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# TEST REPORT

FCC Part 27C & RSS-130 & RSS-139 & RSS-199

Report Reference No. .... : CTL2106018081-W07

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Product Name ..... : Siyata SD7

Model/Type reference ..... : SD7

List Model(s)..... : N/A

Trade Mark..... : Siyata

FCC ID..... : 2AOCX- SD7

Applicant's name ..... : Siyata Mobile Inc.

Address of applicant ..... : 1001 Lenoir St Suite A, Montreal, Quebec H4C 2Z6 Canada

Test Firm..... : Shenzhen CTL Testing Technology Co., Ltd.

Address of Test Firm ..... : Floor 1-A, Baisha Technology Park, No.3011, Shahexi Road,  
Nanshan District, Shenzhen, China 518055

Test specification..... :

FCC CFR Title 47 Part 2, Part 27

RSS-130 Issue 2

RSS-139 Issue 3

RSS-199 Issue 3

EIA/TIA 603-D: 2010

KDB 971168 D01

Standard .....

TRF Originator ..... : Shenzhen CTL Testing Technology Co., Ltd.

Master TRF..... : Dated 2011-01

Date of receipt of test item ..... : Jun. 25, 2021

Date of sampling..... : Jun. 25, 2021

Date of Test Date..... : Jun. 25, 2021-Jul. 09, 2021

Date of Issue..... : Jul. 12, 2021

Result..... : Pass

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# TEST REPORT

|                                            |                                         |
|--------------------------------------------|-----------------------------------------|
| <b>Test Report No. :</b> CTL2106018081-W07 | Jul. 12, 2021<br>-----<br>Date of issue |
|--------------------------------------------|-----------------------------------------|

Equipment under Test : Siyata SD7

Sample No : CTL210601808-1-S001

Model /Type : SD7

Listed Models : N/A

**Applicant** : **Siyata Mobile Inc.**

Address : 1001 Lenoir St Suite A, Montreal, Quebec H4C 2Z6  
Canada

**Manufacturer** : **Siyata Mobile Inc.**

Address : 1001 Lenoir St Suite A, Montreal, Quebec H4C 2Z6  
Canada

|                    |               |
|--------------------|---------------|
| <b>Test result</b> | <b>Pass *</b> |
|--------------------|---------------|

\*In the configuration tested, the EUT complied with the standards specified page 5.

The test results presented in this report relate only to the object tested.

This report shall not be reproduced, except in full, without the written approval of the issuing testing laboratory.

### \*\* Modified History \*\*

[illegible]

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# 1. SUMMARY

## 1.1. TEST STANDARDS

The tests were performed according to following standards:

[FCC Part 27](#) : MISCELLANEOUS WIRELESS COMMUNICATIONS SERVICES

[TIA/EIA 603 D June 2010](#):Land Mobile FM or PM Communications Equipment Measurement and Performance Standards.

[FCC Part 2](#): FREQUENCY ALLOCA-TIONS AND RADIO TREATY MAT-TERS; GENERAL RULES AND REG-ULATIONS

[RSS-Gen Issue 4](#): General Requirements for Compliance of Radio Apparatus

[RSS-130 Issue 2](#): Equipment Operating in the Frequency Bands 617-652 MHz, 663-698 MHz, 698-756 MHz and 777-787 MHz

[RSS-139 Issue 3](#): Advanced Wireless Services Equipment Operating in the Bands 1710-1780 MHz and 2110-2180 MHz

[RSS-199](#): Broadband Radio Service (BRS) Equipment Operating in the Band 2500-2690 MHz

[SRSP-518](#): Technical Requirements in the Bands 617-652 MHz, 663-698 MHz, 698-756 MHz and 777-787 MHz Issue 2, February 2019

[SRSP-513](#): Technical Requirements for Advanced Wireless Services in the Bands 1710–1780 MHz and 2110–2180 MHz

[SRSP-517](#): Technical Requirements for Broadband Radio Service (BRS) in the Band 2500-2690 MHz

[KDB971168 D01: v03r01](#) MEASUREMENT GUIDANCE FOR CERTIFICATION OF LICENSED DIGITAL TRANSMITTERS

[ANSI C63.10: 2020](#): American National Standard for Testing Unlicensed Wireless Devices

[ANSI C63.4: 2014](#): –American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40GHz Range of 9 kHz to 40GHz

## 1.2. Test Description

| Test Item                                        | Section in CFR 47                                                                  | Result |
|--------------------------------------------------|------------------------------------------------------------------------------------|--------|
| Effective (Isotropic) Radiated Power Output Data | §2.1046<br>§27.50(b)(10)(c)(10)(h)(2)<br>RSS 130 4.6<br>RSS 139 6.5<br>RSS 199 4.4 | Pass   |
| Peak-to-Average Ratio                            | §2.1046<br>§27.50(d)(5)<br>RSS 130 4.6<br>RSS 139 6.5<br>RSS 199 4.4               | Pass   |
| Modulation Characteristics                       | §2.1047                                                                            | Pass   |
| Bandwidth                                        | §2.1049<br>RSS-GEN 6.7                                                             | Pass   |
| Band Edges Compliance                            | § 2.1051<br>§27.53(c)(f)(g)(m)(4)<br>RSS 130 4.7<br>RSS 139 6.6                    | Pass   |
| Conducted Spurious Emissions                     | §2.1051<br>§27.53(c)(f)(g)(m)(4)                                                   | Pass   |
| Field Strength of Spurious Radiation             | §2.1053<br>§27.53(c)(f)(g)(m)(4)<br>RSS 130 4.7<br>RSS 139 6.6                     | Pass   |

|                     |                                                                |      |
|---------------------|----------------------------------------------------------------|------|
| Frequency stability | §2.1055<br>§27.54<br>RSS 130 4.5<br>RSS 139 6.4<br>RSS 199 4.3 | Pass |
|---------------------|----------------------------------------------------------------|------|

### 1.3. Test Facility

#### 1.3.1 Address of the test laboratory

Shenzhen CTL Testing Technology Co., Ltd.

Floor 1-A, Baisha Technology Park, No. 3011, Shahexi Road, Nanshan, Shenzhen 518055 China

There is one 3m semi-anechoic chamber and two line conducted labs for final test. The Test Sites meet the requirements in documents ANSI C63.4 and CISPR 32/EN 55032 requirements.

#### 1.3.2 Laboratory accreditation

The test facility is recognized, certified, or accredited by the following organizations:

##### **CNAS-Lab Code: L7497**

Shenzhen CTL Testing Technology Co., Ltd. has been assessed and proved to be in compliance with CNAS-CL01 Accreditation Criteria for Testing and Calibration Laboratories (identical to ISO/IEC 17025: 2005 General Requirements) for the Competence of Testing and Calibration Laboratories.

##### **A2LA-Lab Cert. No. 4343.01**

Shenzhen CTL Testing Technology Co., Ltd, EMC Laboratory has been accredited by A2LA for technical competence in the field of electrical testing, and proved to be in compliance with ISO/IEC 17025: 2005 General Requirements for the Competence of Testing and Calibration Laboratories and any additional program requirements in the identified field of testing.

##### **IC Registration No.: 9618B**

##### **CAB identifier: CN0041**

The 3m alternate test site of Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements with Registration No.: 9618B on Jan. 22, 2019.

##### **FCC-Registration No.: 399832**

##### **Designation No.: CN1216**

Shenzhen CTL Testing Technology Co., Ltd. EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration 399832, December 08, 2017.

### 1.4. Statement of the measurement uncertainty

The data and results referenced in this document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities. The measurement uncertainty was calculated for all measurements listed in this test report acc. to CISPR 16 - 4 "Specification for radio disturbance and immunity measuring apparatus and methods – Part 4: Uncertainty in EMC Measurements" and is documented in the Shenzhen CTL Testing Technology Co., Ltd. quality system acc. to DIN EN ISO/IEC 17025. Furthermore, component and process variability of devices similar to that tested may result in additional deviation. The manufacturer has the sole responsibility of continued compliance of the device.

Hereafter the best measurement capability for CTL laboratory is reported:

| Test                  | Range      | Measurement Uncertainty | Notes |
|-----------------------|------------|-------------------------|-------|
| Radiated Emission     | 30~1000MHz | 4.10dB                  | (1)   |
| Radiated Emission     | Above 1GHz | 4.32dB                  | (1)   |
| Conducted Disturbance | 0.15~30MHz | 3.20dB                  | (1)   |

- (1) This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

## 2. GENERAL INFORMATION

### 2.1. Environmental conditions

During the measurement the environmental conditions were within the listed ranges:

|                     |         |
|---------------------|---------|
| Normal Temperature: | 25°C    |
| Relative Humidity:  | 55 %    |
| Air Pressure:       | 101 kPa |

### 2.2. General Description of EUT

|                              |                                                                                                                                                                                                                        |           |           |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------|
| Product Name:                | Siyata SD7                                                                                                                                                                                                             |           |           |
| Model/Type reference:        | SD7                                                                                                                                                                                                                    |           |           |
| Power supply:                | Adapter<br>Model: HJ-0502000W2-US<br>InputL:100-240V~50/60Hz0.3A<br>Output:5V---2000mA<br>DC 3.85V from battery                                                                                                        |           |           |
| Hardware version:            | H128MB_V0.2                                                                                                                                                                                                            |           |           |
| Software version:            | 7RO2G27JUN1D                                                                                                                                                                                                           |           |           |
| LTE                          |                                                                                                                                                                                                                        |           |           |
| Mode:                        | WCDMA Band IV; LTE Band 4; LTE Band 5; LTE Band7;<br>LTE Band12; LTE Band13; LTE Band41; LTE Band66; LTE Band71                                                                                                        |           |           |
| Modulation Type:             | (WCDMA)QPSK; (LTE)QPSK 16QAM                                                                                                                                                                                           |           |           |
| Operating Frequency Range(S) | Band                                                                                                                                                                                                                   | Tx(MHz)   | Rx(MHz)   |
|                              | WCDMA Band IV                                                                                                                                                                                                          | 1710~1755 | 2110~2155 |
|                              | LTE Band 4                                                                                                                                                                                                             | 1710~1755 | 2110~2155 |
|                              | LTE Band 7                                                                                                                                                                                                             | 2500~2570 | 2620~2690 |
|                              | LTE Band 12                                                                                                                                                                                                            | 699~716   | 729~746   |
|                              | LTE Band 13                                                                                                                                                                                                            | 777~787   | 746~756   |
|                              | LTE Band 17                                                                                                                                                                                                            | 704~716   | 734~746   |
|                              | LTE Band 41                                                                                                                                                                                                            | 2496~2690 | 2496~2690 |
|                              | LTE Band 66                                                                                                                                                                                                            | 1710~1780 | 2110~2180 |
|                              | LTE Band 71                                                                                                                                                                                                            | 663~698   | 617~652   |
| Release Version:             | Release 9                                                                                                                                                                                                              |           |           |
| Category:                    | Cat 4                                                                                                                                                                                                                  |           |           |
| Antenna type:                | PIFA Antenna                                                                                                                                                                                                           |           |           |
| Antenna gain:                | WCDMA Band IV:0.37dBi<br>LTE Band 4: 0.37dBi<br>LTE Band 7:0.41dBi<br>LTE Band 12: -0.37dBi<br>LTE Band 13: -0.37dBi<br>LTE Band 17: -0.37dBi<br>LTE Band 41: 0.41dBi<br>LTE Band 66: 0.38dBi<br>LTE Band 71: -0.37dBi |           |           |

Note: For more details, please refer to the user's manual of the EUT.

## 2.3. Description of Test Modes

1. The EUT has been tested under typical operating condition. The CMW500 used to control the EUT staying in continuous transmitting and receiving mode for testing. Regards to the frequency band operation: the lowest, middle and highest frequency of channel were selected to perform the test, then shown on this report.

### 2. Test Frequencies

| Test Mode        | TX/RX | RF Channel   |              |              |
|------------------|-------|--------------|--------------|--------------|
|                  |       | Low (L)      | Middle (M)   | High (H)     |
| WCDMA<br>Band IV | TX    | Channel 1312 | Channel 1413 | Channel 1752 |
|                  |       | 1712.4MHz    | 1732.6MHz    | 1752.6MHz    |
|                  | RX    | Channel 1537 | Channel 1638 | Channel 1738 |
|                  |       | 2112.4MHz    | 2132.6MHz    | 2152.6MHz    |

| Test Mode  | Bandwidth | TX/RX | RF Channel     |               |               |
|------------|-----------|-------|----------------|---------------|---------------|
|            |           |       | Low (L)        | Middle (M)    | High (H)      |
| LTE Band 4 | 1.4MHz    | TX    | Channel 19957  | Channel 20175 | Channel 20393 |
|            |           |       | 1710.7MHz      | 1732.5MHz     | 1754.4MHz     |
|            |           | RX    | Channel 1975   | Channel 2175  | Channel 2375  |
|            |           |       | 2112.5MHz      | 2132.5MHz     | 2152.5MHz     |
|            | 3MHz      | TX    | Channel 19965  | Channel 20175 | Channel 20385 |
|            |           |       | 1711.5MHz      | 1732.5MHz     | 1753.5MHz     |
|            |           | RX    | Channel 2000   | Channel 2175  | Channel 2350  |
|            |           |       | 2115MHz        | 2132.5MHz     | 2150MHz       |
|            | 5MHz      | TX    | Channel 19975  | Channel 20175 | Channel 20375 |
|            |           |       | 1712.5MHz      | 1732.5MHz     | 1752.5MHz     |
|            |           | RX    | Channel 1975   | Channel 2175  | Channel 2375  |
|            |           |       | 2112.5MHz      | 2132.5MHz     | 2152.5MHz     |
|            | 10MHz     | TX    | Channel 20000  | Channel 20175 | Channel 20350 |
|            |           |       | 1715MHz        | 1732.5MHz     | 1750MHz       |
|            |           | RX    | Channel 2000   | Channel 2175  | Channel 2350  |
|            |           |       | 2115MHz        | 2132.5MHz     | 2150MHz       |
|            | 15MHz     | TX    | Channel 20025  | Channel 20175 | Channel 20325 |
|            |           |       | 1717.5MHz      | 1732.5MHz     | 1747.5MHz     |
|            |           | RX    | Channel 2025   | Channel 2175  | Channel 2325  |
|            |           |       | 2117.5MHz      | 2132.5MHz     | 2147.5MHz     |
|            | 20 MHz    | TX    | Channel 200.50 | Channel 20175 | Channel 20300 |
|            |           |       | 1720MHz        | 1732.5MHz     | 1745MHz       |
|            |           | RX    | Channel 2050   | Channel 2175  | Channel 2300  |
|            |           |       | 2120MHz        | 2132.5MHz     | 2145MHz       |

| Test Mode  | Bandwidth | TX/RX | RF Channel    |               |               |
|------------|-----------|-------|---------------|---------------|---------------|
|            |           |       | Low (L)       | Middle (M)    | High (H)      |
| LTE Band 7 | 5MHz      | TX    | Channel 20775 | Channel 21100 | Channel 21425 |
|            |           |       | 2502.5MHz     | 2535MHz       | 2567.5MHz     |
|            |           | RX    | Channel 2775  | Channel 3100  | Channel 5825  |
|            |           |       | 2622.5MHz     | 2655MHz       | 2687.5MHz     |
|            | 10MHz     | TX    | Channel 20800 | Channel 21100 | Channel 21400 |
|            |           |       | 2505MHz       | 2535MHz       | 2565MHz       |
|            |           | RX    | Channel 2800  | Channel 3100  | Channel 3400  |
|            |           |       | 2625MHz       | 2655MHz       | 2685MHz       |
|            | 15MHz     | TX    | Channel 20825 | Channel 21100 | Channel 21375 |
|            |           |       | 2507.5MHz     | 2535MHz       | 2562.5MHz     |
|            |           | RX    | Channel 2825  | Channel 3100  | Channel 3375  |
|            |           |       | 2627.5MHz     | 2655MHz       | 2682.5MHz     |
|            | 20 MHz    | TX    | Channel 20850 | Channel 21100 | Channel 21350 |
|            |           |       | 2510MHz       | 2535MHz       | 2560MHz       |
|            |           | RX    | Channel 2850  | Channel 3100  | Channel 3350  |
|            |           |       | 2630MHz       | 2655MHz       | 2680MHz       |

| Test Mode   | Bandwidth | TX/RX | RF Channel    |               |               |
|-------------|-----------|-------|---------------|---------------|---------------|
|             |           |       | Low (L)       | Middle (M)    | High (H)      |
| LTE Band 12 | 1.4MHz    | TX    | Channel 23017 | Channel 23095 | Channel 23173 |
|             |           |       | 699.7MHz      | 707.5MHz      | 715.3MHz      |
|             |           | RX    | Channel 5017  | Channel 5095  | Channel 5173  |
|             |           |       | 729.7MHz      | 737.5MHz      | 745.3MHz      |
|             | 3MHz      | TX    | Channel 23025 | Channel 23095 | Channel 23165 |
|             |           |       | 700.5MHz      | 707.5MHz      | 714.5MHz      |
|             |           | RX    | Channel 5025  | Channel 5095  | Channel 5165  |
|             |           |       | 730.5MHz      | 737.5MHz      | 744.5MHz      |
|             | 5MHz      | TX    | Channel 23035 | Channel 23095 | Channel 23155 |
|             |           |       | 701.5MHz      | 707.5MHz      | 713.5MHz      |
|             |           | RX    | Channel 5035  | Channel 5095  | Channel 5155  |
|             |           |       | 731.5MHz      | 737.5MHz      | 743.5MHz      |
|             | 10MHz     | TX    | Channel 23060 | Channel 23095 | Channel 23130 |
|             |           |       | 704MHz        | 707.5MHz      | 711MHz        |
|             |           | RX    | Channel 5060  | Channel 5095  | Channel 5130  |
|             |           |       | 734MHz        | 737.5MHz      | 741MHz        |

