# TEST REPORT

## Radio Frequency Devices-Intentional Radiators

## for

| | |
|---|---|
| **Products Name:** | **Miffy EarBuds** |
| **Model No.:** | **TD19** |
| **FCC ID:** | **SL7-TD19** |
| **Report No.:** | **SST2607E394** |
| **Issued Date:** | **2026-7-31** |

## Issued for

**Shenzhen Baojia Battery Technology Co., Ltd.**

**Block A, Yonghe Road, Tongfuyu Industrial Zone, Heping, Fuyong,Baoan, Shenzhen, 518103, China**

## Issued by

**DONGGUAN QIYANG TESTING TECHNOLOGY CO., LTD.**

**Room 101-1, Building 1, No. 19, Tianxin Butterfly 1st Road, Huangjiang, Dongguan, Guangdong, China**

# Table of Contents

# 1. Basic Introduction

| | | |
|---|---|---|
| **Applicant's name..... :** | Shenzhen Baojia Battery Technology Co., Ltd. | |
| **Address ..... :** | Block A, Yonghe Road, Tongfuyu Industrial Zone, Heping, Fuyong,Baoan, Shenzhen, 518103, China | |
| **Manufacturer's name ..... :** | Shenzhen Baojia Battery Technology Co., Ltd. | |
| **Address ..... :** | Block A, Yonghe Road, Tongfuyu Industrial Zone, Heping, Fuyong,Baoan, Shenzhen, 518103, China | |
| **Factory name ..... :** | Shenzhen Baojia Battery Technology Co., Ltd. | |
| **Address ..... :** | Block A, Yonghe Road, Tongfuyu Industrial Zone, Heping, Fuyong,Baoan, Shenzhen, 518103, China | |
| **Products Name..... :** | Miffy EarBuds | |
| **Model No..... :** | TD19 | |
| **Trade Mark ..... :** | MIPOW, MIPOW X MIFFY | |
| **Rating(s)..... :** | DC 3.7V 50mAh battery for earphones<br>DC 3.7V 400mAh battery for charging case<br>Or DC 5V by external power supply | |
| **Date of sample receipt..... :** | 2026-7-21 | |
| **Date of Test..... :** | 2026-7-21~2026-7-31 | |
| **Standard(s) ..... :** | FCC 47 CFR Part 15 Subpart C Section 15.247<br>ANSI C63.10-2020 + Cor. 1-2023+C63.10a-2024 + Errata to C63.10a-2024 | |
| **Tested by (+signature)..... :** | Connor Ma | |
| **Check by (+signature)..... :** | Davis Zhou | |
| **Approved by (+signature).... :** | Tiger Chen | |

# 2. General description

## 2.1. EUT description

| | | |
|---|---|---|
| Products Name ..... : | Miffy EarBuds | |
| Model No. ..... : | TD19 | |
| Rating(s) ..... : | DC 3.7V 50mAh battery for earphones<br>DC 3.7V 400mAh battery for charging case<br>Or DC 5V by external power supply | |
| SN..... : | 26072010-6 | |
| Software version..... : | / | |
| Hardware version ..... : | / | |
| Operation frequency..... : | 2402MHz ~ 2480MHz | |
| Channel numbers ..... : | 79 | |
| Channel separation ..... : | 1MHz | |
| Modulation technology .... : | GFSK, pi/4 DQPSK, 8DPSK | |
| Antenna type ..... : | Chip Antenna | |
| Antenna gain ..... : | 2.8 dBi | |
| EUT cable description ..... : | **Name** | **Description** |
| | | ☐Shielded ☐Unshielded ☐Detachable ☐Un-detachable<br>☐No applicable ☐Length: |

## 2.2. Serial model(s) and model difference

| | |
|---|---|
| Main model(s) ..... : | **TD19** |
| Serial model(s) ..... : | / |
| Model difference ..... : | / |

## 2.3. Auxiliary equipment

| **Support equipment list** | | | |
|---|---|---|---|
| **Description** | **Manufacturer** | **Model No.** | **Serial No.** |
| Adapter | Lenovo | XXC100G | / |
| | | | |
| **Support cable list** | | | |
| **Description** | **Specified length(m)** | **Shielded** | **Unshielded** |

| | | | |
|---|---|---|---|
| / | / | / | / |

## 2.4. Description of test modes

| Prescan Operating Mode | |
|---|---|
| **No.** | **Detailed description of the operating mode** |
| 1 | continuously transmitting, with its lowest data rate which emit the max power level |

| Operation Frequency each of channel | | | | | | | |
|---|---|---|---|---|---|---|---|
| Channel | Frequency | Channel | Frequency | Channel | Frequency | Channel | Frequency |
| 1 | 2402MHz | 21 | 2422MHz | 41 | 2442MHz | 61 | 2462MHz |
| 2 | 2403MHz | 22 | 2423MHz | 42 | 2443MHz | 62 | 2463MHz |
| 3 | 2404MHz | 23 | 2424MHz | 43 | 2444MHz | 63 | 2464MHz |
| 4 | 2405MHz | 24 | 2425MHz | 44 | 2445MHz | 64 | 2465MHz |
| 5 | 2406MHz | 25 | 2426MHz | 45 | 2446MHz | 65 | 2466MHz |
| 6 | 2407MHz | 26 | 2427MHz | 46 | 2447MHz | 66 | 2467MHz |
| 7 | 2408MHz | 27 | 2428MHz | 47 | 2448MHz | 67 | 2468MHz |
| 8 | 2409MHz | 28 | 2429MHz | 48 | 2449MHz | 68 | 2469MHz |
| 9 | 2410MHz | 29 | 2430MHz | 49 | 2450MHz | 69 | 2470MHz |
| 10 | 2411MHz | 30 | 2431MHz | 50 | 2451MHz | 70 | 2471MHz |
| 11 | 2412MHz | 31 | 2432MHz | 51 | 2452MHz | 71 | 2472MHz |
| 12 | 2413MHz | 32 | 2433MHz | 52 | 2453MHz | 72 | 2473MHz |
| 13 | 2414MHz | 33 | 2434MHz | 53 | 2454MHz | 73 | 2474MHz |
| 14 | 2415MHz | 34 | 2435MHz | 54 | 2455MHz | 74 | 2475MHz |
| 15 | 2416MHz | 35 | 2436MHz | 55 | 2456MHz | 75 | 2476MHz |
| 16 | 2417MHz | 36 | 2437MHz | 56 | 2457MHz | 76 | 2477MHz |
| 17 | 2418MHz | 37 | 2438MHz | 57 | 2458MHz | 77 | 2478MHz |
| 18 | 2419MHz | 38 | 2439MHz | 58 | 2459MHz | 78 | 2479MHz |
| 19 | 2420MHz | 39 | 2440MHz | 59 | 2460MHz | 79 | 2480MHz |
| 20 | 2421MHz | 40 | 2441MHz | 60 | 2461MHz | | |

## 2.5.Test environmental conditions

The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment.
The climatic conditions during the tests were within the following limits:

| Ambient temperature | Relative humidity | Atmospheric pressure |
|---|---|---|

| | | |
|---|---|---|
| 15 °C ~ 35 °C | 30 % ~ 60 % | 86 kPa ~ 106 kPa |
| If explicitly required in the basic standard or applied product standard the climatic values are recorded and documented separately in this test report. | | |

## 2.6.Statement of Measurement Uncertainty

| Test Item | Uncertainty |
|---|---|
| Uncertainty for Conducted emissions | 3.31 dB |
| Uncertainty for Radiated emission (9 kHz to 30 MHz) | 3.1 dB |
| Uncertainty for Radiated emission (30 MHz to 1 GHz) | 4.53 dB |
| Uncertainty for Radiated emission (above 1 GHz) | 4.80 dB |
| RF power, conducted | 1.08 dB |
| Power Spectral Density, Conducted | 1.46 dB |
| Spurious Emissions, Conducted | 2.94 dB |
| Occupied bandwidth | 57.74 kHz |
| Measurement Uncertainty Decision Rule<br>Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2023, clause 4.3.3 and 4.3.4. | |

## 2.7.Report modification record

| Report No. | Issue Date | Description |
|---|---|---|
| SST2607E394 | 2026-7-31 | Original Report |

## 2.8.Test Facility

| The test facility is recognized, certified, or accredited by the following organizations: | |
|---|---|
| **A2LA** | Certificate No.:7057.01 |
| **FCC** | Designation Number: CN1432 |
| | Test Firm Registration Number: 640253 |
| **IC** | Company Number: 30419 |
| | CAB identifier: CN0154 |
| **CNAS** | Registration No.: L17883 |
| **Location** | DONGGUAN QIYANG TESTING TECHNOLOGY CO., LTD.<br>Room 101-1, Building 1, No. 19, Tianxin Butterfly 1st Road, Huangjiang, Dongguan, Guangdong, China |

## 2.9.Other information

The laboratory responsible for all the information provided in the report, except those information provided by the applicant.

The applicant shall fully responsible for the information they provided.

The report would be invalid without a stamp of test laboratory and the signatures of compiler and approver.

The laboratory has not been responsible for the sampling stage; the test report merely corresponds to the test sample received.

Any objection to the test report shall submitted to the test laboratory within 15 days from the date of receipt of the report.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.

## 2.10. Addition Instructions

| | |
|---|---|
| Test Software | BT_TOOL_V1.1.4 |
| Power level setup | default |

# 3. Verdict summary section

| FCC 47 CFR PART 15 Subpart C | | |
|---|---|---|
| **Requirement – Test case** | **Basic standard** | **Verdict** |
| Antenna requirement | 47 CFR Part 15.203 | Pass |
| AC Power Line Conducted Emission | 47 CFR Part 15.207(a) | Pass |
| Conducted Peak Output Power and EIRP | 47 CFR Part 15.247(b)(1) | Pass |
| 20dB & 99% Occupied Bandwidth | 47 CFR Part 15.215(c) | Pass |
| Carrier Frequencies Separation | 47 CFR Part 15.247(a)(1) | Pass |
| Hopping Channel Number | 47 CFR Part 15.247(a)(1)(iii) | Pass |
| Dwell Time | 47 CFR Part 15.247(a)(1)(iii) | Pass |
| Spurious Emission | 47 CFR Part 15.247(d) | Pass |

| Test case verdicts | |
|---|---|
| - Test case does not apply to the test object ..... : | N/A |
| - Test object does meet the requirement ..... : | P (Pass) |
| - Test object does not meet the requirement ..... : | F (Fail) |

# 4. List of Test Equipment

| Equipment | Manufacturer | Model No. | Serial No. | Cal. cycle | Cal. Due |
|---|---|---|---|---|---|
| **Conducted emissions** | | | | | |
| EMI Test Receiver | R&S | ESR3 | 103057 | 1 year | 2027/04/09 |
| LISN | R&S | ENV 216 | 102832 | 1 year | 2027/04/09 |
| Test Software | Farad | EZ-EMC | 3A1.6 | / | / |
| **Radiated emissions** | | | | | |
| Loop Antenna | Schwarzbeck | FMZB 1513-60B | 1513-60B 044 | 1 year | 2027/04/10 |
| Broadband Antenna | Schwarzbeck | VULB 9162 | 00556 | 1 year | 2027/04/10 |
| Horn Antenna | Schwarzbeck | BBHA 9120 D | 02783 | 1 year | 2027/04/10 |
| Horn Antenna | Schwarzbeck | BBHA9170 | 01306 | 1 year | 2027/04/10 |
| EMI Test Receiver | R&S | ESU8 | 100372 | 1 year | 2027/04/10 |
| Spectrum Analyzer | R&S | FSV40-N | 101791 | 1 year | 2027/04/10 |
| Amplifier | Schwarzbeck | BBV 9744 | 00327 | 1 year | 2027/04/10 |
| Amplifier | TSTPASS | LNA10180G45 | TSAM2303003 | 1 year | 2027/04/13 |
| Amplifier | RF system | TRLA-180400G45B | 23060801 | 1 year | 2027/04/13 |
| 3m Anechoic Chamber | BOST | 966 | / | 3 year | 2029/04/10 |
| Test Software | Farad | EZ-EMC | 3A1.1+ | / | / |
| **RF conducted** | | | | | |
| Spectrum Analyzer | keysight | N9020A | MY51280659 | 1 year | 2027/04/09 |
| Signal Generator | Agilent | N5181A | MY48180054 | 1 year | 2027/04/09 |
| Signal Generator | keysight | N5172B | MY57281610 | 1 year | 2027/04/09 |
| Spectrum Analyzer | R&S | FSV40-N | 101791 | 1 year | 2027/04/09 |
| Wideband Radio Communication Tester | R&S | CMW500 | 123123 | 1 year | 2027/04/09 |
| RF Switch Box | TST PASS | TST V2 | / | 1 year | 2027/04/09 |
| Test Software | TST PASS | TST PASS | V2.0 | / | / |
| Temperature and humidity chamber | Guangdong fenghe | FH-TH-1000 | FH24032017 | 1 year | 2027/04/09 |

# 5. Technical Requirement and Measurement Data

## 5.1. Generally requirement

**Antenna requirement:**

**§15.203 requirement:**

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

**§15.247(b) (4) requirement:**

(4) The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

**EUT Antenna:**

The antenna is chip antenna which is permanently attached, Reference to the appendix for details

## 5.2. Conducted emissions

### 5.2.1. Limits

| Frequency (MHz) | Quasi-peak | Average |
|---|---|---|
| 0.15 to 0.5 | 66 to 56 | 56 to 46 |
| 0.5 to 5 | 56 | 46 |
| 5 to 30 | 60 | 50 |

### 5.2.2. Test method

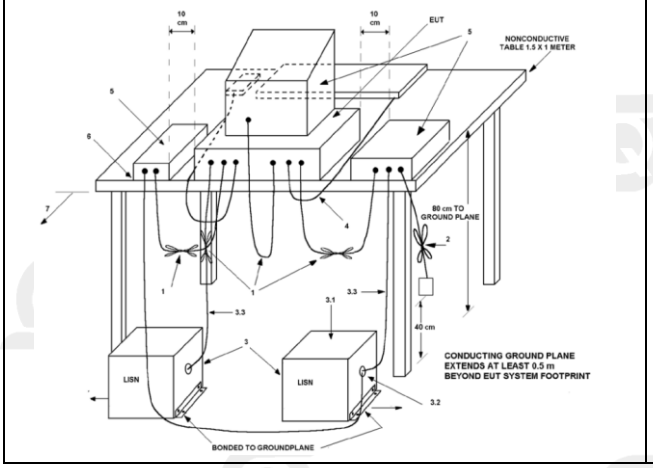
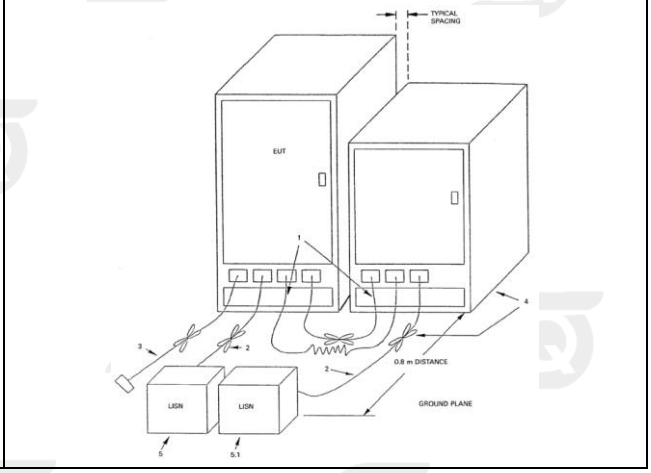
The measurement was performed in a shield room.

