

# FCC Radio Test Report

## FCC ID: ZMOSU806LA

This report concerns: Original Grant

**Project No.** : 2205C056  
**Equipment** : LTE Module  
**Brand Name** : Fibocom  
**Test Model** : SU806-LA  
**Series Model** : N/A  
**Applicant** : Fibocom Wireless Inc.  
**Address** : 1101, Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan, Shenzhen, China  
**Manufacturer** : Fibocom Wireless Inc.  
**Address** : 1101, Tower A, Building 6, Shenzhen International Innovation Valley, Dashi 1st Rd, Nanshan, Shenzhen, China  
**Date of Receipt** : May 16, 2022  
**Date of Test** : May 18, 2022 ~ Jun. 06, 2022  
**Issued Date** : Jun. 15, 2022  
**Report Version** : R01  
**Test Sample** : Engineering Sample No.: DG20220516111 for radiated, DG20220516107 and DG20220516110 for conducted.  
**Standard(s)** : 47 CFR FCC Part 24 Subpart E  
47 CFR FCC Part 2  
ANSI C63.26-2015  
ANSI/TIA/EIA-603-E-2016  
FCC KDB 971168 D01 Power Meas License Digital Systems v03r01

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

*Gabriel Zhu*

Prepared by : Gabriel Zhu

*Steven Lu*

Approved by : Steven Lu



Add: No. 3 Jinshagang 1st Rd. Shixia, Dalang Town Dongguan City, Guangdong 523792

People's Republic of China

Tel: +86-769-8318-3000

Web: [www.newbtl.com](http://www.newbtl.com)

**Declaration**

**BTL** represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

**BTL's** reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

The report must not be used by the client to claim product certification, approval, or endorsement by NIST, A2LA, or any agency of the U.S. Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and ourselves, the test report shall not be reproduced, except in full, without our written approval.

**BTL's** laboratory quality assurance procedures are in compliance with the **ISO/IEC 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

**BTL** is not responsible for the sampling stage, so the results only apply to the sample as received.

The information, data and test plan are provided by manufacturer which may affect the validity of results, so it is manufacturer's responsibility to ensure that the apparatus meets the essential requirements of applied standards and in all the possible configurations as representative of its intended use.

**Limitation**

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

Please note that the measurement uncertainty is provided for informational purpose only and is not use in determining the Pass/Fail results.

| <b>Table of Contents</b>                                     | <b>Page</b> |
|--------------------------------------------------------------|-------------|
| <b>REPORT ISSUED HISTORY</b>                                 | <b>5</b>    |
| <b>1 . SUMMARY OF TEST RESULTS</b>                           | <b>6</b>    |
| 1.1 TEST FACILITY                                            | 7           |
| 1.2 MEASUREMENT UNCERTAINTY                                  | 7           |
| 1.3 TEST ENVIRONMENT CONDITIONS                              | 8           |
| <b>2 . GENERAL INFORMATION</b>                               | <b>9</b>    |
| 2.1 GENERAL DESCRIPTION OF EUT                               | 9           |
| 2.2 DESCRIPTION OF TEST MODES                                | 11          |
| 2.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED | 13          |
| 2.4 DESCRIPTION OF SUPPORT UNITS                             | 13          |
| <b>3 . TEST RESULT</b>                                       | <b>14</b>   |
| 3.1 OUTPUT POWER MEASUREMENT                                 | 14          |
| 3.1.1 LIMIT                                                  | 14          |
| 3.1.2 TEST PROCEDURE                                         | 14          |
| 3.1.3 TEST SETUP LAYOUT                                      | 14          |
| 3.1.4 TEST DEVIATION                                         | 14          |
| 3.1.5 TEST RESULTS                                           | 14          |
| 3.2 OCCUPIED BANDWIDTH MEASUREMENT                           | 15          |
| 3.2.1 TEST PROCEDURE                                         | 15          |
| 3.2.2 TEST SETUP LAYOUT                                      | 15          |
| 3.2.3 TEST DEVIATION                                         | 15          |
| 3.2.4 TEST RESULTS                                           | 15          |
| 3.3 CONDUCTED SPURIOUS EMISSIONS MEASUREMENT                 | 16          |
| 3.3.1 LIMIT                                                  | 16          |
| 3.3.2 TEST PROCEDURES                                        | 16          |
| 3.3.3 TEST SETUP LAYOUT                                      | 16          |
| 3.3.4 TEST DEVIATION                                         | 16          |
| 3.3.5 TEST RESULTS                                           | 16          |
| 3.4 RADIATED SPURIOUS EMISSIONS MEASUREMENT                  | 17          |
| 3.4.1 LIMIT                                                  | 17          |
| 3.4.2 TEST PROCEDURES                                        | 17          |
| 3.4.3 TEST SETUP LAYOUT                                      | 18          |
| 3.4.4 TEST DEVIATION                                         | 19          |
| 3.4.5 TEST RESULTS (9KHZ TO 30MHZ)                           | 19          |
| 3.4.6 TEST RESULTS (30MHZ TO 1000MHZ)                        | 19          |
| 3.4.7 TEST RESULTS (ABOVE 1000MHZ)                           | 19          |
| 3.5 BAND EDGE MEASUREMENT                                    | 20          |
| 3.5.1 LIMIT                                                  | 20          |
| 3.5.2 TEST PROCEDURES                                        | 20          |

| <b>Table of Contents</b>                                    | <b>Page</b> |
|-------------------------------------------------------------|-------------|
| 3.5.3 TEST SETUP LAYOUT                                     | 20          |
| 3.5.4 TEST DEVIATION                                        | 20          |
| 3.5.5 TEST RESULTS                                          | 20          |
| 3.6 PEAK TO AVERAGE RATIO MEASUREMENT                       | 21          |
| 3.6.1 LIMIT                                                 | 21          |
| 3.6.2 TEST PROCEDURES                                       | 21          |
| 3.6.3 TEST SETUP LAYOUT                                     | 21          |
| 3.6.4 TEST DEVIATION                                        | 21          |
| 3.6.5 TEST RESULTS                                          | 21          |
| 3.7 FREQUENCY STABILITY MEASUREMENT                         | 22          |
| 3.7.1 LIMIT                                                 | 22          |
| 3.7.2 TEST PROCEDURES                                       | 22          |
| 3.7.3 TEST SETUP LAYOUT                                     | 22          |
| 3.7.4 TEST DEVIATION                                        | 22          |
| 3.7.5 TEST RESULTS                                          | 22          |
| 4. LIST OF MEASUREMENT EQUIPMENTS                           | 23          |
| 5. EUT TEST PHOTO                                           | 25          |
| APPENDIX A - OUTPUT POWER                                   | 28          |
| APPENDIX B - OCCUPIED BANDWIDTH                             | 37          |
| APPENDIX C - CONDUCTED SPURIOUS EMISSIONS                   | 47          |
| APPENDIX D - RADIATED SPURIOUS EMISSIONS (9KHZ TO 30MHZ)    | 51          |
| APPENDIX E - RADIATED SPURIOUS EMISSIONS (30MHZ TO 1000MHZ) | 53          |
| APPENDIX F - RADIATED SPURIOUS EMISSIONS (ABOVE 1000MHZ)    | 57          |
| APPENDIX G - BAND EDGE                                      | 61          |
| APPENDIX H - PEAK TO AVERAGE RATIO                          | 70          |
| APPENDIX I - FREQUENCY STABILITY                            | 80          |

**REPORT ISSUED HISTORY**

| Report No.          | Version | Description                                               | Issued Date   | Note    |
|---------------------|---------|-----------------------------------------------------------|---------------|---------|
| BTL-FCCP-2-2205C056 | R00     | Original Report.                                          | Jun. 13, 2022 | Invalid |
| BTL-FCCP-2-2205C056 | R01     | Updated channel 810 of 99% Occupied Bandwidth in page 38. | Jun. 15, 2022 | Valid   |

## 1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standard(s):

| FCC Part 24 Subpart E & Part 2 |                                     |          |        |
|--------------------------------|-------------------------------------|----------|--------|
| Standard(s) Section            | Test Item                           | Judgment | Remark |
| 2.1046<br>24.232(c)            | Equivalent Isotropic Radiated Power | PASS     | -----  |
| 2.1049                         | Occupied Bandwidth                  | PASS     | -----  |
| 2.1051<br>24.238(a)            | Conducted Spurious Emissions        | PASS     | -----  |
| 2.1053<br>24.238(a)            | Radiated Spurious Emissions         | PASS     | -----  |
| 24.238(a)                      | Band Edge Measurements              | PASS     | -----  |
| 24.232(d)                      | Peak To Average Ratio               | PASS     | -----  |
| 2.1055<br>24.235               | Frequency Stability                 | PASS     | -----  |

Note:

(1) "N/A" denotes test is not applicable in this test report.

## 1.1 TEST FACILITY

The test facilities used to collect the test data of radiated in this report is at the location of No. 3 Jinshagang 1st Rd. Shixia, Dalang Town Dongguan City, Guangdong 523792 People's Republic of China.

The test facilities used to collect the test data of conducted in this report is at the location of Room 108, Building 2, No.1, Yile Road, Songshan Lake Zone, Dongguan City, Guangdong, People's Republic of China.

BTL's Test Firm Registration Number for FCC: 357015

BTL's Designation Number for FCC: CN1240

## 1.2 MEASUREMENT UNCERTAINTY

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2))

The BTL measurement uncertainty as below table:

### A. Radiated Measurement:

| Test Site | Method | Measurement Frequency Range | U,(dB) |
|-----------|--------|-----------------------------|--------|
| DG-CB01   | CISPR  | 9kHz ~ 30MHz                | 2.36   |

| Test Site | Method | Measurement Frequency Range | Ant.<br>H / V | U,(dB) |
|-----------|--------|-----------------------------|---------------|--------|
| DG-CB03   | CISPR  | 30MHz ~ 200MHz              | V             | 4.36   |
|           |        | 30MHz ~ 200MHz              | H             | 3.32   |
|           |        | 200MHz ~ 1,000MHz           | V             | 4.08   |
|           |        | 200MHz ~ 1,000MHz           | H             | 3.96   |
|           |        | 1GHz ~ 6GHz                 | -             | 3.80   |
|           |        | 6GHz ~ 18GHz                | -             | 4.82   |
|           |        | 18GHz ~ 26.5 GHz            | -             | 3.62   |

### B. Other Measurement:

| Parameter              | Uncertainty |
|------------------------|-------------|
| Spectrum Bandwidth     | ±3.8 %      |
| Maximum Output Power   | ±0.95 dB    |
| Power Spectral Density | ±0.86 dB    |
| Frequency Stability    | ±0.16 dB    |
| Temperature            | ±0.08 °C    |
| Time                   | ±0.58 %     |
| Supply voltages        | ±0.3 %      |

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

### 1.3 TEST ENVIRONMENT CONDITIONS

| Test Item                                           | Temperature      | Humidity | Test Voltage     | Tested By  |
|-----------------------------------------------------|------------------|----------|------------------|------------|
| Output Power & EIRP                                 | 23~25°C          | 33~37%   | DC 3.8V          | Rick Liao  |
| Occupied Bandwidth                                  | 23~25°C          | 33~37%   | DC 3.8V          | Rick Liao  |
| Conducted Spurious Emissions                        | 23~25°C          | 33~37%   | DC 3.8V          | Rick Liao  |
| Radiated Spurious Emissions<br>(9 kHz to 30 MHz)    | 24°C             | 60%      | DC 3.8V          | Rod Tang   |
| Radiated Spurious Emissions<br>(30 MHz to 1000 MHz) | 22°C             | 50~51%   | DC 3.8V          | Berton Luo |
| Radiated Spurious Emissions<br>(Above 1000 MHz)     | 22°C             | 50~51%   | DC 3.8V          | Berton Luo |
| Band Edge                                           | 23~25°C          | 33~37%   | DC 3.8V          | Rick Liao  |
| Peak to Average Ratio                               | 23~25°C          | 33~37%   | DC 3.8V          | Rick Liao  |
| Frequency Stability                                 | Normal & Extreme | 33~37%   | Normal & Extreme | Rick Liao  |

## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

|                     |                                                        |                                  |                                           |             |
|---------------------|--------------------------------------------------------|----------------------------------|-------------------------------------------|-------------|
| Equipment           | LTE Module                                             |                                  |                                           |             |
| Brand Name          | Fibocom                                                |                                  |                                           |             |
| Test Model          | SU806-LA                                               |                                  |                                           |             |
| Series Model        | N/A                                                    |                                  |                                           |             |
| Model Difference(s) | N/A                                                    |                                  |                                           |             |
| Hardware Version    | V1.0                                                   |                                  |                                           |             |
| Software Version    | SU806-LA-Q3E. 01. 101                                  |                                  |                                           |             |
| Power Source        | DC voltage supplied from external power supply.        |                                  |                                           |             |
| Power Rating        | Supply voltage: 3.5~4.2V, Typical supply voltage: 3.8V |                                  |                                           |             |
| IMEI No.            | Radiated                                               | 862147060002785                  |                                           |             |
|                     | Conducted                                              | 862147060000789, 862147060001225 |                                           |             |
| Modulation Type     | GSM/GPRS                                               |                                  | GMSK                                      |             |
|                     | EDGE                                                   |                                  | GMSK, 8PSK                                |             |
|                     | WCDMA/HSDPA/HSUPA                                      |                                  | UL: QPSK, 16QAM<br>DL: QPSK, 16QAM, 64QAM |             |
|                     | LTE                                                    |                                  | UL: QPSK, 16QAM<br>DL: QPSK, 16QAM, 64QAM |             |
| Max. EIRP           | GSM 1900 / GPRS 1900                                   |                                  | GMSK                                      | 31.35 dBm   |
|                     | EDGE 1900                                              |                                  | 8PSK                                      | 26.83 dBm   |
|                     | WCDMA Band II                                          |                                  | QPSK                                      | 26.62 dBm   |
|                     | HSDPA Band II                                          |                                  | QPSK                                      | 24.72 dBm   |
|                     | HSUPA Band II                                          |                                  | QPSK                                      | 25.03 dBm   |
|                     | LTE                                                    | Channel Bandwidth (MHz)          | QPSK (dBm)                                | 16QAM (dBm) |
|                     | Band 2                                                 | 1.4                              | 25.95                                     | 25.52       |
|                     |                                                        | 3                                | 25.98                                     | 25.07       |
|                     |                                                        | 5                                | 25.89                                     | 24.93       |
|                     |                                                        | 10                               | 25.90                                     | 25.17       |
|                     |                                                        | 15                               | 25.89                                     | 25.74       |
|                     |                                                        | 20                               | 26.00                                     | 24.87       |

Note:

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.

