

# TEST REPORT

**Reference No.**..... : WTD21D02012811W002  
**FCC ID** ..... : 2APJQ-WC30895A  
**Applicant**..... : KEEPWAY INDUSTRIAL(ASIA)CO.,LTD  
**Address**..... : Flat D, 8/F., SuccessInd.Bld G., No.17, SheungHeiSt., SanPoKong, Kowloon, Hongkong  
**Manufacturer** ..... : HUARUI TECHNOLOGY(SHENZHEN)CO.,LTD  
**Address**..... : 401, building 3, No.32,Dafu Road, Zhangge community, Fucheng street, Longhua District, Shenzhen, China  
**Product**..... : Covert Wireless Trail Camera  
**Model(s)** ..... : WC30-A, CT895A  
**Standards**..... : FCC CFR47 Part 24 Subpart E: 2018  
FCC CFR47 Part 27 Subpart L: 2018  
**Date of Receipt sample** .... : 2021-02-24  
**Date of Test** ..... : 2021-02-25 to 2021-03-15  
**Date of Issue**..... : 2021-03-15  
**Test Result**..... : **Pass**

**Remarks:**

The results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

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### 3 Revision History

| Test report No.        | Date of Receipt sample | Date of Test                   | Date of Issue | Purpose  | Comment | Approved |
|------------------------|------------------------|--------------------------------|---------------|----------|---------|----------|
| WTD21D02012<br>811W002 | 2021-02-24             | 2021-02-25<br>to<br>2021-03-15 | 2021-03-15    | original | -       | Valid    |

## 4 General Information

### 4.1 General Description of E.U.T.

|                                       |                                                                          |
|---------------------------------------|--------------------------------------------------------------------------|
| Product:                              | Covert Wireless Trail Camera                                             |
| Model(s):                             | WC30-A, CT895A                                                           |
| Model Description:                    | Only the model name is different, So choose the model WC30-A for testing |
| WCDMA Band(s):                        | FDD Band II/IV/V                                                         |
| LTE Band(s):                          | FDD Band 2/4/12                                                          |
| Hardware Version:                     | KT895MV07                                                                |
| Software Version:                     | CT895ANC2Lx146018                                                        |
| Highest frequency<br>(Exclude Radio): | 26MHz                                                                    |
| Storage Location:                     | Internal Storage                                                         |

### 4.2 Details of E.U.T.

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operation Frequency:  | LTE Band 2: 1850~1910MHz<br>LTE Band 4: 1710~1755MHz<br>LTE Band 12: 699~716MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Max. RF output power: | LTE Band 2: 21.26dBm<br>LTE Band 4: 21.57dBm<br>LTE Band 12: 23.30dBm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Type of Modulation:   | LTE: QPSK, 16QAM                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Antenna installation: | LTE: External antenna with RP-SMA connector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Antenna Gain:         | LTE Band 2: 1.0dBi<br>LTE Band 4: 1.0dBi<br>LTE Band 12: 1.0dBi                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Ratings:              | DC 9V                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Type of Emission:     | LTE Band 2 1.4MHz: 1M09G7D(QPSK), 1M09W7D(16QAM)<br>LTE Band 2 3MHz: 2M69G7D(QPSK), 2M68W7D(16QAM)<br>LTE Band 2 5MHz: 4M49G7D(QPSK), 4M49W7D(16QAM)<br>LTE Band 2 10 MHz: 8M92G7D(QPSK), 8M91W7D(16QAM)<br>LTE Band 2 15MHz: 13M4G7D(QPSK), 13M4W7D(16QAM)<br>LTE Band 2 20MHz: 17M9G7D(QPSK), 17M9W7D(16QAM)<br>LTE Band 4 1.4MHz: 1M09G7D(QPSK), 1M09W7D(16QAM)<br>LTE Band 4 3MHz: 2M69G7D(QPSK), 2M68W7D(16QAM)<br>LTE Band 4 5MHz: 4M49G7D(QPSK), 4M49W7D(16QAM)<br>LTE Band 4 10 MHz: 8M91G7D(QPSK), 8M90W7D(16QAM)<br>LTE Band 4 15MHz: 13M4G7D(QPSK), 13M4W7D(16QAM)<br>LTE Band 4 20MHz: 17M9G7D(QPSK), 17M9W7D(16QAM) |

LTE Band 12 1.4MHz: 1M09G7D(QPSK), 1M09W7D(16QAM)

LTE Band 12 3MHz: 2M69G7D(QPSK), 2M68W7D(16QAM)

LTE Band 12 5MHz: 4M49G7D(QPSK), 4M49W7D(16QAM)

LTE Band 12 10MHz: 8M93G7D(QPSK), 8M93W7D(16QAM)

### 4.3 Test Mode

All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst data were recorded and reported.

| Support Band | Test Mode BW(MHz) | Channel Frequency | Channel Number |
|--------------|-------------------|-------------------|----------------|
| LTE Band 2   | 1.4               | 1850.7 MHz        | 18607          |
|              |                   | 1880.0 MHz        | 18900          |
|              |                   | 1909.3 MHz        | 19193          |
|              | 3                 | 1851.5 MHz        | 18615          |
|              |                   | 1880.0 MHz        | 18900          |
|              |                   | 1908.5 MHz        | 19185          |
|              | 5                 | 1852.5 MHz        | 18625          |
|              |                   | 1880.0 MHz        | 18900          |
|              |                   | 1907.5 MHz        | 19175          |
|              | 10                | 1855.0 MHz        | 18650          |
|              |                   | 1880.0 MHz        | 18900          |
|              |                   | 1905.0 MHz        | 19150          |
|              | 15                | 1857.5 MHz        | 18675          |
|              |                   | 1880.0 MHz        | 18900          |
|              |                   | 1902.5 MHz        | 19125          |
|              | 20                | 1860.0 MHz        | 18700          |
|              |                   | 1880.0 MHz        | 18900          |
|              |                   | 1900.0 MHz        | 19100          |
| LTE Band 4   | 1.4               | 1710.7 MHz        | 19957          |
|              |                   | 1732.5 MHz        | 20175          |
|              |                   | 1754.3 MHz        | 20393          |
|              | 3                 | 1711.5 MHz        | 19965          |
|              |                   | 1732.5 MHz        | 20175          |
|              |                   | 1753.5 MHz        | 20385          |
|              | 5                 | 1712.5 MHz        | 19975          |
|              |                   | 1732.5 MHz        | 20175          |
|              |                   | 1752.5 MHz        | 20375          |
|              | 10                | 1715.0 MHz        | 20000          |
|              |                   | 1732.5 MHz        | 20175          |
|              |                   | 1750.0 MHz        | 20350          |
|              | 15                | 1717.5 MHz        | 20025          |
|              |                   | 1732.5 MHz        | 20175          |
|              |                   | 1747.5 MHz        | 20325          |
|              | 20                | 1720.0 MHz        | 20050          |
|              |                   | 1732.5 MHz        | 20175          |
|              |                   | 1745.0 MHz        | 20300          |
| LTE Band 12  | 1.4               | 699.7 MHz         | 23017          |
|              |                   | 707.5 MHz         | 23095          |
|              |                   | 715.3 MHz         | 23173          |

|                                                                  |    |           |       |
|------------------------------------------------------------------|----|-----------|-------|
|                                                                  | 3  | 700.5 MHz | 23025 |
|                                                                  |    | 707.5 MHz | 23095 |
|                                                                  |    | 714.5 MHz | 23165 |
|                                                                  | 5  | 701.5 MHz | 23035 |
|                                                                  |    | 707.5 MHz | 23095 |
|                                                                  |    | 713.5 MHz | 23155 |
|                                                                  | 10 | 704.0 MHz | 23060 |
|                                                                  |    | 707.5 MHz | 23095 |
|                                                                  |    | 711.0 MHz | 23130 |
| Remark: All mode(s) were tested and the worst data was recorded. |    |           |       |

#### 4.4 Test Facility

The test facility has a test site registered with the following organizations:

**ISED CAB identifier: CN0013. Test Firm Registration No.: 7760A.**

Waltek Testing Group Co., Ltd. Has been registered and fully described in a report filed with the Industry Canada. The acceptance letter from the Industry Canada is maintained in our files.

Registration number 7760A, October 15, 2016.

**FCC Designation No.: CN1201. Test Firm Registration No.: 523476.**

Waltek Testing Group 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 number 523476, September 10, 2019.

## 5 Test Summary

| Test Items                             | Test Requirement                                 | Result |
|----------------------------------------|--------------------------------------------------|--------|
| RF Output Power                        | 2.1046<br>24.232 (c)<br>27.50(h.2)<br>27.50(d.4) | PASS   |
| Peak-to-Average Ratio                  | 24.232 (d)<br>27.50(d)                           | PASS   |
| Bandwidth                              | 2.1049<br>22.917<br>24.238<br>27.53(a)           | PASS   |
| Spurious Emissions at Antenna Terminal | 2.1051<br>24.238 (a)<br>27.53(h)<br>27.53(m)(4)  | PASS   |
| Field Strength of Spurious Radiation   | 2.1053<br>24.238 (a)<br>27.53(h)<br>27.53(m)(4)  | PASS   |
| Out of band emission                   | 24.238 (a)<br>27.53(h)<br>27.53(m)(4)            | PASS   |
| Frequency Stability                    | 2.1055<br>24.235<br>27.5(h)<br>27.54             | PASS   |
| Maximum Permissible Exposure<br>(SAR)  | 1.1307<br>2.1093                                 | PASS   |

## 6 Equipment Used during Test

### 6.1 Equipments List

| 3m Semi-anechoic Chamber for Radiation Emissions Test site 1# |                                      |                                  |             |            |                       |                      |
|---------------------------------------------------------------|--------------------------------------|----------------------------------|-------------|------------|-----------------------|----------------------|
| Item                                                          | Equipment                            | Manufacturer                     | Model No.   | Serial No. | Last Calibration Date | Calibration Due Date |
| 1                                                             | Spectrum Analyzer                    | R&S                              | FSP         | 100091     | 2020-04-20            | 2021-04-19           |
| 2                                                             | Active Loop Antenna                  | Beijing Dazhi                    | ZN30900A    | -          | 2020-04-20            | 2021-04-19           |
| 3                                                             | Trilog Broadband Antenna             | SCHWARZBECK                      | VULB9163    | 336        | 2020-08-22            | 2021-08-21           |
| 4                                                             | Coaxial Cable (below 1GHz)           | Top                              | TYPE16(13M) | -          | 2020-04-20            | 2021-04-19           |
| 5                                                             | Broad-band Horn Antenna              | SCHWARZBECK                      | BBHA 9120 D | 667        | 2020-04-25            | 2021-04-24           |
| 6                                                             | Broad-band Horn Antenna              | SCHWARZBECK                      | BBHA 9170   | 335        | 2020-04-20            | 2021-04-19           |
| 7                                                             | Broadband Preamplifier               | COMPLIANCE DIRECTION             | PAP-1G18    | 2004       | 2020-04-20            | 2021-04-19           |
| 8                                                             | Coaxial Cable (above 1GHz)           | Top                              | 1GHz-25GHz  | EW02014-7  | 2020-04-20            | 2021-04-19           |
| 9                                                             | Universal Radio Communication Tester | R&S                              | CMU 200     | 112461     | 2020-04-20            | 2021-04-19           |
| 10                                                            | Signal Generator                     | R&S                              | SMR20       | 100046     | 2020-07-30            | 2021-07-29           |
| 11                                                            | Smart Antenna                        | SCHWARZBECK                      | HA08        | -          | 2020-04-20            | 2021-04-19           |
| 3m Semi-anechoic Chamber for Radiation Emissions Test site 2# |                                      |                                  |             |            |                       |                      |
| Item                                                          | Equipment                            | Manufacturer                     | Model No.   | Serial No. | Last Calibration Date | Calibration Due Date |
| 1                                                             | Test Receiver                        | R&S                              | ESCI        | 101296     | 2020-04-20            | 2021-04-19           |
| 2                                                             | Trilog Broadband Antenna             | SCHWARZBECK                      | VULB9160    | 9160-3325  | 2020-04-25            | 2021-04-24           |
| 3                                                             | Amplifier                            | Compliance pirection systems inc | PAP-0203    | 22024      | 2020-04-20            | 2021-04-19           |
| 4                                                             | Cable                                | HUBER+SUHNER                     | CBL2        | 525178     | 2020-04-20            | 2021-04-19           |
| RF Conducted Testing                                          |                                      |                                  |             |            |                       |                      |
| Item                                                          | Equipment                            | Manufacturer                     | Model No.   | Serial No. | Last Calibration Date | Calibration Due Date |
| 1.                                                            | EMC Analyzer (9k~26.5GHz)            | Agilent                          | E7405A      | MY45114943 | 2020-07-30            | 2021-07-29           |
| 2.                                                            | Spectrum Analyzer (9k-6GHz)          | R&S                              | FSL6        | 100959     | 2020-07-30            | 2021-07-29           |

|    |                                      |         |         |            |            |            |
|----|--------------------------------------|---------|---------|------------|------------|------------|
| 3. | Universal Radio Communication Tester | R&S     | CMU 200 | 112461     | 2020-07-30 | 2021-07-29 |
| 4  | Signal Analyzer (9k~26.5GHz)         | Agilent | N9010A  | MY50520207 | 2020-07-30 | 2021-07-29 |

## 6.2 Measurement Uncertainty

| Parameter                                       | Uncertainty                                 |
|-------------------------------------------------|---------------------------------------------|
| Conducted Emission                              | $\pm 3.64$ dB(AC mains 150KHz~30MHz)        |
| Radiated Spurious Emissions                     | $\pm 5.08$ dB (Bilog antenna 30M~1000MHz)   |
|                                                 | $\pm 5.47$ dB (Horn antenna 1000M~25000MHz) |
| Radio Frequency                                 | $\pm 1 \times 10^{-7}$ Hz                   |
| RF Power                                        | $\pm 0.42$ dB                               |
| RF Power Density                                | $\pm 0.7$ dB                                |
| Conducted Spurious Emissions                    | $\pm 2.76$ dB (9kHz~26500MHz)               |
| Confidence interval: 95%. Confidence factor:k=2 |                                             |

## 6.3 Test Equipment Calibration

All the test equipments used are valid and calibrated by CEPREI Certification Body that address is No.110 Dongguan Zhuang RD. Guangzhou, P.R.China.

## 7 RF OUTPUT POWER

|                   |                                                     |
|-------------------|-----------------------------------------------------|
| Test Requirement: | FCC Part 2.1046, 24.232 (c), 27.50(h.2); 27.50(d.4) |
| Test Method:      | ANSI C63.26:2015<br>ANSI/TIA-603-E:2016             |
| Test Mode:        | TX transmitting                                     |

### 7.1 EUT Operation

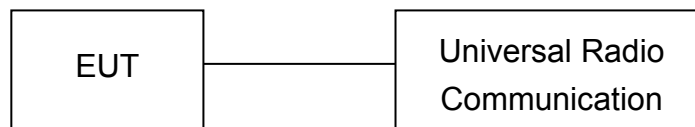
Operating Environment :

|                       |           |
|-----------------------|-----------|
| Temperature:          | 22.5 °C   |
| Humidity:             | 52.1 % RH |
| Atmospheric Pressure: | 101.2kPa  |

### 7.2 Test Procedure

Conducted method:

The RF output of the transmitter was connected to the wireless test set and the spectrum analyzer through sufficient attenuation.



Radiated method:

1. The setup of EUT is according with per TIA/EIA Standard 603D:2010.
2. The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and polarization as well as EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. The test was performed by placing the EUT on 3-orthogonal axis.
3. The frequency range up to tenth harmonic of the fundamental frequency was investigated.
4. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.

### 7.3 Test Result

#### Conducted Power

##### LTE Band 2:

| BW(MHz) | Ch    | Freq(MHz) | Mode  | UL RB Allocation | UL RB Offset | Average Power (dbm) | Tune up limited(dBm) | MPR (dB) |
|---------|-------|-----------|-------|------------------|--------------|---------------------|----------------------|----------|
| 1.4MHz  | 18607 | 1850.7    | QPSK  | 1                | 0            | 21.05               | 23.0±1               | /        |
|         |       |           |       | 1                | 2            | 21.79               | 23.0±1               | /        |
|         |       |           |       | 1                | 5            | 21.26               | 23.0±1               | /        |
|         |       |           |       | 3                | 0            | 21.2                | 23.0±1               | /        |
|         |       |           |       | 3                | 1            | 21.22               | 23.0±1               | /        |
|         |       |           |       | 3                | 2            | 21.17               | 23.0±1               | /        |
|         |       |           | 16QAM | 6                | 0            | 20.08               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 0            | 19.99               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 2            | 20.02               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 5            | 19.98               | 22.0±1               | 1.0      |
|         |       |           |       | 3                | 0            | 20.37               | 22.0±1               | 1.0      |
|         |       |           |       | 3                | 1            | 20.39               | 22.0±1               | 1.0      |
|         |       |           |       | 3                | 2            | 20.33               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 0            | 19.18               | 22.0±1               | 1.0      |
|         | 18900 | 1880      | QPSK  | 1                | 0            | 20.9                | 23.0±1               | /        |
|         |       |           |       | 1                | 2            | 20.89               | 23.0±1               | /        |
|         |       |           |       | 1                | 5            | 20.58               | 23.0±1               | /        |
|         |       |           |       | 3                | 0            | 20.69               | 23.0±1               | /        |
|         |       |           |       | 3                | 1            | 20.66               | 23.0±1               | /        |
|         |       |           |       | 3                | 2            | 20.59               | 23.0±1               | /        |
|         |       |           | 16QAM | 6                | 0            | 19.74               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 0            | 19.89               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 2            | 20.12               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 5            | 20.02               | 22.0±1               | 1.0      |
|         |       |           |       | 3                | 0            | 20.09               | 22.0±1               | 1.0      |
|         |       |           |       | 3                | 1            | 20.06               | 22.0±1               | 1.0      |
|         |       |           |       | 3                | 2            | 20                  | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 0            | 18.96               | 22.0±1               | 1.0      |
|         | 19193 | 1909.3    | QPSK  | 1                | 0            | 20.86               | 23.0±1               | /        |
|         |       |           |       | 1                | 2            | 21.02               | 23.0±1               | /        |
|         |       |           |       | 1                | 5            | 21.13               | 23.0±1               | /        |
|         |       |           |       | 3                | 0            | 21.23               | 23.0±1               | /        |
|         |       |           |       | 3                | 1            | 21.15               | 23.0±1               | /        |
|         |       |           |       | 3                | 2            | 21.05               | 23.0±1               | /        |
|         |       |           | 16QAM | 6                | 0            | 20.23               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 0            | 19.92               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 2            | 19.97               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 5            | 19.84               | 22.0±1               | 1.0      |
|         |       |           |       | 3                | 0            | 20.21               | 22.0±1               | 1.0      |
|         |       |           |       | 3                | 1            | 20.07               | 22.0±1               | 1.0      |
|         |       |           |       | 3                | 2            | 19.96               | 22.0±1               | 1.0      |

|  |  |  |  |   |   |       |        |     |
|--|--|--|--|---|---|-------|--------|-----|
|  |  |  |  | 6 | 0 | 19.01 | 22.0±1 | 1.0 |
|--|--|--|--|---|---|-------|--------|-----|

| BW(MHz) | Ch    | Freq(MHz) | Mode  | UL RB Allocation | UL RB Offset | Average Power (dbm) | Tune up limited(dBm) | MPR (dB) |
|---------|-------|-----------|-------|------------------|--------------|---------------------|----------------------|----------|
| 3MHz    | 18615 | 1851.5    | QPSK  | 1                | 0            | 20.93               | 23.0±1               | /        |
|         |       |           |       | 1                | 8            | 20.73               | 23.0±1               | /        |
|         |       |           |       | 1                | 14           | 20.95               | 23.0±1               | /        |
|         |       |           |       | 6                | 0            | 19.81               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 4            | 19.82               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 9            | 19.75               | 22.0±1               | 1.0      |
|         |       |           |       | 15               | 0            | 19.9                | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 20.01               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 8            | 19.4                | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 14           | 19.68               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 0            | 18.81               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 4            | 18.87               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 9            | 18.91               | 22.0±1               | 1.0      |
|         |       |           |       | 15               | 0            | 18.89               | 22.0±1               | 1.0      |
|         | 18900 | 1880      | QPSK  | 1                | 0            | 20.51               | 23.0±1               | /        |
|         |       |           |       | 1                | 8            | 20.29               | 23.0±1               | /        |
|         |       |           |       | 1                | 14           | 20.43               | 23.0±1               | /        |
|         |       |           |       | 6                | 0            | 19.67               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 4            | 19.53               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 9            | 19.44               | 22.0±1               | 1.0      |
|         |       |           |       | 15               | 0            | 19.51               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 19.3                | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 8            | 19.25               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 14           | 19.34               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 0            | 18.58               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 4            | 18.52               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 9            | 18.5                | 22.0±1               | 1.0      |
|         |       |           |       | 15               | 0            | 18.65               | 22.0±1               | 1.0      |
|         | 19185 | 1908.5    | QPSK  | 1                | 0            | 21.01               | 23.0±1               | /        |
|         |       |           |       | 1                | 8            | 20.86               | 23.0±1               | /        |
|         |       |           |       | 1                | 14           | 21.01               | 23.0±1               | /        |
|         |       |           |       | 6                | 0            | 19.94               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 4            | 19.8                | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 9            | 19.77               | 22.0±1               | 1.0      |
|         |       |           |       | 15               | 0            | 19.94               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 19.98               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 8            | 20.17               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 14           | 20.1                | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 0            | 19.21               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 4            | 19.07               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 9            | 18.89               | 22.0±1               | 1.0      |
|         |       |           |       | 15               | 0            | 19.09               | 22.0±1               | 1.0      |

| BW(MHz) | Ch    | Freq(MHz) | Mode  | UL RB Allocation | UL RB Offset | Average Power (dbm) | Tune up limited(dBm) | MPR (dB) |
|---------|-------|-----------|-------|------------------|--------------|---------------------|----------------------|----------|
| 5MHz    | 18625 | 1852.5    | QPSK  | 1                | 0            | 20.9                | 23.0±1               | /        |
|         |       |           |       | 1                | 12           | 20.78               | 23.0±1               | /        |
|         |       |           |       | 1                | 24           | 20.85               | 23.0±1               | /        |
|         |       |           |       | 12               | 0            | 19.88               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 6            | 19.98               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 11           | 19.93               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 0            | 19.98               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 19.5                | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 12           | 19.43               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 24           | 19.31               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 0            | 18.92               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 6            | 18.67               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 11           | 18.87               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 0            | 18.88               | 22.0±1               | 1.0      |
|         | 18900 | 1880      | QPSK  | 1                | 0            | 20.47               | 23.0±1               | /        |
|         |       |           |       | 1                | 12           | 20.34               | 23.0±1               | /        |
|         |       |           |       | 1                | 24           | 20.36               | 23.0±1               | /        |
|         |       |           |       | 12               | 0            | 19.52               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 6            | 19.45               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 11           | 19.49               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 0            | 19.55               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 19.58               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 12           | 19.47               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 24           | 19.48               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 0            | 18.41               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 6            | 18.42               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 11           | 18.48               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 0            | 18.62               | 22.0±1               | 1.0      |
|         | 19175 | 1907.5    | QPSK  | 1                | 0            | 20.82               | 23.0±1               | /        |
|         |       |           |       | 1                | 12           | 20.9                | 23.0±1               | /        |
|         |       |           |       | 1                | 24           | 20.9                | 23.0±1               | /        |
|         |       |           |       | 12               | 0            | 19.78               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 6            | 19.86               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 11           | 19.95               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 0            | 19.77               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 19.59               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 12           | 19.7                | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 24           | 19.32               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 0            | 18.67               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 6            | 18.81               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 11           | 18.79               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 0            | 18.83               | 22.0±1               | 1.0      |

| BW(MHz) | Ch    | Freq(MHz) | Mode  | UL RB Allocation | UL RB Offset | Average Power (dbm) | Tune up limited(dBm) | MPR (dB) |
|---------|-------|-----------|-------|------------------|--------------|---------------------|----------------------|----------|
| 10MHz   | 18650 | 1855      | QPSK  | 1                | 0            | 20.85               | 23.0±1               | /        |
|         |       |           |       | 1                | 24           | 20.64               | 23.0±1               | /        |
|         |       |           |       | 1                | 49           | 20.71               | 23.0±1               | /        |
|         |       |           |       | 25               | 0            | 19.71               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 12           | 19.76               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 24           | 19.64               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 0            | 19.68               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 19.8                | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 24           | 19.61               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 49           | 19.59               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 0            | 18.79               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 12           | 18.92               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 24           | 18.71               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 0            | 18.74               | 22.0±1               | 1.0      |
|         | 18900 | 1880      | QPSK  | 1                | 0            | 20.54               | 23.0±1               | /        |
|         |       |           |       | 1                | 24           | 20.72               | 23.0±1               | /        |
|         |       |           |       | 1                | 49           | 20.29               | 23.0±1               | /        |
|         |       |           |       | 25               | 0            | 19.48               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 12           | 19.56               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 24           | 19.4                | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 0            | 19.47               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 19.37               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 24           | 19.34               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 49           | 18.91               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 0            | 18.61               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 12           | 18.57               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 24           | 18.55               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 0            | 18.59               | 22.0±1               | 1.0      |
|         | 19150 | 1905      | QPSK  | 1                | 0            | 20.74               | 23.0±1               | /        |
|         |       |           |       | 1                | 24           | 21.18               | 23.0±1               | /        |
|         |       |           |       | 1                | 49           | 20.96               | 23.0±1               | /        |
|         |       |           |       | 25               | 0            | 19.69               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 12           | 19.78               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 24           | 19.96               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 0            | 19.78               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 18.98               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 24           | 20.5                | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 49           | 20.3                | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 0            | 18.93               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 12           | 19.1                | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 24           | 19.11               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 0            | 18.84               | 22.0±1               | 1.0      |

| BW(MHz) | Ch    | Freq(MHz) | Mode  | UL RB Allocation | UL RB Offset | Average Power (dbm) | Tune up limited(dBm) | MPR (dB) |
|---------|-------|-----------|-------|------------------|--------------|---------------------|----------------------|----------|
| 15MHz   | 18675 | 1857.5    | QPSK  | 1                | 0            | 20.83               | 23.0±1               | /        |
|         |       |           |       | 1                | 37           | 20.63               | 23.0±1               | /        |
|         |       |           |       | 1                | 74           | 20.65               | 23.0±1               | /        |
|         |       |           |       | 36               | 0            | 19.74               | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 16           | 19.77               | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 35           | 19.7                | 22.0±1               | 1.0      |
|         |       |           |       | 75               | 0            | 19.71               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 19.89               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 37           | 19.56               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 74           | 19.59               | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 0            | 18.74               | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 16           | 18.71               | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 35           | 18.71               | 22.0±1               | 1.0      |
|         |       |           |       | 75               | 0            | 18.74               | 22.0±1               | 1.0      |
|         | 18900 | 1880      | QPSK  | 1                | 0            | 20.68               | 23.0±1               | /        |
|         |       |           |       | 1                | 37           | 20.44               | 23.0±1               | /        |
|         |       |           |       | 1                | 74           | 20.43               | 23.0±1               | /        |
|         |       |           |       | 36               | 0            | 19.56               | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 16           | 19.48               | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 35           | 19.38               | 22.0±1               | 1.0      |
|         |       |           |       | 75               | 0            | 19.54               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 19.59               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 37           | 19.33               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 74           | 19                  | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 0            | 18.55               | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 16           | 18.6                | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 35           | 18.49               | 22.0±1               | 1.0      |
|         |       |           |       | 75               | 0            | 18.64               | 22.0±1               | 1.0      |
|         | 19125 | 1902.5    | QPSK  | 1                | 0            | 20.48               | 23.0±1               | /        |
|         |       |           |       | 1                | 37           | 20.46               | 23.0±1               | /        |
|         |       |           |       | 1                | 74           | 20.86               | 23.0±1               | /        |
|         |       |           |       | 36               | 0            | 19.71               | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 16           | 19.88               | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 35           | 19.81               | 22.0±1               | 1.0      |
|         |       |           |       | 75               | 0            | 19.67               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 20.1                | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 37           | 20.18               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 74           | 20.04               | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 0            | 18.6                | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 16           | 18.77               | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 35           | 18.74               | 22.0±1               | 1.0      |
|         |       |           |       | 75               | 0            | 18.63               | 22.0±1               | 1.0      |

| BW(MHz) | Ch    | Freq(MHz) | Mode  | UL RB Allocation | UL RB Offset | Average Power (dbm) | Tune up limited(dBm) | MPR (dB) |
|---------|-------|-----------|-------|------------------|--------------|---------------------|----------------------|----------|
| 20MHz   | 18700 | 1860      | QPSK  | 1                | 0            | 20.99               | 23.0±1               | /        |
|         |       |           |       | 1                | 49           | 20.81               | 23.0±1               | /        |
|         |       |           |       | 1                | 99           | 20.19               | 23.0±1               | /        |
|         |       |           |       | 50               | 0            | 19.82               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 24           | 19.68               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 49           | 19.59               | 22.0±1               | 1.0      |
|         |       |           |       | 100              | 0            | 19.6                | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 19.95               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 49           | 19.85               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 99           | 19.23               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 0            | 18.91               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 24           | 18.76               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 49           | 18.68               | 22.0±1               | 1.0      |
|         |       |           |       | 100              | 0            | 18.66               | 22.0±1               | 1.0      |
|         | 18900 | 1880      | QPSK  | 1                | 0            | 20.35               | 23.0±1               | /        |
|         |       |           |       | 1                | 49           | 20.78               | 23.0±1               | /        |
|         |       |           |       | 1                | 99           | 20.24               | 23.0±1               | /        |
|         |       |           |       | 50               | 0            | 19.49               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 24           | 19.55               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 49           | 19.4                | 22.0±1               | 1.0      |
|         |       |           |       | 100              | 0            | 19.5                | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 19.02               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 49           | 19.78               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 99           | 19                  | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 0            | 18.61               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 24           | 18.66               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 49           | 18.4                | 22.0±1               | 1.0      |
|         |       |           |       | 100              | 0            | 18.57               | 22.0±1               | 1.0      |
|         | 19100 | 1900      | QPSK  | 1                | 0            | 20.8                | 23.0±1               | /        |
|         |       |           |       | 1                | 49           | 20.84               | 23.0±1               | /        |
|         |       |           |       | 1                | 99           | 20.95               | 23.0±1               | /        |
|         |       |           |       | 50               | 0            | 19.64               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 24           | 19.64               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 49           | 19.63               | 22.0±1               | 1.0      |
|         |       |           |       | 100              | 0            | 19.71               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 19.39               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 49           | 19.33               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 99           | 19.81               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 0            | 18.48               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 24           | 18.69               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 49           | 18.67               | 22.0±1               | 1.0      |
|         |       |           |       | 100              | 0            | 18.68               | 22.0±1               | 1.0      |

