ACCREDITED
Certificate # 3939.01

# FCC TEST REPORT

# (PART 24)

| | |
|---|---|
| Applicant: | Honeywell International Inc<br>Honeywell Safety and Productivity Solutions |
| Address: | 9680 Old Bailes Road, Fort Mill, SC 29707 United States |

| | |
|---|---|
| Manufacturer or Supplier: | Honeywell International Inc<br>Honeywell Safety and Productivity Solutions |
| Address: | 9680 Old Bailes Road, Fort Mill, SC 29707 United States |
| Product: | Mobile Computer |
| Brand Name: | Honeywell |
| Model Name: | CT45P-L1N-2 |
| FCC ID: | HD5-CT45PL1N2 |
| Date of tests: | May. 08, 2021 ~ Aug. 31, 2021 |

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 |
|---|---|
| Simon<br>Date: Sep. 01, 2021 | Luke Lu<br>Date: Sep. 01, 2021 |

# TABLE OF CONTENTS

# RELEASE CONTROL RECORD

| ISSUE NO. | REASON FOR CHANGE | DATE ISSUED |
|---|---|---|
| W7L-P21080006RF16 | Original release | Sep. 01, 2021 |

# 1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

| APPLIED STANDARD: FCC Part 24 & Part 2 | | |
|---|---|---|
| **STANDARD SECTION** | **1.1.1.1.1.1TEST TYPE** | **RESULT** |
| 2.1046<br>24.232 | Equivalent Isotropic Radiated Power | Compliance |
| 2.1055<br>24.235 | Frequency Stability | Compliance |
| 2.1049<br>24.238(b) | Occupied Bandwidth | Compliance |
| 24.232(d) | Peak to average ratio | Compliance |
| 24.238(b) | Band Edge Measurements | Compliance |
| 2.1051<br>24.238 | Conducted Spurious Emissions | Compliance |
| 2.1053<br>24.238 | Radiated Spurious Emissions | Compliance |

## 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 | ±76.97Hz |
| Radiated emissions & Radiated Power (30MHz~1GMHz) | ±4.98dB |
| Radiated emissions & Radiated Power (1GMHz ~6GMHz) | ±4.70dB |
| Radiated emissions (6GMHz ~18GMHz) | ±4.60dB |
| Radiated emissions (18GMHz ~40GMHz) | ±4.12dB |
| Conducted emissions | ±4.01dB |
| Occupied Channel Bandwidth | ±43.58KHz |
| Conducted Output power | ±2.06dB |
| Band Edge Measurements | ±4.70dB |
| Peak to average ratio | ±0.76dB |

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 | Apr. 22,21 | Apr. 21,22 |
| EXA Signal Analyzer | KEYSIGHT | N9010A-544 | MY54510355 | Jun. 04,20 | Jun. 03,21 |
| EXA Signal Analyzer | KEYSIGHT | N9010A-544 | MY54510355 | Jun. 03,21 | Jun. 02,22 |
| Bilog Antenna | ETS-LINDGREN | 3143B | 00161965 | Mar. 05,21 | Mar. 04,22 |
| Horn Antenna | ETS-LINDGREN | 3117 | 00168728 | Apr. 02,21 | Apr. 01,22 |
| Horn Antenna (18GHz-40GHz) | N/A | QWH-SL-18-40-K-SG/QMS-00361 | 15433 | Aug. 26, 20 | Aug. 25, 21 |
| Horn Antenna (18GHz-40GHz) | N/A | QWH-SL-18-40-K-SG/QMS-00361 | 15433 | Aug. 25, 21 | Aug. 24, 22 |
| Radio Communication Analyzer | ANRITSU | MT8820C | 6201465426 | Feb. 25,21 | Feb. 24,22 |
| Signal Pre-Amplifier | EMSI | EMC 9135 | 980249 | Jun. 03,20 | Jun. 02,21 |
| Signal Pre-Amplifier | EMSI | EMC 9135 | 980249 | Jun. 02,21 | Jun. 01,22 |
| Signal Pre-Amplifier | EMSI | EMC 012645B | 980257 | Jun. 04,20 | Jun. 03,21 |
| Signal Pre-Amplifier | EMSI | EMC 012645B | 980257 | Jun. 03,21 | Jun. 02,22 |
| Signal Pre-Amplifier | EMSI | EMC 184045B | 980259 | Apr. 22,21 | Apr. 21,22 |
| 3m Semi-anechoic Chamber | ETS-LINDGREN | 9m*6m*6m | Euroshieldpn-CT0001143-1216 | May. 19,20 | May. 18,23 |
| Test Software | E3 | V 9.160323 | N/A | N/A | N/A |
| Test Software | ADT | ADT_Radiated_V7.6.15.9.2 | N/A | N/A | N/A |
| 10dB Attenuator | JFW/USA | 50HF-010-SMA | 1505 | Jun. 04,20 | Jun. 03,21 |
| 10dB Attenuator | JFW/USA | 50HF-010-SMA | 1505 | Jun. 03,21 | Jun. 02,22 |
| Power Meter | Anritsu | ML2495A | 1506002 | Apr. 07,21 | Apr. 06,22 |
| Power Sensor | Anritsu | MA2411B | 1339352 | May. 07,21 | May. 06,22 |
| Temperature Chamber | ESPEC | SH-242 | 93000855 | Jun. 03,20 | Jun. 02,21 |
| Temperature Chamber | ESPEC | SH-242 | 93000855 | Jun. 02,21 | Jun. 01,22 |
| MXG Analog Microvave Signal Generator | KEYSIGHT | N5183A | MY50143024 | Mar. 05,21 | Mar. 04,22 |
| Power Divider | MCLI/USA | PS2-15 | 24880 | N/A | N/A |

**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

| | | |
|---|---|---|
| **PRODUCT** | Mobile Computer | |
| **BRAND NAME** | Honeywell | |
| **MODEL NAME** | CT45P-L1N-2 | |
| **NOMINAL VOLTAGE** | 3.85Vdc (Lithium-ion cell, battery) | |
| **MODULATION TYPE** | **GPRS:** GMSK<br>**EDGE:** 8PSK<br>**WCDMA:** BPSK,QPSK<br>**LTE Band 2:** QPSK, 16QAM, 64QAM | |
| **FREQUENCY RANGE** | **GSM, GPRS, EDGE** | 1850.2MHz ~ 1909.8MHz |
| | **WCDMA** | 1852.4MHz ~ 1907.6MHz |
| | **LTE Band 2<br>Channel Bandwidth: 1.4MHz** | 1850.7MHz ~ 1909.3MHz |
| | **LTE Band 2<br>Channel Bandwidth: 3MHz** | 1851.5MHz ~ 1908.5MHz |
| | **LTE Band 2<br>Channel Bandwidth: 5MHz** | 1852.5MHz ~ 1907.5MHz |
| | **LTE Band 2<br>Channel Bandwidth: 10MHz** | 1855.0MHz ~ 1905.0MHz |
| | **LTE Band 2<br>Channel Bandwidth: 15MHz** | 1857.5MHz ~ 1902.5MHz |
| | **LTE Band 2<br>Channel Bandwidth: 20MHz** | 1860.0MHz ~ 1900.0MHz |
| | **LTE Band 25<br>Channel Bandwidth: 1.4MHz** | 1850.7MHz ~ 1914.3MHz |
| | **LTE Band 25<br>Channel Bandwidth: 3MHz** | 1851.5MHz ~ 1913.5MHz |
| | **LTE Band 25<br>Channel Bandwidth: 5MHz** | 1852.5MHz ~ 1912.5MHz |
| | **LTE Band 25<br>Channel Bandwidth: 10MHz** | 1855.0MHz ~ 1910.0MHz |
| | **LTE Band 25<br>Channel Bandwidth: 15MHz** | 1857.5MHz ~ 1907.5MHz |
| | **LTE Band 25<br>Channel Bandwidth: 20MHz** | 1860.0MHz ~ 1905.0MHz |

| | | |
|---|---|---|
| MAX. EIRP POWER | GSM | 1358.31mW |
| | EDGE | 656.15mW |
| | WCDMA | 114.02mW |
| | LTE Band 2<br>Channel Bandwidth: 1.4MHz | 223.36mW |
| | LTE Band 2<br>Channel Bandwidth: 3MHz | 220.80mW |
| | LTE Band 2<br>Channel Bandwidth: 5MHz | 220.80mW |
| | LTE Band 2<br>Channel Bandwidth: 10MHz | 221.31mW |
| | LTE Band 2<br>Channel Bandwidth: 15MHz | 221.82mW |
| | LTE Band 2<br>Channel Bandwidth: 20MHz | 223.36mW |
| MAX. EIRP POWER | LTE Band 25<br>Channel Bandwidth: 1.4MHz | 224.91mW |
| | LTE Band 25<br>Channel Bandwidth: 3MHz | 222.84mW |
| | LTE Band 25<br>Channel Bandwidth: 5MHz | 221.31mW |
| | LTE Band 25<br>Channel Bandwidth: 10MHz | 221.82mW |
| | LTE Band 25<br>Channel Bandwidth: 15MHz | 223.36mW |
| | LTE Band 25<br>Channel Bandwidth: 20MHz | 225.42mW |

| | | |
|---|---|---|
| **EMISSION DESIGNATOR** | **GSM** | 240KGXW |
| | **EDGE** | 240KG7W |
| | **WCDMA** | 4M16F9W |
| | **LTE Band 2 Channel Bandwidth: 1.4MHz** | QPSK: 1M10G7D |
| | | 16QAM: 1M10W7D |
| | | 64QAM: 1M10W7D |
| | **LTE Band 2 Channel Bandwidth: 3MHz** | QPSK: 2M69G7D |
| | | 16QAM: 2M69W7D |
| | | 64QAM: 2M69W7D |
| | **LTE Band 2 Channel Bandwidth: 5MHz** | QPSK: 4M49G7D |
| | | 16QAM: 4M48W7D |
| | | 64QAM: 4M48W7D |
| | **LTE Band 2 Channel Bandwidth: 10MHz** | QPSK: 8M97G7D |
| | | 16QAM: 8M97W7D |
| | | 64QAM: 8M98W7D |
| | **LTE Band 2 Channel Bandwidth: 15MHz** | QPSK: 13M5G7D |
| | | 16QAM: 13M5W7D |
| | | 64QAM: 13M5W7D |
| | **LTE Band 2 Channel Bandwidth: 20MHz** | QPSK: 17M9G7D |
| | | 16QAM: 19M3W7D |
| | | 64QAM: 17M9W7D |
| | **LTE Band 25 Channel Bandwidth: 1.4MHz** | QPSK: 1M09G7D |
| | | 16QAM: 1M09W7D |
| | | 64QAM: 1M09W7D |
| | **LTE Band 25 Channel Bandwidth: 3MHz** | QPSK: 2M70G7D |
| | | 16QAM: 2M69W7D |
| | | 64QAM: 2M69W7D |
| | **LTE Band 25 Channel Bandwidth: 5MHz** | QPSK: 4M46G7D |
| | | 16QAM: 4M46W7D |
| | | 64QAM: 4M49W7D |
| | **LTE Band 25 Channel Bandwidth: 10MHz** | QPSK: 8M92G7D |
| | | 16QAM: 8M92W7D |
| | | 64QAM: 8M92W7D |
| | **LTE Band 25 Channel Bandwidth: 15MHz** | QPSK: 13M5G7D |
| | | 16QAM: 13M4W7D |
| | | 64QAM: 13M5W7D |
| | **LTE Band 25 Channel Bandwidth: 20MHz** | QPSK: 18M0G7D |
| | | 16QAM: 18M0W7D |
| | | 64QAM: 18M0W7D |
| **ANTENNA TYPE** | PIFA Antenna with 2.67dBi gain | |
| **HW VERSION** | V1.0 | |

| | |
|---|---|
| **SW VERSION** | OS.11.002-HON.11.002 |
| **I/O PORTS** | Refer to user's manual |
| **CABLE SUPPLIED** | USB cable: unshielded without ferrite, 1.25 meter<br>Earphone cable: unshielded without ferrite, 1.27 meter |
| **EXTREME TEMPERATURE** | -10-55 ℃ |
| **EXTREME VOLTAGE** | 3.4V- 4.4V |

**NOTE**:

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

2. This product includes the following three SKU which hardware is exactly same, the difference is described as following, Sample 1 was full test, sample 2 verify the worst case,check worst case Radiated emission:

| SAMPLE | EUT CONFIGURATION INFORMATION |
|---|---|
| 1 | SKU ID:CT45-L1N-37D120G ,Assembled Scanner Imager: 7-S0703 |
| 2 | SKU ID:CT45-L1N-38D120G ,Assembled Scanner Imager: 8 - N6803/S0803 |
| 3 | SKU ID: CT45-L1N-37D220G , Assembled with Scanner: 7-S0703 for China Only with Android non-GMS |

