



# RF TEST REPORT

Report No.: SHATBL2602003W06

**Applicant** : Shenzhen Guangqun Communication Technology Co., Ltd.

**Product Name** : Tablet

**Brand Name** : Aorlym

**Model Name** : P12 Pro

**Series Model** : P12 Pro Max,P12 Pro Plus,P12 Pro Ultra

**FCC ID** : 2BTXRP12PROMAX

**Test Standard** : 47 CFR Part 2, Part 24E, Part 22H

**Date of Sample Arrival** : Dec.12, 2025

**Date of Test** : Dec.13, 2025~Mar.11, 2026

**Issue Date** : Mar.11, 2026

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**REVISION HISTORY**

| Rev. | Issue Date   | Revisions       | Revised by |
|------|--------------|-----------------|------------|
| 00   | Mar.11, 2026 | Initial Release |            |

## DECLARATION OF REPORT

1. The device has been tested by ATBL, and the test results show that the equipment under test (EUT) is in compliance with the requirements of 47 CFR Part 2, Part 24E, Part 22H. And it is applicable only to the tested sample identified in the report.
2. This report shall not be reproduced except in full, without the written approval of ATBL, this document only be altered or revised by ATBL, personal only, and shall be noted in the revision of the document.
3. The general information of EUT in this report is provided by the customer or manufacture, ATBL is only responsible for the test data but not for the information provided by the customer or manufacture.
4. The results in this report is only apply to the sample as tested under conditions. The customer or manufacturer is responsible for ensuring that the additional production units of this model have the same electrical and mechanical components.

## 1. GENERAL DESCRIPTION

### 1.1. Applicant

Name : Shenzhen Guangqun Communication Technology Co., Ltd.  
Address : Room 537Z, 5th Floor, Building 522, Bagualing Industrial Zone, Futian District,  
Shenzhen China

### 1.2. Manufacturer

Name : Shenzhen Guangqun Communication Technology Co., Ltd.  
Address : Room 537Z, 5th Floor, Building 522, Bagualing Industrial Zone, Futian District,  
Shenzhen China

### 1.3. Factory

Name : Shenzhen Guangqun Communication Technology Co., Ltd.  
Address : Room 537Z, 5th Floor, Building 522, Bagualing Industrial Zone, Futian District,  
Shenzhen China

#### 1.4. General Information of EUT

|                        |                                                                                                                                                                                                                                                                                        |                  |                      |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------------------|
| Test Sample            | 202512031003001                                                                                                                                                                                                                                                                        |                  |                      |
| Product Name:          | Tablet                                                                                                                                                                                                                                                                                 |                  |                      |
| Brand Name             | Aorlym                                                                                                                                                                                                                                                                                 |                  |                      |
| Model Name             | P12 Pro                                                                                                                                                                                                                                                                                |                  |                      |
| Series Model           | P12 Pro Max,P12 Pro Plus,P12 Pro Ultra                                                                                                                                                                                                                                                 |                  |                      |
| Model Difference       | The only differences are in model naming, color, and memory, while all other aspects remain the same.                                                                                                                                                                                  |                  |                      |
| Hardware Version:      | T30-T7300-V1.0-251015-QU                                                                                                                                                                                                                                                               |                  |                      |
| Software Version:      | P12 Pro-EEA-Android16.0-20260202                                                                                                                                                                                                                                                       |                  |                      |
| Support Networks:      | WCDMA, HSDPA, HSUPA                                                                                                                                                                                                                                                                    |                  |                      |
| Frequency Bands:       | <input checked="" type="checkbox"/> UMTS FDD Band II <input checked="" type="checkbox"/> UMTS FDD Band IV<br><input checked="" type="checkbox"/> UMTS FDD Band V (U.S. Bands)<br><input type="checkbox"/> UMTS FDD Band I <input type="checkbox"/> UMTS FDD Band VIII (Non-U.S. Bands) |                  |                      |
| Type of Modulation:    | BPSK,QPSK Modulation For WCDMA/HSDPA/HSUPA                                                                                                                                                                                                                                             |                  |                      |
| Frequency Range:       | WCDMA Band II:1852.4MHz-1907.6 MHz                                                                                                                                                                                                                                                     |                  |                      |
|                        | WCDMA Band IV:1710MHz-1755MHz                                                                                                                                                                                                                                                          |                  |                      |
|                        | WCDMA Band V:826.4-846.6 MHz                                                                                                                                                                                                                                                           |                  |                      |
| Emission Designator:   | WCDMA Band II:                                                                                                                                                                                                                                                                         | 4M18F9W          |                      |
|                        | WCDMA Band IV:                                                                                                                                                                                                                                                                         | 4M15F9W          |                      |
|                        | WCDMA Band V:                                                                                                                                                                                                                                                                          | 4M17F9W          |                      |
| Antenna Type:          | FPC Antenna                                                                                                                                                                                                                                                                            |                  |                      |
| Antenna gain:          | WCDMA II:-0.8dBi                                                                                                                                                                                                                                                                       | WCDMA IV:-1.3dBi | WCDMA Band V:-2.5dBi |
| Power supply           | DC 3.85V                                                                                                                                                                                                                                                                               |                  |                      |
| Adapter                | Input:AC100-240V~50/60Hz 0.6A<br>Output:5.0V== 3.0A 15.0W;9.0V== 2.0A 18.0W;12.0V== 1.5A 18.0W                                                                                                                                                                                         |                  |                      |
| Battery                | DC 3.85V 12000mAh                                                                                                                                                                                                                                                                      |                  |                      |
| SIM Card Description:  | The prototype supports dual cards                                                                                                                                                                                                                                                      |                  |                      |
| Connecting I/O Port(s) | Refer to the remark below.                                                                                                                                                                                                                                                             |                  |                      |

Remark:

The above information of EUT was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

### 1.5. Environmental conditions

|             |                         |         |
|-------------|-------------------------|---------|
| Temperature | Normal Temperature(NT): | 25°C    |
|             | High Temperature(HT):   | 55°C    |
|             | Low Temperature(LT):    | -20°C   |
| Voltage     | Normal Voltage(NV):     | 3.85V   |
|             | High Voltage(HV):       | 4.75V   |
|             | Low Voltage(LV):        | 3.66V   |
| Other       | Relative Humidity       | 55 %    |
|             | Air Pressure            | 101 kPa |

### 1.6. Modification of EUT

No modifications are made to the EUT during all test items.

### 1.7. Laboratory Information

|                                |   |                                                                                        |
|--------------------------------|---|----------------------------------------------------------------------------------------|
| <b>Company Name</b>            | : | Shanghai ATBL Technology Co., Ltd.                                                     |
| <b>Address</b>                 | : | Building 8, No.160 Basheng Road, Waigaoqiao Free Trade Zone, Pudong New Area, Shanghai |
| <b>Telephone</b>               | : | +86(0)21-51298625                                                                      |
| <b>FCC-Registration Number</b> | : | 485917                                                                                 |
| <b>Designation Number</b>      | : | CN1306                                                                                 |
| <b>A2LA Number</b>             | : | 6184.01                                                                                |
| <b>CNAS Number</b>             | : | CNAS L14531                                                                            |
| <b>ISED Designation Number</b> | : | 27371                                                                                  |
| <b>CAB identifier</b>          | : | CN0116                                                                                 |

### 1.8. Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

47 CFR Part 2, 22(H), 24(E)

ANSI C63.26-2015

FCC KDB 971168 D01 Power Meas License Digital Systems v03r01

Remark:

All test items were verified and recorded according to the standards and without any deviation during the test.

## 2. TEST CONFIGURATION OF EQUIPMENT UNDER TEST

### 2.1. Test Mode

| Band         | Tx/Rx Frequency           | RF Channel   |              |              |
|--------------|---------------------------|--------------|--------------|--------------|
|              |                           | Low(L)       | Middle(M)    | High(H)      |
| WCDMA band V | TX<br>(824 MHz ~ 849 MHz) | Channel 4132 | Channel 4182 | Channel 4233 |
|              |                           | 826.4 MHz    | 836.4 MHz    | 846.6 MHz    |

| Band          | Tx/Rx Frequency           | RF Channel   |              |              |
|---------------|---------------------------|--------------|--------------|--------------|
|               |                           | Low(L)       | Middle(M)    | High(H)      |
| WCDMA Band II | TX<br>(1850 MHz-1910 MHz) | Channel 9262 | Channel 9400 | Channel 9538 |
|               |                           | 1852.4 MHz   | 1880.0 MHz   | 1907.6 MHz   |

| Band          | Tx/Rx Frequency           | RF Channel   |              |              |
|---------------|---------------------------|--------------|--------------|--------------|
|               |                           | Low(L)       | Middle(M)    | High(H)      |
| WCDMA Band IV | TX<br>(1710 MHz-1755 MHz) | Channel 1312 | Channel 1412 | Channel 1513 |
|               |                           | 1712.4 MHz   | 1732.4 MHz   | 1752.6 MHz   |

Pre-scan all bandwidth and RB, find worse case mode are chosen to the report, the worse mode applicability and tested channel detail as below:

| Band               | Radiated          | Conducted         |
|--------------------|-------------------|-------------------|
| WCDMA Band II/V/IV | RMC 12.2kbps Link | RMC 12.2kbps Link |

The device supports MPR to solve linearity issues (ACLR or SEM) due to the higher peak-to-average ratios (PAR) of the HSUPA signal. This prevents saturating the full range of the TX DAC inside of device and provides a reduced power output to the RF transceiver chip according to the Cubic Metric (a function of the combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH).

When E-DPDCH channels are present the beta gains on those channels are reduced firsts to try to get the power under the allowed limit. If the beta gains are lowered as far as possible, then a hard limiting is applied at the maximum allowed level.

The SW currently recalculates the cubic metric every time the beta gains on the E-DPDCH are reduced. The cubic metric will likely get lower each time this is done .However, there is no reported reduction of maximum output power in the HSUPA mode since the device also provides a compensate for the power back-off by increasing the gain of TX\_AGC in the transceiver (PA) device.

The end effect is that the DUT output power is identical to the case where there is no MPR in the device.

## 2.2. Summary of Test Results

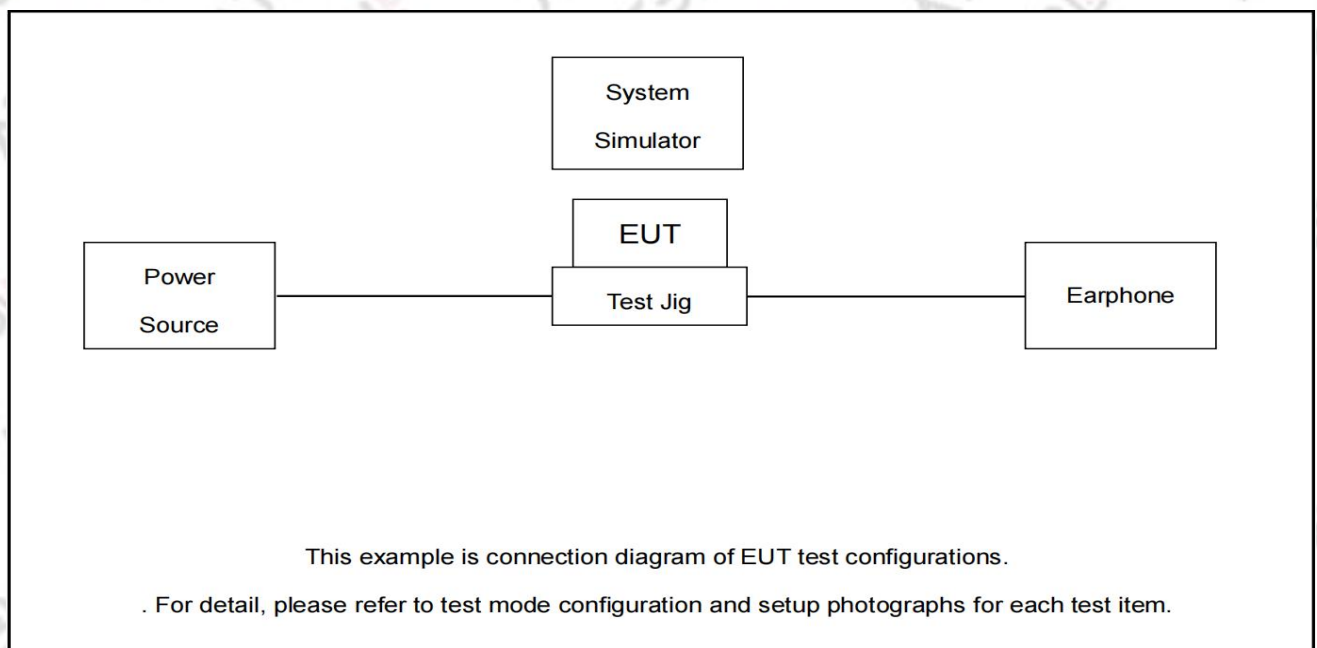
Conducted Test:

| Item | Test Description                                                | FCC Rules                       | Result |
|------|-----------------------------------------------------------------|---------------------------------|--------|
| 1    | Occupied Bandwidth                                              | §2.1049                         | Pass   |
| 2    | Band Edge / Spurious and Harmonic Emissions at Antenna Terminal | §2.1051, §22.917(a), §24.238(a) | Pass   |
| 5    | Conducted Output Power                                          | §2.1046                         | Pass   |
| 6    | Frequency stability / variation of ambient temperature          | §2.1055, § 22.355, §24.235      | Pass   |
| 7    | Peak- to- Average Ratio                                         | §24.232(d)                      | Pass   |
| 8    | Equivalent Isotropic Radiated Power                             | §24.232(c)                      | Pass   |

Radiated Test:

| Item | Test Description                         | FCC Rules                        | Result |
|------|------------------------------------------|----------------------------------|--------|
| 1    | Effective Radiated Power                 | §22.913(a)(5)                    | Pass   |
| 2    | Radiated Spurious and Harmonic Emissions | §2.1053, §22.917(a), §24.238(a), | Pass   |

## 2.3. Connection Diagram of Test System



#### 2.4. Support Unit used in test configuration and system

| NO. | Unit | Brand | Model | Description |
|-----|------|-------|-------|-------------|
| 1   | --   | --    | --    | --          |
| 2   | --   | --    | --    | --          |
|     |      |       |       |             |
|     |      |       |       |             |
|     |      |       |       |             |

