# FCC SAR Compliance Test Report

| | |
|---|---|
| **Product Name:** | Tablet |
| **Model:** | CMR-AL19 |
| **Report No.:** | SYBH(Z-SAR) 008122017-2 |
| **FCC ID:** | QISCMR-AL19 |

| | APPROVED (Lab Manager) | PREPARED (Test Engineer) |
|---|---|---|
| BY | Wei Huanbin | Cao Ting |
| DATE | 2018-01-23 | 2018-01-23 |


**Reliability Laboratory of Huawei Technologies Co., Ltd.**

**(Global Compliance and Testing Center of Huawei Technologies Co., Ltd)**

Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C
Tel: +86 755 28780808 Fax: +86 755 89652518

# ※ ※ Notice ※ ※

1. The laboratory has passed the accreditation by China National Accreditation Service for Conformity Assessment (CNAS). The accreditation number is L0310.

2. The laboratory has passed the accreditation by The American Association for Laboratory Accreditation (A2LA). The accreditation number is 2174.01 & 2174.02 & 2174.03

3. The laboratory (Reliability Lab of Huawei Technologies Co., Ltd) is also named “Global Compliance and Testing Center of Huawei Technologies Co., Ltd”, the both names have coexisted since 2009.

4. The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.

5. The test report is invalid if there is any evidence of erasure and/or falsification.

6. The test report is only valid for the test samples.

7. Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.

# Table of Contents

# ※ ※ Modified History ※ ※

| REV. | DESCRIPTION | ISSUED DATE | REMARK |
|---|---|---|---|
| Rev.1.0 | Initial Test Report Release | 2018-01-23 | Cao Ting |
| | | | |
| | | | |
| | | | |
| | | | |

# 1 General Information

## 1.1 Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for CMR-AL19 are as below Table 1.

| Band | 1-g Max Reported SAR(W/kg) |
|---|---|
| | Body |
| GSM850 | 0.48 |
| GSM1900 | **0.92** |
| UMTS Band 5 | 0.57 |
| UMTS Band 2 | 0.68 |
| LTE Band 4 | 0.52 |
| LTE Band 5 | 0.73 |
| LTE Band 7 | 0.78 |
| LTE Band 12 | 0.52 |
| LTE Band 17 | 0.60 |
| LTE Band 26 | 0.70 |
| LTE Band 38 | 0.43 |
| LTE Band 41 | 0.63 |
| WiFi 2.4G | 0.28 |
| WiFi 5G | 0.43 |
| BT | 0.20 |
| The highest reported SAR for Body and Simultaneous transmission exposure conditions are 0.92W/kg and 1.54W/kg | |

Table 1:Summary of test result

Note:

For body operation, this device has been tested and meets FCC RF exposure guidelines when used with any accessory that contains no metal and that positions the handset a minimum of 0mm from the body. Use of other accessories may not ensure compliance with FCC RF exposure guidelines.

The device is in compliance with Specific Absorption Rate（SAR）for general population/uncontraolled exposure limits according to the FCC rule §2.1093, the ANSI C95.1:1992/IEEE C95.1:1991, the NCRP Report Number 86 for uncontrolled environment, and had been tested in accordance with the measurement methods and procedures specified in IEEE Std 1528-2013.

## 1.2 RF exposure limits

| Human Exposure | Uncontrolled Environment General Population | Controlled Environment Occupational |
|---|---|---|
| **Spatial Peak SAR*** (Brain/Body/Arms/Legs) | **1.60 W/kg** | 8.00 W/kg |
| **Spatial Average SAR**** (Whole Body) | 0.08 W/kg | 0.40 W/kg |
| **Spatial Peak SAR***** (Hands/Feet/Ankle/Wrist) | 4.00 W/kg | 20.00 W/kg |

Table 2: RF exposure limits

The limit applied in this test report is shown in **bold** letters

**Notes:**

* The Spatial Peak value of the SAR averaged over any 1 gram 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 grams 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.

**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.

## 1.3 EUT Description

| Device Information： | | | |
|---|---|---|---|
| Product Name: | Tablet | | |
| Model: | CMR-AL19 | | |
| FCC ID : | QISCMR-AL19 | | |
| SN: | 1#:CMR0117A20000221<br>2#:CMR0117A20000257<br>3#:CMR0117A20000195<br>4#:CMR0117A20000152 | | |
| Device Type : | Portable device | | |
| Device Phase: | Identical Prototype | | |
| Exposure Category: | Uncontrolled environment / general population | | |
| Hardware Version : | SH1CMRONLM | | |
| Software Version : | CMR-AL19 8.0.1.3(SP1C331) | | |
| Antenna Type : | Internal antenna | | |
| Others Accessories | Protected Cover (Non-metallic) | | |
| Device Operating Configurations: | | | |
| Supporting Mode(s) | GSM850/1900, UMTS Band 2/5,<br>LTE Band 4/5/7/12/17/26/38/41, WiFi 2.4G/5G;BT | | |
| Test Modulation | GSM(GMSK/8PSK),UMTS(QPSK), LTE(QPSK/16QAM),<br>WiFi(DSSS/OFDM),BT(GFSK) | | |
| Device Class | B | | |
| Operating Frequency Range(s) | Band | Tx (MHz) | Rx (MHz) |
| | GSM850 | 824-849 | 869-894 |
| | GSM1900 | 1850-1910 | 1930-1990 |
| | UMTS Band 2 | 1850-1910 | 1930-1990 |
| | UMTS Band 5 | 824-849 | 869-894 |
| | LTE Band 4 | 1710-1755 | 2110-2155 |
| | LTE Band 5 | 824-849 | 869-894 |
| | LTE Band 7 | 2500-2570 | 2620-2690 |
| | LTE Band 12 | 699-716 | 729-746 |
| | LTE Band 17 | 704-716 | 734-746 |
| | LTE Band 26 | 814-849 | 859-894 |
| | LTE Band 38 | 2570-2620 | 2570-2620 |
| | LTE Band 41 | 2545-2655 | 2545-2655 |
| | BT | 2402-2480 | |
| | WiFi 2.4G | 2412-2462 | |
| | WiFi 5G | 5150-5350<br>5470-5850 | |
| GPRS Multislot Class(12) | Max Number of Timeslots in Uplink: | 4 | |
| | Max Number of Timeslots in Downlink: | 4 | |
| | Max Total Timeslot: | 5 | |
| EGPRS Multislot Class(12) | Max Number of Timeslots in Uplink: | 4 | |
| | Max Number of Timeslots in Downlink: | 4 | |
| | Max Total Timeslot: | 5 | |
| HSDPA UE Category | 14 | | |
| HSUPA UE Category | 6 | | |
| DC-HSDPA UE Category | 24 | | |

| | |
|---|---|
| Power Class: | 4,tested with power level 5(GSM850) |
| | 1,tested with power level 0(GSM1900) |
| | 3, tested with power control “all 1”(UMTS Band 2) |
| | 3, tested with power control “all 1”(UMTS Band 5) |
| | 3, tested with power control all Max.(LTE Band 4) |
| | 3, tested with power control all Max.(LTE Band 5) |
| | 3, tested with power control all Max.( LTE Band 7) |
| | 3, tested with power control all Max.( LTE Band 12) |
| | 3, tested with power control all Max.(LTE Band 17) |
| | 3, tested with power control all Max.( LTE Band 26) |
| | 3, tested with power control all Max.( LTE Band 38) |
| | 3, tested with power control all Max.(LTE Band 41) |
| Test Channels (low-mid-high): | 128-190-251(GSM850) |
| | 512-661-810(GSM1900) |
| | 9262-9400-9538(UMTS Band 2) |
| | 4132-4182-4233(UMTS Band 5) |
| | 19957-20175-20393(LTE Band 4 BW=1.4MHz) |
| | 19965-20175-20385(LTE Band 4 BW=3MHz) |
| | 19975-20175-20375(LTE Band 4 BW=5MHz) |
| | 20000-20175-20350 (LTE Band 4 BW=10MHz) |
| | 20025-20175-20325 (LTE Band 4 BW=15MHz) |
| | 20050-20175-20300(LTE Band 4 BW=20MHz) |
| | 20407-20525-20643(LTE Band 5 BW=1.4MHz) |
| | 20415-20525-20635(LTE Band 5 BW=3MHz) |
| | 20425-20525-20625(LTE Band 5 BW=5MHz) |
| | 20450-20525-20600(LTE Band 5 BW=10MHz) |
| | 20775-21100-21425(LTE Band 7 BW=5MHz) |
| | 20800-21100-21400(LTE Band 7 BW=10MHz) |
| | 20825-21100-21375(LTE Band 7 BW=15MHz) |
| | 20850-21100-21350 (LTE Band 7 BW=20MHz) |
| | 23017-23095-23173(Band 12 BW=1.4MHz) |
| | 23025-23095-23165(Band 12 BW=3MHz) |
| | 23035-23095-23155(Band 12 BW=5MHz) |
| | 23060-23095-23130(Band 12 BW=10MHz) |
| | 23755-23790-23825(Band 17 BW=5MHz) |
| | 23780-23790-23800(Band 17 BW=10MHz) |
| | 26697-26865-27033(Band 26 BW=1.4MHz) |
| | 26705-26865-27025(Band 26 BW=3MHz) |
| | 26715-26865-27015(Band 26 BW=5MHz) |
| | 26750-26865-26990(Band 26 BW=10MHz) |
| | 26775-26865-26965(Band 26 BW=15MHz) |
| | 37775-38000-38225(Band 38 BW=5MHz) |
| | 37800-38000-38200(Band 38 BW=10MHz) |
| | 37825-38000-38175(Band 38 BW=15MHz) |
| | 37850-38000-38150(Band 38 BW=20MHz) |
| | 40165-40515-40865-41215(Band 41 BW=5MHz) |
| | 40190-40520-40850-41190(Band 41 BW=10MHz) |
| | 40215-40535-40855-41165(Band 41 BW=15MHz) |
| | 40240-40540-40840-41140(Band 41 BW=20MHz) |

| | |
|---|---|
| Test Channels (low-mid-high): | 802.11b/g/n 20M:1-6-11<br>802.11n 40M:3-6-9(WiFi 2.4G) |
| | 802.11a/n/ac 20M: 36-40-44-48-52-56-60-64-100-104-108-112-116-120-124-128-132-136-140-149-153-157-161-165<br>802.11 n/ac 40M: 38-46-54-62-102-110-118-126-134-151-159<br>802.11ac 80M: 42-58-106-122-138-155(WiFi 5G) |
| | BT: 0-19-39-78 |

Table 3:Device information and operating configuration

### 1.3.1 General Description

CMR-AL19 run on Huawei's latest EMUI 8.0 system based on Google Android Oreo (8.0) system, providing easy access to Huawei Cloud services.

| Name | Manufacture | Description |
|---|---|---|
| Li-ion | SCUD (FUJIAN) Electronics Co., Ltd | Battery Model: HB2994I8ECW<br>Rated capacity: 7350 mAh<br>Nominal Voltage: +3.82V<br>Charging Voltage: +4.4V |
| Li-ion | Sunwoda Electronic Co., LTD. | Battery Model: HB2994I8ECW<br>Rated capacity: 7350 mAh<br>Nominal Voltage: +3.82V<br>Charging Voltage: +4.4V |
| Li-ion | Huizhou Desay Battery Co., Ltd | Battery Model: HB2994I8ECW<br>Rated capacity: 7350 mAh<br>Nominal Voltage: +3.82V<br>Charging Voltage: +4.4V |

### 1.3.2 TDD LTE additional specification

The device supports TDD LTE bands. According to KDB 941225 D05 SAR for LTE Devices, 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.
For this device, TDD LTE SAR should be tested with the highest transmission duty factor (63.33%) , which using Uplink-downlink configuration 0.The detailed TDD LTE test configuration description are provided in Section 6.5 of this report.

### 1.3.3 Power reduction specification

This device uses a mobile country code (MCC) detection and proximity sensor mechanism that share the same metallic electrode as the transmitting antenna to facilitate triggering in typical user interactivity with the device. This device uses the mobile country code (MCC) to indicate whether the users in FCC countries or not. It utilizes the proximity sensor to reduce the output power in specific wireless and operating modes to ensure SAR compliance when the MCC information accomplished by operator network is in FCC countries and the DUT is held close to a user's body exposure condition with sensor on.

The following tables summarize the key power reduction information. The detailed full power and reduced conducted power measurement results are provided in Section 6.7 and section 7 of this report per KDB 616217:

| Band | Power Reduction amount(dB) | |
|---|---|---|
| | Sensor off<br>(Full power level) | Sensor on,MCC of FCC countries<br>(Reduced power level) |
| GSM850 | 0 | 9 |
| GSM1900 | 0 | 10 |
| UMTS Band 5 | 0 | 6 |
| UMTS Band 2 | 0 | 10 |
| LTE Band 4 | 0 | 10 |
| LTE Band 5 | 0 | 6 |
| LTE Band 7 | 0 | 15 |
| LTE Band 12 | 0 | 8 |
| LTE Band 17 | 0 | 7 |
| LTE Band 26 | 0 | 7 |
| LTE Band 38 | 0 | 12 |
| LTE Band 41 | 0 | 13 |
| WiFi 2.4G 11b | 0 | 8 |
| WiFi 2.4G 11g | 0 | 3 |
| WiFi 2.4G 11n(20M) | 0 | 2 |
| WiFi 5G 11a(20M)<br>(U-NII-1 & U-NII-2A) | 0 | 12 |
| WiFi 5G 11a(20M)<br>(U-NII-2C & U-NII-3) | 0 | 13 |
| WiFi 5G 11n(20M)<br>(U-NII-1 & U-NII-2A) | 0 | 11 |
| WiFi 5G 11n(20M)<br>(U-NII-2C & U-NII-3) | 0 | 12 |
| WiFi 5G 11n(40M)<br>(U-NII-1 & U-NII-2A) | 0 | 9 |
| WiFi 5G 11n(40M)<br>(U-NII-2C & U-NII-3) | 0 | 10 |
| WiFi 5G 11ac(20M)<br>(U-NII-1 & U-NII-2A) | 0 | 11 |
| WiFi 5G 11ac(20M)<br>(U-NII-2C & U-NII-3) | 0 | 12 |
| WiFi 5G 11ac(40M)<br>(U-NII-1 & U-NII-2A) | 0 | 9 |
| WiFi 5G 11ac(40M)<br>(U-NII-2C & U-NII-3) | 0 | 10 |
| WiFi 5G 11ac(80M)<br>(U-NII-1 & U-NII-2A) | 0 | 8 |
| WiFi 5G 11ac(80M)<br>(U-NII-2C & U-NII-3) | 0 | 9 |

### 1.3.4 Downlink LTE CA specification

The device supports downlink Release 10 LTE Carrier Aggregation (CA) only. It supports a maximum of 2 carriers in the downlink. Other Release 10 features are not supported, including Uplink Carrier Aggregation, Enhanced SC-FDMA and Uplink MIMO or other antenna diversity configurations etc. All uplink communications are identical to the Release 8 Specifications.

The possible downlink LTE CA combinations supported by this device are as below tables per 3GPP TS 36.101 V12.13.0. The conducted power measurement results of downlink LTE CA are provided in Section 7 of this report per 3GPP TS 36.521-1 V12.8.0. According to KDB 941225 D05A, the downlink LTE CA SAR test is not required and PAG requirements can be excluded.

**intra-band contiguous CA (per 3GPP TS 36.101 V12.8.0 Table 5.6A.1-1)**

| E-UTRA CA configuration / Bandwidth combination set | | | | | | |
|---|---|---|---|---|---|---|
| E-UTRA CA configuration | Uplink CA configurations (NOTE 3) | Component carriers in order of increasing carrier frequency | | | Maximum aggregated bandwidth [MHz] | Bandwidth combination set |
| | | Channel bandwidths for carrier [MHz] | Channel bandwidths for carrier [MHz] | Channel bandwidths for carrier [MHz] | | |
| CA_5B | NA | 5,10 | 10 | | 20 | 0 |
| | | 10 | 5 | | | |
| CA_7C | NA | 15 | 15 | | 40 | 0 |
| | | 20 | 20 | | | |
| | | 10 | 20 | | 40 | 1 |
| | | 15 | 15, 20 | | | |
| | | 20 | 10, 15, 20 | | | |
| | | 15 | 10,15 | | 40 | 2 |
| | | 20 | 15,20 | | | |
| CA_12B | NA | 5 | 5,10 | | 15 | 0 |
| CA_38C | NA | 15 | 15 | | 40 | 0 |
| | | 20 | 20 | | | |
| CA_41C | NA | 10 | 20 | | 40 | 0 |
| | | 15 | 15, 20 | | | |
| | | 20 | 10, 15, 20 | | | |
| | | 5, 10 | 20 | | 40 | 1 |
| | | 15 | 15, 20 | | | |
| | | 20 | 5, 10, 15, 20 | | | |
| | | 10 | 15, 20 | | 40 | 2 |
| | | 15 | 10, 15, 20 | | | |
| | | 20 | 10, 15, 20 | | | |
| | | 10 | 20 | | 40 | 3 |
| | | 20 | 20 | | | |

NOTE 1: The CA configuration refers to an operating band and a CA bandwidth class specified in Table 5.6A-1 (the indexing letter). Absence of a CA bandwidth class for an operating band implies support of all classes.

NOTE 2: For the supported CC bandwidth combinations, the CC downlink and uplink bandwidths are equal.

**inter-band CA (per 3GPP TS 36.101 V12.8.0 Table 5.6A.1-2)**

| E-UTRA CA configuration / Bandwidth combination set | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| E-UTRA CA Configuration | E-UTRA Bands | 1.4 MHz | 3 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz | Maximum aggregated bandwidth [MHz] | Bandwidth combination set |
| CA_5A-7A | 5 | Yes | Yes | Yes | Yes | | | 30 | 0 |
| | 7 | | | | Yes | Yes | Yes | | |
| NOTE 1:The CA Configuration refers to a combination of an operating band and a CA bandwidth class specified in Table 5.4.2A-1 (the indexing letter). Absence of a CA bandwidth class for an operating band implies support of all classes.<br>NOTE 2:For each band combination, all combinations of indicated bandwidths belong to the set<br>NOTE 3:For the supported CC bandwidth combinations, the CC downlink and uplink bandwidths are equal | | | | | | | | | |

Note:
1) All the listed bands above can be used as PCC or SCC.
2) The channel spacing and aggregated channel bandwidth for CA are identical to the associated specification in 3GPP TS 36.101 V12.13.0.
3) The reference test frequencies for CA refers to 3GPP TS 36.508 V12.10.0

## 1.4 Test specification(s)

| | |
|---|---|
| ANSI C95.1:1992 /IEEE C95.1:1991 | Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz – 300 GHz. |
| IEEE Std 1528-2013 | Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques |
| KDB941225 D01 | 3G SAR Procedures v03r01 |
| KDB941225 D05 | SAR for LTE Devices v02r05 |
| KDB941225 D05A | LTE Rel.10 KDB Inquiry Sheet v01r02 |
| KDB447498 D01 | General RF Exposure Guidance v06 |
| KDB648474 D04 | Handsets SAR v01r03 |
| KDB248227 D01 | SAR Guidance for IEEE 802 11 Wi-Fi SAR v02r02 |
| KDB865664 D01 | SAR measurement 100 MHz to 6 GHz v01r04 |
| KDB865664 D02 | RF Exposure Reporting v01r02 |
| KDB690783 D01 | SAR Listings on Grants v01r03 |
| KDB616217 D04 | SAR for laptop and tablets v01r02 |

## 1.5 Testing laboratory

| | |
|---|---|
| Test Site | The Reliability Laboratory of Huawei Technologies Co., Ltd. |
| Test Location | Section G1,Huawei Base Bantian, Longgang District, Shenzhen 518129, P.R. China |
| Telephone | +86 755 28780808 |
| Fax | +86 755 89652518 |
| State of accreditation | The Test laboratory (area of testing) is accredited according to ISO/IEC 17025.<br>CNAS Registration number: L0310<br>A2LA TESTING CERT #2174.01 & 2174.02 & 2174.03 |

## 1.6 Applicant and Manufacturer

| | |
|---|---|
| Company Name | HUAWEI TECHNOLOGIES CO., LTD |
| Address | Administration Building, Headquarters of Huawei Technologies Co., Ltd., Bantian, Longgang District, Shenzhen, 518129, P.R.C |

## 1.7 Application details

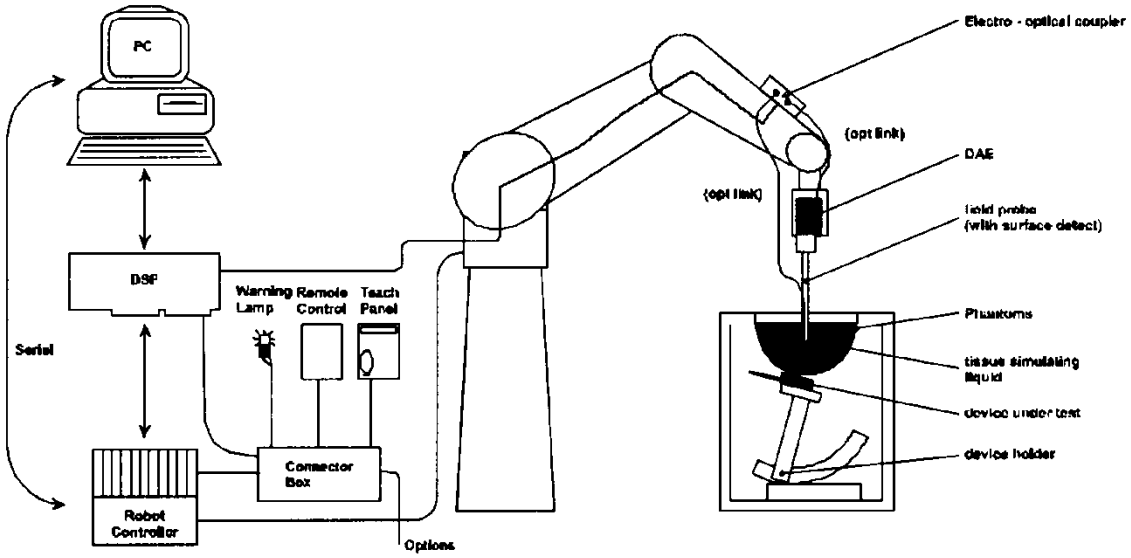
| | |
|---|---|
| Start Date of test | 2017-12-20 |
| End Date of test | 2018-01-05 |

## 1.8 Ambient Condition

| | |
|---|---|
| Ambient temperature | 18°C – 25°C |
| Relative Humidity | 30% – 70% |

# 2 SAR Measurement System

## 2.1 SAR Measurement Set-up




The DASY system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot (Stäubli RX family) with controller and software. An arm extension for accommodating the data acquisition electronics (DAE).

- A dosimetric probe, i.e. an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.

- A data acquisition electronic (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- A unit to operate the optical surface detector which is connected to the EOC.
- The Electro-Optical Coupler (EOC) performs the conversion from the optical into a digital electric signal of the DAE. The EOC is connected to the DASY measurement server.
- The DASY measurement server, which performs all real-time data evaluation for field measurements and surface detection, controls robot movements and handles safety operation. A computer operating Windows 7.
- DASY software and SEMCAD data evaluation software.
- Remote control with teach panel and additional circuitry for robot safety such as warning lamps, etc.
- The generic twin phantom enabling the testing of left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- System check dipoles allowing to validate the proper functioning of the system.

## 2.2 Test environment

The DASY measurement system is placed at the head end of a room with dimensions:
5 x 2.5 x 3 m³, the SAM phantom is placed in a distance of 75 cm from the side walls and 1.1m from the rear wall. Above the test system a 1.5 x 1.5 m² array of pyramid absorbers is installed to reduce reflections from the ceiling.
Picture 1 of the photo documentation shows a complete view of the test environment.
The system allows the measurement of SAR values larger than 0.005 mW/g.

## 2.3 Data Acquisition Electronics description

The data acquisition electronics (DAE) consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converte and a command decoder with a control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information, as well as an optical uplink for commands and the clock.

The mechanical probe mounting device includes two different sensor systems for frontal and sideways probe contacts. They are used for mechanical surface detection and probe collision detection.

DAE4

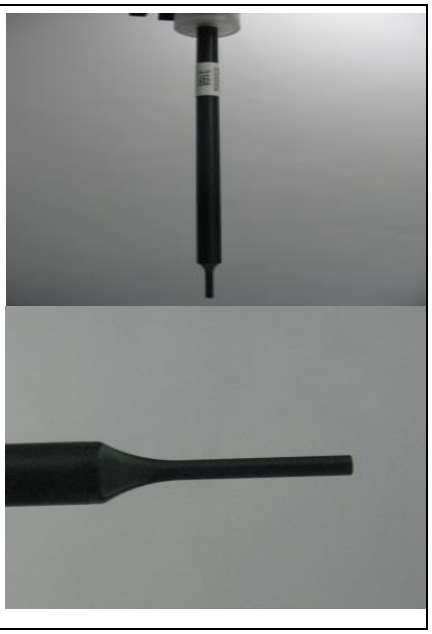
| | | |
|---|---|---|
| Input Impedance | 200MOhm |  |
| The Inputs | symmetrical and floating | |
| Common mode rejection | above 80 dB | |

## 2.4 Probe description

These probes are specially designed and calibrated for use in liquids with high permittivities. They should not be used in air, since the spherical isotropy in air is poor (±2 dB). The dosimetric probes have special calibrations in various liquids at different frequencies.

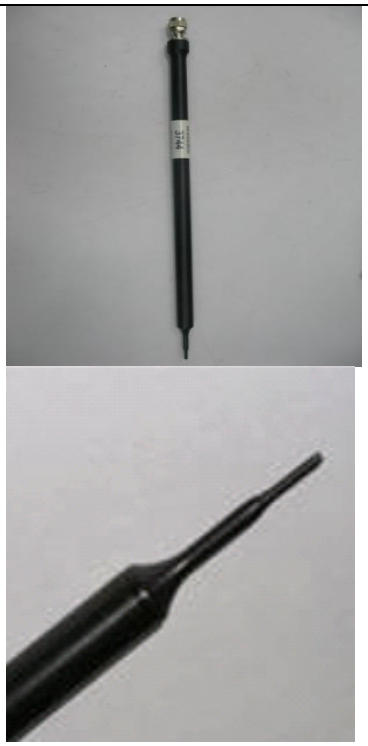
Isotropic E-Field Probe ES3DV3 for Dosimetric Measurements

| | |
|---|---|
| Construction | Symmetrical design with triangular core<br>Interleaved sensors<br>Built-in shielding against static charges<br>PEEK enclosure material (resistant to organic solvents, e.g., DGBE) |
| Calibration | ISO/IEC 17025 calibration service available. |
| Frequency | 10 MHz to 4 GHz; Linearity: ± 0.2 dB (30 MHz to 4 GHz) |
| Directivity | ± 0.2 dB in HSL (rotation around probe axis)<br>± 0.3 dB in tissue material (rotation normal to probe axis) |
| Dynamic range | 5 µW/g to > 100 mW/g; Linearity: ± 0.2 dB |
| Dimensions | Overall length: 337 mm (Tip: 20 mm)<br>Tip diameter: 3.9 mm (Body: 12 mm)<br>Distance from probe tip to dipole centers: 2.0 mm |
| Application | General dosimetry up to 4 GHz<br>Dosimetry in strong gradient fields<br>Compliance tests of mobile phones |



Isotropic E-Field Probe EX3DV4 for Dosimetric Measurements

| | |
|---|---|
| Construction | Symmetrical design with triangular core<br>Built-in shielding against static charges<br>PEEK enclosure material (resistant to organic solvents, e.g., DGBE) |
| Calibration | ISO/IEC 17025 calibration service available. |
| Frequency | 10 MHz to >6 GHz; Linearity: ± 0.2 dB (30 MHz to 6 GHz) |
| Directivity | ± 0.3 dB in HSL (rotation around probe axis)<br>± 0.5 dB in tissue material (rotation normal to probe axis) |
| Dynamic range | 10 µW/g to > 100 mW/g;<br>Linearity: ± 0.2 dB(noise:typically<1µW/g) |
| Dimensions | Overall length: 337 mm (Tip:20 mm)<br>Tip diameter:2.5 mm (Body:12 mm)<br>Typical distance from probe tip to dipole centers: 1mm |
| Application | High precision dosimetric measurements in any exposure scenario(e.g.,very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30% |

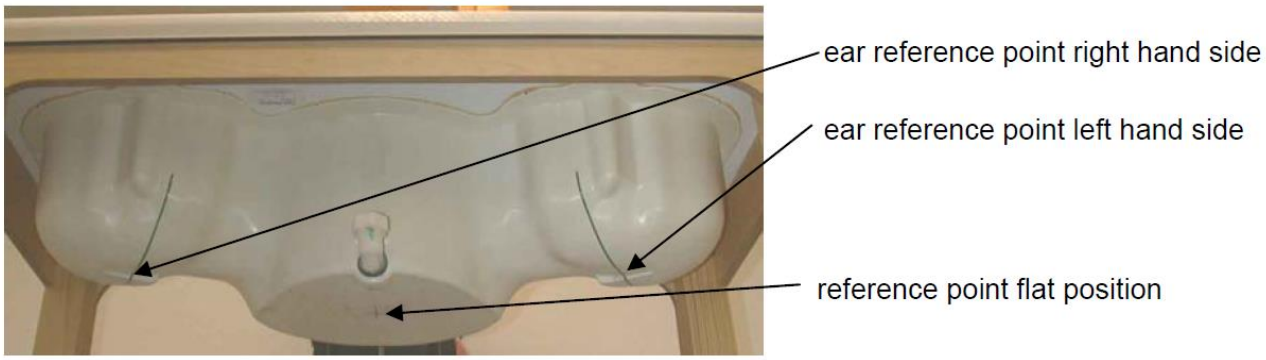


## 2.5 Phantom description

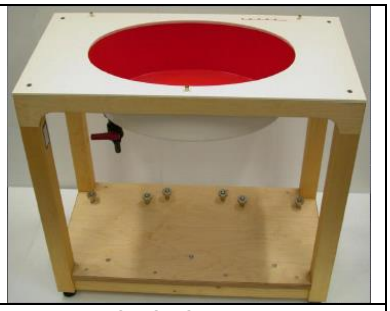
SAM Twin Phantom

| | | |
|---|---|---|
| Shell Thickness | 2mm±0.2mm;The ear region:6.0±0.2mm |  |
| Filling Volume | Approximately 25 liters | |
| Dimensions | Length:1000mm; Width:500mm;<br>Height: adjustable feet | |
| Measurement Areas | Left hand<br>Right hand<br>Flat phantom | |
| The bottom plate contains three pairs of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections.<br>A white cover is provided to cover the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. Free space scans of devices on top of this phantom cover are possible. Three reference marks are provided on the phantom counter. These reference marks are used to teach the absolute phantom position relative to the robot. | | |

The following figure shows the definition of reference point:




ELI4 Phantom

| | | |
|---|---|---|
| Shell Thickness | 2mm±0.2mm |  |
| Filling Volume | Approximately 30 liters | |
| Dimensions | Major axis:600mm; Minor axis:400mm; | |
| Measurement Areas | Flat phantom | |
| The ELI4 phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30MHz to 6GHz. ELI4 is fully compatible with the latest draft of the standard IEC 62209-2 and all known tissue simulating liquids. | | |

The phantom shell material is resistant to all ingredients used in the tissue-equivalent liquid recipes. The shell of the phantom including ear spacers is constructed from low permittivity and low loss material, with a relative permittivity $2 \leq \varepsilon r \leq 5$ at ≤3 GHz, $3 \leq \varepsilon r \leq 4$ at >3 GHz and and a loss tangent $\leqslant 0.05$.

## 2.6 Device holder description

The DASY device holder has two scales for device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear openings). The plane between the ear openings and the mouth tip has a rotation angle of 65°. The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. This device holder is used for standard mobile phones or PDA's only. If necessary an additional support of polystyrene material is used.

The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity $\varepsilon$ =3 and loss tangent $\sigma$ =0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.
The device holder permits the device to be positioned with a tolerance of ±1° in the tilt angle.

Larger DUT's (e.g. notebooks) cannot be tested using this device holder. Instead a support of bigger polystyrene cubes and thin polystyrene plates is used to position the DUT in all relevant positions to find and measure spots with maximum SAR values.
Therefore those devices are normally only tested at the flat part of the SAM.

## 2.7 Test Equipment List

This table gives a complete overview of the SAR measurement equipment.
Devices used during the test described are marked ☒

| | Manufacturer | Device | Type | Serial number | Date of last calibration | Valid period |
|---|---|---|---|---|---|---|
| ☒ | SPEAG | Dosimetric E-Field Probe | EX3DV4 | 7381 | 2017-10-24 | One year |
| ☒ | SPEAG | Dosimetric E-Field Probe | EX3DV4 | 3743 | 2017-11-23 | One year |
| ☒ | SPEAG | Data acquisition electronics | DAE4 | 1492 | 2017-09-25 | One year |
| ☒ | SPEAG | Data acquisition electronics | DAE4 | 1235 | 2017-11-16 | One year |
| ☒ | SPEAG | 750 MHz Dipole | D705V3 | 1044 | 2017-09-21 | Three years |
| ☒ | SPEAG | 835 MHz Dipole | D835V2 | 4d126 | 2015-07-23 | Three years |
| ☒ | SPEAG | 1750 MHz Dipole | D1750V2 | 1145 | 2016-02-02 | Three years |
| ☒ | SPEAG | 1900 MHz Dipole | D1900V2 | 5d091 | 2015-09-21 | Three years |
| ☒ | SPEAG | 2450 MHz Dipole | D2450V2 | 978 | 2016-02-08 | Three years |
| ☒ | SPEAG | 2600 MHz Dipole | D2600V2 | 1119 | 2016-02-03 | Three years |
| ☒ | SPEAG | 5 GHz Dipole | D5GHzV2 | 1155 | 2017-04-26 | Three years |
| ☒ | SPEAG | Software | DASY 5 | N/A | NCR | NCR |
| ☒ | SPEAG | Twin Phantom | SAM6 | TP-1892 | NCR | NCR |
| ☒ | SPEAG | Flat Phantom | ELI 4.0 | TP-1110 | NCR | NCR |
| ☒ | R & S | Universal Radio Communication Tester | CMU 200 | 113989 | 2017-05-21 | One year |
| ☒ | R & S | Universal Radio Communication Tester | CMW 500 | 158850 | 2017-06-13 | One year |
| ☒ | Agilent | Wireless Connectivity Test Set | N4010A | MY49081592 | 2017-07-31 | One year |
| ☒ | Agilent | Signal Analyzer | N9030A | MY49431698 | 2017-07-31 | One year |
| ☒ | Agilent | Network Analyser | E5071C | MY46109355 | 2017-01-25 | One year |
| ☒ | Agilent | Dielectric Probe Kit | 85070E | 2484 | NCR | NCR |
| ☒ | Agilent | Signal Generator | E8257D | MY49281095 | 2017-02-15 | One year |
| ☒ | MINI-CIRCUITS | Amplifier | ZHL-42W | QA1402001 | NCR | NCR |
| ☒ | AR | Directional Coupler | DC7144AM1 | 0423264 | 2017-04-12 | One year |
| ☒ | SHX | Directional Coupler | DDTO-4-20 | 07122401 | 2017-08-07 | One year |
| ☒ | MINI-CIRCUITS | Amplifier | ZVE-8G+ | N523101139 | NCR | NCR |
| ☒ | Agilent | Dual Directional Coupler | 772D | MY52180173 | 2017-01-03 | One year |
| ☒ | Agilent | Power Meter | E4417A | MY54100027 | 2017-04-10 | One year |
| ☒ | Agilent | Power Meter Sensor | E9321A | MY54130007 | 2017-04-10 | One year |
| ☒ | Agilent | Power Meter Sensor | E9321A | MY54130001 | 2017-04-10 | One year |

Note:

1) Per KDB865664D01 requirements for dipole calibration, the test laboratory has adopted three-year extended calibration interval. Each measured dipole is expected to evaluate with the following criteria at least on annual interval in Appendix C.

a) There is no physical damage on the dipole;
b) System check with specific dipole is within 10% of calibrated value;
c) The most recent return-loss result, measured at least annually, deviates by no more than 20% from the previous measurement.
d) The most recent measurement of the real or imaginary parts of the impedance, measured at least annually is within 5Ω from the previous measurement.

2) Network analyzer probe calibration against air, distilled water and a shorting block performed before measuring liquid parameters.

# 3 SAR Measurement Procedure

## 3.1 Scanning procedure

The DASY installation includes predefined files with recommended procedures for measurements and system check. They are read-only document files and destined as fully defined but unmeasured masks. All test positions (head or body-worn) are tested with the same configuration of test steps differing only in the grid definition for the different test positions.

- The “reference” and “drift” measurements are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure. The indicated drift is mainly the variation of the DUT’s output power and should vary max. +/- 5 %.

- The “surface check” measurement tests the optical surface detection system of the DASY system by repeatedly detecting the surface with the optical and mechanical surface detector and comparing the results. The output gives the detecting heights of both systems, the difference between the two systems and the standard deviation of the detection repeatability. Air bubbles or refraction in the liquid due to separation of the sugar-water mixture gives poor repeatability (above ± 0.1mm). To prevent wrong results tests are only executed when the liquid is free of air bubbles. The difference between the optical surface detection and the actual surface depends on the probe and is specified with each probe. (It does not depend on the surface reflectivity or the probe angle to the surface within ± 30°.)

- The “area scan” measures the SAR above the DUT or verification dipole on a parallel plane to the surface. It is used to locate the approximate location of the peak SAR with 2D spline interpolation. The robot performs a stepped movement along one grid axis while the local electrical field strength is measured by the probe. The probe is touching the surface of the SAM during acquisition of measurement values. The standard scan uses large grid spacing for faster measurement. Standard grid spacing for head measurements is 15 mm in x- and y- dimension(≤2GHz)，12 mm in x- and y-dimension(2-4 GHz) and 10mm in x- and y- dimension(4-6GHz). If a finer resolution is needed, the grid spacing can be reduced. Grid spacing and orientation have no influence on the SAR result. For special applications where the standard scan method does not find the peak SAR within the grid, e.g. mobile phones with flip cover, the grid can be adapted in orientation.
  Results of this coarse scan are shown in Appendix B.

- A “zoom scan” measures the field in a volume around the 2D peak SAR value acquired in the previous “coarse” scan. This is a fine grid with maximum scan spatial resolution: $\Delta x_{zoom}$, $\Delta y_{zoom}$≤ 2GHz - ≤8mm, 2-4GHz - ≤5 mm and 4-6 GHz-≤4mm; $\Delta z_{zoom}$ ≤3GHz - ≤5 mm, 3-4 GHz- ≤4mm and 4-6GHz-≤2mm where the robot additionally moves the probe along the z-axis away from the bottom of the Phantom. DASY is also able to perform repeated zoom scans if more than 1 peak is found during area scan. In this document, the evaluated peak 1g and 10g averaged SAR values are shown in the 2D-graphics in Appendix B. Test results relevant for the specified standard (see chapter 1.4.)are shown in table form form in chapter 7.2.

- A Z-axis scan measures the total SAR value at the x-and y-position of the maximum SAR value found during the cube scan. The probe is moved away in z-direction from the bottom of the SAM phantom in 2 mm steps. This measurement shows the continuity of the liquid and can - depending in the field strength – also show the liquid depth. A z-axis scan of the measurement with maximum SAR value is shown in Appendix B.

The following table summarizes the area scan and zoom scan resolutions per FCC KDB 865664D01:

| Frequency | Maximun Area Scan resolution ($\Delta x_{area}$, $\Delta y_{area}$ ) | Maximun Zoom Scan spatial resolution ($\Delta x_{Zoom}$, $\Delta y_{Zoom}$ ) | Maximun Zoom Scan spatial resolution | | | Minimum zoom scan volume (x,y,z) |
|---|---|---|---|---|---|---|
| | | | Uniform Grid | Graded Grad | | |
| | | | $\Delta z_{Zoom}(n)$ | $\Delta z_{Zoom}(1)$* | $\Delta z_{Zoom}(n>1)$* | |
| ≤2GHz | ≤15mm | ≤8mm | ≤5mm | ≤4mm | ≤1.5*$\Delta z_{Zoom}(n-1)$ | ≥30mm |
| 2-3GHz | ≤12mm | ≤5mm | ≤5mm | ≤4mm | ≤1.5*$\Delta z_{Zoom}(n-1)$ | ≥30mm |
| 3-4GHz | ≤12mm | ≤5mm | ≤4mm | ≤3mm | ≤1.5*$\Delta z_{Zoom}(n-1)$ | ≥28mm |
| 4-5GHz | ≤10mm | ≤4mm | ≤3mm | ≤2.5mm | ≤1.5*$\Delta z_{Zoom}(n-1)$ | ≥25mm |
| 5-6GHz | ≤10mm | ≤4mm | ≤2mm | ≤2mm | ≤1.5*$\Delta z_{Zoom}(n-1)$ | ≥22mm |

### 3.2 Spatial Peak SAR Evaluation

The spatial peak SAR - value for 1 and 10 g is evaluated after the Cube measurements have been done. The basis of the evaluation are the SAR values measured at the points of the fine cube grid consisting of 5 x 5 x 7 points( with 8mm horizontal resolution) or 7 x 7 x 7 points( with 5mm horizontal resolution) or 8 x 8 x 7 points( with 4mm horizontal resolution). The algorithm that finds the maximal averaged volume is separated into three different stages.

- The data between the dipole center of the probe and the surface of the phantom are extrapolated. This data cannot be measured since the center of the dipole is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is about 1 mm (see probe calibration sheet). The extrapolated data from a cube measurement can be visualized by selecting ‘Graph Evaluated’.

- The maximum interpolated value is searched with a straight-forward algorithm. Around this maximum the SAR - values averaged over the spatial volumes (1g or 10 g) are computed using the 3d-spline interpolation algorithm. If the volume cannot be evaluated (i.e., if a part of the grid was cut off by the boundary of the measurement area) the evaluation will be started on the corners of the bottom plane of the cube.

- All neighboring volumes are evaluated until no neighboring volume with a higher average value is found.

**Extrapolation**

The extrapolation is based on a least square algorithm [W. Gander, Computermathematik, p.168-180]. Through the points in the first 3 cm along the z-axis, polynomials of order four are calculated. These polynomials are then used to evaluate the points between the surface and the probe tip. The points, calculated from the surface, have a distance of 1 mm from each other.

**Interpolation**

The interpolation of the points is done with a 3d-Spline. The 3d-Spline is composed of three one-dimensional splines with the "Not a knot"-condition [W. Gander, Computermathematik, p.141-150] (x, y and z -direction) [Numerical Recipes in C, Second Edition, p.123ff ].

**Volume Averaging**

At First the size of the cube is calculated. Then the volume is integrated with the trapezoidal algorithm. 8000 points (20x20x20) are interpolated to calculate the average.

**Advanced Extrapolation**

DASY uses the advanced extrapolation option which is able to compansate boundary effects on E-field probes.

### 3.3 Data Storage and Evaluation

**Data Storage**

The DASY software stores the acquired data from the data acquisition electronics as raw data (in microvolt readings from the probe sensors), together with all necessary software parameters for the data evaluation (probe calibration data, liquid parameters and device frequency and modulation data) in measurement files with the extension "DAE4". The software evaluates the desired unit and format for output each time the data is visualized or exported. This allows verification of the complete software setup even after the measurement and allows correction of incorrect parameter settings. For example, if a measurement has been performed with a wrong crest factor parameter in the device setup, the parameter can be corrected afterwards and the data can be re-evaluated.