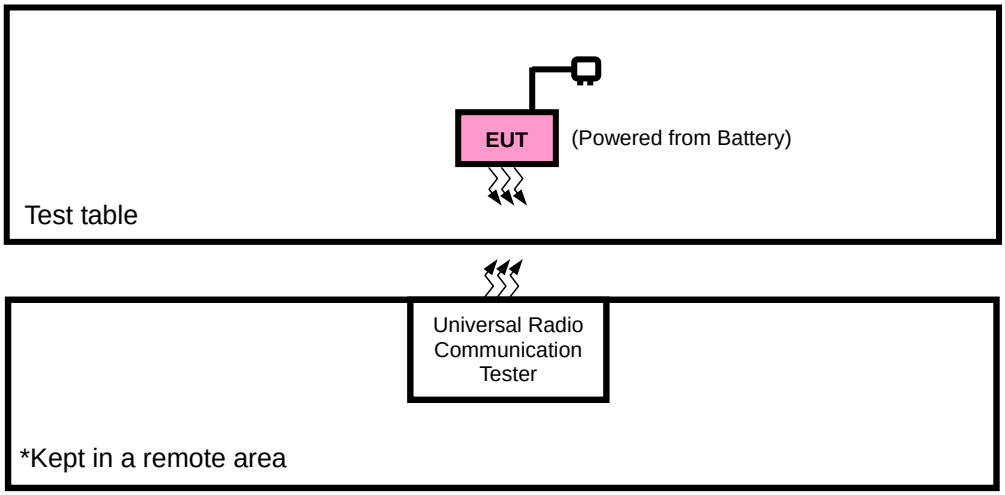
3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

**List of Accessory:**

| ACCESSORIES | BRAND | MODEL | SPECIFICATION |
|---|---|---|---|
| Battery | Honeywell | CT50-BTSC | Capacity：3.85vdc 4020mAh |
| AC Adapter | HONOR | ADS-12B-06 05010E | I/P:100-240Vac, 0.3A<br>O/P: 5Vdc, 2A |
| USB Cable | Honeywell | CT40-SN | Shielded, 1.25meter |
| Earphone | VIVO | N/A | Shielded, 1.27meter |
| LCD Panel | CASIL | CTM10801920T01 | 5.0" FHD(1928*1080) |

## 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 | DC source | Kikusui/JP | PMX18-5A | 0000001 | N/A |

| NO. | SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS |
|---|---|
| 1 | DC Line: 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 GSM/EDGE/ LTE. Following channel(s) was (were) selected for the final test as listed below:

| EUT CONFIGURE MODE | 1.1.1.1.1.2DESCRIPTION |
|---|---|
| A | EUT + DC Source with GSM or WCDMA or LTE link |

**GSM MODE**

| EUT CONFIGURE MODE | TEST ITEM | AVAILABLE CHANNEL | TESTED CHANNEL | MODE |
|---|---|---|---|---|
| B | EIRP | 512 to 810 | 512, 661, 810 | GPRS, EDGE |
| B | FREQUENCY STABILITY | 512 to 810 | 512, 810 | GPRS, EDGE |
| B | OCCUPIED BANDWIDTH | 512 to 810 | 512, 661, 810 | GPRS, EDGE |
| B | PEAK TO AVERAGE RATIO | 512 to 810 | 512, 661, 810 | GPRS, EDGE |
| B | BAND EDGE | 512 to 810 | 512, 810 | GPRS, EDGE |
| B | CONDCUDETED EMISSION | 512 to 810 | 512, 661, 810 | GPRS, EDGE |
| A | RADIATED EMISSION | 512 to 810 | 512, 661, 810 | GPRS, EDGE |

## WCDMA

| EUT CONFIGURE MODE | TEST ITEM | AVAILABLE CHANNEL | TESTED CHANNEL | MODE |
|---|---|---|---|---|
| B | EIRP | 9262 to 9538 | 9262, 9400, 9538 | WCDMA |
| B | FREQUENCY STABILITY | 9262 to 9538 | 9262, 9538 | WCDMA |
| B | OCCUPIED BANDWIDTH | 9262 to 9538 | 9262, 9400, 9538 | WCDMA |
| B | PEAK TO AVERAGE RATIO | 9262 to 9538 | 9262, 9400, 9538 | WCDMA |
| B | BAND EDGE | 9262 to 9538 | 9262, 9538 | WCDMA |
| B | CONDCUDETED 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 |
|---|---|---|---|---|---|---|
| B | 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 |
| B | FREQUENCY STABILITY | 18607 to 19193 | 18607, 19193 | 1.4MHz | QPSK | 1 RB / 0 RB Offset |
| | | 18615 to 19185 | 18615, 19185 | 3MHz | QPSK | 1 RB / 0 RB Offset |
| | | 18625 to 19175 | 18625, 19175 | 5MHz | QPSK | 1 RB / 0 RB Offset |
| | | 18650 to 19150 | 18650, 19150 | 10MHz | QPSK | 1 RB / 0 RB Offset |
| | | 18675 to 19125 | 18675, 19125 | 15MHz | QPSK | 1 RB / 0 RB Offset |
| | | 18700 to 19100 | 18700, 19100 | 20MHz | QPSK | 1 RB / 0 RB Offset |
| B | OCCUPIED BANDWIDTH | 18607 to 19193 | 18607, 18900, 19193 | 1.4MHz | QPSK,16QAM, 64QAM | 6 RB / 0 RB Offset |
| | | 18615 to 19185 | 18615, 18900, 19185 | 3MHz | QPSK,16QAM, 64QAM | 15 RB / 0 RB Offset |
| | | 18625 to 19175 | 18625, 18900, 19175 | 5MHz | QPSK,16QAM, 64QAM | 25 RB / 0 RB Offset |
| | | 18650 to 19150 | 18650, 18900, 19150 | 10MHz | QPSK,16QAM, 64QAM | 50 RB / 0 RB Offset |
| | | 18675 to 19125 | 18675, 18900, 19125 | 15MHz | QPSK,16QAM, 64QAM | 75 RB / 0 RB Offset |
| | | 18700 to 19100 | 18700, 18900, 19100 | 20MHz | QPSK,16QAM, 64QAM | 100 RB / 0 RB Offset |
| B | PEAK TO AVERAGE RATIO | 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 |

| | | | | | | |
|---|---|---|---|---|---|---|
| B | BAND EDGE | 18607 to 19193 | 18607 | 1.4MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | | | | | 6 RB / 0 RB Offset |
| | | | 19193 | 1.4MHz | QPSK,16QAM, 64QAM | 1 RB / 5 RB Offset |
| | | | | | | 6 RB / 0 RB Offset |
| | | 18615 to 19185 | 18615 | 3MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | | | | | 15 RB / 0 RB Offset |
| | | | 19185 | 3MHz | QPSK,16QAM, 64QAM | 1 RB / 14 RB Offset |
| | | | | | | 15 RB / 0 RB Offset |
| | | 18625 to 19175 | 18625 | 5MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | | | | | 25 RB / 0 RB Offset |
| | | | 19175 | 5MHz | QPSK,16QAM, 64QAM | 1 RB / 24 RB Offset |
| | | | | | | 25 RB / 0 RB Offset |
| | | 18650 to 19150 | 18650 | 10MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | | | | | 50 RB / 0 RB Offset |
| | | | 19150 | 10MHz | QPSK,16QAM, 64QAM | 1 RB / 49 RB Offset |
| | | | | | | 50 RB / 0 RB Offset |
| | | 18675 to 19125 | 18675 | 15MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | | | | | 75 RB / 0 RB Offset |
| | | | 19125 | 15MHz | QPSK,16QAM, 64QAM | 1 RB / 74 RB Offset |
| | | | | | | 75 RB / 0 RB Offset |
| | | 18700 to 19100 | 18700 | 20MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | | | | | 100 RB / 0 RB Offset |
| | | | 19100 | 20MHz | QPSK,16QAM, 64QAM | 1 RB / 99 RB Offset |
| | | | | | | 100 RB / 0 RB Offset |
| B | CONDCUDETED 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 | 18607, 18900, 19193 | 10MHz | QPSK | 1 RB / 0 RB Offset |
| | | 18675 to 19125 | 18900 | 15MHz | QPSK | 1 RB / 0 RB Offset |
| | | 18700 to 19100 | 18900 | 20MHz | QPSK | 1 RB / 0 RB Offset |

## LTE BAND 25

| EUT CONFIGURE MODE | TEST ITEM | AVAILABLE CHANNEL | TESTED CHANNEL | CHANNEL BANDWIDTH | MODULATION | MODE |
|---|---|---|---|---|---|---|
| B | EIRP | 26047 to 26683 | 26047, 26365, 26683 | 1.4MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 26055 to 26675 | 26055, 26365, 26675 | 3MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 26065 to 26665 | 26065, 26365, 26665 | 5MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 26090 to 26640 | 26090, 26365 26640 | 10MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 26115 to 26615 | 26115, 26365, 26615 | 15MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 26140 to 26590 | 26140, 26365, 26590 | 20MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset |
| B | FREQUENCY STABILITY | 26047 to 26683 | 26047, 26683 | 1.4MHz | QPSK | 1 RB / 0 RB Offset |
| | | 26055 to 26675 | 26055, 26675 | 3MHz | QPSK | 1 RB / 0 RB Offset |
| | | 26065 to 26665 | 26065, 26665 | 5MHz | QPSK | 1 RB / 0 RB Offset |
| | | 26090 to 26640 | 26090, 26640 | 10MHz | QPSK | 1 RB / 0 RB Offset |
| | | 26115 to 26615 | 26115, 26615 | 15MHz | QPSK | 1 RB / 0 RB Offset |
| | | 26140 to 26590 | 26140, 26590 | 20MHz | QPSK | 1 RB / 0 RB Offset |
| B | OCCUPIED BANDWIDTH | 26047 to 26683 | 26047, 26365, 26683 | 1.4MHz | QPSK,16QAM, 64QAM | 6 RB / 0 RB Offset |
| | | 26055 to 26675 | 26055, 26365, 26675 | 3MHz | QPSK,16QAM, 64QAM | 15 RB / 0 RB Offset |
| | | 26065 to 26665 | 26065, 26365, 26665 | 5MHz | QPSK,16QAM, 64QAM | 25 RB / 0 RB Offset |
| | | 26090 to 26640 | 26090, 26365 26640 | 10MHz | QPSK,16QAM, 64QAM | 50 RB / 0 RB Offset |
| | | 26115 to 26615 | 26115, 26365, 26615 | 15MHz | QPSK,16QAM, 64QAM | 75 RB / 0 RB Offset |
| | | 26140 to 26590 | 26140, 26365, 26590 | 20MHz | QPSK,16QAM, 64QAM | 100 RB / 0 RB Offset |
| B | PEAK TO AVERAGE RATIO | 26047 to 26683 | 26047, 26365, 26683 | 1.4MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 26055 to 26675 | 26055, 26365, 26675 | 3MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 26065 to 26665 | 26065, 26365, 26665 | 5MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 26090 to 26640 | 26090, 26365 26640 | 10MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 26115 to 26615 | 26115, 26365, 26615 | 15MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | 26140 to 26590 | 26140, 26365, 26590 | 20MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset |

| | | | | | | |
|---|---|---|---|---|---|---|
| B | BAND EDGE | 26047 to 26683 | 26047 | 1.4MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | | | | | 6 RB / 0 RB Offset |
| | | | 26683 | 1.4MHz | QPSK,16QAM, 64QAM | 1 RB / 5 RB Offset |
| | | | | | | 6 RB / 0 RB Offset |
| | | 26055 to 26675 | 26055 | 3MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | | | | | 15 RB / 0 RB Offset |
| | | | 26675 | 3MHz | QPSK,16QAM, 64QAM | 1 RB / 14 RB Offset |
| | | | | | | 15 RB / 0 RB Offset |
| | | 26065 to 26665 | 26065 | 5MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | | | | | 25 RB / 0 RB Offset |
| | | | 26665 | 5MHz | QPSK,16QAM, 64QAM | 1 RB / 24 RB Offset |
| | | | | | | 25 RB / 0 RB Offset |
| | | 26090 to 26640 | 26090 | 10MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | | | | | 50 RB / 0 RB Offset |
| | | | 26640 | 10MHz | QPSK,16QAM, 64QAM | 1 RB / 49 RB Offset |
| | | | | | | 50 RB / 0 RB Offset |
| | | 26115 to 26615 | 26115 | 15MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | | | | | 75 RB / 0 RB Offset |
| | | | 26615 | 15MHz | QPSK,16QAM, 64QAM | 1 RB / 74 RB Offset |
| | | | | | | 75 RB / 0 RB Offset |
| | | 26140 to 26590 | 26140 | 20MHz | QPSK,16QAM, 64QAM | 1 RB / 0 RB Offset |
| | | | | | | 100 RB / 0 RB Offset |
| | | | 26590 | 20MHz | QPSK,16QAM, 64QAM | 1 RB / 99 RB Offset |
| | | | | | | 100 RB / 0 RB Offset |
| B | CONDCUDETED EMISSION | 26047 to 26683 | 26047, 26365, 26683 | 1.4MHz | QPSK | 1 RB / 0 RB Offset |
| | | 26055 to 26675 | 26055, 26365, 26675 | 3MHz | QPSK | 1 RB / 0 RB Offset |
| | | 26065 to 26665 | 26065, 26365, 26665 | 5MHz | QPSK | 1 RB / 0 RB Offset |
| | | 26090 to 26640 | 26090, 26365 26640 | 10MHz | QPSK | 1 RB / 0 RB Offset |
| | | 26115 to 26615 | 26115, 26365, 26615 | 15MHz | QPSK | 1 RB / 0 RB Offset |
| | | 26140 to 26590 | 26140, 26365, 26590 | 20MHz | QPSK | 1 RB / 0 RB Offset |
| A | RADIATED EMISSION | 26047 to 26683 | 26365 | 1.4MHz | QPSK | 1 RB / 0 RB Offset |
| | | 26055 to 26675 | 26365 | 3MHz | QPSK | 1 RB / 0 RB Offset |
| | | 26065 to 26665 | 26065, 26365, 26665 | 5MHz | QPSK | 1 RB / 0 RB Offset |
| | | 26090 to 26640 | 26365 | 10MHz | QPSK | 1 RB / 0 RB Offset |
| | | 26115 to 26615 | 26365 | 15MHz | QPSK | 1 RB / 0 RB Offset |
| | | 26140 to 26590 | 26365 | 20MHz | QPSK | 1 RB / 0 RB Offset |

## TEST CONDITION:

| TEST ITEM | ENVIRONMENTAL CONDITIONS | INPUT POWER | TESTED BY |
|---|---|---|---|
| EIRP | 25deg. C, 57%RH | DC 3.85V By Battery | Jace Hu |
| FREQUENCY STABILITY | 23deg. C, 61%RH | DC 3.85V By Battery | James Fu |
| OCCUPIED BANDWIDTH | 23deg. C, 61%RH | DC 3.85V By Battery | James Fu |
| PEAK TO AVERAGE RATIO | 23deg. C, 61%RH | DC 3.85V By Battery | James Fu |
| BAND EDGE | 23deg. C, 61%RH | DC 3.85V By Battery | James Fu |
| CONDCUDETED EMISSION | 23deg. C, 61%RH | DC 3.85V By Battery | James Fu |
| RADIATED EMISSION | 23deg. C, 70%RH | DC 3.85V By Battery | 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 determing the ERP or EIRP from the conducted RF output power measured using the guidance provided above is:

ERP or EIRP = $P_{Meas} + G_T – L_C$

Where:

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

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

$P_{Meas}$ = 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.