| Test Mode   | Bandwidth | TX/RX | RF Channel    |               |               |
|-------------|-----------|-------|---------------|---------------|---------------|
|             |           |       | Low (L)       | Middle (M)    | High (H)      |
| LTE Band 13 | 5MHz      | TX    | Channel 23025 | Channel 23230 | Channel 23255 |
|             |           |       | 779.5MHz      | 782MHz        | 784.5MHz      |
|             |           | RX    | Channel 5205  | Channel 5230  | Channel 5255  |
|             |           |       | 748.5MHz      | 751MHz        | 753.5MHz      |
|             | 10MHz     | TX    | Channel 23230 | Channel 23230 | Channel 23230 |
|             |           |       | 782MHz        | 782MHz        | 782MHz        |
|             |           | RX    | Channel 5230  | Channel 5230  | Channel 5230  |
|             |           |       | 751MHz        | 751MHz        | 751MHz        |

| Test Mode   | Bandwidth | TX/RX | RF Channel    |               |               |
|-------------|-----------|-------|---------------|---------------|---------------|
|             |           |       | Low (L)       | Middle (M)    | High (H)      |
| LTE Band 17 | 5MHz      | TX    | Channel 23755 | Channel 23790 | Channel 23825 |
|             |           |       | 706.5MHz      | 710MHz        | 713.5MHz      |
|             |           | RX    | Channel 5755  | Channel 5790  | Channel 5825  |
|             |           |       | 736.5MHz      | 740MHz        | 743.5MHz      |
|             | 10MHz     | TX    | Channel 23780 | Channel 23790 | Channel 23800 |
|             |           |       | 709MHz        | 710MHz        | 711MHz        |
|             |           | RX    | Channel 5780  | Channel 5290  | Channel 5800  |
|             |           |       | 739MHz        | 740MHz        | 741MHz        |

| Test Mode   | Bandwidth | TX/RX  | RF Channel    |               |               |
|-------------|-----------|--------|---------------|---------------|---------------|
|             |           |        | Low (L)       | Middle (M)    | High (H)      |
| LTE Band 41 | 5MHz      | TX/ RX | Channel 39675 | Channel 40620 | Channel 41565 |
|             |           |        | 2498.5MHz     | 2593MHz       | 2687.5MHz     |
|             | 10MHz     | TX/ RX | Channel 39700 | Channel 40620 | Channel 41540 |
|             |           |        | 2501MHz       | 2593MHz       | 2685MHz       |
|             | 15MHz     | TX/ RX | Channel 39725 | Channel 40620 | Channel 41515 |
|             |           |        | 2503.5MHz     | 2593MHz       | 2682.5MHz     |
|             | 20 MHz    | TX/ RX | Channel 39750 | Channel 40620 | Channel 41490 |
|             |           |        | 2506MHz       | 2593MHz       | 2680MHz       |

| Test Mode   | Bandwidth | TX/RX | RF Channel     |                |                |
|-------------|-----------|-------|----------------|----------------|----------------|
|             |           |       | Low (L)        | Middle (M)     | High (H)       |
| LTE Band 66 | 1.4MHz    | TX    | Channel 131979 | Channel 132322 | Channel 132665 |
|             |           |       | 1710.7MHz      | 1745MHz        | 1779.3MHz      |
|             |           | RX    | Channel 66443  | Channel 66786  | Channel 67129  |
|             |           |       | 2110.7MHz      | 2145MHz        | 2179.3MHz      |
|             | 3MHz      | TX    | Channel 131987 | Channel 132322 | Channel 132657 |
|             |           |       | 1711.5MHz      | 1745MHz        | 1778.5MHz      |
|             |           | RX    | Channel 66451  | Channel 66786  | Channel 67121  |
|             |           |       | 2111.5MHz      | 2145MHz        | 2178.5MHz      |
|             | 5MHz      | TX    | Channel 131997 | Channel 132322 | Channel 132647 |
|             |           |       | 1712.5MHz      | 1745MHz        | 1777.5MHz      |
|             |           | RX    | Channel 66461  | Channel 66786  | Channel 67711  |
|             |           |       | 2112.5MHz      | 2145MHz        | 2177.5MHz      |
|             | 10MHz     | TX    | Channel 132022 | Channel 132322 | Channel 132622 |
|             |           |       | 1715MHz        | 1745MHz        | 1775MHz        |
|             |           | RX    | Channel 66486  | Channel 66786  | Channel 67086  |
|             |           |       | 2115MHz        | 2145MHz        | 2175MHz        |
|             | 15MHz     | TX    | Channel 132047 | Channel 132322 | Channel 132597 |
|             |           |       | 1717.5MHz      | 1745MHz        | 1772.5MHz      |
|             |           | RX    | Channel 66511  | Channel 66786  | Channel 67061  |
|             |           |       | 2117.5MHz      | 2145MHz        | 2172.5MHz      |
|             | 20 MHz    | TX    | Channel 132072 | Channel 132322 | Channel 132572 |
|             |           |       | 1720MHz        | 1745MHz        | 1770MHz        |
|             |           | RX    | Channel 66536  | Channel 66786  | Channel 67036  |
|             |           |       | 2120MHz        | 2145MHz        | 2170MHz        |

| Test Mode   | Bandwidth | TX/RX | RF Channel     |                |                |
|-------------|-----------|-------|----------------|----------------|----------------|
|             |           |       | Low (L)        | Middle (M)     | High (H)       |
| LTE Band 71 | 5MHz      | TX    | Channel 133147 | Channel 133297 | Channel 133447 |
|             |           |       | 665.5MHz       | 680.5MHz       | 695.5MHz       |
|             |           | RX    | Channel 68611  | Channel 68761  | Channel 68911  |
|             |           |       | 619.5MHz       | 634.5MHz       | 649.5MHz       |
|             | 10MHz     | TX    | Channel 133172 | Channel 133297 | Channel 133422 |
|             |           |       | 668MHz         | 680.5MHz       | 693MHz         |
|             |           | RX    | Channel 68636  | Channel 68761  | Channel 68886  |
|             |           |       | 622MHz         | 634.5MHz       | 647MHz         |
|             | 15MHz     | TX    | Channel 133197 | Channel 133297 | Channel 133397 |
|             |           |       | 670.5MHz       | 680.5MHz       | 690.5MHz       |
|             |           | RX    | Channel 68661  | Channel 68761  | Channel 68861  |
|             |           |       | 624.5MHz       | 634.5MHz       | 644.5MHz       |
|             | 20 MHz    | TX    | Channel 133222 | Channel 133297 | Channel 133372 |
|             |           |       | 673MHz         | 680.5MHz       | 688MHz         |
|             |           | RX    | Channel 68686  | Channel 68761  | Channel 68836  |
|             |           |       | 627MHz         | 634.4MHz       | 642MHz         |

## 2.4. Equipments Used during the Test

| Test Equipment                      | Manufacturer         | Model No.              | Serial No. | Calibration Date | Calibration Due Date |
|-------------------------------------|----------------------|------------------------|------------|------------------|----------------------|
| Bilog Antenna                       | Sunol Sciences Corp. | JB1                    | A061713    | 2021/05/22       | 2022/05/21           |
| Bilog Antenna                       | Sunol Sciences Corp. | JB1                    | A061714    | 2021/05/22       | 2022/05/21           |
| EMI Test Receiver                   | R&S                  | ESCI                   | 103710     | 2021/05/22       | 2022/05/21           |
| Spectrum Analyzer                   | Agilent              | E4407B                 | MY41440676 | 2021/05/22       | 2022/05/21           |
| Spectrum Analyzer                   | Agilent              | N9020                  | US46220290 | 2021/05/22       | 2022/05/21           |
| Spectrum Analyzer                   | Keysight             | N9020A                 | MY53420874 | 2021/05/22       | 2022/05/21           |
| Controller                          | EM Electronics       | Controller EM 1000     | N/A        | 2021/05/22       | 2022/05/21           |
| Horn Antenna                        | Sunol Sciences Corp. | DRH-118                | A062013    | 2021/05/22       | 2022/05/21           |
| Horn Antenna                        | Sunol Sciences Corp. | DRH-118                | A062014    | 2021/05/22       | 2022/05/21           |
| Active Loop Antenna                 | SCHWARZBEC K         | FMZB1519               | 1519-037   | 2021/05/22       | 2022/05/21           |
| Amplifier                           | Agilent              | 8349B                  | 3008A02306 | 2021/05/22       | 2022/05/21           |
| Amplifier                           | Agilent              | 8447D                  | 2944A10176 | 2021/05/22       | 2022/05/21           |
| Temperature/Humidity Meter          | Gangxing             | CTH-608                | 02         | 2021/05/22       | 2022/05/21           |
| Wideband Radio Communication Tester | R&S                  | CMW500                 | 101814     | 2021/05/22       | 2022/05/21           |
| High-Pass Filter                    | K&L                  | 9SH10-2700/X1 2750-O/O | N/A        | 2021/05/22       | 2022/05/21           |
| High-Pass Filter                    | K&L                  | 41H10-1375/U1 2750-O/O | N/A        | 2021/05/22       | 2022/05/21           |
| RF Cable                            | HUBER+SUHNER         | RG214                  | N/A        | 2021/05/22       | 2022/05/21           |
| Climate Chamber                     | ESPEC                | EL-10KA                | A20120523  | 2021/05/22       | 2022/05/21           |
| SIGNAL GENERATOR                    | Agilent              | E4421B                 | US40051744 | 2021/05/22       | 2022/05/21           |
| Directional Coupler                 | Agilent              | 87300B                 | 3116A03638 | 2021/05/22       | 2022/05/21           |
| Power Sensor                        | Agilent              | U2021XA                | MY5365004  | 2021/05/22       | 2022/05/21           |
| Power Meter                         | Agilent              | U2531A                 | TW53323507 | 2021/05/22       | 2022/05/21           |

The calibration interval was one year

## 2.5. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended to comply with of the Part 27 Rules.

## 2.6. Modifications

No modifications were implemented to meet testing criteria.

### 3. TEST CONDITIONS AND RESULTS

#### 3.1. Output Power

##### LIMIT

##### FCC

- §22.913(a)(5), the ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 watts.
- §24.232(c), mobile and portable stations are limited to 2 watts EIRP and the equipment must employ means for limiting power to the minimum necessary for successful communications.
- §27.50(c)(10), portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.
- §27.50(d)(4), fixed, mobile, and portable (hand-held) stations operating in the 1 710-1 755 MHz band and mobile and portable stations operating in the 1 695-1 710 MHz and 1 755-1 780 MHz bands are limited to 1 watt EIRP.
- §27.50(h)(2), mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP. All user stations are limited to 2.0 watts transmitter output power.

##### IC

##### - RSS-130 Issue 2

4.6.3, the e.r.p. shall not exceed 30 watts for mobile equipment and outdoor fixed subscriber equipment. The e.r.p. shall not exceed 3 watts for portable equipment and indoor fixed subscriber equipment.

For base and fixed equipment other than fixed subscriber equipment, refer to SRSP-518 for the e.i.r.p. limits.

##### - RSS-132 Issue 3

5.4, the transmitter output power shall be measured in terms of average power.

The equivalent isotropically radiated power (e.i.r.p.) for mobile equipment shall not exceed 11.5 watts. Refer to SRSP-503 for base station e.i.r.p. limits.

##### - RSS-133 Issue 6

6.4, the equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits given in SRSP-510. Moreover, base station transmitters operating in the band 1 930-1 995 MHz shall not have output power exceeding 100 watts.

##### - RSS-139 Issue 3

6.5, the equivalent isotropically radiated power (e.i.r.p.) for mobile and portable transmitters shall not exceed one watt. The e.i.r.p. for fixed and base stations in the band 1 710-1 780 MHz shall not exceed one watt.

##### - RSS-199 Issue 3

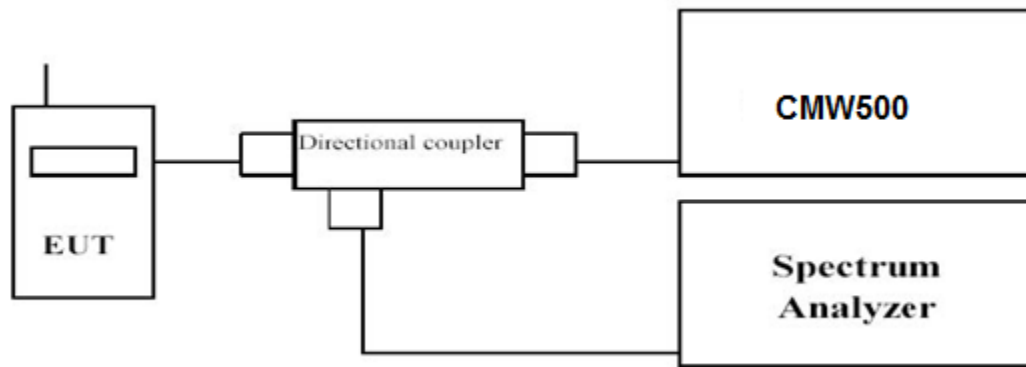
4.4, the transmitter output power shall be measured in terms of average value.

For base station equipment, refer to SRSP-517 for the maximum permissible e.i.r.p.

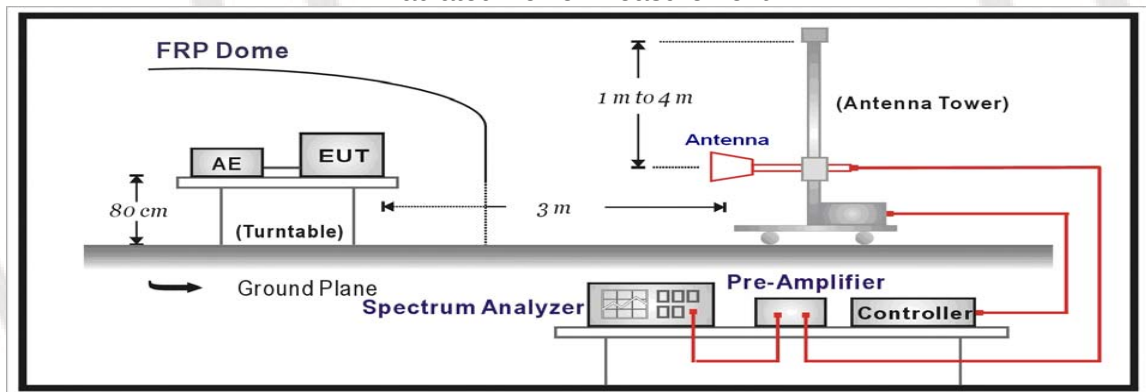
For mobile subscriber equipment, the e.i.r.p. shall not exceed 2 W. For fixed subscriber equipment, the transmitter output power shall not exceed 2 W and the e.i.r.p. shall be limited to 40 W.

##### TEST CONFIGURATION

Conducted Power Measurement



Radiated Power Measurement:



## **TEST PROCEDURE**

The EUT was setup according to EIA/TIA 603D

### **Conducted Power Measurement:**

- Place the EUT on a bench and set it in transmitting mode.
- Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMW500 by a Directional Couple.
- EUT Communicate with CMW500 then selects a channel for testing.
- Add a correction factor to the display of spectrum, and then test.

### **Radiated Power Measurement:**

- The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
- The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter
- The output of the test antenna shall be connected to the measuring receiver.
- The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.
- The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
- The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.

- g) The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
- h) The maximum signal level detected by the measuring receiver shall be noted.
- i) The transmitter shall be replaced by a substitution antenna.
- j) The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
- k) The substitution antenna shall be connected to a calibrated signal generator.
- l) If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- m) The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
- n) The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
- o) The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
- p) The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.
- q) Test site anechoic chamber refer to ANSI C63.10.

**TEST RESULTS****Conducted Measurement :**

1. Please refer to Appendix B: Section 1
2. Please refer to Appendix E: Section 1
3. Please refer to Appendix G: Section 1
4. Please refer to Appendix H: Section 1
5. Please refer to Appendix I: Section 1
6. Please refer to Appendix K: Section 1
7. Please refer to Appendix O: Section 1
8. Please refer to Appendix P: Section 1
9. Please refer to Appendix Q: Section 1

**Radiated Measurement:****Limits**

Rule Part 27.50(b)(10) specifies that " Portable stations (hand-held devices) transmitting in the 746~757 MHz , 776MHz~788MHz, and 805~806MHz bands are limited to 3 watts ERP "

Rule Part 27.50(c)(10) specifies that " Portable stations (hand-held devices) in the 600MHz uplink band and the 698-746MHz band, and mobile stations in the 600MHz uplink band are limited to 3 watts ERP "

Rule Part 27.50(d)(4) specifies that " mobile stations (hand-held) stations operating in the 1710~1755 MHz , band and mobile and portable stations operating in the 1695MHz~1710MHz and 1755~1780MHz bands are limited to 1 watts ERP "

Rule Part 27.50 (h) (2) Mobile and other user stations. Mobile stations are limited to 2.0 watts EIRP.

All user stations are limited to 2.0 watts transmitter output power.