## 2.5. Equipment List

### 2.5.1. For Conducted Test

| Kind of Equipment                   | Manufacturer | Type No.    | Serial No.    | Calibrated until | Calibrated due until | Cal. Interval |
|-------------------------------------|--------------|-------------|---------------|------------------|----------------------|---------------|
| Power sensor-Card reader            | Cesheng      | smu 1003    | 16I00054SN016 | 2025.03.19       | 2026.03.18           | 1 year        |
| Adjustable Attenuator               | Agilent      | 8494B       | MY42144015    | 2025.07.28       | 2026.07.27           | 1 year        |
| Adjustable Attenuator               | Agilent      | 8496B       | MY42143776    | 2025.07.28       | 2026.07.27           | 1 year        |
| Environmental Test Chamber          | KSON         | THS-B6C-150 | 9159K         | 2025.03.17       | 2026.03.16           | 1 year        |
| Signal analyzer                     | Keysight     | N9020A      | MY50510136    | 2025.07.18       | 2026.07.17           | 1 year        |
| Vector signal generator             | Agilent      | N5182A      | MY48180764    | 2025.07.18       | 2026.07.17           | 1 year        |
| Analog signal generator             | Keysight     | N5182B      | MY57300196    | 2025.07.18       | 2026.07.17           | 1 year        |
| Wideband radio communication tester | R&S          | CMW500      | 101331        | 2025.07.28       | 2026.07.27           | 1 year        |
| Switch Box                          | Cesheng      | smu 1003    | WCS20221215   | 2025.03.19       | 2026.03.18           | 1 year        |
| Thermometer                         | DeLi         | N/A         | N/A           | 2025.08.01       | 2026.07.31           | 1 year        |
| Test Software                       | Cesheng      | WCS-WC N    | N/A           | N/A              | N/A                  | N/A           |

### 2.5.2. For Radiated Spurious Emission

| Kind of Equipment                             | Manufacturer | Type No.                | Serial No.           | Calibrated until | Calibrated due until | Cal. Interval |
|-----------------------------------------------|--------------|-------------------------|----------------------|------------------|----------------------|---------------|
| Signal analyzer                               | Agilent      | N9020A                  | MY50200811           | 2025.03.17       | 2026.03.16           | 1 year        |
| Amplifier                                     | JPT          | JPA0118-5<br>5-303A     | 1910001800055<br>000 | 2025.03.24       | 2026.03.23           | 1 year        |
| Amplifier                                     | JPT          | JPA-10M1<br>G32         | 2101010003500<br>1   | 2025.03.17       | 2026.03.16           | 1 year        |
| Antenna/Turn table Controller                 | Brilliant    | N/A                     | N/A                  | N/A              | N/A                  | N/A           |
| Loop Antenna(9kHz-30MHz)                      | Daze         | ZN30900C                | 20077                | 2025.05.13       | 2026.05.12           | 1 year        |
| Bilog Antenna                                 | SCHWARZBECK  | VULB<br>9168            | 01174                | 2025.05.20       | 2026.05.19           | 1 year        |
| Broad-band Horn Antenna                       | SCHWARZBECK  | BBHA<br>9120D           | 02334                | 2025.05.20       | 2026.05.19           | 1 year        |
| Horn Antenna                                  | COM-POWER    | AH-1840                 | 10100008             | 2025.07.27       | 2026.07.26           | 1 year        |
| Thermometer                                   | DeLi         | N/A                     | N/A                  | 2025.08.01       | 2026.07.31           | 1 year        |
| Test Software                                 | FALA         | EMC-RI(V<br>er.4A2)     | N/A                  | N/A              | N/A                  | N/A           |
| Wideband radio communication tester           | R&S          | CMW500                  | 101331               | 2025.07.28       | 2026.07.27           | 1 year        |
| Spectrum analyzer                             | R&S          | FSV40-N                 | 101761               | 2025.07.28       | 2026.07.27           | 1 year        |
| Vector signal generator                       | Keysight     | N5182B                  | MY50200811           | 2025.07.28       | 2026.07.27           | 1 year        |
| Alternative Horn Antenna                      | Schwarzbeck  | BBHA<br>9120D           | 2802                 | 2025.07.28       | 2026.07.27           | 1 year        |
| Filter Box                                    | XingBo       | EZSVFU<br>1&EZSV<br>FU2 | N/A                  | N/A              | N/A                  |               |
| Substitute antenna<br>Bilog Antenna           | SCHWARZBECK  | VULB<br>9168            | 1449                 | 2025.05.20       | 2026.05.19           | 1 year        |
| Substitute antenna<br>Broad-band Horn Antenna | SCHWARZBECK  | BBHA<br>9120D           | 2659                 | 2025.05.20       | 2026.05.19           | 1 year        |

### 2.5.3. For AC Power-Line Conducted Emission

| Kind of Equipment                         | Manufacturer     | Type No.                         | Serial No. | Calibrated until | Calibrated due until | Cal. Interval |
|-------------------------------------------|------------------|----------------------------------|------------|------------------|----------------------|---------------|
| EMI Test Receiver                         | R&S              | ESPI                             | 100679     | 2025.03.17       | 2026.03.16           | 1 year        |
| LISN                                      | R&S              | ENV216                           | 101300     | 2025.03.17       | 2026.03.16           | 1 year        |
| LISN                                      | R&S              | ENV216                           | 100333     | 2025.03.17       | 2026.03.16           | 1 year        |
| CE Cable                                  | Chuangce<br>xing | 2M                               | EMI0014    | N/A              | N/A                  | N/A           |
| Temperature &<br>Humidity                 | Deli             | Deli                             | EMI0015    | 2025.08.01       | 2026.07.31           | 1 year        |
| Testing Software                          | FALA             | EZ-EMC(Ve<br>r.EMC-CON<br>3A1.1) | EMI0044    | N/A              | N/A                  | N/A           |
| Wideband radio<br>communication<br>tester | R&S              | CMW500                           | 101331     | 2025.07.28       | 2026.07.27           | 1 year        |

## 2.6. Measurement Uncertainty

The reported uncertainty of measurement  $y \pm U$ , where expanded uncertainty  $U$  is based on a standard uncertainty multiplied by a coverage factor of  $k=2$ , providing a level of confidence of approximately 95 %.

| No. | Item                          | Uncertainty             |
|-----|-------------------------------|-------------------------|
| 1   | Occupied Channel Bandwidth    | $\pm 4\%$               |
| 2   | Transmitter power conducted   | $\pm 0.56 \text{ dB}$   |
| 3   | Transmitter power Radiated    | $\pm 2.20 \text{ dB}$   |
| 4   | Conducted spurious emission   | $\pm 1.60 \text{ dB}$   |
| 5   | Radiated spurious emission    | $\pm 2.20 \text{ dB}$   |
| 6   | Temperature                   | $\pm 0.6^\circ\text{C}$ |
| 7   | Humidity                      | $\pm 2\%$               |
| 8   | DC and low frequency voltages | $\pm 0.05\%$            |
| 9   | Radio frequency error         | $\pm 3 \times 10^{-8}$  |

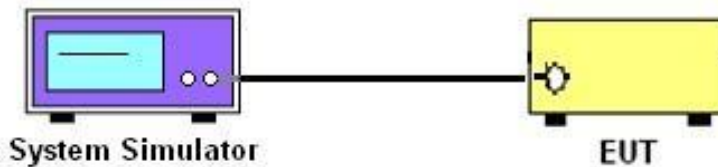
### 3. TEST RESULT

#### 3.1. Conducted Output Power and ERP/EIRP

##### 3.1.1. Test Limit

The substitution method, in ANSI/TIA-603-E-2016, was used for ERP/EIRP measurement, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v03. The ERP of mobile transmitters must not exceed 7 Watts (Cellular Band) and the EIRP of mobile transmitters are limited to 2 Watts (PCS Band).

##### 3.1.2. Test Setup



##### 3.1.3. Test Procedures

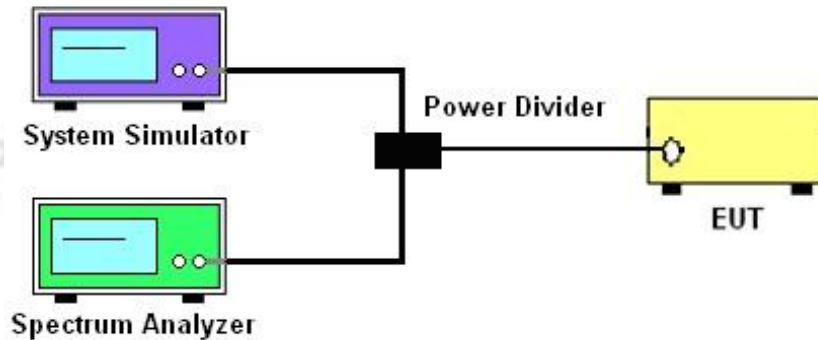
- 1).The testing follows ANSI C63.26 Section 5.2.
- 2).The transmitter output port was connected to the system simulator.
- 3).Set EUT at maximum power through the system simulator.
- 4).Select lowest, middle, and highest channels for each band and different modulation.
- 5).Measure and record the power level from the system simulator.

##### 3.1.4. Test Result

Please refer to the Appendix G1.

### 3.2. Peak-to-Average Ratio

#### 3.2.1. Test Setup



#### 3.2.2. Description of the PAR Measurement

Power Complementary Cumulative Distribution Function (CCDF) curves provide a means for characterizing the power peaks of a digitally modulated signal on a statistical basis. A CCDF curve depicts the probability of the peak signal amplitude exceeding the average power level. Most contemporary measurement instrumentation include the capability to produce CCDF curves for an input signal provided that the instrument's resolution bandwidth can be set wide enough to accommodate the entire input signal bandwidth. 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.

#### 3.2.3. Test Procedures

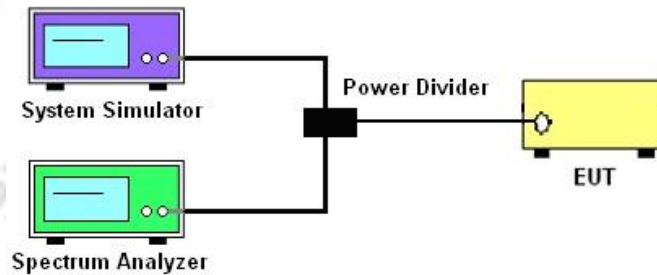
1. The testing follows ANSI C63.26 Section 5.2.3.4 (CCDF).
2. The EUT was connected to spectrum and system simulator via a power divider.
3. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
4. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
5. Record the deviation as Peak to Average Ratio.

#### 3.2.4. Test Result of Peak-to-Average Ratio

Please refer to the Appendix G2.

### 3.3. Occupied Bandwidth

#### 3.3.1. Test Setup



#### 3.3.2. Description of Occupied Bandwidth Measurement

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

The 26 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 26 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

#### 3.3.3. Test Procedures

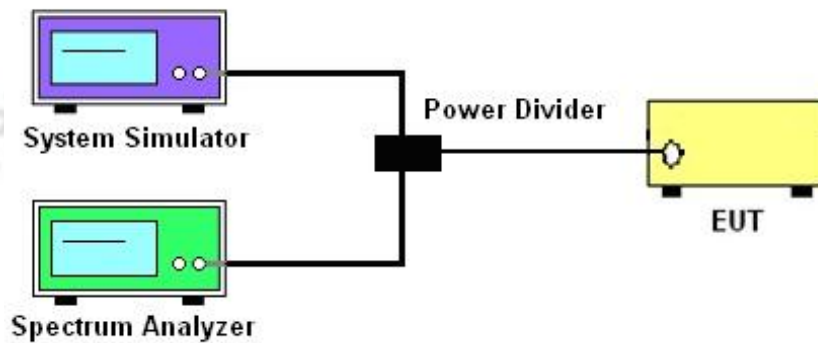
1. The testing follows ANSI C63.26 Section 5.4.
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the spectrum analyzer shall be between two and five times the anticipated OBW.
4. The nominal resolution bandwidth (RBW) shall be in the range of 1 to 5 % of the anticipated OBW, and the VBW shall be at least 3 times the RBW.
5. Set the detection mode to peak, and the trace mode to max hold.
6. Determine the reference value: Set the EUT to transmit a modulated signal. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace.(this is the reference value)
7. Determine the “-26 dB down amplitude” as equal to (Reference Value – X).
8. Place two markers, one at the lowest and the other at the highest frequency of the envelope of the spectral display such that each marker is at or slightly below the “-X dB down amplitude” determined in step 6. If a marker is below this “-X dB down amplitude” value it shall be placed as close as possible to this value. The OBW is the positive frequency difference between the two markers.
9. Use the 99 % power bandwidth function of the spectrum analyzer and report the measured bandwidth.

### 3.3.4. Test Result of Occupied Bandwidth

Please refer to the Appendix G3.

### 3.4. Conducted Band Edge

#### 3.4.1. Test Setup



#### 3.4.2. Description of Conducted Band Edge Measurement

##### 22.917(a):

For operations in the 824 – 849 MHz band, the FCC limit is  $43 + 10\log_{10}(P[\text{Watts}])$  dB below the transmitter power  $P(\text{Watts})$  in a 100kHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

##### 24.238 (a):

For operations in the 1850-1910 and 1930-1990 MHz band, the FCC limit is  $43 + 10\log_{10}(P[\text{Watts}])$  dB below the transmitter power  $P(\text{Watts})$  in a 1MHz bandwidth. However, 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.

##### 27.53 (g):

For operations in the 600MHz band and 698 -746 MHz band, the FCC limit is  $43 + 10\log_{10}(P[\text{Watts}])$  dB below the transmitter power  $P(\text{Watts})$  in a 100 kHz bandwidth. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

##### 27.53 (h):

For operations in the 1710 – 1755 MHz and 1710 – 1780 MHz band, the FCC limit is  $43 + 10\log_{10}(P[\text{Watts}])$  dB below the transmitter power  $P(\text{Watts})$  in a 1 MHz bandwidth. However, in the 1MHz bands immediately outside and adjacent to the licensee's frequency block, a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed.

### 3.4.3. Test Procedures

1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The band edges of low and high channels for the highest RF powers were measured.
4. Set RBW  $\geq$  1% EBW in the 1MHz band immediately outside and adjacent to the band edge.
5. Beyond the 1 MHz band from the band edge, RBW=1MHz was used or a narrower RBW was used and the measured power was integrated over the full required measurement bandwidth of 1 MHz.
6. Set spectrum analyzer with RMS detector.
7. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
8. Checked that all the results comply with the emission limit line.

