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## SAR TEST REPORT

**Applicant Name:**

**SAMSUNG Electronics Co., Ltd.**

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Rep. of Korea

**Date of Issue: Mar. 30, 2021**

**Test Report No.: HCT-SR-2103-FC002**

**Test Site: HCT CO., LTD.**

**FCC ID:**

**A3LNP345XLA**

**Equipment Type:**

**Notebook Computer**

**Application Type**

**Certification**

**FCC Rule Part(s):**

**CFR §2.1093**

**Model Name:**

**NP345XLA**

**Date of Test:**

**Mar. 02. 2021 ~ Mar. 11. 2021**

This device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in FCC KDB procedures and had been tested in accordance with the measurement procedures specified in FCC KDB procedures.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Tested By

Reviewed By

Da-sol Lee  
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SAR Team  
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**REVISION HISTORY**

The revision history for this test report is shown in table.

| Revision No. | Date of Issue | Description     |
|--------------|---------------|-----------------|
| 0            | Mar. 30, 2021 | Initial Release |

This test results were applied only to the test methods required by the standard.

The above Test Report is not related to the accredited test result by (KS Q) ISO/IEC 17025 and KOLAS(Korea Laboratory Accreditation Scheme), which signed the ILAC-MRA.

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### **Appendix**

Appendix A. DUT Ant. Information & Test SETUP PHOTO

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## 1. Test Regulations

The tests documented in this report were performed in accordance with FCC CFR § 2.1093, IEEE 1528-2013, ANSI C63.26-2015 the following FCC Published RF exposure KDB procedures:

- FCC KDB Publication 941225 D01 3G SAR Procedures v03r01
- FCC KDB Publication 941225 D05 SAR for LTE Devices v02r05
- FCC KDB Publication 941225 D05A LTE Rel.10 KDB Inquiry sheet v01r02
- FCC KDB Publication 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB Publication 447498 D01 General SAR Guidance v06
- FCC KDB Publication 616217 D04 SAR for Laptop and Tablets v01r02
- FCC KDB Publication 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
- FCC KDB Publication 865664 D02 SAR Reporting v01r02
- FCC KDB Publication 616217 D04 v01r02 (Proximity Sensor)
- FCC KDB Publication 690783 D01 SAR Listings on Grants v01r03
- FCC KDB Publication 971168 D01 Power Meas License Digital Systems v03r01

In Addition to the above, the following information was used.

- October 2014 TCB Workshop Notes (Overlapping LTE Bands)
- April 2015 TCB Workshop Notes (Simultaneous transmission summation clarified)
- October 2016 TCB Workshop Notes (Bluetooth Duty Factor)
- November 2017 TCBC Workshop Notes (LTE Carrier Aggregation)
- April 2018 TCBC Workshop Notes (LTE DL CA SAR Test Exclusion)
- Oct 2016 TCB Workshop Notes (Device Holder Perturbations)

## 2. Test Location

### 2.1 Test Laboratory

|              |                                                                                 |
|--------------|---------------------------------------------------------------------------------|
| Company Name | HCT Co., Ltd.                                                                   |
| Address      | 74, Seoicheon-ro 578beon-gil, Majang-myeon, Icheon-si, Gyeonggi-do, 17383 KOREA |
| Telephone    | 031-645-6300                                                                    |
| Fax.         | 031-645-6401                                                                    |

### 2.2 Test Facilities

Our laboratories are accredited and approved by the following approval agencies according to ISO/IEC 17025.

|       |                                                         |
|-------|---------------------------------------------------------|
| Korea | National Radio Research Agency (Designation No. KR0032) |
|       | KOLAS (Testing No. KT197)                               |

## 3. Information of the EUT

### 3.1 General Information of the EUT

|                  |                               |
|------------------|-------------------------------|
| Model Name       | NP345XLA                      |
| Equipment Type   | Notebook Computer             |
| FCC ID           | A3LNP345XLA                   |
| Application Type | Certification                 |
| Applicant        | SAMSUNG Electronics Co., Ltd. |

### 3.2 Atestation of test result of device under test

| Band                                      | Tx. Frequency                 | Equipment Class | SAR (W/kg)           |
|-------------------------------------------|-------------------------------|-----------------|----------------------|
|                                           |                               |                 | Reported 1g Body SAR |
| UMTS 850                                  | 826.4 MHz ~ 846.6 MHz         | PCB             | 0.94                 |
| UMTS 1700                                 | 1 712.4 MHz ~ 1 752.6 MHz     | PCB             | <b>1.37</b>          |
| UMTS 1900                                 | 1 852.4 MHz ~ 1 907.6 MHz     | PCB             | 1.21                 |
| LTE Band 2 (PCS)                          | 1 850.7 MHz ~ 1 909.3 MHz     | PCB             | 1.24                 |
| LTE Band 4 (AWS)                          | 1 710.7 MHz ~ 1 754.3 MHz     | PCB             | N/A                  |
| LTE Band 5 (Cell)                         | 824.7 MHz ~ 848.3 MHz         | PCB             | N/A                  |
| LTE Band 12                               | 699.7 MHz ~ 715.3 MHz         | PCB             | 0.91                 |
| LTE Band 13                               | 779.5 MHz ~ 784.5 MHz         | PCB             | 0.76                 |
| LTE Band 17                               | 706.5 MHz ~ 713.5 MHz         | PCB             | N/A                  |
| LTE Band 26 (Cell)                        | 814.7 MHz ~ 848.3 MHz         | PCB             | 0.65                 |
| LTE Band 41                               | 2 498.5 MHz ~ 2 687.5 MHz     | PCB             | 0.92                 |
| LTE Band 66 (AWS)                         | 1 710.7 MHz ~ 1 779.3 MHz     | PCB             | 1.34                 |
| 802.11b                                   | 2 412 MHz ~ 2 472 MHz         | DTS             | <b>0.37</b>          |
| U-NII-1                                   | 5 180 MHz ~ 5 240 MHz         | NII             | N/A                  |
| U-NII-2A                                  | 5 260 MHz ~ 5 320 MHz         | NII             | 0.42                 |
| U-NII-2C                                  | 5 500 MHz ~ 5 720 MHz         | NII             | <b>0.55</b>          |
| U-NII-3                                   | 5 745 MHz ~ 5 825 MHz         | NII             | 0.54                 |
| Bluetooth                                 | 2 402 MHz ~ 2 480 MHz         | DSS             | <b>0.26</b>          |
| Simultaneous SAR per KDB 690783 D01v01r03 |                               |                 | <b>1.598</b>         |
| Date(s) of Tests:                         | Mar. 02. 2021 ~ Mar. 11. 2021 |                 |                      |

## 4. Device Under Test Description

### 4.1 DUT specification

| Device Wireless specification overview |                |                           |
|----------------------------------------|----------------|---------------------------|
| Band & Mode                            | Operating Mode | Tx Frequency              |
| UMTS 850                               | Data           | 826.4 MHz ~ 846.6 MHz     |
| UMTS 1700                              | Data           | 1 712.4 MHz ~ 1 752.6 MHz |
| UMTS 1900                              | Data           | 1 852.4 MHz ~ 1 907.6 MHz |
| LTE Band 2 (PCS)                       | Data           | 1 850.7 MHz ~ 1 909.3 MHz |
| LTE Band 4 (AWS)                       | Data           | 1 710.7 MHz ~ 1 754.3 MHz |
| LTE Band 5 (Cell)                      | Data           | 824.7 MHz ~ 848.3 MHz     |
| LTE Band 12                            | Data           | 699.7 MHz ~ 715.3 MHz     |
| LTE Band 13                            | Data           | 779.5 MHz ~ 784.5 MHz     |
| LTE Band 17                            | Data           | 706.5 MHz ~ 713.5 MHz     |
| LTE Band 26 (Cell)                     | Data           | 814.7 MHz ~ 848.3 MHz     |
| LTE TDD Band 41                        | Data           | 2 498.5 MHz ~ 2 687.5 MHz |
| LTE Band 66 (AWS)                      | Data           | 1 710.7 MHz ~ 1 779.3 MHz |
| U-NII-1                                | Data           | 5 180 MHz ~ 5 240 MHz     |
| U-NII-2A                               | Data           | 5 260 MHz ~ 5 320 MHz     |
| U-NII-2C                               | Data           | 5 500 MHz ~ 5 720 MHz     |
| U-NII-3                                | Data           | 5 745 MHz ~ 5 825 MHz     |
| 2.4 GHz WLAN                           | Data           | 2 412 MHz ~ 2 472 MHz     |
| Bluetooth / LE 5.1                     | Data           | 2 402 MHz ~ 2 480 MHz     |

| Device Description                                                                                                                                                                     |                                                                        |                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|----------------|
| Device Serial Numbers                                                                                                                                                                  | Mode                                                                   | Serial Number  |
|                                                                                                                                                                                        | UMTS 850/ UMTS 1700/ UMTS 1900<br>LTE B2/B4/B5/B12/B13/B17/B26/B41/B66 | FCMR01R1400359 |
|                                                                                                                                                                                        |                                                                        | FCMR01R1400369 |
|                                                                                                                                                                                        |                                                                        | FCMR01R1400338 |
|                                                                                                                                                                                        | 2.4 GHz WLAN                                                           | FCMR01R1400343 |
|                                                                                                                                                                                        | 5 GHz WLAN / Bluetooth                                                 | FCMR01R1400361 |
| The manufacturer has confirmed that the devices tested have the same physical, mechanical and thermal characteristics are within operational tolerances expected for production units. |                                                                        |                |

### 4.2 Power Reduction for SAR

This device utilizes a power reduction mechanism for some wireless modes and bands for SAR compliance under some conditions when the device is being used in close proximity to the user's Body. FCC KDB Publication 616217 D04v01r02 Sec.6 was used as a guideline for selection SAR test distances for device

The reduced powers for the power reduction mechanisms were conformed via conducted power measurements at the RF Port .

### 4.3 Nominal and Maximum Output Power Specifications

This device operates using the following maximum output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB publication 447498 D01v06.

#### 4.3.1 Maximum PCE Output Power

| Mode / Band            |         | Modulated Average (dBm) |            |            |          |
|------------------------|---------|-------------------------|------------|------------|----------|
|                        |         | 3GPP UMTS               | 3GPP HSDPA | 3GPP HSUPA | DC-HSDPA |
| UMTS Band 5 (850 MHz)  | Maximum | 24.5                    | 23.5       | 23.5       | 23.5     |
|                        | Nominal | 23.5                    | 22.5       | 22.5       | 22.5     |
| UMTS Band 4 (1700 MHz) | Maximum | 23.5                    | 22.5       | 22.5       | 22.5     |
|                        | Nominal | 22.5                    | 21.5       | 21.5       | 21.5     |
| UMTS Band 2 (1900 MHz) | Maximum | 23.5                    | 22.5       | 22.5       | 22.5     |
|                        | Nominal | 22.5                    | 21.5       | 21.5       | 21.5     |

| Mode / Band        |         | Modulated Average (dBm) |  |
|--------------------|---------|-------------------------|--|
|                    |         | Max                     |  |
| LTE Band 2 (PCS)   | Maximum | 23.5                    |  |
|                    | Nominal | 22.5                    |  |
| LTE Band 4 (AWS)   | Maximum | 23.5                    |  |
|                    | Nominal | 22.5                    |  |
| LTE Band 5 (Cell)  | Maximum | 24.5                    |  |
|                    | Nominal | 23.5                    |  |
| LTE Band 12        | Maximum | 24.5                    |  |
|                    | Nominal | 23.5                    |  |
| LTE Band 13        | Maximum | 24.5                    |  |
|                    | Nominal | 23.5                    |  |
| LTE Band 17        | Maximum | 24.5                    |  |
|                    | Nominal | 23.5                    |  |
| LTE Band 26 (Cell) | Maximum | 24.5                    |  |
|                    | Nominal | 23.5                    |  |
| LTE TDD Band 41    | Maximum | 24.5                    |  |
|                    | Nominal | 23.5                    |  |
| LTE Band 66 (AWS)  | Maximum | 23.5                    |  |
|                    | Nominal | 22.5                    |  |



### 4.3.2 Reduced Main Output Power – Proximity Sensor activated

| Mode / Band            |         | Modulated Average (dBm) |            |            |          |
|------------------------|---------|-------------------------|------------|------------|----------|
|                        |         | 3GPP UMTS               | 3GPP HSDPA | 3GPP HSUPA | DC-HSDPA |
| UMTS Band 5 (850 MHz)  | Maximum | 21.0                    | 20.0       | 20.0       | 20.0     |
|                        | Nominal | 20.0                    | 19.0       | 19.0       | 19.0     |
| UMTS Band 4 (1700 MHz) | Maximum | 15.0                    | 14.0       | 14.0       | 14.0     |
|                        | Nominal | 14.0                    | 13.0       | 13.0       | 13.0     |
| UMTS Band 2 (1900 MHz) | Maximum | 15.0                    | 14.0       | 14.0       | 14.0     |
|                        | Nominal | 14.0                    | 13.0       | 13.0       | 13.0     |

| Mode / Band        |         | Modulated Average (dBm) |  |
|--------------------|---------|-------------------------|--|
|                    |         | Max                     |  |
| LTE Band 2 (PCS)   | Maximum | 15.0                    |  |
|                    | Nominal | 14.0                    |  |
| LTE Band 4 (AWS)   | Maximum | 15.0                    |  |
|                    | Nominal | 14.0                    |  |
| LTE Band 5 (Cell)  | Maximum | 20.0                    |  |
|                    | Nominal | 19.0                    |  |
| LTE Band 12        | Maximum | 20.0                    |  |
|                    | Nominal | 19.0                    |  |
| LTE Band 13        | Maximum | 20.0                    |  |
|                    | Nominal | 19.0                    |  |
| LTE Band 17        | Maximum | 20.0                    |  |
|                    | Nominal | 19.0                    |  |
| LTE Band 26 (Cell) | Maximum | 20.0                    |  |
|                    | Nominal | 19.0                    |  |
| LTE TDD Band 41    | Maximum | 18.0                    |  |
|                    | Nominal | 17.0                    |  |
| LTE Band 66(AWS)   | Maximum | 15.0                    |  |
|                    | Nominal | 14.0                    |  |

### 4.3.3 Maximum 2.4 GHz, 5 GHz WIFI output power

| Mode / Band                                  |                        |         | Modulated Average (dBm) |                                       |                         |                         |                         |                    |                                       |                         |                         |                         |
|----------------------------------------------|------------------------|---------|-------------------------|---------------------------------------|-------------------------|-------------------------|-------------------------|--------------------|---------------------------------------|-------------------------|-------------------------|-------------------------|
|                                              |                        |         | SISO                    |                                       |                         |                         |                         | MIMO               |                                       |                         |                         |                         |
|                                              |                        |         | 11a                     | 11b                                   | 11g                     | 11n                     | 11ac                    | 11a                | 11b                                   | 11g                     | 11n                     | 11ac                    |
| 2.4 GHz WIFI                                 | 2450 MHz               | Maximum | N/A                     | 1-5CH : 14<br>6CH : 15<br>7-11CH : 16 | 1CH : 15<br>2-11CH : 16 | 1CH : 15<br>2-11CH : 16 | 1CH : 15<br>2-11CH : 16 | N/A                | 1-5CH : 17<br>6CH : 18<br>7-11CH : 19 | 1CH : 18<br>2-11CH : 19 | 1CH : 18<br>2-11CH : 19 | 1CH : 18<br>2-11CH : 19 |
|                                              |                        | Nominal | N/A                     | 1-5CH : 13<br>6CH : 14<br>7-11CH : 15 | 1CH : 14<br>2-11CH : 15 | 1CH : 14<br>2-11CH : 15 | 1CH : 14<br>2-11CH : 15 | N/A                | 1-5CH : 16<br>6CH : 17<br>7-11CH : 18 | 1CH : 17<br>2-11CH : 18 | 1CH : 17<br>2-11CH : 18 | 1CH : 17<br>2-11CH : 18 |
| 2.4 GHz WIFI<br>(CH12 when airplane mode ON) | 2450 MHz               | Maximum | N/A                     | 4.0                                   | 4.0                     | 4.0                     | 4.0                     | N/A                | 7.0                                   | 7.0                     | 7.0                     | 7.0                     |
|                                              |                        | Nominal | N/A                     | 3.0                                   | 3.0                     | 3.0                     | 3.0                     | N/A                | 6.0                                   | 6.0                     | 6.0                     | 6.0                     |
| 2.4 GHz WIFI<br>(CH13 when airplane mode ON) | 2450 MHz               | Maximum | N/A                     | -2.5                                  | -2.5                    | -2.5                    | -2.5                    | N/A                | 0.5                                   | 0.5                     | 0.5                     | 0.5                     |
|                                              |                        | Nominal | N/A                     | -3.5                                  | -3.5                    | -3.5                    | -3.5                    | N/A                | -0.5                                  | -0.5                    | -0.5                    | -0.5                    |
| 5 GHz WIFI<br>(20 MHz)                       | 5200 MHz<br>(U-NII-1)  | Maximum | 16.0                    | N/A                                   | N/A                     | 15.0                    | 14.0                    | 19.0               | N/A                                   | N/A                     | 18.0                    | 17.0                    |
|                                              |                        | Nominal | 15.0                    | N/A                                   | N/A                     | 14.0                    | 13.0                    | 18.0               | N/A                                   | N/A                     | 17.0                    | 16.0                    |
|                                              | 5300 MHz<br>(U-NII-2A) | Maximum | 16.0                    | N/A                                   | N/A                     | 15.0                    | 14.0                    | 19.0               | N/A                                   | N/A                     | 18.0                    | 17.0                    |
|                                              |                        | Nominal | 15.0                    | N/A                                   | N/A                     | 14.0                    | 13.0                    | 18.0               | N/A                                   | N/A                     | 17.0                    | 16.0                    |
|                                              | 5500 MHz<br>(U-NII-2C) | Maximum | 16.0<br>(100ch:14)      | N/A                                   | N/A                     | 15.0                    | 14.0                    | 19.0<br>(100ch:17) | N/A                                   | N/A                     | 18.0                    | 17.0                    |
|                                              |                        | Nominal | 15.0<br>(100ch:13)      | N/A                                   | N/A                     | 14.0                    | 13.0                    | 18.0<br>(100ch:16) | N/A                                   | N/A                     | 17.0                    | 16.0                    |
|                                              | 5800 MHz<br>(U-NII-3)  | Maximum | 16.0                    | N/A                                   | N/A                     | 15.0                    | 14.0                    | 19.0               | N/A                                   | N/A                     | 18.0                    | 17.0                    |
|                                              |                        | Nominal | 15.0                    | N/A                                   | N/A                     | 14.0                    | 13.0                    | 18.0               | N/A                                   | N/A                     | 17.0                    | 16.0                    |
| 5 GHz WIFI<br>(40 MHz)                       | 5200 MHz<br>(U-NII-1)  | Maximum | N/A                     | N/A                                   | N/A                     | 14.0                    | 13.0                    | N/A                | N/A                                   | N/A                     | 17.0                    | 16.0                    |
|                                              |                        | Nominal | N/A                     | N/A                                   | N/A                     | 13.0                    | 12.0                    | N/A                | N/A                                   | N/A                     | 16.0                    | 15.0                    |
|                                              | 5300 MHz<br>(U-NII-2A) | Maximum | N/A                     | N/A                                   | N/A                     | 14.0                    | 13.0                    | N/A                | N/A                                   | N/A                     | 17.0                    | 16.0                    |
|                                              |                        | Nominal | N/A                     | N/A                                   | N/A                     | 13.0                    | 12.0                    | N/A                | N/A                                   | N/A                     | 16.0                    | 15.0                    |
|                                              | 5500 MHz<br>(U-NII-2C) | Maximum | N/A                     | N/A                                   | N/A                     | 14.0                    | 13.0                    | N/A                | N/A                                   | N/A                     | 17.0                    | 16.0                    |
|                                              |                        | Nominal | N/A                     | N/A                                   | N/A                     | 13.0                    | 12.0                    | N/A                | N/A                                   | N/A                     | 16.0                    | 15.0                    |
|                                              | 5800 MHz<br>(U-NII-3)  | Maximum | N/A                     | N/A                                   | N/A                     | 14.0                    | 13.0                    | N/A                | N/A                                   | N/A                     | 17.0                    | 16.0                    |
|                                              |                        | Nominal | N/A                     | N/A                                   | N/A                     | 13.0                    | 12.0                    | N/A                | N/A                                   | N/A                     | 16.0                    | 15.0                    |
| 5 GHz WIFI<br>(80 MHz)                       | 5200 MHz<br>(U-NII-1)  | Maximum | N/A                     | N/A                                   | N/A                     | N/A                     | 12.0                    | N/A                | N/A                                   | N/A                     | N/A                     | 15.0                    |
|                                              |                        | Nominal | N/A                     | N/A                                   | N/A                     | N/A                     | 11.0                    | N/A                | N/A                                   | N/A                     | N/A                     | 14.0                    |
|                                              | 5300 MHz<br>(U-NII-2A) | Maximum | N/A                     | N/A                                   | N/A                     | N/A                     | 12.0                    | N/A                | N/A                                   | N/A                     | N/A                     | 15.0                    |
|                                              |                        | Nominal | N/A                     | N/A                                   | N/A                     | N/A                     | 11.0                    | N/A                | N/A                                   | N/A                     | N/A                     | 14.0                    |
|                                              | 5500 MHz<br>(U-NII-2C) | Maximum | N/A                     | N/A                                   | N/A                     | N/A                     | 12.0                    | N/A                | N/A                                   | N/A                     | N/A                     | 15.0                    |
|                                              |                        | Nominal | N/A                     | N/A                                   | N/A                     | N/A                     | 11.0                    | N/A                | N/A                                   | N/A                     | N/A                     | 14.0                    |
|                                              | 5800 MHz<br>(U-NII-3)  | Maximum | N/A                     | N/A                                   | N/A                     | N/A                     | 12.0                    | N/A                | N/A                                   | N/A                     | N/A                     | 15.0                    |
|                                              |                        | Nominal | N/A                     | N/A                                   | N/A                     | N/A                     | 11.0                    | N/A                | N/A                                   | N/A                     | N/A                     | 14.0                    |

#### 4.3.4 Reduced 2.4 GHz, 5 GHz WIFI output power Proximity Sensor activated (Grip Sensor)

| Mode / Band                                     |                        |         | Modulated Average (dBm) |      |      |      |      |      |      |      |      |      |
|-------------------------------------------------|------------------------|---------|-------------------------|------|------|------|------|------|------|------|------|------|
|                                                 |                        |         | SISO                    |      |      |      |      | MIMO |      |      |      |      |
|                                                 |                        |         | 11a                     | 11b  | 11g  | 11n  | 11ac | 11a  | 11b  | 11g  | 11n  | 11ac |
| 2.4 GHz WIFI                                    | 2450 MHz               | Maximum | N/A                     | 13.0 | 13.0 | 13.0 | 13.0 | N/A  | 16.0 | 16.0 | 16.0 | 16.0 |
|                                                 |                        | Nominal | N/A                     | 12.0 | 12.0 | 12.0 | 12.0 | N/A  | 15.0 | 15.0 | 15.0 | 15.0 |
| 2.4 GHz WIFI<br>(CH12 when<br>airplane mode ON) | 2450 MHz               | Maximum | N/A                     | 4.0  | 4.0  | 4.0  | 4.0  | N/A  | 7.0  | 7.0  | 7.0  | 7.0  |
|                                                 |                        | Nominal | N/A                     | 3.0  | 3.0  | 3.0  | 3.0  | N/A  | 6.0  | 6.0  | 6.0  | 6.0  |
| 2.4 GHz WIFI<br>(CH13 when<br>airplane mode ON) | 2450 MHz               | Maximum | N/A                     | -2.5 | -2.5 | -2.5 | -2.5 | N/A  | 0.5  | 0.5  | 0.5  | 0.5  |
|                                                 |                        | Nominal | N/A                     | -3.5 | -3.5 | -3.5 | -3.5 | N/A  | -0.5 | -0.5 | -0.5 | -0.5 |
| 5 GHz WIFI<br>(20 MHz)                          | 5200 MHz<br>(U-NII-1)  | Maximum | 11.0                    | N/A  | N/A  | 11.0 | 11.0 | 14.0 | N/A  | N/A  | 14.0 | 14.0 |
|                                                 |                        | Nominal | 10.0                    | N/A  | N/A  | 10.0 | 10.0 | 13.0 | N/A  | N/A  | 13.0 | 13.0 |
|                                                 | 5300 MHz<br>(U-NII-2A) | Maximum | 11.0                    | N/A  | N/A  | 11.0 | 11.0 | 14.0 | N/A  | N/A  | 14.0 | 14.0 |
|                                                 |                        | Nominal | 10.0                    | N/A  | N/A  | 10.0 | 10.0 | 13.0 | N/A  | N/A  | 13.0 | 13.0 |
|                                                 | 5500 MHz<br>(U-NII-2C) | Maximum | 11.0                    | N/A  | N/A  | 11.0 | 11.0 | 14.0 | N/A  | N/A  | 14.0 | 14.0 |
|                                                 |                        | Nominal | 10.0                    | N/A  | N/A  | 10.0 | 10.0 | 13.0 | N/A  | N/A  | 13.0 | 13.0 |
|                                                 | 5800 MHz<br>(U-NII-3)  | Maximum | 11.0                    | N/A  | N/A  | 11.0 | 11.0 | 14.0 | N/A  | N/A  | 14.0 | 14.0 |
|                                                 |                        | Nominal | 10.0                    | N/A  | N/A  | 10.0 | 10.0 | 13.0 | N/A  | N/A  | 13.0 | 13.0 |
| 5 GHz WIFI<br>(40 MHz)                          | 5200 MHz<br>(U-NII-1)  | Maximum | N/A                     | N/A  | N/A  | 11.0 | 11.0 | N/A  | N/A  | N/A  | 14.0 | 14.0 |
|                                                 |                        | Nominal | N/A                     | N/A  | N/A  | 10.0 | 10.0 | N/A  | N/A  | N/A  | 13.0 | 13.0 |
|                                                 | 5300 MHz<br>(U-NII-2A) | Maximum | N/A                     | N/A  | N/A  | 11.0 | 11.0 | N/A  | N/A  | N/A  | 14.0 | 14.0 |
|                                                 |                        | Nominal | N/A                     | N/A  | N/A  | 10.0 | 10.0 | N/A  | N/A  | N/A  | 13.0 | 13.0 |
|                                                 | 5500 MHz<br>(U-NII-2C) | Maximum | N/A                     | N/A  | N/A  | 11.0 | 11.0 | N/A  | N/A  | N/A  | 14.0 | 14.0 |
|                                                 |                        | Nominal | N/A                     | N/A  | N/A  | 10.0 | 10.0 | N/A  | N/A  | N/A  | 13.0 | 13.0 |
|                                                 | 5800 MHz<br>(U-NII-3)  | Maximum | N/A                     | N/A  | N/A  | 11.0 | 11.0 | N/A  | N/A  | N/A  | 14.0 | 14.0 |
|                                                 |                        | Nominal | N/A                     | N/A  | N/A  | 10.0 | 10.0 | N/A  | N/A  | N/A  | 13.0 | 13.0 |
| 5 GHz WIFI<br>(80 MHz)                          | 5200 MHz<br>(U-NII-1)  | Maximum | N/A                     | N/A  | N/A  | N/A  | 11.0 | N/A  | N/A  | N/A  | N/A  | 14.0 |
|                                                 |                        | Nominal | N/A                     | N/A  | N/A  | N/A  | 10.0 | N/A  | N/A  | N/A  | N/A  | 13.0 |
|                                                 | 5300 MHz<br>(U-NII-2A) | Maximum | N/A                     | N/A  | N/A  | N/A  | 11.0 | N/A  | N/A  | N/A  | N/A  | 14.0 |
|                                                 |                        | Nominal | N/A                     | N/A  | N/A  | N/A  | 10.0 | N/A  | N/A  | N/A  | N/A  | 13.0 |
|                                                 | 5500 MHz<br>(U-NII-2C) | Maximum | N/A                     | N/A  | N/A  | N/A  | 11.0 | N/A  | N/A  | N/A  | N/A  | 14.0 |
|                                                 |                        | Nominal | N/A                     | N/A  | N/A  | N/A  | 10.0 | N/A  | N/A  | N/A  | N/A  | 13.0 |
|                                                 | 5800 MHz<br>(U-NII-3)  | Maximum | N/A                     | N/A  | N/A  | N/A  | 11.0 | N/A  | N/A  | N/A  | N/A  | 14.0 |
|                                                 |                        | Nominal | N/A                     | N/A  | N/A  | N/A  | 10.0 | N/A  | N/A  | N/A  | N/A  | 13.0 |

#### 4.3.5 Maximum Bluetooth Power

| Mode / Band   |         | Modulated Average (dBm) |
|---------------|---------|-------------------------|
| Bluetooth BR  | Maximum | 11.5                    |
|               | Nominal | 10.5                    |
| Bluetooth EDR | Maximum | 9.5                     |
|               | Nominal | 8.5                     |
| Bluetooth LE  | Maximum | 4.0                     |
|               | Nominal | 3.0                     |

#### 4.4 LTE Information

| Item.              | Description                                                     |
|--------------------|-----------------------------------------------------------------|
| Frequency Range    | LTE Band 2 (PCS) 1 850.7 MHz ~ 1 909.3 MHz                      |
|                    | LTE Band 4 (AWS) 1 710.7 MHz ~ 1 754.3 MHz                      |
|                    | LTE Band 5 (Cell) 824.7 MHz ~ 848.3 MHz                         |
|                    | LTE Band 12 699.7 MHz ~ 715.3 MHz                               |
|                    | LTE Band 13 779.5 MHz ~ 784.5 MHz                               |
|                    | LTE Band 17 706.5 MHz ~ 713.5 MHz                               |
|                    | LTE Band 26 (Cell) 814.7 MHz ~ 848.3 MHz                        |
|                    | LTE TDD Band 41 2 498.5 MHz ~ 2 687.5 MHz                       |
|                    | LTE Band 66 (AWS) 1 710.7 MHz ~ 1 779.3 MHz                     |
| Channel Bandwidths | LTE Band 2 (PCS) 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz  |
|                    | LTE Band 4 (AWS) 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz  |
|                    | LTE Band 5 (Cell) 1.4 MHz, 3 MHz, 5 MHz, 10 MHz                 |
|                    | LTE Band 12 1.4 MHz, 3 MHz, 5 MHz, 10 MHz                       |
|                    | LTE Band 13 5 MHz, 10 MHz                                       |
|                    | LTE Band 17 5 MHz, 10 MHz                                       |
|                    | LTE Band 26 (Cell) 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz        |
|                    | LTE TDD Band 41 5 MHz, 10 MHz, 15 MHz, 20 MHz                   |
|                    | LTE Band 66 (AWS) 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz |

| Ch. No.& Freq.(MHz) | Low                     | Mid             | High            |
|---------------------|-------------------------|-----------------|-----------------|
| LTE Band 2 (PCS)    | 1.4 MHz 1 850.7 (18607) | 1 880.0 (18900) | 1 909.3 (19193) |
|                     | 3 MHz 1 851.5 (18615)   | 1 880.0 (18900) | 1 908.5 (19185) |
|                     | 5 MHz 1 852.5 (18625)   | 1 880.0 (18900) | 1 907.5 (19175) |
|                     | 10 MHz 1 855.0 (18650)  | 1 880.0 (18900) | 1 905.0 (19150) |
|                     | 15 MHz 1 857.5 (18675)  | 1 880.0 (18900) | 1 902.5 (19125) |
|                     | 20 MHz 1 860.0 (18700)  | 1 880.0 (18900) | 1 900.0 (19100) |
| LTE Band 4 (AWS)    | 1.4 MHz 1 710.7 (19957) | 1 732.5 (20175) | 1 754.3 (20393) |
|                     | 3 MHz 1 711.5 (19965)   | 1 732.5 (20175) | 1 753.5 (20385) |
|                     | 5 MHz 1 712.5 (19975)   | 1 732.5 (20175) | 1 752.5 (20375) |
|                     | 10 MHz 1 715.0 (20000)  | 1 732.5 (20175) | 1 750.0 (20350) |
|                     | 15 MHz 1 717.5 (20025)  | 1 732.5 (20175) | 1 747.5 (20325) |
|                     | 20 MHz 1 720.0 (20050)  | 1 732.5 (20175) | 1 745.0 (20300) |
| LTE Band 5 (Cell)   | 1.4 MHz 824.7 (20407)   | 836.5 (20525)   | 848.3 (20643)   |
|                     | 3 MHz 825.5 (20415)     | 836.5 (20525)   | 847.5 (20635)   |
|                     | 5 MHz 826.5 (20425)     | 836.5 (20525)   | 846.5 (20625)   |
|                     | 10 MHz 829.0 (20450)    | 836.5 (20525)   | 844.0 (20600)   |
| LTE Band 12         | 1.4 MHz 699.7 (23017)   | 707.5 (23095)   | 715.3 (23173)   |
|                     | 3 MHz 700.5 (23025)     | 707.5 (23095)   | 714.5 (23165)   |
|                     | 5 MHz 701.5 (23035)     | 707.5 (23095)   | 713.5 (23155)   |
|                     | 10 MHz 704.0 (23060)    | 707.5 (23095)   | 711.0 (23130)   |
| LTE Band 13         | 5 MHz 779.5 (23205)     | 782 (23230)     | 784.5 (23255)   |
|                     | 10 MHz                  | 782 (23230)     |                 |
| LTE Band 17         | 5 MHz 706.5 (23755)     | 710.0 (23790)   | 713.5 (23825)   |
|                     | 10 MHz                  | 710.0 (23790)   |                 |
| LTE Band 26 (Cell)  | 1.4 MHz 814.7 (26697)   | 831.5 (26865)   | 848.3 (27033)   |
|                     | 3 MHz 815.5 (26705)     | 831.5 (26865)   | 847.5 (27025)   |
|                     | 5 MHz 816.5 (26715)     | 831.5 (26865)   | 846.5 (27015)   |
|                     | 10 MHz 819.0 (26740)    | 831.5 (26865)   | 844.0 (26990)   |
|                     | 15 MHz 821.5 (26765)    | 831.5 (26865)   | 841.5 (26965)   |

| Ch. No.& Freq.(MHz)                                              |         | Low              |                                                                                                                                                                                                                                                     | Mid                                                                                                                                                                |                | High             |  |
|------------------------------------------------------------------|---------|------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------------------|--|
| LTE Band 66 (AWS)                                                | 1.4 MHz | 1 710.7 (131979) |                                                                                                                                                                                                                                                     | 1 745 (132322)                                                                                                                                                     |                | 1 779.3 (132665) |  |
|                                                                  | 3 MHz   | 1 711.5 (131987) |                                                                                                                                                                                                                                                     | 1 745 (132322)                                                                                                                                                     |                | 1 778.5 (132657) |  |
|                                                                  | 5 MHz   | 1 712.5 (131997) |                                                                                                                                                                                                                                                     | 1 745 (132322)                                                                                                                                                     |                | 1 777.5 (132647) |  |
|                                                                  | 10 MHz  | 1 715.0 (132022) |                                                                                                                                                                                                                                                     | 1 745 (132322)                                                                                                                                                     |                | 1 775.0 (132622) |  |
|                                                                  | 15 MHz  | 1 717.5 (132047) |                                                                                                                                                                                                                                                     | 1 745 (132322)                                                                                                                                                     |                | 1 772.5 (132597) |  |
|                                                                  | 20 MHz  | 1 720.0 (132072) |                                                                                                                                                                                                                                                     | 1 745 (132322)                                                                                                                                                     |                | 1 770.0 (132572) |  |
| LTE TDD Band 41                                                  | 5 MHz   | 2 506.0(39750)   | 2 549.5(40185)                                                                                                                                                                                                                                      | 2 593.0(40620)                                                                                                                                                     | 2 636.5(41055) | 2 680.0(41490)   |  |
|                                                                  | 10 MHz  | 2 506.0(39750)   | 2 549.5(40185)                                                                                                                                                                                                                                      | 2 593.0(40620)                                                                                                                                                     | 2 636.5(41055) | 2 680.0(41490)   |  |
|                                                                  | 15 MHz  | 2 506.0(39750)   | 2 549.5(40185)                                                                                                                                                                                                                                      | 2 593.0(40620)                                                                                                                                                     | 2 636.5(41055) | 2 680.0(41490)   |  |
|                                                                  | 20 MHz  | 2 506.0(39750)   | 2 549.5(40185)                                                                                                                                                                                                                                      | 2 593.0(40620)                                                                                                                                                     | 2 636.5(41055) | 2 680.0(41490)   |  |
| UE Category                                                      |         |                  | LTE Rel. 12, DL: Category 11 , UL: Category 5                                                                                                                                                                                                       |                                                                                                                                                                    |                |                  |  |
| Modulations Supported in UL                                      |         |                  | QPSK, 16QAM, 64QAM                                                                                                                                                                                                                                  |                                                                                                                                                                    |                |                  |  |
| LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3 |         |                  | Yes                                                                                                                                                                                                                                                 |                                                                                                                                                                    |                |                  |  |
| A-MPR disabled for SAR Testing.                                  |         |                  | Yes                                                                                                                                                                                                                                                 |                                                                                                                                                                    |                |                  |  |
| LTE Carrier Aggregation                                          |         |                  | Down-Link CA                                                                                                                                                                                                                                        | This device supports DL-link Intra-band and Inter-band Carrier aggregations. The Technical Description includes all the possible carrier aggregation combinations. |                |                  |  |
| LTE Information                                                  |         |                  | This device does not support full CA features on 3GPP Release 12. The following LTE Release 12 features are not supported. Relay, HetNet, Enhanced MIMO, eICI, WiFi offloading, MDH, eMBMA, Cross-Carrier Scheduling, Enhanced SC-FDMA, Up link CA. |                                                                                                                                                                    |                |                  |  |

Note:

1. LTE Band 41 test channels in accordance with Oct. 2014 TCB Workshop notes for all channels bandwidths

## 4.5 SAR Summation Scenario

According to FCC KDB 447498 D01v06, transmitters are considered to be transmitting simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds. Possible transmission paths for the EUT are shown below paths and are mode in same rectangle to indicate communication modes which share the same path. Modes which share the same transmission path cannot transmit simultaneously with one another.



Simultaneous transmission paths

This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis according to FCC KDB 447498 D01v06.

| Simultaneous Transmission Scenarios |      |
|-------------------------------------|------|
| Applicable Combination              | Body |
| UMTS + 2.4 GHz Wifi Antenna 1       | Yes  |
| UMTS + 2.4 GHz Wifi Antenna 2       | Yes  |
| UMTS + 2.4 GHz Wifi MIMO            | Yes  |
| LTE + 2.4 GHz Wifi Antenna 1        | Yes  |
| LTE + 2.4 GHz Wifi Antenna 2        | Yes  |
| LTE + 2.4 GHz Wifi MIMO             | Yes  |
| UMTS + 5 GHz WiFi Antenna 1         | Yes  |
| UMTS + 5 GHz WiFi Antenna 2         | Yes  |
| UMTS + 5 GHz WiFi MIMO              | Yes  |
| LTE + 5 GHz WiFi Antenna 1          | Yes  |
| LTE + 5 GHz WiFi Antenna 2          | Yes  |
| LTE + 5 GHz WiFi MIMO               | Yes  |
| UMTS + 2.4 GHz Bluetooth            | Yes  |
| LTE + 2.4 GHz Bluetooth             | Yes  |
| UMTS + 5 GHz WiFi MIMO + Bluetooth  | Yes  |
| LTE + 5 GHz WiFi MIMO + Bluetooth   | Yes  |

1. Bluetooth cannot transmit simultaneously with 2.4 GHz WLAN.
2. 5 GHz WLAN can transmit simultaneously with Bluetooth
3. All Licensed modes cannot transmit simultaneously.

## 4.6 SAR Test Considerations

### 4.6.1 WiFi

Since U-NII-1 and U-NII-2A bands have the same maximum output power and the highest reported SAR for U-NII-2A is less than 1.2 W/kg for 1g SAR and is less than 3.0 W/kg for 10g SAR, SAR is not required for U-NII-1 band according to FCC KDB 248227D01v02r02.

This device supports IEEE 802.11 ac with the following features:

- a) Up to 80 MHz Bandwidth only
- b) No aggregate channel configurations
- c) 2Tx antenna output
- d) 256 QAM is supported
- e) TDWR channels are supported.
- f) Straddle channels are supported.

### 4.6.2 Licensed Transmitter(s)

This device is only capable of QPSK HSUPA in the uplink. Therefore, no additional SAR tests are required beyond that described for devices with HSUPA in KDB 941225 D01v03r01.

LTE SAR for the higher modulations and lower bandwidths were not tested since the maximum average output power of all required channels and configurations was not more than 0.5 dB higher than the highest bandwidth; and the reported LTE SAR for the highest bandwidth was less than 1.45 W/kg for all configurations according to FCC KDB 941225 D05v02r05.

This device supports LTE Carrier Aggregation (CA) in the downlink Per FCC KDB publication 941225 D05A v01r02, SAR for LTE DL CA operations was not needed since the maximum average output power in LTE CA mode was not >0.25 dB higher than the maximum output power when downlink carrier aggregation was inactive.

This device supports 64QAM on the uplink for LTE operations conducted powers for 64QAM uplink configurations were measured per sec.5.1 of FCC KDB 941225 D05v02r05. SAR was not required for 64QAM since the highest maximum output power for 64QAM is  $\leq 0.5$  dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is  $\leq 1.45$  W/kg, per sec.5.2.4 of FCC KDB 941225 D05v02r05.

This DUT supports LTE capabilities with overlapping transmission frequency ranges. When the supported frequency range of an LTE band falls completely within an LTE band with a larger transmission frequency range, both LTE bands have the same maximum target power. and both LTE bands share the same transmission path and signal characteristics, SAR was only assessed for the band with the larger transmission frequency range  
LTE Band 5 (824.7 MHz ~ 848.3 MHz) is covered by LTE Band 26 (814.7 MHz ~ 848.3 MHz),  
LTE Band 4 (1 710.7 MHz ~ 1 754.3 MHz) is covered by LTE Band 66 (1 710.7 MHz ~ 1 779.3 MHz)  
LTE Band 17 (706.5 MHz ~ 713.5 MHz) is covered by LTE Band 12 (699.7 MHz ~ 715.3 MHz) and each both LTE bands have the same target powers

Per FCC KDB 941225 D01v03r01, 12.2 kbps RMC is the primary mode and HSPA (HSUPA/HSDPA with RMC) is the secondary mode.

Per FCC KDB 941225 D01v03r01, The SAR test exclusion is applied to the secondary mode by the following equation.

$$\text{Adjusted SAR} = \text{Highest Reported SAR} * \frac{\text{Secondary Max tune - up (mW)}}{\text{Primary Max tune - up (mW)}} \leq 1.2 \text{ W/kg.}$$

Based on the highest Reported SAR, the secondary mode is not required.

Per FCC KDB 690783 1 D01 SAR Listings on Grants v01r03 and KDB 447498 D01 General RF Exposure Guidance v06 The SAR numbers listed must be consistent with the highest reported test results required by the published RF exposure KDB procedures. When the measured SAR is not at the maximum tune-up tolerance limit or maximum output power allowed for production units, the measured results are scaled to the maximum conditions to determine compliance; the scaled results are referred to as the reported SAR.

$$\text{The Reported SAR} = \text{The Measured SAR} * \frac{\text{Maximum tune-up (mW)}}{\text{Measured Conducted Power(mW)}}$$

The Reported SAR for WLAN and Bluetooth

$$\text{The Reported SAR} = \text{The Measured SAR} * \frac{\text{Maximum tune-up (mW)}}{\text{Measured Conducted Power(mW)}} * \text{Duty factor}$$

FCC KDB 447498 D01v06 General RF Exposure Guidance introduces a new formula for calculating the SAR a Peak Location Separation Ratio(SPLSR) between pairs of simultaneously transmitting antennas:

$$SPLSR_i = (SAR_1 + SAR_2)^{1.5} / R_i$$

Where:

$SAR_1$  is the highest measured or estimated SAR for the first of a pair of simultaneous transmitting antennas, in a specific test operating mode and exposure condition

$SAR_2$  is the highest measured or estimated SAR for the second of a pair of simultaneous transmitting antennas, in the same test operating mode and exposure condition as the first

$R_i$  is the separation distance between the pair of simultaneous transmitting antennas, When the SAR is measured, for both antennas in the pair, it is determined by the actual x, y and z coordinates in the 1-g SAR for each SAR peak location, based on the extrapolated and interpolated result in the zoom scan measurement, using the formula of  $[(X_1 - X_2)^2 + (Y_1 - Y_2)^2 + (Z_1 - Z_2)^2]$

In order for a pair of simultaneous transmitting antennas with the sum 1-g of SAR > 1.6 W/kg and with the sum 10-g of SAR > 4W/Kg to qualify for exemption from Simultaneous Transmission SAR measurements, it has to satisfy the condition of:

$$(SAR_1 + SAR_2)^{1.5} / R_i \leq 0.04 \text{ for 1g SAR and } (SAR_1 + SAR_2)^{1.5} / R_i \leq 0.1 \text{ for 10g SAR.}$$



## 5. Introduction

The FCC has adopted the guidelines for evaluating the environmental effects of radio frequency radiation in ET Docket 93-62 on Aug. 6, 1996 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices.

The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz. 1992 by the Institute of Electrical and Electronics Engineers, Inc., New York 10017. The measurement procedure described in IEEE/ANSI C95.3-1992 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave is used for guidance in measuring SAR due to the RF radiation exposure from the Equipment Under Test (EUT). These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in Biological Effects and Exposure Criteria for Radio Frequency Electromagnetic Fields," NCRP Report No. 86 NCRP, 1986, Bethesda, MD 20814. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards.

### SAR Definition

Specific Absorption Rate (SAR) is defined as the time derivative of the incremental electromagnetic energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of a given density ( $\rho$ ). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body.

$$SAR = \frac{d}{dt} \left( \frac{dU}{dm} \right)$$

Figure 1. SAR Mathematical Equation  
SAR is expressed in units of Watts per Kilogram (W/kg)

Where:

- = conductivity of the tissue-simulant material (S/m)
- = mass density of the tissue-simulant material (kg/m<sup>3</sup>)
- = Total RMS electric field strength (V/m)

NOTE: The primary factors that control rate of energy absorption were found to be the wavelength of the incident field in relations to the dimensions and geometry of the irradiated organism, the orientation of the organism in relation to the polarity of field vectors, the presence of reflecting surfaces, and whether conductive contact is made by the organism with a ground plane.

## 6. Description of test equipment

### 6.1 SAR MEASUREMENT SETUP

These measurements are performed using the DASY4 automated dosimetric assessment system. It is made by Schmid & Partner Engineering AG (SPEAG) in Zurich, Switzerland. It consists of high precision robotics system (Staubli), robot controller, Pentium III computer, near-field probe, probe alignment sensor, and the generic twin phantom containing the brain equivalent material. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF) (see Figure.2).

A cell controller system contains the power supply, robot controller, teach pendant (Joystick), and remote control, is used to drive the robot motors. The PC with Windows XP or Windows 7 is working with SAR Measurement system DASY4 & DASY5, A/D interface card, monitor, mouse, and keyboard. The Staubli Robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC plug-in card.

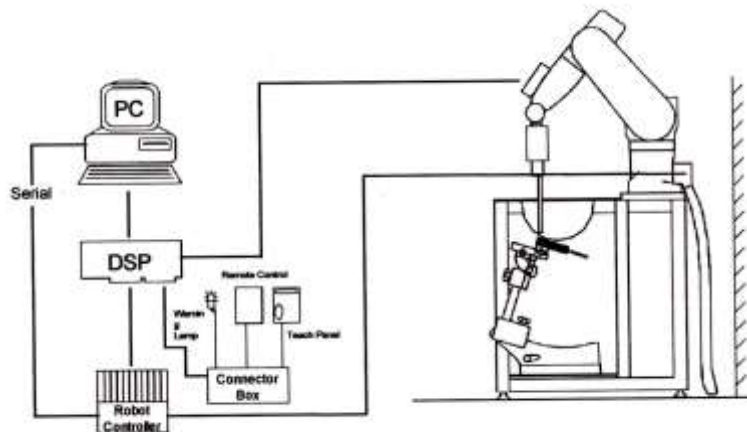


Figure 2. HCT SAR Lab. Test Measurement Set-up

The DAE consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer. The system is described in detail in.

## 7. SAR Measurement Procedure

The evaluation was performed using the following procedure compliant to FCC KDB Publication 865664 D01v01r04 and IEEE 1528-2013.

1. The SAR distribution at the exposed side of the head or body was measured at a distance no more than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the DUT's head and body area and the horizontal grid resolution was depending on the FCC KDB 865664 D01v01r04 table 4-1 & IEEE 1528-2013.
2. Based on step, the area of the maximum absorption was determined by sophisticated interpolations routines implemented in DASY software. When an Area Scan has measured all reachable point. DASY system computes the field maximal found in the scanned area, within a range of the maximum. SAR at this fixed point was measured and used as a reference value.
3. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB 865664 D01v01r04 table 4-1 and IEEE 1528-2013. On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure (reference from the DASY manual.)
  - a. The data at the surface were extrapolated, since the center of the dipoles is no more than 2.7 mm away from the tip of the probe (it is different from the probe type) and the distance between the surface and the lowest measuring point is 1.2 mm. The extrapolation was based on a least square algorithm. A polynomial of the fourth order was calculated through the points in z-axes. This polynomial was then used to evaluate the points between the surface and the probe tip.
  - b. The maximum interpolated value was searched with a straight-forward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g or 10 g) were computed using the 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the "Not a knot" condition (in x, y, and z directions. The volume was integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the average.
  - c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan. If the value changed by more than 5 %, the SAR evaluation and drift measurements were repeated.

Area scan and zoom scan resolution setting follow KDB 865664 D01v01r04 quoted below.

|                                                                                                                                                                                                                                                                                                                                                                                                                         |                                      |                                                                                       |                                                                                                                                                                                                                                                                   |                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                         |                                      |                                                                                       | ≤ 3 GHz                                                                                                                                                                                                                                                           | > 3 GHz                                               |
| Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface                                                                                                                                                                                                                                                                                                                  |                                      |                                                                                       | 5±1 mm                                                                                                                                                                                                                                                            | ·δ·ln(2)±0.5 mm                                       |
| Maximum probe angle from probe axis to phantom surface normal at the measurement location                                                                                                                                                                                                                                                                                                                               |                                      |                                                                                       | 30°±1°                                                                                                                                                                                                                                                            | 20°±1°                                                |
| Maximum area scan Spatial resolution: Δx <sub>Area</sub> , Δy <sub>Area</sub>                                                                                                                                                                                                                                                                                                                                           |                                      |                                                                                       | ≤ 2 GHz: ≤15 mm<br>2-3 GHz: ≤12 mm                                                                                                                                                                                                                                | 3-4 GHz: ≤12 mm<br>4-6 GHz: ≤10 mm                    |
|                                                                                                                                                                                                                                                                                                                                                                                                                         |                                      |                                                                                       | When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device. |                                                       |
| Maximum zoom scan Spatial resolution: Δx <sub>zoom</sub> , Δy <sub>zoom</sub>                                                                                                                                                                                                                                                                                                                                           |                                      |                                                                                       | ≤ 2 GHz: ≤8mm<br>2-3 GHz: ≤5mm*                                                                                                                                                                                                                                   | 3-4 GHz: ≤5 mm*<br>4-6 GHz: ≤4 mm*                    |
| Maximum zoom scan Spatial resolution normal to phantom surface                                                                                                                                                                                                                                                                                                                                                          | uniform grid: Δz <sub>zoom</sub> (n) |                                                                                       | ≤ 5 mm                                                                                                                                                                                                                                                            | 3-4 GHz: ≤4 mm<br>4-5 GHz: ≤3 mm<br>5-6 GHz: ≤2 mm    |
|                                                                                                                                                                                                                                                                                                                                                                                                                         | graded grid                          | Δz <sub>zoom</sub> (1): between 1 <sup>st</sup> two Points closest to phantom surface | ≤ 4 mm                                                                                                                                                                                                                                                            | 3-4 GHz: ≤3 mm<br>4-5 GHz: ≤2.5 mm<br>5-6 GHz: ≤2 mm  |
|                                                                                                                                                                                                                                                                                                                                                                                                                         |                                      | Δz <sub>zoom</sub> (n>1): between subsequent Points                                   | ≤1.5·Δz <sub>zoom</sub> (n-1)                                                                                                                                                                                                                                     |                                                       |
| Minimum zoom scan volume                                                                                                                                                                                                                                                                                                                                                                                                | x, y, z                              |                                                                                       | ≥ 30 mm                                                                                                                                                                                                                                                           | 3-4 GHz: ≥28 mm<br>4-5 GHz: ≥25 mm<br>5-6 GHz: ≥22 mm |
| Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.<br>* When zoom scan is required and the reported SAR from the area scan based 1-g SAR estimation procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz. |                                      |                                                                                       |                                                                                                                                                                                                                                                                   |                                                       |

## 8. Description of Test Position

### 8.1 Device Holder

The device holder is made out of low-loss POM material having the following dielectric parameters: relative permittivity  $\epsilon$  and loss tangent  $\delta=0.02$

### 8.2 Laptop host platform test requirements Per KDB Publication 616217 D04v01r02

The required minimum test separation distance for incorporating transmitters and antennas into laptop, notebook and netbook computer displays is determined with the display screen opened at an angle of 90° to the keyboard compartment.

According to FCC KDB 616217, after removing all the rubber feet of the laptop computer, the rear side of the laptop computer was placed in contact with the SAR Phantom, and the measurement was carried out.

Provided tablet use conditions are not supported by the laptop computer, SAR tests for bystander exposure from the edges of the keyboard and display screen of laptop computers are generally not required.

### 8.3 Proximity Sensor Considerations

This device uses a sensor to reduce output powers in certain use conditions when the device is used close the user's body.

When the sensor detects a user is touching the device on or near to the antenna the device reduces the maximum allowed output power. However, the proximity sensor is not active when the device is moved beyond the sensor triggering distance and the maximum output power is no longer limited. Therefore, an additional exposure condition is needed in the vicinity of the triggering distance to ensure SAR is compliant when the device is allowed to operate at a non-reduced output power level.

FCC KDB 616217 D04v01r02 Section 6 was used as a guideline for selecting SAR test distances for this device at the exposure condition. The smallest separation distance determined by the sensor triggering, minus 1 mm, was used as the test separation distance for SAR testing. Sensor triggering distance evaluation is provided in a separate document.

| Antenna Configuration | Wireless technologies                                       | Position | §6.2 Triggering Distance | §6.3 Coverage | §6.4 Tilt Angle | Worst case distance for Body SAR |
|-----------------------|-------------------------------------------------------------|----------|--------------------------|---------------|-----------------|----------------------------------|
| Main Ant.             | UMTS B2/ B4/ B5,<br>LTE B2/B4/B5/B12/B13/B17<br>B26/B41/B66 | Rear     | 16 mm                    | N/A           | N/A             | 15 mm                            |
| WLAN Ant. 1           | 2.4GHz/ 5GHz WLAN                                           | Rear     | 7 mm                     | N/A           | N/A             | 6 mm                             |
| WLAN Ant. 2           | 2.4GHz/ 5GHz WLAN                                           | Rear     | 10 mm                    | N/A           | N/A             | 9 mm                             |

## 9. RF Exposure Limits

| HUMAN EXPOSURE                                         | UNCONTROLLED ENVIRONMENT<br>General Population<br>(W/kg) or (mW/g) | CONTROLLED ENVIRONMENT<br>Occupational<br>(W/kg) or (mW/g) |
|--------------------------------------------------------|--------------------------------------------------------------------|------------------------------------------------------------|
| SPATIAL PEAK SAR *<br>(Partial Body)                   | 1.6                                                                | 8.0                                                        |
| SPATIAL AVERAGE SAR **<br>(Whole Body)                 | 0.08                                                               | 0.4                                                        |
| SPATIAL PEAK SAR ***<br>(Hands / Feet / Ankle / Wrist) | 4.0                                                                | 20.0                                                       |

### NOTES:

\* The Spatial Peak value of the SAR averaged over any 1 g of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

\*\* The Spatial Average value of the SAR averaged over the whole-body.

\*\*\* The Spatial Peak value of the SAR averaged over any 10 g of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

**Uncontrolled Environments** are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

**Controlled Environments** are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

## 10. FCC SAR General Measurement Procedures

Power Measurements for licensed transmitters are performed using a base simulator under digital average power.

### 10.1 Measured and Reported SAR

Per FCC KDB Publication 447498 D01v06, when SAR is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance. For simultaneous transmission, the measured aggregate SAR must be scaled according to the sum of the differences between the maximum tune-up tolerance and actual power used to test each transmitter. When SAR is measured at or scaled to the maximum tune-up tolerance limit, the results are referred to as Reported SAR. The highest reported SAR results are identified on the grant of equipment authorization according to procedures in KDB 690783 D01v01r03.

### 10.2 Procedures Used to Establish RF Signal for SAR

The following procedures are according to FCC KDB 941225 D01v03r01-3G SAR Measurement Procedures. The handset was placed into a simulated call using a base station simulator in a shielded chamber. Such test signals offer a consistent means for testing SAR and are recommended for evaluation SAR measurements were taken with a fully charged battery. In order to verify that the device was tested and maintained at full power, this was configured with the base station simulator. The SAR measurement Software calculates a reference point at the start and end of the test to Check for power drifts. If conducted Power deviations of more than 5 % occurred, the tests were repeated.