**Remark:**

1. We were tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of WCDMA Band IV, TE Band 4, LTE Band 7, LTE Band 12, Band 13, Band 17, Band 41, Band 66, Band 71. recorded worst case for each Channel Bandwidth of WCDMA Band IV, TE Band 4, LTE Band 7, LTE Band 12, Band 13, Band 17, Band 41, Band 66, Band 71.

**WCDMA Band IV**

| Mode          | Channel | Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Polarization | Conclusion |
|---------------|---------|-----------------|------------|-------------|--------------|------------|
| WCDMA Band IV | Low     | 1712.4          | 25.75      | 30.00       | H            | Pass       |
|               | Mid     | 1732.6          | 25.26      | 30.00       | H            | Pass       |
|               | High    | 1752.6          | 25.83      | 30.00       | H            | Pass       |

**LTE FDD Band 4**

| Bandwidth   | Channel | Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Polarization | Conclusion |
|-------------|---------|-----------------|------------|-------------|--------------|------------|
| 1.4MHz QPSK | Low     | 1710.7          | 25.12      | 30.00       | H            | Pass       |
|             | Mid     | 1732.5          | 25.22      | 30.00       | H            | Pass       |
|             | High    | 1754.3          | 25.62      | 30.00       | H            | Pass       |
| 3MHz QPSK   | Low     | 1711.5          | 25.78      | 30.00       | H            | Pass       |
|             | Mid     | 1732.5          | 25.62      | 30.00       | H            | Pass       |
|             | High    | 1753.5          | 25.12      | 30.00       | H            | Pass       |
| 5MHz QPSK   | Low     | 1712.5          | 25.22      | 30.00       | H            | Pass       |
|             | Mid     | 1732.5          | 25.62      | 30.00       | H            | Pass       |
|             | High    | 1752.5          | 25.78      | 30.00       | H            | Pass       |

|              |      |        |       |       |   |      |
|--------------|------|--------|-------|-------|---|------|
| 10MHz QPSK   | Low  | 1715.0 | 25.42 | 30.00 | H | Pass |
|              | Mid  | 1732.5 | 25.35 | 30.00 | H | Pass |
|              | High | 1750.0 | 25.62 | 30.00 | H | Pass |
| 15MHz QPSK   | Low  | 1717.5 | 25.82 | 30.00 | H | Pass |
|              | Mid  | 1732.5 | 25.62 | 30.00 | H | Pass |
|              | High | 1747.5 | 25.42 | 30.00 | H | Pass |
| 20MHz QPSK   | Low  | 1720.0 | 25.62 | 30.00 | H | Pass |
|              | Mid  | 1732.5 | 25.12 | 30.00 | H | Pass |
|              | High | 1745.0 | 25.78 | 30.00 | H | Pass |
| 1.4MHz 16QAM | Low  | 1710.7 | 26.52 | 30.00 | H | Pass |
|              | Mid  | 1732.5 | 26.62 | 30.00 | H | Pass |
|              | High | 1754.3 | 26.57 | 30.00 | H | Pass |
| 3MHz 16QAM   | Low  | 1711.5 | 26.52 | 30.00 | H | Pass |
|              | Mid  | 1732.5 | 26.62 | 30.00 | H | Pass |
|              | High | 1753.5 | 26.85 | 30.00 | H | Pass |
| 5MHz 16QAM   | Low  | 1712.5 | 26.62 | 30.00 | H | Pass |
|              | Mid  | 1732.5 | 26.71 | 30.00 | H | Pass |
|              | High | 1752.5 | 26.28 | 30.00 | H | Pass |
| 10MHz 16QAM  | Low  | 1715.0 | 26.38 | 30.00 | H | Pass |
|              | Mid  | 1732.5 | 26.28 | 30.00 | H | Pass |
|              | High | 1750.0 | 26.42 | 30.00 | H | Pass |
| 15MHz 16QAM  | Low  | 1717.5 | 26.82 | 30.00 | H | Pass |
|              | Mid  | 1732.5 | 26.92 | 30.00 | H | Pass |
|              | High | 1747.5 | 26.71 | 30.00 | H | Pass |
| 20MHz 16QAM  | Low  | 1720.0 | 26.25 | 30.00 | H | Pass |
|              | Mid  | 1732.5 | 25.36 | 30.00 | H | Pass |
|              | High | 1745.0 | 25.62 | 30.00 | H | Pass |

## LTE FDD Band 7

| Bandwidth   | Channel | Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Polarization | Conclusion |
|-------------|---------|-----------------|------------|-------------|--------------|------------|
| 5MHz QPSK   | Low     | 2502.5          | 27.54      | 33.01       | H            | Pass       |
|             | Mid     | 2535            | 27.66      | 33.01       | H            | Pass       |
|             | High    | 2567.5          | 27.53      | 33.01       | H            | Pass       |
| 10MHz QPSK  | Low     | 2505            | 27.58      | 33.01       | H            | Pass       |
|             | Mid     | 2535            | 27.62      | 33.01       | H            | Pass       |
|             | High    | 2565            | 27.77      | 33.01       | H            | Pass       |
| 5MHz 16QAM  | Low     | 2507.5          | 27.39      | 33.01       | H            | Pass       |
|             | Mid     | 2535            | 27.72      | 33.01       | H            | Pass       |
|             | High    | 2562.5          | 27.97      | 33.01       | H            | Pass       |
| 10MHz 16QAM | Low     | 2510            | 27.76      | 33.01       | H            | Pass       |
|             | Mid     | 2535            | 27.25      | 33.01       | H            | Pass       |
|             | High    | 2560            | 27.23      | 33.01       | H            | Pass       |

**LTE FDD Band 12**

| Bandwidth    | Channel | Frequency (MHz) | ERP (dBm) | Limit (dBm) | Polarization | Conclusion |
|--------------|---------|-----------------|-----------|-------------|--------------|------------|
| 1.4MHz QPSK  | Low     | 699.7           | 28.13     | 34.77       | H            | Pass       |
|              | Mid     | 707.5           | 28.35     | 34.77       | H            | Pass       |
|              | High    | 715.3           | 28.52     | 34.77       | H            | Pass       |
| 3MHz QPSK    | Low     | 700.5           | 28.44     | 34.77       | H            | Pass       |
|              | Mid     | 707.5           | 28.36     | 34.77       | H            | Pass       |
|              | High    | 714.5           | 28.42     | 34.77       | H            | Pass       |
| 5MHz QPSK    | Low     | 701.5           | 28.42     | 34.77       | H            | Pass       |
|              | Mid     | 707.5           | 27.62     | 34.77       | H            | Pass       |
|              | High    | 713.5           | 27.12     | 34.77       | H            | Pass       |
| 10MHz QPSK   | Low     | 704.0           | 27.28     | 34.77       | H            | Pass       |
|              | Mid     | 707.5           | 27.93     | 34.77       | H            | Pass       |
|              | High    | 711.0           | 27.75     | 34.77       | H            | Pass       |
| 1.4MHz 16QAM | Low     | 699.7           | 27.25     | 34.77       | H            | Pass       |
|              | Mid     | 707.5           | 27.71     | 34.77       | H            | Pass       |
|              | High    | 715.3           | 27.62     | 34.77       | H            | Pass       |
| 3MHz 16QAM   | Low     | 700.5           | 27.25     | 34.77       | H            | Pass       |
|              | Mid     | 707.5           | 27.75     | 34.77       | H            | Pass       |
|              | High    | 714.5           | 27.92     | 34.77       | H            | Pass       |
| 5MHz 16QAM   | Low     | 701.5           | 27.25     | 34.77       | H            | Pass       |
|              | Mid     | 707.5           | 27.25     | 34.77       | H            | Pass       |
|              | High    | 713.5           | 27.63     | 34.77       | H            | Pass       |
| 10MHz 16QAM  | Low     | 704.0           | 27.84     | 34.77       | H            | Pass       |
|              | Mid     | 707.5           | 27.85     | 34.77       | H            | Pass       |
|              | High    | 711.0           | 27.96     | 34.77       | H            | Pass       |

**LTE FDD Band 13**

| Bandwidth   | Channel | Frequency (MHz) | ERP (dBm) | Limit (dBm) | Polarization | Conclusion |
|-------------|---------|-----------------|-----------|-------------|--------------|------------|
| 5MHz QPSK   | Low     | 790.5           | 26.86     | 34.77       | H            | Pass       |
|             | Mid     | 793             | 26.68     | 34.77       | H            | Pass       |
|             | High    | 795.5           | 26.68     | 34.77       | H            | Pass       |
| 10MHz QPSK  | Mid     | 793             | 26.89     | 34.77       | H            | Pass       |
| 5MHz 16QAM  | Low     | 790.5           | 26.91     | 34.77       | H            | Pass       |
|             | Mid     | 793             | 26.68     | 34.77       | H            | Pass       |
|             | High    | 795.5           | 26.93     | 34.77       | H            | Pass       |
| 10MHz 16QAM | Low     | 793             | 26.38     | 34.77       | H            | Pass       |
|             | Mid     |                 |           |             |              |            |
|             | High    |                 |           |             |              |            |

**LTE FDD Band 17**

| Bandwidth   | Channel | Frequency (MHz) | ERP (dBm) | Limit (dBm) | Polarization | Conclusion |
|-------------|---------|-----------------|-----------|-------------|--------------|------------|
| 5MHz QPSK   | Low     | 706.5           | 27.63     | 34.77       | H            | Pass       |
|             | Mid     | 710             | 27.25     | 34.77       | H            | Pass       |
|             | High    | 713.5           | 27.45     | 34.77       | H            | Pass       |
| 10MHz QPSK  | Low     | 709             | 27.63     | 34.77       | H            | Pass       |
|             | Mid     | 710             | 27.25     | 34.77       | H            | Pass       |
|             | High    | 711             | 27.41     | 34.77       | H            | Pass       |
| 5MHz 16QAM  | Low     | 706.5           | 27.25     | 34.77       | H            | Pass       |
|             | Mid     | 710             | 27.15     | 34.77       | H            | Pass       |
|             | High    | 713.5           | 27.95     | 34.77       | H            | Pass       |
| 10MHz 16QAM | Low     | 709             | 27.85     | 34.77       | H            | Pass       |
|             | Mid     | 710             | 27.62     | 34.77       | H            | Pass       |
|             | High    | 711             | 27.42     | 34.77       | H            | Pass       |

**LTE FDD Band 41**

| Bandwidth   | Channel | Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Polarization | Conclusion |
|-------------|---------|-----------------|------------|-------------|--------------|------------|
| 5MHz QPSK   | Low     | 2498.5          | 27.62      | 33.00       | H            | Pass       |
|             | Mid     | 2593            | 27.68      | 33.00       | H            | Pass       |
|             | High    | 2687.5          | 27.35      | 33.00       | H            | Pass       |
| 10MHz QPSK  | Low     | 2501            | 27.82      | 33.00       | H            | Pass       |
|             | Mid     | 2593            | 27.62      | 33.00       | H            | Pass       |
|             | High    | 2685            | 27.72      | 33.00       | H            | Pass       |
| 15MHz QPSK  | Low     | 2503.5          | 27.36      | 33.00       | H            | Pass       |
|             | Mid     | 2593            | 27.72      | 33.00       | H            | Pass       |
|             | High    | 2682.5          | 27.34      | 33.00       | H            | Pass       |
| 20MHz QPSK  | Low     | 2506            | 27.89      | 33.00       | H            | Pass       |
|             | Mid     | 2593            | 27.35      | 33.00       | H            | Pass       |
|             | High    | 2680            | 27.12      | 33.00       | H            | Pass       |
| 5MHz 16QAM  | Low     | 2498.5          | 27.36      | 33.00       | H            | Pass       |
|             | Mid     | 2593            | 27.75      | 33.00       | H            | Pass       |
|             | High    | 2687.5          | 27.15      | 33.00       | H            | Pass       |
| 10MHz 16QAM | Low     | 2501            | 27.36      | 33.00       | H            | Pass       |
|             | Mid     | 2593            | 27.82      | 33.00       | H            | Pass       |
|             | High    | 2685            | 26.62      | 33.00       | H            | Pass       |
| 15MHz 16QAM | Low     | 2503.5          | 26.72      | 33.00       | H            | Pass       |
|             | Mid     | 2593            | 26.36      | 33.00       | H            | Pass       |
|             | High    | 2682.5          | 24.72      | 33.00       | H            | Pass       |
| 20MHz 16QAM | Low     | 2506            | 25.82      | 33.00       | H            | Pass       |
|             | Mid     | 2593            | 26.62      | 33.00       | H            | Pass       |
|             | High    | 2680            | 26.72      | 33.00       | H            | Pass       |

**LTE FDD Band 66**

| Bandwidth    | Channel | Frequency (MHz) | EIRP (dBm) | Limit (dBm) | Polarization | Conclusion |
|--------------|---------|-----------------|------------|-------------|--------------|------------|
| 1.4MHz QPSK  | Low     | 1710.7          | 25.16      | 30.00       | H            | Pass       |
|              | Mid     | 1745.0          | 25.34      | 30.00       | H            | Pass       |
|              | High    | 1779.3          | 26.57      | 30.00       | H            | Pass       |
| 3MHz QPSK    | Low     | 1711.5          | 26.63      | 30.00       | H            | Pass       |
|              | Mid     | 1745.0          | 25.67      | 30.00       | H            | Pass       |
|              | High    | 1778.5          | 25.78      | 30.00       | H            | Pass       |
| 5MHz QPSK    | Low     | 1712.5          | 25.52      | 30.00       | H            | Pass       |
|              | Mid     | 1745.5          | 24.42      | 30.00       | H            | Pass       |
|              | High    | 1777.5          | 25.67      | 30.00       | H            | Pass       |
| 10MHz QPSK   | Low     | 1715.0          | 26.63      | 30.00       | H            | Pass       |
|              | Mid     | 1745.0          | 25.36      | 30.00       | H            | Pass       |
|              | High    | 1775.0          | 25.75      | 30.00       | H            | Pass       |
| 15MHz QPSK   | Low     | 1717.5          | 25.57      | 30.00       | H            | Pass       |
|              | Mid     | 1745.0          | 25.63      | 30.00       | H            | Pass       |
|              | High    | 1772.5          | 24.67      | 30.00       | H            | Pass       |
| 20MHz QPSK   | Low     | 1720.0          | 25.78      | 30.00       | H            | Pass       |
|              | Mid     | 1745.0          | 25.52      | 30.00       | H            | Pass       |
|              | High    | 1770.0          | 24.42      | 30.00       | H            | Pass       |
| 1.4MHz 16QAM | Low     | 1710.7          | 25.67      | 30.00       | H            | Pass       |
|              | Mid     | 1745.0          | 25.63      | 30.00       | H            | Pass       |
|              | High    | 1779.3          | 25.36      | 30.00       | H            | Pass       |
| 3MHz 16QAM   | Low     | 1711.5          | 25.75      | 30.00       | H            | Pass       |
|              | Mid     | 1745.0          | 25.57      | 30.00       | H            | Pass       |
|              | High    | 1778.5          | 26.63      | 30.00       | H            | Pass       |
| 5MHz 16QAM   | Low     | 1712.5          | 25.67      | 30.00       | H            | Pass       |
|              | Mid     | 1745.0          | 25.78      | 30.00       | H            | Pass       |

|                |      |        |       |       |   |      |
|----------------|------|--------|-------|-------|---|------|
| 10MHz<br>16QAM | High | 1777.5 | 24.52 | 30.00 | H | Pass |
|                | Low  | 1715.0 | 24.85 | 30.00 | H | Pass |
|                | Mid  | 1745.0 | 25.47 | 30.00 | H | Pass |
|                | High | 1775.0 | 25.25 | 30.00 | H | Pass |
| 15MHz<br>16QAM | Low  | 1717.5 | 25.15 | 30.00 | H | Pass |
|                | Mid  | 1745.0 | 25.15 | 30.00 | H | Pass |
|                | High | 1772.5 | 26.25 | 30.00 | H | Pass |
| 20MHz<br>16QAM | Low  | 1720.0 | 26.67 | 30.00 | H | Pass |
|                | Mid  | 1745.0 | 26.67 | 30.00 | H | Pass |
|                | High | 1770.0 | 26.78 | 30.00 | H | Pass |

## LTE FDD Band 71

| Bandwidth   | Channel | Frequency (MHz) | ERP (dBm) | Limit (dBm) | Polarization | Conclusion |
|-------------|---------|-----------------|-----------|-------------|--------------|------------|
| 5MHz QPSK   | Low     | 665.5           | 26.22     | 34.77       | H            | Pass       |
|             | Mid     | 680.5           | 26.28     | 34.77       | H            | Pass       |
|             | High    | 695.5           | 26.25     | 34.77       | H            | Pass       |
| 10MHz QPSK  | Low     | 668             | 26.32     | 34.77       | H            | Pass       |
|             | Mid     | 680.5           | 26.52     | 34.77       | H            | Pass       |
|             | High    | 693             | 26.42     | 34.77       | H            | Pass       |
| 15MHz QPSK  | Low     | 670.5           | 26.56     | 34.77       | H            | Pass       |
|             | Mid     | 680.5           | 26.62     | 34.77       | H            | Pass       |
|             | High    | 690.5           | 26.64     | 34.77       | H            | Pass       |
| 20MHz QPSK  | Low     | 673             | 26.79     | 34.77       | H            | Pass       |
|             | Mid     | 683             | 26.15     | 34.77       | H            | Pass       |
|             | High    | 688             | 26.22     | 34.77       | H            | Pass       |
| 5MHz 16QAM  | Low     | 665.5           | 26.56     | 34.77       | H            | Pass       |
|             | Mid     | 680.5           | 26.65     | 34.77       | H            | Pass       |
|             | High    | 695.5           | 26.55     | 34.77       | H            | Pass       |
| 10MHz 16QAM | Low     | 668             | 26.36     | 34.77       | H            | Pass       |
|             | Mid     | 680.5           | 26.82     | 34.77       | H            | Pass       |
|             | High    | 693             | 26.62     | 34.77       | H            | Pass       |
| 15MHz 16QAM | Low     | 670.5           | 26.72     | 34.77       | H            | Pass       |
|             | Mid     | 680.5           | 26.26     | 34.77       | H            | Pass       |
|             | High    | 690.5           | 26.62     | 34.77       | H            | Pass       |
| 20MHz 16QAM | Low     | 673             | 26.82     | 34.77       | H            | Pass       |
|             | Mid     | 683             | 26.42     | 34.77       | H            | Pass       |
|             | High    | 688             | 26.72     | 34.77       | H            | Pass       |

### 3.2. Peak-to-Average Ratio (PAR)

#### LIMIT

##### FCC

- §22.913(d) Measurement of the ERP of Cellular base transmitters and repeaters must be made using an average power measurement technique. The peak-to-average ratio (PAR) of the transmission must not exceed 13 dB.