Example:

The limit line is derived from  $43 + 10\log(P)$  dB below the transmitter power P(Watts)  
 $= P(W) - [43 + 10\log(P)]$  (dB)  
 $= [30 + 10\log(P)]$  (dBm) -  $[43 + 10\log(P)]$  (dB) = -13dBm

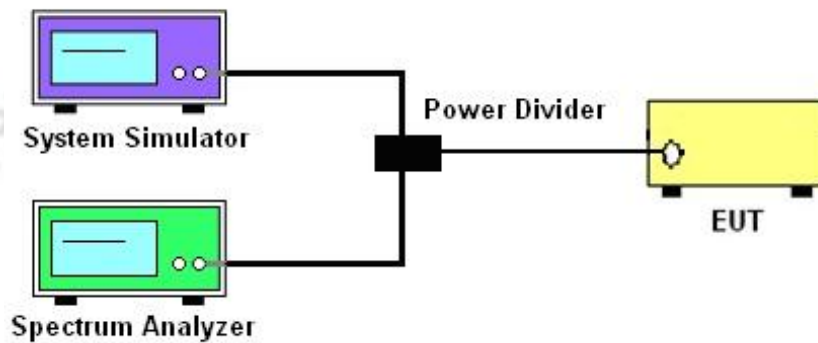
9. When using the integration method, the starting frequency of the integration shall be centered at one-half of the RBW away from the band edge.

### 3.4.4. Test Result of Conducted Band Edge

Please refer to the Appendix G4.

### 3.5. Conducted Spurious Emission

#### 3.5.1. Test Setup



#### 3.5.2. Description of Conducted Spurious Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least  $43 + 10 \log(P)$  dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10th harmonic.

#### 3.5.3. Test Procedures

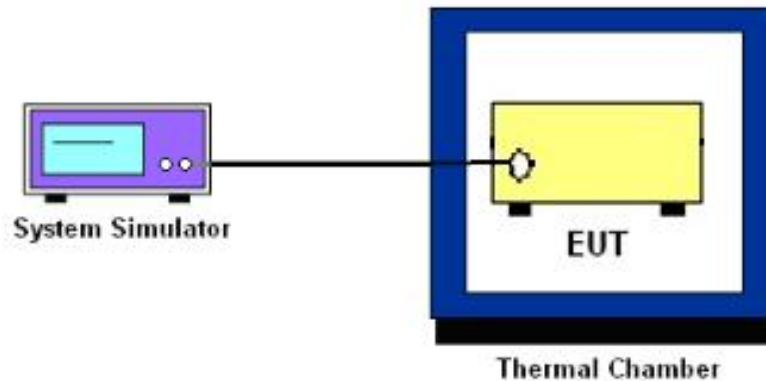
1. The testing follows ANSI C63.26 section 5.7
2. The EUT was connected to spectrum analyzer and system simulator via a power divider.
3. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
4. The middle channel for the highest RF power within the transmitting frequency was measured.
5. The conducted spurious emission for the whole frequency range was taken.
6. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz.
7. Set spectrum analyzer with RMS detector.
8. Taking the record of maximum spurious emission.
9. The RF fundamental frequency should be excluded against the limit line in the operating frequency band
10. The limit line is derived from  $43 + 10\log(P)$  dB below the transmitter power P(Watts)  
 $= P(W) - [43 + 10\log(P)] \text{ (dB)} = [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)} = -13\text{dBm}.$

#### 3.5.4. Test Result of Conducted Spurious Emission

Please refer to the Appendix G5.

### 3.6. Frequency Stability

#### 3.6.1. Test Setup



#### 3.6.2. Description of Frequency Stability Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within  $\pm 0.00025\%$  ( $\pm 2.5\text{ppm}$ ) of the center frequency.

#### 3.6.3. Test Procedures for Temperature Variation

1. The testing follows ANSI C63.26 section 5.6.4.
2. The EUT was set up in the thermal chamber and connected with the system simulator.
3. With power OFF, the temperature was decreased to  $-30^{\circ}\text{C}$  and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.
4. With power OFF, the temperature was raised in  $10^{\circ}\text{C}$  step up to  $50^{\circ}\text{C}$ . The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

#### 3.6.4. Test Procedures for Voltage Variation

1. The testing follows ANSI C63.26 section 5.6.5
2. The EUT was placed in a temperature chamber at  $20 \pm 5^{\circ}\text{C}$  and connected with the system simulator.
3. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value for other than hand carried battery equipment.
4. For hand carried, battery powered equipment, reduce the primary ac or dc supply voltage to the battery operating end point, which shall be specified by the manufacturer.
5. The variation in frequency was measured for the worst case.

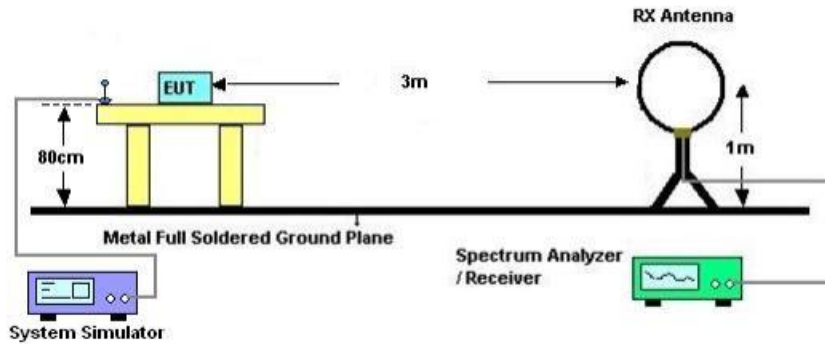
#### 3.6.5. Test Result of Frequency Stability

Please refer to the Appendix G6.

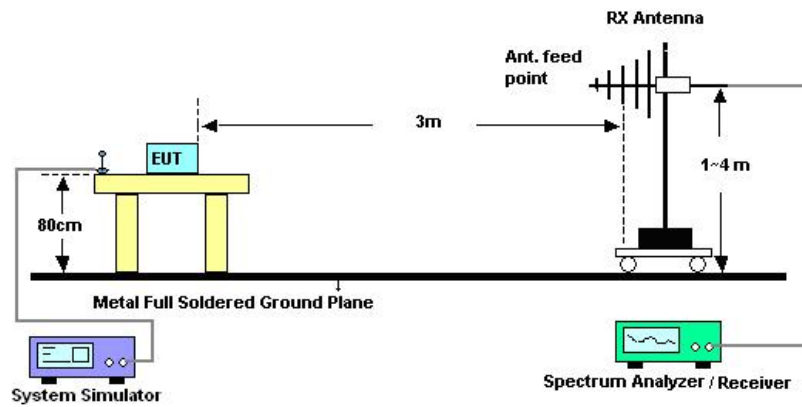
### 3.7. Radiated Spurious Emission

#### 3.7.1. Test Setup

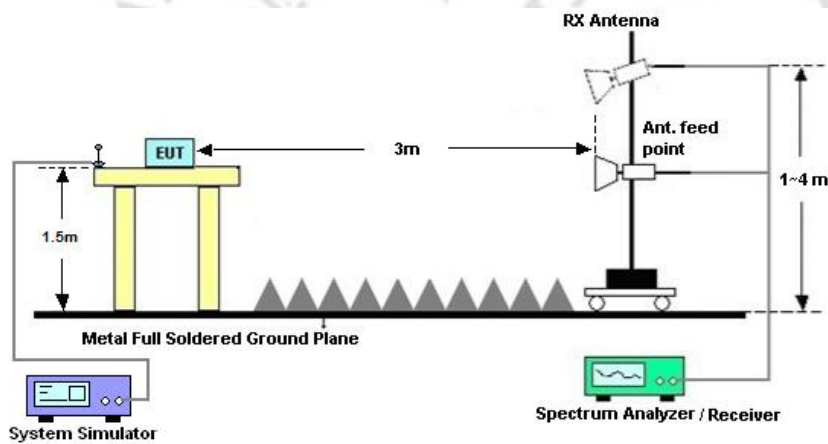
##### 3.7.1.1. For radiated test below 30MHz



##### 3.7.1.2. For radiated test from 30MHz to 1GHz



##### 3.7.1.3. For radiated test above 1GHz



### 3.7.2. Description of Radiated Spurious Emission

The radiated spurious emission was measured by substitution method according to ANSI C63.26.

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least  $43 + 10 \log (P)$  dB.

The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

### 3.7.3. Test Procedures

1. The testing follows ANSI C63.26 Section 5.5
2. The EUT was placed on a turntable with 0.8 meter height for frequency below 1GHz and 1.5 meter height for frequency above 1GHz respectively above ground.
3. The EUT was set 3 meters from the receiving antenna mounted on the antenna tower.
4. The table was rotated 360 degrees to determine the position of the highest spurious emission.
5. The height of the receiving antenna is varied between 1m to 4m to search the maximum spurious emission for both horizontal and vertical polarizations.
6. During the measurement, the system simulator parameters were set to force the EUT transmitting at maximum output power.
7. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, taking the record of maximum spurious emission.
8. A horn antenna was substituted in place of the EUT and was driven by a signal generator.
9. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
10.  $EIRP \text{ (dBm)} = S.G. \text{ Power} - Tx \text{ Cable Loss} + Tx \text{ Antenna Gain}$
11.  $ERP \text{ (dBm)} = EIRP - 2.15$
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

The limit line is derived from  $43 + 10\log(P)\text{dB}$  below the transmitter power  $P(\text{Watts})$   
 $= P(W) - [43 + 10\log(P)] \text{ (dB)}$   
 $= [30 + 10\log(P)] \text{ (dBm)} - [43 + 10\log(P)] \text{ (dB)}$   
 $= -13\text{dBm}.$

### 3.7.4. Test Result of Radiated Spurious Emission

The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20dB lower than the limit line was not reported.

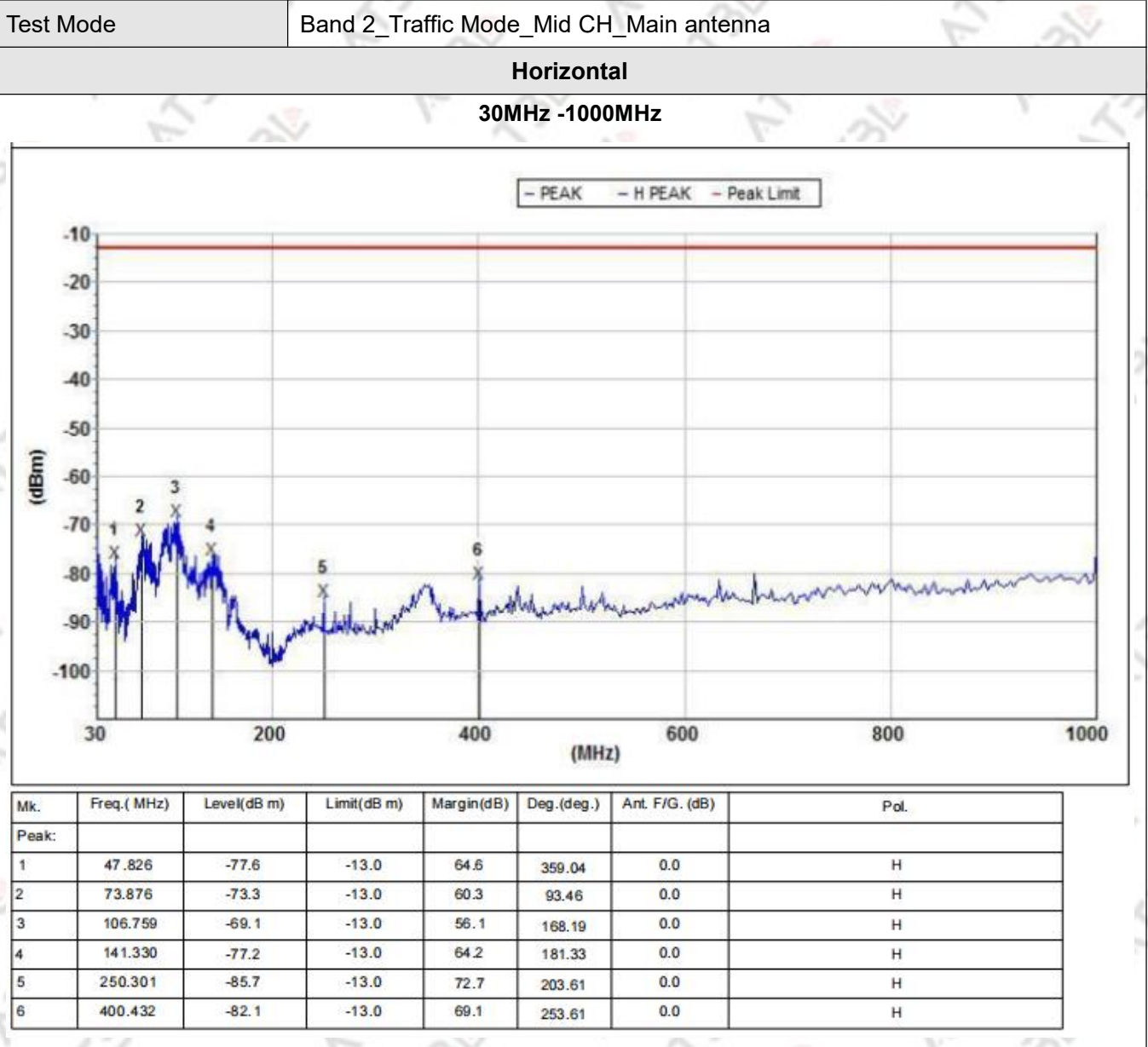
For frequencies above 30 MHz, the test results are as follows

## Test Results

### Radiated spurious emissions - MS allocated a channel

Below 1GHz:

