ACCREDITED
Certificate # 3939.01

# FCC TEST REPORT
# (PART 24)

| | |
|---|---|
| Applicant: | HMD Global Oy |
| Address: | Bertel Jungin aukio 9, 02600 Espoo, Finland |

| | |
|---|---|
| Manufacturer or Supplier: | HMD Global Oy |
| Address: | Bertel Jungin aukio 9, 02600 Espoo, Finland |
| Product: | Multi-band GSM/WCDMA/LTE phone with Bluetooth&WLAN |
| Brand Name: | NOKIA |
| Model Name: | TA-1404 |
| FCC ID: | 2AJOTTA-1404 |
| Date of tests: | Nov. 25, 2021 ~ Dec. 12, 2021 |

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

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

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

| Prepared by Simon Wang<br>Engineer / Mobile Department | Approved by Luke Lu<br>Manager / Mobile Department |
|---|---|
| Simon<br>Date: Dec. 13, 2021 | Luke Lu<br>Date: Dec. 13, 2021 |

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# RELEASE CONTROL RECORD

| ISSUE NO. | REASON FOR CHANGE | DATE ISSUED |
|---|---|---|
| W7L-P21100018-1RF05 | Original release | Dec. 13, 2021 |

# 1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

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

## 1.1 MEASUREMENT UNCERTAINTY

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

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

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

## 1.2 TEST SITE AND INSTRUMENTS

| Equipment | Manufacturer | Model No. | Serial No. | Last Cal. | Next Cal. |
|---|---|---|---|---|---|
| MXE EMI Receiver | KEYSIGHT | N9038A-544 | MY54450026 | Apr. 22,21 | Apr. 21,22 |
| EXA Signal Analyzer | KEYSIGHT | N9010A-544 | MY54510355 | Jun. 03,21 | Jun. 02,22 |
| Bilog Antenna 2 | ETS-LINDGREN | 3143B | 00161965 | Mar. 05,21 | Mar. 04,22 |
| Horn Antenna 2 | ETS-LINDGREN | 3117 | 00168692 | Apr. 02,21 | Apr. 01,22 |
| Horn Antenna (18GHz-40GHz) | N/A | QWH-SL-18-40-K-SG/QMS-00361 | 15433 | Aug. 25, 21 | Aug. 24, 22 |
| Radio Communication Analyzer | ANRITSU | MT8820C | 6201465426 | Feb. 25,21 | Feb. 24,22 |
| Signal Pre-Amplifier | EMSI | EMC 9135 | 980249 | Jun. 02,21 | Jun. 01,22 |
| Signal Pre-Amplifier | EMSI | EMC 012645B | 980257 | Jun. 03,21 | Jun. 02,22 |
| Signal Pre-Amplifier | EMSI | EMC 184045B | 980259 | Apr. 22,21 | Apr. 21,22 |
| 3m Semi-anechoic Chamber | ETS-LINDGREN | 9m*6m*6m | Euroshieldpn-CT0001143-1216 | May. 19,20 | May. 18,23 |
| Test Software | E3 | V 9.160323 | N/A | N/A | N/A |
| Test Software | ADT | ADT_Radiated_V 7.6.15.9.2 | N/A | N/A | N/A |
| 10dB Attenuator | JFW/USA | 50HF-010-SMA | 1505 | Jun. 03,21 | Jun. 02,22 |
| Power Meter | Anritsu | ML2495A | 1506002 | Apr. 07,21 | Apr. 06,22 |
| Power Sensor | Anritsu | MA2411B | 1339352 | May. 07,21 | May. 06,22 |
| Temperature Chamber | ESPEC | SH-242 | 93000855 | Jun. 02,21 | Jun. 01,22 |
| MXG Analog Microvave Signal Generator | KEYSIGHT | N5183A | MY50143024 | Mar. 05,21 | Mar. 04,22 |
| Power Divider | MCLI/USA | PS2-15 | 24880 | N/A | N/A |

**NOTE:** 1. The calibration interval of the above test instruments is 12 months or 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

2. The test was performed in 3m Semi-anechoic Chamber and RF Oven Room.

3. The horn antenna is used only for the measurement of emission frequency above 1GHz if tested.

4. The FCC Site Registration No. is 525120; The Designation No. is CN1171.

# 2 GENERAL INFORMATION

## 2.1 GENERAL DESCRIPTION OF EUT

| | | |
|---|---|---|
| **PRODUCT** | Multi-band GSM/WCDMA/LTE phone with Bluetooth&WLAN | |
| **BRAND NAME** | NOKIA | |
| **MODEL NAME** | TA-1404 | |
| **NOMINAL VOLTAGE** | 5.0/9.0/12.0Vdc(adapter or host equipment)<br>3.85Vdc (Li-ion, battery) | |
| **MODULATION TYPE** | **GSM/GPRS:** GMSK<br>**EDGE:** 8PSK<br>**WCDMA:** QPSK<br>**LTE Band 2:** QPSK, 16QAM, 64QAM | |
| **FREQUENCY RANGE** | **GSM/GPRS, EDGE** | 1850.2MHz ~ 1909.8MHz |
| | **WCDMA** | 1852.4MHz ~ 1907.6MHz |
| | **LTE Band 2<br>Channel Bandwidth: 1.4MHz** | 1850.7MHz ~ 1909.3MHz |
| | **LTE Band 2<br>Channel Bandwidth: 3MHz** | 1851.5MHz ~ 1908.5MHz |
| | **LTE Band 2<br>Channel Bandwidth: 5MHz** | 1852.5MHz ~ 1907.5MHz |
| | **LTE Band 2<br>Channel Bandwidth: 10MHz** | 1855.0MHz ~ 1905.0MHz |
| | **LTE Band 2<br>Channel Bandwidth: 15MHz** | 1857.5MHz ~ 1902.5MHz |
| | **LTE Band 2<br>Channel Bandwidth: 20MHz** | 1860.0MHz ~ 1900.0MHz |
| **MAX. EIRP POWER** | **GSM/GPRS** | 1183.04mW |
| | **EDGE** | 642.69mW |
| | **WCDMA** | 318.42mW |
| | **LTE Band 2<br>Channel Bandwidth: 1.4MHz** | 316.23mW |
| | **LTE Band 2<br>Channel Bandwidth: 3MHz** | 313.33mW |
| | **LTE Band 2<br>Channel Bandwidth: 5MHz** | 314.05mW |
| | **LTE Band 2<br>Channel Bandwidth: 10MHz** | 311.89mW |
| | **LTE Band 2<br>Channel Bandwidth: 15MHz** | 316.23mW |

| | | |
|---|---|---|
| | **LTE Band 2 Channel Bandwidth: 20MHz** | 317.69mW |
| **EMISSION DESIGNATOR** | **GSM/GPRS** | 249KGXW |
| | **EDGE** | 258KG7W |
| | **WCDMA** | 4M18F9W |
| | **LTE Band 2 Channel Bandwidth: 1.4MHz** | QPSK: 1M12G7D |
| | | 16QAM: 1M12W7D |
| | | 64QAM: 1M12W7D |
| | **LTE Band 2 Channel Bandwidth: 3MHz** | QPSK: 2M76G7D |
| | | 16QAM: 2M77W7D |
| | | 64QAM: 2M77W7D |
| | **LTE Band 2 Channel Bandwidth: 5MHz** | QPSK: 4M56G7D |
| | | 16QAM: 4M55W7D |
| | | 64QAM: 4M56W7D |
| | **LTE Band 2 Channel Bandwidth: 10MHz** | QPSK: 9M09G7D |
| | | 16QAM: 9M08W7D |
| | | 64QAM: 9M06W7D |
| | **LTE Band 2 Channel Bandwidth: 15MHz** | QPSK: 13M6G7D |
| | | 16QAM: 13M7W7D |
| | | 64QAM: 13M7W7D |
| | **LTE Band 2 Channel Bandwidth: 20MHz** | QPSK: 18M2G7D |
| | | 16QAM: 18M2W7D |
| | | 64QAM: 18M2W7D |
| **ANTENNA TYPE** | Fixed Internal Antenna with 0.9dBi gain for GSM1900/ WCDMA II/LTE B2 | |
| **HW VERSION** | 19655-1-11M12 | |
| **SW VERSION** | 00WW_0_010 | |
| **I/O PORTS** | Refer to user's manual | |
| **CABLE SUPPLIED** | USB1 cable: unshielded without ferrite, 1.0meter<br>USB2 cable: unshielded without ferrite, 1.0meter<br>USB3 cable: unshielded without ferrite, 1.0meter<br>Earphone1: non-shielded cable, with w/o ferrite core, 1.2 meter<br>Earphone2: non-shielded cable, with w/o ferrite core, 1.2 meter | |
| **EXTREME TEMPERATURE** | 0-40 ℃ | |
| **EXTREME VOLTAGE** | 3.5V - 4.4V | |

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

2. The EUT incorporates a SISO function. Physically, the EUT provides one completed transmitter and one receiver.

| MODULATION MODE | TX FUNCTION |
|---|---|
| GSM/GPRS/EDGE | 1TX/1RX |
| WCDMA | 1TX/1RX |
| LTE | 1TX/1RX |

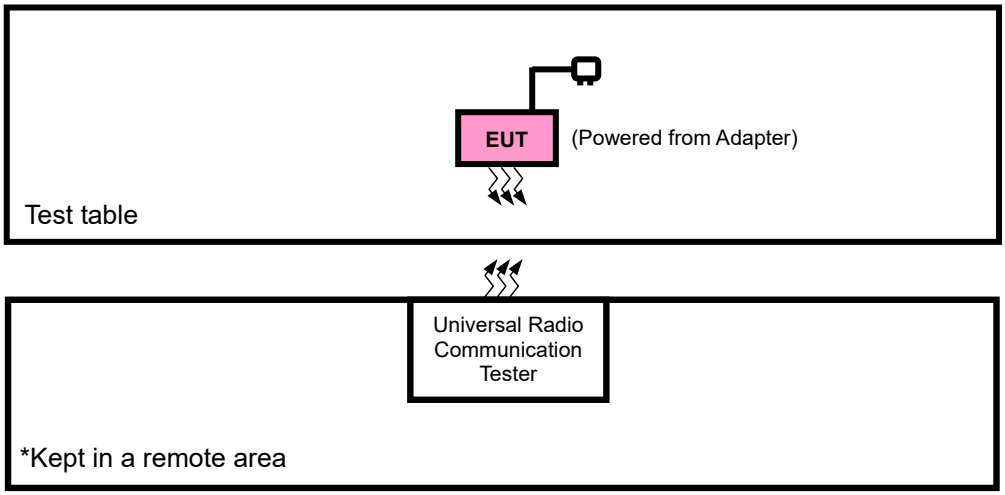
3. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

**List of Accessory:**

| ACCESSORIES | BRAND | MANUFACTURER | MODEL | SPECIFICATION |
|---|---|---|---|---|
| Battery | Nokia | Hunan Gaoyuan Battery Co., Ltd. | WT341 | Capacity：3.85 Vdc, 4900mAh |
| AC Adapter 1 | Nokia | ShenZhenBaiJunDa ElectronicCO.,LTD. | AD-010U | I/P: 100-240Vac, 0.35A, O/P: 5.0Vdc, 2.0A |
| AC Adapter 2 | Nokia | SHENZHEN TIANYIN ELECTRONICS CO., LTD. | CH-21U | I/P: 100-240Vac, 0.3A, O/P: 5.0Vdc, 2.0A |
| AC Adapter 3 | Nokia | YuTong Electronics(HuiZhou) Co.,Ltd | PA-US5V2A-03 6 | I/P: 100-240Vac, 0.5A, O/P: 5.0Vdc, 2.0A |
| AC Adapter 4 | Nokia | Dongguan Aohai Technology Co., Ltd. | A829US | I/P: 100 - 240Vac, 0.5A, O/P:5.0 Vdc,3A/9.0 Vdc, 2.23 A/12.0 Vdc,1.67A |
| Earphone 1 | Nokia | NEW LEADER INDUSTRY CO.,LTD | HS-34 | Signal Line, 1.2meter |
| Earphone 2 | Nokia | Guangdong Wivtak Technology Co., Ltd. | HS-34 | Signal Line, 1.2meter |
| USB Cable 1 | Nokia | HUIZHOU WASHIN ELECTRONICS CO.,LTD | CB-36A | Signal Line, 1.0meter |
| USB Cable 2 | Nokia | Shenzhen BRL Technology Co.,Ltd. | CB-36A | Signal Line, 1.0meter |
| USB Cable 3 | Nokia | Saibao(Jiangi) Communication Industial Co.,Ltd | CB-12A | Signal Line, 1.0meter |

## 2.2 CONFIGURATION OF SYSTEM UNDER TEST

### FOR RADIATION EMISSION TEST



## 2.3 DESCRIPTION OF SUPPORT UNITS

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

| NO. | PRODUCT | BRAND | MODEL NO. | SERIAL NO. | FCC ID |
|---|---|---|---|---|---|
| 1 | DC source | Kikusui/JP | PMX18-5A | 0000001 | N/A |

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

## 2.4 TEST ITEM AND TEST CONFIGURATION

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

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

**GSM MODE**

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

## WCDMA

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

## LTE BAND 2 MODE

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

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

**TEST CONDITION:**

| TEST ITEM | ENVIRONMENTAL CONDITIONS | INPUT POWER | TESTED BY |
|---|---|---|---|
| EIRP | 25deg. C, 57%RH | DC 5V By Adapter | Jace Hu |
| FREQUENCY STABILITY | 23deg. C, 61%RH | DC5V By Adapter | James Fu |
| OCCUPIED BANDWIDTH | 23deg. C, 61%RH | DC5V By Adapter | James Fu |
| PEAK TO AVERAGE RATIO | 23deg. C, 61%RH | DC 5V By Adapter | James Fu |
| BAND EDGE | 23deg. C, 61%RH | DC5V By Adapter | James Fu |
| CONDCUDETED EMISSION | 23deg. C, 61%RH | DC5V By Adapter | James Fu |
| RADIATED EMISSION | 23deg. C, 70%RH | DC 3.85V By Battery | Jace Hu |

## 2.5 EUT OPERATING CONDITIONS

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

## 2.6 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

**FCC 47 CFR Part 2**

**FCC 47 CFR Part 24**

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

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

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

**ANSI C63.26-2015**

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

# 3 TEST TYPES AND RESULTS

## 3.1 OUTPUT POWER MEASUREMENT

### 3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

Mobile and portable stations are limited to 2 watts EIRP.

### 3.1.2 TEST PROCEDURES

**EIRP MEASUREMENT:**

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

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

Where:

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

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

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

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

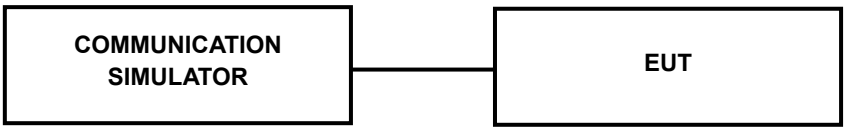
**CONDUCTED POWER MEASUREMENT:**

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

## 3.1.3 TEST SETUP

**EIRP / ERP Measurement:**

**CONDUCTED POWER MEASUREMENT:**




## 3.1.4 TEST RESULTS

**CONDUCTED OUTPUT POWER (dBm)**

**Ant0:**

| Band | GSM1900 | | | Max. Tune-up Power |
|---|---|---|---|---|
| Channel | 512 | 661 | 810 | |
| Frequency | 1850.2 | 1880 | 1909.8 | |
| GSM (GMSK, 1Tx-slot) | 29.65 | 29.71 | **29.83** | 31.0 |
| GPRS (GMSK, 1Tx-slot) | 29.66 | 29.70 | 29.81 | 31.0 |
| GPRS (GMSK, 2Tx-slot) | 27.51 | 27.48 | 27.48 | 29.0 |
| GPRS (GMSK, 3Tx-slot) | 25.91 | 25.87 | 25.87 | 27.0 |
| GPRS (GMSK, 4Tx-slot) | 23.85 | 23.79 | 23.78 | 25.0 |
| EDGE (8PSK, 1Tx-slot) | 27.15 | 27.18 | 26.95 | 27.5 |
| EDGE (8PSK, 2Tx-slot) | 25.84 | 25.78 | 25.56 | 26.5 |
| EDGE (8PSK, 3Tx-slot) | 23.45 | 23.41 | 23.37 | 23.5 |
| EDGE (8PSK, 4Tx-slot) | 21.15 | 21.32 | 21.13 | 21.5 |

| Band | WCDMA II | | | Max. Tune-up Power |
|---|---|---|---|---|
| Channel | 9262 | 9400 | 9538 | |
| Frequency | 1852.4 | 1880 | 1907.6 | |
| RMC 12.2K | 24.09 | **24.13** | 24.05 | 25.00 |
| HSDPA Subtest-1 | 23.08 | 23.14 | 23.00 | 24.00 |
| HSDPA Subtest-2 | 23.01 | 23.06 | 23.04 | 24.00 |
| HSDPA Subtest-3 | 22.57 | 22.62 | 22.52 | 24.00 |
| HSDPA Subtest-4 | 22.51 | 22.58 | 22.46 | 24.00 |
| DC-HSDPA Subtest-1 | 23.02 | 23.11 | 23.01 | 24.00 |
| DC-HSDPA Subtest-2 | 23.02 | 23.08 | 22.94 | 24.00 |
| DC-HSDPA Subtest-3 | 22.48 | 22.58 | 22.43 | 24.00 |
| DC-HSDPA Subtest-4 | 22.53 | 22.53 | 22.46 | 24.00 |
| HSUPA Subtest-1 | 23.09 | 23.19 | 23.04 | 24.00 |
| HSUPA Subtest-2 | 21.19 | 21.19 | 21.12 | 24.00 |
| HSUPA Subtest-3 | 22.20 | 22.27 | 22.15 | 24.00 |
| HSUPA Subtest-4 | 21.06 | 21.15 | 21.05 | 24.00 |
| HSUPA Subtest-5 | 23.17 | 23.23 | 23.09 | 24.00 |
| HSPA+ Subtest-1 | 20.62 | 20.67 | 20.65 | 24.00 |

**LTE BAND 2**

| Band/BW | Modulation | RB Size | RB Offset | Low CH 18607 | Mid CH 18900 | High CH 19193 | MPR |
|---|---|---|---|---|---|---|---|
| | | | | Frequency 1850.7 MHz | Frequency 1880 MHz | Frequency 1909.3 MHz | |
| 2/ 1.4 | QPSK | 1 | 0 | 23.93 | 23.91 | 23.87 | 0 |
| | | 1 | 2 | 24.00 | 23.82 | 24.01 | 0 |
| | | 1 | 5 | 24.10 | 23.98 | 23.87 | 0 |
| | | 3 | 0 | 23.81 | 23.81 | 23.86 | 0 |
| | | 3 | 1 | 23.85 | 23.93 | 23.88 | 0 |
| | | 3 | 3 | 23.94 | 23.79 | 23.85 | 0 |
| | | 6 | 0 | 22.93 | 22.82 | 22.88 | 1 |
| | 16QAM | 1 | 0 | 23.19 | 22.77 | 22.84 | 1 |
| | | 1 | 2 | 23.20 | 22.58 | 22.91 | 1 |
| | | 1 | 5 | 23.27 | 22.61 | 23.22 | 1 |
| | | 3 | 0 | 22.78 | 22.94 | 22.94 | 1 |
| | | 3 | 1 | 22.83 | 23.03 | 22.98 | 1 |
| | | 3 | 3 | 22.98 | 22.86 | 23.03 | 1 |
| | | 6 | 0 | 22.01 | 21.91 | 21.89 | 2 |
| | 64QAM | 1 | 0 | 21.94 | 21.92 | 21.89 | 2 |
| | | 1 | 2 | 21.85 | 21.76 | 21.91 | 2 |
| | | 1 | 5 | 21.92 | 21.78 | 21.80 | 2 |
| | | 3 | 0 | 21.92 | 22.02 | 22.03 | 2 |
| | | 3 | 1 | 21.86 | 21.85 | 21.82 | 2 |
| | | 3 | 3 | 21.78 | 21.70 | 21.85 | 2 |
| | | 6 | 0 | 20.53 | 20.57 | 20.66 | 3 |

| Band/BW | Modulation | RB Size | RB Offset | Low CH 18615 | Mid CH 18900 | High CH 19185 | MPR |
|---|---|---|---|---|---|---|---|
| | | | | Frequency 1851.5 MHz | Frequency 1880 MHz | Frequency 1908.5 MHz | |
| 2/ 3 | QPSK | 1 | 0 | 23.95 | 23.93 | 23.86 | 0 |
| | | 1 | 7 | 23.96 | 23.83 | 24.01 | 0 |
| | | 1 | 14 | 24.06 | 23.98 | 23.87 | 0 |
| | | 8 | 0 | 22.80 | 22.84 | 22.86 | 1 |
| | | 8 | 3 | 22.78 | 22.93 | 22.90 | 1 |
| | | 8 | 7 | 22.91 | 22.86 | 22.89 | 1 |
| | | 15 | 0 | 22.90 | 22.83 | 22.82 | 1 |
| | 16QAM | 1 | 0 | 23.16 | 22.83 | 22.87 | 1 |
| | | 1 | 7 | 23.17 | 22.61 | 22.89 | 1 |
| | | 1 | 14 | 23.30 | 22.61 | 23.22 | 1 |
| | | 8 | 0 | 21.74 | 21.95 | 21.94 | 2 |
| | | 8 | 3 | 21.88 | 21.98 | 22.01 | 2 |
| | | 8 | 7 | 22.00 | 21.84 | 21.99 | 2 |
| | | 15 | 0 | 22.01 | 21.85 | 21.92 | 2 |
| | 64QAM | 1 | 0 | 22.00 | 21.95 | 21.83 | 2 |
| | | 1 | 7 | 21.88 | 21.70 | 21.90 | 2 |
| | | 1 | 14 | 21.93 | 21.80 | 21.80 | 2 |
| | | 8 | 0 | 20.95 | 21.06 | 21.04 | 3 |
| | | 8 | 3 | 20.90 | 20.79 | 20.87 | 3 |
| | | 8 | 7 | 20.75 | 20.74 | 20.71 | 3 |
| | | 15 | 0 | 20.55 | 20.54 | 20.70 | 3 |

| Band/BW | Modulation | RB Size | RB Offset | Low CH 18625 | Mid CH 18900 | High CH 19175 | MPR |
|---|---|---|---|---|---|---|---|
| | | | | Frequency 1852.5 MHz | Frequency 1880 MHz | Frequency 1907.5 MHz | |
| 2/ 5 | QPSK | 1 | 0 | 23.96 | 23.88 | 23.87 | 0 |
| | | 1 | 12 | 24.01 | 23.80 | 24.01 | 0 |
| | | 1 | 24 | 24.07 | 23.97 | 23.91 | 0 |
| | | 12 | 0 | 22.83 | 22.84 | 22.83 | 1 |
| | | 12 | 6 | 22.78 | 22.94 | 22.91 | 1 |
| | | 12 | 13 | 22.95 | 22.82 | 22.90 | 1 |
| | | 25 | 0 | 22.88 | 22.86 | 22.85 | 1 |
| | 16QAM | 1 | 0 | 23.17 | 22.79 | 22.87 | 1 |
| | | 1 | 12 | 23.14 | 22.64 | 22.88 | 1 |
| | | 1 | 24 | 23.30 | 22.61 | 23.21 | 1 |
| | | 12 | 0 | 21.74 | 21.93 | 21.91 | 2 |
| | | 12 | 6 | 21.85 | 22.02 | 21.97 | 2 |
| | | 12 | 13 | 21.95 | 21.86 | 22.02 | 2 |
| | | 25 | 0 | 22.01 | 21.86 | 21.89 | 2 |
| | 64QAM | 1 | 0 | 21.94 | 21.92 | 21.89 | 2 |
| | | 1 | 12 | 21.85 | 21.76 | 21.90 | 2 |
| | | 1 | 24 | 21.86 | 21.85 | 21.80 | 2 |
| | | 12 | 0 | 20.96 | 21.03 | 21.03 | 3 |
| | | 12 | 6 | 20.84 | 20.86 | 20.86 | 3 |
| | | 12 | 13 | 20.79 | 20.73 | 20.78 | 3 |
| | | 25 | 0 | 20.51 | 20.60 | 20.68 | 3 |

