

# FCC TEST REPORT

## (PART 24)

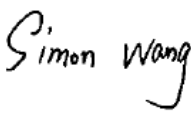
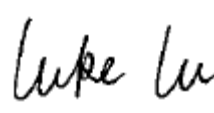
|            |                                                 |
|------------|-------------------------------------------------|
| Applicant: | Continental Automotive Systems, Inc.            |
| Address:   | 21440 W Lake Cook Rd., Deer Park, IL 60010, USA |

|                           |                                                 |
|---------------------------|-------------------------------------------------|
| Manufacturer or Supplier: | Continental Automotive Systems, Inc.            |
| Address:                  | 21440 W Lake Cook Rd., Deer Park, IL 60010, USA |
| Product:                  | Module                                          |
| Brand Name:               | Continental                                     |
| Model Name:               | FE5NAR110, FE5NAR111                            |
| FCC ID:                   | LHJ-FE5NAR110                                   |
| Date of tests:            | May. 01, 2024 ~ Jun. 17, 2024                   |

The tests have been carried out according to the requirements of the following standard:

☒ **FCC PART 24, Subpart E** ☒ **FCC PART 2**  
☒ **ANSI/TIA/EIA-603-D** ☒ **ANSI/TIA/EIA-603-E** ☒ **ANSI C63.26-2015**

**CONCLUSION:** The submitted sample was found to COMPLY with the test requirement

|                                                                                     |                                                                                      |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Prepared by Simon Wang<br>Engineer / Mobile Department                              | Approved by Luke Lu<br>Manager / Mobile Department                                   |
|  |  |
| Date: Jun. 17, 2024                                                                 | Date: Jun. 17, 2024                                                                  |

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## RELEASE CONTROL RECORD

| ISSUE NO.          | REASON FOR CHANGE | DATE ISSUED   |
|--------------------|-------------------|---------------|
| W7L-240430W002RF03 | Original release  | Jun. 17, 2024 |

## 1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: FCC Part 24 & Part 2 |                                     |            |
|----------------------------------------|-------------------------------------|------------|
| STANDARD SECTION                       | TEST TYPE                           | RESULT     |
| §2.1046                                | Conducted Output Power              | Compliance |
| §24.232(c)                             | Equivalent Isotropic Radiated Power | Compliance |
| §2.1055<br>§24.235                     | Frequency Stability                 | Compliance |
| §2.1049                                | Occupied Bandwidth                  | Compliance |
| §24.232(d)                             | Peak to average ratio               | Compliance |
| §24.238(a)(b)                          | Band Edge Measurements              | Compliance |
| §2.1051<br>§24.238(a)(b)               | Conducted Spurious Emissions        | Compliance |
| §2.1053<br>§24.238(a)(b)               | Radiated Spurious Emissions         | Compliance |

### NOTE:

The worst-case scenario for all measurements is based on an engineering evaluation made on different modulations. Then, QPSK and 16QAM were observed as the worst mode to LTE bands respectively and set for all conducted and radiated. Output power measurements were measured on QPSK, 16QAM, 64QAM modulations, and tests other than output power are performed only in worse-case QPSK and 16QAM modulations.

**1.1 MEASUREMENT UNCERTAINTY**

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

| MEASUREMENT                                      | UNCERTAINTY           |
|--------------------------------------------------|-----------------------|
| Frequency Stability                              | $\pm 76.97\text{Hz}$  |
| Radiated emissions (9KHz~30MHz)                  | $\pm 2.68\text{dB}$   |
| Radiated emissions & Radiated Power (30MHz~1GHz) | $\pm 4.98\text{dB}$   |
| Radiated emissions & Radiated Power (1GHz ~6GHz) | $\pm 4.70\text{dB}$   |
| Radiated emissions (6GHz ~18GHz)                 | $\pm 4.60\text{dB}$   |
| Radiated emissions (18GHz ~40GHz)                | $\pm 4.12\text{dB}$   |
| Conducted emissions                              | $\pm 4.01\text{dB}$   |
| Occupied Channel Bandwidth                       | $\pm 43.58\text{KHz}$ |
| Conducted Output power                           | $\pm 2.06\text{dB}$   |
| Band Edge Measurements                           | $\pm 4.70\text{dB}$   |
| Peak to average ratio                            | $\pm 0.76\text{dB}$   |

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

**1.2 TEST SITE AND INSTRUMENTS**

| Equipment                                   | Manufacturer      | Model No.                       | Serial No.                          | Last Cal.  | Next Cal.  |
|---------------------------------------------|-------------------|---------------------------------|-------------------------------------|------------|------------|
| MXE EMI Receiver                            | KEYSIGHT          | N9038A-544                      | MY54450026                          | Mar. 28,24 | Mar. 27,25 |
| EXA Signal Analyzer                         | KEYSIGHT          | N9010A-544                      | MY54510355                          | May.10,23  | May.09,24  |
| EXA Signal Analyzer                         | KEYSIGHT          | N9010A-544                      | MY54510355                          | May.09,24  | May.08,25  |
| Loop Antenna                                | Schwarzbeck       | FMZB 1519B                      | 00173                               | Sep.03,23  | Sep.02,24  |
| Bilog Antenna                               | ETS-LINDGRE<br>N  | 3143B                           | 00161965                            | Feb. 18,24 | Feb. 17,25 |
| Horn Antenna                                | ETS-LINDGRE<br>N  | 3117                            | 00168692                            | Feb. 18,24 | Feb. 17,25 |
| Horn Antenna<br>(18GHz-40GHz)               | N/A               | QWH-SL-18-40-K-<br>SG/QMS-00361 | 15433                               | Sep.04, 23 | Sep.03, 24 |
| Radio Communication<br>Analyzer             | ANRITSU           | MT8820C                         | 6201465426                          | Feb. 14,24 | Feb. 13,25 |
| Signal Pre-Amplifier                        | EMSI              | EMC 9135                        | 980249                              | May. 06,23 | May. 05,24 |
| Signal Pre-Amplifier                        | EMSI              | EMC 9135                        | 980249                              | May. 05,24 | May. 04,25 |
| Signal Pre-Amplifier                        | EMSI              | EMC 012645B                     | 980257                              | May.10,23  | May.09,24  |
| Signal Pre-Amplifier                        | EMSI              | EMC 012645B                     | 980257                              | May.09,24  | May.08,25  |
| Signal Pre-Amplifier                        | EMSI              | EMC 184045B                     | 980259                              | Feb. 17,24 | Feb.16,25  |
| 3m<br>Semi-anechoic<br>Chamber              | ETS-LINDGRE<br>N  | 9m*6m*6m                        | Euroshieldpn-<br>CT0001143-121<br>6 | Nov. 14,23 | Nov. 13,26 |
| Test Software                               | E3                | V 9.160323                      | N/A                                 | N/A        | N/A        |
| Test Software                               | JS1120            | 3.1.36                          | N/A                                 | N/A        | N/A        |
| 10dB Attenuator                             | JFW/USA           | 50HF-010-SMA                    | 50HF-010-SMA                        | May. 06,23 | May. 05,24 |
| 10dB Attenuator                             | JFW/USA           | 50HF-010-SMA                    | 50HF-010-SMA                        | May. 05,24 | May. 04,25 |
| Power Meter                                 | Anritsu           | ML2495A                         | 1506002                             | Feb. 14,24 | Feb. 13,25 |
| Power Sensor                                | Anritsu           | MA2411B                         | 1339352                             | Feb. 14,24 | Feb. 13,25 |
| Temperature Chamber                         | ESPEC             | SH-242                          | 93000855                            | May. 06,23 | May. 05,24 |
| Temperature Chamber                         | ESPEC             | SH-242                          | 93000855                            | May. 05,24 | May. 04,25 |
| MXG<br>Analog Microwave<br>Signal Generator | KEYSIGHT          | N5183A                          | MY50143024                          | Feb. 14,24 | Feb. 13,25 |
| Base station R&S<br>CMW500                  | Rohde&Schwa<br>rz | CMW500                          | 153085                              | May.10,23  | May.09,24  |
| Base station R&S<br>CMW500                  | Rohde&Schwa<br>rz | CMW500                          | 153085                              | May.09,24  | May.08,25  |
| DC Source                                   | Kikusui/JP        | PMX18-5A                        | N/A                                 | Aug. 11,23 | Aug. 10,24 |

- NOTE:** 1. The calibration interval of the above test instruments is 12 months or 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
2. The test was performed in 3m Semi-anechoic Chamber and RF Oven Room.
3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.
4. The FCC Site Registration No. is 525120; The Designation No. is CN1171.

## 2 GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

|                            |                                                            |                                 |
|----------------------------|------------------------------------------------------------|---------------------------------|
| <b>PRODUCT</b>             | Module                                                     |                                 |
| <b>BRAND NAME</b>          | Continental                                                |                                 |
| <b>MODEL NAME</b>          | FE5NAR110, FE5NAR111                                       |                                 |
| <b>NOMINAL VOLTAGE</b>     | DC4.0V                                                     |                                 |
| <b>MODULATION TYPE</b>     | <b>WCDMA:</b> BPSK, QPSK<br><b>LTE:</b> QPSK, 16QAM, 64QAM |                                 |
| <b>FREQUENCY RANGE</b>     | <b>WCDMA II</b>                                            | 1852.4MHz ~ 1907.6MHz           |
|                            | <b>LTE Band 2<br/>Channel Bandwidth: 1.4MHz</b>            | 1850.7MHz ~ 1909.3MHz           |
|                            | <b>LTE Band 2<br/>Channel Bandwidth: 3MHz</b>              | 1851.5MHz ~ 1908.5MHz           |
|                            | <b>LTE Band 2<br/>Channel Bandwidth: 5MHz</b>              | 1852.5MHz ~ 1907.5MHz           |
|                            | <b>LTE Band 2<br/>Channel Bandwidth: 10MHz</b>             | 1855.0MHz ~ 1905.0MHz           |
|                            | <b>LTE Band 2<br/>Channel Bandwidth: 15MHz</b>             | 1857.5MHz ~ 1902.5MHz           |
|                            | <b>LTE Band 2<br/>Channel Bandwidth: 20MHz</b>             | 1860.0MHz ~ 1900.0MHz           |
| <b>MAX. EIRP POWER</b>     | <b>WCDMA</b>                                               | 332.66mW                        |
|                            | <b>LTE Band 2<br/>Channel Bandwidth: 1.4MHz</b>            | 331.13mW                        |
|                            | <b>LTE Band 2<br/>Channel Bandwidth: 3MHz</b>              | 334.97mW                        |
|                            | <b>LTE Band 2<br/>Channel Bandwidth: 5MHz</b>              | 328.1mW                         |
|                            | <b>LTE Band 2<br/>Channel Bandwidth: 10MHz</b>             | 326.59mW                        |
|                            | <b>LTE Band 2<br/>Channel Bandwidth: 15MHz</b>             | 334.97mW                        |
|                            | <b>LTE Band 2<br/>Channel Bandwidth: 20MHz</b>             | 336.51mW                        |
| <b>EMISSION DESIGNATOR</b> | <b>WCDMA</b>                                               | 4M14F9W                         |
|                            | <b>LTE Band 2<br/>Channel Bandwidth: 1.4MHz</b>            | QPSK: 1M09G7D<br>16QAM: 1M10W7D |



|                            |                                                        |                                 |
|----------------------------|--------------------------------------------------------|---------------------------------|
|                            | <b>LTE Band 2</b><br><b>Channel Bandwidth: 3MHz</b>    | QPSK: 2M69G7D<br>16QAM: 2M70W7D |
|                            | <b>LTE Band 2</b><br><b>Channel Bandwidth: 5MHz</b>    | QPSK: 4M51G7D<br>16QAM: 4M51W7D |
|                            | <b>LTE Band 2</b><br><b>Channel Bandwidth: 10MHz</b>   | QPSK: 9M00G7D<br>16QAM: 8M97W7D |
|                            | <b>LTE Band 2</b><br><b>Channel Bandwidth: 15MHz</b>   | QPSK: 13M5G7D<br>16QAM: 13M5W7D |
|                            | <b>LTE Band 2</b><br><b>Channel Bandwidth: 20MHz</b>   | QPSK: 18M0G7D<br>16QAM: 17M9W7D |
| <b>ANTENNA TYPE</b>        | Monopole Antenna with 1.93dBi gain for WCDMA II/LTE B2 |                                 |
| <b>HW VERSION</b>          | P2.0                                                   |                                 |
| <b>SW VERSION</b>          | MODEM_GM_C3_3.0.2.24                                   |                                 |
| <b>I/O PORTS</b>           | Refer to user's manual                                 |                                 |
| <b>CABLE SUPPLIED</b>      | N/A                                                    |                                 |
| <b>EXTREME TEMPERATURE</b> | -40-85 °C                                              |                                 |
| <b>EXTREME VOLTAGE</b>     | 3.8V - 4.2V                                            |                                 |

**NOTE:**

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitter

| MODULATION MODE | TX FUNCTION |
|-----------------|-------------|
| WCDMA           | 1TX         |
| LTE             | 1TX         |

- For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
- Antenna gain and EUT conducted cable loss are provided by the customer, and the laboratory will record the results based on these items that involve these two parameters.

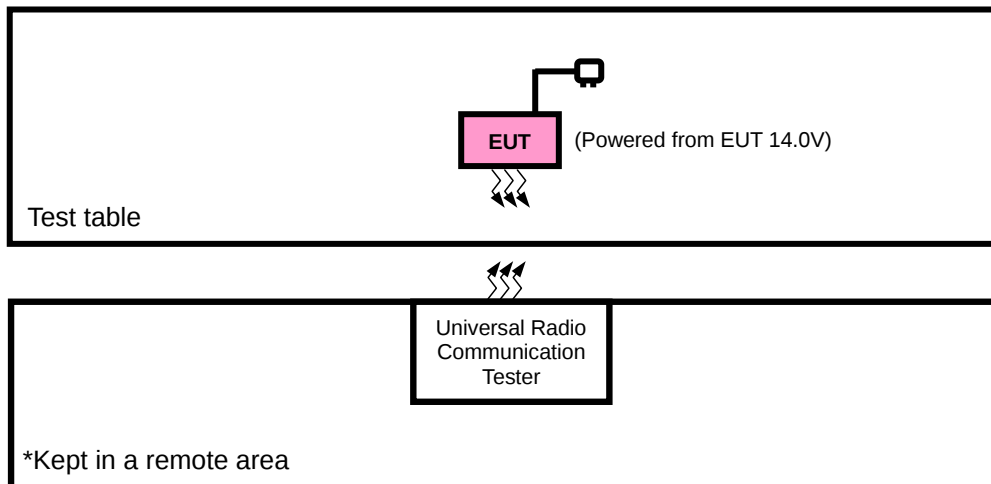
5. According to the information provided by the manufacturer, The difference between FE5NAR110, FE5NAR111 is as follows:

| Sample | HVIN/PMN  | 5G Bands NSA     | 5G Bands SA             | SA UL MIMO | LTE Bands                                            | UMTS    | GNSS   |
|--------|-----------|------------------|-------------------------|------------|------------------------------------------------------|---------|--------|
| 1      | FE5NAR110 | n2, n5, n66, n77 | n25, n41, n66, n71, n77 | n41, n77   | 2, 4, 5, 7, 12, 13, 14, 28A, 28B, 29Rx, 30Rx, 66, 71 | 2, 4, 5 | L1, L5 |
| 2      | FE5NAR111 | n2, n5, n66, n77 | n25, n41, n66, n71, n77 | n41, n77   | 2, 4, 5, 7, 12, 13, 14, 28A, 28B, 29Rx, 30Rx, 66, 71 | 2, 4, 5 | L1     |



## 2.2 CONFIGURATION OF SYSTEM UNDER TEST

### FOR RADIATION EMISSION TEST





## 2.3 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.

| NO. | PRODUCT | BRAND | MODEL NO. | SERIAL NO. | FCC ID |
|-----|---------|-------|-----------|------------|--------|
| 1   | N/A     | N/A   | N/A       | N/A        | N/A    |

| NO. | SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS |
|-----|-----------------------------------------------------|
| 1   | USB cable: Unshielded, Detachable 1.0m              |

## 2.4 TEST ITEM AND TEST CONFIGURATION

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports. The worst case in EIRP and radiated emission was found when positioned on X-plane for WCDMA/ LTE. Following channel(s) was (were) selected for the final test as listed below:

| EUT<br>CONFIGURE<br>MODE | DESCRIPTION                            |
|--------------------------|----------------------------------------|
| A                        | EUT + DC Source with WCDMA or LTE link |

### WCDMA MODE

| EUT<br>CONFIGURE<br>MODE | TEST ITEM             | AVAILABLE CHANNEL | TESTED CHANNEL   | MODE  |
|--------------------------|-----------------------|-------------------|------------------|-------|
| A                        | EIRP                  | 9262 to 9538      | 9262, 9400, 9538 | WCDMA |
| A                        | FREQUENCY STABILITY   | 9262 to 9538      | 9262, 9538       | WCDMA |
| A                        | OCCUPIED BANDWIDTH    | 9262 to 9538      | 9262, 9400, 9538 | WCDMA |
| A                        | PEAK TO AVERAGE RATIO | 9262 to 9538      | 9262, 9400, 9538 | WCDMA |
| A                        | BAND EDGE             | 9262 to 9538      | 9262, 9538       | WCDMA |
| A                        | CONDUCTED EMISSION    | 9262 to 9538      | 9262, 9400, 9538 | WCDMA |
| A                        | RADIATED EMISSION     | 9262 to 9538      | 9262, 9400, 9538 | WCDMA |



**LTE BAND 2**

| EUT CONFIGURE MODE | TEST ITEM             | AVAILABLE CHANNEL | TESTED CHANNEL      | CHANNEL BANDWIDTH | MODULATION          | MODE                 |
|--------------------|-----------------------|-------------------|---------------------|-------------------|---------------------|----------------------|
| A                  | EIRP                  | 18607 to 19193    | 18607, 18900, 19193 | 1.4MHz            | QPSK, 16QAM, 64QAM, | 1 RB / 0 RB Offset   |
|                    |                       | 18615 to 19185    | 18615, 18900, 19185 | 3MHz              | QPSK, 16QAM, 64QAM  | 1 RB / 0 RB Offset   |
|                    |                       | 18625 to 19175    | 18625, 18900, 19175 | 5MHz              | QPSK, 16QAM, 64QAM  | 1 RB / 0 RB Offset   |
|                    |                       | 18650 to 19150    | 18650, 18900, 19150 | 10MHz             | QPSK, 16QAM, 64QAM  | 1 RB / 0 RB Offset   |
|                    |                       | 18675 to 19125    | 18675, 18900, 19125 | 15MHz             | QPSK, 16QAM, 64QAM  | 1 RB / 0 RB Offset   |
|                    |                       | 18700 to 19100    | 18700, 18900, 19100 | 20MHz             | QPSK, 16QAM, 64QAM, | 1 RB / 0 RB Offset   |
| A                  | FREQUENCY STABILITY   | 18650 to 19150    | 18650, 19150        | 10MHz             | QPSK                | 1 RB / 0 RB Offset   |
| A                  | OCCUPIED BANDWIDTH    | 18607 to 19193    | 18607, 18900, 19193 | 1.4MHz            | QPSK,16QAM          | 6 RB / 0 RB Offset   |
|                    |                       | 18615 to 19185    | 18615, 18900, 19185 | 3MHz              | QPSK,16QAM          | 15 RB / 0 RB Offset  |
|                    |                       | 18625 to 19175    | 18625, 18900, 19175 | 5MHz              | QPSK,16QAM          | 25 RB / 0 RB Offset  |
|                    |                       | 18650 to 19150    | 18650, 18900, 19150 | 10MHz             | QPSK,16QAM          | 50 RB / 0 RB Offset  |
|                    |                       | 18675 to 19125    | 18675, 18900, 19125 | 15MHz             | QPSK,16QAM          | 75 RB / 0 RB Offset  |
|                    |                       | 18700 to 19100    | 18700, 18900, 19100 | 20MHz             | QPSK,16QAM          | 100 RB / 0 RB Offset |
| A                  | PEAK TO AVERAGE RATIO | 18700 to 19100    | 18700, 18900, 19100 | 20MHz             | QPSK                | 1 RB / 0 RB Offset   |

|   |                    |                |                     |        |      |                     |
|---|--------------------|----------------|---------------------|--------|------|---------------------|
| A | BAND EDGE          | 18607 to 19193 | 18607               | 1.4MHz | QPSK | 1 RB / 0 RB Offset  |
|   |                    |                | 19193               | 1.4MHz | QPSK | 6 RB / 0 RB Offset  |
|   |                    | 18615 to 19185 | 18615               | 3MHz   | QPSK | 1 RB / 5 RB Offset  |
|   |                    |                | 19185               | 3MHz   | QPSK | 6 RB / 0 RB Offset  |
|   |                    | 18625 to 19175 | 18625               | 5MHz   | QPSK | 1 RB / 0 RB Offset  |
|   |                    |                | 19175               | 5MHz   | QPSK | 15 RB / 0 RB Offset |
|   |                    | 18650 to 19150 | 18650               | 10MHz  | QPSK | 1 RB / 14 RB Offset |
|   |                    |                | 19150               | 10MHz  | QPSK | 15 RB / 0 RB Offset |
|   |                    | 18675 to 19125 | 18675               | 15MHz  | QPSK | 1 RB / 0 RB Offset  |
|   |                    |                | 19125               | 15MHz  | QPSK | 25 RB / 0 RB Offset |
|   |                    | 18700 to 19100 | 18700               | 20MHz  | QPSK | 1 RB / 24 RB Offset |
|   |                    |                | 19100               | 20MHz  | QPSK | 25 RB / 0 RB Offset |
| A | CONDCUDED EMISSION | 18607 to 19193 | 18607, 18900, 19193 | 1.4MHz | QPSK | 1 RB / 0 RB Offset  |
|   |                    | 18615 to 19185 | 18615, 18900, 19185 | 3MHz   | QPSK | 1 RB / 0 RB Offset  |
|   |                    | 18625 to 19175 | 18625, 18900, 19175 | 5MHz   | QPSK | 1 RB / 0 RB Offset  |
|   |                    | 18650 to 19150 | 18650, 18900, 19150 | 10MHz  | QPSK | 1 RB / 0 RB Offset  |
|   |                    | 18675 to 19125 | 18675, 18900, 19125 | 15MHz  | QPSK | 1 RB / 0 RB Offset  |
|   |                    | 18700 to 19100 | 18700, 18900, 19100 | 20MHz  | QPSK | 1 RB / 0 RB Offset  |
| A | RADIATED EMISSION  | 18607 to 19193 | 18900               | 1.4MHz | QPSK | 1 RB / 0 RB Offset  |
|   |                    | 18615 to 19185 | 18900               | 3MHz   | QPSK | 1 RB / 0 RB Offset  |
|   |                    | 18625 to 19175 | 18900               | 5MHz   | QPSK | 1 RB / 0 RB Offset  |
|   |                    | 18650 to 19150 | 18900               | 10MHz  | QPSK | 1 RB / 0 RB Offset  |
|   |                    | 18675 to 19125 | 18900               | 15MHz  | QPSK | 1 RB / 0 RB Offset  |
|   |                    | 18700 to 19100 | 18700, 18900, 19100 | 20MHz  | QPSK | 1 RB / 0 RB Offset  |

**Note:** This device was tested under all bandwidths, RB configurations and modulations. The worst case was found in QPSK modulation.

