

# TEST REPORT

**Product Name:** Cinterion PLS83-X3  
**Trade Mark:** CINTERION  
**Model No. / HVIN:** PLS83-X3  
**Report Number:** 210127006RFM-1  
**Test Standards:** FCC 47 CFR Part 24  
FCC 47 CFR Part 27  
RSS-130 Issue 2, RSS-133 Issue 6  
RSS-139 Issue 3, RSS-Gen Issue 5  
**FCC ID:** QIPPLS83-X3  
**IC:** 7830A-PLS83X3  
**Test Result:** PASS  
**Date of Issue:** March 23, 2021

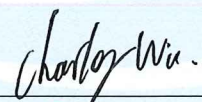
Prepared for:

**Thales DIS AIS Deutschland GmbH**  
**Siemensdamm 50, 13629 Berlin, Germany**

Prepared by:

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**  
**Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and**  
**technology park, Longhua district, Shenzhen, China**  
**TEL: +86-755-2823 0888**  
**FAX: +86-755-2823 0886**

Prepared by:

  
Charley Wu

Project Engineer

Reviewed by:

  
Kevin Liang

Assistant Manager

Approved by:

  
Billy Li

Technical Director

Date:

March 23, 2021

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: [info@uttlab.com](mailto:info@uttlab.com)

<http://www.uttlab.com>

UTTR-RF-FCC4G-V1.1

**Version**

| Version No. | Date           | Description |
|-------------|----------------|-------------|
| V1.0        | March 23, 2021 | Original    |

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: [info@uttlab.com](mailto:info@uttlab.com)<http://www.uttlab.com>UTTR-RF-FCC4G-V1.1

## CONTENTS

|                                                                    |            |
|--------------------------------------------------------------------|------------|
| <b>1. GENERAL INFORMATION .....</b>                                | <b>5</b>   |
| <b>1.1 CLIENT INFORMATION .....</b>                                | <b>5</b>   |
| <b>1.2 EUT INFORMATION .....</b>                                   | <b>5</b>   |
| 1.2.1 GENERAL DESCRIPTION OF EUT .....                             | 5          |
| 1.2.2 DESCRIPTION OF ACCESSORIES.....                              | 5          |
| <b>1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD .....</b> | <b>5</b>   |
| <b>1.4 DESCRIPTION OF SUPPORT UNITS .....</b>                      | <b>7</b>   |
| <b>1.5 TEST LOCATION.....</b>                                      | <b>7</b>   |
| <b>1.6 TEST FACILITY.....</b>                                      | <b>7</b>   |
| <b>1.7 DEVIATION FROM STANDARDS .....</b>                          | <b>8</b>   |
| <b>1.8 ABNORMALITIES FROM STANDARD CONDITIONS.....</b>             | <b>8</b>   |
| <b>1.9 OTHER INFORMATION REQUESTED BY THE CUSTOMER .....</b>       | <b>8</b>   |
| <b>1.10 MEASUREMENT UNCERTAINTY .....</b>                          | <b>9</b>   |
| <b>2. TEST SUMMARY .....</b>                                       | <b>10</b>  |
| <b>3. EQUIPMENT LIST .....</b>                                     | <b>12</b>  |
| <b>4. TEST CONFIGURATION .....</b>                                 | <b>13</b>  |
| <b>4.1 ENVIRONMENTAL CONDITIONS FOR TESTING .....</b>              | <b>13</b>  |
| <b>4.2 TEST SETUP .....</b>                                        | <b>14</b>  |
| 4.2.1 FOR RADIATED EMISSIONS TEST SETUP .....                      | 14         |
| 4.2.2 FOR CONDUCTED RF TEST SETUP .....                            | 15         |
| <b>4.3 TEST CHANNELS .....</b>                                     | <b>16</b>  |
| <b>4.4 SYSTEM TEST CONFIGURATION .....</b>                         | <b>18</b>  |
| <b>4.5 PRE-SCAN.....</b>                                           | <b>19</b>  |
| 4.5.1 LTE BAND 2 .....                                             | 19         |
| 4.5.2 LTE BAND 4 .....                                             | 20         |
| 4.5.3 LTE BAND 12 .....                                            | 21         |
| 4.5.4 LTE BAND 66 .....                                            | 22         |
| <b>5. RADIO TECHNICAL REQUIREMENTS SPECIFICATION .....</b>         | <b>27</b>  |
| <b>5.1 REFERENCE DOCUMENTS FOR TESTING .....</b>                   | <b>27</b>  |
| <b>5.2 ERP OR EIRP .....</b>                                       | <b>27</b>  |
| 5.2.1 LTE BAND 2 .....                                             | 29         |
| 5.2.2 LTE BAND 4 .....                                             | 30         |
| 5.2.3 LTE BAND 12 .....                                            | 31         |
| 5.2.4 LTE BAND 66 .....                                            | 32         |
| <b>5.3 CONDUCTED OUTPUT POWER .....</b>                            | <b>33</b>  |
| <b>5.4 PEAK-TO-AVERAGE RATIO .....</b>                             | <b>34</b>  |
| 5.4.1 LTE BAND 2 .....                                             | 34         |
| 5.4.2 LTE BAND 4 .....                                             | 37         |
| 5.4.3 LTE BAND 12 .....                                            | 40         |
| 5.4.4 LTE BAND 66 .....                                            | 43         |
| <b>5.5 99%&amp;26dB BANDWIDTH.....</b>                             | <b>46</b>  |
| 5.5.1 LTE BAND 2 .....                                             | 46         |
| 5.5.2 LTE BAND 4 .....                                             | 53         |
| 5.5.3 LTE BAND 12 .....                                            | 60         |
| 5.5.4 LTE BAND 66 .....                                            | 65         |
| <b>5.6 BAND EDGE AT ANTENNA TERMINALS .....</b>                    | <b>72</b>  |
| 5.6.1 LTE BAND 2 .....                                             | 74         |
| 5.6.2 LTE BAND 4 .....                                             | 86         |
| 5.6.3 LTE BAND 12 .....                                            | 98         |
| 5.6.4 LTE BAND 66 .....                                            | 106        |
| <b>5.7 SPURIOUS EMISSIONS AT ANTENNA TERMINALS .....</b>           | <b>118</b> |
| 5.7.1 LTE BAND 2 .....                                             | 119        |
| 5.7.2 LTE BAND 4 .....                                             | 125        |

|                                                             |                                                  |            |
|-------------------------------------------------------------|--------------------------------------------------|------------|
| 5.7.3                                                       | LTE BAND 12 .....                                | 131        |
| 5.7.4                                                       | LTE BAND 66 .....                                | 135        |
| <b>5.8</b>                                                  | <b>FIELD STRENGTH OF SPURIOUS RADIATION.....</b> | <b>141</b> |
| 5.8.1                                                       | LTE BAND 2 .....                                 | 142        |
| 5.8.2                                                       | LTE BAND 4 .....                                 | 143        |
| 5.8.3                                                       | LTE BAND 12 .....                                | 144        |
| 5.8.4                                                       | LTE BAND 66 .....                                | 145        |
| <b>5.9</b>                                                  | <b>FREQUENCY STABILITY .....</b>                 | <b>147</b> |
| 5.9.1                                                       | LTE BAND 2 .....                                 | 148        |
| 5.9.2                                                       | LTE BAND 4 .....                                 | 149        |
| 5.9.3                                                       | LTE BAND 12 .....                                | 149        |
| 5.9.4                                                       | LTE BAND 66 .....                                | 150        |
| <b>APPENDIX 1 PHOTOS OF TEST SETUP.....</b>                 |                                                  | <b>151</b> |
| <b>APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS.....</b> |                                                  | <b>151</b> |

## 1. GENERAL INFORMATION

### 1.1 CLIENT INFORMATION

|                                 |                                        |
|---------------------------------|----------------------------------------|
| <b>Applicant:</b>               | Thales DIS AIS Deutschland GmbH        |
| <b>Address of Applicant:</b>    | Siemensdamm 50, 13629 Berlin, Germany  |
| <b>Manufacturer:</b>            | Thales DIS AIS Deutschland GmbH        |
| <b>Address of Manufacturer:</b> | Werinherstr. 81, 81541 Munich, Germany |

### 1.2 EUT INFORMATION

#### 1.2.1 General Description of EUT

|                                       |                                         |                                               |
|---------------------------------------|-----------------------------------------|-----------------------------------------------|
| <b>Product Name:</b>                  | Cinterion PLS83-X3                      |                                               |
| <b>Model No.:</b>                     | PLS83-X3                                |                                               |
| <b>Trade Mark:</b>                    | CINTERION                               |                                               |
| <b>DUT Stage:</b>                     | Production Unit                         |                                               |
| <b>EUT Supports Function:</b>         | E-UTRA Bands:                           | FDD Band 2/ Band 4/ Band 12/ Band 14/ Band 66 |
| <b>Original Sample Received Date:</b> | August 25, 2020                         |                                               |
| <b>Original Sample Tested Date:</b>   | September 1, 2020 to September 24, 2020 |                                               |
| <b>Sample Received Date:</b>          | January 27, 2021                        |                                               |
| <b>Sample Tested Date:</b>            | January 28, 2021 to February 7, 2021    |                                               |

#### 1.2.2 Description of Accessories

None.

### 1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

|                                  |                     |                         |
|----------------------------------|---------------------|-------------------------|
| <b>Support Networks:</b>         | LTE                 |                         |
| <b>Type of Modulation:</b>       | LTE Band 2/4/12/66: | QPSK, 16QAM             |
| <b>Antenna Type:</b>             | External Antenna    |                         |
| <b>Antenna Gain:</b>             | LTE Band 2:         | 50 ohm terminal (0 dBi) |
|                                  | LTE Band 4:         | 50 ohm terminal (0 dBi) |
|                                  | LTE Band 12:        | 50 ohm terminal (0 dBi) |
|                                  | LTE Band 66:        | 50 ohm terminal (0 dBi) |
| <b>Normal Test Voltage:</b>      | 3.8 Vdc             |                         |
| <b>Extreme Test Voltage:</b>     | 3.2 to 4.5Vdc       |                         |
| <b>Extreme Test Temperature:</b> | -30 °C to +65 °C    |                         |

| Summary of Results: |       |            |                 |                           |                    |          |        |                     |
|---------------------|-------|------------|-----------------|---------------------------|--------------------|----------|--------|---------------------|
| Bands               | BW    | Modulation | Frequency Range | Max RF Output Power (dBm) |                    | ERP/EIRP | 99% BW | Emission Designator |
|                     | (MHz) |            | (MHz)           | Conducted (Average)       | ERP/EIRP (Average) | (W)      | (MHz)  |                     |
| 2                   | 1.4   | QPSK       | 1850.7-1909.3   | 23.36                     | 23.36              | 0.21677  | 1.1084 | 1M11G7D             |
|                     |       | 16QAM      |                 | 23.03                     | 23.03              | 0.20091  | 1.1033 | 1M10W7D             |
|                     | 3     | QPSK       | 1851.5-1908.5   | 23.44                     | 23.44              | 0.22080  | 2.7071 | 2M71G7D             |
|                     |       | 16QAM      |                 | 22.73                     | 22.73              | 0.18750  | 2.7119 | 2M71W7D             |
|                     | 5     | QPSK       | 1852.5-1907.5   | 23.29                     | 23.29              | 0.21330  | 4.5338 | 4M53G7D             |
|                     |       | 16QAM      |                 | 22.89                     | 22.89              | 0.19454  | 4.5258 | 4M53W7D             |
|                     | 10    | QPSK       | 1855.0-1905.0   | 23.40                     | 23.40              | 0.21878  | 8.9839 | 8M98G7D             |
|                     |       | 16QAM      |                 | 22.80                     | 22.80              | 0.19055  | 8.9949 | 8M99W7D             |
|                     | 15    | QPSK       | 1857.5-1902.5   | 23.30                     | 23.30              | 0.21380  | 13.457 | 13M5G7D             |
|                     |       | 16QAM      |                 | 22.88                     | 22.88              | 0.19409  | 13.476 | 13M5W7D             |
|                     | 20    | QPSK       | 1860.0-1900.0   | 23.46                     | 23.46              | 0.22182  | 17.946 | 17M9G7D             |
|                     |       | 16QAM      |                 | 22.89                     | 22.89              | 0.19454  | 17.969 | 18M0W7D             |
| 4                   | 1.4   | QPSK       | 1710.7-1754.3   | 22.95                     | 22.95              | 0.19724  | 1.1050 | 1M11G7D             |
|                     |       | 16QAM      |                 | 21.99                     | 21.99              | 0.15812  | 1.0997 | 1M10W7D             |
|                     | 3     | QPSK       | 1711.5-1753.5   | 23.00                     | 23.00              | 0.19953  | 2.7036 | 2M70G7D             |
|                     |       | 16QAM      |                 | 21.85                     | 21.85              | 0.15311  | 2.7054 | 2M71W7D             |
|                     | 5     | QPSK       | 1712.5-1752.5   | 23.01                     | 23.01              | 0.19999  | 4.5246 | 4M52G7D             |
|                     |       | 16QAM      |                 | 21.87                     | 21.87              | 0.15382  | 4.5368 | 4M54W7D             |
|                     | 10    | QPSK       | 1715-1750       | 22.90                     | 22.90              | 0.19498  | 8.9776 | 8M98G7D             |
|                     |       | 16QAM      |                 | 21.75                     | 21.75              | 0.14962  | 9.0049 | 9M00W7D             |
|                     | 15    | QPSK       | 1717.5-1747.5   | 23.08                     | 23.08              | 0.20324  | 13.479 | 13M5G7D             |
|                     |       | 16QAM      |                 | 21.80                     | 21.80              | 0.15136  | 13.471 | 13M5W7D             |
|                     | 20    | QPSK       | 1720-1745       | 23.38                     | 23.38              | 0.21777  | 17.961 | 18M0G7D             |
|                     |       | 16QAM      |                 | 22.20                     | 22.20              | 0.16596  | 17.965 | 18M0W7D             |
| 12                  | 1.4   | QPSK       | 699.7-715.3     | 23.34                     | 21.19              | 0.13152  | 1.0993 | 1M10G7D             |
|                     |       | 16QAM      |                 | 22.82                     | 20.67              | 0.11668  | 1.0974 | 1M10W7D             |
|                     | 3     | QPSK       | 700.5-714.5     | 23.32                     | 21.17              | 0.13092  | 2.7036 | 2M70G7D             |
|                     |       | 16QAM      |                 | 22.91                     | 20.76              | 0.11912  | 2.7073 | 2M71W7D             |
|                     | 5     | QPSK       | 701.5-713.5     | 23.33                     | 21.18              | 0.13122  | 4.5217 | 4M52G7D             |
|                     |       | 16QAM      |                 | 22.83                     | 20.68              | 0.11695  | 4.5218 | 4M52W7D             |
|                     | 10    | QPSK       | 704-711         | 23.40                     | 21.25              | 0.13335  | 9.0164 | 9M02G7D             |
|                     |       | 16QAM      |                 | 22.93                     | 20.78              | 0.11967  | 8.9957 | 9M00W7D             |