2. Channel List:

| PCS 1900          |        |                           |        |                             |
|-------------------|--------|---------------------------|--------|-----------------------------|
| Test Frequency ID | UARFCN | Frequency of Uplink (MHz) | UARFCN | Frequency of Downlink (MHz) |
| Low Range         | 512    | 1850.2                    | 528    | 1930.2                      |
| Mid Range         | 661    | 1880                      | 677    | 1960                        |
| High Range        | 810    | 1909.8                    | 826    | 1989.8                      |

| WCDMA Band II     |        |                           |        |                             |
|-------------------|--------|---------------------------|--------|-----------------------------|
| Test Frequency ID | UARFCN | Frequency of Uplink (MHz) | UARFCN | Frequency of Downlink (MHz) |
| Low Range         | 9262   | 1852.4                    | 9662   | 1932.4                      |
| Mid Range         | 9400   | 1880.0                    | 9800   | 1960.0                      |
| High Range        | 9538   | 1907.6                    | 9938   | 1987.6                      |

| LTE Band 2        |                  |                 |                           |                 |                             |
|-------------------|------------------|-----------------|---------------------------|-----------------|-----------------------------|
| Test Frequency ID | Bandwidth (MHz)  | N <sub>UL</sub> | Frequency of Uplink (MHz) | N <sub>DL</sub> | Frequency of Downlink (MHz) |
| Low Range         | 1.4              | 18607           | 1850.7                    | 607             | 1930.7                      |
|                   | 3                | 18615           | 1851.5                    | 615             | 1931.5                      |
|                   | 5                | 18625           | 1852.5                    | 625             | 1932.5                      |
|                   | 10               | 18650           | 1855                      | 650             | 1935                        |
|                   | 15               | 18675           | 1857.5                    | 675             | 1937.5                      |
|                   | 20               | 18700           | 1860                      | 700             | 1940                        |
| Mid Range         | 1.4/3/5/10/15/20 | 18900           | 1880                      | 900             | 1960                        |
| High Range        | 1.4              | 19193           | 1909.3                    | 1193            | 1989.3                      |
|                   | 3                | 19185           | 1908.5                    | 1185            | 1988.5                      |
|                   | 5                | 19175           | 1907.5                    | 1175            | 1987.5                      |
|                   | 10               | 19150           | 1905                      | 1150            | 1985                        |
|                   | 15               | 19125           | 1902.5                    | 1125            | 1982.5                      |
|                   | 20               | 19100           | 1900                      | 1100            | 1980                        |

3. Table for Filed Antenna:

| Manufacturer                                      | P/N      | Antenna Type | Connector  | Gain (dBi) | Note          |
|---------------------------------------------------|----------|--------------|------------|------------|---------------|
| shenzhen bogesi communication technology co., ltd | GHT-019A | Dipole       | SMA Male J | 1.93       | PCS 1900      |
|                                                   |          |              |            | 1.93       | WCDMA Band II |
|                                                   |          |              |            | 1.93       | LTE Band 2    |

Note: The antenna gain is provided by the manufacturer.

## 2.2 DESCRIPTION OF TEST MODES

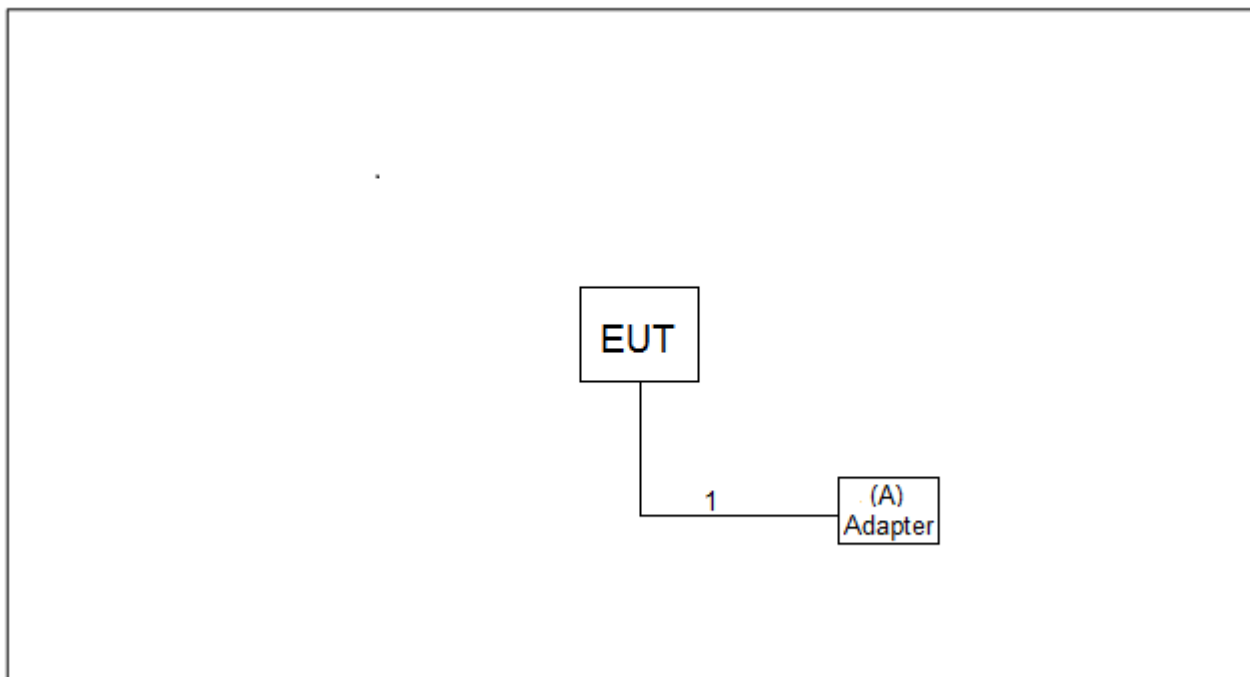
Following mode(s) is (were) found to be the worst case(s) and selected for the final test.

| GSM MODE                     |                   |                |                 |
|------------------------------|-------------------|----------------|-----------------|
| Test Item                    | Available Channel | Tested Channel | Mode            |
| Output Power & EIRP          | 512 to 810        | 512, 661, 810  | GSM, GPRS, EDGE |
| Occupied Bandwidth           | 512 to 810        | 512, 661, 810  | GSM, EDGE       |
| Conducted Spurious Emissions | 512 to 810        | 661            | GSM, EDGE       |
| Radiated Spurious Emissions  | 512 to 810        | 661            | GSM             |
| Band Edge                    | 512 to 810        | 512, 810       | GSM, EDGE       |
| Peak to Average Ratio        | 512 to 810        | 512, 661, 810  | GSM, EDGE       |
| Frequency Stability          | 512 to 810        | 512, 810       | GSM             |

| WCDMA BAND II MODE           |                   |                  |                     |
|------------------------------|-------------------|------------------|---------------------|
| Test Item                    | Available Channel | Tested Channel   | Mode                |
| Output Power & EIRP          | 9262 to 9538      | 9262, 9400, 9538 | WCDMA, HSDPA, HSUPA |
| Occupied Bandwidth           | 9262 to 9538      | 9262, 9400, 9538 | WCDMA               |
| Conducted Spurious Emissions | 9262 to 9538      | 9400             | WCDMA               |
| Radiated Spurious Emissions  | 9262 to 9538      | 9400             | WCDMA               |
| Band Edge                    | 9262 to 9538      | 9262, 9538       | WCDMA               |
| Peak To Average Ratio        | 9262 to 9538      | 9262, 9400, 9538 | WCDMA               |
| Frequency Stability          | 9262 to 9538      | 9262, 9538       | WCDMA               |

| LTE BAND 2 MODE              |                   |                     |                   |             |                |
|------------------------------|-------------------|---------------------|-------------------|-------------|----------------|
| Test Item                    | Available Channel | Tested Channel      | Channel Bandwidth | Modulation  | Mode           |
| Output Power & EIRP          | 18607 to 19193    | 18607, 18900, 19193 | 1.4MHz            | QPSK, 16QAM | 1RB/3RB/6RB    |
|                              | 18615 to 19185    | 18615, 18900, 19185 | 3MHz              | QPSK, 16QAM | 1RB/8RB/15RB   |
|                              | 18625 to 19175    | 18625, 18900, 19175 | 5MHz              | QPSK, 16QAM | 1RB/12RB/25RB  |
|                              | 18650 to 19150    | 18650, 18900, 19150 | 10MHz             | QPSK, 16QAM | 1RB/25RB/50RB  |
|                              | 18675 to 19125    | 18675, 18900, 19125 | 15MHz             | QPSK, 16QAM | 1RB/36RB/75RB  |
|                              | 18700 to 19100    | 18700, 18900, 19100 | 20MHz             | QPSK, 16QAM | 1RB/50RB/100RB |
| Occupied Bandwidth           | 18607 to 19193    | 18607, 18900, 19193 | 1.4MHz            | QPSK, 16QAM | 6RB            |
|                              | 18615 to 19185    | 18615, 18900, 19185 | 3MHz              | QPSK, 16QAM | 15RB           |
|                              | 18625 to 19175    | 18625, 18900, 19175 | 5MHz              | QPSK, 16QAM | 25RB           |
|                              | 18650 to 19150    | 18650, 18900, 19150 | 10MHz             | QPSK, 16QAM | 50RB           |
|                              | 18675 to 19125    | 18675, 18900, 19125 | 15MHz             | QPSK, 16QAM | 75RB           |
|                              | 18700 to 19100    | 18700, 18900, 19100 | 20MHz             | QPSK, 16QAM | 100RB          |
| Conducted Spurious Emissions | 18607 to 19193    | 18900               | 1.4 MHz           | QPSK        | 1RB            |
|                              | 18625 to 19175    | 18900               | 5MHz              | QPSK        | 1RB            |
|                              | 18700 to 19100    | 18900               | 20MHz             | QPSK        | 1RB            |
| Radiated Spurious Emissions  | 18607 to 19193    | 18900               | 1.4 MHz           | QPSK        | 1RB            |
|                              | 18625 to 19175    | 18900               | 5MHz              | QPSK        | 1RB            |
|                              | 18700 to 19100    | 18900               | 20MHz             | QPSK        | 1RB            |
| Band Edge                    | 18607 to 19193    | 18607, 19193        | 1.4MHz            | QPSK        | 1RB/6RB        |
|                              | 18615 to 19185    | 18615, 19185        | 3MHz              | QPSK        | 1RB/15RB       |
|                              | 18625 to 19175    | 18625, 19175        | 5MHz              | QPSK        | 1RB/25RB       |
|                              | 18650 to 19150    | 18650, 19150        | 10MHz             | QPSK        | 1RB/50RB       |
|                              | 18675 to 19125    | 18675, 19125        | 15MHz             | QPSK        | 1RB/75RB       |
|                              | 18700 to 19100    | 18700, 19100        | 20MHz             | QPSK        | 1RB/100RB      |
| Peak To Average Ratio        | 18607 to 19193    | 18607, 18900, 19193 | 1.4MHz            | QPSK, 16QAM | 1RB            |
|                              | 18615 to 19185    | 18615, 18900, 19185 | 3MHz              | QPSK, 16QAM | 1RB            |
|                              | 18625 to 19175    | 18625, 18900, 19175 | 5MHz              | QPSK, 16QAM | 1RB            |
|                              | 18650 to 19150    | 18650, 18900, 19150 | 10MHz             | QPSK, 16QAM | 1RB            |
|                              | 18675 to 19125    | 18675, 18900, 19125 | 15MHz             | QPSK, 16QAM | 1RB            |
|                              | 18700 to 19100    | 18700, 18900, 19100 | 20MHz             | QPSK, 16QAM | 1RB            |
| Frequency Stability          | 18700 to 19100    | 18700, 19100        | 20MHz             | QPSK        | 100RB          |

## 2.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



## 2.4 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

| Item | Equipment | Mfr/Brand | Model/Type No. | Series No. |
|------|-----------|-----------|----------------|------------|
| A    | Adapter   | HUAWEI    | HW-100225B00   | -          |

| Item | Cable Type | Shielded Type | Ferrite Core | Length |
|------|------------|---------------|--------------|--------|
| 1    | USB Cable  | NO            | NO           | 1.2m   |

### 3. TEST RESULT

#### 3.1 OUTPUT POWER MEASUREMENT

##### 3.1.1 LIMIT

Mobile / Portable station are limited to 2 watts e.i.r.p.

##### 3.1.2 TEST PROCEDURE

The testing follows FCC KDB 971168 v03r01 Section 5.

##### EIRP:

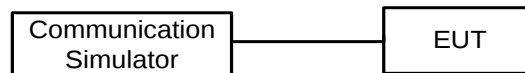
$EIRP = \text{Output Power} + \text{Antenan gain}$

##### Output Power:

The EUT was set up for the maximum power with GSM, GPRS, EDGE, WCDMA and 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.

##### 3.1.3 TEST SETUP LAYOUT

##### Output Power Measurement



##### 3.1.4 TEST DEVIATION

No deviation.

##### 3.1.5 TEST RESULTS

Please refer to the APPENDIX A.

