TEST REPORT

Applicant:	Wyrestorm Technologies LLC
Address of Applicant:	23 Wood Rd, Round Lake, New York 12151, United States
Manufacturer/Factory:	Shen Zhen Proitav Technology Co.,Ltd
Address of Manufacturer/Factory:	301-401, Building 16, Hejing Industrial Park, No.87, Hexiu West Road, Zhancheng Community, Fuhai St., Baoan District, Shenzhen, China

Equipment Under Test (EUT)

Product Name:	Video Bar
Model No.:	APO-VX20-UC(VB10-A00)
Trade Mark:	WyreStorm
FCC ID:	2A2CW-APO-VX20
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.247
Date of sample receipt:	June 06, 2022
Date of Test:	June 07, 2022-August 29, 2022
Date of report issued:	August 29, 2022
Test Result :	PASS *

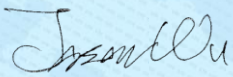
* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Robinson Luo
Laboratory Manager

2 Version

Version No.	Date	Description
00	*August 29, 2022*	*Original*

Prepared By:  ***Date:*** *August 29, 2022*

Project Engineer

Check By:  ***Date:*** *August 29, 2022*

Reviewer

3 Contents

4 Test Summary

Test Item	Section	Result
Antenna requirement	FCC part 15.203/15.247 (c)	Pass
AC Power Line Conducted Emission	FCC part 15.207	Pass
Conducted Peak Output Power	FCC part 15.247 (b)(3)	Pass
Channel Bandwidth & 99% OCB	FCC part 15.247 (a)(2)	Pass
Power Spectral Density	FCC part 15.247 (e)	Pass
Band Edge	FCC part 15.247(d)	Pass
Spurious Emission	FCC part 15.205/15.209	Pass

Remark: Test according to ANSI C63.10 and RSS-Gen

Test according: KDB 662911 D01 Multiple Transmitter Output v02r01

Pass: The EUT complies with the essential requirements in the standard.

Measurement Uncertainty

Test Item	Frequency Range	Measurement Uncertainty	Notes
Radiated Emission	9kHz-30MHz	3.1dB	(1)
Radiated Emission	30MHz-200MHz	3.8039dB	(1)
Radiated Emission	200MHz-1GHz	3.9679dB	(1)
Radiated Emission	1GHz-18GHz	4.29dB	(1)
Radiated Emission	18GHz-40GHz	3.30dB	(1)
AC Power Line Conducted Emission	0.15MHz ~ 30MHz	3.44dB	(1)
Note (1): The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.			

5 General Information

5.1 General Description of EUT

Product Name:	Video Bar
Model No.:	APO-VX20-UC(VB10-A00)
Serial No.:	WS1635000001
Test sample(s) ID:	GTS202206000036-1
Sample(s) Status	Engineer sample
Operation Frequency:	802.11n(HT20): 2412MHz~2462MHz
Channel numbers:	802.11n(HT20): 11
Channel separation:	5MHz
Modulation technology:	802.11n(HT20) : Orthogonal Frequency Division Multiplexing (OFDM)
Antenna Type:	Integral Antenna
Antenna gain:	ANT 1: 2.88dBi ANT 2: 1.25dBi
Power supply:	Switch mode power supply: Model: S120-1A240500M2 Input: AC 100-240V, 50/60Hz, 2.0A Output: DC 24.0V, 5.0A, 120.0W

Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	**Frequency (MHz)**
	802.11n(HT20)
Lowest channel	2412MHz
Middle channel	2437MHz
Highest channel	2462MHz

5.2 Test mode

Transmitting mode	Keep the EUT in continuously transmitting mode

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Pre-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

Mode	802.11n(HT20)
Data rate	6.5Mbps

5.3 Description of Support Units

Manufacturer	Description	Model	Serial Number
Lenovo	Notebook PC	E40-80	N/A

5.4 Deviation from Standards

None.

5.5 Abnormalities from Standard Conditions

None.

5.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

● **FCC—Registration No.: 381383**

Designation Number: CN5029

Global United Technology Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in files.

● **IC —Registration No.: 9079A**

CAB identifier: CN0091

The 3m Semi-anechoic chamber of Global United Technology Services Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing

● **NVLAP (LAB CODE:600179-0)**

Global United Technology Services Co., Ltd., is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP).

5.7 Test Location

All tests were performed at:

Global United Technology Services Co., Ltd.
Address: No. 123-128, Tower A, Jinyuan Business Building, No.2, Laodong Industrial Zone, Xixiang Road, Baoan District, Shenzhen, Guangdong, China 518102
Tel: 0755-27798480
Fax: 0755-27798960

6 Test Instruments list

Radiated Emission:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	3m Semi- Anechoic Chamber	ZhongYu Electron	9.2(L)*6.2(W)* 6.4(H)	GTS250	July 02, 2020	July 01, 2025
2	Control Room	ZhongYu Electron	6.2(L)*2.5(W)* 2.4(H)	GTS251	N/A	N/A
3	EMI Test Receiver	Rohde & Schwarz	ESU26	GTS203	April 22, 2022	April 21, 2023
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9168	GTS640	March 21, 2022	March 20, 2023
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June 12, 2022	June 11, 2023
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June 23, 2022	June 22, 2023
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	April 22, 2022	April 21, 2023
9	Coaxial Cable	GTS	N/A	GTS211	April 22, 2022	April 21, 2023
10	Coaxial cable	GTS	N/A	GTS210	April 22, 2022	April 21, 2023
11	Coaxial Cable	GTS	N/A	GTS212	April 22, 2022	April 21, 2023
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	April 22, 2022	April 21, 2023
13	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June 23, 2022	June 22, 2023
14	Band filter	Amindeon	82346	GTS219	June 23, 2022	June 22, 2023
15	Power Meter	Anritsu	ML2495A	GTS540	June 23, 2022	June 22, 2023
16	Power Sensor	Anritsu	MA2411B	GTS541	June 23, 2022	June 22, 2023
17	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	April 22, 2022	April 21, 2023
18	Splitter	Agilent	11636B	GTS237	June 23, 2022	June 22, 2023
19	Loop Antenna	ZHINAN	ZN30900A	GTS534	Nov. 30, 2021	Nov. 29, 2022
20	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	April 22, 2022	April 21, 2023
21	Breitband hornantenna	SCHWARZBECK	BBHA 9170	GTS579	Oct. 17, 2021	Oct. 16, 2022
22	Amplifier	TDK	PA-02-02	GTS574	Oct. 17, 2021	Oct. 16, 2022
23	Amplifier	TDK	PA-02-03	GTS576	Oct. 17, 2021	Oct. 16, 2022
24	PSA Series Spectrum Analyzer	Rohde & Schwarz	FSP	GTS578	June 23, 2022	June 22, 2023
25	Amplifier(1GHz-26.5GHz)	HP	8449B	GTS601	April 22, 2022	April 21, 2023

Conducted Emission						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Shielding Room	ZhongYu Electron	7.3(L)x3.1(W)x2.9(H)	GTS252	May 14, 2022	May 13, 2025
2	EMI Test Receiver	R&S	ESCI 7	GTS552	April 24, 2022	April 23, 2023
3	Coaxial Switch	ANRITSU CORP	MP59B	GTS225	June 23, 2022	June 22, 2023
4	ENV216 2-L-V-NETZNACHB.DE	ROHDE&SCHWARZ	ENV216	GTS226	April 22, 2022	April 21, 2023
5	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Thermo meter	JINCHUANG	GSP-8A	GTS639	April 28, 2022	April 27, 2023
8	Absorbing clamp	Elektronik-Feinmechanik	MDS21	GTS229	April 15, 2022	April 14, 2023
9	ISN	SCHWARZBECK	NTFM 8158	GTS565	April 22, 2022	April 21, 2023
10	High voltage probe	SCHWARZBECK	TK9420	GTS537	April 22, 2022	April 21, 2023

RF Conducted Test:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Serial No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	MXA Signal Analyzer	Agilent	N9020A	GTS566	April 22, 2022	April 21, 2023
2	EMI Test Receiver	R&S	ESCI 7	GTS552	April 22, 2022	April 21, 2023
3	Spectrum Analyzer	Agilent	E4440A	GTS536	April 22, 2022	April 21, 2023
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	April 22, 2022	April 21, 2023
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	April 22, 2022	April 21, 2023
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	April 22, 2022	April 21, 2023
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	April 22, 2022	April 21, 2023
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	April 22, 2022	April 21, 2023

General used equipment:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	April 25, 2022	April 24, 2023
2	Barometer	KUMAO	SF132	GTS647	July 26, 2022	July 25, 2023

7 Test results and Measurement Data

7.1 Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203 /247(c)

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.

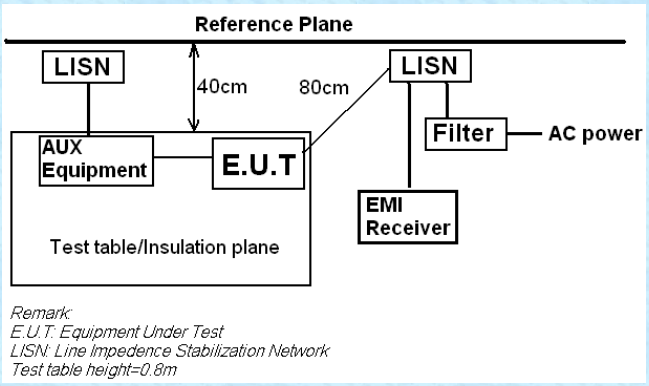
15.247(c) (1)(i) requirement:

(i) Systems operating in the 2400-2483.5 MHz band that is used exclusively for fixed. Point-to-point operations may employ transmitting antennas with directional gain greater than 6dBi provided the maximum conducted output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6dBi.

EUT Antenna:

The antenna is integral antenna, reference to the appendix II for details.

7.2 Conducted Emissions

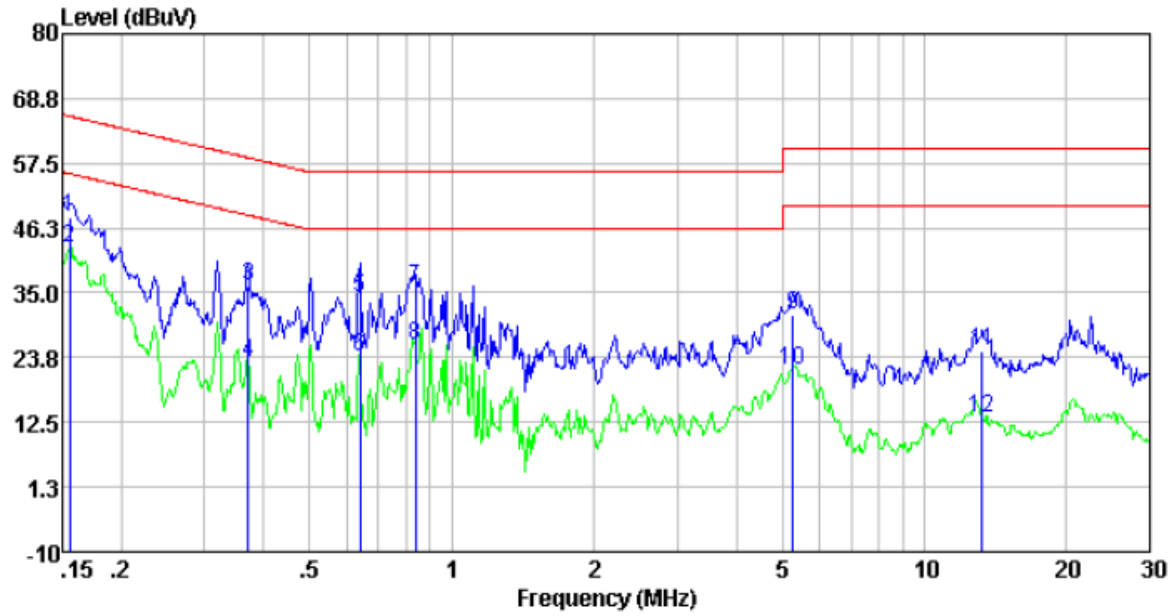
Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto
Limit:	Frequency range (MHz) / Limit (dBuV): Quasi-peak / Average 0.15-0.5: 66 to 56* / 56 to 46* 0.5-5: 56 / 46 5-30: 60 / 50 * Decreases with the logarithm of the frequency.
Test setup:	 *Remark:* *E.U.T: Equipment Under Test* *LISN: Line Impedence Stabilization Network* *Test table height=0.8m*
Test procedure:	1. The E.U.T and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uH coupling impedance for the measuring equipment. 2. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. (Please refer to the block diagram of the test setup and photographs). 3. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test environment:	Temp.: 25 °C / Humid.: 52% / Press.: 1012mbar
Test voltage:	AC 120V, 60Hz
Test results:	Pass

Remark: Both high and low voltages have been tested to show only the worst low voltage test data.

Measurement data

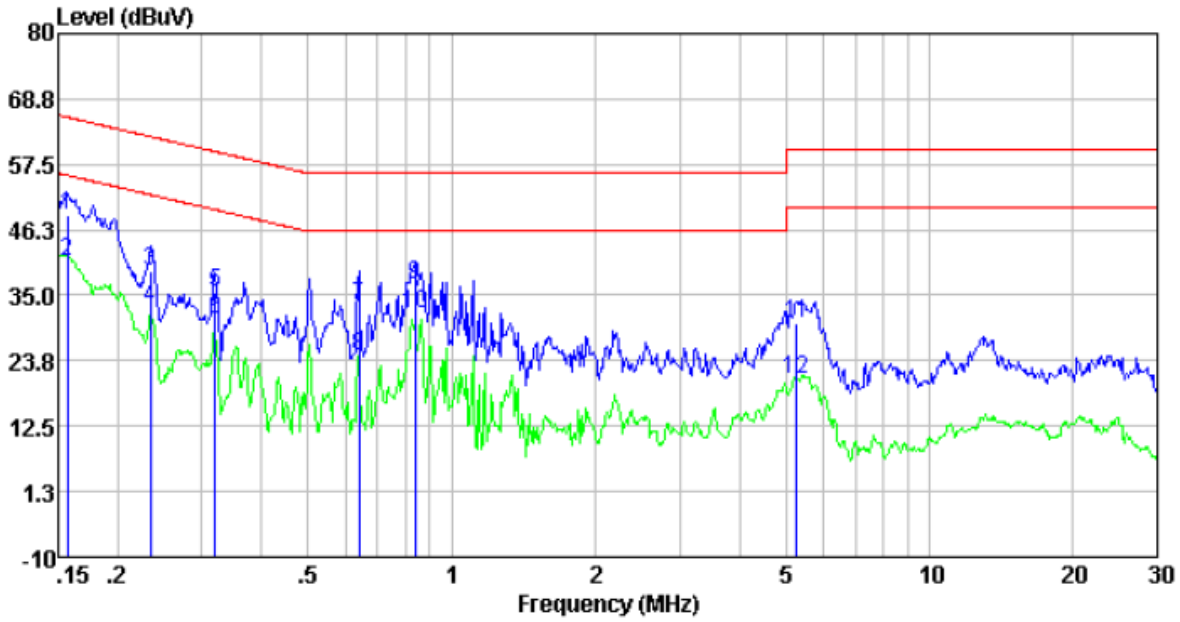
All antennas have test, only the worst case ANT 1 report.