| Summary of Results: |       |            |                 |                           |                    |         |        |                     |
|---------------------|-------|------------|-----------------|---------------------------|--------------------|---------|--------|---------------------|
| Bands               | BW    | Modulation | Frequency Range | Max RF Output Power (dBm) |                    | EIRP    | 99% BW | Emission Designator |
|                     | (MHz) |            | (MHz)           | Conducted (Average)       | ERP/EIRP (Average) | (W)     | (MHz)  |                     |
| 66                  | 1.4   | QPSK       | 1710.7-1779.3   | 23.45                     | 23.45              | 0.22131 | 1.1091 | 1M11G7D             |
|                     |       | 16QAM      |                 | 22.71                     | 22.71              | 0.18664 | 1.1052 | 1M11W7D             |
|                     | 3     | QPSK       | 1711.5-1778.5   | 23.58                     | 23.58              | 0.22803 | 2.7109 | 2M71G7D             |
|                     |       | 16QAM      |                 | 22.47                     | 22.47              | 0.17660 | 2.7058 | 2M71W7D             |
|                     | 5     | QPSK       | 1712.5-1777.5   | 23.50                     | 23.50              | 0.22387 | 4.5332 | 4M53G7D             |
|                     |       | 16QAM      |                 | 22.65                     | 22.65              | 0.18408 | 4.5309 | 4M53W7D             |
|                     | 10    | QPSK       | 1715-1775       | 23.47                     | 23.47              | 0.22233 | 8.9935 | 8M99G7D             |
|                     |       | 16QAM      |                 | 22.50                     | 22.50              | 0.17783 | 8.9875 | 8M99W7D             |
|                     | 15    | QPSK       | 1717.5-1772.5   | 23.48                     | 23.48              | 0.22284 | 13.480 | 13M5G7D             |
|                     |       | 16QAM      |                 | 22.50                     | 22.50              | 0.17783 | 13.448 | 13M4W7D             |
|                     | 20    | QPSK       | 1720-1770       | 23.61                     | 23.61              | 0.22961 | 17.933 | 17M9G7D             |
|                     |       | 16QAM      |                 | 22.65                     | 22.65              | 0.18408 | 17.959 | 18M0W7D             |

## 1.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested with associated equipment below.

### 1) Support Equipment

| Description     | Manufacturer | Model No. | Serial Number | Supplied by |
|-----------------|--------------|-----------|---------------|-------------|
| Adaptor         | N/A          | CD139     | 20359         | Applicant   |
| PCB board       | N/A          | DSB75     | --            | Applicant   |
| PCB board       | N/A          | AH8       | --            | Applicant   |
| 50 ohm terminal | N/A          | N/A       | N/A           | UnionTrust  |

### 2) Support Cable

| Cable No. | Description | Connector | Length | Supplied by |
|-----------|-------------|-----------|--------|-------------|
| --        | --          | --        | --     | --          |

## 1.5 TEST LOCATION

### Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China 518109

Telephone: +86 (0) 755 2823 0888

Fax: +86 (0) 755 2823 0886

## 1.6 TEST FACILITY

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

### Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-FCC4G-V1.1

**CNAS-Lab Code: L9069**

The measuring equipment utilized to perform the tests documented in this report has been calibrated once a year or in accordance with the manufacturer's recommendations, and is traceable under the ISO/IEC/EN 17025 to international or national standards. Equipment has been calibrated by accredited calibration laboratories.

**A2LA-Lab Certificate No.: 4312.01**

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

**ISED Wireless Device Testing Laboratories**

CAB identifier: CN0032

**FCC Accredited Lab.**

Designation Number: CN1194

Test Firm Registration Number: 259480

---

## **1.7 DEVIATION FROM STANDARDS**

None.

## **1.8 ABNORMALITIES FROM STANDARD CONDITIONS**

None.

## **1.9 OTHER INFORMATION REQUESTED BY THE CUSTOMER**

None.

### 1.10 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

| No. | Item                                    | Measurement Uncertainty  |
|-----|-----------------------------------------|--------------------------|
| 1   | Conducted emission 9KHz-150KHz          | ±3.2 dB                  |
| 2   | Conducted emission 150KHz-30MHz         | ±2.7 dB                  |
| 3   | Radiated spurious emissions 30MHz-1GHz  | ± 4.9 dB                 |
| 4   | Radiated spurious emissions 1GHz-18GHz  | ± 4.8 dB                 |
| 5   | Radiated spurious emissions 18GHz-40GHz | ± 5.1 dB                 |
| 6   | Occupied Bandwidth                      | ± 1.86 %                 |
| 7   | DC Supply Voltages                      | ± 0.68 %                 |
| 8   | Temperature                             | ± 0.62 °C                |
| 9   | Humidity                                | ± 3.9 %                  |
| 10  | Conducted spurious emissions            | ± 2.7 dB                 |
| 11  | DC Supply Voltages                      | ± 0.68 %                 |
| 12  | AC Supply Voltages                      | ± 1.2 %                  |
| 13  | Radio Frequency                         | ± 6.5 × 10 <sup>-8</sup> |
| 14  | RF Power, Conducted                     | ± 0.9 dB                 |

## 2. TEST SUMMARY

| FCC 47 CFR Part 24 Test Cases (Band 2)     |                                                                                       |                                         |          |
|--------------------------------------------|---------------------------------------------------------------------------------------|-----------------------------------------|----------|
| Test Item                                  | Test Requirement                                                                      | Test Method                             | Result   |
| Equivalent Isotropic Radiated Power (EIRP) | FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 24.232(c)<br>RSS-133 Issue 6, Section 6.4 | ANSI C63.26-2015 & KDB 971168 D01v03r01 | See Note |
| Conducted Output Power                     | FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 24.232(c)<br>RSS-133 Issue 6, Section 6.4 | ANSI C63.26-2015 & KDB 971168 D01v03r01 | See Note |
| Peak-to-average ratio                      | FCC 47 CFR Part 24.232(d)<br>RSS-133 Issue 6, Section 6.4                             | KDB 971168 D01v03r01                    | See Note |
| 99%&26dB Bandwidth                         | FCC 47 CFR Part 2.1049(h) & FCC 47 CFR Part 24.238(b)<br>RSS-Gen Issue 5, Section 6.7 | ANSI C63.26-2015 & KDB 971168 D01v03r01 | See Note |
| Band Edge at antenna terminals             | FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 24.238(a)<br>RSS-133 Issue 6, Section 6.5    | ANSI C63.26-2015 & KDB 971168 D01v03r01 | See Note |
| Spurious emissions at antenna terminals    | FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 24.238(a)(b)<br>RSS-133 Issue 6, Section 6.5 | ANSI C63.26-2015 & KDB 971168 D01v03r01 | See Note |
| Field strength of spurious radiation       | FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 24.238(a)(b)<br>RSS-133 Issue 6, Section 6.5 | ANSI C63.26-2015 & KDB 971168 D01v03r01 | PASS     |
| Frequency stability                        | FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 24.235<br>RSS-133 Issue 6, Section 6.3       | ANSI C63.26-2015 & KDB 971168 D01v03r01 | See Note |

| FCC 47 CFR Part 27 Test Cases (LTE Band 4 & Band 66) |                                                                                         |                                         |          |
|------------------------------------------------------|-----------------------------------------------------------------------------------------|-----------------------------------------|----------|
| Test Item                                            | Test Requirement                                                                        | Test Method                             | Result   |
| Equivalent Isotropic Radiated Power (EIRP)           | FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(d)(4)<br>RSS-139 Issue 3, Section 6.5 | ANSI C63.26-2015 & KDB 971168 D01v03r01 | See Note |
| Conducted Output Power                               | FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(d)(4)<br>RSS-139 Issue 3, Section 6.5 | ANSI C63.26-2015 & KDB 971168 D01v03r01 | See Note |
| Peak-to-average ratio                                | FCC 47 CFR Part 27.50(d)(5)<br>RSS-139 Issue 3, Section 6.5                             | KDB 971168 D01v03r01                    | See Note |
| 99%&26dB Bandwidth                                   | FCC 47 CFR Part 2.1049(h)<br>FCC 47 CFR Part 27.53(h)<br>RSS-Gen Issue 5, Section 6.7   | ANSI C63.26-2015 & KDB 971168 D01v03r01 | See Note |
| Band Edge at antenna terminals                       | FCC 47 CFR Part 27.53(h)(1)<br>RSS-139 Issue 3, Section 6.6                             | ANSI C63.26-2015 & KDB 971168 D01v03r01 | See Note |
| Spurious emissions at antenna terminals              | FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 27.53(h)<br>RSS-139 Issue 3, Section 6.6       | ANSI C63.26-2015 & KDB 971168 D01v03r01 | See Note |
| Field strength of spurious radiation                 | FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 27.53(h)<br>RSS-139 Issue 3, Section 6.6       | ANSI C63.26-2015 & KDB 971168 D01v03r01 | PASS     |
| Frequency stability                                  | FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 27.54<br>RSS-139 Issue 3, Section 6.4          | ANSI C63.26-2015 & KDB 971168 D01v03r01 | See Note |

### Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-FCC4G-V1.1

| FCC 47 CFR Part 27 Test Cases (LTE Band 12) |                                                                                          |                                         |          |
|---------------------------------------------|------------------------------------------------------------------------------------------|-----------------------------------------|----------|
| Test Item                                   | Test Requirement                                                                         | Test Method                             | Result   |
| Effective Radiated Power (ERP)              | FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(c)(10)<br>RSS-130 Issue 2, Section 4.6 | ANSI C63.26-2015 & KDB 971168 D01v03r01 | See Note |
| Conducted Output Power                      | FCC 47 CFR Part 2.1046(a) & FCC 47 CFR Part 27.50(c)(10)<br>RSS-130 Issue 2, Section 4.6 | ANSI C63.26-2015 & KDB 971168 D01v03r01 | See Note |
| Peak-to-average ratio                       | FCC 47 CFR Part 27.50(d)(5)<br>RSS-130 Issue 2, Section 4.6                              | KDB 971168 D01v03r01                    | See Note |
| 99%&26dB Bandwidth                          | FCC 47 CFR Part 2.1049(h)<br>FCC 47 CFR Part 27.53(g)<br>RSS-Gen Issue 5, Section 6.7    | ANSI C63.26-2015 & KDB 971168 D01v03r01 | See Note |
| Band Edge at antenna terminals              | FCC 47 CFR Part 27.53(g)<br>RSS-130 Issue 2, Section 4.7                                 | ANSI C63.26-2015 & KDB 971168 D01v03r01 | See Note |
| Spurious emissions at antenna terminals     | FCC 47 CFR Part 2.1051 & FCC 47 CFR Part 27.53(g)<br>RSS-130 Issue 2, Section 4.7        | ANSI C63.26-2015 & KDB 971168 D01v03r01 | See Note |
| Field strength of spurious radiation        | FCC 47 CFR Part 2.1053 & FCC 47 CFR Part 27.53(g)<br>RSS-130 Issue 2, Section 4.7        | ANSI C63.26-2015 & KDB 971168 D01v03r01 | PASS     |
| Frequency stability                         | FCC 47 CFR Part 2.1055 & FCC 47 CFR Part 27.54<br>RSS-130 Issue 2, Section 4.5           | ANSI C63.26-2015 & KDB 971168 D01v03r01 | See Note |

Note:

**Difference description:**

- 1) There are hardware differences between PLS83-X3 and PLS83-X Module. For detailed PCB board and component differences, see the difference statement document
- 2) The UE Category level of PLS83-X3 and PLS83-X is 4

**Test Plan:**

- 1) According to the difference description, PLS83-X3 shares the same data from the PLS83-X original report(Report No.: 200722022RFM-2).
- 2) This report is based on the report of 200722022RFM-2, just update the operating frequency bands and Field strength of spurious radiation
- 3) The FCC ID of PLS83-X is QIPPLS83-X
- 4) The ISED NO. of PLS83-X is 7830A-PLS83X
- 5) The data of PLS83-X was used for PLS83-X3 as below:

| Band                                    | Test Item                                  | Description  |
|-----------------------------------------|--------------------------------------------|--------------|
| LTE Band 2<br>LTE Band 4<br>LTE Band 66 | Equivalent Isotropic Radiated Power (EIRP) | Reuse        |
|                                         | Conducted Output Power                     | Reuse        |
|                                         | Peak-to-average ratio                      | Reuse        |
|                                         | 99%&26dB Bandwidth                         | Reuse        |
|                                         | Band Edge at antenna terminals             | Reuse        |
|                                         | Spurious emissions at antenna terminals    | Updated data |
|                                         | Field strength of spurious radiation       | Reuse        |
|                                         | Frequency stability                        | Reuse        |
| LTE Band 12                             | Effective Radiated Power (ERP)             | Reuse        |
|                                         | Conducted Output Power                     | Reuse        |
|                                         | Peak-to-average ratio                      | Reuse        |
|                                         | 99%&26dB Bandwidth                         | Reuse        |
|                                         | Band Edge at antenna terminals             | Reuse        |
|                                         | Spurious emissions at antenna terminals    | Updated data |
|                                         | Field strength of spurious radiation       | Reuse        |
|                                         | Frequency stability                        | Reuse        |

