

# FCC Radio Test Report

**FCC ID: M82-DLTV6210LTE**

**Report No.** : BTL-FCCP-1-1608T164C  
**Equipment** : Computer  
**Model Name** : DLT-V6210LTE, DLTV6210XXXXXXXXXXXXXXX (where X may be any alphanumeric character, blank or "-".)  
**Brand Name** : ADVANTECH  
**Applicant** : Advantech Co., Ltd.  
**Address** : No.1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 11491, Taiwan, R.O.C.  
**Manufacturer** : Advantech Co., Ltd.  
**Address** : No.1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 11491, Taiwan, R.O.C.  
  
**Radio Function** : WCDMA Band II+ LTE Band 2  
  
**FCC Rule Part(s)** : 47 CFR FCC Part 24, Subpart E  
**Measurement** : ANSI/TIA/EIA-603-E-2016  
**Procedure(s)** : KDB 971168 D01 Power Meas License Digital Systems v03r01  
  
**Date of Receipt** : 2019/10/18  
**Date of Test** : 2019/10/18 ~ 2020/8/26  
**Issued Date** : 2020/9/4

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

**Prepared by**

  
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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 are not use in determining the Pass/Fail results.

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**REPORT ISSUED HISTORY**

| Report Version | Description                               | Issued Date |
|----------------|-------------------------------------------|-------------|
| R00            | Original Issue.                           | 2020/2/27   |
| R01            | Revised report to address TCB's comments. | 2020/7/9    |
| R02            | Revised report to address TCB's comments. | 2020/8/4    |
| R03            | Revised report to address TCB's comments. | 2020/8/28   |
| R04            | Revised report to address TCB's comments. | 2020/9/4    |

## 1 SUMMARY OF TEST RESULTS

Test procedures according to the technical standards.

| FCC Clause No       | Description                       | Test Result | Judgement | Remark   |
|---------------------|-----------------------------------|-------------|-----------|----------|
| 15.207              | AC Power Line Conducted Emissions | N/A         | N/A       | NOTE (3) |
| 2.1046<br>24.232(c) | RF Power Output                   | APPENDIX A  | Pass      | -----    |
| 2.1049              | Occupied Bandwidth                | APPENDIX B  | Pass      | -----    |
| 2.1051<br>24.238(a) | Conducted Spurious Emissions      | APPENDIX C  | Pass      | -----    |
| 2.1053<br>24.238(a) | Radiated Spurious Emissions       | APPENDIX D  | Pass      | -----    |
| 24.238(a)           | Band Edge Measurements            | APPENDIX E  | Pass      | -----    |
| 24.232(d)           | Peak To Average Ratio             | APPENDIX F  | Pass      | -----    |
| 2.1055<br>24.235    | Frequency Stability               | APPENDIX G  | Pass      | -----    |

NOTE:

- (1) "N/A" denotes test is not applicable in this Test Report.
- (2) The report format version is TP.1.1.1.
- (3) This is a DC input device.

## 1.1 TEST FACILITY

The test facilities used to collect the test data in this report:

No. 68-1, Ln. 169, Sec. 2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

The test sites and facilities are covered under FCC RN: 674415 and DN: TW0659.

☐ C05      ☐ CB08      ☐ CB11      ☒ CB15      ☐ CB16  
☒ SR06

## 1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k = 2$ , providing a level of confidence of approximately **95 %**.

The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2. The BTL measurement uncertainty is less than the CISPR 16-4-2  $U_{\text{CISPR}}$  requirement.

### A. Radiated Spurious Emissions test:

| Test Site | Measurement Frequency Range | U,(dB) |
|-----------|-----------------------------|--------|
| CB15      | 0.03 GHz ~ 0.2 GHz          | 4.17   |
|           | 0.2 GHz ~ 1 GHz             | 4.72   |
|           | 1 GHz ~ 6 GHz               | 5.21   |
|           | 6 GHz ~ 18 GHz              | 5.51   |
|           | 18 GHz ~ 26 GHz             | 3.69   |
|           | 26 GHz ~ 40 GHz             | 4.23   |

### B. Conducted test:

| Test Item    | U,(dB) |
|--------------|--------|
| Output power | 1.06   |

### 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                    | Environment Condition | Test Voltage  | Tested by     |
|------------------------------|-----------------------|---------------|---------------|
| RF Power Output              | 24.1 °C, 46 %         | DC 60V        | Jay Kao       |
| Occupied Bandwidth           | 24.8 °C, 46 %         | DC 60V        | Jay Kao       |
| Conducted Spurious Emissions | 24.8 °C, 46 %         | DC 60V        | Jay Kao       |
| Radiated Spurious Emissions  | 22 °C, 67 %           | Refer to data | Hunter Chiang |
| Band Edge                    | 24.8 °C, 46 %         | DC 60V        | Jay Kao       |
| Peak to Average Ratio        | 24.8 °C, 46 %         | DC 60V        | Jay Kao       |
| Frequency Stability          | Normal and Extreme    |               | Jay Kao       |

## 2 GENERAL INFORMATION

### 2.1 DESCRIPTION OF EUT

|                     |                                                                                                   |      |                    |                    |
|---------------------|---------------------------------------------------------------------------------------------------|------|--------------------|--------------------|
| Equipment           | Computer                                                                                          |      |                    |                    |
| Model Name          | DLT-V6210LTE, DLT-V6210XXXXXXXXXXXXXXX (where X may be any alphanumeric character, blank or "-".) |      |                    |                    |
| Brand Name          | ADVANTECH                                                                                         |      |                    |                    |
| Model Difference    | Different model distribute to different area.                                                     |      |                    |                    |
| Power Source        | Supplied from DC power.                                                                           |      |                    |                    |
| Power Rating        | 9-60V --- 3.6A                                                                                    |      |                    |                    |
| Products Covered    | 1 * WWAN Card: Quectel / EC25-A                                                                   |      |                    |                    |
| Test Model          | DLT-V6210LTE                                                                                      |      |                    |                    |
| Sample Status       | Engineering Sample                                                                                |      |                    |                    |
| Operation Frequency | Mode                                                                                              | Band | UL Frequency (MHz) | DL Frequency (MHz) |
|                     | WCDMA                                                                                             | II   | 1852.4 ~ 1907.6    | 1932.4 ~ 1987.6    |
|                     | LTE                                                                                               | 2    | 1850 ~ 1910        | 1930 ~ 1990        |
| EUT Modification(s) | N/A                                                                                               |      |                    |                    |

**NOTE:**

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

(2) Channel List:

| 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:

## Group 1(External):

| Ant. | Brand   | Model Name    | Antenna Type | Connector | Gain (dBi) | Note          |
|------|---------|---------------|--------------|-----------|------------|---------------|
| 1    | taoglas | TLS.01.305111 | Dipole       | SMA(M)    | 2.32       | WCDMA Band II |
|      |         |               |              |           | 2.32       | LTE Band 2    |
| 2    | taoglas | TLS.01.305111 | Dipole       | SMA(M)    | 2.32       | WCDMA Band II |
|      |         |               |              |           | 2.32       | LTE Band 2    |

## Group 2(Integrated):

| Ant. | Brand   | Model Name        | Antenna Type | Connector | Gain (dBi) | Note          |
|------|---------|-------------------|--------------|-----------|------------|---------------|
| 1    | taoglas | MA540.A.ABICG.001 | Dipole       | IPEX MHF  | 2.4        | WCDMA Band II |
|      |         |                   |              |           | 2.4        | LTE Band 2    |
| 2    | taoglas | MA540.A.ABICG.001 | Dipole       | IPEX MHF  | 1.9        | WCDMA Band II |
|      |         |                   |              |           | 1.9        | LTE Band 2    |

Note: Group 2 is found to be the worst case and used for final test.

## 2.2 TEST MODES

| WCDMA BAND II MODE           |                   |                  |                     |
|------------------------------|-------------------|------------------|---------------------|
| Test Item                    | Available Channel | Tested Channel   | Mode                |
| Output Power                 | 9262 to 9538      | 9262, 9400, 9538 | WCDMA, HSDPA, HSUPA |
| EIRP                         | 9262 to 9538      | 9262, 9400, 9538 | WCDMA               |
| 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      | 9400             | WCDMA               |

| LTE BAND 2 MODE    |                   |                     |                   |             |                |
|--------------------|-------------------|---------------------|-------------------|-------------|----------------|
| Test Item          | Available Channel | Tested Channel      | Channel Bandwidth | Modulation  | Mode           |
| Output Power       | 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 |
| EIRP               | 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 | 75 RB          |
|                    | 18700 to 19100    | 18700, 18900, 19100 | 20MHz             | QPSK, 16QAM | 100RB          |

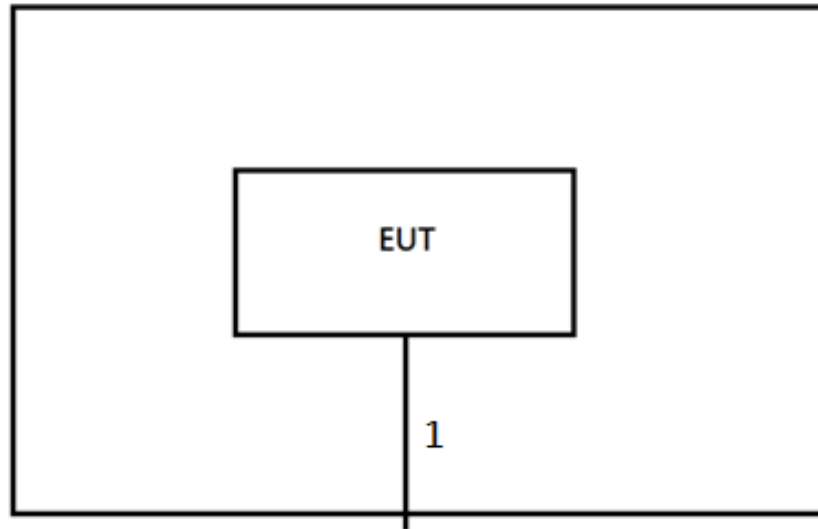
| LTE BAND 2 MODE              |                   |                     |                   |             |           |
|------------------------------|-------------------|---------------------|-------------------|-------------|-----------|
| Test Item                    | Available Channel | Tested Channel      | Channel Bandwidth | Modulation  | Mode      |
| Conducted Spurious Emissions | 18607 to 19193    | 18900               | 1.4MHz            | QPSK        | 1RB       |
|                              | 18615 to 19185    | 18900               | 3MHz              | QPSK        | 1RB       |
|                              | 18625 to 19175    | 18900               | 5MHz              | QPSK        | 1RB       |
|                              | 18650 to 19150    | 18900               | 10MHz             | QPSK        | 1RB       |
|                              | 18675 to 19125    | 18900               | 15MHz             | QPSK        | 1RB       |
|                              | 18700 to 19100    | 18900               | 20MHz             | QPSK        | 1RB       |
| Radiated Spurious Emissions  | 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          | 18607 to 19193    | 18900               | 1.4MHz            | QPSK        | 1RB       |
|                              | 18615 to 19185    | 18900               | 3MHz              | QPSK        | 1RB       |
|                              | 18625 to 19175    | 18900               | 5MHz              | QPSK        | 1RB       |
|                              | 18650 to 19150    | 18900               | 10MHz             | QPSK        | 1RB       |
|                              | 18675 to 19125    | 18900               | 15MHz             | QPSK        | 1RB       |
|                              | 18700 to 19100    | 18900               | 20MHz             | QPSK        | 1RB       |

NOTE:

- (1) The Radiated emissions test was verified based on the worst conducted power and Bandwidth test results reported in the original report.
- (2) All X, Y and Z axes are evaluated, but only the worst case (WCDMA: Y axis, LTE: Z axis) is recorded.

### 2.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Equipment letters and Cable numbers refer to item numbers described in the tables of clause 2.4.



### 2.4 SUPPORT UNITS

| Item | Equipment | Brand | Model No. | Series No. | Remarks |
|------|-----------|-------|-----------|------------|---------|
| -    | -         | -     | -         | -          | -       |

| Item | Shielded | Ferrite Core | Length | Cable Type | Remarks |
|------|----------|--------------|--------|------------|---------|
| 1    | NO       | NO           | 3m     | DC Cable   | -       |

### 3 RF POWER OUTPUT TEST

#### 3.1 LIMIT

Mobile and portable stations are limited to 2 watts EIRP.

#### 3.2 TEST PROCEDURE

##### EIRP / ERP Power Measurement:

EIRP = Conducted Power + Antenna gain.  
ERP power = EIPR power - 2.15 dBi.

##### Conducted Power Measurement:

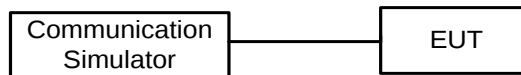
The EUT was set up for the maximum power with WCDMA and LTE link data modulation and link up with simulator. Set the EUT to transmit under low, middle and high channel and record the power level shown on simulator.

#### 3.3 DEVIATION FROM TEST STANDARD

No deviation.

#### 3.4 TEST SETUP

##### Conducted Power Measurement:



#### 3.5 TEST RESULT

Please refer to the APPENDIX A.

## 4 OCCUPIED BANDWIDTH MEASUREMENT

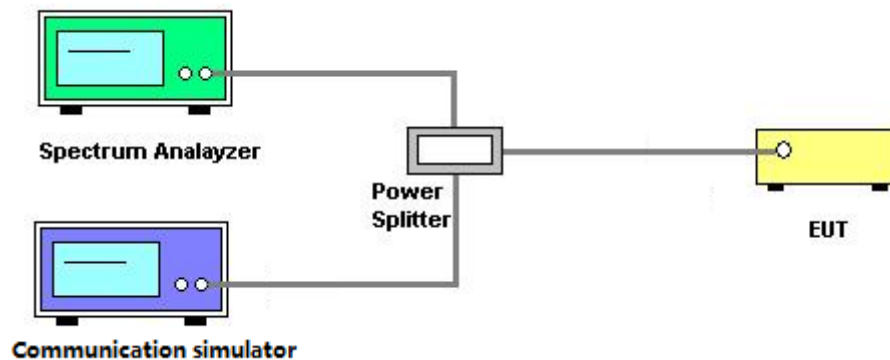
### 4.1 TEST PROCEDURE

- 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.
- The EUT was connected to spectrum analyzer and system simulator via a power divider.
- $RBW = (1\% \sim 5\%) \cdot EBW$   
 $VBW \geq 3 \cdot RBW$ .
- Set spectrum analyzer with Peak detector.

### 4.2 DEVIATION FROM TEST STANDARD

No deviation.

### 4.3 TEST SETUP



### 4.4 TEST RESULT

Please refer to the APPENDIX B

## 5 CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

### 5.1 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.

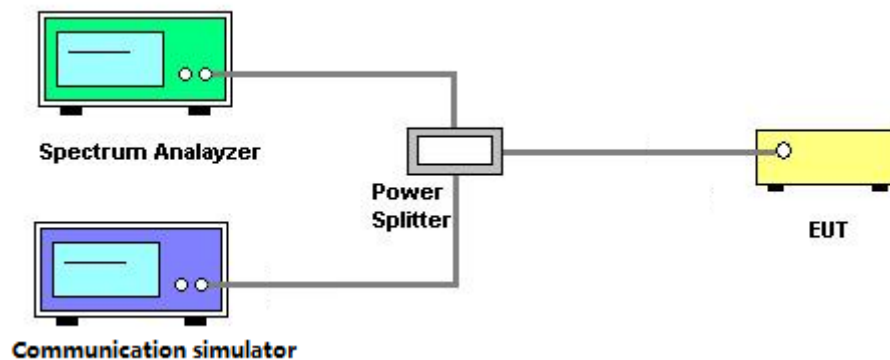
### 5.2 TEST PROCEDURE

- The EUT was connected to spectrum analyzer and system simulator via a power divider.
- 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.
- Set spectrum analyzer with Peak detector.
- The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

### 5.3 DEVIATION FROM TEST STANDARD

No deviation.

### 5.4 TEST SETUP



### 5.5 TEST RESULT

Please refer to the APPENDIX C.

## 6 RADIATED SPURIOUS EMISSIONS TEST

### 6.1 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.

NOTE:

(1) The test result calculated as following:

Measurement Value = Reading Level + Correct Factor

Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)

Margin Level = Measurement Value - Limit Value

Calculation example:

| Reading Level |   | Correct Factor |   | Measurement Value |
|---------------|---|----------------|---|-------------------|
| -50.43        | + | -2.11          | = | -52.54            |

| Measurement Value |   | Limit Value |   | Margin Level |
|-------------------|---|-------------|---|--------------|
| -52.54            | - | -13         | = | -39.54       |

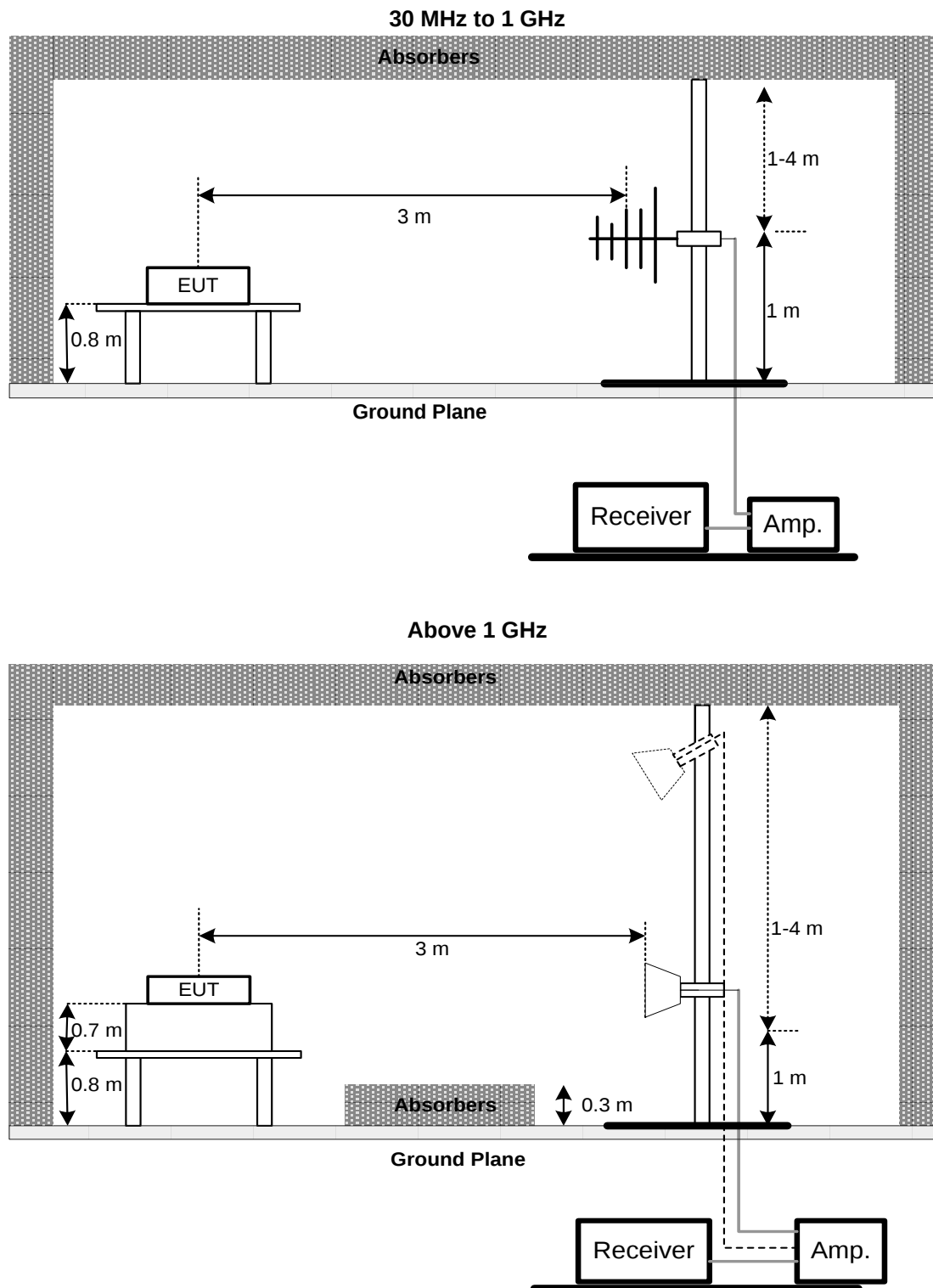
### 6.2 TEST PROCEDURE

- 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.
- 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
- $EIRP = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$
- ERP power can be calculated form EIRP power by subtracting the gain of dipole,  
 $ERP \text{ power} = EIRP \text{ power} - 2.15 \text{ dBi}.$
- The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1 MHz / 3 MHz.

