Report No.: GTSL2024060249F01

TEST REPORT

Applicant:	Shenzhen EWRF Technology Co.,LTD
Address of Applicant:	Rm 412, Building 535, Second Bagua Road, Futian, Shenzhen, China
Manufacturer/Factory:	Shenzhen EWRF Technology Co.,LTD
Address of Manufacturer/Factory:	Rm 412, Building 535, Second Bagua Road, Futian, Shenzhen, China
Equipment Under Test (EUT)	
Product Name:	EWRF 1022MLA LoRaWAN RF Module
Model No.:	EWRF 1022MLA
Trade Mark:	EWRF
FCC ID:	2BG9A-E1022MLA
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.247
Date of sample receipt:	June 19, 2024
Date of Test:	June 20, 2024-August 09, 2024
Date of report issued:	August 09, 2024
Test Result :	PASS *

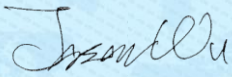
* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

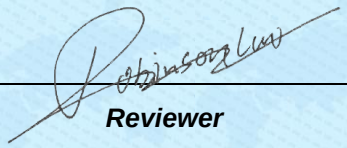
Robinson Luo
Laboratory Manager

2 Version

Version No.	Date	Description
00	*August 09, 2024*	*Original*

Prepared By:  ***Date:*** *August 09, 2024*

Project Engineer

Check By:  ***Date:*** *August 09, 2024*

Reviewer

3 Contents

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4 Test Summary

Test Item	Section	Result
Antenna Requirement	15.203	Pass
AC Power Line Conducted Emission	15.207	Pass
Conducted Peak Output Power	15.247 (b)(2) 15.247 (b)(3)	Pass
Channel Bandwidth	15.247 (a)(1) 15.247 (a)(2)	Pass
Power Spectral Density	15.247 (e)	Pass
Carrier Frequencies Separation	15.247 (a)(1)	Pass
Hopping Channel Number	Report only for hybrid system	Pass
Dwell Time	15.247 (f)	Pass
Radiated Emission	15.205/15.209	Pass
Band Edge	15.247(d)	Pass

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

Remark: Test according to ANSI C63.10:2013.

4.1 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	$\pm 7.25\times10^{-8}$
2	Duty cycle	±0.37%
3	Occupied Bandwidth	±3%
4	RF conducted power	±0.75dB
5	RF power density	±3dB
6	Conducted Spurious emissions	±2.58dB
7	AC Power Line Conducted Emission	±3.44dB (0.15MHz ~ 30MHz)
8	Radiated Spurious emission test	±3.1dB (9kHz-30MHz)
		±3.8039dB (30MHz-200MHz)
		±3.9679dB (200MHz-1GHz)
		±4.29dB (1GHz-18GHz)
		±3.30dB (18GHz-40GHz)
9	Temperature test	±1°C
10	Humidity test	±3%
11	Time	±3%

5 General Information

5.1 General Description of EUT

Product Name:	EWRF 1022MLA LoRaWAN RF Module
Model No.:	EWRF 1022MLA
Serial No.:	1EBDB2425B000256
Test sample(s) ID:	GTSL2024060249-1
Sample(s) Status	Engineer sample
Operation Frequency:	125k bandwidth: 902.3MHz~914.9MHz 500k bandwidth: 903MHz~914.2MHz
Channel numbers:	125k bandwidth: 64 500k bandwidth: 8
Modulation technology:	125k bandwidth: FHSS 500k bandwidth: DTS
Antenna Type:	Spring Antenna
Antenna gain:	1.5dBi(Declared by applicant)
Power supply:	DC 2.0-3.7V

Remark:
1. Antenna gain information provided by the customer
2. The relevant information of the sample is provided by the entrusting company, and the laboratory is not responsible for its authenticity.

The test frequencies are below:

Channel	Frequency(MHz)	
	FHSS	DTS
The lowest channel	902.3	903
The middle channel	908.5	907.8
The Highest channel	914.9	914.2

RF Channel and Frequency of Lora FHSS					
1	902.3	23	906.7	45	911.1
2	902.5	24	906.9	46	911.3
3	902.7	25	907.1	47	911.5
4	902.9	26	907.3	48	911.7
5	903.1	27	907.5	49	911.9
6	903.3	28	907.7	50	912.1
7	903.5	29	907.9	51	912.3
8	903.7	30	908.1	52	912.5
9	903.9	31	908.3	53	912.7
10	904.1	32	908.5	54	912.9
11	904.3	33	908.7	55	913.1
12	904.5	34	908.9	56	913.3
13	904.7	35	909.1	57	913.5
14	904.9	36	909.3	58	913.7
15	905.1	37	909.5	59	913.9
16	905.3	38	909.7	60	914.1
17	905.5	39	909.9	61	914.3
18	905.7	40	910.1	62	914.5
19	905.9	41	910.3	63	914.7
20	906.1	42	910.5	64	914.9
21	906.3	43	910.7		
22	906.5	44	910.9		

RF Channel and Frequency of Lora DTS					
1	903.0	4	907.8	7	912.6
2	904.6	5	909.4	8	914.2
3	906.2	6	911.0		

5.2 Test mode

Transmitting mode	Keep the EUT in transmitting mode.

5.3 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.

● **ISED —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 ISED 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).

5.4 Test Location

All other 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

5.5 Description of Support Units

None.

5.6 Deviation from Standards

None.

5.7 Abnormalities from Standard Conditions

None.

5.8 Additional Instructions

Test Software	Special test command provided by manufacturer
Power level setup	Default

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	June 22, 2024	June 21, 2027
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 11, 2024	April 10, 2025
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9168	GTS640	March 19, 2023	March 18, 2025
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	April 17, 2023	April 16, 2025
6	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
7	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	April 11, 2024	April 10, 2025
8	Loop Antenna	ZHINAN	ZN30900A	GTS534	Nov. 13, 2023	Nov.12, 2024
9	Broadband Preamplifier	SCHWARZBECK	BBV9718	GTS535	April 11, 2024	April 10, 2025
10	Amplifier(1GHz-26.5GHz)	HP	8449B	GTS601	April 11, 2024	April 10, 2025
11	Horn Antenna (18-26.5GHz)	/	UG-598A/U	GTS664	Oct. 29, 2023	Oct. 28, 2024
12	Horn Antenna (26.5-40GHz)	A.H Systems	SAS-573	GTS665	Oct. 29, 2023	Oct. 28, 2024
13	FSV·Signal Analyzer (10Hz-40GHz)	Keysight	FSV-40-N	GTS666	March 12, 2024	March 11, 2025
14	Amplifier	/	LNA-1000-30S	GTS650	April 11, 2024	April 10, 2025
15	CDNE M2+M3-16A	HCT	30MHz-300MHz	GTS692	Nov. 08, 2023	Nov.07, 2024
16	Wideband Amplifier	/	WDA-01004000-15P35	GTS602	April 11, 2024	April 10, 2025
17	Thermo meter	JINCHUANG	GSP-8A	GTS643	April 18, 2024	April 17, 2025
18	RE cable 1	GTS	N/A	GTS675	July 02. 2024	July 01. 2025
19	RE cable 2	GTS	N/A	GTS676	July 02. 2024	July 01. 2025
20	RE cable 3	GTS	N/A	GTS677	July 02. 2024	July 01. 2025
21	RE cable 4	GTS	N/A	GTS678	July 02. 2024	July 01. 2025
22	RE cable 5	GTS	N/A	GTS679	July 02. 2024	July 01. 2025
23	RE cable 6	GTS	N/A	GTS680	July 02. 2024	July 01. 2025
24	RE cable 7	GTS	N/A	GTS681	July 05. 2024	July 04. 2025
25	RE cable 8	GTS	N/A	GTS682	July 05. 2024	July 04. 2025

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	July 12, 2022	July 11, 2027
2	EMI Test Receiver	R&S	ESCI 7	GTS552	April 11, 2024	April 10, 2025
3	LISN	ROHDE & SCHWARZ	ENV216	GTS226	April 11, 2024	April 10, 2025
4	Coaxial Cable	GTS	N/A	GTS227	N/A	N/A
5	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
6	Thermo meter	JINCHUANG	GSP-8A	GTS642	April 18, 2024	April 17, 2025
7	Absorbing clamp	Elektronik-Feinmechanik	MDS21	GTS229	April 11, 2024	April 10, 2025
8	ISN	SCHWARZBECK	NTFM 8158	GTS565	April 11, 2024	April 10, 2025
9	High voltage probe	SCHWARZBECK	TK9420	GTS537	April 11, 2024	April 10, 2025
10	Antenna end assembly	Weinschel	1870A	GTS560	April 11, 2024	April 10, 2025

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 11, 2024	April 10, 2025
2	EMI Test Receiver	R&S	ESCI 7	GTS552	April 11, 2024	April 10, 2025
3	PSA Series Spectrum Analyzer	Agilent	E4440A	GTS536	April 11, 2024	April 10, 2025
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	April 11, 2024	April 10, 2025
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	April 11, 2024	April 10, 2025
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	April 11, 2024	April 10, 2025
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	April 11, 2024	April 10, 2025
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	April 11, 2024	April 10, 2025
9	Thermo meter	JINCHUANG	GSP-8A	GTS641	April 18, 2024	April 17, 2025

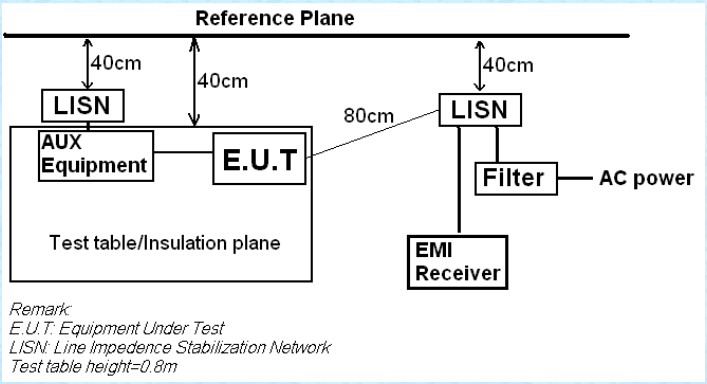
General used equipment:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Barometer	KUMAO	SF132	GTS647	April 18, 2024	April 17, 2025

7 Test results and Measurement Data

7.1 Antenna requirement

Standard requirement:	FCC Part15 C Section 15.203
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.	
EUT Antenna:	
The antenna is spring antenna, reference to the appendix II for details.	

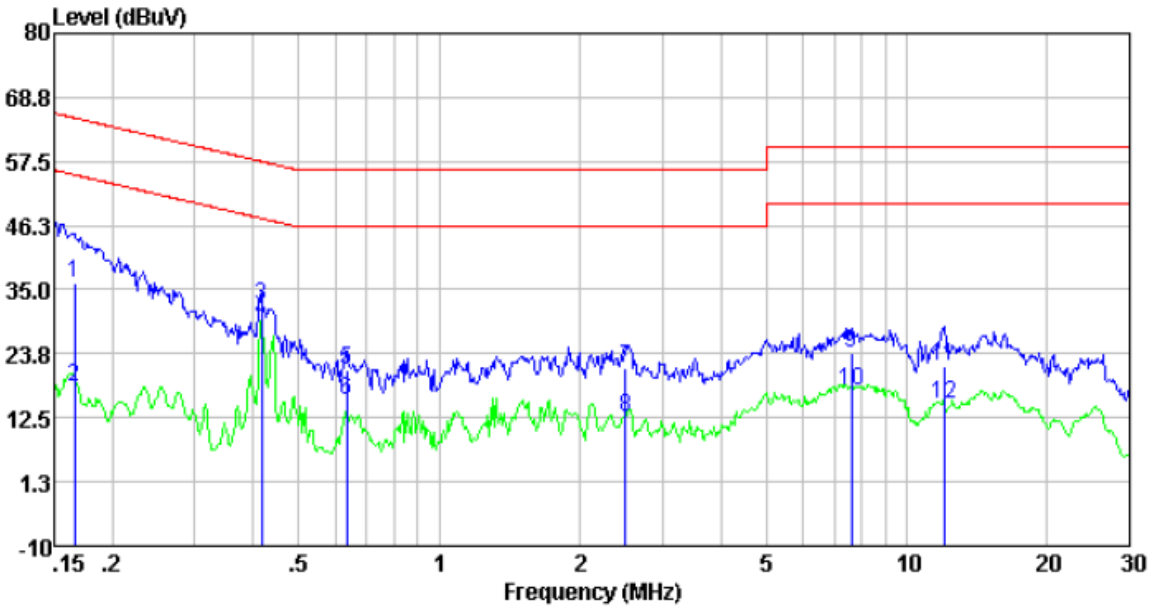
7.2 Conducted Emissions

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2013
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 C63.10:2013 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