**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-FCC4G-V1.1

### 3. EQUIPMENT LIST

| Radiated Emission Test Equipment List |                                   |              |            |                            |                         |                             |
|---------------------------------------|-----------------------------------|--------------|------------|----------------------------|-------------------------|-----------------------------|
| Used                                  | Equipment                         | Manufacturer | Model No.  | Serial Number              | Cal. date (mm dd, yyyy) | Cal. Due date (mm dd, yyyy) |
| <input checked="" type="checkbox"/>   | 3M Chamber & Accessory Equipment  | ETS-LINDGREN | 3M         | N/A                        | Dec. 03, 2018           | Dec. 03, 2021               |
| <input checked="" type="checkbox"/>   | Receiver                          | R&S          | ESIB26     | 100114                     | Nov. 24, 2019           | Nov. 23, 2020               |
|                                       |                                   |              |            |                            | Nov. 18, 2020           | Nov. 17, 2021               |
| <input type="checkbox"/>              | Loop Antenna                      | ETS-LINDGREN | 6502       | 00202525                   | Nov. 16, 2019           | Nov. 15, 2020               |
|                                       |                                   |              |            |                            | Nov. 14, 2020           | Nov. 13, 2021               |
| <input checked="" type="checkbox"/>   | Broadband Antenna                 | ETS-LINDGREN | 3142E      | 00201566                   | Nov. 16, 2019           | Nov. 15, 2020               |
|                                       |                                   |              |            |                            | Nov. 14, 2020           | Nov. 13, 2021               |
| <input checked="" type="checkbox"/>   | 6dB Attenuator                    | Talent       | RA6A5-N-18 | 18103001                   | Nov. 16, 2019           | Nov. 15, 2020               |
|                                       |                                   |              |            |                            | Nov. 14, 2020           | Nov. 13, 2021               |
| <input checked="" type="checkbox"/>   | Preamplifier                      | HP           | 8447F      | 2805A02960                 | Nov. 24, 2019           | Nov. 23, 2020               |
|                                       |                                   |              |            |                            | Nov. 10, 2020           | Nov. 09, 2021               |
| <input type="checkbox"/>              | Broadband Antenna (Pre-amplifier) | ETS-LINDGREN | 3142E-PA   | 00201891                   | May. 30, 2020           | May. 29, 2021               |
| <input type="checkbox"/>              | 6dB Attenuator                    | Talent       | RA6A5-N-18 | 18103002                   | Nov. 24, 2019           | Nov. 23, 2020               |
|                                       |                                   |              |            |                            | Nov. 18, 2020           | Nov. 17, 2021               |
| <input type="checkbox"/>              | Horn Antenna                      | ETS-LINDGREN | 3117       | 00164202                   | Nov. 16, 2019           | Nov. 15, 2020               |
|                                       |                                   |              |            |                            | Nov. 14, 2020           | Nov. 13, 2021               |
| <input checked="" type="checkbox"/>   | Horn Antenna (Pre-amplifier)      | ETS-LINDGREN | 3117-PA    | 00201874                   | May. 30, 2020           | May. 29, 2021               |
| <input type="checkbox"/>              | Horn Antenna                      | ETS-LINDGREN | 3116C      | 00200180                   | Jun. 19, 2020           | Jun. 18, 2021               |
| <input checked="" type="checkbox"/>   | Horn Antenna (Pre-amplifier)      | ETS-LINDGREN | 3116C-PA   | 00202652                   | Nov. 16, 2019           | Nov. 15, 2020               |
|                                       |                                   |              |            |                            | Nov. 14, 2020           | Nov. 13, 2021               |
| <input checked="" type="checkbox"/>   | Multi device Controller           | ETS-LINDGREN | 7006-001   | 00160105                   | N/A                     | N/A                         |
| <input checked="" type="checkbox"/>   | Test Software                     | Audix        | e3         | Software Version: 9.160323 |                         |                             |

| RF Test Equipment List              |                                      |              |           |                        |                         |                             |
|-------------------------------------|--------------------------------------|--------------|-----------|------------------------|-------------------------|-----------------------------|
| Used                                | Equipment                            | Manufacturer | Model No. | Serial Number          | Cal. date (mm dd, yyyy) | Cal. Due date (mm dd, yyyy) |
| <input checked="" type="checkbox"/> | Receiver                             | R&S          | ESR7      | 1316.3003K07-101181-K3 | Nov. 24, 2019           | Nov. 23, 2020               |
|                                     |                                      |              |           |                        | Nov. 18, 2020           | Nov. 17, 2021               |
| <input checked="" type="checkbox"/> | EXA Spectrum Analyzer                | KEYSIGHT     | N9010A    | MY51440197             | Nov. 24, 2019           | Nov. 23, 2020               |
|                                     |                                      |              |           |                        | Nov. 10, 2020           | Nov. 09, 2021               |
| <input checked="" type="checkbox"/> | Wideband Radio Communication Tester  | R&S          | CMW500    | 119583                 | Jul. 20, 2020           | Jul. 19, 2021               |
| <input type="checkbox"/>            | Universal Radio Communication Tester | R&S          | CMU200    | 114713                 | Nov. 24, 2019           | Nov. 23, 2020               |
|                                     |                                      |              |           |                        | Nov. 10, 2020           | Nov. 09, 2021               |
| <input checked="" type="checkbox"/> | DC Source                            | KIKUSUI      | PWR400L   | LK003024               | N/A                     | N/A                         |
| <input checked="" type="checkbox"/> | Temp & Humidity chamber              | Votisch      | VT4002    | 58566133290020         | May. 11, 2020           | May. 10, 2021               |

#### Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-FCC4G-V1.1

#### 4. TEST CONFIGURATION

##### 4.1 ENVIRONMENTAL CONDITIONS FOR TESTING

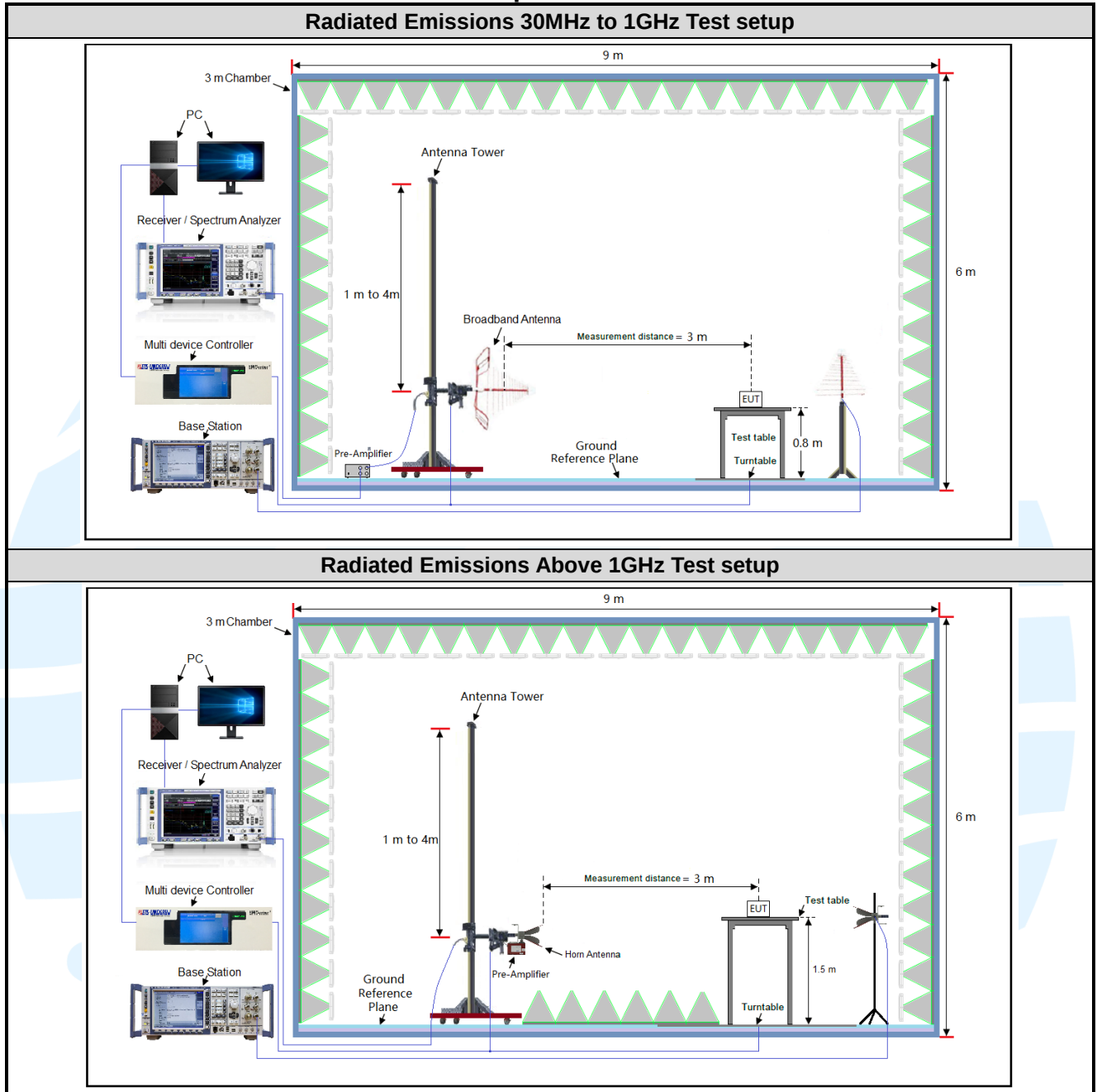
| Test Environment | Selected Values During Tests |             |                       |
|------------------|------------------------------|-------------|-----------------------|
| Test Condition   | Ambient                      |             |                       |
|                  | Temperature (°C)             | Voltage (V) | Relative Humidity (%) |
| TN/VN            | +15 to +35                   | 3.8         | 20 to 75              |
| TL/VL            | -30                          | 3.2         | 20 to 75              |
| TH/VL            | +65                          | 3.2         | 20 to 75              |
| TL/VH            | -30                          | 4.5         | 20 to 75              |
| TH/VH            | +65                          | 4.5         | 20 to 75              |

**Remark:**

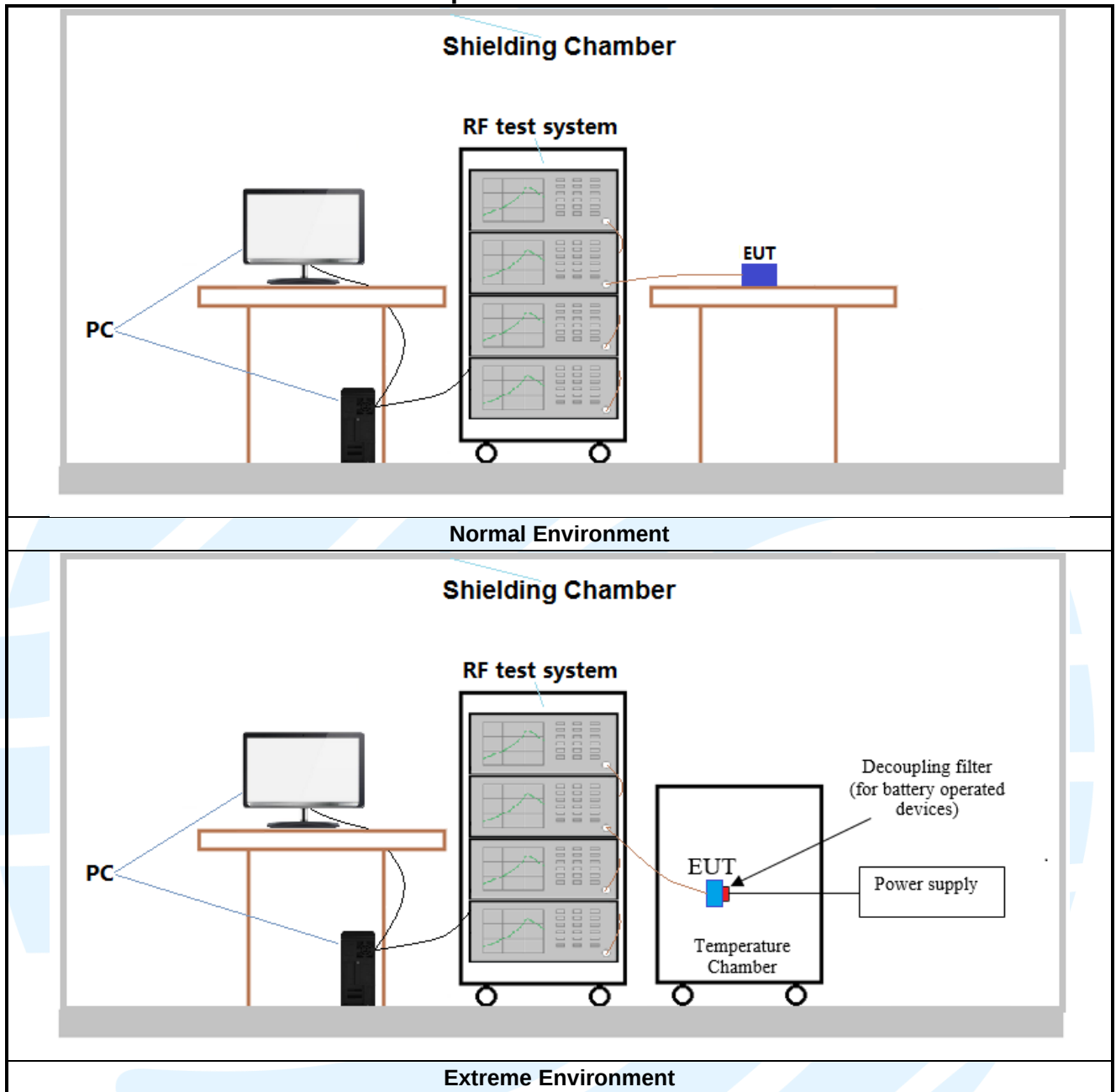
- 1) The EUT just work in such extreme temperature of -30 °C to +65 °C and the extreme voltage of 3.2 V to 4.5V, so here the EUT is tested in the temperature of -30 °C to +65 °C and the voltage of 3.2 V to 4.5 V.
- 2) VN: Normal Voltage; TN: Normal Temperature;  
TL: Low Extreme Test Temperature; TH: High Extreme Test Temperature;  
VL: Low Extreme Test Voltage; VH: High Extreme Test Voltage.