**LTE Band 4:**

| BW(MHz) | Ch    | Freq(MHz) | Mode  | UL RB Allocation | UL RB Offset | Average Power (dbm) | Tune up limited(dBm) | MPR (dB) |
|---------|-------|-----------|-------|------------------|--------------|---------------------|----------------------|----------|
| 1.4MHz  | 19957 | 1710.7    | QPSK  | 1                | 0            | 21.24               | 23.0±1               | /        |
|         |       |           |       | 1                | 2            | 21.54               | 23.0±1               | /        |
|         |       |           |       | 1                | 5            | 21.47               | 23.0±1               | /        |
|         |       |           |       | 3                | 0            | 21.31               | 23.0±1               | /        |
|         |       |           |       | 3                | 1            | 21.41               | 23.0±1               | /        |
|         |       |           |       | 3                | 2            | 21.4                | 23.0±1               | /        |
|         |       |           |       | 6                | 0            | 20.32               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 20.65               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 2            | 20.28               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 5            | 20.48               | 22.0±1               | 1.0      |
|         |       |           |       | 3                | 0            | 20.45               | 22.0±1               | 1.0      |
|         |       |           |       | 3                | 1            | 20.64               | 22.0±1               | 1.0      |
|         |       |           |       | 3                | 2            | 20.64               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 0            | 19.39               | 22.0±1               | 1.0      |
|         | 20175 | 1732.5    | QPSK  | 1                | 0            | 21.23               | 23.0±1               | /        |
|         |       |           |       | 1                | 2            | 21.44               | 23.0±1               | /        |
|         |       |           |       | 1                | 5            | 21.17               | 23.0±1               | /        |
|         |       |           |       | 3                | 0            | 21.57               | 23.0±1               | /        |
|         |       |           |       | 3                | 1            | 21.48               | 23.0±1               | /        |
|         |       |           |       | 3                | 2            | 21.36               | 23.0±1               | /        |
|         |       |           |       | 6                | 0            | 20.63               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 20.38               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 2            | 20.31               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 5            | 20.32               | 22.0±1               | 1.0      |
|         |       |           |       | 3                | 0            | 20.57               | 22.0±1               | 1.0      |
|         |       |           |       | 3                | 1            | 20.56               | 22.0±1               | 1.0      |
|         |       |           |       | 3                | 2            | 20.34               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 0            | 19.5                | 22.0±1               | 1.0      |
|         | 20393 | 1754.3    | QPSK  | 1                | 0            | 21.32               | 23.0±1               | /        |
|         |       |           |       | 1                | 2            | 21.34               | 23.0±1               | /        |
|         |       |           |       | 1                | 5            | 21.33               | 23.0±1               | /        |
|         |       |           |       | 3                | 0            | 21.49               | 23.0±1               | /        |
|         |       |           |       | 3                | 1            | 21.31               | 23.0±1               | /        |
|         |       |           |       | 3                | 2            | 21.37               | 23.0±1               | /        |
|         |       |           |       | 6                | 0            | 20.45               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 20.43               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 2            | 20.41               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 5            | 20.06               | 22.0±1               | 1.0      |
|         |       |           |       | 3                | 0            | 20.33               | 22.0±1               | 1.0      |
|         |       |           |       | 3                | 1            | 20.24               | 22.0±1               | 1.0      |
|         |       |           |       | 3                | 2            | 20.27               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 0            | 19.66               | 22.0±1               | 1.0      |

| BW(MHz) | Ch    | Freq(MHz) | Mode  | UL RB Allocation | UL RB Offset | Average Power (dbm) | Tune up limited(dBm) | MPR (dB) |
|---------|-------|-----------|-------|------------------|--------------|---------------------|----------------------|----------|
| 3MHz    | 19965 | 1711.5    | QPSK  | 1                | 0            | 21.16               | 23.0±1               | /        |
|         |       |           |       | 1                | 8            | 21.41               | 23.0±1               | /        |
|         |       |           |       | 1                | 14           | 21.33               | 23.0±1               | /        |
|         |       |           |       | 6                | 0            | 20.18               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 4            | 20.38               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 9            | 20.37               | 22.0±1               | 1.0      |
|         |       |           |       | 15               | 0            | 20.31               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 20.1                | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 8            | 20.47               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 14           | 20.37               | 22.0±1               | 1.0      |
|         |       |           |       | 8                | 0            | 19.12               | 22.0±1               | 1.0      |
|         |       |           |       | 8                | 4            | 18.99               | 22.0±1               | 1.0      |
|         |       |           |       | 8                | 9            | 19.32               | 22.0±1               | 1.0      |
|         |       |           |       | 15               | 0            | 18.99               | 22.0±1               | 1.0      |
|         | 20175 | 1732.5    | QPSK  | 1                | 0            | 21.27               | 23.0±1               | /        |
|         |       |           |       | 1                | 8            | 21.17               | 23.0±1               | /        |
|         |       |           |       | 1                | 14           | 21.24               | 23.0±1               | /        |
|         |       |           |       | 6                | 0            | 20.25               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 4            | 20.19               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 9            | 20.15               | 22.0±1               | 1.0      |
|         |       |           |       | 15               | 0            | 20.33               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 19.94               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 8            | 19.48               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 14           | 19.56               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 0            | 19.39               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 4            | 19.15               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 9            | 19.09               | 22.0±1               | 1.0      |
|         |       |           |       | 15               | 0            | 19.36               | 22.0±1               | 1.0      |
|         | 20385 | 1753.5    | QPSK  | 1                | 0            | 21.01               | 23.0±1               | /        |
|         |       |           |       | 1                | 8            | 21.11               | 23.0±1               | /        |
|         |       |           |       | 1                | 14           | 21.27               | 23.0±1               | /        |
|         |       |           |       | 6                | 0            | 20.17               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 4            | 20.14               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 9            | 20.15               | 22.0±1               | 1.0      |
|         |       |           |       | 15               | 0            | 20.29               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 20.14               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 8            | 20.21               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 14           | 20                  | 22.0±1               | 1.0      |
|         |       |           |       | 8                | 0            | 19.28               | 22.0±1               | 1.0      |
|         |       |           |       | 8                | 4            | 19.44               | 22.0±1               | 1.0      |
|         |       |           |       | 8                | 9            | 19.34               | 22.0±1               | 1.0      |
|         |       |           |       | 15               | 0            | 19.25               | 22.0±1               | 1.0      |

| BW(MHz) | Ch    | Freq(MHz) | Mode  | UL RB Allocation | UL RB Offset | Average Power (dbm) | Tune up limited(dBm) | MPR (dB) |
|---------|-------|-----------|-------|------------------|--------------|---------------------|----------------------|----------|
| 5MHz    | 19975 | 1712.5    | QPSK  | 1                | 0            | 20.97               | 23.0±1               | /        |
|         |       |           |       | 1                | 49           | 21.02               | 23.0±1               | /        |
|         |       |           |       | 1                | 99           | 20.97               | 23.0±1               | /        |
|         |       |           |       | 12               | 0            | 19.89               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 24           | 20.1                | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 49           | 20.06               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 0            | 19.88               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 19.47               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 49           | 19.91               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 99           | 19.7                | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 0            | 18.81               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 24           | 18.91               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 49           | 19.17               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 0            | 19.05               | 22.0±1               | 1.0      |
|         | 20175 | 1732.5    | QPSK  | 1                | 0            | 20.96               | 23.0±1               | /        |
|         |       |           |       | 1                | 49           | 20.87               | 23.0±1               | /        |
|         |       |           |       | 1                | 99           | 20.97               | 23.0±1               | /        |
|         |       |           |       | 12               | 0            | 20.05               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 24           | 19.99               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 49           | 19.93               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 0            | 20.04               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 20.15               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 49           | 19.64               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 99           | 19.67               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 0            | 18.99               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 24           | 19.03               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 49           | 18.97               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 0            | 19.19               | 22.0±1               | 1.0      |
|         | 20375 | 1752.5    | QPSK  | 1                | 0            | 20.87               | 23.0±1               | /        |
|         |       |           |       | 1                | 49           | 21.04               | 23.0±1               | /        |
|         |       |           |       | 1                | 99           | 21.03               | 23.0±1               | /        |
|         |       |           |       | 12               | 0            | 20.04               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 24           | 19.94               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 49           | 20.13               | 22.0±1               | 1.0      |

|  |  |  |       |    |    |       |        |     |
|--|--|--|-------|----|----|-------|--------|-----|
|  |  |  |       | 25 | 0  | 20.1  | 22.0±1 | 1.0 |
|  |  |  | 16QAM | 1  | 0  | 19.68 | 22.0±1 | 1.0 |
|  |  |  |       | 1  | 49 | 19.66 | 22.0±1 | 1.0 |
|  |  |  |       | 1  | 99 | 19.52 | 22.0±1 | 1.0 |
|  |  |  |       | 12 | 0  | 18.99 | 22.0±1 | 1.0 |
|  |  |  |       | 12 | 24 | 19.06 | 22.0±1 | 1.0 |
|  |  |  |       | 12 | 49 | 19.07 | 22.0±1 | 1.0 |
|  |  |  |       | 25 | 0  | 19.27 | 22.0±1 | 1.0 |

| BW(MHz) | Ch    | Freq(MHz) | Mode  | UL RB Allocation | UL RB Offset | Average Power (dbm) | Tune up limited(dBm) | MPR (dB) |
|---------|-------|-----------|-------|------------------|--------------|---------------------|----------------------|----------|
| 10MHz   | 20000 | 1715      | QPSK  | 1                | 0            | 21.01               | 23.0±1               | /        |
|         |       |           |       | 1                | 49           | 21.17               | 23.0±1               | /        |
|         |       |           |       | 1                | 99           | 21.4                | 23.0±1               | /        |
|         |       |           |       | 25               | 0            | 19.96               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 24           | 20.08               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 49           | 20.14               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 0            | 19.99               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 20.21               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 49           | 20.4                | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 99           | 20.64               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 0            | 18.81               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 24           | 19.22               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 49           | 19.27               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 0            | 18.99               | 22.0±1               | 1.0      |
|         | 20175 | 1732.5    | QPSK  | 1                | 0            | 20.94               | 23.0±1               | /        |
|         |       |           |       | 1                | 49           | 20.99               | 23.0±1               | /        |
|         |       |           |       | 1                | 99           | 20.91               | 23.0±1               | /        |
|         |       |           |       | 25               | 0            | 19.92               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 24           | 19.87               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 49           | 19.84               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 0            | 19.88               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 20.13               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 49           | 19.23               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 99           | 19.62               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 0            | 19.17               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 24           | 18.88               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 49           | 18.93               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 0            | 18.8                | 22.0±1               | 1.0      |
|         | 20350 | 1750      | QPSK  | 1                | 0            | 20.75               | 23.0±1               | /        |
|         |       |           |       | 1                | 49           | 21.06               | 23.0±1               | /        |
|         |       |           |       | 1                | 99           | 20.84               | 23.0±1               | /        |
|         |       |           |       | 25               | 0            | 19.61               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 24           | 19.84               | 22.0±1               | 1.0      |

|  |  |  |       |    |    |       |        |     |
|--|--|--|-------|----|----|-------|--------|-----|
|  |  |  |       | 25 | 49 | 19.91 | 22.0±1 | 1.0 |
|  |  |  |       | 50 | 0  | 19.78 | 22.0±1 | 1.0 |
|  |  |  | 16QAM | 1  | 0  | 19.55 | 22.0±1 | 1.0 |
|  |  |  |       | 1  | 49 | 19.73 | 22.0±1 | 1.0 |
|  |  |  |       | 1  | 99 | 19.51 | 22.0±1 | 1.0 |
|  |  |  |       | 25 | 0  | 18.61 | 22.0±1 | 1.0 |
|  |  |  |       | 25 | 24 | 19.03 | 22.0±1 | 1.0 |
|  |  |  |       | 25 | 49 | 19.2  | 22.0±1 | 1.0 |
|  |  |  |       | 50 | 0  | 18.73 | 22.0±1 | 1.0 |

| BW(MHz) | Ch    | Freq(MHz) | Mode  | UL RB Allocation | UL RB Offset | Average Power (dbm) | Tune up limited(dBm) | MPR (dB) |
|---------|-------|-----------|-------|------------------|--------------|---------------------|----------------------|----------|
| 15MHz   | 20025 | 1717.5    | QPSK  | 1                | 0            | 21.57               | 23.0±1               | /        |
|         |       |           |       | 1                | 49           | 21.03               | 23.0±1               | /        |
|         |       |           |       | 1                | 99           | 21.04               | 23.0±1               | /        |
|         |       |           |       | 36               | 0            | 19.95               | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 24           | 20                  | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 49           | 20.16               | 22.0±1               | 1.0      |
|         |       |           |       | 75               | 0            | 19.98               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 19.64               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 49           | 20.59               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 99           | 20.6                | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 0            | 18.87               | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 24           | 19.1                | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 49           | 18.98               | 22.0±1               | 1.0      |
|         |       |           |       | 75               | 0            | 18.99               | 22.0±1               | 1.0      |
|         | 20175 | 1732.5    | QPSK  | 1                | 0            | 20.85               | 23.0±1               | /        |
|         |       |           |       | 1                | 49           | 20.67               | 23.0±1               | /        |
|         |       |           |       | 1                | 99           | 20.51               | 23.0±1               | /        |
|         |       |           |       | 36               | 0            | 19.86               | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 24           | 19.69               | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 49           | 19.78               | 22.0±1               | 1.0      |
|         |       |           |       | 75               | 0            | 19.77               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 19.83               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 49           | 19.1                | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 99           | 19.29               | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 0            | 18.96               | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 24           | 18.79               | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 49           | 18.77               | 22.0±1               | 1.0      |
|         |       |           |       | 75               | 0            | 18.95               | 22.0±1               | 1.0      |
|         | 20325 | 1747.5    | QPSK  | 1                | 0            | 20.53               | 23.0±1               | /        |
|         |       |           |       | 1                | 49           | 20.48               | 23.0±1               | /        |
|         |       |           |       | 1                | 99           | 20.67               | 23.0±1               | /        |
|         |       |           |       | 36               | 0            | 19.52               | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 24           | 19.52               | 22.0±1               | 1.0      |
|         |       |           |       | 36               | 49           | 19.87               | 22.0±1               | 1.0      |
|         |       |           |       | 75               | 0            | 19.63               | 22.0±1               | 1.0      |

|  |  |  |       |    |    |       |        |     |
|--|--|--|-------|----|----|-------|--------|-----|
|  |  |  | 16QAM | 1  | 0  | 20.03 | 22.0±1 | 1.0 |
|  |  |  |       | 1  | 49 | 20.75 | 22.0±1 | 1.0 |
|  |  |  |       | 1  | 99 | 20.31 | 22.0±1 | 1.0 |
|  |  |  |       | 36 | 0  | 18.52 | 22.0±1 | 1.0 |
|  |  |  |       | 36 | 24 | 18.73 | 22.0±1 | 1.0 |
|  |  |  |       | 36 | 49 | 18.78 | 22.0±1 | 1.0 |
|  |  |  |       | 75 | 0  | 18.68 | 22.0±1 | 1.0 |

| BW(MHz) | Ch    | Freq(MHz) | Mode  | UL RB Allocation | UL RB Offset | Average Power (dbm) | Tune up limited(dBm) | MPR (dB) |
|---------|-------|-----------|-------|------------------|--------------|---------------------|----------------------|----------|
| 20MHz   | 20050 | 1720      | QPSK  | 1                | 0            | 21.01               | 23.0±1               | /        |
|         |       |           |       | 1                | 49           | 21.11               | 23.0±1               | /        |
|         |       |           |       | 1                | 99           | 20.62               | 23.0±1               | /        |
|         |       |           |       | 50               | 0            | 19.96               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 24           | 20.07               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 49           | 20.02               | 22.0±1               | 1.0      |
|         |       |           |       | 100              | 0            | 19.95               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 19.79               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 49           | 19.85               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 99           | 19.46               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 0            | 19.02               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 24           | 19.23               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 49           | 19.17               | 22.0±1               | 1.0      |
|         |       |           |       | 100              | 0            | 19.13               | 22.0±1               | 1.0      |
|         | 20175 | 1732.5    | QPSK  | 1                | 0            | 21.3                | 23.0±1               | /        |
|         |       |           |       | 1                | 49           | 20.85               | 23.0±1               | /        |
|         |       |           |       | 1                | 99           | 20.65               | 23.0±1               | /        |
|         |       |           |       | 50               | 0            | 19.86               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 24           | 19.72               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 49           | 19.65               | 22.0±1               | 1.0      |
|         |       |           |       | 100              | 0            | 19.81               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 20.22               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 49           | 19.54               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 99           | 19.12               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 0            | 18.96               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 24           | 18.53               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 49           | 18.56               | 22.0±1               | 1.0      |
|         |       |           |       | 100              | 0            | 18.85               | 22.0±1               | 1.0      |
|         | 20300 | 1745      | QPSK  | 1                | 0            | 20.58               | 23.0±1               | /        |
|         |       |           |       | 1                | 49           | 20.55               | 23.0±1               | /        |
|         |       |           |       | 1                | 99           | 20.64               | 23.0±1               | /        |
|         |       |           |       | 50               | 0            | 19.72               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 24           | 19.58               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 49           | 19.58               | 22.0±1               | 1.0      |
|         |       |           |       | 100              | 0            | 19.63               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 19.5                | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 49           | 19.36               | 22.0±1               | 1.0      |

|  |  |  |  |     |    |       |        |     |
|--|--|--|--|-----|----|-------|--------|-----|
|  |  |  |  | 1   | 99 | 19.4  | 22.0±1 | 1.0 |
|  |  |  |  | 50  | 0  | 18.75 | 22.0±1 | 1.0 |
|  |  |  |  | 50  | 24 | 18.48 | 22.0±1 | 1.0 |
|  |  |  |  | 50  | 49 | 18.58 | 22.0±1 | 1.0 |
|  |  |  |  | 100 | 0  | 18.48 | 22.0±1 | 1.0 |

## LTE Band 12:

| BW(MHz) | Ch    | Freq(MHz) | Mode  | UL RB Allocation | UL RB Offset | Average Power (dbm) | Tune up limited(dBm) | MPR (dB) |
|---------|-------|-----------|-------|------------------|--------------|---------------------|----------------------|----------|
| 1.4MHz  | 23017 | 699.7     | QPSK  | 1                | 0            | 22.81               | 23.0±1               | /        |
|         |       |           |       | 1                | 2            | 22.7                | 23.0±1               | /        |
|         |       |           |       | 1                | 5            | 23.06               | 23.0±1               | /        |
|         |       |           |       | 3                | 0            | 22.87               | 23.0±1               | /        |
|         |       |           |       | 3                | 1            | 22.76               | 23.0±1               | /        |
|         |       |           |       | 3                | 2            | 22.82               | 23.0±1               | /        |
|         |       |           | 16QAM | 6                | 0            | 21.98               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 0            | 21.95               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 2            | 21.68               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 5            | 21.66               | 22.0±1               | 1.0      |
|         |       |           |       | 3                | 0            | 21.96               | 22.0±1               | 1.0      |
|         |       |           |       | 3                | 1            | 21.96               | 22.0±1               | 1.0      |
|         | 23095 | 707.5     | QPSK  | 3                | 2            | 21.83               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 0            | 21.22               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 0            | 22.56               | 23.0±1               | /        |
|         |       |           |       | 1                | 2            | 22.73               | 23.0±1               | /        |
|         |       |           |       | 1                | 5            | 22.72               | 23.0±1               | /        |
|         |       |           |       | 3                | 0            | 22.69               | 23.0±1               | /        |
|         |       |           | 16QAM | 3                | 1            | 22.88               | 23.0±1               | /        |
|         |       |           |       | 3                | 2            | 22.8                | 23.0±1               | /        |
|         |       |           |       | 6                | 0            | 21.9                | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 0            | 21.77               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 2            | 21.75               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 5            | 21.73               | 22.0±1               | 1.0      |
|         | 23173 | 715.3     | QPSK  | 3                | 0            | 21.83               | 22.0±1               | 1.0      |
|         |       |           |       | 3                | 1            | 21.83               | 22.0±1               | 1.0      |
|         |       |           |       | 3                | 2            | 21.95               | 22.0±1               | 1.0      |
|         |       |           |       | 6                | 0            | 20.64               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 22.79               | 23.0±1               | /        |
|         |       |           |       | 1                | 2            | 23.01               | 23.0±1               | /        |
|         |       |           |       | 1                | 5            | 23.17               | 23.0±1               | /        |
|         |       |           |       | 3                | 0            | 22.83               | 23.0±1               | /        |
|         |       |           |       | 3                | 1            | 23.09               | 23.0±1               | /        |
|         |       |           |       | 3                | 2            | 22.74               | 23.0±1               | /        |
|         |       |           |       | 6                | 0            | 21.87               | 22.0±1               | 1.0      |

|  |  |  |  |   |   |       |        |     |
|--|--|--|--|---|---|-------|--------|-----|
|  |  |  |  | 1 | 2 | 21.78 | 22.0±1 | 1.0 |
|  |  |  |  | 1 | 5 | 22    | 22.0±1 | 1.0 |
|  |  |  |  | 3 | 0 | 21.64 | 22.0±1 | 1.0 |
|  |  |  |  | 3 | 1 | 22.51 | 22.0±1 | 1.0 |
|  |  |  |  | 3 | 2 | 22.19 | 22.0±1 | 1.0 |
|  |  |  |  | 6 | 0 | 20.95 | 22.0±1 | 1.0 |

| BW(MHz) | Ch    | Freq(MHz) | Mode  | UL RB Allocation | UL RB Offset | Average Power (dbm) | Tune up limited(dBm) | MPR (dB) |
|---------|-------|-----------|-------|------------------|--------------|---------------------|----------------------|----------|
| 3MHz    | 23025 | 700.5     | QPSK  | 1                | 0            | 22.81               | 23.0±1               | /        |
|         |       |           |       | 1                | 8            | 22.84               | 23.0±1               | /        |
|         |       |           |       | 1                | 14           | 22.72               | 23.0±1               | /        |
|         |       |           |       | 8                | 0            | 22                  | 22.0±1               | 1.0      |
|         |       |           |       | 8                | 4            | 22                  | 22.0±1               | 1.0      |
|         |       |           |       | 8                | 9            | 21.9                | 22.0±1               | 1.0      |
|         |       |           |       | 15               | 0            | 21.99               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 21.83               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 8            | 21.7                | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 14           | 21.57               | 22.0±1               | 1.0      |
|         |       |           |       | 8                | 0            | 20.81               | 22.0±1               | 1.0      |
|         |       |           |       | 8                | 4            | 20.86               | 22.0±1               | 1.0      |
|         |       |           |       | 8                | 9            | 20.67               | 22.0±1               | 1.0      |
|         |       |           |       | 15               | 0            | 20.94               | 22.0±1               | 1.0      |
|         | 23095 | 707.5     | QPSK  | 1                | 0            | 22.97               | 23.0±1               | /        |
|         |       |           |       | 1                | 8            | 23.04               | 23.0±1               | /        |
|         |       |           |       | 1                | 14           | 22.98               | 23.0±1               | /        |
|         |       |           |       | 8                | 0            | 21.8                | 22.0±1               | 1.0      |
|         |       |           |       | 8                | 4            | 21.89               | 22.0±1               | 1.0      |
|         |       |           |       | 8                | 9            | 22.07               | 22.0±1               | 1.0      |
|         |       |           |       | 15               | 0            | 21.81               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 21.86               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 8            | 21.58               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 14           | 21.63               | 22.0±1               | 1.0      |
|         |       |           |       | 8                | 0            | 20.77               | 22.0±1               | 1.0      |
|         |       |           |       | 8                | 4            | 20.79               | 22.0±1               | 1.0      |
|         |       |           |       | 8                | 9            | 21.01               | 22.0±1               | 1.0      |
|         |       |           |       | 15               | 0            | 20.85               | 22.0±1               | 1.0      |
|         | 23165 | 714.5     | QPSK  | 1                | 0            | 22.78               | 23.0±1               | /        |
|         |       |           |       | 1                | 8            | 22.7                | 23.0±1               | /        |
|         |       |           |       | 1                | 14           | 22.72               | 23.0±1               | /        |
|         |       |           |       | 8                | 0            | 21.93               | 22.0±1               | 1.0      |
|         |       |           |       | 8                | 4            | 21.88               | 22.0±1               | 1.0      |
|         |       |           |       | 8                | 9            | 21.9                | 22.0±1               | 1.0      |
|         |       |           |       | 15               | 0            | 21.92               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 22.11               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 8            | 21.62               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 14           | 21.64               | 22.0±1               | 1.0      |
|         |       |           |       | 8                | 0            | 20.9                | 22.0±1               | 1.0      |
|         |       |           |       | 8                | 4            | 20.83               | 22.0±1               | 1.0      |
|         |       |           |       | 8                | 9            | 20.65               | 22.0±1               | 1.0      |
|         |       |           |       | 15               | 0            | 20.59               | 22.0±1               | 1.0      |

| BW(MHz) | Ch    | Freq(MHz) | Mode  | UL RB Allocation | UL RB Offset | Average Power (dbm) | Tune up limited(dBm) | MPR (dB) |
|---------|-------|-----------|-------|------------------|--------------|---------------------|----------------------|----------|
| 5MHz    | 23035 | 701.5     | QPSK  | 1                | 0            | 22.84               | 23.0±1               | /        |
|         |       |           |       | 1                | 49           | 22.7                | 23.0±1               | /        |
|         |       |           |       | 1                | 99           | 22.84               | 23.0±1               | /        |
|         |       |           |       | 12               | 0            | 22.02               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 24           | 21.77               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 49           | 21.72               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 0            | 21.93               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 21.69               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 49           | 21.35               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 99           | 21.2                | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 0            | 21.01               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 24           | 20.68               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 49           | 20.73               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 0            | 20.98               | 22.0±1               | 1.0      |
|         | 23095 | 707.5     | QPSK  | 1                | 0            | 22.72               | 23.0±1               | /        |
|         |       |           |       | 1                | 49           | 22.85               | 23.0±1               | /        |
|         |       |           |       | 1                | 99           | 22.91               | 23.0±1               | /        |
|         |       |           |       | 12               | 0            | 21.88               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 24           | 21.97               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 49           | 21.95               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 0            | 21.89               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 21.95               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 49           | 21.91               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 99           | 21.88               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 0            | 20.72               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 24           | 21.01               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 49           | 21                  | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 0            | 20.97               | 22.0±1               | 1.0      |
|         | 23155 | 713.5     | QPSK  | 1                | 0            | 22.81               | 23.0±1               | /        |
|         |       |           |       | 1                | 49           | 22.88               | 23.0±1               | /        |
|         |       |           |       | 1                | 99           | 22.5                | 23.0±1               | /        |
|         |       |           |       | 12               | 0            | 21.93               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 24           | 21.84               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 49           | 21.77               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 0            | 21.76               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 21.84               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 49           | 21.15               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 99           | 21.43               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 0            | 20.69               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 24           | 20.85               | 22.0±1               | 1.0      |
|         |       |           |       | 12               | 49           | 20.77               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 0            | 20.77               | 22.0±1               | 1.0      |

| BW(MHz) | Ch    | Freq(MHz) | Mode  | UL RB Allocation | UL RB Offset | Average Power (dbm) | Tune up limited(dBm) | MPR (dB) |
|---------|-------|-----------|-------|------------------|--------------|---------------------|----------------------|----------|
| 10MHz   | 23060 | 704       | QPSK  | 1                | 0            | 23.05               | 23.0±1               | /        |
|         |       |           |       | 1                | 49           | 23.11               | 23.0±1               | /        |
|         |       |           |       | 1                | 99           | 22.78               | 23.0±1               | /        |
|         |       |           |       | 25               | 0            | 21.65               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 24           | 21.81               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 49           | 21.83               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 0            | 21.77               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 21.68               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 49           | 21.65               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 99           | 21.71               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 0            | 20.74               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 24           | 20.83               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 49           | 20.75               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 0            | 20.79               | 22.0±1               | 1.0      |
|         | 23095 | 707.5     | QPSK  | 1                | 0            | 22.73               | 23.0±1               | /        |
|         |       |           |       | 1                | 49           | 23.06               | 23.0±1               | /        |
|         |       |           |       | 1                | 99           | 22.61               | 23.0±1               | /        |
|         |       |           |       | 25               | 0            | 21.74               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 24           | 21.89               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 49           | 21.89               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 0            | 21.77               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 21.45               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 49           | 21.62               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 99           | 21.53               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 0            | 20.82               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 24           | 20.91               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 49           | 20.84               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 0            | 20.63               | 22.0±1               | 1.0      |
|         | 23130 | 711       | QPSK  | 1                | 0            | 22.73               | 23.0±1               | /        |
|         |       |           |       | 1                | 49           | 23.3                | 23.0±1               | /        |
|         |       |           |       | 1                | 99           | 22.53               | 23.0±1               | /        |
|         |       |           |       | 25               | 0            | 21.91               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 24           | 21.87               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 49           | 21.82               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 0            | 21.83               | 22.0±1               | 1.0      |
|         |       |           | 16QAM | 1                | 0            | 21.56               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 49           | 21.98               | 22.0±1               | 1.0      |
|         |       |           |       | 1                | 99           | 21.56               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 0            | 21.13               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 24           | 20.91               | 22.0±1               | 1.0      |
|         |       |           |       | 25               | 49           | 20.78               | 22.0±1               | 1.0      |
|         |       |           |       | 50               | 0            | 20.8                | 22.0±1               | 1.0      |