| Band/BW | Modulation | RB Size | RB Offset | Low CH 18650 | Mid CH 18900 | High CH 19150 | MPR |
|---|---|---|---|---|---|---|---|
| | | | | Frequency 1855 MHz | Frequency 1880 MHz | Frequency 1905 MHz | |
| 2/ 10 | QPSK | 1 | 0 | 23.93 | 23.91 | 23.87 | 0 |
| | | 1 | 24 | 24.01 | 23.80 | 24.02 | 0 |
| | | 1 | 49 | 24.04 | 24.01 | 23.87 | 0 |
| | | 25 | 0 | 22.84 | 22.83 | 22.86 | 1 |
| | | 25 | 12 | 22.84 | 22.88 | 22.91 | 1 |
| | | 25 | 25 | 22.93 | 22.79 | 22.89 | 1 |
| | | 50 | 0 | 22.93 | 22.86 | 22.82 | 1 |
| | 16QAM | 1 | 0 | 23.17 | 22.76 | 22.83 | 1 |
| | | 1 | 24 | 23.19 | 22.60 | 22.91 | 1 |
| | | 1 | 49 | 23.30 | 22.62 | 23.18 | 1 |
| | | 25 | 0 | 21.76 | 21.91 | 21.97 | 2 |
| | | 25 | 12 | 21.89 | 21.96 | 22.02 | 2 |
| | | 25 | 25 | 21.94 | 21.87 | 21.99 | 2 |
| | | 50 | 0 | 22.05 | 21.85 | 21.93 | 2 |
| | 64QAM | 1 | 0 | 21.93 | 21.93 | 21.86 | 2 |
| | | 1 | 24 | 21.90 | 21.72 | 21.94 | 2 |
| | | 1 | 49 | 21.92 | 21.79 | 21.77 | 2 |
| | | 25 | 0 | 20.94 | 21.00 | 21.09 | 3 |
| | | 25 | 12 | 20.91 | 20.85 | 20.80 | 3 |
| | | 25 | 25 | 20.78 | 20.70 | 20.80 | 3 |
| | | 50 | 0 | 20.56 | 20.56 | 20.69 | 3 |

| Band/BW | Modulation | RB Size | RB Offset | Low CH 18675 | Mid CH 18900 | High CH 19125 | MPR |
|---|---|---|---|---|---|---|---|
| | | | | Frequency 1857.5 MHz | Frequency 1880 MHz | Frequency 1902.5 MHz | |
| 2/ 15 | QPSK | 1 | 0 | 24.00 | 23.91 | 23.84 | 0 |
| | | 1 | 37 | 23.99 | 23.85 | 23.97 | 0 |
| | | 1 | 74 | 24.10 | 24.04 | 23.88 | 0 |
| | | 36 | 0 | 22.81 | 22.84 | 22.87 | 1 |
| | | 36 | 19 | 22.85 | 22.93 | 22.91 | 1 |
| | | 36 | 39 | 22.91 | 22.80 | 22.89 | 1 |
| | | 75 | 0 | 22.93 | 22.84 | 22.87 | 1 |
| | 16QAM | 1 | 0 | 23.21 | 22.83 | 22.83 | 1 |
| | | 1 | 37 | 23.18 | 22.61 | 22.91 | 1 |
| | | 1 | 74 | 23.26 | 22.67 | 23.20 | 1 |
| | | 36 | 0 | 21.80 | 21.91 | 21.98 | 2 |
| | | 36 | 19 | 21.83 | 22.00 | 21.98 | 2 |
| | | 36 | 39 | 21.99 | 21.85 | 22.02 | 2 |
| | | 75 | 0 | 22.06 | 21.88 | 21.86 | 2 |
| | 64QAM | 1 | 0 | 21.95 | 21.94 | 21.87 | 2 |
| | | 1 | 37 | 21.91 | 21.71 | 21.91 | 2 |
| | | 1 | 74 | 21.88 | 21.78 | 21.80 | 2 |
| | | 36 | 0 | 20.99 | 21.06 | 21.03 | 3 |
| | | 36 | 19 | 20.85 | 20.79 | 20.82 | 3 |
| | | 36 | 39 | 20.81 | 20.77 | 20.82 | 3 |
| | | 75 | 0 | 20.55 | 20.54 | 20.70 | 3 |

| Band/BW | Modulation | RB Size | RB Offset | Low CH 18700 | Mid CH 18900 | High CH 19100 | MPR |
|---|---|---|---|---|---|---|---|
| | | | | Frequency 1860 MHz | Frequency 1880 MHz | Frequency 1900 MHz | |
| 2/ 20 | QPSK | 1 | 0 | 24.01 | 23.95 | 23.92 | 0 |
| | | 1 | 50 | 24.03 | 23.88 | 24.03 | 0 |
| | | 1 | 99 | 24.12 | 24.05 | 23.92 | 0 |
| | | 50 | 0 | 23.07 | 22.89 | 22.88 | 1 |
| | | 50 | 25 | 22.86 | 22.95 | 22.96 | 1 |
| | | 50 | 50 | 22.99 | 22.87 | 22.91 | 1 |
| | | 100 | 0 | 22.94 | 22.88 | 22.90 | 1 |
| | 16QAM | 1 | 0 | 23.24 | 22.84 | 22.89 | 1 |
| | | 1 | 50 | 23.22 | 22.66 | 22.93 | 1 |
| | | 1 | 99 | 23.32 | 22.69 | 23.23 | 1 |
| | | 50 | 0 | 21.82 | 21.99 | 21.99 | 2 |
| | | 50 | 25 | 21.91 | 22.04 | 22.03 | 2 |
| | | 50 | 50 | 22.02 | 21.91 | 22.04 | 2 |
| | | 100 | 0 | 22.07 | 21.93 | 21.94 | 2 |
| | 64QAM | 1 | 0 | 22.01 | 21.97 | 21.91 | 2 |
| | | 1 | 50 | 21.93 | 21.78 | 21.96 | 2 |
| | | 1 | 99 | 21.94 | 21.86 | 21.82 | 2 |
| | | 50 | 0 | 20.80 | 20.88 | 20.91 | 3 |
| | | 50 | 25 | 20.72 | 20.87 | 20.78 | 3 |
| | | 50 | 50 | 20.83 | 20.88 | 20.86 | 3 |
| | | 100 | 0 | 20.97 | 20.72 | 20.81 | 3 |

**EIRP POWER (dBm)**

**GSM**

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 512 | 1850.2 | 29.66 | 0.9 | 30.56 | 1137.63 | 2 |
| 661 | 1880.0 | 29.71 | 0.9 | 30.61 | 1150.80 | 2 |
| 810 | 1909.8 | 29.83 | 0.9 | 30.73 | 1183.04 | 2 |

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

**EDGE**

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 512 | 1850.2 | 27.15 | 0.9 | 28.05 | 638.26 | 2 |
| 661 | 1880.0 | 27.18 | 0.9 | 28.08 | 642.69 | 2 |
| 810 | 1909.8 | 26.95 | 0.9 | 27.85 | 609.54 | 2 |

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

**WCDMA**

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 9262 | 1852.4 | 24.09 | 0.9 | 24.99 | 315.50 | 2 |
| 9400 | 1880 | 24.13 | 0.9 | 25.03 | 318.42 | 2 |
| 9538 | 1907.6 | 24.05 | 0.9 | 24.95 | 312.61 | 2 |

**LTE BAND 2**

**CHANNEL BANDWIDTH: 1.4MHz QPSK**

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18607 | 1850.7 | 24.1 | 0.9 | 25 | 316.23 | 2 |
| 18900 | 1880.0 | 23.98 | 0.9 | 24.88 | 307.61 | 2 |
| 19193 | 1909.3 | 24.01 | 0.9 | 24.91 | 309.74 | 2 |

**CHANNEL BANDWIDTH: 1.4MHz 16QAM**

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18607 | 1850.7 | 23.27 | 0.9 | 24.17 | 261.22 | 2 |
| 18900 | 1880.0 | 23.03 | 0.9 | 23.93 | 247.17 | 2 |
| 19193 | 1909.3 | 23.22 | 0.9 | 24.12 | 258.23 | 2 |

**CHANNEL BANDWIDTH: 1.4MHz 64QAM**

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18607 | 1850.7 | 21.94 | 0.9 | 22.84 | 192.31 | 2 |
| 18900 | 1880.0 | 22.02 | 0.9 | 22.92 | 195.88 | 2 |
| 19193 | 1909.3 | 22.03 | 0.9 | 22.93 | 196.34 | 2 |

**CHANNEL BANDWIDTH: 3MHz QPSK**

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18615 | 1851.5 | 24.06 | 0.9 | 24.96 | 313.33 | 2 |
| 18900 | 1880.0 | 23.98 | 0.9 | 24.88 | 307.61 | 2 |
| 19185 | 1908.5 | 24.01 | 0.9 | 24.91 | 309.74 | 2 |

**CHANNEL BANDWIDTH: 3MHz 16QAM**

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18615 | 1851.5 | 23.3 | 0.9 | 24.2 | 263.03 | 2 |
| 18900 | 1880.0 | 22.83 | 0.9 | 23.73 | 236.05 | 2 |
| 19185 | 1908.5 | 23.22 | 0.9 | 24.12 | 258.23 | 2 |

**CHANNEL BANDWIDTH: 3MHz 64QAM**

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18615 | 1851.5 | 22 | 0.9 | 22.9 | 194.98 | 2 |
| 18900 | 1880.0 | 21.95 | 0.9 | 22.85 | 192.75 | 2 |
| 19185 | 1908.5 | 21.9 | 0.9 | 22.8 | 190.55 | 2 |

**CHANNEL BANDWIDTH: 5MHz QPSK**

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18625 | 1852.5 | 24.07 | 0.9 | 24.97 | 314.05 | 2 |
| 18900 | 1880.0 | 23.97 | 0.9 | 24.87 | 306.90 | 2 |
| 19175 | 1907.5 | 24.01 | 0.9 | 24.91 | 309.74 | 2 |

**CHANNEL BANDWIDTH: 5MHz 16QAM**

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18625 | 1852.5 | 23.3 | 0.9 | 24.2 | 263.03 | 2 |
| 18900 | 1880.0 | 22.79 | 0.9 | 23.69 | 233.88 | 2 |
| 19175 | 1907.5 | 23.21 | 0.9 | 24.11 | 257.63 | 2 |

**CHANNEL BANDWIDTH: 5MHz 64QAM**

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18625 | 1852.5 | 21.94 | 0.9 | 22.84 | 192.31 | 2 |
| 18900 | 1880.0 | 21.92 | 0.9 | 22.82 | 191.43 | 2 |
| 19175 | 1907.5 | 21.9 | 0.9 | 22.8 | 190.55 | 2 |

**CHANNEL BANDWIDTH: 10MHz QPSK**

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18650 | 1855.0 | 24.04 | 0.9 | 24.94 | 311.89 | 2 |
| 18900 | 1880.0 | 24.01 | 0.9 | 24.91 | 309.74 | 2 |
| 19150 | 1905.0 | 24.02 | 0.9 | 24.92 | 310.46 | 2 |

**CHANNEL BANDWIDTH: 10MHz 16QAM**

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18650 | 1855.0 | 23.3 | 0.9 | 24.2 | 263.03 | 2 |
| 18900 | 1880.0 | 22.76 | 0.9 | 23.66 | 232.27 | 2 |
| 19150 | 1905.0 | 23.18 | 0.9 | 24.08 | 255.86 | 2 |

**CHANNEL BANDWIDTH: 10MHz 64QAM**

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18650 | 1855.0 | 21.93 | 0.9 | 22.83 | 191.87 | 2 |
| 18900 | 1880.0 | 21.93 | 0.9 | 22.83 | 191.87 | 2 |
| 19150 | 1905.0 | 21.94 | 0.9 | 22.84 | 192.31 | 2 |

**CHANNEL BANDWIDTH: 15MHz QPSK**

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18675 | 1857.5 | 24.1 | 0.9 | 25 | 316.23 | 2 |
| 18900 | 1880.0 | 24.04 | 0.9 | 24.94 | 311.89 | 2 |
| 19125 | 1902.5 | 23.97 | 0.9 | 24.87 | 306.90 | 2 |

**CHANNEL BANDWIDTH: 15MHz 16QAM**

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18675 | 1857.5 | 23.26 | 0.9 | 24.16 | 260.62 | 2 |
| 18900 | 1880.0 | 22.83 | 0.9 | 23.73 | 236.05 | 2 |
| 19125 | 1902.5 | 23.2 | 0.9 | 24.1 | 257.04 | 2 |

**CHANNEL BANDWIDTH: 15MHz 64QAM**

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18675 | 1857.5 | 21.95 | 0.9 | 22.85 | 192.75 | 2 |
| 18900 | 1880.0 | 21.94 | 0.9 | 22.84 | 192.31 | 2 |
| 19125 | 1902.5 | 21.91 | 0.9 | 22.81 | 190.99 | 2 |

**CHANNEL BANDWIDTH: 20MHz QPSK**

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18700 | 1860 | 24.12 | 0.9 | 25.02 | 317.69 | 2 |
| 18900 | 1880 | 24.05 | 0.9 | 24.95 | 312.61 | 2 |
| 19100 | 1900 | 24.03 | 0.9 | 24.93 | 311.17 | 2 |

**CHANNEL BANDWIDTH: 20MHz 16QAM**

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18700 | 1860 | 23.32 | 0.9 | 24.22 | 264.24 | 2 |
| 18900 | 1880 | 22.84 | 0.9 | 23.74 | 236.59 | 2 |
| 19100 | 1900 | 23.23 | 0.9 | 24.13 | 258.82 | 2 |

**CHANNEL BANDWIDTH: 20MHz 64QAM**

| Channel | Frequency (MHz) | Conducted Power (dBm) | $G_T$-$L_C$ (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---|---|---|---|---|---|---|
| 18700 | 1860 | 22.01 | 0.9 | 22.91 | 195.43 | 2 |
| 18900 | 1880 | 21.97 | 0.9 | 22.87 | 193.64 | 2 |
| 19100 | 1900 | 21.96 | 0.9 | 22.86 | 193.2 | 2 |

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

## 3.2 FREQUENCY STABILITY MEASUREMENT

### 3.2.1 LIMITS OF FREQUENCY STABILIITY MEASUREMENT

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

### 3.2.2 TEST PROCEDURE

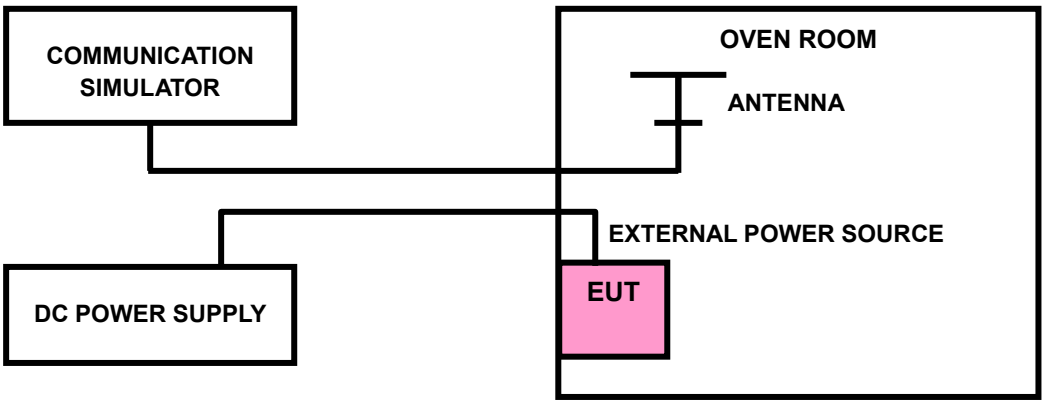
a. Device is placed at the oven room. The oven room could control the temperatures and humidity. Power warm up is at least 15 min and power applied should perform before recording frequency error.

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

c. The temperature range step is 10 degrees in this test items. All temperature levels shall be hold the ±0.5℃ during the measurement testing. The each temperature step shall be at least 0.5 hours, consider the EUT could be test under the stability condition.

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

### 3.2.3 TEST SETUP



### 3.2.4 TEST RESULTS

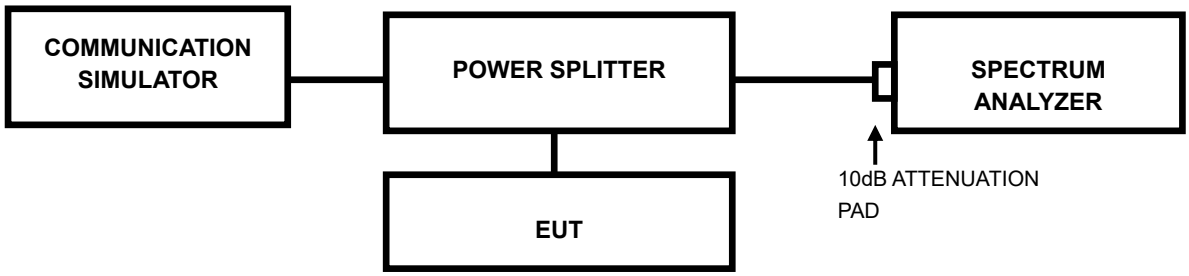
Please Refer to Appendix Of this test report.

## 3.3 OCCUPIED BANDWIDTH MEASUREMENT

### 3.3.1 TEST PROCEDURES

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

### 3.3.2 TEST SETUP



### 3.3.3 TEST RESULTS

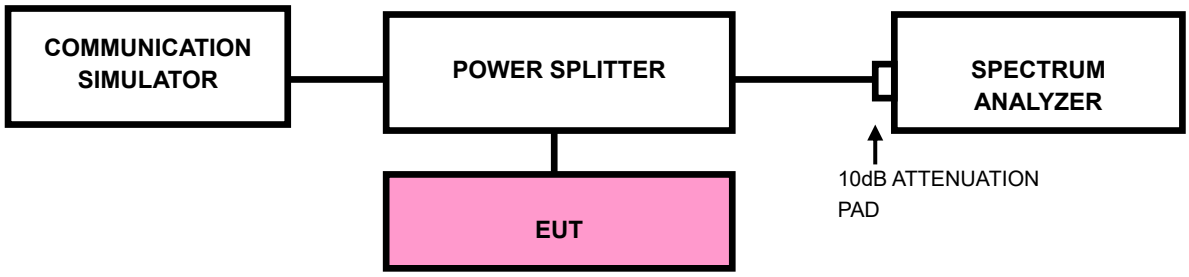
Please Refer to Appendix Of this test report.

## 3.4 BAND EDGE MEASUREMENTC

### 3.4.1 LIMITS OF BAND EDGE MEASUREMENT

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

### 3.4.2 TEST SETUP



### 3.4.3 TEST PROCEDURES

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

b. The center frequency of spectrum is the band edge frequency and span is 1.5 MHz. RBW of the spectrum is 10kHz and VBW of the spectrum is 30kHz (GSM/GPRS/ EDGE).

c. The center frequency of spectrum is the band edge frequency and span is 10MHz. RBW of the spectrum is 100kHz and VBW of the spectrum is 300kHz (WCDMA).

d. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 20kHz and VBW of the spectrum is 100 kHz. (LTE bandwidth 1.4MHz)

e. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 30kHz and VBW of the spectrum is 100kHz. (LTE bandwidth 3MHz)

f. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 50kHz and VBW of the spectrum is 200kHz. (LTE bandwidth 5MHz)

g. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 100kHz and VBW of the spectrum is 300kHz. (LTE bandwidth 10MHz)

h. The center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 200kHz and VBW of the spectrum is 1MHz. (LTE bandwidth 15MHz)

i. he center frequency of spectrum is the band edge frequency and span is 1~5 MHz. RBW of the spectrum is 200kHz and VBW of the spectrum is 1MHz. (LTE bandwidth 20MHz)

j. Record the max trace plot into the test report.

### 3.4.4. TEST RESULTS

Please Refer to Appendix Of this test report.

## 3.5 CONDUCTED SPURIOUS EMISSIONS

### 3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

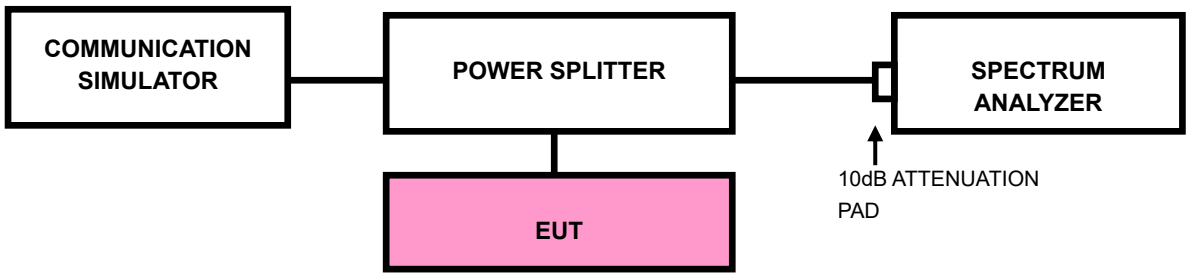
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log(P) dB. The emission limit equal to –13dBm.

### 3.5.2 TEST PROCEDURE

a. The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.

b. Measuring frequency range is from 30 MHz to 19.1GHz. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

### 3.5.3 TEST SETUP



## 3.5.4 TEST RESULTS

Please Refer to Appendix Of this test report.

## 3.6 RADIATED EMISSION MEASUREMENT

### 3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

### 3.6.2 TEST PROCEDURES

a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The “Read Value” is the spectrum reading the maximum power value.

b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to “Read Value “ of step a. Record the power level of S.G

c. EIRP = Output power level of S.G – TX cable loss + Antenna gain of substitution horn.