### 6.3 DEVIATION FROM TEST STANDARD

No deviation.

## 6.4 TEST SETUP



## 6.5 EUT OPERATING CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

## 6.6 TEST RESULT

Please refer to the APPENDIX D.

## 7 BAND EDGE MEASUREMENT

### 7.1 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.

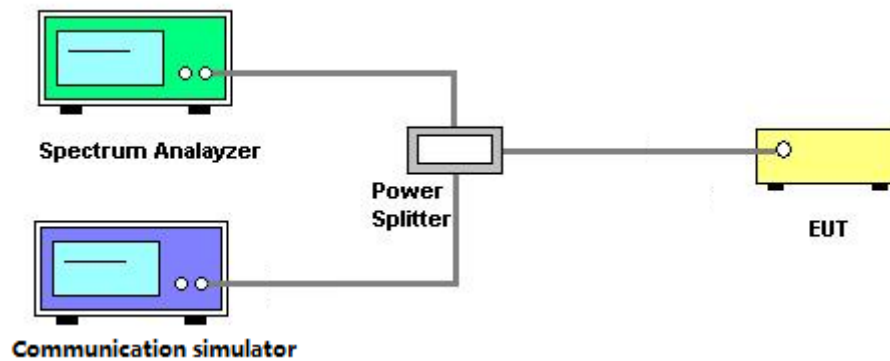
### 7.2 TEST PROCEDURE

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

### 7.3 DEVIATION FROM TEST STANDARD

No deviation.

### 7.4 TEST SETUP



### 7.5 TEST RESULT

Please refer to the APPENDIX E

## 8 PEAK TO AVERAGE RATIO MEASUREMENT

### 8.1 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.

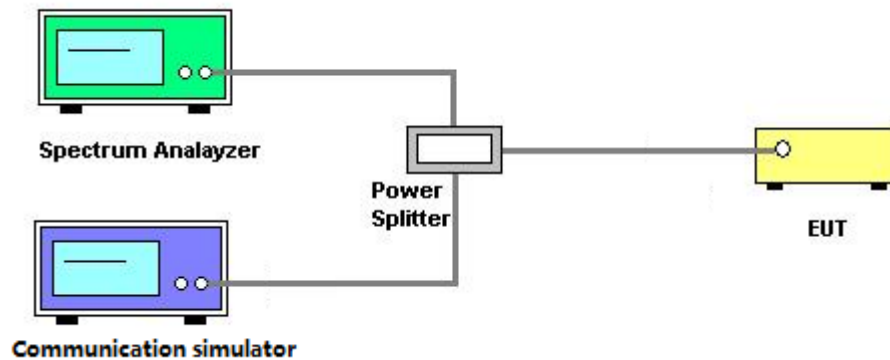
### 8.2 TEST PROCEDURE

- 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%.

### 8.3 DEVIATION FROM TEST STANDARD

No deviation.

### 8.4 TEST SETUP



### 8.5 TEST RESULT

Please refer to the APPENDIX F.

## 9 FREQUENCY STABILITY MEASUREMENT

### 9.1 LIMIT

$\pm 1.5$  ppm is for base and fixed station.  $\pm 2.5$  ppm is for mobile station.

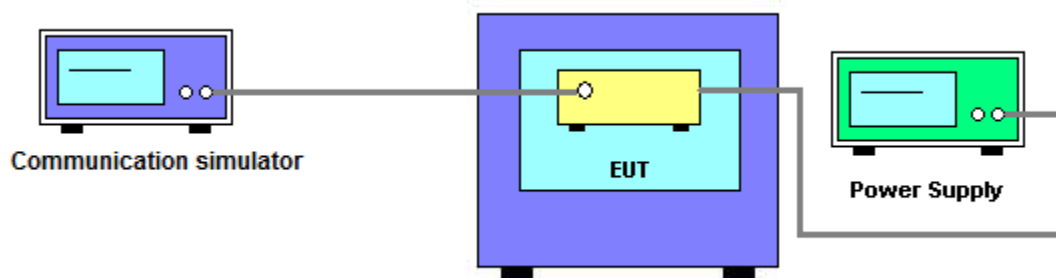
### 9.2 TEST PROCEDURE

- Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.
- EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.
- The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the  $\pm 0.5^{\circ}\text{C}$  during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.
- The frequency error was recorded frequency error from the communication simulator.

### 9.3 DEVIATION FROM TEST STANDARD

No deviation.

### 9.4 TEST SETUP



### 9.5 TEST RESULT

Please refer to the APPENDIX G

## 10 LIST OF MEASURING EQUIPMENTS

| RF Power Output |                                      |              |          |            |                 |                  |
|-----------------|--------------------------------------|--------------|----------|------------|-----------------|------------------|
| Item            | Kind of Equipment                    | Manufacturer | Type No. | Serial No. | Calibrated Date | Calibrated Until |
| 1               | Radio Communication Analyzer         | Anritsu      | MT8820C  | 6201525878 | 2020/6/19       | 2021/6/18        |
| 2               | 8960 Series 10 Wireless Com Test Set | Agilent      | E5515C   | GB47390193 | 2020/6/4        | 2021/6/3         |

| Radiated Spurious Emissions |                          |              |                   |            |                 |                  |
|-----------------------------|--------------------------|--------------|-------------------|------------|-----------------|------------------|
| Item                        | Kind of Equipment        | Manufacturer | Type No.          | Serial No. | Calibrated Date | Calibrated Until |
| 1                           | Preamplifier             | EMCI         | EMC001340         | 980555     | 2019/4/12       | 2020/4/11        |
| 2                           | Preamplifier             | EMCI         | EMC02325B         | 980217     | 2019/4/12       | 2020/4/11        |
| 3                           | Preamplifier             | EMCI         | EMC012645B        | 980267     | 2019/4/12       | 2020/4/11        |
| 4                           | Test Cable               | EMCI         | EMC104-SM-SM-800  | 150207     | 2019/4/12       | 2020/4/11        |
| 5                           | Test Cable               | EMCI         | EMC104-SM-SM-3000 | 151205     | 2019/4/12       | 2020/4/11        |
| 6                           | Test Cable               | EMCI         | EMC-SM-SM-7000    | 180408     | 2019/4/12       | 2020/4/11        |
| 7                           | MXE EMI Receiver         | Agilent      | N9038A            | MY55420127 | 2019/3/26       | 2020/3/25        |
| 8                           | Signal Analyzer          | Agilent      | N9010A            | MY56480554 | 2019/6/6        | 2020/6/5         |
| 9                           | Horn Ant                 | SCHWARZBECK  | BBHA 9120D        | 9120D-1342 | 2019/6/10       | 2020/6/9         |
| 10                          | Trilog-Broadband Antenna | Schwarzbeck  | VULB 9168         | 000992     | 2019/5/29       | 2020/5/28        |
| 11                          | 5dB Attenuator           | EMCI         | EMCI-N-6-05       | AT-N0508   | 2019/5/29       | 2020/5/28        |
| 12                          | Preamplifier             | EMCI         | EMC2654045        | 980030     | 2019/2/2        | 2020/2/2         |

| Frequency Stability Measurement |                                      |              |            |            |                 |                  |
|---------------------------------|--------------------------------------|--------------|------------|------------|-----------------|------------------|
| Item                            | Kind of Equipment                    | Manufacturer | Type No.   | Serial No. | Calibrated Date | Calibrated Until |
| 1                               | Radio Communication Analyzer         | Anritsu      | MT8820C    | 6201525878 | 2020/6/19       | 2021/6/18        |
| 2                               | 8960 Series 10 Wireless Com Test Set | Agilent      | E5515C     | GB47390193 | 2020/6/4        | 2021/6/3         |
| 3                               | Thermal Chamber                      | HOLINK       | H-TH-2SP-B | EK04101902 | 2020/7/2        | 2021/7/1         |

| Others Conducted Measurement |                   |              |          |            |                 |                  |
|------------------------------|-------------------|--------------|----------|------------|-----------------|------------------|
| Item                         | Kind of Equipment | Manufacturer | Type No. | Serial No. | Calibrated Date | Calibrated Until |
| 1                            | Spectrum Analyzer | Agilent      | N9010A   | MY54200240 | 2019/11/19      | 2020/11/18       |

Remark: "N/A" denotes no model name, no serial no. or no calibration specified.  
All calibration period of equipment list is one year.

**11 EUT TEST PHOTO**

Please refer to document Appendix No.: TP-1608T164C-1 (APPENDIX-TEST PHOTOS).

**12 EUT PHOTOS**

Please refer to document Appendix No.: EP-1608T164C-2 (APPENDIX-EUT PHOTOS).

## APPENDIX A RF POWER OUTPUT TEST

| Band            | WCDMA Band II         |       |        |              |       |        |
|-----------------|-----------------------|-------|--------|--------------|-------|--------|
| Tx Channel      | 9262                  | 9400  | 9538   | 9262         | 9400  | 9538   |
| Rx Channel      | 9662                  | 9800  | 9938   | 9662         | 9800  | 9938   |
| Frequency (MHz) | 1852.4                | 1880  | 1907.6 | 1852.4       | 1880  | 1907.6 |
| Mode            | Conducted Power (dBm) |       |        | EIRP (dBm)   |       |        |
| RMC 12.2K       | <b>22.91</b>          | 22.87 | 22.84  | <b>25.31</b> | 25.27 | 25.24  |
| HSDPA Subtest-1 | 22.89                 | 22.75 | 22.82  | 25.29        | 25.15 | 25.22  |
| HSDPA Subtest-2 | 22.72                 | 22.69 | 22.71  | 25.12        | 25.09 | 25.11  |
| HSDPA Subtest-3 | 22.52                 | 22.47 | 22.52  | 24.92        | 24.87 | 24.92  |
| HSDPA Subtest-4 | 22.47                 | 22.41 | 22.42  | 24.87        | 24.81 | 24.82  |
| HSUPA Subtest-1 | 22.87                 | 22.72 | 22.74  | 25.27        | 25.12 | 25.14  |
| HSUPA Subtest-2 | 22.77                 | 22.68 | 22.72  | 25.17        | 25.08 | 25.12  |
| HSUPA Subtest-3 | 22.73                 | 22.59 | 22.67  | 25.13        | 24.99 | 25.07  |
| HSUPA Subtest-4 | 22.68                 | 22.63 | 22.64  | 25.08        | 25.03 | 25.04  |
| HSUPA Subtest-5 | 22.74                 | 22.62 | 22.71  | 25.14        | 25.02 | 25.11  |
| HSPA+           | 22.87                 | 22.69 | 22.76  | 25.27        | 25.09 | 25.16  |
|                 |                       |       |        | Antenna Gain | 2.40  | dBi    |

| Band                    |            |         |           | LTE Band 2            |       |              |              |       |              |
|-------------------------|------------|---------|-----------|-----------------------|-------|--------------|--------------|-------|--------------|
| Channel                 |            |         |           | 18607                 | 18900 | 19192        | 18607        | 18900 | 19192        |
| Frequency (MHz)         |            |         |           | 1850.7                | 1880  | 1909.2       | 1850.7       | 1880  | 1909.2       |
| Channel Bandwidth (MHz) | Modulation | RB Size | RB Offset | Conducted Power (dBm) |       |              | EIRP (dBm)   |       |              |
| 1.4                     | QPSK       | 1       | 0         | 23.17                 | 23.27 | <b>23.30</b> | 25.57        | 25.67 | <b>25.70</b> |
|                         |            | 1       | 2         | 22.99                 | 23.13 | 23.12        | 25.39        | 25.53 | 25.52        |
|                         |            | 1       | 5         | 23.07                 | 23.19 | 23.26        | 25.47        | 25.59 | 25.66        |
|                         |            | 3       | 0         | 23.16                 | 23.27 | <b>23.30</b> | 25.56        | 25.67 | <b>25.70</b> |
|                         |            | 3       | 1         | 22.99                 | 23.13 | 23.12        | 25.39        | 25.53 | 25.52        |
|                         |            | 3       | 2         | 23.07                 | 23.19 | 23.26        | 25.47        | 25.59 | 25.66        |
|                         | 16QAM      | 6       | 0         | 22.12                 | 22.31 | 22.31        | 24.52        | 24.71 | 24.71        |
|                         |            | 1       | 0         | 22.21                 | 22.32 | <b>22.37</b> | 24.61        | 24.72 | <b>24.77</b> |
|                         |            | 1       | 2         | 22.01                 | 22.31 | 22.22        | 24.41        | 24.71 | 24.62        |
|                         |            | 1       | 5         | 22.16                 | 22.22 | 22.31        | 24.56        | 24.62 | 24.71        |
|                         |            | 3       | 0         | 22.21                 | 22.32 | <b>22.37</b> | 24.61        | 24.72 | <b>24.77</b> |
|                         |            | 3       | 1         | 22.01                 | 22.31 | 22.22        | 24.41        | 24.71 | 24.62        |
|                         |            | 3       | 2         | 22.16                 | 22.22 | 22.31        | 24.56        | 24.62 | 24.71        |
|                         |            | 6       | 0         | 21.12                 | 21.36 | 21.47        | 23.52        | 23.76 | 23.87        |
|                         |            |         |           |                       |       |              | Antenna Gain | 2.40  | dB           |

| Band                    |            |         |           | LTE Band 2            |       |              |              |       |              |
|-------------------------|------------|---------|-----------|-----------------------|-------|--------------|--------------|-------|--------------|
| Channel                 |            |         |           | 18615                 | 18900 | 19184        | 18615        | 18900 | 19184        |
| Frequency (MHz)         |            |         |           | 1851.5                | 1880  | 1908.4       | 1851.5       | 1880  | 1908.4       |
| Channel Bandwidth (MHz) | Modulation | RB Size | RB Offset | Conducted Power (dBm) |       |              | EIRP (dBm)   |       |              |
| 3                       | QPSK       | 1       | 0         | 23.22                 | 23.32 | <b>23.35</b> | 25.62        | 25.72 | <b>25.75</b> |
|                         |            | 1       | 7         | 23.04                 | 23.18 | 23.17        | 25.44        | 25.58 | 25.57        |
|                         |            | 1       | 14        | 23.12                 | 23.24 | 23.31        | 25.52        | 25.64 | 25.71        |
|                         |            | 8       | 0         | 22.29                 | 22.39 | 22.36        | 24.69        | 24.79 | 24.76        |
|                         |            | 8       | 4         | 22.06                 | 22.41 | 22.24        | 24.46        | 24.81 | 24.64        |
|                         |            | 8       | 7         | 22.17                 | 22.26 | 22.37        | 24.57        | 24.66 | 24.77        |
|                         |            | 15      | 0         | 22.17                 | 22.36 | 22.36        | 24.57        | 24.76 | 24.76        |
|                         | 16QAM      | 1       | 0         | 22.26                 | 22.37 | <b>22.42</b> | 24.66        | 24.77 | <b>24.82</b> |
|                         |            | 1       | 7         | 22.06                 | 22.36 | 22.27        | 24.46        | 24.76 | 24.67        |
|                         |            | 1       | 14        | 22.21                 | 22.27 | 22.36        | 24.61        | 24.67 | 24.76        |
|                         |            | 8       | 0         | 21.26                 | 21.37 | 21.48        | 23.66        | 23.77 | 23.88        |
|                         |            | 8       | 4         | 21.12                 | 21.22 | 21.36        | 23.52        | 23.62 | 23.76        |
|                         |            | 8       | 7         | 21.13                 | 21.24 | 21.34        | 23.53        | 23.64 | 23.74        |
|                         |            | 15      | 0         | 21.13                 | 21.30 | 21.31        | 23.53        | 23.70 | 23.71        |
|                         |            |         |           |                       |       |              | Antenna Gain | 2.40  | dB           |

| Band                    |            |         |           | LTE Band 2            |       |              |              |       |              |
|-------------------------|------------|---------|-----------|-----------------------|-------|--------------|--------------|-------|--------------|
| Channel                 |            |         |           | 18615                 | 18900 | 19184        | 18615        | 18900 | 19184        |
| Frequency (MHz)         |            |         |           | 1851.5                | 1880  | 1908.4       | 1851.5       | 1880  | 1908.4       |
| Channel Bandwidth (MHz) | Modulation | RB Size | RB Offset | Conducted Power (dBm) |       |              | EIRP (dBm)   |       |              |
| 5                       | QPSK       | 1       | 0         | 23.27                 | 23.37 | <b>23.40</b> | 25.67        | 25.77 | <b>25.80</b> |
|                         |            | 1       | 12        | 23.09                 | 23.23 | 23.22        | 25.49        | 25.63 | 25.62        |
|                         |            | 1       | 24        | 23.17                 | 23.29 | 23.36        | 25.57        | 25.69 | 25.76        |
|                         |            | 12      | 0         | 22.34                 | 22.44 | 22.41        | 24.74        | 24.84 | 24.81        |
|                         |            | 12      | 6         | 22.11                 | 22.46 | 22.29        | 24.51        | 24.86 | 24.69        |
|                         |            | 12      | 11        | 22.22                 | 22.31 | 22.42        | 24.62        | 24.71 | 24.82        |
|                         |            | 25      | 0         | 22.22                 | 22.41 | 22.41        | 24.62        | 24.81 | 24.81        |
|                         | 16QAM      | 1       | 0         | 22.31                 | 22.42 | <b>22.47</b> | 24.71        | 24.82 | <b>24.87</b> |
|                         |            | 1       | 12        | 22.11                 | 22.41 | 22.32        | 24.51        | 24.81 | 24.72        |
|                         |            | 1       | 24        | 22.26                 | 22.32 | 22.41        | 24.66        | 24.72 | 24.81        |
|                         |            | 12      | 0         | 21.31                 | 21.42 | 21.53        | 23.71        | 23.82 | 23.93        |
|                         |            | 12      | 6         | 21.17                 | 21.27 | 21.41        | 23.57        | 23.67 | 23.81        |
|                         |            | 12      | 11        | 21.18                 | 21.29 | 21.39        | 23.58        | 23.69 | 23.79        |
|                         |            | 25      | 0         | 21.18                 | 21.36 | 21.37        | 23.58        | 23.76 | 23.77        |
|                         |            |         |           |                       |       |              | Antenna Gain | 2.40  | dBi          |