Measurement data

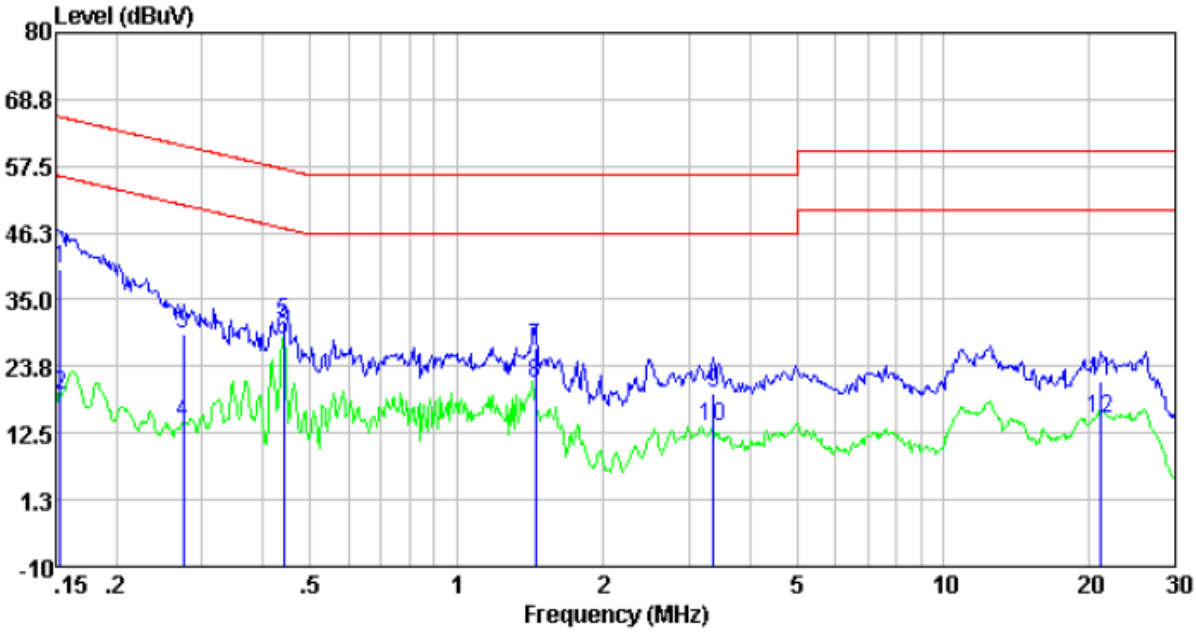
Pre-scan all test modes, found worst case at 902.3MHz, and so only show the test result of it.

Line



Freq	Reading level	LISN/ISN factor	Cable loss	Level	Limit level	Over limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0.17	26.54	9.55	0.01	36.10	65.16	-29.06	QP
0.17	8.34	9.55	0.01	17.90	55.16	-37.26	Average
0.42	22.56	9.49	0.01	32.06	57.51	-25.45	QP
0.42	20.07	9.49	0.01	29.57	47.51	-17.94	Average
0.63	11.32	9.50	0.02	20.84	56.00	-35.16	QP
0.63	6.02	9.50	0.02	15.54	46.00	-30.46	Average
2.50	11.49	9.57	0.05	21.11	56.00	-34.89	QP
2.50	3.03	9.57	0.05	12.65	46.00	-33.35	Average
7.61	14.32	9.31	0.09	23.72	60.00	-36.28	QP
7.61	7.71	9.31	0.09	17.11	50.00	-32.89	Average
12.00	11.93	9.43	0.13	21.49	60.00	-38.51	QP
12.00	5.44	9.43	0.13	15.00	50.00	-35.00	Average

Neutral

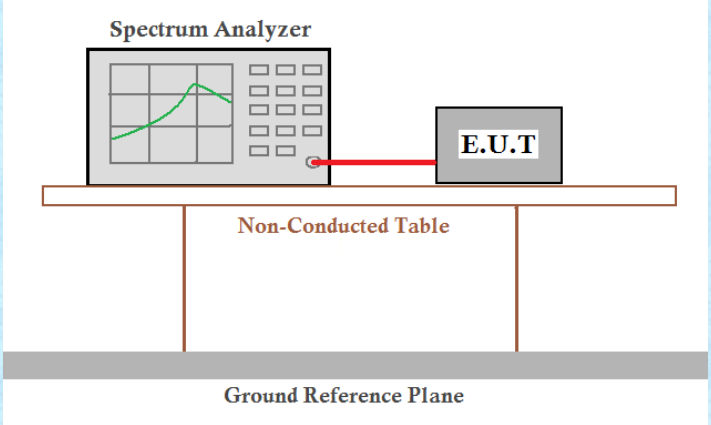


Freq	Reading level	LISN/ISN factor	Cable loss	Level	Limit level	Over limit	Remark
MHz	dBuV	dB	dB	dBuV	dBuV	dB	
0.15	30.71	9.55	0.01	40.27	65.82	-25.55	QP
0.15	9.39	9.55	0.01	18.95	55.82	-36.87	Average
0.27	19.49	9.56	0.01	29.06	60.98	-31.92	QP
0.27	4.70	9.56	0.01	14.27	50.98	-36.71	Average
0.44	21.49	9.57	0.01	31.07	57.07	-26.00	QP
0.44	18.54	9.57	0.01	28.12	47.07	-18.95	Average
1.45	17.12	9.55	0.04	26.71	56.00	-29.29	QP
1.45	11.19	9.55	0.04	20.78	46.00	-25.22	Average
3.36	9.59	9.56	0.05	19.20	56.00	-36.80	QP
3.36	4.02	9.56	0.05	13.63	46.00	-32.37	Average
21.15	10.95	10.14	0.19	21.28	60.00	-38.72	QP
21.15	4.51	10.14	0.19	14.84	50.00	-35.16	Average

Notes:

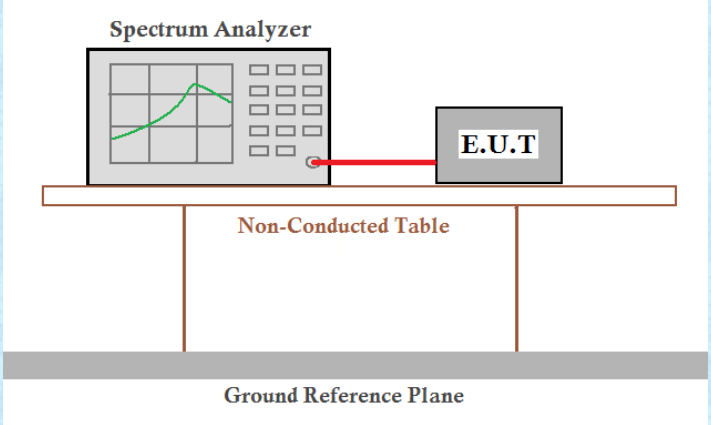
1. *An initial pre-scan was performed on the line and neutral lines with peak detector.*
2. *Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.*
3. *Final Level =Receiver Read level + LISN Factor + Cable Loss*
4. *If the average limit is met when using 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)(2) FCC Part15 C Section 15.247(b)(3)
Test Method:	ANSI C63.10:2013
Limit:	30dBm
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

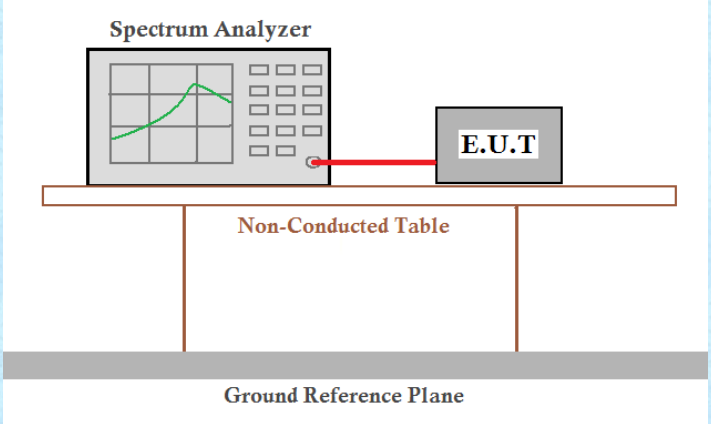
Measurement Data: The detailed test data see Appendix.

7.4 Channel Bandwidth

Test Requirement:	FCC Part15 C Section 15.247 (a)(1) FCC Part15 C Section 15.247 (a)(2)
Test Method:	ANSI C63.10:2013
Limit:	N/A
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

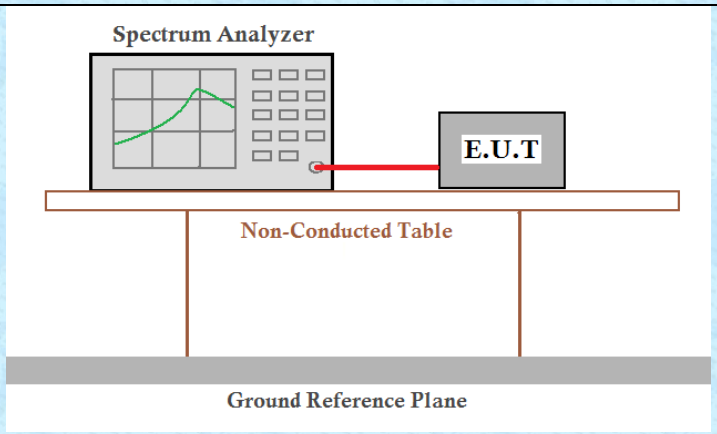
Measurement Data: The detailed test data see Appendix.

7.5 Power Spectral Density

Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	ANSI C63.10:2013
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

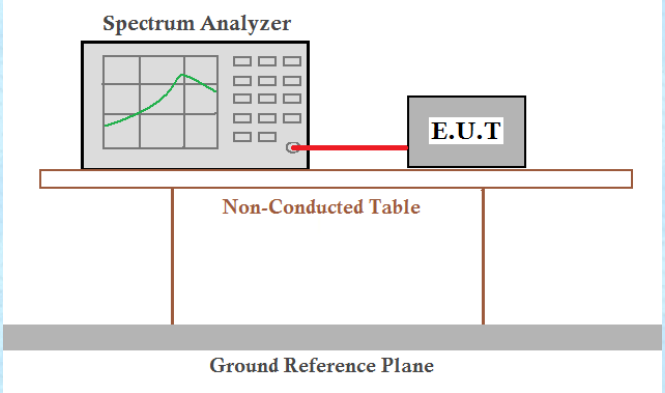
Measurement Data: The detailed test data see Appendix.

7.6 Carrier Frequencies Separation

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=30KHz, VBW=100KHz, detector=Peak
Limit:	0.025MHz or 20dB bandwidth (whichever is greater)
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

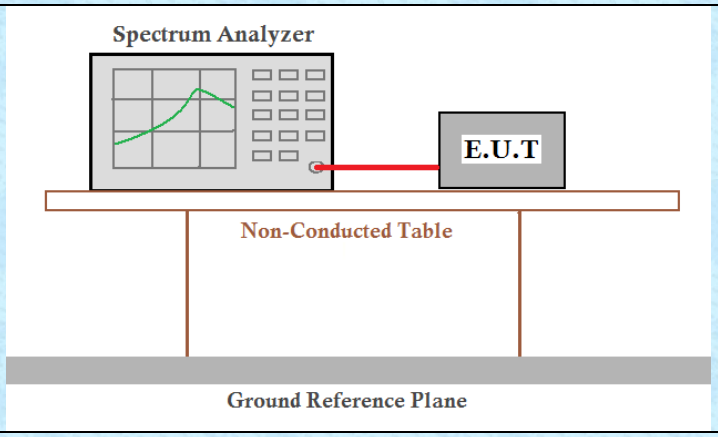
Measurement Data: The detailed test data see Appendix.

7.7 Hopping Channel Number

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)(i)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=30kHz, VBW=100kHz, Frequency range=901MHz-916MHz, Detector=Peak
Limit:	Report for Use
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.