Line:



Freq	Reading level	LISN/ISN factor	Cable loss	Level	Limit level	Over limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0.16	37.79	10.40	0.01	48.20	65.69	-17.49	QP
0.16	32.48	10.40	0.01	42.89	55.69	-12.80	Average
0.37	25.75	10.36	0.01	36.12	58.47	-22.35	QP
0.37	12.60	10.36	0.01	22.97	48.47	-25.50	Average
0.64	23.97	10.27	0.02	34.26	56.00	-21.74	QP
0.64	13.61	10.27	0.02	23.90	46.00	-22.10	Average
0.84	25.53	10.23	0.03	35.79	56.00	-20.21	QP
0.84	15.48	10.23	0.03	25.74	46.00	-20.26	Average
5.28	20.82	10.20	0.07	31.09	60.00	-28.91	QP
5.28	11.22	10.20	0.07	21.49	50.00	-28.51	Average
13.27	14.55	10.20	0.14	24.89	60.00	-35.11	QP
13.27	2.91	10.20	0.14	13.25	50.00	-36.75	Average

Neutral:

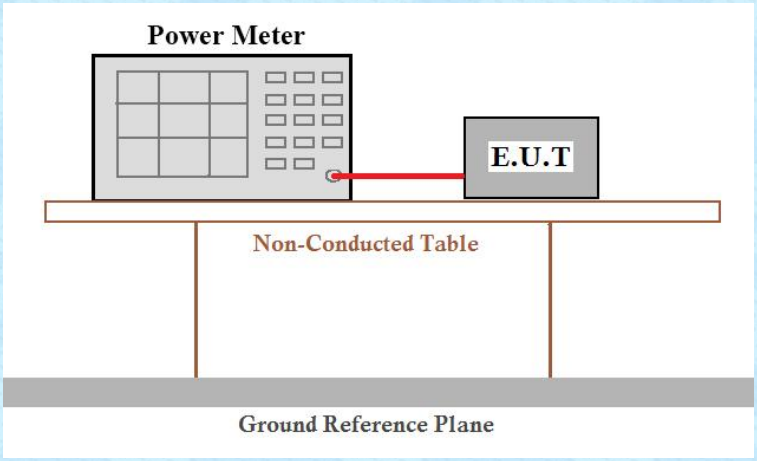


Freq	Reading level	LISN/ISN factor	Cable loss	Level	Limit level	Over limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0.16	38.52	10.40	0.01	48.93	65.65	-16.72	QP
0.16	30.30	10.40	0.01	40.71	55.65	-14.94	Average
0.23	28.65	10.40	0.01	39.06	62.30	-23.24	QP
0.23	22.34	10.40	0.01	32.75	52.30	-19.55	Average
0.32	25.04	10.39	0.01	35.44	59.71	-24.27	QP
0.32	20.46	10.39	0.01	30.86	49.71	-18.85	Average
0.64	22.82	10.27	0.02	33.11	56.00	-22.89	QP
0.64	14.34	10.27	0.02	24.63	46.00	-21.37	Average
0.84	26.54	10.23	0.03	36.80	56.00	-19.20	QP
0.84	21.46	10.23	0.03	31.72	46.00	-14.28	Average
5.28	19.96	10.20	0.07	30.23	60.00	-29.77	QP
5.28	10.17	10.20	0.07	20.44	50.00	-29.56	Average

Notes:

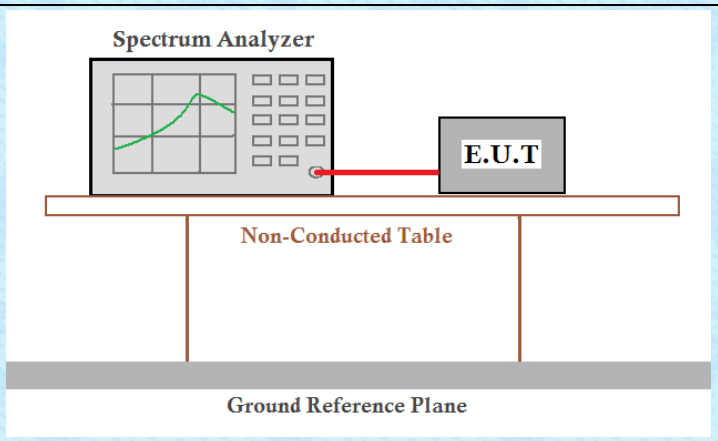
1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Final Level =Receiver Read level + LISN Factor + Cable Loss
4. *If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits and measurement with the average detector receiver is unnecessary.*

7.3 Conducted Peak Output Power

Test Requirement :	FCC Part15 C Section 15.247 (b)(3)
Test Method :	KDB558074 D01 15.247 Meas Guidance v05r02
Limit:	30dBm 36dBm(4W for e.i.r.p)
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

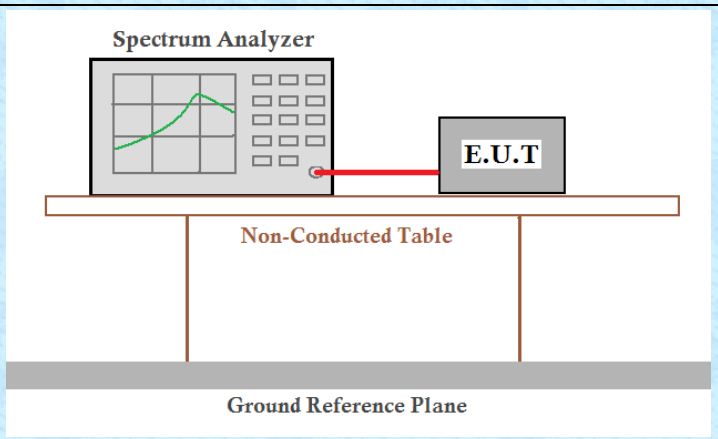
Measurement Data: The detailed test data see Appendix for WIFI_2.4G.

7.4 Channel Bandwidth & 99% Occupy Bandwidth

Test Requirement :	FCC Part15 C Section 15.247 (a)(2)
Test Method :	KDB558074 D01 15.247 Meas Guidance v05r02
Limit:	>500KHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data: The detailed test data see Appendix for WIFI_2.4G.

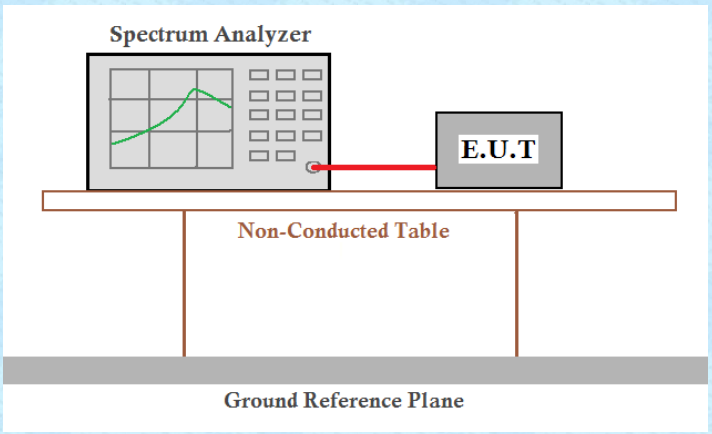
7.5 Power Spectral Density

Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	KDB558074 D01 15.247 Meas Guidance v05r02
Limit:	8dBm/3kHz
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data: The detailed test data see Appendix for WIFI_2.4G.

7.6 Spurious Emission Spurious Emission in Non-restricted & restricted Bands

7.6.1 Conducted Emission Method

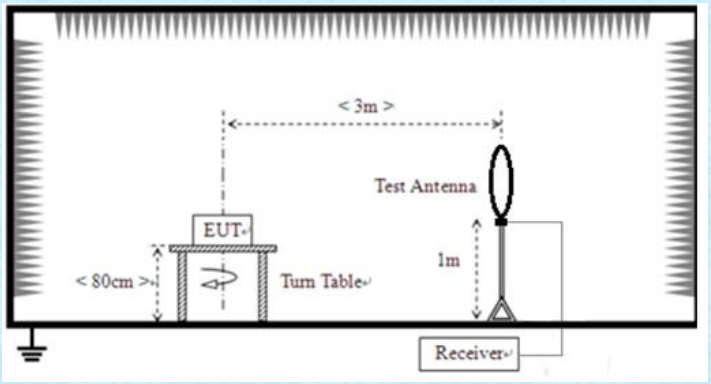
Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	KDB558074 D01 15.247 Meas Guidance v05r02
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall 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.
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data: The detailed test data see Appendix for WIFI_2.4G.

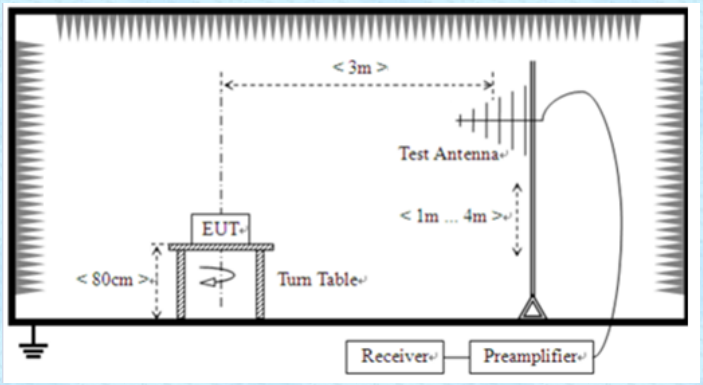
7.6.2 Radiated Emission Method

<table>
<tr><td>Test Requirement:</td><td>FCC Part15 C Section 15.209</td></tr>
<tr><td>Test Method:</td><td>ANSI C63.10 & RSS-Gen</td></tr>
<tr><td>Test Frequency Range:</td><td>9kHz to 25GHz</td></tr>
<tr><td>Test site:</td><td>Measurement Distance: 3m</td></tr>
<tr><td>Receiver setup:</td><td>
<table>
<tr><th>Frequency</th><th>Detector</th><th>RBW</th><th>VBW</th><th>Value</th></tr>
<tr><td>9KHz-150KHz</td><td>Quasi-peak</td><td>200Hz</td><td>600Hz</td><td>Quasi-peak</td></tr>
<tr><td>150KHz-30MHz</td><td>Quasi-peak</td><td>9KHz</td><td>30KHz</td><td>Quasi-peak</td></tr>
<tr><td>30MHz-1GHz</td><td>Quasi-peak</td><td>120KHz</td><td>300KHz</td><td>Quasi-peak</td></tr>
<tr><td rowspan="2">Above 1GHz</td><td>Peak</td><td>1MHz</td><td>3MHz</td><td>Peak</td></tr>
<tr><td>Peak</td><td>1MHz</td><td>10Hz</td><td>Average</td></tr>
</table>
</td></tr>
<tr><td>FCC Limit:</td><td>
<table>
<tr><th>Frequency (MHz)</th><th>Field strength (microvolts/meter)</th><th>Measurement distance (meters)</th></tr>
<tr><td>0.009-0.490</td><td>2400/F(kHz)</td><td>300</td></tr>
<tr><td>0.490-1.705</td><td>24000/F(kHz)</td><td>30</td></tr>
<tr><td>1.705-30.0</td><td>30</td><td>30</td></tr>
<tr><td>30-88</td><td>100**</td><td>3</td></tr>
<tr><td>88-216</td><td>150**</td><td>3</td></tr>
<tr><td>216-960</td><td>200**</td><td>3</td></tr>
<tr><td>Above 960</td><td>500</td><td>3</td></tr>
</table>

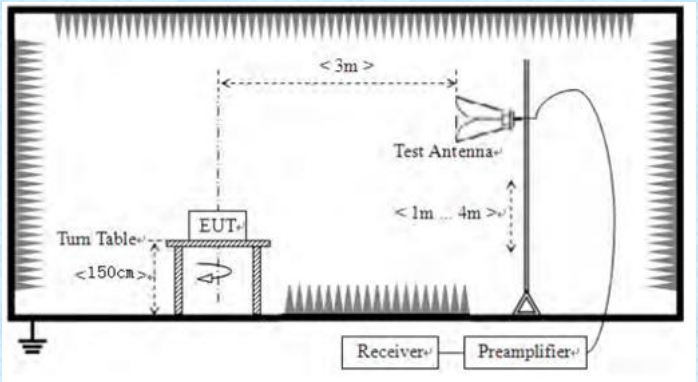
The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.
</td></tr>
<tr><td>IC Limit:</td><td>
Table 5 – General field strength limits at frequencies above 30 MHz
<table>
<tr><th>Frequency (MHz)</th><th>Field strength (µV/m at 3 m)</th></tr>
<tr><td>30 – 88</td><td>100</td></tr>
<tr><td>88 – 216</td><td>150</td></tr>
<tr><td>216 – 960</td><td>200</td></tr>
<tr><td>Above 960</td><td>500</td></tr>
</table>
Table 6 – General field strength limits at frequencies below 30 MHz
<table>
<tr><th>Frequency</th><th>Magnetic field strength (H-Field) (µA/m)</th><th>Measurement distance (m)</th></tr>
<tr><td>9 - 490 kHz [1]</td><td>6.37/F (F in kHz)</td><td>300</td></tr>
<tr><td>490 - 1705 kHz</td><td>63.7/F (F in kHz)</td><td>30</td></tr>
<tr><td>1.705 - 30 MHz</td><td>0.08</td><td>30</td></tr>
</table>
Note 1: The emission limits for the ranges 9-90 kHz and 110-490 kHz are based on measurements employing a linear average detector.
</td></tr>
<tr><td>Test setup:</td><td>For radiated emissions from 9kHz to 30MHz</td></tr>
</table>



For radiated emissions from 30MHz to1GHz



For radiated emissions above 1GHz



Test Procedure:	1. The EUT was placed on the top of a rotating table (0.8m for below 1G and 1.5m for above 1G) above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation. 2. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 3. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

	4. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading. 5. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 6. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.					
Test Instruments:	Refer to section 6.0 for details					
Test mode:	Refer to section 5.2 for details					
Test environment:	Temp.:	25 °C	Humid.:	52%	Press.:	1012mbar
Test voltage:	AC 120V, 60Hz					
Test results:	Pass					

Remarks:

1. *Only the worst case Main Antenna test data.*
2. *Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.*

Measurement data:

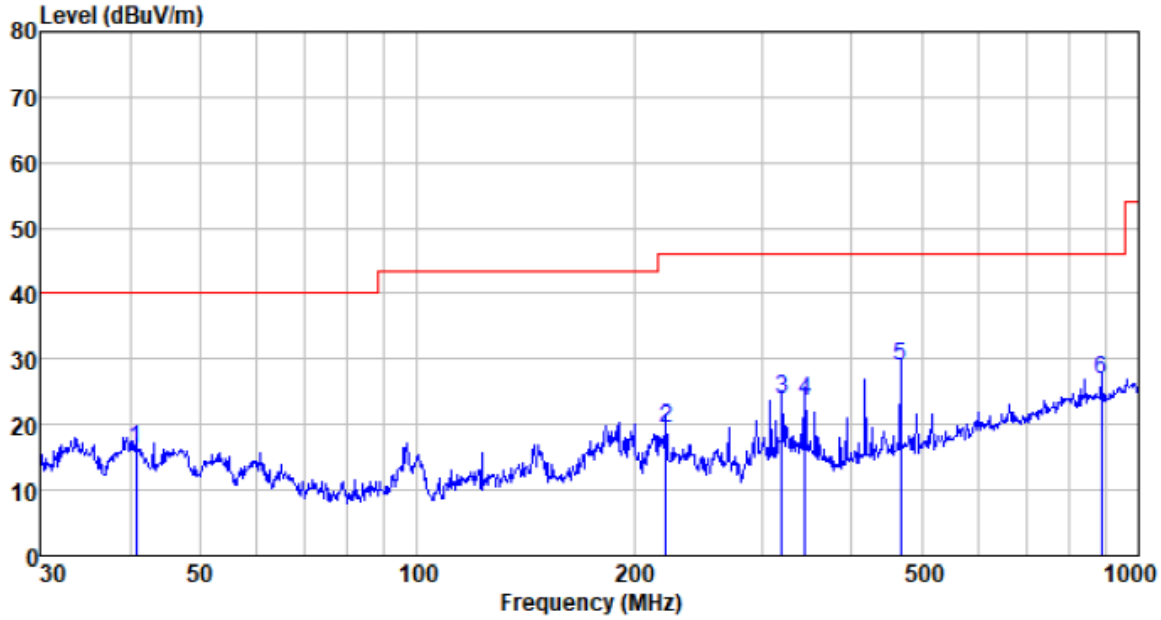
■ **9kHz~30MHz**

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) & RSS-Gen 6.13, the test result no need to reported.