## 4.2 TEST SETUP

### 4.2.1 For Radiated Emissions test setup



#### 4.2.2 For Conducted RF test setup



### 4.3 TEST CHANNELS

| Band                           | Test Frequency ID | Bandwidth (MHz)   | Number [UL] | Frequency of Uplink (MHz) |
|--------------------------------|-------------------|-------------------|-------------|---------------------------|
| LTE Band 2<br>TX: 1850-1910MHz | Low Range         | 1.4               | 18607       | 1850.7                    |
|                                |                   | 3                 | 18615       | 1851.5                    |
|                                |                   | 5                 | 18625       | 1852.5                    |
|                                |                   | 10                | 18650       | 1855                      |
|                                |                   | 15                | 18675       | 1857.5                    |
|                                |                   | 20                | 18700       | 1860                      |
|                                | Middle Range      | 1.4/3/5/10/15/20  | 18900       | 1880                      |
|                                | High Range        | 1.4               | 19193       | 1909.3                    |
|                                |                   | 3                 | 19185       | 1908.5                    |
|                                |                   | 5                 | 19175       | 1907.5                    |
|                                |                   | 10                | 19150       | 1905                      |
|                                |                   | 15                | 19125       | 1902.5                    |
|                                |                   | 20                | 19100       | 1900                      |
| LTE Band 4<br>TX: 1710-1755MHz | Low Range         | 1.4               | 19957       | 1710.7                    |
|                                |                   | 3                 | 19965       | 1711.5                    |
|                                |                   | 5                 | 19975       | 1712.5                    |
|                                |                   | 10                | 20000       | 1715                      |
|                                |                   | 15                | 20025       | 1717.5                    |
|                                |                   | 20                | 20050       | 1720                      |
|                                | Middle Range      | 1.4/3/5/10/ 15/20 | 20175       | 1732.5                    |
|                                | High Range        | 1.4               | 20393       | 1754.3                    |
|                                |                   | 3                 | 20385       | 1753.5                    |
|                                |                   | 5                 | 20375       | 1752.5                    |
|                                |                   | 10                | 20350       | 1750                      |
|                                |                   | 15                | 20325       | 1747.5                    |
|                                |                   | 20                | 20300       | 1745                      |
| LTE Band 12<br>TX: 699-716MHz  | Low Range         | 1.4               | 23017       | 699.7                     |
|                                |                   | 3                 | 23025       | 700.5                     |
|                                |                   | 5                 | 23035       | 701.5                     |
|                                |                   | 10                | 23060       | 704                       |
|                                | Middle Range      | 1.4/3/5/10        | 23095       | 707.5                     |
|                                | High Range        | 1.4               | 23173       | 715.3                     |
|                                |                   | 3                 | 23165       | 714.5                     |
|                                |                   | 5                 | 23155       | 713.5                     |
|                                |                   | 10                | 23130       | 711                       |

|                                 |              |                   |        |        |
|---------------------------------|--------------|-------------------|--------|--------|
| LTE Band 66<br>TX: 1710-1780MHz | Low Range    | 1.4               | 131979 | 1710.7 |
|                                 |              | 3                 | 131987 | 1711.5 |
|                                 |              | 5                 | 131997 | 1712.5 |
|                                 |              | 10                | 132022 | 1715   |
|                                 |              | 15                | 132047 | 1717.5 |
|                                 |              | 20                | 132072 | 1720   |
|                                 | Middle Range | 1.4/3/5/10/ 15/20 | 132322 | 1745   |
|                                 | High Range   | 1.4               | 132665 | 1779.3 |
|                                 |              | 3                 | 132657 | 1778.5 |
|                                 |              | 5                 | 132647 | 1777.5 |
|                                 |              | 10                | 132622 | 1775   |
|                                 |              | 15                | 132597 | 1772.5 |
|                                 |              | 20                | 132572 | 1770   |

### Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: [info@uttlab.com](mailto:info@uttlab.com)

<http://www.uttlab.com>

UTTR-RF-FCC4G-V1.1

#### 4.4 SYSTEM TEST CONFIGURATION

For emissions testing, the equipment under test (EUT) setup to transmit continuously to simplify the measurement methodology. Care was taken to ensure proper power supply voltages during testing. During testing, radiated emission were performed with the EUT set to transmit at the channel with highest output power as worst-case scenario. Only the worst case data were recorded in this test report.

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, X/Y/Z axis, and antenna ports.

The worst case was found when positioned as the table below.

| Band        | Mode | Antenna Port | Worst-case axis positioning |
|-------------|------|--------------|-----------------------------|
| LTE Band 2  | 1TX  | Chain 0      | Z axis                      |
| LTE Band 4  | 1TX  | Chain 0      | Z axis                      |
| LTE Band 12 | 1TX  | Chain 0      | Z axis                      |
| LTE Band 66 | 1TX  | Chain 0      | Z axis                      |

All readings are extrapolated back to the equivalent three meter reading using inverse scaling with distance. Analyzer resolution is 100 kHz or greater for frequencies below 1000MHz. The resolution is 1 MHz or greater for frequencies above 1000MHz. The spurious emissions more than 20 dB below the permissible value are not reported.

Radiated emission measurement were performed from the lowest radio frequency signal generated in the device which is greater than 9 kHz to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

## 4.5 PRE-SCAN

Pre-scan under all rate at lowest middle and highest channel, find the transmitter power as below.

### 4.5.1 LTE Band 2

| LTE Band 2 Maximum Average Power (dBm) |      |        |              |       |       |                           |        |              |       |       |
|----------------------------------------|------|--------|--------------|-------|-------|---------------------------|--------|--------------|-------|-------|
| Modulation                             | RB   |        | Test Channel |       |       | RB                        |        | Test Channel |       |       |
|                                        | Size | Offset | Low          | Mid   | High  | Size                      | Offset | Low          | Mid   | High  |
| Channel Bandwidth: 1.4 MHz             |      |        |              |       |       | Channel Bandwidth: 3 MHz  |        |              |       |       |
| QPSK                                   | 1    | 0      | 22.41        | 22.84 | 22.76 | 1                         | 0      | 22.39        | 22.82 | 22.83 |
|                                        | 1    | 2      | 23.36        | 23.24 | 23.03 | 1                         | 7      | 23.44        | 23.17 | 22.95 |
|                                        | 1    | 5      | 22.94        | 22.78 | 22.79 | 1                         | 14     | 22.97        | 22.67 | 22.86 |
|                                        | 3    | 0      | 22.93        | 23.08 | 23.06 | 8                         | 0      | 21.92        | 22.08 | 22.02 |
|                                        | 3    | 1      | 22.88        | 22.99 | 22.88 | 8                         | 3      | 21.93        | 22.02 | 21.89 |
|                                        | 3    | 3      | 22.85        | 23.04 | 22.92 | 8                         | 7      | 21.84        | 22.04 | 22.01 |
|                                        | 6    | 0      | 21.87        | 21.95 | 21.78 | 15                        | 0      | 21.94        | 22.03 | 21.79 |
| 16QAM                                  | 1    | 0      | 21.98        | 22.14 | 21.84 | 1                         | 0      | 22.03        | 22.14 | 21.96 |
|                                        | 1    | 2      | 22.84        | 22.49 | 22.23 | 1                         | 7      | 22.73        | 22.39 | 22.14 |
|                                        | 1    | 5      | 21.69        | 22.06 | 21.27 | 1                         | 14     | 21.55        | 22.23 | 21.26 |
|                                        | 3    | 0      | 22.15        | 22.04 | 21.95 | 8                         | 0      | 21.02        | 20.89 | 21.06 |
|                                        | 3    | 1      | 23.03        | 22.91 | 22.94 | 8                         | 3      | 22.06        | 21.84 | 22.08 |
|                                        | 3    | 3      | 21.94        | 21.79 | 21.95 | 8                         | 7      | 21.03        | 20.79 | 20.93 |
|                                        | 6    | 0      | 20.93        | 20.79 | 20.95 | 15                        | 0      | 20.86        | 20.84 | 20.89 |
| Channel Bandwidth: 5 MHz               |      |        |              |       |       | Channel Bandwidth: 10 MHz |        |              |       |       |
| QPSK                                   | 1    | 0      | 22.45        | 22.85 | 22.85 | 1                         | 0      | 22.51        | 22.73 | 22.83 |
|                                        | 1    | 12     | 23.29        | 23.23 | 22.96 | 1                         | 24     | 23.40        | 23.34 | 23.04 |
|                                        | 1    | 24     | 23.04        | 22.75 | 22.91 | 1                         | 49     | 22.96        | 22.79 | 22.86 |
|                                        | 12   | 0      | 21.87        | 22.17 | 21.98 | 25                        | 0      | 21.91        | 22.18 | 22.14 |
|                                        | 12   | 6      | 21.80        | 22.00 | 22.03 | 25                        | 12     | 21.93        | 21.99 | 21.95 |
|                                        | 12   | 13     | 21.96        | 22.06 | 22.00 | 25                        | 25     | 21.82        | 21.90 | 21.87 |
|                                        | 25   | 0      | 21.95        | 21.98 | 21.92 | 50                        | 0      | 21.94        | 21.96 | 21.91 |
| 16QAM                                  | 1    | 0      | 22.12        | 22.07 | 21.79 | 1                         | 0      | 22.13        | 22.11 | 21.96 |
|                                        | 1    | 12     | 22.89        | 22.56 | 22.16 | 1                         | 24     | 22.80        | 22.37 | 22.11 |
|                                        | 1    | 24     | 21.59        | 22.17 | 21.18 | 1                         | 49     | 21.69        | 22.17 | 21.16 |
|                                        | 12   | 0      | 21.03        | 21.01 | 21.02 | 25                        | 0      | 21.03        | 20.88 | 21.05 |
|                                        | 12   | 6      | 21.93        | 21.99 | 22.10 | 25                        | 12     | 21.92        | 21.83 | 22.05 |
|                                        | 12   | 13     | 20.90        | 20.87 | 21.06 | 25                        | 25     | 20.95        | 20.81 | 20.90 |
|                                        | 25   | 0      | 20.84        | 20.96 | 20.98 | 50                        | 0      | 20.90        | 20.82 | 20.86 |
| Channel Bandwidth: 15 MHz              |      |        |              |       |       | Channel Bandwidth: 20 MHz |        |              |       |       |
| QPSK                                   | 1    | 0      | 22.53        | 22.71 | 22.85 | 1                         | 0      | 22.56        | 22.85 | 22.90 |
|                                        | 1    | 37     | 23.26        | 23.30 | 22.87 | 1                         | 50     | 23.46        | 23.35 | 23.06 |
|                                        | 1    | 74     | 23.03        | 22.70 | 22.88 | 1                         | 99     | 23.10        | 22.85 | 22.95 |
|                                        | 37   | 0      | 21.93        | 22.15 | 22.03 | 50                        | 0      | 21.97        | 22.23 | 22.16 |
|                                        | 37   | 19     | 21.92        | 22.00 | 22.01 | 50                        | 25     | 21.98        | 22.16 | 22.07 |
|                                        | 37   | 39     | 21.92        | 22.02 | 21.97 | 50                        | 50     | 21.99        | 22.07 | 22.02 |
|                                        | 75   | 0      | 21.91        | 21.94 | 21.80 | 100                       | 0      | 22.01        | 22.05 | 21.96 |
| 16QAM                                  | 1    | 0      | 22.08        | 22.09 | 21.88 | 1                         | 0      | 22.15        | 22.18 | 21.98 |
|                                        | 1    | 37     | 22.88        | 22.56 | 22.17 | 1                         | 50     | 22.89        | 22.57 | 22.29 |
|                                        | 1    | 74     | 21.66        | 22.12 | 21.30 | 1                         | 99     | 21.74        | 22.26 | 21.35 |
|                                        | 37   | 0      | 20.98        | 21.01 | 21.03 | 50                        | 0      | 21.16        | 21.06 | 21.11 |
|                                        | 37   | 19     | 22.05        | 21.94 | 22.04 | 50                        | 25     | 22.07        | 22.03 | 22.11 |
|                                        | 37   | 39     | 21.01        | 20.83 | 21.05 | 50                        | 50     | 21.05        | 20.90 | 21.07 |
|                                        | 75   | 0      | 20.79        | 20.89 | 20.85 | 100                       | 0      | 20.95        | 20.97 | 20.99 |