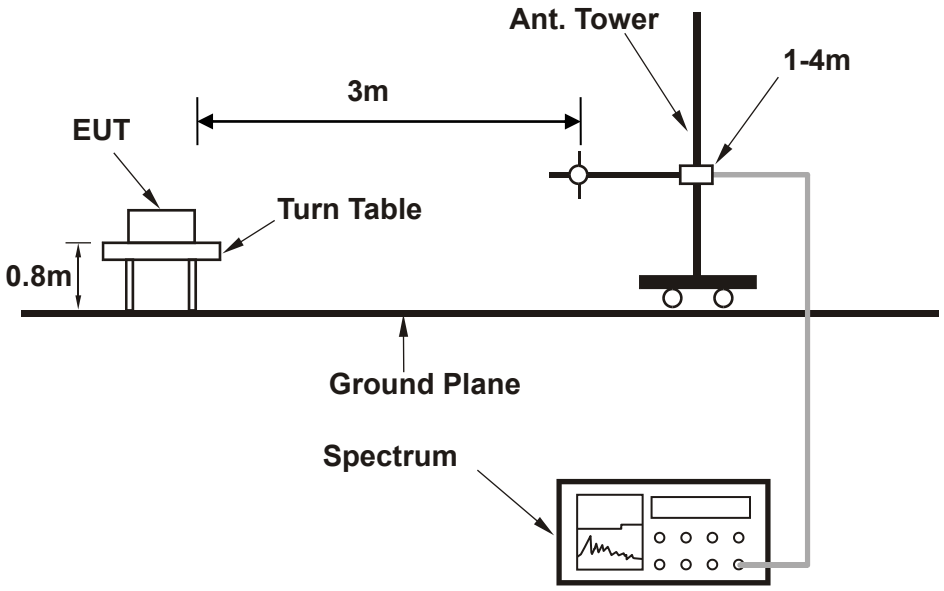
**NOTE:** The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

### 3.6.3 DEVIATION FROM TEST STANDARD

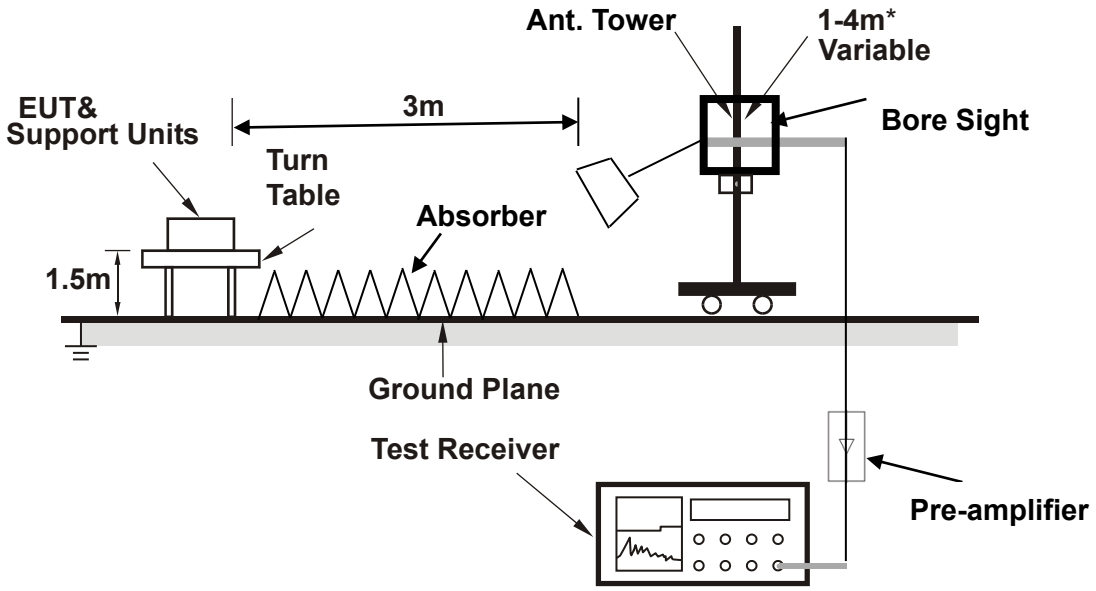
No deviation

## 3.6.4 TEST SETUP

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




**<Frequency Range above 1GHz>**




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

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

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

## 3.6.5 TEST RESULTS

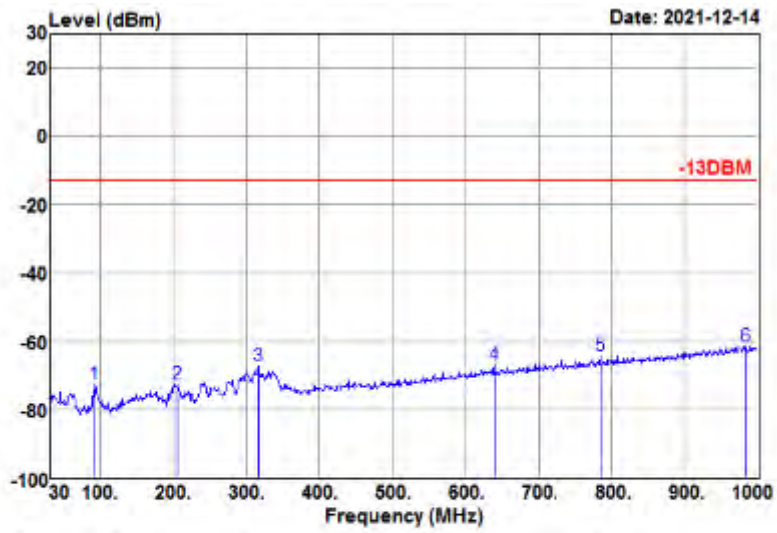
**BELOW 1GHz WORST-CASE DATA**

**30 MHz – 1GHz data:**

**LTE Band 2**

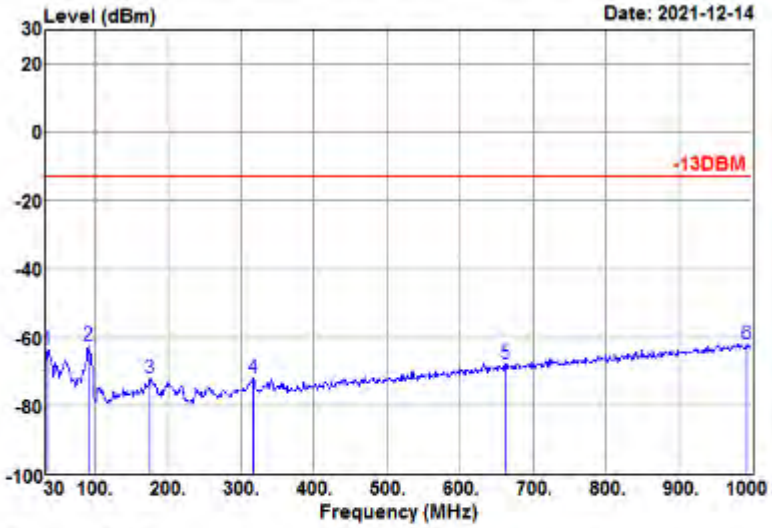
**CHANNEL BANDWIDTH: 10MHz / QPSK**

| | | | |
|---|---|---|---|
| **MODE** | TX channel 18607 | **FREQUENCY RANGE** | Below 1000MHz |
| **ENVIRONMENTAL CONDITIONS** | 23deg. C, 70%RH | **INPUT POWER** | AC 120V/60Hz |
| **TESTED BY** | Jace Hu | | |
| **ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M** | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 93.050 | -65.91 | -6.80 | -72.71 | -13.00 | -59.71 | Peak |
| 205.570 | -66.47 | -6.19 | -72.66 | -13.00 | -59.66 | Peak |
| 316.150 | -65.30 | -2.16 | -67.46 | -13.00 | -54.46 | Peak |
| 639.160 | -72.33 | 5.30 | -67.03 | -13.00 | -54.03 | Peak |
| 784.660 | -72.36 | 7.93 | -64.43 | -13.00 | -51.43 | Peak |
| 983.510 | -73.35 | 11.81 | -61.54 | -13.00 | -48.54 | Peak |

| MODE | TX channel 18607 | FREQUENCY RANGE | Below 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | AC 120V/60Hz |
| TESTED BY | Jace Hu | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 35.820 | -58.82 | -4.84 | -63.66 | -13.00 | -50.66 | Peak |
| 90.140 | -55.66 | -6.85 | -62.51 | -13.00 | -49.51 | Peak |
| 174.530 | -67.73 | -4.45 | -72.18 | -13.00 | -59.18 | Peak |
| 316.150 | -69.67 | -2.31 | -71.98 | -13.00 | -58.98 | Peak |
| 662.440 | -73.12 | 5.42 | -67.70 | -13.00 | -54.70 | Peak |
| 993.210 | -73.69 | 11.60 | -62.09 | -13.00 | -49.09 | Peak |

**ABOVE 1GHz DATA**

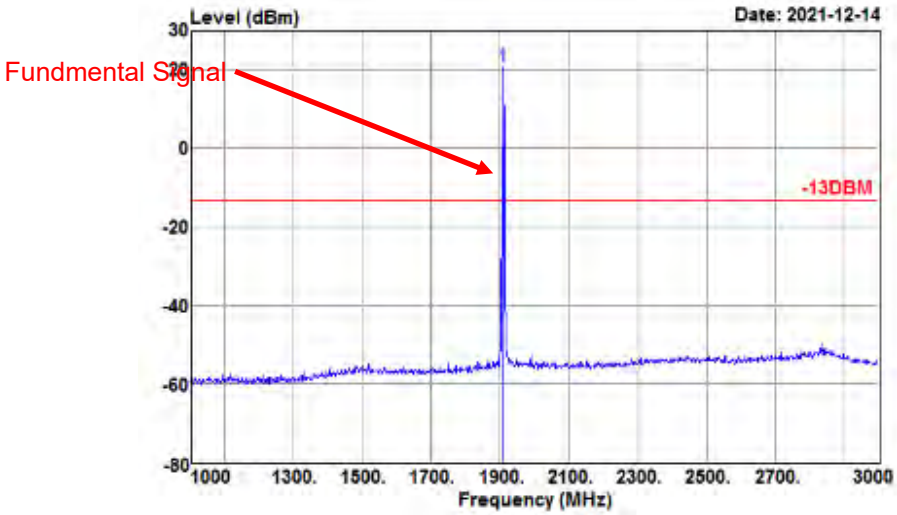
**Note:** For higher frequency, the emission is too low to be detected.

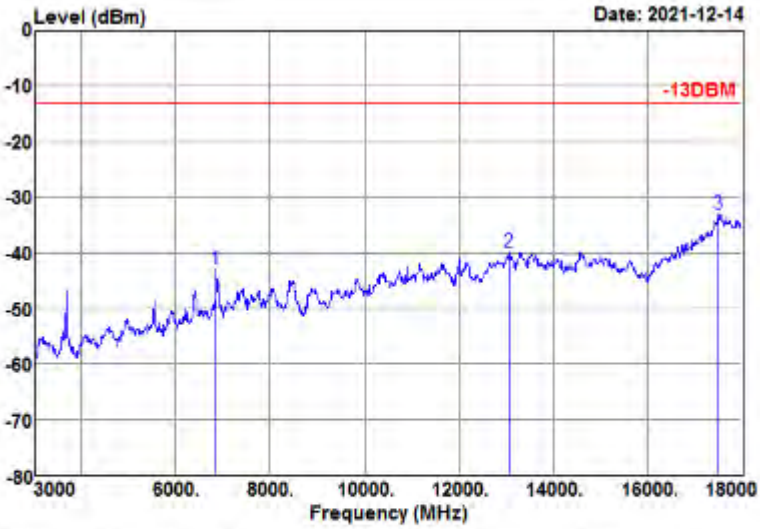
**WORST-CASE DATA**

**GSM 1900**

**CH 512**

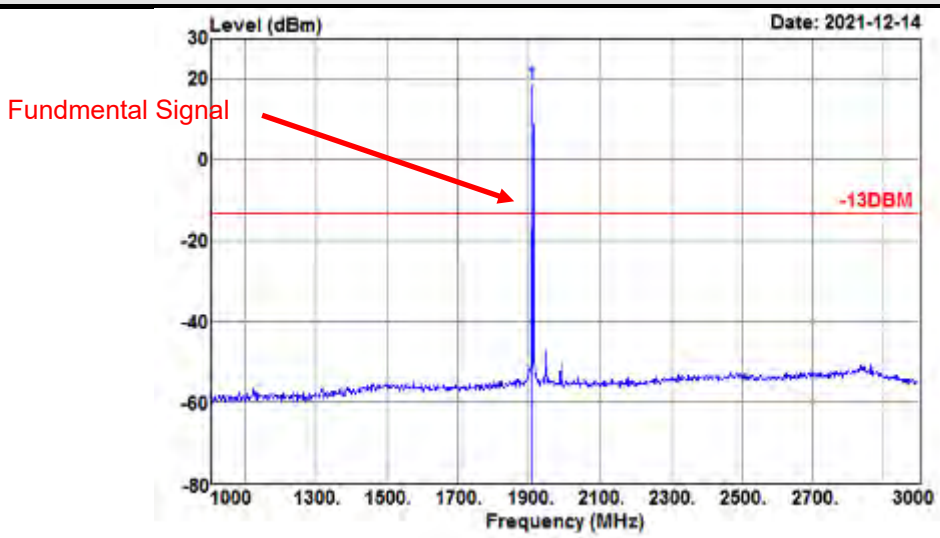
| | | | |
|---|---|---|---|
| **MODE** | TX channel 512 | **FREQUENCY RANGE** | Above 1000MHz |
| **ENVIRONMENTAL CONDITIONS** | 23deg. C, 70%RH | **INPUT POWER** | AC 120V/60Hz |
| **TESTED BY** | Jace Hu | | |
| **ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M** | | | |

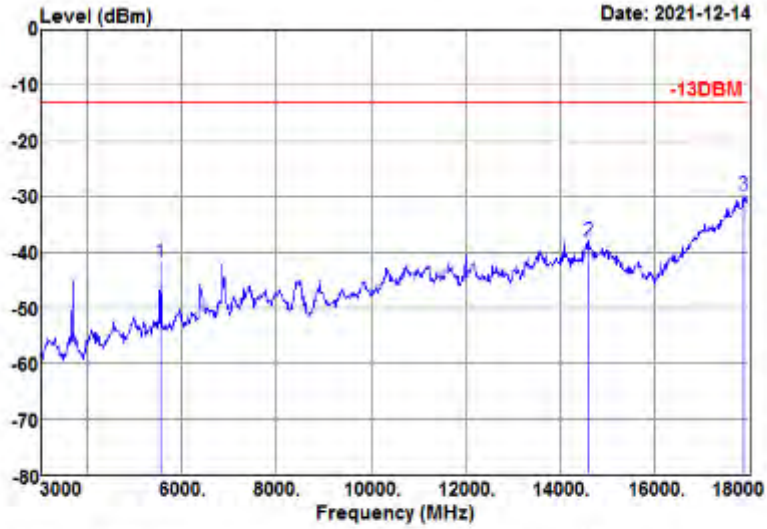



| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 6855.000 | -60.95 | 17.91 | -43.04 | -13.00 | -30.04 | Peak |
| 13050.000 | -68.43 | 28.66 | -39.77 | -13.00 | -26.77 | Peak |
| 17505.000 | -68.86 | 35.81 | -33.05 | -13.00 | -20.05 | Peak |

| MODE | TX channel 512 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | AC 120V/60Hz |
| TESTED BY | Jace Hu | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

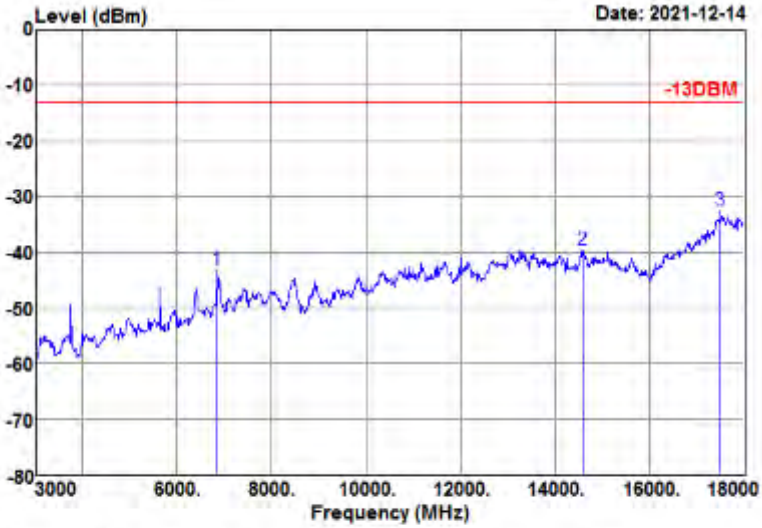



| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 5550.000 | -55.10 | 13.23 | -41.87 | -13.00 | -28.87 | Peak |
| 14610.000 | -66.39 | 28.30 | -38.09 | -13.00 | -25.09 | Peak |
| 17895.000 | -69.35 | 39.55 | -29.80 | -13.00 | -16.80 | Peak |

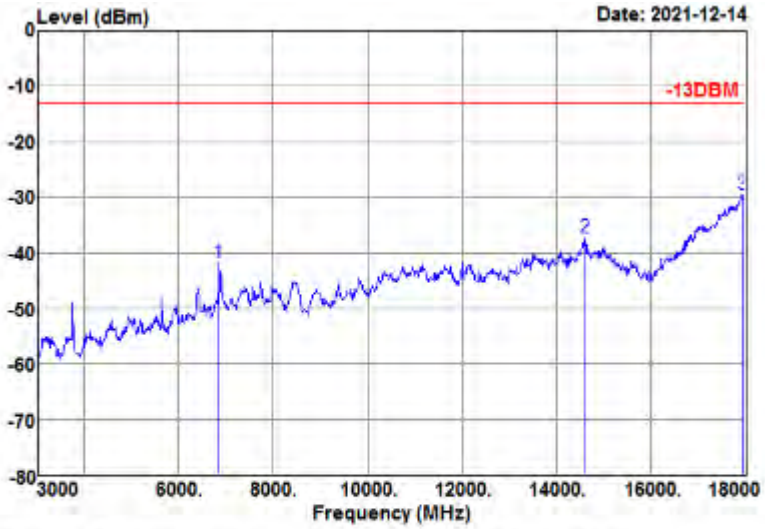
**CH 661**

| | | | |
|---|---|---|---|
| **MODE** | TX channel 661 | **FREQUENCY RANGE** | Above 1000MHz |
| **ENVIRONMENTAL CONDITIONS** | 23deg. C, 70%RH | **INPUT POWER** | AC 120V/60Hz |
| **TESTED BY** | Jace Hu | | |
| **ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M** | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 6855.000 | -61.14 | 17.91 | -43.23 | -13.00 | -30.23 | Peak |
| 14580.000 | -66.21 | 26.50 | -39.71 | -13.00 | -26.71 | Peak |
| 17505.000 | -68.45 | 35.81 | -32.64 | -13.00 | -19.64 | Peak |

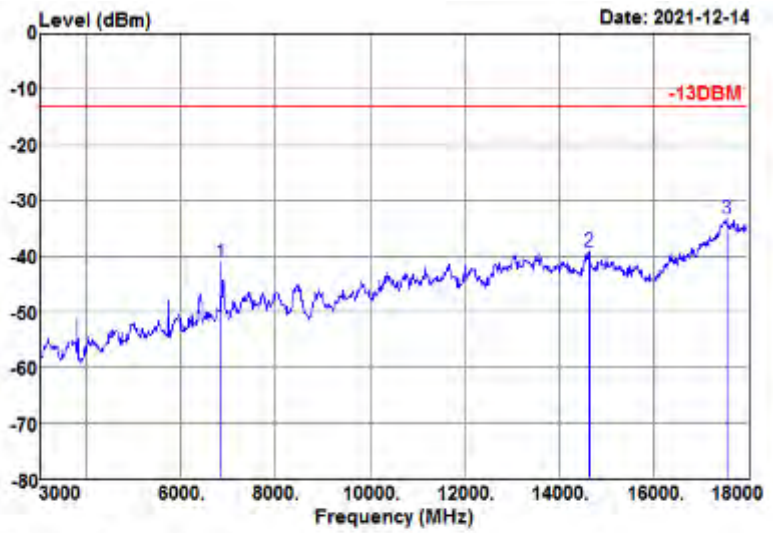
| MODE | TX channel 661 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | AC 120V/60Hz |
| TESTED BY | Jace Hu | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 6855.000 | -60.11 | 18.25 | -41.86 | -13.00 | -28.86 | Peak |
| 14610.000 | -65.65 | 28.30 | -37.35 | -13.00 | -24.35 | Peak |
| 17955.000 | -69.53 | 40.04 | -29.49 | -13.00 | -16.49 | Peak |

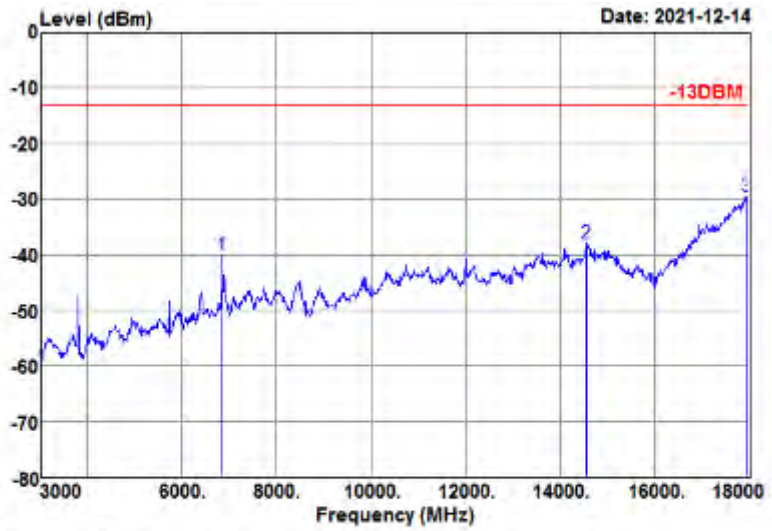
**CH 810**

| | | | |
|---|---|---|---|
| **MODE** | TX channel 810 | **FREQUENCY RANGE** | Above 1000MHz |
| **ENVIRONMENTAL CONDITIONS** | 23deg. C, 70%RH | **INPUT POWER** | AC 120V/60Hz |
| **TESTED BY** | Jace Hu | | |
| **ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M** | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 6855.000 | -58.97 | 17.91 | -41.06 | -13.00 | -28.06 | Peak |
| 14640.000 | -65.82 | 26.63 | -39.19 | -13.00 | -26.19 | Peak |
| 17550.000 | -69.03 | 35.75 | -33.28 | -13.00 | -20.28 | Peak |

| MODE | TX channel 810 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | AC 120V/60Hz |
| TESTED BY | Jace Hu | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

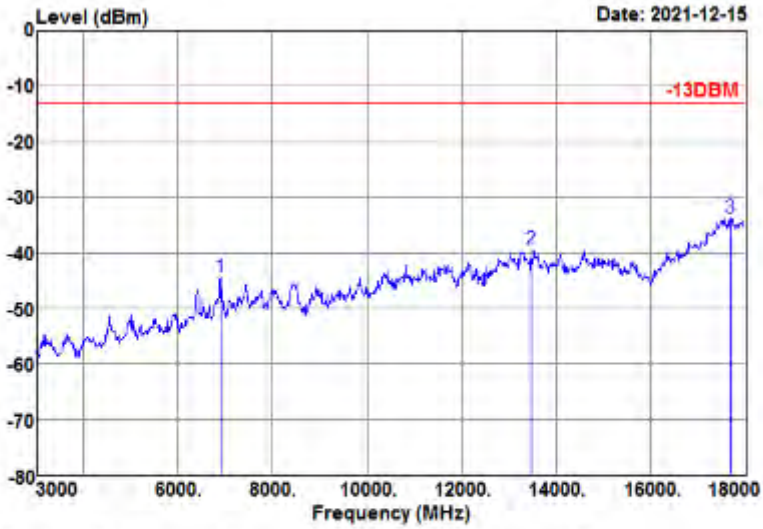



| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 6855.000 | -58.33 | 18.25 | -40.08 | -13.00 | -27.08 | Peak |
| 14565.000 | -66.18 | 28.24 | -37.94 | -13.00 | -24.94 | Peak |
| 17955.000 | -69.45 | 40.04 | -29.41 | -13.00 | -16.41 | Peak |

**EDGE 1900**

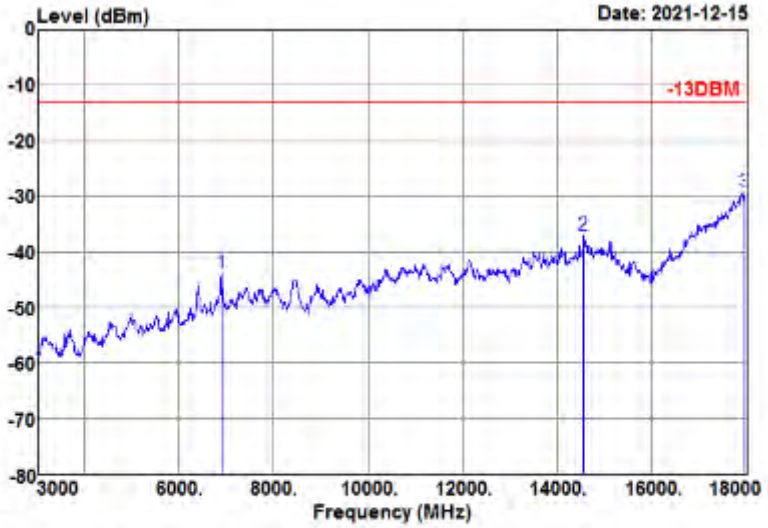
**CH 512**

| MODE | TX channel 512 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | AC 120V/60Hz |
| TESTED BY | Jace Hu | | |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 6900.000 | -62.44 | 18.08 | -44.36 | -13.00 | -31.36 | Peak |
| 13470.000 | -67.84 | 28.47 | -39.37 | -13.00 | -26.37 | Peak |
| 17700.000 | -69.17 | 35.53 | -33.64 | -13.00 | -20.64 | Peak |

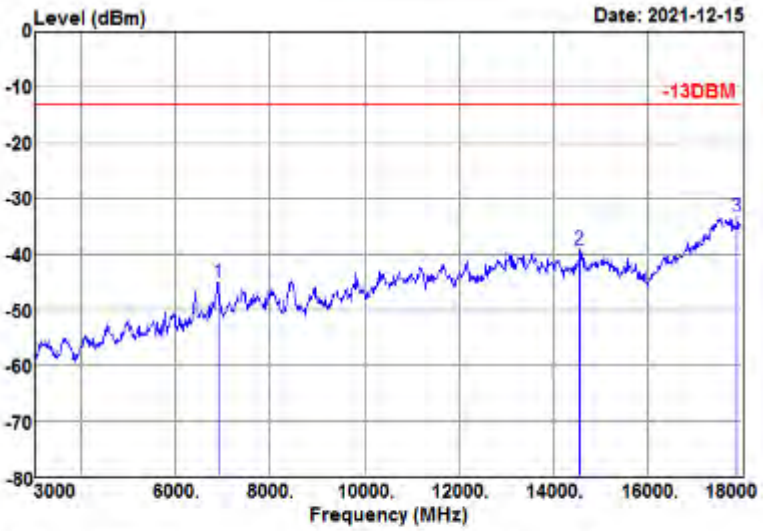
| MODE | TX channel 512 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | AC 120V/60Hz |
| TESTED BY | Jace Hu | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 6900.000 | -62.38 | 18.41 | -43.97 | -13.00 | -30.97 | Peak |
| 14565.000 | -65.16 | 28.24 | -36.92 | -13.00 | -23.92 | Peak |
| 17970.000 | -69.47 | 40.16 | -29.31 | -13.00 | -16.31 | Peak |