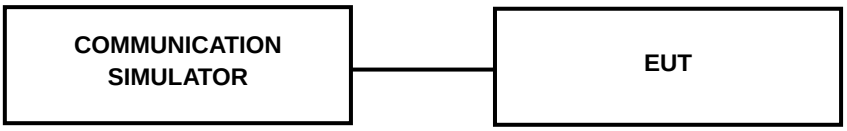
**CONDUCTED POWER MEASUREMENT:**

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 | GSM1900 | | | Max. Tune-up Power |
|---|---|---|---|---|
| Channel | 512 | 661 | 810 | |
| Frequency | 1850.2 | 1880 | 1909.8 | |
| GSM (GMSK, 1Tx-slot) | 28.62 | 28.66 | 28.63 | 29.5 |
| GPRS (GMSK, 1Tx-slot) | 28.54 | 28.57 | 28.56 | 29.5 |
| GPRS (GMSK, 2Tx-slot) | 27.06 | 27.09 | 27.19 | 28.0 |
| GPRS (GMSK, 3Tx-slot) | 25.36 | 25.69 | 25.84 | 26.5 |
| GPRS (GMSK, 4Tx-slot) | 23.20 | 23.40 | 23.73 | 24.5 |
| EDGE (8PSK, 1Tx-slot) | 25.24 | 25.34 | 25.50 | 26.0 |
| EDGE (8PSK, 2Tx-slot) | 23.07 | 23.04 | 23.40 | 24.0 |
| EDGE (8PSK, 3Tx-slot) | 21.04 | 21.26 | 21.47 | 22.0 |
| EDGE (8PSK, 4Tx-slot) | 19.91 | 20.07 | 20.36 | 21.0 |

| Band | WCDMA II | | | Max. Tune-up Power |
|---|---|---|---|---|
| Channel | 9262 | 9400 | 9538 | |
| Frequency | 1852.4 | 1880 | 1907.6 | |
| RMC 12.2K | 21.55 | 21.62 | 21.73 | 22.0 |
| HSDPA Subtest-1 | 20.64 | 20.76 | 20.81 | 21.0 |
| HSDPA Subtest-2 | 20.63 | 20.66 | 20.80 | 21.0 |
| HSDPA Subtest-3 | 20.16 | 20.17 | 20.33 | 20.5 |
| HSDPA Subtest-4 | 20.14 | 20.18 | 20.30 | 20.5 |
| DC-HSDPA Subtest-1 | 20.71 | 20.74 | 20.84 | 21.0 |
| DC-HSDPA Subtest-2 | 20.67 | 20.78 | 20.83 | 21.0 |
| DC-HSDPA Subtest-3 | 20.23 | 20.16 | 20.37 | 20.5 |
| DC-HSDPA Subtest-4 | 20.19 | 20.18 | 20.31 | 20.5 |
| HSUPA Subtest-1 | 20.71 | 20.76 | 20.79 | 21.0 |
| HSUPA Subtest-2 | 20.58 | 18.68 | 18.77 | 19.0 |
| HSUPA Subtest-3 | 20.19 | 19.22 | 19.38 | 20.0 |
| HSUPA Subtest-4 | 20.19 | 18.16 | 18.31 | 19.0 |
| HSUPA Subtest-5 | 20.72 | 20.81 | 20.90 | 21.0 |

## LTE BAND 2

| Band/BW | Modulation | RB Size | RB Offset | Low CH 18607 | Mid CH 18900 | High CH 19193 | MPR |
|---|---|---|---|---|---|---|---|
| | | | | Frequency 1850.7 MHz | Frequency 1880 MHz | Frequency 1909.3 MHz | |
| 2/ 1.4 | QPSK | 1 | 0 | 20.72 | 20.64 | 20.77 | 0 |
| | | 1 | 2 | 20.73 | 20.62 | 20.77 | 0 |
| | | 1 | 5 | 20.54 | 20.41 | 20.54 | 0 |
| | | 3 | 0 | 20.78 | 20.68 | 20.82 | 0 |
| | | 3 | 1 | 20.80 | 20.74 | 20.79 | 0 |
| | | 3 | 3 | 20.55 | 20.44 | 20.65 | 0 |
| | | 6 | 0 | 19.97 | 19.80 | 19.99 | 1 |
| | 16QAM | 1 | 0 | 20.05 | 19.96 | 20.07 | 1 |
| | | 1 | 2 | 20.03 | 19.87 | 20.10 | 1 |
| | | 1 | 5 | 19.67 | 19.59 | 19.79 | 1 |
| | | 3 | 0 | 19.87 | 19.71 | 19.92 | 1 |
| | | 3 | 1 | 19.79 | 19.81 | 19.90 | 1 |
| | | 3 | 3 | 19.62 | 19.49 | 19.71 | 1 |
| | | 6 | 0 | 18.89 | 18.80 | 18.88 | 2 |
| | 64QAM | 1 | 0 | 18.84 | 18.80 | 18.96 | 2 |
| | | 1 | 2 | 18.90 | 18.82 | 18.95 | 2 |
| | | 1 | 5 | 18.61 | 18.44 | 18.70 | 2 |
| | | 3 | 0 | 18.79 | 18.71 | 18.77 | 2 |
| | | 3 | 1 | 18.81 | 18.75 | 18.87 | 2 |
| | | 3 | 3 | 18.61 | 18.50 | 18.68 | 2 |
| | | 6 | 0 | 17.93 | 17.77 | 17.98 | 3 |

| Band/BW | Modulation | RB Size | RB Offset | Low CH 18615 | Mid CH 18900 | High CH 19185 | MPR |
|---|---|---|---|---|---|---|---|
| | | | | Frequency 1851.5 MHz | Frequency 1880 MHz | Frequency 1908.5 MHz | |
| 2/ 3 | QPSK | 1 | 0 | 20.74 | 20.66 | 20.76 | 0 |
| | | 1 | 7 | 20.69 | 20.63 | 20.77 | 0 |
| | | 1 | 14 | 20.50 | 20.41 | 20.54 | 0 |
| | | 8 | 0 | 19.77 | 19.71 | 19.92 | 1 |
| | | 8 | 3 | 19.78 | 19.74 | 19.81 | 1 |
| | | 8 | 7 | 19.52 | 19.51 | 19.69 | 1 |
| | | 15 | 0 | 19.94 | 19.81 | 19.93 | 1 |
| | 16QAM | 1 | 0 | 20.02 | 20.02 | 20.10 | 1 |
| | | 1 | 7 | 20.00 | 19.90 | 20.08 | 1 |
| | | 1 | 14 | 19.70 | 19.59 | 19.79 | 1 |
| | | 8 | 0 | 18.83 | 18.72 | 18.92 | 2 |
| | | 8 | 3 | 18.84 | 18.76 | 18.93 | 2 |
| | | 8 | 7 | 18.64 | 18.47 | 18.67 | 2 |
| | | 15 | 0 | 18.89 | 18.74 | 18.91 | 2 |
| | 64QAM | 1 | 0 | 18.90 | 18.83 | 18.90 | 2 |
| | | 1 | 7 | 18.93 | 18.76 | 18.94 | 2 |
| | | 1 | 14 | 18.62 | 18.46 | 18.70 | 2 |
| | | 8 | 0 | 17.82 | 17.75 | 17.78 | 3 |
| | | 8 | 3 | 17.85 | 17.69 | 17.92 | 3 |
| | | 8 | 7 | 17.58 | 17.54 | 17.64 | 3 |
| | | 15 | 0 | 17.95 | 17.74 | 18.02 | 3 |

| Band/BW | Modulation | RB Size | RB Offset | Low CH 18625 | Mid CH 18900 | High CH 19175 | MPR |
|---|---|---|---|---|---|---|---|
| | | | | Frequency 1852.5 MHz | Frequency 1880 MHz | Frequency 1907.5 MHz | |
| 2/ 5 | QPSK | 1 | 0 | 20.75 | 20.61 | 20.77 | 0 |
| | | 1 | 12 | 20.74 | 20.60 | 20.77 | 0 |
| | | 1 | 24 | 20.51 | 20.40 | 20.58 | 0 |
| | | 12 | 0 | 19.80 | 19.71 | 19.89 | 1 |
| | | 12 | 6 | 19.78 | 19.75 | 19.82 | 1 |
| | | 12 | 13 | 19.56 | 19.47 | 19.70 | 1 |
| | | 25 | 0 | 19.92 | 19.84 | 19.96 | 1 |
| | 16QAM | 1 | 0 | 20.03 | 19.98 | 20.10 | 1 |
| | | 1 | 12 | 19.97 | 19.93 | 20.07 | 1 |
| | | 1 | 24 | 19.70 | 19.59 | 19.78 | 1 |
| | | 12 | 0 | 18.83 | 18.70 | 18.89 | 2 |
| | | 12 | 6 | 18.81 | 18.80 | 18.89 | 2 |
| | | 12 | 13 | 18.59 | 18.49 | 18.70 | 2 |
| | | 25 | 0 | 18.89 | 18.75 | 18.88 | 2 |
| | 64QAM | 1 | 0 | 18.84 | 18.80 | 18.96 | 2 |
| | | 1 | 12 | 18.90 | 18.82 | 18.94 | 2 |
| | | 1 | 24 | 18.55 | 18.51 | 18.70 | 2 |
| | | 12 | 0 | 17.83 | 17.72 | 17.77 | 3 |
| | | 12 | 6 | 17.79 | 17.76 | 17.91 | 3 |
| | | 12 | 13 | 17.62 | 17.53 | 17.61 | 3 |
| | | 25 | 0 | 17.91 | 17.80 | 18.00 | 3 |

| Band/BW | Modulation | RB Size | RB Offset | Low CH 18650 | Mid CH 18900 | High CH 19150 | MPR |
|---|---|---|---|---|---|---|---|
| | | | | Frequency 1855 MHz | Frequency 1880 MHz | Frequency 1905 MHz | |
| 2/ 10 | QPSK | 1 | 0 | 20.72 | 20.64 | 20.77 | 0 |
| | | 1 | 24 | 20.74 | 20.60 | 20.78 | 0 |
| | | 1 | 49 | 20.48 | 20.44 | 20.54 | 0 |
| | | 25 | 0 | 19.81 | 19.70 | 19.92 | 1 |
| | | 25 | 12 | 19.84 | 19.69 | 19.82 | 1 |
| | | 25 | 25 | 19.54 | 19.44 | 19.69 | 1 |
| | | 50 | 0 | 19.97 | 19.84 | 19.93 | 1 |
| | 16QAM | 1 | 0 | 20.03 | 19.95 | 20.06 | 1 |
| | | 1 | 24 | 20.02 | 19.89 | 20.10 | 1 |
| | | 1 | 49 | 19.70 | 19.60 | 19.75 | 1 |
| | | 25 | 0 | 18.85 | 18.68 | 18.95 | 2 |
| | | 25 | 12 | 18.85 | 18.74 | 18.94 | 2 |
| | | 25 | 25 | 18.58 | 18.50 | 18.67 | 2 |
| | | 50 | 0 | 18.93 | 18.74 | 18.92 | 2 |
| | 64QAM | 1 | 0 | 18.83 | 18.81 | 18.93 | 2 |
| | | 1 | 24 | 18.95 | 18.78 | 18.98 | 2 |
| | | 1 | 49 | 18.61 | 18.45 | 18.67 | 2 |
| | | 25 | 0 | 17.81 | 17.69 | 17.83 | 3 |
| | | 25 | 12 | 17.86 | 17.75 | 17.85 | 3 |
| | | 25 | 25 | 17.61 | 17.50 | 17.63 | 3 |
| | | 50 | 0 | 17.96 | 17.76 | 18.01 | 3 |