| Band                    |            |         |           | LTE Band 2            |       |              |              |       |              |
|-------------------------|------------|---------|-----------|-----------------------|-------|--------------|--------------|-------|--------------|
| Channel                 |            |         |           | 18650                 | 18900 | 19150        | 18650        | 18900 | 19150        |
| Frequency (MHz)         |            |         |           | 1855                  | 1880  | 1905         | 1855         | 1880  | 1905         |
| Channel Bandwidth (MHz) | Modulation | RB Size | RB Offset | Conducted Power (dBm) |       |              | EIRP (dBm)   |       |              |
| 10                      | QPSK       | 1       | 0         | 23.32                 | 23.42 | <b>23.45</b> | 25.72        | 25.82 | <b>25.85</b> |
|                         |            | 1       | 24        | 23.14                 | 23.28 | 23.27        | 25.54        | 25.68 | 25.67        |
|                         |            | 1       | 49        | 23.22                 | 23.34 | 23.41        | 25.62        | 25.74 | 25.81        |
|                         |            | 25      | 0         | 22.39                 | 22.49 | 22.46        | 24.79        | 24.89 | 24.86        |
|                         |            | 25      | 12        | 22.16                 | 22.51 | 22.34        | 24.56        | 24.91 | 24.74        |
|                         |            | 25      | 24        | 22.27                 | 22.36 | 22.47        | 24.67        | 24.76 | 24.87        |
|                         |            | 50      | 0         | 22.27                 | 22.46 | 22.46        | 24.67        | 24.86 | 24.86        |
|                         | 16QAM      | 1       | 0         | 22.36                 | 22.47 | <b>22.52</b> | 24.76        | 24.87 | <b>24.92</b> |
|                         |            | 1       | 24        | 22.16                 | 22.46 | 22.37        | 24.56        | 24.86 | 24.77        |
|                         |            | 1       | 49        | 22.31                 | 22.37 | 22.46        | 24.71        | 24.77 | 24.86        |
|                         |            | 25      | 0         | 21.36                 | 21.47 | 21.58        | 23.76        | 23.87 | 23.98        |
|                         |            | 25      | 12        | 21.22                 | 21.32 | 21.46        | 23.62        | 23.72 | 23.86        |
|                         |            | 25      | 24        | 21.23                 | 21.34 | 21.44        | 23.63        | 23.74 | 23.84        |
|                         |            | 50      | 0         | 21.23                 | 21.41 | 21.42        | 23.63        | 23.81 | 23.82        |
|                         |            |         |           |                       |       |              | Antenna Gain | 2.40  | dBi          |

| Band                    |            |         |           | LTE Band 2            |       |              |              |       |              |
|-------------------------|------------|---------|-----------|-----------------------|-------|--------------|--------------|-------|--------------|
| Channel                 |            |         |           | 18675                 | 18900 | 19125        | 18675        | 18900 | 19125        |
| Frequency (MHz)         |            |         |           | 1857.5                | 1880  | 1902.5       | 1857.5       | 1880  | 1902.5       |
| Channel Bandwidth (MHz) | Modulation | RB Size | RB Offset | Conducted Power (dBm) |       |              | EIRP (dBm)   |       |              |
| 15                      | QPSK       | 1       | 0         | 23.37                 | 23.47 | <b>23.50</b> | 25.77        | 25.87 | <b>25.90</b> |
|                         |            | 1       | 37        | 23.19                 | 23.33 | 23.32        | 25.59        | 25.73 | 25.72        |
|                         |            | 1       | 74        | 23.27                 | 23.39 | 23.46        | 25.67        | 25.79 | 25.86        |
|                         |            | 36      | 0         | 22.44                 | 22.54 | 22.51        | 24.84        | 24.94 | 24.91        |
|                         |            | 36      | 18        | 22.21                 | 22.56 | 22.39        | 24.61        | 24.96 | 24.79        |
|                         |            | 36      | 35        | 22.32                 | 22.41 | 22.52        | 24.72        | 24.81 | 24.92        |
|                         |            | 75      | 0         | 22.32                 | 22.51 | 22.51        | 24.72        | 24.91 | 24.91        |
|                         | 16QAM      | 1       | 0         | 22.41                 | 22.52 | <b>22.57</b> | 24.81        | 24.92 | <b>24.97</b> |
|                         |            | 1       | 37        | 22.21                 | 22.51 | 22.42        | 24.61        | 24.91 | 24.82        |
|                         |            | 1       | 74        | 22.36                 | 22.42 | 22.51        | 24.76        | 24.82 | 24.91        |
|                         |            | 36      | 0         | 21.41                 | 21.52 | 21.63        | 23.81        | 23.92 | 24.03        |
|                         |            | 36      | 18        | 21.27                 | 21.37 | 21.51        | 23.67        | 23.77 | 23.91        |
|                         |            | 36      | 35        | 21.28                 | 21.39 | 21.49        | 23.68        | 23.79 | 23.89        |
|                         |            | 75      | 0         | 21.28                 | 21.46 | 21.47        | 23.68        | 23.86 | 23.87        |
|                         |            |         |           |                       |       |              | Antenna Gain | 2.40  | dB           |

| Band                    |            |         |           | LTE Band 2            |       |              |              |       |              |
|-------------------------|------------|---------|-----------|-----------------------|-------|--------------|--------------|-------|--------------|
| Channel                 |            |         |           | 18700                 | 18900 | 19100        | 18700        | 18900 | 19100        |
| Frequency (MHz)         |            |         |           | 1860                  | 1880  | 1900         | 1860         | 1880  | 1900         |
| Channel Bandwidth (MHz) | Modulation | RB Size | RB Offset | Conducted Power (dBm) |       |              | EIRP (dBm)   |       |              |
| 20                      | QPSK       | 1       | 0         | 23.42                 | 23.52 | <b>23.55</b> | 25.82        | 25.92 | <b>25.95</b> |
|                         |            | 1       | 49        | 23.24                 | 23.38 | 23.37        | 25.64        | 25.78 | 25.77        |
|                         |            | 1       | 99        | 23.32                 | 23.44 | 23.51        | 25.72        | 25.84 | 25.91        |
|                         |            | 50      | 0         | 22.49                 | 22.59 | 22.56        | 24.89        | 24.99 | 24.96        |
|                         |            | 50      | 24        | 22.26                 | 22.61 | 22.44        | 24.66        | 25.01 | 24.84        |
|                         |            | 50      | 49        | 22.37                 | 22.46 | 22.57        | 24.77        | 24.86 | 24.97        |
|                         |            | 100     | 0         | 22.37                 | 22.56 | 22.56        | 24.77        | 24.96 | 24.96        |
|                         | 16QAM      | 1       | 0         | 22.46                 | 22.57 | <b>22.62</b> | 24.86        | 24.97 | <b>25.02</b> |
|                         |            | 1       | 49        | 22.26                 | 22.56 | 22.47        | 24.66        | 24.96 | 24.87        |
|                         |            | 1       | 99        | 22.41                 | 22.47 | 22.56        | 24.81        | 24.87 | 24.96        |
|                         |            | 50      | 0         | 21.46                 | 21.57 | 21.68        | 23.86        | 23.97 | 24.08        |
|                         |            | 50      | 24        | 21.32                 | 21.42 | 21.56        | 23.72        | 23.82 | 23.96        |
|                         |            | 50      | 49        | 21.33                 | 21.44 | 21.54        | 23.73        | 23.84 | 23.94        |
|                         |            | 100     | 0         | 21.33                 | 21.51 | 21.52        | 23.73        | 23.91 | 23.92        |
|                         |            |         |           |                       |       |              | Antenna Gain | 2.40  | dB           |

## APPENDIX B OCCUPIED BANDWIDTH

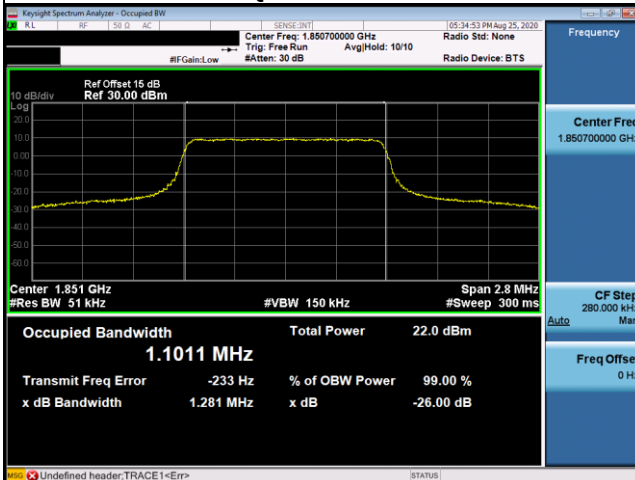
| WCDMA Band II_WCDMA |                 |                              |         |                 |                      |
|---------------------|-----------------|------------------------------|---------|-----------------|----------------------|
| QPSK                |                 |                              |         |                 |                      |
| Channel             | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |
| 9262                | 1852.4          | 4.1386                       | 9262    | 1852.4          | 4.737                |
| 9400                | 1880            | 4.1283                       | 9400    | 1880            | 4.716                |
| 9538                | 1907.6          | 4.1231                       | 9538    | 1907.6          | 4.683                |



| LTE Band 2_1.4M |                 |                              |         |                 |                      |
|-----------------|-----------------|------------------------------|---------|-----------------|----------------------|
| QPSK            |                 |                              |         |                 |                      |
| Channel         | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |
| 18607           | 1850.7          | 1.1011                       | 18607   | 1850.7          | 1.281                |
| 18900           | 1880            | 1.1015                       | 18900   | 1880            | 1.253                |
| 19193           | 1909.3          | 1.1009                       | 19193   | 1909.3          | 1.258                |
| 16QAM           |                 |                              |         |                 |                      |
| Channel         | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |
| 18607           | 1850.7          | 1.1027                       | 18607   | 1850.7          | 1.289                |
| 18900           | 1880            | 1.1001                       | 18900   | 1880            | 1.274                |
| 19193           | 1909.3          | 1.1006                       | 19193   | 1909.3          | 1.265                |

## Spectrum Plot

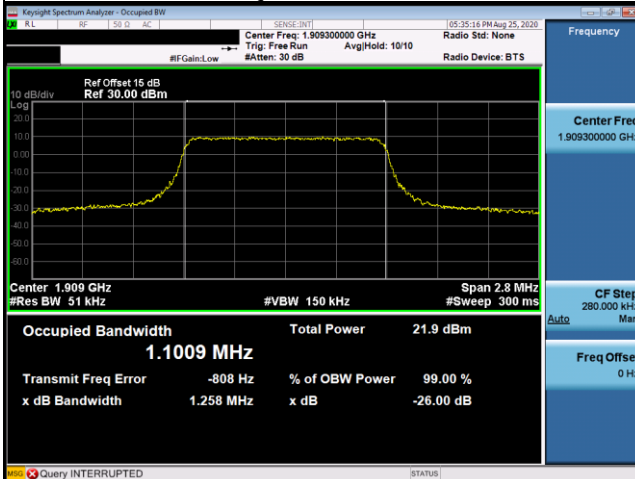
### QPSK-18607



### QPSK-18900



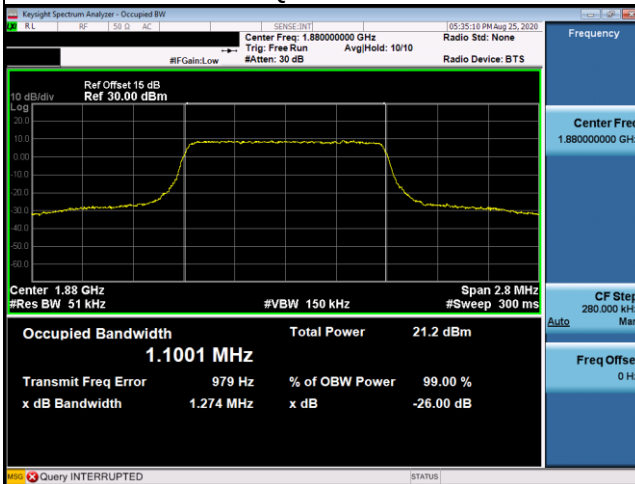
### QPSK-19193



### 16QAM-18607



### 16QAM-18900



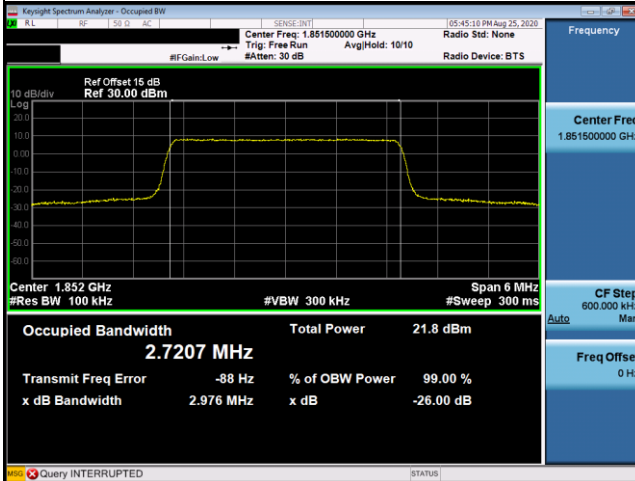
### 16QAM-19193



| LTE Band 2_3M |                 |                              |         |                 |                      |
|---------------|-----------------|------------------------------|---------|-----------------|----------------------|
| QPSK          |                 |                              |         |                 |                      |
| Channel       | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |
| 18615         | 1851.5          | 2.7207                       | 18615   | 1851.5          | 2.976                |
| 18900         | 1880            | 2.7196                       | 18900   | 1880            | 2.962                |
| 19185         | 1908.5          | 2.7189                       | 19185   | 1908.5          | 2.956                |
| 16QAM         |                 |                              |         |                 |                      |
| Channel       | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |
| 18615         | 1851.5          | 2.7185                       | 18615   | 1851.5          | 2.964                |
| 18900         | 1880            | 2.7188                       | 18900   | 1880            | 2.959                |
| 19185         | 1908.5          | 2.7165                       | 19185   | 1908.5          | 2.953                |

## Spectrum Plot

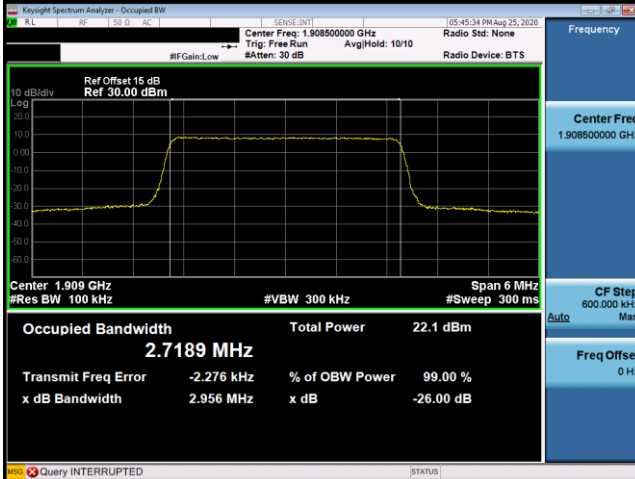
### QPSK-18615



### QPSK-18900



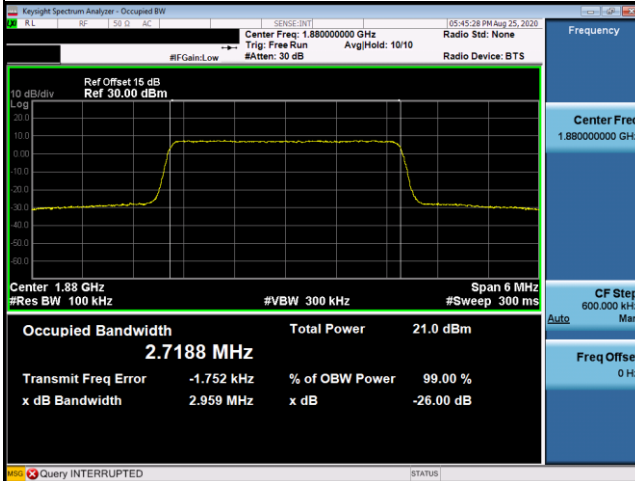
### QPSK-19185



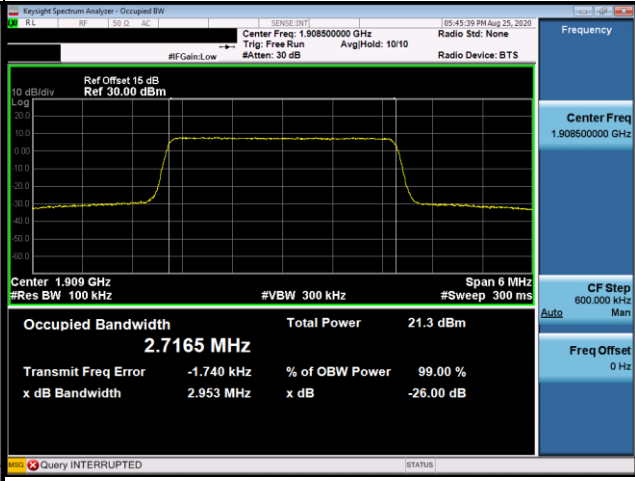
### 16QAM-18615



### 16QAM-18900



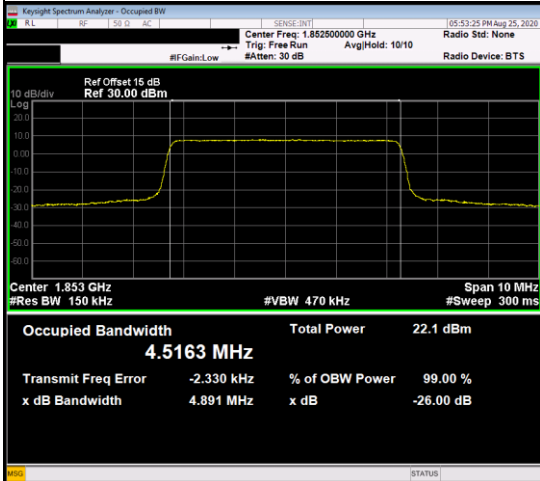
### 16QAM-19185



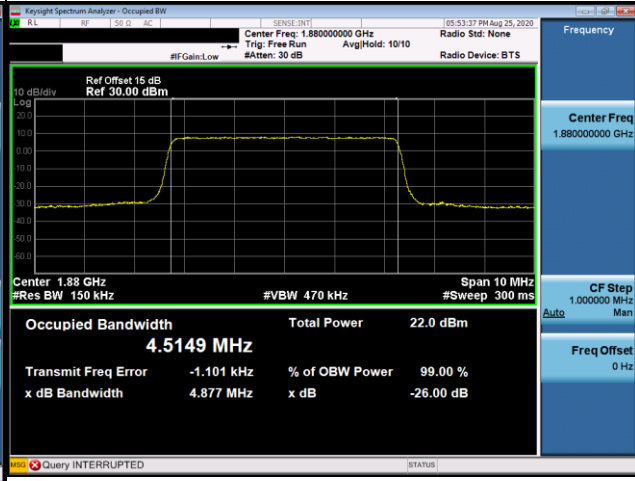
| LTE Band 2_5M |                 |                              |         |                 |                      |
|---------------|-----------------|------------------------------|---------|-----------------|----------------------|
| QPSK          |                 |                              |         |                 |                      |
| Channel       | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |
| 18625         | 1852.5          | 4.5163                       | 18625   | 1852.5          | 4.891                |
| 18900         | 1880            | 4.5149                       | 18900   | 1880            | 4.877                |
| 19175         | 1907.5          | 4.5122                       | 19175   | 1907.5          | 4.870                |
| 16QAM         |                 |                              |         |                 |                      |
| Channel       | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |
| 18625         | 1852.5          | 4.5125                       | 18625   | 1852.5          | 4.890                |
| 18900         | 1880            | 4.5087                       | 18900   | 1880            | 4.878                |
| 19175         | 1907.5          | 4.5044                       | 19175   | 1907.5          | 4.872                |