#### 4.5.2 LTE Band 4

| LTE Band 4 Maximum Average Power (dBm) |      |        |              |       |       |                           |        |              |       |       |
|----------------------------------------|------|--------|--------------|-------|-------|---------------------------|--------|--------------|-------|-------|
| Modulation                             | RB   |        | Test Channel |       |       | RB                        |        | Test Channel |       |       |
|                                        | Size | Offset | Low          | Mid   | High  | Size                      | Offset | Low          | Mid   | High  |
| Channel Bandwidth: 1.4 MHz             |      |        |              |       |       | Channel Bandwidth: 3 MHz  |        |              |       |       |
| QPSK                                   | 1    | 0      | 22.73        | 22.63 | 22.35 | 1                         | 0      | 22.72        | 22.62 | 22.39 |
|                                        | 1    | 2      | 22.85        | 22.91 | 22.79 | 1                         | 7      | 23.00        | 22.99 | 22.90 |
|                                        | 1    | 5      | 22.59        | 22.95 | 22.60 | 1                         | 14     | 22.76        | 22.94 | 22.71 |
|                                        | 3    | 0      | 22.70        | 22.70 | 22.68 | 8                         | 0      | 21.71        | 21.78 | 21.65 |
|                                        | 3    | 1      | 22.62        | 22.81 | 22.87 | 8                         | 3      | 21.61        | 21.75 | 21.92 |
|                                        | 3    | 3      | 22.74        | 22.68 | 22.78 | 8                         | 7      | 21.76        | 21.75 | 21.95 |
|                                        | 6    | 0      | 21.64        | 21.66 | 21.71 | 15                        | 0      | 21.54        | 21.80 | 21.77 |
| 16QAM                                  | 1    | 0      | 21.05        | 21.51 | 21.64 | 1                         | 0      | 20.96        | 21.40 | 21.64 |
|                                        | 1    | 2      | 21.43        | 21.56 | 21.73 | 1                         | 7      | 21.47        | 21.54 | 21.85 |
|                                        | 1    | 5      | 21.43        | 21.59 | 21.82 | 1                         | 14     | 21.37        | 21.58 | 21.83 |
|                                        | 3    | 0      | 21.67        | 21.82 | 21.96 | 8                         | 0      | 20.64        | 20.73 | 20.89 |
|                                        | 3    | 1      | 21.85        | 21.68 | 21.96 | 8                         | 3      | 20.78        | 20.69 | 21.01 |
|                                        | 3    | 3      | 21.75        | 21.80 | 21.99 | 8                         | 7      | 20.83        | 20.85 | 20.99 |
|                                        | 6    | 0      | 20.77        | 20.66 | 20.84 | 15                        | 0      | 20.73        | 20.68 | 20.93 |
| Channel Bandwidth: 5 MHz               |      |        |              |       |       | Channel Bandwidth: 10 MHz |        |              |       |       |
| QPSK                                   | 1    | 0      | 22.77        | 22.67 | 22.41 | 1                         | 0      | 22.82        | 22.66 | 22.32 |
|                                        | 1    | 12     | 23.01        | 22.92 | 22.82 | 1                         | 24     | 22.86        | 23.02 | 22.87 |
|                                        | 1    | 24     | 22.61        | 22.95 | 22.59 | 1                         | 49     | 22.66        | 22.90 | 22.57 |
|                                        | 12   | 0      | 21.76        | 21.78 | 21.56 | 25                        | 0      | 21.79        | 21.81 | 21.77 |
|                                        | 12   | 6      | 21.70        | 21.69 | 22.04 | 25                        | 12     | 21.73        | 21.69 | 21.96 |
|                                        | 12   | 13     | 21.60        | 21.81 | 21.94 | 25                        | 25     | 21.70        | 21.78 | 21.96 |
|                                        | 25   | 0      | 21.56        | 21.80 | 21.77 | 50                        | 0      | 21.54        | 21.69 | 21.66 |
| 16QAM                                  | 1    | 0      | 21.10        | 21.57 | 21.63 | 1                         | 0      | 21.11        | 21.45 | 21.63 |
|                                        | 1    | 12     | 21.47        | 21.63 | 21.87 | 1                         | 24     | 21.38        | 21.48 | 21.75 |
|                                        | 1    | 24     | 21.47        | 21.69 | 21.64 | 1                         | 49     | 21.50        | 21.56 | 21.74 |
|                                        | 12   | 0      | 20.65        | 20.64 | 21.01 | 25                        | 0      | 20.69        | 20.73 | 20.95 |
|                                        | 12   | 6      | 20.74        | 20.60 | 20.93 | 25                        | 12     | 20.84        | 20.69 | 21.01 |
|                                        | 12   | 13     | 20.80        | 20.73 | 21.01 | 25                        | 25     | 20.72        | 20.71 | 20.92 |
|                                        | 25   | 0      | 20.63        | 20.75 | 20.91 | 50                        | 0      | 20.71        | 20.70 | 20.83 |
| Channel Bandwidth: 15 MHz              |      |        |              |       |       | Channel Bandwidth: 20 MHz |        |              |       |       |
| QPSK                                   | 1    | 0      | 22.72        | 22.55 | 22.34 | 1                         | 0      | 22.83        | 23.01 | 22.92 |
|                                        | 1    | 37     | 22.90        | 23.08 | 22.91 | 1                         | 50     | 23.18        | 23.38 | 23.32 |
|                                        | 1    | 74     | 22.69        | 22.85 | 22.58 | 1                         | 99     | 22.68        | 22.97 | 22.90 |
|                                        | 37   | 0      | 21.68        | 21.69 | 21.58 | 50                        | 0      | 21.95        | 21.85 | 22.06 |
|                                        | 37   | 19     | 21.65        | 21.72 | 22.04 | 50                        | 25     | 21.90        | 22.00 | 22.01 |
|                                        | 37   | 39     | 21.70        | 21.67 | 21.82 | 50                        | 50     | 21.87        | 21.96 | 21.91 |
|                                        | 75   | 0      | 21.68        | 21.72 | 21.68 | 100                       | 0      | 22.06        | 21.76 | 21.94 |
| 16QAM                                  | 1    | 0      | 20.98        | 21.49 | 21.66 | 1                         | 0      | 21.56        | 21.68 | 21.40 |
|                                        | 1    | 37     | 21.45        | 21.58 | 21.74 | 1                         | 50     | 21.96        | 21.92 | 22.18 |
|                                        | 1    | 74     | 21.48        | 21.63 | 21.80 | 1                         | 99     | 22.20        | 22.14 | 21.45 |
|                                        | 37   | 0      | 20.75        | 20.79 | 20.94 | 50                        | 0      | 21.36        | 21.10 | 21.18 |
|                                        | 37   | 19     | 20.79        | 20.66 | 20.96 | 50                        | 25     | 21.04        | 21.10 | 21.02 |
|                                        | 37   | 39     | 20.81        | 20.84 | 20.87 | 50                        | 50     | 21.12        | 21.09 | 20.99 |
|                                        | 75   | 0      | 20.75        | 20.67 | 20.88 | 100                       | 0      | 21.09        | 20.89 | 21.04 |

### 4.5.3 LTE Band 12

| LTE Band 12 Maximum Average Power (dBm) |      |        |              |       |       |                           |        |              |       |       |
|-----------------------------------------|------|--------|--------------|-------|-------|---------------------------|--------|--------------|-------|-------|
| Modulation                              | RB   |        | Test Channel |       |       | RB                        |        | Test Channel |       |       |
|                                         | Size | Offset | Low          | Mid   | High  | Size                      | Offset | Low          | Mid   | High  |
| Channel Bandwidth: 1.4 MHz              |      |        |              |       |       | Channel Bandwidth: 3 MHz  |        |              |       |       |
| QPSK                                    | 1    | 0      | 23.10        | 23.05 | 23.24 | 1                         | 0      | 23.08        | 22.99 | 23.13 |
|                                         | 1    | 2      | 23.34        | 23.28 | 23.16 | 1                         | 7      | 23.25        | 23.32 | 23.05 |
|                                         | 1    | 5      | 23.16        | 22.81 | 22.95 | 1                         | 14     | 23.19        | 22.87 | 23.05 |
|                                         | 3    | 0      | 23.08        | 23.13 | 23.05 | 8                         | 0      | 22.09        | 22.23 | 22.22 |
|                                         | 3    | 1      | 23.20        | 23.18 | 23.08 | 8                         | 3      | 22.16        | 22.19 | 22.22 |
|                                         | 3    | 3      | 23.23        | 23.11 | 23.15 | 8                         | 7      | 22.13        | 22.01 | 22.13 |
|                                         | 6    | 0      | 22.10        | 22.13 | 22.20 | 15                        | 0      | 22.15        | 22.18 | 22.23 |
| 16QAM                                   | 1    | 0      | 21.93        | 22.10 | 22.08 | 1                         | 0      | 21.96        | 22.14 | 22.08 |
|                                         | 1    | 2      | 22.24        | 22.82 | 22.14 | 1                         | 7      | 22.27        | 22.91 | 22.16 |
|                                         | 1    | 5      | 21.65        | 21.94 | 21.95 | 1                         | 14     | 21.57        | 22.05 | 22.13 |
|                                         | 3    | 0      | 22.13        | 22.08 | 22.14 | 8                         | 0      | 21.19        | 20.99 | 21.04 |
|                                         | 3    | 1      | 22.00        | 22.02 | 22.04 | 8                         | 3      | 21.07        | 21.02 | 21.05 |
|                                         | 3    | 3      | 22.10        | 22.09 | 22.82 | 8                         | 7      | 21.12        | 21.01 | 21.89 |
|                                         | 6    | 0      | 21.81        | 21.68 | 21.83 | 15                        | 0      | 21.82        | 21.67 | 21.69 |
| Channel Bandwidth: 5 MHz                |      |        |              |       |       | Channel Bandwidth: 10 MHz |        |              |       |       |
| QPSK                                    | 1    | 0      | 23.08        | 22.99 | 23.29 | 1                         | 0      | 23.14        | 23.15 | 23.33 |
|                                         | 1    | 12     | 23.28        | 23.33 | 23.14 | 1                         | 24     | 23.40        | 23.38 | 23.22 |
|                                         | 1    | 24     | 23.07        | 22.76 | 23.07 | 1                         | 49     | 23.24        | 22.96 | 23.10 |
|                                         | 12   | 0      | 22.19        | 22.19 | 22.07 | 25                        | 0      | 22.21        | 22.25 | 22.23 |
|                                         | 12   | 6      | 22.11        | 22.12 | 22.06 | 25                        | 12     | 22.25        | 22.23 | 22.24 |
|                                         | 12   | 13     | 22.07        | 22.16 | 22.01 | 25                        | 25     | 22.27        | 22.20 | 22.15 |
|                                         | 25   | 0      | 22.23        | 22.21 | 22.10 | 50                        | 0      | 22.24        | 22.25 | 22.23 |
| 16QAM                                   | 1    | 0      | 22.03        | 22.05 | 22.08 | 1                         | 0      | 22.10        | 22.17 | 22.17 |
|                                         | 1    | 12     | 22.27        | 22.83 | 22.16 | 1                         | 24     | 22.33        | 22.93 | 22.20 |
|                                         | 1    | 24     | 21.51        | 21.92 | 21.98 | 1                         | 49     | 21.65        | 22.08 | 22.14 |
|                                         | 12   | 0      | 21.18        | 21.06 | 21.02 | 25                        | 0      | 21.33        | 21.14 | 21.16 |
|                                         | 12   | 6      | 21.04        | 21.09 | 21.12 | 25                        | 12     | 21.13        | 21.16 | 21.13 |
|                                         | 12   | 13     | 21.11        | 20.91 | 21.86 | 25                        | 25     | 21.28        | 21.11 | 21.89 |
|                                         | 25   | 0      | 21.72        | 21.65 | 21.76 | 50                        | 0      | 21.84        | 21.83 | 21.85 |

#### 4.5.4 LTE Band 66

| LTE Band 66 Maximum Average Power (dBm) |      |        |              |       |       |                           |        |              |       |       |
|-----------------------------------------|------|--------|--------------|-------|-------|---------------------------|--------|--------------|-------|-------|
| Modulation                              | RB   |        | Test Channel |       |       | RB                        |        | Test Channel |       |       |
|                                         | Size | Offset | Low          | Mid   | High  | Size                      | Offset | Low          | Mid   | High  |
| Channel Bandwidth: 1.4 MHz              |      |        |              |       |       | Channel Bandwidth: 3 MHz  |        |              |       |       |
| QPSK                                    | 1    | 0      | 23.24        | 23.40 | 23.45 | 1                         | 0      | 23.20        | 23.49 | 23.58 |
|                                         | 1    | 2      | 23.35        | 23.40 | 23.37 | 1                         | 7      | 23.47        | 23.34 | 23.38 |
|                                         | 1    | 5      | 23.06        | 23.20 | 23.36 | 1                         | 14     | 23.05        | 23.11 | 23.25 |
|                                         | 3    | 0      | 23.14        | 23.14 | 23.17 | 8                         | 0      | 22.22        | 22.16 | 22.11 |
|                                         | 3    | 1      | 23.25        | 23.25 | 23.11 | 8                         | 3      | 22.18        | 22.27 | 22.25 |
|                                         | 3    | 3      | 23.10        | 23.10 | 23.26 | 8                         | 7      | 22.00        | 22.12 | 22.21 |
|                                         | 6    | 0      | 22.21        | 22.19 | 22.23 | 15                        | 0      | 22.30        | 22.13 | 22.21 |
| 16QAM                                   | 1    | 0      | 22.10        | 22.38 | 22.10 | 1                         | 0      | 22.17        | 22.47 | 22.12 |
|                                         | 1    | 2      | 22.35        | 22.60 | 22.24 | 1                         | 7      | 22.47        | 22.47 | 22.31 |
|                                         | 1    | 5      | 22.36        | 22.25 | 22.02 | 1                         | 14     | 22.32        | 22.26 | 22.01 |
|                                         | 3    | 0      | 22.61        | 22.58 | 22.50 | 8                         | 0      | 21.55        | 21.58 | 21.50 |
|                                         | 3    | 1      | 22.63        | 22.33 | 22.11 | 8                         | 3      | 21.64        | 21.30 | 21.22 |
|                                         | 3    | 3      | 22.51        | 22.71 | 22.14 | 8                         | 7      | 21.49        | 21.70 | 21.25 |
|                                         | 6    | 0      | 21.38        | 21.50 | 21.21 | 15                        | 0      | 21.54        | 21.53 | 21.24 |
| Channel Bandwidth: 5 MHz                |      |        |              |       |       | Channel Bandwidth: 10 MHz |        |              |       |       |
| QPSK                                    | 1    | 0      | 23.24        | 23.37 | 23.50 | 1                         | 0      | 23.24        | 23.37 | 23.47 |
|                                         | 1    | 12     | 23.45        | 23.34 | 23.35 | 1                         | 24     | 23.36        | 23.38 | 23.37 |
|                                         | 1    | 24     | 23.10        | 23.27 | 23.35 | 1                         | 49     | 23.10        | 23.10 | 23.27 |
|                                         | 12   | 0      | 22.33        | 22.11 | 22.10 | 25                        | 0      | 22.20        | 22.13 | 22.24 |
|                                         | 12   | 6      | 22.13        | 22.21 | 22.22 | 25                        | 12     | 22.13        | 22.16 | 22.23 |
|                                         | 12   | 13     | 22.01        | 22.28 | 22.17 | 25                        | 25     | 22.11        | 22.14 | 22.15 |
|                                         | 25   | 0      | 22.26        | 22.13 | 22.28 | 50                        | 0      | 22.21        | 22.05 | 22.24 |
| 16QAM                                   | 1    | 0      | 22.21        | 22.47 | 22.09 | 1                         | 0      | 22.19        | 22.42 | 22.16 |
|                                         | 1    | 12     | 22.31        | 22.65 | 22.25 | 1                         | 24     | 22.34        | 22.50 | 22.37 |
|                                         | 1    | 24     | 22.39        | 22.28 | 22.02 | 1                         | 49     | 22.26        | 22.18 | 21.96 |
|                                         | 12   | 0      | 21.57        | 21.65 | 21.65 | 25                        | 0      | 21.61        | 21.63 | 21.64 |
|                                         | 12   | 6      | 21.53        | 21.36 | 21.14 | 25                        | 12     | 21.48        | 21.32 | 21.22 |
|                                         | 12   | 13     | 21.49        | 21.75 | 21.28 | 25                        | 25     | 21.49        | 21.75 | 21.23 |
|                                         | 25   | 0      | 21.54        | 21.47 | 21.27 | 50                        | 0      | 21.51        | 21.49 | 21.24 |
| Channel Bandwidth: 15 MHz               |      |        |              |       |       | Channel Bandwidth: 20 MHz |        |              |       |       |
| QPSK                                    | 1    | 0      | 23.28        | 23.48 | 23.44 | 1                         | 0      | 23.32        | 23.53 | 23.61 |
|                                         | 1    | 37     | 23.30        | 23.45 | 23.44 | 1                         | 50     | 23.47        | 23.50 | 23.48 |
|                                         | 1    | 74     | 22.92        | 23.22 | 23.40 | 1                         | 99     | 23.12        | 23.29 | 23.42 |
|                                         | 37   | 0      | 22.15        | 22.07 | 22.21 | 50                        | 0      | 22.33        | 22.25 | 22.24 |
|                                         | 37   | 19     | 22.24        | 22.27 | 22.24 | 50                        | 25     | 22.31        | 22.28 | 22.25 |
|                                         | 37   | 39     | 21.98        | 22.19 | 22.24 | 50                        | 50     | 22.12        | 22.29 | 22.27 |
|                                         | 75   | 0      | 22.23        | 22.11 | 22.25 | 100                       | 0      | 22.32        | 22.24 | 22.30 |
| 16QAM                                   | 1    | 0      | 22.09        | 22.44 | 22.12 | 1                         | 0      | 22.26        | 22.48 | 22.22 |
|                                         | 1    | 37     | 22.49        | 22.50 | 22.30 | 1                         | 50     | 22.49        | 22.65 | 22.42 |
|                                         | 1    | 74     | 22.35        | 22.17 | 22.11 | 1                         | 99     | 22.43        | 22.31 | 22.14 |
|                                         | 37   | 0      | 21.69        | 21.58 | 21.52 | 50                        | 0      | 21.70        | 21.71 | 21.68 |
|                                         | 37   | 19     | 21.53        | 21.29 | 21.22 | 50                        | 25     | 21.68        | 21.47 | 21.27 |
|                                         | 37   | 39     | 21.38        | 21.77 | 21.15 | 50                        | 50     | 21.57        | 21.83 | 21.29 |
|                                         | 75   | 0      | 21.36        | 21.58 | 21.11 | 100                       | 0      | 21.55        | 21.59 | 21.27 |