Only the worst model is shown

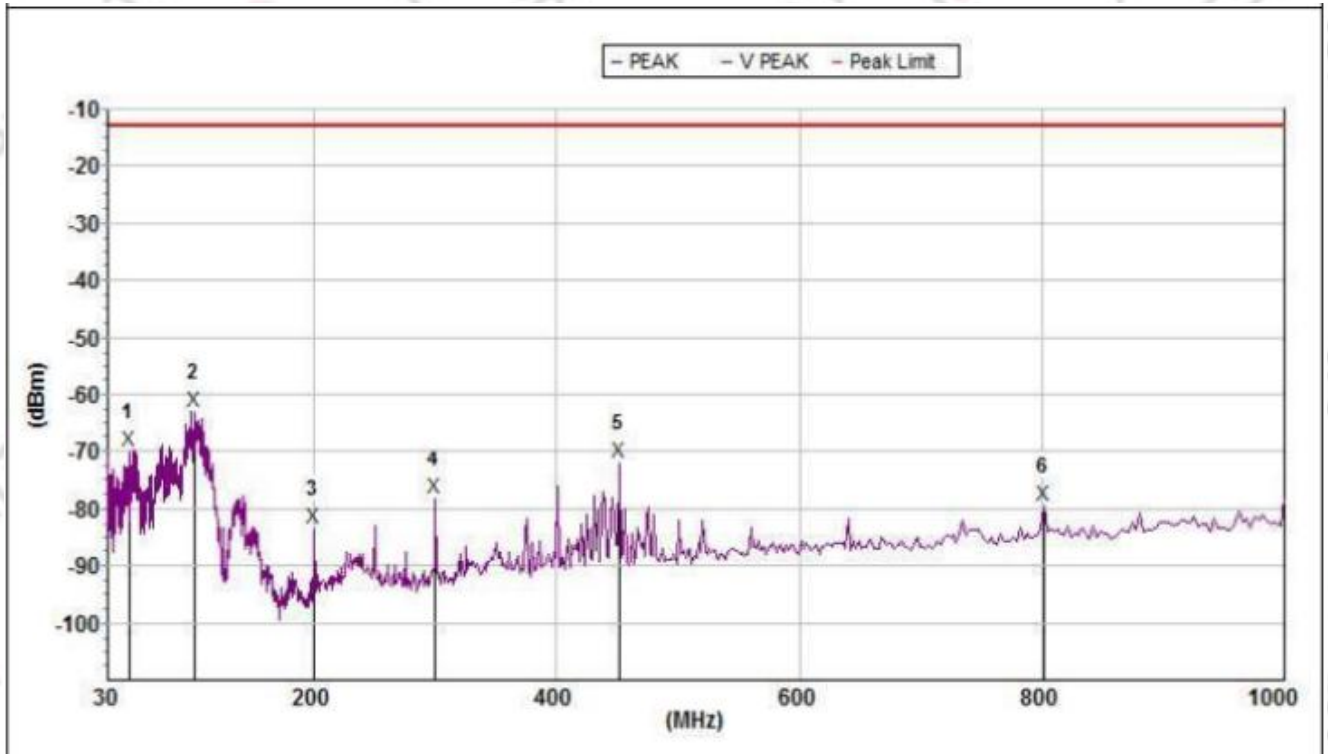


Test Mode

Band 2\_Traffic Mode\_Mid CH\_Main antenna

Vertical

30MHz -1000MHz

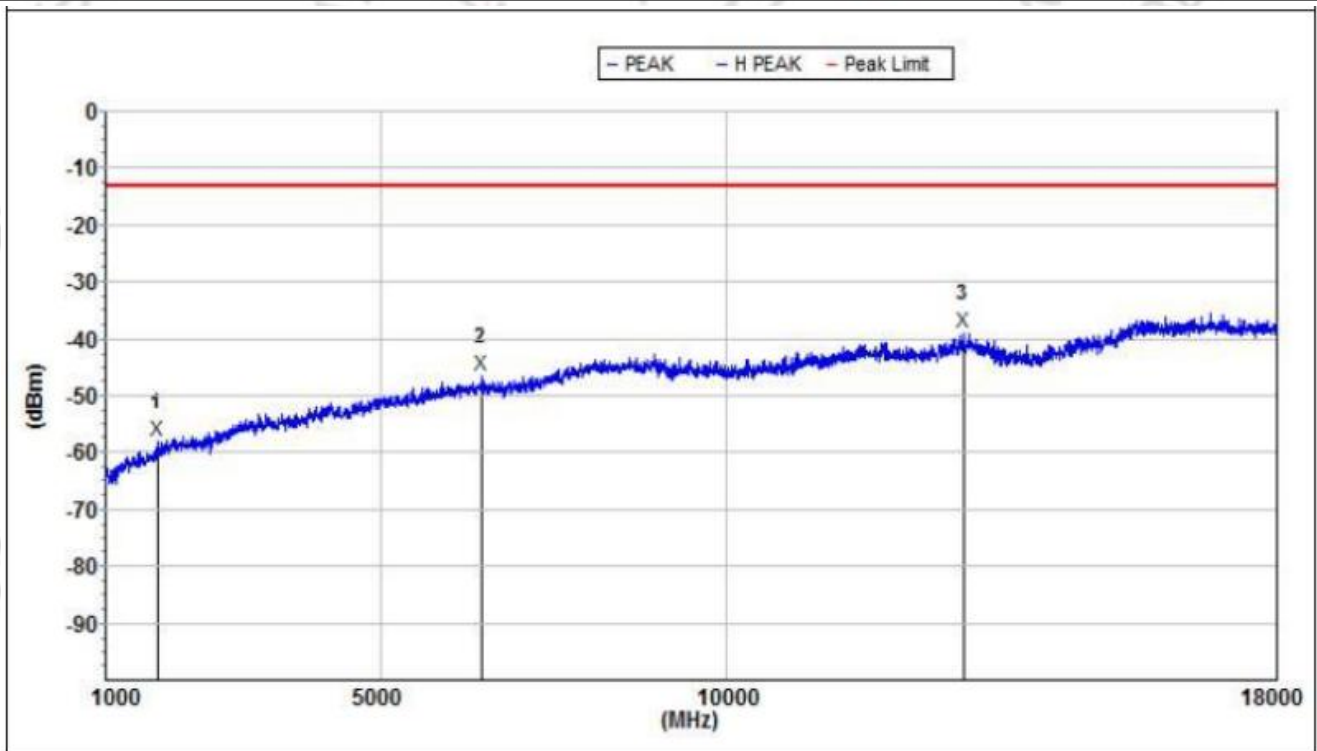


| Mk.   | Freq.( MHz) | Level(dB m) | Limit(dB m) | Margin(dB) | Deg.(deg.) | Ant. F/G. (dB) | Pol. |
|-------|-------------|-------------|-------------|------------|------------|----------------|------|
| Peak: |             |             |             |            |            |                |      |
| 1     | 47.826      | -69.8       | -13.0       | 56.8       | 358.75     | 0.0            | V    |
| 2     | 102.001     | -62.8       | -13.0       | 49.8       | 93.15      | 0.0            | V    |
| 3     | 199.986     | -83.2       | -13.0       | 70.2       | 167.99     | 0.0            | V    |
| 4     | 300.367     | -78.2       | -13.0       | 65.2       | 181.18     | 0.0            | V    |
| 5     | 451.135     | -71.9       | -13.0       | 58.9       | 202.81     | 0.0            | V    |
| 6     | 801.786     | -79.5       | -13.0       | 66.5       | 252.58     | 0.0            | V    |

# Above1GHz

Test Mode Band 2\_Traffic Mode\_Low CH\_Main antenna

## Horizontal

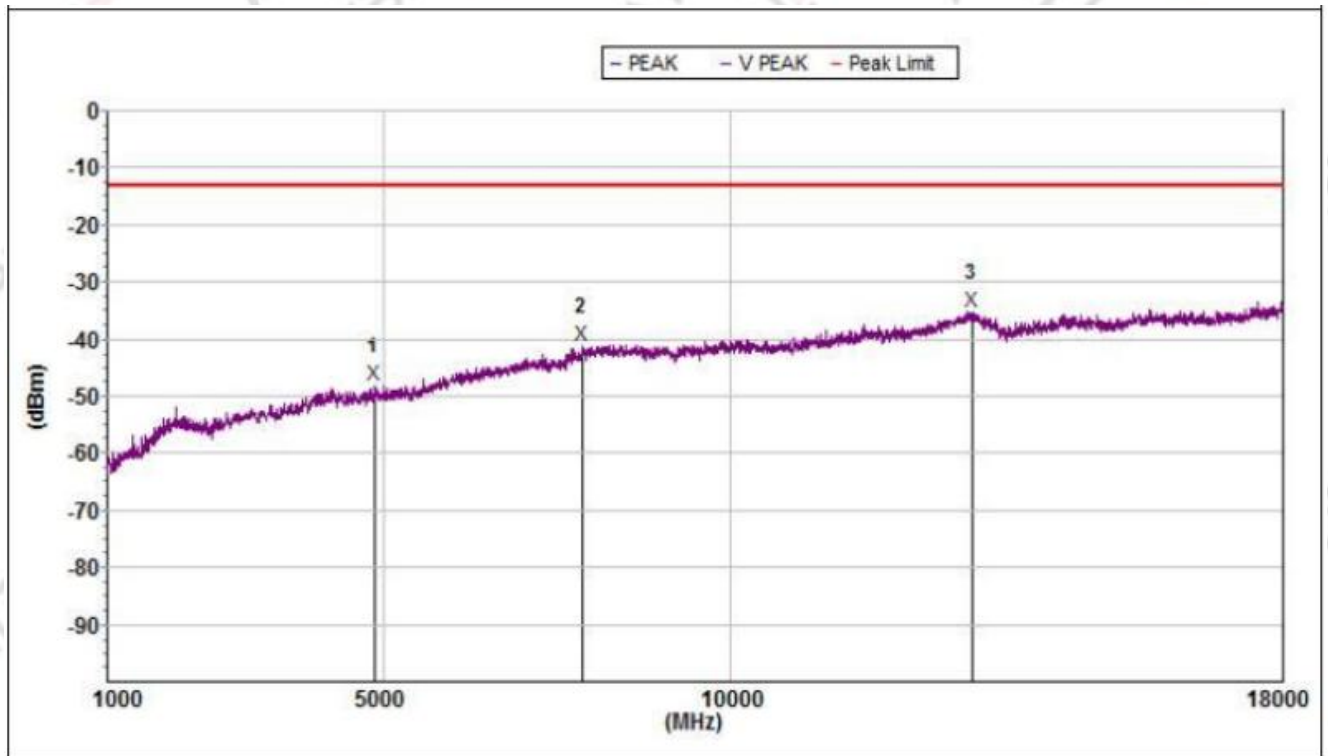


| Mk.   | Freq.(MHz) | Level(dBm) | Limit(dBm) | Margin(dB) | Deg.(deg.) | Ant. F/G.(dB) | Pol. |
|-------|------------|------------|------------|------------|------------|---------------|------|
| Peak: |            |            |            |            |            |               |      |
| 1     | 1752.000   | -57.8      | -13.0      | 44.8       | 40.97      | 0.0           | H    |
| 2     | 6468.000   | -46.4      | -13.0      | 33.4       | 167.97     | 0.0           | H    |
| 3     | 13459.500  | -38.9      | -13.0      | 25.9       | 0          | 0.0           | H    |

Test Mode

Band 2\_Traffic Mode\_Low CH\_Main antenna

### Vertical

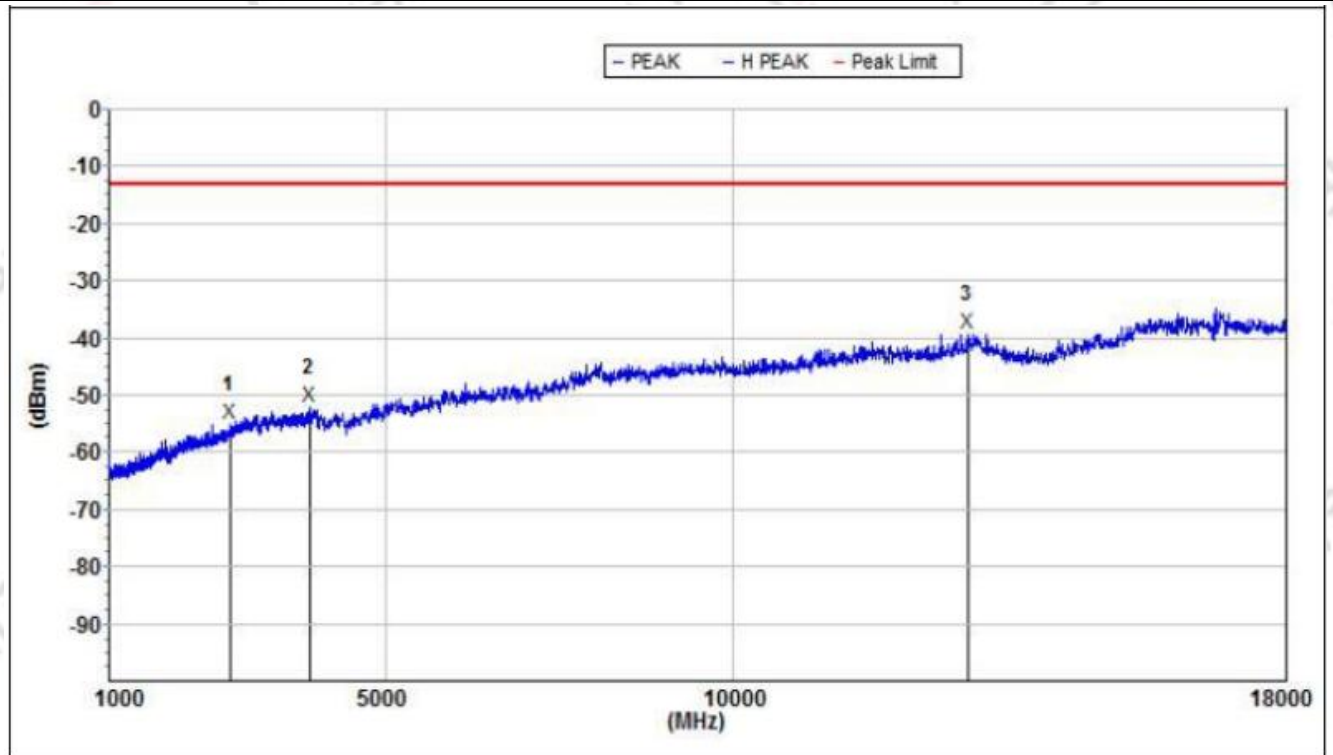


| Mk.   | Freq.(MHz) | Level(dBm) | Limit(dBm) | Margin(dB) | Deg.(deg.) | Ant. F/G.(dB) | Pol. |
|-------|------------|------------|------------|------------|------------|---------------|------|
| Peak: |            |            |            |            |            |               |      |
| 1     | 4870.000   | -48.0      | -13.0      | 35.0       | 183.37     | 0.0           | V    |
| 2     | 7871.500   | -41.0      | -13.0      | 28.0       | 0          | 0.0           | V    |
| 3     | 13508.000  | -35.1      | -13.0      | 22.1       | 0          | 0.0           | V    |

