Report No.: GTS202203000099F01

TEST REPORT

Applicant:	Hoopo Systems Ltd.
Address of Applicant:	1 Silo Building, Glil-Yam 4690500, Israel
Manufacturer/Factory:	Hoopo Systems Ltd.
Address of Manufacturer/Factory:	1 Silo Building, Glil-Yam 4690500, Israel
Equipment Under Test (EUT)	
Product Name:	hoopoSense
Model No.:	502G1000-1A
Trade Mark:	hoopoSense
FCC ID:	2A7ZU-S02
Applicable standards:	FCC CFR Title 47 Part 15 Subpart C Section 15.247
Date of sample receipt:	March 09, 2022
Date of Test:	March 10, 2022-June 23, 2022
Date of report issued:	June 23, 2022
Test Result :	PASS *

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

Authorized Signature:

Robinson Luo
Laboratory Manager

TESTING
NVLAP LAB CODE 600179-0

This results shown in this test report refer only to the sample(s) tested, this test report cannot be reproduced, except in full, without prior written permission of the company. The report would be invalid without specific stamp of test institute and the signatures of compiler and approver.

2 Version

Version No.	Date	Description
00	*June 23, 2022*	*Original*

Prepared By: Tiger Chen ***Date:*** *June 23, 2022*

Project Engineer

Check By: Robinson Luo ***Date:*** *June 23, 2022*

Reviewer

3 Contents

Page

1 COVER PAGE 1

2 VERSION 2

3 CONTENTS 3

4 TEST SUMMARY 4

4.1 MEASUREMENT UNCERTAINTY 4

5 GENERAL INFORMATION 5

5.1 GENERAL DESCRIPTION OF EUT 5
5.2 TEST MODE 8
5.3 TEST FACILITY 8
5.4 TEST LOCATION 8
5.5 DESCRIPTION OF SUPPORT UNITS 8
5.6 DEVIATION FROM STANDARDS 8
5.7 ABNORMALITIES FROM STANDARD CONDITIONS 8
5.8 ADDITIONAL INSTRUCTIONS 8

6 TEST INSTRUMENTS LIST 9

7 TEST RESULTS AND MEASUREMENT DATA 11

7.1 ANTENNA REQUIREMENT 11
7.2 CONDUCTED PEAK OUTPUT POWER 12
7.3 CHANNEL BANDWIDTH 14
7.4 POWER SPECTRAL DENSITY 17
7.5 CARRIER FREQUENCIES SEPARATION 19
7.6 HOPPING CHANNEL NUMBER 21
7.7 DWELL TIME 22
7.8 SPURIOUS EMISSION 23
7.8.1 Conducted Emission Method 23
7.8.2 Radiated Emission Method 26

8 TEST SETUP PHOTO 53

9 EUT CONSTRUCTIONAL DETAILS 53

4 Test Summary

Test Item	Section	Result
Antenna Requirement	15.203	Pass
AC Power Line Conducted Emission	15.207	N/A
Conducted Peak Output Power	15.247 (b)(2)(3)	Pass
Channel Bandwidth	15.247 (a)(1)(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

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:	hoopoSense
Model No.:	502G1000-1A
Serial No.:	N/A
Hardware version:	0.0
Software version:	3.30
Test sample(s) ID:	GTS202203000099-1
Sample(s) Status	Engineer sample
Operation Frequency:	125k bandwidth: 902.5~927.5MHz 500k bandwidth: 903~927MHz
Channel numbers:	125k bandwidth: 126 500k bandwidth: 31
Modulation technology:	125k bandwidth: FHSS 500k bandwidth: DTS
Antenna Type:	Integral Antenna
Antenna gain:	2.4dBi
Power supply:	3V 2 S3P 6*AA Size

The test frequencies are below:

Channel	Frequency(MHz)	
	FHSS	DTS
The lowest channel	902.5	903
The middle channel	915.1	915
The Highest channel	927.5	927