Measured levels of ac power-line conducted emission shall be the radio-noise voltage from the voltage probe, where permitted, or across the 50 Ω LISN port (to which the EUT is connected), as terminated into a 50 Ω EMI receiver or spectrum analyzer. All radio-noise voltage and current measurements shall be made on each current-carrying conductor at the plug end of the EUT power cord or calibrated extension cord by the use of mating plugs and receptacles on the EUT and LISN, if used. The manufacturer shall test equipment with power cords that are normally supplied or recommended by the manufacturer and that have electrical and shielding characteristics that are the same as those cords normally supplied or recommended. For measurements using a LISN, the 50 Ω measuring port is terminated into a 50 Ω EMI receiver or spectrum analyzer. All other ports are terminated into 50 Ω loads.

Table top devices shall be placed on a platform of nominal size 1 m by 1.5 m, raised 80 cm above the reference ground plane. The vertical conducting plane or wall of an RF-shielded (screened) room shall be located 40 cm to the rear of the EUT. Floor-standing devices shall be placed either directly on the reference ground-plane or on insulating material as described in ANSI C63.4. All other surfaces of tabletop or floor-standing EUTs shall be at least 80 cm from any other grounded conducting surface, including the case or cases of one or more LISNs.

The bandwidth of the test receiver is set at 9 kHz.

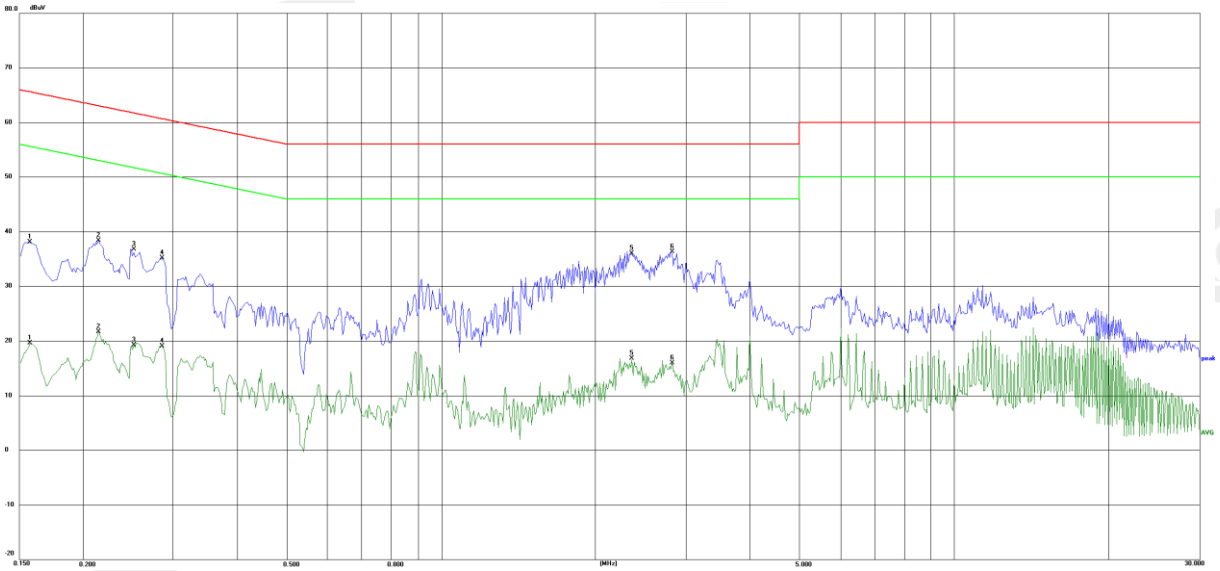
### 5.2.3. Block diagram of test setup

| ☒For table-top equipment | ☐For floor standing equipment |
|---|---|
|  |  |

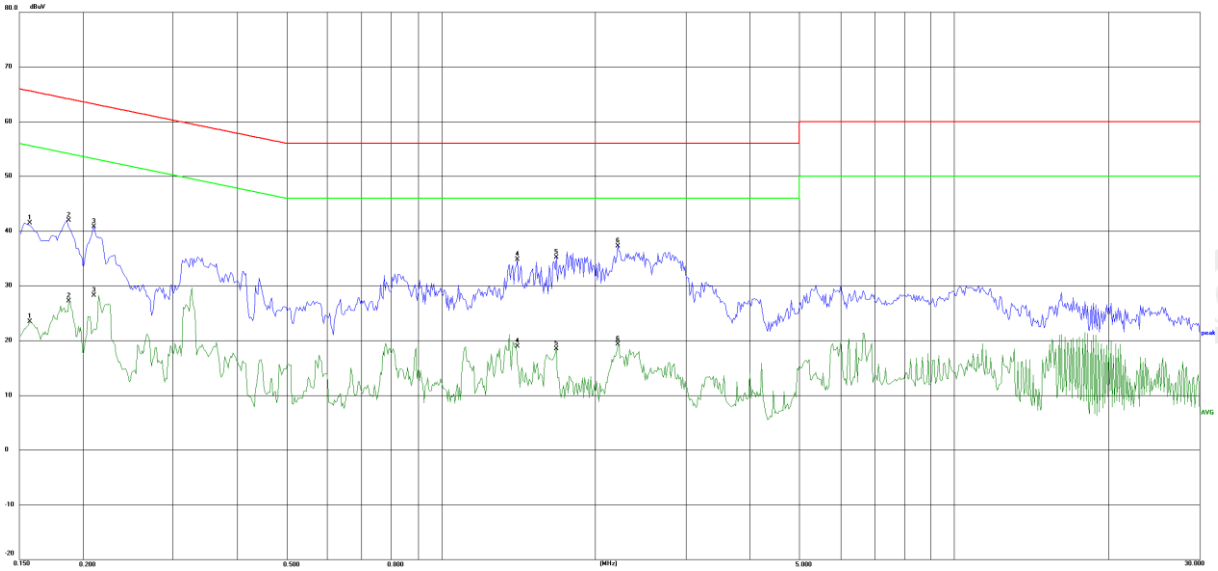
### 5.2.4. Test information

| | |
|---|---|
| Ambient temperature: | 26.4 °C |
| Relative humidity: | 47 % |
| EUT operation mode: | Mode 1 |
| Test results: | Pass |
| Remark: | Correct Factor Value = Attenuator Factor + Cable Loss + LISN Factor<br>Measurement Value = Reading Level Value + Correct Factor Value<br>Over Value = Measurement Value - Limit Value<br>Only the worst case report (GFSK, 2402MHz) |

## Measurement data and Graphical presentation of the result



| No. | Frequency (MHz) | QP Value (dBuV) | QP Limit (dBuV) | QP Margin (dB) | AVG Value (dBuV) | AVG Limit (dBuV) | AVG Margin (dB) | Result | Line |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.158 | 38.07 | 65.57 | -27.50 | 19.64 | 55.57 | -35.93 | Pass | Line 1 |
| 2 | 0.214 | 38.38 | 63.05 | -24.67 | 21.72 | 53.05 | -31.33 | Pass | Line 1 |
| 3 | 0.251 | 36.78 | 61.72 | -24.94 | 19.22 | 51.72 | -32.50 | Pass | Line 1 |
| 4 | 0.286 | 35.24 | 60.64 | -25.40 | 19.09 | 50.64 | -31.55 | Pass | Line 1 |
| 5 | 2.350 | 16.83 | 56.00 | -39.17 | 36.02 | 46.00 | -9.98 | Pass | Line 1 |
| 6 | 2.822 | 36.35 | 56.00 | -19.65 | 16.00 | 46.00 | -30.00 | Pass | Line 1 |



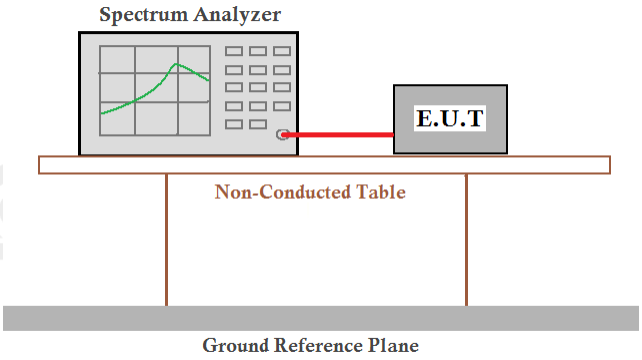
| No. | Frequency (MHz) | QP Value (dBuV) | QP Limit (dBuV) | QP Margin (dB) | AVG Value (dBuV) | AVG Limit (dBuV) | AVG Margin (dB) | Result | Line |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.158 | 41.50 | 65.57 | -24.07 | 23.45 | 55.57 | -32.12 | Pass | Neutral |
| 2 | 0.188 | 41.95 | 64.12 | -22.17 | 27.19 | 54.12 | -26.93 | Pass | Neutral |
| 3 | 0.210 | 40.85 | 63.21 | -22.36 | 28.25 | 53.21 | -24.96 | Pass | Neutral |
| 4 | 1.406 | 34.82 | 56.00 | -21.18 | 18.96 | 46.00 | -27.04 | Pass | Neutral |
| 5 | 1.674 | 35.17 | 56.00 | -20.83 | 18.50 | 46.00 | -27.50 | Pass | Neutral |
| 6 | 2.202 | 37.27 | 56.00 | -18.73 | 19.32 | 46.00 | -26.68 | Pass | Neutral |

## 5.3. Conducted Peak Output Power

**Limit**

For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400-2483.5 MHz band: 0.125 watts.

**Block diagram of Test Setup**




**Test Instrument**

Refer to section 4 for details

**Test Procedures**

The path loss was compensated to the results for each measurement.
Use the following spectrum analyzer settings:
Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel
RBW > the 20 dB bandwidth of the emission being measured VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold
Allow the trace to stabilize.
Use the marker-to-peak function to set the marker to the peak of the emission.

**Verdict**

Pass

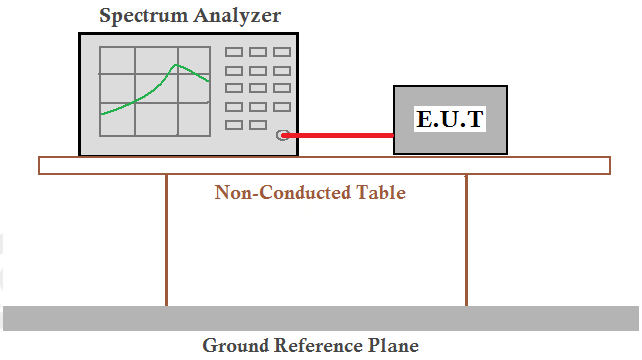
**Measurement Data: The detailed test data see Appendix**

## 5.4. Occupied Channel Bandwidth

**Limit**

Report only

**Block diagram of Test Setup**




**Test Instrument**

Refer to section 4 for details

**Test Procedures**

1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Use the following spectrum analyzer settings for 20dB Bandwidth measurement.
   Span = approximately 2 to 5 times the 20 dB bandwidth, centered on a hopping channel; 1%≤RBW≤5% of the 20 dB bandwidth; VBW≥3RBW;
   Sweep = auto; Detector function = peak; Trace = max hold.
4. Measure and record the results in the test report.

The following procedure shall be used for measuring 99% power bandwidth: Use the following spectrum analyzer settings:
a) Span equal to approximately 1.5 times the OBW, centered on the carrier frequency
b) RBW, prefer 1% to 5% of OBW, or a minimum of 1 MHz if this is not possible due to a large OBW
c) VBW approximately 3 × RBW.
d) Sweep = No faster than coupled (auto) time
e) Detector function = peak.
f) Trace = max-hold.
g) The EUT shall be transmitting at its maximum data rate. Allow the trace to stabilize.