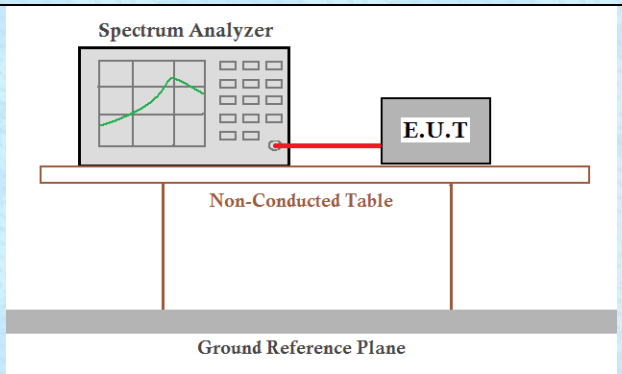
7.8 Dwell Time

Test Requirement:	FCC Part15 C Section 15.247 (f)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=1MHz, VBW=3MHz, Span=0Hz, Detector=Peak
Limit:	0.4 Second
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.

7.9 Spurious Emission

7.9.1 Conducted Emission Method

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=100kHz, VBW=300kHz, Detector=Peak
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 section6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data: The detailed test data see Appendix.

7.9.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205
Test Method:	ANSI C63.10:2013
Test site:	Measurement Distance: 3m

Receiver setup:

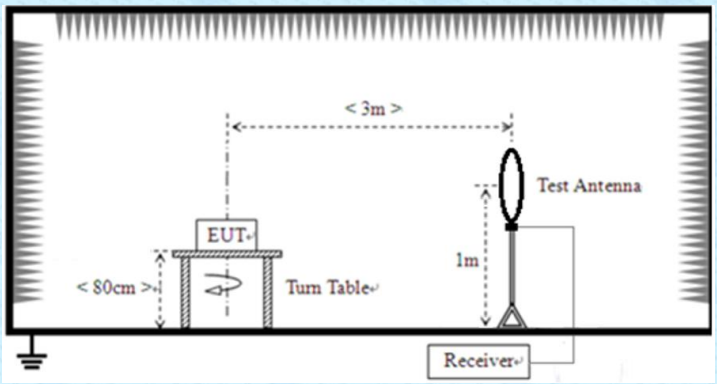
Frequency	Detector	RBW	VBW	Value
9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

Limit:
(Spurious Emissions)

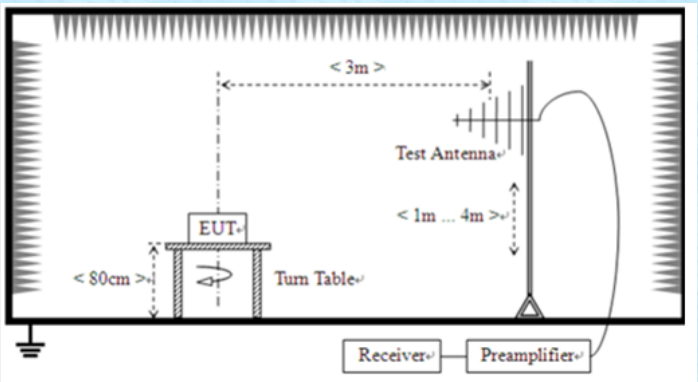
Frequency	Limit (uV/m)	Value	Measurement Distance
0.009MHz-0.490MHz	2400/F(KHz)	QP/PK/AV	300m
0.490MHz-1.705MHz	24000/F(KHz)	QP	300m
1.705MHz-30MHz	30	QP	30m
30MHz-88MHz	100	QP	3m
88MHz-216MHz	150	QP	
216MHz-960MHz	200	QP	
960MHz-1GHz	500	QP	
Above 1GHz	500	Average	
	5000	Peak	

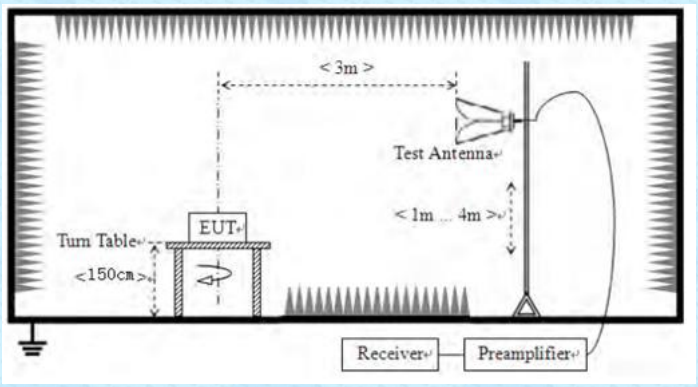
Test setup:

Below 30MHz



Below 1GHz



<table>
<tr><td></td><td colspan="6">Above 1GHz
 
</td></tr>
<tr><td>Test Procedure:</td><td colspan="6">1. The EUT was placed on the top of a rotating table (0.8 meters for below 1GHz and 1.5meters for above 1GHz) 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.</td></tr>
<tr><td>Test Instruments:</td><td colspan="6">Refer to section 5.8 for details</td></tr>
<tr><td>Test mode:</td><td colspan="6">Refer to section 5.2 for details</td></tr>
<tr><td>Temp. / Hum.</td><td>Temp.:</td><td>25 °C</td><td>Humid.:</td><td>52%</td><td>Press.:</td><td>1 012mbar</td></tr>
<tr><td>Test results:</td><td colspan="6">Pass</td></tr>
<tr><td>Test voltage:</td><td colspan="6">AC 120V, 60Hz</td></tr>
</table>

Remark:

1. Pre-scan all kind of the place mode (X-axis, Y-axis, Z-axis), and found the Y-axis which it is worse case.

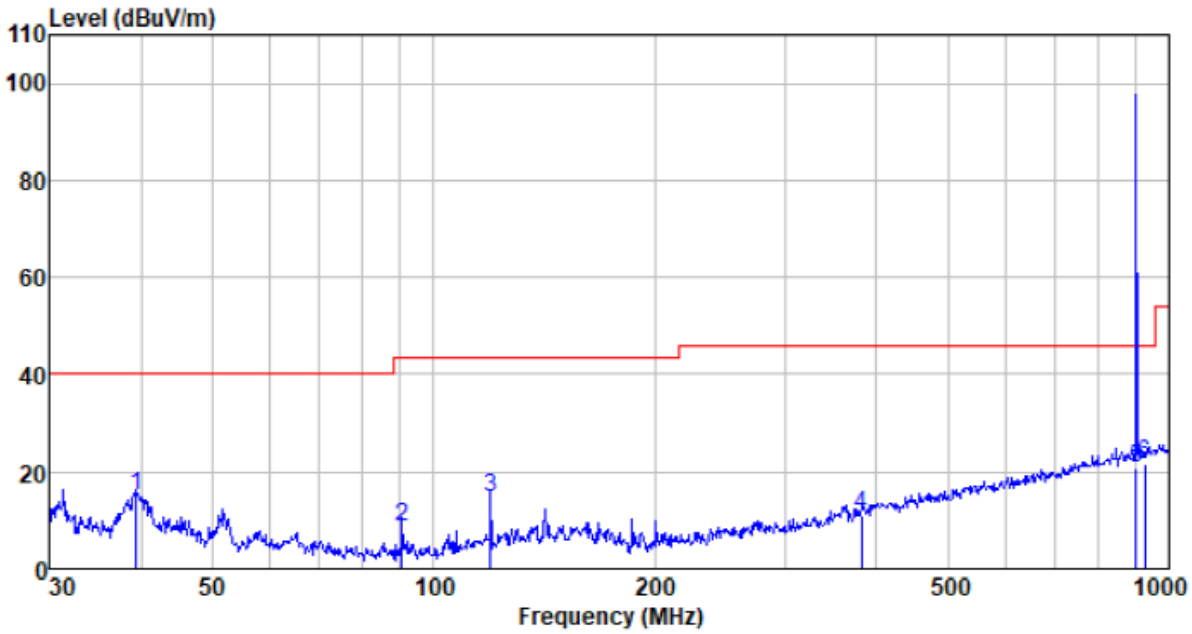
Measurement data:

■ **Below 30MHz**

The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.

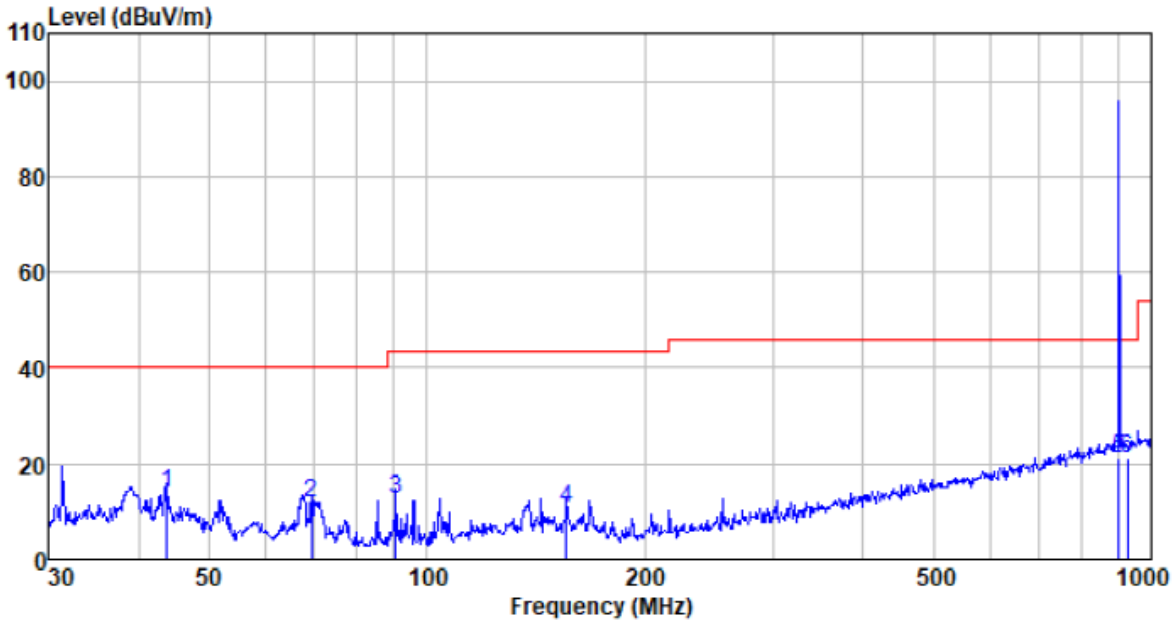
- **30MHz ~ 1GHz**
- **FHSS**

Test channel:	Lowest	Polarization:	Horizontal



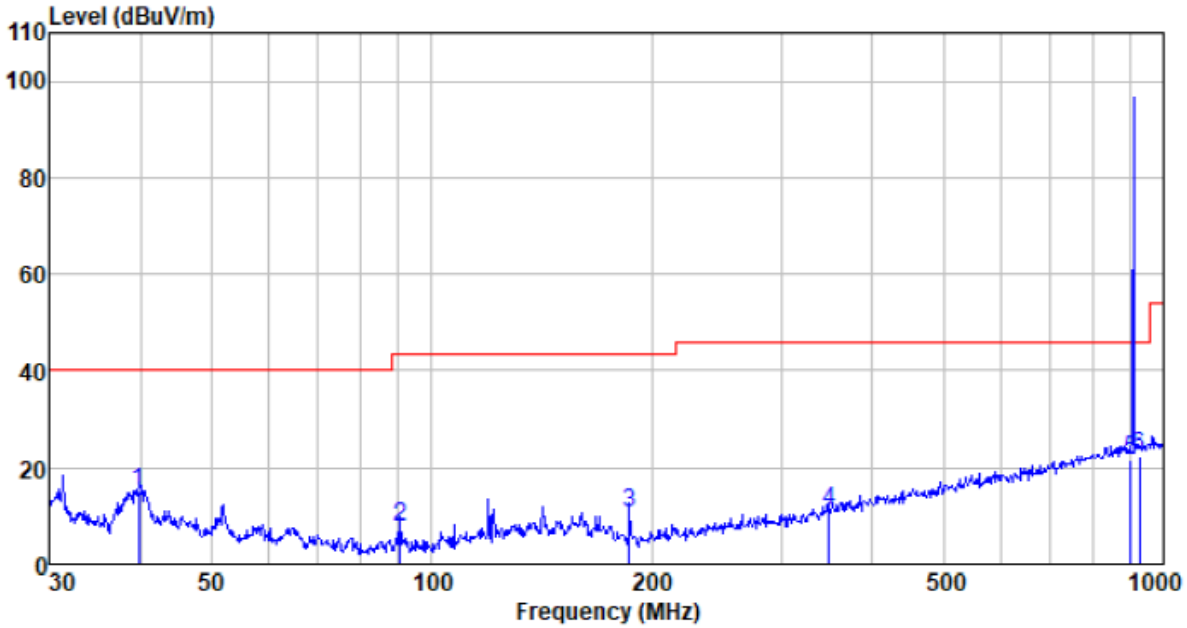
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
39.437	34.84	13.42	0.65	33.74	15.17	40.00	-24.83	QP
90.537	32.52	8.66	1.11	33.60	8.69	43.50	-34.81	QP
119.436	35.32	11.16	1.36	33.40	14.44	43.50	-29.06	QP
381.249	25.54	15.15	2.77	32.37	11.09	46.00	-34.91	QP
902.000	22.97	23.92	4.87	30.96	20.80	46.00	-25.20	QP
928.000	23.51	24.13	4.96	30.89	21.71	46.00	-24.29	QP

