



# **TEST REPORT**

**Report Number. :** 12775491-E3V4

**Applicant :** ANELTO INC.  
6270 MORNINGSTAR DRIVE  
SUITE 100  
THE COLONY, TX 75056, U.S.A.

**Model :** ANH0319

**FCC ID :** 2AGPI-ANH0319  
**IC ID :** 20951-ANH0319

**EUT :** CELLULAR PERSONAL EMERGENCY RESPONSE SYSTEM  
**Description**

**Test :** FCC CFR47 PART 22 SUBPART H  
**Standard(s)** FCC CFR47 PART 24 SUBPART E  
FCC CFR47 PART 27 SUBPART H and L  
ISED RSS-132 ISSUE 3, RSS-133 ISSUE 6,  
RSS-139 ISSUE 3, RSS-130 ISSUE 2

**Date Of Issue:**  
SEPTEMBER 26, 2019

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NVLAP Lab code: 200065-0

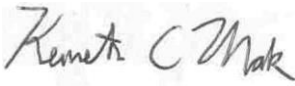
Revision History

| Rev. | Issue Date | Revisions                                                     | Revised By  |
|------|------------|---------------------------------------------------------------|-------------|
| V1   | 9/18/2019  | Initial Review                                                | --          |
| V2   | 9/18/2019  | Updated Section 5.4 per TCB Feedback                          | Dan Corona  |
| V3   | 9/20/2019  | Updated Section 5.4, 5.5, and 7 per TCB Feedback              | Kenneth Mak |
| V4   | 9/26/2019  | Updated Section 2 and Sec. 8.1: Removed mentioning of TIA-603 | Kenneth Mak |
|      |            |                                                               |             |

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## 1. ATTESTATION OF TEST RESULTS

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                   |                                                                                                      |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|--|
| Applicant Name and Address                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ANELTO INC.<br>6270 MORNINGSTAR DRIVE<br>SUITE 100<br>THE COLONY, TX 75056, U.S.A.                                |                                                                                                      |  |
| Model                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | ANH0319                                                                                                           |                                                                                                      |  |
| FCC ID                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2AGPI-ANH0319                                                                                                     |                                                                                                      |  |
| EUT Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | CELLULAR PERSONAL EMERGENCY RESPONSE SYSTEM                                                                       |                                                                                                      |  |
| Serial Number                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 190312, 190411, 190405, 19239                                                                                     |                                                                                                      |  |
| Date Tested                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 7/31/2019; 8/23/2019 TO 8/27/2019                                                                                 |                                                                                                      |  |
| Applicable Standards                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | FCC CFR 47 PART 22H, 24E, 27H and L<br>ISED RSS-132 ISSUE 3, RSS-133 ISSUE 6,<br>RSS-139 ISSUE 3, RSS-130 ISSUE 2 |                                                                                                      |  |
| Test Results                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Complies                                                                                                          |                                                                                                      |  |
| <p>UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.</p> <p>The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.</p> <p>This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of the U.S. government.</p> |                                                                                                                   |                                                                                                      |  |
| Approved & Released For<br>UL Verification Services Inc. By:<br>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                   | Reviewed By:<br> |  |
| Dan Corona<br>Operations Leader<br>Consumer Technology Division<br>UL Verification Services Inc.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                   | Kenneth Mak<br>Test Engineer<br>Consumer Technology Division<br>UL Verification Services Inc.        |  |

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.26:2015, ANSI C63.4:2014, FCC CFR 47 Part 2, Part 22, Part 24, Part 27, KDB 971168 D01 v03r01, KDB 996369 D04 v01, ISED RSS-132 ISSUE 3, RSS-133 ISSUE 6, RSS-139 ISSUE 3, RSS-130 ISSUE 2.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, and 47658 Kato Road, Fremont, California, USA. Line conducted emissions are measured only at the 47173 address. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

| 47173 Benicia Street               | 47266 Benicia Street               | 47658 Kato Rd.                                |
|------------------------------------|------------------------------------|-----------------------------------------------|
| <input type="checkbox"/> Chamber A | <input type="checkbox"/> Chamber D | <input type="checkbox"/> Chamber I            |
| <input type="checkbox"/> Chamber B | <input type="checkbox"/> Chamber E | <input checked="" type="checkbox"/> Chamber J |
| <input type="checkbox"/> Chamber C | <input type="checkbox"/> Chamber F | <input checked="" type="checkbox"/> Chamber K |
|                                    | <input type="checkbox"/> Chamber G | <input type="checkbox"/> Chamber L            |
|                                    | <input type="checkbox"/> Chamber H |                                               |

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers above are covered under Industry Canada company address and respective code: 2324A.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0

## 4. CALIBRATION AND UNCERTAINTY

### 4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

### 4.2. SAMPLE CALCULATION

#### RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:

Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)  
 $36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$

#### MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.  
 $36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} = 46.6 \text{ dBuV}$

### 4.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

| Parameter                                           | Uncertainty |
|-----------------------------------------------------|-------------|
| Worst Case Conducted Disturbance, 9KHz to 0.15 MHz  | 3.84 dB     |
| Worst Case Conducted Disturbance, 0.15 to 30 MHz    | 3.65 dB     |
| Worst Case Radiated Disturbance, 9KHz to 30 MHz     | 2.52 dB     |
| Worst Case Radiated Disturbance, 30 to 1000 MHz     | 4.88 dB     |
| Worst Case Radiated Disturbance, 1000 to 18000 MHz  | 4.24 dB     |
| Worst Case Radiated Disturbance, 18000 to 26000 MHz | 4.37 dB     |
| Worst Case Radiated Disturbance, 26000 to 40000 MHz | 5.17 dB     |

Uncertainty figures are valid to a confidence level of 95%.

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

The EUT is a mobile personal emergency response system with WCDMA, LTE and 906 MHz single channel radio.

### 5.2. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was 5350CERT.

### 5.3. MAXIMUM ANTENNA GAIN

| Carrier Band | Tx Band Frequency   | Nominal Antenna Gain<br>(Isotropic) |
|--------------|---------------------|-------------------------------------|
| Band 2       | 1850.0 - 1909.9 MHz | -2 dBi                              |
| Band 4       | 1710.0 - 1754.9 MHz | -2 dBi                              |
| Band 5       | 824.0 - 848.9 MHz   | -4 dBi                              |
| Band12       | 699.0 - 715.9 MHz   | -5 dBi                              |

| ISM Band | Tx Band Frequency | Nominal Antenna Gain<br>(Isotropic) |
|----------|-------------------|-------------------------------------|
| SRR      | 906 MHz           | -2 dBi                              |

### 5.4. MAXIMUM OUTPUT POWER

Conducted test data from the antenna port is referred to SAR Report 12775491-S1 (FCC ID: 2AGPI-ANH0319) in accordance with ANSI C63.26:2015.

#### WCDMA

| RSS 132 Band 5           |            |                              |                       |              |       |       |                 |                        |
|--------------------------|------------|------------------------------|-----------------------|--------------|-------|-------|-----------------|------------------------|
| Frequency range<br>(MHz) | Modulation | Conducted (Average)<br>(dBm) | Antenna Gain<br>(dBi) | Limit<br>(W) | EIRP  |       | 99% BW<br>(kHz) | Emission<br>Designator |
|                          |            |                              |                       |              | (dBm) | (W)   |                 |                        |
| 826.4-846.6              | REL 99     | 23.1                         | -4.00                 | 11.5         | 19.10 | 0.081 | 4110            | 4M11F9W                |
|                          | HSDPA      | 22.4                         |                       |              | 18.40 | 0.069 | 4148            | 4M15F9W                |
| Part 22 Band 5           |            |                              |                       |              |       |       |                 |                        |
| Frequency range<br>(MHz) | Modulation | Conducted (Average)<br>(dBm) | Antenna Gain<br>(dBi) | Limit<br>(W) | ERP   |       | 99% BW<br>(kHz) | Emission<br>Designator |
|                          |            |                              |                       |              | (dBm) | (W)   |                 |                        |
| 826.4-846.6              | REL 99     | 23.1                         | -4.00                 | 7.0          | 16.95 | 0.050 | 4110            | 4M11F9W                |
|                          | HSDPA      | 22.4                         |                       |              | 16.25 | 0.042 | 4148            | 4M15F9W                |
| Part 24 / RSS 133 Band 2 |            |                              |                       |              |       |       |                 |                        |
| Frequency range<br>(MHz) | Modulation | Conducted (Average)<br>(dBm) | Antenna Gain<br>(dBi) | Limit<br>(W) | EIRP  |       | 99% BW<br>(kHz) | Emission<br>Designator |
|                          |            |                              |                       |              | (dBm) | (W)   |                 |                        |
| 1852.4-1907.6            | REL 99     | 20.8                         | -2.00                 | 2.0          | 18.80 | 0.076 | 4124            | 4M12F9W                |
|                          | HSDPA      | 19.7                         |                       |              | 17.70 | 0.059 | 4148            | 4M15F9W                |
| Part 27 / RSS 139 Band 4 |            |                              |                       |              |       |       |                 |                        |
| Frequency range<br>(MHz) | Modulation | Conducted (Average)<br>(dBm) | Antenna Gain<br>(dBi) | Limit<br>(W) | EIRP  |       | 99% BW<br>(kHz) | Emission<br>Designator |
|                          |            |                              |                       |              | (dBm) | (W)   |                 |                        |
| 1712.4-1752.6            | REL 99     | 21.9                         | -2.00                 | 1.0          | 19.90 | 0.098 | 4130            | 4M13F9W                |
|                          | HSDPA      | 21.2                         |                       |              | 19.20 | 0.083 | 4150            | 4M15F9W                |

## LTE Band 2

| Part 24 / RSS 133  |            |                     |                       |                         |                    |                  |              |                     |
|--------------------|------------|---------------------|-----------------------|-------------------------|--------------------|------------------|--------------|---------------------|
| EIRP Limit (W)     |            | 2.00                |                       |                         |                    |                  |              |                     |
| Antenna Gain (dBi) |            | -2.00               |                       |                         |                    |                  |              |                     |
| Bandwidth (MHz)    | Modulation | Low Frequency (MHz) | Upper Frequency (MHz) | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Average (W) | 99% BW (kHz) | Emission Designator |
| 1.4                | QPSK       | 1850.7              | 1909.3                | 21.3                    | 19.30              | 0.085            | 1104         | 1M10G7W             |
|                    | 16QAM      |                     |                       | 20.5                    | 18.50              | 0.071            | 1104         | 1M10D7W             |
| 3.0                | QPSK       | 1851.5              | 1908.5                | 21.1                    | 19.10              | 0.081            | 2760         | 2M76G7W             |
|                    | 16QAM      |                     |                       | 20.2                    | 18.20              | 0.066            | 2760         | 2M76D7W             |
| 5.0                | QPSK       | 1852.5              | 1907.5                | 21.1                    | 19.10              | 0.081            | 4540         | 4M54G7W             |
|                    | 16QAM      |                     |                       | 20.1                    | 18.10              | 0.065            | 4540         | 4M54D7W             |
| 10.0               | QPSK       | 1855.0              | 1905.0                | 21.4                    | 19.40              | 0.087            | 9120         | 9M12G7W             |
| 15.0               | QPSK       | 1857.5              | 1902.5                | 21.2                    | 19.20              | 0.083            | 13560        | 13M6G7W             |
| 20.0               | QPSK       | 1860.0              | 1900.0                | 21.0                    | 19.00              | 0.079            | 18640        | 18M6G7W             |

## LTE Band 4

| Part 27 / RSS 139  |            |                     |                       |                         |                    |                  |              |                     |
|--------------------|------------|---------------------|-----------------------|-------------------------|--------------------|------------------|--------------|---------------------|
| EIRP Limit (W)     |            | 1.00                |                       |                         |                    |                  |              |                     |
| Antenna Gain (dBi) |            | -2.00               |                       |                         |                    |                  |              |                     |
| Bandwidth (MHz)    | Modulation | Low Frequency (MHz) | Upper Frequency (MHz) | Conducted Average (dBm) | EIRP Average (dBm) | EIRP Average (W) | 99% BW (kHz) | Emission Designator |
| 1.4                | QPSK       | 1710.7              | 1754.3                | 22.1                    | 20.10              | 0.102            | 1098         | 1M10G7W             |
|                    | 16QAM      |                     |                       | 21.2                    | 19.20              | 0.083            | 1110         | 1M11D7W             |
| 3.0                | QPSK       | 1711.5              | 1753.5                | 22.1                    | 20.10              | 0.102            | 2748         | 2M75G7W             |
|                    | 16QAM      |                     |                       | 20.9                    | 18.90              | 0.078            | 2760         | 2M76D7W             |
| 5.0                | QPSK       | 1712.5              | 1752.5                | 22.3                    | 20.30              | 0.107            | 4520         | 4M52G7W             |
|                    | 16QAM      |                     |                       | 21.1                    | 19.10              | 0.081            | 4520         | 4M52D7W             |
| 10.0               | QPSK       | 1715.0              | 1750.0                | 22.4                    | 20.40              | 0.110            | 9080         | 9M08G7W             |
| 15.0               | QPSK       | 1717.5              | 1747.5                | 22.4                    | 20.40              | 0.110            | 13500        | 13M5G7W             |
| 20.0               | QPSK       | 1720.0              | 1745.0                | 22.6                    | 20.60              | 0.115            | 18480        | 18M5G7W             |

## LTE Band 12

| Part 27 / RSS 130  |            |                     |                       |                         |                   |                 |              |                     |
|--------------------|------------|---------------------|-----------------------|-------------------------|-------------------|-----------------|--------------|---------------------|
| ERP Limit (W)      |            | 3.00                |                       |                         |                   |                 |              |                     |
| Antenna Gain (dBi) |            | -5.00               |                       |                         |                   |                 |              |                     |
| Bandwidth (MHz)    | Modulation | Low Frequency (MHz) | Upper Frequency (MHz) | Conducted Average (dBm) | ERP Average (dBm) | ERP Average (W) | 99% BW (kHz) | Emission Designator |
| 1.4                | QPSK       | 699.7               | 715.3                 | 22.8                    | 15.65             | 0.037           | 1110         | 1M11G7W             |
|                    | 16QAM      |                     |                       | 22.1                    | 14.95             | 0.031           | 1104         | 1M10D7W             |
| 3.0                | QPSK       | 700.5               | 714.5                 | 22.8                    | 15.65             | 0.037           | 2748         | 2M75G7W             |
|                    | 16QAM      |                     |                       | 21.9                    | 14.75             | 0.030           | 2760         | 2M76D7W             |
| 5.0                | QPSK       | 701.5               | 713.5                 | 23.1                    | 15.95             | 0.039           | 4540         | 4M54G7W             |
| 10.0               | QPSK       | 704.0               | 711.0                 | 22.9                    | 15.75             | 0.038           | 9120         | 9M12G7W             |

## 5.5. WORST-CASE CONFIGURATION AND MODE

The EUT supports WCDMA and LTE Bands of:  
WCDMA Band 2/4/5 and LTE Band 2/4/12.

The EUT was tested with the AC/DC adapter.

All testing was performed using WCDMA REL 99 and HSDPA, and LTE QPSK modulations to represent the worst case.