ANT 1:

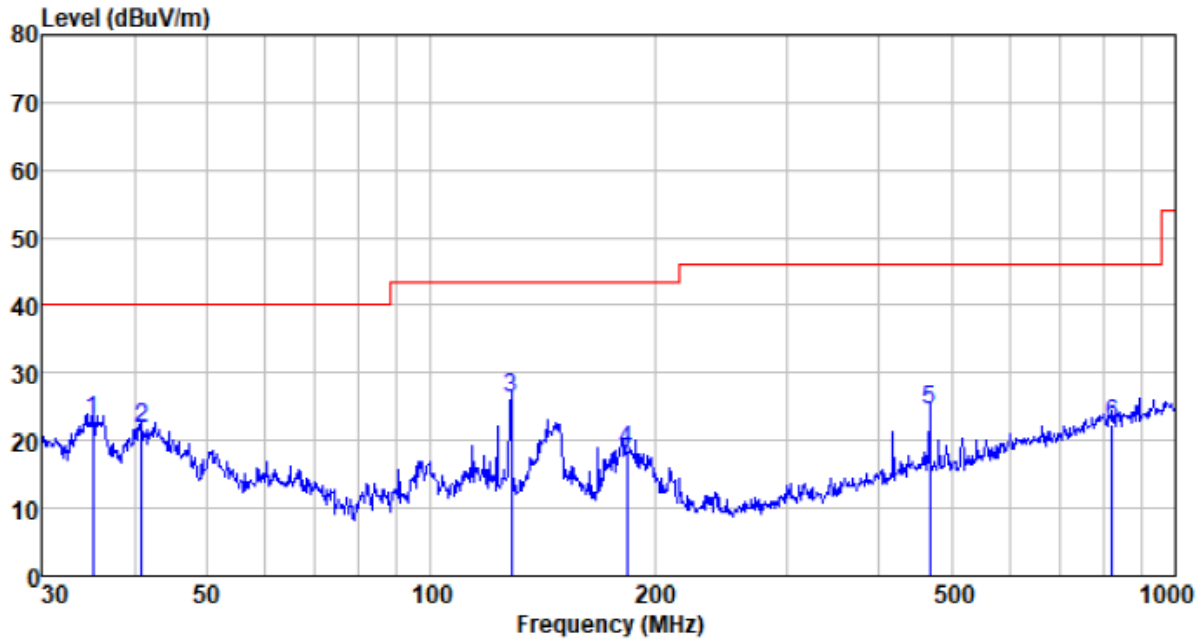
■ **Below 1GHz**

Test channel:	Lowest	Polarziation:	Horizontal



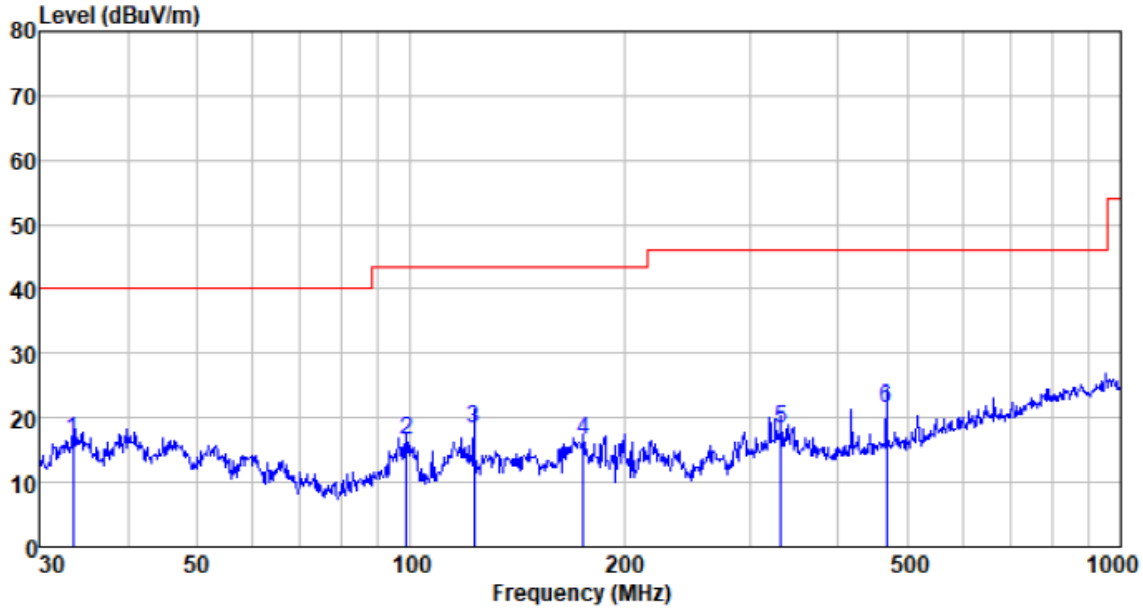
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
40.702	37.96	13.22	0.67	35.70	16.15	40.00	-23.85	QP
221.392	45.82	9.08	1.97	37.35	19.52	46.00	-26.48	QP
319.937	45.82	12.97	2.47	37.44	23.82	46.00	-22.18	QP
344.386	45.05	13.45	2.60	37.47	23.63	46.00	-22.37	QP
467.235	47.00	16.22	3.17	37.51	28.88	46.00	-17.12	QP
887.610	36.76	22.86	4.80	37.60	26.82	46.00	-19.18	QP

Test channel:	Lowest	Polarziation:	Vertical



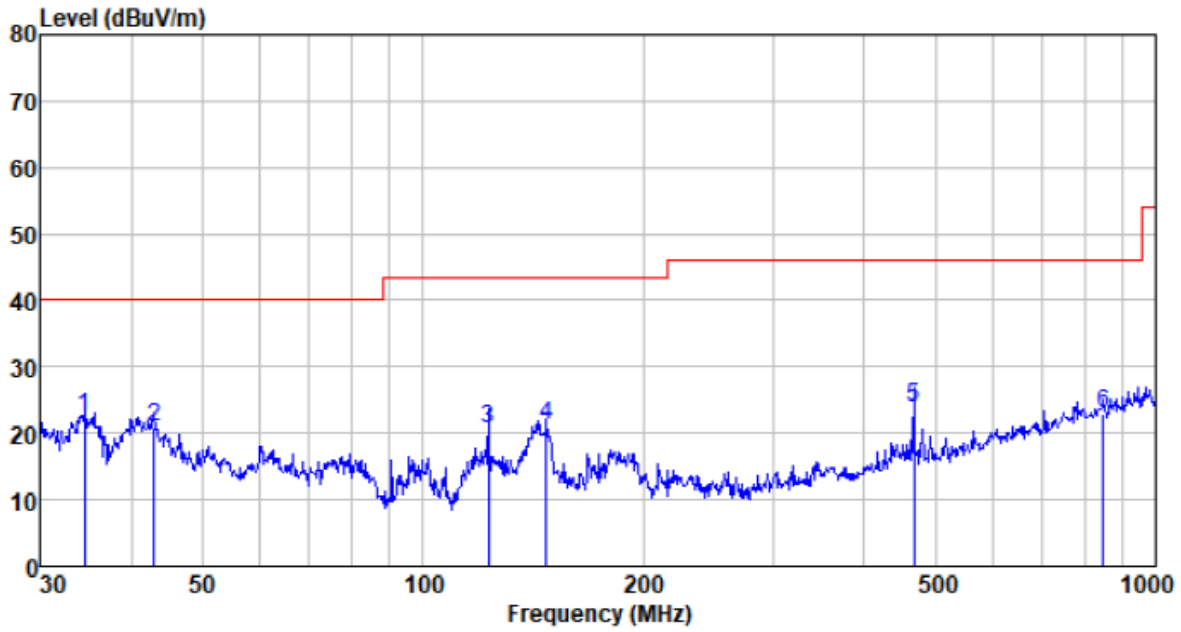
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
35.128	45.32	12.52	0.61	35.36	23.09	40.00	-16.91	QP
40.845	43.61	13.21	0.67	35.71	21.78	40.00	-18.22	QP
128.113	50.15	11.51	1.42	36.94	26.14	43.50	-17.36	QP
183.201	43.51	10.61	1.75	37.25	18.62	43.50	-24.88	QP
467.235	42.54	16.22	3.17	37.51	24.42	46.00	-21.58	QP
821.710	33.04	22.39	4.54	37.62	22.35	46.00	-23.65	QP

Test channel:	Middle	Polarziation:	Horizontal



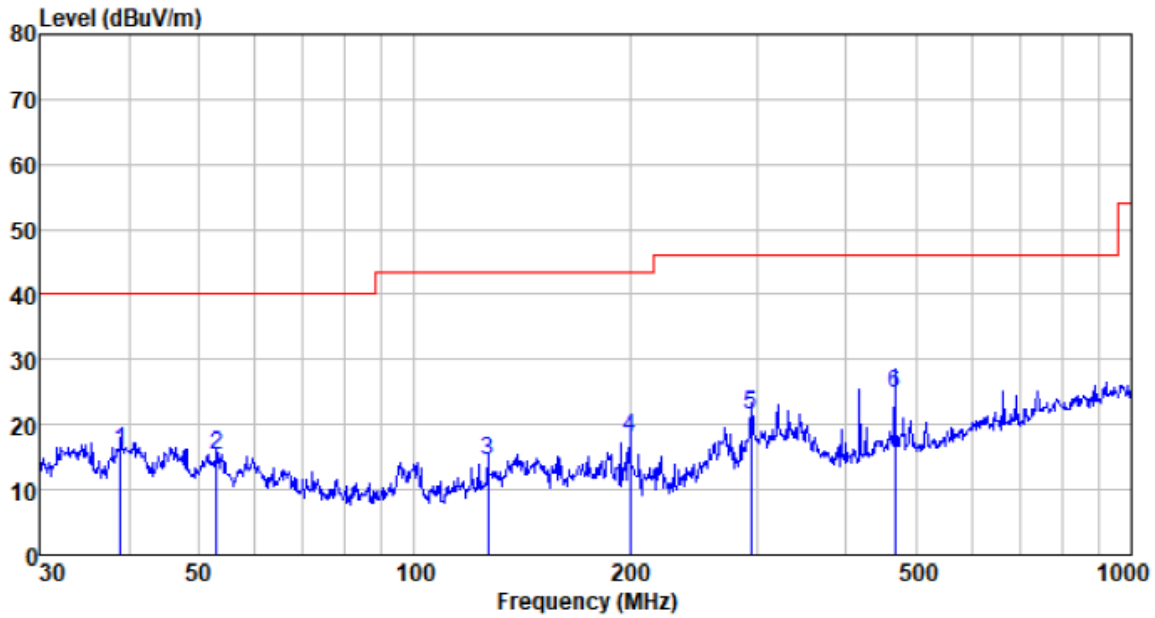
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
33.445	38.67	12.40	0.59	35.25	16.41	40.00	-23.59	QP
98.833	42.99	9.03	1.18	36.71	16.49	43.50	-27.01	QP
122.834	42.61	11.17	1.38	36.90	18.26	43.50	-25.24	QP
175.037	40.32	11.70	1.72	37.21	16.53	43.50	-26.97	QP
332.519	40.06	13.24	2.53	37.46	18.37	46.00	-27.63	QP
467.235	39.69	16.22	3.17	37.51	21.57	46.00	-24.43	QP

Test channel:	Middle	Polarziation:	Vertical



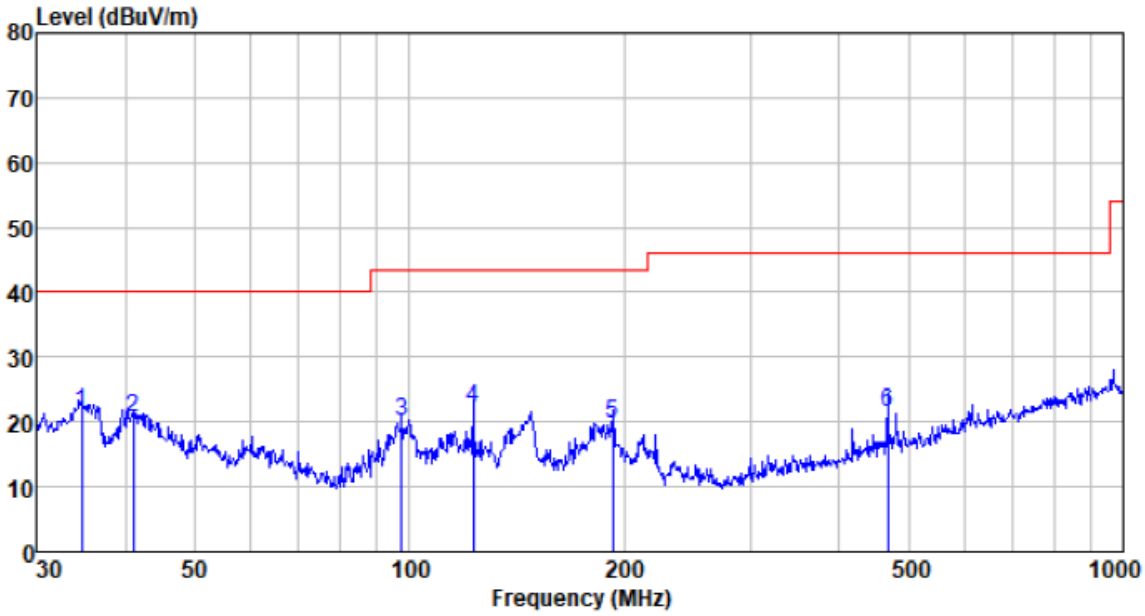
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
34.517	44.60	12.47	0.60	35.32	22.35	40.00	-17.65	QP
42.900	42.90	13.09	0.69	35.83	20.85	40.00	-19.15	QP
122.834	45.05	11.17	1.38	36.90	20.70	43.50	-22.80	QP
147.404	44.14	12.60	1.55	37.06	21.23	43.50	-22.27	QP
467.235	41.96	16.22	3.17	37.51	23.84	46.00	-22.16	QP
848.056	33.45	22.58	4.65	37.61	23.07	46.00	-22.93	QP