#### **TEST CONDITION:**

| TEST ITEM             | ENVIRONMENTAL CONDITIONS | INPUT POWER     | TESTED BY |
|-----------------------|--------------------------|-----------------|-----------|
| EIRP                  | 25deg. C, 57%RH          | DC 14.0V        | Jace Hu   |
| FREQUENCY STABILITY   | 23deg. C, 61%RH          | DC 3.8V/4V/4.2V | James Fu  |
| OCCUPIED BANDWIDTH    | 23deg. C, 61%RH          | DC 4.0V         | James Fu  |
| PEAK TO AVERAGE RATIO | 23deg. C, 61%RH          | DC 4.0V         | James Fu  |
| BAND EDGE             | 23deg. C, 61%RH          | DC 4.0V         | James Fu  |
| CONDUCTED EMISSION    | 23deg. C, 61%RH          | DC 4.0V         | James Fu  |
| RADIATED EMISSION     | 23deg. C, 70%RH          | DC 14.0V        | Jace Hu   |

## **2.5 EUT OPERATING CONDITIONS**

The EUT makes a call to the communication simulator. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency.

## **2.6 GENERAL DESCRIPTION OF APPLIED STANDARDS**

The EUT is a RF product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

**FCC 47 CFR Part 2**

**FCC 47 CFR Part 24**

**KDB 971168 D01 Power Meas License Digital Systems v03r01**

**ANSI/TIA/EIA-603-D**

**ANSI/TIA/EIA-603-E**

**ANSI C63.26-2015**

**NOTE:** All test items have been performed and recorded as per the above standards.

## 3 TEST TYPES AND RESULTS

### 3.1 OUTPUT POWER MEASUREMENT

#### 3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

Mobile and portable stations are limited to 2 watts EIRP.

#### 3.1.2 TEST PROCEDURES

##### EIRP MEASUREMENT:

Per KDB 971168 D01 Power Meas License Digital Systems v03r01 or subclause 5.2.5.5 of ANSI C63.26-2015, the relevant equation for determining the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

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

Where:

ERP or EIRP = effective radiated power or equivalent isotopically radiated power, respectively

(expressed in the same units as  $P_{\text{Meas}}$ , typically dBW or dBm);

$P_{\text{Meas}}$  = measured transmitter output power or PSD, in dBm or dBW;

$G_T$  = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);

$L_C$  = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

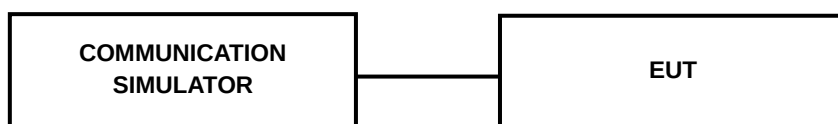
##### CONDUCTED POWER MEASUREMENT:

The EUT was set up for the maximum power with WCDMA 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

**EIRP / ERP Measurement:**

**CONDUCTED POWER MEASUREMENT:**



### 3.1.4 TEST RESULTS

#### CONDUCTED OUTPUT POWER (dBm)

| Band               | WCDMA II |       |        |
|--------------------|----------|-------|--------|
| TX Channel         | 9262     | 9400  | 9538   |
| Rx Channel         | 9662     | 9800  | 9938   |
| Frequency (MHz)    | 1852.4   | 1880  | 1907.6 |
| RMC 12.2K          | 23.29    | 23.27 | 23.15  |
| HSDPA Subtest-1    | 22.19    | 22.07 | 21.99  |
| HSDPA Subtest-2    | 22.00    | 22.06 | 21.98  |
| HSDPA Subtest-3    | 21.64    | 21.65 | 21.49  |
| HSDPA Subtest-4    | 21.54    | 21.63 | 21.44  |
| DC-HSDPA Subtest-1 | 22.00    | 21.98 | 21.95  |
| DC-HSDPA Subtest-2 | 21.97    | 21.96 | 21.91  |
| DC-HSDPA Subtest-3 | 21.48    | 21.59 | 21.46  |
| DC-HSDPA Subtest-4 | 21.41    | 21.53 | 21.45  |
| HSUPA Subtest-1    | 22.05    | 22.07 | 21.95  |
| HSUPA Subtest-2    | 19.94    | 20.06 | 19.95  |
| HSUPA Subtest-3    | 21.13    | 21.04 | 20.98  |
| HSUPA Subtest-4    | 20.00    | 19.97 | 19.96  |
| HSUPA Subtest-5    | 21.94    | 22.02 | 21.92  |

## LTE Band 2

| LTE Band 2 |            |                 |           |              |       |       |
|------------|------------|-----------------|-----------|--------------|-------|-------|
| BW         | Modulation | RB Size         | RB Offset | Low          | Mid   | High  |
|            |            | Channel         |           | 18700        | 18900 | 19100 |
|            |            | Frequency (MHz) |           | 1860         | 1880  | 1900  |
| 20M        | QPSK       | 1               | 0         | <b>23.34</b> | 23.16 | 23.14 |
|            |            | 1               | 50        | 23.13        | 23.11 | 22.94 |
|            |            | 1               | 99        | 23.04        | 22.98 | 22.94 |
|            |            | 50              | 0         | 22.13        | 22.10 | 22.02 |
|            |            | 50              | 25        | 22.28        | 22.14 | 22.09 |
|            |            | 50              | 50        | 22.26        | 22.17 | 21.98 |
|            |            | 100             | 0         | 22.20        | 22.20 | 22.10 |
|            | 16QAM      | 1               | 0         | 22.56        | 22.43 | 22.28 |
|            |            | 1               | 50        | 22.33        | 22.25 | 22.23 |
|            |            | 1               | 99        | 22.37        | 22.24 | 22.08 |
|            |            | 50              | 0         | 21.29        | 21.07 | 21.01 |
|            |            | 50              | 25        | 21.32        | 21.11 | 21.05 |
|            |            | 50              | 50        | 21.19        | 21.19 | 21.02 |
|            |            | 100             | 0         | 21.24        | 21.19 | 21.05 |
|            | 64QAM      | 1               | 0         | 21.50        | 21.43 | 21.46 |
|            |            | 1               | 50        | 21.34        | 21.27 | 21.24 |
|            |            | 1               | 99        | 21.40        | 21.26 | 21.16 |
|            |            | 50              | 0         | 20.29        | 20.10 | 20.11 |
|            |            | 50              | 25        | 20.33        | 20.15 | 20.14 |
|            |            | 50              | 50        | 20.31        | 20.16 | 20.13 |
|            |            | 100             | 0         | 20.26        | 20.11 | 20.06 |

| BW  | Modulation | Channel         |    | 18675  | 18900 | 19125  |
|-----|------------|-----------------|----|--------|-------|--------|
|     |            | Frequency (MHz) |    | 1857.5 | 1880  | 1902.5 |
| 15M | QPSK       | 1               | 0  | 23.32  | 23.03 | 23.12  |
|     |            | 1               | 37 | 23.02  | 22.98 | 22.89  |
|     |            | 1               | 74 | 22.98  | 22.86 | 22.84  |
|     |            | 36              | 0  | 22.04  | 22.07 | 21.91  |
|     |            | 36              | 19 | 22.18  | 22.03 | 22.08  |
|     |            | 36              | 39 | 22.23  | 22.03 | 21.96  |
|     |            | 75              | 0  | 22.11  | 22.19 | 22.08  |
|     | 16QAM      | 1               | 0  | 22.49  | 22.29 | 22.13  |
|     |            | 1               | 37 | 22.28  | 22.16 | 22.08  |
|     |            | 1               | 74 | 22.25  | 22.17 | 22.07  |
|     |            | 36              | 0  | 21.21  | 21.02 | 20.95  |
|     |            | 36              | 19 | 21.27  | 20.96 | 21.02  |
|     |            | 36              | 39 | 21.12  | 21.05 | 20.87  |
|     |            | 75              | 0  | 21.14  | 21.07 | 21.02  |
|     | 64QAM      | 1               | 0  | 21.49  | 21.39 | 21.37  |
|     |            | 1               | 37 | 21.27  | 21.19 | 21.10  |
|     |            | 1               | 74 | 21.29  | 21.18 | 21.03  |
|     |            | 36              | 0  | 20.25  | 20.01 | 20.04  |
|     |            | 36              | 19 | 20.21  | 20.01 | 20.03  |
|     |            | 36              | 39 | 20.18  | 20.08 | 20.11  |
|     |            | 75              | 0  | 20.12  | 20.02 | 20.05  |

| BW  | Modulation | Channel         |    | 18650 | 18900 | 19150 |
|-----|------------|-----------------|----|-------|-------|-------|
|     |            | Frequency (MHz) |    | 1855  | 1880  | 1905  |
| 10M | QPSK       | 1               | 0  | 23.21 | 23.08 | 23.10 |
|     |            | 1               | 24 | 23.02 | 22.96 | 22.80 |
|     |            | 1               | 49 | 22.94 | 22.94 | 22.83 |
|     |            | 25              | 0  | 22.03 | 22.06 | 21.92 |
|     |            | 25              | 12 | 22.13 | 22.11 | 22.02 |
|     |            | 25              | 25 | 22.18 | 22.13 | 21.87 |
|     |            | 50              | 0  | 22.09 | 22.09 | 21.95 |
|     | 16QAM      | 1               | 0  | 22.51 | 22.30 | 22.13 |
|     |            | 1               | 24 | 22.19 | 22.11 | 22.20 |
|     |            | 1               | 49 | 22.34 | 22.14 | 22.06 |
|     |            | 25              | 0  | 21.23 | 21.00 | 20.97 |
|     |            | 25              | 12 | 21.29 | 21.01 | 20.99 |
|     |            | 25              | 25 | 21.07 | 21.14 | 20.96 |
|     |            | 50              | 0  | 21.22 | 21.05 | 20.99 |
|     | 64QAM      | 1               | 0  | 21.35 | 21.28 | 21.43 |
|     |            | 1               | 24 | 21.20 | 21.23 | 21.15 |
|     |            | 1               | 49 | 21.28 | 21.20 | 21.01 |
|     |            | 25              | 0  | 20.15 | 19.99 | 20.02 |
|     |            | 25              | 12 | 20.26 | 20.02 | 20.05 |
|     |            | 25              | 25 | 20.28 | 20.04 | 20.11 |
|     |            | 50              | 0  | 20.25 | 20.03 | 20.05 |

| BW | Modulation | Channel         |    | 18625  | 18900 | 19175  |
|----|------------|-----------------|----|--------|-------|--------|
|    |            | Frequency (MHz) |    | 1852.5 | 1880  | 1907.5 |
| 5M | QPSK       | 1               | 0  | 23.23  | 23.08 | 23.08  |
|    |            | 1               | 12 | 23.02  | 23.04 | 22.89  |
|    |            | 1               | 24 | 22.94  | 22.95 | 22.81  |
|    |            | 12              | 0  | 22.05  | 22.02 | 21.99  |
|    |            | 12              | 6  | 22.13  | 22.08 | 21.98  |
|    |            | 12              | 13 | 22.14  | 22.11 | 21.87  |
|    |            | 25              | 0  | 22.18  | 22.15 | 22.03  |
|    | 16QAM      | 1               | 0  | 22.55  | 22.35 | 22.22  |
|    |            | 1               | 12 | 22.32  | 22.15 | 22.16  |
|    |            | 1               | 24 | 22.30  | 22.22 | 22.02  |
|    |            | 12              | 0  | 21.28  | 20.98 | 20.91  |
|    |            | 12              | 6  | 21.19  | 20.98 | 21.01  |
|    |            | 12              | 13 | 21.15  | 21.08 | 20.90  |
|    |            | 25              | 0  | 21.16  | 21.13 | 20.92  |
|    | 64QAM      | 1               | 0  | 21.43  | 21.37 | 21.31  |
|    |            | 1               | 12 | 21.24  | 21.26 | 21.19  |
|    |            | 1               | 24 | 21.33  | 21.18 | 21.14  |
|    |            | 12              | 0  | 20.24  | 20.02 | 20.00  |
|    |            | 12              | 6  | 20.25  | 20.08 | 20.11  |
|    |            | 12              | 13 | 20.28  | 20.12 | 19.99  |
|    |            | 25              | 0  | 20.17  | 20.03 | 19.92  |

| BW | Modulation | Channel         |    | 18615  | 18900 | 19185  |
|----|------------|-----------------|----|--------|-------|--------|
|    |            | Frequency (MHz) |    | 1851.5 | 1880  | 1908.5 |
| 3M | QPSK       | 1               | 0  | 23.32  | 23.05 | 23.04  |
|    |            | 1               | 7  | 23.06  | 22.97 | 22.81  |
|    |            | 1               | 14 | 23.00  | 22.96 | 22.89  |
|    |            | 8               | 0  | 22.11  | 22.00 | 21.92  |
|    |            | 8               | 3  | 22.23  | 22.00 | 22.05  |
|    |            | 8               | 7  | 22.19  | 22.05 | 21.83  |
|    |            | 15              | 0  | 22.13  | 22.10 | 21.99  |
|    | 16QAM      | 1               | 0  | 22.47  | 22.31 | 22.20  |
|    |            | 1               | 7  | 22.26  | 22.11 | 22.15  |
|    |            | 1               | 14 | 22.29  | 22.09 | 22.01  |
|    |            | 8               | 0  | 21.14  | 20.92 | 21.00  |
|    |            | 8               | 3  | 21.20  | 21.07 | 20.91  |
|    |            | 8               | 7  | 21.07  | 21.18 | 21.01  |
|    |            | 15              | 0  | 21.20  | 21.07 | 20.97  |
|    | 64QAM      | 1               | 0  | 21.49  | 21.37 | 21.41  |
|    |            | 1               | 7  | 21.26  | 21.16 | 21.20  |
|    |            | 1               | 14 | 21.25  | 21.14 | 21.02  |
|    |            | 8               | 0  | 20.26  | 20.03 | 20.04  |
|    |            | 8               | 3  | 20.28  | 20.00 | 20.09  |
|    |            | 8               | 7  | 20.23  | 20.08 | 20.06  |
|    |            | 15              | 0  | 20.22  | 20.02 | 19.97  |

| BW   | Modulation | Channel         |   | 18607  | 18900 | 19193  |
|------|------------|-----------------|---|--------|-------|--------|
|      |            | Frequency (MHz) |   | 1850.7 | 1880  | 1909.3 |
| 1.4M | QPSK       | 1               | 0 | 23.24  | 23.03 | 23.13  |
|      |            | 1               | 2 | 23.09  | 23.05 | 22.88  |
|      |            | 1               | 5 | 23.01  | 22.90 | 22.93  |
|      |            | 3               | 0 | 23.02  | 22.95 | 22.99  |
|      |            | 3               | 1 | 23.27  | 23.09 | 23.08  |
|      |            | 3               | 3 | 23.23  | 23.09 | 22.83  |
|      |            | 6               | 0 | 22.15  | 22.14 | 21.97  |
|      | 16QAM      | 1               | 0 | 22.43  | 22.29 | 22.16  |
|      |            | 1               | 2 | 22.25  | 22.23 | 22.12  |
|      |            | 1               | 5 | 22.29  | 22.15 | 22.06  |
|      |            | 3               | 0 | 22.14  | 22.03 | 21.91  |
|      |            | 3               | 1 | 22.26  | 22.01 | 21.99  |
|      |            | 3               | 3 | 22.10  | 22.15 | 21.95  |
|      |            | 6               | 0 | 21.12  | 21.18 | 20.92  |
|      | 64QAM      | 1               | 0 | 21.36  | 21.38 | 21.32  |
|      |            | 1               | 2 | 21.19  | 21.14 | 21.09  |
|      |            | 1               | 5 | 21.31  | 21.25 | 21.07  |
|      |            | 3               | 0 | 21.15  | 20.98 | 21.08  |
|      |            | 3               | 1 | 21.30  | 21.00 | 21.11  |
|      |            | 3               | 3 | 21.23  | 21.11 | 20.99  |
|      |            | 6               | 0 | 20.13  | 20.09 | 20.04  |

**EIRP**

**WCDMA II**

| WCDMA II |                 |                       |            |            |           |           |
|----------|-----------------|-----------------------|------------|------------|-----------|-----------|
| Channel  | Frequency (MHz) | Conducted Power (dBm) | Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (W) |
| 9262     | 1852.4          | 23.29                 | 1.93       | 25.22      | 332.66    | 2         |
| 9400     | 1880            | 23.27                 | 1.93       | 25.2       | 331.13    | 2         |
| 9538     | 1907.6          | 23.15                 | 1.93       | 25.08      | 322.11    | 2         |