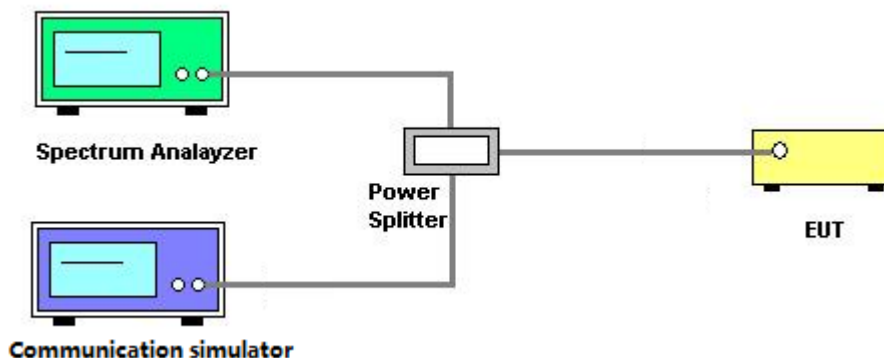
## 3.2 OCCUPIED BANDWIDTH MEASUREMENT

### 3.2.1 TEST PROCEDURE

The testing follows FCC KDB 971168 v03r01 Section 4.

1. The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth and 26dB bandwidth.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3.  $RBW = (1\% \sim 5\%) * EBW$   
 $VBW \geq 3 * RBW$
4. Set spectrum analyzer with Peak detector.

### 3.2.2 TEST SETUP LAYOUT



### 3.2.3 TEST DEVIATION

No deviation.

### 3.2.4 TEST RESULTS

Please refer to the APPENDIX B.

### 3.3 CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

#### 3.3.1 LIMIT

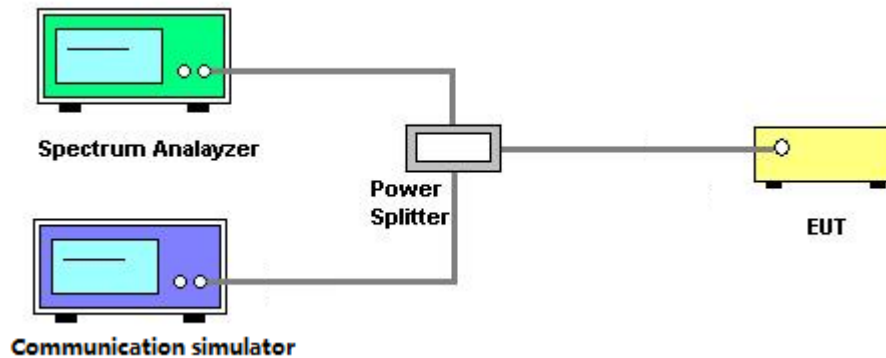
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB. The emission limit equal to -13dBm.

#### 3.3.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 6.

1. The EUT was connected to spectrum analyzer and system simulator via a power divider.
2. The band edges of low and high channels for the highest RF powers were measured. Set RBW  $\geq 1\%$  EBW in the 1MHz band immediately outside and adjacent to the band edge.
3. Set spectrum analyzer with Peak detector.
4. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

#### 3.3.3 TEST SETUP LAYOUT



#### 3.3.4 TEST DEVIATION

No deviation.

#### 3.3.5 TEST RESULTS

Please refer to the APPENDIX C.

### **3.4 RADIATED SPURIOUS EMISSIONS MEASUREMENT**

#### **3.4.1 LIMIT**

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB. The emission limit equal to -13dBm.

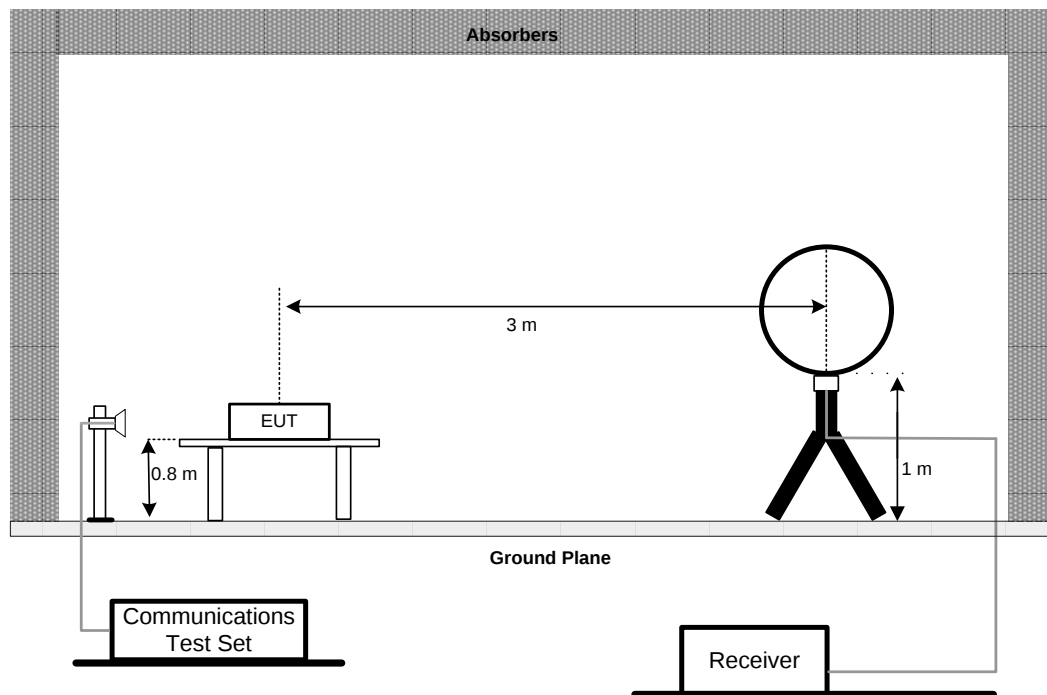
#### **3.4.2 TEST PROCEDURES**

The testing follows FCC KDB 971168 v03r01 Section 6.2.

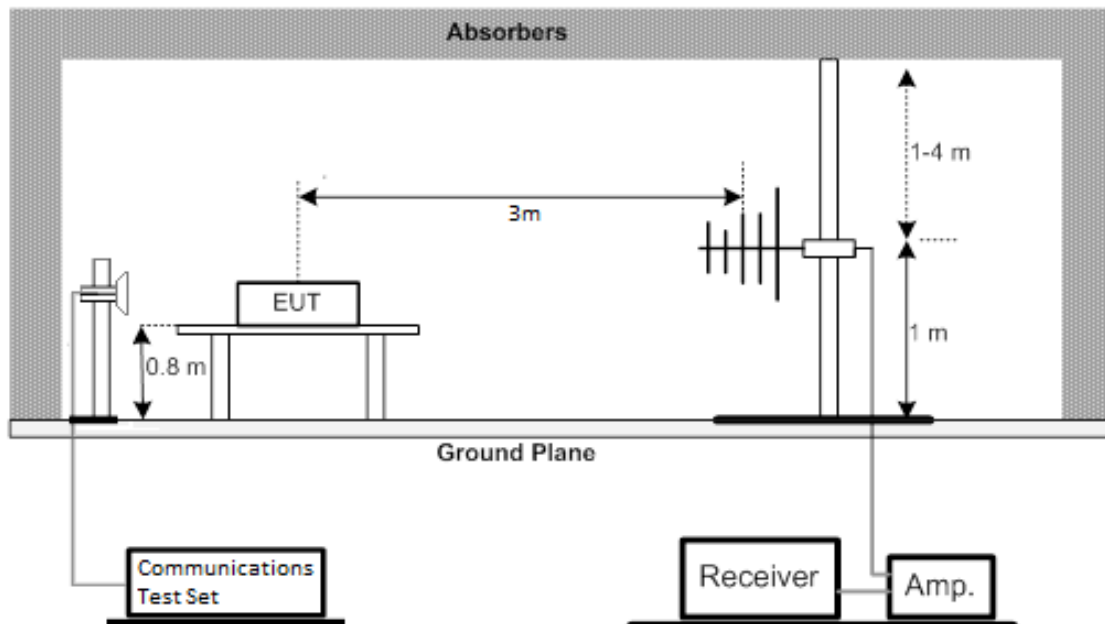
1. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
2. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value " of step a. Record the power level of S.G
3.  $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$
4. ERP can be calculated form EIRP by subtracting the gain of dipole,  $ERP = EIPR - 2.15\text{dBi}.$
5. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

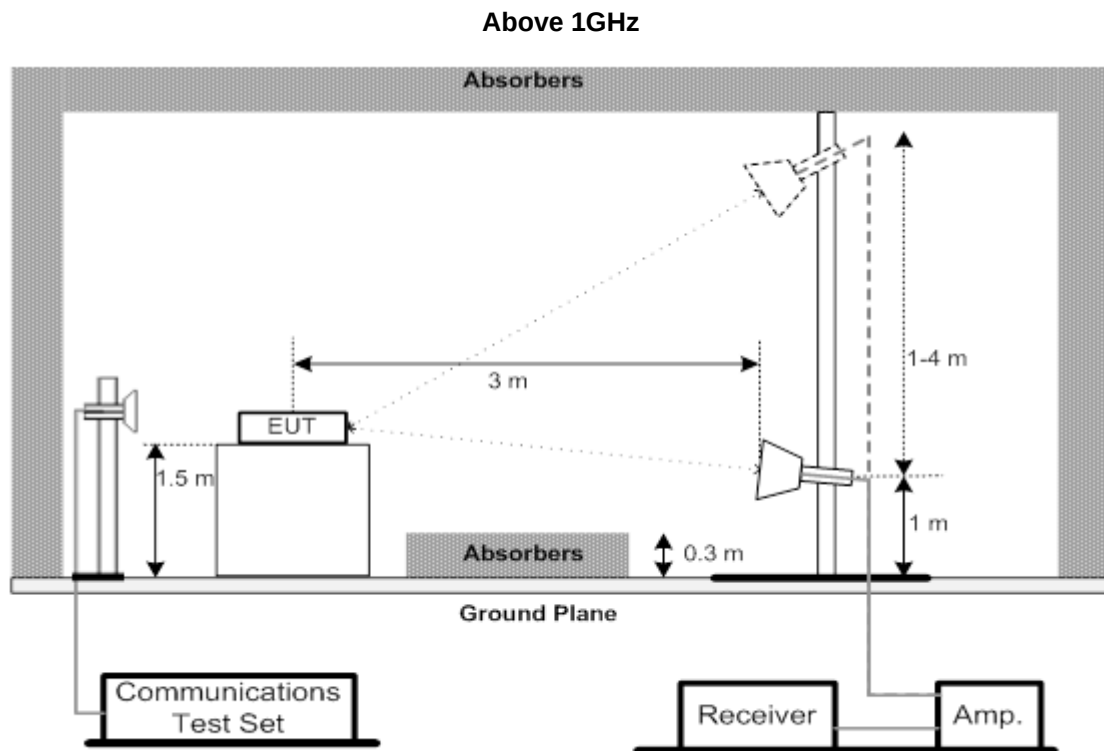
### 3.4.3 TEST SETUP LAYOUT

#### Below 30MHz



#### 30MHz to 1000MHz





#### 3.4.4 TEST DEVIATION

No deviation.

#### 3.4.5 TEST RESULTS (9KHZ TO 30MHZ)

Please refer to the APPENDIX D.

#### 3.4.6 TEST RESULTS (30MHZ TO 1000MHZ)

Please refer to the APPENDIX E.

#### 3.4.7 TEST RESULTS (ABOVE 1000MHZ)

Please refer to the APPENDIX F.

### 3.5 BAND EDGE MEASUREMENT

#### 3.5.1 LIMIT

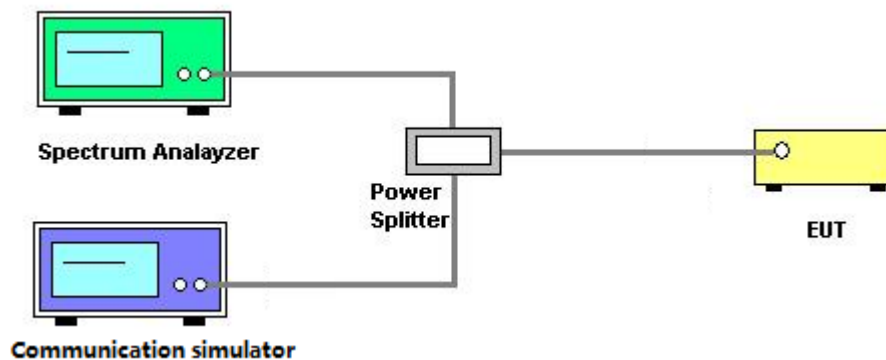
A Power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log(P)$  dB. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

#### 3.5.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 6.

1. All measurements were done at low and high operational frequency range.
2. Record the max trace plot into the test report.

#### 3.5.3 TEST SETUP LAYOUT



#### 3.5.4 TEST DEVIATION

No deviation.

#### 3.5.5 TEST RESULTS

Please refer to the APPENDIX G.

### 3.6 PEAK TO AVERAGE RATIO MEASUREMENT

#### 3.6.1 LIMIT

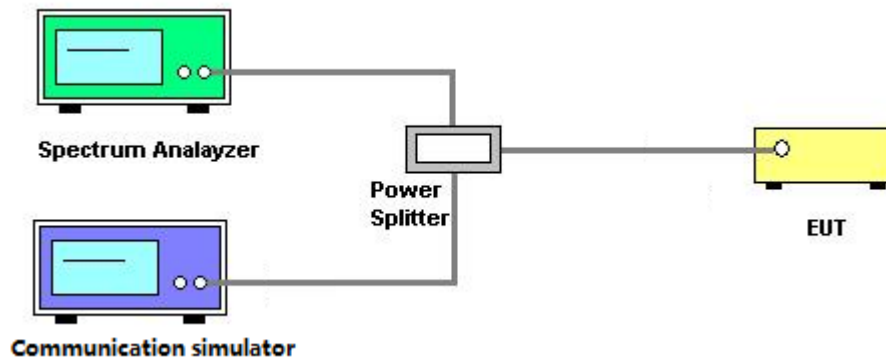
In measuring transmissions in this band using an average power technique, the peak to-average ratio (PAR) of the transmission may not exceed 13 dB.

#### 3.6.2 TEST PROCEDURES

The testing follows FCC KDB 971168 v03r01 Section 5.7.

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

#### 3.6.3 TEST SETUP LAYOUT



#### 3.6.4 TEST DEVIATION

No deviation.

#### 3.6.5 TEST RESULTS

Please refer to the APPENDIX H.