The measured data can be visualized or exported in different units or formats, depending on the selected probe type ([V/m], [A/m], [°C], [mW/g], [mW/cm²], [dBrel], etc.). Some of these units are not available in certain situations or show meaningless results, e.g., a SAR output in a lossless media will always be zero. Raw data can also be exported to perform the evaluation with other software packages.

**Data Evaluation by SEMCAD**

The SEMCAD software automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The parameters used in the evaluation are stored in the configuration modules of the software:

| | | |
|---|---|---|
| Probe parameters: | - Sensitivity | $Norm_i$, $a_{i0}$, $a_{i1}$, $a_{i2}$ |
| | - Conversion factor | $ConvF_i$ |
| | - Diode compression point | Dcpi |
| Device parameters: | - Frequency | f |
| | - Crest factor | cf |
| Media parameters: | - Conductivity | $\sigma$ |
| | - Density | $\rho$ |

These parameters must be set correctly in the software. They can be found in the component documents or they can be imported into the software from the configuration files issued for the DASY components. In the direct measuring mode of the multimeter option, the parameters of the actual system setup are used. In the scan visualization and export modes, the parameters stored in the corresponding document files are used.

The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics.

If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given as:

$$V_i = U_i + U_i^2 \cdot cf/dcp_i$$

with $V_i$ = compensated signal of channel i (i = x, y, z)
$U_i$ = input signal of channel i (i = x, y, z)
cf = crest factor of exciting field (DASY parameter)
$dcp_i$ = diode compression point (DASY parameter)

From the compensated input signals the primary field data for each channel can be

evaluated:

E-field probes: $E_i = (V_i / Norm_i \cdot ConvF)^{1/2}$

H-field probes: $H_i = (V_i)^{1/2} \cdot (a_{i0} + a_{i1}f + a_{i2}f^2)/f$

with $V_i$ = compensated signal of channel i (i = x, y, z)

$Norm_i$ = sensor sensitivity of channel i (i = x, y, z)
[mV/(V/m)$^2$] for E-field Probes

ConvF = sensitivity enhancement in solution

$a_{ij}$ = sensor sensitivity factors for H-field probes

f = carrier frequency [GHz]

$E_i$ = electric field strength of channel i in V/m

$H_i$ = magnetic field strength of channel i in A/m

The RSS value of the field components gives the total field strength (Hermitian magnitude):

$$Etot = (Ex2 + EY2 + Ez2)1/2$$

The primary field data are used to calculate the derived field units.

$$SAR = (E_{tot}^2 \cdot \sigma) / (\rho \cdot 1000)$$

with SAR = local specific absorption rate in mW/g

$E_{tot}$ = total field strength in V/m

$\sigma$ = conductivity in [mho/m] or [Siemens/m]

$\rho$ = equivalent tissue density in g/cm$^3$

Note that the density is normally set to 1 (or 1.06), to account for actual brain density rather than the density of the simulation liquid.The power flow density is calculated assuming the excitation field to be a free space field.

$P_{pwe} = E_{tot}^2 / 3770$ or $P_{pwe} = H_{tot}^2 \cdot 37.7$

with $P_{pwe}$ = equivalent power density of a plane wave in mW/cm$^2$

$E_{tot}$ = total electric field strength in V/m

$H_{tot}$ = total magnetic field strength in A/m

# 4 System Verification Procedure

## 4.1 Tissue Verification

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine of the dielectic parameter are within the tolerances of the specified target values. The measured conductivity and relative permittivity should be within ± 5% of the target values.

The following materials are used for producing the tissue-equivalent materials.

| **Ingredients** (% of weight) | **Head Tissue** | | | | | |
|---|---|---|---|---|---|---|
| Frequency Band (MHz) | 750 | 835 | 1750 | 1900 | 2450 | 2600 |
| Water | 39.2 | 41.45 | 52.64 | 55.242 | 62.7 | 55.242 |
| Salt (NaCl) | 2.7 | 1.45 | 0.36 | 0.306 | 0.5 | 0.306 |
| Sugar | 57.0 | 56.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| HEC | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Bactericide | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Triton X-100 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| DGBE | 0.0 | 0.0 | 47.0 | 44.542 | 36.8 | 44.452 |
| **Ingredients** (% of weight) | **Body Tissue** | | | | | |
| Frequency Band (MHz) | 750 | 835 | 1750 | 1900 | 2450 | 2600 |
| Water | 50.3 | 52.4 | 69.91 | 69.91 | 73.2 | 64.493 |
| Salt (NaCl) | 1.60 | 1.40 | 0.13 | 0.13 | 0.04 | 0.024 |
| Sugar | 47.0 | 45.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| HEC | 0.0 | 1.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Bactericide | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Triton X-100 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| DGBE | 0.0 | 0.0 | 29.96 | 29.96 | 26.7 | 32.252 |

Table 4: Tissue Dielectric Properties

☐**Simulating Head Liquid (HBBL600-6000MHz), Manufactured by SPEAG:**

| Ingredients | (% by weight) |
|---|---|
| Water | 50-65% |
| Mineral oil | 10-30% |
| Emulsifiers | 8-25% |
| Sodium salt | 0-1.5% |

☒**Simulating Body Liquid(MBBL600-6000MHz),Manufactured by SPEAG:**

| Ingredients | (% by weight) |
|---|---|
| Water | 60-80% |
| Esters,Emulsifiers,Inhibitors | 20-40% |
| Sodium salt | 0-1.5% |

Table 5: Tissue Dielectric Properties

Salt: 99+% Pure Sodium Chloride; Sugar: 98+% Pure Sucrose; Water: De-ionized, 16MΩ+ resistivity HEC: Hydroxyethyl Cellulose; DGBE: 99+% Di(ethylene glycol) butyl ether, [2-(2-butoxyethoxy)ethanol] Triton X-100(ultra pure): Polyethylene glycol mono [4-(1,1,3,3-tetramethylbutyl)phenyl]ether

| Tissue Type | Target Frequency | Target Tissue | | Measured Tissue | | Deviation (Within +/-5% ) | | Liquid Temp. | Test Date |
|---|---|---|---|---|---|---|---|---|---|
| | | Permit-tivity | Conduc-tivity [S/m] | Permit-tivity | Conduc-tivity [S/m] | $\Delta\varepsilon_r$ | $\Delta\sigma$ | | |
| 750MHz Body | 705 | 55.70 | 0.96 | 55.91 | 0.933 | 0.38% | -2.82% | 22.0°C | 2017/12/25 |
| | 710 | 55.70 | 0.96 | 55.90 | 0.935 | 0.36% | -2.60% | | |
| | 750 | 55.50 | 0.96 | 55.86 | 0.953 | 0.65% | -0.78% | | |
| 835MHz Body | 825 | 55.20 | 0.97 | 53.44 | 0.995 | -3.19% | 2.60% | 21.4°C | 2017/12/21 |
| | 835 | 55.20 | 0.97 | 53.42 | 1.000 | -3.22% | 3.05% | | |
| | 850 | 55.20 | 0.99 | 53.45 | 1.007 | -3.17% | 1.72% | | |
| 835MHz Body | 825 | 55.20 | 0.97 | 55.70 | 0.930 | 0.91% | -4.12% | 22.0°C | 2017/12/23 |
| | 835 | 55.20 | 0.97 | 55.68 | 0.934 | 0.87% | -3.71% | | |
| | 850 | 55.20 | 0.99 | 55.64 | 0.947 | 0.80% | -4.34% | | |
| 835MHz Body | 825 | 55.20 | 0.97 | 54.69 | 0.999 | -0.92% | 2.94% | 21.5°C | 2017/12/27 |
| | 835 | 55.20 | 0.97 | 54.68 | 1.003 | -0.94% | 3.40% | | |
| | 850 | 55.20 | 0.99 | 54.66 | 1.007 | -0.98% | 1.72% | | |
| 1750MHz Body | 1710 | 53.50 | 1.46 | 53.86 | 1.398 | 0.67% | -4.25% | 21.4°C | 2017/12/21 |
| | 1730 | 53.50 | 1.48 | 53.80 | 1.412 | 0.56% | -4.59% | | |
| | 1750 | 53.40 | 1.49 | 53.81 | 1.426 | 0.77% | -4.30% | | |
| | 1800 | 53.30 | 1.52 | 53.68 | 1.461 | 0.71% | -3.88% | | |
| 1900MHz Body | 1850 | 53.30 | 1.52 | 54.69 | 1.489 | 2.61% | -2.04% | 21.4°C | 2017/12/20 |
| | 1880 | 53.30 | 1.52 | 54.65 | 1.510 | 2.53% | -0.66% | | |
| | 1900 | 53.30 | 1.52 | 54.63 | 1.526 | 2.50% | 0.39% | | |
| | 1910 | 53.30 | 1.52 | 54.61 | 1.534 | 2.46% | 0.92% | | |
| 1900MHz Body | 1850 | 53.30 | 1.52 | 52.75 | 1.548 | -1.03% | 1.84% | 21.5°C | 2017/12/26 |
| | 1880 | 53.30 | 1.52 | 52.68 | 1.565 | -1.16% | 2.96% | | |
| | 1900 | 53.30 | 1.52 | 52.65 | 1.579 | -1.22% | 3.88% | | |
| | 1910 | 53.30 | 1.52 | 52.65 | 1.586 | -1.22% | 4.34% | | |
| 2450MHz Body | 2410 | 52.80 | 1.91 | 51.91 | 1.958 | -1.69% | 2.51% | 22.3°C | 2017/12/22 |
| | 2435 | 52.70 | 1.94 | 51.85 | 1.975 | -1.61% | 1.80% | | |
| | 2450 | 52.70 | 1.95 | 51.80 | 1.994 | -1.71% | 2.26% | | |
| | 2460 | 52.70 | 1.96 | 51.79 | 2.006 | -1.73% | 2.35% | | |
| 2450MHz Body | 2410 | 52.80 | 1.91 | 51.09 | 1.990 | -3.24% | 4.19% | 22.2°C | 2018/1/5 |
| | 2435 | 52.70 | 1.94 | 51.06 | 2.016 | -3.11% | 3.92% | | |
| | 2450 | 52.70 | 1.95 | 51.05 | 2.028 | -3.13% | 4.00% | | |
| | 2460 | 52.70 | 1.96 | 51.05 | 2.035 | -3.13% | 3.83% | | |
| 2600MHz Body | 2510 | 52.62 | 2.03 | 52.06 | 2.006 | -1.06% | -1.18% | 22.0°C | 2017/12/21 |
| | 2535 | 52.59 | 2.07 | 52.04 | 2.025 | -1.05% | -2.17% | | |
| | 2560 | 52.57 | 2.09 | 51.96 | 2.040 | -1.16% | -2.39% | | |
| | 2600 | 52.50 | 2.16 | 51.87 | 2.087 | -1.20% | -3.38% | | |
| 2600MHz Body | 2510 | 52.62 | 2.03 | 51.12 | 2.092 | -2.85% | 3.05% | 22.2°C | 2017/12/27 |
| | 2535 | 52.59 | 2.07 | 51.05 | 2.116 | -2.93% | 2.22% | | |
| | 2560 | 52.57 | 2.09 | 51.05 | 2.141 | -2.89% | 2.44% | | |
| | 2600 | 52.50 | 2.16 | 50.98 | 2.180 | -2.90% | 0.93% | | |
| 5G Hz Body | 5250 | 48.90 | 5.36 | 46.90 | 5.378 | -4.09% | 0.34% | 22.0°C | 2017/12/25 |
| | 5600 | 48.50 | 5.77 | 46.24 | 5.867 | -4.66% | 1.68% | | |
| | 5750 | 48.30 | 5.94 | 46.05 | 6.090 | -4.66% | 2.53% | | |

Table 6:Measured Tissue Parameter

Note: 1）The dielectric parameters of the tissue-equivalent liquid should be measured under similar ambient conditions and within 2 °C of the conditions expected during the SAR evaluation to satisfy protocol requirements.

2）KDB 865664 was ensured to be applied for probe calibration frequencies greater than or equal to 50MHz of the EUT frequencies.

3）The above measured tissue parameters were used in the DASY software to perform interpolation via the DASY software to determine actual dielectric parameters at the test frequencies. The SAR test plots may slightly differ from the table above since the DASY rounds to three significant digits.

## 4.2 System Check

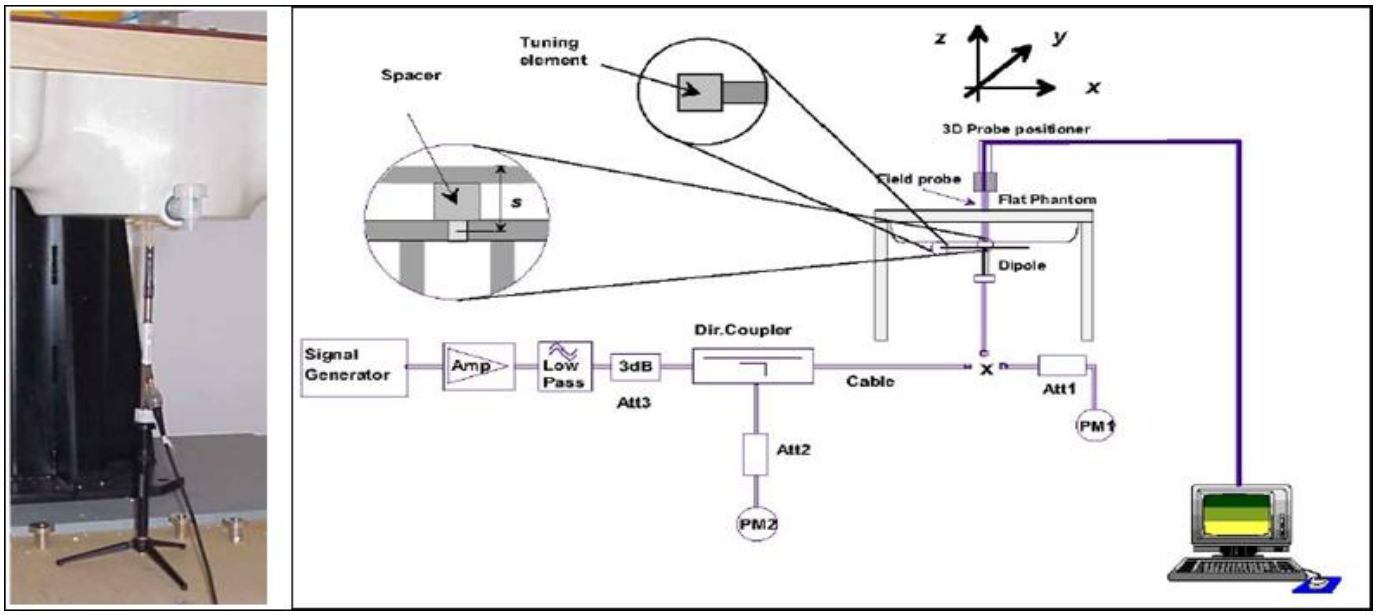
The system check is performed for verifying the accuracy of the complete measurement system and performance of the software. The system check is performed with tissue equivalent material according to IEEE 1528 (described above). The following table shows system check results for all frequency bands and tissue liquids used during the tests(Graphic Plot(s) see Appendix A).

| System Check | Target SAR (Normalized to 1W) | | Measured SAR (Normalized to 1W) | | Deviation (Within +/-10% ) | | Liquid Temp. | Test Date |
|---|---|---|---|---|---|---|---|---|
| | 1-g (mW/g) | 10-g (mW/g) | 1-g (mW/g) | 10-g (mW/g) | Δ1-g | Δ10-g | | |
| 750MHz Body | 8.56 | 5.64 | 8.44 | 5.68 | -1.40% | 0.71% | 22.0°C | 2017/12/25 |
| 835MHz Body | 9.41 | 6.16 | 10.08 | 6.68 | 7.12% | 8.44% | 21.4°C | 2017/12/21 |
| 835MHz Body | 9.41 | 6.16 | 9.40 | 6.36 | -0.11% | 3.25% | 22.0°C | 2017/12/23 |
| 835MHz Body | 9.41 | 6.16 | 9.72 | 6.44 | 3.29% | 4.55% | 21.5°C | 2017/12/27 |
| 1750MHz Body | 36.50 | 19.40 | 36.52 | 19.76 | 0.05% | 1.86% | 21.4°C | 2017/12/21 |
| 1900MHz Body | 39.90 | 21.00 | 42.80 | 22.52 | 7.27% | 7.24% | 21.4°C | 2017/12/20 |
| 1900MHz Body | 39.90 | 21.00 | 43.20 | 22.40 | 8.27% | 6.67% | 21.5°C | 2017/12/26 |
| 2450MHz Body | 52.10 | 24.70 | 54.80 | 25.20 | 5.18% | 2.02% | 22.3°C | 2017/12/22 |
| 2450MHz Body | 52.10 | 24.70 | 52.80 | 24.36 | 1.34% | -1.38% | 22.2°C | 2017/1/5 |
| 2600MHz Body | 51.60 | 23.00 | 55.20 | 24.80 | 6.98% | 7.83% | 22.0°C | 2017/12/21 |
| 2600MHz Body | 51.60 | 23.00 | 54.40 | 24.04 | 5.43% | 4.52% | 22.2°C | 2017/12/27 |
| 5250MHz Body | 74.80 | 20.90 | 69.40 | 19.40 | -7.22% | -7.18% | 22.0°C | 2017/12/25 |
| 5600MHz Body | 78.70 | 22.10 | 77.80 | 21.60 | -1.14% | -2.26% | 22.0°C | 2017/12/25 |
| 5750MHz Body | 75.90 | 21.20 | 72.50 | 20.20 | -4.48% | -4.72% | 22.0°C | 2017/12/25 |

Table 7:System Check Results

### 4.3 System check Procedure

The system check is performed by using a system check dipole which is positioned parallel to the planar part of the SAM phantom at the reference point. The distance of the dipole to the SAM phantom is determined by a plexiglass spacer. The dipole is connected to the signal source consisting of signal generator and amplifier via a directional coupler, N-connector cable and adaption to SMA. It is fed with a power of 250 mW(below 3GHz) or 100mW(3-6GHz). To adjust this power a power meter is used. The power sensor is connected to the cable before the system check to measure the power at this point and do adjustments at the signal generator. At the outputs of the directional coupler both return loss as well as forward power are controlled during the system check to make sure that emitted power at the dipole is kept constant. This can also be checked by the power drift measurement after the test (result on plot).
System check results have to be equal or near the values determined during dipole calibration (target SAR in table above) with the relevant liquids and test system.



# 5 SAR measurement variability and uncertainty

## 5.1 SAR measurement variability

Per KDB865664 D01 SAR measurement 100 MHz to 6 GHz, SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. The 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.

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.
2) When the original highest measured SAR is ⩾ 0.80 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 ⩾ 1.45 W/kg (~ 10% from the 1-g SAR limit).
4) Perform a third repeated measurement only if the original, first or second repeated measurement is ⩾ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.

The detailed repeated measurement results are shown in Section 7.2.

## 5.2 SAR measurement uncertainty

Per KDB865664 D01 SAR Measurement 100 MHz to 6 GHz,when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. The equivalent ratio (1.5/1.6) is applied to extremity and occupational exposure conditions.

# 6 SAR Test Configuration

## 6.1 Test Positions Configuration

### 6.1.1 Body Exposure Condition

The overall diagonal dimension of the tablet is > 20 cm. Per FCC KDB616217D04, the back side and edges of the tablet should be tested for SAR compliance with the tablet touching the phantom. The SAR Exclusion Threshold in FCC KDB 447498D01 can be applied to determine SAR test exclusion for adjacent edge configurations. The closest distance from the antenna to an adjacent tablet edge is used to determine if SAR testing is required for the adjacent edges, with the adjacent edge positioned against the phantom and the edge containing the antenna positioned perpendicular to the phantom.

The device does not have telephone receiver. Next to the ear operation is not supported. Voice mode is limited to speaker mode and headset operations only, so additional Head SAR testing for this type of voice use is not required per KDB616217D04.

## 6.2 3G SAR Test Reduction Procedure

Per KDB941225 D01, in the following procedures, the mode tested for SAR is referred to as the primary mode. The equivalent modes considered for SAR test reduction are denoted as secondary modes. Both primary and secondary modes must be in the same frequency band. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode. This is referred to as the 3G SAR test reduction procedure in the following SAR test guidance, where the primary mode is identified in the applicable wireless mode test procedures and the secondary mode is wireless mode being considered for SAR test reduction by that procedure. When the 3G SAR test reduction procedure is not satisfied, it is identified as “otherwise” in the applicable procedures; SAR measurement is required for the secondary mode.

## 6.3 GSM Test Configuration

SAR tests for GSM850 and GSM1900, a communication link is set up with a base station by air link. Using CMU200 the power lever is set to “5”and “0” in SAR of GSM850 and GSM1900. The tests in the band of GSM850 and GSM1900 are performed in the mode of GPRS/EGPRS function. Since the GPRS class is 12 for this EUT, it has at most 4 timeslots in uplink and at most 4 timeslots in downlink, the maximum total timeslot is 5. The EGPRS class is 12 for this EUT, it has at most 4 timeslots in uplink, and at most 4 timeslots in downlink, the maximum total timeslot is 5.

When SAR tests for EGPRS mode is necessary, GMSK modulation should be used to minimize SAR measurement error due to higher peak-to-average power (PAR) ratios inherent in 8-PSK.

## 6.4 UMTS Test Configuration

1) Output Power Verification

Maximum output power is verified on the high, middle and low channels according to procedures described in section 5.2 of 3GPP TS 34.121, using the appropriate RMC or AMR with TPC (transmit power control) set to all “1’s” for WCDMA/HSDPA or by 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, HSDPA, HSPA) are requied in the SAR report. All configurations that are not supported by the handset or cannot be measured due to technical or equipment limitations must be clearly identified.

2) WCDMA

Body SAR Measurements

SAR for body-worn accessory configurations is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”. 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

3) HSDPA

SAR for body exposure configurations is measured according to the “Body SAR Measurements’’ procedures of 3G device. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode. This is referred to as the 3G SAR test reduction procedure in the following SAR test guidance, where the primary mode is identified in the applicable wireless mode test procedures and the secondary mode is wireless mode being considered for SAR test reduction by that procedure. When the 3G SAR test reduction procedure is not satisfied, it is identified as “otherwise” in the applicable procedures; SAR measurement is required for the secondary mode.

Per KDB941225 D01, the 3G SAR test reduction procedure is applied to HSDPA body configurations with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured for HSDPA using the HSDPA body SAR procedures for the highest reported SAR body exposure configuration in 12.2 kbps RMC.

HSDPA should be configured according to UE category of a test device. The number of HS-DSCH/HS-PDSCHs, HAPRQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the H-set. To maintain a consistent test configuration and stable transmission condition, QPSK is used in the H-set for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 4ms with a CQI repetition factor of 2 to maintain a constant rate of active CQI slots. The $\beta_c$ and $\beta_d$ gain factors for DPCCH and DPDCH were set according to the values in the below table, $\beta_{hs}$ for HS-DPCCH is set automatically to the correct value when ΔACK, ΔNACK, ΔCQI = 8. The variation of the $\beta_c$ /$\beta_d$ ratio causes a power reduction at sub-tests 2 - 4.

| Sub-test | $\beta_c$ | $\beta_d$ | $\beta_d$ (SF) | $\beta_c / \beta_d$ | $\beta_{hs}$ (1) | CM(dB)(2) | MPR (dB) |
|---|---|---|---|---|---|---|---|
| 1 | 2/15 | 15/15 | 64 | 2/15 | 4/15 | 0.0 | 0 |
| 2 | 12/15(3) | 15/15(3) | 64 | 12/15(3) | 24/15 | 1.0 | 0 |
| 3 | 15/15 | 8/15 | 64 | 15/8 | 30/15 | 1.5 | 0.5 |
| 4 | 15/15 | 4/15 | 64 | 15/4 | 30/15 | 1.5 | 0.5 |

Note 1: $\Delta$ACK, $\Delta$NACK and $\Delta$CQI = 8 $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$

Note 2 : CM=1 for $\beta_c/\beta_d$= 12/15, $\beta_{hs}/\beta_c$ = 24/15. For all other combinations of DPDCH,DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 3 : For subtest 2 the $\beta_c/\beta_d$ ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1,TF1) to $\beta_c$ = 11/15 and $\beta_d$ = 15/15

Table 8: Sub-tests for UMTS Release 5 HSDPA

The measurements were performed with a Fixed Reference Channel (FRC) and H-Set 1 QPSK.

| Parameter | Value |
|---|---|
| Nominal average inf. bit rate | 534 kbit/s |
| Inter-TTI Distance | 3 TTI's |
| Number of HARQ Processes | 2 Processes |
| Information Bit Payload | 3202 Bits |
| MAC-d PDU size | 336 Bits |
| Number Code Blocks | 1 Block |
| Binary Channel Bits Per TTI | 4800 Bits |
| Total Available SMLs in UE | 19200 SMLs |
| Number of SMLs per HARQ Process | 9600 SMLs |
| Coding Rate | 0.67 |
| Number of Physical Channel Codes | 5 |

Table 9:settings of required H-Set 1 QPSK acc. to 3GPP 34.121

| HS-DSCH Category | Maximum HS-DSCH Codes Received | Minimum Inter-TTI Interval | Maximum HS-DSCH Transport Block Bits/HS-DSCH TTI | Total Soft Channel Bits |
|---|---|---|---|---|
| 1 | 5 | 3 | 7298 | 19200 |
| 2 | 5 | 3 | 7298 | 28800 |
| 3 | 5 | 2 | 7298 | 28800 |
| 4 | 5 | 2 | 7298 | 38400 |
| 5 | 5 | 1 | 7298 | 57600 |
| 6 | 5 | 1 | 7298 | 67200 |
| 7 | 10 | 1 | 14411 | 115200 |
| 8 | 10 | 1 | 14411 | 134400 |
| 9 | 15 | 1 | 25251 | 172800 |
| 10 | 15 | 1 | 27952 | 172800 |
| 11 | 5 | 2 | 3630 | 14400 |
| 12 | 5 | 1 | 3630 | 28800 |
| 13 | 15 | 1 | 34800 | 259200 |
| 14 | 15 | 1 | 42196 | 259200 |
| 15 | 15 | 1 | 23370 | 345600 |
| 16 | 15 | 1 | 27952 | 345600 |

Table 10:HSDPA UE category

4) HSUPA

SAR for body exposure configurations is measured according to the “Body SAR Measurements’’ procedures of 3G device. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

Per KDB941225 D01, 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, SAR is measured for HSPA using the HSPA body SAR procedures for the highest reported body exposure SAR configuration in 12.2 kbps RMC.

Due to inner loop power control requirements in HSDPA, a commercial communication test set should be used for the output power and SAR tests. The 12.2 kbps RMC, FRC H-set 1 and E-DCH configurations for HSDPA should be configured according to the values indicated below as well as other applicable procedures described in the ‘WCDMA Handset’ and ‘Release 5 HSDPA Data Device’ sections of 3G device.

| Sub-test | $\beta_c$ | $\beta_d$ | $\beta_d$ (SF) | $\beta_c/\beta_d$ | $\beta_{hs}$(1) | $\beta_{ec}$ | $\beta_{ed}$ | $\beta_{ec}$ (SF) | $\beta_{ed}$ (code) | CM(2) (dB) | MPR (dB) | AG(4) Index | E-TFCI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 11/15(3) | 15/15(3) | 64 | 11/15(3) | 22/15 | 209/225 | 1039/225 | 4 | 1 | 1.0 | 0.0 | 20 | 75 |
| 2 | 6/15 | 15/15 | 64 | 6/15 | 12/15 | 12/15 | 94/75 | 4 | 1 | 3.0 | 2.0 | 12 | 67 |
| 3 | 15/15 | 9/15 | 64 | 15/9 | 30/15 | 30/15 | $\beta_{ed1}$:47/15 $\beta_{ed2}$:47/15 | 4 | 2 | 2.0 | 1.0 | 15 | 92 |
| 4 | 2/15 | 15/15 | 64 | 2/15 | 4/15 | 2/15 | 56/75 | 4 | 1 | 3.0 | 2.0 | 17 | 71 |
| 5 | 15/15(4) | 15/15(4) | 64 | 15/15(4) | 30/15 | 24/15 | 134/15 | 4 | 1 | 1.0 | 0.0 | 21 | 81 |

Note 1: $\Delta$ ACK, $\Delta$ NACK and $\Delta$ CQI = 8 $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference

Note 3 : For subtest 1 the $\beta_c/\beta_d$ ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1,TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$

Note 4 : For subtest 5 the $\beta_c/\beta_d$ ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1,TF1) to $\beta_c = 14/15$ and $\beta_d = 15/15$

Note 5 : Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g

Note 6: $\beta_{ed}$ can not be set directly; it is set by Absolute Grant Value.

Table 11:Subtests for UMTS Release 6 HSUPA

| UE E-DCH Category | Maximum E-DCH Codes Transmitted | Number of HARQ Processes | E-DCH TTI(ms) | Minimum Speading Factor | Maximum E-DCH Transport Block Bits | Max Rate (Mbps) |
|---|---|---|---|---|---|---|
| 1 | 1 | 4 | 10 | 4 | 7110 | 0.7296 |
| 2 | 2 | 8 | 2 | 4 | 2798 | 1.4592 |
| | 2 | 4 | 10 | 4 | 14484 | |
| 3 | 2 | 4 | 10 | 4 | 14484 | 1.4592 |
| 4 | 2 | 8 | 2 | 2 | 5772 | 2.9185 |
| | 2 | 4 | 10 | 2 | 20000 | 2.00 |
| 5 | 2 | 4 | 10 | 2 | 20000 | 2.00 |
| 6 (No DPDCH) | 4 | 8 | 10 | 2SF2&2SF4 | 11484 | 5.76 |
| | 4 | 4 | 2 | | 20000 | 2.00 |
| 7 (No DPDCH) | 4 | 8 | 2 | 2SF2&2SF4 | 22996 | ? |
| | 4 | 4 | 10 | | 20000 | ? |
| NOTE: When 4 codes are transmitted in parallel, two codes shall be transmitted with SF2 and two with SF4.UE categories 1 to 6 support QPSK only. UE category 7 supports QPSK and 16QAM.(TS25.306-7.3.0). | | | | | | |

Table 12:HSUPA UE category

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 TS 34.121-1 to determine SAR test reduction. A primary and a Second serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable.

The following tests were completed according to procedures in section 7.3.13 of 3GPP TS 34.108 v9.5.0. A summary of these settings are illustrated below:

Downlink Physical Channels are set as per 3GPP TS34.121-1 v9.0.0 E.5.0

**Table E.5.0: Levels for HSDPA connection setup**

| Parameter During Connection setup | Unit | Value |
|---|---|---|
| P-CPICH_Ec/Ior | dB | -10 |
| P-CCPCH and SCH_Ec/Ior | dB | -12 |
| PICH _Ec/Ior | dB | -15 |
| HS-PDSCH | dB | off |
| HS-SCCH_1 | dB | off |
| DPCH_Ec/Ior | dB | -5 |
| OCNS_Ec/Ior | dB | -3.1 |

Call is set up as per 3GPP TS34.108 v9.5.0 sub clause 7.3.13

The configurations of the fixed reference channels for HSDPA RF tests are described in 3GPP TS 34.121, annex C for FDD and 3GPP TS 34.122.

The measurements were performed with a Fixed Reference Channel (FRC) H-Set 12 with QPSK

| Parameter | Value |
|---|---|
| Nominal average inf. bit rate | 60 kbit/s |
| Inter-TTI Distance | 1 TTI's |
| Number of HARQ Processes | 6 Processes |
| Information Bit Payload | 120 Bits |
| Number Code Blocks | 1 Block |
| Binary Channel Bits Per TTI | 960 Bits |
| Total Available SMLs in UE | 19200 SMLs |
| Number of SMLs per HARQ Process | 3200 SMLs |
| Coding Rate | 0.15 |
| Number of Physical Channel Codes | 1 |

Table 13:settings of required H-Set 12 QPSK acc. to 3GPP 34.121

Note:

1.The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table above.

2.Maximum number of transmission is limited to 1,i.e.,retransmission is not allowed. The redundancy and constellation version 0 shall be used.

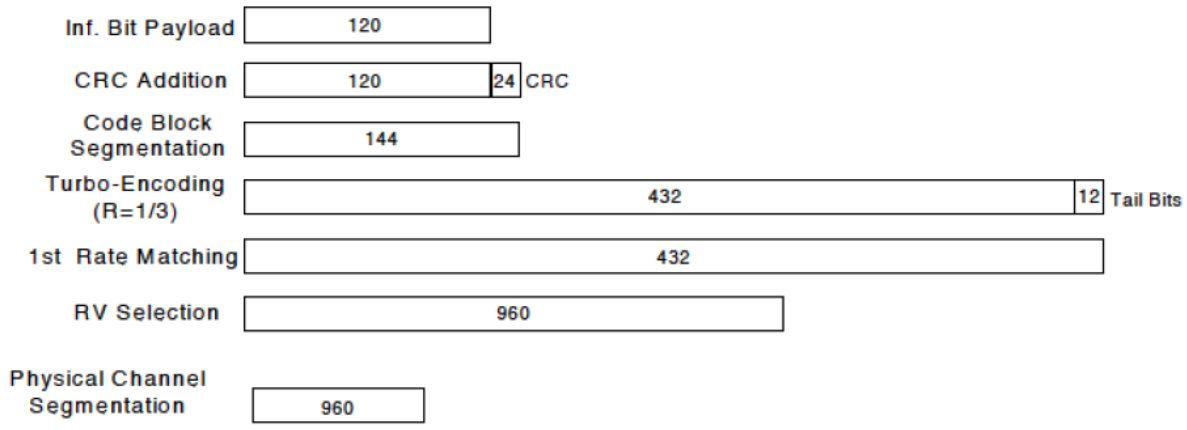



**Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)**

The following 4 Sub-tests for HSDPA were completed according to Release 5 procedures. A summary of subtest settings are illustrated below:

| Sub-test | $\beta_c$ | $\beta_d$ | $\beta_d$ (SF) | $\beta_c/\beta_d$ | $\beta_{hs}$ (1) | CM(dB)(2) | MPR (dB) |
|---|---|---|---|---|---|---|---|
| 1 | 2/15 | 15/15 | 64 | 2/15 | 4/15 | 0.0 | 0 |
| 2 | 12/15(3) | 15/15(3) | 64 | 12/15(3) | 24/15 | 1.0 | 0 |
| 3 | 15/15 | 8/15 | 64 | 15/8 | 30/15 | 1.5 | 0.5 |
| 4 | 15/15 | 4/15 | 64 | 15/4 | 30/15 | 1.5 | 0.5 |

Note 1: Δ ACK, Δ NACK and Δ CQI = 8 $A_{hs} = \beta_{hs}/\beta_c = 30/15$ $\beta_{hs} = 30/15 * \beta_c$

Note 2: CM=1 for $\beta_c/\beta_d$= 12/15, $\beta_{hs}/\beta_c$ = 24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 3: For subtest 2 the $\beta_c/\beta_d$ ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c$ = 11/15 and $\beta_d$ = 15/15

Up commands are set continuously to set the UE to Max power.

Note:

1.The Dual Carriers transmission only applies to HSDPA physical channels

2.The Dual Carriers belong to the same Node and are on adjacent carriers.

3.The Dual Carriers do not support MIMO to serve UEs configured for dual cell operation

4.The Dual Carriers operate in the same frequency band .
5.The device doesn't support the modulation of 16QAM in uplink but 64QAM in downlink for DC-HSDPA mode.
6.The device doesn’t support carrier aggregation for it just can operate in Release 8.

## 6.5 LTE Test Configuration

SAR for LTE band exposure configurations is measured according to the procedures of KDB 941225 D05 SAR for LTE Devices. The CMW500 WideBand Radio Communication Tester was 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 test were performed with the same number of RB and RB offsets transmitting on all TTI frames(Maximum TTI)

**1) Spectrum Plots for RB configurations**

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

**2) MPR**

When MPR is implemented permanently within the UE, regardless of network requirements, only those RB configurations allowed by 3GPP for the channel bandwidth and modulation combinations may be tested with MPR active. Configurations with RB allocations less than the RB thresholds required by 3GPP must be tested without MPR.

The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

**Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3**

| Modulation | Channel bandwidth / Transmission bandwidth (RB) | | | | | | MPR (dB) |
|---|---|---|---|---|---|---|---|
| | 1.4 MHz | 3.0 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz | |
| QPSK | > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 1 |
| 16 QAM | ≤ 5 | ≤ 4 | ≤ 8 | ≤ 12 | ≤ 16 | ≤ 18 | ≤ 1 |
| 16 QAM | > 5 | > 4 | > 8 | > 12 | > 16 | > 18 | ≤ 2 |

**3) A-MPR**

A-MPR(Additional MPR) has been disabled for all SAR tests by using Network Signalling Value of “NS_01”on the base station simulator.

**4) LTE procedures for SAR testing**

A) Largest channel bandwidth standalone SAR test requirements

i) QPSK with 1 RB allocation

Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for 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 of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel. When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

ii) QPSK with 50% RB allocation

The procedures required for 1 RB allocation in i) are applied to measure the SAR for QPSK with 50% RB allocation.

iii) QPSK with 100% RB allocation

For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation in i) and ii) are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

iv) Higher order modulations

For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in above sections to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > ½ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

B) Other channel bandwidth standalone SAR test requirements

For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in section A) to determine the channels and RB configurations that need SAR testing and only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > ½ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg.

**5) TDD LTE test configuration**

According to KDB 941225 D05 SAR for LTE Devices, 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.

TDD LTE Band supports 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations and Table 4.2-1 for Special subframe configurations.

**Figure 4.2-1: Frame structure type 2**

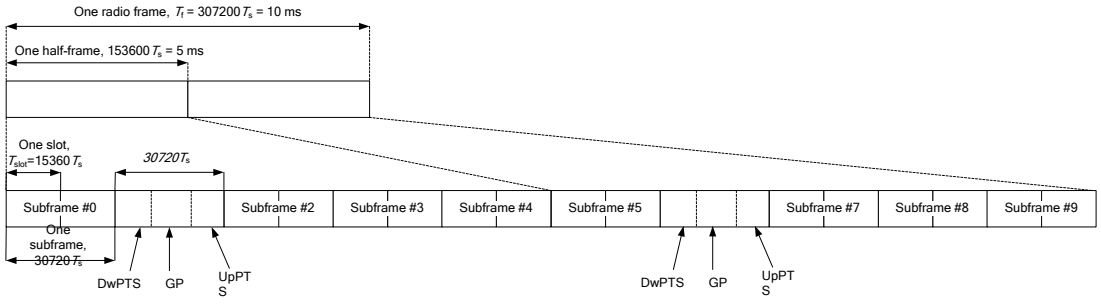



**Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS)**

| 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 | $26336 \cdot T_s$ | | | $7680 \cdot T_s$ | $4384 \cdot T_s$ | $5120 \cdot T_s$ |
| 5 | $6592 \cdot T_s$ | $4384 \cdot T_s$ | $5120 \cdot T_s$ | $20480 \cdot T_s$ | | |
| 6 | $19760 \cdot T_s$ | | | $23040 \cdot T_s$ | | |
| 7 | $21952 \cdot T_s$ | | | $12800 \cdot T_s$ | | |
| 8 | $24144 \cdot T_s$ | | | - | - | - |
| 9 | $13168 \cdot T_s$ | | | - | - | - |

**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 |

According to Figure 4.2-1, one radio frame is configured by 10 subframes, which consist of Uplink-subframe, Downlink-subframe and Special subframe. For TDD-LTE, the Duty Cycle should be calculated on Uplink-subframes and Special subframes, due to Special subframe containing both Uplink transmissions. So for one radio frame, Duty Cycle can be calculated with formula as below. The count of Uplink subframes are according to Table 4.2-2:

Duty cycle =(30720Ts*Ups+Uplink Component*Specials)/(307200Ts)

About the uplink component of Special subframes, we can figure out by Table 4.2-1:

Uplink Component=UpPTS

In conclusion, for the TDD LTE Band, Duty Cycle can be calculated with formula as below .all these sets are ok when we test, or we can set as below.

Duty cycle =[(30720Ts*Ups)+ UpPTS *Specials]/(307200Ts)

And we can get different Duty cycles under different configurations:

| Uplink-Downlink configuration | Subframe number | | | Configuration of special subframe | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Normal cyclice prefix in downlink | | | | Extended cyclice prefix in downlink | | | |
| | | | | Normal cyclice prefix in uplink | | Extended cyclice prefix in uplink | | Normal cyclice prefix in uplink | | Extended cyclice prefix in uplink | |
| | D | S | U | configuration 0~4 | configuration 5~9 | configuration 0~4 | configuration 5~9 | configuration 0~3 | configuration 4~7 | configuration 0~3 | configuration 4~7 |
| 0 | 2 | 2 | 6 | 61.43% | 62.85% | 61.67% | **63.33%** | 61.43% | 62.85% | 61.67% | **63.33%** |
| 1 | 4 | 2 | 4 | 41.43% | 42.85% | 41.67% | 43.33% | 41.43% | 42.85% | 41.67% | 43.33% |
| 2 | 6 | 2 | 2 | 21.43% | 22.85% | 21.67% | 23.33% | 21.43% | 22.85% | 21.67% | 23.33% |
| 3 | 6 | 1 | 3 | 30.71% | 31.43% | 30.83% | 31.67% | 30.71% | 31.43% | 30.83% | 31.67% |
| 4 | 7 | 1 | 2 | 20.71% | 21.43% | 20.83% | 21.67% | 20.71% | 21.43% | 20.83% | 21.67% |
| 5 | 8 | 1 | 1 | 10.71% | 11.43% | 10.83% | 11.67% | 10.71% | 11.43% | 10.83% | 11.67% |
| 6 | 3 | 2 | 5 | 51.43% | 52.85% | 51.67% | 53.33% | 51.43% | 52.85% | 51.67% | 53.33% |

For TDD LTE, SAR should be tested with the highest transmission duty factor (63.33%) using Uplink-downlink configuration 0 and Special subframe configuration 7 for Frame structure type 2.

## 6.6 WiFi Test Configuration

For WiFi SAR testing, a communication link is set up with the testing software for WiFi mode test. During the test,at the each test frequency channel, the EUT is operated at the RF continuous emission mode. Per KDB 248227D01, 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 must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

### 6.6.1 Initial Test Position Procedure

For exposure condition with multiple test position, such as handsets 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 position 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 ≤ 0.4W/kg, no additional testing for the remaining test position is required. Otherwise, SAR is evaluated at the subsequent highest peak SAR position until the reported SAR result is ≤ 0.8W/kg or all test position are measured. For all positions/configurations tested using the initial test position and subsequent test positions, when the *reported* SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the *reported* SAR is ≤ 1.2 W/kg or all required channels are tested.

### 6.6.2 Initial Test Configuration Procedure

An initial test configuration is determined for OFDM transmission modes according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band. SAR is measured using the highest measured maximum output power channel. For configurations with the same specified or measured maximum output power, additional transmission mode and test channel selection procedures are required (see section 5.3.2 of KDB 248227D01). SAR test reduction of subsequent highest output test channels is based on the *reported* SAR of the initial test configuration.

For next to the ear, hotspot mode and UMC mini-tablet exposure configurations where multiple test positions are required, the initial test position procedure is applied to minimize the number of test positions required for SAR measurement using the initial test configuration transmission mode. For fixed exposure conditions that do not have multiple SAR test positions, SAR is measured in the transmission mode determined by the initial test configuration.