**Verdict**

Pass

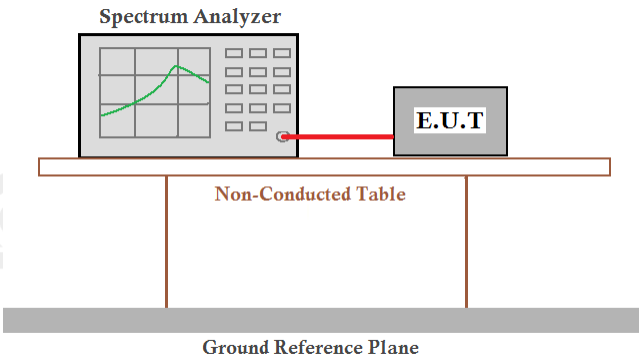
**Measurement Data: The detailed test data see Appendix**

## 5.5. Carrier Frequency Separation

**Limit**

FHS operating in the band 2400-2483.5 MHz may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided that the systems operate with an output power no greater than 0.125 W

**Block diagram of Test Setup**




**Test Instrument**

Refer to section 4 for details

**Test Procedures**

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:
a) Span: Wide enough to capture the peaks of two adjacent channels.
b) RBW: Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel.
c) Video (or average) bandwidth (VBW) ⩾ RBW.
d) Sweep: No faster than coupled (auto) time.
e) Detector function: Peak.
f) Trace: Max-hold.
g) Allow the trace to stabilize.
Use the marker-delta function to determine the separation between the peaks of the adjacent channels.

**Verdict**

Pass

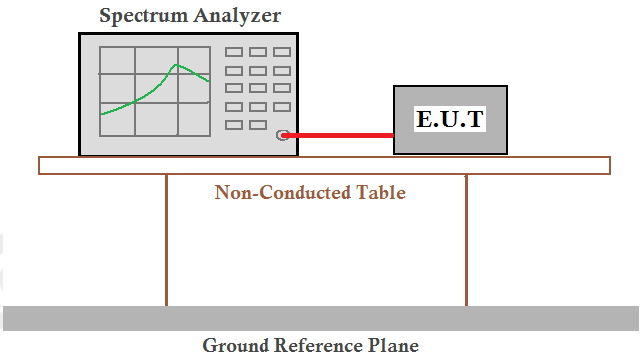
**Measurement Data: The detailed test data see Appendix**

## 5.6. Hopping Channel Numbers

**Limit**

FHS operating in the band 2400-2483.5 MHz shall use at least 15 hopping channels.

**Block diagram of Test Setup**




**Test Instrument**

Refer to section 4 for details

**Test Procedures**

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

a) Span: The frequency band of operation. Depending on the number of channels the device supports, it could be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.

b) RBW: To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.

c) VBW ⩾ RBW.

d) Sweep: No faster than coupled (auto) time.

e) Detector function: Peak.

f) Trace: Max-hold.

g) Allow the trace to stabilize.

**Verdict**

Pass

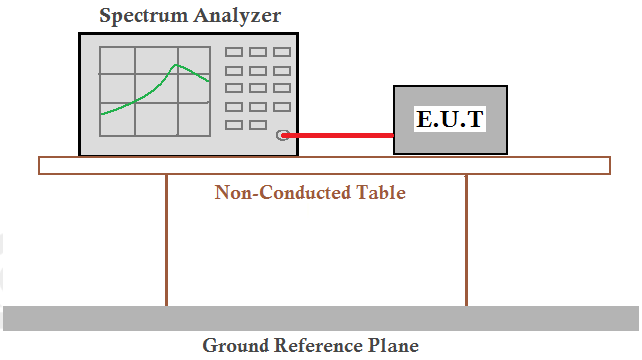
**Measurement Data: The detailed test data see Appendix**

## 5.7. Dwell Time

**Limit**

0.4s

**Block diagram of Test Setup**




**Test Instrument**

Refer to section 4 for details

**Test Procedures**

Use the following spectrum analyzer settings to determine the dwell time per hop:
a) Span: Zero span, centered on a hopping channel.
b) RBW shall be ≤ channel spacing and where possible RBW should be set >> 1 / T, where T is the expected transmission time per hop.
c) Sweep time: Set so that the start of the first transmission and end of the last transmission for the hop are clearly captured. Setting the sweep time to be slightly longer than the hopping period per channel (hopping period = 1/hopping rate) should achieve this.
d) Use a video trigger, where possible with a trigger delay, so that the start of the transmission is clearly observed. The trigger level might need adjustment to reduce the chance of triggering when the system hops on an adjacent channel.
e) Detector function: Peak.
f) Trace: Clear-write, single sweep.
g) Place markers at the start of the first transmission on the channel and at the end of the last transmission. The dwell time per hop is the time between these two markers.

**Verdict**

Pass

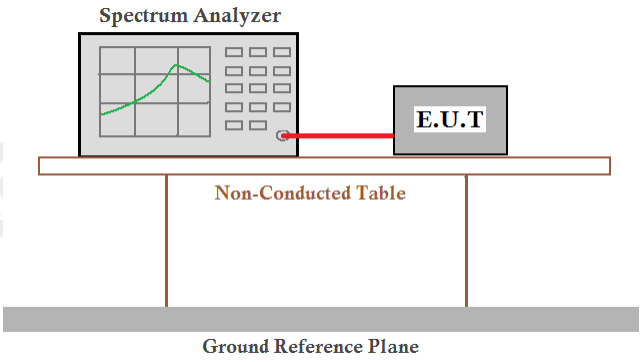
**Measurement Data: The detailed test data see Appendix**

## 5.8. Conducted Spurious Emission

**Limit**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

**Block diagram of Test Setup**




**Test Instrument**

Refer to section 4 for details

**Test Procedures**

1. The RF output of EUT was connected to the spectrum analyzer by RF cable. The path loss was compensated to the results for each measurement.
2. Set to the maximum power setting and enable the EUT transmit continuously.
3. Set RBW = 100 kHz, VBW = 300kHz, scan up through 10th harmonic. All harmonics / spurs must be at least 20 dB down from the highest emission level within the authorized band as measured with a 100 kHz RBW.
4. Measure and record the results in the test report.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.

Note: The conducted spurious emissions test has compensated for the maximum line loss measurement, and the recorded data represents the worst-case scenario.

**Verdict**

Pass

**Note: The conducted spurious emissions test has compensated for the maximum line loss measurement, and the recorded data represents the worst-case scenario**

**Measurement Data: The detailed test data see Appendix**

## 5.9. Radiated emissions

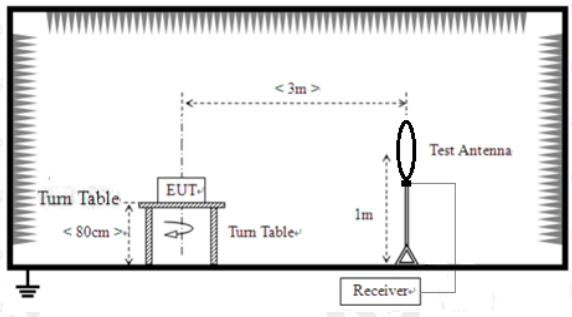
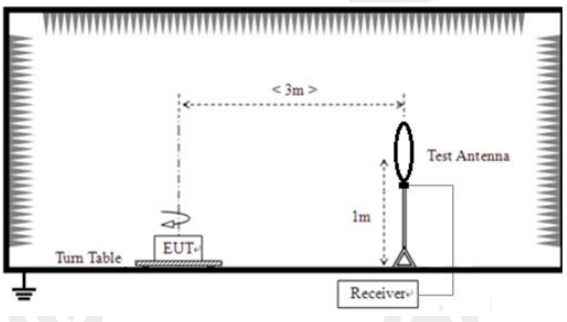
### 5.9.1. Limits

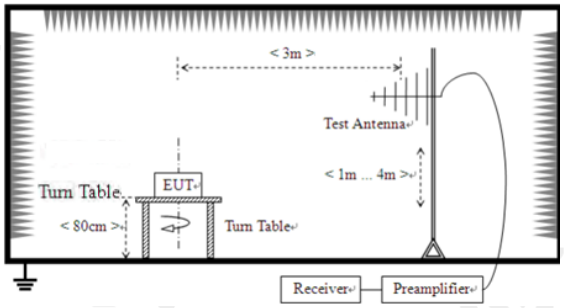
| Frequency (MHz) | Field Strength(microvolts/meter) | Measurement distance(meters) |
|---|---|---|
| 0.009~0.49 | 2400/F(kHz) | 300 |
| 0.49~1.705 | 24000/F(kHz) | 30 |
| 1.705~30 | 30 | 30 |
| 30~88 | 100** | 3 |
| 88~216 | 150** | 3 |
| 216~960 | 200** | 3 |
| Above 960 | 500 | 3 |
| ** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54–72 MHz, 76–88 MHz, 174–216 MHz or 470–806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241. | | |

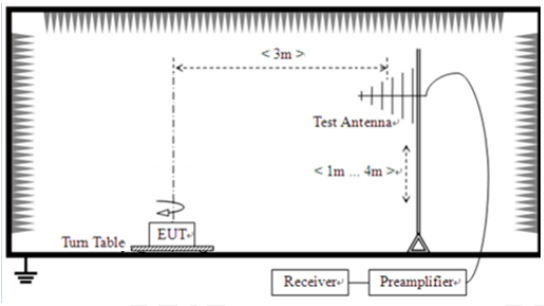
### 5.9.2. Test method

Measurements were made in semi-anechoic chamber or Open Area Test Site that complies to CISPR 16. Preliminary (peak) measurements. The EUT was rotated 360° about its azimuth with the receive antenna located at various heights in horizontal and vertical polarities. Final measurements (quasi-peak detector below 1 GHz and average detector above 1 GHz) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4 m. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable.

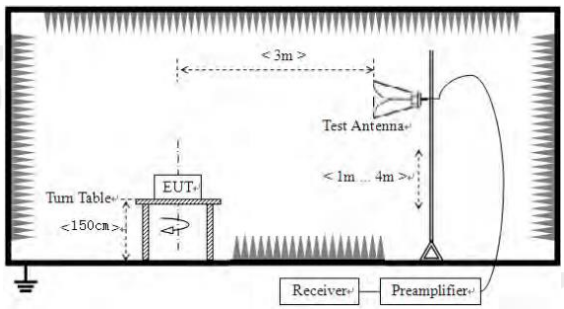
### 5.9.3. Block diagram of test setup

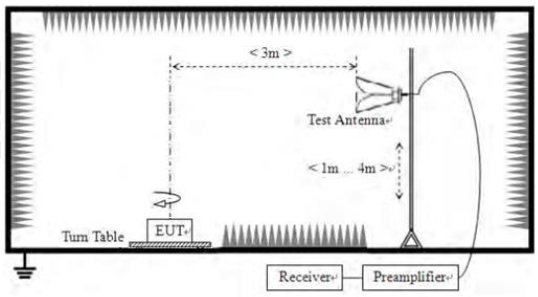
| ☒For table-top equipment | ☐For floor standing equipment |
|---|---|
| For radiated emissions from 9kHz to 30MHz | |
|  |  |
| For radiated emissions from 30MHz to1GHz | |




For radiated emissions above 1GHz



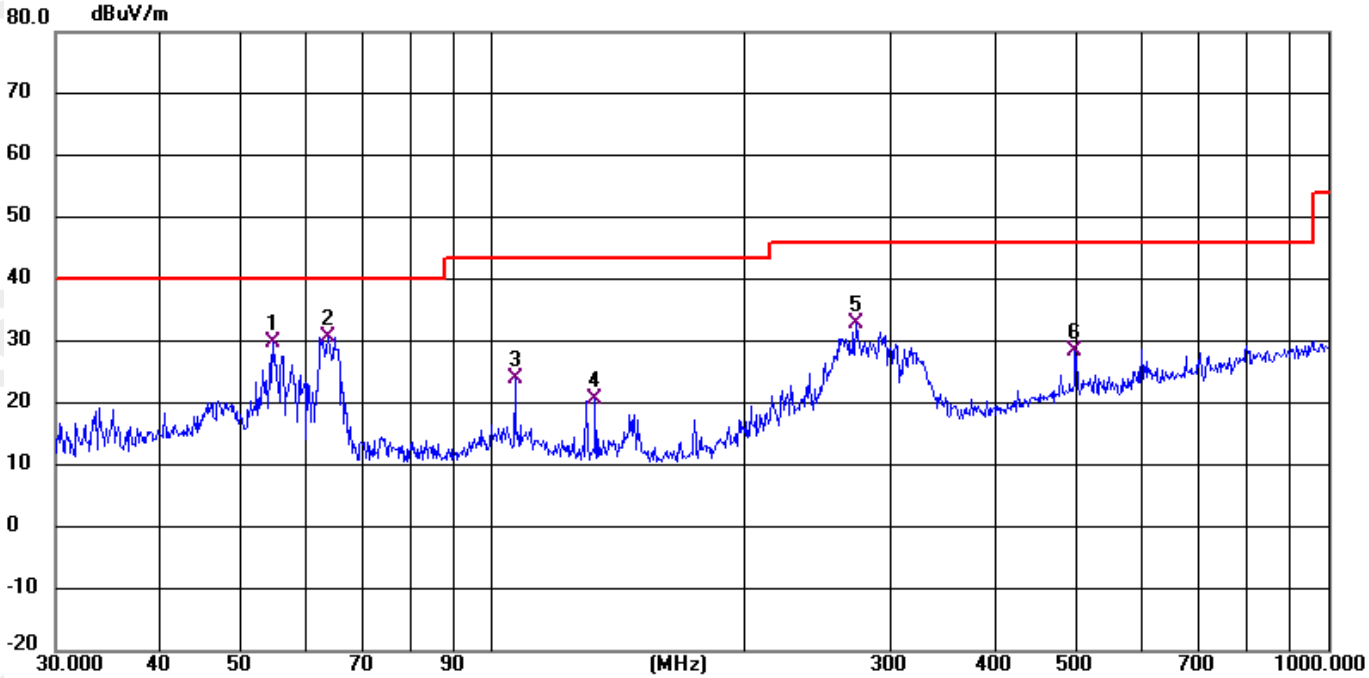

### 5.9.4. Test information

| | |
|---|---|
| Ambient temperature: | 24.5 °C |
| Relative humidity: | 46 % |
| EUT operation mode: | Mode 1 |
| Test results: | Pass |
| Remark: | Factor Value = Antenna Factor + Cable Loss - Preamplifier Factor<br>Level Value = Reading Value + Factor Value<br>Margin Value = Level Value - Limit Value |