### 3.7 FREQUENCY STABILITY MEASUREMENT

#### 3.7.1 LIMIT

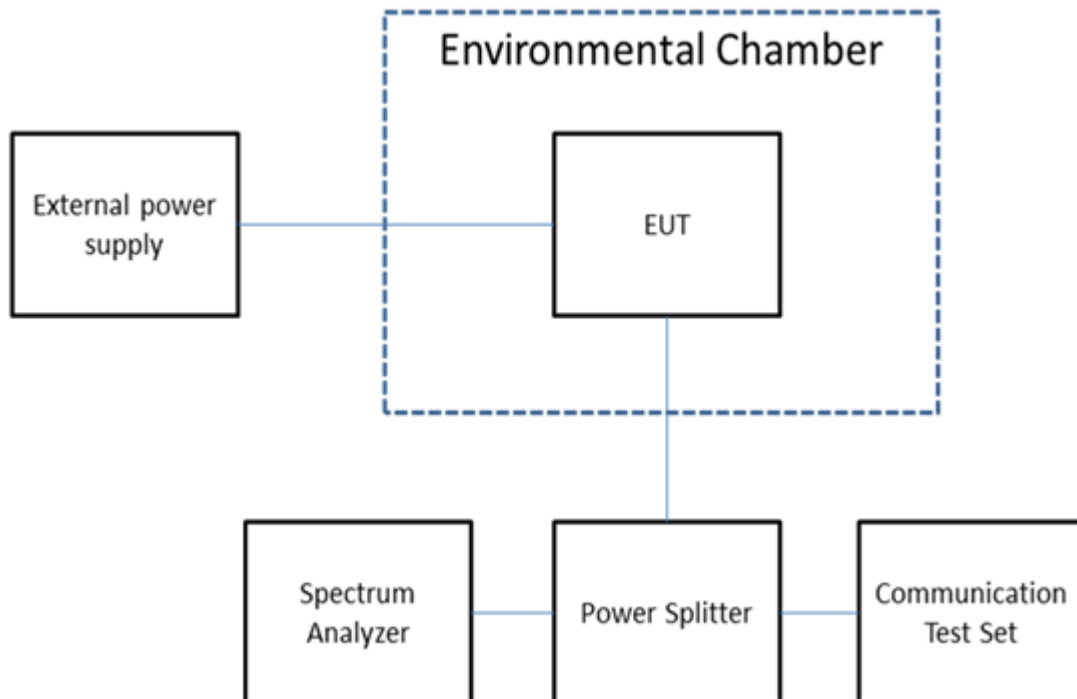
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

#### 3.7.2 TEST PROCEDURES

The testing follows ANSI C63.26-2015 Section 5.6.

1. A reference point shall be established at the applicable unwanted emissions limit using a RBW equal to the RBW required by the unwanted emissions specification of the applicable regulatory standard. These reference points measured using the lowest and highest channel of operation shall be identified as  $f_L$  and  $f_H$  respectively. The worst-case frequency offset determined in the above methods shall be added or subtracted from the values of  $f_L$  and  $f_H$  and the resulting frequencies must remain within the band.
2. The EUT was set up in the thermal chamber and connected with the system simulator.
3. With power OFF, the temperature was decreased to  $-30^{\circ}\text{C}$  and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
4. With power OFF, the temperature was raised in  $10^{\circ}\text{C}$  step up to  $50^{\circ}\text{C}$ . The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

#### 3.7.3 TEST SETUP LAYOUT



#### 3.7.4 TEST DEVIATION

No deviation

#### 3.7.5 TEST RESULTS

Please refer to the APPENDIX I.

#### 4. LIST OF MEASUREMENT EQUIPMENTS

| Radiated Emissions - 9 kHz to 30 MHz |                                        |              |                            |            |                  |
|--------------------------------------|----------------------------------------|--------------|----------------------------|------------|------------------|
| Item                                 | Kind of Equipment                      | Manufacturer | Type No.                   | Serial No. | Calibrated until |
| 1                                    | MXE EMI Receiver                       | Keysight     | N9038A                     | MY56400091 | Jan. 22, 2023    |
| 2*                                   | Active Loop Antenna                    | R&S          | HFH2-Z2                    | 830749/020 | Aug. 23, 2024    |
| 3                                    | Cable                                  | N/A          | RG<br>213/U(9kHz~1G<br>Hz) | N/A        | Jul. 09, 2022    |
| 4                                    | Measurement Software                   | Farad        | EZ-EMC<br>Ver.NB-03A1-01   | N/A        | N/A              |
| 5                                    | wideband radio<br>communication tester | R&S          | CMW500                     | 152372     | Mar. 13, 2023    |
| 6                                    | Wireless Communication<br>Test SET     | Agilent      | E5515C                     | MY48364183 | Jan. 23, 2023    |
| 7                                    | 966 Chamber Room                       | ETS          | 9*6*6                      | N/A        | Jul. 17, 2022    |

| Radiated Emissions - 30 MHz to 1 GHz |                                        |              |                          |             |                  |
|--------------------------------------|----------------------------------------|--------------|--------------------------|-------------|------------------|
| Item                                 | Kind of Equipment                      | Manufacturer | Type No.                 | Serial No.  | Calibrated until |
| 1                                    | Antenna                                | Schwarzbeck  | VULB9160                 | 9160-3232   | Mar. 03, 2023    |
| 2                                    | Amplifier                              | HP           | 8447D                    | 2944A08742  | Jan. 22, 2023    |
| 3                                    | Cable                                  | emci         | LMR-400                  | N/A         | Nov. 30, 2022    |
| 4                                    | Controller                             | CT           | SC100                    | N/A         | N/A              |
| 5                                    | Controller                             | MF           | MF-7802                  | MF780208416 | N/A              |
| 6                                    | Receiver                               | Agilent      | N9038A                   | MY52130039  | Jan. 22, 2023    |
| 7                                    | Measurement Software                   | Farad        | EZ-EMC<br>Ver.NB-03A1-01 | N/A         | N/A              |
| 8                                    | wideband radio<br>communication tester | R&S          | CMW500                   | 152372      | Mar. 13, 2023    |
| 9                                    | Wireless<br>Communication Test<br>SET  | Agilent      | E5515C                   | MY48364183  | Jan. 23, 2023    |
| 10                                   | 966 Chamber Room                       | RM           | 9*6*6                    | N/A         | Jul. 24, 2022    |

| Radiated Emissions - Above 1 GHz |                                     |                  |                       |             |                  |
|----------------------------------|-------------------------------------|------------------|-----------------------|-------------|------------------|
| Item                             | Kind of Equipment                   | Manufacturer     | Type No.              | Serial No.  | Calibrated until |
| 1                                | Double Ridged Horn Antenna          | ARA              | DRG-118A              | 16554       | Apr. 18, 2023    |
| 2                                | Broad-Band Horn Antenna             | Schwarzbeck      | BBHA 9170             | 9170319     | Jun. 30, 2022    |
| 3                                | Amplifier                           | Agilent          | 8449B                 | 3008A02584  | Jul. 10, 2022    |
| 4                                | Controller                          | CT               | SC100                 | N/A         | N/A              |
| 5                                | Controller                          | MF               | MF-7802               | MF780208416 | N/A              |
| 6                                | Receiver                            | Agilent          | N9038A                | MY52130039  | Jan. 22, 2023    |
| 7                                | EXA Spectrum Analyzer               | Keysight         | N9010A                | MY56480488  | Jan. 22, 2023    |
| 8                                | Low Noise Amplifier                 | CONNPHY          | CLN-18G40G-4330-K     | 619413      | Jul. 16, 2022    |
| 9                                | Cable                               | Talent microwave | A81-SMAMSMAM-12.5M    | N/A         | Oct. 15, 2022    |
| 10                               | Cable                               | Talent microwave | A40-2.92M2.92M-2.5M   | N/A         | Nov. 30, 2022    |
| 11                               | Measurement Software                | Farad            | EZ-EMC Ver.NB-03A1-01 | N/A         | N/A              |
| 12                               | wideband radio communication tester | R&S              | CMW500                | 152372      | Mar. 13, 2023    |
| 13                               | Wireless Communication Test SET     | Agilent          | E5515C                | MY48364183  | Jan. 23, 2023    |
| 14                               | 966 Chamber Room                    | RM               | 9*6*6                 | N/A         | Jul. 24, 2022    |

| Conducted Measurement |                                      |               |              |              |                  |
|-----------------------|--------------------------------------|---------------|--------------|--------------|------------------|
| Item                  | Kind of Equipment                    | Manufacturer  | Type No.     | Serial No.   | Calibrated until |
| 1                     | 8960 Series 10 Wireless Com Test set | Agilent       | E5515E       | MY52112163   | Jul. 24, 2022    |
| 2                     | MXA Signal Analyzer                  | Keysight      | N9020A       | MY49100060   | Jul. 24, 2022    |
| 3                     | Power Splitter                       | Mini-Circuits | ZFRSC-183-S+ | SF103501511S | Jul. 24, 2022    |
| 4                     | wideband radio communication tester  | R&S           | CMW500       | 104462       | Jul. 24, 2022    |
| 5                     | Const Temp. & Humidity Chamber       | Bell          | BTH-50C      | 20170306001  | Feb. 19, 2023    |
| 6                     | Mob Comms DC Supply                  | Agilent       | 66319D       | MY52002262   | Feb. 20, 2023    |
| 7                     | Signal Analyzer                      | R&S           | FSQ-26       | 200822       | Feb. 19, 2023    |

Remark: "N/A" denotes no model name, serial no. or calibration specified.

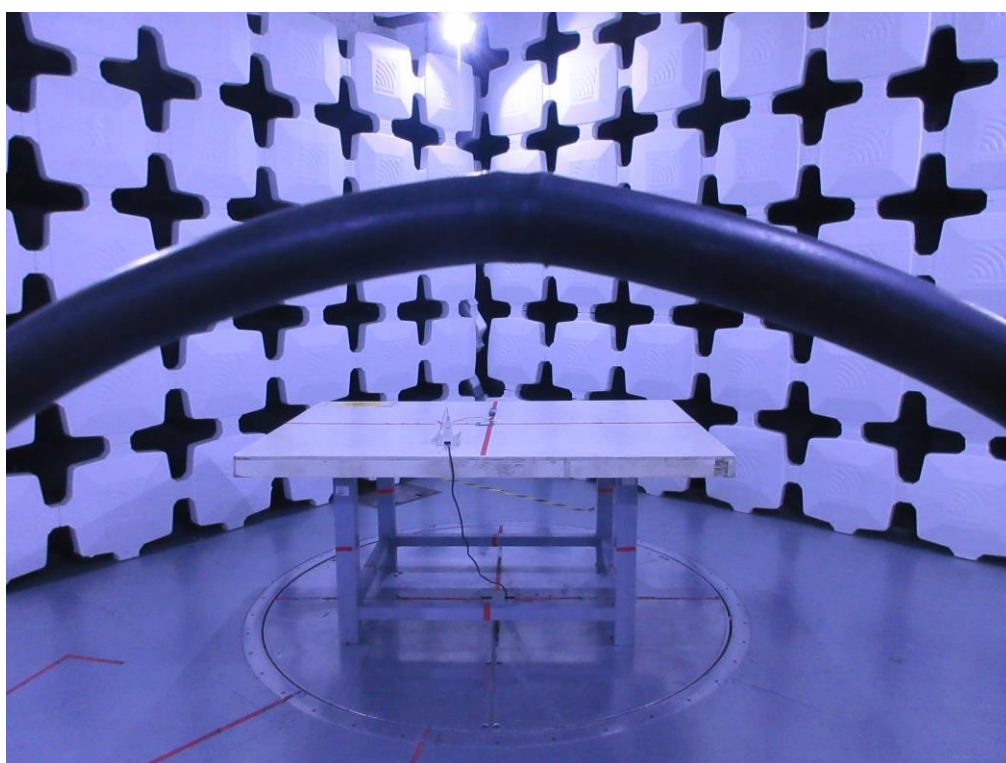
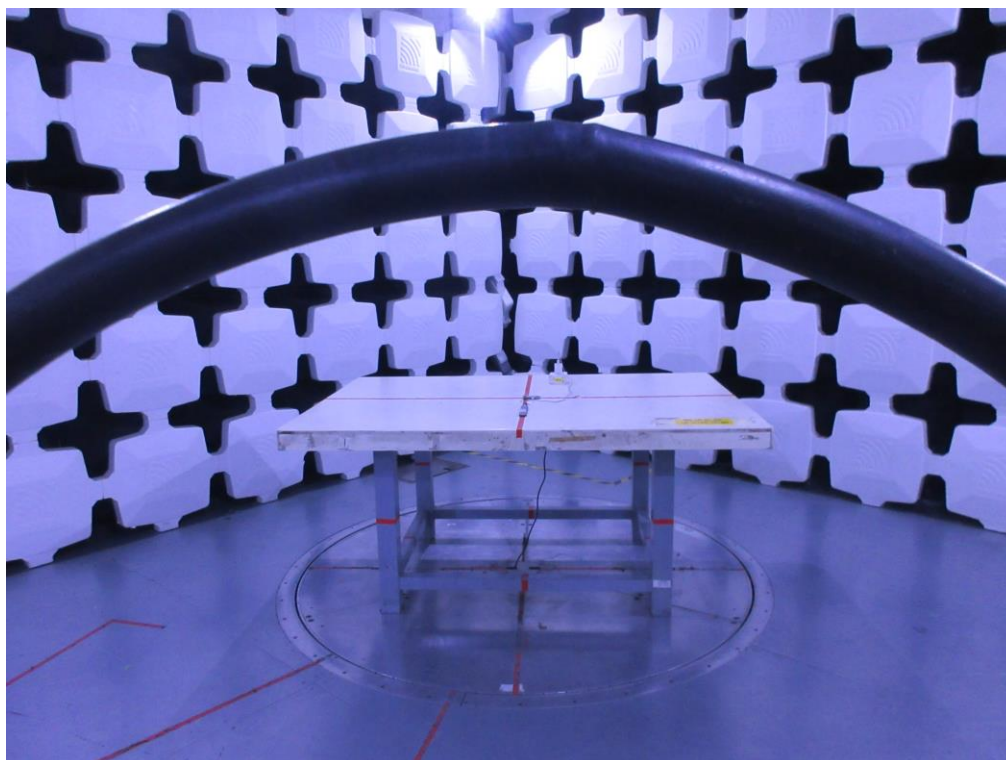
Except \* item, all calibration period of equipment list is one year.