**LTE BAND 2**

| LTE B2 1.4M QPSK |                 |                       |            |            |           |           |
|------------------|-----------------|-----------------------|------------|------------|-----------|-----------|
| Channel          | Frequency (MHz) | Conducted Power (dBm) | Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (W) |
| 18607            | 1850.7          | 23.27                 | 1.93       | 25.2       | 331.13    | 2         |
| 18900            | 1880            | 23.09                 | 1.93       | 25.02      | 317.69    | 2         |
| 19193            | 1909.3          | 23.13                 | 1.93       | 25.06      | 320.63    | 2         |

| LTE B2 1.4M 16QAM |                 |                       |            |            |           |           |
|-------------------|-----------------|-----------------------|------------|------------|-----------|-----------|
| Channel           | Frequency (MHz) | Conducted Power (dBm) | Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (W) |
| 18607             | 1850.7          | 22.43                 | 1.93       | 24.36      | 272.9     | 2         |
| 18900             | 1880            | 22.29                 | 1.93       | 24.22      | 264.24    | 2         |
| 19193             | 1909.3          | 22.16                 | 1.93       | 24.09      | 256.45    | 2         |

| LTE B2 1.4M 64QAM |                 |                       |            |            |           |           |
|-------------------|-----------------|-----------------------|------------|------------|-----------|-----------|
| Channel           | Frequency (MHz) | Conducted Power (dBm) | Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (W) |
| 18607             | 1850.7          | 21.36                 | 1.93       | 23.29      | 213.3     | 2         |
| 18900             | 1880            | 21.38                 | 1.93       | 23.31      | 214.29    | 2         |
| 19193             | 1909.3          | 21.32                 | 1.93       | 23.25      | 211.35    | 2         |

| LTE B2 3M QPSK |                 |                       |            |            |           |           |
|----------------|-----------------|-----------------------|------------|------------|-----------|-----------|
| Channel        | Frequency (MHz) | Conducted Power (dBm) | Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (W) |
| 18615          | 1851.5          | 23.32                 | 1.93       | 25.25      | 334.97    | 2         |
| 18900          | 1880            | 23.05                 | 1.93       | 24.98      | 314.77    | 2         |
| 19185          | 1908.5          | 23.04                 | 1.93       | 24.97      | 314.05    | 2         |

| LTE B2 3M 16QAM |                 |                       |            |            |           |           |
|-----------------|-----------------|-----------------------|------------|------------|-----------|-----------|
| Channel         | Frequency (MHz) | Conducted Power (dBm) | Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (W) |
| 18615           | 1851.5          | 22.47                 | 1.93       | 24.4       | 275.42    | 2         |
| 18900           | 1880            | 22.31                 | 1.93       | 24.24      | 265.46    | 2         |
| 19185           | 1908.5          | 22.2                  | 1.93       | 24.13      | 258.82    | 2         |

| LTE B2 3M 64QAM |                 |                       |            |            |           |           |
|-----------------|-----------------|-----------------------|------------|------------|-----------|-----------|
| Channel         | Frequency (MHz) | Conducted Power (dBm) | Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (W) |
| 18615           | 1851.5          | 21.49                 | 1.93       | 23.42      | 219.79    | 2         |
| 18900           | 1880            | 21.37                 | 1.93       | 23.3       | 213.8     | 2         |
| 19185           | 1908.5          | 21.41                 | 1.93       | 23.34      | 215.77    | 2         |

| LTE B2 5M QPSK |                 |                       |            |            |           |           |
|----------------|-----------------|-----------------------|------------|------------|-----------|-----------|
| Channel        | Frequency (MHz) | Conducted Power (dBm) | Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (W) |
| 18625          | 1852.5          | 23.23                 | 1.93       | 25.16      | 328.1     | 2         |
| 18900          | 1880            | 23.08                 | 1.93       | 25.01      | 316.96    | 2         |
| 19175          | 1907.5          | 23.08                 | 1.93       | 25.01      | 316.96    | 2         |

| LTE B2 5M 16QAM |                 |                       |            |            |           |           |
|-----------------|-----------------|-----------------------|------------|------------|-----------|-----------|
| Channel         | Frequency (MHz) | Conducted Power (dBm) | Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (W) |
| 18625           | 1852.5          | 22.55                 | 1.93       | 24.48      | 280.54    | 2         |
| 18900           | 1880            | 22.35                 | 1.93       | 24.28      | 267.92    | 2         |
| 19175           | 1907.5          | 22.22                 | 1.93       | 24.15      | 260.02    | 2         |

| LTE B2 5M 64QAM |                 |                       |            |            |           |           |
|-----------------|-----------------|-----------------------|------------|------------|-----------|-----------|
| Channel         | Frequency (MHz) | Conducted Power (dBm) | Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (W) |
| 18625           | 1852.5          | 21.43                 | 1.93       | 23.36      | 216.77    | 2         |
| 18900           | 1880            | 21.37                 | 1.93       | 23.3       | 213.8     | 2         |
| 19175           | 1907.5          | 21.31                 | 1.93       | 23.24      | 210.86    | 2         |

| LTE B2 10M QPSK |                 |                       |            |            |           |           |
|-----------------|-----------------|-----------------------|------------|------------|-----------|-----------|
| Channel         | Frequency (MHz) | Conducted Power (dBm) | Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (W) |
| 18650           | 1855            | 23.21                 | 1.93       | 25.14      | 326.59    | 2         |
| 18900           | 1880            | 23.08                 | 1.93       | 25.01      | 316.96    | 2         |
| 19150           | 1905            | 23.1                  | 1.93       | 25.03      | 318.42    | 2         |

| LTE B2 10M 16QAM |                 |                       |            |            |           |           |
|------------------|-----------------|-----------------------|------------|------------|-----------|-----------|
| Channel          | Frequency (MHz) | Conducted Power (dBm) | Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (W) |
| 18650            | 1855            | 22.51                 | 1.93       | 24.44      | 277.97    | 2         |
| 18900            | 1880            | 22.3                  | 1.93       | 24.23      | 264.85    | 2         |
| 19150            | 1905            | 22.2                  | 1.93       | 24.13      | 258.82    | 2         |

| LTE B2 10M 64QAM |                 |                       |            |            |           |           |
|------------------|-----------------|-----------------------|------------|------------|-----------|-----------|
| Channel          | Frequency (MHz) | Conducted Power (dBm) | Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (W) |
| 18650            | 1855            | 21.35                 | 1.93       | 23.28      | 212.81    | 2         |
| 18900            | 1880            | 21.28                 | 1.93       | 23.21      | 209.41    | 2         |
| 19150            | 1905            | 21.43                 | 1.93       | 23.36      | 216.77    | 2         |

| LTE B2 15M QPSK |                 |                       |            |            |           |           |
|-----------------|-----------------|-----------------------|------------|------------|-----------|-----------|
| Channel         | Frequency (MHz) | Conducted Power (dBm) | Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (W) |
| 18675           | 1857.5          | 23.32                 | 1.93       | 25.25      | 334.97    | 2         |
| 18900           | 1880            | 23.03                 | 1.93       | 24.96      | 313.33    | 2         |
| 19125           | 1902.5          | 23.12                 | 1.93       | 25.05      | 319.89    | 2         |

| LTE B2 15M 16QAM |                 |                       |            |            |           |           |
|------------------|-----------------|-----------------------|------------|------------|-----------|-----------|
| Channel          | Frequency (MHz) | Conducted Power (dBm) | Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (W) |
| 18675            | 1857.5          | 22.49                 | 1.93       | 24.42      | 276.69    | 2         |
| 18900            | 1880            | 22.29                 | 1.93       | 24.22      | 264.24    | 2         |
| 19125            | 1902.5          | 22.13                 | 1.93       | 24.06      | 254.68    | 2         |

| LTE B2 15M 64QAM |                 |                       |            |            |           |           |
|------------------|-----------------|-----------------------|------------|------------|-----------|-----------|
| Channel          | Frequency (MHz) | Conducted Power (dBm) | Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (W) |
| 18675            | 1857.5          | 21.49                 | 1.93       | 23.42      | 219.79    | 2         |
| 18900            | 1880            | 21.39                 | 1.93       | 23.32      | 214.78    | 2         |
| 19125            | 1902.5          | 21.37                 | 1.93       | 23.3       | 213.8     | 2         |

| LTE B2 20M QPSK |                 |                       |            |            |           |           |
|-----------------|-----------------|-----------------------|------------|------------|-----------|-----------|
| Channel         | Frequency (MHz) | Conducted Power (dBm) | Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (W) |
| 18700           | 1860            | 23.34                 | 1.93       | 25.27      | 336.51    | 2         |
| 18900           | 1880            | 23.16                 | 1.93       | 25.09      | 322.85    | 2         |
| 19100           | 1900            | 23.14                 | 1.93       | 25.07      | 321.37    | 2         |

| LTE B2 20M 16QAM |                 |                       |            |            |           |           |
|------------------|-----------------|-----------------------|------------|------------|-----------|-----------|
| Channel          | Frequency (MHz) | Conducted Power (dBm) | Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (W) |
| 18700            | 1860            | 22.56                 | 1.93       | 24.49      | 281.19    | 2         |
| 18900            | 1880            | 22.43                 | 1.93       | 24.36      | 272.9     | 2         |
| 19100            | 1900            | 22.28                 | 1.93       | 24.21      | 263.63    | 2         |

| LTE B2 20M 64QAM |                 |                       |            |            |           |           |
|------------------|-----------------|-----------------------|------------|------------|-----------|-----------|
| Channel          | Frequency (MHz) | Conducted Power (dBm) | Gain (dBi) | EIRP (dBm) | EIRP (mW) | Limit (W) |
| 18700            | 1860            | 21.5                  | 1.93       | 23.43      | 220.29    | 2         |
| 18900            | 1880            | 21.43                 | 1.93       | 23.36      | 216.77    | 2         |
| 19100            | 1900            | 21.46                 | 1.93       | 23.39      | 218.27    | 2         |



### 3.2 FREQUENCY STABILITY MEASUREMENT

#### 3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

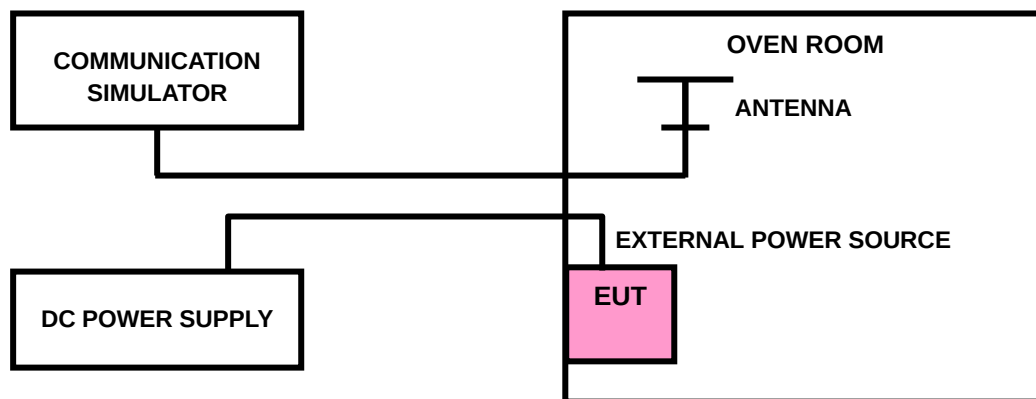
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

#### 3.2.2 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 to 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.

**NOTE:** The frequency error was recorded frequency error from the communication simulator.

#### 3.2.3 TEST SETUP





Test Report No.: W7L-240430W002RF03

### 3.2.4 TEST RESULTS

Please Refer to Appendix C Of this test report.

Note: VL = Low voltage(3.8V); VN/NV = Normal voltage(4V); VH = High voltage(4.2V);  
NT = Normal temperature (25°C)

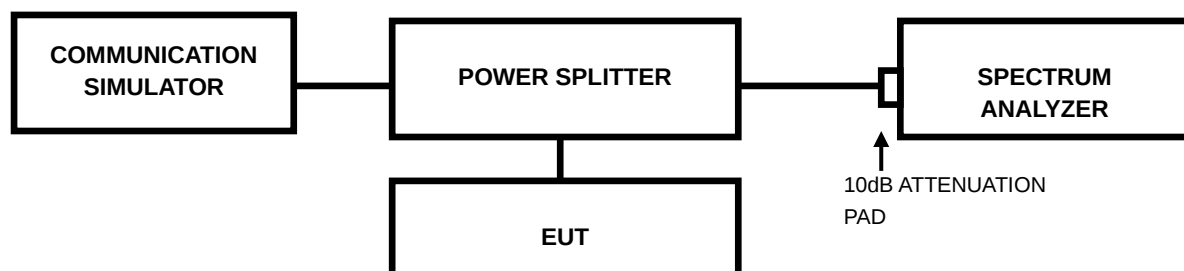


### 3.3 OCCUPIED BANDWIDTH MEASUREMENT

#### 3.3.1 LIMITS OF OCCUPIED BANDWIDTH MEASUREMENT

The width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5 % of the total mean power of a given emission.

#### 3.3.2 TEST SETUP



#### 3.3.3 TEST PROCEDURES

- The conducted occupied bandwidth used the power splitter via EUT RF power connector between simulation base station and spectrum analyzer.
- Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.



Test Report No.: W7L-240430W002RF03

### 3.3.4 TEST RESULTS

Please Refer to Appendix C Of this test report.

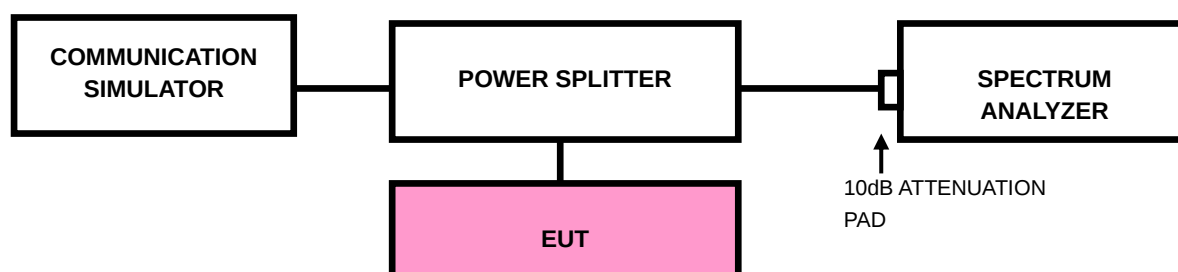


### 3.4 BAND EDGE MEASUREMENTC

#### 3.4.1 LIMITS OF BAND EDGE MEASUREMENT

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.

#### 3.4.2 TEST SETUP



### 3.4.3 TEST PROCEDURES

- a) All measurements were done at low and high operational frequency range
- b) Connect the transmitter to the spectrum analyzer via coaxial cable while ensuring proper impedance matching.
- c) Tune the analyzer to the nominal center frequency of the emission bandwidth (EBW)
- d) .Set the resolution bandwidth (RBW)  $\geq 1\%$  EBW in the 1MHz band immediately outside and adjacent to the band edge.
- e) Beyond the 1MHz band from the band edge, RBW=1MHz was used.
- f) Set the video bandwidth (VBW) to  $\geq 3 \times$  RBW.
- g) Select the average power (RMS) display detector.
- h) Set the number of measurement points to  $\geq 1001$ .
- i) Use auto-coupled sweep time.
- j) Perform the measurement over an interval of time when the transmission is continuous and at its maximum power level.
- k) The RF fundamental frequency should be excluded against the limit line in the operating frequency band and use RBW is 10KHz or 100KHz.
- l) Record the max trace plot into the test report.



Test Report No.: W7L-240430W002RF03

### 3.4.4. TEST RESULTS

Please Refer to Appendix C Of this test report.



### 3.5 CONDUCTED SPURIOUS EMISSIONS

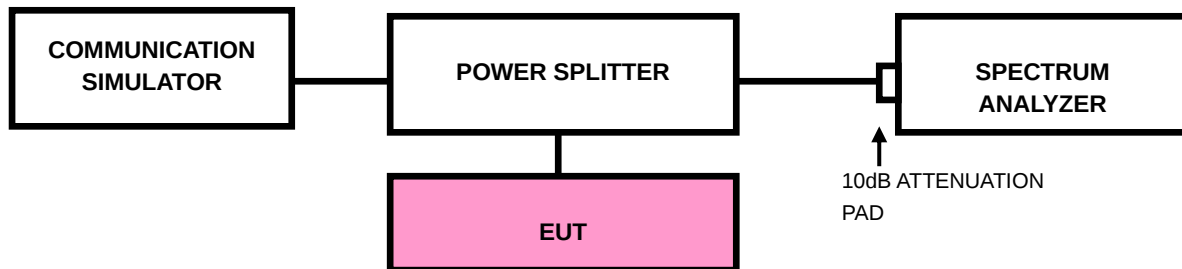
#### 3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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  $-13\text{dBm}$ .

#### 3.5.2 TEST PROCEDURE

- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 30MHz up to a frequency including its 10<sup>th</sup> harmonic. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

#### 3.5.3 TEST SETUP





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### 3.5.4 TEST RESULTS

NOTE : The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

Please Refer to Appendix C Of this test report.

### 3.6 RADIATED EMISSION MEASUREMENT

#### 3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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  $-13\text{dBm}$ .

#### 3.6.2 TEST PROCEDURES

- a. Substitution method is used for E.I.R.P measurement. 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.
- b. 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
- c.  $\text{EIRP} = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$

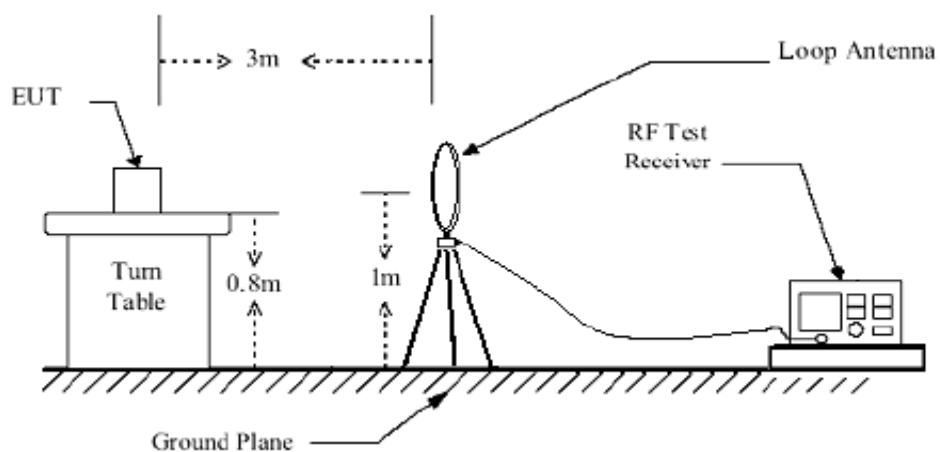
**NOTE:** The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

#### 3.6.3 DEVIATION FROM TEST STANDARD

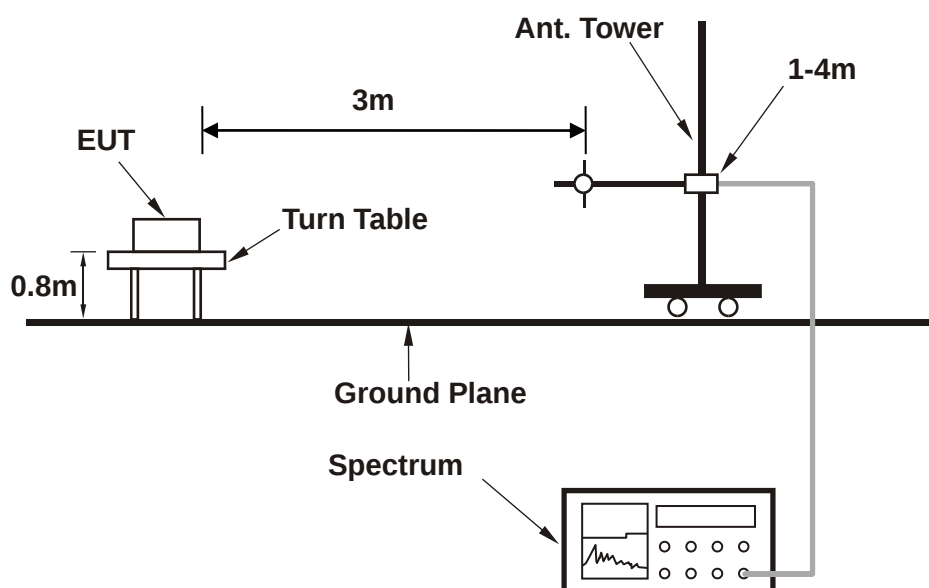
No deviation

### 3.6.4 TEST SETUP

#### < Frequency Range below 30MHz >



#### < Frequency Range 30MHz~1GHz >

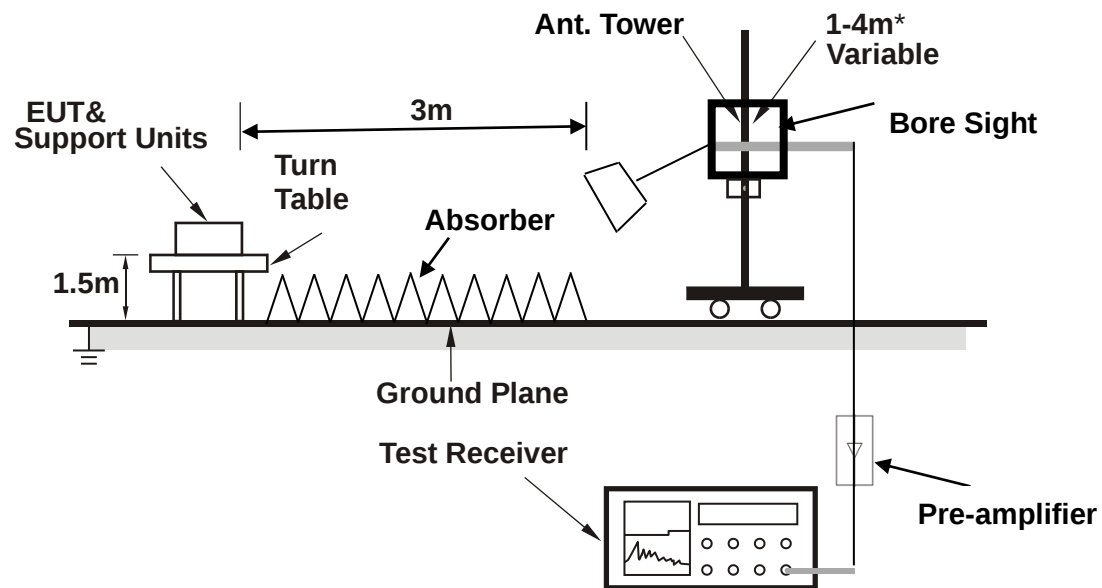




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<Frequency Range above 1GHz>



**Note:** Above 1G is a directional antenna

Depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

For the actual test configuration, please refer to the attached file (Test Setup Photo).



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### 3.6.5 TEST RESULTS

#### NOTE :

1. The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.
2. For CA band, stricter limit is used for the results' evaluation.