Test channel:	Lowest	Polarization:	Vertical



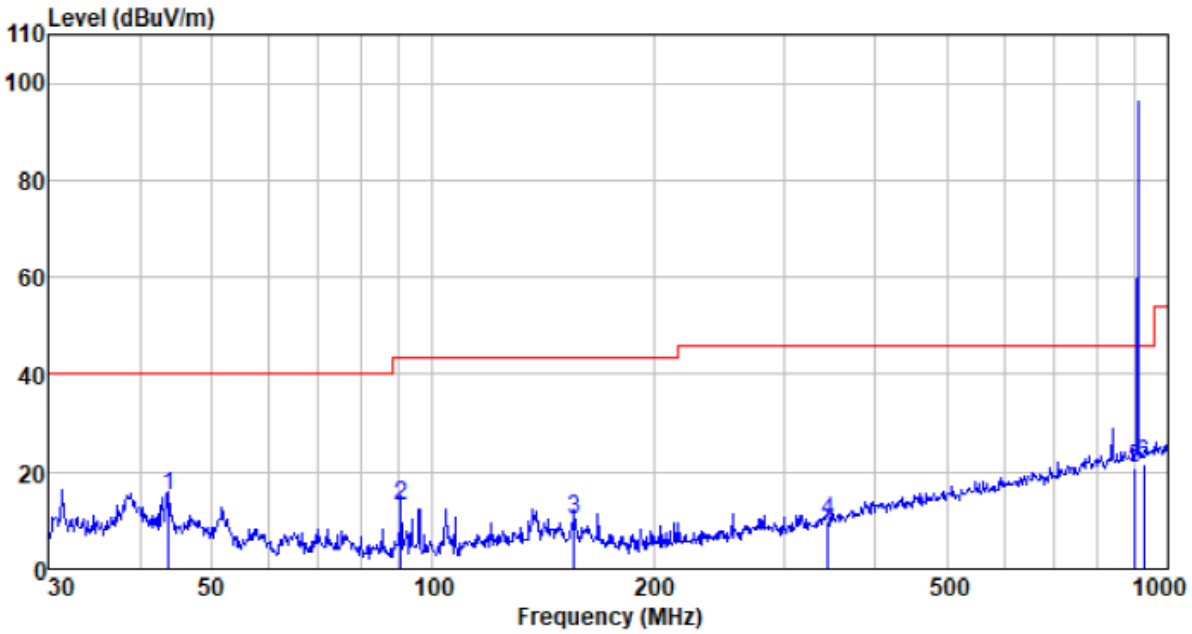
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
43.812	33.31	13.38	0.71	33.71	13.69	40.00	-26.31	QP
69.357	33.62	10.63	0.94	33.60	11.59	40.00	-28.41	QP
90.537	36.31	8.66	1.11	33.60	12.48	43.50	-31.02	QP
155.910	29.69	12.56	1.60	33.09	10.76	43.50	-32.74	QP
902.000	23.11	23.92	4.87	30.96	20.94	46.00	-25.06	QP
928.000	23.04	24.13	4.96	30.89	21.24	46.00	-24.76	QP

Test channel:	Middle	Polarization:	Horizontal



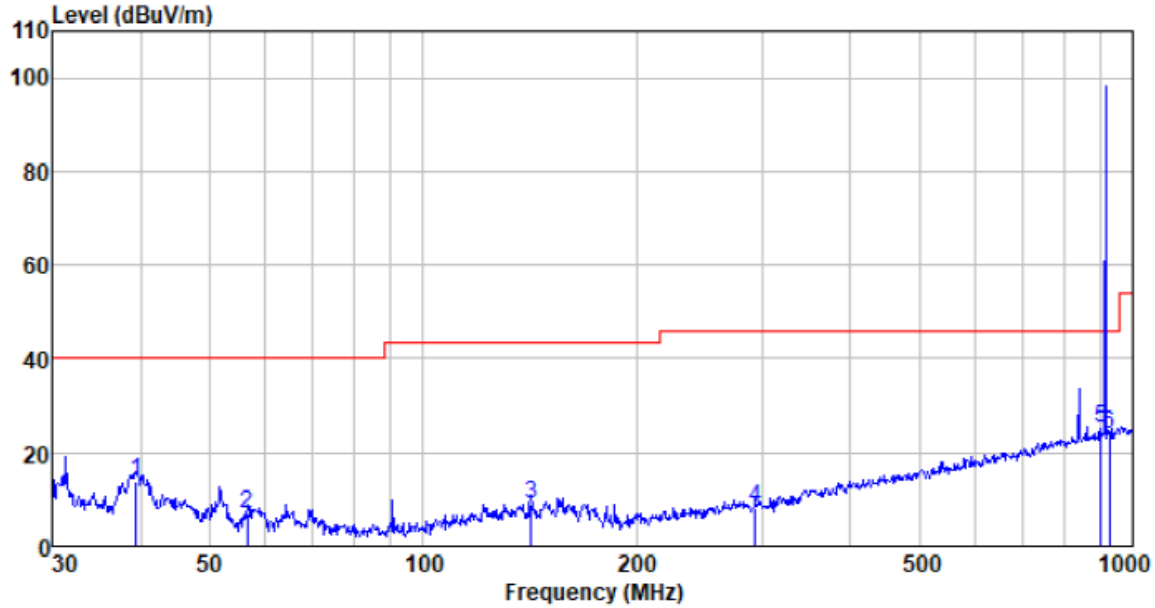
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
39.715	34.74	13.46	0.66	33.73	15.13	40.00	-24.87	QP
90.537	31.69	8.66	1.11	33.60	7.86	43.50	-35.64	QP
186.441	31.69	9.93	1.77	32.88	10.51	43.50	-32.99	QP
349.250	26.49	14.14	2.62	32.49	10.76	46.00	-35.24	QP
902.000	23.55	23.92	4.87	30.96	21.38	46.00	-24.62	QP
928.000	24.29	24.13	4.96	30.89	22.49	46.00	-23.51	QP

Test channel:	Middle	Polarization:	Vertical



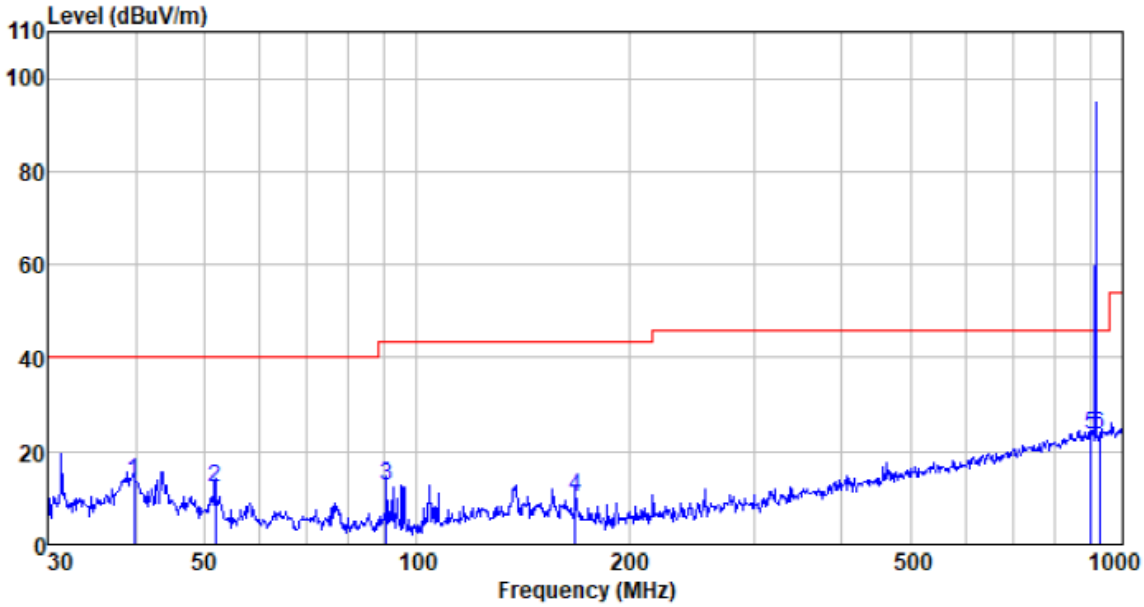
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
43.812	34.56	13.38	0.71	33.71	14.94	40.00	-25.06	QP
90.537	36.70	8.66	1.11	33.60	12.87	43.50	-30.63	QP
155.910	29.09	12.56	1.60	33.09	10.16	43.50	-33.34	QP
344.386	25.76	13.98	2.60	32.51	9.83	46.00	-36.17	QP
902.000	22.85	23.92	4.87	30.96	20.68	46.00	-25.32	QP
928.000	23.15	24.13	4.96	30.89	21.35	46.00	-24.65	QP

Test channel:	Highest	Polarization:	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	
39.437	33.43	13.42	0.65	33.74	13.76	40.00	-26.24	QP
56.593	26.98	12.79	0.83	33.65	6.95	40.00	-33.05	QP
141.826	28.04	12.42	1.52	33.20	8.78	43.50	-34.72	QP
294.114	25.84	12.54	2.33	32.70	8.01	46.00	-37.99	QP
902.000	27.23	23.92	4.87	30.96	25.06	46.00	-20.94	QP
928.000	25.95	24.13	4.96	30.89	24.15	46.00	-21.85	QP

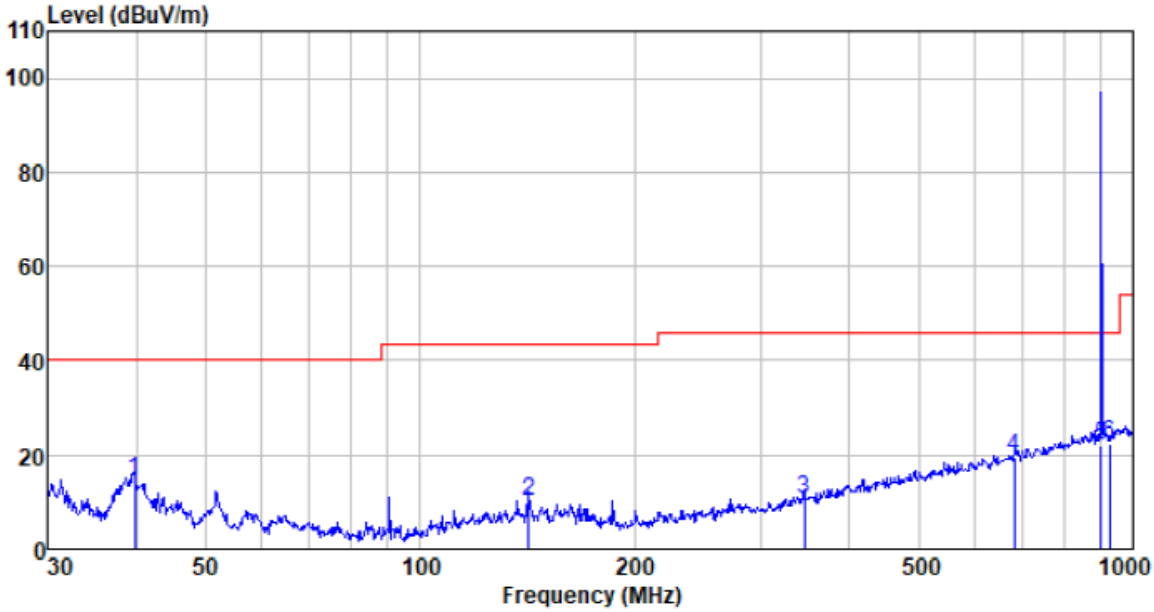
Test channel:	Highest	Polarization:	Vertical