When the *reported* SAR of the initial test configuration is > 0.8 W/kg, SAR measurement is required for the subsequent next highest measured output power channel(s) in the initial test configuration until the *reported* SAR is ≤ 1.2 W/kg or all required channels are tested.

### 6.6.3 Sub Test Configuration Procedure

SAR measurement requirements for the remaining 802.11 transmission mode configurations that have not been tested in the initial test configuration are determined separately for each standalone and aggregated frequency band, in each exposure condition, according to the maximum output power specified for production units.

When the highest reported SAR for the initial test configuration, according to the initial test position or fixed exposure position requirements, is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is

not required for that subsequent test configuration.

### 6.6.4 WiFi 2.4G SAR Test Procedures

Separate SAR procedures are applied to DSSS and OFDM configurations in the 2.4 GHz band to simplify DSSS test requirements. For 802.11b DSSS SAR measurements, DSSS SAR procedure applies to fixed exposure test position and initial test position procedure applies to multiple exposure test positions.

**A) 802.11b DSSS SAR Test Requirements**

SAR is measured for 2.4 GHz 802.11b DSSS using either a 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 (section 3.1 of of KDB 248227D01) for the exposure configuration is ≤ 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 exposure configuration 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.

**B) 2.4GHz 802.11g/n OFDM SAR Test Exclusion Requirements**

When SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations, the measurement and test reduction procedures for OFDM are applied (section 5.3 of of KDB 248227D01). SAR is not required for the following 2.4 GHz OFDM conditions.

1) When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.

2) When the highest *reported* SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

**C) SAR Test Requirements for OFDM configurations**

When SAR measurement is required for 802.11 a/g/n/ac OFDM configurations, each standalone and frequency aggregated band is considered separately for SAR test reduction. When the same transmitter and antenna(s) are used for U-NII-1 and U-NII-2A bands, additional SAR test reduction applies. When band gap channels between U-NII-2C band and 5.8 GHz U-NII-3 or §15.247 band are supported, the highest maximum output power transmission mode configuration and maximum output power channel across the bands must be used to determine SAR test reduction, according to the initial test configuration and subsequent test configuration requirements. In applying the initial test configuration and subsequent test configuration procedures, the 802.11 transmission configuration with the highest specified maximum output power and the channel within a test configuration with the highest measured maximum output power should be clearly distinguished to apply the procedures.

### 6.6.5 U-NII-1 and U-NII-2A Bands

For devices that operate in only one of the U-NII-1 and U-NII-2A bands, the normally required SAR procedures for OFDM configurations are applied. For devices that operate in both U-NII bands using the same transmitter and antenna(s), SAR test reduction is determined according to the following：

1) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest *reported* SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, both bands are tested independently for SAR.

2) When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest *reported* SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, both bands are tested independently for SAR.

3) The two U-NII bands may be aggregated to support a 160 MHz channel on channel number 50. Without additional testing, the maximum output power for this is limited to the lower of the maximum output power certified for the two bands. When SAR measurement is required for at least one of the bands and the highest *reported* SAR adjusted by the ratio of specified maximum output power of aggregated to standalone band is > 1.2 W/kg, SAR is required for the 160 MHz channel. This procedure does not apply to an aggregated band with maximum output higher than the standalone band(s); the aggregated band must be tested independently for SAR. SAR is not required when the 160 MHz channel is operating at a reduced maximum power and also qualifies for SAR test exclusion.

### 6.6.6 U-NII-2C and U-NII-3 Bands

The frequency range covered by these bands is 380 MHz (5.47 – 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 – 5.65 GHz in U-NII-2C band must be disabled with acceptable mechanisms and documented in the equipment certification to avoid SAR requirements.10 TDWR restriction does not apply under the new rules; all channels that operate at 5.60 – 5.65 GHz must be included to apply the SAR test reduction and measurement procedures.

When the same transmitter and antenna(s) are used for U-NII-2C band and U-NII-3 band or 5.8 GHz band of §15.247, the bands may be aggregated to enable additional channels with 20, 40 or 80 MHz bandwidth to span across the band gap, as illustrated in Appendix B. The maximum output power for the additional band gap channels is limited to the lower of those certified for the bands. Unless band gap channels are permanently disabled, they must be considered for SAR testing. The frequency range covered by these bands is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. To maintain SAR measurement accuracy and to facilitate test reduction, the channels in U-NII-2C band above 5.65 GHz may be grouped with the 5.8 GHz channels in U-NII-3 or §15.247 band to enable two SAR probe calibration frequency points to cover the bands, including the band gap channels.11 When band gap channels are supported and the bands are not aggregated for SAR testing, band gap channels must be considered independently in each band according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

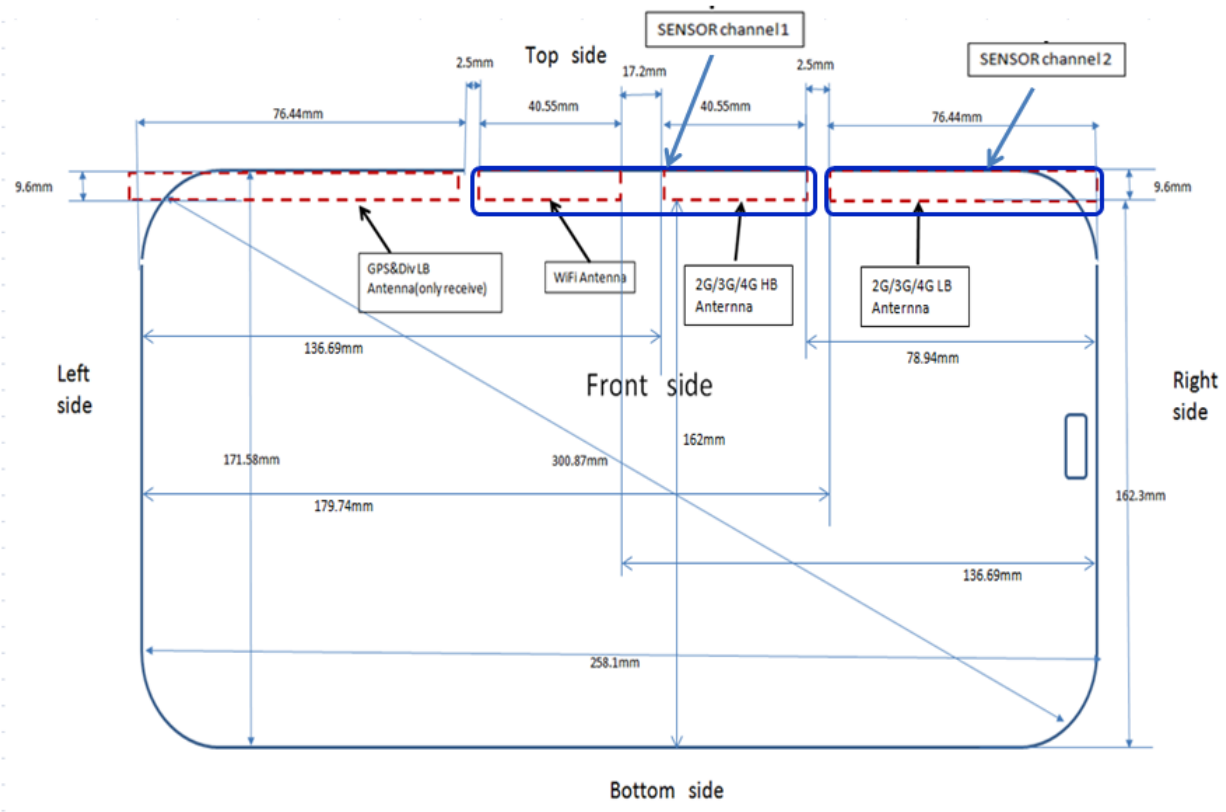
### 6.6.7 OFDM Transmission Mode SAR Test Channel Selection Requirements

For 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. When the maximum output power of a channel is the same for equivalent OFDM configurations(for example 802.11a, 802.11n and 802.11ac, 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 is chosen over 802.11n then 802.11ac, or 802.11g is chosen over 802.11n) is used for SAR measurement. When the maximum output power are the same for multiple test channel, either according to the default or additional power measurement requirement, SAR is measured using the channel closest to the middle of the frequency band or aggregted band. When there are multiple channels with the same maximum output power, SAR is measured using the higher number channel.

## 6.7 Proximity sensor power reduction test configurations

This device uses a mobile country code (MCC) detection and proximity sensor mechanism that share the same metallic electrode as the transmitting antenna to facilitate triggering in typical user interactivity with the device. This device uses the mobile country code (MCC) to indicate whether the users in FCC countries or not. It utilizes the proximity sensor to reduce the output power in specific wireless and operating modes to ensure SAR compliance when the MCC information accomplished by operator network is in FCC countries and the DUT is held close to a user's body exposure condition with sensor on.

The following tables summerize the key power reduction information for proximity sensor. The test procedures in KDB 616217 should be applied to determine proximity sensor triggering distances, and sensor coverage for normal and tilt positions. To ensure all production units are compliant, it is generally necessary to reduce the triggering distance determined from the triggering tests by 1 mm, or more if it is necessary, and use the smallest distance for movements to and from the phantom, minus 1 mm, as the sensor triggering distance for determining the SAR measurement distance.




Note:

1) Sensor channel1 shares the same position with WIFI Antenna &2G/3G/4G HB Antenna. Sensor channel2 shares the same position with 2G/3G/4G LB Antenna. The proximity sensor channel-1 and sensor channel-2 are ndependent. It can be triggered by its own capacitance changes.
2) The 2G/3G/4G LB antenna supports frequency bands at frequency of 698-960MHz
3) The 2G/3G/4G HB antenna supports frequency bands at frequency of 1710-2690MHz

| Band | Power Reduction(dB) | |
|---|---|---|
| | Sensor off<br>(Full power level) | Sensor on,MCC of FCC countries<br>(Reduced power level) |
| GSM850 | 0 | 9 |
| GSM1900 | 0 | 10 |
| UMTS Band 5 | 0 | 6 |
| UMTS Band 2 | 0 | 10 |
| LTE Band 4 | 0 | 10 |
| LTE Band 5 | 0 | 6 |
| LTE Band 7 | 0 | 15 |
| LTE Band 12 | 0 | 8 |
| LTE Band 17 | 0 | 7 |
| LTE Band 26 | 0 | 7 |
| LTE Band 38 | 0 | 12 |
| LTE Band 41 | 0 | 13 |
| WiFi 2.4G 11b | 0 | 8 |
| WiFi 2.4G 11g | 0 | 3 |
| WiFi 2.4G 11n(20M) | 0 | 2 |
| WiFi 5G 11a(20M)<br>(U-NII-1 & U-NII-2A) | 0 | 12 |
| WiFi 5G 11a(20M)<br>(U-NII-2C & U-NII-3) | 0 | 13 |
| WiFi 5G 11n(20M)<br>(U-NII-1 & U-NII-2A) | 0 | 11 |
| WiFi 5G 11n(20M)<br>(U-NII-2C & U-NII-3) | 0 | 12 |
| WiFi 5G 11n(40M)<br>(U-NII-1 & U-NII-2A) | 0 | 9 |
| WiFi 5G 11n(40M)<br>(U-NII-2C & U-NII-3) | 0 | 10 |
| WiFi 5G 11ac(20M)<br>(U-NII-1 & U-NII-2A) | 0 | 11 |
| WiFi 5G 11ac(20M)<br>(U-NII-2C & U-NII-3) | 0 | 12 |
| WiFi 5G 11ac(40M)<br>(U-NII-1 & U-NII-2A) | 0 | 9 |
| WiFi 5G 11ac(40M)<br>(U-NII-2C & U-NII-3) | 0 | 10 |
| WiFi 5G 11ac(80M)<br>(U-NII-1 & U-NII-2A) | 0 | 8 |
| WiFi 5G 11ac(80M)<br>(U-NII-2C & U-NII-3) | 0 | 9 |

| Band | Sensor Trigger Distance |
|---|---|

| | |
|---|---|
| GSM850 | Top side: 17mm<br>Back side: 12mm |
| GSM1900 | Top side: 18mm<br>Back side: 15mm |
| UMTS Band 2 | Top side: 18mm<br>Back side: 15mm |
| UMTS Band 5 | Top side: 17mm<br>Back side: 12mm |
| LTE Band 4 | Top side: 18mm<br>Back side: 15mm |
| LTE Band 5 | Top side: 17mm<br>Back side: 12mm |
| LTE Band 7 | Top side: 18mm<br>Back side: 15mm |
| LTE Band 12 | Top side: 17mm<br>Back side: 12mm |
| LTE Band 17 | Top side: 17mm<br>Back side: 12mm |
| LTE Band 26 | Top side: 17mm<br>Back side: 12mm |
| LTE Band 38 | Top side: 18mm<br>Back side: 15mm |
| LTE Band 41 | Top side: 18mm<br>Back side: 15mm |
| WiFi 2.4G 11b | Top side: 18mm<br>Back side: 15mm |
| WiFi 2.4G 11g | Top side: 18mm<br>Back side: 15mm |
| WiFi 2.4G 11n(20M) | Top side: 18mm<br>Back side: 15mm |
| WiFi 5G 11a(20M)<br>(U-NII-1 & U-NII-2A) | Top side: 18mm<br>Back side: 15mm |
| WiFi 5G 11a(20M)<br>(U-NII-2C & U-NII-3) | Top side: 18mm<br>Back side: 15mm |
| WiFi 5G 11n(20M)<br>(U-NII-1 & U-NII-2A) | Top side: 18mm<br>Back side: 15mm |
| WiFi 5G 11n(20M)<br>(U-NII-2C & U-NII-3) | Top side: 18mm<br>Back side: 15mm |
| WiFi 5G 11n(40M)<br>(U-NII-1 & U-NII-2A) | Top side: 18mm<br>Back side: 15mm |
| WiFi 5G 11n(40M)<br>(U-NII-2C & U-NII-3) | Top side: 18mm<br>Back side: 15mm |
| WiFi 5G 11ac(20M)<br>(U-NII-1 & U-NII-2A) | Top side: 18mm<br>Back side: 15mm |
| WiFi 5G 11ac(20M)<br>(U-NII-2C & U-NII-3) | Top side: 18mm<br>Back side: 15mm |
| WiFi 5G 11ac(40M)<br>(U-NII-1 & U-NII-2A) | Top side: 18mm<br>Back side: 15mm |
| WiFi 5G 11ac(40M)<br>(U-NII-2C & U-NII-3) | Top side: 18mm<br>Back side: 15mm |

| | |
|---|---|
| WiFi 5G 11ac(80M)<br>(U-NII-1 & U-NII-2A) | Top side: 18mm<br>Back side: 15mm |
| WiFi 5G 11ac(80M)<br>(U-NII-2C & U-NII-3) | Top side: 18mm<br>Back side: 15mm |

Note:
1）To ensure all production units are compliant, the smallest separation distance determined by the sensor triggering minus 1 mm, must be used as the test separation distance for SAR testing.
2) SAR tests with proximity sensor power reduction are only required for the sides of frequency bands in the table above. For the other sides or other frequency bands of the device, SAR is still tested at the maximum power level with sensor off.

The following procedures in KDB 616217 are applied to determine proximity sensor triggering distances and sensor coverage for normal and tilt positions.

**1) Procedures for determining proximity sensor triggering distances**
The device was tested by the test lab to determine the proximity sensor triggering distances for the front side, back side and bottom side of the device. To ensure all production units are compliant, the smallest separation distance determined by the sensor triggering minus 1 mm, must be used as the test separation distance for SAR testing.

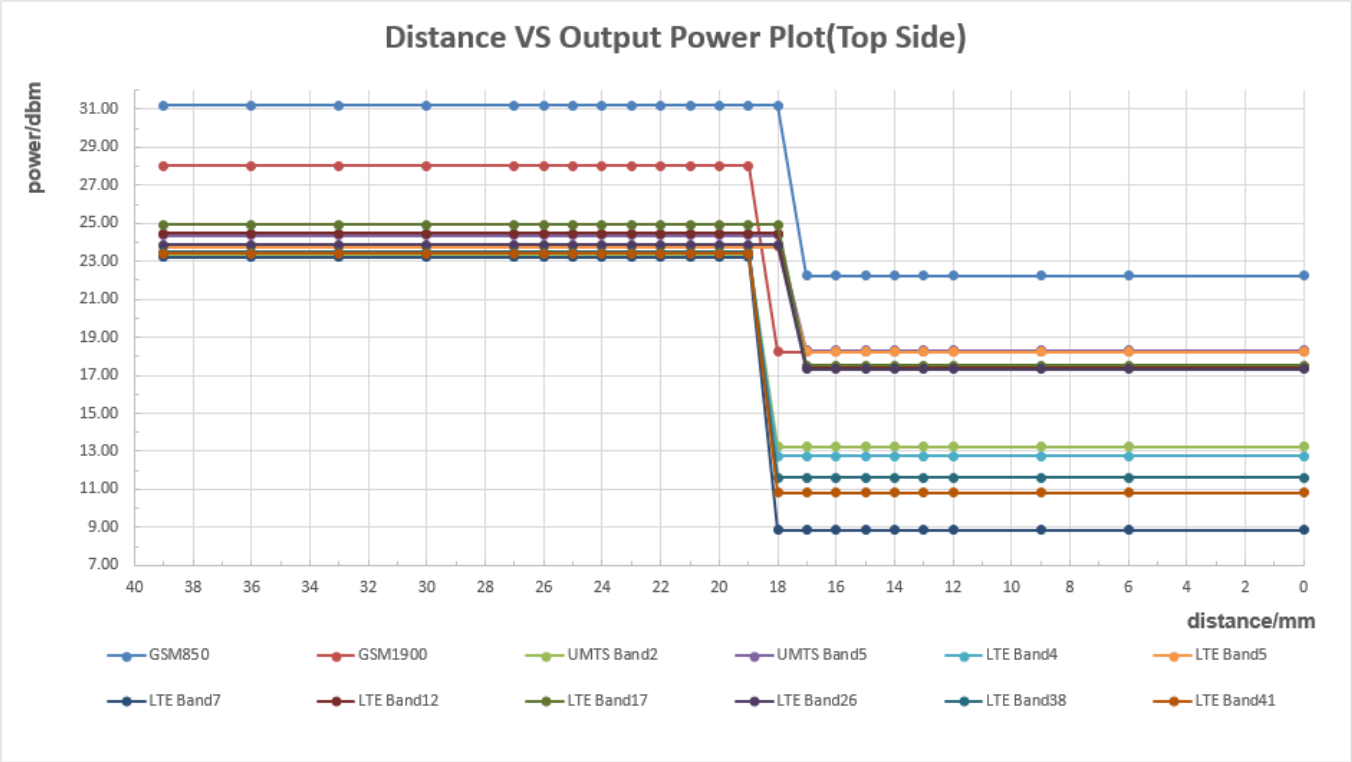
the proximity sensor triggering distance measurement method are as below:

**Table: Summary of Trigger Distances**

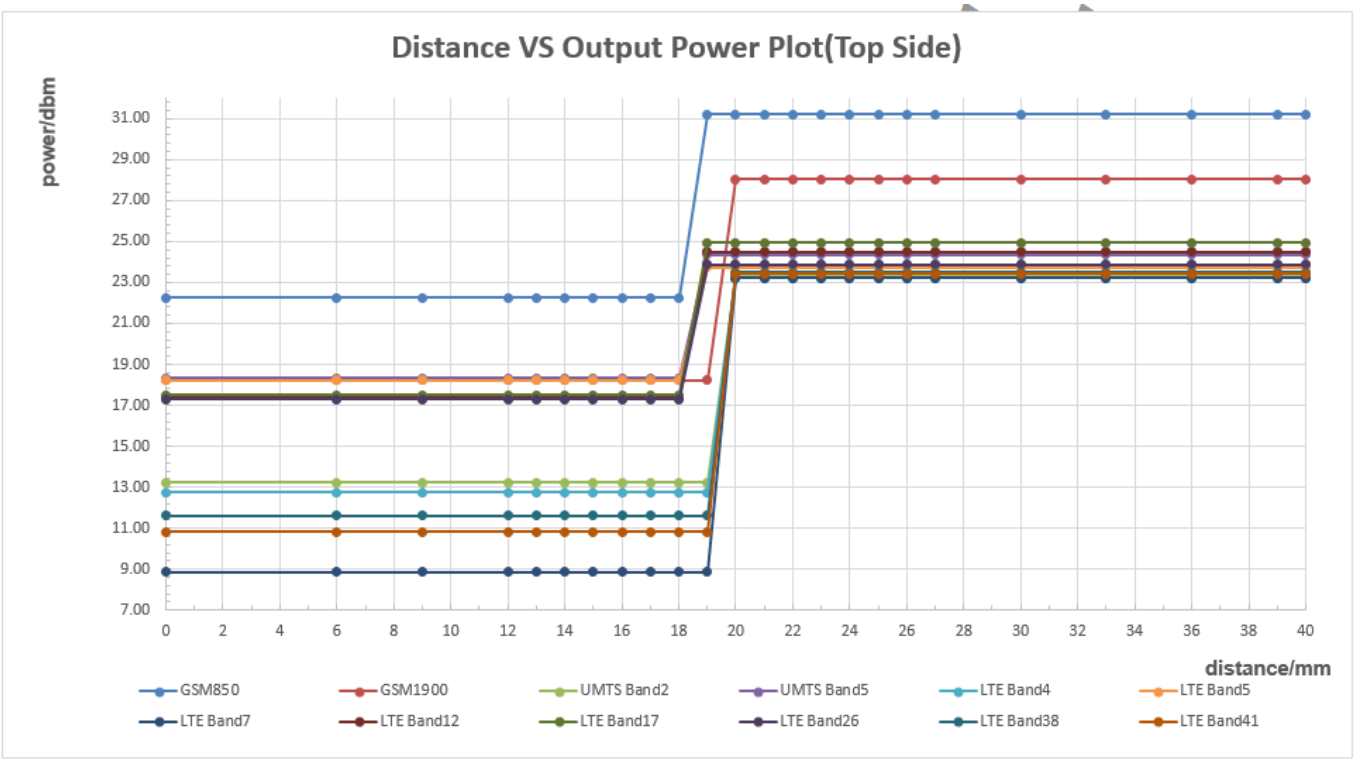
| Band(MHz) | Trigger distance-Top Side | | Trigger distance-Back Side | |
|---|---|---|---|---|
| | Moving toward phantom | Moving away from phantom | Moving toward phantom | Moving away from phantom |
| GSM850 | 17mm | 19mm | 12mm | 14mm |
| GSM1900 | 18mm | 20mm | 15mm | 17mm |
| UMTS Band 2 | 18mm | 20mm | 15mm | 17mm |
| UMTS Band 5 | 17mm | 19mm | 12mm | 14mm |
| LTE Band 4 | 18mm | 20mm | 15mm | 17mm |
| LTE Band 5 | 17mm | 19mm | 12mm | 14mm |
| LTE Band 7 | 18mm | 20mm | 15mm | 17mm |
| LTE Band 12 | 17mm | 19mm | 12mm | 14mm |
| LTE Band 17 | 17mm | 19mm | 12mm | 14mm |
| LTE Band 26 | 17mm | 19mm | 12mm | 14mm |
| LTE Band 38 | 18mm | 20mm | 15mm | 17mm |
| LTE Band 41 | 18mm | 20mm | 15mm | 17mm |
| WiFi 2.4G 11b | 18mm | 19mm | 15mm | 16mm |
| WiFi 2.4G 11g | 18mm | 19mm | 15mm | 16mm |
| WiFi 2.4G 11n(20M) | 18mm | 19mm | 15mm | 16mm |
| WiFi 5G 11a(20M) (U-NII-1 & U-NII-2A) | 18mm | 19mm | 15mm | 16mm |
| WiFi 5G 11a(20M) (U-NII-2C & U-NII-3) | 18mm | 19mm | 15mm | 16mm |
| WiFi 5G 11n(20M) (U-NII-1 & U-NII-2A) | 18mm | 19mm | 15mm | 16mm |
| WiFi 5G 11n(20M) (U-NII-2C & U-NII-3) | 18mm | 19mm | 15mm | 16mm |
| WiFi 5G 11n(40M) (U-NII-1 & U-NII-2A) | 18mm | 19mm | 15mm | 16mm |
| WiFi 5G 11n(40M) (U-NII-2C & U-NII-3) | 18mm | 19mm | 15mm | 16mm |
| WiFi 5G 11ac(20M) (U-NII-1 & U-NII-2A) | 18mm | 19mm | 15mm | 16mm |
| WiFi 5G 11ac(20M) (U-NII-2C & U-NII-3) | 18mm | 19mm | 15mm | 16mm |
| WiFi 5G 11ac(40M) (U-NII-1 & U-NII-2A) | 18mm | 19mm | 15mm | 16mm |
| WiFi 5G 11ac(40M) (U-NII-2C & U-NII-3) | 18mm | 19mm | 15mm | 16mm |
| WiFi 5G 11ac(80M) (U-NII-1 & U-NII-2A) | 18mm | 19mm | 15mm | 16mm |
| WiFi 5G 11ac(80M) (U-NII-2C & U-NII-3) | 18mm | 19mm | 15mm | 16mm |

The detailed conducted power measurement data to determine the triggering distances is as below:

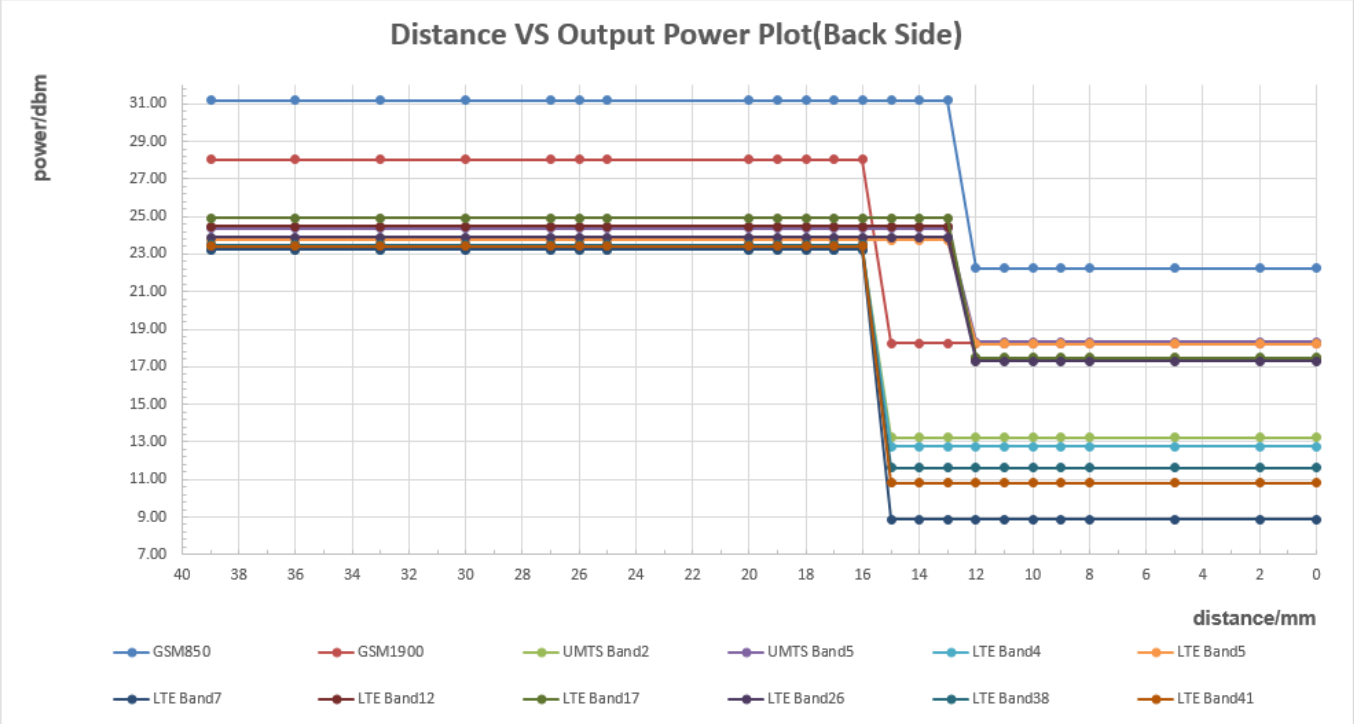
The DUT(top side) is moved towards the flat phantom(2G/3G/4G antenna):



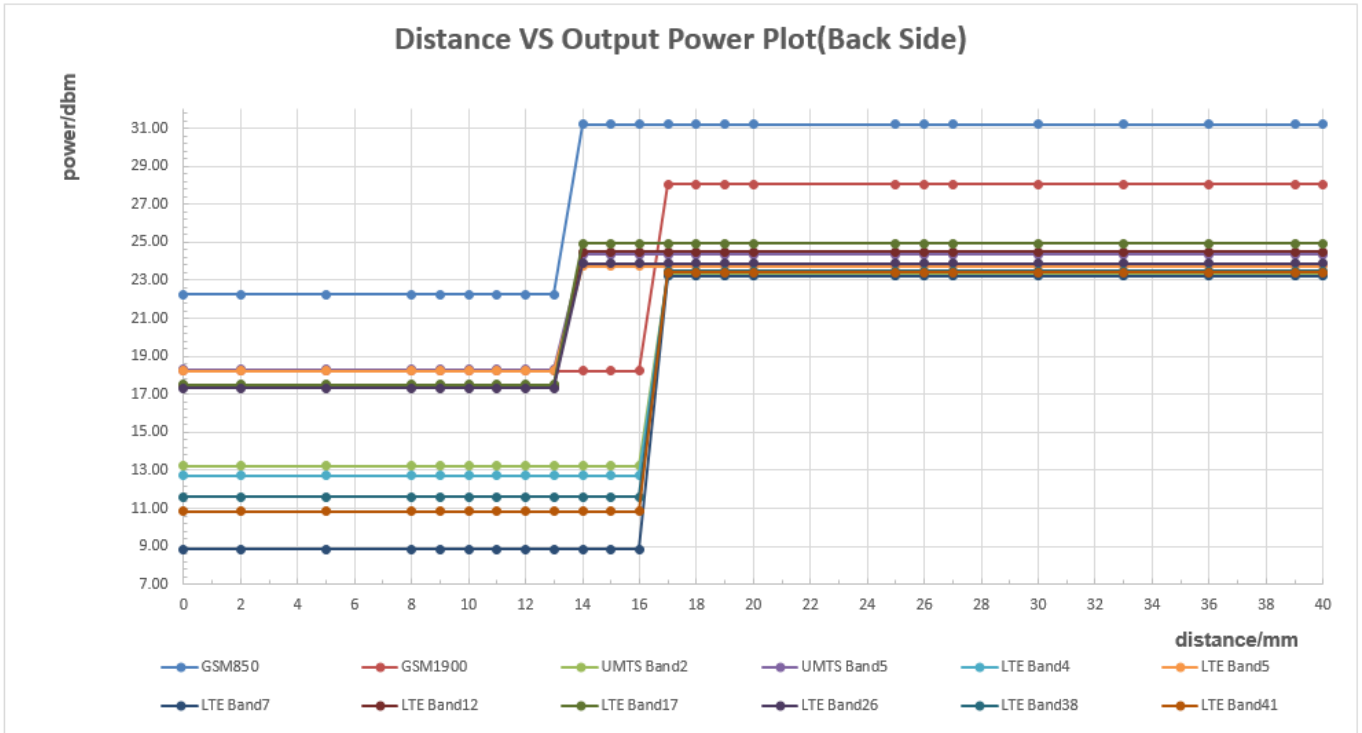

The DUT(top side) is moved awar from the flat phantom(2G/3G/4G  antenna):



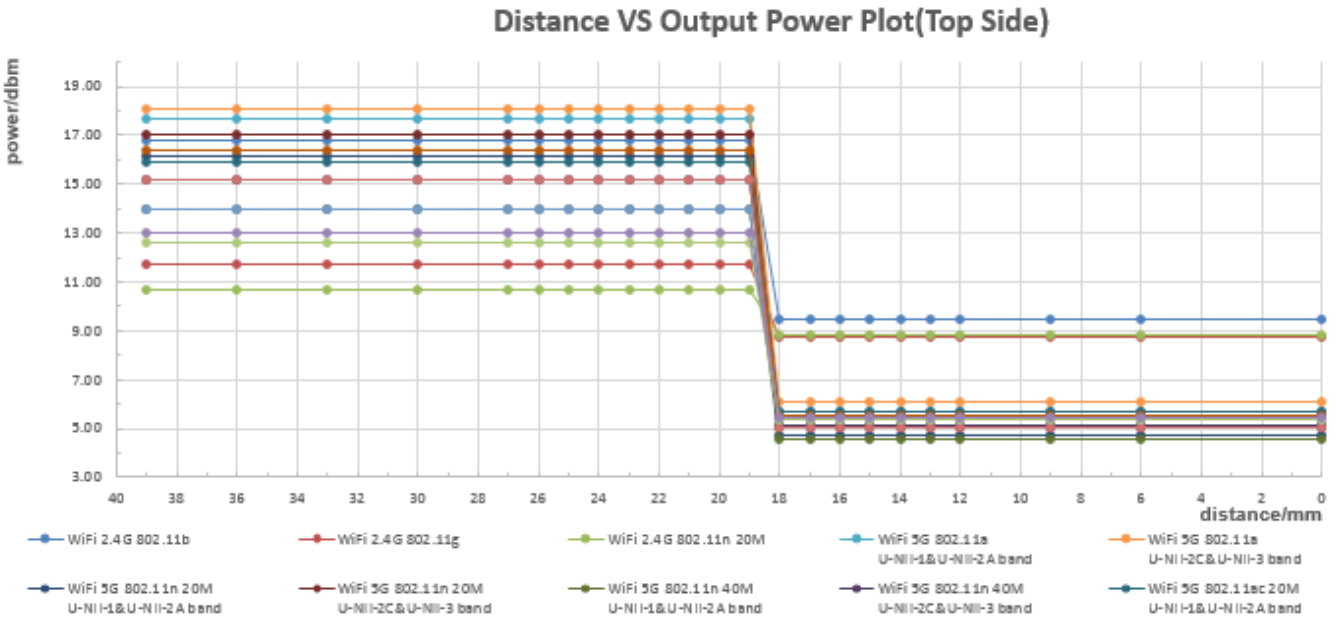
The DUT(back side) is moved towards the flat phantom(2G/3G/4G  antenna):



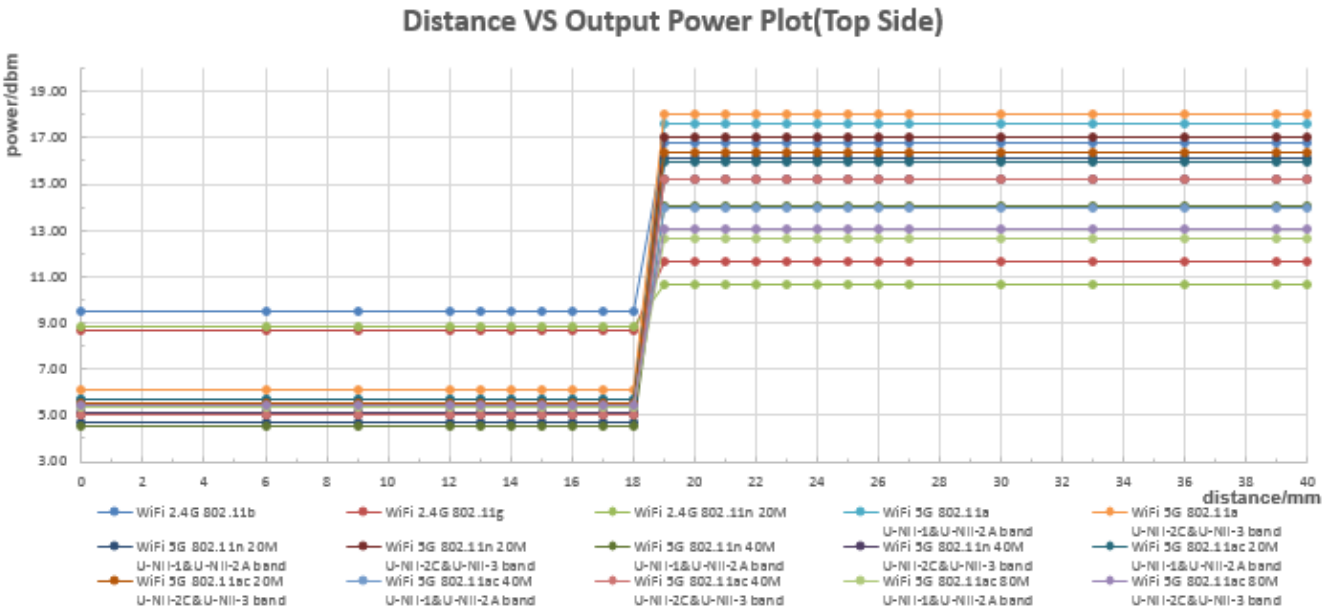

The DUT(back side) is moved away from the flat phantom(2G/3G/4G  antenna):



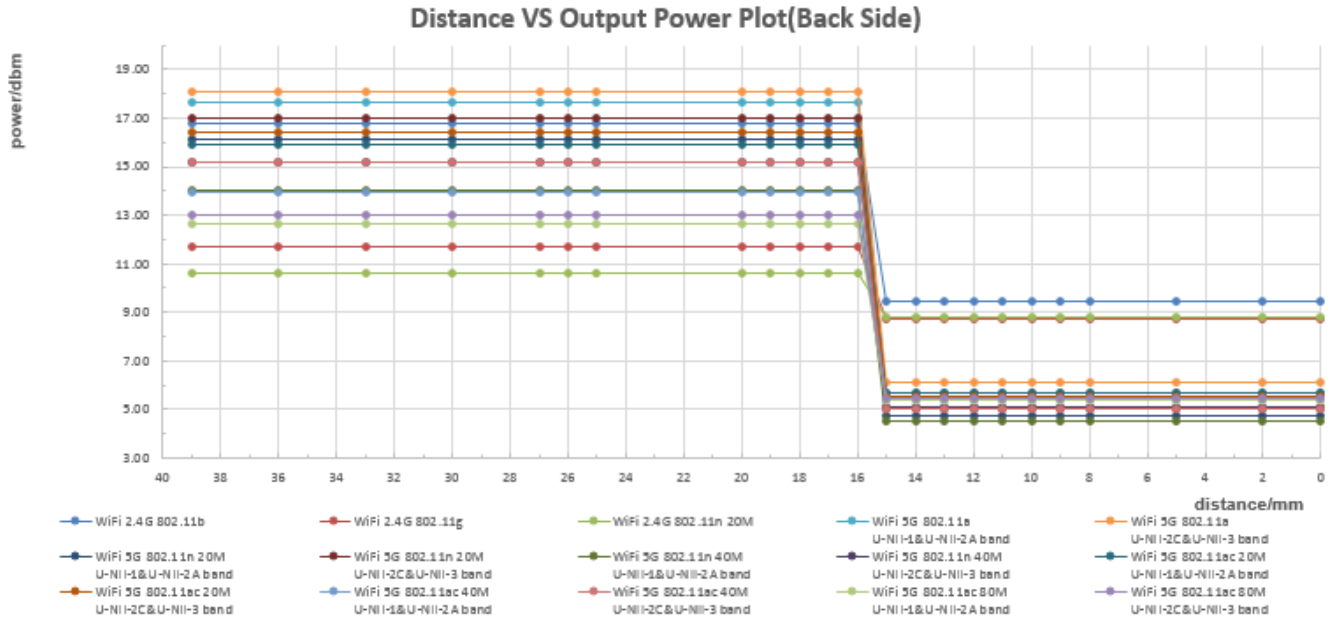
The DUT(top side) is moved towards the flat phantom(WiFi antenna):



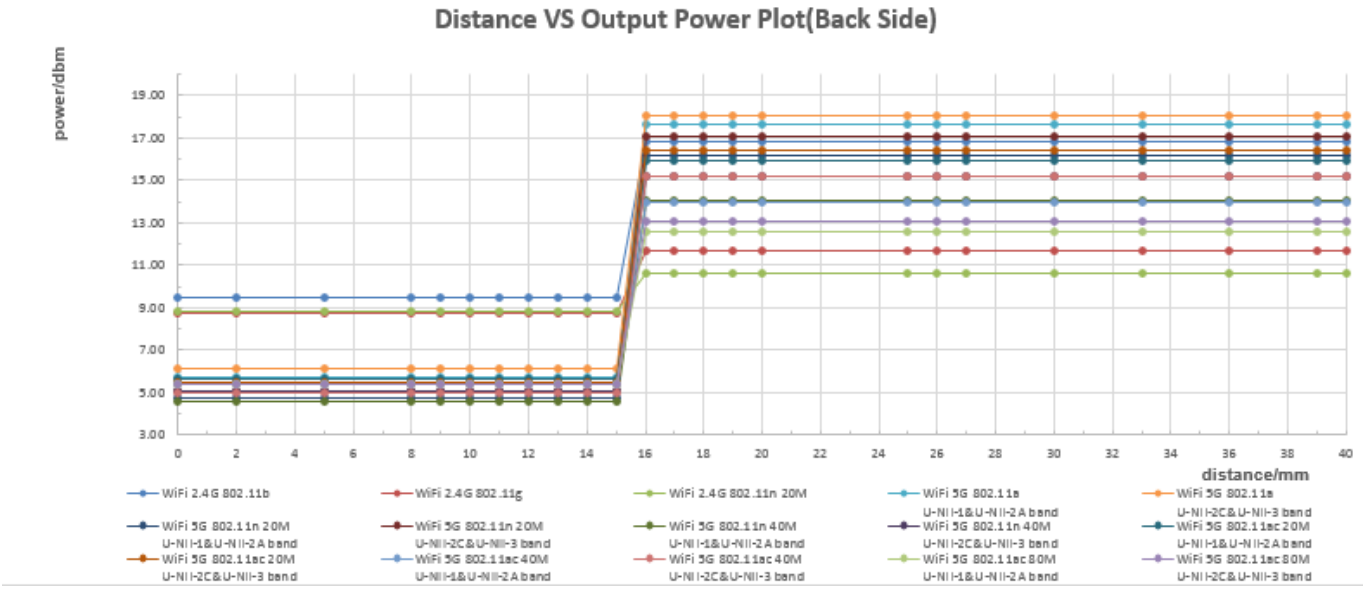

The DUT(top side) is moved away from the flat phantom(WiFi antenna):



The DUT(back side) is moved towards the flat phantom(WiFi antenna):




The DUT(back side) is moved away from the flat phantom(WiFi antenna):




**Conclusion:** It can be ensured that the proximity sensor can be valid triggered.

**2) Procedures for determining antenna and proximity sensor coverage**

There is no spatial offset between the Tx antenna and the proximity sensor element, so procedures for determining the proximity sensor coverage does not need to be assessed per KDB616217.

**3) Procedures for determining device tilt angle influences to proximity sensor triggering**

The DUT was positioned directly below the flat phantom at the minimum measured trigger distance with Bottom side parallel to the base of the flat phantom for each band.

The EUT was rotated about Bottom side for angles up to +/- 45°. If the output power increased during the rotation the DUT was moved 1mm toward the phantom and the rotation repeated. This procedure was repeated until the power remained reduced for all angles up to +/- 45°.