"\*\*" calibration period of equipment list is three year.

## 5. EUT TEST PHOTO

### Radiated Emissions Test Photos

9 kHz to 30 MHz



**Radiated Emissions Test Photos****30 MHz to 1 GHz**

**Radiated Emissions Test Photos****Above 1 GHz**

## APPENDIX A - OUTPUT POWER

### Output Power (dBm)

| PCS1900             |           | 512CH     | 661CH   | 810CH     |
|---------------------|-----------|-----------|---------|-----------|
|                     |           | 1850.2MHz | 1880MHz | 1909.8MHz |
| GSM (CS)            |           | 28.68     | 28.85   | 29.42     |
| GPRS/EDGE<br>(GMSK) | 1 Tx Slot | 28.51     | 28.74   | 29.22     |
|                     | 2 Tx Slot | 26.46     | 26.52   | 26.60     |
|                     | 3 Tx Slot | 24.91     | 25.06   | 25.08     |
|                     | 4 Tx Slot | 23.00     | 23.09   | 23.17     |
| EDGE<br>(8PSK)      | 1 Tx Slot | 24.47     | 24.88   | 24.90     |
|                     | 2 Tx Slot | 22.64     | 23.78   | 23.13     |
|                     | 3 Tx Slot | 20.05     | 21.53   | 21.20     |
|                     | 4 Tx Slot | 17.76     | 19.69   | 19.06     |

| Modulation | Band            | WCDMA Band II |         |           |
|------------|-----------------|---------------|---------|-----------|
|            | Tx Channel      | 9262CH        | 9400CH  | 9538CH    |
|            | Frequency       | 1852.4MHz     | 1880MHz | 1907.6MHz |
| QPSK       | RMC 12.2K       | 23.57         | 23.57   | 23.64     |
|            | RMC 64K         | 23.61         | 23.60   | 23.65     |
|            | RMC 144K        | 23.63         | 23.62   | 23.69     |
|            | RMC 384K        | 23.62         | 23.61   | 23.67     |
|            | HSDPA Subtest-1 | 22.60         | 22.73   | 22.79     |
|            | HSDPA Subtest-2 | 22.50         | 22.78   | 22.75     |
|            | HSDPA Subtest-3 | 22.41         | 22.74   | 22.69     |
|            | HSDPA Subtest-4 | 21.90         | 22.26   | 22.07     |
|            | HSUPA Subtest-1 | 20.89         | 21.06   | 21.16     |
|            | HSUPA Subtest-2 | 20.49         | 20.68   | 20.83     |
|            | HSUPA Subtest-3 | 20.84         | 21.04   | 21.18     |
|            | HSUPA Subtest-4 | 20.91         | 21.12   | 21.22     |
|            | HSUPA Subtest-5 | 22.74         | 23.00   | 23.10     |

| LTE Band / BW | Modulation | RB Size | RB Offset | Low CH    | Mid CH  | High CH   |
|---------------|------------|---------|-----------|-----------|---------|-----------|
|               |            |         |           | 18607CH   | 18900CH | 19193CH   |
|               |            |         |           | 1850.7MHz | 1880MHz | 1909.3MHz |
| 2 / 1.4MHz    | QPSK       | 1       | 0         | 23.56     | 24.02   | 23.90     |
|               |            | 1       | 2         | 23.52     | 24.00   | 23.87     |
|               |            | 1       | 5         | 23.49     | 24.02   | 23.87     |
|               |            | 3       | 0         | 23.35     | 23.87   | 23.74     |
|               |            | 3       | 1         | 23.41     | 23.79   | 23.68     |
|               |            | 3       | 2         | 23.36     | 23.88   | 23.69     |
|               |            | 6       | 0         | 22.42     | 22.89   | 22.79     |
|               | 16QAM      | 1       | 0         | 22.71     | 23.16   | 23.59     |
|               |            | 1       | 2         | 22.66     | 23.22   | 23.56     |
|               |            | 1       | 5         | 22.78     | 23.22   | 23.56     |
|               |            | 3       | 0         | 22.82     | 22.72   | 22.79     |
|               |            | 3       | 1         | 22.88     | 22.77   | 22.82     |
|               |            | 3       | 2         | 22.83     | 22.71   | 22.74     |
|               |            | 6       | 0         | 21.70     | 22.22   | 21.42     |

| LTE Band / BW | Modulation | RB Size | RB Offset | Low CH    | Mid CH  | High CH   |
|---------------|------------|---------|-----------|-----------|---------|-----------|
|               |            |         |           | 18615CH   | 18900CH | 19185CH   |
|               |            |         |           | 1851.5MHz | 1880MHz | 1908.5MHz |
| 2 / 3MHz      | QPSK       | 1       | 0         | 23.79     | 24.04   | 23.97     |
|               |            | 1       | 7         | 23.80     | 24.05   | 23.94     |
|               |            | 1       | 14        | 23.80     | 24.02   | 23.84     |
|               |            | 8       | 0         | 22.47     | 22.71   | 22.64     |
|               |            | 8       | 4         | 22.35     | 22.79   | 22.64     |
|               |            | 8       | 7         | 22.41     | 22.79   | 22.71     |
|               |            | 15      | 0         | 22.37     | 22.74   | 22.78     |
|               | 16QAM      | 1       | 0         | 23.06     | 23.10   | 23.07     |
|               |            | 1       | 7         | 23.04     | 23.11   | 23.00     |
|               |            | 1       | 14        | 23.06     | 23.14   | 23.04     |
|               |            | 8       | 0         | 21.50     | 22.00   | 21.76     |
|               |            | 8       | 4         | 21.45     | 22.08   | 21.77     |
|               |            | 8       | 7         | 21.57     | 22.03   | 21.76     |
|               |            | 15      | 0         | 21.63     | 21.98   | 21.75     |

| LTE Band / BW | Modulation | RB Size | RB Offset | Low CH    | Mid CH  | High CH   |
|---------------|------------|---------|-----------|-----------|---------|-----------|
|               |            |         |           | 18625CH   | 18900CH | 19175CH   |
|               |            |         |           | 1852.5MHz | 1880MHz | 1907.5MHz |
| 2 / 5MHz      | QPSK       | 1       | 0         | 23.47     | 23.88   | 23.76     |
|               |            | 1       | 13        | 23.51     | 23.92   | 23.61     |
|               |            | 1       | 24        | 23.52     | 23.96   | 23.66     |
|               |            | 12      | 0         | 22.42     | 22.79   | 22.78     |
|               |            | 12      | 6         | 22.41     | 22.83   | 22.78     |
|               |            | 12      | 11        | 22.41     | 22.80   | 22.65     |
|               |            | 25      | 0         | 22.50     | 22.86   | 22.70     |
|               | 16QAM      | 1       | 0         | 22.28     | 22.59   | 23.00     |
|               |            | 1       | 13        | 22.33     | 22.57   | 22.93     |
|               |            | 1       | 24        | 22.38     | 22.63   | 22.95     |
|               |            | 12      | 0         | 21.49     | 21.95   | 21.75     |
|               |            | 12      | 6         | 21.51     | 21.90   | 21.70     |
|               |            | 12      | 11        | 21.52     | 21.87   | 21.71     |
|               |            | 25      | 0         | 21.45     | 22.18   | 21.81     |

| LTE Band / BW | Modulation | RB Size | RB Offset | Low CH  | Mid CH  | High CH |
|---------------|------------|---------|-----------|---------|---------|---------|
|               |            |         |           | 18650CH | 18900CH | 19150CH |
|               |            |         |           | 1855MHz | 1880MHz | 1905MHz |
| 2 / 10MHz     | QPSK       | 1       | 0         | 23.63   | 23.79   | 23.96   |
|               |            | 1       | 25        | 23.75   | 23.85   | 23.93   |
|               |            | 1       | 49        | 23.85   | 23.97   | 23.85   |
|               |            | 25      | 0         | 22.53   | 22.90   | 22.79   |
|               |            | 25      | 13        | 22.44   | 22.86   | 22.77   |
|               |            | 25      | 25        | 22.47   | 22.82   | 22.68   |
|               |            | 50      | 0         | 22.55   | 22.92   | 22.80   |
|               | 16QAM      | 1       | 0         | 23.09   | 22.98   | 23.07   |
|               |            | 1       | 25        | 23.19   | 23.07   | 22.91   |
|               |            | 1       | 49        | 23.24   | 23.06   | 22.90   |
|               |            | 25      | 0         | 21.41   | 21.98   | 21.94   |
|               |            | 25      | 13        | 21.42   | 22.02   | 21.90   |
|               |            | 25      | 25        | 21.51   | 21.94   | 21.80   |
|               |            | 50      | 0         | 21.48   | 22.03   | 21.90   |

| LTE Band / BW | Modulation | RB Size | RB Offset | Low CH    | Mid CH  | High CH   |
|---------------|------------|---------|-----------|-----------|---------|-----------|
|               |            |         |           | 18675CH   | 18900CH | 19125CH   |
|               |            |         |           | 1857.5MHz | 1880MHz | 1902.5MHz |
| 2 / 15MHz     | QPSK       | 1       | 0         | 23.68     | 23.76   | 23.77     |
|               |            | 1       | 38        | 23.81     | 23.89   | 23.69     |
|               |            | 1       | 74        | 23.92     | 23.96   | 23.63     |
|               |            | 36      | 0         | 22.42     | 22.74   | 22.85     |
|               |            | 36      | 18        | 22.55     | 22.88   | 22.67     |
|               |            | 36      | 39        | 22.61     | 22.93   | 22.68     |
|               |            | 75      | 0         | 22.54     | 22.81   | 22.59     |
|               | 16QAM      | 1       | 0         | 23.11     | 23.00   | 23.81     |
|               |            | 1       | 38        | 23.21     | 23.13   | 23.70     |
|               |            | 1       | 74        | 23.37     | 23.13   | 23.53     |
|               |            | 36      | 0         | 21.39     | 22.05   | 21.94     |
|               |            | 36      | 18        | 21.53     | 22.07   | 21.88     |
|               |            | 36      | 39        | 21.62     | 22.01   | 21.73     |
|               |            | 75      | 0         | 21.67     | 21.98   | 21.87     |

| LTE Band / BW | Modulation | RB Size | RB Offset | Low CH  | Mid CH  | High CH |
|---------------|------------|---------|-----------|---------|---------|---------|
|               |            |         |           | 18700CH | 18900CH | 19100CH |
|               |            |         |           | 1860MHz | 1880MHz | 1900MHz |
| 2 / 20MHz     | QPSK       | 1       | 0         | 23.48   | 24.01   | 23.76   |
|               |            | 1       | 50        | 23.60   | 24.03   | 23.74   |
|               |            | 1       | 99        | 23.74   | 24.07   | 23.57   |
|               |            | 50      | 0         | 22.51   | 22.81   | 22.92   |
|               |            | 50      | 25        | 22.54   | 22.81   | 22.85   |
|               |            | 50      | 50        | 22.60   | 22.77   | 22.74   |
|               |            | 100     | 0         | 22.57   | 22.88   | 22.72   |
|               | 16QAM      | 1       | 0         | 22.29   | 22.50   | 22.94   |
|               |            | 1       | 50        | 22.39   | 22.73   | 22.87   |
|               |            | 1       | 99        | 22.61   | 22.81   | 22.77   |
|               |            | 50      | 0         | 21.56   | 21.88   | 21.89   |
|               |            | 50      | 25        | 21.69   | 21.98   | 21.85   |
|               |            | 50      | 50        | 21.73   | 21.90   | 21.77   |
|               |            | 100     | 0         | 21.64   | 21.93   | 21.93   |

|                     |           | EIRP (dBm) |         |           |
|---------------------|-----------|------------|---------|-----------|
| PCS1900             |           | 512CH      | 661CH   | 810CH     |
|                     |           | 1850.2MHz  | 1880MHz | 1909.8MHz |
| GSM (CS)            |           | 30.61      | 30.78   | 31.35     |
| GPRS/EDGE<br>(GMSK) | 1 Tx Slot | 30.44      | 30.67   | 31.15     |
|                     | 2 Tx Slot | 28.39      | 28.45   | 28.53     |
|                     | 3 Tx Slot | 26.84      | 26.99   | 27.01     |
|                     | 4 Tx Slot | 24.93      | 25.02   | 25.10     |
| EDGE<br>(8PSK)      | 1 Tx Slot | 26.40      | 26.81   | 26.83     |
|                     | 2 Tx Slot | 24.57      | 25.71   | 25.06     |
|                     | 3 Tx Slot | 21.98      | 23.46   | 23.13     |
|                     | 4 Tx Slot | 19.69      | 21.62   | 20.99     |

| Modulation | Band            | WCDMA Band II |         |           |
|------------|-----------------|---------------|---------|-----------|
|            | Tx Channel      | 9262CH        | 9400CH  | 9538CH    |
|            | Frequency       | 1852.4MHz     | 1880MHz | 1907.6MHz |
| QPSK       | RMC 12.2K       | 25.50         | 25.50   | 25.57     |
|            | RMC 64K         | 25.54         | 25.53   | 25.58     |
|            | RMC 144K        | 25.56         | 25.55   | 25.62     |
|            | RMC 384K        | 25.55         | 25.54   | 25.60     |
|            | HSDPA Subtest-1 | 24.53         | 24.66   | 24.72     |
|            | HSDPA Subtest-2 | 24.43         | 24.71   | 24.68     |
|            | HSDPA Subtest-3 | 24.34         | 24.67   | 24.62     |
|            | HSDPA Subtest-4 | 23.83         | 24.19   | 24.00     |
|            | HSUPA Subtest-1 | 22.82         | 22.99   | 23.09     |
|            | HSUPA Subtest-2 | 22.42         | 22.61   | 22.76     |
|            | HSUPA Subtest-3 | 22.77         | 22.97   | 23.11     |
|            | HSUPA Subtest-4 | 22.84         | 23.05   | 23.15     |
|            | HSUPA Subtest-5 | 24.67         | 24.93   | 25.03     |