Test Mode

Band 2\_Traffic Mode\_Mid CH\_Main antenna

## Horizontal

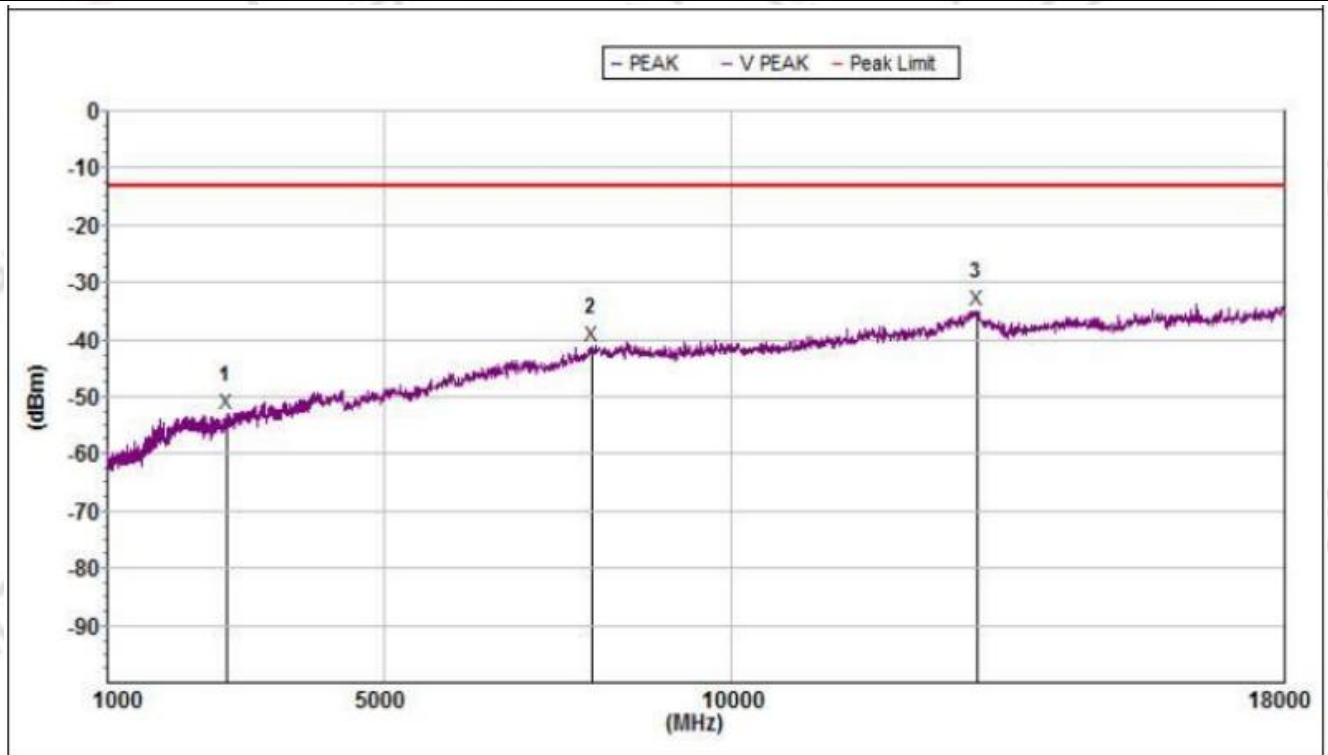


| Mk.   | Freq.(MHz) | Level(dBm) | Limit(dBm) | Margin(dB) | Deg.(deg.) | Ant.F/G.(dB) | Pol. |
|-------|------------|------------|------------|------------|------------|--------------|------|
| Peak: |            |            |            |            |            |              |      |
| 1     | 2753.500   | -54.9      | -13.0      | 41.9       | 46.27      | 0.0          | H    |
| 2     | 3886.000   | -52.0      | -13.0      | 39.0       | 193.37     | 0.0          | H    |
| 3     | 13415.000  | -39.2      | -13.0      | 26.2       | 359.98     | 0.0          | H    |

Test Mode

Band 2\_Traffic Mode\_Mid CH\_Main antenna

### Vertical

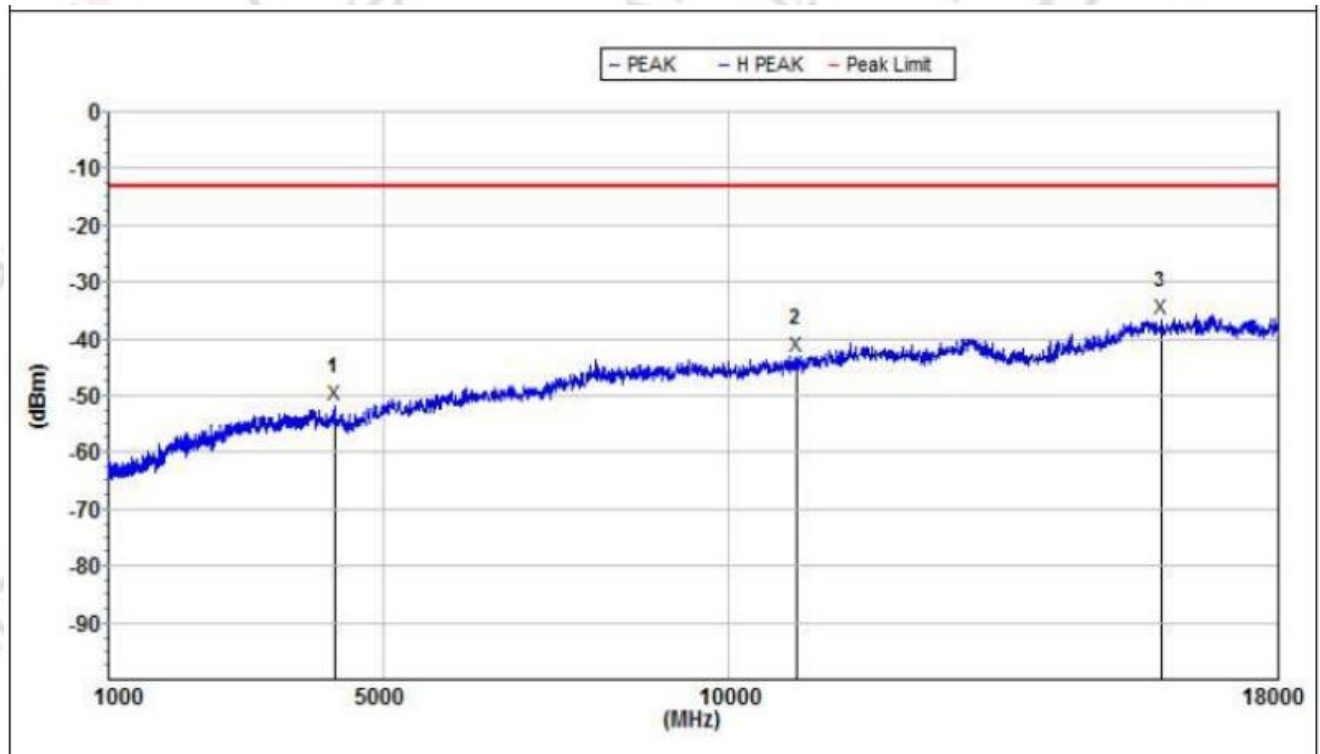


| Mk    | Freq.(MHz) | Level(dBm) | Limit(dBm) | Margin(dB) | Deg.(deg.) | Ant. F/G.(dB) | Pol. |
|-------|------------|------------|------------|------------|------------|---------------|------|
| Peak: |            |            |            |            |            |               |      |
| 1     | 2729.500   | -53.0      | -13.0      | 40.0       | 124.72     | 0.0           | V    |
| 2     | 8004.000   | -41.0      | -13.0      | 28.0       | 359.99     | 0.0           | V    |
| 3     | 13555.000  | -34.9      | -13.0      | 21.9       | 45.57      | 0.0           | V    |

Test Mode

Band 2\_Traffic Mode\_High CH\_Main antenna

### Horizontal

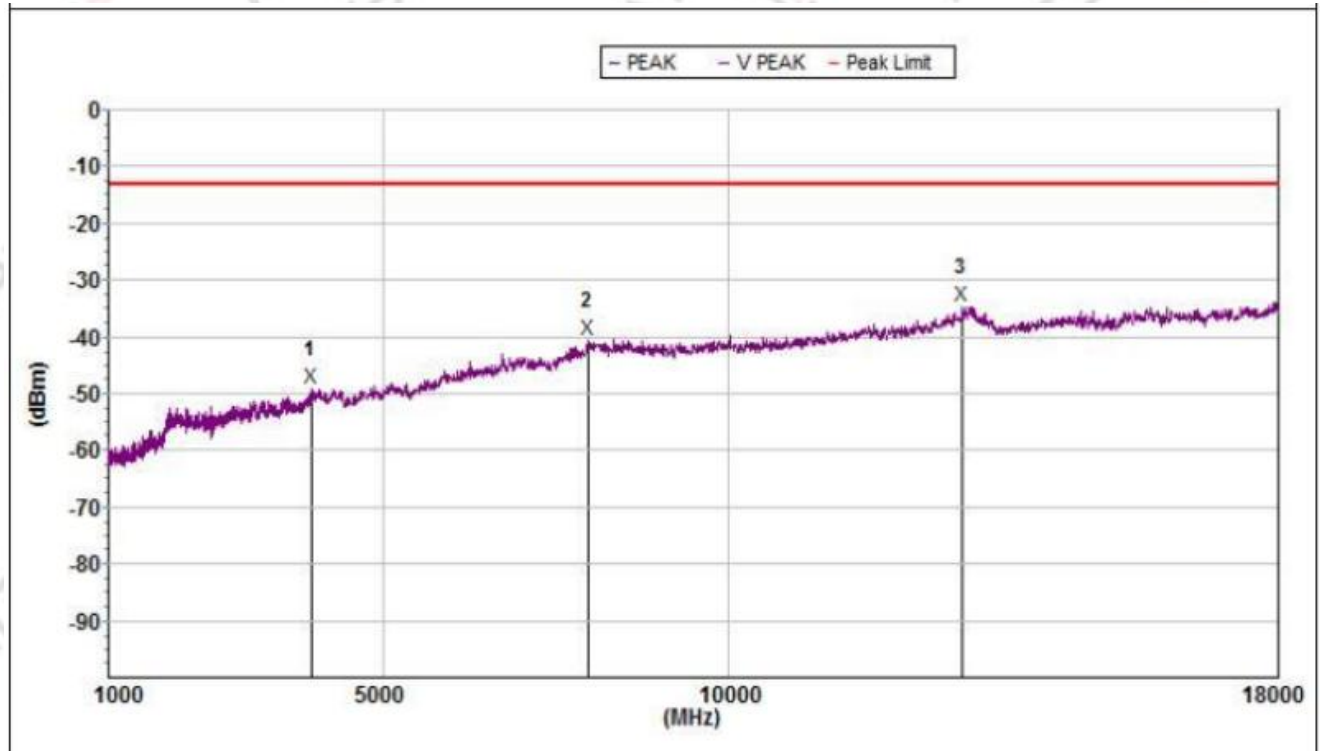


| Mk.   | Freq.(MHz) | Level(dBm) | Limit(dBm) | Margin(dB) | Deg.(deg.) | Ant.F/G.(dB) | Pol. |
|-------|------------|------------|------------|------------|------------|--------------|------|
| Peak: |            |            |            |            |            |              |      |
| 1     | 4280.000   | -51.8      | -13.0      | 38.8       | 0          | 0.0          | H    |
| 2     | 11014.000  | -43.0      | -13.0      | 30.0       | 0          | 0.0          | H    |
| 3     | 16313.000  | -36.4      | -13.0      | 23.4       | 0          | 0.0          | H    |

Test Mode

Band 2\_Traffic Mode\_High CH\_Main antenna

### Vertical

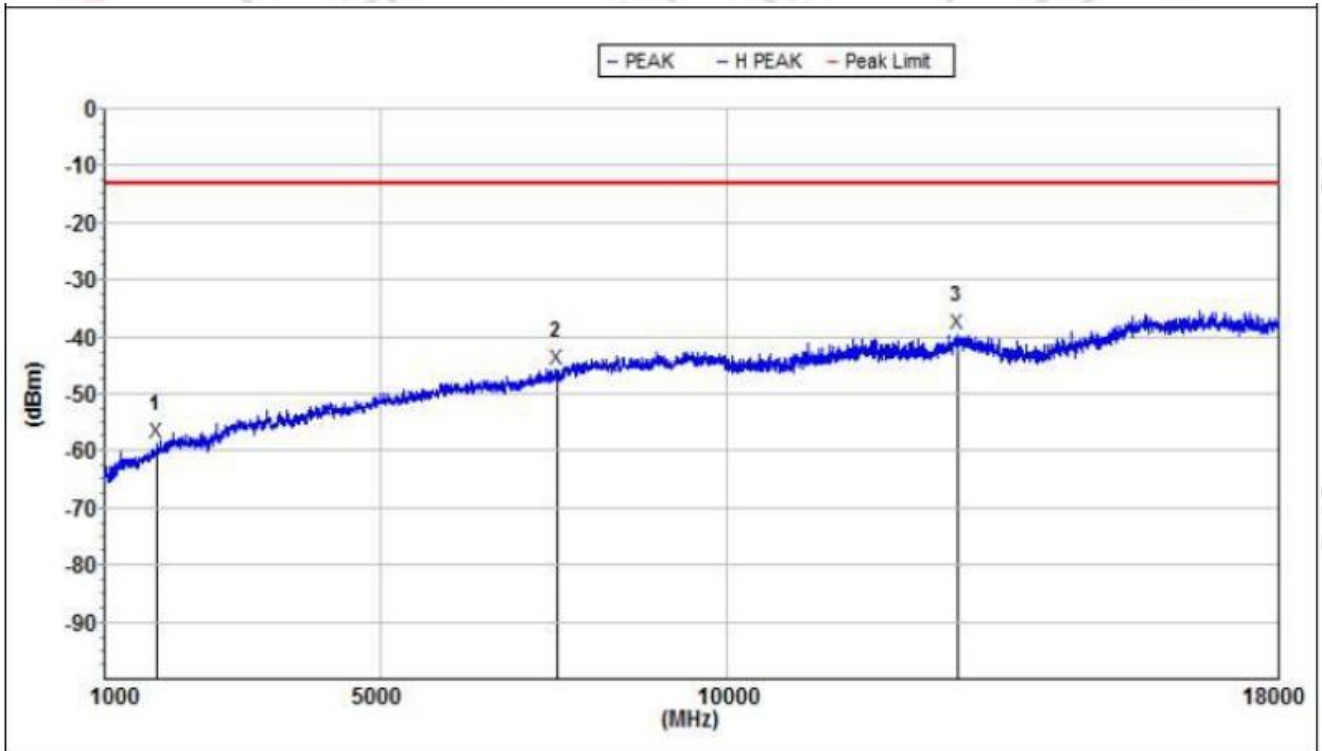


| Mk.   | Freq.(MHz) | Level(dBm) | Limit(dBm) | Margin(dB) | Deg.(deg.) | Ant.F/G.(dB) | Pol. |
|-------|------------|------------|------------|------------|------------|--------------|------|
| Peak: |            |            |            |            |            |              |      |
| 1     | 3958.000   | -49.0      | -13.0      | 36.0       | 95.7       | 0.0          | V    |
| 2     | 7976.000   | -40.5      | -13.0      | 27.5       | 55.7       | 0.0          | V    |
| 3     | 13415.000  | -34.7      | -13.0      | 21.7       | 174        | 0.0          | V    |