### 10.3 SAR Measurement Conditions for UMTS

#### 10.3.1 Output Power Verification

Maximum output power is verified on the High, Middle and Low channels according to the general descriptions in sec. 5.2 of 3GPP TS 34.121, using the appropriate RMC with TPC (transmit power control) set to all "1s" or applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Results for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HS-DPCCH etc) are tabulated in this test report. All configurations that are not supported by the DUT or cannot be measured due to technical or equipment limitations are identified.

#### 10.3.2 Body SAR measurements

SAR for body exposure configurations is measured using the 12.2 kbps RMC with the TPC bits all "1s". the 3G SAR test reduction procedure is applied to other spreading codes and multiple DPDCHn configurations supported by the handset with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured using and applicable RMC configuration with the corresponding spreading code or DPDCHn, for the highest reported SAR configuration in 12.2 kbps RMC.

#### 10.3.3 SAR Measurements with Rel. 5 HSDPA

The 3G SAR test reduction procedure is applied to HSDPA body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSDPA is measured using and FRC with H-SET 1 in Sub-test and a 12.2 kbps RMC without HSDPA. Handsets with both HSDPA and HSUPA are tested according to release 6 HSPA test procedures. 8.4.5 SAR Measurement with Rel.6 HSUPA The 3G SAR test Reduction Procedure is applied to HSPA (HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSPA is measured with E-DCH Sub-test 5, Using H-Set 1 and QPSK for FRC and a 12.2kbps RMC configured in Test Loop Mode 1 and Power Control algorithm 2, according to the highest reported

body SAR configuration in 12.2 kbps RMC without HSPA. When VOIP applies to head exposure, the 3G SAR test reduction procedure is applied with 12.2 kbps RMC as the primary mode; otherwise, the same HSPA configuration used for body SAR measurements are applied to head exposure testing.

#### 10.3.4 SAR Measurements with Rel. 6 HSUPA

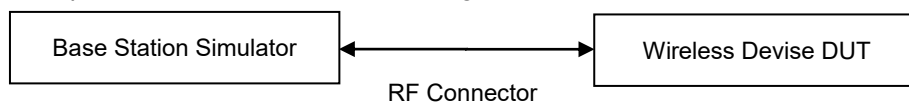
The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 and power control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA.

#### 10.3.5 DC-HSDPA

SAR is required for Rel.8 DC-HSDPA when SAR is required for Rel.5 HSDPA; otherwise, the 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in table C.8.1.12 of 3GPP TS34.121-1 to determine SAR test reduction. Primary and secondary serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable.

##### DC-HSDPA Configurations

- ◆ 3GPP specification TS 34.121-1 Release 8. was used for used for DC-HSDPA guidance.
- ◆ H-set 12(QPSK)was conformed to be used during DC-HSDPA measurements.





## 10.4 SAR Measurement Conditions for LTE

LTE modes are tested according to FCC KDB 941225 D05v02r05 publication. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluation SAR [4]. The R&S CMW500 or Anritsu MT8820C simulators are used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

### 10.4.1 Spectrum Plots for RB Configurations

A properly configured base station simulator was used for SAR tests and power measurements. Therefore, spectrum plots for RB configurations were not required to be included in this report.

### 10.4.2 MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36. 101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

### 10.4.3 A-MPR

A-MPR (Additional MPR) has been disabled for all SAR tests by setting NS=01 on the base station simulator.

### 10.4.4 Required RB Size and RB offsets for SAR testing

According to FCC KDB 941225 D05v02r05

- a. Per sec 4.2.1, SAR is required for QPSK 1 RB Allocation for the largest bandwidth
  - i. The required channel and offset combination with the highest maximum output power is required for SAR.
  - ii. When the reported SAR is  $\leq 0.8$  W/Kg, testing of the remaining RB offset configurations and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the RB offset configuration with highest output power for that channel.
  - iii. When the reported SAR for a required test channel is  $> 1.45$  W/kg, SAR is required for all RB offset configurations for that channel.
- b. Per Sec 4.2.2, SAR is required for 50% RB allocation using the largest bandwidth following the same procedures outlined in Sec 4.2.1.
- c. Per Sec. 4.2.3, QPSK SAR is not required for the 100% allocation when the highest maximum output power for the 100% allocation is less than the highest maximum output power of the 1 RB and 50% RB allocations and the reported SAR for the 1 RB and 50% RB allocations is  $< 0.8$  W/kg.
- d. Per Sec. 4.2.4 and 4.3, SAR test for higher order modulations and lower bandwidths configurations are not required when the conducted power of the required test configurations determined by Sec. 4.2.1 through 4.2.3 is less than or equal to 1/2 dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is  $< 1.45$  W/Kg.

### 10.4.5 Downlink Carrier Aggregation

Conducted power measurements with LTE Carrier aggregation (CA) downlink only active are made in accordance to KDB publication 941225 D05Av01r02. The RRC connection is only handled by one cell, the primary component carrier (PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds secondary component carrier (SCC) on the downlink only. All uplink communications and acknowledgements remain identical to specifications when downlink carrier aggregation is inactive on the PCC. For every supported combination of downlink only carrier aggregation, additional conducted output Powers are measured with downlink carrier aggregation active for the configuration with highest measured maximum conducted power with the downlink carrier aggregation inactive measured among the channel bandwidth, modulation and RB combinations in each frequency band. Per FCC KDB Publication

941225 D05Av01r02, no SAR measurements are required for carrier aggregation configurations when the average output power with downlink only carrier aggregation active is not more than 0.25dB higher than the average output power with downlink only carrier aggregation inactive.

#### 10.4.6 LTE(TDD) Considerations

According to KDB 941225 D05v02r05, for Time-Division Duplex (TDD) systems, SAR must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP LTE TDD configurations.

SAR was tested with the highest transmission duty factor (63.33 %) using Uplink-downlink configuration 0 and Special subframe configuration 6. LTE TDD Band 41 supports 3GPP TS 36.211 section 4.2 for Type 2 Frame and Table 4.2-2 for uplink-downlink configurations and Table 4.2-1 for Special sub frame configurations.

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS)

| Special subframe configuration | Normal cyclic prefix in downlink |                                |                                  | Extended cyclic prefix in downlink |                                |                                  |
|--------------------------------|----------------------------------|--------------------------------|----------------------------------|------------------------------------|--------------------------------|----------------------------------|
|                                | DwPTS                            | UpPTS                          |                                  | DwPTS                              | UpPTS                          |                                  |
|                                |                                  | Normal cyclic prefix in uplink | Extended cyclic prefix in uplink |                                    | Normal cyclic prefix in uplink | Extended cyclic prefix in uplink |
| 0                              | $6592 \cdot T_s$                 | $2192 \cdot T_s$               | $2560 \cdot T_s$                 | $7680 \cdot T_s$                   | $2192 \cdot T_s$               | $2560 \cdot T_s$                 |
| 1                              | $19760 \cdot T_s$                |                                |                                  | $20480 \cdot T_s$                  |                                |                                  |
| 2                              | $21952 \cdot T_s$                |                                |                                  | $23040 \cdot T_s$                  |                                |                                  |
| 3                              | $24144 \cdot T_s$                |                                |                                  | $25600 \cdot T_s$                  |                                |                                  |
| 4                              | $26336 \cdot T_s$                | $4384 \cdot T_s$               | $5120 \cdot T_s$                 | $7680 \cdot T_s$                   | $4384 \cdot T_s$               | $5120 \cdot T_s$                 |
| 5                              | $6592 \cdot T_s$                 |                                |                                  | $20480 \cdot T_s$                  |                                |                                  |
| 6                              | $19760 \cdot T_s$                |                                |                                  | $23040 \cdot T_s$                  |                                |                                  |
| 7                              | $21952 \cdot T_s$                |                                |                                  | $12800 \cdot T_s$                  |                                |                                  |
| 8                              | $24144 \cdot T_s$                |                                |                                  | -                                  | -                              | -                                |
| 9                              | $13168 \cdot T_s$                |                                |                                  | -                                  | -                              | -                                |

Calculated Duty Cycle – Extended cyclic prefix in uplink  $\times (T_s) \times$  no of S + no of U

Table 4.2-2: Uplink-downlink configurations.

| Uplink-downlink configuration | Downlink-to-Uplink Switch-point periodicity | Subframe number |   |   |   |   |   |   |   |   |   |
|-------------------------------|---------------------------------------------|-----------------|---|---|---|---|---|---|---|---|---|
|                               |                                             | 0               | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 0                             | 5 ms                                        | D               | S | U | U | U | D | S | U | U | U |
| 1                             | 5 ms                                        | D               | S | U | U | D | D | S | U | U | D |
| 2                             | 5 ms                                        | D               | S | U | D | D | D | S | U | D | D |
| 3                             | 10 ms                                       | D               | S | U | U | U | D | D | D | D | D |
| 4                             | 10 ms                                       | D               | S | U | U | D | D | D | D | D | D |
| 5                             | 10 ms                                       | D               | S | U | D | D | D | D | D | D | D |
| 6                             | 5 ms                                        | D               | S | U | U | U | D | S | U | U | D |

Example for calculated Duty Cycle for Uplink-Downlink Configuration 0:

Calculated Duty Cycle =  $(5120 \times (1/(15000 \times 2048))) \times 2 + 0.006/0.01 = 63.33 \%$

Where

$T_s = 1/(15000 \times 2048)$  seconds

### 10.4.7 The Call Box Setup for LTE(TDD)

When you Want to Test for LTE TDD, Please Change Frame Structure TDD and TDD Uplink Downlink Configuration 0 and Special Subframe Configuration 6.

| 2018/01/08 11:00                           |             | Idle( Regist ) |                        | Phone-2 | Phone-1          |
|--------------------------------------------|-------------|----------------|------------------------|---------|------------------|
| <Fundamental Measurement> Output Main      |             | Continuous     |                        | W-CDMA  | LTE              |
| Parameter                                  | Fundamental | UE Report      |                        |         |                  |
| Reference Signal not found                 |             |                | UE Power : -21.5 dBm   |         |                  |
| Power Measurement                          |             |                | (Meas. Count : 11/ 20) |         |                  |
|                                            | Avg.        | Max.           | Min.                   | Limit   |                  |
| TX Power                                   | *****       | *****          | *****                  | dBm     | 20.3 to 25.7 dBm |
| Channel Power                              | *****       | *****          | *****                  | dBm     |                  |
| Modulation Analysis View                   |             |                | (Meas. Count : 1/ 1)   |         |                  |
| Common Parameter                           |             |                |                        |         |                  |
| Test Parameter TX1 - Max. Power(QPSK/1 RB) |             |                |                        |         |                  |
| Call Processing On Scenario Normal         |             |                |                        |         |                  |
| Frequency                                  |             |                |                        |         |                  |
| Frame Structure                            | TDD         |                |                        |         |                  |
| Channel Bandwidth                          | FDD Hz      |                |                        |         |                  |
| UL Channel & Frequency                     | TDD         | 20             | CH = 2593.000000 MHz   |         |                  |
| DL Channel & Frequency                     |             | 40620          | CH = 2593.000000 MHz   |         |                  |
| Operation Band                             | 41          |                |                        |         |                  |
| Frequency Separation                       | ( 0 ) MHz   |                |                        |         |                  |
| Level                                      |             |                |                        |         |                  |
| Input Level                                | 30.0 dBm    |                |                        |         |                  |

| 2018/01/08 11:01                                              |             | Idle( Regist ) |                        | Phone-2 | Phone-1          |
|---------------------------------------------------------------|-------------|----------------|------------------------|---------|------------------|
| <Fundamental Measurement> Output Main                         |             | Continuous     |                        | W-CDMA  | LTE              |
| Parameter                                                     | Fundamental | UE Report      |                        |         |                  |
| Reference Signal not found                                    |             |                | UE Power : -21.5 dBm   |         |                  |
| Power Measurement                                             |             |                | (Meas. Count : 11/ 20) |         |                  |
|                                                               | Avg.        | Max.           | Min.                   | Limit   |                  |
| TX Power                                                      | *****       | *****          | *****                  | dBm     | 20.3 to 25.7 dBm |
| Channel Power                                                 | *****       | *****          | *****                  | dBm     |                  |
| Modulation Analysis View                                      |             |                | (Meas. Count : 1/ 1)   |         |                  |
| MCS Index ( - ) 5 (QPSK ) ( 5 ) ( 2216 ) - -                  |             |                |                        |         |                  |
| MCS Index ( 5 ) 5 (QPSK ) ( 5 ) ( 1884 ) 4 -                  |             |                |                        |         |                  |
| MCS Index ( 0 ) 5 (QPSK ) ( 5 ) ( 2216 ) - 2                  |             |                |                        |         |                  |
| MCS Index ( 1,6 ) N/A (----) (--) (----) - 2                  |             |                |                        |         |                  |
| CFI 3                                                         |             |                |                        |         |                  |
| TDD subframe 0 1 2 3 4 5 6 7 8 9                              |             |                |                        |         |                  |
| Uplink Downlink Configuration 0 : ( 5ms ) D S U U U D S U U U |             |                |                        |         |                  |
| Special Subframe Configuration 6                              |             |                |                        |         |                  |
| Physical Channel Parameter                                    |             |                |                        |         |                  |
| PSS Power                                                     | 0.0 dB      |                |                        |         |                  |
| SSS Power                                                     | 0.0 dB      |                |                        |         |                  |
| PBCH Power                                                    | 0.0 dB      |                |                        |         |                  |
| PCFICH Power                                                  | 0.0 dB      |                |                        |         |                  |
| PHICH Power                                                   | 0.0 dB      |                |                        |         |                  |

## 10.5 SAR Testing with 802.11 Transmitters

The normal network operating configurations of 802.11 transmitters are not suitable for SAR measurements. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset based test mode software to ensure the results are consistent and reliable. See KDB Publication 248227 D01v02r02 for more details.

### 10.5.1 General Device Setup

Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters.

A periodic duty factor is required for current generation SAR system to measure SAR. When 802.11 frame gaps are accounted for in the transmission, a maximum transmission duty factor of 92-96% is typically achievable in most test mode configurations. A minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. The reported SAR is scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

### 10.5.2 U-NII-1 and U-NII-2A

For devices that operate in both U-NII-1 and U-NII-2A bands, when the same maximum output power is specified for both bands, SAR measurement using OFDM SAR test procedures is not required for U-NII-1 unless the highest reported SAR for U-NII-2A is  $> 1.2$  W/kg for 1g SAR or  $> 3.0$  W/kg for 10g SAR. When different maximum output powers are specified for the bands, SAR measurement for the U-NII band with the lower maximum output power is not required unless the highest reported SAR for the U-NII band with the higher maximum output power, adjusted by the ratio of lower to higher specified maximum output power for the two bands, is  $> 1.2$  W/kg for 1g SAR or  $> 3.0$  W/kg for 10g SAR.

### 10.5.3 U-NII-2C and U-NII-3

The frequency range covered by U-NII-2C and U-NII-3 is 380 MHz (5.47 GHz – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. When Terminal Doppler Weather Radar (TDWR) restriction applies, the channels at 5.60 GHz – 5.65 GHz in U-NII-2C band must be disabled with acceptable mechanisms and documented in the equipment certification.

Unless band gap channels are permanently disabled, SAR must be considered for these channels.

### 10.5.4 Initial Test Position Procedure

For exposure conditions with multiple test positions, such as handset operating next to the ear, devices with hotspot mode or UMPC mini-tablet, procedures for initial test position can be applied. Using the transmission mode determined by the DSSS procedure or initial test configuration, area scans are measured for all positions in an exposure condition. The test position with the highest extrapolated (peak) SAR is used as the initial test position. When reported SAR for the initial test position is  $\leq 0.4$  W/kg for 1g SAR and  $\leq 1.0$  W/kg for 10g SAR, no additional testing for the remaining test position is required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is  $\leq 0.8$  W/kg for 1g SAR and  $\leq 2.0$  W/kg for 10g SAR or all test positions are measured.

### 10.5.5 2.4 GHz SAR test Requirements

SAR is measured for 2.4 GHz 802.11b DSSS using either the fixed test position or, when applicable, the initial test position procedure. SAR test reduction is determined according to the following:

- 1) When the reported SAR of the highest measured maximum output power channel for the exposure configuration is  $\leq 0.8$  W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.
- 2) When the reported SAR is  $> 0.8$  W/kg, SAR is required for that position using the next highest measured output power channel. When any reported SAR is  $> 1.2$  W/kg, SAR is required for the third channel; i.e., all

channels require testing.

2.4 GHz 802.11 g/n/ac OFDM are additionally evaluated for SAR if the highest reported SAR for 802.11b, adjusted by the ratio of the OFDM to DSSS specified maximum output power, is  $> 1.2$  W/kg. When SAR is required for OFDM modes in 2.4 GHz band, the Initial Test Configuration Procedures should be followed.

#### 10.5.6 OFDM Transmission Mode and SAR Test Channel Selection

For the 2.4 GHz and 5 GHz bands, when the same maximum output power was specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration with the largest channel bandwidth, lowest order modulation and lowest data rate and lowest order 802.11 a/g/n/ac mode. When the maximum output power of a channel is the same for equivalent OFDM configurations; for example, 802.11a, 802.11n and 802.11 ac or 802.11g and 802.11n with the same channel bandwidth, modulation and data rate etc., the lower order 802.11 mode i.e., 802.11a, then 802.11n and 802.11ac or 802.11g then 802.11n, is used for SAR measurement. When the maximum output power are the same for multiple test channels, either according to the default or additional power measurement requirements, SAR is measured using the channel closest to the middle of the frequency band or aggregated band. When there are multiple channels with the same maximum output power, SAR is measured using the higher number channel.

#### 10.5.7 Initial Test Configuration Procedure

For OFDM, in both 2.4 GHz and 5 GHz bands, an initial test configuration is determined for each frequency band and aggregated band, according to the transmission mode with the highest maximum output power specified for SAR measurements. When the same maximum output power is specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration(s) with the largest channel bandwidth, lowest order modulation, and lowest data rate. If the average RF output powers of the highest identical transmission modes are within 0.25 dB of each other, mid channel of the transmission mode with highest average RF output power is the initial test channel. Otherwise, the channel of the transmission mode with the highest average RF output conducted power will be the initial test configuration.

When the reported SAR is  $\leq 0.8$  W/kg, no additional measurements on other test channels are required. Otherwise, SAR is evaluated using the subsequent highest average RF output channel until the reported SAR result is 1.2 W/kg or all channels are measured. When there are multiple untested channels having the same subsequent highest average RF output power, the channel with higher frequency from the lowest 802.11 mode is considered for SAR measurements.

#### 10.5.8 Subsequent Test Configuration Procedures

For OFDM configurations in each frequency band and aggregated band, SAR is evaluated for initial test configuration using the fixed test position or the initial test position on procedure. When the highest reported SAR (for the initial test configuration), adjusted by the ratio of the specified maximum output power of the subsequent test configuration to initial test configuration, is  $\leq 1.2$  W/kg for 1g SAR and  $\leq 3.0$  W/kg for 10g SAR, no additional SAR tests for the subsequent test configurations are required.

#### 10.5.9 MIMO SAR considerations

Per KDB Publication 248227 D01v02r02, the simultaneous SAR provisions in KDB Publication 447498 D01v06 should be applied to determine simultaneous transmission SAR test exclusion for WIFI MIMO. If the sum of 1g single transmission chain SAR measurements is  $< 1.6$  W/kg, no additional SAR measurements for MIMO are required. Alternatively, SAR for MIMO can be measured with all antennas transmitting simultaneously at the specified maximum output power of MIMO operation.



## 11. Output Power Specifications

This device operates using the following maximum output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB publication 447498 D01v06.

### Licensed bands

| Test Description       | Test Procedure Used                                                                     |
|------------------------|-----------------------------------------------------------------------------------------|
| Conducted Output Power | - KDB 971168 D01 v03r01 - Section 5.2.4<br>- ANSI C63.26-2015 - Section 5.2.1 & 5.2.4.2 |

### Test Overview

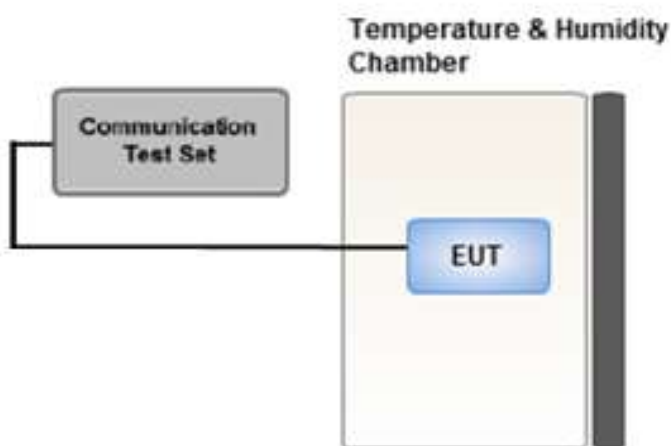
According to ANSI C63.26-2015 Section 5.2.1 when measuring the maximum RF output power from such devices, control over the EUT must be provided either through special test software (provided by manufacturer specifically for compliance testing, but not accessible by an end user) or through use of a base station emulator, communications test set, call box, or similar instrumentation that is capable of establishing a communications link with the EUT to enable control over variable parameters (e.g., output power, OBW, etc.).

In some cases, these instruments also include basic digital spectrum analyzer and/or power meter capabilities that can be utilized to measure the RF output power if the specified detectors and requirements can be realized and the measurement functions have been calibrated.

### Test Procedure

1. The RF port of the EUT was connected to the Communication Tester via an RF cable.
2. Conducted average power was measured using a calibrated Radio Communication Tester.

### Test setup



## 11.1 UMTS

### HSPA+

This DUT is only capable of QPSK HSPA+ in uplink. Therefore, the RF conducted power is not measured according to 941225 D01v03r01 3G SAR.

### 11.1.1 UMTS Maximum Conducted Output Power

#### UMTS Band 5 Maximum Conducted Output Power

| 3GPP Release Version | Mode     | 3GPP 34.121   | UMTS Band 5 [dBm]  |                    |                    | 3GPP MPR |
|----------------------|----------|---------------|--------------------|--------------------|--------------------|----------|
|                      |          | Subtest       | UL 4132<br>DL 4357 | UL 4183<br>DL 4408 | UL 4233<br>DL 4458 |          |
| 99                   | UMTS     | 12.2 kbps RMC | 23.58              | 23.59              | 23.43              | -        |
| 5                    | HSDPA    | Subtest 1     | 22.45              | 22.43              | 22.35              | 0        |
| 5                    |          | Subtest 2     | 22.47              | 22.45              | 22.36              | 0        |
| 5                    |          | Subtest 3     | 21.95              | 21.94              | 21.84              | 0.5      |
| 5                    |          | Subtest 4     | 21.94              | 21.95              | 21.85              | 0.5      |
| 6                    | HSUPA    | Subtest 1     | 22.45              | 22.44              | 22.34              | 0        |
| 6                    |          | Subtest 2     | 20.49              | 20.43              | 20.34              | 2        |
| 6                    |          | Subtest 3     | 21.46              | 21.45              | 21.36              | 1        |
| 6                    |          | Subtest 4     | 20.47              | 20.45              | 20.35              | 2        |
| 6                    |          | Subtest 5     | 22.47              | 22.46              | 22.34              | 0        |
| 8                    | DC-HSDPA | Subtest 1     | 22.49              | 22.52              | 22.44              | 0        |
| 8                    |          | Subtest 2     | 22.49              | 22.53              | 22.42              | 0        |
| 8                    |          | Subtest 3     | 22.03              | 22.03              | 21.94              | 0.5      |
| 8                    |          | Subtest 4     | 22.02              | 22.01              | 21.93              | 0.5      |

UMTS Average Conducted output powers

#### UMTS Band 4 Maximum Conducted Output Power

| 3GPP Release Version | Mode     | 3GPP 34.121   | UMTS Band 4 [dBm]  |                    |                    | 3GPP MPR |
|----------------------|----------|---------------|--------------------|--------------------|--------------------|----------|
|                      |          | Subtest       | UL 1312<br>DL 1537 | UL 1412<br>DL 1637 | UL 1513<br>DL 1738 |          |
| 99                   | UMTS     | 12.2 kbps RMC | 22.73              | 23.10              | 22.90              | -        |
| 5                    | HSDPA    | Subtest 1     | 20.78              | 21.01              | 20.77              | 0        |
| 5                    |          | Subtest 2     | 20.78              | 20.98              | 20.79              | 0        |
| 5                    |          | Subtest 3     | 21.18              | 21.51              | 21.29              | 0.5      |
| 5                    |          | Subtest 4     | 21.20              | 21.48              | 21.33              | 0.5      |
| 6                    | HSUPA    | Subtest 1     | 20.76              | 21.49              | 20.87              | 0        |
| 6                    |          | Subtest 2     | 19.10              | 19.20              | 19.02              | 2        |
| 6                    |          | Subtest 3     | 19.74              | 19.87              | 19.86              | 1        |
| 6                    |          | Subtest 4     | 18.99              | 19.40              | 19.23              | 2        |
| 6                    |          | Subtest 5     | 20.48              | 20.67              | 20.39              | 0        |
| 8                    | DC-HSDPA | Subtest 1     | 20.66              | 20.98              | 20.61              | 0        |
| 8                    |          | Subtest 2     | 20.65              | 20.99              | 20.64              | 0        |
| 8                    |          | Subtest 3     | 20.81              | 21.06              | 20.88              | 0.5      |
| 8                    |          | Subtest 4     | 20.80              | 21.00              | 20.85              | 0.5      |

UMTS Average Conducted output powers

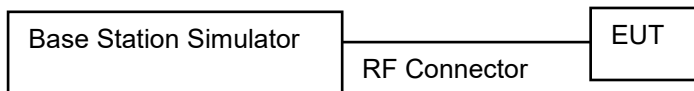
### UMTS Band 2 Maximum Conducted Output Power

| 3GPP Release Version | Mode     | 3GPP 34.121   | UMTS Band 2 [dBm]  |                    |                    | 3GPP MPR |
|----------------------|----------|---------------|--------------------|--------------------|--------------------|----------|
|                      |          | Subtest       | UL 9262<br>DL 9662 | UL 9400<br>DL 9800 | UL 9538<br>DL 9938 |          |
| 99                   | UMTS     | 12.2 kbps RMC | 23.00              | 22.80              | 23.10              | -        |
| 5                    | HSDPA    | Subtest 1     | 21.54              | 21.82              | 22.09              | 0        |
| 5                    |          | Subtest 2     | 21.55              | 21.81              | 22.08              | 0        |
| 5                    |          | Subtest 3     | 21.03              | 21.33              | 21.59              | 0.5      |
| 5                    |          | Subtest 4     | 21.03              | 21.32              | 21.58              | 0.5      |
| 6                    | HSUPA    | Subtest 1     | 21.54              | 21.80              | 22.07              | 0        |
| 6                    |          | Subtest 2     | 19.60              | 19.73              | 20.05              | 2        |
| 6                    |          | Subtest 3     | 20.50              | 20.78              | 21.05              | 1        |
| 6                    |          | Subtest 4     | 19.68              | 19.94              | 20.08              | 2        |
| 6                    |          | Subtest 5     | 21.34              | 21.46              | 21.68              | 0        |
| 8                    | DC-HSDPA | Subtest 1     | 21.33              | 21.60              | 22.01              | 0        |
| 8                    |          | Subtest 2     | 21.30              | 21.70              | 21.98              | 0        |
| 8                    |          | Subtest 3     | 20.75              | 21.00              | 21.10              | 0.5      |
| 8                    |          | Subtest 4     | 20.91              | 21.04              | 21.08              | 0.5      |

UMTS Average Conducted output powers

#### DC-HSDPA Configurations

- ◆ 3GPP specification TS 34.121-1 Release 8. was used for used for DC-HSDPA guidance.
- ◆ H-set 12(QPSK)was conformed to be used during DC-HSDPA measurements.





### 11.1.2 UMTS Reduced Conducted Output Power – (Proximity Sensor Activated)

#### UMTS Band 5 Grip Back-off Power

| 3GPP Release Version | Mode     | 3GPP 34.121   | UMTS Band 5 [dBm]  |                    |                    | 3GPP MPR |
|----------------------|----------|---------------|--------------------|--------------------|--------------------|----------|
|                      |          | Subtest       | UL 4132<br>DL 4357 | UL 4183<br>DL 4408 | UL 4233<br>DL 4458 |          |
| 99                   | UMTS     | 12.2 kbps RMC | 20.07              | 20.06              | 19.94              | -        |
| 5                    | HSDPA    | Subtest 1     | 18.92              | 18.93              | 18.82              | 0        |
| 5                    |          | Subtest 2     | 18.94              | 18.92              | 18.84              | 0        |
| 5                    |          | Subtest 3     | 18.44              | 18.42              | 18.32              | 0.5      |
| 5                    |          | Subtest 4     | 18.41              | 18.41              | 18.30              | 0.5      |
| 6                    | HSUPA    | Subtest 1     | 18.93              | 18.92              | 18.83              | 0        |
| 6                    |          | Subtest 2     | 16.94              | 16.93              | 16.83              | 2        |
| 6                    |          | Subtest 3     | 17.93              | 17.92              | 17.84              | 1        |
| 6                    |          | Subtest 4     | 16.93              | 16.94              | 16.83              | 2        |
| 6                    |          | Subtest 5     | 18.94              | 18.95              | 18.84              | 0        |
| 8                    | DC-HSDPA | Subtest 1     | 18.99              | 18.97              | 18.90              | 0        |
| 8                    |          | Subtest 2     | 18.96              | 18.99              | 18.91              | 0        |
| 8                    |          | Subtest 3     | 18.46              | 18.49              | 18.41              | 0.5      |
| 8                    |          | Subtest 4     | 18.47              | 18.50              | 18.39              | 0.5      |

UMTS Average Conducted output powers

#### UMTS Band 4 Grip Back-off Power

| 3GPP Release Version | Mode     | 3GPP 34.121   | UMTS Band 4 [dBm]  |                    |                    | 3GPP MPR |
|----------------------|----------|---------------|--------------------|--------------------|--------------------|----------|
|                      |          | Subtest       | UL 1312<br>DL 1537 | UL 1412<br>DL 1637 | UL 1513<br>DL 1738 |          |
| 99                   | UMTS     | 12.2 kbps RMC | 13.87              | 13.92              | 13.77              | -        |
| 5                    | HSDPA    | Subtest 1     | 11.78              | 11.81              | 11.69              | 0        |
| 5                    |          | Subtest 2     | 11.79              | 11.84              | 11.70              | 0        |
| 5                    |          | Subtest 3     | 12.20              | 12.33              | 12.21              | 0.5      |
| 5                    |          | Subtest 4     | 12.21              | 12.35              | 12.22              | 0.5      |
| 6                    | HSUPA    | Subtest 1     | 11.67              | 11.81              | 11.68              | 0        |
| 6                    |          | Subtest 2     | 9.76               | 9.82               | 9.67               | 2        |
| 6                    |          | Subtest 3     | 10.68              | 10.80              | 10.67              | 1        |
| 6                    |          | Subtest 4     | 9.79               | 9.81               | 9.69               | 2        |
| 6                    |          | Subtest 5     | 11.66              | 11.79              | 11.67              | 0        |
| 8                    | DC-HSDPA | Subtest 1     | 11.63              | 11.92              | 11.72              | 0        |
| 8                    |          | Subtest 2     | 11.61              | 11.93              | 11.74              | 0        |
| 8                    |          | Subtest 3     | 12.12              | 12.37              | 12.26              | 0.5      |
| 8                    |          | Subtest 4     | 12.13              | 12.38              | 12.25              | 0.5      |

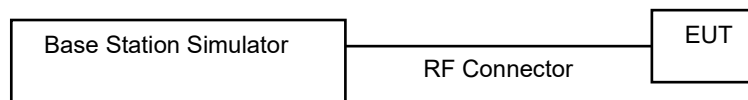
UMTS Average Conducted output power

### UMTS Band 2 Grip Back-off Power

| 3GPP Release Version | Mode     | 3GPP 34.121   | UMTS Band 2 [dBm]  |                    |                    | 3GPP MPR |
|----------------------|----------|---------------|--------------------|--------------------|--------------------|----------|
|                      |          | Subtest       | DL 9662<br>UL 9262 | DL 9800<br>UL 9400 | DL 9938<br>UL 9538 |          |
| 99                   | UMTS     | 12.2 kbps RMC | 14.15              | 14.19              | 14.08              | -        |
| 5                    | HSDPA    | Subtest 1     | 13.07              | 13.15              | 13.04              | 0        |
| 5                    |          | Subtest 2     | 13.09              | 13.16              | 13.08              | 0        |
| 5                    |          | Subtest 3     | 12.58              | 12.68              | 12.57              | 0.5      |
| 5                    |          | Subtest 4     | 12.57              | 12.65              | 12.58              | 0.5      |
| 6                    | HSUPA    | Subtest 1     | 13.04              | 13.13              | 13.05              | 0        |
| 6                    |          | Subtest 2     | 11.06              | 11.14              | 11.05              | 2        |
| 6                    |          | Subtest 3     | 12.05              | 12.14              | 12.07              | 1        |
| 6                    |          | Subtest 4     | 11.04              | 11.13              | 11.06              | 2        |
| 6                    |          | Subtest 5     | 13.06              | 13.12              | 13.02              | 0        |
| 8                    | DC-HSDPA | Subtest 1     | 12.73              | 12.90              | 12.77              | 0        |
| 8                    |          | Subtest 2     | 12.76              | 12.91              | 12.79              | 0        |
| 8                    |          | Subtest 3     | 12.25              | 12.40              | 12.30              | 0.5      |
| 8                    |          | Subtest 4     | 12.24              | 12.43              | 12.31              | 0.5      |

UMTS Average Conducted output powers

- ◆ 3GPP specification TS 34.121-1 Release 8. was used for used for DC-HSDPA guidance.
- ◆ H-set 12(QPSK) was conformed to be used during DC-HSDPA measurements.



## 11.2 LTE Maximum Output Power

LTE B4/5/12/13/17/26/66 at 10 MHz/ 20 MHz Bandwidth does not support three non-overlapping channels. Per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the mid channel of the group of overlapping channels should be selected for testing.

### 11.2.1 LTE Maximum Conducted Power

#### [ LTE Band 2 Conducted Power ]

LTE Band 2 \_ 1.4 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                       |                         | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|-----------------------|-------------------------|---------------------------|----------|
|           |            |         |           | 18607 Ch.<br>1850.7 MHz  | 18900 Ch.<br>1880 MHz | 19193 Ch.<br>1909.3 MHz |                           |          |
| 1.4 MHz   | QPSK       | 1       | 0         | 21.94                    | 22.32                 | 22.53                   | 0                         | 0        |
|           |            | 1       | 3         | 22.03                    | 22.45                 | 22.58                   | 0                         | 0        |
|           |            | 1       | 5         | 21.94                    | 22.41                 | 22.53                   | 0                         | 0        |
|           |            | 3       | 0         | 21.99                    | 22.38                 | 22.58                   | 0                         | 0        |
|           |            | 3       | 1         | 22.04                    | 22.42                 | 22.56                   | 0                         | 0        |
|           |            | 3       | 3         | 21.99                    | 22.37                 | 22.56                   | 0                         | 0        |
|           |            | 6       | 0         | 21.02                    | 21.34                 | 21.57                   | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.41                    | 21.69                 | 21.93                   | 0-1                       | 1        |
|           |            | 1       | 3         | 21.52                    | 21.82                 | 21.97                   | 0-1                       | 1        |
|           |            | 1       | 5         | 21.40                    | 21.73                 | 21.85                   | 0-1                       | 1        |
|           |            | 3       | 0         | 21.17                    | 21.47                 | 21.71                   | 0-1                       | 1        |
|           |            | 3       | 1         | 21.20                    | 21.52                 | 21.66                   | 0-1                       | 1        |
|           |            | 3       | 3         | 21.16                    | 21.49                 | 21.64                   | 0-1                       | 1        |
|           |            | 6       | 0         | 20.23                    | 20.52                 | 20.71                   | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 20.33                    | 20.70                 | 20.82                   | 0-2                       | 2        |
|           |            | 1       | 3         | 20.45                    | 20.77                 | 20.92                   | 0-2                       | 2        |
|           |            | 1       | 5         | 20.33                    | 20.61                 | 20.82                   | 0-2                       | 2        |
|           |            | 3       | 0         | 20.28                    | 20.59                 | 20.81                   | 0-2                       | 2        |
|           |            | 3       | 1         | 20.34                    | 20.67                 | 20.86                   | 0-2                       | 2        |
|           |            | 3       | 3         | 20.22                    | 20.62                 | 20.83                   | 0-2                       | 2        |
|           |            | 6       | 0         | 19.13                    | 19.43                 | 19.65                   | 0-3                       | 3        |

LTE Band 2 \_ 3 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                    |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|--------------------|----------------------|---------------------------|----------|
|           |            |         |           | 18615 Ch. 1851.5 MHz     | 18900 Ch. 1880 MHz | 19185 Ch. 1908.5 MHz |                           |          |
| 3 MHz     | QPSK       | 1       | 0         | 22.01                    | 22.41              | 22.59                | 0                         | 0        |
|           |            | 1       | 7         | 22.14                    | 22.51              | 22.74                | 0                         | 0        |
|           |            | 1       | 14        | 22.03                    | 22.37              | 22.57                | 0                         | 0        |
|           |            | 8       | 0         | 21.05                    | 21.39              | 21.60                | 0-1                       | 1        |
|           |            | 8       | 3         | 21.09                    | 21.42              | 21.65                | 0-1                       | 1        |
|           |            | 8       | 7         | 21.07                    | 21.43              | 21.60                | 0-1                       | 1        |
|           |            | 15      | 0         | 21.02                    | 21.38              | 21.62                | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.47                    | 21.80              | 21.90                | 0-1                       | 1        |
|           |            | 1       | 7         | 21.58                    | 21.90              | 22.14                | 0-1                       | 1        |
|           |            | 1       | 14        | 21.40                    | 21.82              | 21.96                | 0-1                       | 1        |
|           |            | 8       | 0         | 20.23                    | 20.59              | 20.85                | 0-2                       | 2        |
|           |            | 8       | 3         | 20.29                    | 20.62              | 20.80                | 0-2                       | 2        |
|           |            | 8       | 7         | 20.24                    | 20.57              | 20.78                | 0-2                       | 2        |
|           |            | 15      | 0         | 20.16                    | 20.53              | 20.70                | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 20.31                    | 20.70              | 20.94                | 0-2                       | 2        |
|           |            | 1       | 7         | 20.46                    | 20.80              | 20.99                | 0-2                       | 2        |
|           |            | 1       | 14        | 20.30                    | 20.75              | 20.86                | 0-2                       | 2        |
|           |            | 8       | 0         | 19.31                    | 19.55              | 19.84                | 0-3                       | 3        |
|           |            | 8       | 3         | 19.27                    | 19.61              | 19.82                | 0-3                       | 3        |
|           |            | 8       | 7         | 19.22                    | 19.55              | 19.77                | 0-3                       | 3        |
|           |            | 15      | 0         | 19.18                    | 19.51              | 19.73                | 0-3                       | 3        |

LTE Band 2 \_ 5 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                    |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|--------------------|----------------------|---------------------------|----------|
|           |            |         |           | 18625 Ch. 1852.5 MHz     | 18900 Ch. 1880 MHz | 19175 Ch. 1907.5 MHz |                           |          |
| 5 MHz     | QPSK       | 1       | 0         | 22.02                    | 22.39              | 22.59                | 0                         | 0        |
|           |            | 1       | 12        | 22.02                    | 22.43              | 22.60                | 0                         | 0        |
|           |            | 1       | 24        | 21.98                    | 22.44              | 22.58                | 0                         | 0        |
|           |            | 12      | 0         | 21.05                    | 21.38              | 21.64                | 0-1                       | 1        |
|           |            | 12      | 6         | 21.12                    | 21.45              | 21.66                | 0-1                       | 1        |
|           |            | 12      | 11        | 21.04                    | 21.42              | 21.62                | 0-1                       | 1        |
|           |            | 25      | 0         | 21.07                    | 21.40              | 21.61                | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.43                    | 21.75              | 21.92                | 0-1                       | 1        |
|           |            | 1       | 12        | 21.44                    | 21.83              | 21.98                | 0-1                       | 1        |
|           |            | 1       | 24        | 21.24                    | 21.79              | 21.86                | 0-1                       | 1        |
|           |            | 12      | 0         | 20.21                    | 20.54              | 20.77                | 0-2                       | 2        |
|           |            | 12      | 6         | 20.18                    | 20.55              | 20.77                | 0-2                       | 2        |
|           |            | 12      | 11        | 20.18                    | 20.50              | 20.73                | 0-2                       | 2        |
|           |            | 25      | 0         | 20.18                    | 20.52              | 20.70                | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 20.37                    | 20.70              | 20.89                | 0-2                       | 2        |
|           |            | 1       | 12        | 20.39                    | 20.78              | 20.84                | 0-2                       | 2        |
|           |            | 1       | 24        | 20.35                    | 20.67              | 20.85                | 0-2                       | 2        |
|           |            | 12      | 0         | 19.24                    | 19.58              | 19.79                | 0-3                       | 3        |
|           |            | 12      | 6         | 19.27                    | 19.60              | 19.86                | 0-3                       | 3        |
|           |            | 12      | 11        | 19.25                    | 19.60              | 19.77                | 0-3                       | 3        |
|           |            | 25      | 0         | 19.21                    | 19.50              | 19.73                | 0-3                       | 3        |

## LTE Band 2 \_ 10 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                    |                    | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|--------------------|--------------------|---------------------------|----------|
|           |            |         |           | 18650 Ch. 1855 MHz       | 18900 Ch. 1880 MHz | 19150 Ch. 1905 MHz |                           |          |
| 10 MHz    | QPSK       | 1       | 0         | 22.07                    | 22.45              | 22.47              | 0                         | 0        |
|           |            | 1       | 24        | 22.02                    | 22.42              | 22.62              | 0                         | 0        |
|           |            | 1       | 49        | 22.15                    | 22.45              | 22.61              | 0                         | 0        |
|           |            | 25      | 0         | 21.06                    | 21.38              | 21.51              | 0-1                       | 1        |
|           |            | 25      | 12        | 21.07                    | 21.41              | 21.57              | 0-1                       | 1        |
|           |            | 25      | 24        | 21.19                    | 21.41              | 21.62              | 0-1                       | 1        |
|           |            | 50      | 0         | 21.17                    | 21.40              | 21.53              | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.40                    | 21.74              | 21.91              | 0-1                       | 1        |
|           |            | 1       | 24        | 21.44                    | 21.86              | 21.94              | 0-1                       | 1        |
|           |            | 1       | 49        | 21.48                    | 21.89              | 22.05              | 0-1                       | 1        |
|           |            | 25      | 0         | 20.17                    | 20.55              | 20.63              | 0-2                       | 2        |
|           |            | 25      | 12        | 20.18                    | 20.57              | 20.64              | 0-2                       | 2        |
|           |            | 25      | 24        | 20.33                    | 20.52              | 20.76              | 0-2                       | 2        |
|           |            | 50      | 0         | 20.31                    | 20.56              | 20.63              | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 20.50                    | 20.71              | 20.82              | 0-2                       | 2        |
|           |            | 1       | 24        | 20.39                    | 20.78              | 20.91              | 0-2                       | 2        |
|           |            | 1       | 49        | 20.48                    | 20.76              | 20.96              | 0-2                       | 2        |
|           |            | 25      | 0         | 19.18                    | 19.54              | 19.62              | 0-3                       | 3        |
|           |            | 25      | 12        | 19.25                    | 19.53              | 19.68              | 0-3                       | 3        |
|           |            | 25      | 24        | 19.30                    | 19.55              | 19.77              | 0-3                       | 3        |
|           |            | 50      | 0         | 19.31                    | 19.54              | 19.68              | 0-3                       | 3        |

## LTE Band 2 \_ 15 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                    |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|--------------------|----------------------|---------------------------|----------|
|           |            |         |           | 18675 Ch. 1857.5 MHz     | 18900 Ch. 1880 MHz | 19125 Ch. 1902.5 MHz |                           |          |
| 15 MHz    | QPSK       | 1       | 0         | 22.06                    | 22.43              | 22.51                | 0                         | 0        |
|           |            | 1       | 36        | 22.01                    | 22.35              | 22.48                | 0                         | 0        |
|           |            | 1       | 74        | 22.16                    | 22.49              | 22.63                | 0                         | 0        |
|           |            | 36      | 0         | 21.05                    | 21.43              | 21.52                | 0-1                       | 1        |
|           |            | 36      | 18        | 21.20                    | 21.46              | 21.59                | 0-1                       | 1        |
|           |            | 36      | 39        | 21.15                    | 21.44              | 21.57                | 0-1                       | 1        |
|           |            | 75      | 0         | 21.17                    | 21.40              | 21.51                | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.44                    | 21.67              | 21.75                | 0-1                       | 1        |
|           |            | 1       | 36        | 21.37                    | 21.76              | 21.88                | 0-1                       | 1        |
|           |            | 1       | 74        | 21.48                    | 21.88              | 21.99                | 0-1                       | 1        |
|           |            | 36      | 0         | 20.17                    | 20.56              | 20.64                | 0-2                       | 2        |
|           |            | 36      | 18        | 20.29                    | 20.54              | 20.66                | 0-2                       | 2        |
|           |            | 36      | 39        | 20.29                    | 20.56              | 20.63                | 0-2                       | 2        |
|           |            | 75      | 0         | 20.24                    | 20.54              | 20.62                | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 20.43                    | 20.65              | 20.72                | 0-2                       | 2        |
|           |            | 1       | 36        | 20.29                    | 20.73              | 20.78                | 0-2                       | 2        |
|           |            | 1       | 74        | 20.43                    | 20.79              | 20.99                | 0-2                       | 2        |
|           |            | 36      | 0         | 19.21                    | 19.55              | 19.63                | 0-3                       | 3        |
|           |            | 36      | 18        | 19.32                    | 19.60              | 19.69                | 0-3                       | 3        |
|           |            | 36      | 39        | 19.29                    | 19.59              | 19.69                | 0-3                       | 3        |
|           |            | 75      | 0         | 19.30                    | 19.53              | 19.69                | 0-3                       | 3        |

## LTE Band 2 \_ 20 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                       |                       | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|-----------------------|-----------------------|---------------------------|----------|
|           |            |         |           | 18700 Ch.<br>1860 MHz    | 18900 Ch.<br>1880 MHz | 19100 Ch.<br>1900 MHz |                           |          |
| 20 MHz    | QPSK       | 1       | 0         | 22.12                    | 22.65                 | 22.45                 | 0                         | 0        |
|           |            | 1       | 49        | 22.11                    | 22.37                 | 22.25                 | 0                         | 0        |
|           |            | 1       | 99        | 21.99                    | 22.47                 | 22.38                 | 0                         | 0        |
|           |            | 50      | 0         | 21.21                    | 21.60                 | 21.59                 | 0-1                       | 1        |
|           |            | 50      | 25        | 21.15                    | 21.42                 | 21.43                 | 0-1                       | 1        |
|           |            | 50      | 49        | 21.18                    | 21.41                 | 21.39                 | 0-1                       | 1        |
|           |            | 100     | 0         | 21.40                    | 21.52                 | 21.15                 | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.47                    | 21.60                 | 21.69                 | 0-1                       | 1        |
|           |            | 1       | 49        | 21.54                    | 21.69                 | 21.76                 | 0-1                       | 1        |
|           |            | 1       | 99        | 21.49                    | 21.80                 | 22.04                 | 0-1                       | 1        |
|           |            | 50      | 0         | 20.29                    | 20.54                 | 20.54                 | 0-2                       | 2        |
|           |            | 50      | 25        | 20.27                    | 20.57                 | 20.64                 | 0-2                       | 2        |
|           |            | 50      | 49        | 20.26                    | 20.52                 | 20.66                 | 0-2                       | 2        |
|           |            | 100     | 0         | 20.20                    | 20.48                 | 20.67                 | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 20.39                    | 20.60                 | 20.70                 | 0-2                       | 2        |
|           |            | 1       | 49        | 20.42                    | 20.76                 | 20.63                 | 0-2                       | 2        |
|           |            | 1       | 99        | 20.45                    | 20.86                 | 20.87                 | 0-2                       | 2        |
|           |            | 50      | 0         | 19.27                    | 19.54                 | 19.54                 | 0-3                       | 3        |
|           |            | 50      | 25        | 19.26                    | 19.55                 | 19.68                 | 0-3                       | 3        |
|           |            | 50      | 49        | 19.26                    | 19.55                 | 19.67                 | 0-3                       | 3        |
|           |            | 100     | 0         | 19.29                    | 19.52                 | 19.65                 | 0-3                       | 3        |

# [ LTE Band 4 Conducted Power ]

LTE Band 4 \_ 1.4 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                      |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|----------------------|----------------------|---------------------------|----------|
|           |            |         |           | 19957 Ch. 1710.7 MHz     | 20175 Ch. 1732.5 MHz | 20393 Ch. 1754.3 MHz |                           |          |
| 1.4 MHz   | QPSK       | 1       | 0         | 22.42                    | 22.46                | 22.27                | 0                         | 0        |
|           |            | 1       | 3         | 22.44                    | 22.53                | 22.35                | 0                         | 0        |
|           |            | 1       | 5         | 22.36                    | 22.47                | 22.27                | 0                         | 0        |
|           |            | 3       | 0         | 22.40                    | 22.52                | 22.29                | 0                         | 0        |
|           |            | 3       | 1         | 22.43                    | 22.52                | 22.33                | 0                         | 0        |
|           |            | 3       | 3         | 22.37                    | 22.45                | 22.28                | 0                         | 0        |
|           |            | 6       | 0         | 21.39                    | 21.49                | 21.28                | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.75                    | 21.93                | 21.56                | 0-1                       | 1        |
|           |            | 1       | 3         | 21.80                    | 21.87                | 21.65                | 0-1                       | 1        |
|           |            | 1       | 5         | 21.71                    | 21.77                | 21.63                | 0-1                       | 1        |
|           |            | 3       | 0         | 21.56                    | 21.63                | 21.42                | 0-1                       | 1        |
|           |            | 3       | 1         | 21.51                    | 21.71                | 21.38                | 0-1                       | 1        |
|           |            | 3       | 3         | 21.48                    | 21.56                | 21.36                | 0-1                       | 1        |
|           |            | 6       | 0         | 20.58                    | 20.68                | 20.49                | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 20.71                    | 20.78                | 20.53                | 0-2                       | 2        |
|           |            | 1       | 3         | 20.78                    | 20.76                | 20.64                | 0-2                       | 2        |
|           |            | 1       | 5         | 20.62                    | 20.78                | 20.58                | 0-2                       | 2        |
|           |            | 3       | 0         | 20.62                    | 20.71                | 20.55                | 0-2                       | 2        |
|           |            | 3       | 1         | 20.68                    | 20.78                | 20.60                | 0-2                       | 2        |
|           |            | 3       | 3         | 20.67                    | 20.75                | 20.53                | 0-2                       | 2        |
|           |            | 6       | 0         | 19.49                    | 19.57                | 19.44                | 0-3                       | 3        |

LTE Band 4 \_ 3 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                      |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|----------------------|----------------------|---------------------------|----------|
|           |            |         |           | 19965 Ch. 1711.5 MHz     | 20175 Ch. 1732.5 MHz | 20385 Ch. 1753.5 MHz |                           |          |
| 3 MHz     | QPSK       | 1       | 0         | 22.47                    | 22.55                | 22.35                | 0                         | 0        |
|           |            | 1       | 7         | 22.51                    | 22.66                | 22.41                | 0                         | 0        |
|           |            | 1       | 14        | 22.35                    | 22.54                | 22.34                | 0                         | 0        |
|           |            | 8       | 0         | 21.45                    | 21.59                | 21.35                | 0-1                       | 1        |
|           |            | 8       | 3         | 21.44                    | 21.61                | 21.40                | 0-1                       | 1        |
|           |            | 8       | 7         | 21.41                    | 21.55                | 21.39                | 0-1                       | 1        |
|           |            | 15      | 0         | 21.47                    | 21.57                | 21.40                | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.86                    | 21.90                | 21.66                | 0-1                       | 1        |
|           |            | 1       | 7         | 21.91                    | 21.98                | 21.92                | 0-1                       | 1        |
|           |            | 1       | 14        | 21.73                    | 21.85                | 21.77                | 0-1                       | 1        |
|           |            | 8       | 0         | 20.60                    | 20.78                | 20.54                | 0-2                       | 2        |
|           |            | 8       | 3         | 20.64                    | 20.81                | 20.55                | 0-2                       | 2        |
|           |            | 8       | 7         | 20.57                    | 20.71                | 20.51                | 0-2                       | 2        |
|           |            | 15      | 0         | 20.57                    | 20.65                | 20.50                | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 20.75                    | 20.83                | 20.63                | 0-2                       | 2        |
|           |            | 1       | 7         | 20.80                    | 20.97                | 20.73                | 0-2                       | 2        |
|           |            | 1       | 14        | 20.73                    | 20.77                | 20.68                | 0-2                       | 2        |
|           |            | 8       | 0         | 19.60                    | 19.72                | 19.55                | 0-3                       | 3        |
|           |            | 8       | 3         | 19.63                    | 19.75                | 19.58                | 0-3                       | 3        |
|           |            | 8       | 7         | 19.62                    | 19.75                | 19.56                | 0-3                       | 3        |
|           |            | 15      | 0         | 19.54                    | 19.69                | 19.52                | 0-3                       | 3        |

## LTE Band 4 \_ 5 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                      |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|----------------------|----------------------|---------------------------|----------|
|           |            |         |           | 19975 Ch. 1712.5 MHz     | 20175 Ch. 1732.5 MHz | 20375 Ch. 1752.5 MHz |                           |          |
| 5 MHz     | QPSK       | 1       | 0         | 22.49                    | 22.59                | 22.43                | 0                         | 0        |
|           |            | 1       | 12        | 22.42                    | 22.55                | 22.41                | 0                         | 0        |
|           |            | 1       | 24        | 22.45                    | 22.53                | 22.32                | 0                         | 0        |
|           |            | 12      | 0         | 21.45                    | 21.59                | 21.39                | 0-1                       | 1        |
|           |            | 12      | 6         | 21.44                    | 21.62                | 21.48                | 0-1                       | 1        |
|           |            | 12      | 11        | 21.43                    | 21.58                | 21.42                | 0-1                       | 1        |
|           |            | 25      | 0         | 21.45                    | 21.60                | 21.43                | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.90                    | 21.92                | 21.77                | 0-1                       | 1        |
|           |            | 1       | 12        | 21.90                    | 21.89                | 21.79                | 0-1                       | 1        |
|           |            | 1       | 24        | 21.75                    | 21.93                | 21.79                | 0-1                       | 1        |
|           |            | 12      | 0         | 20.56                    | 20.73                | 20.54                | 0-2                       | 2        |
|           |            | 12      | 6         | 20.55                    | 20.76                | 20.55                | 0-2                       | 2        |
|           |            | 12      | 11        | 20.53                    | 20.65                | 20.50                | 0-2                       | 2        |
|           |            | 25      | 0         | 20.52                    | 20.68                | 20.51                | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 20.81                    | 20.92                | 20.68                | 0-2                       | 2        |
|           |            | 1       | 12        | 20.78                    | 20.88                | 20.62                | 0-2                       | 2        |
|           |            | 1       | 24        | 20.71                    | 20.85                | 20.69                | 0-2                       | 2        |
|           |            | 12      | 0         | 19.65                    | 19.80                | 19.57                | 0-3                       | 3        |
|           |            | 12      | 6         | 19.63                    | 19.79                | 19.62                | 0-3                       | 3        |
|           |            | 12      | 11        | 19.60                    | 19.73                | 19.59                | 0-3                       | 3        |
|           |            | 25      | 0         | 19.56                    | 19.68                | 19.55                | 0-3                       | 3        |

## LTE Band 4 \_ 10 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                      |                    | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|----------------------|--------------------|---------------------------|----------|
|           |            |         |           | 20000 Ch. 1715 MHz       | 20175 Ch. 1732.5 MHz | 20350 Ch. 1750 MHz |                           |          |
| 10 MHz    | QPSK       | 1       | 0         | 22.50                    | 22.62                | 22.43              | 0                         | 0        |
|           |            | 1       | 24        | 22.43                    | 22.56                | 22.36              | 0                         | 0        |
|           |            | 1       | 49        | 22.48                    | 22.53                | 22.33              | 0                         | 0        |
|           |            | 25      | 0         | 21.48                    | 21.64                | 21.45              | 0-1                       | 1        |
|           |            | 25      | 12        | 21.54                    | 21.61                | 21.42              | 0-1                       | 1        |
|           |            | 25      | 24        | 21.51                    | 21.59                | 21.38              | 0-1                       | 1        |
|           |            | 50      | 0         | 21.56                    | 21.63                | 21.44              | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.84                    | 21.97                | 21.86              | 0-1                       | 1        |
|           |            | 1       | 24        | 21.72                    | 21.93                | 21.62              | 0-1                       | 1        |
|           |            | 1       | 49        | 21.78                    | 21.83                | 21.81              | 0-1                       | 1        |
|           |            | 25      | 0         | 20.57                    | 20.77                | 20.50              | 0-2                       | 2        |
|           |            | 25      | 12        | 20.66                    | 20.75                | 20.53              | 0-2                       | 2        |
|           |            | 25      | 24        | 20.61                    | 20.69                | 20.51              | 0-2                       | 2        |
|           |            | 50      | 0         | 20.61                    | 20.70                | 20.51              | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 20.81                    | 20.90                | 20.72              | 0-2                       | 2        |
|           |            | 1       | 24        | 20.69                    | 20.90                | 20.63              | 0-2                       | 2        |
|           |            | 1       | 49        | 20.78                    | 20.77                | 20.70              | 0-2                       | 2        |
|           |            | 25      | 0         | 19.64                    | 19.75                | 19.58              | 0-3                       | 3        |
|           |            | 25      | 12        | 19.69                    | 19.72                | 19.55              | 0-3                       | 3        |
|           |            | 25      | 24        | 19.65                    | 19.68                | 19.52              | 0-3                       | 3        |
|           |            | 50      | 0         | 19.68                    | 19.77                | 19.52              | 0-3                       | 3        |