| LTE Band / BW | Modulation | RB Size | RB Offset | Low CH    | Mid CH  | High CH   |
|---------------|------------|---------|-----------|-----------|---------|-----------|
|               |            |         |           | 18607CH   | 18900CH | 19193CH   |
|               |            |         |           | 1850.7MHz | 1880MHz | 1909.3MHz |
| 2 / 1.4MHz    | QPSK       | 1       | 0         | 25.49     | 25.95   | 25.83     |
|               |            | 1       | 2         | 25.45     | 25.93   | 25.80     |
|               |            | 1       | 5         | 25.42     | 25.95   | 25.80     |
|               |            | 3       | 0         | 25.28     | 25.80   | 25.67     |
|               |            | 3       | 1         | 25.34     | 25.72   | 25.61     |
|               |            | 3       | 2         | 25.29     | 25.81   | 25.62     |
|               |            | 6       | 0         | 24.35     | 24.82   | 24.72     |
|               | 16QAM      | 1       | 0         | 24.64     | 25.09   | 25.52     |
|               |            | 1       | 2         | 24.59     | 25.15   | 25.49     |
|               |            | 1       | 5         | 24.71     | 25.15   | 25.49     |
|               |            | 3       | 0         | 24.75     | 24.65   | 24.72     |
|               |            | 3       | 1         | 24.81     | 24.70   | 24.75     |
|               |            | 3       | 2         | 24.76     | 24.64   | 24.67     |
|               |            | 6       | 0         | 23.63     | 24.15   | 23.35     |

| LTE Band / BW | Modulation | RB Size | RB Offset | Low CH    | Mid CH  | High CH   |
|---------------|------------|---------|-----------|-----------|---------|-----------|
|               |            |         |           | 18615CH   | 18900CH | 19185CH   |
|               |            |         |           | 1851.5MHz | 1880MHz | 1908.5MHz |
| 2 / 3MHz      | QPSK       | 1       | 0         | 25.72     | 25.97   | 25.90     |
|               |            | 1       | 7         | 25.73     | 25.98   | 25.87     |
|               |            | 1       | 14        | 25.73     | 25.95   | 25.77     |
|               |            | 8       | 0         | 24.40     | 24.64   | 24.57     |
|               |            | 8       | 4         | 24.28     | 24.72   | 24.57     |
|               |            | 8       | 7         | 24.34     | 24.72   | 24.64     |
|               |            | 15      | 0         | 24.30     | 24.67   | 24.71     |
|               | 16QAM      | 1       | 0         | 24.99     | 25.03   | 25.00     |
|               |            | 1       | 7         | 24.97     | 25.04   | 24.93     |
|               |            | 1       | 14        | 24.99     | 25.07   | 24.97     |
|               |            | 8       | 0         | 23.43     | 23.93   | 23.69     |
|               |            | 8       | 4         | 23.38     | 24.01   | 23.70     |
|               |            | 8       | 7         | 23.50     | 23.96   | 23.69     |
|               |            | 15      | 0         | 23.56     | 23.91   | 23.68     |

| LTE Band / BW | Modulation | RB Size | RB Offset | Low CH    | Mid CH  | High CH   |
|---------------|------------|---------|-----------|-----------|---------|-----------|
|               |            |         |           | 18625CH   | 18900CH | 19175CH   |
|               |            |         |           | 1852.5MHz | 1880MHz | 1907.5MHz |
| 2 / 5MHz      | QPSK       | 1       | 0         | 25.40     | 25.81   | 25.69     |
|               |            | 1       | 13        | 25.44     | 25.85   | 25.54     |
|               |            | 1       | 24        | 25.45     | 25.89   | 25.59     |
|               |            | 12      | 0         | 24.35     | 24.72   | 24.71     |
|               |            | 12      | 6         | 24.34     | 24.76   | 24.71     |
|               |            | 12      | 11        | 24.34     | 24.73   | 24.58     |
|               |            | 25      | 0         | 24.43     | 24.79   | 24.63     |
|               | 16QAM      | 1       | 0         | 24.21     | 24.52   | 24.93     |
|               |            | 1       | 13        | 24.26     | 24.50   | 24.86     |
|               |            | 1       | 24        | 24.31     | 24.56   | 24.88     |
|               |            | 12      | 0         | 23.42     | 23.88   | 23.68     |
|               |            | 12      | 6         | 23.44     | 23.83   | 23.63     |
|               |            | 12      | 11        | 23.45     | 23.80   | 23.64     |
|               |            | 25      | 0         | 23.38     | 24.11   | 23.74     |

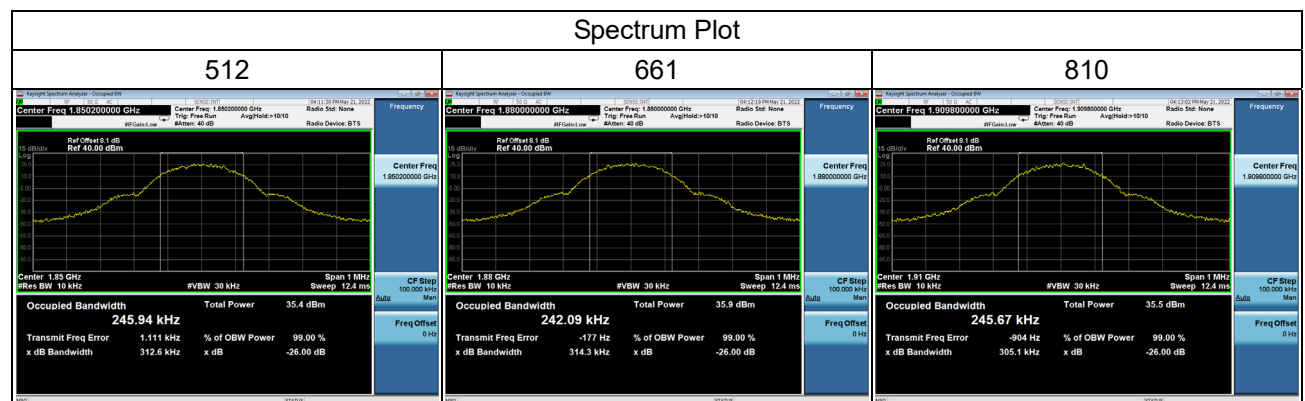
| LTE Band / BW | Modulation | RB Size | RB Offset | Low CH  | Mid CH  | High CH |
|---------------|------------|---------|-----------|---------|---------|---------|
|               |            |         |           | 18650CH | 18900CH | 19150CH |
|               |            |         |           | 1855MHz | 1880MHz | 1905MHz |
| 2 / 10MHz     | QPSK       | 1       | 0         | 25.56   | 25.72   | 25.89   |
|               |            | 1       | 25        | 25.68   | 25.78   | 25.86   |
|               |            | 1       | 49        | 25.78   | 25.90   | 25.78   |
|               |            | 25      | 0         | 24.46   | 24.83   | 24.72   |
|               |            | 25      | 13        | 24.37   | 24.79   | 24.70   |
|               |            | 25      | 25        | 24.40   | 24.75   | 24.61   |
|               |            | 50      | 0         | 24.48   | 24.85   | 24.73   |
|               | 16QAM      | 1       | 0         | 25.02   | 24.91   | 25.00   |
|               |            | 1       | 25        | 25.12   | 25.00   | 24.84   |
|               |            | 1       | 49        | 25.17   | 24.99   | 24.83   |
|               |            | 25      | 0         | 23.34   | 23.91   | 23.87   |
|               |            | 25      | 13        | 23.35   | 23.95   | 23.83   |
|               |            | 25      | 25        | 23.44   | 23.87   | 23.73   |
|               |            | 50      | 0         | 23.41   | 23.96   | 23.83   |

| LTE Band / BW | Modulation | RB Size | RB Offset | Low CH    | Mid CH  | High CH   |
|---------------|------------|---------|-----------|-----------|---------|-----------|
|               |            |         |           | 18675CH   | 18900CH | 19125CH   |
|               |            |         |           | 1857.5MHz | 1880MHz | 1902.5MHz |
| 2 / 15MHz     | QPSK       | 1       | 0         | 25.61     | 25.69   | 25.70     |
|               |            | 1       | 38        | 25.74     | 25.82   | 25.62     |
|               |            | 1       | 74        | 25.85     | 25.89   | 25.56     |
|               |            | 36      | 0         | 24.35     | 24.67   | 24.78     |
|               |            | 36      | 18        | 24.48     | 24.81   | 24.60     |
|               |            | 36      | 39        | 24.54     | 24.86   | 24.61     |
|               |            | 75      | 0         | 24.47     | 24.74   | 24.52     |
|               | 16QAM      | 1       | 0         | 25.04     | 24.93   | 25.74     |
|               |            | 1       | 38        | 25.14     | 25.06   | 25.63     |
|               |            | 1       | 74        | 25.30     | 25.06   | 25.46     |
|               |            | 36      | 0         | 23.32     | 23.98   | 23.87     |
|               |            | 36      | 18        | 23.46     | 24.00   | 23.81     |
|               |            | 36      | 39        | 23.55     | 23.94   | 23.66     |
|               |            | 75      | 0         | 23.60     | 23.91   | 23.80     |

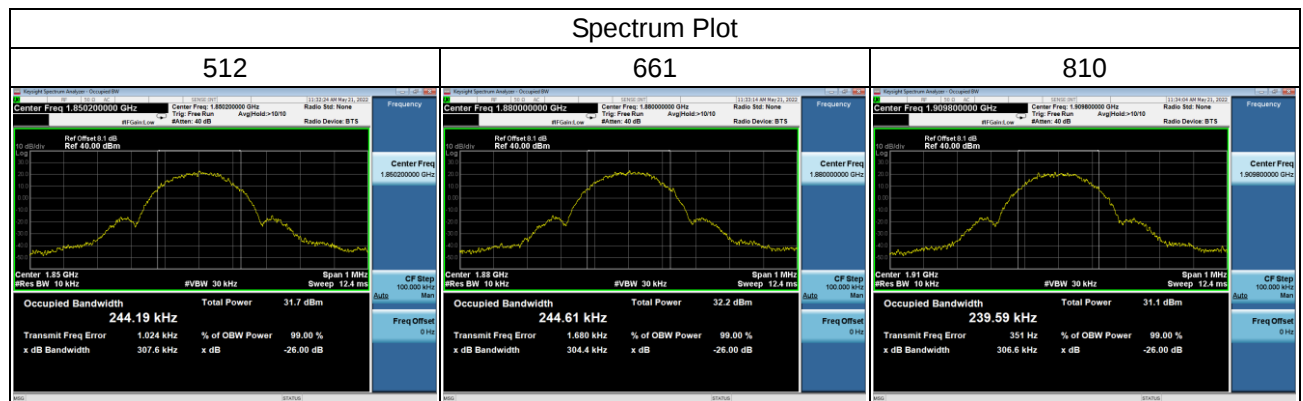
| LTE Band / BW | Modulation | RB Size | RB Offset | Low CH  | Mid CH  | High CH |
|---------------|------------|---------|-----------|---------|---------|---------|
|               |            |         |           | 18700CH | 18900CH | 19100CH |
|               |            |         |           | 1860MHz | 1880MHz | 1900MHz |
| 2 / 20MHz     | QPSK       | 1       | 0         | 25.41   | 25.94   | 25.69   |
|               |            | 1       | 50        | 25.53   | 25.96   | 25.67   |
|               |            | 1       | 99        | 25.67   | 26.00   | 25.50   |
|               |            | 50      | 0         | 24.44   | 24.74   | 24.85   |
|               |            | 50      | 25        | 24.47   | 24.74   | 24.78   |
|               |            | 50      | 50        | 24.53   | 24.70   | 24.67   |
|               |            | 100     | 0         | 24.50   | 24.81   | 24.65   |
|               | 16QAM      | 1       | 0         | 24.22   | 24.43   | 24.87   |
|               |            | 1       | 50        | 24.32   | 24.66   | 24.80   |
|               |            | 1       | 99        | 24.54   | 24.74   | 24.70   |
|               |            | 50      | 0         | 23.49   | 23.81   | 23.82   |
|               |            | 50      | 25        | 23.62   | 23.91   | 23.78   |
|               |            | 50      | 50        | 23.66   | 23.83   | 23.70   |
|               |            | 100     | 0         | 23.57   | 23.86   | 23.86   |

## **APPENDIX B - OCCUPIED BANDWIDTH**

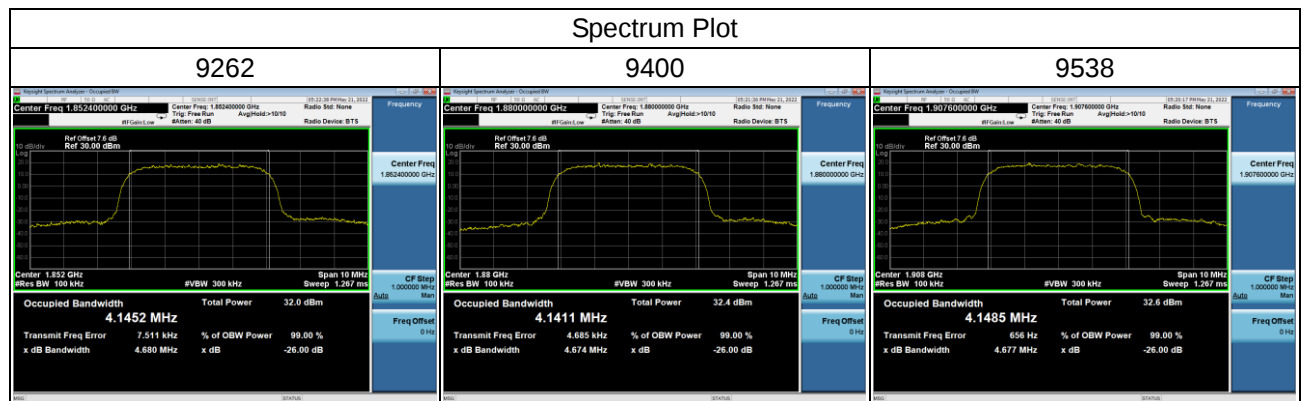
| PCS1900_GSM |                 |                              |                      |
|-------------|-----------------|------------------------------|----------------------|
| Channel     | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | 26dB Bandwidth (MHz) |
|             |                 | QPSK                         | QPSK                 |
| 512         | 1850.2          | 0.2459                       | 0.3126               |
| 661         | 1880            | 0.2421                       | 0.3143               |
| 810         | 1909.8          | 0.2457                       | 0.3051               |