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	
39.715	33.07	13.46	0.66	33.73	13.46	40.00	-26.54	QP
51.843	32.00	13.08	0.79	33.67	12.20	40.00	-27.80	QP
90.537	36.56	8.66	1.11	33.60	12.73	43.50	-30.77	QP
167.824	29.86	11.67	1.67	33.00	10.20	43.50	-33.30	QP
902.000	25.62	23.92	4.87	30.96	23.45	46.00	-22.55	QP
928.000	25.36	24.13	4.96	30.89	23.56	46.00	-22.44	QP

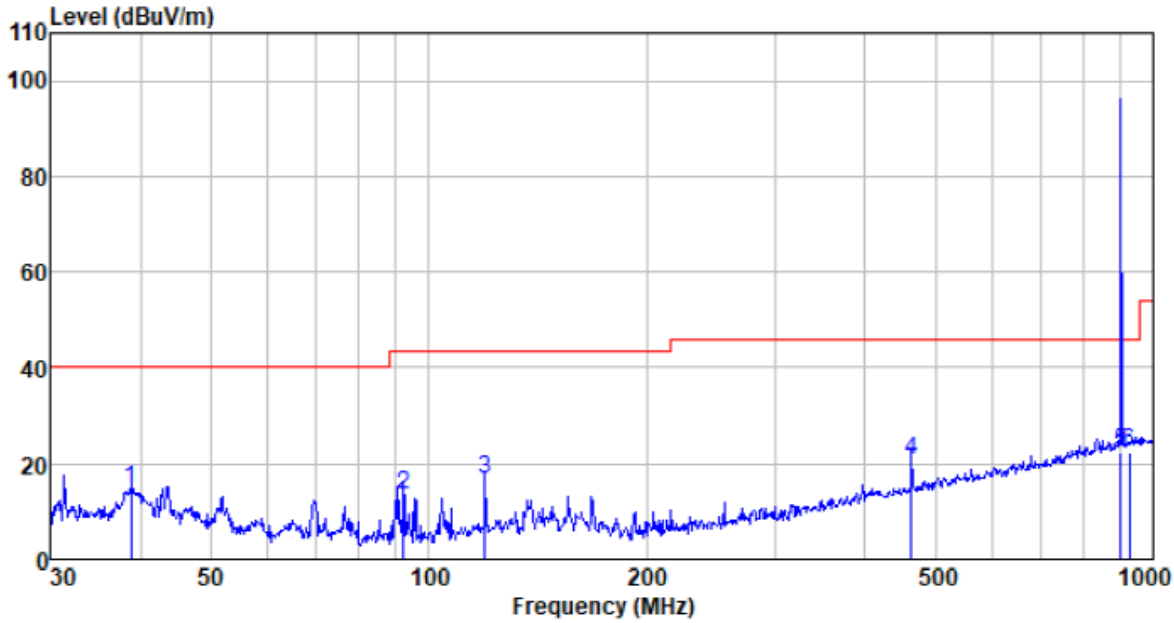
■ **DTS**

Test channel:	Lowest	Polarization:	Horizontal



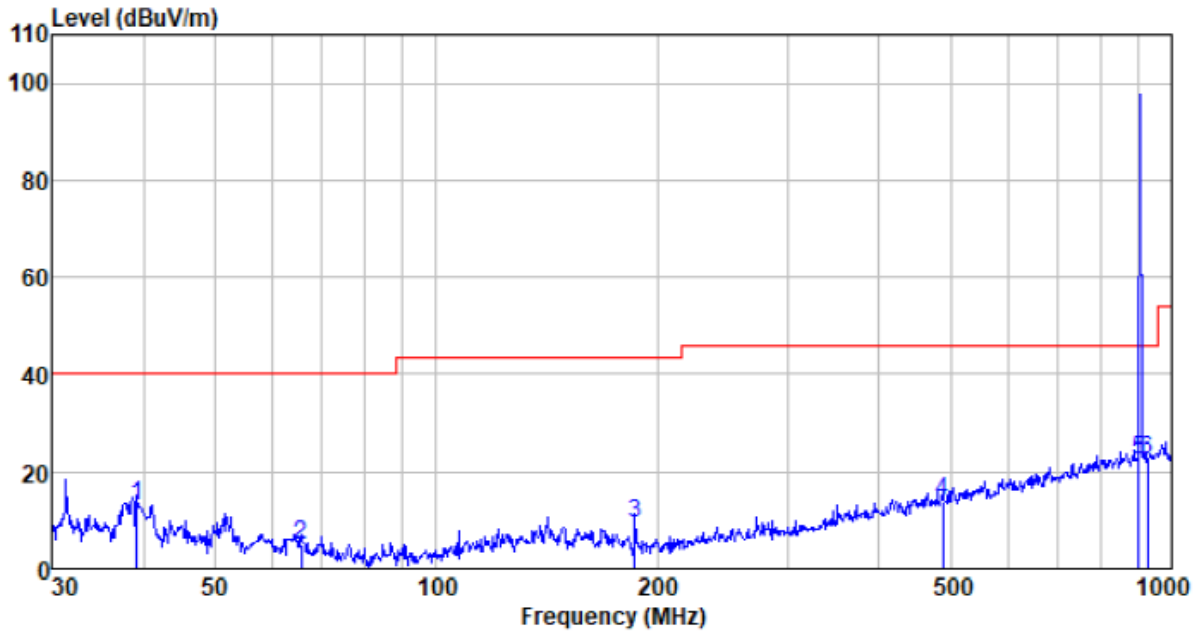
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
39.715	34.23	13.46	0.66	33.73	14.62	40.00	-25.38	QP
141.826	29.31	12.42	1.52	33.20	10.05	43.50	-33.45	QP
345.595	26.29	14.02	2.60	32.51	10.40	46.00	-35.60	QP
682.348	26.51	20.55	4.02	31.63	19.45	46.00	-26.55	QP
902.000	23.98	23.92	4.87	30.96	21.81	46.00	-24.19	QP
928.000	24.04	24.13	4.96	30.89	22.24	46.00	-23.76	QP

Test channel:	Lowest	Polarization:	Vertical



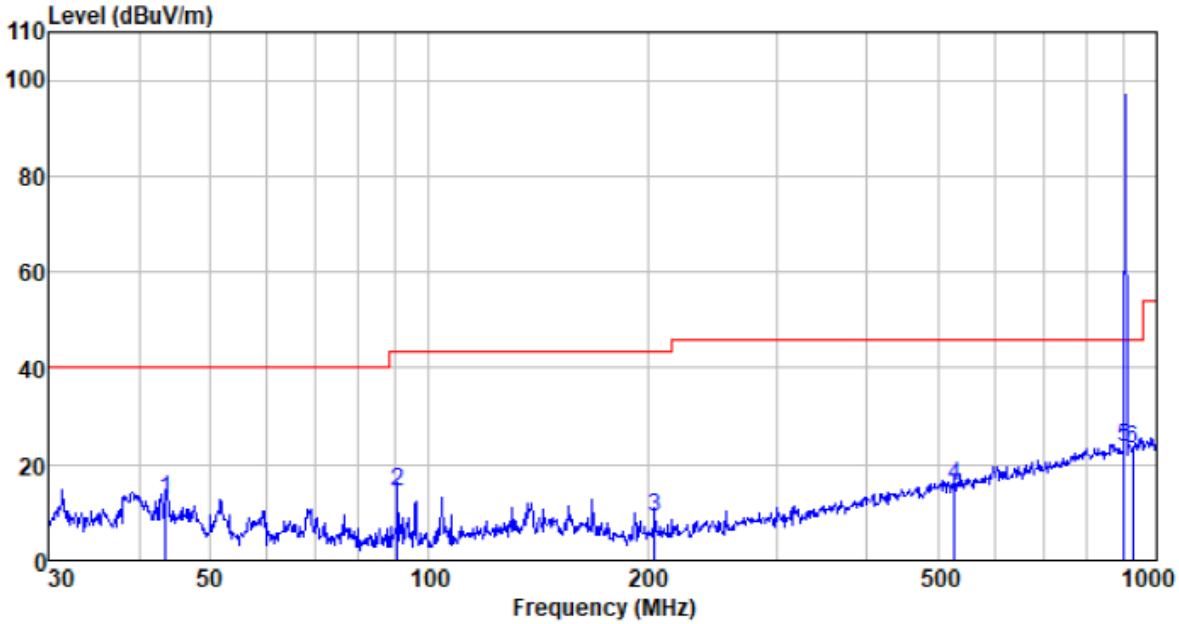
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
38.752	34.43	13.31	0.65	33.74	14.65	40.00	-25.35	QP
92.139	36.92	8.85	1.13	33.60	13.30	43.50	-30.20	QP
119.436	37.66	11.16	1.36	33.40	16.78	43.50	-26.72	QP
463.970	32.68	16.96	3.15	32.10	20.69	46.00	-25.31	QP
902.000	24.54	23.92	4.87	30.96	22.37	46.00	-23.63	QP
928.000	24.10	24.13	4.96	30.89	22.30	46.00	-23.70	QP

Test channel:	Middle	Polarization:	Horizontal



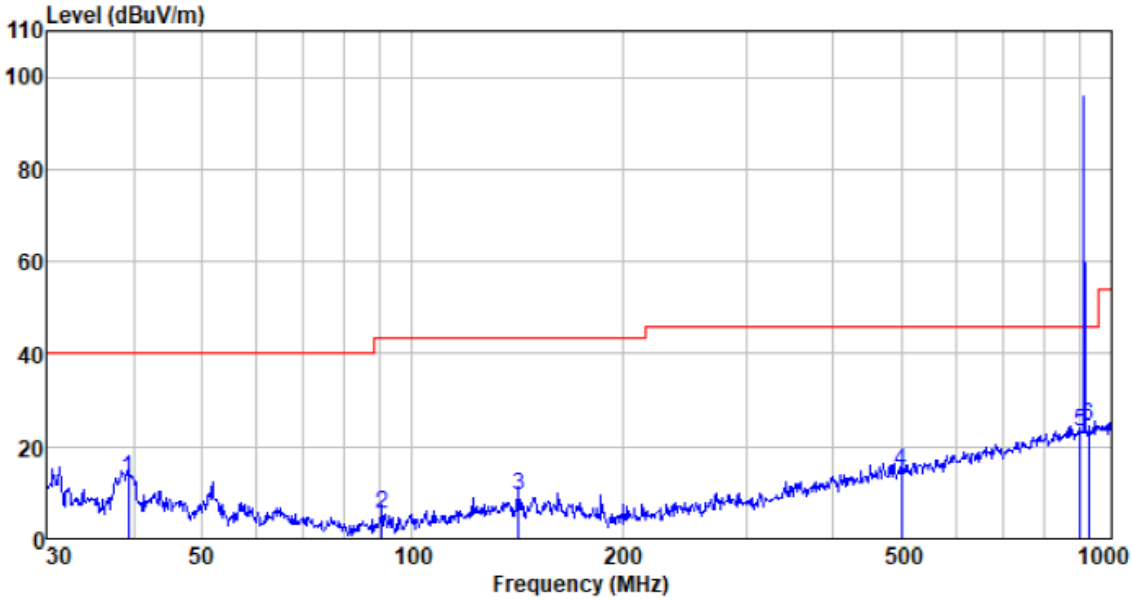
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
39.162	32.86	13.37	0.65	33.74	13.14	40.00	-26.86	QP
65.573	26.28	11.39	0.90	33.62	4.95	40.00	-35.05	QP
186.441	30.58	9.93	1.77	32.88	9.40	43.50	-34.10	QP
489.027	25.28	17.41	3.26	32.03	13.92	46.00	-32.08	QP
902.000	24.61	23.92	4.87	30.96	22.44	46.00	-23.56	QP
928.000	24.25	24.13	4.96	30.89	22.45	46.00	-23.55	QP