| Band/BW | Modulation | RB Size | RB Offset | Low CH 18675 | Mid CH 18900 | High CH 19125 | MPR |
|---|---|---|---|---|---|---|---|
| | | | | Frequency 1857.5 MHz | Frequency 1880 MHz | Frequency 1902.5 MHz | |
| 2/ 15 | QPSK | 1 | 0 | 20.79 | 20.64 | 20.74 | 0 |
| | | 1 | 37 | 20.72 | 20.65 | 20.73 | 0 |
| | | 1 | 74 | 20.54 | 20.47 | 20.55 | 0 |
| | | 36 | 0 | 19.78 | 19.71 | 19.93 | 1 |
| | | 36 | 19 | 19.85 | 19.74 | 19.82 | 1 |
| | | 36 | 39 | 19.52 | 19.45 | 19.69 | 1 |
| | | 75 | 0 | 19.97 | 19.82 | 19.98 | 1 |
| | 16QAM | 1 | 0 | 20.07 | 20.02 | 20.06 | 1 |
| | | 1 | 37 | 20.01 | 19.90 | 20.10 | 1 |
| | | 1 | 74 | 19.66 | 19.65 | 19.77 | 1 |
| | | 36 | 0 | 18.89 | 18.68 | 18.96 | 2 |
| | | 36 | 19 | 18.79 | 18.78 | 18.90 | 2 |
| | | 36 | 39 | 18.63 | 18.48 | 18.70 | 2 |
| | | 75 | 0 | 18.94 | 18.77 | 18.85 | 2 |
| | 64QAM | 1 | 0 | 18.85 | 18.82 | 18.94 | 2 |
| | | 1 | 37 | 18.96 | 18.77 | 18.95 | 2 |
| | | 1 | 74 | 18.57 | 18.44 | 18.70 | 2 |
| | | 36 | 0 | 17.86 | 17.75 | 17.77 | 3 |
| | | 36 | 19 | 17.80 | 17.69 | 17.87 | 3 |
| | | 36 | 39 | 17.64 | 17.57 | 17.65 | 3 |
| | | 75 | 0 | 17.95 | 17.74 | 18.02 | 3 |

| Band/BW | Modulation | RB Size | RB Offset | Low CH 18700 | Mid CH 18900 | High CH 19100 | MPR |
|---|---|---|---|---|---|---|---|
| | | | | Frequency 1860 MHz | Frequency 1880 MHz | Frequency 1900 MHz | |
| 2/ 20 | QPSK | 1 | 0 | 20.80 | 20.68 | **20.82** | 0 |
| | | 1 | 50 | 20.76 | 20.68 | 20.79 | 0 |
| | | 1 | 99 | 20.56 | 20.48 | 20.59 | 0 |
| | | 50 | 0 | 19.84 | 19.76 | 19.94 | 1 |
| | | 50 | 25 | 19.86 | 19.76 | 19.87 | 1 |
| | | 50 | 50 | 19.60 | 19.52 | 19.71 | 1 |
| | | 100 | 0 | 19.98 | 19.86 | 20.01 | 1 |
| | 16QAM | 1 | 0 | 20.10 | 20.03 | 20.12 | 1 |
| | | 1 | 50 | 20.05 | 19.95 | 20.12 | 1 |
| | | 1 | 99 | 19.72 | 19.67 | 19.80 | 1 |
| | | 50 | 0 | 18.91 | 18.76 | 18.97 | 2 |
| | | 50 | 25 | 18.87 | 18.82 | 18.95 | 2 |
| | | 50 | 50 | 18.66 | 18.54 | 18.72 | 2 |
| | | 100 | 0 | 18.95 | 18.82 | 18.93 | 2 |
| | 64QAM | 1 | 0 | 18.91 | 18.85 | 18.98 | 2 |
| | | 1 | 50 | 18.98 | 18.84 | 19.00 | 2 |
| | | 1 | 99 | 18.63 | 18.52 | 18.72 | 2 |
| | | 50 | 0 | 17.87 | 17.77 | 17.85 | 3 |
| | | 50 | 25 | 17.87 | 17.77 | 17.93 | 3 |
| | | 50 | 50 | 17.66 | 17.58 | 17.69 | 3 |
| | | 100 | 0 | 17.97 | 17.82 | 18.03 | 3 |

## LTE BAND 25

| Band/BW | Modulation | RB Size | RB Offset | Low CH 26047 | Mid CH 26365 | High CH 26683 | MPR |
|---|---|---|---|---|---|---|---|
| | | | | Frequency 1850.7 MHz | Frequency 1882.5 MHz | Frequency 1914.3 MHz | |
| 25/ 1.4 | QPSK | 1 | 0 | 20.75 | 20.79 | 20.69 | 0 |
| | | 1 | 2 | 20.62 | 20.63 | 20.59 | 0 |
| | | 1 | 5 | 20.58 | 20.57 | 20.51 | 0 |
| | | 3 | 0 | 20.68 | 20.70 | 20.75 | 0 |
| | | 3 | 1 | 20.84 | 20.85 | 20.71 | 0 |
| | | 3 | 3 | 20.62 | 20.63 | 20.65 | 0 |
| | | 6 | 0 | 19.77 | 19.72 | 19.72 | 1 |
| | 16QAM | 1 | 0 | 20.17 | 20.20 | 20.12 | 1 |
| | | 1 | 2 | 20.09 | 20.05 | 20.09 | 1 |
| | | 1 | 5 | 19.72 | 19.76 | 19.77 | 1 |
| | | 3 | 0 | 19.73 | 19.69 | 19.71 | 1 |
| | | 3 | 1 | 19.68 | 19.82 | 19.72 | 1 |
| | | 3 | 3 | 19.71 | 19.70 | 19.73 | 1 |
| | | 6 | 0 | 18.75 | 18.78 | 18.67 | 2 |
| | 64QAM | 1 | 0 | 18.97 | 19.05 | 19.02 | 2 |
| | | 1 | 2 | 18.72 | 18.76 | 18.70 | 2 |
| | | 1 | 5 | 18.71 | 18.66 | 18.73 | 2 |
| | | 3 | 0 | 18.66 | 18.70 | 18.57 | 2 |
| | | 3 | 1 | 18.68 | 18.74 | 18.67 | 2 |
| | | 3 | 3 | 18.69 | 18.70 | 18.69 | 2 |
| | | 6 | 0 | 17.68 | 17.64 | 17.66 | 3 |

| Band/BW | Modulation | RB Size | RB Offset | Low CH 26055 | Mid CH 26365 | High CH 26675 | MPR |
|---|---|---|---|---|---|---|---|
| | | | | Frequency 1851.5 MHz | Frequency 1882.5 MHz | Frequency 1913.5 MHz | |
| 25/ 3 | QPSK | 1 | 0 | 20.77 | 20.81 | 20.68 | 0 |
| | | 1 | 7 | 20.58 | 20.64 | 20.59 | 0 |
| | | 1 | 14 | 20.54 | 20.57 | 20.51 | 0 |
| | | 8 | 0 | 19.67 | 19.73 | 19.75 | 1 |
| | | 8 | 3 | 19.77 | 19.85 | 19.73 | 1 |
| | | 8 | 7 | 19.59 | 19.70 | 19.69 | 1 |
| | | 15 | 0 | 19.74 | 19.73 | 19.66 | 1 |
| | 16QAM | 1 | 0 | 20.14 | 20.26 | 20.15 | 1 |
| | | 1 | 7 | 20.06 | 20.08 | 20.07 | 1 |
| | | 1 | 14 | 19.75 | 19.76 | 19.77 | 1 |
| | | 8 | 0 | 18.69 | 18.70 | 18.71 | 2 |
| | | 8 | 3 | 18.73 | 18.77 | 18.75 | 2 |
| | | 8 | 7 | 18.73 | 18.68 | 18.69 | 2 |
| | | 15 | 0 | 18.75 | 18.72 | 18.70 | 2 |
| | 64QAM | 1 | 0 | 19.03 | 19.08 | 18.96 | 2 |
| | | 1 | 7 | 18.75 | 18.70 | 18.69 | 2 |
| | | 1 | 14 | 18.72 | 18.68 | 18.73 | 2 |
| | | 8 | 0 | 17.69 | 17.74 | 17.58 | 3 |
| | | 8 | 3 | 17.72 | 17.68 | 17.72 | 3 |
| | | 8 | 7 | 17.66 | 17.74 | 17.65 | 3 |
| | | 15 | 0 | 17.70 | 17.61 | 17.70 | 3 |

| Band/BW | Modulation | RB Size | RB Offset | Low CH 26065 | Mid CH 26365 | High CH 26665 | MPR |
|---|---|---|---|---|---|---|---|
| | | | | Frequency 1852.5 MHz | Frequency 1882.5 MHz | Frequency 1912.5 MHz | |
| 25/ 5 | QPSK | 1 | 0 | 20.78 | 20.76 | 20.69 | 0 |
| | | 1 | 12 | 20.63 | 20.61 | 20.59 | 0 |
| | | 1 | 24 | 20.55 | 20.56 | 20.55 | 0 |
| | | 12 | 0 | 19.70 | 19.73 | 19.72 | 1 |
| | | 12 | 6 | 19.77 | 19.86 | 19.74 | 1 |
| | | 12 | 13 | 19.63 | 19.66 | 19.70 | 1 |
| | | 25 | 0 | 19.72 | 19.76 | 19.69 | 1 |
| | 16QAM | 1 | 0 | 20.15 | 20.22 | 20.15 | 1 |
| | | 1 | 12 | 20.03 | 20.11 | 20.06 | 1 |
| | | 1 | 24 | 19.75 | 19.76 | 19.76 | 1 |
| | | 12 | 0 | 18.69 | 18.68 | 18.68 | 2 |
| | | 12 | 6 | 18.70 | 18.81 | 18.71 | 2 |
| | | 12 | 13 | 18.68 | 18.70 | 18.72 | 2 |
| | | 25 | 0 | 18.75 | 18.73 | 18.67 | 2 |
| | 64QAM | 1 | 0 | 18.97 | 19.05 | 19.02 | 2 |
| | | 1 | 12 | 18.72 | 18.76 | 18.69 | 2 |
| | | 1 | 24 | 18.65 | 18.73 | 18.73 | 2 |
| | | 12 | 0 | 17.70 | 17.71 | 17.57 | 3 |
| | | 12 | 6 | 17.66 | 17.75 | 17.71 | 3 |
| | | 12 | 13 | 17.70 | 17.73 | 17.62 | 3 |
| | | 25 | 0 | 17.66 | 17.67 | 17.68 | 3 |

| Band/BW | Modulation | RB Size | RB Offset | Low CH 26090 | Mid CH 26365 | High CH 26640 | MPR |
|---|---|---|---|---|---|---|---|
| | | | | Frequency 1855 MHz | Frequency 1882.5 MHz | Frequency 1910 MHz | |
| 25/ 10 | QPSK | 1 | 0 | 20.75 | 20.79 | 20.69 | 0 |
| | | 1 | 24 | 20.63 | 20.61 | 20.60 | 0 |
| | | 1 | 49 | 20.52 | 20.60 | 20.51 | 0 |
| | | 25 | 0 | 19.71 | 19.72 | 19.75 | 1 |
| | | 25 | 12 | 19.83 | 19.80 | 19.74 | 1 |
| | | 25 | 25 | 19.61 | 19.63 | 19.69 | 1 |
| | | 50 | 0 | 19.77 | 19.76 | 19.66 | 1 |
| | 16QAM | 1 | 0 | 20.15 | 20.19 | 20.11 | 1 |
| | | 1 | 24 | 20.08 | 20.07 | 20.09 | 1 |
| | | 1 | 49 | 19.75 | 19.77 | 19.73 | 1 |
| | | 25 | 0 | 18.71 | 18.66 | 18.74 | 2 |
| | | 25 | 12 | 18.74 | 18.75 | 18.76 | 2 |
| | | 25 | 25 | 18.67 | 18.71 | 18.69 | 2 |
| | | 50 | 0 | 18.79 | 18.72 | 18.71 | 2 |
| | 64QAM | 1 | 0 | 18.96 | 19.06 | 18.99 | 2 |
| | | 1 | 24 | 18.77 | 18.72 | 18.73 | 2 |
| | | 1 | 49 | 18.71 | 18.67 | 18.70 | 2 |
| | | 25 | 0 | 17.68 | 17.68 | 17.63 | 3 |
| | | 25 | 12 | 17.73 | 17.74 | 17.65 | 3 |
| | | 25 | 25 | 17.69 | 17.70 | 17.64 | 3 |
| | | 50 | 0 | 17.71 | 17.63 | 17.69 | 3 |