Test Mode

Band 4\_Traffic Mode\_Low CH\_Main antenna

## Horizontal

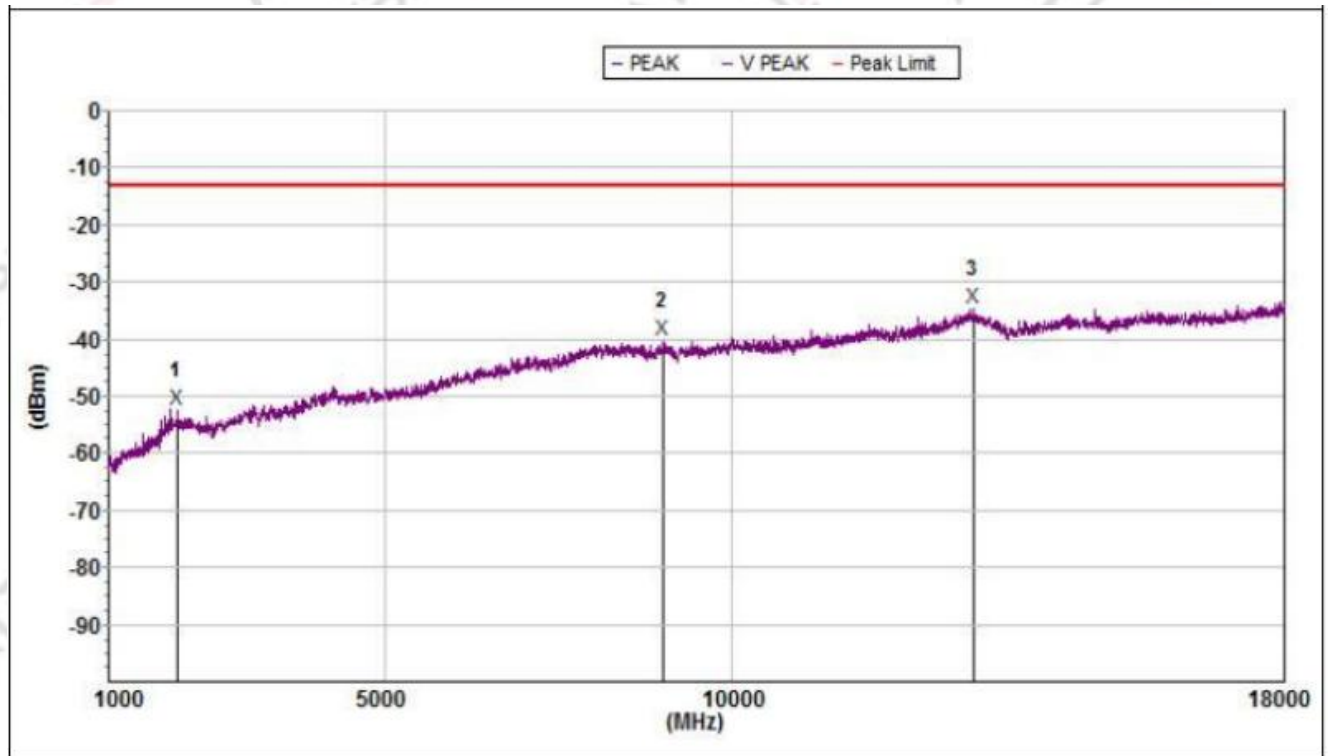


| Mk.   | Freq.(MHz) | Level(dBm) | Limit(dBm) | Margin(dB) | Deg. (deg.) | Ant. F/G.(dB) | Pol. |
|-------|------------|------------|------------|------------|-------------|---------------|------|
| Peak: |            |            |            |            |             |               |      |
| 1     | 1751.500   | -58.5      | -13.0      | 45.5       | 35.62       | 0.0           | H    |
| 2     | 7561.000   | -45.6      | -13.0      | 32.6       | 25.87       | 0.0           | H    |
| 3     | 13344.000  | -39.5      | -13.0      | 26.5       | 359.76      | 0.0           | H    |

Test Mode

Band 4\_Traffic Mode\_Low CH\_Main antenna

### Vertical

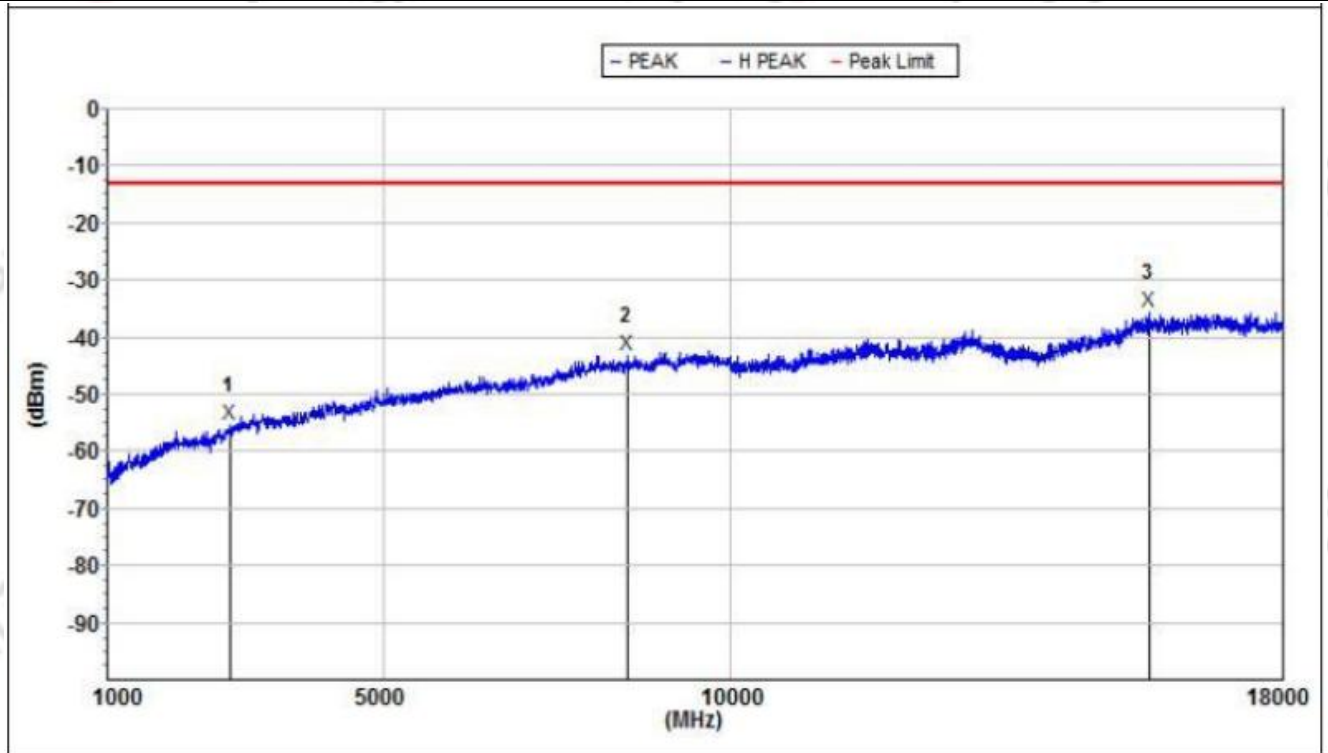


| Mk.   | Freq.(MHz) | Level(dBm) | Limit(dBm) | Margin(dB) | Deg.(deg.) | Ant.F/G.(dB) | Pol. |
|-------|------------|------------|------------|------------|------------|--------------|------|
| Peak: |            |            |            |            |            |              |      |
| 1     | 1999.000   | -52.2      | -13.0      | 39.2       | 185.5      | 0.0          | V    |
| 2     | 9023.500   | -40.1      | -13.0      | 27.1       | 284        | 0.0          | V    |
| 3     | 13512.000  | -34.7      | -13.0      | 21.7       | 310        | 0.0          | V    |

Test Mode

Band 4\_Traffic Mode\_Mid CH\_Main antenna

## Horizontal

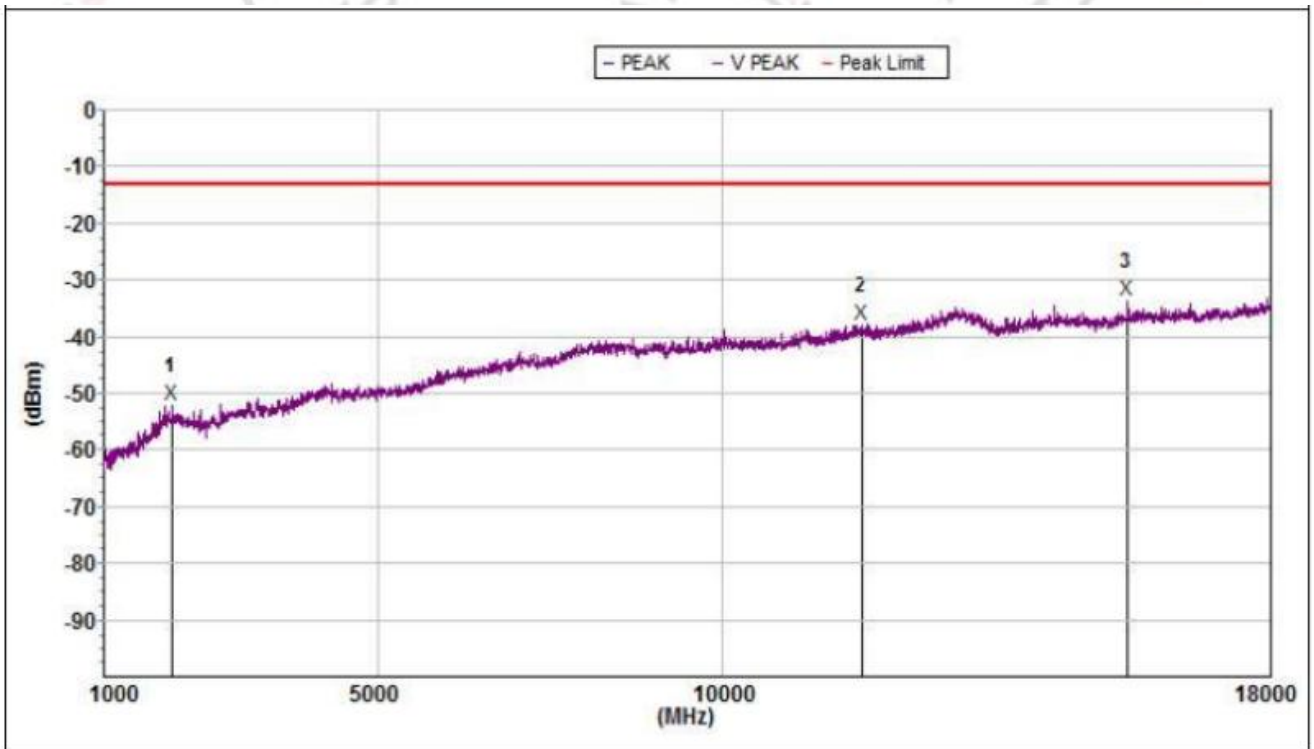


| Mk.   | Freq.(MHz) | Level(dBm) | Limit(dBm) | Margin(dB) | Deg.(deg.) | Ant. F/G.(dB) | Pol. |
|-------|------------|------------|------------|------------|------------|---------------|------|
| Peak: |            |            |            |            |            |               |      |
| 1     | 2768.500   | -55.3      | -13.0      | 42.3       | 340.52     | 0.0           | H    |
| 2     | 8519.500   | -43.1      | -13.0      | 30.1       | 311.22     | 0.0           | H    |
| 3     | 16060.000  | -35.4      | -13.0      | 22.4       | 359.97     | 0.0           | H    |

Test Mode

Band 4\_Traffic Mode\_Mid CH\_Main antenna

### Vertical

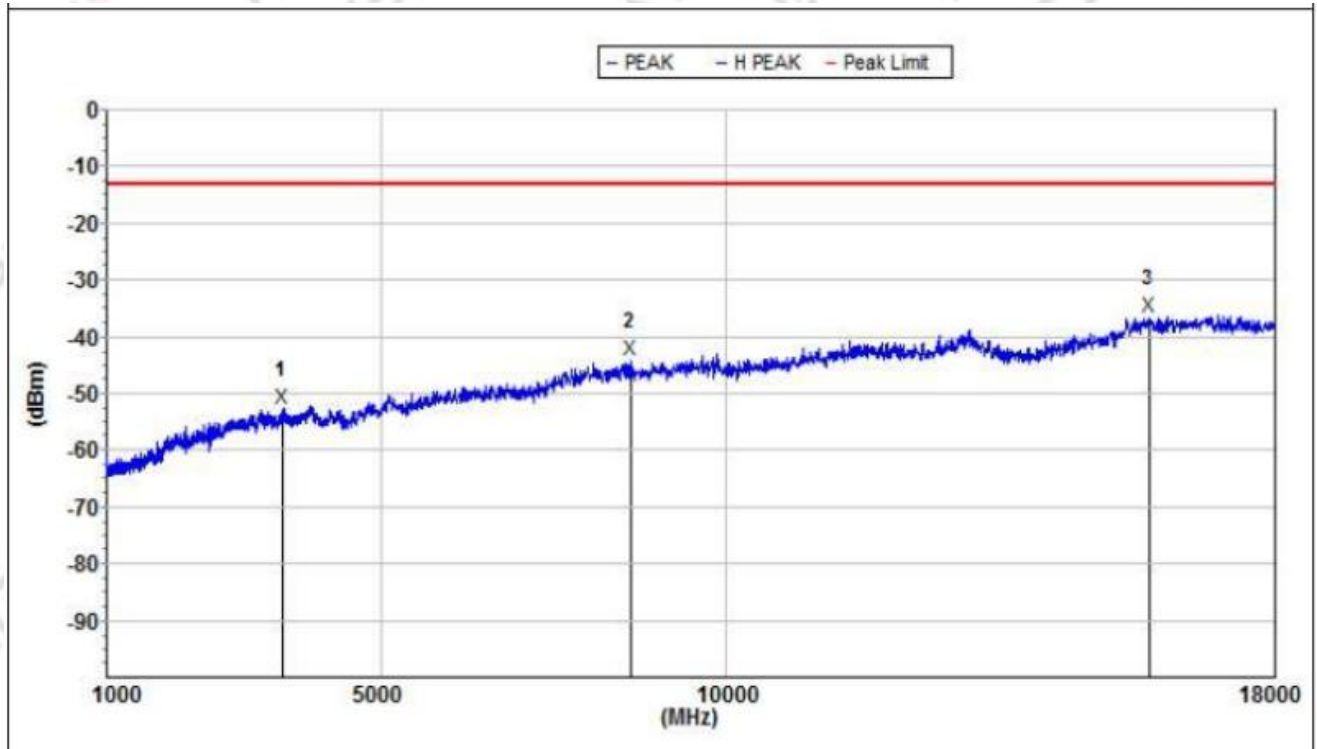


| Mk.   | Freq.(MHz) | Level(dBm) | Limit(dBm) | Margin(dB) | Deg.(deg.) | Ant. F/G.(dB) | Pol. |
|-------|------------|------------|------------|------------|------------|---------------|------|
| Peak: |            |            |            |            |            |               |      |
| 1     | 1999.000   | -51.9      | -13.0      | 38.9       | 168.1      | 0.0           | V    |
| 2     | 12044.000  | -37.8      | -13.0      | 24.8       | 74.9       | 0.0           | V    |
| 3     | 15920.000  | -33.7      | -13.0      | 20.7       | 123.5      | 0.0           | V    |