The worst-case scenario for all measurements is based on the average conducted output power measurement. The test items below based on FCC ID: XMR201605EC25A (Report number: RTWK160705001-00 and RKS160908001-00A (C2PC adding W-CDMA Band 4)). The device supports LTE UE Category 1 only. Therefore, 16QAM only supports channel bandwidths up to 5MHz per Table A.2.2.1.2-1 of 3GPP TS 36.101.

| Test Item                   | Note                                                   |
|-----------------------------|--------------------------------------------------------|
| Occupied bandwidth          | Refer to Reports RTWK160705001-00 and RKS160908001-00A |
| Band edge and emission mask | Refer to Reports RTWK160705001-00 and RKS160908001-00A |
| Out of band emissions       | Refer to Reports RTWK160705001-00 and RKS160908001-00A |
| Frequency stability         | Refer to Reports RTWK160705001-00 and RKS160908001-00A |
| Peak to average ratio       | Refer to Reports RTWK160705001-00 and RKS160908001-00A |
| Radiated spurious emissions | Tested                                                 |

## 5.6. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

| Support Equipment List |              |          |               |        |
|------------------------|--------------|----------|---------------|--------|
| Description            | Manufacturer | Model    | Serial Number | FCC ID |
| AC Adapter             | Anelto       | SWI5-5-N | SW15-5-N-MUB  | N/A    |

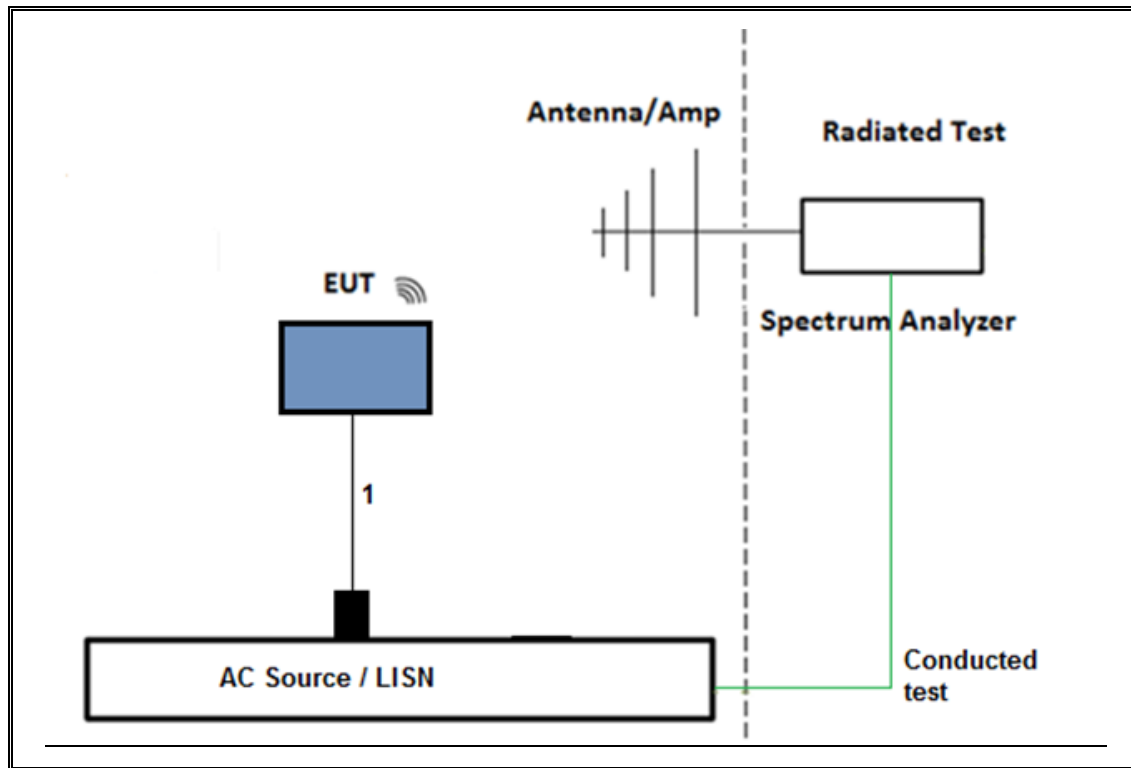
### I/O CABLES (RF Radiated Test)

| I/O Cable List |           |                      |                        |             |                  |         |
|----------------|-----------|----------------------|------------------------|-------------|------------------|---------|
| Cable No       | Port      | # of identical ports | Connector Type         | Cable Type  | Cable Length (m) | Remarks |
| 1              | AC        | 1                    | 2-prong                | Un-shielded | 1.2m             | N/A     |
| 2              | RF In/out | 1                    | Communication Test Set | Un-shielded | 2m               | N/A     |

### TEST SETUP

The EUT is continuously communicated to the call box during the tests

**RADIATED TEST SETUP DIAGRAM**



## 6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

| TEST EQUIPMENT LIST                         |                                       |                        |                       |            |
|---------------------------------------------|---------------------------------------|------------------------|-----------------------|------------|
| Description                                 | Manufacturer                          | Model                  | Asset                 | Cal Due    |
| Antenna, Horn 1-18GHz                       | ETS-Lindgren                          | 3117                   | T346                  | 5/13/2020  |
| Filter, HPF 3.0GHz                          | MICRO-TRONICS                         | HPM17543               | T486                  | 6/23/2020  |
| Spectrum Analyzer, PXA, 3Hz to 44GHz        | Agilent (Keysight) Technologies       | N9030A                 | T908                  | 1/23/2020  |
| RF Amplifier, 1-18GHz                       | MITEQ                                 | AFS42-00101800-25-S-42 | T1165                 | 6/23/2020  |
| RF SWITCH                                   | Pasternack                            | PE7159                 | T1274                 | 6/23/2020  |
| RF Cable, DC - 18GHz,                       | Pasternack                            | PE341-48               | 167835                | 6/23/2020  |
| Antenna, Horn 1-18GHz                       | ETS-Lindgren                          | 3117                   | T344                  | 5/7/2020   |
| Antenna, Broadband Hybrid, 30MHz to 2000MHz | Sunol Sciences Corp.                  | JB3                    | T899                  | 8/23/2020  |
| Amplifier, 1 to 18GHz, 35dB                 | AMPLICAL                              | AMP1G18-35             | T1571                 | 5/28/2020  |
| Amplifier, 1-7GHz, 24dB                     | AMPLICAL                              | AMP1G7-24-27           | T1608                 | 5/28/2020  |
| Amplifier, 9KHz to 1GHz, 32dB               | SONOMA INSTRUMENT                     | 310                    | PRE0180174            | 6/1/2020   |
| EMI TEST RECEIVER                           | Rohde & Schwarz                       | ESW44                  | PRE0179367            | 5/16/2020  |
| Amplifier, 1 to 18GHz, 35dB                 | AMPLICAL                              | AMP1G18-35             | T1569                 | 5/4/2020   |
| Amplifier, 1-7GHz, 24dB                     | AMPLICAL                              | AMP1G7-24-27           | T1609                 | 5/4/2020   |
| Antenna, Broadband Hybrid, 30MHz to 3GHz    | Sunol Sciences Corp.                  | JB3                    | PRE0184052            | 10/24/2019 |
| Amplifier, 9KHz to 1GHz, 32dB               | SONOMA INSTRUMENT                     | 310                    | 175953                | 12/13/2019 |
| EMI TEST RECEIVER                           | Rohde & Schwarz                       | ESW44                  | PRE0179372            | 2/16/2020  |
| Wideband Communication Test Set, Call Box   | Rohde & Schwarz (Koeln) GmbH & Co. KG | CMW500                 | T958                  | 2/20/2020  |
| Wideband Communication Test Set, Call Box   | Rohde & Schwarz (Koeln) GmbH & Co. KG | CMW500                 | T979                  | 2/20/2020  |
| UL AUTOMATION SOFTWARE                      |                                       |                        |                       |            |
| Radiated Software                           | UL                                    | UL EMC                 | Ver 9.5, Dec 01, 2016 |            |

### NOTES:

- Equipment listed above that calibrated during the testing period was set for test after the calibration.
- Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.

## 7. RF OUTPUT POWER VERIFICATION

Output power was from SAR Report 12775491-S1 in accordance with ANSI C63.26:2015.

### 7.1. W-CDMA

Per KDB 941225 D01 3G SAR Procedures for W-CDMA:

Maximum output power is verified on the high, middle and low channels and using the appropriate 12.2 kbps RMC with TPC (transmit power control) set to all "1's"

#### Release 99 Setup Procedures used to establish the test signals

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 specification. The DUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7).

| Mode                   | Subtest                 | Rel99        |
|------------------------|-------------------------|--------------|
| WCDMA General Settings | Loopback Mode           | Test Mode 2  |
|                        | Rel99 RMC               | 12.2kbps RMC |
|                        | Power Control Algorithm | Algorithm2   |
|                        | $\beta_c/\beta_d$       | 8/15         |

#### HSDPA Setup Procedures used to establish the test signals

The following 4 Sub-tests were completed according to Release 5 procedures in section 5.2 of 3GPP TS34.121. A summary of these settings are illustrated below:

**Table C.10.2.4:  $\beta$  values for transmitter characteristics tests with HS-DPCCH**

|                         | Mode                                   | HSDPA        | HSDPA | HSDPA | HSDPA |
|-------------------------|----------------------------------------|--------------|-------|-------|-------|
|                         | Subtest                                | 1            | 2     | 3     | 4     |
| W-CDMA General Settings | Loopback Mode                          | Test Mode 1  |       |       |       |
|                         | Rel99 RMC                              | 12.2kbps RMC |       |       |       |
|                         | HSDPA FRC                              | H-Set 1      |       |       |       |
|                         | Power Control Algorithm                | Algorithm 2  |       |       |       |
|                         | $\beta_c$                              | 2/15         | 11/15 | 15/15 | 15/15 |
|                         | $\beta_d$                              | 15/15        | 15/15 | 8/15  | 4/15  |
|                         | Bd (SF)                                | 64           |       |       |       |
|                         | $\beta_c/\beta_d$                      | 2/15         | 11/15 | 15/8  | 15/4  |
|                         | $\beta_{hs}$                           | 4/15         | 24/15 | 30/15 | 30/15 |
| HSDPA Specific Settings | MPR (dB)                               | 0            | 0     | 0.5   | 0.5   |
|                         | D <sub>ACK</sub>                       | 8            |       |       |       |
|                         | D <sub>NAK</sub>                       | 8            |       |       |       |
|                         | DCQI                                   | 8            |       |       |       |
|                         | Ack-Nack repetition factor             | 3            |       |       |       |
|                         | CQI Feedback (Table 5.2B.4)            | 4ms          |       |       |       |
|                         | CQI Repetition Factor (Table 5.2B.4)   | 2            |       |       |       |
|                         | A <sub>hs</sub> = $\beta_{hs}/\beta_c$ | 30/15        |       |       |       |

### HSPA (HSDPA & HSUPA) Setup Procedures used to establish the test signals

The following 5 Sub-tests were completed according to Release 6 procedures in table C.11.1.3 of 3GPP TS 34.121-1

A summary of these settings are illustrated below:

**Table C.11.1.3:  $\beta$  values for transmitter characteristics tests with HS-DPCCH and E-DCH**

|                               | Mode                                 | HSPA          |       |       |       |             |
|-------------------------------|--------------------------------------|---------------|-------|-------|-------|-------------|
|                               | Subtest                              | 1             | 2     | 3     | 4     | 5           |
| WCDMA<br>General<br>Settings  | Loopback Mode                        | Test Mode 1   |       |       |       |             |
|                               | Rel99 RMC                            | 12.2 kbps RMC |       |       |       |             |
|                               | HSDPA FRC                            | H-Set 1       |       |       |       |             |
|                               | HSUPA Test                           | HSPA          |       |       |       |             |
|                               | Power Control Algorithm              | Algorithm 2   |       |       |       | Algorithm 1 |
|                               | $\beta_c$                            | 11/15         | 6/15  | 15/15 | 2/15  | 15/15       |
|                               | $\beta_d$                            | 15/15         | 15/15 | 9/15  | 15/15 | 0           |
|                               | $\beta_{ec}$                         | 209/225       | 12/15 | 30/15 | 2/15  | 5/15        |
|                               | $\beta_c/\beta_d$                    | 11/15         | 6/15  | 15/9  | 2/15  | -           |
|                               | $\beta_{hs}$                         | 22/15         | 12/15 | 30/15 | 4/15  | 5/15        |
| HSDPA<br>Specific<br>Settings | $\beta_{ed}$                         | 1309/225      | 94/75 | 47/15 | 56/75 | 47/15       |
|                               | CM (dB)                              | 1             | 3     | 2     | 3     | 1           |
|                               | MPR (dB)                             | 0             | 2     | 1     | 2     | 0           |
|                               | DACK                                 | 8             |       |       |       | 0           |
|                               | DNAK                                 | 8             |       |       |       | 0           |
|                               | DCQI                                 | 8             |       |       |       | 0           |
|                               | Ack-Nack repetition factor           | 3             |       |       |       |             |
| HSUPA<br>Specific<br>Settings | CQI Feedback (Table 5.2B.4)          | 4ms           |       |       |       |             |
|                               | CQI Repetition Factor (Table 5.2B.4) | 2             |       |       |       |             |
|                               | $A_{hs} = \beta_{hs}/\beta_c$        | 30/15         |       |       |       |             |
|                               | E-DPDCCH                             | 6             | 8     | 8     | 5     | 0           |
|                               | DHARQ                                | 0             | 0     | 0     | 0     | 0           |
|                               | AG Index                             | 20            | 12    | 15    | 17    | 12          |
|                               | ETFCI (from 34.121 Table C.11.1.3)   | 75            | 67    | 92    | 71    | 67          |
|                               | Associated Max UL Data Rate kbps     | 242.1         | 174.9 | 482.8 | 205.8 | 308.9       |
|                               | Reference E-TFCIs                    | 5             | 5     | 2     | 5     | 1           |
|                               | Reference E-TFCI                     | 11            | 11    | 11    | 11    | 67          |
|                               | Reference E-TFCI PO                  | 4             | 4     | 4     | 4     | 18          |
|                               | Reference E-TFCI                     | 67            | 67    | 92    | 67    | 67          |
|                               | Reference E-TFCI PO                  | 18            | 18    | 18    | 18    | 18          |
|                               | Reference E-TFCI                     | 71            | 71    | 71    | 71    | 71          |
|                               | Reference E-TFCI PO                  | 23            | 23    | 23    | 23    | 23          |
|                               | Reference E-TFCI                     | 75            | 75    | 75    | 75    | 75          |
|                               | Reference E-TFCI PO                  | 26            | 26    | 26    | 26    | 26          |
|                               | Reference E-TFCI                     | 81            | 81    | 81    | 81    | 81          |
|                               | Reference E-TFCI PO                  | 27            | 27    | 27    | 27    | 27          |
|                               | Maximum Channelization Codes         | 2xSF2         |       |       |       | SF4         |

### DC-HSDPA Setup Procedures used to establish the test signals

The following tests were completed according to procedures in section 7.3.13 of 3GPP TS34.108. A summary of these settings are illustrated below:

Downlink Physical Channels are set as per 3GPP TS34.121-1

Table E.5.0: Levels for HSDPA connection setup

| Parameter<br>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 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.

