# FCC Test Report
# (Part 24 – GPRS, EDGE, WCDMA B2, LTE B2/B25)

**Report No.:** RFBEAD-WTW-P21060534-7

**FCC ID:** M82-AIM78S6

**Test Model:** AIM-78S-6

**Series Model:** AIM-78H-6, AIM-78H-6XXXXXXXXXXXXXXXX, AIM-78S-6XXXXXXXXXXXXXXXX (X: maybe 1-9, A-Z, or blank) (refer to item 3.1 for more details)

**Received Date:** Jun. 16, 2021

**Test Date:** Aug. 12 ~ Sep. 16, 2021

**Issued Date:** Dec. 27, 2021

**Applicant:** ADVANTECH CO., LTD

**Address:** No. 1, Alley 20, Lane 26, Rueiguang Rd, Neihu District, Taipei, Taiwan 114

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lin Kou Laboratories

**Lab Address:** No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan

**Test Location(1):** No. 19, Hwa Ya 2nd Rd., Wen Hwa Vil., Kwei Shan Dist., Taoyuan City 33383, Taiwan

**FCC Registration / Designation Number(1):** 788550 / TW0003

**Test Location(2):** B2F., No. 215, Sec. 3, Beixin Rd., Xindian Dist., New Taipei City 231, Taiwan

**FCC Registration / Designation Number(2):** 427177 / TW0011

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## Release Control Record

| Issue No. | Description | Date Issued |
|---|---|---|
| RFBEAD-WTW-P21060534-7 | Original release. | Dec. 27, 2021 |

## 1 Certificate of Conformity

**Product:** 10.1" Tablet PC

**Brand:** ADVANTECH

**Test Model:** AIM-78S-6

**Series Model:** AIM-78H-6, AIM-78H-6XXXXXXXXXXXXXXXX, AIM-78S-6XXXXXXXXXXXXXXXX
(X: maybe 1-9, A-Z, or blank) (refer to item 3.1 for more details)

**Sample Status:** Engineering sample

**Applicant:** ADVANTECH CO., LTD

**Test Date:** Aug. 12 ~ Sep. 16, 2021

**Standards:** FCC Part 24, Subpart E

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

**Prepared by :** Celine Chou , **Date:** Dec. 27, 2021

Celine Chou / Senior Specialist

**Approved by :** Jeremy Lin , **Date:** Dec. 27, 2021

Jeremy Lin / Project Engineer

## 2 Summary of Test Results

| Applied Standard: FCC Part 24 & Part 2 | | | |
|---|---|---|---|
| FCC Clause | Test Item | Result | Remarks |
| 2.1046<br>24.232 | Effective Isotropically Radiated Power | Pass | Meet the requirement of limit. |
| 2.1046<br>24.232<br>(d) | Peak To Average Ratio | Pass | Meet the requirement of limit. |
| 2.1047 | Modulation Characteristics | Pass | Meet the requirement |
| 2.1055<br>24.235 | Frequency Stability | Pass | Meet the requirement of limit. |
| 2.1049 | Occupied Bandwidth | Pass | Meet the requirement of limit. |
| 24.238 | Band Edge Measurements | Pass | Meet the requirement of limit. |
| 2.1051<br>24.238 | Conducted Spurious Emissions | Pass | Meet the requirement of limit. |
| 2.1053<br>24.238 | Radiated Spurious Emissions | Pass | Meet the requirement of limit.<br>Minimum passing margin is<br>-24.30dB at 9412.50MHz. |

Note: Determining compliance based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

### 2.1 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 | Frequency | Expanded Uncertainty (k=2) (±) |
|---|---|---|
| Radiated Emissions up to 1 GHz | 9kHz ~ 30MHz | 3.04 dB |
| | 30MHz ~ 200MHz | 2.0153 dB |
| | 200MHz ~1000MHz | 2.0224 dB |
| Radiated Emissions above 1 GHz | 1GHz ~ 18GHz | 1.0121 dB |
| | 18GHz ~ 40GHz | 1.1508 dB |

## 2.2 Test Site and Instruments

| Description & Manufacturer | Model No. | Serial No. | Cal. Date | Cal. Due |
|---|---|---|---|---|
| Test Receiver<br>Agilent Technologies | N9038A | MY52260177 | Aug. 24, 2020 | Aug. 23, 2021 |
| | | | Sep. 01, 2021 | Aug. 31, 2022 |
| Spectrum Analyzer<br>ROHDE & SCHWARZ | FSW43 | 101582 | Apr. 01, 2021 | Mar. 31, 2022 |
| HORN Antenna<br>ETS-Lindgren | 3117 | 00143293 | Nov. 22, 2020 | Nov. 21, 2021 |
| BILOG Antenna<br>SCHWARZBECK | VULB 9168 | 9168-616 | Nov. 09, 2020 | Nov. 08, 2021 |
| HORN Antenna<br>SCHWARZBECK | BBHA 9170 | 9170-480 | Nov. 22, 2020 | Nov. 21, 2021 |
| Fixed Attenuator<br>Mini-Circuits | MDCS18N-10 | MDCS18N-10-01 | Apr. 13, 2021 | Apr. 12, 2022 |
| Loop Antenna | EM-6879 | 269 | Sep. 17, 2020 | Sep. 16, 2021 |
| MXG Vector signal generator<br>Agilent | N5182B | MY53050430 | Nov. 25, 2020 | Nov. 24, 2021 |
| Preamplifier<br>Agilent | 310N | 187226 | Jun. 17, 2021 | Jun. 16, 2022 |
| Preamplifier<br>Agilent | 83017A | MY39501357 | Jun. 17, 2021 | Jun. 16, 2022 |
| Preamplifier<br>EMCI | EMC 184045 | 980116 | Oct. 07, 2020 | Oct. 06, 2021 |
| RF signal cable<br>ETS-LINDGREN | 5D-FB | Cable-CH1-01(RFC-SMS-100-SMS-120+RFC-SMS-100-SMS-400) | Jun. 17, 2021 | Jun. 16, 2022 |
| RF signal cable<br>ETS-LINDGREN | 8D-FB | Cable-CH1-02(RFC-SMS-100-SMS-24) | Jun. 17, 2021 | Jun. 16, 2022 |
| Boresight Antenna Fixture | FBA-01 | FBA-SIP01 | NA | NA |
| Software<br>BV ADT | E3<br>8.130425b | NA | NA | NA |
| Antenna Tower<br>MF | NA | NA | NA | NA |
| Turn Table<br>MF | NA | NA | NA | NA |
| Antenna Tower &Turn Table Controller<br>MF | MF-7802 | NA | NA | NA |
| Temperature & Humidity Chamber<br>TERCHY | HRM-120RF | 931022 | Dec. 24, 2020 | Dec. 23, 2021 |
| JFW 20dB attenuation | 50HF-020-SMA | NA | NA | NA |
| True RMS Clamp Meter<br>Fluke | 325 | 31130711WS | Jun. 02, 2021 | Jun. 01, 2022 |
| DC power supply<br>Keysight | U8002A | MY56330015 | NA | NA |
| Radio Communication Analyzer<br>Anritsu | MT8820C | 6201010284 | Dec. 28, 2020 | Dec. 27, 2021 |
| Universal Radio Communication Tester<br>R&S | CMU200 | 101095 | Nov. 18, 2020 | Nov. 17, 2021 |

Note: 1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Xindian Chamber 6.

# 3 General Information

## 3.1 General Description of EUT

| | | |
|---|---|---|
| Product | 10.1” Tablet PC | |
| Brand | ADVANTECH | |
| Test Model | AIM-78S-6 | |
| Series Model | AIM-78H-6, AIM-78H-6XXXXXXXXXXXXXXXX,<br>AIM-78S-6XXXXXXXXXXXXXXXX (X: maybe 1-9, A-Z, or blank) | |
| Model Difference | Refer to note | |
| Sample Status | Engineering sample | |
| Power Supply Rating | 10.8Vdc (Battery)<br>19Vdc (Adapter) | |
| Modulation Type | GPRS: GMSK<br>EDGE: 8PSK<br>WCDMA: BPSK, QPSK<br>HSDPA: BPSK<br>HSUPA: QPSK<br>LTE: QPSK, 16QAM, 64QAM | |
| Operating Frequency | GPRS, EDGE | 1850.2MHz ~ 1909.8MHz |
| | WCDMA Band 2 | 1852.4MHz ~ 1907.6MHz |
| | LTE Band 2 (Channel Bandwidth 1.4MHz) | 1850.7MHz ~ 1909.3MHz |
| | LTE Band 2 (Channel Bandwidth 3MHz) | 1851.5MHz ~ 1908.5MHz |
| | LTE Band 2 (Channel Bandwidth 5MHz) | 1852.5MHz ~ 1907.5MHz |
| | LTE Band 2 (Channel Bandwidth 10MHz) | 1855.0MHz ~ 1905.0MHz |
| | LTE Band 2 (Channel Bandwidth 15MHz) | 1857.5MHz ~ 1902.5MHz |
| | LTE Band 2 (Channel Bandwidth 20MHz) | 1860.0MHz ~ 1900.0MHz |
| | LTE Band 25 (Channel Bandwidth 1.4MHz) | 1850.7MHz ~ 1914.3MHz |
| | LTE Band 25 (Channel Bandwidth 3MHz) | 1851.5MHz ~ 1913.5MHz |
| | LTE Band 25 (Channel Bandwidth 5MHz) | 1852.5MHz ~ 1912.5MHz |
| | LTE Band 25 (Channel Bandwidth 10MHz) | 1855.0MHz ~ 1910.0MHz |
| | LTE Band 25 (Channel Bandwidth 15MHz) | 1857.5MHz ~ 1907.5MHz |
| | LTE Band 25 (Channel Bandwidth 20MHz) | 1860.0MHz ~ 1905.0MHz |

| | | | | |
|---|---|---|---|---|
| Max. EIRP Power | GPRS | 1291.219mW (31.11dBm) | | |
| | EDGE | 540.754mW (27.33dBm) | | |
| | WCDMA Band 2 | 368.129mW (25.66dBm) | | |
| | | QPSK | 16QAM | 64QAM |
| | LTE Band 2 (Channel Bandwidth 1.4MHz) | 338.844mW (25.30dBm) | 261.818mW (24.18dBm) | 209.894mW (23.22dBm) |
| | LTE Band 2 (Channel Bandwidth 3MHz) | 331.131mW (25.20dBm) | 261.818mW (24.18dBm) | 208.449mW (23.19dBm) |
| | LTE Band 2 (Channel Bandwidth 5MHz) | 337.287mW (25.28dBm) | 260.016mW (24.15dBm) | 210.863mW (23.24dBm) |
| | LTE Band 2 (Channel Bandwidth 10MHz) | 333.426mW (25.23dBm) | 261.216mW (24.17dBm) | 207.014mW (23.16dBm) |
| | LTE Band 2 (Channel Bandwidth 15MHz) | 337.287mW (25.28dBm) | 265.461mW (24.24dBm) | 211.349mW (23.25dBm) |
| | LTE Band 2 (Channel Bandwidth 20MHz) | 340.408mW (25.32dBm) | 269.774mW (24.31dBm) | 213.796mW (23.30dBm) |
| | LTE Band 25 (Channel Bandwidth 1.4MHz) | 341.193mW (25.33dBm) | 271.019mW (24.33dBm) | 214.289mW (23.31dBm) |
| | LTE Band 25 (Channel Bandwidth 3MHz) | 344.350mW (25.37dBm) | 272.270mW (24.35dBm) | 214.289mW (23.31dBm) |
| | LTE Band 25 (Channel Bandwidth 5MHz) | 341.979mW (25.34dBm) | 271.644mW (24.34dBm) | 218.776mW (23.40dBm) |
| | LTE Band 25 (Channel Bandwidth 10MHz) | 349.140mW (25.43dBm) | 264.241mW (24.22dBm) | 212.814mW (23.28dBm) |
| | LTE Band 25 (Channel Bandwidth 15MHz) | 348.337mW (25.42dBm) | 272.898mW (24.36dBm) | 215.774mW (23.34dBm) |
| | LTE Band 25 (Channel Bandwidth 20MHz) | 353.183mW (25.48dBm) | 276.694mW (24.42dBm) | 219.280mW (23.41dBm) |
| Emission Designator | GPRS | 254KGXW | | |
| | EDGE | 255KG7W | | |
| | WCDMA Band 2 | 4M15F9W | | |
| | | QPSK | 16QAM | 64QAM |
| | LTE Band 2 (Channel Bandwidth 1.4MHz) | 1M09G7D | 1M09D7W | 1M09D7W |
| | LTE Band 2 (Channel Bandwidth 3MHz) | 2M70G7D | 2M70D7W | 2M70D7W |
| | LTE Band 2 (Channel Bandwidth 5MHz) | 4M49G7D | 4M50D7W | 4M51D7W |
| | LTE Band 2 (Channel Bandwidth 10MHz) | 8M97G7D | 8M98D7W | 8M99D7W |
| | LTE Band 2 (Channel Bandwidth 15MHz) | 13M5G7D | 13M5D7W | 13M5D7W |
| | LTE Band 2 (Channel Bandwidth 20MHz) | 18M0G7D | 18M0D7W | 18M0D7W |
| | LTE Band 25 (Channel Bandwidth 1.4MHz) | 1M09G7D | 1M09D7W | 1M09D7W |
| | LTE Band 25 (Channel Bandwidth 3MHz) | 2M70G7D | 2M70D7W | 2M71D7W |
| | LTE Band 25 (Channel Bandwidth 5MHz) | 4M49G7D | 4M50D7W | 4M50D7W |
| | LTE Band 25 (Channel Bandwidth 10MHz) | 8M97G7D | 8M97D7W | 8M97D7W |
| | LTE Band 25 (Channel Bandwidth 15MHz) | 13M5G7D | 13M5D7W | 13M4D7W |
| | LTE Band 25 (Channel Bandwidth 20MHz) | 17M9G7D | 18M0D7W | 17M9D7W |

| | |
|---|---|
| Antenna Type | Refer to note |
| Antenna Connector | Refer to note |
| Accessory Device | Refer to note |
| Cable Supplied | Refer to note |

Note:

1. The following models are provided to this EUT. The model of the AIM-78S-6 was chosen for final test.

| Model | Description |
|---|---|
| AIM-78S-6, AIM-78H-6,<br>AIM-78H-6XXXXXXXXXXXXXXX,<br>AIM-78S-6XXXXXXXXXXXXXXX<br>(X: maybe 1-9, A-Z, or blank) | For marketing purpose |

2. The EUT contains following accessory devices.

| Product | Brand | Model | Description |
|---|---|---|---|
| Adapter 1 | Tamura | XEW1934N | Input: 100-240Vac~1.5A , 50/60Hz<br>Output: 19Vdc / 3.42A<br>Power Line:<br>AC: 1.5m cable without core<br>DC: 1.2m cable without core |
| Adapter 2 (option) | FSP | FSP065-DBCM1 | Input: 100-240Vac~ 2.0-1.0A, 50-60Hz<br>Output: 19Vdc / 3.43A<br>Power Line:<br>AC: 1.5m cable without core<br>DC: 1.5m cable with 1 core |
| Battery | Advantech | AIM-BAT-10 | Rating: 10.8Vdc, 24.84Wh, 2300mAh |
| WWAN+WLAN module | USI | MS-01 Pro | - |
| Docking Station (option) | Advantech | AIM-DOC-0001 | Rating: 19Vdc, 3.42A (VESA Dock) |
| Docking Station (option) | Advantech | AIM-VED0 | Rating: 9 ~ 32Vdc (Vehicle Dock) |
| Docking Station (option) | Advantech | AIM-OFD-0000 | Rating: 19Vdc (Office Dock) |
| Extension Modules-Barcode scanner (20° ) (option) | Advantech | AIM-EXT0-0040 (20 degree) | Sensor: 640 x 480 CMOS sensor |
| Extension Modules-Barcode scanner (70° ) (option) | Advantech | AIM-EXT0-0041 (70 degree) | Sensor: 640 x 480 CMOS sensor |

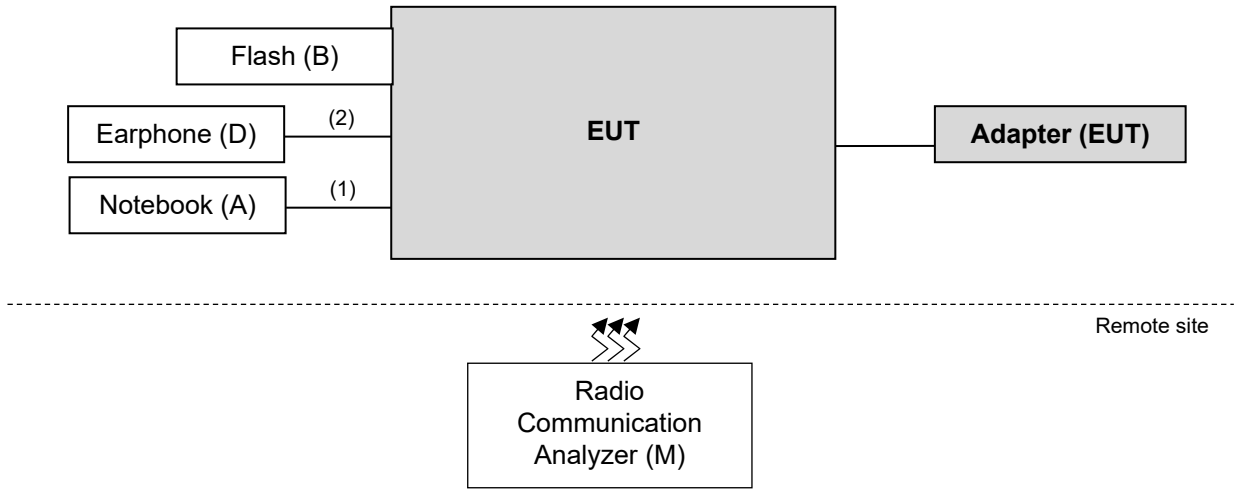
3. The following antennas were provided to the EUT.

| Ant. Type | PIFA | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ant. Connector | I-PEX_IV | | | | | | | | | | | | | | |
| WWAN_Main | | | | | | | | | | | | | | | |
| Frequency (MHz) | 704 | 710 | 716 | 734 | 740 | 746 | 751 | 756 | 777 | 782 | 787 | 791 | 806 | 821 | 824 |
| Gain (dBi) | -3.77 | -3.47 | -3.24 | -1.68 | -1.24 | -0.99 | -0.45 | -0.07 | 0.40 | 0.44 | 0.57 | 0.52 | 0.76 | 0.51 | 0.37 |
| Frequency (MHz) | 836 | 849 | 862 | 869 | 880 | 894 | 900 | 915 | 925 | 940 | 960 | 1710 | 1730 | 1750 | 1770 |
| Gain (dBi) | 0.02 | 0.10 | 0.10 | 0.16 | 0.19 | -0.35 | -0.83 | -1.68 | -2.29 | -2.41 | -2.39 | 1.67 | 2.19 | 2.73 | 3.25 |
| Frequency (MHz) | 1785 | 1805 | 1840 | 1850 | 1880 | 1910 | 1920 | 1930 | 1950 | 1960 | 1980 | 1990 | 2010 | 2018 | 2025 |
| Gain (dBi) | 3.52 | 3.43 | 2.63 | 1.99 | -0.63 | -0.88 | -0.47 | -0.20 | 0.84 | 1.18 | 2.07 | 2.17 | 2.48 | 2.14 | 1.91 |
| Frequency (MHz) | 2110 | 2140 | 2170 | 2300 | 2325 | 2350 | 2375 | 2400 | 2500 | 2515 | 2535 | 2555 | 2570 | 2595 | 2620 |
| Gain (dBi) | 1.08 | 1.00 | 1.14 | 0.05 | -0.28 | 0.23 | 0.70 | 1.43 | 0.57 | 0.31 | 0.05 | 0.51 | 0.86 | 1.38 | 1.37 |
| Frequency (MHz) | 2630 | 2655 | 2680 | 2690 | | | | | | | | | | | |
| Gain (dBi) | 1.47 | 1.92 | 1.95 | 1.87 | | | | | | | | | | | |
| WWAN_Aux (only RX) | | | | | | | | | | | | | | | |
| Frequency (MHz) | 704 | 710 | 716 | 734 | 740 | 746 | 751 | 756 | 777 | 782 | 787 | 791 | 806 | 821 | 824 |
| Gain (dBi) | -11.59 | -11.10 | -11.03 | -9.89 | -9.75 | -9.54 | -9.49 | -9.59 | -9.46 | -9.38 | -9.51 | -9.28 | -8.58 | -7.57 | -7.56 |
| Frequency (MHz) | 836 | 849 | 862 | 869 | 880 | 894 | 900 | 915 | 925 | 940 | 960 | 1710 | 1730 | 1750 | 1770 |
| Gain (dBi) | -7.09 | -6.80 | -6.17 | -5.74 | -5.00 | -4.53 | -4.54 | -4.52 | -4.55 | -4.26 | -3.49 | 1.68 | 1.77 | 2.06 | 2.35 |
| Frequency (MHz) | 1785 | 1805 | 1840 | 1850 | 1880 | 1910 | 1920 | 1930 | 1950 | 1960 | 1980 | 1990 | 2010 | 2018 | 2025 |
| Gain (dBi) | 2.73 | 2.82 | 2.96 | 3.11 | 3.31 | 3.84 | 4.01 | 4.13 | 4.51 | 4.59 | 4.37 | 4.23 | 4.09 | 4.06 | 3.90 |
| Frequency (MHz) | 2110 | 2140 | 2170 | 2300 | 2325 | 2350 | 2375 | 2400 | 2500 | 2515 | 2535 | 2555 | 2570 | 2595 | 2620 |
| Gain (dBi) | 3.30 | 3.55 | 3.24 | 2.93 | 2.63 | 2.47 | 2.11 | 2.67 | 3.99 | 3.94 | 3.96 | 3.89 | 3.48 | 3.40 | 3.31 |
| Frequency (MHz) | 2630 | 2655 | 2680 | 2690 | | | | | | | | | | | |
| Gain (dBi) | 3.01 | 3.16 | 3.57 | 3.27 | | | | | | | | | | | |

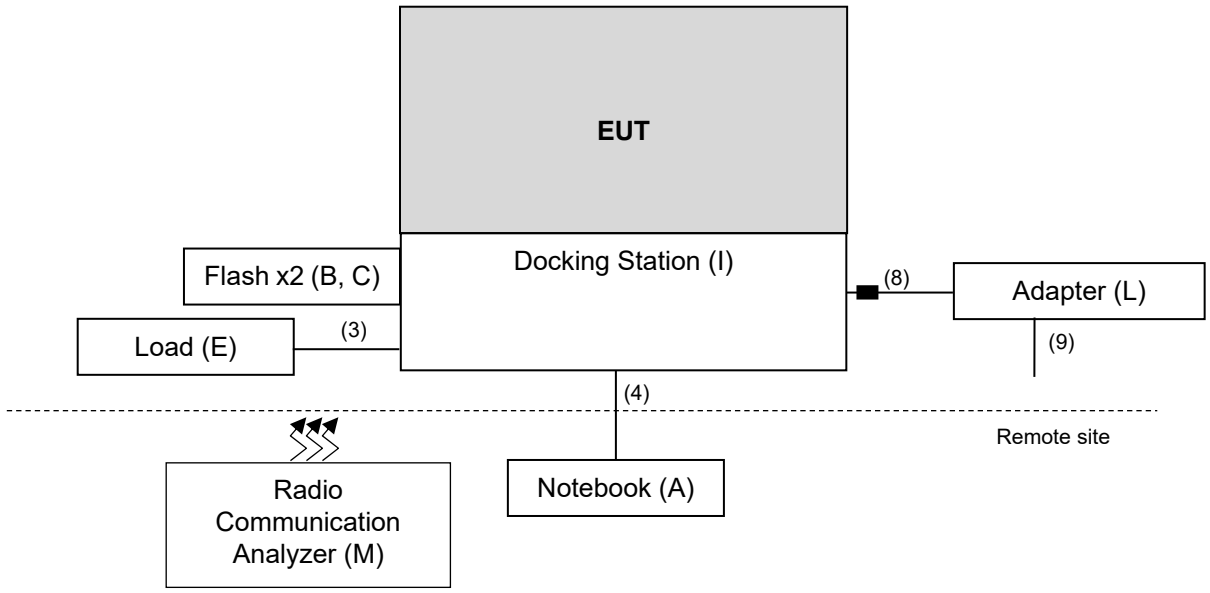
* The max. gain (Main Antenna) was chosen for final tests.
* The above Antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.

## 3.2 Configuration of System under Test

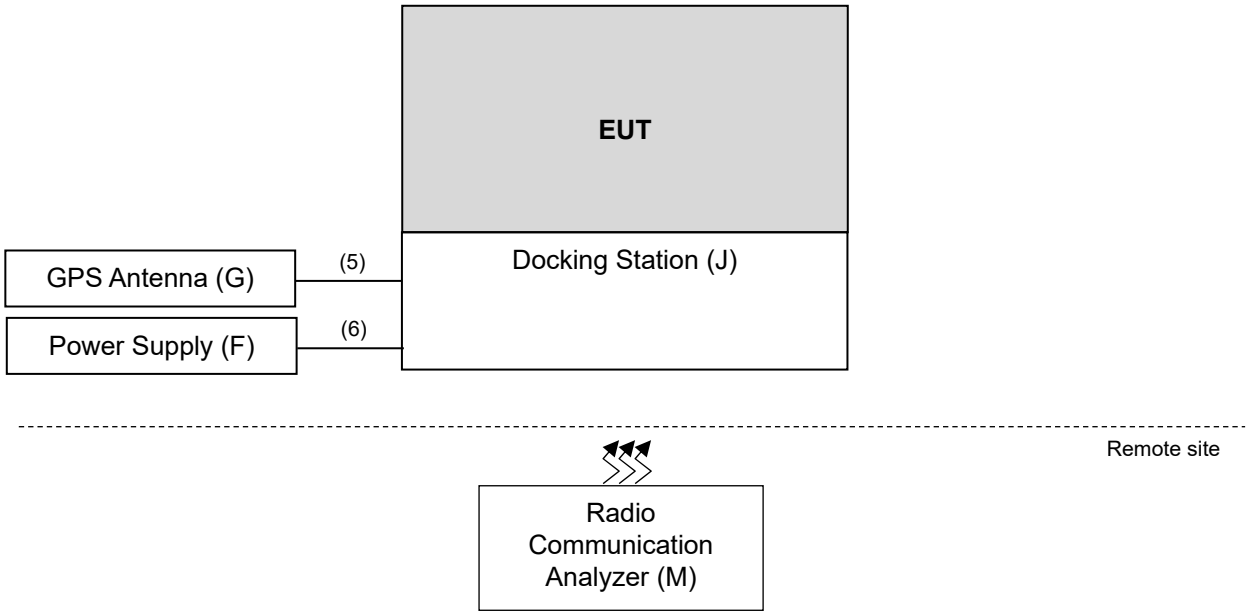
Test Mode A



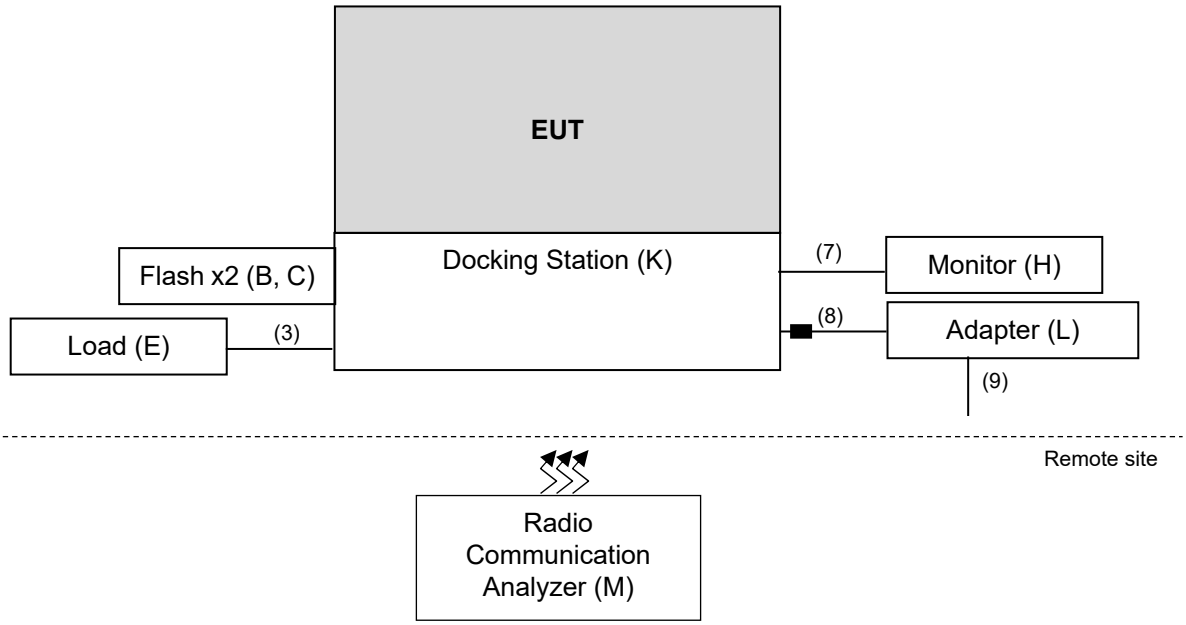

Test Mode B



Test Mode C




Test Mode D



### 3.2.1 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.

| ID | Product | Brand | Model No. | Serial No. | FCC ID | Remarks |
|---|---|---|---|---|---|---|
| A. | Notebook | Lenovo | 20J4 MD A003TW | PF-11H9AK | FCC DoC Approved | - |
| B. | Flash | HP | v250W | 05 | NA | Type-A |
| C. | Flash | HP | v250W | 03 | NA | Type-A |
| D. | Earphone | APPLE | NA | NA | NA | - |
| E. | Load | NA | NA | NA | NA | - |
| F. | Power Supply | TOPWARD | 6306D | 809760 | NA | - |
| G. | GPS Antenna | Connectec | SP070809-001 | 3-6004-031R000 | NA | Provided by client |
| H. | Monitor | DELL | SE2416Hc | CN-OWJKMC-64180-66D-013B-A00 | NA | - |
| I. | Docking Station | Advantech | AIM-DOC-0001 | NA | NA | Provided by client |
| J. | Docking Station | Advantech | AIM-VED0 | NA | NA | Provided by client |
| K. | Docking Station | Advantech | AIM-OFD-0000 | NA | NA | Provided by client |
| L. | Adapter | FSP | FSP065-DBCM1 | NA | NA | Provided by client |
| M. | Radio Communication Analyzer | Anritsu | MT8821C | 6261806803 | NA | - |
| | | | MT8820C | 6201010284 | NA | - |

Note:

1. All power cords of the above support units are non-shielded (1.8m).
2. Item A and M acted as a communication partner to transfer data.

| ID | Descriptions | Qty. | Length (m) | Shielding (Yes/No) | Cores (Qty.) | Remarks |
|---|---|---|---|---|---|---|
| 1. | Type C cable | 1 | 1 | Y | 0 | - |
| 2. | Audio cable | 1 | 1.2 | N | 0 | - |
| 3. | RS232 cable | 1 | 1.5 | N | 0 | - |
| 4. | LAN cable | 1 | 7 | N | 0 | RJ45, Cat.5e |
| 5. | Antenna cable | 1 | 5 | N | 0 | Provided by client |
| 6. | Power cable | 1 | 1 | N | 0 | Provided by client |
| 7. | HDMI cable | 1 | 2.0 | Y | 0 | Provided by Lab. (Brand: Amber, Model: HDMI-AA120) |
| 8. | DC Power cable | 1 | 1.28 | N | 1 | Provided by client |
| 9. | AC Power cable | 1 | 0.93 | N | 0 | Provided by client |

Note: The core(s) is(are) originally attached to the cable(s).

### 3.3 Test Mode Applicability and Tested Channel Detail

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 was found when positioned as the table below. Following channel(s) was (were) selected for the final test as listed below:

| Band | Radiated Emission |
|---|---|
| GPRS, EDGE | Z-plane |
| WCDMA Band 2 | Z-plane |
| LTE Band 2 | Z-plane |
| LTE Band 25 | Z-plane |

For radiated emission test item, the worst case (Test Mode A) was tested under radiated emission below 1GHz and above 1GHz. Test mode B, C and D were select the worst radiated emission mode (LTE Band 25 mode) for radiated emission below 1GHz tested only.

| Test Mode | Test Condition |
|---|---|
| A | EUT + Adapter |
| B | EUT + VESA Dock |
| C | EUT + Vehicle Dock |
| D | EUT + Office Dock |

GPRS, EDGE Mode

| EUT Configure Mode | Test Item | Available Channel | Tested Channel | Mode |
|---|---|---|---|---|
| - | EIRP | 512 to 810 | 512 (1850.2MHz), 661 (1880.0MHz), 810 (1909.8MHz) | GPRS, EDGE |
| - | Modulation Characteristics | 512 to 810 | 661 (1880.0MHz) | GPRS, EDGE |
| - | Frequency Stability | 512 to 810 | 512 (1850.2MHz), 810 (1909.8MHz) | EDGE |
| - | Occupied Bandwidth | 512 to 810 | 512 (1850.2MHz), 661 (1880.0MHz), 810 (1909.8MHz) | GPRS, EDGE |
| - | Band Edge | 512 to 810 | 512(1850.2MHz), 810(1909.8MHz) | GPRS, EDGE |
| - | Peak To Average Ratio | 512 to 810 | 512 (1850.2MHz), 661 (1880.0MHz), 810 (1909.8MHz) | GPRS, EDGE |
| - | Conducted Emission | 512 to 810 | 512 (1850.2MHz), 661 (1880.0MHz), 810 (1909.8MHz) | GPRS, EDGE |
| - | Radiated Emission | 512 to 810 | 512 (1850.2MHz), 661 (1880.0MHz), 810 (1909.8MHz) | GPRS, EDGE |

Note: For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.