The proximity sensor triggering tilt angle measurement method are as below:

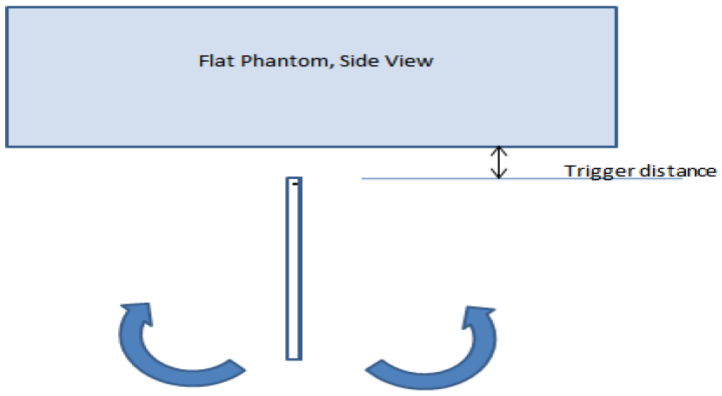



**Table: Summary of Tablet Tilt Angle Influence to Proximity Sensor Triggering(Top side)**

| Band(MHz) | Minimum trigger distance at which power reduction was maintained over ±45° | Power Reduction Status | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | -45° | -35° | -25° | -15° | -5° | 0° | 5° | 15° | 25° | 35° | 45° |
| GSM850 | 17mm | on | on | on | on | on | on | on | on | on | on | on |
| GSM1900 | 18mm | on | on | on | on | on | on | on | on | on | on | on |
| UMTS Band 2 | 18mm | on | on | on | on | on | on | on | on | on | on | on |
| UMTS Band 5 | 17mm | on | on | on | on | on | on | on | on | on | on | on |
| LTE Band 4 | 18mm | on | on | on | on | on | on | on | on | on | on | on |
| LTE Band 5 | 17mm | on | on | on | on | on | on | on | on | on | on | on |
| LTE Band 7 | 18mm | on | on | on | on | on | on | on | on | on | on | on |
| LTE Band 12 | 17mm | on | on | on | on | on | on | on | on | on | on | on |
| LTE Band 17 | 17mm | on | on | on | on | on | on | on | on | on | on | on |
| LTE Band 26 | 17mm | on | on | on | on | on | on | on | on | on | on | on |
| LTE Band 38 | 18mm | on | on | on | on | on | on | on | on | on | on | on |
| LTE Band 41 | 18mm | on | on | on | on | on | on | on | on | on | on | on |
| WiFi 2.4G 11b | 18mm | on | on | on | on | on | on | on | on | on | on | on |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WiFi 2.4G 11g | 18mm | on | on | on | on | on | on | on | on | on | on | on |
| WiFi 2.4G 11n(20M) | 18mm | on | on | on | on | on | on | on | on | on | on | on |
| WiFi 5G 11a(20M) (U-NII-1 & U-NII-2A) | 18mm | on | on | on | on | on | on | on | on | on | on | on |
| WiFi 5G 11a(20M) (U-NII-2C & U-NII-3) | 18mm | on | on | on | on | on | on | on | on | on | on | on |
| WiFi 5G 11n(20M) (U-NII-1 & U-NII-2A) | 18mm | on | on | on | on | on | on | on | on | on | on | on |
| WiFi 5G 11n(20M) (U-NII-2C & U-NII-3) | 18mm | on | on | on | on | on | on | on | on | on | on | on |
| WiFi 5G 11n(40M) (U-NII-1 & U-NII-2A) | 18mm | on | on | on | on | on | on | on | on | on | on | on |
| WiFi 5G 11n(40M) (U-NII-2C & U-NII-3) | 18mm | on | on | on | on | on | on | on | on | on | on | on |
| WiFi 5G 11ac(20M) (U-NII-1 & U-NII-2A) | 18mm | on | on | on | on | on | on | on | on | on | on | on |
| WiFi 5G 11ac(20M) (U-NII-2C & U-NII-3) | 18mm | on | on | on | on | on | on | on | on | on | on | on |
| WiFi 5G 11ac(40M) (U-NII-1 & U-NII-2A) | 18mm | on | on | on | on | on | on | on | on | on | on | on |
| WiFi 5G 11ac(40M) (U-NII-2C & U-NII-3) | 18mm | on | on | on | on | on | on | on | on | on | on | on |
| WiFi 5G 11ac(80M) (U-NII-1 & U-NII-2A) | 18mm | on | on | on | on | on | on | on | on | on | on | on |
| WiFi 5G 11ac(80M) (U-NII-2C & U-NII-3) | 18mm | on | on | on | on | on | on | on | on | on | on | on |

**Conclusion:** It can be ensured that the proximity sensor can be valid triggered for the DUT tilt coverage exposure condition.

# 7 SAR Measurement Results

## 7.1 Conducted power measurements

For the measurements a Rohde & Schwarz Radio Communication Tester CMU 200&CMW500 was used.
SAR drift measured at the same position in liquid before and after each SAR test as below 7.2 chapter.
Note: CMU200 measures GSM peak and average output power for active timeslots.For SAR the timebased average power is relevant. The difference in between depends on the duty cycle of the TDMA signal :

| No. of timeslots | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Duty Cycle | 1:8.3 | 1:4.1 | 1:2.77 | 1:2.08 |
| timebased avg. power compared to slotted avg. power | -9.19dB | -6.13dB | -4.42dB | -3.18dB |

The signalling modes differ as follows:

| mode | coding scheme | modulation |
|---|---|---|
| GPRS | CS1 to CS4 | GMSK |
| EDGE | MCS1 to MCS4 | GMSK |
| EDGE | MCS5 to MCS9 | 8PSK |

Apart from modulation change (GMSK/8PSK) coding schemes differ in code rate without influence on the RF signal. Therefore one coding scheme per mode was selected for conducted power measurements.

### 7.1.1 Conducted power measurements of GSM850

| GSM850 | | Tune-up | Burst-Averaged output Power (dBm) | | | Division | Tune-up | Frame-Averaged output Power (dBm) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Max. | 128CH | 190CH | 251CH | Factors | Max. | 128CH | 190CH | 251CH |
| GSM (CS) | | 34.0 | 33.23 | 33.31 | 33.26 | -9.19 | 24.81 | 24.04 | 24.12 | 24.07 |
| GPRS (GMSK) | 1 Tx Slot | 34.0 | 33.33 | 33.30 | 33.34 | -9.19 | 24.81 | 24.14 | 24.11 | 24.15 |
| | 2 Tx Slots | **32.0** | **31.23** | **31.20** | **31.22** | **-6.13** | **25.87** | **25.10** | **25.07** | **25.09** |
| | 3 Tx Slots | 30.0 | 29.32 | 29.24 | 29.23 | -4.42 | 25.58 | 24.90 | 24.82 | 24.81 |
| | 4 Tx Slots | 28.0 | 27.23 | 27.20 | 27.19 | -3.18 | 24.82 | 24.05 | 24.02 | 24.01 |
| EDGE (GMSK) | 1 Tx Slot | 34.0 | 33.33 | 33.30 | 33.34 | -9.19 | 24.81 | 24.14 | 24.11 | 24.15 |
| | 2 Tx Slots | 32.0 | 31.23 | 31.20 | 31.22 | -6.13 | 25.87 | 25.10 | 25.07 | 25.09 |
| | 3 Tx Slots | 30.0 | 29.32 | 29.24 | 29.23 | -4.42 | 25.58 | 24.90 | 24.82 | 24.81 |
| | 4 Tx Slots | 28.0 | 27.23 | 27.20 | 27.19 | -3.18 | 24.82 | 24.05 | 24.02 | 24.01 |
| EDGE (8PSK) | 1 Tx Slot | 27.2 | 26.16 | 26.17 | 26.10 | -9.19 | 18.01 | 16.97 | 16.98 | 16.91 |
| | 2 Tx Slots | 26.4 | 25.26 | 25.30 | 25.36 | -6.13 | 20.27 | 19.13 | 19.17 | 19.23 |
| | 3 Tx Slots | 24.0 | 23.06 | 23.16 | 23.10 | -4.42 | 19.58 | 18.64 | 18.74 | 18.68 |
| | 4 Tx Slots | 23.0 | 21.92 | 21.96 | 22.03 | -3.18 | 19.82 | 18.74 | 18.78 | 18.85 |

Table 14:Conducted power measurement results of GSM850(Full Power)

| GSM850 | | Tune-up | Burst-Averaged output Power (dBm) | | | Division | Tune-up | Frame-Averaged output Power (dBm) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Max. | 128CH | 190CH | 251CH | Factors | Max. | 128CH | 190CH | 251CH |
| GSM (CS) | | 25.0 | 24.16 | 24.31 | 24.32 | -9.19 | 15.81 | 14.97 | 15.12 | 15.13 |
| GPRS (GMSK) | 1 Tx Slot | 25.0 | 24.33 | 24.33 | 24.32 | -9.19 | 15.81 | 15.14 | 15.14 | 15.13 |
| | **2 Tx Slots** | **23.0** | **22.28** | **22.26** | **22.24** | **-6.13** | **16.87** | **16.15** | **16.13** | **16.11** |
| | 3 Tx Slots | 21.0 | 20.40 | 20.25 | 20.23 | -4.42 | 16.58 | 15.98 | 15.83 | 15.81 |
| | 4 Tx Slots | 19.0 | 18.32 | 18.23 | 18.20 | -3.18 | 15.82 | 15.14 | 15.05 | 15.02 |
| EDGE (GMSK) | 1 Tx Slot | 25.0 | 24.33 | 24.33 | 24.32 | -9.19 | 15.81 | 15.14 | 15.14 | 15.13 |
| | 2 Tx Slots | 23.0 | 22.28 | 22.26 | 22.24 | -6.13 | 16.87 | 16.15 | 16.13 | 16.11 |
| | 3 Tx Slots | 21.0 | 20.40 | 20.25 | 20.23 | -4.42 | 16.58 | 15.98 | 15.83 | 15.81 |
| | 4 Tx Slots | 19.0 | 18.32 | 18.23 | 18.20 | -3.18 | 15.82 | 15.14 | 15.05 | 15.02 |
| EDGE (8PSK) | 1 Tx Slot | 18.2 | 16.85 | 17.01 | 17.02 | -9.19 | 9.01 | 7.66 | 7.82 | 7.83 |
| | 2 Tx Slots | 17.4 | 16.16 | 16.29 | 16.37 | -6.13 | 11.27 | 10.03 | 10.16 | 10.24 |
| | 3 Tx Slots | 15.0 | 14.22 | 14.34 | 14.32 | -4.42 | 10.58 | 9.80 | 9.92 | 9.90 |
| | 4 Tx Slots | 14.0 | 13.21 | 13.32 | 13.15 | -3.18 | 10.82 | 10.03 | 10.14 | 9.97 |

Table 15:Conducted power measurement results of GSM850(Sensor On, reduced power)

Note:

1) The conducted power of GSM850 is measured with RMS detector.

2) Frame-averaged output power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 timesolts.

3) Per KDB941225 D01, SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.

### 7.1.2 Conducted power measurements of GSM1900

| GSM1900 | | Tune-up | Burst-Averaged output Power (dBm) | | | Division | Tune-up | Frame-Averaged output Power (dBm) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Max. | 512CH | 661CH | 810CH | Factors | Max. | 512CH | 661CH | 810CH |
| GSM (CS) | | 31.0 | 30.13 | 29.96 | 29.82 | -9.19 | 21.81 | 20.94 | 20.77 | 20.63 |
| GPRS (GMSK) | 1 Tx Slot | 31.0 | 30.22 | 30.01 | 29.80 | -9.19 | 21.81 | 21.03 | 20.82 | 20.61 |
| | **2 Tx Slots** | **29.0** | **28.15** | **28.04** | **27.85** | **-6.13** | **22.87** | **22.02** | **21.91** | **21.72** |
| | 3 Tx Slots | 27.0 | 26.11 | 26.03 | 25.92 | -4.42 | 22.58 | 21.69 | 21.61 | 21.50 |
| | 4 Tx Slots | 25.0 | 24.08 | 23.98 | 23.87 | -3.18 | 21.82 | 20.90 | 20.80 | 20.69 |
| EDGE (GMSK) | 1 Tx Slot | 31.0 | 30.22 | 30.01 | 29.80 | -9.19 | 21.81 | 21.03 | 20.82 | 20.61 |
| | 2 Tx Slots | 29.0 | 28.15 | 28.04 | 27.85 | -6.13 | 22.87 | 22.02 | 21.91 | 21.72 |
| | 3 Tx Slots | 27.0 | 26.11 | 26.03 | 25.92 | -4.42 | 22.58 | 21.69 | 21.61 | 21.50 |
| | 4 Tx Slots | 25.0 | 24.08 | 23.98 | 23.87 | -3.18 | 21.82 | 20.90 | 20.80 | 20.69 |
| EDGE (8PSK) | 1 Tx Slot | 27.7 | 26.74 | 26.35 | 26.17 | -9.19 | 18.51 | 17.55 | 17.16 | 16.98 |
| | 2 Tx Slots | 25.0 | 24.12 | 23.95 | 24.07 | -6.13 | 18.87 | 17.99 | 17.82 | 17.94 |
| | 3 Tx Slots | 23.0 | 21.85 | 22.02 | 21.75 | -4.42 | 18.58 | 17.43 | 17.60 | 17.33 |
| | 4 Tx Slots | 20.5 | 19.33 | 19.21 | 19.45 | -3.18 | 17.32 | 16.15 | 16.03 | 16.27 |

Table 16: Conducted power measurement results of GSM1900(Full Power)

| GSM1900 | | Tune-up | Burst-Averaged output Power (dBm) | | | Division | Tune-up | Frame-Averaged output Power (dBm) | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Max. | 512CH | 661CH | 810CH | Factors | Max. | 512CH | 661CH | 810CH |
| GSM (CS) | | 21.0 | 20.17 | 20.11 | 20.07 | -9.19 | 11.81 | 10.98 | 10.92 | 10.88 |
| GPRS (GMSK) | 1 Tx Slot | 21.0 | 20.25 | 20.17 | 20.10 | -9.19 | 11.81 | 11.06 | 10.98 | 10.91 |
| | **2 Tx Slots** | **19.0** | **18.32** | **18.24** | **18.22** | **-6.13** | **12.87** | **12.19** | **12.11** | **12.09** |
| | 3 Tx Slots | 17.0 | 16.29 | 16.16 | 16.19 | -4.42 | 12.58 | 11.87 | 11.74 | 11.77 |
| | 4 Tx Slots | 15.0 | 14.25 | 14.16 | 14.24 | -3.18 | 11.82 | 11.07 | 10.98 | 11.06 |
| EDGE (GMSK) | 1 Tx Slot | 21.0 | 20.25 | 20.17 | 20.10 | -9.19 | 11.81 | 11.06 | 10.98 | 10.91 |
| | 2 Tx Slots | 19.0 | 18.32 | 18.24 | 18.22 | -6.13 | 12.87 | 12.19 | 12.11 | 12.09 |
| | 3 Tx Slots | 17.0 | 16.29 | 16.16 | 16.19 | -4.42 | 12.58 | 11.87 | 11.74 | 11.77 |
| | 4 Tx Slots | 15.0 | 14.25 | 14.16 | 14.24 | -3.18 | 11.82 | 11.07 | 10.98 | 11.06 |
| EDGE (8PSK) | 1 Tx Slot | 17.7 | 16.48 | 16.36 | 16.31 | -9.19 | 8.51 | 7.29 | 7.17 | 7.12 |
| | 2 Tx Slots | 15.0 | 14.08 | 14.01 | 13.95 | -6.13 | 8.87 | 7.95 | 7.88 | 7.82 |
| | 3 Tx Slots | 13.0 | 11.70 | 11.61 | 11.60 | -4.42 | 8.58 | 7.28 | 7.19 | 7.18 |
| | 4 Tx Slots | 10.5 | 9.49 | 9.45 | 9.45 | -3.18 | 7.32 | 6.31 | 6.27 | 6.27 |

Table 17: Conducted power measurement results of GSM1900(Sensor On, reduced power)

Note:

1) The conducted power of GSM1900 is measured with RMS detector.

2) Frame-averaged output power was calculated from the measured burst-averaged output power by converting the slot powers into linear units and calculating the energy over 8 timesolts.

3) Per KDB941225 D01, SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.

### 7.1.3 Conducted power measurements of UMTS Band 5

| UMTS Band 5 | | Tune-up | Average Power (dBm) | | |
|---|---|---|---|---|---|
| | | Max. | 4132CH | 4182CH | 4233CH |
| WCDMA | 12.2kbps RMC | 25.2 | 24.42 | **24.36** | 24.35 |
| | 12.2kbps AMR | 25.2 | 24.41 | 24.39 | 24.42 |
| HSDPA | Subtest 1 | 24.0 | 23.15 | 23.09 | 23.20 |
| | Subtest 2 | 23.9 | 22.84 | 22.90 | 22.86 |
| | Subtest 3 | 23.6 | 22.49 | 22.51 | 22.56 |
| | Subtest 4 | 23.6 | 22.51 | 22.52 | 22.55 |
| HSUPA | Subtest 1 | 24.0 | 22.97 | 23.21 | 22.92 |
| | Subtest 2 | 22.0 | 20.81 | 21.21 | 21.04 |
| | Subtest 3 | 23.5 | 22.44 | 22.26 | 22.16 |
| | Subtest 4 | 22.0 | 20.83 | 20.51 | 21.12 |
| | Subtest 5 | 24.5 | 23.77 | 23.71 | 23.69 |
| DC-HSDPA | Subtest 1 | 24.0 | 22.81 | 22.87 | 22.83 |
| | Subtest 2 | 23.9 | 23.12 | 23.06 | 23.17 |
| | Subtest 3 | 23.6 | 22.46 | 22.48 | 22.53 |
| | Subtest 4 | 23.6 | 22.48 | 22.49 | 22.52 |

Table 18: Conducted power measurement results of UMTS Band 5(Full Power)

| UMTS Band 5 | | Tune-up | Average Power (dBm) | | |
|---|---|---|---|---|---|
| | | Max. | 4132CH | 4182CH | 4233CH |
| WCDMA | 12.2kbps RMC | 19.2 | 18.37 | **18.32** | 18.35 |
| | 12.2kbps AMR | 19.2 | 18.37 | 18.34 | 18.37 |
| HSDPA | Subtest 1 | 18.0 | 17.27 | 17.21 | 17.32 |
| | Subtest 2 | 17.9 | 16.96 | 17.02 | 16.98 |
| | Subtest 3 | 17.6 | 16.61 | 16.63 | 16.68 |
| | Subtest 4 | 17.6 | 16.6 | 16.64 | 16.67 |
| HSUPA | Subtest 1 | 18.0 | 17.09 | 17.33 | 17.04 |
| | Subtest 2 | 16.0 | 14.93 | 15.33 | 15.16 |
| | Subtest 3 | 17.5 | 16.56 | 16.38 | 16.28 |
| | Subtest 4 | 16.0 | 14.95 | 14.63 | 15.24 |
| | Subtest 5 | 18.5 | 17.77 | 17.69 | 17.70 |
| DC-HSDPA | Subtest 1 | 18.0 | 16.93 | 16.99 | 16.95 |
| | Subtest 2 | 17.9 | 17.24 | 17.18 | 17.29 |
| | Subtest 3 | 17.6 | 16.58 | 16.60 | 16.65 |
| | Subtest 4 | 17.6 | 16.60 | 16.61 | 16.64 |

Table 19: Conducted power measurement results of UMTS Band 5(Sensor On, reduced power)

Note: 1) The conducted power of UMTS Band 5 is measured with RMS detector.

2) The bolded 12.2kbps RMC mode was selected for SAR testing(the primary mode).

3) Per KDB941225 D01, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

### 7.1.4 Conducted power measurements of UMTS Band 2

| UMTS Band 2 | | Tune-up | Average Power (dBm) | | |
|---|---|---|---|---|---|
| | | Max. | 9262CH | 9400CH | 9538CH |
| WCDMA | 12.2kbps RMC | 24.2 | 23.26 | **23.31** | 23.21 |
| | 12.2kbps AMR | 24.2 | 23.30 | 23.32 | 23.29 |
| HSDPA | Subtest 1 | 24.0 | 23.23 | 23.28 | 22.81 |
| | Subtest 2 | 23.9 | 23.20 | 22.98 | 22.60 |
| | Subtest 3 | 23.4 | 22.23 | 22.16 | 21.81 |
| | Subtest 4 | 23.4 | 22.27 | 22.20 | 21.85 |
| HSUPA | Subtest 1 | 23.5 | 22.85 | 22.78 | 22.44 |
| | Subtest 2 | 20.5 | 19.77 | 19.80 | 19.45 |
| | Subtest 3 | 21.8 | 20.84 | 20.88 | 20.72 |
| | Subtest 4 | 20.4 | 19.78 | 19.80 | 19.24 |
| | Subtest 5 | 24.0 | 22.92 | 23.11 | 22.99 |
| DC-HSDPA | Subtest 1 | 24.0 | 23.12 | 23.17 | 22.70 |
| | Subtest 2 | 23.9 | 23.09 | 22.87 | 22.49 |
| | Subtest 3 | 23.4 | 22.12 | 22.05 | 21.70 |
| | Subtest 4 | 23.4 | 22.16 | 22.09 | 21.74 |

Table 20: Conducted power measurement results of UMTS Band 2(Full Power)

| UMTS Band 2 | | Tune-up | Average Power (dBm) | | |
|---|---|---|---|---|---|
| | | Max. | 9262CH | 9400CH | 9538CH |
| WCDMA | 12.2kbps RMC | 14.2 | 13.26 | **13.25** | 12.88 |
| | 12.2kbps AMR | 14.2 | 13.39 | 13.41 | 12.89 |
| HSDPA | Subtest 1 | 14.0 | 13.34 | 13.39 | 12.92 |
| | Subtest 2 | 13.9 | 13.31 | 13.09 | 12.71 |
| | Subtest 3 | 13.4 | 12.34 | 12.27 | 11.92 |
| | Subtest 4 | 13.4 | 12.38 | 12.31 | 11.96 |
| HSUPA | Subtest 1 | 13.5 | 12.79 | 12.93 | 12.20 |
| | Subtest 2 | 10.5 | 9.73 | 9.47 | 8.92 |
| | Subtest 3 | 11.8 | 10.23 | 10.89 | 10.75 |
| | Subtest 4 | 10.4 | 9.02 | 8.89 | 8.63 |
| | Subtest 5 | 14.0 | 13.50 | 13.47 | 13.04 |
| DC-HSDPA | Subtest 1 | 14.0 | 13.22 | 13.27 | 12.80 |
| | Subtest 2 | 13.9 | 13.19 | 12.97 | 12.59 |
| | Subtest 3 | 13.4 | 12.22 | 12.15 | 11.80 |
| | Subtest 4 | 13.4 | 12.26 | 12.19 | 11.84 |

Table 21: Conducted power measurement results of UMTS Band 2(Sensor On, reduced power)

Note: 1) The conducted power of UMTS Band 2 is measured with RMS detector.

2) The bolded 12.2kbps RMC mode was selected for SAR testing(the primary mode).

3) Per KDB941225 D01, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest *reported* SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

### 7.1.5 Conducted power measurements of LTE Band 4

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 19957CH | Channel 20175CH | Channel 20393CH |
|---|---|---|---|---|---|---|---|
| 1.4MHz | QPSK | 1 | 0 | 24.0 | 22.93 | 23.20 | 23.23 |
| | | 1 | 3 | 24.0 | 23.02 | 23.30 | 23.27 |
| | | 1 | 5 | 24.0 | 22.88 | 23.15 | 23.02 |
| | | 3 | 0 | 24.0 | 22.94 | 23.20 | 23.09 |
| | | 3 | 2 | 24.0 | 22.98 | 23.24 | 23.11 |
| | | 3 | 3 | 24.0 | 22.90 | 23.16 | 23.03 |
| | | 6 | 0 | 23.3 | 22.08 | 22.37 | 22.36 |
| | 16QAM | 1 | 0 | 23.0 | 22.16 | 22.34 | 22.43 |
| | | 1 | 3 | 23.0 | 22.10 | 22.53 | 22.40 |
| | | 1 | 5 | 23.0 | 22.12 | 22.29 | 22.38 |
| | | 3 | 0 | 23.0 | 22.04 | 22.42 | 22.39 |
| | | 3 | 2 | 23.0 | 22.07 | 22.46 | 22.43 |
| | | 3 | 3 | 23.0 | 22.03 | 22.39 | 22.16 |
| | | 6 | 0 | 23.0 | 22.07 | 22.28 | 22.35 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 19965CH | Channel 20175CH | Channel 20385CH |
| 3MHz | QPSK | 1 | 0 | 24.0 | 22.78 | 23.02 | 23.06 |
| | | 1 | 7 | 24.0 | 23.07 | 23.27 | 23.21 |
| | | 1 | 14 | 24.0 | 22.70 | 22.96 | 22.88 |
| | | 8 | 0 | 23.3 | 22.08 | 22.34 | 22.29 |
| | | 8 | 4 | 23.3 | 22.18 | 22.37 | 22.34 |
| | | 8 | 7 | 23.3 | 22.08 | 22.28 | 22.24 |
| | | 15 | 0 | 23.3 | 22.11 | 22.28 | 22.29 |
| | 16QAM | 1 | 0 | 23.0 | 21.90 | 22.29 | 22.15 |
| | | 1 | 7 | 23.0 | 22.08 | 22.48 | 22.45 |
| | | 1 | 14 | 23.0 | 21.96 | 22.13 | 22.08 |
| | | 8 | 0 | 23.0 | 22.02 | 22.29 | 22.29 |
| | | 8 | 4 | 23.0 | 22.03 | 22.25 | 22.30 |
| | | 8 | 7 | 23.0 | 22.01 | 22.21 | 22.23 |
| | | 15 | 0 | 23.0 | 21.91 | 22.16 | 22.22 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 19975CH | Channel 20175CH | Channel 20375CH |
|---|---|---|---|---|---|---|---|
| 5MHz | QPSK | 1 | 0 | 24.0 | 22.98 | 22.87 | 23.12 |
| | | 1 | 13 | 24.0 | 23.06 | 23.24 | 23.19 |
| | | 1 | 24 | 24.0 | 22.99 | 23.07 | 23.09 |
| | | 12 | 0 | 23.3 | 22.25 | 22.40 | 22.45 |
| | | 12 | 6 | 23.3 | 22.31 | 22.53 | 22.54 |
| | | 12 | 13 | 23.3 | 22.08 | 22.31 | 22.36 |
| | | 25 | 0 | 23.3 | 22.16 | 22.33 | 22.40 |
| | 16QAM | 1 | 0 | 23.0 | 21.97 | 21.88 | 22.17 |
| | | 1 | 13 | 23.0 | 22.07 | 22.38 | 22.35 |
| | | 1 | 24 | 23.0 | 22.08 | 22.33 | 22.24 |
| | | 12 | 0 | 23.0 | 22.13 | 22.29 | 22.34 |
| | | 12 | 6 | 23.0 | 22.19 | 22.43 | 22.45 |
| | | 12 | 13 | 23.0 | 22.00 | 22.26 | 22.29 |
| | | 25 | 0 | 23.0 | 21.97 | 22.19 | 22.31 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 20000CH | Channel 20175CH | Channel 20350CH |
| 10MHz | QPSK | 1 | 0 | 24.0 | 22.87 | 23.07 | 23.08 |
| | | 1 | 25 | 24.0 | 22.96 | 23.17 | 23.07 |
| | | 1 | 49 | 24.0 | 22.73 | 22.91 | 22.92 |
| | | 25 | 0 | 23.3 | 22.16 | 22.24 | 22.38 |
| | | 25 | 13 | 23.3 | 22.29 | 22.41 | 22.41 |
| | | 25 | 25 | 23.3 | 22.16 | 22.32 | 22.26 |
| | | 50 | 0 | 23.3 | 22.17 | 22.33 | 22.32 |
| | 16QAM | 1 | 0 | 23.0 | 21.96 | 22.17 | 22.08 |
| | | 1 | 25 | 23.0 | 22.18 | 22.29 | 22.14 |
| | | 1 | 49 | 23.0 | 22.19 | 22.16 | 22.10 |
| | | 25 | 0 | 23.0 | 22.04 | 22.13 | 22.24 |
| | | 25 | 13 | 23.0 | 22.17 | 22.30 | 22.28 |
| | | 25 | 25 | 23.0 | 22.09 | 22.19 | 22.17 |
| | | 50 | 0 | 23.0 | 22.03 | 22.28 | 22.18 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 20025CH | Channel 20175CH | Channel 20325CH |
|---|---|---|---|---|---|---|---|
| 15MHz | QPSK | 1 | 0 | 24.0 | 22.08 | 23.08 | 23.04 |
| | | 1 | 38 | 24.0 | 23.23 | 23.36 | 23.31 |
| | | 1 | 74 | 24.0 | 23.08 | 22.97 | 22.96 |
| | | 36 | 0 | 23.3 | 22.33 | 22.33 | 22.36 |
| | | 36 | 18 | 23.3 | 22.35 | 22.46 | 22.39 |
| | | 36 | 39 | 23.3 | 22.33 | 22.38 | 22.42 |
| | | 75 | 0 | 23.3 | 22.31 | 22.40 | 22.23 |
| | 16QAM | 1 | 0 | 23.0 | 22.04 | 22.42 | 22.18 |
| | | 1 | 38 | 23.0 | 22.40 | 22.60 | 22.37 |
| | | 1 | 74 | 23.0 | 22.26 | 22.27 | 22.18 |
| | | 36 | 0 | 23.0 | 22.19 | 22.32 | 22.24 |
| | | 36 | 18 | 23.0 | 22.27 | 22.38 | 22.26 |
| | | 36 | 39 | 23.0 | 22.25 | 22.27 | 22.30 |
| | | 75 | 0 | 23.0 | 22.22 | 22.31 | 22.06 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 20050CH | Channel 20175CH | Channel 20300CH |
| 20MHz | QPSK | 1 | 0 | 24.0 | 22.86 | 22.91 | 22.97 |
| | | 1 | 50 | 24.0 | 23.11 | 23.19 | **23.22** |
| | | 1 | 99 | 24.0 | 22.99 | 22.90 | 22.94 |
| | | 50 | 0 | 23.3 | 22.20 | 22.23 | 22.43 |
| | | 50 | 25 | 23.3 | 22.30 | **22.46** | 22.31 |
| | | 50 | 50 | 23.3 | 22.26 | 22.34 | 22.39 |
| | | 100 | 0 | 23.3 | 22.20 | 22.26 | 22.34 |
| | 16QAM | 1 | 0 | 23.0 | 22.00 | 22.37 | 22.35 |
| | | 1 | 50 | 23.0 | 22.38 | 22.57 | 22.38 |
| | | 1 | 99 | 23.0 | 22.23 | 22.23 | 22.31 |
| | | 50 | 0 | 23.0 | 22.12 | 22.13 | 22.28 |
| | | 50 | 25 | 23.0 | 22.18 | 22.34 | 22.14 |
| | | 50 | 50 | 23.0 | 22.22 | 22.21 | 22.18 |
| | | 100 | 0 | 23.0 | 22.07 | 22.16 | 22.20 |

Table 22: Conducted power measurement results of LTE Band 4(Full Power)

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 19957CH | Channel 20175CH | Channel 20393CH |
|---|---|---|---|---|---|---|---|
| 1.4MHz | QPSK | 1 | 0 | 14.0 | 12.26 | 12.63 | 12.51 |
| | | 1 | 3 | 14.0 | 12.41 | 12.77 | 12.55 |
| | | 1 | 5 | 14.0 | 12.29 | 12.74 | 12.44 |
| | | 3 | 0 | 14.0 | 12.36 | 12.71 | 12.54 |
| | | 3 | 2 | 14.0 | 12.37 | 12.79 | 12.51 |
| | | 3 | 3 | 14.0 | 12.36 | 12.75 | 12.47 |
| | | 6 | 0 | 13.3 | 11.37 | 11.69 | 11.40 |
| | 16QAM | 1 | 0 | 13.0 | 11.40 | 11.60 | 11.30 |
| | | 1 | 3 | 13.0 | 11.48 | 12.01 | 11.45 |
| | | 1 | 5 | 13.0 | 11.42 | 11.74 | 11.26 |
| | | 3 | 0 | 13.0 | 11.46 | 11.82 | 11.62 |
| | | 3 | 2 | 13.0 | 11.51 | 11.89 | 11.65 |
| | | 3 | 3 | 13.0 | 11.36 | 11.91 | 11.55 |
| | | 6 | 0 | 13.0 | 11.34 | 11.56 | 11.36 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 19965CH | Channel 20175CH | Channel 20385CH |
| 3MHz | QPSK | 1 | 0 | 14.0 | 12.05 | 12.05 | 12.23 |
| | | 1 | 7 | 14.0 | 12.41 | 12.76 | 12.45 |
| | | 1 | 14 | 14.0 | 12.07 | 12.51 | 12.18 |
| | | 8 | 0 | 13.3 | 11.31 | 11.45 | 11.40 |
| | | 8 | 4 | 13.3 | 11.38 | 11.66 | 11.44 |
| | | 8 | 7 | 13.3 | 11.30 | 11.61 | 11.34 |
| | | 15 | 0 | 13.3 | 11.30 | 11.51 | 11.37 |
| | 16QAM | 1 | 0 | 13.0 | 11.25 | 11.06 | 11.12 |
| | | 1 | 7 | 13.0 | 11.55 | 11.83 | 11.35 |
| | | 1 | 14 | 13.0 | 11.26 | 11.49 | 11.00 |
| | | 8 | 0 | 13.0 | 11.29 | 11.43 | 11.37 |
| | | 8 | 4 | 13.0 | 11.42 | 11.61 | 11.35 |
| | | 8 | 7 | 13.0 | 11.27 | 11.60 | 11.32 |
| | | 15 | 0 | 13.0 | 11.19 | 11.40 | 11.25 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 19975CH | Channel 20175CH | Channel 20375CH |
|---|---|---|---|---|---|---|---|
| 5MHz | QPSK | 1 | 0 | 14.0 | 12.19 | 12.41 | 12.41 |
| | | 1 | 13 | 14.0 | 12.49 | 12.73 | 12.44 |
| | | 1 | 24 | 14.0 | 12.42 | 12.76 | 12.47 |
| | | 12 | 0 | 13.3 | 11.50 | 11.56 | 11.58 |
| | | 12 | 6 | 13.3 | 11.59 | 11.85 | 11.66 |
| | | 12 | 13 | 13.3 | 11.36 | 11.73 | 11.42 |
| | | 25 | 0 | 13.3 | 11.42 | 11.59 | 11.53 |
| | 16QAM | 1 | 0 | 13.0 | 11.21 | 11.42 | 11.46 |
| | | 1 | 13 | 13.0 | 11.46 | 11.75 | 11.50 |
| | | 1 | 24 | 13.0 | 11.31 | 11.82 | 11.53 |
| | | 12 | 0 | 13.0 | 11.45 | 11.48 | 11.52 |
| | | 12 | 6 | 13.0 | 11.54 | 11.78 | 11.60 |
| | | 12 | 13 | 13.0 | 11.31 | 11.66 | 11.37 |
| | | 25 | 0 | 13.0 | 11.28 | 11.46 | 11.45 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 20000CH | Channel 20175CH | Channel 20350CH |
| 10MHz | QPSK | 1 | 0 | 14.0 | 12.13 | 12.29 | 12.61 |
| | | 1 | 25 | 14.0 | 12.28 | 12.63 | 12.50 |
| | | 1 | 49 | 14.0 | 12.01 | 12.70 | 12.28 |
| | | 25 | 0 | 13.3 | 11.42 | 11.44 | 11.63 |
| | | 25 | 13 | 13.3 | 11.42 | 11.69 | 11.64 |
| | | 25 | 25 | 13.3 | 11.25 | 11.75 | 11.41 |
| | | 50 | 0 | 13.3 | 11.29 | 11.68 | 11.53 |
| | 16QAM | 1 | 0 | 13.0 | 11.20 | 11.28 | 11.50 |
| | | 1 | 25 | 13.0 | 11.22 | 11.69 | 11.31 |
| | | 1 | 49 | 13.0 | 11.03 | 11.72 | 11.03 |
| | | 25 | 0 | 13.0 | 11.34 | 11.34 | 11.54 |
| | | 25 | 13 | 13.0 | 11.35 | 11.59 | 11.54 |
| | | 25 | 25 | 13.0 | 11.17 | 11.65 | 11.32 |
| | | 50 | 0 | 13.0 | 11.19 | 11.58 | 11.41 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 20025CH | Channel 20175CH | Channel 20325CH |
|---|---|---|---|---|---|---|---|
| 15MHz | QPSK | 1 | 0 | 14.0 | 12.23 | 12.34 | 12.73 |
| | | 1 | 38 | 14.0 | 12.47 | 12.92 | 12.77 |
| | | 1 | 74 | 14.0 | 12.27 | 12.80 | 12.34 |
| | | 36 | 0 | 13.3 | 11.46 | 11.49 | 11.85 |
| | | 36 | 18 | 13.3 | 11.36 | 11.77 | 11.72 |
| | | 36 | 39 | 13.3 | 11.29 | 11.85 | 11.64 |
| | | 75 | 0 | 13.3 | 11.38 | 11.78 | 11.67 |
| | 16QAM | 1 | 0 | 13.0 | 11.51 | 11.44 | 11.78 |
| | | 1 | 38 | 13.0 | 11.66 | 12.04 | 11.83 |
| | | 1 | 74 | 13.0 | 11.44 | 11.89 | 11.39 |
| | | 36 | 0 | 13.0 | 11.36 | 11.41 | 11.77 |
| | | 36 | 18 | 13.0 | 11.25 | 11.69 | 11.63 |
| | | 36 | 39 | 13.0 | 11.19 | 11.77 | 11.54 |
| | | 75 | 0 | 13.0 | 11.28 | 11.65 | 11.55 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 20050CH | Channel 20175CH | Channel 20300CH |
| 20MHz | QPSK | 1 | 0 | 14.0 | 12.23 | 12.24 | **12.75** |
| | | 1 | 50 | 14.0 | 12.33 | 12.71 | 12.74 |
| | | 1 | 99 | 14.0 | 12.32 | 12.59 | 12.30 |
| | | 50 | 0 | 13.3 | 11.37 | 11.30 | **11.95** |
| | | 50 | 25 | 13.3 | 11.37 | 11.77 | 11.72 |
| | | 50 | 50 | 13.3 | 11.28 | 11.82 | 11.61 |
| | | 100 | 0 | 13.3 | 11.25 | 11.59 | 11.81 |
| | 16QAM | 1 | 0 | 13.0 | 11.37 | 11.32 | 11.83 |
| | | 1 | 50 | 13.0 | 11.40 | 11.83 | 11.91 |
| | | 1 | 99 | 13.0 | 11.41 | 11.66 | 11.40 |
| | | 50 | 0 | 13.0 | 11.26 | 11.20 | 11.84 |
| | | 50 | 25 | 13.0 | 11.26 | 11.67 | 11.62 |
| | | 50 | 50 | 13.0 | 11.17 | 11.71 | 11.50 |
| | | 100 | 0 | 13.0 | 11.15 | 11.50 | 11.71 |

Table 23: Conducted power measurement results of LTE Band 4(Sensor On)

### 7.1.6 Conducted power measurements of LTE Band 5

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 20407CH | Channel 20525CH | Channel 20643CH |
|---|---|---|---|---|---|---|---|
| 1.4MHz | QPSK | 1 | 0 | 24.7 | 23.46 | 23.53 | 23.45 |
| | | 1 | 3 | 24.7 | 23.40 | 23.53 | 23.40 |
| | | 1 | 5 | 24.7 | 23.40 | 23.39 | 23.27 |
| | | 3 | 0 | 24.7 | 23.41 | 23.46 | 23.34 |
| | | 3 | 2 | 24.7 | 23.40 | 23.50 | 23.29 |
| | | 3 | 3 | 24.7 | 23.38 | 23.41 | 23.32 |
| | | 6 | 0 | 24.2 | 22.58 | 22.63 | 22.43 |
| | 16QAM | 1 | 0 | 24.0 | 22.60 | 22.83 | 22.50 |
| | | 1 | 3 | 24.0 | 22.60 | 22.89 | 22.57 |
| | | 1 | 5 | 24.0 | 22.55 | 22.73 | 22.36 |
| | | 3 | 0 | 24.0 | 22.69 | 22.60 | 22.60 |
| | | 3 | 2 | 24.0 | 22.72 | 22.72 | 22.56 |
| | | 3 | 3 | 24.0 | 22.63 | 22.49 | 22.43 |
| | | 6 | 0 | 23.3 | 21.55 | 21.48 | 21.50 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 20415CH | Channel 20525CH | Channel 20635CH |
| 3MHz | QPSK | 1 | 0 | 24.7 | 23.26 | 23.39 | 23.41 |
| | | 1 | 7 | 24.7 | 23.37 | 23.55 | 23.43 |
| | | 1 | 14 | 24.7 | 23.13 | 23.28 | 23.19 |
| | | 8 | 0 | 24.2 | 22.54 | 22.65 | 22.48 |
| | | 8 | 4 | 24.2 | 22.55 | 22.63 | 22.55 |
| | | 8 | 7 | 24.2 | 22.44 | 22.56 | 22.41 |
| | | 15 | 0 | 24.2 | 22.49 | 22.61 | 22.45 |
| | 16QAM | 1 | 0 | 24.0 | 22.53 | 22.57 | 22.57 |
| | | 1 | 7 | 24.0 | 22.74 | 22.83 | 22.74 |
| | | 1 | 14 | 24.0 | 22.41 | 22.46 | 22.36 |
| | | 8 | 0 | 23.3 | 21.44 | 21.55 | 21.66 |
| | | 8 | 4 | 23.3 | 21.55 | 21.66 | 21.72 |
| | | 8 | 7 | 23.3 | 21.36 | 21.53 | 21.54 |
| | | 15 | 0 | 23.3 | 21.46 | 21.60 | 21.58 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 20425CH | Channel 20525CH | Channel 20625CH |
|---|---|---|---|---|---|---|---|
| 5MHz | QPSK | 1 | 0 | 24.7 | 23.67 | 23.72 | 23.75 |
| | | 1 | 13 | 24.7 | 23.83 | 23.92 | 23.87 |
| | | 1 | 24 | 24.7 | 23.67 | 23.66 | 23.59 |
| | | 12 | 0 | 24.2 | 22.94 | 22.96 | 23.01 |
| | | 12 | 6 | 24.2 | 23.03 | 23.04 | 23.04 |
| | | 12 | 13 | 24.2 | 22.81 | 22.84 | 22.84 |
| | | 25 | 0 | 24.2 | 22.89 | 23.02 | 22.84 |
| | 16QAM | 1 | 0 | 24.0 | 22.68 | 22.74 | 23.08 |
| | | 1 | 13 | 24.0 | 22.95 | 22.99 | 23.17 |
| | | 1 | 24 | 24.0 | 22.75 | 22.72 | 22.84 |
| | | 12 | 0 | 23.3 | 21.99 | 22.05 | 22.16 |
| | | 12 | 6 | 23.3 | 22.13 | 22.07 | 22.20 |
| | | 12 | 13 | 23.3 | 21.93 | 21.97 | 22.03 |
| | | 25 | 0 | 23.3 | 21.89 | 22.02 | 21.91 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 20450CH | Channel 20525CH | Channel 20600CH |
| 10MHz | QPSK | 1 | 0 | 24.7 | 23.68 | 23.70 | 23.73 |
| | | 1 | 25 | 24.7 | 23.73 | 23.74 | **23.75** |
| | | 1 | 49 | 24.7 | 23.62 | 23.57 | 23.41 |
| | | 25 | 0 | 24.2 | 22.96 | 23.05 | 23.07 |
| | | 25 | 13 | 24.2 | 22.98 | **23.11** | 23.09 |
| | | 25 | 25 | 24.2 | 22.86 | 22.94 | 22.82 |
| | | 50 | 0 | 24.2 | 22.87 | 23.03 | 22.95 |
| | 16QAM | 1 | 0 | 24.0 | 22.76 | 22.90 | 23.00 |
| | | 1 | 25 | 24.0 | 22.83 | 22.98 | 23.01 |
| | | 1 | 49 | 24.0 | 22.74 | 22.77 | 22.68 |
| | | 25 | 0 | 23.3 | 21.96 | 22.05 | 22.11 |
| | | 25 | 13 | 23.3 | 22.00 | 22.22 | 22.13 |
| | | 25 | 25 | 23.3 | 21.88 | 22.05 | 21.89 |
| | | 50 | 0 | 23.3 | 21.84 | 22.12 | 21.99 |