Test channel:	Middle	Polarization:	Vertical



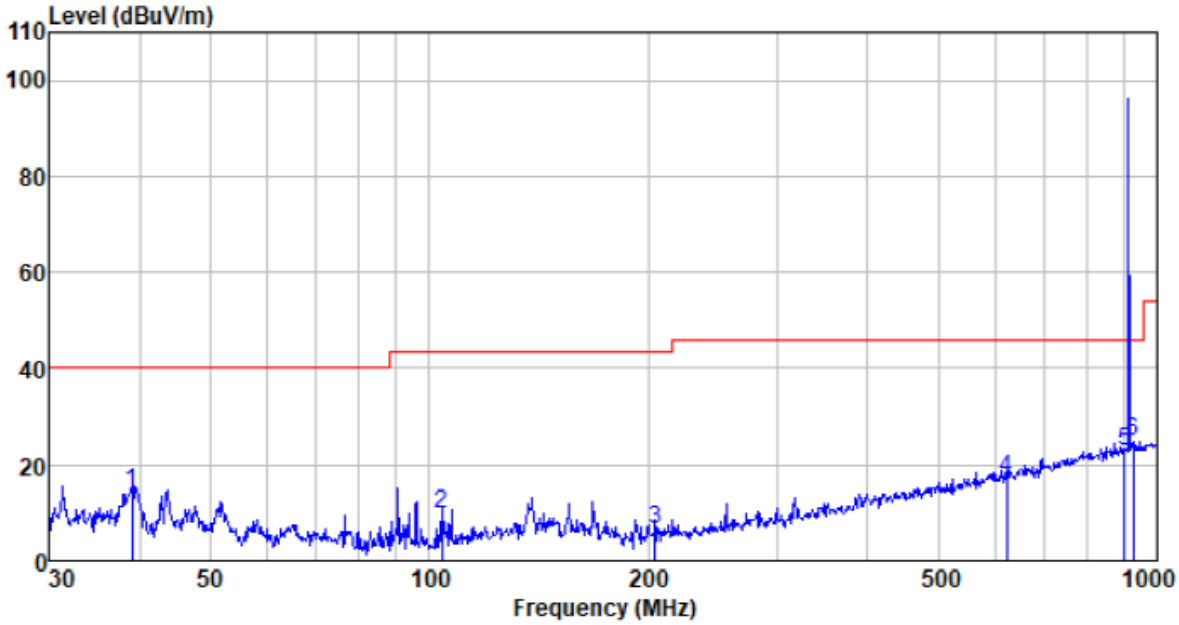
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
43.506	32.31	13.39	0.70	33.71	12.69	40.00	-27.31	QP
90.537	38.21	8.66	1.11	33.60	14.38	43.50	-29.12	QP
204.238	30.34	9.44	1.86	32.79	8.85	43.50	-34.65	QP
528.246	25.82	18.11	3.43	31.93	15.43	46.00	-30.57	QP
902.000	25.52	23.92	4.87	30.96	23.35	46.00	-22.65	QP
928.000	24.84	24.13	4.96	30.89	23.04	46.00	-22.96	QP

Test channel:	Highest	Polarization:	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	
39.299	32.66	13.39	0.65	33.74	12.96	40.00	-27.04	QP
90.537	29.01	8.66	1.11	33.60	5.18	43.50	-38.32	QP
141.826	28.56	12.42	1.52	33.20	9.30	43.50	-34.20	QP
501.179	25.55	17.62	3.31	32.00	14.48	46.00	-31.52	QP
902.000	25.18	23.92	4.87	30.96	23.01	46.00	-22.99	QP
928.000	26.20	24.13	4.96	30.89	24.40	46.00	-21.60	QP

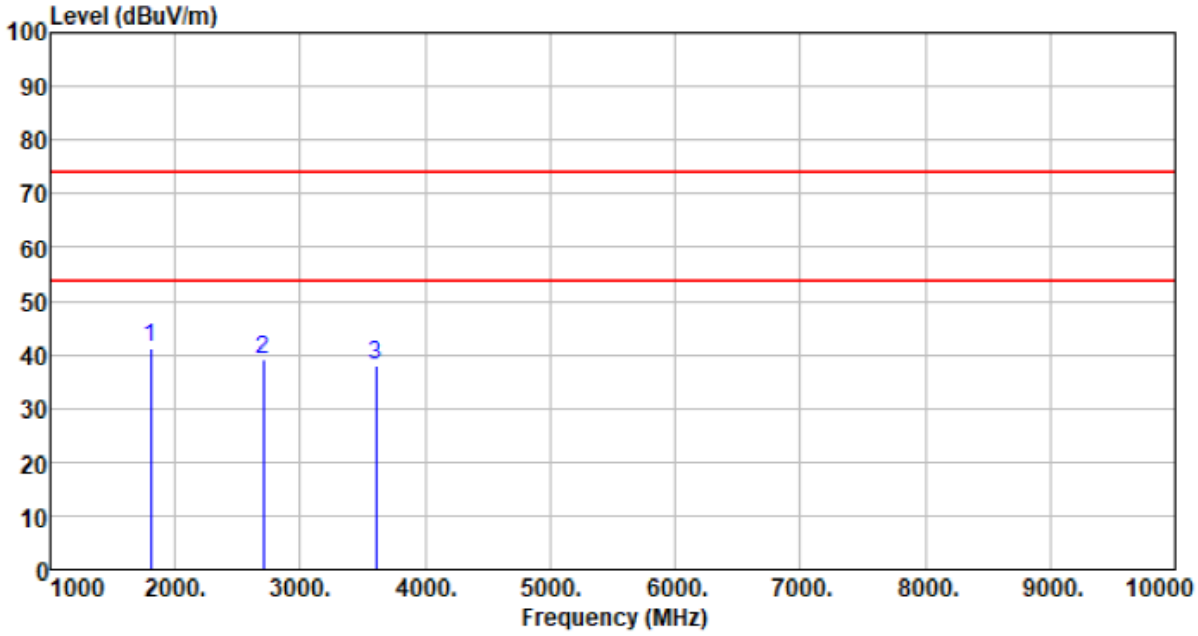
Test channel:	Highest	Polarization:	Vertical



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	
39.024	33.75	13.35	0.65	33.74	14.01	40.00	-25.99	QP
104.170	31.84	10.04	1.23	33.55	9.56	43.50	-33.94	QP
204.238	28.16	9.44	1.86	32.79	6.67	43.50	-36.83	QP
620.710	25.46	19.63	3.80	31.74	17.15	46.00	-28.85	QP
902.000	24.88	23.92	4.87	30.96	22.71	46.00	-23.29	QP
928.000	26.75	24.13	4.96	30.89	24.95	46.00	-21.05	QP

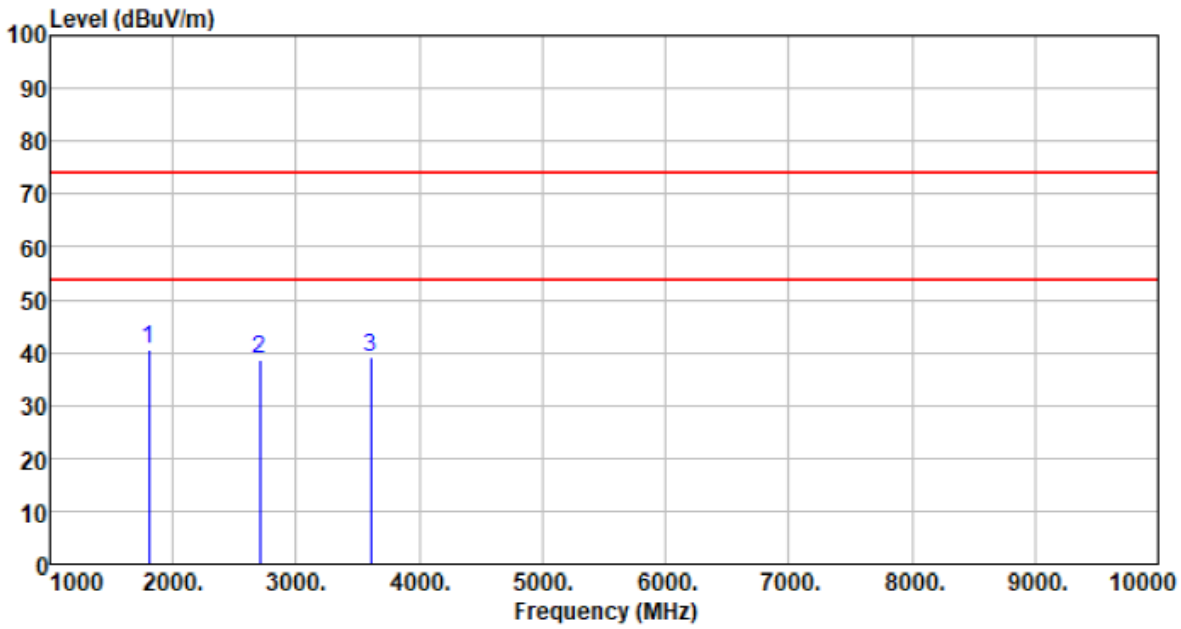
- **Above 1GHz**
- **FHSS**

Test channel:	Lowest	Polarization:	Horizontal



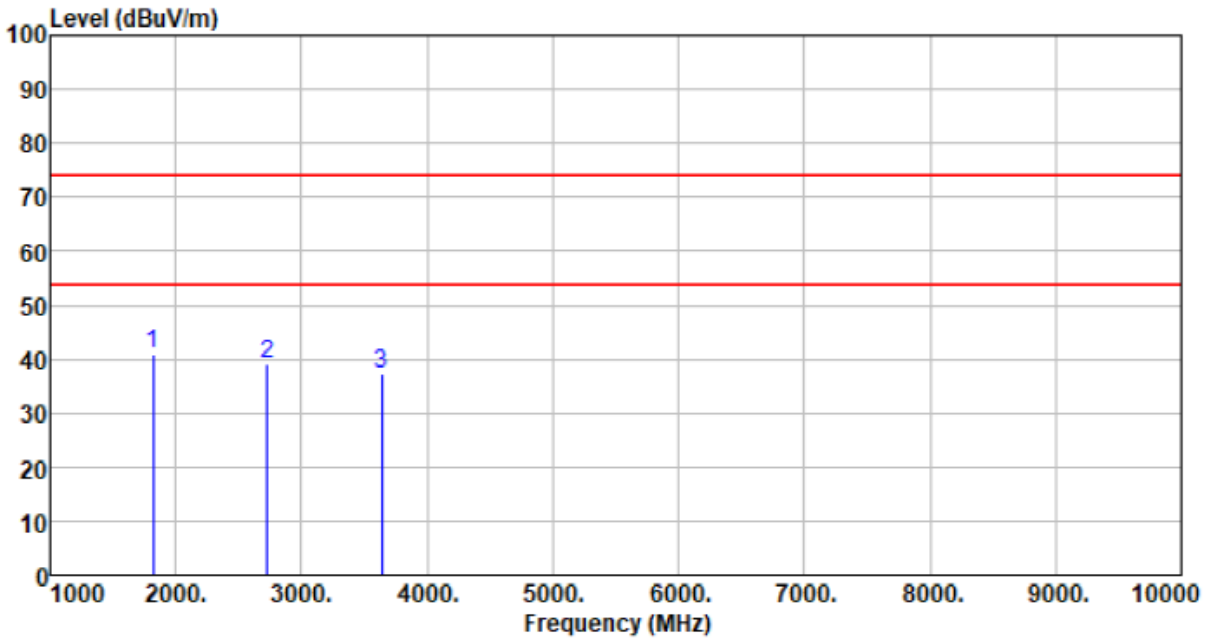
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
1804.600	46.11	25.73	8.12	38.56	41.40	74.00	-32.60	Peak
2706.900	45.42	27.84	4.45	38.60	39.11	74.00	-34.89	Peak
3609.200	42.19	29.20	4.87	38.43	37.83	74.00	-36.17	Peak