WCDMA Band 2

| EUT Configure Mode | Test Item | Available Channel | Tested Channel | Mode |
|---|---|---|---|---|
| - | EIRP | 9262 to 9538 | 9262 (1852.4MHz), 9400 (1880.0MHz), 9538 (1907.6MHz) | WCDMA, HSDPA, HSUPA |
| - | Modulation Characteristics | 9262 to 9538 | 9400 (1880.0MHz) | WCDMA, HSDPA, HSUPA |
| - | Frequency Stability | 9262 to 9538 | 9262 (1852.4MHz), 9538 (1907.6MHz) | WCDMA |
| - | Occupied Bandwidth | 9262 to 9538 | 9262 (1852.4MHz), 9400 (1880.0MHz), 9538 (1907.6MHz) | WCDMA, HSDPA, HSUPA |
| - | Band Edge | 9262 to 9538 | 9262 (1852.4MHz), 9538 (1907.6MHz) | WCDMA, HSDPA, HSUPA |
| - | Peak To Average Ratio | 9262 to 9538 | 9262 (1852.4MHz), 9400 (1880.0MHz), 9538 (1907.6MHz) | WCDMA, HSDPA, HSUPA |
| - | Conducted Emission | 9262 to 9538 | 9262 (1852.4MHz), 9400 (1880.0MHz), 9538 (1907.6MHz) | WCDMA, HSDPA, HSUPA |
| - | Radiated Emission | 9262 to 9538 | 9262 (1852.4MHz), 9400 (1880.0MHz), 9538 (1907.6MHz) | WCDMA |

Note: For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.

LTE Band 2

| EUT Configure Mode | Test item | Available channel | Tested Channel | Channel Bandwidth | Modulation | Mode |
|---|---|---|---|---|---|---|
| - | EIRP | 18607 to 19193 | 18607 (1850.7MHz),<br>18900 (1880.0MHz),<br>19193 (1909.3MHz) | 1.4MHz | QPSK / 16QAM / 64QAM | 1 RB / 0 RB Offset<br>1 RB / 2 RB Offset<br>1 RB / 5 RB Offset<br>3 RB / 0 RB Offset<br>3 RB / 1 RB Offset<br>3 RB / 3 RB Offset<br>6 RB / 0 RB Offset |
| | | 18615 to 19185 | 18615 (1851.5MHz),<br>18900 (1880.0MHz),<br>19185 (1908.5MHz) | 3MHz | QPSK / 16QAM / 64QAM | 1 RB / 0 RB Offset<br>1 RB / 7 RB Offset<br>1 RB / 14 RB Offset<br>8 RB / 0 RB Offset<br>8 RB / 3 RB Offset<br>8 RB / 7 RB Offset<br>15 RB / 0 RB Offset |
| | | 18625 to 19175 | 18625 (1852.5MHz),<br>18900 (1880.0MHz),<br>19175 (1907.5MHz) | 5MHz | QPSK / 16QAM / 64QAM | 1 RB / 0 RB Offset<br>1 RB / 12 RB Offset<br>1 RB / 24 RB Offset<br>12 RB / 0 RB Offset<br>12 RB / 6 RB Offset<br>12 RB / 13 RB Offset<br>25 RB / 0 RB Offset |
| | | 18650 to 19150 | 18650 (1855.0MHz),<br>18900 (1880.0MHz),<br>19150 (1905.0MHz) | 10MHz | QPSK / 16QAM / 64QAM | 1 RB / 0 RB Offset<br>1 RB / 24 RB Offset<br>1 RB / 49 RB Offset<br>25 RB / 0 RB Offset<br>25 RB / 12 RB Offset<br>25 RB / 25 RB Offset<br>50 RB / 0 RB Offset |
| | | 18675 to 19125 | 18675 (1857.5MHz),<br>18900 (1880.0MHz),<br>19125 (1902.5MHz) | 15MHz | QPSK / 16QAM / 64QAM | 1 RB / 0 RB Offset<br>1 RB / 37 RB Offset<br>1 RB / 74 RB Offset<br>36 RB / 0 RB Offset<br>36 RB / 19 RB Offset<br>36 RB / 39 RB Offset<br>75 RB / 0 RB Offset |
| | | 18700 to 19100 | 18700 (1860.0MHz),<br>18900 (1880.0MHz),<br>19100 (1900.0MHz) | 20MHz | QPSK / 16QAM / 64QAM | 1 RB / 0 RB Offset<br>1 RB / 50 RB Offset<br>1 RB / 99 RB Offset<br>50 RB / 0 RB Offset<br>50 RB / 25 RB Offset<br>50 RB / 50 RB Offset<br>100 RB / 0 RB Offset |
| - | Modulation Characteristics | 18700 to 19100 | 18900 (1880.0MHz) | 20MHz | QPSK / 16QAM / 64QAM | 100 RB / 0 RB Offset |

| EUT Configure Mode | Test item | Available channel | Tested Channel | Channel Bandwidth | Modulation | Mode |
|---|---|---|---|---|---|---|
| - | Frequency Stability | 18607 to 19193 | 18607 (1850.7MHz), 19193 (1909.3MHz) | 1.4MHz | QPSK | 6 RB / 0 RB Offset |
| | | 18615 to 19185 | 18615 (1851.5MHz), 19185 (1908.5MHz) | 3MHz | QPSK | 15 RB / 0 RB Offset |
| | | 18625 to 19175 | 18625 (1852.5MHz), 19175 (1907.5MHz) | 5MHz | QPSK | 25 RB / 0 RB Offset |
| | | 18650 to 19150 | 18650 (1855.0MHz), 19150 (1905.0MHz) | 10MHz | QPSK | 50 RB / 0 RB Offset |
| | | 18675 to 19125 | 18675 (1857.5MHz), 19125 (1902.5MHz) | 15MHz | QPSK | 75 RB / 0 RB Offset |
| | | 18700 to 19100 | 18700 (1860.0MHz), 19100 (1900.0MHz) | 20MHz | QPSK | 100 RB / 0 RB Offset |
| - | Occupied Bandwidth | 18607 to 19193 | 18607 (1850.7MHz), 18900 (1880.0MHz), 19193 (1909.3MHz) | 1.4MHz | QPSK / 16QAM / 64QAM | 6 RB / 0RB Offset |
| | | 18615 to 19185 | 18615 (1851.5MHz), 18900 (1880.0MHz), 19185 (1908.5MHz) | 3MHz | QPSK / 16QAM / 64QAM | 15 RB / 0RB Offset |
| | | 18625 to 19175 | 18625 (1852.5MHz), 18900 (1880.0MHz), 19175 (1907.5MHz) | 5MHz | QPSK / 16QAM / 64QAM | 25RB / 0RB Offset |
| | | 18650 to 19150 | 18650 (1855.0MHz), 18900 (1880.0MHz), 19150 (1905.0MHz) | 10MHz | QPSK / 16QAM / 64QAM | 50RB / 0RB Offset |
| | | 18675 to 19125 | 18675 (1857.5MHz), 18900 (1880.0MHz), 19125 (1902.5MHz) | 15MHz | QPSK / 16QAM / 64QAM | 75 RB / 0 RB Offset |
| | | 18700 to 19100 | 18700 (1860.0MHz), 18900 (1880.0MHz), 19100 (1900.0MHz) | 20MHz | QPSK / 16QAM / 64QAM | 100 RB / 0 RB Offset |
| - | Band Edge | 18607 to 19193 | 18607 (1850.7MHz), 19193 (1909.3MHz) | 1.4MHz | QPSK | 1 RB / 0 RB Offset<br>1 RB / 5 RB Offset<br>6 RB / 0 RB Offset |
| | | 18615 to 19185 | 18615 (1851.5MHz), 19185 (1908.5MHz) | 3MHz | QPSK | 1 RB / 0 RB Offset<br>1 RB / 14 RB Offset<br>15 RB / 0 RB Offset |
| | | 18625 to 19175 | 18625 (1852.5MHz), 19175 (1907.5MHz) | 5MHz | QPSK | 1 RB / 0 RB Offset<br>1 RB / 24 RB Offset<br>25 RB / 0 RB Offset |
| | | 18650 to 19150 | 18650 (1855.0MHz), 19150 (1905.0MHz) | 10MHz | QPSK | 1 RB / 0 RB Offset<br>1 RB / 49 RB Offset<br>50 RB / 0 RB Offset |
| | | 18675 to 19125 | 18675 (1857.5MHz), 19125 (1902.5MHz) | 15MHz | QPSK | 1 RB / 0 RB Offset<br>1 RB / 74 RB Offset<br>75 RB / 0 RB Offset |
| | | 18700 to 19100 | 18700 (1860.0MHz), 19100 (1900.0MHz) | 20MHz | QPSK | 1 RB / 0 RB Offset<br>1 RB / 99 RB Offset<br>100 RB / 0 RB Offset |

| EUT Configure Mode | Test item | Available channel | Tested Channel | Channel Bandwidth | Modulation | Mode |
|---|---|---|---|---|---|---|
| - | Peak to Average Ratio | 18607 to 19193 | 18607 (1850.7MHz), 18900 (1880.0MHz), 19193 (1909.3MHz) | 1.4MHz | QPSK / 16QAM / 64QAM | 1 RB / 0 RB Offset |
| | | 18615 to 19185 | 18615 (1851.5MHz), 18900 (1880.0MHz), 19185 (1908.5MHz) | 3MHz | QPSK / 16QAM / 64QAM | 1 RB / 14 RB Offset |
| | | 18625 to 19175 | 18625 (1852.5MHz), 18900 (1880.0MHz), 19175 (1907.5MHz) | 5MHz | QPSK / 16QAM / 64QAM | 1 RB / 0 RB Offset |
| | | 18650 to 19150 | 18650 (1855.0MHz), 18900 (1880.0MHz), 19150 (1905.0MHz) | 10MHz | QPSK / 16QAM / 64QAM | 1 RB / 0 RB Offset |
| | | 18675 to 19125 | 18675 (1857.5MHz), 18900 (1880.0MHz), 19125 (1902.5MHz) | 15MHz | QPSK / 16QAM / 64QAM | 1 RB / 37 RB Offset |
| | | 18700 to 19100 | 18700 (1860.0MHz), 18900 (1880.0MHz), 19100 (1900.0MHz) | 20MHz | QPSK / 16QAM / 64QAM | 1 RB / 0 RB Offset |
| - | Conducted Emission | 18607 to 19193 | 18607 (1850.7MHz), 18900 (1880.0MHz), 19193 (1909.3MHz) | 1.4MHz | QPSK | 1 RB / 0 RB Offset |
| | | 18615 to 19185 | 18615 (1851.5MHz), 18900 (1880.0MHz), 19185 (1908.5MHz) | 3MHz | QPSK | 1 RB / 14 RB Offset |
| | | 18625 to 19175 | 18625 (1852.5MHz), 18900 (1880.0MHz), 19175 (1907.5MHz) | 5MHz | QPSK | 1 RB / 0 RB Offset |
| | | 18650 to 19150 | 18650 (1855.0MHz), 18900 (1880.0MHz), 19150 (1905.0MHz) | 10MHz | QPSK | 1 RB / 0 RB Offset |
| | | 18675 to 19125 | 18675 (1857.5MHz), 18900 (1880.0MHz), 19125 (1902.5MHz) | 15MHz | QPSK | 1 RB / 37 RB Offset |
| | | 18700 to 19100 | 18700 (1860.0MHz), 18900 (1880.0MHz), 19100 (1900.0MHz) | 20MHz | QPSK | 1 RB / 0 RB Offset |

| EUT Configure Mode | Test item | Available channel | Tested Channel | Channel Bandwidth | Modulation | Mode |
|---|---|---|---|---|---|---|
| - | Radiated Emission | 18607 to 19193 | 18607 (1850.7MHz), 18900 (1880.0MHz), 19193 (1909.3MHz) | 1.4MHz | QPSK | 1 RB / 0 RB Offset |
| | | 18625 to 19175 | 18625 (1852.5MHz), 18900 (1880.0MHz), 19175 (1907.5MHz) | 5MHz | QPSK | 1 RB / 0 RB Offset |
| | | 18700 to 19100 | 18700 (1860.0MHz), 18900 (1880.0MHz), 19100 (1900.0MHz) | 20MHz | QPSK | 1 RB / 0 RB Offset |

Note:

1. For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.
2. For radiated emission above 1GHz, according to 3GPP 36.521-1 Section 6.6.3.1.4.1, choose the lowest, 5MHz & highest channel bandwidth for final test.
3. The output power for QPSK, 16QAM and 64QAM, measured value of QPSK is higher than 16QAM, and 64QAM mode. Therefore, only Modulation characteristics, occupied bandwidth and Peak to average ratio items had been tested under QPSK, 16QAM and 64QAM modes, the other test items were performed under worse mode according to the maximum output power.

LTE Band 25

| EUT Configure Mode | Test item | Available channel | Tested Channel | Channel Bandwidth | Modulation | Mode |
|---|---|---|---|---|---|---|
| - | EIRP | 26047 to 26683 | 26047 (1850.7MHz),<br>26365 (1882.5MHz),<br>26683 (1914.3MHz) | 1.4MHz | QPSK / 16QAM / 64QAM | 1 RB / 0 RB Offset<br>1 RB / 2 RB Offset<br>1 RB / 5 RB Offset<br>3 RB / 0 RB Offset<br>3 RB / 1 RB Offset<br>3 RB / 3 RB Offset<br>6 RB / 0 RB Offset |
| | | 26055 to 26675 | 26055 (1851.5MHz),<br>26365 (1882.5MHz),<br>26675 (1913.5MHz) | 3MHz | QPSK / 16QAM / 64QAM | 1 RB / 0 RB Offset<br>1 RB / 7 RB Offset<br>1 RB / 14 RB Offset<br>8 RB / 0 RB Offset<br>8 RB / 3 RB Offset<br>8 RB / 7 RB Offset<br>15 RB / 0 RB Offset |
| | | 26065 to 26665 | 26065 (1852.5MHz),<br>26365 (1882.5MHz),<br>26665 (1912.5MHz) | 5MHz | QPSK / 16QAM / 64QAM | 1 RB / 0 RB Offset<br>1 RB / 12 RB Offset<br>1 RB / 24 RB Offset<br>12 RB / 0 RB Offset<br>12 RB / 6 RB Offset<br>12 RB / 13 RB Offset<br>25 RB / 0 RB Offset |
| | | 26090 to 26640 | 26090 (1855.0MHz),<br>26365 (1882.5MHz),<br>26640 (1910.0MHz) | 10MHz | QPSK / 16QAM / 64QAM | 1 RB / 0 RB Offset<br>1 RB / 24 RB Offset<br>1 RB / 49 RB Offset<br>25 RB / 0 RB Offset<br>25 RB / 12 RB Offset<br>25 RB / 25 RB Offset<br>50 RB / 0 RB Offset |
| | | 26115 to 26615 | 26115 (1857.5MHz),<br>26365 (1882.5MHz),<br>26615 (1907.5MHz) | 15MHz | QPSK / 16QAM / 64QAM | 1 RB / 0 RB Offset<br>1 RB / 37 RB Offset<br>1 RB / 74 RB Offset<br>36 RB / 0 RB Offset<br>36 RB / 19 RB Offset<br>36 RB / 39 RB Offset<br>75 RB / 0 RB Offset |
| | | 26140 to 26590 | 26140 (1860.0MHz),<br>26365 (1882.5MHz),<br>26590 (1905.0MHz) | 20MHz | QPSK / 16QAM / 64QAM | 1 RB / 0 RB Offset<br>1 RB / 50 RB Offset<br>1 RB / 99 RB Offset<br>50 RB / 0 RB Offset<br>50 RB / 25 RB Offset<br>50 RB / 50 RB Offset<br>100 RB / 0 RB Offset |
| - | Modulation Characteristics | 26140 to 26590 | 26365 (1882.5MHz) | 20MHz | QPSK / 16QAM / 64QAM | 100 RB / 0 RB Offset |

| EUT Configure Mode | Test item | Available channel | Tested Channel | Channel Bandwidth | Modulation | Mode |
|---|---|---|---|---|---|---|
| - | Frequency Stability | 26047 to 26683 | 26047 (1850.7MHz), 26683 (1914.3MHz) | 1.4MHz | QPSK | 6 RB / 0 RB Offset |
| | | 26055 to 26675 | 26055 (1851.5MHz), 26675 (1913.5MHz) | 3MHz | QPSK | 15 RB / 0 RB Offset |
| | | 26065 to 26665 | 26065 (1852.5MHz), 26665 (1912.5MHz) | 5MHz | QPSK | 25 RB / 0 RB Offset |
| | | 26090 to 26640 | 26090 (1855.0MHz), 26640 (1910.0MHz) | 10MHz | QPSK | 50 RB / 0 RB Offset |
| | | 26115 to 26615 | 26115 (1857.5MHz), 26615 (1907.5MHz) | 15MHz | QPSK | 75 RB / 0 RB Offset |
| | | 26140 to 26590 | 26140 (1860.0MHz), 26590 (1905.0MHz) | 20MHz | QPSK | 100 RB / 0 RB Offset |
| - | Occupied Bandwidth | 26047 to 26683 | 26047 (1850.7MHz), 26365 (1882.5MHz), 26683 (1914.3MHz) | 1.4MHz | QPSK / 16QAM / 64QAM | 6 RB / 0RB Offset |
| | | 26055 to 26675 | 26055 (1851.5MHz), 26365 (1882.5MHz), 26675 (1913.5MHz) | 3MHz | QPSK / 16QAM / 64QAM | 15 RB / 0RB Offset |
| | | 26065 to 26665 | 26065 (1852.5MHz), 26365 (1882.5MHz), 26665 (1912.5MHz) | 5MHz | QPSK / 16QAM / 64QAM | 25RB / 0RB Offset |
| | | 26090 to 26640 | 26090 (1855.0MHz), 26365 (1882.5MHz), 26640 (1910.0MHz) | 10MHz | QPSK / 16QAM / 64QAM | 50RB / 0RB Offset |
| | | 26115 to 26615 | 26115 (1857.5MHz), 26365 (1882.5MHz), 26615 (1907.5MHz) | 15MHz | QPSK / 16QAM / 64QAM | 75 RB / 0 RB Offset |
| | | 26140 to 26590 | 26140 (1860.0MHz), 26365 (1882.5MHz), 26590 (1905.0MHz) | 20MHz | QPSK / 16QAM / 64QAM | 100 RB / 0 RB Offset |
| - | Band Edge | 26047 to 26683 | 26047 (1850.7MHz), 26683 (1914.3MHz) | 1.4MHz | QPSK | 1 RB / 0 RB Offset<br>1 RB / 5 RB Offset<br>6 RB / 0 RB Offset |
| | | 26055 to 26675 | 26055 (1851.5MHz), 26675 (1913.5MHz) | 3MHz | QPSK | 1 RB / 0 RB Offset<br>1 RB / 14 RB Offset<br>15 RB / 0 RB Offset |
| | | 26065 to 26665 | 26065 (1852.5MHz), 26665 (1912.5MHz) | 5MHz | QPSK | 1 RB / 0 RB Offset<br>1 RB / 24 RB Offset<br>25 RB / 0 RB Offset |
| | | 26090 to 26640 | 26090 (1855.0MHz), 26640 (1910.0MHz) | 10MHz | QPSK | 1 RB / 0 RB Offset<br>1 RB / 49 RB Offset<br>50 RB / 0 RB Offset |
| | | 26115 to 26615 | 26115 (1857.5MHz), 26615 (1907.5MHz) | 15MHz | QPSK | 1 RB / 0 RB Offset<br>1 RB / 74 RB Offset<br>75 RB / 0 RB Offset |
| | | 26140 to 26590 | 26140 (1860.0MHz), 26590 (1905.0MHz) | 20MHz | QPSK | 1 RB / 0 RB Offset<br>1 RB / 99 RB Offset<br>100 RB / 0 RB Offset |

| EUT Configure Mode | Test item | Available channel | Tested Channel | Channel Bandwidth | Modulation | Mode |
|---|---|---|---|---|---|---|
| - | Peak to Average Ratio | 26047 to 26683 | 26047 (1850.7MHz), 26365 (1882.5MHz), 26683 (1914.3MHz) | 1.4MHz | QPSK / 16QAM / 64QAM | 1 RB / 0 RB Offset |
| | | 26055 to 26675 | 26055 (1851.5MHz), 26365 (1882.5MHz), 26675 (1913.5MHz) | 3MHz | QPSK / 16QAM / 64QAM | 1 RB / 0 RB Offset |
| | | 26065 to 26665 | 26065 (1852.5MHz), 26365 (1882.5MHz), 26665 (1912.5MHz) | 5MHz | QPSK / 16QAM / 64QAM | 1 RB / 24 RB Offset |
| | | 26090 to 26640 | 26090 (1855.0MHz), 26365 (1882.5MHz), 26640 (1910.0MHz) | 10MHz | QPSK / 16QAM / 64QAM | 1 RB / 0 RB Offset |
| | | 26115 to 26615 | 26115 (1857.5MHz), 26365 (1882.5MHz), 26615 (1907.5MHz) | 15MHz | QPSK / 16QAM / 64QAM | 1 RB / 0 RB Offset |
| | | 26140 to 26590 | 26140 (1860.0MHz), 26365 (1882.5MHz), 26590 (1905.0MHz) | 20MHz | QPSK / 16QAM / 64QAM | 1 RB / 0 RB Offset |
| - | Conducted Emission | 26047 to 26683 | 26047 (1850.7MHz), 26365 (1882.5MHz), 26683 (1914.3MHz) | 1.4MHz | QPSK | 1 RB / 0 RB Offset |
| | | 26055 to 26675 | 26055 (1851.5MHz), 26365 (1882.5MHz), 26675 (1913.5MHz) | 3MHz | QPSK | 1 RB / 0 RB Offset |
| | | 26065 to 26665 | 26065 (1852.5MHz), 26365 (1882.5MHz), 26665 (1912.5MHz) | 5MHz | QPSK | 1 RB / 24 RB Offset |
| | | 26090 to 26640 | 26090 (1855.0MHz), 26365 (1882.5MHz), 26640 (1910.0MHz) | 10MHz | QPSK | 1 RB / 0 RB Offset |
| | | 26115 to 26615 | 26115 (1857.5MHz), 26365 (1882.5MHz), 26615 (1907.5MHz) | 15MHz | QPSK | 1 RB / 0 RB Offset |
| | | 26140 to 26590 | 26140 (1860.0MHz), 26365 (1882.5MHz), 26590 (1905.0MHz) | 20MHz | QPSK | 1 RB / 0 RB Offset |

| EUT Configure Mode | Test item | Available channel | Tested Channel | Channel Bandwidth | Modulation | Mode |
|---|---|---|---|---|---|---|
| - | Radiated Emission | 26047 to 26683 | 26047 (1850.7MHz), 26365 (1882.5MHz), 26683 (1914.3MHz) | 1.4MHz | QPSK | 1 RB / 0 RB Offset |
| | | 26065 to 26665 | 26065 (1852.5MHz), 26365 (1882.5MHz), 26665 (1912.5MHz) | 5MHz | QPSK | 1 RB / 24 RB Offset |
| | | 26140 to 26590 | 26140 (1860.0MHz), 26365 (1882.5MHz), 26590 (1905.0MHz) | 20MHz | QPSK | 1 RB / 0 RB Offset |

Note:
1. For radiated emission below 1GHz, select the worst radiated emission channel (above 1GHz) for final testing.
2. For radiated emission above 1GHz, according to 3GPP 36.521-1 Section 6.6.3.1.4.1, choose the lowest, 5MHz & highest channel bandwidth for final test.
3. The output power for QPSK, 16QAM and 64QAM, measured value of QPSK is higher than 16QAM, and 64QAM mode. Therefore, only Modulation characteristics, occupied bandwidth and Peak to average ratio items had been tested under QPSK, 16QAM and 64QAM modes, the other test items were performed under worse mode according to the maximum output power.

Test Condition:

| Test Item | Environmental Conditions | Input Power | Tested By |
|---|---|---|---|
| EIRP | 25deg. C, 60%RH | 120Vac, 60Hz | Willy Cheng |
| Modulation Characteristics | 25deg. C, 60%RH | 120Vac, 60Hz | Willy Cheng |
| Frequency Stability | 25deg. C, 60%RH | 10.80Vdc | Willy Cheng |
| Occupied Bandwidth | 25deg. C, 60%RH | 120Vac, 60Hz | Willy Cheng |
| Band Edge | 25deg. C, 60%RH | 120Vac, 60Hz | Willy Cheng |
| Peak To Average Ratio | 25deg. C, 60%RH | 120Vac, 60Hz | Willy Cheng |
| Conducted Emission | 25deg. C, 60%RH | 120Vac, 60Hz | Willy Cheng |
| Radiated Emission | 22deg. C, 66%RH | 120Vac, 60Hz | Charles Hsiao<br>Karl Lee |

### 3.4 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

### 3.5 General Description of Applied Standards and References

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

**Test Standard:**

**FCC 47 CFR Part 2**

**FCC 47 CFR Part 24**

**ANSI/TIA/EIA-603-E 2016**

ANSI 63.26-2015

**References Test Guidance:**

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

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

# 4 Test Types and Results

## 4.1 Output Power Measurement

### 4.1.1 Limits of Output Power Measurement

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

### 4.1.2 Test Procedures

**Conducted Power Measurement:**

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

**Maximum EIRP / ERP**

The relevant equation for determining the maximum ERP or EIRP from the measured RF output power is given in Equation as follows:

$EIRP = P_{Meas} + G_T$

$ERP = P_{Meas} + G_T - 2.15$

where

ERP or EIRP effective radiated power or equivalent isotropically radiated power, respectively (expressed in the same units as $P_{Meas}$, e.g., dBm or dBW)

$P_{Meas}$ measured transmitter output power or PSD, in dBm or dBW

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

### 4.1.3 Test Setup

Conducted Power Measurement:

### 4.1.4 Test Results

**Conducted Output Power (dBm)**

| Band | GPRS, EDGE 1900 | | |
|---|---|---|---|
| Channel | 512 | 661 | 810 |
| Frequency | 1850.2 | 1880 | 1909.8 |
| GPRS 1Tx Slot | 29.04 | 29.05 | 29.12 |
| GPRS 2Tx Slot | 26.43 | 26.39 | 26.58 |
| GPRS 3Tx Slot | 24.58 | 24.63 | 24.67 |
| GPRS 4Tx Slot | 23.22 | 23.14 | 23.32 |
| DTM 9 (GPRS) | 26.35 | 26.29 | 26.49 |
| DTM 11 (GPRS) | 24.51 | 24.52 | 24.58 |
| EDGE 1Tx Slot (MCS9) | 25.28 | 25.25 | 25.34 |
| EDGE 2Tx Slot (MCS9) | 22.67 | 22.76 | 22.78 |
| EDGE 3Tx Slot (MCS9) | 21.38 | 21.32 | 21.47 |
| EDGE 4Tx Slot (MCS9) | 19.37 | 19.30 | 19.45 |
| DTM 9 (EDGE) | 22.61 | 22.72 | 22.73 |
| DTM 11 (EDGE) | 21.31 | 21.28 | 21.41 |

| Band | WCDMA II | | |
|---|---|---|---|
| TX Channel | 9262 | 9400 | 9538 |
| Rx Channel | 9662 | 9800 | 9938 |
| Frequency | 1852.4 | 1880 | 1907.6 |
| RMC 12.2K | 23.55 | 23.67 | 23.53 |
| HSDPA Subtest-1 | 22.90 | 22.92 | 22.91 |
| HSDPA Subtest-2 | 22.90 | 22.92 | 22.91 |
| HSDPA Subtest-3 | 22.44 | 22.46 | 22.45 |
| HSDPA Subtest-4 | 22.41 | 22.43 | 22.42 |
| DC-HSDPA Subtest-1 | 22.87 | 22.89 | 22.88 |
| DC-HSDPA Subtest-2 | 22.87 | 22.89 | 22.88 |
| DC-HSDPA Subtest-3 | 22.41 | 22.43 | 22.42 |
| DC-HSDPA Subtest-4 | 22.38 | 22.40 | 22.39 |
| HSUPA Subtest-1 | 22.47 | 22.49 | 22.48 |
| HSUPA Subtest-2 | 20.46 | 20.48 | 20.47 |
| HSUPA Subtest-3 | 21.52 | 21.54 | 21.53 |
| HSUPA Subtest-4 | 20.43 | 20.45 | 20.44 |
| HSUPA Subtest-5 | 22.48 | 22.50 | 22.49 |
| HSPA+ Subtest-1 | 19.96 | 19.98 | 19.97 |

| LTE Band 2 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 18700 | 18900 | 19100 |
| | | Frequency (MHz) | | 1860 | 1880 | 1900 |
| 20M | QPSK | 1 | 0 | 23.29 | 23.33 | 23.27 |
| | | 1 | 50 | 23.22 | 23.31 | 23.25 |
| | | 1 | 99 | 23.12 | 23.30 | 23.23 |
| | | 50 | 0 | 22.35 | 22.39 | 22.33 |
| | | 50 | 25 | 22.18 | 22.33 | 22.24 |
| | | 50 | 50 | 22.25 | 22.37 | 22.28 |
| | | 100 | 0 | 22.21 | 22.38 | 22.29 |
| 20M | 16QAM | 1 | 0 | 22.29 | 22.32 | 22.23 |
| | | 1 | 50 | 22.20 | 22.28 | 22.16 |
| | | 1 | 99 | 22.08 | 22.25 | 22.20 |
| | | 50 | 0 | 21.27 | 21.31 | 21.25 |
| | | 50 | 25 | 21.17 | 21.27 | 21.22 |
| | | 50 | 50 | 21.17 | 21.35 | 21.19 |
| | | 100 | 0 | 21.21 | 21.37 | 21.28 |
| 20M | 64QAM | 1 | 0 | 21.24 | 21.23 | 21.19 |
| | | 1 | 50 | 21.22 | 21.31 | 21.24 |
| | | 1 | 99 | 21.08 | 21.22 | 21.14 |
| | | 50 | 0 | 20.27 | 20.27 | 20.29 |
| | | 50 | 25 | 20.08 | 20.30 | 20.19 |
| | | 50 | 50 | 20.19 | 20.30 | 20.20 |
| | | 100 | 0 | 20.21 | 20.33 | 20.21 |

| LTE Band 2 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 18675 | 18900 | 19125 |
| | | Frequency (MHz) | | 1857.5 | 1880 | 1902.5 |
| 15M | QPSK | 1 | 0 | 23.21 | 23.26 | 23.20 |
| | | 1 | 37 | 23.17 | 23.29 | 23.21 |
| | | 1 | 74 | 23.08 | 23.20 | 23.23 |
| | | 36 | 0 | 22.33 | 22.30 | 22.28 |
| | | 36 | 19 | 22.18 | 22.31 | 22.19 |
| | | 36 | 39 | 22.20 | 22.32 | 22.27 |
| | | 75 | 0 | 22.17 | 22.31 | 22.27 |
| 15M | 16QAM | 1 | 0 | 22.17 | 22.25 | 22.10 |
| | | 1 | 37 | 22.10 | 22.15 | 22.18 |
| | | 1 | 74 | 21.97 | 22.16 | 22.19 |
| | | 36 | 0 | 21.25 | 21.26 | 21.15 |
| | | 36 | 19 | 21.01 | 21.19 | 21.20 |
| | | 36 | 39 | 21.23 | 21.27 | 21.20 |
| | | 75 | 0 | 21.12 | 21.30 | 21.12 |
| 15M | 64QAM | 1 | 0 | 21.20 | 21.26 | 21.16 |
| | | 1 | 37 | 21.18 | 21.25 | 21.11 |
| | | 1 | 74 | 21.07 | 21.19 | 21.11 |
| | | 36 | 0 | 20.30 | 20.18 | 20.28 |
| | | 36 | 19 | 20.11 | 20.25 | 20.15 |
| | | 36 | 39 | 20.12 | 20.24 | 20.20 |
| | | 75 | 0 | 20.12 | 20.36 | 20.18 |