## Spectrum Plot

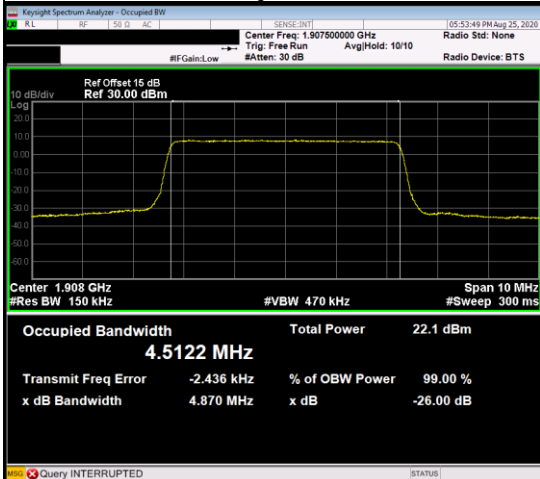
### QPSK-18625



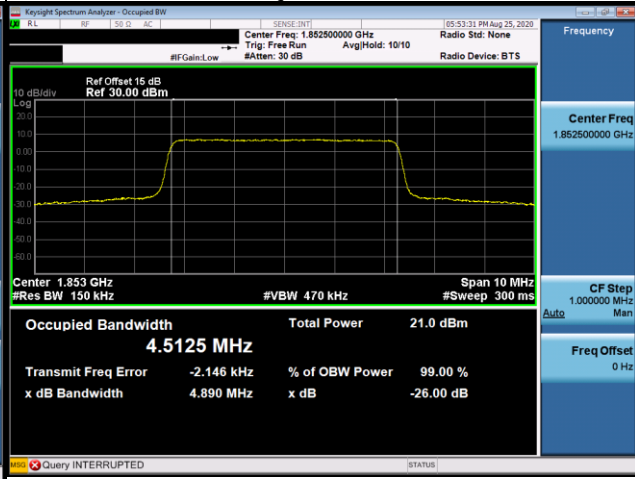
### QPSK-18900



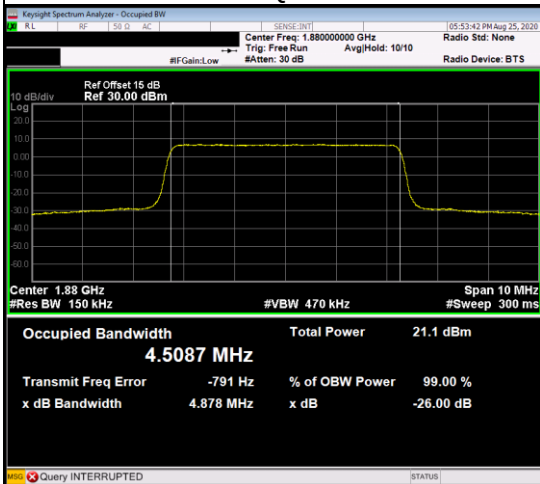
### QPSK-19175



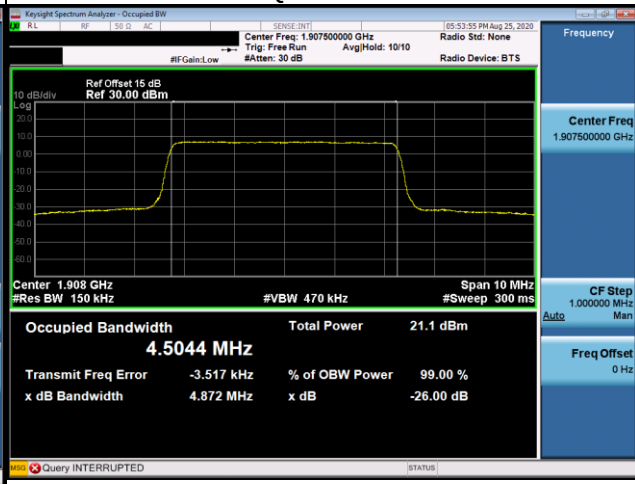
### 16QAM-18625



### 16QAM-18900



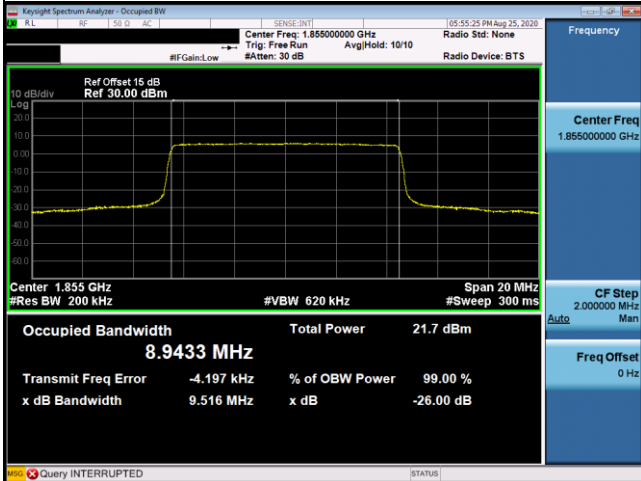
### 16QAM-19175



| LTE Band 2_10M |                 |                              |         |                 |                      |
|----------------|-----------------|------------------------------|---------|-----------------|----------------------|
| QPSK           |                 |                              |         |                 |                      |
| Channel        | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |
| 18650          | 1855            | 8.9433                       | 18650   | 1855            | 9.516                |
| 18900          | 1880            | 8.9384                       | 18900   | 1880            | 9.499                |
| 19150          | 1905            | 8.9336                       | 19150   | 1905            | 9.490                |
| 16QAM          |                 |                              |         |                 |                      |
| Channel        | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |
| 18650          | 1855            | 8.9436                       | 18650   | 1855            | 9.511                |
| 18900          | 1880            | 8.9371                       | 18900   | 1880            | 9.494                |
| 19150          | 1905            | 8.9333                       | 19150   | 1905            | 9.483                |

## Spectrum Plot

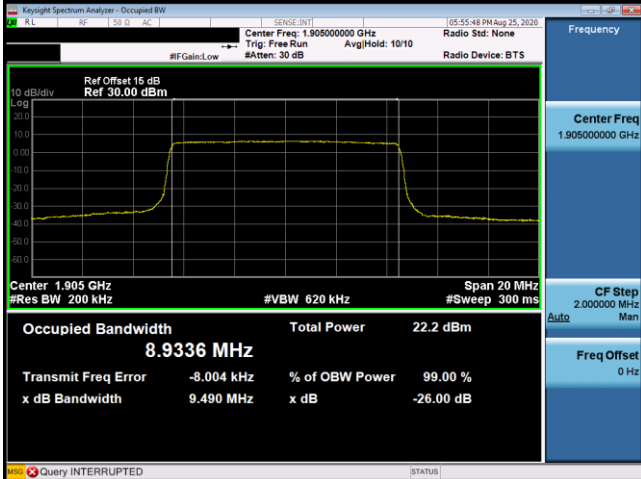
### QPSK-18650



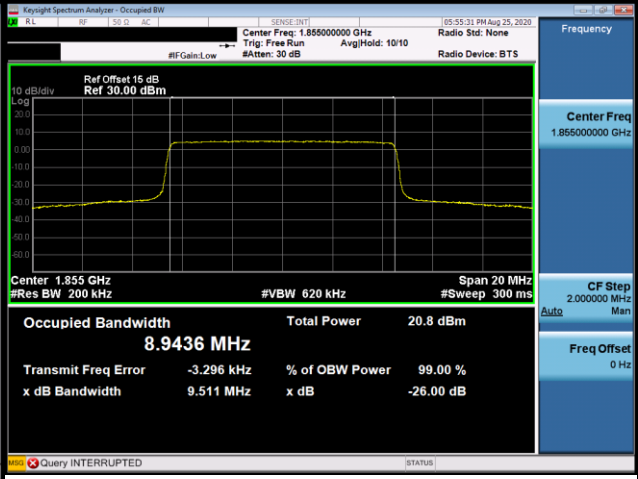
### QPSK-18900



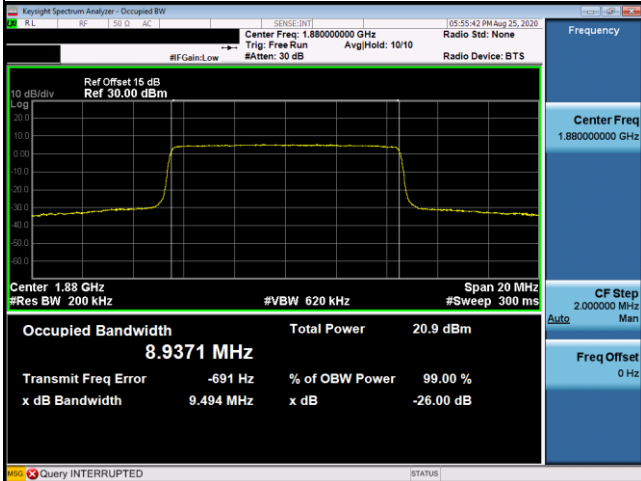
### QPSK-19150



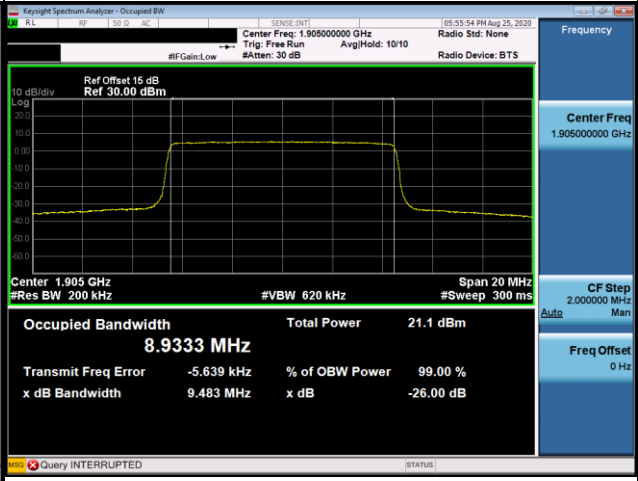
### 16QAM-18650



### 16QAM-18900



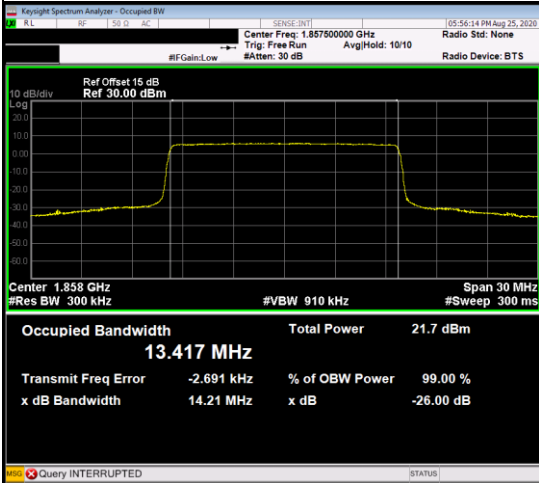
### 16QAM-19150



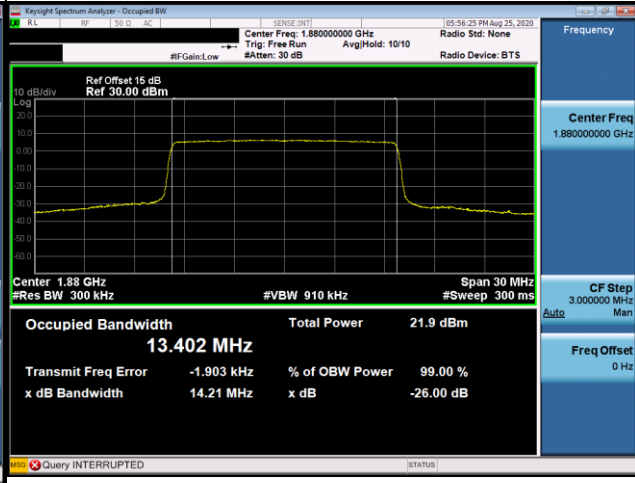
| LTE Band 2_15M |                 |                              |         |                 |                      |
|----------------|-----------------|------------------------------|---------|-----------------|----------------------|
| QPSK           |                 |                              |         |                 |                      |
| Channel        | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |
| 18675          | 1857.5          | 13.417                       | 18675   | 1857.5          | 14.21                |
| 18900          | 1880            | 13.402                       | 18900   | 1880            | 14.21                |
| 19125          | 1902.5          | 13.400                       | 19125   | 1902.5          | 14.21                |
| 16QAM          |                 |                              |         |                 |                      |
| Channel        | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |
| 18675          | 1857.5          | 13.410                       | 18675   | 1857.5          | 14.21                |
| 18900          | 1880            | 13.394                       | 18900   | 1880            | 14.21                |
| 19125          | 1902.5          | 13.399                       | 19125   | 1902.5          | 14.20                |

## Spectrum Plot

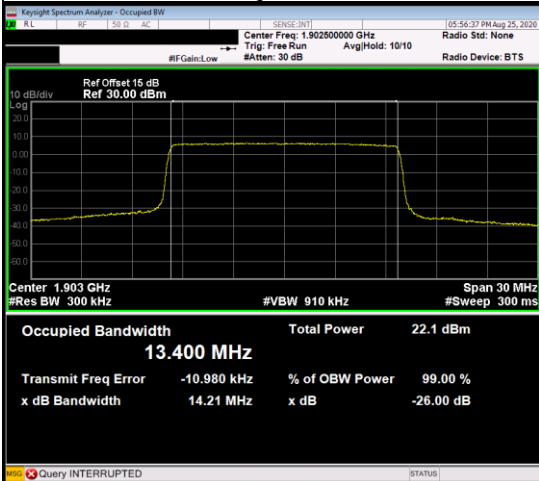
### QPSK-18675



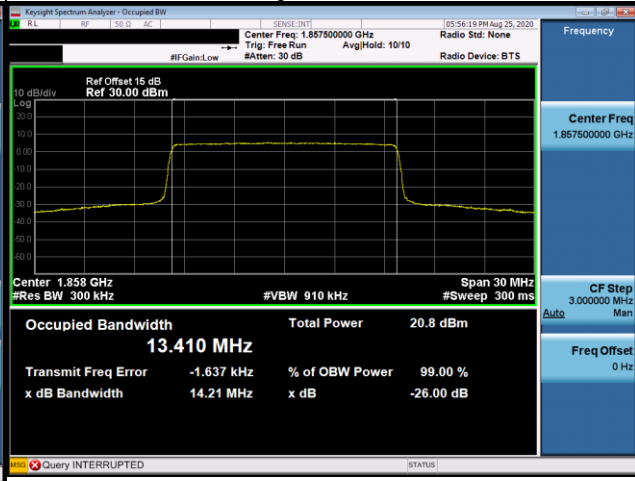
### QPSK-18900



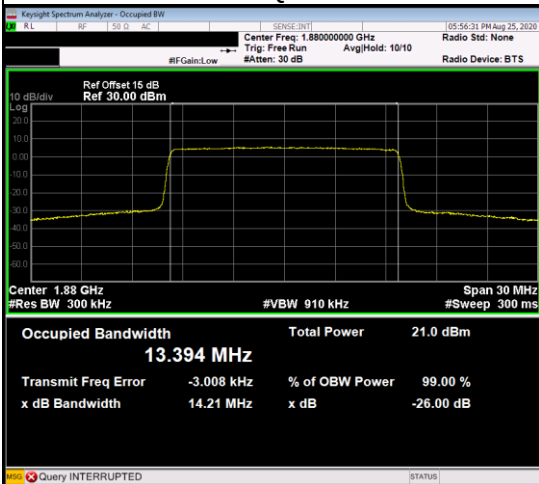
### QPSK-19125



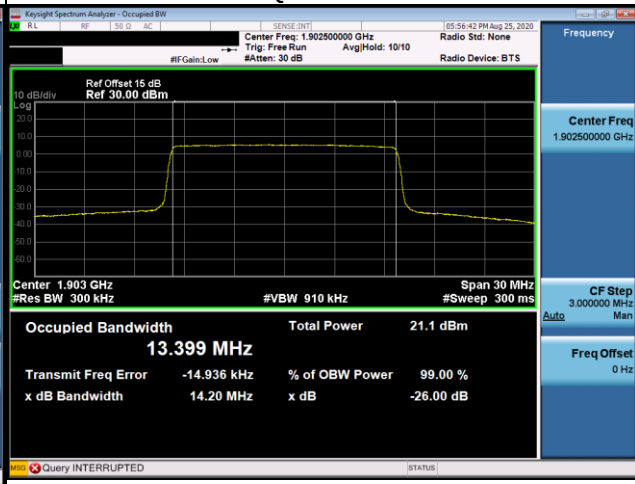
### 16QAM-18675



### 16QAM-18900



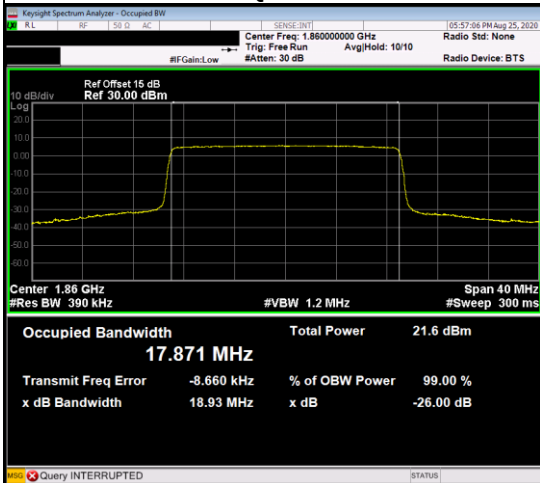
### 16QAM-19125



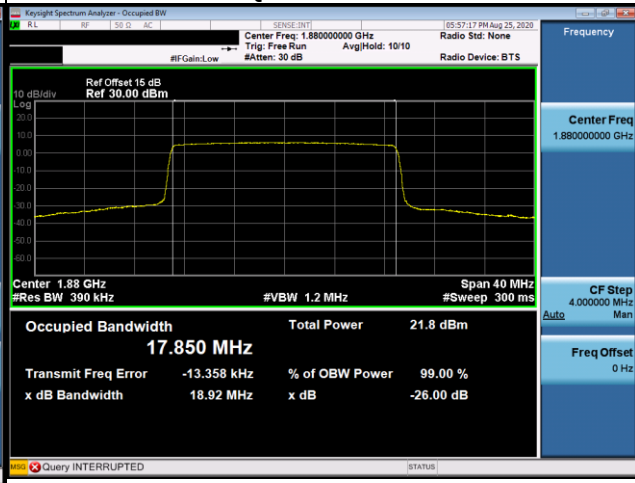
| LTE Band 2_20M |                 |                              |         |                 |                      |
|----------------|-----------------|------------------------------|---------|-----------------|----------------------|
| QPSK           |                 |                              |         |                 |                      |
| Channel        | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |
| 18700          | 1860            | 17.871                       | 18700   | 1860            | 18.93                |
| 18900          | 1880            | 17.850                       | 18900   | 1880            | 18.92                |
| 19100          | 1900            | 17.868                       | 19100   | 1900            | 18.92                |
| 16QAM          |                 |                              |         |                 |                      |
| Channel        | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | Channel | Frequency (MHz) | 26dB Bandwidth (MHz) |
| 18700          | 1860            | 17.866                       | 18700   | 1860            | 18.92                |
| 18900          | 1880            | 17.846                       | 18900   | 1880            | 18.90                |
| 19100          | 1900            | 17.863                       | 19100   | 1900            | 18.91                |