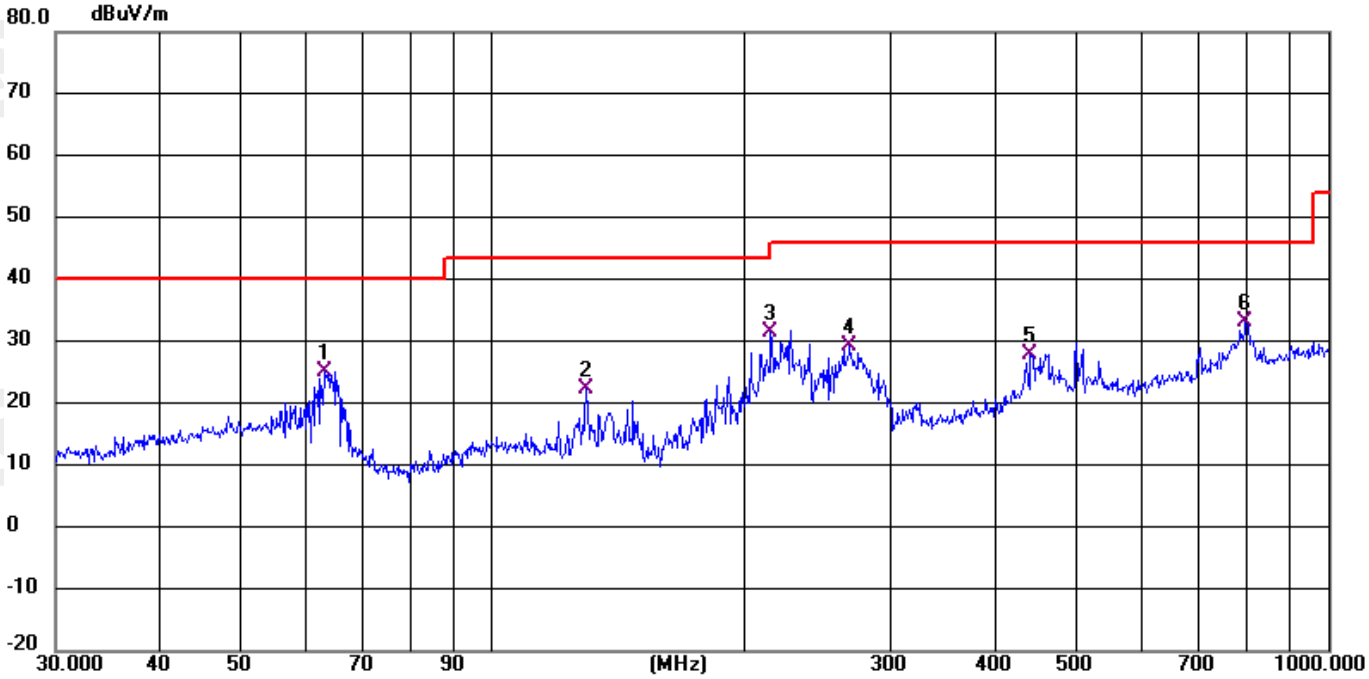
*Note: The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o), the test result no need to reported.*

**Measurement data and Graphical presentation of the result**

All condition were test and passed, only worst data report (8DPSK, 2402MHz)



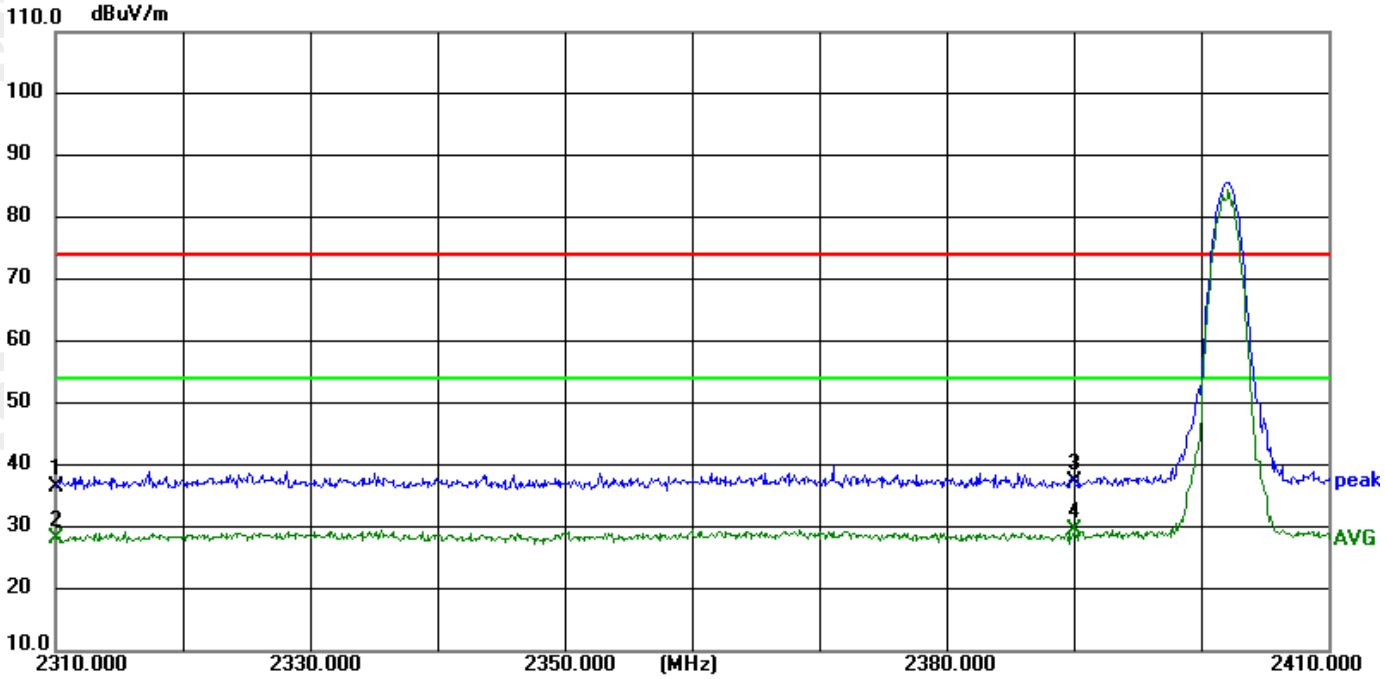

| No. | Frequency (MHz) | Reading Level(dBuV) | Factor (dB) | Measure-ment(dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Comment |
|---|---|---|---|---|---|---|---|---|
| 1 | 54.715 | 15.48 | 14.27 | 29.75 | 40.00 | -10.25 | QP | Vertical |
| 2 * | 63.703 | 18.26 | 12.55 | 30.81 | 40.00 | -9.19 | QP | Vertical |
| 3 | 106.525 | 11.08 | 12.87 | 23.95 | 43.50 | -19.55 | QP | Vertical |
| 4 | 133.034 | 11.20 | 9.52 | 20.72 | 43.50 | -22.78 | QP | Vertical |
| 5 | 272.397 | 18.12 | 14.69 | 32.81 | 46.00 | -13.19 | QP | Vertical |
| 6 | 498.331 | 8.76 | 19.58 | 28.34 | 46.00 | -17.66 | QP | Vertical |



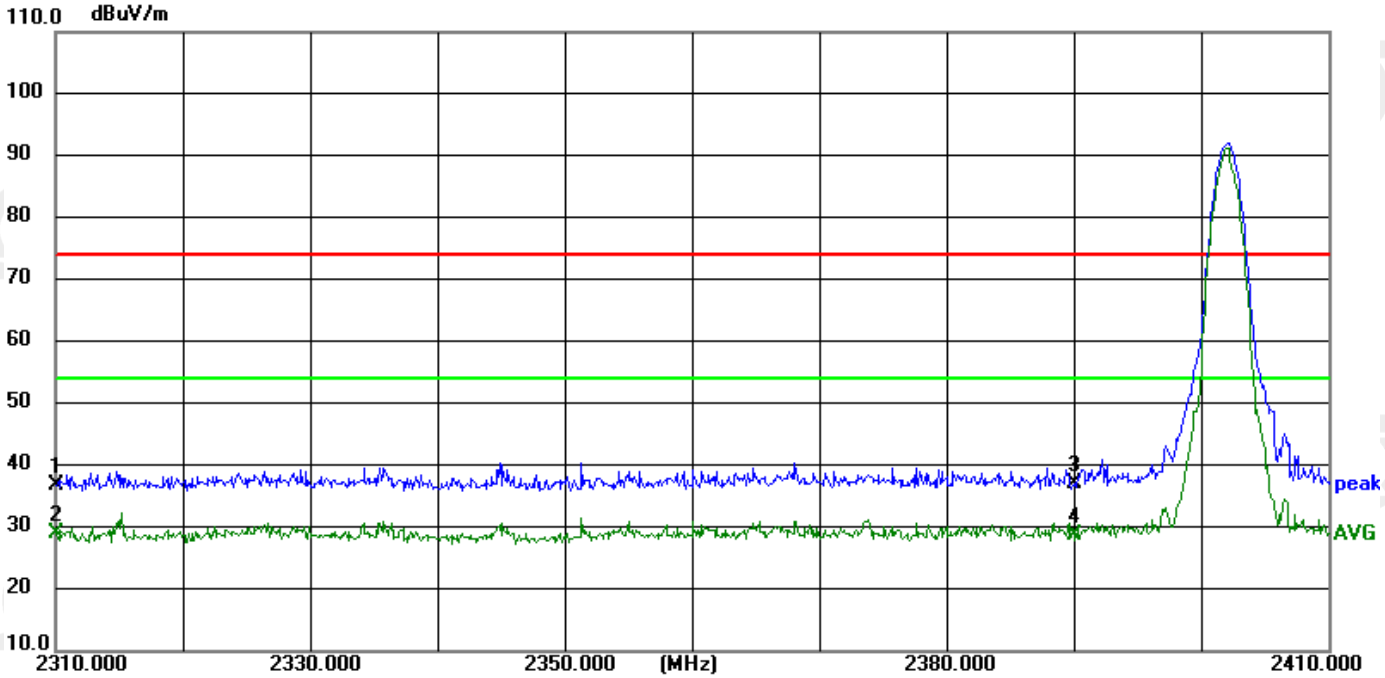

| No. | Frequency (MHz) | Reading Level(dBuV) | Factor (dB) | Measure-ment(dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Comment |
|---|---|---|---|---|---|---|---|---|
| 1 | 62.981 | 12.39 | 12.76 | 25.15 | 40.00 | -14.85 | QP | Horizontal |
| 2 | 129.695 | 12.58 | 9.67 | 22.25 | 43.50 | -21.25 | QP | Horizontal |
| 3 * | 215.929 | 18.47 | 12.98 | 31.45 | 43.50 | -12.05 | QP | Horizontal |
| 4 | 268.015 | 14.57 | 14.61 | 29.18 | 46.00 | -16.82 | QP | Horizontal |
| 5 | 441.162 | 9.49 | 18.44 | 27.93 | 46.00 | -18.07 | QP | Horizontal |
| 6 | 798.280 | 8.89 | 24.23 | 33.12 | 46.00 | -12.88 | QP | Horizontal |

**Restricted Bands:** All condition were test and passed, only worst data report (8DPSK)

**Lowest channel:**

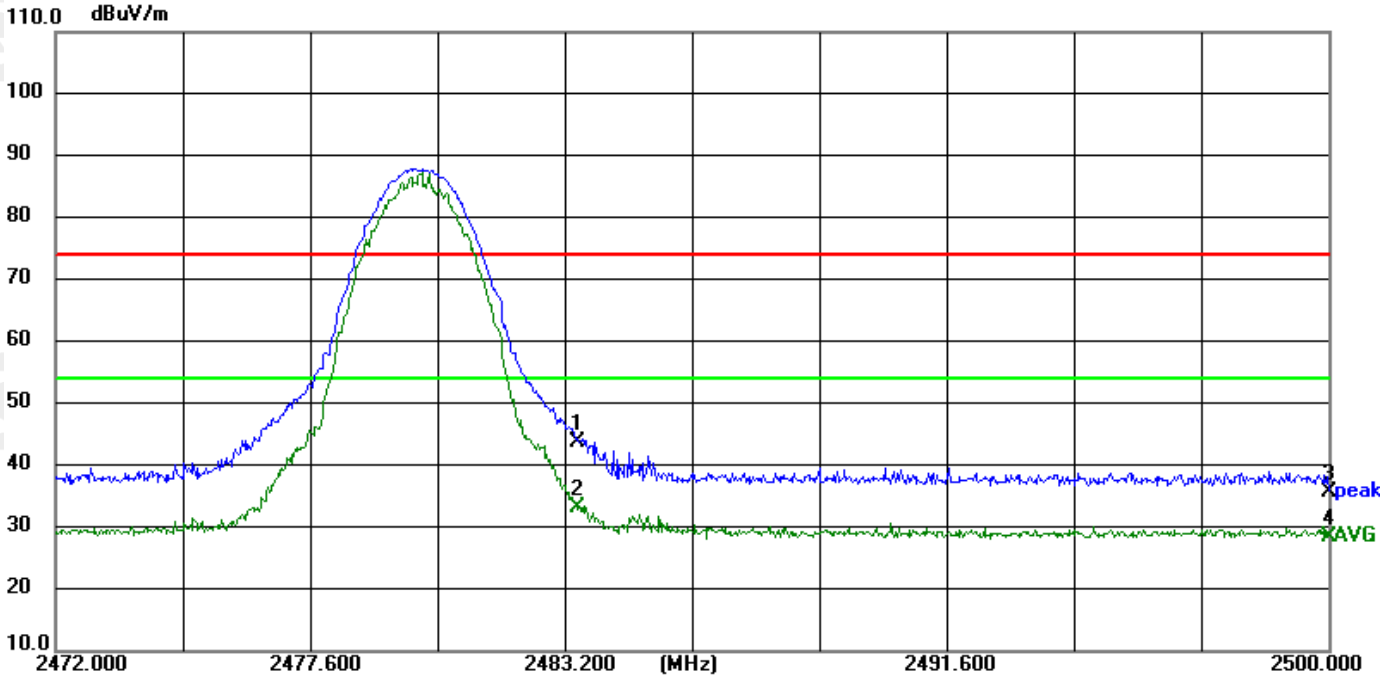



| No. | Frequency (MHz) | Reading Level(dBuV) | Factor (dB) | Measure-ment(dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Comment |
|---|---|---|---|---|---|---|---|---|
| 1 | 2310.000 | 57.46 | -20.81 | 36.65 | 74.00 | -37.35 | peak | Horizontal |
| 2 | 2310.000 | 48.93 | -20.81 | 28.12 | 54.00 | -25.88 | AVG | Horizontal |
| 3 | 2390.000 | 58.06 | -20.60 | 37.46 | 74.00 | -36.54 | peak | Horizontal |
| 4 * | 2390.000 | 50.18 | -20.60 | 29.58 | 54.00 | -24.42 | AVG | Horizontal |