**ERP and EIRP****LTE Band 2**

| Frequency                                 | Receiver Reading | Turn table Angle | RX Antenna |       | Substituted |       |              | Absolute Level | Part 24E |        |
|-------------------------------------------|------------------|------------------|------------|-------|-------------|-------|--------------|----------------|----------|--------|
|                                           |                  |                  | Height     | Polar | SG Level    | Cable | Antenna Gain |                | Limit    | Margin |
| (MHz)                                     | (dBμV)           | Degree           | (m)        | (H/V) | (dBm)       | (dB)  | (dB)         | (dBm)          | (dBm)    | (dB)   |
| LTE Band 2 Channel 18607 – 1.4MHz – QPSK  |                  |                  |            |       |             |       |              |                |          |        |
| 1850.70                                   | 85.60            | 33               | 2.3        | H     | 11.63       | 0.31  | 10.40        | 21.72          | 33       | -11.28 |
| 1850.70                                   | 85.00            | 325              | 1.6        | V     | 11.72       | 0.31  | 10.40        | 21.81          | 33       | -11.19 |
| LTE Band 2 Channel 18900 – 1.4MHz – QPSK  |                  |                  |            |       |             |       |              |                |          |        |
| 1909.30                                   | 85.54            | 138              | 1.9        | H     | 11.81       | 0.32  | 10.40        | 21.89          | 33       | -11.11 |
| 1909.30                                   | 84.70            | 323              | 1.7        | V     | 11.74       | 0.32  | 10.40        | 21.82          | 33       | -11.18 |
| LTE Band 2 Channel 19193 – 1.4MHz – QPSK  |                  |                  |            |       |             |       |              |                |          |        |
| 1909.30                                   | 85.54            | 138              | 1.9        | H     | 11.81       | 0.32  | 10.40        | 21.89          | 33       | -11.11 |
| 1909.30                                   | 84.70            | 323              | 1.7        | V     | 11.74       | 0.32  | 10.40        | 21.82          | 33       | -11.18 |
| LTE Band 2 Channel 18607 – 1.4MHz – 16QAM |                  |                  |            |       |             |       |              |                |          |        |
| 1850.70                                   | 85.63            | 329              | 1.7        | H     | 11.66       | 0.31  | 10.40        | 21.75          | 33       | -11.25 |
| 1850.70                                   | 84.89            | 212              | 1.7        | V     | 11.61       | 0.31  | 10.40        | 21.70          | 33       | -11.30 |
| LTE Band 2 Channel 18900 – 1.4MHz – 16QAM |                  |                  |            |       |             |       |              |                |          |        |
| 1880.00                                   | 85.83            | 152              | 2.3        | H     | 11.98       | 0.31  | 10.40        | 22.07          | 33       | -10.93 |
| 1880.00                                   | 84.87            | 131              | 1.4        | V     | 11.75       | 0.31  | 10.40        | 21.84          | 33       | -11.16 |
| LTE Band 2 Channel 19193 – 1.4MHz – 16QAM |                  |                  |            |       |             |       |              |                |          |        |
| 1909.30                                   | 85.43            | 194              | 1.7        | H     | 11.70       | 0.32  | 10.40        | 21.78          | 33       | -11.22 |
| 1909.30                                   | 84.65            | 211              | 2.2        | V     | 11.69       | 0.32  | 10.40        | 21.77          | 33       | -11.23 |
| LTE Band 2 Channel 18615 – 3MHz – QPSK    |                  |                  |            |       |             |       |              |                |          |        |
| 1851.50                                   | 85.90            | 141              | 1.6        | H     | 11.93       | 0.31  | 10.40        | 22.02          | 33       | -10.98 |
| 1851.50                                   | 85.10            | 151              | 1.4        | V     | 11.82       | 0.31  | 10.40        | 21.91          | 33       | -11.09 |
| LTE Band 2 Channel 18900 – 3MHz – QPSK    |                  |                  |            |       |             |       |              |                |          |        |
| 1880.00                                   | 85.49            | 235              | 2.3        | H     | 11.64       | 0.31  | 10.40        | 21.73          | 33       | -11.27 |
| 1880.00                                   | 85.02            | 241              | 1.4        | V     | 11.90       | 0.31  | 10.40        | 21.99          | 33       | -11.01 |
| LTE Band 2 Channel 19185 – 3MHz – QPSK    |                  |                  |            |       |             |       |              |                |          |        |
| 1908.50                                   | 85.30            | 236              | 2.4        | H     | 11.57       | 0.32  | 10.40        | 21.65          | 33       | -11.35 |
| 1908.50                                   | 84.87            | 48               | 1.2        | V     | 11.91       | 0.32  | 10.40        | 21.99          | 33       | -11.01 |
| LTE Band 2 Channel 18615 – 3MHz – 16QAM   |                  |                  |            |       |             |       |              |                |          |        |
| 1851.50                                   | 85.43            | 288              | 2.4        | H     | 11.46       | 0.31  | 10.40        | 21.55          | 33       | -11.45 |
| 1851.50                                   | 85.00            | 95               | 1.6        | V     | 11.72       | 0.31  | 10.40        | 21.81          | 33       | -11.19 |
| LTE Band 2 Channel 18900 – 3MHz – 16QAM   |                  |                  |            |       |             |       |              |                |          |        |

|                                          |       |     |     |   |       |      |       |       |    |        |
|------------------------------------------|-------|-----|-----|---|-------|------|-------|-------|----|--------|
| 1880.00                                  | 85.47 | 278 | 1.1 | H | 11.62 | 0.31 | 10.40 | 21.71 | 33 | -11.29 |
| 1880.00                                  | 84.81 | 340 | 2.4 | V | 11.69 | 0.31 | 10.40 | 21.78 | 33 | -11.22 |
| LTE Band 2 Channel 19185 – 3MHz – 16QAM  |       |     |     |   |       |      |       |       |    |        |
| 1908.50                                  | 85.89 | 115 | 1.8 | H | 12.16 | 0.32 | 10.40 | 22.24 | 33 | -10.76 |
| 1908.50                                  | 84.75 | 108 | 1.4 | V | 11.79 | 0.32 | 10.40 | 21.87 | 33 | -11.13 |
| LTE Band 2 Channel 18625 – 5MHz – QPSK   |       |     |     |   |       |      |       |       |    |        |
| 1852.50                                  | 85.78 | 129 | 1.2 | H | 11.81 | 0.31 | 10.40 | 21.90 | 33 | -11.10 |
| 1852.50                                  | 84.69 | 171 | 1.0 | V | 11.41 | 0.31 | 10.40 | 21.50 | 33 | -11.50 |
| LTE Band 2 Channel 18900 – 5MHz – QPSK   |       |     |     |   |       |      |       |       |    |        |
| 1880.00                                  | 85.58 | 39  | 1.9 | H | 11.73 | 0.31 | 10.40 | 21.82 | 33 | -11.18 |
| 1880.00                                  | 84.92 | 35  | 1.8 | V | 11.80 | 0.31 | 10.40 | 21.89 | 33 | -11.11 |
| LTE Band 2 Channel 19175 – 5MHz – QPSK   |       |     |     |   |       |      |       |       |    |        |
| 1907.50                                  | 85.46 | 72  | 2.3 | H | 11.73 | 0.32 | 10.40 | 21.81 | 33 | -11.19 |
| 1907.50                                  | 84.85 | 67  | 2.3 | V | 11.89 | 0.32 | 10.40 | 21.97 | 33 | -11.03 |
| LTE Band 2 Channel 18625 – 5MHz – 16QAM  |       |     |     |   |       |      |       |       |    |        |
| 1852.50                                  | 85.60 | 131 | 1.3 | H | 11.63 | 0.31 | 10.40 | 21.72 | 33 | -11.28 |
| 1852.50                                  | 85.10 | 120 | 1.3 | V | 11.82 | 0.31 | 10.40 | 21.91 | 33 | -11.09 |
| LTE Band 2 Channel 18900 – 5MHz – 16QAM  |       |     |     |   |       |      |       |       |    |        |
| 1880.00                                  | 85.44 | 358 | 1.4 | H | 11.59 | 0.31 | 10.40 | 21.68 | 33 | -11.32 |
| 1880.00                                  | 85.00 | 177 | 2.1 | V | 11.88 | 0.31 | 10.40 | 21.97 | 33 | -11.03 |
| LTE Band 2 Channel 19175 – 5MHz – 16QAM  |       |     |     |   |       |      |       |       |    |        |
| 1907.50                                  | 85.59 | 191 | 2.2 | H | 11.86 | 0.32 | 10.40 | 21.94 | 33 | -11.06 |
| 1907.50                                  | 84.97 | 294 | 1.9 | V | 12.01 | 0.32 | 10.40 | 22.09 | 33 | -10.91 |
| LTE Band 2 Channel 18650 – 10MHz – QPSK  |       |     |     |   |       |      |       |       |    |        |
| 1855.00                                  | 85.33 | 170 | 2.4 | H | 11.36 | 0.31 | 10.40 | 21.45 | 33 | -11.55 |
| 1855.00                                  | 85.46 | 317 | 1.9 | V | 12.18 | 0.31 | 10.40 | 22.27 | 33 | -10.73 |
| LTE Band 2 Channel 18900 – 10MHz – QPSK  |       |     |     |   |       |      |       |       |    |        |
| 1880.00                                  | 85.41 | 65  | 1.6 | H | 11.56 | 0.31 | 10.40 | 21.65 | 33 | -11.35 |
| 1880.00                                  | 85.63 | 26  | 2.1 | V | 12.51 | 0.31 | 10.40 | 22.60 | 33 | -10.40 |
| LTE Band 2 Channel 19150 – 10MHz – QPSK  |       |     |     |   |       |      |       |       |    |        |
| 1905.00                                  | 85.76 | 183 | 1.3 | H | 12.03 | 0.32 | 10.40 | 22.11 | 33 | -10.89 |
| 1905.00                                  | 85.49 | 285 | 1.5 | V | 12.53 | 0.32 | 10.40 | 22.61 | 33 | -10.39 |
| LTE Band 2 Channel 18650 – 10MHz – 16QAM |       |     |     |   |       |      |       |       |    |        |
| 1855.00                                  | 85.86 | 16  | 1.7 | H | 11.89 | 0.31 | 10.40 | 21.98 | 33 | -11.02 |
| 1855.00                                  | 85.37 | 188 | 1.2 | V | 12.09 | 0.31 | 10.40 | 22.18 | 33 | -10.82 |
| LTE Band 2 Channel 18900 – 10MHz – 16QAM |       |     |     |   |       |      |       |       |    |        |

|                                          |       |     |     |   |       |      |       |       |    |        |
|------------------------------------------|-------|-----|-----|---|-------|------|-------|-------|----|--------|
| 1880.00                                  | 85.53 | 211 | 1.4 | H | 11.68 | 0.31 | 10.40 | 21.77 | 33 | -11.23 |
| 1880.00                                  | 85.59 | 279 | 1.3 | V | 12.47 | 0.31 | 10.40 | 22.56 | 33 | -10.44 |
| LTE Band 2 Channel 19150 – 10MHz – 16QAM |       |     |     |   |       |      |       |       |    |        |
| 1905.00                                  | 85.82 | 303 | 1.4 | H | 12.09 | 0.32 | 10.40 | 22.17 | 33 | -10.83 |
| 1905.00                                  | 85.04 | 131 | 2.1 | V | 12.08 | 0.32 | 10.40 | 22.16 | 33 | -10.84 |
| LTE Band 2 Channel 18675 – 15MHz – QPSK  |       |     |     |   |       |      |       |       |    |        |
| 1857.50                                  | 85.67 | 18  | 1.5 | H | 11.70 | 0.31 | 10.40 | 21.79 | 33 | -11.21 |
| 1857.50                                  | 85.15 | 88  | 2.1 | V | 11.87 | 0.31 | 10.40 | 21.96 | 33 | -11.04 |
| LTE Band 2 Channel 18900 – 15MHz – QPSK  |       |     |     |   |       |      |       |       |    |        |
| 1880.00                                  | 85.76 | 355 | 2.2 | H | 11.91 | 0.31 | 10.40 | 22.00 | 33 | -11.00 |
| 1880.00                                  | 85.65 | 60  | 1.4 | V | 12.53 | 0.31 | 10.40 | 22.62 | 33 | -10.38 |
| LTE Band 2 Channel 19125 – 15MHz – QPSK  |       |     |     |   |       |      |       |       |    |        |
| 1902.50                                  | 85.51 | 354 | 1.3 | H | 11.78 | 0.32 | 10.40 | 21.86 | 33 | -11.14 |
| 1902.50                                  | 85.41 | 49  | 1.7 | V | 12.45 | 0.32 | 10.40 | 22.53 | 33 | -10.47 |
| LTE Band 2 Channel 18675 – 15MHz – 16QAM |       |     |     |   |       |      |       |       |    |        |
| 1857.50                                  | 85.40 | 235 | 2.0 | H | 11.43 | 0.31 | 10.40 | 21.52 | 33 | -11.48 |
| 1857.50                                  | 85.52 | 259 | 1.9 | V | 12.24 | 0.31 | 10.40 | 22.33 | 33 | -10.67 |
| LTE Band 2 Channel 18900 – 15MHz – 16QAM |       |     |     |   |       |      |       |       |    |        |
| 1880.00                                  | 85.87 | 56  | 1.2 | H | 12.02 | 0.31 | 10.40 | 22.11 | 33 | -10.89 |
| 1880.00                                  | 85.00 | 161 | 2.4 | V | 11.88 | 0.31 | 10.40 | 21.97 | 33 | -11.03 |
| LTE Band 2 Channel 19125 – 15MHz – 16QAM |       |     |     |   |       |      |       |       |    |        |
| 1902.50                                  | 85.72 | 120 | 1.4 | H | 11.99 | 0.32 | 10.40 | 22.07 | 33 | -10.93 |
| 1902.50                                  | 85.00 | 250 | 1.0 | V | 12.04 | 0.32 | 10.40 | 22.12 | 33 | -10.88 |
| LTE Band 2 Channel 18700 – 20MHz – QPSK  |       |     |     |   |       |      |       |       |    |        |
| 1860.00                                  | 86.80 | 300 | 2.3 | H | 12.83 | 0.31 | 10.40 | 22.92 | 33 | -10.08 |
| 1860.00                                  | 86.00 | 18  | 2.2 | V | 12.72 | 0.31 | 10.40 | 22.81 | 33 | -10.19 |
| LTE Band 2 Channel 18900 – 20MHz – QPSK  |       |     |     |   |       |      |       |       |    |        |
| 1880.00                                  | 86.71 | 356 | 1.5 | H | 12.86 | 0.31 | 10.40 | 22.95 | 33 | -10.05 |
| 1880.00                                  | 86.00 | 89  | 2.5 | V | 12.88 | 0.31 | 10.40 | 22.97 | 33 | -10.03 |
| LTE Band 2 Channel 19100 – 20MHz – QPSK  |       |     |     |   |       |      |       |       |    |        |
| 1900.00                                  | 86.60 | 349 | 2.3 | H | 12.87 | 0.32 | 10.40 | 22.95 | 33 | -10.05 |
| 1900.00                                  | 85.96 | 31  | 2.4 | V | 13.00 | 0.32 | 10.40 | 23.08 | 33 | -9.92  |
| LTE Band 2 Channel 18670 – 20MHz – 16QAM |       |     |     |   |       |      |       |       |    |        |
| 1860.00                                  | 87.00 | 3   | 1.9 | H | 13.03 | 0.31 | 10.40 | 23.12 | 33 | -9.88  |
| 1860.00                                  | 85.45 | 321 | 2.2 | V | 12.17 | 0.31 | 10.40 | 22.26 | 33 | -10.74 |
| LTE Band 2 Channel 18900 – 20MHz – 16QAM |       |     |     |   |       |      |       |       |    |        |

|                                          |       |     |     |   |       |      |       |       |    |        |
|------------------------------------------|-------|-----|-----|---|-------|------|-------|-------|----|--------|
| 1880.00                                  | 86.85 | 287 | 2.4 | H | 13.00 | 0.31 | 10.40 | 23.09 | 33 | -9.91  |
| 1880.00                                  | 86.00 | 37  | 2.4 | V | 12.88 | 0.31 | 10.40 | 22.97 | 33 | -10.03 |
| LTE Band 2 Channel 19100 – 20MHz – 16QAM |       |     |     |   |       |      |       |       |    |        |
| 1900.00                                  | 86.49 | 360 | 2.0 | H | 12.76 | 0.32 | 10.40 | 22.84 | 33 | -10.16 |
| 1900.00                                  | 86.00 | 166 | 1.4 | V | 13.04 | 0.32 | 10.40 | 23.12 | 33 | -9.88  |

**LTE Band 4**

| Frequency                                 | Receiver Reading | Turn table Angle | RX Antenna |       | Substituted |       |              | Absolute Level | Part 27 |        |
|-------------------------------------------|------------------|------------------|------------|-------|-------------|-------|--------------|----------------|---------|--------|
|                                           |                  |                  | Height     | Polar | SG Level    | Cable | Antenna Gain |                | Limit   | Margin |
| (MHz)                                     | (dBμV)           | Degree           | (m)        | (H/V) | (dBm)       | (dB)  | (dB)         | (dBm)          | (dBm)   | (dB)   |
| LTE Band 4 Channel 19957 – 1.4MHz – QPSK  |                  |                  |            |       |             |       |              |                |         |        |
| 1710.70                                   | 87.00            | 309              | 1.1        | H     | 12.89       | 0.30  | 9.40         | 21.99          | 30      | -8.01  |
| 1710.70                                   | 86.20            | 72               | 1.8        | V     | 12.67       | 0.30  | 9.40         | 21.77          | 30      | -8.23  |
| LTE Band 4 Channel 20175 – 1.4MHz – QPSK  |                  |                  |            |       |             |       |              |                |         |        |
| 1732.50                                   | 86.85            | 281              | 2.1        | H     | 12.74       | 0.30  | 9.40         | 21.84          | 30      | -8.16  |
| 1732.50                                   | 86.20            | 108              | 1.4        | V     | 12.67       | 0.30  | 9.40         | 21.77          | 30      | -8.23  |
| LTE Band 4 Channel 20393 – 1.4MHz – QPSK  |                  |                  |            |       |             |       |              |                |         |        |
| 1754.30                                   | 87.00            | 269              | 2.1        | H     | 12.89       | 0.30  | 9.40         | 21.99          | 30      | -8.01  |
| 1754.30                                   | 86.10            | 22               | 1.9        | V     | 12.57       | 0.30  | 9.40         | 21.67          | 30      | -8.33  |
| LTE Band 4 Channel 19957 – 1.4MHz – 16QAM |                  |                  |            |       |             |       |              |                |         |        |
| 1710.70                                   | 87.01            | 164              | 1.8        | H     | 12.90       | 0.30  | 9.40         | 22.00          | 30      | -8.00  |
| 1710.70                                   | 86.05            | 280              | 1.7        | V     | 12.52       | 0.30  | 9.40         | 21.62          | 30      | -8.38  |
| LTE Band 4 Channel 20175 – 1.4MHz – 16QAM |                  |                  |            |       |             |       |              |                |         |        |
| 1732.50                                   | 87.00            | 118              | 1.4        | H     | 12.89       | 0.30  | 9.40         | 21.99          | 30      | -8.01  |
| 1732.50                                   | 86.15            | 123              | 1.7        | V     | 12.62       | 0.30  | 9.40         | 21.72          | 30      | -8.28  |
| LTE Band 4 Channel 20393 – 1.4MHz – 16QAM |                  |                  |            |       |             |       |              |                |         |        |
| 1754.30                                   | 86.88            | 49               | 2.4        | H     | 12.77       | 0.30  | 9.40         | 21.87          | 30      | -8.13  |
| 1754.30                                   | 86.47            | 151              | 2.3        | V     | 12.94       | 0.30  | 9.40         | 22.04          | 30      | -7.96  |
| LTE Band 4 Channel 19965 – 3MHz – QPSK    |                  |                  |            |       |             |       |              |                |         |        |
| 1711.50                                   | 87.23            | 92               | 2.5        | H     | 13.12       | 0.30  | 9.40         | 22.22          | 30      | -7.78  |
| 1711.50                                   | 86.42            | 50               | 1.7        | V     | 12.89       | 0.30  | 9.40         | 21.99          | 30      | -8.01  |
| LTE Band 4 Channel 20175 – 3MHz – QPSK    |                  |                  |            |       |             |       |              |                |         |        |
| 1732.50                                   | 86.97            | 176              | 2.3        | H     | 12.86       | 0.30  | 9.40         | 21.96          | 30      | -8.04  |
| 1732.50                                   | 86.50            | 334              | 2.2        | V     | 12.97       | 0.30  | 9.40         | 22.07          | 30      | -7.93  |
| LTE Band 4 Channel 20385 – 3MHz – QPSK    |                  |                  |            |       |             |       |              |                |         |        |
| 1753.50                                   | 86.74            | 174              | 2.1        | H     | 12.63       | 0.30  | 9.40         | 21.73          | 30      | -8.27  |

|                                         |       |     |     |   |       |      |      |       |    |       |
|-----------------------------------------|-------|-----|-----|---|-------|------|------|-------|----|-------|
| 1753.50                                 | 86.20 | 330 | 2.0 | V | 12.67 | 0.30 | 9.40 | 21.77 | 30 | -8.23 |
| LTE Band 4 Channel 19965 – 3MHz – 16QAM |       |     |     |   |       |      |      |       |    |       |
| 1711.50                                 | 87.03 | 153 | 2.3 | H | 12.92 | 0.30 | 9.40 | 22.02 | 30 | -7.98 |
| 1711.50                                 | 86.96 | 149 | 2.4 | V | 13.43 | 0.30 | 9.40 | 22.53 | 30 | -7.47 |
| LTE Band 4 Channel 20175 – 3MHz – 16QAM |       |     |     |   |       |      |      |       |    |       |
| 1732.50                                 | 86.58 | 152 | 2.2 | H | 12.47 | 0.30 | 9.40 | 21.57 | 30 | -8.43 |
| 1732.50                                 | 86.84 | 12  | 1.3 | V | 13.31 | 0.30 | 9.40 | 22.41 | 30 | -7.59 |
| LTE Band 4 Channel 20385 – 3MHz – 16QAM |       |     |     |   |       |      |      |       |    |       |
| 1753.50                                 | 87.01 | 151 | 1.9 | H | 12.90 | 0.30 | 9.40 | 22.00 | 30 | -8.00 |
| 1753.50                                 | 86.73 | 346 | 1.2 | V | 13.20 | 0.30 | 9.40 | 22.30 | 30 | -7.70 |
| LTE Band 4 Channel 19975 – 5MHz – QPSK  |       |     |     |   |       |      |      |       |    |       |
| 1712.50                                 | 86.78 | 55  | 2.5 | H | 12.67 | 0.30 | 9.40 | 21.77 | 30 | -8.23 |
| 1712.50                                 | 87.01 | 70  | 1.3 | V | 13.48 | 0.30 | 9.40 | 22.58 | 30 | -7.42 |
| LTE Band 4 Channel 20175 – 5MHz – QPSK  |       |     |     |   |       |      |      |       |    |       |
| 1732.50                                 | 87.41 | 263 | 2.2 | H | 13.30 | 0.30 | 9.40 | 22.40 | 30 | -7.60 |
| 1732.50                                 | 87.30 | 270 | 1.3 | V | 13.77 | 0.30 | 9.40 | 22.87 | 30 | -7.13 |
| LTE Band 4 Channel 20375 – 5MHz – QPSK  |       |     |     |   |       |      |      |       |    |       |
| 1752.50                                 | 86.85 | 206 | 1.3 | H | 12.74 | 0.30 | 9.40 | 21.84 | 30 | -8.16 |
| 1752.50                                 | 86.57 | 344 | 2.2 | V | 13.04 | 0.30 | 9.40 | 22.14 | 30 | -7.86 |
| LTE Band 4 Channel 19975 – 5MHz – 16QAM |       |     |     |   |       |      |      |       |    |       |
| 1712.50                                 | 87.16 | 182 | 2.4 | H | 13.05 | 0.30 | 9.40 | 22.15 | 30 | -7.85 |
| 1712.50                                 | 87.11 | 192 | 2.3 | V | 13.58 | 0.30 | 9.40 | 22.68 | 30 | -7.32 |
| LTE Band 4 Channel 20175 – 5MHz – 16QAM |       |     |     |   |       |      |      |       |    |       |
| 1732.50                                 | 87.10 | 352 | 1.4 | H | 12.99 | 0.30 | 9.40 | 22.09 | 30 | -7.91 |
| 1732.50                                 | 86.96 | 186 | 1.2 | V | 13.43 | 0.30 | 9.40 | 22.53 | 30 | -7.47 |
| LTE Band 4 Channel 20375 – 5MHz – 16QAM |       |     |     |   |       |      |      |       |    |       |
| 1752.50                                 | 87.20 | 231 | 1.7 | H | 13.09 | 0.30 | 9.40 | 22.19 | 30 | -7.81 |
| 1752.50                                 | 87.02 | 156 | 1.2 | V | 13.49 | 0.30 | 9.40 | 22.59 | 30 | -7.41 |
| LTE Band 4 Channel 20000 – 10MHz – QPSK |       |     |     |   |       |      |      |       |    |       |
| 1715.00                                 | 87.26 | 153 | 1.1 | H | 13.15 | 0.30 | 9.40 | 22.25 | 30 | -7.75 |
| 1715.00                                 | 87.25 | 268 | 1.4 | V | 13.72 | 0.30 | 9.40 | 22.82 | 30 | -7.18 |
| LTE Band 4 Channel 20175 – 10MHz – QPSK |       |     |     |   |       |      |      |       |    |       |
| 1732.50                                 | 86.86 | 184 | 1.3 | H | 12.75 | 0.30 | 9.40 | 21.85 | 30 | -8.15 |
| 1732.50                                 | 86.86 | 72  | 1.5 | V | 13.33 | 0.30 | 9.40 | 22.43 | 30 | -7.57 |
| LTE Band 4 Channel 20350 – 10MHz – QPSK |       |     |     |   |       |      |      |       |    |       |
| 1750.00                                 | 87.23 | 332 | 2.1 | H | 13.12 | 0.30 | 9.40 | 22.22 | 30 | -7.78 |

