

# 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:                  | Mobile phone                                |
| Brand Name:               | NOKIA                                       |
| Model Name:               | TA-1542                                     |
| FCC ID:                   | 2AJOTTA-1542                                |
| Date of tests:            | Feb. 02, 2023 ~ Mar. 02, 2023               |

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 Chao Wu<br>Engineer / Mobile Department                                                        | Approved by Peibo Sun<br>Manager / Mobile Department                                                        |
| <br>Date: Mar. 02, 2023 | <br>Date: Mar. 02, 2023 |

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## RELEASE CONTROL RECORD

| ISSUE NO.         | REASON FOR CHANGE | DATE ISSUED   |
|-------------------|-------------------|---------------|
| W7L-P23010016RF02 | Original release  | Mar. 02, 2023 |

## 1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

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

### NOTE:

1. This report refers to the data of W7L-P23010015RF01(model:TA-1558, FCC ID: 2AJOTTA-1558), the difference of TA-1558 and TA-1542 is TA-1542 change model name, TA-1558 is dual card, TA-1542 is single card, and functions are realized through softwareIn. The test data of this report is copied from the report W7L-P23010015RF01(model:TA-1558, FCC ID: 2AJOTTA-1558).
2. For radiation spurious testing, the GSM1900 is in Lab B and the other Band are in Lab A.



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**\*Test Lab Information Reference**

**Lab A:**

Huarui 7Layers High Technology (Suzhou) Co., Ltd.

**Lab Address:**

Tower N, Innovation Center, 88 Zhuyi Road, High-tech District, Suzhou City, Anhui Province

**Accredited Test Lab Cert 6613.01**

The FCC Site Registration No. is 434559; The Designation No. is CN1325.

**Lab B:**

BV 7Layers Communications Technology (Shenzhen) Co. Ltd

**Lab Address:**

No.B102, Dazu Chuangxin Mansion, North of Beihuan Avenue, North Area, Hi-Tech Industrial Park, Nanshan District, Shenzhen, Guangdong, China

**Accredited Test Lab Cert 3939.01**

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

## 1.1 MEASUREMENT UNCERTAINTY

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

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

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



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## 1.2 TEST SITE AND INSTRUMENTS

| Equipment                          | Manufacturer            | Model No.        | Serial No.             | Last Cal. | Next Cal. |
|------------------------------------|-------------------------|------------------|------------------------|-----------|-----------|
| Pre-Amplifier                      | R&S                     | SCU18F1          | 100815                 | Aug.30,22 | Aug.29,24 |
| Pre-Amplifier                      | R&S                     | SCU08F1          | 101028                 | Sep.16,22 | Sep.15,24 |
| Vector Signal Generator            | R&S                     | SMBV100B         | 102176                 | Feb.16,22 | Feb.15,24 |
| Signal Generator                   | R&S                     | SMB100A          | 182185                 | Feb.16,22 | Feb.15,24 |
| 3m Fully-anechoic Chamber          | TDK                     | 9m*6m*6m         | HRSW-SZ-EM C-01Chamber | Nov.25,22 | Nov.24,25 |
| 3m Semi-anechoic Chamber           | TDK                     | 9m*6m*6m         | HRSW-SZ-EM C-02Chamber | Nov.25,22 | Nov.24,25 |
| EMI TEST Receiver                  | R&S                     | ESR26            | 101734                 | Feb.25,22 | Feb.24,24 |
| EMI TEST Receiver                  | R&S                     | ESW44            | 101973                 | Feb.25,22 | Feb.24,24 |
| Bilog Antenna                      | SCHWARZBECK             | VULB 9163        | 1264                   | Feb.28,22 | Feb.27,24 |
| Horn Antenna                       | ETS-LINDGREN            | 3117             | 227836                 | Aug.22,22 | Aug.21,24 |
| Horn Antenna (18GHz-40GHz)         | Steatite Q-par Antennas | QMS 00880        | 23486                  | Feb.23,22 | Feb.22,24 |
| Horn Antenna                       | Steatite Q-par Antennas | QMS 00208        | 23485                  | Aug.22,22 | Aug.21,24 |
| Loop Antenna                       | SCHWARZ                 | HFH2-Z2/Z2E      | 100976                 | Feb.23,22 | Feb.22,24 |
| WIDEBANDRADIO COMMUNICATION TESTER | R&S                     | CMW500           | 169399                 | Jun.27,22 | Jun.26,24 |
| Test Software                      | EMC32                   | EMC32            | N/A                    | N/A       | N/A       |
| Test Software                      | ELEKTRA                 | ELEKTRA4.32      | N/A                    | N/A       | N/A       |
| Open Switch and Control Unit       | R&S                     | OSP220           | 101964                 | Oct.01,22 | Sep.30,24 |
| DC Source                          | HYELEC                  | HY3010B          | 551016                 | Aug.31,22 | Aug.30,24 |
| Hygrothermograph                   | DELI                    | 20210528         | SZ014                  | Sep.06,22 | Sep.05,24 |
| PC                                 | LENOVO                  | E14              | HRSW0024               | N/A       | N/A       |
| TMC-AMI18843A(CABLE)               | R&S                     | HF290-NMNM-7.00M | N/A                    | N/A       | N/A       |
| TMC-AMI18843A(CABLE)               | R&S                     | HF290-NMNM-4.00M | N/A                    | N/A       | N/A       |
| CABLE                              | R&S                     | W13.02           | N/A                    | Oct.31,22 | Apr.29,23 |
| CABLE                              | R&S                     | W12.14           | N/A                    | Oct.31,22 | Apr.29,23 |
| CABLE                              | R&S                     | J12J103539-00-1  | SEP-03-20-069          | Oct.31,22 | Apr.29,23 |
| CABLE                              | R&S                     | J12J103539-00-1  | SEP-03-20-070          | Oct.31,22 | Apr.29,23 |
| Temperature Chamber                | votsch                  | VT4002           | 58566078100050         | May.31,22 | May.30,24 |



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| Equipment                             | Manufacturer  | Model No.                   | Serial No.                  | Last Cal.   | Next Cal.   |
|---------------------------------------|---------------|-----------------------------|-----------------------------|-------------|-------------|
| MXE EMI Receiver                      | KEYSIGHT      | N9038A-544                  | MY54450026                  | Feb. 21,22  | Feb. 20,23  |
| MXE EMI Receiver                      | KEYSIGHT      | N9038A-544                  | MY54450026                  | Feb. 20,23  | Feb. 19,24  |
| EXA Signal Analyzer                   | KEYSIGHT      | N9010A-544                  | MY54510355                  | May.15,22   | May.14,23   |
| Loop Antenna                          | Schwarzbeck   | FMZB 1519B                  | 00173                       | Sep.04,22   | Sep.03,23   |
| Bilog Antenna                         | ETS-LINDGRE N | 3143B                       | 00161965                    | Mar. 06,22  | Mar. 05,23  |
| Horn Antenna                          | ETS-LINDGRE N | 3117                        | 00168692                    | Mar. 06,22  | Mar. 05,23  |
| Horn Antenna (18GHz-40GHz)            | N/A           | QWH-SL-18-40-K-SG/QMS-00361 | 15433                       | Aug. 24, 22 | Aug. 23, 23 |
| Radio Communication Analyzer          | ANRITSU       | MT8820C                     | 6201465426                  | Feb. 15,22  | Feb. 14,23  |
| Radio Communication Analyzer          | ANRITSU       | MT8820C                     | 6201465426                  | Feb. 14,23  | Feb. 13,24  |
| Signal Pre-Amplifier                  | EMSI          | EMC 9135                    | 980249                      | May.12,22   | May.11,23   |
| Signal Pre-Amplifier                  | EMSI          | EMC 012645B                 | 980257                      | May.12,22   | May.11,23   |
| Signal Pre-Amplifier                  | EMSI          | EMC 184045B                 | 980259                      | Feb. 21,22  | Feb.20,23   |
| Signal Pre-Amplifier                  | EMSI          | EMC 184045B                 | 980259                      | Feb. 20,23  | Feb.19,24   |
| 3m Semi-anechoic Chamber              | ETS-LINDGRE N | 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                         | JS1120        | 3.1.36                      | N/A                         | N/A         | N/A         |
| 10dB Attenuator                       | JFW/USA       | 50HF-010-SMA                | 1505                        | May. 07,22  | May. 06,23  |
| Power Meter                           | Anritsu       | ML2495A                     | 1506002                     | Feb. 22,22  | Feb. 21,23  |
| Power Meter                           | Anritsu       | ML2495A                     | 1506002                     | Feb. 21,23  | Feb. 20,24  |
| Power Sensor                          | Anritsu       | MA2411B                     | 1339352                     | May. 07,22  | May. 06,23  |
| Temperature Chamber                   | ESPEC         | SH-242                      | 93000855                    | May. 12,22  | May. 11,23  |
| MXG Analog Microwave Signal Generator | KEYSIGHT      | N5183A                      | MY50143024                  | Feb. 18,22  | Feb. 17,23  |
| MXG Analog Microwave Signal Generator | KEYSIGHT      | N5183A                      | MY50143024                  | Feb. 17,23  | Feb. 16,24  |
| Base station R&S CMW500               | Rohde&Schwarz | CMW500                      | 153085                      | May.12,22   | May.11,23   |
| DC Source                             | Kikusui/JP    | PMX18-5A                    | 0000001                     | Aug. 24,22  | Aug. 23,23  |

- NOTE:**
1. The calibration interval of the above test instruments is 6 months or 12 months or 24 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.

## 2 GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

|                        |                                                                                                                 |                       |
|------------------------|-----------------------------------------------------------------------------------------------------------------|-----------------------|
| <b>PRODUCT</b>         | Mobile phone                                                                                                    |                       |
| <b>BRAND NAME</b>      | NOKIA                                                                                                           |                       |
| <b>MODEL NAME</b>      | TA-1542                                                                                                         |                       |
| <b>NOMINAL VOLTAGE</b> | 5.0Vdc(adapter or host equipment)<br>3.85Vdc (Li-ion, battery)                                                  |                       |
| <b>MODULATION TYPE</b> | <b>GSM/EDGE:</b> GMSK,8PSK<br><b>WCDMA:</b> HSUPA, HSDPA,DC-HSDPA,HSPA+<br><b>LTE Band 2:</b> QPSK,16QAM, 64QAM |                       |
| <b>FREQUENCY RANGE</b> | <b>GSM/EDGE</b>                                                                                                 | 1850.2MHz ~ 1909.8MHz |
|                        | <b>WCDMA</b>                                                                                                    | 1852.4MHz ~ 1907.6MHz |
|                        | <b>LTE Band 2<br/>Channel Bandwidth: 1.4MHz</b>                                                                 | 1850.7MHz ~ 1909.3MHz |
|                        | <b>LTE Band 2<br/>Channel Bandwidth: 3MHz</b>                                                                   | 1851.5MHz ~ 1908.5MHz |
|                        | <b>LTE Band 2<br/>Channel Bandwidth: 5MHz</b>                                                                   | 1852.5MHz ~ 1907.5MHz |
|                        | <b>LTE Band 2<br/>Channel Bandwidth: 10MHz</b>                                                                  | 1855.0MHz ~ 1905.0MHz |
|                        | <b>LTE Band 2<br/>Channel Bandwidth: 15MHz</b>                                                                  | 1857.5MHz ~ 1902.5MHz |
|                        | <b>LTE Band 2<br/>Channel Bandwidth: 20MHz</b>                                                                  | 1860.0MHz ~ 1900.0MHz |
| <b>MAX. EIRP POWER</b> | <b>GSM</b>                                                                                                      | 558.47mW              |
|                        | <b>EDGE</b>                                                                                                     | 261.22mW              |
|                        | <b>WCDMA</b>                                                                                                    | 120.5mW               |
|                        | <b>LTE Band 2<br/>Channel Bandwidth: 1.4MHz</b>                                                                 | 108.14mW              |
|                        | <b>LTE Band 2<br/>Channel Bandwidth: 3MHz</b>                                                                   | 108.14mW              |
|                        | <b>LTE Band 2<br/>Channel Bandwidth: 5MHz</b>                                                                   | 109.14mW              |
|                        | <b>LTE Band 2<br/>Channel Bandwidth: 10MHz</b>                                                                  | 108.89mW              |
|                        | <b>LTE Band 2<br/>Channel Bandwidth: 15MHz</b>                                                                  | 109.65mW              |
|                        | <b>LTE Band 2<br/>Channel Bandwidth: 20MHz</b>                                                                  | 109.9mW               |

|                            |                                                                                                                                                                                                                                                                      |                |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| <b>EMISSION DESIGNATOR</b> | <b>GSM</b>                                                                                                                                                                                                                                                           | 245KGXW        |
|                            | <b>EDGE</b>                                                                                                                                                                                                                                                          | 245KG7W        |
|                            | <b>WCDMA</b>                                                                                                                                                                                                                                                         | 4M15F9W        |
|                            | <b>LTE Band 2<br/>Channel Bandwidth: 1.4MHz</b>                                                                                                                                                                                                                      | QPSK: 1M10G7D  |
|                            |                                                                                                                                                                                                                                                                      | 16QAM: 1M10W7D |
|                            |                                                                                                                                                                                                                                                                      | 64QAM: 1M10W7D |
|                            | <b>LTE Band 2<br/>Channel Bandwidth: 3MHz</b>                                                                                                                                                                                                                        | QPSK: 2M73G7D  |
|                            |                                                                                                                                                                                                                                                                      | 16QAM: 2M75W7D |
|                            |                                                                                                                                                                                                                                                                      | 64QAM: 2M74W7D |
|                            | <b>LTE Band 2<br/>Channel Bandwidth: 5MHz</b>                                                                                                                                                                                                                        | QPSK: 4M49G7D  |
|                            |                                                                                                                                                                                                                                                                      | 16QAM: 4M52W7D |
|                            |                                                                                                                                                                                                                                                                      | 64QAM: 4M50W7D |
|                            | <b>LTE Band 2<br/>Channel Bandwidth: 10MHz</b>                                                                                                                                                                                                                       | QPSK: 9M09G7D  |
|                            |                                                                                                                                                                                                                                                                      | 16QAM: 9M06W7D |
|                            |                                                                                                                                                                                                                                                                      | 64QAM: 9M06W7D |
| <b>ANTENNA TYPE</b>        | <b>LTE Band 2<br/>Channel Bandwidth: 15MHz</b>                                                                                                                                                                                                                       | QPSK: 13M5G7D  |
|                            |                                                                                                                                                                                                                                                                      | 16QAM: 13M5W7D |
|                            |                                                                                                                                                                                                                                                                      | 64QAM: 13M5W7D |
| <b>ANTENNA TYPE</b>        | <b>LTE Band 2<br/>Channel Bandwidth: 20MHz</b>                                                                                                                                                                                                                       | QPSK: 18M5G7D  |
|                            |                                                                                                                                                                                                                                                                      | 16QAM: 18M5W7D |
|                            |                                                                                                                                                                                                                                                                      | 64QAM: 18M4W7D |
| <b>ANTENNA TYPE</b>        | Fixed Internal Antenna with -2.5dBi gain for GSM1900/WCDMA II / LTE B2                                                                                                                                                                                               |                |
| <b>HW VERSION</b>          | SPR_S63Q0                                                                                                                                                                                                                                                            |                |
| <b>SW VERSION</b>          | 00WW_0_122                                                                                                                                                                                                                                                           |                |
| <b>I/O PORTS</b>           | Refer to user's manual                                                                                                                                                                                                                                               |                |
| <b>CABLE SUPPLIED</b>      | USB cable1: non-shielded cable, with w/o ferrite core, 1 meter<br>USB cable2: non-shielded cable, with w/o ferrite core, 1 meter<br>USB cable3: non-shielded cable, with w/o ferrite core, 1 meter<br>Earphone: non-shielded cable, with w/o ferrite core, 1.2 meter |                |
| <b>EXTREME TEMPERATURE</b> | -20-60°C                                                                                                                                                                                                                                                             |                |
| <b>EXTREME VOLTAGE</b>     | EUT 3.4V - EUT 4.4V                                                                                                                                                                                                                                                  |                |

**NOTE:**

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

| MODULATION MODE | TX FUNCTION |
|-----------------|-------------|
| GSM/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.
4. The product of TA-1542(FCC ID: 2AJOTTA-1542), only the following manufacturer of key parts is different between the first and second supply, other parameters are the same. The details are as follows:

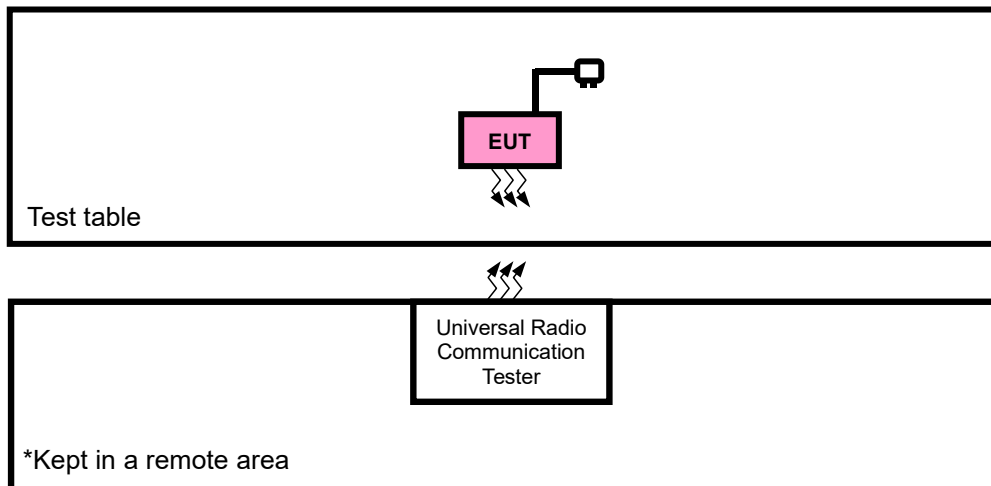
| NO. | Change Description |                  | specificatons                      | first supplier | specificatons                      | second supplier   |
|-----|--------------------|------------------|------------------------------------|----------------|------------------------------------|-------------------|
| 1   | PCBA               | 64GB EMMC        | FEMDNN064G-A3A56<br>BWCTARV11X64G  | Longsys        | FEMDNN064G-A3A56<br>BWCTARV11X64G  | Biwin             |
|     |                    | 128GB EMMC       | FEMDNN128G-A3A56<br>BWCTAKJ21X128G | Longsys        | FEMDNN128G-A3A56<br>BWCTAKJ21X128G | Biwin             |
|     |                    | 3GB LPDDR        | FLXC4003G-50<br>BWMEXX32H2A-24Gb-X | Longsys        | FLXC4003G-50<br>BWMEXX32H2A-24Gb-X | Biwin             |
|     |                    | 4GB LPDDR        | FLXC2004G-30<br>BWMZCX32H2A-32G-X  | Longsys        | FLXC2004G-30<br>BWMZCX32H2A-32G-X  | Biwin             |
|     |                    | PCB              | /                                  | KINGSHINE      | /                                  | wuzhu             |
| 2   | LCM                | LCD              | 6.517 HKC,<br>360min,400typ, 2.5D  | TCL            | 6.517 HKC,<br>360min,400typ, 2.5D  | Lia               |
| 3   | Front camera       | Camera           | 8M FF COM                          | Lianhe         | 8M FF COM                          | Shijia            |
| 4   | Macro CAM          | Camera           | 2M FF                              | Shijia         | 2M FF                              | Lianhe            |
| 5   | Acoustic           | Speaker          | 1712 1W                            | Dong Sheng     | 1712 1W                            | Xin Rongda        |
|     |                    | Vibrator         | 1027 FPC                           | Chao Yin       | 1027 FPC                           | Kai Long          |
|     |                    | Receiver         | 0809                               | Dong Sheng     | 0809                               | Xin Rongda        |
|     |                    | Glass rear cover | Glass, monochrome printing or film | Kaimao         | Glass, monochrome printing or film | Longqin gxiangrui |
|     |                    | FPC              | /                                  | Lante          | /                                  | Kaihong xin       |
| 6   | Battery            |                  | 5000MAH                            | Gaoyuan        | 5000MAH                            | Fenghua           |
| 7   | Data cable         |                  | 2A typeC                           | Yuwei          | 2A typeC                           | Juwei             |

**List of Accessory:**

| <b>ACCESSORIES</b> | <b>BRAND</b>               | <b>MANUFACTURER</b>                               | <b>MODEL</b>  | <b>SPECIFICATION</b>                      |
|--------------------|----------------------------|---------------------------------------------------|---------------|-------------------------------------------|
| LCD Panel 1        | HKC                        | MianYang HKC Optoelectronics Technology Co., Ltd. | QM065HS03-1   | 6.517                                     |
| LCD Panel 2        | BOE                        | BOE                                               | BV065WBQ-L1B  | 6.517                                     |
| Battery 1          | Nokia                      | Guangdong Fenghua New Energy Co.,Ltd.             | WT510         | Capacity : 3.85 Vdc, 4900mAh              |
| Battery 2          | Nokia                      | HUNAN GAOYUAN BATTERY Co., Ltd.                   | WT510         | Capacity : 3.85 Vdc, 4900mAh              |
| AC Adapter         | Nokia                      | SHENZHEN BAIJUNDA ELECTRONICS.,LTD                | AD-010U       | I/P: 100-240Vac, 0.35A, O/P: 5.0Vdc, 2.0A |
| Earphone           | Juwei Electronics Co., LTD | Juwei Electronics Co., LTD                        | JWEP1252-H21H | Signal Line, 1.2meter                     |
| USB Cable 1        | Juwei Electronics Co., LTD | Juwei Electronics Co., LTD                        | JWUB1536-H21H | Signal Line, 1.0meter                     |
| USB Cable 2        | Yu Wei                     | Dongguan Yuwei Electronic Technology Co., Ltd.    | CH2212TC      | Signal Line, 1.0meter                     |
| USB Cable 3        | Sai bao                    | Saibao (Jiangxi) Industrial Co., Ltd              | SHM1-A003A    | 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   | N/A     | N/A   | N/A       | N/A        | N/A    |

| NO. | SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS |
|-----|-----------------------------------------------------|
| 1   | N/A                                                 |

## 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/ LTE. Following channel(s) was (were) selected for the final test as listed below:

| EUT CONFIGURE MODE | DESCRIPTION                                   |
|--------------------|-----------------------------------------------|
| A                  | EUT + Adapter + GSM/WCDMA/LTE                 |
| B                  | EUT + DC source with GSM or WCDMA or LTE link |



Test Report No.: W7L-P23010016RF02

### GSM MODE

| EUT CONFIGURE MODE | TEST ITEM             | AVAILABLE CHANNEL | TESTED CHANNEL | MODE     |
|--------------------|-----------------------|-------------------|----------------|----------|
| A                  | EIRP                  | 512 to 810        | 512, 661, 810  | GSM/EDGE |
| B                  | 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                  | CONDCUDED 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 |
| B                  | FREQUENCY STABILITY   | 9262 to 9538      | 9262, 9400, 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                  | CONDCUDED 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                          |
| B                  | FREQUENCY STABILITY   | 18607 to 19193    | 18607, 18900, 19193 | 1.4MHz            | QPSK,16QAM · 64QAM | Full RB / 0 RB Offset                       |
|                    |                       | 18615 to 19185    | 18615, 18900, 19185 | 3MHz              | QPSK,16QAM · 64QAM | Full RB / 0 RB Offset                       |
|                    |                       | 18625 to 19175    | 18625, 18900, 19175 | 5MHz              | QPSK,16QAM · 64QAM | Full RB / 0 RB Offset                       |
|                    |                       | 18650 to 19150    | 18650, 18900, 19150 | 10MHz             | QPSK,16QAM · 64QAM | Full RB / 0 RB Offset                       |
|                    |                       | 18675 to 19125    | 18675, 18900, 19125 | 15MHz             | QPSK,16QAM · 64QAM | Full RB / 0 RB Offset                       |
|                    |                       | 18700 to 19100    | 18700, 18900, 19100 | 20MHz             | QPSK,16QAM · 64QAM | Full RB / 0 RB Offset                       |
| A                  | OCCUPIED BANDWIDTH    | 18607 to 19193    | 18607, 18900, 19193 | 1.4MHz            | QPSK,16QAM · 64QAM | Full RB / 0 RB Offset                       |
|                    |                       | 18615 to 19185    | 18615, 18900, 19185 | 3MHz              | QPSK,16QAM · 64QAM | Full RB / 0 RB Offset                       |
|                    |                       | 18625 to 19175    | 18625, 18900, 19175 | 5MHz              | QPSK,16QAM · 64QAM | Full RB / 0 RB Offset                       |
|                    |                       | 18650 to 19150    | 18650, 18900, 19150 | 10MHz             | QPSK,16QAM · 64QAM | Full RB / 0 RB Offset                       |
|                    |                       | 18675 to 19125    | 18675, 18900, 19125 | 15MHz             | QPSK,16QAM · 64QAM | Full RB / 0 RB Offset                       |
|                    |                       | 18700 to 19100    | 18700, 18900, 19100 | 20MHz             | QPSK,16QAM · 64QAM | Full 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<br>Full RB / 0 RB Offset |
|                    |                       | 18615 to 19185    | 18615, 18900, 19185 | 3MHz              | QPSK,16QAM · 64QAM | 1 RB / 0 RB Offset<br>Full RB / 0 RB Offset |
|                    |                       | 18625 to 19175    | 18625, 18900, 19175 | 5MHz              | QPSK,16QAM · 64QAM | 1 RB / 0 RB Offset<br>Full RB / 0 RB Offset |

|   |                          |                |                     |        |                    |                                              |
|---|--------------------------|----------------|---------------------|--------|--------------------|----------------------------------------------|
|   |                          | 18650 to 19150 | 18650, 18900, 19150 | 10MHz  | QPSK,16QAM · 64QAM | 1 RB / 0 RB Offset<br>Full RB / 0 RB Offset  |
|   |                          | 18675 to 19125 | 18675, 18900, 19125 | 15MHz  | QPSK,16QAM · 64QAM | 1 RB / 0 RB Offset<br>Full RB / 0 RB Offset  |
|   |                          | 18700 to 19100 | 18700, 18900, 19100 | 20MHz  | QPSK,16QAM · 64QAM | 1 RB / 0 RB Offset<br>Full RB / 0 RB Offset  |
| A | BAND EDGE                | 18607 to 19193 | 18607               | 1.4MHz | QPSK,16QAM · 64QAM | 1 RB / 0 RB Offset<br>Full RB / 0 RB Offset  |
|   |                          |                | 19193               | 1.4MHz | QPSK,16QAM · 64QAM | 1 RB / 5 RB Offset<br>Full RB / 0 RB Offset  |
|   |                          | 18615 to 19185 | 18615               | 3MHz   | QPSK,16QAM · 64QAM | 1 RB / 0 RB Offset<br>Full RB / 0 RB Offset  |
|   |                          |                | 19185               | 3MHz   | QPSK,16QAM · 64QAM | 1 RB / 14 RB Offset<br>Full RB / 0 RB Offset |
|   |                          | 18625 to 19175 | 18625               | 5MHz   | QPSK,16QAM · 64QAM | 1 RB / 0 RB Offset<br>Full RB / 0 RB Offset  |
|   |                          |                | 19175               | 5MHz   | QPSK,16QAM · 64QAM | 1 RB / 24 RB Offset<br>Full RB / 0 RB Offset |
|   |                          | 18650 to 19150 | 18650               | 10MHz  | QPSK,16QAM · 64QAM | 1 RB / 0 RB Offset<br>Full RB / 0 RB Offset  |
|   |                          |                | 19150               | 10MHz  | QPSK,16QAM · 64QAM | 1 RB / 49 RB Offset<br>Full RB / 0 RB Offset |
|   |                          | 18675 to 19125 | 18675               | 15MHz  | QPSK,16QAM · 64QAM | 1 RB / 0 RB Offset<br>Full RB / 0 RB Offset  |
|   |                          |                | 19125               | 15MHz  | QPSK,16QAM · 64QAM | 1 RB / 74 RB Offset<br>Full RB / 0 RB Offset |
|   |                          | 18700 to 19100 | 18700               | 20MHz  | QPSK,16QAM · 64QAM | 1 RB / 0 RB Offset<br>Full RB / 0 RB Offset  |
|   |                          |                | 19100               | 20MHz  | QPSK,16QAM · 64QAM | 1 RB / 99 RB Offset<br>Full RB / 0 RB Offset |
| A | CONDCUDET<br>ED EMISSION | 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 | RADIATED<br>EMISSION     | 18607 to 19193 | 18607,18900,19193   | 1.4MHz | QPSK               | 1 RB / 0 RB Offset                           |
|   |                          | 18615 to 19185 | 18900               | 3MHz   | QPSK               | 1 RB / 0 RB Offset                           |
|   |                          | 18625 to 19175 | 18900               | 5MHz   | QPSK               | 1 RB / 0 RB Offset                           |
|   |                          | 18650 to 19150 | 18900               | 10MHz  | QPSK               | 1 RB / 0 RB Offset                           |
|   |                          | 18675 to 19125 | 18900               | 15MHz  | QPSK               | 1 RB / 0 RB Offset                           |
|   |                          | 18700 to 19100 | 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 | Chao Wu         |
| FREQUENCY STABILITY   | 23deg. C, 61%RH          | DC 5V By Adapter | Chao Wu         |
| OCCUPIED BANDWIDTH    | 23deg. C, 61%RH          | DC5V By Adapter  | Chao Wu         |
| PEAK TO AVERAGE RATIO | 23deg. C, 61%RH          | DC 5V By Adapter | Chao Wu         |
| BAND EDGE             | 23deg. C, 61%RH          | DC5V By Adapter  | Chao Wu         |
| CONDCUDED EMISSION    | 23deg. C, 61%RH          | DC5V By Adapter  | Chao Wu/Jace Hu |
| RADIATED EMISSION     | 23deg. C, 70%RH          | DC5V By Adapter  | Chao Wu         |

## 2.5 EUT OPERATING CONDITIONS

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

## 2.6 GENERAL DESCRIPTION OF APPLIED STANDARDS

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

**FCC 47 CFR Part 2**

**FCC 47 CFR Part 24**

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

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

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

**ANSI C63.26-2015**

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

## 3 TEST TYPES AND RESULTS

### 3.1 OUTPUT POWER MEASUREMENT

#### 3.1.1 LIMITS OF OUTPUT POWER MEASUREMENT

Mobile and portable stations are limited to 2 watts EIRP.

#### 3.1.2 TEST PROCEDURES

##### EIRP MEASUREMENT:

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

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

Where:

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

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

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

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

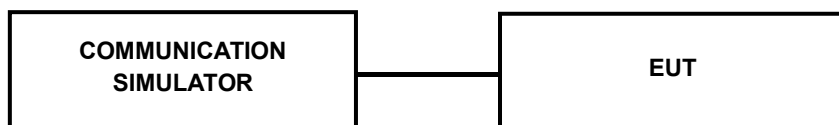
##### CONDUCTED POWER MEASUREMENT:

The EUT was set up for the maximum power with GPRS/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.

### 3.1.3 TEST SETUP

EIRP / ERP Measurement:

CONDUCTED POWER MEASUREMENT:



### 3.1.4 TEST RESULTS

CONDUCTED OUTPUT POWER (dBm)

| Band          | GSM1900 |       |              | Max.<br>Tune-up<br>Power |
|---------------|---------|-------|--------------|--------------------------|
| Channel       | 512     | 661   | 810          |                          |
| Frequency     | 1850.2  | 1880  | 1909.8       |                          |
| <b>GSM</b>    | 29.68   | 29.93 | 29.90        | 31.00                    |
| GPRS 1Tx Slot | 29.75   | 29.95 | <b>29.97</b> | 31.00                    |
| GPRS 2Tx Slot | 27.89   | 27.76 | 27.83        | 28.50                    |
| GPRS 3Tx Slot | 26.37   | 26.24 | 26.28        | 27.00                    |
| GPRS 4Tx Slot | 24.35   | 24.30 | 24.29        | 25.00                    |
| EDGE 1Tx Slot | 26.23   | 26.67 | 26.66        | 27.50                    |
| EDGE 2Tx Slot | 24.79   | 25.48 | 25.28        | 26.50                    |
| EDGE 3Tx Slot | 22.52   | 23.37 | 23.06        | 24.00                    |
| EDGE 4Tx Slot | 19.30   | 20.25 | 20.12        | 21.00                    |

| Band               | WCDMA II |       |              | Max.<br>Tune-up<br>Power |
|--------------------|----------|-------|--------------|--------------------------|
| Channel            | 9262     | 9400  | 9538         |                          |
| Frequency          | 1852.4   | 1880  | 1907.6       |                          |
| <b>RMC 12.2K</b>   | 23.21    | 23.26 | <b>23.31</b> | 24.00                    |
| HSDPA Subtest-1    | 22.63    | 22.68 | 22.73        | 23.50                    |
| HSDPA Subtest-2    | 22.62    | 22.67 | 22.72        | 23.50                    |
| HSDPA Subtest-3    | 22.11    | 22.16 | 22.21        | 23.00                    |
| HSDPA Subtest-4    | 22.10    | 22.15 | 22.20        | 23.00                    |
| DC-HSDPA Subtest-1 | 22.55    | 22.62 | 22.65        | 23.50                    |
| DC-HSDPA Subtest-2 | 22.54    | 22.61 | 22.64        | 23.50                    |
| DC-HSDPA Subtest-3 | 22.12    | 22.10 | 22.15        | 23.00                    |
| DC-HSDPA Subtest-4 | 22.11    | 22.09 | 22.14        | 23.00                    |
| HSUPA Subtest-1    | 22.59    | 22.64 | 22.69        | 23.50                    |
| HSUPA Subtest-2    | 21.58    | 21.63 | 21.68        | 22.50                    |
| HSUPA Subtest-3    | 22.06    | 22.12 | 22.17        | 23.00                    |
| HSUPA Subtest-4    | 21.55    | 21.61 | 21.66        | 22.50                    |
| HSUPA Subtest-5    | 22.54    | 22.60 | 22.65        | 23.50                    |
| HSPA+ Subtest-1    | 21.30    | 21.37 | 21.42        | 22.00                    |

LTE BAND 2

| Band/BW | Modulation | RB Size | RB Offset | Low CH<br>18607         | Mid CH<br>18900       | High CH<br>19193        | MPR |
|---------|------------|---------|-----------|-------------------------|-----------------------|-------------------------|-----|
|         |            |         |           | Frequency<br>1850.7 MHz | Frequency<br>1880 MHz | Frequency<br>1909.3 MHz |     |
| 2/ 1.4  | QPSK       | 1       | 0         | 23.58                   | 23.67                 | 23.67                   | 0   |
|         |            | 1       | 2         | 23.68                   | 23.70                 | 23.73                   | 0   |
|         |            | 1       | 5         | 23.71                   | 23.74                 | 23.74                   | 0   |
|         |            | 3       | 0         | 23.58                   | 23.67                 | 23.71                   | 0   |
|         |            | 3       | 1         | 23.72                   | 23.63                 | 23.63                   | 0   |
|         |            | 3       | 3         | 23.63                   | 23.53                 | 23.62                   | 0   |
|         |            | 6       | 0         | 22.66                   | 22.66                 | 22.67                   | 1   |
|         | 16QAM      | 1       | 0         | 22.29                   | 22.29                 | 22.36                   | 1   |
|         |            | 1       | 2         | 22.50                   | 22.31                 | 22.63                   | 1   |
|         |            | 1       | 5         | 22.43                   | 22.36                 | 22.70                   | 1   |
|         |            | 3       | 0         | 22.83                   | 22.76                 | 22.86                   | 1   |
|         |            | 3       | 1         | 22.73                   | 22.82                 | 22.88                   | 1   |
|         |            | 3       | 3         | 22.76                   | 22.81                 | 22.86                   | 1   |
|         |            | 6       | 0         | 21.65                   | 21.77                 | 21.84                   | 2   |
|         | 64QAM      | 1       | 0         | 21.90                   | 21.99                 | 21.94                   | 2   |
|         |            | 1       | 2         | 21.81                   | 21.97                 | 21.96                   | 2   |
|         |            | 1       | 5         | 21.92                   | 22.03                 | 22.02                   | 2   |
|         |            | 3       | 0         | 21.87                   | 21.89                 | 21.93                   | 2   |
|         |            | 3       | 1         | 21.94                   | 21.94                 | 21.92                   | 2   |
|         |            | 3       | 3         | 21.96                   | 21.90                 | 21.98                   | 2   |
|         |            | 6       | 0         | 20.85                   | 20.88                 | 20.97                   | 3   |

| Band/BW | Modulation | RB Size | RB Offset | Low CH<br>18615         | Mid CH<br>18900       | High CH<br>19185        | MPR |
|---------|------------|---------|-----------|-------------------------|-----------------------|-------------------------|-----|
|         |            |         |           | Frequency<br>1851.5 MHz | Frequency<br>1880 MHz | Frequency<br>1908.5 MHz |     |
| 2/ 3    | QPSK       | 1       | 0         | 23.60                   | 23.69                 | 23.66                   | 0   |
|         |            | 1       | 7         | 23.64                   | 23.71                 | 23.73                   | 0   |
|         |            | 1       | 14        | 23.67                   | 23.74                 | 23.74                   | 0   |
|         |            | 8       | 0         | 22.57                   | 22.70                 | 22.71                   | 1   |
|         |            | 8       | 3         | 22.65                   | 22.63                 | 22.65                   | 1   |
|         |            | 8       | 7         | 22.60                   | 22.60                 | 22.66                   | 1   |
|         |            | 15      | 0         | 22.63                   | 22.67                 | 22.61                   | 1   |
|         | 16QAM      | 1       | 0         | 22.26                   | 22.35                 | 22.39                   | 1   |
|         |            | 1       | 7         | 22.47                   | 22.34                 | 22.61                   | 1   |
|         |            | 1       | 14        | 22.46                   | 22.36                 | 22.70                   | 1   |
|         |            | 8       | 0         | 21.79                   | 21.77                 | 21.86                   | 2   |
|         |            | 8       | 3         | 21.78                   | 21.77                 | 21.91                   | 2   |
|         |            | 8       | 7         | 21.78                   | 21.79                 | 21.82                   | 2   |
|         |            | 15      | 0         | 21.65                   | 21.71                 | 21.87                   | 2   |
|         | 64QAM      | 1       | 0         | 21.96                   | 22.02                 | 21.88                   | 2   |
|         |            | 1       | 7         | 21.84                   | 21.91                 | 21.95                   | 2   |
|         |            | 1       | 14        | 21.93                   | 22.05                 | 22.02                   | 2   |
|         |            | 8       | 0         | 20.90                   | 20.93                 | 20.94                   | 3   |
|         |            | 8       | 3         | 20.98                   | 20.88                 | 20.97                   | 3   |
|         |            | 8       | 7         | 20.93                   | 20.94                 | 20.94                   | 3   |
|         |            | 15      | 0         | 20.87                   | 20.85                 | 21.01                   | 3   |

| Band/BW | Modulation | RB Size | RB Offset | Low CH<br>18625         | Mid CH<br>18900       | High CH<br>19175        | MPR |
|---------|------------|---------|-----------|-------------------------|-----------------------|-------------------------|-----|
|         |            |         |           | Frequency<br>1852.5 MHz | Frequency<br>1880 MHz | Frequency<br>1907.5 MHz |     |
| 2/ 5    | QPSK       | 1       | 0         | 23.61                   | 23.64                 | 23.67                   | 0   |
|         |            | 1       | 12        | 23.69                   | 23.68                 | 23.73                   | 0   |
|         |            | 1       | 24        | 23.68                   | 23.73                 | 23.78                   | 0   |
|         |            | 12      | 0         | 22.60                   | 22.70                 | 22.68                   | 1   |
|         |            | 12      | 6         | 22.65                   | 22.64                 | 22.66                   | 1   |
|         |            | 12      | 13        | 22.64                   | 22.56                 | 22.67                   | 1   |
|         |            | 25      | 0         | 22.61                   | 22.70                 | 22.64                   | 1   |
|         | 16QAM      | 1       | 0         | 22.27                   | 22.31                 | 22.39                   | 1   |
|         |            | 1       | 12        | 22.44                   | 22.37                 | 22.60                   | 1   |
|         |            | 1       | 24        | 22.46                   | 22.36                 | 22.69                   | 1   |
|         |            | 12      | 0         | 21.79                   | 21.75                 | 21.83                   | 2   |
|         |            | 12      | 6         | 21.75                   | 21.81                 | 21.87                   | 2   |
|         |            | 12      | 13        | 21.73                   | 21.81                 | 21.85                   | 2   |
|         |            | 25      | 0         | 21.65                   | 21.72                 | 21.84                   | 2   |
|         | 64QAM      | 1       | 0         | 21.90                   | 21.99                 | 21.94                   | 2   |
|         |            | 1       | 12        | 21.81                   | 21.97                 | 21.95                   | 2   |
|         |            | 1       | 24        | 21.86                   | 22.10                 | 22.02                   | 2   |
|         |            | 12      | 0         | 20.91                   | 20.90                 | 20.93                   | 3   |
|         |            | 12      | 6         | 20.92                   | 20.95                 | 20.96                   | 3   |
|         |            | 12      | 13        | 20.97                   | 20.93                 | 20.91                   | 3   |
|         |            | 25      | 0         | 20.83                   | 20.91                 | 20.99                   | 3   |

| Band/BW | Modulation | RB Size | RB Offset | Low CH<br>18650       | Mid CH<br>18900       | High CH<br>19150      | MPR |
|---------|------------|---------|-----------|-----------------------|-----------------------|-----------------------|-----|
|         |            |         |           | Frequency<br>1855 MHz | Frequency<br>1880 MHz | Frequency<br>1905 MHz |     |
| 2/ 10   | QPSK       | 1       | 0         | 23.58                 | 23.67                 | 23.67                 | 0   |
|         |            | 1       | 24        | 23.69                 | 23.68                 | 23.74                 | 0   |
|         |            | 1       | 49        | 23.65                 | 23.77                 | 23.74                 | 0   |
|         |            | 25      | 0         | 22.61                 | 22.69                 | 22.71                 | 1   |
|         |            | 25      | 12        | 22.71                 | 22.58                 | 22.66                 | 1   |
|         |            | 25      | 25        | 22.62                 | 22.53                 | 22.66                 | 1   |
|         |            | 50      | 0         | 22.66                 | 22.70                 | 22.61                 | 1   |
|         | 16QAM      | 1       | 0         | 22.27                 | 22.28                 | 22.35                 | 1   |
|         |            | 1       | 24        | 22.49                 | 22.33                 | 22.63                 | 1   |
|         |            | 1       | 49        | 22.46                 | 22.37                 | 22.66                 | 1   |
|         |            | 25      | 0         | 21.81                 | 21.73                 | 21.89                 | 2   |
|         |            | 25      | 12        | 21.79                 | 21.75                 | 21.92                 | 2   |
|         |            | 25      | 25        | 21.72                 | 21.82                 | 21.82                 | 2   |
|         |            | 50      | 0         | 21.69                 | 21.71                 | 21.88                 | 2   |
|         | 64QAM      | 1       | 0         | 21.89                 | 22.00                 | 21.91                 | 2   |
|         |            | 1       | 24        | 21.86                 | 21.93                 | 21.99                 | 2   |
|         |            | 1       | 49        | 21.92                 | 22.04                 | 21.99                 | 2   |
|         |            | 25      | 0         | 20.89                 | 20.87                 | 20.99                 | 3   |
|         |            | 25      | 12        | 20.99                 | 20.94                 | 20.90                 | 3   |
|         |            | 25      | 25        | 20.96                 | 20.90                 | 20.93                 | 3   |
|         |            | 50      | 0         | 20.88                 | 20.87                 | 21.00                 | 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         | 23.65                | 23.67              | 23.64                | 0   |
|         |            | 1       | 37        | 23.67                | 23.73              | 23.69                | 0   |
|         |            | 1       | 74        | 23.71                | 23.80              | 23.75                | 0   |
|         |            | 36      | 0         | 22.58                | 22.70              | 22.72                | 1   |
|         |            | 36      | 19        | 22.72                | 22.63              | 22.66                | 1   |
|         |            | 36      | 39        | 22.60                | 22.54              | 22.66                | 1   |
|         |            | 75      | 0         | 22.66                | 22.68              | 22.66                | 1   |
|         | 16QAM      | 1       | 0         | 22.31                | 22.35              | 22.35                | 1   |
|         |            | 1       | 37        | 22.48                | 22.34              | 22.63                | 1   |
|         |            | 1       | 74        | 22.42                | 22.42              | 22.68                | 1   |
|         |            | 36      | 0         | 21.85                | 21.73              | 21.90                | 2   |
|         |            | 36      | 19        | 21.73                | 21.79              | 21.88                | 2   |
|         |            | 36      | 39        | 21.77                | 21.80              | 21.85                | 2   |
|         |            | 75      | 0         | 21.70                | 21.74              | 21.81                | 2   |
|         | 64QAM      | 1       | 0         | 21.91                | 22.01              | 21.92                | 2   |
|         |            | 1       | 37        | 21.87                | 21.92              | 21.96                | 2   |
|         |            | 1       | 74        | 21.88                | 22.03              | 22.02                | 2   |
|         |            | 36      | 0         | 20.94                | 20.93              | 20.93                | 3   |
|         |            | 36      | 19        | 20.93                | 20.88              | 20.92                | 3   |
|         |            | 36      | 39        | 20.99                | 20.97              | 20.95                | 3   |
|         |            | 75      | 0         | 20.87                | 20.85              | 21.01                | 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         | 23.66              | 23.71              | 23.72              | 0   |
|         |            | 1       | 50        | 23.71              | 23.76              | 23.75              | 0   |
|         |            | 1       | 99        | 23.73              | <b>23.81</b>       | 23.79              | 0   |
|         |            | 50      | 0         | 22.64              | 22.75              | 22.73              | 1   |
|         |            | 50      | 25        | 22.73              | 22.65              | 22.71              | 1   |
|         |            | 50      | 50        | 22.68              | 22.61              | 22.68              | 1   |
|         |            | 100     | 0         | 22.67              | 22.72              | 22.69              | 1   |
|         | 16QAM      | 1       | 0         | 22.34              | 22.36              | 22.41              | 1   |
|         |            | 1       | 50        | 22.52              | 22.39              | 22.65              | 1   |
|         |            | 1       | 99        | 22.48              | 22.44              | 22.71              | 1   |
|         |            | 50      | 0         | 21.87              | 21.81              | 21.91              | 2   |
|         |            | 50      | 25        | 21.81              | 21.83              | 21.93              | 2   |
|         |            | 50      | 50        | 21.80              | 21.86              | 21.87              | 2   |
|         |            | 100     | 0         | 21.71              | 21.79              | 21.89              | 2   |
|         | 64QAM      | 1       | 0         | 21.97              | 22.04              | 21.96              | 2   |
|         |            | 1       | 50        | 21.89              | 21.99              | 22.01              | 2   |
|         |            | 1       | 99        | 21.94              | 22.11              | 22.04              | 2   |
|         |            | 50      | 0         | 20.95              | 20.95              | 21.01              | 3   |
|         |            | 50      | 25        | 21.00              | 20.96              | 20.98              | 3   |
|         |            | 50      | 50        | 21.01              | 20.98              | 20.99              | 3   |
|         |            | 100     | 0         | 20.89              | 20.93              | 21.02              | 3   |



Test Report No.: W7L-P23010016RF02

# EIRP POWER (dBm)

## GSM 1900

| Channel | Frequency (MHz) | Conducted Power (dBm) | G <sub>T</sub> -L <sub>c</sub> (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---------|-----------------|-----------------------|-------------------------------------|------------|-----------|-----------|
| 512     | 1850.2          | 29.75                 | -2.5                                | 27.25      | 530.88    | 2         |
| 661     | 1880            | 29.95                 | -2.5                                | 27.45      | 555.9     | 2         |
| 810     | 1909.8          | 29.97                 | -2.5                                | 27.47      | 558.47    | 2         |

## EDGE 1900

| Channel | Frequency (MHz) | Conducted Power (dBm) | G <sub>T</sub> -L <sub>c</sub> (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---------|-----------------|-----------------------|-------------------------------------|------------|-----------|-----------|
| 512     | 1850.2          | 26.23                 | -2.5                                | 23.73      | 236.05    | 2         |
| 661     | 1880            | 26.67                 | -2.5                                | 24.17      | 261.22    | 2         |
| 810     | 1909.8          | 26.66                 | -2.5                                | 24.16      | 260.62    | 2         |

## WCDMA

| Channel | Frequency (MHz) | Conducted Power (dBm) | G <sub>T</sub> -L <sub>c</sub> (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---------|-----------------|-----------------------|-------------------------------------|------------|-----------|-----------|
| 9662    | 1852.4          | 23.21                 | -2.5                                | 20.71      | 117.76    | 2         |
| 9800    | 1880            | 23.26                 | -2.5                                | 20.76      | 119.12    | 2         |
| 9938    | 1907.6          | 23.31                 | -2.5                                | 20.81      | 120.5     | 2         |

## LTE BAND 2

### CHANNEL BANDWIDTH: 1.4MHz QPSK

| Channel | Frequency (MHz) | Conducted Power (dBm) | G <sub>T</sub> -L <sub>C</sub> (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---------|-----------------|-----------------------|-------------------------------------|------------|-----------|-----------|
| 18607   | 1850.7          | 23.72                 | -3.4                                | 20.32      | 107.65    | 2         |
| 18900   | 1880            | 23.74                 | -3.4                                | 20.34      | 108.14    | 2         |
| 19193   | 1909.3          | 23.74                 | -3.4                                | 20.34      | 108.14    | 2         |

### CHANNEL BANDWIDTH: 1.4MHz 16QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | G <sub>T</sub> -L <sub>C</sub> (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---------|-----------------|-----------------------|-------------------------------------|------------|-----------|-----------|
| 18607   | 1850.7          | 22.83                 | -3.4                                | 19.43      | 87.7      | 2         |
| 18900   | 1880            | 22.82                 | -3.4                                | 19.42      | 87.5      | 2         |
| 19193   | 1909.3          | 22.88                 | -3.4                                | 19.48      | 88.72     | 2         |

### CHANNEL BANDWIDTH: 1.4MHz 64QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | G <sub>T</sub> -L <sub>C</sub> (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---------|-----------------|-----------------------|-------------------------------------|------------|-----------|-----------|
| 18607   | 1850.7          | 21.96                 | -3.4                                | 18.56      | 71.78     | 2         |
| 18900   | 1880            | 22.03                 | -3.4                                | 18.63      | 72.95     | 2         |
| 19193   | 1909.3          | 22.02                 | -3.4                                | 18.62      | 72.78     | 2         |

### CHANNEL BANDWIDTH: 3MHz QPSK

| Channel | Frequency (MHz) | Conducted Power (dBm) | G <sub>T</sub> -L <sub>C</sub> (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---------|-----------------|-----------------------|-------------------------------------|------------|-----------|-----------|
| 18615   | 1851.5          | 23.67                 | -3.4                                | 20.27      | 106.41    | 2         |
| 18900   | 1880            | 23.74                 | -3.4                                | 20.34      | 108.14    | 2         |
| 19185   | 1908.5          | 23.74                 | -3.4                                | 20.34      | 108.14    | 2         |

### CHANNEL BANDWIDTH: 3MHz 16QAM

| Channel | Frequency (MHz) | Conducted Power (dBm) | G <sub>T</sub> -L <sub>C</sub> (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---------|-----------------|-----------------------|-------------------------------------|------------|-----------|-----------|
| 18615   | 1851.5          | 22.47                 | -3.4                                | 19.07      | 80.72     | 2         |
| 18900   | 1880            | 22.36                 | -3.4                                | 18.96      | 78.7      | 2         |
| 19185   | 1908.5          | 22.7                  | -3.4                                | 19.3       | 85.11     | 2         |

**CHANNEL BANDWIDTH: 3MHz 64QAM**

| Channel | Frequency (MHz) | Conducted Power (dBm) | G <sub>T-Lc</sub> (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---------|-----------------|-----------------------|------------------------|------------|-----------|-----------|
| 18615   | 1851.5          | 21.96                 | -3.4                   | 18.56      | 71.78     | 2         |
| 18900   | 1880            | 22.05                 | -3.4                   | 18.65      | 73.28     | 2         |
| 19185   | 1908.5          | 22.02                 | -3.4                   | 18.62      | 72.78     | 2         |

**CHANNEL BANDWIDTH: 5MHz QPSK**

| Channel | Frequency (MHz) | Conducted Power (dBm) | G <sub>T-Lc</sub> (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---------|-----------------|-----------------------|------------------------|------------|-----------|-----------|
| 18625   | 1852.5          | 23.69                 | -3.4                   | 20.29      | 106.91    | 2         |
| 18900   | 1880            | 23.73                 | -3.4                   | 20.33      | 107.89    | 2         |
| 19175   | 1907.5          | 23.78                 | -3.4                   | 20.38      | 109.14    | 2         |

**CHANNEL BANDWIDTH: 5MHz 16QAM**

| Channel | Frequency (MHz) | Conducted Power (dBm) | G <sub>T-Lc</sub> (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---------|-----------------|-----------------------|------------------------|------------|-----------|-----------|
| 18625   | 1852.5          | 22.46                 | -3.4                   | 19.06      | 80.54     | 2         |
| 18900   | 1880            | 22.37                 | -3.4                   | 18.97      | 78.89     | 2         |
| 19175   | 1907.5          | 22.69                 | -3.4                   | 19.29      | 84.92     | 2         |

**CHANNEL BANDWIDTH: 5MHz 64QAM**

| Channel | Frequency (MHz) | Conducted Power (dBm) | G <sub>T-Lc</sub> (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---------|-----------------|-----------------------|------------------------|------------|-----------|-----------|
| 18625   | 1852.5          | 21.9                  | -3.4                   | 18.5       | 70.79     | 2         |
| 18900   | 1880            | 22.1                  | -3.4                   | 18.7       | 74.13     | 2         |
| 19175   | 1907.5          | 22.02                 | -3.4                   | 18.62      | 72.78     | 2         |

**CHANNEL BANDWIDTH: 10MHz QPSK**

| Channel | Frequency (MHz) | Conducted Power (dBm) | G <sub>T-Lc</sub> (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---------|-----------------|-----------------------|------------------------|------------|-----------|-----------|
| 18650   | 1855            | 23.69                 | -3.4                   | 20.29      | 106.91    | 2         |
| 18900   | 1880            | 23.77                 | -3.4                   | 20.37      | 108.89    | 2         |
| 19150   | 1905            | 23.74                 | -3.4                   | 20.34      | 108.14    | 2         |

**CHANNEL BANDWIDTH: 10MHz 16QAM**

| Channel | Frequency (MHz) | Conducted Power (dBm) | G <sub>T-Lc</sub> (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---------|-----------------|-----------------------|------------------------|------------|-----------|-----------|
| 18650   | 1855            | 22.49                 | -3.4                   | 19.09      | 81.1      | 2         |
| 18900   | 1880            | 22.37                 | -3.4                   | 18.97      | 78.89     | 2         |
| 19150   | 1905            | 22.66                 | -3.4                   | 19.26      | 84.33     | 2         |

**CHANNEL BANDWIDTH: 10MHz 64QAM**

| Channel | Frequency (MHz) | Conducted Power (dBm) | G <sub>T-Lc</sub> (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---------|-----------------|-----------------------|------------------------|------------|-----------|-----------|
| 18650   | 1855            | 21.92                 | -3.4                   | 18.52      | 71.12     | 2         |
| 18900   | 1880            | 22.04                 | -3.4                   | 18.64      | 73.11     | 2         |
| 19150   | 1905            | 21.99                 | -3.4                   | 18.59      | 72.28     | 2         |

**CHANNEL BANDWIDTH: 15MHz QPSK**

| Channel | Frequency (MHz) | Conducted Power (dBm) | G <sub>T-Lc</sub> (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---------|-----------------|-----------------------|------------------------|------------|-----------|-----------|
| 18675   | 1857.5          | 23.71                 | -3.4                   | 20.31      | 107.4     | 2         |
| 18900   | 1880            | 23.8                  | -3.4                   | 20.4       | 109.65    | 2         |
| 19125   | 1902.5          | 23.75                 | -3.4                   | 20.35      | 108.39    | 2         |

**CHANNEL BANDWIDTH: 15MHz 16QAM**

| Channel | Frequency (MHz) | Conducted Power (dBm) | G <sub>T-Lc</sub> (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---------|-----------------|-----------------------|------------------------|------------|-----------|-----------|
| 18675   | 1857.5          | 22.48                 | -3.4                   | 19.08      | 80.91     | 2         |
| 18900   | 1880            | 22.42                 | -3.4                   | 19.02      | 79.8      | 2         |
| 19125   | 1902.5          | 22.68                 | -3.4                   | 19.28      | 84.72     | 2         |

**CHANNEL BANDWIDTH: 15MHz 64QAM**

| Channel | Frequency (MHz) | Conducted Power (dBm) | G <sub>T-Lc</sub> (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---------|-----------------|-----------------------|------------------------|------------|-----------|-----------|
| 18675   | 1857.5          | 21.91                 | -3.4                   | 18.51      | 70.96     | 2         |
| 18900   | 1880            | 22.03                 | -3.4                   | 18.63      | 72.95     | 2         |
| 19125   | 1902.5          | 22.02                 | -3.4                   | 18.62      | 72.78     | 2         |

**CHANNEL BANDWIDTH: 20MHz QPSK**

| Channel | Frequency (MHz) | Conducted Power (dBm) | G <sub>T</sub> -L <sub>C</sub> (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---------|-----------------|-----------------------|-------------------------------------|------------|-----------|-----------|
| 18700   | 1860            | 23.73                 | -3.4                                | 20.33      | 107.89    | 2         |
| 18900   | 1880            | 23.81                 | -3.4                                | 20.41      | 109.9     | 2         |
| 19100   | 1900            | 23.79                 | -3.4                                | 20.39      | 109.4     | 2         |

**CHANNEL BANDWIDTH: 20MHz 16QAM**

| Channel | Frequency (MHz) | Conducted Power (dBm) | G <sub>T</sub> -L <sub>C</sub> (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---------|-----------------|-----------------------|-------------------------------------|------------|-----------|-----------|
| 18700   | 1860            | 22.52                 | -3.4                                | 19.12      | 81.66     | 2         |
| 18900   | 1880            | 22.44                 | -3.4                                | 19.04      | 80.17     | 2         |
| 19100   | 1900            | 22.71                 | -3.4                                | 19.31      | 85.31     | 2         |

**CHANNEL BANDWIDTH: 20MHz 64QAM**

| Channel | Frequency (MHz) | Conducted Power (dBm) | G <sub>T</sub> -L <sub>C</sub> (dB) | EIRP (dBm) | EIRP (mW) | Limit (W) |
|---------|-----------------|-----------------------|-------------------------------------|------------|-----------|-----------|
| 18700   | 1860            | 21.97                 | -3.4                                | 18.57      | 71.94     | 2         |
| 18900   | 1880            | 22.11                 | -3.4                                | 18.71      | 74.3      | 2         |
| 19100   | 1900            | 22.04                 | -3.4                                | 18.64      | 73.11     | 2         |

### 3.2 FREQUENCY STABILITY MEASUREMENT

#### 3.2.1 LIMITS OF FREQUENCY STABILITY MEASUREMENT

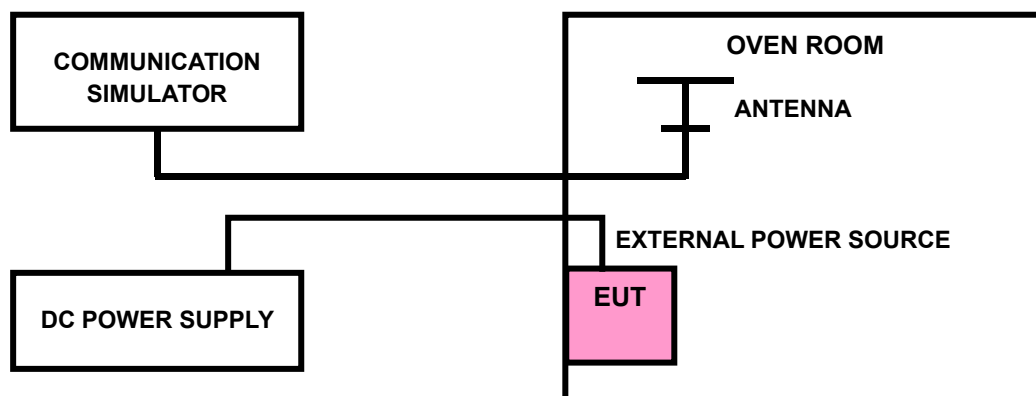
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

#### 3.2.2 TEST PROCEDURE

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

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

#### 3.2.3 TEST SETUP





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### 3.2.4 TEST RESULTS

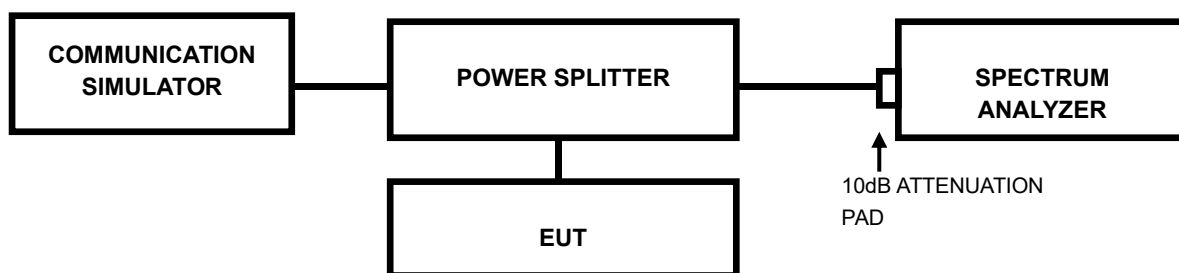
Please Refer to Appendix Of this test report.