Test channel:	Lowest	Polarization:	Vertical



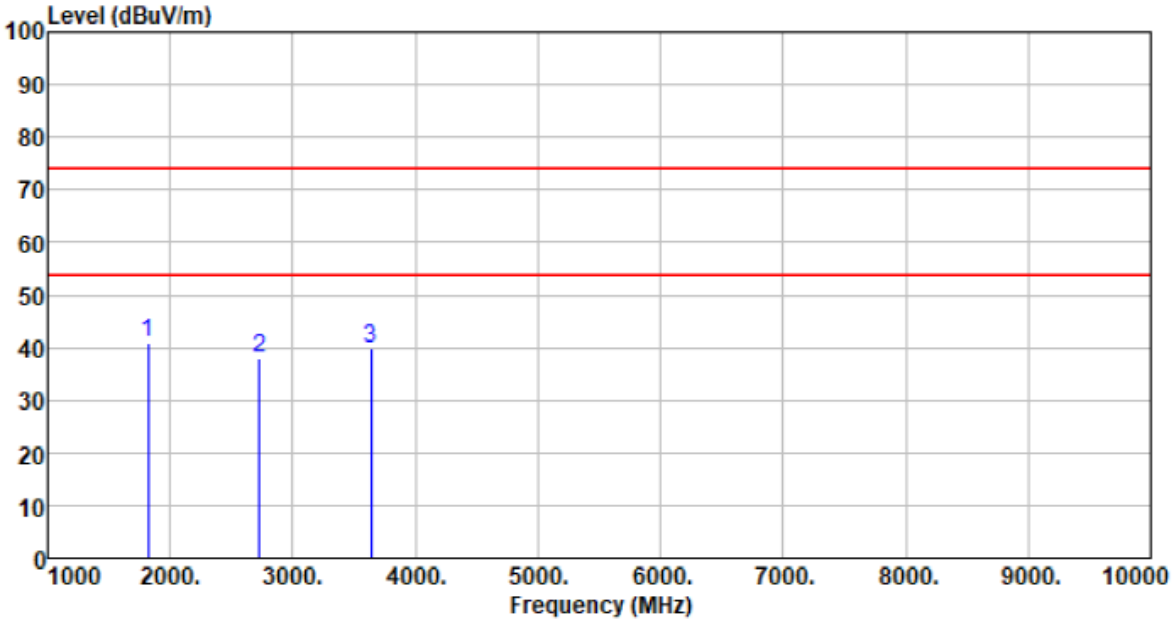
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1804.600	45.31	25.73	8.12	38.56	40.60	74.00	-33.40	Peak
2706.900	45.10	27.84	4.45	38.60	38.79	74.00	-35.21	Peak
3609.200	43.39	29.20	4.87	38.43	39.03	74.00	-34.97	Peak

Test channel:	Middle	Polarization:	Horizontal



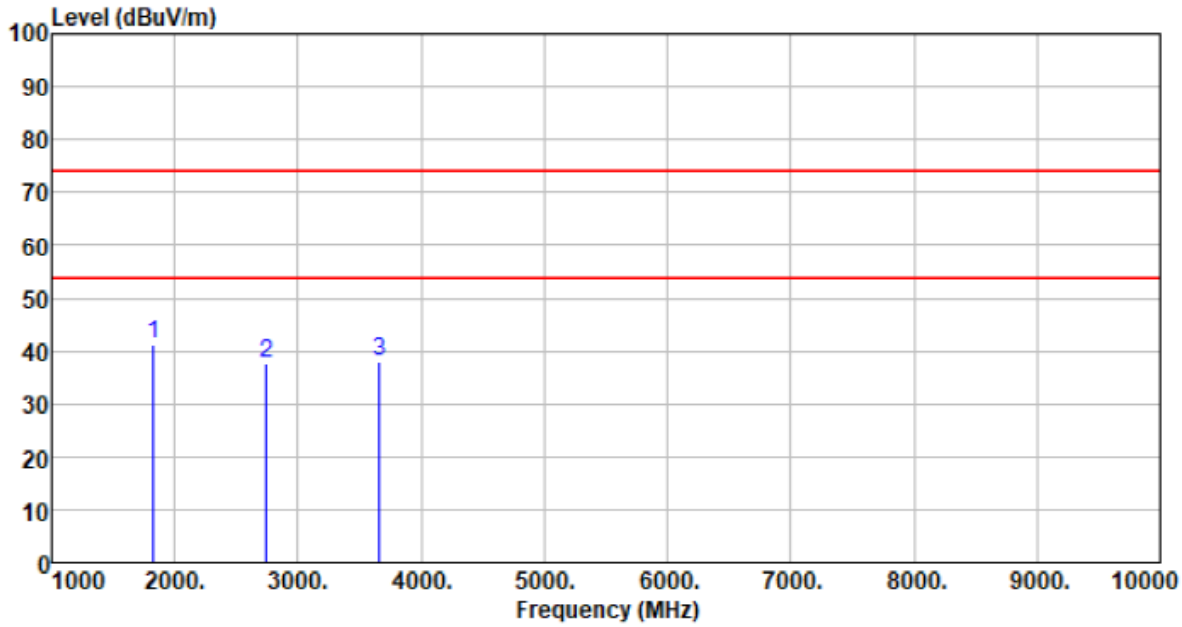
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1817.000	45.74	25.74	7.87	38.55	40.80	74.00	-33.20	Peak
2725.500	45.49	27.89	4.47	38.60	39.25	74.00	-34.75	Peak
3634.000	41.29	29.24	5.06	38.42	37.17	74.00	-36.83	Peak

Test channel:	Middle	Polarization:	Vertical



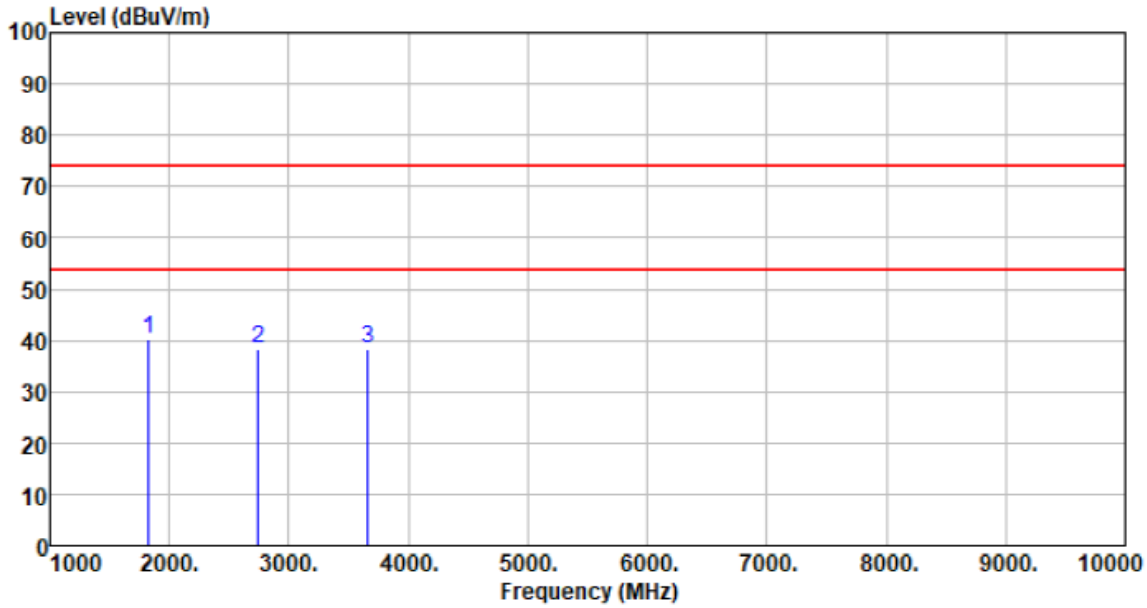
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1817.000	45.85	25.74	7.87	38.55	40.91	74.00	-33.09	Peak
2725.500	44.24	27.89	4.47	38.60	38.00	74.00	-36.00	Peak
3634.000	43.79	29.24	5.06	38.42	39.67	74.00	-34.33	Peak

Test channel:	Highest	Polarization:	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	
1829.800	46.39	25.76	7.60	38.54	41.21	74.00	-32.79	Peak
2744.700	43.78	27.94	4.49	38.60	37.61	74.00	-36.39	Peak
3659.600	42.01	29.29	5.25	38.40	38.15	74.00	-35.85	Peak

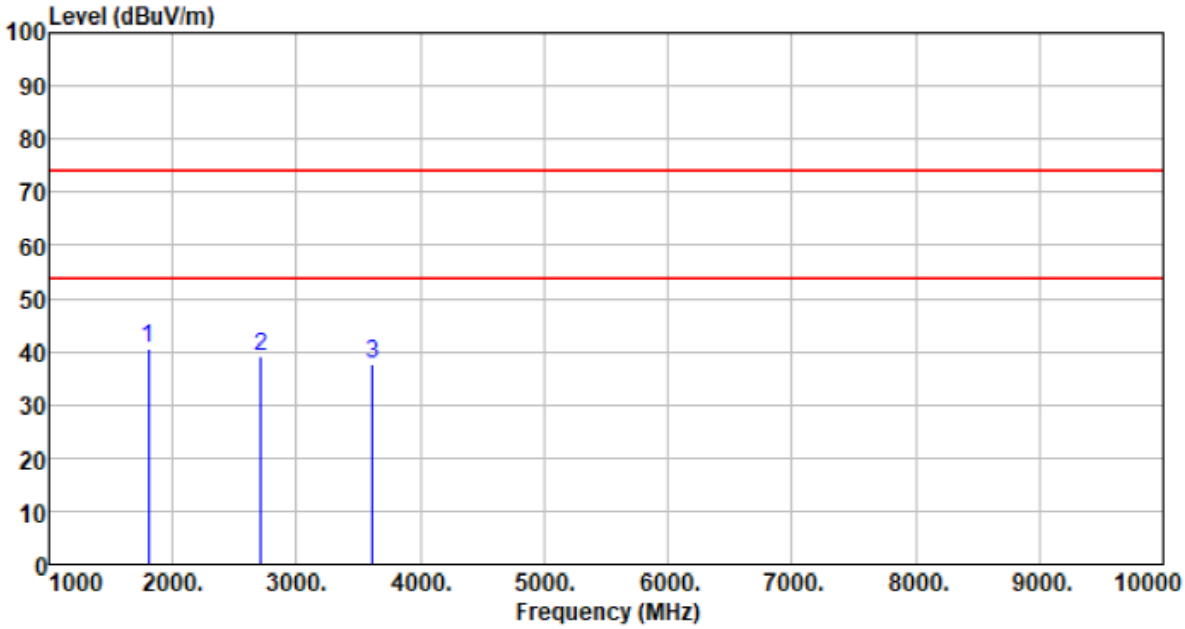
Test channel:	Highest	Polarization:	Vertical



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	
1829.800	45.57	25.76	7.60	38.54	40.39	74.00	-33.61	Peak
2744.700	44.43	27.94	4.49	38.60	38.26	74.00	-35.74	Peak
3659.600	42.38	29.29	5.25	38.40	38.52	74.00	-35.48	Peak