## Spectrum Plot

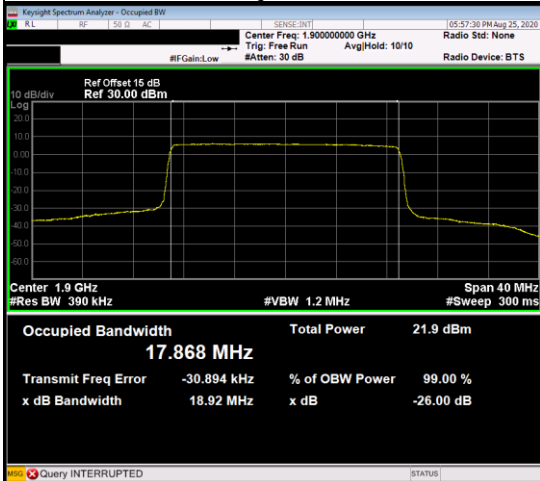
### QPSK-18700



### QPSK-18900



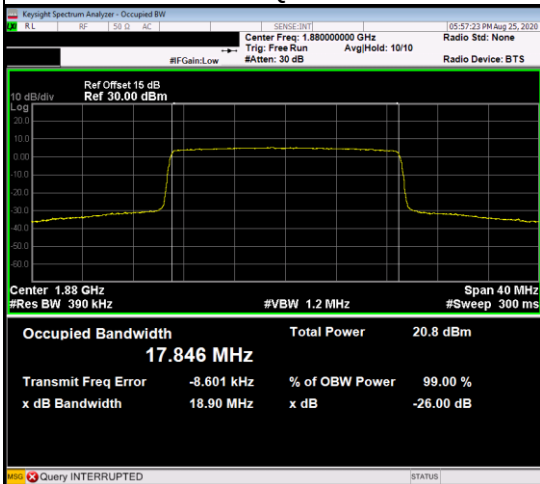
### QPSK-19100



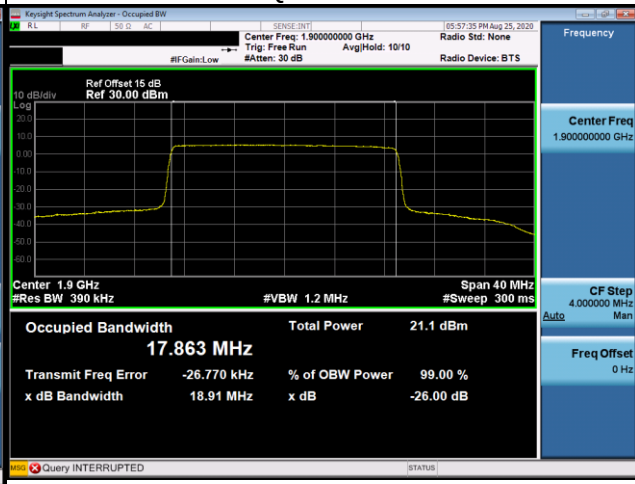
### 16QAM-18700



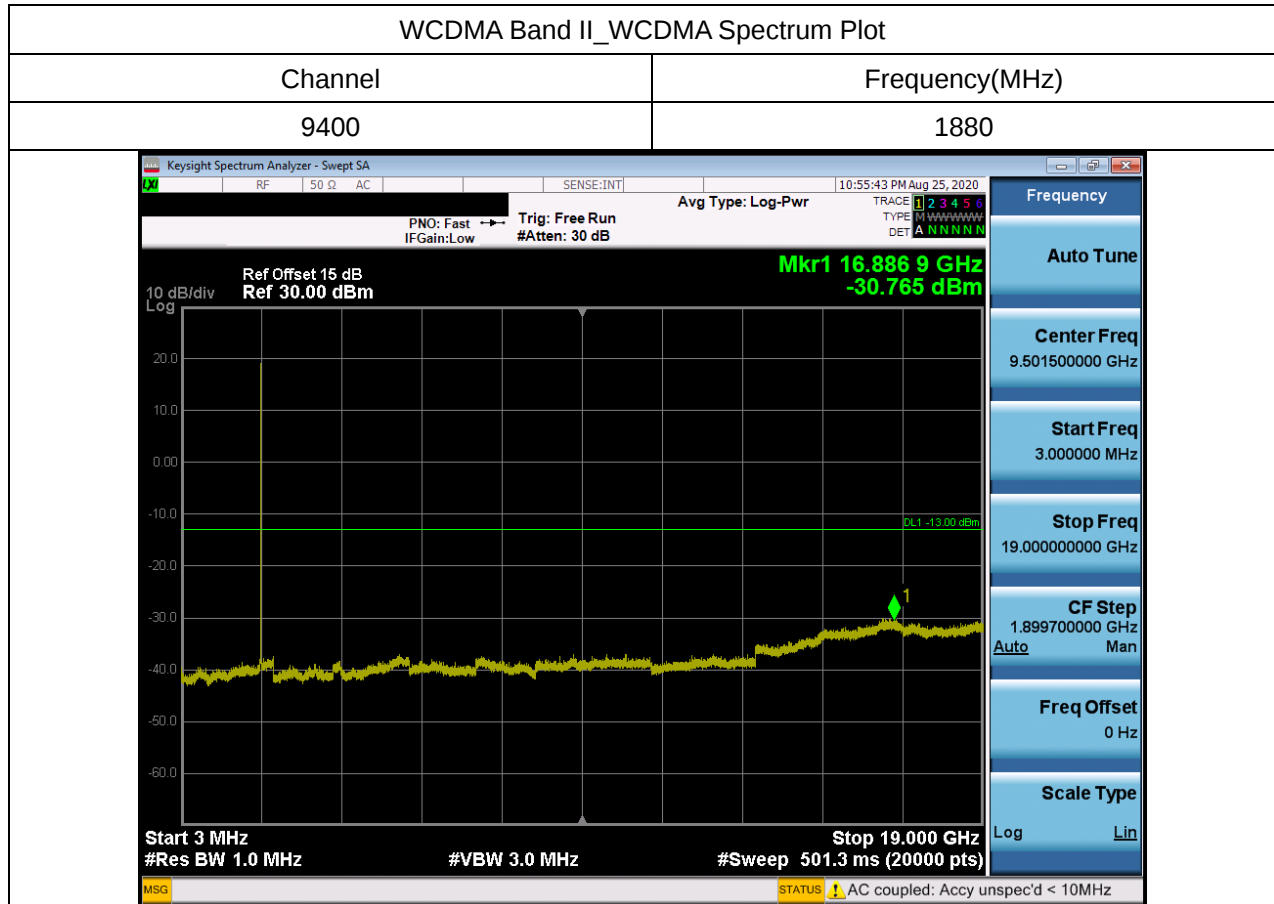
### 16QAM-18900

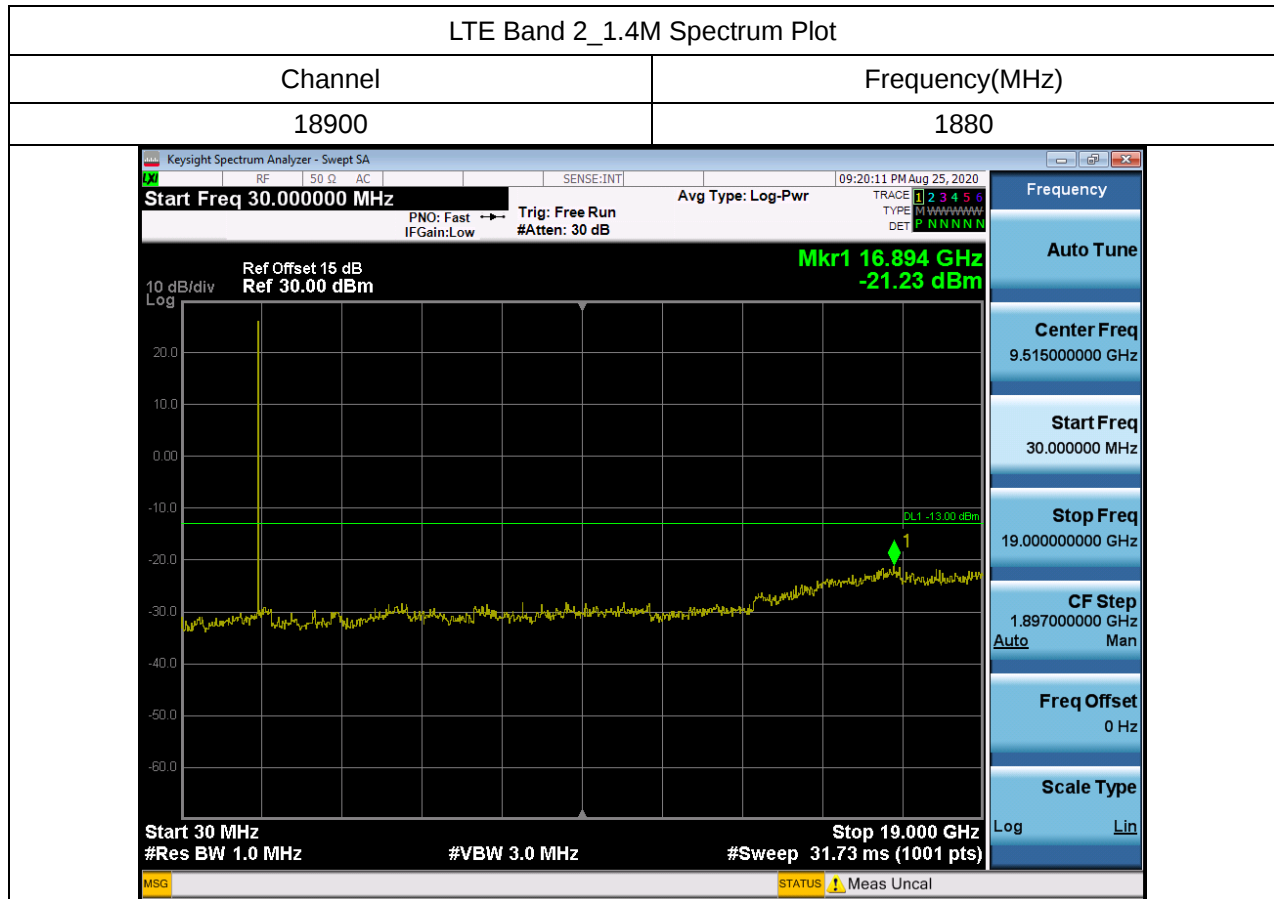


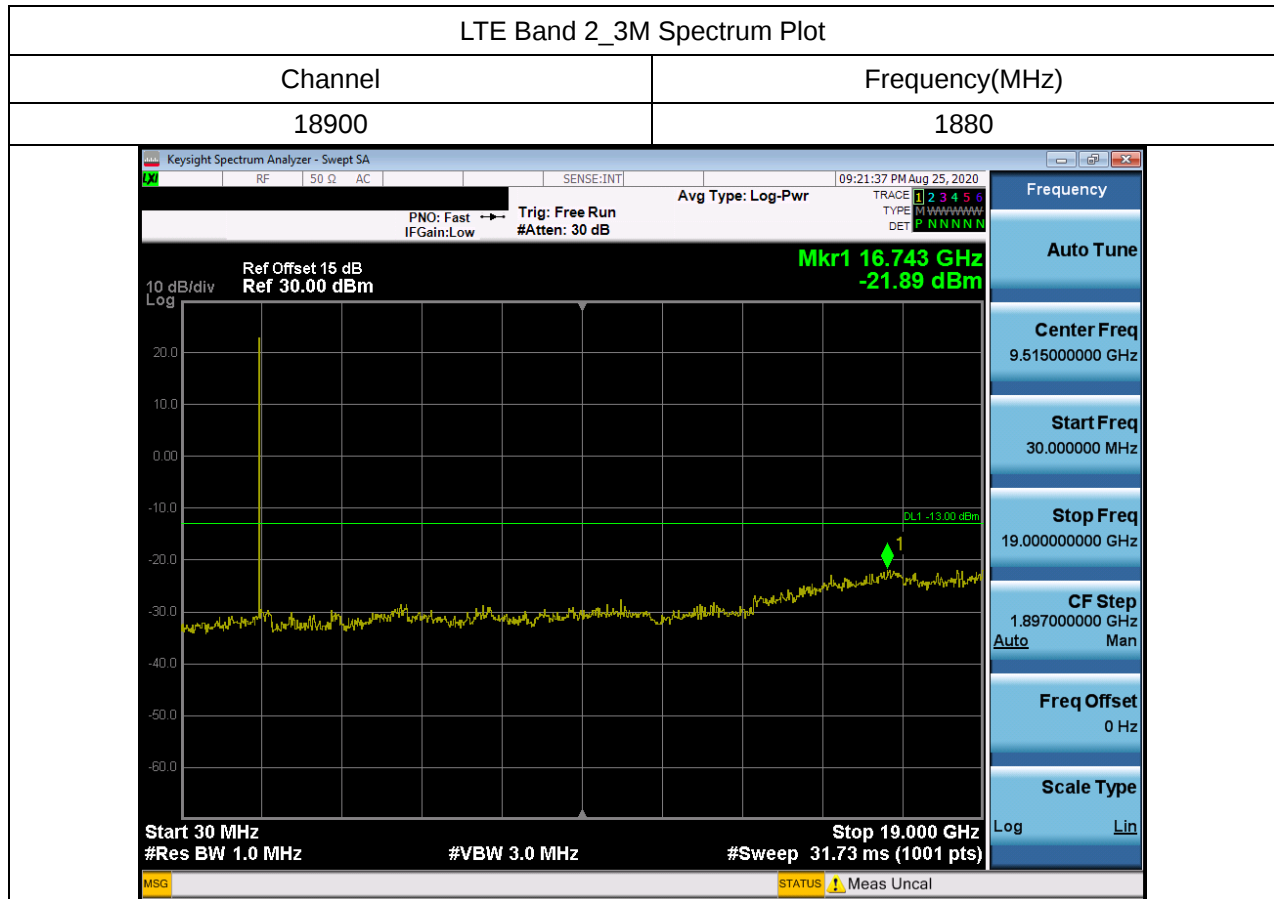
### 16QAM-19100

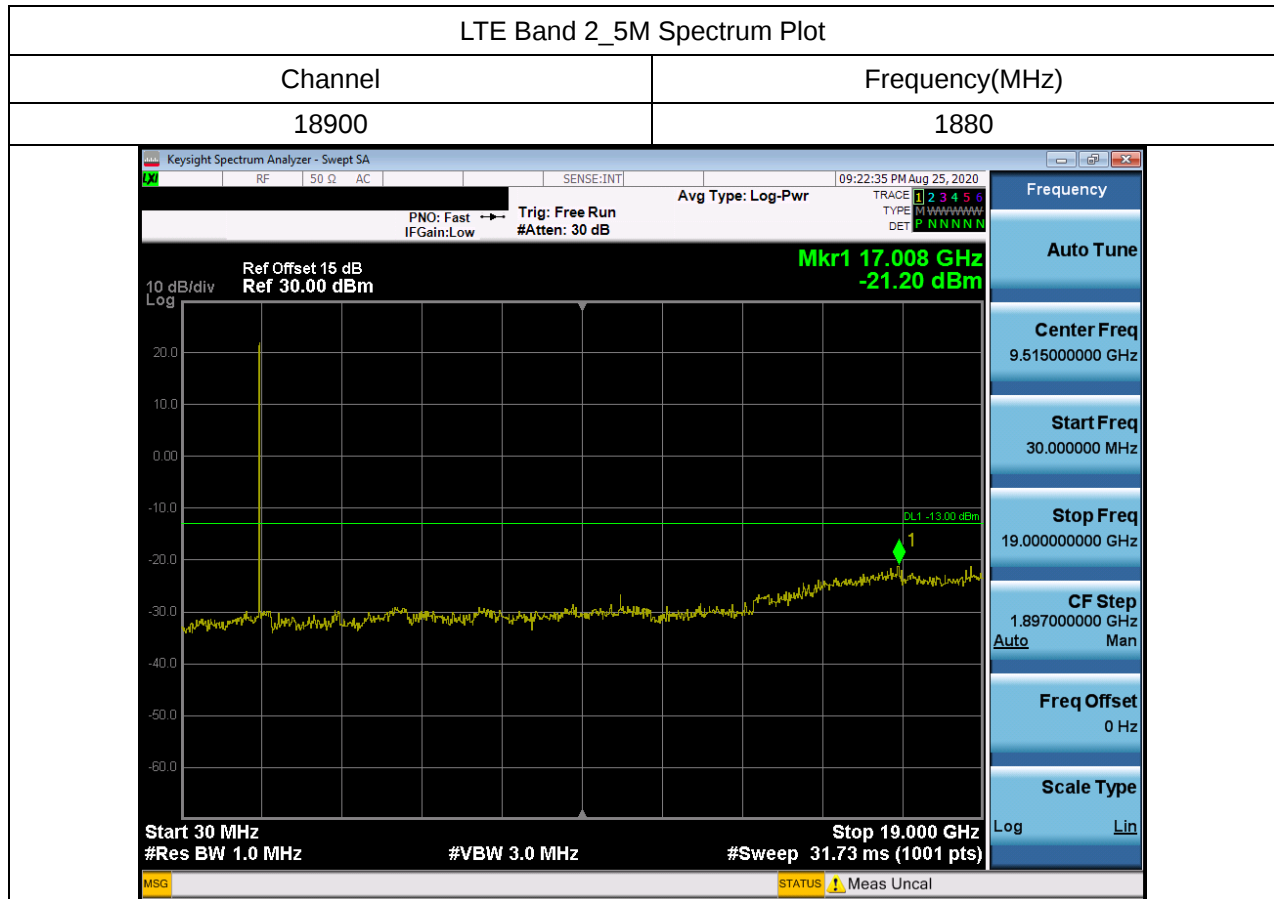


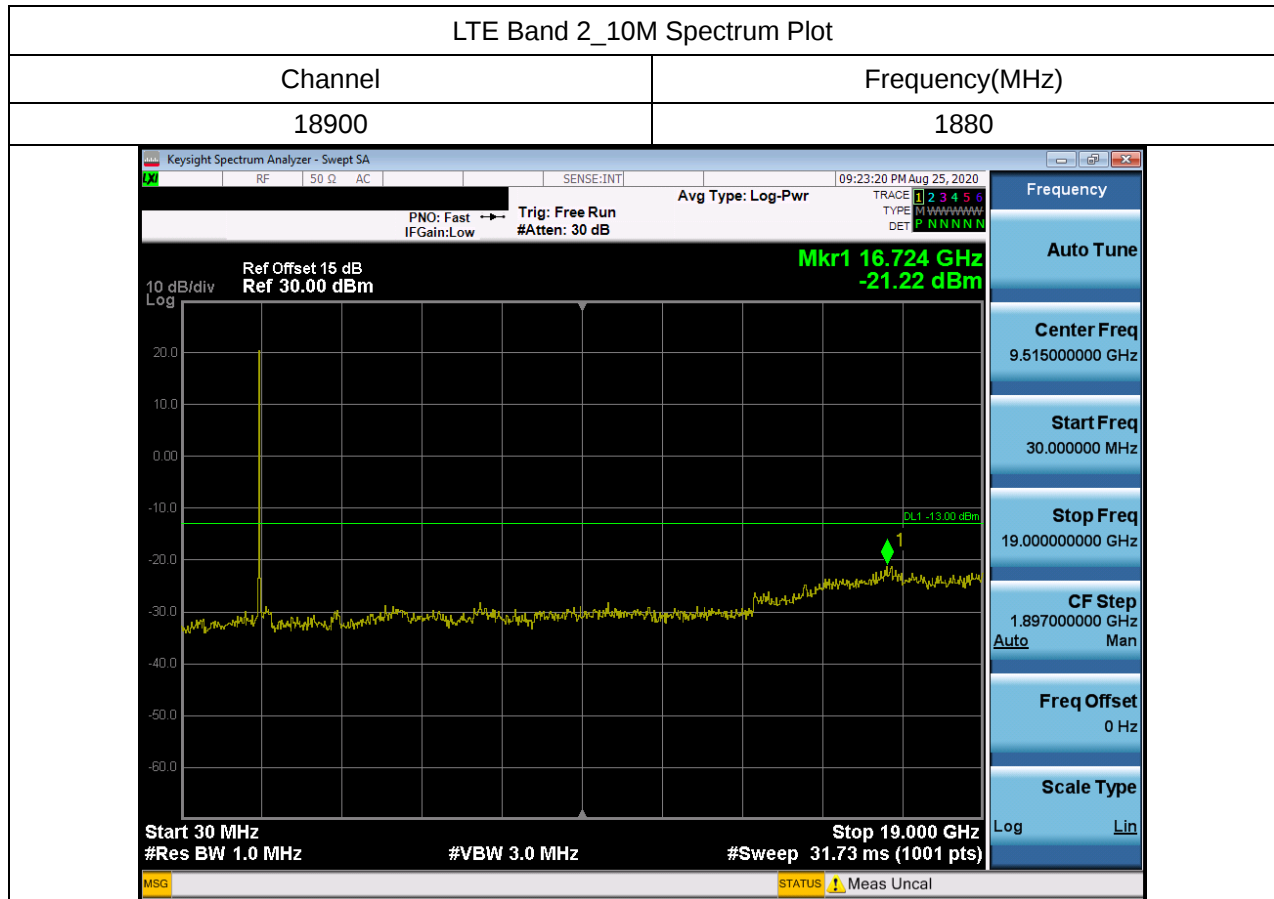
## **APPENDIX C    CONDUCTED SPURIOUS EMISSION**