### 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





Test Report No.: W7L-P23010016RF02

### 3.3.3 TEST RESULTS

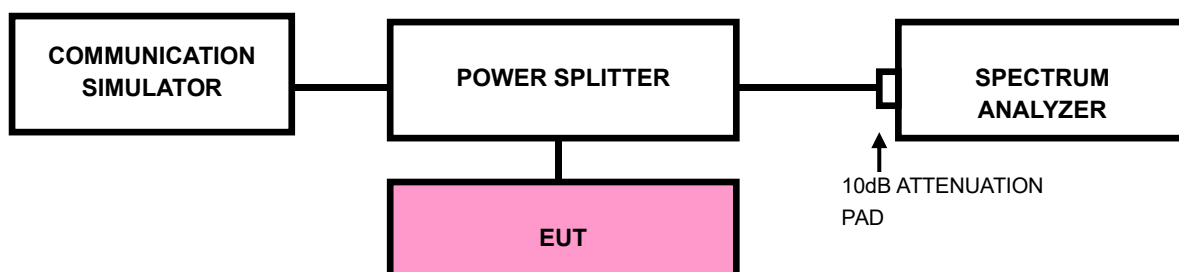
Please Refer to Appendix Of this test report.

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

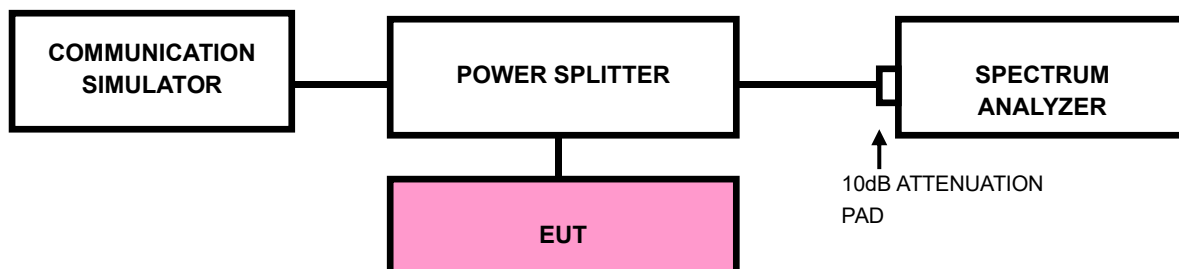
#### 3.5.1 LIMITS OF CONDUCTED SPURIOUS EMISSIONS MEASUREMENT

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  $-13\text{dBm}$ .

#### 3.5.2 TEST PROCEDURE

- The EUT makes a phone call to the communication simulator. All measurements were done at low, middle and high operational frequency range.
- Measuring frequency range is from 9kHz up to a frequency including its 10<sup>th</sup> harmonic. 10dB attenuation pad is connected with spectrum. RBW=1MHz and VBW=3MHz is used for conducted emission measurement.

#### 3.5.3 TEST SETUP





Test Report No.: W7L-P23010016RF02

### 3.5.4 TEST RESULTS

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

Please Refer to Appendix Of this test report.



### 3.6 RADIATED EMISSION MEASUREMENT

#### 3.6.1 LIMITS OF RADIATED EMISSION MEASUREMENT

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

#### 3.6.2 TEST PROCEDURES

- a. Substitution method is used for E.I.R.P measurement. In the semi-anechoic chamber, EUT placed on the 0.8m height of Turn Table, rotated the table around 360 degrees to search the maximum radiation power and receiver antenna shall be rotated vertical and horizontal polarization and moved height from 1m to 4m to find the maximum polar radiated power. The "Read Value" is the spectrum reading the maximum power value.
- b. The substitution horn antenna is substituted for EUT at the same position and signals generator export the CW signal to the substitution antenna via a TX cable. Rotated the Turn Table and moved receiving antenna to find the maximum radiation power. Adjust output power level of S.G to get a Value of spectrum reading equal to "Read Value" of step a. Record the power level of S.G
- c.  $\text{EIRP} = \text{Output power level of S.G} - \text{TX cable loss} + \text{Antenna gain of substitution horn}.$

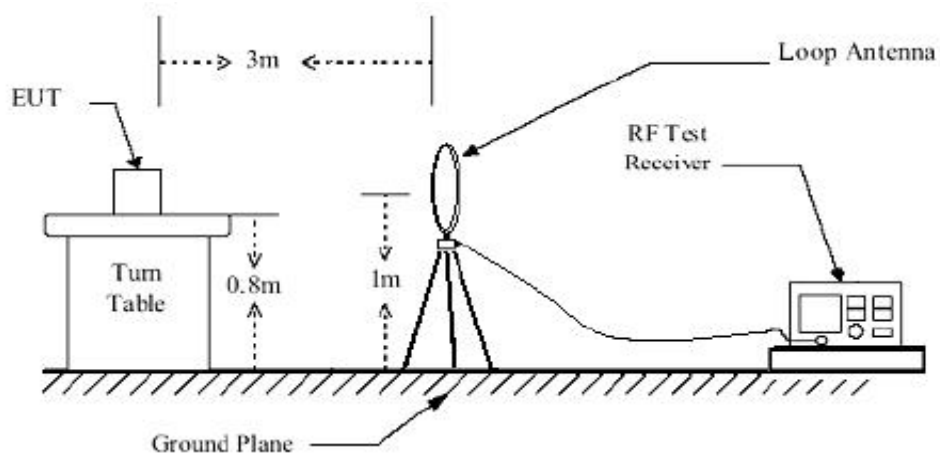
**NOTE:** The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz/3MHz.

#### 3.6.3 DEVIATION FROM TEST STANDARD

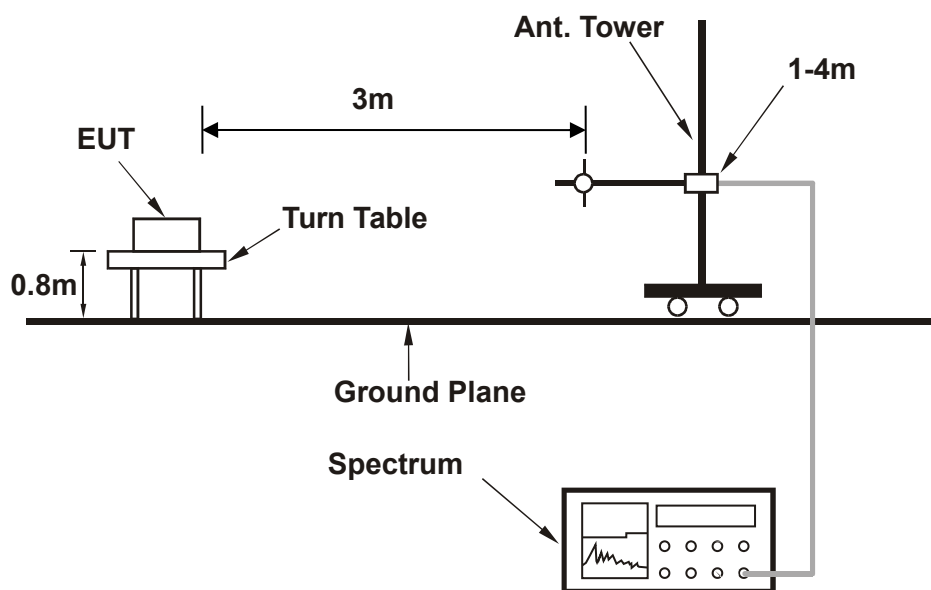
No deviation

### 3.6.4 TEST SETUP

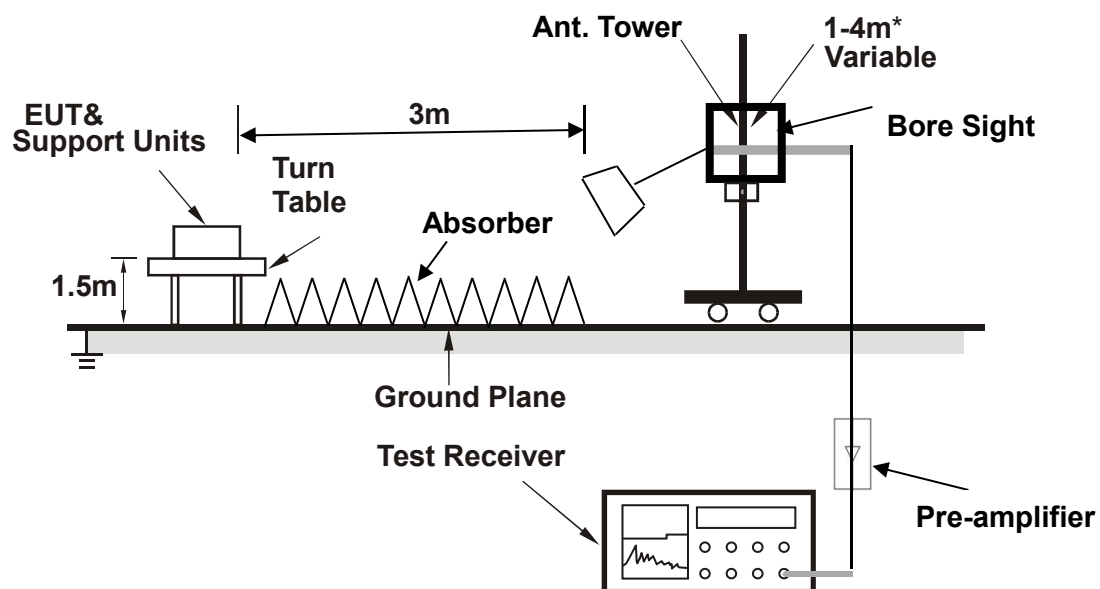
#### < Frequency Range below 30MHz >



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



<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

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

#### BELOW 1GHz WORST-CASE DATA

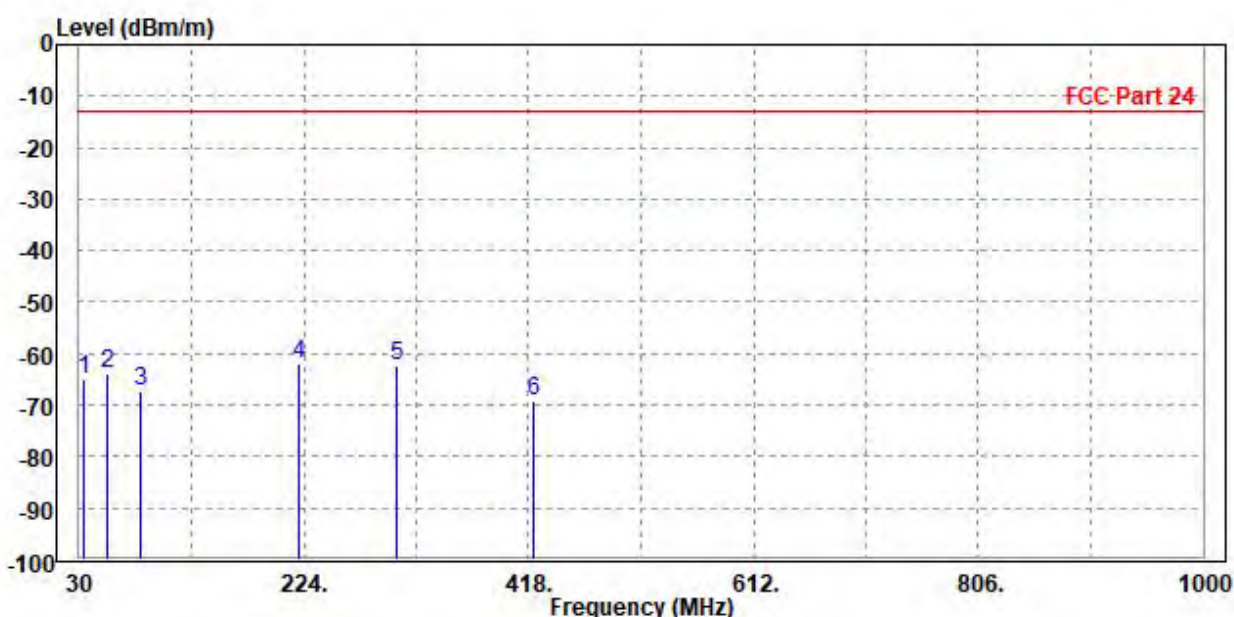
30 MHz – 1GHz data:

EDGE 1900

CHANNEL BANDWIDTH: 512~810

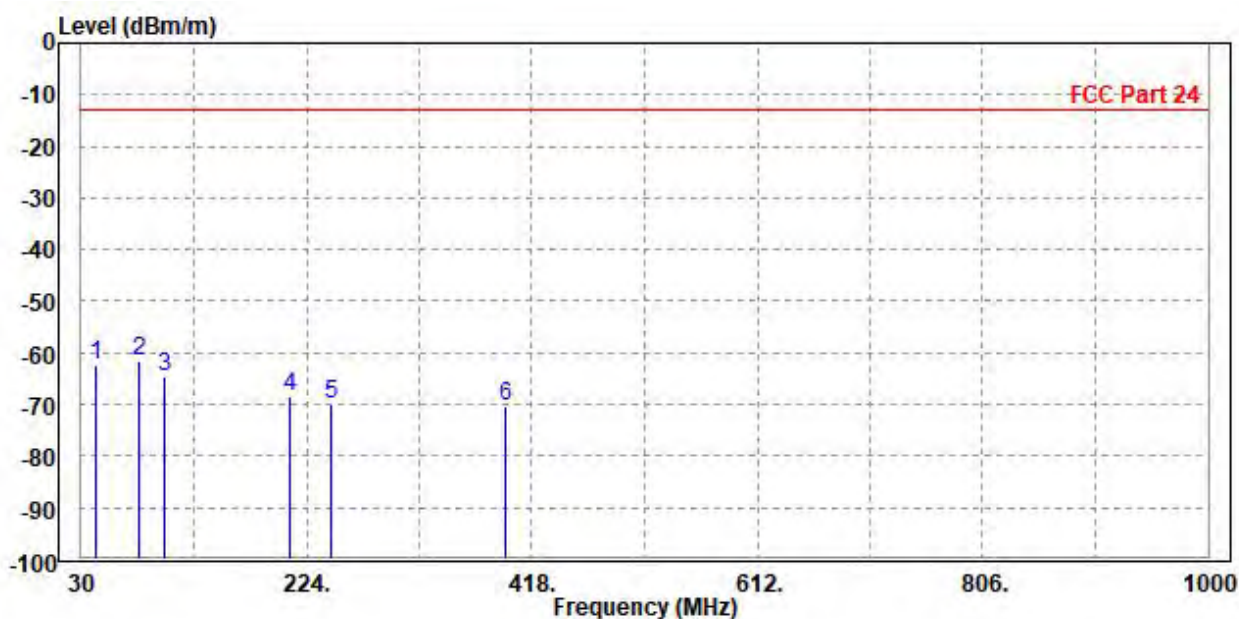
|                                                     |                 |                 |               |
|-----------------------------------------------------|-----------------|-----------------|---------------|
| MODE                                                | TX channel 661  | FREQUENCY RANGE | 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    | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase  |
|------|---------|--------|------------|------------|------------|--------|--------|------------|
|      | MHz     | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |            |
| 1    | 33.880  | -65.20 | -53.97     | -13.00     | -52.20     | -11.23 | Peak   | Horizontal |
| 2    | 55.220  | -63.97 | -46.07     | -13.00     | -50.97     | -17.90 | Peak   | Horizontal |
| 3    | 82.380  | -67.30 | -45.88     | -13.00     | -54.30     | -21.42 | Peak   | Horizontal |
| 4 PP | 219.150 | -62.12 | -46.98     | -13.00     | -49.12     | -15.14 | Peak   | Horizontal |
| 5    | 303.540 | -62.33 | -49.95     | -13.00     | -49.33     | -12.38 | Peak   | Horizontal |
| 6    | 422.850 | -69.35 | -59.73     | -13.00     | -56.35     | -9.62  | Peak   | Horizontal |



|                                                   |                 |                 |               |
|---------------------------------------------------|-----------------|-----------------|---------------|
| MODE                                              | TX channel 661  | 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    | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|------|---------|--------|------------|------------|------------|--------|--------|-----------|
|      | MHz     | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |           |
| 1    | 42.610  | -62.24 | -37.16     | -13.00     | -49.24     | -25.08 | Peak   | Vertical  |
| 2 PP | 80.440  | -61.64 | -42.64     | -13.00     | -48.64     | -19.00 | Peak   | Vertical  |
| 3    | 101.780 | -64.46 | -57.35     | -13.00     | -51.46     | -7.11  | Peak   | Vertical  |
| 4    | 209.450 | -68.55 | -51.36     | -13.00     | -55.55     | -17.19 | Peak   | Vertical  |
| 5    | 244.370 | -69.79 | -55.69     | -13.00     | -56.79     | -14.10 | Peak   | Vertical  |
| 6    | 394.720 | -70.41 | -61.31     | -13.00     | -57.41     | -9.10  | Peak   | Vertical  |



# ABOVE 1GHz

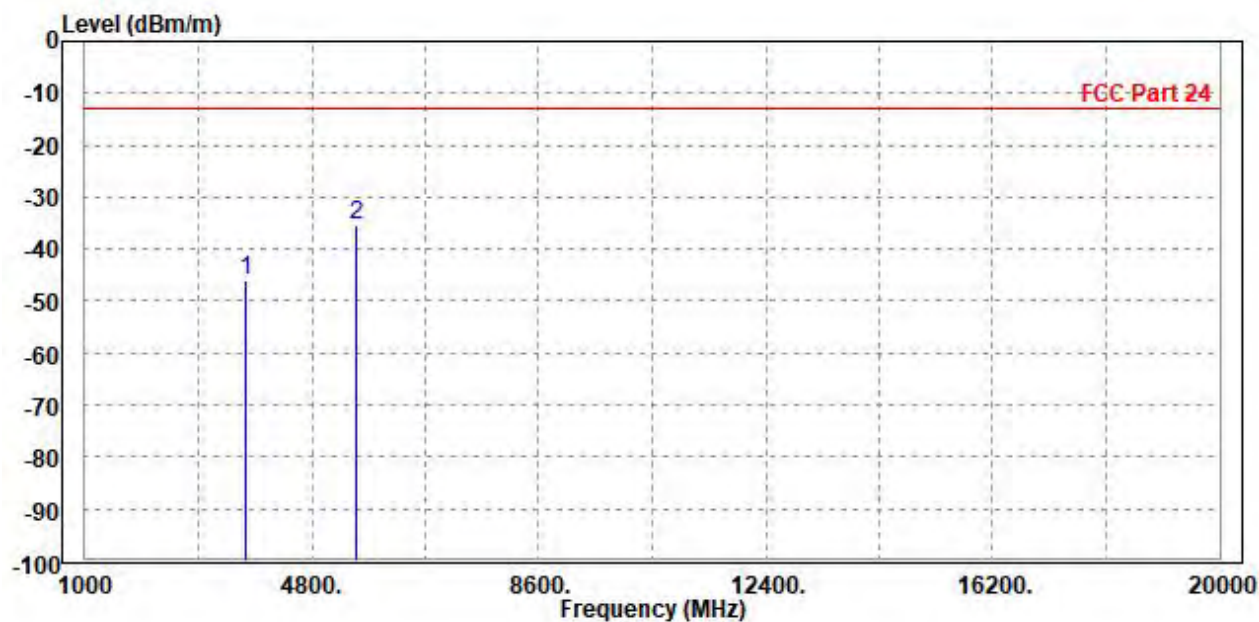
**Note:** For higher frequency, the emission is too low to be detected.

## GSM 1900:

### CH 512

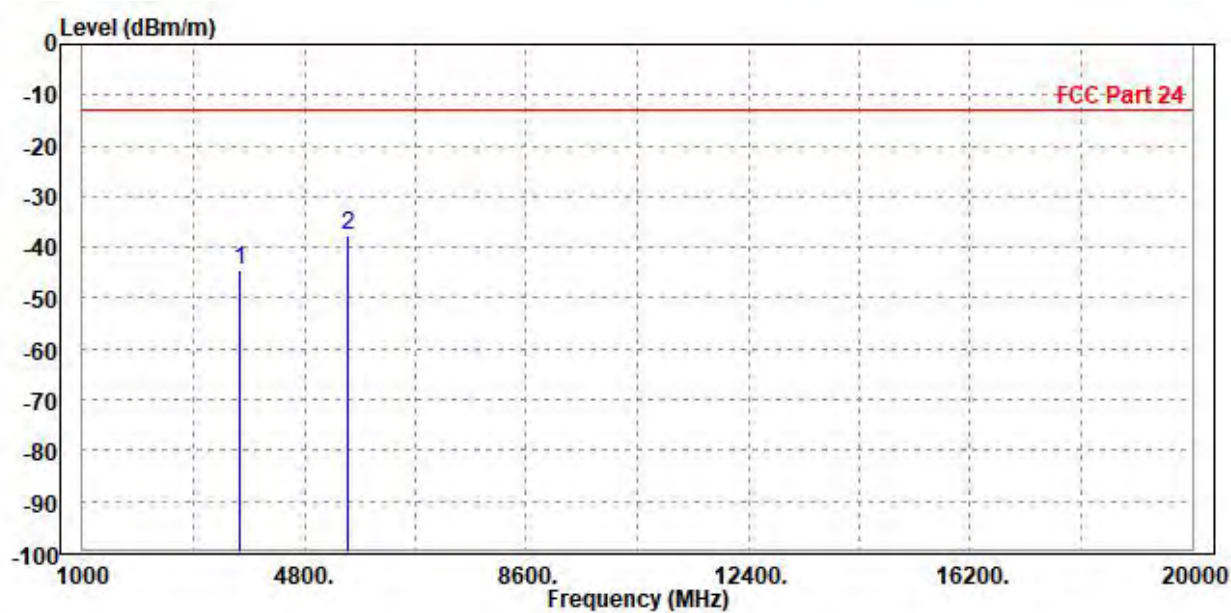
|                                                     |                 |                 |               |
|-----------------------------------------------------|-----------------|-----------------|---------------|
| MODE                                                | TX channel 512  | FREQUENCY RANGE | 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     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase  |
|------|----------|--------|------------|------------|------------|--------|--------|------------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |            |
| 1    | 3698.000 | -46.01 | -53.84     | -13.00     | -33.01     | 7.83   | Peak   | Horizontal |
| 2 PP | 5550.600 | -35.42 | -45.99     | -13.00     | -22.42     | 10.57  | Peak   | Horizontal |



|                                                   |                 |                 |               |
|---------------------------------------------------|-----------------|-----------------|---------------|
| 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 |                 |                 |               |

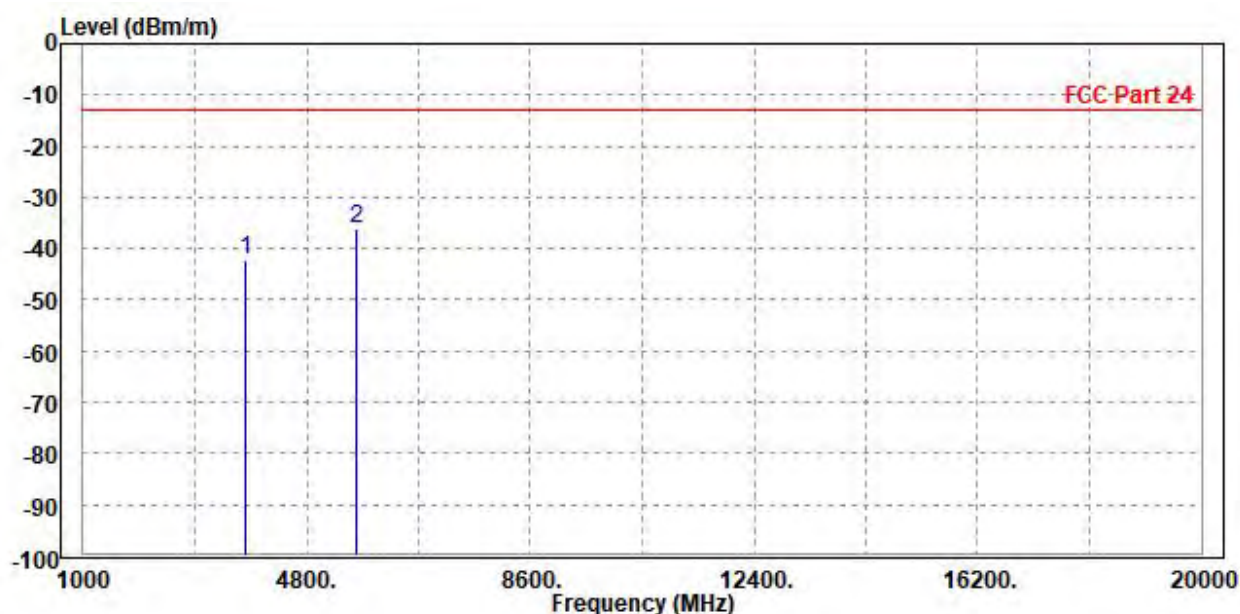
|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|------|----------|--------|------------|------------|------------|--------|--------|-----------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |           |
| 1    | 3700.400 | -44.58 | -52.19     | -13.00     | -31.58     | 7.61   | Peak   | Vertical  |
| 2 PP | 5560.000 | -37.73 | -48.63     | -13.00     | -24.73     | 10.90  | Peak   | Vertical  |



CH 661

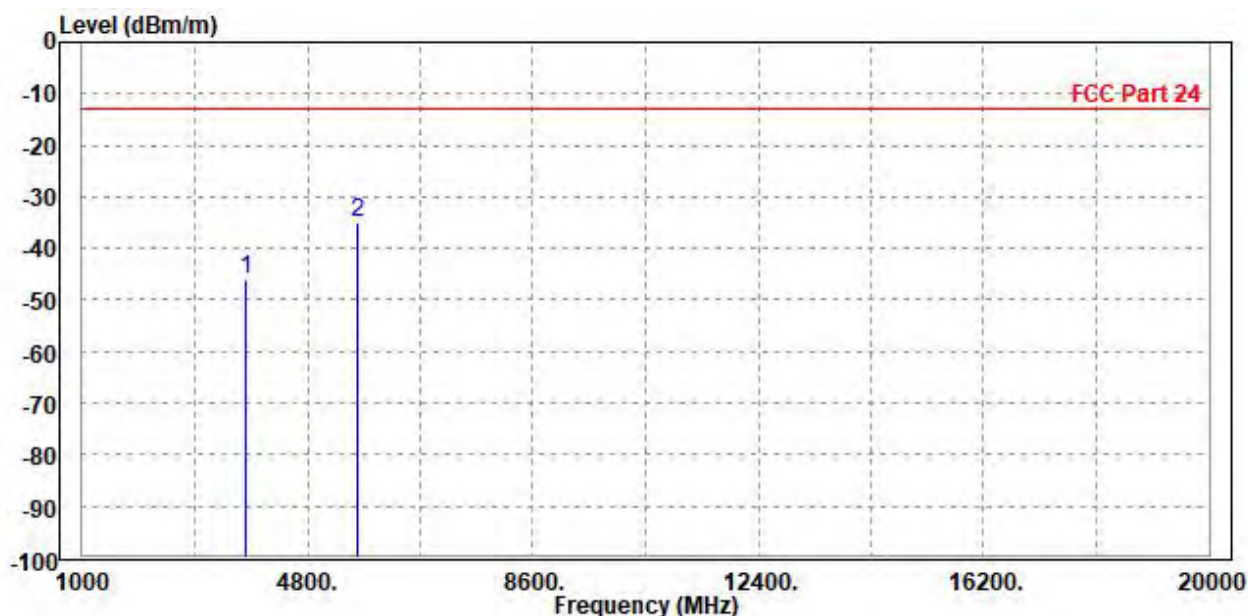
|                                                     |                 |                 |               |
|-----------------------------------------------------|-----------------|-----------------|---------------|
| MODE                                                | TX channel 661  | FREQUENCY RANGE | 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     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase  |
|------|----------|--------|------------|------------|------------|--------|--------|------------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |            |
| 1    | 3760.000 | -42.15 | -50.14     | -13.00     | -29.15     | 7.99   | Peak   | Horizontal |
| 2 PP | 5636.000 | -36.30 | -47.03     | -13.00     | -23.30     | 10.73  | Peak   | Horizontal |



|                                                   |                 |                 |               |
|---------------------------------------------------|-----------------|-----------------|---------------|
| 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     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|------|----------|--------|------------|------------|------------|--------|--------|-----------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |           |
| 1    | 3755.000 | -45.83 | -53.52     | -13.00     | -32.83     | 7.69   | Peak   | Vertical  |
| 2 PP | 5640.000 | -34.87 | -46.00     | -13.00     | -21.87     | 11.13  | Peak   | Vertical  |





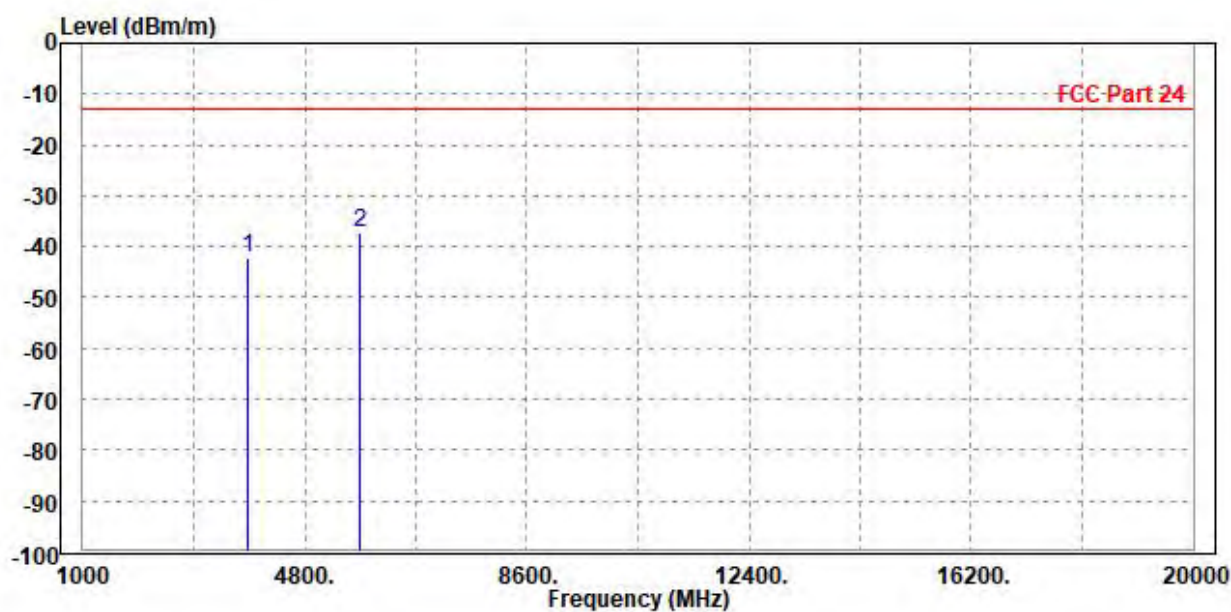
BUREAU  
VERITAS

Test Report No.: W7L-P23010016RF02

CH 810

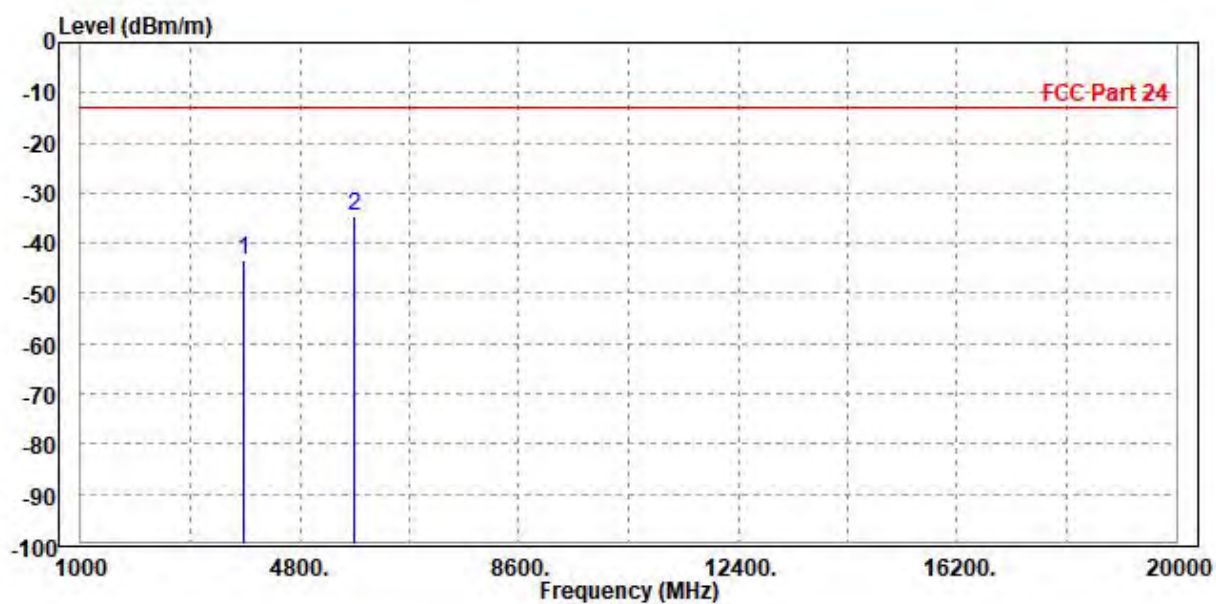
|                                                     |                 |                 |               |
|-----------------------------------------------------|-----------------|-----------------|---------------|
| CH 510                                              |                 |                 |               |
| 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     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase  |
|------|----------|--------|------------|------------|------------|--------|--------|------------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |            |
| 1    | 3819.600 | -42.30 | -50.44     | -13.00     | -29.30     | 8.14   | Peak   | Horizontal |
| 2 PP | 5731.000 | -37.20 | -48.11     | -13.00     | -24.20     | 10.91  | Peak   | Horizontal |



|                                                   |                 |                 |               |
|---------------------------------------------------|-----------------|-----------------|---------------|
| 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     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|------|----------|--------|------------|------------|------------|--------|--------|-----------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |           |
| 1    | 3812.000 | -43.42 | -51.19     | -13.00     | -30.42     | 7.77   | Peak   | Vertical  |
| 2 PP | 5729.400 | -34.51 | -45.89     | -13.00     | -21.51     | 11.38  | Peak   | Vertical  |





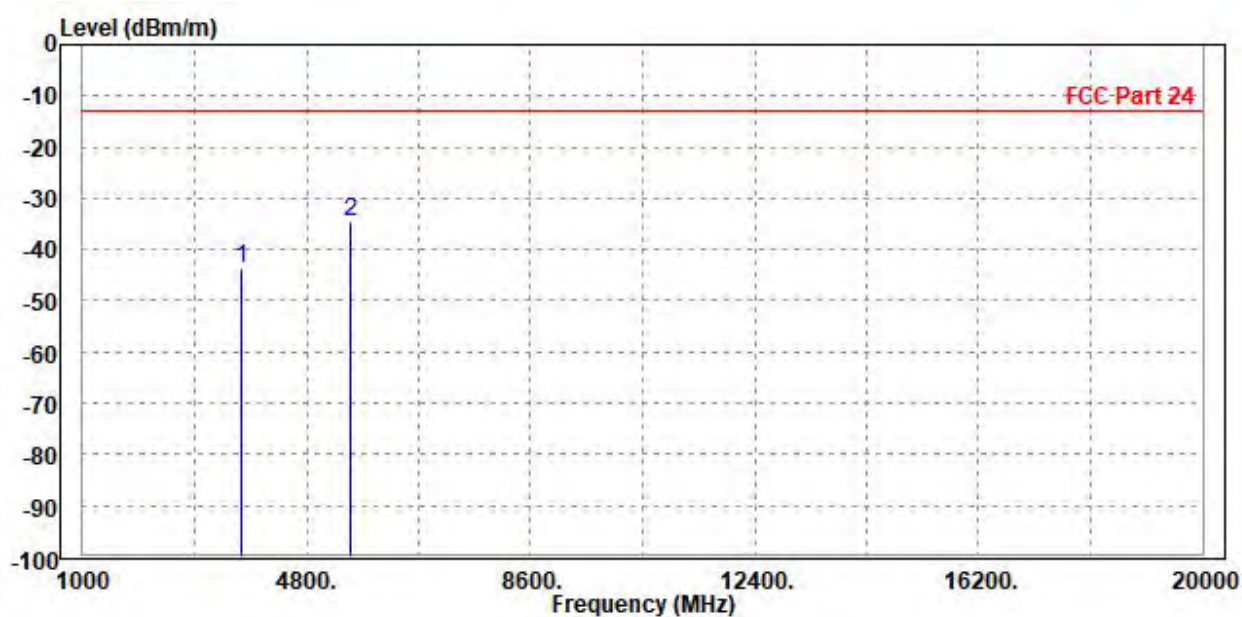
Test Report No.: W7L-P23010016RF02

EDGE 1900:

CH 512

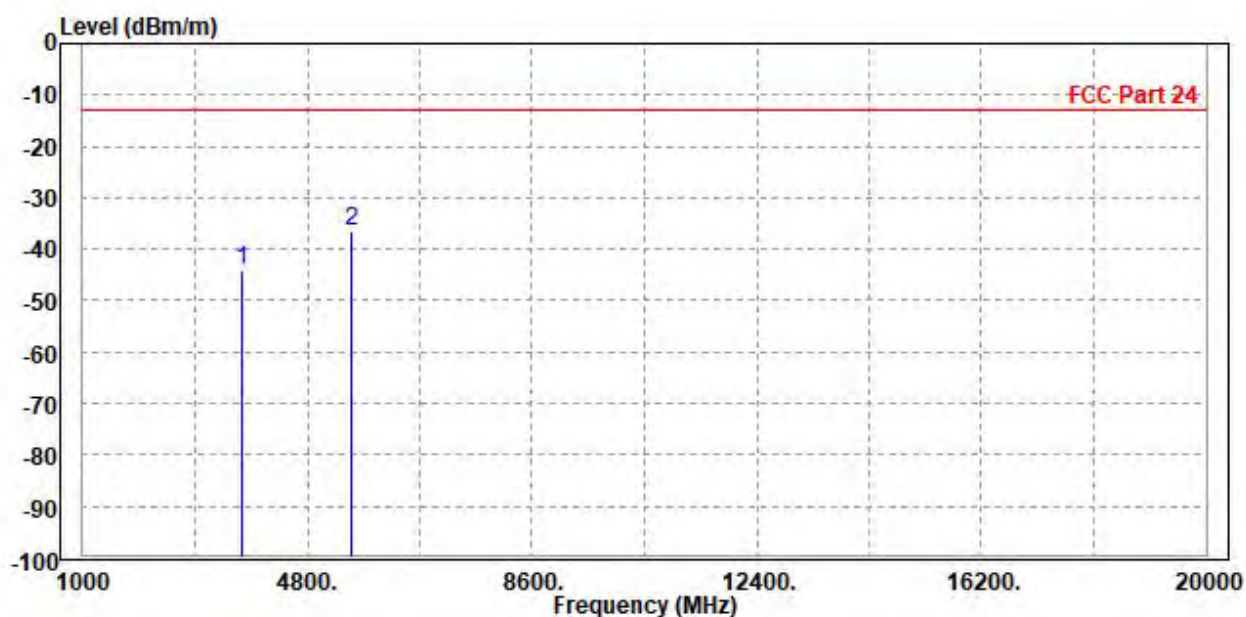
|                                                     |                 |                 |               |
|-----------------------------------------------------|-----------------|-----------------|---------------|
| MODE                                                | TX channel 512  | FREQUENCY RANGE | 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     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase  |
|------|----------|--------|------------|------------|------------|--------|--------|------------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |            |
| 1    | 3700.400 | -43.55 | -51.39     | -13.00     | -30.55     | 7.84   | Peak   | Horizontal |
| 2 PP | 5560.000 | -34.53 | -45.12     | -13.00     | -21.53     | 10.59  | Peak   | Horizontal |



|                                                   |                 |                 |               |
|---------------------------------------------------|-----------------|-----------------|---------------|
| 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 |                 |                 |               |

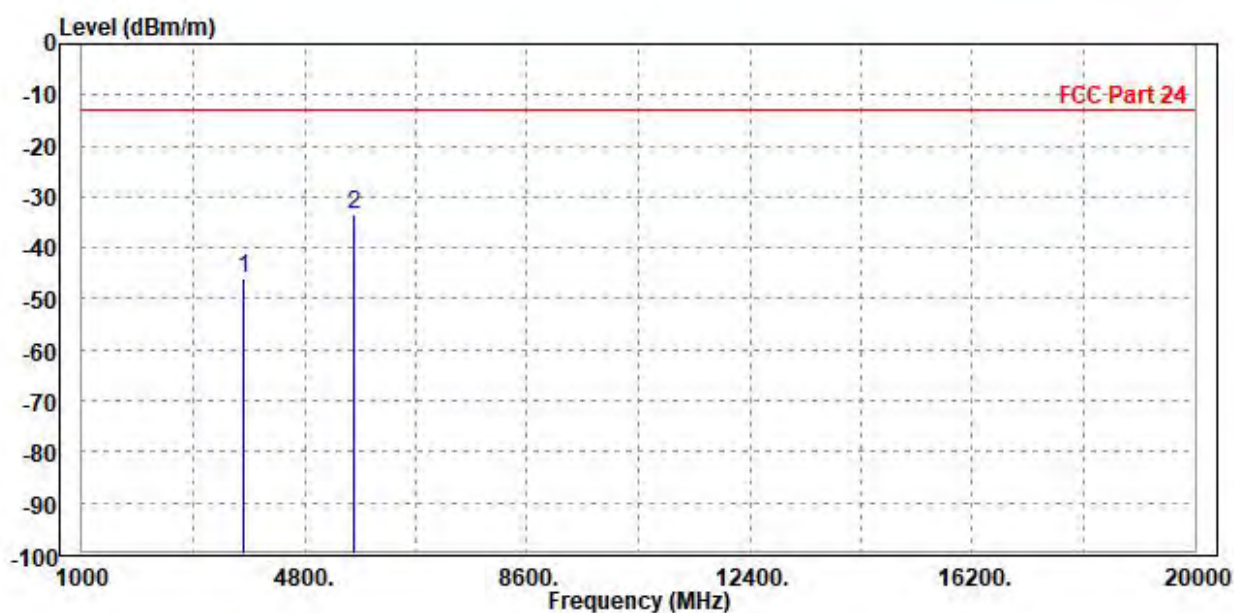
|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|------|----------|--------|------------|------------|------------|--------|--------|-----------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |           |
| 1    | 3698.000 | -43.94 | -51.55     | -13.00     | -30.94     | 7.61   | Peak   | Vertical  |
| 2 PP | 5550.600 | -36.45 | -47.32     | -13.00     | -23.45     | 10.87  | Peak   | Vertical  |



CH 661

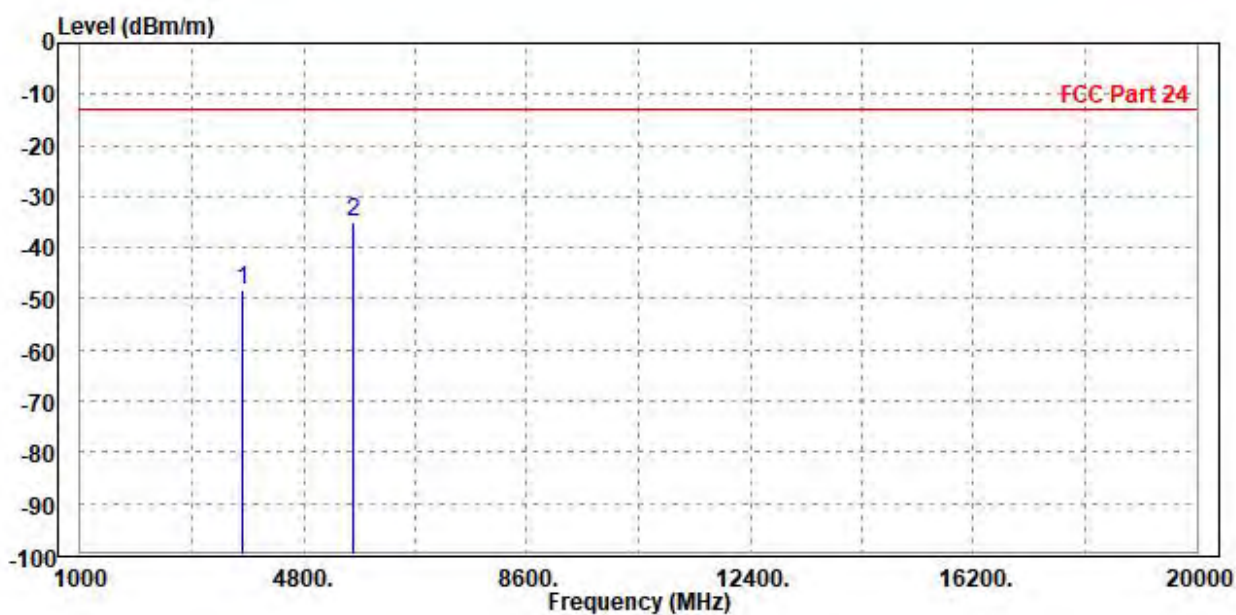
|                                                     |                 |                 |               |
|-----------------------------------------------------|-----------------|-----------------|---------------|
| MODE                                                | TX channel 661  | FREQUENCY RANGE | 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     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase  |
|------|----------|--------|------------|------------|------------|--------|--------|------------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |            |
| 1    | 3755.000 | -45.82 | -53.80     | -13.00     | -32.82     | 7.98   | Peak   | Horizontal |
| 2 PP | 5640.000 | -33.42 | -44.16     | -13.00     | -20.42     | 10.74  | Peak   | Horizontal |



|                                                   |                 |                 |               |
|---------------------------------------------------|-----------------|-----------------|---------------|
| 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 |                 |                 |               |