Pre-scan all bandwidth and RB, find worse case mode are chosen to the report, the LTE worse case mode applicability and tested channel detail as below:

| Item                   | Band | Bandwidth(MHz)                      |                                     |                                     |                                     |                                     |                                     | Modulation                          |                                     |                                     | RB                                  |                                     |                                     | Test Channel                        |                                     |                                     |
|------------------------|------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
|                        |      | 1.4                                 | 3                                   | 5                                   | 10                                  | 15                                  | 20                                  | QPSK                                | 16QAM                               | 64QAM                               | 1                                   | Half                                | Full                                | L                                   | M                                   | H                                   |
| ERP/EIRP               | 2    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|                        | 4    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|                        | 12   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | -                                   | -                                   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|                        | 66   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Conducted output power | 2    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|                        | 4    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|                        | 12   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | -                                   | -                                   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|                        | 66   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

| Item                  | Band | Bandwidth(MHz)                      |                                     |                                     |                                     |                                     |                                     | Modulation                          |                                     |                                     | RB                                  |                          |                                     | Test Channel                        |                                     |                                     |
|-----------------------|------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
|                       |      | 1.4                                 | 3                                   | 5                                   | 10                                  | 15                                  | 20                                  | QPSK                                | 16QAM                               | 64QAM                               | 1                                   | Half                     | Full                                | L                                   | M                                   | H                                   |
| 99%&26dB Bandwidth    | 2    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|                       | 4    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|                       | 12   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | -                                   | -                                   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|                       | 66   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| peak-to-average ratio | 2    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
|                       | 4    | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
|                       | 12   | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | -                                   | -                                   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
|                       | 66   | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |

| Item                                    | Band | Bandwidth(MHz)                      |                                     |                                     |                                     |                                     |                                     | Modulation                          |                                     |                                     | RB                                  |                          |                                     | Test Channel                        |                                     |                                     |
|-----------------------------------------|------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
|                                         |      | 1.4                                 | 3                                   | 5                                   | 10                                  | 15                                  | 20                                  | QPSK                                | 16QAM                               | 64QAM                               | 1                                   | Half                     | Full                                | L                                   | M                                   | H                                   |
| Band Edge at antenna terminals          | 2    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
|                                         | 4    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
|                                         | 12   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | -                                   | -                                   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
|                                         | 66   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| Spurious emissions at antenna terminals | 2    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|                                         | 4    | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|                                         | 12   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | -                                   | -                                   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|                                         | 66   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |

| Item                                                                                                                                                | Band | Bandwidth(MHz)           |                          |                          |                                     |                          |                                     | Modulation                          |                          |                          | RB                                  |                          |                                     | Test Channel                        |                                     |                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|------|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
|                                                                                                                                                     |      | 1.4                      | 3                        | 5                        | 10                                  | 15                       | 20                                  | QPSK                                | 16QAM                    | 64QAM                    | 1                                   | Half                     | Full                                | L                                   | M                                   | H                                   |
| Field strength of spurious radiation                                                                                                                | 2    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|                                                                                                                                                     | 4    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|                                                                                                                                                     | 12   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | -                        | -                                   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|                                                                                                                                                     | 66   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Frequency stability                                                                                                                                 | 2    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
|                                                                                                                                                     | 4    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
|                                                                                                                                                     | 12   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | -                        | -                                   | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
|                                                                                                                                                     | 66   | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| Remark:<br>The mark "☒" means is chosen for testing; The mark "☐" means is not chosen for testing;<br>The mark "-" means is not supported bandwidth |      |                          |                          |                          |                                     |                          |                                     |                                     |                          |                          |                                     |                          |                                     |                                     |                                     |                                     |

## 5. RADIO TECHNICAL REQUIREMENTS SPECIFICATION

### 5.1 REFERENCE DOCUMENTS FOR TESTING

| No. | Identity           | Document Title                                                                                    |
|-----|--------------------|---------------------------------------------------------------------------------------------------|
| 1   | FCC 47 CFR Part 2  | Frequency allocations and radio treaty matters; general rules and regulations                     |
| 2   | FCC 47 CFR Part 27 | Miscellaneous Wireless Communications Services                                                    |
| 3   | FCC 47 CFR Part 24 | Personal Communications Services                                                                  |
| 4   | ANSI C63.26-2015   | American National Standard for Compliance Testing of Transmitters Used in Licensed Radio Services |
| 5   | RSS-Gen Issue 5    | General Requirements for Compliance of Radio Apparatus                                            |
| 6   | RSS-130 Issue 2    | Equipment Operating in the Frequency Bands 617-652 MHz, 663-698 MHz, 698-756 MHz and 777-787 MHz  |
| 7   | RSS-133 Issue 6    | 2 GHz Personal Communications Services Aussi disponible                                           |
| 8   | RSS-139 Issue 3    | Advanced Wireless Services (AWS) Equipment Operating in the Bands 1710-1780 MHz and 2110-2180 MHz |
| 9   | KDB 971168 D01     | KDB 971168 D01 Power Meas License Digital Systems v03r01                                          |

### 5.2 ERP OR EIRP

**Test Requirement:** FCC 47 CFR Part 2.1046(a)  
**LTE Band 2:** FCC 47 CFR Part 24.232(c), RSS-133 Issue 6, Section 6.4  
**LTE Band 4 & LTE Band 66:** FCC 47 CFR Part 27.50(d)(4), RSS-139 Issue 3, Section 6.5  
**LTE Band 12:** FCC 47 CFR Part 27.50(c)(10), RSS-130 Issue 2, Section 4.6  
**LTE Band 13:** FCC 47 CFR Part 27.50(b)(10), RSS-130 Issue 2, Section 4.6  
**Test Method:** KDB 971168 D01v03r01 Section 5.6 & ANSI C63.26-2015  
**Limit:**

#### **FCC 47 CFR Part 24.232(c):**

Mobile and portable stations are limited to 2 watts EIRP.

#### **FCC 47 CFR Part 27.50(d)(4):**

Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

#### **FCC 47 CFR Part 27.50(c)(10):**

Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

#### **FCC 47 CFR Part 27.50(b)(10):**

Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

#### **RSS-130 Issue 2, Section 4.6,**

4.6.2 Frequency bands 617-652 MHz and 663-698 MHz

The e.r.p. shall not exceed 3 watts for mobile equipment, fixed subscriber equipment and portable equipment.

4.6.3 Frequency bands 698-756 MHz and 777-787 MHz

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

#### **RSS-133 Issue 6, Section 6.4**

The equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits given in SRSP-510. Moreover, base station transmitters operating in the band 1930-1995 MHz shall not have output power exceeding 100 watts.

### **Shenzhen UnionTrust Quality and Technology Co., Ltd.**

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-FCC4G-V1.1

**RSS-139 Issue 3, Section 6.5**

The equivalent isotropically radiated power (e.i.r.p.) for mobile and portable transmitters shall not exceed one watt. The e.i.r.p. for fixed and base stations in the band 1710-1780 MHz shall not exceed one watt.

**Test Procedure:**

$$\text{ERP or EIRP} = P_{\text{Meas}} + G_T - L_C$$

where:

ERP or EIRP = effective radiated power or equivalent isotropically radiated power, respectively  
(expressed in the same units as P<sub>Meas</sub>, typically dBW or dBm);

P<sub>Meas</sub> = measured transmitter output power or PSD, in dBm or dBW;

G<sub>T</sub> = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

1) L<sub>C</sub> = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

**Test Setup:** Refer to section 4.2.1 for details.

**Instruments Used:** Refer to section 3 for details

**Test Mode:** Link mode

**Test Results:** Pass

**Test Data:** See table below

### 5.2.1 LTE Band 2

| LTE Band 2 Maximum EIRP (dBm) |            |             |             |             |        |
|-------------------------------|------------|-------------|-------------|-------------|--------|
| Channel                       | QPSK; RB:1 | 16QAM; RB:1 | 64QAM; RB:1 | Limit (dBm) | Result |
| Channel Bandwidth: 1.4MHz     |            |             |             |             |        |
| Lowest                        | 23.36      | 23.03       | /           | 33.01       | Pass   |
| Middle                        | 23.24      | 22.91       | /           | 33.01       | Pass   |
| Highest                       | 23.03      | 22.94       | /           | 33.01       | Pass   |
| Channel Bandwidth: 3MHz       |            |             |             |             |        |
| Lowest                        | 23.44      | 22.73       | /           | 33.01       | Pass   |
| Middle                        | 23.17      | 22.39       | /           | 33.01       | Pass   |
| Highest                       | 22.95      | 22.14       | /           | 33.01       | Pass   |
| Channel Bandwidth: 5MHz       |            |             |             |             |        |
| Lowest                        | 23.29      | 22.89       | /           | 33.01       | Pass   |
| Middle                        | 23.23      | 22.56       | /           | 33.01       | Pass   |
| Highest                       | 22.96      | 22.16       | /           | 33.01       | Pass   |
| Channel Bandwidth: 10MHz      |            |             |             |             |        |
| Lowest                        | 23.40      | 22.80       | /           | 33.01       | Pass   |
| Middle                        | 23.34      | 22.37       | /           | 33.01       | Pass   |
| Highest                       | 23.04      | 22.11       | /           | 33.01       | Pass   |
| Channel Bandwidth: 15MHz      |            |             |             |             |        |
| Lowest                        | 23.26      | 22.88       | /           | 33.01       | Pass   |
| Middle                        | 23.30      | 22.56       | /           | 33.01       | Pass   |
| Highest                       | 22.87      | 22.17       | /           | 33.01       | Pass   |
| Channel Bandwidth: 20MHz      |            |             |             |             |        |
| Lowest                        | 23.46      | 22.89       | /           | 33.01       | Pass   |
| Middle                        | 23.35      | 22.57       | /           | 33.01       | Pass   |
| Highest                       | 23.06      | 22.29       | /           | 33.01       | Pass   |

### 5.2.2 LTE Band 4

| LTE Band 4 Maximum EIRP (dBm) |            |             |             |             |        |
|-------------------------------|------------|-------------|-------------|-------------|--------|
| Channel                       | QPSK; RB:1 | 16QAM; RB:1 | 64QAM; RB:1 | Limit (dBm) | Result |
| Channel Bandwidth: 1.4MHz     |            |             |             |             |        |
| Lowest                        | 22.59      | 21.75       | /           | 30.00       | Pass   |
| Middle                        | 22.95      | 21.80       | /           | 30.00       | Pass   |
| Highest                       | 22.60      | 21.99       | /           | 30.00       | Pass   |
| Channel Bandwidth: 3MHz       |            |             |             |             |        |
| Lowest                        | 23.00      | 21.47       | /           | 30.00       | Pass   |
| Middle                        | 22.99      | 21.54       | /           | 30.00       | Pass   |
| Highest                       | 22.90      | 21.85       | /           | 30.00       | Pass   |
| Channel Bandwidth: 5MHz       |            |             |             |             |        |
| Lowest                        | 23.01      | 21.47       | /           | 30.00       | Pass   |
| Middle                        | 22.92      | 21.63       | /           | 30.00       | Pass   |
| Highest                       | 22.82      | 21.87       | /           | 30.00       | Pass   |
| Channel Bandwidth: 10MHz      |            |             |             |             |        |
| Lowest                        | 22.66      | 21.38       | /           | 30.00       | Pass   |
| Middle                        | 22.90      | 21.48       | /           | 30.00       | Pass   |
| Highest                       | 22.57      | 21.75       | /           | 30.00       | Pass   |
| Channel Bandwidth: 15MHz      |            |             |             |             |        |
| Lowest                        | 22.90      | 21.48       | /           | 30.00       | Pass   |
| Middle                        | 23.08      | 21.63       | /           | 30.00       | Pass   |
| Highest                       | 22.91      | 21.80       | /           | 30.00       | Pass   |
| Channel Bandwidth: 20MHz      |            |             |             |             |        |
| Lowest                        | 23.18      | 22.20       | /           | 30.00       | Pass   |
| Middle                        | 23.38      | 22.14       | /           | 30.00       | Pass   |
| Highest                       | 23.32      | 21.45       | /           | 30.00       | Pass   |

### 5.2.3 LTE Band 12

| LTE Band 12 Maximum ERP (dBm) |            |             |             |             |        |
|-------------------------------|------------|-------------|-------------|-------------|--------|
| Channel                       | QPSK; RB:1 | 16QAM; RB:1 | 64QAM; RB:1 | Limit (dBm) | Result |
| Channel Bandwidth: 1.4MHz     |            |             |             |             |        |
| Lowest                        | 21.19      | 20.09       | /           | 34.77       | Pass   |
| Middle                        | 21.13      | 20.67       | /           | 34.77       | Pass   |
| Highest                       | 21.01      | 19.99       | /           | 34.77       | Pass   |
| Channel Bandwidth: 3MHz       |            |             |             |             |        |
| Lowest                        | 21.10      | 20.12       | /           | 34.77       | Pass   |
| Middle                        | 21.17      | 20.76       | /           | 34.77       | Pass   |
| Highest                       | 20.90      | 20.01       | /           | 34.77       | Pass   |
| Channel Bandwidth: 5MHz       |            |             |             |             |        |
| Lowest                        | 21.13      | 20.12       | /           | 34.77       | Pass   |
| Middle                        | 21.18      | 20.68       | /           | 34.77       | Pass   |
| Highest                       | 20.99      | 20.01       | /           | 34.77       | Pass   |
| Channel Bandwidth: 10MHz      |            |             |             |             |        |
| Lowest                        | 21.25      | 20.18       | /           | 34.77       | Pass   |
| Middle                        | 21.23      | 20.78       | /           | 34.77       | Pass   |
| Highest                       | 21.07      | 20.05       | /           | 34.77       | Pass   |

### Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: Unit D/E of 9/F and 16/F, Block A, Building 6, Baoneng science and technology park, Longhua district, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com

<http://www.uttlab.com>

UTTR-RF-FCC4G-V1.1

### 5.2.4 LTE Band 66

| LTE Band 66 Maximum EIRP (dBm) |            |             |             |             |        |
|--------------------------------|------------|-------------|-------------|-------------|--------|
| Channel                        | QPSK; RB:1 | 16QAM; RB:1 | 64QAM; RB:1 | Limit (dBm) | Result |
| Channel Bandwidth: 1.4MHz      |            |             |             |             |        |
| Lowest                         | 23.24      | 22.51       | /           | 30.00       | Pass   |
| Middle                         | 23.40      | 22.71       | /           | 30.00       | Pass   |
| Highest                        | 23.45      | 22.14       | /           | 30.00       | Pass   |
| Channel Bandwidth: 3MHz        |            |             |             |             |        |
| Lowest                         | 23.20      | 22.47       | /           | 30.00       | Pass   |
| Middle                         | 23.49      | 22.47       | /           | 30.00       | Pass   |
| Highest                        | 23.58      | 22.31       | /           | 30.00       | Pass   |
| Channel Bandwidth: 5MHz        |            |             |             |             |        |
| Lowest                         | 23.24      | 22.31       | /           | 30.00       | Pass   |
| Middle                         | 23.37      | 22.65       | /           | 30.00       | Pass   |
| Highest                        | 23.50      | 22.25       | /           | 30.00       | Pass   |
| Channel Bandwidth: 10MHz       |            |             |             |             |        |
| Lowest                         | 23.24      | 22.34       | /           | 30.00       | Pass   |
| Middle                         | 23.37      | 22.50       | /           | 30.00       | Pass   |
| Highest                        | 23.47      | 22.37       | /           | 30.00       | Pass   |
| Channel Bandwidth: 15MHz       |            |             |             |             |        |
| Lowest                         | 23.28      | 22.49       | /           | 30.00       | Pass   |
| Middle                         | 23.48      | 22.50       | /           | 30.00       | Pass   |
| Highest                        | 23.44      | 22.30       | /           | 30.00       | Pass   |
| Channel Bandwidth: 20MHz       |            |             |             |             |        |
| Lowest                         | 23.32      | 22.49       | /           | 30.00       | Pass   |
| Middle                         | 23.53      | 22.65       | /           | 30.00       | Pass   |
| Highest                        | 23.61      | 22.42       | /           | 30.00       | Pass   |

### 5.3 CONDUCTED OUTPUT POWER

**Test Requirement:** FCC 47 CFR Part 2.1046(a),  
**LTE Band 2:** FCC 47 CFR Part 24.232(c), RSS-133 Issue 6, Section 6.4  
**LTE Band 4 & LTE Band 66:** FCC 47 CFR Part 27.50(d)(4), RSS-139 Issue 3, Section 6.5  
**LTE Band 12:** FCC 47 CFR Part 27.50(c)(10), RSS-130 Issue 2, Section 4.6

**Test Method:** KDB 971168 D01v03r01 & ANSI C63.26-2015

**Limit:**

**FCC 47 CFR Part 24.232(c):**

Mobile and portable stations are limited to 2 watts EIRP.

**FCC 47 CFR Part 27.50(d)(4):**

Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.

**FCC 47 CFR Part 27.50(c)(10):**

Portable stations (hand-held devices) in the 600 MHz uplink band and the 698-746 MHz band, and fixed and mobile stations in the 600 MHz uplink band are limited to 3 watts ERP.

**FCC 47 CFR Part 27.50(b)(10):**

Portable stations (hand-held devices) transmitting in the 746-757 MHz, 776-788 MHz, and 805-806 MHz bands are limited to 3 watts ERP.

**RSS-130 Issue 2, Section 4.6,**

4.6.2 Frequency bands 617-652 MHz and 663-698 MHz

The e.r.p. shall not exceed 3 watts for mobile equipment, fixed subscriber equipment and portable equipment.

4.6.3 Frequency bands 698-756 MHz and 777-787 MHz

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

**RSS-133 Issue 6, Section 6.4**

The equivalent isotropically radiated power (e.i.r.p.) for transmitters shall not exceed the limits given in SRSP-510. Moreover, base station transmitters operating in the band 1930-1995 MHz shall not have output power exceeding 100 watts.

**RSS-139 Issue 3, Section 6.5**

The equivalent isotropically radiated power (e.i.r.p.) for mobile and portable transmitters shall not exceed one watt. The e.i.r.p. for fixed and base stations in the band 1710-1780 MHz shall not exceed one watt.

**Test Procedure:**

The EUT was set up for the maximum power with LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

**Test Setup:** Refer to section 4.2.2 for details.

**Instruments Used:** Refer to section 3 for details

**Test Mode:** Link mode

**Test Results:** Pass

**Test Data:** [The full result refer to section 4.5 for details.](#)

## 5.4 PEAK-TO-AVERAGE RATIO

**Test Requirement:** LTE Band 2: FCC 47 CFR Part 24.232(d), RSS-133 Issue 6, Section 6.4  
 LTE Band 4 & LTE Band 66: FCC 47 CFR Part 27.50(d)(5), RSS-139 Issue 3, Section 6.5  
 LTE Band 12: FCC 47 CFR Part 27.50(d)(5), RSS-130 Issue 2, Section 4.6

**Test Method:** KDB 971168 D01v03r01 Section 5.7

**Limit:** In measuring transmissions in this band using an average power technique, the peak-to-average ratio (PAR) of the transmission may not exceed 13 dB

### Test Procedure:

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer.

- Set resolution/measurement bandwidth  $\geq$  signal's occupied bandwidth
- Set the number of counts to a value that stabilizes the measured CCDF curve
- Record the maximum PAPR level associated with a probability of 0.1 %

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.

**Test Setup:** Refer to section 4.2.2 for details.

**Instruments Used:** Refer to section 3 for details

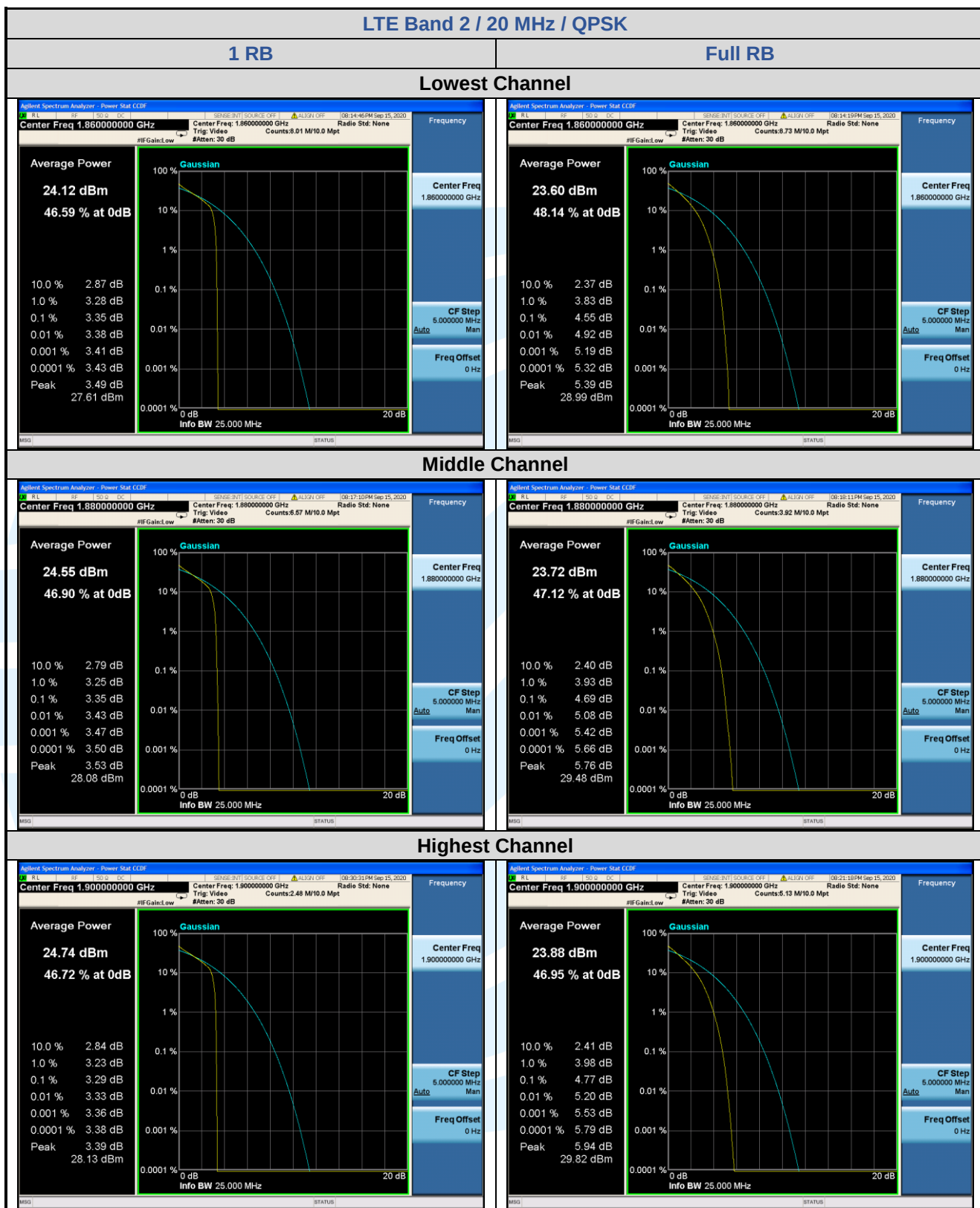
**Test Mode:** Link mode

**Test Results:** Pass

**Test Data:** See table below

### 5.4.1 LTE Band 2

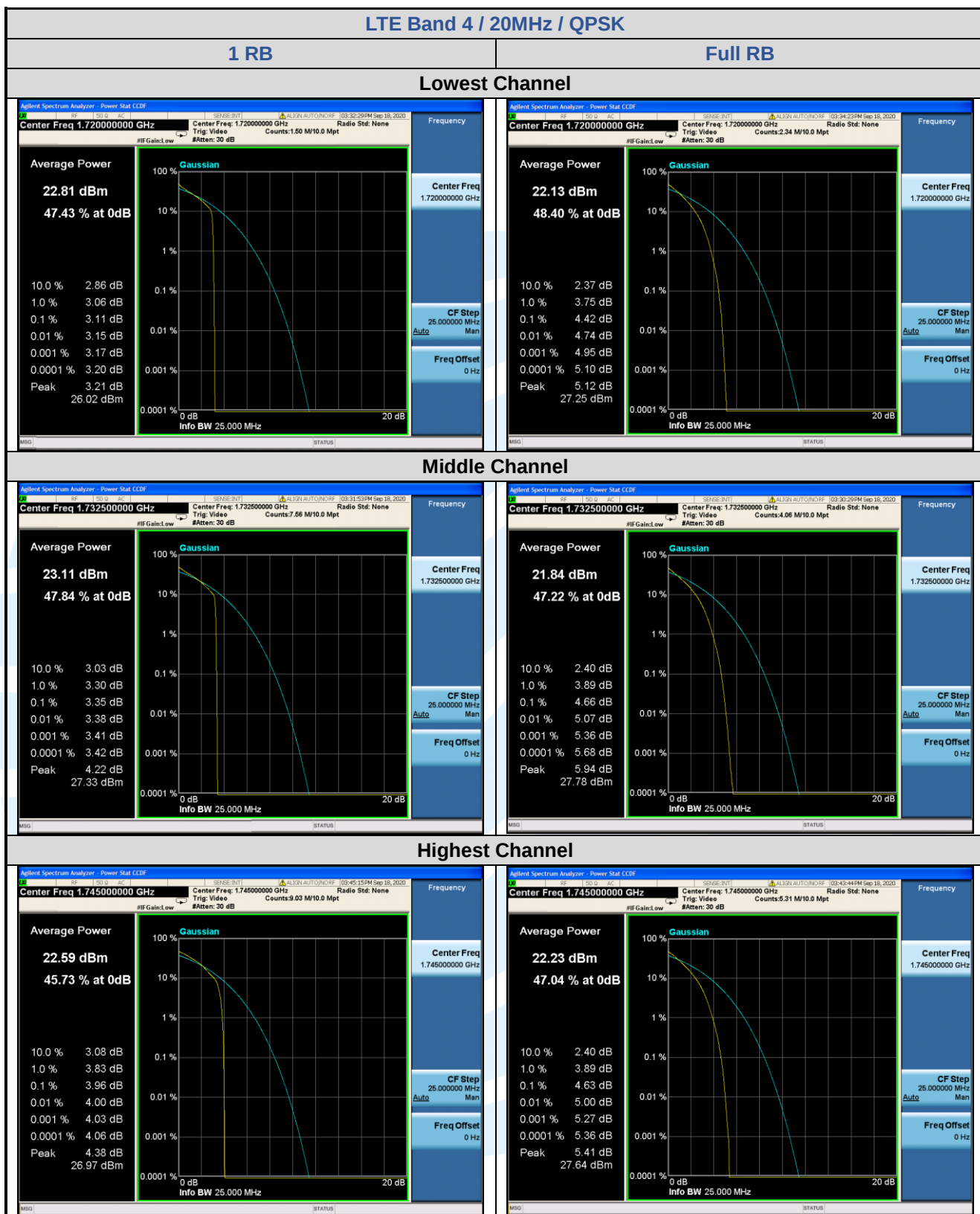
| LTE Band 2 Peak-to-average ratio (dB) |                  |                           |       |       |            |        |
|---------------------------------------|------------------|---------------------------|-------|-------|------------|--------|
| Channel                               | RB Configuration | Channel Bandwidth: 20 MHz |       |       | Limit (dB) | Result |
|                                       |                  | QPSK                      | 16QAM | 64QAM |            |        |
| Lowest                                | 1 RB             | 3.35                      | 4.34  | /     | 13         | Pass   |
|                                       | Full RB          | 4.55                      | 5.34  | /     | 13         | Pass   |
| Middle                                | 1 RB             | 3.35                      | 4.29  | /     | 13         | Pass   |
|                                       | Full RB          | 4.69                      | 5.48  | /     | 13         | Pass   |
| Highest                               | 1 RB             | 3.29                      | 4.34  | /     | 13         | Pass   |
|                                       | Full RB          | 4.77                      | 5.53  | /     | 13         | Pass   |