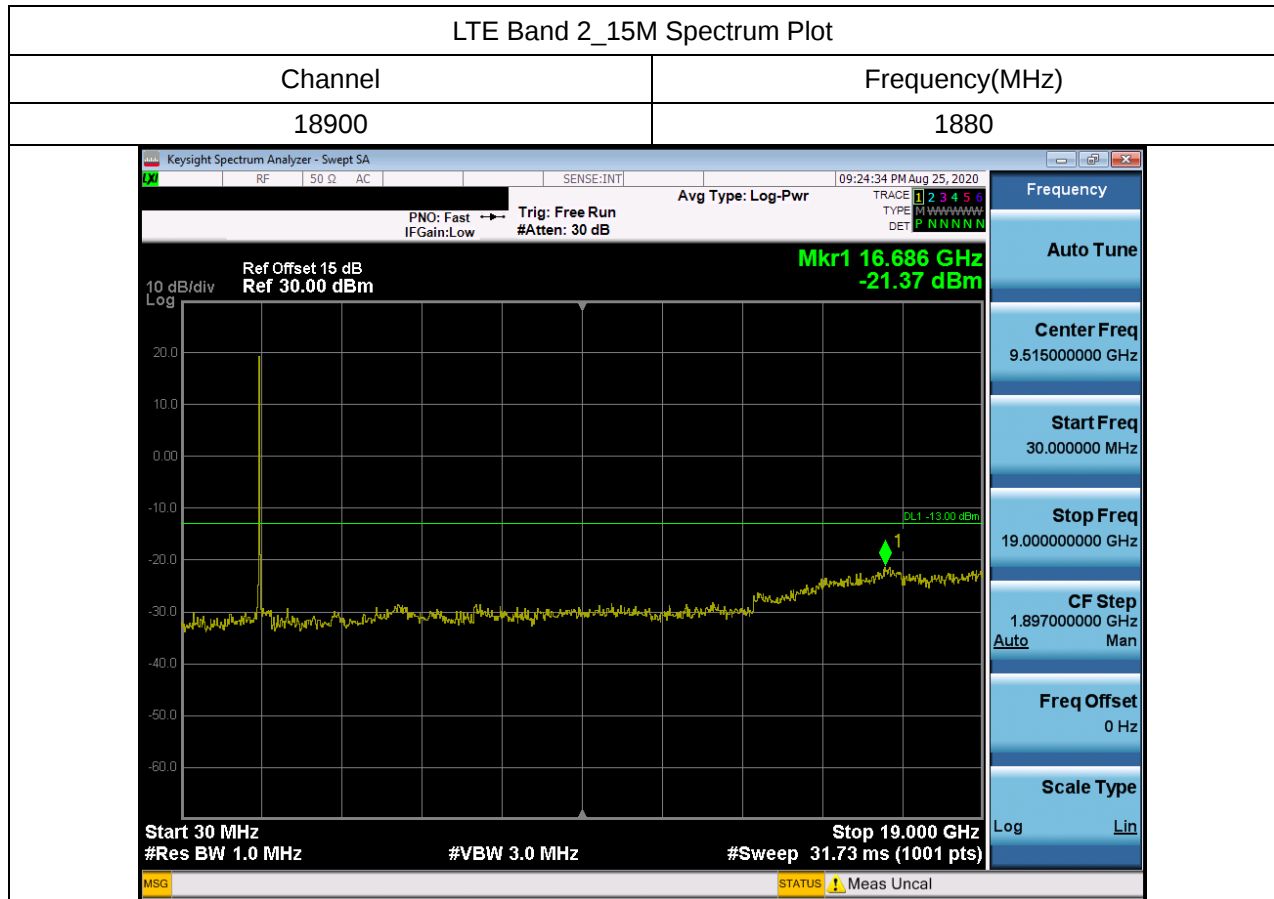


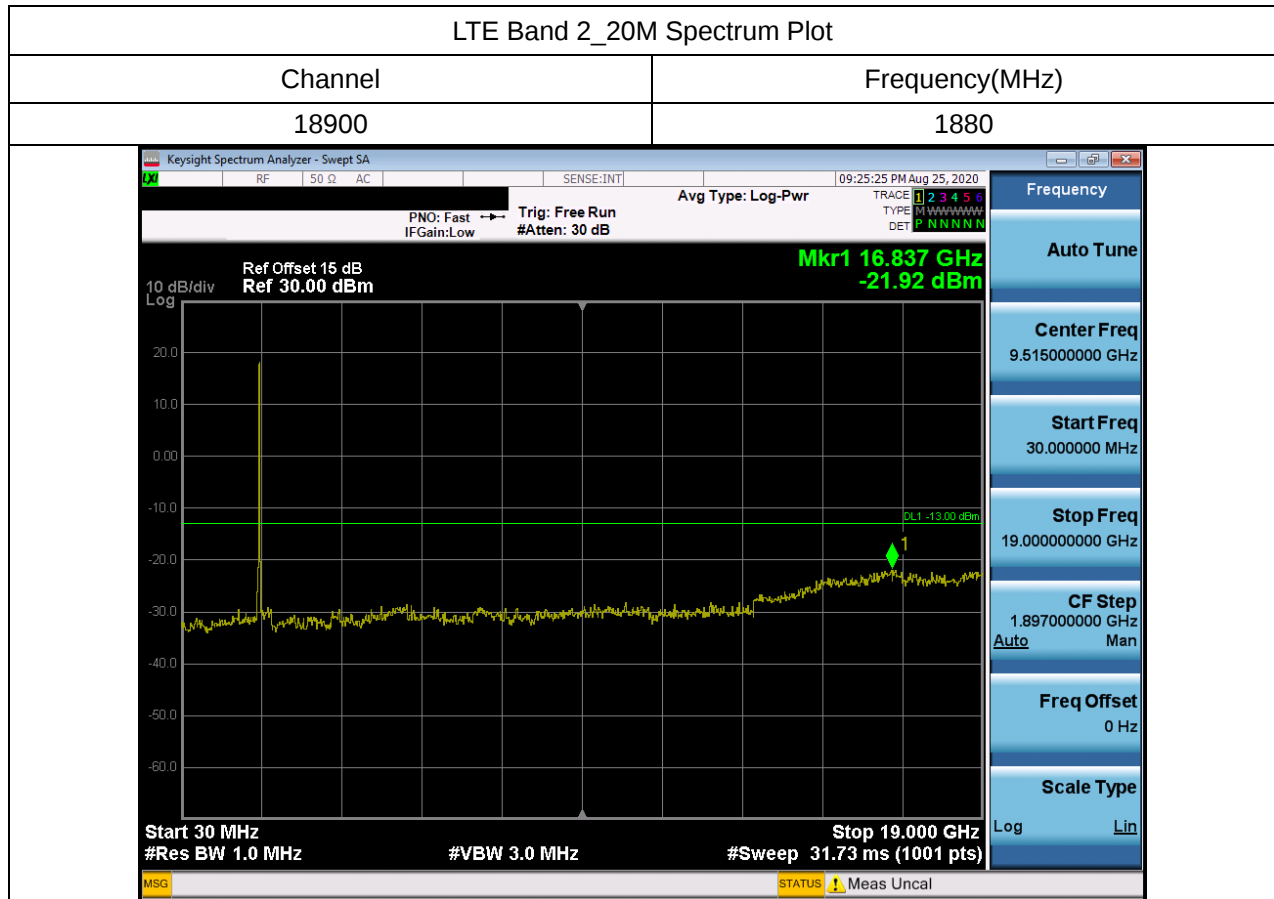






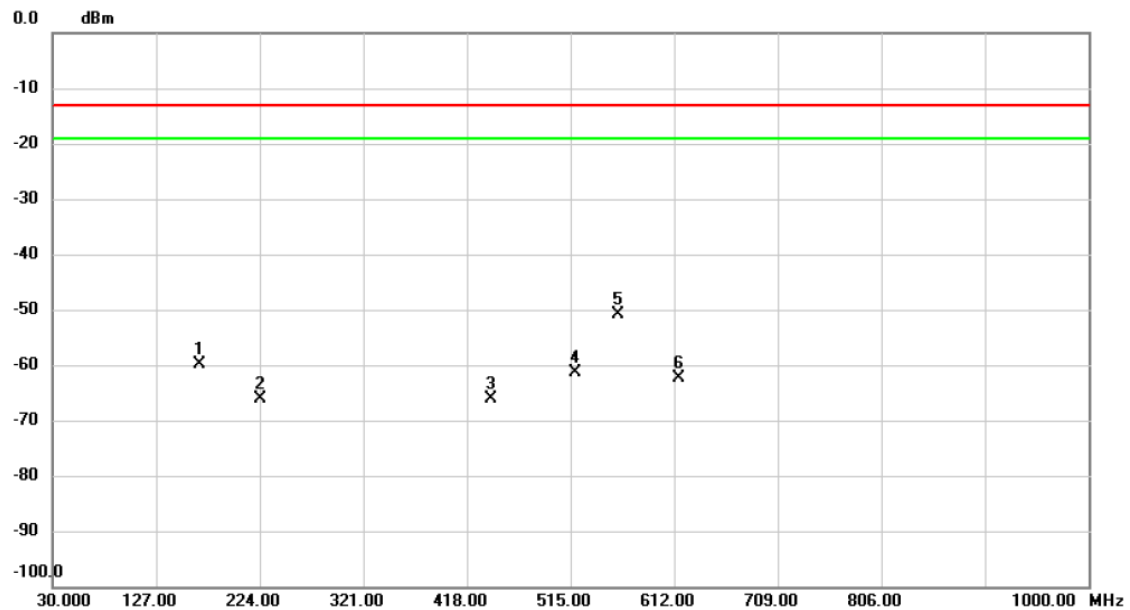






## **APPENDIX D    RADIATED SPURIOUS EMISSIONS TEST**

|              |                           |              |               |
|--------------|---------------------------|--------------|---------------|
| Test Mode    | WCDMA Band II_Link CH9800 | Tested Date  | 2019/10/28~29 |
| Test Voltage | DC 60V                    | Polarization | Vertical      |

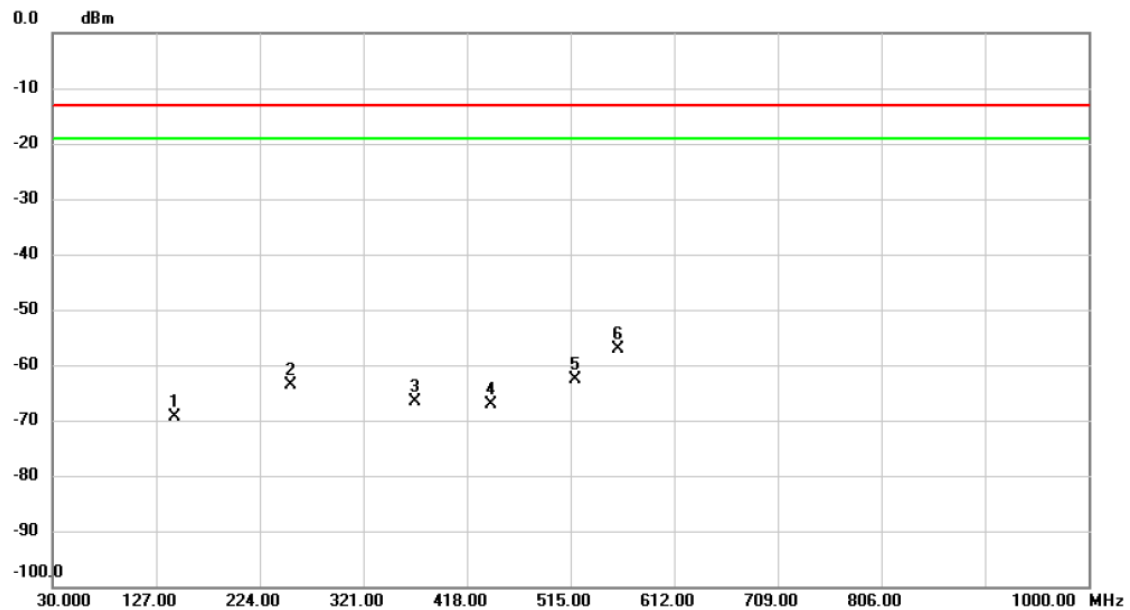


| No. | Mk. | Freq.    | Reading Level | Correct Factor | Measurement | Limit  | Over   |          |         |
|-----|-----|----------|---------------|----------------|-------------|--------|--------|----------|---------|
|     |     | MHz      | dBm           | dB             | dBm         | dBm    | dB     | Detector | Comment |
| 1   |     | 167.7400 | -64.89        | 4.93           | -59.96      | -13.00 | -46.96 | peak     |         |
| 2   |     | 224.0000 | -65.71        | -0.34          | -66.05      | -13.00 | -53.05 | peak     |         |
| 3   |     | 440.3100 | -66.95        | 0.76           | -66.19      | -13.00 | -53.19 | peak     |         |
| 4   |     | 519.8500 | -64.47        | 3.17           | -61.30      | -13.00 | -48.30 | peak     |         |
| 5   | *   | 559.6200 | -56.27        | 5.43           | -50.84      | -13.00 | -37.84 | peak     |         |
| 6   |     | 615.8800 | -68.01        | 5.76           | -62.25      | -13.00 | -49.25 | peak     |         |

## REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

|              |                           |              |               |
|--------------|---------------------------|--------------|---------------|
| Test Mode    | WCDMA Band II_Link CH9800 | Tested Date  | 2019/10/28~29 |
| Test Voltage | DC 60V                    | Polarization | Horizontal    |

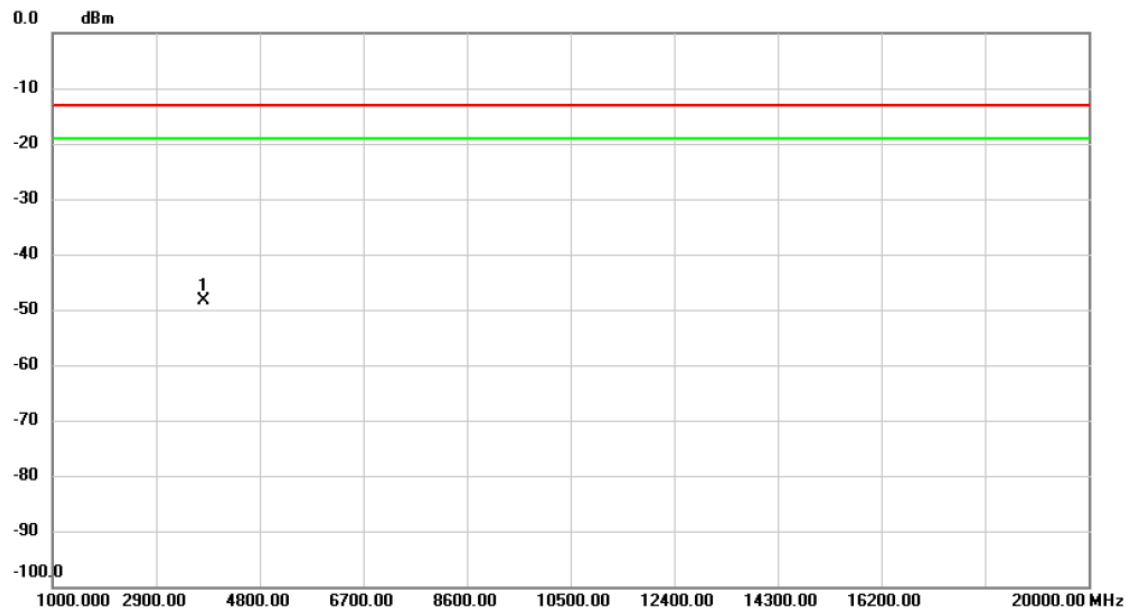


| No. | Mk. | Freq.    | Reading Level | Correct Factor | Measurement | Limit  | Over   | Detector | Comment |
|-----|-----|----------|---------------|----------------|-------------|--------|--------|----------|---------|
|     |     | MHz      | dBm           | dB             | dBm         | dBm    | dB     |          |         |
| 1   |     | 144.4600 | -68.38        | -0.90          | -69.28      | -13.00 | -56.28 | peak     |         |
| 2   |     | 253.1000 | -58.01        | -5.67          | -63.68      | -13.00 | -50.68 | peak     |         |
| 3   |     | 369.5000 | -66.62        | -0.07          | -66.69      | -13.00 | -53.69 | peak     |         |
| 4   |     | 440.3100 | -68.18        | 0.96           | -67.22      | -13.00 | -54.22 | peak     |         |
| 5   |     | 519.8500 | -63.89        | 1.24           | -62.65      | -13.00 | -49.65 | peak     |         |
| 6   | *   | 559.6200 | -59.05        | 1.92           | -57.13      | -13.00 | -44.13 | peak     |         |

## REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

|              |                           |              |               |
|--------------|---------------------------|--------------|---------------|
| Test Mode    | WCDMA Band II_Link CH9800 | Tested Date  | 2019/10/28~29 |
| Test Voltage | DC 60V                    | Polarization | Vertical      |