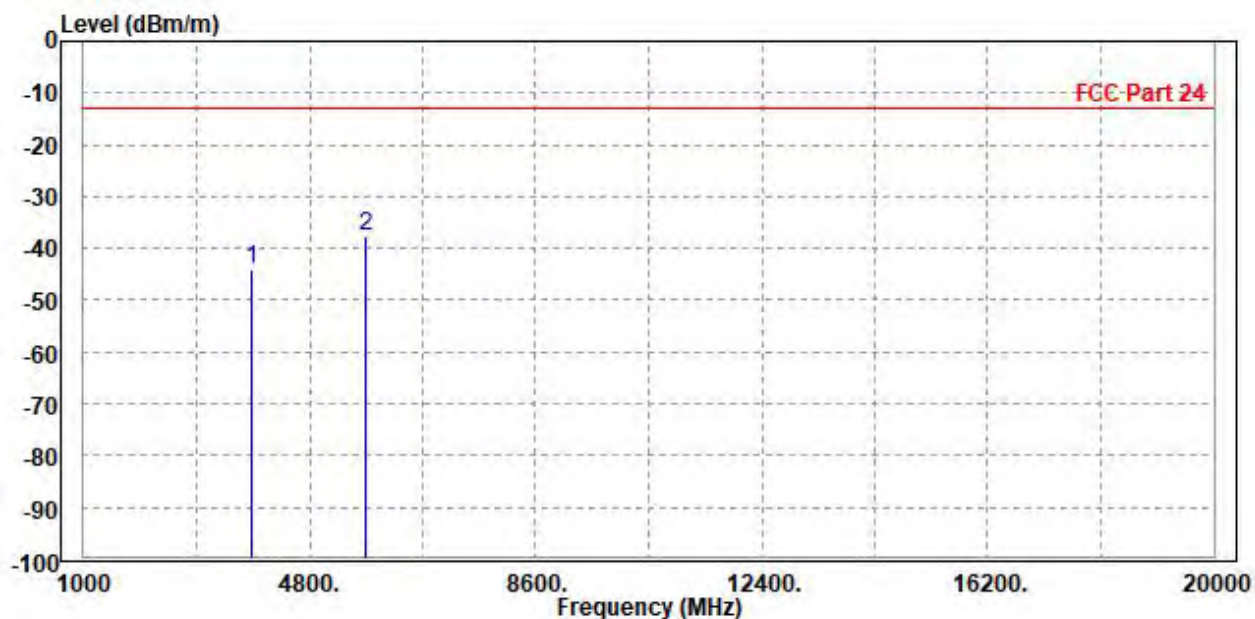
|      | Freq     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|------|----------|--------|------------|------------|------------|--------|--------|-----------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |           |
| 1    | 3760.000 | -48.10 | -55.80     | -13.00     | -35.10     | 7.70   | Peak   | Vertical  |
| 2 PP | 5636.000 | -34.87 | -45.99     | -13.00     | -21.87     | 11.12  | Peak   | Vertical  |



CH 810

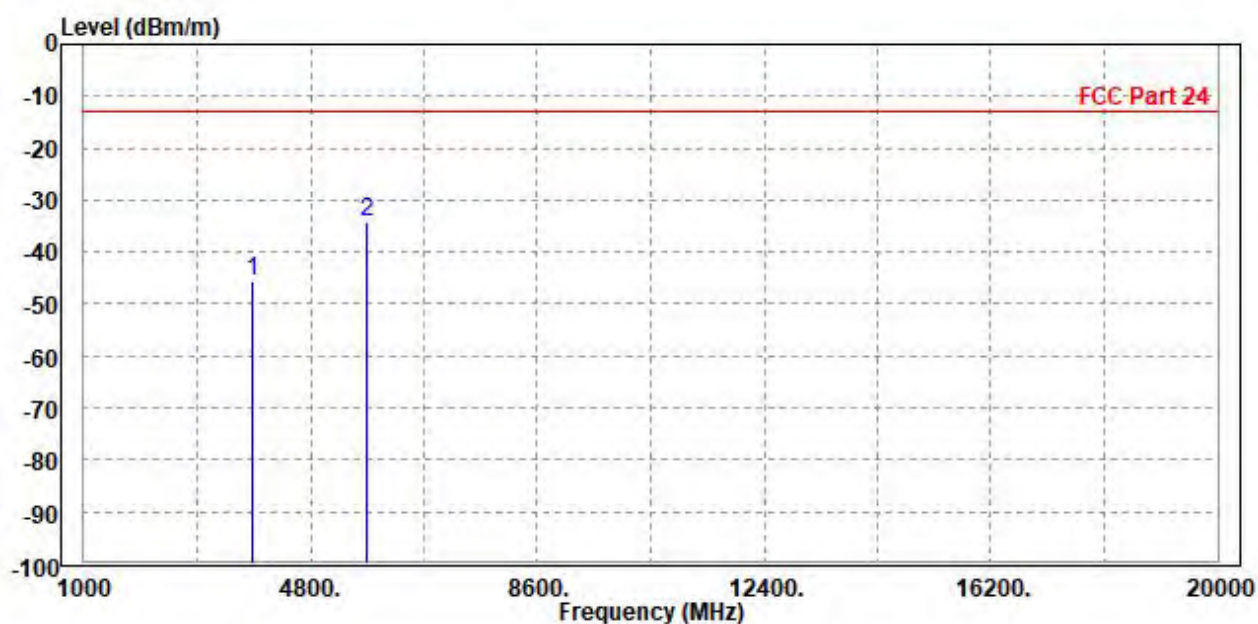
|                                                     |                 |                 |               |
|-----------------------------------------------------|-----------------|-----------------|---------------|
| MODE                                                | TX channel 810  | FREQUENCY RANGE | 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     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase  |
|------|----------|--------|------------|------------|------------|--------|--------|------------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |            |
| 1    | 3812.000 | -44.05 | -52.17     | -13.00     | -31.05     | 8.12   | Peak   | Horizontal |
| 2 PP | 5731.000 | -37.56 | -48.47     | -13.00     | -24.56     | 10.91  | Peak   | Horizontal |



|                                                   |                 |                 |               |
|---------------------------------------------------|-----------------|-----------------|---------------|
| 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     | Level  | Read Level | Limit Line | Over Limit | Factor | Remark | Pol/Phase |
|------|----------|--------|------------|------------|------------|--------|--------|-----------|
|      | MHz      | dBm/m  | dBm        | dBm/m      | dB         | dB/m   |        |           |
| 1    | 3812.000 | -45.57 | -53.34     | -13.00     | -32.57     | 7.77   | Peak   | Vertical  |
| 2 PP | 5731.000 | -34.34 | -45.73     | -13.00     | -21.34     | 11.39  | Peak   | Vertical  |





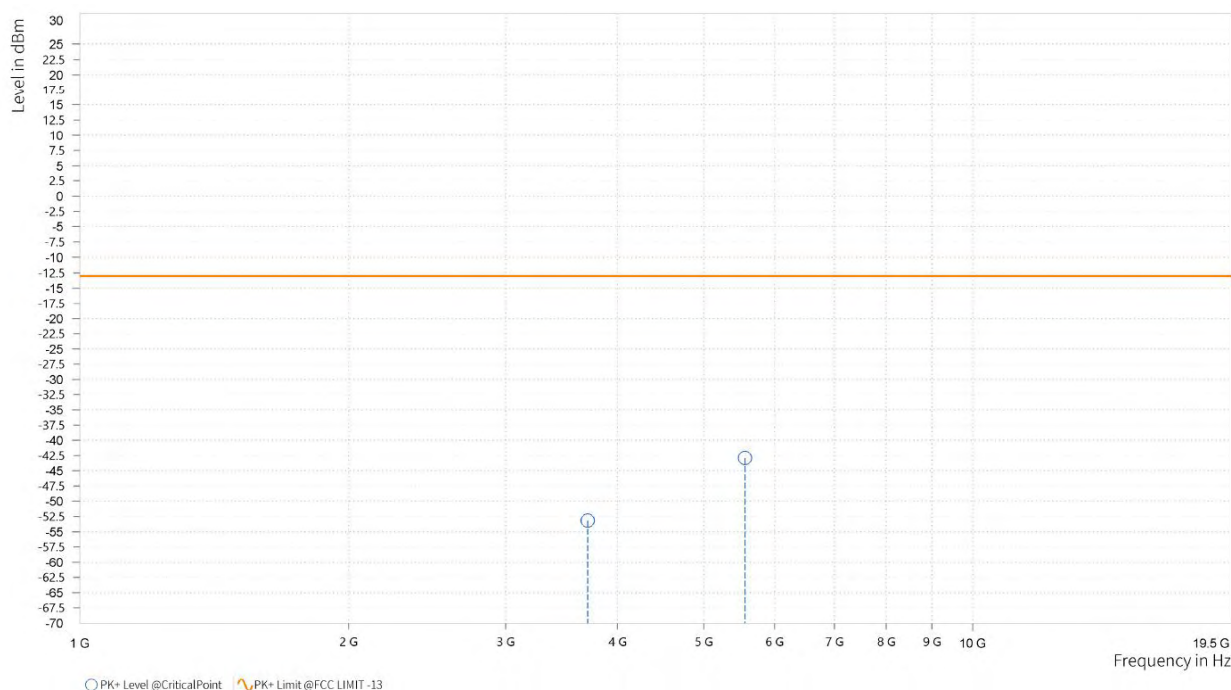
Test Report No.: W7L-P23010016RF02

## WCDMA Band II

CH 9262

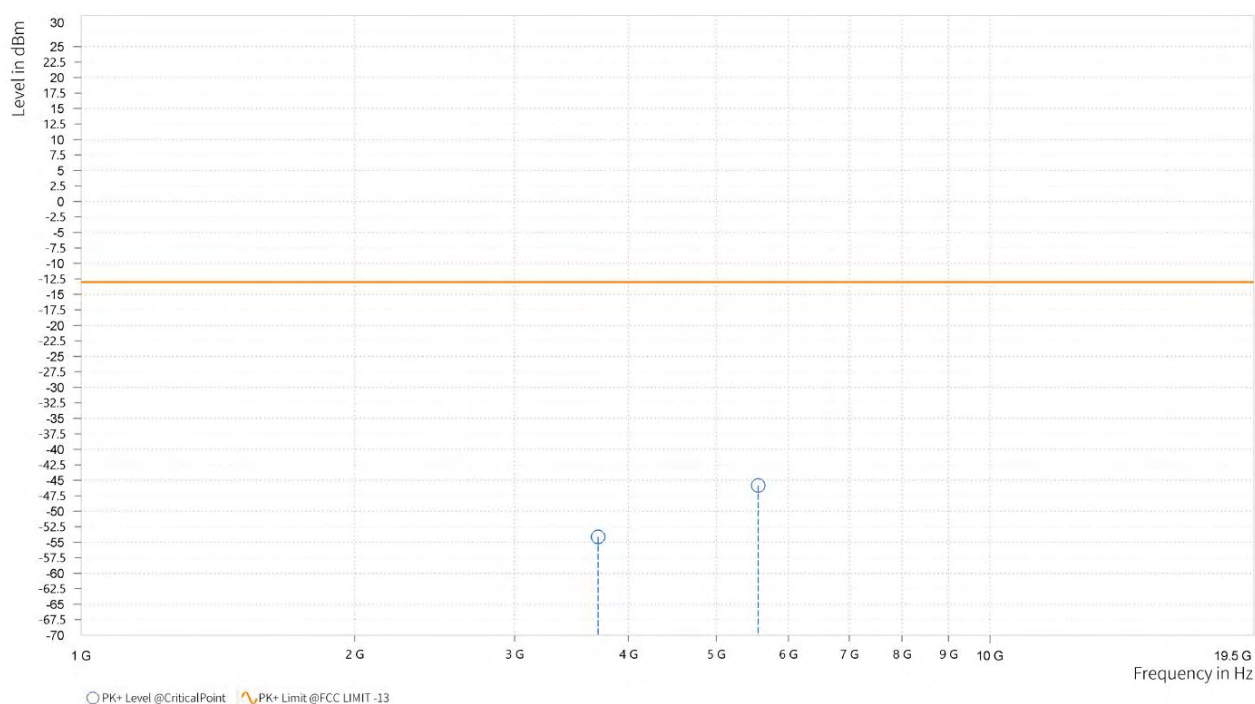
|                                                     |                 |                 |               |
|-----------------------------------------------------|-----------------|-----------------|---------------|
| MODE                                                | TX channel 9262 | FREQUENCY RANGE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

| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 4  | 3,704.000       | -53.18          | -13.00          | 40.18           | 22.68           | H            | 359.1         | 1                  |
| 4  | 5,560.000       | -42.90          | -13.00          | 29.90           | 26.58           | H            | 1             | 1                  |



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

| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 4  | 3,705.000       | -54.15          | -13.00          | 41.15           | 22.67           | V            | 359.1         | 1                  |
| 4  | 5,560.000       | -45.82          | -13.00          | 32.82           | 25.83           | V            | 199.2         | 1                  |



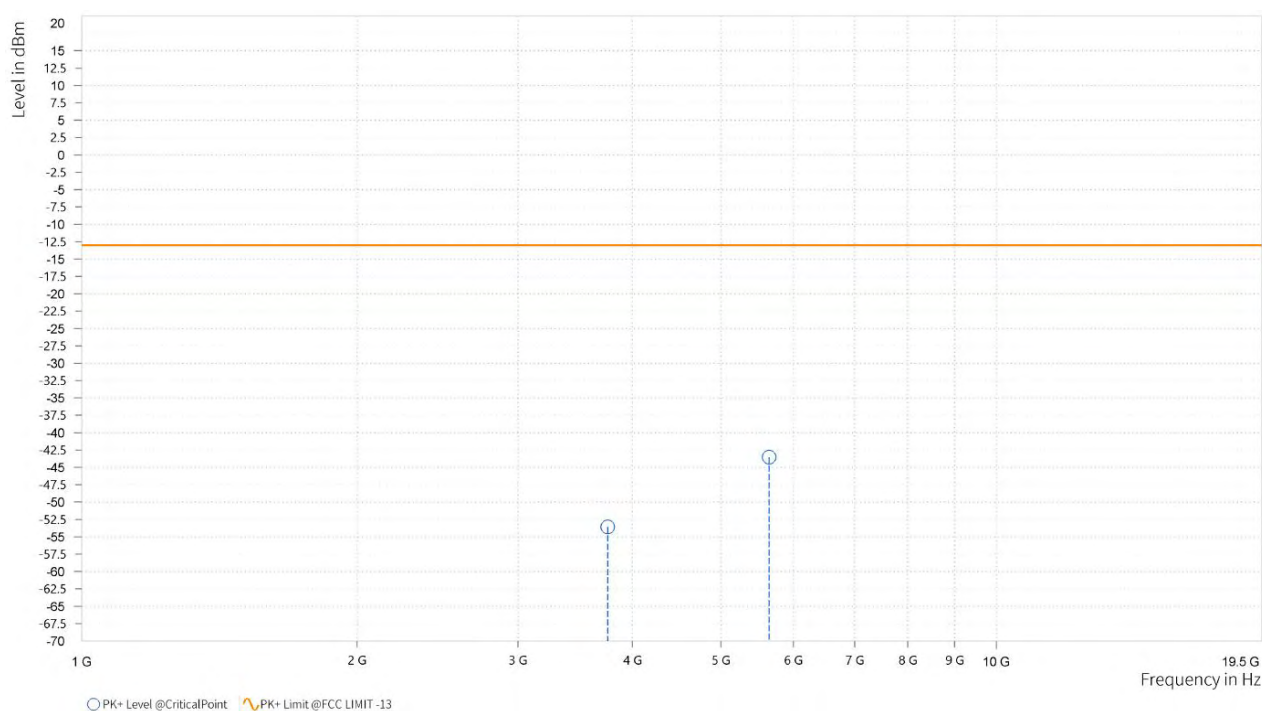


Test Report No.: W7L-P23010016RF02

# CH 9400

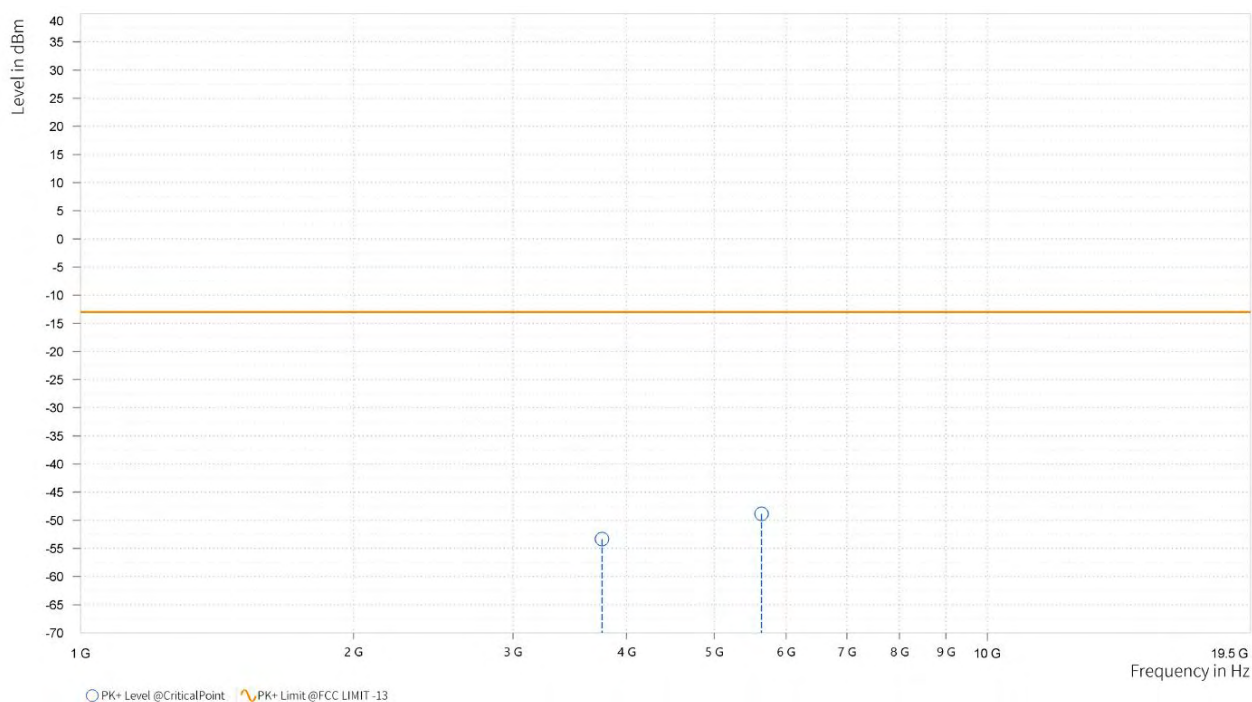
|                                                     |                 |                 |               |
|-----------------------------------------------------|-----------------|-----------------|---------------|
| MODE                                                | TX channel 9400 | FREQUENCY RANGE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

| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 4  | 3,759.500       | -53.59          | -13.00          | 40.59           | 23.53           | H            | 359           | 1                  |
| 4  | 5,644.000       | -43.54          | -13.00          | 30.54           | 26.44           | H            | 359           | 1                  |



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

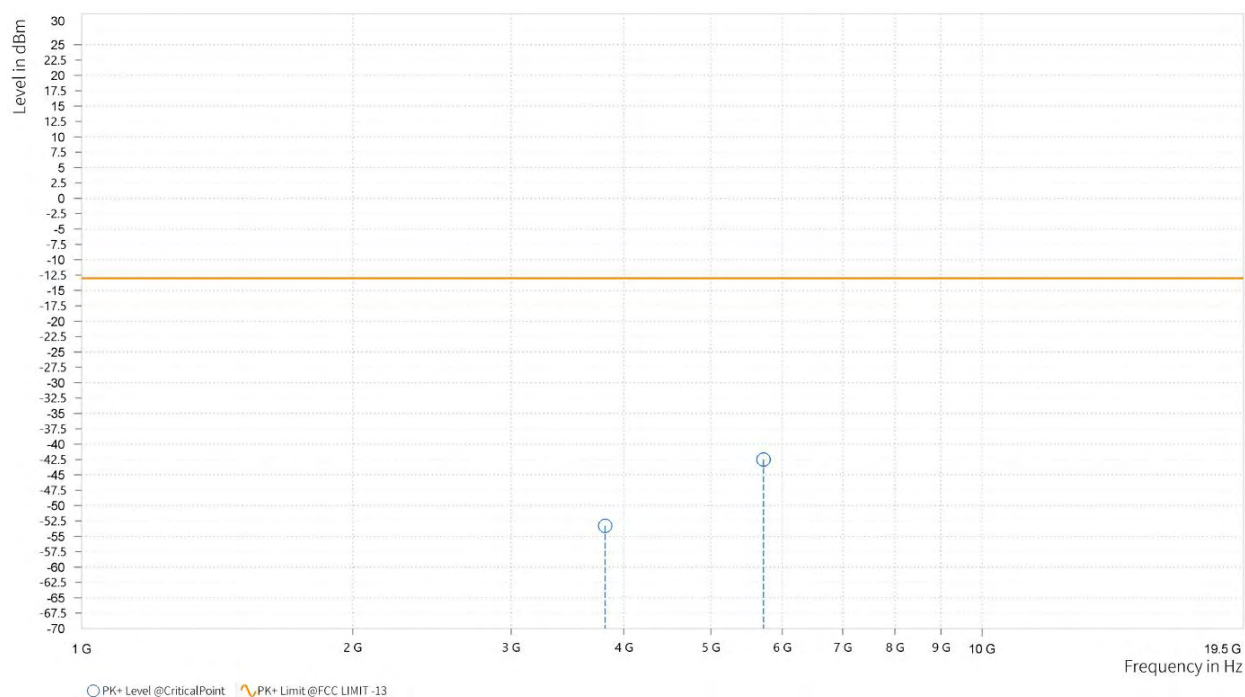
| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 4  | 3,760.000       | -53.34          | -13.00          | 40.34           | 23.42           | V            | 1             | 2                  |
| 4  | 5,637.000       | -48.87          | -13.00          | 35.87           | 25.64           | V            | 359           | 2                  |



CH 9538

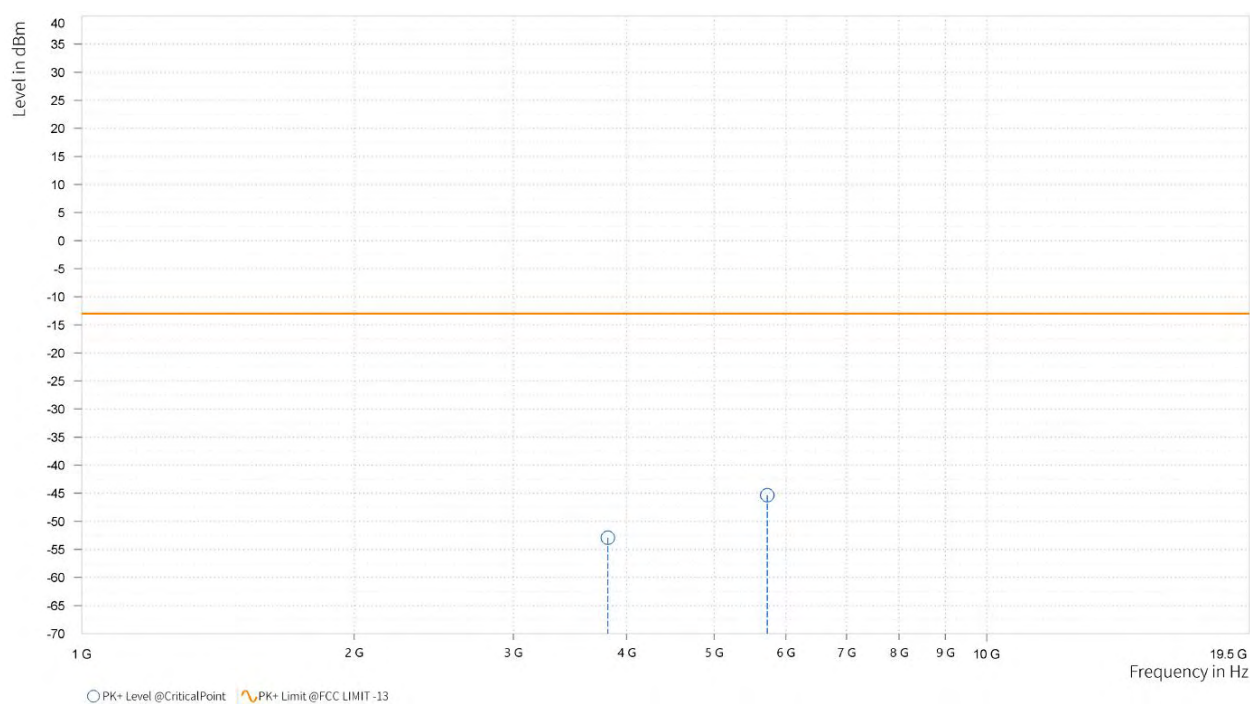
|                                                     |                 |                 |               |
|-----------------------------------------------------|-----------------|-----------------|---------------|
| MODE                                                | TX channel 9538 | FREQUENCY RANGE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

| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 4  | 3,815.000       | -53.28          | -13.00          | 40.28           | 23.53           | H            | 192           | 1                  |
| 4  | 5,719.000       | -42.53          | -13.00          | 29.53           | 27.05           | H            | 1             | 1                  |



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

| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 4  | 3,814.500       | -52.94          | -13.00          | 39.94           | 23.32           | V            | 359.1         | 1                  |
| 4  | 5,720.500       | -45.34          | -13.00          | 32.34           | 26.22           | V            | 0.9           | 2                  |





Test Report No.: W7L-P23010016RF02

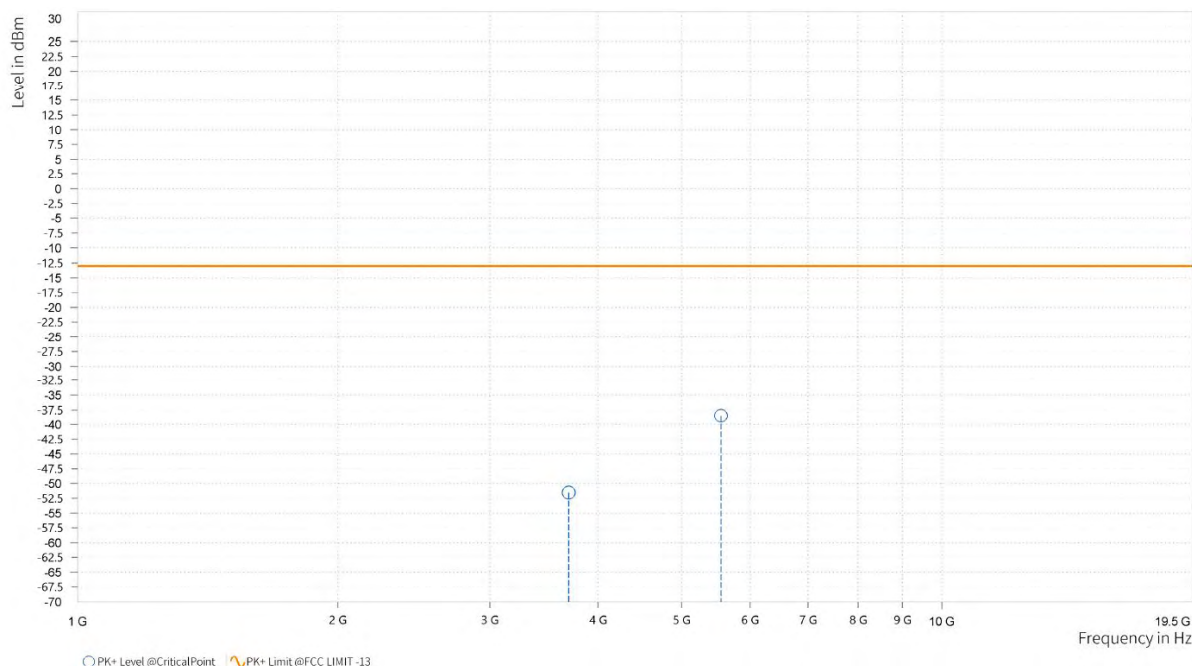
## LTE Band 2

CHANNEL BANDWIDTH: 1.4MHz / QPSK

CH 18607

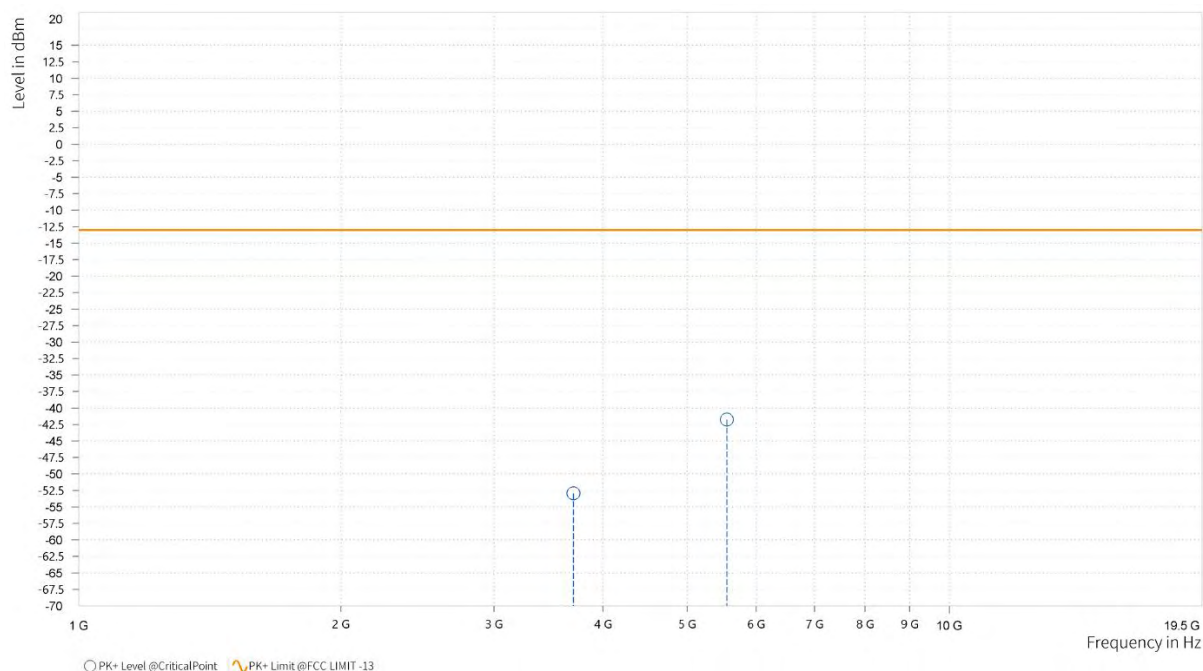
|                                                     |                  |                 |               |
|-----------------------------------------------------|------------------|-----------------|---------------|
| MODE                                                | TX channel 18607 | FREQUENCY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

| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 4  | 3,699.500       | -51.54          | -13.00          | 38.54           | 22.64           | H            | 182.4         | 1                  |
| 4  | 5,551.000       | -38.48          | -13.00          | 25.48           | 26.61           | H            | 151.2         | 2                  |



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

| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 4  | 3,700.500       | -52.93          | -13.00          | 39.93           | 22.58           | V            | 359.1         | 1                  |
| 4  | 5,551.000       | -41.74          | -13.00          | 28.74           | 25.84           | V            | 196.8         | 1                  |



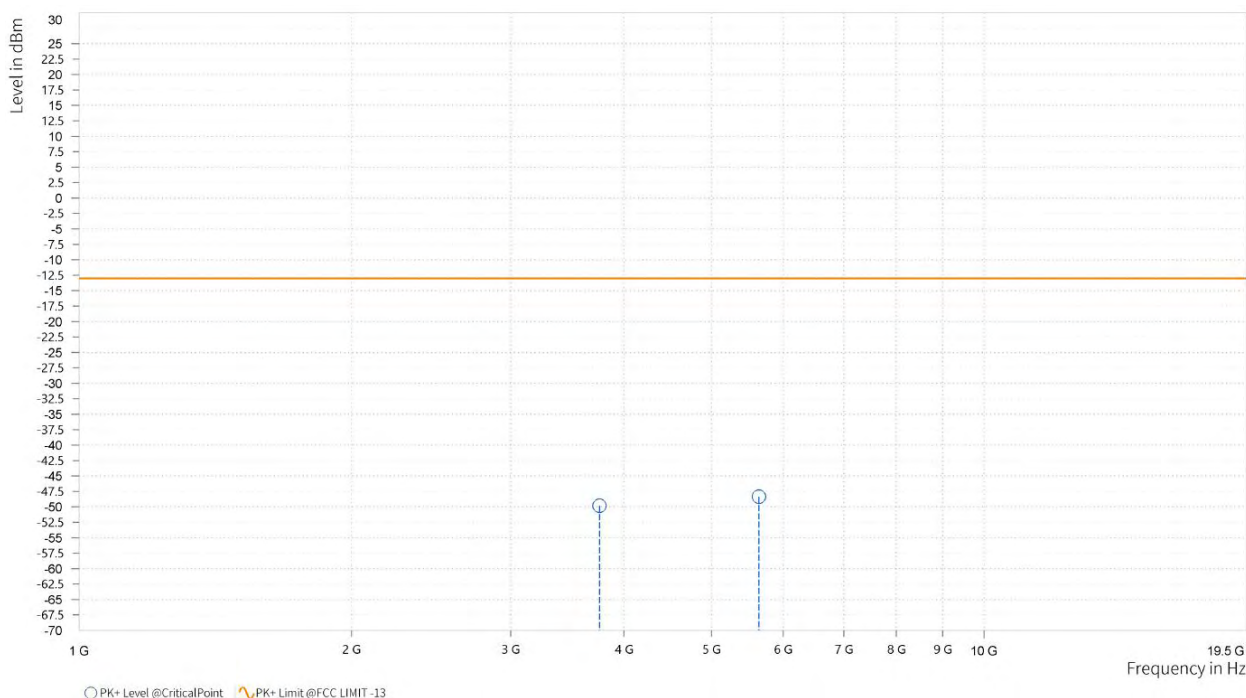


Test Report No.: W7L-P23010016RF02

# CH18900

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

| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 4  | 3,759.000       | -49.82          | -13.00          | 36.82           | 23.53           | H            | 176.3         | 2                  |
| 4  | 5,638.500       | -48.34          | -13.00          | 35.34           | 26.46           | H            | 184.8         | 1                  |

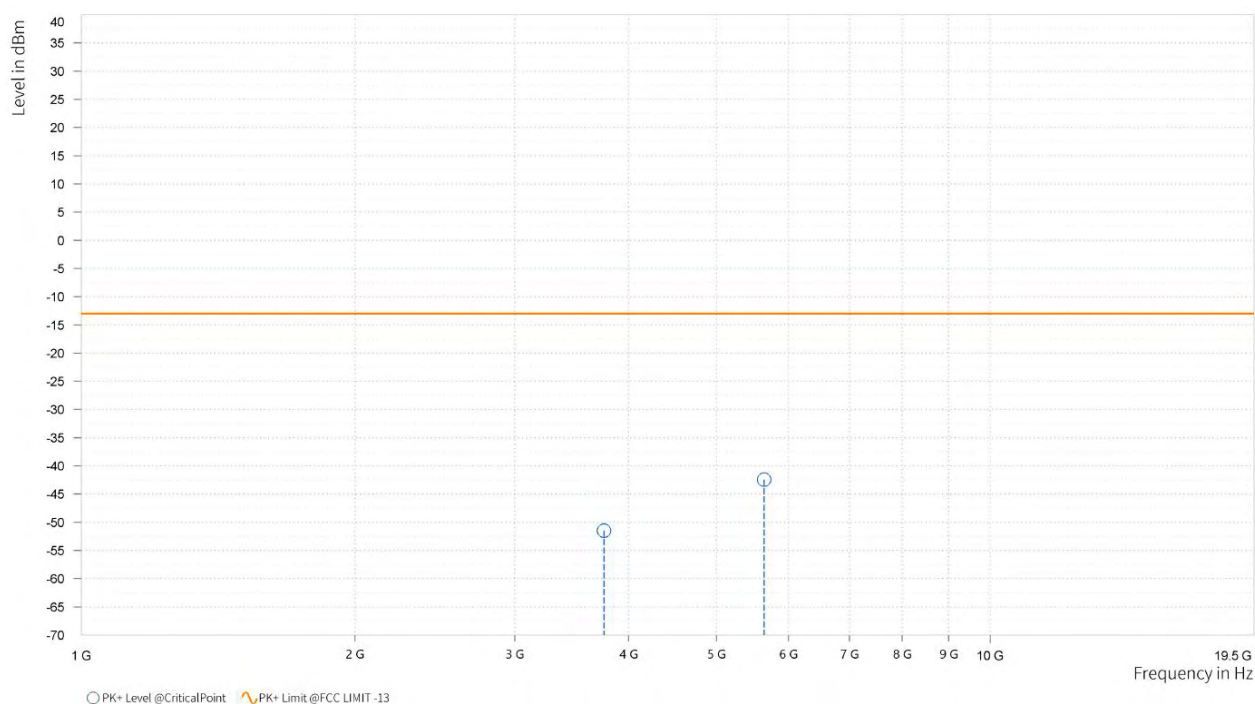




Test Report No.: W7L-P23010016RF02

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

| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 4  | 3,759.500       | -51.50          | -13.00          | 38.50           | 23.42           | V            | 117.8         | 2                  |
| 4  | 5,638.500       | -42.44          | -13.00          | 29.44           | 25.64           | V            | 359.1         | 1                  |



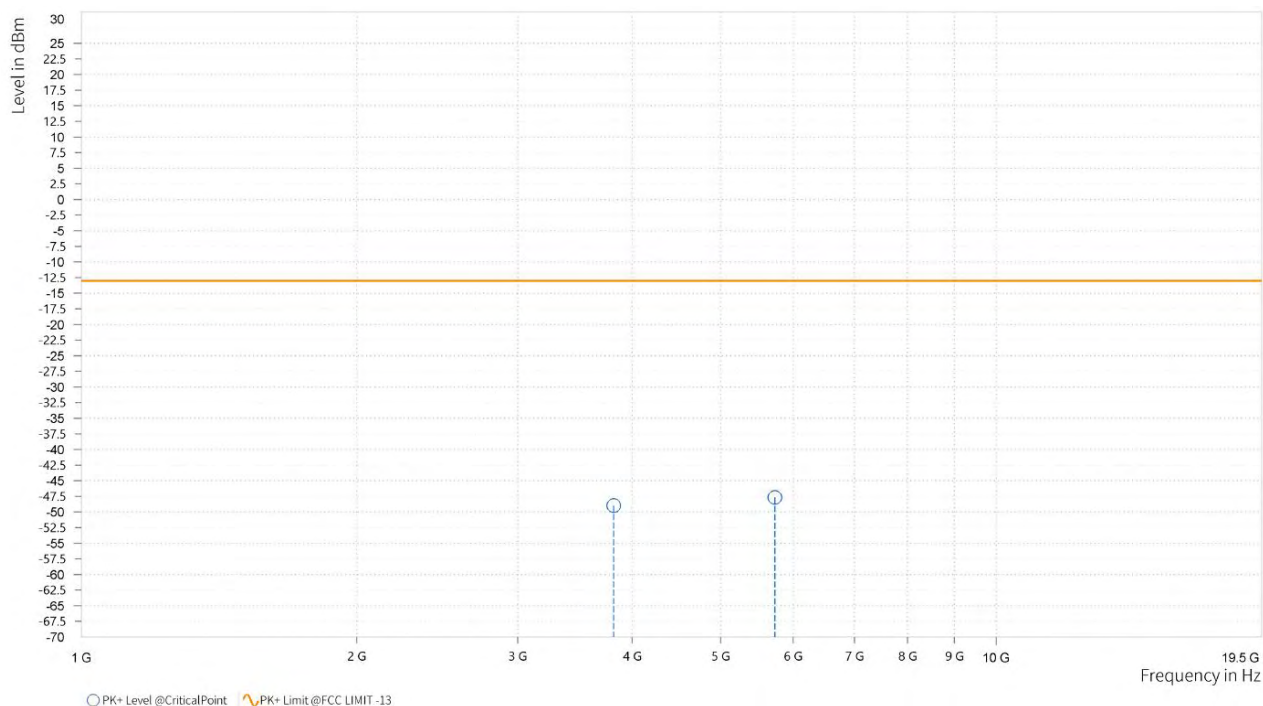


Test Report No.: W7L-P23010016RF02

CH19193

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

| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 4  | 3,818.500       | -48.97          | -13.00          | 35.97           | 23.55           | H            | 183.6         | 1                  |
| 4  | 5,728.000       | -47.66          | -13.00          | 34.66           | 27.09           | H            | 150           | 2                  |

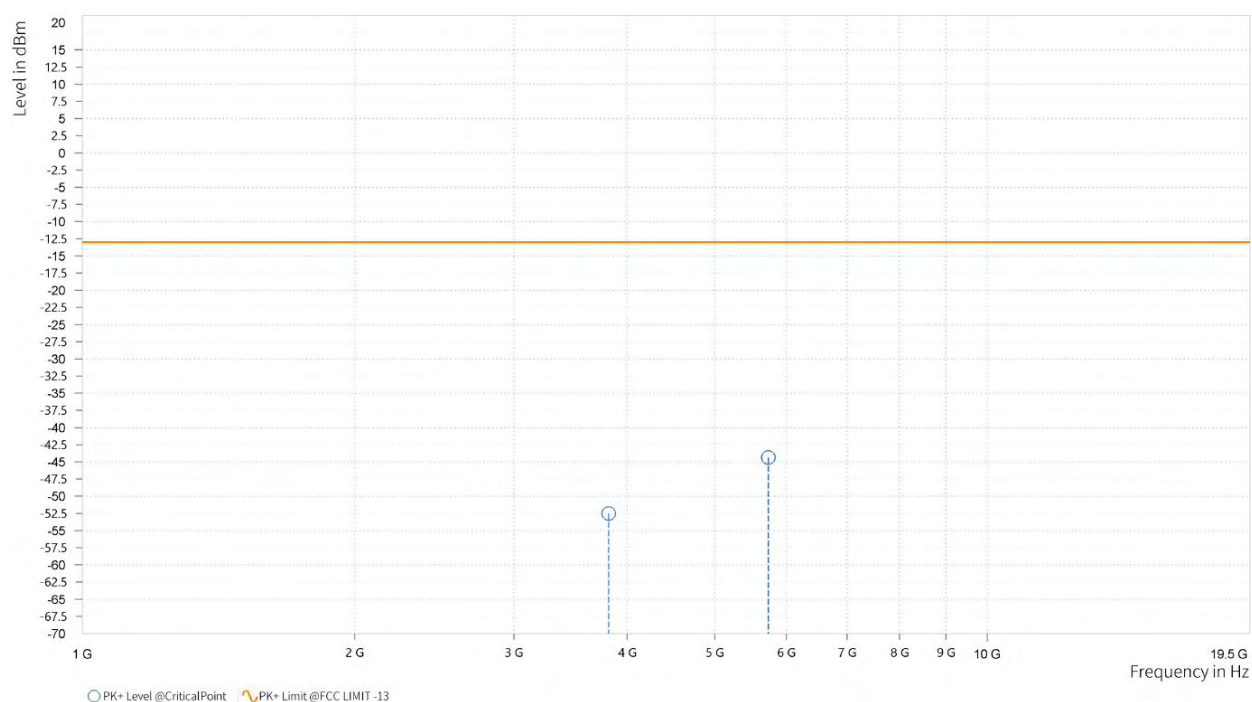




Test Report No.: W7L-P23010016RF02

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

| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 4  | 3,817.000       | -52.53          | -13.00          | 39.53           | 23.32           | V            | 1             | 1                  |
| 4  | 5,728.000       | -44.36          | -13.00          | 31.36           | 26.23           | V            | 196.8         | 1                  |





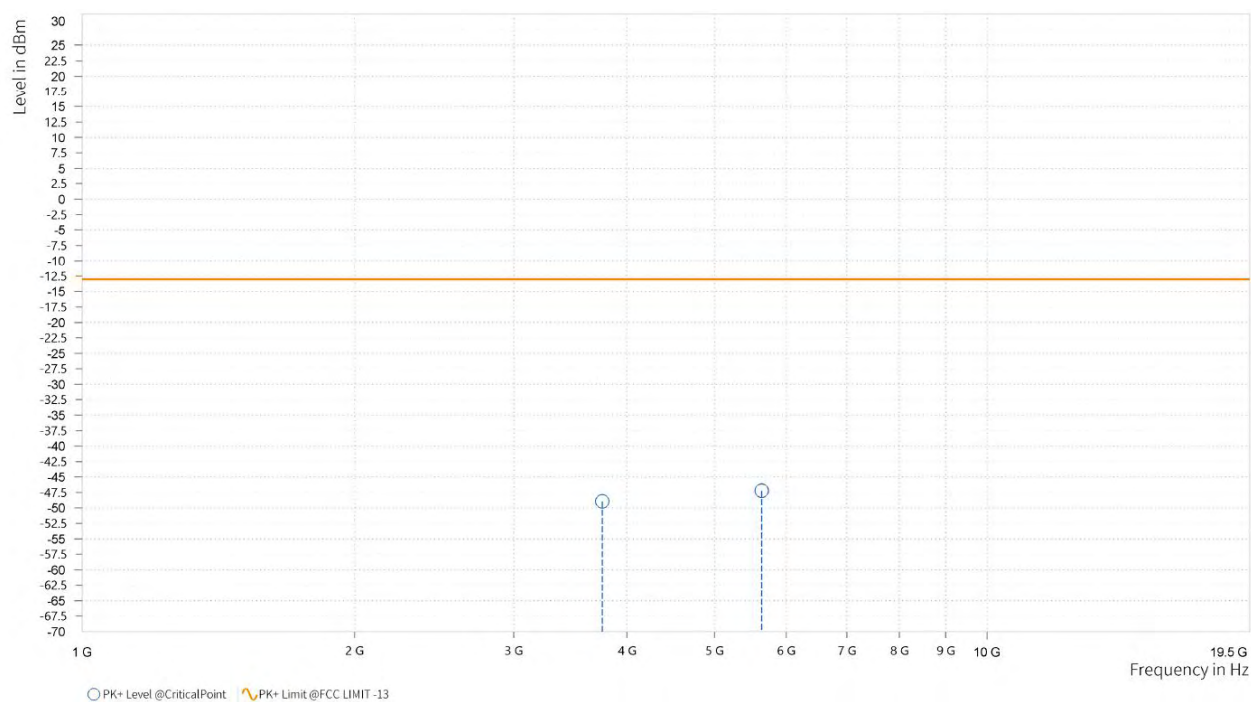
Test Report No.: W7L-P23010016RF02

CHANNEL BANDWIDTH: 3MHz / QPSK

CH18900

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

| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 4  | 3,757.000       | -48.93          | -13.00          | 35.93           | 23.54           | H            | 176.3         | 2                  |
| 4  | 5,637.000       | -47.22          | -13.00          | 34.22           | 26.46           | H            | 184.8         | 1                  |

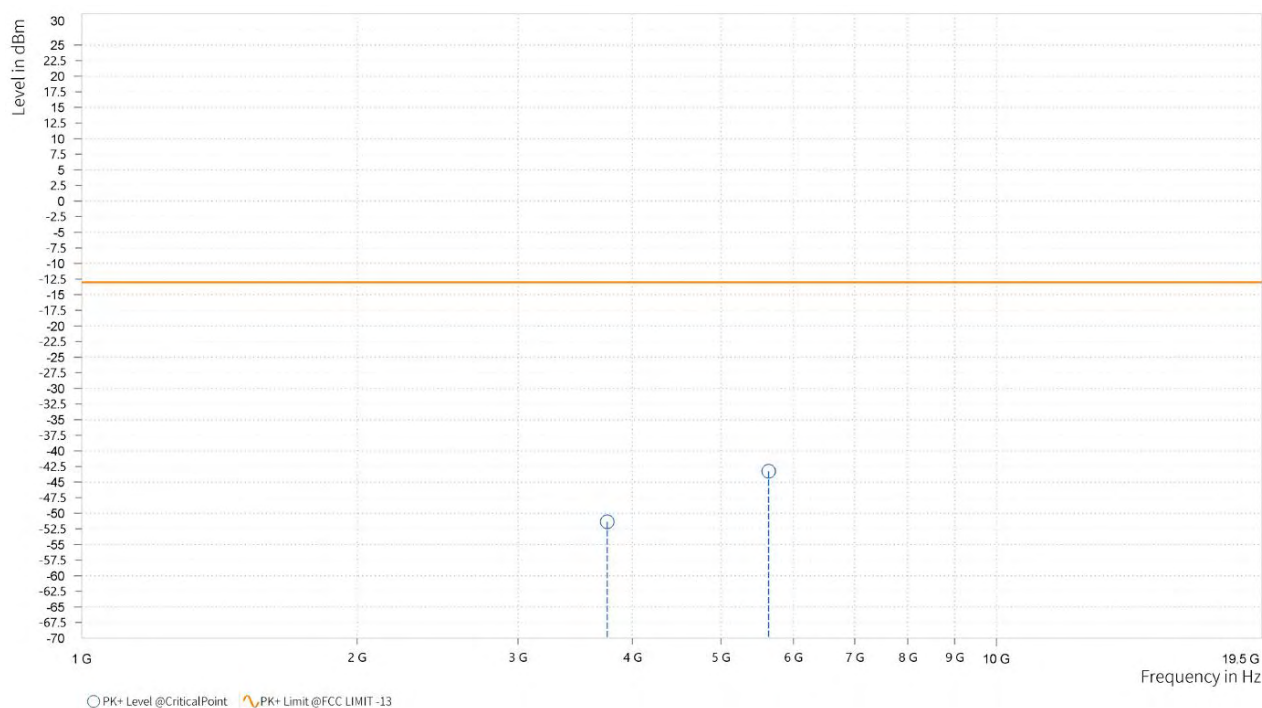




# Test Report No.: W7L-P23010016RF02

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

| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 4  | 3,754.500       | -51.35          | -13.00          | 38.35           | 23.44           | V            | 199.2         | 1                  |
| 4  | 5,636.500       | -43.28          | -13.00          | 30.28           | 25.64           | V            | 1             | 1                  |





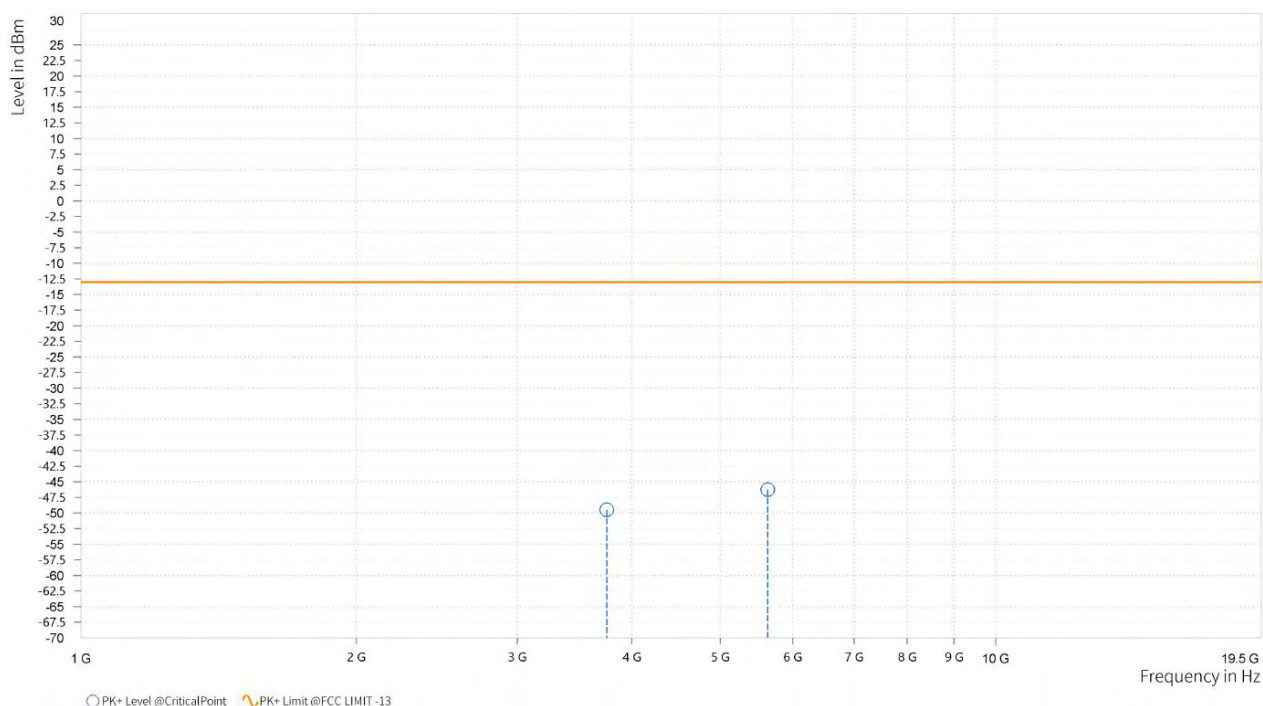
Test Report No.: W7L-P23010016RF02

CHANNEL BANDWIDTH: 5MHz / QPSK

CH18900

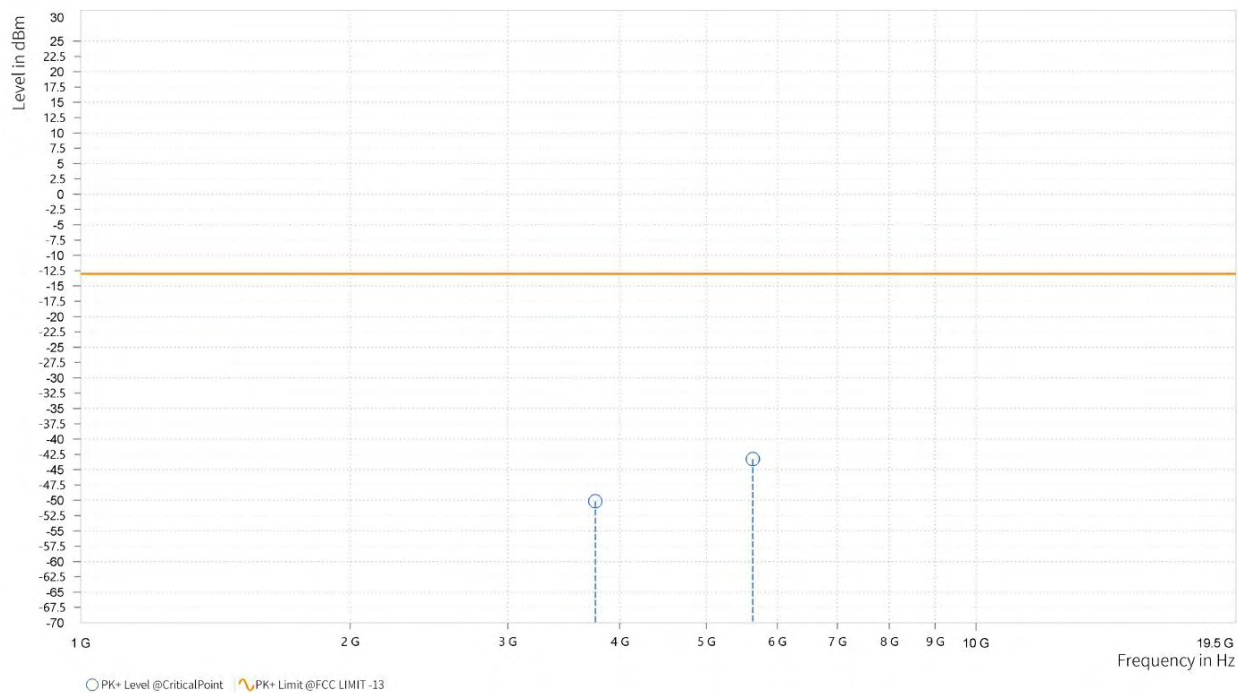
|                                                     |                  |                 |               |
|-----------------------------------------------------|------------------|-----------------|---------------|
| MODE                                                | TX channel 18900 | FREQUENCY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

| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 4  | 3,755.500       | -49.48          | -13.00          | 36.48           | 23.55           | H            | 175.2         | 2                  |
| 4  | 5,633.500       | -46.26          | -13.00          | 33.26           | 26.47           | H            | 183.6         | 1                  |