Table 24: Conducted power measurement results of LTE Band 5(Full Power)

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 20407CH | Channel 20525CH | Channel 20643CH |
|---|---|---|---|---|---|---|---|
| 1.4MHz | QPSK | 1 | 0 | 18.7 | 17.66 | 17.86 | 18.05 |
| | | 1 | 3 | 18.7 | 17.75 | 17.94 | 18.04 |
| | | 1 | 5 | 18.7 | 17.65 | 17.74 | 17.91 |
| | | 3 | 0 | 18.7 | 17.68 | 17.90 | 18.05 |
| | | 3 | 2 | 18.7 | 17.73 | 17.95 | 18.00 |
| | | 3 | 3 | 18.7 | 17.66 | 17.86 | 17.96 |
| | | 6 | 0 | 18.2 | 16.70 | 16.94 | 16.97 |
| | 16QAM | 1 | 0 | 18.0 | 16.94 | 16.92 | 16.94 |
| | | 1 | 3 | 18.0 | 16.90 | 17.02 | 17.38 |
| | | 1 | 5 | 18.0 | 16.88 | 16.85 | 17.01 |
| | | 3 | 0 | 18.0 | 16.88 | 16.85 | 17.08 |
| | | 3 | 2 | 18.0 | 16.90 | 16.96 | 17.15 |
| | | 3 | 3 | 18.0 | 16.85 | 16.80 | 17.12 |
| | | 6 | 0 | 17.3 | 15.70 | 15.89 | 15.97 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 20415CH | Channel 20525CH | Channel 20635CH |
| 3MHz | QPSK | 1 | 0 | 18.7 | 17.47 | 17.52 | 17.76 |
| | | 1 | 7 | 18.7 | 17.75 | 17.86 | 18.08 |
| | | 1 | 14 | 18.7 | 17.25 | 17.42 | 17.65 |
| | | 8 | 0 | 18.2 | 16.71 | 16.90 | 16.82 |
| | | 8 | 4 | 18.2 | 16.72 | 16.95 | 16.99 |
| | | 8 | 7 | 18.2 | 16.62 | 16.86 | 16.86 |
| | | 15 | 0 | 18.2 | 16.67 | 16.91 | 16.83 |
| | 16QAM | 1 | 0 | 18.0 | 16.68 | 16.90 | 16.75 |
| | | 1 | 7 | 18.0 | 16.83 | 16.99 | 17.11 |
| | | 1 | 14 | 18.0 | 16.51 | 16.81 | 16.79 |
| | | 8 | 0 | 17.3 | 15.64 | 15.77 | 15.91 |
| | | 8 | 4 | 17.3 | 15.69 | 15.94 | 16.02 |
| | | 8 | 7 | 17.3 | 15.55 | 15.75 | 15.90 |
| | | 15 | 0 | 17.3 | 15.57 | 15.79 | 15.87 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 20425CH | Channel 20525CH | Channel 20625CH |
|---|---|---|---|---|---|---|---|
| 5MHz | QPSK | 1 | 0 | 18.7 | 17.89 | 17.78 | 18.21 |
| | | 1 | 13 | 18.7 | 18.25 | 17.77 | 18.47 |
| | | 1 | 24 | 18.7 | 18.06 | 17.76 | 18.19 |
| | | 12 | 0 | 18.2 | 17.13 | 17.89 | 17.28 |
| | | 12 | 6 | 18.2 | 17.24 | 17.79 | 17.38 |
| | | 12 | 13 | 18.2 | 17.00 | 17.84 | 17.35 |
| | | 25 | 0 | 18.2 | 17.08 | 17.88 | 17.22 |
| | 16QAM | 1 | 0 | 18.0 | 17.01 | 16.85 | 17.21 |
| | | 1 | 13 | 18.0 | 17.30 | 16.85 | 17.52 |
| | | 1 | 24 | 18.0 | 17.07 | 16.85 | 17.34 |
| | | 12 | 0 | 17.3 | 16.25 | 17.00 | 16.44 |
| | | 12 | 6 | 17.3 | 16.35 | 16.95 | 16.46 |
| | | 12 | 13 | 17.3 | 16.12 | 16.93 | 16.33 |
| | | 25 | 0 | 17.3 | 16.15 | 16.95 | 16.18 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 20450CH | Channel 20525CH | Channel 20600CH |
| 10MHz | QPSK | 1 | 0 | 18.7 | 17.85 | 17.95 | 18.09 |
| | | 1 | 25 | 18.7 | 17.98 | 18.22 | **18.23** |
| | | 1 | 49 | 18.7 | 17.82 | 17.90 | 18.00 |
| | | 25 | 0 | 18.2 | 17.05 | 17.21 | 17.27 |
| | | 25 | 13 | 18.2 | 17.11 | **17.39** | 17.37 |
| | | 25 | 25 | 18.2 | 17.00 | 17.19 | 17.15 |
| | | 50 | 0 | 18.2 | 17.04 | 17.26 | 17.22 |
| | 16QAM | 1 | 0 | 18.0 | 16.84 | 17.24 | 17.08 |
| | | 1 | 25 | 18.0 | 17.08 | 17.58 | 17.29 |
| | | 1 | 49 | 18.0 | 16.74 | 17.23 | 17.09 |
| | | 25 | 0 | 17.3 | 16.19 | 16.32 | 16.23 |
| | | 25 | 13 | 17.3 | 16.24 | 16.45 | 16.31 |
| | | 25 | 25 | 17.3 | 16.14 | 16.26 | 16.09 |
| | | 50 | 0 | 17.3 | 16.09 | 16.31 | 16.11 |

Table 25: Conducted power measurement results of LTE Band 5(Sensor On)

### 7.1.7 Conducted power measurements of LTE Band 7

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 20775CH | Channel 21100CH | Channel 21425CH |
|---|---|---|---|---|---|---|---|
| 5MHz | QPSK | 1 | 0 | 24.2 | 21.64 | 23.11 | 23.00 |
| | | 1 | 13 | 24.2 | 21.63 | 23.15 | 23.15 |
| | | 1 | 24 | 24.2 | 21.61 | 23.04 | 23.13 |
| | | 12 | 0 | 23.5 | 21.63 | 22.35 | 22.17 |
| | | 12 | 6 | 23.5 | 21.92 | 22.36 | 22.24 |
| | | 12 | 13 | 23.5 | 22.10 | 22.04 | 21.98 |
| | | 25 | 0 | 23.5 | 22.11 | 22.13 | 22.07 |
| | 16QAM | 1 | 0 | 23.5 | 21.60 | 22.24 | 21.99 |
| | | 1 | 13 | 23.5 | 21.66 | 22.25 | 22.14 |
| | | 1 | 24 | 23.5 | 21.65 | 22.26 | 22.14 |
| | | 12 | 0 | 23.0 | 21.43 | 21.91 | 21.67 |
| | | 12 | 6 | 23.0 | 21.43 | 21.92 | 21.75 |
| | | 12 | 13 | 23.0 | 21.61 | 21.66 | 21.61 |
| | | 25 | 0 | 23.0 | 21.53 | 21.74 | 21.54 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 20800CH | Channel 21100CH | Channel 21400CH |
| 10MHz | QPSK | 1 | 0 | 24.2 | 22.71 | 23.23 | 23.24 |
| | | 1 | 25 | 24.2 | 22.65 | 23.26 | 23.15 |
| | | 1 | 49 | 24.2 | 22.58 | 23.08 | 23.15 |
| | | 25 | 0 | 23.5 | 22.16 | 22.28 | 22.17 |
| | | 25 | 13 | 23.5 | 22.21 | 22.19 | 22.23 |
| | | 25 | 25 | 23.5 | 22.38 | 22.06 | 22.13 |
| | | 50 | 0 | 23.5 | 22.18 | 22.09 | 22.17 |
| | 16QAM | 1 | 0 | 23.5 | 22.15 | 22.46 | 22.21 |
| | | 1 | 25 | 23.5 | 22.08 | 22.36 | 22.17 |
| | | 1 | 49 | 23.5 | 22.11 | 22.24 | 22.15 |
| | | 25 | 0 | 23.0 | 21.67 | 21.80 | 21.73 |
| | | 25 | 13 | 23.0 | 21.67 | 21.76 | 21.69 |
| | | 25 | 25 | 23.0 | 21.94 | 21.66 | 21.60 |
| | | 50 | 0 | 23.0 | 21.74 | 21.66 | 21.59 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 20825CH | Channel 21100CH | Channel 21375CH |
|---|---|---|---|---|---|---|---|
| 15MHz | QPSK | 1 | 0 | 24.2 | 22.66 | 23.14 | 22.90 |
| | | 1 | 38 | 24.2 | 22.59 | 23.08 | 23.15 |
| | | 1 | 74 | 24.2 | 22.52 | 22.86 | 22.97 |
| | | 36 | 0 | 23.5 | 22.06 | 22.26 | 22.24 |
| | | 36 | 18 | 23.5 | 22.27 | 22.31 | 22.22 |
| | | 36 | 39 | 23.5 | 22.12 | 22.07 | 22.16 |
| | | 75 | 0 | 23.5 | 22.22 | 22.16 | 22.07 |
| | 16QAM | 1 | 0 | 23.5 | 21.77 | 22.58 | 22.22 |
| | | 1 | 38 | 23.5 | 21.65 | 22.59 | 22.47 |
| | | 1 | 74 | 23.5 | 21.57 | 22.32 | 22.20 |
| | | 36 | 0 | 23.0 | 21.72 | 21.69 | 21.74 |
| | | 36 | 18 | 23.0 | 21.93 | 21.85 | 21.74 |
| | | 36 | 39 | 23.0 | 21.70 | 21.62 | 21.68 |
| | | 75 | 0 | 23.0 | 21.78 | 21.70 | 21.53 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 20850CH | Channel 21100CH | Channel 21350CH |
| 20MHz | QPSK | 1 | 0 | 24.2 | 22.66 | 23.09 | 22.84 |
| | | 1 | 50 | 24.2 | 22.78 | 23.23 | **23.23** |
| | | 1 | 99 | 24.2 | 22.83 | 22.92 | 23.03 |
| | | 50 | 0 | 23.5 | **22.26** | 22.13 | 22.10 |
| | | 50 | 25 | 23.5 | 22.25 | 22.16 | 22.06 |
| | | 50 | 50 | 23.5 | 22.10 | 22.09 | 22.18 |
| | | 100 | 0 | 23.5 | 22.18 | 22.05 | 22.07 |
| | 16QAM | 1 | 0 | 23.5 | 21.93 | 22.37 | 22.34 |
| | | 1 | 50 | 23.5 | 22.06 | 22.59 | 22.67 |
| | | 1 | 99 | 23.5 | 22.17 | 22.31 | 22.59 |
| | | 50 | 0 | 23.0 | 21.76 | 21.60 | 21.58 |
| | | 50 | 25 | 23.0 | 21.75 | 21.63 | 21.55 |
| | | 50 | 50 | 23.0 | 21.60 | 21.56 | 21.67 |
| | | 100 | 0 | 23.0 | 21.70 | 21.55 | 21.52 |

Table 26: Conducted power measurement results of LTE Band 7(Full Power)

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 20775CH | Channel 21100CH | Channel 21425CH |
|---|---|---|---|---|---|---|---|
| 5MHz | QPSK | 1 | 0 | 9.2 | 8.26 | 8.76 | 8.43 |
| | | 1 | 13 | 9.2 | 8.70 | 9.08 | 8.67 |
| | | 1 | 24 | 9.2 | 8.66 | 9.02 | 8.69 |
| | | 12 | 0 | 8.5 | 7.64 | 8.10 | 7.71 |
| | | 12 | 6 | 8.5 | 7.73 | 8.15 | 7.79 |
| | | 12 | 13 | 8.5 | 7.97 | 7.88 | 7.56 |
| | | 25 | 0 | 8.5 | 7.84 | 7.95 | 7.62 |
| | 16QAM | 1 | 0 | 8.5 | 7.47 | 7.90 | 7.63 |
| | | 1 | 13 | 8.5 | 7.88 | 8.03 | 7.91 |
| | | 1 | 24 | 8.5 | 7.84 | 7.99 | 7.93 |
| | | 12 | 0 | 8.0 | 7.11 | 7.51 | 7.13 |
| | | 12 | 6 | 8.0 | 7.20 | 7.55 | 7.22 |
| | | 12 | 13 | 8.0 | 7.43 | 7.30 | 6.98 |
| | | 25 | 0 | 8.0 | 7.44 | 7.31 | 6.96 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 20800CH | Channel 21100CH | Channel 21400CH |
| 10MHz | QPSK | 1 | 0 | 9.2 | 8.43 | 8.95 | 8.75 |
| | | 1 | 25 | 9.2 | 8.68 | 9.04 | 8.62 |
| | | 1 | 49 | 9.2 | 8.59 | 8.81 | 8.62 |
| | | 25 | 0 | 8.5 | 8.00 | 8.01 | 7.68 |
| | | 25 | 13 | 8.5 | 8.07 | 8.00 | 7.68 |
| | | 25 | 25 | 8.5 | 8.31 | 7.87 | 7.60 |
| | | 50 | 0 | 8.5 | 8.12 | 7.90 | 7.62 |
| | 16QAM | 1 | 0 | 8.5 | 7.76 | 8.08 | 7.66 |
| | | 1 | 25 | 8.5 | 7.96 | 8.15 | 7.44 |
| | | 1 | 49 | 8.5 | 7.85 | 7.91 | 7.43 |
| | | 25 | 0 | 8.0 | 7.43 | 7.39 | 7.03 |
| | | 25 | 13 | 8.0 | 7.50 | 7.39 | 7.03 |
| | | 25 | 25 | 8.0 | 7.74 | 7.26 | 6.95 |
| | | 50 | 0 | 8.0 | 7.55 | 7.25 | 6.97 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 20825CH | Channel 21100CH | Channel 21375CH |
|---|---|---|---|---|---|---|---|
| 15MHz | QPSK | 1 | 0 | 9.2 | 8.39 | 8.76 | 8.55 |
| | | 1 | 38 | 9.2 | 8.54 | 8.89 | 8.64 |
| | | 1 | 74 | 9.2 | 8.30 | 8.60 | 8.37 |
| | | 36 | 0 | 8.5 | 7.99 | 7.91 | 7.65 |
| | | 36 | 18 | 8.5 | 8.23 | 8.03 | 7.64 |
| | | 36 | 39 | 8.5 | 7.98 | 7.78 | 7.56 |
| | | 75 | 0 | 8.5 | 8.06 | 7.83 | 7.48 |
| | 16QAM | 1 | 0 | 8.5 | 7.30 | 8.09 | 7.53 |
| | | 1 | 38 | 8.5 | 7.54 | 8.30 | 7.73 |
| | | 1 | 74 | 8.5 | 7.26 | 7.92 | 7.44 |
| | | 36 | 0 | 8.0 | 7.43 | 7.28 | 7.10 |
| | | 36 | 18 | 8.0 | 7.67 | 7.40 | 7.00 |
| | | 36 | 39 | 8.0 | 7.37 | 7.16 | 6.94 |
| | | 75 | 0 | 8.0 | 7.47 | 7.16 | 6.82 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 20850CH | Channel 21100CH | Channel 21350CH |
| 20MHz | QPSK | 1 | 0 | 9.2 | 8.41 | 8.73 | 8.56 |
| | | 1 | 50 | 9.2 | 8.70 | **8.89** | 8.86 |
| | | 1 | 99 | 9.2 | 8.69 | 8.86 | 8.62 |
| | | 50 | 0 | 8.5 | **8.18** | 7.86 | 7.66 |
| | | 50 | 25 | 8.5 | 8.18 | 7.95 | 7.63 |
| | | 50 | 50 | 8.5 | 7.93 | 7.88 | 7.65 |
| | | 100 | 0 | 8.5 | 8.06 | 7.86 | 7.68 |
| | 16QAM | 1 | 0 | 8.5 | 7.61 | 7.95 | 7.84 |
| | | 1 | 50 | 8.5 | 7.94 | 8.38 | 8.20 |
| | | 1 | 99 | 8.5 | 7.85 | 8.06 | 7.96 |
| | | 50 | 0 | 8.0 | 7.63 | 7.21 | 7.14 |
| | | 50 | 25 | 8.0 | 7.54 | 7.31 | 7.12 |
| | | 50 | 50 | 8.0 | 7.30 | 7.23 | 7.01 |
| | | 100 | 0 | 8.0 | 7.48 | 7.22 | 7.08 |

Table 27: Conducted power measurement results of LTE Band 7(Sensor on)

### 7.1.8 Conducted power measurements of LTE Band 12

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 23017CH | Channel 23095CH | Channel 23173CH |
|---|---|---|---|---|---|---|---|
| 1.4MHz | QPSK | 1 | 0 | 25.7 | 24.33 | 24.57 | 24.54 |
| | | 1 | 3 | 25.7 | 24.33 | 24.71 | 24.56 |
| | | 1 | 5 | 25.7 | 24.20 | 24.58 | 24.40 |
| | | 3 | 0 | 25.7 | 24.30 | 24.59 | 24.40 |
| | | 3 | 2 | 25.7 | 24.29 | 24.66 | 24.47 |
| | | 3 | 3 | 25.7 | 24.29 | 24.60 | 24.44 |
| | | 6 | 0 | 25.1 | 22.95 | 23.12 | 23.13 |
| | 16QAM | 1 | 0 | 24.7 | 22.85 | 23.11 | 23.05 |
| | | 1 | 3 | 24.7 | 23.10 | 23.36 | 23.29 |
| | | 1 | 5 | 24.7 | 22.87 | 23.19 | 23.07 |
| | | 3 | 0 | 24.7 | 23.05 | 23.18 | 23.20 |
| | | 3 | 2 | 24.7 | 23.11 | 23.28 | 23.29 |
| | | 3 | 3 | 24.7 | 23.01 | 23.22 | 23.26 |
| | | 6 | 0 | 23.7 | 22.07 | 22.24 | 22.14 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 23025CH | Channel 23095CH | Channel 23165CH |
| 3MHz | QPSK | 1 | 0 | 25.7 | 24.19 | 24.39 | 24.31 |
| | | 1 | 7 | 25.7 | 24.34 | 24.63 | 24.45 |
| | | 1 | 14 | 25.7 | 24.02 | 24.36 | 24.35 |
| | | 8 | 0 | 25.1 | 22.92 | 23.01 | 23.06 |
| | | 8 | 4 | 25.1 | 22.86 | 23.10 | 23.12 |
| | | 8 | 7 | 25.1 | 22.74 | 23.06 | 23.03 |
| | | 15 | 0 | 25.1 | 22.81 | 23.00 | 23.11 |
| | 16QAM | 1 | 0 | 24.7 | 22.90 | 22.94 | 22.94 |
| | | 1 | 7 | 24.7 | 22.89 | 23.33 | 23.44 |
| | | 1 | 14 | 24.7 | 22.82 | 23.03 | 23.01 |
| | | 8 | 0 | 23.7 | 22.06 | 22.11 | 22.02 |
| | | 8 | 4 | 23.7 | 22.01 | 22.29 | 22.03 |
| | | 8 | 7 | 23.7 | 21.89 | 22.10 | 21.98 |
| | | 15 | 0 | 23.7 | 21.83 | 22.09 | 22.00 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 23035CH | Channel 23095CH | Channel 23155CH |
|---|---|---|---|---|---|---|---|
| 5MHz | QPSK | 1 | 0 | 25.7 | 24.52 | 24.57 | 24.56 |
| | | 1 | 13 | 25.7 | 24.67 | 24.93 | 24.53 |
| | | 1 | 24 | 25.7 | 24.48 | 24.61 | 24.55 |
| | | 12 | 0 | 25.1 | 23.50 | 23.46 | 23.69 |
| | | 12 | 6 | 25.1 | 23.46 | 23.65 | 23.72 |
| | | 12 | 13 | 25.1 | 23.31 | 23.49 | 23.46 |
| | | 25 | 0 | 25.1 | 23.32 | 23.46 | 23.56 |
| | 16QAM | 1 | 0 | 24.7 | 23.06 | 23.16 | 23.42 |
| | | 1 | 13 | 24.7 | 23.32 | 23.57 | 23.55 |
| | | 1 | 24 | 24.7 | 23.04 | 23.27 | 23.55 |
| | | 12 | 0 | 23.7 | 22.47 | 22.50 | 22.60 |
| | | 12 | 6 | 23.7 | 22.44 | 22.73 | 22.75 |
| | | 12 | 13 | 23.7 | 22.29 | 22.57 | 22.58 |
| | | 25 | 0 | 23.7 | 22.24 | 22.50 | 22.41 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 23060CH | Channel 23095CH | Channel 23130CH |
| 10MHz | QPSK | 1 | 0 | 25.7 | 24.74 | 24.67 | 24.86 |
| | | 1 | 25 | 25.7 | 24.82 | **24.94** | 24.88 |
| | | 1 | 49 | 25.7 | 24.71 | 24.40 | 24.47 |
| | | 25 | 0 | 25.1 | 23.42 | 23.51 | 23.71 |
| | | 25 | 13 | 25.1 | 23.54 | 23.73 | **23.77** |
| | | 25 | 25 | 25.1 | 23.42 | 23.57 | 23.38 |
| | | 50 | 0 | 25.1 | 23.38 | 23.54 | 23.51 |
| | 16QAM | 1 | 0 | 24.7 | 23.38 | 23.64 | 23.51 |
| | | 1 | 25 | 24.7 | 23.50 | 23.93 | 23.74 |
| | | 1 | 49 | 24.7 | 23.23 | 23.60 | 23.25 |
| | | 25 | 0 | 23.7 | 22.30 | 22.44 | 22.70 |
| | | 25 | 13 | 23.7 | 22.43 | 22.73 | 22.70 |
| | | 25 | 25 | 23.7 | 22.33 | 22.52 | 22.30 |
| | | 50 | 0 | 23.7 | 22.28 | 22.43 | 22.40 |

Table 28: Conducted power measurement results of LTE Band 12(Full Power)

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 23017CH | Channel 23095CH | Channel 23173CH |
|---|---|---|---|---|---|---|---|
| 1.4MHz | QPSK | 1 | 0 | 17.7 | 16.75 | 16.92 | 16.94 |
| | | 1 | 3 | 17.7 | 16.82 | 17.07 | 16.99 |
| | | 1 | 5 | 17.7 | 16.61 | 16.98 | 16.90 |
| | | 3 | 0 | 17.7 | 16.80 | 16.90 | 16.84 |
| | | 3 | 2 | 17.7 | 16.87 | 17.00 | 16.88 |
| | | 3 | 3 | 17.7 | 16.78 | 16.94 | 16.88 |
| | | 6 | 0 | 17.1 | 15.30 | 15.51 | 15.37 |
| | 16QAM | 1 | 0 | 16.7 | 15.42 | 15.51 | 15.40 |
| | | 1 | 3 | 16.7 | 15.28 | 15.81 | 15.54 |
| | | 1 | 5 | 16.7 | 15.38 | 15.62 | 15.42 |
| | | 3 | 0 | 16.7 | 15.52 | 15.59 | 15.48 |
| | | 3 | 2 | 16.7 | 15.55 | 15.68 | 15.56 |
| | | 3 | 3 | 16.7 | 15.37 | 15.64 | 15.54 |
| | | 6 | 0 | 15.7 | 14.44 | 14.51 | 14.48 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 23025CH | Channel 23095CH | Channel 23165CH |
| 3MHz | QPSK | 1 | 0 | 17.7 | 16.57 | 16.64 | 16.82 |
| | | 1 | 7 | 17.7 | 16.73 | 16.96 | 16.99 |
| | | 1 | 14 | 17.7 | 16.39 | 16.81 | 16.77 |
| | | 8 | 0 | 17.1 | 15.24 | 15.42 | 15.42 |
| | | 8 | 4 | 17.1 | 15.28 | 15.53 | 15.43 |
| | | 8 | 7 | 17.1 | 15.12 | 15.45 | 15.30 |
| | | 15 | 0 | 17.1 | 15.20 | 15.44 | 15.43 |
| | 16QAM | 1 | 0 | 16.7 | 15.18 | 15.28 | 15.24 |
| | | 1 | 7 | 16.7 | 15.63 | 15.71 | 15.47 |
| | | 1 | 14 | 16.7 | 15.11 | 15.44 | 15.21 |
| | | 8 | 0 | 15.7 | 14.35 | 14.41 | 14.54 |
| | | 8 | 4 | 15.7 | 14.24 | 14.53 | 14.54 |
| | | 8 | 7 | 15.7 | 14.20 | 14.44 | 14.43 |
| | | 15 | 0 | 15.7 | 14.11 | 14.44 | 14.43 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 23035CH | Channel 23095CH | Channel 23155CH |
|---|---|---|---|---|---|---|---|
| 5MHz | QPSK | 1 | 0 | 17.7 | 16.98 | 16.99 | 17.21 |
| | | 1 | 13 | 17.7 | 17.19 | 17.44 | 17.38 |
| | | 1 | 24 | 17.7 | 16.94 | 17.19 | 17.17 |
| | | 12 | 0 | 17.1 | 15.76 | 15.80 | 16.09 |
| | | 12 | 6 | 17.1 | 15.73 | 16.04 | 16.11 |
| | | 12 | 13 | 17.1 | 15.57 | 15.94 | 15.87 |
| | | 25 | 0 | 17.1 | 15.59 | 15.88 | 15.90 |
| | 16QAM | 1 | 0 | 16.7 | 15.63 | 15.40 | 15.83 |
| | | 1 | 13 | 16.7 | 15.85 | 15.88 | 16.05 |
| | | 1 | 24 | 16.7 | 15.61 | 15.59 | 15.82 |
| | | 12 | 0 | 15.7 | 14.87 | 14.90 | 15.13 |
| | | 12 | 6 | 15.7 | 14.85 | 15.12 | 15.10 |
| | | 12 | 13 | 15.7 | 14.70 | 15.03 | 14.86 |
| | | 25 | 0 | 15.7 | 14.56 | 14.83 | 14.91 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 23060CH | Channel 23095CH | Channel 23130CH |
| 10MHz | QPSK | 1 | 0 | 17.7 | 17.23 | 17.06 | 17.24 |
| | | 1 | 25 | 17.7 | 17.27 | 17.44 | **17.56** |
| | | 1 | 49 | 17.7 | 17.11 | 17.12 | 17.05 |
| | | 25 | 0 | 17.1 | 15.65 | 15.74 | 16.03 |
| | | 25 | 13 | 17.1 | 15.77 | 16.01 | **16.18** |
| | | 25 | 25 | 17.1 | 15.64 | 15.93 | 15.72 |
| | | 50 | 0 | 17.1 | 15.59 | 15.83 | 15.84 |
| | 16QAM | 1 | 0 | 16.7 | 15.70 | 15.80 | 15.80 |
| | | 1 | 25 | 16.7 | 15.97 | 16.40 | 16.18 |
| | | 1 | 49 | 16.7 | 15.81 | 15.86 | 15.58 |
| | | 25 | 0 | 15.7 | 14.64 | 14.74 | 15.03 |
| | | 25 | 13 | 15.7 | 14.78 | 15.02 | 15.21 |
| | | 25 | 25 | 15.7 | 14.64 | 14.93 | 14.71 |
| | | 50 | 0 | 15.7 | 14.57 | 14.83 | 14.85 |

Table 29: Conducted power measurement results of LTE Band 12(Sensor On)

### 7.1.9 Conducted power measurements of LTE Band 17

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | Max. | 23755CH | 23790CH | 23825CH |
| 5MHz | QPSK | 1 | 0 | 25.7 | 24.39 | 24.73 | 24.66 |
| | | 1 | 13 | 25.7 | 24.80 | 24.93 | 24.62 |
| | | 1 | 24 | 25.7 | 24.67 | 24.66 | 24.60 |
| | | 12 | 0 | 25.0 | 23.76 | 24.16 | 24.11 |
| | | 12 | 6 | 25.0 | 23.94 | 24.17 | 24.08 |
| | | 12 | 13 | 25.0 | 23.92 | 24.12 | 23.94 |
| | | 25 | 0 | 25.0 | 23.82 | 24.03 | 23.90 |
| | 16QAM | 1 | 0 | 25.0 | 23.66 | 23.88 | 23.74 |
| | | 1 | 13 | 25.0 | 24.06 | 24.18 | 23.89 |
| | | 1 | 24 | 25.0 | 24.01 | 23.90 | 23.84 |
| | | 12 | 0 | 24.0 | 22.68 | 23.12 | 23.27 |
| | | 12 | 6 | 24.0 | 22.88 | 23.16 | 23.24 |
| | | 12 | 13 | 24.0 | 22.87 | 23.10 | 23.10 |
| | | 25 | 0 | 24.0 | 22.74 | 23.00 | 23.01 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | Max. | 23780CH | 23790CH | 23800CH |
| 10MHz | QPSK | 1 | 0 | 25.7 | 24.62 | 24.59 | 24.75 |
| | | 1 | 25 | 25.7 | **24.93** | 24.85 | 24.80 |
| | | 1 | 49 | 25.7 | 24.37 | 24.29 | 24.49 |
| | | 25 | 0 | 25.0 | 23.95 | 24.06 | 24.10 |
| | | 25 | 13 | 25.0 | **24.16** | 24.15 | 24.16 |
| | | 25 | 25 | 25.0 | 23.89 | 23.86 | 23.76 |
| | | 50 | 0 | 25.0 | 23.89 | 23.89 | 23.84 |
| | 16QAM | 1 | 0 | 25.0 | 23.48 | 23.99 | 23.84 |
| | | 1 | 25 | 25.0 | 24.01 | 24.35 | 23.98 |
| | | 1 | 49 | 25.0 | 23.83 | 23.93 | 23.75 |
| | | 25 | 0 | 24.0 | 22.83 | 22.95 | 23.03 |
| | | 25 | 13 | 24.0 | 23.06 | 23.08 | 23.09 |
| | | 25 | 25 | 24.0 | 22.79 | 22.93 | 22.83 |
| | | 50 | 0 | 24.0 | 22.79 | 22.76 | 22.75 |

Table 30: Conducted power measurement results of LTE Band 17(Full Power)

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 23755CH | Channel 23790CH | Channel 23825CH |
|---|---|---|---|---|---|---|---|
| 5MHz | QPSK | 1 | 0 | 18.7 | 17.62 | 18.03 | 18.15 |
| | | 1 | 13 | 18.7 | 18.05 | 18.45 | 18.30 |
| | | 1 | 24 | 18.7 | 18.06 | 18.02 | 17.97 |
| | | 12 | 0 | 18.0 | 16.95 | 17.42 | 17.54 |
| | | 12 | 6 | 18.0 | 17.15 | 17.51 | 17.50 |
| | | 12 | 13 | 18.0 | 17.15 | 17.47 | 17.26 |
| | | 25 | 0 | 18.0 | 17.04 | 17.33 | 17.30 |
| | 16QAM | 1 | 0 | 18.0 | 16.69 | 16.98 | 17.15 |
| | | 1 | 13 | 18.0 | 17.11 | 17.48 | 17.43 |
| | | 1 | 24 | 18.0 | 17.11 | 17.16 | 17.17 |
| | | 12 | 0 | 17.0 | 15.96 | 16.44 | 16.55 |
| | | 12 | 6 | 17.0 | 16.19 | 16.53 | 16.52 |
| | | 12 | 13 | 17.0 | 16.18 | 16.49 | 16.28 |
| | | 25 | 0 | 17.0 | 16.00 | 16.30 | 16.23 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 23780CH | Channel 23790CH | Channel 23800CH |
| 10MHz | QPSK | 1 | 0 | 18.7 | 17.91 | 17.97 | 17.96 |
| | | 1 | 25 | 18.7 | 18.35 | **18.41** | 18.26 |
| | | 1 | 49 | 18.7 | 17.82 | 17.73 | 17.70 |
| | | 25 | 0 | 18.0 | 17.11 | 17.24 | 17.38 |
| | | 25 | 13 | 18.0 | 17.41 | 17.42 | **17.50** |
| | | 25 | 25 | 18.0 | 17.18 | 17.22 | 17.14 |
| | | 50 | 0 | 18.0 | 17.10 | 17.11 | 17.13 |
| | 16QAM | 1 | 0 | 18.0 | 16.86 | 16.84 | 17.08 |
| | | 1 | 25 | 18.0 | 17.26 | 17.35 | 17.56 |
| | | 1 | 49 | 18.0 | 16.89 | 16.88 | 17.17 |
| | | 25 | 0 | 17.0 | 16.06 | 16.21 | 16.34 |
| | | 25 | 13 | 17.0 | 16.37 | 16.41 | 16.49 |
| | | 25 | 25 | 17.0 | 16.13 | 16.19 | 16.10 |
| | | 50 | 0 | 17.0 | 16.05 | 16.07 | 16.06 |

Table 31: Conducted power measurement results of LTE Band 17(Sensor On)

### 7.1.10 Conducted power measurements of LTE Band 26

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 26697CH | Channel 26865CH | Channel 27033CH |
|---|---|---|---|---|---|---|---|
| 1.4MHz | QPSK | 1 | 0 | 25.0 | 23.48 | 23.71 | 23.59 |
| | | 1 | 3 | 25.0 | 23.53 | 23.77 | 23.58 |
| | | 1 | 5 | 25.0 | 23.44 | 23.61 | 23.32 |
| | | 3 | 0 | 25.0 | 23.49 | 23.69 | 23.48 |
| | | 3 | 2 | 25.0 | 23.49 | 23.74 | 23.48 |
| | | 3 | 3 | 25.0 | 23.47 | 23.66 | 23.37 |
| | | 6 | 0 | 24.3 | 22.52 | 22.72 | 22.67 |
| | 16QAM | 1 | 0 | 24.2 | 22.47 | 22.86 | 22.83 |
| | | 1 | 3 | 24.2 | 22.54 | 22.95 | 22.91 |
| | | 1 | 5 | 24.2 | 22.45 | 22.81 | 22.57 |
| | | 3 | 0 | 24.2 | 22.49 | 22.83 | 22.72 |
| | | 3 | 2 | 24.2 | 22.52 | 22.86 | 22.70 |
| | | 3 | 3 | 24.2 | 22.49 | 22.80 | 22.60 |
| | | 6 | 0 | 23.4 | 21.60 | 21.78 | 21.54 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 26705CH | Channel 26865CH | Channel 27025CH |
| 3MHz | QPSK | 1 | 0 | 25.0 | 23.27 | 23.69 | 23.42 |
| | | 1 | 7 | 25.0 | 23.41 | 23.73 | 23.55 |
| | | 1 | 14 | 25.0 | 23.19 | 23.45 | 23.19 |
| | | 8 | 0 | 24.3 | 22.58 | 22.72 | 22.79 |
| | | 8 | 4 | 24.3 | 22.61 | 22.69 | 22.79 |
| | | 8 | 7 | 24.3 | 22.51 | 22.59 | 22.65 |
| | | 15 | 0 | 24.3 | 22.55 | 22.63 | 22.71 |
| | 16QAM | 1 | 0 | 24.2 | 22.65 | 22.77 | 22.45 |
| | | 1 | 7 | 24.2 | 22.68 | 22.81 | 22.75 |
| | | 1 | 14 | 24.2 | 22.58 | 22.53 | 22.24 |
| | | 8 | 0 | 23.4 | 21.68 | 21.82 | 21.74 |
| | | 8 | 4 | 23.4 | 21.65 | 21.72 | 21.82 |
| | | 8 | 7 | 23.4 | 21.64 | 21.71 | 21.58 |
| | | 15 | 0 | 23.4 | 21.54 | 21.68 | 21.62 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 26715CH | Channel 26865CH | Channel 27015CH |
|---|---|---|---|---|---|---|---|
| 5MHz | QPSK | 1 | 0 | 25.0 | 23.86 | 24.04 | 24.11 |
| | | 1 | 13 | 25.0 | 24.16 | 24.20 | 24.19 |
| | | 1 | 24 | 25.0 | 24.02 | 23.96 | 23.80 |
| | | 12 | 0 | 24.3 | 23.10 | 23.30 | 23.39 |
| | | 12 | 6 | 24.3 | 23.16 | 23.31 | 23.25 |
| | | 12 | 13 | 24.3 | 23.00 | 23.12 | 23.11 |
| | | 25 | 0 | 24.3 | 23.04 | 23.17 | 23.07 |
| | 16QAM | 1 | 0 | 24.2 | 22.92 | 23.13 | 23.41 |
| | | 1 | 13 | 24.2 | 23.24 | 23.37 | 23.41 |
| | | 1 | 24 | 24.2 | 23.02 | 23.25 | 23.05 |
| | | 12 | 0 | 23.4 | 22.19 | 22.42 | 22.27 |
| | | 12 | 6 | 23.4 | 22.27 | 22.42 | 22.32 |
| | | 12 | 13 | 23.4 | 22.06 | 22.25 | 22.29 |
| | | 25 | 0 | 23.4 | 22.13 | 22.30 | 22.09 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 26750CH | Channel 26865CH | Channel 26990CH |
| 10MHz | QPSK | 1 | 0 | 25.0 | 23.76 | 23.85 | 23.85 |
| | | 1 | 25 | 25.0 | 24.10 | 24.16 | 24.28 |
| | | 1 | 49 | 25.0 | 23.59 | 23.61 | 23.75 |
| | | 25 | 0 | 24.3 | 23.02 | 23.12 | 23.33 |
| | | 25 | 13 | 24.3 | 23.02 | 23.17 | 23.37 |
| | | 25 | 25 | 24.3 | 22.97 | 23.03 | 23.06 |
| | | 50 | 0 | 24.3 | 23.04 | 23.07 | 23.25 |
| | 16QAM | 1 | 0 | 24.2 | 22.94 | 23.27 | 23.06 |
| | | 1 | 25 | 24.2 | 23.18 | 23.52 | 23.41 |
| | | 1 | 49 | 24.2 | 22.82 | 23.00 | 22.80 |
| | | 25 | 0 | 23.4 | 22.04 | 22.22 | 22.24 |
| | | 25 | 13 | 23.4 | 22.10 | 22.28 | 22.23 |
| | | 25 | 25 | 23.4 | 22.08 | 22.15 | 22.09 |
| | | 50 | 0 | 23.4 | 22.09 | 22.14 | 22.09 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 26775CH | Channel 26865CH | Channel 26965CH |
|---|---|---|---|---|---|---|---|
| 15MHz | QPSK | 1 | 0 | 25.0 | 23.71 | 23.68 | 23.63 |
| | | 1 | 38 | 25.0 | 23.79 | **23.88** | 23.78 |
| | | 1 | 74 | 25.0 | 23.56 | 23.39 | 23.42 |
| | | 36 | 0 | 24.3 | 23.03 | 23.07 | 23.22 |
| | | 36 | 18 | 24.3 | 23.09 | 23.20 | **23.24** |
| | | 36 | 39 | 24.3 | 22.88 | 23.06 | 23.03 |
| | | 75 | 0 | 24.3 | 22.93 | 22.97 | 23.06 |
| | 16QAM | 1 | 0 | 24.2 | 22.72 | 22.84 | 22.64 |
| | | 1 | 38 | 24.2 | 22.95 | 23.18 | 22.99 |
| | | 1 | 74 | 24.2 | 22.55 | 22.93 | 22.40 |
| | | 36 | 0 | 23.4 | 22.02 | 22.19 | 22.17 |
| | | 36 | 18 | 23.4 | 22.16 | 22.31 | 22.19 |
| | | 36 | 39 | 23.4 | 21.98 | 22.00 | 21.94 |
| | | 75 | 0 | 23.4 | 21.97 | 22.06 | 21.99 |

Table 32: Conducted power measurement results of LTE Band 26(Full Power)