| Band/BW | Modulation | RB Size | RB Offset | Low CH 26115 | Mid CH 26365 | High CH 26615 | MPR |
|---|---|---|---|---|---|---|---|
| | | | | Frequency 1857.5 MHz | Frequency 1882.5 MHz | Frequency 1907.5 MHz | |
| 25/ 15 | QPSK | 1 | 0 | 20.82 | 20.79 | 20.66 | 0 |
| | | 1 | 37 | 20.61 | 20.66 | 20.55 | 0 |
| | | 1 | 74 | 20.58 | 20.63 | 20.52 | 0 |
| | | 36 | 0 | 19.68 | 19.73 | 19.76 | 1 |
| | | 36 | 19 | 19.84 | 19.85 | 19.74 | 1 |
| | | 36 | 39 | 19.59 | 19.64 | 19.69 | 1 |
| | | 75 | 0 | 19.77 | 19.74 | 19.71 | 1 |
| | 16QAM | 1 | 0 | 20.19 | 20.26 | 20.11 | 1 |
| | | 1 | 37 | 20.07 | 20.08 | 20.09 | 1 |
| | | 1 | 74 | 19.71 | 19.82 | 19.75 | 1 |
| | | 36 | 0 | 18.75 | 18.66 | 18.75 | 2 |
| | | 36 | 19 | 18.68 | 18.79 | 18.72 | 2 |
| | | 36 | 39 | 18.72 | 18.69 | 18.72 | 2 |
| | | 75 | 0 | 18.80 | 18.75 | 18.64 | 2 |
| | 64QAM | 1 | 0 | 18.98 | 19.07 | 19.00 | 2 |
| | | 1 | 37 | 18.78 | 18.71 | 18.70 | 2 |
| | | 1 | 74 | 18.67 | 18.66 | 18.73 | 2 |
| | | 36 | 0 | 17.73 | 17.74 | 17.57 | 3 |
| | | 36 | 19 | 17.67 | 17.68 | 17.67 | 3 |
| | | 36 | 39 | 17.72 | 17.77 | 17.66 | 3 |
| | | 75 | 0 | 17.70 | 17.61 | 17.70 | 3 |

| Band/BW | Modulation | RB Size | RB Offset | Low CH 26140 | Mid CH 26365 | High CH 26590 | MPR |
|---|---|---|---|---|---|---|---|
| | | | | Frequency 1860 MHz | Frequency 1882.5 MHz | Frequency 1905 MHz | |
| 25/ 20 | QPSK | 1 | 0 | 20.83 | **20.86** | 20.74 | 0 |
| | | 1 | 50 | 20.65 | 20.69 | 20.61 | 0 |
| | | 1 | 99 | 20.60 | 20.64 | 20.56 | 0 |
| | | 50 | 0 | 19.74 | 19.78 | 19.77 | 1 |
| | | 50 | 25 | 19.85 | 19.87 | 19.79 | 1 |
| | | 50 | 50 | 19.67 | 19.71 | 19.71 | 1 |
| | | 100 | 0 | 19.78 | 19.78 | 19.74 | 1 |
| | 16QAM | 1 | 0 | 20.22 | 20.27 | 20.17 | 1 |
| | | 1 | 50 | 20.11 | 20.13 | 20.11 | 1 |
| | | 1 | 99 | 19.77 | 19.84 | 19.78 | 1 |
| | | 50 | 0 | 18.77 | 18.74 | 18.76 | 2 |
| | | 50 | 25 | 18.76 | 18.83 | 18.77 | 2 |
| | | 50 | 50 | 18.75 | 18.75 | 18.74 | 2 |
| | | 100 | 0 | 18.81 | 18.80 | 18.72 | 2 |
| | 64QAM | 1 | 0 | 19.04 | 19.10 | 19.04 | 2 |
| | | 1 | 50 | 18.80 | 18.78 | 18.75 | 2 |
| | | 1 | 99 | 18.73 | 18.74 | 18.75 | 2 |
| | | 50 | 0 | 17.74 | 17.76 | 17.65 | 3 |
| | | 50 | 25 | 17.74 | 17.76 | 17.73 | 3 |
| | | 50 | 50 | 17.74 | 17.78 | 17.70 | 3 |
| | | 100 | 0 | 17.72 | 17.69 | 17.71 | 3 |

## EIRP POWER (dBm)

### GSM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 512 | 1850.2 | 28.62 | 2.67 | 31.29 | 1345.86 | 2 |
| 661 | 1880.0 | 28.66 | 2.67 | 31.33 | **1358.31** | 2 |
| 810 | 1909.8 | 28.63 | 2.67 | 31.30 | 1348.96 | 2 |

### EDGE

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 512 | 1850.2 | 25.24 | 2.67 | 27.91 | 618.02 | 2 |
| 661 | 1880.0 | 25.34 | 2.67 | 28.01 | 632.41 | 2 |
| 810 | 1909.8 | 25.50 | 2.67 | 28.17 | **656.15** | 2 |

### WCDMA

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 9662 | 1852.4 | 22.75 | -0.56 | 20.04 | 100.93 | 2 |
| 9800 | 1880 | 23.26 | -0.56 | 20.55 | 113.50 | 2 |
| 9938 | 1907.6 | 23.28 | -0.56 | 20.57 | **114.02** | 2 |

## LTE BAND 2

### CHANNEL BANDWIDTH: 1.4MHz QPSK

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18607 | 1850.7 | 20.80 | 2.67 | 23.47 | 222.33 | 2 |
| 18900 | 1880.0 | 20.74 | 2.67 | 23.41 | 219.28 | 2 |
| 19193 | 1908.3 | 20.82 | 2.67 | 23.49 | **223.36** | 2 |

### CHANNEL BANDWIDTH: 1.4MHz 16QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18607 | 1850.7 | 20.05 | 2.67 | 22.72 | 187.07 | 2 |
| 18900 | 1880.0 | 19.96 | 2.67 | 22.63 | 183.23 | 2 |
| 19193 | 1908.3 | 20.10 | 2.67 | 22.77 | 189.23 | 2 |

### CHANNEL BANDWIDTH: 1.4MHz 64QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18607 | 1850.7 | 18.90 | 2.67 | 21.57 | 143.55 | 2 |
| 18900 | 1880.0 | 18.82 | 2.67 | 21.49 | 140.93 | 2 |
| 19193 | 1908.3 | 18.96 | 2.67 | 21.63 | 145.55 | 2 |

## CHANNEL BANDWIDTH: 3MHz QPSK

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18615 | 1851.5 | 20.74 | 2.67 | 23.41 | 219.28 | 2 |
| 18900 | 1880.0 | 20.66 | 2.67 | 23.33 | 215.28 | 2 |
| 19185 | 1908.5 | 20.77 | 2.67 | 23.44 | **220.80** | 2 |

## CHANNEL BANDWIDTH: 3MHz 16QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18615 | 1851.5 | 20.02 | 2.67 | 22.69 | 185.78 | 2 |
| 18900 | 1880.0 | 20.02 | 2.67 | 22.69 | 185.78 | 2 |
| 19185 | 1908.5 | 20.10 | 2.67 | 22.77 | 189.23 | 2 |

## CHANNEL BANDWIDTH: 3MHz 64QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18615 | 1851.5 | 18.93 | 2.67 | 21.6 | 144.54 | 2 |
| 18900 | 1880.0 | 18.83 | 2.67 | 21.50 | 141.25 | 2 |
| 19185 | 1908.5 | 18.94 | 2.67 | 21.61 | 144.88 | 2 |

## CHANNEL BANDWIDTH: 5MHz QPSK

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18625 | 1852.5 | 20.75 | 2.67 | 23.42 | 219.79 | 2 |
| 18900 | 1880.0 | 20.61 | 2.67 | 23.28 | 212.81 | 2 |
| 19175 | 1907.5 | 20.77 | 2.67 | 23.44 | **220.80** | 2 |

## CHANNEL BANDWIDTH: 5MHz 16QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18625 | 1852.5 | 20.03 | 2.67 | 22.7 | 186.21 | 2 |
| 18900 | 1880.0 | 19.98 | 2.67 | 22.65 | 184.08 | 2 |
| 19175 | 1907.5 | 20.10 | 2.67 | 22.77 | 189.23 | 2 |

## CHANNEL BANDWIDTH: 5MHz 64QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18625 | 1852.5 | 18.90 | 2.67 | 21.57 | 143.55 | 2 |
| 18900 | 1880.0 | 18.82 | 2.67 | 21.49 | 140.93 | 2 |
| 19175 | 1907.5 | 18.96 | 2.67 | 21.63 | 145.55 | 2 |

## CHANNEL BANDWIDTH: 10MHz QPSK

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18650 | 1855.0 | 20.74 | 2.67 | 23.41 | 219.28 | 2 |
| 18900 | 1880.0 | 20.64 | 2.67 | 23.31 | 214.29 | 2 |
| 19150 | 1905.0 | 20.78 | 2.67 | 23.45 | **221.31** | 2 |

## CHANNEL BANDWIDTH: 10MHz 16QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18650 | 1855.0 | 20.03 | 2.67 | 22.70 | 186.21 | 2 |
| 18900 | 1880.0 | 19.95 | 2.67 | 22.62 | 182.81 | 2 |
| 19150 | 1905.0 | 20.10 | 2.67 | 22.77 | 189.23 | 2 |

## CHANNEL BANDWIDTH: 10MHz 64QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18650 | 1855.0 | 18.95 | 2.67 | 21.62 | 145.21 | 2 |
| 18900 | 1880.0 | 18.81 | 2.67 | 21.48 | 140.60 | 2 |
| 19150 | 1905.0 | 18.98 | 2.67 | 21.65 | 146.22 | 2 |

## CHANNEL BANDWIDTH: 15MHz QPSK

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18675 | 1857.5 | 20.79 | 2.67 | 23.46 | **221.82** | 2 |
| 18900 | 1880.0 | 20.65 | 2.67 | 23.32 | 214.78 | 2 |
| 19125 | 1902.5 | 20.74 | 2.67 | 23.41 | 219.28 | 2 |

## CHANNEL BANDWIDTH: 15MHz 16QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18675 | 1857.5 | 20.07 | 2.67 | 22.74 | 187.93 | 2 |
| 18900 | 1880.0 | 20.02 | 2.67 | 22.69 | 185.78 | 2 |
| 19125 | 1902.5 | 20.10 | 2.67 | 22.77 | 189.23 | 2 |

## CHANNEL BANDWIDTH: 15MHz 64QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18675 | 1857.5 | 18.96 | 2.67 | 21.63 | 145.55 | 2 |
| 18900 | 1880.0 | 18.82 | 2.67 | 21.49 | 140.93 | 2 |
| 19125 | 1902.5 | 18.95 | 2.67 | 21.62 | 145.21 | 2 |

## CHANNEL BANDWIDTH: 20MHz QPSK

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18700 | 1860 | 20.80 | 2.67 | 23.47 | 222.33 | 2 |
| 18900 | 1880 | 20.68 | 2.67 | 23.35 | 216.27 | 2 |
| 19100 | 1900 | 20.82 | 2.67 | 23.49 | **223.36** | 2 |

## CHANNEL BANDWIDTH: 20MHz 16QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18700 | 1860 | 20.10 | 2.67 | 22.77 | 189.23 | 2 |
| 18900 | 1880 | 20.03 | 2.67 | 22.7 | 186.21 | 2 |
| 19100 | 1900 | 20.12 | 2.67 | 22.79 | 190.11 | 2 |

## CHANNEL BANDWIDTH: 20MHz 64QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18700 | 1860 | 18.98 | 2.67 | 21.65 | 146.22 | 2 |
| 18900 | 1880 | 18.85 | 2.67 | 21.52 | 141.91 | 2 |
| 19100 | 1900 | 19.00 | 2.67 | 21.67 | 146.89 | 2 |

**REMARKS:** ERP Output Power (dBm) = EIRP (dBm) -2.15(dB).

## LTE BAND 25

### CHANNEL BANDWIDTH: 1.4MHz QPSK

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 26047 | 1850.7 | 20.84 | 2.67 | 23.51 | 224.39 | 2 |
| 26365 | 1882.5 | 20.85 | 2.67 | 23.52 | **224.91** | 2 |
| 26683 | 1914.3 | 20.75 | 2.67 | 23.42 | 219.79 | 2 |

### CHANNEL BANDWIDTH: 1.4MHz 16QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 26047 | 1850.7 | 20.17 | 2.67 | 22.84 | 192.31 | 2 |
| 26365 | 1882.5 | 20.20 | 2.67 | 22.87 | 193.64 | 2 |
| 26683 | 1914.3 | 20.12 | 2.67 | 22.79 | 190.11 | 2 |

### CHANNEL BANDWIDTH: 1.4MHz 64QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 26047 | 1850.7 | 18.97 | 2.67 | 21.64 | 145.88 | 2 |
| 26365 | 1882.5 | 19.05 | 2.67 | 21.72 | 148.59 | 2 |
| 26683 | 1914.3 | 19.02 | 2.67 | 21.69 | 147.57 | 2 |

## CHANNEL BANDWIDTH: 3MHz QPSK

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 26055 | 1851.5 | 20.77 | 2.67 | 23.44 | 220.80 | 2 |
| 26365 | 1882.5 | 20.81 | 2.67 | 23.48 | **222.84** | 2 |
| 26675 | 1913.5 | 20.68 | 2.67 | 23.35 | 216.27 | 2 |

## CHANNEL BANDWIDTH: 3MHz 16QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 26055 | 1851.5 | 20.14 | 2.67 | 22.81 | 190.99 | 2 |
| 26365 | 1882.5 | 20.26 | 2.67 | 22.93 | 196.34 | 2 |
| 26675 | 1913.5 | 20.15 | 2.67 | 22.82 | 191.43 | 2 |