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

| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 4  | 3,755.500       | -50.15          | -13.00          | 37.15           | 23.44           | V            | 1             | 1                  |
| 4  | 5,633.500       | -43.27          | -13.00          | 30.27           | 25.64           | V            | 359           | 1                  |





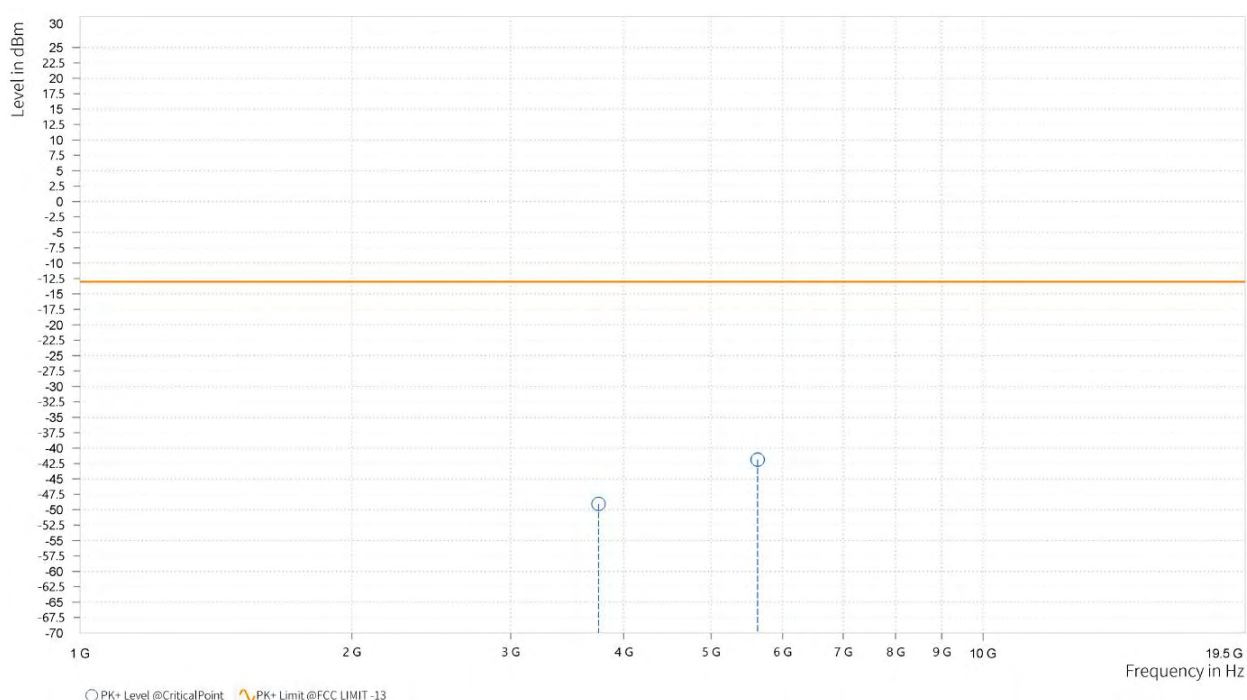
Test Report No.: W7L-P23010016RF02

CHANNEL BANDWIDTH: 10MHz / QPSK

CH 18900

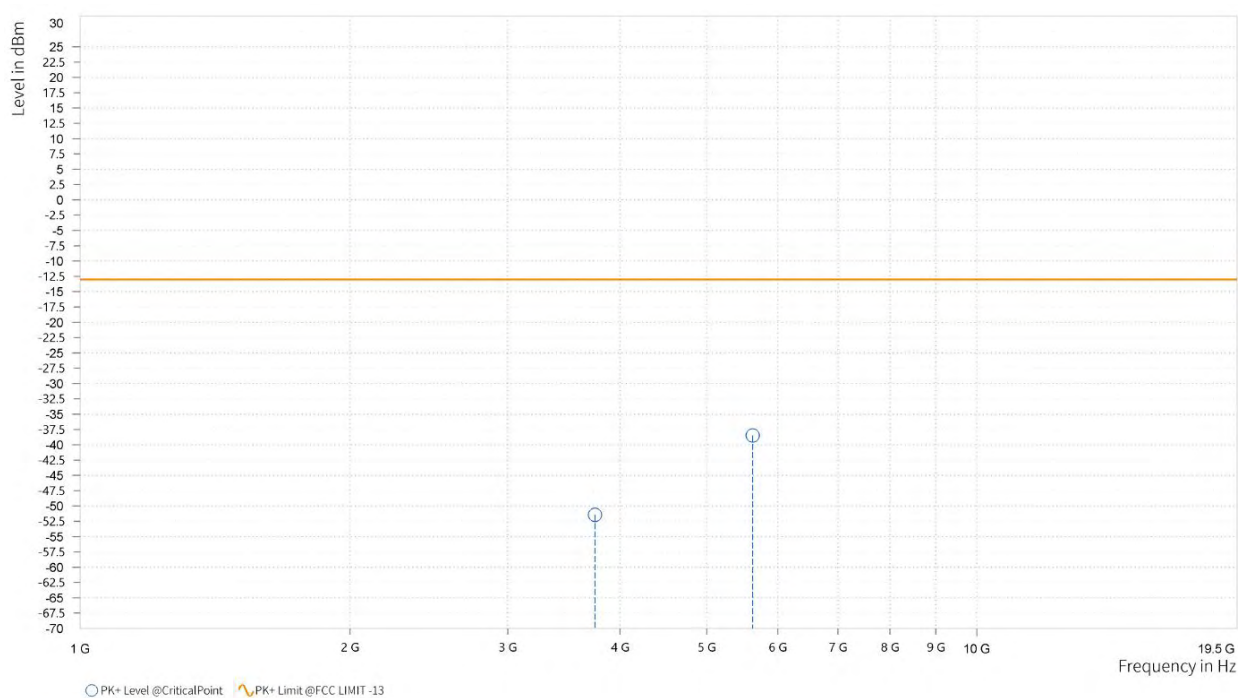
|                                                     |                  |                 |               |
|-----------------------------------------------------|------------------|-----------------|---------------|
| MODE                                                | TX channel 18900 | FREQUENCY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

| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 4  | 3,751.000       | -49.05          | -13.00          | 36.05           | 23.56           | H            | 163.2         | 2                  |
| 4  | 5,627.000       | -41.88          | -13.00          | 28.88           | 26.49           | H            | 0.9           | 2                  |



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

| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 4  | 3,751.000       | -51.45          | -13.00          | 38.45           | 23.43           | V            | 0.9           | 2                  |
| 4  | 5,626.500       | -38.50          | -13.00          | 25.50           | 25.67           | V            | 1             | 1                  |



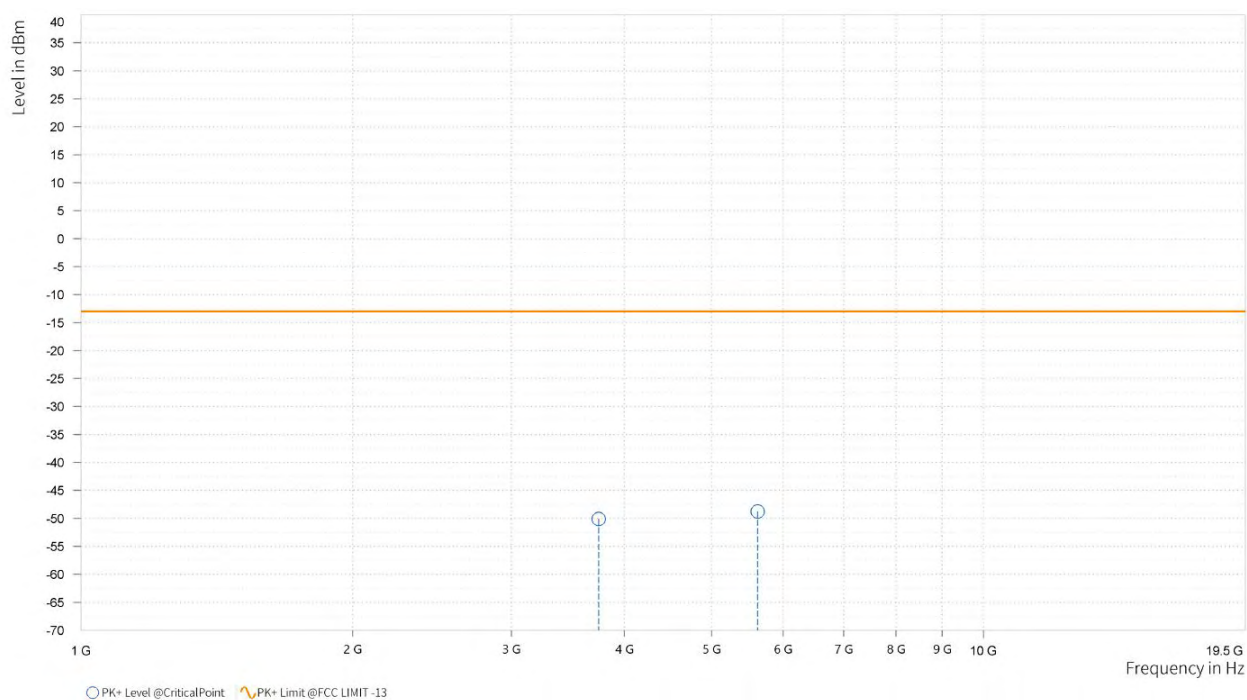


Test Report No.: W7L-P23010016RF02

CHANNEL BANDWIDTH: 15MHz / QPSK

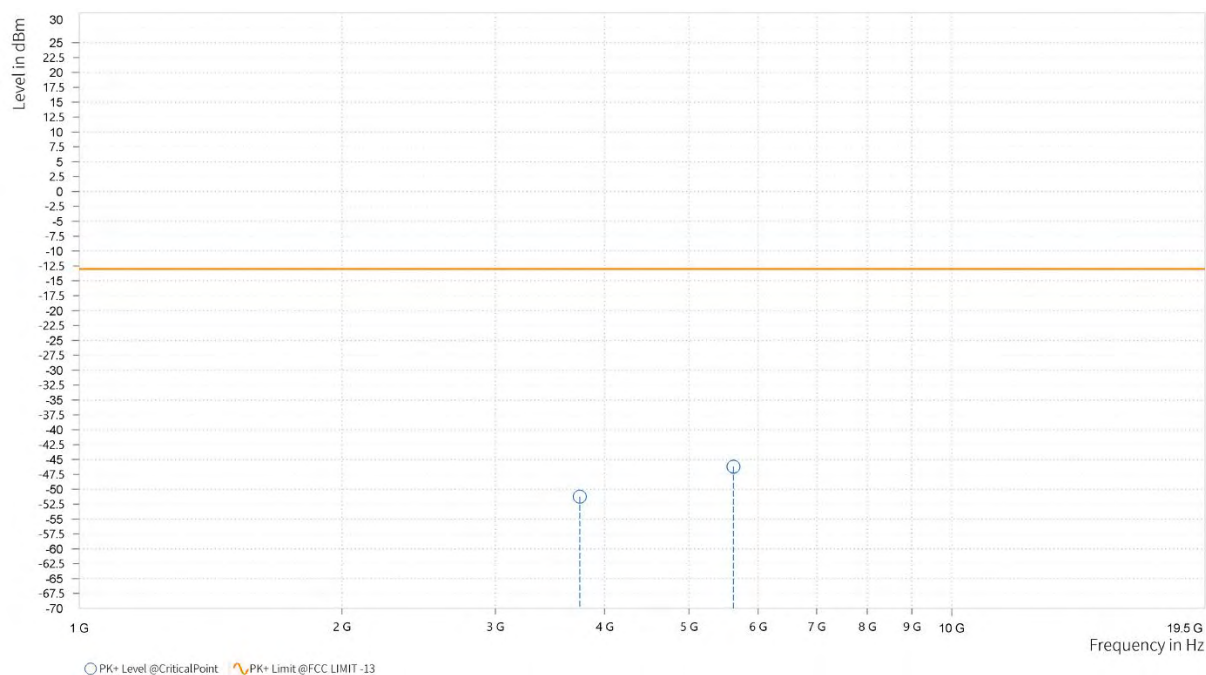
|                                                     |                  |                 |               |
|-----------------------------------------------------|------------------|-----------------|---------------|
| MODE                                                | TX channel 18900 | FREQUENCY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

| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 4  | 3,747.000       | -50.12          | -13.00          | 37.12           | 23.56           | H            | 359.1         | 1                  |
| 4  | 5,620.000       | -48.75          | -13.00          | 35.75           | 26.52           | H            | 359.1         | 1                  |



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

| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 4  | 3,747.000       | -51.24          | -13.00          | 38.24           | 23.43           | V            | 359           | 2                  |
| 4  | 5,620.000       | -46.19          | -13.00          | 33.19           | 25.70           | V            | 1             | 1                  |





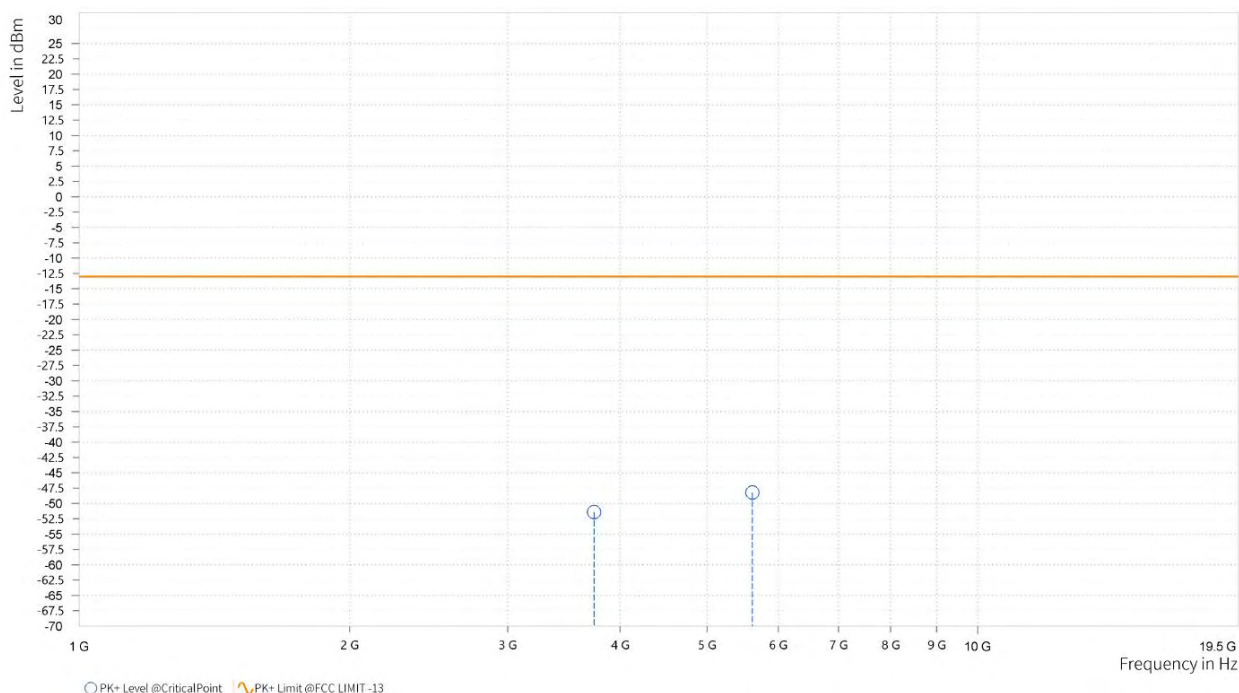
Test Report No.: W7L-P23010016RF02

CHANNEL BANDWIDTH: 20MHz / QPSK

CH18900

|                                                     |                  |                 |               |
|-----------------------------------------------------|------------------|-----------------|---------------|
| 01/10/2023                                          |                  |                 |               |
| MODE                                                | TX channel 18900 | FREQUENCY RANGE | Above 1000MHz |
| ENVIRONMENTAL CONDITIONS                            | 23deg. C, 70%RH  | INPUT POWER     | AC 120V/60HZ  |
| TESTED BY                                           | Chao Wu          |                 |               |
| ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M |                  |                 |               |

| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 4  | 3,741.500       | -51.41          | -13.00          | 38.41           | 23.45           | H            | 160.8         | 2                  |
| 4  | 5,613.000       | -48.21          | -13.00          | 35.21           | 26.54           | H            | 186           | 1                  |

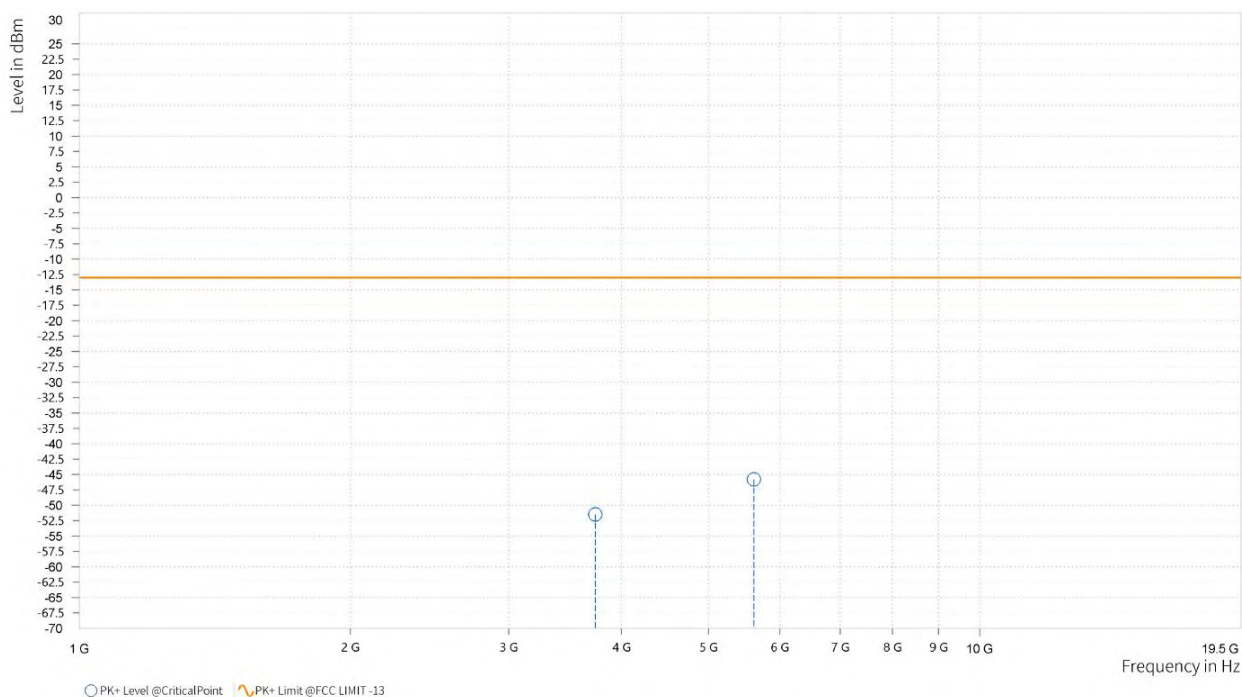




Test Report No.: W7L-P23010016RF02

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

| Rg | Frequency [MHz] | PK+ Level [dBm] | PK+ Limit [dBm] | PK+ Margin [dB] | Correction [dB] | Polarization | Azimuth [deg] | Antenna Height [m] |
|----|-----------------|-----------------|-----------------|-----------------|-----------------|--------------|---------------|--------------------|
| 4  | 3,742.500       | -51.49          | -13.00          | 38.49           | 23.36           | V            | 359           | 2                  |
| 4  | 5,613.000       | -45.77          | -13.00          | 32.77           | 25.74           | V            | 1             | 1                  |

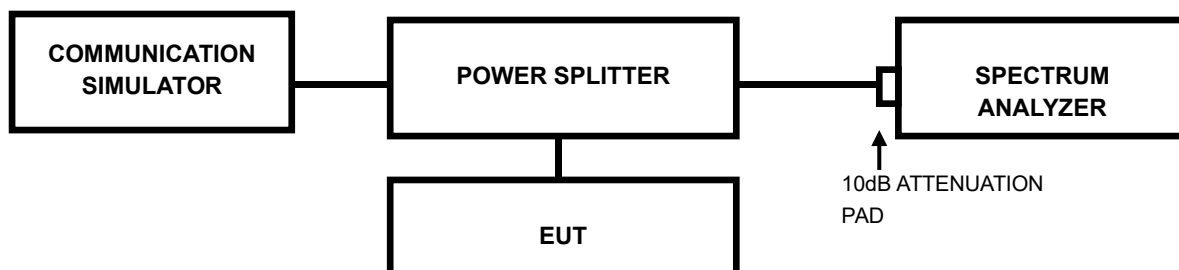


### 3.7 PEAK TO AVERAGE RATIO

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

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

#### 3.7.2 TEST SETUP



#### 3.7.3 TEST PROCEDURES

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



Test Report No.: W7L-P23010016RF02

### 3.7.4 TEST RESULTS

Please Refer to Appendix Of this test report.



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## 4 INFORMATION ON THE TESTING LABORATORIES

We, Huarui 7layers High Technology (Suzhou) Co., Ltd. ,were founded in 2020 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:

**Suzhou EMC/RF Lab:**

Tel: +86 (0557) 368 1008



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

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



Test Report No.: W7L-P23010016RF02

## APPENDIX

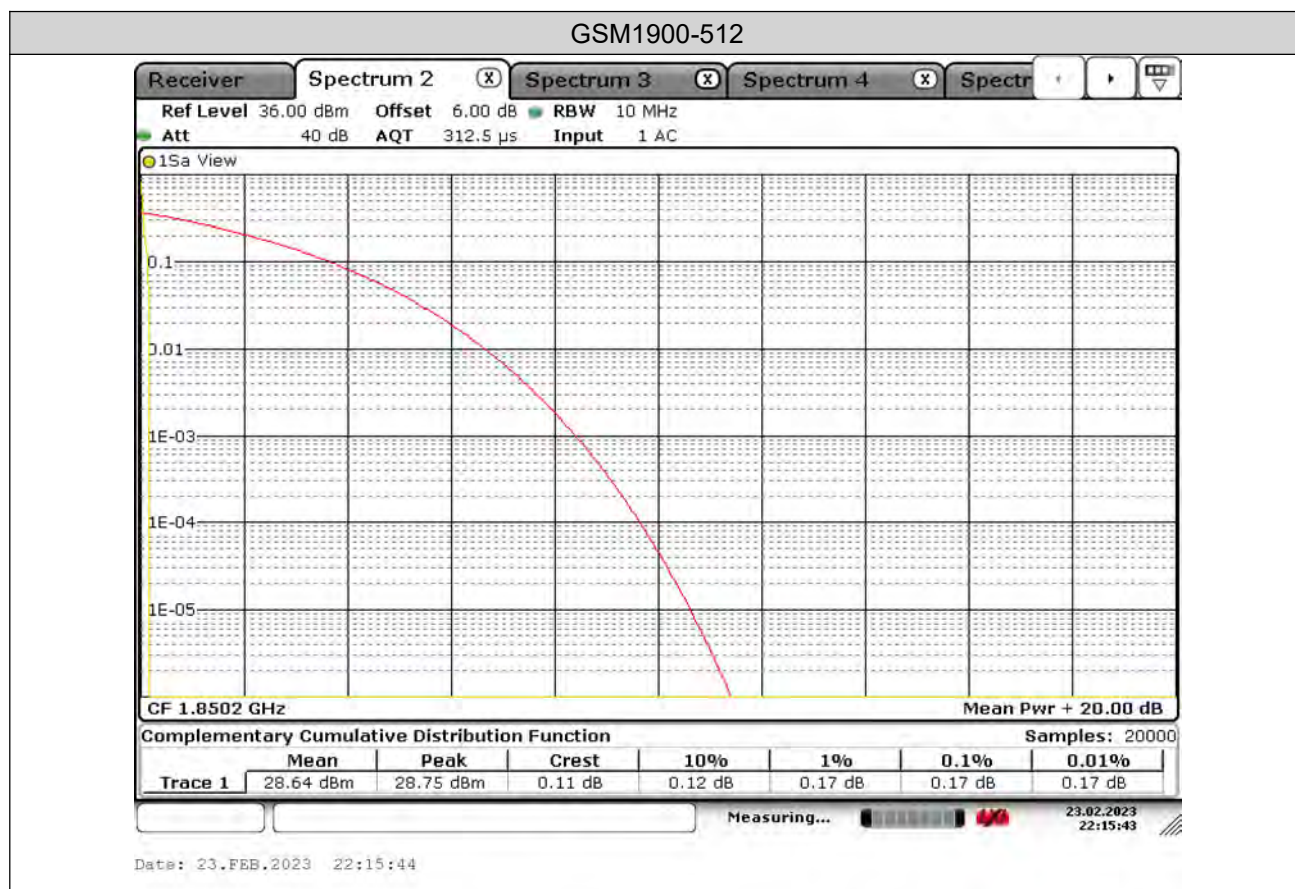
### GSM1900

#### PEAK-TO-AVERAGE RATIO(CCDF)

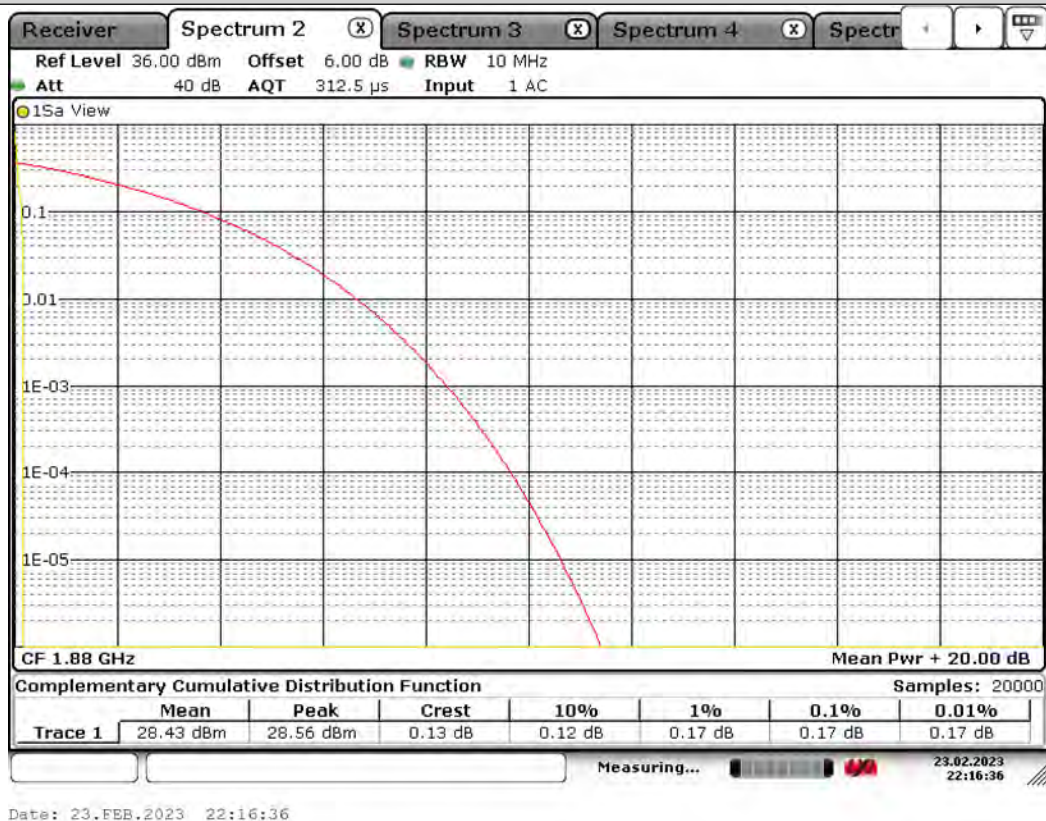
##### Test Result

| Band      | Channel | Result(dB) | Limit(dB) | Verdict |
|-----------|---------|------------|-----------|---------|
| GSM1900   | 512     | 0.17       | 13        | PASS    |
| GSM1900   | 661     | 0.17       | 13        | PASS    |
| GSM1900   | 810     | 0.12       | 13        | PASS    |
| EGPRS1900 | 512     | 0.17       | 13        | PASS    |
| EGPRS1900 | 661     | 0.12       | 13        | PASS    |
| EGPRS1900 | 810     | 0.14       | 13        | PASS    |

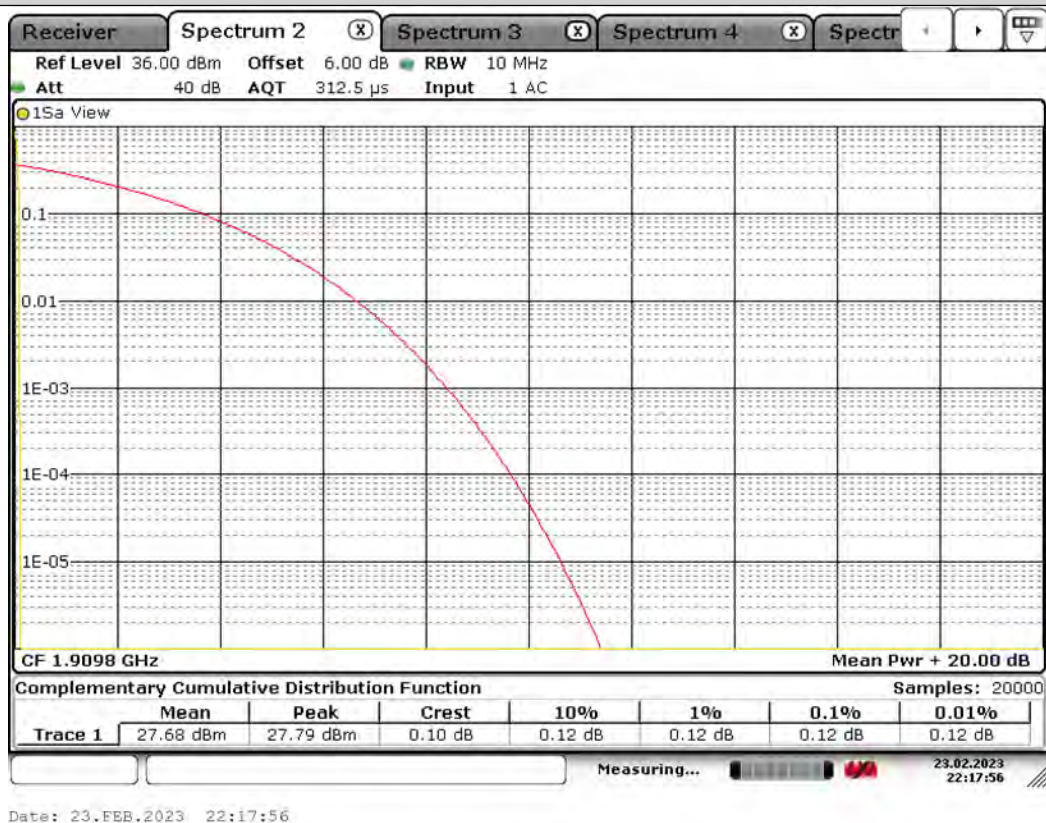
## Test Graphs



### GSM1900-661



### GSM1900-810

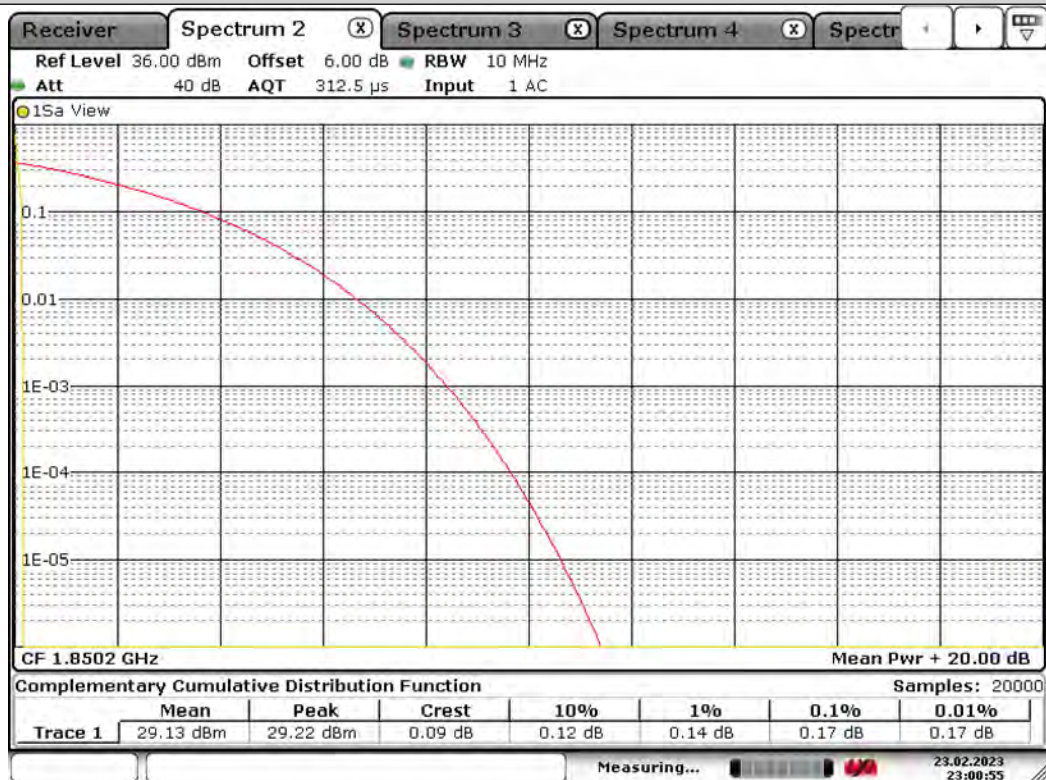




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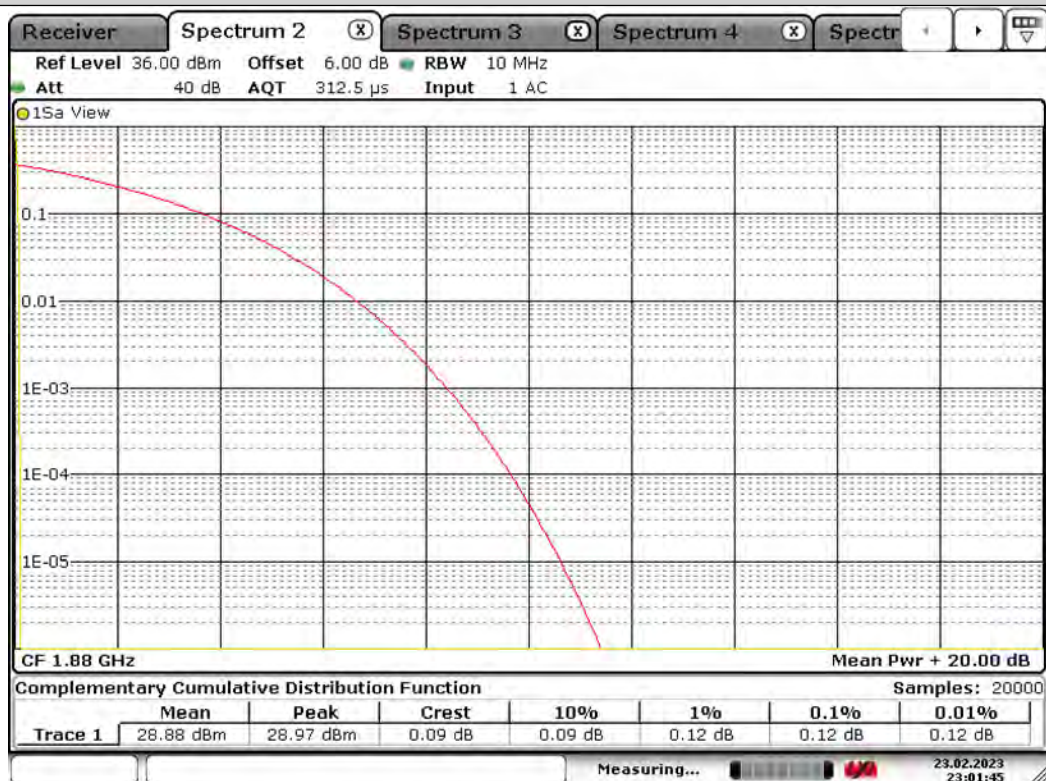
Test Report No.: W7L-P23010016RF02

### EGPRS1900-512



Date: 23.FEB.2023 23:00:55

### EGPRS1900-661



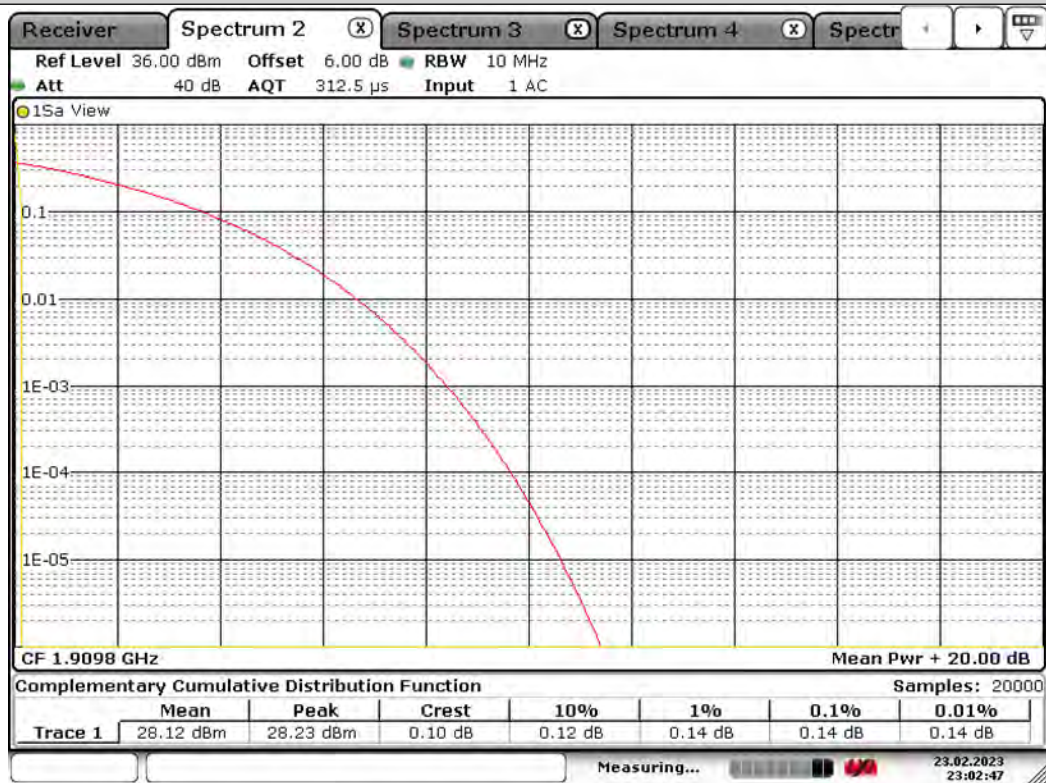
Date: 23.FEB.2023 23:01:45



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Test Report No.: W7L-P23010016RF02

EGPRS1900-810



Date: 23.FEB.2023 23:02:48



Test Report No.: W7L-P23010016RF02

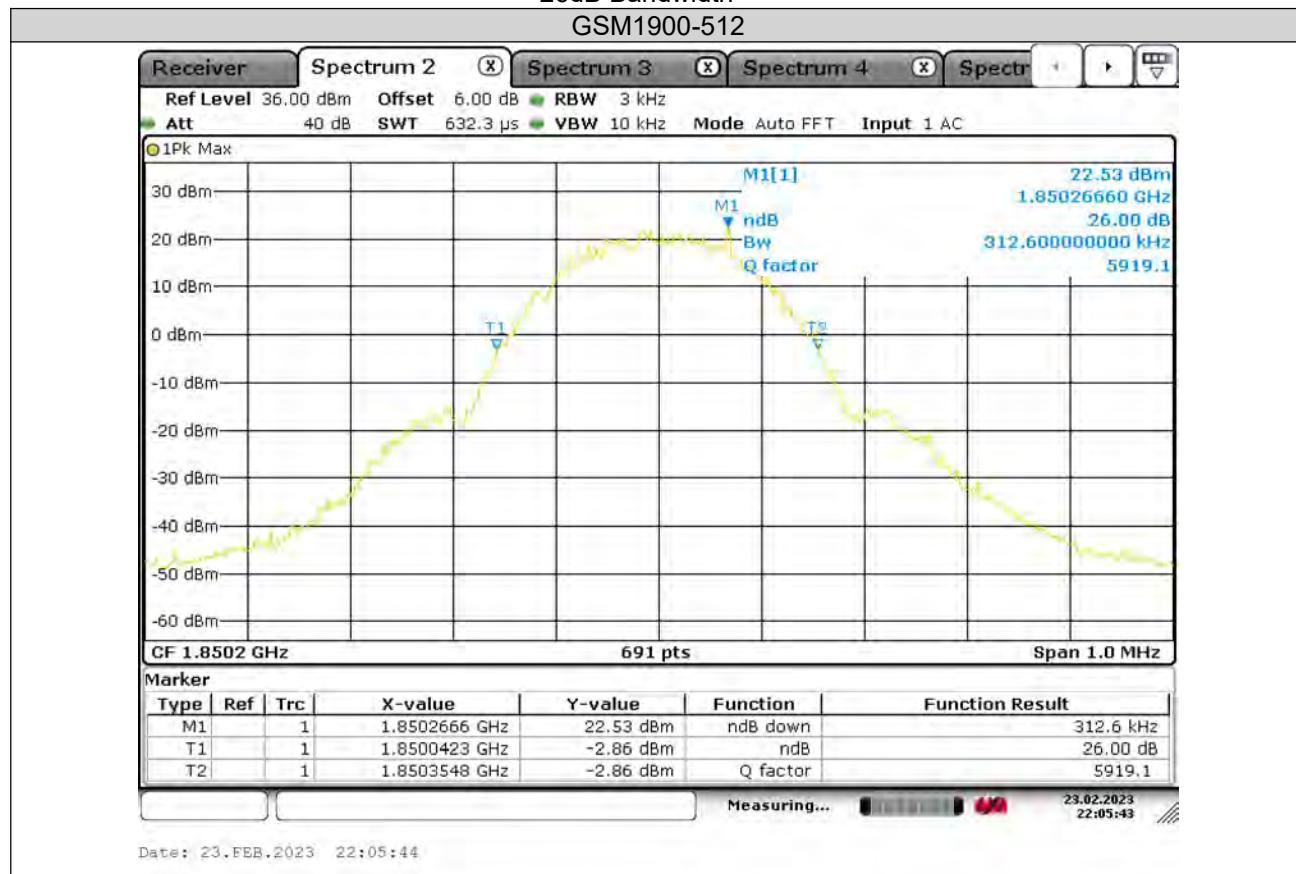
## 26DB BANDWIDTH AND OCCUPIED BANDWIDTH

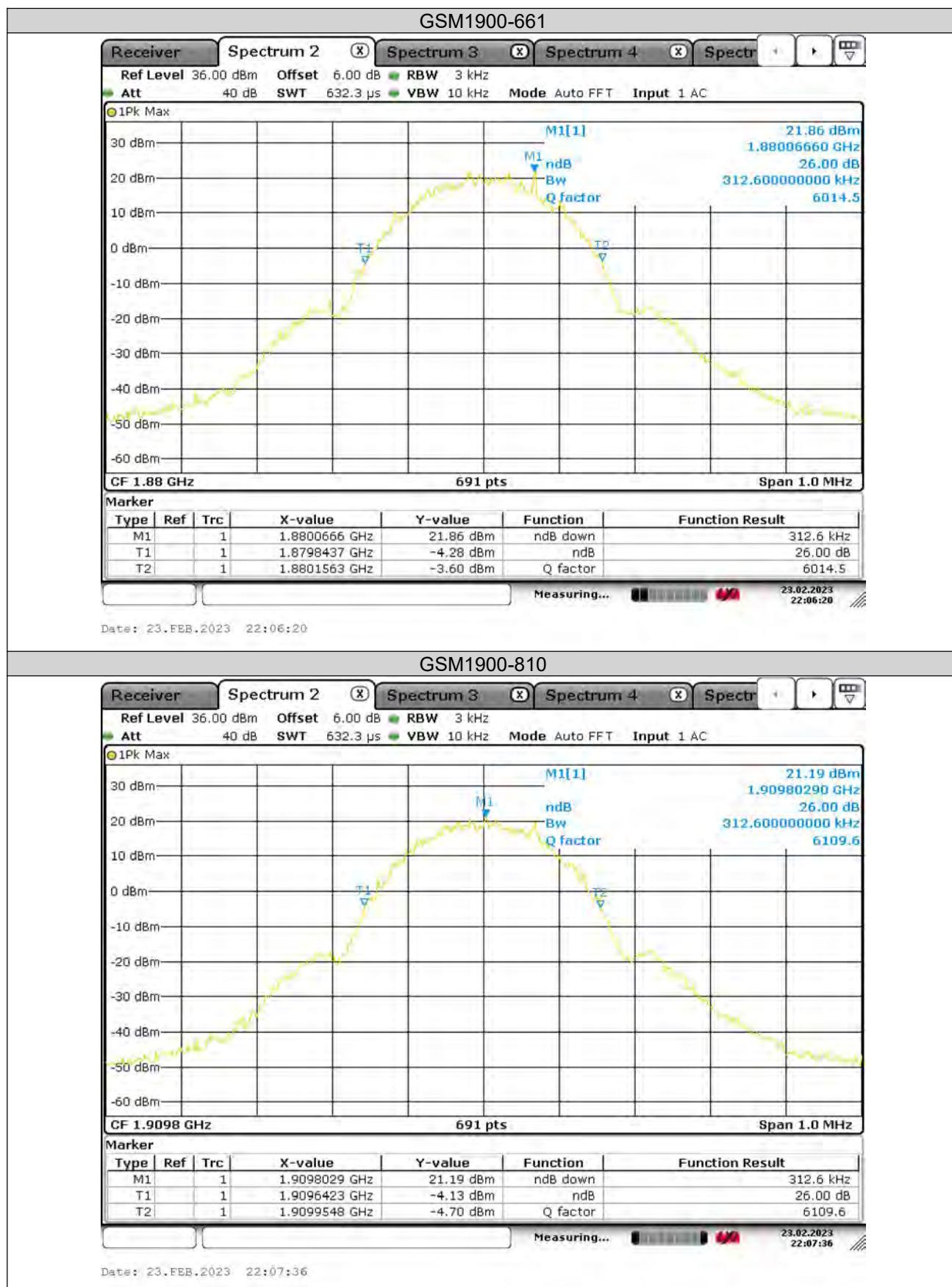
### Test Result

| Band      | Channel | Occupied<br>Bandwidth (MHz) | 26dB Bandwidth<br>(MHz) | Limit<br>(MHz) | Verdict |
|-----------|---------|-----------------------------|-------------------------|----------------|---------|
| GSM1900   | 512     | 0.2431                      | 0.3126                  | ---            | PASS    |
| GSM1900   | 661     | 0.2446                      | 0.3126                  | ---            | PASS    |
| GSM1900   | 810     | 0.2417                      | 0.3126                  | ---            | PASS    |
| EGPRS1900 | 512     | 0.2446                      | 0.3140                  | ---            | PASS    |
| EGPRS1900 | 661     | 0.2446                      | 0.3126                  | ---            | PASS    |
| EGPRS1900 | 810     | 0.2431                      | 0.3169                  | ---            | PASS    |