Test Mode

Band 4\_Traffic Mode\_High CH\_Main antenna

## Horizontal

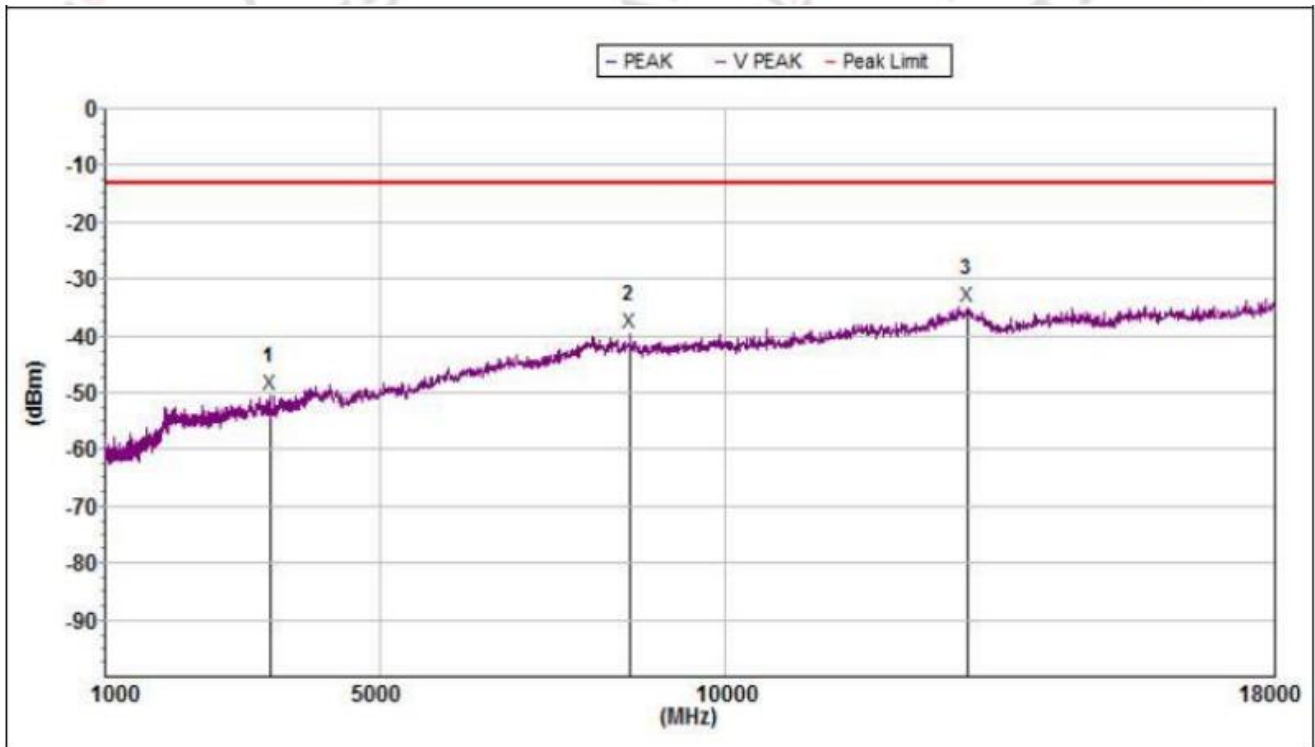


| Mk.   | Freq.(MHz) | Level(dBm) | Limit(dBm) | Margin(dB) | Deg.(deg.) | Ant.F/G.(dB) | Pol. |
|-------|------------|------------|------------|------------|------------|--------------|------|
| Peak: |            |            |            |            |            |              |      |
| 1     | 3563.500   | -52.6      | -13.0      | 39.6       | 360        | 0.0          | H    |
| 2     | 8620.000   | -44.2      | -13.0      | 31.2       | 0.5        | 0.0          | H    |
| 3     | 16180.000  | -36.5      | -13.0      | 23.5       | 0.5        | 0.0          | H    |

Test Mode

Band 4\_Traffic Mode\_High CH\_Main antenna

### Vertical

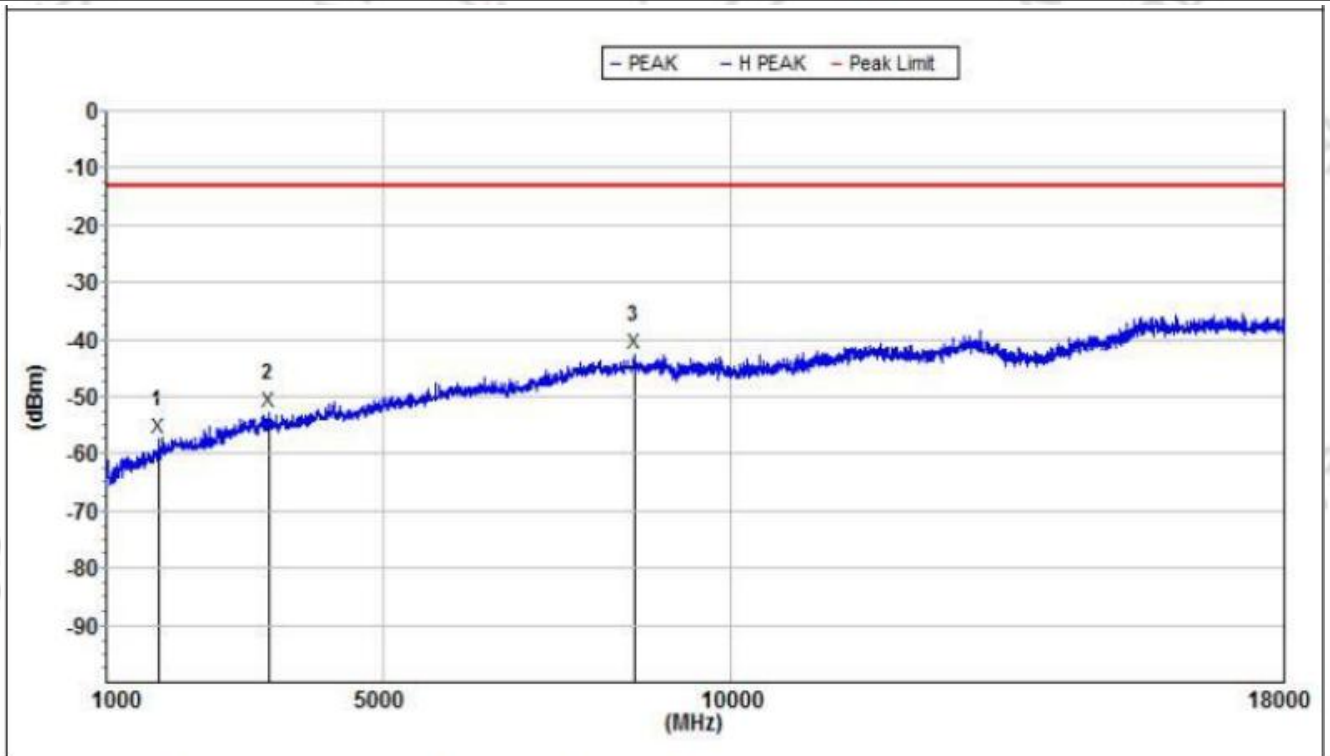


| Mk.   | Freq.(MHz) | Level(dBm) | Limit(dBm) | Margin(dB) | Deg.(deg.) | Ant. F/G.(dB) | Pol. |
|-------|------------|------------|------------|------------|------------|---------------|------|
| Peak: |            |            |            |            |            |               |      |
| 1     | 3389.500   | -50.3      | -13.0      | 37.3       | 211.17     | 0.0           | V    |
| 2     | 8620.000   | -39.4      | -13.0      | 26.4       | 360        | 0.0           | V    |
| 3     | 13527.000  | -34.9      | -13.0      | 21.9       | 360        | 0.0           | V    |

Test Mode

Band 5\_Traffic Mode\_Low CH\_Main antenna

### Horizontal

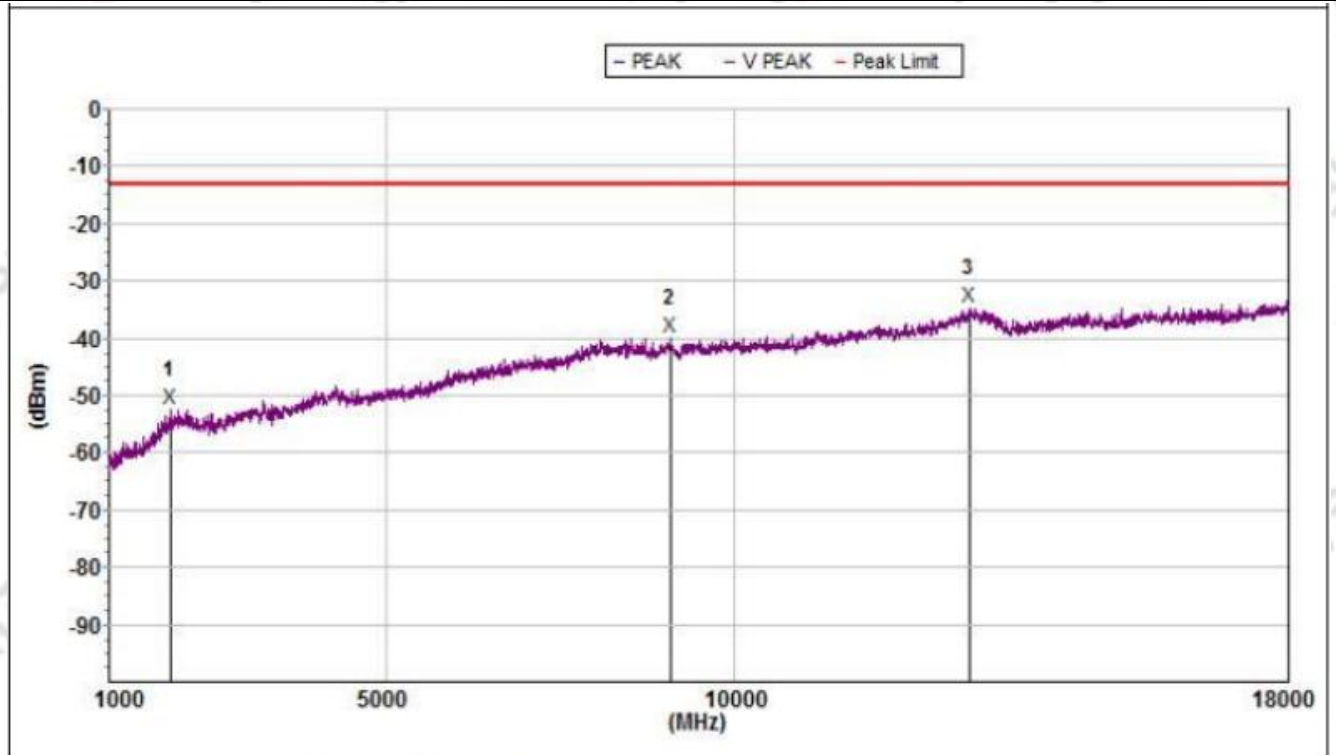


| Mk.   | Freq. (MHz) | Level(dBm) | Limit(dBm) | Margin(dB) | Deg. (deg.) | Ant. F/G.(dB) | Pol. |
|-------|-------------|------------|------------|------------|-------------|---------------|------|
| Peak: |             |            |            |            |             |               |      |
| 1     | 1752.000    | -57.4      | -13.0      | 44.4       | 158.42      | 0.0           | H    |
| 2     | 3348.000    | -52.6      | -13.0      | 39.6       | 7.65        | 0.0           | H    |
| 3     | 8628.000    | -42.4      | -13.0      | 29.4       | 57.37       | 0.0           | H    |

Test Mode

Band 5\_Traffic Mode\_Low CH\_Main antenna

### Vertical

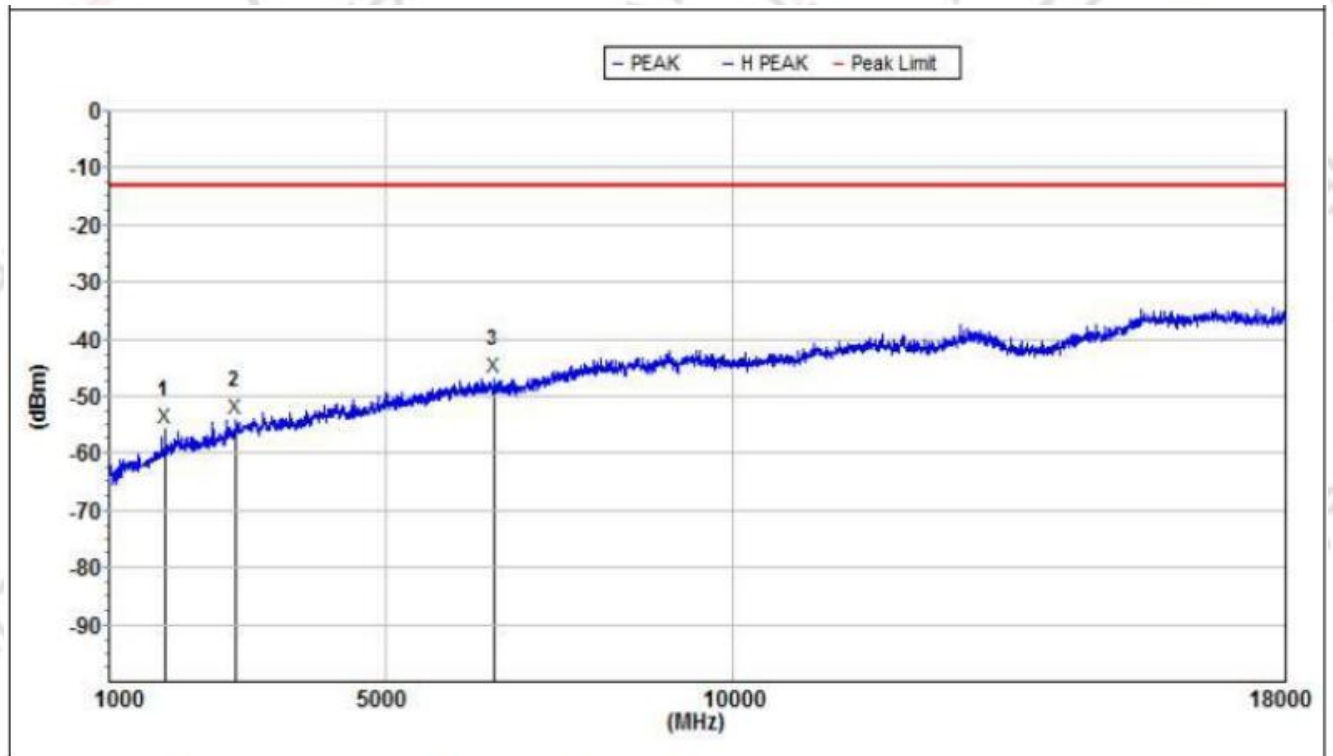


| Mk.   | Freq. (MHz) | Level(dBm) | Limit(dBm) | Margin(dB) | Deg.(deg.) | Ant. F/G.(dB) | Pol. |
|-------|-------------|------------|------------|------------|------------|---------------|------|
| Peak: |             |            |            |            |            |               |      |
| 1     | 1900.000    | -52.2      | -13.0      | 39.2       | 225        | 0.0           | V    |
| 2     | 9085.500    | -39.7      | -13.0      | 26.7       | 302.4      | 0.0           | V    |
| 3     | 13392.000   | -34.5      | -13.0      | 21.5       | 42.1       | 0.0           | V    |