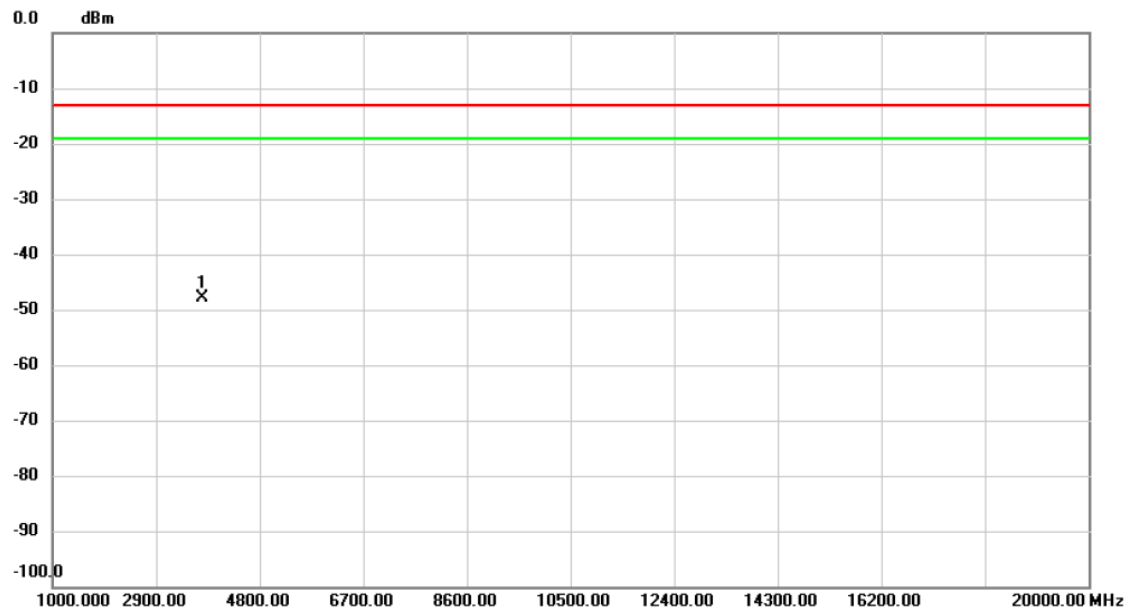


| No. | Mk. | Freq.    | Reading Level | Correct Factor | Measurement | Limit  | Over   |          |         |
|-----|-----|----------|---------------|----------------|-------------|--------|--------|----------|---------|
|     |     | MHz      | dBm           | dB             | dBm         | dBm    | dB     | Detector | Comment |
| 1   | *   | 3762.025 | -47.75        | -0.74          | -48.49      | -13.00 | -35.49 | peak     |         |

## REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

|              |                           |              |               |
|--------------|---------------------------|--------------|---------------|
| Test Mode    | WCDMA Band II_Link CH9800 | Tested Date  | 2019/10/28~29 |
| Test Voltage | DC 60V                    | Polarization | Horizontal    |

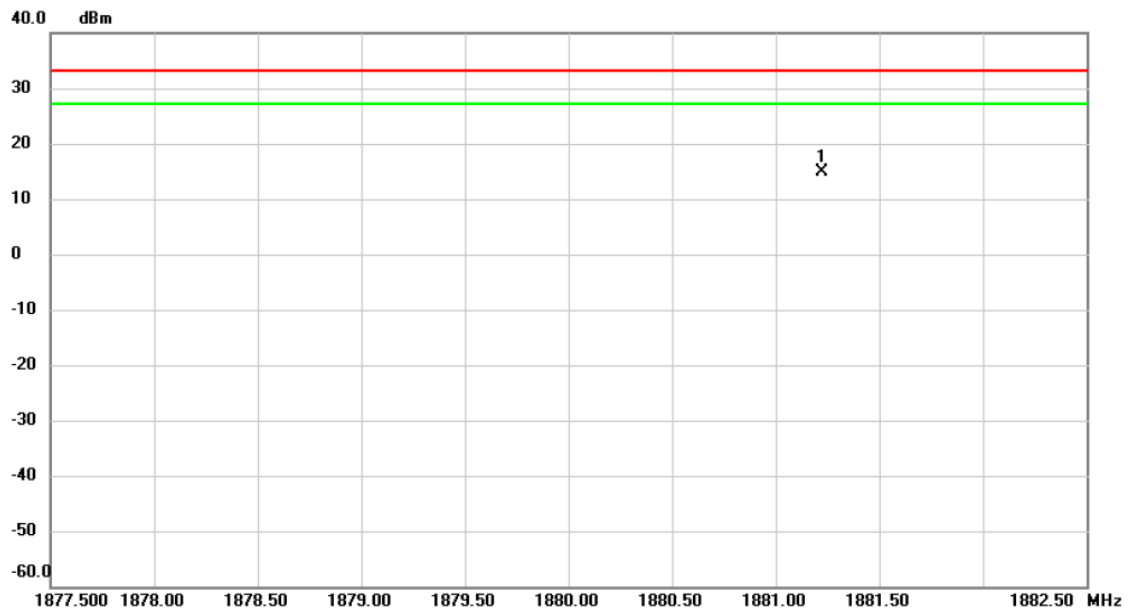


| No. | Mk. | Freq.    | Reading Level | Correct Factor | Measurement | Limit  | Over   |          |         |
|-----|-----|----------|---------------|----------------|-------------|--------|--------|----------|---------|
|     |     | MHz      | dBm           | dB             | dBm         | dBm    | dB     | Detector | Comment |
| 1   | *   | 3758.585 | -46.57        | -1.25          | -47.82      | -13.00 | -34.82 | peak     |         |

## REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

|              |                           |              |               |
|--------------|---------------------------|--------------|---------------|
| Test Mode    | WCDMA Band II_Link CH9800 | Tested Date  | 2019/10/28~29 |
| Test Voltage | DC 60V                    | Polarization | Vertical      |

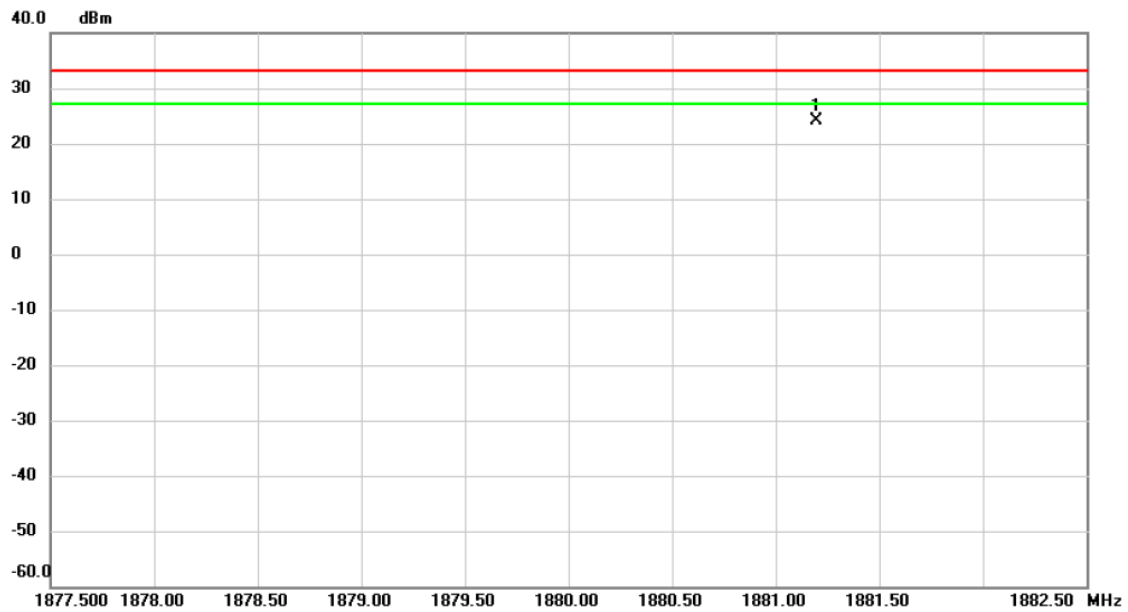


| No. | Mk. | Freq.    | Reading Level | Correct Factor | Measurement | Limit | Over   |          |         |
|-----|-----|----------|---------------|----------------|-------------|-------|--------|----------|---------|
|     |     | MHz      | dBm           | dB             | dBm         | dBm   | dB     | Detector | Comment |
| 1   | *   | 1881.220 | -24.36        | 39.32          | 14.96       | 33.01 | -18.05 | peak     |         |

## REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

|              |                           |              |               |
|--------------|---------------------------|--------------|---------------|
| Test Mode    | WCDMA Band II_Link CH9800 | Tested Date  | 2019/10/28~29 |
| Test Voltage | DC 60V                    | Polarization | Horizontal    |

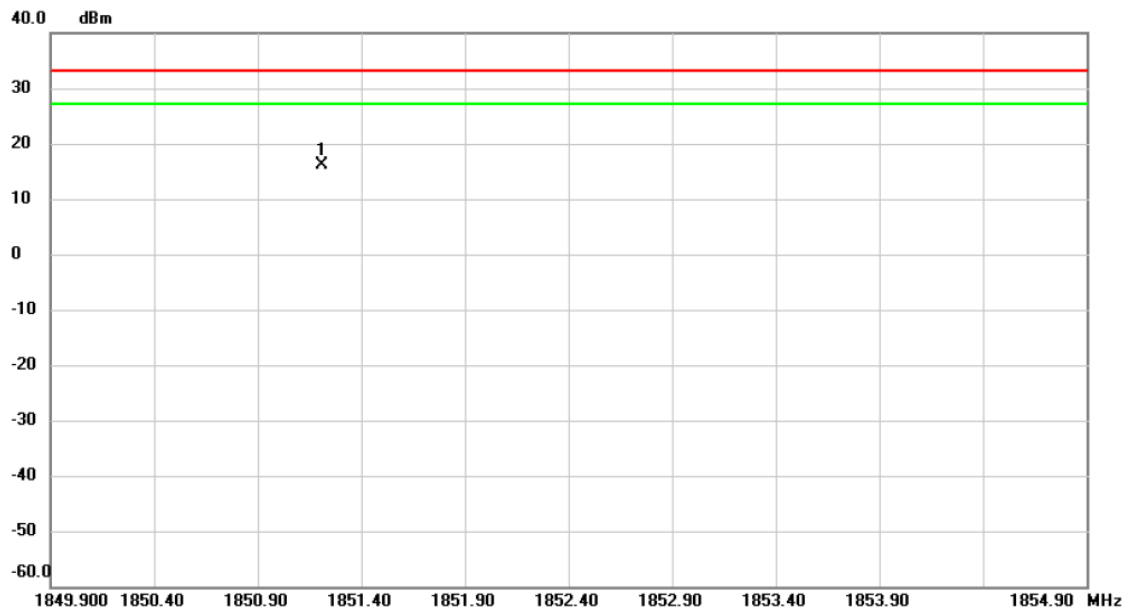


| No. | Mk. | Freq.    | Reading Level | Correct Factor | Measurement | Limit | Over  |                  |
|-----|-----|----------|---------------|----------------|-------------|-------|-------|------------------|
|     |     | MHz      | dBm           | dB             | dBm         | dBm   | dB    | Detector Comment |
| 1   | *   | 1881.195 | -15.69        | 39.91          | 24.22       | 33.01 | -8.79 | peak             |

## REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

|              |                           |              |               |
|--------------|---------------------------|--------------|---------------|
| Test Mode    | WCDMA Band II_Link CH9662 | Tested Date  | 2019/10/28~29 |
| Test Voltage | DC 60V                    | Polarization | Vertical      |

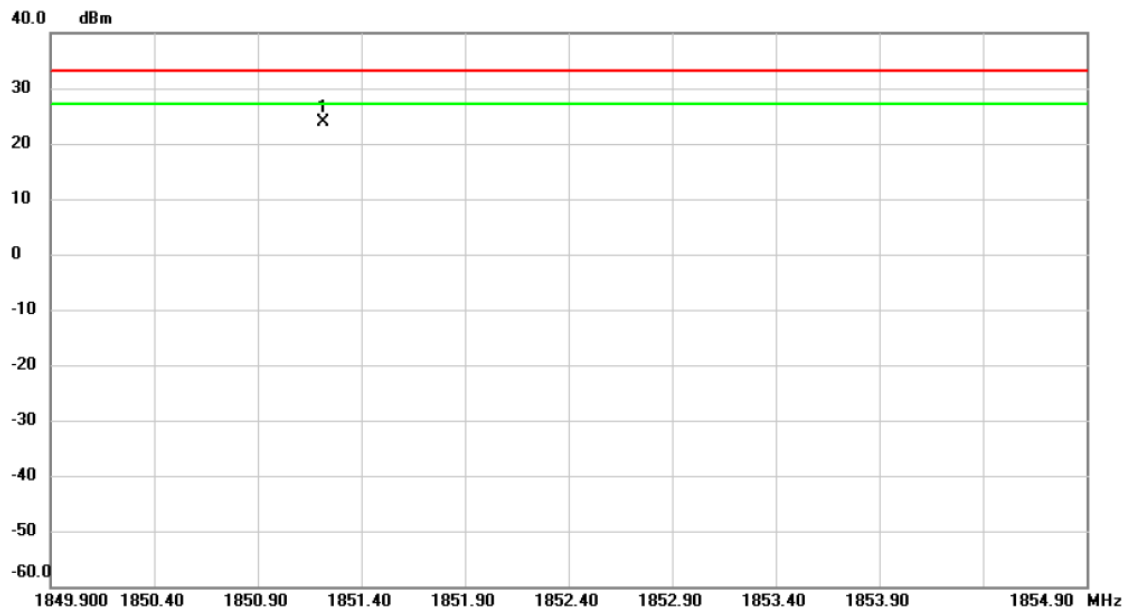


| No. | Mk. | Freq.    | Reading Level | Correct Factor | Measurement | Limit | Over   |          |         |
|-----|-----|----------|---------------|----------------|-------------|-------|--------|----------|---------|
|     |     | MHz      | dBm           | dB             | dBm         | dBm   | dB     | Detector | Comment |
| 1   | *   | 1851.210 | -22.96        | 39.21          | 16.25       | 33.01 | -16.76 | peak     |         |

## REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

|              |                           |              |               |
|--------------|---------------------------|--------------|---------------|
| Test Mode    | WCDMA Band II_Link CH9662 | Tested Date  | 2019/10/28~29 |
| Test Voltage | DC 60V                    | Polarization | Horizontal    |

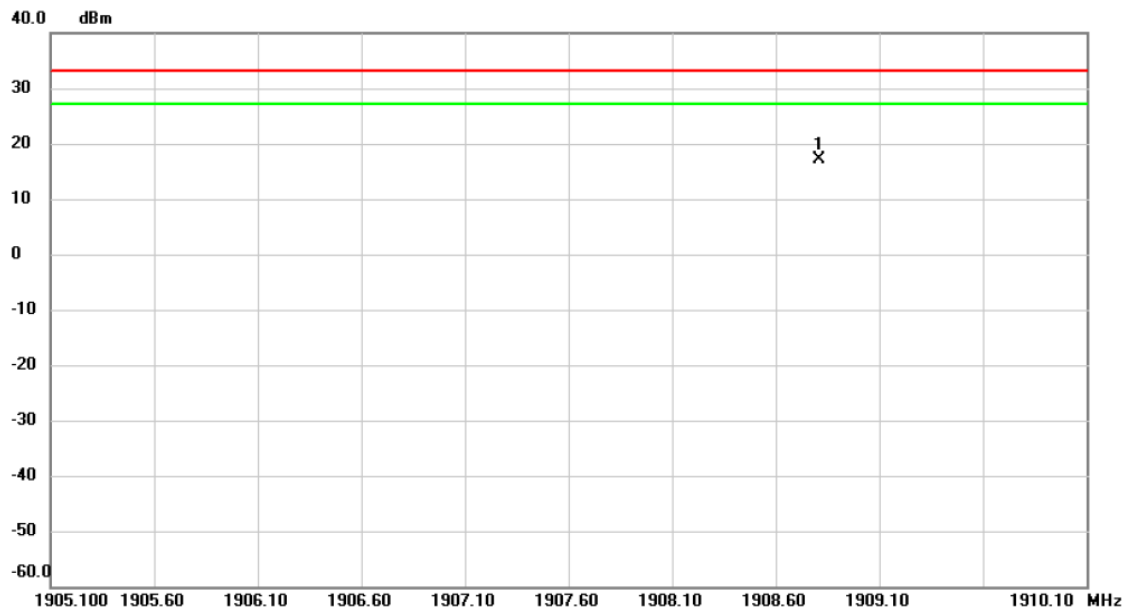


| No. | Mk. | Freq.    | Reading Level | Correct Factor | Measurement | Limit | Over  |          |         |
|-----|-----|----------|---------------|----------------|-------------|-------|-------|----------|---------|
|     |     | MHz      | dBm           | dB             | dBm         | dBm   | dB    | Detector | Comment |
| 1   | *   | 1851.215 | -15.87        | 39.79          | 23.92       | 33.01 | -9.09 | peak     |         |

## REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

|              |                           |              |               |
|--------------|---------------------------|--------------|---------------|
| Test Mode    | WCDMA Band II_Link CH9938 | Tested Date  | 2019/10/28~29 |
| Test Voltage | DC 60V                    | Polarization | Vertical      |

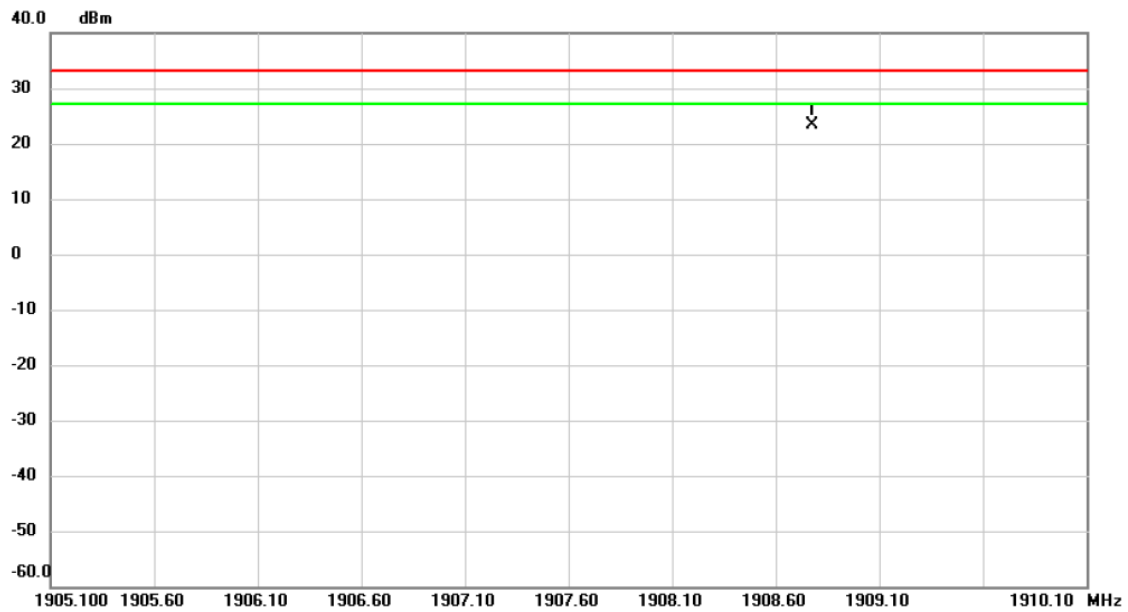


| No. | Mk. | Freq.    | Reading Level | Correct Factor | Measurement | Limit | Over   |          |         |
|-----|-----|----------|---------------|----------------|-------------|-------|--------|----------|---------|
|     |     | MHz      | dBm           | dB             | dBm         | dBm   | dB     | Detector | Comment |
| 1   | *   | 1908.810 | -22.31        | 39.42          | 17.11       | 33.01 | -15.90 | peak     |         |

## REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

|              |                           |              |               |
|--------------|---------------------------|--------------|---------------|
| Test Mode    | WCDMA Band II_Link CH9938 | Tested Date  | 2019/10/28~29 |
| Test Voltage | DC 60V                    | Polarization | Horizontal    |

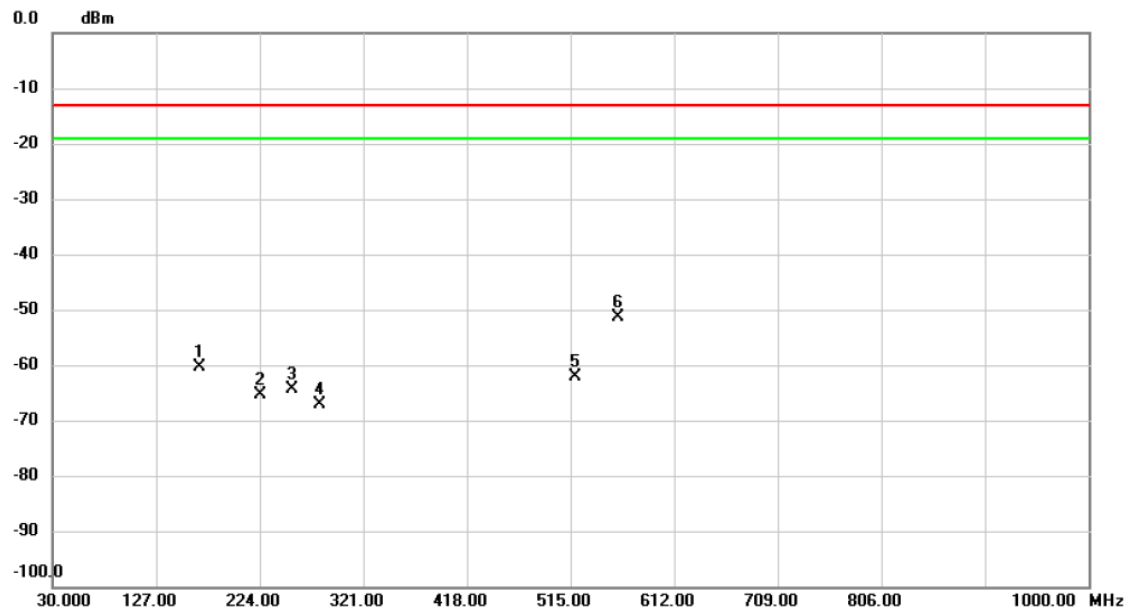


| No. | Mk. | Freq.    | Reading Level | Correct Factor | Measurement | Limit | Over  |          |         |
|-----|-----|----------|---------------|----------------|-------------|-------|-------|----------|---------|
|     |     | MHz      | dBm           | dB             | dBm         | dBm   | dB    | Detector | Comment |
| 1   | *   | 1908.775 | -16.67        | 40.02          | 23.35       | 33.01 | -9.66 | peak     |         |

## REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

|              |                          |              |               |
|--------------|--------------------------|--------------|---------------|
| Test Mode    | LTE Band 2_Link CH 18900 | Tested Date  | 2019/10/28~29 |
| Test Voltage | DC 60V                   | Polarization | Vertical      |

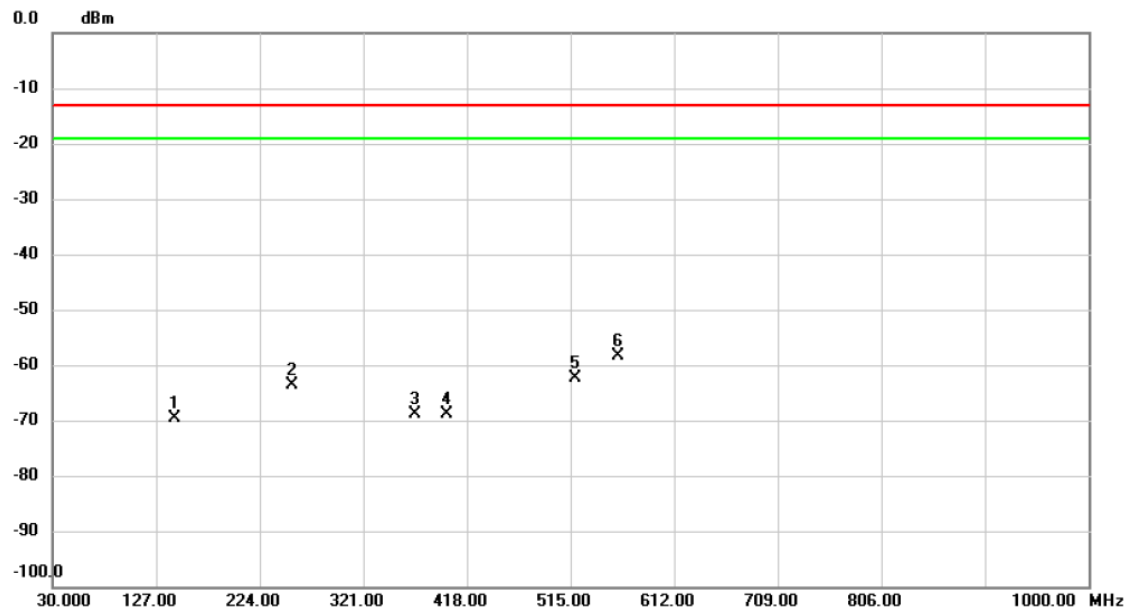


| No. | Mk. | Freq.    | Reading Level | Correct Factor | Measurement | Limit  | Over   |          |         |
|-----|-----|----------|---------------|----------------|-------------|--------|--------|----------|---------|
|     |     | MHz      | dBm           | dB             | dBm         | dBm    | dB     | Detector | Comment |
| 1   |     | 167.7400 | -65.31        | 4.93           | -60.38      | -13.00 | -47.38 | peak     |         |
| 2   |     | 224.0000 | -64.94        | -0.34          | -65.28      | -13.00 | -52.28 | peak     |         |
| 3   |     | 254.0700 | -63.37        | -1.02          | -64.39      | -13.00 | -51.39 | peak     |         |
| 4   |     | 280.2600 | -66.05        | -0.98          | -67.03      | -13.00 | -54.03 | peak     |         |
| 5   |     | 519.8500 | -65.23        | 3.17           | -62.06      | -13.00 | -49.06 | peak     |         |
| 6   | *   | 559.6200 | -56.76        | 5.43           | -51.33      | -13.00 | -38.33 | peak     |         |

## REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

|              |                          |              |               |
|--------------|--------------------------|--------------|---------------|
| Test Mode    | LTE Band 2_Link CH 18900 | Tested Date  | 2019/10/28~29 |
| Test Voltage | DC 60V                   | Polarization | Horizontal    |

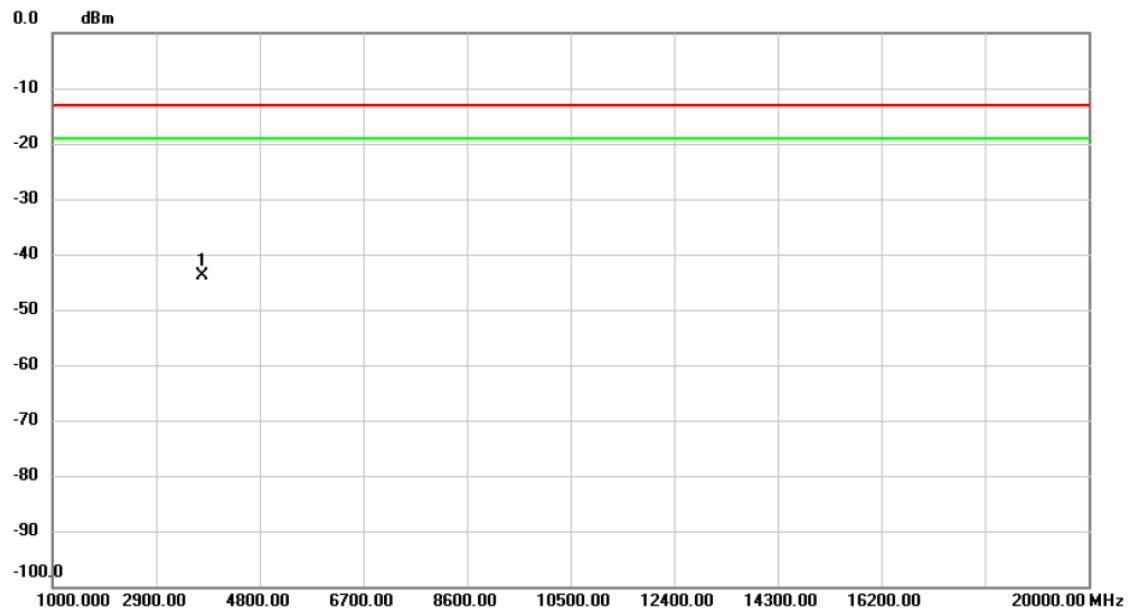


| No. | Mk. | Freq.    | Reading Level | Correct Factor | Measurement | Limit  | Over   | Detector | Comment |
|-----|-----|----------|---------------|----------------|-------------|--------|--------|----------|---------|
|     |     | MHz      | dBm           | dB             | dBm         | dBm    | dB     |          |         |
| 1   |     | 144.4600 | -68.65        | -0.90          | -69.55      | -13.00 | -56.55 | peak     |         |
| 2   |     | 254.0700 | -58.05        | -5.64          | -63.69      | -13.00 | -50.69 | peak     |         |
| 3   |     | 369.5000 | -68.77        | -0.07          | -68.84      | -13.00 | -55.84 | peak     |         |
| 4   |     | 399.5700 | -69.45        | 0.47           | -68.98      | -13.00 | -55.98 | peak     |         |
| 5   |     | 519.8500 | -63.71        | 1.24           | -62.47      | -13.00 | -49.47 | peak     |         |
| 6   | *   | 559.6200 | -60.34        | 1.92           | -58.42      | -13.00 | -45.42 | peak     |         |

## REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

|              |                          |              |               |
|--------------|--------------------------|--------------|---------------|
| Test Mode    | LTE Band 2_Link CH 18900 | Tested Date  | 2019/10/28~29 |
| Test Voltage | DC 60V                   | Polarization | Vertical      |

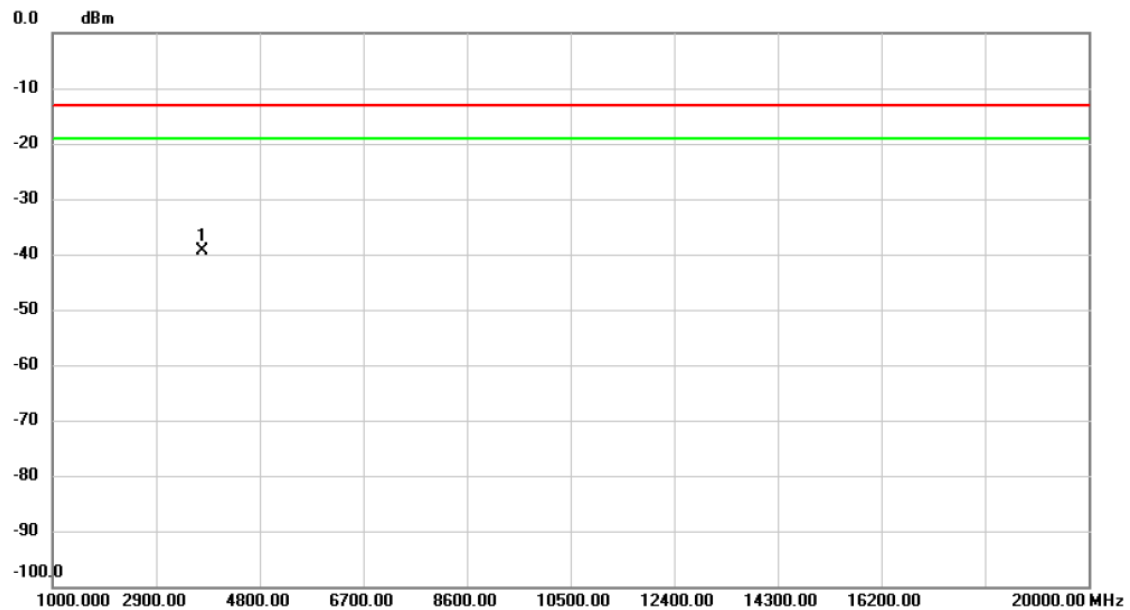


| No. | Mk. | Freq.    | Reading Level | Correct Factor | Measurement | Limit  | Over   |          |         |
|-----|-----|----------|---------------|----------------|-------------|--------|--------|----------|---------|
|     |     | MHz      | dBm           | dB             | dBm         | dBm    | dB     | Detector | Comment |
| 1   | *   | 3742.175 | -43.90        | -0.06          | -43.96      | -13.00 | -30.96 | peak     |         |

## REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

|              |                          |              |               |
|--------------|--------------------------|--------------|---------------|
| Test Mode    | LTE Band 2_Link CH 18900 | Tested Date  | 2019/10/28~29 |
| Test Voltage | DC 60V                   | Polarization | Horizontal    |

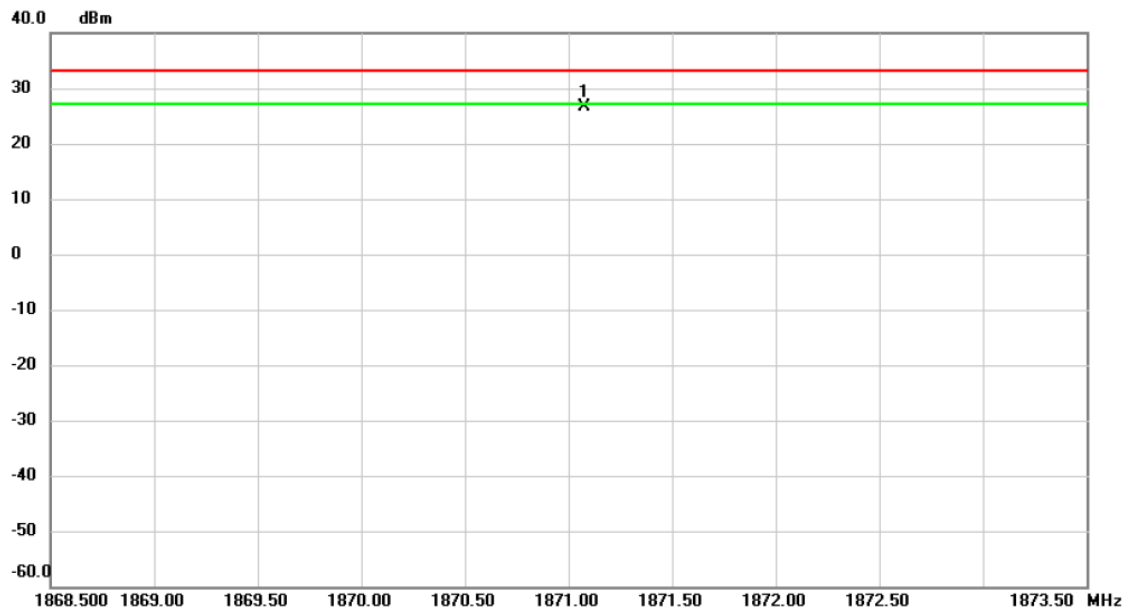


| No. | Mk. | Freq.    | Reading Level | Correct Factor | Measurement | Limit  | Over   |          |         |
|-----|-----|----------|---------------|----------------|-------------|--------|--------|----------|---------|
|     |     | MHz      | dBm           | dB             | dBm         | dBm    | dB     | Detector | Comment |
| 1   | *   | 3742.165 | -39.12        | -0.23          | -39.35      | -13.00 | -26.35 | peak     |         |

## REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

|              |                          |              |               |
|--------------|--------------------------|--------------|---------------|
| Test Mode    | LTE Band 2_Link CH 18900 | Tested Date  | 2019/10/28~29 |
| Test Voltage | DC 60V                   | Polarization | Vertical      |

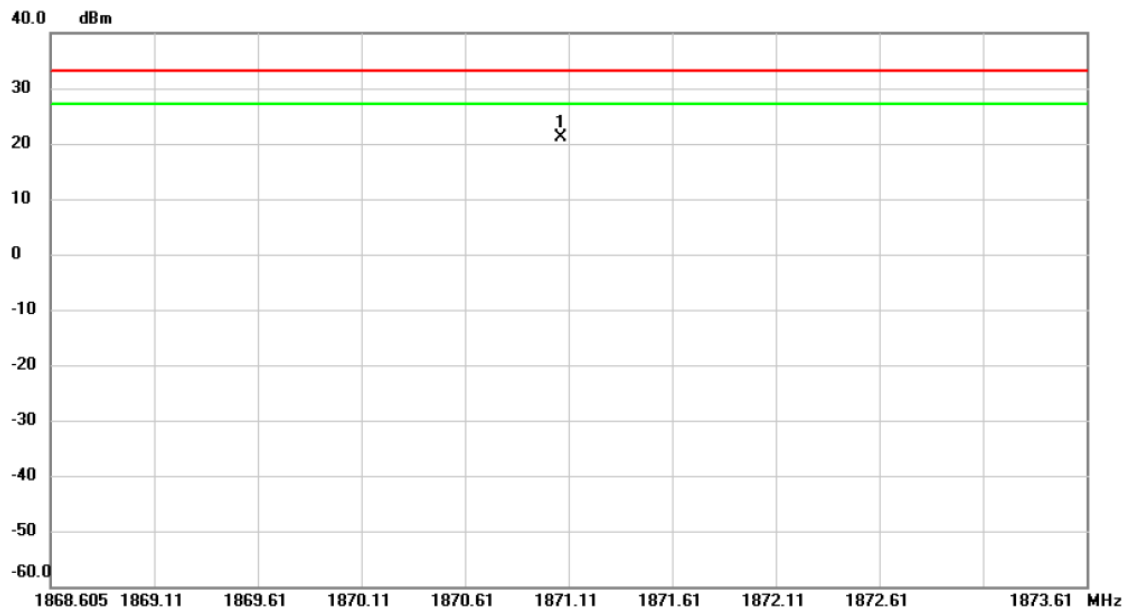


| No. | Mk. | Freq.    | Reading Level | Correct Factor | Measurement | Limit | Over  |          |         |
|-----|-----|----------|---------------|----------------|-------------|-------|-------|----------|---------|
|     |     | MHz      | dBm           | dB             | dBm         | dBm   | dB    | Detector | Comment |
| 1   | *   | 1871.075 | -12.75        | 39.28          | 26.53       | 33.01 | -6.48 | peak     |         |

## REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.

|              |                          |              |               |
|--------------|--------------------------|--------------|---------------|
| Test Mode    | LTE Band 2_Link CH 18900 | Tested Date  | 2019/10/28~29 |
| Test Voltage | DC 60V                   | Polarization | Horizontal    |



| No. | Mk. | Freq.    | Reading Level | Correct Factor | Measurement | Limit | Over   |          |         |
|-----|-----|----------|---------------|----------------|-------------|-------|--------|----------|---------|
|     |     | MHz      | dBm           | dB             | dBm         | dBm   | dB     | Detector | Comment |
| 1   | *   | 1871.065 | -18.82        | 39.87          | 21.05       | 33.01 | -11.96 | peak     |         |

# REMARKS:

- (1) Measurement Value = Reading Level + Correct Factor.
- (2) Margin Level = Measurement Value - Limit Value.