| LTE Band 2 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 18650 | 18900 | 19150 |
| | | Frequency (MHz) | | 1855 | 1880 | 1905 |
| 10M | QPSK | 1 | 0 | 23.19 | 23.24 | 23.12 |
| | | 1 | 24 | 23.15 | 23.20 | 23.16 |
| | | 1 | 49 | 23.02 | 23.16 | 23.15 |
| | | 25 | 0 | 22.17 | 22.30 | 22.23 |
| | | 25 | 12 | 21.97 | 22.18 | 22.17 |
| | | 25 | 25 | 22.20 | 22.32 | 22.13 |
| | | 50 | 0 | 22.16 | 22.24 | 22.23 |
| 10M | 16QAM | 1 | 0 | 22.15 | 22.10 | 22.18 |
| | | 1 | 24 | 22.10 | 22.17 | 21.96 |
| | | 1 | 49 | 21.97 | 21.99 | 21.99 |
| | | 25 | 0 | 21.15 | 21.20 | 21.05 |
| | | 25 | 12 | 20.91 | 21.21 | 21.08 |
| | | 25 | 25 | 20.98 | 21.18 | 21.13 |
| | | 50 | 0 | 21.01 | 21.14 | 21.04 |
| 10M | 64QAM | 1 | 0 | 21.10 | 21.15 | 21.13 |
| | | 1 | 24 | 20.97 | 21.14 | 21.06 |
| | | 1 | 49 | 20.94 | 21.17 | 20.95 |
| | | 25 | 0 | 20.23 | 20.10 | 20.09 |
| | | 25 | 12 | 20.07 | 20.19 | 20.00 |
| | | 25 | 25 | 19.95 | 20.20 | 20.12 |
| | | 50 | 0 | 19.90 | 20.23 | 20.07 |

| LTE Band 2 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 18625 | 18900 | 19175 |
| | | Frequency (MHz) | | 1852.5 | 1880 | 1907.5 |
| 5M | QPSK | 1 | 0 | 23.25 | 23.29 | 23.07 |
| | | 1 | 12 | 23.16 | 23.20 | 23.09 |
| | | 1 | 24 | 23.04 | 23.22 | 22.85 |
| | | 12 | 0 | 22.18 | 22.22 | 22.22 |
| | | 12 | 6 | 22.02 | 22.15 | 21.97 |
| | | 12 | 13 | 22.18 | 22.24 | 22.12 |
| | | 25 | 0 | 22.11 | 22.30 | 22.08 |
| 5M | 16QAM | 1 | 0 | 22.05 | 22.15 | 22.05 |
| | | 1 | 12 | 21.95 | 22.16 | 22.04 |
| | | 1 | 24 | 22.08 | 22.10 | 22.08 |
| | | 12 | 0 | 21.18 | 21.17 | 21.06 |
| | | 12 | 6 | 20.92 | 21.08 | 20.97 |
| | | 12 | 13 | 21.08 | 21.20 | 21.02 |
| | | 25 | 0 | 21.10 | 21.20 | 21.19 |
| 5M | 64QAM | 1 | 0 | 21.15 | 21.22 | 21.04 |
| | | 1 | 12 | 20.95 | 21.25 | 21.11 |
| | | 1 | 24 | 21.03 | 21.03 | 20.99 |
| | | 12 | 0 | 20.11 | 20.16 | 20.23 |
| | | 12 | 6 | 20.02 | 20.19 | 20.16 |
| | | 12 | 13 | 20.14 | 20.08 | 20.15 |
| | | 25 | 0 | 20.12 | 20.03 | 20.22 |

| LTE Band 2 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 18615 | 18900 | 19185 |
| | | Frequency (MHz) | | 1851.5 | 1880 | 1908.5 |
| 3M | QPSK | 1 | 0 | 23.14 | 23.17 | 23.19 |
| | | 1 | 7 | 23.18 | 23.19 | 23.11 |
| | | 1 | 14 | 23.02 | 23.21 | 23.09 |
| | | 8 | 0 | 22.23 | 22.13 | 22.27 |
| | | 8 | 3 | 21.93 | 22.28 | 22.11 |
| | | 8 | 7 | 22.22 | 22.33 | 22.22 |
| | | 15 | 0 | 21.99 | 22.24 | 22.08 |
| 3M | 16QAM | 1 | 0 | 22.13 | 22.15 | 22.02 |
| | | 1 | 7 | 22.04 | 22.19 | 21.95 |
| | | 1 | 14 | 21.93 | 22.03 | 22.09 |
| | | 8 | 0 | 21.19 | 21.17 | 21.25 |
| | | 8 | 3 | 20.90 | 21.20 | 21.06 |
| | | 8 | 7 | 21.08 | 21.27 | 21.01 |
| | | 15 | 0 | 20.97 | 21.29 | 21.17 |
| 3M | 64QAM | 1 | 0 | 21.05 | 21.14 | 21.12 |
| | | 1 | 7 | 21.11 | 21.11 | 21.18 |
| | | 1 | 14 | 20.97 | 21.20 | 20.96 |
| | | 8 | 0 | 20.20 | 20.24 | 20.25 |
| | | 8 | 3 | 19.96 | 20.26 | 20.08 |
| | | 8 | 7 | 19.95 | 20.24 | 20.20 |
| | | 15 | 0 | 20.05 | 20.09 | 20.12 |

| LTE Band 2 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 18607 | 18900 | 19193 |
| | | Frequency (MHz) | | 1850.7 | 1880 | 1909.3 |
| 1.4M | QPSK | 1 | 0 | 23.15 | 23.31 | 23.19 |
| | | 1 | 2 | 23.09 | 23.09 | 23.16 |
| | | 1 | 5 | 23.02 | 23.13 | 23.13 |
| | | 3 | 0 | 23.29 | 23.19 | 23.14 |
| | | 3 | 1 | 23.03 | 23.23 | 23.13 |
| | | 3 | 3 | 23.16 | 23.15 | 23.11 |
| | | 6 | 0 | 22.07 | 22.26 | 22.17 |
| 1.4M | 16QAM | 1 | 0 | 22.12 | 22.15 | 22.02 |
| | | 1 | 2 | 22.05 | 22.12 | 22.01 |
| | | 1 | 5 | 21.87 | 22.09 | 22.05 |
| | | 3 | 0 | 22.19 | 22.16 | 22.16 |
| | | 3 | 1 | 22.01 | 22.17 | 22.08 |
| | | 3 | 3 | 22.19 | 22.11 | 22.06 |
| | | 6 | 0 | 21.00 | 21.16 | 21.21 |
| 1.4M | 64QAM | 1 | 0 | 21.01 | 21.12 | 21.09 |
| | | 1 | 2 | 21.02 | 21.19 | 21.04 |
| | | 1 | 5 | 20.90 | 21.11 | 21.03 |
| | | 3 | 0 | 21.23 | 21.22 | 21.12 |
| | | 3 | 1 | 20.91 | 21.11 | 21.02 |
| | | 3 | 3 | 21.12 | 21.22 | 21.05 |
| | | 6 | 0 | 19.97 | 20.23 | 20.05 |

| LTE Band 25 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 26140 | 26365 | 26590 |
| | | Frequency (MHz) | | 1860 | 1882.5 | 1905 |
| 20M | QPSK | 1 | 0 | 23.44 | 23.49 | 23.32 |
| | | 1 | 50 | 23.30 | 23.35 | 23.18 |
| | | 1 | 99 | 23.39 | 23.44 | 23.27 |
| | | 50 | 0 | 22.32 | 22.39 | 22.20 |
| | | 50 | 25 | 22.29 | 22.34 | 22.17 |
| | | 50 | 50 | 22.33 | 22.38 | 22.21 |
| | | 100 | 0 | 22.31 | 22.36 | 22.19 |
| 20M | 16QAM | 1 | 0 | 22.40 | 22.43 | 22.30 |
| | | 1 | 50 | 22.21 | 22.26 | 22.17 |
| | | 1 | 99 | 22.33 | 22.36 | 22.27 |
| | | 50 | 0 | 21.29 | 21.33 | 21.13 |
| | | 50 | 25 | 21.22 | 21.33 | 21.15 |
| | | 50 | 50 | 21.26 | 21.37 | 21.15 |
| | | 100 | 0 | 21.23 | 21.35 | 21.13 |
| 20M | 64QAM | 1 | 0 | 21.37 | 21.42 | 21.28 |
| | | 1 | 50 | 21.26 | 21.34 | 21.18 |
| | | 1 | 99 | 21.31 | 21.38 | 21.18 |
| | | 50 | 0 | 20.31 | 20.33 | 20.12 |
| | | 50 | 25 | 20.27 | 20.33 | 20.14 |
| | | 50 | 50 | 20.23 | 20.38 | 20.16 |
| | | 100 | 0 | 20.31 | 20.26 | 20.11 |

| LTE Band 25 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 26115 | 26365 | 26615 |
| | | Frequency (MHz) | | 1857.5 | 1882.5 | 1907.5 |
| 15M | QPSK | 1 | 0 | 23.43 | 23.43 | 23.28 |
| | | 1 | 37 | 23.29 | 23.35 | 23.10 |
| | | 1 | 74 | 23.36 | 23.37 | 23.22 |
| | | 36 | 0 | 22.31 | 22.31 | 22.14 |
| | | 36 | 19 | 22.26 | 22.28 | 22.09 |
| | | 36 | 39 | 22.31 | 22.38 | 22.19 |
| | | 75 | 0 | 22.30 | 22.30 | 22.18 |
| 15M | 16QAM | 1 | 0 | 22.37 | 22.35 | 22.20 |
| | | 1 | 37 | 22.19 | 22.23 | 22.10 |
| | | 1 | 74 | 22.24 | 22.36 | 22.19 |
| | | 36 | 0 | 21.21 | 21.23 | 21.19 |
| | | 36 | 19 | 21.15 | 21.29 | 21.07 |
| | | 36 | 39 | 21.16 | 21.29 | 21.11 |
| | | 75 | 0 | 21.20 | 21.23 | 21.12 |
| 15M | 64QAM | 1 | 0 | 21.30 | 21.35 | 21.30 |
| | | 1 | 37 | 21.19 | 21.29 | 21.13 |
| | | 1 | 74 | 21.23 | 21.28 | 21.15 |
| | | 36 | 0 | 20.25 | 20.19 | 20.03 |
| | | 36 | 19 | 20.18 | 20.16 | 20.03 |
| | | 36 | 39 | 20.28 | 20.18 | 20.13 |
| | | 75 | 0 | 20.23 | 20.26 | 20.12 |

| LTE Band 25 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 26090 | 26365 | 26640 |
| | | Frequency (MHz) | | 1855 | 1882.5 | 1910 |
| 10M | QPSK | 1 | 0 | 23.37 | 23.39 | 23.22 |
| | | 1 | 24 | 23.28 | 23.32 | 23.09 |
| | | 1 | 49 | 23.27 | 23.44 | 23.17 |
| | | 25 | 0 | 22.23 | 22.25 | 22.13 |
| | | 25 | 12 | 22.08 | 22.17 | 22.00 |
| | | 25 | 25 | 22.21 | 22.34 | 22.14 |
| | | 50 | 0 | 22.11 | 22.17 | 21.97 |
| 10M | 16QAM | 1 | 0 | 22.21 | 22.16 | 22.10 |
| | | 1 | 24 | 22.03 | 22.23 | 21.97 |
| | | 1 | 49 | 22.17 | 22.19 | 22.16 |
| | | 25 | 0 | 21.21 | 21.24 | 21.14 |
| | | 25 | 12 | 21.18 | 21.11 | 20.94 |
| | | 25 | 25 | 21.20 | 21.24 | 21.08 |
| | | 50 | 0 | 21.12 | 21.28 | 21.09 |
| 10M | 64QAM | 1 | 0 | 21.29 | 21.26 | 21.20 |
| | | 1 | 24 | 21.18 | 21.19 | 20.96 |
| | | 1 | 49 | 21.26 | 21.27 | 21.08 |
| | | 25 | 0 | 20.17 | 20.22 | 19.99 |
| | | 25 | 12 | 20.15 | 20.15 | 19.97 |
| | | 25 | 25 | 20.12 | 20.19 | 20.03 |
| | | 50 | 0 | 20.01 | 20.15 | 19.99 |

| LTE Band 25 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 26065 | 26365 | 26665 |
| | | Frequency (MHz) | | 1852.5 | 1882.5 | 1912.5 |
| 5M | QPSK | 1 | 0 | 23.32 | 23.30 | 23.12 |
| | | 1 | 12 | 23.23 | 23.19 | 22.95 |
| | | 1 | 24 | 23.21 | 23.35 | 23.06 |
| | | 12 | 0 | 22.20 | 22.21 | 22.14 |
| | | 12 | 6 | 22.26 | 22.25 | 21.86 |
| | | 12 | 13 | 22.22 | 22.29 | 22.05 |
| | | 25 | 0 | 22.24 | 22.32 | 21.88 |
| 5M | 16QAM | 1 | 0 | 22.18 | 22.35 | 22.26 |
| | | 1 | 12 | 22.04 | 22.16 | 22.03 |
| | | 1 | 24 | 22.18 | 22.21 | 22.16 |
| | | 12 | 0 | 21.10 | 21.16 | 21.09 |
| | | 12 | 6 | 20.99 | 21.24 | 20.88 |
| | | 12 | 13 | 21.19 | 21.28 | 21.06 |
| | | 25 | 0 | 21.09 | 21.25 | 20.97 |
| 5M | 64QAM | 1 | 0 | 21.41 | 21.25 | 21.20 |
| | | 1 | 12 | 21.20 | 21.13 | 21.05 |
| | | 1 | 24 | 21.19 | 21.30 | 21.12 |
| | | 12 | 0 | 20.24 | 20.21 | 19.93 |
| | | 12 | 6 | 20.14 | 20.16 | 19.93 |
| | | 12 | 13 | 20.24 | 20.23 | 20.14 |
| | | 25 | 0 | 20.12 | 20.28 | 20.06 |

| LTE Band 25 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 26055 | 26365 | 26675 |
| | | Frequency (MHz) | | 1851.5 | 1882.5 | 1913.5 |
| 3M | QPSK | 1 | 0 | 23.28 | 23.38 | 23.19 |
| | | 1 | 7 | 23.10 | 23.20 | 23.13 |
| | | 1 | 14 | 23.33 | 23.36 | 23.12 |
| | | 8 | 0 | 22.13 | 22.17 | 22.02 |
| | | 8 | 3 | 22.12 | 22.13 | 22.01 |
| | | 8 | 7 | 22.20 | 22.33 | 22.11 |
| | | 15 | 0 | 22.12 | 22.16 | 22.07 |
| 3M | 16QAM | 1 | 0 | 22.36 | 22.30 | 22.18 |
| | | 1 | 7 | 22.16 | 22.16 | 21.88 |
| | | 1 | 14 | 22.12 | 22.29 | 21.99 |
| | | 8 | 0 | 21.11 | 21.26 | 21.01 |
| | | 8 | 3 | 21.10 | 21.30 | 20.98 |
| | | 8 | 7 | 21.06 | 21.19 | 21.14 |
| | | 15 | 0 | 21.19 | 21.21 | 21.06 |
| 3M | 64QAM | 1 | 0 | 21.17 | 21.30 | 21.09 |
| | | 1 | 7 | 21.07 | 21.12 | 21.02 |
| | | 1 | 14 | 21.32 | 21.32 | 21.01 |
| | | 8 | 0 | 20.17 | 20.17 | 19.99 |
| | | 8 | 3 | 20.10 | 20.21 | 19.97 |
| | | 8 | 7 | 20.20 | 20.24 | 20.11 |
| | | 15 | 0 | 20.17 | 20.22 | 20.13 |

| LTE Band 25 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 26047 | 26365 | 26683 |
| | | Frequency (MHz) | | 1850.7 | 1882.5 | 1914.3 |
| 1.4M | QPSK | 1 | 0 | 23.34 | 23.31 | 23.22 |
| | | 1 | 2 | 23.12 | 23.21 | 23.06 |
| | | 1 | 5 | 23.29 | 23.33 | 23.22 |
| | | 3 | 0 | 23.19 | 23.34 | 23.07 |
| | | 3 | 1 | 23.15 | 23.24 | 22.96 |
| | | 3 | 3 | 23.19 | 23.33 | 23.08 |
| | | 6 | 0 | 22.22 | 22.23 | 22.09 |
| 1.4M | 16QAM | 1 | 0 | 22.25 | 22.34 | 22.23 |
| | | 1 | 2 | 22.12 | 22.18 | 22.09 |
| | | 1 | 5 | 22.29 | 22.24 | 22.17 |
| | | 3 | 0 | 22.21 | 22.26 | 21.95 |
| | | 3 | 1 | 22.17 | 22.09 | 21.97 |
| | | 3 | 3 | 22.12 | 22.21 | 21.97 |
| | | 6 | 0 | 21.11 | 21.25 | 21.00 |
| 1.4M | 64QAM | 1 | 0 | 21.30 | 21.30 | 21.24 |
| | | 1 | 2 | 21.13 | 21.17 | 20.98 |
| | | 1 | 5 | 21.32 | 21.25 | 21.11 |
| | | 3 | 0 | 21.17 | 21.11 | 20.99 |
| | | 3 | 1 | 21.19 | 21.22 | 21.02 |
| | | 3 | 3 | 21.14 | 21.17 | 21.11 |
| | | 6 | 0 | 20.16 | 20.24 | 20.03 |

**EIRP Power (dBm)**

| Band | GPRS, EDGE 1900 | | |
|---|---|---|---|
| Channel | 512 | 661 | 810 |
| Frequency | 1850.2 | 1880 | 1909.8 |
| GPRS 1Tx Slot | 31.03 | 31.04 | 31.11 |
| GPRS 2Tx Slot | 28.42 | 28.38 | 28.57 |
| GPRS 3Tx Slot | 26.57 | 26.62 | 26.66 |
| GPRS 4Tx Slot | 25.21 | 25.13 | 25.31 |
| DTM 9 (GPRS) | 28.34 | 28.28 | 28.48 |
| DTM 11 (GPRS) | 26.50 | 26.51 | 26.57 |
| EDGE 1Tx Slot (MCS9) | 27.27 | 27.24 | 27.33 |
| EDGE 2Tx Slot (MCS9) | 24.66 | 24.75 | 24.77 |
| EDGE 3Tx Slot (MCS9) | 23.37 | 23.31 | 23.46 |
| EDGE 4Tx Slot (MCS9) | 21.36 | 21.29 | 21.44 |
| DTM 9 (EDGE) | 24.60 | 24.71 | 24.72 |
| DTM 11 (EDGE) | 23.30 | 23.27 | 23.40 |

| Band | WCDMA II | | |
|---|---|---|---|
| TX Channel | 9262 | 9400 | 9538 |
| Rx Channel | 9662 | 9800 | 9938 |
| Frequency | 1852.4 | 1880 | 1907.6 |
| RMC 12.2K | 25.54 | 25.66 | 25.52 |
| HSDPA Subtest-1 | 24.89 | 24.91 | 24.90 |
| HSDPA Subtest-2 | 24.89 | 24.91 | 24.90 |
| HSDPA Subtest-3 | 24.43 | 24.45 | 24.44 |
| HSDPA Subtest-4 | 24.40 | 24.42 | 24.41 |
| DC-HSDPA Subtest-1 | 24.86 | 24.88 | 24.87 |
| DC-HSDPA Subtest-2 | 24.86 | 24.88 | 24.87 |
| DC-HSDPA Subtest-3 | 24.40 | 24.42 | 24.41 |
| DC-HSDPA Subtest-4 | 24.37 | 24.39 | 24.38 |
| HSUPA Subtest-1 | 24.46 | 24.48 | 24.47 |
| HSUPA Subtest-2 | 22.45 | 22.47 | 22.46 |
| HSUPA Subtest-3 | 23.51 | 23.53 | 23.52 |
| HSUPA Subtest-4 | 22.42 | 22.44 | 22.43 |
| HSUPA Subtest-5 | 24.47 | 24.49 | 24.48 |
| HSPA+ Subtest-1 | 21.95 | 21.97 | 21.96 |

| LTE Band 2 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 18700 | 18900 | 19100 |
| | | Frequency (MHz) | | 1860 | 1880 | 1900 |
| 20M | QPSK | 1 | 0 | 25.28 | 25.32 | 25.26 |
| | | 1 | 50 | 25.21 | 25.30 | 25.24 |
| | | 1 | 99 | 25.11 | 25.29 | 25.22 |
| | | 50 | 0 | 24.34 | 24.38 | 24.32 |
| | | 50 | 25 | 24.17 | 24.32 | 24.23 |
| | | 50 | 50 | 24.24 | 24.36 | 24.27 |
| | | 100 | 0 | 24.20 | 24.37 | 24.28 |
| 20M | 16QAM | 1 | 0 | 24.28 | 24.31 | 24.22 |
| | | 1 | 50 | 24.19 | 24.27 | 24.15 |
| | | 1 | 99 | 24.07 | 24.24 | 24.19 |
| | | 50 | 0 | 23.26 | 23.30 | 23.24 |
| | | 50 | 25 | 23.16 | 23.26 | 23.21 |
| | | 50 | 50 | 23.16 | 23.34 | 23.18 |
| | | 100 | 0 | 23.20 | 23.36 | 23.27 |
| 20M | 64QAM | 1 | 0 | 23.23 | 23.22 | 23.18 |
| | | 1 | 50 | 23.21 | 23.30 | 23.23 |
| | | 1 | 99 | 23.07 | 23.21 | 23.13 |
| | | 50 | 0 | 22.26 | 22.26 | 22.28 |
| | | 50 | 25 | 22.07 | 22.29 | 22.18 |
| | | 50 | 50 | 22.18 | 22.29 | 22.19 |
| | | 100 | 0 | 22.20 | 22.32 | 22.20 |

| LTE Band 2 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 18675 | 18900 | 19125 |
| | | Frequency (MHz) | | 1857.5 | 1880 | 1902.5 |
| 15M | QPSK | 1 | 0 | 25.20 | 25.25 | 25.19 |
| | | 1 | 37 | 25.16 | 25.28 | 25.20 |
| | | 1 | 74 | 25.07 | 25.19 | 25.22 |
| | | 36 | 0 | 24.32 | 24.29 | 24.27 |
| | | 36 | 19 | 24.17 | 24.30 | 24.18 |
| | | 36 | 39 | 24.19 | 24.31 | 24.26 |
| | | 75 | 0 | 24.16 | 24.30 | 24.26 |
| 15M | 16QAM | 1 | 0 | 24.16 | 24.24 | 24.09 |
| | | 1 | 37 | 24.09 | 24.14 | 24.17 |
| | | 1 | 74 | 23.96 | 24.15 | 24.18 |
| | | 36 | 0 | 23.24 | 23.25 | 23.14 |
| | | 36 | 19 | 23.00 | 23.18 | 23.19 |
| | | 36 | 39 | 23.22 | 23.26 | 23.19 |
| | | 75 | 0 | 23.11 | 23.29 | 23.11 |
| 15M | 64QAM | 1 | 0 | 23.19 | 23.25 | 23.15 |
| | | 1 | 37 | 23.17 | 23.24 | 23.10 |
| | | 1 | 74 | 23.06 | 23.18 | 23.10 |
| | | 36 | 0 | 22.29 | 22.17 | 22.27 |
| | | 36 | 19 | 22.10 | 22.24 | 22.14 |
| | | 36 | 39 | 22.11 | 22.23 | 22.19 |
| | | 75 | 0 | 22.11 | 22.35 | 22.17 |

| LTE Band 2 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 18650 | 18900 | 19150 |
| | | Frequency (MHz) | | 1855 | 1880 | 1905 |
| 10M | QPSK | 1 | 0 | 25.18 | 25.23 | 25.11 |
| | | 1 | 24 | 25.14 | 25.19 | 25.15 |
| | | 1 | 49 | 25.01 | 25.15 | 25.14 |
| | | 25 | 0 | 24.16 | 24.29 | 24.22 |
| | | 25 | 12 | 23.96 | 24.17 | 24.16 |
| | | 25 | 25 | 24.19 | 24.31 | 24.12 |
| | | 50 | 0 | 24.15 | 24.23 | 24.22 |
| 10M | 16QAM | 1 | 0 | 24.14 | 24.09 | 24.17 |
| | | 1 | 24 | 24.09 | 24.16 | 23.95 |
| | | 1 | 49 | 23.96 | 23.98 | 23.98 |
| | | 25 | 0 | 23.14 | 23.19 | 23.04 |
| | | 25 | 12 | 22.90 | 23.20 | 23.07 |
| | | 25 | 25 | 22.97 | 23.17 | 23.12 |
| | | 50 | 0 | 23.00 | 23.13 | 23.03 |
| 10M | 64QAM | 1 | 0 | 23.09 | 23.14 | 23.12 |
| | | 1 | 24 | 22.96 | 23.13 | 23.05 |
| | | 1 | 49 | 22.93 | 23.16 | 22.94 |
| | | 25 | 0 | 22.22 | 22.09 | 22.08 |
| | | 25 | 12 | 22.06 | 22.18 | 21.99 |
| | | 25 | 25 | 21.94 | 22.19 | 22.11 |
| | | 50 | 0 | 21.89 | 22.22 | 22.06 |

| LTE Band 2 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 18625 | 18900 | 19175 |
| | | Frequency (MHz) | | 1852.5 | 1880 | 1907.5 |
| 5M | QPSK | 1 | 0 | 25.24 | 25.28 | 25.06 |
| | | 1 | 12 | 25.15 | 25.19 | 25.08 |
| | | 1 | 24 | 25.03 | 25.21 | 24.84 |
| | | 12 | 0 | 24.17 | 24.21 | 24.21 |
| | | 12 | 6 | 24.01 | 24.14 | 23.96 |
| | | 12 | 13 | 24.17 | 24.23 | 24.11 |
| | | 25 | 0 | 24.10 | 24.29 | 24.07 |
| 5M | 16QAM | 1 | 0 | 24.04 | 24.14 | 24.04 |
| | | 1 | 12 | 23.94 | 24.15 | 24.03 |
| | | 1 | 24 | 24.07 | 24.09 | 24.07 |
| | | 12 | 0 | 23.17 | 23.16 | 23.05 |
| | | 12 | 6 | 22.91 | 23.07 | 22.96 |
| | | 12 | 13 | 23.07 | 23.19 | 23.01 |
| | | 25 | 0 | 23.09 | 23.19 | 23.18 |
| 5M | 64QAM | 1 | 0 | 23.14 | 23.21 | 23.03 |
| | | 1 | 12 | 22.94 | 23.24 | 23.10 |
| | | 1 | 24 | 23.02 | 23.02 | 22.98 |
| | | 12 | 0 | 22.10 | 22.15 | 22.22 |
| | | 12 | 6 | 22.01 | 22.18 | 22.15 |
| | | 12 | 13 | 22.13 | 22.07 | 22.14 |
| | | 25 | 0 | 22.11 | 22.02 | 22.21 |

| LTE Band 2 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 18615 | 18900 | 19185 |
| | | Frequency (MHz) | | 1851.5 | 1880 | 1908.5 |
| 3M | QPSK | 1 | 0 | 25.13 | 25.16 | 25.18 |
| | | 1 | 7 | 25.17 | 25.18 | 25.10 |
| | | 1 | 14 | 25.01 | 25.20 | 25.08 |
| | | 8 | 0 | 24.22 | 24.12 | 24.26 |
| | | 8 | 3 | 23.92 | 24.27 | 24.10 |
| | | 8 | 7 | 24.21 | 24.32 | 24.21 |
| | | 15 | 0 | 23.98 | 24.23 | 24.07 |
| 3M | 16QAM | 1 | 0 | 24.12 | 24.14 | 24.01 |
| | | 1 | 7 | 24.03 | 24.18 | 23.94 |
| | | 1 | 14 | 23.92 | 24.02 | 24.08 |
| | | 8 | 0 | 23.18 | 23.16 | 23.24 |
| | | 8 | 3 | 22.89 | 23.19 | 23.05 |
| | | 8 | 7 | 23.07 | 23.26 | 23.00 |
| | | 15 | 0 | 22.96 | 23.28 | 23.16 |
| 3M | 64QAM | 1 | 0 | 23.04 | 23.13 | 23.11 |
| | | 1 | 7 | 23.10 | 23.10 | 23.17 |
| | | 1 | 14 | 22.96 | 23.19 | 22.95 |
| | | 8 | 0 | 22.19 | 22.23 | 22.24 |
| | | 8 | 3 | 21.95 | 22.25 | 22.07 |
| | | 8 | 7 | 21.94 | 22.23 | 22.19 |
| | | 15 | 0 | 22.04 | 22.08 | 22.11 |

| LTE Band 2 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 18607 | 18900 | 19193 |
| | | Frequency (MHz) | | 1850.7 | 1880 | 1909.3 |
| 1.4M | QPSK | 1 | 0 | 25.14 | 25.30 | 25.18 |
| | | 1 | 2 | 25.08 | 25.08 | 25.15 |
| | | 1 | 5 | 25.01 | 25.12 | 25.12 |
| | | 3 | 0 | 25.28 | 25.18 | 25.13 |
| | | 3 | 1 | 25.02 | 25.22 | 25.12 |
| | | 3 | 3 | 25.15 | 25.14 | 25.10 |
| | | 6 | 0 | 24.06 | 24.25 | 24.16 |
| 1.4M | 16QAM | 1 | 0 | 24.11 | 24.14 | 24.01 |
| | | 1 | 2 | 24.04 | 24.11 | 24.00 |
| | | 1 | 5 | 23.86 | 24.08 | 24.04 |
| | | 3 | 0 | 24.18 | 24.15 | 24.15 |
| | | 3 | 1 | 24.00 | 24.16 | 24.07 |
| | | 3 | 3 | 24.18 | 24.10 | 24.05 |
| | | 6 | 0 | 22.99 | 23.15 | 23.20 |
| 1.4M | 64QAM | 1 | 0 | 23.00 | 23.11 | 23.08 |
| | | 1 | 2 | 23.01 | 23.18 | 23.03 |
| | | 1 | 5 | 22.89 | 23.10 | 23.02 |
| | | 3 | 0 | 23.22 | 23.21 | 23.11 |
| | | 3 | 1 | 22.90 | 23.10 | 23.01 |
| | | 3 | 3 | 23.11 | 23.21 | 23.04 |
| | | 6 | 0 | 21.96 | 22.22 | 22.04 |

| LTE Band 25 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 26140 | 26365 | 26590 |
| | | Frequency (MHz) | | 1860 | 1882.5 | 1905 |
| 20M | QPSK | 1 | 0 | 25.43 | 25.48 | 25.31 |
| | | 1 | 50 | 25.29 | 25.34 | 25.17 |
| | | 1 | 99 | 25.38 | 25.43 | 25.26 |
| | | 50 | 0 | 24.31 | 24.38 | 24.19 |
| | | 50 | 25 | 24.28 | 24.33 | 24.16 |
| | | 50 | 50 | 24.32 | 24.37 | 24.20 |
| | | 100 | 0 | 24.30 | 24.35 | 24.18 |
| 20M | 16QAM | 1 | 0 | 24.39 | 24.42 | 24.29 |
| | | 1 | 50 | 24.20 | 24.25 | 24.16 |
| | | 1 | 99 | 24.32 | 24.35 | 24.26 |
| | | 50 | 0 | 23.28 | 23.32 | 23.12 |
| | | 50 | 25 | 23.21 | 23.32 | 23.14 |
| | | 50 | 50 | 23.25 | 23.36 | 23.14 |
| | | 100 | 0 | 23.22 | 23.34 | 23.12 |
| 20M | 64QAM | 1 | 0 | 23.36 | 23.41 | 23.27 |
| | | 1 | 50 | 23.25 | 23.33 | 23.17 |
| | | 1 | 99 | 23.30 | 23.37 | 23.17 |
| | | 50 | 0 | 22.30 | 22.32 | 22.11 |
| | | 50 | 25 | 22.26 | 22.32 | 22.13 |
| | | 50 | 50 | 22.22 | 22.37 | 22.15 |
| | | 100 | 0 | 22.30 | 22.25 | 22.10 |

| LTE Band 25 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 26115 | 26365 | 26615 |
| | | Frequency (MHz) | | 1857.5 | 1882.5 | 1907.5 |
| 15M | QPSK | 1 | 0 | 25.42 | 25.42 | 25.27 |
| | | 1 | 37 | 25.28 | 25.34 | 25.09 |
| | | 1 | 74 | 25.35 | 25.36 | 25.21 |
| | | 36 | 0 | 24.30 | 24.30 | 24.13 |
| | | 36 | 19 | 24.25 | 24.27 | 24.08 |
| | | 36 | 39 | 24.30 | 24.37 | 24.18 |
| | | 75 | 0 | 24.29 | 24.29 | 24.17 |
| 15M | 16QAM | 1 | 0 | 24.36 | 24.34 | 24.19 |
| | | 1 | 37 | 24.18 | 24.22 | 24.09 |
| | | 1 | 74 | 24.23 | 24.35 | 24.18 |
| | | 36 | 0 | 23.20 | 23.22 | 23.18 |
| | | 36 | 19 | 23.14 | 23.28 | 23.06 |
| | | 36 | 39 | 23.15 | 23.28 | 23.10 |
| | | 75 | 0 | 23.19 | 23.22 | 23.11 |
| 15M | 64QAM | 1 | 0 | 23.29 | 23.34 | 23.29 |
| | | 1 | 37 | 23.18 | 23.28 | 23.12 |
| | | 1 | 74 | 23.22 | 23.27 | 23.14 |
| | | 36 | 0 | 22.24 | 22.18 | 22.02 |
| | | 36 | 19 | 22.17 | 22.15 | 22.02 |
| | | 36 | 39 | 22.27 | 22.17 | 22.12 |
| | | 75 | 0 | 22.22 | 22.25 | 22.11 |