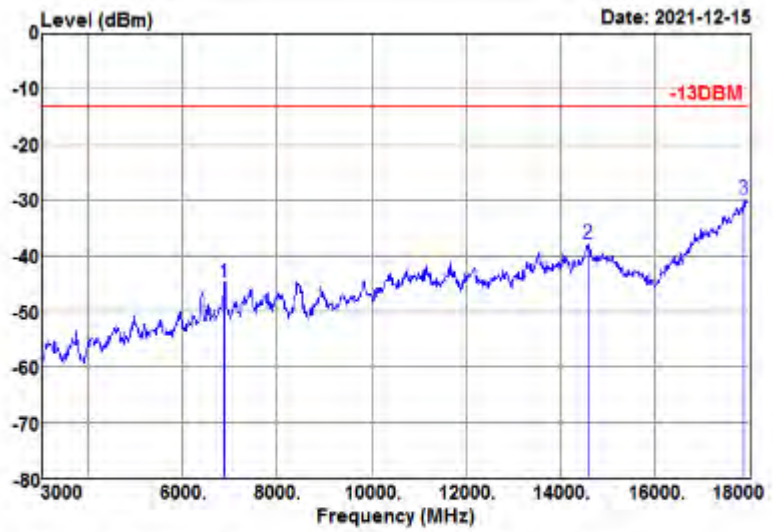
**CH 661**

| | | | |
|---|---|---|---|
| **MODE** | TX channel 661 | **FREQUENCY RANGE** | Above 1000MHz |
| **ENVIRONMENTAL CONDITIONS** | 23deg. C, 70%RH | **INPUT POWER** | AC 120V/60Hz |
| **TESTED BY** | Jace Hu | | |
| **ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M** | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 6900.000 | -63.06 | 18.08 | -44.98 | -13.00 | -31.98 | Peak |
| 14565.000 | -65.55 | 26.46 | -39.09 | -13.00 | -26.09 | Peak |
| 17895.000 | -68.55 | 35.25 | -33.30 | -13.00 | -20.30 | Peak |

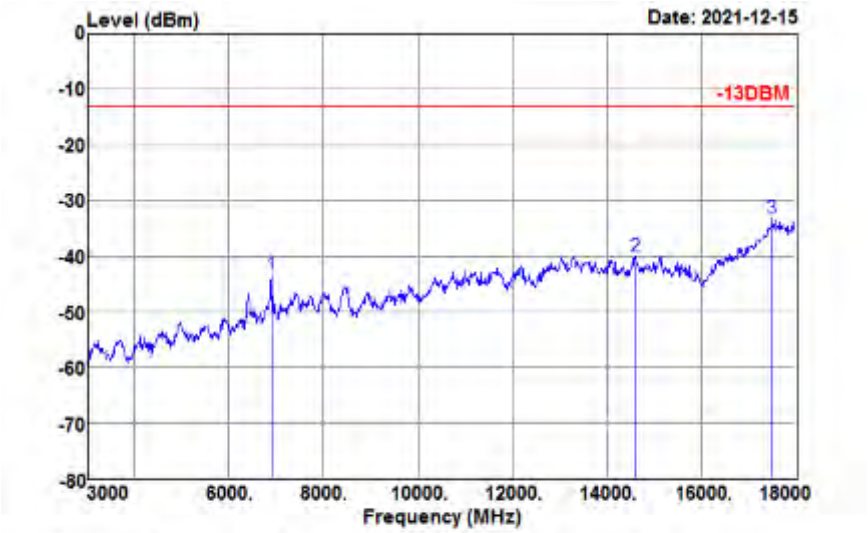
| MODE | TX channel 661 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | AC 120V/60Hz |
| TESTED BY | Jace Hu | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 6885.000 | -63.09 | 18.36 | -44.73 | -13.00 | -31.73 | Peak |
| 14580.000 | -66.01 | 28.26 | -37.75 | -13.00 | -24.75 | Peak |
| 17895.000 | -69.35 | 39.55 | -29.80 | -13.00 | -16.80 | Peak |

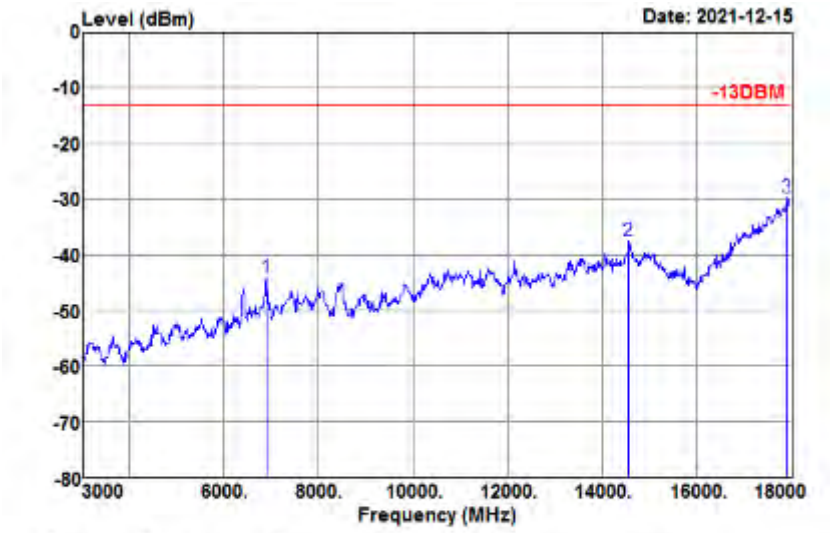
**CH 810**

| | | | |
|---|---|---|---|
| **MODE** | TX channel 810 | **FREQUENCY RANGE** | Above 1000MHz |
| **ENVIRONMENTAL CONDITIONS** | 23deg. C, 70%RH | **INPUT POWER** | AC 120V/60Hz |
| **TESTED BY** | Jace Hu | | |
| **ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M** | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 6900.000 | -61.39 | 18.08 | -43.31 | -13.00 | -30.31 | Peak |
| 14610.000 | -66.58 | 26.56 | -40.02 | -13.00 | -27.02 | Peak |
| 17505.000 | -69.16 | 35.81 | -33.35 | -13.00 | -20.35 | Peak |

| MODE | TX channel 810 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | AC 120V/60Hz |
| TESTED BY | Jace Hu | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

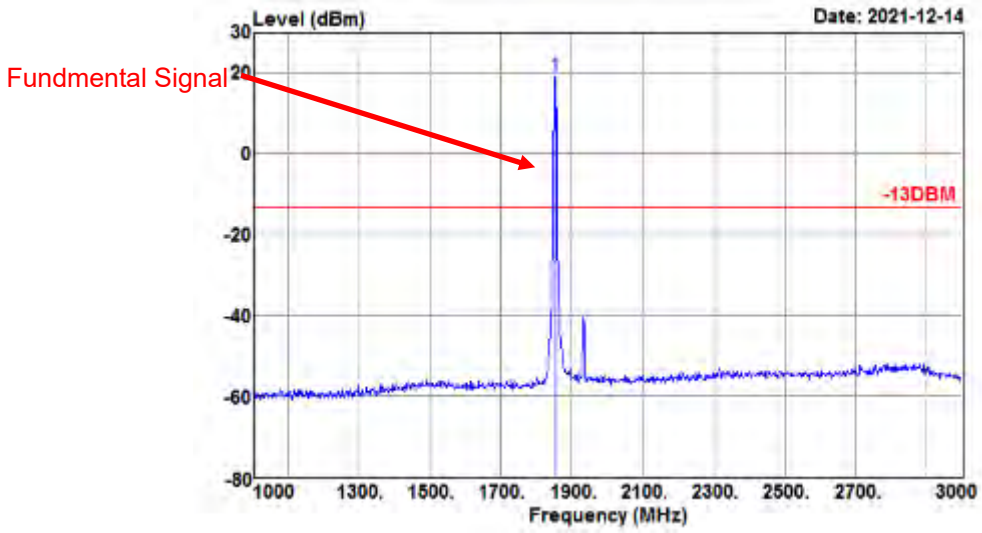


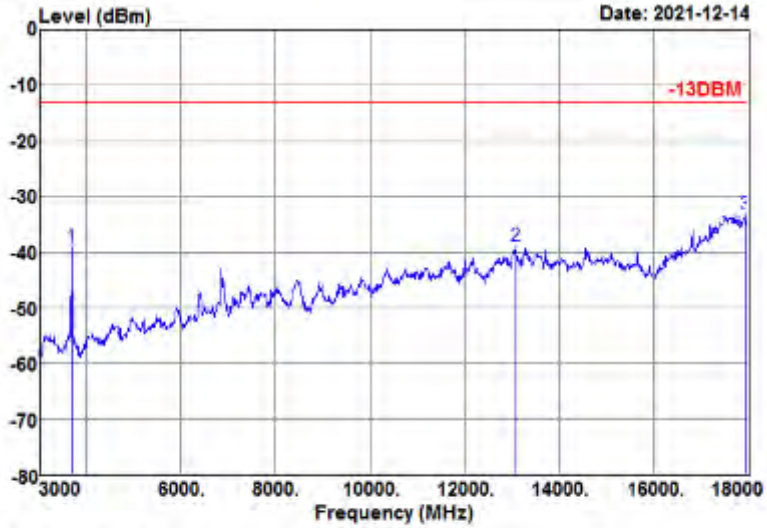

| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 6900.000 | -62.42 | 18.41 | -44.01 | -13.00 | -31.01 | Peak |
| 14565.000 | -65.80 | 28.24 | -37.56 | -13.00 | -24.56 | Peak |
| 17925.000 | -69.50 | 39.79 | -29.71 | -13.00 | -16.71 | Peak |

**WCDMA Band II**

**CH 9262**

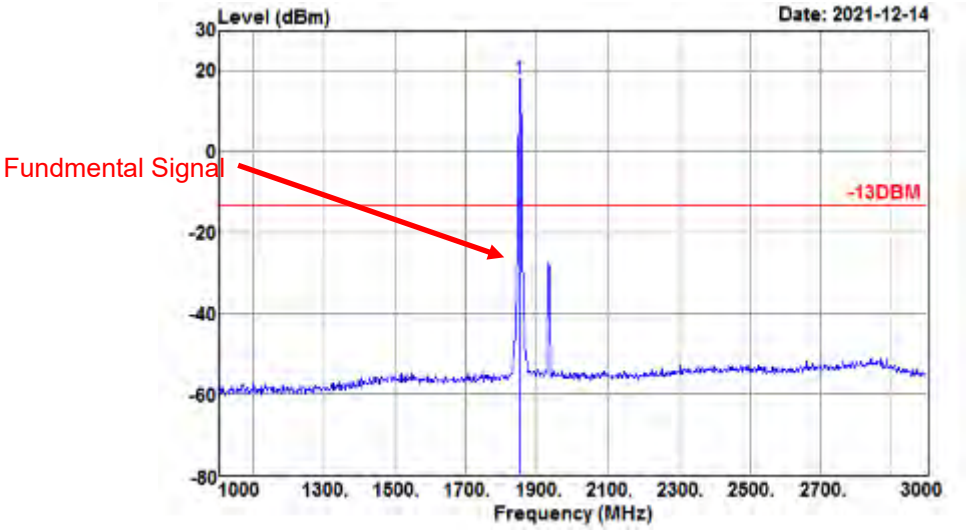
| MODE | TX channel 9262 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | AC 120V/60Hz |
| TESTED BY | Jace Hu | | |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M | | | |

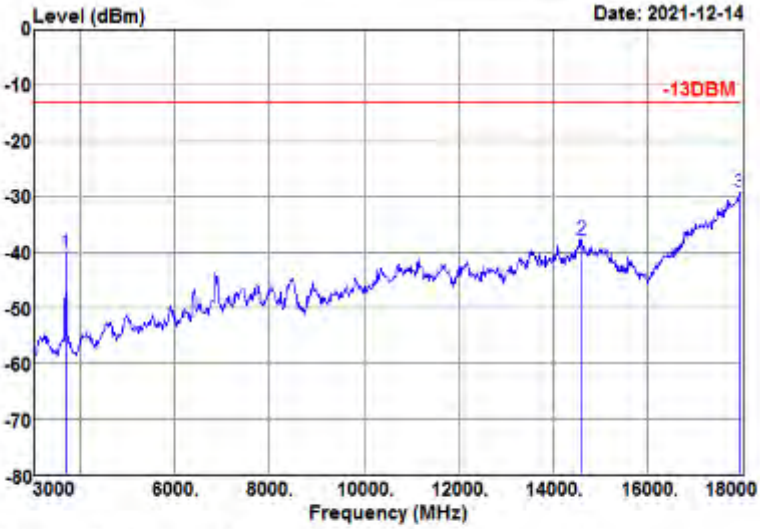



| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 3705.000 | -47.91 | 8.63 | -39.28 | -13.00 | -26.28 | Peak |
| 13080.000 | -67.68 | 28.64 | -39.04 | -13.00 | -26.04 | Peak |
| 17955.000 | -68.48 | 35.16 | -33.32 | -13.00 | -20.32 | Peak |

| MODE | TX channel 9262 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | AC 120V/60Hz |
| TESTED BY | Jace Hu | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

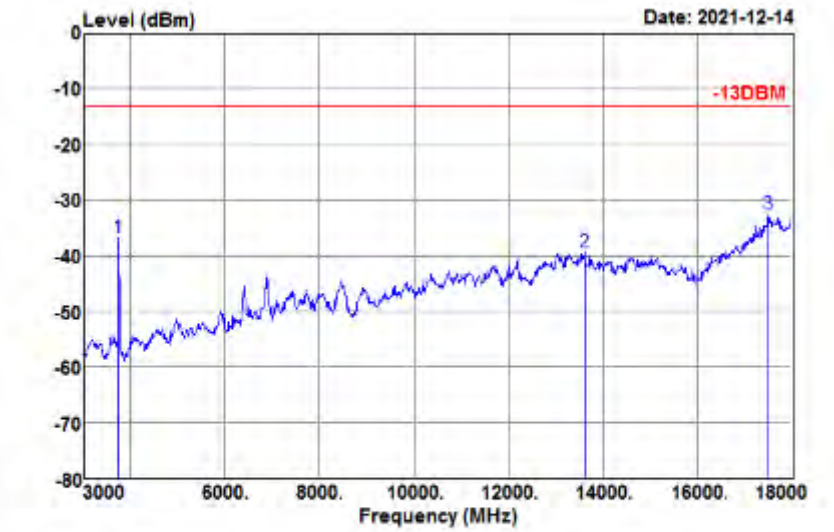



| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 3705.000 | -48.72 | 8.64 | -40.08 | -13.00 | -27.08 | Peak |
| 14610.000 | -65.96 | 28.30 | -37.66 | -13.00 | -24.66 | Peak |
| 17955.000 | -69.22 | 40.04 | -29.18 | -13.00 | -16.18 | Peak |

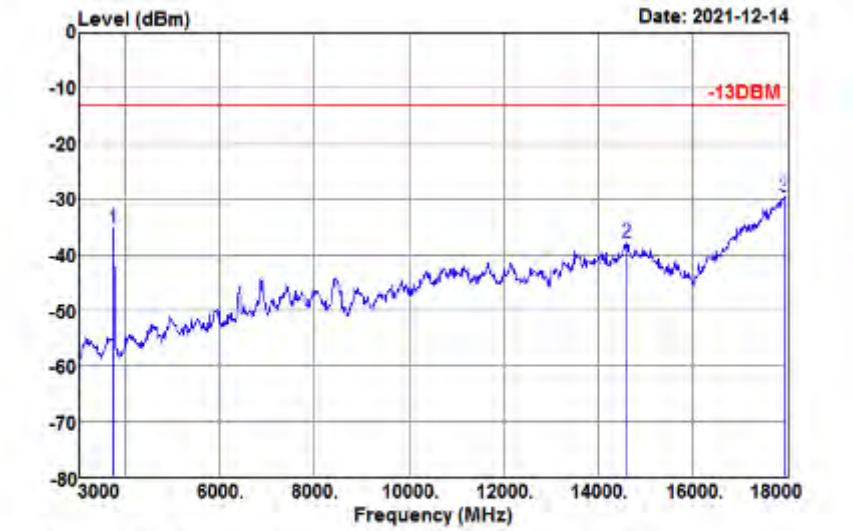
**CH 9400**

| | | | |
|---|---|---|---|
| **MODE** | TX channel 9400 | **FREQUENCY RANGE** | Above 1000MHz |
| **ENVIRONMENTAL CONDITIONS** | 23deg. C, 70%RH | **INPUT POWER** | AC 120V/60Hz |
| **TESTED BY** | Jace Hu | | |
| **ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M** | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 3750.000 | -45.31 | 8.59 | -36.72 | -13.00 | -23.72 | Peak |
| 13605.000 | -67.51 | 28.11 | -39.40 | -13.00 | -26.40 | Peak |
| 17505.000 | -68.26 | 35.81 | -32.45 | -13.00 | -19.45 | Peak |

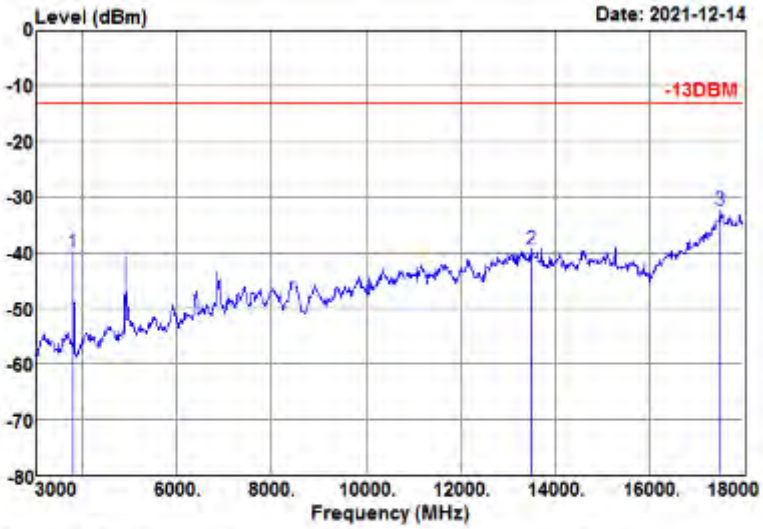
| MODE | TX channel 9400 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | AC 120V/60Hz |
| TESTED BY | Jace Hu | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 3750.000 | -43.74 | 8.66 | -35.08 | -13.00 | -22.08 | Peak |
| 14625.000 | -65.98 | 28.32 | -37.66 | -13.00 | -24.66 | Peak |
| 17955.000 | -69.57 | 40.04 | -29.53 | -13.00 | -16.53 | Peak |

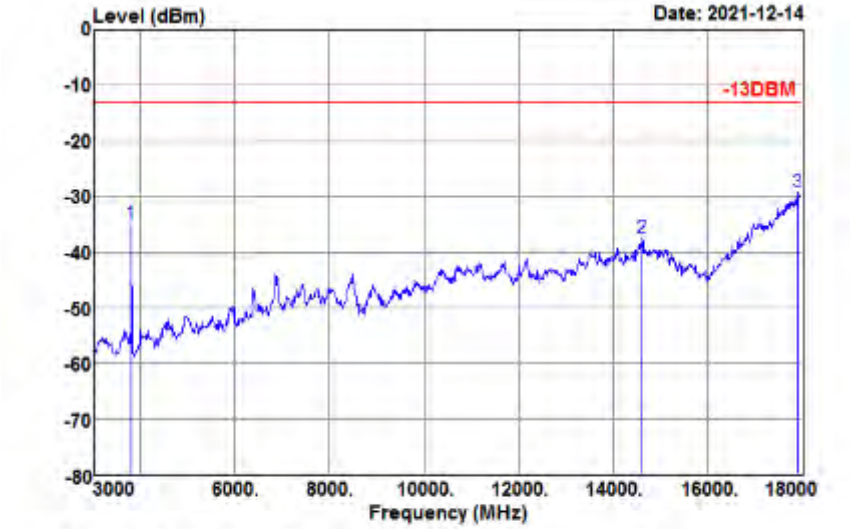
**CH 9538**

| | | | |
|---|---|---|---|
| **MODE** | TX channel 9538 | **FREQUENCY RANGE** | Above 1000MHz |
| **ENVIRONMENTAL CONDITIONS** | 23deg. C, 70%RH | **INPUT POWER** | AC 120V/60Hz |
| **TESTED BY** | Jace Hu | | |
| **ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M** | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 3810.000 | -48.37 | 8.60 | -39.77 | -13.00 | -26.77 | Peak |
| 13500.000 | -67.84 | 28.46 | -39.38 | -13.00 | -26.38 | Peak |
| 17505.000 | -68.23 | 35.81 | -32.42 | -13.00 | -19.42 | Peak |

| MODE | TX channel 9538 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | AC 120V/60Hz |
| TESTED BY | Jace Hu | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

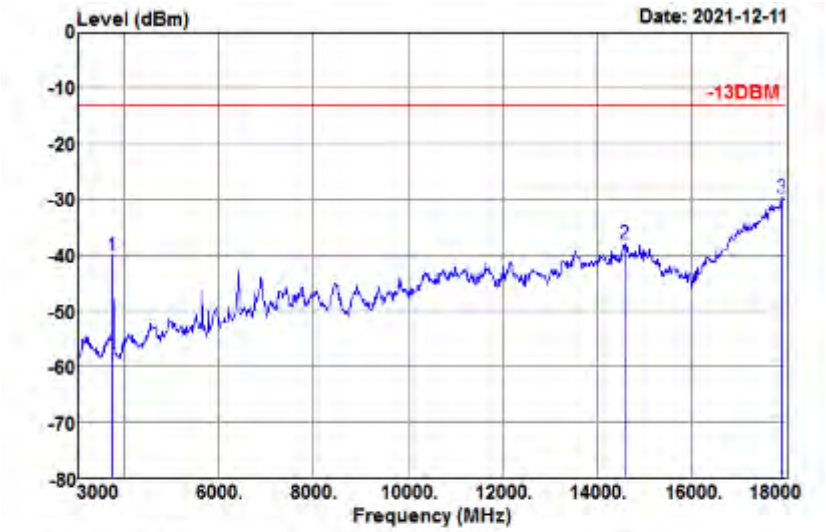



| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 3810.000 | -43.50 | 8.70 | -34.80 | -13.00 | -21.80 | Peak |
| 14625.000 | -65.93 | 28.32 | -37.61 | -13.00 | -24.61 | Peak |
| 17925.000 | -69.14 | 39.79 | -29.35 | -13.00 | -16.35 | Peak |

**LTE Band 2**

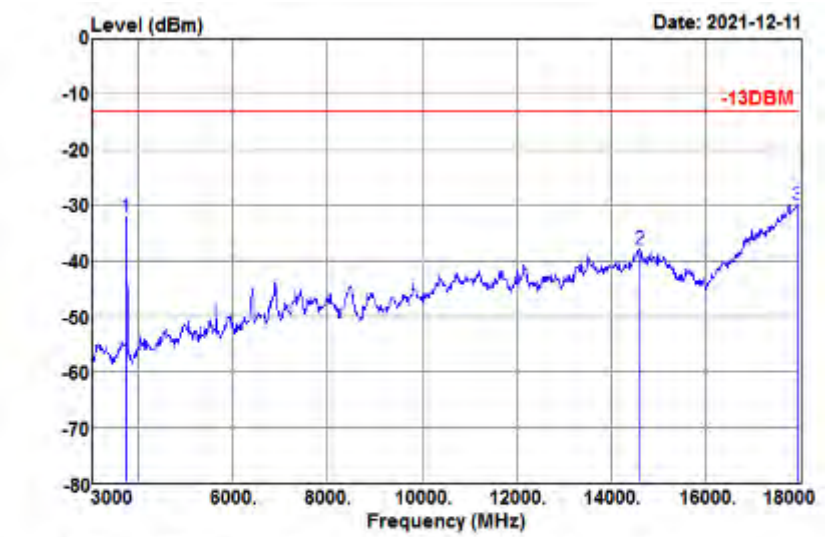
**CHANNEL BANDWIDTH: 1.4MHz / QPSK**

| | | | |
|---|---|---|---|
| **MODE** | TX channel 18900 | **FREQUENCY RANGE** | Above 1000MHz |
| **ENVIRONMENTAL CONDITIONS** | 23deg. C, 70%RH | **INPUT POWER** | AC 120V/60Hz |
| **TESTED BY** | Jace Hu | | |
| **ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M** | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 3750.000 | -48.81 | 8.59 | -40.22 | -13.00 | -27.22 | Peak |
| 14595.000 | -64.40 | 26.53 | -37.87 | -13.00 | -24.87 | Peak |
| 17910.000 | -64.95 | 35.23 | -29.72 | -13.00 | -16.72 | Peak |