## CHANNEL BANDWIDTH: 3MHz 64QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 26047 | 1851.5 | 19.03 | 2.67 | 21.70 | 147.91 | 2 |
| 26365 | 1882.5 | 19.08 | 2.67 | 21.75 | 149.62 | 2 |
| 26683 | 1913.5 | 18.96 | 2.67 | 21.63 | 145.55 | 2 |

## CHANNEL BANDWIDTH: 5MHz QPSK

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 26065 | 1852.5 | 20.78 | 2.67 | 23.45 | **221.31** | 2 |
| 26365 | 1882.5 | 20.76 | 2.67 | 23.43 | 220.29 | 2 |
| 26665 | 1912.5 | 20.69 | 2.67 | 23.36 | 216.77 | 2 |

## CHANNEL BANDWIDTH: 5MHz 16QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 26065 | 1852.5 | 20.15 | 2.67 | 22.82 | 191.43 | 2 |
| 26365 | 1882.5 | 20.22 | 2.67 | 22.89 | 194.54 | 2 |
| 26665 | 1912.5 | 20.15 | 2.67 | 22.82 | 191.43 | 2 |

## CHANNEL BANDWIDTH: 5MHz 64QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 26065 | 1852.5 | 18.97 | 2.67 | 21.64 | 145.88 | 2 |
| 26365 | 1882.5 | 19.05 | 2.67 | 21.72 | 148.59 | 2 |
| 26665 | 1912.5 | 19.02 | 2.67 | 21.69 | 147.57 | 2 |

## CHANNEL BANDWIDTH: 10MHz QPSK

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 26090 | 1855 | 20.75 | 2.67 | 23.42 | 219.79 | 2 |
| 26365 | 1882.5 | 20.79 | 2.67 | 23.46 | **221.82** | 2 |
| 26640 | 1910 | 20.69 | 2.67 | 23.36 | 216.77 | 2 |

## CHANNEL BANDWIDTH: 10MHz 16QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 26090 | 1855 | 20.15 | 2.67 | 22.82 | 191.43 | 2 |
| 26365 | 1882.5 | 20.19 | 2.67 | 22.86 | 193.2 | 2 |
| 26640 | 1910 | 20.11 | 2.67 | 22.78 | 189.67 | 2 |

## CHANNEL BANDWIDTH: 10MHz 64QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 26090 | 1855 | 18.96 | 2.67 | 21.63 | 145.55 | 2 |
| 26365 | 1882.5 | 19.06 | 2.67 | 21.73 | 148.94 | 2 |
| 26640 | 1910 | 18.99 | 2.67 | 21.66 | 146.55 | 2 |

## CHANNEL BANDWIDTH: 15MHz QPSK

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 26115 | 1857.5 | 20.82 | 2.67 | 23.49 | **223.36** | 2 |
| 26365 | 1882.5 | 20.79 | 2.67 | 23.46 | 221.82 | 2 |
| 26615 | 1907.5 | 20.66 | 2.67 | 23.33 | 215.28 | 2 |

## CHANNEL BANDWIDTH: 15MHz 16QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 26115 | 1857.5 | 20.19 | 2.67 | 22.86 | 193.20 | 2 |
| 26365 | 1882.5 | 20.26 | 2.67 | 22.93 | 196.34 | 2 |
| 26615 | 1907.5 | 20.11 | 2.67 | 22.78 | 189.67 | 2 |

## CHANNEL BANDWIDTH: 15MHz 64QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 26115 | 1857.5 | 18.98 | 2.67 | 21.65 | 146.22 | 2 |
| 26365 | 1882.5 | 19.07 | 2.67 | 21.74 | 149.28 | 2 |
| 26615 | 1907.5 | 19.00 | 2.67 | 21.67 | 146.89 | 2 |

## CHANNEL BANDWIDTH: 20MHz QPSK

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 26140 | 1860 | 20.83 | 2.67 | 23.50 | 223.87 | 2 |
| 26365 | 1882.5 | 20.86 | 2.67 | 23.53 | **225.42** | 2 |
| 26590 | 1905 | 20.74 | 2.67 | 23.41 | 219.28 | 2 |

## CHANNEL BANDWIDTH: 20MHz 16QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 26140 | 1860 | 20.22 | 2.67 | 22.89 | 194.54 | 2 |
| 26365 | 1882.5 | 20.27 | 2.67 | 22.94 | 196.79 | 2 |
| 26590 | 1905 | 20.17 | 2.67 | 22.84 | 192.31 | 2 |

## CHANNEL BANDWIDTH: 20MHz 64QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 26140 | 1860 | 19.04 | 2.67 | 21.71 | 148.25 | 2 |
| 26365 | 1882.5 | 19.10 | 2.67 | 21.77 | 150.31 | 2 |
| 26590 | 1905 | 19.04 | 2.67 | 21.71 | 148.25 | 2 |

## 3.2 FREQUENCY STABILITY MEASUREMENT

### 3.2.1 LIMITS OF FREQUENCY STABILIITY MEASUREMENT

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

### 3.2.2 TEST PROCEDURE

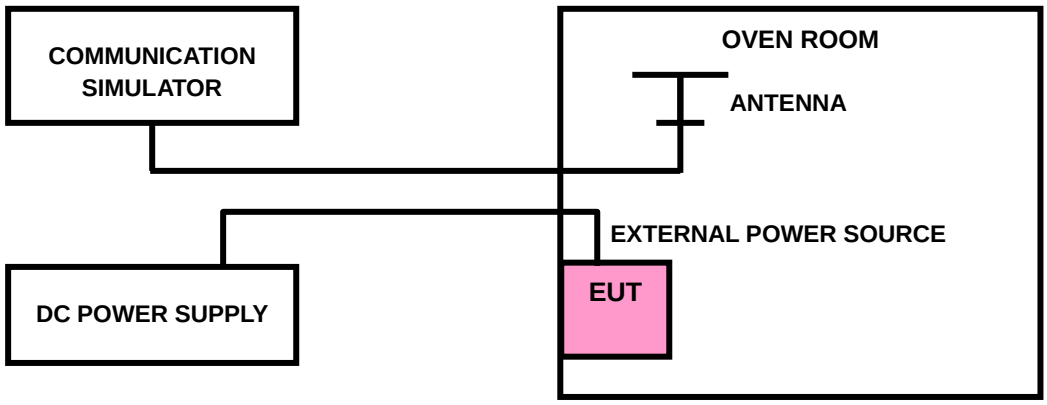
a. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.

b. EUT is connected the external power supply to control the DC input power. The test voltage range is from minimum to maximum working voltage. Each step shall be record the frequency error rate.

c. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ±0.5℃ 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



## 3.2.4 TEST RESULTS

### GSM1900

**FREQUENCY ERROR VS. VOLTAGE**

| VOLTAGE (Volts) | FREQUENCY ERROR (ppm) | | LIMIT (ppm) |
|---|---|---|---|
| | Low Channel | High Channel | |
| $V_{nor}$ | 0.0002 | 0.0013 | 2.5 |
| $V_{min}$ | -0.0015 | -0.0016 | 2.5 |
| $V_{max}$ | 0.0010 | 0.0007 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from $V_{min}$ to $V_{max}$.

**FREQUENCY ERROR vs. TEMPERATURE.**

| TEMP. (℃) | FREQUENCY ERROR (ppm) | | LIMIT (ppm) |
|---|---|---|---|
| | Low Channel | High Channel | |
| -10 | -0.0034 | -0.0037 | 2.5 |
| 0 | -0.0012 | -0.0039 | 2.5 |
| 10 | -0.0021 | -0.0026 | 2.5 |
| 20 | -0.0015 | -0.0024 | 2.5 |
| 30 | -0.0019 | -0.0016 | 2.5 |
| 40 | -0.0014 | -0.0010 | 2.5 |
| 55 | -0.0023 | -0.0003 | 2.5 |

EDGE 1900

**FREQUENCY ERROR VS. VOLTAGE**

| VOLTAGE (Volts) | FREQUENCY ERROR (ppm) | | LIMIT (ppm) |
|---|---|---|---|
| | Low Channel | High Channel | |
| $V_{nor}$ | 0.0008 | 0.0011 | 2.5 |
| $V_{min}$ | -0.0014 | -0.0013 | 2.5 |
| $V_{max}$ | 0.0009 | 0.0009 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from $V_{min}$ to $V_{max}$.

**FREQUENCY ERROR vs. TEMPERATURE.**

| TEMP. (℃) | FREQUENCY ERROR (ppm) | | LIMIT (ppm) |
|---|---|---|---|
| | Low Channel | High Channel | |
| -10 | -0.0038 | -0.0035 | 2.5 |
| 0 | -0.0035 | -0.0032 | 2.5 |
| 10 | -0.0021 | -0.0019 | 2.5 |
| 20 | -0.0018 | -0.0017 | 2.5 |
| 30 | -0.0013 | -0.0012 | 2.5 |
| 40 | -0.0009 | -0.0009 | 2.5 |
| 55 | -0.0001 | -0.0001 | 2.5 |

## WCDMA BAND II

### FREQUENCY ERROR VS. VOLTAGE

| VOLTAGE (Volts) | FREQUENCY ERROR (ppm) | | LIMIT (ppm) |
|---|---|---|---|
| | Low Channel | High Channel | |
| $V_{nor}$ | 0.0014 | 0.0011 | 2.5 |
| $V_{min}$ | 0.0007 | 0.0009 | 2.5 |
| $V_{max}$ | 0.0028 | 0.0015 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from $V_{min}$ to $V_{max}$.

### FREQUENCY ERROR vs. TEMPERATURE.

| TEMP. (℃) | FREQUENCY ERROR (ppm) | | LIMIT (ppm) |
|---|---|---|---|
| | Low Channel | High Channel | |
| -10 | -0.0035 | -0.0032 | 2.5 |
| 0 | -0.0016 | -0.0019 | 2.5 |
| 10 | 0.0004 | 0.0005 | 2.5 |
| 20 | 0.0012 | 0.0013 | 2.5 |
| 30 | 0.0027 | 0.0026 | 2.5 |
| 40 | 0.0018 | 0.0042 | 2.5 |
| 55 | 0.0022 | 0.0026 | 2.5 |

## LTE BAND 2

### FREQUENCY ERROR VS. VOLTAGE

| VOLTAGE (Volts) | 1.4MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| $V_{nor}$ | 0.002 | 0.0024 | 2.5 |
| $V_{min}$ | -0.0031 | -0.003 | 2.5 |
| $V_{max}$ | 0.0022 | 0.0021 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from $V_{min}$ to $V_{max}$.

### FREQUENCY ERROR vs. TEMPERATURE.

| TEMP. (℃) | 1.4MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| -10 | -0.0084 | -0.0081 | 2.5 |
| 0 | -0.0074 | -0.0076 | 2.5 |
| 10 | -0.0046 | -0.0053 | 2.5 |
| 20 | -0.004 | -0.0039 | 2.5 |
| 30 | -0.0032 | -0.0032 | 2.5 |
| 40 | -0.0016 | -0.0019 | 2.5 |
| 55 | -0.0002 | -0.0002 | 2.5 |

**FREQUENCY ERROR VS. VOLTAGE**

| VOLTAGE (Volts) | 3MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| $V_{nor}$ | 0.0022 | 0.0021 | 2.5 |
| $V_{min}$ | -0.0021 | -0.0025 | 2.5 |
| $V_{max}$ | 0.0018 | 0.0018 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from $V_{min}$ to $V_{max}$.

**FREQUENCY ERROR vs. TEMPERATURE.**

| TEMP. (℃) | 3MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| -10 | -0.0082 | -0.0084 | 2.5 |
| 0 | -0.0078 | -0.0073 | 2.5 |
| 10 | -0.0054 | -0.0045 | 2.5 |
| 20 | -0.0044 | -0.0043 | 2.5 |
| 30 | -0.0033 | -0.0041 | 2.5 |
| 40 | -0.0022 | -0.0018 | 2.5 |
| 55 | -0.0002 | -0.0005 | 2.5 |

**FREQUENCY ERROR VS. VOLTAGE**

| VOLTAGE (Volts) | 5MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| $V_{nor}$ | 0.0022 | 0.0026 | 2.5 |
| $V_{min}$ | -0.0024 | -0.003 | 2.5 |
| $V_{max}$ | 0.0021 | 0.0021 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from $V_{min}$ to $V_{max}$.

**FREQUENCY ERROR vs. TEMPERATURE.**

| TEMP. (℃) | 5MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| -10 | -0.0085 | -0.0081 | 2.5 |
| 0 | -0.0075 | -0.0076 | 2.5 |
| 10 | -0.0045 | -0.0051 | 2.5 |
| 20 | -0.0044 | -0.0038 | 2.5 |
| 30 | -0.004 | -0.0038 | 2.5 |
| 40 | -0.0018 | -0.0015 | 2.5 |
| 55 | -0.0004 | -0.0005 | 2.5 |

**FREQUENCY ERROR VS. VOLTAGE**

| VOLTAGE (Volts) | 10MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| $V_{nor}$ | 0.0024 | 0.0025 | 2.5 |
| $V_{min}$ | -0.0031 | -0.003 | 2.5 |
| $V_{max}$ | 0.0025 | 0.0025 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from $V_{min}$ to $V_{max}$.