#### BELOW 1GHz WORST-CASE DATA

30 MHz – 1GHz data:

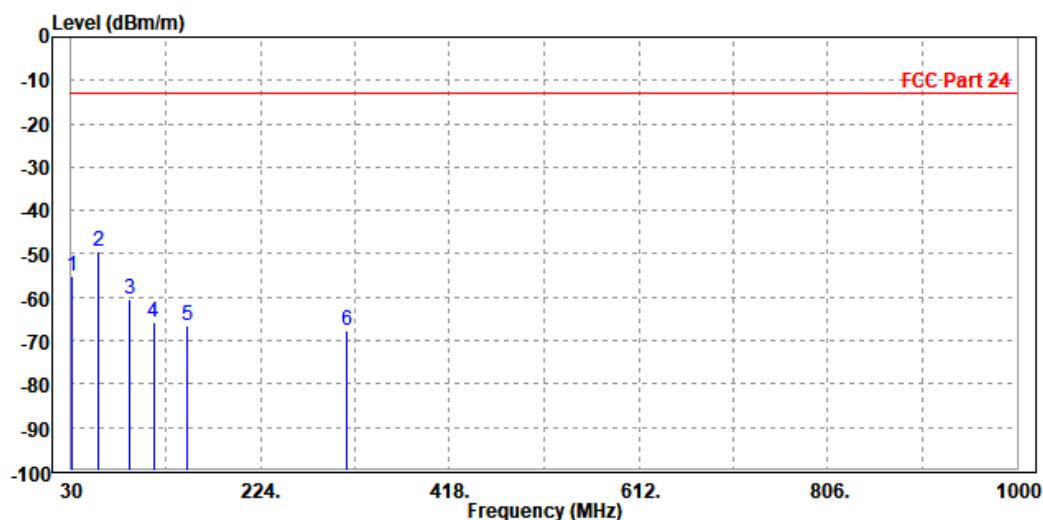
WCDMA II

CHANNEL BANDWIDTH: 9262~9538 / QPSK

CH 9400

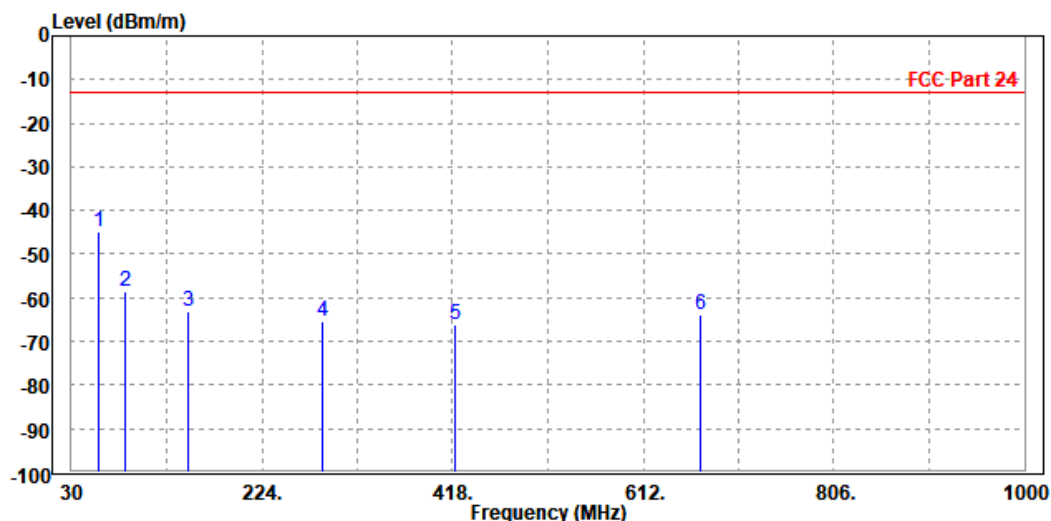
|                                                     |                 |                 |               |
|-----------------------------------------------------|-----------------|-----------------|---------------|
| MODE                                                | TX channel 9400 | FREQUENCY RANGE | Below 1000MHz |
| ENVIRONMENTAL CONDITIONS                            | 23deg. C, 70%RH | INPUT POWER     | DC 14V        |
| TESTED BY                                           | Jace Hu         |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                 |                 |               |

|      | Freq    | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase  |
|------|---------|--------|------------|------------|------------|--------|--------|------------|
|      | MHz     | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |            |
| 1    | 30.970  | -55.27 | -52.76     | -13.00     | -42.27     | -2.51  | Peak   | Horizontal |
| 2 PP | 57.160  | -49.48 | -37.38     | -13.00     | -36.48     | -12.10 | Peak   | Horizontal |
| 3    | 89.170  | -60.56 | -47.83     | -13.00     | -47.56     | -12.73 | Peak   | Horizontal |
| 4    | 114.390 | -65.94 | -50.99     | -13.00     | -52.94     | -14.95 | Peak   | Horizontal |
| 5    | 148.340 | -66.49 | -52.07     | -13.00     | -53.49     | -14.42 | Peak   | Horizontal |
| 6    | 313.240 | -67.79 | -59.24     | -13.00     | -54.79     | -8.55  | Peak   | Horizontal |



|                                                   |                 |                 |               |
|---------------------------------------------------|-----------------|-----------------|---------------|
| MODE                                              | TX channel 9400 | FREQUENCY RANGE | Below 1000MHz |
| ENVIRONMENTAL CONDITIONS                          | 23deg. C, 70%RH | INPUT POWER     | DC 14V        |
| TESTED BY                                         | Jace Hu         |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |                 |                 |               |

|   | Freq | Level   | Read Level | Limit Line | Over Limit | Factor | Remark      | Pol/Phase |
|---|------|---------|------------|------------|------------|--------|-------------|-----------|
|   | MHz  | dBm/m   | dBm        | dBm/m      | dB         | dB/m   |             |           |
| 1 | PP   | 57.160  | -44.95     | -26.05     | -13.00     | -31.95 | -18.90 Peak | Vertical  |
| 2 |      | 84.320  | -58.72     | -40.44     | -13.00     | -45.72 | -18.28 Peak | Vertical  |
| 3 |      | 148.340 | -63.20     | -49.67     | -13.00     | -50.20 | -13.53 Peak | Vertical  |
| 4 |      | 286.080 | -65.46     | -61.96     | -13.00     | -52.46 | -3.50 Peak  | Vertical  |
| 5 |      | 419.940 | -66.21     | -61.84     | -13.00     | -53.21 | -4.37 Peak  | Vertical  |
| 6 |      | 670.200 | -63.90     | -63.65     | -13.00     | -50.90 | -0.25 Peak  | Vertical  |





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## ABOVE 1GHz DATA

**Note:** For higher frequency, the emission is too low to be detected.

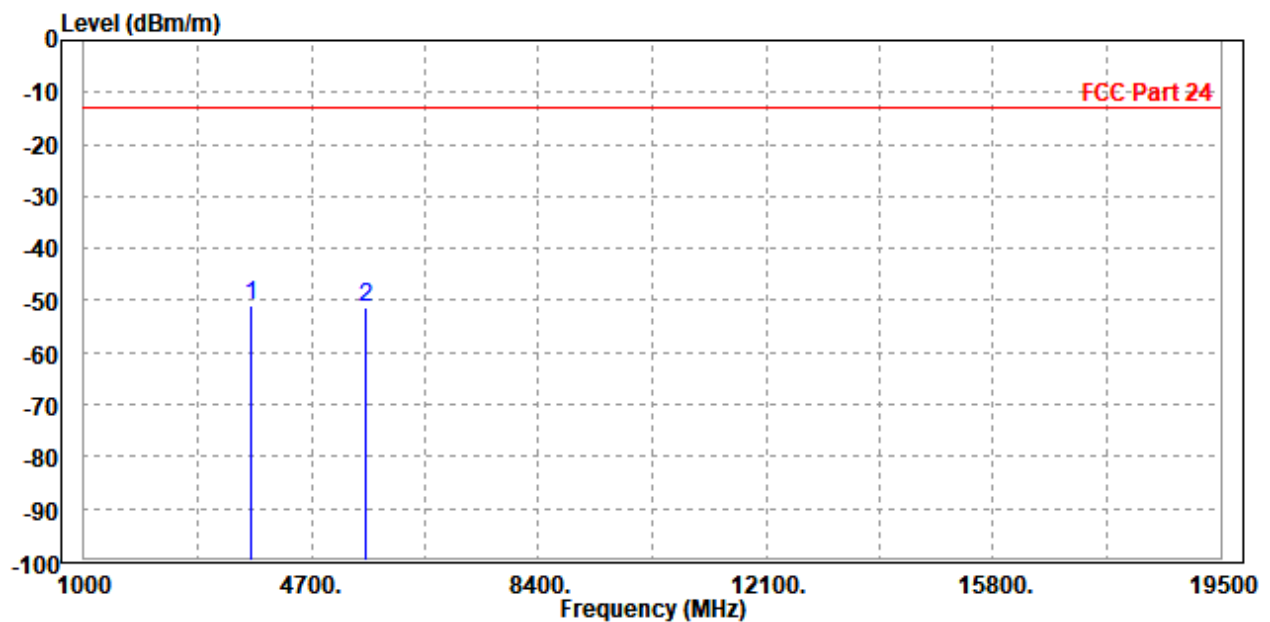
## WORST-CASE DATA

WCDMA Band II

CH 9262

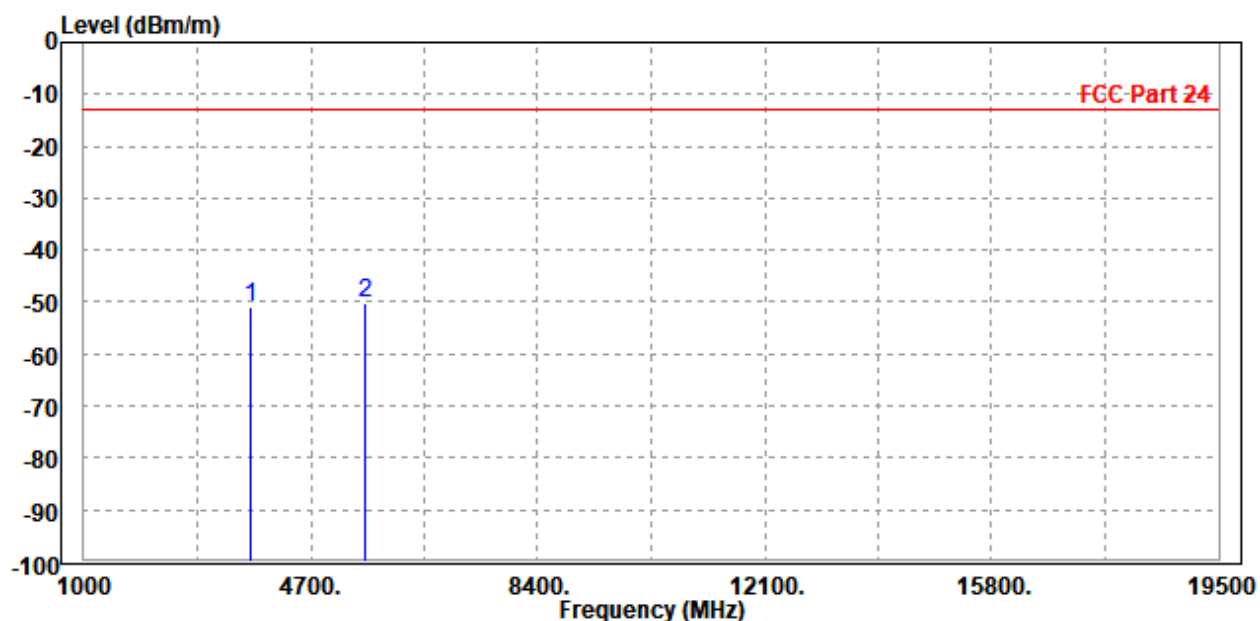
|                                                     |                 |                 |               |
|-----------------------------------------------------|-----------------|-----------------|---------------|
| MODE                                                | TX channel 9262 | FREQUENCY RANGE | Above 1000MHz |
| ENVIRONMENTAL CONDITIONS                            | 23deg. C, 70%RH | INPUT POWER     | DC 14V        |
| TESTED BY                                           | Jace hu         |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                 |                 |               |

|   |             |        | Read   | Limit  | Over   |        |        |            |
|---|-------------|--------|--------|--------|--------|--------|--------|------------|
|   | Freq        | Level  | Level  | Line   | Limit  | Factor | Remark | Pol/Phase  |
|   | MHz         | dBm/m  | dBm    | dBm/m  | dB     | dB/m   |        |            |
| 1 | PP 3719.500 | -50.89 | -59.27 | -13.00 | -37.89 | 8.38   | Peak   | Horizontal |
| 2 | 5580.000    | -51.43 | -63.24 | -13.00 | -38.43 | 11.81  | Peak   | Horizontal |



|                                                   |                 |                 |               |
|---------------------------------------------------|-----------------|-----------------|---------------|
| MODE                                              | TX channel 9262 | FREQUENCY RANGE | Above 1000MHz |
| ENVIRONMENTAL CONDITIONS                          | 23deg. C, 70%RH | INPUT POWER     | DC 14V        |
| TESTED BY                                         | Jace hu         |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |                 |                 |               |

|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|------|----------|--------|------------|------------|------------|--------|--------|-----------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |           |
| 1    | 3720.000 | -50.92 | -59.55     | -13.00     | -37.92     | 8.63   | Peak   | Vertical  |
| 2 PP | 5588.000 | -50.24 | -62.57     | -13.00     | -37.24     | 12.33  | Peak   | Vertical  |





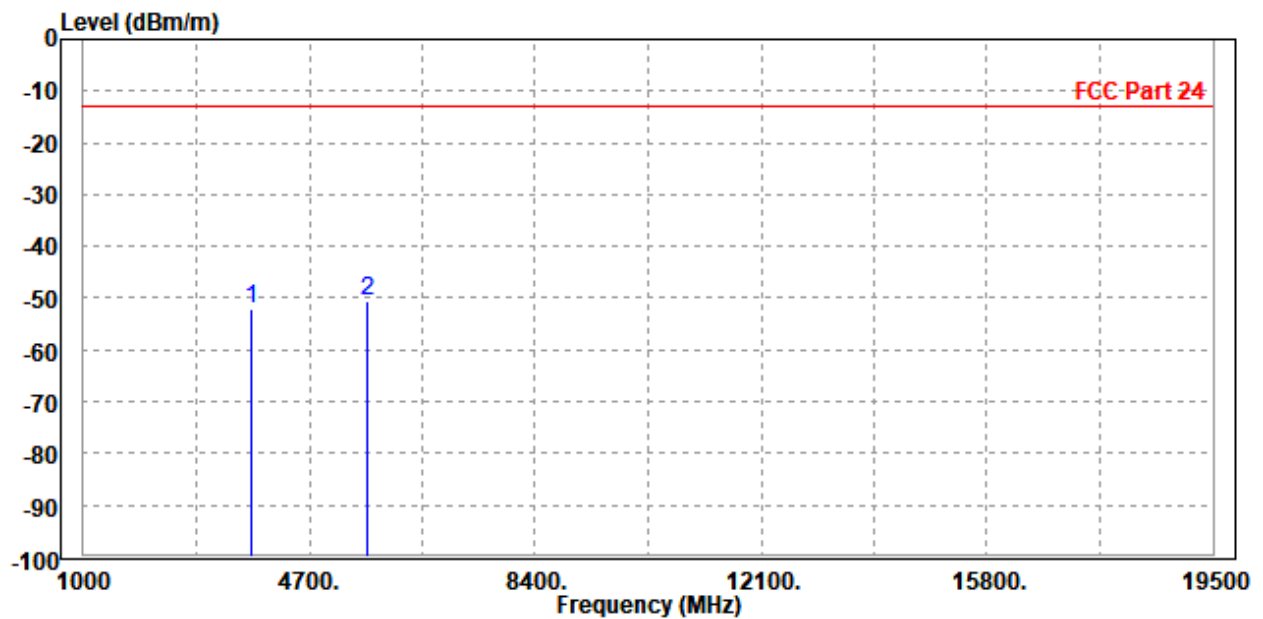
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CH 9400

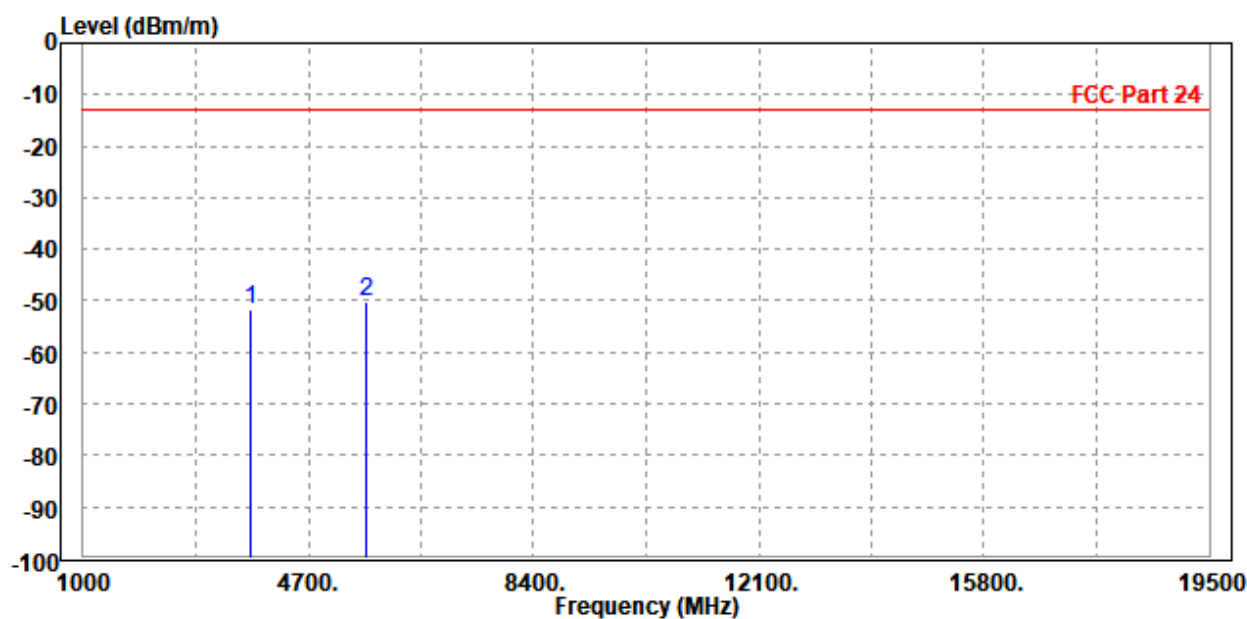
|                                                     |                 |                 |               |
|-----------------------------------------------------|-----------------|-----------------|---------------|
| MODE                                                | TX channel 9400 | FREQUENCY RANGE | Above 1000MHz |
| ENVIRONMENTAL CONDITIONS                            | 23deg. C, 70%RH | INPUT POWER     | DC 14V        |
| TESTED BY                                           | Jace hu         |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                 |                 |               |

|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase  |
|------|----------|--------|------------|------------|------------|--------|--------|------------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |            |
| 1    | 3760.000 | -52.20 | -60.55     | -13.00     | -39.20     | 8.35   | Peak   | Horizontal |
| 2 PP | 5643.500 | -50.45 | -62.26     | -13.00     | -37.45     | 11.81  | Peak   | Horizontal |



|                                                   |                 |                 |               |
|---------------------------------------------------|-----------------|-----------------|---------------|
| MODE                                              | TX channel 9400 | FREQUENCY RANGE | Above 1000MHz |
| ENVIRONMENTAL CONDITIONS                          | 23deg. C, 70%RH | INPUT POWER     | DC 14V        |
| TESTED BY                                         | Jace hu         |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |                 |                 |               |

|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|------|----------|--------|------------|------------|------------|--------|--------|-----------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |           |
| 1    | 3756.500 | -51.58 | -60.21     | -13.00     | -38.58     | 8.63   | Peak   | Vertical  |
| 2 PP | 5640.000 | -50.25 | -62.57     | -13.00     | -37.25     | 12.32  | Peak   | Vertical  |