## LTE Band 4 \_ 15 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                      |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|----------------------|----------------------|---------------------------|----------|
|           |            |         |           | 20025 Ch. 1717.5 MHz     | 20175 Ch. 1732.5 MHz | 20325 Ch. 1747.5 MHz |                           |          |
| 15 MHz    | QPSK       | 1       | 0         | 22.68                    | 22.75                | 22.61                | 0                         | 0        |
|           |            | 1       | 36        | 22.61                    | 22.61                | 22.38                | 0                         | 0        |
|           |            | 1       | 74        | 22.58                    | 22.59                | 22.42                | 0                         | 0        |
|           |            | 36      | 0         | 21.73                    | 21.68                | 21.60                | 0-1                       | 1        |
|           |            | 36      | 18        | 21.69                    | 21.65                | 21.43                | 0-1                       | 1        |
|           |            | 36      | 39        | 21.63                    | 21.60                | 21.41                | 0-1                       | 1        |
|           |            | 75      | 0         | 21.66                    | 21.63                | 21.56                | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 22.08                    | 22.12                | 21.93                | 0-1                       | 1        |
|           |            | 1       | 36        | 21.89                    | 21.89                | 21.66                | 0-1                       | 1        |
|           |            | 1       | 74        | 22.01                    | 21.94                | 21.81                | 0-1                       | 1        |
|           |            | 36      | 0         | 20.83                    | 20.76                | 20.69                | 0-2                       | 2        |
|           |            | 36      | 18        | 20.82                    | 20.73                | 20.58                | 0-2                       | 2        |
|           |            | 36      | 39        | 20.76                    | 20.68                | 20.55                | 0-2                       | 2        |
|           |            | 75      | 0         | 20.76                    | 20.76                | 20.67                | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 20.94                    | 21.09                | 20.91                | 0-2                       | 2        |
|           |            | 1       | 36        | 20.85                    | 20.86                | 20.65                | 0-2                       | 2        |
|           |            | 1       | 74        | 20.89                    | 20.82                | 20.70                | 0-2                       | 2        |
|           |            | 36      | 0         | 19.91                    | 19.83                | 19.72                | 0-3                       | 3        |
|           |            | 36      | 18        | 19.81                    | 19.78                | 19.57                | 0-3                       | 3        |
|           |            | 36      | 39        | 19.80                    | 19.73                | 19.55                | 0-3                       | 3        |
|           |            | 75      | 0         | 19.78                    | 19.71                | 19.65                | 0-3                       | 3        |

## LTE Band 4 \_ 20 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------------|----------|
|           |            |         |           | 20175 Ch. 1732.5 MHz     |                           |          |
| 20 MHz    | QPSK       | 1       | 0         | 22.65                    | 0                         | 0        |
|           |            | 1       | 49        | 22.57                    | 0                         | 0        |
|           |            | 1       | 99        | 22.54                    | 0                         | 0        |
|           |            | 50      | 0         | 21.71                    | 0-1                       | 1        |
|           |            | 50      | 25        | 21.62                    | 0-1                       | 1        |
|           |            | 50      | 49        | 21.58                    | 0-1                       | 1        |
|           |            | 100     | 0         | 21.66                    | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 22.05                    | 0-1                       | 1        |
|           |            | 1       | 49        | 21.94                    | 0-1                       | 1        |
|           |            | 1       | 99        | 21.80                    | 0-1                       | 1        |
|           |            | 50      | 0         | 20.81                    | 0-2                       | 2        |
|           |            | 50      | 25        | 20.75                    | 0-2                       | 2        |
|           |            | 50      | 49        | 20.71                    | 0-2                       | 2        |
|           |            | 100     | 0         | 20.70                    | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 20.99                    | 0-2                       | 2        |
|           |            | 1       | 49        | 20.84                    | 0-2                       | 2        |
|           |            | 1       | 99        | 20.76                    | 0-2                       | 2        |
|           |            | 50      | 0         | 19.85                    | 0-3                       | 3        |
|           |            | 50      | 25        | 19.80                    | 0-3                       | 3        |
|           |            | 50      | 49        | 19.70                    | 0-3                       | 3        |
|           |            | 100     | 0         | 19.75                    | 0-3                       | 3        |

### [ LTE Band 5 Conducted Power ]

LTE Band 5 \_ 1.4 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                        |                        | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|------------------------|------------------------|---------------------------|----------|
|           |            |         |           | 20407 Ch.<br>824.7 MHz   | 20525 Ch.<br>836.5 MHz | 20643 Ch.<br>848.3 MHz |                           |          |
| 1.4 MHz   | QPSK       | 1       | 0         | 22.93                    | 22.80                  | 22.66                  | 0                         | 0        |
|           |            | 1       | 3         | 22.97                    | 22.87                  | 22.76                  | 0                         | 0        |
|           |            | 1       | 5         | 22.91                    | 22.78                  | 22.70                  | 0                         | 0        |
|           |            | 3       | 0         | 22.93                    | 22.82                  | 22.71                  | 0                         | 0        |
|           |            | 3       | 1         | 22.99                    | 22.89                  | 22.74                  | 0                         | 0        |
|           |            | 3       | 3         | 22.91                    | 22.80                  | 22.68                  | 0                         | 0        |
|           |            | 6       | 0         | 22.03                    | 21.82                  | 21.73                  | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.99                    | 22.15                  | 21.84                  | 0-1                       | 1        |
|           |            | 1       | 3         | 22.05                    | 22.29                  | 21.83                  | 0-1                       | 1        |
|           |            | 1       | 5         | 21.91                    | 22.20                  | 21.74                  | 0-1                       | 1        |
|           |            | 3       | 0         | 21.85                    | 21.81                  | 21.76                  | 0-1                       | 1        |
|           |            | 3       | 1         | 21.86                    | 21.82                  | 21.80                  | 0-1                       | 1        |
|           |            | 3       | 3         | 21.83                    | 21.75                  | 21.76                  | 0-1                       | 1        |
|           |            | 6       | 0         | 21.05                    | 20.96                  | 20.83                  | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 20.93                    | 20.69                  | 20.96                  | 0-2                       | 2        |
|           |            | 1       | 3         | 21.01                    | 20.73                  | 21.00                  | 0-2                       | 2        |
|           |            | 1       | 5         | 20.95                    | 20.68                  | 20.96                  | 0-2                       | 2        |
|           |            | 3       | 0         | 21.00                    | 20.96                  | 20.87                  | 0-2                       | 2        |
|           |            | 3       | 1         | 21.06                    | 21.03                  | 20.93                  | 0-2                       | 2        |
|           |            | 3       | 3         | 21.01                    | 20.95                  | 20.86                  | 0-2                       | 2        |
|           |            | 6       | 0         | 20.12                    | 19.90                  | 19.65                  | 0-3                       | 3        |

LTE Band 5 \_ 3 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                        |                        | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|------------------------|------------------------|---------------------------|----------|
|           |            |         |           | 20415 Ch.<br>825.5 MHz   | 20525 Ch.<br>836.5 MHz | 20635 Ch.<br>847.5 MHz |                           |          |
| 3 MHz     | QPSK       | 1       | 0         | 22.89                    | 22.84                  | 22.83                  | 0                         | 0        |
|           |            | 1       | 7         | 23.00                    | 22.94                  | 22.92                  | 0                         | 0        |
|           |            | 1       | 14        | 22.85                    | 22.83                  | 22.78                  | 0                         | 0        |
|           |            | 8       | 0         | 21.99                    | 21.94                  | 21.82                  | 0-1                       | 1        |
|           |            | 8       | 3         | 22.01                    | 21.92                  | 21.82                  | 0-1                       | 1        |
|           |            | 8       | 7         | 22.00                    | 21.88                  | 21.81                  | 0-1                       | 1        |
|           |            | 15      | 0         | 22.00                    | 21.99                  | 21.82                  | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 22.11                    | 22.20                  | 21.96                  | 0-1                       | 1        |
|           |            | 1       | 7         | 22.16                    | 22.29                  | 22.06                  | 0-1                       | 1        |
|           |            | 1       | 14        | 22.08                    | 22.15                  | 21.92                  | 0-1                       | 1        |
|           |            | 8       | 0         | 21.04                    | 20.99                  | 20.76                  | 0-2                       | 2        |
|           |            | 8       | 3         | 21.09                    | 21.03                  | 20.75                  | 0-2                       | 2        |
|           |            | 8       | 7         | 21.01                    | 21.00                  | 20.71                  | 0-2                       | 2        |
|           |            | 15      | 0         | 21.01                    | 20.98                  | 20.87                  | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 21.04                    | 21.07                  | 20.88                  | 0-2                       | 2        |
|           |            | 1       | 7         | 21.13                    | 21.14                  | 20.99                  | 0-2                       | 2        |
|           |            | 1       | 14        | 20.97                    | 21.00                  | 20.99                  | 0-2                       | 2        |
|           |            | 8       | 0         | 19.97                    | 19.97                  | 19.84                  | 0-3                       | 3        |
|           |            | 8       | 3         | 19.99                    | 20.01                  | 19.88                  | 0-3                       | 3        |
|           |            | 8       | 7         | 19.98                    | 19.94                  | 19.83                  | 0-3                       | 3        |
|           |            | 15      | 0         | 20.08                    | 20.03                  | 19.90                  | 0-3                       | 3        |

## LTE Band 5 \_ 5 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                        |                        | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|------------------------|------------------------|---------------------------|----------|
|           |            |         |           | 20425 Ch.<br>826.5 MHz   | 20525 Ch.<br>836.5 MHz | 20625 Ch.<br>846.5 MHz |                           |          |
| 5 MHz     | QPSK       | 1       | 0         | 22.97                    | 22.97                  | 22.81                  | 0                         | 0        |
|           |            | 1       | 12        | 22.96                    | 22.91                  | 22.73                  | 0                         | 0        |
|           |            | 1       | 24        | 22.89                    | 22.85                  | 22.59                  | 0                         | 0        |
|           |            | 12      | 0         | 22.00                    | 21.92                  | 21.85                  | 0-1                       | 1        |
|           |            | 12      | 6         | 22.00                    | 21.95                  | 21.83                  | 0-1                       | 1        |
|           |            | 12      | 11        | 21.98                    | 21.89                  | 21.82                  | 0-1                       | 1        |
|           |            | 25      | 0         | 21.98                    | 21.90                  | 21.86                  | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 22.10                    | 22.01                  | 21.78                  | 0-1                       | 1        |
|           |            | 1       | 12        | 22.05                    | 21.97                  | 21.72                  | 0-1                       | 1        |
|           |            | 1       | 24        | 22.04                    | 21.95                  | 21.63                  | 0-1                       | 1        |
|           |            | 12      | 0         | 21.06                    | 20.93                  | 20.84                  | 0-2                       | 2        |
|           |            | 12      | 6         | 21.06                    | 20.94                  | 20.86                  | 0-2                       | 2        |
|           |            | 12      | 11        | 21.07                    | 20.92                  | 20.83                  | 0-2                       | 2        |
|           |            | 25      | 0         | 21.07                    | 20.95                  | 20.83                  | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 21.23                    | 21.07                  | 21.10                  | 0-2                       | 2        |
|           |            | 1       | 12        | 21.20                    | 21.15                  | 21.06                  | 0-2                       | 2        |
|           |            | 1       | 24        | 21.14                    | 21.09                  | 20.99                  | 0-2                       | 2        |
|           |            | 12      | 0         | 20.10                    | 20.03                  | 19.94                  | 0-3                       | 3        |
|           |            | 12      | 6         | 20.14                    | 20.02                  | 19.91                  | 0-3                       | 3        |
|           |            | 12      | 11        | 20.12                    | 20.04                  | 19.83                  | 0-3                       | 3        |
|           |            | 25      | 0         | 20.05                    | 19.92                  | 19.81                  | 0-3                       | 3        |

## LTE Band 5 \_ 10 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------------|----------|
|           |            |         |           | 20525 Ch. 836.5 MHz      |                           |          |
| 10 MHz    | QPSK       | 1       | 0         | 22.97                    | 0                         | 0        |
|           |            | 1       | 24        | 22.91                    | 0                         | 0        |
|           |            | 1       | 49        | 22.83                    | 0                         | 0        |
|           |            | 25      | 0         | 21.95                    | 0-1                       | 1        |
|           |            | 25      | 12        | 21.95                    | 0-1                       | 1        |
|           |            | 25      | 24        | 21.90                    | 0-1                       | 1        |
|           |            | 50      | 0         | 21.95                    | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 22.31                    | 0-1                       | 1        |
|           |            | 1       | 24        | 22.24                    | 0-1                       | 1        |
|           |            | 1       | 49        | 22.24                    | 0-1                       | 1        |
|           |            | 25      | 0         | 20.56                    | 0-2                       | 2        |
|           |            | 25      | 12        | 20.52                    | 0-2                       | 2        |
|           |            | 25      | 24        | 20.48                    | 0-2                       | 2        |
|           |            | 50      | 0         | 20.50                    | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 21.24                    | 0-2                       | 2        |
|           |            | 1       | 24        | 21.17                    | 0-2                       | 2        |
|           |            | 1       | 49        | 21.11                    | 0-2                       | 2        |
|           |            | 25      | 0         | 20.56                    | 0-3                       | 3        |
|           |            | 25      | 12        | 20.58                    | 0-3                       | 3        |
|           |            | 25      | 24        | 20.51                    | 0-3                       | 3        |
|           |            | 50      | 0         | 20.53                    | 0-3                       | 3        |

### [LTE Band 12 Conducted Power]

LTE Band 12 \_ 1.4 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                        |                        | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|------------------------|------------------------|---------------------------|----------|
|           |            |         |           | 23017 Ch.<br>699.7 MHz   | 23095 Ch.<br>707.5 MHz | 23173 Ch.<br>715.3 MHz |                           |          |
| 1.4 MHz   | QPSK       | 1       | 0         | 23.12                    | 23.06                  | 22.85                  | 0                         | 0        |
|           |            | 1       | 3         | 23.20                    | 23.14                  | 22.90                  | 0                         | 0        |
|           |            | 1       | 5         | 23.07                    | 23.03                  | 22.79                  | 0                         | 0        |
|           |            | 3       | 0         | 23.14                    | 23.02                  | 22.80                  | 0                         | 0        |
|           |            | 3       | 1         | 23.18                    | 23.08                  | 22.82                  | 0                         | 0        |
|           |            | 3       | 3         | 23.11                    | 23.04                  | 22.77                  | 0                         | 0        |
|           |            | 6       | 0         | 22.21                    | 22.00                  | 21.85                  | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 22.09                    | 22.42                  | 21.81                  | 0-1                       | 1        |
|           |            | 1       | 3         | 22.15                    | 22.54                  | 21.92                  | 0-1                       | 1        |
|           |            | 1       | 5         | 22.06                    | 22.42                  | 21.88                  | 0-1                       | 1        |
|           |            | 3       | 0         | 22.22                    | 22.11                  | 21.80                  | 0-1                       | 1        |
|           |            | 3       | 1         | 22.27                    | 22.16                  | 21.90                  | 0-1                       | 1        |
|           |            | 3       | 3         | 22.19                    | 22.12                  | 21.85                  | 0-1                       | 1        |
|           |            | 6       | 0         | 21.21                    | 21.29                  | 20.93                  | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 21.45                    | 21.33                  | 21.02                  | 0-2                       | 2        |
|           |            | 1       | 3         | 21.50                    | 21.36                  | 21.11                  | 0-2                       | 2        |
|           |            | 1       | 5         | 21.39                    | 21.29                  | 21.01                  | 0-2                       | 2        |
|           |            | 3       | 0         | 21.33                    | 21.23                  | 20.88                  | 0-2                       | 2        |
|           |            | 3       | 1         | 21.29                    | 21.20                  | 20.96                  | 0-2                       | 2        |
|           |            | 3       | 3         | 21.26                    | 21.20                  | 20.89                  | 0-2                       | 2        |
|           |            | 6       | 0         | 20.22                    | 20.10                  | 19.98                  | 0-3                       | 3        |

LTE Band 12 \_ 3 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                        |                        | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|------------------------|------------------------|---------------------------|----------|
|           |            |         |           | 23025 Ch.<br>700.5 MHz   | 23095 Ch.<br>707.5 MHz | 23165 Ch.<br>714.5 MHz |                           |          |
| 3 MHz     | QPSK       | 1       | 0         | 23.02                    | 23.05                  | 22.83                  | 0                         | 0        |
|           |            | 1       | 7         | 23.13                    | 23.14                  | 22.98                  | 0                         | 0        |
|           |            | 1       | 14        | 22.99                    | 23.03                  | 22.92                  | 0                         | 0        |
|           |            | 8       | 0         | 22.06                    | 22.10                  | 21.86                  | 0-1                       | 1        |
|           |            | 8       | 3         | 22.08                    | 22.14                  | 21.84                  | 0-1                       | 1        |
|           |            | 8       | 7         | 22.05                    | 22.08                  | 21.86                  | 0-1                       | 1        |
|           |            | 15      | 0         | 22.10                    | 22.16                  | 21.88                  | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 22.44                    | 22.41                  | 22.01                  | 0-1                       | 1        |
|           |            | 1       | 7         | 22.49                    | 22.57                  | 22.12                  | 0-1                       | 1        |
|           |            | 1       | 14        | 22.22                    | 22.54                  | 22.06                  | 0-1                       | 1        |
|           |            | 8       | 0         | 21.20                    | 21.20                  | 20.81                  | 0-2                       | 2        |
|           |            | 8       | 3         | 21.19                    | 21.25                  | 20.84                  | 0-2                       | 2        |
|           |            | 8       | 7         | 21.12                    | 21.22                  | 20.84                  | 0-2                       | 2        |
|           |            | 15      | 0         | 21.14                    | 21.18                  | 20.88                  | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 21.16                    | 21.28                  | 20.94                  | 0-2                       | 2        |
|           |            | 1       | 7         | 21.25                    | 21.39                  | 21.06                  | 0-2                       | 2        |
|           |            | 1       | 14        | 21.15                    | 21.28                  | 21.14                  | 0-2                       | 2        |
|           |            | 8       | 0         | 20.11                    | 20.16                  | 19.92                  | 0-3                       | 3        |
|           |            | 8       | 3         | 20.11                    | 20.21                  | 19.98                  | 0-3                       | 3        |
|           |            | 8       | 7         | 20.06                    | 20.16                  | 19.96                  | 0-3                       | 3        |
|           |            | 15      | 0         | 20.20                    | 20.23                  | 19.97                  | 0-3                       | 3        |

LTE Band 12\_ 5 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                     |                     | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------|---------------------|---------------------------|----------|
|           |            |         |           | 23035 Ch. 701.5 MHz      | 23095 Ch. 707.5 MHz | 23155 Ch. 713.5 MHz |                           |          |
| 5 MHz     | QPSK       | 1       | 0         | 23.05                    | 23.08               | 22.83               | 0                         | 0        |
|           |            | 1       | 12        | 23.06                    | 23.11               | 22.78               | 0                         | 0        |
|           |            | 1       | 24        | 23.16                    | 23.10               | 22.74               | 0                         | 0        |
|           |            | 12      | 0         | 22.08                    | 22.12               | 21.95               | 0-1                       | 1        |
|           |            | 12      | 6         | 22.10                    | 22.14               | 21.89               | 0-1                       | 1        |
|           |            | 12      | 11        | 22.08                    | 22.14               | 21.87               | 0-1                       | 1        |
|           |            | 25      | 0         | 22.20                    | 22.08               | 21.98               | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 22.20                    | 22.27               | 21.98               | 0-1                       | 1        |
|           |            | 1       | 12        | 22.24                    | 22.28               | 21.90               | 0-1                       | 1        |
|           |            | 1       | 24        | 22.31                    | 22.25               | 21.90               | 0-1                       | 1        |
|           |            | 12      | 0         | 21.15                    | 21.13               | 20.97               | 0-2                       | 2        |
|           |            | 12      | 6         | 21.21                    | 21.17               | 20.88               | 0-2                       | 2        |
|           |            | 12      | 11        | 21.17                    | 21.15               | 20.89               | 0-2                       | 2        |
|           |            | 25      | 0         | 21.29                    | 21.09               | 21.00               | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 21.36                    | 21.35               | 20.99               | 0-2                       | 2        |
|           |            | 1       | 12        | 21.36                    | 21.37               | 20.89               | 0-2                       | 2        |
|           |            | 1       | 24        | 21.46                    | 21.40               | 20.90               | 0-2                       | 2        |
|           |            | 12      | 0         | 20.23                    | 20.18               | 19.98               | 0-3                       | 3        |
|           |            | 12      | 6         | 20.29                    | 20.19               | 19.91               | 0-3                       | 3        |
|           |            | 12      | 11        | 20.24                    | 20.18               | 19.87               | 0-3                       | 3        |
|           |            | 25      | 0         | 20.19                    | 20.20               | 20.00               | 0-3                       | 3        |

LTE Band 12\_ 10 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------------|----------|
|           |            |         |           | 23095 Ch. 707.5 MHz      |                           |          |
| 10 MHz    | QPSK       | 1       | 0         | 22.96                    | 0                         | 0        |
|           |            | 1       | 24        | 23.05                    | 0                         | 0        |
|           |            | 1       | 49        | 23.06                    | 0                         | 0        |
|           |            | 25      | 0         | 23.15                    | 0-1                       | 1        |
|           |            | 25      | 12        | 23.17                    | 0-1                       | 1        |
|           |            | 25      | 24        | 23.19                    | 0-1                       | 1        |
|           |            | 50      | 0         | 22.93                    | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 22.45                    | 0-1                       | 1        |
|           |            | 1       | 24        | 22.59                    | 0-1                       | 1        |
|           |            | 1       | 49        | 22.55                    | 0-1                       | 1        |
|           |            | 25      | 0         | 22.12                    | 0-2                       | 2        |
|           |            | 25      | 12        | 22.13                    | 0-2                       | 2        |
|           |            | 25      | 24        | 22.11                    | 0-2                       | 2        |
|           |            | 50      | 0         | 22.43                    | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 20.88                    | 0-2                       | 2        |
|           |            | 1       | 24        | 21.02                    | 0-2                       | 2        |
|           |            | 1       | 49        | 21.01                    | 0-2                       | 2        |
|           |            | 25      | 0         | 21.19                    | 0-3                       | 3        |
|           |            | 25      | 12        | 21.26                    | 0-3                       | 3        |
|           |            | 25      | 24        | 21.24                    | 0-3                       | 3        |
|           |            | 50      | 0         | 21.10                    | 0-3                       | 3        |

### [LTE Band 13 Conducted Power]

LTE Band 13 \_ 5 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------------|----------|
|           |            |         |           | 23230 Ch. 782 MHz        |                           |          |
| 5 MHz     | QPSK       | 1       | 0         | 23.01                    | 0                         | 0        |
|           |            | 1       | 24        | 23.04                    | 0                         | 0        |
|           |            | 1       | 49        | 23.01                    | 0                         | 0        |
|           |            | 25      | 0         | 22.05                    | 0-1                       | 1        |
|           |            | 25      | 12        | 22.05                    | 0-1                       | 1        |
|           |            | 25      | 24        | 22.05                    | 0-1                       | 1        |
|           |            | 50      | 0         | 22.06                    | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 22.42                    | 0-1                       | 1        |
|           |            | 1       | 24        | 22.44                    | 0-1                       | 1        |
|           |            | 1       | 49        | 22.45                    | 0-1                       | 1        |
|           |            | 25      | 0         | 21.11                    | 0-2                       | 2        |
|           |            | 25      | 12        | 21.09                    | 0-2                       | 2        |
|           |            | 25      | 24        | 21.07                    | 0-2                       | 2        |
|           |            | 50      | 0         | 21.07                    | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 21.18                    | 0-2                       | 2        |
|           |            | 1       | 24        | 21.13                    | 0-2                       | 2        |
|           |            | 1       | 49        | 21.19                    | 0-2                       | 2        |
|           |            | 25      | 0         | 20.10                    | 0-3                       | 3        |
|           |            | 25      | 12        | 20.18                    | 0-3                       | 3        |
|           |            | 25      | 24        | 20.13                    | 0-3                       | 3        |
|           |            | 50      | 0         | 20.14                    | 0-3                       | 3        |

LTE Band 13 \_ 10 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------------|----------|
|           |            |         |           | 23230 Ch. 782 MHz        |                           |          |
| 10 MHz    | QPSK       | 1       | 0         | 23.01                    | 0                         | 0        |
|           |            | 1       | 24        | 23.04                    | 0                         | 0        |
|           |            | 1       | 49        | 23.03                    | 0                         | 0        |
|           |            | 25      | 0         | 22.07                    | 0-1                       | 1        |
|           |            | 25      | 12        | 22.09                    | 0-1                       | 1        |
|           |            | 25      | 24        | 22.06                    | 0-1                       | 1        |
|           |            | 50      | 0         | 22.06                    | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 22.04                    | 0-1                       | 1        |
|           |            | 1       | 24        | 22.13                    | 0-1                       | 1        |
|           |            | 1       | 49        | 22.11                    | 0-1                       | 1        |
|           |            | 25      | 0         | 21.15                    | 0-2                       | 2        |
|           |            | 25      | 12        | 21.13                    | 0-2                       | 2        |
|           |            | 25      | 24        | 21.07                    | 0-2                       | 2        |
|           |            | 50      | 0         | 21.13                    | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 21.17                    | 0-2                       | 2        |
|           |            | 1       | 24        | 21.33                    | 0-2                       | 2        |
|           |            | 1       | 49        | 21.28                    | 0-2                       | 2        |
|           |            | 25      | 0         | 20.06                    | 0-3                       | 3        |
|           |            | 25      | 12        | 20.04                    | 0-3                       | 3        |
|           |            | 25      | 24        | 20.05                    | 0-3                       | 3        |
|           |            | 50      | 0         | 20.13                    | 0-3                       | 3        |

### [ LTE Band 17 conducted Power ]

LTE Band 17 \_ 5 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                     |                     | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------|---------------------|---------------------------|----------|
|           |            |         |           | 23755 Ch. 706.5 MHz      | 23790 Ch. 710.0 MHz | 23825 Ch. 713.5 MHz |                           |          |
| 5 MHz     | QPSK       | 1       | 0         |                          | 23.03               |                     | 0                         | 0        |
|           |            | 1       | 12        |                          | 23.00               |                     | 0                         | 0        |
|           |            | 1       | 24        |                          | 23.00               |                     | 0                         | 0        |
|           |            | 12      | 0         |                          | 22.11               |                     | 0-1                       | 1        |
|           |            | 12      | 6         |                          | 22.11               |                     | 0-1                       | 1        |
|           |            | 12      | 11        |                          | 22.06               |                     | 0-1                       | 1        |
|           |            | 25      | 0         |                          | 22.11               |                     | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         |                          | 22.53               |                     | 0-1                       | 1        |
|           |            | 1       | 12        |                          | 22.56               |                     | 0-1                       | 1        |
|           |            | 1       | 24        |                          | 22.57               |                     | 0-1                       | 1        |
|           |            | 12      | 0         |                          | 21.11               |                     | 0-2                       | 2        |
|           |            | 12      | 6         |                          | 21.18               |                     | 0-2                       | 2        |
|           |            | 12      | 11        |                          | 21.18               |                     | 0-2                       | 2        |
|           |            | 25      | 0         |                          | 21.12               |                     | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         |                          | 21.26               |                     | 0-2                       | 2        |
|           |            | 1       | 12        |                          | 21.24               |                     | 0-2                       | 2        |
|           |            | 1       | 24        |                          | 21.31               |                     | 0-2                       | 2        |
|           |            | 12      | 0         |                          | 20.24               |                     | 0-3                       | 3        |
|           |            | 12      | 6         |                          | 20.24               |                     | 0-3                       | 3        |
|           |            | 12      | 11        |                          | 20.24               |                     | 0-3                       | 3        |
|           |            | 25      | 0         |                          | 20.18               |                     | 0-3                       | 3        |

LTE Band 17 \_ 10 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------------|----------|
|           |            |         |           | 23790 Ch. 710.0 MHz      |                           |          |
| 10 MHz    | QPSK       | 1       | 0         | 23.11                    | 0                         | 0        |
|           |            | 1       | 24        | 23.12                    | 0                         | 0        |
|           |            | 1       | 49        | 23.10                    | 0                         | 0        |
|           |            | 25      | 0         | 22.10                    | 0-1                       | 1        |
|           |            | 25      | 12        | 22.12                    | 0-1                       | 1        |
|           |            | 25      | 24        | 22.12                    | 0-1                       | 1        |
|           |            | 50      | 0         | 22.05                    | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 22.19                    | 0-1                       | 1        |
|           |            | 1       | 24        | 22.12                    | 0-1                       | 1        |
|           |            | 1       | 49        | 22.05                    | 0-1                       | 1        |
|           |            | 25      | 0         | 21.16                    | 0-2                       | 2        |
|           |            | 25      | 12        | 21.16                    | 0-2                       | 2        |
|           |            | 25      | 24        | 21.16                    | 0-2                       | 2        |
|           |            | 50      | 0         | 21.19                    | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 21.39                    | 0-2                       | 2        |
|           |            | 1       | 24        | 21.41                    | 0-2                       | 2        |
|           |            | 1       | 49        | 21.42                    | 0-2                       | 2        |
|           |            | 25      | 0         | 20.11                    | 0-3                       | 3        |
|           |            | 25      | 12        | 20.16                    | 0-3                       | 3        |
|           |            | 25      | 24        | 20.13                    | 0-3                       | 3        |
|           |            | 50      | 0         | 20.17                    | 0-3                       | 3        |

# [ LTE Band 26 Conducted Power ]

LTE Band 26\_ 1.4 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                        |                        | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|------------------------|------------------------|---------------------------|----------|
|           |            |         |           | 26697 Ch.<br>814.7 MHz   | 26865 Ch.<br>831.5 MHz | 27033 Ch.<br>848.3 MHz |                           |          |
| 1.4 MHz   | QPSK       | 1       | 0         | 22.77                    | 22.87                  | 22.74                  | 0                         | 0        |
|           |            | 1       | 3         | 22.84                    | 22.85                  | 22.82                  | 0                         | 0        |
|           |            | 1       | 5         | 22.75                    | 22.76                  | 22.79                  | 0                         | 0        |
|           |            | 3       | 0         | 22.88                    | 22.88                  | 22.85                  | 0                         | 0        |
|           |            | 3       | 1         | 22.93                    | 22.89                  | 22.88                  | 0                         | 0        |
|           |            | 3       | 3         | 22.85                    | 22.86                  | 22.83                  | 0                         | 0        |
|           |            | 6       | 0         | 21.95                    | 21.93                  | 21.86                  | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 22.20                    | 21.82                  | 21.98                  | 0-1                       | 1        |
|           |            | 1       | 3         | 22.23                    | 21.86                  | 22.04                  | 0-1                       | 1        |
|           |            | 1       | 5         | 22.24                    | 21.83                  | 21.93                  | 0-1                       | 1        |
|           |            | 3       | 0         | 21.96                    | 21.96                  | 21.92                  | 0-1                       | 1        |
|           |            | 3       | 1         | 22.00                    | 22.03                  | 21.96                  | 0-1                       | 1        |
|           |            | 3       | 3         | 21.95                    | 21.93                  | 21.89                  | 0-1                       | 1        |
|           |            | 6       | 0         | 21.05                    | 20.91                  | 20.92                  | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 21.04                    | 21.19                  | 21.10                  | 0-2                       | 2        |
|           |            | 1       | 3         | 21.09                    | 21.22                  | 21.17                  | 0-2                       | 2        |
|           |            | 1       | 5         | 21.05                    | 21.08                  | 21.09                  | 0-2                       | 2        |
|           |            | 3       | 0         | 21.19                    | 21.08                  | 21.05                  | 0-2                       | 2        |
|           |            | 3       | 1         | 21.21                    | 21.15                  | 21.07                  | 0-2                       | 2        |
|           |            | 3       | 3         | 21.17                    | 21.04                  | 21.00                  | 0-2                       | 2        |
|           |            | 6       | 0         | 19.97                    | 19.97                  | 19.95                  | 0-3                       | 3        |

LTE Band 26\_ 3 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                        |                        | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|------------------------|------------------------|---------------------------|----------|
|           |            |         |           | 26705 Ch.<br>815.5 MHz   | 26865 Ch.<br>831.5 MHz | 27025 Ch.<br>847.5 MHz |                           |          |
| 3 MHz     | QPSK       | 1       | 0         | 22.96                    | 22.96                  | 22.90                  | 0                         | 0        |
|           |            | 1       | 7         | 23.02                    | 22.97                  | 22.98                  | 0                         | 0        |
|           |            | 1       | 14        | 22.96                    | 22.87                  | 22.90                  | 0                         | 0        |
|           |            | 8       | 0         | 21.98                    | 21.92                  | 21.92                  | 0-1                       | 1        |
|           |            | 8       | 3         | 22.01                    | 21.96                  | 21.96                  | 0-1                       | 1        |
|           |            | 8       | 7         | 21.95                    | 21.87                  | 21.92                  | 0-1                       | 1        |
|           |            | 15      | 0         | 21.99                    | 21.92                  | 21.96                  | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.99                    | 22.44                  | 22.13                  | 0-1                       | 1        |
|           |            | 1       | 7         | 22.08                    | 22.45                  | 22.29                  | 0-1                       | 1        |
|           |            | 1       | 14        | 21.97                    | 22.32                  | 22.24                  | 0-1                       | 1        |
|           |            | 8       | 0         | 20.98                    | 21.00                  | 20.99                  | 0-2                       | 2        |
|           |            | 8       | 3         | 21.00                    | 21.01                  | 21.01                  | 0-2                       | 2        |
|           |            | 8       | 7         | 20.97                    | 20.97                  | 20.99                  | 0-2                       | 2        |
|           |            | 15      | 0         | 21.00                    | 21.03                  | 21.02                  | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 21.15                    | 20.79                  | 21.22                  | 0-2                       | 2        |
|           |            | 1       | 7         | 21.26                    | 20.88                  | 21.32                  | 0-2                       | 2        |
|           |            | 1       | 14        | 21.14                    | 20.79                  | 21.15                  | 0-2                       | 2        |
|           |            | 8       | 0         | 20.05                    | 20.06                  | 19.99                  | 0-3                       | 3        |
|           |            | 8       | 3         | 20.08                    | 20.08                  | 20.02                  | 0-3                       | 3        |
|           |            | 8       | 7         | 20.02                    | 20.02                  | 19.94                  | 0-3                       | 3        |
|           |            | 15      | 0         | 19.94                    | 20.04                  | 20.02                  | 0-3                       | 3        |



## LTE Band 26\_ 5 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                        |                        | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|------------------------|------------------------|---------------------------|----------|
|           |            |         |           | 26715 Ch.<br>816.5 MHz   | 26865 Ch.<br>831.5 MHz | 27015 Ch.<br>846.5 MHz |                           |          |
| 5 MHz     | QPSK       | 1       | 0         | 22.91                    | 22.87                  | 22.99                  | 0                         | 0        |
|           |            | 1       | 12        | 22.90                    | 22.82                  | 22.94                  | 0                         | 0        |
|           |            | 1       | 24        | 22.87                    | 22.76                  | 22.94                  | 0                         | 0        |
|           |            | 12      | 0         | 21.95                    | 21.96                  | 21.98                  | 0-1                       | 1        |
|           |            | 12      | 6         | 21.95                    | 22.00                  | 21.99                  | 0-1                       | 1        |
|           |            | 12      | 11        | 21.92                    | 21.93                  | 21.96                  | 0-1                       | 1        |
|           |            | 25      | 0         | 21.97                    | 22.01                  | 21.98                  | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 22.07                    | 22.26                  | 22.14                  | 0-1                       | 1        |
|           |            | 1       | 12        | 22.08                    | 22.35                  | 22.13                  | 0-1                       | 1        |
|           |            | 1       | 24        | 22.06                    | 22.33                  | 22.10                  | 0-1                       | 1        |
|           |            | 12      | 0         | 20.99                    | 21.01                  | 20.94                  | 0-2                       | 2        |
|           |            | 12      | 6         | 21.01                    | 21.01                  | 20.94                  | 0-2                       | 2        |
|           |            | 12      | 11        | 20.98                    | 21.00                  | 20.89                  | 0-2                       | 2        |
|           |            | 25      | 0         | 21.05                    | 20.97                  | 20.98                  | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 21.03                    | 21.12                  | 21.32                  | 0-2                       | 2        |
|           |            | 1       | 12        | 21.02                    | 21.08                  | 21.25                  | 0-2                       | 2        |
|           |            | 1       | 24        | 20.98                    | 21.06                  | 21.18                  | 0-2                       | 2        |
|           |            | 12      | 0         | 20.02                    | 20.00                  | 19.97                  | 0-3                       | 3        |
|           |            | 12      | 6         | 20.03                    | 20.03                  | 20.02                  | 0-3                       | 3        |
|           |            | 12      | 11        | 19.99                    | 19.97                  | 19.98                  | 0-3                       | 3        |
|           |            | 25      | 0         | 19.99                    | 20.00                  | 20.00                  | 0-3                       | 3        |

## LTE Band 26\_ 10 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                        |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|------------------------|----------------------|---------------------------|----------|
|           |            |         |           | 26740 Ch.<br>819 MHz     | 26865 Ch.<br>831.5 MHz | 26990 Ch.<br>844 MHz |                           |          |
| 10 MHz    | QPSK       | 1       | 0         | 22.92                    | 22.93                  | 22.85                | 0                         | 0        |
|           |            | 1       | 24        | 22.95                    | 22.94                  | 22.84                | 0                         | 0        |
|           |            | 1       | 49        | 22.95                    | 22.98                  | 22.80                | 0                         | 0        |
|           |            | 25      | 0         | 22.05                    | 21.97                  | 21.96                | 0-1                       | 1        |
|           |            | 25      | 12        | 22.04                    | 21.98                  | 21.95                | 0-1                       | 1        |
|           |            | 25      | 24        | 22.00                    | 21.92                  | 21.98                | 0-1                       | 1        |
|           |            | 50      | 0         | 22.03                    | 21.98                  | 21.90                | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 22.08                    | 21.99                  | 21.89                | 0-1                       | 1        |
|           |            | 1       | 24        | 22.14                    | 21.95                  | 21.91                | 0-1                       | 1        |
|           |            | 1       | 49        | 22.11                    | 22.06                  | 21.81                | 0-1                       | 1        |
|           |            | 25      | 0         | 21.12                    | 21.02                  | 20.97                | 0-2                       | 2        |
|           |            | 25      | 12        | 21.10                    | 20.99                  | 20.95                | 0-2                       | 2        |
|           |            | 25      | 24        | 21.06                    | 20.90                  | 20.99                | 0-2                       | 2        |
|           |            | 50      | 0         | 21.03                    | 20.97                  | 20.94                | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 21.21                    | 21.14                  | 21.22                | 0-2                       | 2        |
|           |            | 1       | 24        | 21.23                    | 21.19                  | 21.13                | 0-2                       | 2        |
|           |            | 1       | 49        | 21.21                    | 21.20                  | 20.95                | 0-2                       | 2        |
|           |            | 25      | 0         | 20.10                    | 19.99                  | 19.95                | 0-3                       | 3        |
|           |            | 25      | 12        | 20.10                    | 20.00                  | 19.92                | 0-3                       | 3        |
|           |            | 25      | 24        | 20.04                    | 19.96                  | 20.00                | 0-3                       | 3        |
|           |            | 50      | 0         | 20.06                    | 20.05                  | 19.92                | 0-3                       | 3        |

## LTE Band 26\_ 15 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------------|----------|
|           |            |         |           | 26865 Ch.<br>831.5 MHz   |                           |          |
| 15 MHz    | QPSK       | 1       | 0         | 22.88                    | 0                         | 0        |
|           |            | 1       | 36        | 22.82                    | 0                         | 0        |
|           |            | 1       | 74        | 22.89                    | 0                         | 0        |
|           |            | 36      | 0         | 22.01                    | 0-1                       | 1        |
|           |            | 36      | 18        | 21.99                    | 0-1                       | 1        |
|           |            | 36      | 39        | 21.92                    | 0-1                       | 1        |
|           |            | 75      | 0         | 21.95                    | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 22.30                    | 0-1                       | 1        |
|           |            | 1       | 36        | 22.30                    | 0-1                       | 1        |
|           |            | 1       | 74        | 22.28                    | 0-1                       | 1        |
|           |            | 36      | 0         | 21.00                    | 0-2                       | 2        |
|           |            | 36      | 18        | 20.97                    | 0-2                       | 2        |
|           |            | 36      | 39        | 20.92                    | 0-2                       | 2        |
|           |            | 75      | 0         | 20.96                    | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 21.17                    | 0-2                       | 2        |
|           |            | 1       | 36        | 21.13                    | 0-2                       | 2        |
|           |            | 1       | 74        | 21.14                    | 0-2                       | 2        |
|           |            | 36      | 0         | 20.05                    | 0-3                       | 3        |
|           |            | 36      | 18        | 20.04                    | 0-3                       | 3        |
|           |            | 36      | 39        | 19.96                    | 0-3                       | 3        |
|           |            | 75      | 0         | 19.97                    | 0-3                       | 3        |

### [ LTE Band 41 Conducted Power ]

LTE Band 41 \_ 5 MHz Bandwidth

| Band width | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                      |                      |                      |                      | MPR Allowed Per GPP [dB] | MPR [dB] |
|------------|------------|---------|-----------|--------------------------|----------------------|----------------------|----------------------|----------------------|--------------------------|----------|
|            |            |         |           | 39750 Ch. 2506.0 MHz     | 40185 Ch. 2549.5 MHz | 40620 Ch. 2593.0 MHz | 41055 Ch. 2636.5 MHz | 41490 Ch. 2680.0 MHz |                          |          |
| 5 MHz      | QPSK       | 1       | 0         | 23.33                    | 23.31                | 23.16                | 23.35                | 23.10                | 0                        | 0        |
|            |            | 1       | 12        | 23.32                    | 23.32                | 23.18                | 23.32                | 23.07                | 0                        | 0        |
|            |            | 1       | 24        | 23.27                    | 23.30                | 23.14                | 23.36                | 22.99                | 0                        | 0        |
|            |            | 12      | 0         | 22.35                    | 22.36                | 22.23                | 22.33                | 22.07                | 0-1                      | 1        |
|            |            | 12      | 6         | 22.37                    | 22.36                | 22.25                | 22.34                | 22.08                | 0-1                      | 1        |
|            |            | 12      | 11        | 22.35                    | 22.36                | 22.25                | 22.29                | 22.06                | 0-1                      | 1        |
|            |            | 25      | 0         | 22.36                    | 22.33                | 22.24                | 22.33                | 22.04                | 0-1                      | 1        |
|            | 16QAM      | 1       | 0         | 22.42                    | 22.41                | 22.35                | 22.40                | 22.20                | 0-1                      | 1        |
|            |            | 1       | 12        | 22.39                    | 22.39                | 22.34                | 22.38                | 22.21                | 0-1                      | 1        |
|            |            | 1       | 24        | 22.41                    | 22.39                | 22.33                | 22.43                | 22.12                | 0-1                      | 1        |
|            |            | 12      | 0         | 21.42                    | 21.44                | 21.27                | 21.37                | 21.16                | 0-2                      | 2        |
|            |            | 12      | 6         | 21.44                    | 21.42                | 21.33                | 21.38                | 21.14                | 0-2                      | 2        |
|            |            | 12      | 11        | 21.44                    | 21.41                | 21.31                | 21.34                | 21.10                | 0-2                      | 2        |
|            |            | 25      | 0         | 21.48                    | 21.42                | 21.35                | 21.40                | 21.20                | 0-2                      | 2        |
|            | 64QAM      | 1       | 0         | 21.21                    | 21.18                | 21.12                | 21.16                | 20.97                | 0-2                      | 2        |
|            |            | 1       | 12        | 21.23                    | 21.17                | 21.11                | 21.18                | 20.95                | 0-2                      | 2        |
|            |            | 1       | 24        | 21.16                    | 21.17                | 21.10                | 21.20                | 20.86                | 0-2                      | 2        |
|            |            | 12      | 0         | 20.50                    | 20.48                | 20.38                | 20.43                | 20.23                | 0-3                      | 3        |
|            |            | 12      | 6         | 20.50                    | 20.48                | 20.39                | 20.44                | 20.21                | 0-3                      | 3        |
|            |            | 12      | 11        | 20.50                    | 20.46                | 20.38                | 20.41                | 20.18                | 0-3                      | 3        |
|            |            | 25      | 0         | 20.50                    | 20.52                | 20.40                | 20.45                | 20.22                | 0-3                      | 3        |

LTE Band 41 \_ 10 MHz Bandwidth

| Band width | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                      |                      |                      |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|------------|------------|---------|-----------|--------------------------|----------------------|----------------------|----------------------|----------------------|---------------------------|----------|
|            |            |         |           | 39750 Ch. 2506.0 MHz     | 40185 Ch. 2549.5 MHz | 40620 Ch. 2593.0 MHz | 41055 Ch. 2636.5 MHz | 41490 Ch. 2680.0 MHz |                           |          |
| 10 MHz     | QPSK       | 1       | 0         | 23.39                    | 23.36                | 23.29                | 23.36                | 23.25                | 0                         | 0        |
|            |            | 1       | 24        | 23.36                    | 23.30                | 23.29                | 23.26                | 23.15                | 0                         | 0        |
|            |            | 1       | 49        | 23.30                    | 23.32                | 23.24                | 23.34                | 23.08                | 0                         | 0        |
|            |            | 25      | 0         | 22.43                    | 22.38                | 22.26                | 22.37                | 22.15                | 0-1                       | 1        |
|            |            | 25      | 12        | 22.44                    | 22.38                | 22.30                | 22.39                | 22.14                | 0-1                       | 1        |
|            |            | 25      | 24        | 22.40                    | 22.38                | 22.28                | 22.35                | 22.06                | 0-1                       | 1        |
|            |            | 50      | 0         | 22.41                    | 22.41                | 22.31                | 22.36                | 22.16                | 0-1                       | 1        |
|            | 16QAM      | 1       | 0         | 22.51                    | 22.47                | 22.41                | 22.51                | 22.38                | 0-1                       | 1        |
|            |            | 1       | 24        | 22.43                    | 22.46                | 22.37                | 22.42                | 22.25                | 0-1                       | 1        |
|            |            | 1       | 49        | 22.40                    | 22.39                | 22.31                | 22.46                | 22.15                | 0-1                       | 1        |
|            |            | 25      | 0         | 21.52                    | 21.46                | 21.40                | 21.46                | 21.27                | 0-2                       | 2        |
|            |            | 25      | 12        | 21.53                    | 21.50                | 21.39                | 21.48                | 21.26                | 0-2                       | 2        |
|            |            | 25      | 24        | 21.50                    | 21.46                | 21.40                | 21.43                | 21.21                | 0-2                       | 2        |
|            |            | 50      | 0         | 21.51                    | 21.48                | 21.39                | 21.45                | 21.28                | 0-2                       | 2        |
|            | 64QAM      | 1       | 0         | 21.27                    | 21.21                | 21.16                | 21.24                | 21.12                | 0-2                       | 2        |
|            |            | 1       | 24        | 21.23                    | 21.17                | 21.12                | 21.20                | 21.06                | 0-2                       | 2        |
|            |            | 1       | 49        | 21.14                    | 21.12                | 21.04                | 21.23                | 20.88                | 0-2                       | 2        |
|            |            | 25      | 0         | 20.57                    | 20.49                | 20.42                | 20.47                | 20.33                | 0-3                       | 3        |
|            |            | 25      | 12        | 20.59                    | 20.56                | 20.41                | 20.48                | 20.31                | 0-3                       | 3        |
|            |            | 25      | 24        | 20.52                    | 20.50                | 20.43                | 20.45                | 20.25                | 0-3                       | 3        |
|            |            | 50      | 0         | 20.54                    | 20.49                | 20.39                | 20.45                | 20.28                | 0-3                       | 3        |

LTE Band 41 \_ 15 MHz Bandwidth

| Band width | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                      |                      |                      |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|------------|------------|---------|-----------|--------------------------|----------------------|----------------------|----------------------|----------------------|---------------------------|----------|
|            |            |         |           | 39750 Ch. 2506.0 MHz     | 40185 Ch. 2549.5 MHz | 40620 Ch. 2593.0 MHz | 41055 Ch. 2636.5 MHz | 41490 Ch. 2680.0 MHz |                           |          |
| 15 MHz     | QPSK       | 1       | 0         | 23.40                    | 23.39                | 23.28                | 23.30                | 23.23                | 0                         | 0        |
|            |            | 1       | 36        | 23.33                    | 23.32                | 23.22                | 23.25                | 23.12                | 0                         | 0        |
|            |            | 1       | 74        | 23.29                    | 23.29                | 23.23                | 23.31                | 23.03                | 0                         | 0        |
|            |            | 36      | 0         | 22.38                    | 22.37                | 22.26                | 22.36                | 22.12                | 0-1                       | 1        |
|            |            | 36      | 18        | 22.38                    | 22.38                | 22.28                | 22.36                | 22.18                | 0-1                       | 1        |
|            |            | 36      | 39        | 22.35                    | 22.36                | 22.21                | 22.33                | 22.11                | 0-1                       | 1        |
|            |            | 75      | 0         | 22.40                    | 22.39                | 22.30                | 22.35                | 22.10                | 0-1                       | 1        |
|            | 16QAM      | 1       | 0         | 22.52                    | 22.45                | 22.42                | 22.46                | 22.29                | 0-1                       | 1        |
|            |            | 1       | 36        | 22.45                    | 22.43                | 22.38                | 22.44                | 22.23                | 0-1                       | 1        |
|            |            | 1       | 74        | 22.41                    | 22.45                | 22.33                | 22.45                | 22.14                | 0-1                       | 1        |
|            |            | 36      | 0         | 21.44                    | 21.43                | 21.32                | 21.40                | 21.17                | 0-2                       | 2        |
|            |            | 36      | 18        | 21.44                    | 21.45                | 21.36                | 21.43                | 21.23                | 0-2                       | 2        |
|            |            | 36      | 39        | 21.39                    | 21.43                | 21.30                | 21.37                | 21.18                | 0-2                       | 2        |
|            |            | 75      | 0         | 21.53                    | 21.51                | 21.44                | 21.47                | 21.22                | 0-2                       | 2        |
|            | 64QAM      | 1       | 0         | 21.24                    | 21.21                | 21.14                | 21.25                | 21.07                | 0-2                       | 2        |
|            |            | 1       | 36        | 21.20                    | 21.18                | 21.13                | 21.19                | 21.04                | 0-2                       | 2        |
|            |            | 1       | 74        | 21.18                    | 21.18                | 21.11                | 21.23                | 20.87                | 0-2                       | 2        |
|            |            | 36      | 0         | 20.49                    | 20.45                | 20.37                | 20.49                | 20.26                | 0-3                       | 3        |
|            |            | 36      | 18        | 20.50                    | 20.47                | 20.39                | 20.46                | 20.32                | 0-3                       | 3        |
|            |            | 36      | 39        | 20.47                    | 20.45                | 20.37                | 20.39                | 20.21                | 0-3                       | 3        |
|            |            | 75      | 0         | 20.54                    | 20.49                | 20.42                | 20.45                | 20.25                | 0-3                       | 3        |

LTE Band 41 \_ 20 MHz Bandwidth

| Band width | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                      |                      |                      |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|------------|------------|---------|-----------|--------------------------|----------------------|----------------------|----------------------|----------------------|---------------------------|----------|
|            |            |         |           | 39750 Ch. 2506.0 MHz     | 40185 Ch. 2549.5 MHz | 40620 Ch. 2593.0 MHz | 41055 Ch. 2636.5 MHz | 41490 Ch. 2680.0 MHz |                           |          |
| 20 MHz     | QPSK       | 1       | 0         | 23.28                    | 23.31                | 23.24                | 23.32                | 23.25                | 0                         | 0        |
|            |            | 1       | 49        | 23.25                    | 23.35                | 23.27                | 23.25                | 23.20                | 0                         | 0        |
|            |            | 1       | 99        | 23.19                    | 23.29                | 23.24                | 23.28                | 23.00                | 0                         | 0        |
|            |            | 50      | 0         | 22.40                    | 22.36                | 22.31                | 22.39                | 22.19                | 0-1                       | 1        |
|            |            | 50      | 25        | 22.37                    | 22.39                | 22.30                | 22.37                | 22.15                | 0-1                       | 1        |
|            |            | 50      | 49        | 22.35                    | 22.34                | 22.25                | 22.34                | 22.15                | 0-1                       | 1        |
|            |            | 100     | 0         | 22.45                    | 22.43                | 22.36                | 22.40                | 22.17                | 0-1                       | 1        |
|            | 16QAM      | 1       | 0         | 22.55                    | 22.42                | 22.44                | 22.48                | 22.35                | 0-1                       | 1        |
|            |            | 1       | 49        | 22.43                    | 22.43                | 22.40                | 22.44                | 22.34                | 0-1                       | 1        |
|            |            | 1       | 99        | 22.37                    | 22.37                | 22.33                | 22.41                | 22.11                | 0-1                       | 1        |
|            |            | 50      | 0         | 21.50                    | 21.48                | 21.39                | 21.49                | 21.31                | 0-2                       | 2        |
|            |            | 50      | 25        | 21.50                    | 21.50                | 21.41                | 21.45                | 21.24                | 0-2                       | 2        |
|            |            | 50      | 49        | 21.48                    | 21.44                | 21.36                | 21.44                | 21.24                | 0-2                       | 2        |
|            |            | 100     | 0         | 21.52                    | 21.49                | 21.44                | 21.47                | 21.27                | 0-2                       | 2        |
|            | 64QAM      | 1       | 0         | 21.23                    | 21.16                | 21.14                | 21.21                | 21.09                | 0-2                       | 2        |
|            |            | 1       | 49        | 21.20                    | 21.16                | 21.14                | 21.23                | 21.09                | 0-2                       | 2        |
|            |            | 1       | 99        | 21.15                    | 21.12                | 21.11                | 21.19                | 20.85                | 0-2                       | 2        |
|            |            | 50      | 0         | 20.48                    | 20.47                | 20.40                | 20.46                | 20.34                | 0-3                       | 3        |
|            |            | 50      | 25        | 20.51                    | 20.48                | 20.41                | 20.49                | 20.25                | 0-3                       | 3        |
|            |            | 50      | 49        | 20.45                    | 20.43                | 20.38                | 20.41                | 20.24                | 0-3                       | 3        |
|            |            | 100     | 0         | 20.55                    | 20.53                | 20.46                | 20.48                | 20.25                | 0-3                       | 3        |

Note; LTE Band 41 has 5 required test channels per FCC KDB 447498 D01v06.