Table C.8.1.12: Fixed Reference Channel H-Set 12

| Parameter                                                                                                                                              | Unit       | Value |
|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------|
| Nominal Avg. Inf. Bit Rate                                                                                                                             | kbps       | 60    |
| Inter-TTI Distance                                                                                                                                     | TTI's      | 1     |
| Number of HARQ Processes                                                                                                                               | Proces ses | 6     |
| Information Bit Payload ( $N_{INF}$ )                                                                                                                  | Bits       | 120   |
| Number Code Blocks                                                                                                                                     | Blocks     | 1     |
| Binary Channel Bits Per TTI                                                                                                                            | Bits       | 960   |
| Total Available SML's in UE                                                                                                                            | SML's      | 19200 |
| Number of SML's per HARQ Proc.                                                                                                                         | SML's      | 3200  |
| Coding Rate                                                                                                                                            |            | 0.15  |
| Number of Physical Channel Codes                                                                                                                       | Codes      | 1     |
| Modulation                                                                                                                                             |            | QPSK  |
| 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.               |            |       |
| Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used. |            |       |

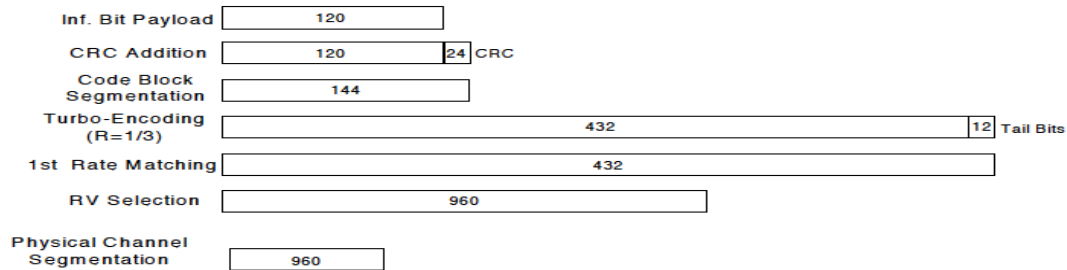


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

The following 4 Sub-tests for HSDPA were completed according to Release 8 procedures in section 5.2 of 3GPP TS34.121. A summary of subtest settings are illustrated below:

|                         | Mode                       | HSDPA        | HSDPA | HSDPA | HSDPA |
|-------------------------|----------------------------|--------------|-------|-------|-------|
|                         | Subtest                    | 1            | 2     | 3     | 4     |
| WCDMA General Settings  | Loopback Mode              | Test Mode 1  |       |       |       |
|                         | Rel99 RMC                  | 12.2kbps RMC |       |       |       |
|                         | HSDPA FRC                  | H-Set 1      |       |       |       |
|                         | Power Control Algorithm    | Algorithm2   |       |       |       |
|                         | $\beta_c$                  | 2/15         | 11/15 | 15/15 | 15/15 |
|                         | $\beta_d$                  | 15/15        | 15/15 | 8/15  | 4/15  |
|                         | $\beta_d$ (SF)             | 64           |       |       |       |
|                         | $\beta_c/\beta_d$          | 2/15         | 12/15 | 15/8  | 15/4  |
|                         | $\beta_{hs}$               | 4/15         | 24/15 | 30/15 | 30/15 |
| HSDPA Specific Settings | MPR (dB)                   | 0            | 0     | 0.5   | 0.5   |
|                         | DACK                       | 8            |       |       |       |
|                         | DNAK                       | 8            |       |       |       |
|                         | DCQI                       | 8            |       |       |       |
|                         | Ack-Nack Repetition factor | 3            |       |       |       |
|                         | CQI Feedback               | 4ms          |       |       |       |
|                         | CQI Repetition Factor      | 2            |       |       |       |
|                         | Ahs = $\beta_{hs}/\beta_c$ | 30/15        |       |       |       |

**W-CDMA Band V Measured Results**

| Mode       |                         | UL Ch No. | Freq. (MHz) | Maximum Average Power (dBm) |     |               |
|------------|-------------------------|-----------|-------------|-----------------------------|-----|---------------|
|            |                         |           |             | Measured Pwr                | MPR | Tune-up Limit |
| Release 99 | Rel 99 (RMC, 12.2 kbps) | 4132      | 826.4       | 23.1                        | N/A | 24.0          |
|            |                         | 4183      | 836.6       | 23.1                        |     |               |
|            |                         | 4233      | 846.6       | 23.1                        |     |               |
| HSDPA      | Subtest 1               | 4132      | 826.4       | 22.4                        | 0.0 | 24.0          |
|            |                         | 4183      | 836.6       | 22.4                        |     |               |
|            |                         | 4233      | 846.6       | 22.4                        |     |               |
|            | Subtest 2               | 4132      | 826.4       | 21.6                        | 0.0 | 24.0          |
|            |                         | 4183      | 836.6       | 21.6                        |     |               |
|            |                         | 4233      | 846.6       | 21.6                        |     |               |
|            | Subtest 3               | 4132      | 826.4       | 20.8                        | 0.5 | 23.5          |
|            |                         | 4183      | 836.6       | 20.6                        |     |               |
|            |                         | 4233      | 846.6       | 20.7                        |     |               |
|            | Subtest 4               | 4132      | 826.4       | 20.5                        | 0.5 | 23.5          |
|            |                         | 4183      | 836.6       | 20.5                        |     |               |
|            |                         | 4233      | 846.6       | 20.5                        |     |               |
| HSUPA      | Subtest 1               | 4132      | 826.4       | 22.0                        | 0.0 | 24.0          |
|            |                         | 4183      | 836.6       | 22.3                        |     |               |
|            |                         | 4233      | 846.6       | 22.0                        |     |               |
|            | Subtest 2               | 4132      | 826.4       | 21.2                        | 2.0 | 22.0          |
|            |                         | 4183      | 836.6       | 21.2                        |     |               |
|            |                         | 4233      | 846.6       | 21.3                        |     |               |
|            | Subtest 3               | 4132      | 826.4       | 21.2                        | 1.0 | 23.0          |
|            |                         | 4183      | 836.6       | 21.2                        |     |               |
|            |                         | 4233      | 846.6       | 21.2                        |     |               |
|            | Subtest 4               | 4132      | 826.4       | 21.5                        | 2.0 | 22.0          |
|            |                         | 4183      | 836.6       | 21.9                        |     |               |
|            |                         | 4233      | 846.6       | 21.4                        |     |               |
|            | Subtest 5               | 4132      | 826.4       | 22.5                        | 0.0 | 24.0          |
|            |                         | 4183      | 836.6       | 22.5                        |     |               |
|            |                         | 4233      | 846.6       | 22.3                        |     |               |
| DC-HSDPA   | Subtest 1               | 4132      | 826.4       | 22.4                        | 0.0 | 24.0          |
|            |                         | 4183      | 836.6       | 22.5                        |     |               |
|            |                         | 4233      | 846.6       | 22.4                        |     |               |
|            | Subtest 2               | 4132      | 826.4       | 21.7                        | 0.0 | 24.0          |
|            |                         | 4183      | 836.6       | 21.6                        |     |               |
|            |                         | 4233      | 846.6       | 21.7                        |     |               |
|            | Subtest 3               | 4132      | 826.4       | 20.8                        | 0.5 | 23.5          |
|            |                         | 4183      | 836.6       | 20.6                        |     |               |
|            |                         | 4233      | 846.6       | 20.7                        |     |               |
|            | Subtest 4               | 4132      | 826.4       | 20.4                        | 0.5 | 23.5          |
|            |                         | 4183      | 836.6       | 20.4                        |     |               |
|            |                         | 4233      | 846.6       | 20.4                        |     |               |

**W-CDMA Band IV Measured Results**

| Mode       |                         | UL Ch No. | Freq. (MHz) | Maximum Average Power (dBm) |     |               |
|------------|-------------------------|-----------|-------------|-----------------------------|-----|---------------|
|            |                         |           |             | Measured Pwr                | MPR | Tune-up Limit |
| Release 99 | Rel 99 (RMC, 12.2 kbps) | 1312      | 1712.4      | 21.6                        | N/A | 23.0          |
|            |                         | 1413      | 1732.6      | 21.9                        |     |               |
|            |                         | 1513      | 1752.6      | 21.5                        |     |               |
| HSDPA      | Subtest 1               | 1312      | 1712.4      | 21.0                        | 0.0 | 23.0          |
|            |                         | 1413      | 1732.6      | 21.0                        |     |               |
|            |                         | 1513      | 1752.6      | 21.0                        |     |               |
|            | Subtest 2               | 1312      | 1712.4      | 21.0                        | 0.0 | 23.0          |
|            |                         | 1413      | 1732.6      | 21.2                        |     |               |
|            |                         | 1513      | 1752.6      | 21.1                        |     |               |
|            | Subtest 3               | 1312      | 1712.4      | 21.1                        | 0.5 | 22.5          |
|            |                         | 1413      | 1732.6      | 21.0                        |     |               |
|            |                         | 1513      | 1752.6      | 21.1                        |     |               |
|            | Subtest 4               | 1312      | 1712.4      | 21.0                        | 0.5 | 22.5          |
|            |                         | 1413      | 1732.6      | 21.2                        |     |               |
|            |                         | 1513      | 1752.6      | 21.2                        |     |               |
| HSUPA      | Subtest 1               | 1312      | 1712.4      | 20.5                        | 0.0 | 23.0          |
|            |                         | 1413      | 1732.6      | 20.6                        |     |               |
|            |                         | 1513      | 1752.6      | 20.5                        |     |               |
|            | Subtest 2               | 1312      | 1712.4      | 20.1                        | 2.0 | 21.0          |
|            |                         | 1413      | 1732.6      | 20.0                        |     |               |
|            |                         | 1513      | 1752.6      | 20.1                        |     |               |
|            | Subtest 3               | 1312      | 1712.4      | 20.0                        | 1.0 | 22.0          |
|            |                         | 1413      | 1732.6      | 20.0                        |     |               |
|            |                         | 1513      | 1752.6      | 20.0                        |     |               |
|            | Subtest 4               | 1312      | 1712.4      | 20.4                        | 2.0 | 21.0          |
|            |                         | 1413      | 1732.6      | 20.4                        |     |               |
|            |                         | 1513      | 1752.6      | 20.5                        |     |               |
|            | Subtest 5               | 1312      | 1712.4      | 21.0                        | 0.0 | 23.0          |
|            |                         | 1413      | 1732.6      | 21.0                        |     |               |
|            |                         | 1513      | 1752.6      | 21.1                        |     |               |
| DC-HSDPA   | Subtest 1               | 1312      | 1712.4      | 21.1                        | 0.0 | 23.0          |
|            |                         | 1413      | 1732.6      | 21.2                        |     |               |
|            |                         | 1513      | 1752.6      | 21.0                        |     |               |
|            | Subtest 2               | 1312      | 1712.4      | 21.0                        | 0.0 | 23.0          |
|            |                         | 1413      | 1732.6      | 21.2                        |     |               |
|            |                         | 1513      | 1752.6      | 21.0                        |     |               |
|            | Subtest 3               | 1312      | 1712.4      | 21.1                        | 0.5 | 22.5          |
|            |                         | 1413      | 1732.6      | 21.1                        |     |               |
|            |                         | 1513      | 1752.6      | 21.1                        |     |               |
|            | Subtest 4               | 1312      | 1712.4      | 21.2                        | 0.5 | 22.5          |
|            |                         | 1413      | 1732.6      | 21.2                        |     |               |
|            |                         | 1513      | 1752.6      | 21.2                        |     |               |

**W-CDMA Band II Measured Results**

| Mode       |                         | UL Ch No. | Freq. (MHz) | Maximum Average Power (dBm) |     |               |
|------------|-------------------------|-----------|-------------|-----------------------------|-----|---------------|
|            |                         |           |             | Measured Pwr                | MPR | Tune-up Limit |
| Release 99 | Rel 99 (RMC, 12.2 kbps) | 9262      | 1852.4      | 20.7                        | N/A | 22.0          |
|            |                         | 9400      | 1880.0      | 20.7                        |     |               |
|            |                         | 9538      | 1907.6      | 20.8                        |     |               |
| HSDPA      | Subtest 1               | 9262      | 1852.4      | 19.7                        | 0.0 | 22.0          |
|            |                         | 9400      | 1880.0      | 19.6                        |     |               |
|            |                         | 9538      | 1907.6      | 19.6                        |     |               |
|            | Subtest 2               | 9262      | 1852.4      | 19.1                        | 0.0 | 22.0          |
|            |                         | 9400      | 1880.0      | 19.2                        |     |               |
|            |                         | 9538      | 1907.6      | 19.1                        |     |               |
|            | Subtest 3               | 9262      | 1852.4      | 18.7                        | 0.5 | 21.5          |
|            |                         | 9400      | 1880.0      | 18.9                        |     |               |
|            |                         | 9538      | 1907.6      | 18.8                        |     |               |
|            | Subtest 4               | 9262      | 1852.4      | 18.5                        | 0.5 | 21.5          |
|            |                         | 9400      | 1880.0      | 18.5                        |     |               |
|            |                         | 9538      | 1907.6      | 18.7                        |     |               |
| HSUPA      | Subtest 1               | 9262      | 1852.4      | 19.6                        | 0.0 | 22.0          |
|            |                         | 9400      | 1880.0      | 19.7                        |     |               |
|            |                         | 9538      | 1907.6      | 19.3                        |     |               |
|            | Subtest 2               | 9262      | 1852.4      | 18.6                        | 2.0 | 20.0          |
|            |                         | 9400      | 1880.0      | 18.6                        |     |               |
|            |                         | 9538      | 1907.6      | 18.4                        |     |               |
|            | Subtest 3               | 9262      | 1852.4      | 18.6                        | 1.0 | 21.0          |
|            |                         | 9400      | 1880.0      | 18.0                        |     |               |
|            |                         | 9538      | 1907.6      | 18.3                        |     |               |
|            | Subtest 4               | 9262      | 1852.4      | 19.1                        | 2.0 | 20.0          |
|            |                         | 9400      | 1880.0      | 19.1                        |     |               |
|            |                         | 9538      | 1907.6      | 18.8                        |     |               |
|            | Subtest 5               | 9262      | 1852.4      | 19.7                        | 0.0 | 22.0          |
|            |                         | 9400      | 1880.0      | 19.7                        |     |               |
|            |                         | 9538      | 1907.6      | 19.7                        |     |               |
| DC-HSDPA   | Subtest 1               | 9262      | 1852.4      | 19.6                        | 0.0 | 22.0          |
|            |                         | 9400      | 1880.0      | 19.7                        |     |               |
|            |                         | 9538      | 1907.6      | 19.6                        |     |               |
|            | Subtest 2               | 9262      | 1852.4      | 19.6                        | 0.0 | 22.0          |
|            |                         | 9400      | 1880.0      | 19.7                        |     |               |
|            |                         | 9538      | 1907.6      | 19.7                        |     |               |
|            | Subtest 3               | 9262      | 1852.4      | 19.2                        | 0.5 | 21.5          |
|            |                         | 9400      | 1880.0      | 19.1                        |     |               |
|            |                         | 9538      | 1907.6      | 19.2                        |     |               |
|            | Subtest 4               | 9262      | 1852.4      | 19.1                        | 0.5 | 21.5          |
|            |                         | 9400      | 1880.0      | 19.1                        |     |               |
|            |                         | 9538      | 1907.6      | 19.2                        |     |               |

## 7.2. LTE

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

UE Power Class: 3 (23 +/- 2dBm). 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 1, 2 and 3**

| Modulation | Channel bandwidth / Transmission bandwidth (N <sub>RB</sub> ) |         |       |        |        |        | 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      |
| 64 QAM     | ≤ 5                                                           | ≤ 4     | ≤ 8   | ≤ 12   | ≤ 16   | ≤ 18   | ≤ 2      |
| 64 QAM     | > 5                                                           | > 4     | > 8   | > 12   | > 16   | > 18   | ≤ 3      |
| 256 QAM    | ≥ 1                                                           |         |       |        |        |        | ≤ 5      |

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of "NS\_01".

**Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)**

| Network Signalling value | Requirements (subclause)       | E-UTRA Band                      | Channel bandwidth (MHz) | Resources Blocks ( $N_{RB}$ )                  | A-MPR (dB)        |
|--------------------------|--------------------------------|----------------------------------|-------------------------|------------------------------------------------|-------------------|
| NS_01                    | 6.6.2.1.1                      | Table 5.5-1                      | 1.4, 3, 5, 10, 15, 20   | Table 5.6-1                                    | N/A               |
| NS_03                    | 6.6.2.2.1                      | 2, 4, 10, 23, 25, 35, 36, 66, 70 | 3                       | >5                                             | $\leq 1$          |
|                          |                                |                                  | 5                       | >6                                             | $\leq 1$          |
|                          |                                |                                  | 10                      | >6                                             | $\leq 1$          |
|                          |                                |                                  | 15                      | >8                                             | $\leq 1$          |
|                          |                                |                                  | 20                      | >10                                            | $\leq 1$          |
| NS_04                    | 6.6.2.2.2, 6.6.3.3.19          | 41                               | 5, 10, 15, 20           | Table 6.2.4-4, Table 6.2.4-4a                  |                   |
| NS_05                    | 6.6.3.3.1                      | 1                                | 10, 15, 20              | $\geq 50$ (NOTE1)                              | $\leq 1$ (NOTE1)  |
|                          |                                |                                  | 15, 20                  | Table 6.2.4-18 (NOTE2)                         |                   |
|                          |                                | 65 (NOTE 3)                      | 10, 15, 20              | $\geq 50$                                      | $\leq 1$ (NOTE 1) |
|                          |                                |                                  | 15, 20                  | Table 6.2.4-18 (NOTE 2)                        |                   |
| NS_06                    | 6.6.2.2.3                      | 12, 13, 14, 17                   | 1.4, 3, 5, 10           | Table 5.6-1                                    | N/A               |
| NS_07                    | 6.6.2.2.3                      | 13                               | 10                      | Table 6.2.4-2                                  |                   |
| NS_08                    | 6.6.3.3.2                      |                                  |                         |                                                |                   |
| NS_09                    | 6.6.3.3.3                      | 19                               | 10, 15                  | > 44                                           | $\leq 3$          |
| NS_10                    | 6.6.3.3.4                      | 21                               | 10, 15                  | > 40                                           | $\leq 1$          |
|                          |                                |                                  |                         | > 55                                           | $\leq 2$          |
| NS_11                    | 6.6.2.2.1                      | 20                               | 15, 20                  | Table 6.2.4-3                                  |                   |
| NS_12                    | 6.6.3.3.13                     | 23                               | 1.4, 3, 5, 10, 15, 20   | Table 6.2.4-5                                  |                   |
| NS_13                    | 6.6.3.3.5                      | 26                               | 1.4, 3, 5, 10, 15       | Table 6.2.4-6                                  |                   |
| NS_14                    | 6.6.3.3.6                      | 26                               | 5                       | Table 6.2.4-7                                  |                   |
| NS_15                    | 6.6.3.3.7                      | 26                               | 10, 15                  | Table 6.2.4-8                                  |                   |
| NS_16                    | 6.6.3.3.8                      | 26                               | 1.4, 3, 5, 10, 15       | Table 6.2.4-9                                  |                   |
| NS_17                    | 6.6.3.3.9                      | 27                               | 3, 5, 10                | Table 6.2.4-10                                 |                   |
| NS_18                    | 6.6.3.3.10                     | 27                               | 3, 5, 10                | Table 6.2.4-11, Table 6.2.4-12, Table 6.2.4-13 |                   |
| NS_19                    | 6.6.3.3.10                     | 28                               | 5, 10                   | Table 5.6-1                                    | N/A               |
| NS_20                    | 6.6.3.3.11                     | 28                               | 5                       | $\geq 2$                                       | $\leq 1$          |
|                          |                                |                                  | 10, 15, 20              | $\geq 1$                                       | $\leq 4$          |
| NS_21                    | 6.6.3.3.12                     | 44                               | 10, 15, 20              | Table 6.2.4-14                                 |                   |
| NS_22                    | 6.2.2                          | 23                               | 5, 10, 15, 20           | Table 6.2.4-15                                 |                   |
| NS_23                    | 6.6.2.2.1                      |                                  |                         |                                                |                   |
| NS_24                    | 6.6.3.3.14                     | 30                               | 5, 10                   | Table 6.2.4-16                                 |                   |
| NS_25                    | 6.6.2.2.1                      | 30                               | 5, 10                   | Table 6.2.4-16                                 |                   |
| NS_26                    | 6.6.3.3.15                     | 42, 43                           | 5, 10, 15, 20           | Table 6.2.4-17                                 |                   |
| NS_27                    | 6.6.3.3.16                     | 42, 43                           | 5, 10, 15, 20           | N/A                                            |                   |
| NS_28                    | 6.6.3.3.17                     | 65 (NOTE 4)                      | 5, 10, 15, 20           | Table 6.2.4-19                                 |                   |
| NS_29                    | 6.6.3.3.21                     | 65 (NOTE 4)                      | 5, 10, 15, 20           | Table 6.2.4-20                                 |                   |
| NS_30                    | 6.6.3.3.22                     | 68                               | 10, 15                  | Table 6.2.4-21                                 |                   |
| NS_31                    | 6.6.2.2.5, 6.6.3.3.23          | 48                               | 5, 10, 15, 20           | Table 6.2.4-22                                 |                   |
| NS_32                    | 6.2.2A, 6.6.3.3.24             | 46 (NOTE 5)                      | 20                      | Table 6.2.4-23                                 |                   |
| NS_33                    | 6.2.2A, 6.6.2.3.1a, 6.6.3.3.25 | 46 (NOTE 5)                      | 20                      | Table 6.2.4-24                                 |                   |
| NS_34                    | 6.2.2A, 6.6.3.3.26             | 46 (NOTE 5)                      | 20                      | Table 6.2.4-25                                 |                   |
| NS_35                    | 6.2.2A, 6.6.3.3.27             | 46 (NOTE 5)                      | 20                      | Table 6.2.4-26                                 |                   |
| NS_36                    | -                              | -                                | -                       | -                                              | -                 |

NOTE 1: Applicable when the lower edge of the assigned E-UTRA UL channel bandwidth frequency is larger than or equal to the upper edge of PHS band (1915.7 MHz) + 4 MHz + the channel BW assigned, where channel BW is as defined in subclause 5.6. A-MPR for

### LTE Band 2 Measured Results

| BW<br>(MHz) | Mode | RB<br>Allocation | RB<br>offset | Maximum Average Power (dBm) |          |            |     |                  |
|-------------|------|------------------|--------------|-----------------------------|----------|------------|-----|------------------|
|             |      |                  |              | 18700                       | 18900    | 19100      | MPR | Tune-up<br>Limit |
|             |      |                  |              | 1860 MHz                    | 1880 MHz | 1900 MHz   |     |                  |
| 20 MHz      | QPSK | 1                | 0            | 21.0                        | 20.8     | 20.7       | 0.0 | 21.5             |
|             |      | 1                | 49           | 20.7                        | 20.8     | 20.7       | 0.0 | 21.5             |
|             |      | 1                | 99           | 20.6                        | 21.0     | 20.8       | 0.0 | 21.5             |
|             |      | 50               | 0            | 19.8                        | 19.7     | 19.7       | 1.0 | 20.5             |
|             |      | 50               | 24           | 19.7                        | 19.8     | 19.7       | 1.0 | 20.5             |
|             |      | 50               | 50           | 19.6                        | 19.9     | 19.6       | 1.0 | 20.5             |
|             |      | 100              | 0            | 19.8                        | 19.7     | 19.7       | 1.0 | 20.5             |
| BW<br>(MHz) | Mode | RB<br>Allocation | RB<br>offset | Maximum Average Power (dBm) |          |            |     |                  |
|             |      |                  |              | 18675.0                     | 18900.0  | 19125.0    | MPR | Tune-up<br>Limit |
|             |      |                  |              | 1857.5 MHz                  | 1880 MHz | 1902.5 MHz |     |                  |
| 15 MHz      | QPSK | 1                | 0            | 21.0                        | 21.2     | 21.0       | 0.0 | 21.5             |
|             |      | 1                | 37           | 21.0                        | 21.1     | 21.0       | 0.0 | 21.5             |
|             |      | 1                | 74           | 20.9                        | 21.1     | 21.0       | 0.0 | 21.5             |
|             |      | 36               | 0            | 20.0                        | 20.2     | 19.9       | 1.0 | 20.5             |
|             |      | 36               | 20           | 20.0                        | 20.2     | 19.8       | 1.0 | 20.5             |
|             |      | 36               | 39           | 19.9                        | 20.2     | 20.0       | 1.0 | 20.5             |
|             |      | 75               | 0            | 20.1                        | 20.2     | 19.9       | 1.0 | 20.5             |
| BW<br>(MHz) | Mode | RB<br>Allocation | RB<br>offset | Maximum Average Power (dBm) |          |            |     |                  |
|             |      |                  |              | 18650.0                     | 18900.0  | 19150.0    | MPR | Tune-up<br>Limit |
|             |      |                  |              | 1855 MHz                    | 1880 MHz | 1905 MHz   |     |                  |
| 10 MHz      | QPSK | 1                | 0            | 21.2                        | 21.1     | 21.0       | 0.0 | 21.5             |
|             |      | 1                | 25           | 21.2                        | 21.3     | 20.9       | 0.0 | 21.5             |
|             |      | 1                | 49           | 21.1                        | 21.4     | 21.3       | 0.0 | 21.5             |
|             |      | 25               | 0            | 20.2                        | 20.0     | 19.9       | 1.0 | 20.5             |
|             |      | 25               | 12           | 20.2                        | 20.1     | 19.9       | 1.0 | 20.5             |
|             |      | 25               | 25           | 20.1                        | 20.1     | 19.9       | 1.0 | 20.5             |
|             |      | 50               | 0            | 20.1                        | 20.0     | 20.0       | 1.0 | 20.5             |

#### Note(s):

1. Device supports LTE UE Category 1 only. Therefore, 16QAM only supports channel bandwidths up to 5MHz per Table A.2.2.1.2-1 of 3GPP TS 36.101.

**LTE Band 2 Measured Results (continued)**

| BW<br>(MHz) | Mode  | RB<br>Allocation | RB<br>offset | Maximum Average Power (dBm) |          |            |     |                  |
|-------------|-------|------------------|--------------|-----------------------------|----------|------------|-----|------------------|
|             |       |                  |              | 18625.0                     | 18900.0  | 19175.0    | MPR | Tune-up<br>Limit |
|             |       |                  |              | 1852.5 MHz                  | 1880 MHz | 1907.5 MHz |     |                  |
| 5 MHz       | QPSK  | 1                | 0            | 20.7                        | 20.8     | 20.8       | 0.0 | 21.5             |
|             |       | 1                | 12           | 20.7                        | 21.0     | 21.1       | 0.0 | 21.5             |
|             |       | 1                | 24           | 20.8                        | 21.1     | 21.0       | 0.0 | 21.5             |
|             |       | 12               | 0            | 19.9                        | 19.9     | 19.8       | 1.0 | 20.5             |
|             |       | 12               | 7            | 19.9                        | 20.0     | 19.9       | 1.0 | 20.5             |
|             |       | 12               | 13           | 20.0                        | 20.1     | 20.0       | 1.0 | 20.5             |
|             |       | 25               | 0            | 20.1                        | 20.1     | 19.8       | 1.0 | 20.5             |
|             | 16QAM | 1                | 0            | 19.9                        | 19.6     | 19.4       | 1.0 | 20.5             |
|             |       | 1                | 12           | 20.0                        | 19.9     | 19.5       | 1.0 | 20.5             |
|             |       | 1                | 24           | 20.1                        | 19.7     | 20.0       | 1.0 | 20.5             |
|             |       | 12               | 0            | 18.9                        | 18.9     | 18.8       | 2.0 | 19.5             |
|             |       | 12               | 7            | 18.9                        | 18.9     | 18.8       | 2.0 | 19.5             |
|             |       | 12               | 13           | 18.8                        | 18.9     | 18.9       | 2.0 | 19.5             |
|             |       | 25               | 0            | 18.9                        | 18.9     | 18.9       | 2.0 | 19.5             |
| BW<br>(MHz) | Mode  | RB<br>Allocation | RB<br>offset | Maximum Average Power (dBm) |          |            |     |                  |
|             |       |                  |              | 18615.0                     | 18900.0  | 19185.0    | MPR | Tune-up<br>Limit |
|             |       |                  |              | 1851.5 MHz                  | 1880 MHz | 1908.5 MHz |     |                  |
| 3 MHz       | QPSK  | 1                | 0            | 21.1                        | 21.0     | 21.1       | 0.0 | 21.5             |
|             |       | 1                | 8            | 21.0                        | 21.1     | 21.1       | 0.0 | 21.5             |
|             |       | 1                | 14           | 21.0                        | 21.1     | 21.1       | 0.0 | 21.5             |
|             |       | 8                | 0            | 20.0                        | 20.1     | 20.0       | 1.0 | 20.5             |
|             |       | 8                | 4            | 19.9                        | 20.1     | 20.0       | 1.0 | 20.5             |
|             |       | 8                | 7            | 20.0                        | 20.1     | 19.9       | 1.0 | 20.5             |
|             |       | 15               | 0            | 20.0                        | 20.1     | 19.9       | 1.0 | 20.5             |
|             | 16QAM | 1                | 0            | 19.8                        | 20.1     | 20.0       | 1.0 | 20.5             |
|             |       | 1                | 8            | 20.2                        | 20.2     | 19.9       | 1.0 | 20.5             |
|             |       | 1                | 14           | 19.9                        | 19.8     | 20.0       | 1.0 | 20.5             |
|             |       | 8                | 0            | 18.9                        | 18.7     | 18.9       | 2.0 | 19.5             |
|             |       | 8                | 4            | 19.0                        | 18.7     | 18.9       | 2.0 | 19.5             |
|             |       | 8                | 7            | 19.2                        | 18.7     | 19.0       | 2.0 | 19.5             |
|             |       | 15               | 0            | 19.0                        | 18.8     | 19.0       | 2.0 | 19.5             |
| BW<br>(MHz) | Mode  | RB<br>Allocation | RB<br>offset | Maximum Average Power (dBm) |          |            |     |                  |
|             |       |                  |              | 18607.0                     | 18900.0  | 19193.0    | MPR | Tune-up<br>Limit |
|             |       |                  |              | 1850.7 MHz                  | 1880 MHz | 1909.3 MHz |     |                  |
| 1.4 MHz     | QPSK  | 1                | 0            | 21.2                        | 21.1     | 21.1       | 0.0 | 21.5             |
|             |       | 1                | 3            | 21.3                        | 21.2     | 21.2       | 0.0 | 21.5             |
|             |       | 1                | 5            | 21.1                        | 21.2     | 21.1       | 0.0 | 21.5             |
|             |       | 3                | 0            | 21.2                        | 21.1     | 21.1       | 0.0 | 21.5             |
|             |       | 3                | 1            | 21.2                        | 21.2     | 21.1       | 0.0 | 21.5             |
|             |       | 3                | 3            | 21.2                        | 21.3     | 21.0       | 0.0 | 21.5             |
|             |       | 6                | 0            | 20.2                        | 20.2     | 20.0       | 1.0 | 20.5             |
|             | 16QAM | 1                | 0            | 20.0                        | 20.0     | 19.9       | 1.0 | 20.5             |
|             |       | 1                | 3            | 20.0                        | 20.1     | 20.3       | 1.0 | 20.5             |
|             |       | 1                | 5            | 19.9                        | 20.1     | 19.9       | 1.0 | 20.5             |
|             |       | 3                | 0            | 20.1                        | 20.5     | 20.2       | 1.0 | 20.5             |
|             |       | 3                | 1            | 20.0                        | 20.5     | 20.2       | 1.0 | 20.5             |
|             |       | 3                | 3            | 20.1                        | 20.5     | 20.3       | 1.0 | 20.5             |
|             |       | 6                | 0            | 19.0                        | 19.3     | 19.1       | 2.0 | 19.5             |

### LTE Band 4 Measured Results

| BW<br>(MHz) | Mode | RB<br>Allocation | RB<br>offset | Maximum Average Power (dBm) |            |            |     |                  |
|-------------|------|------------------|--------------|-----------------------------|------------|------------|-----|------------------|
|             |      |                  |              |                             | 20175      |            | MPR | Tune-up<br>Limit |
|             |      |                  |              |                             | 1732.5 MHz |            |     |                  |
| 20 MHz      | QPSK | 1                | 0            |                             | 22.6       |            | 0.0 | 23.5             |
|             |      | 1                | 49           |                             | 22.5       |            | 0.0 | 23.5             |
|             |      | 1                | 99           |                             | 22.1       |            | 0.0 | 23.5             |
|             |      | 50               | 0            |                             | 21.3       |            | 1.0 | 22.5             |
|             |      | 50               | 24           |                             | 21.2       |            | 1.0 | 22.5             |
|             |      | 50               | 50           |                             | 21.1       |            | 1.0 | 22.5             |
|             |      | 100              | 0            |                             | 21.6       |            | 1.0 | 22.5             |
| BW<br>(MHz) | Mode | RB<br>Allocation | RB<br>offset | Maximum Average Power (dBm) |            |            |     |                  |
|             |      |                  |              | 20025.0                     | 20175.0    | 20325.0    | MPR | Tune-up<br>Limit |
|             |      |                  |              | 1717.5 MHz                  | 1732.5 MHz | 1747.5 MHz |     |                  |
| 15 MHz      | QPSK | 1                | 0            | 21.6                        | 22.4       | 22.3       | 0.0 | 23.5             |
|             |      | 1                | 37           | 21.8                        | 22.3       | 22.2       | 0.0 | 23.5             |
|             |      | 1                | 74           | 22.0                        | 22.0       | 22.4       | 0.0 | 23.5             |
|             |      | 36               | 0            | 20.6                        | 21.0       | 20.8       | 1.0 | 22.5             |
|             |      | 36               | 20           | 20.7                        | 20.9       | 20.8       | 1.0 | 22.5             |
|             |      | 36               | 39           | 20.7                        | 20.9       | 20.9       | 1.0 | 22.5             |
|             |      | 75               | 0            | 20.7                        | 20.8       | 20.8       | 1.0 | 22.5             |
| BW<br>(MHz) | Mode | RB<br>Allocation | RB<br>offset | Maximum Average Power (dBm) |            |            |     |                  |
|             |      |                  |              | 20000.0                     | 20175.0    | 20350.0    | MPR | Tune-up<br>Limit |
|             |      |                  |              | 1715 MHz                    | 1732.5 MHz | 1750 MHz   |     |                  |
| 10 MHz      | QPSK | 1                | 0            | 22.0                        | 22.1       | 22.0       | 0.0 | 23.5             |
|             |      | 1                | 25           | 22.0                        | 22.1       | 22.2       | 0.0 | 23.5             |
|             |      | 1                | 49           | 22.1                        | 22.0       | 22.4       | 0.0 | 23.5             |
|             |      | 25               | 0            | 20.8                        | 20.8       | 20.9       | 1.0 | 22.5             |
|             |      | 25               | 12           | 20.7                        | 20.8       | 21.0       | 1.0 | 22.5             |
|             |      | 25               | 25           | 20.8                        | 20.8       | 21.0       | 1.0 | 22.5             |
|             |      | 50               | 0            | 20.8                        | 20.9       | 20.9       | 1.0 | 22.5             |

### Note(s):

- Device supports LTE UE Category 1 only. Therefore, 16QAM only supports channel bandwidths up to 5MHz per Table A.2.2.1.2-1 of 3GPP TS 36.101.