|                                          |       |     |     |   |       |      |      |       |    |       |
|------------------------------------------|-------|-----|-----|---|-------|------|------|-------|----|-------|
| 1750.00                                  | 86.88 | 235 | 2.0 | V | 13.35 | 0.30 | 9.40 | 22.45 | 30 | -7.55 |
| LTE Band 4 Channel 20000 – 10MHz – 16QAM |       |     |     |   |       |      |      |       |    |       |
| 1715.00                                  | 86.93 | 331 | 2.2 | H | 12.82 | 0.30 | 9.40 | 21.92 | 30 | -8.08 |
| 1715.00                                  | 86.87 | 325 | 1.3 | V | 13.34 | 0.30 | 9.40 | 22.44 | 30 | -7.56 |
| LTE Band 4 Channel 20175 – 10MHz – 16QAM |       |     |     |   |       |      |      |       |    |       |
| 1732.50                                  | 86.85 | 93  | 1.5 | H | 12.74 | 0.30 | 9.40 | 21.84 | 30 | -8.16 |
| 1732.50                                  | 87.09 | 205 | 1.4 | V | 13.56 | 0.30 | 9.40 | 22.66 | 30 | -7.34 |
| LTE Band 4 Channel 20350 – 10MHz – 16QAM |       |     |     |   |       |      |      |       |    |       |
| 1750.00                                  | 87.12 | 86  | 1.4 | H | 13.01 | 0.30 | 9.40 | 22.11 | 30 | -7.89 |
| 1750.00                                  | 86.87 | 266 | 1.2 | V | 13.34 | 0.30 | 9.40 | 22.44 | 30 | -7.56 |
| LTE Band 4 Channel 20025 – 15MHz – QPSK  |       |     |     |   |       |      |      |       |    |       |
| 1717.50                                  | 86.73 | 243 | 1.4 | H | 12.62 | 0.30 | 9.40 | 21.72 | 30 | -8.28 |
| 1717.50                                  | 87.00 | 271 | 2.1 | V | 13.47 | 0.30 | 9.40 | 22.57 | 30 | -7.43 |
| LTE Band 4 Channel 20175 – 15MHz – QPSK  |       |     |     |   |       |      |      |       |    |       |
| 1732.50                                  | 87.06 | 140 | 2.4 | H | 12.95 | 0.30 | 9.40 | 22.05 | 30 | -7.95 |
| 1732.50                                  | 86.92 | 259 | 1.4 | V | 13.39 | 0.30 | 9.40 | 22.49 | 30 | -7.51 |
| LTE Band 4 Channel 20325 – 15MHz – QPSK  |       |     |     |   |       |      |      |       |    |       |
| 1747.50                                  | 87.14 | 109 | 1.1 | H | 13.03 | 0.30 | 9.40 | 22.13 | 30 | -7.87 |
| 1747.50                                  | 86.79 | 90  | 1.5 | V | 13.26 | 0.30 | 9.40 | 22.36 | 30 | -7.64 |
| LTE Band 4 Channel 20025 – 15MHz – 16QAM |       |     |     |   |       |      |      |       |    |       |
| 1717.50                                  | 87.02 | 88  | 2.4 | H | 12.91 | 0.30 | 9.40 | 22.01 | 30 | -7.99 |
| 1717.50                                  | 86.81 | 227 | 2.0 | V | 13.28 | 0.30 | 9.40 | 22.38 | 30 | -7.62 |
| LTE Band 4 Channel 20175 – 15MHz – 16QAM |       |     |     |   |       |      |      |       |    |       |
| 1732.50                                  | 86.69 | 154 | 1.9 | H | 12.58 | 0.30 | 9.40 | 21.68 | 30 | -8.32 |
| 1732.50                                  | 87.13 | 238 | 1.6 | V | 13.60 | 0.30 | 9.40 | 22.70 | 30 | -7.30 |
| LTE Band 4 Channel 20325 – 15MHz – 16QAM |       |     |     |   |       |      |      |       |    |       |
| 1747.50                                  | 87.11 | 304 | 1.8 | H | 13.00 | 0.30 | 9.40 | 22.10 | 30 | -7.90 |
| 1747.50                                  | 87.02 | 277 | 1.0 | V | 13.49 | 0.30 | 9.40 | 22.59 | 30 | -7.41 |
| LTE Band 4 Channel 20050 – 20MHz – QPSK  |       |     |     |   |       |      |      |       |    |       |
| 1720.00                                  | 88.00 | 54  | 1.3 | H | 13.89 | 0.30 | 9.40 | 22.99 | 30 | -7.01 |
| 1720.00                                  | 87.50 | 178 | 1.2 | V | 13.97 | 0.30 | 9.40 | 23.07 | 30 | -6.93 |
| LTE Band 4 Channel 20175 – 20MHz – QPSK  |       |     |     |   |       |      |      |       |    |       |
| 1732.50                                  | 88.01 | 7   | 1.7 | H | 13.90 | 0.30 | 9.40 | 23.00 | 30 | -7.00 |
| 1732.50                                  | 87.46 | 257 | 2.4 | V | 13.93 | 0.30 | 9.40 | 23.03 | 30 | -6.97 |
| LTE Band 4 Channel 20300 – 20MHz – QPSK  |       |     |     |   |       |      |      |       |    |       |
| 1745.00                                  | 88.04 | 56  | 1.8 | H | 13.93 | 0.30 | 9.40 | 23.03 | 30 | -6.97 |

|                                          |       |     |     |   |       |      |      |       |    |       |
|------------------------------------------|-------|-----|-----|---|-------|------|------|-------|----|-------|
| 1745.00                                  | 87.50 | 307 | 1.8 | V | 13.97 | 0.30 | 9.40 | 23.07 | 30 | -6.93 |
| LTE Band 4 Channel 20050 – 20MHz – 16QAM |       |     |     |   |       |      |      |       |    |       |
| 1720.00                                  | 88.00 | 321 | 1.3 | H | 13.89 | 0.30 | 9.40 | 22.99 | 30 | -7.01 |
| 1720.00                                  | 87.59 | 251 | 1.3 | V | 14.06 | 0.30 | 9.40 | 23.16 | 30 | -6.84 |
| LTE Band 4 Channel 20175 – 20MHz – 16QAM |       |     |     |   |       |      |      |       |    |       |
| 1732.50                                  | 88.05 | 121 | 1.5 | H | 13.94 | 0.30 | 9.40 | 23.04 | 30 | -6.96 |
| 1732.50                                  | 87.63 | 110 | 1.0 | V | 14.10 | 0.30 | 9.40 | 23.20 | 30 | -6.80 |
| LTE Band 4 Channel 20300 – 20MHz – 16QAM |       |     |     |   |       |      |      |       |    |       |
| 1745.00                                  | 88.03 | 189 | 1.6 | H | 13.92 | 0.30 | 9.40 | 23.02 | 30 | -6.98 |
| 1745.00                                  | 87.51 | 35  | 1.7 | V | 13.98 | 0.30 | 9.40 | 23.08 | 30 | -6.92 |

**LTE Band 12**

| Frequency                                  | Receiver Reading | Turn table Angle | RX Antenna |       | Substituted |       |              | Absolute Level | Part 27 |        |
|--------------------------------------------|------------------|------------------|------------|-------|-------------|-------|--------------|----------------|---------|--------|
|                                            |                  |                  | Height     | Polar | SG Level    | Cable | Antenna Gain |                | Limit   | Margin |
| (MHz)                                      | (dBμV)           | Degree           | (m)        | (H/V) | (dBm)       | (dB)  | (dB)         | (dBm)          | (dBm)   | (dB)   |
| LTE Band 12 Channel 23017 – 1.4MHz – QPSK  |                  |                  |            |       |             |       |              |                |         |        |
| 699.70                                     | 94.30            | 160              | 1.1        | H     | 23.30       | 0.20  | 0.00         | 23.10          | 34.77   | -11.67 |
| 699.70                                     | 95.80            | 183              | 1.3        | V     | 23.52       | 0.20  | 0.00         | 23.32          | 34.77   | -11.45 |
| LTE Band 12 Channel 23095 – 1.4MHz – QPSK  |                  |                  |            |       |             |       |              |                |         |        |
| 707.50                                     | 94.38            | 185              | 2.5        | H     | 23.38       | 0.20  | 0.00         | 23.18          | 34.77   | -11.59 |
| 707.50                                     | 95.60            | 31               | 1.3        | V     | 23.32       | 0.20  | 0.00         | 23.12          | 34.77   | -11.65 |
| LTE Band 12 Channel 23173 – 1.4MHz – QPSK  |                  |                  |            |       |             |       |              |                |         |        |
| 715.30                                     | 94.50            | 264              | 1.6        | H     | 23.50       | 0.20  | 0.00         | 23.30          | 34.77   | -11.47 |
| 715.30                                     | 95.40            | 8                | 1.7        | V     | 23.12       | 0.20  | 0.00         | 22.92          | 34.77   | -11.85 |
| LTE Band 12 Channel 23017 – 1.4MHz – 16QAM |                  |                  |            |       |             |       |              |                |         |        |
| 699.70                                     | 94.25            | 338              | 2.3        | H     | 23.25       | 0.20  | 0.00         | 23.05          | 34.77   | -11.72 |
| 699.70                                     | 95.80            | 89               | 2.1        | V     | 23.52       | 0.20  | 0.00         | 23.32          | 34.77   | -11.45 |
| LTE Band 12 Channel 23095 – 1.4MHz – 16QAM |                  |                  |            |       |             |       |              |                |         |        |
| 707.50                                     | 93.95            | 207              | 1.0        | H     | 22.95       | 0.20  | 0.00         | 22.75          | 34.77   | -12.02 |
| 707.50                                     | 95.60            | 64               | 2.3        | V     | 23.32       | 0.20  | 0.00         | 23.12          | 34.77   | -11.65 |
| LTE Band 12 Channel 23173 – 1.4MHz – 16QAM |                  |                  |            |       |             |       |              |                |         |        |
| 715.30                                     | 94.61            | 23               | 1.4        | H     | 23.61       | 0.20  | 0.00         | 23.41          | 34.77   | -11.36 |
| 715.30                                     | 95.60            | 256              | 1.7        | V     | 23.32       | 0.20  | 0.00         | 23.12          | 34.77   | -11.65 |
| LTE Band 12 Channel 23025 – 3MHz – QPSK    |                  |                  |            |       |             |       |              |                |         |        |
| 700.50                                     | 93.86            | 158              | 2.2        | H     | 22.86       | 0.20  | 0.00         | 22.66          | 34.77   | -12.11 |
| 700.50                                     | 95.70            | 270              | 2.4        | V     | 23.42       | 0.20  | 0.00         | 23.22          | 34.77   | -11.55 |

| LTE Band 12 Channel 23095 – 3MHz – QPSK  |       |     |     |   |       |      |      |       |       |        |
|------------------------------------------|-------|-----|-----|---|-------|------|------|-------|-------|--------|
| 707.50                                   | 94.16 | 142 | 1.0 | H | 23.16 | 0.20 | 0.00 | 22.96 | 34.77 | -11.81 |
| 707.50                                   | 95.60 | 242 | 1.5 | V | 23.32 | 0.20 | 0.00 | 23.12 | 34.77 | -11.65 |
| LTE Band 12 Channel 23165 – 3MHz – QPSK  |       |     |     |   |       |      |      |       |       |        |
| 714.50                                   | 94.16 | 312 | 1.8 | H | 23.16 | 0.20 | 0.00 | 22.96 | 34.77 | -11.81 |
| 714.50                                   | 95.87 | 311 | 1.1 | V | 23.59 | 0.20 | 0.00 | 23.39 | 34.77 | -11.38 |
| LTE Band 12 Channel 23025 – 3MHz – 16QAM |       |     |     |   |       |      |      |       |       |        |
| 700.50                                   | 94.18 | 33  | 2.5 | H | 23.18 | 0.20 | 0.00 | 22.98 | 34.77 | -11.79 |
| 700.50                                   | 95.49 | 272 | 1.8 | V | 23.21 | 0.20 | 0.00 | 23.01 | 34.77 | -11.76 |
| LTE Band 12 Channel 23095 – 3MHz – 16QAM |       |     |     |   |       |      |      |       |       |        |
| 707.50                                   | 94.23 | 190 | 1.4 | H | 23.23 | 0.20 | 0.00 | 23.03 | 34.77 | -11.74 |
| 707.50                                   | 95.48 | 11  | 2.2 | V | 23.20 | 0.20 | 0.00 | 23.00 | 34.77 | -11.77 |
| LTE Band 12 Channel 23165 – 3MHz – 16QAM |       |     |     |   |       |      |      |       |       |        |
| 714.50                                   | 94.29 | 152 | 1.0 | H | 23.29 | 0.20 | 0.00 | 23.09 | 34.77 | -11.68 |
| 714.50                                   | 95.63 | 142 | 1.6 | V | 23.35 | 0.20 | 0.00 | 23.15 | 34.77 | -11.62 |
| LTE Band 12 Channel 23035 – 5MHz – QPSK  |       |     |     |   |       |      |      |       |       |        |
| 701.50                                   | 94.31 | 61  | 1.8 | H | 23.31 | 0.20 | 0.00 | 23.11 | 34.77 | -11.66 |
| 701.50                                   | 95.80 | 273 | 1.6 | V | 23.52 | 0.20 | 0.00 | 23.32 | 34.77 | -11.45 |
| LTE Band 12 Channel 23095 – 5MHz – QPSK  |       |     |     |   |       |      |      |       |       |        |
| 707.50                                   | 95.00 | 67  | 1.6 | H | 24.00 | 0.20 | 0.00 | 23.80 | 34.77 | -10.97 |
| 707.50                                   | 95.68 | 74  | 1.3 | V | 23.40 | 0.20 | 0.00 | 23.20 | 34.77 | -11.57 |
| LTE Band 12 Channel 23155 – 5MHz – QPSK  |       |     |     |   |       |      |      |       |       |        |
| 713.50                                   | 94.01 | 94  | 1.7 | H | 23.01 | 0.20 | 0.00 | 22.81 | 34.77 | -11.96 |
| 713.50                                   | 95.30 | 68  | 1.4 | V | 23.02 | 0.20 | 0.00 | 22.82 | 34.77 | -11.95 |
| LTE Band 12 Channel 23035 – 5MHz – 16QAM |       |     |     |   |       |      |      |       |       |        |
| 701.50                                   | 94.73 | 148 | 2.0 | H | 23.73 | 0.20 | 0.00 | 23.53 | 34.77 | -11.24 |
| 701.50                                   | 95.90 | 355 | 2.1 | V | 23.62 | 0.20 | 0.00 | 23.42 | 34.77 | -11.35 |
| LTE Band 12 Channel 23095 – 5MHz – 16QAM |       |     |     |   |       |      |      |       |       |        |
| 707.50                                   | 94.62 | 21  | 1.6 | H | 23.62 | 0.20 | 0.00 | 23.42 | 34.77 | -11.35 |
| 707.50                                   | 95.89 | 360 | 1.4 | V | 23.61 | 0.20 | 0.00 | 23.41 | 34.77 | -11.36 |
| LTE Band 12 Channel 23155 – 5MHz – 16QAM |       |     |     |   |       |      |      |       |       |        |
| 713.50                                   | 94.47 | 81  | 1.6 | H | 23.47 | 0.20 | 0.00 | 23.27 | 34.77 | -11.50 |
| 713.50                                   | 95.87 | 50  | 2.3 | V | 23.59 | 0.20 | 0.00 | 23.39 | 34.77 | -11.38 |
| LTE Band 12 Channel 23060 – 10MHz – QPSK |       |     |     |   |       |      |      |       |       |        |
| 704.00                                   | 95.80 | 303 | 2.3 | H | 24.80 | 0.20 | 0.00 | 24.60 | 34.77 | -10.17 |
| 704.00                                   | 97.00 | 221 | 2.0 | V | 24.72 | 0.20 | 0.00 | 24.52 | 34.77 | -10.25 |

| LTE Band 12 Channel 23095 – 10MHz – QPSK  |       |     |     |   |       |      |      |       |       |        |
|-------------------------------------------|-------|-----|-----|---|-------|------|------|-------|-------|--------|
| 707.50                                    | 95.69 | 343 | 1.8 | H | 24.69 | 0.20 | 0.00 | 24.49 | 34.77 | -10.28 |
| 707.50                                    | 97.10 | 333 | 1.6 | V | 24.82 | 0.20 | 0.00 | 24.62 | 34.77 | -10.15 |
| LTE Band 12 Channel 23130 – 10MHz – QPSK  |       |     |     |   |       |      |      |       |       |        |
| 711.00                                    | 95.71 | 63  | 2.4 | H | 24.71 | 0.20 | 0.00 | 24.51 | 34.77 | -10.26 |
| 711.00                                    | 97.20 | 316 | 2.2 | V | 24.92 | 0.20 | 0.00 | 24.72 | 34.77 | -10.05 |
| LTE Band 12 Channel 23060 – 10MHz – 16QAM |       |     |     |   |       |      |      |       |       |        |
| 704.00                                    | 95.63 | 219 | 1.9 | H | 24.63 | 0.20 | 0.00 | 24.43 | 34.77 | -10.34 |
| 704.00                                    | 97.06 | 4   | 2.2 | V | 24.78 | 0.20 | 0.00 | 24.58 | 34.77 | -10.19 |
| LTE Band 12 Channel 23095 – 10MHz – 16QAM |       |     |     |   |       |      |      |       |       |        |
| 707.50                                    | 95.66 | 52  | 1.4 | H | 24.66 | 0.20 | 0.00 | 24.46 | 34.77 | -10.31 |
| 707.50                                    | 97.05 | 109 | 2.3 | V | 24.77 | 0.20 | 0.00 | 24.57 | 34.77 | -10.20 |
| LTE Band 12 Channel 23130 – 10MHz – 16QAM |       |     |     |   |       |      |      |       |       |        |
| 711.00                                    | 95.69 | 164 | 1.6 | H | 24.69 | 0.20 | 0.00 | 24.49 | 34.77 | -10.28 |
| 711.00                                    | 97.03 | 219 | 1.1 | V | 24.75 | 0.20 | 0.00 | 24.55 | 34.77 | -10.22 |

## 8 Peak-to-Average Ratio

|                   |                      |
|-------------------|----------------------|
| Test Requirement: | 24.232 (d), 27.50(d) |
| Test Method:      | N/A                  |
| Test Mode:        | TX transmitting      |

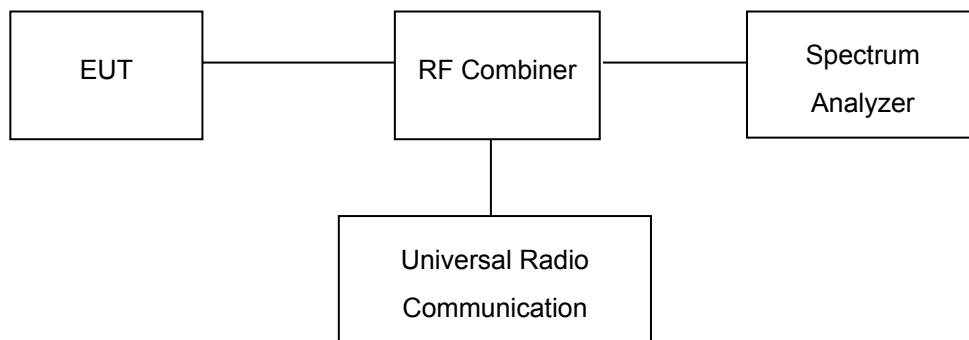
### 8.1 EUT Operation

Operating Environment :

|                       |          |
|-----------------------|----------|
| Temperature:          | 22.5 °C  |
| Humidity:             | 52.3% RH |
| Atmospheric Pressure: | 101.2kPa |

### 8.2 Test Procedure

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. Set EUT to transmit at maximum output power.
3. When the duty cycle is less than 98%, then signal gating will be implemented on the spectrum analyzer by triggering from the system simulator.
4. Set the CCDF (Complementary Cumulative Distribution Function) option of the spectrum analyzer. Record the maximum PAPR level associated with a probability of 0.1%.



### 8.3 Test Result

PASS

#### LTE Band

Please refer to the Annex B. LTE Peak to Average Ratio for LTE Band 2/4/12.

## 9 BANDWIDTH

|                   |                                                   |
|-------------------|---------------------------------------------------|
| Test Requirement: | FCC Part 2.1049, 22.917, 22.905, 24.238, 27.53(a) |
| Test Method:      | ANSI C63.26:2015<br>ANSI/TIA-603-E:2016           |
| Test Mode:        | TX transmitting                                   |

### 9.1 EUT Operation

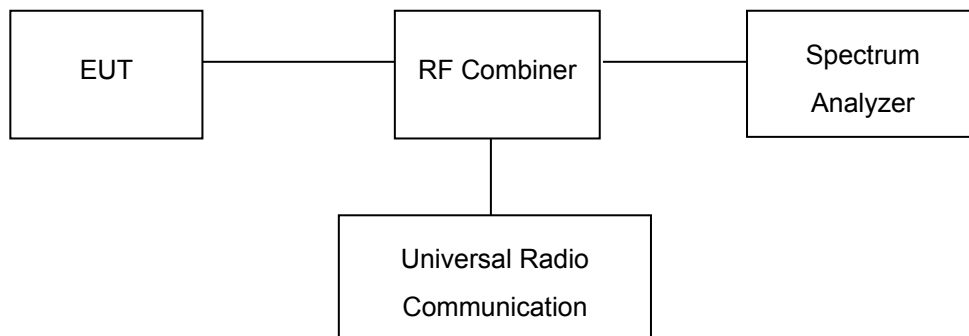
Operating Environment :

|                       |          |
|-----------------------|----------|
| Temperature:          | 22.5 °C  |
| Humidity:             | 52.3% RH |
| Atmospheric Pressure: | 101.2kPa |

### 9.2 Test Procedure

The RF output of the transmitter was connected to the wireless test set and the spectrum analyzer through sufficient attenuation.

The resolution bandwidth of the spectrum analyzer was set in the range of 1 to 5 % of the anticipated OBW and the 26 dB & 99%bandwidth was recorded.