Test channel:	Highest	Polarziation:	Horizontal



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
38.888	37.95	13.09	0.65	35.60	16.09	40.00	-23.91	QP
52.945	37.90	12.75	0.80	36.22	15.23	40.00	-24.77	QP
126.772	38.52	11.42	1.41	36.93	14.42	43.50	-29.08	QP
199.986	44.35	9.23	1.84	37.33	18.09	43.50	-25.41	QP
295.147	44.28	12.26	2.34	37.42	21.46	46.00	-24.54	QP
467.235	42.84	16.22	3.17	37.51	24.72	46.00	-21.28	QP

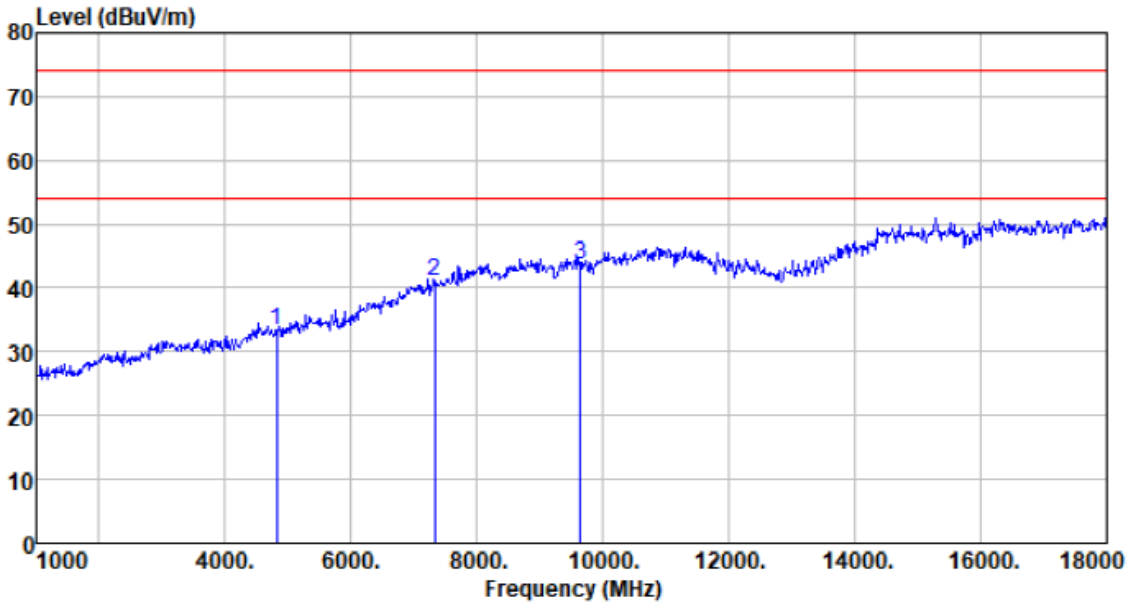
Test channel:	Highest	Polarziation:	Vertical



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
34.760	43.70	12.48	0.61	35.34	21.45	40.00	-18.55	QP
40.988	42.39	13.20	0.67	35.72	20.54	40.00	-19.46	QP
97.456	46.68	8.94	1.17	36.70	20.09	43.50	-23.41	QP
122.834	46.59	11.17	1.38	36.90	22.24	43.50	-21.26	QP
192.419	45.57	9.68	1.80	37.30	19.75	43.50	-23.75	QP
467.235	39.55	16.22	3.17	37.51	21.43	46.00	-24.57	QP

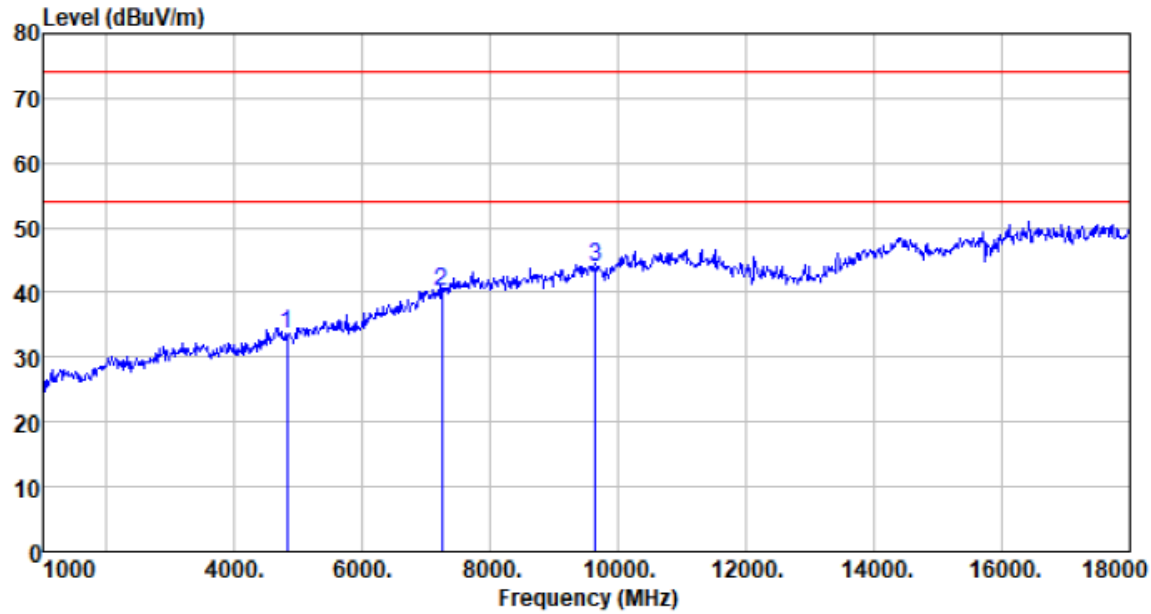
■ **Above 1GHz**

Test channel:	Lowest	Polarziation:	Horizontal



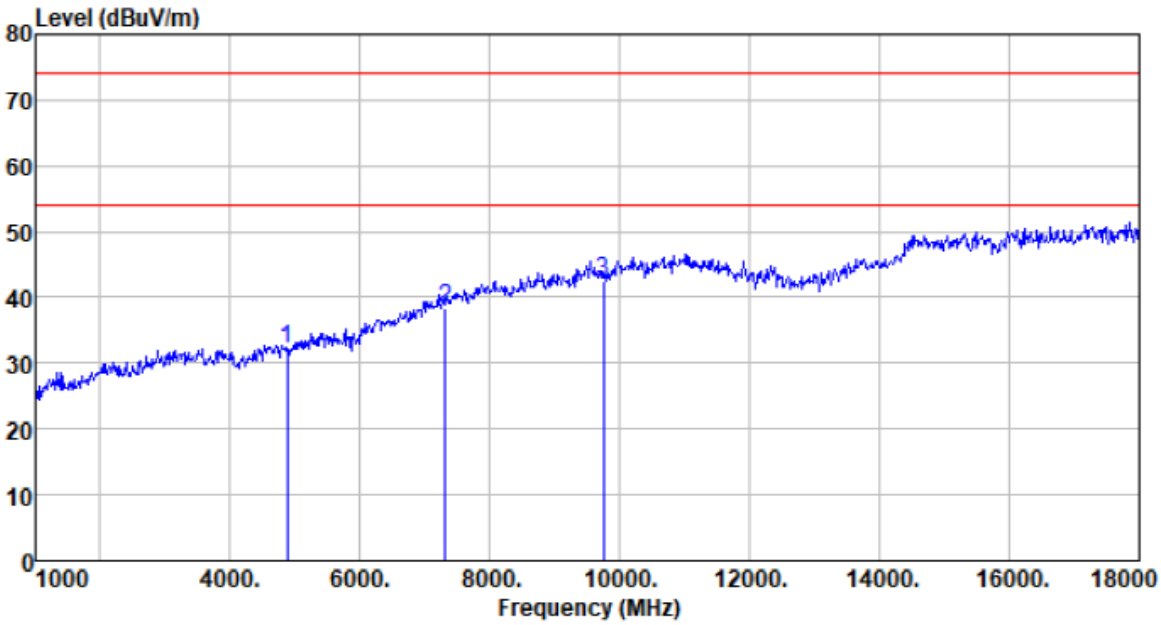
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
4824.000	35.10	31.22	4.63	37.68	33.27	74.00	-40.73	Peak
7326.000	35.69	36.43	6.63	37.77	40.98	74.00	-33.02	Peak
9648.000	35.70	37.97	7.99	37.93	43.73	74.00	-30.27	Peak

Test channel:	Lowest	Polarziation:	Vertical



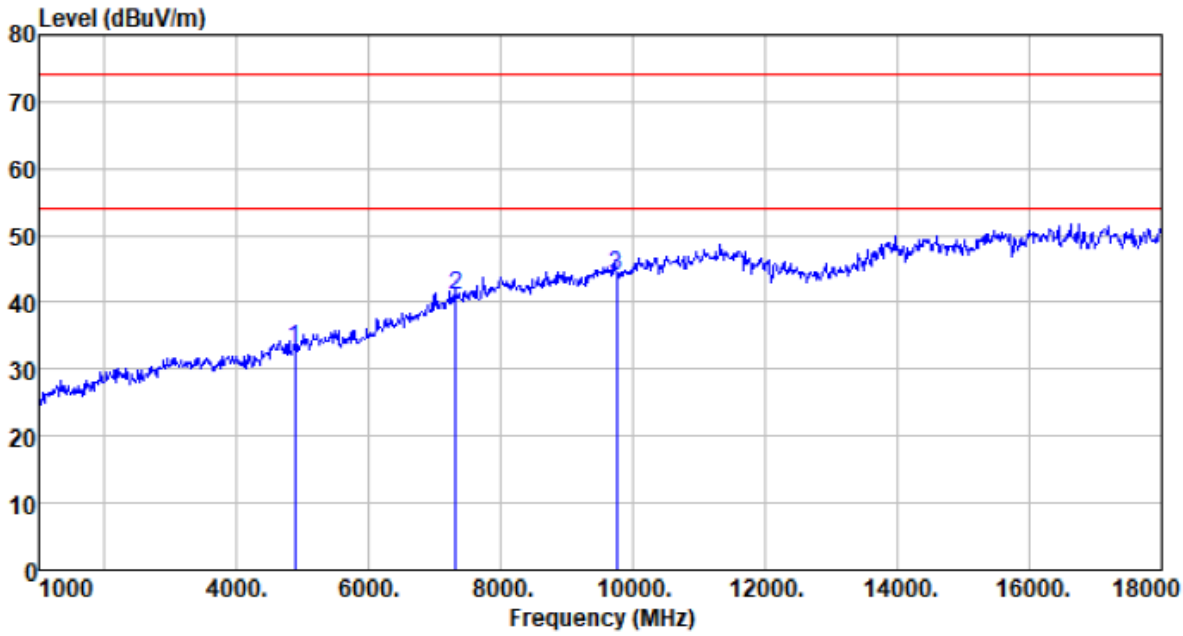
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
4824.000	35.44	31.22	4.63	37.68	33.61	74.00	-40.39	Peak
7236.000	35.16	36.25	6.52	37.81	40.12	74.00	-33.88	Peak
9648.000	35.98	37.97	7.99	37.93	44.01	74.00	-29.99	Peak

Test channel:	Middle	Polarziation:	Horizontal



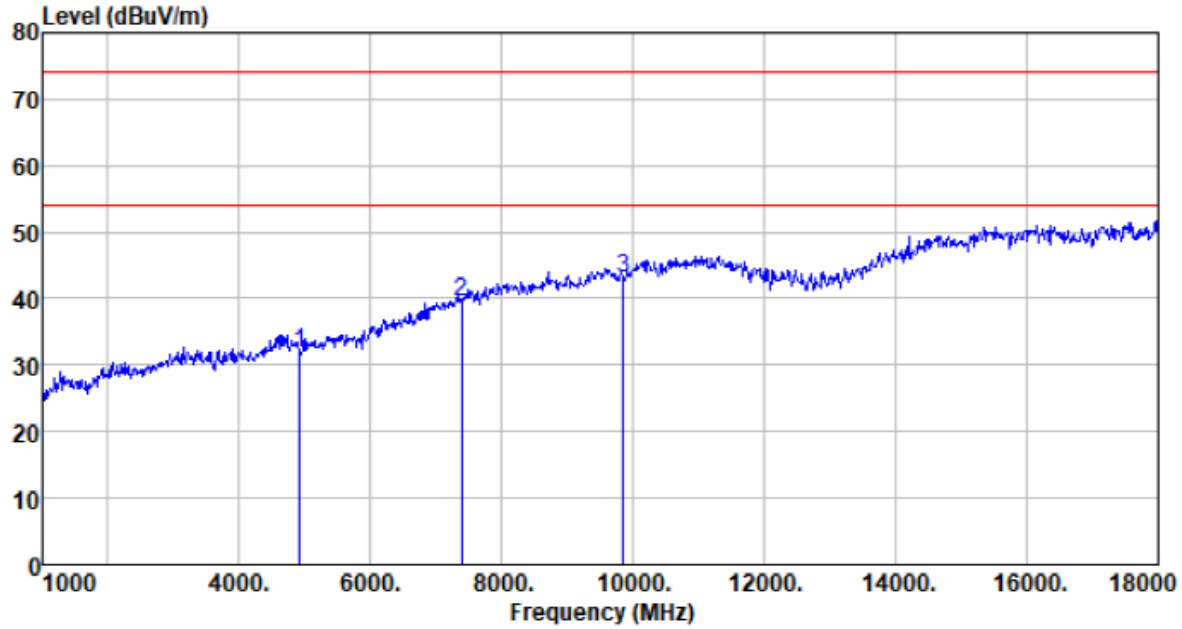
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
4874.000	33.87	31.31	4.69	37.63	32.24	74.00	-41.76	Peak
7311.000	33.15	36.39	6.61	37.78	38.37	74.00	-35.63	Peak
9748.000	34.45	38.10	8.03	37.95	42.63	74.00	-31.37	Peak