## Test Graphs

26dB Bandwidth  
GSM1900-512



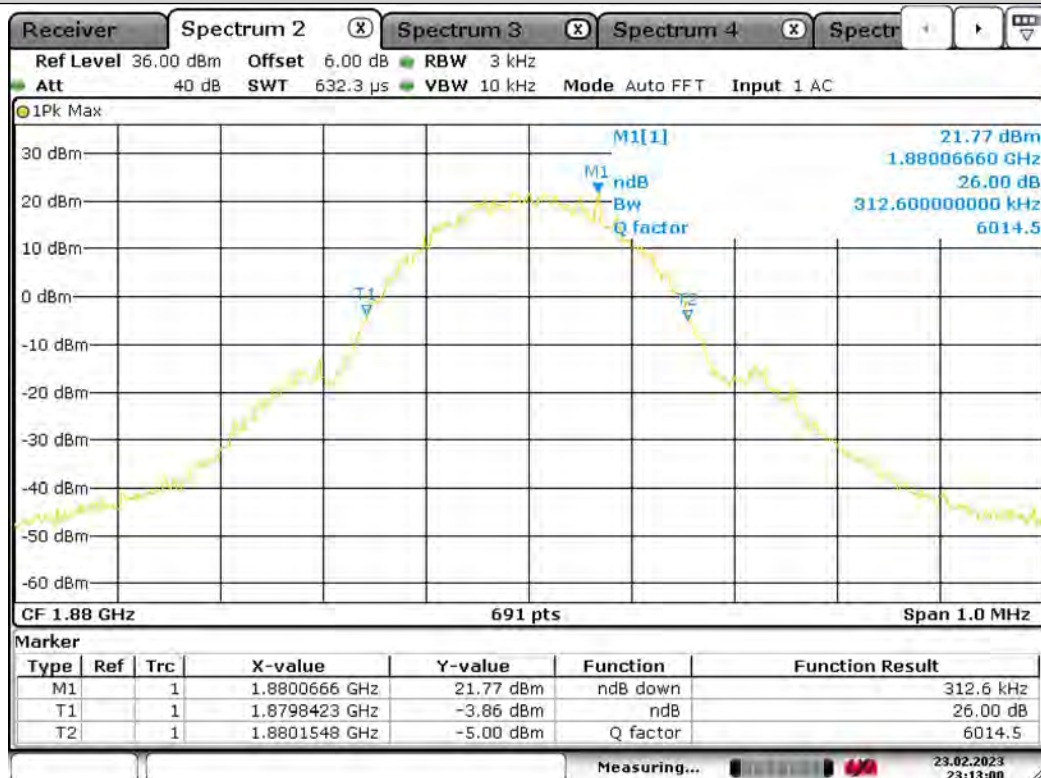


### EGPRS1900-512

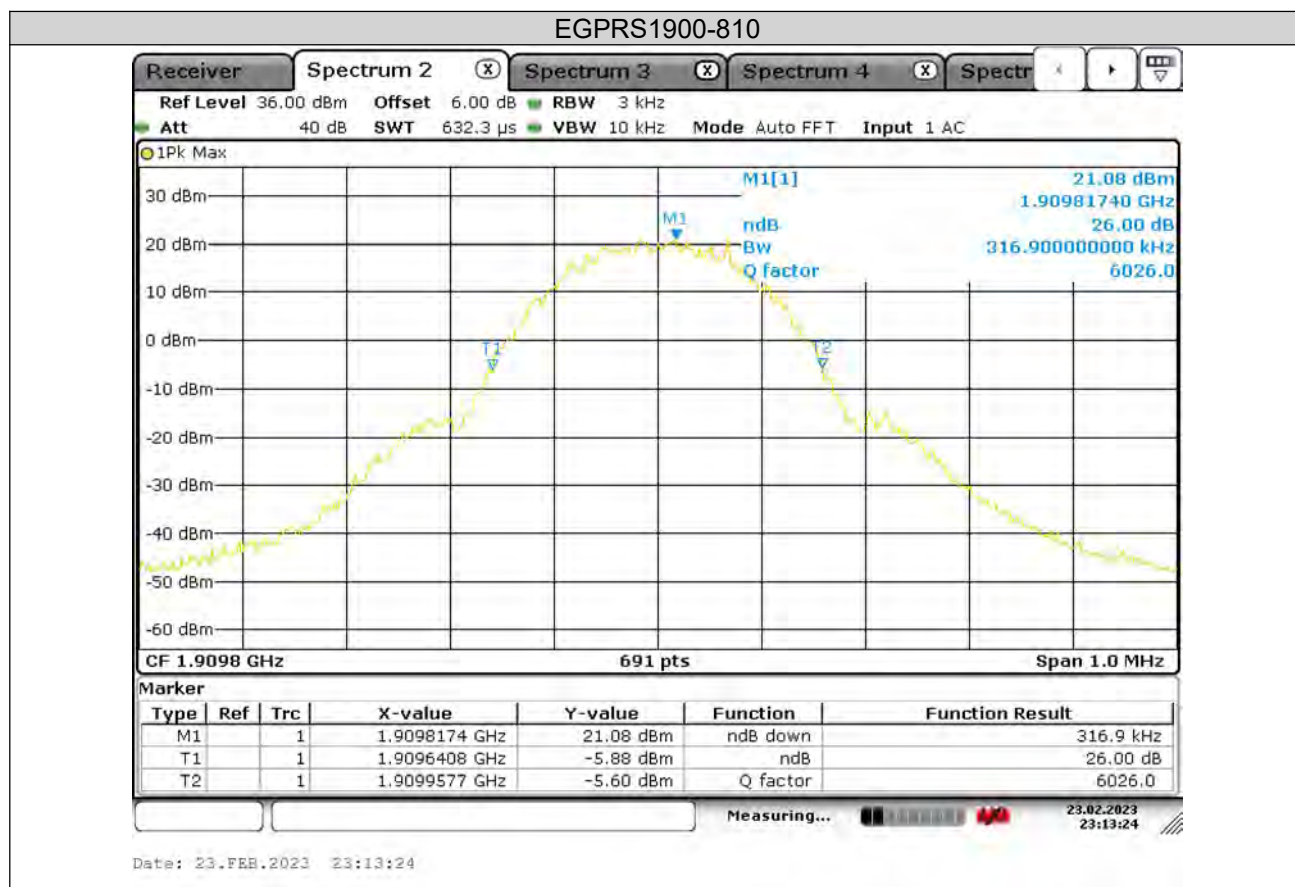


Date: 23.FEB.2023 23:11:49

### EGPRS1900-661



Date: 23.FEB.2023 23:13:00



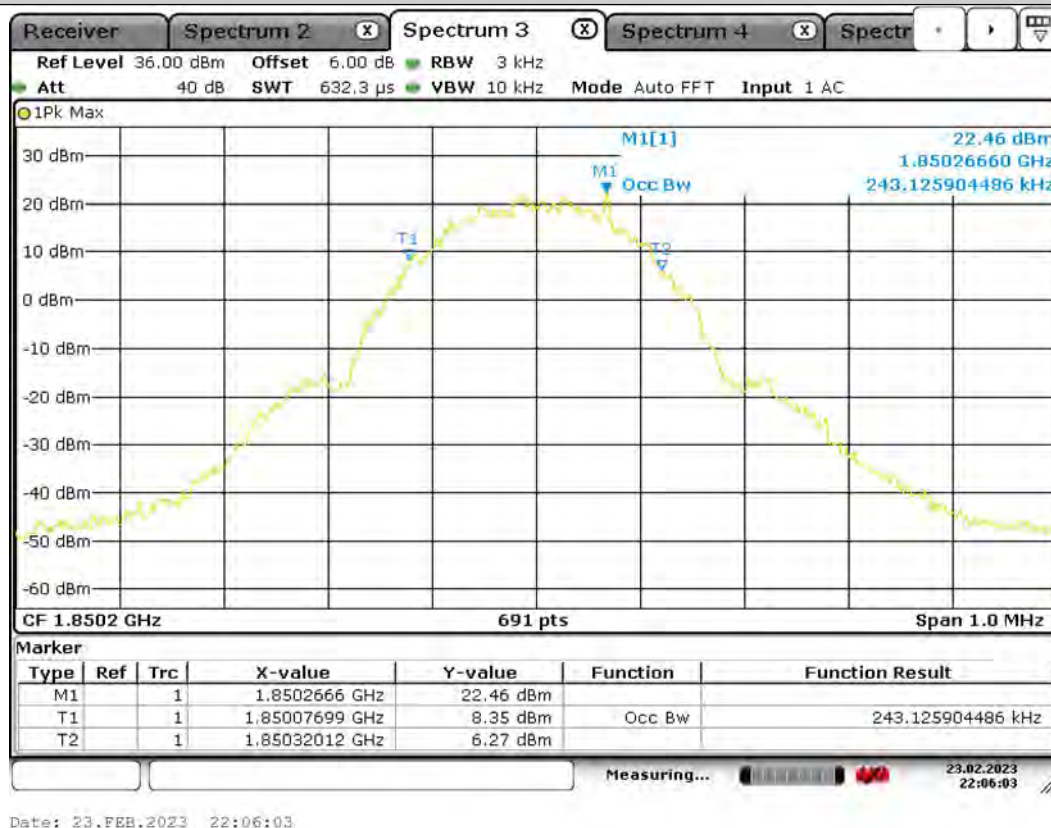


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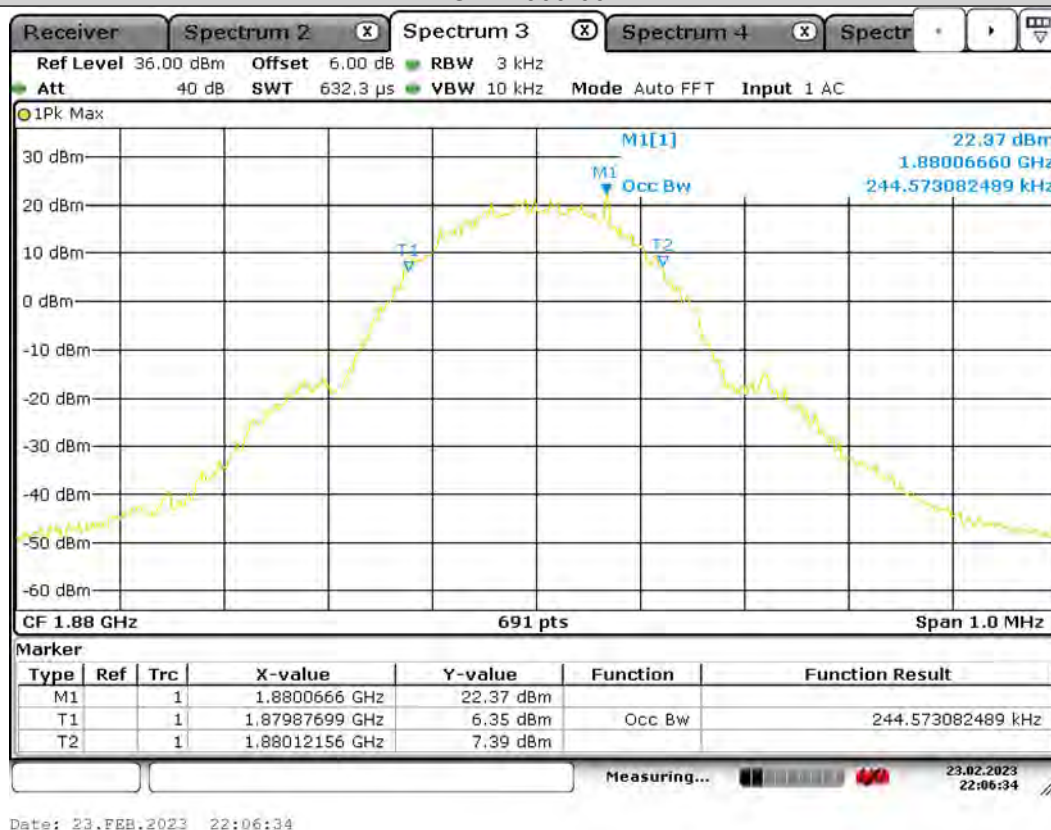
Test Report No.: W7L-P23010016RF02

## Occupied Bandwidth

### GSM1900-512



### GSM1900-661

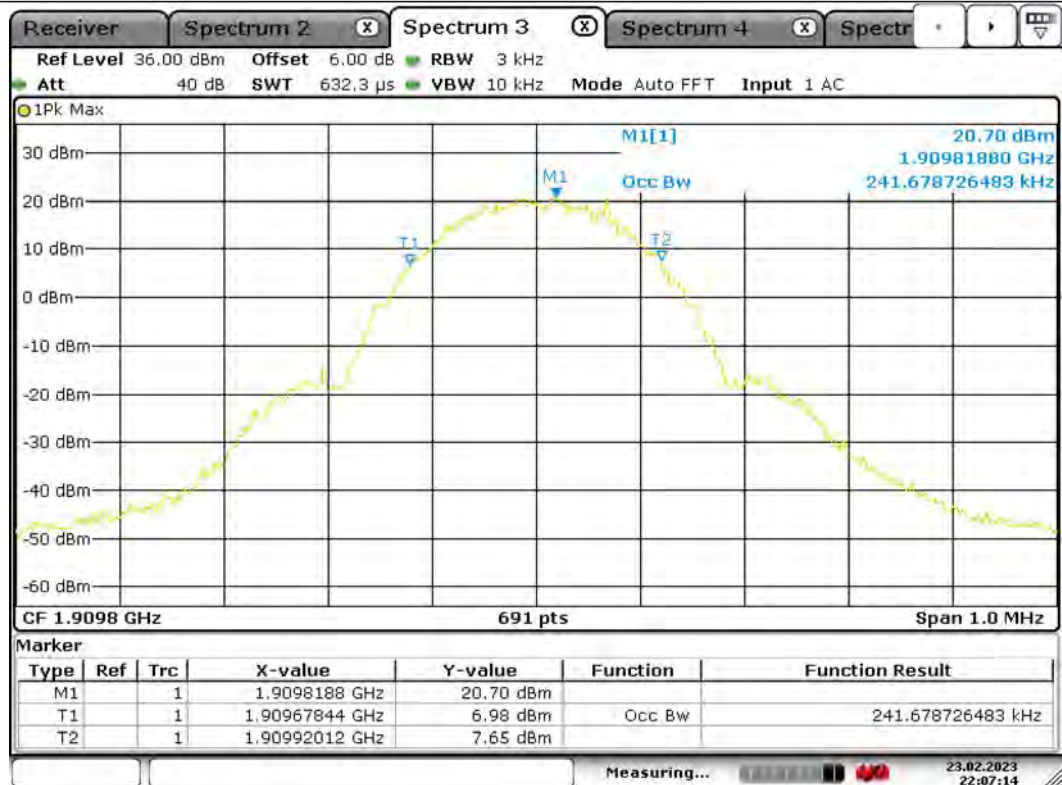




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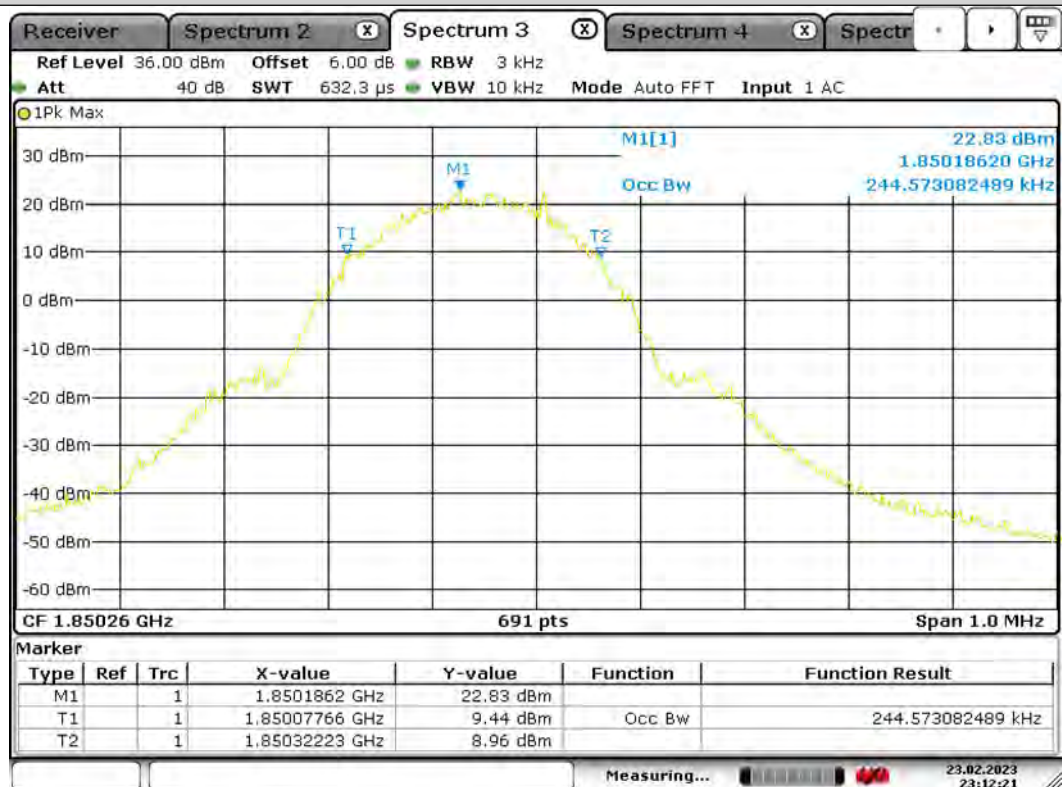
Test Report No.: W7L-P23010016RF02

### GSM1900-810



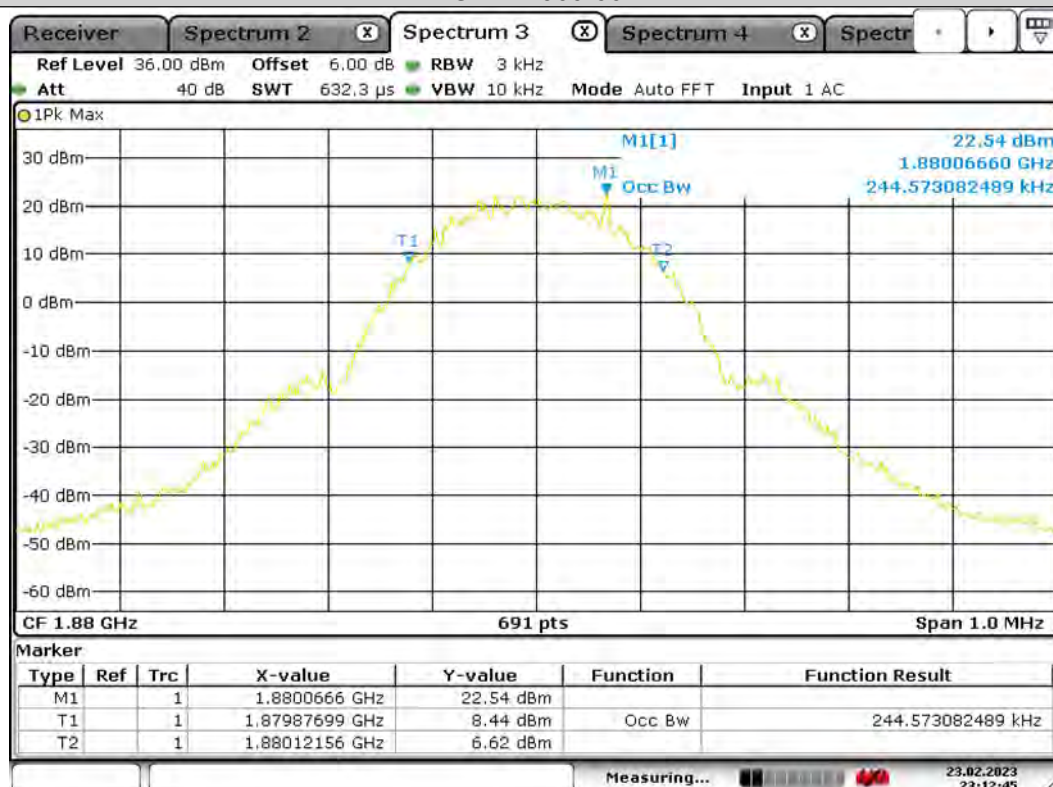
Date: 23.FEB.2023 22:07:14

### EGPRS1900-512



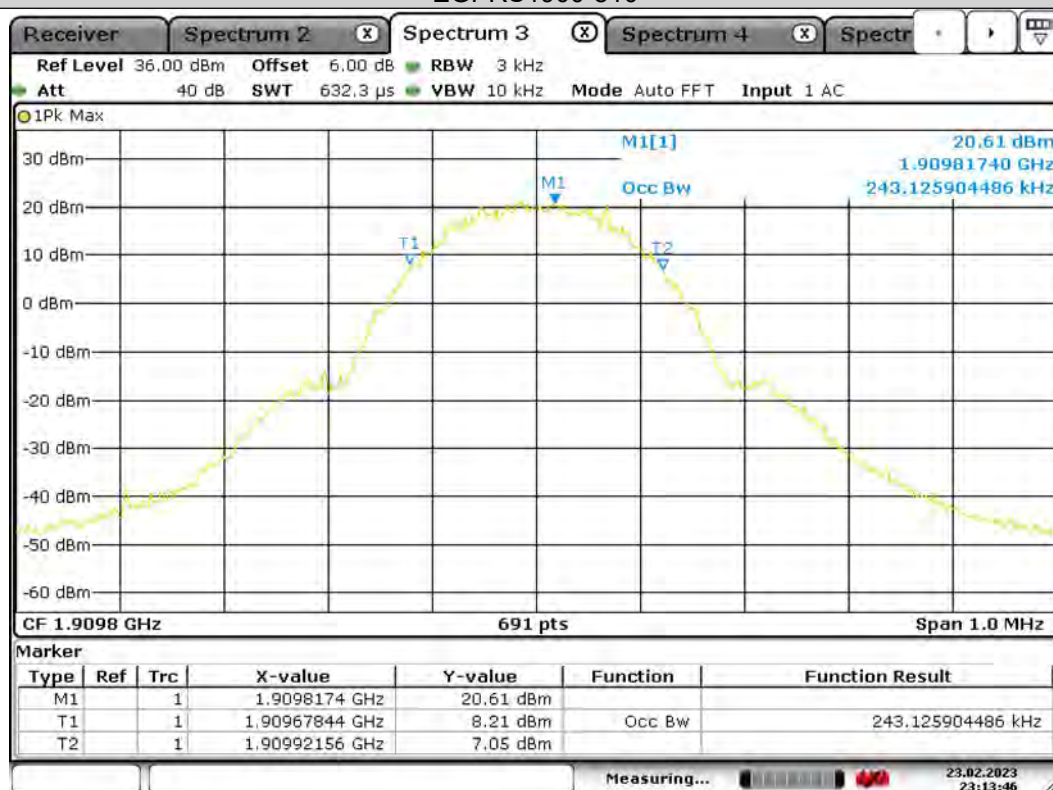
Date: 23.FEB.2023 23:12:21

### EGPRS1900-661



Date: 23.FEB.2023 23:12:45

### EGPRS1900-810



Date: 23.FEB.2023 23:13:46



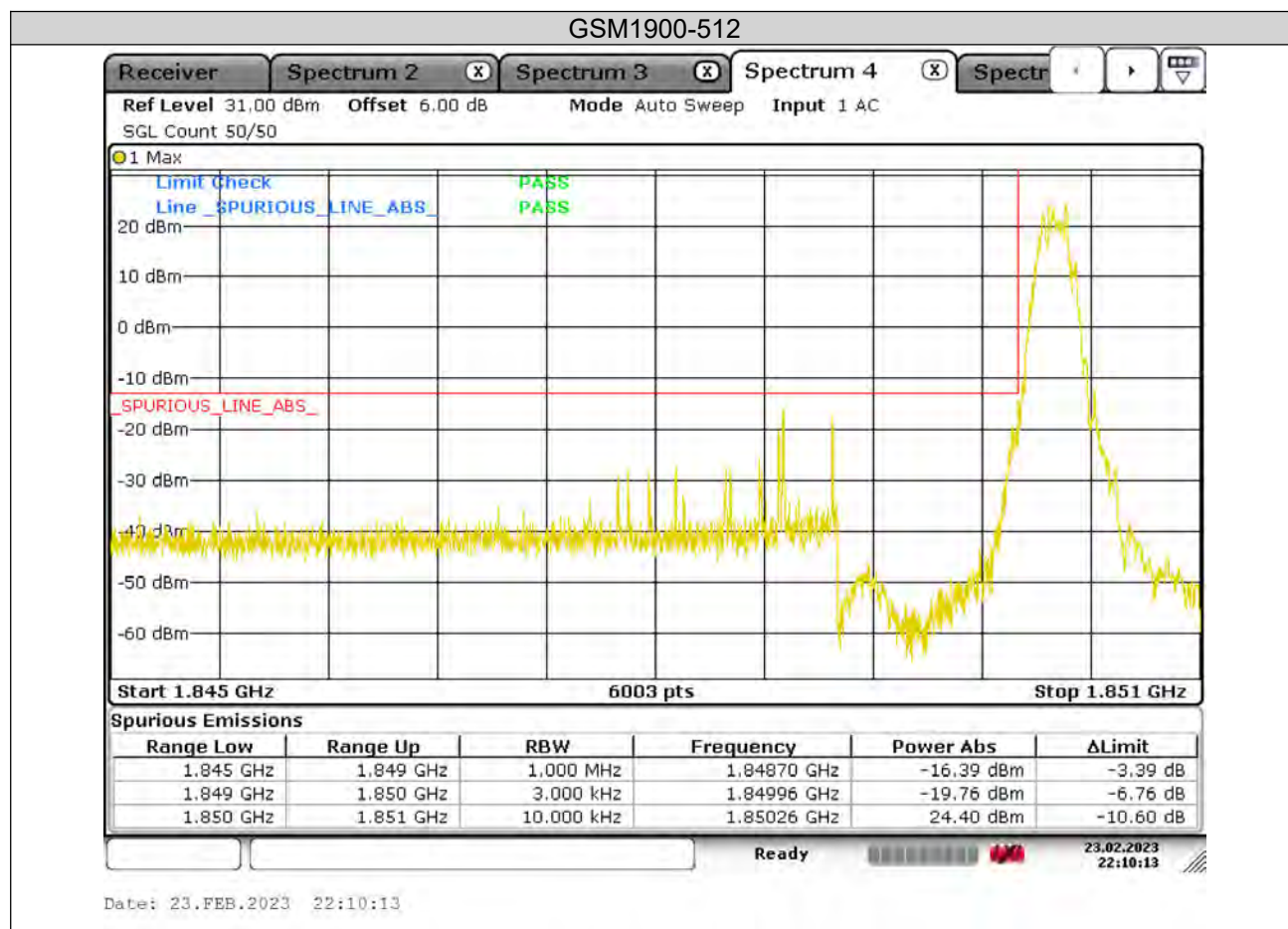
Test Report No.: W7L-P23010016RF02

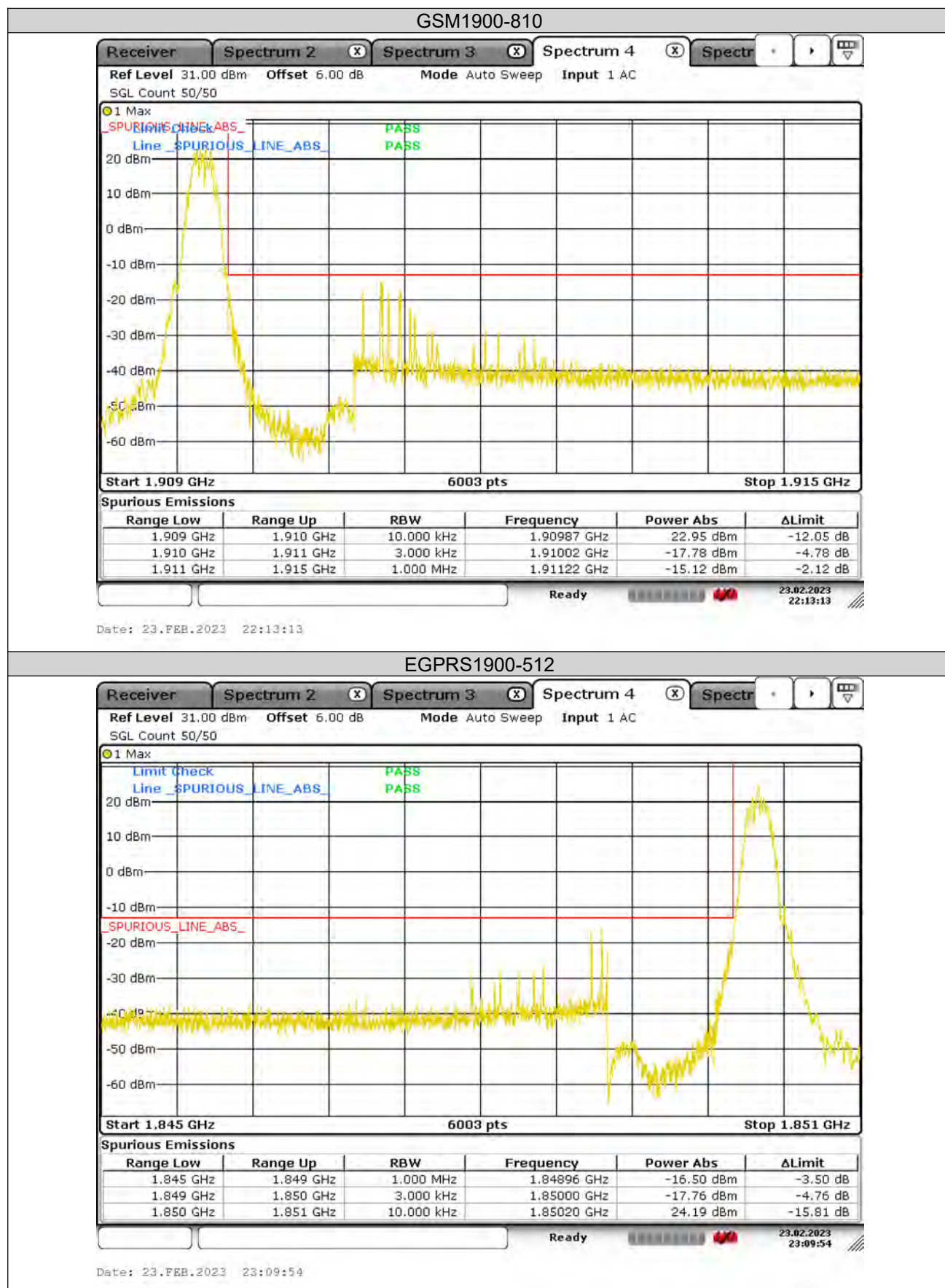
## BAND EDGE

### Test Result

| Band      | Channel | Freq (MHz) | Result (dBm) | Limit(dBm) | Verdict |
|-----------|---------|------------|--------------|------------|---------|
| GSM1900   | 512     | 1848.70    | -16.39       | -13        | PASS    |
| GSM1900   | 810     | 1911.22    | -15.12       | -13        | PASS    |
| EGPRS1900 | 512     | 1848.96    | -16.50       | -13        | PASS    |
| EGPRS1900 | 810     | 1911.24    | -18.27       | -13        | PASS    |

## Test Graphs



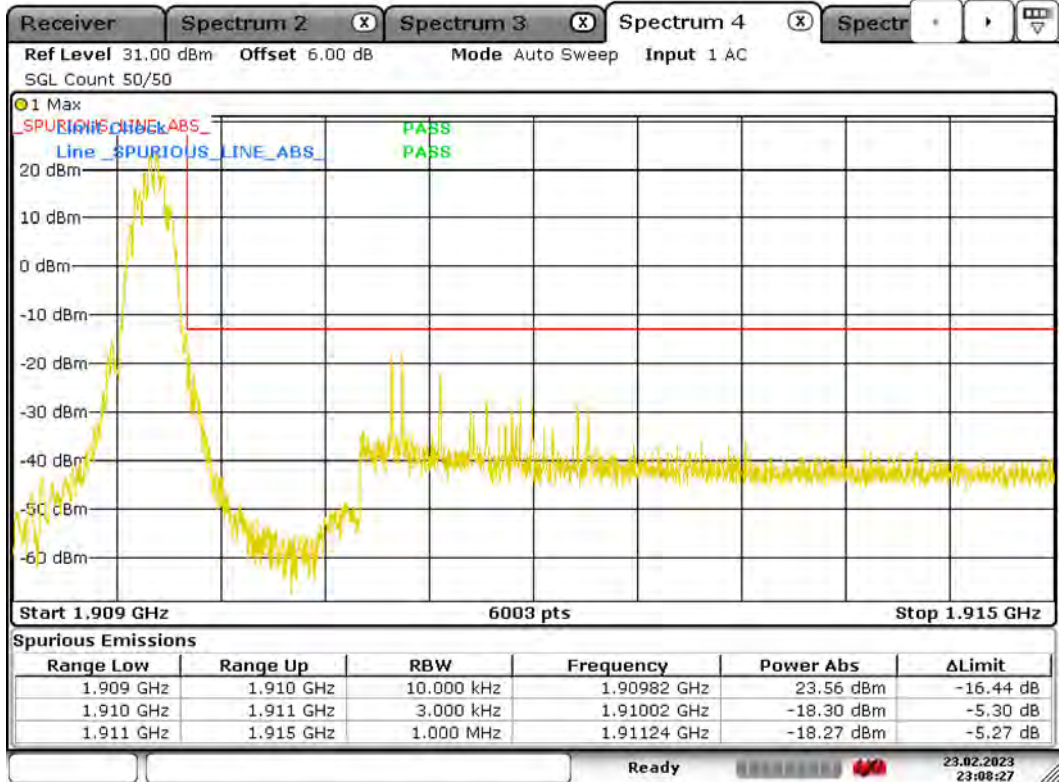




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Test Report No.: W7L-P23010016RF02

EGPRS1900-810



Date: 23.FEB.2023 23:08:27

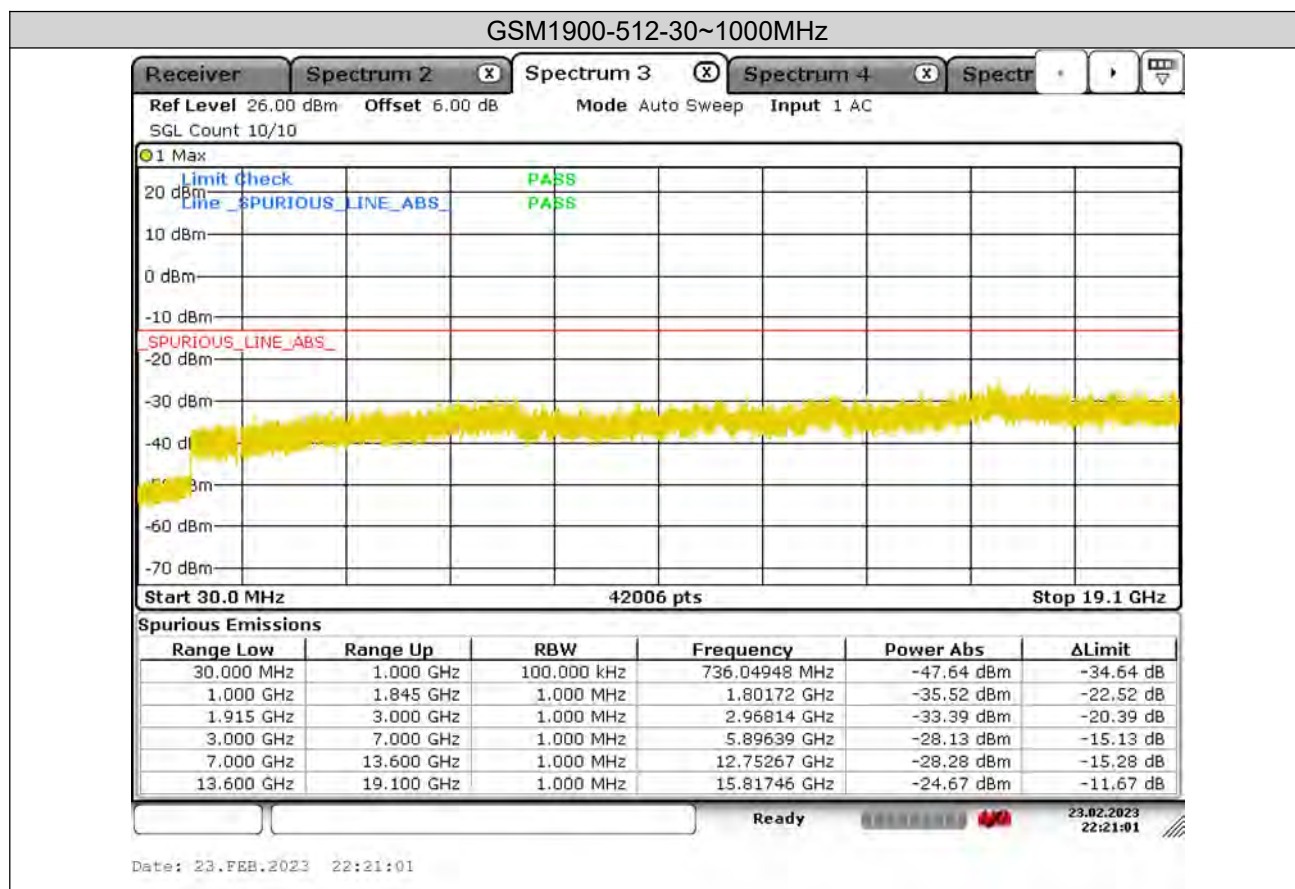


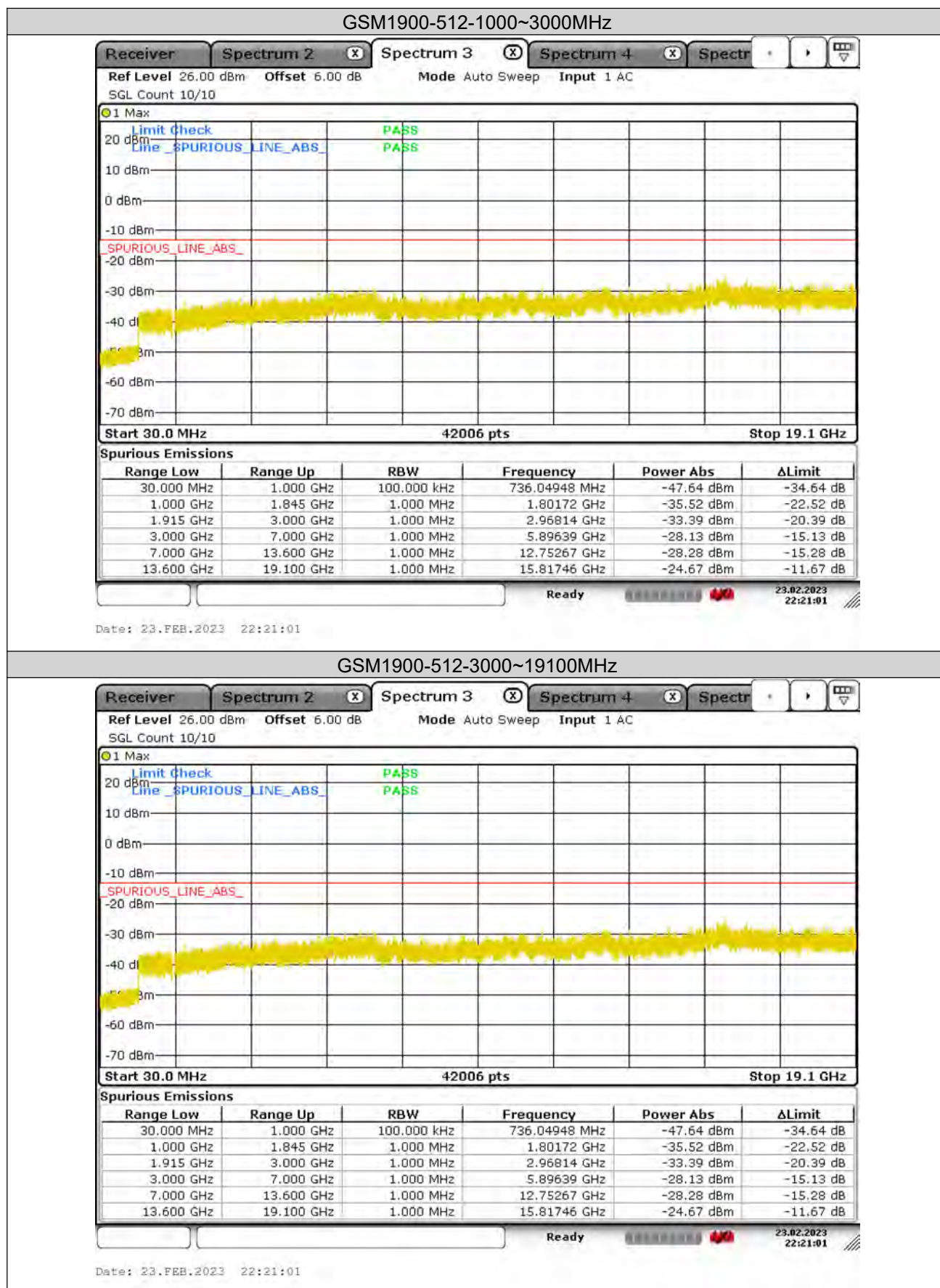
## CONDUCTED SPURIOUS EMISSION

### Test Result

| Band      | Channel | Frequency Range(MHz) | Max.Freq. (MHz) | Result (dBm) | Limit (dBm) | Verdict |
|-----------|---------|----------------------|-----------------|--------------|-------------|---------|
| GSM1900   | 512     | 30~1000MHz           | 736.04948       | -47.64       | -13         | PASS    |
| GSM1900   | 512     | 1000~3000MHz         | 2968.14         | -33.39       | -13         | PASS    |
| GSM1900   | 512     | 3000~19100MHz        | 15817.46        | -24.67       | -13         | PASS    |
| GSM1900   | 661     | 30~1000MHz           | 988.6082        | -47.22       | -13         | PASS    |
| GSM1900   | 661     | 1000~3000MHz         | 2895.46         | -33.58       | -13         | PASS    |
| GSM1900   | 661     | 3000~19100MHz        | 15795           | -26.57       | -13         | PASS    |
| GSM1900   | 810     | 30~1000MHz           | 929.46777       | -46.96       | -13         | PASS    |
| GSM1900   | 810     | 1000~3000MHz         | 2890.04         | -33.43       | -13         | PASS    |
| GSM1900   | 810     | 3000~19100MHz        | 15822.96        | -26.21       | -13         | PASS    |
| EGPRS1900 | 512     | 30~1000MHz           | 901.35182       | -47.43       | -13         | PASS    |
| EGPRS1900 | 512     | 1000~3000MHz         | 2590.65         | -33.77       | -13         | PASS    |
| EGPRS1900 | 512     | 3000~19100MHz        | 15733.59        | -25.96       | -13         | PASS    |
| EGPRS1900 | 661     | 30~1000MHz           | 944.98001       | -46.06       | -13         | PASS    |
| EGPRS1900 | 661     | 1000~3000MHz         | 2479.91         | -33.47       | -13         | PASS    |
| EGPRS1900 | 661     | 3000~19100MHz        | 16823.42        | -26.39       | -13         | PASS    |
| EGPRS1900 | 810     | 30~1000MHz           | 918.8031        | -47.00       | -13         | PASS    |
| EGPRS1900 | 810     | 1000~3000MHz         | 2982.78         | -33.79       | -13         | PASS    |
| EGPRS1900 | 810     | 3000~19100MHz        | 15816.09        | -26.34       | -13         | PASS    |

## Test Graphs



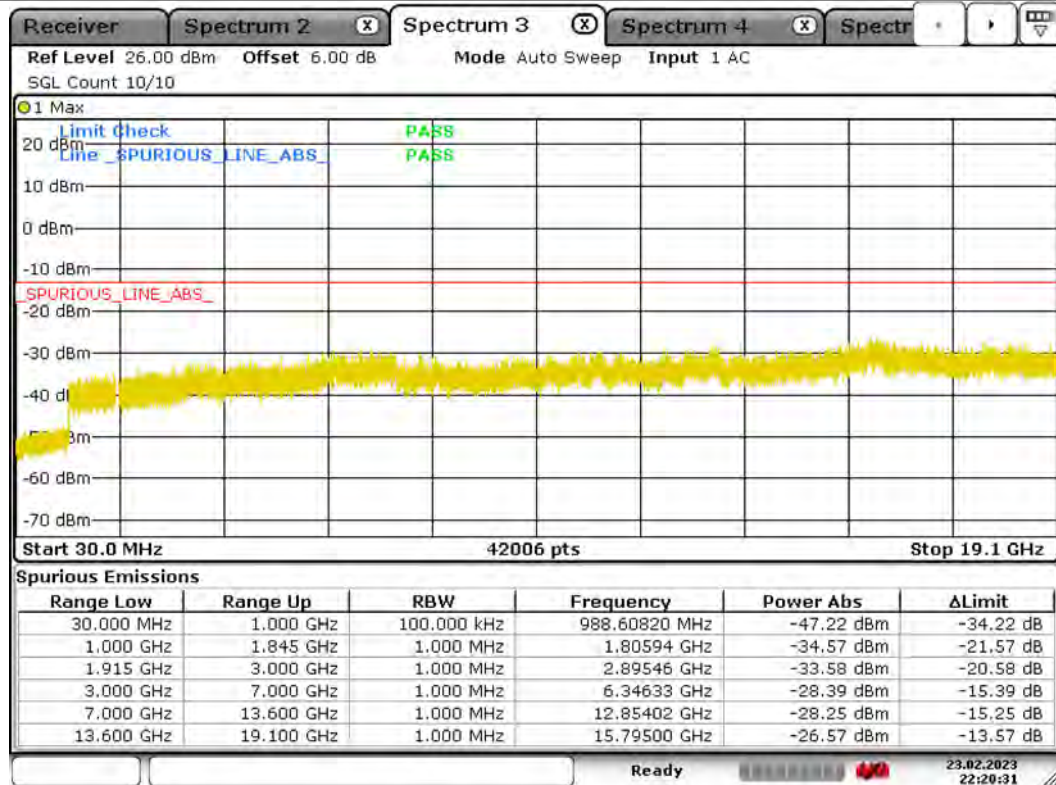




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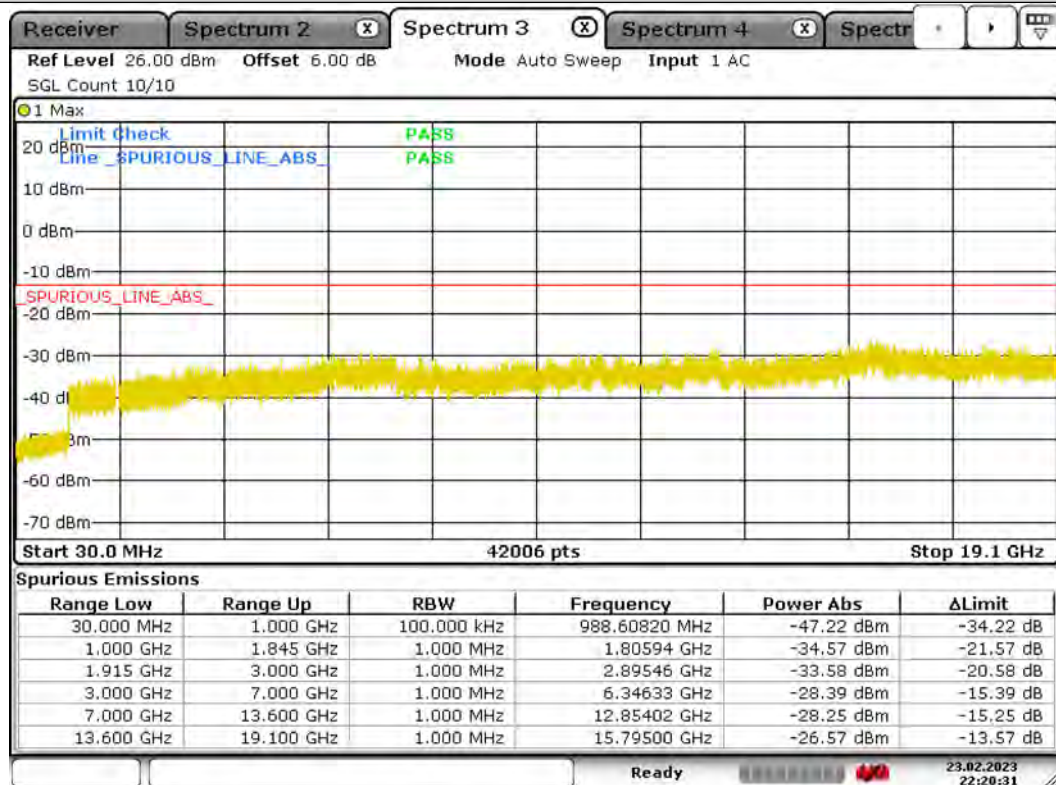
Test Report No.: W7L-P23010016RF02