### 9.3 Test Result

#### LTE Band 2 (Part 24E):

| BW(MHz) | Channel | Frequency (MHz) | Modulation | 99% Occupied Bandwidth (MHz) | 26 dB Bandwidth (MHz) |
|---------|---------|-----------------|------------|------------------------------|-----------------------|
| 1.4     | 18607   | 1850.7          | QPSK       | 1.09                         | 1.27                  |
|         |         |                 | 16QAM      | 1.09                         | 1.27                  |
| 1.4     | 18900   | 1880            | QPSK       | 1.09                         | 1.29                  |
|         |         |                 | 16QAM      | 1.09                         | 1.29                  |
| 1.4     | 19193   | 1909.3          | QPSK       | 1.09                         | 1.28                  |
|         |         |                 | 16QAM      | 1.09                         | 1.28                  |
| 3       | 18615   | 1851.5          | QPSK       | 2.68                         | 2.89                  |
|         |         |                 | 16QAM      | 2.68                         | 2.9                   |
| 3       | 18900   | 1880            | QPSK       | 2.69                         | 2.94                  |
|         |         |                 | 16QAM      | 2.68                         | 2.93                  |
| 3       | 19185   | 1908.5          | QPSK       | 2.68                         | 2.91                  |
|         |         |                 | 16QAM      | 2.68                         | 2.92                  |
| 5       | 18625   | 1852.5          | QPSK       | 4.49                         | 4.86                  |
|         |         |                 | 16QAM      | 4.49                         | 4.84                  |
| 5       | 18900   | 1880            | QPSK       | 4.49                         | 4.86                  |
|         |         |                 | 16QAM      | 4.49                         | 4.87                  |
| 5       | 19175   | 1907.5          | QPSK       | 4.48                         | 4.84                  |
|         |         |                 | 16QAM      | 4.48                         | 4.83                  |
| 10      | 18650   | 1855            | QPSK       | 8.92                         | 9.41                  |
|         |         |                 | 16QAM      | 8.91                         | 9.39                  |
| 10      | 18900   | 1880            | QPSK       | 8.9                          | 9.41                  |
|         |         |                 | 16QAM      | 8.9                          | 9.39                  |
| 10      | 19150   | 1905            | QPSK       | 8.89                         | 9.3                   |
|         |         |                 | 16QAM      | 8.88                         | 9.31                  |
| 15      | 18675   | 1857.5          | QPSK       | 13.43                        | 14.25                 |
|         |         |                 | 16QAM      | 13.43                        | 14.24                 |
| 15      | 18900   | 1880            | QPSK       | 13.41                        | 14.24                 |
|         |         |                 | 16QAM      | 13.39                        | 14.23                 |
| 15      | 19125   | 1902.5          | QPSK       | 13.37                        | 14.2                  |
|         |         |                 | 16QAM      | 13.38                        | 14.2                  |
| 20      | 18700   | 1860            | QPSK       | 17.86                        | 18.75                 |

|    |       |      |       |       |       |
|----|-------|------|-------|-------|-------|
|    |       |      | 16QAM | 17.86 | 18.74 |
| 20 | 18900 | 1880 | QPSK  | 17.79 | 18.72 |
|    |       |      | 16QAM | 17.79 | 18.74 |
| 20 | 19100 | 1900 | QPSK  | 17.83 | 18.72 |
|    |       |      | 16QAM | 17.84 | 18.71 |

**LTE Band 4 (Part 27):**

| BW(MHz) | Channel | Frequency (MHz) | Modulation | 99% Occupied Bandwidth (MHz) | 26 dB Bandwidth (MHz) |
|---------|---------|-----------------|------------|------------------------------|-----------------------|
| 1.4     | 19957   | 1710.7          | QPSK       | 1.09                         | 1.25                  |
|         |         |                 | 16QAM      | 1.08                         | 1.25                  |
| 1.4     | 2.175   | 1732.5          | QPSK       | 1.09                         | 1.26                  |
|         |         |                 | 16QAM      | 1.09                         | 1.25                  |
| 1.4     | 20393   | 1754.3          | QPSK       | 1.09                         | 1.33                  |
|         |         |                 | 16QAM      | 1.09                         | 1.29                  |
| 3       | 19965   | 1711.5          | QPSK       | 2.68                         | 2.89                  |
|         |         |                 | 16QAM      | 2.68                         | 2.88                  |
| 3       | 2.175   | 1732.5          | QPSK       | 2.68                         | 2.91                  |
|         |         |                 | 16QAM      | 2.68                         | 2.91                  |
| 3       | 2.385   | 1753.5          | QPSK       | 2.69                         | 2.94                  |
|         |         |                 | 16QAM      | 2.68                         | 2.93                  |
| 5       | 19975   | 1712.5          | QPSK       | 4.49                         | 4.83                  |
|         |         |                 | 16QAM      | 4.49                         | 4.81                  |
| 5       | 20175   | 1732.5          | QPSK       | 4.49                         | 4.83                  |
|         |         |                 | 16QAM      | 4.49                         | 4.85                  |
| 5       | 20375   | 1752.5          | QPSK       | 4.48                         | 4.85                  |
|         |         |                 | 16QAM      | 4.49                         | 4.85                  |
| 10      | 2000    | 1715            | QPSK       | 8.91                         | 9.34                  |
|         |         |                 | 16QAM      | 8.9                          | 9.35                  |
| 10      | 20175   | 1732.5          | QPSK       | 8.9                          | 9.36                  |
|         |         |                 | 16QAM      | 8.89                         | 9.32                  |
| 10      | 20350   | 1750            | QPSK       | 8.9                          | 9.33                  |
|         |         |                 | 16QAM      | 8.89                         | 9.32                  |
| 15      | 20025   | 1717.5          | QPSK       | 13.4                         | 14.21                 |
|         |         |                 | 16QAM      | 13.4                         | 14.21                 |
| 15      | 20175   | 1732.5          | QPSK       | 13.42                        | 14.21                 |

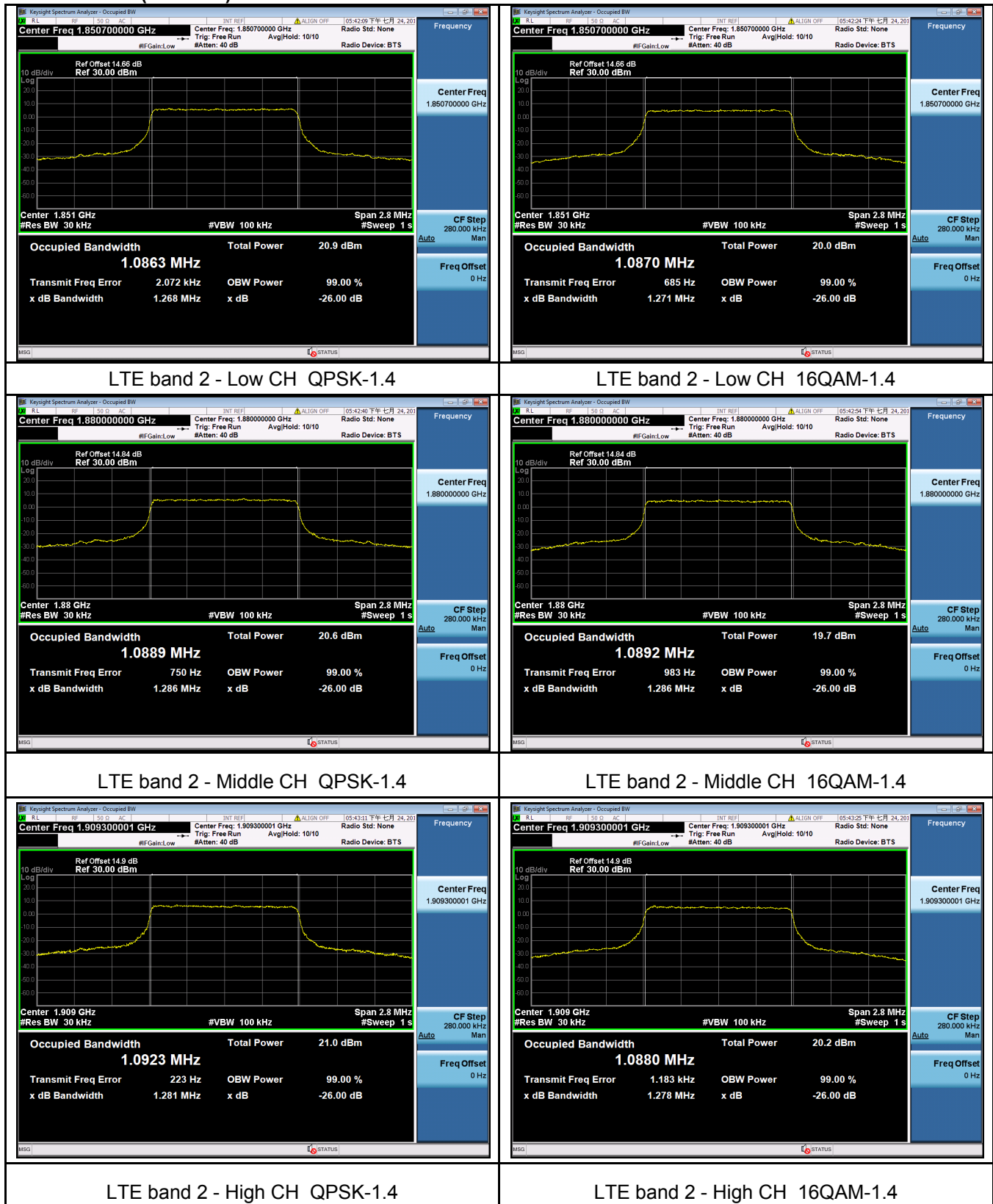
|    |       |        |       |       |       |
|----|-------|--------|-------|-------|-------|
|    |       |        | 16QAM | 13.4  | 14.21 |
| 15 | 20325 | 1747.5 | QPSK  | 13.41 | 14.21 |
|    |       |        | 16QAM | 13.41 | 14.21 |
| 20 | 20050 | 1720   | QPSK  | 17.77 | 18.69 |
|    |       |        | 16QAM | 17.78 | 18.7  |
| 20 | 20175 | 1732.5 | QPSK  | 17.82 | 18.71 |
|    |       |        | 16QAM | 17.81 | 18.71 |
| 20 | 20300 | 1745   | QPSK  | 17.87 | 18.76 |
|    |       |        | 16QAM | 17.87 | 18.74 |

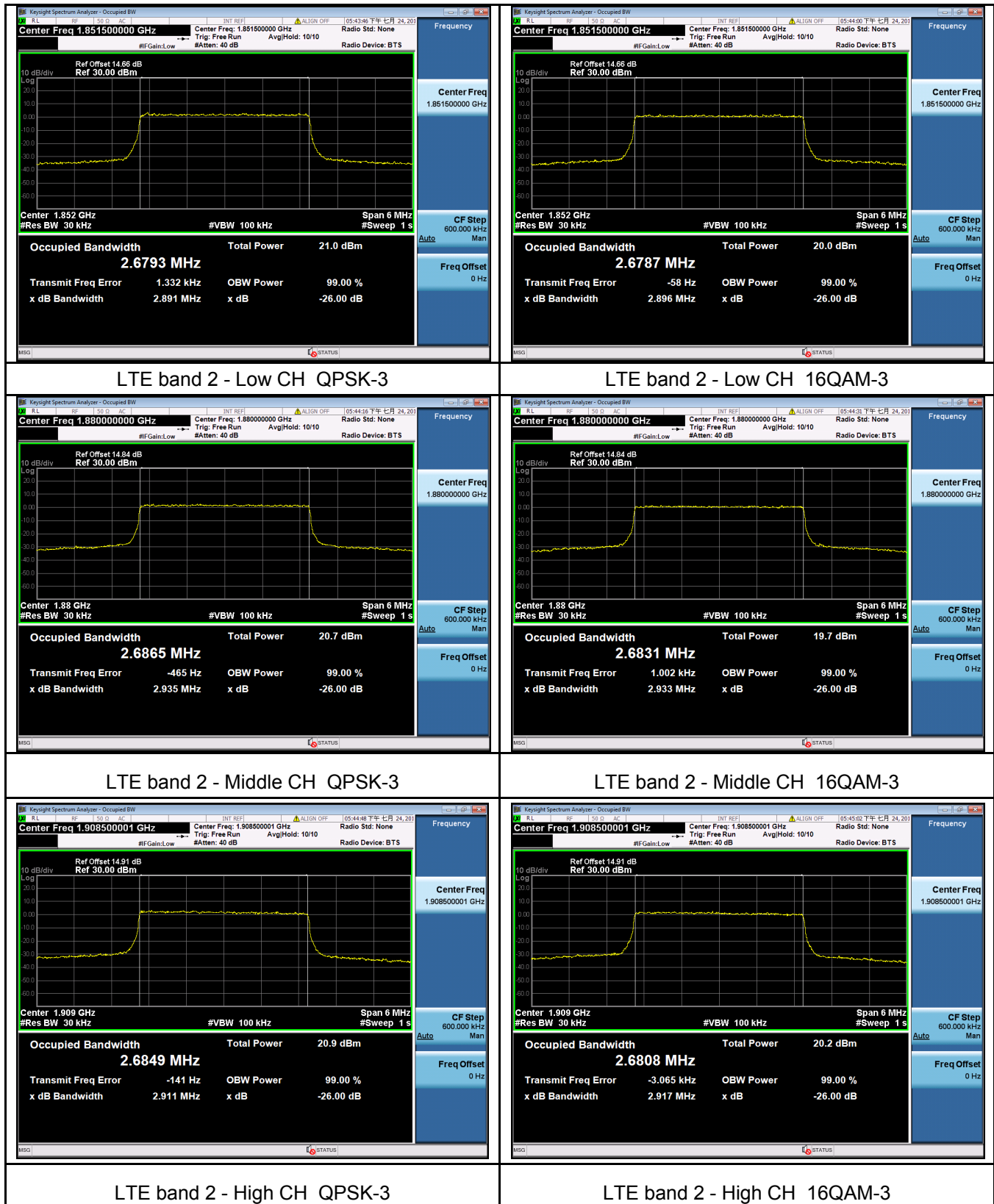
**LTE Band 12 (Part 27):**

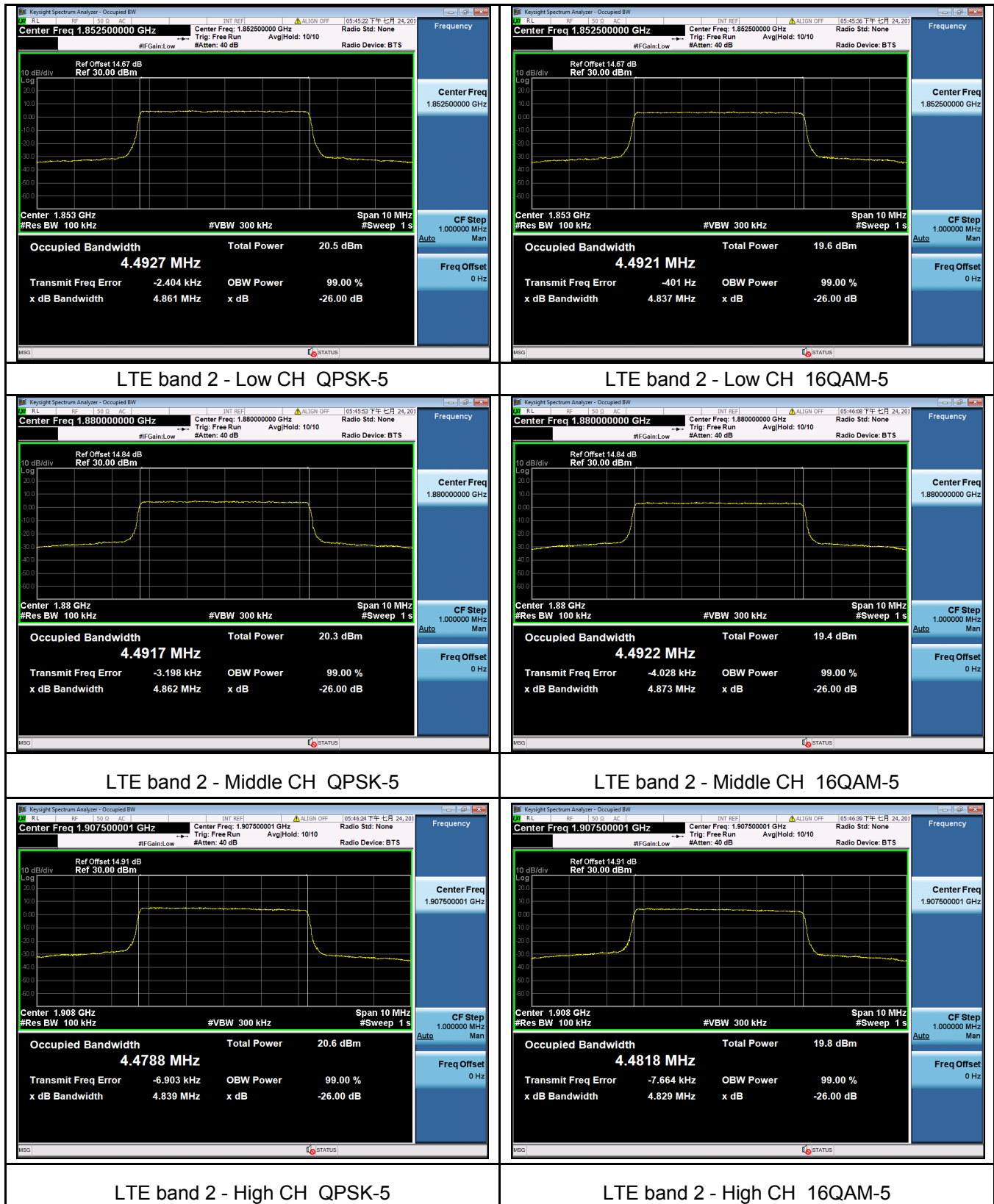
| BW(MHz) | Channel | Frequency (MHz) | Modulation | 99% Occupied Bandwidth (MHz) | 26 dB Bandwidth (MHz) |
|---------|---------|-----------------|------------|------------------------------|-----------------------|
| 1.4     | 23017   | 699.7           | QPSK       | 1.09                         | 1.25                  |
|         |         |                 | 16QAM      | 1.09                         | 1.26                  |
| 1.4     | 23095   | 707.5           | QPSK       | 1.09                         | 1.24                  |
|         |         |                 | 16QAM      | 1.09                         | 1.26                  |
| 1.4     | 23173   | 715.3           | QPSK       | 1.09                         | 1.25                  |
|         |         |                 | 16QAM      | 1.09                         | 1.24                  |
| 3       | 23025   | 700.5           | QPSK       | 2.68                         | 2.89                  |
|         |         |                 | 16QAM      | 2.68                         | 2.87                  |
| 3       | 23095   | 707.5           | QPSK       | 2.68                         | 2.89                  |
|         |         |                 | 16QAM      | 2.68                         | 2.87                  |
| 3       | 23165   | 714.5           | QPSK       | 2.69                         | 2.91                  |
|         |         |                 | 16QAM      | 2.68                         | 2.91                  |
| 5       | 23035   | 701.5           | QPSK       | 4.49                         | 4.85                  |
|         |         |                 | 16QAM      | 4.49                         | 4.8                   |
| 5       | 23095   | 707.5           | QPSK       | 4.49                         | 4.82                  |
|         |         |                 | 16QAM      | 4.49                         | 4.82                  |
| 5       | 23155   | 713.5           | QPSK       | 4.49                         | 4.82                  |
|         |         |                 | 16QAM      | 4.49                         | 4.84                  |
| 10      | 23060   | 704             | QPSK       | 8.93                         | 9.43                  |
|         |         |                 | 16QAM      | 8.93                         | 9.42                  |
| 10      | 23095   | 707.5           | QPSK       | 8.9                          | 9.34                  |
|         |         |                 | 16QAM      | 8.9                          | 9.3                   |
| 10      | 23130   | 711             | QPSK       | 8.89                         | 9.31                  |
|         |         |                 | 16QAM      | 8.89                         | 9.3                   |