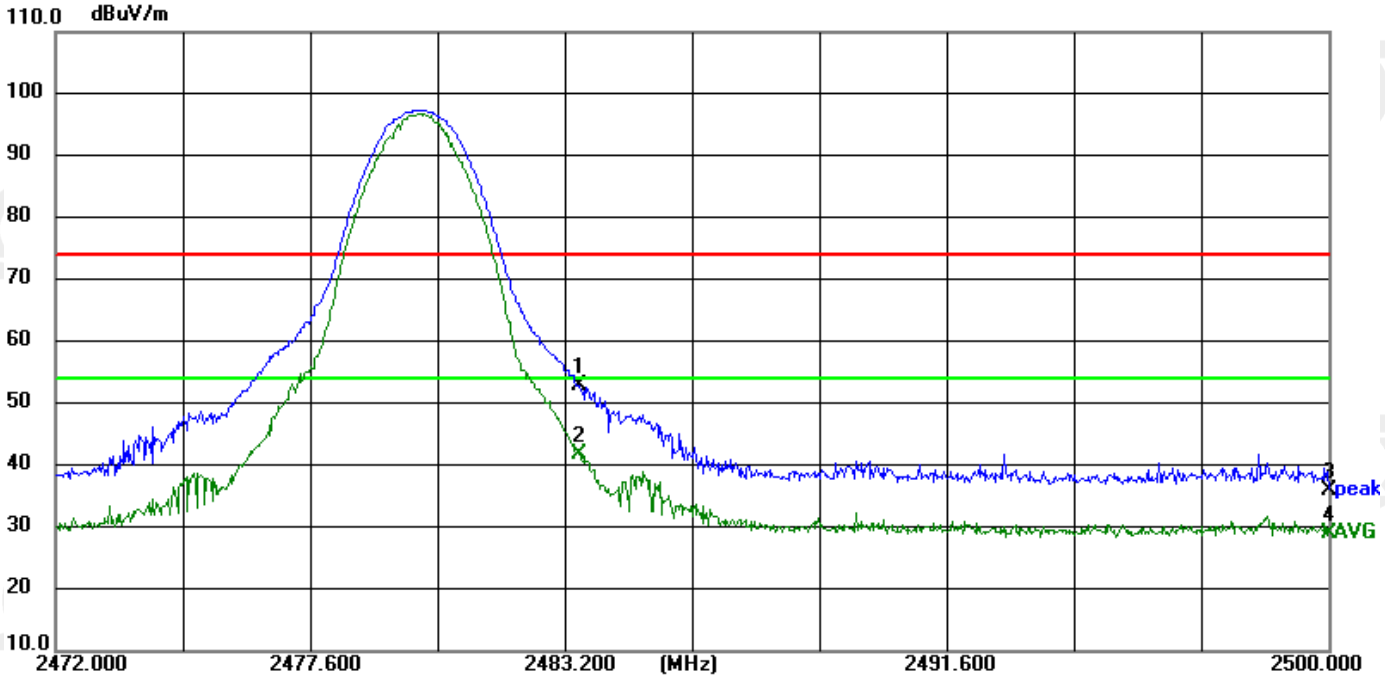



| No. | Frequency (MHz) | Reading Level(dBuV) | Factor (dB) | Measure-ment(dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Comment |
|---|---|---|---|---|---|---|---|---|
| 1 | 2310.000 | 57.73 | -20.81 | 36.92 | 74.00 | -37.08 | peak | Vertical |
| 2 * | 2310.000 | 49.97 | -20.81 | 29.16 | 54.00 | -24.84 | AVG | Vertical |
| 3 | 2390.000 | 57.67 | -20.60 | 37.07 | 74.00 | -36.93 | peak | Vertical |
| 4 | 2390.000 | 49.24 | -20.60 | 28.64 | 54.00 | -25.36 | AVG | Vertical |

**Highest channel:**




| No. | Frequency (MHz) | Reading Level(dBuV) | Factor (dB) | Measure-ment(dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Comment |
|---|---|---|---|---|---|---|---|---|
| 1 | 2483.500 | 64.04 | -20.29 | 43.75 | 74.00 | -30.25 | peak | Horizontal |
| 2 * | 2483.500 | 53.37 | -20.29 | 33.08 | 54.00 | -20.92 | AVG | Horizontal |
| 3 | 2500.000 | 55.97 | -20.20 | 35.77 | 74.00 | -38.23 | peak | Horizontal |
| 4 | 2500.000 | 48.64 | -20.20 | 28.44 | 54.00 | -25.56 | AVG | Horizontal |

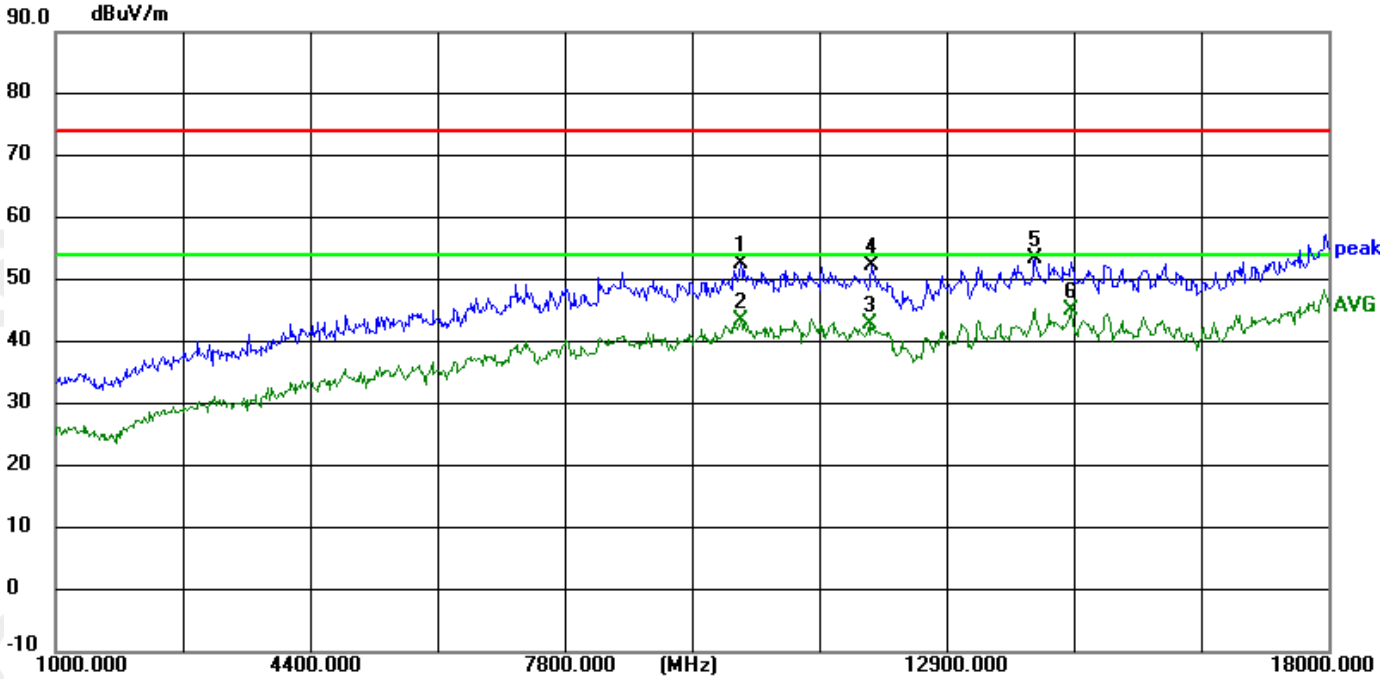



| No. | Frequency (MHz) | Reading Level(dBuV) | Factor (dB) | Measure-ment(dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Comment |
|---|---|---|---|---|---|---|---|---|
| 1 | 2483.500 | 73.26 | -20.29 | 52.97 | 74.00 | -21.03 | peak | Vertical |
| 2 * | 2483.500 | 62.12 | -20.29 | 41.83 | 54.00 | -12.17 | AVG | Vertical |
| 3 | 2500.000 | 56.08 | -20.20 | 35.88 | 74.00 | -38.12 | peak | Vertical |
| 4 | 2500.000 | 49.26 | -20.20 | 29.06 | 54.00 | -24.94 | AVG | Vertical |

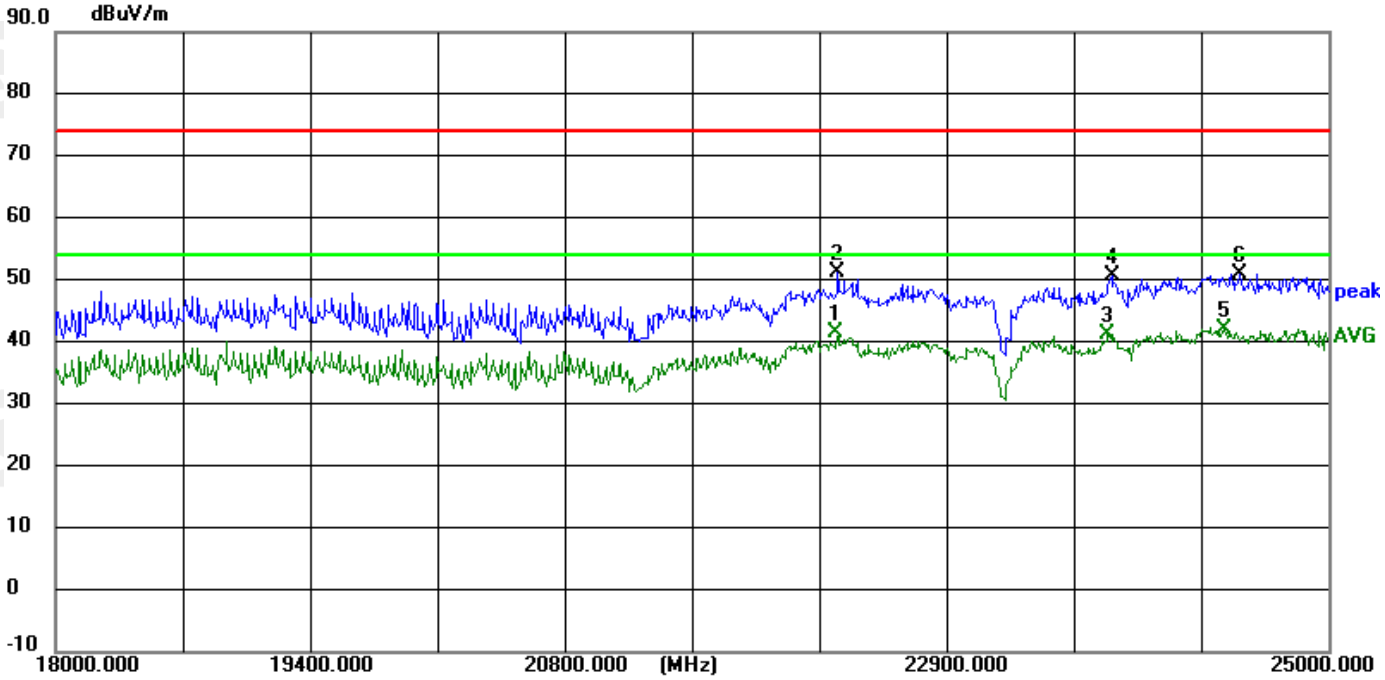
**Spurious Emissions:**

All condition were test and passed, only worst data report (8DPSK)