| LTE Band 25 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 26090 | 26365 | 26640 |
| | | Frequency (MHz) | | 1855 | 1882.5 | 1910 |
| 10M | QPSK | 1 | 0 | 25.36 | 25.38 | 25.21 |
| | | 1 | 24 | 25.27 | 25.31 | 25.08 |
| | | 1 | 49 | 25.26 | 25.43 | 25.16 |
| | | 25 | 0 | 24.22 | 24.24 | 24.12 |
| | | 25 | 12 | 24.07 | 24.16 | 23.99 |
| | | 25 | 25 | 24.20 | 24.33 | 24.13 |
| | | 50 | 0 | 24.10 | 24.16 | 23.96 |
| 10M | 16QAM | 1 | 0 | 24.20 | 24.15 | 24.09 |
| | | 1 | 24 | 24.02 | 24.22 | 23.96 |
| | | 1 | 49 | 24.16 | 24.18 | 24.15 |
| | | 25 | 0 | 23.20 | 23.23 | 23.13 |
| | | 25 | 12 | 23.17 | 23.10 | 22.93 |
| | | 25 | 25 | 23.19 | 23.23 | 23.07 |
| | | 50 | 0 | 23.11 | 23.27 | 23.08 |
| 10M | 64QAM | 1 | 0 | 23.28 | 23.25 | 23.19 |
| | | 1 | 24 | 23.17 | 23.18 | 22.95 |
| | | 1 | 49 | 23.25 | 23.26 | 23.07 |
| | | 25 | 0 | 22.16 | 22.21 | 21.98 |
| | | 25 | 12 | 22.14 | 22.14 | 21.96 |
| | | 25 | 25 | 22.11 | 22.18 | 22.02 |
| | | 50 | 0 | 22.00 | 22.14 | 21.98 |

| LTE Band 25 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 26065 | 26365 | 26665 |
| | | Frequency (MHz) | | 1852.5 | 1882.5 | 1912.5 |
| 5M | QPSK | 1 | 0 | 25.31 | 25.29 | 25.11 |
| | | 1 | 12 | 25.22 | 25.18 | 24.94 |
| | | 1 | 24 | 25.20 | 25.34 | 25.05 |
| | | 12 | 0 | 24.19 | 24.20 | 24.13 |
| | | 12 | 6 | 24.25 | 24.24 | 23.85 |
| | | 12 | 13 | 24.21 | 24.28 | 24.04 |
| | | 25 | 0 | 24.23 | 24.31 | 23.87 |
| 5M | 16QAM | 1 | 0 | 24.17 | 24.34 | 24.25 |
| | | 1 | 12 | 24.03 | 24.15 | 24.02 |
| | | 1 | 24 | 24.17 | 24.20 | 24.15 |
| | | 12 | 0 | 23.09 | 23.15 | 23.08 |
| | | 12 | 6 | 22.98 | 23.23 | 22.87 |
| | | 12 | 13 | 23.18 | 23.27 | 23.05 |
| | | 25 | 0 | 23.08 | 23.24 | 22.96 |
| 5M | 64QAM | 1 | 0 | 23.40 | 23.24 | 23.19 |
| | | 1 | 12 | 23.19 | 23.12 | 23.04 |
| | | 1 | 24 | 23.18 | 23.29 | 23.11 |
| | | 12 | 0 | 22.23 | 22.20 | 21.92 |
| | | 12 | 6 | 22.13 | 22.15 | 21.92 |
| | | 12 | 13 | 22.23 | 22.22 | 22.13 |
| | | 25 | 0 | 22.11 | 22.27 | 22.05 |

| LTE Band 25 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 26055 | 26365 | 26675 |
| | | Frequency (MHz) | | 1851.5 | 1882.5 | 1913.5 |
| 3M | QPSK | 1 | 0 | 25.27 | 25.37 | 25.18 |
| | | 1 | 7 | 25.09 | 25.19 | 25.12 |
| | | 1 | 14 | 25.32 | 25.35 | 25.11 |
| | | 8 | 0 | 24.12 | 24.16 | 24.01 |
| | | 8 | 3 | 24.11 | 24.12 | 24.00 |
| | | 8 | 7 | 24.19 | 24.32 | 24.10 |
| | | 15 | 0 | 24.11 | 24.15 | 24.06 |
| 3M | 16QAM | 1 | 0 | 24.35 | 24.29 | 24.17 |
| | | 1 | 7 | 24.15 | 24.15 | 23.87 |
| | | 1 | 14 | 24.11 | 24.28 | 23.98 |
| | | 8 | 0 | 23.10 | 23.25 | 23.00 |
| | | 8 | 3 | 23.09 | 23.29 | 22.97 |
| | | 8 | 7 | 23.05 | 23.18 | 23.13 |
| | | 15 | 0 | 23.18 | 23.20 | 23.05 |
| 3M | 64QAM | 1 | 0 | 23.16 | 23.29 | 23.08 |
| | | 1 | 7 | 23.06 | 23.11 | 23.01 |
| | | 1 | 14 | 23.31 | 23.31 | 23.00 |
| | | 8 | 0 | 22.16 | 22.16 | 21.98 |
| | | 8 | 3 | 22.09 | 22.20 | 21.96 |
| | | 8 | 7 | 22.19 | 22.23 | 22.10 |
| | | 15 | 0 | 22.16 | 22.21 | 22.12 |

| LTE Band 25 | | | | | | |
|---|---|---|---|---|---|---|
| BW | MCS Index | RB Size | RB Offset | Low | Mid | High |
| | | Channel | | 26047 | 26365 | 26683 |
| | | Frequency (MHz) | | 1850.7 | 1882.5 | 1914.3 |
| 1.4M | QPSK | 1 | 0 | 25.33 | 25.30 | 25.21 |
| | | 1 | 2 | 25.11 | 25.20 | 25.05 |
| | | 1 | 5 | 25.28 | 25.32 | 25.21 |
| | | 3 | 0 | 25.18 | 25.33 | 25.06 |
| | | 3 | 1 | 25.14 | 25.23 | 24.95 |
| | | 3 | 3 | 25.18 | 25.32 | 25.07 |
| | | 6 | 0 | 24.21 | 24.22 | 24.08 |
| 1.4M | 16QAM | 1 | 0 | 24.24 | 24.33 | 24.22 |
| | | 1 | 2 | 24.11 | 24.17 | 24.08 |
| | | 1 | 5 | 24.28 | 24.23 | 24.16 |
| | | 3 | 0 | 24.20 | 24.25 | 23.94 |
| | | 3 | 1 | 24.16 | 24.08 | 23.96 |
| | | 3 | 3 | 24.11 | 24.20 | 23.96 |
| | | 6 | 0 | 23.10 | 23.24 | 22.99 |
| 1.4M | 64QAM | 1 | 0 | 23.29 | 23.29 | 23.23 |
| | | 1 | 2 | 23.12 | 23.16 | 22.97 |
| | | 1 | 5 | 23.31 | 23.24 | 23.10 |
| | | 3 | 0 | 23.16 | 23.10 | 22.98 |
| | | 3 | 1 | 23.18 | 23.21 | 23.01 |
| | | 3 | 3 | 23.13 | 23.16 | 23.10 |
| | | 6 | 0 | 22.15 | 22.23 | 22.02 |

## 4.2 Modulation Characteristics Measurement

### 4.2.1 Limits of Modulation Characteristics

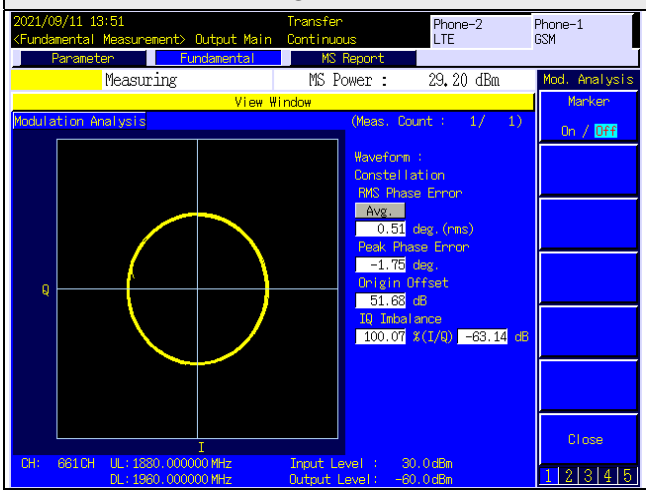
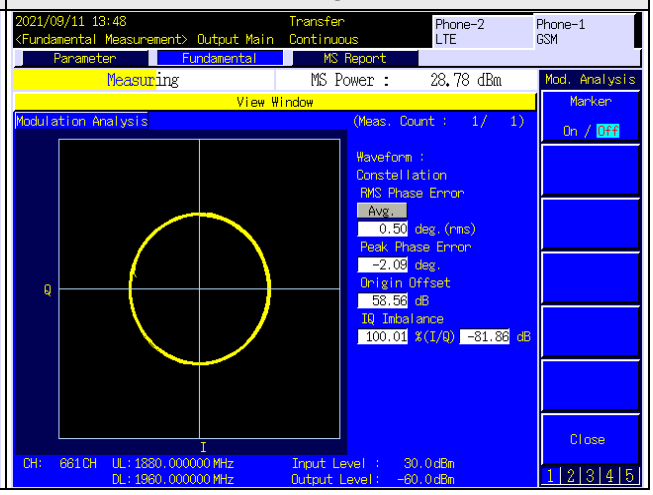
N/A

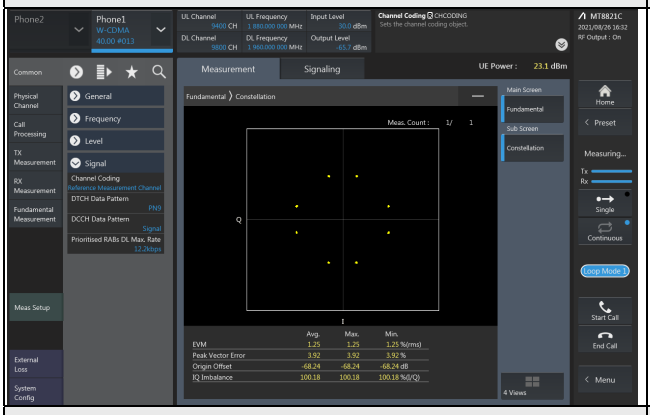
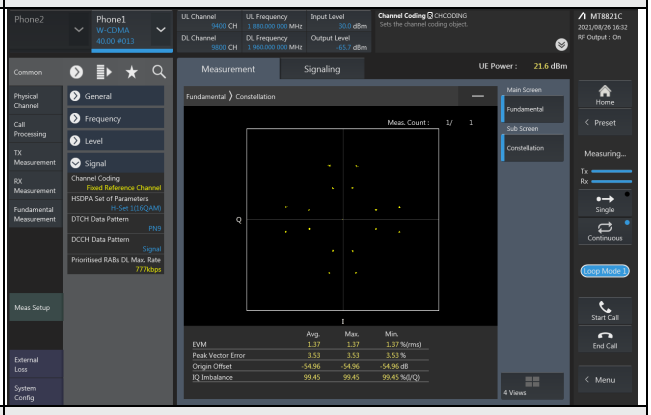
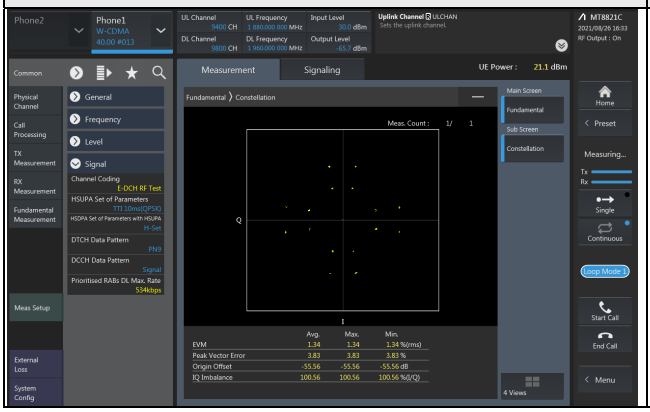
### 4.2.2 Test Procedure

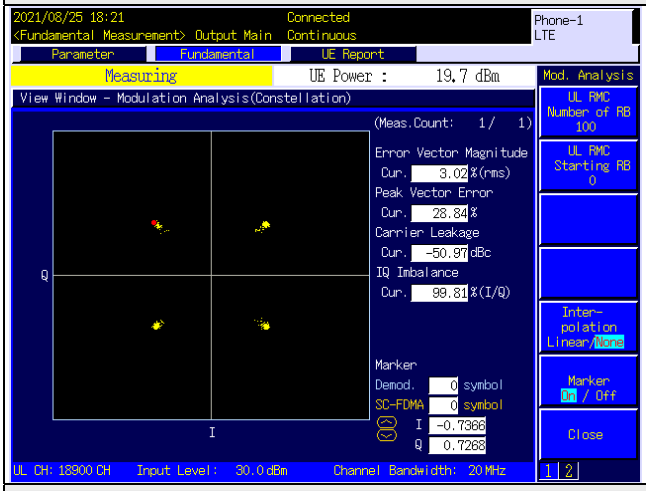
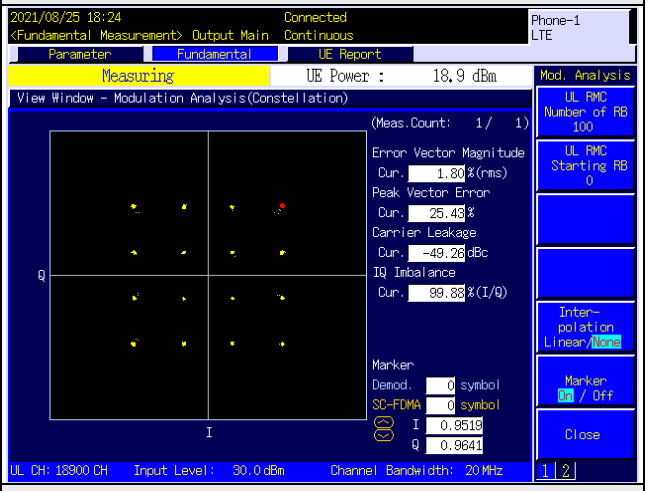
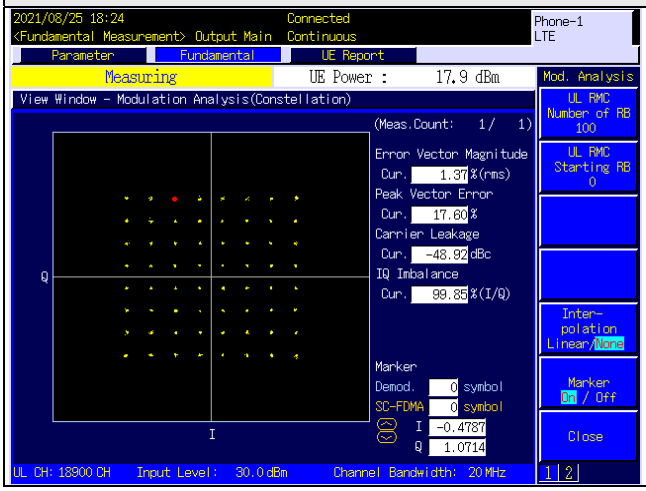
Connect the EUT to Communication Simulator via the antenna connector, The frequency band is set as EUT supported Modulation and Channels, the EUT output is matched with 50 ohm load, the waveform quality and constellation of the EUT was tested.

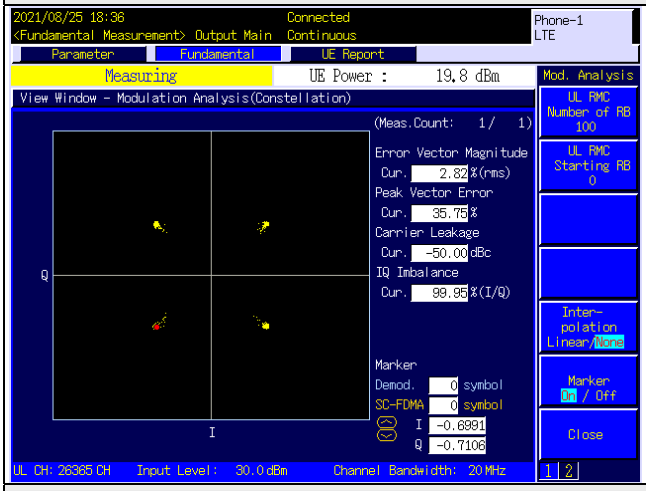
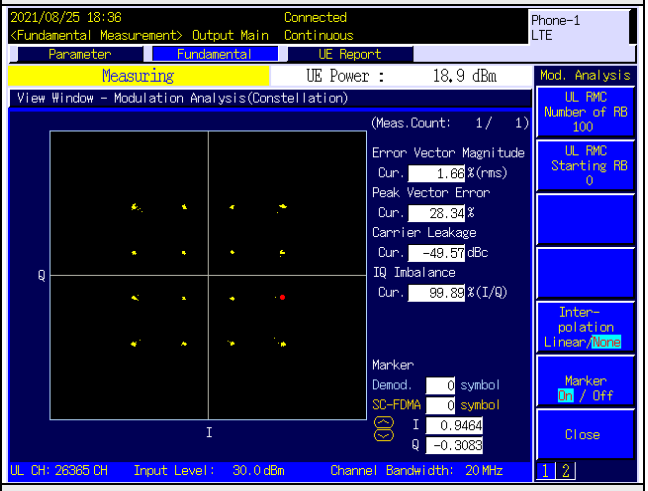
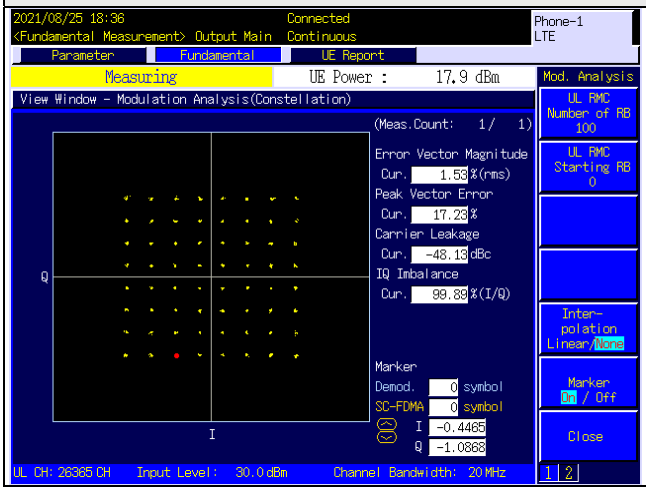
### 4.2.3 Test Setup

### 4.2.4 Test Results

| GPRS, EDGE | |
|---|---|
| Spectrum Plot of Measurement Value | |
| Channel: 661 / Frequency (MHz): 1880.0MHz | |
| GPRS | EDGE |
|  |  |

| WCDMA Band 2 | |
|---|---|
| Spectrum Plot of Measurement Value | |
| Channel: 9400 / Frequency (MHz): 1880.0MHz | |
| WCDMA | HSDPA |
|  |  |
| HSUPA | |
|  | |

| LTE Band 2 | |
|---|---|
| Spectrum Plot of Measurement Value | |
| Channel: 18900 / Frequency (MHz): 1880.0MHz | |
| QPSK | 16QAM |
|  |  |
| 64QAM | |
|  | |

| LTE Band 25 | |
|---|---|
| Spectrum Plot of Measurement Value | |
| Channel: 26365 / Frequency (MHz): 1882.5MHz | |
| QPSK | 16QAM |
|  |  |
| 64QAM | |
|  | |

## 4.3 Frequency Stability Measurement

### 4.3.1 Limits of Frequency Stabiliity Measurement

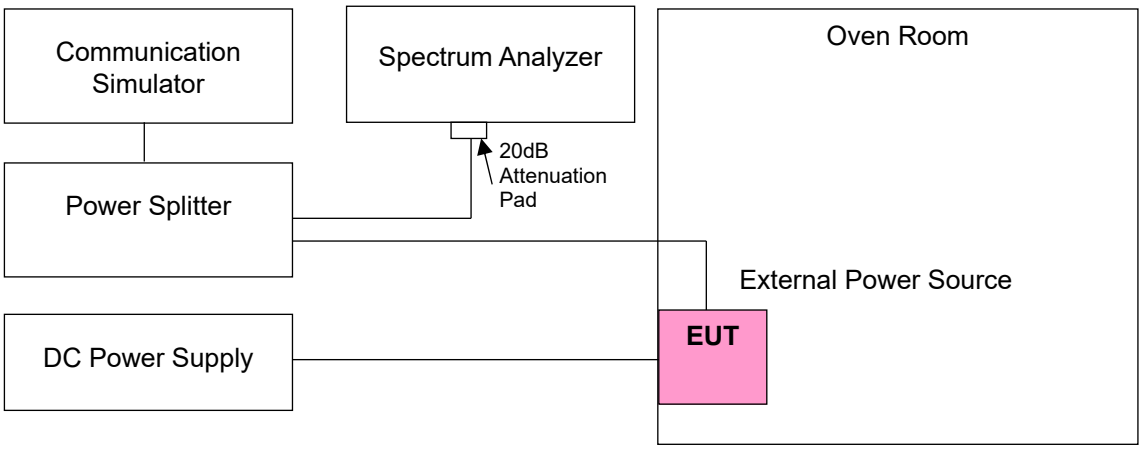
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

### 4.3.2 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.

### 4.3.3 Conducted Setup



### 4.3.4 Test Results

Frequency Error vs. Voltage

| Voltage (Vdc) | EDGE | | | |
|---|---|---|---|---|
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 9.18 | 1850.200002 | 0.0011 | 1909.800002 | 0.0010 |
| 10.80 | 1850.200003 | 0.0016 | 1909.800004 | 0.0021 |
| 12.42 | 1850.200001 | 0.0005 | 1909.800002 | 0.0010 |

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

| Temp. (℃) | EDGE | | | |
|---|---|---|---|---|
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1850.200002 | 0.0011 | 1909.800004 | 0.0021 |
| -20 | 1850.200004 | 0.0022 | 1909.800003 | 0.0016 |
| -10 | 1850.200004 | 0.0022 | 1909.800004 | 0.0021 |
| 0 | 1850.200002 | 0.0011 | 1909.800003 | 0.0016 |
| 10 | 1850.200001 | 0.0005 | 1909.800003 | 0.0016 |
| 20 | 1850.199997 | -0.0016 | 1909.799997 | -0.0016 |
| 30 | 1850.199998 | -0.0011 | 1909.799999 | -0.0005 |
| 40 | 1850.199998 | -0.0011 | 1909.799996 | -0.0021 |
| 50 | 1850.199998 | -0.0011 | 1909.799997 | -0.0016 |

Frequency Error vs. Voltage

| Voltage (Vdc) | WCDMA Band 2 | | | |
|---|---|---|---|---|
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 9.18 | 1852.400001 | 0.0005 | 1907.600002 | 0.0010 |
| 10.80 | 1852.400004 | 0.0022 | 1907.600004 | 0.0021 |
| 12.42 | 1852.400001 | 0.0005 | 1907.600003 | 0.0016 |

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

| Temp. (℃) | WCDMA Band 2 | | | |
|---|---|---|---|---|
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1852.400002 | 0.0011 | 1907.600002 | 0.0010 |
| -20 | 1852.400003 | 0.0016 | 1907.600002 | 0.0010 |
| -10 | 1852.400002 | 0.0011 | 1907.600003 | 0.0016 |
| 0 | 1852.400002 | 0.0011 | 1907.600001 | 0.0005 |
| 10 | 1852.400001 | 0.0005 | 1907.600004 | 0.0021 |
| 20 | 1852.399997 | -0.0016 | 1907.599997 | -0.0016 |
| 30 | 1852.399997 | -0.0016 | 1907.599998 | -0.0010 |
| 40 | 1852.399997 | -0.0016 | 1907.599998 | -0.0010 |
| 50 | 1852.399996 | -0.0022 | 1907.599996 | -0.0021 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 2 | | | |
|---|---|---|---|---|
| | Channel Bandwidth 1.4 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 9.18 | 1850.700003 | 0.0016 | 1909.300002 | 0.0010 |
| 10.80 | 1850.700003 | 0.0016 | 1909.300004 | 0.0021 |
| 12.42 | 1850.700002 | 0.0011 | 1909.300002 | 0.0010 |

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

| Temp. (℃) | LTE Band 2 | | | |
|---|---|---|---|---|
| | Channel Bandwidth 1.4 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1850.700003 | 0.0016 | 1909.300003 | 0.0016 |
| -20 | 1850.700002 | 0.0011 | 1909.300002 | 0.0010 |
| -10 | 1850.700004 | 0.0022 | 1909.300003 | 0.0016 |
| 0 | 1850.700004 | 0.0022 | 1909.300003 | 0.0016 |
| 10 | 1850.700001 | 0.0005 | 1909.300003 | 0.0016 |
| 20 | 1850.699999 | -0.0005 | 1909.299997 | -0.0016 |
| 30 | 1850.699996 | -0.0022 | 1909.299996 | -0.0021 |
| 40 | 1850.699996 | -0.0022 | 1909.299997 | -0.0016 |
| 50 | 1850.699999 | -0.0005 | 1909.299998 | -0.0010 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 2 | | | |
|---|---|---|---|---|
| | Channel Bandwidth 3MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 9.18 | 1851.500002 | 0.0011 | 1908.500003 | 0.0016 |
| 10.80 | 1851.500003 | 0.0016 | 1908.500004 | 0.0021 |
| 12.42 | 1851.500002 | 0.0011 | 1908.500003 | 0.0016 |

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

| Temp. (℃) | LTE Band 2 | | | |
|---|---|---|---|---|
| | Channel Bandwidth 3MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1851.500001 | 0.0005 | 1908.500004 | 0.0021 |
| -20 | 1851.500003 | 0.0016 | 1908.500001 | 0.0005 |
| -10 | 1851.500004 | 0.0022 | 1908.500002 | 0.0010 |
| 0 | 1851.500002 | 0.0011 | 1908.500001 | 0.0005 |
| 10 | 1851.500002 | 0.0011 | 1908.500001 | 0.0005 |
| 20 | 1851.499998 | -0.0011 | 1908.499997 | -0.0016 |
| 30 | 1851.499996 | -0.0022 | 1908.499997 | -0.0016 |
| 40 | 1851.499996 | -0.0022 | 1908.499997 | -0.0016 |
| 50 | 1851.499998 | -0.0011 | 1908.499997 | -0.0016 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 2 | | | |
|---|---|---|---|---|
| | Channel Bandwidth 5 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 9.18 | 1852.500001 | 0.0005 | 1907.500004 | 0.0021 |
| 10.80 | 1852.500001 | 0.0005 | 1907.500003 | 0.0016 |
| 12.42 | 1852.500004 | 0.0022 | 1907.500002 | 0.0010 |

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

| Temp. (℃) | LTE Band 2 | | | |
|---|---|---|---|---|
| | Channel Bandwidth 5 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1852.500002 | 0.0011 | 1907.500002 | 0.0010 |
| -20 | 1852.500003 | 0.0016 | 1907.500002 | 0.0010 |
| -10 | 1852.500002 | 0.0011 | 1907.500003 | 0.0016 |
| 0 | 1852.500002 | 0.0011 | 1907.500003 | 0.0016 |
| 10 | 1852.500001 | 0.0005 | 1907.500002 | 0.0010 |
| 20 | 1852.499997 | -0.0016 | 1907.499997 | -0.0016 |
| 30 | 1852.499998 | -0.0011 | 1907.499997 | -0.0016 |
| 40 | 1852.499998 | -0.0011 | 1907.499998 | -0.0010 |
| 50 | 1852.499996 | -0.0022 | 1907.499998 | -0.0010 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 2 | | | |
|---|---|---|---|---|
| | Channel Bandwidth 10 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 9.18 | 1855.000003 | 0.0016 | 1905.000001 | 0.0005 |
| 10.80 | 1855.000003 | 0.0016 | 1905.000002 | 0.0010 |
| 12.42 | 1855.000002 | 0.0011 | 1905.000003 | 0.0016 |

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

| Temp. (℃) | LTE Band 2 | | | |
|---|---|---|---|---|
| | Channel Bandwidth 10 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1855.000002 | 0.0011 | 1905.000001 | 0.0005 |
| -20 | 1855.000003 | 0.0016 | 1905.000003 | 0.0016 |
| -10 | 1855.000002 | 0.0011 | 1905.000002 | 0.0010 |
| 0 | 1855.000002 | 0.0011 | 1905.000004 | 0.0021 |
| 10 | 1855.000001 | 0.0005 | 1905.000002 | 0.0010 |
| 20 | 1854.999997 | -0.0016 | 1904.999998 | -0.0010 |
| 30 | 1854.999998 | -0.0011 | 1904.999997 | -0.0016 |
| 40 | 1854.999997 | -0.0016 | 1904.999998 | -0.0010 |
| 50 | 1854.999997 | -0.0016 | 1904.999997 | -0.0016 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 2 | | | |
|---|---|---|---|---|
| | Channel Bandwidth 15 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 9.18 | 1857.500003 | 0.0016 | 1902.500003 | 0.0016 |
| 10.80 | 1857.500003 | 0.0016 | 1902.500004 | 0.0021 |
| 12.42 | 1857.500001 | 0.0005 | 1902.500002 | 0.0011 |

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

| Temp. (℃) | LTE Band 2 | | | |
|---|---|---|---|---|
| | Channel Bandwidth 15 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1857.500002 | 0.0011 | 1902.500004 | 0.0021 |
| -20 | 1857.500002 | 0.0011 | 1902.500001 | 0.0005 |
| -10 | 1857.500004 | 0.0022 | 1902.500002 | 0.0011 |
| 0 | 1857.500004 | 0.0022 | 1902.500003 | 0.0016 |
| 10 | 1857.500002 | 0.0011 | 1902.500003 | 0.0016 |
| 20 | 1857.499999 | -0.0005 | 1902.499997 | -0.0016 |
| 30 | 1857.499999 | -0.0005 | 1902.499999 | -0.0005 |
| 40 | 1857.499998 | -0.0011 | 1902.499998 | -0.0011 |
| 50 | 1857.499998 | -0.0011 | 1902.499998 | -0.0011 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 2 | | | |
|---|---|---|---|---|
| | Channel Bandwidth 20 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 9.18 | 1860.000004 | 0.0022 | 1900.000003 | 0.0016 |
| 10.80 | 1860.000001 | 0.0005 | 1900.000004 | 0.0021 |
| 12.42 | 1860.000002 | 0.0011 | 1900.000003 | 0.0016 |

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

| Temp. (℃) | LTE Band 2 | | | |
|---|---|---|---|---|
| | Channel Bandwidth 20 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1860.000001 | 0.0005 | 1900.000003 | 0.0016 |
| -20 | 1860.000001 | 0.0005 | 1900.000003 | 0.0016 |
| -10 | 1860.000003 | 0.0016 | 1900.000001 | 0.0005 |
| 0 | 1860.000001 | 0.0005 | 1900.000002 | 0.0011 |
| 10 | 1860.000004 | 0.0022 | 1900.000002 | 0.0011 |
| 20 | 1859.999996 | -0.0022 | 1899.999999 | -0.0005 |
| 30 | 1859.999997 | -0.0016 | 1899.999997 | -0.0016 |
| 40 | 1859.999997 | -0.0016 | 1899.999998 | -0.0011 |
| 50 | 1859.999998 | -0.0011 | 1899.999998 | -0.0011 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 25 | | | |
|---|---|---|---|---|
| | Channel Bandwidth 1.4 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 9.18 | 1850.700002 | 0.0011 | 1914.300003 | 0.0016 |
| 10.80 | 1850.700002 | 0.0011 | 1914.300002 | 0.0010 |
| 12.42 | 1850.700004 | 0.0022 | 1914.300003 | 0.0016 |

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

| Temp. (℃) | LTE Band 25 | | | |
|---|---|---|---|---|
| | Channel Bandwidth 1.4 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1850.700003 | 0.0016 | 1914.300004 | 0.0021 |
| -20 | 1850.700003 | 0.0016 | 1914.300001 | 0.0005 |
| -10 | 1850.700003 | 0.0016 | 1914.300003 | 0.0016 |
| 0 | 1850.700003 | 0.0016 | 1914.300003 | 0.0016 |
| 10 | 1850.700003 | 0.0016 | 1914.300004 | 0.0021 |
| 20 | 1850.699997 | -0.0016 | 1914.299998 | -0.0010 |
| 30 | 1850.699999 | -0.0005 | 1914.299997 | -0.0016 |
| 40 | 1850.699997 | -0.0016 | 1914.299999 | -0.0005 |
| 50 | 1850.699999 | -0.0005 | 1914.299998 | -0.0010 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 25 | | | |
|---|---|---|---|---|
| | Channel Bandwidth 3MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 9.18 | 1851.500003 | 0.0016 | 1913.500004 | 0.0021 |
| 10.80 | 1851.500004 | 0.0022 | 1913.500003 | 0.0016 |
| 12.42 | 1851.500001 | 0.0005 | 1913.500003 | 0.0016 |