**FREQUENCY ERROR vs. TEMPERATURE.**

| TEMP. (℃) | 10MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| -10 | -0.0085 | -0.0082 | 2.5 |
| 0 | -0.0074 | -0.0074 | 2.5 |
| 10 | -0.0045 | -0.0047 | 2.5 |
| 20 | -0.0044 | -0.0037 | 2.5 |
| 30 | -0.0026 | -0.0037 | 2.5 |
| 40 | -0.0019 | -0.0014 | 2.5 |
| 55 | -0.0002 | -0.0005 | 2.5 |

**FREQUENCY ERROR VS. VOLTAGE**

| VOLTAGE (Volts) | 15MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| $V_{nor}$ | 0.0026 | 0.0025 | 2.5 |
| $V_{min}$ | -0.0031 | -0.003 | 2.5 |
| $V_{max}$ | 0.0026 | 0.0025 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from $V_{min}$ to $V_{max}$.

**FREQUENCY ERROR vs. TEMPERATURE.**

| TEMP. (℃) | 15MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| -10 | -0.0084 | -0.008 | 2.5 |
| 0 | -0.0074 | -0.0073 | 2.5 |
| 10 | -0.0049 | -0.0045 | 2.5 |
| 20 | -0.0043 | -0.0043 | 2.5 |
| 30 | -0.0029 | -0.0032 | 2.5 |
| 40 | -0.0018 | -0.0019 | 2.5 |
| 55 | -0.0005 | -0.0005 | 2.5 |

**FREQUENCY ERROR VS. VOLTAGE**

| VOLTAGE (Volts) | 20MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| $V_{nor}$ | 0.0026 | 0.0026 | 2.5 |
| $V_{min}$ | -0.0031 | -0.003 | 2.5 |
| $V_{max}$ | 0.0024 | 0.0026 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from $V_{min}$ to $V_{max}$.

**FREQUENCY ERROR vs. TEMPERATURE.**

| TEMP. (℃) | 20MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| -10 | -0.0085 | -0.0083 | 2.5 |
| 0 | -0.0074 | -0.0075 | 2.5 |
| 10 | -0.0051 | -0.0055 | 2.5 |
| 20 | -0.0039 | -0.004 | 2.5 |
| 30 | -0.0031 | -0.0032 | 2.5 |
| 40 | -0.0018 | -0.0022 | 2.5 |
| 55 | -0.0003 | -0.0005 | 2.5 |

## LTE BAND 25

### FREQUENCY ERROR VS. VOLTAGE

| VOLTAGE (Volts) | 1.4MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| $V_{nor}$ | 0.0009 | 0.0011 | 2.5 |
| $V_{min}$ | -0.0014 | -0.0013 | 2.5 |
| $V_{max}$ | 0.001 | 0.0009 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from $V_{min}$ to $V_{max}$.

### FREQUENCY ERROR vs. TEMPERATURE.

| TEMP. (℃) | 1.4MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| -10 | -0.0038 | -0.0037 | 2.5 |
| 0 | -0.0035 | -0.0034 | 2.5 |
| 10 | -0.0021 | -0.0022 | 2.5 |
| 20 | -0.0018 | -0.0019 | 2.5 |
| 30 | -0.0014 | -0.0019 | 2.5 |
| 40 | -0.0007 | -0.0009 | 2.5 |
| 55 | -0.0001 | -0.0001 | 2.5 |

**FREQUENCY ERROR VS. VOLTAGE**

| VOLTAGE (Volts) | 3MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| $V_{nor}$ | 0.001 | 0.0009 | 2.5 |
| $V_{min}$ | -0.0009 | -0.0011 | 2.5 |
| $V_{max}$ | 0.0008 | 0.0008 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from $V_{min}$ to $V_{max}$.

**FREQUENCY ERROR vs. TEMPERATURE.**

| TEMP. (℃) | 3MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| -10 | -0.0037 | -0.0036 | 2.5 |
| 0 | -0.0035 | -0.0033 | 2.5 |
| 10 | -0.0021 | -0.0023 | 2.5 |
| 20 | -0.0019 | -0.0019 | 2.5 |
| 30 | -0.0015 | -0.0011 | 2.5 |
| 40 | -0.0008 | -0.001 | 2.5 |
| 55 | -0.0002 | -0.0001 | 2.5 |

**FREQUENCY ERROR VS. VOLTAGE**

| VOLTAGE (Volts) | 5MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| $V_{nor}$ | 0.001 | 0.0011 | 2.5 |
| $V_{min}$ | -0.001 | -0.0013 | 2.5 |
| $V_{max}$ | 0.0009 | 0.0009 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from $V_{min}$ to $V_{max}$.

**FREQUENCY ERROR vs. TEMPERATURE.**

| TEMP. (℃) | 5MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| -10 | -0.0038 | -0.0035 | 2.5 |
| 0 | -0.0033 | -0.0032 | 2.5 |
| 10 | -0.0024 | -0.0024 | 2.5 |
| 20 | -0.002 | -0.0017 | 2.5 |
| 30 | -0.0017 | -0.0012 | 2.5 |
| 40 | -0.001 | -0.001 | 2.5 |
| 55 | -0.0002 | -0.0002 | 2.5 |

**FREQUENCY ERROR VS. VOLTAGE**

| VOLTAGE (Volts) | 10MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| $V_{nor}$ | 0.0011 | 0.001 | 2.5 |
| $V_{min}$ | -0.0014 | -0.0013 | 2.5 |
| $V_{max}$ | 0.0011 | 0.001 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from $V_{min}$ to $V_{max}$.

**FREQUENCY ERROR vs. TEMPERATURE.**

| TEMP. (℃) | 10MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| -10 | -0.0038 | -0.0036 | 2.5 |
| 0 | -0.0034 | -0.0033 | 2.5 |
| 10 | -0.0025 | -0.0024 | 2.5 |
| 20 | -0.0018 | -0.0018 | 2.5 |
| 30 | -0.0017 | -0.0015 | 2.5 |
| 40 | -0.0008 | -0.0009 | 2.5 |
| 55 | -0.0001 | -0.0002 | 2.5 |

**FREQUENCY ERROR VS. VOLTAGE**

| VOLTAGE (Volts) | 15MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| $V_{nor}$ | 0.0011 | 0.0011 | 2.5 |
| $V_{min}$ | -0.0014 | -0.0013 | 2.5 |
| $V_{max}$ | 0.0012 | 0.001 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from $V_{min}$ to $V_{max}$.

**FREQUENCY ERROR vs. TEMPERATURE.**

| TEMP. (℃) | 15MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| -10 | -0.0038 | -0.0037 | 2.5 |
| 0 | -0.0034 | -0.0033 | 2.5 |
| 10 | -0.0024 | -0.002 | 2.5 |
| 20 | -0.0018 | -0.0017 | 2.5 |
| 30 | -0.0012 | -0.0017 | 2.5 |
| 40 | -0.0009 | -0.0007 | 2.5 |
| 55 | -0.0001 | -0.0001 | 2.5 |

**FREQUENCY ERROR VS. VOLTAGE**

| VOLTAGE (Volts) | 20MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| $V_{nor}$ | 0.0011 | 0.0011 | 2.5 |
| $V_{min}$ | -0.0014 | -0.0013 | 2.5 |
| $V_{max}$ | 0.0012 | 0.0011 | 2.5 |

**NOTE:** The applicant defined the normal working voltage of the battery is from $V_{min}$ to $V_{max}$.

**FREQUENCY ERROR vs. TEMPERATURE.**

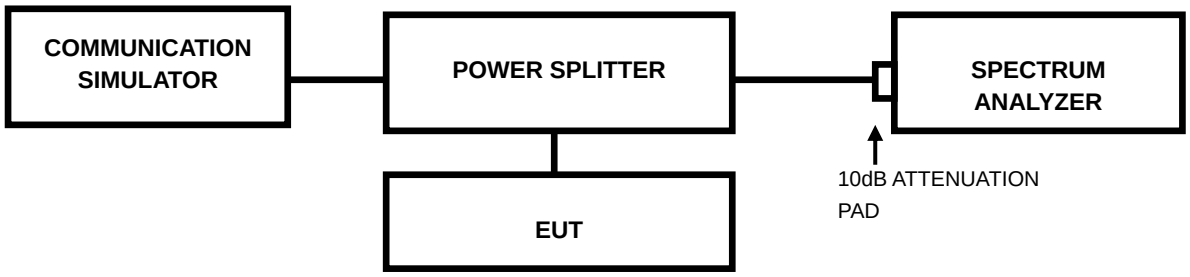
| TEMP. (℃) | 20MHz | | LIMIT (ppm) |
|---|---|---|---|
| | FREQUENCY ERROR (ppm) | | |
| | Low Channel | High Channel | |
| -10 | -0.0038 | -0.0036 | 2.5 |
| 0 | -0.0034 | -0.0032 | 2.5 |
| 10 | -0.0022 | -0.0024 | 2.5 |
| 20 | -0.0017 | -0.0017 | 2.5 |
| 30 | -0.0016 | -0.0013 | 2.5 |
| 40 | -0.001 | -0.001 | 2.5 |
| 55 | -0.0001 | -0.0001 | 2.5 |

## 3.3 OCCUPIED BANDWIDTH MEASUREMENT

### 3.3.1 TEST PROCEDURES

The EUT makes a call to the communication simulator. All measurements were done at low, middle and high operational frequency range. The communication simulator station system controlled a EUT to export maximum output power under transmission mode and specific channel frequency. Use OBW measurement function of Spectrum analyzer to measure 99 % occupied bandwidth.

### 3.3.2 TEST SETUP

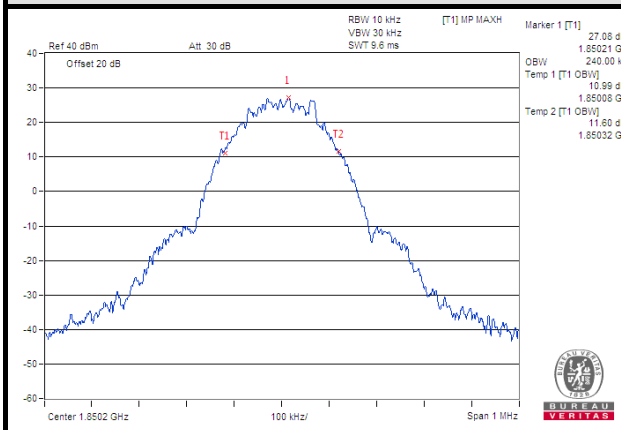


## 3.3.3 TEST RESULTS

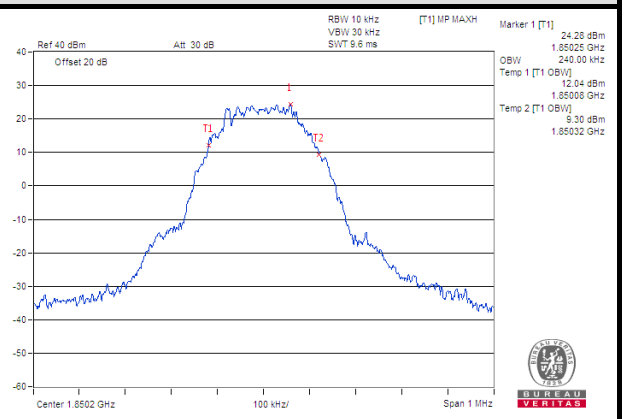
| Channel | Frequency (MHz) | 99% Occupied bandwidth (kHz) | | Channel | Frequency (MHz) | 99% Occupied bandwidth (kHz) |
|---|---|---|---|---|---|---|
| | | GPRS | EDGE | | | WCAMA |
| 512 | 1850.2 | 240.000 | 240.000 | 9262 | 1852.4 | 4.160 |
| 661 | 1880.0 | 240.000 | 240.000 | 9400 | 1880.0 | 4.160 |
| 810 | 1909.8 | 240.000 | 240.000 | 9538 | 1907.6 | 4.160 |