**LTE Band 4 Measured Results (continued)**

| BW<br>(MHz) | Mode  | RB<br>Allocation | RB<br>offset | Maximum Average Power (dBm) |            |            |     |                  |
|-------------|-------|------------------|--------------|-----------------------------|------------|------------|-----|------------------|
|             |       |                  |              | 19975.0                     | 20175.0    | 20375.0    | MPR | Tune-up<br>Limit |
|             |       |                  |              | 1712.5 MHz                  | 1732.5 MHz | 1752.5 MHz |     |                  |
| 5 MHz       | QPSK  | 1                | 0            | 21.5                        | 21.7       | 22.1       | 0.0 | 23.5             |
|             |       | 1                | 12           | 21.7                        | 21.9       | 22.0       | 0.0 | 23.5             |
|             |       | 1                | 24           | 21.6                        | 21.9       | 22.3       | 0.0 | 23.5             |
|             |       | 12               | 0            | 20.7                        | 20.9       | 20.8       | 1.0 | 22.5             |
|             |       | 12               | 7            | 20.7                        | 20.9       | 21.0       | 1.0 | 22.5             |
|             |       | 12               | 13           | 20.7                        | 20.9       | 21.1       | 1.0 | 22.5             |
|             |       | 25               | 0            | 20.7                        | 20.9       | 20.8       | 1.0 | 22.5             |
|             | 16QAM | 1                | 0            | 20.6                        | 20.6       | 20.5       | 1.0 | 22.5             |
|             |       | 1                | 12           | 20.5                        | 20.5       | 20.5       | 1.0 | 22.5             |
|             |       | 1                | 24           | 20.7                        | 20.6       | 21.1       | 1.0 | 22.5             |
|             |       | 12               | 0            | 19.6                        | 19.8       | 19.7       | 2.0 | 21.5             |
|             |       | 12               | 7            | 19.6                        | 19.9       | 19.7       | 2.0 | 21.5             |
|             |       | 12               | 13           | 19.8                        | 19.9       | 19.9       | 2.0 | 21.5             |
|             |       | 25               | 0            | 19.9                        | 19.9       | 20.0       | 2.0 | 21.5             |
| BW<br>(MHz) | Mode  | RB<br>Allocation | RB<br>offset | Maximum Average Power (dBm) |            |            |     |                  |
|             |       |                  |              | 19965.0                     | 20175.0    | 20385.0    | MPR | Tune-up<br>Limit |
|             |       |                  |              | 1711.5 MHz                  | 1732.5 MHz | 1753.5 MHz |     |                  |
| 3 MHz       | QPSK  | 1                | 0            | 22.0                        | 21.9       | 21.8       | 0.0 | 23.5             |
|             |       | 1                | 8            | 21.7                        | 21.9       | 21.9       | 0.0 | 23.5             |
|             |       | 1                | 14           | 22.0                        | 21.8       | 22.1       | 0.0 | 23.5             |
|             |       | 8                | 0            | 20.6                        | 20.8       | 20.8       | 1.0 | 22.5             |
|             |       | 8                | 4            | 20.6                        | 20.8       | 20.8       | 1.0 | 22.5             |
|             |       | 8                | 7            | 20.7                        | 20.8       | 20.9       | 1.0 | 22.5             |
|             |       | 15               | 0            | 20.7                        | 21.0       | 21.0       | 1.0 | 22.5             |
|             | 16QAM | 1                | 0            | 20.5                        | 20.8       | 20.8       | 1.0 | 22.5             |
|             |       | 1                | 8            | 20.9                        | 20.6       | 20.7       | 1.0 | 22.5             |
|             |       | 1                | 14           | 20.5                        | 20.5       | 20.8       | 1.0 | 22.5             |
|             |       | 8                | 0            | 19.8                        | 20.1       | 19.7       | 2.0 | 21.5             |
|             |       | 8                | 4            | 19.9                        | 19.9       | 19.8       | 2.0 | 21.5             |
|             |       | 8                | 7            | 19.8                        | 19.8       | 20.0       | 2.0 | 21.5             |
|             |       | 15               | 0            | 19.8                        | 20.0       | 19.9       | 2.0 | 21.5             |
| BW<br>(MHz) | Mode  | RB<br>Allocation | RB<br>offset | Maximum Average Power (dBm) |            |            |     |                  |
|             |       |                  |              | 19957.0                     | 20175.0    | 20393.0    | MPR | Tune-up<br>Limit |
|             |       |                  |              | 1710.7 MHz                  | 1732.5 MHz | 1754.3 MHz |     |                  |
| 1.4 MHz     | QPSK  | 1                | 0            | 21.9                        | 22.0       | 22.0       | 0.0 | 23.5             |
|             |       | 1                | 3            | 22.0                        | 22.1       | 22.0       | 0.0 | 23.5             |
|             |       | 1                | 5            | 21.8                        | 21.9       | 22.1       | 0.0 | 23.5             |
|             |       | 3                | 0            | 21.9                        | 21.9       | 22.1       | 0.0 | 23.5             |
|             |       | 3                | 1            | 21.9                        | 22.0       | 22.1       | 0.0 | 23.5             |
|             |       | 3                | 3            | 21.9                        | 22.1       | 22.1       | 0.0 | 23.5             |
|             |       | 6                | 0            | 20.7                        | 20.9       | 21.0       | 1.0 | 22.5             |
|             | 16QAM | 1                | 0            | 20.8                        | 21.1       | 20.8       | 1.0 | 22.5             |
|             |       | 1                | 3            | 20.8                        | 21.2       | 20.9       | 1.0 | 22.5             |
|             |       | 1                | 5            | 20.8                        | 21.0       | 20.8       | 1.0 | 22.5             |
|             |       | 3                | 0            | 21.0                        | 21.2       | 20.7       | 1.0 | 22.5             |
|             |       | 3                | 1            | 20.9                        | 21.2       | 20.8       | 1.0 | 22.5             |
|             |       | 3                | 3            | 20.9                        | 21.0       | 20.9       | 1.0 | 22.5             |
|             |       | 6                | 0            | 19.9                        | 20.3       | 19.8       | 2.0 | 21.5             |

### LTE Band 12 Measured Results

| BW<br>(MHz) | Mode  | RB<br>Allocation | RB<br>offset | Maximum Average Power (dBm) |           |           |     |                  |
|-------------|-------|------------------|--------------|-----------------------------|-----------|-----------|-----|------------------|
|             |       |                  |              |                             | 23095     |           | MPR | Tune-up<br>Limit |
|             |       |                  |              |                             | 707.5 MHz |           |     |                  |
| 10 MHz      | QPSK  | 1                | 0            |                             | 22.6      |           | 0.0 | 23.5             |
|             |       | 1                | 25           |                             | 22.9      |           | 0.0 | 23.5             |
|             |       | 1                | 49           |                             | 22.6      |           | 0.0 | 23.5             |
|             |       | 25               | 0            |                             | 21.7      |           | 1.0 | 22.5             |
|             |       | 25               | 12           |                             | 21.7      |           | 1.0 | 22.5             |
|             |       | 25               | 25           |                             | 21.7      |           | 1.0 | 22.5             |
|             |       | 50               | 0            |                             | 21.8      |           | 1.0 | 22.5             |
| BW<br>(MHz) | Mode  | RB<br>Allocation | RB<br>offset | Maximum Average Power (dBm) |           |           |     |                  |
|             |       |                  |              | 23035.0                     | 23095.0   | 23155.0   | MPR | Tune-up<br>Limit |
|             |       |                  |              | 701.5 MHz                   | 707.5 MHz | 713.5 MHz |     |                  |
| 5 MHz       | QPSK  | 1                | 0            | 22.4                        | 22.8      | 22.5      | 0.0 | 23.5             |
|             |       | 1                | 12           | 22.5                        | 23.1      | 22.6      | 0.0 | 23.5             |
|             |       | 1                | 24           | 22.4                        | 22.7      | 22.5      | 0.0 | 23.5             |
|             |       | 12               | 0            | 21.8                        | 21.7      | 21.6      | 1.0 | 22.5             |
|             |       | 12               | 7            | 21.6                        | 21.8      | 21.6      | 1.0 | 22.5             |
|             |       | 12               | 13           | 21.4                        | 21.8      | 21.7      | 1.0 | 22.5             |
|             |       | 25               | 0            | 21.6                        | 21.8      | 21.7      | 1.0 | 22.5             |
| BW<br>(MHz) | Mode  | RB<br>Allocation | RB<br>offset | Maximum Average Power (dBm) |           |           |     |                  |
|             |       |                  |              | 23025.0                     | 23095.0   | 23165.0   | MPR | Tune-up<br>Limit |
|             |       |                  |              | 700.5 MHz                   | 707.5 MHz | 714.5 MHz |     |                  |
| 3 MHz       | QPSK  | 1                | 0            | 22.7                        | 22.7      | 22.5      | 0.0 | 23.5             |
|             |       | 1                | 8            | 22.8                        | 22.7      | 22.5      | 0.0 | 23.5             |
|             |       | 1                | 14           | 22.6                        | 22.6      | 22.8      | 0.0 | 23.5             |
|             |       | 8                | 0            | 21.6                        | 21.7      | 21.6      | 1.0 | 22.5             |
|             |       | 8                | 4            | 21.7                        | 21.7      | 21.5      | 1.0 | 22.5             |
|             |       | 8                | 7            | 21.5                        | 21.6      | 21.6      | 1.0 | 22.5             |
|             |       | 15               | 0            | 21.6                        | 21.7      | 21.6      | 1.0 | 22.5             |
|             | 16QAM | 1                | 0            | 21.7                        | 21.8      | 21.4      | 1.0 | 22.5             |
|             |       | 1                | 8            | 21.8                        | 21.9      | 21.1      | 1.0 | 22.5             |
|             |       | 1                | 14           | 21.5                        | 21.7      | 21.4      | 1.0 | 22.5             |
|             |       | 8                | 0            | 21.0                        | 21.0      | 20.6      | 2.0 | 21.5             |
|             |       | 8                | 4            | 21.0                        | 21.0      | 20.6      | 2.0 | 21.5             |
|             |       | 8                | 7            | 20.8                        | 21.0      | 20.7      | 2.0 | 21.5             |
|             |       | 15               | 0            | 20.8                        | 20.7      | 20.6      | 2.0 | 21.5             |
| BW<br>(MHz) | Mode  | RB<br>Allocation | RB<br>offset | Maximum Average Power (dBm) |           |           |     |                  |
|             |       |                  |              | 23017.0                     | 23095.0   | 23173.0   | MPR | Tune-up<br>Limit |
|             |       |                  |              | 699.7 MHz                   | 707.5 MHz | 715.3 MHz |     |                  |
| 1.4 MHz     | QPSK  | 1                | 0            | 22.6                        | 22.6      | 22.4      | 0.0 | 23.5             |
|             |       | 1                | 3            | 22.6                        | 22.6      | 22.8      | 0.0 | 23.5             |
|             |       | 1                | 5            | 22.6                        | 22.6      | 22.7      | 0.0 | 23.5             |
|             |       | 3                | 0            | 22.6                        | 22.5      | 22.6      | 0.0 | 23.5             |
|             |       | 3                | 1            | 22.6                        | 22.6      | 22.7      | 0.0 | 23.5             |
|             |       | 3                | 3            | 22.6                        | 22.5      | 22.6      | 0.0 | 23.5             |
|             |       | 6                | 0            | 21.7                        | 21.6      | 21.7      | 1.0 | 22.5             |
|             | 16QAM | 1                | 0            | 21.3                        | 21.9      | 21.4      | 1.0 | 22.5             |
|             |       | 1                | 3            | 21.6                        | 22.1      | 21.6      | 1.0 | 22.5             |
|             |       | 1                | 5            | 21.4                        | 22.0      | 21.7      | 1.0 | 22.5             |
|             |       | 3                | 0            | 21.2                        | 21.9      | 21.7      | 1.0 | 22.5             |
|             |       | 3                | 1            | 21.3                        | 21.9      | 21.8      | 1.0 | 22.5             |
|             |       | 3                | 3            | 21.4                        | 21.9      | 21.8      | 1.0 | 22.5             |
|             |       | 6                | 0            | 20.7                        | 20.9      | 20.7      | 2.0 | 21.5             |

#### Note(s):

1. Device supports LTE UE Category 1 only. Therefore, 16QAM only supports channel bandwidths up to 5MHz per Table A.2.2.1.2-1 of 3GPP TS 36.101.

## 8. RADIATED TEST RESULTS

### 8.1. FIELD STRENGTH OF SPURIOUS RADIATION

#### RULE PART(S)

FCC: §2.1053, §22.917, §24.238, and §27.53.

#### LIMITS

FCC: §22.917(a), §24.238(a), and §27.53 (g), (h)

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log (P)$  dB.

#### TEST PROCEDURE

KDB 971168 D01 v03r01/D02 v02/r01

#### MODES TESTED

- WCDMA Band 2
- WCDMA Band 4
- WCDMA Band 5
- LTE Band 2
- LTE Band 4
- LTE Band 12

#### RESULTS

No spurious emissions were detected above system noise floor from 18-26GHz.