- §24.232(d), power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (e) of this section. In both instances, equipment employed must be authorized in accordance with the provisions of §24.51. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

- §27.50(d)(5), power measurements for transmissions by stations authorized under this section may be made either in accordance with a Commission-approved average power technique or in compliance with paragraph (d)(6) of this section. In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

##### IC

- RSS-130 Issue 2

4.6.1, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1 % of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

- RSS-132 Issue 3

5.4, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1 % of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

- RSS-133 Issue 6

6.4, the transmitter's peak-to-average power ratio (PAPR) shall not exceed 13 dB for more than 0.1 % of the time using a signal corresponding to the highest PAPR during periods of continuous transmission.

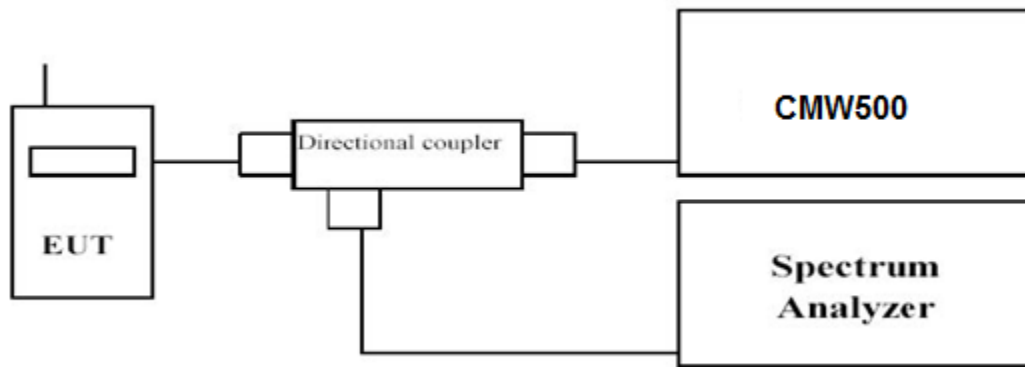
- RSS-139 Issue 3

6.5, the peak to average power ratio (PAPR) of the equipment shall not exceed 13 dB for more than 0.1 % of the time, using a signal that corresponds to the highest PAPR during periods of continuous transmission.

- RSS-199 Issue 3

4.4, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

#### TEST CONFIGURATION



### **TEST PROCEDURE**

1. Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;
2. Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth;
3. Set the number of counts to a value that stabilizes the measured CCDF curve;
4. Set the measurement interval as follows:
  - 1). for continuous transmissions, set to 1 ms,
  - 2). for burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.
5. Record the maximum PAPR level associated with a probability of 0.1%.

### **TEST RESULTS**

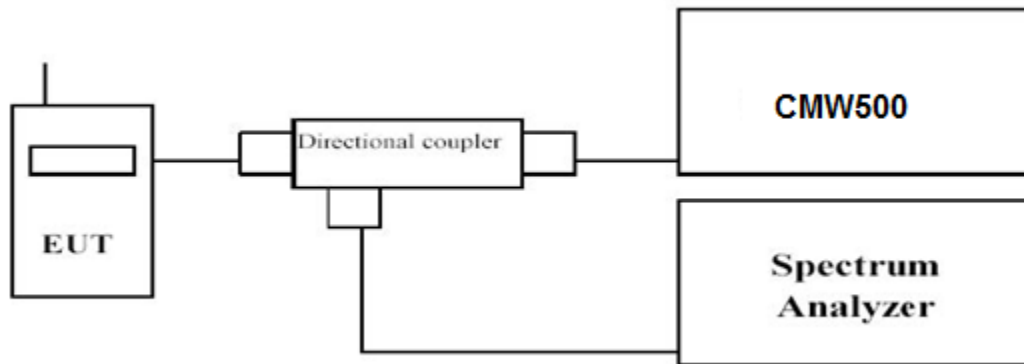
1. Please refer to Appendix B: Section 4
2. Please refer to Appendix E: Section 4
3. Please refer to Appendix G: Section 4
4. Please refer to Appendix H: Section 4
5. Please refer to Appendix I: Section 4
6. Please refer to Appendix K: Section 4
7. Please refer to Appendix O: Section 4
8. Please refer to Appendix P: Section 4
9. Please refer to Appendix Q: Section 4

### 3.3. Occupied Bandwidth and Emission Bandwidth

#### LIMIT

N/A

#### TEST CONFIGURATION



#### TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at low, middle and high channel in each band. The -26dBc Emission bandwidth was also measured and recorded.

Set RBW was set to about 1% of emission BW, VBW $\geq$ 3 times RBW.

-26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.

#### TEST RESULTS

1. Please refer to Appendix B: Section 3
2. Please refer to Appendix E: Section 3
3. Please refer to Appendix G: Section 3
4. Please refer to Appendix H: Section 3
5. Please refer to Appendix I: Section 3
6. Please refer to Appendix K: Section 3
7. Please refer to Appendix O: Section 3
8. Please refer to Appendix P: Section 3
9. Please refer to Appendix Q: Section 3

### 3.4. Band Edge compliance

#### LIMIT FCC

- §22.917(a), 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.
- §24.238(a), 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.
- §27.53(g), the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least  $43 + 10 \log (P)$  dB.
- §27.53(h)(1), for operations in the 1 695-1 710 MHz, 1 710-1 755 MHz, 1 755-1 780 MHz, 1 915-1 920 MHz, 1 995-2 000 MHz, 2 000-2 020 MHz, 2 110-2 155 MHz, 2 155-2 180 MHz, and 2 180-2 200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10 \log_{10} (P)$  dB.
- §27.53(m)(4), For mobile digital stations, the attenuation factor shall be not less than  $40 + 10 \log_{10} (P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log_{10} (P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and  $55 + 10 \log_{10} (P)$  dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than  $43 + 10 \log_{10} (P)$  dB on all frequencies between 2490.5 MHz and 2496 MHz and  $55 + 10 \log_{10} (P)$  dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees

#### IC

- RSS-130 Issue 2

4.7.1, the unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dB W), by at least  $43 + 10 \log_{10} p$  (watts), dB. However, in the 100 kHz band immediately outside the equipment's operating frequency block range, a resolution bandwidth of 30 kHz may be employed.

- RSS-132 Issue 3

5.5, Mobile and base station equipment shall comply with the limits in (i) and (ii) below.

- (i) In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1 % of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dB W) by at least  $43 + 10 \log_{10} p$  (watts).
- (ii) After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dB W) by at least  $43 + 10 \log_{10} p$  (watts). If the measurement is performed using 1 % of the occupied

bandwidth, power integration over 100 kHz is required.

- RSS-133 Issue 6

6.5, Equipment shall comply with the limits in (i) and (ii) below.

(i) In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1 % of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dB W) by at least  $43 + 10 \log_{10} p(\text{watts})$ .

(ii) After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dB W) by at least  $43 + 10 \log_{10} p(\text{watts})$ . If the measurement is performed using 1 % of the emission bandwidth, power integration over 1.0 MHz is required.

- RSS-139 Issue 3

6.6, (i) In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power per any 1 % of the emission bandwidth shall be attenuated below the transmitter output power P (in dB W) by at least  $43 + 10 \log_{10} p(\text{watts})$  dB.

(ii) After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in dB W) by at least  $43 + 10 \log_{10} p(\text{watts})$  dB.

- RSS-199 Issue 3

4.5, In the 1 MHz band immediately outside and adjacent to the channel edge, the unwanted emission power shall be measured with a resolution bandwidth of at least 1% of the occupied bandwidth for base station and fixed subscriber equipment, and 2% for mobile subscriber equipment. Beyond the 1 MHz band, a resolution bandwidth of 1 MHz shall be used. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full required measurement bandwidth of 1 MHz, or 1% or 2% of the occupied bandwidth, as applicable.

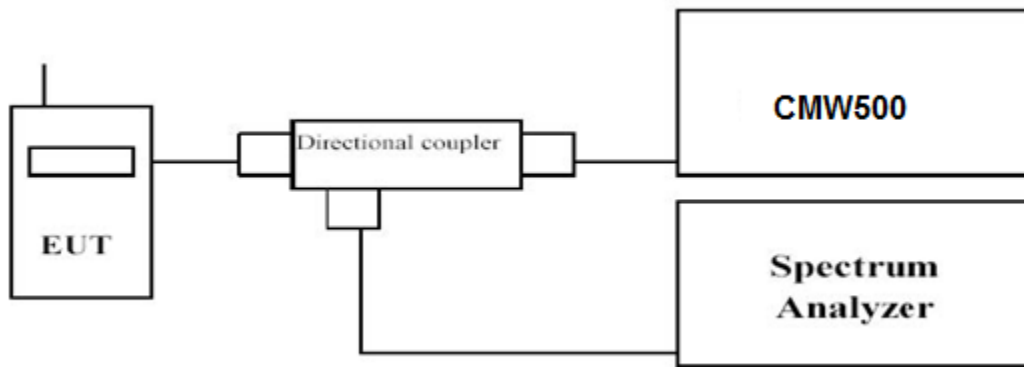
Equipment shall comply with the following unwanted emission limits:

- a. for base station and fixed subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least  $43 + 10 \log_{10} p$
- b. for mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:
  - i.  $40 + 10 \log_{10} p$  from the channel edges to 5 MHz away
  - ii.  $43 + 10 \log_{10} p$  between 5 MHz and X MHz from the channel edges, and
  - iii.  $55 + 10 \log_{10} p$  at X MHz and beyond from the channel edges

In addition, the attenuation shall not be less than  $43 + 10 \log_{10} p$  on all frequencies between 2490.5 MHz and 2496 MHz, and  $55 + 10 \log_{10} p$  at or below 2490.5 MHz.

In (a) and (b), p is the transmitter power measured in watts and X is 6 MHz or the equipment occupied bandwidth, whichever is greater.

## **TEST CONFIGURATION**



### **TEST PROCEDURE**

1. The transmitter output port was connected to base station.
2. The RF output of EUT was connected to the power meter by RF cable and attenuator, the path loss was compensated to the results for each measurement.
3. Set EUT at maximum power through base station.
4. Select lowest and highest channels for each band and different modulation.
5. Measure Band edge using RMS (Average) detector by spectrum

### **TEST RESULTS**

1. Please refer to Appendix B: Section 6
2. Please refer to Appendix E: Section 6
3. Please refer to Appendix G: Section 6
4. Please refer to Appendix H: Section 6
5. Please refer to Appendix I: Section 6
6. Please refer to Appendix K: Section 6
7. Please refer to Appendix O: Section 6
8. Please refer to Appendix P: Section 6
9. Please refer to Appendix Q: Section 6

### 3.5. Spurious Emission

#### LIMIT

##### **FCC**

- §22.917(a), 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.
- §24.238(a), 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.
- §27.53(g), the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least  $43 + 10\log(P)$  dB.
- §27.53(h)(1), for operations in the 1 695-1 710 MHz, 1 710-1 755 MHz, 1 755-1 780 MHz, 1 915-1 920 MHz, 1 995-2 000 MHz, 2 000-2 020 MHz, 2 110-2 155 MHz, 2 155-2 180 MHz, and 2 180-2 200 bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) in watts by at least  $43 + 10\log_{10}(P)$  dB.
- §27.53(m)(4), For mobile digital stations, the attenuation factor shall be not less than  $40 + 10\log_{10}(P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10\log_{10}(P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and  $55 + 10\log_{10}(P)$  dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less than  $43 + 10\log_{10}(P)$  dB on all frequencies between 2 490.5 MHz and 2 496 MHz and  $55 + 10\log_{10}(P)$  dB at or below 2 490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2 495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees

##### **IC**

##### **- RSS-130 Issue 2**

4.7.1, the unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dB W), by at least  $43 + 10\log_{10} p$  (watts), dB.

However, in the 100 kHz band immediately outside the equipment's operating frequency block range, a resolution bandwidth of 30 kHz may be employed.

##### **- RSS-132 Issue 3**

5.5, Mobile and base station equipment shall comply with the limits in (i) and (ii) below.

(i) In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1 % of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dB W) by at least  $43 + 10\log_{10} p$  (watts).

(ii) After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dB W) by at least  $43 + 10\log_{10} p$  (watts). If the measurement is performed using 1 % of the occupied bandwidth, power integration over 100 kHz is required.

- RSS-133 Issue 6

6.5, Equipment shall comply with the limits in (i) and (ii) below.

(i) In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1 % of the emission bandwidth shall be attenuated (in dB) below the transmitter output power  $P$  (dB W) by at least  $43 + 10 \log_{10} p$  (watts).

(ii) After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power  $P$  (dB W) by at least  $43 + 10 \log_{10} p$  (watts). If the measurement is performed using 1 % of the emission bandwidth, power integration over 1.0 MHz is required.

- RSS-139 Issue 3

6.6, (i) In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power per any 1 % of the emission bandwidth shall be attenuated below the transmitter output power  $P$  (in dB W) by at least  $43 + 10 \log_{10} p$  (watts) dB.

(ii) After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power  $P$  (in dB W) by at least  $43 + 10 \log_{10} p$  (watts) dB.

- RSS-199 Issue 3

4.5, In the 1 MHz band immediately outside and adjacent to the channel edge, the unwanted emission power shall be measured with a resolution bandwidth of at least 1% of the occupied bandwidth for base station and fixed subscriber equipment, and 2% for mobile subscriber equipment. Beyond the 1 MHz band, a resolution bandwidth of 1 MHz shall be used. A narrower resolution bandwidth can be used, provided that the measured power is integrated over the full required measurement bandwidth of 1 MHz, or 1% or 2% of the occupied bandwidth, as applicable.

Equipment shall comply with the following unwanted emission limits:

- a. for base station and fixed subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power,  $P$  (dB W), by at least  $43 + 10 \log_{10} p$
- b. for mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power,  $P$  (dB W), by at least:

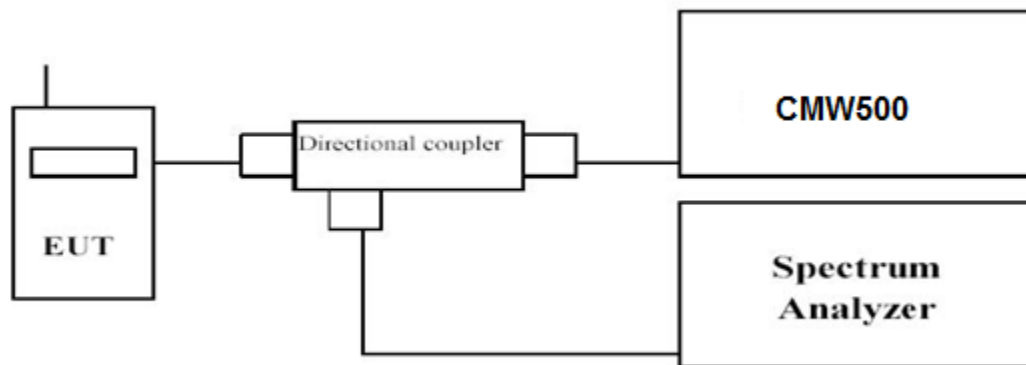
- i.  $40 + 10 \log_{10} p$  from the channel edges to 5 MHz away
- ii.  $43 + 10 \log_{10} p$  between 5 MHz and  $X$  MHz from the channel edges, and
- iii.  $55 + 10 \log_{10} p$  at  $X$  MHz and beyond from the channel edges

In addition, the attenuation shall not be less than  $43 + 10 \log_{10} p$  on all frequencies between 2490.5 MHz and 2496 MHz, and  $55 + 10 \log_{10} p$  at or below 2490.5 MHz.