Test channel:	Middle	Polarziation:	Vertical



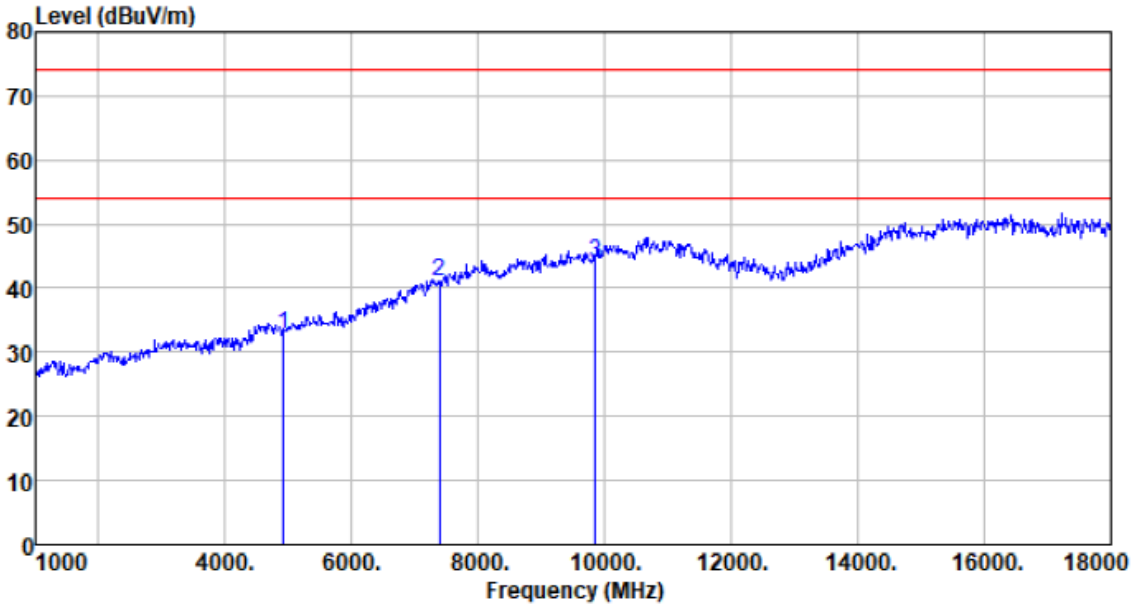
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
4874.000	34.55	31.31	4.69	37.63	32.92	74.00	-41.08	Peak
7311.000	35.70	36.39	6.61	37.78	40.92	74.00	-33.08	Peak
9748.000	35.76	38.10	8.03	37.95	43.94	74.00	-30.06	Peak

Test channel:	Highest	Polarziation:	Horizontal



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
4924.000	33.40	31.39	4.75	37.58	31.96	74.00	-42.04	Peak
7386.000	34.02	36.57	6.71	37.75	39.55	74.00	-34.45	Peak
9848.000	34.77	38.20	8.06	37.97	43.06	74.00	-30.94	Peak

Test channel:	Highest	Polarziation:	Vertical

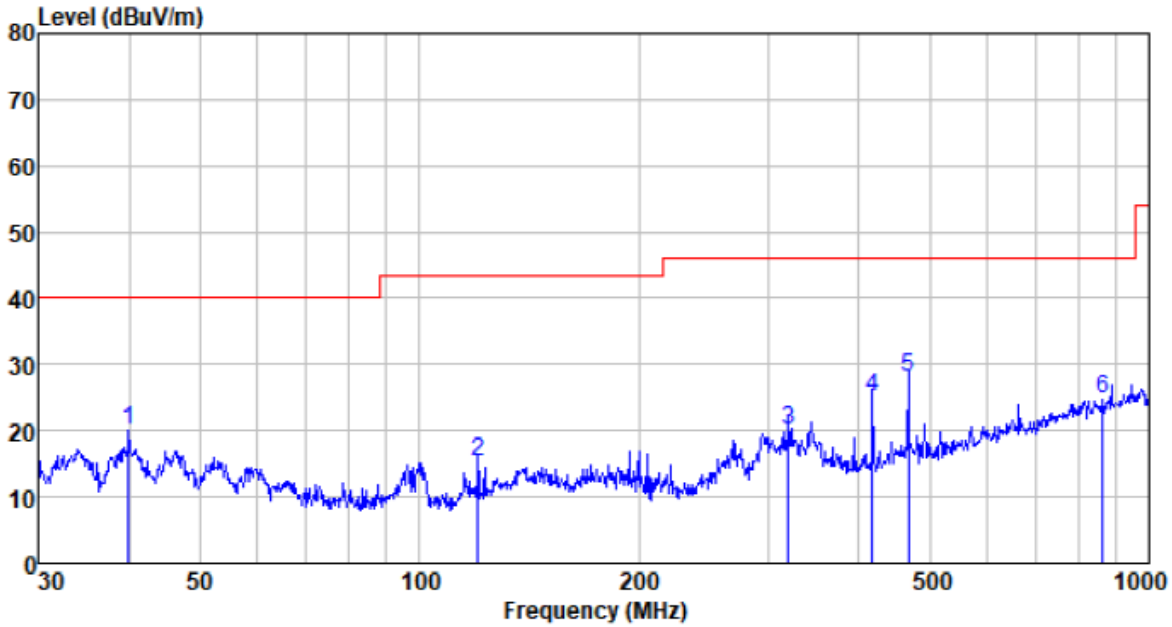


Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
4924.000	34.31	31.39	4.75	37.58	32.87	74.00	-41.13	Peak
7386.000	35.60	36.57	6.71	37.75	41.13	74.00	-32.87	Peak
9848.000	35.56	38.20	8.06	37.97	43.85	74.00	-30.15	Peak

ANT 2:

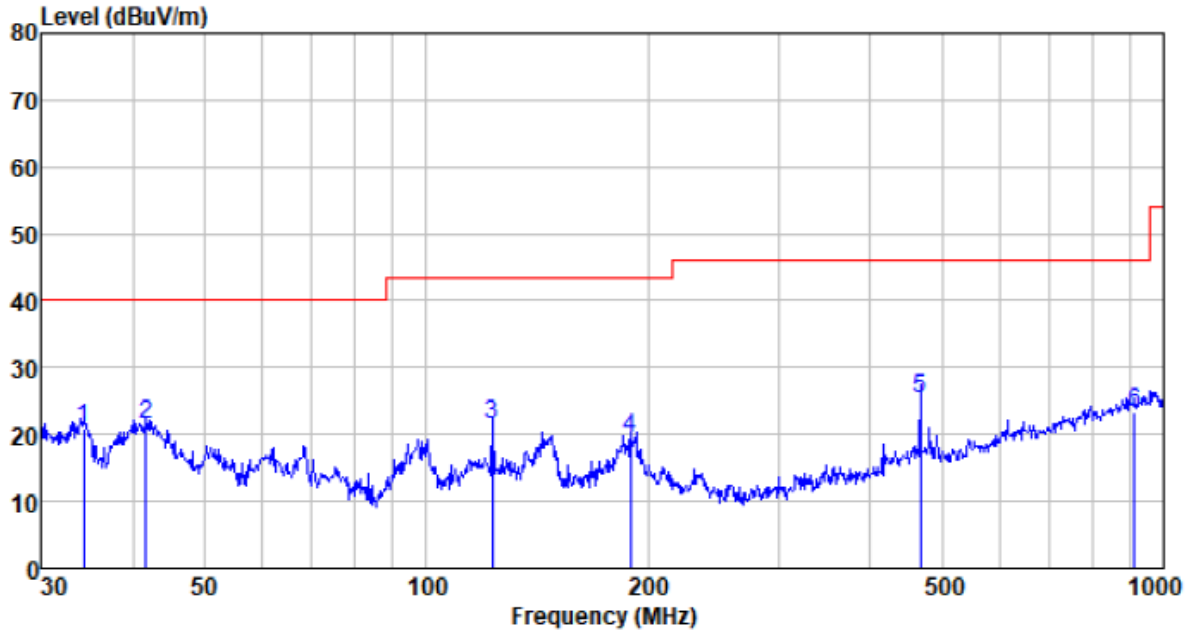
■ **Below 1GHz**

Test channel:	Lowest	Polarziation:	Horizontal



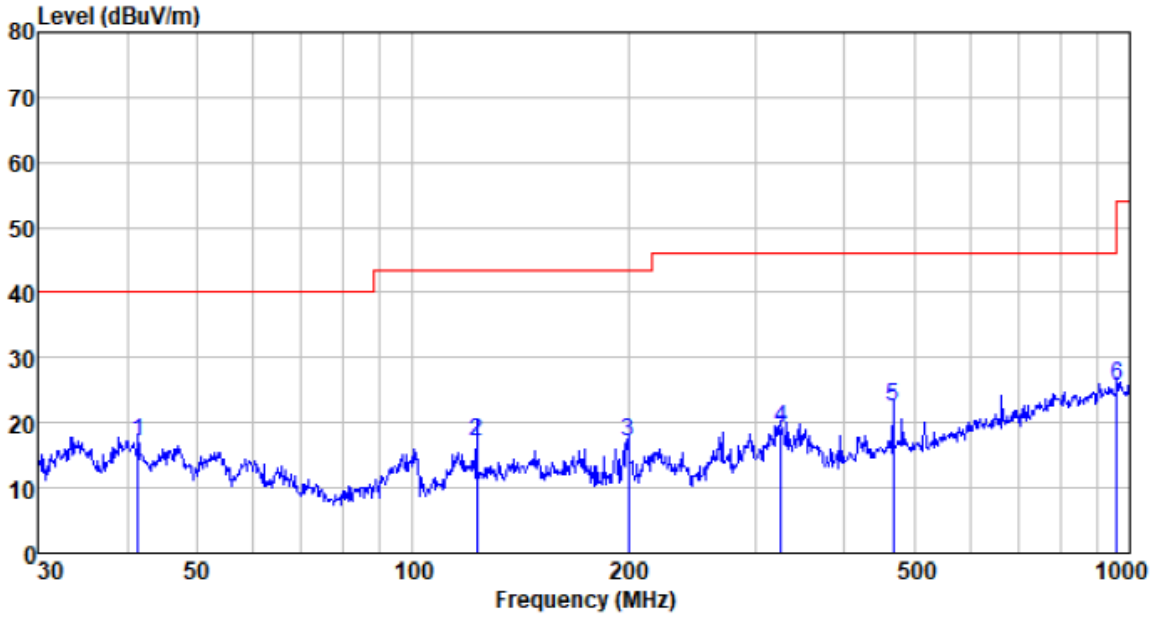
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
39.854	41.70	13.24	0.66	35.66	19.94	40.00	-20.06	QP
120.277	39.93	11.01	1.36	36.88	15.42	43.50	-28.08	QP
319.937	42.08	12.97	2.47	37.44	20.08	46.00	-25.92	QP
417.641	44.63	15.15	2.93	37.52	25.19	46.00	-20.81	QP
467.235	46.17	16.22	3.17	37.51	28.05	46.00	-17.95	QP
863.056	35.14	22.68	4.71	37.61	24.92	46.00	-21.08	QP

Test channel:	Lowest	Polarziation:	Vertical



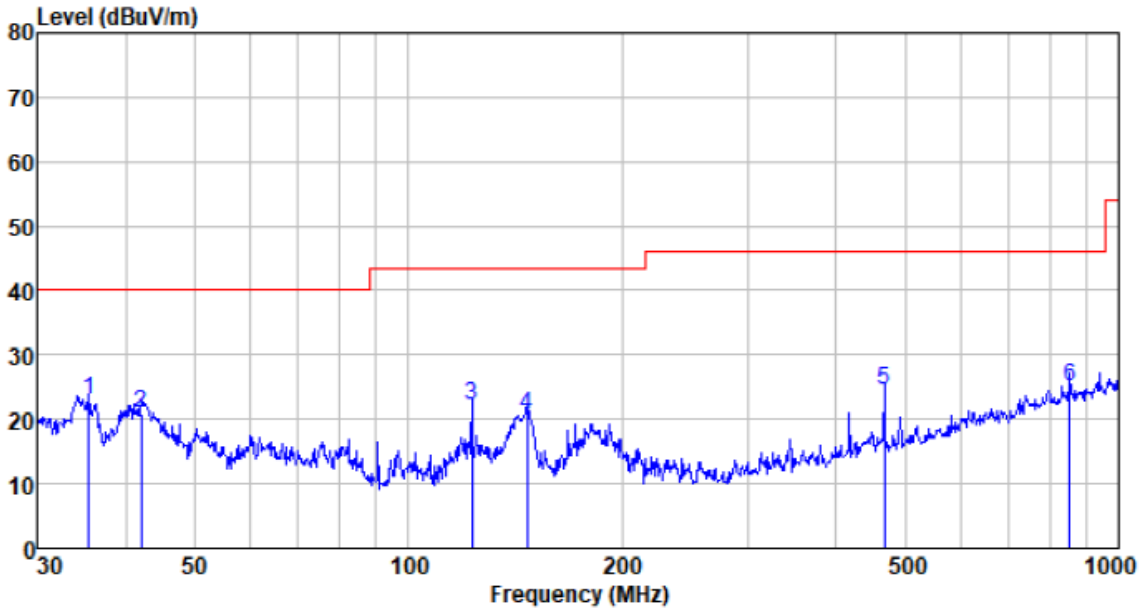
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
34.276	43.09	12.45	0.60	35.31	20.83	40.00	-19.17	QP
41.713	43.39	13.16	0.68	35.76	21.47	40.00	-18.53	QP
122.834	45.93	11.17	1.38	36.90	21.58	43.50	-21.92	QP
189.074	45.05	9.94	1.78	37.28	19.49	43.50	-24.01	QP
467.235	43.49	16.22	3.17	37.51	25.37	46.00	-20.63	QP
912.862	32.90	23.21	4.90	37.59	23.42	46.00	-22.58	QP