Test Mode

Band 5\_Traffic Mode\_Mid CH\_Main antenna

## Horizontal

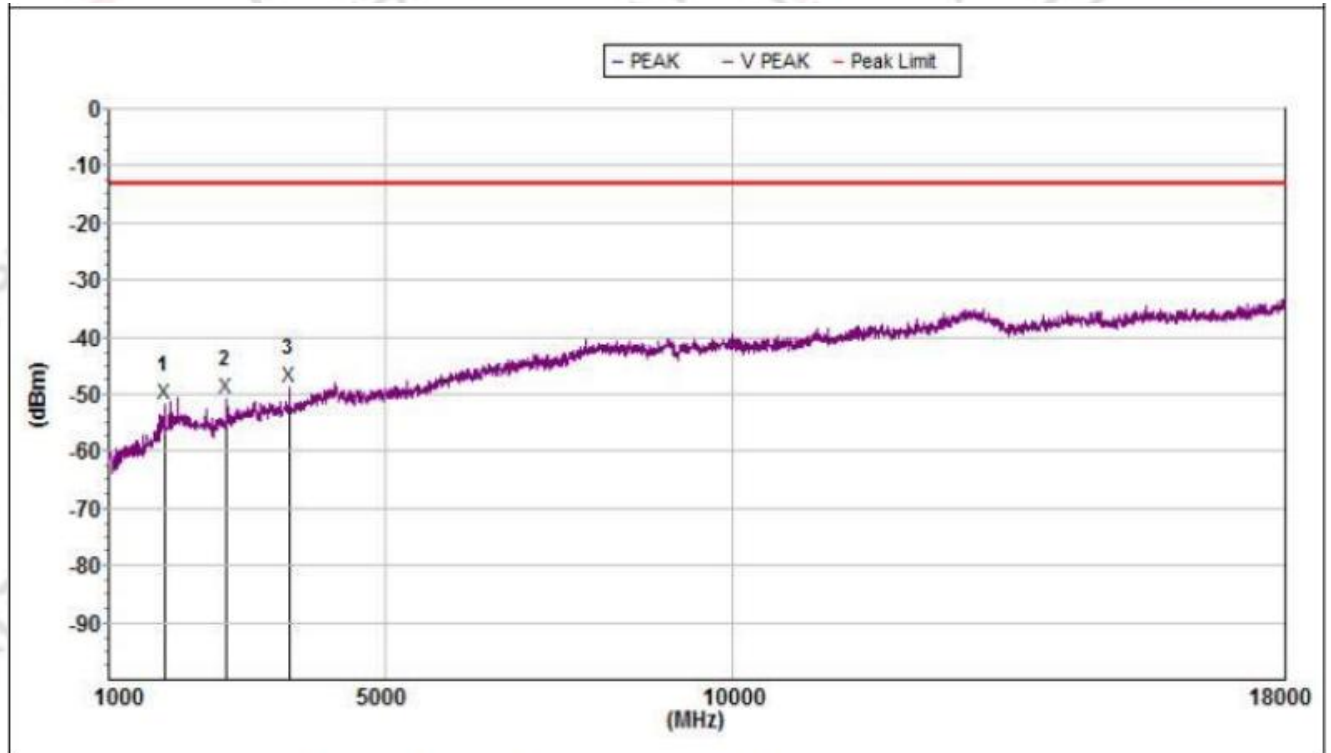


| Mk.   | Freq. (MHz) | Level (dBm) | Limit (dBm) | Margin (dB) | Deg. (deg.) | Ant. F/G. (dB) | Pol. |
|-------|-------------|-------------|-------------|-------------|-------------|----------------|------|
| Peak: |             |             |             |             |             |                |      |
| 1     | 1804.000    | -55.7       | -13.0       | 42.7        | 16.67       | 0.0            | H    |
| 2     | 2840.000    | -54.1       | -13.0       | 41.1        | 206.62      | 0.0            | H    |
| 3     | 6568.000    | -46.7       | -13.0       | 33.7        | 176.37      | 0.0            | H    |

Test Mode

Band 5\_Traffic Mode\_Mid CH\_Main antenna

### Vertical

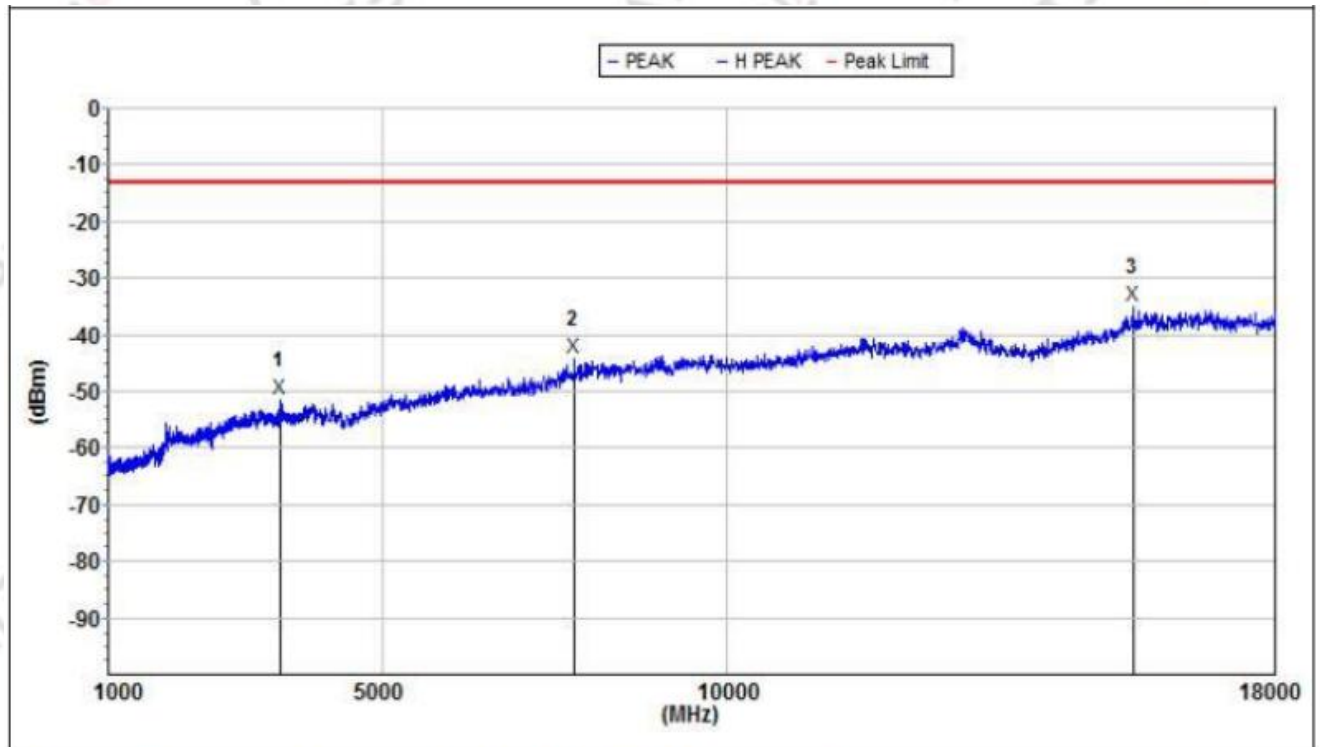


| Mk.   | Freq. (MHz) | Level(dBm) | Limit(dBm) | Margin(dB) | Deg.(deg.) | Ant. F/G.(dB) | Pol. |
|-------|-------------|------------|------------|------------|------------|---------------|------|
| Peak: |             |            |            |            |            |               |      |
| 1     | 1800.000    | -51.8      | -13.0      | 38.8       | 156.72     | 0.0           | V    |
| 2     | 2708.000    | -50.6      | -13.0      | 37.6       | 337.02     | 0.0           | V    |
| 3     | 3608.000    | -48.7      | -13.0      | 35.7       | 66.42      | 0.0           | V    |

Test Mode

Band 5\_Traffic Mode\_High CH\_Main antenna

## Horizontal

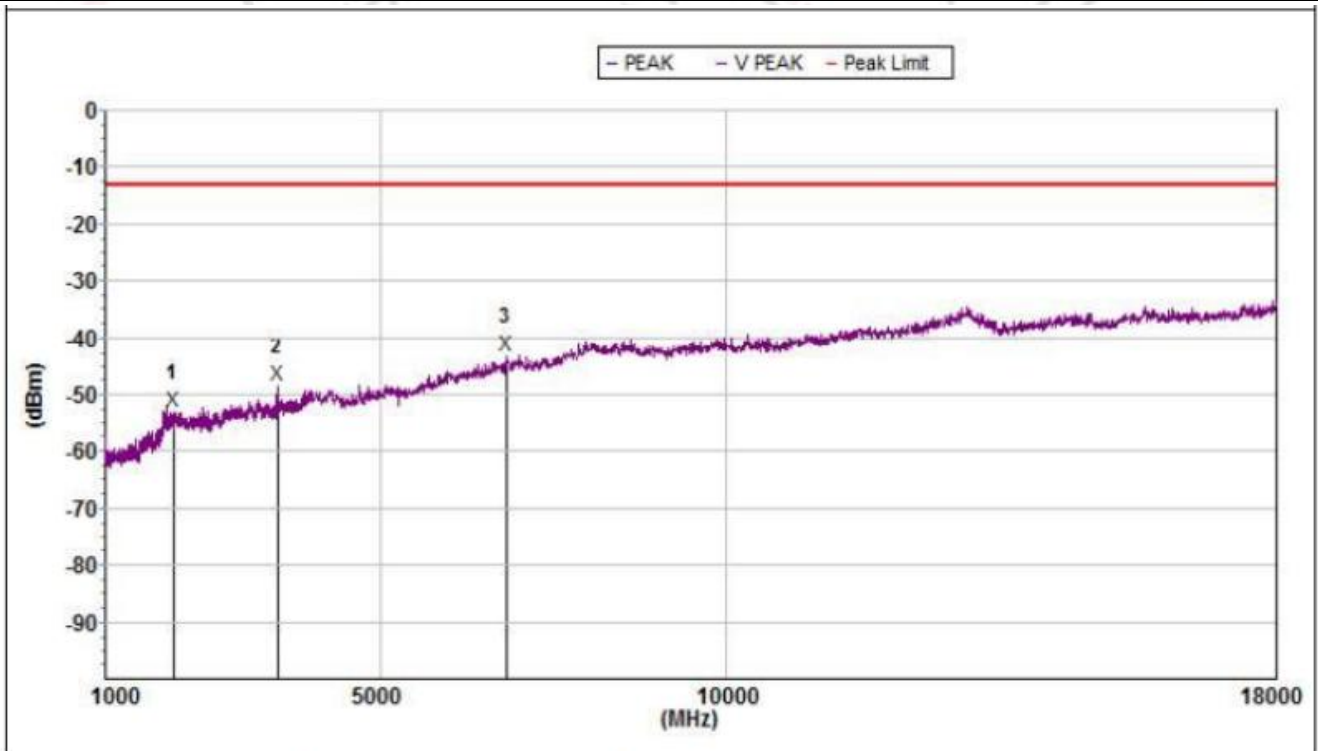


| Mk.   | Freq. (MHz) | Level(dBm) | Limit(dBm) | Margin(dB) | Deg.(deg.) | Ant. F/G.(dB) | Pol. |
|-------|-------------|------------|------------|------------|------------|---------------|------|
| Peak: |             |            |            |            |            |               |      |
| 1     | 3494.500    | -51.3      | -13.0      | 38.3       | 0          | 0.0           | H    |
| 2     | 7787.000    | -44.2      | -13.0      | 31.2       | 360        | 0.0           | H    |
| 3     | 15928.000   | -35.0      | -13.0      | 22.0       | 360        | 0.0           | H    |

Test Mode

Band 5\_Traffic Mode\_High CH\_Main antenna

### Vertical



| Mk.   | Freq. (MHz) | Level(dBm) | Limit(dBm) | Margin(dB) | Deg.(deg.) | Ant. F/G.(dB) | Pol. |
|-------|-------------|------------|------------|------------|------------|---------------|------|
| Peak: |             |            |            |            |            |               |      |
| 1     | 1979.500    | -53.1      | -13.0      | 40.1       | 230.42     | 0.0           | V    |
| 2     | 3494.500    | -48.5      | -13.0      | 35.5       | 169.87     | 0.0           | V    |
| 3     | 6835.000    | -43.1      | -13.0      | 30.1       | 262.37     | 0.0           | V    |

#### 4. TEST SETUP PHOTOGRAPHS

Please refer to Appendix J\_Test Setup Template

#### 5. EXTERNAL AND INTERNAL PHOTOS OF THE EUT

Please refer to Appendix K\_ External Photos of the EUT

Please refer to Appendix K\_ Internal Photos of the EUT

※※※※END OF THE REPORT※※※※