## HARMONICS AND SPURIOUS EMISSIONS

### 8.1.1. WCDMA Band 5

|                |                        |
|----------------|------------------------|
| Company:       | Anelto                 |
| Project #:     | 12775491               |
| Date:          | 8/26/2019              |
| Test Engineer: | 31300                  |
| Configuration: | EUT+ Support Equipment |
| Mode:          | Band 5 REL99           |
| Chamber #:     | Chamber K              |

| Marker    | Frequency (GHz) | Meter Reading (dBm) | Det | AF EMC4294 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | LIMIT | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------|-----------------|---------------------|-----|-------------------|--------------|--------------|-------------------------|-------|-------------|----------------|-------------|----------|
| 826.4 MHz |                 |                     |     |                   |              |              |                         |       |             |                |             |          |
| 1         | 1.65397         | -38.3               | Pk  | 28.7              | -35.5        | 10.2         | -34.9                   | -13   | -21.9       | 0-360          | 150         | H        |
| 3         | 2.48219         | -60.14              | Pk  | 32.5              | -35.3        | 10.4         | -52.54                  | -13   | -39.54      | 0-360          | 150         | H        |
| 5         | 3.30775         | -66.36              | Pk  | 32.8              | -33.5        | 10.8         | -56.26                  | -13   | -43.26      | 0-360          | 150         | H        |
| 2         | 1.65397         | -44.39              | Pk  | 28.7              | -35.5        | 11.1         | -40.09                  | -13   | -27.09      | 0-360          | 150         | V        |
| 4         | 2.47528         | -60                 | Pk  | 32.4              | -35.3        | 10.9         | -52                     | -13   | -39         | 0-360          | 150         | V        |
| 6         | 3.30084         | -62.04              | Pk  | 32.8              | -33.4        | 11           | -51.64                  | -13   | -38.64      | 0-360          | 150         | V        |

| Marker    | Frequency (GHz) | Meter Reading (dBm) | Det | AF EMC4294 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | LIMIT | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------|-----------------|---------------------|-----|-------------------|--------------|--------------|-------------------------|-------|-------------|----------------|-------------|----------|
| 836.6 MHz |                 |                     |     |                   |              |              |                         |       |             |                |             |          |
| 1         | * 1.67522       | -43.04              | Pk  | 28.8              | -35.5        | 9.8          | -39.94                  | -13   | -26.94      | 0-360          | 150         | H        |
| 2         | 2.51088         | -61.51              | Pk  | 32.4              | -35.3        | 10.2         | -54.21                  | -13   | -41.21      | 0-360          | 150         | H        |
| 3         | 3.34281         | -62.09              | Pk  | 32.9              | -33.4        | 10.6         | -51.99                  | -13   | -38.99      | 0-360          | 150         | H        |
| 4         | * 1.67097       | -49.59              | Pk  | 28.8              | -35.5        | 11.3         | -44.99                  | -13   | -31.99      | 0-360          | 150         | V        |
| 5         | 2.513           | -58.11              | Pk  | 32.4              | -35.3        | 11.4         | -49.61                  | -13   | -36.61      | 0-360          | 150         | V        |
| 6         | 3.34334         | -59.54              | Pk  | 32.9              | -33.4        | 10.8         | -49.24                  | -13   | -36.24      | 0-360          | 150         | V        |
| 7         | * 4.18378       | -63.64              | Pk  | 33.2              | -31.9        | 11           | -51.34                  | -13   | -38.34      | 0-360          | 150         | V        |

| Marker    | Frequency (GHz) | Meter Reading (dBm) | Det | AF EMC4294 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | LIMIT | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------|-----------------|---------------------|-----|-------------------|--------------|--------------|-------------------------|-------|-------------|----------------|-------------|----------|
| 846.6 MHz |                 |                     |     |                   |              |              |                         |       |             |                |             |          |
| 1         | * 1.69434       | -50                 | Pk  | 29                | -35.5        | 11.4         | -45.1                   | -13   | -32.1       | 0-360          | 150         | H        |
| 2         | 2.54169         | -61.27              | Pk  | 32.4              | -35.3        | 9.9          | -54.27                  | -13   | -41.27      | 0-360          | 150         | H        |
| 3         | 3.38319         | -63.37              | Pk  | 33                | -33.4        | 10.9         | -52.87                  | -13   | -39.87      | 0-360          | 150         | H        |
| 4         | * 1.69142       | -54.32              | Pk  | 29                | -35.5        | 11.9         | -48.92                  | -13   | -35.92      | 0-360          | 150         | V        |
| 5         | 2.53744         | -59.57              | Pk  | 32.4              | -35.3        | 10.5         | -51.97                  | -13   | -38.97      | 0-360          | 150         | V        |
| 6         | 3.38213         | -63.42              | Pk  | 33                | -33.4        | 11.1         | -52.72                  | -13   | -39.72      | 0-360          | 150         | V        |

|                |                        |
|----------------|------------------------|
| Company:       | Anelto                 |
| Project #:     | 12775491               |
| Date:          | 8/26/2019              |
| Test Engineer: | 10646                  |
| Configuration: | EUT+ Support Equipment |
| Mode:          | Band 5 HSDPA           |
| Chamber #:     | Chamber K              |

| Marker    | Frequency (GHz) | Meter Reading (dBm) | Det | AF EMC4294 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | LIMIT | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------|-----------------|---------------------|-----|-------------------|--------------|--------------|-------------------------|-------|-------------|----------------|-------------|----------|
| 826.4 MHz |                 |                     |     |                   |              |              |                         |       |             |                |             |          |
| 1         | 1.65078         | -38.94              | Pk  | 28.6              | -35.5        | 10.1         | -35.74                  | -13   | -22.74      | 0-360          | 150         | H        |
| 3         | 2.47528         | -59.5               | Pk  | 32.4              | -35.3        | 10.9         | -51.5                   | -13   | -38.5       | 0-360          | 150         | H        |
| 5         | 3.30775         | -66.19              | Pk  | 32.8              | -33.5        | 10.8         | -56.09                  | -13   | -43.09      | 0-360          | 150         | H        |
| 2         | 1.65078         | -45.81              | Pk  | 28.6              | -35.5        | 11           | -41.71                  | -13   | -28.71      | 0-360          | 150         | V        |
| 4         | 2.47581         | -59.57              | Pk  | 32.4              | -35.3        | 10.9         | -51.57                  | -13   | -38.57      | 0-360          | 150         | V        |
| 6         | 3.30881         | -63.65              | Pk  | 32.8              | -33.4        | 11.3         | -52.95                  | -13   | -39.95      | 0-360          | 150         | V        |

| Marker    | Frequency (GHz) | Meter Reading (dBm) | Det | AF EMC4294 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | LIMIT | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------|-----------------|---------------------|-----|-------------------|--------------|--------------|-------------------------|-------|-------------|----------------|-------------|----------|
| 836.6 MHz |                 |                     |     |                   |              |              |                         |       |             |                |             |          |
| 1         | 1.67416         | -41.55              | Pk  | 28.8              | -35.5        | 9.8          | -38.45                  | -13   | -25.45      | 0-360          | 150         | H        |
| 3         | 2.51141         | -60.4               | Pk  | 32.4              | -35.3        | 10.2         | -53.1                   | -13   | -40.1       | 0-360          | 150         | H        |
| 5         | 3.35078         | -62.46              | Pk  | 32.9              | -33.5        | 10.5         | -52.56                  | -13   | -39.56      | 0-360          | 150         | H        |
| 2         | 1.67416         | -48.11              | Pk  | 28.8              | -35.5        | 11.3         | -43.51                  | -13   | -30.51      | 0-360          | 150         | V        |
| 4         | 2.51353         | -57.71              | Pk  | 32.4              | -35.3        | 11.3         | -49.31                  | -13   | -36.31      | 0-360          | 150         | V        |
| 6         | 3.34972         | -60.09              | Pk  | 32.9              | -33.5        | 10.7         | -49.99                  | -13   | -36.99      | 0-360          | 150         | V        |

| Marker    | Frequency (GHz) | Meter Reading (dBm) | Det | AF EMC4294 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | LIMIT | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------|-----------------|---------------------|-----|-------------------|--------------|--------------|-------------------------|-------|-------------|----------------|-------------|----------|
| 846.6 MHz |                 |                     |     |                   |              |              |                         |       |             |                |             |          |
| 1         | 1.69116         | -49.21              | Pk  | 29                | -35.5        | 11           | -44.71                  | -13   | -31.71      | 0-360          | 150         | H        |
| 3         | 2.54169         | -62.27              | Pk  | 32.4              | -35.3        | 9.9          | -55.27                  | -13   | -42.27      | 0-360          | 150         | H        |
| 5         | 3.38213         | -65.55              | Pk  | 33                | -33.4        | 11           | -54.95                  | -13   | -41.95      | 0-360          | 150         | H        |
| 2         | 1.69116         | -53.77              | Pk  | 29                | -35.5        | 11.9         | -48.37                  | -13   | -35.37      | 0-360          | 150         | V        |
| 4         | 2.54222         | -59.75              | Pk  | 32.4              | -35.3        | 10.5         | -52.15                  | -13   | -39.15      | 0-360          | 150         | V        |
| 6         | 3.38319         | -62.69              | Pk  | 33                | -33.4        | 11.1         | -51.99                  | -13   | -38.99      | 0-360          | 150         | V        |

## 8.1.2. WCDMA Band 2

|                |                        |
|----------------|------------------------|
| Company:       | Anelto                 |
| Project #:     | 12775491               |
| Date:          | 8/23/2019              |
| Test Engineer: | 43575 OS               |
| Configuration: | EUT+ Support Equipment |
| Mode:          | Band 2 REL99           |
| Chamber #:     | Chamber K              |

| Marker     | Frequency (GHz) | Meter Reading (dBm) | Det | AF EMC4294 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | Limit | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|------------|-----------------|---------------------|-----|-------------------|--------------|--------------|-------------------------|-------|-------------|----------------|-------------|----------|
| 1852.4 MHz |                 |                     |     |                   |              |              |                         |       |             |                |             |          |
| 1          | 1.85266         | -61.47              | Pk  | 30.9              | -35.4        | 11           | -54.97                  | -13   | -41.97      | 0-360          | 150         | H        |
| 2          | 3.703           | -68.3               | Pk  | 33                | -32.6        | 10.7         | -57.2                   | -13   | -44.2       | 0-360          | 150         | H        |
| 3          | 5.55334         | -64.74              | Pk  | 34.6              | -29.9        | 10.7         | -49.34                  | -13   | -36.34      | 0-360          | 150         | H        |
| 4          | 7.43716         | -73.26              | Pk  | 35.7              | -26.8        | 10.4         | -53.96                  | -13   | -40.96      | 0-360          | 150         | H        |
| 5          | 1.85106         | -59.75              | Pk  | 30.8              | -35.4        | 11.4         | -52.95                  | -13   | -39.95      | 0-360          | 150         | V        |
| 6          | 3.70619         | -65.82              | Pk  | 33.1              | -32.6        | 11           | -54.32                  | -13   | -41.32      | 0-360          | 150         | V        |
| 7          | 5.55494         | -57.01              | Pk  | 34.6              | -29.9        | 10.9         | -41.41                  | -13   | -28.41      | 0-360          | 150         | V        |
| 8          | 7.39678         | -72.96              | Pk  | 35.7              | -26.9        | 10.7         | -53.46                  | -13   | -40.46      | 0-360          | 150         | V        |

| Marker   | Frequency (GHz) | Meter Reading (dBm) | Det | AF EMC4294 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | Limit | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|----------|-----------------|---------------------|-----|-------------------|--------------|--------------|-------------------------|-------|-------------|----------------|-------------|----------|
| 1880 MHz |                 |                     |     |                   |              |              |                         |       |             |                |             |          |
| 1        | 1.87922         | -60.68              | Pk  | 30.9              | -35.4        | 11.4         | -53.78                  | -13   | -40.78      | 0-360          | 150         | H        |
| 2        | 3.76303         | -67.41              | Pk  | 33.3              | -32.5        | 10.3         | -56.31                  | -13   | -43.31      | 0-360          | 150         | H        |
| 3        | 5.64206         | -61.85              | Pk  | 34.8              | -29.4        | 10.1         | -46.35                  | -13   | -33.35      | 0-360          | 150         | H        |
| 4        | 7.55244         | -73.07              | Pk  | 35.7              | -26.7        | 10.3         | -53.77                  | -13   | -40.77      | 0-360          | 150         | H        |
| 5        | 1.88081         | -60.31              | Pk  | 30.9              | -35.4        | 11.9         | -52.91                  | -13   | -39.91      | 0-360          | 150         | V        |
| 6        | 3.76144         | -65.77              | Pk  | 33.3              | -32.5        | 10.6         | -54.37                  | -13   | -41.37      | 0-360          | 150         | V        |
| 7        | 5.63781         | -54.35              | Pk  | 34.7              | -29.5        | 10.6         | -38.55                  | -13   | -25.55      | 0-360          | 150         | V        |
| 8        | 7.50197         | -72.4               | Pk  | 35.5              | -26.8        | 10.8         | -52.9                   | -13   | -39.9       | 0-360          | 150         | V        |

| Marker     | Frequency (GHz) | Meter Reading (dBm) | Det | AF EMC4294 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | Limit | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|------------|-----------------|---------------------|-----|-------------------|--------------|--------------|-------------------------|-------|-------------|----------------|-------------|----------|
| 1907.6 MHz |                 |                     |     |                   |              |              |                         |       |             |                |             |          |
| 1          | 1.90844         | -60.13              | Pk  | 31                | -35.4        | 11.2         | -53.33                  | -13   | -40.33      | 0-360          | 150         | H        |
| 2          | 3.81616         | -64.96              | Pk  | 33.4              | -32.2        | 10.1         | -53.66                  | -13   | -40.66      | 0-360          | 150         | H        |
| 3          | 5.72653         | -61.09              | Pk  | 34.8              | -29.4        | 10.5         | -45.19                  | -13   | -32.19      | 0-360          | 150         | H        |
| 4          | 7.62097         | -73.31              | Pk  | 35.8              | -26.5        | 10.4         | -53.61                  | -13   | -40.61      | 0-360          | 150         | H        |
| 5          | 1.90631         | -59.72              | Pk  | 31                | -35.4        | 11.5         | -52.62                  | -13   | -39.62      | 0-360          | 150         | V        |
| 6          | 3.81403         | -66.11              | Pk  | 33.4              | -32.3        | 10.3         | -54.71                  | -13   | -41.71      | 0-360          | 150         | V        |
| 7          | 5.71963         | -54.61              | Pk  | 34.9              | -29.4        | 10.3         | -38.81                  | -13   | -25.81      | 0-360          | 150         | V        |
| 8          | 7.66188         | -72.94              | Pk  | 35.8              | -26.6        | 10.5         | -53.24                  | -13   | -40.24      | 0-360          | 150         | V        |

|                |                        |
|----------------|------------------------|
| Company:       | Anelto                 |
| Project #:     | 12775491               |
| Date:          | 8/23/2019              |
| Test Engineer: | 43575 OS               |
| Configuration: | EUT+ Support Equipment |
| Mode:          | Band 2 HSDPA           |
| Chamber #:     | Chamber K              |

| Marker     | Frequency (GHz) | Meter Reading (dBm) | Det | AF EMC4294 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | Limit | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|------------|-----------------|---------------------|-----|-------------------|--------------|--------------|-------------------------|-------|-------------|----------------|-------------|----------|
| 1852.4 MHz |                 |                     |     |                   |              |              |                         |       |             |                |             |          |
| 1          | 1.85106         | -61.47              | Pk  | 30.8              | -35.4        | 11.1         | -54.97                  | -13   | -41.97      | 0-360          | 150         | H        |
| 2          | 3.703           | -67.38              | Pk  | 33                | -32.6        | 10.7         | -56.28                  | -13   | -43.28      | 0-360          | 150         | H        |
| 3          | 5.55972         | -65.46              | Pk  | 34.6              | -29.9        | 10.9         | -49.86                  | -13   | -36.86      | 0-360          | 150         | H        |
| 4          | 7.45469         | -72.96              | Pk  | 35.7              | -26.8        | 10.6         | -53.46                  | -13   | -40.46      | 0-360          | 150         | H        |
| 5          | 1.85319         | -60.51              | Pk  | 30.9              | -35.4        | 11.5         | -53.51                  | -13   | -40.51      | 0-360          | 150         | V        |
| 6          | 3.70672         | -65.65              | Pk  | 33.1              | -32.6        | 11           | -54.15                  | -13   | -41.15      | 0-360          | 150         | V        |
| 7          | 5.56025         | -56.46              | Pk  | 34.6              | -30          | 11           | -40.86                  | -13   | -27.86      | 0-360          | 150         | V        |
| 8          | 7.42813         | -73.19              | Pk  | 35.6              | -26.8        | 10.6         | -53.79                  | -13   | -40.79      | 0-360          | 150         | V        |