### [LTE Band 66 Conducted Power]

LTE Band 66 \_ 1.4 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                     |                       | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------|-----------------------|---------------------------|----------|
|           |            |         |           | 131979 Ch. 1710.7 MHz    | 132322 Ch. 1745 MHz | 132665 Ch. 1779.3 MHz |                           |          |
| 1.4 MHz   | QPSK       | 1       | 0         | 22.42                    | 22.34               | 21.75                 | 0                         | 0        |
|           |            | 1       | 3         | 22.46                    | 22.46               | 21.88                 | 0                         | 0        |
|           |            | 1       | 5         | 22.39                    | 22.32               | 21.73                 | 0                         | 0        |
|           |            | 3       | 0         | 22.43                    | 22.37               | 21.78                 | 0                         | 0        |
|           |            | 3       | 1         | 22.44                    | 22.39               | 21.82                 | 0                         | 0        |
|           |            | 3       | 3         | 22.42                    | 22.41               | 21.81                 | 0                         | 0        |
|           |            | 6       | 0         | 21.47                    | 21.41               | 20.78                 | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.77                    | 21.76               | 21.23                 | 0-1                       | 1        |
|           |            | 1       | 3         | 21.88                    | 21.73               | 21.22                 | 0-1                       | 1        |
|           |            | 1       | 5         | 21.76                    | 21.71               | 21.21                 | 0-1                       | 1        |
|           |            | 3       | 0         | 21.52                    | 21.53               | 20.96                 | 0-1                       | 1        |
|           |            | 3       | 1         | 21.59                    | 21.50               | 20.94                 | 0-1                       | 1        |
|           |            | 3       | 3         | 21.57                    | 21.51               | 20.87                 | 0-1                       | 1        |
|           |            | 6       | 0         | 20.63                    | 20.52               | 19.98                 | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 20.78                    | 20.61               | 20.12                 | 0-2                       | 2        |
|           |            | 1       | 3         | 20.78                    | 20.73               | 20.21                 | 0-2                       | 2        |
|           |            | 1       | 5         | 20.70                    | 20.69               | 20.12                 | 0-2                       | 2        |
|           |            | 3       | 0         | 20.67                    | 20.57               | 20.04                 | 0-2                       | 2        |
|           |            | 3       | 1         | 20.75                    | 20.65               | 20.10                 | 0-2                       | 2        |
|           |            | 3       | 3         | 20.68                    | 20.62               | 20.11                 | 0-2                       | 2        |
|           |            | 6       | 0         | 19.59                    | 19.48               | 18.89                 | 0-3                       | 3        |

LTE Band 66 \_ 3 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                     |                       | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------|-----------------------|---------------------------|----------|
|           |            |         |           | 131987 Ch. 1711.5 MHz    | 132322 Ch. 1745 MHz | 132657 Ch. 1778.5 MHz |                           |          |
| 3 MHz     | QPSK       | 1       | 0         | 22.47                    | 22.46               | 21.85                 | 0                         | 0        |
|           |            | 1       | 7         | 22.57                    | 22.53               | 21.95                 | 0                         | 0        |
|           |            | 1       | 14        | 22.47                    | 22.42               | 21.87                 | 0                         | 0        |
|           |            | 8       | 0         | 21.51                    | 21.43               | 20.82                 | 0-1                       | 1        |
|           |            | 8       | 3         | 21.49                    | 21.44               | 20.88                 | 0-1                       | 1        |
|           |            | 8       | 7         | 21.53                    | 21.46               | 20.87                 | 0-1                       | 1        |
|           |            | 15      | 0         | 21.52                    | 21.45               | 20.88                 | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.83                    | 21.86               | 21.28                 | 0-1                       | 1        |
|           |            | 1       | 7         | 21.94                    | 21.82               | 21.29                 | 0-1                       | 1        |
|           |            | 1       | 14        | 21.74                    | 21.74               | 21.26                 | 0-1                       | 1        |
|           |            | 8       | 0         | 20.65                    | 20.64               | 20.03                 | 0-2                       | 2        |
|           |            | 8       | 3         | 20.70                    | 20.63               | 20.06                 | 0-2                       | 2        |
|           |            | 8       | 7         | 20.63                    | 20.61               | 20.04                 | 0-2                       | 2        |
|           |            | 15      | 0         | 20.66                    | 20.58               | 20.01                 | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 20.78                    | 20.67               | 20.15                 | 0-2                       | 2        |
|           |            | 1       | 7         | 20.87                    | 20.80               | 20.24                 | 0-2                       | 2        |
|           |            | 1       | 14        | 20.80                    | 20.67               | 20.20                 | 0-2                       | 2        |
|           |            | 8       | 0         | 19.70                    | 19.60               | 19.01                 | 0-3                       | 3        |
|           |            | 8       | 3         | 19.70                    | 19.63               | 19.08                 | 0-3                       | 3        |
|           |            | 8       | 7         | 19.70                    | 19.63               | 19.01                 | 0-3                       | 3        |
|           |            | 15      | 0         | 19.64                    | 19.54               | 18.98                 | 0-3                       | 3        |

## LTE Band 66 \_ 5 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                     |                       | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------|-----------------------|---------------------------|----------|
|           |            |         |           | 131997 Ch. 1712.5 MHz    | 132322 Ch. 1745 MHz | 132647 Ch. 1777.5 MHz |                           |          |
| 5 MHz     | QPSK       | 1       | 0         | 22.53                    | 22.50               | 21.98                 | 0                         | 0        |
|           |            | 1       | 12        | 22.47                    | 22.39               | 21.84                 | 0                         | 0        |
|           |            | 1       | 24        | 22.44                    | 22.43               | 21.90                 | 0                         | 0        |
|           |            | 12      | 0         | 21.54                    | 21.46               | 21.00                 | 0-1                       | 1        |
|           |            | 12      | 6         | 21.56                    | 21.47               | 20.99                 | 0-1                       | 1        |
|           |            | 12      | 11        | 21.52                    | 21.49               | 20.90                 | 0-1                       | 1        |
|           |            | 25      | 0         | 21.51                    | 21.46               | 21.01                 | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.83                    | 21.92               | 21.41                 | 0-1                       | 1        |
|           |            | 1       | 12        | 21.91                    | 21.76               | 21.24                 | 0-1                       | 1        |
|           |            | 1       | 24        | 21.88                    | 21.77               | 21.25                 | 0-1                       | 1        |
|           |            | 12      | 0         | 20.66                    | 20.61               | 20.11                 | 0-2                       | 2        |
|           |            | 12      | 6         | 20.65                    | 20.64               | 20.11                 | 0-2                       | 2        |
|           |            | 12      | 11        | 20.63                    | 20.57               | 20.00                 | 0-2                       | 2        |
|           |            | 25      | 0         | 20.61                    | 20.58               | 20.08                 | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 20.85                    | 20.74               | 20.31                 | 0-2                       | 2        |
|           |            | 1       | 12        | 20.73                    | 20.77               | 20.20                 | 0-2                       | 2        |
|           |            | 1       | 24        | 20.80                    | 20.75               | 20.22                 | 0-2                       | 2        |
|           |            | 12      | 0         | 19.69                    | 19.66               | 19.13                 | 0-3                       | 3        |
|           |            | 12      | 6         | 19.72                    | 19.63               | 19.21                 | 0-3                       | 3        |
|           |            | 12      | 11        | 19.69                    | 19.64               | 19.02                 | 0-3                       | 3        |
|           |            | 25      | 0         | 19.64                    | 19.56               | 19.10                 | 0-3                       | 3        |

## LTE Band 66 \_ 10 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                     |                     | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|---------------------|---------------------|---------------------------|----------|
|           |            |         |           | 132022 Ch. 1715 MHz      | 132322 Ch. 1745 MHz | 132622 Ch. 1775 MHz |                           |          |
| 10 MHz    | QPSK       | 1       | 0         | 22.57                    | 22.52               | 22.17               | 0                         | 0        |
|           |            | 1       | 24        | 22.43                    | 22.45               | 21.97               | 0                         | 0        |
|           |            | 1       | 49        | 22.55                    | 22.34               | 21.87               | 0                         | 0        |
|           |            | 25      | 0         | 21.55                    | 21.54               | 21.12               | 0-1                       | 1        |
|           |            | 25      | 12        | 21.55                    | 21.53               | 21.01               | 0-1                       | 1        |
|           |            | 25      | 24        | 21.59                    | 21.50               | 21.03               | 0-1                       | 1        |
|           |            | 50      | 0         | 21.64                    | 21.56               | 21.02               | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.91                    | 21.96               | 21.56               | 0-1                       | 1        |
|           |            | 1       | 24        | 21.78                    | 21.83               | 21.28               | 0-1                       | 1        |
|           |            | 1       | 49        | 22.03                    | 21.66               | 21.33               | 0-1                       | 1        |
|           |            | 25      | 0         | 20.68                    | 20.63               | 20.27               | 0-2                       | 2        |
|           |            | 25      | 12        | 20.65                    | 20.60               | 20.10               | 0-2                       | 2        |
|           |            | 25      | 24        | 20.70                    | 20.58               | 20.15               | 0-2                       | 2        |
|           |            | 50      | 0         | 20.74                    | 20.64               | 20.14               | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 20.86                    | 20.89               | 20.39               | 0-2                       | 2        |
|           |            | 1       | 24        | 20.84                    | 20.72               | 20.31               | 0-2                       | 2        |
|           |            | 1       | 49        | 20.81                    | 20.67               | 20.21               | 0-2                       | 2        |
|           |            | 25      | 0         | 19.73                    | 19.66               | 19.21               | 0-3                       | 3        |
|           |            | 25      | 12        | 19.68                    | 19.68               | 19.17               | 0-3                       | 3        |
|           |            | 25      | 24        | 19.74                    | 19.65               | 19.14               | 0-3                       | 3        |
|           |            | 50      | 0         | 19.76                    | 19.62               | 19.16               | 0-3                       | 3        |

## LTE Band 66 \_ 15 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                        |                          | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|------------------------|--------------------------|---------------------------|----------|
|           |            |         |           | 132047 Ch.<br>1717.5 MHz | 132322 Ch.<br>1745 MHz | 132597 Ch.<br>1772.5 MHz |                           |          |
| 15 MHz    | QPSK       | 1       | 0         | 22.54                    | 22.56                  | 22.15                    | 0                         | 0        |
|           |            | 1       | 36        | 22.44                    | 22.47                  | 22.01                    | 0                         | 0        |
|           |            | 1       | 74        | 22.62                    | 22.42                  | 21.91                    | 0                         | 0        |
|           |            | 36      | 0         | 21.59                    | 21.58                  | 21.13                    | 0-1                       | 1        |
|           |            | 36      | 18        | 21.70                    | 21.60                  | 21.17                    | 0-1                       | 1        |
|           |            | 36      | 39        | 21.64                    | 21.57                  | 21.11                    | 0-1                       | 1        |
|           |            | 75      | 0         | 21.67                    | 21.61                  | 21.21                    | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.98                    | 21.89                  | 21.56                    | 0-1                       | 1        |
|           |            | 1       | 36        | 21.80                    | 21.89                  | 21.34                    | 0-1                       | 1        |
|           |            | 1       | 74        | 21.93                    | 21.77                  | 21.41                    | 0-1                       | 1        |
|           |            | 36      | 0         | 20.69                    | 20.70                  | 20.30                    | 0-2                       | 2        |
|           |            | 36      | 18        | 20.76                    | 20.69                  | 20.28                    | 0-2                       | 2        |
|           |            | 36      | 39        | 20.71                    | 20.66                  | 20.18                    | 0-2                       | 2        |
|           |            | 75      | 0         | 20.80                    | 20.69                  | 20.29                    | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 20.84                    | 20.83                  | 20.39                    | 0-2                       | 2        |
|           |            | 1       | 36        | 20.83                    | 20.81                  | 20.34                    | 0-2                       | 2        |
|           |            | 1       | 74        | 20.92                    | 20.69                  | 20.26                    | 0-2                       | 2        |
|           |            | 36      | 0         | 19.72                    | 19.74                  | 19.32                    | 0-3                       | 3        |
|           |            | 36      | 18        | 19.85                    | 19.74                  | 19.34                    | 0-3                       | 3        |
|           |            | 36      | 39        | 19.80                    | 19.72                  | 19.21                    | 0-3                       | 3        |
|           |            | 75      | 0         | 19.83                    | 19.72                  | 19.33                    | 0-3                       | 3        |

## LTE Band 66 \_ 20 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Max. Average Power [dBm] |                        |                        | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|------------------------|------------------------|---------------------------|----------|
|           |            |         |           | 132072 Ch.<br>1720 MHz   | 132322 Ch.<br>1745 MHz | 132572 Ch.<br>1770 MHz |                           |          |
| 20 MHz    | QPSK       | 1       | 0         | 22.58                    | 22.55                  | 22.68                  | 0                         | 0        |
|           |            | 1       | 49        | 22.27                    | 22.52                  | 22.18                  | 0                         | 0        |
|           |            | 1       | 99        | 22.54                    | 22.30                  | 21.95                  | 0                         | 0        |
|           |            | 50      | 0         | 21.70                    | 21.66                  | 21.74                  | 0-1                       | 1        |
|           |            | 50      | 25        | 21.32                    | 21.62                  | 21.21                  | 0-1                       | 1        |
|           |            | 50      | 49        | 21.61                    | 21.60                  | 21.13                  | 0-1                       | 1        |
|           |            | 100     | 0         | 21.32                    | 21.61                  | 21.66                  | 0-1                       | 1        |
|           | 16QAM      | 1       | 0         | 21.87                    | 21.90                  | 21.60                  | 0-1                       | 1        |
|           |            | 1       | 49        | 21.98                    | 21.91                  | 21.47                  | 0-1                       | 1        |
|           |            | 1       | 99        | 21.99                    | 21.68                  | 21.41                  | 0-1                       | 1        |
|           |            | 50      | 0         | 20.85                    | 20.72                  | 20.39                  | 0-2                       | 2        |
|           |            | 50      | 25        | 20.80                    | 20.68                  | 20.31                  | 0-2                       | 2        |
|           |            | 50      | 49        | 20.77                    | 20.70                  | 20.22                  | 0-2                       | 2        |
|           |            | 100     | 0         | 20.80                    | 20.66                  | 20.31                  | 0-2                       | 2        |
|           | 64QAM      | 1       | 0         | 20.90                    | 20.70                  | 20.58                  | 0-2                       | 2        |
|           |            | 1       | 49        | 20.97                    | 20.85                  | 20.49                  | 0-2                       | 2        |
|           |            | 1       | 99        | 20.84                    | 20.64                  | 20.24                  | 0-2                       | 2        |
|           |            | 50      | 0         | 19.84                    | 19.79                  | 19.41                  | 0-3                       | 3        |
|           |            | 50      | 25        | 19.82                    | 19.76                  | 19.38                  | 0-3                       | 3        |
|           |            | 50      | 49        | 19.77                    | 19.71                  | 19.24                  | 0-3                       | 3        |
|           |            | 100     | 0         | 19.79                    | 19.76                  | 19.38                  | 0-3                       | 3        |

### 11.2.2 LTE Reduced Conducted Power

#### [ LTE Band 2 Conducted Power ]

LTE Band 2 \_ 1.4 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]  |                    |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|----------------------|--------------------|----------------------|---------------------------|----------|
|           |            |         |           | 18607 Ch. 1850.7 MHz | 18900 Ch. 1880 MHz | 19193 Ch. 1909.3 MHz |                           |          |
| 1.4 MHz   | QPSK       | 1       | 0         | 13.25                | 13.36              | 13.29                | 0                         | 0        |
|           |            | 1       | 3         | 13.32                | 13.41              | 13.33                | 0                         | 0        |
|           |            | 1       | 5         | 13.24                | 13.36              | 13.25                | 0                         | 0        |
|           |            | 3       | 0         | 13.27                | 13.42              | 13.28                | 0-1                       | 0        |
|           |            | 3       | 1         | 13.31                | 13.48              | 13.32                | 0-1                       | 0        |
|           |            | 3       | 3         | 13.26                | 13.45              | 13.24                | 0-1                       | 0        |
|           |            | 6       | 0         | 13.26                | 13.52              | 13.29                | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 13.74                | 13.54              | 13.41                | 0-1                       | 0        |
|           |            | 1       | 3         | 13.80                | 13.64              | 13.46                | 0-1                       | 0        |
|           |            | 1       | 5         | 13.75                | 13.55              | 13.27                | 0-1                       | 0        |
|           |            | 3       | 0         | 13.35                | 13.44              | 13.43                | 0-2                       | 0        |
|           |            | 3       | 1         | 13.43                | 13.48              | 13.45                | 0-2                       | 0        |
|           |            | 3       | 3         | 13.36                | 13.40              | 13.37                | 0-2                       | 0        |
|           |            | 6       | 0         | 13.36                | 13.59              | 13.32                | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 13.57                | 13.57              | 13.63                | 0-2                       | 0        |
|           |            | 1       | 3         | 13.61                | 13.57              | 13.73                | 0-2                       | 0        |
|           |            | 1       | 5         | 13.52                | 13.50              | 13.63                | 0-2                       | 0        |
|           |            | 3       | 0         | 13.47                | 13.60              | 13.56                | 0-3                       | 0        |
|           |            | 3       | 1         | 13.52                | 13.63              | 13.60                | 0-3                       | 0        |
|           |            | 3       | 3         | 13.49                | 13.61              | 13.57                | 0-3                       | 0        |
|           |            | 6       | 0         | 13.38                | 13.57              | 13.35                | 0-3                       | 0        |

LTE Band 2 \_ 3 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]  |                    |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|----------------------|--------------------|----------------------|---------------------------|----------|
|           |            |         |           | 18615 Ch. 1851.5 MHz | 18900 Ch. 1880 MHz | 19185 Ch. 1908.5 MHz |                           |          |
| 3 MHz     | QPSK       | 1       | 0         | 13.31                | 13.44              | 13.28                | 0                         | 0        |
|           |            | 1       | 7         | 13.48                | 13.60              | 13.44                | 0                         | 0        |
|           |            | 1       | 14        | 13.31                | 13.40              | 13.27                | 0                         | 0        |
|           |            | 8       | 0         | 13.35                | 13.50              | 13.33                | 0-1                       | 0        |
|           |            | 8       | 3         | 13.39                | 13.54              | 13.37                | 0-1                       | 0        |
|           |            | 8       | 7         | 13.33                | 13.49              | 13.34                | 0-1                       | 0        |
|           |            | 15      | 0         | 13.39                | 13.49              | 13.35                | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 13.50                | 13.77              | 13.80                | 0-1                       | 0        |
|           |            | 1       | 7         | 13.66                | 13.84              | 13.95                | 0-1                       | 0        |
|           |            | 1       | 14        | 13.51                | 13.69              | 13.76                | 0-1                       | 0        |
|           |            | 8       | 0         | 13.44                | 13.64              | 13.49                | 0-2                       | 0        |
|           |            | 8       | 3         | 13.50                | 13.67              | 13.51                | 0-2                       | 0        |
|           |            | 8       | 7         | 13.44                | 13.62              | 13.44                | 0-2                       | 0        |
|           |            | 15      | 0         | 13.39                | 13.59              | 13.50                | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 13.64                | 13.66              | 13.29                | 0-2                       | 0        |
|           |            | 1       | 7         | 13.77                | 13.79              | 13.39                | 0-2                       | 0        |
|           |            | 1       | 14        | 13.62                | 13.60              | 13.29                | 0-2                       | 0        |
|           |            | 8       | 0         | 13.45                | 13.59              | 13.55                | 0-3                       | 0        |
|           |            | 8       | 3         | 13.48                | 13.61              | 13.58                | 0-3                       | 0        |
|           |            | 8       | 7         | 13.44                | 13.55              | 13.54                | 0-3                       | 0        |
|           |            | 15      | 0         | 13.47                | 13.73              | 13.49                | 0-3                       | 0        |



## LTE Band 2 \_ 5 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]     |                       |                         | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|-------------------------|-----------------------|-------------------------|---------------------------|----------|
|           |            |         |           | 18625 Ch.<br>1852.5 MHz | 18900 Ch.<br>1880 MHz | 19175 Ch.<br>1907.5 MHz |                           |          |
| 5 MHz     | QPSK       | 1       | 0         | 13.36                   | 13.50                 | 13.31                   | 0                         | 0        |
|           |            | 1       | 12        | 13.39                   | 13.53                 | 13.33                   | 0                         | 0        |
|           |            | 1       | 24        | 13.36                   | 13.44                 | 13.26                   | 0                         | 0        |
|           |            | 12      | 0         | 13.42                   | 13.56                 | 13.38                   | 0-1                       | 0        |
|           |            | 12      | 6         | 13.41                   | 13.53                 | 13.42                   | 0-1                       | 0        |
|           |            | 12      | 11        | 13.38                   | 13.52                 | 13.38                   | 0-1                       | 0        |
|           |            | 25      | 0         | 13.35                   | 13.52                 | 13.39                   | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 13.66                   | 13.99                 | 13.73                   | 0-1                       | 0        |
|           |            | 1       | 12        | 13.62                   | 14.05                 | 13.75                   | 0-1                       | 0        |
|           |            | 1       | 24        | 13.52                   | 13.94                 | 13.71                   | 0-1                       | 0        |
|           |            | 12      | 0         | 13.39                   | 13.64                 | 13.41                   | 0-2                       | 0        |
|           |            | 12      | 6         | 13.43                   | 13.69                 | 13.44                   | 0-2                       | 0        |
|           |            | 12      | 11        | 13.37                   | 13.63                 | 13.40                   | 0-2                       | 0        |
|           |            | 25      | 0         | 13.43                   | 13.67                 | 13.42                   | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 13.49                   | 13.86                 | 13.71                   | 0-2                       | 0        |
|           |            | 1       | 12        | 13.54                   | 13.89                 | 13.62                   | 0-2                       | 0        |
|           |            | 1       | 24        | 13.45                   | 13.79                 | 13.58                   | 0-2                       | 0        |
|           |            | 12      | 0         | 13.47                   | 13.74                 | 13.47                   | 0-3                       | 0        |
|           |            | 12      | 6         | 13.47                   | 13.77                 | 13.51                   | 0-3                       | 0        |
|           |            | 12      | 11        | 13.43                   | 13.71                 | 13.48                   | 0-3                       | 0        |
|           |            | 25      | 0         | 13.43                   | 13.64                 | 13.48                   | 0-3                       | 0        |

## LTE Band 2 \_ 10 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]   |                       |                       | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|-----------------------|-----------------------|-----------------------|---------------------------|----------|
|           |            |         |           | 18650 Ch.<br>1855 MHz | 18900 Ch.<br>1880 MHz | 19150 Ch.<br>1905 MHz |                           |          |
| 10 MHz    | QPSK       | 1       | 0         | 13.47                 | 13.67                 | 13.54                 | 0                         | 0        |
|           |            | 1       | 24        | 13.42                 | 13.55                 | 13.44                 | 0                         | 0        |
|           |            | 1       | 49        | 13.40                 | 13.56                 | 13.44                 | 0                         | 0        |
|           |            | 25      | 0         | 13.42                 | 13.57                 | 13.40                 | 0-1                       | 0        |
|           |            | 25      | 12        | 13.46                 | 13.60                 | 13.41                 | 0-1                       | 0        |
|           |            | 25      | 24        | 13.39                 | 13.57                 | 13.38                 | 0-1                       | 0        |
|           |            | 50      | 0         | 13.40                 | 13.54                 | 13.40                 | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 13.45                 | 13.81                 | 13.62                 | 0-1                       | 0        |
|           |            | 1       | 24        | 13.41                 | 13.73                 | 13.64                 | 0-1                       | 0        |
|           |            | 1       | 49        | 13.37                 | 13.75                 | 13.57                 | 0-1                       | 0        |
|           |            | 25      | 0         | 13.49                 | 13.62                 | 13.51                 | 0-2                       | 0        |
|           |            | 25      | 12        | 13.51                 | 13.61                 | 13.53                 | 0-2                       | 0        |
|           |            | 25      | 24        | 13.46                 | 13.57                 | 13.49                 | 0-2                       | 0        |
|           |            | 50      | 0         | 13.46                 | 13.64                 | 13.44                 | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 13.81                 | 13.92                 | 13.60                 | 0-2                       | 0        |
|           |            | 1       | 24        | 13.75                 | 13.93                 | 13.63                 | 0-2                       | 0        |
|           |            | 1       | 49        | 13.74                 | 13.88                 | 13.57                 | 0-2                       | 0        |
|           |            | 25      | 0         | 13.44                 | 13.68                 | 13.49                 | 0-3                       | 0        |
|           |            | 25      | 12        | 13.45                 | 13.72                 | 13.51                 | 0-3                       | 0        |
|           |            | 25      | 24        | 13.40                 | 13.66                 | 13.50                 | 0-3                       | 0        |
|           |            | 50      | 0         | 13.48                 | 13.64                 | 13.51                 | 0-3                       | 0        |

## LTE Band 2 \_ 15 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]     |                       |                         | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|-------------------------|-----------------------|-------------------------|---------------------------|----------|
|           |            |         |           | 18675 Ch.<br>1857.5 MHz | 18900 Ch.<br>1880 MHz | 19125 Ch.<br>1902.5 MHz |                           |          |
| 15 MHz    | QPSK       | 1       | 0         | 13.42                   | 13.65                 | 13.39                   | 0                         | 0        |
|           |            | 1       | 36        | 13.30                   | 13.59                 | 13.31                   | 0                         | 0        |
|           |            | 1       | 74        | 13.30                   | 13.55                 | 13.28                   | 0                         | 0        |
|           |            | 36      | 0         | 13.49                   | 13.61                 | 13.49                   | 0-1                       | 0        |
|           |            | 36      | 18        | 13.47                   | 13.62                 | 13.46                   | 0-1                       | 0        |
|           |            | 36      | 39        | 13.37                   | 13.59                 | 13.39                   | 0-1                       | 0        |
|           |            | 75      | 0         | 13.40                   | 13.58                 | 13.42                   | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 13.99                   | 13.85                 | 13.60                   | 0-1                       | 0        |
|           |            | 1       | 36        | 13.86                   | 13.79                 | 13.59                   | 0-1                       | 0        |
|           |            | 1       | 74        | 13.84                   | 13.80                 | 13.54                   | 0-1                       | 0        |
|           |            | 36      | 0         | 13.52                   | 13.67                 | 13.51                   | 0-2                       | 0        |
|           |            | 36      | 18        | 13.55                   | 13.65                 | 13.52                   | 0-2                       | 0        |
|           |            | 36      | 39        | 13.49                   | 13.59                 | 13.48                   | 0-2                       | 0        |
|           |            | 75      | 0         | 13.50                   | 13.65                 | 13.49                   | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 13.39                   | 13.80                 | 13.45                   | 0-2                       | 0        |
|           |            | 1       | 36        | 13.23                   | 13.68                 | 13.49                   | 0-2                       | 0        |
|           |            | 1       | 74        | 13.22                   | 13.71                 | 13.48                   | 0-2                       | 0        |
|           |            | 36      | 0         | 13.60                   | 13.68                 | 13.51                   | 0-3                       | 0        |
|           |            | 36      | 18        | 13.56                   | 13.69                 | 13.52                   | 0-3                       | 0        |
|           |            | 36      | 39        | 13.51                   | 13.64                 | 13.47                   | 0-3                       | 0        |
|           |            | 75      | 0         | 13.50                   | 13.63                 | 13.52                   | 0-3                       | 0        |

## LTE Band 2 \_ 20 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]   |                       |                       | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|-----------------------|-----------------------|-----------------------|---------------------------|----------|
|           |            |         |           | 18700 Ch.<br>1860 MHz | 18900 Ch.<br>1880 MHz | 19100 Ch.<br>1900 MHz |                           |          |
| 20 MHz    | QPSK       | 1       | 0         | 13.41                 | 13.62                 | 13.34                 | 0                         | 0        |
|           |            | 1       | 49        | 13.37                 | 13.59                 | 13.33                 | 0                         | 0        |
|           |            | 1       | 99        | 13.36                 | 13.40                 | 13.30                 | 0                         | 0        |
|           |            | 50      | 0         | 13.55                 | 13.62                 | 13.46                 | 0-1                       | 0        |
|           |            | 50      | 25        | 13.43                 | 13.61                 | 13.45                 | 0-1                       | 0        |
|           |            | 50      | 49        | 13.51                 | 13.57                 | 13.44                 | 0-1                       | 0        |
|           |            | 100     | 0         | 13.50                 | 13.51                 | 13.31                 | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 13.88                 | 13.65                 | 13.52                 | 0-1                       | 0        |
|           |            | 1       | 49        | 13.73                 | 13.61                 | 13.57                 | 0-1                       | 0        |
|           |            | 1       | 99        | 13.82                 | 13.54                 | 13.54                 | 0-1                       | 0        |
|           |            | 50      | 0         | 13.54                 | 13.74                 | 13.42                 | 0-2                       | 0        |
|           |            | 50      | 25        | 13.47                 | 13.73                 | 13.47                 | 0-2                       | 0        |
|           |            | 50      | 49        | 13.53                 | 13.66                 | 13.48                 | 0-2                       | 0        |
|           |            | 100     | 0         | 13.54                 | 13.60                 | 13.36                 | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 13.69                 | 14.05                 | 13.69                 | 0-2                       | 0        |
|           |            | 1       | 49        | 13.63                 | 13.96                 | 13.73                 | 0-2                       | 0        |
|           |            | 1       | 99        | 13.58                 | 13.84                 | 13.70                 | 0-2                       | 0        |
|           |            | 50      | 0         | 13.51                 | 13.70                 | 13.46                 | 0-3                       | 0        |
|           |            | 50      | 25        | 13.48                 | 13.71                 | 13.52                 | 0-3                       | 0        |
|           |            | 50      | 49        | 13.57                 | 13.65                 | 13.52                 | 0-3                       | 0        |
|           |            | 100     | 0         | 13.56                 | 13.65                 | 13.34                 | 0-3                       | 0        |

### [ LTE Band 4 Conducted Power ]

LTE Band 4 \_ 1.4 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]  |                      |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|----------------------|----------------------|----------------------|---------------------------|----------|
|           |            |         |           | 19957 Ch. 1710.7 MHz | 20175 Ch. 1732.5 MHz | 20393 Ch. 1754.3 MHz |                           |          |
| 1.4 MHz   | QPSK       | 1       | 0         | 13.04                | 13.30                | 13.28                | 0                         | 0        |
|           |            | 1       | 3         | 13.09                | 13.36                | 13.36                | 0                         | 0        |
|           |            | 1       | 5         | 13.02                | 13.35                | 13.27                | 0                         | 0        |
|           |            | 3       | 0         | 13.07                | 13.33                | 13.32                | 0                         | 0        |
|           |            | 3       | 1         | 13.09                | 13.37                | 13.35                | 0                         | 0        |
|           |            | 3       | 3         | 13.04                | 13.35                | 13.31                | 0                         | 0        |
|           |            | 6       | 0         | 13.11                | 13.33                | 13.32                | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 13.16                | 13.86                | 13.60                | 0-1                       | 0        |
|           |            | 1       | 3         | 13.22                | 13.92                | 13.84                | 0-1                       | 0        |
|           |            | 1       | 5         | 13.15                | 13.87                | 13.76                | 0-1                       | 0        |
|           |            | 3       | 0         | 13.06                | 13.35                | 13.41                | 0-1                       | 0        |
|           |            | 3       | 1         | 13.12                | 13.39                | 13.48                | 0-1                       | 0        |
|           |            | 3       | 3         | 13.06                | 13.34                | 13.42                | 0-1                       | 0        |
|           |            | 6       | 0         | 13.23                | 13.45                | 13.54                | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 13.34                | 13.33                | 13.62                | 0-2                       | 0        |
|           |            | 1       | 3         | 13.43                | 13.38                | 13.67                | 0-2                       | 0        |
|           |            | 1       | 5         | 13.32                | 13.25                | 13.61                | 0-2                       | 0        |
|           |            | 3       | 0         | 13.19                | 13.54                | 13.53                | 0-2                       | 0        |
|           |            | 3       | 1         | 13.24                | 13.62                | 13.64                | 0-2                       | 0        |
|           |            | 3       | 3         | 13.20                | 13.51                | 13.52                | 0-2                       | 0        |
|           |            | 6       | 0         | 13.27                | 13.47                | 13.38                | 0-3                       | 0        |

LTE Band 4 \_ 3 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]  |                      |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|----------------------|----------------------|----------------------|---------------------------|----------|
|           |            |         |           | 19965 Ch. 1711.5 MHz | 20175 Ch. 1732.5 MHz | 20385 Ch. 1753.5 MHz |                           |          |
| 3 MHz     | QPSK       | 1       | 0         | 13.09                | 13.33                | 13.43                | 0                         | 0        |
|           |            | 1       | 7         | 13.17                | 13.45                | 13.53                | 0                         | 0        |
|           |            | 1       | 14        | 13.02                | 13.30                | 13.37                | 0                         | 0        |
|           |            | 8       | 0         | 13.12                | 13.43                | 13.42                | 0-1                       | 0        |
|           |            | 8       | 3         | 13.14                | 13.43                | 13.41                | 0-1                       | 0        |
|           |            | 8       | 7         | 13.14                | 13.43                | 13.35                | 0-1                       | 0        |
|           |            | 15      | 0         | 13.15                | 13.41                | 13.43                | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 13.31                | 13.91                | 13.67                | 0-1                       | 0        |
|           |            | 1       | 7         | 13.37                | 14.00                | 13.71                | 0-1                       | 0        |
|           |            | 1       | 14        | 13.31                | 13.85                | 13.61                | 0-1                       | 0        |
|           |            | 8       | 0         | 13.22                | 13.55                | 13.42                | 0-2                       | 0        |
|           |            | 8       | 3         | 13.29                | 13.59                | 13.47                | 0-2                       | 0        |
|           |            | 8       | 7         | 13.20                | 13.55                | 13.47                | 0-2                       | 0        |
|           |            | 15      | 0         | 13.18                | 13.51                | 13.37                | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 13.24                | 13.67                | 13.78                | 0-2                       | 0        |
|           |            | 1       | 7         | 13.31                | 13.73                | 13.84                | 0-2                       | 0        |
|           |            | 1       | 14        | 13.23                | 13.60                | 13.74                | 0-2                       | 0        |
|           |            | 8       | 0         | 13.22                | 13.56                | 13.55                | 0-3                       | 0        |
|           |            | 8       | 3         | 13.23                | 13.58                | 13.57                | 0-3                       | 0        |
|           |            | 8       | 7         | 13.20                | 13.50                | 13.54                | 0-3                       | 0        |
|           |            | 15      | 0         | 13.13                | 13.59                | 13.53                | 0-3                       | 0        |

## LTE Band 4 \_ 5 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]  |                      |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|----------------------|----------------------|----------------------|---------------------------|----------|
|           |            |         |           | 19975 Ch. 1712.5 MHz | 20175 Ch. 1732.5 MHz | 20375 Ch. 1752.5 MHz |                           |          |
| 5 MHz     | QPSK       | 1       | 0         | 13.19                | 13.48                | 13.34                | 0                         | 0        |
|           |            | 1       | 12        | 13.15                | 13.42                | 13.26                | 0                         | 0        |
|           |            | 1       | 24        | 13.13                | 13.38                | 13.23                | 0                         | 0        |
|           |            | 12      | 0         | 13.20                | 13.46                | 13.43                | 0-1                       | 0        |
|           |            | 12      | 6         | 13.15                | 13.48                | 13.44                | 0-1                       | 0        |
|           |            | 12      | 11        | 13.12                | 13.44                | 13.41                | 0-1                       | 0        |
|           |            | 25      | 0         | 13.17                | 13.44                | 13.40                | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 13.36                | 13.59                | 13.43                | 0-1                       | 0        |
|           |            | 1       | 12        | 13.31                | 13.54                | 13.41                | 0-1                       | 0        |
|           |            | 1       | 24        | 13.25                | 13.54                | 13.38                | 0-1                       | 0        |
|           |            | 12      | 0         | 13.28                | 13.54                | 13.53                | 0-2                       | 0        |
|           |            | 12      | 6         | 13.25                | 13.51                | 13.53                | 0-2                       | 0        |
|           |            | 12      | 11        | 13.21                | 13.46                | 13.45                | 0-2                       | 0        |
|           |            | 25      | 0         | 13.26                | 13.42                | 13.47                | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 13.46                | 13.78                | 13.56                | 0-2                       | 0        |
|           |            | 1       | 12        | 13.42                | 13.75                | 13.47                | 0-2                       | 0        |
|           |            | 1       | 24        | 13.40                | 13.70                | 13.48                | 0-2                       | 0        |
|           |            | 12      | 0         | 13.30                | 13.63                | 13.47                | 0-3                       | 0        |
|           |            | 12      | 6         | 13.31                | 13.63                | 13.47                | 0-3                       | 0        |
|           |            | 12      | 11        | 13.32                | 13.56                | 13.45                | 0-3                       | 0        |
|           |            | 25      | 0         | 13.14                | 13.50                | 13.47                | 0-3                       | 0        |

## LTE Band 4 \_ 10 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm] |                      |                    | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|---------------------|----------------------|--------------------|---------------------------|----------|
|           |            |         |           | 20000 Ch. 1715 MHz  | 20175 Ch. 1732.5 MHz | 20350 Ch. 1750 MHz |                           |          |
| 10 MHz    | QPSK       | 1       | 0         | 13.22               | 13.45                | 13.45              | 0                         | 0        |
|           |            | 1       | 24        | 13.09               | 13.36                | 13.30              | 0                         | 0        |
|           |            | 1       | 49        | 13.19               | 13.34                | 13.27              | 0                         | 0        |
|           |            | 25      | 0         | 13.18               | 13.51                | 13.49              | 0-1                       | 0        |
|           |            | 25      | 12        | 13.27               | 13.48                | 13.46              | 0-1                       | 0        |
|           |            | 25      | 24        | 13.22               | 13.42                | 13.38              | 0-1                       | 0        |
|           |            | 50      | 0         | 13.27               | 13.47                | 13.46              | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 13.66               | 13.72                | 13.98              | 0-1                       | 0        |
|           |            | 1       | 24        | 13.56               | 13.59                | 13.85              | 0-1                       | 0        |
|           |            | 1       | 49        | 13.69               | 13.56                | 13.81              | 0-1                       | 0        |
|           |            | 25      | 0         | 13.28               | 13.60                | 13.56              | 0-2                       | 0        |
|           |            | 25      | 12        | 13.35               | 13.57                | 13.54              | 0-2                       | 0        |
|           |            | 25      | 24        | 13.35               | 13.51                | 13.50              | 0-2                       | 0        |
|           |            | 50      | 0         | 13.34               | 13.54                | 13.56              | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 13.47               | 13.68                | 13.41              | 0-2                       | 0        |
|           |            | 1       | 24        | 13.39               | 13.52                | 13.31              | 0-2                       | 0        |
|           |            | 1       | 49        | 13.49               | 13.55                | 13.34              | 0-2                       | 0        |
|           |            | 25      | 0         | 13.30               | 13.55                | 13.63              | 0-3                       | 0        |
|           |            | 25      | 12        | 13.38               | 13.52                | 13.58              | 0-3                       | 0        |
|           |            | 25      | 24        | 13.32               | 13.48                | 13.52              | 0-3                       | 0        |
|           |            | 50      | 0         | 13.33               | 13.56                | 13.52              | 0-3                       | 0        |

## LTE Band 4 \_ 15 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]  |                      |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|----------------------|----------------------|----------------------|---------------------------|----------|
|           |            |         |           | 20025 Ch. 1717.5 MHz | 20175 Ch. 1732.5 MHz | 20325 Ch. 1747.5 MHz |                           |          |
| 15 MHz    | QPSK       | 1       | 0         | 13.40                | 13.58                | 13.51                | 0                         | 0        |
|           |            | 1       | 36        | 13.33                | 13.38                | 13.35                | 0                         | 0        |
|           |            | 1       | 74        | 13.32                | 13.39                | 13.30                | 0                         | 0        |
|           |            | 36      | 0         | 13.43                | 13.52                | 13.48                | 0-1                       | 0        |
|           |            | 36      | 18        | 13.36                | 13.45                | 13.43                | 0-1                       | 0        |
|           |            | 36      | 39        | 13.33                | 13.39                | 13.37                | 0-1                       | 0        |
|           |            | 75      | 0         | 13.36                | 13.47                | 13.45                | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 13.81                | 13.75                | 14.01                | 0-1                       | 0        |
|           |            | 1       | 36        | 13.69                | 13.58                | 13.85                | 0-1                       | 0        |
|           |            | 1       | 74        | 13.66                | 13.51                | 13.79                | 0-1                       | 0        |
|           |            | 36      | 0         | 13.47                | 13.60                | 13.54                | 0-2                       | 0        |
|           |            | 36      | 18        | 13.47                | 13.53                | 13.48                | 0-2                       | 0        |
|           |            | 36      | 39        | 13.41                | 13.45                | 13.42                | 0-2                       | 0        |
|           |            | 75      | 0         | 13.45                | 13.47                | 13.47                | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 13.77                | 13.90                | 13.78                | 0-2                       | 0        |
|           |            | 1       | 36        | 13.71                | 13.77                | 13.63                | 0-2                       | 0        |
|           |            | 1       | 74        | 13.64                | 13.72                | 13.57                | 0-2                       | 0        |
|           |            | 36      | 0         | 13.53                | 13.62                | 13.61                | 0-3                       | 0        |
|           |            | 36      | 18        | 13.46                | 13.60                | 13.58                | 0-3                       | 0        |
|           |            | 36      | 39        | 13.37                | 13.55                | 13.46                | 0-3                       | 0        |
|           |            | 75      | 0         | 13.48                | 13.50                | 13.48                | 0-3                       | 0        |

## LTE Band 4 \_ 20 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]  | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|----------------------|---------------------------|----------|
|           |            |         |           | 20175 Ch. 1732.5 MHz |                           |          |
| 20 MHz    | QPSK       | 1       | 0         | 13.45                | 0                         | 0        |
|           |            | 1       | 49        | 13.36                | 0                         | 0        |
|           |            | 1       | 99        | 13.23                | 0                         | 0        |
|           |            | 50      | 0         | 13.55                | 0-1                       | 0        |
|           |            | 50      | 25        | 13.49                | 0-1                       | 0        |
|           |            | 50      | 49        | 13.41                | 0-1                       | 0        |
|           |            | 100     | 0         | 13.49                | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 13.98                | 0-1                       | 0        |
|           |            | 1       | 49        | 13.85                | 0-1                       | 0        |
|           |            | 1       | 99        | 13.79                | 0-1                       | 0        |
|           |            | 50      | 0         | 13.62                | 0-2                       | 0        |
|           |            | 50      | 25        | 13.56                | 0-2                       | 0        |
|           |            | 50      | 49        | 13.47                | 0-2                       | 0        |
|           |            | 100     | 0         | 13.54                | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 13.81                | 0-2                       | 0        |
|           |            | 1       | 49        | 13.68                | 0-2                       | 0        |
|           |            | 1       | 99        | 13.57                | 0-2                       | 0        |
|           |            | 50      | 0         | 13.69                | 0-3                       | 0        |
|           |            | 50      | 25        | 13.60                | 0-3                       | 0        |
|           |            | 50      | 49        | 13.56                | 0-3                       | 0        |
|           |            | 100     | 0         | 13.58                | 0-3                       | 0        |

### [ LTE Band 5 Conducted Power ]

LTE Band 5 \_ 1.4 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]    |                        |                        | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|------------------------|------------------------|------------------------|---------------------------|----------|
|           |            |         |           | 20407 Ch.<br>824.7 MHz | 20525 Ch.<br>836.5 MHz | 20643 Ch.<br>848.3 MHz |                           |          |
| 1.4 MHz   | QPSK       | 1       | 0         | 18.41                  | 18.37                  | 18.07                  | 0                         | 0        |
|           |            | 1       | 3         | 18.49                  | 18.40                  | 18.12                  | 0                         | 0        |
|           |            | 1       | 5         | 18.39                  | 18.32                  | 18.03                  | 0                         | 0        |
|           |            | 3       | 0         | 18.41                  | 18.35                  | 18.14                  | 0                         | 0        |
|           |            | 3       | 1         | 18.44                  | 18.34                  | 18.15                  | 0                         | 0        |
|           |            | 3       | 3         | 18.36                  | 18.31                  | 18.16                  | 0                         | 0        |
|           |            | 6       | 0         | 18.42                  | 18.34                  | 18.24                  | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 18.54                  | 18.51                  | 18.19                  | 0-1                       | 0        |
|           |            | 1       | 3         | 18.64                  | 18.54                  | 18.25                  | 0-1                       | 0        |
|           |            | 1       | 5         | 18.54                  | 18.49                  | 18.21                  | 0-1                       | 0        |
|           |            | 3       | 0         | 18.51                  | 18.45                  | 18.11                  | 0-1                       | 0        |
|           |            | 3       | 1         | 18.51                  | 18.49                  | 18.15                  | 0-1                       | 0        |
|           |            | 3       | 3         | 18.48                  | 18.42                  | 18.11                  | 0-1                       | 0        |
|           |            | 6       | 0         | 18.45                  | 18.51                  | 18.28                  | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 18.74                  | 18.59                  | 18.26                  | 0-2                       | 0        |
|           |            | 1       | 3         | 18.80                  | 18.66                  | 18.28                  | 0-2                       | 0        |
|           |            | 1       | 5         | 18.75                  | 18.61                  | 18.22                  | 0-2                       | 0        |
|           |            | 3       | 0         | 18.64                  | 18.49                  | 18.25                  | 0-2                       | 0        |
|           |            | 3       | 1         | 18.70                  | 18.52                  | 18.31                  | 0-2                       | 0        |
|           |            | 3       | 3         | 18.68                  | 18.46                  | 18.28                  | 0-2                       | 0        |
|           |            | 6       | 0         | 18.50                  | 18.54                  | 18.28                  | 0-3                       | 0        |

LTE Band 5 \_ 3 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]    |                        |                        | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|------------------------|------------------------|------------------------|---------------------------|----------|
|           |            |         |           | 20415 Ch.<br>825.5 MHz | 20525 Ch.<br>836.5 MHz | 20635 Ch.<br>847.5 MHz |                           |          |
| 3 MHz     | QPSK       | 1       | 0         | 18.40                  | 18.39                  | 18.20                  | 0                         | 0        |
|           |            | 1       | 7         | 18.50                  | 18.43                  | 18.29                  | 0                         | 0        |
|           |            | 1       | 14        | 18.35                  | 18.31                  | 18.14                  | 0                         | 0        |
|           |            | 8       | 0         | 18.41                  | 18.37                  | 18.22                  | 0-1                       | 0        |
|           |            | 8       | 3         | 18.46                  | 18.44                  | 18.24                  | 0-1                       | 0        |
|           |            | 8       | 7         | 18.43                  | 18.40                  | 18.24                  | 0-1                       | 0        |
|           |            | 15      | 0         | 18.46                  | 18.41                  | 18.26                  | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 18.93                  | 18.63                  | 18.77                  | 0-1                       | 0        |
|           |            | 1       | 7         | 19.00                  | 18.72                  | 18.85                  | 0-1                       | 0        |
|           |            | 1       | 14        | 18.87                  | 18.62                  | 18.73                  | 0-1                       | 0        |
|           |            | 8       | 0         | 18.55                  | 18.42                  | 18.33                  | 0-2                       | 0        |
|           |            | 8       | 3         | 18.58                  | 18.40                  | 18.34                  | 0-2                       | 0        |
|           |            | 8       | 7         | 18.52                  | 18.36                  | 18.29                  | 0-2                       | 0        |
|           |            | 15      | 0         | 18.54                  | 18.49                  | 18.31                  | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 18.75                  | 18.52                  | 18.37                  | 0-2                       | 0        |
|           |            | 1       | 7         | 18.76                  | 18.64                  | 18.47                  | 0-2                       | 0        |
|           |            | 1       | 14        | 18.44                  | 18.47                  | 18.30                  | 0-2                       | 0        |
|           |            | 8       | 0         | 18.62                  | 18.50                  | 18.30                  | 0-3                       | 0        |
|           |            | 8       | 3         | 18.59                  | 18.49                  | 18.30                  | 0-3                       | 0        |
|           |            | 8       | 7         | 18.60                  | 18.44                  | 18.25                  | 0-3                       | 0        |
|           |            | 15      | 0         | 18.57                  | 18.42                  | 18.42                  | 0-3                       | 0        |

## LTE Band 5 \_ 5 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm] |                     |                     | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|---------------------|---------------------|---------------------|---------------------------|----------|
|           |            |         |           | 20425 Ch. 826.5 MHz | 20525 Ch. 836.5 MHz | 20625 Ch. 846.5 MHz |                           |          |
| 5 MHz     | QPSK       | 1       | 0         | 18.50               | 18.43               | 18.29               | 0                         | 0        |
|           |            | 1       | 12        | 18.41               | 18.36               | 18.24               | 0                         | 0        |
|           |            | 1       | 24        | 18.34               | 18.37               | 18.23               | 0                         | 0        |
|           |            | 12      | 0         | 18.48               | 18.44               | 18.27               | 0-1                       | 0        |
|           |            | 12      | 6         | 18.48               | 18.43               | 18.29               | 0-1                       | 0        |
|           |            | 12      | 11        | 18.43               | 18.37               | 18.24               | 0-1                       | 0        |
|           |            | 25      | 0         | 18.47               | 18.43               | 18.31               | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 18.84               | 18.61               | 18.81               | 0-1                       | 0        |
|           |            | 1       | 12        | 18.80               | 18.55               | 18.73               | 0-1                       | 0        |
|           |            | 1       | 24        | 18.75               | 18.50               | 18.65               | 0-1                       | 0        |
|           |            | 12      | 0         | 18.54               | 18.52               | 18.39               | 0-2                       | 0        |
|           |            | 12      | 6         | 18.48               | 18.49               | 18.37               | 0-2                       | 0        |
|           |            | 12      | 11        | 18.46               | 18.49               | 18.33               | 0-2                       | 0        |
|           |            | 25      | 0         | 18.48               | 18.45               | 18.31               | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 18.85               | 18.79               | 18.57               | 0-2                       | 0        |
|           |            | 1       | 12        | 18.81               | 18.72               | 18.54               | 0-2                       | 0        |
|           |            | 1       | 24        | 18.73               | 18.66               | 18.51               | 0-2                       | 0        |
|           |            | 12      | 0         | 18.55               | 18.59               | 18.47               | 0-3                       | 0        |
|           |            | 12      | 6         | 18.56               | 18.60               | 18.47               | 0-3                       | 0        |
|           |            | 12      | 11        | 18.51               | 18.59               | 18.42               | 0-3                       | 0        |
|           |            | 25      | 0         | 18.54               | 18.43               | 18.39               | 0-3                       | 0        |

## LTE Band 5 \_ 10 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm] | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|---------------------|---------------------------|----------|
|           |            |         |           | 20525 Ch. 836.5 MHz |                           |          |
| 10 MHz    | QPSK       | 1       | 0         | 18.32               | 0                         | 0        |
|           |            | 1       | 24        | 18.29               | 0                         | 0        |
|           |            | 1       | 49        | 18.25               | 0                         | 0        |
|           |            | 25      | 0         | 18.47               | 0-1                       | 0        |
|           |            | 25      | 12        | 18.43               | 0-1                       | 0        |
|           |            | 25      | 24        | 18.38               | 0-1                       | 0        |
|           |            | 50      | 0         | 18.44               | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 18.55               | 0-1                       | 0        |
|           |            | 1       | 24        | 18.52               | 0-1                       | 0        |
|           |            | 1       | 49        | 18.43               | 0-1                       | 0        |
|           |            | 25      | 0         | 18.51               | 0-2                       | 0        |
|           |            | 25      | 12        | 18.48               | 0-2                       | 0        |
|           |            | 25      | 24        | 18.44               | 0-2                       | 0        |
|           |            | 50      | 0         | 18.46               | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 18.55               | 0-2                       | 0        |
|           |            | 1       | 24        | 18.47               | 0-2                       | 0        |
|           |            | 1       | 49        | 18.44               | 0-2                       | 0        |
|           |            | 25      | 0         | 18.50               | 0-3                       | 0        |
|           |            | 25      | 12        | 18.51               | 0-3                       | 0        |
|           |            | 25      | 24        | 18.45               | 0-3                       | 0        |
|           |            | 50      | 0         | 18.50               | 0-3                       | 0        |

### [LTE Band 12 Conducted Power]

LTE Band 12 \_ 1.4 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]    |                        |                        | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|------------------------|------------------------|------------------------|---------------------------|----------|
|           |            |         |           | 23017 Ch.<br>699.7 MHz | 23095 Ch.<br>707.5 MHz | 23173 Ch.<br>715.3 MHz |                           |          |
| 1.4 MHz   | QPSK       | 1       | 0         | 18.55                  | 18.42                  | 18.27                  | 0                         | 0        |
|           |            | 1       | 3         | 18.61                  | 18.49                  | 18.37                  | 0                         | 0        |
|           |            | 1       | 5         | 18.54                  | 18.41                  | 18.29                  | 0                         | 0        |
|           |            | 3       | 0         | 18.59                  | 18.46                  | 18.20                  | 0                         | 0        |
|           |            | 3       | 1         | 18.64                  | 18.52                  | 18.25                  | 0                         | 0        |
|           |            | 3       | 3         | 18.59                  | 18.45                  | 18.23                  | 0                         | 0        |
|           |            | 6       | 0         | 18.57                  | 18.51                  | 18.25                  | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 18.73                  | 18.92                  | 18.48                  | 0-1                       | 0        |
|           |            | 1       | 3         | 18.85                  | 19.00                  | 18.59                  | 0-1                       | 0        |
|           |            | 1       | 5         | 18.77                  | 18.92                  | 18.50                  | 0-1                       | 0        |
|           |            | 3       | 0         | 18.70                  | 18.53                  | 18.30                  | 0-1                       | 0        |
|           |            | 3       | 1         | 18.70                  | 18.60                  | 18.32                  | 0-1                       | 0        |
|           |            | 3       | 3         | 18.64                  | 18.53                  | 18.29                  | 0-1                       | 0        |
|           |            | 6       | 0         | 18.68                  | 18.59                  | 18.46                  | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 18.65                  | 18.67                  | 18.56                  | 0-2                       | 0        |
|           |            | 1       | 3         | 18.74                  | 18.74                  | 18.63                  | 0-2                       | 0        |
|           |            | 1       | 5         | 18.67                  | 18.68                  | 18.59                  | 0-2                       | 0        |
|           |            | 3       | 0         | 18.57                  | 18.78                  | 18.47                  | 0-2                       | 0        |
|           |            | 3       | 1         | 18.57                  | 18.80                  | 18.51                  | 0-2                       | 0        |
|           |            | 3       | 3         | 18.50                  | 18.79                  | 18.46                  | 0-2                       | 0        |
|           |            | 6       | 0         | 18.63                  | 18.57                  | 18.30                  | 0-3                       | 0        |

LTE Band 12 \_ 3 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]    |                        |                        | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|------------------------|------------------------|------------------------|---------------------------|----------|
|           |            |         |           | 23025 Ch.<br>700.5 MHz | 23095 Ch.<br>707.5 MHz | 23165 Ch.<br>714.5 MHz |                           |          |
| 3 MHz     | QPSK       | 1       | 0         | 18.56                  | 18.57                  | 18.19                  | 0                         | 0        |
|           |            | 1       | 7         | 18.65                  | 18.65                  | 18.28                  | 0                         | 0        |
|           |            | 1       | 14        | 18.53                  | 18.58                  | 18.21                  | 0                         | 0        |
|           |            | 8       | 0         | 18.59                  | 18.60                  | 18.27                  | 0-1                       | 0        |
|           |            | 8       | 3         | 18.59                  | 18.65                  | 18.29                  | 0-1                       | 0        |
|           |            | 8       | 7         | 18.53                  | 18.58                  | 18.27                  | 0-1                       | 0        |
|           |            | 15      | 0         | 18.57                  | 18.58                  | 18.32                  | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 18.65                  | 18.65                  | 18.26                  | 0-1                       | 0        |
|           |            | 1       | 7         | 18.76                  | 18.81                  | 18.34                  | 0-1                       | 0        |
|           |            | 1       | 14        | 18.69                  | 18.71                  | 18.26                  | 0-1                       | 0        |
|           |            | 8       | 0         | 18.74                  | 18.66                  | 18.46                  | 0-2                       | 0        |
|           |            | 8       | 3         | 18.75                  | 18.68                  | 18.48                  | 0-2                       | 0        |
|           |            | 8       | 7         | 18.69                  | 18.65                  | 18.42                  | 0-2                       | 0        |
|           |            | 15      | 0         | 18.77                  | 18.60                  | 18.36                  | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 18.85                  | 18.83                  | 18.36                  | 0-2                       | 0        |
|           |            | 1       | 7         | 18.95                  | 18.93                  | 18.45                  | 0-2                       | 0        |
|           |            | 1       | 14        | 18.84                  | 18.83                  | 18.38                  | 0-2                       | 0        |
|           |            | 8       | 0         | 18.68                  | 18.70                  | 18.37                  | 0-3                       | 0        |
|           |            | 8       | 3         | 18.62                  | 18.70                  | 18.43                  | 0-3                       | 0        |
|           |            | 8       | 7         | 18.57                  | 18.68                  | 18.39                  | 0-3                       | 0        |
|           |            | 15      | 0         | 18.63                  | 18.55                  | 18.39                  | 0-3                       | 0        |



## LTE Band 12\_ 5 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm] |                     |                     | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|---------------------|---------------------|---------------------|---------------------------|----------|
|           |            |         |           | 23035 Ch. 701.5 MHz | 23095 Ch. 707.5 MHz | 23155 Ch. 713.5 MHz |                           |          |
| 5 MHz     | QPSK       | 1       | 0         | 18.53               | 18.55               | 18.37               | 0                         | 0        |
|           |            | 1       | 12        | 18.50               | 18.53               | 18.30               | 0                         | 0        |
|           |            | 1       | 24        | 18.61               | 18.54               | 18.27               | 0                         | 0        |
|           |            | 12      | 0         | 18.57               | 18.57               | 18.43               | 0-1                       | 0        |
|           |            | 12      | 6         | 18.58               | 18.60               | 18.37               | 0-1                       | 0        |
|           |            | 12      | 11        | 18.57               | 18.58               | 18.35               | 0-1                       | 0        |
|           |            | 25      | 0         | 18.66               | 18.61               | 18.49               | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 18.95               | 18.74               | 18.91               | 0-1                       | 0        |
|           |            | 1       | 12        | 19.01               | 18.79               | 18.83               | 0-1                       | 0        |
|           |            | 1       | 24        | 19.06               | 18.76               | 18.80               | 0-1                       | 0        |
|           |            | 12      | 0         | 18.61               | 18.62               | 18.45               | 0-2                       | 0        |
|           |            | 12      | 6         | 18.66               | 18.65               | 18.37               | 0-2                       | 0        |
|           |            | 12      | 11        | 18.62               | 18.52               | 18.36               | 0-2                       | 0        |
|           |            | 25      | 0         | 18.70               | 18.59               | 18.52               | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 18.86               | 18.69               | 18.40               | 0-2                       | 0        |
|           |            | 1       | 12        | 18.84               | 18.66               | 18.32               | 0-2                       | 0        |
|           |            | 1       | 24        | 18.90               | 18.64               | 18.41               | 0-2                       | 0        |
|           |            | 12      | 0         | 18.60               | 18.63               | 18.53               | 0-3                       | 0        |
|           |            | 12      | 6         | 18.63               | 18.65               | 18.45               | 0-3                       | 0        |
|           |            | 12      | 11        | 18.61               | 18.66               | 18.43               | 0-3                       | 0        |
|           |            | 25      | 0         | 18.73               | 18.59               | 18.57               | 0-3                       | 0        |