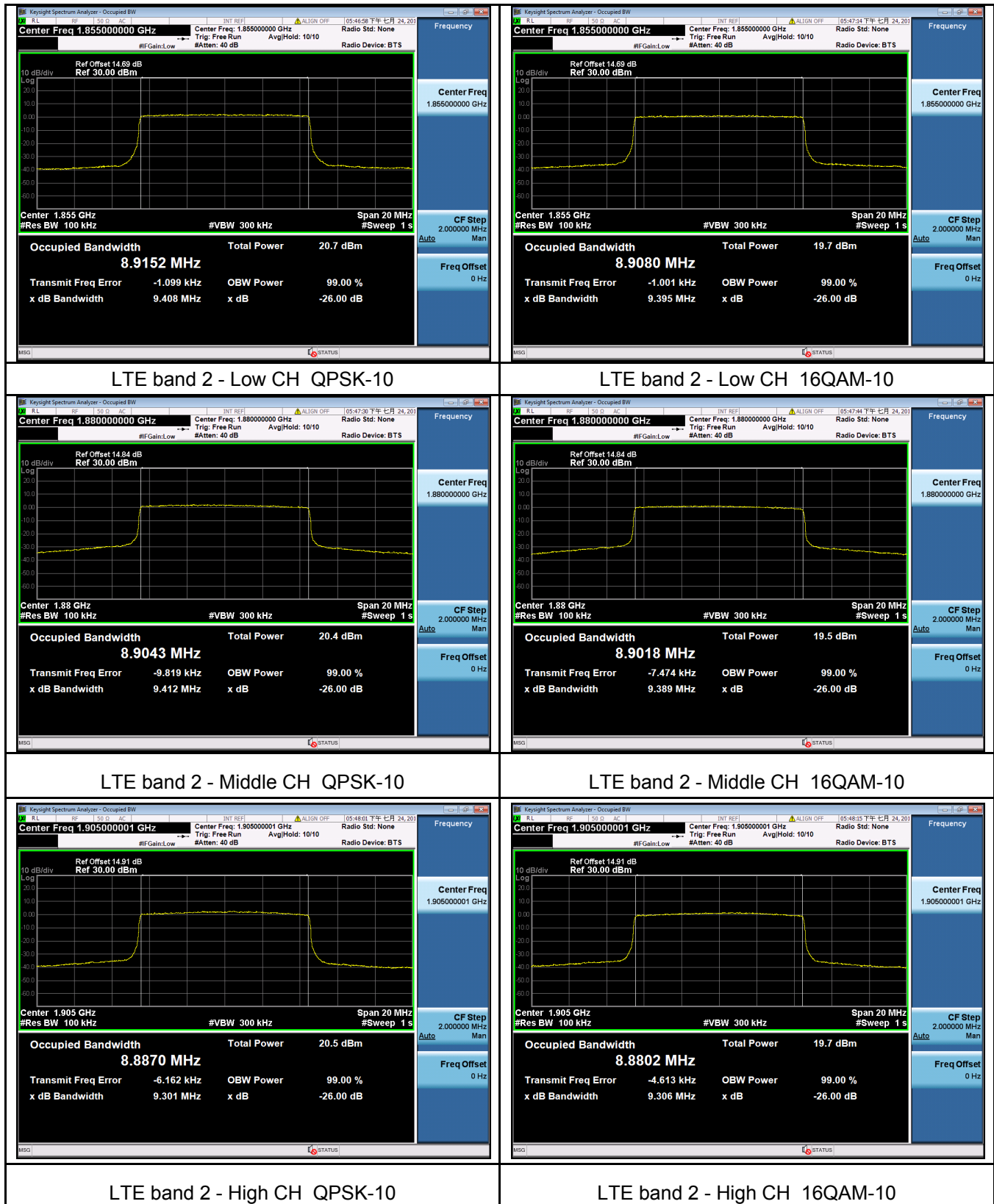
## Test Plots

### LTE Band 2 (Part 24E)





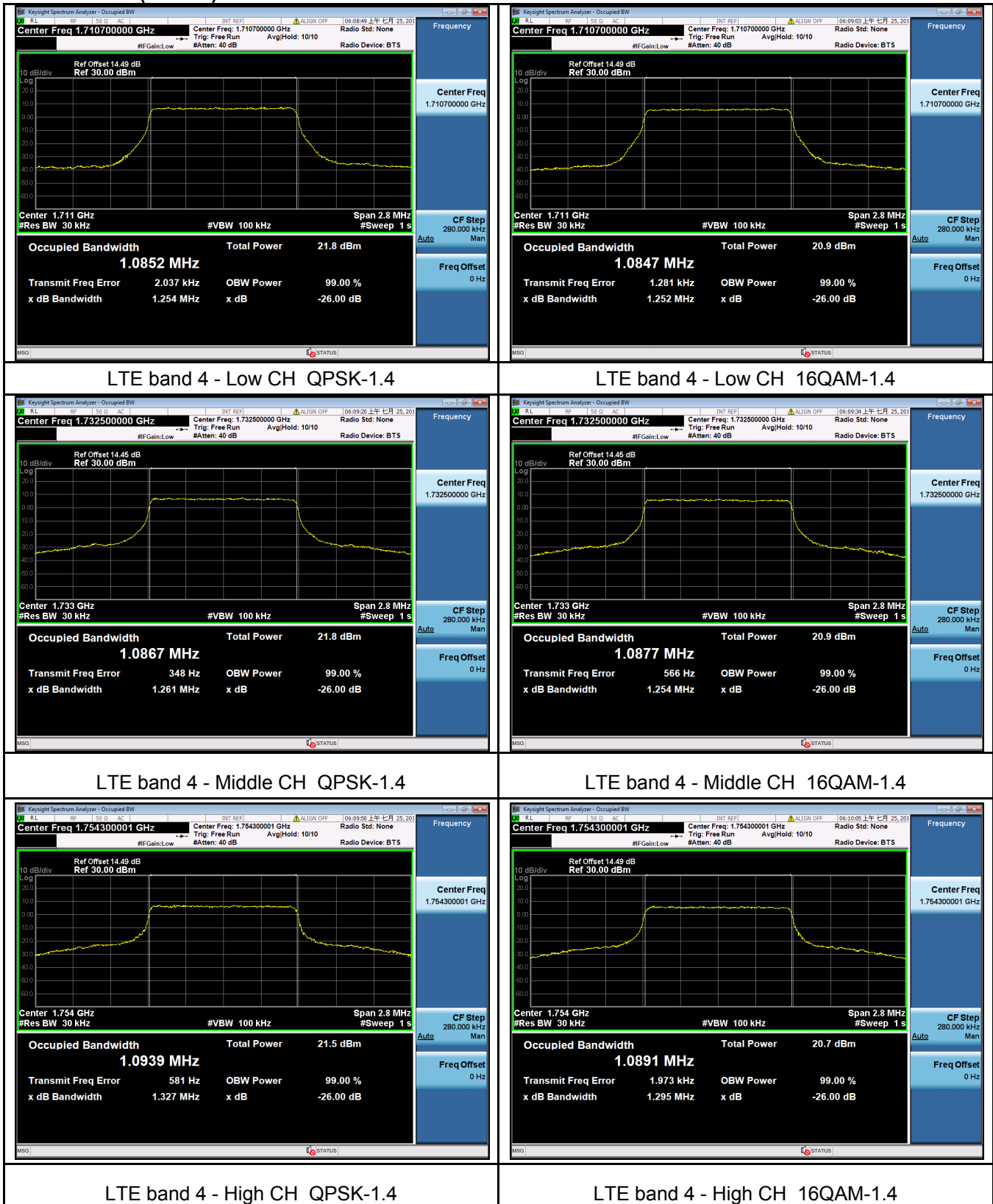


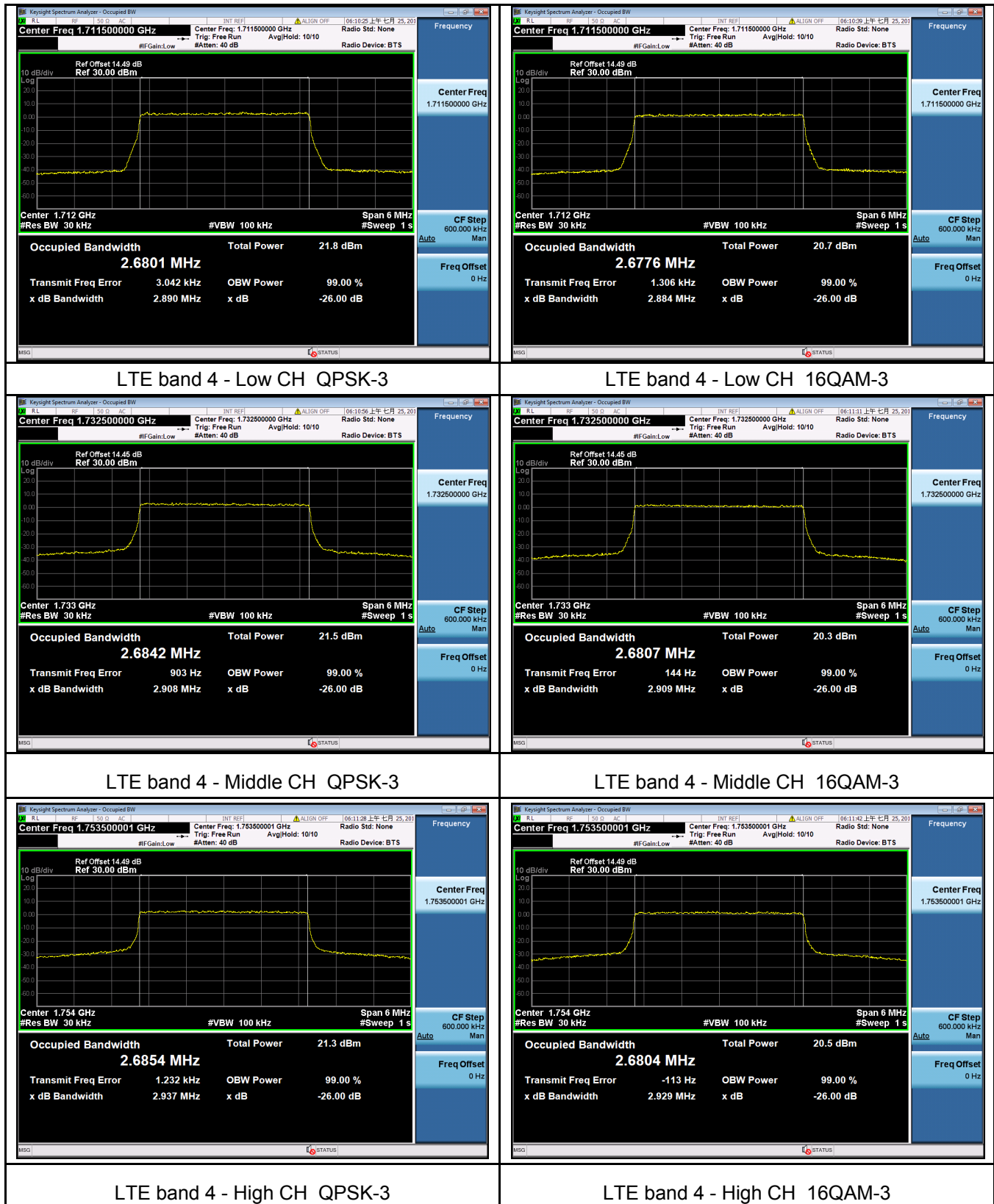


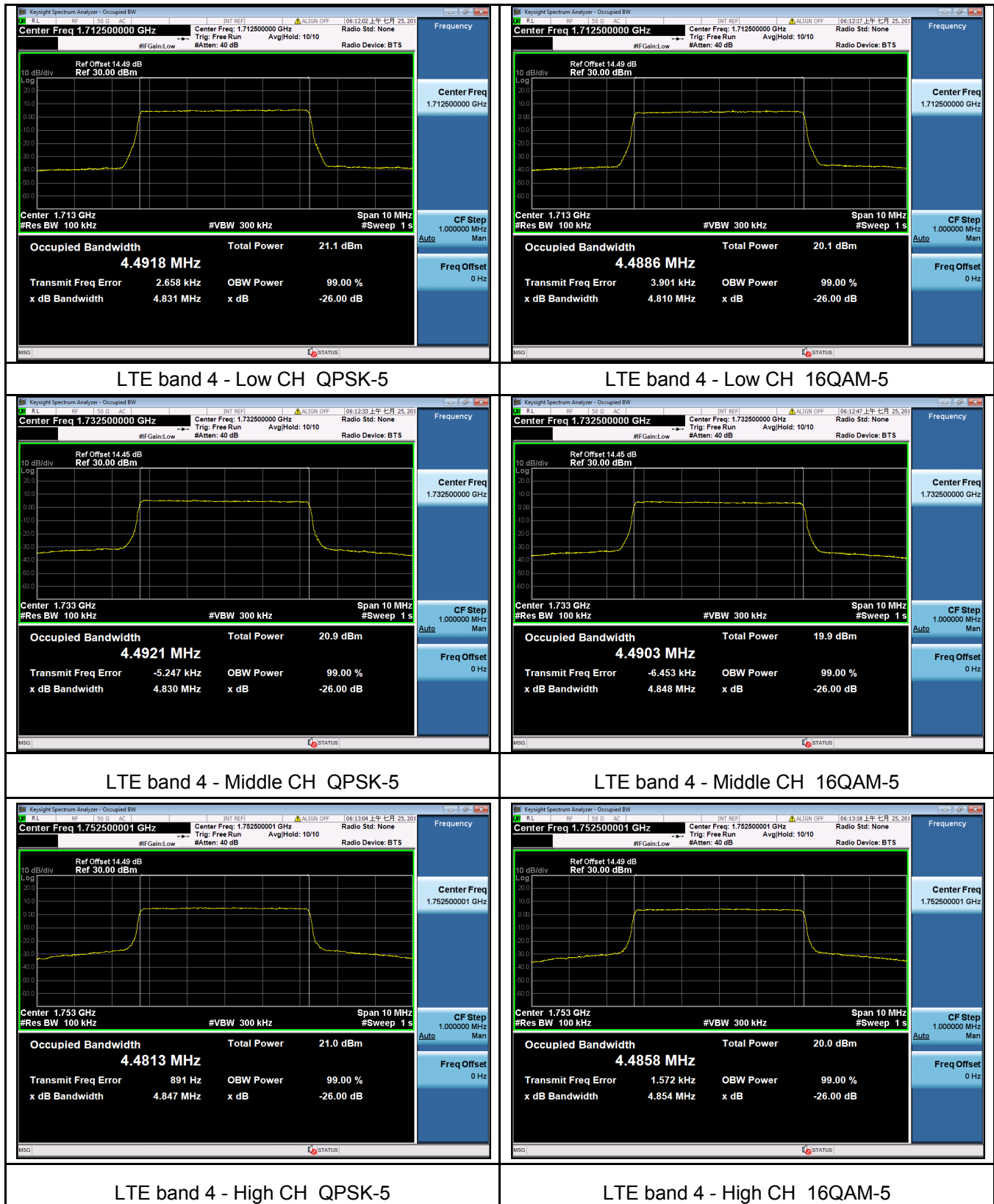


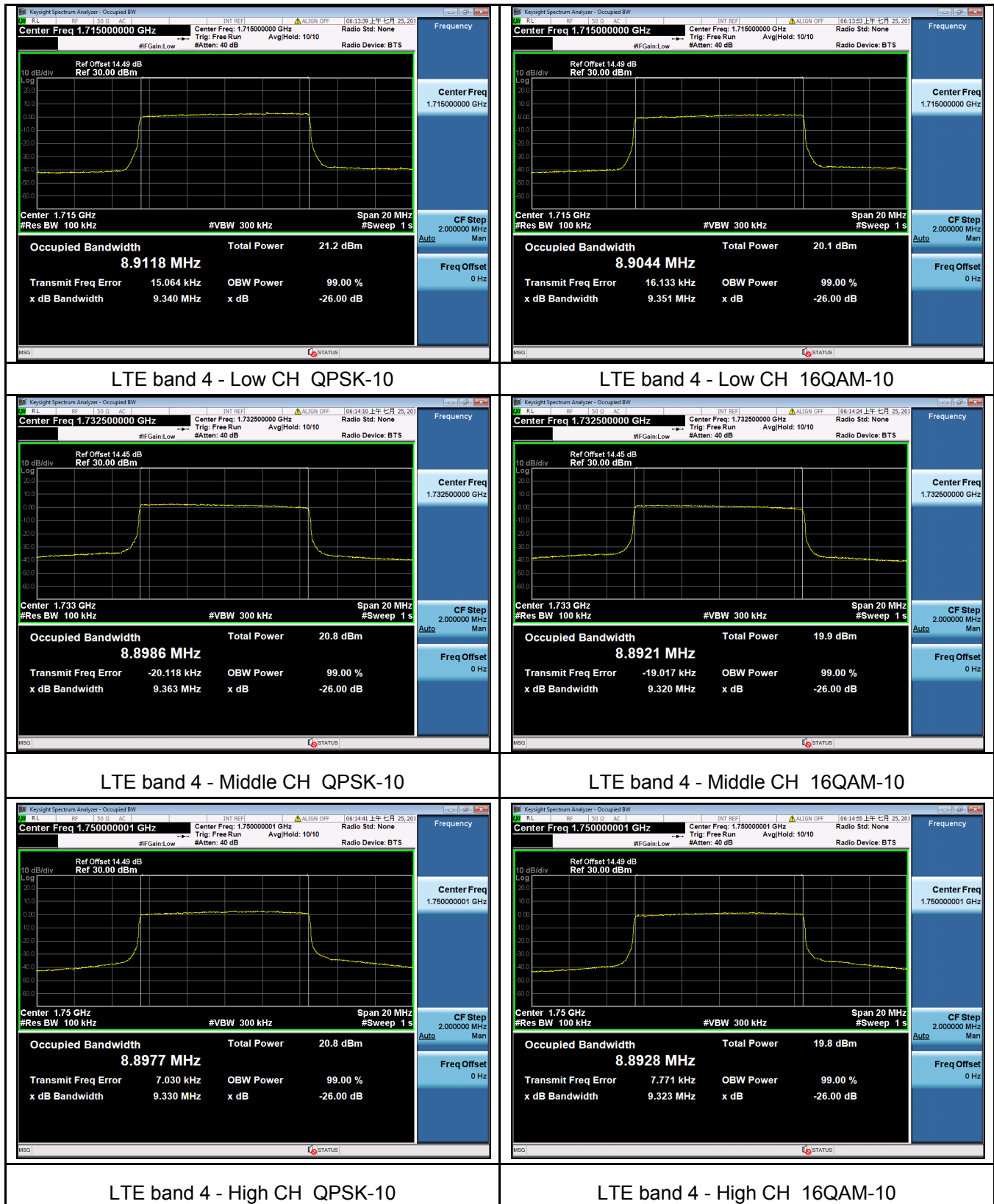


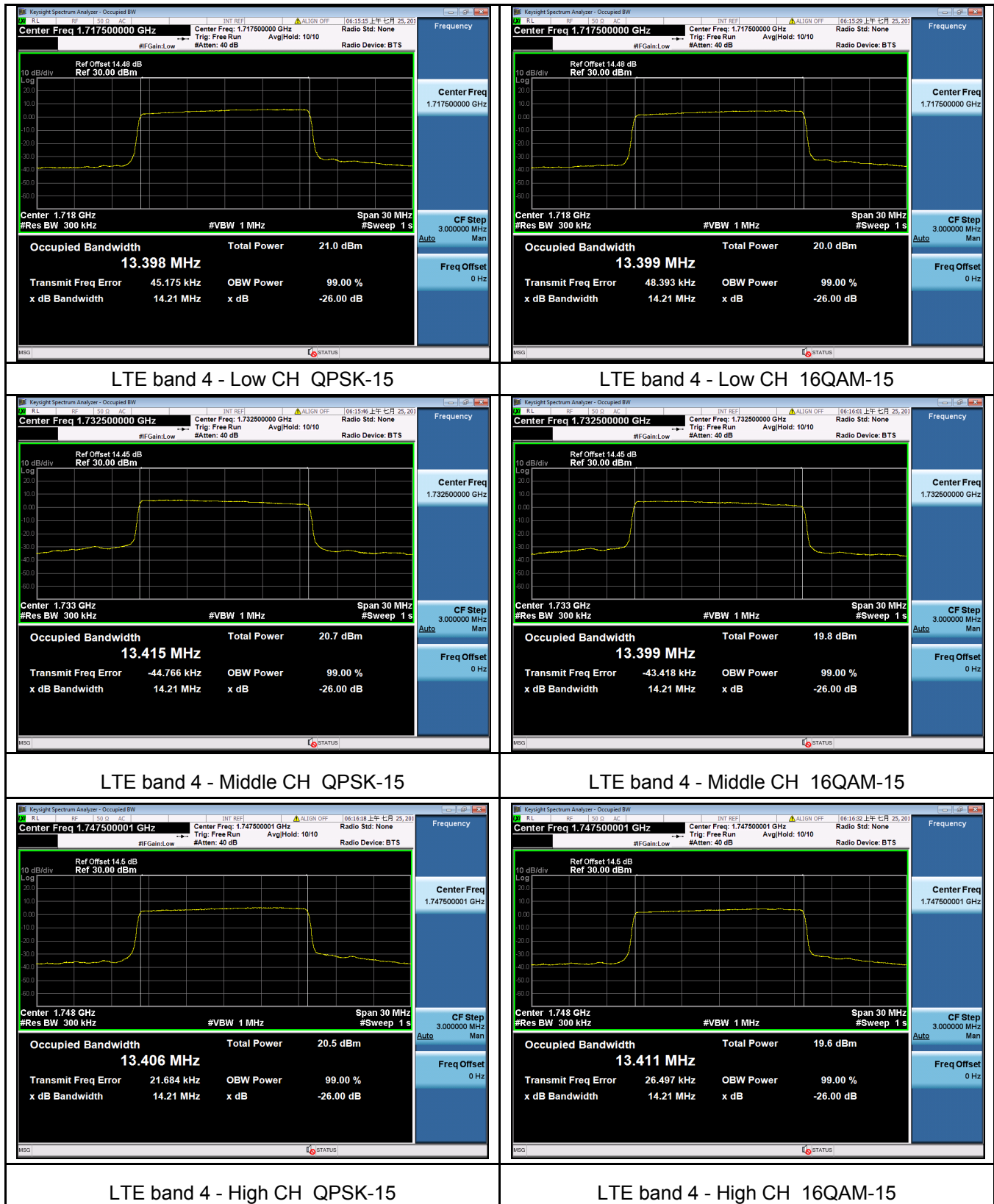
## LTE Band 4 (Part 27)

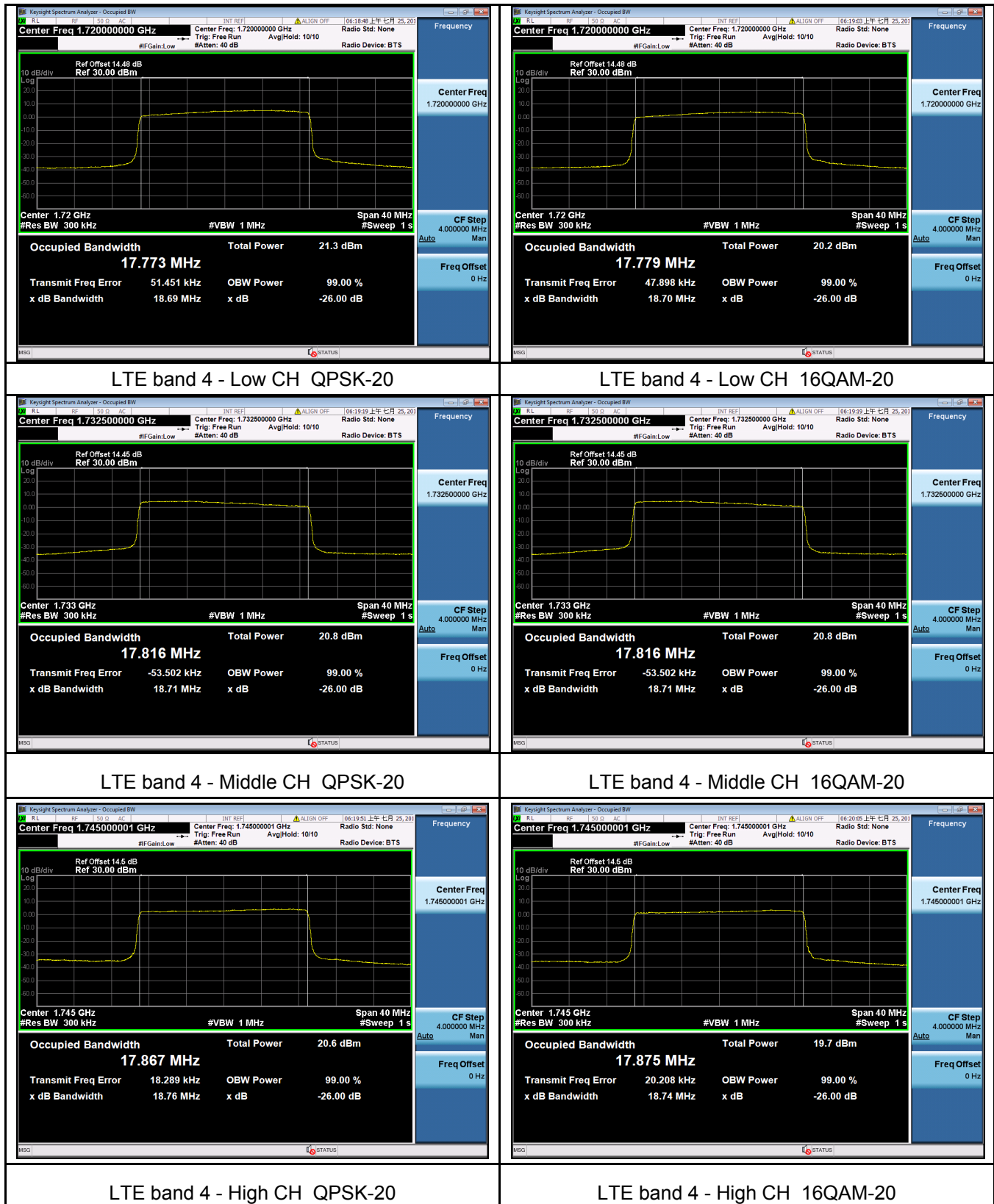




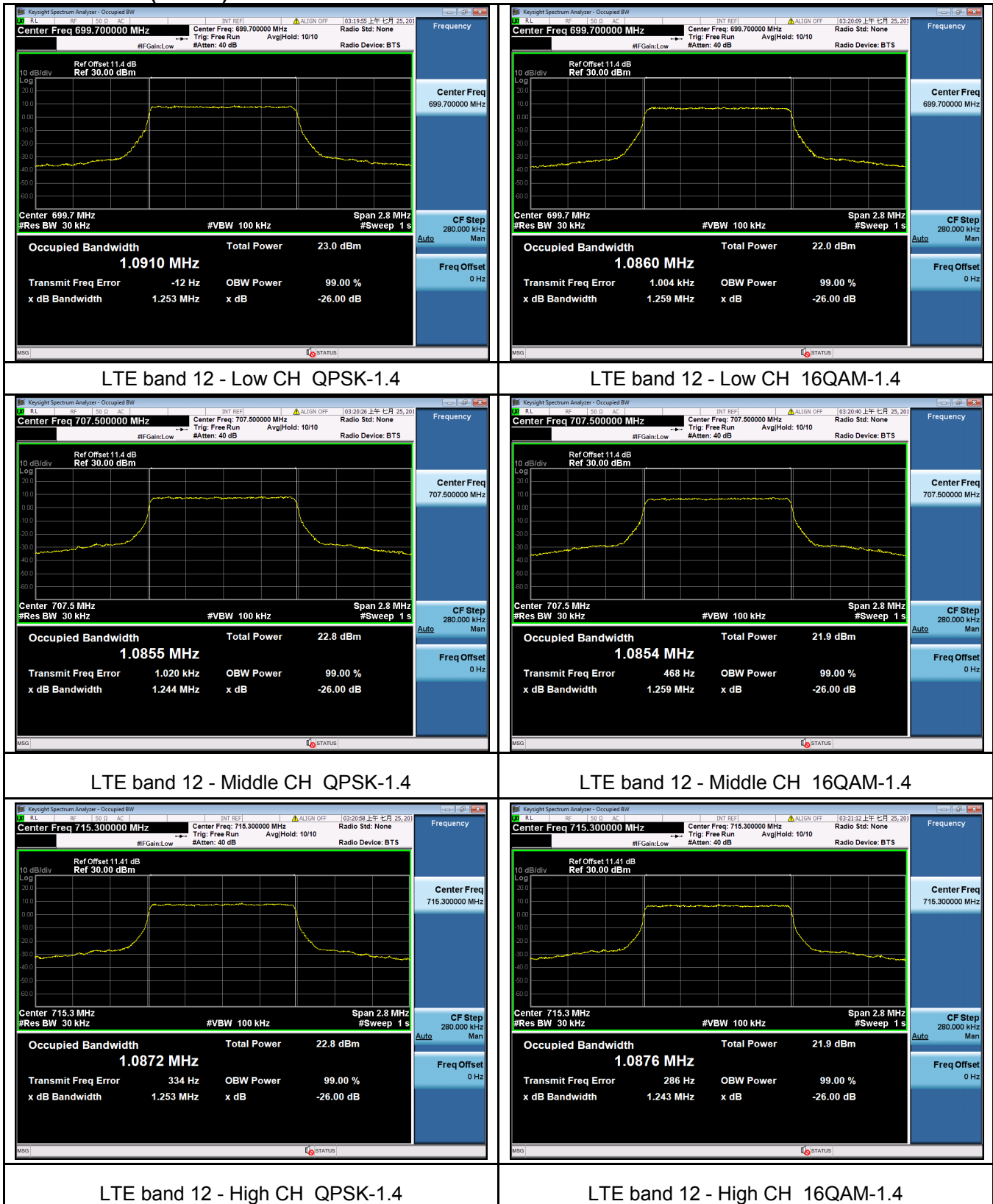


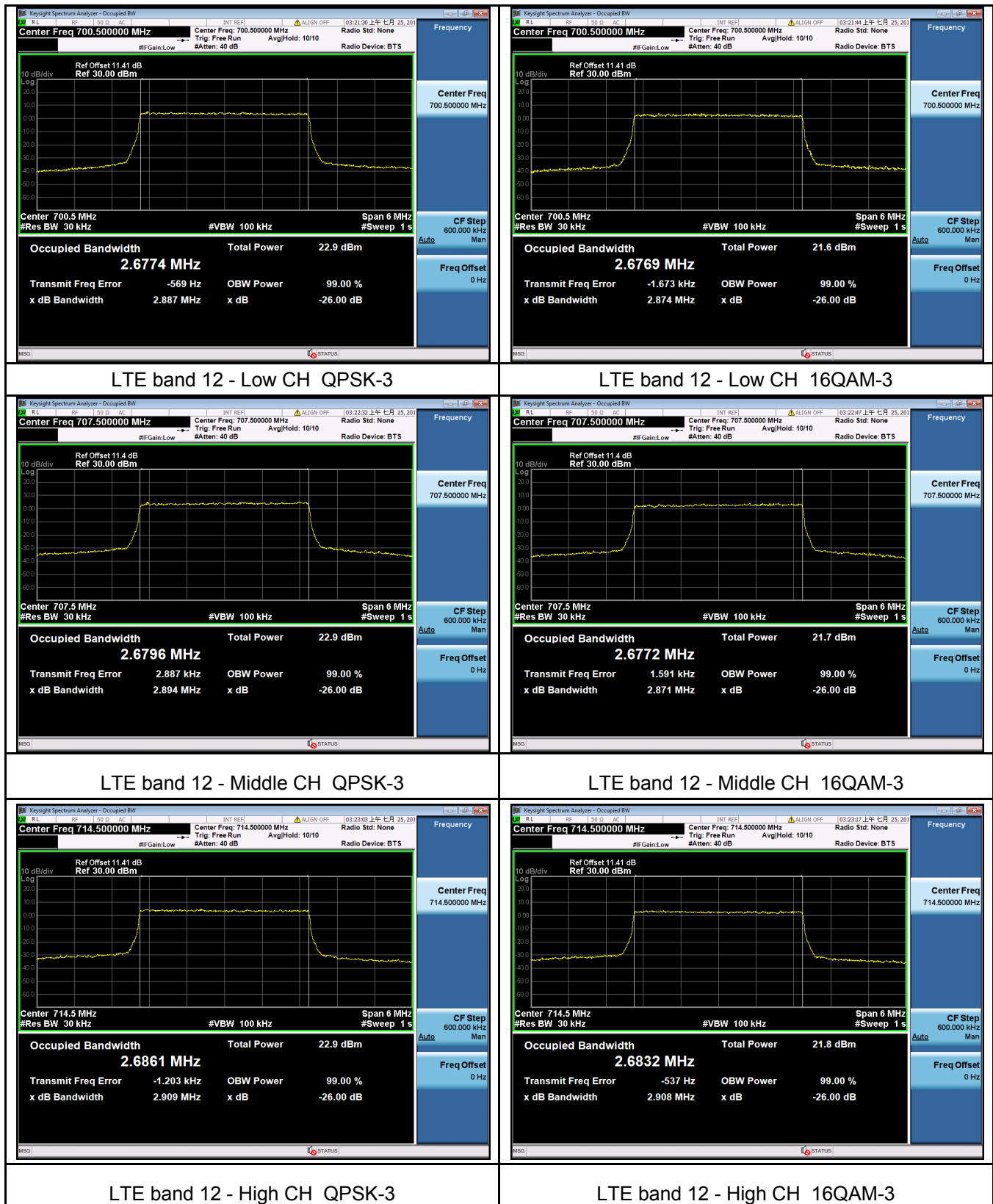


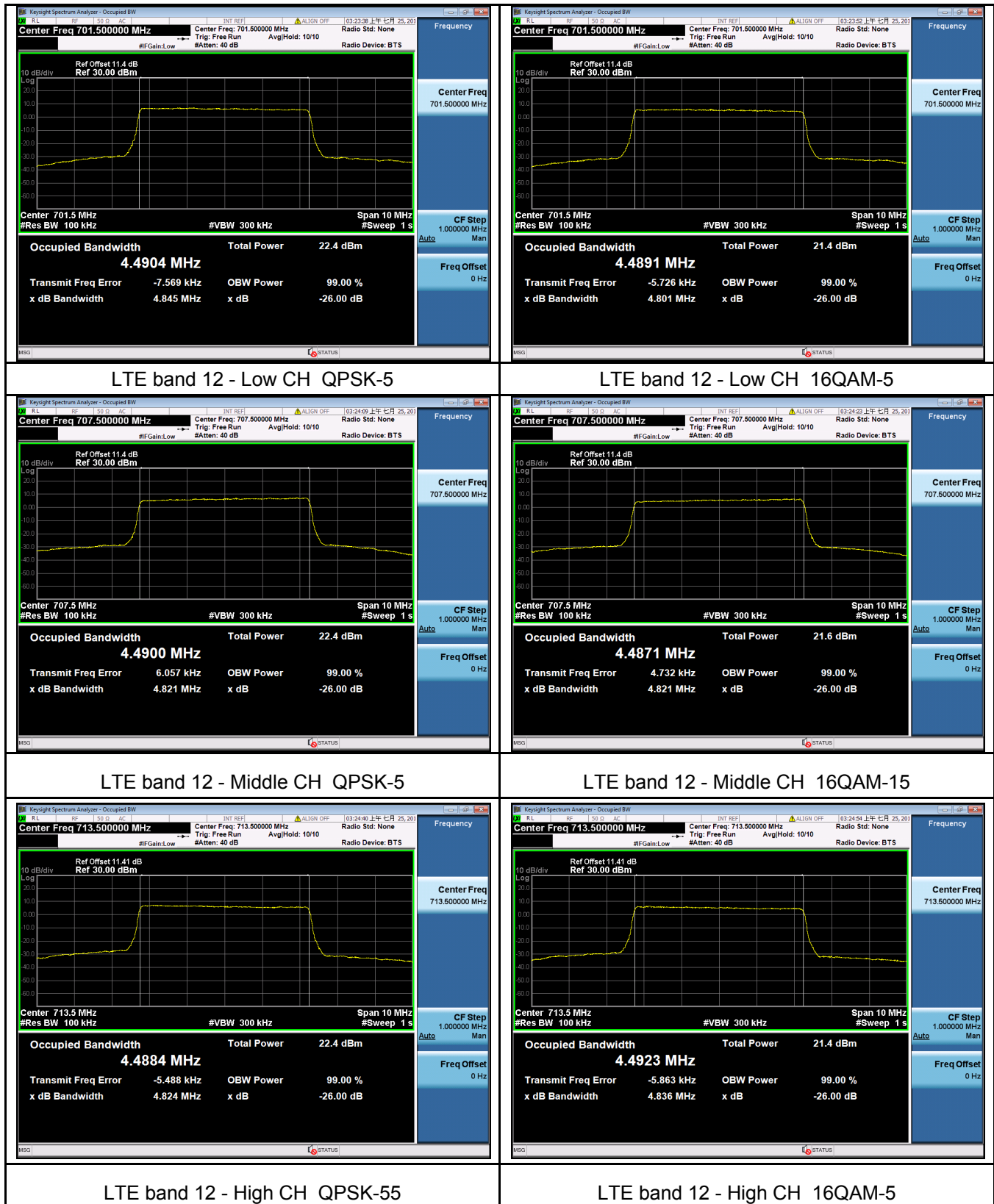


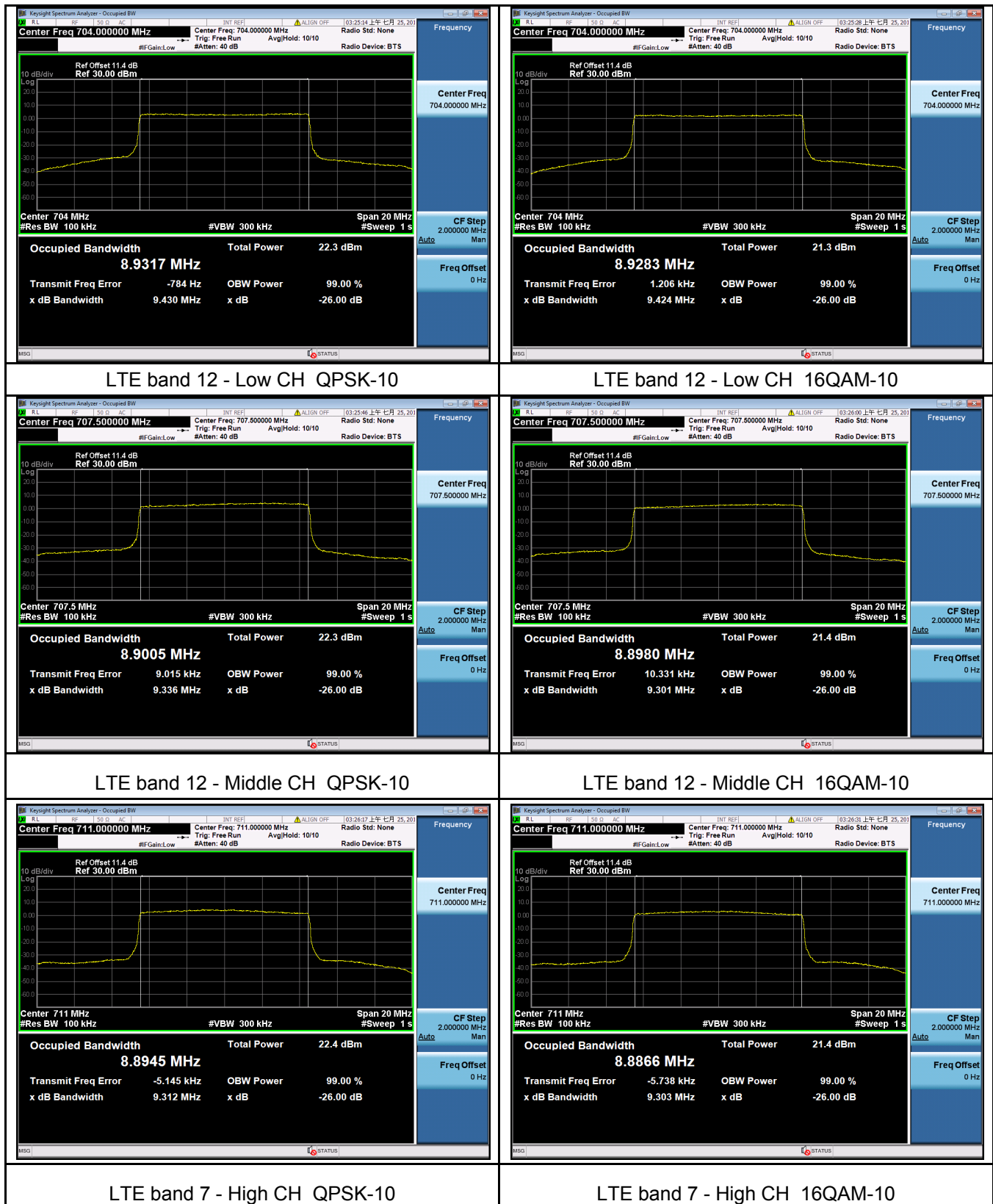


## LTE Band 12 (Part 27)









## 10 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

|                   |                                                              |
|-------------------|--------------------------------------------------------------|
| Test Requirement: | FCC Part 2.1051, 22.917(a), 24.238(a), 27.53(h), 27.53(m)(4) |
| Test Method:      | ANSI C63.26:2015<br>ANSI/TIA-603-E:2016                      |
| Test Mode:        | TX transmitting                                              |

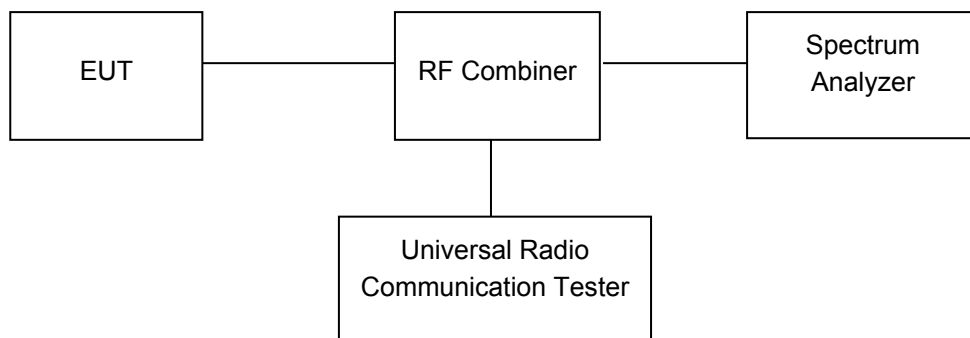
### 10.1 EUT Operation

Operating Environment :

|                       |           |
|-----------------------|-----------|
| Temperature:          | 23.5 °C   |
| Humidity:             | 52.1 % RH |
| Atmospheric Pressure: | 101.3kPa  |

### 10.2 Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonics.



### 10.3 Test Result

PASS

#### LTE Band

Please refer to the Annex C. LTE Transmitter Spurious Emissions for LTE Band 2/4/12.