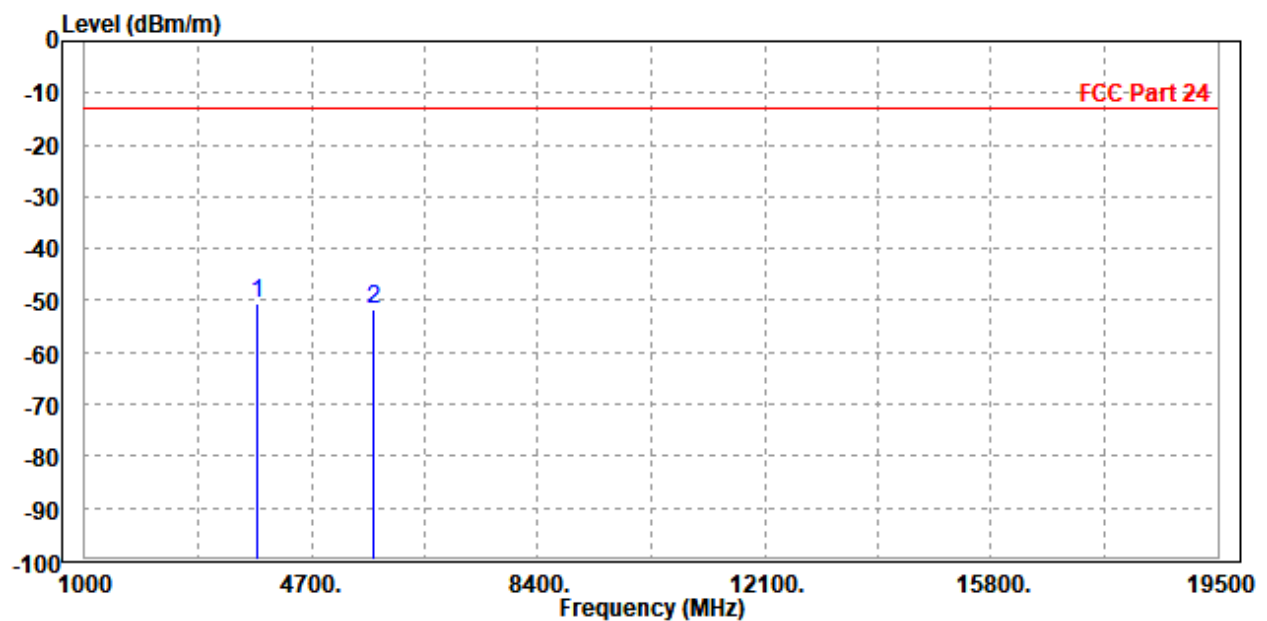
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VERITAS

Test Report No.: W7L-240430W002RF03

CH 9538

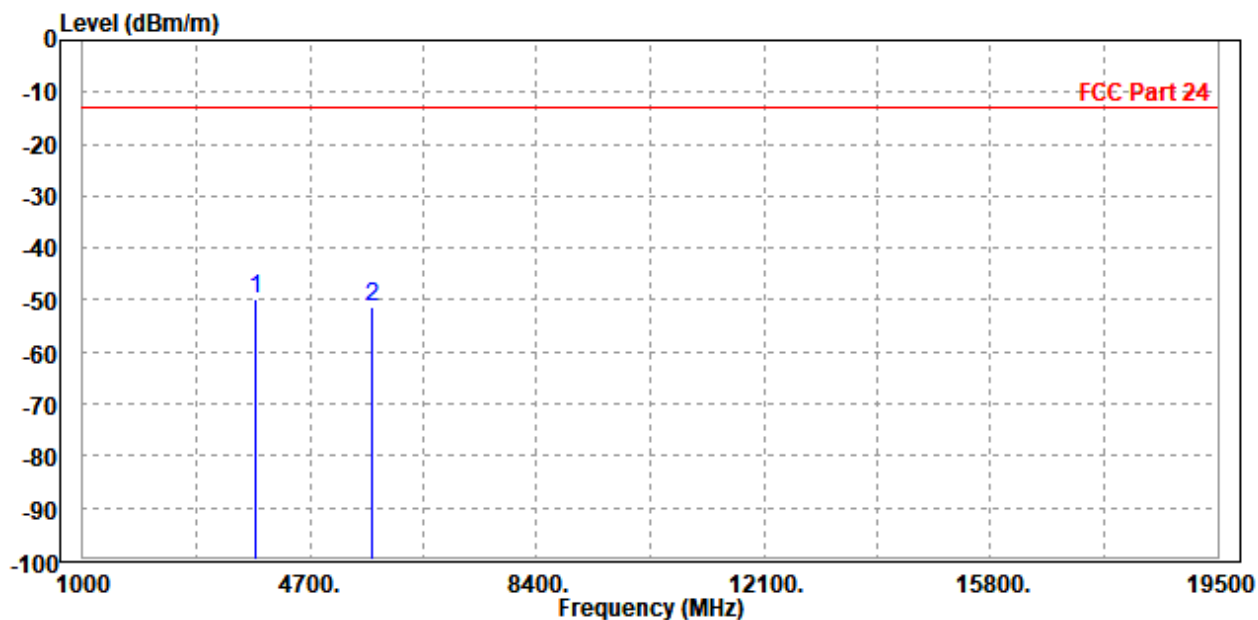
|                                                     |                 |                 |               |
|-----------------------------------------------------|-----------------|-----------------|---------------|
| MODE                                                | TX channel 9538 | FREQUENCY RANGE | Above 1000MHz |
| ENVIRONMENTAL CONDITIONS                            | 23deg. C, 70%RH | INPUT POWER     | DC 14V        |
| TESTED BY                                           | Jace hu         |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                 |                 |               |

|   |    | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase  |
|---|----|----------|--------|------------|------------|------------|--------|--------|------------|
|   |    | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |            |
| 1 | PP | 3814.000 | -50.64 | -58.95     | -13.00     | -37.64     | 8.31   | Peak   | Horizontal |
| 2 |    | 5717.500 | -51.59 | -63.41     | -13.00     | -38.59     | 11.82  | Peak   | Horizontal |



|                                                   |                 |                 |               |
|---------------------------------------------------|-----------------|-----------------|---------------|
| MODE                                              | TX channel 9538 | FREQUENCY RANGE | Above 1000MHz |
| ENVIRONMENTAL CONDITIONS                          | 23deg. C, 70%RH | INPUT POWER     | DC 14V        |
| TESTED BY                                         | Jace hu         |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |                 |                 |               |

|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|------|----------|--------|------------|------------|------------|--------|--------|-----------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |           |
| 1 PP | 3812.000 | -49.79 | -58.42     | -13.00     | -36.79     | 8.63   | Peak   | Vertical  |
| 2    | 5721.000 | -51.27 | -63.58     | -13.00     | -38.27     | 12.31  | Peak   | Vertical  |





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VERITAS

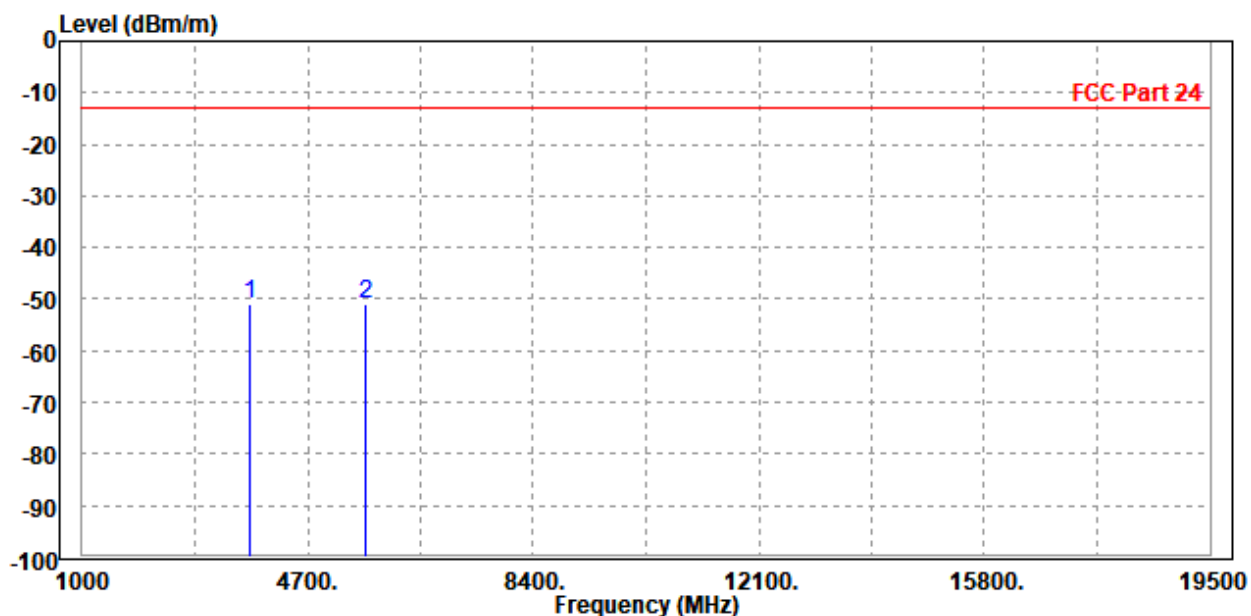
Test Report No.: W7L-240430W002RF03

LTE Band 2

CHANNEL BANDWIDTH: 1.4MHz / QPSK

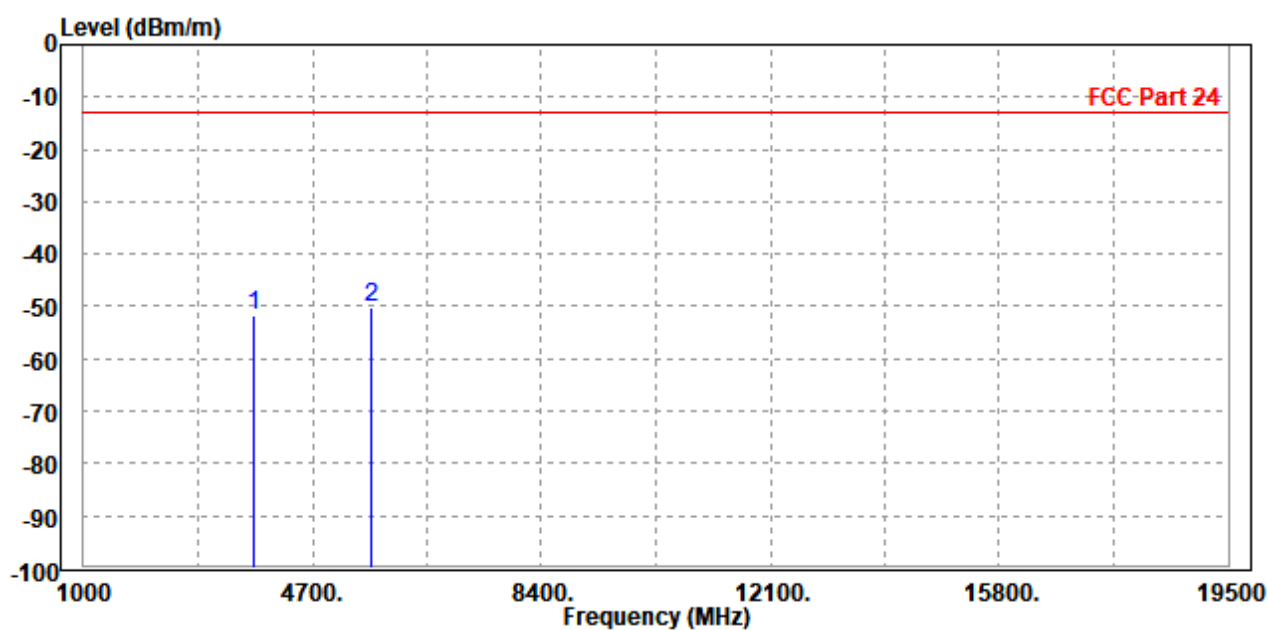
|                                                     |                  |                 |               |
|-----------------------------------------------------|------------------|-----------------|---------------|
| MODE                                                | TX channel 18900 | FREQUENCY RANGE | Above 1000MHz |
| ENVIRONMENTAL CONDITIONS                            | 23deg. C, 70%RH  | INPUT POWER     | DC 14V        |
| TESTED BY                                           | Jace hu          |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                  |                 |               |

|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase  |
|------|----------|--------|------------|------------|------------|--------|--------|------------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |            |
| 1    | 3756.500 | -51.11 | -59.46     | -13.00     | -38.11     | 8.35   | Peak   | Horizontal |
| 2 PP | 5640.000 | -50.99 | -62.80     | -13.00     | -37.99     | 11.81  | Peak   | Horizontal |



|                                                   |                  |                 |               |
|---------------------------------------------------|------------------|-----------------|---------------|
| MODE                                              | TX channel 18900 | FREQUENCY RANGE | Above 1000MHz |
| ENVIRONMENTAL CONDITIONS                          | 23deg. C, 70%RH  | INPUT POWER     | DC 14V        |
| TESTED BY                                         | Jace hu          |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |                  |                 |               |

|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|------|----------|--------|------------|------------|------------|--------|--------|-----------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |           |
| 1    | 3760.000 | -51.62 | -60.25     | -13.00     | -38.62     | 8.63   | Peak   | Vertical  |
| 2 PP | 5643.500 | -50.01 | -62.33     | -13.00     | -37.01     | 12.32  | Peak   | Vertical  |





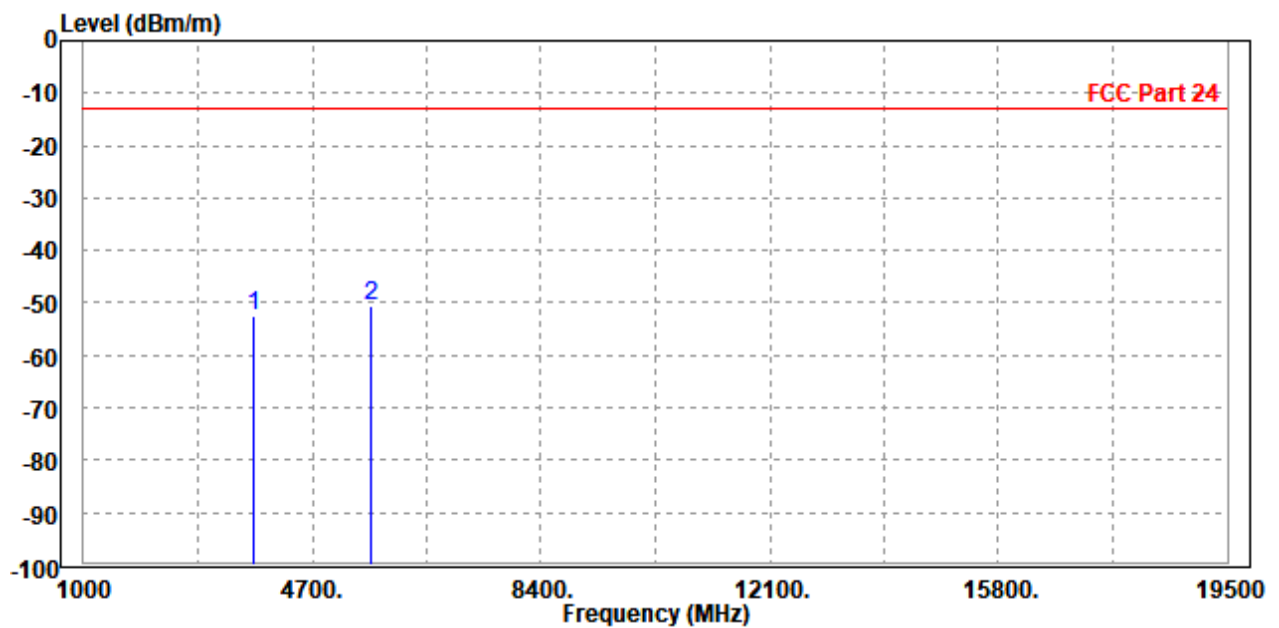
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VERITAS

Test Report No.: W7L-240430W002RF03

CHANNEL BANDWIDTH: 3MHz / QPSK

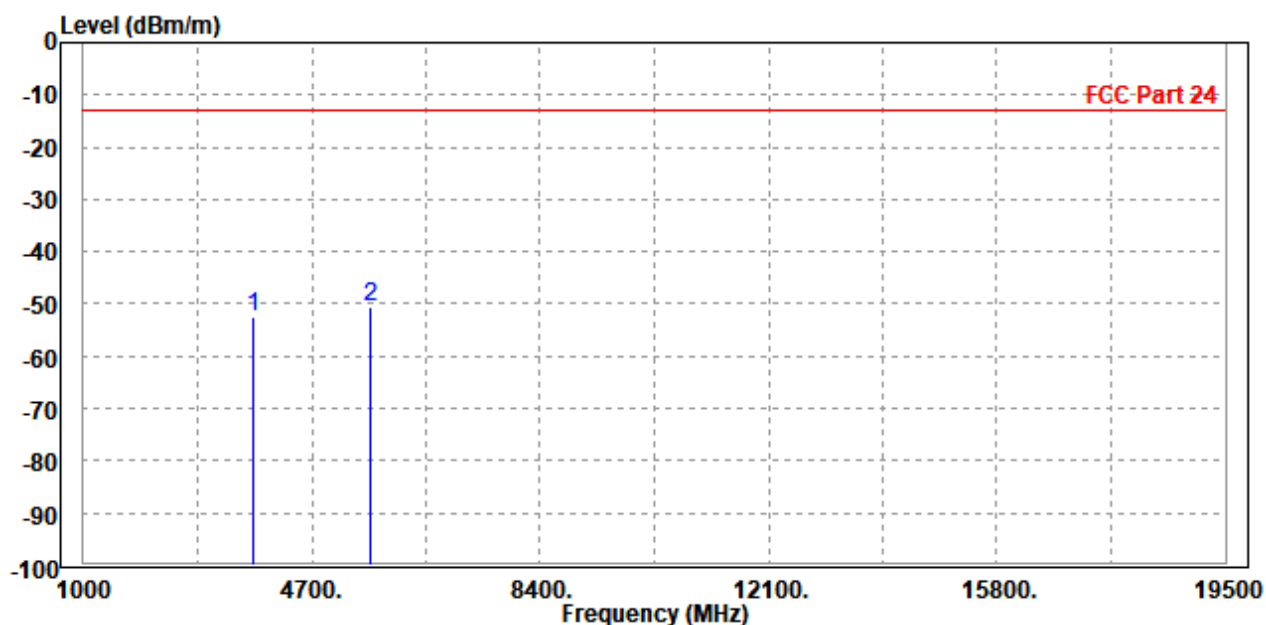
|                                                     |                  |                 |               |
|-----------------------------------------------------|------------------|-----------------|---------------|
| MODE                                                | TX channel 18900 | FREQUENCY RANGE | Above 1000MHz |
| ENVIRONMENTAL CONDITIONS                            | 23deg. C, 70%RH  | INPUT POWER     | DC 14V        |
| TESTED BY                                           | Jace hu          |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                  |                 |               |

|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase  |
|------|----------|--------|------------|------------|------------|--------|--------|------------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |            |
| 1    | 3756.500 | -52.29 | -60.64     | -13.00     | -39.29     | 8.35   | Peak   | Horizontal |
| 2 PP | 5662.000 | -50.64 | -62.45     | -13.00     | -37.64     | 11.81  | Peak   | Horizontal |



|                                                   |                  |                 |               |
|---------------------------------------------------|------------------|-----------------|---------------|
| MODE                                              | TX channel 18900 | FREQUENCY RANGE | Above 1000MHz |
| ENVIRONMENTAL CONDITIONS                          | 23deg. C, 70%RH  | INPUT POWER     | DC 14V        |
| TESTED BY                                         | Jace hu          |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |                  |                 |               |

|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase  |
|------|----------|--------|------------|------------|------------|--------|--------|------------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |            |
| 1    | 3756.500 | -52.29 | -60.64     | -13.00     | -39.29     | 8.35   | Peak   | Horizontal |
| 2 PP | 5662.000 | -50.64 | -62.45     | -13.00     | -37.64     | 11.81  | Peak   | Horizontal |