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

| Temp. (℃) | LTE Band 25 | | | |
|---|---|---|---|---|
| | Channel Bandwidth 3MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1851.500002 | 0.0011 | 1913.500003 | 0.0016 |
| -20 | 1851.500003 | 0.0016 | 1913.500002 | 0.0010 |
| -10 | 1851.500003 | 0.0016 | 1913.500003 | 0.0016 |
| 0 | 1851.500003 | 0.0016 | 1913.500002 | 0.0010 |
| 10 | 1851.500003 | 0.0016 | 1913.500002 | 0.0010 |
| 20 | 1851.499998 | -0.0011 | 1913.499998 | -0.0010 |
| 30 | 1851.499998 | -0.0011 | 1913.499997 | -0.0016 |
| 40 | 1851.499998 | -0.0011 | 1913.499999 | -0.0005 |
| 50 | 1851.499998 | -0.0011 | 1913.499997 | -0.0016 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 25 | | | |
|---|---|---|---|---|
| | Channel Bandwidth 5 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 9.18 | 1852.500002 | 0.0011 | 1912.500004 | 0.0021 |
| 10.80 | 1852.500003 | 0.0016 | 1912.500003 | 0.0016 |
| 12.42 | 1852.500003 | 0.0016 | 1912.500001 | 0.0005 |

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

| Temp. (℃) | LTE Band 25 | | | |
|---|---|---|---|---|
| | Channel Bandwidth 5 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1852.500001 | 0.0005 | 1912.500002 | 0.0010 |
| -20 | 1852.500002 | 0.0011 | 1912.500004 | 0.0021 |
| -10 | 1852.500003 | 0.0016 | 1912.500003 | 0.0016 |
| 0 | 1852.500002 | 0.0011 | 1912.500001 | 0.0005 |
| 10 | 1852.500004 | 0.0022 | 1912.500003 | 0.0016 |
| 20 | 1852.499999 | -0.0005 | 1912.499998 | -0.0010 |
| 30 | 1852.499999 | -0.0005 | 1912.499999 | -0.0005 |
| 40 | 1852.499996 | -0.0022 | 1912.499999 | -0.0005 |
| 50 | 1852.499996 | -0.0022 | 1912.499996 | -0.0021 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 25 | | | |
|---|---|---|---|---|
| | Channel Bandwidth 10 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 9.18 | 1855.000002 | 0.0011 | 1910.000001 | 0.0005 |
| 10.80 | 1855.000002 | 0.0011 | 1910.000003 | 0.0016 |
| 12.42 | 1855.000003 | 0.0016 | 1910.000002 | 0.0010 |

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

| Temp. (℃) | LTE Band 25 | | | |
|---|---|---|---|---|
| | Channel Bandwidth 10 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1855.000002 | 0.0011 | 1910.000002 | 0.0010 |
| -20 | 1855.000002 | 0.0011 | 1910.000001 | 0.0005 |
| -10 | 1855.000002 | 0.0011 | 1910.000002 | 0.0010 |
| 0 | 1855.000002 | 0.0011 | 1910.000002 | 0.0010 |
| 10 | 1855.000003 | 0.0016 | 1910.000001 | 0.0005 |
| 20 | 1854.999999 | -0.0005 | 1909.999997 | -0.0016 |
| 30 | 1854.999998 | -0.0011 | 1909.999998 | -0.0010 |
| 40 | 1854.999997 | -0.0016 | 1909.999996 | -0.0021 |
| 50 | 1854.999998 | -0.0011 | 1909.999997 | -0.0016 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 25 | | | |
|---|---|---|---|---|
| | Channel Bandwidth 15 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 9.18 | 1857.500002 | 0.0011 | 1907.500004 | 0.0021 |
| 10.80 | 1857.500002 | 0.0011 | 1907.500002 | 0.0010 |
| 12.42 | 1857.500002 | 0.0011 | 1907.500002 | 0.0010 |

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

| Temp. (℃) | LTE Band 25 | | | |
|---|---|---|---|---|
| | Channel Bandwidth 15 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1857.500003 | 0.0016 | 1907.500004 | 0.0021 |
| -20 | 1857.500002 | 0.0011 | 1907.500002 | 0.0010 |
| -10 | 1857.500002 | 0.0011 | 1907.500003 | 0.0016 |
| 0 | 1857.500003 | 0.0016 | 1907.500001 | 0.0005 |
| 10 | 1857.500001 | 0.0005 | 1907.500002 | 0.0010 |
| 20 | 1857.499999 | -0.0005 | 1907.499997 | -0.0016 |
| 30 | 1857.499998 | -0.0011 | 1907.499996 | -0.0021 |
| 40 | 1857.499998 | -0.0011 | 1907.499996 | -0.0021 |
| 50 | 1857.499997 | -0.0016 | 1907.499998 | -0.0010 |

Frequency Error vs. Voltage

| Voltage (Vdc) | LTE Band 25 | | | |
|---|---|---|---|---|
| | Channel Bandwidth 20 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| 9.18 | 1860.000003 | 0.0016 | 1905.000003 | 0.0016 |
| 10.80 | 1860.000003 | 0.0016 | 1905.000003 | 0.0016 |
| 12.42 | 1860.000004 | 0.0022 | 1905.000003 | 0.0016 |

Note: The applicant defined the normal working voltage is from 9.18Vdc to 12.42Vdc.

Frequency Error vs. Temperature

| Temp. (℃) | LTE Band 25 | | | |
|---|---|---|---|---|
| | Channel Bandwidth 20 MHz | | | |
| | Low Channel | | High Channel | |
| | Frequency (MHz) | Frequency Error (ppm) | Frequency (MHz) | Frequency Error (ppm) |
| -30 | 1860.000003 | 0.0016 | 1905.000003 | 0.0016 |
| -20 | 1860.000004 | 0.0022 | 1905.000002 | 0.0010 |
| -10 | 1860.000004 | 0.0022 | 1905.000002 | 0.0010 |
| 0 | 1860.000003 | 0.0016 | 1905.000001 | 0.0005 |
| 10 | 1860.000003 | 0.0016 | 1905.000001 | 0.0005 |
| 20 | 1859.999997 | -0.0016 | 1904.999997 | -0.0016 |
| 30 | 1859.999996 | -0.0022 | 1904.999998 | -0.0010 |
| 40 | 1859.999996 | -0.0022 | 1904.999997 | -0.0016 |
| 50 | 1859.999997 | -0.0016 | 1904.999998 | -0.0010 |

## 4.4 Occupied Bandwidth Measurement

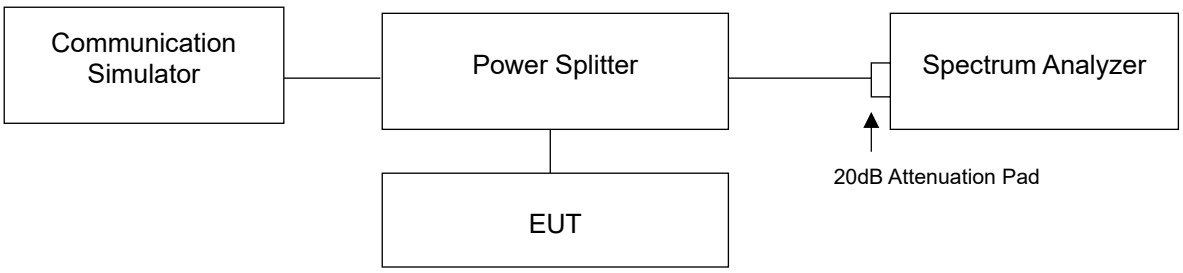
### 4.4.1 Test Procedure

For the 26dBc bandwidth measurement method, please refer to section 5.4.3 of ANSI C63.26.

a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be wide enough to see sufficient roll off of the signal to make the measurement.
b) The nominal RBW shall be in the range of 1% to 5% of the anticipated OBW, and the VBW shall be set ≥ 3 × RBW.
c) Set the reference level of the instrument as required to prevent the signal amplitude from exceeding the maximum spectrum analyzer input mixer level for linear operation. See guidance provided in 4.2.3.
d) The dynamic range of the spectrum analyzer at the selected RBW shall be more than 10 dB below the target "−X dB" requirement, i.e., if the requirement calls for measuring the −26 dB OBW, the spectrum analyzer noise floor at the selected RBW shall be at least 36 dB below the reference level.
e) Set spectrum analyzer detection mode to peak, and the trace mode to max hold.
f) Determine the following reference values: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).
g) Determine the "−X dB amplitude" as equal to (Reference Value − X). Alternatively, this calculation can be performed on the spectrum analyzer using the delta-marker measurement function.
h) Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the "−X dB amplitude" determined in step f). If a marker is below this "−X dB amplitude" value it should be as close as possible to this value. The OBW is the positive frequency difference between the two markers.
i) The OBW shall be reported by providing plot(s) of the measuring instrument display, to include markers depicting the relevant frequency and amplitude information (e.g., marker table). The frequency and amplitude axis and scale shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

For the occupied bandwidth measurement method, please refer to section 5.4.4 of ANSI C63.26.

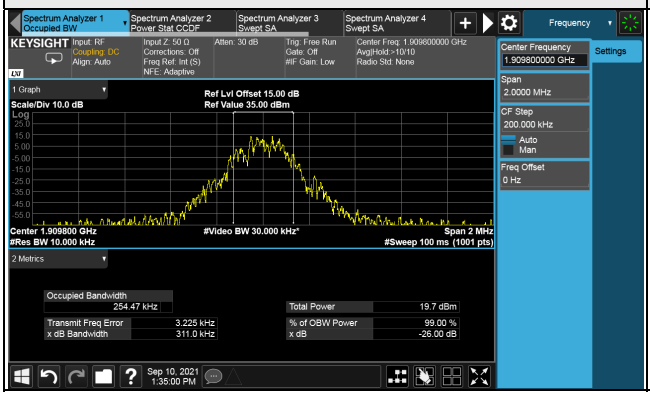
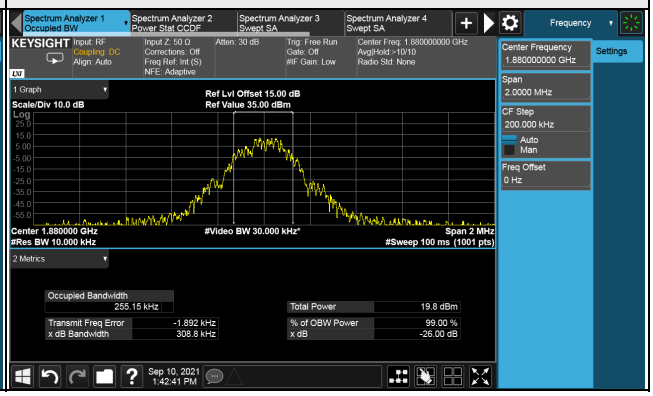
### 4.4.2 Test Setup



### 4.4.3 Test Result

Occupied Bandwidth

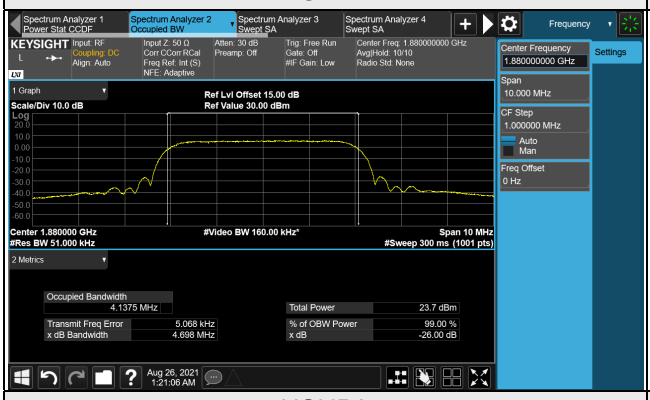
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (kHz) | |
|---|---|---|---|
| | | GPRS | EDGE |
| 512 | 1850.2 | 244.45 | 251.60 |
| 661 | 1880.0 | 249.48 | 255.15 |
| 810 | 1909.8 | 254.47 | 254.41 |

| Spectrum Plot of Worst Value | |
|---|---|
| GPRS | EDGE |
|  |  |

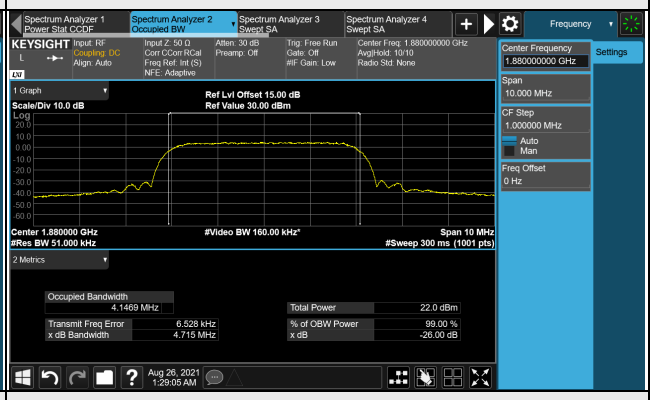
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | |
|---|---|---|---|---|
| | | WCDMA | HSDPA | HSUPA |
| 9262 | 1852.4 | 4.13 | 4.14 | 4.14 |
| 9400 | 1880.0 | 4.14 | 4.15 | 4.14 |
| 9538 | 1907.6 | 4.12 | 4.14 | 4.13 |

Spectrum Plot of Worst Value

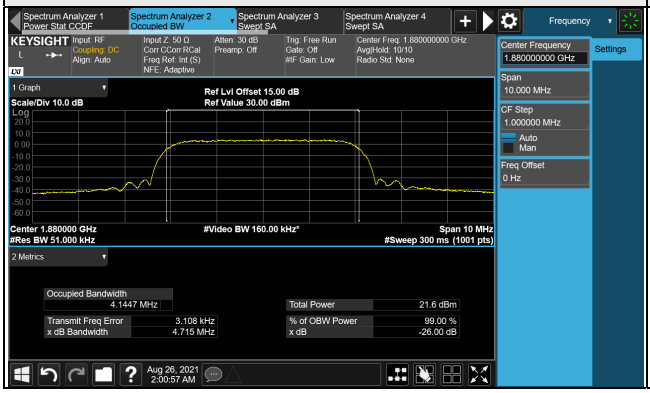
WCDMA




HSDPA




HSUPA

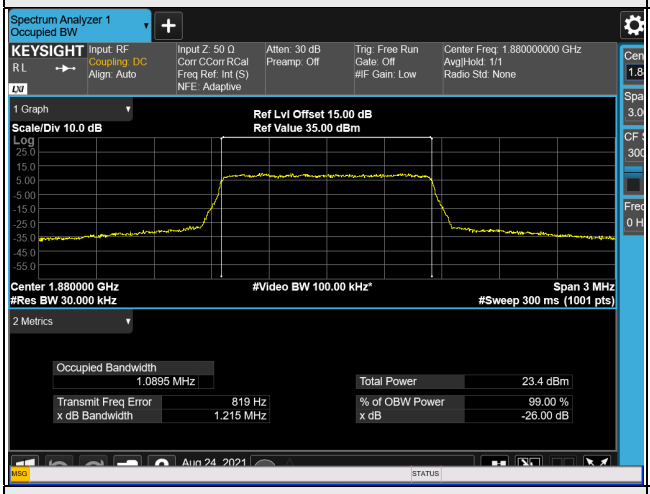


| LTE Band 2, Channel Bandwidth 1.4MHz | | | | |
|---|---|---|---|---|
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 18607 | 1850.7 | 1.09 | 1.09 | 1.09 |
| 18900 | 1880.0 | 1.09 | 1.09 | 1.09 |
| 19193 | 1909.3 | 1.09 | 1.09 | 1.09 |
| LTE Band 2, Channel Bandwidth 3MHz | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 18615 | 1851.5 | 2.70 | 2.70 | 2.70 |
| 18900 | 1880.0 | 2.70 | 2.70 | 2.70 |
| 19185 | 1908.5 | 2.70 | 2.70 | 2.70 |
| LTE Band 2, Channel Bandwidth 5MHz | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 18625 | 1852.5 | 4.49 | 4.49 | 4.50 |
| 18900 | 1880.0 | 4.49 | 4.50 | 4.50 |
| 19175 | 1907.5 | 4.49 | 4.49 | 4.51 |
| LTE Band 2, Channel Bandwidth 10MHz | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 18650 | 1855.0 | 8.97 | 8.96 | 8.97 |
| 18900 | 1880.0 | 8.97 | 8.97 | 8.98 |
| 19150 | 1905.0 | 8.97 | 8.98 | 8.99 |
| LTE Band 2, Channel Bandwidth 15MHz | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 18675 | 1857.5 | 13.44 | 13.43 | 13.43 |
| 18900 | 1880.0 | 13.46 | 13.45 | 13.44 |
| 19125 | 1902.5 | 13.48 | 13.46 | 13.46 |

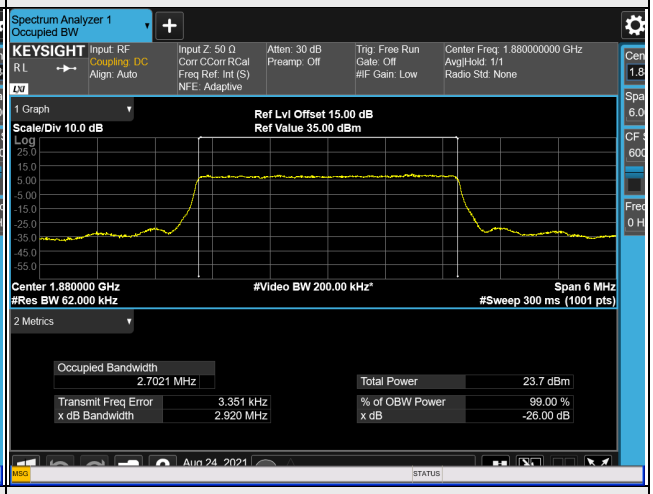
| LTE Band 2, Channel Bandwidth 20MHz | | | | |
|---|---|---|---|---|
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 18700 | 1860.0 | 17.90 | 17.93 | 17.92 |
| 18900 | 1880.0 | 17.92 | 17.94 | 17.94 |
| 19100 | 1900.0 | 17.96 | 17.97 | 17.97 |

## Spectrum Plot of Worst Value

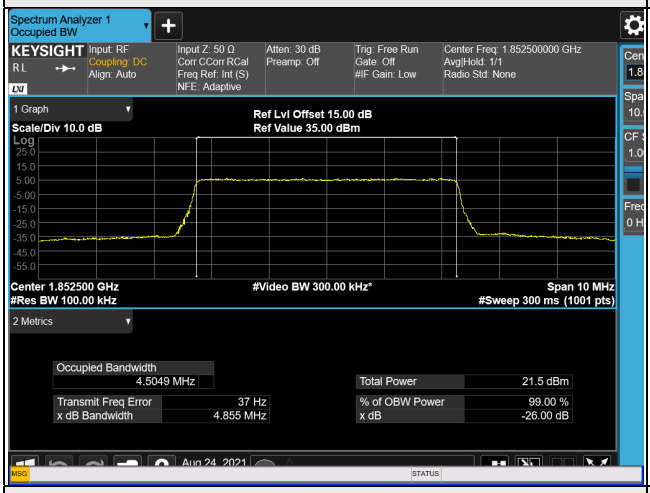
### 1.4MHz / 16QAM



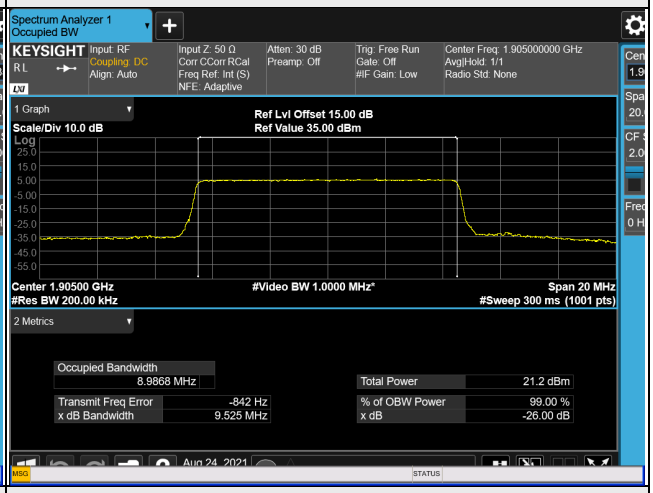

### 3MHz / QPSK



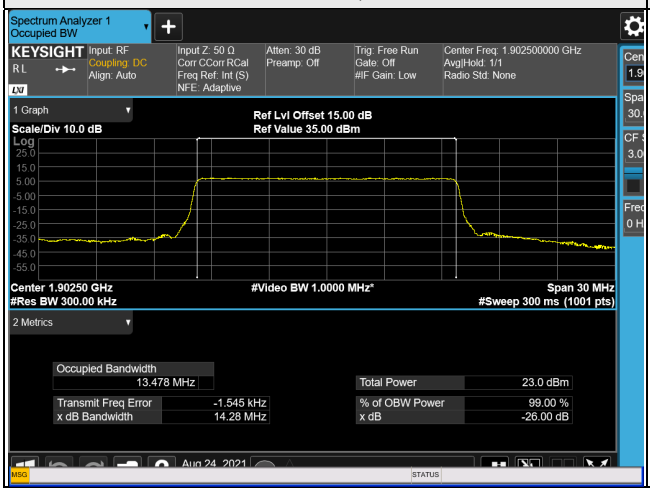

### 5MHz / 64QAM



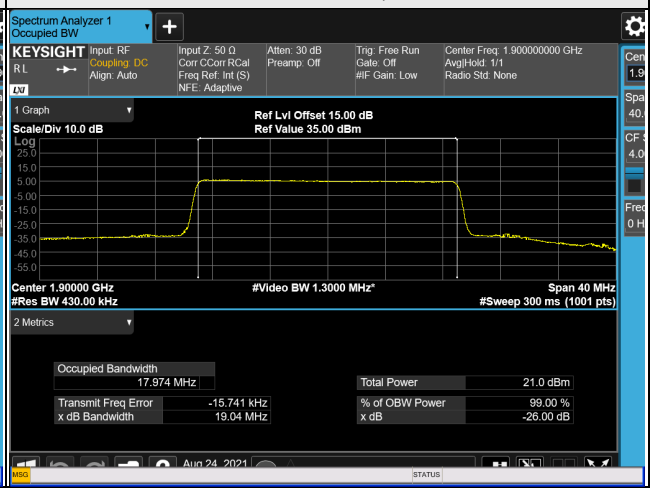

### 10MHz / 64QAM




### 15MHz / QPSK




### 20MHz / 64QAM

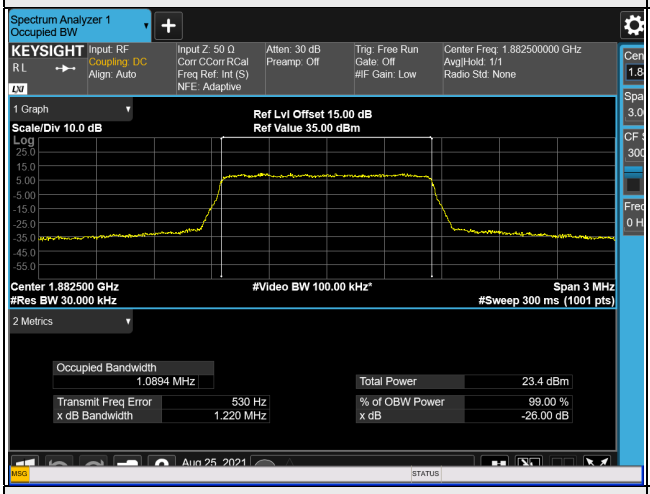


| LTE Band 25, Channel Bandwidth 1.4MHz | | | | |
|---|---|---|---|---|
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 26047 | 1850.7 | 1.09 | 1.09 | 1.09 |
| 26365 | 1882.5 | 1.09 | 1.09 | 1.09 |
| 26683 | 1914.3 | 1.09 | 1.09 | 1.09 |
| LTE Band 25, Channel Bandwidth 3MHz | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 26055 | 1851.5 | 2.70 | 2.70 | 2.70 |
| 26365 | 1882.5 | 2.70 | 2.70 | 2.70 |
| 26675 | 1913.5 | 2.70 | 2.70 | 2.71 |
| LTE Band 25, Channel Bandwidth 5MHz | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 26065 | 1852.5 | 4.49 | 4.49 | 4.49 |
| 26365 | 1882.5 | 4.49 | 4.50 | 4.50 |
| 26665 | 1912.5 | 4.49 | 4.50 | 4.50 |
| LTE Band 25, Channel Bandwidth 10MHz | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 26090 | 1855.0 | 8.96 | 8.97 | 8.96 |
| 26365 | 1882.5 | 8.97 | 8.97 | 8.97 |
| 26640 | 1910.0 | 8.94 | 8.95 | 8.94 |
| LTE Band 25, Channel Bandwidth 15MHz | | | | |
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 26115 | 1857.5 | 13.43 | 13.42 | 13.41 |
| 26365 | 1882.5 | 13.45 | 13.45 | 13.44 |
| 26615 | 1907.5 | 13.39 | 13.39 | 13.38 |

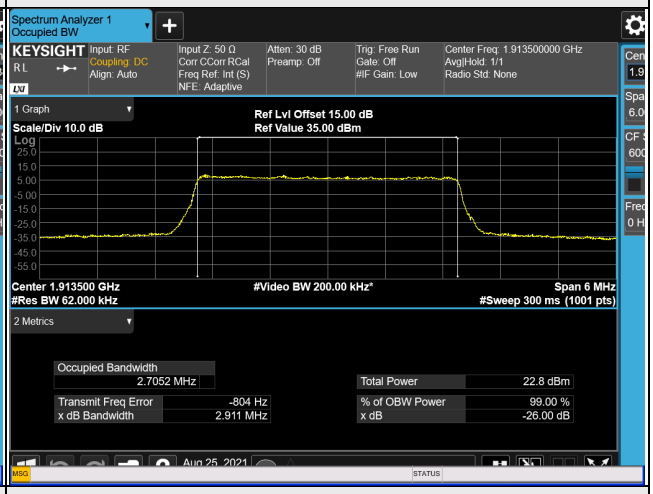
| LTE Band 25, Channel Bandwidth 20MHz | | | | |
|---|---|---|---|---|
| Channel | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 26140 | 1860.0 | 17.87 | 17.89 | 17.89 |
| 26365 | 1882.5 | 17.92 | 17.95 | 17.92 |
| 26590 | 1905.0 | 17.86 | 17.89 | 17.88 |

## Spectrum Plot of Worst Value

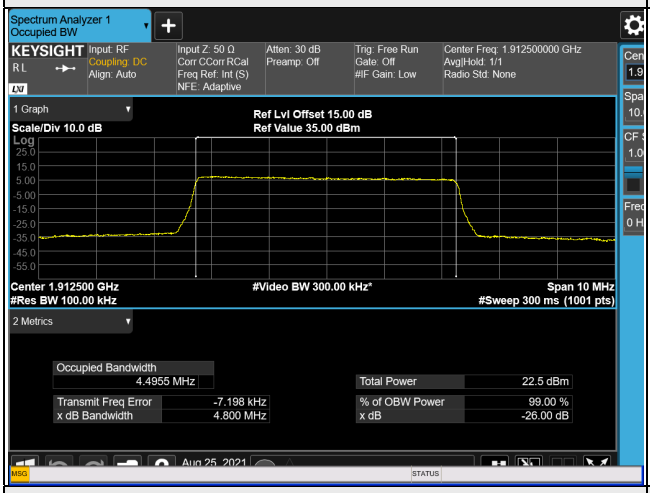
### 1.4MHz / 16QAM



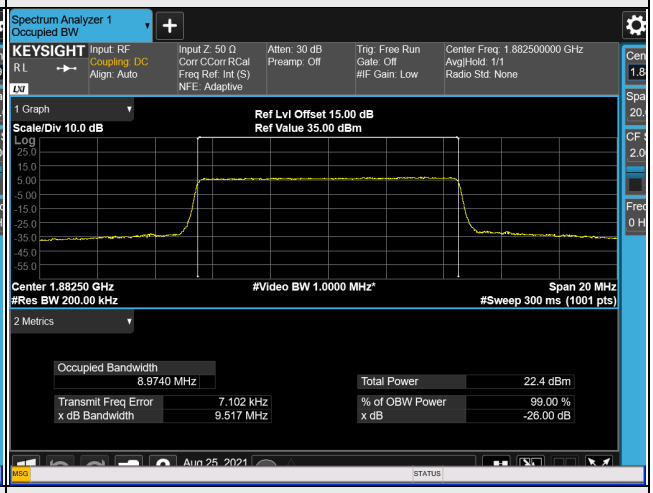

### 3MHz / 64QAM



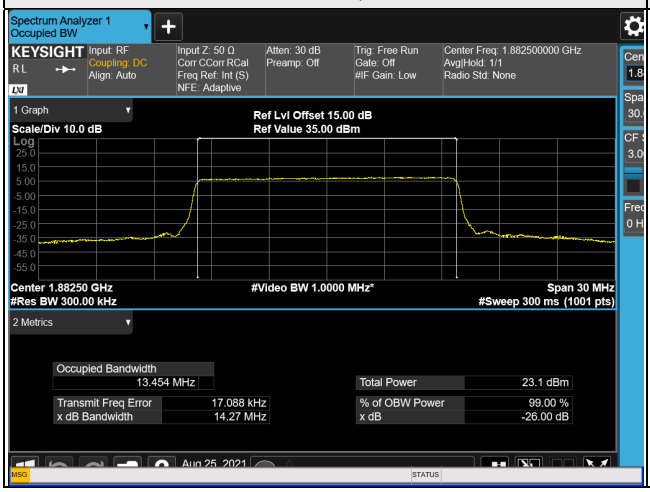

### 5MHz / 64QAM



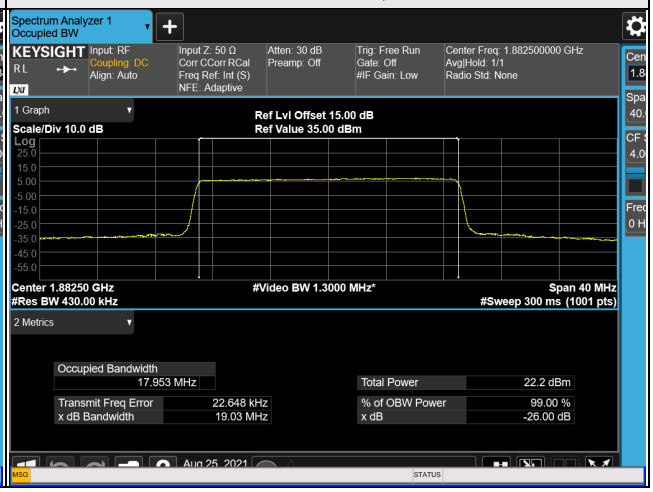

### 10MHz / 16QAM




### 15MHz / QPSK

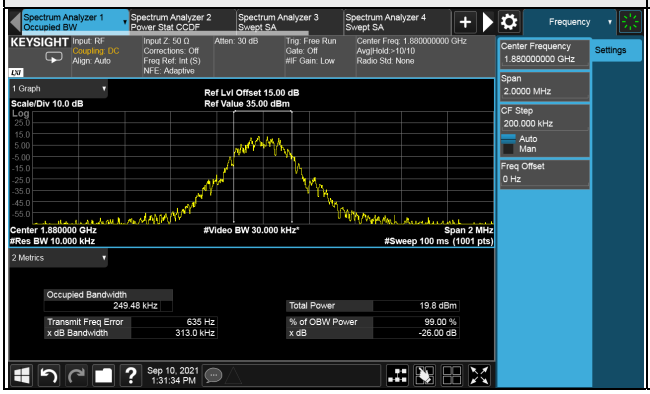
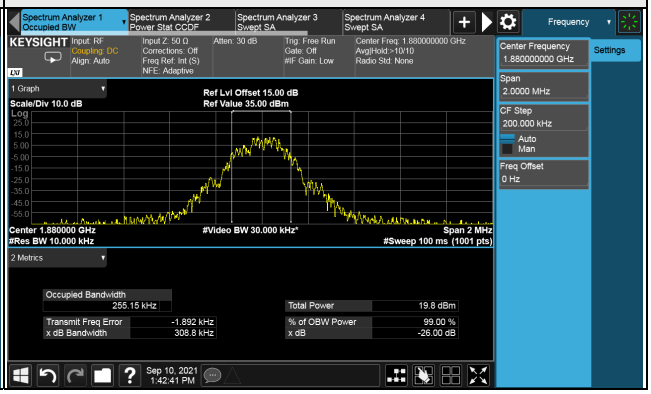