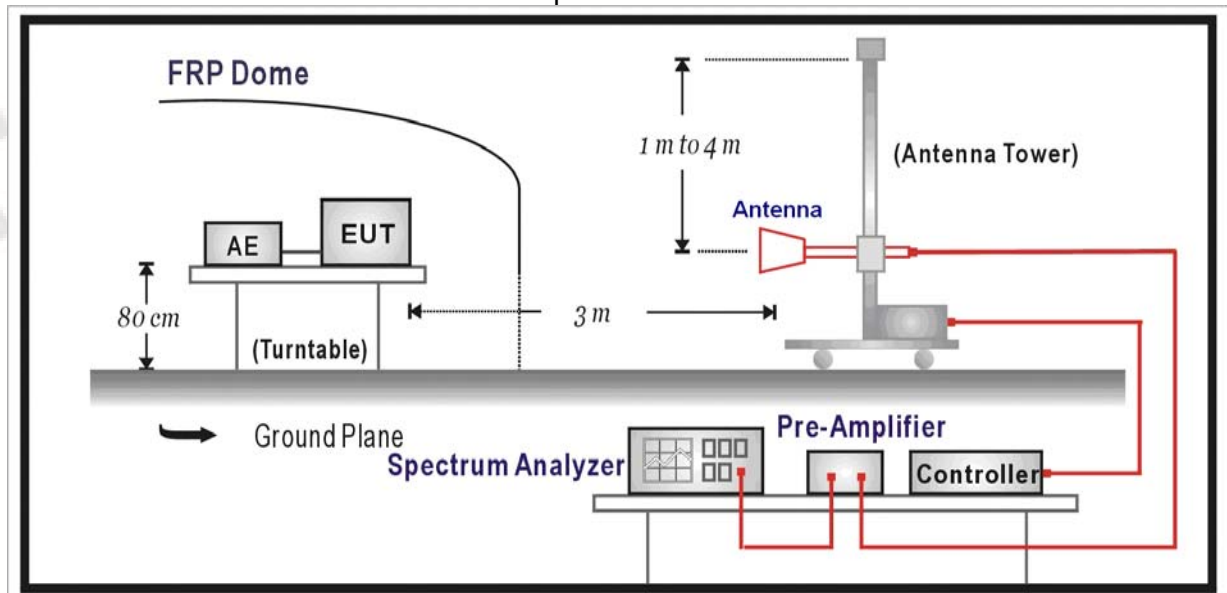
In (a) and (b),  $p$  is the transmitter power measured in watts and  $X$  is 6 MHz or the equipment occupied bandwidth, whichever is greater.

## TEST CONFIGURATION

Conducted Spurious Measurement:



Radiated Spurious Measurement:



## TEST PROCEDURE

The EUT was setup according to EIA/TIA 603D

### **Conducted Spurious Measurement:**

- Place the EUT on a bench and set it in transmitting mode.
- Connect a low loss RF cable from the antenna port to a spectrum analyzer and CMW500 by a Directional Couple.
- EUT Communicate with CMW500 then selects a channel for testing.
- Add a correction factor to the display of spectrum, and then test.
- The resolution bandwidth of the spectrum analyzer was set sufficient scans were taken to show the out of band Emission if any up to 10th harmonic.

**Radiated Spurious Measurement:**

- a. The EUT shall be placed at the specified height on a support, and in the position closest to normal use as declared by provider.
- b. The test antenna shall be oriented initially for vertical polarization and shall be chosen to correspond to the frequency of the transmitter
- c. The output of the test antenna shall be connected to the measuring receiver.
- d. The transmitter shall be switched on and the measuring receiver shall be tuned to the frequency of the transmitter under test.
- e. The test antenna shall be raised and lowered through the specified range of height until a maximum signal level is detected by the measuring receiver.
- f. The transmitter shall then be rotated through 360° in the horizontal plane, until the maximum signal level is detected by the measuring receiver.
- g. The test antenna shall be raised and lowered again through the specified range of height until a maximum signal level is detected by the measuring receiver.
- h. The maximum signal level detected by the measuring receiver shall be noted.
- i. The transmitter shall be replaced by a substitution antenna.
- j. The substitution antenna shall be orientated for vertical polarization and the length of the substitution antenna shall be adjusted to correspond to the frequency of the transmitter.
- k. The substitution antenna shall be connected to a calibrated signal generator.
- l. If necessary, the input attenuator setting of the measuring receiver shall be adjusted in order to increase the sensitivity of the measuring receiver.
- m. The test antenna shall be raised and lowered through the specified range of height to ensure that the maximum signal is received.
- n. The input signal to the substitution antenna shall be adjusted to the level that produces a level detected by the measuring receiver, that is equal to the level noted while the transmitter radiated power was measured, corrected for the change of input attenuator setting of the measuring receiver.
- o. The measurement shall be repeated with the test antenna and the substitution antenna orientated for horizontal polarization.
- p. The measure of the effective radiated power is the larger of the two levels recorded at the input to the substitution antenna, corrected for gain of the substitution antenna if necessary.
- q. The resolution bandwidth of the spectrum analyzer was set at 100 kHz for Part 22 and 1MHz for Part 24. The frequency range was checked up to 10th harmonic.
- r. Test site anechoic chamber refer to ANSI C63.

**TEST RESULTS**

**Conducted Measurement :**

1. Please refer to Appendix B: Section 6
2. Please refer to Appendix E: Section 6
3. Please refer to Appendix G: Section 6
4. Please refer to Appendix H: Section 6
5. Please refer to Appendix I: Section 6
6. Please refer to Appendix K: Section 6
7. Please refer to Appendix O: Section 6
8. Please refer to Appendix P: Section 6
9. Please refer to Appendix Q: Section 6

**Radiated Measurement:**

Remark:

1. We were tested all RB Configuration refer 3GPP TS136 521 for each Channel Bandwidth of WCDMA Band IV, *LTE Band 4*, *LTE Band 7*, *LTE Band 12*, *Band 13*, *Band 17*, *Band 41*, *Band 66*, *Band 71*; recorded worst case for each Channel Bandwidth of WCDMA Band IV, *LTE Band 4*, *LTE Band 7*, *LTE Band 12*, *Band 13*, *Band 17*, *Band 41*, *Band 66*, *Band 71* @ QPSK
2.  $EIRP = P_{Mea}(dBm) - P_{cl}(dB) + G_a(dBi)$
3. We were not recorded other points as values lower than limits.
4. Margin = EIRP- Limit

**WCDMA Band IV \_ Low Channel**

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3424.8          | -50.35                 | 4.62                 | 3.00     | 9.81                            | -45.16          | -13.00      | -32.16      | H            |
| 5137.2          | -51.20                 | 5.94                 | 3.00     | 10.86                           | -46.28          | -13.00      | -33.28      | H            |
| 3424.8          | -52.34                 | 4.62                 | 3.00     | 9.81                            | -47.15          | -13.00      | -34.15      | V            |
| 5137.2          | -54.11                 | 5.94                 | 3.00     | 10.86                           | -49.19          | -13.00      | -36.19      | V            |

**WCDMA Band IV \_ Middle Channel**

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3465.2          | -49.14                 | 4.63                 | 3.00     | 9.84                            | -43.93          | -13.00      | -30.93      | H            |
| 5197.8          | -51.41                 | 5.94                 | 3.00     | 10.86                           | -46.49          | -13.00      | -33.49      | H            |
| 3465.2          | -53.14                 | 4.63                 | 3.00     | 9.84                            | -47.93          | -13.00      | -34.93      | V            |
| 5197.8          | -54.38                 | 5.94                 | 3.00     | 10.86                           | -49.46          | -13.00      | -36.46      | V            |

**WCDMA Band IV \_ High Channel**

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3505.2          | -51.77                 | 4.65                 | 3.00     | 9.90                            | -46.52          | -13.00      | -33.52      | H            |
| 5254.1          | -53.12                 | 5.95                 | 3.00     | 10.91                           | -48.16          | -13.00      | -35.16      | H            |
| 3505.2          | -53.87                 | 4.65                 | 3.00     | 9.90                            | -48.62          | -13.00      | -35.62      | V            |
| 5254.1          | -54.89                 | 5.95                 | 3.00     | 10.91                           | -49.93          | -13.00      | -36.93      | V            |

**LTE Band 4 Channel Bandwidth 1.4MHz\_QPSK \_ Low Channel**

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3421.4          | -48.57                 | 4.62                 | 3.00     | 9.81                            | -43.38          | -13.00      | -30.38      | H            |
| 5132.1          | -52.09                 | 5.94                 | 3.00     | 10.86                           | -47.17          | -13.00      | -34.17      | H            |
| 3421.4          | -52.74                 | 4.62                 | 3.00     | 9.81                            | -47.55          | -13.00      | -34.55      | V            |
| 5132.1          | -54.96                 | 5.94                 | 3.00     | 10.86                           | -50.04          | -13.00      | -37.04      | V            |

**LTE Band 4 Channel Bandwidth 1.4MHz\_QPSK \_ Middle Channel**

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3465.0          | -48.92                 | 4.63                 | 3.00     | 9.84                            | -43.71          | -13.00      | -30.71      | H            |
| 5197.5          | -52.35                 | 5.94                 | 3.00     | 10.86                           | -47.43          | -13.00      | -34.43      | H            |
| 3465.0          | -52.68                 | 4.63                 | 3.00     | 9.84                            | -47.47          | -13.00      | -34.47      | V            |
| 5197.5          | -55.14                 | 5.94                 | 3.00     | 10.86                           | -50.22          | -13.00      | -37.22      | V            |

## LTE Band 4 Channel Bandwidth 1.4MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3508.6          | -48.41                 | 4.62                 | 3.00     | 9.81                            | -43.22          | -13.00      | -30.22      | H            |
| 5262.9          | -52.15                 | 5.94                 | 3.00     | 10.86                           | -47.23          | -13.00      | -34.23      | H            |
| 3508.6          | -52.55                 | 4.62                 | 3.00     | 9.81                            | -47.36          | -13.00      | -34.36      | V            |
| 5262.9          | -54.87                 | 5.94                 | 3.00     | 10.86                           | -49.95          | -13.00      | -36.95      | V            |

## LTE Band 4 Channel Bandwidth 3MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3423.0          | -48.71                 | 4.63                 | 3.00     | 9.84                            | -43.50          | -13.00      | -30.50      | H            |
| 5134.5          | -52.32                 | 5.94                 | 3.00     | 10.86                           | -47.40          | -13.00      | -34.40      | H            |
| 3423.0          | -53.00                 | 4.63                 | 3.00     | 9.84                            | -47.79          | -13.00      | -34.79      | V            |
| 5134.5          | -55.35                 | 5.94                 | 3.00     | 10.86                           | -50.43          | -13.00      | -37.43      | V            |

## LTE Band 4 Channel Bandwidth 3MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3465.0          | -52.22                 | 4.65                 | 3.00     | 9.9                             | -46.97          | -13.00      | -33.97      | H            |
| 5197.5          | -53.48                 | 5.95                 | 3.00     | 10.91                           | -48.52          | -13.00      | -35.52      | H            |
| 3465.0          | -54.78                 | 4.65                 | 3.00     | 9.9                             | -49.53          | -13.00      | -36.53      | V            |
| 5197.5          | -56.10                 | 5.95                 | 3.00     | 10.91                           | -51.14          | -13.00      | -38.14      | V            |

## LTE Band 4 Channel Bandwidth 3MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3507.0          | -48.26                 | 4.62                 | 3.00     | 9.81                            | -43.07          | -13.00      | -30.07      | H            |
| 5260.5          | -52.13                 | 5.94                 | 3.00     | 10.86                           | -47.21          | -13.00      | -34.21      | H            |
| 3507.0          | -52.74                 | 4.62                 | 3.00     | 9.81                            | -47.55          | -13.00      | -34.55      | V            |
| 5260.5          | -54.63                 | 5.94                 | 3.00     | 10.86                           | -49.71          | -13.00      | -36.71      | V            |

## LTE Band 4 Channel Bandwidth 5MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3425.0          | -48.91                 | 4.63                 | 3.00     | 9.84                            | -43.70          | -13.00      | -30.70      | H            |
| 5137.5          | -52.57                 | 5.94                 | 3.00     | 10.86                           | -47.65          | -13.00      | -34.65      | H            |
| 3425.0          | -52.69                 | 4.63                 | 3.00     | 9.84                            | -47.48          | -13.00      | -34.48      | V            |
| 5137.5          | -55.50                 | 5.94                 | 3.00     | 10.86                           | -50.58          | -13.00      | -37.58      | V            |

## LTE Band 4 Channel Bandwidth 5MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3465.0          | -52.16                 | 4.65                 | 3.00     | 9.9                             | -46.91          | -13.00      | -33.91      | H            |
| 5197.5          | -53.27                 | 5.95                 | 3.00     | 10.91                           | -48.31          | -13.00      | -35.31      | H            |
| 3465.0          | -54.89                 | 4.65                 | 3.00     | 9.9                             | -49.64          | -13.00      | -36.64      | V            |
| 5197.5          | -55.88                 | 5.95                 | 3.00     | 10.91                           | -50.92          | -13.00      | -37.92      | V            |

## LTE Band 4 Channel Bandwidth 5MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3505.0          | -48.27                 | 4.62                 | 3.00     | 9.81                            | -43.08          | -13.00      | -30.08      | H            |
| 5257.5          | -51.90                 | 5.94                 | 3.00     | 10.86                           | -46.98          | -13.00      | -33.98      | H            |
| 3505.0          | -52.59                 | 4.62                 | 3.00     | 9.81                            | -47.40          | -13.00      | -34.40      | V            |
| 5257.5          | -54.98                 | 5.94                 | 3.00     | 10.86                           | -50.06          | -13.00      | -37.06      | V            |

## LTE Band 4 Channel Bandwidth 10MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3430.0          | -49.08                 | 4.63                 | 3.00     | 9.84                            | -43.87          | -13.00      | -30.87      | H            |
| 5145.0          | -52.48                 | 5.94                 | 3.00     | 10.86                           | -47.56          | -13.00      | -34.56      | H            |
| 3430.0          | -52.71                 | 4.63                 | 3.00     | 9.84                            | -47.50          | -13.00      | -34.50      | V            |
| 5145.0          | -55.46                 | 5.94                 | 3.00     | 10.86                           | -50.54          | -13.00      | -37.54      | V            |

## LTE Band 4 Channel Bandwidth 10MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3465.0          | -52.24                 | 4.65                 | 3.00     | 9.9                             | -46.99          | -13.00      | -33.99      | H            |
| 5197.5          | -53.31                 | 5.95                 | 3.00     | 10.91                           | -48.35          | -13.00      | -35.35      | H            |
| 3465.0          | -55.14                 | 4.65                 | 3.00     | 9.9                             | -49.89          | -13.00      | -36.89      | V            |
| 5197.5          | -55.97                 | 5.95                 | 3.00     | 10.91                           | -51.01          | -13.00      | -38.01      | V            |

## LTE Band 4 Channel Bandwidth 10MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3500.0          | -48.30                 | 4.62                 | 3.00     | 9.81                            | -43.11          | -13.00      | -30.11      | H            |
| 5250.0          | -51.86                 | 5.94                 | 3.00     | 10.86                           | -46.94          | -13.00      | -33.94      | H            |
| 3500.0          | -52.46                 | 4.62                 | 3.00     | 9.81                            | -47.27          | -13.00      | -34.27      | V            |
| 5250.0          | -54.64                 | 5.94                 | 3.00     | 10.86                           | -49.72          | -13.00      | -36.72      | V            |

## LTE Band 4 Channel Bandwidth 15MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3435.0          | -48.97                 | 4.63                 | 3.00     | 9.84                            | -43.76          | -13.00      | -30.76      | H            |
| 5152.5          | -52.42                 | 5.94                 | 3.00     | 10.86                           | -47.50          | -13.00      | -34.50      | H            |
| 3435.0          | -52.91                 | 4.63                 | 3.00     | 9.84                            | -47.70          | -13.00      | -34.70      | V            |
| 5152.5          | -55.45                 | 5.94                 | 3.00     | 10.86                           | -50.53          | -13.00      | -37.53      | V            |

## LTE Band 4 Channel Bandwidth 15MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3465.0          | -52.17                 | 4.65                 | 3.00     | 9.9                             | -46.92          | -13.00      | -33.92      | H            |
| 5197.5          | -53.53                 | 5.95                 | 3.00     | 10.91                           | -48.57          | -13.00      | -35.57      | H            |
| 3465.0          | -54.89                 | 4.65                 | 3.00     | 9.9                             | -49.64          | -13.00      | -36.64      | V            |
| 5197.5          | -56.15                 | 5.95                 | 3.00     | 10.91                           | -51.19          | -13.00      | -38.19      | V            |

## LTE Band 4 Channel Bandwidth 15MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3495.0          | -48.24                 | 4.62                 | 3.00     | 9.81                            | -43.05          | -13.00      | -30.05      | H            |
| 5242.5          | -52.10                 | 5.94                 | 3.00     | 10.86                           | -47.18          | -13.00      | -34.18      | H            |
| 3495.0          | -52.65                 | 4.62                 | 3.00     | 9.81                            | -47.46          | -13.00      | -34.46      | V            |
| 5242.5          | -54.93                 | 5.94                 | 3.00     | 10.86                           | -50.01          | -13.00      | -37.01      | V            |

## LTE Band 4 Channel Bandwidth 20MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3440.0          | -48.79                 | 4.63                 | 3.00     | 9.84                            | -43.58          | -13.00      | -30.58      | H            |
| 5160.0          | -52.27                 | 5.94                 | 3.00     | 10.86                           | -47.35          | -13.00      | -34.35      | H            |
| 3440.0          | -52.73                 | 4.63                 | 3.00     | 9.84                            | -47.52          | -13.00      | -34.52      | V            |
| 5160.0          | -55.46                 | 5.94                 | 3.00     | 10.86                           | -50.54          | -13.00      | -37.54      | V            |

## LTE Band 4 Channel Bandwidth 20MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3465.0          | -52.27                 | 4.65                 | 3.00     | 9.9                             | -47.02          | -13.00      | -34.02      | H            |
| 5197.5          | -53.29                 | 5.95                 | 3.00     | 10.91                           | -48.33          | -13.00      | -35.33      | H            |
| 3465.0          | -54.83                 | 4.65                 | 3.00     | 9.9                             | -49.58          | -13.00      | -36.58      | V            |
| 5197.5          | -55.91                 | 5.95                 | 3.00     | 10.91                           | -50.95          | -13.00      | -37.95      | V            |