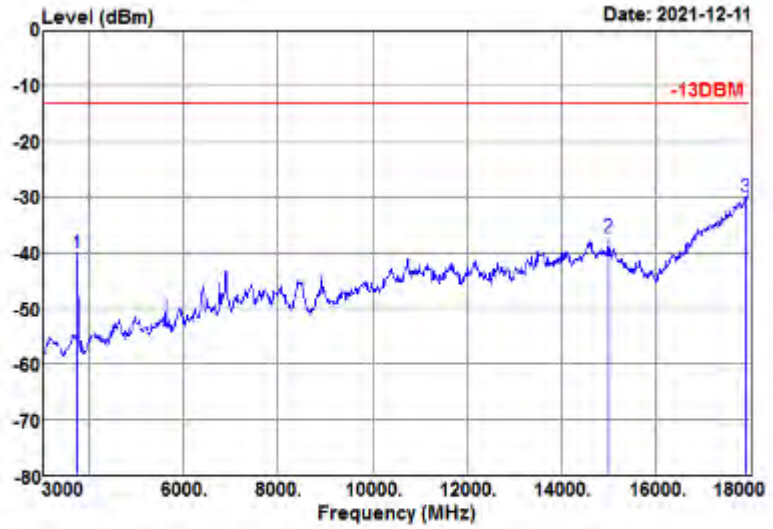
| MODE | TX channel 18900 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | AC 120V/60Hz |
| TESTED BY | Jace Hu | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 3750.000 | -40.65 | 8.66 | -31.99 | -13.00 | -18.99 | Peak |
| 14625.000 | -66.32 | 28.32 | -38.00 | -13.00 | -25.00 | Peak |
| 17940.000 | -69.86 | 39.91 | -29.95 | -13.00 | -16.95 | Peak |

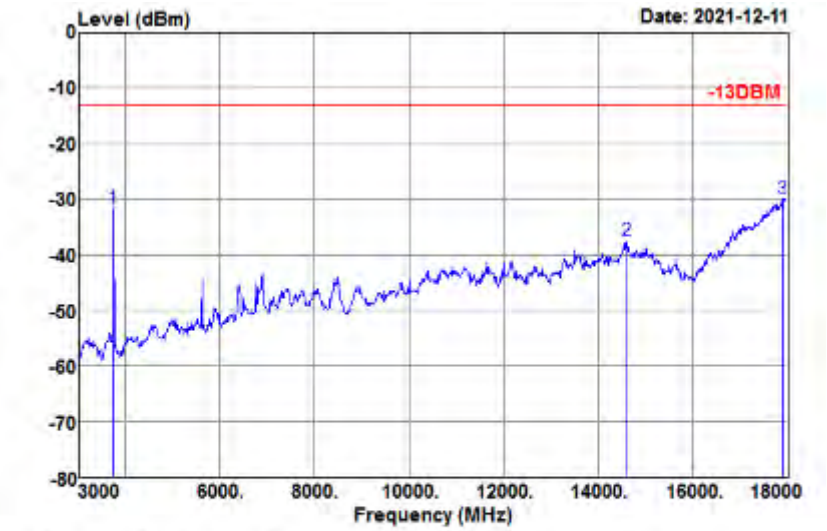
**CHANNEL BANDWIDTH: 3MHz / QPSK**

| | | | |
|---|---|---|---|
| **MODE** | TX channel 18900 | **FREQUENCY RANGE** | Above 1000MHz |
| **ENVIRONMENTAL CONDITIONS** | 23deg. C, 70%RH | **INPUT POWER** | AC 120V/60Hz |
| **TESTED BY** | Jace Hu | | |
| **ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M** | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 3750.000 | -48.78 | 8.59 | -40.19 | -13.00 | -27.19 | Peak |
| 15000.000 | -64.78 | 27.42 | -37.36 | -13.00 | -24.36 | Peak |
| 17910.000 | -65.13 | 35.23 | -29.90 | -13.00 | -16.90 | Peak |

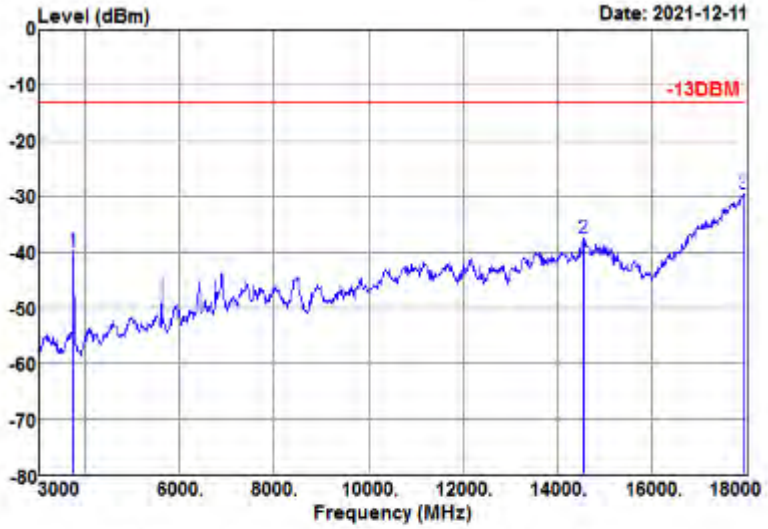
| MODE | TX channel 18900 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | AC 120V/60Hz |
| TESTED BY | Jace Hu | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 3750.000 | -40.22 | 8.66 | -31.56 | -13.00 | -18.56 | Peak |
| 14610.000 | -65.88 | 28.30 | -37.58 | -13.00 | -24.58 | Peak |
| 17910.000 | -69.52 | 39.67 | -29.85 | -13.00 | -16.85 | Peak |

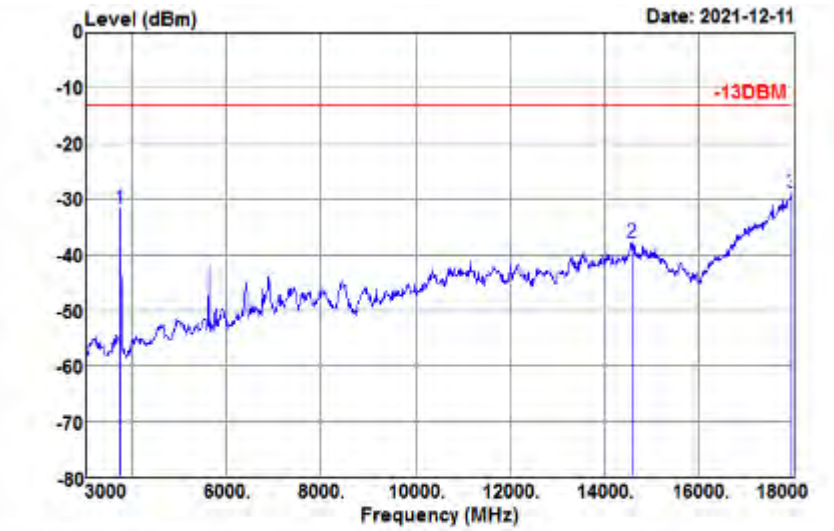
**CHANNEL BANDWIDTH: 5MHz / QPSK**

| | | | |
|---|---|---|---|
| **MODE** | TX channel 18900 | **FREQUENCY RANGE** | Above 1000MHz |
| **ENVIRONMENTAL CONDITIONS** | 23deg. C, 70%RH | **INPUT POWER** | AC 120V/60Hz |
| **TESTED BY** | Jace Hu | | |
| **ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M** | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 3750.000 | -48.35 | 8.59 | -39.76 | -13.00 | -26.76 | Peak |
| 14565.000 | -64.04 | 26.46 | -37.58 | -13.00 | -24.58 | Peak |
| 17955.000 | -64.67 | 35.16 | -29.51 | -13.00 | -16.51 | Peak |

| | | | |
|---|---|---|---|
| **MODE** | TX channel 18900 | **FREQUENCY RANGE** | Above 1000MHz |
| **ENVIRONMENTAL CONDITIONS** | 23deg. C, 70%RH | **INPUT POWER** | AC 120V/60Hz |
| **TESTED BY** | **Jace Hu** | | |
| **ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M** | | | |

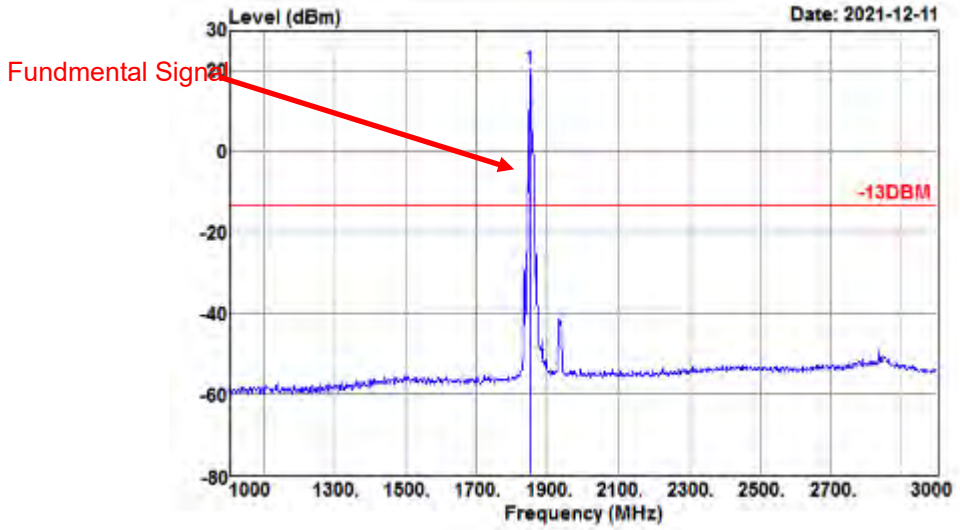


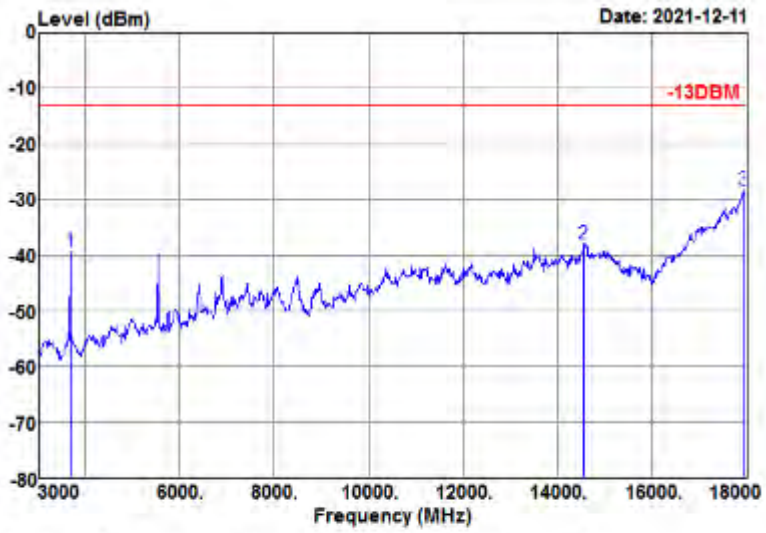

| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 3750.000 | -40.19 | 8.66 | -31.53 | -13.00 | -18.53 | Peak |
| 14595.000 | -66.13 | 28.28 | -37.85 | -13.00 | -24.85 | Peak |
| 17970.000 | -68.82 | 40.16 | -28.66 | -13.00 | -15.66 | Peak |

**CHANNEL BANDWIDTH: 10MHz / QPSK**

**CH18607**

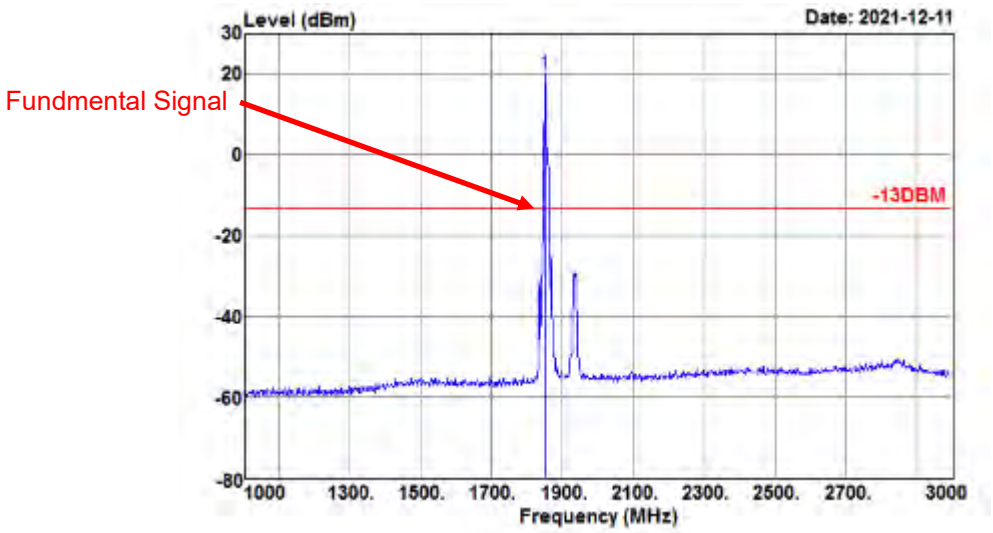
| | | | |
|---|---|---|---|
| **MODE** | TX channel 18607 | **FREQUENCY RANGE** | Above 1000MHz |
| **ENVIRONMENTAL CONDITIONS** | 23deg. C, 70%RH | **INPUT POWER** | AC 120V/60Hz |
| **TESTED BY** | Jace Hu | | |
| **ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M** | | | |

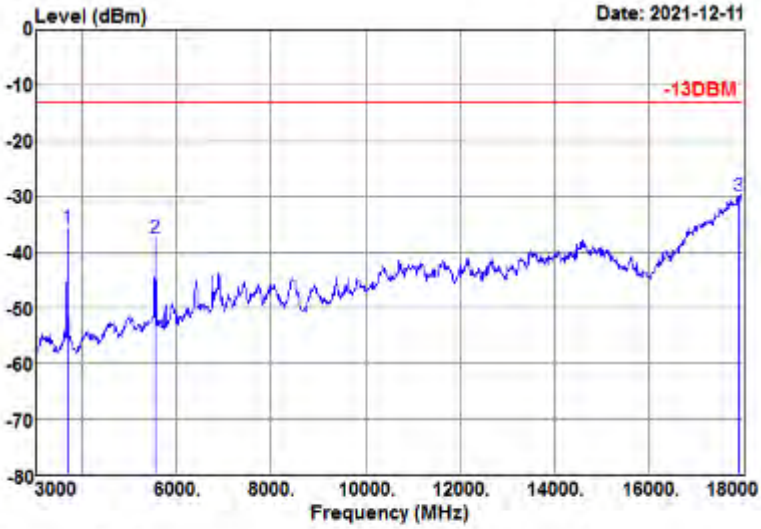



| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 3690.000 | -48.15 | 8.64 | -39.51 | -13.00 | -26.51 | Peak |
| 14565.000 | -64.34 | 26.46 | -37.88 | -13.00 | -24.88 | Peak |
| 17940.000 | -63.51 | 35.19 | -28.32 | -13.00 | -15.32 | Peak |

| MODE | TX channel 18607 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | AC 120V/60Hz |
| TESTED BY | Jace Hu | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |

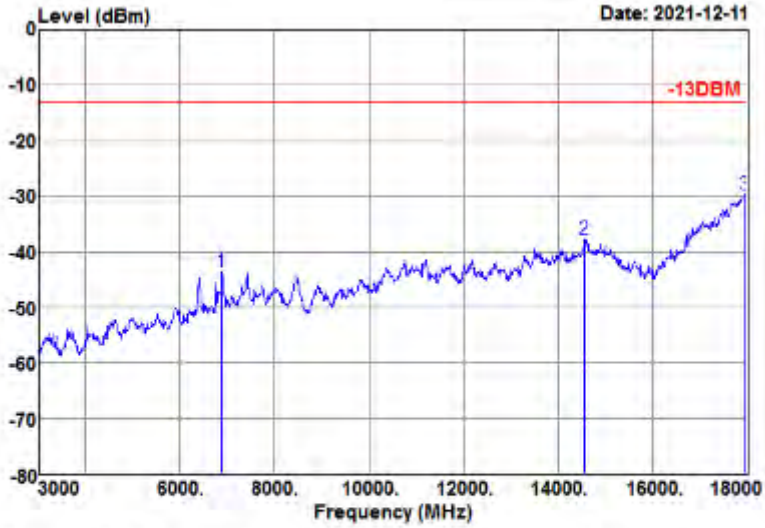



| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 3690.000 | -44.35 | 8.63 | -35.72 | -13.00 | -22.72 | Peak |
| 5550.000 | -50.67 | 13.23 | -37.44 | -13.00 | -24.44 | Peak |
| 17910.000 | -69.72 | 39.67 | -30.05 | -13.00 | -17.05 | Peak |

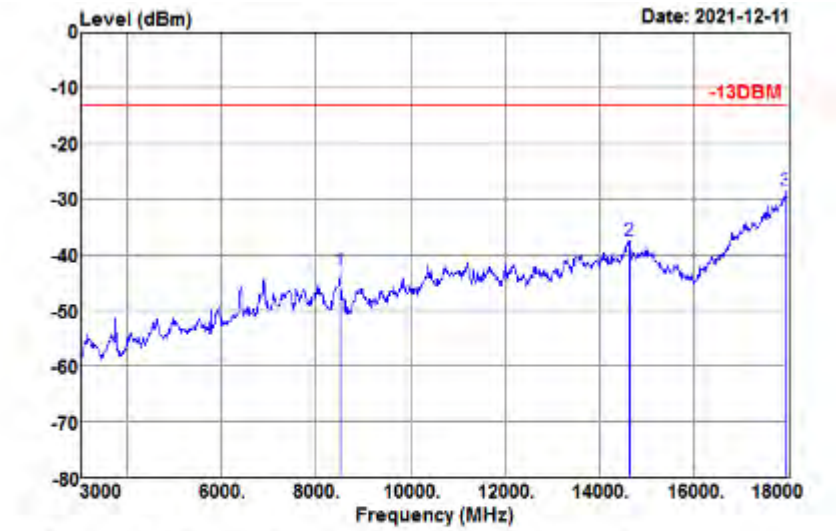
**CH18900**

| | | | |
|---|---|---|---|
| **MODE** | TX channel 18900 | **FREQUENCY RANGE** | Above 1000MHz |
| **ENVIRONMENTAL CONDITIONS** | 23deg. C, 70%RH | **INPUT POWER** | AC 120V/60Hz |
| **TESTED BY** | Jace Hu | | |
| **ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M** | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 6885.000 | -61.76 | 18.03 | -43.73 | -13.00 | -30.73 | Peak |
| 14565.000 | -64.19 | 26.46 | -37.73 | -13.00 | -24.73 | Peak |
| 17955.000 | -64.86 | 35.16 | -29.70 | -13.00 | -16.70 | Peak |

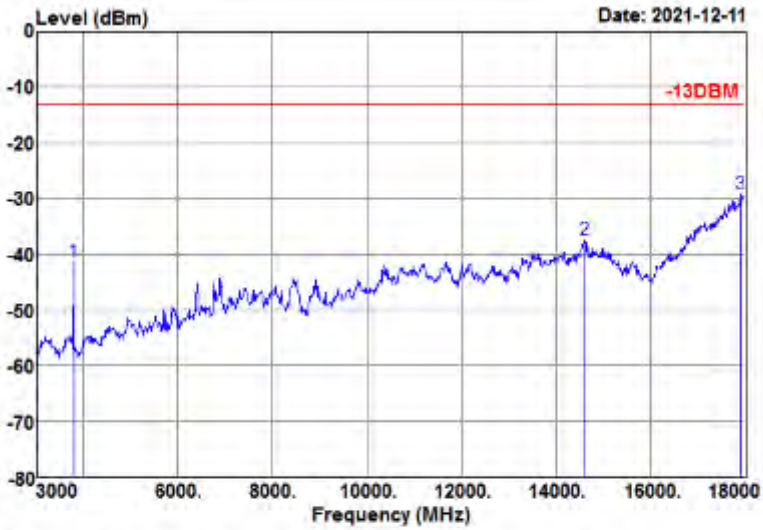
| MODE | TX channel 18900 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | AC 120V/60Hz |
| TESTED BY | Jace Hu | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 8505.000 | -62.36 | 19.33 | -43.03 | -13.00 | -30.03 | Peak |
| 14640.000 | -65.89 | 28.34 | -37.55 | -13.00 | -24.55 | Peak |
| 17940.000 | -68.34 | 39.91 | -28.43 | -13.00 | -15.43 | Peak |

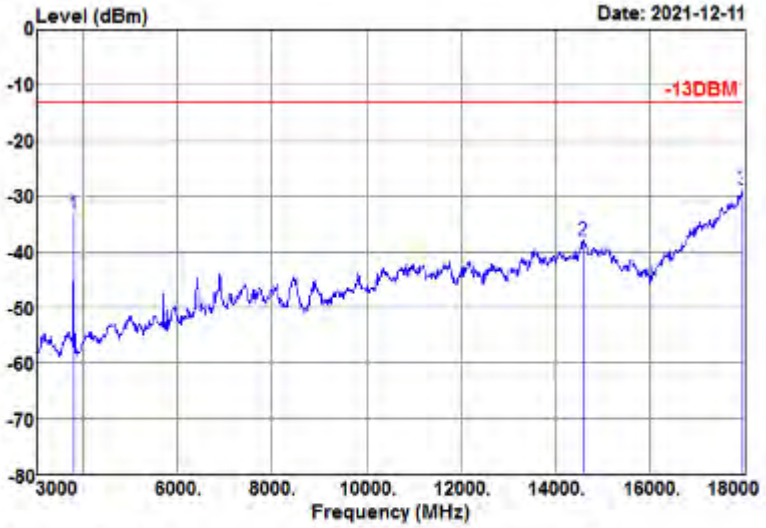
**CH19193**

| | | | |
|---|---|---|---|
| **MODE** | TX channel 19193 | **FREQUENCY RANGE** | Above 1000MHz |
| **ENVIRONMENTAL CONDITIONS** | 23deg. C, 70%RH | **INPUT POWER** | AC 120V/60Hz |
| **TESTED BY** | Jace Hu | | |
| **ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M** | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 3795.000 | -50.05 | 8.60 | -41.45 | -13.00 | -28.45 | Peak |
| 14610.000 | -64.03 | 26.56 | -37.47 | -13.00 | -24.47 | Peak |
| 17925.000 | -64.36 | 35.21 | -29.15 | -13.00 | -16.15 | Peak |

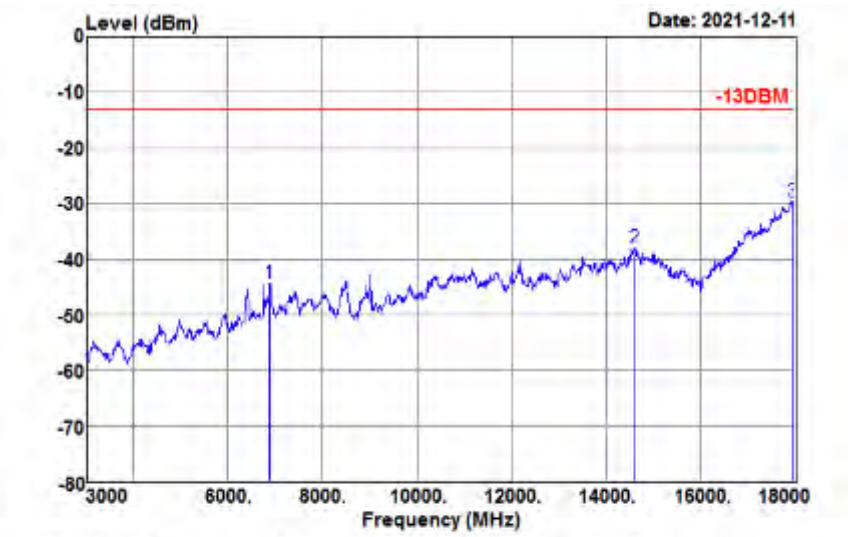
| MODE | TX channel 19193 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | AC 120V/60Hz |
| TESTED BY | Jace Hu | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 3795.000 | -41.94 | 8.69 | -33.25 | -13.00 | -20.25 | Peak |
| 14595.000 | -66.23 | 28.28 | -37.95 | -13.00 | -24.95 | Peak |
| 17970.000 | -69.02 | 40.16 | -28.86 | -13.00 | -15.86 | Peak |