## LTE Band 12\_ 10 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm] | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|---------------------|---------------------------|----------|
|           |            |         |           | 23095 Ch. 707.5 MHz |                           |          |
| 10 MHz    | QPSK       | 1       | 0         | 18.53               | 0                         | 0        |
|           |            | 1       | 24        | 18.61               | 0                         | 0        |
|           |            | 1       | 49        | 18.60               | 0                         | 0        |
|           |            | 25      | 0         | 18.62               | 0-1                       | 0        |
|           |            | 25      | 12        | 18.65               | 0-1                       | 0        |
|           |            | 25      | 24        | 18.64               | 0-1                       | 0        |
|           |            | 50      | 0         | 18.64               | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 18.83               | 0-1                       | 0        |
|           |            | 1       | 24        | 18.99               | 0-1                       | 0        |
|           |            | 1       | 49        | 18.92               | 0-1                       | 0        |
|           |            | 25      | 0         | 18.60               | 0-2                       | 0        |
|           |            | 25      | 12        | 18.61               | 0-2                       | 0        |
|           |            | 25      | 24        | 18.60               | 0-2                       | 0        |
|           |            | 50      | 0         | 18.62               | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 18.85               | 0-2                       | 0        |
|           |            | 1       | 24        | 18.89               | 0-2                       | 0        |
|           |            | 1       | 49        | 18.95               | 0-2                       | 0        |
|           |            | 25      | 0         | 18.66               | 0-3                       | 0        |
|           |            | 25      | 12        | 18.66               | 0-3                       | 0        |
|           |            | 25      | 24        | 18.67               | 0-3                       | 0        |
|           |            | 50      | 0         | 18.64               | 0-3                       | 0        |

### [LTE Band 13 Conducted Power]

LTE Band 13 \_ 5 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm] | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|---------------------|---------------------------|----------|
|           |            |         |           | 23230 Ch. 782 MHz   |                           |          |
| 5 MHz     | QPSK       | 1       | 0         | 18.44               | 0                         | 0        |
|           |            | 1       | 24        | 18.41               | 0                         | 0        |
|           |            | 1       | 49        | 18.39               | 0                         | 0        |
|           |            | 25      | 0         | 18.48               | 0-1                       | 0        |
|           |            | 25      | 12        | 18.48               | 0-1                       | 0        |
|           |            | 25      | 24        | 18.48               | 0-1                       | 0        |
|           |            | 50      | 0         | 18.46               | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 18.58               | 0-1                       | 0        |
|           |            | 1       | 24        | 18.59               | 0-1                       | 0        |
|           |            | 1       | 49        | 18.59               | 0-1                       | 0        |
|           |            | 25      | 0         | 18.49               | 0-2                       | 0        |
|           |            | 25      | 12        | 18.50               | 0-2                       | 0        |
|           |            | 25      | 24        | 18.48               | 0-2                       | 0        |
|           |            | 50      | 0         | 18.46               | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 18.69               | 0-2                       | 0        |
|           |            | 1       | 24        | 18.69               | 0-2                       | 0        |
|           |            | 1       | 49        | 18.64               | 0-2                       | 0        |
|           |            | 25      | 0         | 18.44               | 0-3                       | 0        |
|           |            | 25      | 12        | 18.46               | 0-3                       | 0        |
|           |            | 25      | 24        | 18.43               | 0-3                       | 0        |
|           |            | 50      | 0         | 18.52               | 0-3                       | 0        |

LTE Band 13 \_ 10 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm] | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|---------------------|---------------------------|----------|
|           |            |         |           | 23230 Ch. 782 MHz   |                           |          |
| 10 MHz    | QPSK       | 1       | 0         | 18.29               | 0                         | 0        |
|           |            | 1       | 24        | 18.40               | 0                         | 0        |
|           |            | 1       | 49        | 18.36               | 0                         | 0        |
|           |            | 25      | 0         | 18.53               | 0-1                       | 0        |
|           |            | 25      | 12        | 18.51               | 0-1                       | 0        |
|           |            | 25      | 24        | 18.50               | 0-1                       | 0        |
|           |            | 50      | 0         | 18.55               | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 18.77               | 0-1                       | 0        |
|           |            | 1       | 24        | 18.91               | 0-1                       | 0        |
|           |            | 1       | 49        | 18.84               | 0-1                       | 0        |
|           |            | 25      | 0         | 18.53               | 0-2                       | 0        |
|           |            | 25      | 12        | 18.55               | 0-2                       | 0        |
|           |            | 25      | 24        | 18.52               | 0-2                       | 0        |
|           |            | 50      | 0         | 18.54               | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 18.14               | 0-2                       | 0        |
|           |            | 1       | 24        | 18.25               | 0-2                       | 0        |
|           |            | 1       | 49        | 18.28               | 0-2                       | 0        |
|           |            | 25      | 0         | 18.55               | 0-3                       | 0        |
|           |            | 25      | 12        | 18.55               | 0-3                       | 0        |
|           |            | 25      | 24        | 18.49               | 0-3                       | 0        |
|           |            | 50      | 0         | 18.54               | 0-3                       | 0        |

### [ LTE Band 17 conducted Power ]

LTE Band 17 \_ 5 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm] |                     |                     | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|---------------------|---------------------|---------------------|---------------------------|----------|
|           |            |         |           | 23755 Ch. 706.5 MHz | 23790 Ch. 710.0 MHz | 23825 Ch. 713.5 MHz |                           |          |
| 5 MHz     | QPSK       | 1       | 0         |                     | 18.43               |                     | 0                         | 0        |
|           |            | 1       | 12        |                     | 18.41               |                     | 0                         | 0        |
|           |            | 1       | 24        |                     | 18.45               |                     | 0                         | 0        |
|           |            | 12      | 0         |                     | 18.46               |                     | 0-1                       | 0        |
|           |            | 12      | 6         |                     | 18.50               |                     | 0-1                       | 0        |
|           |            | 12      | 11        |                     | 18.51               |                     | 0-1                       | 0        |
|           |            | 25      | 0         |                     | 18.54               |                     | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         |                     | 18.71               |                     | 0-1                       | 0        |
|           |            | 1       | 12        |                     | 18.75               |                     | 0-1                       | 0        |
|           |            | 1       | 24        |                     | 18.75               |                     | 0-1                       | 0        |
|           |            | 12      | 0         |                     | 18.54               |                     | 0-2                       | 0        |
|           |            | 12      | 6         |                     | 18.57               |                     | 0-2                       | 0        |
|           |            | 12      | 11        |                     | 18.51               |                     | 0-2                       | 0        |
|           |            | 25      | 0         |                     | 18.56               |                     | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         |                     | 18.66               |                     | 0-2                       | 0        |
|           |            | 1       | 12        |                     | 18.66               |                     | 0-2                       | 0        |
|           |            | 1       | 24        |                     | 18.70               |                     | 0-2                       | 0        |
|           |            | 12      | 0         |                     | 18.61               |                     | 0-3                       | 0        |
|           |            | 12      | 6         |                     | 18.64               |                     | 0-3                       | 0        |
|           |            | 12      | 11        |                     | 18.62               |                     | 0-3                       | 0        |
|           |            | 25      | 0         |                     | 18.58               |                     | 0-3                       | 0        |

LTE Band 17 \_ 10 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm] | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|---------------------|---------------------------|----------|
|           |            |         |           | 23790 Ch. 710.0 MHz |                           |          |
| 10 MHz    | QPSK       | 1       | 0         | 18.50               | 0                         | 0        |
|           |            | 1       | 24        | 18.48               | 0                         | 0        |
|           |            | 1       | 49        | 18.47               | 0                         | 0        |
|           |            | 25      | 0         | 18.53               | 0-1                       | 0        |
|           |            | 25      | 12        | 18.55               | 0-1                       | 0        |
|           |            | 25      | 24        | 18.55               | 0-1                       | 0        |
|           |            | 50      | 0         | 18.50               | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 18.85               | 0-1                       | 0        |
|           |            | 1       | 24        | 18.89               | 0-1                       | 0        |
|           |            | 1       | 49        | 18.90               | 0-1                       | 0        |
|           |            | 25      | 0         | 18.56               | 0-2                       | 0        |
|           |            | 25      | 12        | 18.57               | 0-2                       | 0        |
|           |            | 25      | 24        | 18.55               | 0-2                       | 0        |
|           |            | 50      | 0         | 18.58               | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 18.87               | 0-2                       | 0        |
|           |            | 1       | 24        | 18.86               | 0-2                       | 0        |
|           |            | 1       | 49        | 18.88               | 0-2                       | 0        |
|           |            | 25      | 0         | 18.61               | 0-3                       | 0        |
|           |            | 25      | 12        | 18.65               | 0-3                       | 0        |
|           |            | 25      | 24        | 18.62               | 0-3                       | 0        |
|           |            | 50      | 0         | 18.58               | 0-3                       | 0        |

# [ LTE Band 26 Conducted Power ]

LTE Band 26\_ 1.4 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]    |                        |                        | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|------------------------|------------------------|------------------------|---------------------------|----------|
|           |            |         |           | 26697 Ch.<br>814.7 MHz | 26865 Ch.<br>831.5 MHz | 27033 Ch.<br>848.3 MHz |                           |          |
| 1.4 MHz   | QPSK       | 1       | 0         | 18.18                  | 18.21                  | 18.29                  | 0                         | 0        |
|           |            | 1       | 3         | 18.29                  | 18.23                  | 18.37                  | 0                         | 0        |
|           |            | 1       | 5         | 18.17                  | 18.15                  | 18.29                  | 0                         | 0        |
|           |            | 3       | 0         | 18.28                  | 18.26                  | 18.30                  | 0                         | 0        |
|           |            | 3       | 1         | 18.31                  | 18.31                  | 18.30                  | 0                         | 0        |
|           |            | 3       | 3         | 18.26                  | 18.25                  | 18.28                  | 0                         | 0        |
|           |            | 6       | 0         | 18.29                  | 18.34                  | 18.31                  | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 18.75                  | 18.35                  | 18.30                  | 0-1                       | 0        |
|           |            | 1       | 3         | 18.84                  | 18.44                  | 18.30                  | 0-1                       | 0        |
|           |            | 1       | 5         | 18.80                  | 18.38                  | 18.21                  | 0-1                       | 0        |
|           |            | 3       | 0         | 18.38                  | 18.26                  | 18.35                  | 0-1                       | 0        |
|           |            | 3       | 1         | 18.41                  | 18.28                  | 18.41                  | 0-1                       | 0        |
|           |            | 3       | 3         | 18.35                  | 18.22                  | 18.35                  | 0-1                       | 0        |
|           |            | 6       | 0         | 18.42                  | 18.39                  | 18.32                  | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 18.62                  | 18.36                  | 18.60                  | 0-2                       | 0        |
|           |            | 1       | 3         | 18.63                  | 18.42                  | 18.67                  | 0-2                       | 0        |
|           |            | 1       | 5         | 18.57                  | 18.35                  | 18.58                  | 0-2                       | 0        |
|           |            | 3       | 0         | 18.51                  | 18.41                  | 18.51                  | 0-2                       | 0        |
|           |            | 3       | 1         | 18.53                  | 18.45                  | 18.57                  | 0-2                       | 0        |
|           |            | 3       | 3         | 18.46                  | 18.38                  | 18.55                  | 0-2                       | 0        |
|           |            | 6       | 0         | 18.40                  | 18.40                  | 18.33                  | 0-3                       | 0        |

LTE Band 26\_ 3 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]    |                        |                        | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|------------------------|------------------------|------------------------|---------------------------|----------|
|           |            |         |           | 26705 Ch.<br>815.5 MHz | 26865 Ch.<br>831.5 MHz | 27025 Ch.<br>847.5 MHz |                           |          |
| 3 MHz     | QPSK       | 1       | 0         | 18.29                  | 18.31                  | 18.37                  | 0                         | 0        |
|           |            | 1       | 7         | 18.42                  | 18.38                  | 18.44                  | 0                         | 0        |
|           |            | 1       | 14        | 18.31                  | 18.27                  | 18.31                  | 0                         | 0        |
|           |            | 8       | 0         | 18.33                  | 18.31                  | 18.36                  | 0-1                       | 0        |
|           |            | 8       | 3         | 18.37                  | 18.34                  | 18.40                  | 0-1                       | 0        |
|           |            | 8       | 7         | 18.35                  | 18.28                  | 18.34                  | 0-1                       | 0        |
|           |            | 15      | 0         | 18.42                  | 18.34                  | 18.40                  | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 18.49                  | 18.55                  | 18.76                  | 0-1                       | 0        |
|           |            | 1       | 7         | 18.63                  | 18.63                  | 18.89                  | 0-1                       | 0        |
|           |            | 1       | 14        | 18.51                  | 18.49                  | 18.71                  | 0-1                       | 0        |
|           |            | 8       | 0         | 18.46                  | 18.49                  | 18.41                  | 0-2                       | 0        |
|           |            | 8       | 3         | 18.48                  | 18.49                  | 18.43                  | 0-2                       | 0        |
|           |            | 8       | 7         | 18.43                  | 18.45                  | 18.37                  | 0-2                       | 0        |
|           |            | 15      | 0         | 18.44                  | 18.44                  | 18.45                  | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 18.62                  | 18.48                  | 18.23                  | 0-2                       | 0        |
|           |            | 1       | 7         | 18.73                  | 18.54                  | 18.35                  | 0-2                       | 0        |
|           |            | 1       | 14        | 18.66                  | 18.42                  | 18.21                  | 0-2                       | 0        |
|           |            | 8       | 0         | 18.45                  | 18.36                  | 18.48                  | 0-3                       | 0        |
|           |            | 8       | 3         | 18.48                  | 18.41                  | 18.51                  | 0-3                       | 0        |
|           |            | 8       | 7         | 18.40                  | 18.36                  | 18.46                  | 0-3                       | 0        |
|           |            | 15      | 0         | 18.47                  | 18.51                  | 18.42                  | 0-3                       | 0        |

## LTE Band 26\_ 5 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]    |                        |                        | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|------------------------|------------------------|------------------------|---------------------------|----------|
|           |            |         |           | 26715 Ch.<br>816.5 MHz | 26865 Ch.<br>831.5 MHz | 27015 Ch.<br>846.5 MHz |                           |          |
| 5 MHz     | QPSK       | 1       | 0         | 18.40                  | 18.33                  | 18.34                  | 0                         | 0        |
|           |            | 1       | 12        | 18.33                  | 18.33                  | 18.27                  | 0                         | 0        |
|           |            | 1       | 24        | 18.36                  | 18.28                  | 18.23                  | 0                         | 0        |
|           |            | 12      | 0         | 18.37                  | 18.32                  | 18.42                  | 0-1                       | 0        |
|           |            | 12      | 6         | 18.39                  | 18.36                  | 18.43                  | 0-1                       | 0        |
|           |            | 12      | 11        | 18.36                  | 18.33                  | 18.41                  | 0-1                       | 0        |
|           |            | 25      | 0         | 18.32                  | 18.34                  | 18.45                  | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 18.60                  | 18.83                  | 18.74                  | 0-1                       | 0        |
|           |            | 1       | 12        | 18.63                  | 18.77                  | 18.73                  | 0-1                       | 0        |
|           |            | 1       | 24        | 18.56                  | 18.51                  | 18.65                  | 0-1                       | 0        |
|           |            | 12      | 0         | 18.34                  | 18.50                  | 18.39                  | 0-2                       | 0        |
|           |            | 12      | 6         | 18.38                  | 18.49                  | 18.39                  | 0-2                       | 0        |
|           |            | 12      | 11        | 18.35                  | 18.46                  | 18.37                  | 0-2                       | 0        |
|           |            | 25      | 0         | 18.40                  | 18.50                  | 18.38                  | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 18.48                  | 18.69                  | 18.56                  | 0-2                       | 0        |
|           |            | 1       | 12        | 18.44                  | 18.62                  | 18.57                  | 0-2                       | 0        |
|           |            | 1       | 24        | 18.48                  | 18.62                  | 18.44                  | 0-2                       | 0        |
|           |            | 12      | 0         | 18.42                  | 18.54                  | 18.47                  | 0-3                       | 0        |
|           |            | 12      | 6         | 18.43                  | 18.55                  | 18.44                  | 0-3                       | 0        |
|           |            | 12      | 11        | 18.41                  | 18.52                  | 18.41                  | 0-3                       | 0        |
|           |            | 25      | 0         | 18.42                  | 18.47                  | 18.45                  | 0-3                       | 0        |

## LTE Band 26\_ 10 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]  |                        |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|----------------------|------------------------|----------------------|---------------------------|----------|
|           |            |         |           | 26740 Ch.<br>819 MHz | 26865 Ch.<br>831.5 MHz | 26990 Ch.<br>844 MHz |                           |          |
| 10 MHz    | QPSK       | 1       | 0         | 18.35                | 18.30                  | 18.42                | 0                         | 0        |
|           |            | 1       | 24        | 18.39                | 18.33                  | 18.43                | 0                         | 0        |
|           |            | 1       | 49        | 18.32                | 18.42                  | 18.39                | 0                         | 0        |
|           |            | 25      | 0         | 18.48                | 18.38                  | 18.36                | 0-1                       | 0        |
|           |            | 25      | 12        | 18.47                | 18.37                  | 18.38                | 0-1                       | 0        |
|           |            | 25      | 24        | 18.40                | 18.31                  | 18.39                | 0-1                       | 0        |
|           |            | 50      | 0         | 18.43                | 18.36                  | 18.35                | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 18.35                | 18.52                  | 18.43                | 0-1                       | 0        |
|           |            | 1       | 24        | 18.43                | 18.55                  | 18.46                | 0-1                       | 0        |
|           |            | 1       | 49        | 18.37                | 18.60                  | 18.40                | 0-1                       | 0        |
|           |            | 25      | 0         | 18.56                | 18.41                  | 18.42                | 0-2                       | 0        |
|           |            | 25      | 12        | 18.57                | 18.43                  | 18.38                | 0-2                       | 0        |
|           |            | 25      | 24        | 18.50                | 18.37                  | 18.42                | 0-2                       | 0        |
|           |            | 50      | 0         | 18.55                | 18.45                  | 18.35                | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 18.70                | 18.61                  | 18.44                | 0-2                       | 0        |
|           |            | 1       | 24        | 18.74                | 18.63                  | 18.50                | 0-2                       | 0        |
|           |            | 1       | 49        | 18.71                | 18.69                  | 18.51                | 0-2                       | 0        |
|           |            | 25      | 0         | 18.47                | 18.52                  | 18.39                | 0-3                       | 0        |
|           |            | 25      | 12        | 18.46                | 18.53                  | 18.38                | 0-3                       | 0        |
|           |            | 25      | 24        | 18.42                | 18.46                  | 18.40                | 0-3                       | 0        |
|           |            | 50      | 0         | 18.52                | 18.44                  | 18.42                | 0-3                       | 0        |

## LTE Band 26\_ 15 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]    | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|------------------------|---------------------------|----------|
|           |            |         |           | 26865 Ch.<br>831.5 MHz |                           |          |
| 15 MHz    | QPSK       | 1       | 0         | 18.30                  | 0                         | 0        |
|           |            | 1       | 36        | 18.28                  | 0                         | 0        |
|           |            | 1       | 74        | 18.34                  | 0                         | 0        |
|           |            | 36      | 0         | 18.39                  | 0-1                       | 0        |
|           |            | 36      | 18        | 18.36                  | 0-1                       | 0        |
|           |            | 36      | 39        | 18.31                  | 0-1                       | 0        |
|           |            | 75      | 0         | 18.37                  | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 18.84                  | 0-1                       | 0        |
|           |            | 1       | 36        | 18.85                  | 0-1                       | 0        |
|           |            | 1       | 74        | 18.82                  | 0-1                       | 0        |
|           |            | 36      | 0         | 18.52                  | 0-2                       | 0        |
|           |            | 36      | 18        | 18.49                  | 0-2                       | 0        |
|           |            | 36      | 39        | 18.43                  | 0-2                       | 0        |
|           |            | 75      | 0         | 18.49                  | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 18.26                  | 0-2                       | 0        |
|           |            | 1       | 36        | 18.21                  | 0-2                       | 0        |
|           |            | 1       | 74        | 18.20                  | 0-2                       | 0        |
|           |            | 36      | 0         | 18.55                  | 0-3                       | 0        |
|           |            | 36      | 18        | 18.53                  | 0-3                       | 0        |
|           |            | 36      | 39        | 18.43                  | 0-3                       | 0        |
|           |            | 75      | 0         | 18.44                  | 0-3                       | 0        |

### [ LTE Band 41 Conducted Power ]

LTE Band 41 \_ 5 MHz Bandwidth

| Band width | Modulation | RB Size | RB Offset | Reduced Power [dBm]  |                      |                      |                      |                      | MPR Allowed Per GPP [dB] | MPR [dB] |
|------------|------------|---------|-----------|----------------------|----------------------|----------------------|----------------------|----------------------|--------------------------|----------|
|            |            |         |           | 39750 Ch. 2506.0 MHz | 40185 Ch. 2549.5 MHz | 40620 Ch. 2593.0 MHz | 41055 Ch. 2636.5 MHz | 41490 Ch. 2680.0 MHz |                          |          |
| 5 MHz      | QPSK       | 1       | 0         | 16.53                | 16.55                | 16.56                | 16.65                | 16.52                | 0                        | 0        |
|            |            | 1       | 12        | 16.44                | 16.50                | 16.54                | 16.65                | 16.46                | 0                        | 0        |
|            |            | 1       | 24        | 16.44                | 16.50                | 16.56                | 16.76                | 16.47                | 0                        | 0        |
|            |            | 12      | 0         | 16.56                | 16.50                | 16.53                | 16.74                | 16.61                | 0-1                      | 0        |
|            |            | 12      | 6         | 16.56                | 16.54                | 16.61                | 16.74                | 16.58                | 0-1                      | 0        |
|            |            | 12      | 11        | 16.56                | 16.52                | 16.58                | 16.71                | 16.56                | 0-1                      | 0        |
|            |            | 25      | 0         | 16.51                | 16.47                | 16.54                | 16.72                | 16.54                | 0-1                      | 0        |
|            | 16QAM      | 1       | 0         | 16.70                | 16.64                | 16.72                | 16.87                | 16.70                | 0-1                      | 0        |
|            |            | 1       | 12        | 16.67                | 16.62                | 16.69                | 16.84                | 16.62                | 0-1                      | 0        |
|            |            | 1       | 24        | 16.71                | 16.68                | 16.73                | 16.93                | 16.66                | 0-1                      | 0        |
|            |            | 12      | 0         | 16.66                | 16.56                | 16.67                | 16.79                | 16.60                | 0-2                      | 0        |
|            |            | 12      | 6         | 16.67                | 16.61                | 16.67                | 16.83                | 16.64                | 0-2                      | 0        |
|            |            | 12      | 11        | 16.66                | 16.59                | 16.67                | 16.80                | 16.58                | 0-2                      | 0        |
|            |            | 25      | 0         | 16.68                | 16.62                | 16.70                | 16.85                | 16.66                | 0-2                      | 0        |
|            | 64QAM      | 1       | 0         | 16.43                | 16.36                | 16.41                | 16.60                | 16.47                | 0-2                      | 0        |
|            |            | 1       | 12        | 16.42                | 16.36                | 16.40                | 16.59                | 16.39                | 0-2                      | 0        |
|            |            | 1       | 24        | 16.37                | 16.36                | 16.44                | 16.64                | 16.38                | 0-2                      | 0        |
|            |            | 12      | 0         | 16.65                | 16.61                | 16.66                | 16.82                | 16.68                | 0-3                      | 0        |
|            |            | 12      | 6         | 16.67                | 16.64                | 16.70                | 16.83                | 16.69                | 0-3                      | 0        |
|            |            | 12      | 11        | 16.64                | 16.58                | 16.66                | 16.82                | 16.64                | 0-3                      | 0        |
|            |            | 25      | 0         | 16.67                | 16.64                | 16.69                | 16.88                | 16.69                | 0-3                      | 0        |

LTE Band 41 \_ 10 MHz Bandwidth

| Band width | Modulation | RB Size | RB Offset | Reduced Power [dBm]  |                      |                      |                      |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|------------|------------|---------|-----------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------------|----------|
|            |            |         |           | 39750 Ch. 2506.0 MHz | 40185 Ch. 2549.5 MHz | 40620 Ch. 2593.0 MHz | 41055 Ch. 2636.5 MHz | 41490 Ch. 2680.0 MHz |                           |          |
| 10 MHz     | QPSK       | 1       | 0         | 16.64                | 16.55                | 16.62                | 16.76                | 16.65                | 0                         | 0        |
|            |            | 1       | 24        | 16.58                | 16.52                | 16.61                | 16.65                | 16.56                | 0                         | 0        |
|            |            | 1       | 49        | 16.60                | 16.57                | 16.61                | 16.83                | 16.51                | 0                         | 0        |
|            |            | 25      | 0         | 16.61                | 16.50                | 16.55                | 16.77                | 16.64                | 0-1                       | 0        |
|            |            | 25      | 12        | 16.62                | 16.58                | 16.62                | 16.78                | 16.63                | 0-1                       | 0        |
|            |            | 25      | 24        | 16.52                | 16.50                | 16.61                | 16.70                | 16.58                | 0-1                       | 0        |
|            |            | 50      | 0         | 16.58                | 16.51                | 16.57                | 16.76                | 16.64                | 0-1                       | 0        |
|            | 16QAM      | 1       | 0         | 16.80                | 16.71                | 16.78                | 16.97                | 16.81                | 0-1                       | 0        |
|            |            | 1       | 24        | 16.75                | 16.65                | 16.74                | 16.89                | 16.70                | 0-1                       | 0        |
|            |            | 1       | 49        | 16.71                | 16.65                | 16.78                | 16.98                | 16.61                | 0-1                       | 0        |
|            |            | 25      | 0         | 16.73                | 16.62                | 16.72                | 16.89                | 16.71                | 0-2                       | 0        |
|            |            | 25      | 12        | 16.73                | 16.69                | 16.76                | 16.88                | 16.72                | 0-2                       | 0        |
|            |            | 25      | 24        | 16.68                | 16.62                | 16.74                | 16.86                | 16.69                | 0-2                       | 0        |
|            |            | 50      | 0         | 16.66                | 16.64                | 16.72                | 16.83                | 16.74                | 0-2                       | 0        |
|            | 64QAM      | 1       | 0         | 16.53                | 16.41                | 16.50                | 16.65                | 16.59                | 0-2                       | 0        |
|            |            | 1       | 24        | 16.43                | 16.37                | 16.46                | 16.60                | 16.49                | 0-2                       | 0        |
|            |            | 1       | 49        | 16.34                | 16.35                | 16.46                | 16.71                | 16.36                | 0-2                       | 0        |
|            |            | 25      | 0         | 16.72                | 16.64                | 16.72                | 16.91                | 16.76                | 0-3                       | 0        |
|            |            | 25      | 12        | 16.73                | 16.66                | 16.73                | 16.88                | 16.76                | 0-3                       | 0        |
|            |            | 25      | 24        | 16.69                | 16.62                | 16.72                | 16.89                | 16.70                | 0-3                       | 0        |
|            |            | 50      | 0         | 16.63                | 16.64                | 16.68                | 16.85                | 16.73                | 0-3                       | 0        |

LTE Band 41 \_ 15 MHz Bandwidth

| Band width | Modulation | RB Size | RB Offset | Reduced Power [dBm]  |                      |                      |                      |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|------------|------------|---------|-----------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------------|----------|
|            |            |         |           | 39750 Ch. 2506.0 MHz | 40185 Ch. 2549.5 MHz | 40620 Ch. 2593.0 MHz | 41055 Ch. 2636.5 MHz | 41490 Ch. 2680.0 MHz |                           |          |
| 15 MHz     | QPSK       | 1       | 0         | 16.53                | 16.46                | 16.53                | 16.67                | 16.55                | 0                         | 0        |
|            |            | 1       | 36        | 16.43                | 16.41                | 16.52                | 16.63                | 16.55                | 0                         | 0        |
|            |            | 1       | 74        | 16.46                | 16.47                | 16.56                | 16.74                | 16.46                | 0                         | 0        |
|            |            | 36      | 0         | 16.58                | 16.51                | 16.64                | 16.78                | 16.60                | 0-1                       | 0        |
|            |            | 36      | 18        | 16.57                | 16.59                | 16.65                | 16.79                | 16.67                | 0-1                       | 0        |
|            |            | 36      | 39        | 16.57                | 16.51                | 16.62                | 16.71                | 16.65                | 0-1                       | 0        |
|            |            | 75      | 0         | 16.50                | 16.53                | 16.58                | 16.73                | 16.49                | 0-1                       | 0        |
|            | 16QAM      | 1       | 0         | 16.78                | 16.66                | 16.78                | 16.95                | 16.73                | 0-1                       | 0        |
|            |            | 1       | 36        | 16.72                | 16.65                | 16.71                | 16.84                | 16.71                | 0-1                       | 0        |
|            |            | 1       | 74        | 16.71                | 16.73                | 16.85                | 16.96                | 16.66                | 0-1                       | 0        |
|            |            | 36      | 0         | 16.69                | 16.63                | 16.72                | 16.83                | 16.66                | 0-2                       | 0        |
|            |            | 36      | 18        | 16.67                | 16.66                | 16.73                | 16.86                | 16.71                | 0-2                       | 0        |
|            |            | 36      | 39        | 16.58                | 16.64                | 16.70                | 16.80                | 16.68                | 0-2                       | 0        |
|            |            | 75      | 0         | 16.70                | 16.63                | 16.72                | 16.86                | 16.60                | 0-2                       | 0        |
|            | 64QAM      | 1       | 0         | 16.49                | 16.38                | 16.47                | 16.69                | 16.53                | 0-2                       | 0        |
|            |            | 1       | 36        | 16.43                | 16.35                | 16.43                | 16.59                | 16.48                | 0-2                       | 0        |
|            |            | 1       | 74        | 16.32                | 16.37                | 16.48                | 16.65                | 16.38                | 0-2                       | 0        |
|            |            | 36      | 0         | 16.63                | 16.58                | 16.65                | 16.86                | 16.67                | 0-3                       | 0        |
|            |            | 36      | 18        | 16.67                | 16.60                | 16.73                | 16.85                | 16.73                | 0-3                       | 0        |
|            |            | 36      | 39        | 16.56                | 16.56                | 16.70                | 16.84                | 16.65                | 0-3                       | 0        |
|            |            | 75      | 0         | 16.66                | 16.63                | 16.69                | 16.84                | 16.68                | 0-3                       | 0        |

LTE Band 41 \_ 20 MHz Bandwidth

| Band width | Modulation | RB Size | RB Offset | Reduced Power [dBm]  |                      |                      |                      |                      | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|------------|------------|---------|-----------|----------------------|----------------------|----------------------|----------------------|----------------------|---------------------------|----------|
|            |            |         |           | 39750 Ch. 2506.0 MHz | 40185 Ch. 2549.5 MHz | 40620 Ch. 2593.0 MHz | 41055 Ch. 2636.5 MHz | 41490 Ch. 2680.0 MHz |                           |          |
| 20 MHz     | QPSK       | 1       | 0         | 16.61                | 16.47                | 16.53                | 16.72                | 16.65                | 0                         | 0        |
|            |            | 1       | 49        | 16.54                | 16.50                | 16.60                | 16.69                | 16.66                | 0                         | 0        |
|            |            | 1       | 99        | 16.46                | 16.47                | 16.56                | 16.74                | 16.52                | 0                         | 0        |
|            |            | 50      | 0         | 16.63                | 16.53                | 16.63                | 16.77                | 16.60                | 0-1                       | 0        |
|            |            | 50      | 25        | 16.60                | 16.54                | 16.63                | 16.80                | 16.52                | 0-1                       | 0        |
|            |            | 50      | 49        | 16.53                | 16.60                | 16.61                | 16.72                | 16.62                | 0-1                       | 0        |
|            |            | 100     | 0         | 16.58                | 16.54                | 16.61                | 16.77                | 16.56                | 0-1                       | 0        |
|            | 16QAM      | 1       | 0         | 16.85                | 16.71                | 16.82                | 16.95                | 16.78                | 0-1                       | 0        |
|            |            | 1       | 49        | 16.73                | 16.73                | 16.85                | 16.87                | 16.72                | 0-1                       | 0        |
|            |            | 1       | 99        | 16.69                | 16.71                | 16.85                | 16.92                | 16.60                | 0-1                       | 0        |
|            |            | 50      | 0         | 16.71                | 16.65                | 16.74                | 16.88                | 16.69                | 0-2                       | 0        |
|            |            | 50      | 25        | 16.68                | 16.64                | 16.72                | 16.85                | 16.66                | 0-2                       | 0        |
|            |            | 50      | 49        | 16.67                | 16.69                | 16.74                | 16.85                | 16.68                | 0-2                       | 0        |
|            |            | 100     | 0         | 16.67                | 16.63                | 16.73                | 16.90                | 16.60                | 0-2                       | 0        |
|            | 64QAM      | 1       | 0         | 16.44                | 16.37                | 16.44                | 16.64                | 16.47                | 0-2                       | 0        |
|            |            | 1       | 49        | 16.39                | 16.39                | 16.48                | 16.56                | 16.52                | 0-2                       | 0        |
|            |            | 1       | 99        | 16.31                | 16.39                | 16.45                | 16.61                | 16.33                | 0-2                       | 0        |
|            |            | 50      | 0         | 16.66                | 16.63                | 16.72                | 16.90                | 16.74                | 0-3                       | 0        |
|            |            | 50      | 25        | 16.67                | 16.62                | 16.70                | 16.90                | 16.64                | 0-3                       | 0        |
|            |            | 50      | 49        | 16.62                | 16.65                | 16.69                | 16.83                | 16.68                | 0-3                       | 0        |
|            |            | 100     | 0         | 16.63                | 16.67                | 16.71                | 16.85                | 16.90                | 0-3                       | 0        |

Note; LTE Band 41 has 5 required test channels per FCC KDB 447498 D01v06.



### [LTE Band 66 Conducted Power]

LTE Band 66 \_ 1.4 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]     |                        |                          | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|-------------------------|------------------------|--------------------------|---------------------------|----------|
|           |            |         |           | 131979Ch.<br>1710.7 MHz | 132322 Ch.<br>1745 MHz | 132665 Ch.<br>1779.3 MHz |                           |          |
| 1.4 MHz   | QPSK       | 1       | 0         | 13.18                   | 13.36                  | 13.36                    | 0                         | 0        |
|           |            | 1       | 3         | 13.22                   | 13.43                  | 13.38                    | 0                         | 0        |
|           |            | 1       | 5         | 13.17                   | 13.26                  | 13.31                    | 0                         | 0        |
|           |            | 3       | 0         | 13.17                   | 13.35                  | 13.33                    | 0                         | 0        |
|           |            | 3       | 1         | 13.22                   | 13.36                  | 13.38                    | 0                         | 0        |
|           |            | 3       | 3         | 13.18                   | 13.35                  | 13.33                    | 0                         | 0        |
|           |            | 6       | 0         | 13.19                   | 13.39                  | 13.34                    | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 13.70                   | 13.67                  | 13.63                    | 0-1                       | 0        |
|           |            | 1       | 3         | 13.70                   | 13.78                  | 13.64                    | 0-1                       | 0        |
|           |            | 1       | 5         | 13.59                   | 13.72                  | 13.59                    | 0-1                       | 0        |
|           |            | 3       | 0         | 13.23                   | 13.42                  | 13.47                    | 0-1                       | 0        |
|           |            | 3       | 1         | 13.33                   | 13.43                  | 13.52                    | 0-1                       | 0        |
|           |            | 3       | 3         | 13.25                   | 13.38                  | 13.48                    | 0-1                       | 0        |
|           |            | 6       | 0         | 13.30                   | 13.59                  | 13.54                    | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 13.29                   | 13.69                  | 13.49                    | 0-2                       | 0        |
|           |            | 1       | 3         | 13.33                   | 13.77                  | 13.52                    | 0-2                       | 0        |
|           |            | 1       | 5         | 13.29                   | 13.69                  | 13.44                    | 0-2                       | 0        |
|           |            | 3       | 0         | 13.44                   | 13.61                  | 13.30                    | 0-2                       | 0        |
|           |            | 3       | 1         | 13.50                   | 13.66                  | 13.36                    | 0-2                       | 0        |
|           |            | 3       | 3         | 13.41                   | 13.61                  | 13.28                    | 0-2                       | 0        |
|           |            | 6       | 0         | 13.23                   | 13.47                  | 13.43                    | 0-3                       | 0        |

LTE Band 66 \_ 3 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]      |                        |                          | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|------------------------|--------------------------|---------------------------|----------|
|           |            |         |           | 131987 Ch.<br>1711.5 MHz | 132322 Ch.<br>1745 MHz | 132657 Ch.<br>1778.5 MHz |                           |          |
| 3 MHz     | QPSK       | 1       | 0         | 13.23                    | 13.35                  | 13.43                    | 0                         | 0        |
|           |            | 1       | 7         | 13.27                    | 13.41                  | 13.53                    | 0                         | 0        |
|           |            | 1       | 14        | 13.15                    | 13.32                  | 13.39                    | 0                         | 0        |
|           |            | 8       | 0         | 13.26                    | 13.46                  | 13.43                    | 0-1                       | 0        |
|           |            | 8       | 3         | 13.32                    | 13.46                  | 13.45                    | 0-1                       | 0        |
|           |            | 8       | 7         | 13.25                    | 13.44                  | 13.39                    | 0-1                       | 0        |
|           |            | 15      | 0         | 13.27                    | 13.44                  | 13.47                    | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 13.73                    | 13.56                  | 13.56                    | 0-1                       | 0        |
|           |            | 1       | 7         | 13.83                    | 13.67                  | 13.66                    | 0-1                       | 0        |
|           |            | 1       | 14        | 13.67                    | 13.51                  | 13.38                    | 0-1                       | 0        |
|           |            | 8       | 0         | 13.39                    | 13.49                  | 13.55                    | 0-2                       | 0        |
|           |            | 8       | 3         | 13.44                    | 13.51                  | 13.62                    | 0-2                       | 0        |
|           |            | 8       | 7         | 13.37                    | 13.51                  | 13.55                    | 0-2                       | 0        |
|           |            | 15      | 0         | 13.36                    | 13.49                  | 13.52                    | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 13.58                    | 13.53                  | 13.75                    | 0-2                       | 0        |
|           |            | 1       | 7         | 13.66                    | 13.64                  | 13.84                    | 0-2                       | 0        |
|           |            | 1       | 14        | 13.53                    | 13.47                  | 13.73                    | 0-2                       | 0        |
|           |            | 8       | 0         | 13.48                    | 13.54                  | 13.42                    | 0-3                       | 0        |
|           |            | 8       | 3         | 13.48                    | 13.59                  | 13.49                    | 0-3                       | 0        |
|           |            | 8       | 7         | 13.47                    | 13.52                  | 13.42                    | 0-3                       | 0        |
|           |            | 15      | 0         | 13.31                    | 13.51                  | 13.52                    | 0-3                       | 0        |

## LTE Band 66 \_ 5 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]   |                     |                       | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|-----------------------|---------------------|-----------------------|---------------------------|----------|
|           |            |         |           | 131997 Ch. 1712.5 MHz | 132322 Ch. 1745 MHz | 132647 Ch. 1777.5 MHz |                           |          |
| 5 MHz     | QPSK       | 1       | 0         | 13.34                 | 13.48               | 13.41                 | 0                         | 0        |
|           |            | 1       | 12        | 13.30                 | 13.41               | 13.38                 | 0                         | 0        |
|           |            | 1       | 24        | 13.30                 | 13.35               | 13.35                 | 0                         | 0        |
|           |            | 12      | 0         | 13.36                 | 13.49               | 13.49                 | 0-1                       | 0        |
|           |            | 12      | 6         | 13.33                 | 13.47               | 13.49                 | 0-1                       | 0        |
|           |            | 12      | 11        | 13.29                 | 13.43               | 13.47                 | 0-1                       | 0        |
|           |            | 25      | 0         | 13.30                 | 13.46               | 13.43                 | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 13.52                 | 13.78               | 13.95                 | 0-1                       | 0        |
|           |            | 1       | 12        | 13.45                 | 13.63               | 13.87                 | 0-1                       | 0        |
|           |            | 1       | 24        | 13.42                 | 13.61               | 13.87                 | 0-1                       | 0        |
|           |            | 12      | 0         | 13.37                 | 13.54               | 13.52                 | 0-2                       | 0        |
|           |            | 12      | 6         | 13.35                 | 13.56               | 13.50                 | 0-2                       | 0        |
|           |            | 12      | 11        | 13.32                 | 13.52               | 13.44                 | 0-2                       | 0        |
|           |            | 25      | 0         | 13.28                 | 13.56               | 13.54                 | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 13.64                 | 13.62               | 13.41                 | 0-2                       | 0        |
|           |            | 1       | 12        | 13.56                 | 13.55               | 13.34                 | 0-2                       | 0        |
|           |            | 1       | 24        | 13.55                 | 13.52               | 13.29                 | 0-2                       | 0        |
|           |            | 12      | 0         | 13.36                 | 13.56               | 13.53                 | 0-3                       | 0        |
|           |            | 12      | 6         | 13.39                 | 13.59               | 13.58                 | 0-3                       | 0        |
|           |            | 12      | 11        | 13.37                 | 13.53               | 13.55                 | 0-3                       | 0        |
|           |            | 25      | 0         | 13.37                 | 13.58               | 13.54                 | 0-3                       | 0        |

## LTE Band 66 \_ 10 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm] |                     |                     | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|---------------------|---------------------|---------------------|---------------------------|----------|
|           |            |         |           | 132022 Ch. 1715 MHz | 132322 Ch. 1745 MHz | 132622 Ch. 1775 MHz |                           |          |
| 10 MHz    | QPSK       | 1       | 0         | 13.38               | 13.47               | 13.49               | 0                         | 0        |
|           |            | 1       | 24        | 13.27               | 13.34               | 13.37               | 0                         | 0        |
|           |            | 1       | 49        | 13.33               | 13.34               | 13.33               | 0                         | 0        |
|           |            | 25      | 0         | 13.35               | 13.56               | 13.56               | 0-1                       | 0        |
|           |            | 25      | 12        | 13.35               | 13.50               | 13.52               | 0-1                       | 0        |
|           |            | 25      | 24        | 13.39               | 13.48               | 13.46               | 0-1                       | 0        |
|           |            | 50      | 0         | 13.40               | 13.51               | 13.49               | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 13.61               | 13.99               | 13.90               | 0-1                       | 0        |
|           |            | 1       | 24        | 13.49               | 13.87               | 13.78               | 0-1                       | 0        |
|           |            | 1       | 49        | 13.60               | 13.82               | 13.75               | 0-1                       | 0        |
|           |            | 25      | 0         | 13.40               | 13.58               | 13.54               | 0-2                       | 0        |
|           |            | 25      | 12        | 13.37               | 13.62               | 13.51               | 0-2                       | 0        |
|           |            | 25      | 24        | 13.41               | 13.56               | 13.49               | 0-2                       | 0        |
|           |            | 50      | 0         | 13.52               | 13.51               | 13.55               | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 13.50               | 13.84               | 13.77               | 0-2                       | 0        |
|           |            | 1       | 24        | 13.40               | 13.71               | 13.56               | 0-2                       | 0        |
|           |            | 1       | 49        | 13.49               | 13.68               | 13.59               | 0-2                       | 0        |
|           |            | 25      | 0         | 13.41               | 13.63               | 13.57               | 0-3                       | 0        |
|           |            | 25      | 12        | 13.36               | 13.57               | 13.54               | 0-3                       | 0        |
|           |            | 25      | 24        | 13.41               | 13.55               | 13.51               | 0-3                       | 0        |
|           |            | 50      | 0         | 13.44               | 13.55               | 13.54               | 0-3                       | 0        |

## LTE Band 66 \_ 15 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]      |                        |                          | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|--------------------------|------------------------|--------------------------|---------------------------|----------|
|           |            |         |           | 132047 Ch.<br>1717.5 MHz | 132322 Ch.<br>1745 MHz | 132597 Ch.<br>1772.5 MHz |                           |          |
| 15 MHz    | QPSK       | 1       | 0         | 13.35                    | 13.52                  | 13.54                    | 0                         | 0        |
|           |            | 1       | 36        | 13.29                    | 13.42                  | 13.46                    | 0                         | 0        |
|           |            | 1       | 74        | 13.29                    | 13.37                  | 13.37                    | 0                         | 0        |
|           |            | 36      | 0         | 13.34                    | 13.55                  | 13.55                    | 0-1                       | 0        |
|           |            | 36      | 18        | 13.48                    | 13.57                  | 13.54                    | 0-1                       | 0        |
|           |            | 36      | 39        | 13.42                    | 13.46                  | 13.44                    | 0-1                       | 0        |
|           |            | 75      | 0         | 13.44                    | 13.52                  | 13.52                    | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 13.34                    | 13.68                  | 13.61                    | 0-1                       | 0        |
|           |            | 1       | 36        | 13.25                    | 13.62                  | 13.50                    | 0-1                       | 0        |
|           |            | 1       | 74        | 13.36                    | 13.55                  | 13.48                    | 0-1                       | 0        |
|           |            | 36      | 0         | 13.44                    | 13.55                  | 13.57                    | 0-2                       | 0        |
|           |            | 36      | 18        | 13.50                    | 13.54                  | 13.57                    | 0-2                       | 0        |
|           |            | 36      | 39        | 13.44                    | 13.51                  | 13.53                    | 0-2                       | 0        |
|           |            | 75      | 0         | 13.48                    | 13.57                  | 13.55                    | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 13.68                    | 13.85                  | 13.63                    | 0-2                       | 0        |
|           |            | 1       | 36        | 13.64                    | 13.75                  | 13.48                    | 0-2                       | 0        |
|           |            | 1       | 74        | 13.64                    | 13.68                  | 13.51                    | 0-2                       | 0        |
|           |            | 36      | 0         | 13.48                    | 13.62                  | 13.63                    | 0-3                       | 0        |
|           |            | 36      | 18        | 13.54                    | 13.64                  | 13.65                    | 0-3                       | 0        |
|           |            | 36      | 39        | 13.52                    | 13.53                  | 13.54                    | 0-3                       | 0        |
|           |            | 75      | 0         | 13.48                    | 13.59                  | 13.57                    | 0-3                       | 0        |

## LTE Band 66 \_ 20 MHz Bandwidth

| Bandwidth | Modulation | RB Size | RB Offset | Reduced Power [dBm]    |                        |                        | MPR Allowed Per 3GPP [dB] | MPR [dB] |
|-----------|------------|---------|-----------|------------------------|------------------------|------------------------|---------------------------|----------|
|           |            |         |           | 132072 Ch.<br>1720 MHz | 132322 Ch.<br>1745 MHz | 132572 Ch.<br>1770 MHz |                           |          |
| 20 MHz    | QPSK       | 1       | 0         | 13.34                  | 13.45                  | 13.40                  | 0                         | 0        |
|           |            | 1       | 49        | 13.39                  | 13.48                  | 13.40                  | 0                         | 0        |
|           |            | 1       | 99        | 13.28                  | 13.37                  | 13.23                  | 0                         | 0        |
|           |            | 50      | 0         | 13.48                  | 13.60                  | 13.52                  | 0-1                       | 0        |
|           |            | 50      | 25        | 13.48                  | 13.56                  | 13.56                  | 0-1                       | 0        |
|           |            | 50      | 49        | 13.42                  | 13.51                  | 13.50                  | 0-1                       | 0        |
|           |            | 100     | 0         | 13.48                  | 13.56                  | 13.47                  | 0-1                       | 0        |
|           | 16QAM      | 1       | 0         | 13.82                  | 13.62                  | 13.62                  | 0-1                       | 0        |
|           |            | 1       | 49        | 13.88                  | 13.73                  | 13.62                  | 0-1                       | 0        |
|           |            | 1       | 99        | 13.77                  | 13.63                  | 13.52                  | 0-1                       | 0        |
|           |            | 50      | 0         | 13.59                  | 13.64                  | 13.59                  | 0-2                       | 0        |
|           |            | 50      | 25        | 13.55                  | 13.61                  | 13.62                  | 0-2                       | 0        |
|           |            | 50      | 49        | 13.52                  | 13.56                  | 13.55                  | 0-2                       | 0        |
|           |            | 100     | 0         | 13.53                  | 13.59                  | 13.53                  | 0-2                       | 0        |
|           | 64QAM      | 1       | 0         | 13.24                  | 13.56                  | 13.59                  | 0-2                       | 0        |
|           |            | 1       | 49        | 13.30                  | 13.65                  | 13.53                  | 0-2                       | 0        |
|           |            | 1       | 99        | 13.19                  | 13.64                  | 13.43                  | 0-2                       | 0        |
|           |            | 50      | 0         | 13.64                  | 13.64                  | 13.59                  | 0-3                       | 0        |
|           |            | 50      | 25        | 13.61                  | 13.57                  | 13.59                  | 0-3                       | 0        |
|           |            | 50      | 49        | 13.58                  | 13.54                  | 13.59                  | 0-3                       | 0        |
|           |            | 100     | 0         | 13.52                  | 13.59                  | 13.51                  | 0-3                       | 0        |

### 11.3 WIFI Conducted Power measurement method

#### Un-Licensed bands (DTS Band)

| Test Description       | Test Procedure Used                                                        |
|------------------------|----------------------------------------------------------------------------|
| Conducted Output Power | - KDB 558074 v05 - Section 8.3.2.3<br>- ANSI 63.10-2013 - Section 11.9.2.3 |

#### Test Procedure

1. Measure the duty cycle.
2. Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
3. Add  $10 \log(1/x)$ , where  $x$  is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

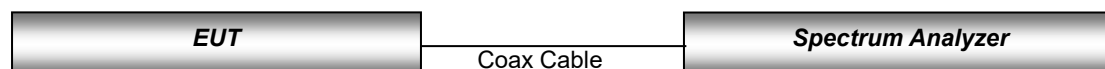
#### Un-Licensed bands (NII Band)

| Test Description       | Test Procedure Used                     |
|------------------------|-----------------------------------------|
| Conducted Output Power | - KDB 789033 D02 v02r01 - Section E.3.a |

#### Test Procedure

1. Measure the duty cycle.
2. Measure the average power of the transmitter. This measurement is an average over both the on and off periods of the transmitter.
3. Add  $10 \log(1/x)$ , where  $x$  is the duty cycle, to the measured power in order to compute the average power during the actual transmission times.

#### Test setup



### 11.3.1 IEEE 802.11 (2.4 GHz) Maximum Conducted Power

| Mode               | Frequency [MHz] | Channel | IEEE 802.11 (2.4 GHz) Average RF Conducted Power [dBm] |        |       |
|--------------------|-----------------|---------|--------------------------------------------------------|--------|-------|
|                    |                 |         | Ant. 1                                                 | Ant. 2 | MIMO  |
| 802.11b            | 2 412           | 1       | 13.11                                                  | 13.14  | 16.14 |
|                    | 2 437           | 6       | 13.96                                                  | 14.59  | 17.30 |
|                    | 2 442           | 7       | 14.65                                                  | 15.41  | 18.06 |
|                    | 2 462           | 11      | 14.76                                                  | 15.45  | 18.13 |
|                    | 2 467           | 12      | 2.68                                                   | 3.10   | 5.91  |
|                    | 2 472           | 13      | -4.13                                                  | -2.60  | -0.29 |
| 802.11g            | 2 412           | 1       | 13.55                                                  | 13.56  | 16.57 |
|                    | 2 417           | 2       | 14.50                                                  | 15.05  | 17.80 |
|                    | 2 437           | 6       | 14.50                                                  | 15.08  | 17.81 |
|                    | 2 462           | 11      | 14.51                                                  | 14.85  | 17.70 |
|                    | 2 467           | 12      | 2.20                                                   | 2.53   | 5.38  |
|                    | 2 472           | 13      | -4.91                                                  | -3.49  | -1.13 |
| 802.11n<br>(HT20)  | 2 412           | 1       | 13.50                                                  | 13.37  | 16.45 |
|                    | 2 417           | 2       | 15.22                                                  | 14.74  | 18.00 |
|                    | 2 437           | 6       | 15.17                                                  | 14.93  | 18.06 |
|                    | 2 462           | 11      | 14.54                                                  | 14.77  | 17.67 |
|                    | 2 467           | 12      | 2.05                                                   | 2.38   | 5.23  |
|                    | 2 472           | 13      | -4.92                                                  | -3.67  | -1.24 |
| 802.11ac<br>(HT20) | 2 412           | 1       | 13.52                                                  | 13.37  | 16.46 |
|                    | 2 417           | 2       | 15.21                                                  | 14.72  | 17.99 |
|                    | 2 437           | 6       | 14.50                                                  | 14.88  | 17.71 |
|                    | 2 462           | 11      | 14.50                                                  | 14.72  | 17.62 |
|                    | 2 467           | 12      | 2.02                                                   | 2.27   | 5.16  |
|                    | 2 472           | 13      | -4.90                                                  | -3.70  | -1.25 |

### 11.3.2 IEEE 802.11 (2.4 GHz) Reduced Conducted Power

| Mode               | Frequency [MHz] | Channel | IEEE 802.11 (2.4 GHz) Reduced Conducted Power [dBm] |        |       |
|--------------------|-----------------|---------|-----------------------------------------------------|--------|-------|
|                    |                 |         | Ant. 1                                              | Ant. 2 | MIMO  |
| 802.11b            | 2 412           | 1       | 12.96                                               | 12.48  | 15.74 |
|                    | 2 437           | 6       | 12.86                                               | 12.47  | 15.68 |
|                    | 2 462           | 11      | 12.61                                               | 12.29  | 15.46 |
|                    | 2 467           | 12      | 2.68                                                | 3.10   | 5.91  |
|                    | 2 472           | 13      | -4.13                                               | -2.60  | -0.29 |
| 802.11g            | 2 412           | 1       | 12.71                                               | 11.59  | 15.20 |
|                    | 2 437           | 6       | 12.36                                               | 11.95  | 15.17 |
|                    | 2 462           | 11      | 11.91                                               | 11.70  | 14.82 |
|                    | 2 467           | 12      | 2.20                                                | 2.53   | 5.38  |
|                    | 2 472           | 13      | -4.91                                               | -3.49  | -1.13 |
| 802.11n<br>(HT20)  | 2 412           | 1       | 12.52                                               | 11.50  | 15.05 |
|                    | 2 437           | 6       | 12.13                                               | 11.75  | 14.96 |
|                    | 2 462           | 11      | 11.62                                               | 11.51  | 14.58 |
|                    | 2 467           | 12      | 2.05                                                | 2.38   | 5.23  |
|                    | 2 472           | 13      | -4.92                                               | -3.67  | -1.24 |
| 802.11ac<br>(HT20) | 2 412           | 1       | 12.47                                               | 11.50  | 15.03 |
|                    | 2 437           | 6       | 12.20                                               | 11.72  | 14.98 |
|                    | 2 462           | 11      | 11.72                                               | 11.50  | 14.62 |
|                    | 2 467           | 12      | 2.02                                                | 2.27   | 5.16  |
|                    | 2 472           | 13      | -4.90                                               | -3.70  | -1.25 |

### 11.3.3 IEEE 802.11 (5 GHz) Maximum Conducted Power

| Mode                   | Frequency [MHz] | Channel | IEEE 802.11 (5 GHz) Average RF Conducted Power [dBm]<br>802.11a (20 MHz BW) |        |       |
|------------------------|-----------------|---------|-----------------------------------------------------------------------------|--------|-------|
|                        |                 |         | Ant. 1                                                                      | Ant. 2 | MIMO  |
| 802.11a<br>(20 MHz BW) | 5 180           | 36      | 13.90                                                                       | 13.82  | 16.87 |
|                        | 5 200           | 40      | 15.56                                                                       | 13.86  | 17.81 |
|                        | 5 220           | 44      | 14.65                                                                       | 13.85  | 17.28 |
|                        | 5 240           | 48      | 15.09                                                                       | 15.40  | 18.26 |
|                        | 5 260           | 52      | 15.37                                                                       | 15.48  | 18.44 |
|                        | 5 280           | 56      | 15.45                                                                       | 15.31  | 18.49 |
|                        | 5 300           | 60      | 14.32                                                                       | 15.15  | 17.77 |
|                        | 5 320           | 64      | 14.26                                                                       | 15.21  | 17.77 |
|                        | 5 500           | 100     | 12.44                                                                       | 13.29  | 15.90 |
|                        | 5 600           | 120     | 14.51                                                                       | 14.86  | 17.70 |
|                        | 5 620           | 124     | 14.50                                                                       | 14.50  | 17.51 |
|                        | 5 720           | 144     | 14.09                                                                       | 15.42  | 17.82 |
|                        | 5 745           | 149     | 13.90                                                                       | 15.45  | 17.76 |
|                        | 5 785           | 157     | 14.68                                                                       | 15.43  | 18.08 |
|                        | 5 825           | 165     | 14.83                                                                       | 15.39  | 18.13 |

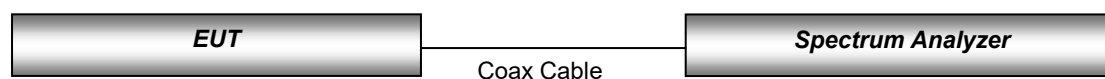
### 11.3.4 IEEE 802.11 (5 GHz) Reduced Conducted Power

| Mode                    | Frequency [MHz] | Channel | IEEE 802.11 (5 GHz) Reduced Conducted Power [dBm]<br>802.11ac (80 MHz BW) |        |       |
|-------------------------|-----------------|---------|---------------------------------------------------------------------------|--------|-------|
|                         |                 |         | Ant. 1                                                                    | Ant. 2 | MIMO  |
| 802.11ac<br>(80 MHz BW) | 5 210           | 42      | 10.41                                                                     | 9.51   | 12.99 |
|                         | 5 290           | 58      | 10.42                                                                     | 9.10   | 12.82 |
|                         | 5 530           | 106     | 9.63                                                                      | 9.96   | 12.81 |
|                         | 5 610           | 122     | 10.28                                                                     | 10.12  | 13.21 |
|                         | 5 690           | 138     | 10.49                                                                     | 9.85   | 13.19 |
|                         | 5 775           | 155     | 9.47                                                                      | 9.14   | 12.32 |

Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02:

- Power measurements were performed for the transmission mode configuration with the highest maximum output power specified for production units.
- For transmission mode with the same maximum output power specification, powers were measured for the largest channel bandwidth, lowest order modulation and lowest data rate.
- For transmission modes with identical maximum specified output power, channel bandwidth, modulation and data rates, power measurements were required for all identical configurations.
- For each transmission mode configuration, powers were measured for the highest and lowest channels; and at the mid-band channel(s) when there were at least 3 channels supported. For configurations with multiple mid-band channels, due to an even number of channels, both channels were measured.