**SPECTRUM PLOT OF WORST VALUE of 99% Occupied Bandwidth**

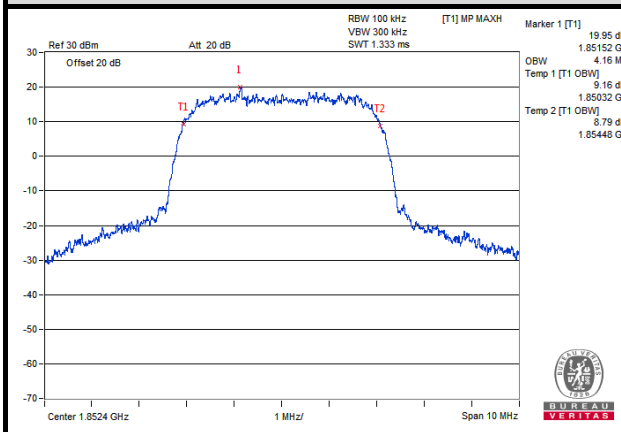
**GPRS**




**EDGE**



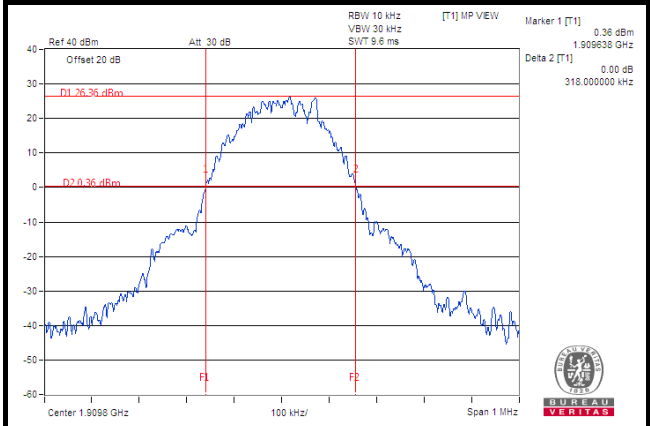

**WCAMA**



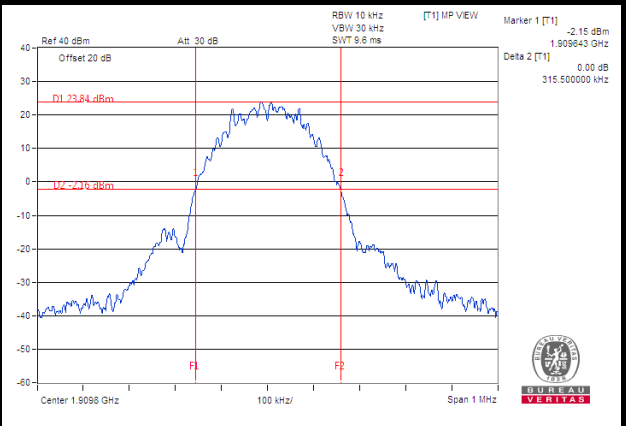
| Channel | Frequency (MHz) | 26dB bandwidth (MHz) | | Channel | Frequency (MHz) | 26dB bandwidth (MHz) |
|---|---|---|---|---|---|---|
| | | GPRS | EDGE | | | WCAMA |
| 512 | 1850.2 | 320.600 | 317.700 | 9262 | 1852.4 | 4.755 |
| 661 | 1880.0 | 326.000 | 316.300 | 9400 | 1880.0 | 4.741 |
| 810 | 1909.8 | 318.000 | 315.500 | 9538 | 1907.6 | 4.743 |

**SPECTRUM PLOT OF WORST VALUE of 26 dB bandwidth**

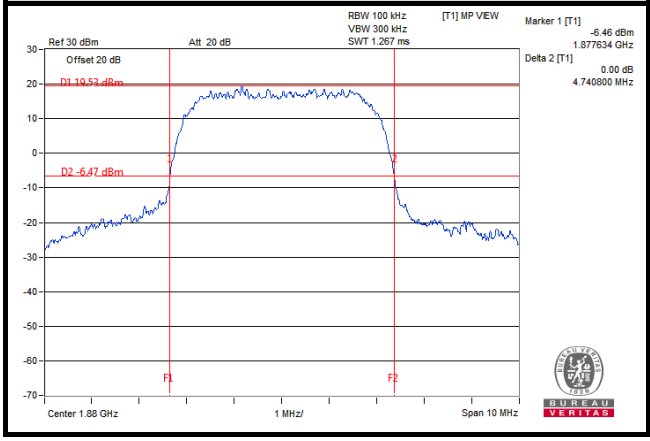
**GSM**




**EDGE**




**WCAMA**

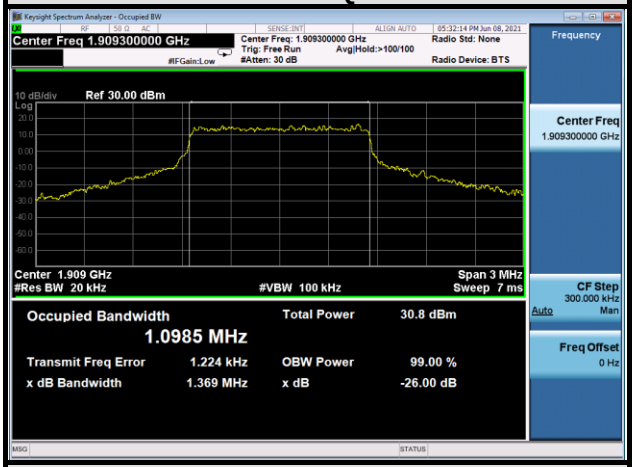


## LTE BAND 2

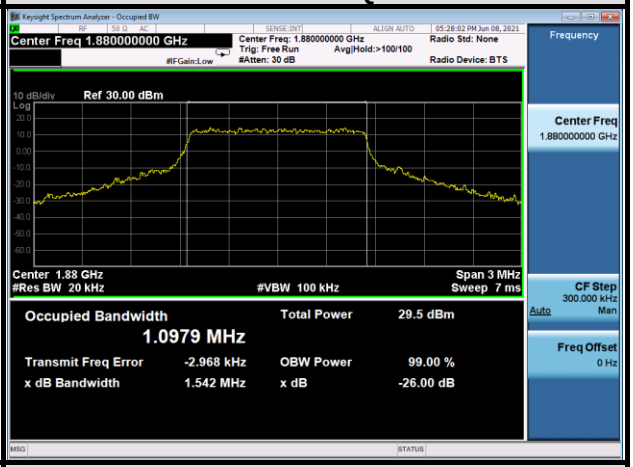
| LTE band 2 | | | | | | | |
|---|---|---|---|---|---|---|---|
| CHANNEL BANDWIDTH: 1.4MHz | | | | | | | |
| CHANNEL | FREQUENCY (MHz) | 99% OCCUPIED BANDWIDTH (MHz) | | | 26dB BANDWIDTH (MHz) | | |
| | | QPSK | 16QAM | 64QAM | QPSK | 16QAM | 64QAM |
| 18607 | 1850.7 | 1.10 | 1.09 | 1.09 | 1.45 | 1.42 | 1.36 |
| 18900 | 1880 | 1.09 | 1.10 | 1.10 | 1.47 | 1.54 | 1.53 |
| 19193 | 1909.3 | 1.10 | 1.09 | 1.09 | 1.37 | 1.43 | 1.38 |

SPECTRUM PLOT OF WORST VALUE

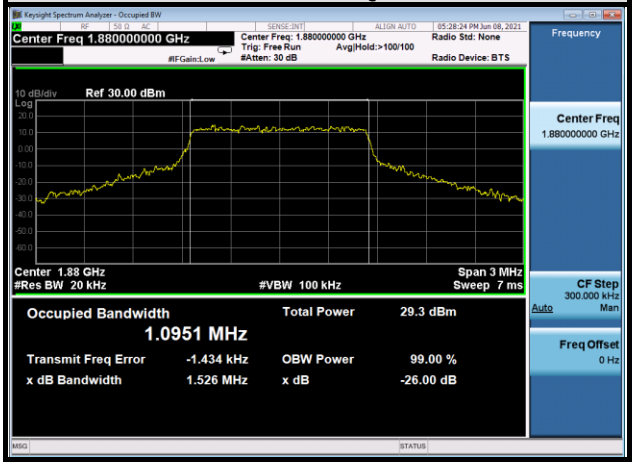
1.4MHz / QPSK




1.4MHz / 16QAM



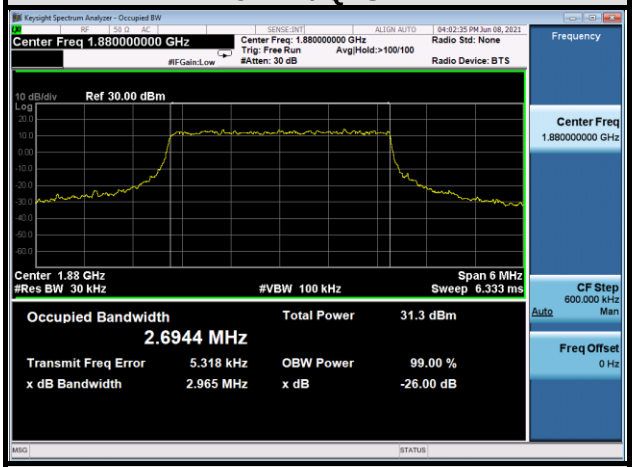

1.4MHz / 64QAM



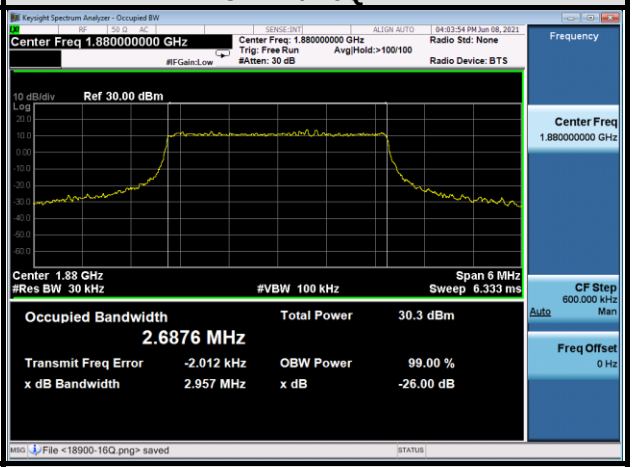
| CHANNEL BANDWIDTH: 3MHz | | | | | | | |
|---|---|---|---|---|---|---|---|
| CHANNEL | Frequency (MHz) | 99% OCCUPIED Bandwidth (MHz) | | | 26 dB bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM | QPSK | 16QAM | 64QAM |
| 18615 | 1851.5 | 2.69 | 2.69 | 2.69 | 2.93 | 2.96 | 2.98 |
| 18900 | 1880 | 2.69 | 2.69 | 2.69 | 2.97 | 2.96 | 2.96 |
| 19185 | 1908.5 | 2.69 | 2.69 | 2.68 | 2.98 | 2.95 | 2.94 |

**SPECTRUM PLOT OF WORST VALUE**

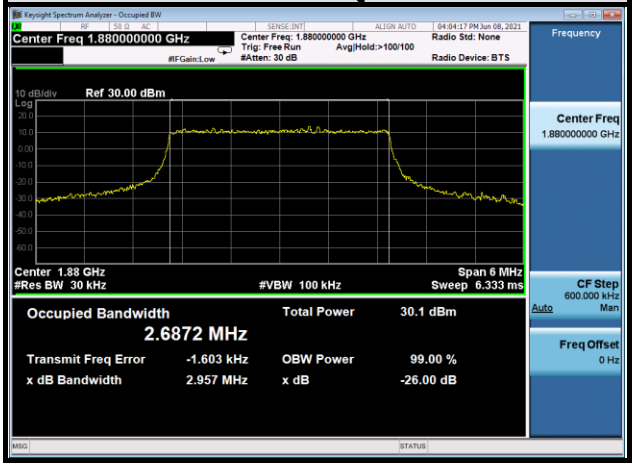
**3MHz / QPSK**




**3MHz / 16QAM**



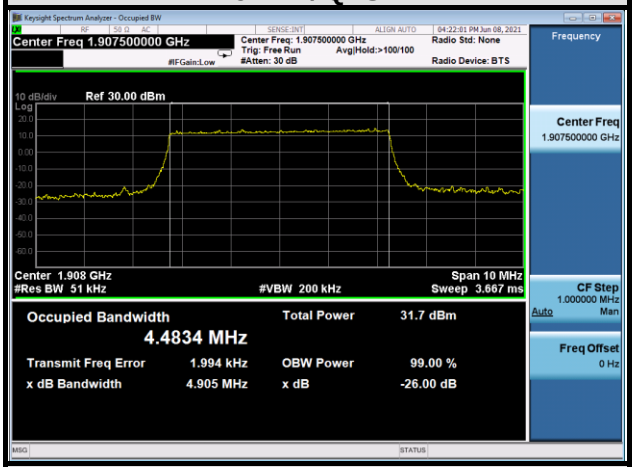

**3MHz / 64QAM**



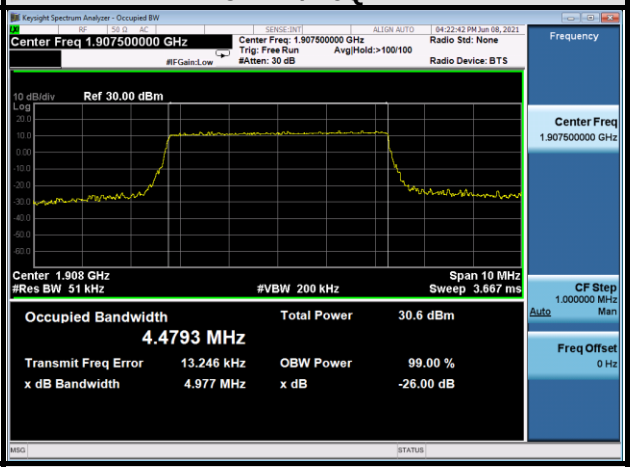
| CHANNEL BANDWIDTH: 5MHz | | | | | | | |
|---|---|---|---|---|---|---|---|
| CHANNEL | Frequency (MHz) | 99% OCCUPIED Bandwidth (MHz) | | | 26 dB bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM | QPSK | 16QAM | 64QAM |
| 18625 | 1852.5 | 4.48 | 4.47 | 4.47 | 4.94 | 4.85 | 4.89 |
| 18900 | 1880 | 4.47 | 4.48 | 4.48 | 4.91 | 4.97 | 4.94 |
| 19175 | 1907.5 | 4.49 | 4.48 | 4.47 | 4.91 | 4.98 | 4.96 |

**SPECTRUM PLOT OF WORST VALUE**

**5MHz / QPSK**




**5MHz / 16QAM**




**5MHz / 64QAM**