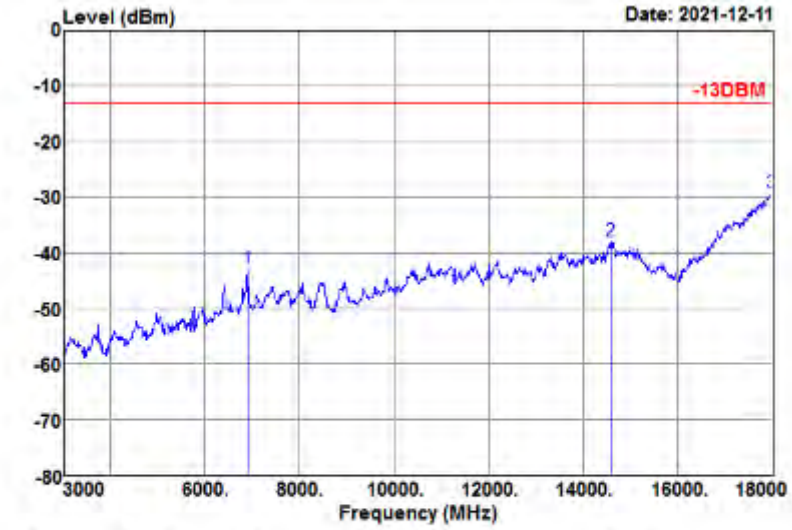
**CHANNEL BANDWIDTH: 15MHz / QPSK**

| | | | |
|---|---|---|---|
| **MODE** | TX channel 18900 | **FREQUENCY RANGE** | Above 1000MHz |
| **ENVIRONMENTAL CONDITIONS** | 23deg. C, 70%RH | **INPUT POWER** | AC 120V/60Hz |
| **TESTED BY** | Jace Hu | | |
| **ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M** | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 6885.000 | -62.41 | 18.03 | -44.38 | -13.00 | -31.38 | Peak |
| 14610.000 | -64.46 | 26.56 | -37.90 | -13.00 | -24.90 | Peak |
| 17940.000 | -64.90 | 35.19 | -29.71 | -13.00 | -16.71 | Peak |

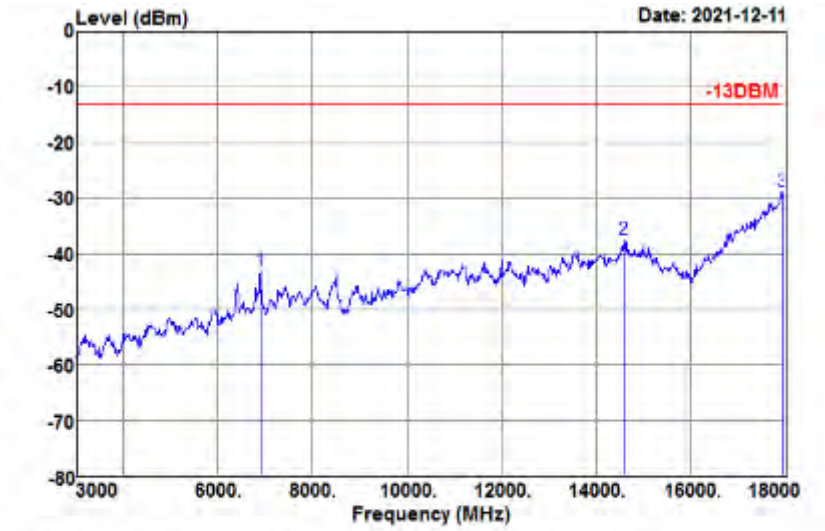
| MODE | TX channel 18900 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | AC 120V/60Hz |
| TESTED BY | Jace Hu | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 6900.000 | -61.37 | 18.41 | -42.96 | -13.00 | -29.96 | Peak |
| 14580.000 | -66.15 | 28.26 | -37.89 | -13.00 | -24.89 | Peak |
| 17985.000 | -69.64 | 40.28 | -29.36 | -13.00 | -16.36 | Peak |

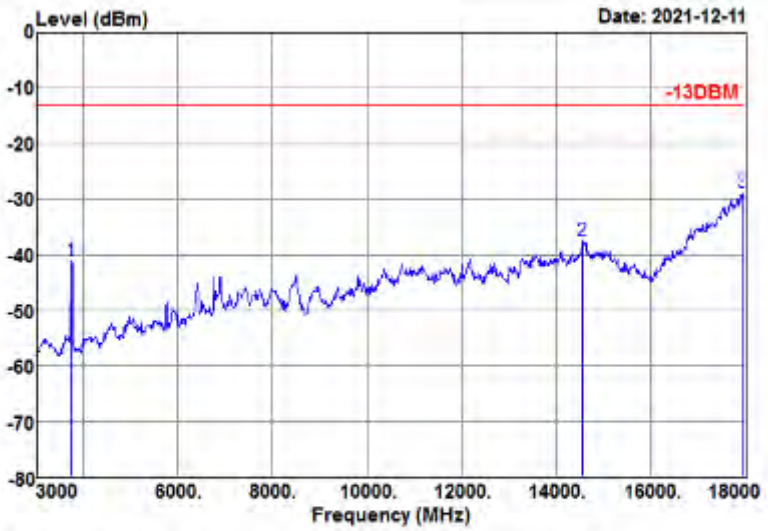
**CHANNEL BANDWIDTH: 20MHz / QPSK**

| | | | |
|---|---|---|---|
| **MODE** | TX channel 18900 | **FREQUENCY RANGE** | Above 1000MHz |
| **ENVIRONMENTAL CONDITIONS** | 23deg. C, 70%RH | **INPUT POWER** | AC 120V/60Hz |
| **TESTED BY** | Jace Hu | | |
| **ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M** | | | |




| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 6900.000 | -61.27 | 18.08 | -43.19 | -13.00 | -30.19 | Peak |
| 14595.000 | -64.16 | 26.53 | -37.63 | -13.00 | -24.63 | Peak |
| 17940.000 | -64.00 | 35.19 | -28.81 | -13.00 | -15.81 | Peak |

| MODE | TX channel 18900 | FREQUENCY RANGE | Above 1000MHz |
|---|---|---|---|
| ENVIRONMENTAL CONDITIONS | 23deg. C, 70%RH | INPUT POWER | AC 120V/60Hz |
| TESTED BY | Jace Hu | | |
| ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M | | | |



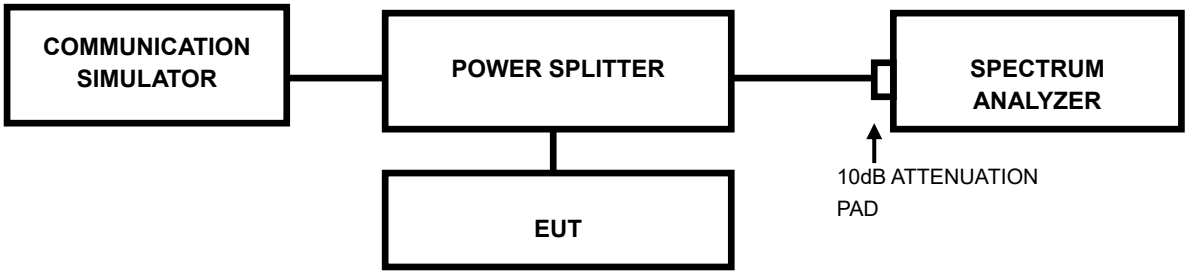

| Freq MHz | Reading level dBm | Aux factor dB | level dBm | Limit level dBm | Over limit dB | Remark |
|---|---|---|---|---|---|---|
| 3750.000 | -49.78 | 8.66 | -41.12 | -13.00 | -28.12 | Peak |
| 14565.000 | -65.83 | 28.24 | -37.59 | -13.00 | -24.59 | Peak |
| 17940.000 | -68.78 | 39.91 | -28.87 | -13.00 | -15.87 | Peak |

## 3.7 PEAK TO AVERAGE RATIO

### 3.7.1 LIMITS OF PEAK TO AVERAGE RATIO MEASUREMENT

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

### 3.7.2 TEST SETUP




### 3.7.3 TEST PROCEDURES

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

### 3.7.4 TEST RESULTS

Please Refer to Appendix Of this test report.

# 4 INFORMATION ON THE TESTING LABORATORIES

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

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

**Shenzhen EMC/RF Lab**:
Tel: +86-755-88696566
Fax: +86-755-88696577

**Email:** customerservice.sw@bureauveritas.com
**Web Site**: www.adt.com.tw

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

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

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

# 6 Appendix

## PCS 1900

FREQUENCY STABILITY PCS1900 TEST RESULT

| Band: PCS1900 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Network | Frequency (MHz) | Temp. (°C) | Voltage (VDC) | Freq. Error (Hz) | Freq. vs. Rated (ppm) | | Verdict |
| | | | | | Result | Limit | |
| GSM | 1850.2 | 20 | 3.27 | 28.93 | 0.02 | -2.5 to 2.5 | Pass |
| | | | 3.85 | 1.03 | 0.00 | -2.5 to 2.5 | Pass |
| | | | 4.43 | 2.03 | 0.00 | -2.5 to 2.5 | Pass |
| | | -30 | 3.85 | 13.21 | 0.01 | -2.5 to 2.5 | Pass |
| | | -20 | 3.85 | 13.49 | 0.01 | -2.5 to 2.5 | Pass |
| | | -10 | 3.85 | 13.72 | 0.01 | -2.5 to 2.5 | Pass |
| | | 0 | 3.85 | 19.02 | 0.01 | -2.5 to 2.5 | Pass |
| | | 10 | 3.85 | 17.92 | 0.01 | -2.5 to 2.5 | Pass |
| | | 30 | 3.85 | 22.47 | 0.01 | -2.5 to 2.5 | Pass |
| | | 40 | 3.85 | 21.37 | 0.01 | -2.5 to 2.5 | Pass |
| | | 50 | 3.85 | 20.44 | 0.01 | -2.5 to 2.5 | Pass |
| | 1880 | 20 | 3.27 | 12.43 | 0.01 | -2.5 to 2.5 | Pass |
| | | | 3.85 | 9.65 | 0.01 | -2.5 to 2.5 | Pass |
| | | | 4.43 | 8.88 | 0.00 | -2.5 to 2.5 | Pass |
| | | -30 | 3.85 | 19.37 | 0.01 | -2.5 to 2.5 | Pass |
| | | -20 | 3.85 | 27.28 | 0.01 | -2.5 to 2.5 | Pass |
| | | -10 | 3.85 | 26.09 | 0.01 | -2.5 to 2.5 | Pass |
| | | 0 | 3.85 | 16.50 | 0.01 | -2.5 to 2.5 | Pass |
| | | 10 | 3.85 | 13.08 | 0.01 | -2.5 to 2.5 | Pass |
| | | 30 | 3.85 | 13.27 | 0.01 | -2.5 to 2.5 | Pass |
| | | 40 | 3.85 | 19.60 | 0.01 | -2.5 to 2.5 | Pass |
| | | 50 | 3.85 | 7.52 | 0.00 | -2.5 to 2.5 | Pass |
| | 1909.8 | 20 | 3.27 | 4.78 | 0.00 | -2.5 to 2.5 | Pass |
| | | | 3.85 | 9.36 | 0.00 | -2.5 to 2.5 | Pass |
| | | | 4.43 | 16.40 | 0.01 | -2.5 to 2.5 | Pass |
| | | -30 | 3.85 | 9.69 | 0.01 | -2.5 to 2.5 | Pass |
| | | -20 | 3.85 | 11.91 | 0.01 | -2.5 to 2.5 | Pass |
| | | -10 | 3.85 | 9.85 | 0.01 | -2.5 to 2.5 | Pass |
| | | 0 | 3.85 | 4.26 | 0.00 | -2.5 to 2.5 | Pass |
| | | 10 | 3.85 | 20.37 | 0.01 | -2.5 to 2.5 | Pass |
| | | 30 | 3.85 | 9.72 | 0.01 | -2.5 to 2.5 | Pass |
| | | 40 | 3.85 | 15.66 | 0.01 | -2.5 to 2.5 | Pass |
| | | 50 | 3.85 | 9.78 | 0.01 | -2.5 to 2.5 | Pass |
| EGSM | 1850.2 | 20 | 3.27 | -2.94 | -0.00 | -2.5 to 2.5 | Pass |
| | | | 3.85 | 12.43 | 0.01 | -2.5 to 2.5 | Pass |
| | | | 4.43 | 12.72 | 0.01 | -2.5 to 2.5 | Pass |
| | | -30 | 3.85 | 3.49 | 0.00 | -2.5 to 2.5 | Pass |
| | | -20 | 3.85 | -11.95 | -0.01 | -2.5 to 2.5 | Pass |
| | | -10 | 3.85 | -3.94 | -0.00 | -2.5 to 2.5 | Pass |
| | | 0 | 3.85 | -1.00 | -0.00 | -2.5 to 2.5 | Pass |
| | | 10 | 3.85 | 9.88 | 0.01 | -2.5 to 2.5 | Pass |
| | | 30 | 3.85 | 10.17 | 0.01 | -2.5 to 2.5 | Pass |
| | | 40 | 3.85 | -7.13 | -0.00 | -2.5 to 2.5 | Pass |
| | | 50 | 3.85 | -9.98 | -0.01 | -2.5 to 2.5 | Pass |
| | 1880 | 20 | 3.27 | 14.21 | 0.01 | -2.5 to 2.5 | Pass |
| | | | 3.85 | 11.33 | 0.01 | -2.5 to 2.5 | Pass |
| | | | 4.43 | 12.01 | 0.01 | -2.5 to 2.5 | Pass |

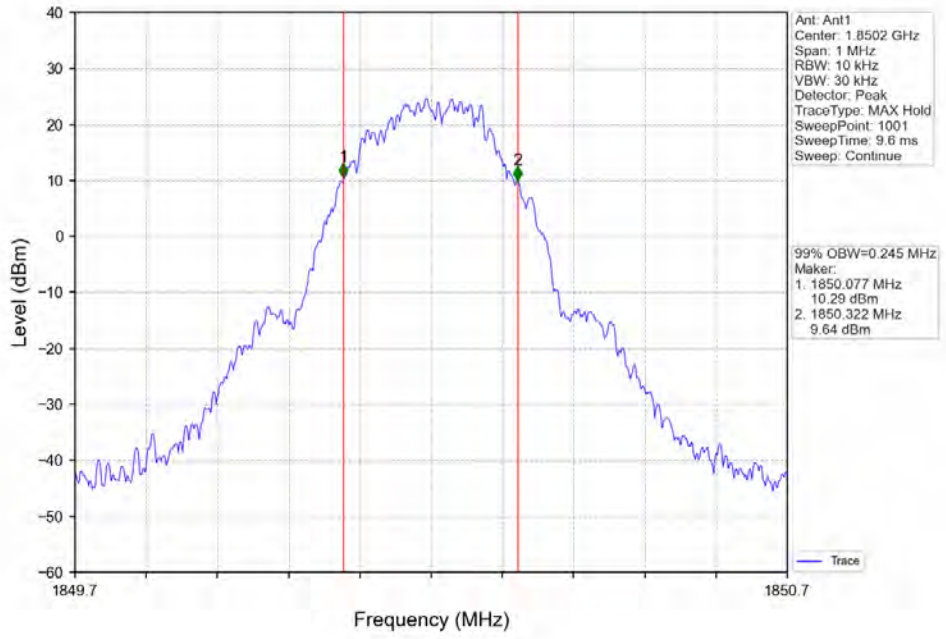
| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | -30 | 3.85 | 7.78 | 0.00 | -2.5 to 2.5 | Pass |
| | | -20 | 3.85 | 12.59 | 0.01 | -2.5 to 2.5 | Pass |
| | | -10 | 3.85 | 3.65 | 0.00 | -2.5 to 2.5 | Pass |
| | | 0 | 3.85 | 12.17 | 0.01 | -2.5 to 2.5 | Pass |
| | | 10 | 3.85 | 13.08 | 0.01 | -2.5 to 2.5 | Pass |
| | | 30 | 3.85 | 23.25 | 0.01 | -2.5 to 2.5 | Pass |
| | | 40 | 3.85 | -5.36 | -0.00 | -2.5 to 2.5 | Pass |
| | | 50 | 3.85 | 13.62 | 0.01 | -2.5 to 2.5 | Pass |
| | 1909.8 | 20 | 3.27 | -0.90 | -0.00 | -2.5 to 2.5 | Pass |
| | | | 3.85 | 5.94 | 0.00 | -2.5 to 2.5 | Pass |
| | | | 4.43 | -7.30 | -0.00 | -2.5 to 2.5 | Pass |
| | | -30 | 3.85 | 3.78 | 0.00 | -2.5 to 2.5 | Pass |
| | | -20 | 3.85 | 13.37 | 0.01 | -2.5 to 2.5 | Pass |
| | | -10 | 3.85 | 10.36 | 0.01 | -2.5 to 2.5 | Pass |
| | | 0 | 3.85 | 20.31 | 0.01 | -2.5 to 2.5 | Pass |
| | | 10 | 3.85 | 7.72 | 0.00 | -2.5 to 2.5 | Pass |
| | | 30 | 3.85 | -7.72 | -0.00 | -2.5 to 2.5 | Pass |
| | | 40 | 3.85 | 12.40 | 0.01 | -2.5 to 2.5 | Pass |
| | | 50 | 3.85 | 11.30 | 0.01 | -2.5 to 2.5 | Pass |

## 99% & 26DB BANDWIDTH 99%_OBW TEST RESULT

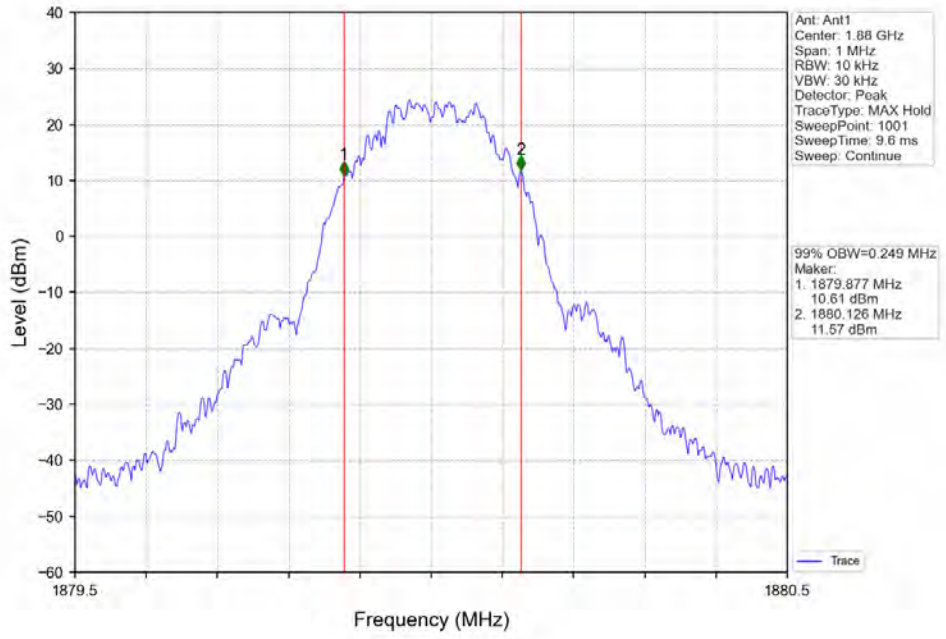
| Band: PCS1900 | | | | | |
|---|---|---|---|---|---|
| ENV | Mode | | Frequency (MHz) | 99% Occupied Bandwidth (MHz) | Verdict |
| | Network | Subset | | Result | |
| NTNV | GSM | 1 TX Slot | 1850.2 | 0.245 | Pass |
| | | | 1880 | 0.249 | Pass |
| | | | 1909.8 | 0.244 | Pass |
| | EGSM | 1 TX Slot | 1850.2 | 0.246 | Pass |
| | | | 1880 | 0.258 | Pass |
| | | | 1909.8 | 0.248 | Pass |

## TEST GRAPH

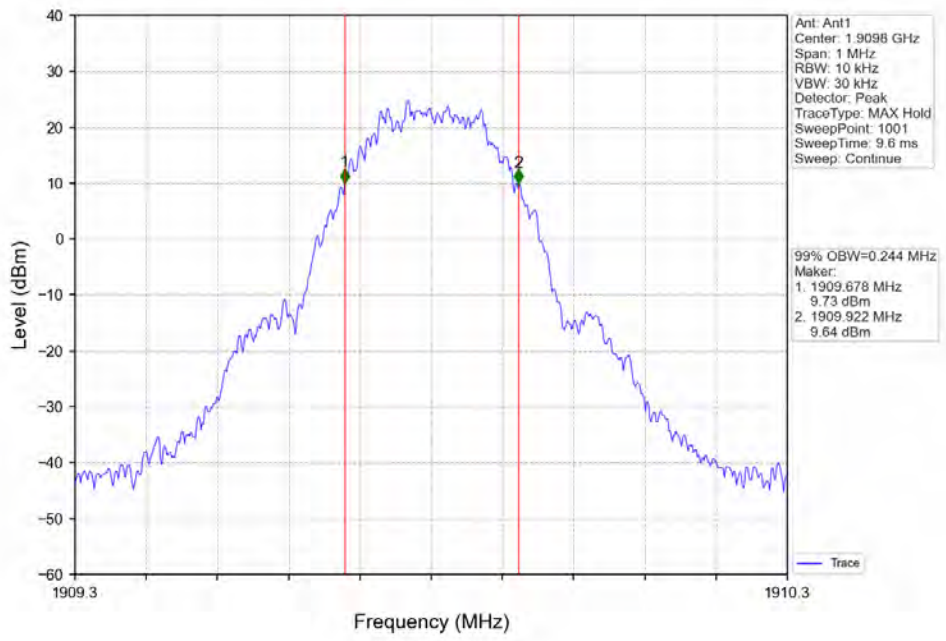
PCS1900_GSM_LCH_1850.2MHz_1 TX Slot_NTNV



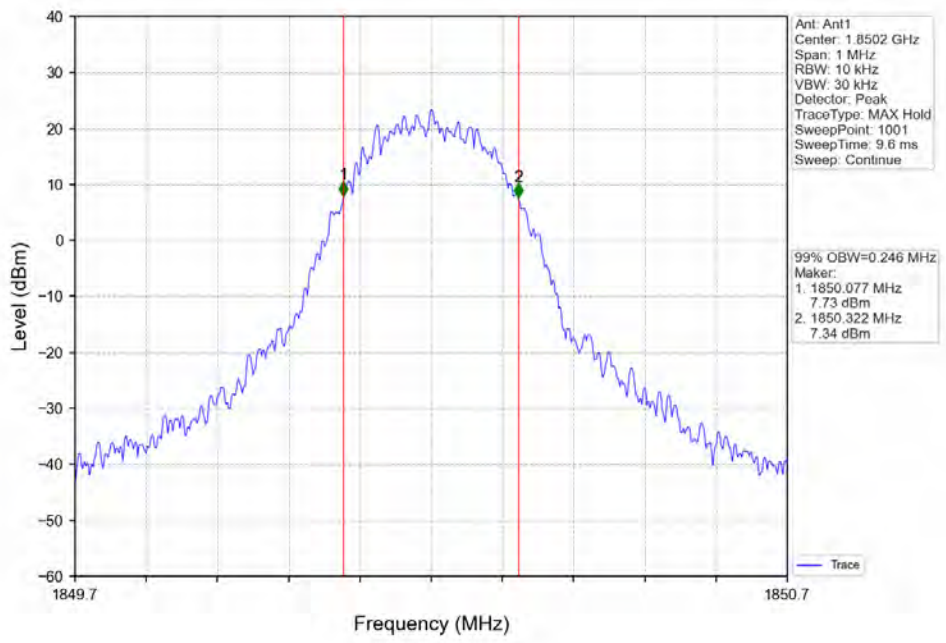

PCS1900_GSM_MCH_1880MHz_1 TX Slot_NTNV



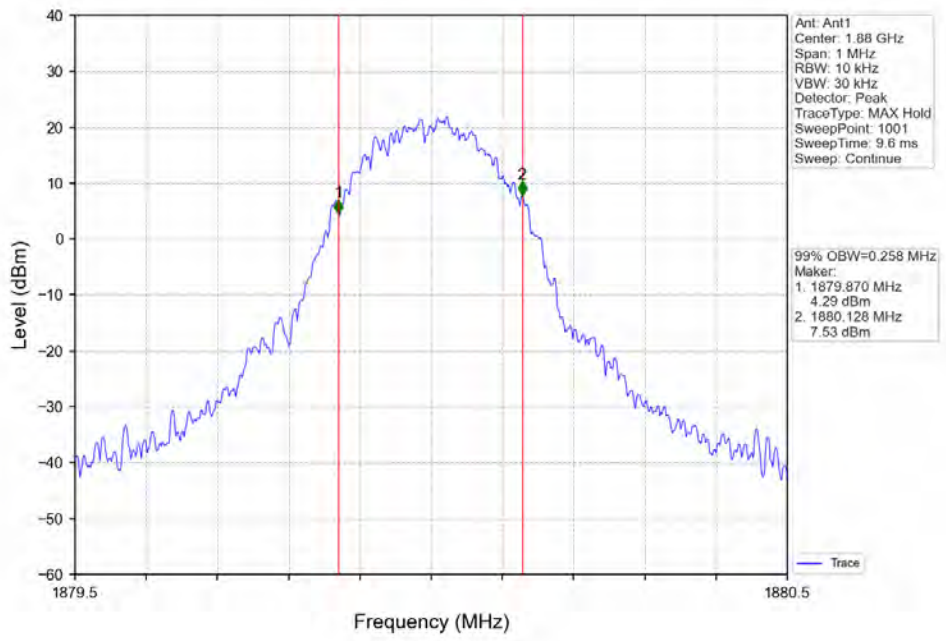
PCS1900_GSM_HCH_1909.8MHz_1 TX Slot_NTNV