### Test Configuration



## 11.4 Bluetooth

### 11.4.1 Bluetooth Maximum Conducted Power

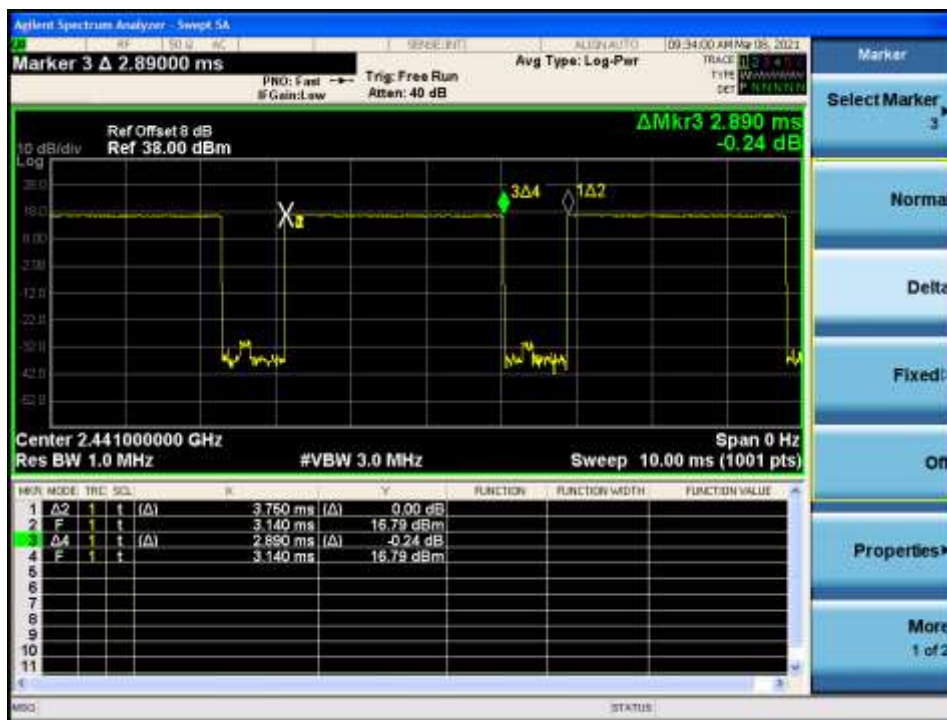
The Burst averaged-conducted power

| Mode  | Channel | Bluetooth Power [dBm] |
|-------|---------|-----------------------|
| DH5   | 0       | 10.96                 |
|       | 39      | 10.55                 |
|       | 78      | 10.09                 |
| 2-DH5 | 0       | 8.46                  |
|       | 39      | 7.79                  |
|       | 78      | 7.80                  |
| 3-DH5 | 0       | 8.45                  |
|       | 39      | 7.80                  |
|       | 78      | 7.82                  |

Per October 2016 TCB Workshop Notes:

When call box and Bluetooth protocol are used for Bluetooth SAR measurement, time-domain plot is required to identify duty factor for supporting the test setup and result.

Bluetooth duty cycle was measured using Bluetooth tester equipment (CBT / R&S) with Bluetooth DH5 mode.



Bluetooth

Duty Cycle

$$= (\text{BT-On time} / \text{BT-Full time}) = (2.890 / 3.750) = 0.771 \text{ (DH5)}$$

$$\text{Duty factor} = 1 / \text{Duty cycle} : 1.297$$



## 12. System Verification

### 12.1 Tissue Verification

The Head simulating material is calibrated by HCT using the DAKS 3.5 to determine the conductivity and permittivity.

| Table for Head Tissue Verification |                   |             |             |                                      |                                          |                                    |                                        |                |                  |
|------------------------------------|-------------------|-------------|-------------|--------------------------------------|------------------------------------------|------------------------------------|----------------------------------------|----------------|------------------|
| Date of Tests                      | Tissue Temp. (°C) | Tissue Type | Freq. (MHz) | Measured Conductivity $\sigma$ (S/m) | Measured Dielectric Constant, $\epsilon$ | Target Conductivity $\sigma$ (S/m) | Target Dielectric Constant, $\epsilon$ | % dev $\sigma$ | % dev $\epsilon$ |
| 03/03/2021                         | 20.7              | 750H        | 705         | 0.879                                | 43.016                                   | 0.889                              | 42.174                                 | -1.12          | 2.00             |
|                                    |                   |             | 710         | 0.883                                | 42.880                                   | 0.890                              | 42.148                                 | -0.79          | 1.74             |
|                                    |                   |             | 750         | 0.926                                | 42.417                                   | 0.893                              | 41.940                                 | 3.70           | 1.14             |
|                                    |                   |             | 785         | 0.928                                | 41.968                                   | 0.896                              | 41.758                                 | 3.57           | 0.50             |
| 03/02/2021                         | 21.9              | 835H        | 820         | 0.895                                | 42.061                                   | 0.899                              | 41.577                                 | -0.44          | 1.16             |
|                                    |                   |             | 835         | 0.912                                | 41.817                                   | 0.900                              | 41.500                                 | 1.33           | 0.76             |
|                                    |                   |             | 850         | 0.926                                | 41.683                                   | 0.916                              | 41.500                                 | 1.09           | 0.44             |
| 03/03/2021                         | 20.7              | 835H        | 820         | 0.895                                | 42.052                                   | 0.899                              | 41.577                                 | -0.44          | 1.14             |
|                                    |                   |             | 835         | 0.913                                | 41.842                                   | 0.900                              | 41.500                                 | 1.44           | 0.82             |
|                                    |                   |             | 850         | 0.927                                | 41.701                                   | 0.916                              | 41.500                                 | 1.20           | 0.48             |
| 03/09/2021                         | 21.4              | 1800H       | 1710        | 1.337                                | 41.168                                   | 1.348                              | 40.144                                 | -0.82          | 2.55             |
|                                    |                   |             | 1750        | 1.378                                | 40.005                                   | 1.371                              | 40.080                                 | 0.51           | -0.19            |
|                                    |                   |             | 1800        | 1.429                                | 40.812                                   | 1.400                              | 40.000                                 | 2.07           | 2.03             |
| 03/09/2021                         | 21.4              | 1800H       | 1710        | 1.334                                | 41.036                                   | 1.348                              | 40.144                                 | -1.04          | 2.22             |
|                                    |                   |             | 1750        | 1.374                                | 40.921                                   | 1.371                              | 40.080                                 | 0.22           | 2.10             |
|                                    |                   |             | 1800        | 1.434                                | 40.682                                   | 1.400                              | 40.000                                 | 2.43           | 1.71             |
| 03/02/2021                         | 21.9              | 1900H       | 1850        | 1.382                                | 41.575                                   | 1.400                              | 40.000                                 | -1.29          | 3.94             |
|                                    |                   |             | 1900        | 1.449                                | 41.336                                   | 1.400                              | 40.000                                 | 3.50           | 3.34             |
|                                    |                   |             | 1910        | 1.445                                | 41.297                                   | 1.400                              | 40.000                                 | 3.21           | 3.24             |
| 03/05/2021                         | 21.2              | 1900H       | 1850        | 1.383                                | 41.447                                   | 1.400                              | 40.000                                 | -1.21          | 3.62             |
|                                    |                   |             | 1900        | 1.446                                | 41.214                                   | 1.400                              | 40.000                                 | 3.29           | 3.04             |
|                                    |                   |             | 1910        | 1.443                                | 41.153                                   | 1.400                              | 40.000                                 | 3.07           | 2.88             |
| 03/11/2021                         | 20.6              | 2450H       | 2400        | 1.692                                | 40.417                                   | 1.756                              | 39.290                                 | -3.64          | 2.87             |
|                                    |                   |             | 2450        | 1.738                                | 40.350                                   | 1.800                              | 39.200                                 | -3.44          | 2.93             |
|                                    |                   |             | 2500        | 1.783                                | 40.139                                   | 1.855                              | 39.140                                 | -3.88          | 2.55             |
| 03/10/2021                         | 21.7              | 2450H       | 2400        | 1.677                                | 40.408                                   | 1.756                              | 39.290                                 | -4.50          | 2.85             |
|                                    |                   |             | 2450        | 1.733                                | 40.334                                   | 1.800                              | 39.200                                 | -3.72          | 2.89             |
|                                    |                   |             | 2500        | 1.783                                | 40.149                                   | 1.855                              | 39.140                                 | -3.88          | 2.58             |
| 03/04/2021                         | 21.2              | 2600H       | 2500        | 1.783                                | 40.120                                   | 1.855                              | 39.140                                 | -3.88          | 2.50             |
|                                    |                   |             | 2600        | 1.892                                | 39.646                                   | 1.964                              | 39.010                                 | -3.67          | 1.63             |
|                                    |                   |             | 2690        | 2.070                                | 39.410                                   | 2.062                              | 38.894                                 | 0.39           | 1.33             |

| Table for Head Tissue Verification |                   |             |             |                                      |                                          |                                    |                                        |                |                  |
|------------------------------------|-------------------|-------------|-------------|--------------------------------------|------------------------------------------|------------------------------------|----------------------------------------|----------------|------------------|
| Date of Tests                      | Tissue Temp. (°C) | Tissue Type | Freq. (MHz) | Measured Conductivity $\sigma$ (S/m) | Measured Dielectric Constant, $\epsilon$ | Target Conductivity $\sigma$ (S/m) | Target Dielectric Constant, $\epsilon$ | % dev $\sigma$ | % dev $\epsilon$ |
| 03/11/2021                         | 22.5              | 5180H-5825H | 5180        | 4.648                                | 37.024                                   | 4.635                              | 36.010                                 | 0.28           | 2.82             |
|                                    |                   |             | 5250        | 4.708                                | 37.207                                   | 4.706                              | 35.930                                 | 0.04           | 3.55             |
|                                    |                   |             | 5280        | 4.729                                | 36.760                                   | 4.737                              | 35.894                                 | -0.17          | 2.41             |
|                                    |                   |             | 5320        | 4.984                                | 36.852                                   | 4.778                              | 35.846                                 | 4.31           | 2.81             |
|                                    |                   |             | 5500        | 4.994                                | 36.523                                   | 4.963                              | 35.640                                 | 0.62           | 2.48             |
|                                    |                   |             | 5600        | 5.058                                | 36.526                                   | 5.065                              | 35.530                                 | -0.14          | 2.80             |
|                                    |                   |             | 5750        | 5.206                                | 36.715                                   | 5.219                              | 35.360                                 | -0.25          | 3.83             |
|                                    |                   |             | 5800        | 5.240                                | 36.479                                   | 5.270                              | 35.300                                 | -0.57          | 3.34             |
|                                    |                   |             | 5825        | 5.069                                | 36.116                                   | 5.296                              | 35.270                                 | -4.29          | 2.40             |
| 03/10/2021                         | 22.0              | 5180H-5825H | 5180        | 4.682                                | 36.996                                   | 4.635                              | 36.010                                 | 1.01           | 2.74             |
|                                    |                   |             | 5250        | 4.850                                | 37.104                                   | 4.706                              | 35.930                                 | 3.06           | 3.27             |
|                                    |                   |             | 5280        | 4.723                                | 36.833                                   | 4.737                              | 35.894                                 | -0.30          | 2.62             |
|                                    |                   |             | 5320        | 4.759                                | 37.119                                   | 4.778                              | 35.846                                 | -0.40          | 3.55             |
|                                    |                   |             | 5500        | 5.057                                | 36.719                                   | 4.963                              | 35.640                                 | 1.89           | 3.03             |
|                                    |                   |             | 5600        | 5.190                                | 36.746                                   | 5.065                              | 35.530                                 | 2.47           | 3.42             |
|                                    |                   |             | 5750        | 5.317                                | 36.707                                   | 5.219                              | 35.360                                 | 1.88           | 3.81             |
|                                    |                   |             | 5800        | 5.157                                | 37.062                                   | 5.270                              | 35.300                                 | -2.14          | 4.99             |
|                                    |                   |             | 5825        | 5.122                                | 36.416                                   | 5.296                              | 35.270                                 | -3.29          | 3.25             |

## 12.2 System Verification

Input Power: 50 mW

| Freq. [MHz] | Date       | Probe (S/N) | Dipole (S/N) | Liquid | Amb. Temp. [°C] | Liquid Temp. [°C] | 1 W Target SAR <sub>1g</sub> (SPEAG) [W/kg] | 50mW Measured SAR <sub>1g</sub> [W/kg] | 1 W Normalized SAR <sub>1g</sub> [W/kg] | Deviation [%] | Limit [%] |
|-------------|------------|-------------|--------------|--------|-----------------|-------------------|---------------------------------------------|----------------------------------------|-----------------------------------------|---------------|-----------|
| 750         | 03/03/2021 | 3863        | 1014         | Head   | 20.8            | 20.7              | 8.39                                        | 0.403                                  | 8.06                                    | - 3.93        | ± 10      |
| 835         | 03/02/2021 | 3863        | 4d165        | Head   | 22.1            | 21.9              | 9.56                                        | 0.443                                  | 8.86                                    | - 7.32        | ± 10      |
| 835         | 03/03/2021 | 3863        |              | Head   | 20.8            | 20.7              | 9.56                                        | 0.445                                  | 8.90                                    | - 6.90        | ± 10      |
| 1 800       | 03/09/2021 | 3863        | 2d007        | Head   | 21.5            | 21.4              | 38.1                                        | 1.91                                   | 38.2                                    | + 0.26        | ± 10      |
| 1 800       | 03/09/2021 | 3863        |              | Head   | 21.5            | 21.4              | 38.1                                        | 1.92                                   | 38.4                                    | + 0.79        | ± 10      |
| 1 900       | 03/02/2021 | 3863        | 5d032        | Head   | 22.1            | 21.9              | 40.0                                        | 2.14                                   | 42.8                                    | + 7.00        | ± 10      |
| 1 900       | 03/05/2021 | 3863        |              | Head   | 21.3            | 21.2              | 40.0                                        | 2.14                                   | 42.8                                    | + 7.00        | ± 10      |
| 2 450       | 03/11/2021 | 3863        | 1049         | Head   | 20.7            | 20.6              | 51.4                                        | 2.57                                   | 51.4                                    | + 0.00        | ± 10      |
| 2 450       | 03/10/2021 | 3863        |              | Head   | 21.8            | 21.7              | 51.4                                        | 2.57                                   | 51.4                                    | + 0.00        | ± 10      |
| 2 600       | 03/04/2021 | 3863        | 1015         | Head   | 21.3            | 21.2              | 56.7                                        | 2.79                                   | 55.8                                    | - 1.59        | ± 10      |
| 5 250       | 03/11/2021 | 3968        | 1253         | Head   | 22.6            | 22.5              | 79.7                                        | 4.20                                   | 84.0                                    | + 5.40        | ± 10      |
| 5 600       | 03/11/2021 | 3968        |              | Head   | 22.6            | 22.5              | 82.2                                        | 4.49                                   | 89.8                                    | + 9.25        | ± 10      |
| 5 750       | 03/11/2021 | 3968        |              | Head   | 22.6            | 22.5              | 79.6                                        | 4.00                                   | 80.0                                    | + 0.50        | ± 10      |
| 5 250       | 03/10/2021 | 3968        | 1253         | Head   | 22.1            | 22.0              | 79.7                                        | 4.26                                   | 85.2                                    | + 6.90        | ± 10      |
| 5 600       | 03/10/2021 | 3968        |              | Head   | 22.1            | 22.0              | 82.2                                        | 4.25                                   | 85.0                                    | + 3.41        | ± 10      |
| 5 750       | 03/10/2021 | 3968        |              | Head   | 22.1            | 22.0              | 79.6                                        | 3.71                                   | 74.2                                    | - 6.78        | ± 10      |

### 12.3 System Verification Procedure

SAR measurement was prior to assessment, the system is verified to the  $\pm 10\%$  of the specifications at each frequency band by using the system verification kit. (Graphic Plots Attached)

- Cabling the system, using the verification kit equipment.
- Generate about 50 mW Input level from the signal generator to the Dipole Antenna.
- Dipole antenna was placed below the flat phantom.
- The measured one-gram SAR at the surface of the phantom above the dipole feed-point should be within 10 % of the target reference value.
- The results are normalized to 1 W input power.

Note;

SAR Verification was performed according to the FCC KDB 865664 D01v01r04.

## 13. SAR Test Data Summary

### 13.1 SAR Measurement Results

| UMTS 850 Body SAR                                                                                   |      |      |               |             |             |                                          |          |            |          |              |                |               |          |
|-----------------------------------------------------------------------------------------------------|------|------|---------------|-------------|-------------|------------------------------------------|----------|------------|----------|--------------|----------------|---------------|----------|
| Frequency                                                                                           |      | Mode | Tune-Up Limit | Meas. Power | Power Drift | Test Position                            | Sensor   | Duty Cycle | Distance | 1g Meas. SAR | Scaling Factor | 1g Scaled SAR | Plot No. |
| Mhz                                                                                                 | Ch.  |      | (dB)          | (dB)        | (dB)        |                                          |          |            | (mm)     | (W/kg)       |                | (W/kg)        |          |
| 826.4                                                                                               | 4132 | RMC  | 21.0          | 20.07       | 0.18        | Rear                                     | Active   | 1:1        | 0        | <b>0.754</b> | 1.239          | 0.934         | 1        |
| 836.6                                                                                               | 4183 | RMC  | 21.0          | 20.06       | -0.14       | Rear                                     | Active   | 1:1        | 0        | 0.731        | 1.242          | 0.908         | -        |
| 846.6                                                                                               | 4233 | RMC  | 21.0          | 19.94       | 0.19        | Rear                                     | Active   | 1:1        | 0        | 0.740        | 1.276          | <b>0.944</b>  | 2        |
| 836.6                                                                                               | 4183 | RMC  | 24.5          | 23.59       | -0.06       | Rear                                     | Inactive | 1:1        | 15       | 0.517        | 1.233          | 0.637         | -        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak<br>Uncontrolled Exposure/ General Population |      |      |               |             |             | Body<br>1.6 W/kg<br>Averaged over 1 gram |          |            |          |              |                |               |          |

Note: \* Data entry indicate Variability measurement.

| UMTS 1700 Body SAR(1g)                                                                              |      |      |               |             |             |                                          |          |            |          |              |                |               |          |
|-----------------------------------------------------------------------------------------------------|------|------|---------------|-------------|-------------|------------------------------------------|----------|------------|----------|--------------|----------------|---------------|----------|
| Frequency                                                                                           |      | Mode | Tune-Up Limit | Meas. Power | Power Drift | Test Position                            | Sensor   | Duty Cycle | Distance | 1g Meas. SAR | Scaling Factor | 1g Scaled SAR | Plot No. |
| Mhz                                                                                                 | Ch.  |      | (dB)          | (dB)        | (dB)        |                                          |          |            | (mm)     | (W/kg)       |                | (W/kg)        |          |
| 1 712.4                                                                                             | 1312 | RMC  | 15.0          | 13.87       | 0.01        | Rear                                     | Active   | 1:1        | 0        | 0.680        | 1.297          | 0.882         | -        |
| 1 732.4                                                                                             | 1412 | RMC  | 15.0          | 13.92       | 0.01        | Rear                                     | Active   | 1:1        | 0        | 0.764        | 1.282          | 0.979         | -        |
| 1 752.6                                                                                             | 1513 | RMC  | 15.0          | 13.77       | 0.01        | Rear                                     | Active   | 1:1        | 0        | 0.761        | 1.327          | 1.010         | -        |
| 1 712.4                                                                                             | 1312 | RMC  | 23.5          | 22.73       | -0.01       | Rear                                     | Inactive | 1:1        | 15       | 1.02         | 1.194          | 1.218         | -        |
| 1 732.4                                                                                             | 1412 | RMC  | 23.5          | 23.10       | 0.10        | Rear                                     | Inactive | 1:1        | 15       | 1.01         | 1.096          | 1.107         | -        |
| 1 752.6                                                                                             | 1513 | RMC  | 23.5          | 22.90       | 0.16        | Rear                                     | Inactive | 1:1        | 15       | 1.19         | 1.148          | <b>1.366</b>  | 3        |
| 1 752.6                                                                                             | 1513 | RMC  | 23.5          | 22.90       | 0.17        | Rear                                     | Inactive | 1:1        | 15       | 1.16         | 1.148          | 1.332         | *        |
| 1 752.6                                                                                             | 1513 | RMC  | 23.5          | 22.90       | 0.14        | Rear                                     | Inactive | 1:1        | 15       | 1.19         | 1.148          | 1.366         | **       |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak<br>Uncontrolled Exposure/ General Population |      |      |               |             |             | Body<br>1.6 W/kg<br>Averaged over 1 gram |          |            |          |              |                |               |          |

Note: \* Data entry indicate Variability measurement.

\*\* Data entry indicate Device holder perturbation measurement.

| UMTS 1900 Body SAR                                                                                  |      |      |               |             |             |                                          |          |            |          |              |                |               |          |
|-----------------------------------------------------------------------------------------------------|------|------|---------------|-------------|-------------|------------------------------------------|----------|------------|----------|--------------|----------------|---------------|----------|
| Frequency                                                                                           |      | Mode | Tune-Up Limit | Meas. Power | Power Drift | Test Position                            | Sensor   | Duty Cycle | Distance | 1g Meas. SAR | Scaling Factor | 1g Scaled SAR | Plot No. |
| Mhz                                                                                                 | Ch.  |      | (dB)          | (dB)        | (dB)        |                                          |          |            | (mm)     | (W/kg)       |                | (W/kg)        |          |
| 1 880.0                                                                                             | 9400 | RMC  | 15.0          | 14.19       | 0.01        | Rear                                     | Active   | 1:1        | 0        | 0.578        | 1.205          | 0.696         | -        |
| 1 852.4                                                                                             | 9262 | RMC  | 23.5          | 23.00       | 0.17        | Rear                                     | Inactive | 1:1        | 15       | 1.08         | 1.122          | <b>1.212</b>  | 4        |
| 1 880.0                                                                                             | 9400 | RMC  | 23.5          | 22.80       | 0.17        | Rear                                     | Inactive | 1:1        | 15       | 0.885        | 1.175          | 1.040         | -        |
| 1 907.6                                                                                             | 9538 | RMC  | 23.5          | 23.10       | 0.16        | Rear                                     | Inactive | 1:1        | 15       | 0.768        | 1.096          | 0.842         | -        |
| 1 852.4                                                                                             | 9262 | RMC  | 23.5          | 23.00       | 0.01        | Rear                                     | Inactive | 1:1        | 15       | 1.03         | 1.122          | 1.156         | *        |
| 1 852.4                                                                                             | 9262 | RMC  | 23.5          | 23.00       | 0.16        | Rear                                     | Inactive | 1:1        | 15       | 0.948        | 1.122          | 1.064         | **       |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak<br>Uncontrolled Exposure/ General Population |      |      |               |             |             | Body<br>1.6 W/kg<br>Averaged over 1 gram |          |            |          |              |                |               |          |

Note: \* Data entry indicate Variability measurement.

\*\* Data entry indicate Device holder perturbation measurement.

| LTE Band 2 Body SAR                                                                                 |       |      |            |               |             |             |               |                                           |     |         |           |            |          |              |                |               |          |
|-----------------------------------------------------------------------------------------------------|-------|------|------------|---------------|-------------|-------------|---------------|-------------------------------------------|-----|---------|-----------|------------|----------|--------------|----------------|---------------|----------|
| Frequency                                                                                           |       | Mode | Band width | Tune-Up Limit | Meas. Power | Power Drift | Test Position | Sensor                                    | MPR | RB Size | RB offset | Duty Cycle | Distance | 1g Meas. SAR | Scaling Factor | 1g Scaled SAR | Plot No. |
| Mhz                                                                                                 | Ch.   |      |            |               |             |             |               |                                           |     |         |           |            |          |              |                |               |          |
| 1 880                                                                                               | 18900 | QPSK | 20         | 15.0          | 13.62       | 0.10        | Rear          | Active                                    | 0   | 1       | 0         | 1:1        | 0        | 0.565        | 1.374          | 0.776         | -        |
| 1 880                                                                                               | 18900 | QPSK | 20         | 15.0          | 13.62       | 0.01        | Rear          | Active                                    | 0   | 50      | 0         | 1:1        | 0        | 0.577        | 1.374          | 0.793         | -        |
| 1 860                                                                                               | 18700 | QPSK | 20         | 23.5          | 22.12       | 0.02        | Rear          | Inactive                                  | 0   | 1       | 0         | 1:1        | 15       | 0.902        | 1.374          | <b>1.239</b>  | 5        |
| 1 880                                                                                               | 18900 | QPSK | 20         | 23.5          | 22.65       | 0.12        | Rear          | Inactive                                  | 0   | 1       | 0         | 1:1        | 15       | 0.786        | 1.216          | 0.956         | -        |
| 1 900                                                                                               | 19100 | QPSK | 20         | 23.5          | 22.45       | -0.15       | Rear          | Inactive                                  | 0   | 1       | 0         | 1:1        | 15       | 0.710        | 1.274          | 0.905         | -        |
| 1 860                                                                                               | 18700 | QPSK | 20         | 22.5          | 21.21       | 0.15        | Rear          | Inactive                                  | 1   | 50      | 0         | 1:1        | 15       | 0.712        | 1.346          | 0.958         | -        |
| 1 880                                                                                               | 18900 | QPSK | 20         | 22.5          | 21.60       | -0.12       | Rear          | Inactive                                  | 1   | 50      | 0         | 1:1        | 15       | 0.627        | 1.230          | 0.771         | -        |
| 1 900                                                                                               | 19100 | QPSK | 20         | 22.5          | 21.59       | -0.19       | Rear          | Inactive                                  | 1   | 50      | 0         | 1:1        | 15       | 0.685        | 1.233          | 0.845         | -        |
| 1 880                                                                                               | 18900 | QPSK | 20         | 22.5          | 21.52       | 0.18        | Rear          | Inactive                                  | 1   | 100     | 0         | 1:1        | 15       | 0.646        | 1.253          | 0.809         | -        |
| 1 860                                                                                               | 18700 | QPSK | 20         | 23.5          | 22.12       | 0.02        | Rear          | Inactive                                  | 0   | 1       | 0         | 1:1        | 15       | 0.895        | 1.374          | 1.230         | *        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak<br>Uncontrolled Exposure/ General Population |       |      |            |               |             |             |               | Body<br>1.6 W/kg<br>Averaged over 10 gram |     |         |           |            |          |              |                |               |          |

Note: \* Data entry indicate Variability measurement.

| LTE Band 12 Body SAR                                                                                |       |      |            |               |             |             |               |                                           |     |         |           |            |          |              |                |               |          |
|-----------------------------------------------------------------------------------------------------|-------|------|------------|---------------|-------------|-------------|---------------|-------------------------------------------|-----|---------|-----------|------------|----------|--------------|----------------|---------------|----------|
| Frequency                                                                                           |       | Mode | Band width | Tune-Up Limit | Meas. Power | Power Drift | Test Position | Sensor                                    | MPR | RB Size | RB offset | Duty Cycle | Distance | 1g Meas. SAR | Scaling Factor | 1g Scaled SAR | Plot No. |
| Mhz                                                                                                 | Ch.   |      |            |               |             |             |               |                                           |     |         |           |            |          |              |                |               |          |
| 707.5                                                                                               | 23095 | QPSK | 10         | 20.0          | 18.61       | 0.19        | Rear          | Active                                    | 0   | 1       | 24        | 1:1        | 0        | 0.652        | 1.380          | 0.900         | -        |
| 707.5                                                                                               | 23095 | QPSK | 10         | 20.0          | 18.65       | 0.10        | Rear          | Active                                    | 0   | 25      | 12        | 1:1        | 0        | 0.665        | 1.368          | <b>0.910</b>  | 6        |
| 707.5                                                                                               | 23095 | QPSK | 10         | 20.0          | 18.64       | 0.13        | Rear          | Active                                    | 0   | 50      | 0         | 1:1        | 0        | 0.660        | 1.368          | 0.903         | -        |
| 707.5                                                                                               | 23095 | QPSK | 10         | 24.5          | 23.06       | 0.05        | Rear          | Inactive                                  | 0   | 1       | 49        | 1:1        | 15       | 0.519        | 1.393          | 0.723         | -        |
| 707.5                                                                                               | 23095 | QPSK | 10         | 23.5          | 23.19       | 0.01        | Rear          | Inactive                                  | 1   | 25      | 24        | 1:1        | 15       | 0.424        | 1.074          | 0.455         | -        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak<br>Uncontrolled Exposure/ General Population |       |      |            |               |             |             |               | Body<br>1.6 W/kg<br>Averaged over 10 gram |     |         |           |            |          |              |                |               |          |

| LTE Band 13 Body SAR                                                                                |       |      |            |               |             |             |               |                                           |     |         |           |            |          |              |                |               |          |
|-----------------------------------------------------------------------------------------------------|-------|------|------------|---------------|-------------|-------------|---------------|-------------------------------------------|-----|---------|-----------|------------|----------|--------------|----------------|---------------|----------|
| Frequency                                                                                           |       | Mode | Band width | Tune-Up Limit | Meas. Power | Power Drift | Test Position | Sensor                                    | MPR | RB Size | RB offset | Duty Cycle | Distance | 1g Meas. SAR | Scaling Factor | 1g Scaled SAR | Plot No. |
| Mhz                                                                                                 | Ch.   |      |            |               |             |             |               |                                           |     |         |           |            |          |              |                |               |          |
| 782                                                                                                 | 23230 | QPSK | 10         | 20.0          | 18.40       | 0.14        | Rear          | Active                                    | 0   | 1       | 24        | 1:1        | 0        | 0.528        | 1.445          | <b>0.763</b>  | 7        |
| 782                                                                                                 | 23230 | QPSK | 10         | 20.0          | 18.53       | -0.12       | Rear          | Active                                    | 0   | 25      | 0         | 1:1        | 0        | <b>0.530</b> | 1.403          | 0.744         | 8        |
| 782                                                                                                 | 23230 | QPSK | 10         | 24.5          | 23.04       | 0.01        | Rear          | Inactive                                  | 0   | 1       | 24        | 1:1        | 15       | 0.450        | 1.400          | 0.630         | -        |
| 782                                                                                                 | 23230 | QPSK | 10         | 23.5          | 22.09       | 0.04        | Rear          | Inactive                                  | 1   | 25      | 12        | 1:1        | 15       | 0.365        | 1.384          | 0.505         | -        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak<br>Uncontrolled Exposure/ General Population |       |      |            |               |             |             |               | Body<br>1.6 W/kg<br>Averaged over 10 gram |     |         |           |            |          |              |                |               |          |

| LTE Band 26 Body SAR                                                                                |       |      |            |               |             |             |               |                                           |      |      |        |            |          |              |         |               |          |
|-----------------------------------------------------------------------------------------------------|-------|------|------------|---------------|-------------|-------------|---------------|-------------------------------------------|------|------|--------|------------|----------|--------------|---------|---------------|----------|
| Frequency                                                                                           |       | Mode | Band width | Tune-Up Limit | Meas. Power | Power Drift | Test Position | Sensor                                    | MPR  | RB   | RB     | Duty Cycle | Distance | 1g Meas. SAR | Scaling | 1g Scaled SAR | Plot No. |
| MHz                                                                                                 | Ch.   |      | (MHz)      | (dBm)         | (dBm)       | (dB)        |               |                                           | (dB) | Size | offset |            | (mm)     | (W/kg)       | Factor  | (W/kg)        |          |
| 831.5                                                                                               | 26865 | QPSK | 15         | 20.0          | 18.34       | 0.12        | Rear          | Active                                    | 0    | 1    | 74     | 1:1        | 0        | 0.336        | 1.466   | 0.493         | -        |
| 831.5                                                                                               | 26865 | QPSK | 15         | 20.0          | 18.39       | 0.14        | Rear          | Active                                    | 0    | 36   | 0      | 1:1        | 0        | 0.451        | 1.449   | <b>0.653</b>  | 9        |
| 831.5                                                                                               | 26865 | QPSK | 15         | 24.5          | 22.89       | 0.07        | Rear          | Inactive                                  | 0    | 1    | 74     | 1:1        | 15       | 0.361        | 1.449   | 0.523         | -        |
| 831.5                                                                                               | 26865 | QPSK | 15         | 23.5          | 22.01       | -0.06       | Rear          | Inactive                                  | 1    | 36   | 0      | 1:1        | 15       | 0.303        | 1.409   | 0.427         | -        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak<br>Uncontrolled Exposure/ General Population |       |      |            |               |             |             |               | Body<br>1.6 W/kg<br>Averaged over 10 gram |      |      |        |            |          |              |         |               |          |

| LTE TDD Band 41 Body SAR                                                                            |       |      |            |               |             |             |               |                                           |      |         |           |            |          |              |                |               |          |
|-----------------------------------------------------------------------------------------------------|-------|------|------------|---------------|-------------|-------------|---------------|-------------------------------------------|------|---------|-----------|------------|----------|--------------|----------------|---------------|----------|
| Frequency                                                                                           |       | Mode | Band width | Tune-Up Limit | Meas. Power | Power Drift | Test Position | Sensor                                    | MPR  | RB Size | RB offset | Duty Cycle | Distance | 1g Meas. SAR | Scaling Factor | 1g Scaled SAR | Plot No. |
| MHz                                                                                                 | Ch.   |      | (MHz)      | (dBm)         | (dBm)       | (dB)        |               |                                           | (dB) | (mm)    | (W/kg)    |            | (W/kg)   |              |                |               |          |
| 2 506.0                                                                                             | 39750 | QPSK | 20         | 18.0          | 16.61       | 0.01        | Rear          | Active                                    | 0    | 1       | 0         | 1:1.58     | 0        | 0.658        | 1.377          | 0.906         | -        |
| 2 549.5                                                                                             | 40185 | QPSK | 20         | 18.0          | 16.50       | 0.01        | Rear          | Active                                    | 0    | 1       | 49        | 1:1.58     | 0        | 0.647        | 1.413          | 0.914         | -        |
| 2 593.0                                                                                             | 40620 | QPSK | 20         | 18.0          | 16.60       | 0.01        | Rear          | Active                                    | 0    | 1       | 49        | 1:1.58     | 0        | 0.597        | 1.380          | 0.824         | -        |
| 2 636.5                                                                                             | 41055 | QPSK | 20         | 18.0          | 16.74       | 0.01        | Rear          | Active                                    | 0    | 1       | 99        | 1:1.58     | 0        | 0.470        | 1.337          | 0.628         | -        |
| 2 680.0                                                                                             | 41490 | QPSK | 20         | 18.0          | 16.66       | 0.01        | Rear          | Active                                    | 0    | 1       | 49        | 1:1.58     | 0        | 0.387        | 1.361          | 0.527         | -        |
| 2 506.0                                                                                             | 39750 | QPSK | 20         | 18.0          | 16.63       | 0.01        | Rear          | Active                                    | 0    | 50      | 0         | 1:1.58     | 0        | 0.666        | 1.371          | 0.913         | -        |
| 2 549.5                                                                                             | 40185 | QPSK | 20         | 18.0          | 16.60       | 0.18        | Rear          | Active                                    | 0    | 50      | 49        | 1:1.58     | 0        | 0.665        | 1.380          | 0.918         | -        |
| 2 593.0                                                                                             | 40620 | QPSK | 20         | 18.0          | 16.63       | -0.10       | Rear          | Active                                    | 0    | 50      | 0         | 1:1.58     | 0        | 0.621        | 1.371          | 0.851         | -        |
| 2 636.5                                                                                             | 41055 | QPSK | 20         | 18.0          | 16.80       | 0.10        | Rear          | Active                                    | 0    | 50      | 25        | 1:1.58     | 0        | 0.512        | 1.318          | 0.675         | -        |
| 2 680.0                                                                                             | 41490 | QPSK | 20         | 18.0          | 16.62       | 0.01        | Rear          | Active                                    | 0    | 50      | 49        | 1:1.58     | 0        | 0.384        | 1.374          | 0.528         | -        |
| 2 636.5                                                                                             | 41055 | QPSK | 20         | 18.0          | 16.77       | 0.01        | Rear          | Active                                    | 0    | 100     | 0         | 1:1.58     | 0        | 0.693        | 1.327          | <b>0.920</b>  | 10       |
| 2 549.5                                                                                             | 40185 | QPSK | 20         | 24.5          | 23.35       | 0.18        | Rear          | Inactive                                  | 0    | 1       | 49        | 1:1.58     | 15       | 0.425        | 1.303          | 0.554         | -        |
| 2 506.0                                                                                             | 39750 | QPSK | 20         | 23.5          | 22.40       | -0.02       | Rear          | Inactive                                  | 1    | 50      | 0         | 1:1.58     | 15       | 0.374        | 1.288          | 0.482         | -        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak<br>Uncontrolled Exposure/ General Population |       |      |            |               |             |             |               | Body<br>1.6 W/kg<br>Averaged over 10 gram |      |         |           |            |          |              |                |               |          |

| LTE Band 66 Body SAR                                                                                |        |      |            |               |             |             |                                           |          |      |         |           |            |          |              |                |               |          |
|-----------------------------------------------------------------------------------------------------|--------|------|------------|---------------|-------------|-------------|-------------------------------------------|----------|------|---------|-----------|------------|----------|--------------|----------------|---------------|----------|
| Frequency                                                                                           |        | Mode | Band width | Tune-Up Limit | Meas. Power | Power Drift | Test Position                             | Sensor   | MPR  | RB Size | RB offset | Duty Cycle | Distance | 1g Meas. SAR | Scaling Factor | 1g Scaled SAR | Plot No. |
| Mhz                                                                                                 | Ch.    |      | (Mhz)      | (dBm)         | (dBm)       | (dB)        |                                           |          | (dB) |         |           |            | (mm)     | (W/kg)       |                | (W/kg)        |          |
| 1 720                                                                                               | 132072 | QPSK | 20         | 15.0          | 13.39       | 0.01        | Rear                                      | Active   | 0    | 1       | 49        | 1:1        | 0        | 0.623        | 1.449          | 0.903         | -        |
| 1 745                                                                                               | 132322 | QPSK | 20         | 15.0          | 13.48       | 0.01        | Rear                                      | Active   | 0    | 1       | 49        | 1:1        | 0        | 0.663        | 1.419          | 0.941         | -        |
| 1 770                                                                                               | 132572 | QPSK | 20         | 15.0          | 13.40       | 0.10        | Rear                                      | Active   | 0    | 1       | 49        | 1:1        | 0        | 0.694        | 1.445          | 1.003         | -        |
| 1 720                                                                                               | 132072 | QPSK | 20         | 15.0          | 13.48       | 0.01        | Rear                                      | Active   | 0    | 50      | 0         | 1:1        | 0        | 0.639        | 1.419          | 0.907         | -        |
| 1 745                                                                                               | 132322 | QPSK | 20         | 15.0          | 13.60       | 0.01        | Rear                                      | Active   | 0    | 50      | 0         | 1:1        | 0        | 0.678        | 1.380          | 0.936         | -        |
| 1 770                                                                                               | 132572 | QPSK | 20         | 15.0          | 13.56       | 0.01        | Rear                                      | Active   | 0    | 50      | 25        | 1:1        | 0        | 0.714        | 1.393          | 0.995         | -        |
| 1 745                                                                                               | 132322 | QPSK | 20         | 15.0          | 13.56       | 0.01        | Rear                                      | Active   | 0    | 100     | 0         | 1:1        | 0        | 0.686        | 1.393          | 0.956         | -        |
| 1 720                                                                                               | 132072 | QPSK | 20         | 23.5          | 22.58       | -0.17       | Rear                                      | Inactive | 0    | 1       | 0         | 1:1        | 15       | 0.907        | 1.236          | 1.121         | -        |
| 1 745                                                                                               | 132322 | QPSK | 20         | 23.5          | 22.55       | 0.17        | Rear                                      | Inactive | 0    | 1       | 0         | 1:1        | 15       | 0.987        | 1.245          | 1.229         | -        |
| 1 770                                                                                               | 132572 | QPSK | 20         | 23.5          | 22.68       | 0.12        | Rear                                      | Inactive | 0    | 1       | 0         | 1:1        | 15       | 1.11         | 1.208          | <b>1.341</b>  | 11       |
| 1 720                                                                                               | 132072 | QPSK | 20         | 22.5          | 21.70       | 0.11        | Rear                                      | Inactive | 1    | 50      | 0         | 1:1        | 15       | 0.738        | 1.202          | 0.887         | -        |
| 1 745                                                                                               | 132322 | QPSK | 20         | 22.5          | 21.66       | 0.15        | Rear                                      | Inactive | 1    | 50      | 0         | 1:1        | 15       | 0.815        | 1.213          | 0.989         | -        |
| 1 770                                                                                               | 132572 | QPSK | 20         | 22.5          | 21.74       | -0.13       | Rear                                      | Inactive | 1    | 50      | 0         | 1:1        | 15       | 0.904        | 1.191          | 1.077         | -        |
| 1 770                                                                                               | 132572 | QPSK | 20         | 22.5          | 21.66       | 0.11        | Rear                                      | Inactive | 1    | 100     | 0         | 1:1        | 15       | 0.918        | 1.213          | 1.114         | -        |
| 1 770                                                                                               | 132572 | QPSK | 20         | 23.5          | 22.68       | 0.16        | Rear                                      | Inactive | 0    | 1       | 0         | 1:1        | 15       | 1.1          | 1.208          | 1.329         | *        |
| 1 770                                                                                               | 132572 | QPSK | 20         | 23.5          | 22.68       | 0.11        | Rear                                      | Inactive | 0    | 1       | 0         | 1:1        | 15       | 1.1          | 1.208          | 1.329         | **       |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak<br>Uncontrolled Exposure/ General Population |        |      |            |               |             |             | Body<br>1.6 W/kg<br>Averaged over 10 gram |          |      |         |           |            |          |              |                |               |          |

Note: \* Data entry indicate Variability measurement.

\*\* Data entry indicate Device holder perturbation measurement.

| Wi-Fi (DTS) Body SAR                                                                                |     |         |            |           |               |             |             |                                          |       |          |            |          |                    |              |                |                       |                 |          |
|-----------------------------------------------------------------------------------------------------|-----|---------|------------|-----------|---------------|-------------|-------------|------------------------------------------|-------|----------|------------|----------|--------------------|--------------|----------------|-----------------------|-----------------|----------|
| Frequency                                                                                           |     | Mode    | Band width | Data Rate | Tune-Up Limit | Meas. Power | Power Drift | Test Position                            | Ant.  | Sensor   | Duty Cycle | Distance | Area Scan Peak SAR | 1g Meas. SAR | Scaling Factor | Scaling Factor (Duty) | 1g Reported SAR | Plot No. |
| MHz                                                                                                 | Ch. |         |            |           |               |             |             |                                          |       |          |            |          |                    |              |                |                       |                 |          |
| 2 412                                                                                               | 1   | 802.11b | 20         | 1         | 13.0          | 12.96       | 0.01        | Rear                                     | Ant.1 | Active   | 98.9       | 0        | 0.681              | <b>0.362</b> | 1.009          | 1.011                 | 0.369           | 12       |
| 2 412                                                                                               | 1   | 802.11b | 20         | 1         | 13.0          | 12.48       | 0.01        | Rear                                     | Ant.2 | Active   | 98.9       | 0        | 0.578              | 0.328        | 1.127          | 1.011                 | <b>0.374</b>    | 13       |
| 2 412                                                                                               | 1   | 802.11b | 20         | 1         | 16.0          | 15.74       | 0.01        | Rear                                     | MIMO  | Active   | 98.9       | 0        | 0.594              | 0.315        | 1.127          | 1.011                 | 0.359           | -        |
| 2 462                                                                                               | 11  | 802.11b | 20         | 1         | 16.0          | 14.76       | -0.11       | Rear                                     | Ant.1 | Inactive | 98.9       | 6        | 0.342              | 0.195        | 1.330          | 1.011                 | 0.262           | -        |
| 2 462                                                                                               | 11  | 802.11b | 20         | 1         | 16.0          | 15.45       | 0.01        | Rear                                     | Ant.2 | Inactive | 98.9       | 9        | 0.391              | 0.233        | 1.135          | 1.011                 | 0.267           | -        |
| 2 462                                                                                               | 11  | 802.11b | 20         | 1         | 19.0          | 18.13       | 0.10        | Rear                                     | MIMO  | Inactive | 98.9       | 6        | 0.432              | 0.253        | 1.330          | 1.011                 | 0.340           | -        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak<br>Uncontrolled Exposure/ General Population |     |         |            |           |               |             |             | Body<br>1.6 W/kg<br>Averaged over 1 gram |       |          |            |          |                    |              |                |                       |                 |          |

Note:

1.The power scaled factor of WLAN MIMO Mode is the largest scaled factor among each antenna chain.

2.Since the activation distance of the grip sensor of each antenna chain was different, the SAR of the WLAN MIMO mode was measured at the shorter distance.



### Wi-Fi (NII) Body SAR

| Frequency                                                                                           |     | Mode     | Band width (MHz) | Data Rate (Mbps) | Tune-Up Limit (dBm) | Meas. Power (dBm) | Power Drift (dB) | Test Position | Ant.                                     | Sensor   | Duty Cycle | Distance (mm) | Area Scan Peak SAR (W/kg) | 1g Meas. SAR (W/kg) | Scaling Factor | Scaling Factor (Duty) | 1g Reported SAR (W/kg) | Plot No. |
|-----------------------------------------------------------------------------------------------------|-----|----------|------------------|------------------|---------------------|-------------------|------------------|---------------|------------------------------------------|----------|------------|---------------|---------------------------|---------------------|----------------|-----------------------|------------------------|----------|
| MHz                                                                                                 | Ch. |          |                  |                  |                     |                   |                  |               |                                          |          |            |               |                           |                     |                |                       |                        |          |
| 5 290                                                                                               | 58  | 802.11ac | 80               | MCS0             | 11.0                | 10.42             | 0.01             | Rear          | Ant.1                                    | Active   | 90.2       | 0             | 0.528                     | 0.219               | 1.143          | 1.109                 | 0.278                  | -        |
| 5 290                                                                                               | 58  | 802.11ac | 80               | MCS0             | 11.0                | 9.10              | 0.01             | Rear          | Ant.2                                    | Active   | 90.2       | 0             | 0.459                     | 0.155               | 1.549          | 1.109                 | 0.266                  | -        |
| 5 290                                                                                               | 58  | 802.11ac | 80               | MCS0             | 14.0                | 12.82             | 0.01             | Rear          | MIMO                                     | Active   | 90.2       | 0             | 0.656                     | 0.243               | 1.549          | 1.109                 | 0.417                  | -        |
| 5 280                                                                                               | 56  | 802.11a  | 20               | 6Mbps            | 16.0                | 15.45             | 0.01             | Rear          | Ant.1                                    | Inactive | 97.7       | 6             | 0.695                     | 0.297               | 1.135          | 1.024                 | 0.345                  | -        |
| 5 260                                                                                               | 52  | 802.11a  | 20               | 6Mbps            | 16.0                | 15.48             | 0.01             | Rear          | Ant.2                                    | Inactive | 97.7       | 9             | 0.417                     | 0.179               | 1.127          | 1.024                 | 0.207                  | -        |
| 5 280                                                                                               | 56  | 802.11a  | 20               | 6Mbps            | 19.0                | 18.49             | -0.10            | Rear          | MIMO                                     | Inactive | 97.7       | 6             | 0.797                     | 0.335               | 1.135          | 1.024                 | 0.389                  | -        |
| 5 690                                                                                               | 138 | 802.11ac | 80               | MCS0             | 11.0                | 10.49             | 0.01             | Rear          | Ant.1                                    | Active   | 90.2       | 0             | 0.404                     | 0.159               | 1.125          | 1.109                 | 0.198                  | -        |
| 5 610                                                                                               | 122 | 802.11ac | 80               | MCS0             | 11.0                | 10.12             | -0.10            | Rear          | Ant.2                                    | Active   | 90.2       | 0             | 0.817                     | 0.285               | 1.225          | 1.109                 | 0.387                  | -        |
| 5 610                                                                                               | 122 | 802.11ac | 80               | MCS0             | 14.0                | 13.21             | 0.01             | Rear          | MIMO                                     | Active   | 90.2       | 0             | 0.863                     | 0.266               | 1.225          | 1.109                 | 0.361                  | -        |
| 5 600                                                                                               | 120 | 802.11a  | 20               | 6Mbps            | 16.0                | 14.51             | 0.01             | Rear          | Ant.1                                    | Inactive | 97.7       | 6             | 0.497                     | 0.220               | 1.409          | 1.024                 | 0.317                  | -        |
| 5 720                                                                                               | 144 | 802.11a  | 20               | 6Mbps            | 16.0                | 15.42             | 0.01             | Rear          | Ant.2                                    | Inactive | 97.7       | 9             | 0.817                     | 0.342               | 1.143          | 1.024                 | 0.400                  | -        |
| 5 720                                                                                               | 144 | 802.11a  | 20               | 6Mbps            | 19.0                | 17.82             | 0.01             | Rear          | MIMO                                     | Inactive | 97.7       | 6             | 0.962                     | <b>0.381</b>        | 1.409          | 1.024                 | <b>0.550</b>           | 14       |
| 5 775                                                                                               | 155 | 802.11ac | 80               | MCS0             | 11.0                | 9.47              | 0.01             | Rear          | Ant.1                                    | Active   | 90.2       | 0             | 0.585                     | 0.199               | 1.422          | 1.109                 | 0.314                  | -        |
| 5 775                                                                                               | 155 | 802.11ac | 80               | MCS0             | 11.0                | 9.14              | 0.01             | Rear          | Ant.2                                    | Active   | 90.2       | 0             | 0.887                     | 0.317               | 1.535          | 1.109                 | 0.540                  | -        |
| 5 775                                                                                               | 155 | 802.11ac | 80               | MCS0             | 14.0                | 12.32             | 0.01             | Rear          | MIMO                                     | Active   | 90.2       | 0             | 0.562                     | 0.216               | 1.535          | 1.109                 | 0.368                  | -        |
| 5 825                                                                                               | 165 | 802.11a  | 20               | 6Mbps            | 16.0                | 14.83             | -0.10            | Rear          | Ant.1                                    | Inactive | 97.7       | 6             | 0.857                     | 0.354               | 1.309          | 1.024                 | 0.475                  | -        |
| 5 745                                                                                               | 149 | 802.11a  | 20               | 6Mbps            | 16.0                | 15.45             | 0.01             | Rear          | Ant.2                                    | Inactive | 97.7       | 9             | 0.416                     | 0.168               | 1.135          | 1.024                 | 0.195                  | -        |
| 5 825                                                                                               | 165 | 802.11a  | 20               | 6Mbps            | 19.0                | 18.13             | 0.01             | Rear          | MIMO                                     | Inactive | 97.7       | 6             | 0.619                     | 0.258               | 1.309          | 1.024                 | 0.346                  | -        |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak<br>Uncontrolled Exposure/ General Population |     |          |                  |                  |                     |                   |                  |               | Body<br>1.6 W/kg<br>Averaged over 1 gram |          |            |               |                           |                     |                |                       |                        |          |

Note:

- 1.The power scaled factor of the SAR of WLAN MIMO Mode is the largest scaled factor among each antenna chain.
- 2.Since the activation distance of the grip sensor of each antenna chain was different, the SAR of the WLAN MIMO mode was measured at the shorter distance.

### DSS Tethering SAR

| Frequency                                                                                           |     | Mode          | Tune-Up Limit (dBm) | Meas. Power (dBm) | Power Drift (dB) | Test Position | Distance (mm)                            | 1g Meas. SAR (W/kg) | Scaling Factor | Scaling Factor (Duty) | 1g Scaled SAR (W/kg) | Plot No. |
|-----------------------------------------------------------------------------------------------------|-----|---------------|---------------------|-------------------|------------------|---------------|------------------------------------------|---------------------|----------------|-----------------------|----------------------|----------|
| MHz                                                                                                 | Ch. |               |                     |                   |                  |               |                                          |                     |                |                       |                      |          |
| 2 402                                                                                               | 0   | Bluetooth DH5 | 11.5                | 10.96             | 0.10             | Rear          | 0                                        | 0.175               | 1.132          | 1.297                 | <b>0.257</b>         | 15       |
| ANSI/ IEEE C95.1 - 2005 – Safety Limit<br>Spatial Peak<br>Uncontrolled Exposure/ General Population |     |               |                     |                   |                  |               | Body<br>1.6 W/kg<br>Averaged over 1 gram |                     |                |                       |                      |          |



## 13.6 SAR Test Notes

### General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in FCC KDB Publication 616217 D04v01r02 and KDB Publication 447498 D01v06
2. Batteries are fully charged at the beginning of the SAR measurements. A standard battery was used for all SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB 447498 D01v06.
6. Per FCC KDB 865664 D01v01r04, variability SAR measurement were performed when the measured SAR results for a frequency band were greater than or equal to 0.8 W/kg for 1g SAR and >2 for 10g SAR Please see Section 15 for variability analysis. the maximum tune-up tolerance limit.
7. This device utilizes power reduction for some wireless mode and technologies, as outlined in sec. 4.3 The maximum output power allowed for each transmitter and exposure condition was evaluated for SAR compliance based on expected use conditions and simultaneous scenarios.
8. FCC KDB Publication 616217 D04v01r02 Section 4.2, SAR tests for Laptop are required for the rear side with the DUT touching the phantom with the display screen opened at an angle of 90°

### UMTS Notes:

1. The 12.2 kbps RMC mode is the primary mode per KDB 941225 D01v03r01.
2. UMTS SAR was tested under RMC 12.2 kbps with HSPA inactive per KDB publication 941225 D01v03r01. HSPA SAR was not required per the 3G Test Reduction Procedure in KDB Publication 941225 D01v03r01.
3. Per FCC KDB 447498 D01v06, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is 0.8 W/kg then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the channel highest output power channel was used.

### LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Consideration for LTE Devices in FCC KDB 941225 D05v02r05.
2. According to FCC KDB 941225 D05v02r05:  
When the reported SAR is 0.8 W/kg, testing of the 100% RB allocation and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the 1RB, 50%RB and 100%RB allocation with highest output power for that channel.  
Only one channel, and as reported SAR values for 1RB allocation and 50%RB allocation were less than 1.45 W/Kg only the highest power RB offset for each allocation was required.
3. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to target MPR is indicated alongside the SAR results.
4. A-MPR was disabled for all SAR tests by setting NS=01 on the base station simulator.
5. Per FCC KDB Publication 447498 D01v06, if the reported (scaled) LTE TDD Band 41 SAR measured at the highest output power channel for each test configuration is 0.6 W/kg then testing at the other channels is not required for such test configurations.
6. TDD LTE B41 was tested using UL-DL configuration 0 with 6 UL sub frames and 2S sub frames using extended cyclic prefix only and special sub frame configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP

- 36.211 Sec. 4, the duty factor using extended cyclic prefix is 0.633(cf=1.58).
7. Per KDB 941225 D05Av01r02, SAR for LTE Carrier Aggregation operations was not needed because the maximum average output power in LTE CA mode was not > 0.25 dB higher than the maximum output power when downlink CA was not activated.
  8. SAR test reduction is applied using the following criteria:  
Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB, and 50% RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is >0.8 W/kg, testing for other Channels is performed at the highest output power level for 1RB, and 50% RB configuration for that channel. Testing for 100% RB configuration is performed at the highest output power level for 100% RB configuration across the Low, Mid and High Channel when the highest reported SAR for 1 RB and 50% RB are >0.8 W/kg, testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation <1.45 W/kg. Testing for 16-QAM modulation is not required because the reported SAR for QPSK is <1.45 W/kg and its output power is not more than 0.5 dB higher than that a QPSK. Testing for the other channel bandwidths is not required because the reported SAR for the highest channel bandwidth is <1.45 W/kg and its output power is not more than 0.5 dB higher than that of the highest channel bandwidth.