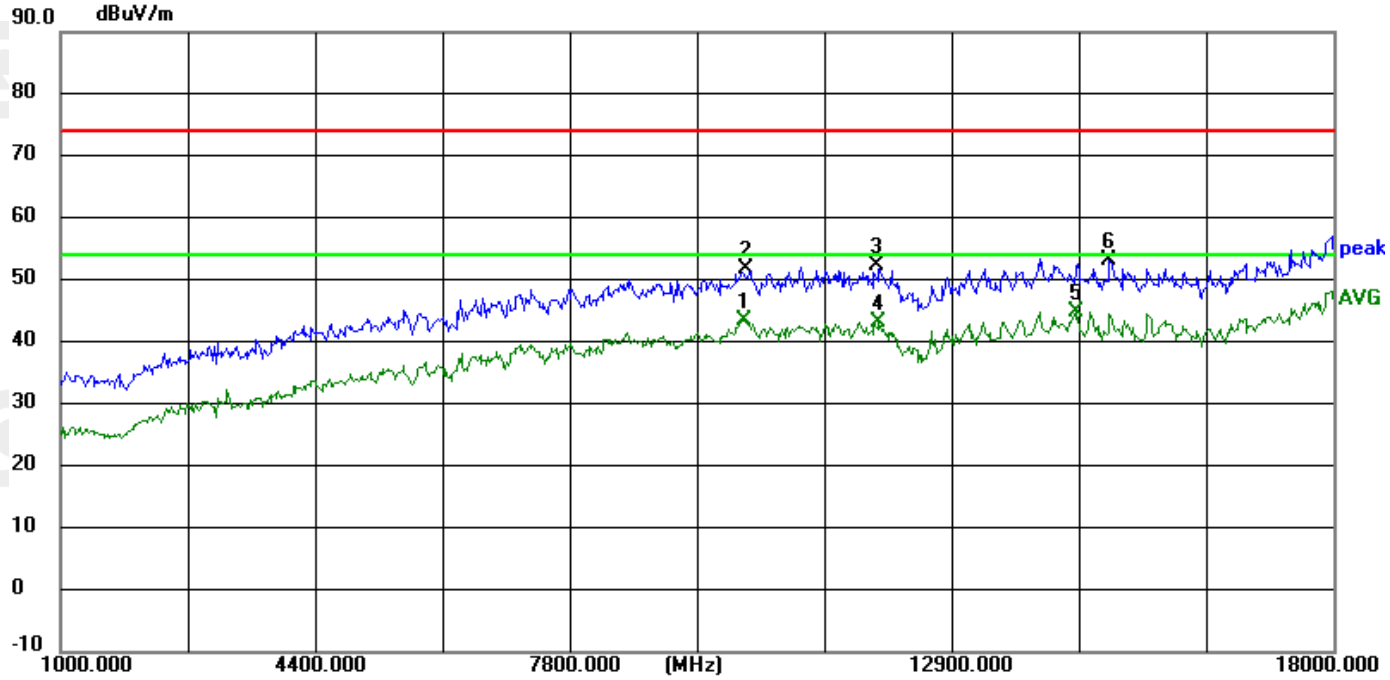
**Lowest Channel:**



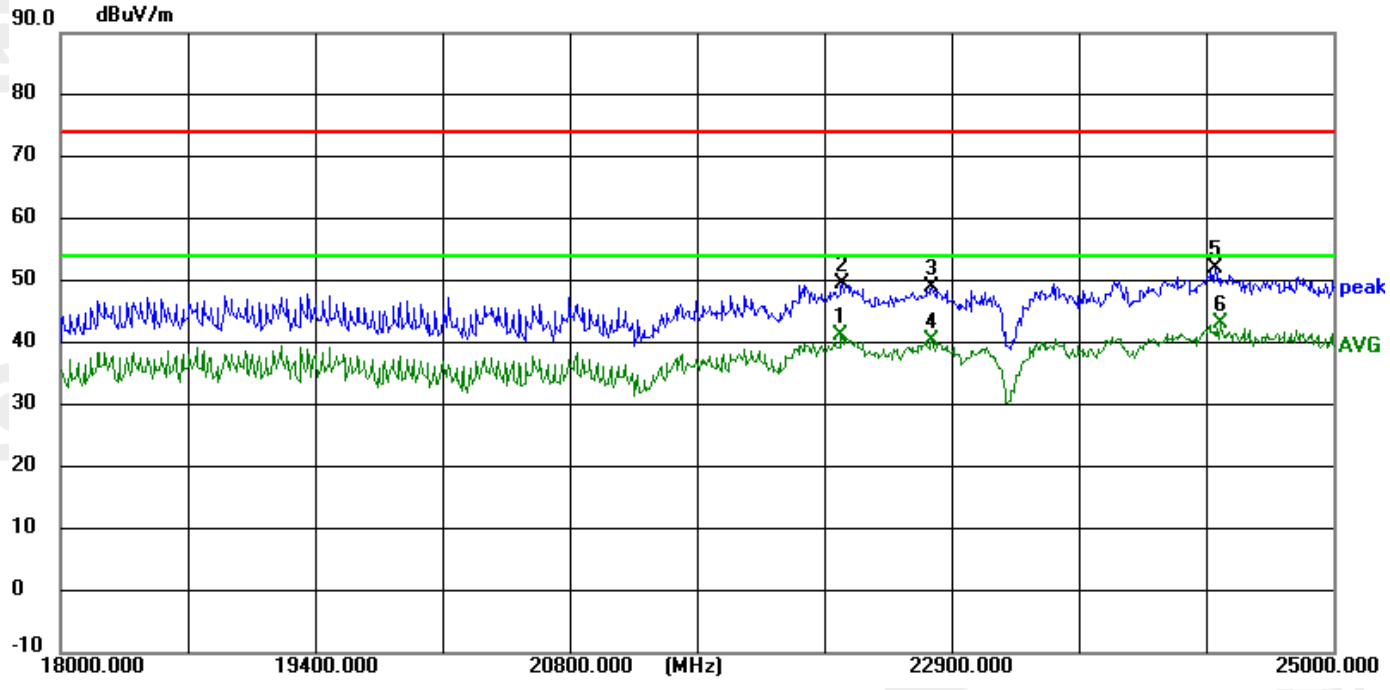

| No. | Frequency (MHz) | Reading Level(dBuV) | Factor (dB) | Measure-ment(dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Comment |
|---|---|---|---|---|---|---|---|---|
| 1 | 10135.375 | 55.31 | -2.63 | 52.68 | 74.00 | -21.32 | peak | Vertical |
| 2 | 10135.375 | 46.24 | -2.63 | 43.61 | 54.00 | -10.39 | AVG | Vertical |
| 3 | 11871.500 | 44.85 | -1.98 | 42.87 | 54.00 | -11.13 | AVG | Vertical |
| 4 | 11909.750 | 54.38 | -1.94 | 52.44 | 74.00 | -21.56 | peak | Vertical |
| 5 | 14085.750 | 52.80 | 0.72 | 53.52 | 74.00 | -20.48 | peak | Vertical |
| 6 * | 14553.250 | 44.22 | 0.85 | 45.07 | 54.00 | -8.93 | AVG | Vertical |




| No. | Frequency (MHz) | Reading Level(dBuV) | Factor (dB) | Measure-ment(dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Comment |
|---|---|---|---|---|---|---|---|---|
| 1 | 22298.000 | 44.54 | -3.14 | 41.40 | 54.00 | -12.60 | AVG | Vertical |
| 2 | 22302.375 | 54.29 | -3.13 | 51.16 | 74.00 | -22.84 | peak | Vertical |
| 3 | 23794.250 | 42.99 | -1.75 | 41.24 | 54.00 | -12.76 | AVG | Vertical |
| 4 | 23804.750 | 52.47 | -1.75 | 50.72 | 74.00 | -23.28 | peak | Vertical |
| 5 * | 24427.750 | 43.21 | -1.19 | 42.02 | 54.00 | -11.98 | AVG | Vertical |
| 6 | 24512.625 | 52.09 | -1.12 | 50.97 | 74.00 | -23.03 | peak | Vertical |

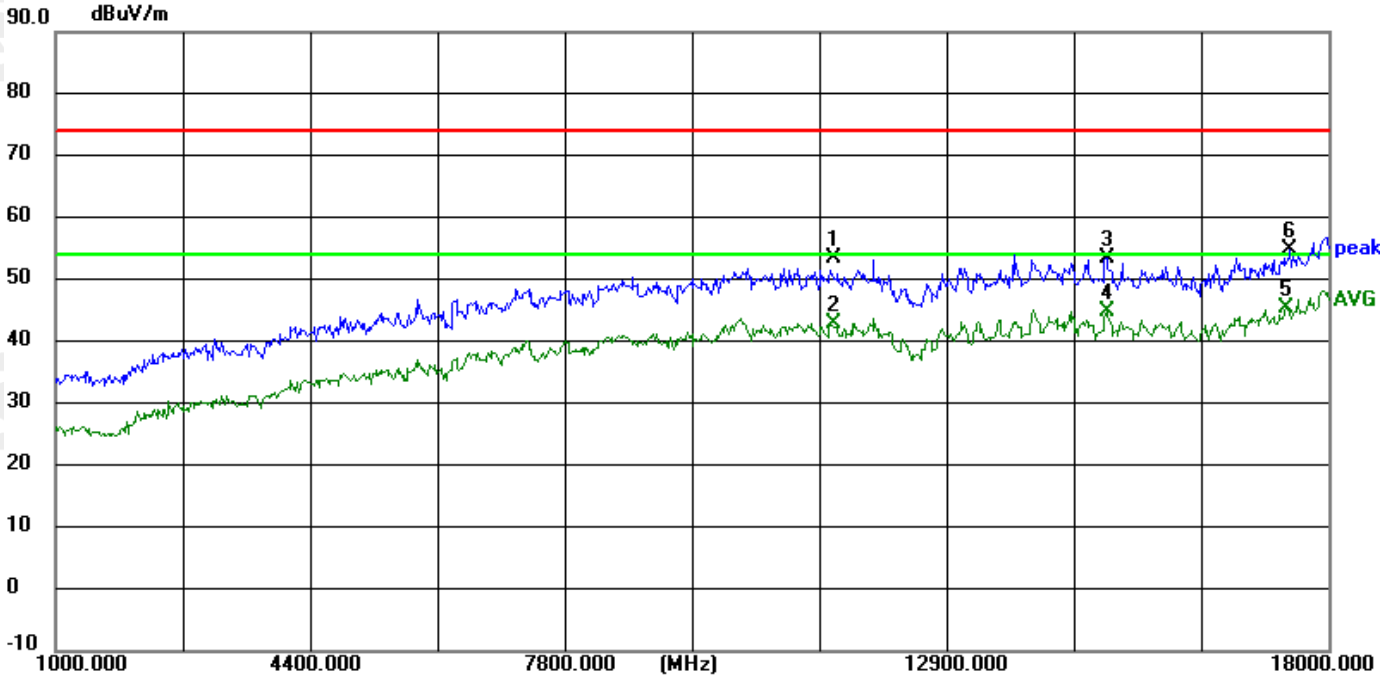



| No. | Frequency (MHz) | Reading Level(dBuV) | Factor (dB) | Measure-ment(dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Comment |
|---|---|---|---|---|---|---|---|---|
| 1 | 10137.500 | 46.22 | -2.62 | 43.60 | 54.00 | -10.40 | AVG | Horizontal |
| 2 | 10173.625 | 54.29 | -2.59 | 51.70 | 74.00 | -22.30 | peak | Horizontal |
| 3 | 11911.875 | 54.23 | -1.94 | 52.29 | 74.00 | -21.71 | peak | Horizontal |
| 4 | 11916.125 | 45.16 | -1.93 | 43.23 | 54.00 | -10.77 | AVG | Horizontal |
| 5 * | 14557.500 | 44.03 | 0.84 | 44.87 | 54.00 | -9.13 | AVG | Horizontal |
| 6 | 15020.750 | 52.96 | 0.35 | 53.31 | 74.00 | -20.69 | peak | Horizontal |

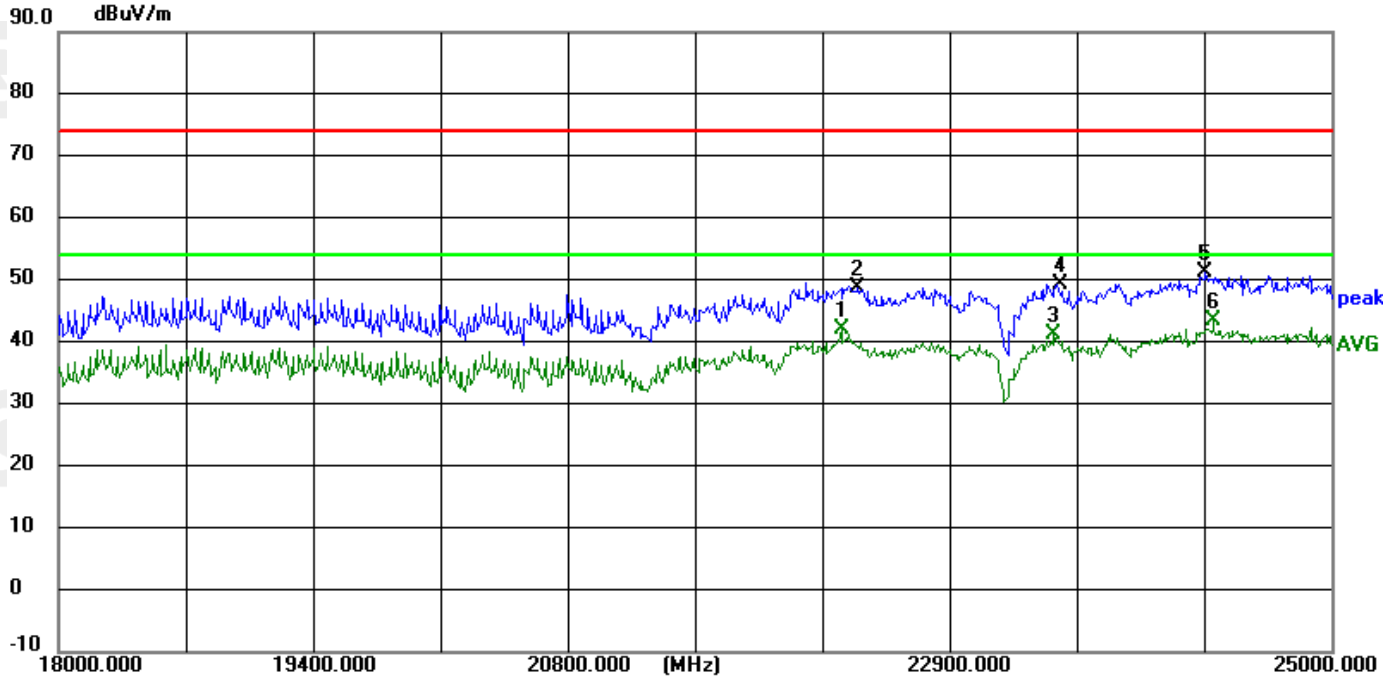



| No. | Frequency (MHz) | Reading Level(dBuV) | Factor (dB) | Measure-ment(dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Comment |
|---|---|---|---|---|---|---|---|---|
| 1 | 22295.375 | 44.36 | -3.14 | 41.22 | 54.00 | -12.78 | AVG | Horizontal |
| 2 | 22303.250 | 52.65 | -3.13 | 49.52 | 74.00 | -24.48 | peak | Horizontal |
| 3 | 22795.000 | 51.98 | -2.99 | 48.99 | 74.00 | -25.01 | peak | Horizontal |
| 4 | 22795.000 | 43.36 | -2.99 | 40.37 | 54.00 | -13.63 | AVG | Horizontal |
| 5 | 24345.500 | 53.45 | -1.26 | 52.19 | 74.00 | -21.81 | peak | Horizontal |
| 6 * | 24377.875 | 44.42 | -1.25 | 43.17 | 54.00 | -10.83 | AVG | Horizontal |