## 11 SPURIOUS RADIATED EMISSIONS

|                   |                                                        |
|-------------------|--------------------------------------------------------|
| Test Requirement: | FCC Part 2.1053, 22.917, 24.238, 27.53(h), 27.53(m)(4) |
| Test Method:      | ANSI C63.26:2015<br>ANSI/TIA-603-E:2016                |
| Test Mode:        | TX transmitting                                        |

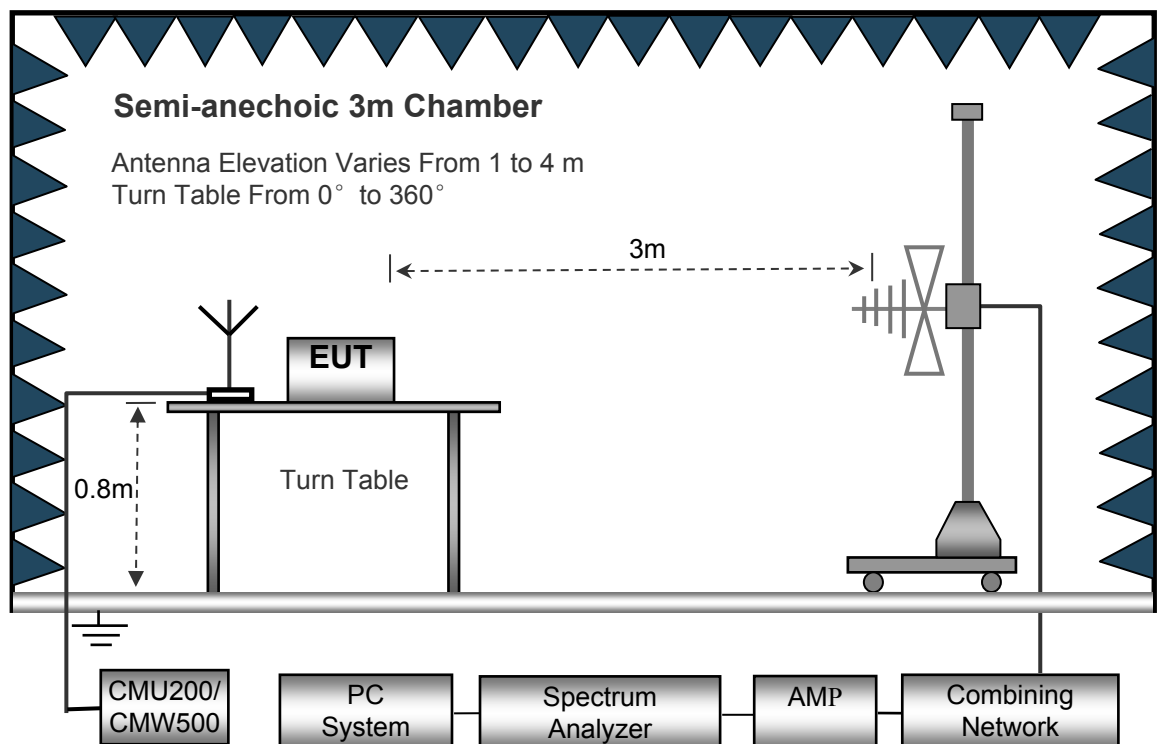
### 11.1 EUT Operation

Operating Environment :

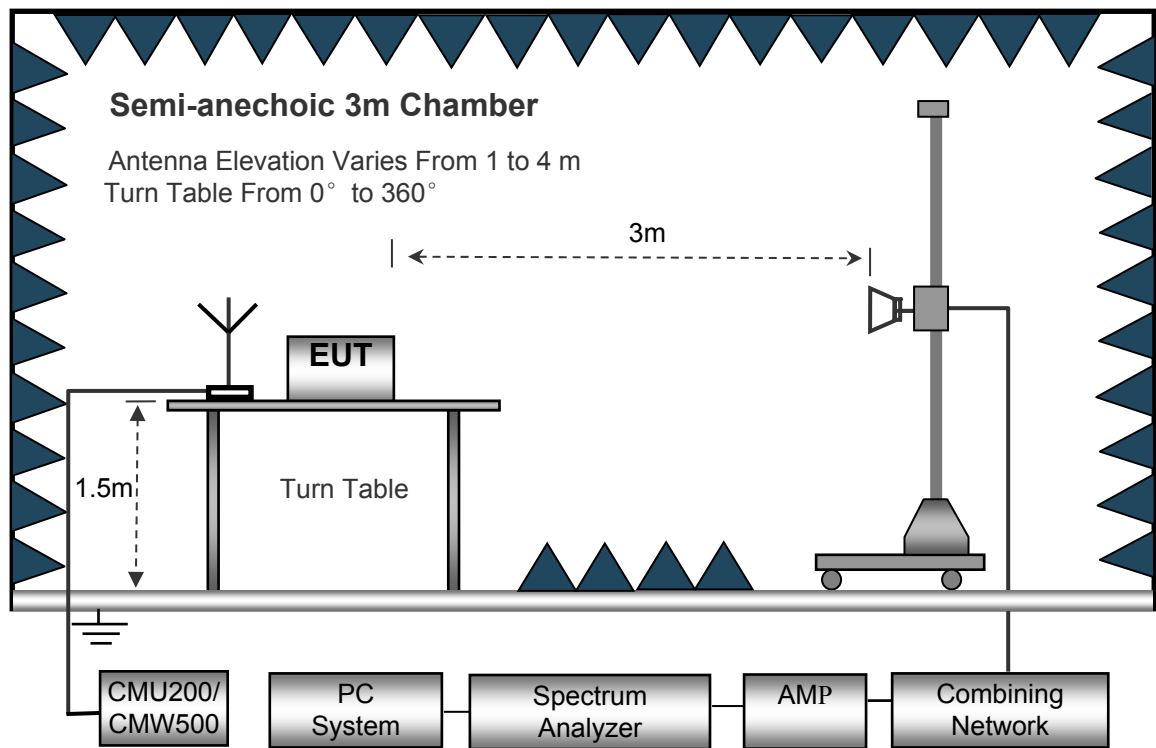
|                       |           |
|-----------------------|-----------|
| Temperature:          | 23.5 °C   |
| Humidity:             | 52.1 % RH |
| Atmospheric Pressure: | 101.2kPa  |

### 11.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site. The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



Spectrum Analyzer Setup

30MHz ~ 1GHz

Sweep Speed ..... Auto  
Detector ..... PK  
Resolution Bandwidth..... 100kHz  
Video Bandwidth..... 300kHz

Above 1GHz

Sweep Speed ..... Auto  
Detector ..... PK  
Resolution Bandwidth..... 1MHz  
Video Bandwidth..... 3MHz  
Detector ..... Ave.  
Resolution Bandwidth..... 1MHz  
Video Bandwidth..... 10Hz

### 11.3 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m for below 1GHz and 1.5m for above 1GHz above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from 30MHz up to the tenth harmonic of the highest fundamental frequency.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the Z position. So the data shown was the Z position only.
7. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.  
  
Spurious emissions in dB =  $10 \lg (\text{TXpwr in Watts}/0.001)$  – the absolute level  
Spurious attenuation limit in dB =  $43 + 10 \lg (\text{power out in Watts})$
8. Repeat above procedures until the measurements for all frequencies are completed.

## 11.4 Summary of Test Results

Remark: Test performed from 30MHz to 10<sup>th</sup> harmonics with low/middle/high channels, only the worst data were recorded.

### LTE Band 2

| Frequency                | Receiver Reading | Turn table Angle | RX Antenna |       | Substituted |       |              | Absolute Level | Result |        |
|--------------------------|------------------|------------------|------------|-------|-------------|-------|--------------|----------------|--------|--------|
|                          |                  |                  | Height     | Polar | SG Level    | Cable | Antenna Gain |                | Limit  | Margin |
| (MHz)                    | (dBμV)           | Degree           | (m)        | (H/V) | (dBm)       | (dB)  | (dB)         | (dBm)          | (dBm)  | (dB)   |
| LTE BAND 2 Channel 18607 |                  |                  |            |       |             |       |              |                |        |        |
| 223.12                   | 45.48            | 92               | 1.3        | H     | -65.03      | 0.15  | 0.00         | -65.18         | -13.00 | -52.18 |
| 223.12                   | 38.68            | 91               | 1.7        | V     | -68.91      | 0.15  | 0.00         | -69.06         | -13.00 | -56.06 |
| 3701.40                  | 65.95            | 247              | 2.1        | H     | -45.59      | 2.37  | 12.50        | -35.46         | -13.00 | -22.46 |
| 3701.40                  | 59.98            | 347              | 1.3        | V     | -49.83      | 2.37  | 12.50        | -39.70         | -13.00 | -26.70 |
| 5552.10                  | 53.58            | 294              | 2.0        | H     | -56.03      | 2.86  | 12.90        | -45.99         | -13.00 | -32.99 |
| 5552.10                  | 44.73            | 256              | 2.1        | V     | -64.15      | 2.86  | 12.90        | -54.11         | -13.00 | -41.11 |
| LTE BAND 2 Channel 18900 |                  |                  |            |       |             |       |              |                |        |        |
| 223.12                   | 45.27            | 267              | 1.2        | H     | -65.24      | 0.15  | 0.00         | -65.39         | -13.00 | -52.39 |
| 223.12                   | 38.37            | 44               | 1.8        | V     | -69.22      | 0.15  | 0.00         | -69.37         | -13.00 | -56.37 |
| 3760.00                  | 58.75            | 89               | 1.1        | H     | -52.79      | 2.37  | 12.50        | -42.66         | -13.00 | -29.66 |
| 3760.00                  | 53.03            | 295              | 1.3        | V     | -56.78      | 2.37  | 12.50        | -46.65         | -13.00 | -33.65 |
| 5640.00                  | 46.22            | 316              | 1.5        | H     | -63.39      | 2.86  | 12.90        | -53.35         | -13.00 | -40.35 |
| 5640.00                  | 37.48            | 161              | 2.0        | V     | -71.40      | 2.86  | 12.90        | -61.36         | -13.00 | -48.36 |
| LTE BAND 2 Channel 19193 |                  |                  |            |       |             |       |              |                |        |        |
| 223.12                   | 44.46            | 189              | 1.8        | H     | -66.05      | 0.15  | 0.00         | -66.20         | -13.00 | -53.20 |
| 223.12                   | 38.93            | 295              | 2.0        | V     | -68.66      | 0.15  | 0.00         | -68.81         | -13.00 | -55.81 |
| 3818.60                  | 52.68            | 256              | 1.0        | H     | -58.17      | 2.37  | 12.60        | -47.94         | -13.00 | -34.94 |
| 3818.60                  | 45.12            | 206              | 1.1        | V     | -64.19      | 2.37  | 12.60        | -53.96         | -13.00 | -40.96 |
| 5727.90                  | 38.76            | 160              | 1.4        | H     | -70.59      | 2.86  | 12.90        | -60.55         | -13.00 | -47.55 |
| 5727.90                  | 30.69            | 317              | 1.0        | V     | -77.81      | 2.86  | 12.90        | -67.77         | -13.00 | -54.77 |

**LTE Band 4**

| Frequency                | Receiver Reading | Turn table Angle | RX Antenna |       | Substituted |       |              | Absolute Level | Result |        |
|--------------------------|------------------|------------------|------------|-------|-------------|-------|--------------|----------------|--------|--------|
|                          |                  |                  | Height     | Polar | SG Level    | Cable | Antenna Gain |                | Limit  | Margin |
| (MHz)                    | (dBμV)           | Degree           | (m)        | (H/V) | (dBm)       | (dB)  | (dB)         | (dBm)          | (dBm)  | (dB)   |
| LTE BAND 4 Channel 19957 |                  |                  |            |       |             |       |              |                |        |        |
| 223.12                   | 37.79            | 351              | 1.0        | H     | -72.72      | 0.15  | 0.00         | -72.87         | -13.00 | -59.87 |
| 223.12                   | 30.66            | 7                | 2.1        | V     | -76.93      | 0.15  | 0.00         | -77.08         | -13.00 | -64.08 |
| 3421.40                  | 65.95            | 307              | 1.6        | H     | -47.10      | 2.34  | 12.40        | -37.04         | -13.00 | -24.04 |
| 3421.40                  | 59.98            | 290              | 2.0        | V     | -51.17      | 2.34  | 12.40        | -41.11         | -13.00 | -28.11 |
| 5132.10                  | 53.58            | 216              | 1.9        | H     | -55.83      | 2.79  | 12.70        | -45.92         | -13.00 | -32.92 |
| 5132.10                  | 44.73            | 174              | 2.2        | V     | -64.04      | 2.79  | 12.70        | -54.13         | -13.00 | -41.13 |
| LTE BAND 4 Channel 20175 |                  |                  |            |       |             |       |              |                |        |        |
| 223.12                   | 37.15            | 198              | 1.4        | H     | -73.36      | 0.15  | 0.00         | -73.51         | -13.00 | -60.51 |
| 223.12                   | 30.67            | 208              | 1.6        | V     | -76.92      | 0.15  | 0.00         | -77.07         | -13.00 | -64.07 |
| 3465.00                  | 58.81            | 288              | 2.0        | H     | -54.24      | 2.37  | 12.50        | -44.11         | -13.00 | -31.11 |
| 3465.00                  | 52.03            | 203              | 1.9        | V     | -59.12      | 2.37  | 12.50        | -48.99         | -13.00 | -35.99 |
| 5197.50                  | 46.30            | 81               | 1.7        | H     | -63.11      | 2.79  | 12.70        | -53.20         | -13.00 | -40.20 |
| 5197.50                  | 38.65            | 94               | 2.1        | V     | -70.12      | 2.79  | 12.70        | -60.21         | -13.00 | -47.21 |
| LTE BAND 4 Channel 20393 |                  |                  |            |       |             |       |              |                |        |        |
| 223.12                   | 37.60            | 37               | 2.1        | H     | -72.91      | 0.15  | 0.00         | -73.06         | -13.00 | -60.06 |
| 223.12                   | 31.17            | 79               | 1.8        | V     | -76.42      | 0.15  | 0.00         | -76.57         | -13.00 | -63.57 |
| 3508.60                  | 52.01            | 223              | 1.7        | H     | -60.63      | 2.37  | 12.50        | -50.50         | -13.00 | -37.50 |
| 3508.60                  | 45.12            | 86               | 1.6        | V     | -65.61      | 2.37  | 12.50        | -55.48         | -13.00 | -42.48 |
| 5262.90                  | 39.14            | 250              | 2.1        | H     | -70.44      | 2.81  | 12.80        | -60.45         | -13.00 | -47.45 |
| 5262.90                  | 30.79            | 245              | 2.0        | V     | -78.01      | 2.81  | 12.80        | -68.02         | -13.00 | -55.02 |

**LTE Band 12**

| Frequency                 | Receiver Reading | Turn table Angle | RX Antenna |       | Substituted |       |              | Absolute Level | Result |        |
|---------------------------|------------------|------------------|------------|-------|-------------|-------|--------------|----------------|--------|--------|
|                           |                  |                  | Height     | Polar | SG Level    | Cable | Antenna Gain |                | Limit  | Margin |
| (MHz)                     | (dBμV)           | Degree           | (m)        | (H/V) | (dBm)       | (dB)  | (dB)         | (dBm)          | (dBm)  | (dB)   |
| LTE BAND 12 Channel 23017 |                  |                  |            |       |             |       |              |                |        |        |
| 223.12                    | 41.06            | 6                | 1.5        | H     | -69.45      | 0.15  | 0.00         | -69.60         | -25.00 | -44.60 |
| 223.12                    | 30.15            | 94               | 1.7        | V     | -77.44      | 0.15  | 0.00         | -77.59         | -25.00 | -52.59 |
| 5005.00                   | 58.24            | 115              | 2.1        | H     | -51.00      | 2.79  | 12.70        | -41.09         | -25.00 | -16.09 |
| 5005.00                   | 52.33            | 117              | 1.9        | V     | -56.44      | 2.79  | 12.70        | -46.53         | -25.00 | -21.53 |
| 7507.50                   | 45.64            | 228              | 2.0        | H     | -60.90      | 3.12  | 11.50        | -52.52         | -25.00 | -27.52 |
| 7507.50                   | 38.70            | 74               | 2.1        | V     | -66.73      | 3.12  | 11.50        | -58.35         | -25.00 | -33.35 |
| LTE BAND 12 Channel 23095 |                  |                  |            |       |             |       |              |                |        |        |
| 223.12                    | 40.66            | 65               | 1.2        | H     | -69.85      | 0.15  | 0.00         | -70.00         | -25.00 | -45.00 |
| 223.12                    | 29.47            | 324              | 1.3        | V     | -78.12      | 0.15  | 0.00         | -78.27         | -25.00 | -53.27 |
| 5070.00                   | 50.26            | 286              | 1.4        | H     | -58.98      | 2.37  | 12.50        | -48.85         | -25.00 | -23.85 |
| 5070.00                   | 45.03            | 267              | 1.7        | V     | -63.74      | 2.37  | 12.50        | -53.61         | -25.00 | -28.61 |
| 7605.00                   | 37.89            | 36               | 1.5        | H     | -68.65      | 3.12  | 11.50        | -60.27         | -25.00 | -35.27 |
| 7605.00                   | 32.10            | 297              | 1.2        | V     | -73.33      | 3.12  | 11.50        | -64.95         | -25.00 | -39.95 |
| LTE BAND 12 Channel 23173 |                  |                  |            |       |             |       |              |                |        |        |
| 223.12                    | 40.76            | 33               | 1.4        | H     | -69.75      | 0.15  | 0.00         | -69.90         | -25.00 | -44.90 |
| 223.12                    | 30.22            | 275              | 2.1        | V     | -77.37      | 0.15  | 0.00         | -77.52         | -25.00 | -52.52 |
| 5135.00                   | 44.09            | 8                | 1.4        | H     | -65.32      | 2.37  | 12.50        | -55.19         | -25.00 | -30.19 |
| 5135.00                   | 38.46            | 61               | 1.3        | V     | -70.31      | 2.37  | 12.50        | -60.18         | -25.00 | -35.18 |
| 7702.50                   | 29.93            | 248              | 1.3        | H     | -75.30      | 3.12  | 11.50        | -66.92         | -25.00 | -41.92 |
| 7702.50                   | 25.01            | 100              | 1.7        | V     | -79.88      | 3.12  | 11.50        | -71.50         | -25.00 | -46.50 |

Note: 1) Absolute Level = SG Level - Cable loss + Antenna Gain

2) Margin = Absolute Level - Limit

## 12 Band Edge Measurement

|                   |                                                              |
|-------------------|--------------------------------------------------------------|
| Test Requirement: | FCC Part 2.1051, 22.917(a), 24.238(a), 27.53(h), 27.53(m)(4) |
| Test Method:      | ANSI C63.26:2015<br>ANSI/TIA-603-E:2016                      |
| Test Mode:        | TX transmitting                                              |

### 12.1 EUT Operation

|                         |           |
|-------------------------|-----------|
| Operating Environment : |           |
| Temperature:            | 23.5 °C   |
| Humidity:               | 52.3 % RH |
| Atmospheric Pressure:   | 101.3kPa  |

### 12.2 Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

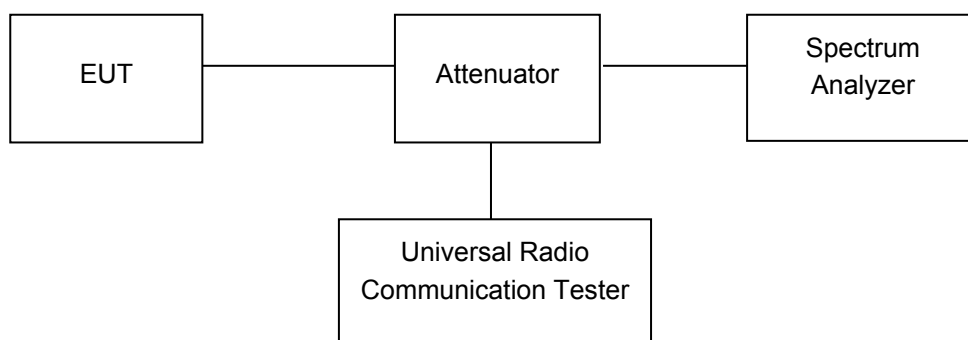
According to FCC Part 22.917(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the TX transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

According to FCC Part 24.238(a), the power of any emissions outside of the authorized operating frequency ranges must be attenuated below the TX transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

According to FCC Part 27.53(h), Except as otherwise specified below, for operations in the 1695-1710 MHz, 1710-1755 MHz, 1755-1780 MHz, 1915-1920 MHz, 1995-2000 MHz, 2000-2020 MHz, 2110-2155 MHz, 2155-2180 MHz, and 2180-2200 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.

According to FCC Part 27.53(m)(4), For mobile digital stations, the attenuation factor shall be not less than  $40 + 10 \log(P)$  dB on all frequencies between the channel edge and 5 megahertz from the channel edge,  $43 + 10 \log(P)$  dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and  $55 + 10 \log(P)$  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  $43 + 10 \log(P)$  dB on all frequencies between 2490.5 MHz and 2496 MHz and  $55 + 10 \log(P)$  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.

The center of the spectrum analyzer was set to block edge frequency  
Waltek Testing Group Co., Ltd.  
<http://www.waltek.com.cn>



### 12.3 Test Result

PASS

#### LTE Band

Please refer to the Annex E. LTE Band Edge for LTE Band 2/4/12 LTE.

## 13 FREQUENCY STABILITY

|                   |                                                |
|-------------------|------------------------------------------------|
| Test Requirement: | FCC Part 2.1055, 22.355, 24.235, 27.5(h),27.54 |
| Test Method:      | ANSI C63.26:2015<br>ANSI/TIA-603-E:2016        |
| Test Mode:        | TX transmitting                                |

### 13.1 EUT Operation

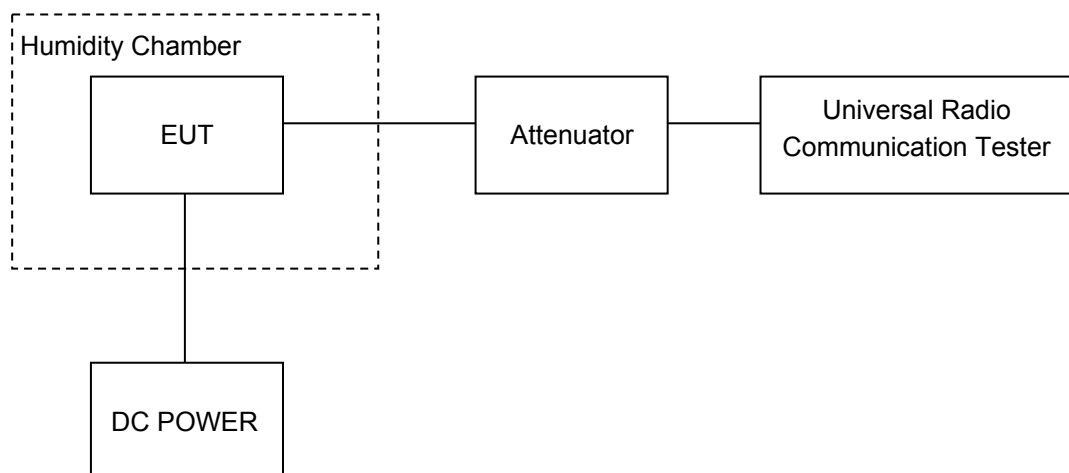
|                         |           |
|-------------------------|-----------|
| Operating Environment : |           |
| Temperature:            | 22.9 °C   |
| Humidity:               | 52.0 % RH |
| Atmospheric Pressure:   | 101.3kPa  |

### 13.2 Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: For hand carried, battery powered equipment; reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.