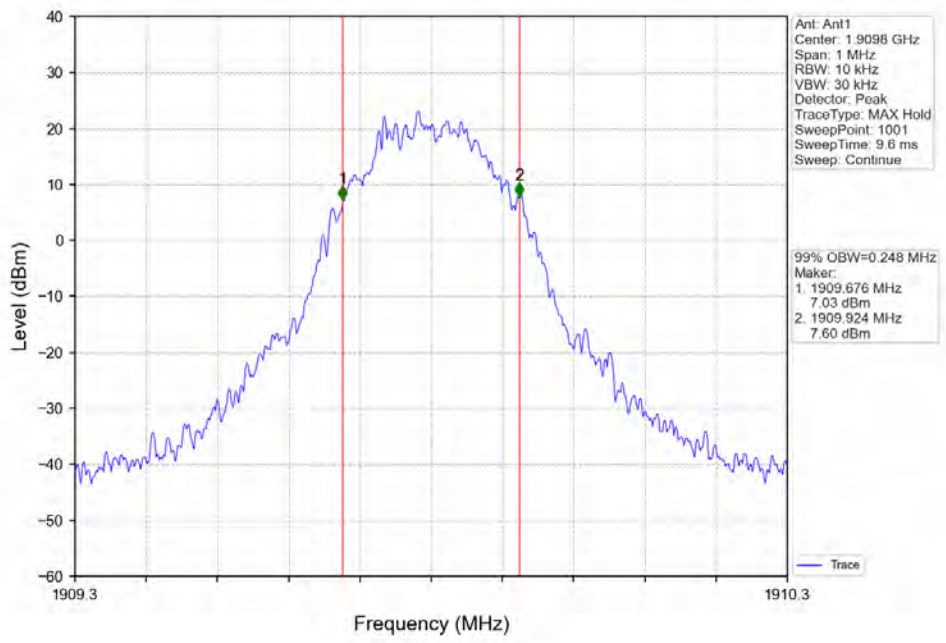

PCS1900_EGSM_LCH_1850.2MHz_1 TX Slot_NTNV



PCS1900_EGSM_MCH_1880MHz_1 TX Slot_NTNV




PCS1900_EGSM_HCH_1909.8MHz_1 TX Slot_NTNV

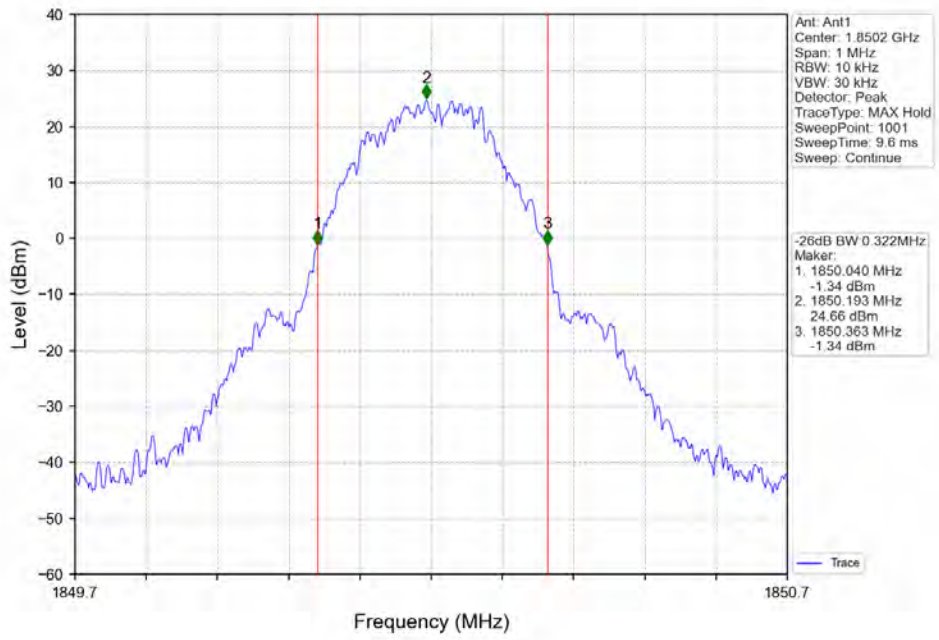


## 26DB_OBW TEST RESULT

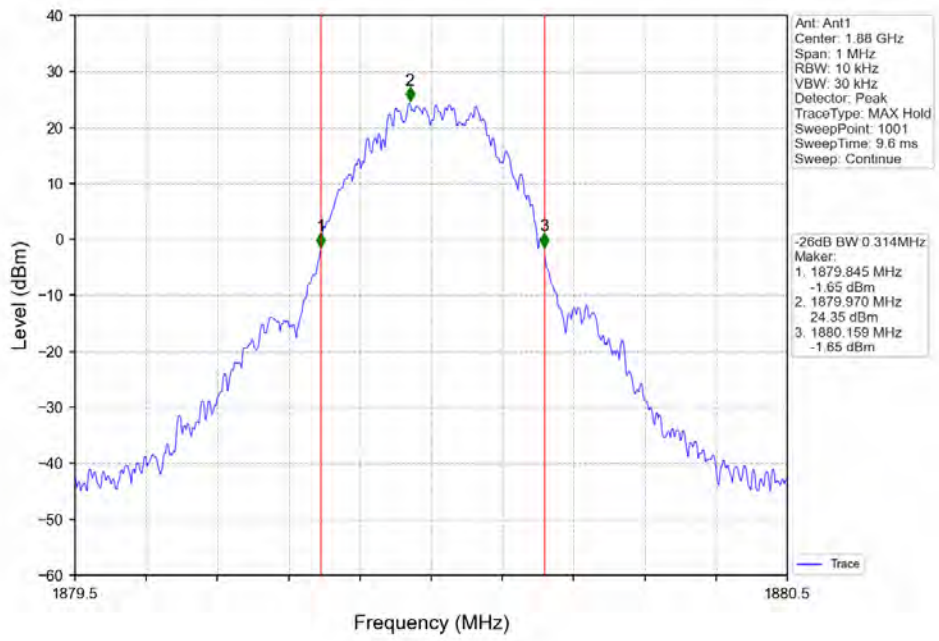
| Band: PCS1900 | | | | | |
|---|---|---|---|---|---|
| ENV | Mode | | Frequency (MHz) | 26dB Bandwidth (MHz) | Verdict |
| | Network | Subset | | Result | |
| NTNV | GSM | 1 TX Slot | 1850.2 | 0.322 | Pass |
| | | | 1880 | 0.314 | Pass |
| | | | 1909.8 | 0.320 | Pass |
| | EGSM | 1 TX Slot | 1850.2 | 0.318 | Pass |
| | | | 1880 | 0.323 | Pass |
| | | | 1909.8 | 0.311 | Pass |

## TEST GRAPH

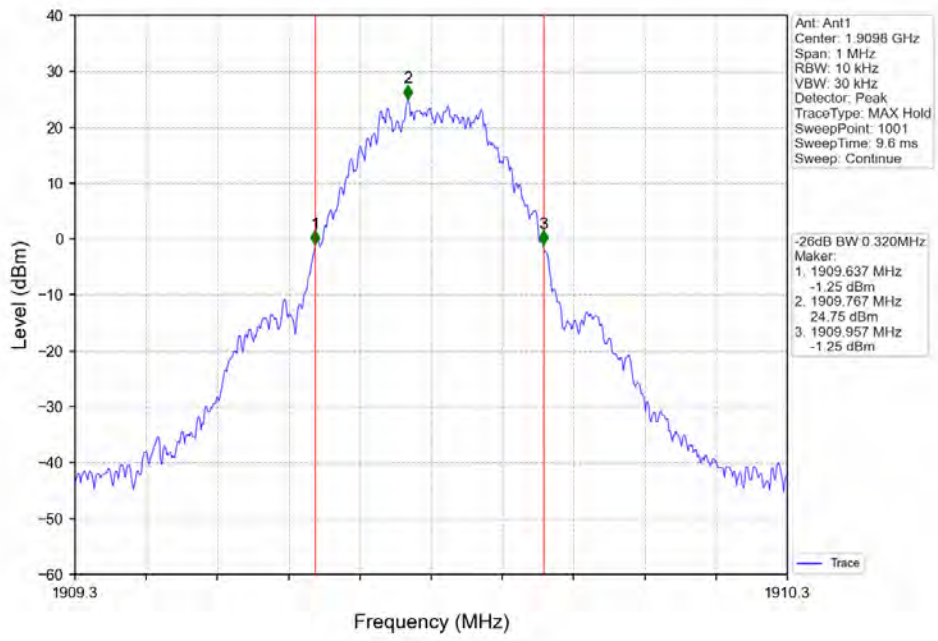
PCS1900_GSM_LCH_1850.2MHz_1 TX Slot_NTNV



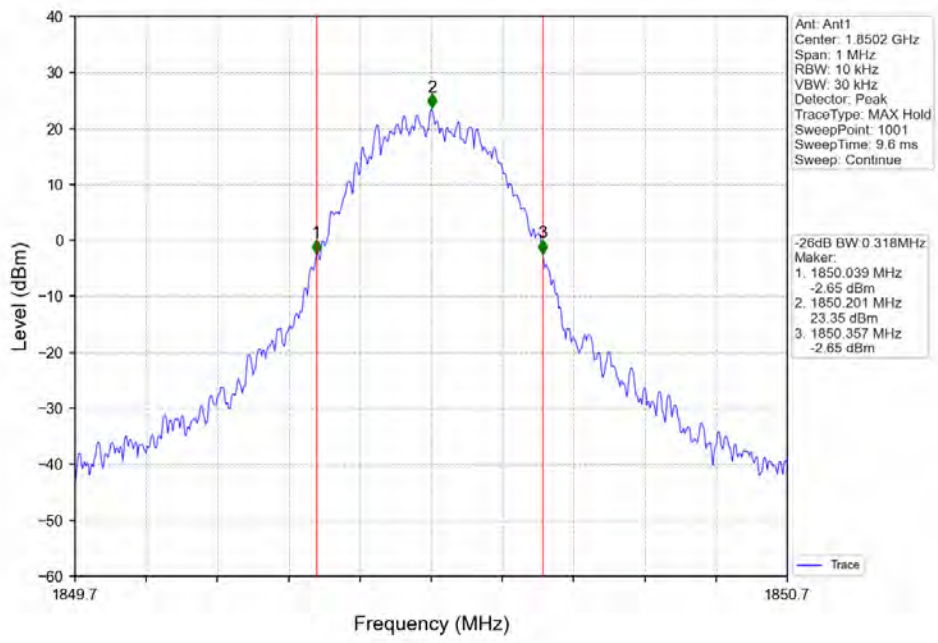

PCS1900_GSM_MCH_1880MHz_1 TX Slot_NTNV



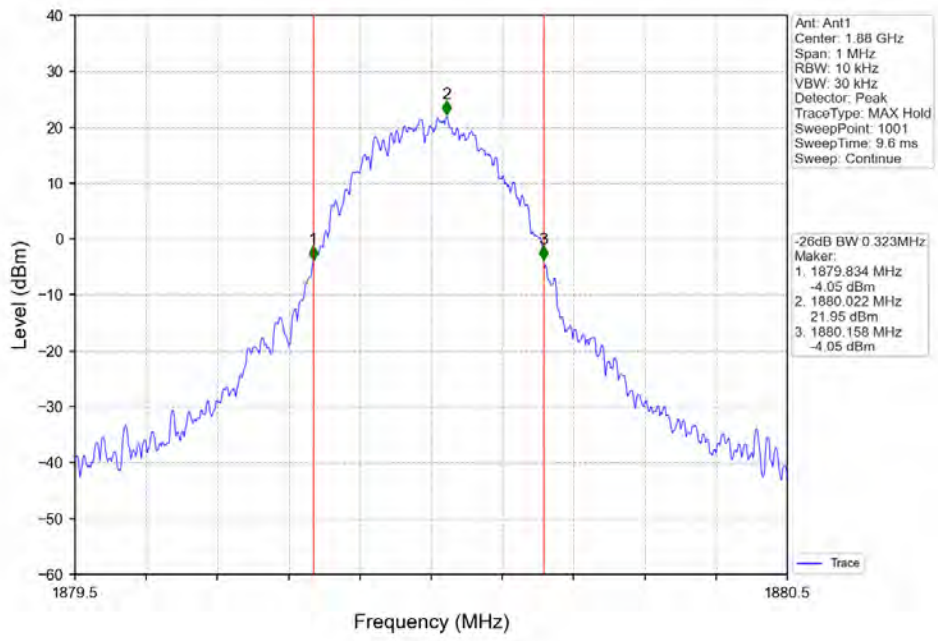
PCS1900_GSM_HCH_1909.8MHz_1 TX Slot_NTNV



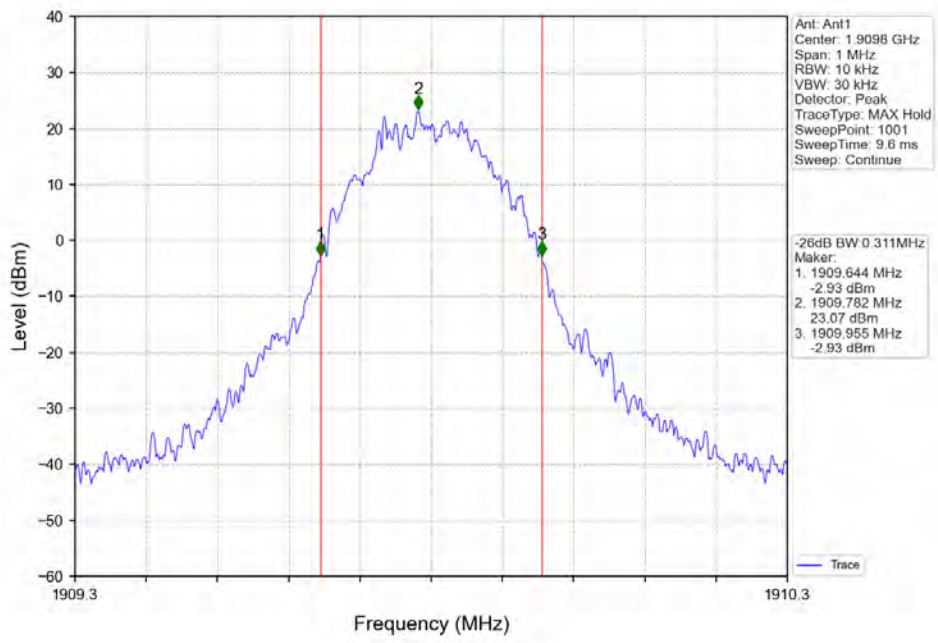

PCS1900_EGSM_LCH_1850.2MHz_1 TX Slot_NTNV



PCS1900_EGSM_MCH_1880MHz_1 TX Slot_NTNV




PCS1900_EGSM_HCH_1909.8MHz_1 TX Slot_NTNV

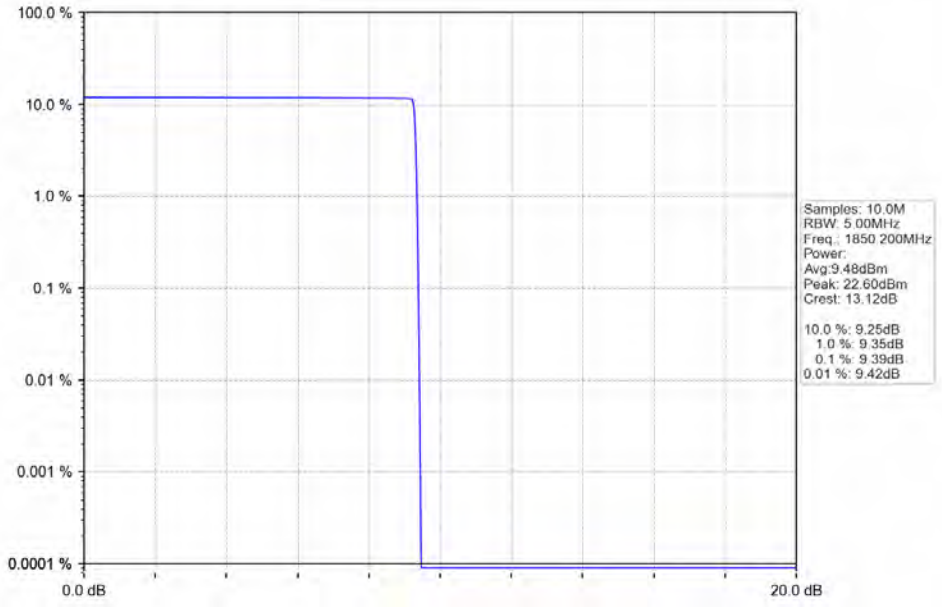


## PEAK-AVERAGE RATIO TEST RESULT

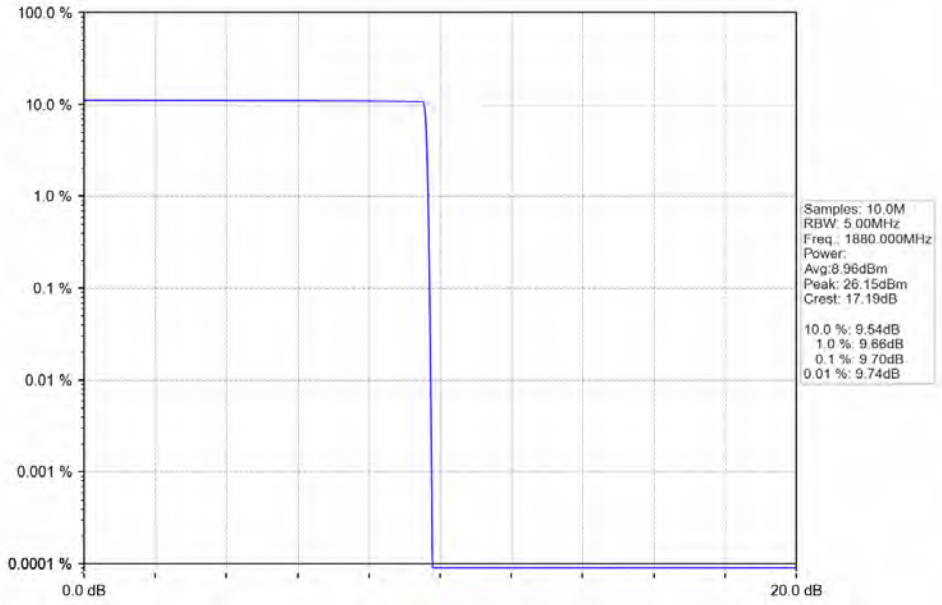
| Band: PCS1900 | | | | | | |
|---|---|---|---|---|---|---|
| ENV | Mode | | Frequency (MHz) | Peak-Average Ratio (dB) | | Verdict |
| | Network | Subset | | Result | Limit | |
| NTNV | GSM | 4 TX Slots | 1850.2 | 9.39 | <=13 | Pass |
| | | | 1880 | 9.70 | <=13 | Pass |
| | | | 1909.8 | 3.60 | <=13 | Pass |
| | EGSM | 4 TX Slots | 1850.2 | 11.82 | <=13 | Pass |
| | | | 1880 | 6.63 | <=13 | Pass |
| | | | 1909.8 | 7.29 | <=13 | Pass |

## TEST GRAPH

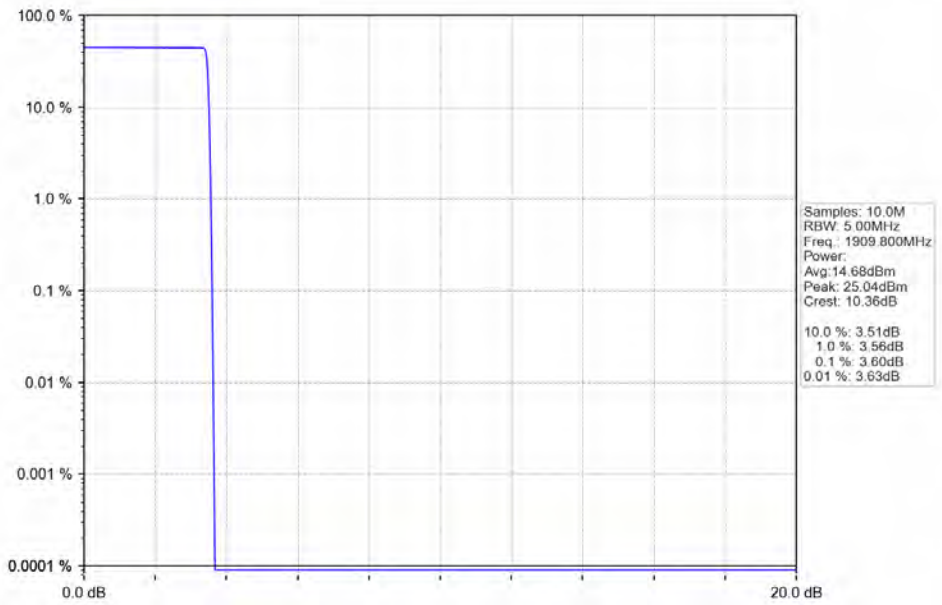
PCS1900_GSM_LCH_1850.2MHz_4 TX Slots_NTNV



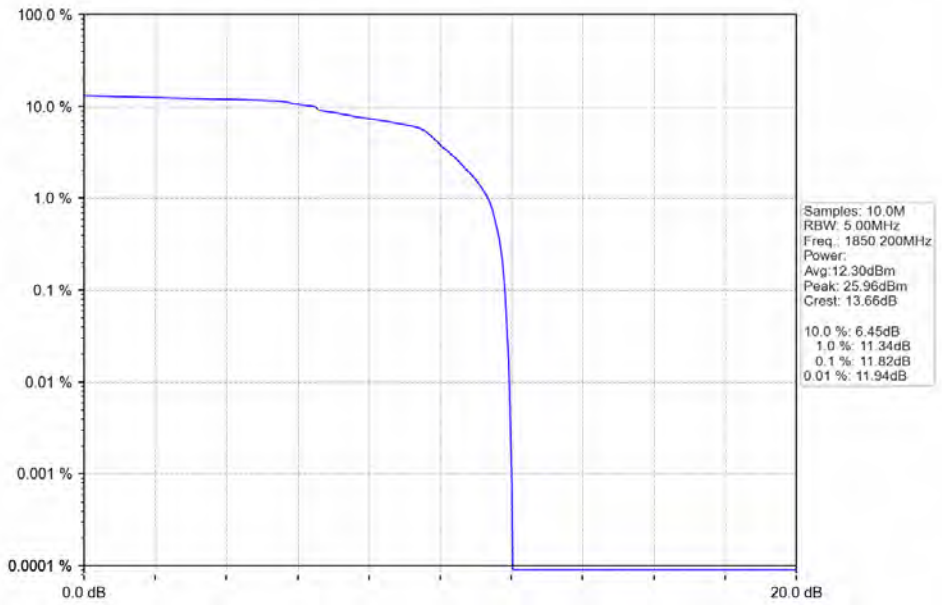

PCS1900_GSM_MCH_1880MHz_4 TX Slots_NTNV



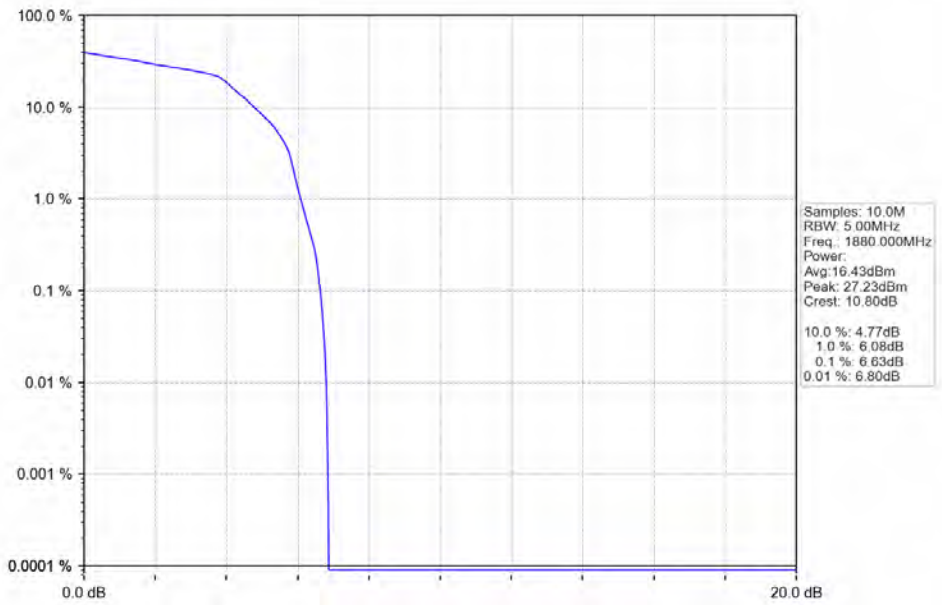
PCS1900_GSM_HCH_1909.8MHz_4 TX Slots_NTNV