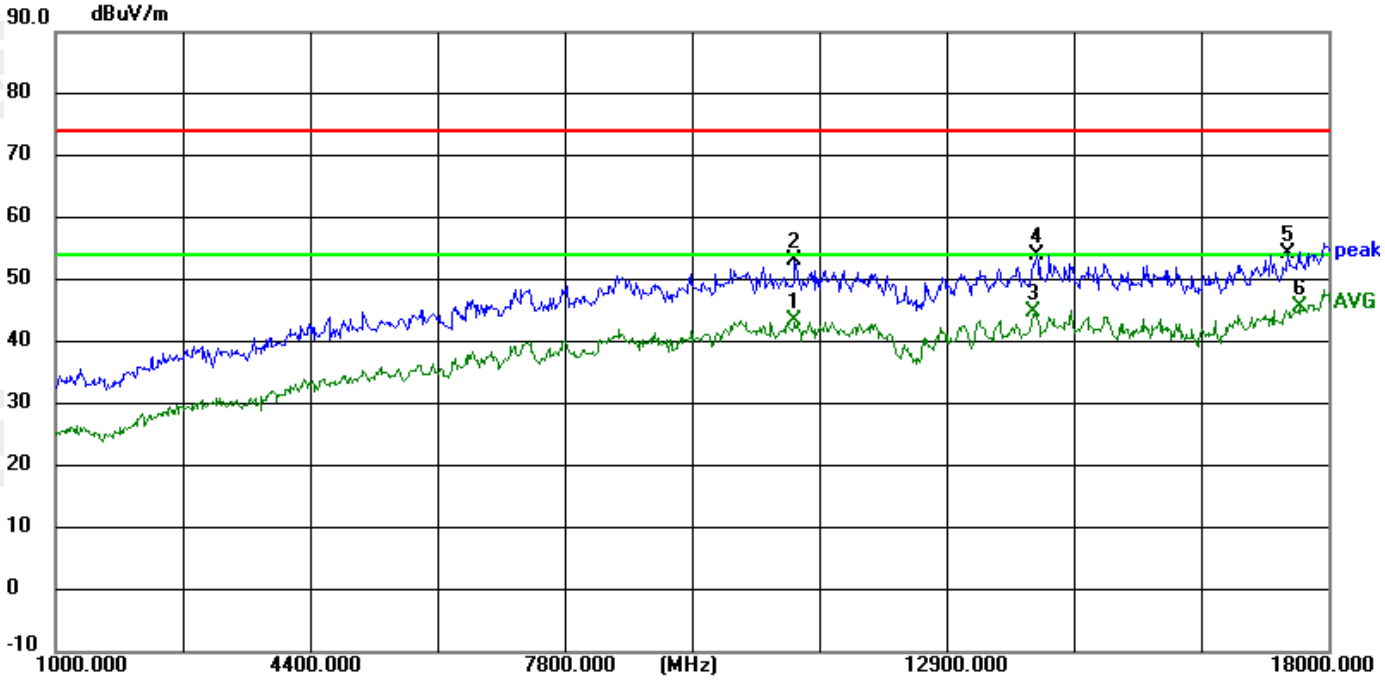
**Middle:**



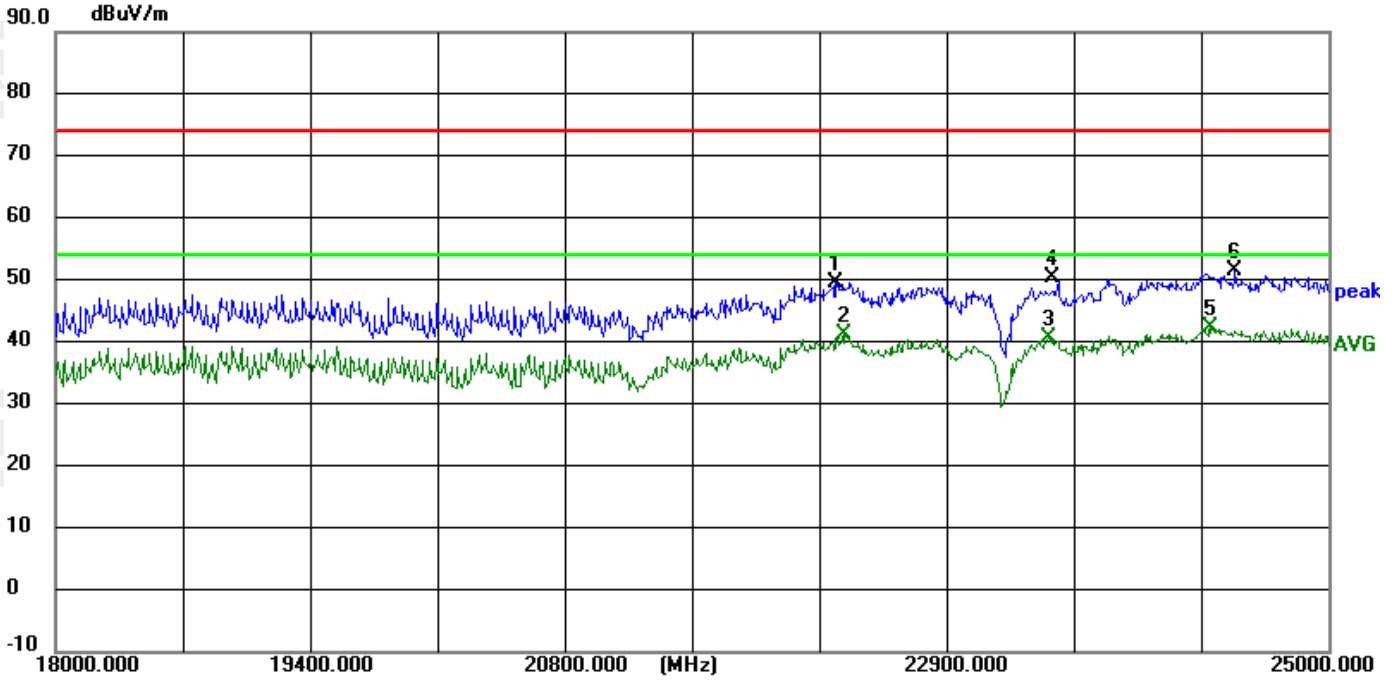

| No. | Frequency (MHz) | Reading Level(dBuV) | Factor (dB) | Measure-ment(dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Comment |
|---|---|---|---|---|---|---|---|---|
| 1 | 11395.500 | 55.02 | -1.51 | 53.51 | 74.00 | -20.49 | peak | Vertical |
| 2 | 11395.500 | 44.40 | -1.51 | 42.89 | 54.00 | -11.11 | AVG | Vertical |
| 3 | 15048.375 | 53.08 | 0.33 | 53.41 | 74.00 | -20.59 | peak | Vertical |
| 4 | 15048.375 | 44.62 | 0.33 | 44.95 | 54.00 | -9.05 | AVG | Vertical |
| 5 * | 17456.000 | 42.25 | 3.08 | 45.33 | 54.00 | -8.67 | AVG | Vertical |
| 6 | 17500.625 | 51.63 | 3.25 | 54.88 | 74.00 | -19.12 | peak | Vertical |




| No. | Frequency (MHz) | Reading Level(dBuV) | Factor (dB) | Measure-ment(dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Comment |
|---|---|---|---|---|---|---|---|---|
| 1 | 22298.875 | 45.21 | -3.14 | 42.07 | 54.00 | -11.93 | AVG | Vertical |
| 2 | 22402.125 | 52.06 | -3.18 | 48.88 | 74.00 | -25.12 | peak | Vertical |
| 3 | 23478.375 | 43.38 | -2.17 | 41.21 | 54.00 | -12.79 | AVG | Vertical |
| 4 | 23515.125 | 51.49 | -2.11 | 49.38 | 74.00 | -24.62 | peak | Vertical |
| 5 | 24311.375 | 52.54 | -1.30 | 51.24 | 74.00 | -22.76 | peak | Vertical |
| 6 * | 24350.750 | 44.63 | -1.27 | 43.36 | 54.00 | -10.64 | AVG | Vertical |

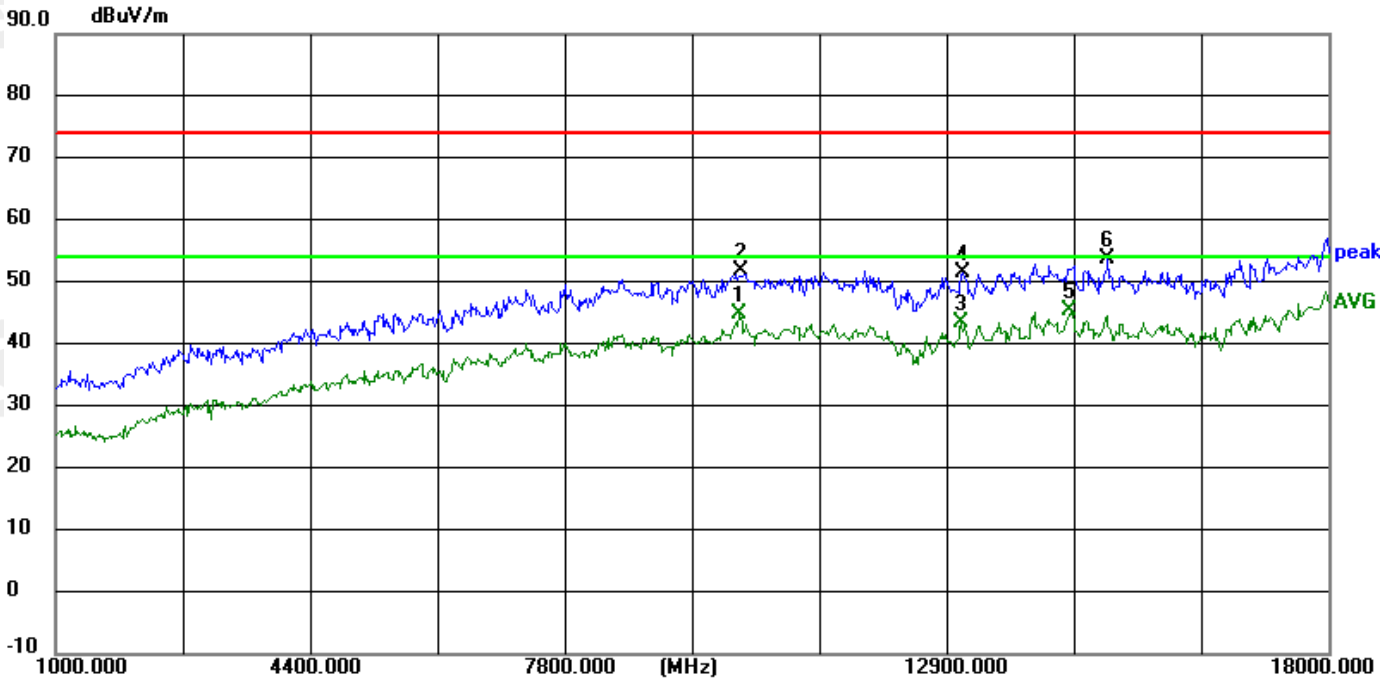



| No. | Frequency (MHz) | Reading Level(dBuV) | Factor (dB) | Measure-ment(dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Comment |
|---|---|---|---|---|---|---|---|---|
| 1 | 10877.000 | 44.68 | -1.27 | 43.41 | 54.00 | -10.59 | AVG | Horizontal |
| 2 | 10883.375 | 54.58 | -1.27 | 53.31 | 74.00 | -20.69 | peak | Horizontal |
| 3 | 14070.875 | 44.12 | 0.70 | 44.82 | 54.00 | -9.18 | AVG | Horizontal |
| 4 | 14098.500 | 53.39 | 0.73 | 54.12 | 74.00 | -19.88 | peak | Horizontal |
| 5 | 17445.375 | 51.18 | 3.04 | 54.22 | 74.00 | -19.78 | peak | Horizontal |
| 6 * | 17611.125 | 41.93 | 3.70 | 45.63 | 54.00 | -8.37 | AVG | Horizontal |