**WLAN Notes:**

1. Per KDB 2482227 D01v02r02 justification for test configurations of 2.4 GHz WiFi Single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11 g/n/ac) was not required due to the maximum allowed powers and the highest reported DSSS SAR.
2. Per KDB 2482227 D01v02r02 justification for test configurations of 5 GHz WiFi Single transmission chain operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed powers. Other transmission mode were not investigated since the highest reported SAR for initial test configuration adjusted by the ration of maximum output powers is less than 1.2 W/kg for 1g SAR and less than 3.0 W/kg for 10 g SAR.
3. When the maximum reported 1g averaged SAR is  $\leq 0.8$  W/kg, SAR testing on additional channels was not required. Otherwise, SAR for the next highest output power channel was required until the reported SAR result was  $\leq 1.20$  W/kg or all test channels were measured.
4. The device was configured to transmit continuously at the required data rated, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools. The reported SAR was scaled to the 100% transmission duty factor to determine compliance. Procedures used to measure the duty factor are identical to that in the associated WLAN test reports.

**Bluetooth Notes:**

1. Bluetooth SAR was measured with the device connected to a call box with hopping disabled with DH5 operation and Tx Tests mode type. Per October 2016 TCBC Workshop Notes, the reported SAR was scaled to 100% transmission duty factor to determine compliance. Please see sec.11 for the time-domain plot and calculation for duty factor of the device.

## 14. Simultaneous SAR Analysis

### 14.1 Body SAR Simultaneous Transmission Analysis. (Reduced Power)

(The Grip sensor is activated)

| Simultaneous Transmission Summation Scenario with 2.4 GHz WLAN (Activated) |             |          |                        |                        |                       |                  |                  |                  |          |          |
|----------------------------------------------------------------------------|-------------|----------|------------------------|------------------------|-----------------------|------------------|------------------|------------------|----------|----------|
| Exposure condition                                                         | Band        | WWAN SAR | 2.4 GHz WLAN Ant.1 SAR | 2.4 GHz WLAN Ant.2 SAR | 2.4 GHz WLAN MIMO SAR | $\Sigma$ 1-g SAR | $\Sigma$ 1-g SAR | $\Sigma$ 1-g SAR | SPLSR    |          |
|                                                                            |             | (W/kg)   | (W/kg)                 | (W/kg)                 | (W/kg)                | (W/kg)           | (W/kg)           | (W/kg)           | (Yes/No) | Plot No. |
|                                                                            |             | 1        | 2                      | 3                      | 4                     | 1+2              | 1+3              | 1+4              |          |          |
| Body SAR                                                                   | UMTS 850    | 0.944    | 0.369                  | 0.374                  | 0.359                 | 1.313            | 1.318            | 1.303            | No       | -        |
|                                                                            | UMTS 1700   | 1.010    | 0.369                  | 0.374                  | 0.359                 | 1.379            | 1.384            | 1.369            | No       | -        |
|                                                                            | UMTS 1900   | 0.696    | 0.369                  | 0.374                  | 0.359                 | 1.065            | 1.070            | 1.055            | No       | -        |
|                                                                            | LTE Band 2  | 0.793    | 0.369                  | 0.374                  | 0.359                 | 1.162            | 1.167            | 1.152            | No       | -        |
|                                                                            | LTE Band 12 | 0.910    | 0.369                  | 0.374                  | 0.359                 | 1.279            | 1.284            | 1.269            | No       | -        |
|                                                                            | LTE Band 13 | 0.763    | 0.369                  | 0.374                  | 0.359                 | 1.132            | 1.137            | 1.122            | No       | -        |
|                                                                            | LTE Band 26 | 0.653    | 0.369                  | 0.374                  | 0.359                 | 1.022            | 1.027            | 1.012            | No       | -        |
|                                                                            | LTE Band 41 | 0.920    | 0.369                  | 0.374                  | 0.359                 | 1.289            | 1.294            | 1.279            | No       | -        |
|                                                                            | LTE Band 66 | 1.003    | 0.369                  | 0.374                  | 0.359                 | 1.372            | 1.377            | 1.362            | No       | -        |

| Simultaneous Transmission Summation Scenario with 5 GHz WLAN (Activated) |             |          |                      |                      |                     |                  |                  |                  |          |          |
|--------------------------------------------------------------------------|-------------|----------|----------------------|----------------------|---------------------|------------------|------------------|------------------|----------|----------|
| Exposure condition                                                       | Band        | WWAN SAR | 5 GHz WLAN Ant.1 SAR | 5 GHz WLAN Ant.2 SAR | 5 GHz WLAN MIMO SAR | $\Sigma$ 1-g SAR | $\Sigma$ 1-g SAR | $\Sigma$ 1-g SAR | SPLSR    |          |
|                                                                          |             | (W/kg)   | (W/kg)               | (W/kg)               | (W/kg)              | (W/kg)           | (W/kg)           | (W/kg)           | (Yes/No) | Plot No. |
|                                                                          |             | 1        | 2                    | 3                    | 4                   | 1+2              | 1+3              | 1+4              |          |          |
| Body SAR                                                                 | UMTS 850    | 0.944    | 0.314                | 0.540                | 0.417               | 1.258            | 1.484            | 1.361            | No       | -        |
|                                                                          | UMTS 1700   | 1.010    | 0.314                | 0.540                | 0.417               | 1.324            | 1.550            | 1.427            | No       | -        |
|                                                                          | UMTS 1900   | 0.696    | 0.314                | 0.540                | 0.417               | 1.010            | 1.236            | 1.113            | No       | -        |
|                                                                          | LTE Band 2  | 0.793    | 0.314                | 0.540                | 0.417               | 1.107            | 1.333            | 1.210            | No       | -        |
|                                                                          | LTE Band 12 | 0.910    | 0.314                | 0.540                | 0.417               | 1.224            | 1.450            | 1.327            | No       | -        |
|                                                                          | LTE Band 13 | 0.763    | 0.314                | 0.540                | 0.417               | 1.077            | 1.303            | 1.180            | No       | -        |
|                                                                          | LTE Band 26 | 0.653    | 0.314                | 0.540                | 0.417               | 0.967            | 1.193            | 1.070            | No       | -        |
|                                                                          | LTE Band 41 | 0.920    | 0.314                | 0.540                | 0.417               | 1.234            | 1.460            | 1.337            | No       | -        |
|                                                                          | LTE Band 66 | 1.003    | 0.314                | 0.540                | 0.417               | 1.317            | 1.543            | 1.420            | No       | -        |

| Simultaneous Transmission Summation Scenario with Bluetooth |             |          |               |                |          |          |
|-------------------------------------------------------------|-------------|----------|---------------|----------------|----------|----------|
| Exposure condition                                          | Band        | WWAN SAR | Bluetooth SAR | $\sum$ 1-g SAR | SPLSR    |          |
|                                                             |             | (W/kg)   | (W/kg)        | (W/kg)         | (Yes/No) | Plot No. |
|                                                             |             | 1        | 2             | 1+2            |          |          |
| Body SAR                                                    | UMTS 850    | 0.944    | 0.257         | 1.201          | No       | -        |
|                                                             | UMTS 1700   | 1.010    | 0.257         | 1.267          | No       | -        |
|                                                             | UMTS 1900   | 0.696    | 0.257         | 0.953          | No       | -        |
|                                                             | LTE Band 2  | 0.793    | 0.257         | 1.050          | No       | -        |
|                                                             | LTE Band 12 | 0.910    | 0.257         | 1.167          | No       | -        |
|                                                             | LTE Band 13 | 0.763    | 0.257         | 1.020          | No       | -        |
|                                                             | LTE Band 26 | 0.653    | 0.257         | 0.910          | No       | -        |
|                                                             | LTE Band 41 | 0.920    | 0.257         | 1.177          | No       | -        |
|                                                             | LTE Band 66 | 1.003    | 0.257         | 1.260          | No       | -        |

| Simultaneous Transmission Summation Scenario with 5 GHz WLAN MIMO & Bluetooth |             |          |                     |               |                |          |          |
|-------------------------------------------------------------------------------|-------------|----------|---------------------|---------------|----------------|----------|----------|
| Exposure condition                                                            | Band        | WWAN SAR | 5 GHz WLAN MIMO SAR | Bluetooth SAR | $\sum$ 1-g SAR | SPLSR    |          |
|                                                                               |             | (W/kg)   | (W/kg)              | (W/kg)        | (W/kg)         | (Yes/No) | Plot No. |
|                                                                               |             | 1        | 2                   | 3             | 1+2+3          |          |          |
| Body SAR                                                                      | UMTS 850    | 0.944    | 0.417               | 0.257         | 1.618          | Yes      | #1       |
|                                                                               | UMTS 1700   | 1.010    | 0.417               | 0.257         | 1.684          | Yes      | #2       |
|                                                                               | UMTS 1900   | 0.696    | 0.417               | 0.257         | 1.370          | No       | -        |
|                                                                               | LTE Band 2  | 0.793    | 0.417               | 0.257         | 1.467          | No       | -        |
|                                                                               | LTE Band 12 | 0.910    | 0.417               | 0.257         | 1.584          | No       | -        |
|                                                                               | LTE Band 13 | 0.763    | 0.417               | 0.257         | 1.437          | No       | -        |
|                                                                               | LTE Band 26 | 0.653    | 0.417               | 0.257         | 1.327          | No       | -        |
|                                                                               | LTE Band 41 | 0.920    | 0.417               | 0.257         | 1.594          | No       | -        |
|                                                                               | LTE Band 66 | 1.003    | 0.417               | 0.257         | 1.677          | Yes      | #3       |

## 14.2 Body SAR Simultaneous Transmission Analysis. (Maximum Power)

(The Grip sensor is Inactived)

| Simultaneous Transmission Summation Scenario with 2.4 GHz WLAN |             |          |                        |                        |                       |                  |                  |                  |          |            |
|----------------------------------------------------------------|-------------|----------|------------------------|------------------------|-----------------------|------------------|------------------|------------------|----------|------------|
| Exposure condition                                             | Band        | WWAN SAR | 2.4 GHz WLAN Ant.1 SAR | 2.4 GHz WLAN Ant.2 SAR | 2.4 GHz WLAN MIMO SAR | $\Sigma$ 1-g SAR | $\Sigma$ 1-g SAR | $\Sigma$ 1-g SAR | SPLSR    |            |
|                                                                |             | (W/kg)   | (W/kg)                 | (W/kg)                 | (W/kg)                | (W/kg)           | (W/kg)           | (W/kg)           | (Yes/No) | Plot No.   |
|                                                                |             | 1        | 2                      | 3                      | 4                     | 1+2              | 1+3              | 1+4              |          |            |
| Body SAR                                                       | UMTS 850    | 0.637    | 0.262                  | 0.267                  | 0.340                 | 0.899            | 0.904            | 0.977            | No       | -          |
|                                                                | UMTS 1700   | 1.366    | 0.262                  | 0.267                  | 0.340                 | 1.628            | 1.633            | 1.706            | Yes      | #4, #5, #6 |
|                                                                | UMTS 1900   | 1.212    | 0.262                  | 0.267                  | 0.340                 | 1.474            | 1.479            | 1.552            | No       | -          |
|                                                                | LTE Band 2  | 1.239    | 0.262                  | 0.267                  | 0.340                 | 1.501            | 1.506            | 1.579            | No       | -          |
|                                                                | LTE Band 12 | 0.723    | 0.262                  | 0.267                  | 0.340                 | 0.985            | 0.990            | 1.063            | No       | -          |
|                                                                | LTE Band 13 | 0.630    | 0.262                  | 0.267                  | 0.340                 | 0.892            | 0.897            | 0.970            | No       | -          |
|                                                                | LTE Band 26 | 0.523    | 0.262                  | 0.267                  | 0.340                 | 0.785            | 0.790            | 0.863            | No       | -          |
|                                                                | LTE Band 41 | 0.554    | 0.262                  | 0.267                  | 0.340                 | 0.816            | 0.821            | 0.894            | No       | -          |
|                                                                | LTE Band 66 | 1.341    | 0.262                  | 0.267                  | 0.340                 | 1.603            | 1.608            | 1.681            | Yes      | #7, #8, #9 |

| Simultaneous Transmission Summation Scenario with 5 GHz WLAN (Inactived) |             |          |                      |                      |                     |                  |                  |                  |          |               |
|--------------------------------------------------------------------------|-------------|----------|----------------------|----------------------|---------------------|------------------|------------------|------------------|----------|---------------|
| Exposure condition                                                       | Band        | WWAN SAR | 5 GHz WLAN Ant.1 SAR | 5 GHz WLAN Ant.2 SAR | 5 GHz WLAN MIMO SAR | $\Sigma$ 1-g SAR | $\Sigma$ 1-g SAR | $\Sigma$ 1-g SAR | SPLSR    |               |
|                                                                          |             | (W/kg)   | (W/kg)               | (W/kg)               | (W/kg)              | (W/kg)           | (W/kg)           | (W/kg)           | (Yes/No) | Plot No.      |
|                                                                          |             | 1        | 2                    | 3                    | 4                   | 1+2              | 1+3              | 1+4              |          |               |
| Body SAR                                                                 | UMTS 850    | 0.637    | 0.475                | 0.400                | 0.550               | 1.112            | 1.037            | 1.187            | No       | -             |
|                                                                          | UMTS 1700   | 1.366    | 0.475                | 0.400                | 0.550               | 1.841            | 1.766            | 1.916            | Yes      | #10, #11, #12 |
|                                                                          | UMTS 1900   | 1.212    | 0.475                | 0.400                | 0.550               | 1.687            | 1.612            | 1.762            | Yes      | #13, #14, #15 |
|                                                                          | LTE Band 2  | 1.239    | 0.475                | 0.400                | 0.550               | 1.714            | 1.639            | 1.789            | Yes      | #16, #17, #18 |
|                                                                          | LTE Band 12 | 0.723    | 0.475                | 0.400                | 0.550               | 1.198            | 1.123            | 1.273            | No       | -             |
|                                                                          | LTE Band 13 | 0.630    | 0.475                | 0.400                | 0.550               | 1.105            | 1.030            | 1.180            | No       | -             |
|                                                                          | LTE Band 26 | 0.523    | 0.475                | 0.400                | 0.550               | 0.998            | 0.923            | 1.073            | No       | -             |
|                                                                          | LTE Band 41 | 0.554    | 0.475                | 0.400                | 0.550               | 1.029            | 0.954            | 1.104            | No       | -             |
|                                                                          | LTE Band 66 | 1.341    | 0.475                | 0.400                | 0.550               | 1.816            | 1.741            | 1.891            | Yes      | #19, #20, #21 |

| Simultaneous Transmission Summation Scenario with Bluetooth (Inactivated) |             |          |               |                |          |          |
|---------------------------------------------------------------------------|-------------|----------|---------------|----------------|----------|----------|
| Exposure condition                                                        | Band        | WWAN SAR | Bluetooth SAR | $\sum$ 1-g SAR | SPLSR    |          |
|                                                                           |             | (W/kg)   | (W/kg)        | (W/kg)         | (Yes/No) | Plot No. |
|                                                                           |             | 1        | 2             | 1+2            |          |          |
| Body SAR                                                                  | UMTS 850    | 0.637    | 0.257         | 0.894          | No       | -        |
|                                                                           | UMTS 1700   | 1.366    | 0.257         | 1.623          | Yes      | #22      |
|                                                                           | UMTS 1900   | 1.212    | 0.257         | 1.469          | No       | -        |
|                                                                           | LTE Band 2  | 1.239    | 0.257         | 1.496          | No       | -        |
|                                                                           | LTE Band 12 | 0.723    | 0.257         | 0.980          | No       | -        |
|                                                                           | LTE Band 13 | 0.630    | 0.257         | 0.887          | No       | -        |
|                                                                           | LTE Band 26 | 0.523    | 0.257         | 0.780          | No       | -        |
|                                                                           | LTE Band 41 | 0.554    | 0.257         | 0.811          | No       | -        |
|                                                                           | LTE Band 66 | 1.341    | 0.257         | <b>1.598</b>   | No       | -        |

| Simultaneous Transmission Summation Scenario with 5 GHz WLAN MIMO & Bluetooth (Inactivated) |             |          |                     |               |                |          |          |
|---------------------------------------------------------------------------------------------|-------------|----------|---------------------|---------------|----------------|----------|----------|
| Exposure condition                                                                          | Band        | WWAN SAR | 5 GHz WLAN MIMO SAR | Bluetooth SAR | $\sum$ 1-g SAR | SPLSR    |          |
|                                                                                             |             | (W/kg)   | (W/kg)              | (W/kg)        | (W/kg)         | (Yes/No) | Plot No. |
|                                                                                             |             | 1        | 2                   | 3             | 1+2+3          |          |          |
| Body SAR                                                                                    | UMTS 850    | 0.637    | 0.550               | 0.257         | 1.444          | No       | -        |
|                                                                                             | UMTS 1700   | 1.366    | 0.550               | 0.257         | 2.173          | Yes      | #23      |
|                                                                                             | UMTS 1900   | 1.212    | 0.550               | 0.257         | 2.019          | Yes      | #24      |
|                                                                                             | LTE Band 2  | 1.239    | 0.550               | 0.257         | 2.046          | Yes      | #25      |
|                                                                                             | LTE Band 12 | 0.723    | 0.550               | 0.257         | 1.530          | No       | -        |
|                                                                                             | LTE Band 13 | 0.630    | 0.550               | 0.257         | 1.437          | No       | -        |
|                                                                                             | LTE Band 26 | 0.523    | 0.550               | 0.257         | 1.330          | No       | -        |
|                                                                                             | LTE Band 41 | 0.554    | 0.550               | 0.257         | 1.361          | No       | -        |
|                                                                                             | LTE Band 66 | 1.341    | 0.550               | 0.257         | 2.148          | Yes      | #26      |

### 14.3 SAR to Peak Location Separation Ratio (SPLSR)

FCC KDB 447498 D01v06 General RF Exposure Guidance introduces a new formula for calculating the SAR a Peak Location Separation Ratio(SPLSR) between pairs of simultaneously transmitting antennas:

$$SPLSR = (SAR_1 + SAR_2)^{1.5} / R_i$$

Where:

$SAR_1$  is the highest measured or estimated SAR for the first of a pair of simultaneous transmitting antennas, in a specific test operating mode and exposure condition

$SAR_2$  is the highest measured of estimated SAR for the second of a pair of simultaneous transmitting antennas, in the same test operating mode and exposure condition as the first

$R_i$  is the separation distance between the pair of simultaneous transmitting antennas, When the SAR is measured, for both antennas in the pair, it is determined by the actual x, y and z coordinates in the 1-g SAR for each SAR peak location, based on the extrapolated and interpolated result in the zoom scan measurement, using the formula of the square root of  $[(X_1 - X_2)^2 + (Y_1 - Y_2)^2 + (Z_1 - Z_2)^2]$

In order for a pair of simultaneous transmitting antennas with the sum 1-g of SAR > 1.6 W/kg and with the sum 10-g of SAR > 4 W/Kg to qualify for exemption from Simultaneous Transmission SAR measurements, it has to satisfy the condition of:

$$(SAR_1 + SAR_2)^{1.5} / R_i \leq 0.04 \text{ for 1g SAR and } (SAR_1 + SAR_2)^{1.5} / R_i \leq 0.1 \text{ for 10g SAR}$$

Per Sec. 14, below simultaneous transmission summations need to be calculated SPLSR.

#### 14.3.1 SPLSR Evaluation

##### Peak SAR location for Rear side (Proximity Sensor is Activated)

| Mode/Band             | X(m)   | Y(m)   | Z(m) | Reported SAR [W/kg] |
|-----------------------|--------|--------|------|---------------------|
| UMTS 850 Grip         | -94.5  | 110.2  | 0.79 | 0.944               |
| UMTS 1700 Grip        | -95.90 | 115.90 | 0.71 | 1.010               |
| LTE Band 66 Grip      | -82.50 | 130.80 | 0.84 | 1.003               |
| WLAN 5GHz Grip (MIMO) | -32.2  | -163.2 | 1.36 | 0.417               |

##### Peak SAR location for Rear side (Proximity Sensor is Inactivated)

| Mode/Band               | X(m)    | Y(m)    | Z(m)  | Reported SAR [W/kg] |
|-------------------------|---------|---------|-------|---------------------|
| UMTS 1700 Max           | -102.00 | 124.90  | 0.68  | 1.366               |
| UMTS 1900 Max           | -100.50 | 128.00  | 0.81  | 1.212               |
| LTE Band 2 Max          | -100.50 | 126.50  | 0.73  | 1.239               |
| LTE Band 66 Max         | -97.50  | 119.00  | 0.50  | 1.341               |
| WLAN 2.4GHz Max (Ant 1) | -4.00   | -155.60 | 1.63  | 0.262               |
| WLAN 2.4GHz Max (Ant 2) | -9.00   | 143.00  | -0.25 | 0.267               |
| WLAN 2.4GHz Max (MIMO)  | -10.80  | 142.40  | -0.11 | 0.340               |
| WLAN 5GHz Max (Ant 1)   | -26.6   | -152.00 | 0.62  | 0.475               |
| WLAN 5GHz Max (Ant 2)   | -31.00  | 152.00  | 0.96  | 0.400               |
| WLAN 5GHz Max (MIMO)    | -32.20  | 143.00  | 0.80  | 0.550               |
| Bluetooth               | -5.60   | -151.20 | 4.10  | 0.257               |



### SAR to Peak Location Ratio (SPLSR) Figures (Sensor Activated)

| Mode        |                 |           | Sum 1g SAR [W/kg] |       |       | Peak SAR Separation Distance (mm) |        |       | SPLSR |       |       | Plot No. |
|-------------|-----------------|-----------|-------------------|-------|-------|-----------------------------------|--------|-------|-------|-------|-------|----------|
| 1           | 2               | 3         | 1+2               | 1+3   | 2+3   | 1+2                               | 1+3    | 2+3   | 1+2   | 1+3   | 2+3   |          |
| UMTS 850    | 5 GHz WLAN MIMO | Bluetooth | 1.361             | 1.201 | 0.674 | 280.41                            | 276.12 | 29.31 | 0.006 | 0.005 | 0.019 | #1       |
| UMTS 1700   | 5 GHz WLAN MIMO | Bluetooth | 1.427             | 1.267 | 0.674 | 286.28                            | 281.97 | 29.31 | 0.006 | 0.005 | 0.019 | #2       |
| LTE Band 66 | 5 GHz WLAN MIMO | Bluetooth | 1.420             | 1.260 | 0.674 | 298.27                            | 292.32 | 29.31 | 0.006 | 0.005 | 0.019 | #3       |

### SAR to Peak Location Ratio (SPLSR) Figures( Sensor Inactivated)

| Mode        |                    | Sum 1g SAR [W/kg] | Peak SAR Separation Distance (mm) | SPLSR | Plot No. |
|-------------|--------------------|-------------------|-----------------------------------|-------|----------|
| 1           | 2                  | 1+2               | 1+2                               | 1+2   |          |
| UMTS 1700   | 2.4 GHz WLAN Ant.1 | 1.628             | 297.13                            | 0.007 | #4       |
| UMTS 1700   | 2.4 GHz WLAN Ant.2 | 1.633             | 94.75                             | 0.022 | #5       |
| UMTS 1700   | 2.4 GHz WLAN MIMO  | 1.706             | 92.87                             | 0.023 | #6       |
| LTE Band 66 | 2.4 GHz WLAN Ant.1 | 1.603             | 290.08                            | 0.007 | #7       |
| LTE Band 66 | 2.4 GHz WLAN Ant.2 | 1.608             | 91.70                             | 0.022 | #8       |
| LTE Band 66 | 2.4 GHz WLAN MIMO  | 1.681             | 89.80                             | 0.023 | #9       |
| UMTS 1700   | 5 GHz WLAN Ant.1   | 1.841             | 286.98                            | 0.009 | #10      |
| UMTS 1700   | 5 GHz WLAN Ant.2   | 1.766             | 76.00                             | 0.031 | #11      |
| UMTS 1700   | 5 GHz WLAN MIMO    | 1.916             | 72.11                             | 0.036 | #12      |
| UMTS 1900   | 5 GHz WLAN Ant.1   | 1.687             | 289.59                            | 0.008 | #13      |
| UMTS 1900   | 5 GHz WLAN Ant.2   | 1.612             | 73.53                             | 0.028 | #14      |
| UMTS 1900   | 5 GHz WLAN MIMO    | 1.762             | 69.93                             | 0.032 | #15      |
| LTE Band 2  | 5 GHz WLAN Ant.1   | 1.714             | 288.14                            | 0.008 | #16      |
| LTE Band 2  | 5 GHz WLAN Ant.2   | 1.639             | 74.03                             | 0.029 | #17      |
| LTE Band 2  | 5 GHz WLAN MIMO    | 1.789             | 294.24                            | 0.008 | #18      |
| LTE Band 66 | 5 GHz WLAN Ant.1   | 1.816             | 280.12                            | 0.009 | #19      |
| LTE Band 66 | 5 GHz WLAN Ant.2   | 1.784             | 74.24                             | 0.031 | #20      |
| LTE Band 66 | 5 GHz WLAN MIMO    | 1.891             | 69.57                             | 0.036 | #21      |
| UMTS 1700   | Bluetooth          | 1.623             | 292.47                            | 0.007 | #22      |

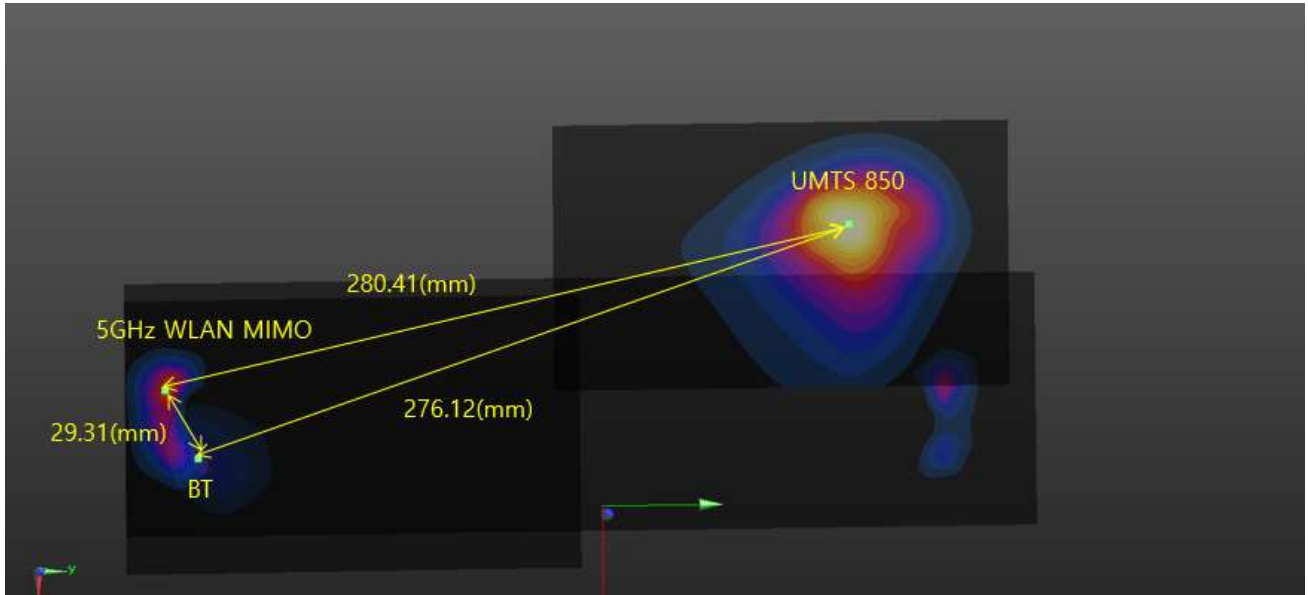
| Mode        |                 |           | Sum 1g SAR [W/kg] |       |       | Peak SAR Separation Distance (mm) |        |        | SPLSR |       |       | Plot No. |
|-------------|-----------------|-----------|-------------------|-------|-------|-----------------------------------|--------|--------|-------|-------|-------|----------|
| 1           | 2               | 3         | 1+2               | 1+3   | 2+3   | 1+2                               | 1+3    | 2+3    | 1+2   | 1+3   | 2+3   |          |
| UMTS 1700   | 5 GHz WLAN MIMO | Bluetooth | 1.916             | 1.623 | 0.807 | 72.11                             | 292.47 | 295.42 | 0.036 | 0.007 | 0.002 | #23      |
| UMTS 1900   | 5 GHz WLAN MIMO | Bluetooth | 1.762             | 1.469 | 0.807 | 69.93                             | 294.91 | 295.42 | 0.032 | 0.006 | 0.002 | #24      |
| LTE Band 2  | 5 GHz WLAN MIMO | Bluetooth | 1.789             | 1.496 | 0.807 | 70.26                             | 293.49 | 295.42 | 0.033 | 0.006 | 0.002 | #25      |
| LTE Band 66 | 5 GHz WLAN MIMO | Bluetooth | 1.891             | 1.598 | 0.807 | 69.57                             | 285.42 | 295.42 | 0.036 | 0.007 | 0.002 | #26      |



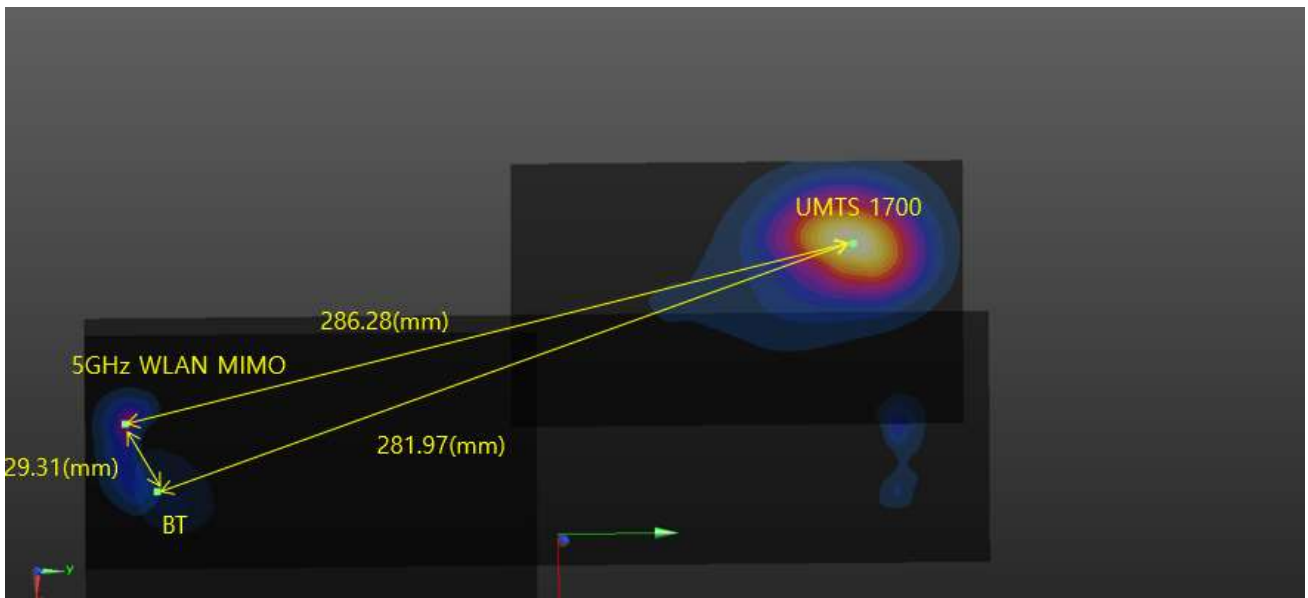
### 14.3.3 SPLSR Plot

#### (Proximity Sensor Activated)

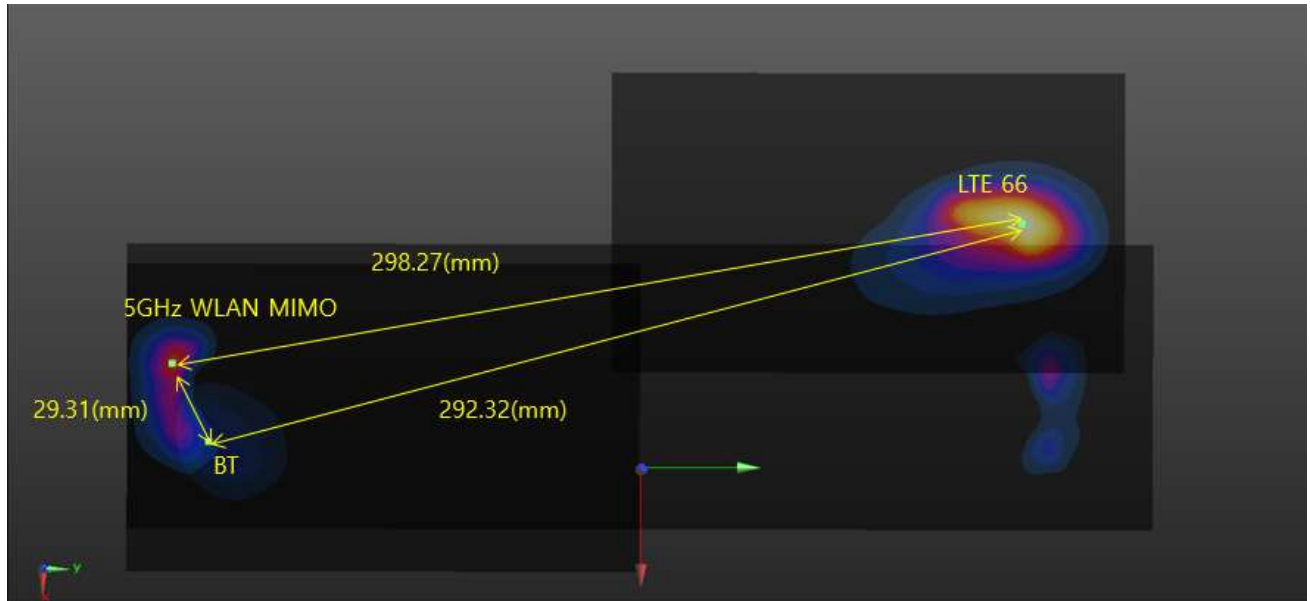
Plot #1 UMTS 850 + 5 GHz MIMO + Bluetooth.



Plot #2 UMTS 1700 + 5 GHz MIMO + Bluetooth

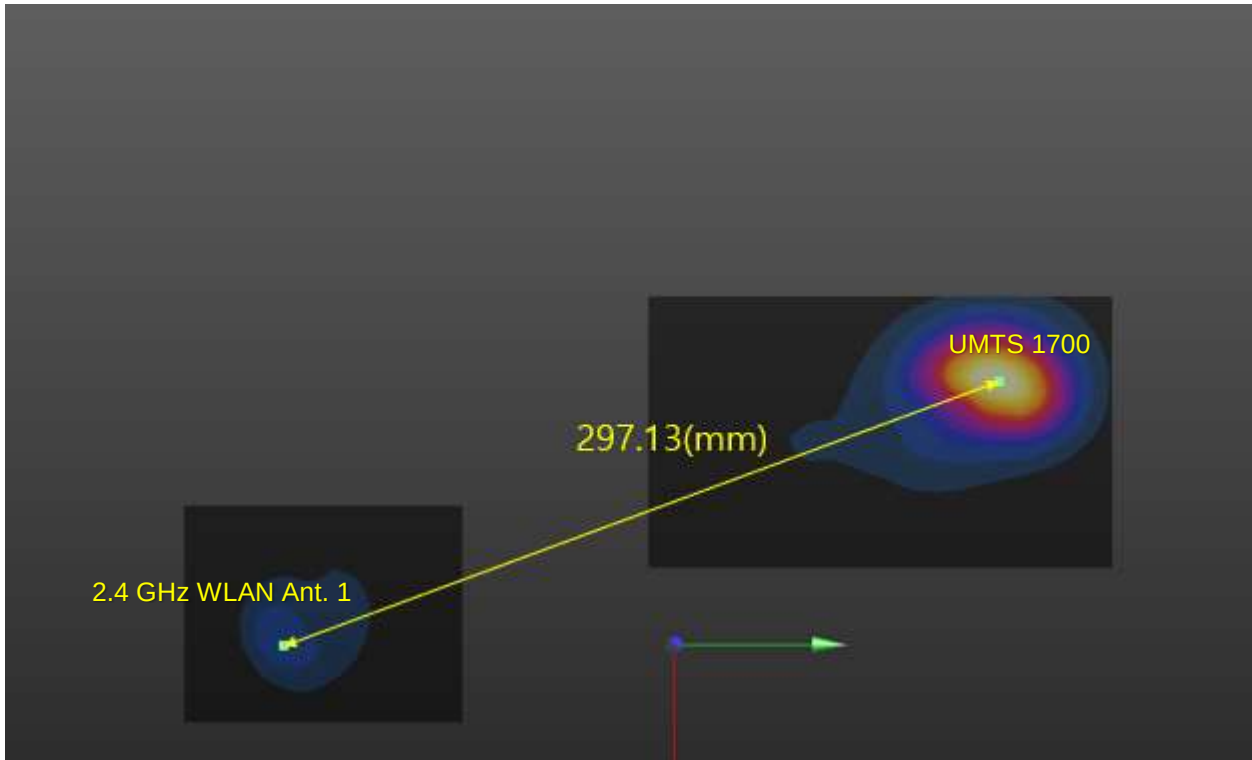


Plot #3 LTE Band 66 + 5 GHz MIMO + Bluetooth

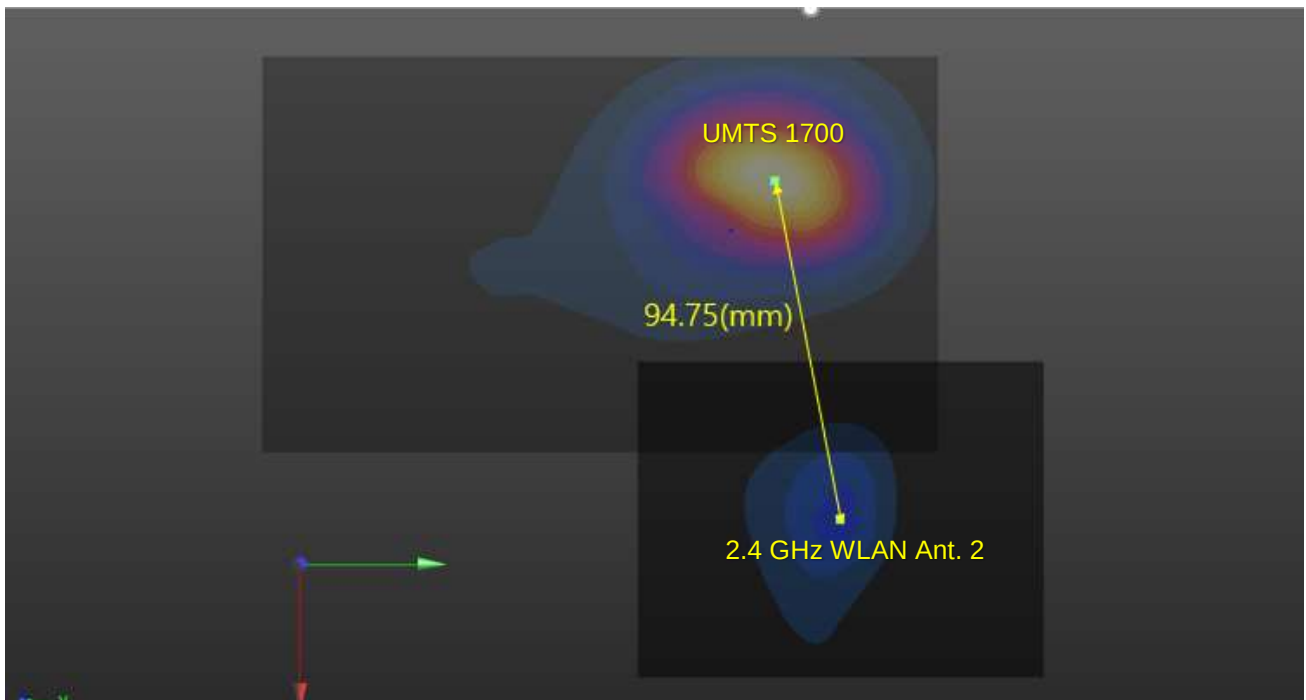


**(Proximity Sensor is Inactivated)**

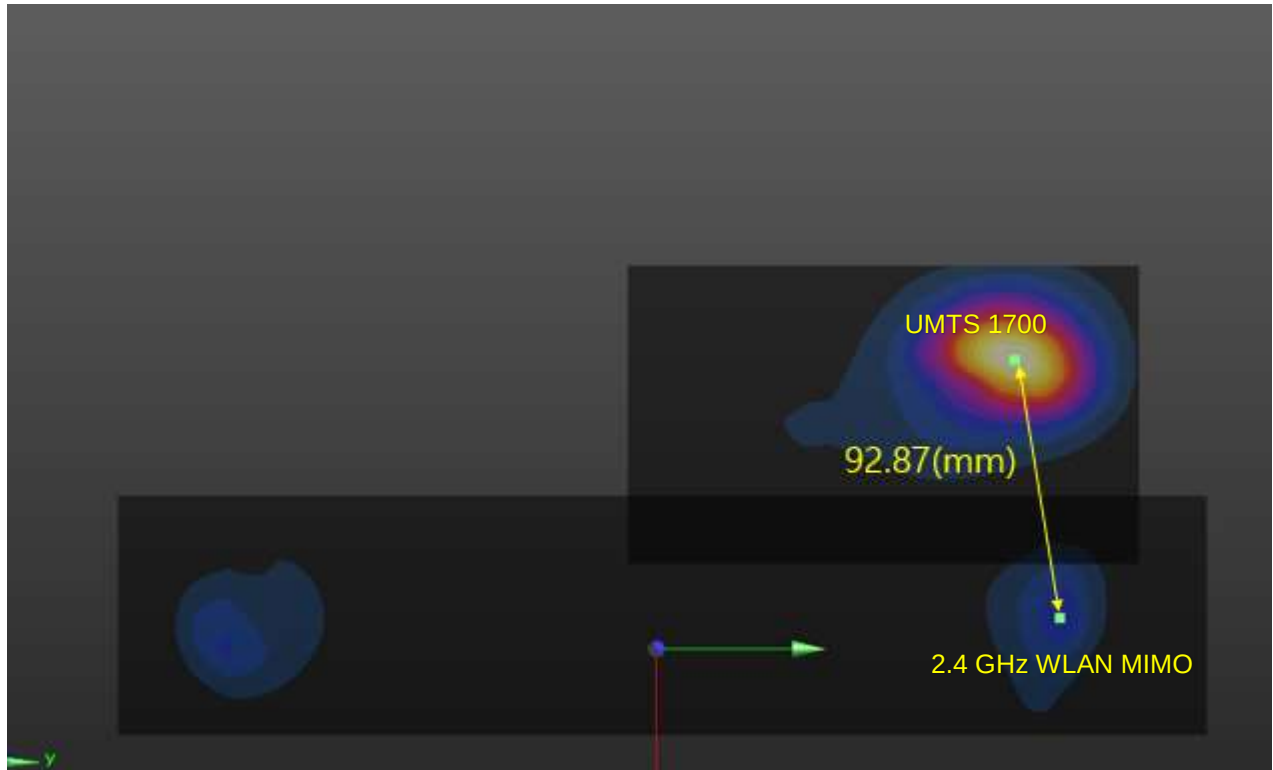
Plot #4 UMTS 1700 MAX. + 2.4 GHz WLAN Ant.1 Max.



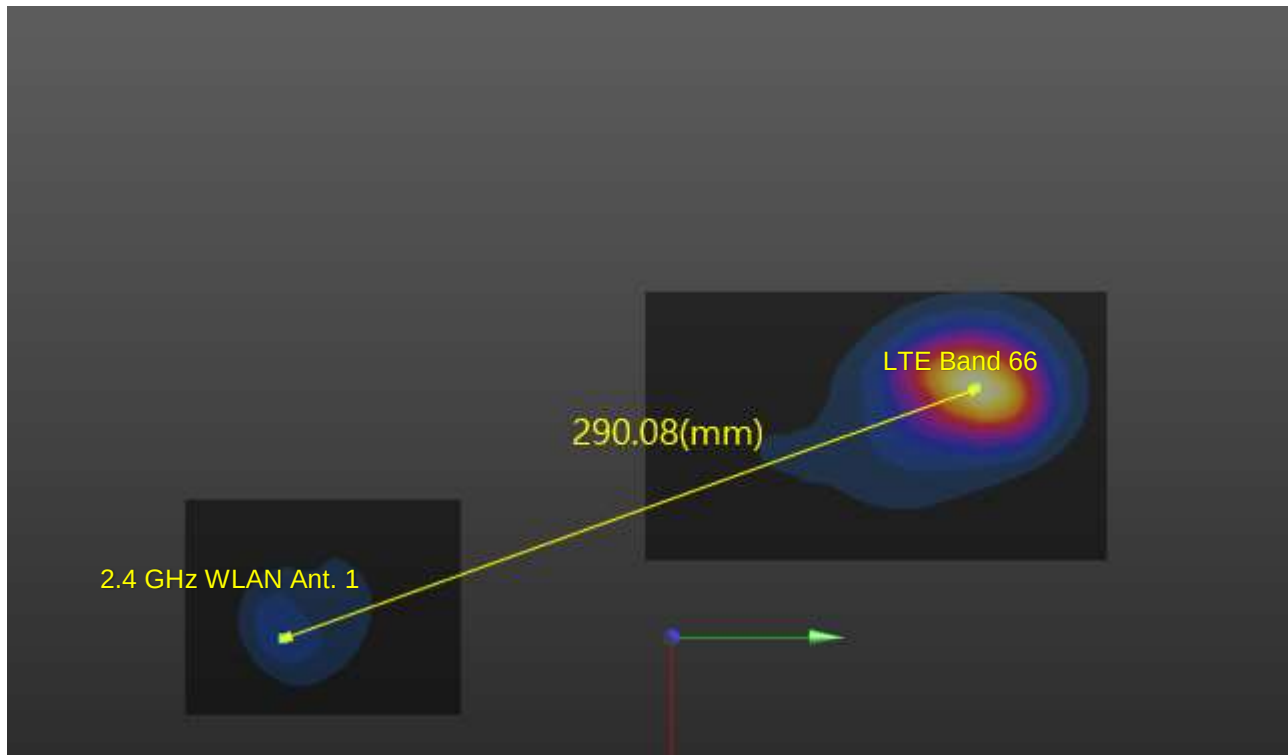
Plot #5 UMTS 1700 MAX. + 2.4 GHz WLAN Ant.2 Max.



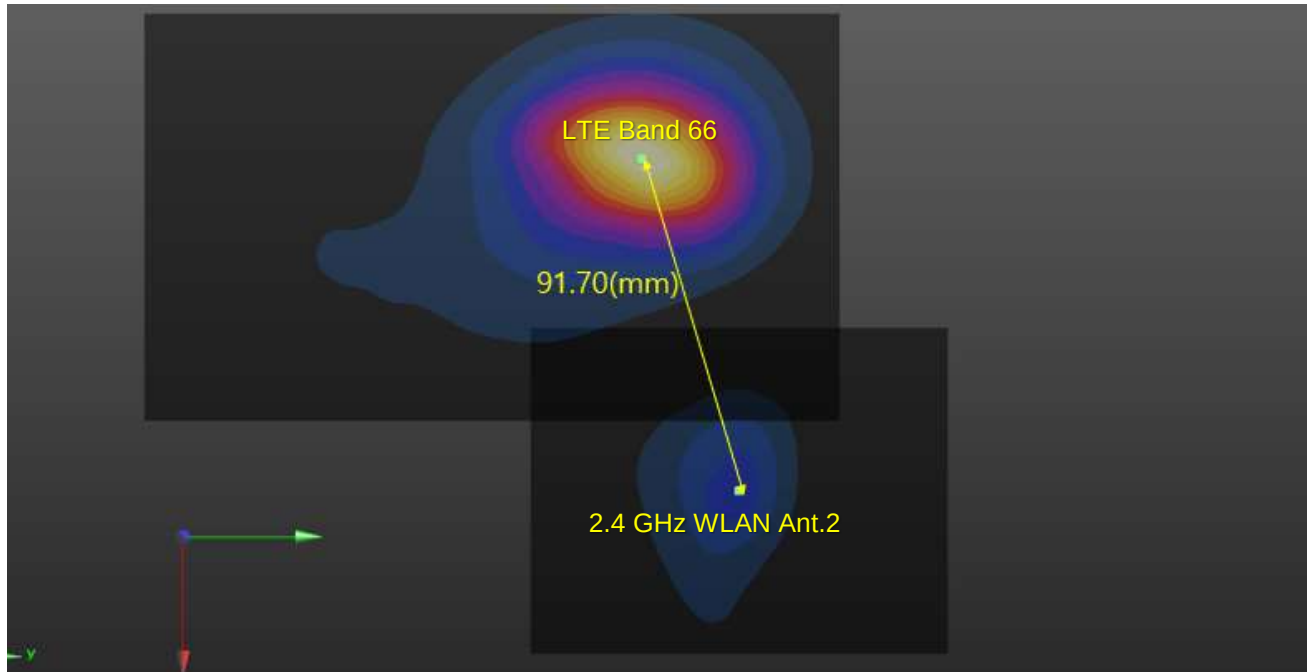
Plot #6 UMTS 1700 MAX. + 2.4 GHz WLAN MIMO Max.



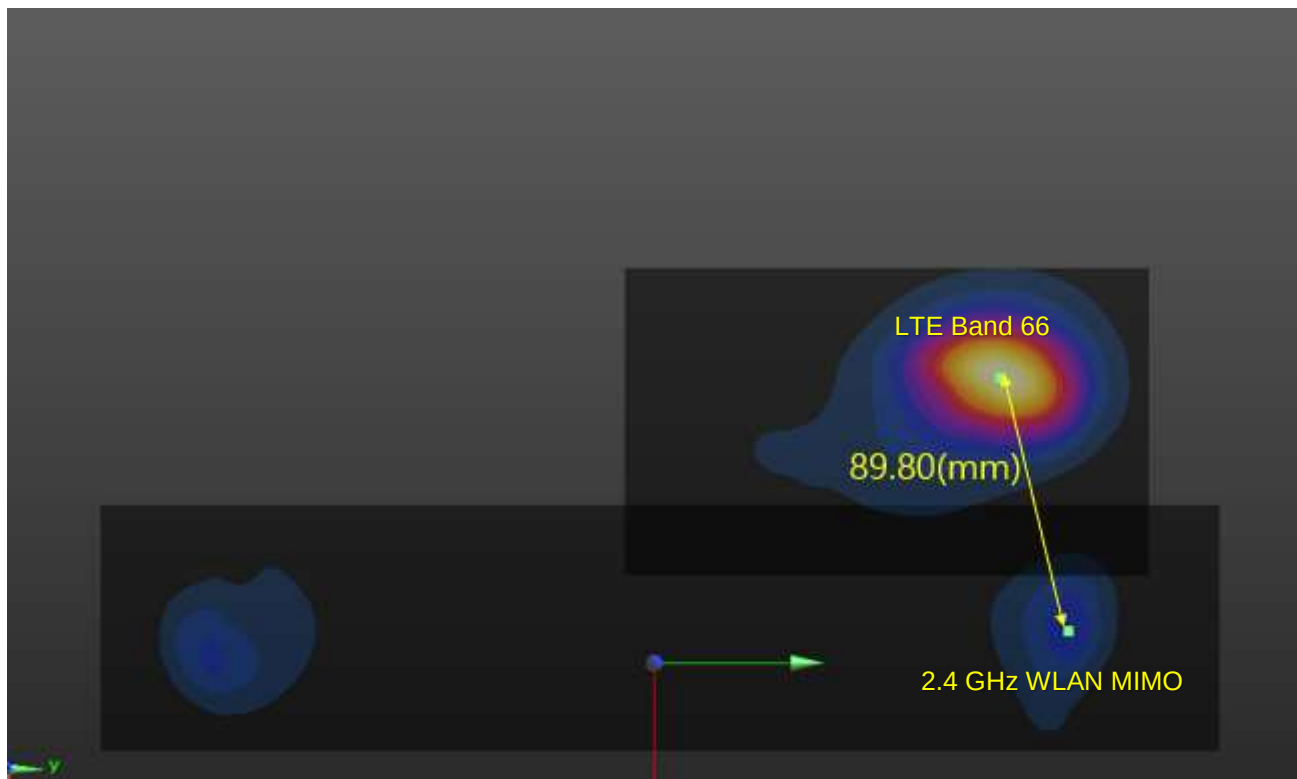
Plot #7 LTE Band 66 MAX. + 2.4 GHz WLAN Ant.1 Max.



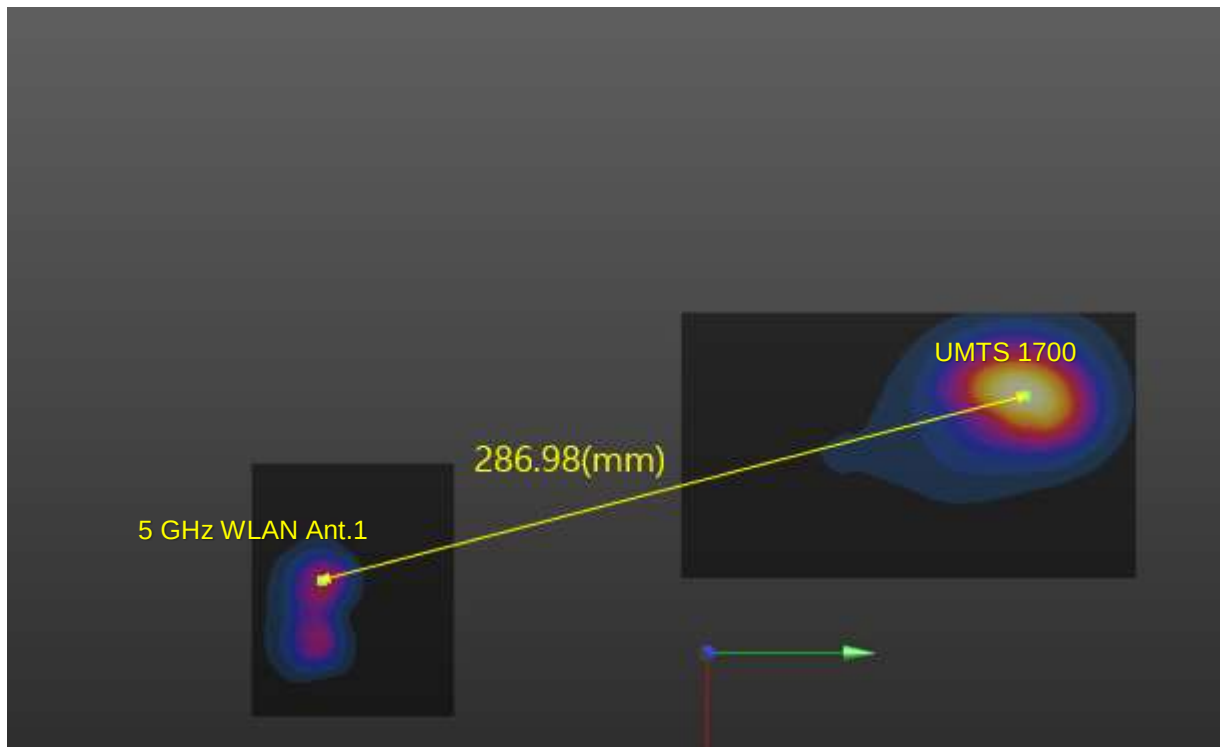
Plot #8 LTE Band 66 MAX. + 2.4 GHz WLAN Ant.2 Max.