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 26697CH | Channel 26865CH | Channel 27033CH |
|---|---|---|---|---|---|---|---|
| 1.4MHz | QPSK | 1 | 0 | 18.0 | 16.16 | 17.21 | 17.41 |
| | | 1 | 3 | 18.0 | 16.07 | 17.13 | 17.28 |
| | | 1 | 5 | 18.0 | 16.09 | 17.12 | 17.20 |
| | | 3 | 0 | 18.0 | 16.15 | 17.17 | 17.27 |
| | | 3 | 2 | 18.0 | 17.07 | 17.17 | 17.30 |
| | | 3 | 3 | 18.0 | 17.00 | 17.13 | 17.20 |
| | | 6 | 0 | 17.3 | 16.01 | 16.06 | 16.30 |
| | 16QAM | 1 | 0 | 17.2 | 16.12 | 16.18 | 16.17 |
| | | 1 | 3 | 17.2 | 16.15 | 16.26 | 16.61 |
| | | 1 | 5 | 17.2 | 16.07 | 15.94 | 15.98 |
| | | 3 | 0 | 17.2 | 16.13 | 16.21 | 16.34 |
| | | 3 | 2 | 17.2 | 16.15 | 16.17 | 16.37 |
| | | 3 | 3 | 17.2 | 16.07 | 16.19 | 16.25 |
| | | 6 | 0 | 16.4 | 15.08 | 15.11 | 15.28 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 26705CH | Channel 26865CH | Channel 27025CH |
| 3MHz | QPSK | 1 | 0 | 18.0 | 16.94 | 17.10 | 16.93 |
| | | 1 | 7 | 18.0 | 17.09 | 17.14 | 17.33 |
| | | 1 | 14 | 18.0 | 16.84 | 16.87 | 16.87 |
| | | 8 | 0 | 17.3 | 15.96 | 16.15 | 16.32 |
| | | 8 | 4 | 17.3 | 15.98 | 16.12 | 16.33 |
| | | 8 | 7 | 17.3 | 15.89 | 16.03 | 16.21 |
| | | 15 | 0 | 17.3 | 15.98 | 16.06 | 16.18 |
| | 16QAM | 1 | 0 | 17.2 | 15.78 | 16.29 | 16.16 |
| | | 1 | 7 | 17.2 | 16.03 | 16.28 | 16.38 |
| | | 1 | 14 | 17.2 | 15.70 | 16.12 | 15.94 |
| | | 8 | 0 | 16.4 | 15.05 | 15.14 | 15.29 |
| | | 8 | 4 | 16.4 | 15.06 | 15.11 | 15.37 |
| | | 8 | 7 | 16.4 | 14.98 | 15.06 | 15.27 |
| | | 15 | 0 | 16.4 | 14.87 | 14.97 | 15.23 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 26715CH | Channel 26865CH | Channel 27015CH |
|---|---|---|---|---|---|---|---|
| 5MHz | QPSK | 1 | 0 | 18.0 | 17.33 | 17.57 | 17.65 |
| | | 1 | 13 | 18.0 | 17.70 | 17.88 | 17.97 |
| | | 1 | 24 | 18.0 | 17.37 | 17.58 | 17.65 |
| | | 12 | 0 | 17.3 | 16.67 | 16.85 | 16.80 |
| | | 12 | 6 | 17.3 | 16.72 | 16.86 | 16.89 |
| | | 12 | 13 | 17.3 | 16.46 | 16.68 | 16.82 |
| | | 25 | 0 | 17.3 | 16.57 | 16.72 | 16.68 |
| | 16QAM | 1 | 0 | 17.2 | 16.51 | 16.84 | 16.74 |
| | | 1 | 13 | 17.2 | 16.82 | 17.04 | 17.11 |
| | | 1 | 24 | 17.2 | 16.55 | 16.78 | 16.80 |
| | | 12 | 0 | 16.4 | 15.59 | 15.83 | 15.82 |
| | | 12 | 6 | 16.4 | 15.68 | 15.87 | 15.91 |
| | | 12 | 13 | 16.4 | 15.43 | 15.70 | 15.85 |
| | | 25 | 0 | 16.4 | 15.45 | 15.55 | 15.71 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 26750CH | Channel 26865CH | Channel 26990CH |
| 10MHz | QPSK | 1 | 0 | 18.0 | 17.20 | 17.24 | 17.41 |
| | | 1 | 25 | 18.0 | 17.72 | 17.74 | 17.80 |
| | | 1 | 49 | 18.0 | 16.98 | 17.10 | 17.23 |
| | | 25 | 0 | 17.3 | 16.49 | 16.61 | 16.68 |
| | | 25 | 13 | 17.3 | 16.56 | 16.68 | 16.74 |
| | | 25 | 25 | 17.3 | 16.52 | 16.57 | 16.58 |
| | | 50 | 0 | 17.3 | 16.55 | 16.58 | 16.60 |
| | 16QAM | 1 | 0 | 17.2 | 16.34 | 16.59 | 16.70 |
| | | 1 | 25 | 17.2 | 16.92 | 17.09 | 17.01 |
| | | 1 | 49 | 17.2 | 16.33 | 16.58 | 16.39 |
| | | 25 | 0 | 16.4 | 15.40 | 15.52 | 15.76 |
| | | 25 | 13 | 16.4 | 15.47 | 15.60 | 15.78 |
| | | 25 | 25 | 16.4 | 15.43 | 15.49 | 15.64 |
| | | 50 | 0 | 16.4 | 15.44 | 15.48 | 15.65 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 26775CH | Channel 26865CH | Channel 26965CH |
|---|---|---|---|---|---|---|---|
| 15MHz | QPSK | 1 | 0 | 18.0 | 16.96 | 16.83 | 17.05 |
| | | 1 | 38 | 18.0 | 17.27 | 17.31 | **17.31** |
| | | 1 | 74 | 18.0 | 16.69 | 16.72 | 16.97 |
| | | 36 | 0 | 17.3 | 16.46 | 16.59 | 16.70 |
| | | 36 | 18 | 17.3 | 16.58 | **16.73** | 16.59 |
| | | 36 | 39 | 17.3 | 16.43 | 16.50 | 16.36 |
| | | 75 | 0 | 17.3 | 16.50 | 16.51 | 16.38 |
| | 16QAM | 1 | 0 | 17.2 | 16.25 | 16.37 | 16.31 |
| | | 1 | 38 | 17.2 | 16.28 | 16.62 | 16.42 |
| | | 1 | 74 | 17.2 | 16.02 | 16.28 | 15.89 |
| | | 36 | 0 | 16.4 | 15.41 | 15.52 | 15.58 |
| | | 36 | 18 | 16.4 | 15.56 | 15.69 | 15.64 |
| | | 36 | 39 | 16.4 | 15.34 | 15.45 | 15.45 |
| | | 75 | 0 | 16.4 | 15.40 | 15.41 | 15.47 |

Table 33: Conducted power measurement results of LTE Band 26(Sensor On)

### 7.1.11 Conducted power measurements of LTE Band 38

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|
| | | | | Max. | 37775CH | 38000CH | 38225CH |
| 5MHz | QPSK | 1 | 0 | 24.0 | 22.63 | 22.94 | 22.98 |
| | | 1 | 13 | 24.0 | 22.76 | 22.88 | 23.08 |
| | | 1 | 24 | 24.0 | 22.83 | 22.78 | 22.95 |
| | | 12 | 0 | 23.0 | 21.91 | 22.12 | 22.25 |
| | | 12 | 6 | 23.0 | 22.01 | 22.19 | 22.29 |
| | | 12 | 13 | 23.0 | 22.07 | 22.07 | 22.34 |
| | | 25 | 0 | 23.0 | 21.89 | 22.06 | 22.19 |
| | 16QAM | 1 | 0 | 23.2 | 21.88 | 22.00 | 22.06 |
| | | 1 | 13 | 23.2 | 22.04 | 21.91 | 22.25 |
| | | 1 | 24 | 23.2 | 22.08 | 21.87 | 22.07 |
| | | 12 | 0 | 23.0 | 21.90 | 22.12 | 22.22 |
| | | 12 | 6 | 23.0 | 21.95 | 22.21 | 22.30 |
| | | 12 | 13 | 23.0 | 22.06 | 22.07 | 22.31 |
| | | 25 | 0 | 23.0 | 21.87 | 22.00 | 22.17 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel |
| | | | | Max. | 37800CH | 38000CH | 38200CH |
| 10MHz | QPSK | 1 | 0 | 24.0 | 22.66 | 23.00 | 22.76 |
| | | 1 | 25 | 24.0 | 23.14 | 23.13 | 23.11 |
| | | 1 | 49 | 24.0 | 22.98 | 22.76 | 22.95 |
| | | 25 | 0 | 23.0 | 21.93 | 22.14 | 22.12 |
| | | 25 | 13 | 23.0 | 22.10 | 22.12 | 22.20 |
| | | 25 | 25 | 23.0 | 22.13 | 22.05 | 22.18 |
| | | 50 | 0 | 23.0 | 22.06 | 22.07 | 22.13 |
| | 16QAM | 1 | 0 | 23.2 | 21.74 | 21.99 | 21.90 |
| | | 1 | 25 | 23.2 | 22.21 | 22.12 | 22.24 |
| | | 1 | 49 | 23.2 | 22.06 | 21.88 | 22.07 |
| | | 25 | 0 | 23.0 | 21.95 | 22.05 | 22.07 |
| | | 25 | 13 | 23.0 | 22.05 | 22.04 | 22.15 |
| | | 25 | 25 | 23.0 | 22.08 | 21.96 | 22.14 |
| | | 50 | 0 | 23.0 | 21.99 | 22.03 | 22.06 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 37825CH | Channel 38000CH | Channel 38175CH |
|---|---|---|---|---|---|---|---|
| 15MHz | QPSK | 1 | 0 | 24.0 | 22.43 | 22.86 | 22.58 |
| | | 1 | 38 | 24.0 | 22.93 | 22.95 | 22.98 |
| | | 1 | 74 | 24.0 | 22.81 | 22.48 | 22.70 |
| | | 36 | 0 | 23.0 | 21.99 | 22.17 | 21.99 |
| | | 36 | 18 | 23.0 | 22.23 | 22.19 | 22.13 |
| | | 36 | 39 | 23.0 | 22.17 | 22.02 | 22.11 |
| | | 75 | 0 | 23.0 | 22.13 | 22.07 | 22.04 |
| | 16QAM | 1 | 0 | 23.2 | 21.56 | 21.70 | 21.52 |
| | | 1 | 38 | 23.2 | 22.08 | 21.90 | 21.88 |
| | | 1 | 74 | 23.2 | 21.95 | 21.50 | 21.76 |
| | | 36 | 0 | 23.0 | 21.95 | 22.20 | 21.94 |
| | | 36 | 18 | 23.0 | 22.22 | 22.22 | 22.09 |
| | | 36 | 39 | 23.0 | 22.20 | 22.04 | 22.07 |
| | | 75 | 0 | 23.0 | 22.09 | 22.03 | 21.98 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 37850CH | Channel 38000CH | Channel 38150CH |
| 20MHz | QPSK | 1 | 0 | 24.0 | 22.88 | 23.21 | 22.92 |
| | | 1 | 50 | 24.0 | **23.49** | 23.29 | 23.10 |
| | | 1 | 99 | 24.0 | 23.21 | 22.78 | 23.08 |
| | | 50 | 0 | 23.0 | 22.23 | 22.36 | 22.17 |
| | | 50 | 25 | 23.0 | 22.35 | 22.29 | 22.22 |
| | | 50 | 50 | 23.0 | **22.40** | 22.15 | 22.26 |
| | | 100 | 0 | 23.0 | 22.30 | 22.25 | 22.21 |
| | 16QAM | 1 | 0 | 23.2 | 22.04 | 22.50 | 22.13 |
| | | 1 | 50 | 23.2 | 22.68 | 22.60 | 22.19 |
| | | 1 | 99 | 23.2 | 22.38 | 22.20 | 22.34 |
| | | 50 | 0 | 23.0 | 22.21 | 22.32 | 22.14 |
| | | 50 | 25 | 23.0 | 22.34 | 22.25 | 22.19 |
| | | 50 | 50 | 23.0 | 22.36 | 22.11 | 22.24 |
| | | 100 | 0 | 23.0 | 22.23 | 22.19 | 22.14 |

Table 34: Conducted power measurement results of LTE Band 38(Full Power)

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 37775CH | Channel 38000CH | Channel 38225CH |
|---|---|---|---|---|---|---|---|
| 5MHz | QPSK | 1 | 0 | 12.0 | 10.43 | 11.22 | 11.29 |
| | | 1 | 13 | 12.0 | 10.64 | 11.12 | 11.28 |
| | | 1 | 24 | 12.0 | 10.65 | 11.13 | 11.27 |
| | | 12 | 0 | 11.0 | 9.58 | 10.31 | 10.46 |
| | | 12 | 6 | 11.0 | 9.68 | 10.34 | 10.51 |
| | | 12 | 13 | 11.0 | 9.52 | 10.31 | 10.53 |
| | | 25 | 0 | 11.0 | 9.56 | 10.23 | 10.39 |
| | 16QAM | 1 | 0 | 11.2 | 9.50 | 10.03 | 10.20 |
| | | 1 | 13 | 11.2 | 9.73 | 9.97 | 10.28 |
| | | 1 | 24 | 11.2 | 9.81 | 9.97 | 10.21 |
| | | 12 | 0 | 11.0 | 9.49 | 10.21 | 10.37 |
| | | 12 | 6 | 11.0 | 9.58 | 10.27 | 10.44 |
| | | 12 | 13 | 11.0 | 9.43 | 10.21 | 10.46 |
| | | 25 | 0 | 11.0 | 9.47 | 10.16 | 10.33 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 37800CH | Channel 38000CH | Channel 38200CH |
| 10MHz | QPSK | 1 | 0 | 12.0 | 10.69 | 11.24 | 11.17 |
| | | 1 | 25 | 12.0 | 11.13 | 11.29 | 11.44 |
| | | 1 | 49 | 12.0 | 11.10 | 10.98 | 11.25 |
| | | 25 | 0 | 11.0 | 10.11 | 10.31 | 10.31 |
| | | 25 | 13 | 11.0 | 10.23 | 10.30 | 10.39 |
| | | 25 | 25 | 11.0 | 10.26 | 10.22 | 10.36 |
| | | 50 | 0 | 11.0 | 10.20 | 10.26 | 10.32 |
| | 16QAM | 1 | 0 | 11.2 | 9.89 | 10.22 | 10.10 |
| | | 1 | 25 | 11.2 | 10.37 | 10.29 | 10.43 |
| | | 1 | 49 | 11.2 | 10.24 | 9.99 | 10.19 |
| | | 25 | 0 | 11.0 | 10.01 | 10.21 | 10.24 |
| | | 25 | 13 | 11.0 | 10.13 | 10.17 | 10.32 |
| | | 25 | 25 | 11.0 | 10.17 | 10.11 | 10.29 |
| | | 50 | 0 | 11.0 | 10.12 | 10.15 | 10.21 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up Max. | Channel 37825CH | Channel 38000CH | Channel 38175CH |
|---|---|---|---|---|---|---|---|
| 15MHz | QPSK | 1 | 0 | 12.0 | 10.57 | 11.12 | 10.92 |
| | | 1 | 38 | 12.0 | 11.09 | 11.12 | 11.09 |
| | | 1 | 74 | 12.0 | 11.05 | 10.81 | 11.02 |
| | | 36 | 0 | 11.0 | 10.07 | 10.31 | 10.19 |
| | | 36 | 18 | 11.0 | 10.32 | 10.32 | 10.31 |
| | | 36 | 39 | 11.0 | 10.28 | 10.16 | 10.29 |
| | | 75 | 0 | 11.0 | 10.24 | 10.22 | 10.17 |
| | 16QAM | 1 | 0 | 11.2 | 9.62 | 10.32 | 9.96 |
| | | 1 | 38 | 11.2 | 10.23 | 10.41 | 10.19 |
| | | 1 | 74 | 11.2 | 10.04 | 10.02 | 10.09 |
| | | 36 | 0 | 11.0 | 9.99 | 10.23 | 10.09 |
| | | 36 | 18 | 11.0 | 10.21 | 10.22 | 10.21 |
| | | 36 | 39 | 11.0 | 10.22 | 10.06 | 10.20 |
| | | 75 | 0 | 11.0 | 10.13 | 10.11 | 10.03 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up Max. | Channel 37850CH | Channel 38000CH | Channel 38150CH |
| 20MHz | QPSK | 1 | 0 | 12.0 | 10.90 | 11.52 | 11.32 |
| | | 1 | 50 | 12.0 | **11.62** | 11.50 | 11.47 |
| | | 1 | 99 | 12.0 | 11.37 | 11.17 | 11.48 |
| | | 50 | 0 | 11.0 | 10.39 | 10.52 | 10.32 |
| | | 50 | 25 | 11.0 | 10.54 | 10.44 | 10.37 |
| | | 50 | 50 | 11.0 | **10.55** | 10.31 | 10.41 |
| | | 100 | 0 | 11.0 | 10.43 | 10.39 | 10.30 |
| | 16QAM | 1 | 0 | 11.2 | 9.97 | 10.18 | 10.34 |
| | | 1 | 50 | 11.2 | 10.45 | 10.29 | 10.52 |
| | | 1 | 99 | 11.2 | 10.40 | 9.84 | 10.53 |
| | | 50 | 0 | 11.0 | 10.27 | 10.40 | 10.21 |
| | | 50 | 25 | 11.0 | 10.40 | 10.32 | 10.25 |
| | | 50 | 50 | 11.0 | 10.44 | 10.19 | 10.30 |
| | | 100 | 0 | 11.0 | 10.31 | 10.27 | 10.18 |

Table 35: Conducted power measurement results of LTE Band 38(Sensor On)

### 7.1.12 Conducted power measurements of LTE Band 41

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel 40165CH | Channel 40515CH | Channel 40865CH | Channel 41215CH |
|---|---|---|---|---|---|---|---|---|
| 5MHz | QPSK | 1 | 0 | 24.0 | 23.12 | 23.02 | 22.93 | 22.80 |
| | | 1 | 13 | 24.0 | 23.30 | 23.28 | 23.14 | 23.03 |
| | | 1 | 24 | 24.0 | 23.01 | 23.11 | 23.06 | 23.07 |
| | | 12 | 0 | 23.1 | 22.45 | 22.45 | 22.31 | 22.25 |
| | | 12 | 6 | 23.1 | 22.48 | 22.55 | 22.52 | 22.45 |
| | | 12 | 13 | 23.1 | 22.32 | 22.33 | 22.26 | 22.28 |
| | | 25 | 0 | 23.1 | 22.59 | 22.49 | 22.54 | 22.52 |
| | 16QAM | 1 | 0 | 23.0 | 22.05 | 22.05 | 22.14 | 22.23 |
| | | 1 | 13 | 23.0 | 21.87 | 21.98 | 22.01 | 22.13 |
| | | 1 | 24 | 23.0 | 22.11 | 22.09 | 22.20 | 22.30 |
| | | 12 | 0 | 23.0 | 21.96 | 21.99 | 22.00 | 22.08 |
| | | 12 | 6 | 23.0 | 21.91 | 21.79 | 21.85 | 21.78 |
| | | 12 | 13 | 23.0 | 21.88 | 21.83 | 21.73 | 21.67 |
| | | 25 | 0 | 23.0 | 21.86 | 21.89 | 21.96 | 21.94 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel 40190CH | Channel 40520CH | Channel 40850CH | Channel 41190CH |
| 10MHz | QPSK | 1 | 0 | 24.0 | 23.05 | 22.95 | 22.84 | 22.95 |
| | | 1 | 25 | 24.0 | 23.24 | 23.17 | 23.02 | 23.02 |
| | | 1 | 49 | 24.0 | 22.80 | 22.78 | 22.69 | 22.60 |
| | | 25 | 0 | 23.1 | 22.64 | 22.68 | 22.79 | 22.71 |
| | | 25 | 13 | 23.1 | 22.48 | 22.46 | 22.56 | 22.58 |
| | | 25 | 25 | 23.1 | 22.52 | 22.51 | 22.41 | 22.32 |
| | | 50 | 0 | 23.1 | 22.37 | 22.39 | 22.36 | 22.38 |
| | 16QAM | 1 | 0 | 23.0 | 22.19 | 22.11 | 22.11 | 21.98 |
| | | 1 | 25 | 23.0 | 22.05 | 22.06 | 22.08 | 22.09 |
| | | 1 | 49 | 23.0 | 22.15 | 22.20 | 22.18 | 22.05 |
| | | 25 | 0 | 23.0 | 21.95 | 22.06 | 21.99 | 21.94 |
| | | 25 | 13 | 23.0 | 22.00 | 22.02 | 22.01 | 21.99 |
| | | 25 | 25 | 23.0 | 21.66 | 21.77 | 21.68 | 21.60 |
| | | 50 | 0 | 23.0 | 22.00 | 22.14 | 22.04 | 22.15 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel | Channel |
|---|---|---|---|---|---|---|---|---|
| | | | | | 40215CH | 40535CH | 40855CH | 41165CH |
| 15MHz | QPSK | 1 | 0 | 24.0 | 23.15 | 23.22 | 23.29 | 23.21 |
| | | 1 | 38 | 24.0 | 23.01 | 23.10 | 23.10 | 23.06 |
| | | 1 | 74 | 24.0 | 22.87 | 23.00 | 22.87 | 22.89 |
| | | 36 | 0 | 23.1 | 22.51 | 22.46 | 22.45 | 22.58 |
| | | 36 | 18 | 23.1 | 22.35 | 22.24 | 22.37 | 22.37 |
| | | 36 | 39 | 23.1 | 22.32 | 22.38 | 22.40 | 22.48 |
| | | 75 | 0 | 23.1 | 22.31 | 22.31 | 22.40 | 22.36 |
| | 16QAM | 1 | 0 | 23.0 | 22.13 | 22.19 | 22.27 | 22.38 |
| | | 1 | 38 | 23.0 | 21.96 | 22.02 | 21.93 | 21.97 |
| | | 1 | 74 | 23.0 | 22.14 | 22.26 | 22.28 | 22.17 |
| | | 36 | 0 | 23.0 | 21.98 | 22.04 | 22.05 | 22.11 |
| | | 36 | 18 | 23.0 | 21.82 | 21.68 | 21.73 | 21.65 |
| | | 36 | 39 | 23.0 | 21.75 | 21.69 | 21.78 | 21.86 |
| | | 75 | 0 | 23.0 | 21.75 | 21.80 | 21.79 | 21.69 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel | Channel | Channel | Channel |
| | | | | | 40240CH | 40540CH | 40840CH | 41140CH |
| 20MHz | QPSK | 1 | 0 | 24.0 | 22.75 | 23.17 | 22.61 | **23.22** |
| | | 1 | 50 | 24.0 | 22.71 | 23.16 | 22.86 | 23.00 |
| | | 1 | 99 | 24.0 | 22.80 | 22.87 | 22.99 | 22.65 |
| | | 50 | 0 | 23.1 | 22.00 | **22.53** | 22.02 | 22.49 |
| | | 50 | 25 | 23.1 | 21.97 | 22.48 | 22.14 | 22.31 |
| | | 50 | 50 | 23.1 | 21.89 | 22.39 | 22.25 | 22.03 |
| | | 100 | 0 | 23.1 | 21.97 | 22.45 | 22.10 | 22.32 |
| | 16QAM | 1 | 0 | 23.0 | 22.10 | 22.69 | 21.92 | 22.53 |
| | | 1 | 50 | 23.0 | 21.94 | 22.67 | 22.17 | 22.14 |
| | | 1 | 99 | 23.0 | 22.14 | 22.50 | 22.36 | 21.92 |
| | | 50 | 0 | 23.0 | 21.97 | 22.50 | 21.97 | 22.40 |
| | | 50 | 25 | 23.0 | 21.88 | 22.45 | 22.06 | 22.23 |
| | | 50 | 50 | 23.0 | 21.80 | 22.30 | 22.13 | 21.93 |
| | | 100 | 0 | 23.0 | 21.90 | 22.41 | 22.00 | 22.19 |

Table 36: Conducted power measurement results of LTE Band 41(Full Power)

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel 40165CH | Channel 40515CH | Channel 40865CH | Channel 42215CH |
|---|---|---|---|---|---|---|---|---|
| 5MHz | QPSK | 1 | 0 | 11.0 | 10.13 | 10.17 | 10.28 | 10.41 |
| | | 1 | 13 | 11.0 | 9.93 | 9.97 | 9.84 | 9.78 |
| | | 1 | 24 | 11.0 | 10.20 | 10.29 | 10.39 | 10.45 |
| | | 12 | 0 | 10.1 | 9.22 | 9.12 | 9.01 | 9.05 |
| | | 12 | 6 | 10.1 | 9.34 | 9.40 | 9.39 | 9.46 |
| | | 12 | 13 | 10.1 | 9.21 | 9.13 | 9.24 | 9.14 |
| | | 25 | 0 | 10.1 | 9.28 | 9.40 | 9.43 | 9.41 |
| | 16QAM | 1 | 0 | 10.0 | 9.04 | 9.11 | 8.98 | 8.86 |
| | | 1 | 13 | 10.0 | 9.33 | 9.36 | 9.37 | 9.39 |
| | | 1 | 24 | 10.0 | 9.42 | 9.57 | 9.51 | 9.56 |
| | | 12 | 0 | 10.0 | 9.37 | 9.24 | 9.35 | 9.21 |
| | | 12 | 6 | 10.0 | 9.47 | 9.44 | 9.56 | 9.56 |
| | | 12 | 13 | 10.0 | 9.05 | 9.02 | 9.02 | 9.13 |
| | | 25 | 0 | 10.0 | 9.23 | 9.10 | 9.18 | 9.05 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel 40190CH | Channel 40520CH | Channel 40850CH | Channel 41190CH |
| 10MHz | QPSK | 1 | 0 | 11.0 | 10.01 | 10.00 | 9.94 | 9.85 |
| | | 1 | 25 | 11.0 | 10.00 | 9.97 | 10.08 | 10.01 |
| | | 1 | 49 | 11.0 | 10.41 | 10.32 | 10.31 | 10.27 |
| | | 25 | 0 | 10.1 | 9.04 | 9.13 | 9.15 | 9.24 |
| | | 25 | 13 | 10.1 | 9.08 | 9.00 | 9.01 | 9.14 |
| | | 25 | 25 | 10.1 | 9.10 | 9.14 | 9.14 | 9.18 |
| | | 50 | 0 | 10.1 | 9.27 | 9.39 | 9.25 | 9.20 |
| | 16QAM | 1 | 0 | 10.0 | 9.20 | 9.23 | 9.27 | 9.30 |
| | | 1 | 25 | 10.0 | 9.30 | 9.35 | 9.25 | 9.27 |
| | | 1 | 49 | 10.0 | 9.45 | 9.51 | 9.48 | 9.62 |
| | | 25 | 0 | 10.0 | 9.47 | 9.46 | 9.49 | 9.62 |
| | | 25 | 13 | 10.0 | 9.30 | 9.37 | 9.49 | 9.37 |
| | | 25 | 25 | 10.0 | 9.22 | 9.32 | 9.33 | 9.29 |
| | | 50 | 0 | 10.0 | 9.19 | 9.09 | 8.99 | 9.13 |

| Bandwidth | Modulation | RB size | RB offset | Tune-up | Channel 40215CH | Channel 40535CH | Channel 40855CH | Channel 41165CH |
|---|---|---|---|---|---|---|---|---|
| 15MHz | QPSK | 1 | 0 | 11.0 | 10.03 | 10.01 | 10.03 | 9.93 |
| | | 1 | 38 | 11.0 | 10.15 | 10.16 | 10.29 | 10.21 |
| | | 1 | 74 | 11.0 | 10.34 | 10.28 | 10.20 | 10.26 |
| | | 36 | 0 | 10.1 | 9.10 | 9.00 | 9.06 | 9.02 |
| | | 36 | 18 | 10.1 | 9.18 | 9.06 | 8.94 | 8.90 |
| | | 36 | 39 | 10.1 | 9.17 | 9.11 | 8.96 | 9.01 |
| | | 75 | 0 | 10.1 | 9.17 | 9.20 | 9.08 | 8.97 |
| | 16QAM | 1 | 0 | 10.0 | 9.16 | 9.13 | 9.12 | 9.00 |
| | | 1 | 38 | 10.0 | 9.29 | 9.39 | 9.52 | 9.47 |
| | | 1 | 74 | 10.0 | 9.39 | 9.52 | 9.39 | 9.31 |
| | | 36 | 0 | 10.0 | 9.25 | 9.28 | 9.22 | 9.13 |
| | | 36 | 18 | 10.0 | 9.27 | 9.37 | 9.46 | 9.32 |
| | | 36 | 39 | 10.0 | 9.17 | 9.23 | 9.24 | 9.17 |
| | | 75 | 0 | 10.0 | 9.13 | 9.13 | 9.20 | 9.29 |
| **Bandwidth** | Modulation | RB size | RB offset | Tune-up | Channel 40240CH | Channel 40540CH | Channel 40840CH | Channel 41140CH |
| 20MHz | QPSK | 1 | 0 | 11.0 | 10.14 | 10.69 | 10.49 | 10.63 |
| | | 1 | 50 | 11.0 | 10.01 | 10.67 | 10.44 | 10.54 |
| | | 1 | 99 | 11.0 | 10.26 | 10.37 | **10.70** | 10.23 |
| | | 50 | 0 | 10.1 | 9.19 | **9.78** | 9.33 | 9.65 |
| | | 50 | 25 | 10.1 | 9.21 | 9.76 | 9.37 | 9.50 |
| | | 50 | 50 | 10.1 | 9.15 | 9.58 | 9.45 | 9.28 |
| | | 100 | 0 | 10.1 | 9.16 | 9.64 | 9.32 | 9.52 |
| | 16QAM | 1 | 0 | 10.0 | 9.45 | 9.24 | 9.39 | 9.70 |
| | | 1 | 50 | 10.0 | 9.37 | 9.19 | 9.13 | 9.65 |
| | | 1 | 99 | 10.0 | 9.31 | 9.14 | 9.51 | 9.30 |
| | | 50 | 0 | 10.0 | 9.33 | 9.60 | 9.02 | 9.49 |
| | | 50 | 25 | 10.0 | 9.32 | 9.44 | 9.04 | 9.34 |
| | | 50 | 50 | 10.0 | 9.11 | 9.11 | 9.11 | 9.09 |
| | | 100 | 0 | 10.0 | 9.56 | 9.18 | 9.10 | 9.40 |

Table 37: Conducted power measurement results of LTE Band 41(Sensor On)

### 7.1.13 Conducted power measurements of LTE CA

In this section, the following conducted power measurement results of downlink LTE carrier aggregation are provided to quantify downlink only carrier aggregation SAR test exclusion per KDB 941225 D05A.

Uplink maximum output power is measured with downlink carrier aggregation active, using the channel with highest measured maximum output power when downlink carrier aggregation is inactive, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.

Power test equipment: a R&S Radio Communication Tester CMW500 was used.

| Initial Conditions | | | | | | |
|---|---|---|---|---|---|---|
| Test Environment as specified in TS 36.508[7] subclause 4.1 | | | NC[, TL/VL, TL/VH, TH/VL, TH/VH] | | | |
| Test Frequencies as specified in TS36.508 [7] subclause 4.3.1 for different CA bandwidth classes. | | | A: Mid range for PCC and SCC | | | |
| Test CC Combination setting ($N_{RB\_agg}$) as specified in subclause 5.4.2A.1 for the CA Configuration | | | Lowest $N_{RB\_agg}$<br>Highest $N_{RB\_agg}$ | | | |
| Test Parameters for CA Configurations | | | | | | |
| CA Configuration / $N_{RB\_agg}$ | | DL Allocation | CC MOD | UL Allocation | | |
| PCC $N_{RB}$ | SCCs $N_{RB}$ | PCC & SCC RB allocation | | $N_{RB\_alloc}$ | PCC RB allocations ($L_{CRB}$ @ $RB_{start}$) | |
| 6 | 25 | N/A<br>for this test | QPSK | 5 | P_5@0 | - |
| 15 | 25 | | QPSK | 4 | P_4@0 | - |
| 25 | 50 | | QPSK | 8 | P_8@0 | - |
| 50 | 75 | | QPSK | 12 | P_12@0 | - |
| 75 | 100 | | QPSK | 16 | P_16@0 | - |
| 100 | 75 | | QPSK | 18 | P_18@0 | - |
| Note 1: CA Configuration Test CC Combination settings are checked separately for each CA Configuration, which applicable aggregated channel bandwidths are specified in Table 5.4.2A.1-1 | | | | | | |

| DL LTE CA Class | PCC | | | | | | | | SCC1 | | | Power | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PCC Band | PCC Bandwidth (MHz) | PCC UL RB size | PCC UL RB offset | PCC DL RB size | PCC DL RB offset | PCC UL Channel | PCC DL Channel | SCC Band | SCC Bandwidth (MHz) | SCC DL Channel | Rel 8 LTE Tx Power (dBm) | DL LTE CA Tx Power (dBm) | Tune-up |
| CA_5B | 5 | 10 | 1 | 25 | 50 | 0 | 20600 | 2600 | 5 | 10 | 2501 | 23.75 | 23.61 | 24.7 |
| CA_7C | 7 | 20 | 1 | 50 | 100 | 0 | 21350 | 3350 | 7 | 20 | 3152 | 23.23 | 23.42 | 24.2 |
| CA_12B | 12 | 10 | 1 | 25 | 25 | 0 | 23117 | 5117 | 12 | 5 | 5045 | 24.94 | 24.85 | 25.7 |
| CA_38C | 38 | 20 | 1 | 50 | 100 | 0 | 37850 | 37850 | 38 | 20 | 38048 | 23.49 | 23.48 | 24.0 |
| CA_41C | 41 | 20 | 1 | 0 | 100 | 0 | 41140 | 41140 | 41 | 20 | 40942 | 23.22 | 22.75 | 24.0 |
| CA_5A-7A | 5 | 10 | 1 | 25 | 50 | 0 | 20600 | 2600 | 7 | 20 | 3100 | 23.75 | 23.71 | 24.7 |
| | 7 | 20 | 1 | 50 | 100 | 0 | 21350 | 3350 | 5 | 10 | 2525 | 23.23 | 23.18 | 24.2 |

Table 38: Conducted power measurement results of DL LTE CA(Full Power).

| DL LTE CA Class | PCC | | | | | | | | SCC1 | | | Power | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | PCC Band | PCC Bandwidth (MHz) | PCC UL RB size | PCC UL RB offset | PCC DL RB size | PCC DL RB offset | PCC UL Channel | PCC DL Channel | SCC Band | SCC Bandwidth (MHz) | SCC DL Channel | Rel 8 LTE Tx Power (dBm) | DL LTE CA Tx Power (dBm) | Tune-up |
| CA_5B | 5 | 10 | 1 | 25 | 50 | 0 | 20600 | 2600 | 5 | 10 | 2501 | 18.23 | 18.16 | 18.7 |
| CA_7C | 7 | 20 | 1 | 50 | 100 | 0 | 21100 | 3100 | 7 | 20 | 3298 | 8.89 | 8.68 | 9.2 |
| CA_12B | 12 | 10 | 1 | 25 | 25 | 0 | 23130 | 5130 | 12 | 5 | 5058 | 17.56 | 17.54 | 17.7 |
| CA_38C | 38 | 20 | 1 | 50 | 100 | 0 | 37850 | 37850 | 38 | 20 | 38048 | 11.62 | 11.65 | 12.0 |
| CA_41C | 41 | 20 | 1 | 99 | 100 | 0 | 40840 | 40840 | 41 | 20 | 40642 | 10.70 | 10.33 | 11.0 |
| CA_5A-7A | 5 | 10 | 1 | 25 | 50 | 0 | 20600 | 2600 | 7 | 20 | 3100 | 18.23 | 18.24 | 18.7 |
| | 7 | 20 | 1 | 50 | 50 | 0 | 21100 | 3100 | 5 | 10 | 2525 | 8.89 | 9.06 | 9.2 |

Table 39: Conducted power measurement results of DL LTE CA(Sensor On,reduced power).

### 7.1.14 Conducted power measurements of WiFi 2.4G

The output power of WiFi antenna is as following:

| Mode | Channel | Frequency (MHz) | Data Rate (Mbps) | Tune-up | Average Power (dBm) | SAR Test (Yes/No) |
|---|---|---|---|---|---|---|
| 802.11b | 1 | 2412 | 1Mbps | 18.0 | 16.67 | No |
| | 6 | 2437 | | 18.0 | **16.81** | Yes |
| | 11 | 2462 | | 18.0 | 16.21 | No |
| 802.11g | 1 | 2412 | 6Mbps | 13.0 | 11.48 | No |
| | 6 | 2437 | | 13.0 | 11.69 | No |
| | 11 | 2462 | | 13.0 | 11.16 | No |
| 802.11n 20M | 1 | 2412 | MCS0 | 12.0 | 10.12 | No |
| | 6 | 2437 | | 12.0 | 10.64 | No |
| | 11 | 2462 | | 12.0 | 10.47 | No |
| 802.11n 40M | 3 | 2422 | MCS0 | 10.0 | 8.35 | No |
| | 6 | 2437 | | 10.0 | 8.95 | No |
| | 9 | 2452 | | 10.0 | 8.36 | No |

Table 40: Conducted power measurement results of WiFi 2.4G(Full Power).

Note: The Average conducted power of WiFi is measured with RMS detector.

| Mode | Channel | Frequency (MHz) | Data Rate (Mbps) | Tune-up | Average Power (dBm) | SAR Test (Yes/No) |
|---|---|---|---|---|---|---|
| 802.11b | 1 | 2412 | 1Mbps | 10.0 | 8.72 | No |
| | 6 | 2437 | | 10.0 | **9.48** | Yes |
| | 11 | 2462 | | 10.0 | 8.56 | No |
| 802.11g | 1 | 2412 | 6Mbps | 10.0 | 8.42 | No |
| | 6 | 2437 | | 10.0 | 8.71 | No |
| | 11 | 2462 | | 10.0 | 8.08 | No |
| 802.11n 20M | 1 | 2412 | MCS0 | 10.0 | 8.1 | No |
| | 6 | 2437 | | 10.0 | 8.81 | No |
| | 11 | 2462 | | 10.0 | 8.21 | No |
| 802.11n 40M | 3 | 2422 | MCS0 | 10.0 | 8.35 | No |
| | 6 | 2437 | | 10.0 | 8.95 | No |
| | 9 | 2452 | | 10.0 | 8.36 | No |

Table 41: Conducted power measurement results of WiFi 2.4G(Sensor On).

Note: The Average conducted power of WiFi is measured with RMS detector.

### 7.1.15 Conducted power measurements of WiFi 5G

| Mode | Channel | Frequency (MHz) | Data Rate (Mbps) | Tune-up | Average Power (dBm) | SAR Test (Yes/No) |
|---|---|---|---|---|---|---|
| 802.11a | CH 36 | 5180 | 6Mbps | 19.0 | 17.17 | No |
| | CH 40 | 5200 | | 19.0 | 17.18 | No |
| | CH 44 | 5220 | | 19.0 | 17.22 | No |
| | CH 48 | 5240 | | 19.0 | 17.32 | No |
| | CH 52 | 5260 | | 19.0 | 17.42 | No |
| | CH 56 | 5280 | | 19.0 | 17.61 | No |
| | CH 60 | 5300 | | 19.0 | **17.80** | Yes |
| | CH 64 | 5320 | | 19.0 | 17.64 | No |
| | CH 100 | 5500 | | 19.0 | 17.75 | No |
| | CH 104 | 5520 | | 19.0 | 17.68 | No |
| | CH 108 | 5540 | | 19.0 | 17.27 | No |
| | CH 112 | 5560 | | 19.0 | 17.59 | No |
| | CH 116 | 5580 | | 19.0 | 17.39 | No |
| | CH 120 | 5600 | | 19.0 | 17.53 | No |
| | CH 124 | 5620 | | 19.0 | 17.65 | No |
| | CH 128 | 5640 | | 19.0 | 17.38 | No |
| | CH 132 | 5660 | | 19.0 | 17.10 | No |
| | CH 136 | 5680 | | 19.0 | 17.30 | No |
| | CH 140 | 5700 | | 19.0 | 17.88 | No |
| | CH 144 | 5720 | | 19.0 | **18.01** | Yes |
| | CH 149 | 5745 | | 19.0 | 17.63 | No |
| | CH 153 | 5765 | | 19.0 | 17.45 | No |
| | CH 157 | 5785 | | 19.0 | 17.67 | No |
| | CH 161 | 5805 | | 19.0 | 17.68 | No |
| | CH 165 | 5825 | | 19.0 | **18.06** | Yes |

| Mode | Channel | Frequency (MHz) | Data Rate (Mbps) | Tune-up | Average Power (dBm) | SAR Test (Yes/No) |
|---|---|---|---|---|---|---|
| 802.11n 20M (5GHz) | CH 36 | 5180 | MCS0 | 18.0 | 15.52 | No |
| | CH 40 | 5200 | | 18.0 | 15.35 | No |
| | CH 44 | 5220 | | 18.0 | 15.9 | No |
| | CH 48 | 5240 | | 18.0 | 16.1 | No |
| | CH 52 | 5260 | | 18.0 | 15.74 | No |
| | CH 56 | 5280 | | 18.0 | 15.96 | No |
| | CH 60 | 5300 | | 18.0 | 15.73 | No |
| | CH 64 | 5320 | | 18.0 | 16.13 | No |
| | CH 100 | 5500 | | 18.0 | 16.32 | No |
| | CH 104 | 5520 | | 18.0 | 16.16 | No |
| | CH 108 | 5540 | | 18.0 | 16.07 | No |
| | CH 112 | 5560 | | 18.0 | 16.01 | No |
| | CH 116 | 5580 | | 18.0 | 16.48 | No |
| | CH 120 | 5600 | | 18.0 | 16.39 | No |
| | CH 124 | 5620 | | 18.0 | 16.73 | No |
| | CH 128 | 5640 | | 18.0 | 16.41 | No |
| | CH 132 | 5660 | | 18.0 | 16.55 | No |
| | CH 136 | 5680 | | 18.0 | 16.21 | No |
| | CH 140 | 5700 | | 18.0 | 16.42 | No |
| | CH 144 | 5720 | | 18.0 | 16.52 | No |
| | CH 149 | 5745 | | 18.0 | 16.00 | No |
| | CH 153 | 5765 | | 18.0 | 16.47 | No |
| | CH 157 | 5785 | | 18.0 | 16.29 | No |
| | CH 161 | 5805 | | 18.0 | 16.38 | No |
| | CH 165 | 5825 | | 18.0 | 17.03 | No |
| Mode | Channel | Frequency (MHz) | Data Rate (Mbps) | Tune-up | Average Power (dBm) | SAR Test (Yes/No) |
| 802.11n 40M (5GHz) | CH 38 | 5190 | MCS0 | 16.0 | 13.64 | No |
| | CH 46 | 5230 | | 16.0 | 13.97 | No |
| | CH 54 | 5270 | | 16.0 | 13.64 | No |
| | CH 62 | 5310 | | 16.0 | 14.01 | No |
| | CH 102 | 5510 | | 16.0 | 14.46 | No |
| | CH 110 | 5550 | | 16.0 | 14.45 | No |
| | CH 118 | 5590 | | 16.0 | 15.01 | No |
| | CH 126 | 5630 | | 16.0 | 15.21 | No |
| | CH 134 | 5670 | | 16.0 | 14.60 | No |
| | CH 142 | 5710 | | 16.0 | 14.89 | No |
| | CH 151 | 5755 | | 16.0 | 14.31 | No |
| | CH 159 | 5795 | | 16.0 | 14.59 | No |

| Mode | Channel | Frequency (MHz) | Data Rate (Mbps) | Tune-up | Average Power (dBm) | SAR Test (Yes/No) |
|---|---|---|---|---|---|---|
| 802.11ac 20M (5GHz) | CH 36 | 5180 | Mcsac0 | 18.0 | 15.43 | No |
| | CH 40 | 5200 | | 18.0 | 15.58 | No |
| | CH 44 | 5220 | | 18.0 | 15.74 | No |
| | CH 48 | 5240 | | 18.0 | 15.94 | No |
| | CH 52 | 5260 | | 18.0 | 15.40 | No |
| | CH 56 | 5280 | | 18.0 | 15.62 | No |
| | CH 60 | 5300 | | 18.0 | 15.43 | No |
| | CH 64 | 5320 | | 18.0 | 15.95 | No |
| | CH 100 | 5500 | | 18.0 | 16.67 | No |
| | CH 104 | 5520 | | 18.0 | 16.50 | No |
| | CH 108 | 5540 | | 18.0 | 16.41 | No |
| | CH 112 | 5560 | | 18.0 | 16.34 | No |
| | CH 116 | 5580 | | 18.0 | 16.88 | No |
| | CH 120 | 5600 | | 18.0 | 16.50 | No |
| | CH 124 | 5620 | | 18.0 | 17.07 | No |
| | CH 128 | 5640 | | 18.0 | 16.51 | No |
| | CH 132 | 5660 | | 18.0 | 16.39 | No |
| | CH 136 | 5680 | | 18.0 | 16.57 | No |
| | CH 140 | 5700 | | 18.0 | 16.73 | No |
| | CH 144 | 5720 | | 18.0 | 16.39 | No |
| | CH 149 | 5745 | | 18.0 | 16.41 | No |
| | CH 153 | 5765 | | 18.0 | 16.10 | No |
| | CH 157 | 5785 | | 18.0 | 16.23 | No |
| | CH 161 | 5805 | | 18.0 | 16.59 | No |
| | CH 165 | 5825 | | 18.0 | 16.47 | No |
| Mode | Channel | Frequency (MHz) | Data Rate (Mbps) | Tune-up | Average Power (dBm) | SAR Test (Yes/No) |
| 802.11ac 40M (5GHz) | CH 38 | 5190 | Mcsac0 | 16.0 | 13.62 | No |
| | CH 46 | 5230 | | 16.0 | 13.94 | No |
| | CH 54 | 5270 | | 16.0 | 13.62 | No |
| | CH 62 | 5310 | | 16.0 | 13.98 | No |
| | CH 102 | 5510 | | 16.0 | 14.66 | No |
| | CH 110 | 5550 | | 16.0 | 14.43 | No |
| | CH 118 | 5590 | | 16.0 | 14.98 | No |
| | CH 126 | 5630 | | 16.0 | 15.17 | No |
| | CH 134 | 5670 | | 16.0 | 14.55 | No |
| | CH 142 | 5710 | | 16.0 | 14.84 | No |
| | CH 151 | 5755 | | 16.0 | 14.24 | No |
| | CH 159 | 5795 | | 16.0 | 14.55 | No |

| Mode | Channel | Frequency (MHz) | Data Rate (Mbps) | Tune-up | Average Power (dBm) | SAR Test (Yes/No) |
|---|---|---|---|---|---|---|
| 802.11ac 80M (5GHz) | CH 42 | 5210 | Mcsac0 | 15.0 | 12.67 | No |
| | CH 58 | 5290 | | 15.0 | 12.61 | No |
| | CH 106 | 5530 | | 15.0 | 13.23 | No |
| | CH 122 | 5610 | | 15.0 | 13.66 | No |
| | CH 138 | 5690 | | 15.0 | 13.57 | No |
| | CH 155 | 5775 | | 15.0 | 13.03 | No |