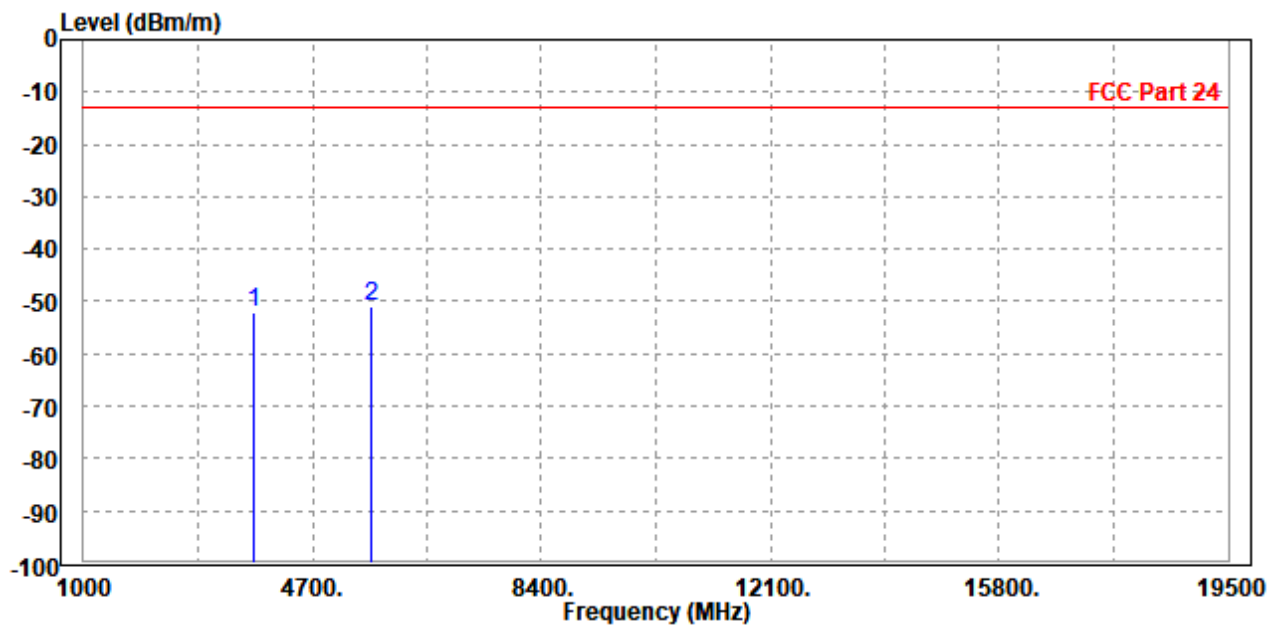
BUREAU  
VERITAS

Test Report No.: W7L-240430W002RF03

CHANNEL BANDWIDTH: 5MHz / QPSK

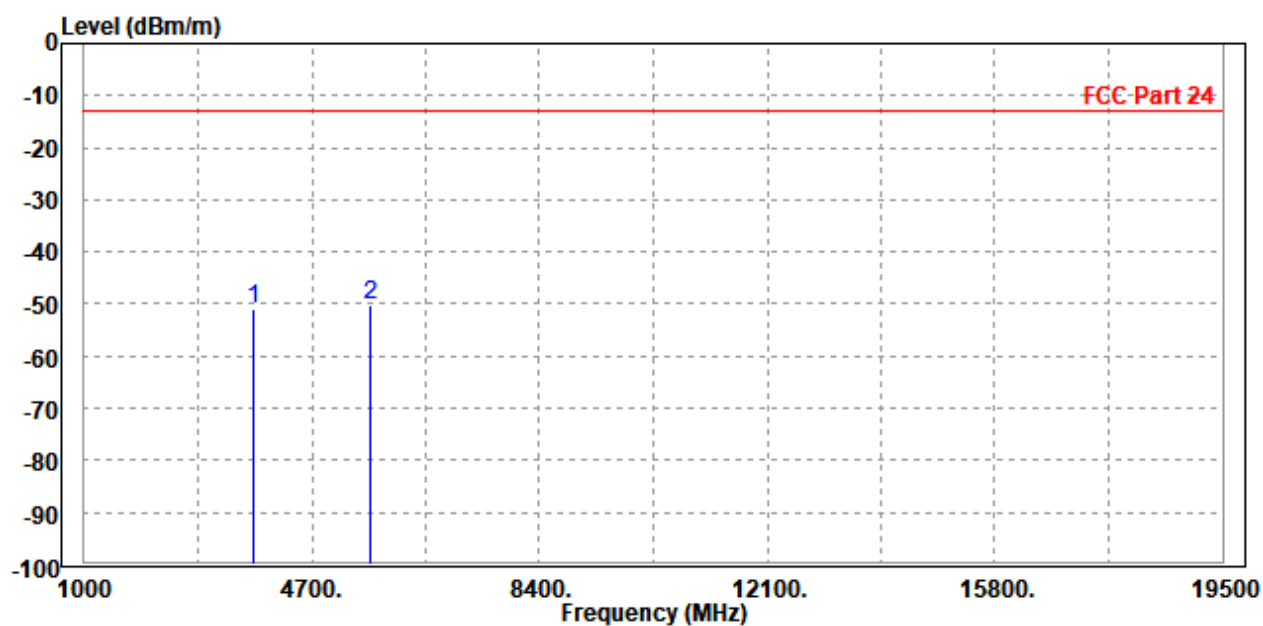
|                                                     |                  |                 |               |
|-----------------------------------------------------|------------------|-----------------|---------------|
| MODE                                                | TX channel 18900 | FREQUENCY RANGE | Above 1000MHz |
| ENVIRONMENTAL CONDITIONS                            | 23deg. C, 70%RH  | INPUT POWER     | DC 14V        |
| TESTED BY                                           | Jace hu          |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                  |                 |               |

|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase  |
|------|----------|--------|------------|------------|------------|--------|--------|------------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |            |
| 1    | 3756.500 | -52.12 | -60.47     | -13.00     | -39.12     | 8.35   | Peak   | Horizontal |
| 2 PP | 5640.000 | -50.99 | -62.80     | -13.00     | -37.99     | 11.81  | Peak   | Horizontal |



|                                                   |                  |                 |               |
|---------------------------------------------------|------------------|-----------------|---------------|
| MODE                                              | TX channel 18900 | FREQUENCY RANGE | Above 1000MHz |
| ENVIRONMENTAL CONDITIONS                          | 23deg. C, 70%RH  | INPUT POWER     | DC 14V        |
| TESTED BY                                         | Jace hu          |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |                  |                 |               |

|   | Freq        | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|---|-------------|--------|------------|------------|------------|--------|--------|-----------|
|   | MHz         | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |           |
| 1 | 3760.000    | -50.79 | -59.42     | -13.00     | -37.79     | 8.63   | Peak   | Vertical  |
| 2 | PP 5643.500 | -50.13 | -62.45     | -13.00     | -37.13     | 12.32  | Peak   | Vertical  |





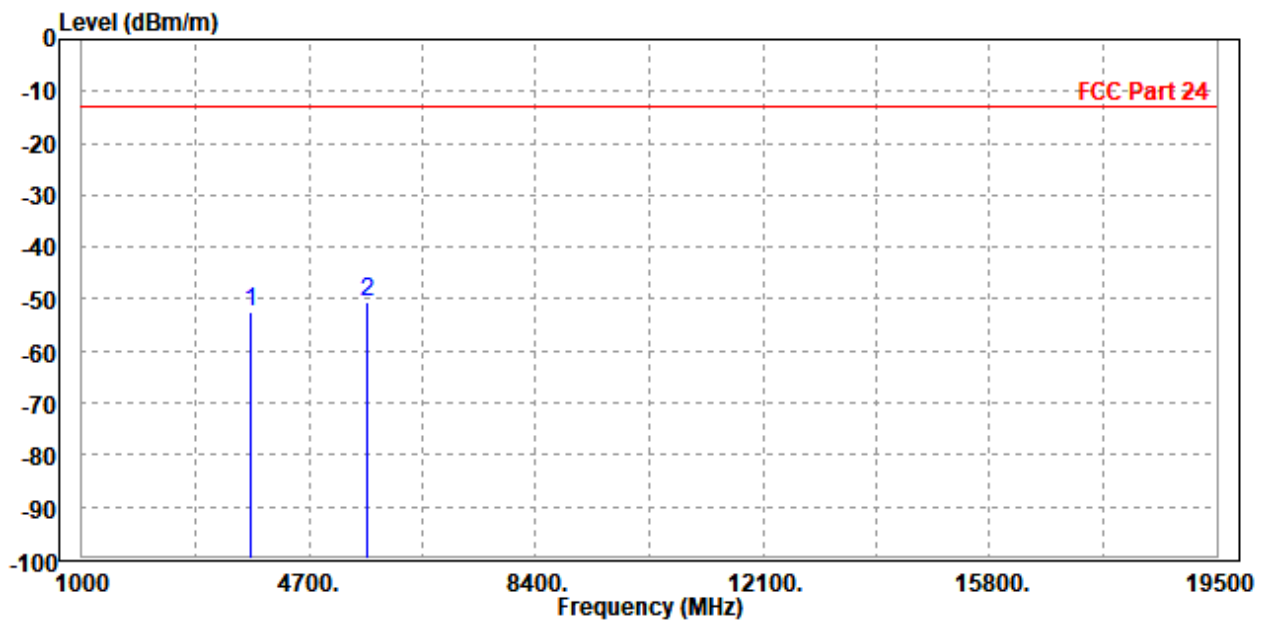
BUREAU  
VERITAS

Test Report No.: W7L-240430W002RF03

CHANNEL BANDWIDTH: 10MHz / QPSK

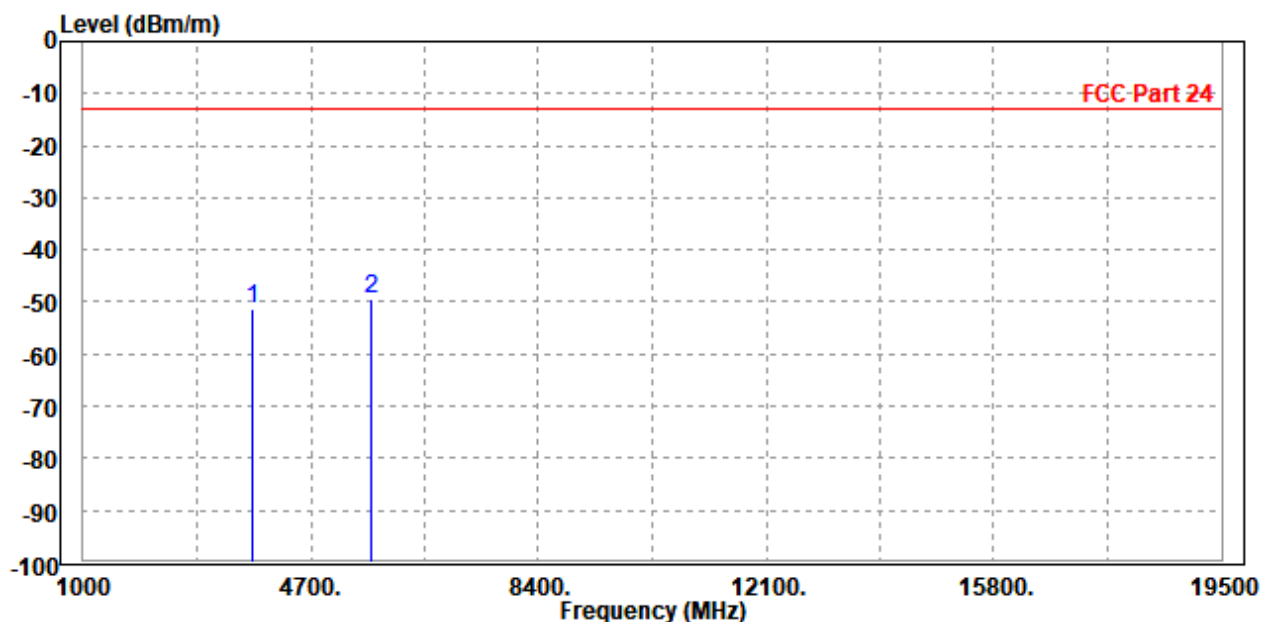
|                                                     |                  |                 |               |
|-----------------------------------------------------|------------------|-----------------|---------------|
| MODE                                                | TX channel 18900 | FREQUENCY RANGE | Above 1000MHz |
| ENVIRONMENTAL CONDITIONS                            | 23deg. C, 70%RH  | INPUT POWER     | DC 14V        |
| TESTED BY                                           | Jace hu          |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                  |                 |               |

|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase  |
|------|----------|--------|------------|------------|------------|--------|--------|------------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |            |
| 1    | 3760.000 | -52.51 | -60.86     | -13.00     | -39.51     | 8.35   | Peak   | Horizontal |
| 2 PP | 5662.000 | -50.68 | -62.49     | -13.00     | -37.68     | 11.81  | Peak   | Horizontal |



|                                                   |                  |                 |               |
|---------------------------------------------------|------------------|-----------------|---------------|
| MODE                                              | TX channel 18900 | FREQUENCY RANGE | Above 1000MHz |
| ENVIRONMENTAL CONDITIONS                          | 23deg. C, 70%RH  | INPUT POWER     | DC 14V        |
| TESTED BY                                         | Jace hu          |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |                  |                 |               |

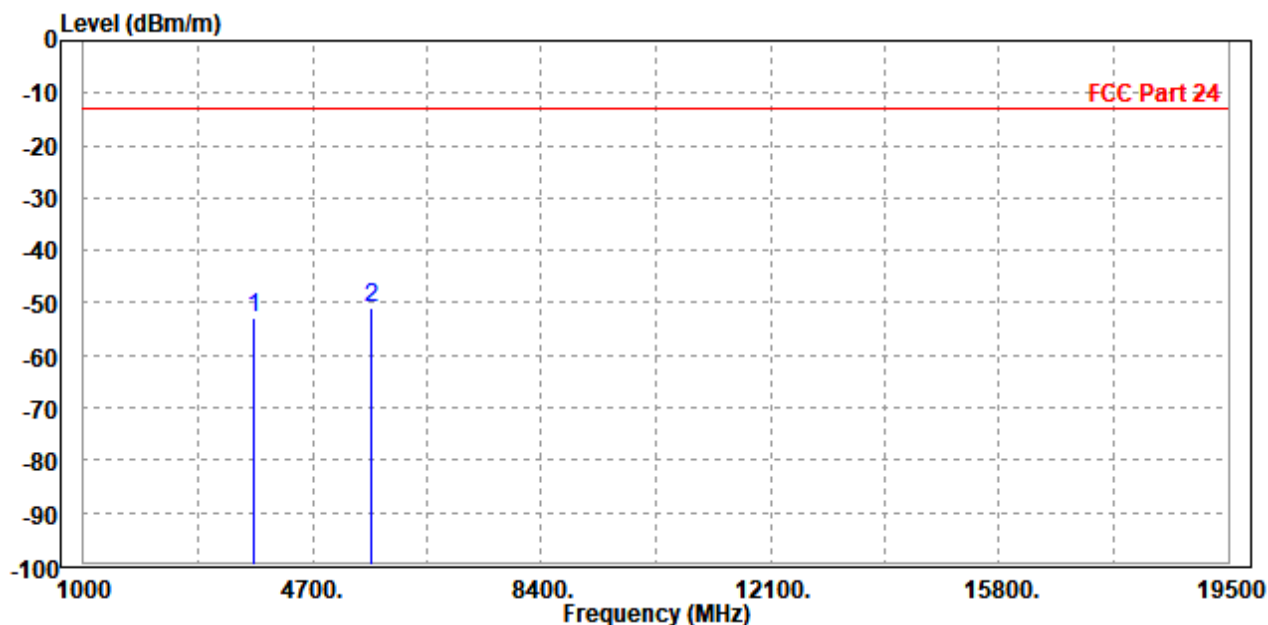
|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|------|----------|--------|------------|------------|------------|--------|--------|-----------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |           |
| 1    | 3756.500 | -51.35 | -59.98     | -13.00     | -38.35     | 8.63   | Peak   | Vertical  |
| 2 PP | 5670.000 | -49.53 | -61.85     | -13.00     | -36.53     | 12.32  | Peak   | Vertical  |



CHANNEL BANDWIDTH: 15MHz / QPSK

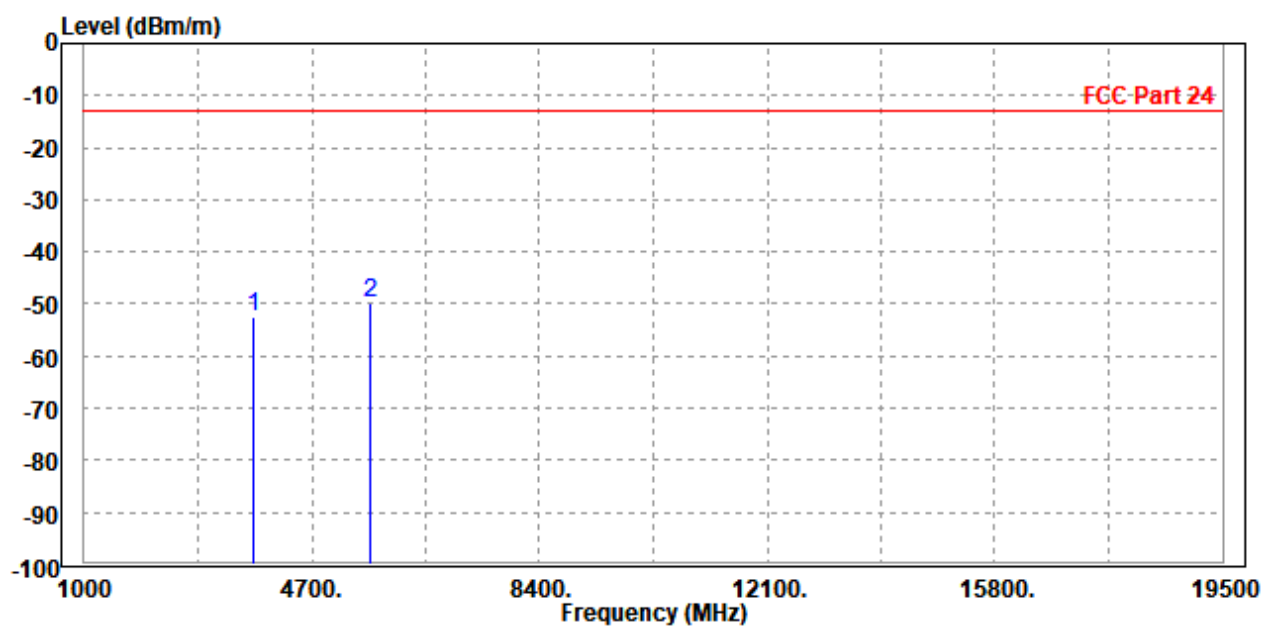
|                                                     |                  |                 |               |
|-----------------------------------------------------|------------------|-----------------|---------------|
| MODE                                                | TX channel 18900 | FREQUENCY RANGE | Above 1000MHz |
| ENVIRONMENTAL CONDITIONS                            | 23deg. C, 70%RH  | INPUT POWER     | DC 14V        |
| TESTED BY                                           | Jace hu          |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                  |                 |               |

|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase  |
|------|----------|--------|------------|------------|------------|--------|--------|------------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |            |
| 1    | 3756.500 | -52.74 | -61.09     | -13.00     | -39.74     | 8.35   | Peak   | Horizontal |
| 2 PP | 5640.000 | -50.78 | -62.59     | -13.00     | -37.78     | 11.81  | Peak   | Horizontal |



|                                                   |                  |                 |               |
|---------------------------------------------------|------------------|-----------------|---------------|
| MODE                                              | TX channel 18900 | FREQUENCY RANGE | Above 1000MHz |
| ENVIRONMENTAL CONDITIONS                          | 23deg. C, 70%RH  | INPUT POWER     | DC 14V        |
| TESTED BY                                         | Jace hu          |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |                  |                 |               |

|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|------|----------|--------|------------|------------|------------|--------|--------|-----------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |           |
| 1    | 3760.000 | -52.50 | -61.13     | -13.00     | -39.50     | 8.63   | Peak   | Vertical  |
| 2 PP | 5643.500 | -49.83 | -62.15     | -13.00     | -36.83     | 12.32  | Peak   | Vertical  |