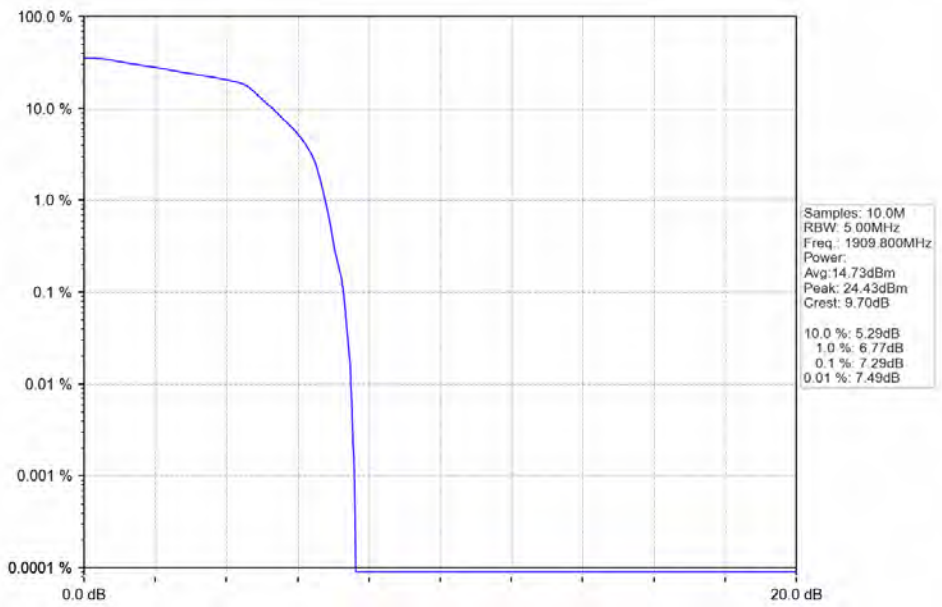

PCS1900_EGSM_LCH_1850.2MHz_4 TX Slots_NTNV



PCS1900_EGSM_MCH_1880MHz_4 TX Slots_NTNV




PCS1900_EGSM_HCH_1909.8MHz_4 TX Slots_NTNV

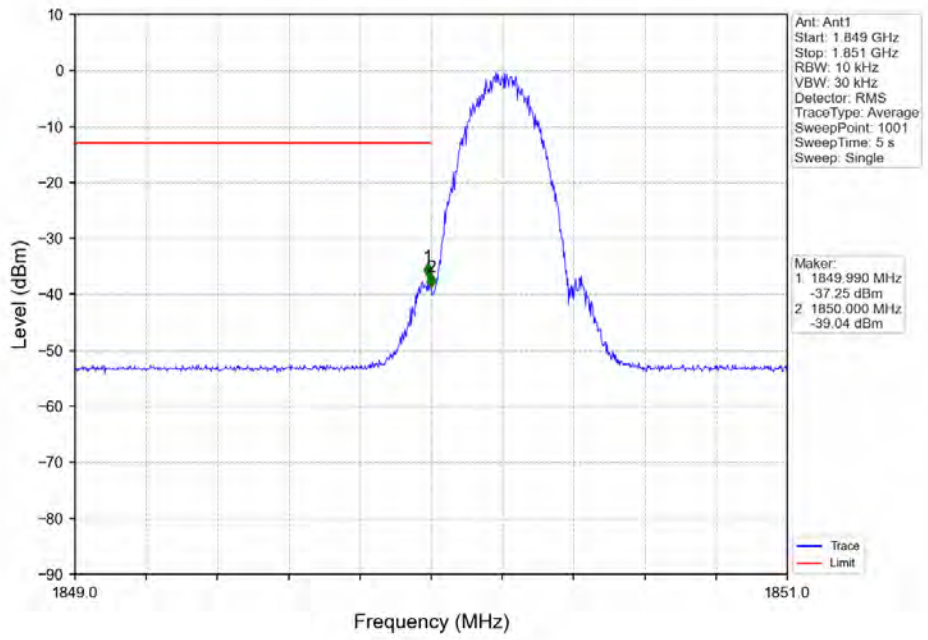


## SPURIOUS EMISSION TEST RESULT

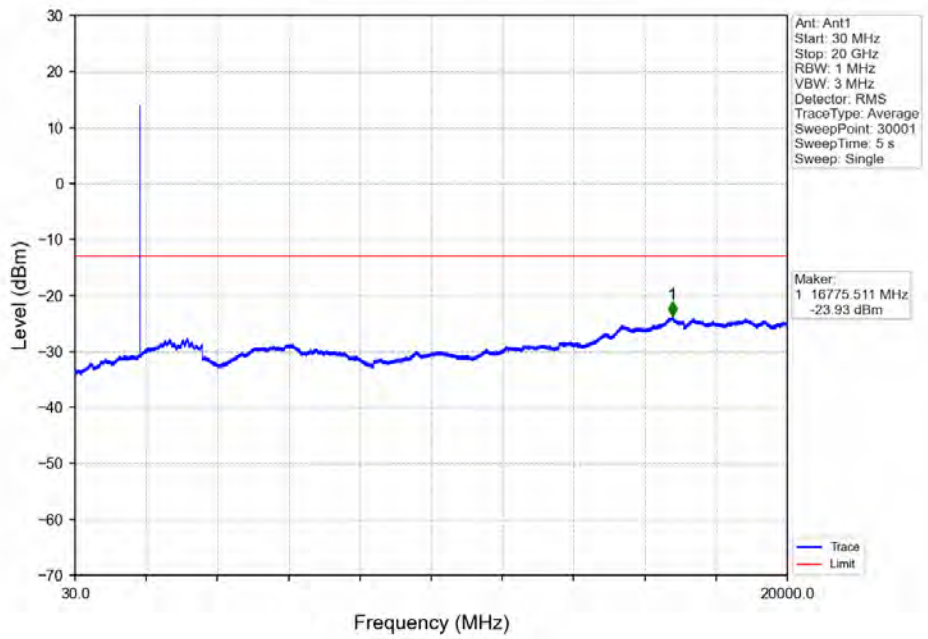
| Band: PCS1900 | | | | | | |
|---|---|---|---|---|---|---|
| ENV | Mode | | Frequency (MHz) | Spurious Emission | | Verdict |
| | Network | Subset | | Result | Limit | |
| NTNV | GSM | 1 TX Slot | 1850.2 | Refer To Test Graph | | Pass |
| | | | 1880 | Refer To Test Graph | | Pass |
| | | | 1909.8 | Refer To Test Graph | | Pass |
| | EGSM | 1 TX Slot | 1850.2 | Refer To Test Graph | | Pass |
| | | | 1880 | Refer To Test Graph | | Pass |
| | | | 1909.8 | Refer To Test Graph | | Pass |

## TEST GRAPH

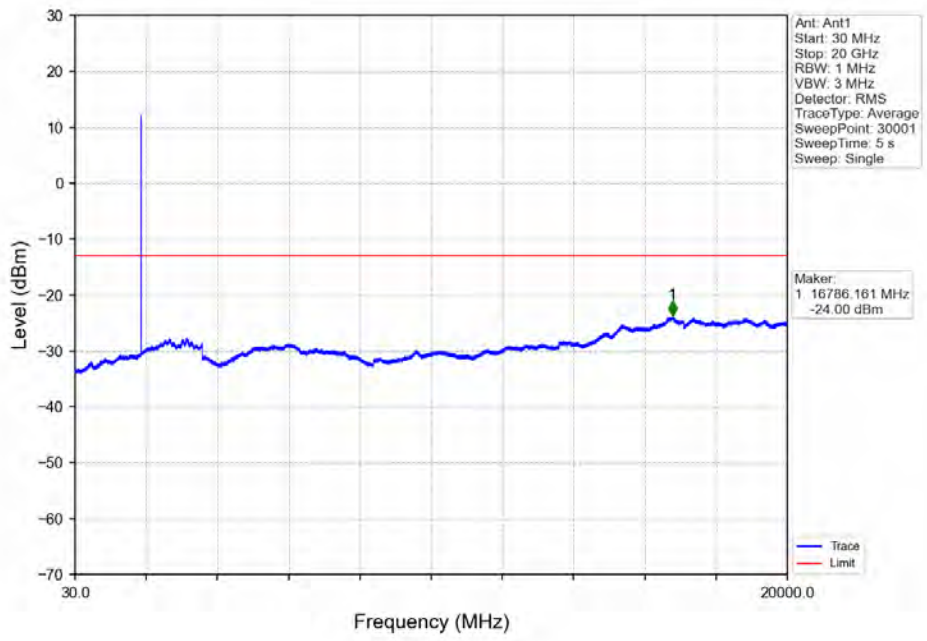
PCS1900_GSM_LCH_1850.2MHz_1 TX Slot_NTNV



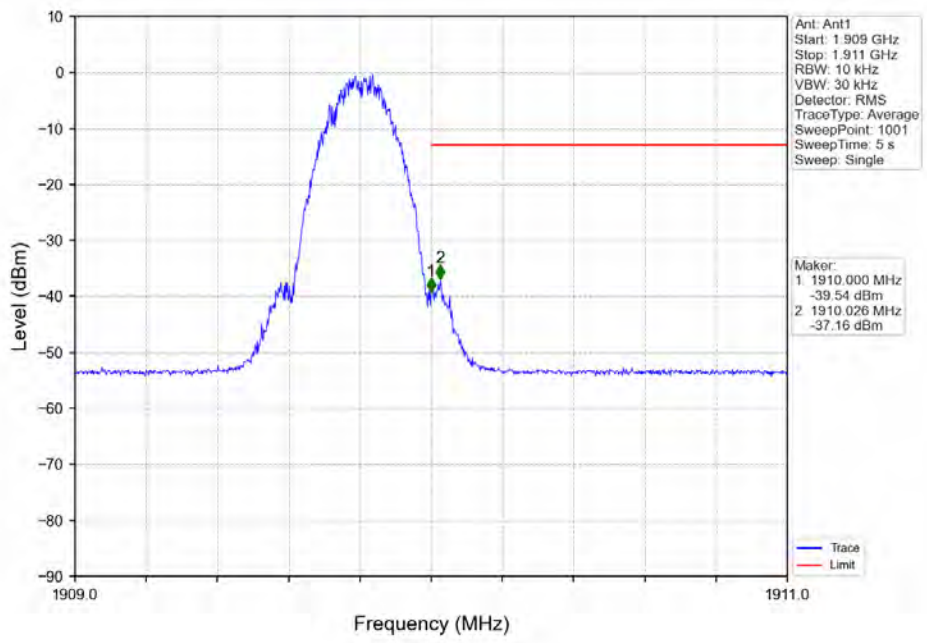

PCS1900_GSM_LCH_1850.2MHz_1 TX Slot_NTNV



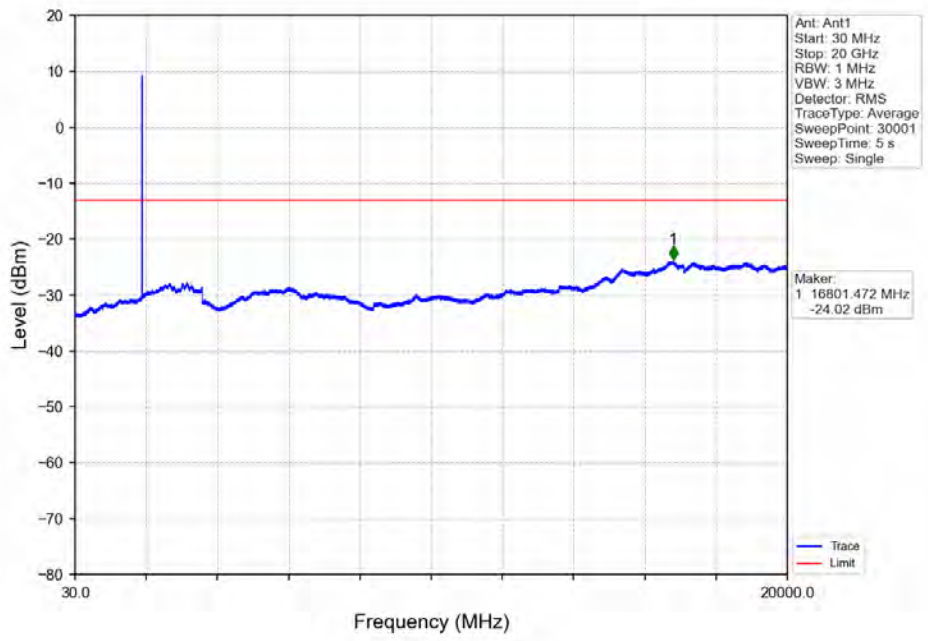
PCS1900_GSM_MCH_1880MHz_1 TX Slot_NTNV



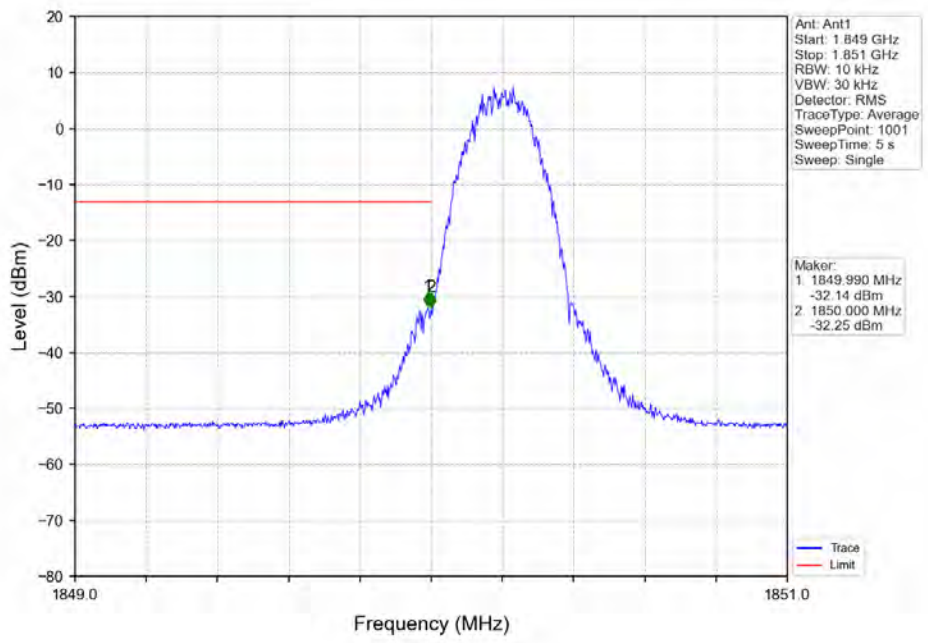

PCS1900_GSM_HCH_1909.8MHz_1 TX Slot_NTNV



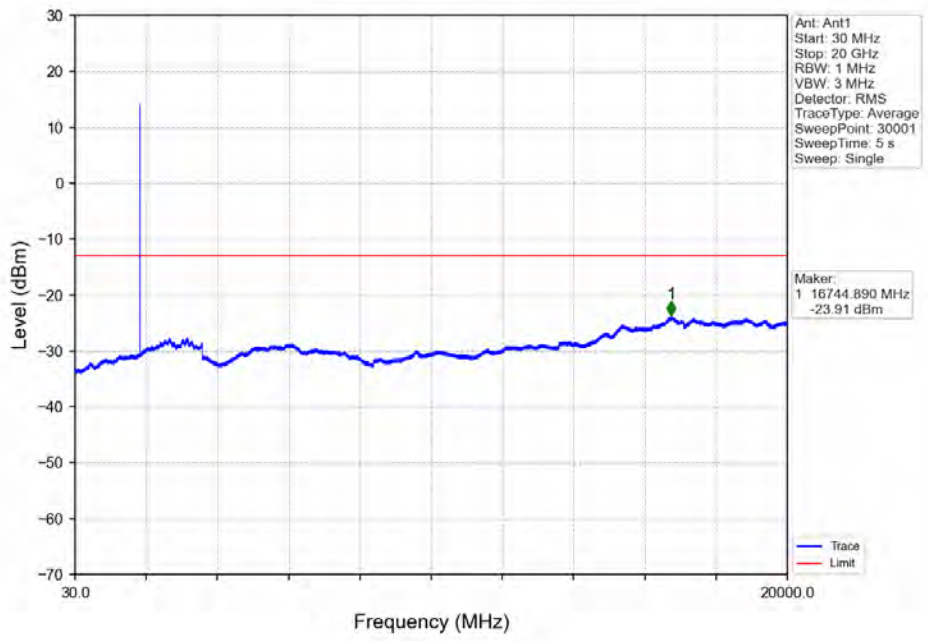
PCS1900_GSM_HCH_1909.8MHz_1 TX Slot_NTNV



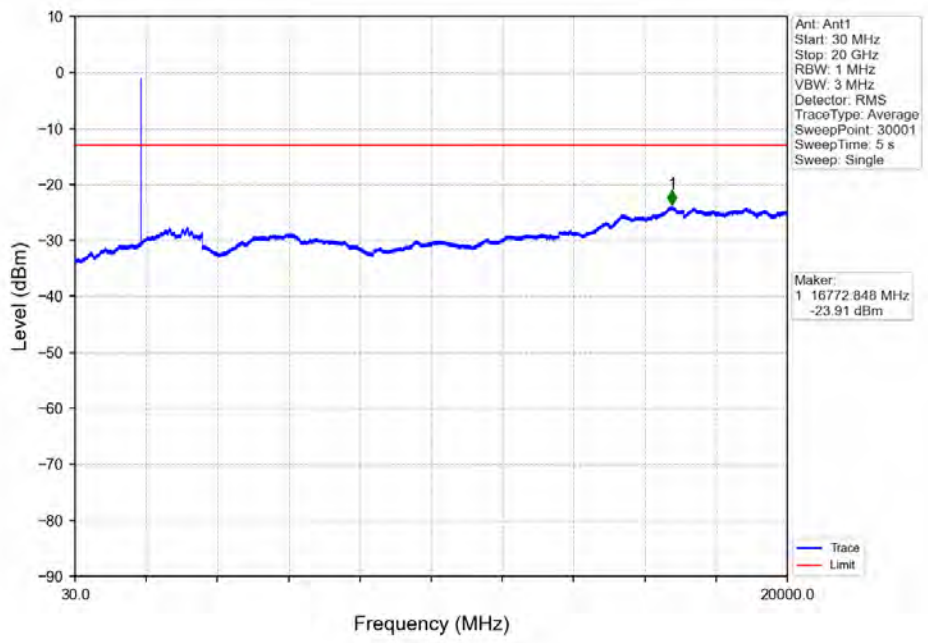

PCS1900_EGSM_LCH_1850.2MHz_1 TX Slot_NTNV



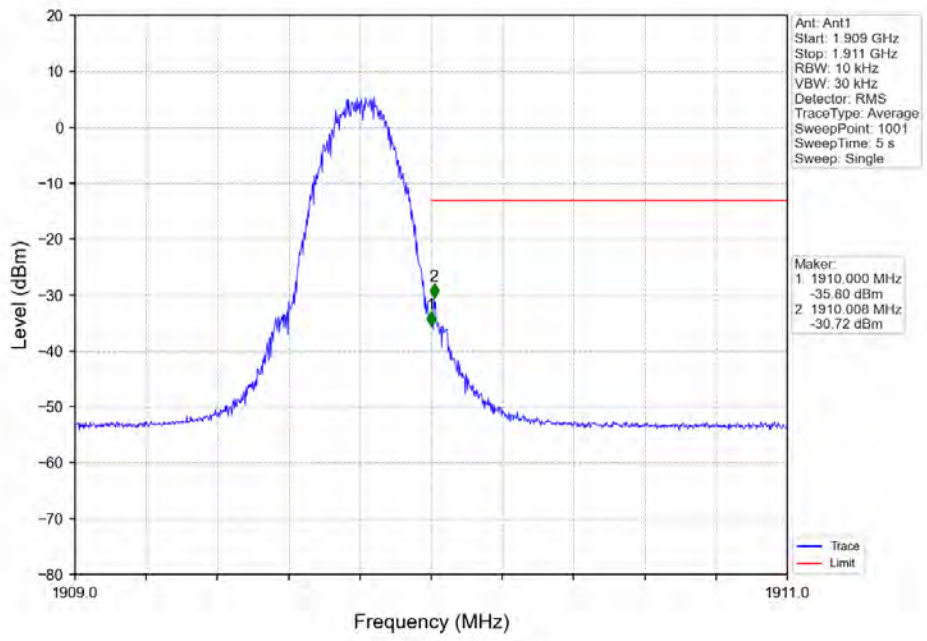
PCS1900_EGSM_LCH_1850.2MHz_1 TX Slot_NTNV

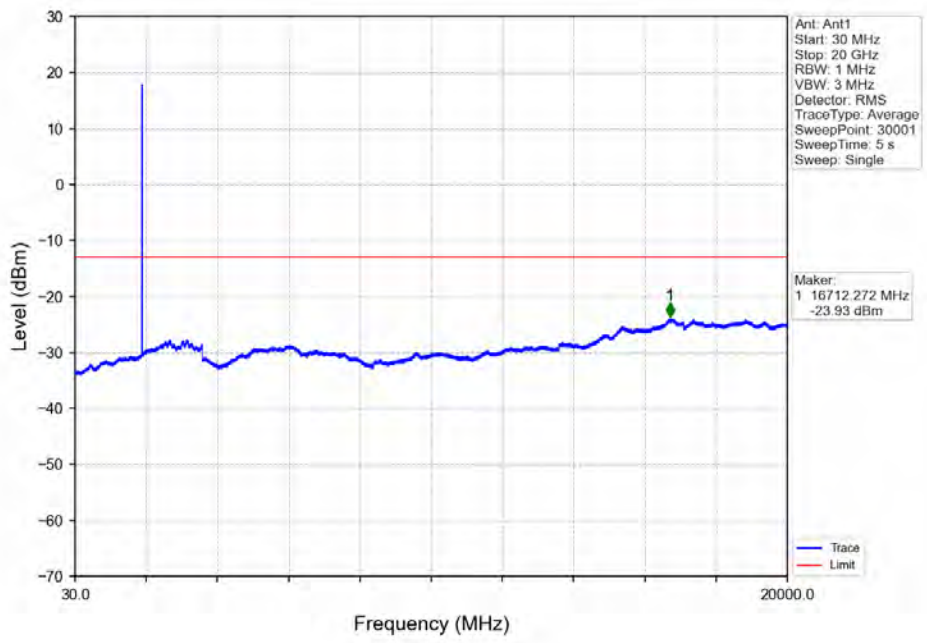



PCS1900_EGSM_MCH_1880MHz_1 TX Slot_NTNV



PCS1900_EGSM_HCH_1909.8MHz_1 TX Slot_NTNV




PCS1900_EGSM_HCH_1909.8MHz_1 TX Slot_NTNV