| Marker   | Frequency (GHz) | Meter Reading (dBm) | Det | AF EMC4294 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | Limit | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|----------|-----------------|---------------------|-----|-------------------|--------------|--------------|-------------------------|-------|-------------|----------------|-------------|----------|
| 1880 MHz |                 |                     |     |                   |              |              |                         |       |             |                |             |          |
| 1        | 1.88081         | -60.84              | Pk  | 30.9              | -35.4        | 11.4         | -53.94                  | -13   | -40.94      | 0-360          | 150         | H        |
| 2        | 3.788           | -67.69              | Pk  | 33.3              | -32.4        | 10.8         | -55.99                  | -13   | -42.99      | 0-360          | 150         | H        |
| 3        | 5.64259         | -63.22              | Pk  | 34.8              | -29.4        | 10.1         | -47.72                  | -13   | -34.72      | 0-360          | 150         | H        |
| 4        | 7.50781         | -73.49              | Pk  | 35.6              | -26.8        | 10.5         | -54.19                  | -13   | -41.19      | 0-360          | 150         | H        |
| 5        | 1.88028         | -60.65              | Pk  | 30.9              | -35.4        | 11.8         | -53.35                  | -13   | -40.35      | 0-360          | 150         | V        |
| 6        | 3.76197         | -65.36              | Pk  | 33.3              | -32.5        | 10.6         | -53.96                  | -13   | -40.96      | 0-360          | 150         | V        |
| 7        | 5.63675         | -54.46              | Pk  | 34.7              | -29.5        | 10.7         | -38.56                  | -13   | -25.56      | 0-360          | 150         | V        |
| 8        | 7.54394         | -73.33              | Pk  | 35.7              | -26.8        | 10.4         | -54.03                  | -13   | -41.03      | 0-360          | 150         | V        |

| Marker     | Frequency (GHz) | Meter Reading (dBm) | Det | AF EMC4294 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | Limit | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|------------|-----------------|---------------------|-----|-------------------|--------------|--------------|-------------------------|-------|-------------|----------------|-------------|----------|
| 1907.6 MHz |                 |                     |     |                   |              |              |                         |       |             |                |             |          |
| 1          | 1.90631         | -61.37              | Pk  | 31                | -35.4        | 11.1         | -54.67                  | -13   | -41.67      | 0-360          | 150         | H        |
| 2          | 3.81244         | -66.59              | Pk  | 33.4              | -32.3        | 10.2         | -55.29                  | -13   | -42.29      | 0-360          | 150         | H        |
| 3          | 5.71963         | -61.33              | Pk  | 34.9              | -29.4        | 10.1         | -45.73                  | -13   | -32.73      | 0-360          | 150         | H        |
| 4          | 7.66453         | -72.37              | Pk  | 35.8              | -26.6        | 10.4         | -52.77                  | -13   | -39.77      | 0-360          | 150         | H        |
| 5          | 1.90844         | -60.2               | Pk  | 31                | -35.4        | 11.4         | -53.2                   | -13   | -40.2       | 0-360          | 150         | V        |
| 6          | 3.81775         | -66.66              | Pk  | 33.4              | -32.2        | 10.3         | -55.16                  | -13   | -42.16      | 0-360          | 150         | V        |
| 7          | 5.71963         | -55.7               | Pk  | 34.9              | -29.4        | 10.3         | -39.9                   | -13   | -26.9       | 0-360          | 150         | V        |
| 8          | 7.62628         | -73.2               | Pk  | 35.8              | -26.6        | 10.5         | -53.5                   | -13   | -40.5       | 0-360          | 150         | V        |

### 8.1.3. WCDMA Band 4

|                |                        |
|----------------|------------------------|
| Company:       | Anelto                 |
| Project #:     | 12775491               |
| Date:          | 8/24/2019              |
| Test Engineer: | 43575 OS               |
| Configuration: | EUT+ Support Equipment |
| Mode:          | Band 4 REL99           |
| Chamber #:     | Chamber K              |

| Marker     | Frequency (GHz) | Meter Reading (dBm) | Det | AF EMC4294 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | Limit | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|------------|-----------------|---------------------|-----|-------------------|--------------|--------------|-------------------------|-------|-------------|----------------|-------------|----------|
| 1712.4 MHz |                 |                     |     |                   |              |              |                         |       |             |                |             |          |
| 1          | 1.71347         | -61.51              | Pk  | 29.3              | -35.5        | 11.3         | -56.41                  | -13   | -43.41      | 0-360          | 150         | H        |
| 2          | 3.42675         | -59.37              | Pk  | 33                | -33.3        | 11           | -48.67                  | -13   | -35.67      | 0-360          | 150         | H        |
| 3          | 5.1395          | -57.29              | Pk  | 34.3              | -30.6        | 10.2         | -43.39                  | -13   | -30.39      | 0-360          | 150         | H        |
| 4          | 6.93619         | -72.9               | Pk  | 35.8              | -27.4        | 10.4         | -54.1                   | -13   | -41.1       | 0-360          | 150         | H        |
| 5          | 1.71134         | -57.29              | Pk  | 29.3              | -35.5        | 12.1         | -51.39                  | -13   | -38.39      | 0-360          | 150         | V        |
| 6          | 3.4225          | -58.55              | Pk  | 33                | -33.4        | 11.2         | -47.75                  | -13   | -34.75      | 0-360          | 150         | V        |
| 7          | 5.13472         | -52.52              | Pk  | 34.3              | -30.5        | 10.5         | -38.22                  | -13   | -25.22      | 0-360          | 150         | V        |
| 8          | 6.84481         | -72.83              | Pk  | 35.8              | -27.4        | 10.5         | -53.93                  | -13   | -40.93      | 0-360          | 150         | V        |

| Marker     | Frequency (GHz) | Meter Reading (dBm) | Det | AF EMC4294 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | Limit | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|------------|-----------------|---------------------|-----|-------------------|--------------|--------------|-------------------------|-------|-------------|----------------|-------------|----------|
| 1732.6 MHz |                 |                     |     |                   |              |              |                         |       |             |                |             |          |
| 1          | 1.73366         | -63.26              | Pk  | 29.6              | -35.5        | 12.2         | -56.96                  | -13   | -43.96      | 0-360          | 150         | H        |
| 2          | 3.46659         | -64.14              | Pk  | 33.1              | -33.3        | 11           | -53.34                  | -13   | -40.34      | 0-360          | 150         | H        |
| 3          | 5.20059         | -58.79              | Pk  | 34.2              | -30.4        | 10.6         | -44.39                  | -13   | -31.39      | 0-360          | 150         | H        |
| 4          | 7.00206         | -72.51              | Pk  | 35.8              | -27.4        | 10.2         | -53.91                  | -13   | -40.91      | 0-360          | 150         | H        |
| 5          | 1.73313         | -56.26              | Pk  | 29.6              | -35.5        | 12.6         | -49.56                  | -13   | -36.56      | 0-360          | 150         | V        |
| 6          | 3.46341         | -64.24              | Pk  | 33.1              | -33.3        | 10.9         | -53.54                  | -13   | -40.54      | 0-360          | 150         | V        |
| 7          | 5.19528         | -54.3               | Pk  | 34.3              | -30.4        | 10.3         | -40.1                   | -13   | -27.1       | 0-360          | 150         | V        |
| 8          | 6.94788         | -72.46              | Pk  | 35.7              | -27.4        | 10.4         | -53.76                  | -13   | -40.76      | 0-360          | 150         | V        |

| Marker     | Frequency (GHz) | Meter Reading (dBm) | Det | AF EMC4294 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | Limit | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|------------|-----------------|---------------------|-----|-------------------|--------------|--------------|-------------------------|-------|-------------|----------------|-------------|----------|
| 1752.6 MHz |                 |                     |     |                   |              |              |                         |       |             |                |             |          |
| 1          | 1.75278         | -67.03              | Pk  | 29.7              | -35.5        | 12.5         | -60.33                  | -13   | -47.33      | 0-360          | 150         | H        |
| 2          | 3.50378         | -63.83              | Pk  | 33.1              | -33.2        | 11.1         | -52.83                  | -13   | -39.83      | 0-360          | 150         | H        |
| 3          | 5.26063         | -61.26              | Pk  | 34.3              | -30.1        | 10.5         | -46.56                  | -13   | -33.56      | 0-360          | 150         | H        |
| 4          | 7.01109         | -73.08              | Pk  | 35.8              | -27.3        | 10.1         | -54.48                  | -13   | -41.48      | 0-360          | 150         | H        |
| 5          | 1.75384         | -67.89              | Pk  | 29.7              | -35.5        | 11.8         | -61.89                  | -13   | -48.89      | 0-360          | 150         | V        |
| 6          | 3.50325         | -64.52              | Pk  | 33.1              | -33.2        | 10.8         | -53.82                  | -13   | -40.82      | 0-360          | 150         | V        |
| 7          | 5.25372         | -55.67              | Pk  | 34.3              | -30.2        | 10.7         | -40.87                  | -13   | -27.87      | 0-360          | 150         | V        |
| 8          | 7.00684         | -71.75              | Pk  | 35.8              | -27.4        | 10.5         | -52.85                  | -13   | -39.85      | 0-360          | 150         | V        |

|                |                        |
|----------------|------------------------|
| Company:       | Anelto                 |
| Project #:     | 12775491               |
| Date:          | 8/24/2019              |
| Test Engineer: | 43575 OS               |
| Configuration: | EUT+ Support Equipment |
| Mode:          | Band 4 HSDPA           |
| Chamber #:     | Chamber K              |

| Marker     | Frequency (GHz) | Meter Reading (dBm) | Det | AF EMC4294 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | Limit | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|------------|-----------------|---------------------|-----|-------------------|--------------|--------------|-------------------------|-------|-------------|----------------|-------------|----------|
| 1712.4 MHz |                 |                     |     |                   |              |              |                         |       |             |                |             |          |
| 1          | 1.71294         | -64.84              | Pk  | 29.3              | -35.5        | 11.3         | -59.74                  | -13   | -46.74      | 0-360          | 150         | H        |
| 2          | 3.4225          | -60.2               | Pk  | 33                | -33.4        | 11           | -49.6                   | -13   | -36.6       | 0-360          | 150         | H        |
| 3          | 5.1395          | -57.77              | Pk  | 34.3              | -30.6        | 10.2         | -43.87                  | -13   | -30.87      | 0-360          | 150         | H        |
| 4          | 6.86819         | -72.81              | Pk  | 35.7              | -27.3        | 10.6         | -53.81                  | -13   | -40.81      | 0-360          | 150         | H        |
| 5          | 1.71347         | -57.82              | Pk  | 29.3              | -35.5        | 11.9         | -52.12                  | -13   | -39.12      | 0-360          | 150         | V        |
| 6          | 3.4225          | -60.55              | Pk  | 33                | -33.4        | 11.2         | -49.75                  | -13   | -36.75      | 0-360          | 150         | V        |
| 7          | 5.14003         | -53.04              | Pk  | 34.3              | -30.6        | 10.4         | -38.94                  | -13   | -25.94      | 0-360          | 150         | V        |
| 8          | 6.84959         | -72.78              | Pk  | 35.7              | -27.4        | 10.5         | -53.98                  | -13   | -40.98      | 0-360          | 150         | V        |

| Marker     | Frequency (GHz) | Meter Reading (dBm) | Det | AF EMC4294 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | Limit | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|------------|-----------------|---------------------|-----|-------------------|--------------|--------------|-------------------------|-------|-------------|----------------|-------------|----------|
| 1732.6 MHz |                 |                     |     |                   |              |              |                         |       |             |                |             |          |
| 1          | 1.73153         | -61.93              | Pk  | 29.5              | -35.5        | 12.3         | -55.63                  | -13   | -42.63      | 0-360          | 150         | H        |
| 2          | 3.46659         | -63.97              | Pk  | 33.1              | -33.3        | 11           | -53.17                  | -13   | -40.17      | 0-360          | 150         | H        |
| 3          | 5.19422         | -59.31              | Pk  | 34.3              | -30.4        | 10.2         | -45.21                  | -13   | -32.21      | 0-360          | 150         | H        |
| 4          | 6.94256         | -73.42              | Pk  | 35.7              | -27.4        | 10.3         | -54.82                  | -13   | -41.82      | 0-360          | 150         | H        |
| 5          | 1.73153         | -56.79              | Pk  | 29.5              | -35.5        | 12.6         | -50.19                  | -13   | -37.19      | 0-360          | 150         | V        |
| 6          | 3.46341         | -63.97              | Pk  | 33.1              | -33.3        | 10.9         | -53.27                  | -13   | -40.27      | 0-360          | 150         | V        |
| 7          | 5.20059         | -56.09              | Pk  | 34.2              | -30.4        | 10.5         | -41.79                  | -13   | -28.79      | 0-360          | 150         | V        |
| 8          | 6.92025         | -73.8               | Pk  | 35.7              | -27.3        | 10.4         | -55                     | -13   | -42         | 0-360          | 150         | V        |

| Marker     | Frequency (GHz) | Meter Reading (dBm) | Det | AF EMC4294 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | Limit | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|------------|-----------------|---------------------|-----|-------------------|--------------|--------------|-------------------------|-------|-------------|----------------|-------------|----------|
| 1752.6 MHz |                 |                     |     |                   |              |              |                         |       |             |                |             |          |
| 1          | 1.75331         | -60.62              | Pk  | 29.7              | -35.5        | 12.5         | -53.92                  | -13   | -40.92      | 0-360          | 150         | H        |
| 2          | 3.50272         | -63.16              | Pk  | 33.1              | -33.2        | 11.2         | -52.06                  | -13   | -39.06      | 0-360          | 150         | H        |
| 3          | 5.26009         | -60.44              | Pk  | 34.3              | -30.1        | 10.5         | -45.74                  | -13   | -32.74      | 0-360          | 150         | H        |
| 4          | 7.03022         | -74.29              | Pk  | 35.7              | -27.1        | 10.2         | -55.49                  | -13   | -42.49      | 0-360          | 150         | H        |
| 5          | 1.75172         | -56.57              | Pk  | 29.7              | -35.5        | 11.7         | -50.67                  | -13   | -37.67      | 0-360          | 150         | V        |
| 6          | 3.50378         | -64.27              | Pk  | 33.1              | -33.2        | 10.8         | -53.57                  | -13   | -40.57      | 0-360          | 150         | V        |
| 7          | 5.25478         | -57.77              | Pk  | 34.3              | -30.2        | 10.7         | -42.97                  | -13   | -29.97      | 0-360          | 150         | V        |
| 8          | 7.001           | -72.62              | Pk  | 35.8              | -27.4        | 10.7         | -53.52                  | -13   | -40.52      | 0-360          | 150         | V        |