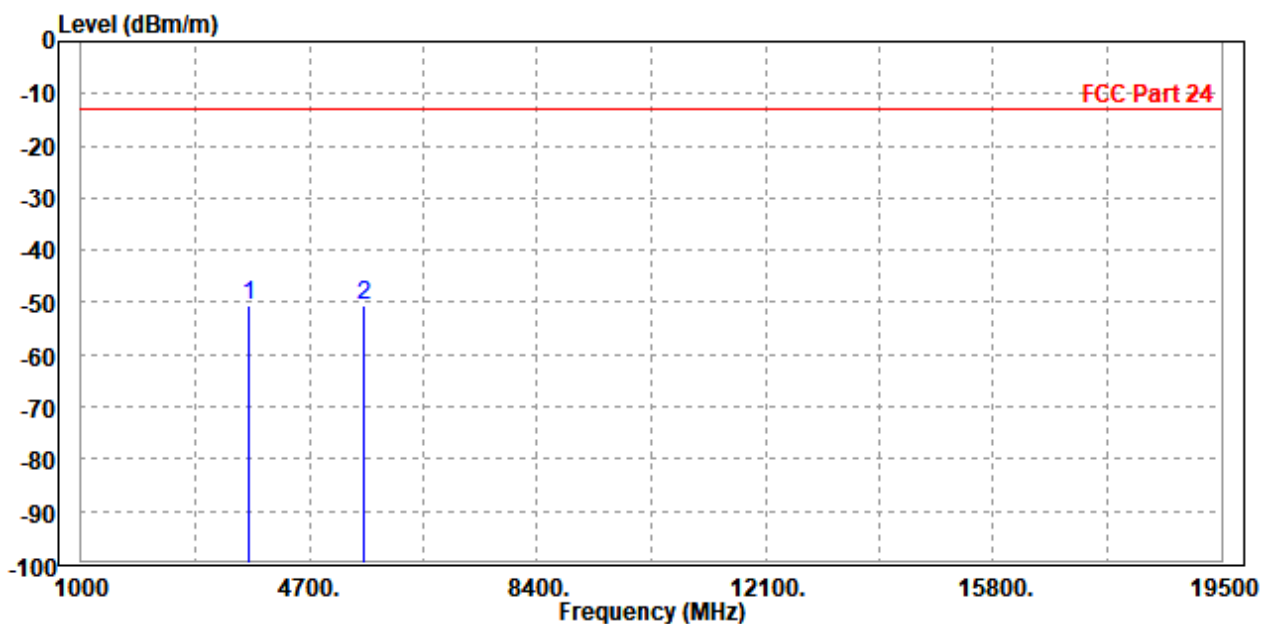


CHANNEL BANDWIDTH: 20MHz / QPSK

CH18700

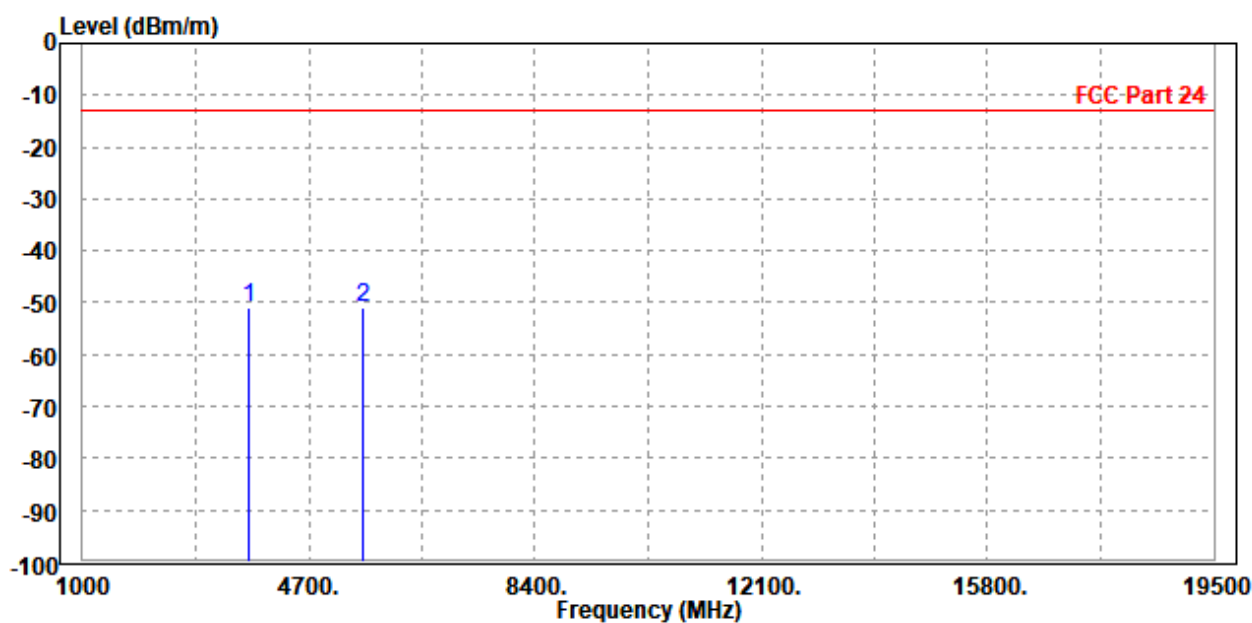
|                                                     |                  |                 |               |
|-----------------------------------------------------|------------------|-----------------|---------------|
| MODE                                                | TX channel 18700 | FREQUENCY RANGE | Above 1000MHz |
| ENVIRONMENTAL CONDITIONS                            | 23deg. C, 70%RH  | INPUT POWER     | DC 14V        |
| TESTED BY                                           | Jace hu          |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                  |                 |               |

|      |          |        | Read   | Limit  | Over   |        |        |            |
|------|----------|--------|--------|--------|--------|--------|--------|------------|
|      | Freq     | Level  | Level  | Line   | Limit  | Factor | Remark | Pol/Phase  |
|      | MHz      | dBm/m  | dBm    | dBm/m  | dB     | dB/m   |        |            |
| 1 PP | 3720.000 | -50.54 | -58.92 | -13.00 | -37.54 | 8.38   | Peak   | Horizontal |
| 2    | 5588.000 | -50.55 | -62.36 | -13.00 | -37.55 | 11.81  | Peak   | Horizontal |



|                                                   |                  |                 |               |
|---------------------------------------------------|------------------|-----------------|---------------|
| MODE                                              | TX channel 18700 | FREQUENCY RANGE | Above 1000MHz |
| ENVIRONMENTAL CONDITIONS                          | 23deg. C, 70%RH  | INPUT POWER     | DC 14V        |
| TESTED BY                                         | Jace hu          |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |                  |                 |               |

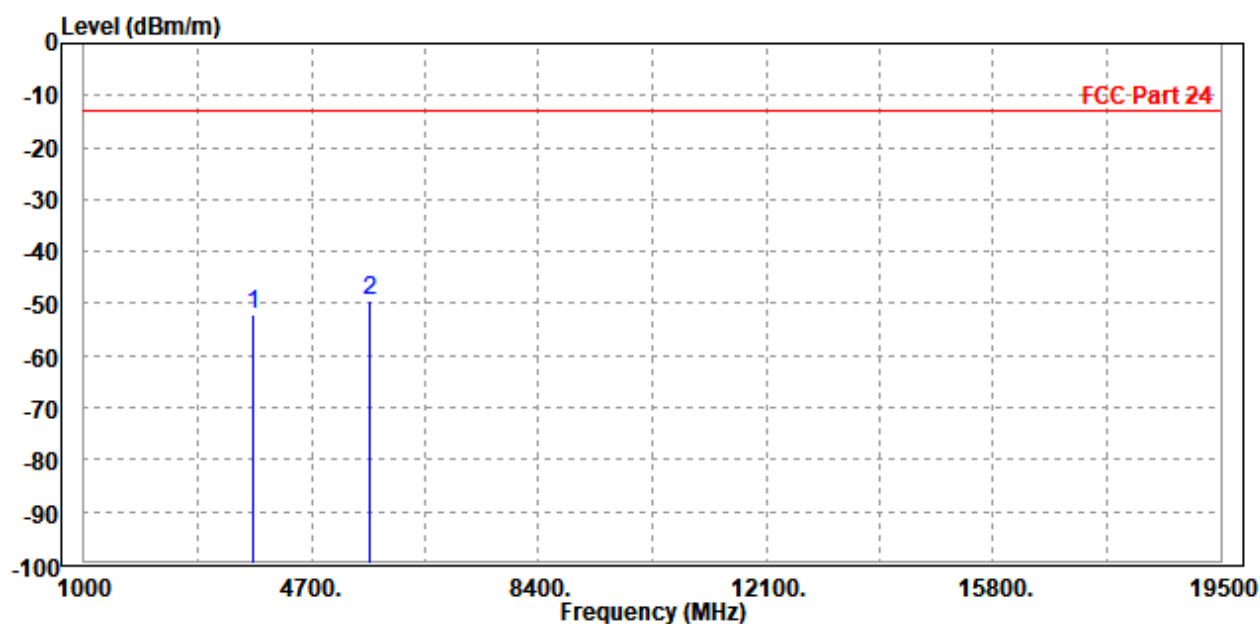
|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|------|----------|--------|------------|------------|------------|--------|--------|-----------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |           |
| 1    | 3719.500 | -50.88 | -59.51     | -13.00     | -37.88     | 8.63   | Peak   | Vertical  |
| 2 PP | 5580.000 | -50.80 | -63.13     | -13.00     | -37.80     | 12.33  | Peak   | Vertical  |



CH18900

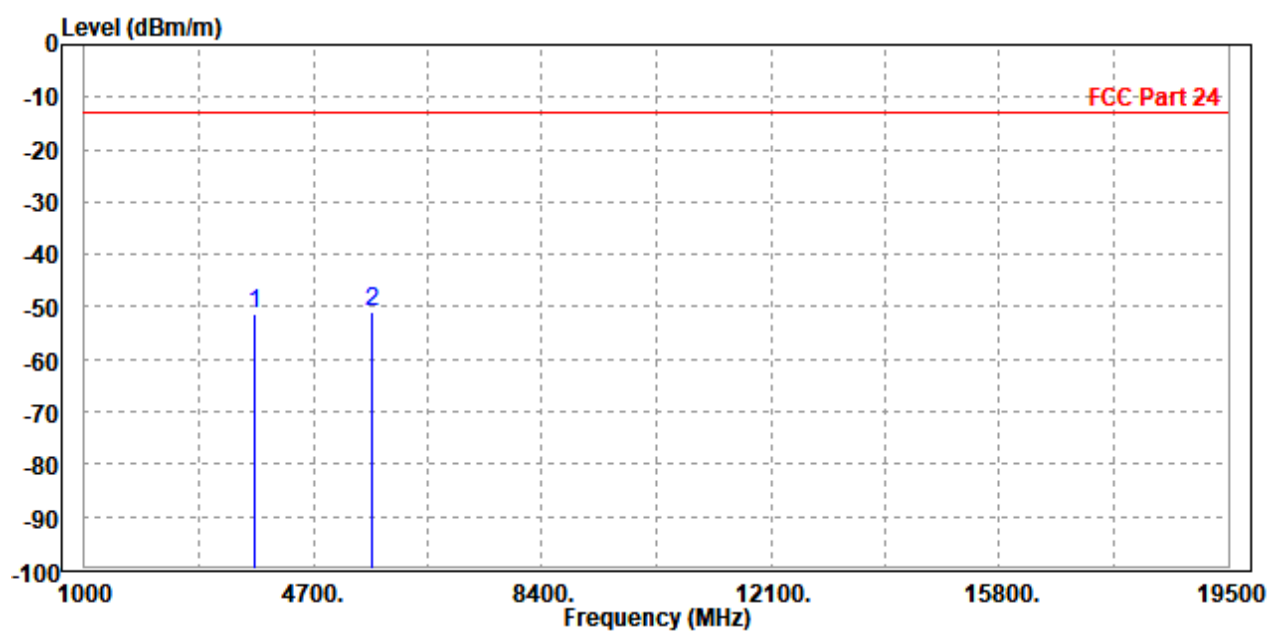
|                                                     |                  |                 |               |
|-----------------------------------------------------|------------------|-----------------|---------------|
| MODE                                                | TX channel 18900 | FREQUENCY RANGE | Above 1000MHz |
| ENVIRONMENTAL CONDITIONS                            | 23deg. C, 70%RH  | INPUT POWER     | DC 14V        |
| TESTED BY                                           | Jace hu          |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                  |                 |               |

|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase  |
|------|----------|--------|------------|------------|------------|--------|--------|------------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |            |
| 1    | 3756.500 | -52.10 | -60.45     | -13.00     | -39.10     | 8.35   | Peak   | Horizontal |
| 2 PP | 5640.000 | -49.37 | -61.18     | -13.00     | -36.37     | 11.81  | Peak   | Horizontal |



|                                                   |                  |                 |               |
|---------------------------------------------------|------------------|-----------------|---------------|
| MODE                                              | TX channel 18900 | FREQUENCY RANGE | Above 1000MHz |
| ENVIRONMENTAL CONDITIONS                          | 23deg. C, 70%RH  | INPUT POWER     | DC 14V        |
| TESTED BY                                         | Jace hu          |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |                  |                 |               |

|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|------|----------|--------|------------|------------|------------|--------|--------|-----------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |           |
| 1    | 3756.500 | -51.25 | -59.88     | -13.00     | -38.25     | 8.63   | Peak   | Vertical  |
| 2 PP | 5640.000 | -50.83 | -63.15     | -13.00     | -37.83     | 12.32  | Peak   | Vertical  |





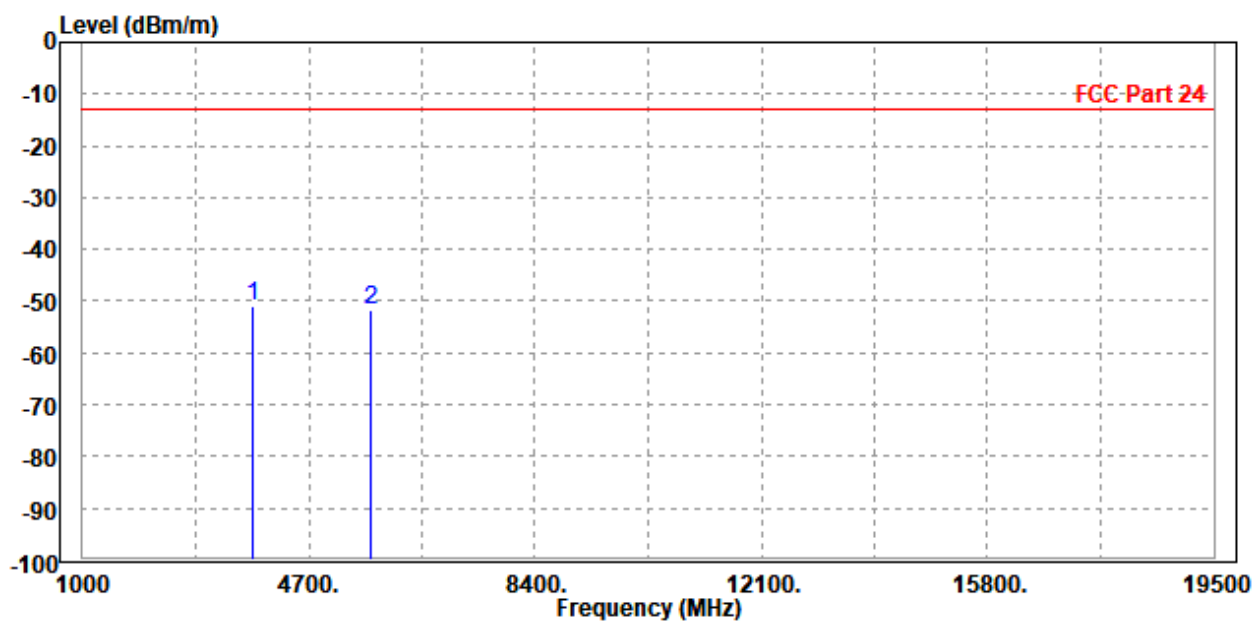
BUREAU  
VERITAS

Test Report No.: W7L-240430W002RF03

CH19100

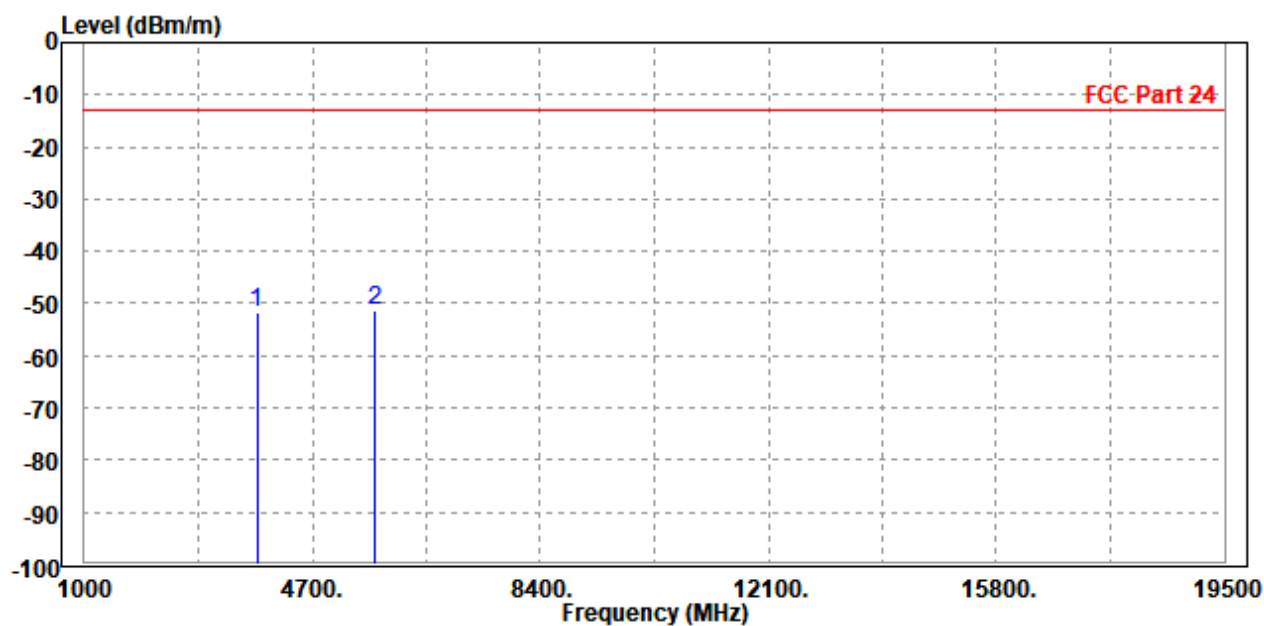
|                                                     |                  |                 |               |
|-----------------------------------------------------|------------------|-----------------|---------------|
| MODE                                                | TX channel 19100 | FREQUENCY RANGE | Above 1000MHz |
| ENVIRONMENTAL CONDITIONS                            | 23deg. C, 70%RH  | INPUT POWER     | DC 14V        |
| TESTED BY                                           | Jace hu          |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                  |                 |               |

|   |             |        | Read   | Limit  | Over   |        |        |            |
|---|-------------|--------|--------|--------|--------|--------|--------|------------|
|   | Freq        | Level  | Level  | Line   | Limit  | Factor | Remark | Pol/Phase  |
|   | MHz         | dBm/m  | dBm    | dBm/m  | dB     | dB/m   |        |            |
| 1 | PP 3793.500 | -50.90 | -59.23 | -13.00 | -37.90 | 8.33   | Peak   | Horizontal |
| 2 | 5700.000    | -51.54 | -63.36 | -13.00 | -38.54 | 11.82  | Peak   | Horizontal |



|                                                   |                  |                 |               |
|---------------------------------------------------|------------------|-----------------|---------------|
| MODE                                              | TX channel 19100 | FREQUENCY RANGE | Above 1000MHz |
| ENVIRONMENTAL CONDITIONS                          | 23deg. C, 70%RH  | INPUT POWER     | DC 14V        |
| TESTED BY                                         | Jace hu          |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |                  |                 |               |

|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|------|----------|--------|------------|------------|------------|--------|--------|-----------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |           |
| 1    | 3800.000 | -51.69 | -60.32     | -13.00     | -38.69     | 8.63   | Peak   | Vertical  |
| 2 PP | 5699.000 | -51.35 | -63.67     | -13.00     | -38.35     | 12.32  | Peak   | Vertical  |