## LTE Band 4 Channel Bandwidth 20MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3490.0          | -48.51                 | 4.62                 | 3.00     | 9.81                            | -43.32          | -13.00      | -30.32      | H            |
| 5235.0          | -52.15                 | 5.94                 | 3.00     | 10.86                           | -47.23          | -13.00      | -34.23      | H            |
| 3490.0          | -52.51                 | 4.62                 | 3.00     | 9.81                            | -47.32          | -13.00      | -34.32      | V            |
| 5235.0          | -54.71                 | 5.94                 | 3.00     | 10.86                           | -49.79          | -13.00      | -36.79      | V            |

## LTE Band 7 Channel Bandwidth 5MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5005            | -45.67                 | 5.88                 | 3.00     | 10.77                           | -40.78          | -25.00      | -15.78      | H            |
| 7507.5          | -47.92                 | 7.12                 | 3.00     | 12.26                           | -42.78          | -25.00      | -17.78      | H            |
| 5005            | -49.46                 | 5.88                 | 3.00     | 10.77                           | -44.57          | -25.00      | -19.57      | V            |
| 7507.5          | -53.82                 | 7.12                 | 3.00     | 12.26                           | -48.68          | -25.00      | -23.68      | V            |

## LTE Band 7 Channel Bandwidth 5MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5070            | -43.25                 | 5.9                  | 3.00     | 10.81                           | -38.34          | -25.00      | -13.34      | H            |
| 7605            | -45.96                 | 7.19                 | 3.00     | 12.32                           | -40.83          | -25.00      | -15.83      | H            |
| 5070            | -46.67                 | 5.9                  | 3.00     | 10.81                           | -41.76          | -25.00      | -16.76      | V            |
| 7605            | -49.30                 | 7.19                 | 3.00     | 12.32                           | -44.17          | -25.00      | -19.17      | V            |

## LTE Band 7\_Channel Bandwidth 5MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5135            | -48.94                 | 5.94                 | 3.00     | 10.86                           | -44.02          | -25.00      | -19.02      | H            |
| 7702.5          | -54.72                 | 7.25                 | 3.00     | 12.98                           | -48.99          | -25.00      | -23.99      | H            |
| 5135            | -52.73                 | 5.94                 | 3.00     | 10.86                           | -47.81          | -25.00      | -22.81      | V            |
| 7702.5          | -56.96                 | 7.25                 | 3.00     | 12.98                           | -51.23          | -25.00      | -26.23      | V            |

## LTE Band 7\_Channel Bandwidth 10MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5010            | -49.00                 | 4.63                 | 3.00     | 9.84                            | -43.79          | -13.00      | -30.79      | H            |
| 7515            | -52.23                 | 5.94                 | 3.00     | 10.86                           | -47.31          | -13.00      | -34.31      | H            |
| 5010            | -52.69                 | 4.63                 | 3.00     | 9.84                            | -47.48          | -13.00      | -34.48      | V            |
| 7515            | -55.13                 | 5.94                 | 3.00     | 10.86                           | -50.21          | -13.00      | -37.21      | V            |

## LTE Band 7\_Channel Bandwidth 10MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5070            | -45.63                 | 5.88                 | 3.00     | 10.77                           | -40.74          | -25.00      | -15.74      | H            |
| 7605            | -48.01                 | 7.12                 | 3.00     | 12.26                           | -42.87          | -25.00      | -17.87      | H            |
| 5070            | -49.41                 | 5.88                 | 3.00     | 10.77                           | -44.52          | -25.00      | -19.52      | V            |
| 7605            | -53.74                 | 7.12                 | 3.00     | 12.26                           | -48.60          | -25.00      | -23.60      | V            |

## LTE Band 7\_Channel Bandwidth 10MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5730            | -43.20                 | 5.9                  | 3.00     | 10.81                           | -38.29          | -25.00      | -13.29      | H            |
| 7695            | -45.95                 | 7.19                 | 3.00     | 12.32                           | -40.82          | -25.00      | -15.82      | H            |
| 5730            | -46.85                 | 5.9                  | 3.00     | 10.81                           | -41.94          | -25.00      | -16.94      | V            |
| 7695            | -49.46                 | 7.19                 | 3.00     | 12.32                           | -44.33          | -25.00      | -19.33      | V            |

## LTE Band 7\_Channel Bandwidth 15MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5015            | -48.89                 | 5.94                 | 3.00     | 10.86                           | -43.97          | -25.00      | -18.97      | H            |
| 7522.5          | -54.54                 | 7.25                 | 3.00     | 12.98                           | -48.81          | -25.00      | -23.81      | H            |
| 5015            | -52.37                 | 5.94                 | 3.00     | 10.86                           | -47.45          | -25.00      | -22.45      | V            |
| 7522.5          | -56.85                 | 7.25                 | 3.00     | 12.98                           | -51.12          | -25.00      | -26.12      | V            |

## LTE Band 7\_Channel Bandwidth 15MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5070            | -45.43                 | 5.88                 | 3.00     | 10.77                           | -40.54          | -25.00      | -15.54      | H            |
| 7605            | -47.93                 | 7.12                 | 3.00     | 12.26                           | -42.79          | -25.00      | -17.79      | H            |
| 5070            | -49.55                 | 5.88                 | 3.00     | 10.77                           | -44.66          | -25.00      | -19.66      | V            |
| 7605            | -53.70                 | 7.12                 | 3.00     | 12.26                           | -48.56          | -25.00      | -23.56      | V            |

## LTE Band 7\_Channel Bandwidth 15MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5125            | -45.55                 | 5.88                 | 3.00     | 10.77                           | -40.66          | -25.00      | -15.66      | H            |
| 7687.5          | -47.97                 | 7.12                 | 3.00     | 12.26                           | -42.83          | -25.00      | -17.83      | H            |
| 5125            | -49.23                 | 5.88                 | 3.00     | 10.77                           | -44.34          | -25.00      | -19.34      | V            |
| 7687.5          | -53.74                 | 7.12                 | 3.00     | 12.26                           | -48.60          | -25.00      | -23.60      | V            |

## LTE Band 7\_Channel Bandwidth 20MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5020            | -43.02                 | 5.9                  | 3.00     | 10.81                           | -38.11          | -25.00      | -13.11      | H            |
| 7530            | -45.71                 | 7.19                 | 3.00     | 12.32                           | -40.58          | -25.00      | -15.58      | H            |
| 5020            | -46.90                 | 5.9                  | 3.00     | 10.81                           | -41.99          | -25.00      | -16.99      | V            |
| 7530            | -49.10                 | 7.19                 | 3.00     | 12.32                           | -43.97          | -25.00      | -18.97      | V            |

## LTE Band 7\_Channel Bandwidth 20MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5070            | -48.76                 | 5.94                 | 3.00     | 10.86                           | -43.84          | -25.00      | -18.84      | H            |
| 5705            | -54.67                 | 7.25                 | 3.00     | 12.98                           | -48.94          | -25.00      | -23.94      | H            |
| 5070            | -52.73                 | 5.94                 | 3.00     | 10.86                           | -47.81          | -25.00      | -22.81      | V            |
| 5705            | -56.79                 | 7.25                 | 3.00     | 12.98                           | -51.06          | -25.00      | -26.06      | V            |

## LTE Band 7\_Channel Bandwidth 20MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5120            | -45.49                 | 5.88                 | 3.00     | 10.77                           | -40.60          | -25.00      | -15.60      | H            |
| 7680            | -48.13                 | 7.12                 | 3.00     | 12.26                           | -42.99          | -25.00      | -17.99      | H            |
| 5120            | -49.37                 | 5.88                 | 3.00     | 10.77                           | -44.48          | -25.00      | -19.48      | V            |
| 7680            | -53.75                 | 7.12                 | 3.00     | 12.26                           | -48.61          | -25.00      | -23.61      | V            |

## LTE Band 12\_Channel Bandwidth 1.4MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1399.40         | -43.05                 | 5.9                  | 3.00     | 10.81                           | -38.14          | -13.00      | -25.14      | H            |
| 2099.10         | -45.95                 | 7.19                 | 3.00     | 12.32                           | -40.82          | -13.00      | -27.82      | H            |
| 1399.40         | -46.73                 | 5.9                  | 3.00     | 10.81                           | -41.82          | -13.00      | -28.82      | V            |
| 2099.10         | -49.43                 | 7.19                 | 3.00     | 12.32                           | -44.30          | -13.00      | -31.30      | V            |

## LTE Band 12\_Channel Bandwidth 1.4MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1415.00         | -41.01                 | 4.73                 | 3.00     | 10.42                           | -35.32          | -13.00      | -22.32      | H            |
| 2122.50         | -47.62                 | 5.64                 | 3.00     | 12.30                           | -40.96          | -13.00      | -27.96      | H            |
| 1415.00         | -43.91                 | 4.73                 | 3.00     | 10.42                           | -38.22          | -13.00      | -25.22      | V            |
| 2122.50         | -50.16                 | 5.64                 | 3.00     | 12.30                           | -43.50          | -13.00      | -30.50      | V            |

## LTE Band 12\_Channel Bandwidth 1.4MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1430.60         | -40.86                 | 4.73                 | 3.00     | 10.42                           | -35.17          | -13.00      | -22.17      | H            |
| 2145.90         | -47.87                 | 5.64                 | 3.00     | 12.30                           | -41.21          | -13.00      | -28.21      | H            |
| 1430.60         | -43.86                 | 4.73                 | 3.00     | 10.42                           | -38.17          | -13.00      | -25.17      | V            |
| 2145.90         | -50.50                 | 5.64                 | 3.00     | 12.30                           | -43.84          | -13.00      | -30.84      | V            |

## LTE Band 12\_Channel Bandwidth 3MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1401.00         | -39.91                 | 4.75                 | 3.00     | 10.44                           | -34.22          | -13.00      | -21.22      | H            |
| 2101.50         | -44.27                 | 5.66                 | 3.00     | 12.33                           | -37.60          | -13.00      | -24.60      | H            |
| 1401.00         | -44.05                 | 4.75                 | 3.00     | 10.44                           | -38.36          | -13.00      | -25.36      | V            |
| 2101.50         | -47.91                 | 5.66                 | 3.00     | 12.33                           | -41.24          | -13.00      | -28.24      | V            |

## LTE Band 12\_Channel Bandwidth 3MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1415.00         | -39.43                 | 4.77                 | 3.00     | 10.45                           | -33.75          | -13.00      | -20.75      | H            |
| 2122.50         | -44.73                 | 5.69                 | 3.00     | 12.36                           | -38.06          | -13.00      | -25.06      | H            |
| 1415.00         | -44.83                 | 4.77                 | 3.00     | 10.45                           | -39.15          | -13.00      | -26.15      | V            |
| 2122.50         | -50.39                 | 5.69                 | 3.00     | 12.36                           | -43.72          | -13.00      | -30.72      | V            |

## LTE Band 12\_Channel Bandwidth 3MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1429.00         | -40.89                 | 4.73                 | 3.00     | 10.42                           | -35.20          | -13.00      | -22.20      | H            |
| 2143.50         | -47.88                 | 5.64                 | 3.00     | 12.30                           | -41.22          | -13.00      | -28.22      | H            |
| 1429.00         | -43.77                 | 4.73                 | 3.00     | 10.42                           | -38.08          | -13.00      | -25.08      | V            |
| 2143.50         | -50.50                 | 5.64                 | 3.00     | 12.30                           | -43.84          | -13.00      | -30.84      | V            |

## LTE Band 12\_Channel Bandwidth 5MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1403.00         | -39.83                 | 4.75                 | 3.00     | 10.44                           | -34.14          | -13.00      | -21.14      | H            |
| 2104.50         | -44.46                 | 5.66                 | 3.00     | 12.33                           | -37.79          | -13.00      | -24.79      | H            |
| 1403.00         | -44.01                 | 4.75                 | 3.00     | 10.44                           | -38.32          | -13.00      | -25.32      | V            |
| 2104.50         | -48.02                 | 5.66                 | 3.00     | 12.33                           | -41.35          | -13.00      | -28.35      | V            |

## LTE Band 12\_Channel Bandwidth 5MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1415.00         | -39.43                 | 4.77                 | 3.00     | 10.45                           | -33.75          | -13.00      | -20.75      | H            |
| 2122.50         | -44.36                 | 5.69                 | 3.00     | 12.36                           | -37.69          | -13.00      | -24.69      | H            |
| 1415.00         | -44.80                 | 4.77                 | 3.00     | 10.45                           | -39.12          | -13.00      | -26.12      | V            |
| 2122.50         | -50.25                 | 5.69                 | 3.00     | 12.36                           | -43.58          | -13.00      | -30.58      | V            |

## LTE Band 12\_Channel Bandwidth 5MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1427.00         | -40.96                 | 4.73                 | 3.00     | 10.42                           | -35.27          | -13.00      | -22.27      | H            |
| 2140.50         | -47.67                 | 5.64                 | 3.00     | 12.30                           | -41.01          | -13.00      | -28.01      | H            |
| 1427.00         | -43.84                 | 4.73                 | 3.00     | 10.42                           | -38.15          | -13.00      | -25.15      | V            |
| 2140.50         | -50.33                 | 5.64                 | 3.00     | 12.30                           | -43.67          | -13.00      | -30.67      | V            |

## LTE and 12\_Channel Bandwidth 10MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1408.00         | -40.00                 | 4.75                 | 3.00     | 10.44                           | -34.31          | -13.00      | -21.31      | H            |
| 2112.00         | -44.32                 | 5.66                 | 3.00     | 12.33                           | -37.65          | -13.00      | -24.65      | H            |
| 1408.00         | -43.96                 | 4.75                 | 3.00     | 10.44                           | -38.27          | -13.00      | -25.27      | V            |
| 2112.00         | -48.02                 | 5.66                 | 3.00     | 12.33                           | -41.35          | -13.00      | -28.35      | V            |

## LTE Band 12\_Channel Bandwidth 10MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1415.00         | -39.50                 | 4.77                 | 3.00     | 10.45                           | -33.82          | -13.00      | -20.82      | H            |
| 2122.50         | -44.41                 | 5.69                 | 3.00     | 12.36                           | -37.74          | -13.00      | -24.74      | H            |
| 1415.00         | -44.55                 | 4.77                 | 3.00     | 10.45                           | -38.87          | -13.00      | -25.87      | V            |
| 2122.50         | -50.02                 | 5.69                 | 3.00     | 12.36                           | -43.35          | -13.00      | -30.35      | V            |

## LTE Band 12\_Channel Bandwidth 10MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1422.00         | -41.22                 | 4.73                 | 3.00     | 10.42                           | -35.53          | -13.00      | -22.53      | H            |
| 2133.00         | -47.71                 | 5.64                 | 3.00     | 12.30                           | -41.05          | -13.00      | -28.05      | H            |
| 1422.00         | -43.72                 | 4.73                 | 3.00     | 10.42                           | -38.03          | -13.00      | -25.03      | V            |
| 2133.00         | -50.45                 | 5.64                 | 3.00     | 12.30                           | -43.79          | -13.00      | -30.79      | V            |

## LTE Band 12\_Channel Bandwidth 1.4MHz\_16QAM\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1399.40         | -40.12                 | 4.75                 | 3.00     | 10.44                           | -34.43          | -13.00      | -21.43      | H            |
| 2099.10         | -44.14                 | 5.66                 | 3.00     | 12.33                           | -37.47          | -13.00      | -24.47      | H            |
| 1399.40         | -44.09                 | 4.75                 | 3.00     | 10.44                           | -38.40          | -13.00      | -25.40      | V            |
| 2099.10         | -47.90                 | 5.66                 | 3.00     | 12.33                           | -41.23          | -13.00      | -28.23      | V            |

## LTE Band 13Channel Bandwidth 5MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1555.80         | -42.25                 | 4.92                 | 3.00     | 10.45                           | -36.72          | -13.00      | -23.72      | H            |
| 2338.50         | -47.28                 | 5.78                 | 3.00     | 12.32                           | -40.74          | -13.00      | -27.74      | H            |
| 1555.80         | -45.02                 | 4.92                 | 3.00     | 10.45                           | -39.49          | -13.00      | -26.49      | V            |
| 2338.50         | -50.13                 | 5.78                 | 3.00     | 12.32                           | -43.59          | -13.00      | -30.59      | V            |

## LTE Band 13Channel Bandwidth 5MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1564.00         | -39.82                 | 4.99                 | 3.00     | 11.12                           | -33.69          | -13.00      | -20.69      | H            |
| 2346.50         | -45.11                 | 5.85                 | 3.00     | 12.02                           | -38.94          | -13.00      | -25.94      | H            |
| 1564.00         | -43.27                 | 4.99                 | 3.00     | 11.12                           | -37.14          | -13.00      | -24.14      | V            |
| 2346.50         | -48.86                 | 5.85                 | 3.00     | 12.02                           | -42.69          | -13.00      | -29.69      | V            |

## LTE Band 13Channel Bandwidth 5MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1569.00         | -40.17                 | 5.12                 | 3.00     | 9.98                            | -35.31          | -13.00      | -22.31      | H            |
| 2353.50         | -45.84                 | 5.93                 | 3.00     | 11.66                           | -40.11          | -13.00      | -27.11      | H            |
| 1569.00         | -43.45                 | 5.12                 | 3.00     | 9.98                            | -38.59          | -13.00      | -25.59      | V            |
| 2353.50         | -50.30                 | 5.93                 | 3.00     | 11.66                           | -44.57          | -13.00      | -31.57      | V            |