### GSM1900-661-30~1000MHz



Date: 23.FEB.2023 22:20:31

### GSM1900-661-1000~3000MHz



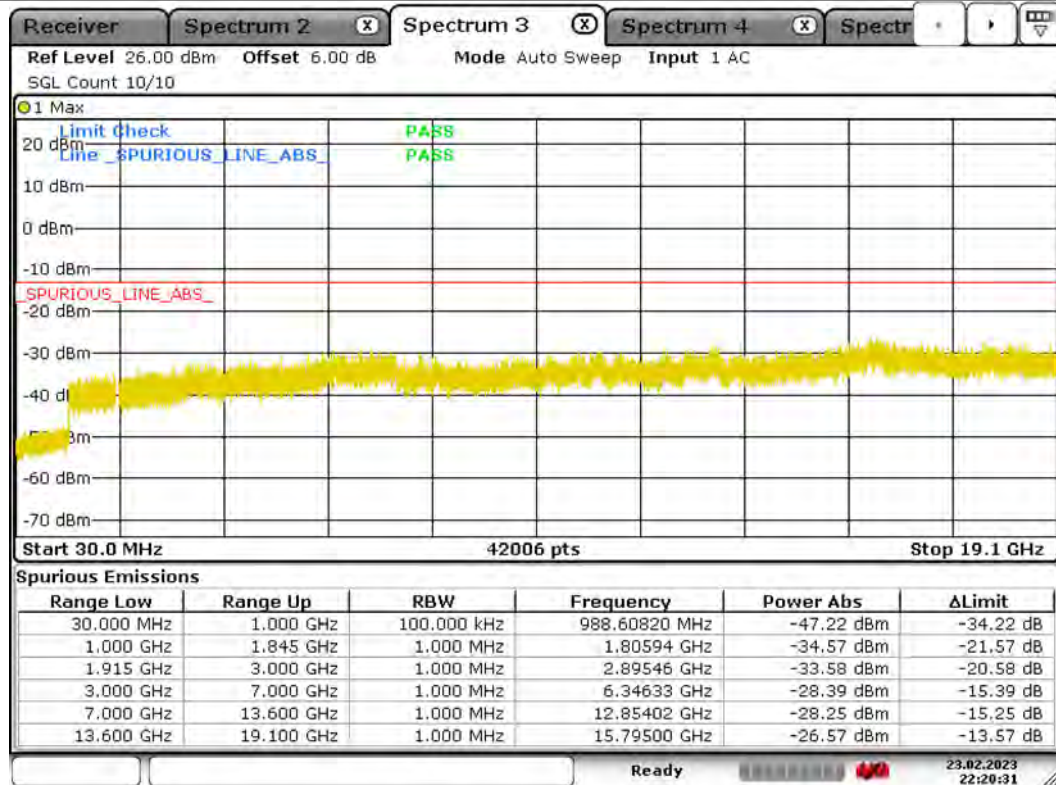
Date: 23.FEB.2023 22:20:31



BUREAU  
VERITAS

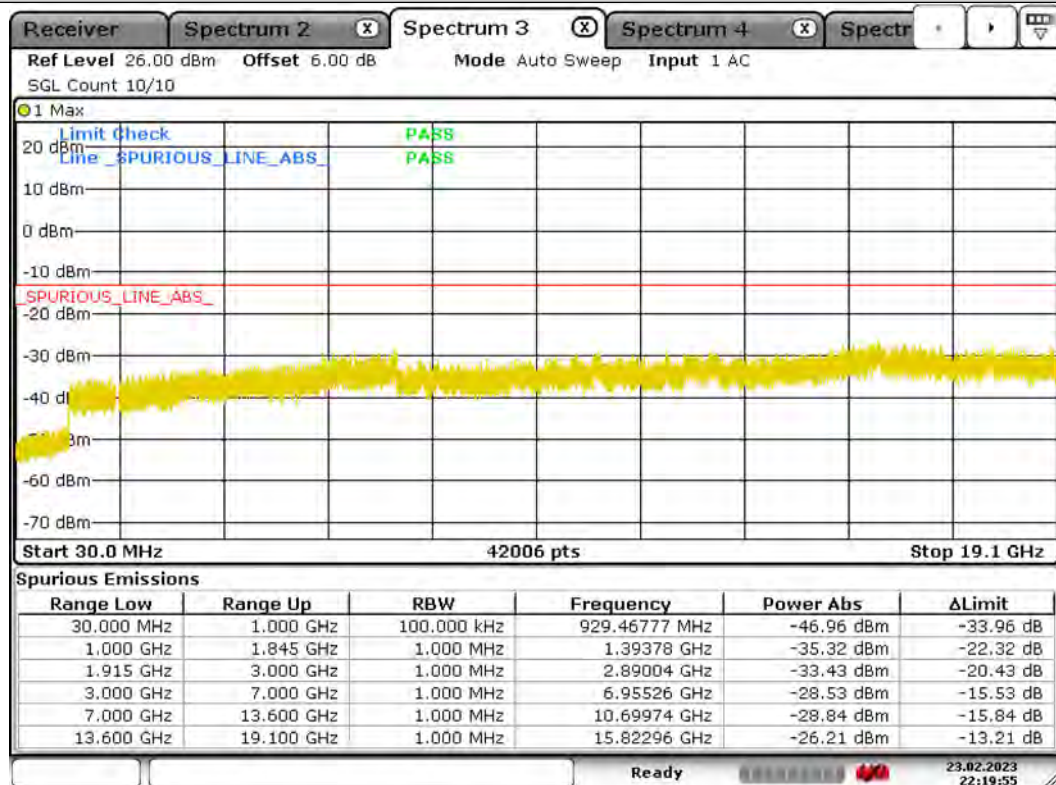
Test Report No.: W7L-P23010016RF02

### GSM1900-661-3000~19100MHz



Date: 23.FEB.2023 22:20:31

### GSM1900-810-30~1000MHz



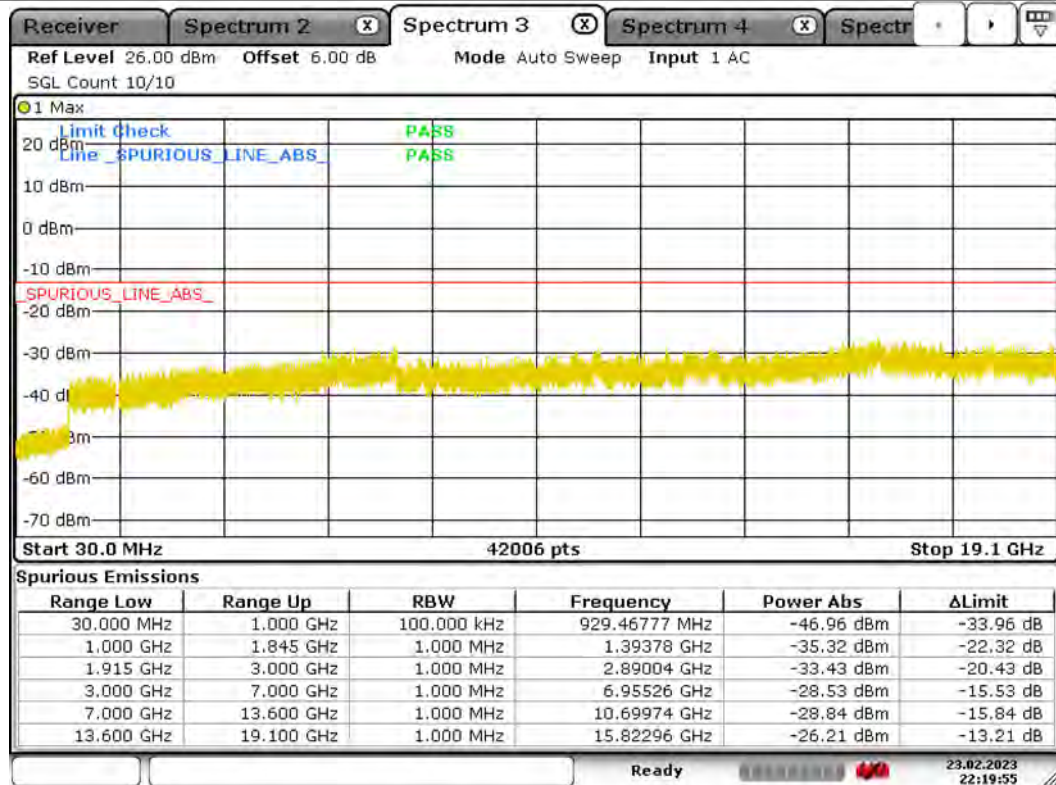
Date: 23.FEB.2023 22:19:55



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VERITAS

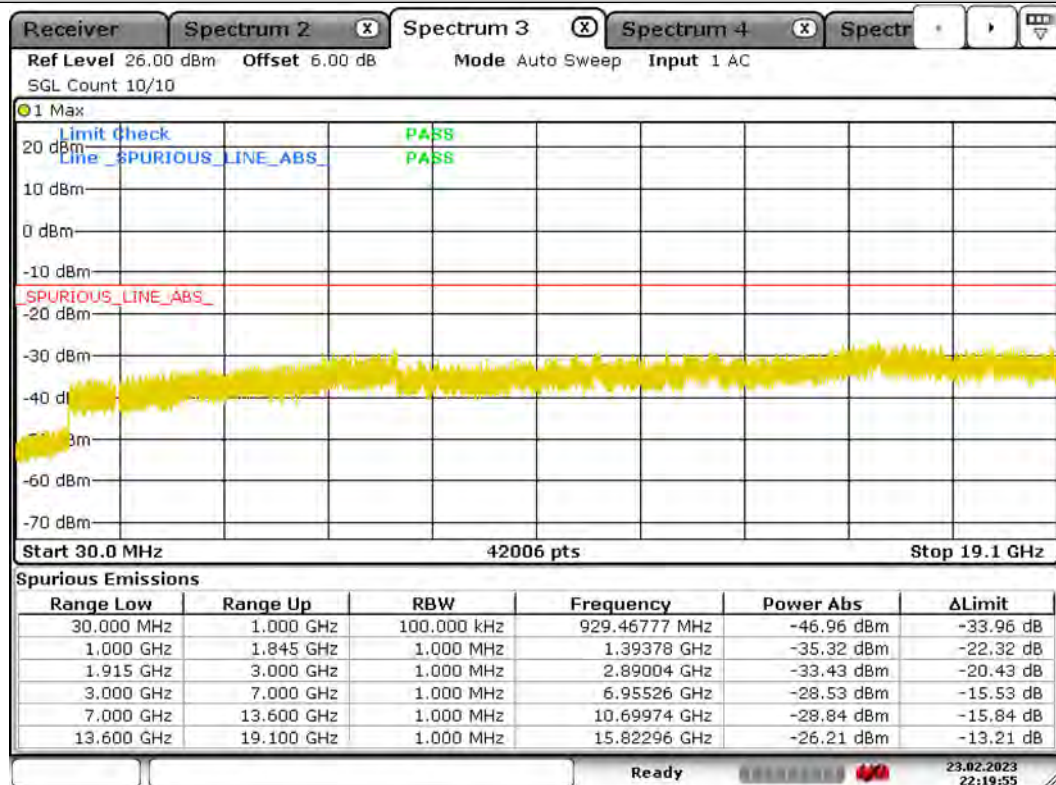
Test Report No.: W7L-P23010016RF02

### GSM1900-810-1000~3000MHz



Date: 23.FEB.2023 22:19:55

### GSM1900-810-3000~19100MHz



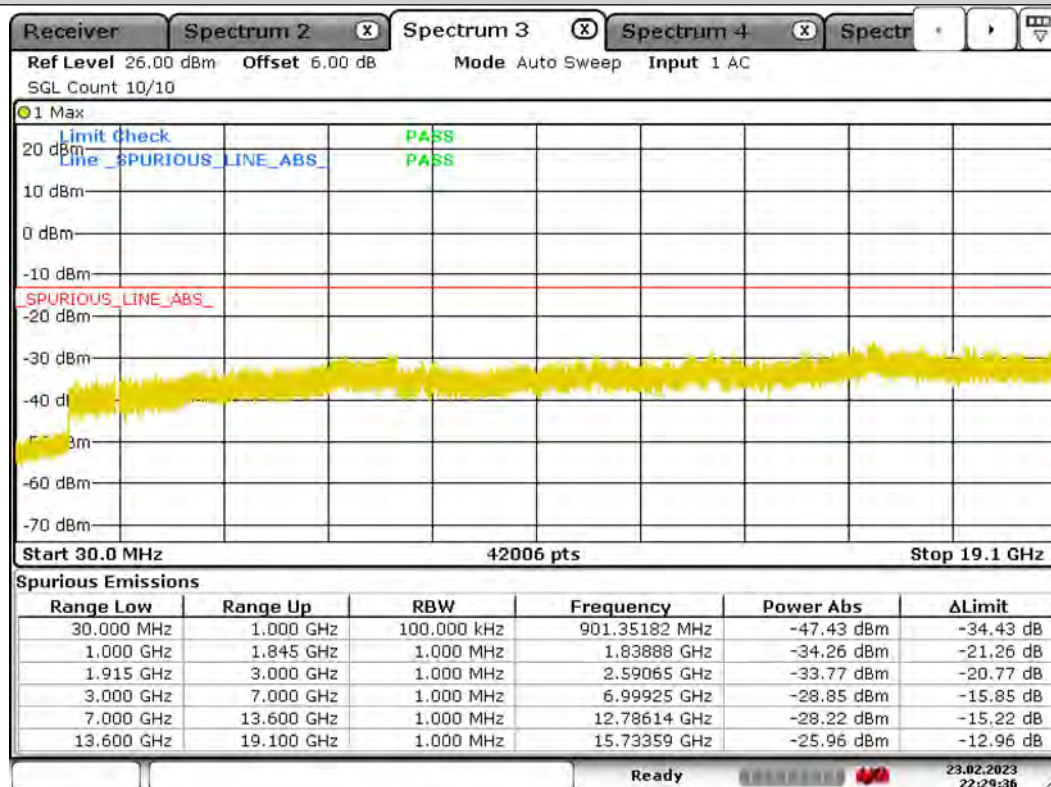
Date: 23.FEB.2023 22:19:55



BUREAU  
VERITAS

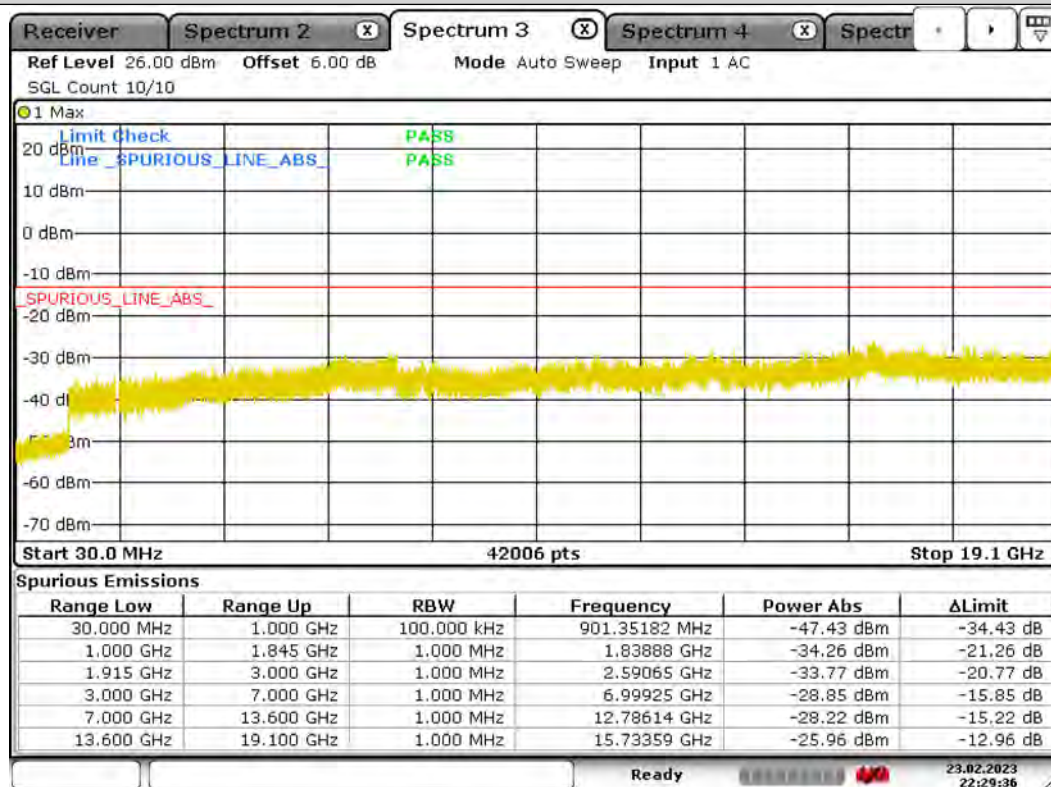
Test Report No.: W7L-P23010016RF02

### EGPRS1900-512-30~1000MHz



Date: 23.FEB.2023 22:29:36

### EGPRS1900-512-1000~3000MHz



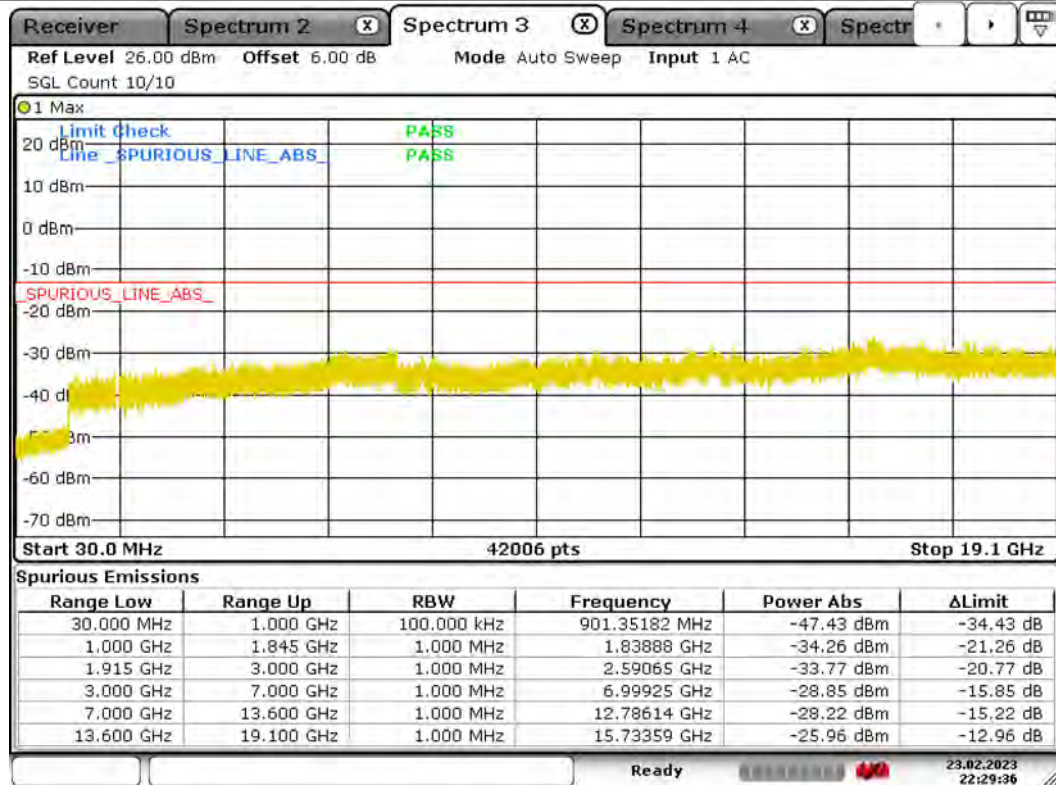
Date: 23.FEB.2023 22:29:36



BUREAU  
VERITAS

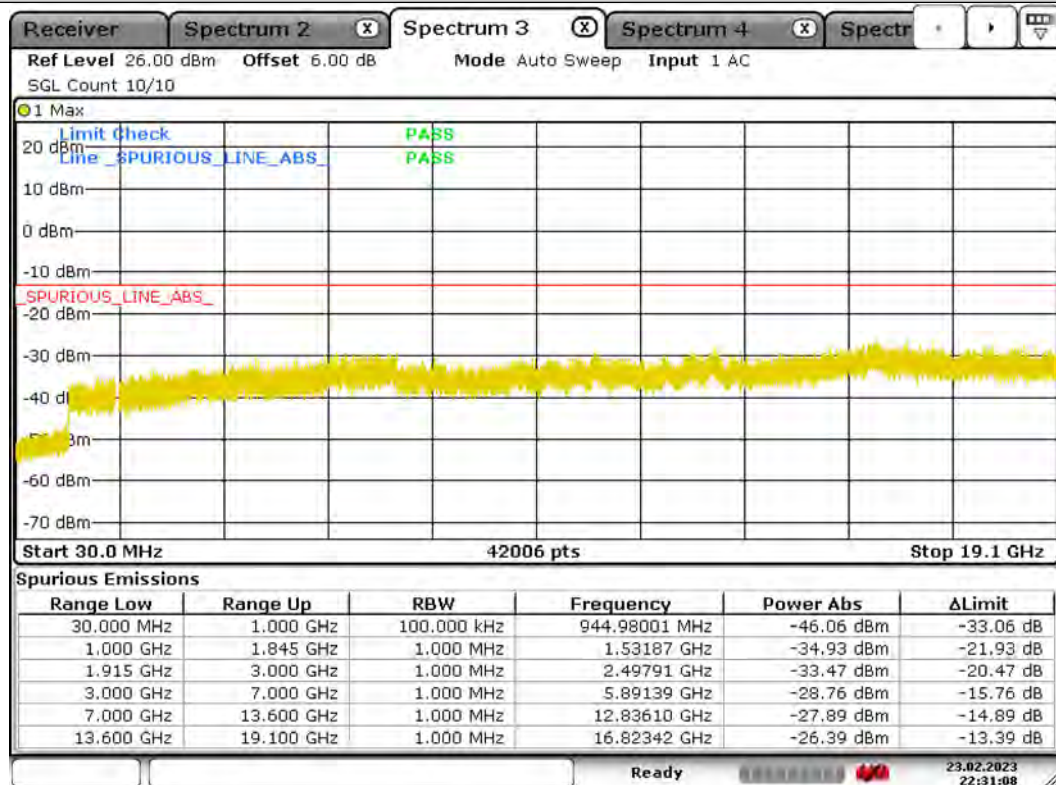
Test Report No.: W7L-P23010016RF02

### EGPRS1900-512-3000~19100MHz



Date: 23.FEB.2023 22:29:36

### EGPRS1900-661-30~1000MHz



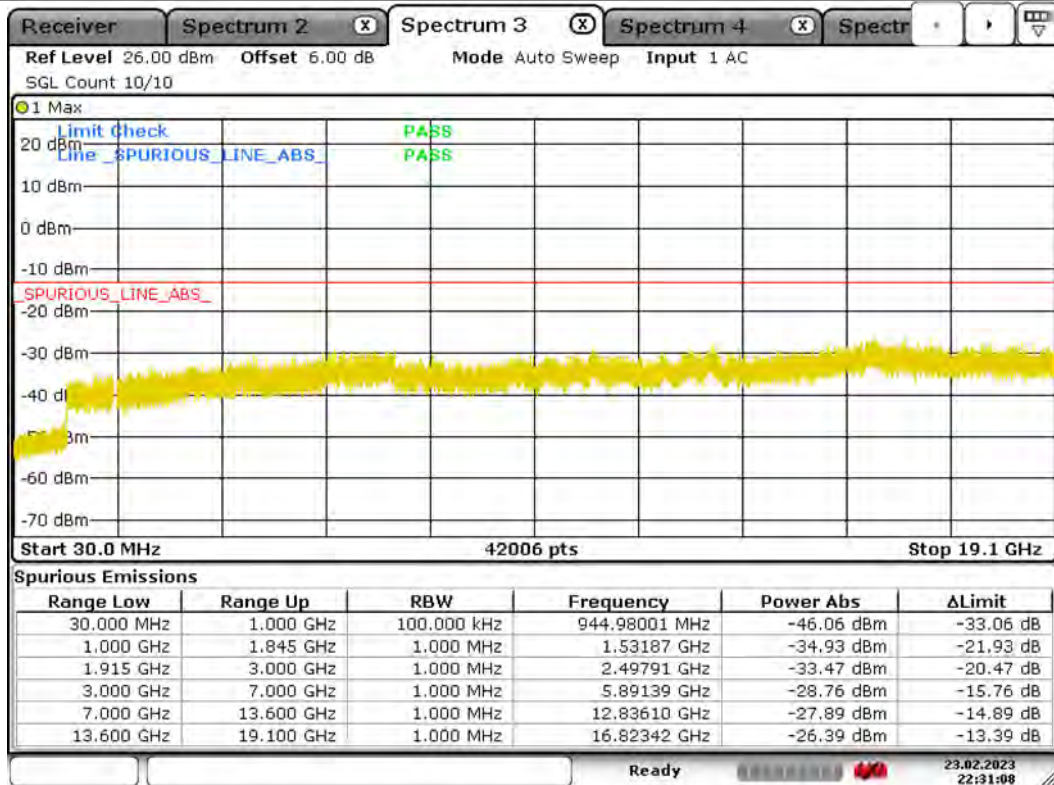
Date: 23.FEB.2023 22:31:08



BUREAU  
VERITAS

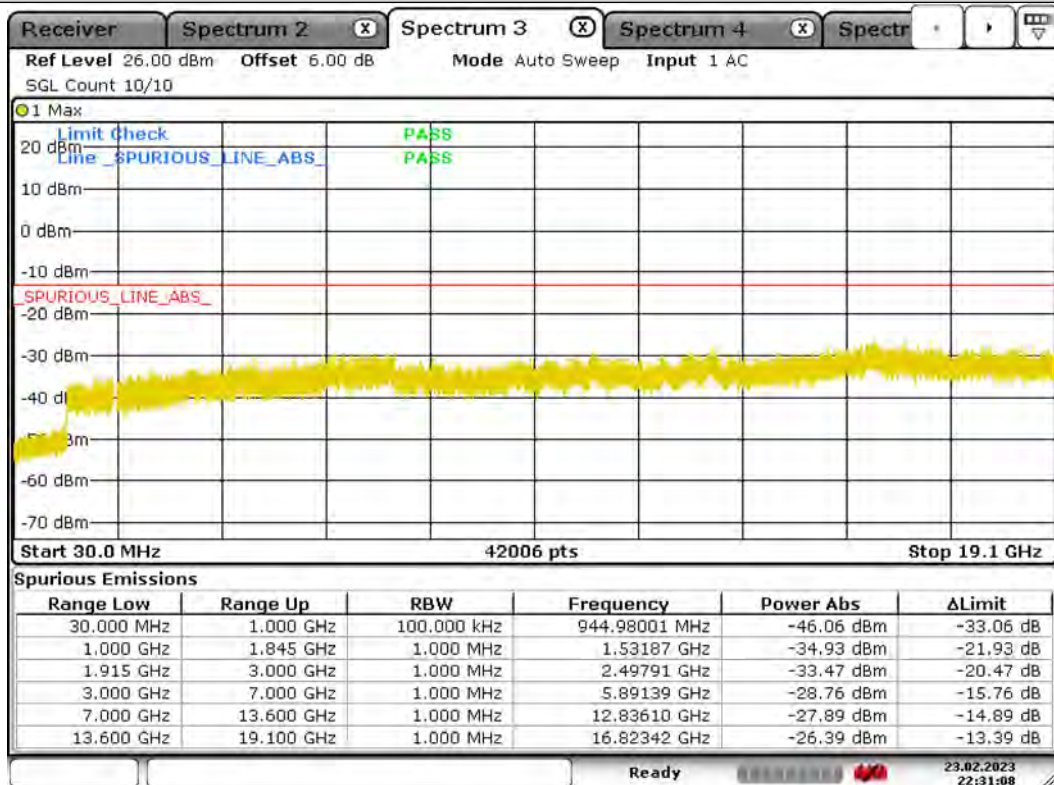
Test Report No.: W7L-P23010016RF02

### EGPRS1900-661-1000~3000MHz



Date: 23.FEB.2023 22:31:08

### EGPRS1900-661-3000~19100MHz



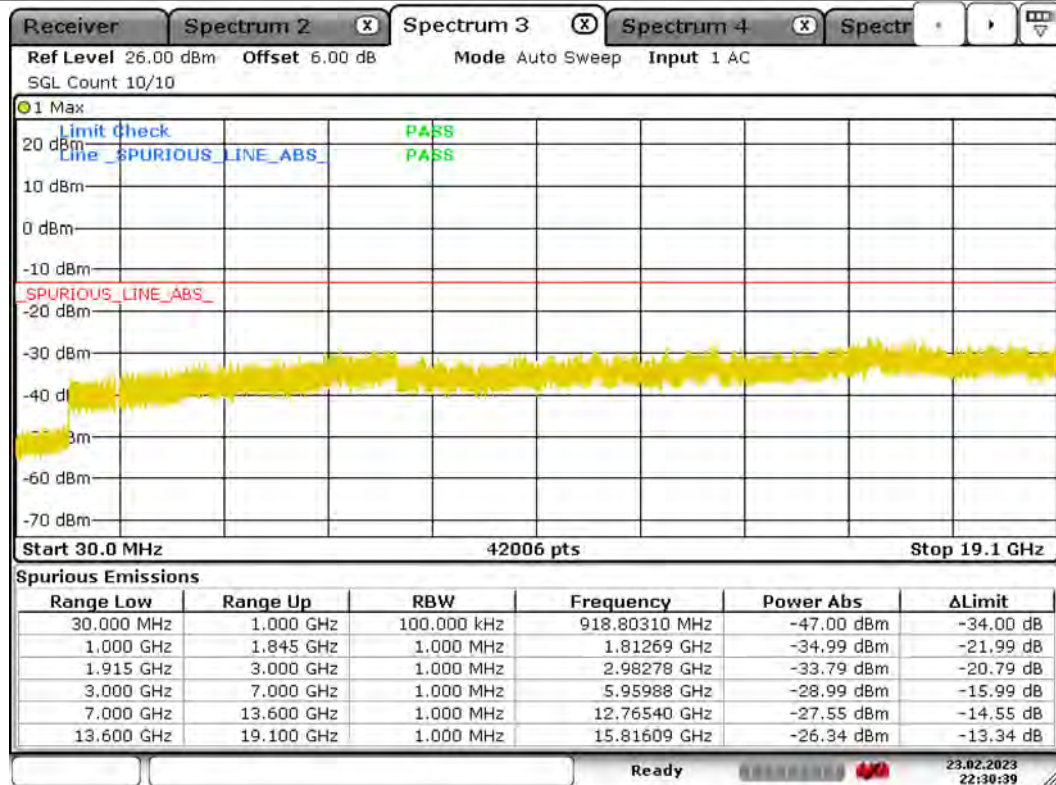
Date: 23.FEB.2023 22:31:08



BUREAU  
VERITAS

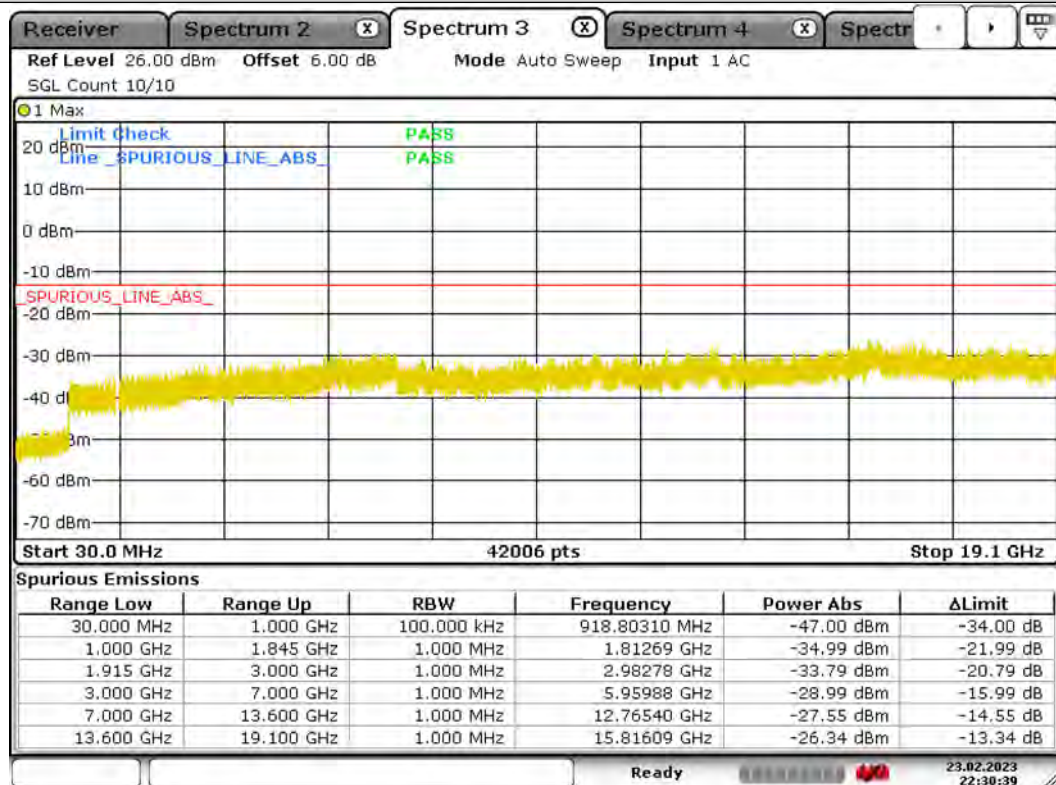
Test Report No.: W7L-P23010016RF02

### EGPRS1900-810-30~1000MHz



Date: 23.FEB.2023 22:30:39

### EGPRS1900-810-1000~3000MHz



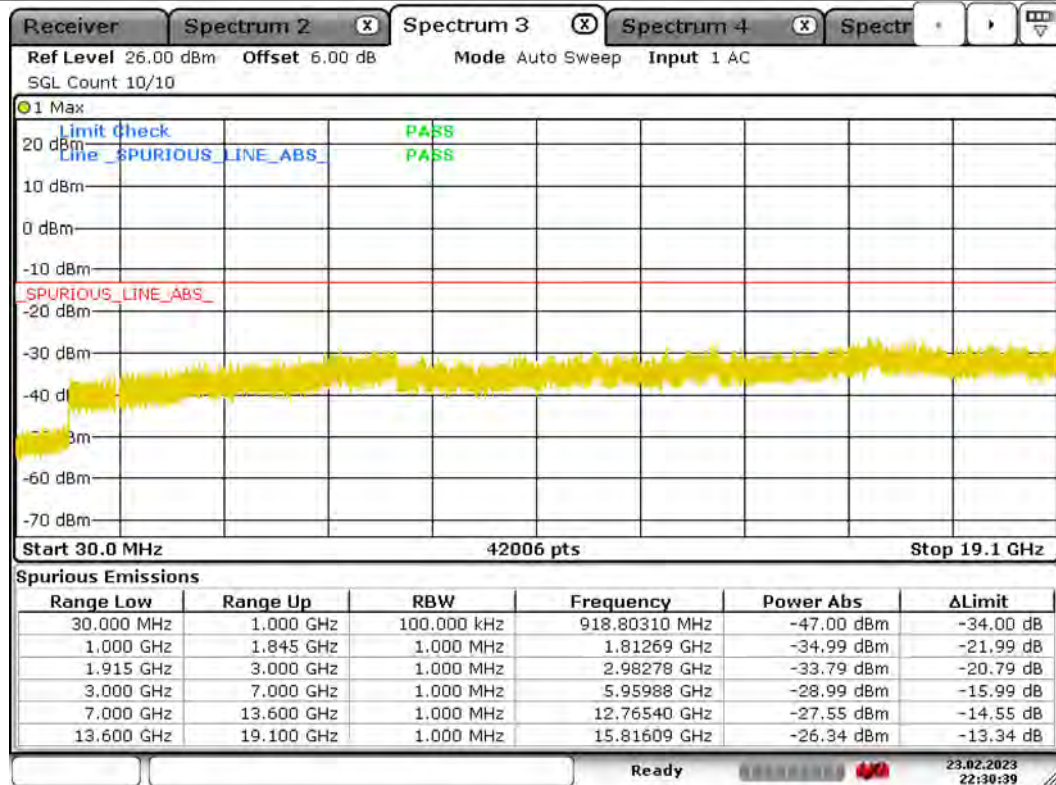
Date: 23.FEB.2023 22:30:39



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VERITAS

Test Report No.: W7L-P23010016RF02

EGPRS1900-810-3000~19100MHz



Date: 23.FEB.2023 22:30:39

## FREQUENCY STABILITY

### Test Result

| Voltage   |         |               |                  |                |                 |             |         |
|-----------|---------|---------------|------------------|----------------|-----------------|-------------|---------|
| Band      | Channel | Voltage [Vdc] | Temperature (°C) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Verdict |
| GSM1900   | 512     | VL            | NT               | -3.91          | -0.002113       | ±2.5        | PASS    |
| GSM1900   | 512     | VN            | NT               | -5.22          | -0.002821       | ±2.5        | PASS    |
| GSM1900   | 512     | VH            | NT               | 1.22           | 0.000659        | ±2.5        | PASS    |
| GSM1900   | 661     | VL            | NT               | -2.72          | -0.001447       | ±2.5        | PASS    |
| GSM1900   | 661     | VN            | NT               | 9.79           | 0.005207        | ±2.5        | PASS    |
| GSM1900   | 661     | VH            | NT               | -1             | -0.000532       | ±2.5        | PASS    |
| GSM1900   | 810     | VL            | NT               | -4.62          | -0.002419       | ±2.5        | PASS    |
| GSM1900   | 810     | VN            | NT               | 2.35           | 0.001230        | ±2.5        | PASS    |
| GSM1900   | 810     | VH            | NT               | 2.09           | 0.001094        | ±2.5        | PASS    |
| EGPRS1900 | 512     | VL            | NT               | -5.41          | -0.002924       | ±2.5        | PASS    |
| EGPRS1900 | 512     | VN            | NT               | -3.35          | -0.001811       | ±2.5        | PASS    |
| EGPRS1900 | 512     | VH            | NT               | -9.8           | -0.005297       | ±2.5        | PASS    |
| EGPRS1900 | 661     | VL            | NT               | -1.79          | -0.000952       | ±2.5        | PASS    |
| EGPRS1900 | 661     | VN            | NT               | -0.11          | -0.000059       | ±2.5        | PASS    |
| EGPRS1900 | 661     | VH            | NT               | -4.37          | -0.002324       | ±2.5        | PASS    |
| EGPRS1900 | 810     | VL            | NT               | 1.92           | 0.001005        | ±2.5        | PASS    |
| EGPRS1900 | 810     | VN            | NT               | 6.28           | 0.003288        | ±2.5        | PASS    |
| EGPRS1900 | 810     | VH            | NT               | 4.74           | 0.002482        | ±2.5        | PASS    |

| Temperature |         |               |                  |                |                 |             |         |
|-------------|---------|---------------|------------------|----------------|-----------------|-------------|---------|
| Band        | Channel | Voltage [Vdc] | Temperature (°C) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Verdict |
| EGPRS850    | 251     | NV            | 50               | 7.92           | 0.004281        | ±2.5        | PASS    |
| GSM1900     | 512     | NV            | -30              | -7.87          | -0.004254       | ±2.5        | PASS    |
| GSM1900     | 512     | NV            | -20              | 6.16           | 0.003329        | ±2.5        | PASS    |
| GSM1900     | 512     | NV            | -10              | -3.91          | -0.002113       | ±2.5        | PASS    |
| GSM1900     | 512     | NV            | 0                | -7.42          | -0.004010       | ±2.5        | PASS    |
| GSM1900     | 512     | NV            | 10               | -5.58          | -0.003016       | ±2.5        | PASS    |
| GSM1900     | 512     | NV            | 20               | -8.9           | -0.004810       | ±2.5        | PASS    |
| GSM1900     | 512     | NV            | 30               | -6.41          | -0.003464       | ±2.5        | PASS    |
| GSM1900     | 512     | NV            | 40               | -9.45          | -0.005108       | ±2.5        | PASS    |
| GSM1900     | 512     | NV            | 50               | 8.71           | 0.004633        | ±2.5        | PASS    |
| GSM1900     | 661     | NV            | -30              | 2.88           | 0.001532        | ±2.5        | PASS    |
| GSM1900     | 661     | NV            | -20              | 9.95           | 0.005293        | ±2.5        | PASS    |
| GSM1900     | 661     | NV            | -10              | 3.9            | 0.002074        | ±2.5        | PASS    |
| GSM1900     | 661     | NV            | 0                | 5.26           | 0.002798        | ±2.5        | PASS    |
| GSM1900     | 661     | NV            | 10               | 1.47           | 0.000782        | ±2.5        | PASS    |
| GSM1900     | 661     | NV            | 20               | 2.85           | 0.001516        | ±2.5        | PASS    |
| GSM1900     | 661     | NV            | 30               | 4.81           | 0.002559        | ±2.5        | PASS    |
| GSM1900     | 661     | NV            | 40               | -9.17          | -0.004878       | ±2.5        | PASS    |

|           |     |    |     |       |           |      |      |
|-----------|-----|----|-----|-------|-----------|------|------|
| GSM1900   | 661 | NV | 50  | 3.69  | 0.001932  | ±2.5 | PASS |
| GSM1900   | 810 | NV | -30 | -4.35 | -0.002278 | ±2.5 | PASS |
| GSM1900   | 810 | NV | -20 | 6.55  | 0.003430  | ±2.5 | PASS |
| GSM1900   | 810 | NV | -10 | 1.15  | 0.000602  | ±2.5 | PASS |
| GSM1900   | 810 | NV | 0   | 4.44  | 0.002325  | ±2.5 | PASS |
| GSM1900   | 810 | NV | 10  | 3.49  | 0.001827  | ±2.5 | PASS |
| GSM1900   | 810 | NV | 20  | 0.03  | 0.000016  | ±2.5 | PASS |
| GSM1900   | 810 | NV | 30  | -0.72 | -0.000377 | ±2.5 | PASS |
| GSM1900   | 810 | NV | 40  | -3.73 | -0.001953 | ±2.5 | PASS |
| GSM1900   | 810 | NV | 50  | 1.4   | 0.000757  | ±2.5 | PASS |
| EGPRS1900 | 512 | NV | -30 | 4.48  | 0.002421  | ±2.5 | PASS |
| EGPRS1900 | 512 | NV | -20 | 7.8   | 0.004216  | ±2.5 | PASS |
| EGPRS1900 | 512 | NV | -10 | 0.78  | 0.000422  | ±2.5 | PASS |
| EGPRS1900 | 512 | NV | 0   | 6.76  | 0.003654  | ±2.5 | PASS |
| EGPRS1900 | 512 | NV | 10  | -4.43 | -0.002394 | ±2.5 | PASS |
| EGPRS1900 | 512 | NV | 20  | -1.18 | -0.000638 | ±2.5 | PASS |
| EGPRS1900 | 512 | NV | 30  | 3.29  | 0.001778  | ±2.5 | PASS |
| EGPRS1900 | 512 | NV | 40  | -2.95 | -0.001594 | ±2.5 | PASS |
| EGPRS1900 | 512 | NV | 50  | 8.38  | 0.004457  | ±2.5 | PASS |
| EGPRS1900 | 661 | NV | -30 | 7.48  | 0.003979  | ±2.5 | PASS |
| EGPRS1900 | 661 | NV | -20 | 7.67  | 0.004080  | ±2.5 | PASS |
| EGPRS1900 | 661 | NV | -10 | 3.14  | 0.001670  | ±2.5 | PASS |
| EGPRS1900 | 661 | NV | 0   | 9.77  | 0.005197  | ±2.5 | PASS |
| EGPRS1900 | 661 | NV | 10  | 1.42  | 0.000755  | ±2.5 | PASS |
| EGPRS1900 | 661 | NV | 20  | -3.96 | -0.002106 | ±2.5 | PASS |
| EGPRS1900 | 661 | NV | 30  | 0.76  | 0.000404  | ±2.5 | PASS |
| EGPRS1900 | 661 | NV | 40  | 3.94  | 0.002096  | ±2.5 | PASS |
| EGPRS1900 | 661 | NV | 50  | 0.19  | 0.000099  | ±2.5 | PASS |
| EGPRS1900 | 810 | NV | -30 | -8.47 | -0.004435 | ±2.5 | PASS |
| EGPRS1900 | 810 | NV | -20 | 2.75  | 0.001440  | ±2.5 | PASS |
| EGPRS1900 | 810 | NV | -10 | -3.33 | -0.001744 | ±2.5 | PASS |
| EGPRS1900 | 810 | NV | 0   | 4.11  | 0.002152  | ±2.5 | PASS |
| EGPRS1900 | 810 | NV | 10  | -9.44 | -0.004943 | ±2.5 | PASS |
| EGPRS1900 | 810 | NV | 20  | 7.88  | 0.004126  | ±2.5 | PASS |
| EGPRS1900 | 810 | NV | 30  | -6.42 | -0.003362 | ±2.5 | PASS |
| EGPRS1900 | 810 | NV | 40  | 2.32  | 0.001215  | ±2.5 | PASS |
| EGPRS1900 | 810 | NV | 50  | 2.5   | 0.001309  | ±2.5 | PASS |



Test Report No.: W7L-P23010016RF02

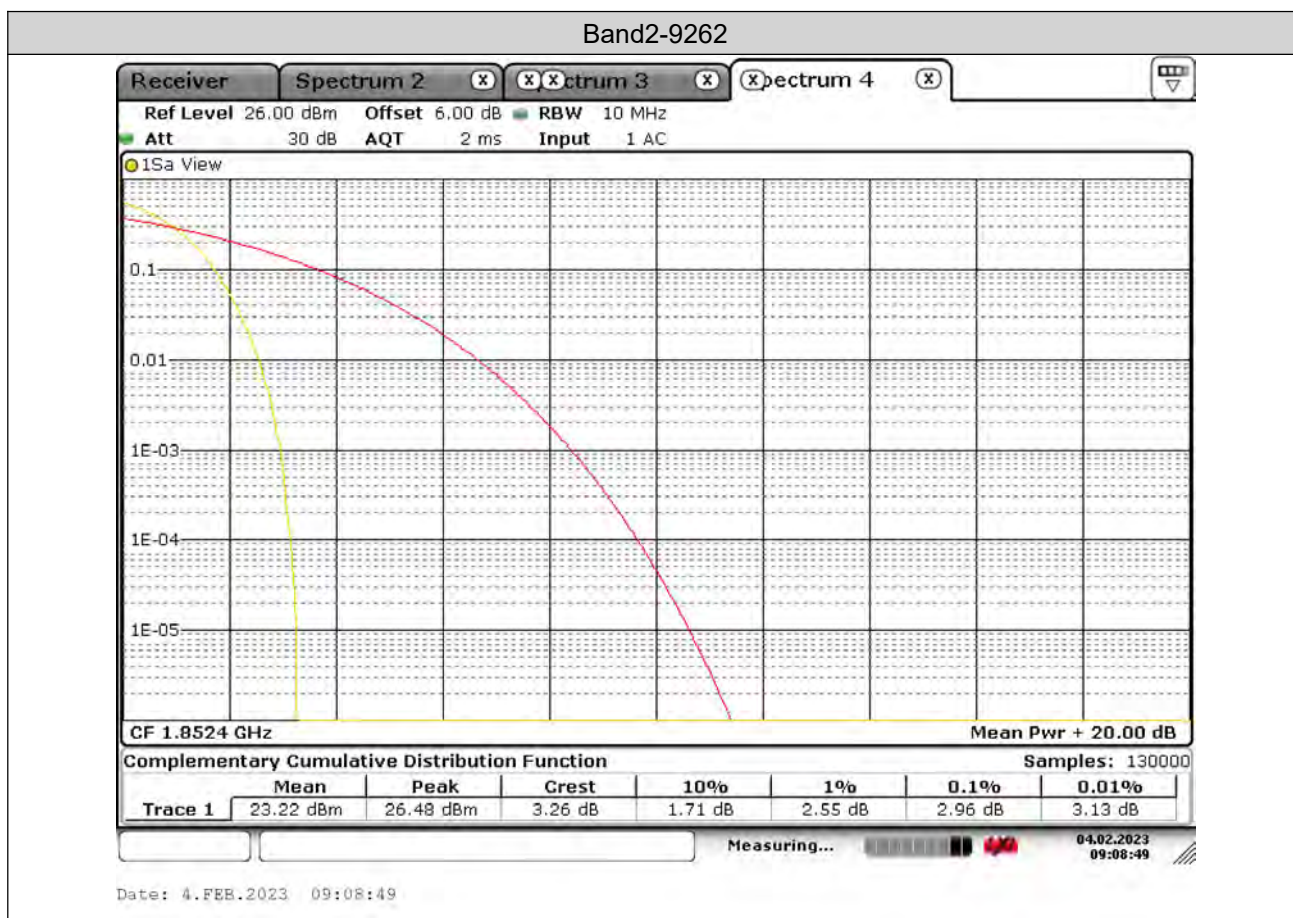
## WCDMA II

### PEAK-TO-AVERAGE RATIO

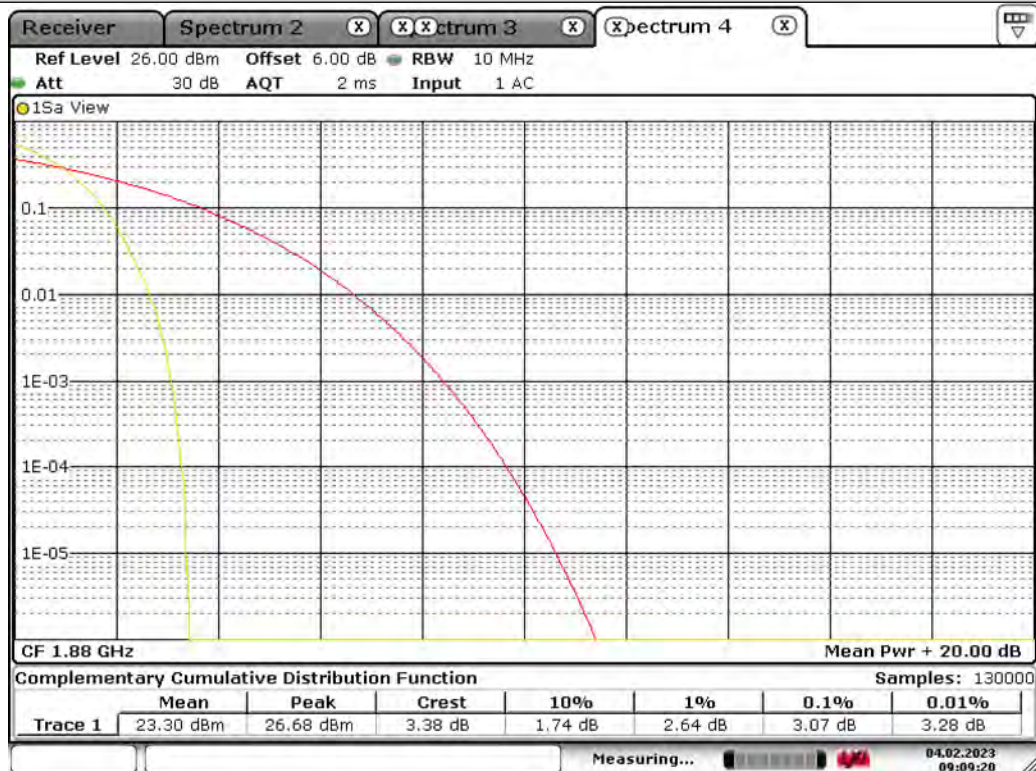
#### Test Result

| Band  | Channel | Peak-to-Average Ratio(dB) | Limit(dBm) | Verdict |
|-------|---------|---------------------------|------------|---------|
| Band2 | 9262    | 2.96                      | 13         | PASS    |
| Band2 | 9400    | 3.07                      | 13         | PASS    |
| Band2 | 9538    | 2.58                      | 13         | PASS    |

## Test Graphs

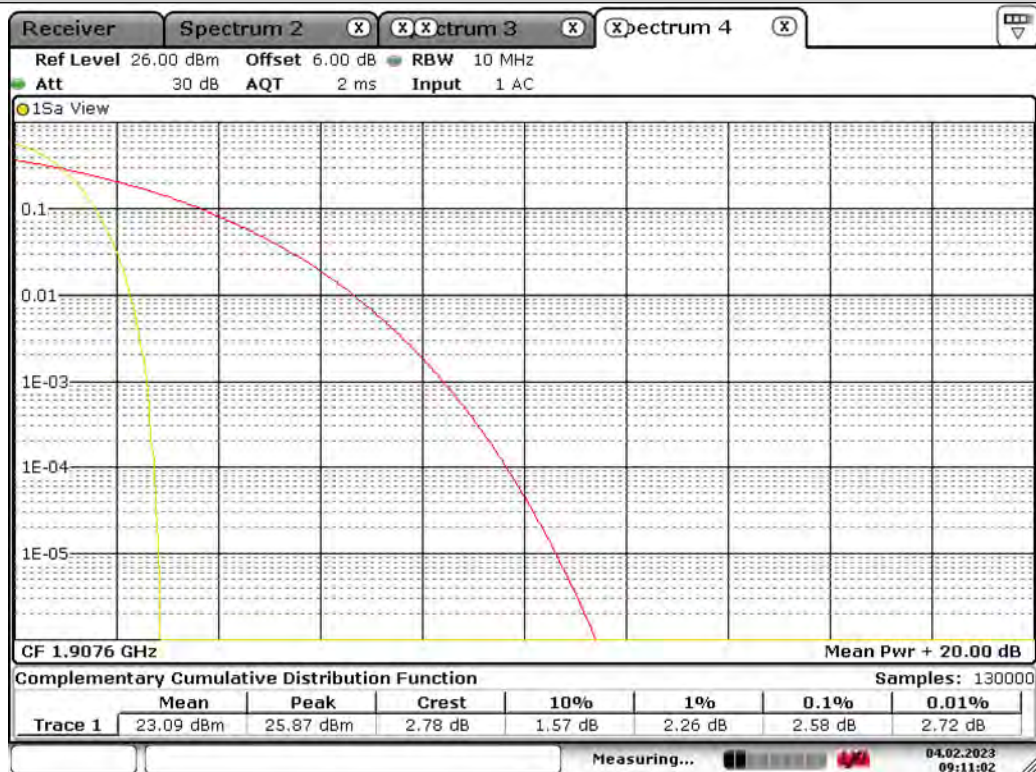


### Band2-9400



Date: 4.FEB.2023 09:09:20

### Band2-9538



Date: 4.FEB.2023 09:11:02



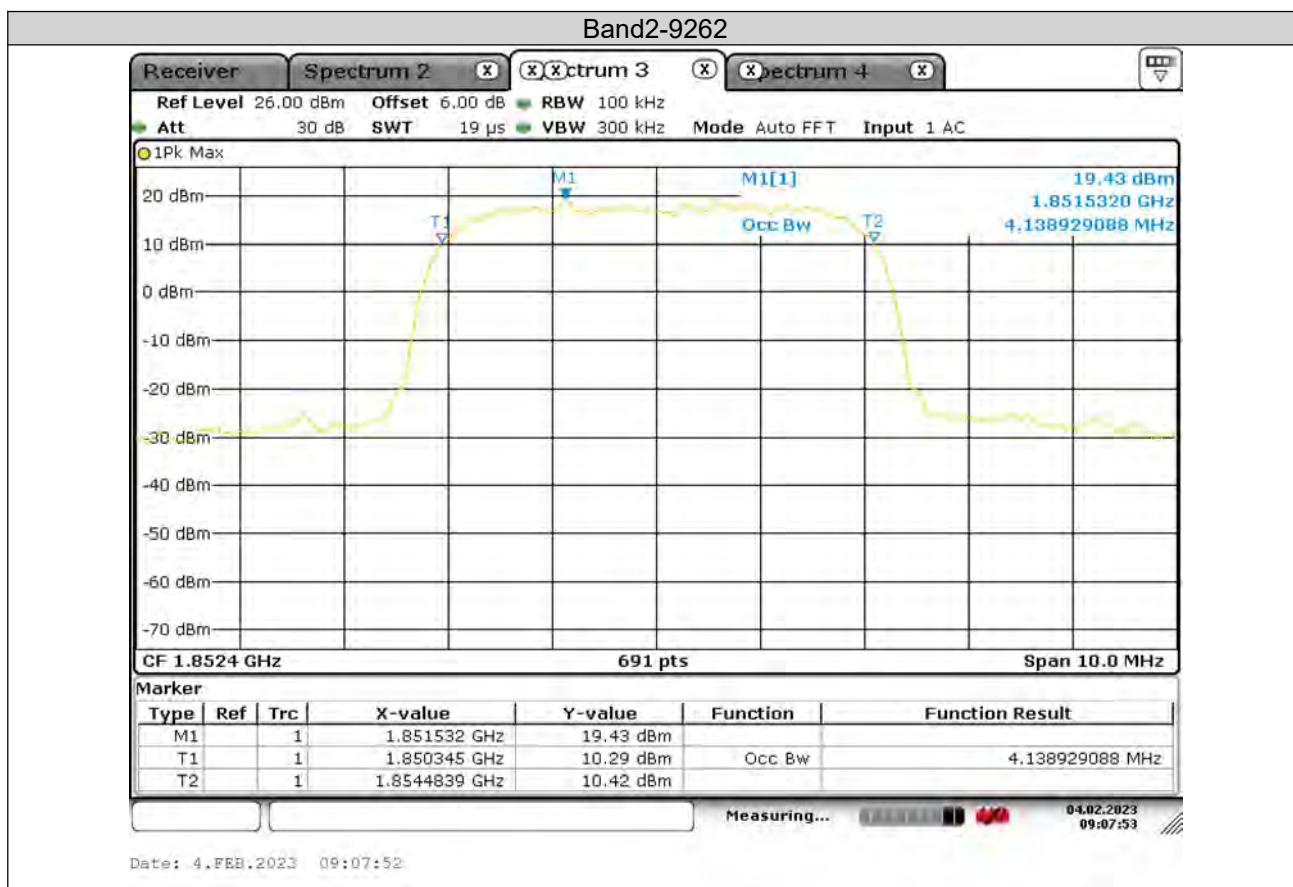
Test Report No.: W7L-P23010016RF02

## 26DB BANDWIDTH AND OCCUPIED BANDWIDTH

### Test Result

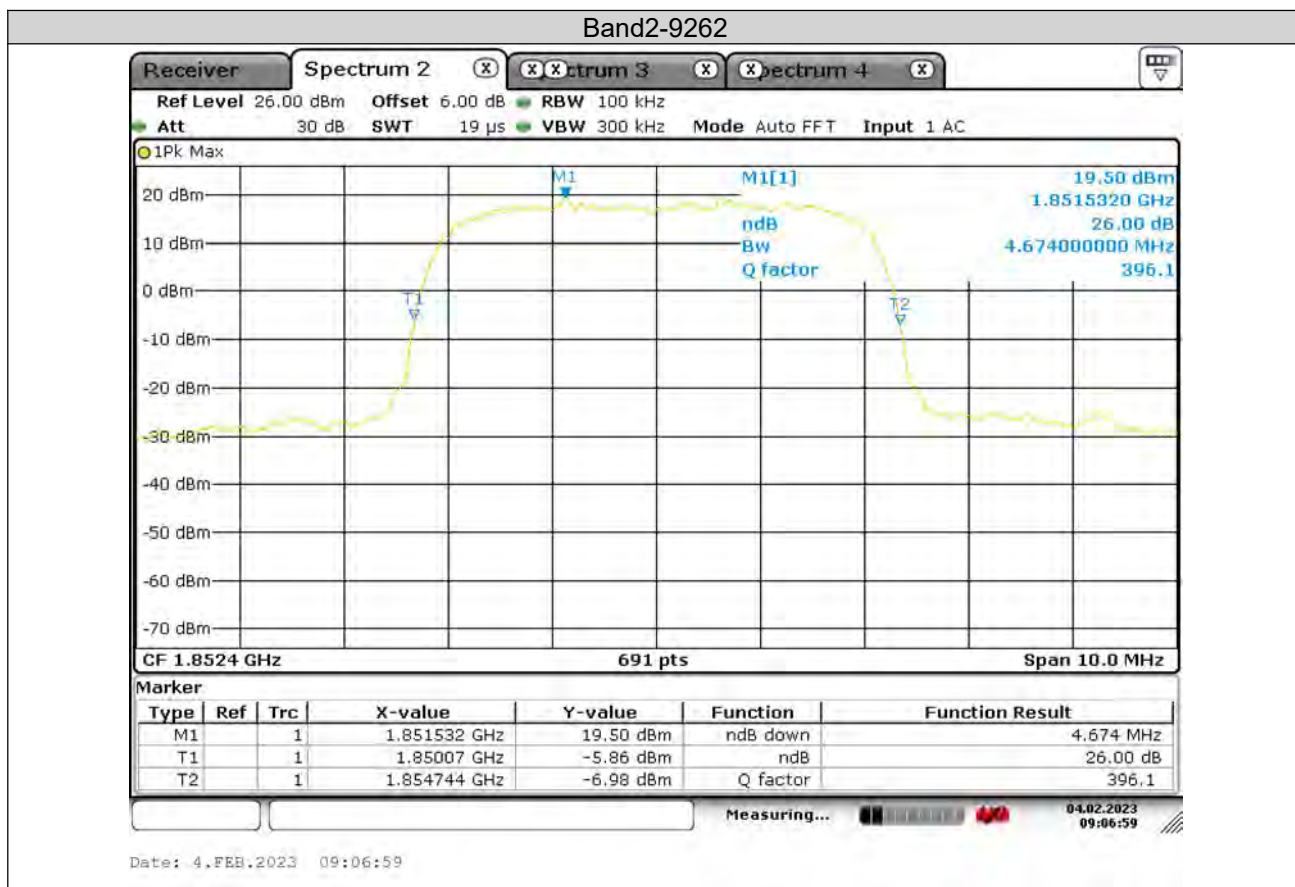
| Band  | Channel | Occupied Bandwidth<br>(MHz) | 26dB Bandwidth<br>(MHz) | Limit(kHz) | Verdict |
|-------|---------|-----------------------------|-------------------------|------------|---------|
| Band2 | 9262    | 4.139                       | 4.674                   | ---        | PASS    |
| Band2 | 9400    | 4.139                       | 4.674                   | ---        | PASS    |
| Band2 | 9538    | 4.153                       | 4.689                   | ---        | PASS    |