**BUREAU  
VERITAS**

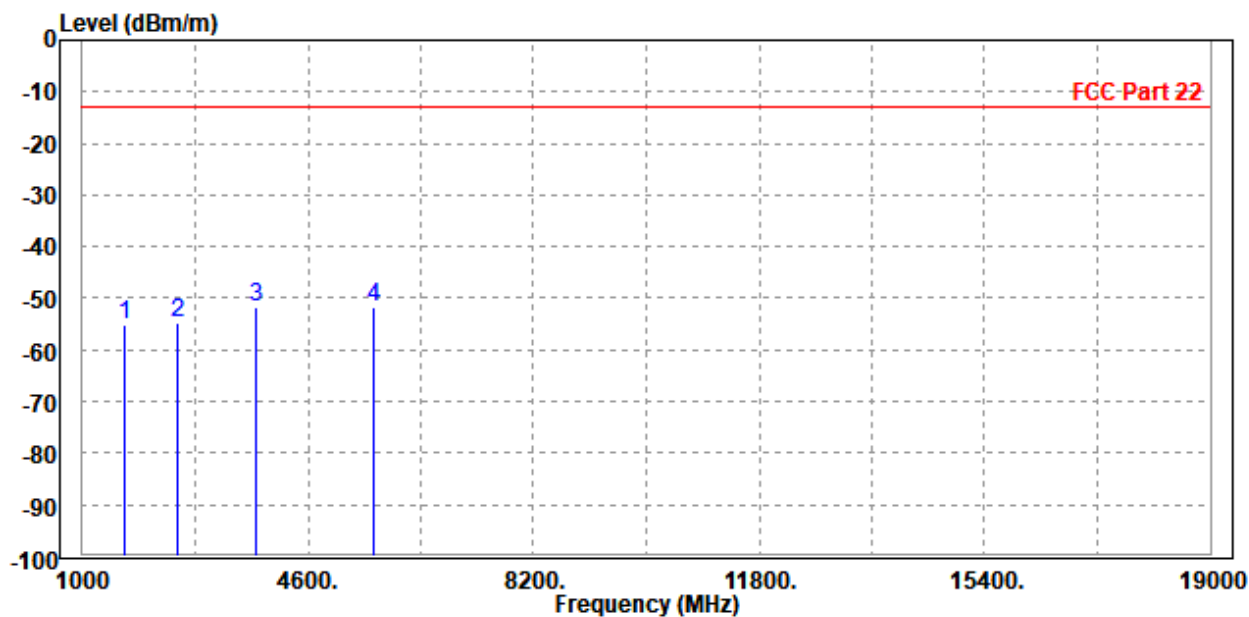
Test Report No.: W7L-240430W002RF03

LTE 2A-5A

CHANNEL BANDWIDTH: (20+10) MHz / QPSK

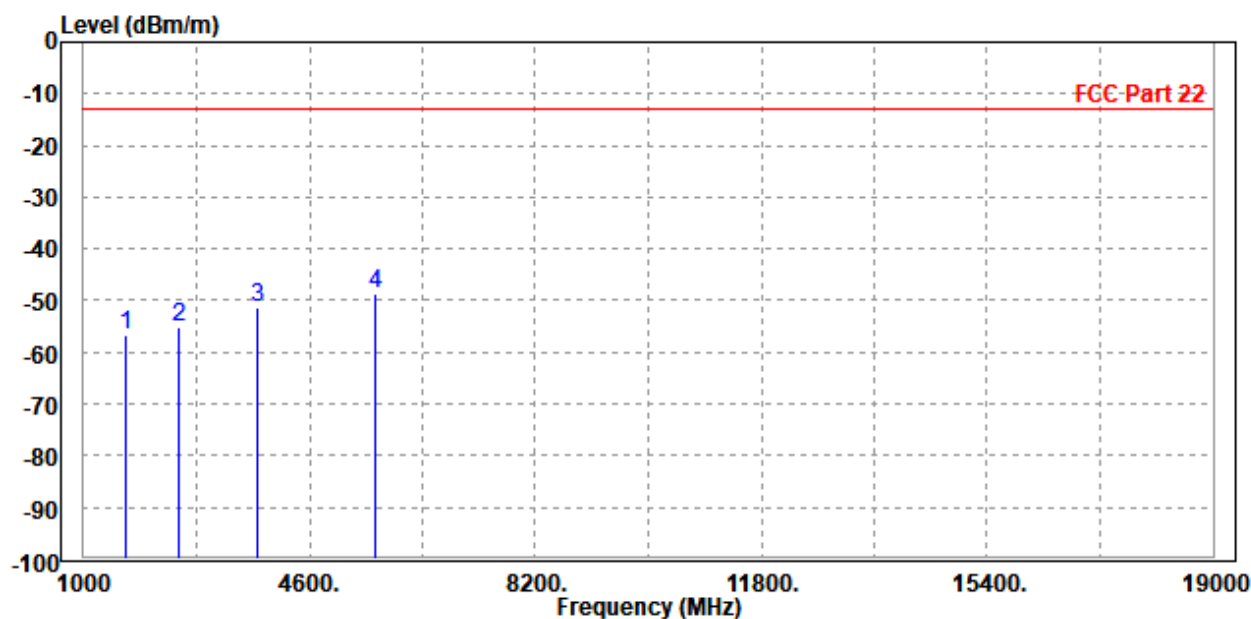
|                                                     |                      |                 |               |
|-----------------------------------------------------|----------------------|-----------------|---------------|
| MODE                                                | TX channel PCC 18900 | FREQUENCY RANGE | Above 1000MHz |
|                                                     | TX channel SCC 20525 |                 |               |
| ENVIRONMENTAL CONDITIONS                            | 23deg. C, 70%RH      | INPUT POWER     | DC 14V        |
| TESTED BY                                           | Jace Hu              |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                      |                 |               |

|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase  |
|------|----------|--------|------------|------------|------------|--------|--------|------------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |            |
| 1    | 1673.000 | -55.25 | -58.99     | -13.00     | -42.25     | 3.74   | Peak   | Horizontal |
| 2    | 2509.500 | -54.75 | -60.89     | -13.00     | -41.75     | 6.14   | Peak   | Horizontal |
| 3    | 3760.000 | -51.87 | -60.22     | -13.00     | -38.87     | 8.35   | Peak   | Horizontal |
| 4 PP | 5640.000 | -51.60 | -63.41     | -13.00     | -38.60     | 11.81  | Peak   | Horizontal |



|                                                   |                      |                 |               |
|---------------------------------------------------|----------------------|-----------------|---------------|
| MODE                                              | TX channel PCC 18900 | FREQUENCY RANGE | Above 1000MHz |
|                                                   | TX channel SCC 20525 |                 |               |
| ENVIRONMENTAL CONDITIONS                          | 23deg. C, 70%RH      | INPUT POWER     | DC 14V        |
| TESTED BY                                         | Jace Hu              |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |                      |                 |               |

|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|------|----------|--------|------------|------------|------------|--------|--------|-----------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |           |
| 1    | 1673.000 | -56.52 | -59.95     | -13.00     | -43.52     | 3.43   | Peak   | Vertical  |
| 2    | 2509.500 | -55.03 | -60.87     | -13.00     | -42.03     | 5.84   | Peak   | Vertical  |
| 3    | 3760.000 | -51.26 | -59.89     | -13.00     | -38.26     | 8.63   | Peak   | Vertical  |
| 4 PP | 5644.000 | -48.79 | -61.11     | -13.00     | -35.79     | 12.32  | Peak   | Vertical  |

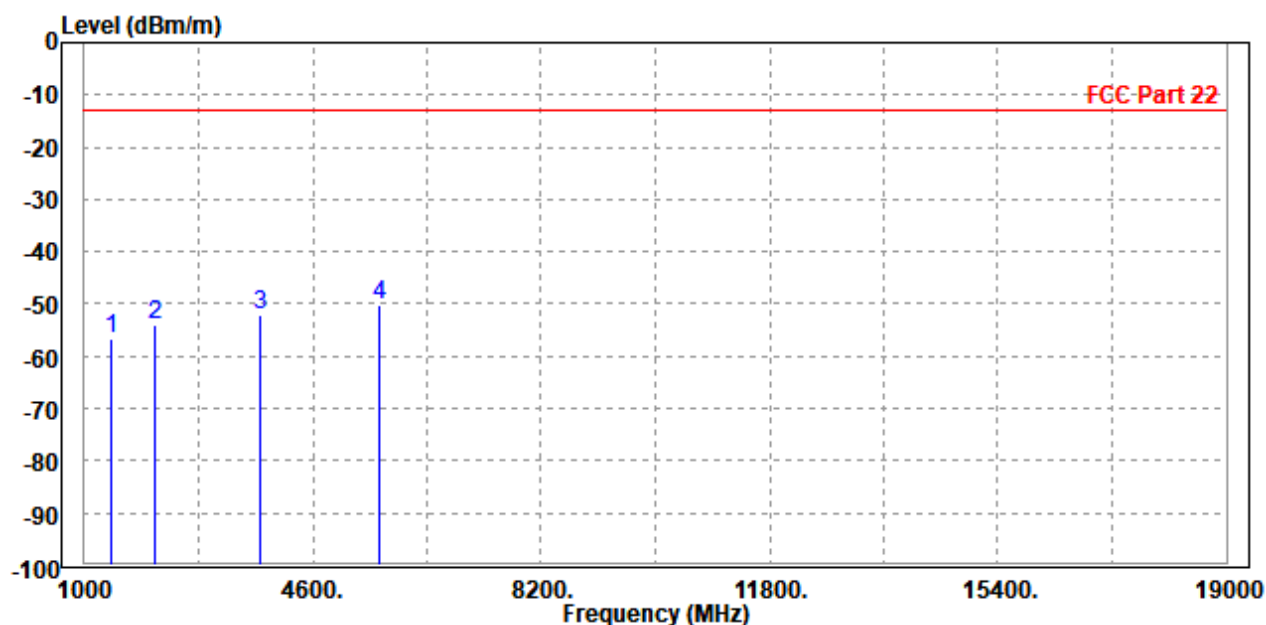


LTE 2A-12A

CHANNEL BANDWIDTH: (20+10) MHz / QPSK

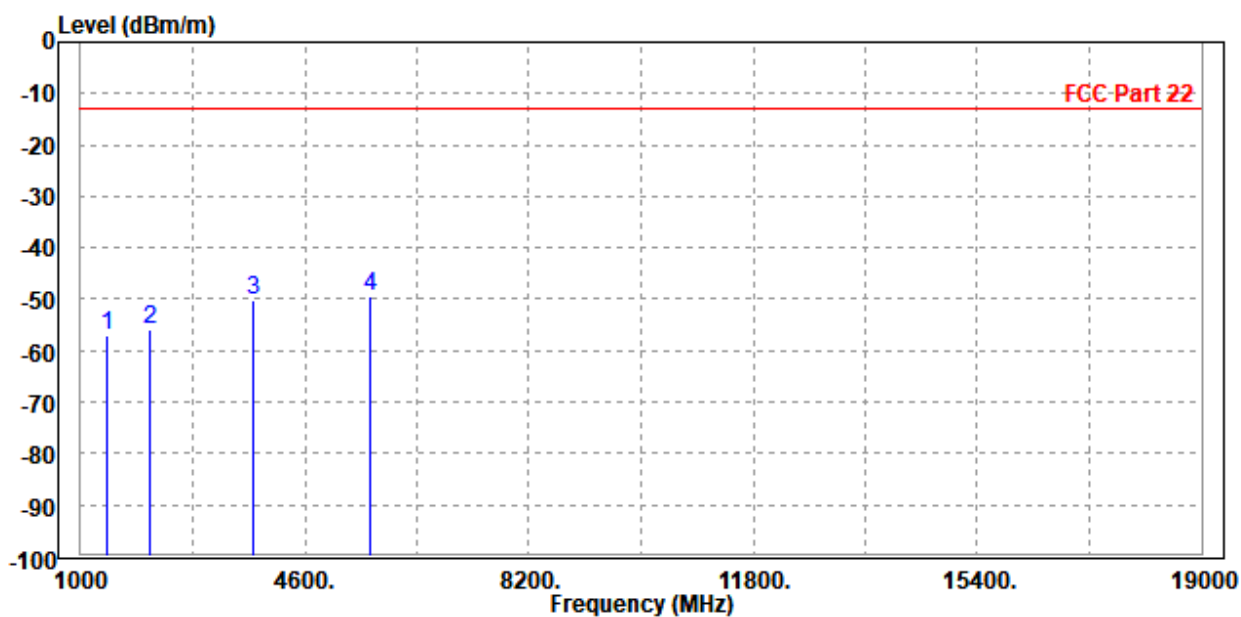
|                                                     |                      |                 |               |
|-----------------------------------------------------|----------------------|-----------------|---------------|
| MODE                                                | TX channel PCC 18900 | FREQUENCY RANGE | Above 1000MHz |
|                                                     | TX channel SCC 23095 |                 |               |
| ENVIRONMENTAL CONDITIONS                            | 23deg. C, 70%RH      | INPUT POWER     | DC 14V        |
| TESTED BY                                           | Jace Hu              |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                      |                 |               |

|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase  |
|------|----------|--------|------------|------------|------------|--------|--------|------------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |            |
| 1    | 1414.000 | -56.51 | -59.45     | -13.00     | -43.51     | 2.94   | Peak   | Horizontal |
| 2    | 2121.000 | -53.95 | -59.03     | -13.00     | -40.95     | 5.08   | Peak   | Horizontal |
| 3    | 3760.000 | -51.92 | -60.27     | -13.00     | -38.92     | 8.35   | Peak   | Horizontal |
| 4 PP | 5644.000 | -50.23 | -62.04     | -13.00     | -37.23     | 11.81  | Peak   | Horizontal |



|                                                   |                      |                 |               |
|---------------------------------------------------|----------------------|-----------------|---------------|
| MODE                                              | TX channel PCC 18900 | FREQUENCY RANGE | Above 1000MHz |
|                                                   | TX channel SCC 23095 |                 |               |
| ENVIRONMENTAL CONDITIONS                          | 23deg. C, 70%RH      | INPUT POWER     | DC 14V        |
| TESTED BY                                         | Jace Hu              |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |                      |                 |               |

|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|------|----------|--------|------------|------------|------------|--------|--------|-----------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |           |
| 1    | 1414.000 | -57.12 | -60.04     | -13.00     | -44.12     | 2.92   | Peak   | Vertical  |
| 2    | 2121.000 | -56.08 | -60.51     | -13.00     | -43.08     | 4.43   | Peak   | Vertical  |
| 3    | 3760.000 | -50.13 | -58.76     | -13.00     | -37.13     | 8.63   | Peak   | Vertical  |
| 4 PP | 5640.000 | -49.45 | -61.77     | -13.00     | -36.45     | 12.32  | Peak   | Vertical  |





**BUREAU  
VERITAS**

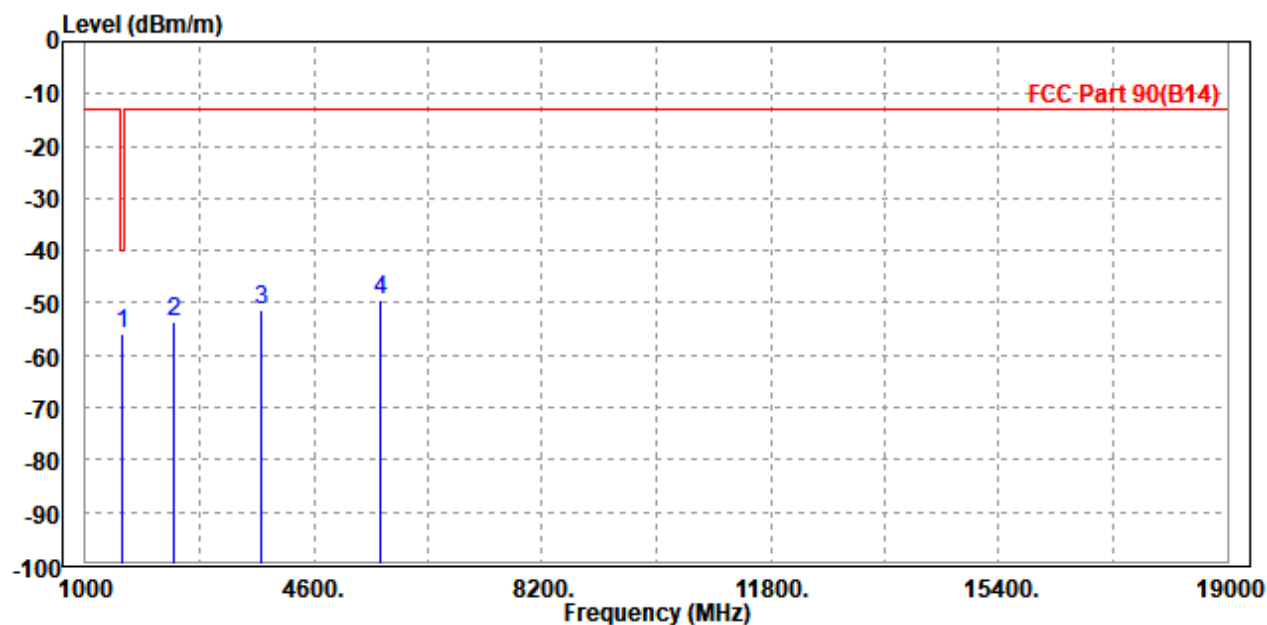
Test Report No.: W7L-240430W002RF03

LTE 2A-14A

CHANNEL BANDWIDTH: (20+10) MHz / QPSK

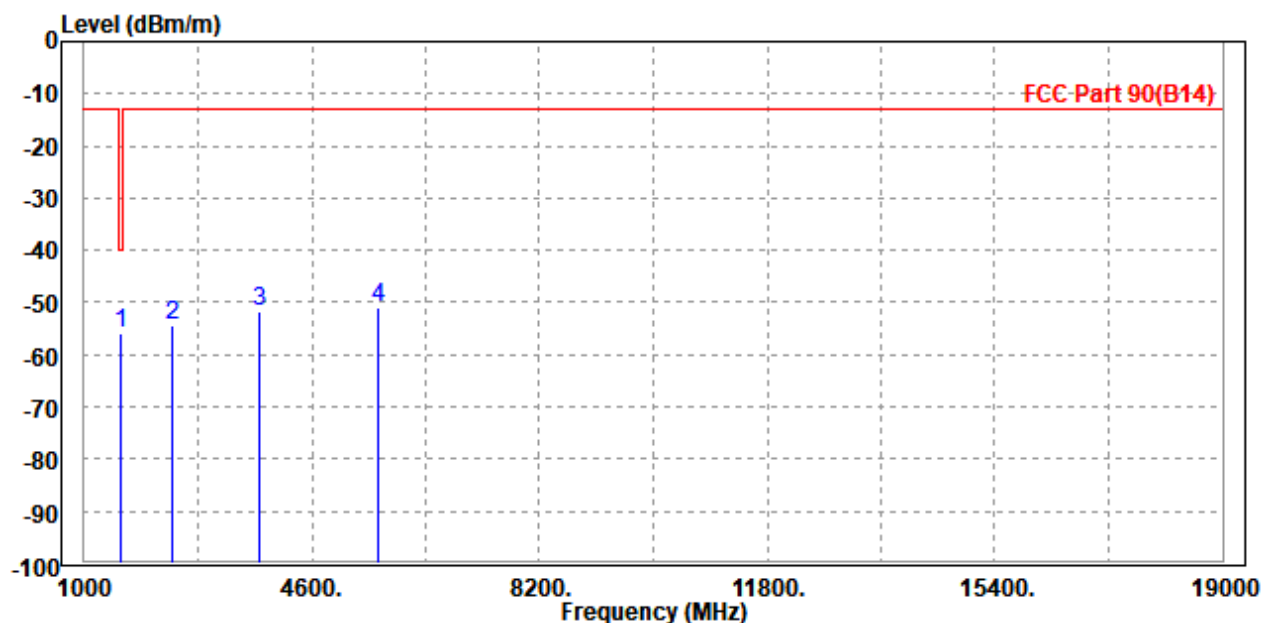
|                                                     |                      |                 |               |
|-----------------------------------------------------|----------------------|-----------------|---------------|
| MODE                                                | TX channel PCC 18900 | FREQUENCY RANGE | Above 1000MHz |
|                                                     | TX channel SCC 23330 |                 |               |
| ENVIRONMENTAL CONDITIONS                            | 23deg. C, 70%RH      | INPUT POWER     | DC 14V        |
| TESTED BY                                           | Jace Hu              |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                      |                 |               |

|   |    | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase  |
|---|----|----------|--------|------------|------------|------------|--------|--------|------------|
|   |    | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |            |
| 1 | PP | 1594.000 | -55.74 | -59.23     | -40.00     | -15.74     | 3.49   | Peak   | Horizontal |
| 2 |    | 2379.000 | -53.43 | -59.20     | -13.00     | -40.43     | 5.77   | Peak   | Horizontal |
| 3 |    | 3760.000 | -51.44 | -59.79     | -13.00     | -38.44     | 8.35   | Peak   | Horizontal |
| 4 |    | 5640.000 | -49.48 | -61.29     | -13.00     | -36.48     | 11.81  | Peak   | Horizontal |



|                                                   |                      |                 |               |
|---------------------------------------------------|----------------------|-----------------|---------------|
| MODE                                              | TX channel PCC 18900 | FREQUENCY RANGE | Above 1000MHz |
|                                                   | TX channel SCC 23330 |                 |               |
| ENVIRONMENTAL CONDITIONS                          | 23deg. C, 70%RH      | INPUT POWER     | DC 14V        |
| TESTED BY                                         | Jace Hu              |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M |                      |                 |               |

|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|------|----------|--------|------------|------------|------------|--------|--------|-----------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |           |
| 1 PP | 1586.000 | -55.97 | -59.25     | -40.00     | -15.97     | 3.28   | Peak   | Vertical  |
| 2    | 2379.000 | -54.51 | -59.86     | -13.00     | -41.51     | 5.35   | Peak   | Vertical  |
| 3    | 3760.000 | -51.54 | -60.17     | -13.00     | -38.54     | 8.63   | Peak   | Vertical  |
| 4    | 5644.000 | -51.03 | -63.35     | -13.00     | -38.03     | 12.32  | Peak   | Vertical  |

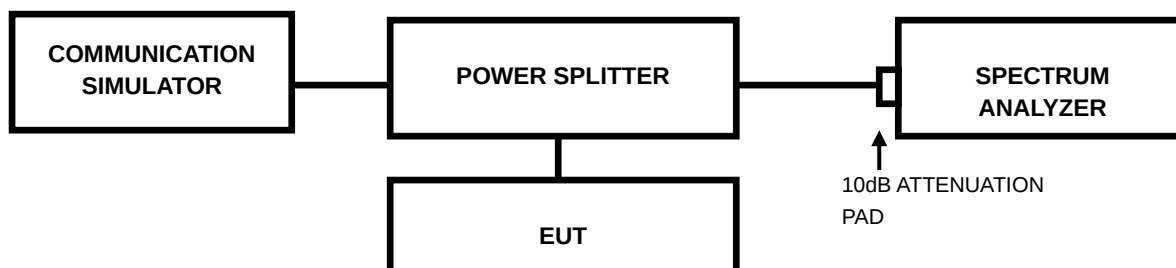


### 3.7 PEAK TO AVERAGE RATIO

#### 3.7.1 LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT

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

#### 3.7.2 TEST SETUP



#### 3.7.3 TEST PROCEDURES

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%.



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### 3.7.4 TEST RESULTS

Please Refer to Appendix C Of this test report.



BUREAU  
VERITAS

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## 4 INFORMATION ON THE TESTING LABORATORIES

We, BV 7LAYERS COMMUNICATIONS TECHNOLOGY (SHENZHEN) CO. LTD., were founded in 2015 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

**Shenzhen EMC/RF Lab:**

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Fax: +86-755-88696577

**Email:** [customerservice.sw@bureauveritas.com](mailto:customerservice.sw@bureauveritas.com)

**Web Site:** [www.adt.com.tw](http://www.adt.com.tw)

The address and road map of all our labs can be found in our web site also.



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## 5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.

---END---