Test channel:	Middle	Polarziation:	Horizontal



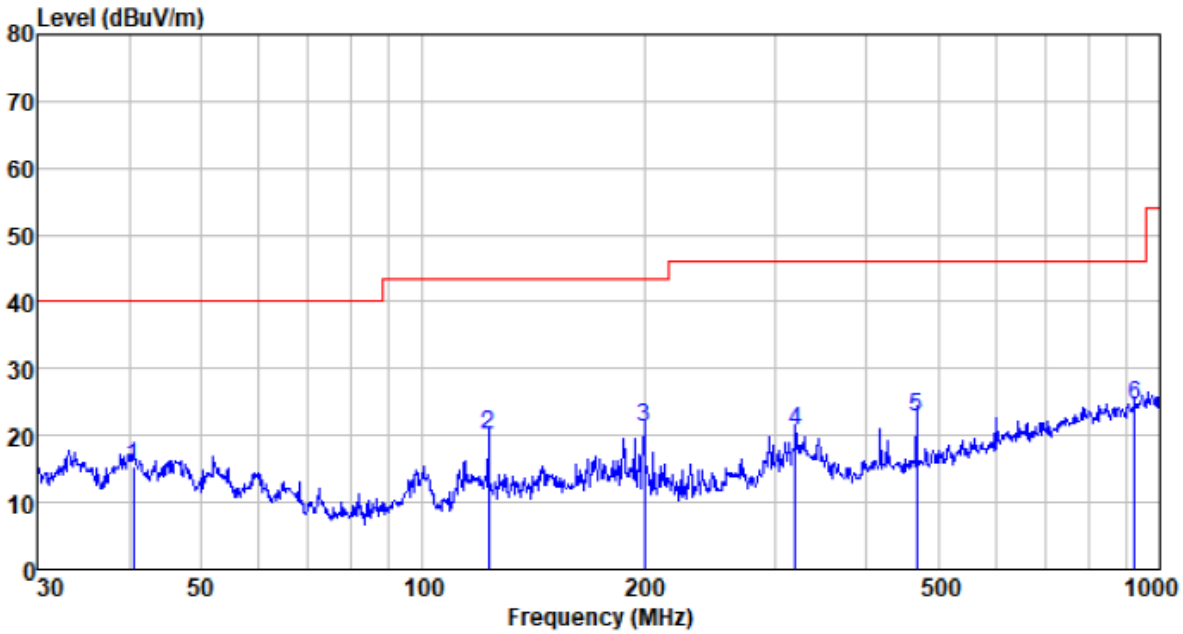
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
41.422	39.14	13.17	0.68	35.75	17.24	40.00	-22.76	QP
122.834	41.59	11.17	1.38	36.90	17.24	43.50	-26.26	QP
199.986	43.50	9.23	1.84	37.33	17.24	43.50	-26.26	QP
326.740	41.09	13.14	2.50	37.45	19.28	46.00	-26.72	QP
467.235	40.70	16.22	3.17	37.51	22.58	46.00	-23.42	QP
958.794	34.24	23.98	5.08	37.55	25.75	46.00	-20.25	QP

Test channel:	Middle	Polarziation:	Vertical



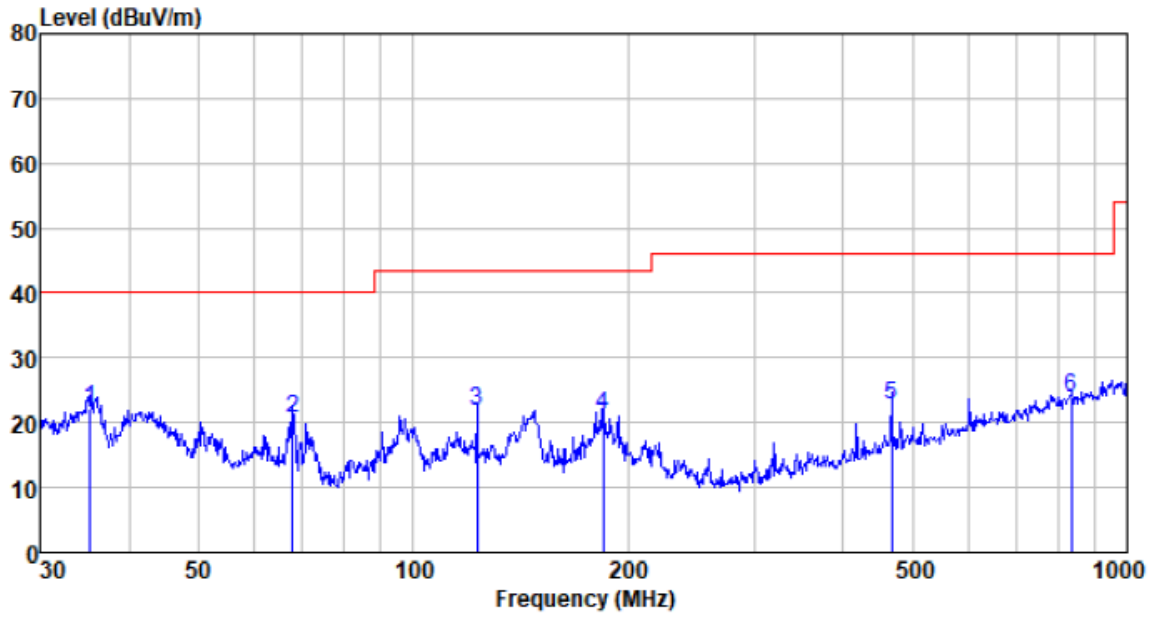
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
35.499	45.14	12.58	0.61	35.39	22.94	40.00	-17.06	QP
42.007	42.96	13.14	0.69	35.78	21.01	40.00	-18.99	QP
122.834	46.52	11.17	1.38	36.90	22.17	43.50	-21.33	QP
146.888	43.50	12.56	1.55	37.06	20.55	43.50	-22.95	QP
467.235	42.64	16.22	3.17	37.51	24.52	46.00	-21.48	QP
854.025	35.54	22.62	4.68	37.61	25.23	46.00	-20.77	QP

Test channel:	Highest	Polarziation:	Horizontal



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
40.559	37.22	13.23	0.67	35.70	15.42	40.00	-24.58	QP
122.834	44.33	11.17	1.38	36.90	19.98	43.50	-23.52	QP
199.986	47.61	9.23	1.84	37.33	21.35	43.50	-22.15	QP
319.937	42.52	12.97	2.47	37.44	20.52	46.00	-25.48	QP
467.235	40.75	16.22	3.17	37.51	22.63	46.00	-23.37	QP
925.756	33.79	23.48	4.95	37.58	24.64	46.00	-21.36	QP

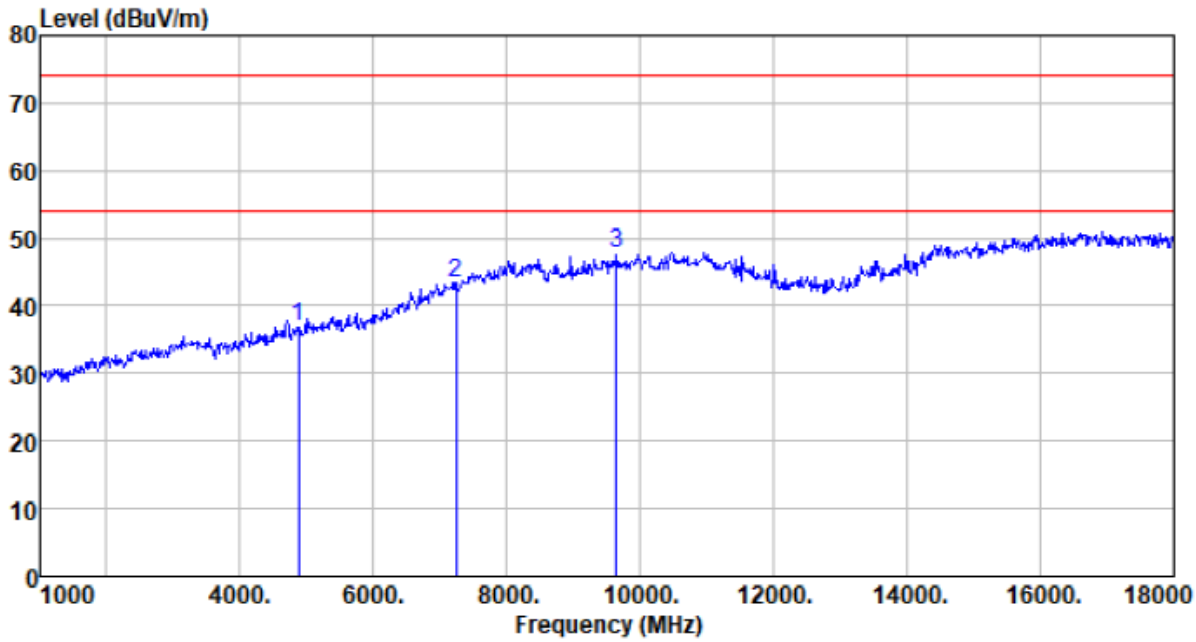
Test channel:	Highest	Polarziation:	Vertical



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
35.251	44.40	12.54	0.61	35.37	22.18	40.00	-17.82	QP
67.675	45.17	11.00	0.92	36.42	20.67	40.00	-19.33	QP
122.834	46.30	11.17	1.38	36.90	21.95	43.50	-21.55	QP
184.490	46.31	10.46	1.76	37.26	21.27	43.50	-22.23	QP
467.235	40.81	16.22	3.17	37.51	22.69	46.00	-23.31	QP
836.244	34.41	22.49	4.60	37.61	23.89	46.00	-22.11	QP

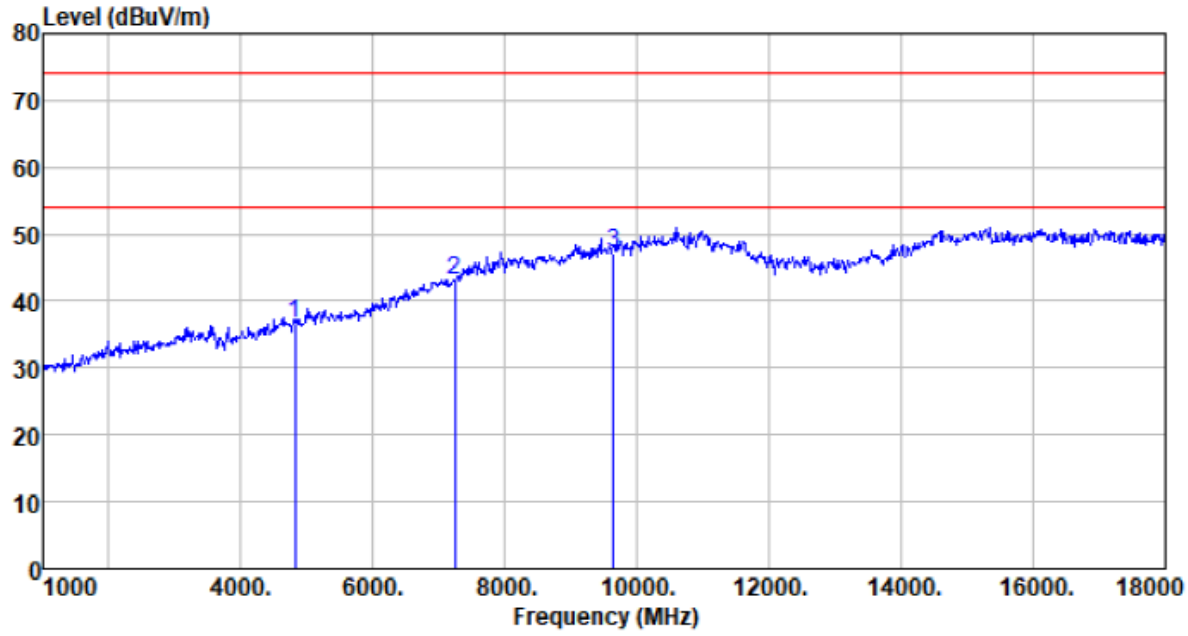
■ **Above 1GHz**

Test channel:	Lowest	Polarziation:	Horizontal



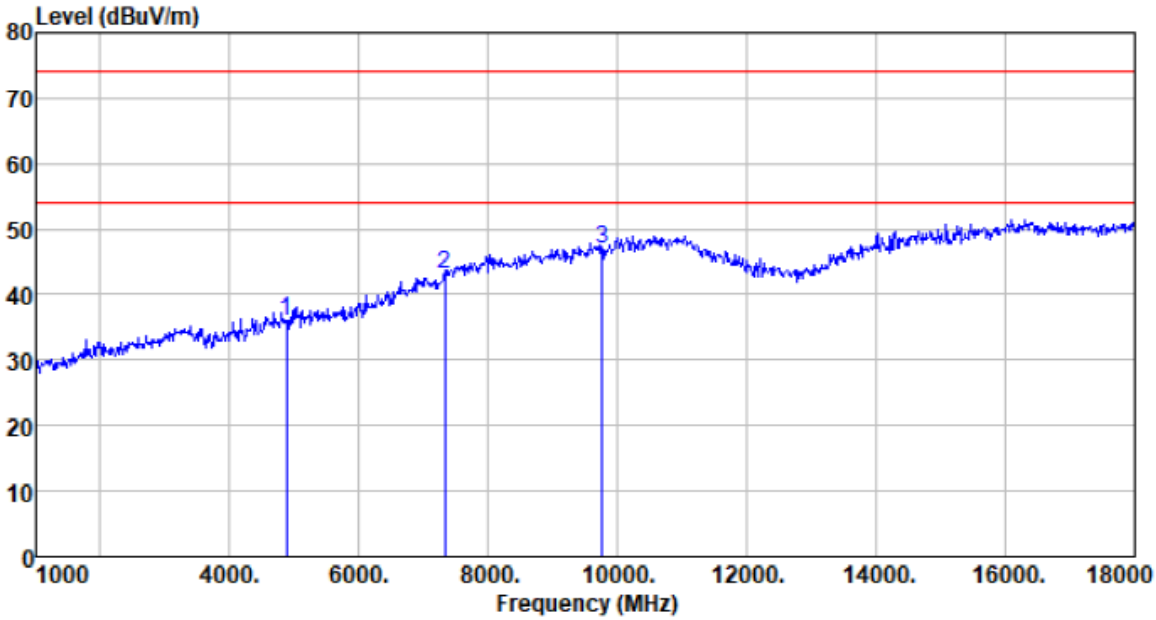
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
4874.000	38.66	31.31	4.69	37.63	37.03	74.00	-36.97	Peak
7236.000	38.38	36.25	6.52	37.81	43.34	74.00	-30.66	Peak
9648.000	39.65	37.97	7.99	37.93	47.68	74.00	-26.32	Peak

Test channel:	Lowest	Polarziation:	Vertical



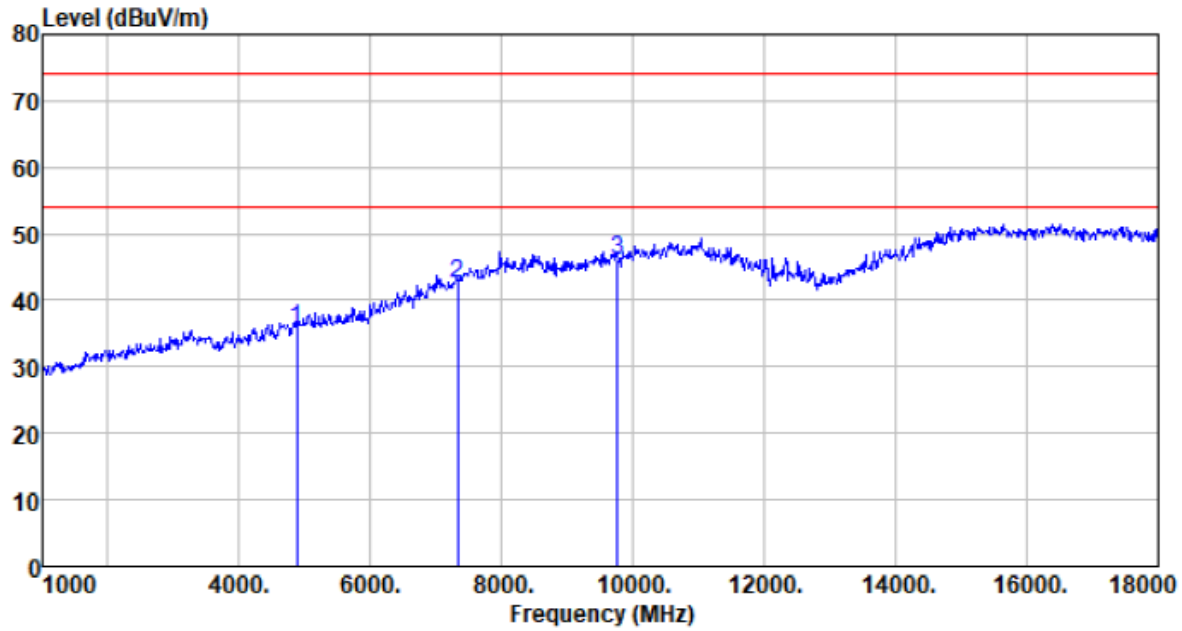
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
4824.000	38.51	31.22	4.63	37.68	36.68	74.00	-37.32	Peak
7236.000	38.07	36.25	6.52	37.81	43.03	74.00	-30.97	Peak
9648.000	39.29	37.97	7.99	37.93	47.32	74.00	-26.68	Peak