## LTE Band 13Channel Bandwidth 10MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1556.50         | -42.21                 | 4.92                 | 3.00     | 10.45                           | -36.68          | -13.00      | -23.68      | H            |
| 2346.00         | -47.16                 | 5.78                 | 3.00     | 12.32                           | -40.62          | -13.00      | -27.62      | H            |
| 1556.50         | -44.83                 | 4.92                 | 3.00     | 10.45                           | -39.30          | -13.00      | -26.30      | V            |
| 2346.00         | -50.19                 | 5.78                 | 3.00     | 12.32                           | -43.65          | -13.00      | -30.65      | V            |

## LTE Band 13Channel Bandwidth 10MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1555.30         | -39.99                 | 4.99                 | 3.00     | 11.12                           | -33.86          | -13.00      | -20.86      | H            |
| 2346.00         | -45.04                 | 5.85                 | 3.00     | 12.02                           | -38.87          | -13.00      | -25.87      | H            |
| 1555.30         | -43.24                 | 4.99                 | 3.00     | 11.12                           | -37.11          | -13.00      | -24.11      | V            |
| 2346.00         | -48.80                 | 5.85                 | 3.00     | 12.02                           | -42.63          | -13.00      | -29.63      | V            |

## LTE Band 13Channel Bandwidth 10MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1564.00         | -39.86                 | 5.12                 | 3.00     | 9.98                            | -35.00          | -13.00      | -22.00      | H            |
| 2346.00         | -45.77                 | 5.93                 | 3.00     | 11.66                           | -40.04          | -13.00      | -27.04      | H            |
| 1564.00         | -43.52                 | 5.12                 | 3.00     | 9.98                            | -38.66          | -13.00      | -25.66      | V            |
| 2346.00         | -50.51                 | 5.93                 | 3.00     | 11.66                           | -44.78          | -13.00      | -31.78      | V            |

## LTE Band 17Channel Bandwidth 5MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1412            | -54.75                 | 3.72                 | 3.00     | 9.04                            | -49.43          | -13.00      | -36.43      | H            |
| 2119.5          | -60.67                 | 4.23                 | 3.00     | 8.60                            | -56.30          | -13.00      | -43.30      | H            |
| 1412            | -49.92                 | 3.72                 | 3.00     | 9.04                            | -44.60          | -13.00      | -31.60      | V            |
| 2119.5          | -55.64                 | 4.23                 | 3.00     | 8.60                            | -51.27          | -13.00      | -38.27      | V            |

## LTE Band 17Channel Bandwidth 5MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1420            | -53.90                 | 4.78                 | 3.00     | 8.91                            | -49.77          | -13.00      | -36.77      | H            |
| 2130            | -59.29                 | 4.25                 | 3.00     | 8.26                            | -55.28          | -13.00      | -42.28      | H            |
| 1420            | -49.04                 | 4.78                 | 3.00     | 8.91                            | -44.91          | -13.00      | -31.91      | V            |
| 2130            | -54.39                 | 4.25                 | 3.00     | 8.26                            | -50.38          | -13.00      | -37.38      | V            |

## LTE Band 17Channel Bandwidth 5MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1427            | -55.27                 | 4.78                 | 3.00     | 8.91                            | -51.14          | -13.00      | -38.14      | H            |
| 2440.5          | -58.86                 | 4.25                 | 3.00     | 8.26                            | -54.85          | -13.00      | -41.85      | H            |
| 1427            | -51.92                 | 4.78                 | 3.00     | 8.91                            | -47.79          | -13.00      | -34.79      | V            |
| 2440.5          | -53.71                 | 4.25                 | 3.00     | 8.26                            | -49.70          | -13.00      | -36.70      | V            |

## LTE Band 17Channel Bandwidth 10MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1418            | -55.07                 | 3.72                 | 3.00     | 9.04                            | -49.75          | -13.00      | -36.75      | H            |
| 2127            | -60.62                 | 4.23                 | 3.00     | 8.60                            | -56.25          | -13.00      | -43.25      | H            |
| 1418            | -49.93                 | 3.72                 | 3.00     | 9.04                            | -44.61          | -13.00      | -31.61      | V            |
| 2127            | -55.75                 | 4.23                 | 3.00     | 8.60                            | -51.38          | -13.00      | -38.38      | V            |

## LTE Band 17Channel Bandwidth 10MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1420            | -53.85                 | 4.78                 | 3.00     | 8.91                            | -49.72          | -13.00      | -36.72      | H            |
| 2130            | -59.08                 | 4.25                 | 3.00     | 8.26                            | -55.07          | -13.00      | -42.07      | H            |
| 1420            | -49.04                 | 4.78                 | 3.00     | 8.91                            | -44.91          | -13.00      | -31.91      | V            |
| 2130            | -54.53                 | 4.25                 | 3.00     | 8.26                            | -50.52          | -13.00      | -37.52      | V            |

## LTE Band 17Channel Bandwidth 10MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1422            | -55.18                 | 4.78                 | 3.00     | 8.91                            | -51.05          | -13.00      | -38.05      | H            |
| 2133            | -58.67                 | 4.25                 | 3.00     | 8.26                            | -54.66          | -13.00      | -41.66      | H            |
| 1422            | -51.73                 | 4.78                 | 3.00     | 8.91                            | -47.60          | -13.00      | -34.60      | V            |
| 2133            | -53.68                 | 4.25                 | 3.00     | 8.26                            | -49.67          | -13.00      | -36.67      | V            |

## LTE Band 41 Channel Bandwidth 5MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 4997            | -39.97                 | 7.15                 | 3.00     | 9.88                            | -37.24          | -25.00      | -12.24      | H            |
| 7495.5          | -45.49                 | 8.36                 | 3.00     | 11.36                           | -42.49          | -25.00      | -17.49      | H            |
| 4997            | -42.36                 | 7.15                 | 3.00     | 9.88                            | -39.63          | -25.00      | -14.63      | V            |
| 7495.5          | -47.36                 | 8.36                 | 3.00     | 11.36                           | -44.36          | -25.00      | -19.36      | V            |

## LTE Band 41 Channel Bandwidth 5MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5186            | -40.13                 | 7.26                 | 3.00     | 10.03                           | -37.36          | -25.00      | -12.36      | H            |
| 7779            | -45.00                 | 8.48                 | 3.00     | 11.41                           | -42.07          | -25.00      | -17.07      | H            |
| 5186            | -44.04                 | 7.26                 | 3.00     | 10.03                           | -41.27          | -25.00      | -16.27      | V            |
| 7779            | -47.61                 | 8.48                 | 3.00     | 11.41                           | -44.68          | -25.00      | -19.68      | V            |

## LTE Band 41 Channel Bandwidth 5MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5375            | -42.26                 | 7.17                 | 3.00     | 9.62                            | -39.81          | -25.00      | -14.81      | H            |
| 8062.5          | -45.41                 | 8.39                 | 3.00     | 11.46                           | -42.34          | -25.00      | -17.34      | H            |
| 5375            | -42.81                 | 7.17                 | 3.00     | 9.62                            | -40.36          | -25.00      | -15.36      | V            |
| 8062.5          | -47.80                 | 8.39                 | 3.00     | 11.46                           | -44.73          | -25.00      | -19.73      | V            |

## LTE Band 41 Channel Bandwidth 10MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5007            | -40.11                 | 7.15                 | 3.00     | 9.88                            | -37.38          | -25.00      | -12.38      | H            |
| 7510.5          | -45.32                 | 8.36                 | 3.00     | 11.36                           | -42.32          | -25.00      | -17.32      | H            |
| 5007            | -42.63                 | 7.15                 | 3.00     | 9.88                            | -39.90          | -25.00      | -14.90      | V            |
| 7510.5          | -47.50                 | 8.36                 | 3.00     | 11.36                           | -44.50          | -25.00      | -19.50      | V            |

## LTE Band 41 Channel Bandwidth 10MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5186            | -40.37                 | 7.26                 | 3.00     | 10.03                           | -37.60          | -25.00      | -12.60      | H            |
| 7779            | -44.97                 | 8.48                 | 3.00     | 11.41                           | -42.04          | -25.00      | -17.04      | H            |
| 5186            | -44.07                 | 7.26                 | 3.00     | 10.03                           | -41.30          | -25.00      | -16.30      | V            |
| 7779            | -47.59                 | 8.48                 | 3.00     | 11.41                           | -44.66          | -25.00      | -19.66      | V            |

## LTE Band 41 Channel Bandwidth 10MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5365            | -42.18                 | 7.17                 | 3.00     | 9.62                            | -39.73          | -25.00      | -14.73      | H            |
| 8047.5          | -45.62                 | 8.39                 | 3.00     | 11.46                           | -42.55          | -25.00      | -17.55      | H            |
| 5365            | -43.10                 | 7.17                 | 3.00     | 9.62                            | -40.65          | -25.00      | -15.65      | V            |
| 8047.5          | -47.79                 | 8.39                 | 3.00     | 11.46                           | -44.72          | -25.00      | -19.72      | V            |

## LTE Band 41\_Channel Bandwidth 15MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5007            | -40.06                 | 7.15                 | 3.00     | 9.88                            | -37.33          | -25.00      | -12.33      | H            |
| 7510.5          | -45.54                 | 8.36                 | 3.00     | 11.36                           | -42.54          | -25.00      | -17.54      | H            |
| 5007            | -42.33                 | 7.15                 | 3.00     | 9.88                            | -39.60          | -25.00      | -14.60      | V            |
| 7510.5          | -47.62                 | 8.36                 | 3.00     | 11.36                           | -44.62          | -25.00      | -19.62      | V            |

## LTE Band 41\_Channel Bandwidth 15MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5180            | -40.28                 | 7.15                 | 3.00     | 9.88                            | -37.55          | -25.00      | -12.55      | H            |
| 7779            | -45.27                 | 8.36                 | 3.00     | 11.36                           | -42.27          | -25.00      | -17.27      | H            |
| 5180            | -42.55                 | 7.15                 | 3.00     | 9.88                            | -39.82          | -25.00      | -14.82      | V            |
| 7779            | -47.55                 | 8.36                 | 3.00     | 11.36                           | -44.55          | -25.00      | -19.55      | V            |

## LTE Band 41\_Channel Bandwidth 15MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5365            | -40.48                 | 7.26                 | 3.00     | 10.03                           | -37.71          | -25.00      | -12.71      | H            |
| 8047.5          | -45.02                 | 8.48                 | 3.00     | 11.41                           | -42.09          | -25.00      | -17.09      | H            |
| 5365            | -44.05                 | 7.26                 | 3.00     | 10.03                           | -41.28          | -25.00      | -16.28      | V            |
| 8047.5          | -47.71                 | 8.48                 | 3.00     | 11.41                           | -44.78          | -25.00      | -19.78      | V            |

## LTE Band 41\_Channel Bandwidth 20MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5012            | -42.23                 | 7.17                 | 3.00     | 9.62                            | -39.78          | -25.00      | -14.78      | H            |
| 7518            | -45.62                 | 8.39                 | 3.00     | 11.46                           | -42.55          | -25.00      | -17.55      | H            |
| 5012            | -42.73                 | 7.17                 | 3.00     | 9.62                            | -40.28          | -25.00      | -15.28      | V            |
| 7518            | -47.60                 | 8.39                 | 3.00     | 11.46                           | -44.53          | -25.00      | -19.53      | V            |

## LTE Band 41\_Channel Bandwidth 20MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5180            | -40.08                 | 7.15                 | 3.00     | 9.88                            | -37.35          | -25.00      | -12.35      | H            |
| 7779            | -45.29                 | 8.36                 | 3.00     | 11.36                           | -42.29          | -25.00      | -17.29      | H            |
| 5180            | -42.49                 | 7.15                 | 3.00     | 9.88                            | -39.76          | -25.00      | -14.76      | V            |
| 7779            | -47.49                 | 8.36                 | 3.00     | 11.36                           | -44.49          | -25.00      | -19.49      | V            |

## LTE Band 41\_Channel Bandwidth 20MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 5360            | -40.16                 | 7.26                 | 3.00     | 10.03                           | -37.39          | -25.00      | -12.39      | H            |
| 8040            | -45.26                 | 8.48                 | 3.00     | 11.41                           | -42.33          | -25.00      | -17.33      | H            |
| 5360            | -43.99                 | 7.26                 | 3.00     | 10.03                           | -41.22          | -25.00      | -16.22      | V            |
| 8040            | -47.51                 | 8.48                 | 3.00     | 11.41                           | -44.58          | -25.00      | -19.58      | V            |

## LTE Band 66 Channel Bandwidth 1.4MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3421.4          | -40.84                 | 7.15                 | 3.00     | 9.88                            | -38.11          | -13.00      | -25.11      | H            |
| 5132.1          | -45.33                 | 8.36                 | 3.00     | 11.36                           | -42.33          | -13.00      | -29.33      | H            |
| 3421.4          | -42.50                 | 7.15                 | 3.00     | 9.88                            | -39.77          | -13.00      | -26.77      | V            |
| 5132.1          | -47.31                 | 8.36                 | 3.00     | 11.36                           | -44.31          | -13.00      | -31.31      | V            |

## LTE Band 66 Channel Bandwidth 1.4MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3465.0          | -40.23                 | 7.26                 | 3.00     | 10.03                           | -37.46          | -13.00      | -24.46      | H            |
| 5197.5          | -45.66                 | 8.48                 | 3.00     | 11.41                           | -42.73          | -13.00      | -29.73      | H            |
| 3465.0          | -43.53                 | 7.26                 | 3.00     | 10.03                           | -40.76          | -13.00      | -27.76      | V            |
| 5197.5          | -47.28                 | 8.48                 | 3.00     | 11.41                           | -44.35          | -13.00      | -31.35      | V            |

## LTE Band 66 Channel Bandwidth 1.4MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3507.8          | -42.59                 | 7.17                 | 3.00     | 9.62                            | -40.14          | -13.00      | -27.14      | H            |
| 5261.6          | -45.54                 | 8.39                 | 3.00     | 11.46                           | -42.47          | -13.00      | -29.47      | H            |
| 3507.8          | -42.27                 | 7.17                 | 3.00     | 9.62                            | -39.82          | -13.00      | -26.82      | V            |
| 5261.6          | -47.87                 | 8.39                 | 3.00     | 11.46                           | -44.80          | -13.00      | -31.80      | V            |

## LTE Band 66 Channel Channel Bandwidth 5MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 2425.0          | -40.84                 | 7.15                 | 3.00     | 9.88                            | -38.11          | -13.00      | -25.11      | H            |
| 5131.1          | -45.20                 | 8.36                 | 3.00     | 11.36                           | -42.20          | -13.00      | -29.20      | H            |
| 2425.0          | -42.44                 | 7.15                 | 3.00     | 9.88                            | -39.71          | -13.00      | -26.71      | V            |
| 5131.1          | -47.37                 | 8.36                 | 3.00     | 11.36                           | -44.37          | -13.00      | -31.37      | V            |

## LTE Band 66 Channel Channel Bandwidth 5MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3460.0          | -40.35                 | 7.26                 | 3.00     | 10.03                           | -37.58          | -13.00      | -24.58      | H            |
| 5191.5          | -45.50                 | 8.48                 | 3.00     | 11.41                           | -42.57          | -13.00      | -29.57      | H            |
| 3460.0          | -43.61                 | 7.26                 | 3.00     | 10.03                           | -40.84          | -13.00      | -27.84      | V            |
| 5191.5          | -47.09                 | 8.48                 | 3.00     | 11.41                           | -44.16          | -13.00      | -31.16      | V            |

## LTE Band 66 Channel Channel Bandwidth 5MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3500.6          | -42.62                 | 7.17                 | 3.00     | 9.62                            | -40.17          | -13.00      | -27.17      | H            |
| 5250.8          | -45.49                 | 8.39                 | 3.00     | 11.46                           | -42.42          | -13.00      | -29.42      | H            |
| 3500.6          | -42.49                 | 7.17                 | 3.00     | 9.62                            | -40.04          | -13.00      | -27.04      | V            |
| 5250.8          | -47.95                 | 8.39                 | 3.00     | 11.46                           | -44.88          | -13.00      | -31.88      | V            |

LTE Band 66 Channel Channel Bandwidth 10MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3420.8          | -40.66                 | 7.15                 | 3.00     | 9.88                            | -37.93          | -13.00      | -24.93      | H            |
| 5131.9          | -45.08                 | 8.36                 | 3.00     | 11.36                           | -42.08          | -13.00      | -29.08      | H            |
| 3420.8          | -42.45                 | 7.15                 | 3.00     | 9.88                            | -39.72          | -13.00      | -26.72      | V            |
| 5131.9          | -47.35                 | 8.36                 | 3.00     | 11.36                           | -44.35          | -13.00      | -31.35      | V            |

LTE Band 66 Channel Channel Bandwidth 10MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3456.0          | -39.99                 | 7.26                 | 3.00     | 10.03                           | -37.22          | -13.00      | -24.22      | H            |
| 5184.4          | -45.60                 | 8.48                 | 3.00     | 11.41                           | -42.67          | -13.00      | -29.67      | H            |
| 3456.0          | -43.47                 | 7.26                 | 3.00     | 10.03                           | -40.70          | -13.00      | -27.70      | V            |
| 5184.4          | -47.19                 | 8.48                 | 3.00     | 11.41                           | -44.26          | -13.00      | -31.26      | V            |