## Test Graphs Occupied Bandwidth





26dB Bandwidth







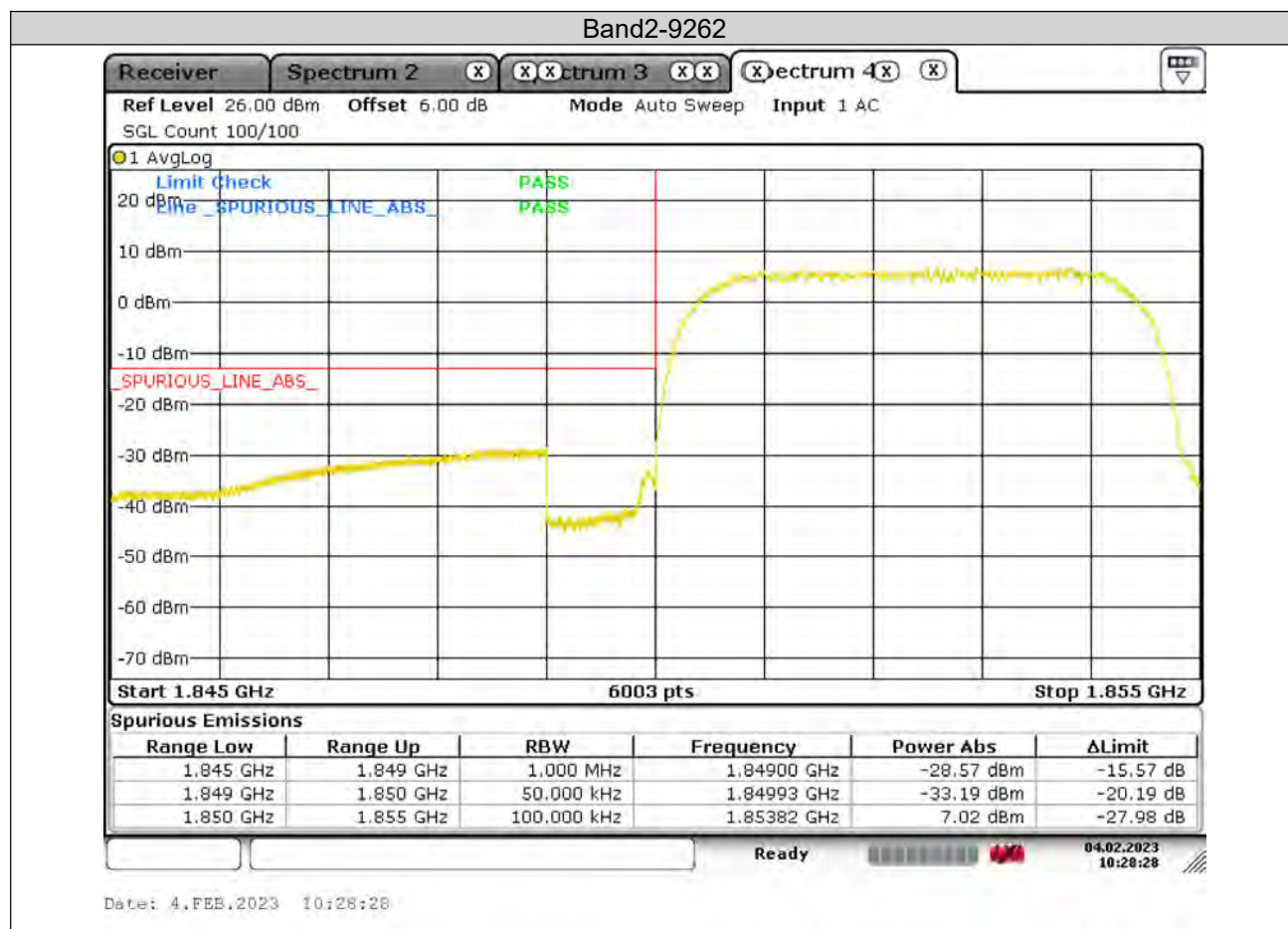
Test Report No.: W7L-P23010016RF02

## BAND EDGE

### Test Result

| Band  | Channel | Frequency (MHz) | Result (dBm) | Limit(dBm) | Verdict |
|-------|---------|-----------------|--------------|------------|---------|
| Band2 | 9262    | 1849            | -28.57       | -13        | PASS    |
| Band2 | 9538    | 1911.02         | -22.1        | -13        | PASS    |

## Test Graphs







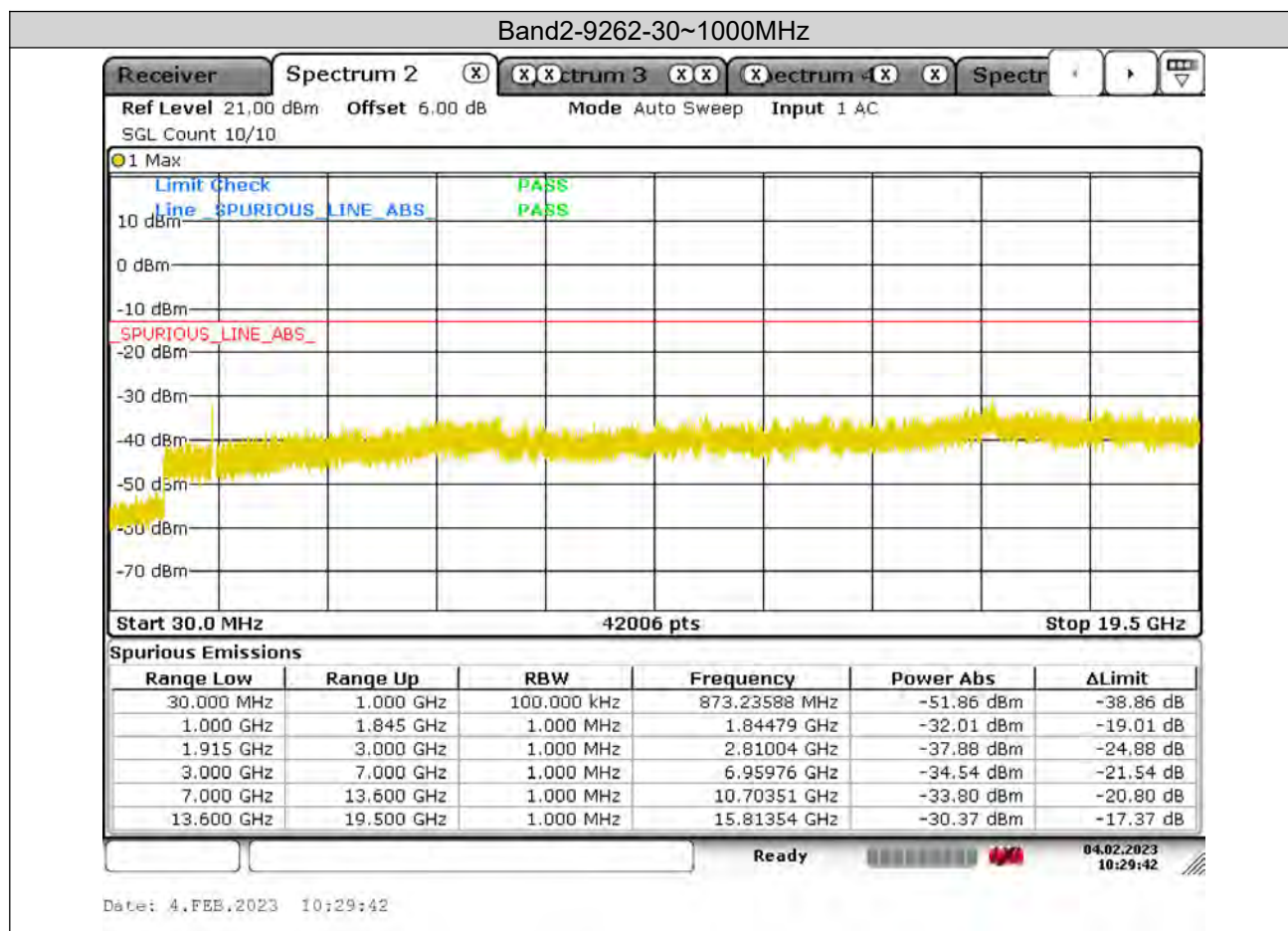
Test Report No.: W7L-P23010016RF02

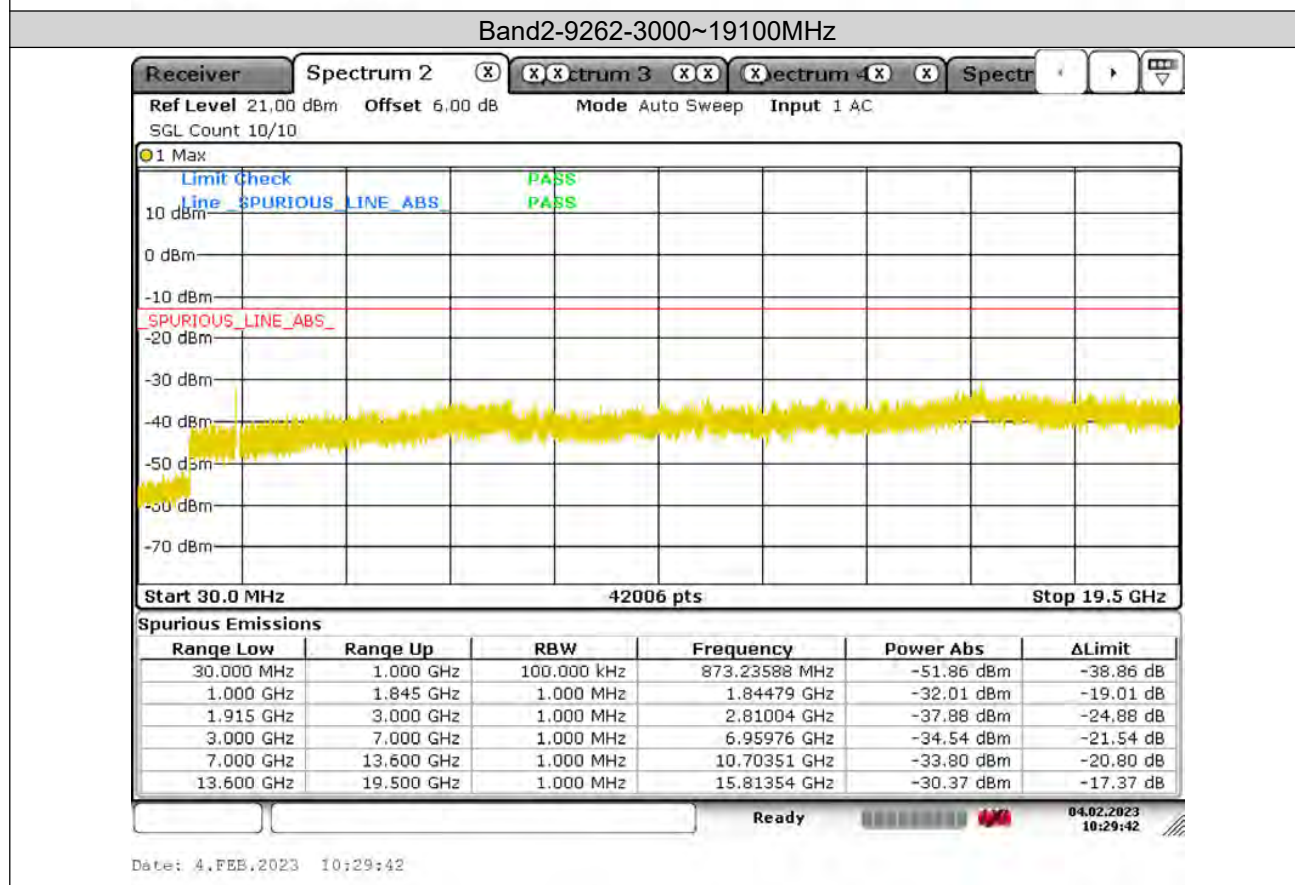
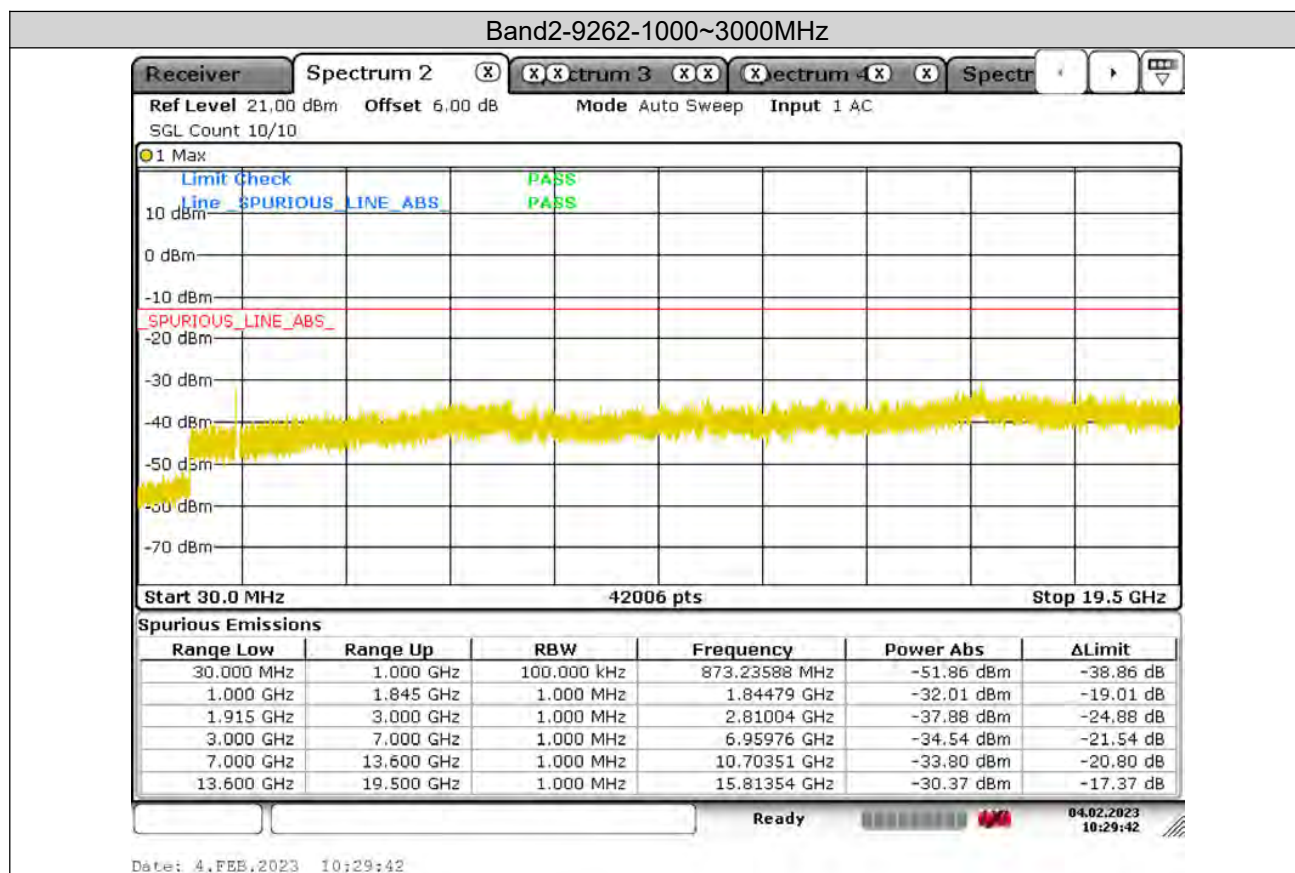
## CONDUCTED SPURIOUS EMISSION

### Test Result

| Band  | Channel | Frequency Range (Mhz) | Frequency (MHz) | Result (dBm) | Limit (dBm) | Verdict |
|-------|---------|-----------------------|-----------------|--------------|-------------|---------|
| Band2 | 9262    | 30~1000MHz            | 873.23588       | -51.86       | -13         | PASS    |
| Band2 | 9262    | 1000~3000MHz          | 1844.79         | -32.01       | -13         | PASS    |
| Band2 | 9262    | 3000~19100MHz         | 15813.54        | -30.37       | -13         | PASS    |
| Band2 | 9400    | 30~1000MHz            | 874.2054        | -51.99       | -13         | PASS    |
| Band2 | 9400    | 1000~3000MHz          | 2448.01         | -37.82       | -13         | PASS    |
| Band2 | 9400    | 3000~19100MHz         | 15822.89        | -31.44       | -13         | PASS    |
| Band2 | 9538    | 30~1000MHz            | 915.4098        | -51.88       | -13         | PASS    |
| Band2 | 9538    | 1000~3000MHz          | 1915.41         | -23.48       | -13         | PASS    |
| Band2 | 9538    | 3000~19100MHz         | 15845.5         | -31.15       | -13         | PASS    |

## Test Graphs



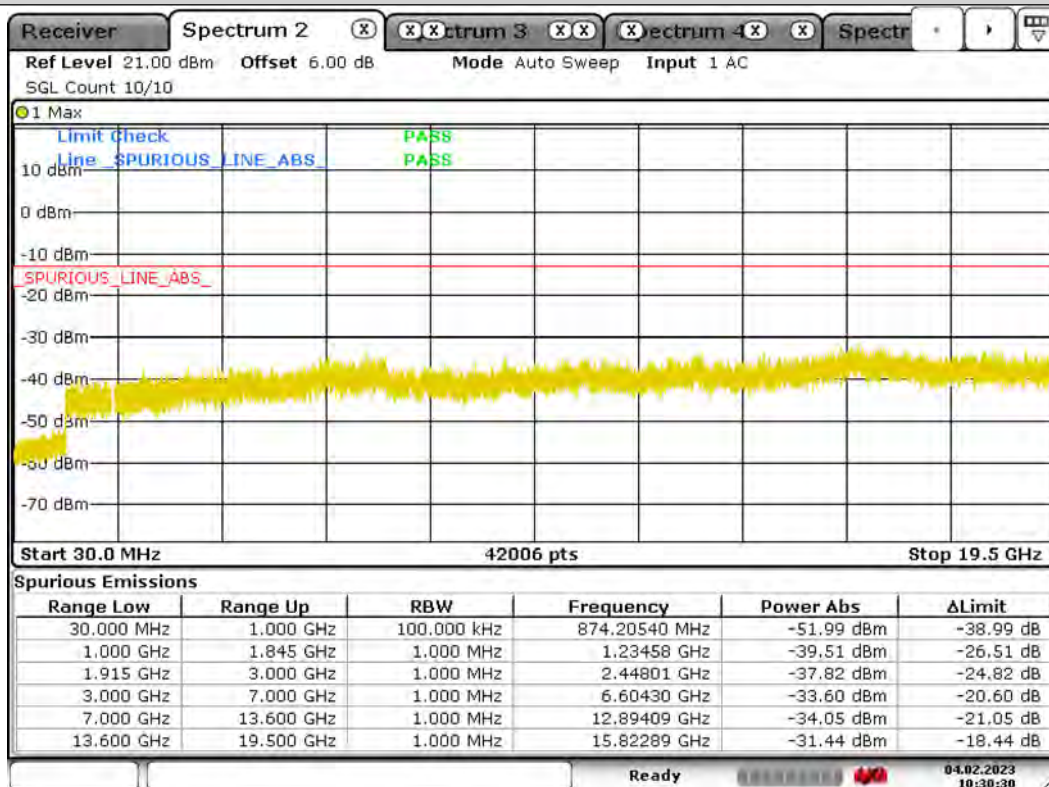




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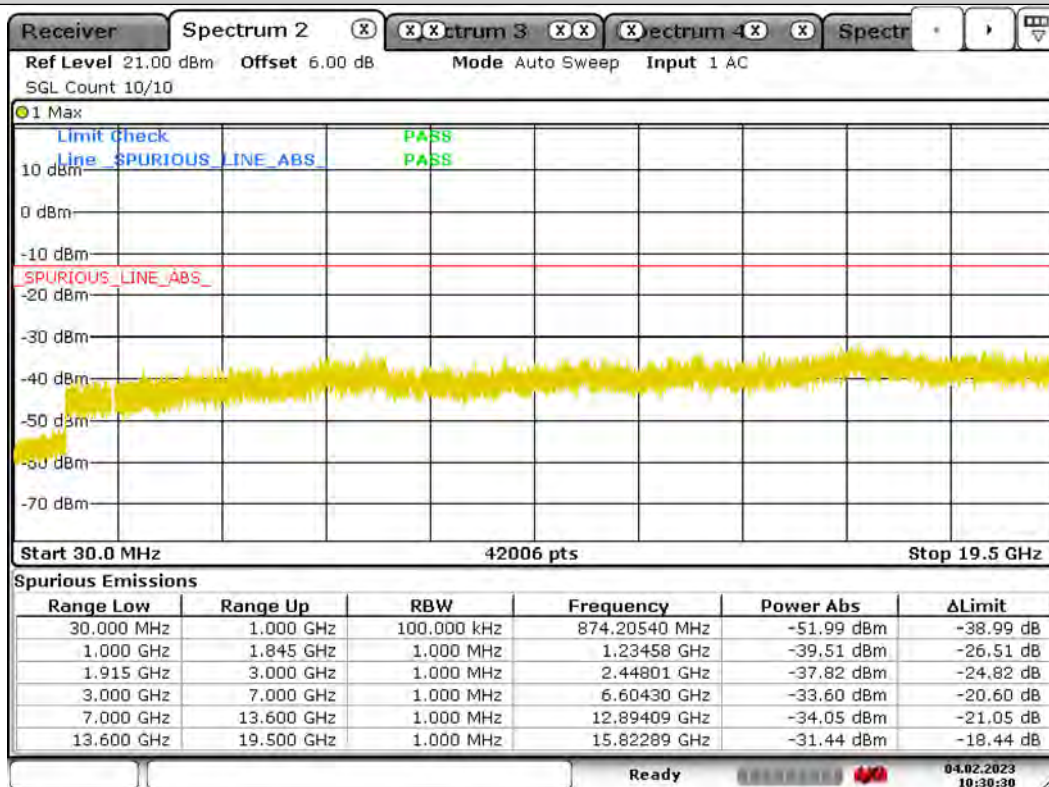
Test Report No.: W7L-P23010016RF02

Band2-9400-30~1000MHz



Date: 4.FEB.2023 10:30:29

Band2-9400-1000~3000MHz



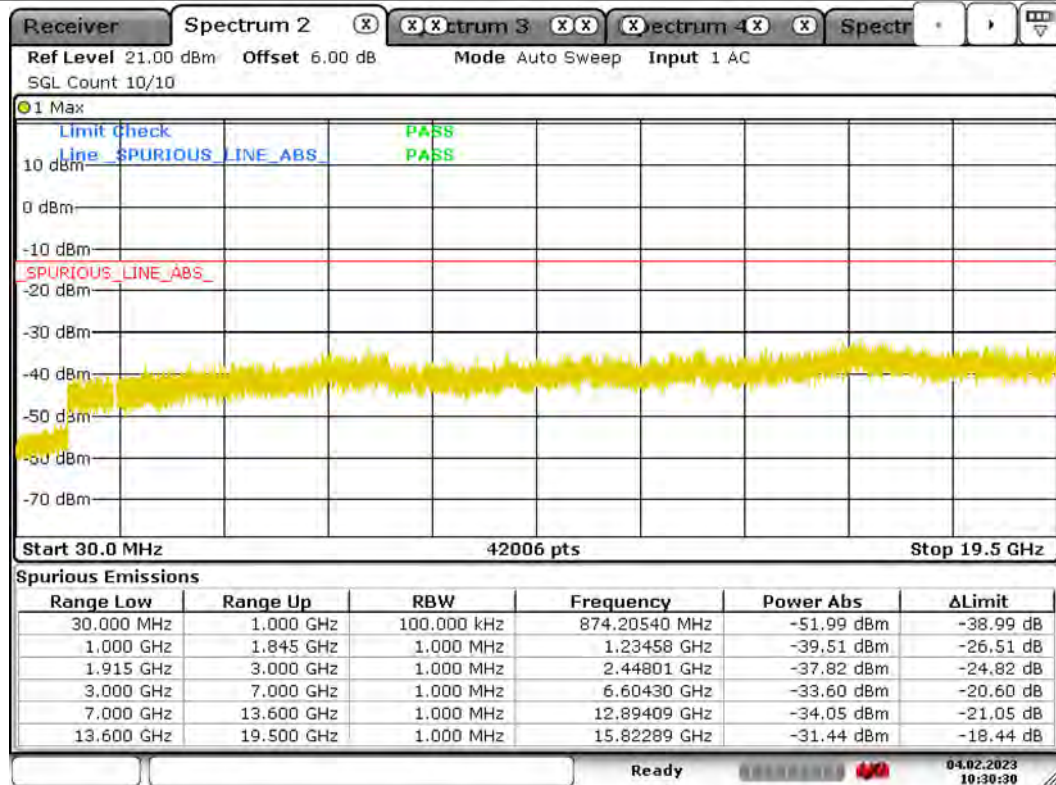
Date: 4.FEB.2023 10:30:29



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VERITAS

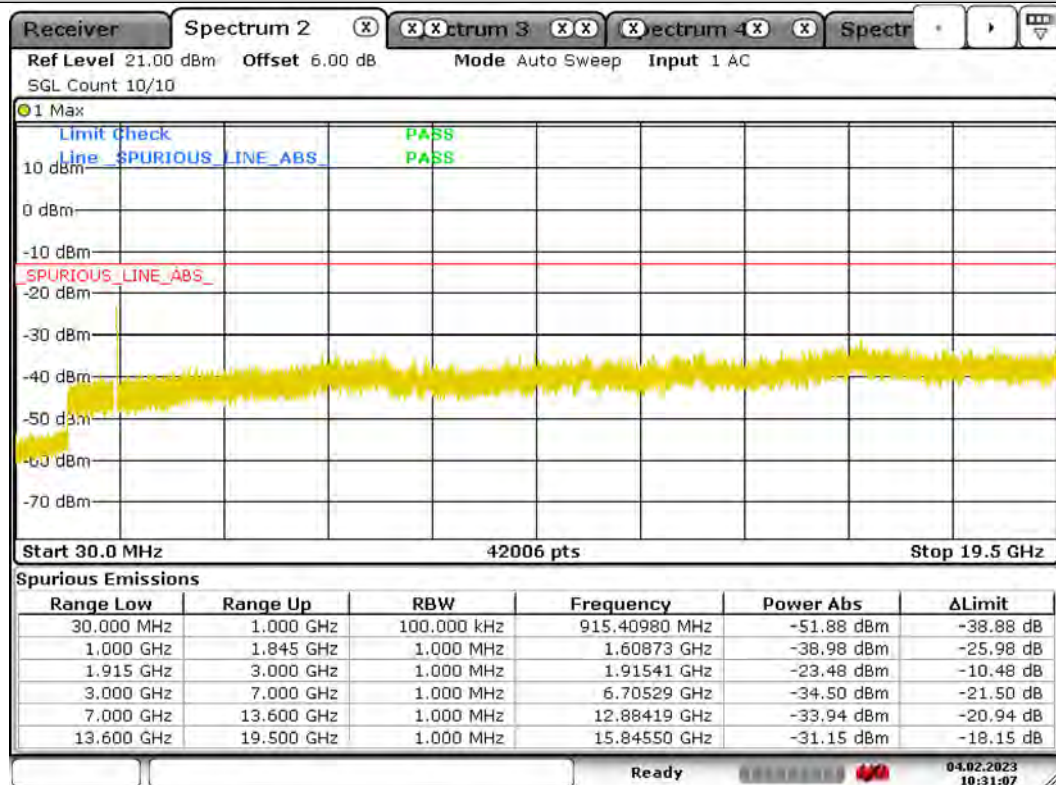
Test Report No.: W7L-P23010016RF02

Band2-9400-3000~19100MHz



Date: 4.FEB.2023 10:30:29

Band2-9538-30~1000MHz



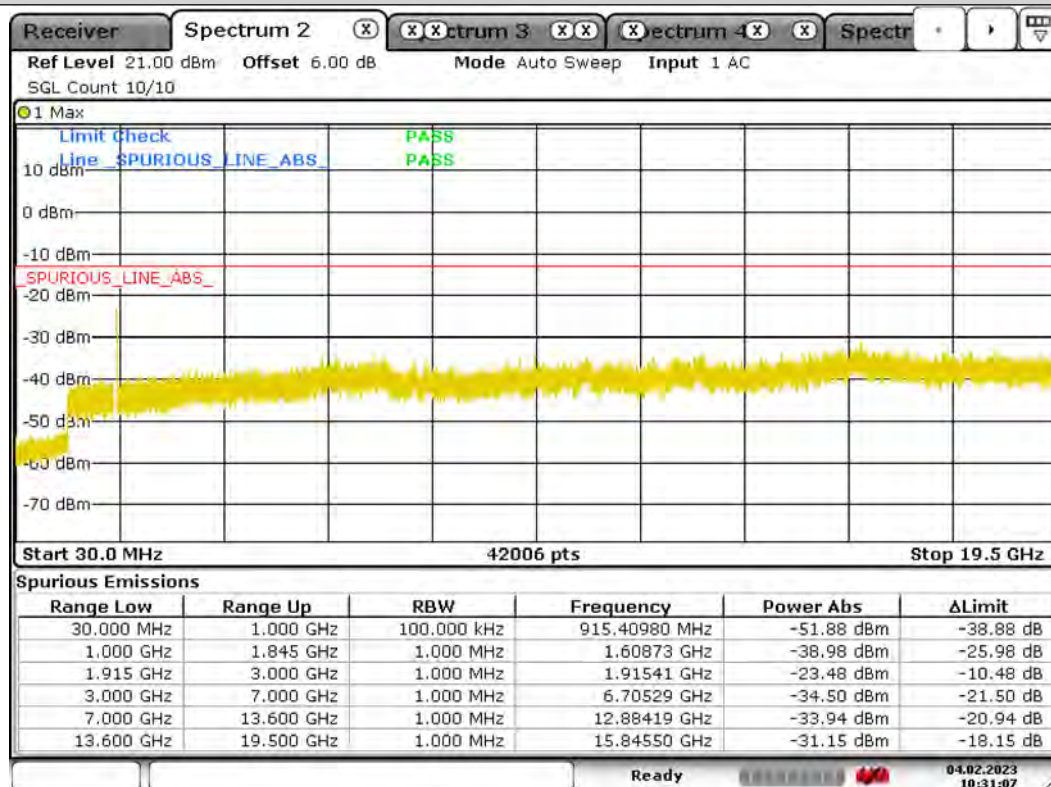
Date: 4.FEB.2023 10:31:07



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VERITAS

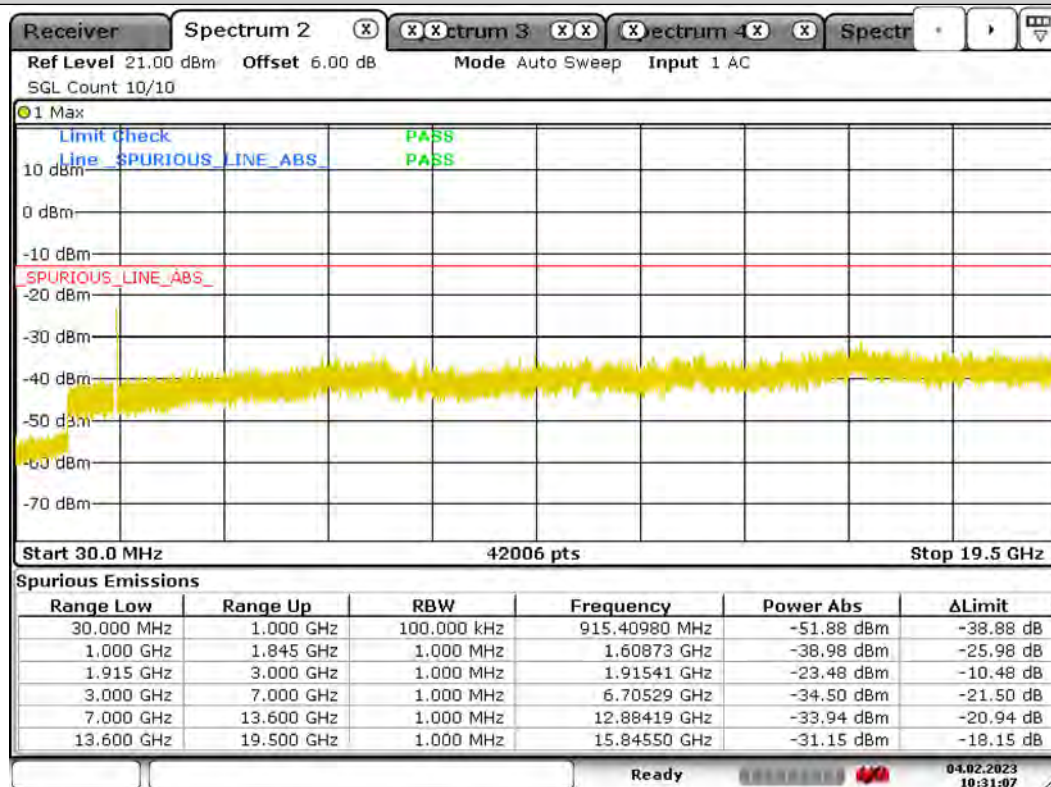
Test Report No.: W7L-P23010016RF02

Band2-9538-1000~3000MHz



Date: 4.FEB.2023 10:31:07

Band2-9538-3000~19100MHz



Date: 4.FEB.2023 10:31:07

## FREQUENCY STABILITY

### Test Result

| Voltage |         |               |                  |                |                 |             |         |
|---------|---------|---------------|------------------|----------------|-----------------|-------------|---------|
| Band    | Channel | Voltage (Vdc) | Temperature (°C) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Verdict |
| Band2   | 9262    | VL            | NT               | -5.7           | -0.003077       | ±2.5        | PASS    |
| Band2   | 9262    | VN            | NT               | -1.91          | -0.001031       | ±2.5        | PASS    |
| Band2   | 9262    | VH            | NT               | -5.31          | -0.002867       | ±2.5        | PASS    |
| Band2   | 9400    | VL            | NT               | 4.65           | 0.002473        | ±2.5        | PASS    |
| Band2   | 9400    | VN            | NT               | 4.81           | 0.002559        | ±2.5        | PASS    |
| Band2   | 9400    | VH            | NT               | 5.11           | 0.002718        | ±2.5        | PASS    |
| Band2   | 9538    | VL            | NT               | -8             | -0.004045       | ±2.5        | PASS    |
| Band2   | 9538    | VN            | NT               | 0.18           | 0.000091        | ±2.5        | PASS    |
| Band2   | 9538    | VH            | NT               | 3.34           | 0.001689        | ±2.5        | PASS    |

| Temperature |         |               |                  |                |                 |             |         |
|-------------|---------|---------------|------------------|----------------|-----------------|-------------|---------|
| Band        | Channel | Voltage (Vdc) | Temperature (°C) | Deviation (Hz) | Deviation (ppm) | Limit (ppm) | Verdict |
| Band2       | 9262    | NV            | -30              | 4.6            | 0.002483        | ±2.5        | PASS    |
| Band2       | 9262    | NV            | -20              | -8.78          | -0.004740       | ±2.5        | PASS    |
| Band2       | 9262    | NV            | 0                | -1.08          | -0.000583       | ±2.5        | PASS    |
| Band2       | 9262    | NV            | 10               | 2.42           | 0.001306        | ±2.5        | PASS    |
| Band2       | 9262    | NV            | 20               | 7.06           | 0.003811        | ±2.5        | PASS    |
| Band2       | 9262    | NV            | 30               | 6.15           | 0.003320        | ±2.5        | PASS    |
| Band2       | 9262    | NV            | 40               | 6.66           | 0.003595        | ±2.5        | PASS    |
| Band2       | 9262    | NV            | 50               | 1.08           | 0.000583        | ±2.5        | PASS    |
| Band2       | 9400    | NV            | -30              | 4.99           | 0.002654        | ±2.5        | PASS    |
| Band2       | 9400    | NV            | -20              | 0.72           | 0.000383        | ±2.5        | PASS    |
| Band2       | 9400    | NV            | 0                | -9.78          | -0.005202       | ±2.5        | PASS    |
| Band2       | 9400    | NV            | 10               | 1.9            | 0.001011        | ±2.5        | PASS    |
| Band2       | 9400    | NV            | 20               | -4.14          | -0.002202       | ±2.5        | PASS    |
| Band2       | 9400    | NV            | 30               | 8.09           | 0.004303        | ±2.5        | PASS    |
| Band2       | 9400    | NV            | 40               | 9.34           | 0.004968        | ±2.5        | PASS    |
| Band2       | 9400    | NV            | 50               | -2.05          | -0.001090       | ±2.5        | PASS    |
| Band2       | 9538    | NV            | -30              | -4.49          | -0.002270       | ±2.5        | PASS    |
| Band2       | 9538    | NV            | -20              | 4.15           | 0.002099        | ±2.5        | PASS    |
| Band2       | 9538    | NV            | 0                | -8.06          | -0.004076       | ±2.5        | PASS    |
| Band2       | 9538    | NV            | 10               | -6.02          | -0.003044       | ±2.5        | PASS    |
| Band2       | 9538    | NV            | 20               | -9.1           | -0.004602       | ±2.5        | PASS    |
| Band2       | 9538    | NV            | 30               | 9.5            | 0.004804        | ±2.5        | PASS    |
| Band2       | 9538    | NV            | 40               | -4.86          | -0.002458       | ±2.5        | PASS    |
| Band2       | 9538    | NV            | 50               | -1.04          | -0.000526       | ±2.5        | PASS    |



Test Report No.: W7L-P23010016RF02

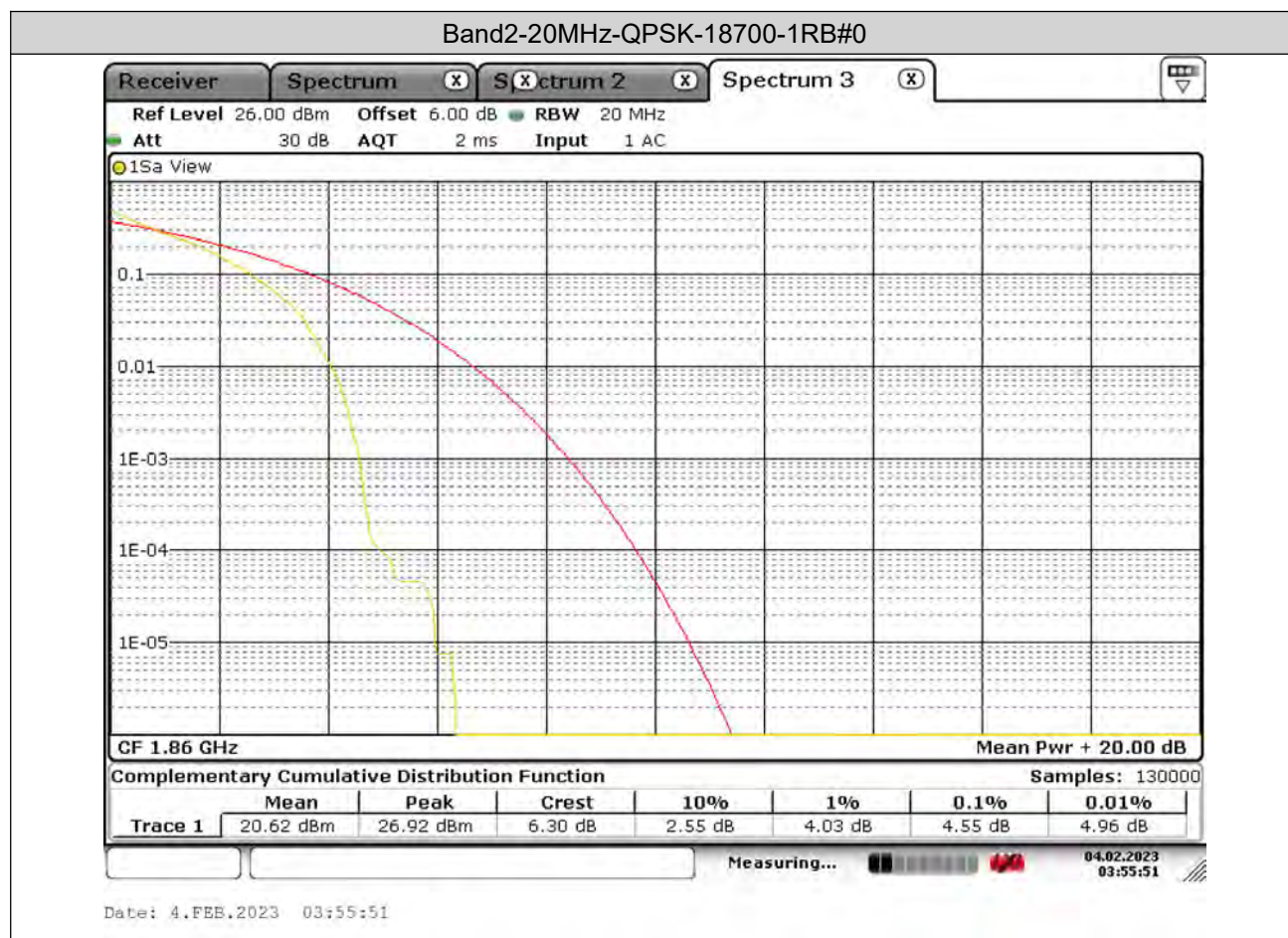
## LTE BAND 2

### PEAK-TO-AVERAGE RATIO(CCDF)

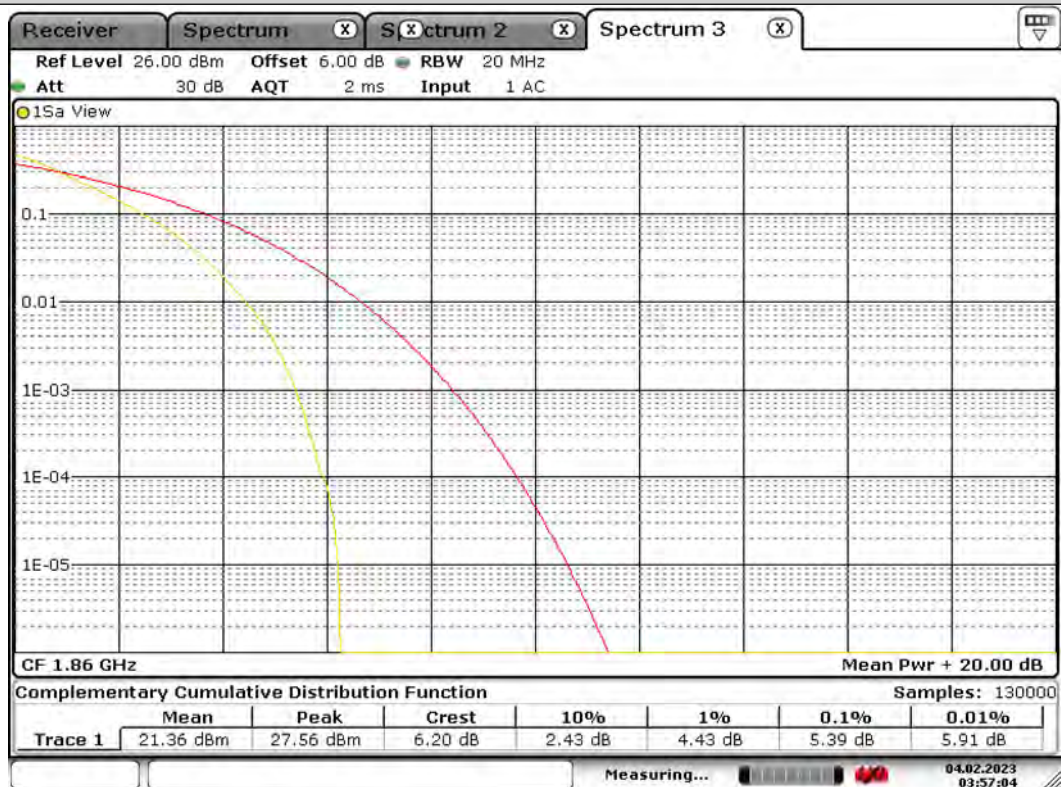
#### Test Result

| Band  | Bandwidth | Modulation | Channel | RB Configuration | Result(dB) | Limit(dB) | Verdict |
|-------|-----------|------------|---------|------------------|------------|-----------|---------|
| Band2 | 20MHz     | QPSK       | 18700   | 1RB#0            | 4.55       | 13        | PASS    |
| Band2 | 20MHz     | QPSK       | 18700   | 100RB#0          | 5.39       | 13        | PASS    |
| Band2 | 20MHz     | QPSK       | 18900   | 1RB#0            | 4.75       | 13        | PASS    |
| Band2 | 20MHz     | QPSK       | 18900   | 100RB#0          | 5.54       | 13        | PASS    |
| Band2 | 20MHz     | QPSK       | 19100   | 1RB#0            | 4.58       | 13        | PASS    |
| Band2 | 20MHz     | QPSK       | 19100   | 100RB#0          | 5.28       | 13        | PASS    |
| Band2 | 20MHz     | 16QAM      | 18700   | 1RB#0            | 5.62       | 13        | PASS    |
| Band2 | 20MHz     | 16QAM      | 18700   | 100RB#0          | 6.29       | 13        | PASS    |
| Band2 | 20MHz     | 16QAM      | 18900   | 1RB#0            | 6.03       | 13        | PASS    |
| Band2 | 20MHz     | 16QAM      | 18900   | 100RB#0          | 6.43       | 13        | PASS    |
| Band2 | 20MHz     | 16QAM      | 19100   | 1RB#0            | 5.16       | 13        | PASS    |
| Band2 | 20MHz     | 16QAM      | 19100   | 100RB#0          | 6.12       | 13        | PASS    |
| Band2 | 20MHz     | 64QAM      | 18700   | 1RB#0            | 5.94       | 13        | PASS    |
| Band2 | 20MHz     | 64QAM      | 18700   | 100RB#0          | 6.55       | 13        | PASS    |
| Band2 | 20MHz     | 64QAM      | 18900   | 1RB#0            | 6.58       | 13        | PASS    |
| Band2 | 20MHz     | 64QAM      | 18900   | 100RB#0          | 6.64       | 13        | PASS    |
| Band2 | 20MHz     | 64QAM      | 19100   | 1RB#0            | 6.26       | 13        | PASS    |
| Band2 | 20MHz     | 64QAM      | 19100   | 100RB#0          | 6.52       | 13        | PASS    |

## Test Graphs



Band2-20MHz-QPSK-18700-100RB#0



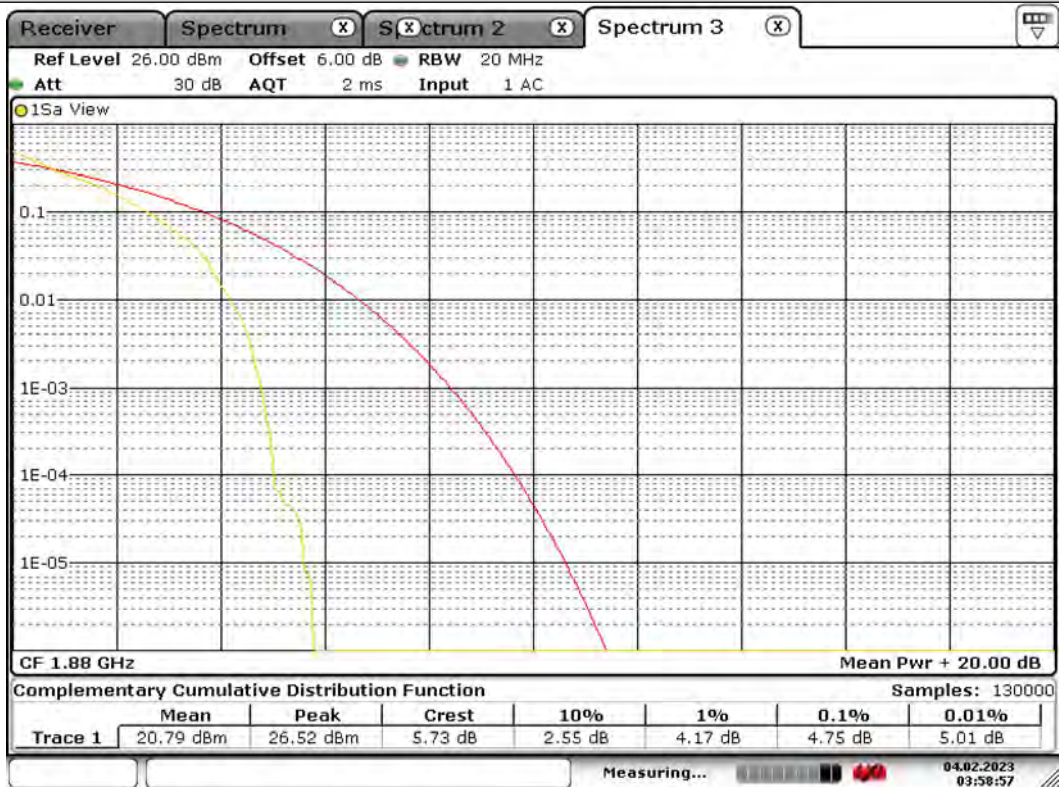
Date: 4.FEB.2023 03:57:04



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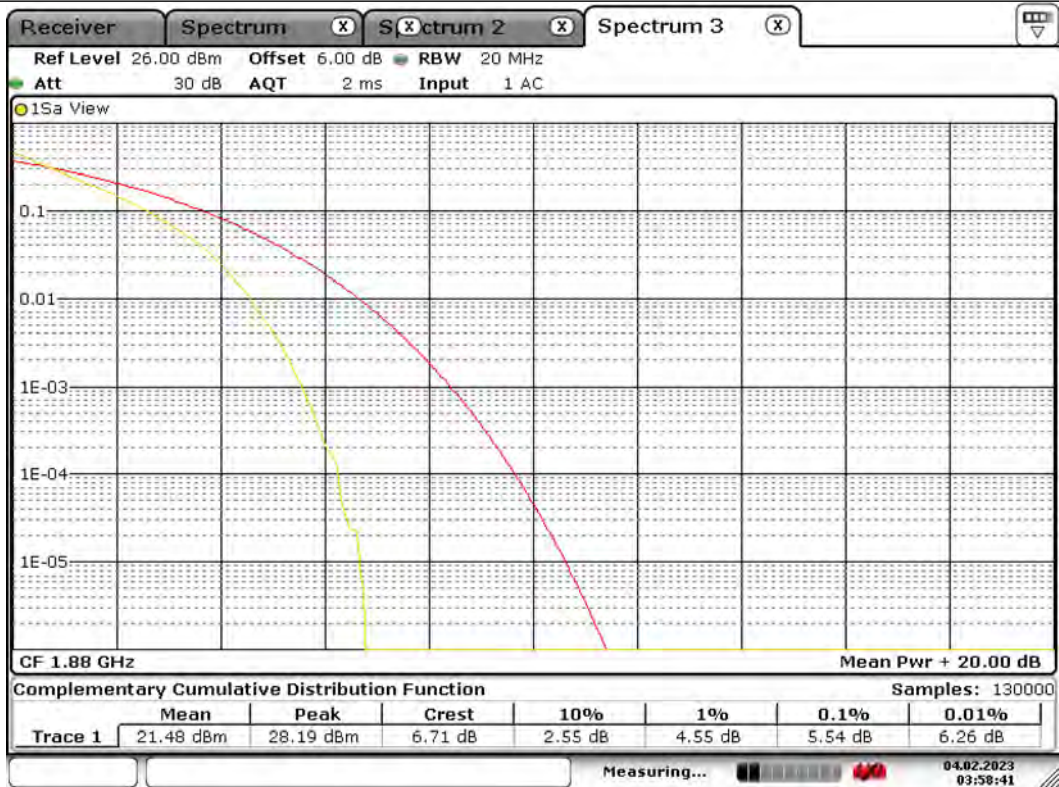
Test Report No.: W7L-P23010016RF02

Band2-20MHz-QPSK-18900-1RB#0



Date: 4.FEB.2023 03:58:57

Band2-20MHz-QPSK-18900-100RB#0



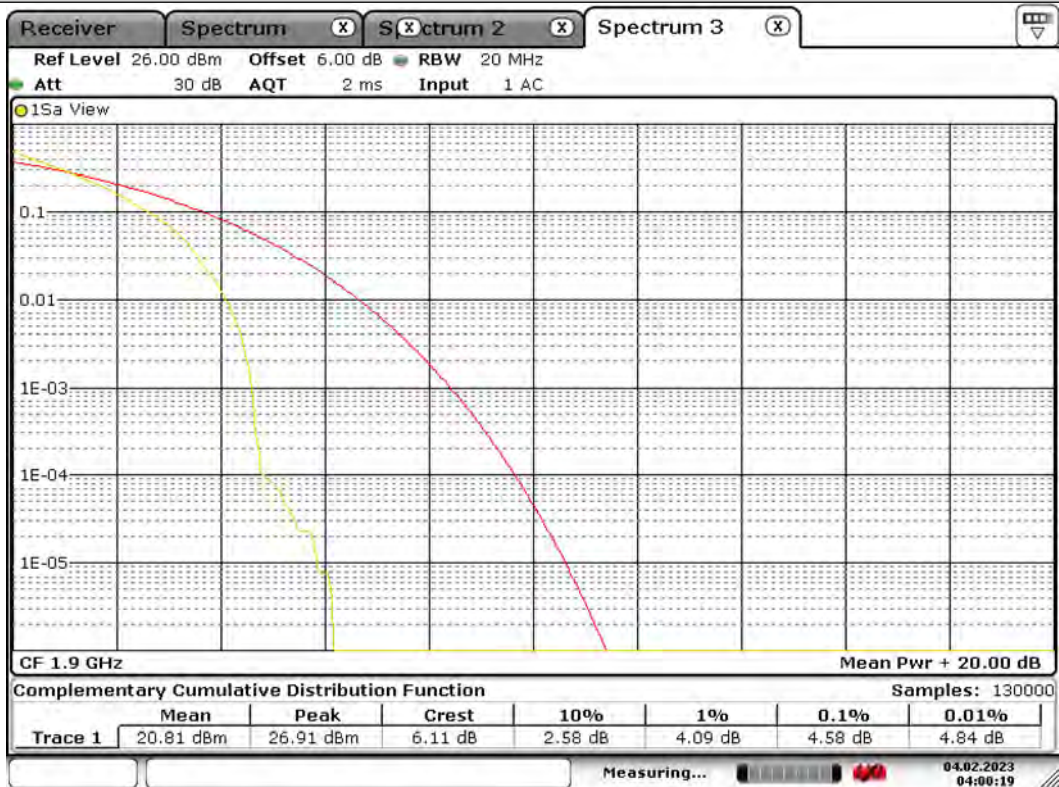
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VERITAS