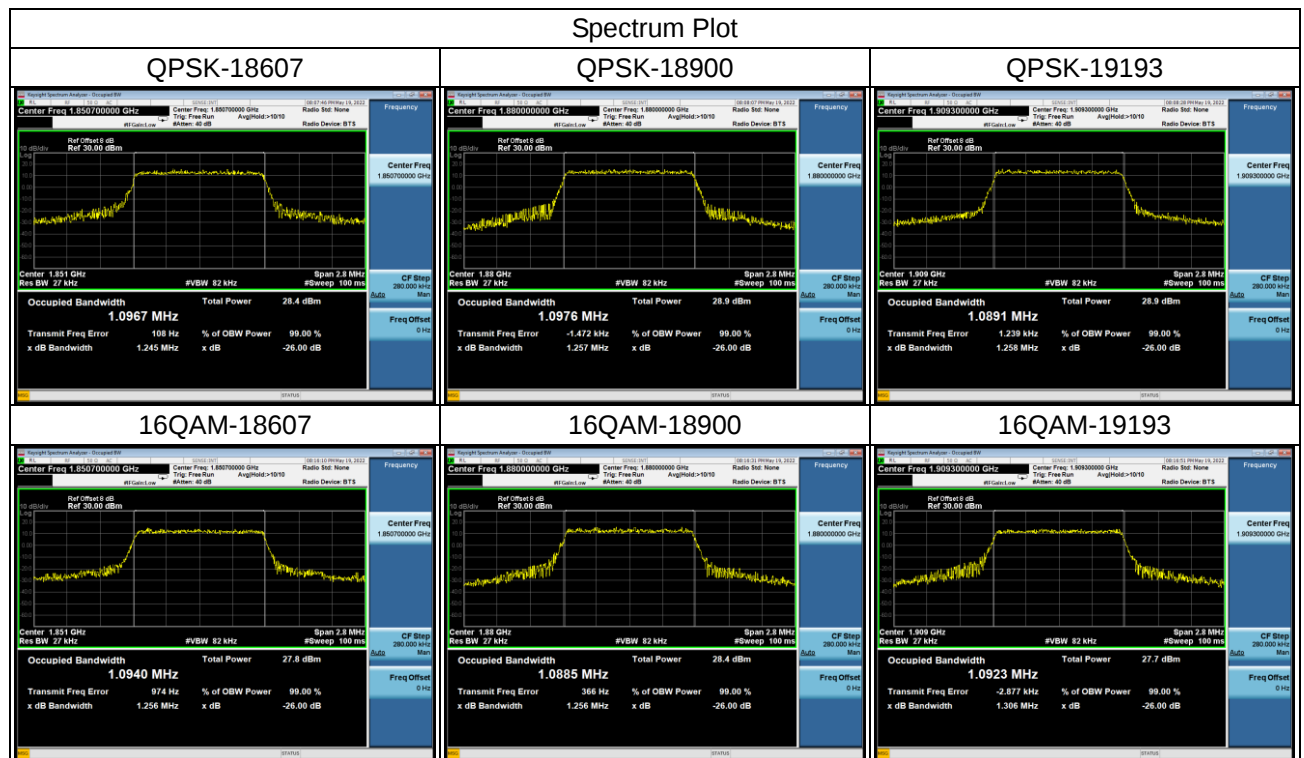
| PCS1900_EDGE |                 |                              |                      |
|--------------|-----------------|------------------------------|----------------------|
| Channel      | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | 26dB Bandwidth (MHz) |
|              |                 | QPSK                         | QPSK                 |
| 512          | 1850.2          | 0.2442                       | 0.3076               |
| 661          | 1880            | 0.2446                       | 0.3044               |
| 810          | 1909.8          | 0.2396                       | 0.3066               |



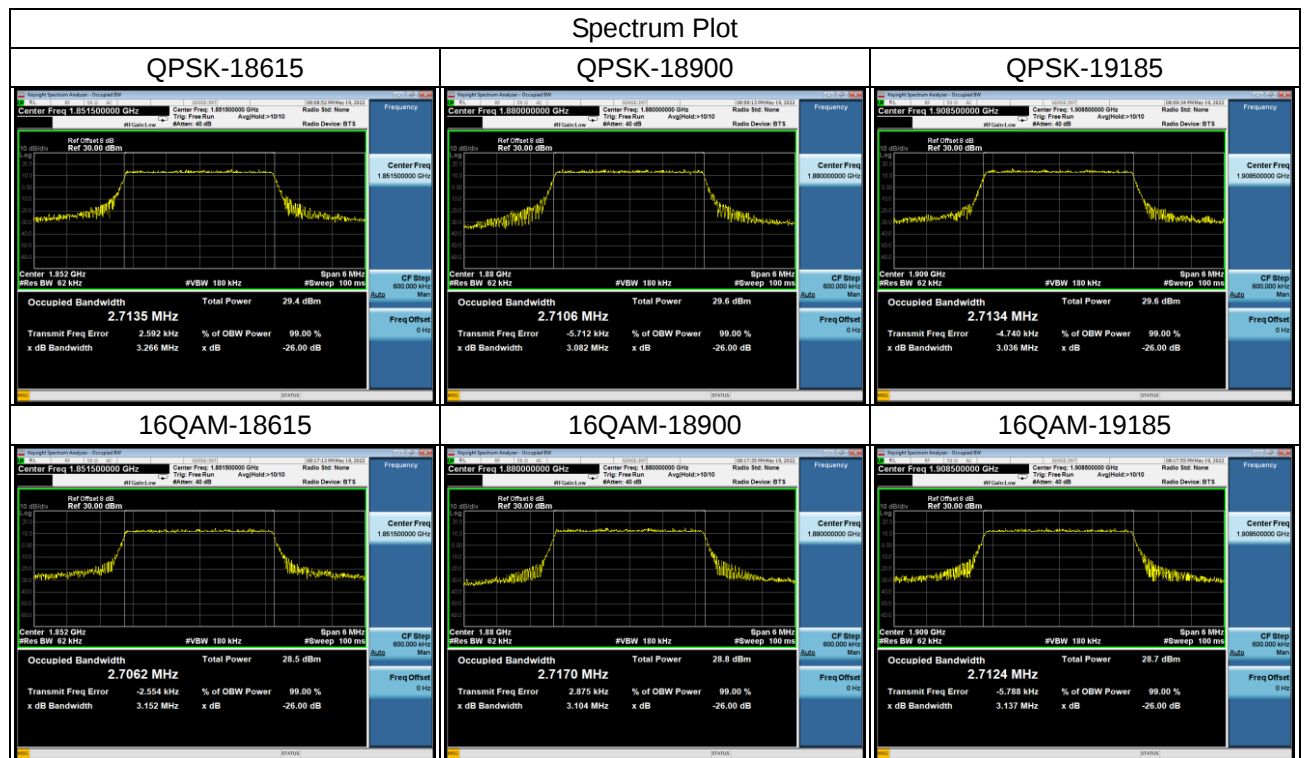
| WCDMA Band II_WCDMA |                 |                              |                      |
|---------------------|-----------------|------------------------------|----------------------|
| Channel             | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | 26dB Bandwidth (MHz) |
|                     |                 | QPSK                         | QPSK                 |
| 9262                | 1852.4          | 4.1452                       | 4.680                |
| 9400                | 1880            | 4.1411                       | 4.674                |
| 9538                | 1907.6          | 4.1485                       | 4.677                |



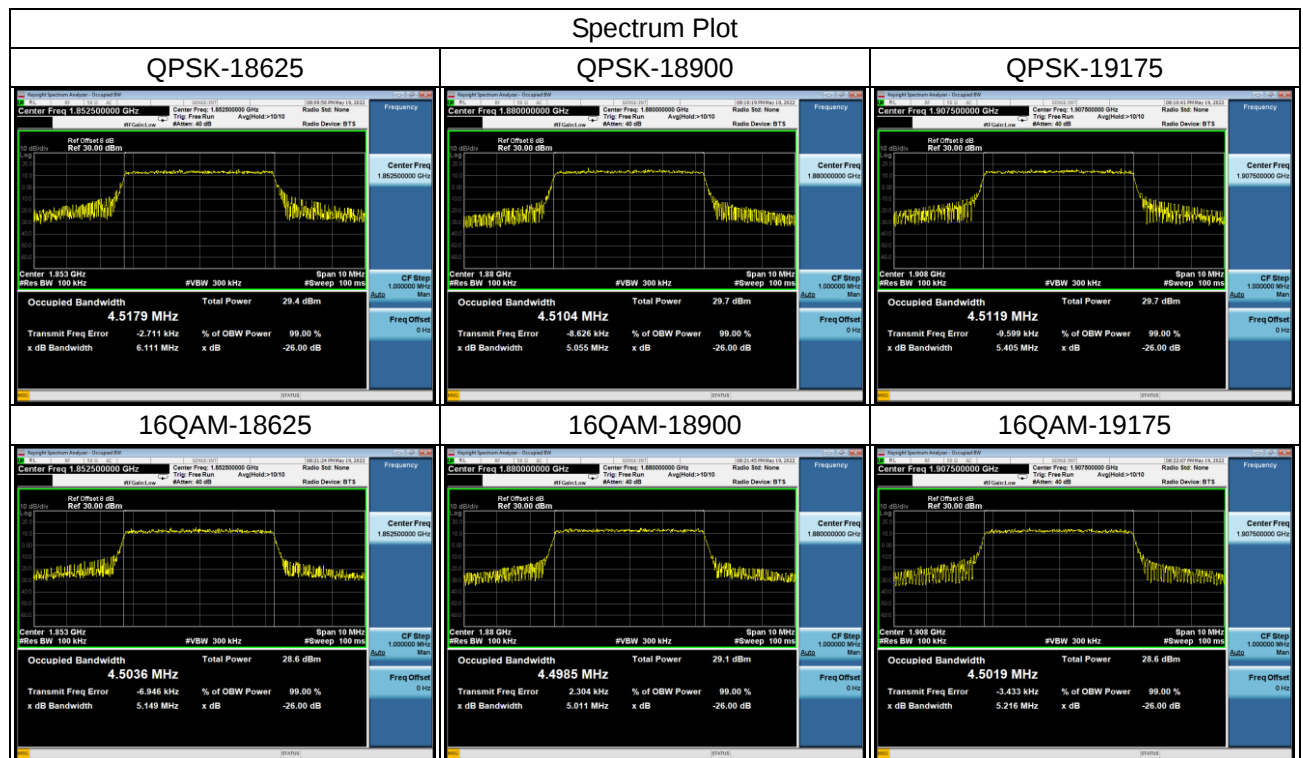
| LTE Band 2_1.4MHz |                 |                              |        |                      |       |
|-------------------|-----------------|------------------------------|--------|----------------------|-------|
| Channel           | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |        | 26dB Bandwidth (MHz) |       |
|                   |                 | QPSK                         | 16QAM  | QPSK                 | 16QAM |
| 18607             | 1850.7          | 1.0967                       | 1.0940 | 1.245                | 1.256 |
| 18900             | 1880            | 1.0976                       | 1.0885 | 1.257                | 1.256 |
| 19193             | 1909.3          | 1.0891                       | 1.0923 | 1.258                | 1.306 |



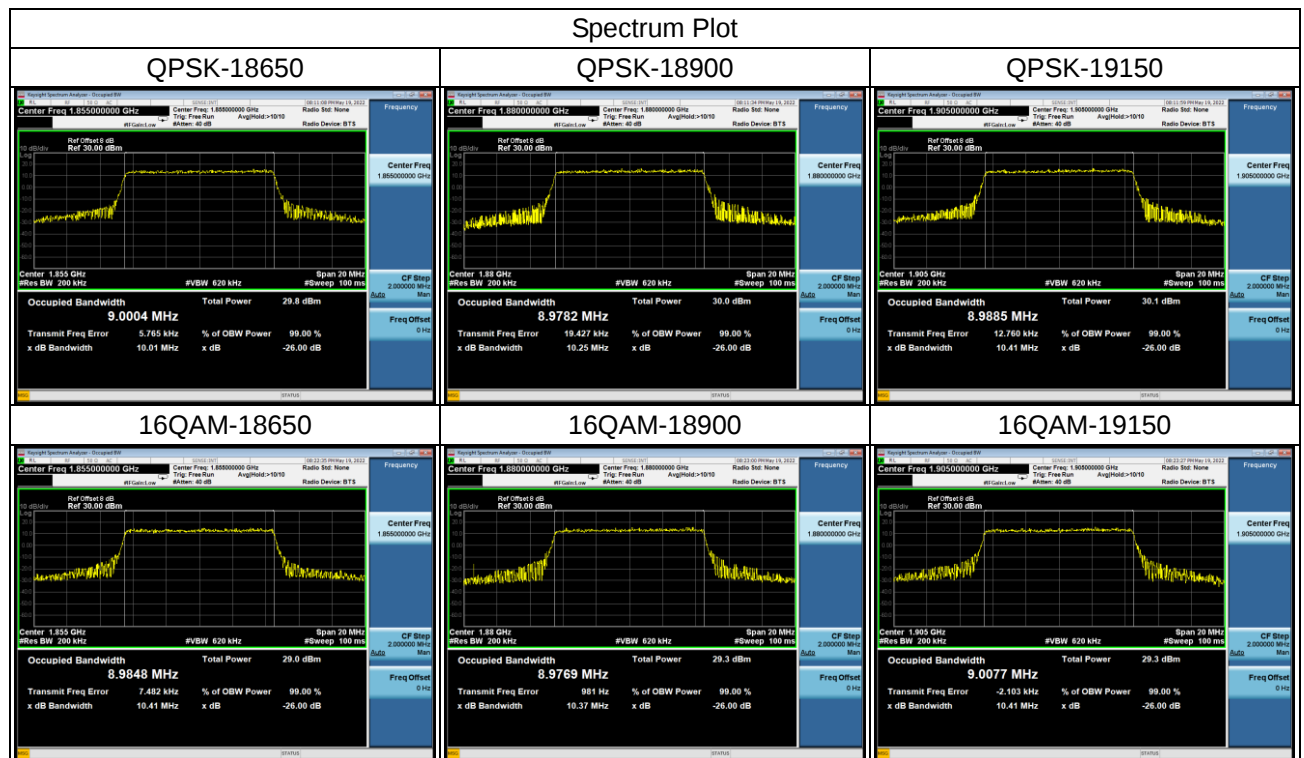
| LTE Band 2_3MHz |                 |                              |        |                      |       |
|-----------------|-----------------|------------------------------|--------|----------------------|-------|
| Channel         | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |        | 26dB Bandwidth (MHz) |       |
|                 |                 | QPSK                         | 16QAM  | QPSK                 | 16QAM |
| 18615           | 1851.5          | 2.7135                       | 2.7062 | 3.266                | 3.152 |
| 18900           | 1880            | 2.7106                       | 2.7170 | 3.082                | 3.104 |
| 19185           | 1908.5          | 2.7134                       | 2.7124 | 3.036                | 3.137 |