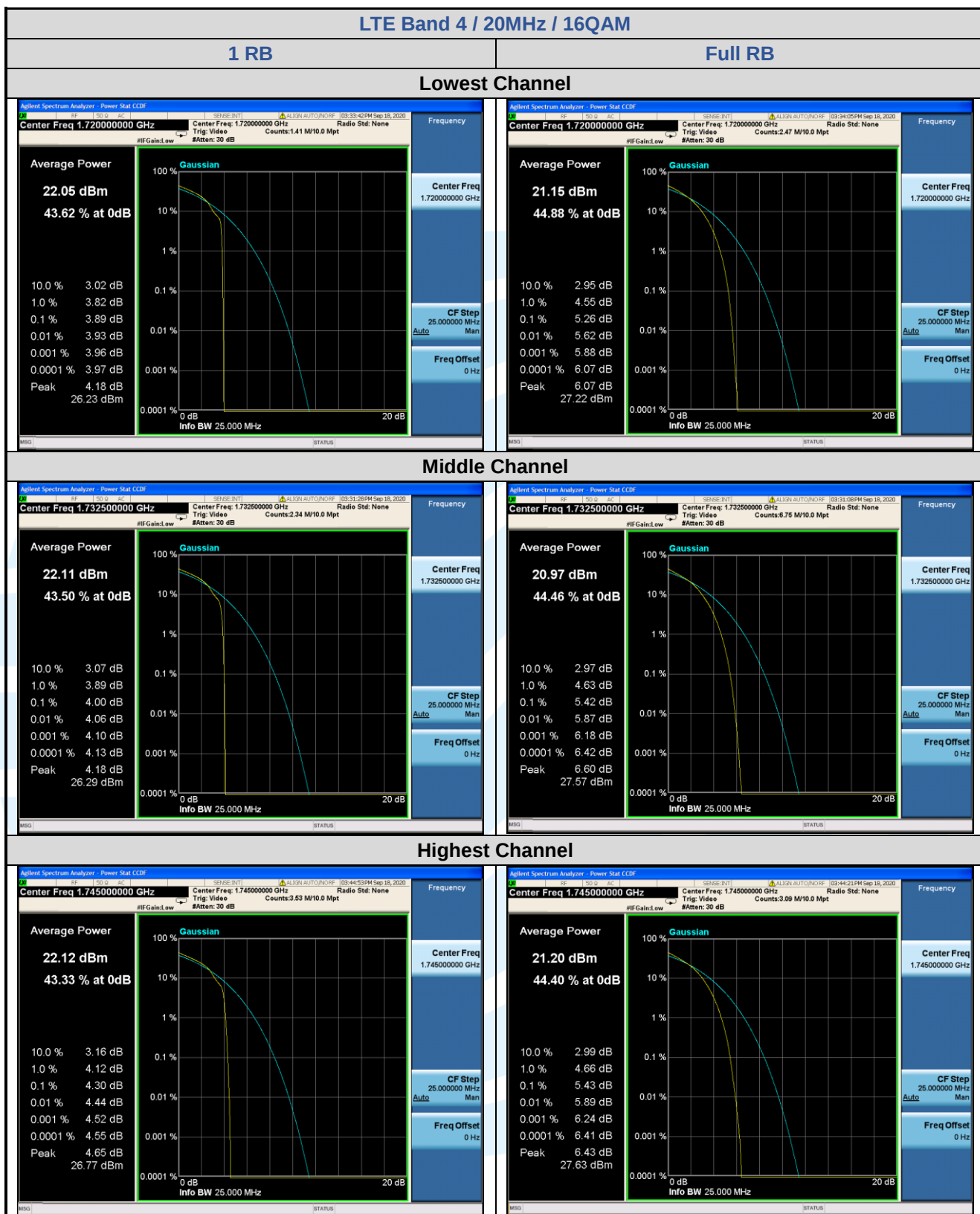




#### 5.4.2 LTE Band 4

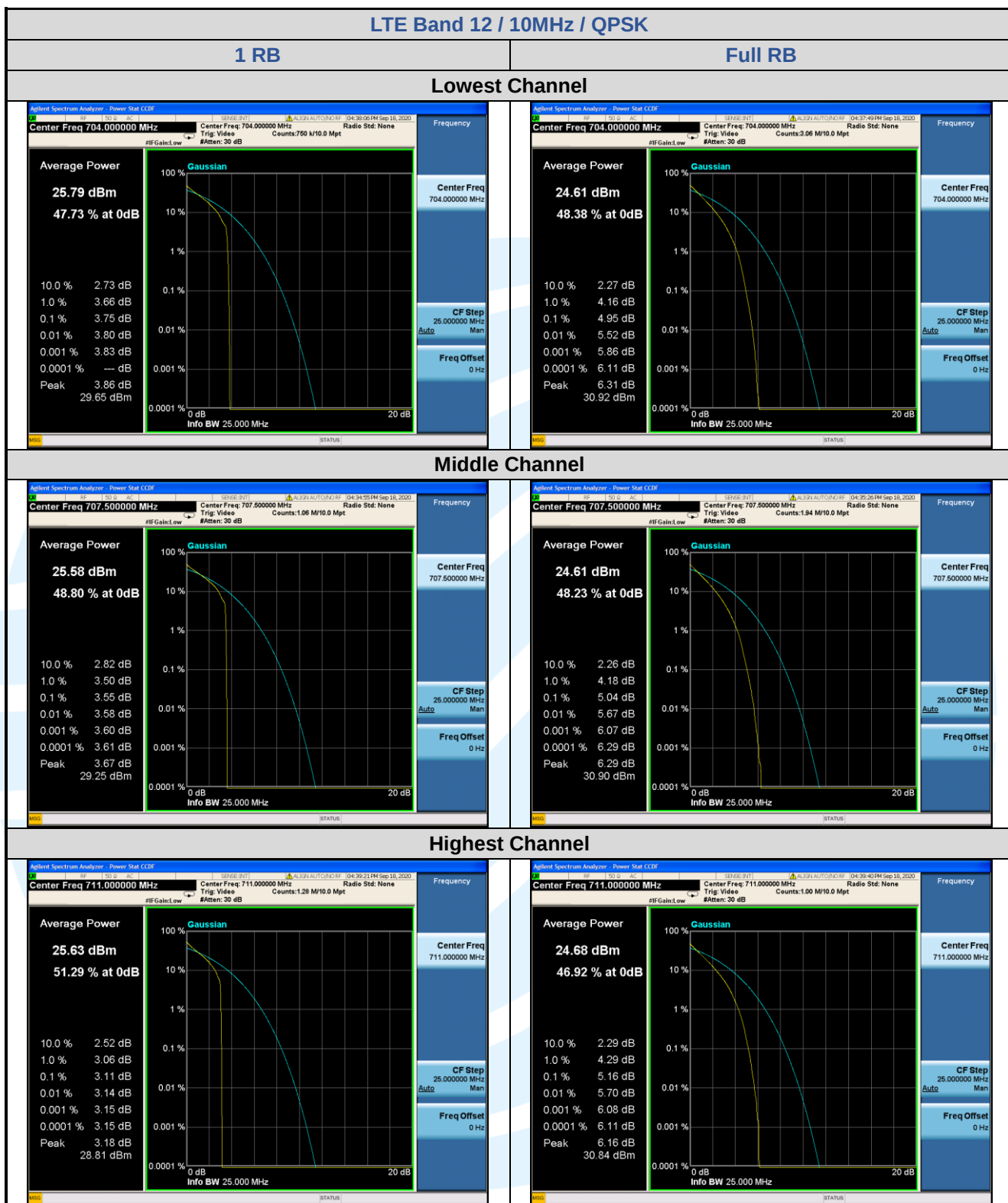
| LTE Band 4 Peak-to-average ratio (dB) |                  |                           |       |       |            |        |
|---------------------------------------|------------------|---------------------------|-------|-------|------------|--------|
| Channel                               | RB Configuration | Channel Bandwidth: 20 MHz |       |       | Limit (dB) | Result |
|                                       |                  | QPSK                      | 16QAM | 64QAM |            |        |
| Lowest                                | 1 RB             | 3.11                      | 3.89  | /     | 13         | Pass   |
|                                       | Full RB          | 4.42                      | 5.26  | /     | 13         | Pass   |
| Middle                                | 1 RB             | 3.35                      | 4.00  | /     | 13         | Pass   |
|                                       | Full RB          | 4.66                      | 5.42  | /     | 13         | Pass   |
| Highest                               | 1 RB             | 3.96                      | 4.30  | /     | 13         | Pass   |
|                                       | Full RB          | 4.63                      | 5.43  | /     | 13         | Pass   |

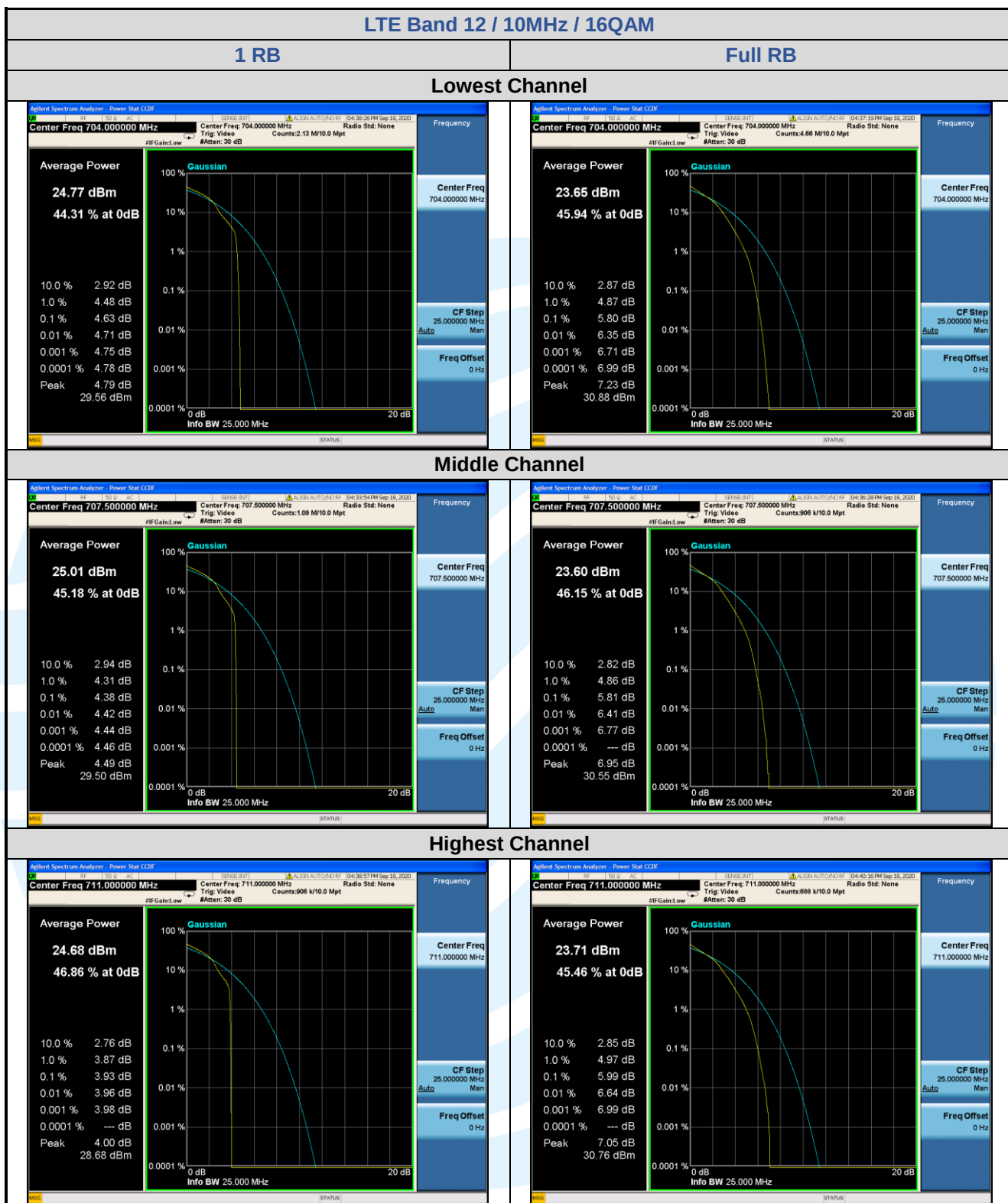




### 5.4.3 LTE Band 12

| LTE Band 12 Peak-to-average ratio (dB) |                  |                           |       |       |            |        |
|----------------------------------------|------------------|---------------------------|-------|-------|------------|--------|
| Channel                                | RB Configuration | Channel Bandwidth: 10 MHz |       |       | Limit (dB) | Result |
|                                        |                  | QPSK                      | 16QAM | 64QAM |            |        |
| Lowest                                 | 1 RB             | 3.75                      | 4.63  | /     | 13         | Pass   |
|                                        | Full RB          | 4.95                      | 5.80  | /     | 13         | Pass   |
| Middle                                 | 1 RB             | 3.55                      | 4.38  | /     | 13         | Pass   |
|                                        | Full RB          | 5.04                      | 5.81  | /     | 13         | Pass   |
| Highest                                | 1 RB             | 3.11                      | 3.93  | /     | 13         | Pass   |
|                                        | Full RB          | 5.16                      | 5.99  | /     | 13         | Pass   |





#### 5.4.4 LTE Band 66

| LTE Band 66 Peak-to-average ratio (dB) |                  |                           |       |       |            |        |
|----------------------------------------|------------------|---------------------------|-------|-------|------------|--------|
| Channel                                | RB Configuration | Channel Bandwidth: 20 MHz |       |       | Limit (dB) | Result |
|                                        |                  | QPSK                      | 16QAM | 64QAM |            |        |
| Lowest                                 | 1 RB             | 4.83                      | 5.75  | /     | 13         | Pass   |
|                                        | Full RB          | 5.24                      | 6.16  | /     | 13         | Pass   |
| Middle                                 | 1 RB             | 4.89                      | 5.88  | /     | 13         | Pass   |
|                                        | Full RB          | 5.28                      | 6.22  | /     | 13         | Pass   |
| Highest                                | 1 RB             | 4.56                      | 5.50  | /     | 13         | Pass   |
|                                        | Full RB          | 5.39                      | 6.24  | /     | 13         | Pass   |