### 20MHz / 16QAM



## 26dB Bandwidth

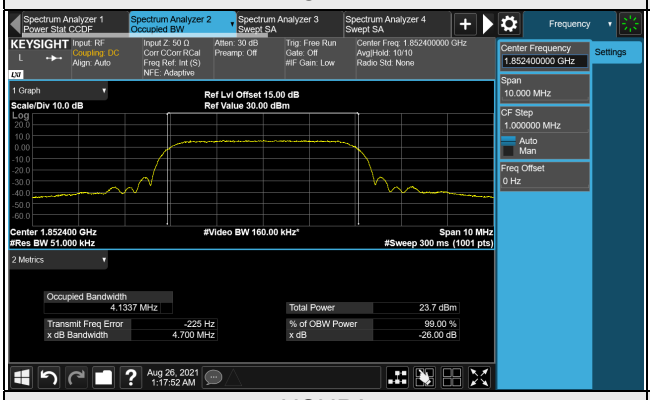
| Channel | Frequency (MHz) | 26dB Bandwidth (kHz) | |
|---|---|---|---|
| | | GPRS | EDGE |
| 512 | 1850.2 | 307.00 | 308.20 |
| 661 | 1880.0 | 313.00 | 308.80 |
| 810 | 1909.8 | 311.00 | 308.60 |

| Spectrum Plot of Worst Value | |
|---|---|
| GPRS | EDGE |
|  |  |

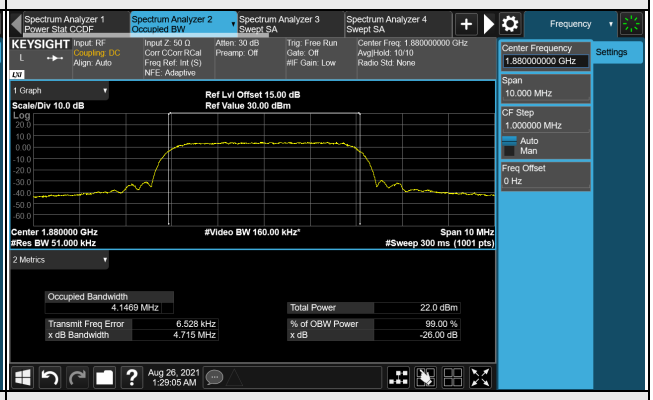
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | | |
|---|---|---|---|---|
| | | WCDMA | HSDPA | HSUPA |
| 9262 | 1852.4 | 4.70 | 4.71 | 4.71 |
| 9400 | 1880.0 | 4.70 | 4.72 | 4.72 |
| 9538 | 1907.6 | 4.69 | 4.71 | 4.71 |

Spectrum Plot of Worst Value

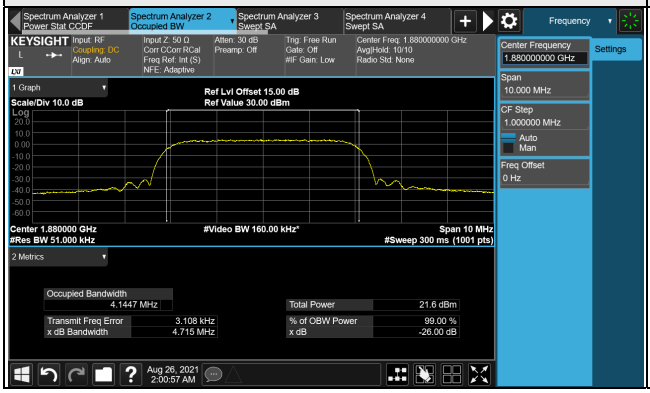
WCDMA




HSDPA




HSUPA

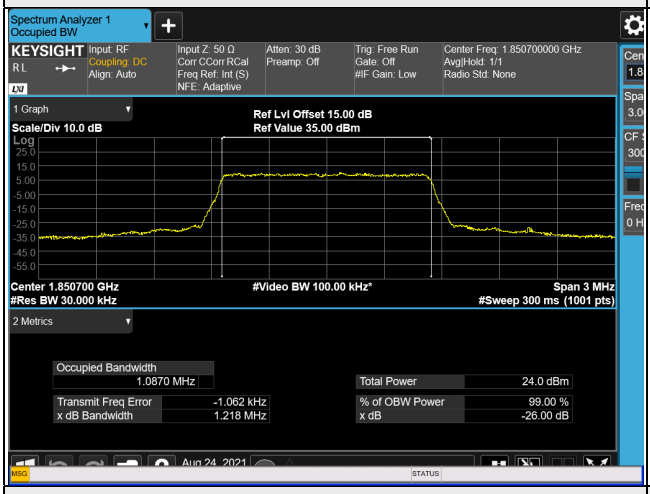


| LTE Band 2, Channel Bandwidth 1.4MHz | | | | |
|---|---|---|---|---|
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 18607 | 1850.7 | 1.22 | 1.22 | 1.22 |
| 18900 | 1880.0 | 1.21 | 1.22 | 1.22 |
| 19193 | 1909.3 | 1.22 | 1.21 | 1.22 |
| LTE Band 2, Channel Bandwidth 3MHz | | | | |
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 18615 | 1851.5 | 2.92 | 2.92 | 2.90 |
| 18900 | 1880.0 | 2.92 | 2.93 | 2.91 |
| 19185 | 1908.5 | 2.93 | 2.93 | 2.91 |
| LTE Band 2, Channel Bandwidth 5MHz | | | | |
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 18625 | 1852.5 | 4.82 | 4.81 | 4.86 |
| 18900 | 1880.0 | 4.84 | 4.80 | 4.84 |
| 19175 | 1907.5 | 4.83 | 4.81 | 4.82 |
| LTE Band 2, Channel Bandwidth 10MHz | | | | |
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 18650 | 1855.0 | 9.54 | 9.52 | 9.54 |
| 18900 | 1880.0 | 9.51 | 9.51 | 9.52 |
| 19150 | 1905.0 | 9.52 | 9.51 | 9.53 |
| LTE Band 2, Channel Bandwidth 15MHz | | | | |
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 18675 | 1857.5 | 14.24 | 14.23 | 14.24 |
| 18900 | 1880.0 | 14.28 | 14.24 | 14.24 |
| 19125 | 1902.5 | 14.28 | 14.25 | 14.26 |

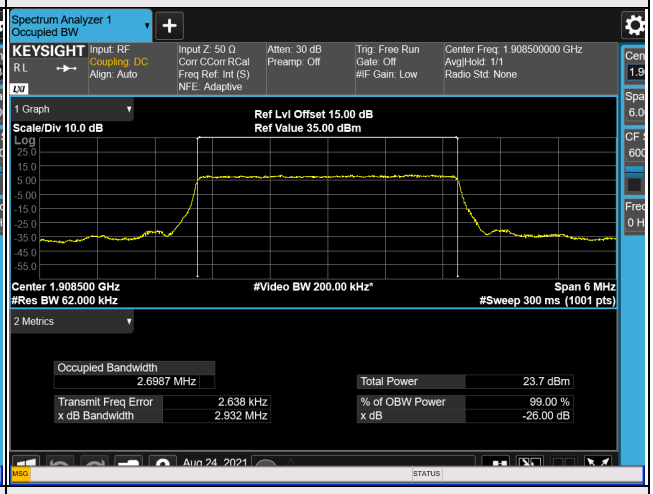
| LTE Band 2, Channel Bandwidth 20MHz | | | | |
|---|---|---|---|---|
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 18700 | 1860.0 | 19.03 | 19.02 | 19.02 |
| 18900 | 1880.0 | 19.03 | 19.02 | 19.01 |
| 19100 | 1900.0 | 19.07 | 19.04 | 19.04 |

## Spectrum Plot of Worst Value

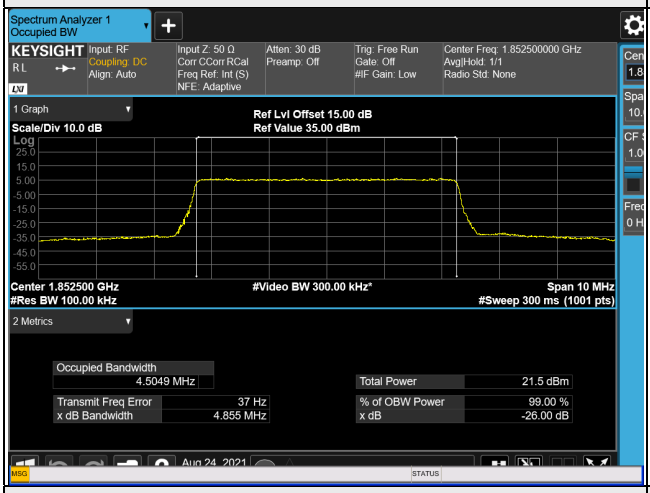
### 1.4MHz / QPSK



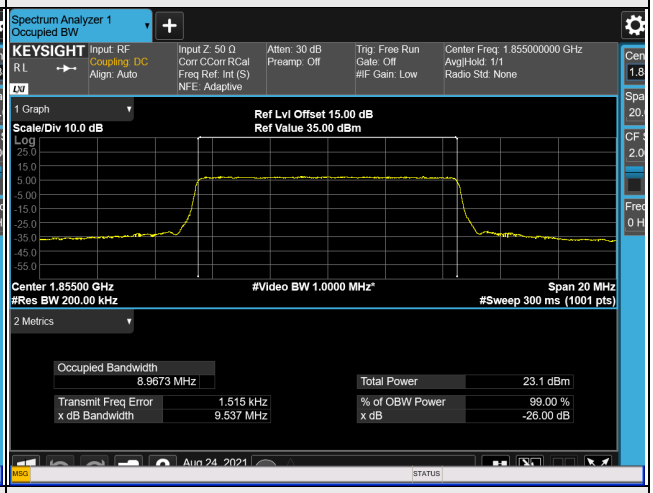

### 3MHz / QPSK



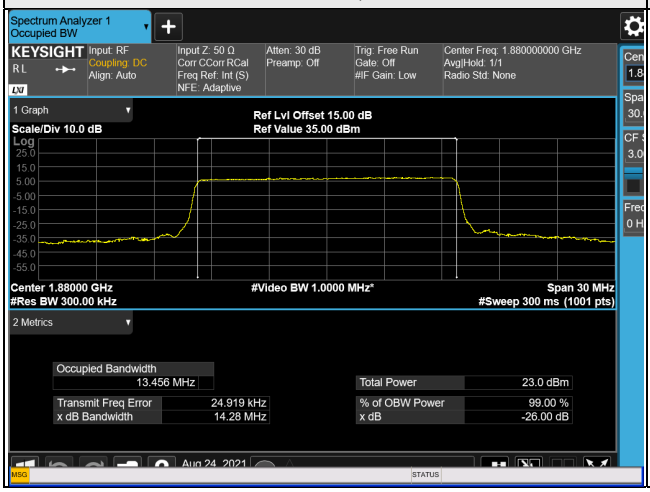

### 5MHz / 64QAM



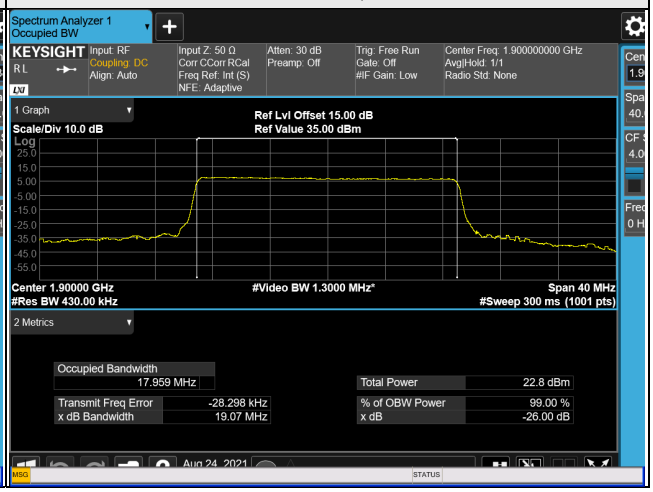

### 10MHz / QPSK




### 15MHz / QPSK




### 20MHz / QPSK

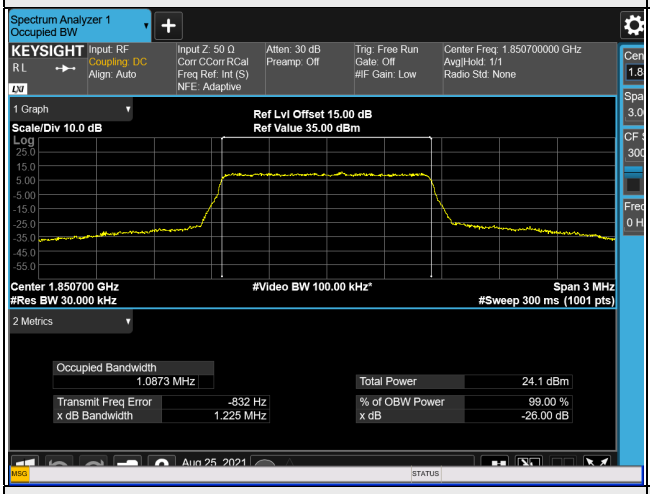


| LTE Band 25, Channel Bandwidth 1.4MHz | | | | |
|---|---|---|---|---|
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 26047 | 1850.7 | 1.23 | 1.22 | 1.21 |
| 26365 | 1882.5 | 1.22 | 1.22 | 1.22 |
| 26683 | 1914.3 | 1.23 | 1.22 | 1.22 |
| LTE Band 25, Channel Bandwidth 3MHz | | | | |
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 26055 | 1851.5 | 2.92 | 2.93 | 2.93 |
| 26365 | 1882.5 | 2.92 | 2.93 | 2.93 |
| 26675 | 1913.5 | 2.93 | 2.93 | 2.91 |
| LTE Band 25, Channel Bandwidth 5MHz | | | | |
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 26065 | 1852.5 | 4.81 | 4.81 | 4.81 |
| 26365 | 1882.5 | 4.83 | 4.81 | 4.82 |
| 26665 | 1912.5 | 4.79 | 4.79 | 4.80 |
| LTE Band 25, Channel Bandwidth 10MHz | | | | |
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 26090 | 1855.0 | 9.51 | 9.51 | 9.51 |
| 26365 | 1882.5 | 9.52 | 9.52 | 9.51 |
| 26640 | 1910.0 | 9.49 | 9.49 | 9.50 |
| LTE Band 25, Channel Bandwidth 15MHz | | | | |
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 26115 | 1857.5 | 14.26 | 14.23 | 14.24 |
| 26365 | 1882.5 | 14.27 | 14.25 | 14.25 |
| 26615 | 1907.5 | 14.22 | 14.21 | 14.20 |

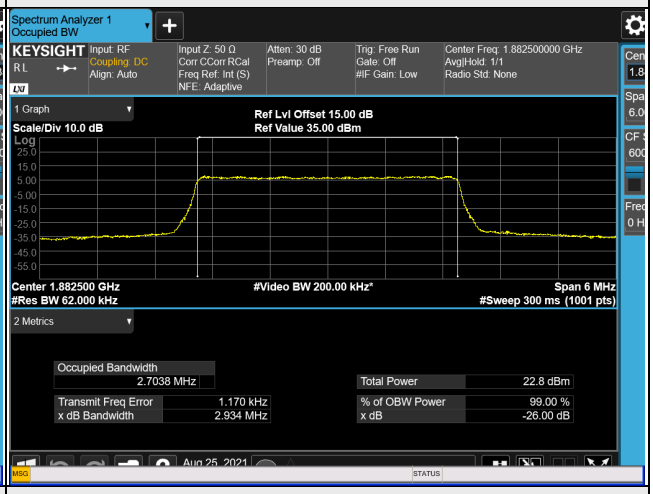
| LTE Band 25, Channel Bandwidth 20MHz | | | | |
|---|---|---|---|---|
| Channel | Frequency (MHz) | 26dB Bandwidth (MHz) | | |
| | | QPSK | 16QAM | 64QAM |
| 26140 | 1860.0 | 18.99 | 19.01 | 19.02 |
| 26365 | 1882.5 | 19.04 | 19.03 | 19.03 |
| 26590 | 1905.0 | 19.00 | 18.98 | 19.00 |

## Spectrum Plot of Worst Value

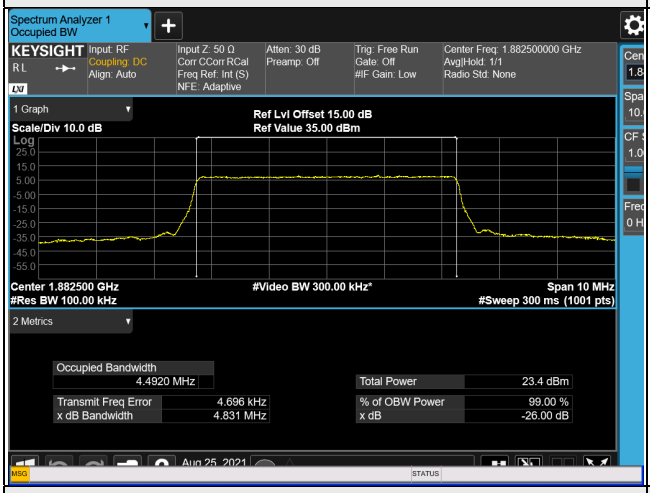
### 1.4MHz / QPSK



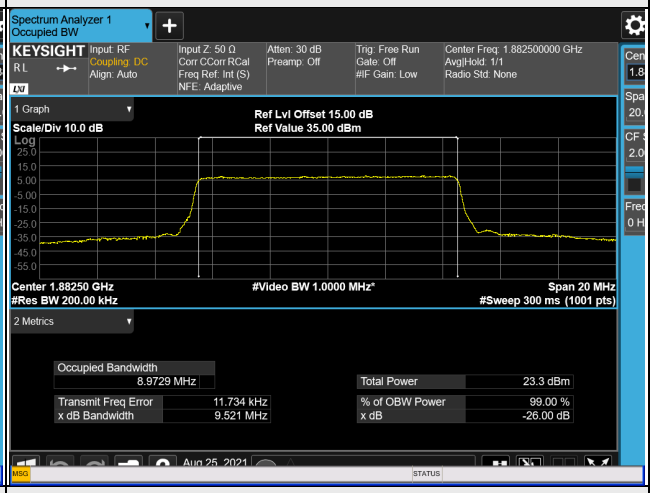

### 3MHz / 64QAM



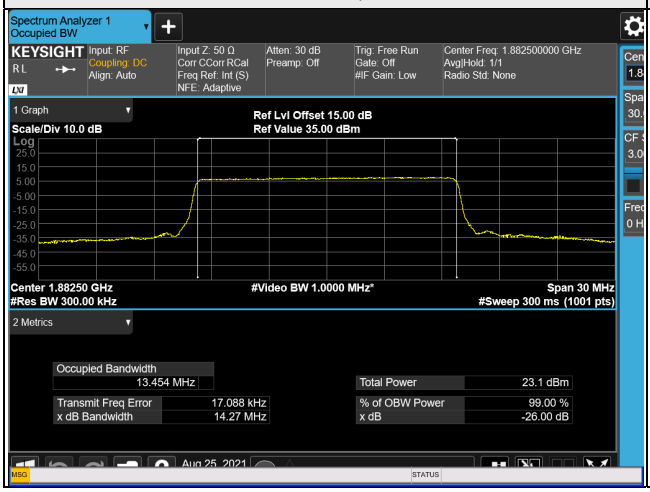

### 5MHz / QPSK



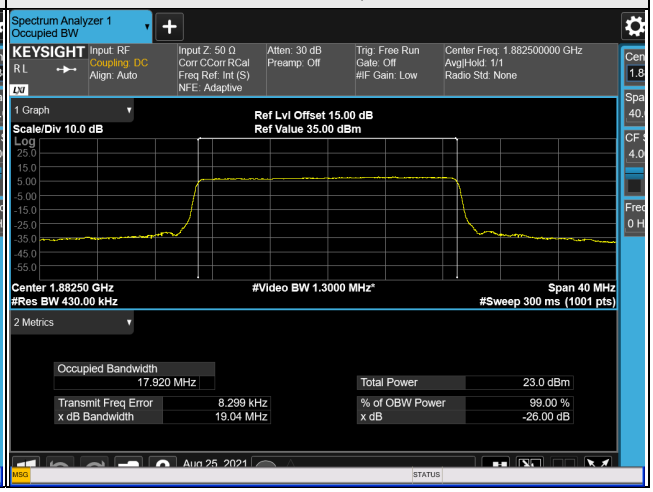

### 10MHz / QPSK




### 15MHz / QPSK




### 20MHz / QPSK

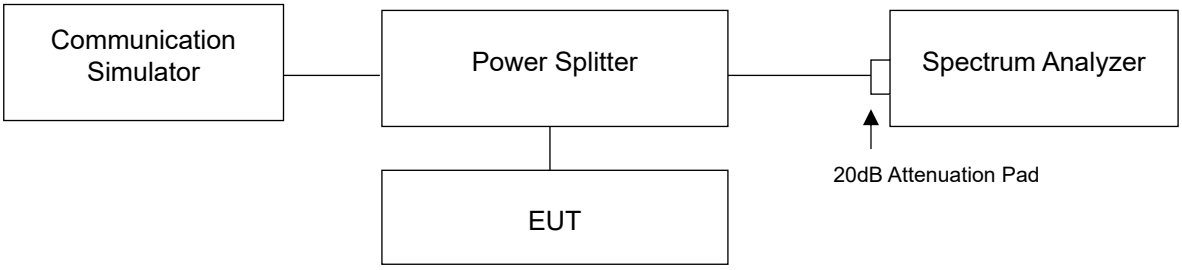


## 4.5 Band Edge Measurement

### 4.5.1 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.

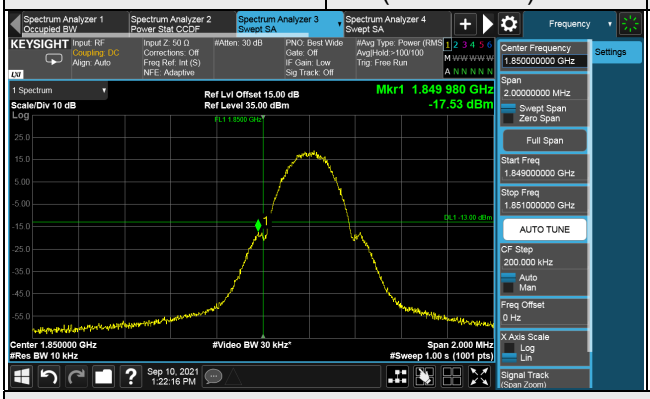
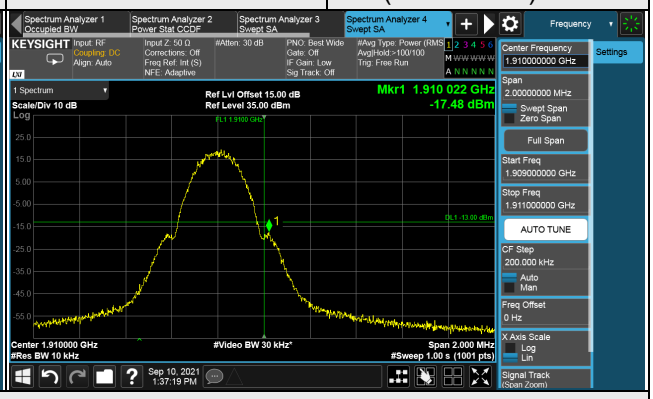
### 4.5.2 Test Setup




### 4.5.3 Test Procedures

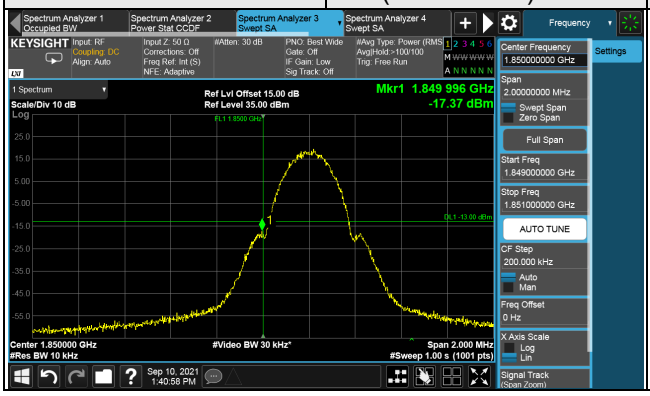
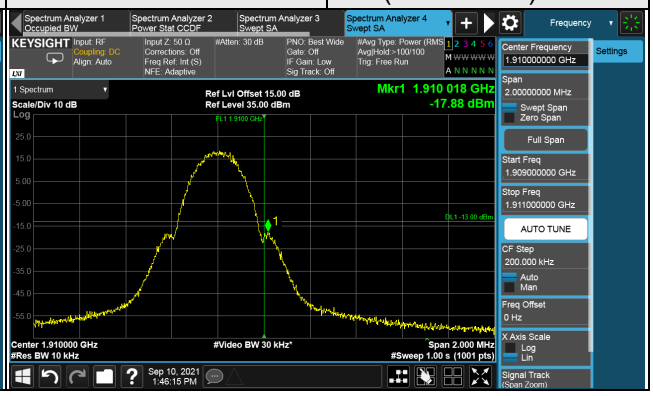
a. All measurements were done at low and high operational frequency range.
b. The center frequency of spectrum is the band edge frequency and span is 2MHz. RB of the spectrum is 10kHz and VB of the spectrum is 30kHz (GPRS / EDGE).
c. The center frequency of spectrum is the band edge frequency and span is 2MHz. RB of the spectrum is 51kHz and VB of the spectrum is 160kHz (WCDMA / HSDPA / HSUPA).
d. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 15kHz and VB of the spectrum is 51kHz (LTE Channel Bandwidth 1.4MHz).
e. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 30kHz and VB of the spectrum is 100kHz (LTE Channel Bandwidth 3MHz).
f. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 51kHz and VB of the spectrum is 160kHz (LTE Channel Bandwidth 5MHz).
g. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 100kHz and VB of the spectrum is 300kHz (LTE Channel Bandwidth 10MHz).
h. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 150kHz and VB of the spectrum is 470kHz (LTE Channel Bandwidth 15MHz).
i. The center frequency of spectrum is the band edge frequency and span is 1MHz. RB of the spectrum is 200kHz and VB of the spectrum is 1MHz (LTE Channel Bandwidth 20MHz).
j. Record the max trace plot into the test report.

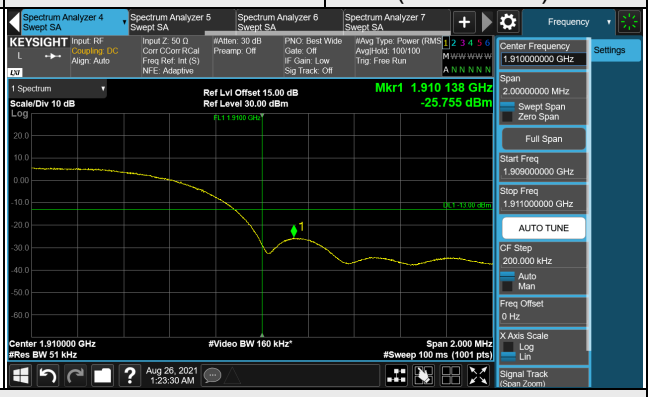
### 4.5.4 Test Results

| GPRS | | | |
|---|---|---|---|
| Channel | 512 (1850.2MHz) | Channel | 810 (1909.8MHz) |
|  | |  | |

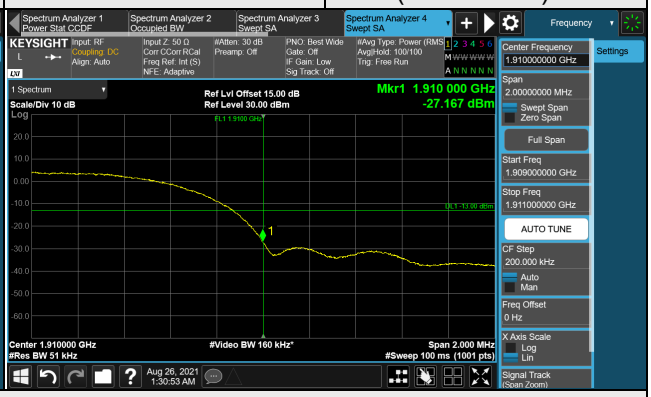




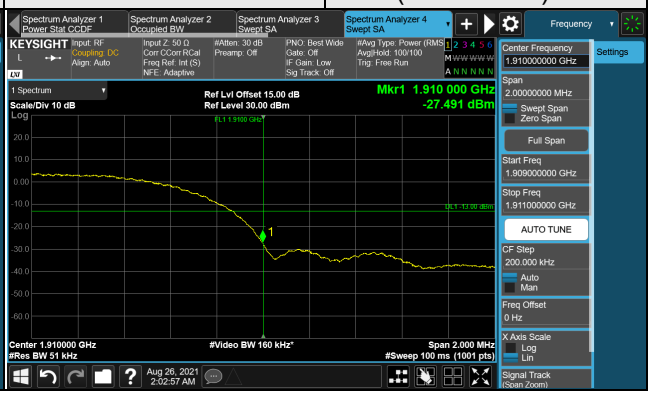
| EDGE | | | |
|---|---|---|---|
| Channel | 512 (1850.2MHz) | Channel | 810 (1909.8MHz) |
|  | |  | |

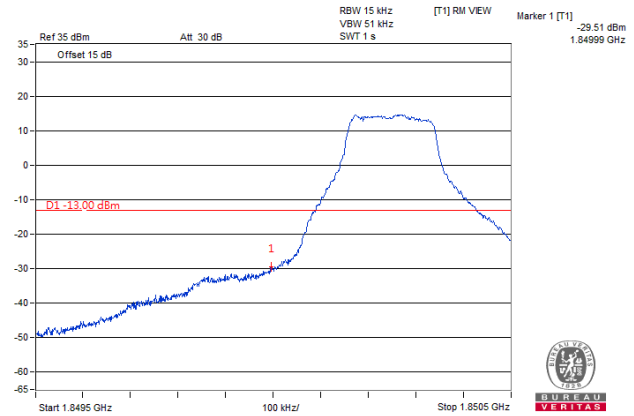
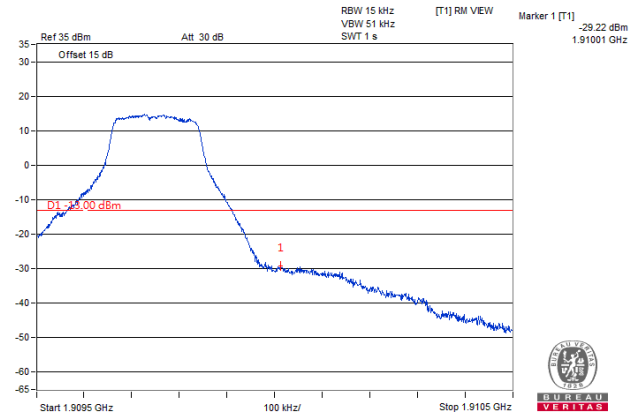
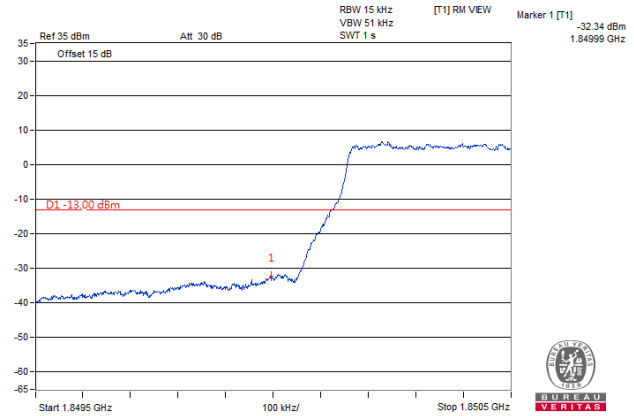
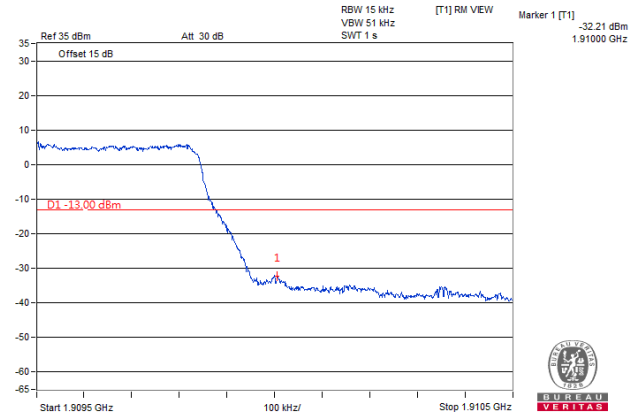
| WCDMA | | | |
|---|---|---|---|
| Channel | 9262 (1852.4MHz) | Channel | 9538 (1907.6MHz) |
| | |  | |