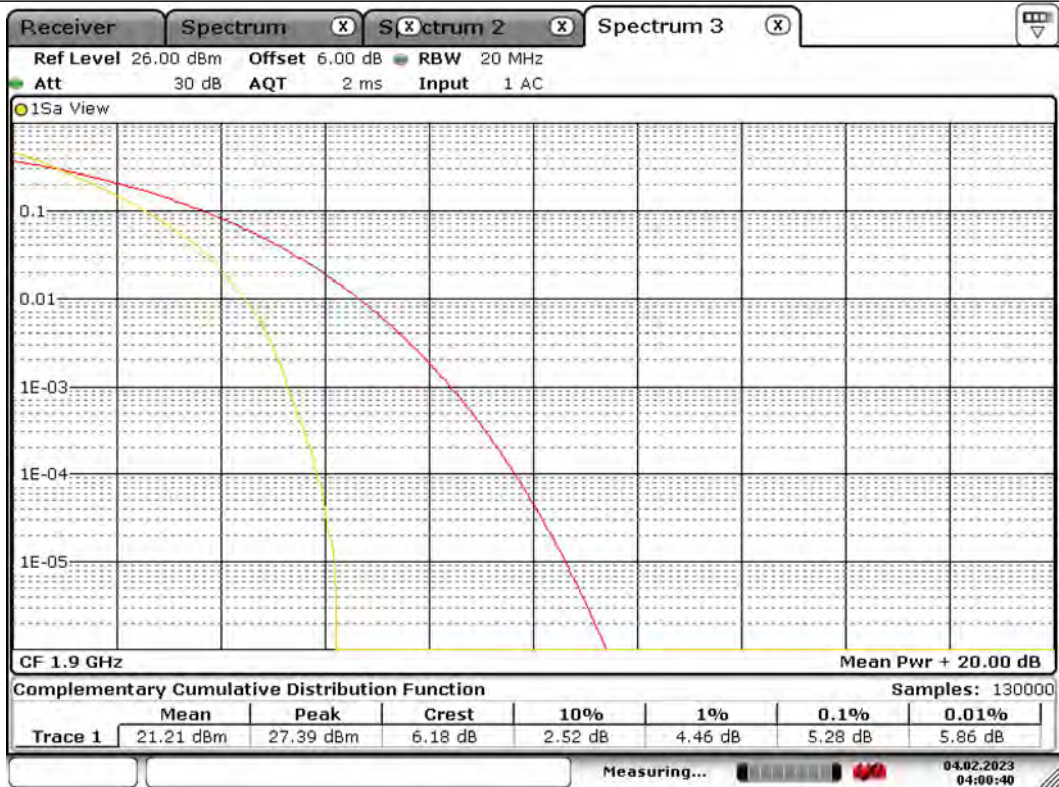
Test Report No.: W7L-P23010016RF02

Band2-20MHz-QPSK-19100-1RB#0



Date: 4.FEB.2023 04:00:20

Band2-20MHz-QPSK-19100-100RB#0



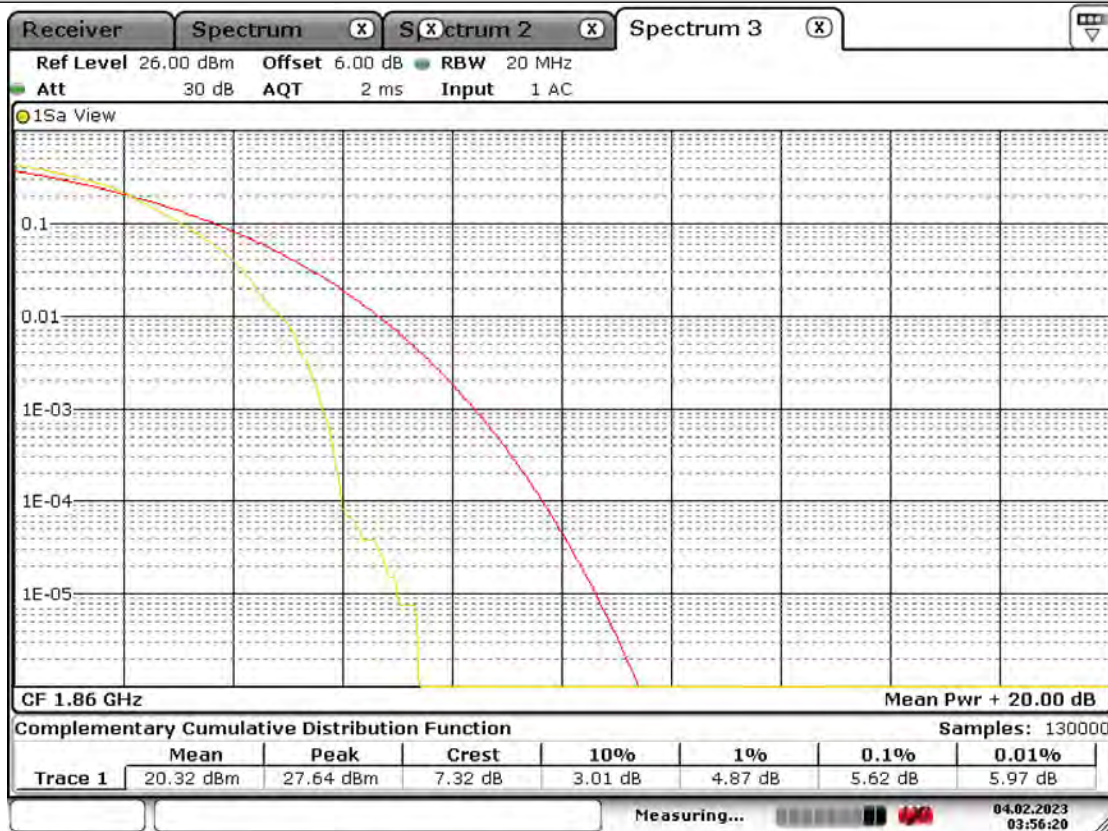
Date: 4.FEB.2023 04:00:40



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Test Report No.: W7L-P23010016RF02

Band2-20MHz-16QAM-18700-1RB#0



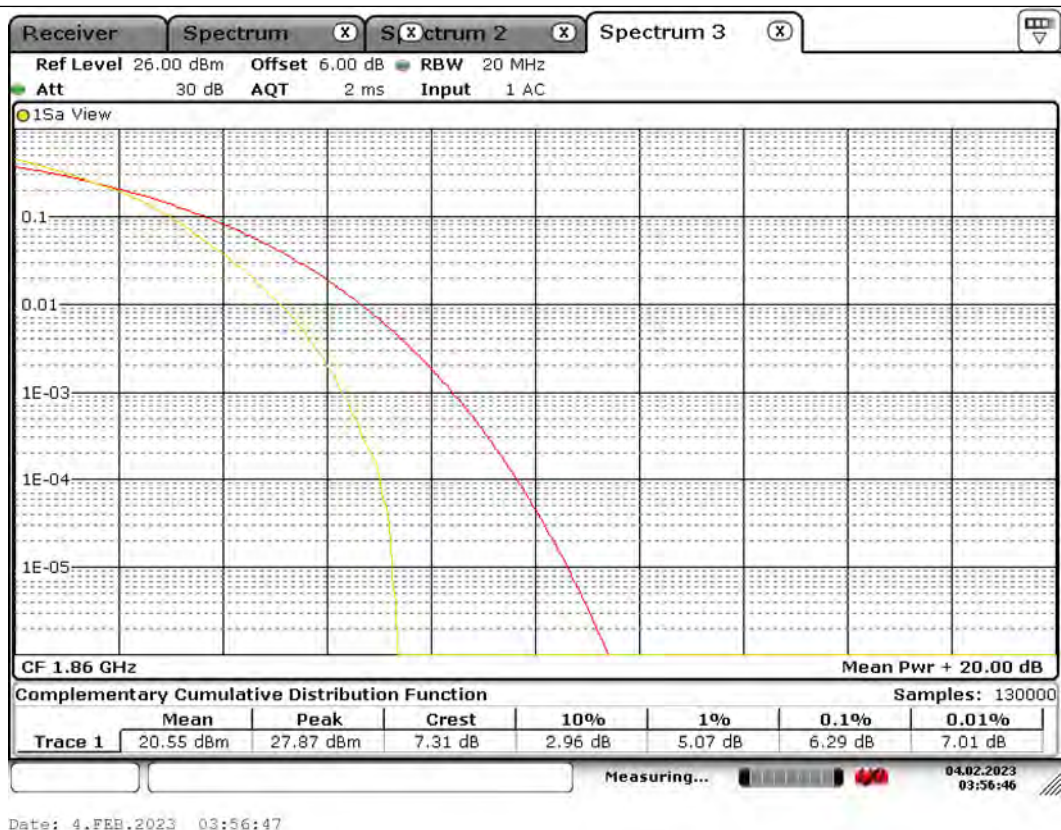
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Band2-20MHz-16QAM-18700-100RB#0

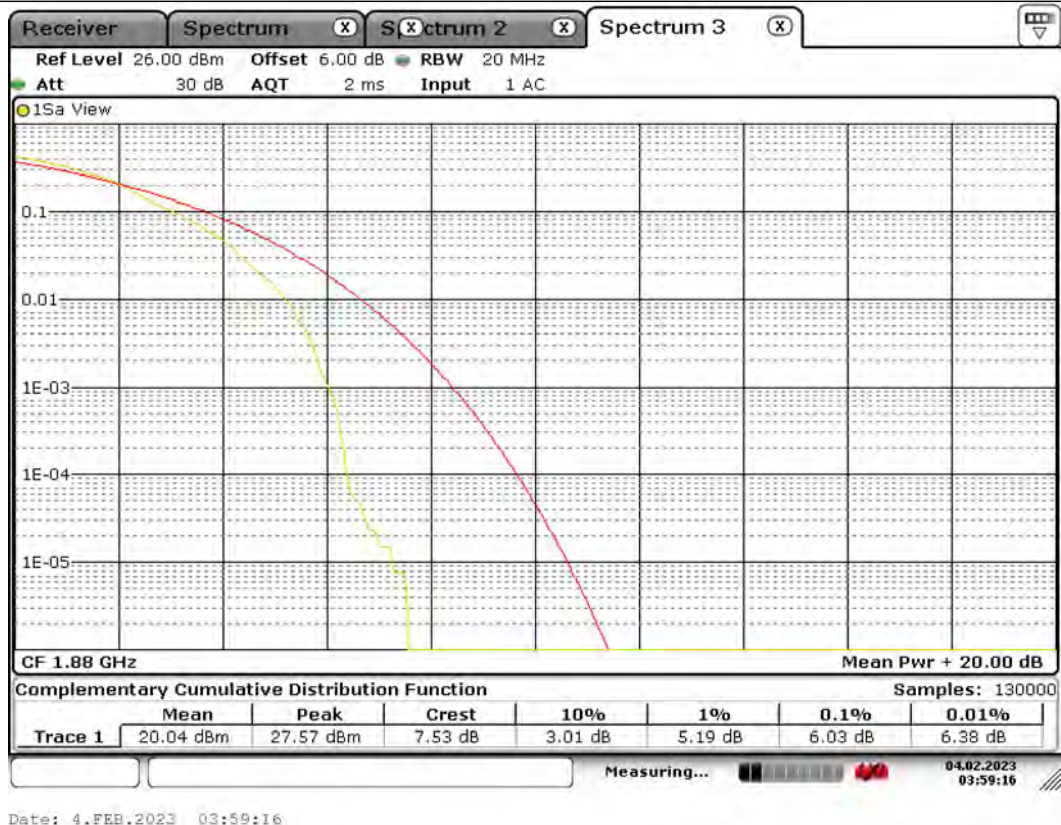


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VERITAS

Test Report No.: W7L-P23010016RF02



Band2-20MHz-16QAM-18900-1RB#0

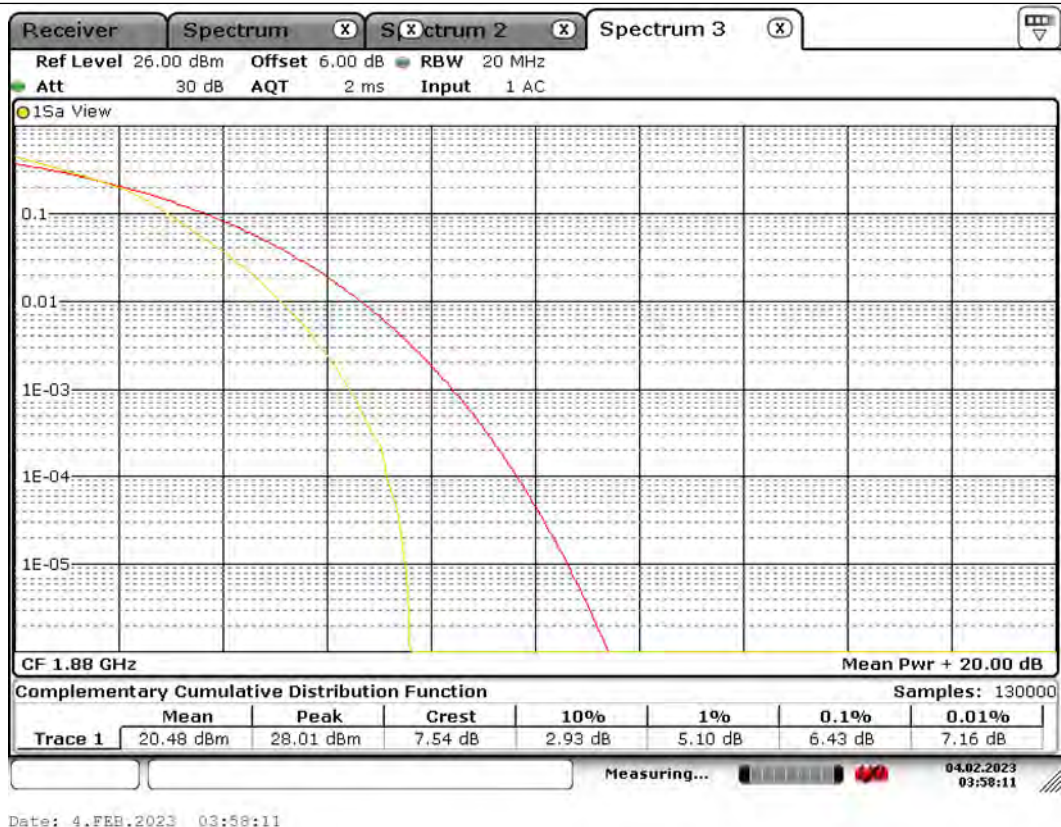


Band2-20MHz-16QAM-18900-100RB#0



BUREAU  
VERITAS

Test Report No.: W7L-P23010016RF02



Band2-20MHz-16QAM-19100-1RB#0

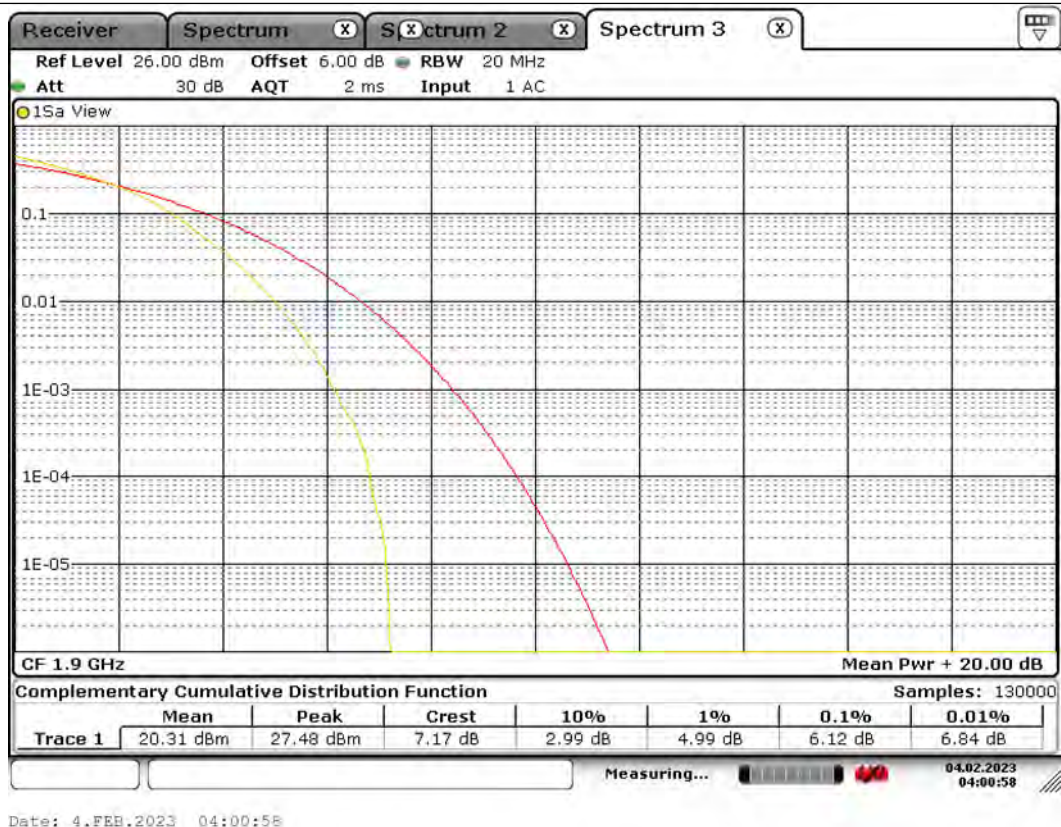


Band2-20MHz-16QAM-19100-100RB#0



BUREAU  
VERITAS

Test Report No.: W7L-P23010016RF02



Band2-20MHz-64QAM-18700-1RB#0

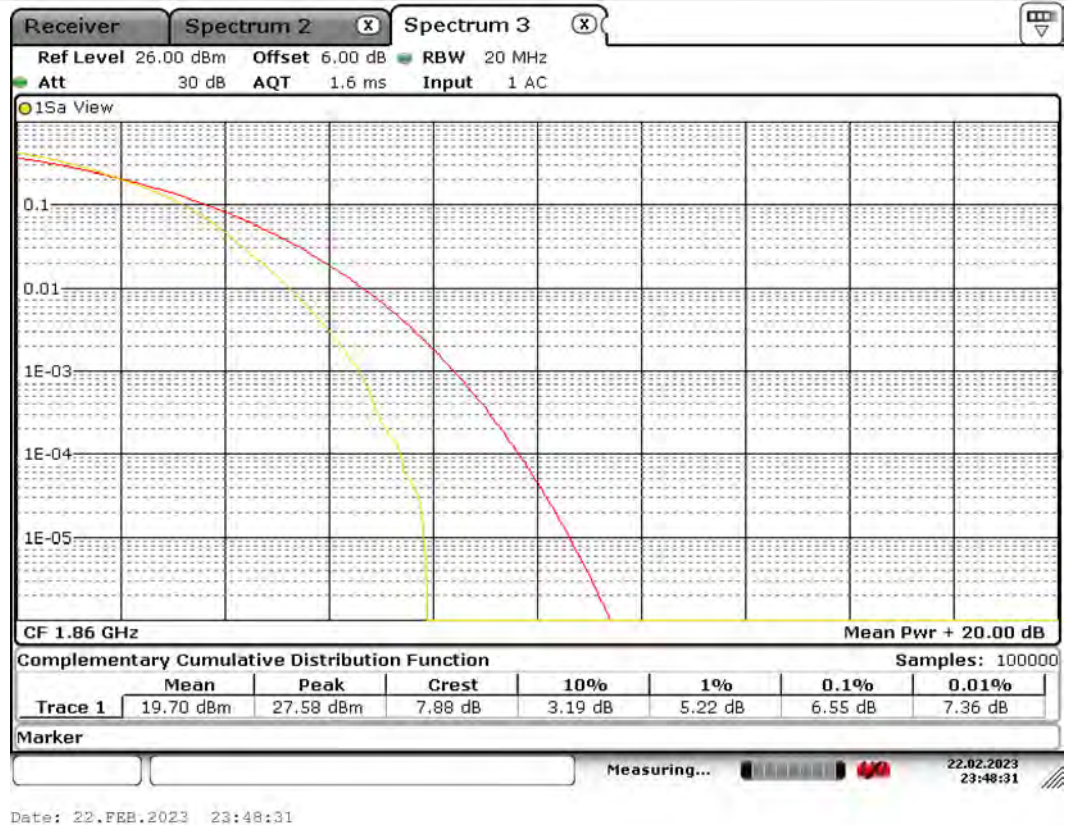


Band2-20MHz-64QAM-18700-100RB#0

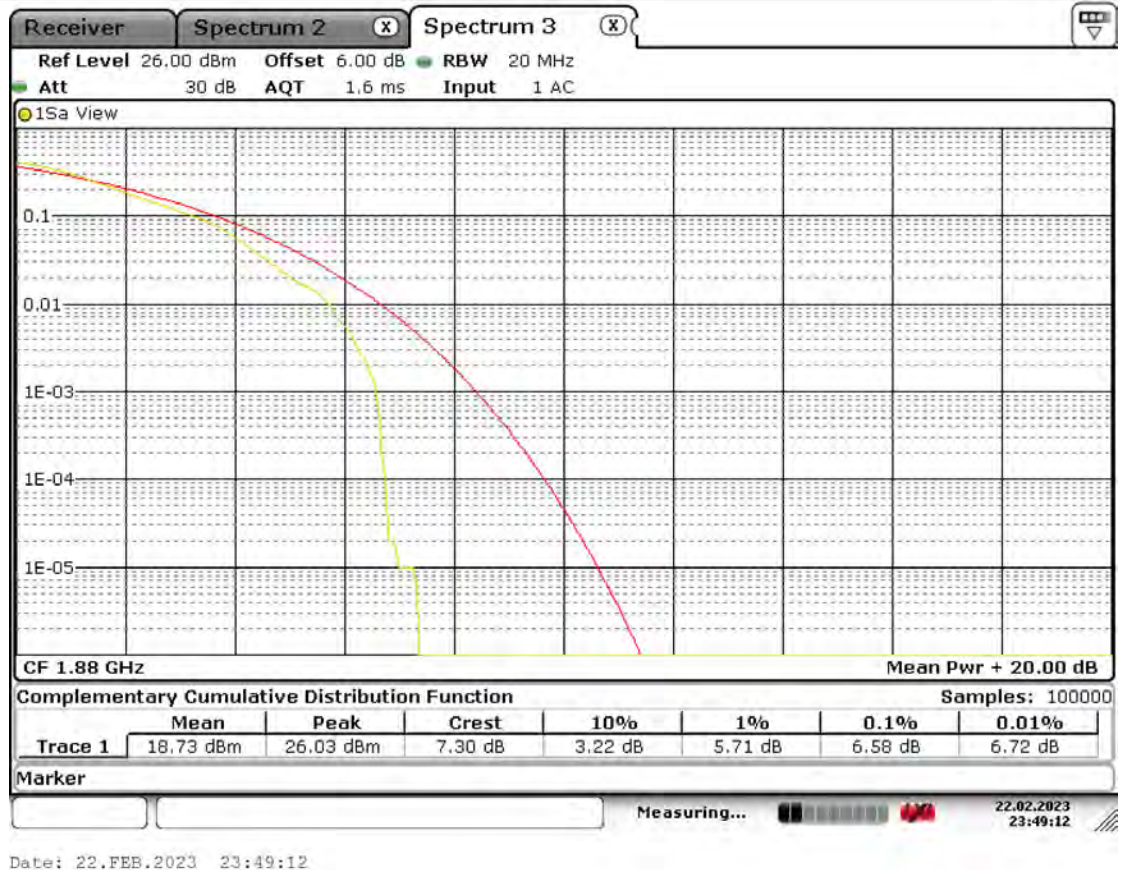


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VERITAS

Test Report No.: W7L-P23010016RF02



Band2-20MHz-64QAM-18900-1RB#0

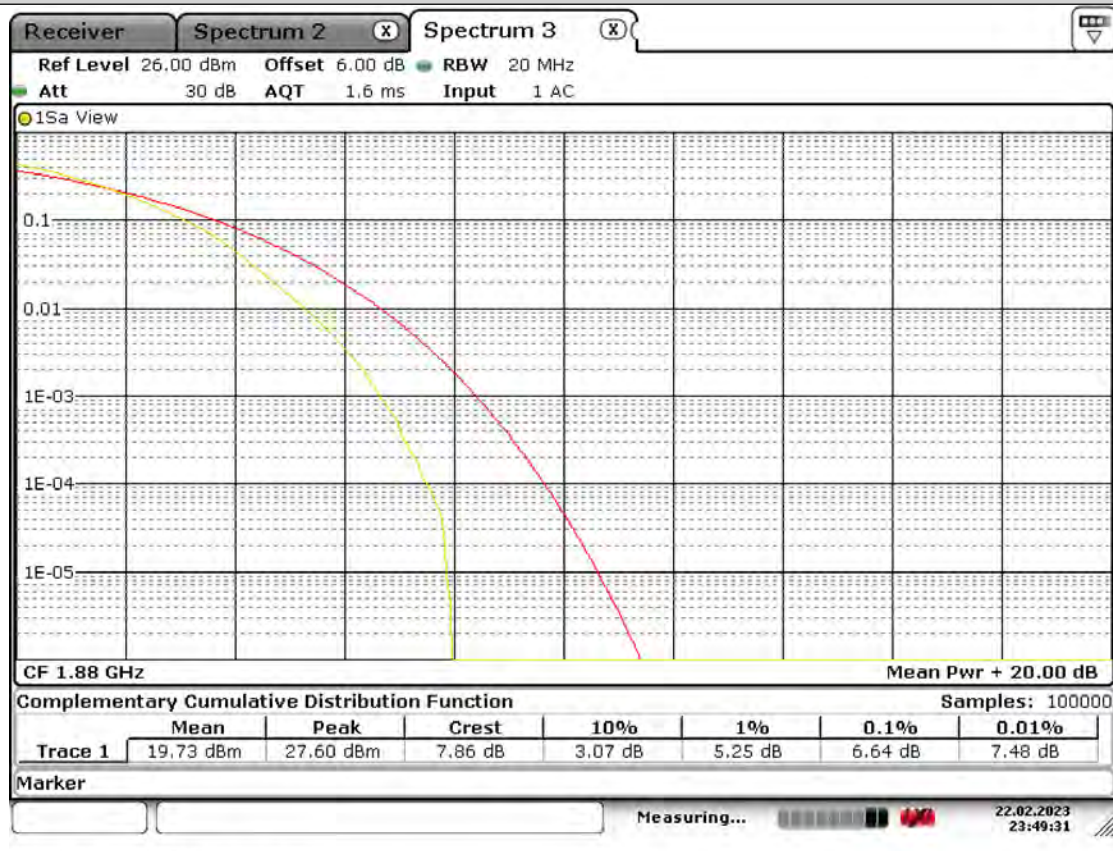




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VERITAS

Test Report No.: W7L-P23010016RF02

Band2-20MHz-64QAM-18900-100RB#0



Date: 22.FEB.2023 23:49:31

Band2-20MHz-64QAM-19100-1RB#0



BUREAU  
VERITAS

Test Report No.: W7L-P23010016RF02



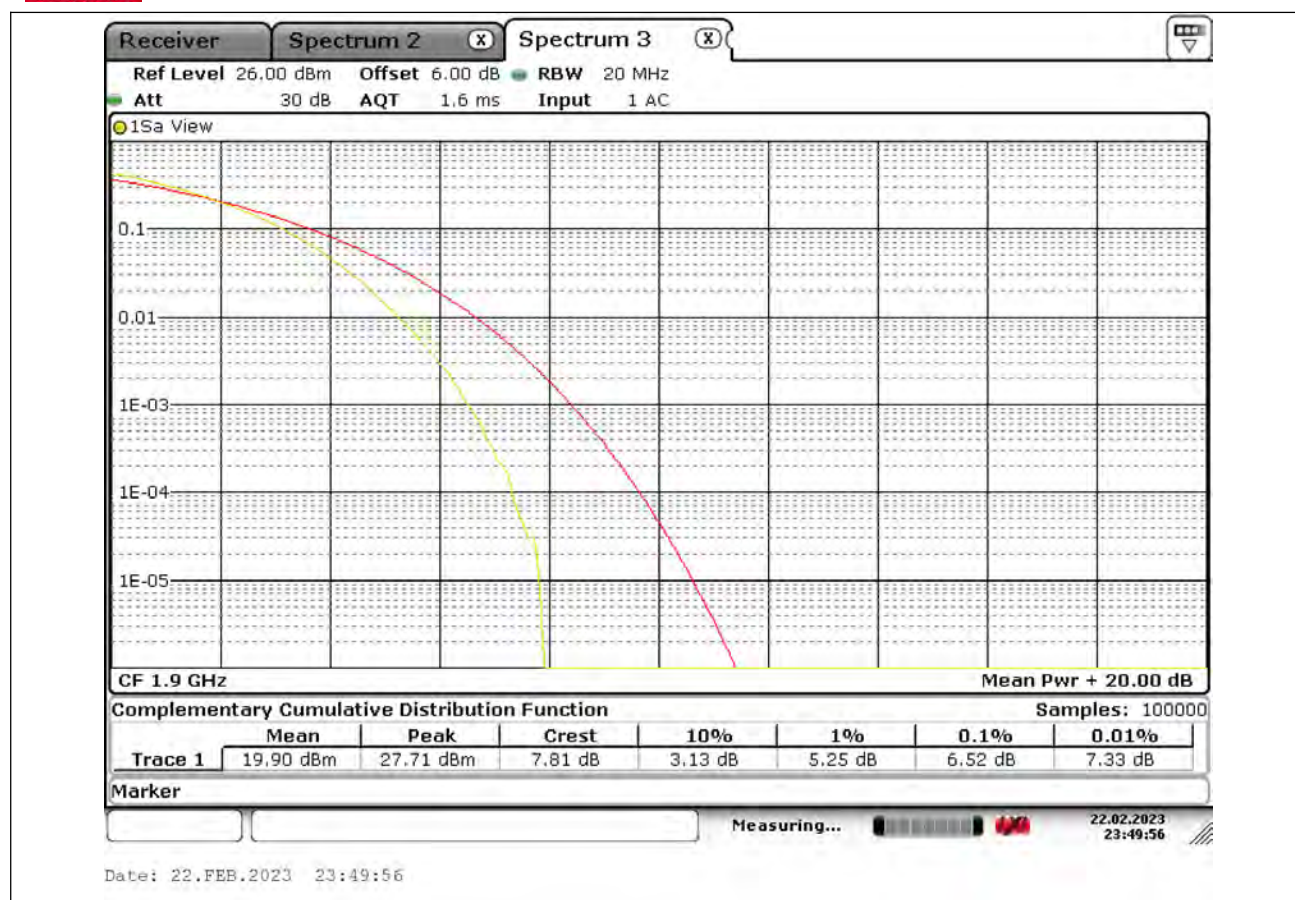
Date: 22.FEB.2023 23:50:11

Band2-20MHz-64QAM-19100-100RB#0



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VERITAS

Test Report No.: W7L-P23010016RF02



## 26DB BANDWIDTH AND OCCUPIED BANDWIDTH

### Test Result

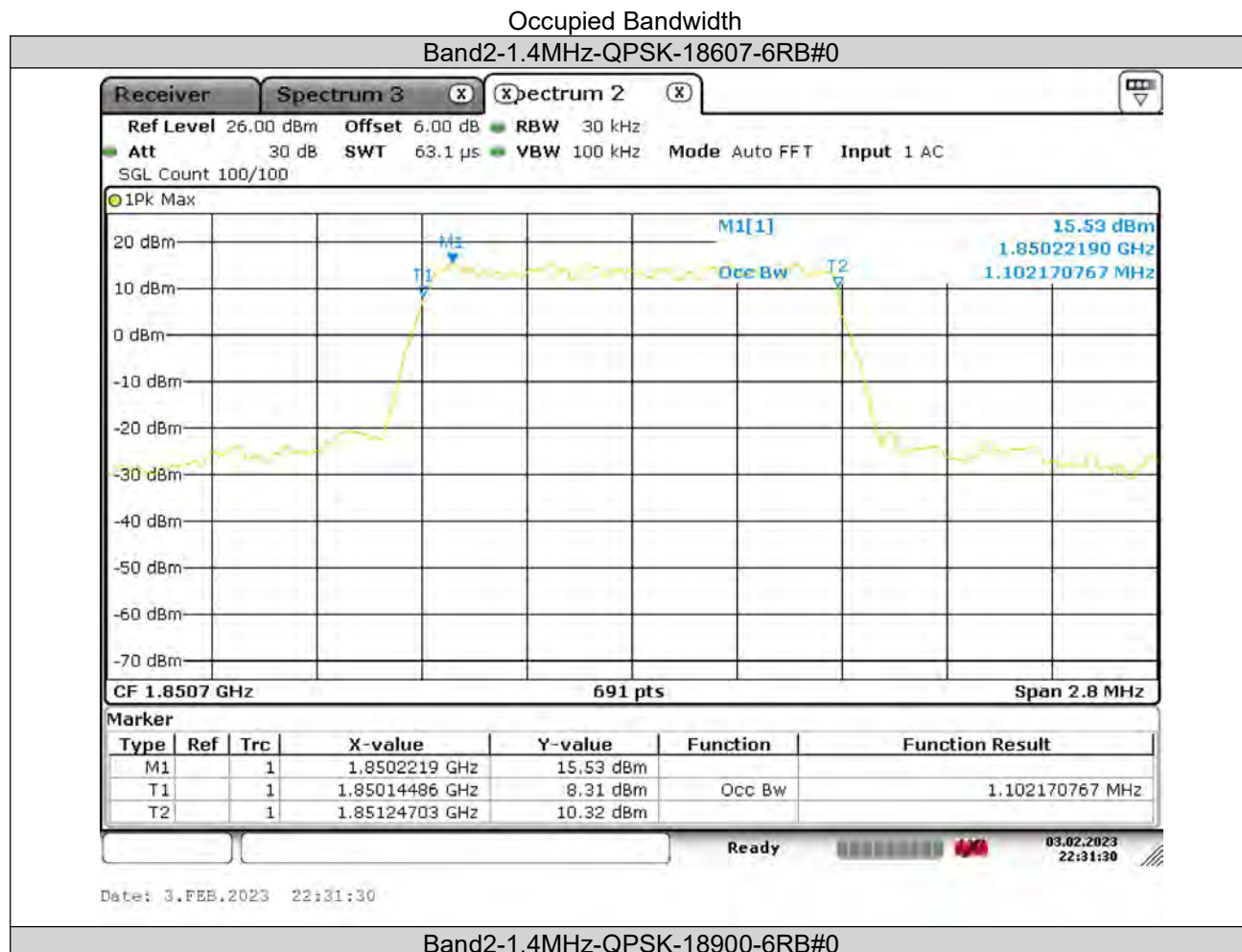
| Band  | Bandwidth | Modulation | Channel | RB Configuration | Occupied Bandwidth (MHz) | 26dB Bandwidth (MHz) | Verdict |
|-------|-----------|------------|---------|------------------|--------------------------|----------------------|---------|
| Band2 | 1.4MHz    | QPSK       | 18607   | 6RB#0            | 1.102                    | 1.248                | PASS    |
| Band2 | 1.4MHz    | QPSK       | 18900   | 6RB#0            | 1.094                    | 1.2359               | PASS    |
| Band2 | 1.4MHz    | QPSK       | 19193   | 6RB#0            | 1.098                    | 1.2399               | PASS    |
| Band2 | 1.4MHz    | 16QAM      | 18607   | 6RB#0            | 1.098                    | 1.248                | PASS    |
| Band2 | 1.4MHz    | 16QAM      | 18900   | 6RB#0            | 1.098                    | 1.2399               | PASS    |
| Band2 | 1.4MHz    | 16QAM      | 19193   | 6RB#0            | 1.094                    | 1.2399               | PASS    |
| Band2 | 3MHz      | QPSK       | 18615   | 15RB#0           | 2.726                    | 3.0564               | PASS    |
| Band2 | 3MHz      | QPSK       | 18900   | 15RB#0           | 2.718                    | 3.0738               | PASS    |
| Band2 | 3MHz      | QPSK       | 19185   | 15RB#0           | 2.718                    | 3.1085               | PASS    |
| Band2 | 3MHz      | 16QAM      | 18615   | 15RB#0           | 2.718                    | 3.0738               | PASS    |
| Band2 | 3MHz      | 16QAM      | 18900   | 15RB#0           | 2.753                    | 3.0391               | PASS    |
| Band2 | 3MHz      | 16QAM      | 19185   | 15RB#0           | 2.700                    | 3.0825               | PASS    |
| Band2 | 5MHz      | QPSK       | 18625   | 25RB#0           | 4.486                    | 4.935                | PASS    |
| Band2 | 5MHz      | QPSK       | 18900   | 25RB#0           | 4.486                    | 4.891                | PASS    |
| Band2 | 5MHz      | QPSK       | 19175   | 25RB#0           | 4.486                    | 4.863                | PASS    |
| Band2 | 5MHz      | 16QAM      | 18625   | 25RB#0           | 4.472                    | 4.935                | PASS    |
| Band2 | 5MHz      | 16QAM      | 18900   | 25RB#0           | 4.515                    | 4.863                | PASS    |
| Band2 | 5MHz      | 16QAM      | 19175   | 25RB#0           | 4.472                    | 4.891                | PASS    |
| Band2 | 10MHz     | QPSK       | 18650   | 50RB#0           | 9.030                    | 9.783                | PASS    |
| Band2 | 10MHz     | QPSK       | 18900   | 50RB#0           | 9.059                    | 9.725                | PASS    |
| Band2 | 10MHz     | QPSK       | 19150   | 50RB#0           | 9.088                    | 9.783                | PASS    |
| Band2 | 10MHz     | 16QAM      | 18650   | 50RB#0           | 9.001                    | 9.841                | PASS    |
| Band2 | 10MHz     | 16QAM      | 18900   | 50RB#0           | 9.030                    | 9.725                | PASS    |
| Band2 | 10MHz     | 16QAM      | 19150   | 50RB#0           | 9.059                    | 9.957                | PASS    |
| Band2 | 15MHz     | QPSK       | 18675   | 75RB#0           | 13.502                   | 14.718               | PASS    |
| Band2 | 15MHz     | QPSK       | 18900   | 75RB#0           | 13.459                   | 14.544               | PASS    |
| Band2 | 15MHz     | QPSK       | 19125   | 75RB#0           | 13.502                   | 14.588               | PASS    |
| Band2 | 15MHz     | 16QAM      | 18675   | 75RB#0           | 13.502                   | 14.457               | PASS    |
| Band2 | 15MHz     | 16QAM      | 18900   | 75RB#0           | 13.459                   | 14.414               | PASS    |
| Band2 | 15MHz     | 16QAM      | 19125   | 75RB#0           | 13.459                   | 14.414               | PASS    |
| Band2 | 20MHz     | QPSK       | 18700   | 100RB#0          | 18.350                   | 20.318               | PASS    |
| Band2 | 20MHz     | QPSK       | 18900   | 100RB#0          | 18.466                   | 20.376               | PASS    |
| Band2 | 20MHz     | QPSK       | 19100   | 100RB#0          | 18.408                   | 20.203               | PASS    |
| Band2 | 20MHz     | 16QAM      | 18700   | 100RB#0          | 18.466                   | 20.145               | PASS    |
| Band2 | 20MHz     | 16QAM      | 18900   | 100RB#0          | 18.408                   | 20.203               | PASS    |
| Band2 | 20MHz     | 16QAM      | 19100   | 100RB#0          | 18.408                   | 20.203               | PASS    |
| Band2 | 1.4MHz    | 64QAM      | 18607   | 6RB#0            | 1.102                    | 1.2318               | PASS    |
| Band2 | 1.4MHz    | 64QAM      | 18900   | 6RB#0            | 1.090                    | 1.2318               | PASS    |
| Band2 | 1.4MHz    | 64QAM      | 19193   | 6RB#0            | 1.090                    | 1.248                | PASS    |
| Band2 | 3MHz      | 64QAM      | 18615   | 15RB#0           | 2.726                    | 3.0304               | PASS    |
| Band2 | 3MHz      | 64QAM      | 18900   | 15RB#0           | 2.709                    | 3.0391               | PASS    |



**Test Report No.: W7L-P23010016RF02**

|       |       |       |       |         |        |        |      |
|-------|-------|-------|-------|---------|--------|--------|------|
| Band2 | 3MHz  | 64QAM | 19185 | 15RB#0  | 2.735  | 3.0825 | PASS |
| Band2 | 5MHz  | 64QAM | 18625 | 25RB#0  | 4.486  | 4.964  | PASS |
| Band2 | 5MHz  | 64QAM | 18900 | 25RB#0  | 4.501  | 4.935  | PASS |
| Band2 | 5MHz  | 64QAM | 19175 | 25RB#0  | 4.486  | 4.949  | PASS |
| Band2 | 10MHz | 64QAM | 18650 | 50RB#0  | 9.001  | 9.783  | PASS |
| Band2 | 10MHz | 64QAM | 18900 | 50RB#0  | 9.030  | 9.667  | PASS |
| Band2 | 10MHz | 64QAM | 19150 | 50RB#0  | 9.059  | 9.986  | PASS |
| Band2 | 15MHz | 64QAM | 18675 | 75RB#0  | 13.459 | 14.674 | PASS |
| Band2 | 15MHz | 64QAM | 18900 | 75RB#0  | 13.459 | 14.848 | PASS |
| Band2 | 15MHz | 64QAM | 19125 | 75RB#0  | 13.415 | 14.457 | PASS |
| Band2 | 20MHz | 64QAM | 18700 | 100RB#0 | 18.350 | 20.203 | PASS |
| Band2 | 20MHz | 64QAM | 18900 | 100RB#0 | 18.408 | 20.550 | PASS |
| Band2 | 20MHz | 64QAM | 19100 | 100RB#0 | 18.408 | 20.145 | PASS |

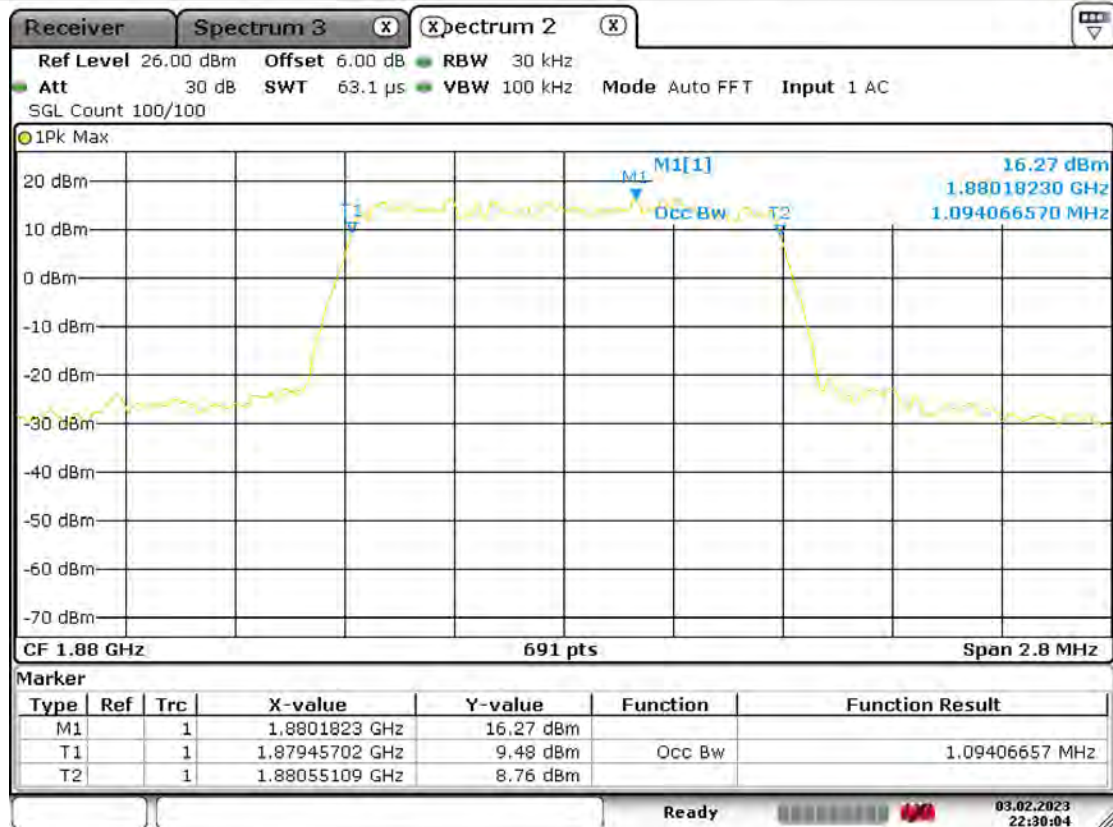
## Test Graphs





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Test Report No.: W7L-P23010016RF02



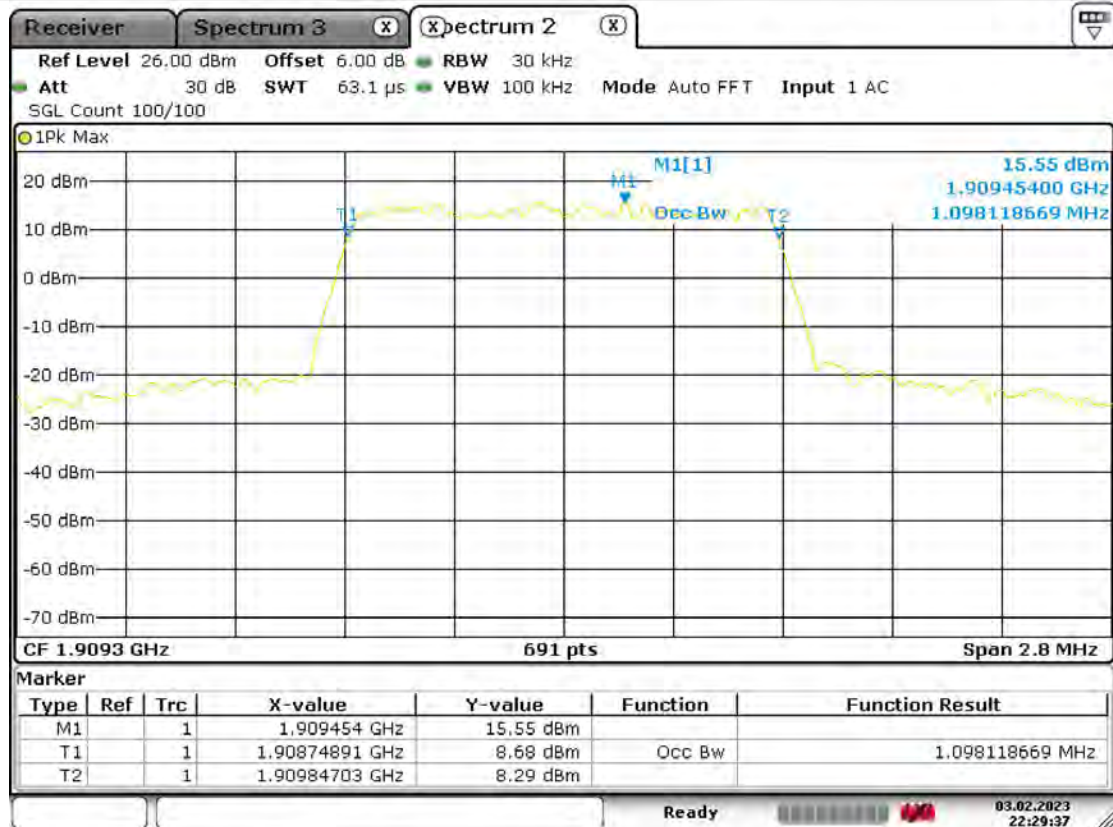
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Band2-1.4MHz-QPSK-19193-6RB#0



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Test Report No.: W7L-P23010016RF02



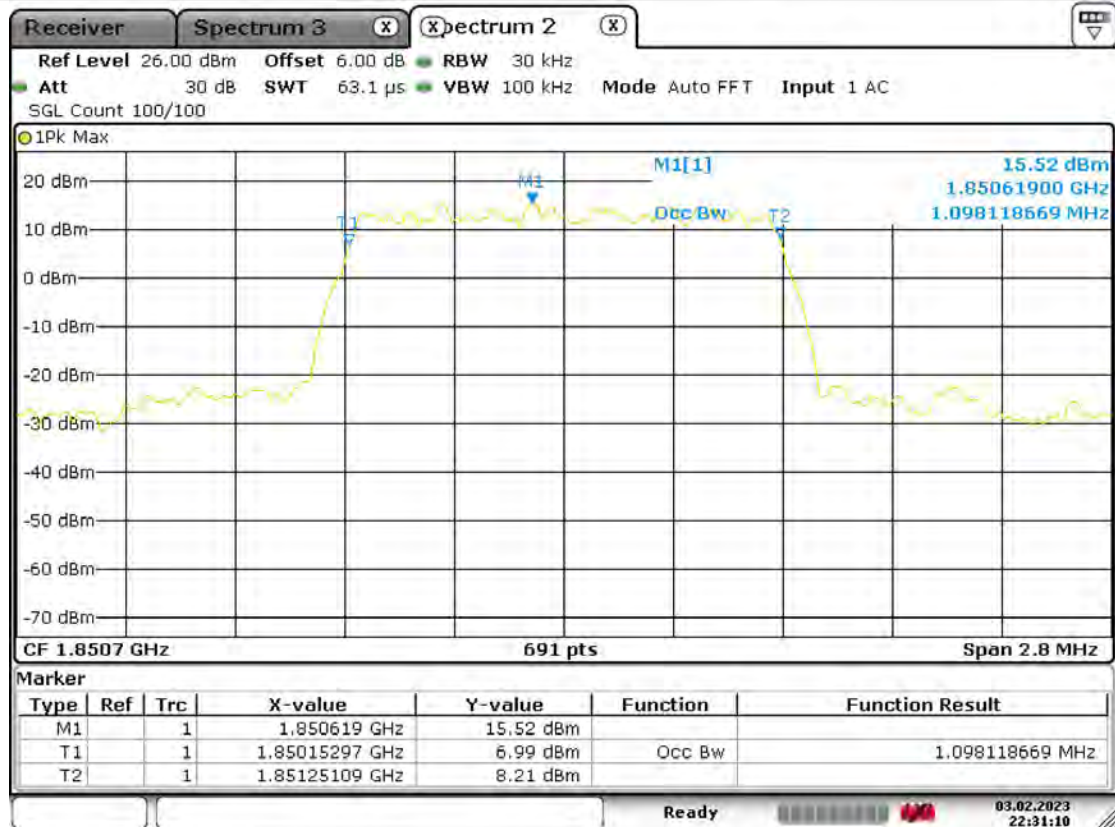
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Band2-1.4MHz-16QAM-18607-6RB#0



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Test Report No.: W7L-P23010016RF02



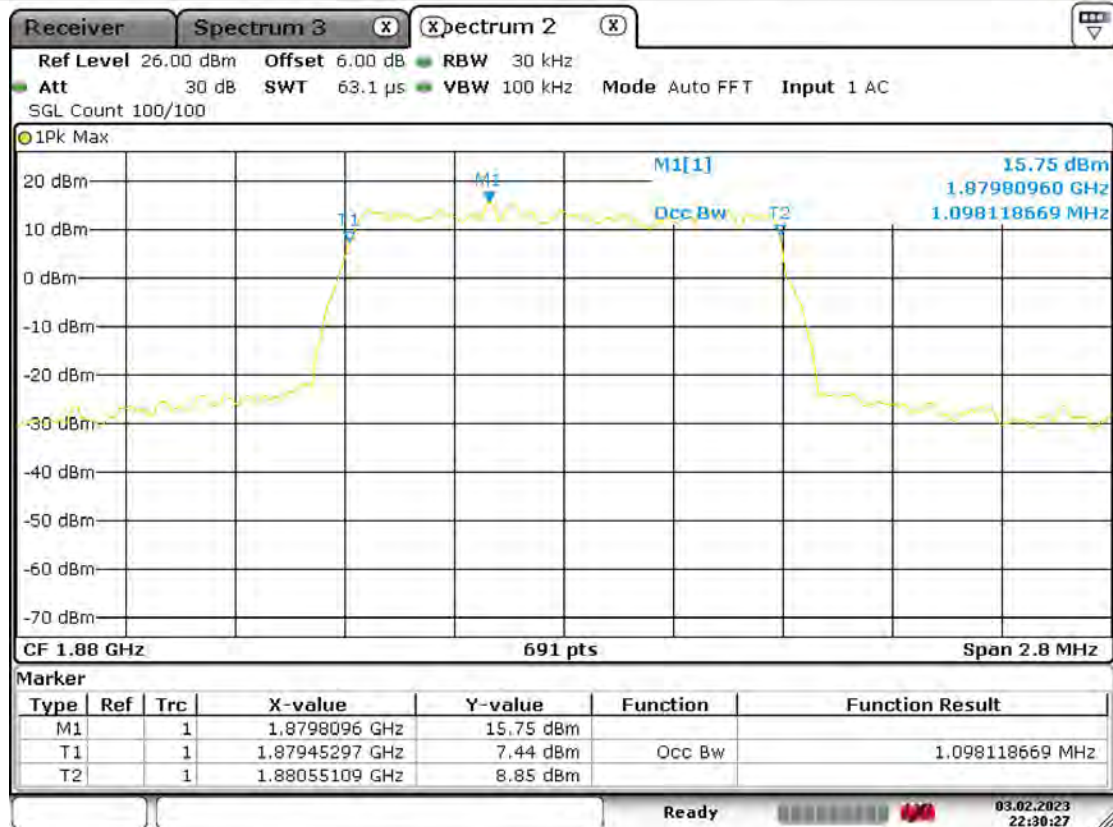
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Band2-1.4MHz-16QAM-18900-6RB#0



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Test Report No.: W7L-P23010016RF02



Date: 3.FEB.2023 22:30:27

Band2-1.4MHz-16QAM-19193-6RB#0