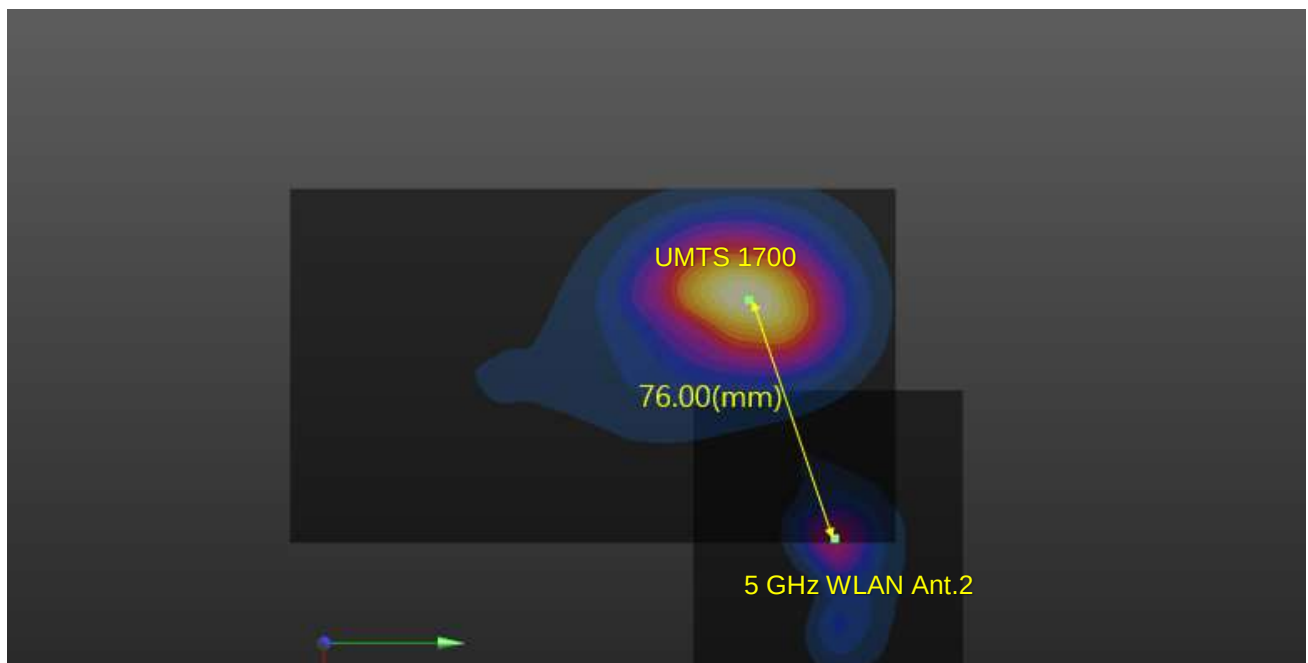
Plot #9 LTE Band 66 MAX. + 2.4 GHz WLAN MIMO Max.



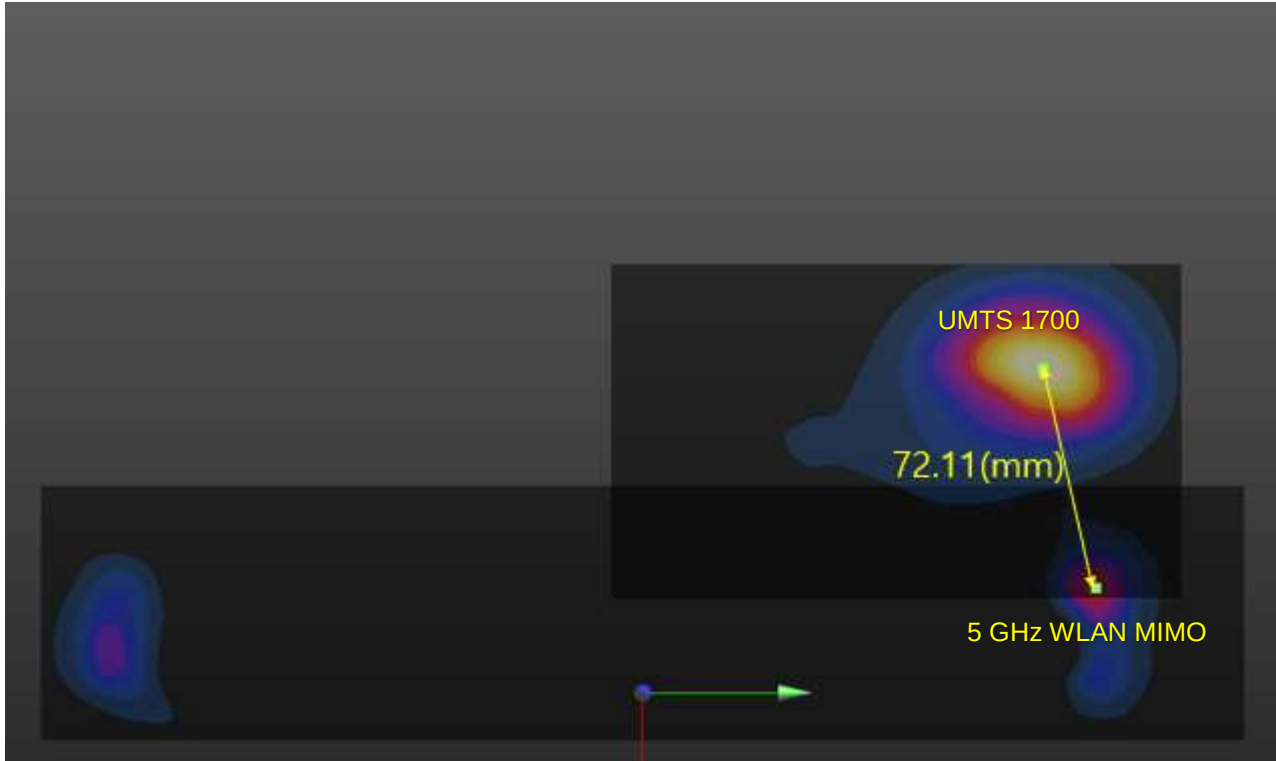
Plot #10 UMTS 1700 MAX. + 5 GHz WLAN Ant.1 Max.



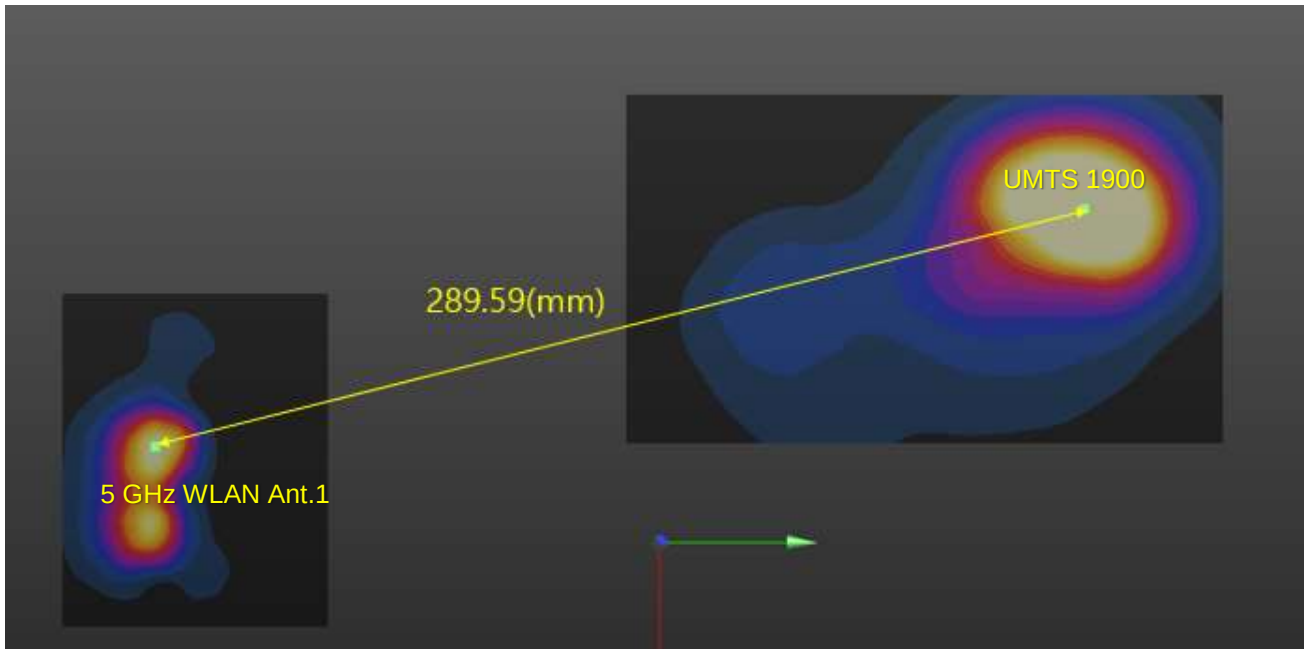
Plot #11 UMTS 1700 MAX. + 5 GHz WLAN Ant.2 Max.



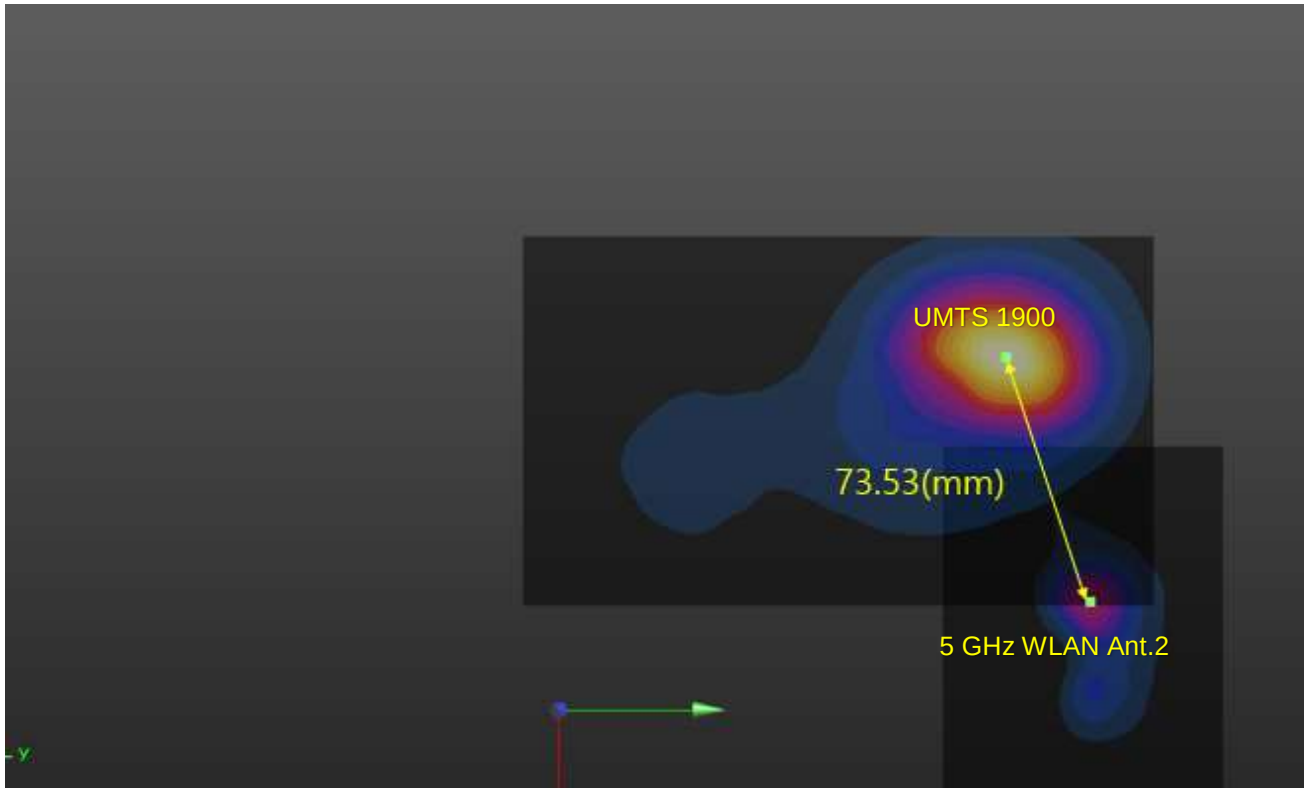
Plot #12 UMTS 1700 MAX. + 5 GHz WLAN MIMO Max.



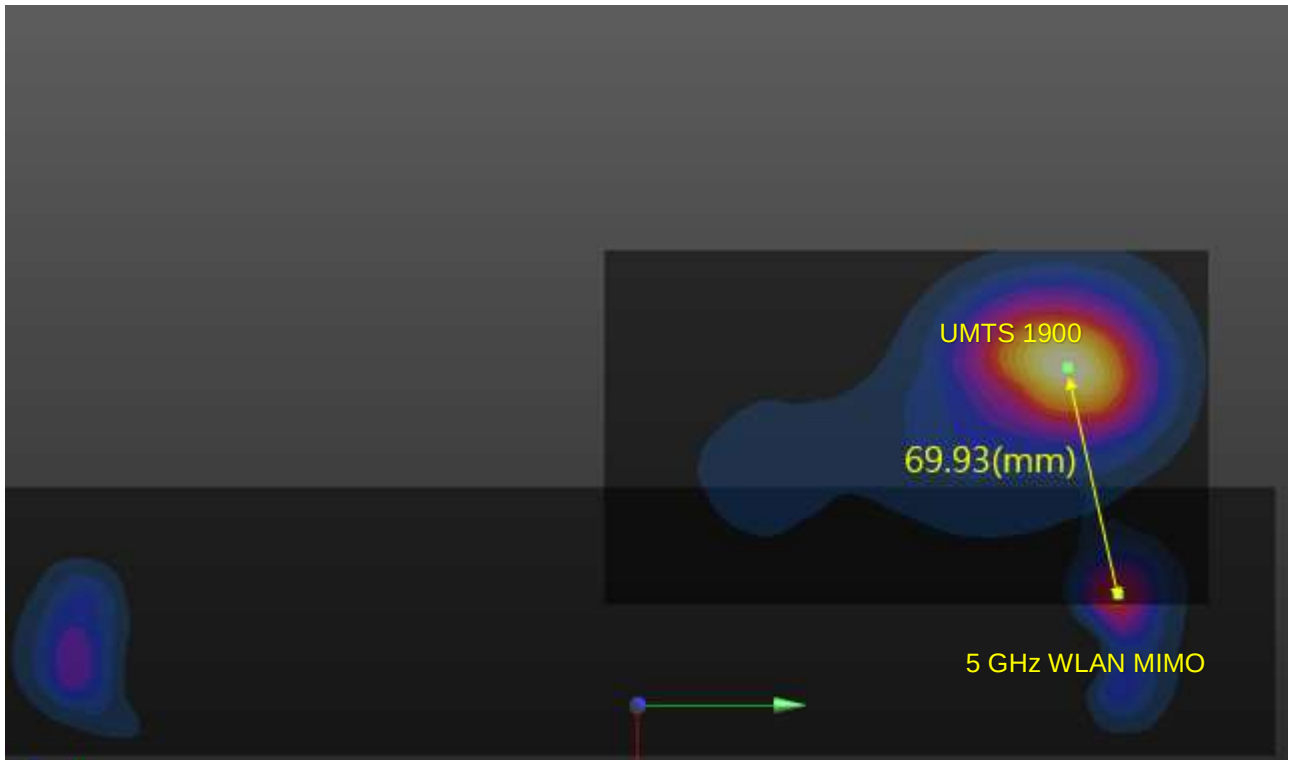
Plot #13 UMTS 1900 MAX. + 5 GHz WLAN Ant.1 Max.



Plot #14 UMTS 1900 MAX. + 5 GHz WLAN Ant.2 Max.

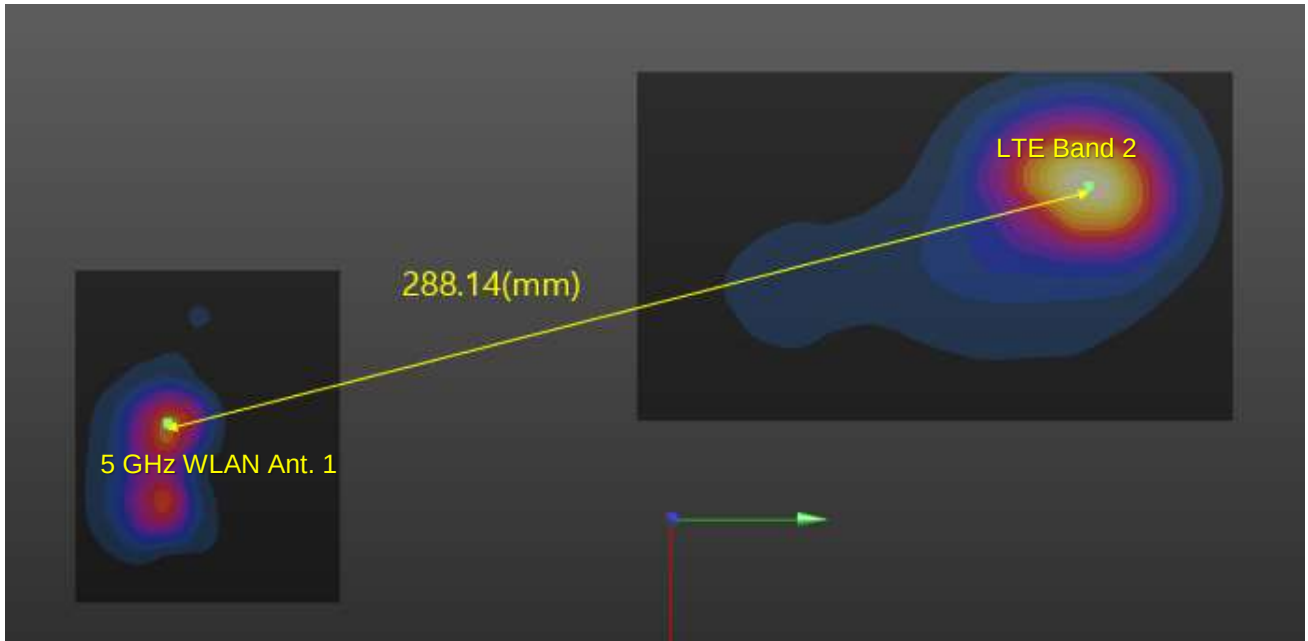


Plot #15 UMTS 1900 MAX. + 5 GHz WLAN MIMO Max.

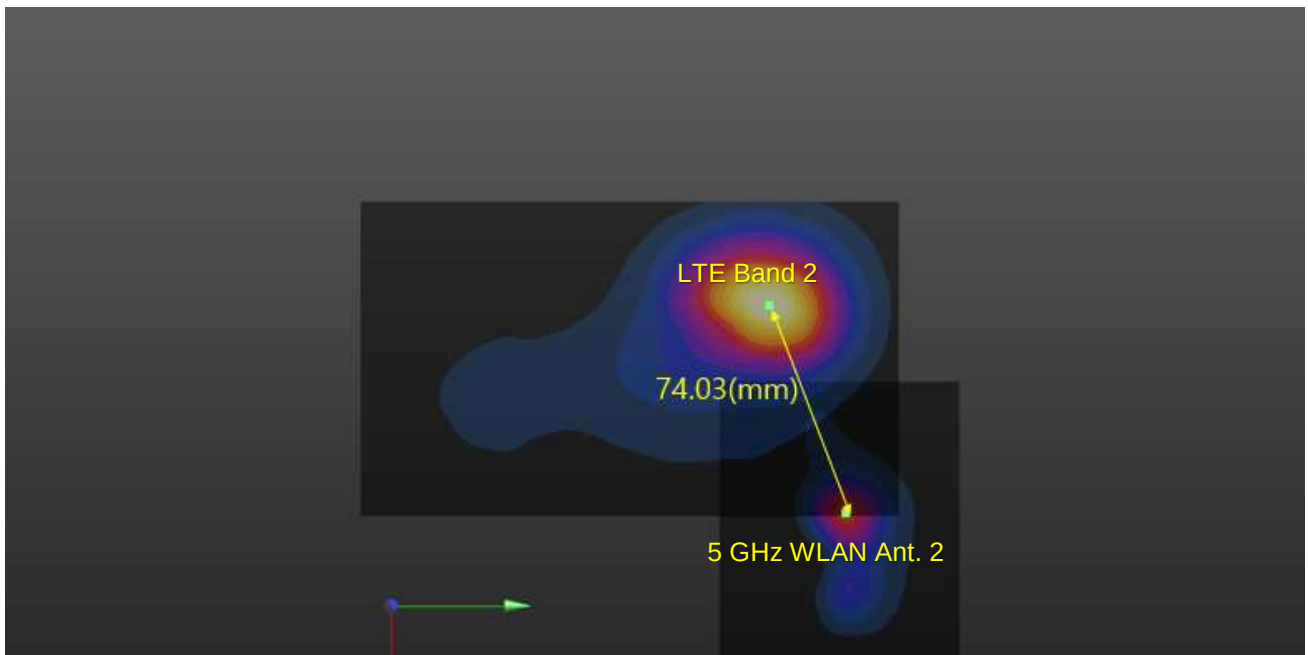




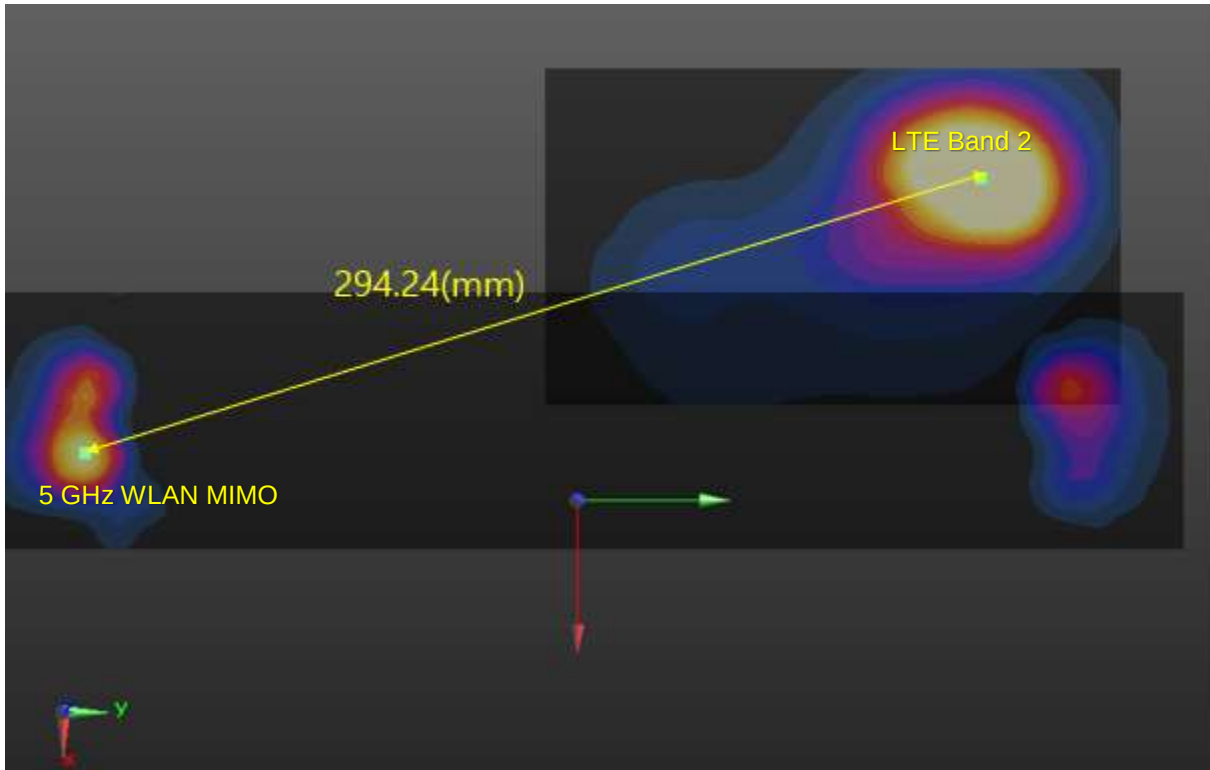
Plot #16 LTE Band 2 MAX. + 5 GHz WLAN Ant.1 Max.



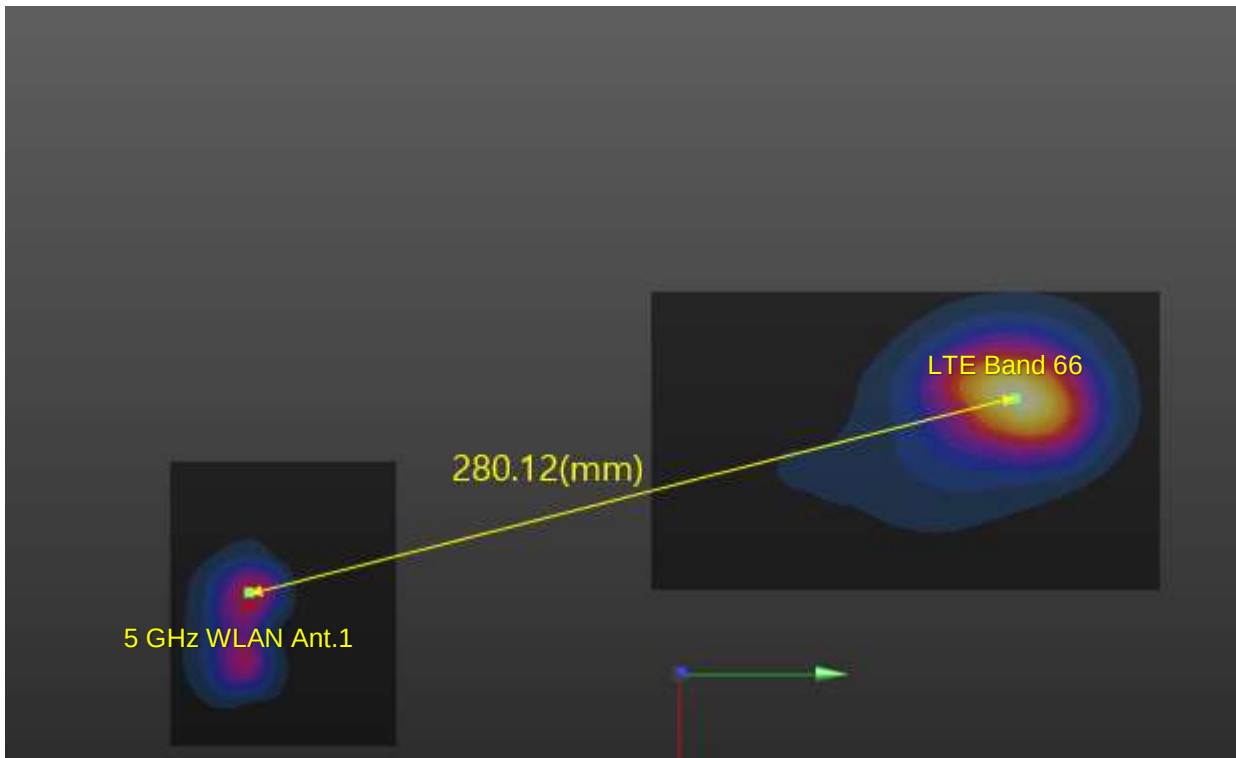
Plot #17 LTE Band 2 MAX. + 5 GHz WLAN Ant.2 Max.



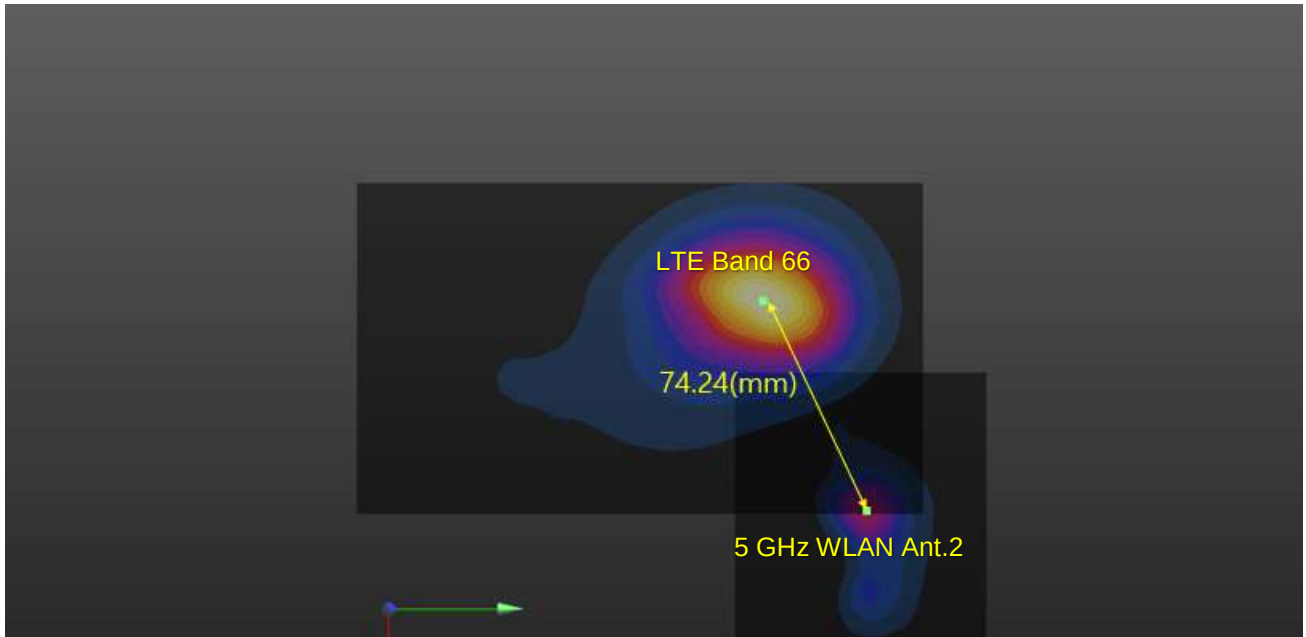
Plot #18 LTE Band 2 MAX. + 5 GHz WLAN MIMO Max.



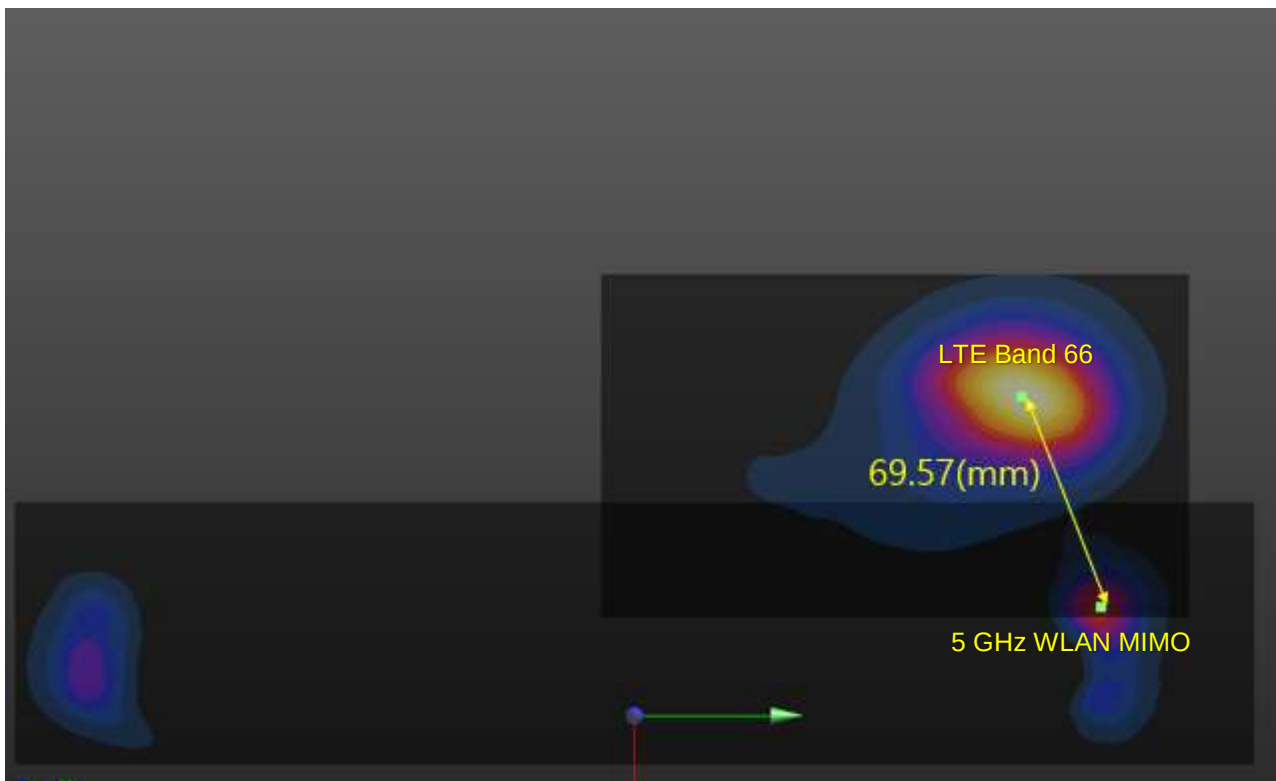
Plot #19 LTE Band 66 MAX. + 5 GHz WLAN Ant.1 Max.



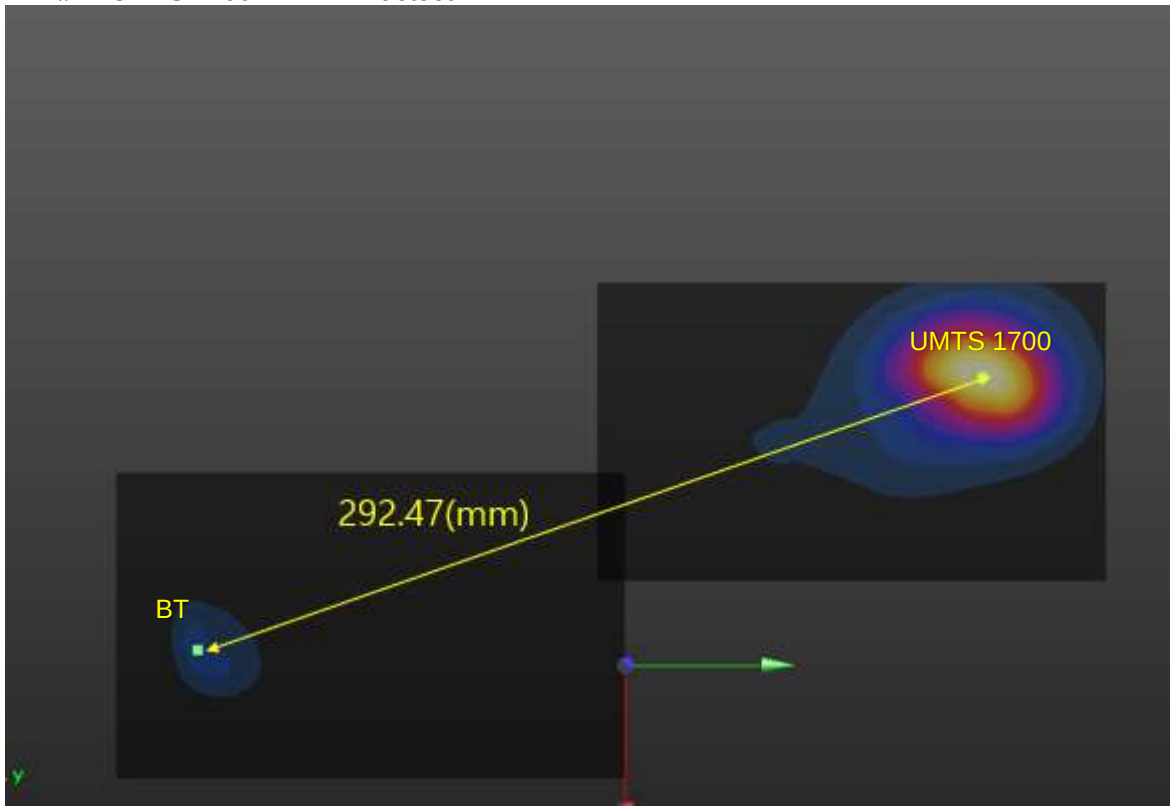
Plot #20 LTE Band 66 MAX. + 5 GHz WLAN Ant.2 Max.



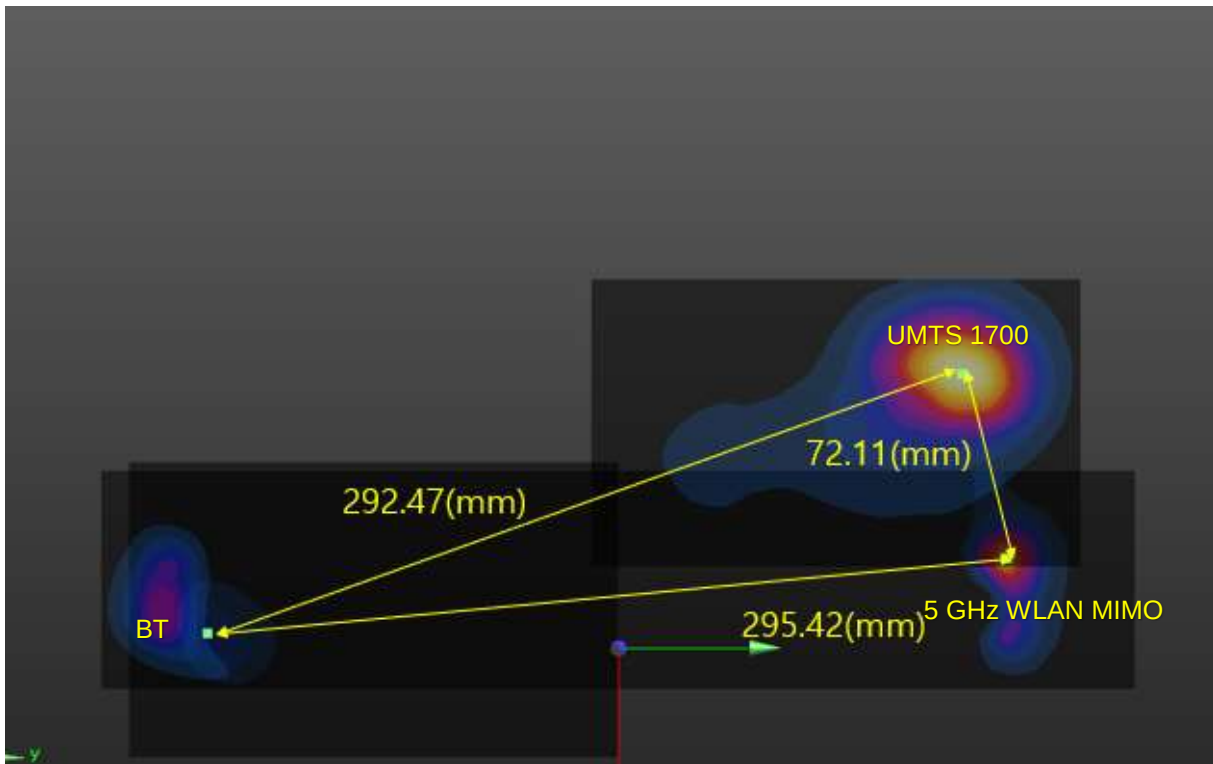
Plot #21 LTE Band 66 MAX. + 5 GHz WLAN MIMO Max.



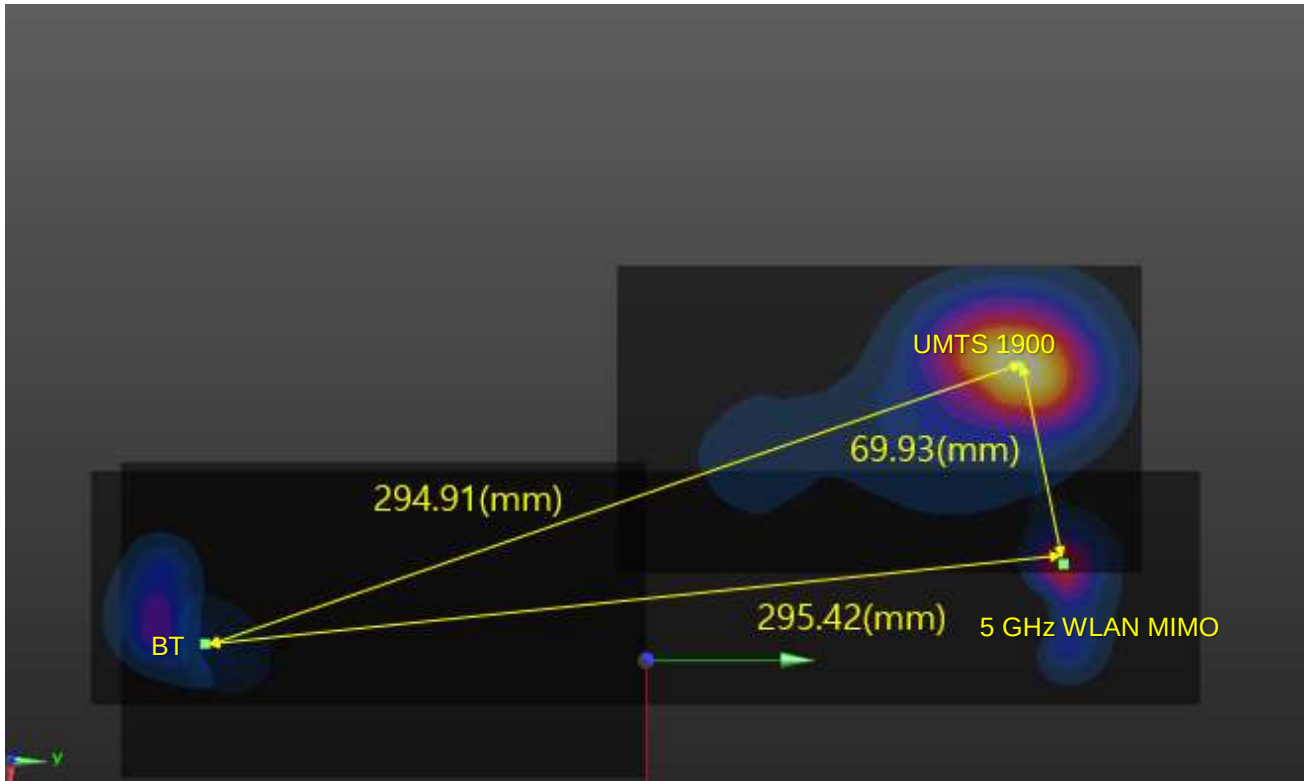
Plot #22 UMTS 1700 MAX. + Bluetooth



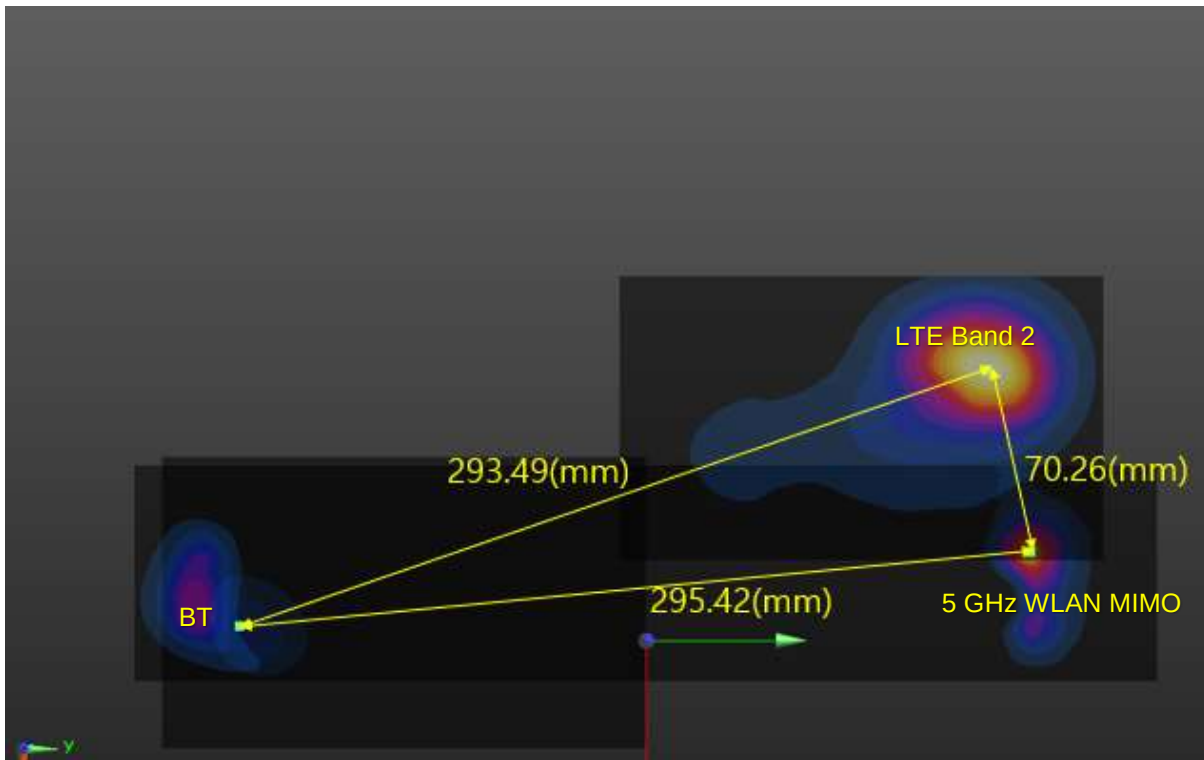
Plot #23 UMTS 1700 MAX.+ 5 GHz WLAN MIMO Max. + Bluetooth



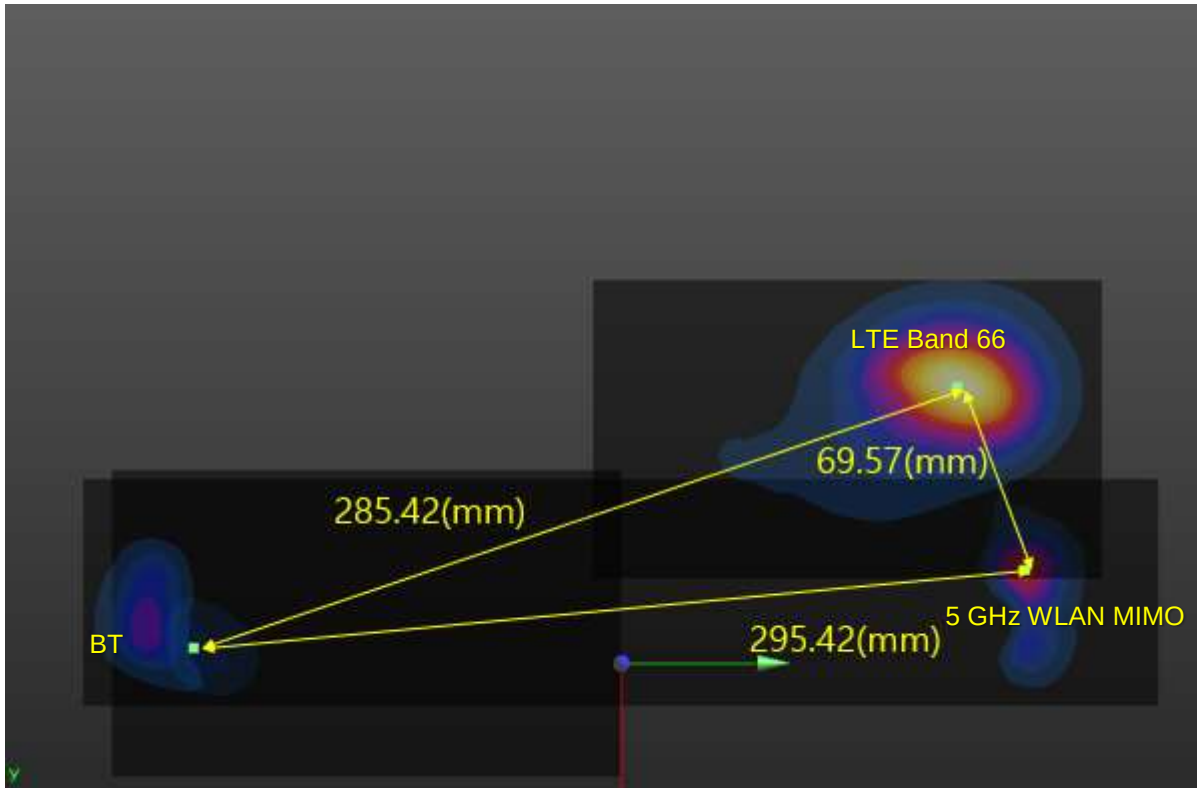
Plot #24 UMTS 1900 MAX.+ 5 GHz WLAN MIMO Max. + Bluetooth



Plot #25 LTE Band 2 MAX.+ 5 GHz WLAN MIMO Max. + Bluetooth



Plot #26 LTE Band 66 MAX.+ 5 GHz WLAN MIMO Max. + Bluetooth



#### 14.4 Simultaneous Transmission Conclusion

The above numerical summed SAR Results are sufficient to determine that simultaneous transmission cases will not exceed the SAR Limit and therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D01v06 and IEEE1528-2013.

## 15. SAR Measurement Variability and Uncertainty

In accordance with KDB procedure 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz, SAR additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR Measurement variability was assessed using the following procedures for each frequency band:

1) Repeated measurement is not required when the original highest measured SAR is  $< 0.80$  W/kg for 1g SAR or  $< 2.0$  W/kg for 10g SAR; steps 2) through 4) do not apply.

2) When the original highest measured 1g SAR is  $\geq 0.80$  W/kg or 10g SAR  $\geq 2.0$  W/kg, repeat that measurement once.

3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is  $> 1.20$  or when the original or repeated measurement is  $\geq 1.45$  W/kg for 1g SAR or  $\geq 3.625$  W/kg for 10g SAR ( $\sim 10\%$  from the 1-g SAR limit).

4) Perform a third repeated measurement only if the original, first or second repeated measurement is  $\geq 1.5$  W/kg for 1g SAR or  $\geq 3.75$  W/kg for 10g SAR and the ratio of largest to smallest SAR for the original, first and second repeated measurements is  $> 1.20$ .

SAR measurement variability Results

| Frequency |         | Mode/Band   | Configuration   | Measured SAR (W/kg) | Repeated SAR (W/kg) | SAR Ratio |
|-----------|---------|-------------|-----------------|---------------------|---------------------|-----------|
| MHz       | Channel |             |                 |                     |                     |           |
| 1 752.6   | 1513    | UMTS 1700   | Rear (Inactive) | 1.19                | 1.16                | 1.03      |
| 1 852.4   | 9262    | UMTS 1900   | Rear (Inactive) | 1.08                | 1.03                | 1.05      |
| 1 770.0   | 132572  | LTE Band 66 | Rear (Inactive) | 1.11                | 1.10                | 1.01      |

## 16. Device Holder Perturbation Verification.

In accordance with published DUT Holder Perturbations in Oct.2016 TCB Workshop.

When Highest reported SAR is over 1.2 W/kg, Holder Perturbation Verification is required for each antenna, using the highest configuration among all applicable frequency bands.

| Antenna configuration | Frequency |         | Mode/Band | Configuration   | Highest Reported SAR    |                      | Deviation |
|-----------------------|-----------|---------|-----------|-----------------|-------------------------|----------------------|-----------|
|                       |           |         |           |                 | (without Device Holder) | (with Device Holder) | (%)       |
|                       | MHz       | Channel |           |                 | (W/kg)                  | (W/kg)               |           |
| Main Ant.             | 1 752.6   | 1513    | UMTS 1700 | Rear (Inactive) | 1.366                   | 1.366                | 1.00      |



## 17. Measurement Uncertainty

The measured SAR was  $<1.5$  W/Kg for 1g SAR and  $<3.75$  W/Kg For 10g SAR for all frequency bands. Therefore, per KDB Publication 865664 D01v01r04, the extended measurement uncertainty analysis per IEEE1528-2013 was not required.

## 18. SAR Test Equipment

| Manufacturer | Type / Model                       | S/N                | Calib. Date | Calib.Interval | Calib.Due  |
|--------------|------------------------------------|--------------------|-------------|----------------|------------|
| SPEAG        | ELI Phantom                        | -                  | N/A         | N/A            | N/A        |
| HP           | SAR System Control PC              | -                  | N/A         | N/A            | N/A        |
| Staubli      | CS8Cspeag-TX90                     | F17/ 59CHA1/ C/ 01 | N/A         | N/A            | N/A        |
| Staubli      | CS8Cspeag-TX90                     | F17/ 59RAA1/ C/ 01 | N/A         | N/A            | N/A        |
| Staubli      | TX90 XLspeag                       | F17/ 59CHA1/ A/ 01 | N/A         | N/A            | N/A        |
| Staubli      | TX90 XLspeag                       | F17/ 59RAA1/ A/ 01 | N/A         | N/A            | N/A        |
| Staubli      | Teach Pendant (Joystick)           | 010963             | N/A         | N/A            | N/A        |
| Staubli      | Teach Pendant (Joystick)           | 011578             | N/A         | N/A            | N/A        |
| SPEAG        | DAE4                               | 868                | 09/29/2020  | Annual         | 09/29/2021 |
| SPEAG        | DAE4                               | 652                | 01/21/2021  | Annual         | 01/21/2022 |
| SPEAG        | E-Field Probe EX3DV4               | 3863               | 09/28/2020  | Annual         | 09/28/2021 |
| SPEAG        | E-Field Probe EX3DV4               | 3968               | 09/28/2020  | Annual         | 09/28/2021 |
| SPEAG        | Dipole D750V3                      | 1014               | 05/19/2020  | Annual         | 05/19/2021 |
| SPEAG        | Dipole D835V2                      | 4d165              | 07/28/2020  | Annual         | 07/28/2021 |
| SPEAG        | Dipole D1800V2                     | 2d007              | 08/26/2020  | Annual         | 08/26/2021 |
| SPEAG        | Dipole D1900V2                     | 5d032              | 01/28/2021  | Annual         | 01/28/2022 |
| SPEAG        | Dipole D2450V2                     | 1049               | 08/26/2020  | Annual         | 08/26/2021 |
| SPEAG        | Dipole D2600V2                     | 1015               | 08/26/2020  | Annual         | 08/26/2021 |
| SPEAG        | Dipole D5GHzV2                     | 1253               | 08/31/2020  | Annual         | 08/31/2021 |
| Agilent      | Power Meter E4419B                 | MY41291386         | 10/23/2020  | Annual         | 10/23/2021 |
| Agilent      | Power Meter N1911A                 | MY45101406         | 08/31/2020  | Annual         | 08/31/2021 |
| Agilent      | Power Sensor 8481A                 | SG1091286          | 10/05/2020  | Annual         | 10/05/2021 |
| Agilent      | Power Sensor 8481A                 | MY41090873         | 10/05/2020  | Annual         | 10/05/2021 |
| Agilent      | Power Sensor N1921A                | MY55220026         | 08/31/2020  | Annual         | 08/31/2021 |
| SPEAG        | DAKS 3.5                           | 1038               | 03/24/2020  | Annual         | 03/24/2021 |
| H.P          | Network Analyzer /8753ES           | JP39240221         | 01/11/2021  | Annual         | 01/11/2022 |
| Agilent      | WIRELESS COMMUNICATION E5515C      | MY48360252         | 08/06/2020  | Annual         | 08/06/2021 |
| Agilent      | Signal Generator N5182A            | MY47070230         | 05/06/2020  | Annual         | 05/06/2021 |
| Agilent      | 11636B/Power Divider               | 58698              | 02/26/2021  | Annual         | 02/26/2022 |
| OSI          | 4Way Power Divider                 | 9                  | 07/15/2020  | Annual         | 07/15/2021 |
| OSI          | 4Way Power Divider                 | 11                 | 07/15/2020  | Annual         | 07/15/2021 |
| TESTO        | 175-H1/Thermometer                 | 40331915309        | 01/26/2021  | Annual         | 01/26/2022 |
| TESTO        | 175-H1/Thermometer                 | 40331922309        | 01/26/2021  | Annual         | 01/26/2022 |
| EMPOWER      | RF Power Amplifier                 | 1084               | 07/01/2020  | Annual         | 07/01/2021 |
| EMPOWER      | RF Power Amplifier                 | 1011               | 07/30/2020  | Annual         | 07/30/2021 |
| MICRO LAB    | LP Filter / LA-15N                 | 10453              | 10/05/2020  | Annual         | 10/05/2021 |
| MICRO LAB    | LP Filter / LA-30N                 | -                  | 10/05/2020  | Annual         | 10/05/2021 |
| MICRO LAB    | LP Filter / LA-60N                 | 32011              | 10/05/2020  | Annual         | 10/05/2021 |
| Agilent      | Attenuator (3dB) 8693B             | MY39260298         | 09/18/2020  | Annual         | 09/18/2021 |
| HP           | Attenuator (20dB) 8493C            | 09271              | 09/18/2020  | Annual         | 09/18/2021 |
| Agilent      | Directional Bridge                 | 3140A03878         | 06/08/2020  | Annual         | 06/08/2021 |
| Agilent      | MXA Signal Analyzer N9020A         | MY50510407         | 10/23/2020  | Annual         | 10/23/2021 |
| HP           | Dual Directional Coupler           | 16072              | 10/05/2020  | Annual         | 10/05/2021 |
| Anritsu      | Radio Communication Tester MT8820C | 6200695605         | 05/06/2020  | Annual         | 05/06/2021 |
| R&S          | Bluetooth CBT                      | 100272             | 02/26/2021  | Annual         | 02/26/2022 |

\* The E-field probe was calibrated by SPEAG, by the waveguide technique procedure. Dipole Verification measurement is performed by HCT Lab. before each test. The brain/body simulating material is calibrated by HCT using the DAKS 3.5 to determine the conductivity and permittivity (dielectric constant) of the brain/body-equivalent material.

## 18. Conclusion

The SAR measurement indicates that the EUT complies with the RF radiation exposure limits of the ANSI/ IEEE C95.1 - 2005.

These measurements were taken to simulate the RF effects exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The results and statements relate only to the item(s) tested.

Please note that the absorption and distribution of electromagnetic energy in the body are very complex phenomena that depend on the mass, shape, and size of the body, the orientation of the body with respect to the field vectors, and the electrical properties of both the body and the environment. Other variables that may play a substantial role in possible biological effects are those that characterize the environment (e.g. ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g. age, gender, activity level, debilitation, or disease). Because various factors may interact with one another to vary the specific biological outcome of an exposure to electromagnetic fields, any protection guide should consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables.

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## Appendix A. DUT Ant. Information & SETUP PHOTO

Please refer to test DUT Ant. Information & setup photo file no. as follows:

| Report No.          |
|---------------------|
| HCT-SR-2103-FC002-P |