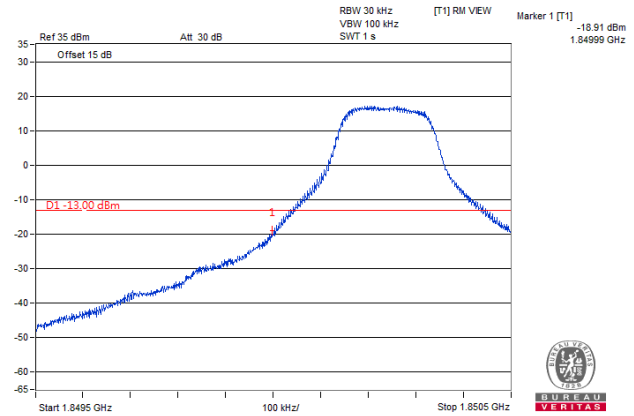
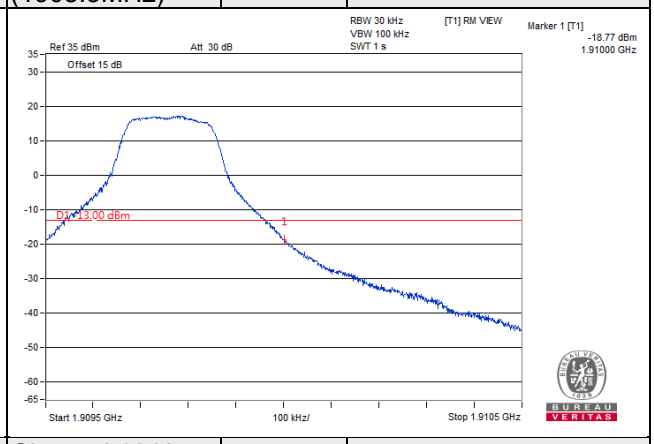
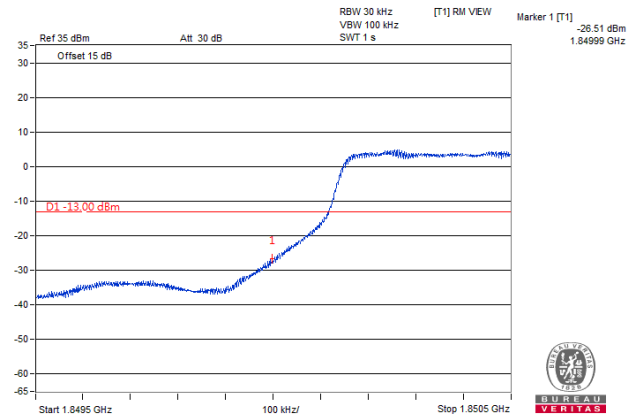
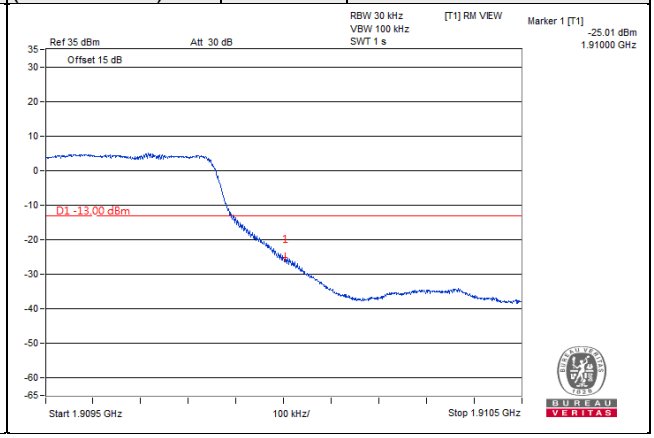


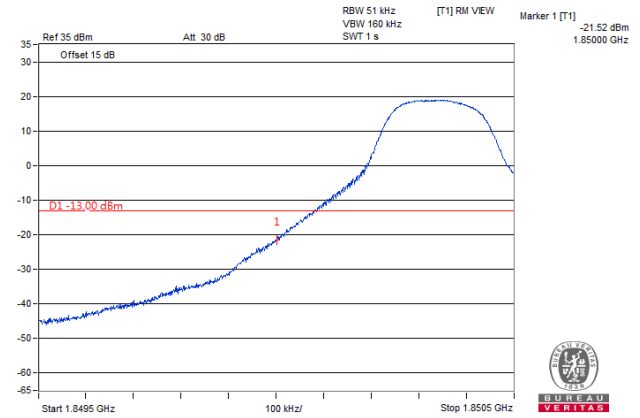
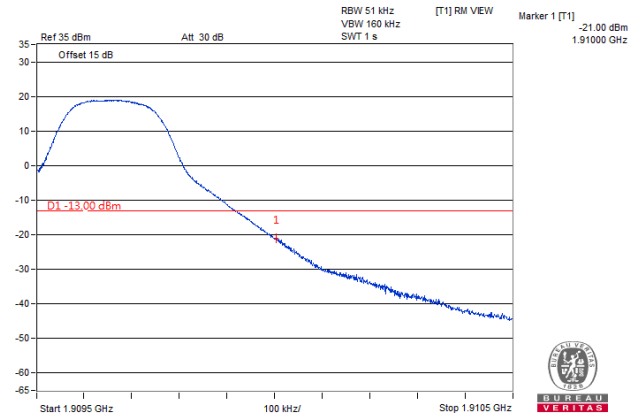
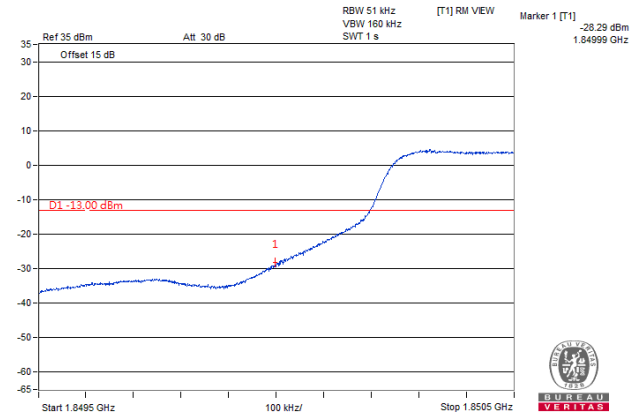
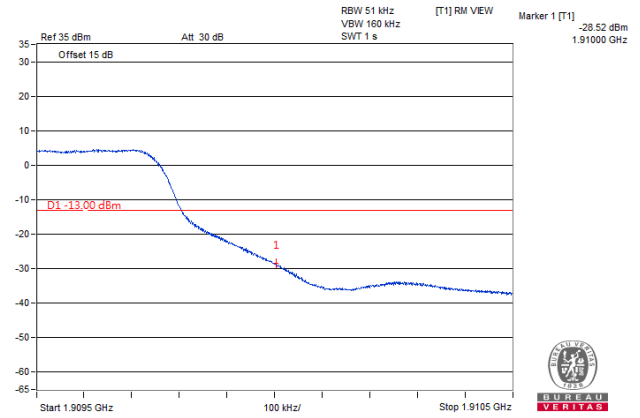
| HSDPA | | | |
|---|---|---|---|
| Channel | 9262 (1852.4MHz) | Channel | 9538 (1907.6MHz) |
| | |  | |

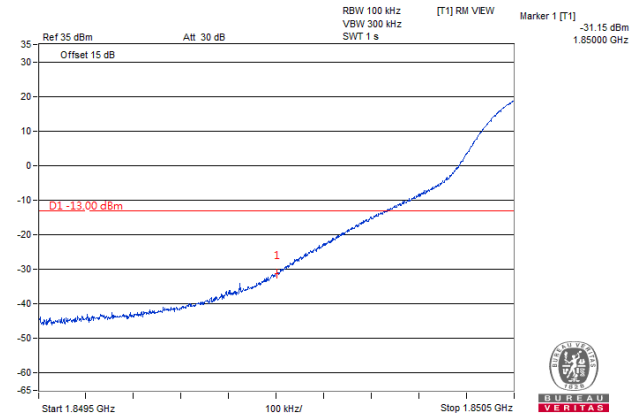
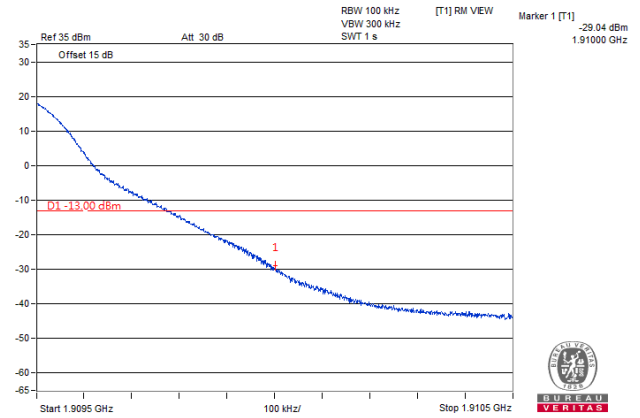
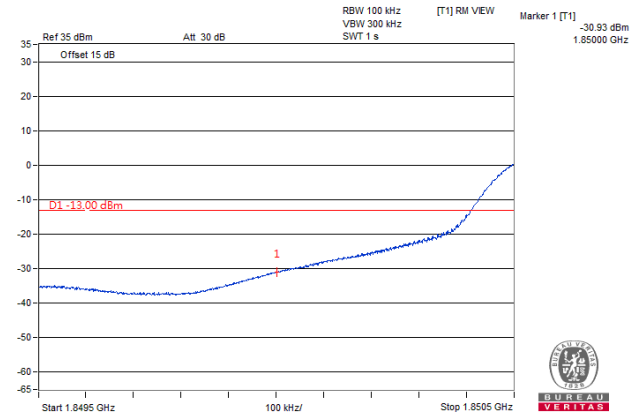
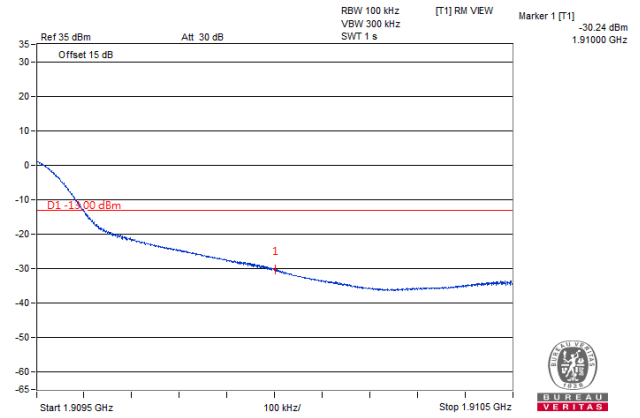


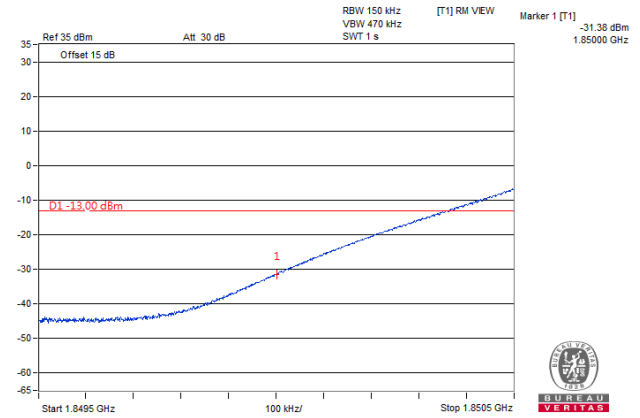
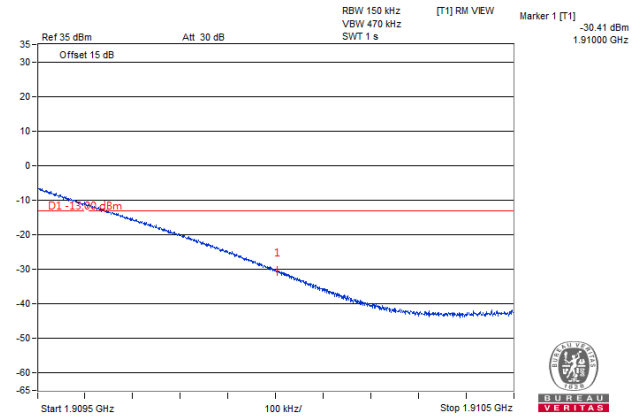
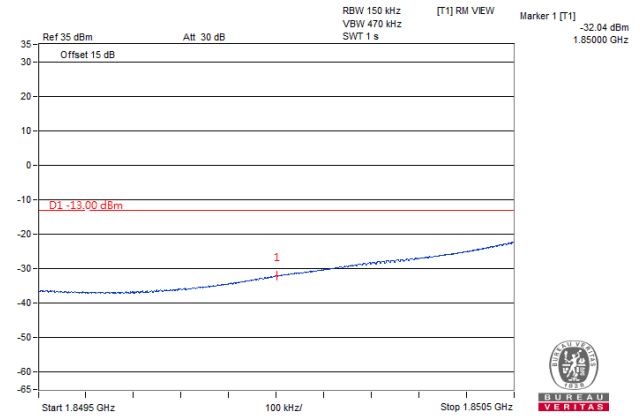
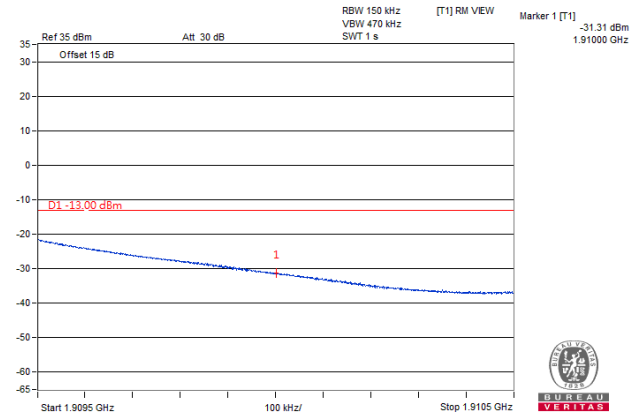
| HSUPA | | | |
|---|---|---|---|
| Channel | 9262 (1852.4MHz) | Channel | 9538 (1907.6MHz) |
| | |  | |

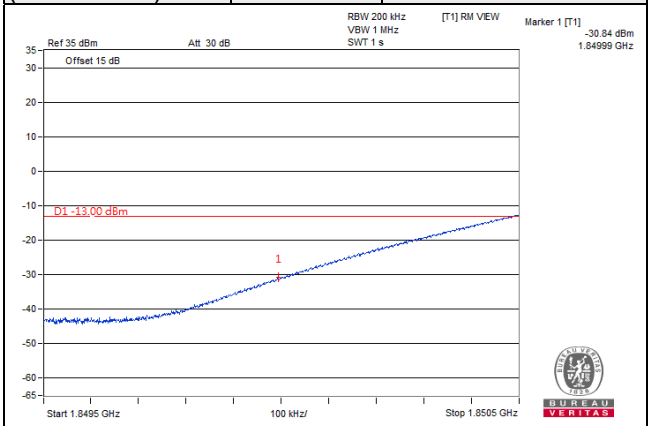
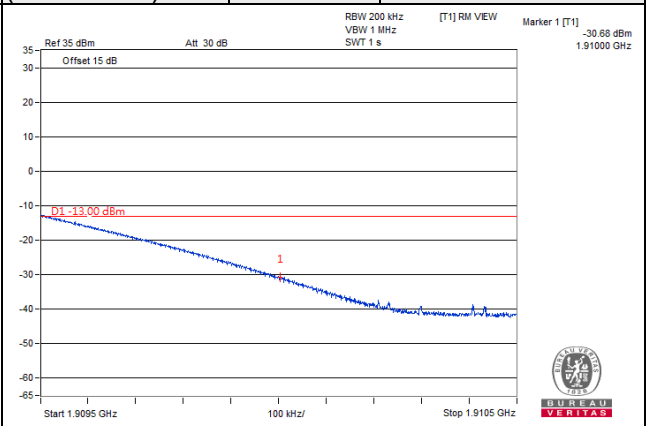
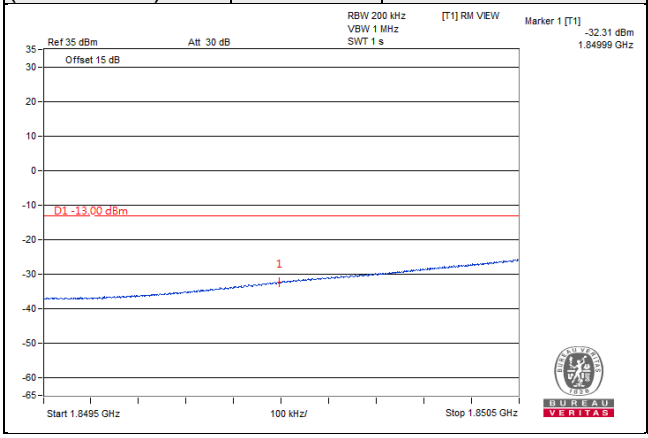
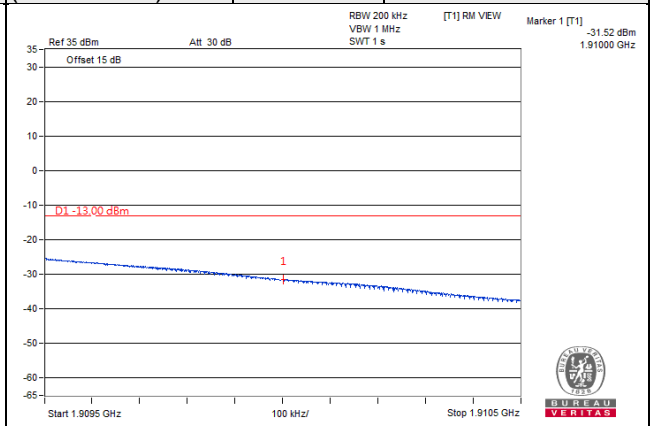
| LTE Band 2, Channel Bandwidth 1.4MHz | | | | | |
|---|---|---|---|---|---|
| Channel 18607 (1850.7MHz) | QPSK | 1 RB / 0 RB Offset | Channel 19193 (1909.3MHz) | QPSK | 1 RB / 5 RB Offset |
|  | | |  | | |
| Channel 18607 (1850.7MHz) | QPSK | 6 RB / 0 RB Offset | Channel 19193 (1909.3MHz) | QPSK | 6 RB / 0 RB Offset |
|  | | |  | | |

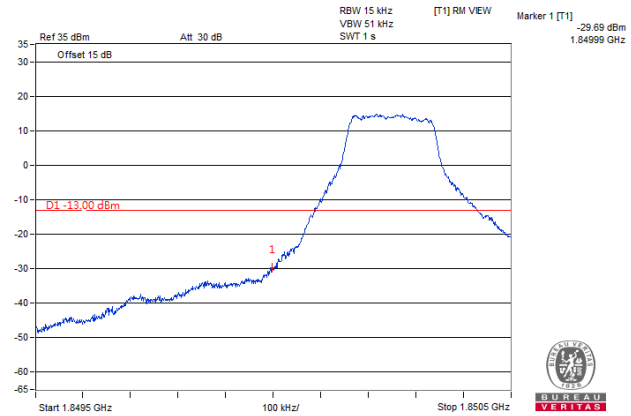
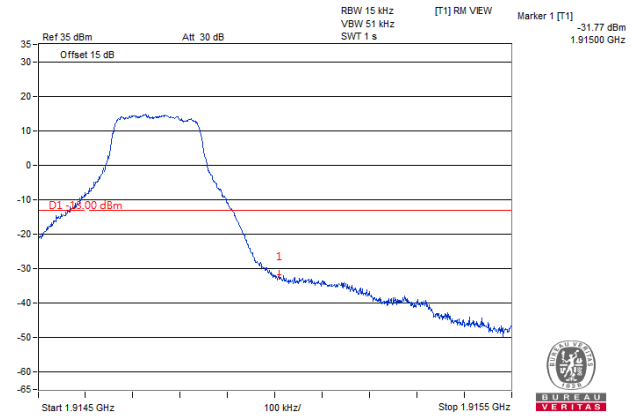
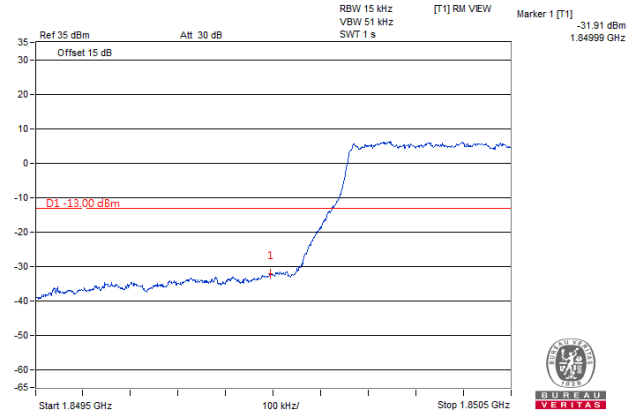
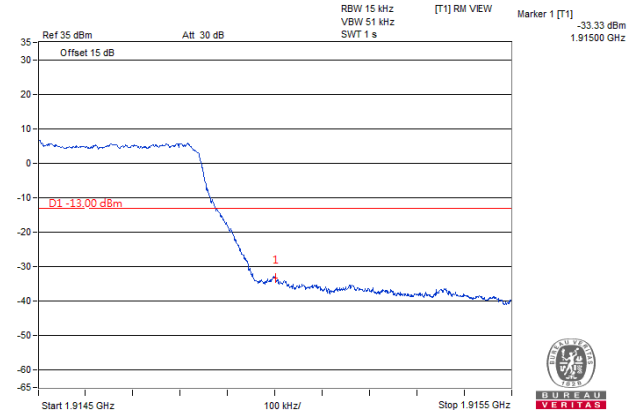
| LTE Band 2, Channel Bandwidth 3MHz | | | | | |
|---|---|---|---|---|---|
| Channel 18615 (1851.5MHz) | QPSK | 1 RB / 0 RB Offset | Channel 19185 (1908.5MHz) | QPSK | 1 RB / 14 RB Offset |
|   | | |   | | |
| Channel 18615 (1851.5MHz) | QPSK | 15 RB / 0 RB Offset | Channel 19185 (1908.5MHz) | QPSK | 15 RB / 0 RB Offset |
|   | | |   | | |

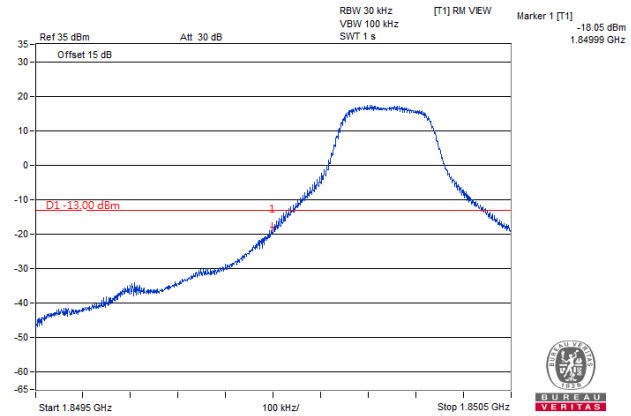
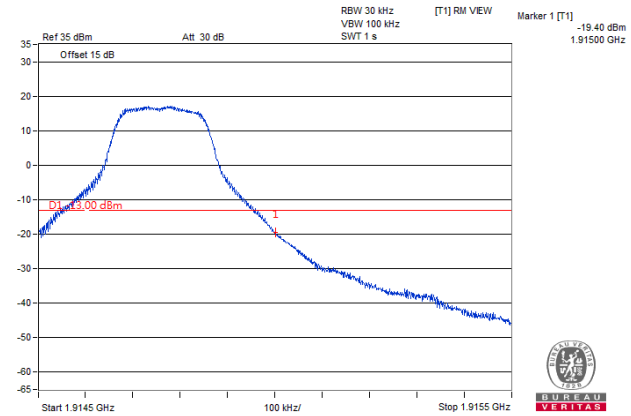
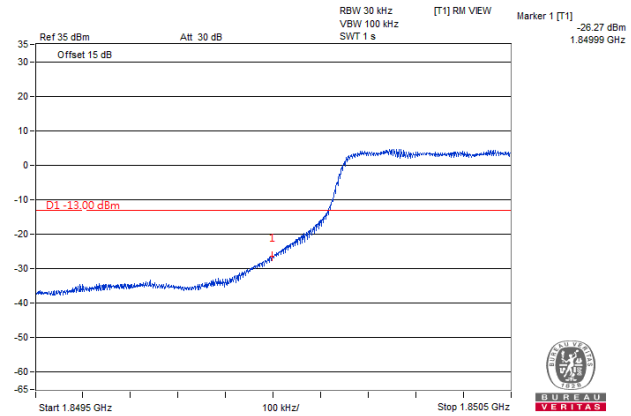
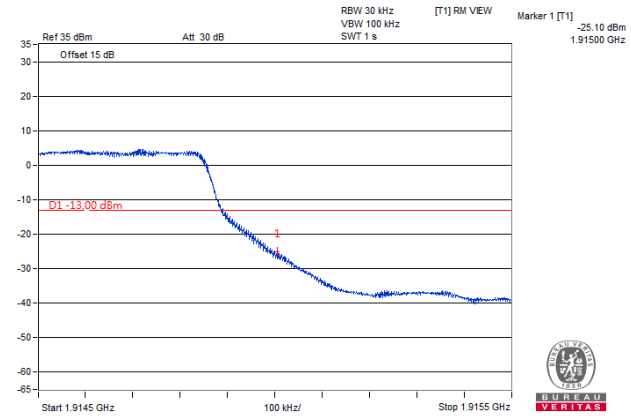
| LTE Band 2, Channel Bandwidth 5MHz | | | | | |
|---|---|---|---|---|---|
| Channel 18625 (1852.5MHz) | QPSK | 1 RB / 0 RB Offset | Channel 19175 (1907.5MHz) | QPSK | 1 RB / 24 RB Offset |
|  | | |  | | |
| Channel 18625 (1852.5MHz) | QPSK | 25 RB / 0 RB Offset | Channel 19175 (1907.5MHz) | QPSK | 25 RB / 0 RB Offset |
|  | | |  | | |

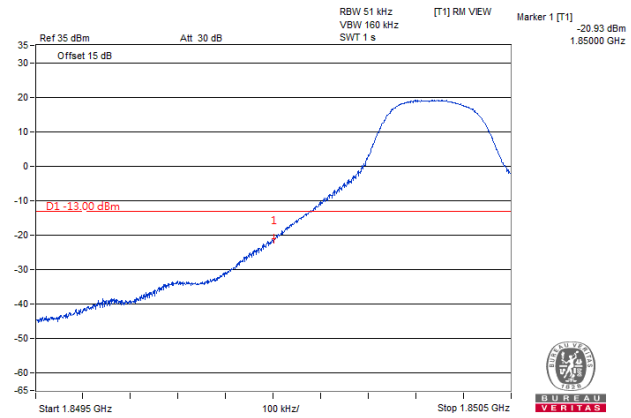
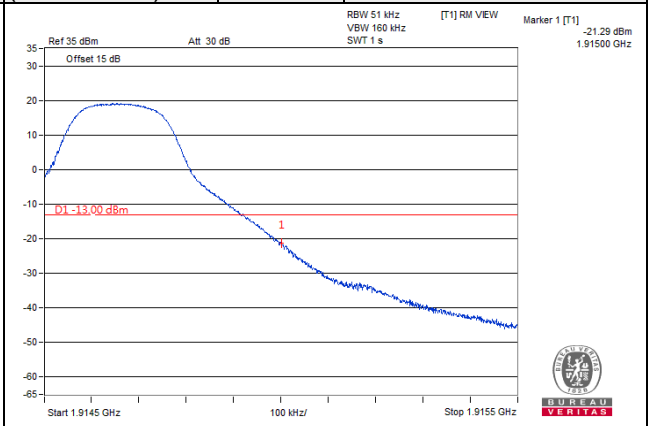
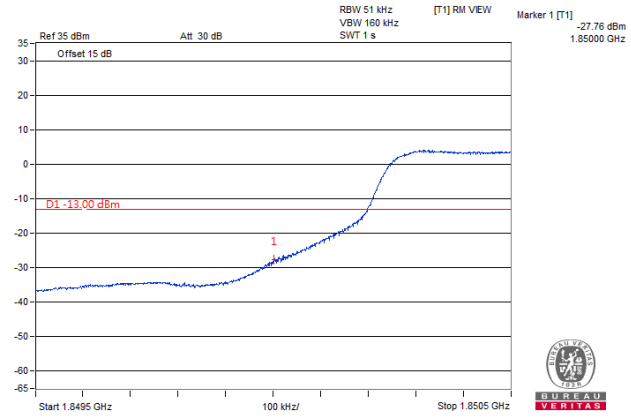
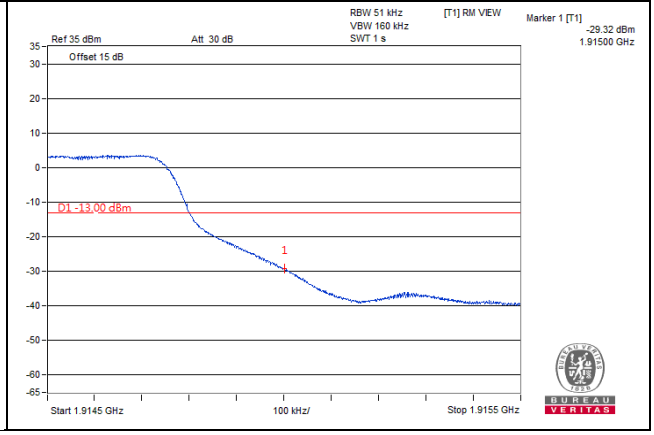
| LTE Band 2, Channel Bandwidth 10MHz | | | | | |
|---|---|---|---|---|---|
| Channel 18650 (1855.0MHz) | QPSK | 1 RB / 0 RB Offset | Channel 19150 (1905.0MHz) | QPSK | 1 RB / 49 RB Offset |
|  | | |  | | |
| Channel 18650 (1855.0MHz) | QPSK | 50 RB / 0 RB Offset | Channel 19150 (1905.0MHz) | QPSK | 50 RB / 0 RB Offset |
|  | | |  | | |

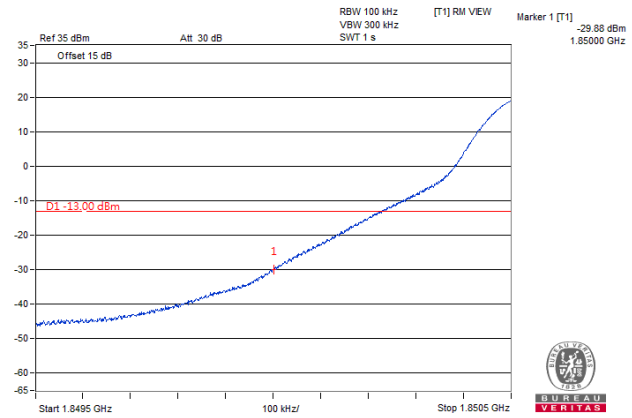
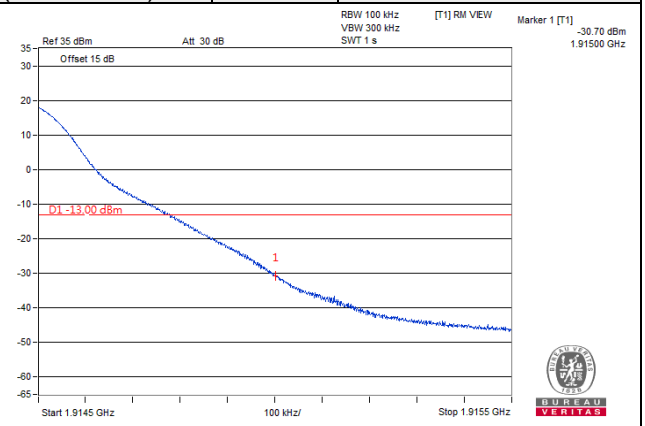
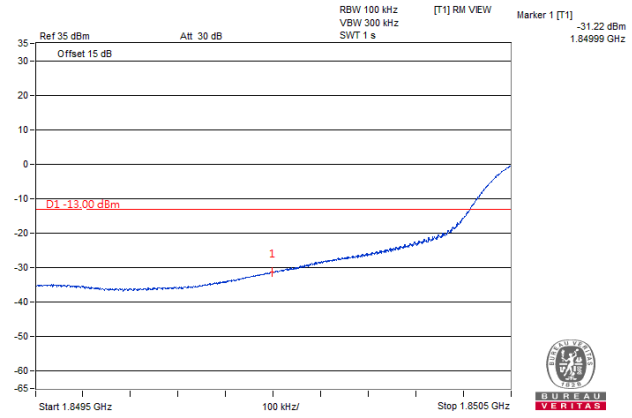
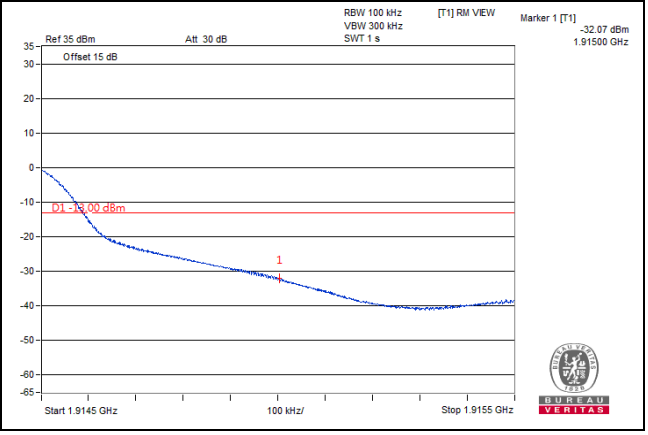
| LTE Band 2, Channel Bandwidth 15MHz | | | | | |
|---|---|---|---|---|---|
| Channel 18675 (1857.5MHz) | QPSK | 1 RB / 0 RB Offset | Channel 19125 (1902.5MHz) | QPSK | 1 RB / 74 RB Offset |
|  | | |  | | |
| Channel 18675 (1857.5MHz) | QPSK | 75 RB / 0 RB Offset | Channel 19125 (1902.5MHz) | QPSK | 75 RB / 0 RB Offset |
|  | | |  | | |