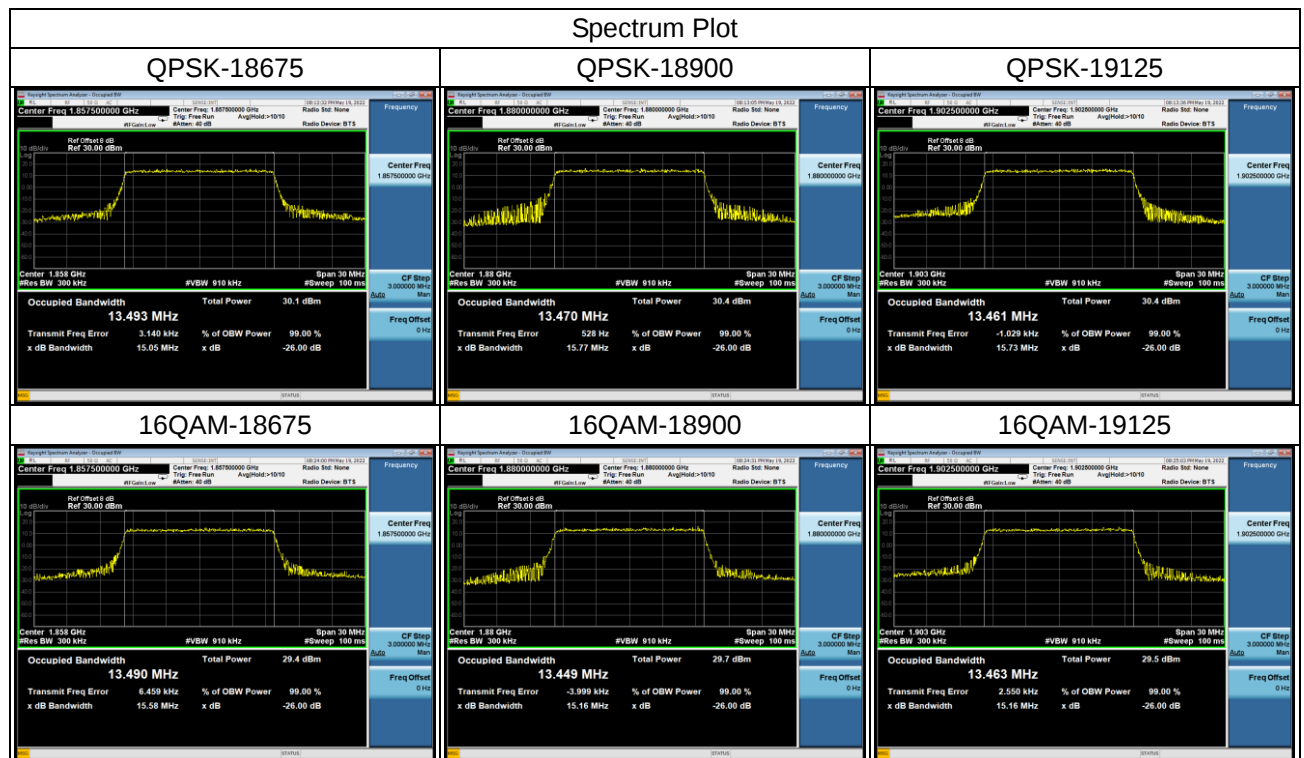
| LTE Band 2_5MHz |                 |                              |        |                      |       |
|-----------------|-----------------|------------------------------|--------|----------------------|-------|
| Channel         | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |        | 26dB Bandwidth (MHz) |       |
|                 |                 | QPSK                         | 16QAM  | QPSK                 | 16QAM |
| 18625           | 1852.5          | 4.5179                       | 4.5036 | 6.111                | 5.149 |
| 18900           | 1880            | 4.5104                       | 4.4985 | 5.055                | 5.011 |
| 19175           | 1907.5          | 4.5119                       | 4.5019 | 5.405                | 5.216 |



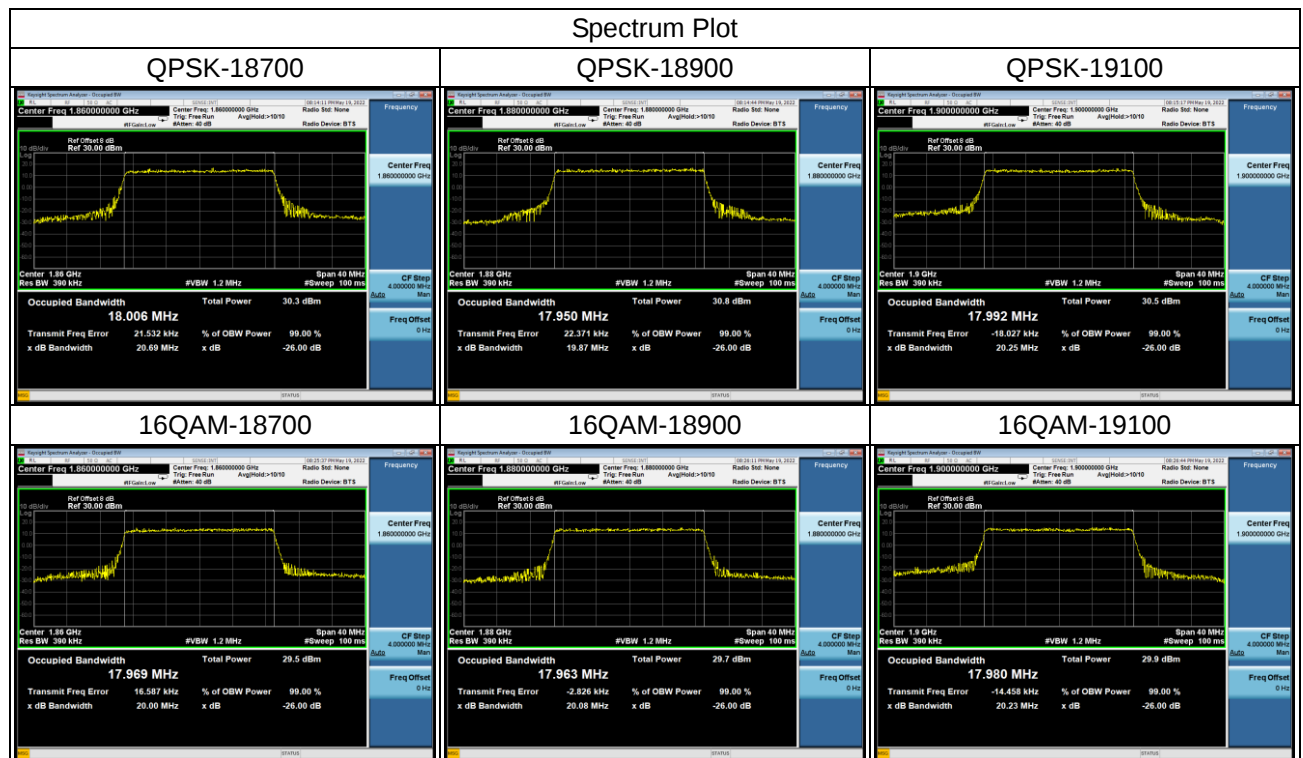
| LTE Band 2_10MHz |                 |                              |        |                      |       |
|------------------|-----------------|------------------------------|--------|----------------------|-------|
| Channel          | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |        | 26dB Bandwidth (MHz) |       |
|                  |                 | QPSK                         | 16QAM  | QPSK                 | 16QAM |
| 18650            | 1855            | 9.0004                       | 8.9848 | 10.01                | 10.41 |
| 18900            | 1880            | 8.9782                       | 8.9769 | 10.25                | 10.37 |
| 19150            | 1905            | 8.9885                       | 9.0077 | 10.41                | 10.41 |



| LTE Band 2_15MHz |                 |                              |        |                      |       |
|------------------|-----------------|------------------------------|--------|----------------------|-------|
| Channel          | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |        | 26dB Bandwidth (MHz) |       |
|                  |                 | QPSK                         | 16QAM  | QPSK                 | 16QAM |
| 18675            | 1857.5          | 13.493                       | 13.490 | 15.05                | 15.58 |
| 18900            | 1880            | 13.470                       | 13.449 | 15.77                | 15.16 |
| 19125            | 1902.5          | 13.461                       | 13.463 | 15.73                | 15.16 |

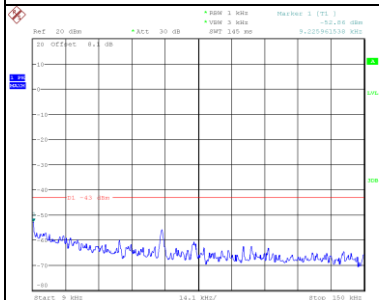


| LTE Band 2_20MHz |                 |                              |        |                      |       |
|------------------|-----------------|------------------------------|--------|----------------------|-------|
| Channel          | Frequency (MHz) | 99% Occupied Bandwidth (MHz) |        | 26dB Bandwidth (MHz) |       |
|                  |                 | QPSK                         | 16QAM  | QPSK                 | 16QAM |
| 18700            | 1860            | 18.006                       | 17.969 | 20.69                | 20.00 |
| 18900            | 1880            | 17.950                       | 17.963 | 19.87                | 20.08 |
| 19100            | 1900            | 17.992                       | 17.980 | 20.25                | 20.23 |

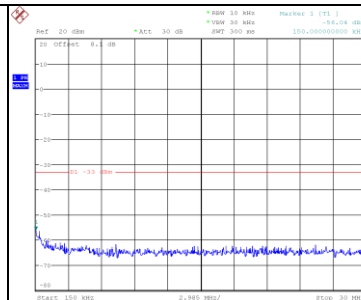


## **APPENDIX C - CONDUCTED SPURIOUS EMISSIONS**

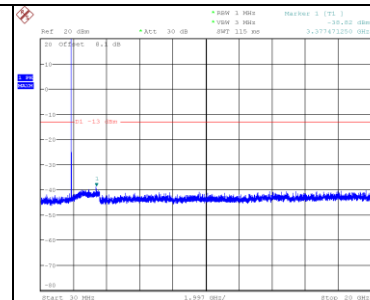
## PCS1900\_GSM\_CH661 Spectrum Plot



Date: 25-Nov-2022 10:16:19

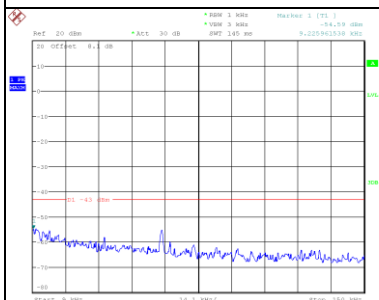


Date: 25-Nov-2022 10:16:33

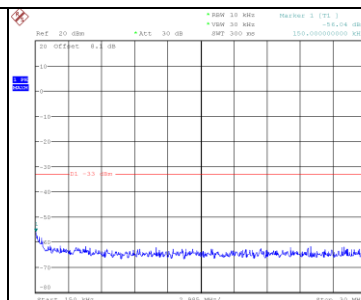


Date: 25-Nov-2022 10:17:20

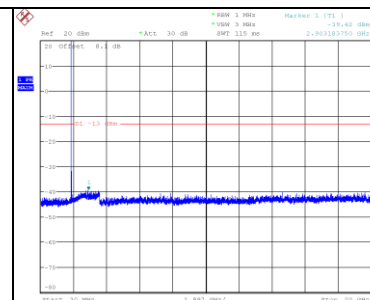
## PCS1900\_EDGE\_CH661 Spectrum Plot



Date: 25-Nov-2022 10:24:33

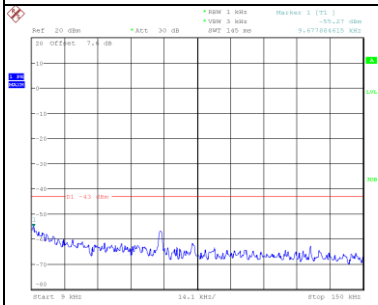


Date: 25-Nov-2022 10:25:12

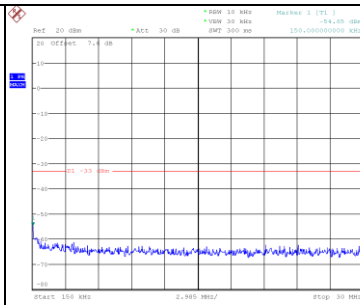


Date: 25-Nov-2022 10:25:29

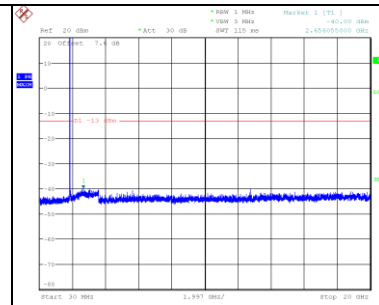
## WCDMA Band II\_WCDMA\_CH9400 Spectrum Plot



Date: 24.Nov.2022 17:16:46



Date: 24.Nov.2022 17:17:38



Date: 24.Nov.2022 17:18:23