Test channel:	Middle	Polarziation:	Horizontal



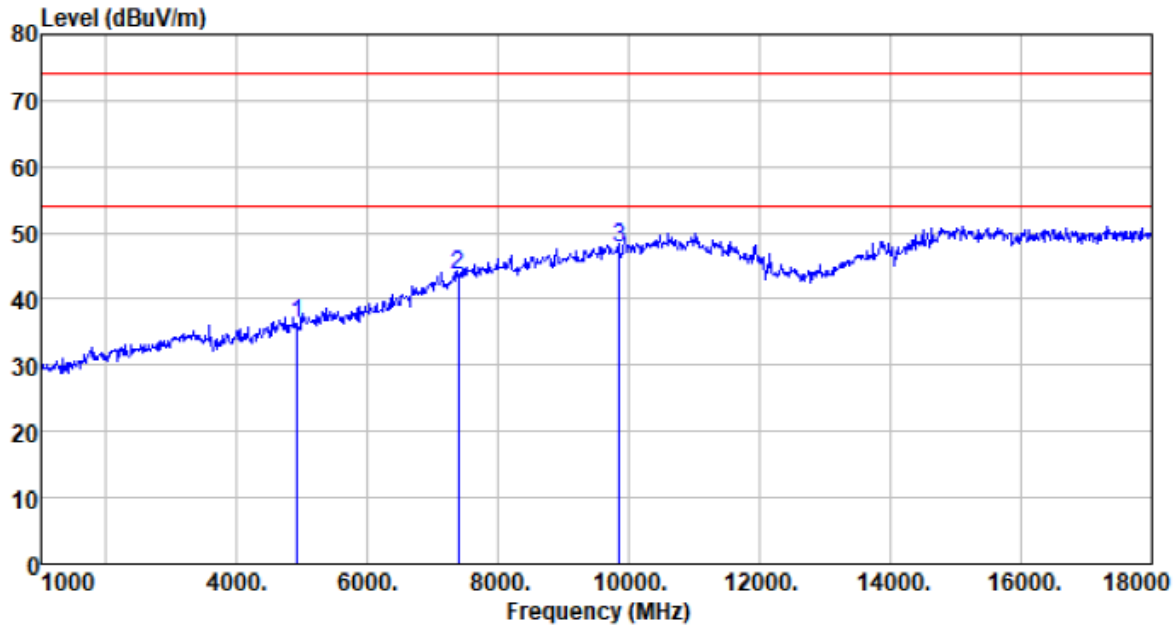
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
4884.000	37.60	31.33	4.69	37.62	36.00	74.00	-38.00	Peak
7326.000	37.70	36.43	6.63	37.77	42.99	74.00	-31.01	Peak
9768.000	38.63	38.13	8.03	37.95	46.84	74.00	-27.16	Peak

Test channel:	Middle	Polarziation:	Vertical



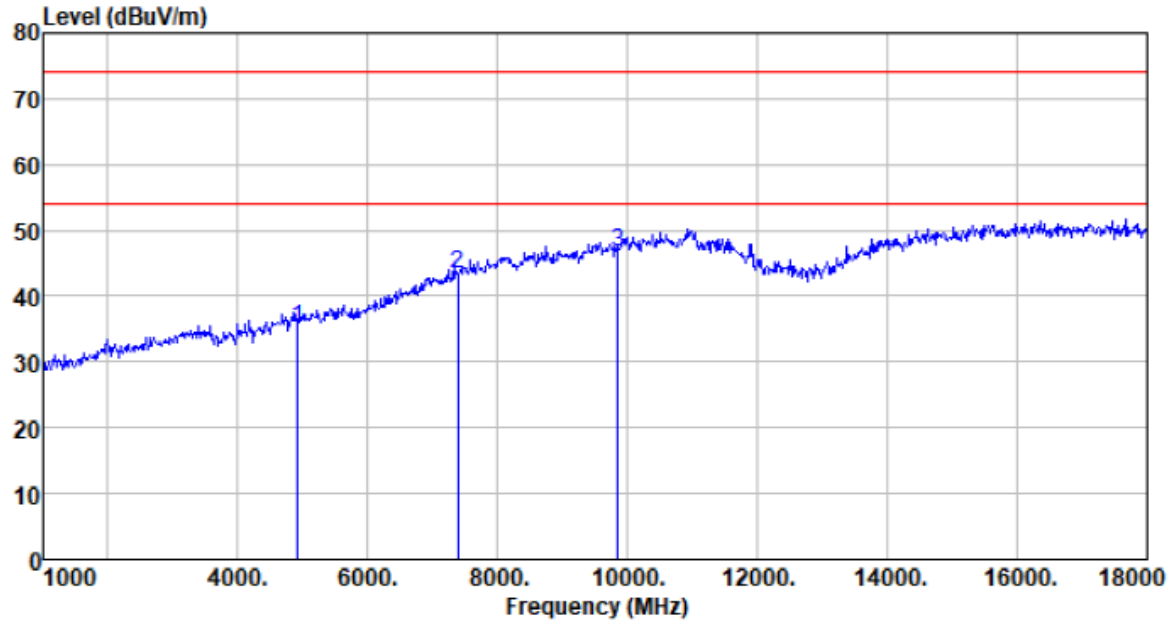
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
4884.000	37.41	31.33	4.69	37.62	35.81	74.00	-38.19	Peak
7326.000	37.23	36.43	6.63	37.77	42.52	74.00	-31.48	Peak
9768.000	37.75	38.13	8.03	37.95	45.96	74.00	-28.04	Peak

Test channel:	Highest	Polarziation:	Horizontal



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
4924.000	37.73	31.39	4.75	37.58	36.29	74.00	-37.71	Peak
7386.000	38.19	36.57	6.71	37.75	43.72	74.00	-30.28	Peak
9848.000	39.43	38.20	8.06	37.97	47.72	74.00	-26.28	Peak

Test channel:	Highest	Polarziation:	Vertical



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
4924.000	36.61	31.39	4.75	37.58	35.17	74.00	-38.83	Peak
7386.000	37.98	36.57	6.71	37.75	43.51	74.00	-30.49	Peak
9848.000	38.48	38.20	8.06	37.97	46.77	74.00	-27.23	Peak

Remark:

1 Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor

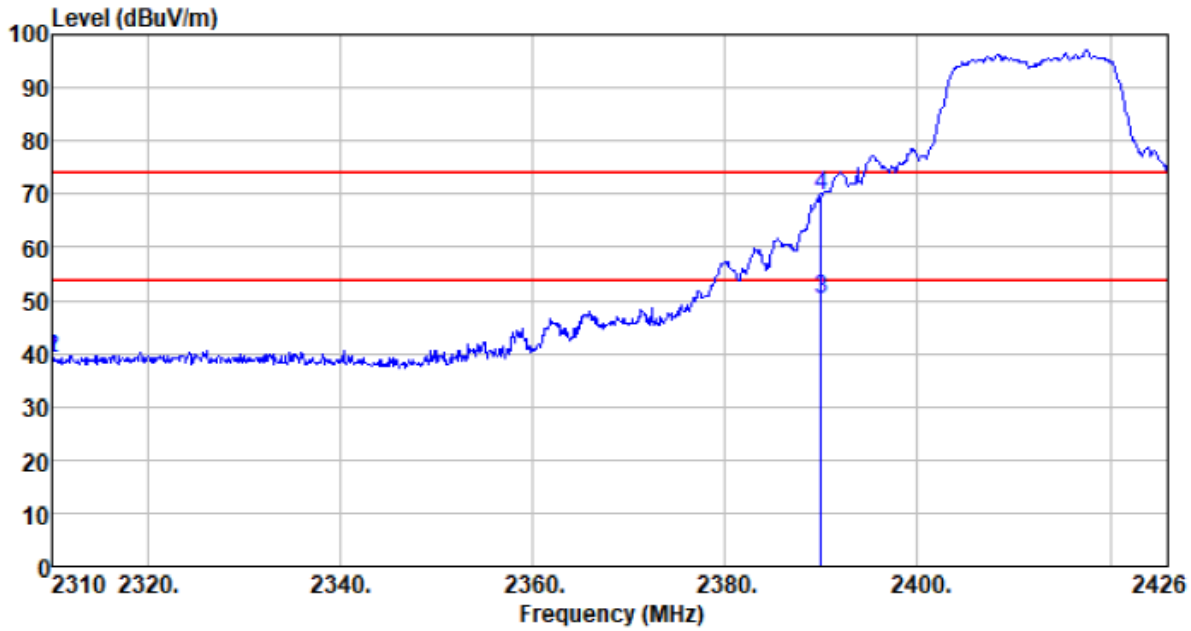
2 "", means this data is the too weak instrument of signal is unable to test.*

3. The emission levels of other frequencies are very lower than the limit and not show in test report.

■ **Unwanted Emissions in restricted Frequency Bands**

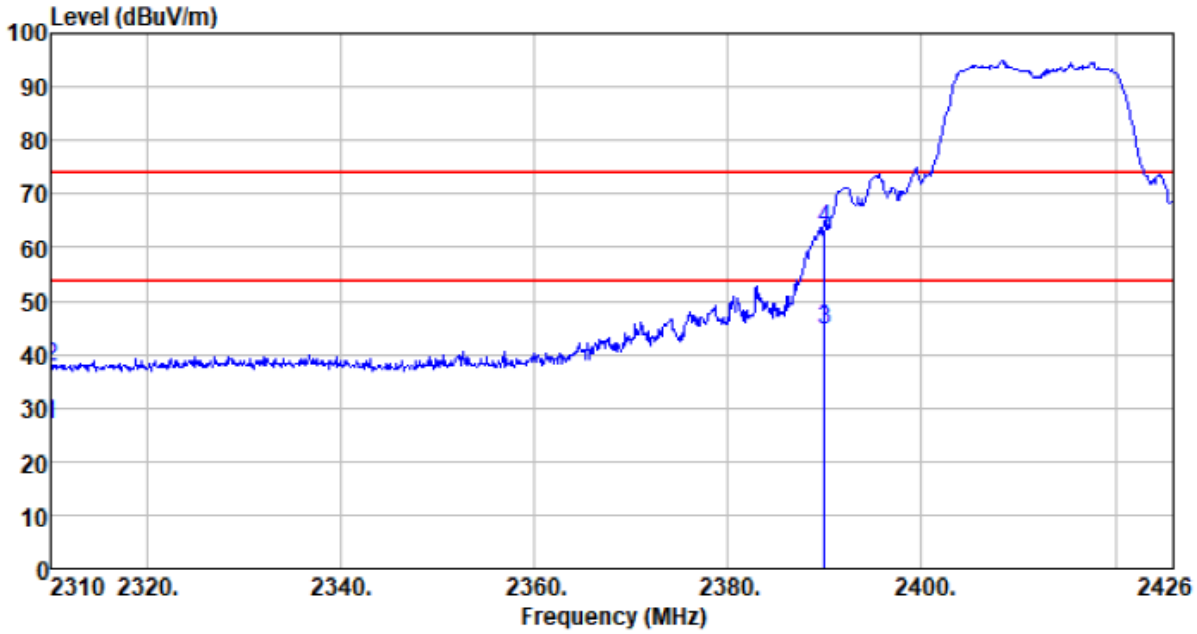
ANT 1:

Test channel:	Lowest	Polarziation:	Horizontal



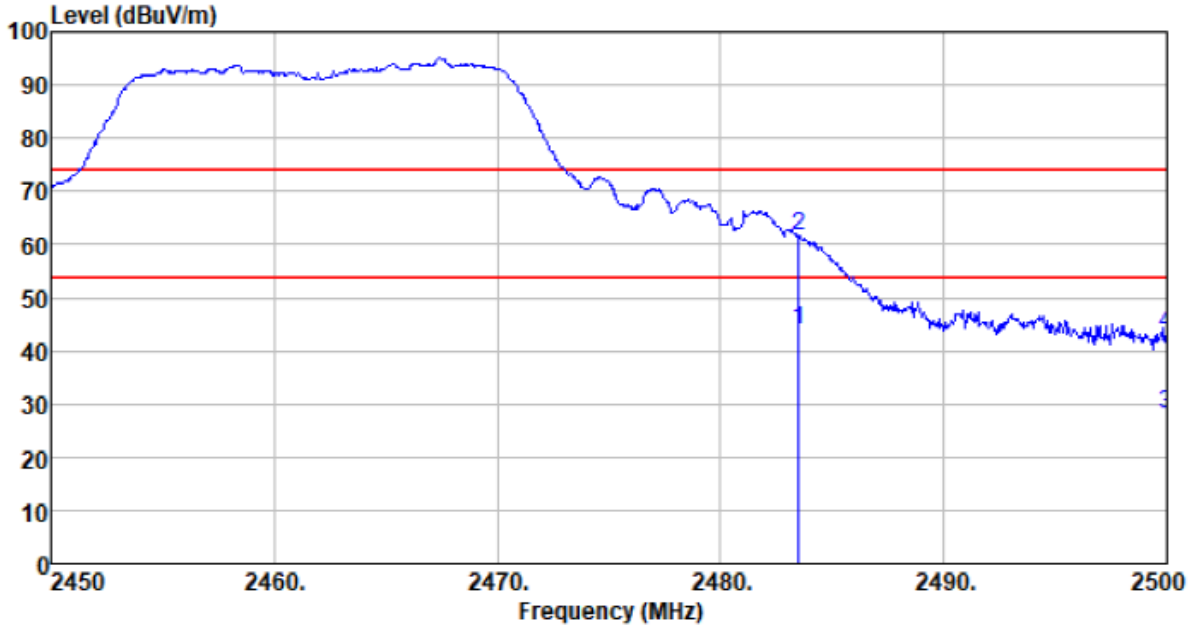
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	47.62	27.14	2.81	38.64	38.93	54.00	-15.07	Average
2310.000	47.62	27.14	2.81	38.64	38.93	74.00	-35.07	Peak
2390.000	58.89	27.37	2.91	38.84	50.33	54.00	-3.67	Average
2390.000	78.34	27.37	2.91	38.84	69.78	74.00	-4.22	Peak