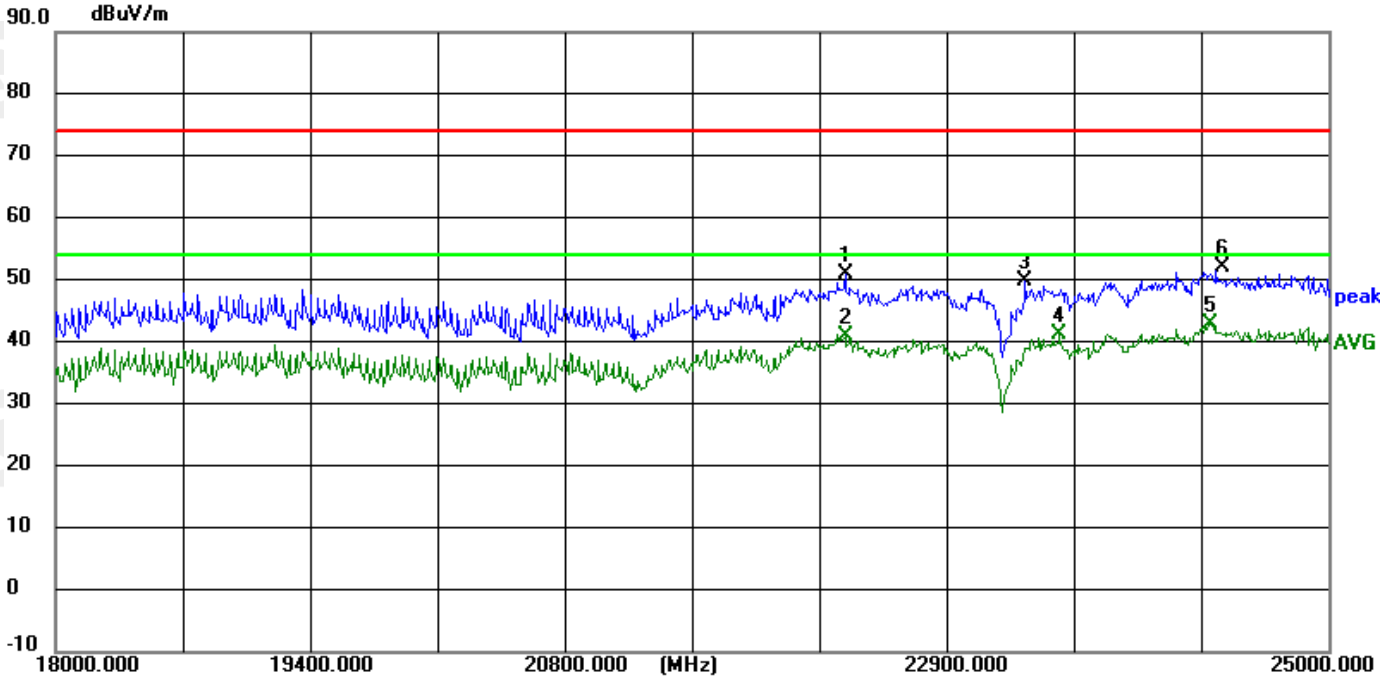



| No. | Frequency (MHz) | Reading Level(dBuV) | Factor (dB) | Measure-ment(dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Comment |
|---|---|---|---|---|---|---|---|---|
| 1 | 22296.250 | 52.86 | -3.14 | 49.72 | 74.00 | -24.28 | peak | Horizontal |
| 2 | 22345.250 | 44.46 | -3.15 | 41.31 | 54.00 | -12.69 | AVG | Horizontal |
| 3 | 23463.500 | 42.80 | -2.21 | 40.59 | 54.00 | -13.41 | AVG | Horizontal |
| 4 | 23484.500 | 52.47 | -2.16 | 50.31 | 74.00 | -23.69 | peak | Horizontal |
| 5 * | 24349.875 | 43.69 | -1.26 | 42.43 | 54.00 | -11.57 | AVG | Horizontal |
| 6 | 24496.000 | 52.58 | -1.13 | 51.45 | 74.00 | -22.55 | peak | Horizontal |

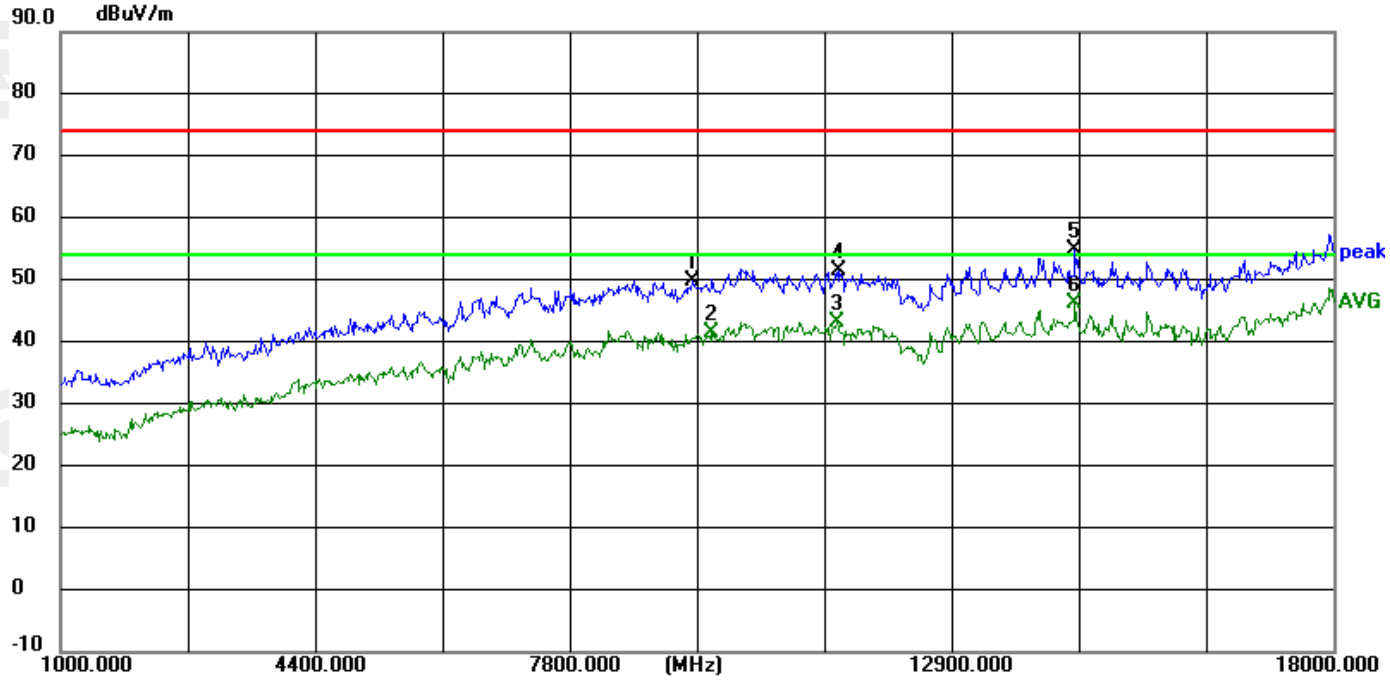
**Highest channel:**



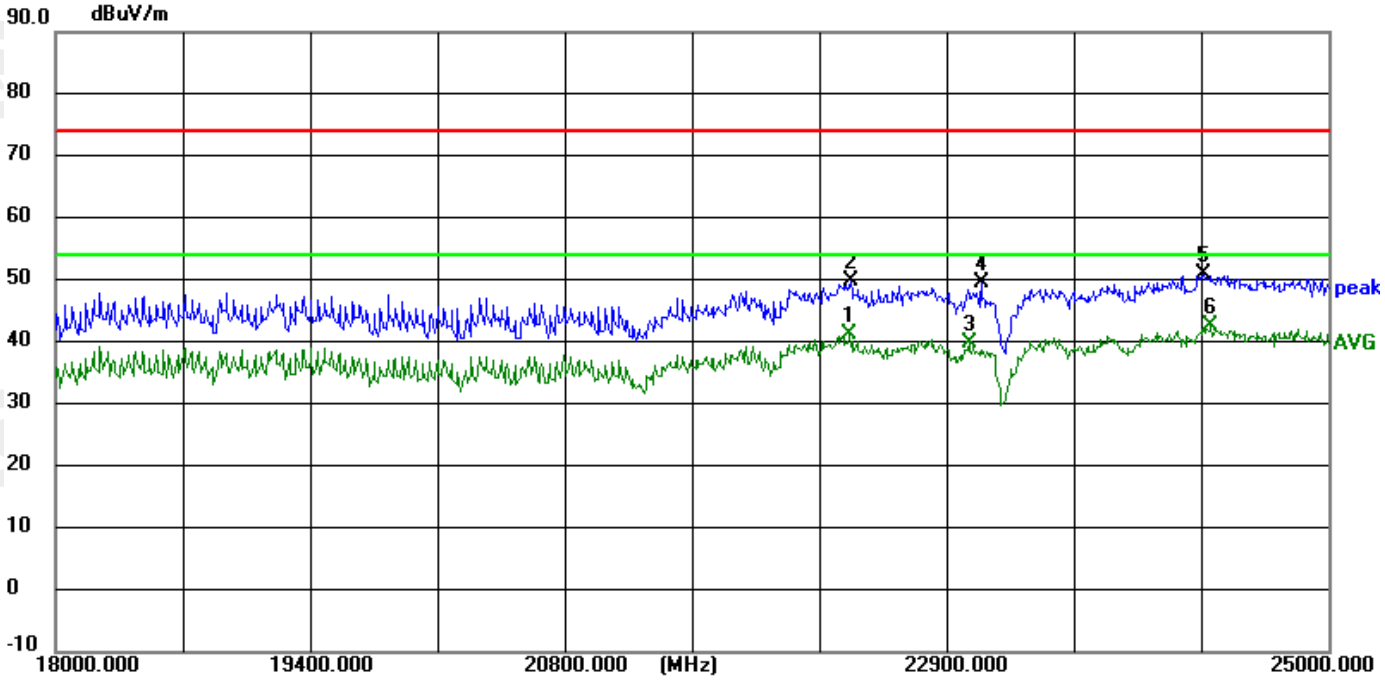

| No. | Frequency (MHz) | Reading Level(dBuV) | Factor (dB) | Measure-ment(dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Comment |
|---|---|---|---|---|---|---|---|---|
| 1 | 10135.375 | 47.48 | -2.63 | 44.85 | 54.00 | -9.15 | AVG | Vertical |
| 2 | 10180.000 | 54.45 | -2.58 | 51.87 | 74.00 | -22.13 | peak | Vertical |
| 3 | 13104.000 | 44.13 | -0.59 | 43.54 | 54.00 | -10.46 | AVG | Vertical |
| 4 | 13138.000 | 52.06 | -0.55 | 51.51 | 74.00 | -22.49 | peak | Vertical |
| 5 * | 14566.000 | 44.55 | 0.83 | 45.38 | 54.00 | -8.62 | AVG | Vertical |
| 6 | 15071.750 | 53.41 | 0.32 | 53.73 | 74.00 | -20.27 | peak | Vertical |




| No. | Frequency (MHz) | Reading Level(dBuV) | Factor (dB) | Measure-ment(dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Comment |
|---|---|---|---|---|---|---|---|---|
| 1 | 22341.750 | 54.25 | -3.15 | 51.10 | 74.00 | -22.90 | peak | Vertical |
| 2 | 22341.750 | 44.16 | -3.15 | 41.01 | 54.00 | -12.99 | AVG | Vertical |
| 3 | 23340.125 | 52.25 | -2.49 | 49.76 | 74.00 | -24.24 | peak | Vertical |
| 4 | 23520.375 | 43.27 | -2.10 | 41.17 | 54.00 | -12.83 | AVG | Vertical |
| 5 * | 24354.250 | 44.22 | -1.27 | 42.95 | 54.00 | -11.05 | AVG | Vertical |
| 6 | 24423.375 | 53.25 | -1.19 | 52.06 | 74.00 | -21.94 | peak | Vertical |




| No. | Frequency (MHz) | Reading Level(dBuV) | Factor (dB) | Measure-ment(dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Comment |
|---|---|---|---|---|---|---|---|---|
| 1 | 9438.375 | 53.74 | -3.81 | 49.93 | 74.00 | -24.07 | peak | Horizontal |
| 2 | 9691.250 | 45.08 | -3.59 | 41.49 | 54.00 | -12.51 | AVG | Horizontal |
| 3 | 11355.125 | 44.73 | -1.53 | 43.20 | 54.00 | -10.80 | AVG | Horizontal |
| 4 | 11404.000 | 53.05 | -1.50 | 51.55 | 74.00 | -22.45 | peak | Horizontal |
| 5 | 14559.625 | 54.10 | 0.84 | 54.94 | 74.00 | -19.06 | peak | Horizontal |
| 6 * | 14559.625 | 45.31 | 0.84 | 46.15 | 54.00 | -7.85 | AVG | Horizontal |




| No. | Frequency (MHz) | Reading Level(dBuV) | Factor (dB) | Measure-ment(dBuV/m) | Limit (dBuV/m) | Margin (dB) | Detector | Comment |
|---|---|---|---|---|---|---|---|---|
| 1 | 22372.375 | 44.52 | -3.17 | 41.35 | 54.00 | -12.65 | AVG | Horizontal |
| 2 | 22381.125 | 52.89 | -3.16 | 49.73 | 74.00 | -24.27 | peak | Horizontal |
| 3 | 23019.875 | 42.53 | -2.75 | 39.78 | 54.00 | -14.22 | AVG | Horizontal |
| 4 | 23092.500 | 52.25 | -2.73 | 49.52 | 74.00 | -24.48 | peak | Horizontal |
| 5 | 24320.125 | 52.40 | -1.29 | 51.11 | 74.00 | -22.89 | peak | Horizontal |
| 6 * | 24357.750 | 43.85 | -1.26 | 42.59 | 54.00 | -11.41 | AVG | Horizontal |

# 6. Test setup photo

**Refer to appendix I for details**

# 7. Photo of the EUT

**Refer to appendix for details**

*******End of report*******