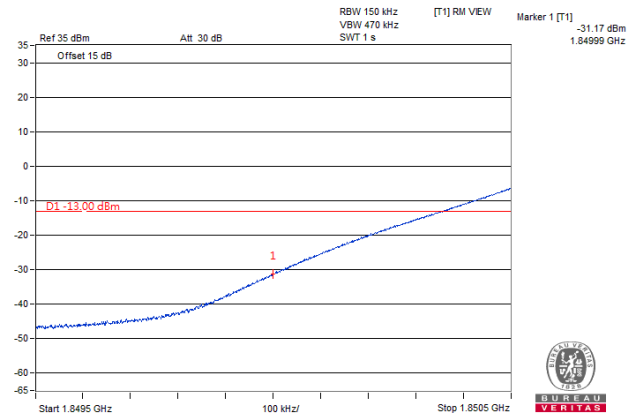
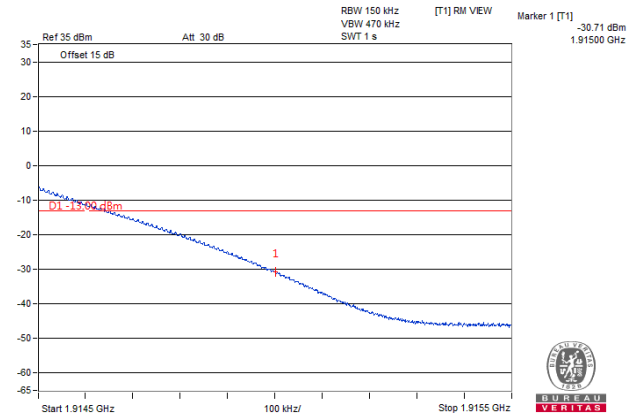
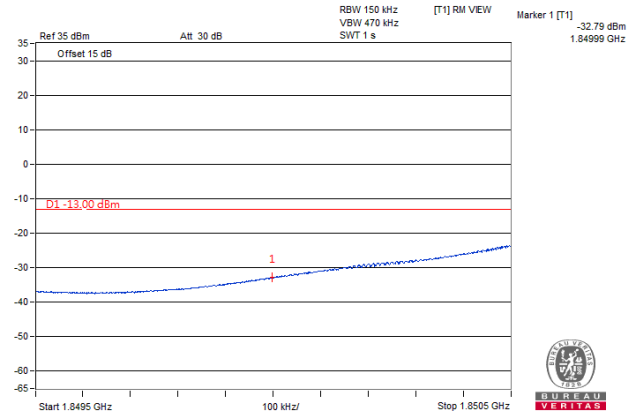
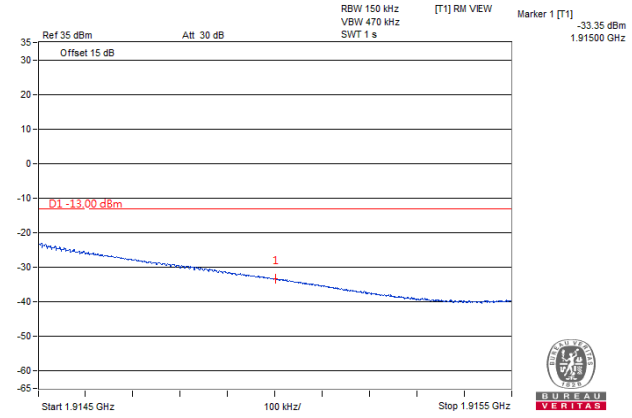
| LTE Band 2, Channel Bandwidth 20MHz | | | | | |
|---|---|---|---|---|---|
| Channel 18700 (1860.0MHz) | QPSK | 1 RB / 0 RB Offset | Channel 19100 (1900.0MHz) | QPSK | 1 RB / 99 RB Offset |
|  | | |  | | |
| Channel 18700 (1860.0MHz) | QPSK | 100 RB / 0 RB Offset | Channel 19100 (1900.0MHz) | QPSK | 100 RB / 0 RB Offset |
|  | | |  | | |

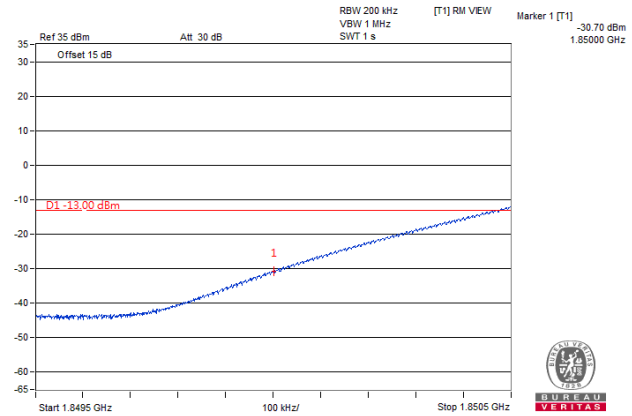
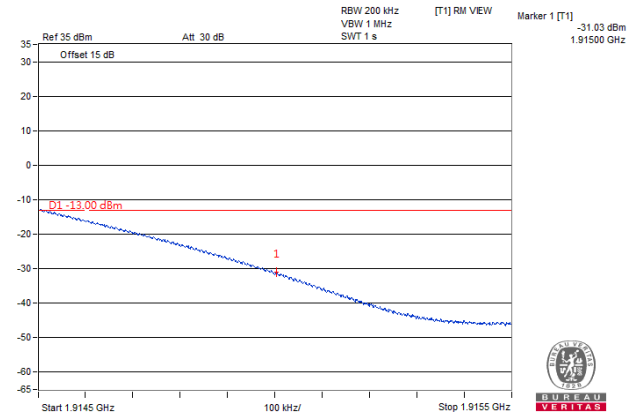
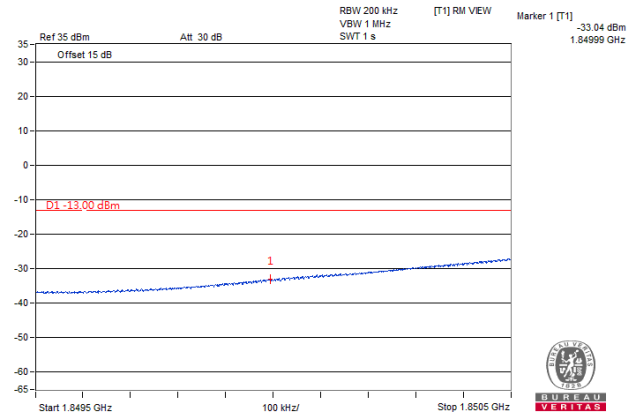
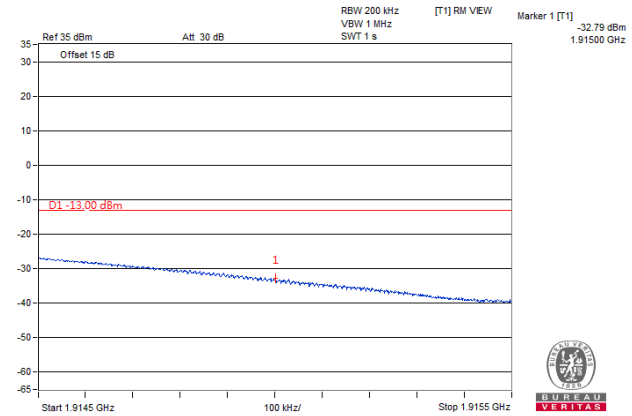
| LTE Band 25, Channel Bandwidth 1.4MHz | | | | | |
|---|---|---|---|---|---|
| Channel 26047 (1850.7MHz) | QPSK | 1 RB / 0 RB Offset | Channel 26683 (1914.3MHz) | QPSK | 1 RB / 5 RB Offset |
|  | | |  | | |
| Channel 26047 (1850.7MHz) | QPSK | 6 RB / 0 RB Offset | Channel 26683 (1914.3MHz) | QPSK | 6 RB / 0 RB Offset |
|  | | |  | | |

| LTE Band 25, Channel Bandwidth 3MHz | | | | | |
|---|---|---|---|---|---|
| Channel 26055 (1851.5MHz) | QPSK | 1 RB / 0 RB Offset | Channel 26675 (1913.5MHz) | QPSK | 1 RB / 14 RB Offset |
|  | | |  | | |
| Channel 26055 (1851.5MHz) | QPSK | 15 RB / 0 RB Offset | Channel 26675 (1913.5MHz) | QPSK | 15 RB / 0 RB Offset |
|  | | |  | | |

| LTE Band 25, Channel Bandwidth 5MHz | | | | | |
|---|---|---|---|---|---|
| Channel 26065 (1852.5MHz) | QPSK | 1 RB / 0 RB Offset | Channel 26665 (1912.5MHz) | QPSK | 1 RB / 24 RB Offset |
|   | | |   | | |
| Channel 26065 (1852.5MHz) | QPSK | 25 RB / 0 RB Offset | Channel 26665 (1912.5MHz) | QPSK | 25 RB / 0 RB Offset |
|   | | |   | | |

| LTE Band 25, Channel Bandwidth 10MHz | | | | | |
|---|---|---|---|---|---|
| Channel 26090 (1855.0MHz) | QPSK | 1 RB / 0 RB Offset | Channel 26640 (1910.0MHz) | QPSK | 1 RB / 49 RB Offset |
|  | | |  | | |
| Channel 26090 (1855.0MHz) | QPSK | 50 RB / 0 RB Offset | Channel 26640 (1910.0MHz) | QPSK | 50 RB / 0 RB Offset |
|  | | |  | | |

| LTE Band 25, Channel Bandwidth 15MHz | | | | | |
|---|---|---|---|---|---|
| Channel 26115 (1857.5MHz) | QPSK | 1 RB / 0 RB Offset | Channel 26615 (1907.5MHz) | QPSK | 1 RB / 74 RB Offset |
|  | | |  | | |
| Channel 26115 (1857.5MHz) | QPSK | 75 RB / 0 RB Offset | Channel 26615 (1907.5MHz) | QPSK | 75 RB / 0 RB Offset |
|  | | |  | | |

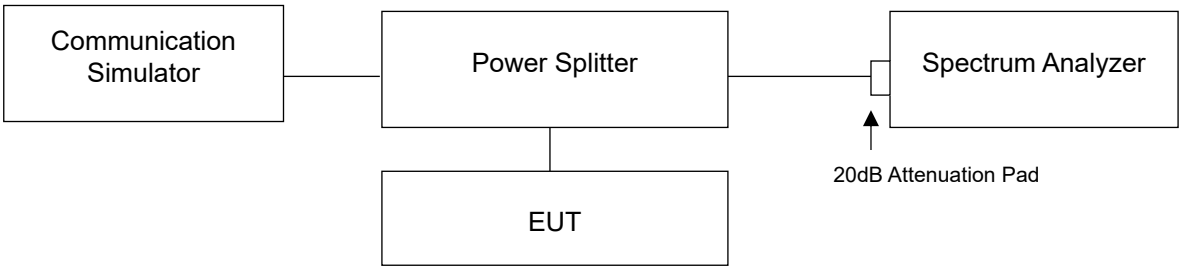
| LTE Band 25, Channel Bandwidth 20MHz | | | | | |
|---|---|---|---|---|---|
| Channel 26140 (1860.0MHz) | QPSK | 1 RB / 0 RB Offset | Channel 26590 (1905.0MHz) | QPSK | 1 RB / 99 RB Offset |
|  | | |  | | |
| Channel 26140 (1860.0MHz) | QPSK | 100 RB / 0 RB Offset | Channel 26590 (1905.0MHz) | QPSK | 100 RB / 0 RB Offset |
|  | | |  | | |

## 4.6 Peak to Average Ratio

### 4.6.1 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

### 4.6.2 Test Setup

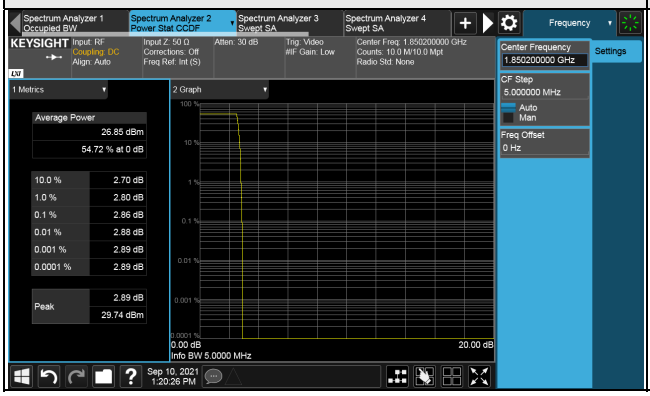
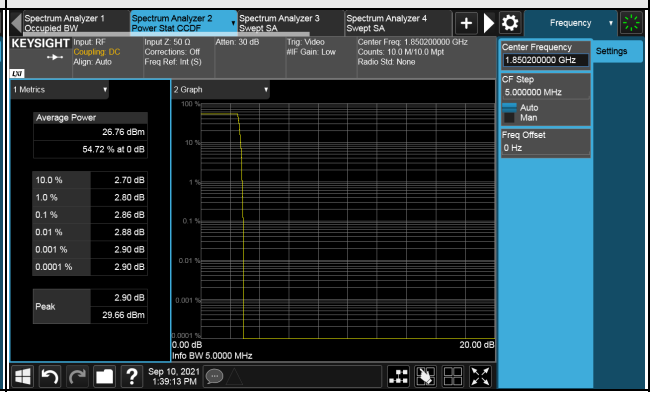



### 4.6.3 Test Procedures

a. Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;
b. Set the number of counts to a value that stabilizes the measured CCDF curve;
c. Record the maximum PAPR level associated with a probability of 0.1%.

### 4.6.4 Test Results

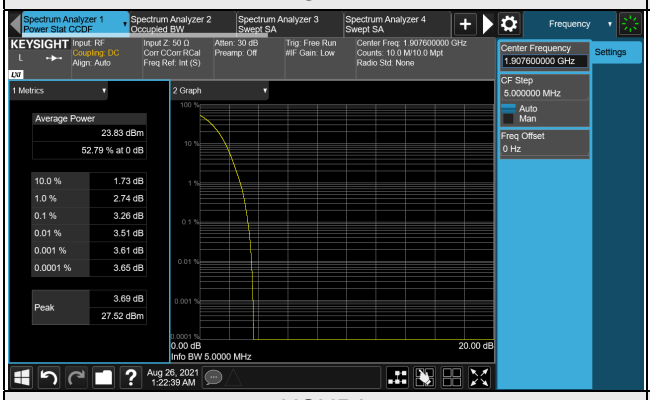
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | |
|---|---|---|---|
| | | GPRS | EDGE |
| 512 | 1850.2 | 2.86 | 2.86 |
| 661 | 1880.0 | 2.85 | 2.84 |
| 810 | 1909.8 | 2.84 | 2.84 |

| Spectrum Plot of Worst Value | |
|---|---|
| GPRS | EDGE |
|  |  |

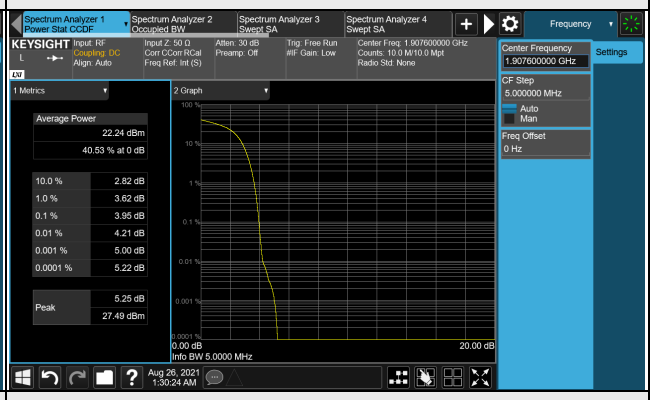
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | |
|---|---|---|---|---|
| | | WCDMA | HSDPA | HSUPA |
| 9262 | 1852.4 | 3.20 | 3.81 | 3.78 |
| 9400 | 1880.0 | 3.21 | 3.88 | 3.86 |
| 9538 | 1907.6 | 3.26 | 3.95 | 3.89 |

Spectrum Plot of Worst Value

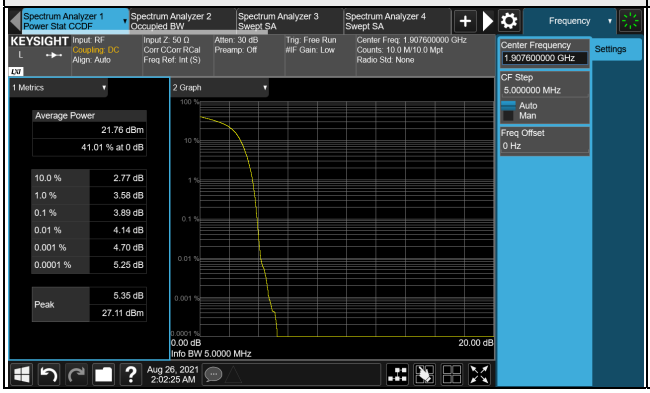
WCDMA




HSDPA




HSUPA

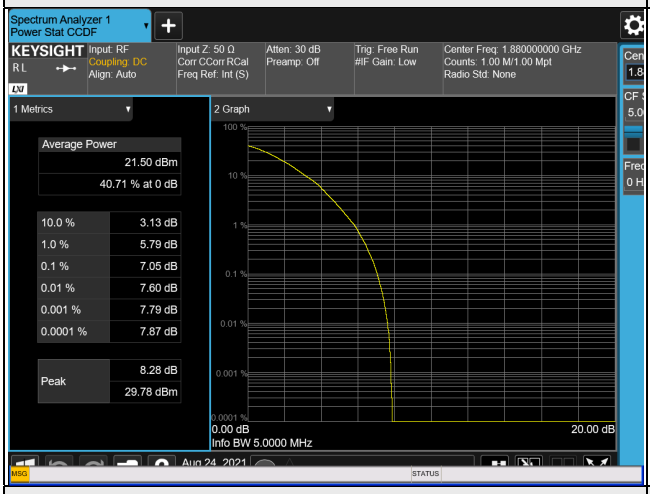


| LTE Band 2, Channel Bandwidth 1.4MHz | | | | |
|---|---|---|---|---|
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 18607 | 1850.7 | 4.15 | 5.65 | 6.69 |
| 18900 | 1880.0 | 4.16 | 5.80 | 7.05 |
| 19193 | 1909.3 | 3.91 | 5.50 | 6.50 |
| LTE Band 2, Channel Bandwidth 3MHz | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 18615 | 1851.5 | 3.87 | 5.57 | 6.75 |
| 18900 | 1880.0 | 3.88 | 5.65 | 7.12 |
| 19185 | 1908.5 | 3.83 | 5.47 | 6.70 |
| LTE Band 2, Channel Bandwidth 5MHz | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 18625 | 1852.5 | 3.87 | 5.57 | 6.69 |
| 18900 | 1880.0 | 3.91 | 5.62 | 7.12 |
| 19175 | 1907.5 | 3.75 | 5.50 | 6.89 |
| LTE Band 2, Channel Bandwidth 10MHz | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 18650 | 1855.0 | 3.89 | 5.59 | 6.64 |
| 18900 | 1880.0 | 3.89 | 5.69 | 7.05 |
| 19150 | 1905.0 | 3.69 | 5.42 | 6.89 |
| LTE Band 2, Channel Bandwidth 15MHz | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 18675 | 1857.5 | 3.72 | 5.49 | 6.64 |
| 18900 | 1880.0 | 3.79 | 5.54 | 7.08 |
| 19125 | 1902.5 | 3.69 | 5.38 | 7.03 |

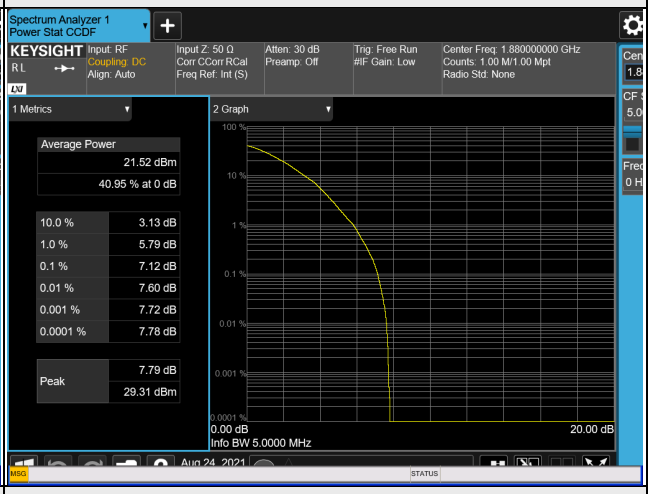
| LTE Band 2, Channel Bandwidth 20MHz | | | | |
|---|---|---|---|---|
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 18700 | 1860.0 | 3.72 | 5.54 | 6.72 |
| 18900 | 1880.0 | 3.72 | 5.51 | 7.12 |
| 19100 | 1900.0 | 3.72 | 5.49 | 6.73 |

## Spectrum Plot of Worst Value

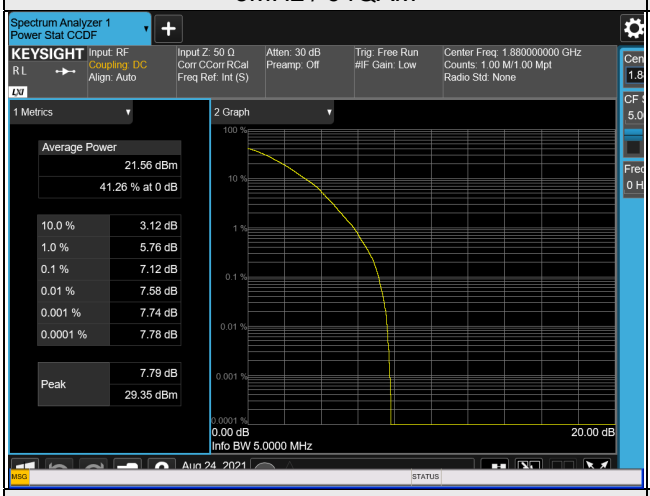
### 1.4MHz / 64QAM



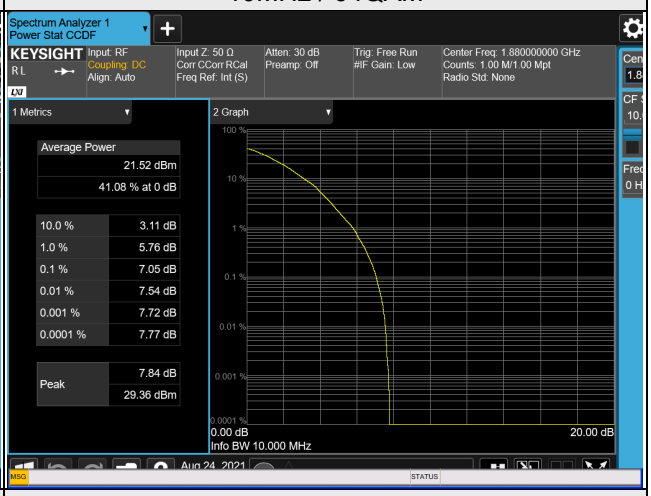

### 3MHz / 64QAM




### 5MHz / 64QAM




### 10MHz / 64QAM




### 15MHz / 64QAM

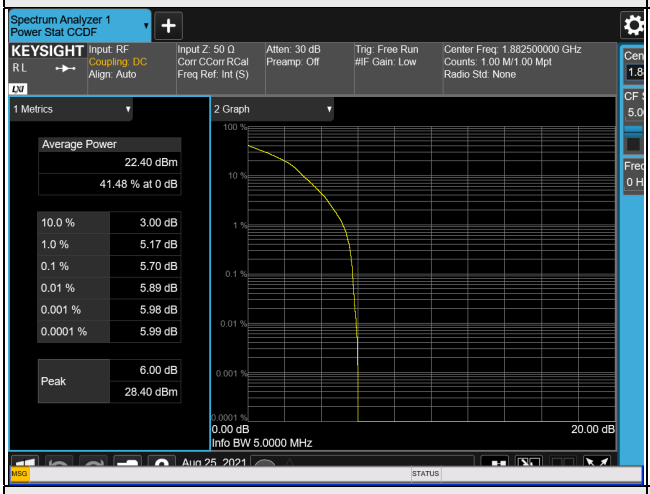
### 20MHz / 64QAM

| LTE Band 25, Channel Bandwidth 1.4MHz | | | | |
|---|---|---|---|---|
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 26047 | 1850.7 | 3.88 | 5.43 | 5.46 |
| 26365 | 1882.5 | 4.04 | 5.66 | 5.70 |
| 26683 | 1914.3 | 3.91 | 5.39 | 5.40 |
| LTE Band 25, Channel Bandwidth 3MHz | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 26055 | 1851.5 | 3.67 | 5.28 | 5.39 |
| 26365 | 1882.5 | 3.75 | 5.51 | 5.59 |
| 26675 | 1913.5 | 3.70 | 5.31 | 5.31 |
| LTE Band 25, Channel Bandwidth 5MHz | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 26065 | 1852.5 | 3.64 | 5.27 | 5.33 |
| 26365 | 1882.5 | 3.74 | 5.40 | 5.55 |
| 26665 | 1912.5 | 3.72 | 5.33 | 5.29 |
| LTE Band 25, Channel Bandwidth 10MHz | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 26090 | 1855.0 | 3.56 | 5.19 | 5.22 |
| 26365 | 1882.5 | 3.63 | 5.37 | 5.39 |
| 26640 | 1910.0 | 3.67 | 5.46 | 5.46 |
| LTE Band 25, Channel Bandwidth 15MHz | | | | |
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 26115 | 1857.5 | 3.61 | 5.24 | 5.30 |
| 26365 | 1882.5 | 3.61 | 5.43 | 5.43 |
| 26615 | 1907.5 | 3.63 | 5.31 | 5.41 |

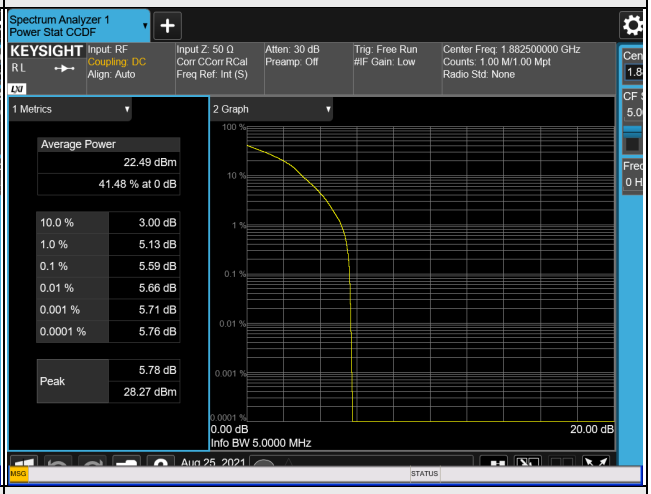
| LTE Band 25, Channel Bandwidth 20MHz | | | | |
|---|---|---|---|---|
| Channel | Frequency (MHz) | Peak To Average Ratio (dB) | | |
| | | QPSK | 16QAM | 64QAM |
| 26140 | 1860.0 | 3.57 | 5.19 | 5.21 |
| 26365 | 1882.5 | 3.62 | 5.31 | 5.36 |
| 26590 | 1905.0 | 3.61 | 5.46 | 5.35 |

## Spectrum Plot of Worst Value

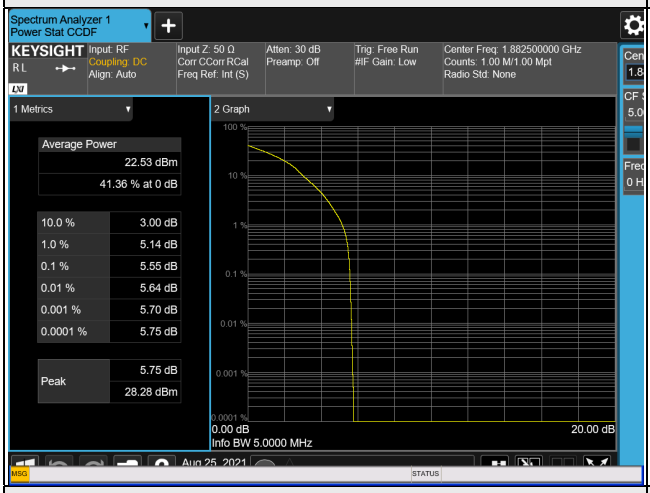
### 1.4MHz / 64QAM



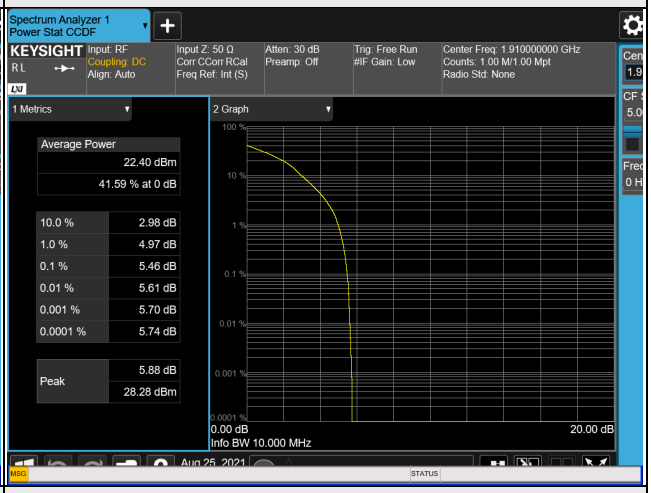

### 3MHz / 64QAM



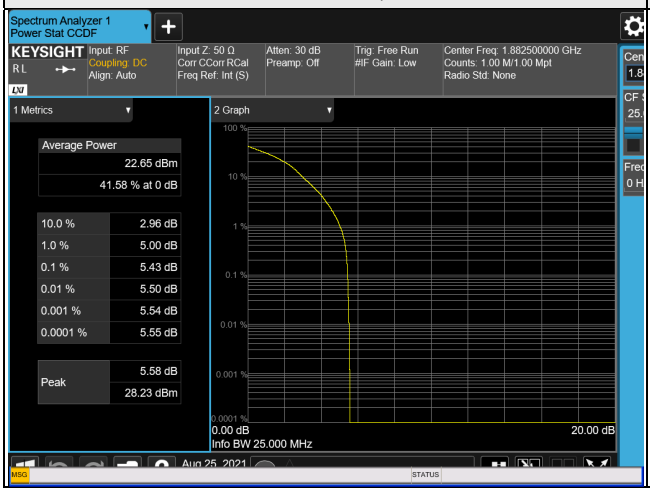

### 5MHz / 64QAM



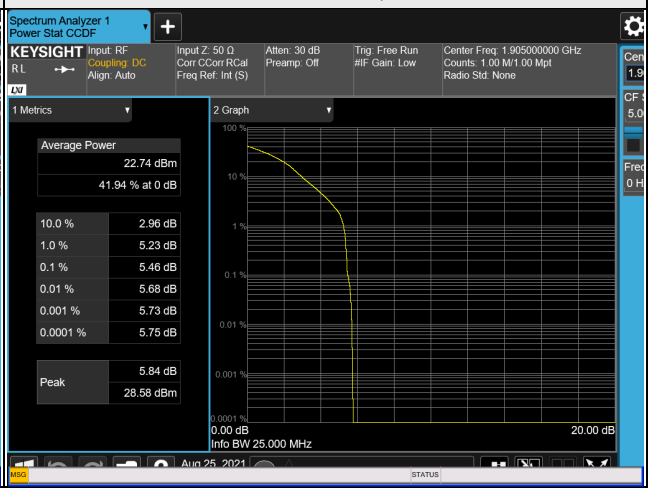

### 10MHz / 64QAM




### 15MHz / 64QAM




### 20MHz / 16QAM

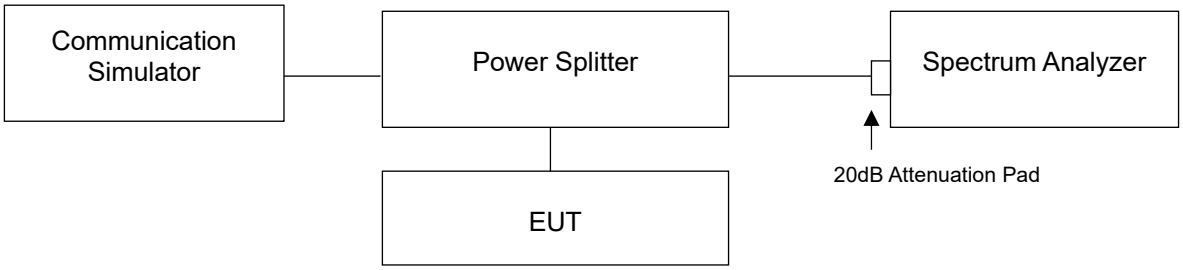


## 4.7 Conducted Spurious Emissions

### 4.7.1 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 –13dBm.

### 4.7.2 Test Setup




### 4.7.3 Test Procedure

a. All measurements were done at low, middle and high channels operational frequency range.

a. Measuring frequency range is from 9kHz to 20GHz / 26.5GHz. 20dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz are used for conducted emission measurement.