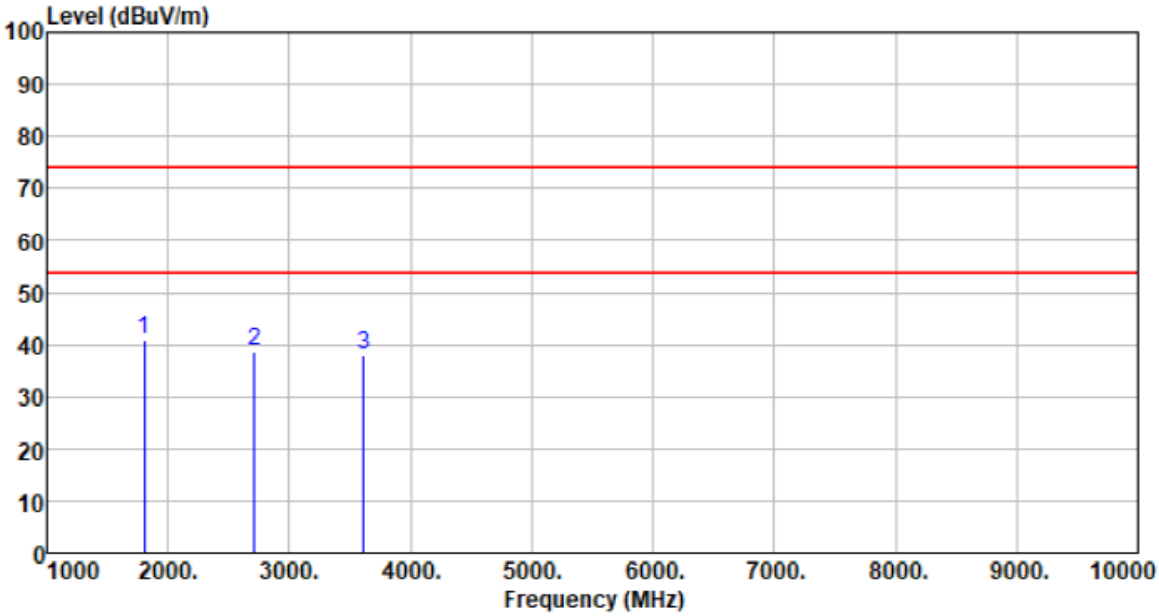
■ **DTS**

Test channel:	Lowest	Polarization:	Horizontal



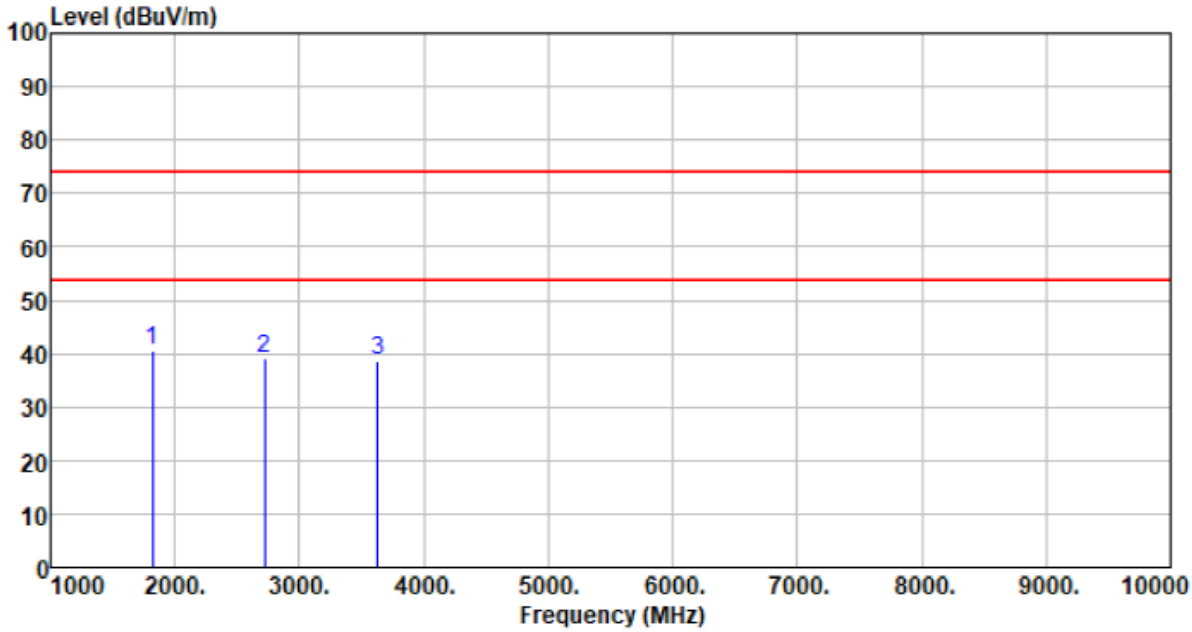
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1806.000	45.17	25.73	8.09	38.56	40.43	74.00	-33.57	Peak
2709.000	45.43	27.84	4.45	38.60	39.12	74.00	-34.88	Peak
3612.000	42.05	29.20	4.89	38.43	37.71	74.00	-36.29	Peak

Test channel:	Lowest	Polarization:	Vertical



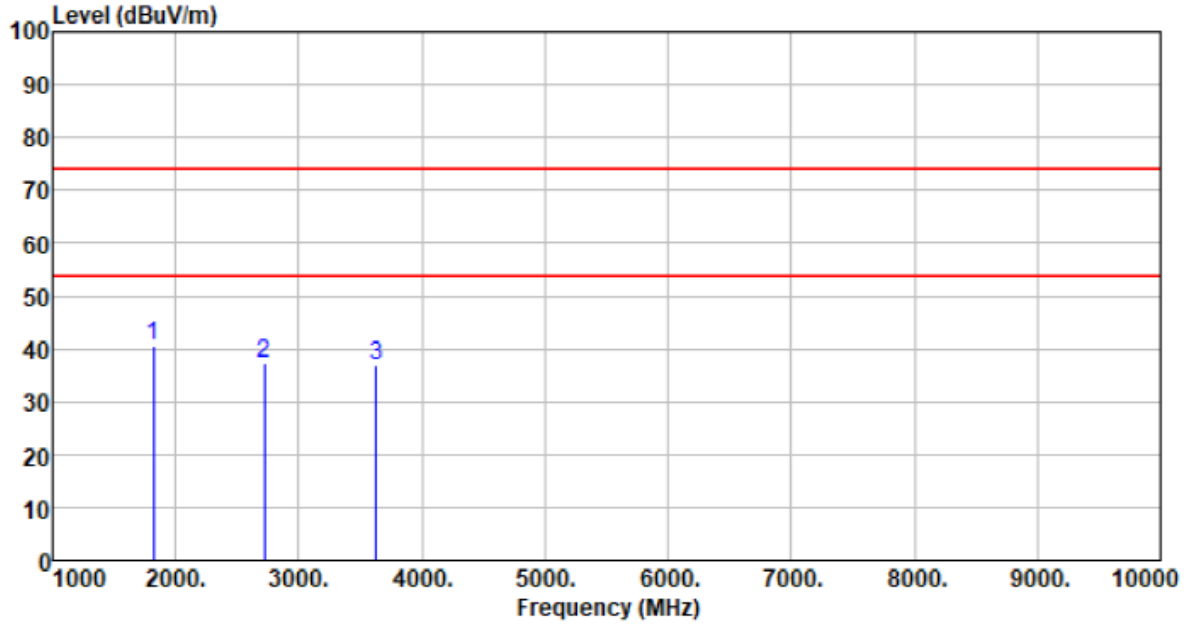
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1806.000	45.80	25.73	8.09	38.56	41.06	74.00	-32.94	Peak
2709.000	44.88	27.84	4.45	38.60	38.57	74.00	-35.43	Peak
3612.000	42.48	29.20	4.89	38.43	38.14	74.00	-35.86	Peak

Test channel:	Middle	Polarization:	Horizontal



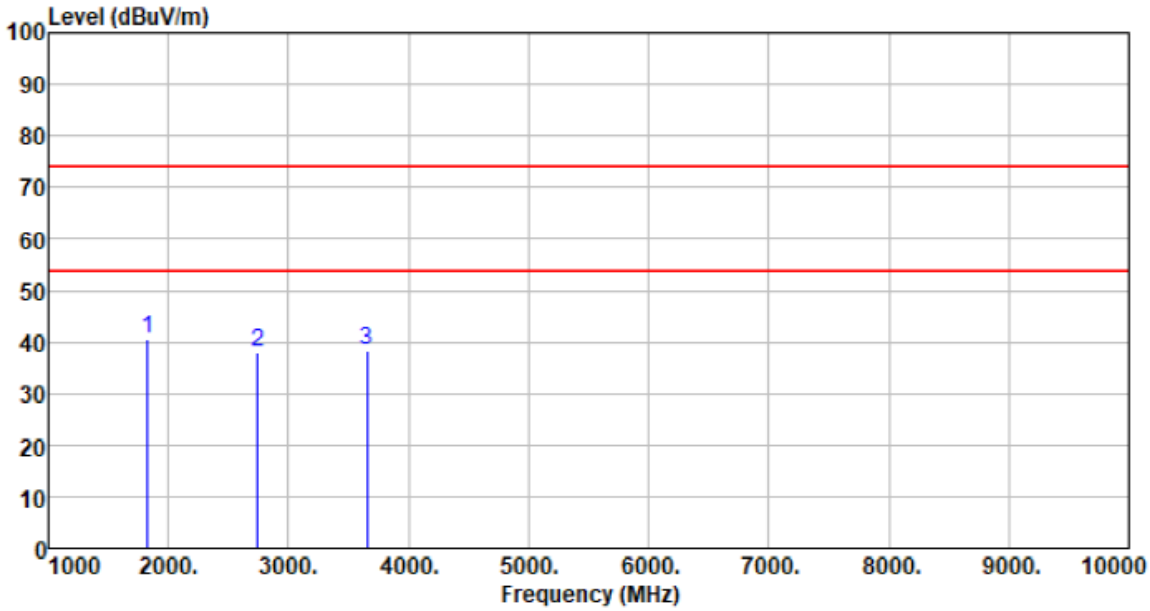
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1815.600	45.40	25.74	7.89	38.55	40.48	74.00	-33.52	Peak
2723.400	45.21	27.88	4.47	38.60	38.96	74.00	-35.04	Peak
3631.200	42.88	29.24	5.04	38.42	38.74	74.00	-35.26	Peak

Test channel:	Middle	Polarization:	Vertical



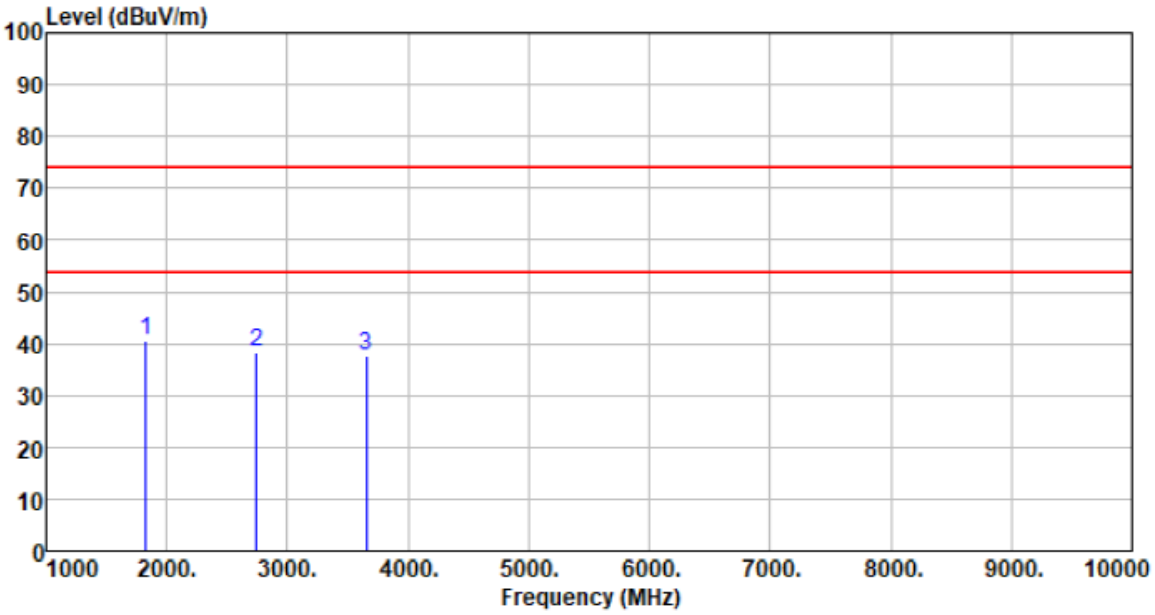
Freq	Reading level	Antenna factor	Cable loss	Preamp factor	level	Limit level	Over limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1815.600	45.59	25.74	7.89	38.55	40.67	74.00	-33.33	Peak
2723.400	43.70	27.88	4.47	38.60	37.45	74.00	-36.55	Peak
3631.200	41.08	29.24	5.04	38.42	36.94	74.00	-37.06	Peak

Test channel:	Highest	Polarization:	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	
1828.400	45.68	25.76	7.63	38.54	40.53	74.00	-33.47	Peak
2742.600	44.10	27.93	4.49	38.60	37.92	74.00	-36.08	Peak
3656.800	42.39	29.28	5.23	38.41	38.49	74.00	-35.51	Peak

Test channel:	Highest	Polarization:	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	
1828.400	45.79	25.76	7.63	38.54	40.64	74.00	-33.36	Peak
2742.600	44.39	27.93	4.49	38.60	38.21	74.00	-35.79	Peak
3656.800	41.61	29.28	5.23	38.41	37.71	74.00	-36.29	Peak

Remark:

1. *Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor*
2. *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---