## 8.1.4. LTE Band 2

|                |                        |
|----------------|------------------------|
| Company:       | Anelto                 |
| Project #:     | 12775491               |
| Date:          | 8/26/2019              |
| Test Engineer: | 31300                  |
| Configuration: | EUT+ Support Equipment |
| Mode:          | LTE 2_20MHz QPSK       |
| Chamber #:     | Chamber K              |

| Marker   | Frequency (GHz) | Meter Reading (dBm) | Det | AF EMC4294 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | LIMIT | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|----------|-----------------|---------------------|-----|-------------------|--------------|--------------|-------------------------|-------|-------------|----------------|-------------|----------|
| 1860 MHz |                 |                     |     |                   |              |              |                         |       |             |                |             |          |
| 1        | 1.85903         | -54.14              | Pk  | 30.8              | -35.4        | 11.1         | -47.64                  | -13   | -34.64      | 0-360          | 150         | H        |
| 2        | 3.68653         | -67.65              | Pk  | 32.9              | -32.5        | 11.1         | -56.15                  | -13   | -43.15      | 0-360          | 150         | H        |
| 3        | 5.55334         | -61.32              | Pk  | 34.6              | -29.9        | 10.7         | -45.92                  | -13   | -32.92      | 0-360          | 150         | H        |
| 4        | 7.50622         | -73.27              | Pk  | 35.6              | -26.8        | 10.5         | -53.97                  | -13   | -40.97      | 0-360          | 150         | H        |
| 5        | 1.85053         | -46.42              | Pk  | 30.8              | -35.4        | 11.4         | -39.62                  | -13   | -26.62      | 0-360          | 150         | V        |
| 6        | 3.70194         | -67.81              | Pk  | 33                | -32.5        | 11           | -56.31                  | -13   | -43.31      | 0-360          | 150         | V        |
| 7        | 5.55281         | -53.86              | Pk  | 34.6              | -29.9        | 10.9         | -38.26                  | -13   | -25.26      | 0-360          | 150         | V        |
| 8        | 7.43716         | -73.52              | Pk  | 35.7              | -26.8        | 10.5         | -54.12                  | -13   | -41.12      | 0-360          | 150         | V        |

| Marker   | Frequency (GHz) | Meter Reading (dBm) | Det | AF EMC4294 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | LIMIT | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|----------|-----------------|---------------------|-----|-------------------|--------------|--------------|-------------------------|-------|-------------|----------------|-------------|----------|
| 1880 MHz |                 |                     |     |                   |              |              |                         |       |             |                |             |          |
| 1        | 1.87178         | -63.17              | Pk  | 31.1              | -35.4        | 11.2         | -56.27                  | -13   | -43.27      | 0-360          | 150         | H        |
| 2        | 3.78322         | -69.63              | Pk  | 33.4              | -32.5        | 10.7         | -58.03                  | -13   | -45.03      | 0-360          | 150         | H        |
| 3        | 5.61284         | -60.06              | Pk  | 34.8              | -29.6        | 10.5         | -44.36                  | -13   | -31.36      | 0-360          | 150         | H        |
| 4        | 7.44034         | -72.86              | Pk  | 35.7              | -26.7        | 10.4         | -53.46                  | -13   | -40.46      | 0-360          | 150         | H        |
| 5        | 1.87125         | -55.81              | Pk  | 31                | -35.4        | 11.6         | -48.61                  | -13   | -35.61      | 0-360          | 150         | V        |
| 6        | 3.73806         | -69.21              | Pk  | 33.1              | -32.5        | 10.7         | -57.91                  | -13   | -44.91      | 0-360          | 150         | V        |
| 7        | 5.61338         | -57.86              | Pk  | 34.8              | -29.6        | 10.8         | -41.86                  | -13   | -28.86      | 0-360          | 150         | V        |
| 8        | 7.5025          | -73.22              | Pk  | 35.5              | -26.8        | 10.8         | -53.72                  | -13   | -40.72      | 0-360          | 150         | V        |

| Marker   | Frequency (GHz) | Meter Reading (dBm) | Det | AF EMC4294 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | LIMIT | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|----------|-----------------|---------------------|-----|-------------------|--------------|--------------|-------------------------|-------|-------------|----------------|-------------|----------|
| 1900 MHz |                 |                     |     |                   |              |              |                         |       |             |                |             |          |
| 1        | 1.90419         | -55.72              | Pk  | 31                | -35.4        | 11.1         | -49.02                  | -13   | -36.02      | 0-360          | 150         | H        |
| 2        | 3.83794         | -68.01              | Pk  | 33.4              | -32.3        | 10.6         | -56.31                  | -13   | -43.31      | 0-360          | 150         | H        |
| 3        | 5.67288         | -61.87              | Pk  | 34.8              | -29.4        | 10.4         | -46.07                  | -13   | -33.07      | 0-360          | 150         | H        |
| 4        | 7.64434         | -73.08              | Pk  | 35.8              | -26.6        | 10.2         | -53.68                  | -13   | -40.68      | 0-360          | 150         | H        |
| 5        | 1.90844         | -58.02              | Pk  | 31                | -35.4        | 11.4         | -51.02                  | -13   | -38.02      | 0-360          | 150         | V        |
| 6        | 3.83209         | -66.57              | Pk  | 33.3              | -32.2        | 10.6         | -54.87                  | -13   | -41.87      | 0-360          | 150         | V        |
| 7        | 5.70316         | -66.17              | Pk  | 34.9              | -29.3        | 10.2         | -50.37                  | -13   | -37.37      | 0-360          | 150         | V        |
| 8        | 7.64328         | -73.39              | Pk  | 35.8              | -26.6        | 10.5         | -53.69                  | -13   | -40.69      | 0-360          | 150         | V        |

## 8.1.5. LTE Band 4

|                |                        |
|----------------|------------------------|
| Company:       | Anelto                 |
| Project #:     | 12775491               |
| Date:          | 8/26/2019              |
| Test Engineer: | 31300                  |
| Configuration: | EUT+ Support Equipment |
| Mode:          | LTE 4_20MHz QPSK       |
| Chamber #:     | Chamber K              |

| Marker   | Frequency (GHz) | Meter Reading (dBm) | Det | AF EMC4294 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | LIMIT | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|----------|-----------------|---------------------|-----|-------------------|--------------|--------------|-------------------------|-------|-------------|----------------|-------------|----------|
| 1720 MHz |                 |                     |     |                   |              |              |                         |       |             |                |             |          |
| 1        | 1.71081         | -46.11              | Pk  | 29.3              | -35.5        | 11.4         | -40.91                  | -13   | -27.91      | 0-360          | 150         | H        |
| 2        | 3.42197         | -60.15              | Pk  | 33                | -33.4        | 11           | -49.55                  | -13   | -36.55      | 0-360          | 150         | H        |
| 3        | 5.13313         | -54.17              | Pk  | 34.3              | -30.5        | 10.1         | -40.27                  | -13   | -27.27      | 0-360          | 150         | H        |
| 4        | 6.76672         | -72.85              | Pk  | 35.7              | -27.7        | 10.4         | -54.45                  | -13   | -41.45      | 0-360          | 150         | H        |
| 5        | 1.72781         | -46.63              | Pk  | 29.4              | -35.5        | 12.6         | -40.13                  | -13   | -27.13      | 0-360          | 150         | V        |
| 6        | 3.43897         | -65.73              | Pk  | 33.1              | -33.3        | 11           | -54.93                  | -13   | -41.93      | 0-360          | 150         | V        |
| 7        | 5.15969         | -60.58              | Pk  | 34.2              | -30.6        | 10.7         | -46.28                  | -13   | -33.28      | 0-360          | 150         | V        |
| 8        | 6.87988         | -73.36              | Pk  | 35.8              | -27.4        | 10.7         | -54.26                  | -13   | -41.26      | 0-360          | 150         | V        |

| Marker     | Frequency (GHz) | Meter Reading (dBm) | Det | AF EMC4294 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | LIMIT | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|------------|-----------------|---------------------|-----|-------------------|--------------|--------------|-------------------------|-------|-------------|----------------|-------------|----------|
| 1732.5 MHz |                 |                     |     |                   |              |              |                         |       |             |                |             |          |
| 1          | 1.72356         | -40.32              | Pk  | 29.4              | -35.4        | 11.9         | -34.42                  | -13   | -21.42      | 0-360          | 150         | H        |
| 2          | 3.44694         | -58.15              | Pk  | 33.1              | -33.2        | 11           | -47.25                  | -13   | -34.25      | 0-360          | 150         | H        |
| 3          | 5.17084         | -56.75              | Pk  | 34.2              | -30.5        | 10.5         | -42.55                  | -13   | -29.55      | 0-360          | 150         | H        |
| 4          | 6.89422         | -69.56              | Pk  | 35.8              | -27.4        | 10.2         | -50.96                  | -13   | -37.96      | 0-360          | 150         | H        |
| 5          | 1.72303         | -40.12              | Pk  | 29.5              | -35.4        | 12.1         | -33.92                  | -13   | -20.92      | 0-360          | 150         | V        |
| 6          | 3.44694         | -60.59              | Pk  | 33.1              | -33.2        | 11.3         | -49.39                  | -13   | -36.39      | 0-360          | 150         | V        |
| 7          | 5.17084         | -47.64              | Pk  | 34.2              | -30.5        | 10.6         | -33.34                  | -13   | -20.34      | 0-360          | 150         | V        |
| 8          | 6.89422         | -73                 | Pk  | 35.8              | -27.4        | 10.4         | -54.2                   | -13   | -41.2       | 0-360          | 150         | V        |

| Marker   | Frequency (GHz) | Meter Reading (dBm) | Det | AF EMC4294 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | LIMIT | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|----------|-----------------|---------------------|-----|-------------------|--------------|--------------|-------------------------|-------|-------------|----------------|-------------|----------|
| 1745 MHz |                 |                     |     |                   |              |              |                         |       |             |                |             |          |
| 1        | 1.73578         | -45.77              | Pk  | 29.6              | -35.5        | 12.2         | -39.47                  | -13   | -26.47      | 0-360          | 150         | H        |
| 2        | 3.47191         | -64.44              | Pk  | 33.1              | -33.2        | 11           | -53.54                  | -13   | -40.54      | 0-360          | 150         | H        |
| 3        | 5.20803         | -55.82              | Pk  | 34.2              | -30.4        | 10.9         | -41.12                  | -13   | -28.12      | 0-360          | 150         | H        |
| 4        | 6.91494         | -72.76              | Pk  | 35.8              | -27.3        | 10.1         | -54.16                  | -13   | -41.16      | 0-360          | 150         | H        |
| 5        | 1.73578         | -46.58              | Pk  | 29.6              | -35.5        | 12.7         | -39.78                  | -13   | -26.78      | 0-360          | 150         | V        |
| 6        | 3.47191         | -65                 | Pk  | 33.1              | -33.2        | 10.9         | -54.2                   | -13   | -41.2       | 0-360          | 150         | V        |
| 7        | 5.20803         | -51.84              | Pk  | 34.2              | -30.4        | 10.7         | -37.34                  | -13   | -24.34      | 0-360          | 150         | V        |
| 8        | 6.95106         | -72.88              | Pk  | 35.8              | -27.4        | 10.3         | -54.18                  | -13   | -41.18      | 0-360          | 150         | V        |

## 8.1.6. LTE Band 12

|                |                        |
|----------------|------------------------|
| Company:       | Anelto                 |
| Project #:     | 12775491               |
| Date:          | 9/12/2019              |
| Test Engineer: | 20756 CW               |
| Configuration: | EUT+ Support Equipment |
| Mode:          | LTE 12_10MHz QPSK      |
| Chamber #:     | Chamber J              |

| Marker  | Frequency (GHz) | Meter Reading (dBm) | Det | AF PRE0189055 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | Limit Line | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---------|-----------------|---------------------|-----|----------------------|--------------|--------------|-------------------------|------------|-------------|----------------|-------------|----------|
| 704 MHz |                 |                     |     |                      |              |              |                         |            |             |                |             |          |
| 1       | * 1.40747       | -35.96              | Pk  | 25.2                 | -35.9        | 12.5         | -34.16                  | -13        | -21.16      | 0-360          | 148         | H        |
| 2       | 2.11191         | -54.14              | Pk  | 28.2                 | -35.6        | 12.1         | -49.44                  | -13        | -36.44      | 0-360          | 148         | H        |
| 3       | * 2.81581       | -62.83              | Pk  | 29.3                 | -35.2        | 12           | -56.73                  | -13        | -43.73      | 0-360          | 148         | H        |
| 4       | * 3.51972       | -60.5               | Pk  | 30.4                 | -33.9        | 11.9         | -52.1                   | -13        | -39.1       | 0-360          | 148         | H        |
| 5       | * 4.22416       | -65.34              | Pk  | 32                   | -32.1        | 12.1         | -53.34                  | -13        | -40.34      | 0-360          | 148         | H        |
| 6       | * 4.92753       | -67.85              | Pk  | 34.6                 | -31.2        | 12.1         | -52.35                  | -13        | -39.35      | 0-360          | 148         | H        |
| 7       | * 1.408         | -37.29              | Pk  | 25.2                 | -35.9        | 11.4         | -36.59                  | -13        | -23.59      | 0-360          | 148         | V        |
| 8       | 2.11191         | -54.76              | Pk  | 28.2                 | -35.6        | 11.3         | -50.86                  | -13        | -37.86      | 0-360          | 148         | V        |
| 9       | * 2.81581       | -58.16              | Pk  | 29.3                 | -35.2        | 11.8         | -52.26                  | -13        | -39.26      | 0-360          | 148         | V        |
| 10      | * 3.51972       | -56.06              | Pk  | 30.4                 | -33.9        | 11.9         | -47.66                  | -13        | -34.66      | 0-360          | 148         | V        |
| 11      | * 4.22363       | -64.45              | Pk  | 32                   | -32.1        | 11.9         | -52.65                  | -13        | -39.65      | 0-360          | 148         | V        |
| 12      | * 4.92753       | -65.15              | Pk  | 34.6                 | -31.2        | 12.1         | -49.65                  | -13        | -36.65      | 0-360          | 148         | V        |

| Marker    | Frequency (GHz) | Meter Reading (dBm) | Det | AF PRE0189055 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | Limit Line | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|-----------|-----------------|---------------------|-----|----------------------|--------------|--------------|-------------------------|------------|-------------|----------------|-------------|----------|
| 707.5 MHz |                 |                     |     |                      |              |              |                         |            |             |                |             |          |
| 1         | * 1.41438       | -35.66              | Pk  | 25.2                 | -35.9        | 12.3         | -34.06                  | -13        | -21.06      | 0-360          | 148         | H        |
| 2         | 2.12253         | -54.47              | Pk  | 28.2                 | -35.6        | 11.8         | -50.07                  | -13        | -37.07      | 0-360          | 148         | H        |
| 3         | * 2.82963       | -62.84              | Pk  | 29.3                 | -35.2        | 11.8         | -56.94                  | -13        | -43.94      | 0-360          | 148         | H        |
| 4         | * 3.53725       | -61.07              | Pk  | 30.4                 | -33.8        | 11.6         | -52.87                  | -13        | -39.87      | 0-360          | 148         | H        |
| 5         | * 1.41438       | -38.4               | Pk  | 25.2                 | -35.9        | 11.5         | -37.6                   | -13        | -24.6       | 0-360          | 148         | V        |
| 6         | 2.122           | -55.39              | Pk  | 28.2                 | -35.6        | 11.6         | -51.19                  | -13        | -38.19      | 0-360          | 148         | V        |
| 7         | * 2.82989       | -60.74              | Pk  | 29.3                 | -35.2        | 11.9         | -54.74                  | -13        | -41.74      | 0-360          | 148         | V        |
| 8         | * 3.53725       | -56.89              | Pk  | 30.4                 | -33.8        | 11.4         | -48.89                  | -13        | -35.89      | 0-360          | 148         | V        |

| Marker  | Frequency (GHz) | Meter Reading (dBm) | Det | AF PRE0189055 (dB/m) | Amp/Cbl (dB) | Amp/Cbl (dB) | Corrected Reading (dBm) | Limit Line | Margin (dB) | Azimuth (Degs) | Height (cm) | Polarity |
|---------|-----------------|---------------------|-----|----------------------|--------------|--------------|-------------------------|------------|-------------|----------------|-------------|----------|
| 711 MHz |                 |                     |     |                      |              |              |                         |            |             |                |             |          |
| 1       | * 1.42181       | -35.91              | Pk  | 25.1                 | -35.8        | 12.3         | -34.31                  | -13        | -21.31      | 0-360          | 148         | H        |
| 2       | 2.13263         | -53.69              | Pk  | 28.2                 | -35.6        | 12           | -49.09                  | -13        | -36.09      | 0-360          | 148         | H        |
| 3       | * 2.84397       | -59.93              | Pk  | 29.3                 | -35.2        | 12.2         | -53.63                  | -13        | -40.63      | 0-360          | 148         | H        |
| 4       | * 3.55478       | -56.57              | Pk  | 30.3                 | -33.8        | 11.4         | -48.67                  | -13        | -35.67      | 0-360          | 148         | H        |
| 5       | * 4.97694       | -62.99              | Pk  | 34.9                 | -31.3        | 11.8         | -47.59                  | -13        | -34.59      | 0-360          | 148         | H        |
| 6       | * 1.42181       | -37.13              | Pk  | 25.1                 | -35.8        | 11.5         | -36.33                  | -13        | -23.33      | 0-360          | 148         | V        |
| 7       | 2.13263         | -51.97              | Pk  | 28.2                 | -35.6        | 12.2         | -47.17                  | -13        | -34.17      | 0-360          | 148         | V        |
| 8       | * 2.84397       | -59.42              | Pk  | 29.3                 | -35.2        | 11.7         | -53.62                  | -13        | -40.62      | 0-360          | 148         | V        |
| 9       | * 3.55478       | -56.63              | Pk  | 30.3                 | -33.8        | 11.5         | -48.63                  | -13        | -35.63      | 0-360          | 148         | V        |
| 10      | * 4.97641       | -63.36              | Pk  | 34.9                 | -31.3        | 11.6         | -48.16                  | -13        | -35.16      | 0-360          | 148         | V        |