Test channel:	Lowest	Polarziation:	Vertical



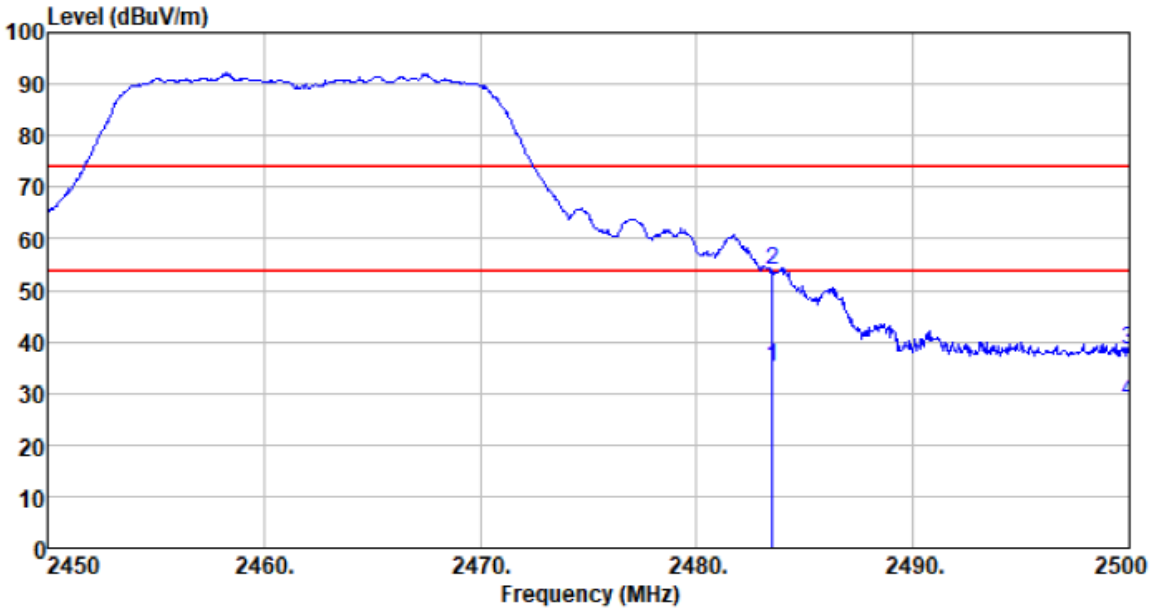
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	35.44	27.14	2.81	38.64	26.75	54.00	-27.25	Average
2310.000	46.46	27.14	2.81	38.64	37.77	74.00	-36.23	Peak
2390.000	53.12	27.37	2.91	38.84	44.56	54.00	-9.44	Average
2390.000	72.02	27.37	2.91	38.84	63.46	74.00	-10.54	Peak

Test channel:	Highest	Polarziation:	Horizontal



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2483.500	52.28	27.66	2.99	39.06	43.87	54.00	-10.13	Average
2483.500	69.98	27.66	2.99	39.06	61.57	74.00	-12.43	Peak
2500.000	36.45	27.70	3.01	39.10	28.06	54.00	-25.94	Average
2500.000	51.44	27.70	3.01	39.10	43.05	74.00	-30.95	Peak

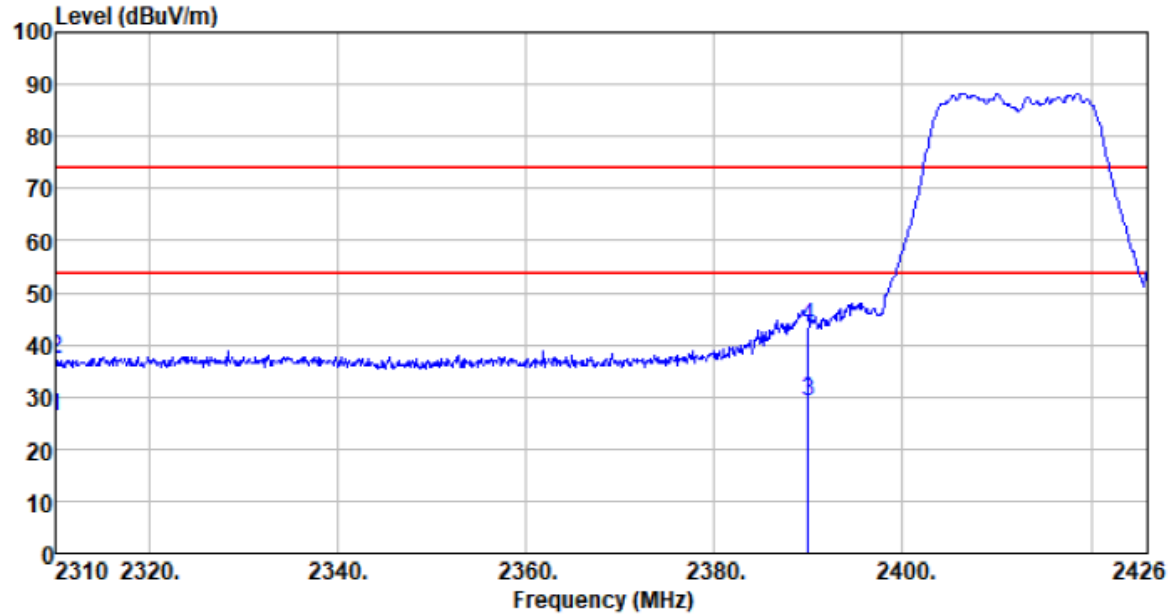
Test channel:	Highest	Polarziation:	Vertical



Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
2483.500	43.56	27.66	2.99	39.06	35.15	54.00	-18.85	Average
2483.500	62.17	27.66	2.99	39.06	53.76	74.00	-20.24	Peak
2500.000	46.78	27.70	3.01	39.10	38.39	74.00	-35.61	Peak
2500.000	36.73	27.70	3.01	39.10	28.34	74.00	-45.66	Peak

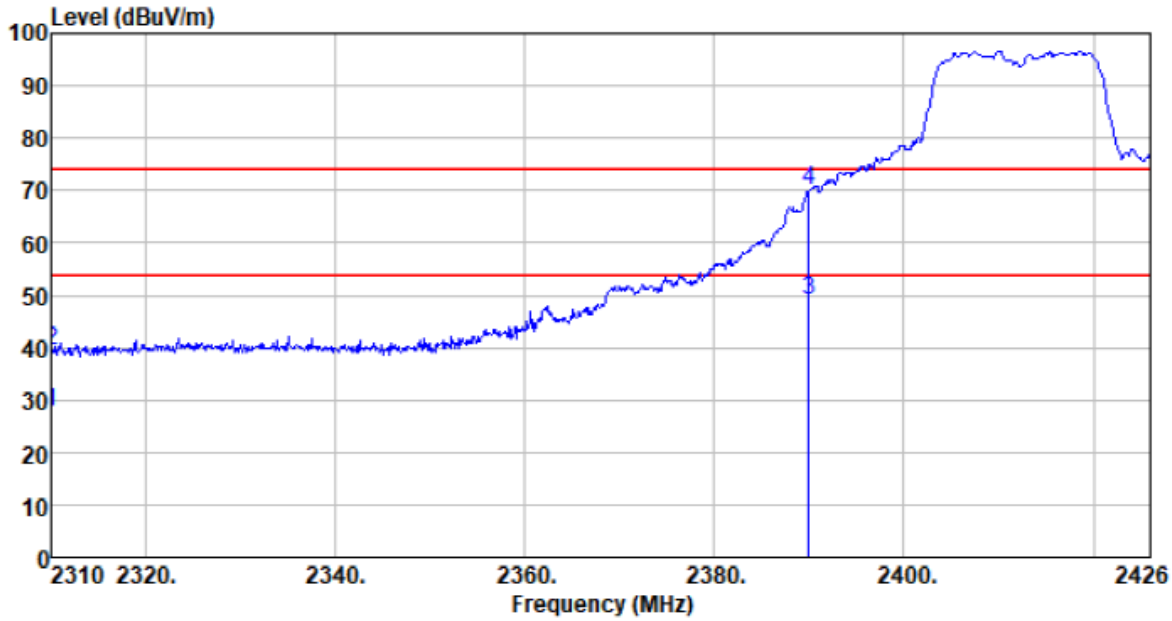
ANT 2:

Test channel:	Lowest	Polarziation:	Horizontal



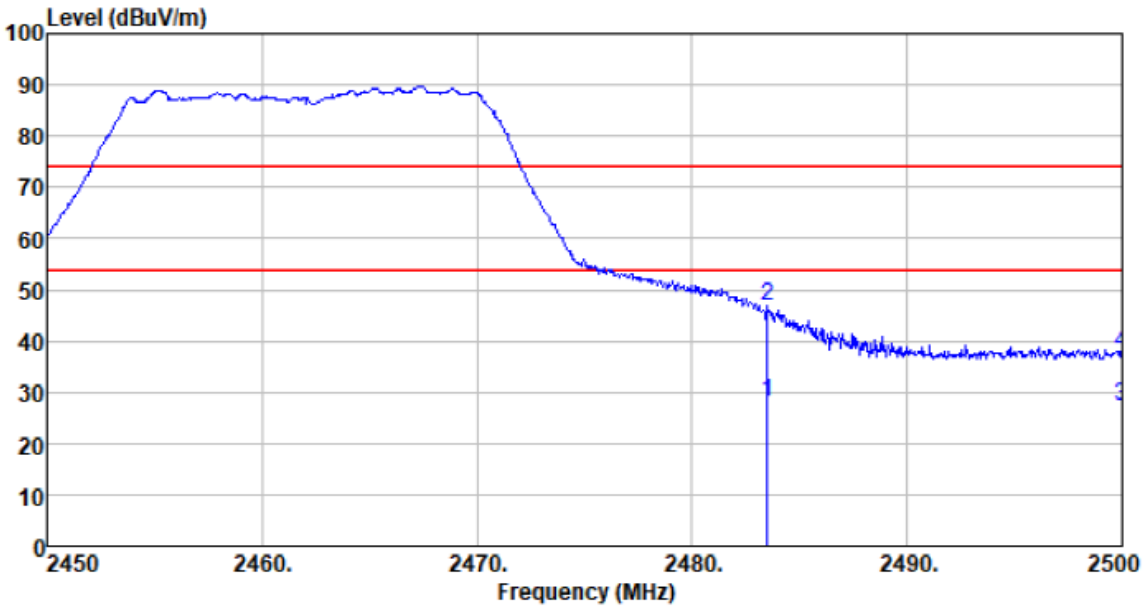
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2310.000	34.86	27.14	2.81	38.64	26.17	54.00	-27.83	Average
2310.000	45.83	27.14	2.81	38.64	37.14	74.00	-36.86	Peak
2390.000	37.85	27.37	2.91	38.84	29.29	54.00	-24.71	Average
2390.000	52.09	27.37	2.91	38.84	43.53	74.00	-30.47	Peak

Test channel:	Lowest	Polarziation:	Vertical



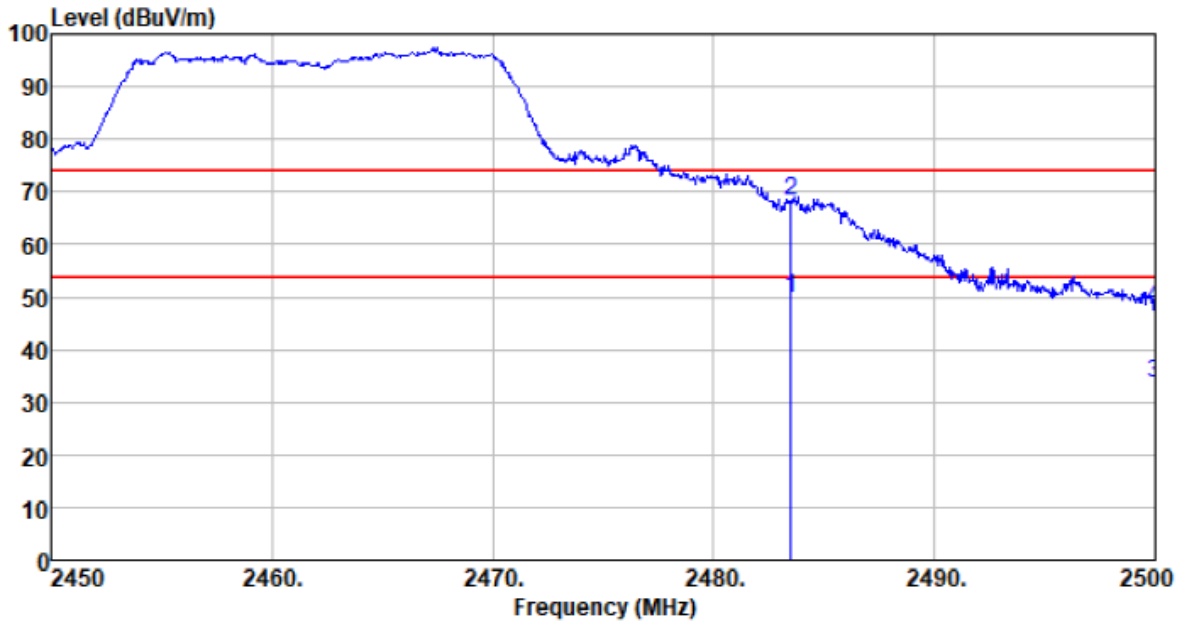
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
2310.000	36.40	27.14	2.81	38.64	27.71	54.00	-26.29	Average
2310.000	48.12	27.14	2.81	38.64	39.43	74.00	-34.57	Peak
2390.000	57.48	27.37	2.91	38.84	48.92	54.00	-5.08	Average
2390.000	78.75	27.37	2.91	38.84	70.19	74.00	-3.81	Peak

Test channel:	Highest	Polarziation:	Horizontal



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2483.500	36.48	27.66	2.99	39.06	28.07	54.00	-25.93	Average
2483.500	55.37	27.66	2.99	39.06	46.96	74.00	-27.04	Peak
2500.000	35.56	27.70	3.01	39.10	27.17	54.00	-26.83	Average
2500.000	45.86	27.70	3.01	39.10	37.47	74.00	-36.53	Peak

Test channel:	Highest	Polarziation:	Vertical



Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
2483.500	58.22	27.66	2.99	39.06	49.81	54.00	-4.19	Average
2483.500	76.77	27.66	2.99	39.06	68.36	74.00	-5.64	Peak
2500.000	42.03	27.70	3.01	39.10	33.64	54.00	-20.36	Average
2500.000	56.30	27.70	3.01	39.10	47.91	74.00	-26.09	Peak

Remarks:

1. *Only the worst case Main Antenna test data.*
2. *The pre-test were performed on lowest, middle and highest frequencies, only the worst case's (lowest and highest frequencies) data was showed.*
3. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
4. *The emission levels of other frequencies are very lower than the limit and not show in test report.*

8 Test Setup Photo

Reference to the **appendix I** for details.

9 EUT Constructional Details

Reference to the **appendix II** for details.

------End------