LTE Band 66 Channel Channel Bandwidth 10MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3490.9          | -42.60                 | 7.17                 | 3.00     | 9.62                            | -40.15          | -13.00      | -27.15      | H            |
| 5236.9          | -45.31                 | 8.39                 | 3.00     | 11.46                           | -42.24          | -13.00      | -29.24      | H            |
| 3490.9          | -42.18                 | 7.17                 | 3.00     | 9.62                            | -39.73          | -13.00      | -26.73      | V            |
| 5236.9          | -47.69                 | 8.39                 | 3.00     | 11.46                           | -44.62          | -13.00      | -31.62      | V            |

LTE Band 66 Channel Channel Bandwidth 20MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3421.9          | -40.94                 | 7.15                 | 3.00     | 9.88                            | -38.21          | -13.00      | -25.21      | H            |
| 5133.0          | -45.33                 | 8.36                 | 3.00     | 11.36                           | -42.33          | -13.00      | -29.33      | H            |
| 3421.9          | -42.43                 | 7.15                 | 3.00     | 9.88                            | -39.70          | -13.00      | -26.70      | V            |
| 5133.0          | -47.50                 | 8.36                 | 3.00     | 11.36                           | -44.50          | -13.00      | -31.50      | V            |

LTE Band 66 Channel Channel Bandwidth 20MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3447.0          | -40.34                 | 7.26                 | 3.00     | 10.03                           | -37.57          | -13.00      | -24.57      | H            |
| 5170.5          | -45.39                 | 8.48                 | 3.00     | 11.41                           | -42.46          | -13.00      | -29.46      | H            |
| 3447.0          | -43.45                 | 7.26                 | 3.00     | 10.03                           | -40.68          | -13.00      | -27.68      | V            |
| 5170.5          | -47.10                 | 8.48                 | 3.00     | 11.41                           | -44.17          | -13.00      | -31.17      | V            |

LTE Band 66 Channel Channel Bandwidth 20MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 3472.1          | -42.66                 | 7.17                 | 3.00     | 9.62                            | -40.21          | -13.00      | -27.21      | H            |
| 5208.4          | -45.51                 | 8.39                 | 3.00     | 11.46                           | -42.44          | -13.00      | -29.44      | H            |
| 3472.1          | -42.27                 | 7.17                 | 3.00     | 9.62                            | -39.82          | -13.00      | -26.82      | V            |
| 5208.4          | -47.74                 | 8.39                 | 3.00     | 11.46                           | -44.67          | -13.00      | -31.67      | V            |

## LTE Band 71\_Channel Bandwidth 5MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1331.0          | -40.93                 | 7.15                 | 3.00     | 9.88                            | -38.20          | -13.00      | -25.20      | H            |
| 1996.5          | -45.42                 | 8.36                 | 3.00     | 11.36                           | -42.42          | -13.00      | -29.42      | H            |
| 1331.0          | -42.49                 | 7.15                 | 3.00     | 9.88                            | -39.76          | -13.00      | -26.76      | V            |
| 1996.5          | -47.38                 | 8.36                 | 3.00     | 11.36                           | -44.38          | -13.00      | -31.38      | V            |

## LTE Band 71\_Channel Bandwidth 5MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1361.0          | -40.03                 | 7.26                 | 3.00     | 10.03                           | -37.26          | -13.00      | -24.26      | H            |
| 2041.5          | -45.48                 | 8.48                 | 3.00     | 11.41                           | -42.55          | -13.00      | -29.55      | H            |
| 1361.0          | -43.40                 | 7.26                 | 3.00     | 10.03                           | -40.63          | -13.00      | -27.63      | V            |
| 2041.5          | -47.21                 | 8.48                 | 3.00     | 11.41                           | -44.28          | -13.00      | -31.28      | V            |

## LTE Band 71\_Channel Bandwidth 5MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1391.0          | -42.81                 | 7.17                 | 3.00     | 9.62                            | -40.36          | -13.00      | -27.36      | H            |
| 2086.5          | -45.27                 | 8.39                 | 3.00     | 11.46                           | -42.20          | -13.00      | -29.20      | H            |
| 1391.0          | -42.21                 | 7.17                 | 3.00     | 9.62                            | -39.76          | -13.00      | -26.76      | V            |
| 2086.5          | -47.87                 | 8.39                 | 3.00     | 11.46                           | -44.80          | -13.00      | -31.80      | V            |

## LTE Band 71\_Channel Bandwidth 10MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1336.0          | -40.87                 | 7.15                 | 3.00     | 9.88                            | -38.14          | -13.00      | -25.14      | H            |
| 2004.0          | -45.43                 | 8.36                 | 3.00     | 11.36                           | -42.43          | -13.00      | -29.43      | H            |
| 1336.0          | -42.32                 | 7.15                 | 3.00     | 9.88                            | -39.59          | -13.00      | -26.59      | V            |
| 2004.0          | -47.58                 | 8.36                 | 3.00     | 11.36                           | -44.58          | -13.00      | -31.58      | V            |

## LTE Band 71\_Channel Bandwidth 10MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1361.0          | -40.11                 | 7.26                 | 3.00     | 10.03                           | -37.34          | -13.00      | -24.34      | H            |
| 2041.5          | -45.41                 | 8.48                 | 3.00     | 11.41                           | -42.48          | -13.00      | -29.48      | H            |
| 1361.0          | -43.67                 | 7.26                 | 3.00     | 10.03                           | -40.90          | -13.00      | -27.90      | V            |
| 2041.5          | -46.99                 | 8.48                 | 3.00     | 11.41                           | -44.06          | -13.00      | -31.06      | V            |

## LTE Band 71\_Channel Bandwidth 10MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1386.0          | -42.56                 | 7.17                 | 3.00     | 9.62                            | -40.11          | -13.00      | -27.11      | H            |
| 2079.0          | -45.62                 | 8.39                 | 3.00     | 11.46                           | -42.55          | -13.00      | -29.55      | H            |
| 1386.0          | -42.35                 | 7.17                 | 3.00     | 9.62                            | -39.90          | -13.00      | -26.90      | V            |
| 2079.0          | -47.80                 | 8.39                 | 3.00     | 11.46                           | -44.73          | -13.00      | -31.73      | V            |

## LTE Band 71\_Channel Bandwidth 20MHz\_QPSK\_Low Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1346.0          | -40.59                 | 7.15                 | 3.00     | 9.88                            | -37.86          | -13.00      | -24.86      | H            |
| 2019.0          | -45.14                 | 8.36                 | 3.00     | 11.36                           | -42.14          | -13.00      | -29.14      | H            |
| 1346.0          | -42.37                 | 7.15                 | 3.00     | 9.88                            | -39.64          | -13.00      | -26.64      | V            |
| 2019.0          | -47.42                 | 8.36                 | 3.00     | 11.36                           | -44.42          | -13.00      | -31.42      | V            |

## LTE Band 71\_Channel Bandwidth 20MHz\_QPSK\_Middle Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1366.0          | -40.01                 | 7.26                 | 3.00     | 10.03                           | -37.24          | -13.00      | -24.24      | H            |
| 2049.0          | -45.54                 | 8.48                 | 3.00     | 11.41                           | -42.61          | -13.00      | -29.61      | H            |
| 1366.0          | -43.51                 | 7.26                 | 3.00     | 10.03                           | -40.74          | -13.00      | -27.74      | V            |
| 2049.0          | -47.33                 | 8.48                 | 3.00     | 11.41                           | -44.40          | -13.00      | -31.40      | V            |

## LTE Band 71\_Channel Bandwidth 20MHz\_QPSK\_High Channel

| Frequency (MHz) | P <sub>Mea</sub> (dBm) | P <sub>cl</sub> (dB) | Diatance | G <sub>a</sub> Antenna Gain(dB) | Peak EIRP (dBm) | Limit (dBm) | Margin (dB) | Polarization |
|-----------------|------------------------|----------------------|----------|---------------------------------|-----------------|-------------|-------------|--------------|
| 1376.0          | -42.75                 | 7.17                 | 3.00     | 9.62                            | -40.30          | -13.00      | -27.30      | H            |
| 2064.0          | -45.62                 | 8.39                 | 3.00     | 11.46                           | -42.55          | -13.00      | -29.55      | H            |
| 1376.0          | -42.24                 | 7.17                 | 3.00     | 9.62                            | -39.79          | -13.00      | -26.79      | V            |
| 2064.0          | -47.85                 | 8.39                 | 3.00     | 11.46                           | -44.78          | -13.00      | -31.78      | V            |

### 3.6. Frequency Stability under Temperature & Voltage Variations

#### LIMIT

##### FCC

- § 2.1055 (a), § 2.1055 (d) & following:

- §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table of this section. For Mobile devices operating in the 824 to 849 MHz band at a power level less than or equal to 3 Watts, the limit specified in Table C-1 is +/- 2.5 ppm.

- §24.235, the frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

- §27.54, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

##### IC

- RSS-Gen Issue 5

6.11, for licensed devices, the following measurement conditions apply:

a. at the temperatures of -30°C (-22°F), +20°C (+68°F) and +50°C (+122°F), and at the manufacturer's rated supply voltage

- RSS-130 Issue 2

4.5, the transmitter frequency stability limit shall be determined as follows:

For equipment that is capable of transmitting numerous channels simultaneously for different applications (e.g. LTE and narrowband – internet of things (IoT)), the occupied bandwidth shall be the bandwidth representing the sum of the occupied bandwidths of these channels. The frequency stability shall be sufficient to ensure that the occupied bandwidth remains within each frequency block range when tested at the temperature and supply voltage variations specified in RSS-Gen.

- RSS-132 Issue 3

5.3, the carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations and ±1.5 ppm for base stations.

- RSS-133 Issue 6

6.3, the carrier frequency shall not depart from the reference frequency, in excess of ±2.5 ppm for mobile stations and ±1.0 ppm for base stations.

- RSS-139 Issue 3

6.4, the frequency stability shall be sufficient to ensure that the occupied bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

- RSS-199 Issue 3

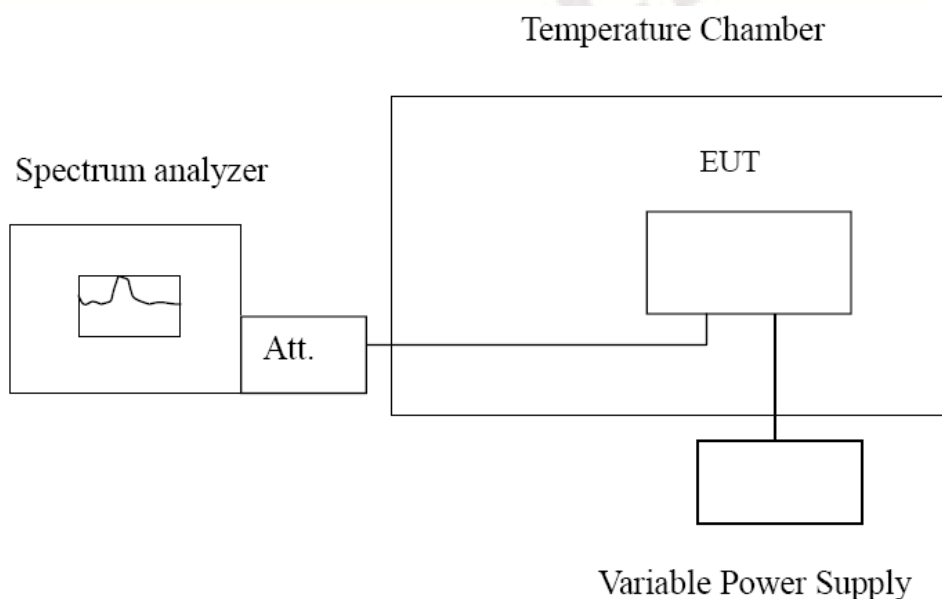
4.3, the transmitter frequency stability limit shall be determined as follows:

(a) the frequency offset shall be measured according to the procedure described in RSS-Gen and recorded.

(b) using a resolution bandwidth equal to that permitted within the 1 MHz band immediately outside the channel edge, as found in section 4.5, reference points will be selected at the unwanted emission limits, which comply with the attenuation specified in section 4.5 for the type of device under test, on the emission mask of the lowest and highest channels. The frequency at these points shall be recorded as fL and Fh respectively.

The applicant shall ensure compliance with frequency stability requirements by showing that fL minus the frequency offset and fH plus the frequency offset is within the frequency range in which the equipment is designed to operate.

## TEST CONFIGURATION



## TEST PROCEDURE

The EUT was setup according to EIA/TIA 603D

### **Frequency Stability under Temperature Variations:**

In order to measure the carrier frequency under the condition of AFC lock, it is necessary to make measurements with the EUT in a "call mode". This is accomplished with the use of R&S CMW500 DIGITAL RADIO COMMUNICATION TESTER.

1. Measure the carrier frequency at room temperature.
2. Subject the EUT to overnight soak at -30°C.
3. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on middle channel for LTE band 4, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
4. Repeat the above measurements at 10°C increments from -30°C to +50°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements.
5. Re-measure carrier frequency at room temperature with nominal voltage. Vary supply voltage from minimum voltage to maximum voltage, in 0.1Volt increments re-measuring carrier frequency at each voltage. Pause at nominal voltage for 1.5 hours unpowered, to allow any self-heating to stabilize, before continuing.
6. Subject the EUT to overnight soak at +50°C.
7. With the EUT, powered via nominal voltage, connected to the CMW500 and in a simulated call on the centre channel, measure the carrier frequency. These measurements should be made within 2 minutes of Powering up the EUT, to prevent significant self-warming.
8. Repeat the above measurements at 10 °C increments from +50°C to -30°C. Allow at least 1.5 hours at each temperature, unpowered, before making measurements
9. At all temperature levels hold the temperature to +/- 0.5°C during the measurement procedure.

### **Frequency Stability under Voltage Variations:**

Set chamber temperature to 20°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specify extreme voltage variation ( $\pm 15\%$ ) and endpoint, record the maximum frequency change.

**TEST RESULTS**

1. Please refer to Appendix B: Section 5
2. Please refer to Appendix E: Section 5
3. Please refer to Appendix G: Section 5
4. Please refer to Appendix H: Section 5
5. Please refer to Appendix I: Section 5
6. Please refer to Appendix K: Section 5
7. Please refer to Appendix O: Section 5
8. Please refer to Appendix P: Section 5
9. Please refer to Appendix Q: Section 5

### 3.7. Modulation Characteristics

#### **Standard Applicable**

#### **According to FCC Part 2 §2.1047:**

(a) Voice modulated communication equipment. A curve or equivalent data showing the frequency response of the audio modulating circuit over a range of 100 to 5000 Hz shall be submitted. For equipment required to have an audio low-pass filter, a curve showing the frequency response of the filter, or of all circuitry installed between the modulation limiter and the modulated stage shall be submitted.

(b) Equipment which employs modulation limiting. A curve or family of curves showing the percentage of modulation versus the modulation input voltage shall be supplied. The information submitted shall be sufficient to show modulation limiting capability throughout the range of modulating frequencies and input modulating signal levels employed.

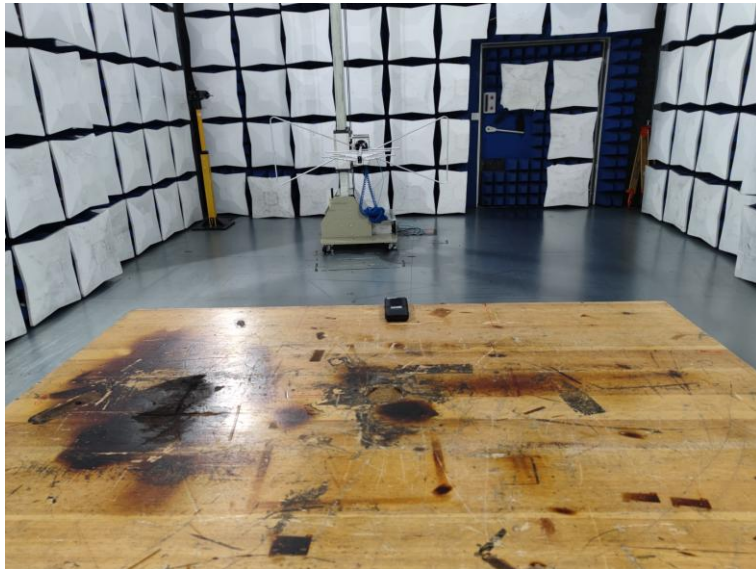
(c) Single sideband and independent sideband radiotelephone transmitters which employ a device or circuit to limit peak envelope power. A curve showing the peak envelope power output versus the modulation input voltage shall be supplied. The modulating signals shall be the same in frequency as specified in paragraph (c) of §2.1049 for the occupied bandwidth tests.

(d) Other types of equipment. A curve or equivalent data which shows that the equipment will meet the modulation requirements of the rules under which the equipment is to be licensed.

#### **TEST RESULTS**

1. Please refer to Appendix B: Section 3
2. Please refer to Appendix E: Section 3
3. Please refer to Appendix G: Section 3
4. Please refer to Appendix H: Section 3
5. Please refer to Appendix I: Section 3
6. Please refer to Appendix K: Section 3
7. Please refer to Appendix O: Section 3
8. Please refer to Appendix P: Section 3
9. Please refer to Appendix Q: Section 3

#### 4. Test Setup Photos of the EUT



## 5. External and Internal Photos of the EUT

Reference to the test report No. CTL2106018081-W01

\*\*\*\*\* End of Report \*\*\*\*\*