### 13.3 Test Result

LTE Band 2

| Test Frequency:1880.0MHz QPSK 1.4MHz |                    |                      |                       |             |
|--------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                     | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                   | 9                  | -5                   | -0.0027               | 2.5         |
| 40                                   |                    | 4                    | 0.0021                | 2.5         |
| 30                                   |                    | 6                    | 0.0032                | 2.5         |
| 20                                   |                    | 1                    | 0.0005                | 2.5         |
| 10                                   |                    | -3                   | -0.0016               | 2.5         |
| 0                                    |                    | -8                   | -0.0043               | 2.5         |
| -10                                  |                    | -2                   | -0.0011               | 2.5         |
| -20                                  |                    | 4                    | 0.0021                | 2.5         |
| -30                                  |                    | 3                    | 0.0016                | 2.5         |
| 20                                   | 8.1                | -1                   | -0.0005               | 2.5         |
| 20                                   | 9.9                | 3                    | 0.0016                | 2.5         |

| T Test Frequency:1880.0MHz 16QAM 1.4MHz |                    |                      |                       |             |
|-----------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                        | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                      | 9                  | 3                    | 0.0016                | 2.5         |
| 40                                      |                    | 11                   | 0.0059                | 2.5         |
| 30                                      |                    | 3                    | 0.0016                | 2.5         |
| 20                                      |                    | 7                    | 0.0037                | 2.5         |
| 10                                      |                    | 5                    | 0.0027                | 2.5         |
| 0                                       |                    | 8                    | 0.0043                | 2.5         |
| -10                                     |                    | 3                    | 0.0016                | 2.5         |
| -20                                     |                    | 11                   | 0.0059                | 2.5         |
| -30                                     |                    | 14                   | 0.0074                | 2.5         |
| 20                                      | 8.1                | 0                    | 0.0000                | 2.5         |
| 20                                      | 9.9                | 0                    | 0.0000                | 2.5         |

## LTE Band 2

| Test Frequency:1880.0MHz QPSK 3MHz |                    |                      |                       |             |
|------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                   | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                 | 9                  | 1                    | 0.0005                | 2.5         |
| 40                                 |                    | -1                   | -0.0005               | 2.5         |
| 30                                 |                    | 0                    | 0.0000                | 2.5         |
| 20                                 |                    | -4                   | -0.0021               | 2.5         |
| 10                                 |                    | -1                   | -0.0005               | 2.5         |
| 0                                  |                    | -10                  | -0.0053               | 2.5         |
| -10                                |                    | -11                  | -0.0059               | 2.5         |
| -20                                |                    | -13                  | -0.0069               | 2.5         |
| -30                                |                    | 3                    | 0.0016                | 2.5         |
| 20                                 | 8.1                | 1                    | 0.0005                | 2.5         |
| 20                                 | 9.9                | -7                   | -0.0037               | 2.5         |

| Test Frequency:1880.0MHz 16QAM 3MHz |                    |                      |                       |             |
|-------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                    | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                  | 9                  | 10                   | 0.0053                | 2.5         |
| 40                                  |                    | -4                   | -0.0021               | 2.5         |
| 30                                  |                    | 5                    | 0.0027                | 2.5         |
| 20                                  |                    | 2                    | 0.0011                | 2.5         |
| 10                                  |                    | 4                    | 0.0021                | 2.5         |
| 0                                   |                    | 11                   | 0.0059                | 2.5         |
| -10                                 |                    | 10                   | 0.0053                | 2.5         |
| -20                                 |                    | 1                    | 0.0005                | 2.5         |
| -30                                 |                    | 2                    | 0.0011                | 2.5         |
| 20                                  | 8.1                | 9                    | 0.0048                | 2.5         |
| 20                                  | 9.9                | 2                    | 0.0011                | 2.5         |

## LTE Band 2

| Test Frequency:1880.0MHz QPSK 5MHz |                    |                      |                       |             |
|------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                   | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                 | 9                  | 5                    | 0.0027                | 2.5         |
| 40                                 |                    | 9                    | 0.0048                | 2.5         |
| 30                                 |                    | 9                    | 0.0048                | 2.5         |
| 20                                 |                    | 8                    | 0.0037                | 2.5         |
| 10                                 |                    | 10                   | 0.0053                | 2.5         |
| 0                                  |                    | 1                    | 0.0005                | 2.5         |
| -10                                |                    | -2                   | -0.0011               | 2.5         |
| -20                                |                    | 2                    | 0.0011                | 2.5         |
| -30                                |                    | 14                   | 0.0074                | 2.5         |
| 20                                 | 8.1                | -1                   | -0.0005               | 2.5         |
| 20                                 | 9.9                | 1                    | 0.0005                | 2.5         |

| Test Frequency:1880.0MHz 16QAM 5MHz |                    |                      |                       |             |
|-------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                    | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                  | 9                  | 3                    | 0.0016                | 2.5         |
| 40                                  |                    | -4                   | -0.0021               | 2.5         |
| 30                                  |                    | -1                   | -0.0005               | 2.5         |
| 20                                  |                    | -3                   | -0.0021               | 2.5         |
| 10                                  |                    | 1                    | 0.0005                | 2.5         |
| 0                                   |                    | -4                   | -0.0021               | 2.5         |
| -10                                 |                    | -6                   | -0.0032               | 2.5         |
| -20                                 |                    | 4                    | 0.0021                | 2.5         |
| -30                                 |                    | 1                    | 0.0005                | 2.5         |
| 20                                  | 8.1                | -12                  | -0.0064               | 2.5         |
| 20                                  | 9.9                | 5                    | 0.0027                | 2.5         |

## LTE Band 2

| Test Frequency:1880.0MHz QPSK 10MHz |                    |                      |                       |             |
|-------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                    | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                  | 9                  | 4                    | 0.0021                | 2.5         |
| 40                                  |                    | -6                   | -0.0032               | 2.5         |
| 30                                  |                    | 0                    | 0.0000                | 2.5         |
| 20                                  |                    | 4                    | 0.0011                | 2.5         |
| 10                                  |                    | 10                   | 0.0053                | 2.5         |
| 0                                   |                    | -4                   | -0.0021               | 2.5         |
| -10                                 |                    | 5                    | 0.0027                | 2.5         |
| -20                                 |                    | 2                    | 0.0011                | 2.5         |
| -30                                 |                    | 8                    | 0.0043                | 2.5         |
| 20                                  | 8.1                | -4                   | -0.0021               | 2.5         |
| 20                                  | 9.9                | 4                    | 0.0021                | 2.5         |

| Test Frequency:1880.0MHz 16QAM 10MHz |                    |                      |                       |             |
|--------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                     | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                   | 9                  | 15                   | 0.0080                | 2.5         |
| 40                                   |                    | 9                    | 0.0048                | 2.5         |
| 30                                   |                    | 3                    | 0.0016                | 2.5         |
| 20                                   |                    | 7                    | 0.0037                | 2.5         |
| 10                                   |                    | -1                   | -0.0005               | 2.5         |
| 0                                    |                    | -2                   | -0.0011               | 2.5         |
| -10                                  |                    | 4                    | 0.0021                | 2.5         |
| -20                                  |                    | 10                   | 0.0053                | 2.5         |
| -30                                  |                    | 0                    | 0.0000                | 2.5         |
| 20                                   | 8.1                | 0                    | 0.0000                | 2.5         |
| 20                                   | 9.9                | 6                    | 0.0032                | 2.5         |

## LTE Band 2

| Test Frequency:1880.0MHz QPSK 15MHz |                    |                      |                       |             |
|-------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                    | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                  | 9                  | 9                    | 0.0048                | 2.5         |
| 40                                  |                    | -2                   | -0.0011               | 2.5         |
| 30                                  |                    | 3                    | 0.0016                | 2.5         |
| 20                                  |                    | 2                    | 0.0011                | 2.5         |
| 10                                  |                    | -3                   | -0.0016               | 2.5         |
| 0                                   |                    | 10                   | 0.0053                | 2.5         |
| -10                                 |                    | 2                    | 0.0011                | 2.5         |
| -20                                 |                    | 4                    | 0.0021                | 2.5         |
| -30                                 |                    | 5                    | 0.0027                | 2.5         |
| 20                                  | 8.1                | 4                    | 0.0021                | 2.5         |
| 20                                  | 9.9                | -4                   | -0.0021               | 2.5         |

| Test Frequency:1880.0MHz 16QAM 15MHz |                    |                      |                       |             |
|--------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                     | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                   | 9                  | -7                   | -0.0037               | 2.5         |
| 40                                   |                    | -1                   | -0.0005               | 2.5         |
| 30                                   |                    | -4                   | -0.0021               | 2.5         |
| 20                                   |                    | 1                    | 0.0005                | 2.5         |
| 10                                   |                    | -3                   | -0.0016               | 2.5         |
| 0                                    |                    | 3                    | 0.0016                | 2.5         |
| -10                                  |                    | 0                    | 0.0000                | 2.5         |
| -20                                  |                    | -6                   | -0.0032               | 2.5         |
| -30                                  |                    | -3                   | -0.0016               | 2.5         |
| 20                                   | 8.1                | 6                    | 0.0032                | 2.5         |
| 20                                   | 9.9                | -8                   | -0.0043               | 2.5         |

## LTE Band 2

| Test Frequency:1880.0MHz QPSK 20MHz |                    |                      |                       |             |
|-------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                    | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                  | 9                  | 0                    | 0.0000                | 2.5         |
| 40                                  |                    | -2                   | -0.0011               | 2.5         |
| 30                                  |                    | -6                   | -0.0032               | 2.5         |
| 20                                  |                    | 1                    | 0.0005                | 2.5         |
| 10                                  |                    | 3                    | 0.0016                | 2.5         |
| 0                                   |                    | -4                   | -0.0021               | 2.5         |
| -10                                 |                    | 7                    | 0.0037                | 2.5         |
| -20                                 |                    | -1                   | -0.0005               | 2.5         |
| -30                                 |                    | 1                    | 0.0005                | 2.5         |
| 20                                  | 8.1                | 2                    | 0.0011                | 2.5         |
| 20                                  | 9.9                | 9                    | 0.0048                | 2.5         |

| Test Frequency:1880.0MHz 16QAM 20MHz |                    |                      |                       |             |
|--------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                     | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                   | 9                  | 7                    | 0.0037                | 2.5         |
| 40                                   |                    | -3                   | -0.0016               | 2.5         |
| 30                                   |                    | 7                    | 0.0037                | 2.5         |
| 20                                   |                    | 0                    | 0.0000                | 2.5         |
| 10                                   |                    | 5                    | 0.0027                | 2.5         |
| 0                                    |                    | -4                   | -0.0021               | 2.5         |
| -10                                  |                    | -3                   | -0.0016               | 2.5         |
| -20                                  |                    | 8                    | 0.0043                | 2.5         |
| -30                                  |                    | 1                    | 0.0005                | 2.5         |
| 20                                   | 8.1                | 8                    | 0.0043                | 2.5         |
| 20                                   | 9.9                | 5                    | 0.0027                | 2.5         |

## LTE Band 4

| Test Frequency:1732.5MHz QPSK 1.4MHz |                    |                      |                       |             |
|--------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                     | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                   | 9                  | -6                   | -0.0035               | 2.5         |
| 40                                   |                    | -6                   | -0.0035               | 2.5         |
| 30                                   |                    | 5                    | 0.0029                | 2.5         |
| 20                                   |                    | 2                    | 0.0010                | 2.5         |
| 10                                   |                    | 2                    | 0.0012                | 2.5         |
| 0                                    |                    | 3                    | 0.0017                | 2.5         |
| -10                                  |                    | -6                   | -0.0035               | 2.5         |
| -20                                  |                    | 0                    | 0.0000                | 2.5         |
| -30                                  |                    | 11                   | 0.0063                | 2.5         |
| 20                                   | 8.1                | 10                   | 0.0058                | 2.5         |
| 20                                   | 9.9                | -6                   | -0.0035               | 2.5         |

| Test Frequency:1732.5MHz 16QAM 1.4MHz |                    |                      |                       |             |
|---------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                      | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                    | 9                  | 1                    | 0.0006                | 2.5         |
| 40                                    |                    | 14                   | 0.0081                | 2.5         |
| 30                                    |                    | 12                   | 0.0069                | 2.5         |
| 20                                    |                    | 7                    | 0.0040                | 2.5         |
| 10                                    |                    | 13                   | 0.0075                | 2.5         |
| 0                                     |                    | 11                   | 0.0063                | 2.5         |
| -10                                   |                    | 14                   | 0.0081                | 2.5         |
| -20                                   |                    | 2                    | 0.0012                | 2.5         |
| -30                                   |                    | 10                   | 0.0058                | 2.5         |
| 20                                    | 8.1                | 4                    | 0.0023                | 2.5         |
| 20                                    | 9.9                | 6                    | 0.0035                | 2.5         |

## LTE Band 4

| Test Frequency:1732.5MHz QPSK 3MHz |                    |                      |                       |             |
|------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                   | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                 | 9                  | 2                    | 0.0012                | 2.5         |
| 40                                 |                    | -1                   | -0.0006               | 2.5         |
| 30                                 |                    | 1                    | 0.0006                | 2.5         |
| 20                                 |                    | 4                    | 0.0023                | 2.5         |
| 10                                 |                    | -1                   | -0.0006               | 2.5         |
| 0                                  |                    | -3                   | -0.0017               | 2.5         |
| -10                                |                    | -2                   | -0.0012               | 2.5         |
| -20                                |                    | 7                    | 0.0040                | 2.5         |
| -30                                |                    | 4                    | 0.0023                | 2.5         |
| 20                                 | 8.1                | -4                   | -0.0023               | 2.5         |
| 20                                 | 9.9                | -3                   | -0.0017               | 2.5         |

| Test Frequency:1732.5MHz 16QAM 3MHz |                    |                      |                       |             |
|-------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                    | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                  | 9                  | 9                    | 0.0052                | 2.5         |
| 40                                  |                    | 9                    | 0.0052                | 2.5         |
| 30                                  |                    | -6                   | -0.0035               | 2.5         |
| 20                                  |                    | 2                    | 0.0012                | 2.5         |
| 10                                  |                    | 4                    | 0.0023                | 2.5         |
| 0                                   |                    | 11                   | 0.0063                | 2.5         |
| -10                                 |                    | 0                    | 0.0000                | 2.5         |
| -20                                 |                    | 9                    | 0.0052                | 2.5         |
| -30                                 |                    | -2                   | -0.0012               | 2.5         |
| 20                                  | 8.1                | 3                    | 0.0017                | 2.5         |
| 20                                  | 9.9                | 2                    | 0.0012                | 2.5         |

## LTE Band 4

| Test Frequency:1732.5MHz QPSK 5MHz |                    |                      |                       |             |
|------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                   | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                 | 9                  | -3                   | -0.0017               | 2.5         |
| 40                                 |                    | -7                   | -0.0040               | 2.5         |
| 30                                 |                    | 2                    | 0.0012                | 2.5         |
| 20                                 |                    | 2                    | 0.0012                | 2.5         |
| 10                                 |                    | -6                   | -0.0035               | 2.5         |
| 0                                  |                    | -6                   | -0.0035               | 2.5         |
| -10                                |                    | -7                   | -0.0040               | 2.5         |
| -20                                |                    | -2                   | -0.0012               | 2.5         |
| -30                                |                    | -2                   | -0.0012               | 2.5         |
| 20                                 | 8.1                | 5                    | 0.0029                | 2.5         |
| 20                                 | 9.9                | 10                   | 0.0058                | 2.5         |

| Test Frequency:1732.5MHz 16QAM 5MHz |                    |                      |                       |             |
|-------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                    | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                  | 9                  | 0                    | 0.0000                | 2.5         |
| 40                                  |                    | 9                    | 0.0052                | 2.5         |
| 30                                  |                    | 9                    | 0.0052                | 2.5         |
| 20                                  |                    | 5                    | 0.0029                | 2.5         |
| 10                                  |                    | 4                    | 0.0023                | 2.5         |
| 0                                   |                    | 6                    | 0.0035                | 2.5         |
| -10                                 |                    | 6                    | 0.0035                | 2.5         |
| -20                                 |                    | 5                    | 0.0029                | 2.5         |
| -30                                 |                    | 9                    | 0.0052                | 2.5         |
| 20                                  | 8.1                | -2                   | -0.0012               | 2.5         |
| 20                                  | 9.9                | 12                   | 0.0069                | 2.5         |

## LTE Band 4

| Test Frequency:1732.5MHz QPSK 10MHz |                    |                      |                       |             |
|-------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                    | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                  | 9                  | -6                   | -0.0035               | 2.5         |
| 40                                  |                    | -3                   | -0.0017               | 2.5         |
| 30                                  |                    | -4                   | -0.0023               | 2.5         |
| 20                                  |                    | 3                    | 0.0017                | 2.5         |
| 10                                  |                    | 7                    | 0.0040                | 2.5         |
| 0                                   |                    | -2                   | -0.0012               | 2.5         |
| -10                                 |                    | 3                    | 0.0017                | 2.5         |
| -20                                 |                    | -2                   | -0.0012               | 2.5         |
| -30                                 |                    | 5                    | 0.0029                | 2.5         |
| 20                                  | 8.1                | -1                   | -0.0006               | 2.5         |
| 20                                  | 9.9                | 0                    | 0.0000                | 2.5         |

| Test Frequency:1732.5MHz 16QAM 10MHz |                    |                      |                       |             |
|--------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                     | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                   | 9                  | 11                   | 0.0063                | 2.5         |
| 40                                   |                    | 2                    | 0.0012                | 2.5         |
| 30                                   |                    | 11                   | 0.0063                | 2.5         |
| 20                                   |                    | 3                    | 0.0017                | 2.5         |
| 10                                   |                    | 2                    | 0.0012                | 2.5         |
| 0                                    |                    | -1                   | -0.0006               | 2.5         |
| -10                                  |                    | 12                   | 0.0069                | 2.5         |
| -20                                  |                    | -5                   | -0.0029               | 2.5         |
| -30                                  |                    | 11                   | 0.0063                | 2.5         |
| 20                                   | 8.1                | -4                   | -0.0023               | 2.5         |
| 20                                   | 9.9                | 8                    | 0.0046                | 2.5         |

## LTE Band 4

| Test Frequency:1732.5MHz QPSK 15MHz |                    |                      |                       |             |
|-------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                    | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                  | 9                  | 1                    | 0.0006                | 2.5         |
| 40                                  |                    | 7                    | 0.0040                | 2.5         |
| 30                                  |                    | 1                    | 0.0006                | 2.5         |
| 20                                  |                    | 1                    | 0.0006                | 2.5         |
| 10                                  |                    | -5                   | -0.0029               | 2.5         |
| 0                                   |                    | 0                    | 0.0000                | 2.5         |
| -10                                 |                    | 6                    | 0.0035                | 2.5         |
| -20                                 |                    | -2                   | -0.0012               | 2.5         |
| -30                                 |                    | 0                    | 0.0000                | 2.5         |
| 20                                  | 8.1                | 4                    | 0.0023                | 2.5         |
| 20                                  | 9.9                | -4                   | -0.0023               | 2.5         |

| Test Frequency:1732.5MHz 16QAM 15MHz |                    |                      |                       |             |
|--------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                     | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                   | 9                  | 9                    | 0.0052                | 2.5         |
| 40                                   |                    | 6                    | 0.0035                | 2.5         |
| 30                                   |                    | 2                    | 0.0012                | 2.5         |
| 20                                   |                    | 4                    | 0.0023                | 2.5         |
| 10                                   |                    | -3                   | -0.0017               | 2.5         |
| 0                                    |                    | 13                   | 0.0075                | 2.5         |
| -10                                  |                    | 10                   | 0.0058                | 2.5         |
| -20                                  |                    | 7                    | 0.0040                | 2.5         |
| -30                                  |                    | 1                    | 0.0006                | 2.5         |
| 20                                   | 8.1                | 11                   | 0.0063                | 2.5         |
| 20                                   | 9.9                | -5                   | -0.0029               | 2.5         |

## LTE Band 4

| Test Frequency:1732.5MHz QPSK 20MHz |                    |                      |                       |             |
|-------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                    | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                  | 9                  | -1                   | -0.0006               | 2.5         |
| 40                                  |                    | -4                   | -0.0023               | 2.5         |
| 30                                  |                    | -8                   | -0.0046               | 2.5         |
| 20                                  |                    | -5                   | -0.0029               | 2.5         |
| 10                                  |                    | -6                   | -0.0035               | 2.5         |
| 0                                   |                    | -11                  | -0.0063               | 2.5         |
| -10                                 |                    | -13                  | -0.0075               | 2.5         |
| -20                                 |                    | -8                   | -0.0046               | 2.5         |
| -30                                 |                    | 1                    | 0.0006                | 2.5         |
| 20                                  | 8.1                | -5                   | -0.0029               | 2.5         |
| 20                                  | 9.9                | -13                  | -0.0075               | 2.5         |

| Test Frequency:1732.5MHz 16QAM 20MHz |                    |                      |                       |             |
|--------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                     | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                   | 9                  | 3                    | 0.0017                | 2.5         |
| 40                                   |                    | 3                    | 0.0017                | 2.5         |
| 30                                   |                    | -10                  | -0.0058               | 2.5         |
| 20                                   |                    | -4                   | -0.0023               | 2.5         |
| 10                                   |                    | -9                   | -0.0052               | 2.5         |
| 0                                    |                    | 4                    | 0.0023                | 2.5         |
| -10                                  |                    | -4                   | -0.0023               | 2.5         |
| -20                                  |                    | -3                   | -0.0017               | 2.5         |
| -30                                  |                    | -13                  | -0.0075               | 2.5         |
| 20                                   | 8.1                | -12                  | -0.0069               | 2.5         |
| 20                                   | 9.9                | -3                   | -0.0017               | 2.5         |

## LTE Band 12

| Test Frequency:707.5MHz QPSK 1.4MHz |                    |                      |                       |             |
|-------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                    | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                  | 9                  | 5                    | 0.0020                | 2.5         |
| 40                                  |                    | 7                    | 0.0028                | 2.5         |
| 30                                  |                    | -5                   | -0.0020               | 2.5         |
| 20                                  |                    | 3                    | 0.0012                | 2.5         |
| 10                                  |                    | 2                    | 0.0008                | 2.5         |
| 0                                   |                    | 11                   | 0.0043                | 2.5         |
| -10                                 |                    | 7                    | 0.0028                | 2.5         |
| -20                                 |                    | 6                    | 0.0024                | 2.5         |
| -30                                 |                    | -1                   | -0.0004               | 2.5         |
| 20                                  | 8.1                | -5                   | -0.0020               | 2.5         |
| 20                                  | 9.9                | 6                    | 0.0024                | 2.5         |

| Test Frequency:707.5MHz 16QAM 1.4MHz |                    |                      |                       |             |
|--------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                     | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                   | 9                  | 6                    | 0.0024                | 2.5         |
| 40                                   |                    | 4                    | 0.0016                | 2.5         |
| 30                                   |                    | -6                   | -0.0024               | 2.5         |
| 20                                   |                    | 3                    | 0.0012                | 2.5         |
| 10                                   |                    | 11                   | 0.0043                | 2.5         |
| 0                                    |                    | -3                   | -0.0012               | 2.5         |
| -10                                  |                    | -5                   | -0.0020               | 2.5         |
| -20                                  |                    | 4                    | 0.0016                | 2.5         |
| -30                                  |                    | 8                    | 0.0032                | 2.5         |
| 20                                   | 8.1                | -1                   | -0.0004               | 2.5         |
| 20                                   | 9.9                | -5                   | -0.0020               | 2.5         |

## LTE Band 12

| Test Frequency:707.5MHz QPSK 3MHz |                    |                      |                       |             |
|-----------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                  | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                | 9                  | 1                    | 0.0004                | 2.5         |
| 40                                |                    | 7                    | 0.0028                | 2.5         |
| 30                                |                    | 10                   | 0.0039                | 2.5         |
| 20                                |                    | 1                    | 0.0004                | 2.5         |
| 10                                |                    | 7                    | 0.0028                | 2.5         |
| 0                                 |                    | 7                    | 0.0028                | 2.5         |
| -10                               |                    | 5                    | 0.0020                | 2.5         |
| -20                               |                    | -8                   | -0.0032               | 2.5         |
| -30                               |                    | -4                   | -0.0016               | 2.5         |
| 20                                | 8.1                | 7                    | 0.0028                | 2.5         |
| 20                                | 9.9                | -4                   | -0.0016               | 2.5         |

| Test Frequency:707.5MHz 16QAM 3MHz |                    |                      |                       |             |
|------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                   | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                 | 9                  | 4                    | 0.0016                | 2.5         |
| 40                                 |                    | 0                    | 0.0000                | 2.5         |
| 30                                 |                    | -5                   | -0.0020               | 2.5         |
| 20                                 |                    | 3                    | 0.0012                | 2.5         |
| 10                                 |                    | 11                   | 0.0043                | 2.5         |
| 0                                  |                    | -5                   | -0.0020               | 2.5         |
| -10                                |                    | 4                    | 0.0016                | 2.5         |
| -20                                |                    | -4                   | -0.0016               | 2.5         |
| -30                                |                    | 11                   | 0.0043                | 2.5         |
| 20                                 | 8.1                | -5                   | -0.0020               | 2.5         |
| 20                                 | 9.9                | 9                    | 0.0036                | 2.5         |

## LTE Band 12

| Test Frequency:707.5MHz QPSK 5MHz |                    |                      |                       |             |
|-----------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                  | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                | 9                  | 4                    | 0.0016                | 2.5         |
| 40                                |                    | 4                    | 0.0016                | 2.5         |
| 30                                |                    | 0                    | 0.0000                | 2.5         |
| 20                                |                    | 3                    | 0.0012                | 2.5         |
| 10                                |                    | 4                    | 0.0016                | 2.5         |
| 0                                 |                    | 6                    | 0.0024                | 2.5         |
| -10                               |                    | 7                    | 0.0028                | 2.5         |
| -20                               |                    | 1                    | 0.0004                | 2.5         |
| -30                               |                    | 6                    | 0.0024                | 2.5         |
| 20                                | 8.1                | -5                   | -0.0020               | 2.5         |
| 20                                | 9.9                | 9                    | 0.0036                | 2.5         |

| Test Frequency:707.5MHz 16QAM 5MHz |                    |                      |                       |             |
|------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                   | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                 | 9                  | 3                    | 0.0012                | 2.5         |
| 40                                 |                    | 8                    | 0.0032                | 2.5         |
| 30                                 |                    | 5                    | 0.0020                | 2.5         |
| 20                                 |                    | 6                    | 0.0024                | 2.5         |
| 10                                 |                    | -1                   | -0.0004               | 2.5         |
| 0                                  |                    | 13                   | 0.0051                | 2.5         |
| -10                                |                    | 6                    | 0.0024                | 2.5         |
| -20                                |                    | -1                   | -0.0004               | 2.5         |
| -30                                |                    | 12                   | 0.0047                | 2.5         |
| 20                                 | 8.1                | 5                    | 0.0020                | 2.5         |
| 20                                 | 9.9                | 14                   | 0.0055                | 2.5         |

## LTE Band 12

| Test Frequency:707.5MHz QPSK 10MHz |                    |                      |                       |             |
|------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                   | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                 | 9                  | 10                   | 0.0039                | 2.5         |
| 40                                 |                    | -6                   | -0.0024               | 2.5         |
| 30                                 |                    | 11                   | 0.0043                | 2.5         |
| 20                                 |                    | 3                    | 0.0012                | 2.5         |
| 10                                 |                    | 6                    | 0.0024                | 2.5         |
| 0                                  |                    | -2                   | -0.0008               | 2.5         |
| -10                                |                    | 12                   | 0.0047                | 2.5         |
| -20                                |                    | 9                    | 0.0036                | 2.5         |
| -30                                |                    | 4                    | 0.0016                | 2.5         |
| 20                                 | 8.1                | -5                   | -0.0020               | 2.5         |
| 20                                 | 9.9                | 10                   | 0.0039                | 2.5         |

| Test Frequency:707.5MHz 16QAM 10MHz |                    |                      |                       |             |
|-------------------------------------|--------------------|----------------------|-----------------------|-------------|
| Temperature (°C)                    | Power Supply (VDC) | Frequency Error (Hz) | Frequency Error (ppm) | Limit (ppm) |
| 50                                  | 9                  | 6                    | 0.0024                | 2.5         |
| 40                                  |                    | -5                   | -0.0020               | 2.5         |
| 30                                  |                    | -7                   | -0.0028               | 2.5         |
| 20                                  |                    | -2                   | -0.0008               | 2.5         |
| 10                                  |                    | 0                    | 0.0000                | 2.5         |
| 0                                   |                    | -1                   | -0.0004               | 2.5         |
| -10                                 |                    | -3                   | -0.0012               | 2.5         |
| -20                                 |                    | 0                    | 0.0000                | 2.5         |
| -30                                 |                    | 0                    | 0.0000                | 2.5         |
| 20                                  | 8.1                | -10                  | -0.0039               | 2.5         |
| 20                                  | 9.9                | -1                   | -0.0004               | 2.5         |

## **14 RF Exposure**

Remark: refer to MPE test report: WTD21D02012811W003.

## **15 Photographs of test setup and EUT.**

Note: Please refer to appendix: Appendix-WC30-A-Photos.

===== End of Report =====