Table 42: Conducted power measurement results of WiFi 5G(Full Power).

| Mode | Channel | Frequency (MHz) | Data Rate (Mbps) | Tune-up | Average Power (dBm) | SAR Test (Yes/No) |
|---|---|---|---|---|---|---|
| 802.11a | CH 36 | 5180 | 6Mbps | 7.0 | 5.22 | No |
| | CH 40 | 5200 | | 7.0 | 5.47 | No |
| | CH 44 | 5220 | | 7.0 | 5.68 | No |
| | CH 48 | 5240 | | 7.0 | 5.98 | No |
| | CH 52 | 5260 | | 7.0 | 4.78 | No |
| | CH 56 | 5280 | | 7.0 | 5.10 | No |
| | CH 60 | 5300 | | 7.0 | 5.41 | No |
| | CH 64 | 5320 | | 7.0 | 5.69 | No |
| | CH 100 | 5500 | | 6.0 | 5.51 | No |
| | CH 104 | 5520 | | 6.0 | 5.60 | No |
| | CH 108 | 5540 | | 6.0 | 5.68 | No |
| | CH 112 | 5560 | | 6.0 | 5.84 | No |
| | CH 116 | 5580 | | 6.0 | 4.85 | No |
| | CH 120 | 5600 | | 6.0 | 5.17 | No |
| | CH 124 | 5620 | | 6.0 | 5.49 | No |
| | CH 128 | 5640 | | 6.0 | 5.73 | No |
| | CH 132 | 5660 | | 6.0 | 4.72 | No |
| | CH 136 | 5680 | | 6.0 | 5.07 | No |
| | CH 140 | 5700 | | 6.0 | 5.52 | No |
| | CH 144 | 5720 | | 6.0 | 5.86 | No |
| | CH 149 | 5745 | | 6.0 | 4.70 | No |
| | CH 153 | 5765 | | 6.0 | 5.09 | No |
| | CH 157 | 5785 | | 6.0 | 5.49 | No |
| | CH 161 | 5805 | | 6.0 | 5.91 | No |
| | CH 165 | 5825 | | 6.0 | 6.12 | No |

| Mode | Channel | Frequency (MHz) | Data Rate (Mbps) | Tune-up | Average Power (dBm) | SAR Test (Yes/No) |
|---|---|---|---|---|---|---|
| 802.11n 20M(5GHz) | CH 36 | 5180 | MCS0 | 7.0 | 4.33 | No |
| | CH 40 | 5200 | | 7.0 | 4.38 | No |
| | CH 44 | 5220 | | 7.0 | 4.62 | No |
| | CH 48 | 5240 | | 7.0 | 4.91 | No |
| | CH 52 | 5260 | | 7.0 | 3.98 | No |
| | CH 56 | 5280 | | 7.0 | 4.12 | No |
| | CH 60 | 5300 | | 7.0 | 4.45 | No |
| | CH 64 | 5320 | | 7.0 | 4.72 | No |
| | CH 100 | 5500 | | 6.0 | 4.10 | No |
| | CH 104 | 5520 | | 6.0 | 4.11 | No |
| | CH 108 | 5540 | | 6.0 | 4.38 | No |
| | CH 112 | 5560 | | 6.0 | 4.33 | No |
| | CH 116 | 5580 | | 6.0 | 3.43 | No |
| | CH 120 | 5600 | | 6.0 | 3.65 | No |
| | CH 124 | 5620 | | 6.0 | 4.06 | No |
| | CH 128 | 5640 | | 6.0 | 4.22 | No |
| | CH 132 | 5660 | | 6.0 | 3.41 | No |
| | CH 136 | 5680 | | 6.0 | 3.60 | No |
| | CH 140 | 5700 | | 6.0 | 4.16 | No |
| | CH 144 | 5720 | | 6.0 | 4.46 | No |
| | CH 149 | 5745 | | 6.0 | 3.38 | No |
| | CH 153 | 5765 | | 6.0 | 3.74 | No |
| | CH 157 | 5785 | | 6.0 | 4.14 | No |
| | CH 161 | 5805 | | 6.0 | 4.56 | No |
| | CH 165 | 5825 | | 6.0 | 5.05 | No |

| Mode | Channel | Frequency (MHz) | Data Rate (Mbps) | Tune-up | Average Power (dBm) | SAR Test (Yes/No) |
|---|---|---|---|---|---|---|
| 802.11n 40M(5GHz) | CH 38 | 5190 | MCS0 | 7.0 | 4.20 | No |
| | CH 46 | 5230 | | 7.0 | 4.71 | No |
| | CH 54 | 5270 | | 7.0 | 3.93 | No |
| | CH 62 | 5310 | | 7.0 | 4.55 | No |
| | CH 102 | 5510 | | 6.0 | 3.79 | No |
| | CH 110 | 5550 | | 6.0 | 3.95 | No |
| | CH 118 | 5590 | | 6.0 | 4.04 | No |
| | CH 126 | 5630 | | 6.0 | 4.61 | No |
| | CH 134 | 5670 | | 6.0 | 4.05 | No |
| | CH 142 | 5710 | | 6.0 | 5.09 | No |
| | CH 151 | 5755 | | 6.0 | 4.03 | No |
| | CH 159 | 5795 | | 6.0 | 4.10 | No |
| Mode | Channel | Frequency (MHz) | Data Rate (Mbps) | Tune-up | Average Power (dBm) | SAR Test (Yes/No) |
| 802.11ac 80M (5GHz) | CH 36 | 5180 | Mcsac0 | 7.0 | 4.19 | No |
| | CH 40 | 5200 | | 7.0 | 5.26 | No |
| | CH 44 | 5220 | | 7.0 | 4.52 | No |
| | CH 48 | 5240 | | 7.0 | 5.83 | No |
| | CH 52 | 5260 | | 7.0 | 4.74 | No |
| | CH 56 | 5280 | | 7.0 | 5.08 | No |
| | CH 60 | 5300 | | 7.0 | 5.39 | No |
| | CH 64 | 5320 | | 7.0 | 5.67 | No |
| | CH 100 | 5500 | | 6.0 | 4.79 | No |
| | CH 104 | 5520 | | 6.0 | 4.76 | No |
| | CH 108 | 5540 | | 6.0 | 4.88 | No |
| | CH 112 | 5560 | | 6.0 | 5.02 | No |
| | CH 116 | 5580 | | 6.0 | 4.19 | No |
| | CH 120 | 5600 | | 6.0 | 4.49 | No |
| | CH 124 | 5620 | | 6.0 | 4.78 | No |
| | CH 128 | 5640 | | 6.0 | 5.08 | No |
| | CH 132 | 5660 | | 6.0 | 4.32 | No |
| | CH 136 | 5680 | | 6.0 | 4.69 | No |
| | CH 140 | 5700 | | 6.0 | 5.12 | No |
| | CH 144 | 5720 | | 6.0 | 5.52 | No |
| | CH 149 | 5745 | | 6.0 | 3.29 | No |
| | CH 153 | 5765 | | 6.0 | 3.67 | No |
| | CH 157 | 5785 | | 6.0 | 4.09 | No |
| | CH 161 | 5805 | | 6.0 | 4.56 | No |
| | CH 165 | 5825 | | 6.0 | 5.27 | No |

| Mode | Channel | Frequency (MHz) | Data Rate (Mbps) | Tune-up | Average Power (dBm) | SAR Test (Yes/No) |
|---|---|---|---|---|---|---|
| 802.11ac 40M (5GHz) | CH 38 | 5190 | Mcsac0 | 7.0 | 5.01 | No |
| | CH 46 | 5230 | | 7.0 | 5.51 | No |
| | CH 54 | 5270 | | 7.0 | 4.75 | No |
| | CH 62 | 5310 | | 7.0 | 5.38 | No |
| | CH 102 | 5510 | | 6.0 | 5.14 | No |
| | CH 110 | 5550 | | 6.0 | 5.26 | No |
| | CH 118 | 5590 | | 6.0 | 4.68 | No |
| | CH 126 | 5630 | | 6.0 | 5.22 | No |
| | CH 134 | 5670 | | 6.0 | 4.26 | No |
| | CH 142 | 5710 | | 6.0 | 5.02 | No |
| | CH 151 | 5755 | | 6.0 | 4.13 | No |
| | CH 159 | 5795 | | 6.0 | 5.14 | No |
| Mode | Channel | Frequency (MHz) | Data Rate (Mbps) | Tune-up | Average Power (dBm) | SAR Test (Yes/No) |
| 802.11ac 80M (5GHz) | CH 42 | 5210 | Mcsac0 | 7.0 | 5.15 | No |
| | CH 58 | 5290 | | 7.0 | **5.38** | Yes |
| | CH 106 | 5530 | | 6.0 | 5.18 | No |
| | CH 122 | 5610 | | 6.0 | **5.71** | Yes |
| | CH 138 | 5690 | | 6.0 | 5.15 | No |
| | CH 155 | 5775 | | 6.0 | **5.43** | Yes |

Table 43: Conducted power measurement results of WiFi 5G(Sensor On).

Note: The Average conducted power of WiFi is measured with RMS detector.

### 7.1.16 Conducted power measurements of BT

The output power of BT antenna is as following:

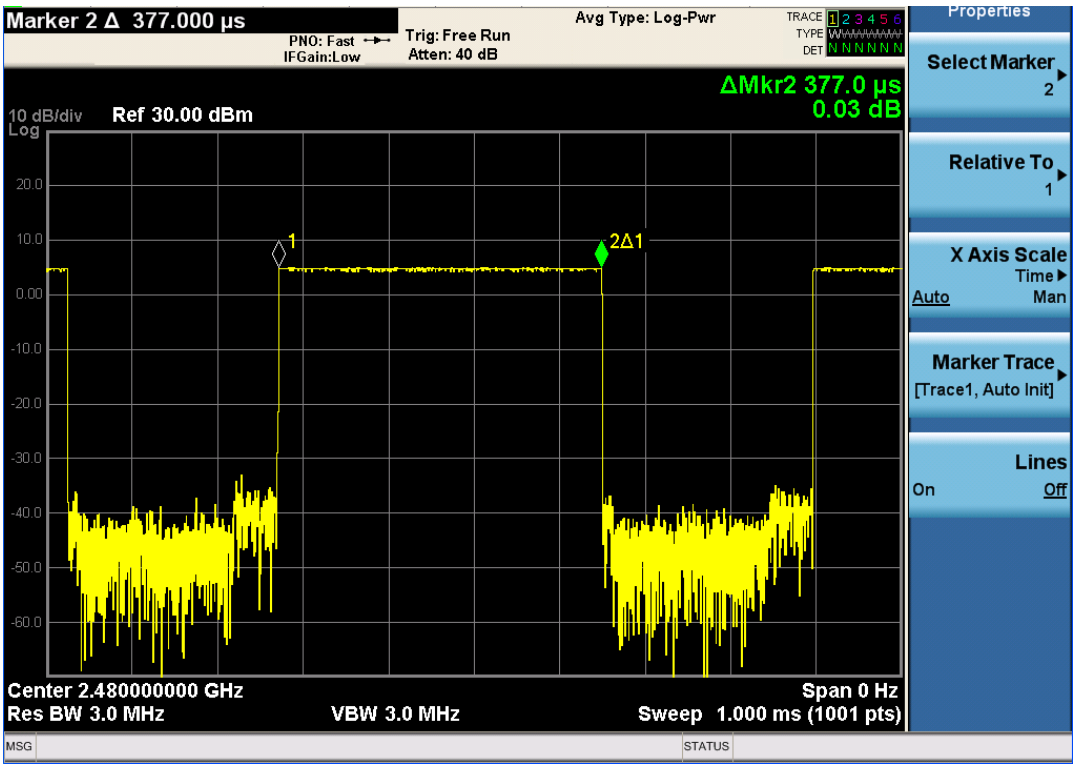
| BT 2450 | Tune-up | Average Conducted Power (dBm) | | |
|---|---|---|---|---|
| | | 0CH | 39CH | 78CH |
| DH5 | 9.5 | 6.98 | 8.28 | 6.30 |
| 2DH5 | 9.5 | 6.97 | 8.26 | 6.27 |
| 3DH5 | 9.5 | 6.96 | 8.25 | 6.27 |

| BT 2450 | Tune-up | Average Conducted Power (dBm) | | |
|---|---|---|---|---|
| | | 0CH | 19CH | 39CH |
| BLE | **9.5** | **8.04** | **9.40** | **7.98** |

Table 44: Conducted power measurement results of BT.

Note:

1) The conducted power of BT is measured with RMS detector.
2) The bolded mode was selected for SAR testing.



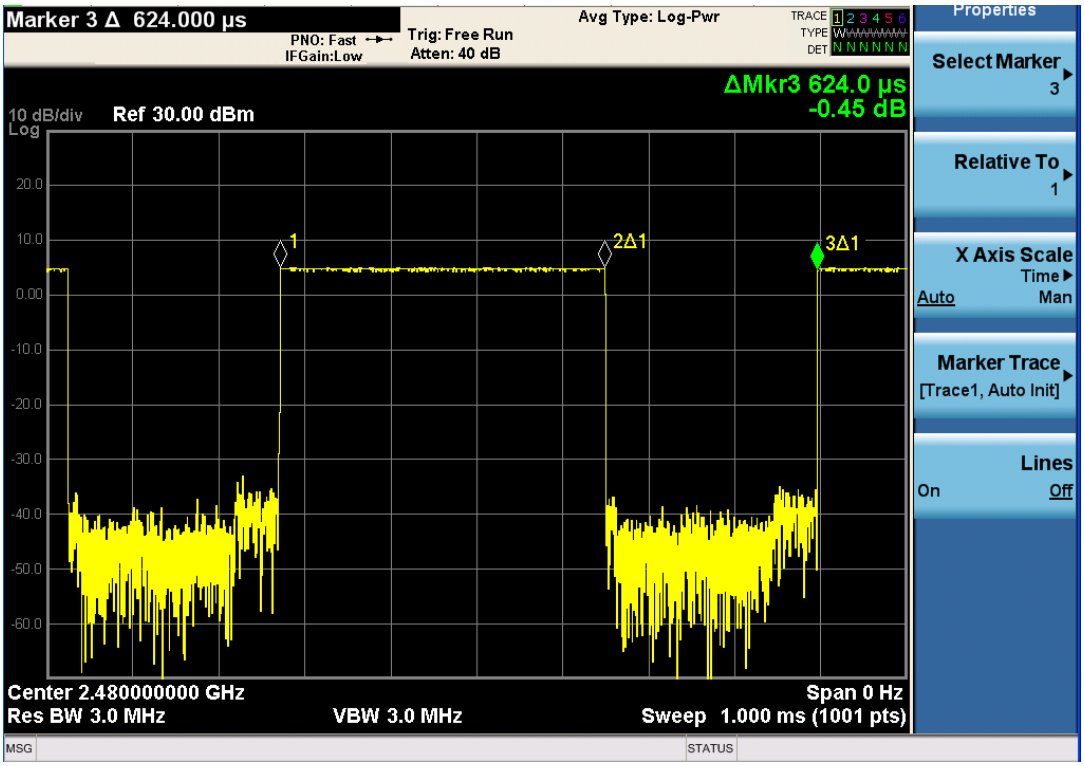



Figure: Bluetooth Transmission Plot

So the bluetooth duty cycle is calculated as below:

$$Duty\ \ Cycle = \frac{Pulse\ \ Width}{Period} * 100\% = \frac{377}{624} * 100\% = 60.42\%$$

## 7.2 SAR measurement Results

**General Notes:**

1) Per KDB447498 D01, all SAR measurement results are scaled to the maximum tune-up tolerance limit to demonstrate SAR compliance.

2) Per KDB447498 D01, testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:

● ≤ 0.8W/kg for 1-g or 2.0W/kg for 10-g respectively, when the transmission band is ≤ 100MHz.

● ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz.

● ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz.

When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel must be used.

3) Per KDB865664 D01,for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/Kg; if the deviation among the repeated measurement is ≤20%, and the measured SAR <1.45W/Kg, only one repeated measurement is required.

4) Per KDB 447498D01, body-worn accessories that do not contain metallic or conductive components is tested according to worst-case exposure configurations, typically according to the smallest test separation distance required for the group of body-worn accessories with similar operating and exposure characteristics.

5) Per KDB865664 D02, SAR plot is only required for the highest measured SAR in each exposure configuration, wireless mode and frequency band combination; Plots are also required when the measured SAR is > 1.5 W/kg, or > 7.0 W/kg for occupational exposure. The published RF exposure KDB procedures may require additional plots; for example, to support SAR to peak location separation ratio test exclusion and/or volume scan post-processing(Refer to appendix B for details).

**GSM Notes:**

1) Per KDB941225 D01, SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.

**UMTS Notes:**

1) Per KDB941225 D01, When the maximum output power and tune-up tolerance specified for production units in a Second mode is ≤ ¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of Second to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the Second mode.

**LTE Notes:**

1) The LTE test configurations are determined according to KDB941225 D05 SAR for LTE Devices.The general test procedures used for SAR testing can be found in Section 6.5.

2) A-MPR was disabled for all SAR test by setting NS_01 on the base station simulator.SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames(maximum TTI)

3) According to KDB 941225 D05 SAR for LTE Devices, for Time-Division Duplex (TDD) systems, SAR is tested using a fixed periodic duty factor according to the highest transmission duty factor (63.33%) implemented for the device and supported by the defined 3GPP LTE TDD configurations.

**WiFi Notes:**

Per KDB248227D01:

1) When reported SAR for the initial test position is ≤ 0.4W/kg, no additional testing for the remaining test position is required. Otherwise, SAR is evaluated at the subsequent highest peak SAR position until the reported SAR result is ≤ 0.8W/kg or all test position are measured. For all positions/configurations tested using the initial test position and subsequent test positions, when the *reported* SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the *reported* SAR is ≤ 1.2 W/kg or all required channels are tested..

2) When the DSSS *reported* SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.

3) When the highest *reported* SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is required for 2.4 GHz 802.11g/n OFDM configurations

4) The highest SAR measured for the initial test position or initial test configuration should be used to determine SAR test exclusion according to the sum of 1-g SAR and SAR peak to location ratio provisions in KDB 447498. In addition, a test lab may also choose to perform standalone SAR measurements for test positions and 802.11 configurations that are not required by the initial test position or initial test configuration procedures and apply the results to determine simultaneous transmission SAR test exclusion, according to sum of 1-g and SAR peak to location ratio requirements to reduce the number of simultaneous transmission SAR measurements.

**BT Notes:**

1) Per KDB 447498D01, BT SAR test can be excluded. But for certain situations where the estimated SAR of BT is overly conservative for simultaneous transmission SAR test exclusion, the test lab may still choose to perform standalone SAR measurements for certain positions, then use the measured reported SAR to determine simultaneous transmission SAR test exclusion in this report.
2) The reported SAR is scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

### 7.2.1 SAR measurement Result of GSM850

| Test Position of Body | Dist. | Test Channel /Freq.(MHz) | Test Mode | Measured SAR(W/kg) | | Power Drift (dB) | Conducted Power (dBm) | Tune-up Power (dBm) | Reported 1-g SAR (W/kg) | Accessory Information | SAR Plot. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1-g | 10-g | | | | | | |
| Back Side | 0mm | 190/836.6 | GPRS 2TS | 0.269 | 0.141 | 0.09 | 22.26 | 23.00 | 0.319 | Battery 1# | / |
| Right Side | 0mm | 190/836.6 | GPRS 2TS | 0.217 | 0.117 | -0.08 | 31.20 | 32.00 | 0.261 | Battery 1# | / |
| Top Side | 0mm | 190/836.6 | GPRS 2TS | 0.394 | 0.179 | -0.07 | 22.26 | 23.00 | 0.467 | Battery 1# | / |
| Top Side | 0mm | 190/836.6 | GPRS 2TS | **0.404** | 0.179 | -0.06 | 22.26 | 23.00 | **0.479** | Battery 2# | Yes |
| Top Side | 0mm | 190/836.6 | GPRS 2TS | 0.392 | 0.174 | -0.13 | 22.26 | 23.00 | 0.465 | Battery 3# | / |
| Additional SAR test with Sensor off | | | | | | | | | | | |
| Top Side | 16mm | 190/836.6 | GPRS 2TS | 0.261 | 0.173 | -0.04 | 31.20 | 32.00 | 0.314 | Battery 2# | / |
| Back Side | 11mm | 190/836.6 | GPRS 2TS | 0.303 | 0.192 | 0.03 | 31.20 | 32.00 | 0.364 | Battery 2# | / |

Table 45: Body SAR test results of GSM850

### 7.2.2 SAR measurement Result of GSM1900

| Test Position of Body | Dist. | Test Channel /Freq.(MHz) | Test Mode | Measured SAR(W/kg) | | Power Drift (dB) | Conducted Power (dBm) | Tune-up Power (dBm) | Reported 1-g SAR (W/kg) | Accessory Information | SAR Plot. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1-g | 10-g | | | | | | |
| Back Side | 0mm | 661/1880 | GPRS 2TS | 0.290 | 0.137 | 0.00 | 18.24 | 19.00 | 0.345 | Battery 1# | / |
| Top Side | 0mm | 661/1880 | GPRS 2TS | **0.772** | 0.307 | -0.05 | 18.24 | 19.00 | **0.920** | Battery 1# | Yes |
| Top Side | 0mm | 512/1850.2 | GPRS 2TS | 0.709 | 0.281 | -0.16 | 18.32 | 19.00 | 0.829 | Battery 1# | / |
| Top Side | 0mm | 810/1909.8 | GPRS 2TS | 0.689 | 0.270 | -0.18 | 18.22 | 19.00 | 0.825 | Battery 1# | / |
| Top Side | 0mm | 661/1880 | GPRS 2TS | 0.738 | 0.303 | -0.11 | 18.24 | 19.00 | 0.879 | Battery 2# | / |
| Top Side | 0mm | 661/1880 | GPRS 2TS | 0.754 | 0.309 | 0.19 | 18.24 | 19.00 | 0.898 | Battery 3# | / |
| Top Side | 0mm | 661/1880 | GPRS 2TS | 0.528 | 0.234 | 0.00 | 18.24 | 19.00 | 0.629 | with Protected cover | / |
| Additional SAR test with Sensor off | | | | | | | | | | | |
| Top Side | 17mm | 661/1880 | GPRS 2TS | 0.303 | 0.180 | 0.11 | 28.04 | 29.00 | 0.378 | Battery 1# | / |
| Back Side | 14mm | 661/1880 | GPRS 2TS | 0.281 | 0.160 | 0.16 | 28.04 | 29.00 | 0.351 | Battery 1# | / |

Table 46: Body SAR test results of GSM1900

### 7.2.3 SAR measurement Result of UMTS Band 5

| Test Position of Body | Dist. | Test Channel /Freq.(MHz) | Test Mode | Measured SAR(W/kg) | | Power Drift (dB) | Conducted Power (dBm) | Tune-up Power (dBm) | Reported 1-g SAR (W/kg) | Accessory Information | SAR Plot. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1-g | 10-g | | | Power(dBm) | Result(W/kg) | | |
| Back Side | 0mm | 4182/836.4 | RMC | 0.277 | 0.147 | 0.09 | 18.32 | 19.20 | 0.339 | Battery 1# | / |
| Right Side | 0mm | 4182/836.4 | RMC | 0.213 | 0.115 | -0.08 | 24.36 | 25.20 | 0.258 | Battery 1# | / |
| Top Side | 0mm | 4182/836.4 | RMC | 0.427 | 0.201 | -0.06 | 18.32 | 19.20 | 0.523 | Battery 1# | / |
| Top Side | 0mm | 4182/836.4 | RMC | 0.448 | 0.209 | 0.00 | 18.32 | 19.20 | 0.549 | Battery 2# | / |
| Top Side | 0mm | 4182/836.4 | RMC | **0.465** | 0.209 | -0.08 | 18.32 | 19.20 | **0.569** | Battery 3# | Yes |
| Additional SAR test with Sensor off | | | | | | | | | | | |
| Top Side | 16mm | 4182/836.4 | RMC | 0.153 | 0.098 | -0.01 | 24.36 | 25.20 | 0.186 | Battery 3# | / |
| Back Side | 11mm | 4182/836.4 | RMC | 0.178 | 0.117 | 0.07 | 24.36 | 25.20 | 0.216 | Battery 3# | / |

Table 47: Body SAR test results of UMTS Band 5

### 7.2.4 SAR measurement Result of UMTS Band 2

| Test Position of Body | Dist. | Test Channel /Freq.(MHz) | Test Mode | Measured SAR(W/kg) | | Power Drift (dB) | Conducted Power (dBm) | Tune-up Power (dBm) | Reported 1-g SAR (W/kg) | Accessory Information | SAR Plot. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1-g | 10-g | | | | | | |
| Back Side | 0mm | 9400/1880 | RMC | 0.537 | 0.246 | -0.11 | 13.25 | 14.20 | 0.668 | Battery 1# | / |
| Top Side | 0mm | 9400/1880 | RMC | 0.317 | 0.134 | 0.07 | 13.25 | 14.20 | 0.395 | Battery 1# | / |
| Back Side | 0mm | 9400/1880 | RMC | 0.519 | 0.235 | -0.06 | 13.25 | 14.20 | 0.646 | Battery 2# | / |
| Back Side | 0mm | 9400/1880 | RMC | **0.549** | 0.249 | -0.01 | 13.25 | 14.20 | **0.683** | Battery 3# | Yes |
| Additional SAR test with Sensor off | | | | | | | | | | | |
| Back Side | 14mm | 9400/1880 | RMC | 0.465 | 0.263 | 0.15 | 23.31 | 24.20 | 0.571 | Battery 1# | / |
| Top Side | 17mm | 9400/1880 | RMC | 0.442 | 0.262 | -0.02 | 23.31 | 24.20 | 0.543 | Battery 1# | / |

Table 48: Body SAR test results of UMTS Band 2

### 7.2.5 SAR measurement Result of LTE Band 4

| Test Position of Body | Dist. | Test Channel /Freq.(MHz) | Test Mode | Measured SAR(W/kg) | | Power Drift (dB) | Conducted Power (dBm) | Tune-up Power (dBm) | Reported 1-g SAR (W/kg) | Accessory Information | SAR Plot. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1-g | 10-g | | | | | | |
| Back Side | 0mm | 20300/1745 | 20M QPSK 1RB#0 | 0.364 | 0.171 | -0.16 | 12.75 | 14.00 | 0.485 | Battery 1# | / |
| Top Side | 0mm | 20300/1745 | 20M QPSK 1RB#0 | 0.364 | 0.153 | 0.13 | 12.75 | 14.00 | 0.485 | Battery 1# | / |
| Back Side | 0mm | 20300/1745 | 20M QPSK 50%RB#0 | 0.304 | 0.143 | -0.18 | 11.95 | 13.30 | 0.415 | Battery 1# | / |
| Top Side | 0mm | 20300/1745 | 20M QPSK 50%RB#0 | 0.348 | 0.146 | 0.19 | 11.95 | 13.30 | 0.475 | Battery 1# | / |
| Back Side | 0mm | 20300/1745 | 20M QPSK 1RB#0 | 0.327 | 0.153 | -0.12 | 12.75 | 14.00 | 0.436 | Battery 2# | / |
| Back Side | 0mm | 20300/1745 | 20M QPSK 1RB#0 | **0.386** | 0.179 | 0.15 | 12.75 | 14.00 | **0.515** | Battery 3# | Yes |
| Additional SAR test with Sensor off | | | | | | | | | | | |
| Back Side | 14mm | 20300/1745 | 20M QPSK 1RB#50 | 0.271 | 0.166 | 0.02 | 23.22 | 24.00 | 0.324 | Battery 3# | / |
| Top Side | 17mm | 20300/1745 | 20M QPSK 1RB#50 | 0.186 | 0.115 | 0.04 | 23.22 | 24.00 | 0.223 | Battery 3# | / |
| Back Side | 14mm | 20175/1732.5 | 20M QPSK 50%RB#25 | 0.208 | 0.128 | -0.05 | 22.46 | 23.30 | 0.252 | Battery 3# | / |
| Top Side | 17mm | 20175/1732.5 | 20M QPSK 50%RB#25 | 0.136 | 0.084 | -0.02 | 22.46 | 23.30 | 0.165 | Battery 3# | / |

Table 49: Body SAR test results of LTE Band 4

### 7.2.6 SAR measurement Result of LTE Band 5

| Test Position of Body | Dist. | Test Channel /Freq.(MHz) | Test Mode | Measured SAR(W/kg) | | Power Drift (dB) | Conducted Power (dBm) | Tune-up Power (dBm) | Reported 1-g SAR (W/kg) | Accessory Information | SAR Plot. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1-g | 10-g | | | | | | |
| Back Side | 0mm | 20600/844 | 10M QPSK 1RB#25 | **0.655** | 0.340 | -0.02 | 18.23 | 18.70 | **0.730** | Battery 1# | Yes |
| Top Side | 0mm | 20600/844 | 10M QPSK 1RB#25 | 0.499 | 0.264 | 0.02 | 18.23 | 18.70 | 0.556 | Battery 1# | / |
| Right Side | 0mm | 20600/844 | 10M QPSK 1RB#25 | 0.330 | 0.179 | 0.04 | 23.75 | 24.70 | 0.411 | Battery 1# | / |
| Back Side | 0mm | 20525/836.5 | 10M QPSK 50%RB#13 | 0.556 | 0.290 | -0.06 | 17.39 | 18.20 | 0.670 | Battery 1# | / |
| Top Side | 0mm | 20525/836.5 | 10M QPSK 50%RB#13 | 0.543 | 0.286 | 0.04 | 17.39 | 18.20 | 0.654 | Battery 1# | / |
| Right Side | 0mm | 20525/836.5 | 10M QPSK 50%RB#13 | 0.263 | 0.143 | 0.09 | 23.11 | 24.20 | 0.338 | Battery 1# | / |
| Back Side | 0mm | 20600/844 | 10M QPSK 1RB#25 | 0.428 | 0.226 | 0.09 | 18.23 | 18.70 | 0.477 | Battery 2# | / |
| Back Side | 0mm | 20600/844 | 10M QPSK 1RB#25 | 0.272 | 0.145 | 0.18 | 18.23 | 18.70 | 0.303 | Battery 3# | / |
| Additional SAR test with Sensor off | | | | | | | | | | | |
| Back Side | 11mm | 20600/844 | 10M QPSK 1RB#25 | 0.398 | 0.252 | 0.04 | 23.75 | 24.70 | 0.495 | Battery 1# | / |
| Top Side | 16mm | 20600/844 | 10M QPSK 1RB#25 | 0.232 | 0.153 | 0.02 | 23.75 | 24.70 | 0.289 | Battery 1# | / |
| Back Side | 11mm | 20525/836.5 | 10M QPSK 50%RB#13 | 0.325 | 0.207 | 0.19 | 23.11 | 24.20 | 0.418 | Battery 1# | / |
| Top Side | 16mm | 20525/836.5 | 10M QPSK 50%RB#13 | 0.211 | 0.140 | 0.03 | 23.11 | 24.20 | 0.271 | Battery 1# | / |

Table 50: Body SAR test results of LTE Band 5

### 7.2.7 SAR measurement Result of LTE Band 7

| Test Position of Body | Dist. | Test Channel /Freq.(MHz) | Test Mode | Measured SAR(W/kg) | | Power Drift (dB) | Conducted Power (dBm) | Tune-up Power (dBm) | Reported 1-g SAR (W/kg) | Accessory Information | SAR Plot. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1-g | 10-g | | | | | | |
| Back Side | 0mm | 21100/2535 | 20M QPSK 1RB#50 | 0.389 | 0.148 | 0.16 | 8.89 | 9.20 | 0.418 | Battery 1# | / |
| Top Side | 0mm | 21100/2535 | 20M QPSK 1RB#50 | 0.192 | 0.071 | 0.14 | 8.89 | 9.20 | 0.206 | Battery 1# | / |
| Back Side | 0mm | 20850/2510 | 20M QPSK 50%RB#0 | 0.283 | 0.108 | 0.18 | 8.18 | 8.50 | 0.305 | Battery 1# | / |
| Top Side | 0mm | 20850/2510 | 20M QPSK 50%RB#0 | 0.192 | 0.071 | 0.11 | 8.18 | 8.50 | 0.207 | Battery 1# | / |
| Back Side | 0mm | 21100/2535 | 20M QPSK 1RB#50 | 0.388 | 0.148 | -0.04 | 8.89 | 9.20 | 0.417 | Battery 2# | / |
| Back Side | 0mm | 21100/2535 | 20M QPSK 1RB#50 | 0.396 | 0.151 | 0.13 | 8.89 | 9.20 | 0.425 | Battery 3# | / |
| Additional SAR test with Sensor off | | | | | | | | | | | |
| Back Side | 14mm | 21350/2560 | 20M QPSK 1RB#50 | 0.511 | 0.268 | -0.07 | 23.23 | 24.20 | 0.639 | Battery 1# | / |
| Top Side | 17mm | 21350/2560 | 20M QPSK 1RB#50 | **0.623** | 0.337 | -0.03 | 23.23 | 24.20 | **0.779** | Battery 1# | Yes |
| Back Side | 14mm | 20850/2510 | 20M QPSK 50%RB#0 | 0.411 | 0.215 | -0.05 | 22.26 | 23.50 | 0.547 | Battery 1# | / |
| Top Side | 17mm | 20850/2510 | 20M QPSK 50%RB#0 | 0.423 | 0.230 | 0.05 | 22.26 | 23.50 | 0.563 | Battery 1# | / |

Table 51: Body SAR test results of LTE Band 7

### 7.2.8 SAR measurement Result of LTE Band 12

| Test Position of Body | Dist. | Test Channel /Freq.(MHz) | Test Mode | Measured SAR(W/kg) | | Power Drift (dB) | Conducted Power (dBm) | Tune-up Power (dBm) | Reported 1-g SAR (W/kg) | Accessory Information | SAR Plot. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1-g | 10-g | | | | | | |
| Back Side | 0mm | 23130/711 | 10M QPSK 1RB#25 | **0.506** | 0.270 | -0.07 | 17.56 | 17.70 | **0.523** | Battery 1# | Yes |
| Top Side | 0mm | 23130/711 | 10M QPSK 1RB#25 | 0.374 | 0.189 | 0.03 | 17.56 | 17.70 | 0.386 | Battery 1# | / |
| Right Side | 0mm | 23095/707.5 | 10M QPSK 1RB#25 | 0.216 | 0.106 | 0.10 | 24.94 | 25.70 | 0.257 | Battery 1# | / |
| Back Side | 0mm | 23130/711 | 10M QPSK 50%RB#13 | 0.358 | 0.191 | 0.13 | 16.18 | 17.10 | 0.442 | Battery 1# | / |
| Top Side | 0mm | 23130/711 | 10M QPSK 50%RB#13 | 0.283 | 0.142 | 0.05 | 16.18 | 17.10 | 0.350 | Battery 1# | / |
| Right Side | 0mm | 23130/711 | 10M QPSK 50%RB#13 | 0.270 | 0.129 | 0.05 | 23.77 | 25.10 | 0.367 | Battery 1# | / |
| Back Side | 0mm | 23130/711 | 10M QPSK 1RB#25 | 0.437 | 0.227 | -0.14 | 17.56 | 17.70 | 0.451 | Battery 2# | / |
| Back Side | 0mm | 23130/711 | 10M QPSK 1RB#25 | 0.385 | 0.207 | 0.05 | 17.56 | 17.70 | 0.398 | Battery 3# | / |
| Additional SAR test with Sensor off | | | | | | | | | | | |
| Back Side | 11mm | 23095/707.5 | 10M QPSK 1RB#25 | 0.243 | 0.153 | 0.17 | 24.94 | 25.70 | 0.289 | Battery 1# | / |
| Top Side | 16mm | 23095/707.5 | 10M QPSK 1RB#25 | 0.103 | 0.066 | 0.00 | 24.94 | 25.70 | 0.123 | Battery 1# | / |
| Back Side | 11mm | 23130/711 | 10M QPSK 50%RB#13 | 0.267 | 0.167 | 0.13 | 23.77 | 25.10 | 0.363 | Battery 1# | / |
| Top Side | 16mm | 23130/711 | 10M QPSK 50%RB#13 | 0.110 | 0.071 | 0.01 | 23.77 | 25.10 | 0.149 | Battery 1# | / |

Table 52: Body SAR test results of LTE Band 12

### 7.2.9 SAR measurement Result of LTE Band 17

| Test Position of Body | Dist. | Test Channel /Freq.(MHz) | Test Mode | Measured SAR(W/kg) | | Power Drift (dB) | Conducted Power (dBm) | Tune-up Power (dBm) | Reported 1-g SAR (W/kg) | Accessory Information | SAR Plot. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1-g | 10-g | | | | | | |
| Back Side | 0mm | 23790/710 | 10M QPSK 1RB#25 | 0.560 | 0.291 | -0.07 | 18.41 | 18.70 | 0.599 | Battery 1# | / |
| Top Side | 0mm | 23790/710 | 10M QPSK 1RB#25 | 0.419 | 0.211 | -0.06 | 18.41 | 18.70 | 0.448 | Battery 1# | / |
| Right Side | 0mm | 23780/709 | 10M QPSK 1RB#25 | 0.364 | 0.173 | 0.07 | 24.93 | 25.70 | 0.435 | Battery 1# | / |
| Back Side | 0mm | 23800/711 | 10M QPSK 50%RB#13 | 0.458 | 0.236 | -0.16 | 17.50 | 18.00 | 0.514 | Battery 1# | / |
| Top Side | 0mm | 23800/711 | 10M QPSK 50%RB#13 | 0.477 | 0.254 | 0.06 | 17.50 | 18.00 | 0.535 | Battery 1# | / |
| Right Side | 0mm | 23780/709 | 10M QPSK 50%RB#13 | 0.363 | 0.173 | 0.06 | 24.16 | 25.00 | 0.440 | Battery 1# | / |
| Back Side | 0mm | 23790/710 | 10M QPSK 1RB#25 | **0.565** | 0.292 | -0.15 | 18.41 | 18.70 | **0.604** | Battery 2# | / |
| Back Side | 0mm | 23790/710 | 10M QPSK 1RB#25 | 0.484 | 0.263 | -0.15 | 18.41 | 18.70 | 0.517 | Battery 3# | / |
| Additional SAR test with Sensor off | | | | | | | | | | | |
| Back Side | 11mm | 23780/709 | 10M QPSK 1RB#25 | 0.289 | 0.182 | 0.20 | 24.93 | 25.70 | 0.345 | Battery 1# | / |
| Top Side | 16mm | 23780/709 | 10M QPSK 1RB#25 | 0.122 | 0.078 | 0.03 | 24.93 | 25.70 | 0.146 | Battery 1# | / |
| Back Side | 11mm | 23780/709 | 10M QPSK 50%RB#13 | 0.134 | 0.093 | 0.06 | 24.16 | 25.00 | 0.163 | Battery 1# | / |
| Top Side | 16mm | 23780/709 | 10M QPSK 50%RB#13 | 0.104 | 0.066 | -0.01 | 24.16 | 25.00 | 0.126 | Battery 1# | / |

Table 53: Body SAR test results of LTE Band 17

### 7.2.10 SAR measurement Result of LTE Band 26

| Test Position of Body | Dist. | Test Channel /Freq.(MHz) | Test Mode | Measured SAR(W/kg) | | Power Drift (dB) | Conducted Power (dBm) | Tune-up Power (dBm) | Reported 1-g SAR (W/kg) | Accessory Information | SAR Plot. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1-g | 10-g | | | | Result(W/kg) | | |
| Back Side | 0mm | 26965/841.5 | 15M QPSK 1RB#38 | **0.596** | 0.316 | 0.19 | 17.31 | 18.00 | **0.699** | Battery 1# | Yes |
| Top Side | 0mm | 26965/841.5 | 15M QPSK 1RB#38 | 0.441 | 0.231 | 0.02 | 17.31 | 18.00 | 0.517 | Battery 1# | / |
| Back Side | 0mm | 26865/831.5 | 15M QPSK 50%RB#18 | 0.507 | 0.268 | -0.08 | 16.73 | 17.30 | 0.578 | Battery 1# | / |
| Top Side | 0mm | 26865/831.5 | 15M QPSK 50%RB#18 | 0.406 | 0.210 | 0.05 | 16.73 | 17.30 | 0.463 | Battery 1# | / |
| Right Side | 0mm | 26865/831.5 | 15M QPSK 1RB#38 | 0.359 | 0.195 | 0.08 | 23.88 | 25.00 | 0.465 | Battery 1# | / |
| Right Side | 0mm | 26965/841.5 | 15M QPSK 50%RB#18 | 0.286 | 0.155 | 0.09 | 23.24 | 24.30 | 0.365 | Battery 1# | / |
| Back Side | 0mm | 26965/841.5 | 15M QPSK 1RB#38 | 0.435 | 0.288 | 0.14 | 17.31 | 18.00 | 0.510 | Battery 2# | / |
| Back Side | 0mm | 26965/841.5 | 15M QPSK 1RB#38 | 0.277 | 0.145 | 0.16 | 17.31 | 18.00 | 0.325 | Battery 3# | / |
| Additional SAR test with Sensor off | | | | | | | | | | | |
| Back Side | 11mm | 26865/831.5 | 15M QPSK 1RB#38 | 0.412 | 0.262 | 0.08 | 23.88 | 25.00 | 0.533 | Battery 1# | / |
| Top Side | 16mm | 26865/831.5 | 15M QPSK 1RB#38 | 0.271 | 0.181 | 0.00 | 23.88 | 25.00 | 0.351 | Battery 1# | / |
| Back Side | 11mm | 26965/841.7 | 15M QPSK 50%RB#18 | 0.354 | 0.225 | 0.20 | 23.24 | 24.30 | 0.452 | Battery 1# | / |
| Top Side | 16mm | 26965/841.7 | 15M QPSK 50%RB#18 | 0.213 | 0.141 | 0.03 | 23.24 | 24.30 | 0.272 | Battery 1# | / |

Table 54: Body SAR test results of LTE Band 26

### 7.2.11 SAR measurement Result of LTE Band 38

| Test Position of Body | Dist. | Test Channel /Freq.(MHz) | Test Mode | Measured SAR(W/kg) | | Power Drift (dB) | Conducted Power (dBm) | Tune-up Power (dBm) | Reported 1-g SAR (W/kg) | Accessory Information | SAR Plot. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1-g | 10-g | | | | | | |
| Back Side | 0mm | 37850/2580 | 20M QPSK 1RB#50 | 0.369 | 0.137 | 0.14 | 11.62 | 12.00 | 0.403 | Battery 1# | / |
| Top Side | 0mm | 37850/2580 | 20M QPSK 1RB#50 | 0.142 | 0.051 | -0.13 | 11.62 | 12.00 | 0.155 | Battery 1# | / |
| Back Side | 0mm | 37850/2580 | 20M QPSK 50%RB#50 | 0.284 | 0.105 | 0.04 | 10.55 | 11.00 | 0.315 | Battery 1# | / |
| Top Side | 0mm | 37850/2580 | 20M QPSK 50%RB#50 | 0.104 | 0.038 | 0.19 | 10.55 | 11.00 | 0.115 | Battery 1# | / |
| Back Side | 0mm | 37850/2580 | 20M QPSK 1RB#50 | **0.390** | 0.144 | 0.08 | 11.62 | 12.00 | **0.426** | Battery 2# | Yes |
| Back Side | 0mm | 37850/2580 | 20M QPSK 1RB#50 | 0.380 | 0.140 | 0.16 | 11.62 | 12.00 | 0.415 | Battery 3# | / |
| Additional SAR test with Sensor off | | | | | | | | | | | |
| Back Side | 14mm | 37850/2580 | 20M QPSK 1RB#50 | 0.297 | 0.151 | -0.14 | 23.49 | 24.00 | 0.334 | Battery 2# | / |
| Top Side | 17mm | 37850/2580 | 20M QPSK 1RB#50 | 0.367 | 0.197 | -0.03 | 23.49 | 24.00 | 0.413 | Battery 2# | / |
| Back Side | 14mm | 37850/2580 | 20M QPSK 50%RB#50 | 0.233 | 0.113 | -0.18 | 22.40 | 23.00 | 0.268 | Battery 2# | / |
| Top Side | 17mm | 37850/2580 | 20M QPSK 50%RB#50 | 0.292 | 0.155 | 0.03 | 22.40 | 23.00 | 0.335 | Battery 2# | / |

Table 55: Body SAR test results of LTE Band 38

### 7.2.12 SAR measurement Result of LTE Band 41

| Test Position of Body | Dist. | Test Channel /Freq.(MHz) | Test Mode | Measured SAR(W/kg) | | Power Drift (dB) | Conducted Power (dBm) | Tune-up Power (dBm) | Reported 1-g SAR (W/kg) | Accessory Information | SAR Plot. |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1-g | 10-g | | | | | | |
| Back Side | 0mm | 40840/2615 | 20M QPSK 1RB#99 | 0.270 | 0.104 | 0.00 | 10.70 | 11.00 | 0.289 | Battery 1# | / |
| Top Side | 0mm | 40840/2615 | 20M QPSK 1RB#99 | 0.240 | 0.079 | -0.03 | 10.70 | 11.00 | 0.257 | Battery 1# | / |
| Back Side | 0mm | 40540/2585 | 20M QPSK 50%RB#0 | 0.201 | 0.078 | 0.00 | 9.78 | 10.10 | 0.216 | Battery 1# | / |
| Top Side | 0mm | 40540/2585 | 20M QPSK 50%RB#0 | 0.122 | 0.040 | -0.03 | 9.78 | 10.10 | 0.131 | Battery 1# | / |
| Back Side | 0mm | 40840/2615 | 20M QPSK 1RB#99 | 0.285 | 0.110 | 0.09 | 10.70 | 11.00 | 0.305 | Battery 2# | / |
| Back Side | 0mm | 40840/2615 | 20M QPSK 1RB#99 | 0.299 | 0.114 | 0.00 | 10.70 | 11.00 | 0.320 | Battery 3# | / |
| Additional SAR test with Sensor off | | | | | | | | | | | |
| Back Side | 14mm | 41140/2645 | 20M QPSK 1RB#0 | 0.347 | 0.170 | 0.07 | 23.22 | 24.00 | 0.415 | Battery 1# | / |
| Top Side | 17mm | 41140/2645 | 20M QPSK 1RB#0 | **0.522** | 0.271 | -0.04 | 23.22 | 24.00 | **0.625** | Battery 1# | Yes |
| Back Side | 14mm | 40540/2585 | 20M QPSK 50%RB#0 | 0.271 | 0.135 | 0.01 | 22.53 | 23.10 | 0.309 | Battery 1# | / |
| Top Side | 17mm | 40540/2585 | 20M QPSK 50%RB#0 | 0.220 | 0.048 | 0.00 | 22.53 | 23.10 | 0.251 | Battery 1# | / |

Table 56: Body SAR test results of LTE Band 41

### 7.2.13 SAR measurement Result of WiFi 2.4G

| Test Position of Body | Dist. | Test Channel /Freq.(MHz) | Test Mode | Area Scan 1-g SAR（W/kg） | Measured SAR(W/kg) | | Power Drift (dB) | Actual duty factor | Scaled 1-g SAR (W/kg) | Conducted Power (dBm) | Tune-up Power (dBm) | Reported 1-g SAR (W/kg) | Accessory Information | SAR Plot. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1-g | 10-g | | | | | | | | |
| Back Side | 0mm | 6/2437 | 802.11 b | 0.174 | 0.184 | 0.080 | 0.00 | 98% | 0.188 | 9.48 | 10.00 | 0.212 | Battery 1# | / |
| Top Side | 0mm | 6/2437 | 802.11 b | 0.249 | 0.240 | 0.086 | -0.05 | 98% | 0.245 | 9.48 | 10.00 | 0.276 | Battery 1# | / |
| Top Side | 0mm | 6/2437 | 802.11 b | 0.170 | 0.239 | 0.085 | -0.07 | 98% | 0.244 | 9.48 | 10.00 | 0.275 | Battery 2# | / |
| Top Side | 0mm | 6/2437 | 802.11 b | 0.189 | **0.244** | 0.085 | -0.10 | 98% | 0.249 | 9.48 | 10.00 | **0.281** | Battery 3# | Yes |
| Additional SAR test with Sensor off | | | | | | | | | | | | | | |
| Back Side | 14mm | 6/2437 | 802.11b | 0.150 | 0.153 | 0.078 | -0.03 | 98% | 0.156 | 16.81 | 18.00 | 0.205 | Battery 3# | / |
| Top Side | 17mm | 6/2437 | 802.11b | 0.182 | 0.180 | 0.093 | 0.14 | 98% | 0.184 | 16.81 | 18.00 | 0.242 | Battery 3# | / |

Table 57: Body SAR test results of WiFi 2.4G

Adjusted SAR (Full power level):

| WiFi 2.4G | Tune-up Limit（dBm） | Tune-up Limit（mW） | Hightest Reported SAR(W/kg) | Adjusted SAR (W/kg) | SAR test |
|---|---|---|---|---|---|
| 802.11b | 18.00 | 63.10 | 0.242 | / | Yes |
| 802.11g | 13.00 | 19.95 | / | 0.077 | No |
| 802.11n 20M | 12.00 | 15.85 | / | 0.061 | No |
| 802.11n 40M | 10.00 | 10.00 | / | 0.038 | No |

Adjusted SAR (Sensor on,reduced power level):

| WiFi 2.4G | Tune-up Limit（dBm） | Tune-up Limit（mW） | Hightest Reported SAR(W/kg) | Adjusted SAR (W/kg) | SAR test |
|---|---|---|---|---|---|
| 802.11b | 10.00 | 10.00 | 0.281 | / | Yes |
| 802.11g | 10.00 | 10.00 | / | 0.281 | No |
| 802.11n 20M | 10.00 | 10.00 | / | 0.281 | No |
| 802.11n 40M | 10.00 | 10.00 | / | 0.281 | No |

Note: Per KDB248227D01, for Body SAR test of WiFi 2.4G, SAR is measured for 2.4 GHz 802.11b DSSS using the initial test position procedure.The highest reported SAR for DSSS is adjusted by the ratio of OFDM 802.11g/n to DSSS specified maximum output power and the adjusted SAR is < 1.2 W/kg, so SAR for 802.11g/n is not required.

## 7.2.14 SAR measurement Result of WiFi 5G

| Test Position of Body | Dist. | Test Channel /Freq.(MHz) | Test Mode | Area Scan 1-g SAR（W/kg） | Measured SAR(W/kg) | | Power Drift (dB) | Actual duty factor | Scaled 1-g SAR (W/kg) | Conducted Power (dBm) | Tune-up Power (dBm) | Reported 1-g SAR (W/kg) | Accessory Information | SAR Plot. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1-g | 10-g | | | | | | | | |
| Test data of U-NII-1&U-NII-2A band | | | | | | | | | | | | | | |
| Back Side | 0mm | 58/5290 | 802.11ac(80M) | 0.141 | / | / | 0.00 | 98% | / | 5.38 | 7.00 | / | Battery 1# | / |
| Top Side | 0mm | 58/5290 | 802.11ac(80M) | 0.220 | **0.287** | 0.064 | -0.07 | 98% | **0.293** | 5.38 | 7.00 | **0.425** | Battery 1# | Yes |
| Top Side | 0mm | 58/5290 | 802.11ac(80M) | 0.206 | 0.249 | 0.056 | 0.00 | 98% | 0.254 | 5.38 | 7.00 | 0.369 | Battery 2# | / |
| Top Side | 0mm | 58/5290 | 802.11ac(80M) | 0.222 | 0.249 | 0.054 | 0.00 | 98% | 0.254 | 5.38 | 7.00 | 0.369 | Battery 3# | / |
| Additional SAR test with Sensor off | | | | | | | | | | | | | | |
| Back Side | 14mm | 60/5300 | 802.11a | 0.091 | 0.087 | 0.033 | 0.03 | 99% | 0.088 | 17.80 | 19.00 | 0.116 | Battery 1# | / |
| Top Side | 17mm | 60/5300 | 802.11a | 0.144 | 0.121 | 0.049 | -0.02 | 99% | 0.122 | 17.80 | 19.00 | 0.161 | Battery 1# | / |
| Test data of U-NII-2C band | | | | | | | | | | | | | | |
| Back Side | 0mm | 122/5610 | 802.11ac(80M) | 0.068 | 0.065 | 0.019 | 0.00 | 98% | 0.066 | 5.71 | 6.00 | 0.070 | Battery 1# | / |
| Top Side | 0mm | 122/5610 | 802.11ac(80M) | 0.190 | 0.201 | 0.042 | -0.02 | 98% | 0.205 | 5.71 | 6.00 | 0.219 | Battery 1# | / |
| Top Side | 0mm | 122/5610 | 802.11ac(80M) | 0.179 | 0.197 | 0.041 | 0.01 | 98% | 0.201 | 5.71 | 6.00 | 0.215 | Battery 2# | / |
| Top Side | 0mm | 122/5610 | 802.11ac(80M) | 0.152 | 0.198 | 0.041 | 0.06 | 98% | 0.202 | 5.71 | 6.00 | 0.216 | Battery 3# | / |
| Additional SAR test with Sensor off | | | | | | | | | | | | | | |
| Back Side | 14mm | 144/5720 | 802.11a | 0.045 | 0.044 | 0.017 | -0.08 | 99% | 0.045 | 18.01 | 19.00 | 0.056 | Battery 1# | / |
| Top Side | 17mm | 144/5720 | 802.11a | 0.119 | 0.115 | 0.044 | -0.05 | 99% | 0.116 | 18.01 | 19.00 | 0.146 | Battery 1# | / |
| Test data of U-NII-3 band | | | | | | | | | | | | | | |
| Back Side | 0mm | 155/5775 | 802.11ac(80M) | 0.029 | 0.023 | 0.009 | 0.00 | 98% | 0.023 | 5.43 | 6.00 | 0.026 | Battery 1# | / |
| Top Side | 0mm | 155/5775 | 802.11ac(80M) | 0.148 | 0.172 | 0.033 | 0.01 | 98% | 0.176 | 5.43 | 6.00 | 0.200 | Battery 1# | / |
| Top Side | 0mm | 155/5775 | 802.11ac(80M) | 0.152 | 0.174 | 0.034 | 0.00 | 98% | 0.178 | 5.43 | 6.00 | 0.202 | Battery 2# | / |
| Top Side | 0mm | 155/5775 | 802.11ac(80M) | 0.137 | 0.179 | 0.035 | 0.10 | 98% | 0.183 | 5.43 | 6.00 | 0.208 | Battery 3# | / |
| Additional SAR test with Sensor off | | | | | | | | | | | | | | |
| Back Side | 14mm | 165/5825 | 802.11a | 0.029 | 0.023 | 0.087 | -0.02 | 99% | 0.023 | 18.06 | 19.00 | 0.028 | Battery 1# | / |
| Top Side | 17mm | 165/5825 | 802.11a | 0.148 | 0.147 | 0.057 | 0.04 | 99% | 0.148 | 18.06 | 19.00 | 0.184 | Battery 1# | / |

Table 58: Body SAR test results of WiFi 5G

Adjusted SAR (Full power level ):

| WiFi 5G | Tune-up Limit（dBm） | Tune-up Limit（mW） | Hightest Reported SAR(W/kg) | Adjusted SAR (W/kg) | SAR test |
|---|---|---|---|---|---|
| 802.11a | 19.00 | 79.43 | 0.184 | / | Yes |
| 802.11n 20M | 18.00 | 63.10 | / | 0.146 | No |
| 802.11n 40M | 16.00 | 39.81 | / | 0.092 | No |
| 802.11ac 20M | 18.00 | 63.10 | / | 0.146 | No |
| 802.11ac 40M | 16.00 | 39.81 | / | 0.092 | No |
| 802.11ac 80M | 15.00 | 31.62 | / | 0.073 | No |

Note:

1) The 802.11a mode is selected as Initial Test Configuration for SAR test according to the specified maximum output power.
2) Per KDB248227D01, for Body SAR test of WiFi 5G , SAR is measured for 5GHz 802.11a using the initial test position procedure.The highest reported SAR is adjusted by the ratio of 802.11a to other WiFi 5G mode specified maximum output power and the adjusted SAR is < 1.2 W/kg, so SAR for other WiFi 5G mode is not required.
3) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. As the highest *reported* SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition);

Adjusted SAR (Sensor on,reduced power level):

| WiFi 5G | Tune-up Limit（dBm） | Tune-up Limit（mW） | Hightest Reported SAR(W/kg) | Adjusted SAR (W/kg) | SAR test |
|---|---|---|---|---|---|
| 802.11ac 80M | 7.00 | 5.01 | 0.425 | / | Yes |
| 802.11a 20M | 7.00 | 5.01 | / | 0.425 | No |
| 802.11n 20M | 7.00 | 5.01 | / | 0.425 | No |
| 802.11n 40M | 7.00 | 5.01 | / | 0.425 | No |
| 802.11ac 20M | 7.00 | 5.01 | / | 0.425 | No |
| 802.11ac 40M | 7.00 | 5.01 | / | 0.425 | No |

Note:

1) For Sensor on,reduced power level condition, the 802.11ac 80M mode is selected as Initial Test Configuration for SAR test according to the specified maximum output power and bandwidth per KDB 248227.
2) Per KDB248227D01, for Body SAR test of WiFi 5G , SAR is measured for 5GHz 802.11ac 80M using the initial test position procedure.The highest reported SAR is adjusted by the ratio of 802.11ac 80M to other WiFi 5G mode specified maximum output power and the adjusted SAR is < 1.2 W/kg, so SAR for other WiFi 5G mode is not required.
3) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. As the highest *reported* SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition).

### 7.2.15 SAR measurement Result of BT

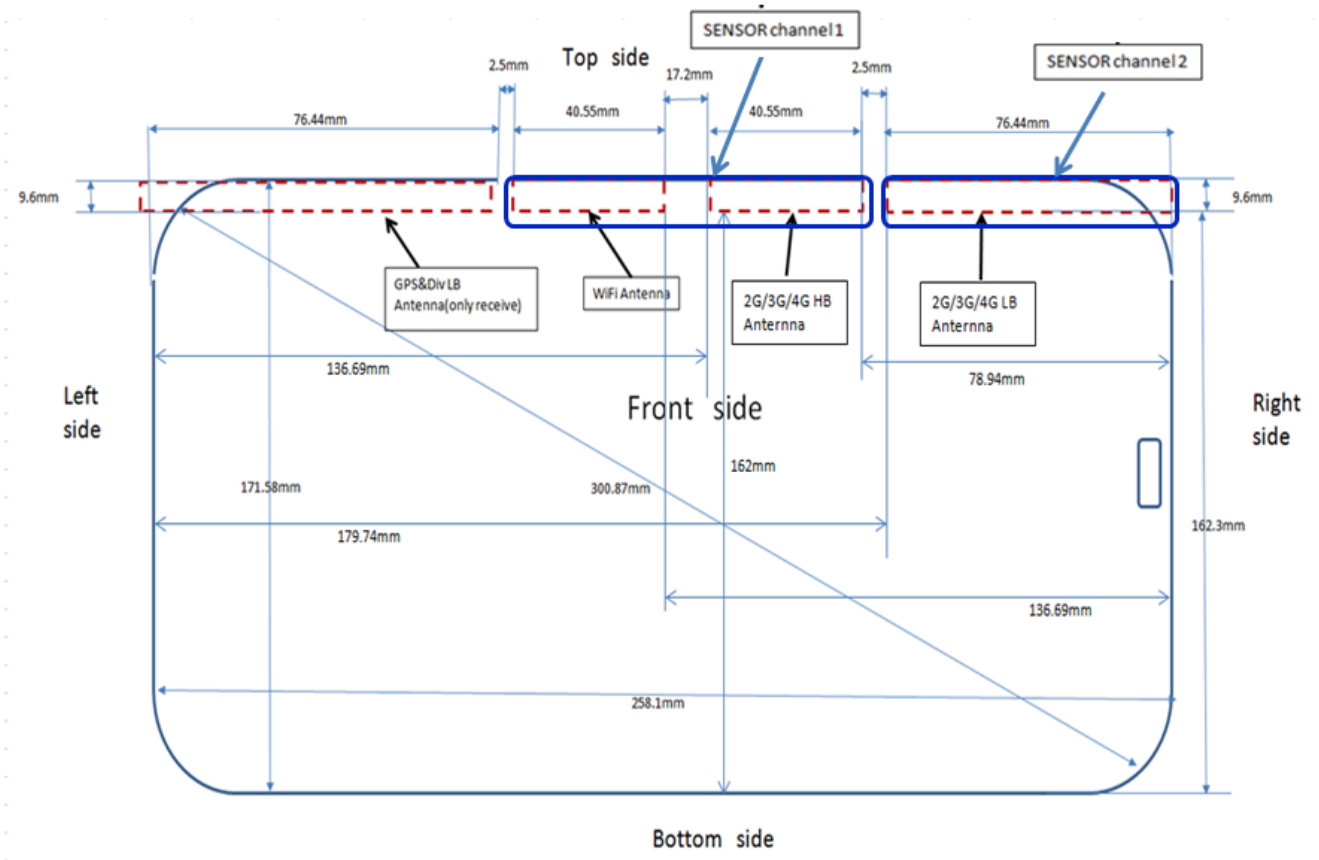
| Test Position of Body | Dist. | Test Channel /Freq.(MHz) | Test Mode | Measured SAR(W/kg) | | Power Drift (dB) | Actual duty factor | Scaled 1-g SAR (W/kg) | Conducted Power (dBm) | Tune-up Power (dBm) | Reported 1-g SAR (W/kg) | Accessory Information | SAR Plot. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 1-g | 10-g | | | | | | | | |
| Back Side | 0mm | 19/2440 | BLE | 0.028 | 0.011 | 0.17 | 60.24% | 0.046 | 9.40 | 9.50 | 0.047 | Battery 1# | / |
| Top Side | 0mm | 19/2440 | BLE | 0.052 | 0.018 | 0.15 | 60.24% | 0.086 | 9.40 | 9.50 | 0.089 | Battery 1# | / |
| Top Side | 0mm | 19/2440 | BLE | 0.052 | 0.019 | -0.18 | 60.24% | 0.087 | 9.40 | 9.50 | 0.089 | Battery 2# | / |
| Top Side | 0mm | 19/2440 | BLE | 0.115 | 0.042 | 0.16 | 60.24% | 0.191 | 9.40 | 9.50 | **0.195** | Battery 3# | Yes |

Table 59: Body SAR test results of BT

## 7.3 Multiple Transmitter Evaluation

The following tables list information which is relevant for the decision if a simultaneous transmit evaluation is necessary according to FCC KDB 447498 D01 General RF Exposure Guidance .

The location of the antennas inside the device is shown as below picture:




<Front View>

Note:

1) Per KDB 616217, because the diagonal Length is ＞200mm, it is considered a “ tablet” device and need to test 0mm 1g Body SAR.

2) The 2G/3G/4G LB antenna supports frequency bands at frequency of 698-960MHz.

3) The 2G/3G/4G HB antenna supports frequency bands at frequency of 1710-2690MHz

### 7.3.1 Standalone SAR exclusion calculation

Per FCC KDB 447498D01:

1) The 1-g SAR and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)]·[√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where:

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation

The test exclusions are applicable only when the minimum *test separation distance* is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

2) At 100 MHz to 6 GHz and for test separation distances > 50 mm, the SAR test exclusion threshold is determined according to the following

a) [Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm)·( f(MHz)/150)] mW, at 100 MHz to 1500 MHz

b) [Power allowed at numeric threshold for 50 mm in step 1) + (test separation distance - 50 mm) • 10] mW at > 1500 MHz and ≤ 6 GHz

(Antenna to adjacent sides<50mm)

| Band | Exposure Condition | f(GHz) | Pmax | Pmax | Seperation Distance(mm) | | | | | Calculated Value | | | | | SAR Test(yes or no) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | (dBm)* | (mW) | Back side | Left side | Right side | Top side | Bottom side | Back side | Left side | Right side | Top side | Bottom side | Back side | Left side | Right side | Top side | Bottom side |
| GSM850 GPRS 2TS | Body 0mm | 0.850 | 32.00 | 572.16 | 5.0 | 179.7 | 5.0 | 5.0 | 162.0 | 105.502 | >50mm | 105.502 | 105.502 | >50mm | Yes | >50mm | Yes | Yes | >50mm |
| GSM1900 GPRS 2TS | Body 0mm | 1.910 | 29.00 | 381.89 | 5.0 | 136.7 | 78.9 | 5.0 | 162.0 | 105.556 | >50mm | >50mm | 105.556 | >50mm | Yes | >50mm | >50mm | Yes | >50mm |
| UMTS B2 | Body 0mm | 1.910 | 24.00 | 251.19 | 5.0 | 136.7 | 78.9 | 5.0 | 162.0 | 69.430 | >50mm | >50mm | 69.430 | >50mm | Yes | >50mm | >50mm | Yes | >50mm |
| UMTS B5 | Body 0mm | 0.850 | 24.80 | 302.00 | 5.0 | 179.7 | 5.0 | 5.0 | 162.0 | 55.685 | >50mm | 55.685 | 55.685 | >50mm | Yes | >50mm | Yes | Yes | >50mm |
| LTE B4 | Body 0mm | 1.755 | 24.00 | 251.19 | 5.0 | 136.7 | 78.9 | 5.0 | 162.0 | 66.553 | >50mm | >50mm | 66.553 | >50mm | Yes | >50mm | >50mm | Yes | >50mm |
| LTE B5 | Body 0mm | 0.850 | 24.70 | 295.12 | 5.0 | 179.7 | 5.0 | 5.0 | 162.0 | 54.418 | >50mm | 54.418 | 54.418 | >50mm | Yes | >50mm | Yes | Yes | >50mm |
| LTE B7 | Body 0mm | 2.600 | 24.20 | 263.03 | 5.0 | 136.7 | 78.9 | 5.0 | 162.0 | 84.824 | >50mm | >50mm | 84.824 | >50mm | Yes | >50mm | >50mm | Yes | >50mm |
| LTE B12 | Body 0mm | 0.750 | 25.70 | 371.54 | 5.0 | 179.7 | 5.0 | 5.0 | 162.0 | 64.352 | >50mm | 64.352 | 64.352 | >50mm | Yes | >50mm | Yes | Yes | >50mm |
| LTE B17 | Body 0mm | 0.750 | 25.70 | 371.54 | 5.0 | 179.7 | 5.0 | 5.0 | 162.0 | 64.352 | >50mm | 64.352 | 64.352 | >50mm | Yes | >50mm | Yes | Yes | >50mm |
| LTE B26 | Body 0mm | 0.850 | 25.00 | 316.23 | 5.0 | 179.7 | 5.0 | 5.0 | 162.0 | 58.310 | >50mm | 58.310 | 58.310 | >50mm | Yes | >50mm | Yes | Yes | >50mm |
| LTE B38 | Body 0mm | 2.620 | 24.00 | 251.19 | 5.0 | 136.7 | 78.9 | 5.0 | 162.0 | 81.317 | >50mm | >50mm | 81.317 | >50mm | Yes | >50mm | >50mm | Yes | >50mm |
| LTE B41 | Body 0mm | 2.655 | 24.00 | 251.19 | 5.0 | 136.7 | 78.9 | 5.0 | 162.0 | 81.858 | >50mm | >50mm | 81.858 | >50mm | Yes | >50mm | >50mm | Yes | >50mm |
| WiFi 2.4G | Body 0mm | 2.480 | 18.00 | 63.10 | 5.0 | 78.9 | 136.7 | 5.0 | 162.0 | 19.873 | >50mm | >50mm | 19.873 | >50mm | Yes | >50mm | >50mm | Yes | >50mm |
| WiFi 5.2G | Body 0mm | 5.250 | 19.00 | 79.43 | 5.0 | 78.9 | 136.7 | 5.0 | 162.0 | 36.401 | >50mm | >50mm | 36.401 | >50mm | Yes | >50mm | >50mm | Yes | >50mm |
| WiFi 5.3G | Body 0mm | 5.350 | 19.00 | 79.43 | 5.0 | 78.9 | 136.7 | 5.0 | 162.0 | 36.746 | >50mm | >50mm | 36.746 | >50mm | Yes | >50mm | >50mm | Yes | >50mm |
| WiFi 5.5G | Body 0mm | 5.730 | 19.00 | 79.43 | 5.0 | 78.9 | 136.7 | 5.0 | 162.0 | 38.028 | >50mm | >50mm | 38.028 | >50mm | Yes | >50mm | >50mm | Yes | >50mm |
| WiFi 5.8G | Body 0mm | 5.850 | 19.00 | 79.43 | 5.0 | 78.9 | 136.7 | 5.0 | 162.0 | 38.424 | >50mm | >50mm | 38.424 | >50mm | Yes | >50mm | >50mm | Yes | >50mm |
| BT | Body 0mm | 2.480 | 9.50 | 8.91 | 5.0 | 78.9 | 136.7 | 5.0 | 162.0 | 2.807 | >50mm | >50mm | 2.807 | >50mm | No | >50mm | >50mm | No | >50mm |

(Antenna to adjacent sides >50mm)

| Band | Exposure Condition | f(GHz) | Pmax | Pmax | Seperation Distance(mm) | | | | | Calculated Threshold Value | | | | | SAR Test(yes or no) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | (dBm)* | (mW) | Back side | Left side | Right side | Top side | Bottom side | Back side | Left side | Right side | Top side | Bottom side | Back side | Left side | Right side | Top side | Bottom side |
| GSM850 GPRS 2TS | Body 0mm | 0.850 | 32.00 | 572.16 | 5.0 | 179.7 | 5.0 | 5.0 | 162.0 | <50mm | 899.19 | <50mm | <50mm | 798.67 | <50mm | No | <50mm | <50mm | No |
| GSM1900 GPRS 2TS | Body 0mm | 1.910 | 29.00 | 381.89 | 5.0 | 136.7 | 78.9 | 5.0 | 162.0 | <50mm | 975.90 | 398.40 | <50mm | 1229.00 | <50mm | No | No | <50mm | No |
| UMTS B2 | Body 0mm | 1.910 | 24.00 | 251.19 | 5.0 | 136.7 | 78.9 | 5.0 | 162.0 | <50mm | 975.90 | 398.40 | <50mm | 1229.00 | <50mm | No | No | <50mm | No |
| UMTS B5 | Body 0mm | 0.850 | 24.80 | 302.00 | 5.0 | 179.7 | 5.0 | 5.0 | 162.0 | <50mm | 899.19 | <50mm | <50mm | 798.67 | <50mm | No | <50mm | <50mm | No |
| LTE B4 | Body 0mm | 1.755 | 24.00 | 251.19 | 5.0 | 136.7 | 78.9 | 5.0 | 162.0 | <50mm | 1866.90 | 1289.40 | <50mm | 1220.00 | <50mm | No | No | <50mm | No |
| LTE B5 | Body 0mm | 0.850 | 24.70 | 295.12 | 5.0 | 179.7 | 5.0 | 5.0 | 162.0 | <50mm | 899.19 | <50mm | <50mm | 734.67 | <50mm | No | <50mm | <50mm | No |
| LTE B7 | Body 0mm | 2.600 | 24.20 | 263.03 | 5.0 | 136.7 | 78.9 | 5.0 | 162.0 | <50mm | 959.93 | 382.43 | <50mm | 1213.03 | <50mm | No | No | <50mm | No |
| LTE B12 | Body 0mm | 0.750 | 25.70 | 371.54 | 5.0 | 179.7 | 5.0 | 5.0 | 162.0 | <50mm | 1648.70 | <50mm | <50mm | 1560.00 | <50mm | No | <50mm | <50mm | No |
| LTE B17 | Body 0mm | 0.750 | 25.70 | 371.54 | 5.0 | 179.7 | 5.0 | 5.0 | 162.0 | <50mm | 1648.70 | <50mm | <50mm | 1560.00 | <50mm | No | <50mm | <50mm | No |
| LTE B26 | Body 0mm | 0.850 | 25.00 | 316.23 | 5.0 | 179.7 | 5.0 | 5.0 | 162.0 | <50mm | 1735.19 | <50mm | <50mm | 1634.67 | <50mm | No | <50mm | <50mm | No |
| LTE B38 | Body 0mm | 2.620 | 24.00 | 251.19 | 5.0 | 136.7 | 78.9 | 5.0 | 162.0 | <50mm | 959.93 | 382.43 | <50mm | 1213.03 | <50mm | No | No | <50mm | No |
| LTE B41 | Body 0mm | 2.655 | 24.00 | 251.19 | 5.0 | 136.7 | 78.9 | 5.0 | 162.0 | <50mm | 959.93 | 382.43 | <50mm | 1213.03 | <50mm | No | No | <50mm | No |
| WiFi 2.4G | Body 0mm | 2.480 | 18.00 | 63.10 | 5.0 | 78.9 | 136.7 | 5.0 | 162.0 | <50mm | 385.40 | 962.90 | <50mm | 1216.00 | <50mm | No | No | <50mm | No |
| WiFi 5.2G | Body 0mm | 5.250 | 19.00 | 79.43 | 5.0 | 78.9 | 136.7 | 5.0 | 162.0 | <50mm | 351.40 | 928.90 | <50mm | 1182.00 | <50mm | No | No | <50mm | No |
| WiFi 5.3G | Body 0mm | 5.350 | 19.00 | 79.43 | 5.0 | 78.9 | 136.7 | 5.0 | 162.0 | <50mm | 354.40 | 931.90 | <50mm | 1185.00 | <50mm | No | No | <50mm | No |
| WiFi 5.5G | Body 0mm | 5.730 | 19.00 | 79.43 | 5.0 | 78.9 | 136.7 | 5.0 | 162.0 | <50mm | 353.40 | 930.90 | <50mm | 1184.00 | <50mm | No | No | <50mm | No |
| WiFi 5.8G | Body 0mm | 5.850 | 19.00 | 79.43 | 5.0 | 78.9 | 136.7 | 5.0 | 162.0 | <50mm | 351.40 | 928.90 | <50mm | 1182.00 | <50mm | No | No | <50mm | No |
| BT | Body 0mm | 2.480 | 9.50 | 8.91 | 5.0 | 78.9 | 136.7 | 5.0 | 162.0 | <50mm | 385.40 | 962.90 | <50mm | 1216.00 | <50mm | No | No | <50mm | No |

According to the table above, the standalone test configurations summary required for this device are as below:

| Test configurations | Front Side | Back Side | Left Side | Right Side | Top Side | Bottom Side |
|---|---|---|---|---|---|---|
| GSM850 GPRS 2TS | No | Yes | No | Yes | Yes | No |
| GSM1900 GPRS 2TS | No | Yes | No | No | Yes | No |
| UMTS Band 2 | No | Yes | No | No | Yes | No |
| UMTS Band 5 | No | Yes | No | Yes | Yes | No |
| LTE Band 4 | No | Yes | No | No | Yes | No |
| LTE Band 5 | No | Yes | No | Yes | Yes | No |
| LTE Band 7 | No | Yes | No | No | Yes | No |
| LTE Band 12 | No | Yes | No | Yes | Yes | No |
| LTE Band 17 | No | Yes | No | Yes | Yes | No |
| LTE Band 26 | No | Yes | No | Yes | Yes | No |
| LTE Band 38 | No | Yes | No | No | Yes | No |
| LTE Band 41 | No | Yes | No | No | Yes | No |
| WiFi 2.4G | No | Yes | No | No | Yes | No |
| WiFi 5G | No | Yes | No | No | Yes | No |
| BT* | No | Yes | No | No | Yes | No |

Note*： Per KDB 447498D01, BT SAR test can be excluded. But for certain situations where the estimated SAR of BT is overly conservative for simultaneous transmission SAR test exclusion, the test lab may still choose to perform standalone SAR measurements for certain positions, then use the measured SAR to determine simultaneous transmission SAR test exclusion in this report.

When standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

1) (max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] • [ √f(GHz)/x] W/kg for test separation distances ≤ 50 mm,where x = 7.5 for 1-g SAR and x = 18.75 for 10-g SAR.

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion

2) 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the test separation distance is > 50 mm.

| mode | Position | Pmax (dBm)* | Pmax (mW) | test separation distance(mm) | | | | | f (GHz) | X | Estimated SAR (W/kg)* | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Back side | Top side | Left side | Right side | Bottom side | | | Back side | Top side | Left side | Right side | Bottom side |
| GSM850 GPRS 2TS | Body 0mm | 32.00 | 1584.89 | 5.0 | 5.0 | 179.7 | 5.0 | 162.0 | 0.850 | 7.50 | measure | measure | 0.400 | measure | 0.400 |
| GSM1900 GPRS 2TS | Body 0mm | 29.00 | 794.33 | 5.0 | 5.0 | 136.7 | 78.9 | 162.0 | 1.910 | 7.50 | measure | measure | 0.400 | 0.400 | 0.400 |
| UMTS Band 2 | Body 0mm | 24.00 | 251.19 | 5.0 | 5.0 | 136.7 | 78.9 | 162.0 | 1.910 | 7.50 | measure | measure | 0.400 | 0.400 | 0.400 |
| UMTS Band 5 | Body 0mm | 24.80 | 302.00 | 5.0 | 5.0 | 179.7 | 5.0 | 162.0 | 0.850 | 7.50 | measure | measure | 0.400 | measure | 0.400 |
| LTE Band 4 | Body 0mm | 24.00 | 251.19 | 5.0 | 5.0 | 136.7 | 78.9 | 162.0 | 1.755 | 7.50 | measure | measure | 0.400 | 0.400 | 0.400 |
| LTE Band 5 | Body 0mm | 24.70 | 295.12 | 5.0 | 5.0 | 179.7 | 5.0 | 162.0 | 0.850 | 7.50 | measure | measure | 0.400 | measure | 0.400 |
| LTE Band 7 | Body 0mm | 24.20 | 263.03 | 5.0 | 5.0 | 136.7 | 78.9 | 162.0 | 2.600 | 7.50 | measure | measure | 0.400 | 0.400 | 0.400 |
| LTE Band 12 | Body 0mm | 25.70 | 371.54 | 5.0 | 5.0 | 179.7 | 5.0 | 162.0 | 0.750 | 7.50 | measure | measure | 0.400 | measure | 0.400 |
| LTE Band 17 | Body 0mm | 25.70 | 371.54 | 5.0 | 5.0 | 179.7 | 5.0 | 162.0 | 0.750 | 7.50 | measure | measure | 0.400 | measure | 0.400 |
| LTE Band 26 | Body 0mm | 25.00 | 316.23 | 5.0 | 5.0 | 179.7 | 5.0 | 162.0 | 0.850 | 7.50 | measure | measure | 0.400 | measure | 0.400 |
| LTE Band 38 | Body 0mm | 24.00 | 251.19 | 5.0 | 5.0 | 136.7 | 78.9 | 162.0 | 2.620 | 7.50 | measure | measure | 0.400 | 0.400 | 0.400 |
| LTE Band 41 | Body 0mm | 24.00 | 251.19 | 5.0 | 5.0 | 136.7 | 78.9 | 162.0 | 2.655 | 7.50 | measure | measure | 0.400 | 0.400 | 0.400 |
| WiFi 2.4G | Body 0mm | 18.00 | 63.10 | 5.0 | 5.0 | 78.9 | 136.7 | 162.0 | 2.480 | 7.50 | measure | measure | 0.400 | 0.400 | 0.400 |
| WiFi 5G | Body 0mm | 19.00 | 79.43 | 5.0 | 5.0 | 78.9 | 136.7 | 162.0 | 5.850 | 7.50 | measure | measure | 0.400 | 0.400 | 0.400 |
| BT | Body 0mm | 9.50 | 8.91 | 5.0 | 5.0 | 78.9 | 136.7 | 162.0 | 2.480 | 7.50 | measure | measure | 0.400 | 0.400 | 0.400 |

Table 60: Estimated SAR calculation for the device.

Note: 1) * - maximum possible output power declared by manufacturer

### 7.3.2 Simultaneous Transmission Possibilities

The Simultaneous Transmission Possibilities of this device are as below:

| No. | Configuration | Body |
|---|---|---|
| 1 | GSM Voice(Ant 1) + BT | Yes |
| 2 | GSM DATA (Ant 1)+ BT | Yes |
| 3 | GSM Voice(Ant 1) + WiFi | Yes |
| 4 | GSM DATA(Ant 1) + WiFi | Yes |
| 5 | UMTS Voice(Ant 1) + BT | Yes |
| 6 | UMTS Data(Ant 1) + BT | Yes |
| 7 | UMTS Voice (Ant 1) + WiFi | Yes |
| 8 | UMTS Data (Ant 1)+ WiFi | Yes |
| 9 | LTE (Ant 1) + BT | Yes |
| 10 | LTE (Ant 1) + WiFi | Yes |
| 11 | GSM Voice(Ant 2) + BT | Yes |
| 12 | GSM DATA (Ant 2)+ BT | Yes |
| 13 | GSM Voice(Ant 2) + WiFi | Yes |
| 14 | GSM DATA(Ant 2) + WiFi | Yes |
| 15 | UMTS Voice(Ant 2) + BT | Yes |
| 16 | UMTS Data(Ant 2) + BT | Yes |
| 17 | UMTS Voice (Ant 2) + WiFi | Yes |
| 18 | UMTS Data (Ant 2)+ WiFi | Yes |
| 19 | LTE (Ant 2) + BT | Yes |
| 20 | LTE (Ant 2) + WiFi | Yes |
| 21 | WiFi 5G+BT | Yes |
| 22 | GSM Voice(Ant 1) + WiFi 5G + BT | Yes |
| 23 | GSM DATA (Ant 1) + WiFi 5G + BT | Yes |
| 24 | UMTS Voice(Ant 1) + WiFi 5G + BT | Yes |
| 25 | UMTS Data(Ant 1) + WiFi 5G + BT | Yes |
| 26 | LTE(Ant 1) + WiFi 5G + BT | Yes |
| 27 | GSM Voice(Ant 2) + WiFi 5G + BT | Yes |
| 28 | GSM DATA (Ant 2) + WiFi 5G + BT | Yes |
| 29 | UMTS Voice(Ant 2) + WiFi 5G + BT | Yes |
| 30 | UMTS Data(Ant 2) + WiFi 5G + BT | Yes |
| 31 | LTE(Ant 2) + WiFi 5G + BT | Yes |

Table 61: Simultaneous Transmission Possibilities

Note:

1) WiFi 2.4G and WiFi 5G can't transmit simutanously.

2) WiFi 2.4G and BT can't transmit simutanously.

3) The device does not support GSM DTM .

4) Ant 1 = 2G/3G/4G LB antenna(2G/3G/4G frequency bands at frequency of 698-960MHz).
Ant 2 = 2G/3G/4G HB antenna (2G/3G/4G frequency bands at frequency of 1710-2690MHz).
2G/3G/4G HB antenna and 2G/3G/4G LB antenna can't transmit simutanously.

### 7.3.3 SAR Summation Scenario

The sum SAR is as below:

| Test Position | | Main antenna SARMax | | | | | | | | | | | | WiFi/BT antenna SARMax | Σ1-g SAR (1.6W/kg Limit) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GSM850 | GSM1900 | UMTS Band 2 | UMTS Band 5 | LTE Band 4 | LTE Band 5 | LTE Band 7 | LTE Band 12 | LTE Band 17 | LTE Band 26 | LTE Band 38 | LTE Band 41 | WiFi 2.4G | |
| Body | Front Side | / | / | / | / | / | / | / | / | / | / | / | / | / | / |
| | Back Side | 0.364 | 0.351 | 0.652 | 0.309 | 0.515 | 0.730 | 0.639 | 0.523 | 0.604 | 0.699 | 0.426 | 0.415 | 0.212 | 0.942 |
| | Left Side | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.800 |
| | Right Side | 0.261 | 0.400 | 0.400 | 0.236 | 0.400 | 0.411 | 0.400 | 0.367 | 0.440 | 0.465 | 0.400 | 0.400 | 0.400 | 0.865 |
| | Top Side | 0.479 | 0.920 | 0.518 | 0.519 | 0.485 | 0.654 | 0.779 | 0.386 | 0.535 | 0.517 | 0.413 | 0.625 | 0.281 | 1.201 |
| | Bottom Side | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.800 |

Table 62: 1-g SAR Simultaneous Tx Combination of GSM/UMTS/LTE & WiFi 2.4G.

| Test Position | | Main antenna SARMax | | | | | | | | | | | | WiFi/BT antenna SARMax | | Σ1-g SAR (1.6W/kg Limit) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | GSM850 | GSM1900 | UMTS Band 2 | UMTS Band 5 | LTE Band 4 | LTE Band 5 | LTE Band 7 | LTE Band 12 | LTE Band 17 | LTE Band 26 | LTE Band 38 | LTE Band 41 | WiFi 5G | BT | |
| Body | Front Side | / | / | / | / | / | / | / | / | / | / | / | / | / | / | / |
| | Back Side | 0.364 | 0.351 | 0.652 | 0.309 | 0.515 | 0.730 | 0.639 | 0.523 | 0.604 | 0.699 | 0.426 | 0.415 | 0.070 | 0.047 | 0.847 |
| | Left Side | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 1.200 |
| | Right Side | 0.261 | 0.400 | 0.400 | 0.236 | 0.400 | 0.411 | 0.400 | 0.367 | 0.440 | 0.465 | 0.400 | 0.400 | 0.400 | 0.400 | 1.265 |
| | Top Side | 0.479 | 0.920 | 0.518 | 0.519 | 0.485 | 0.654 | 0.779 | 0.386 | 0.535 | 0.517 | 0.413 | 0.625 | 0.425 | 0.195 | **1.540** |
| | Bottom Side | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 0.400 | 1.200 |

Table 63: 1-g SAR Simultaneous Tx Combination of GSM/UMTS/LTE & WiFi 5G & BT.

### 7.3.4 Simultaneous Transmission Conclusion

The above numeral summed SAR results and SPLSR analysis is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore simultaneous transmission SAR with Volume Scans is not required per KDB 447498 D01

**Appendix A. System Check Plots**
**(Pls See Appendix No.: SYBH(Z-SAR)008122017-2A, total: 18 pages)**

**Appendix B. SAR Measurement Plots**
**(Pls See Appendix No.: SYBH(Z-SAR)008122017-2B, total: 16 pages)**

**Appendix C. Calibration Certificate**
**(Pls See Appendix No.: SYBH(Z-SAR) 008122017-2C, total: 128 pages)**

**Appendix D. Photo documentation**
**(Pls See Appendix No.: SYBH(Z-SAR) 008122017-2D, total: 5 pages)**

# End