Channel list @125kHz : MHz					
1	902.5	43	910.9	85	919.3
2	902.7	44	911.1	86	919.5
3	902.9	45	911.3	87	919.7
4	903.1	46	911.5	88	919.9
5	903.3	47	911.7	89	920.1
6	903.5	48	911.9	90	920.3
7	903.7	49	912.1	91	920.5
8	903.9	50	912.3	92	920.7
9	904.1	51	912.5	93	920.9
10	904.3	52	912.7	94	921.1
11	904.5	53	912.9	95	921.3
12	904.7	54	913.1	96	921.5
13	904.9	55	913.3	97	921.7
14	905.1	56	913.5	98	921.9
15	905.3	57	913.7	99	922.1
16	905.5	58	913.9	100	922.3
17	905.7	59	914.1	101	922.5
18	905.9	60	914.3	102	922.7
19	906.1	61	914.5	103	922.9
20	906.3	62	914.7	104	923.1
21	906.5	63	914.9	105	923.3
22	906.7	64	915.1	106	923.5
23	906.9	65	915.3	107	923.7
24	907.1	66	915.5	108	923.9
25	907.3	67	915.7	109	924.1
26	907.5	68	915.9	110	924.3
27	907.7	69	916.1	111	924.5
28	907.9	70	916.3	112	924.7
29	908.1	71	916.5	113	924.9
30	908.3	72	916.7	114	925.1
31	908.5	73	916.9	115	925.3
32	908.7	74	917.1	116	925.5
33	908.9	75	917.3	117	925.7
34	909.1	76	917.5	118	925.9
35	909.3	77	917.7	119	926.1
36	909.5	78	917.9	120	926.3
37	909.7	79	918.1	121	926.5
38	909.9	80	918.3	122	926.7

39	910.1	81	918.5	123	926.9
40	910.3	82	918.7	124	927.1
41	910.5	83	918.9	125	927.3
42	910.7	84	919.1	126	927.5

Channel list @500kHz : MHz					
1	903	12	911.8	23	920.6
2	903.8	13	912.6	24	921.4
3	904.6	14	913.4	25	922.2
4	905.4	15	914.2	26	923
5	906.2	16	915	27	923.8
6	907	17	915.8	28	924.6
7	907.8	18	916.6	29	925.4
8	908.6	19	917.4	30	926.2
9	909.4	20	918.2	31	927
10	910.2	21	919		
11	911	22	919.8		

5.2 Test mode

Transmitting mode	Keep the EUT in transmitting mode. New battery used

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.

● **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).

5.4 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	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	June. 24 2021	June. 23 2022
4	BiConiLog Antenna	SCHWARZBECK MESS-ELEKTRONIK	VULB9163	GTS214	June. 24 2021	June. 23 2022
5	Double -ridged waveguide horn	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120 D	GTS208	June. 24 2021	June. 23 2022
6	Horn Antenna	ETS-LINDGREN	3160	GTS217	June. 24 2021	June. 23 2022
7	EMI Test Software	AUDIX	E3	N/A	N/A	N/A
8	Coaxial Cable	GTS	N/A	GTS213	June. 24 2021	June. 23 2022
9	Coaxial Cable	GTS	N/A	GTS211	June. 24 2021	June. 23 2022
10	Coaxial cable	GTS	N/A	GTS210	June. 24 2021	June. 23 2022
11	Coaxial Cable	GTS	N/A	GTS212	June. 24 2021	June. 23 2022
12	Amplifier(100kHz-3GHz)	HP	8347A	GTS204	June. 24 2021	June. 23 2022
13	Amplifier(2GHz-20GHz)	HP	84722A	GTS206	June. 24 2021	June. 23 2022
14	Amplifier (18-26GHz)	Rohde & Schwarz	AFS33-18002 650-30-8P-44	GTS218	June. 24 2021	June. 23 2022
15	Band filter	Amindeon	82346	GTS219	June. 24 2021	June. 23 2022
16	Power Meter	Anritsu	ML2495A	GTS540	June. 24 2021	June. 23 2022
17	Power Sensor	Anritsu	MA2411B	GTS541	June. 24 2021	June. 23 2022
18	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	GTS575	June. 24 2021	June. 23 2022
19	Splitter	Agilent	11636B	GTS237	June. 24 2021	June. 23 2022
20	Loop Antenna	ZHINAN	ZN30900A	GTS534	June. 24 2021	June. 23 2022
21	Breitband hornantenne	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. 24 2021	June. 23 2022

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	June. 24 2021	June. 23 2022
2	EMI Test Receiver	R&S	ESCI 7	GTS552	June. 24 2021	June. 23 2022
3	Spectrum Analyzer	Agilent	E4440A	GTS533	June. 24 2021	June. 23 2022
4	MXG vector Signal Generator	Agilent	N5182A	GTS567	June. 24 2021	June. 23 2022
5	ESG Analog Signal Generator	Agilent	E4428C	GTS568	June. 24 2021	June. 23 2022
6	USB RF Power Sensor	DARE	RPR3006W	GTS569	June. 24 2021	June. 23 2022
7	RF Switch Box	Shongyi	RFSW3003328	GTS571	June. 24 2021	June. 23 2022
8	Programmable Constant Temp & Humi Test Chamber	WEWON	WHTH-150L-40-880	GTS572	June. 24 2021	June. 23 2022

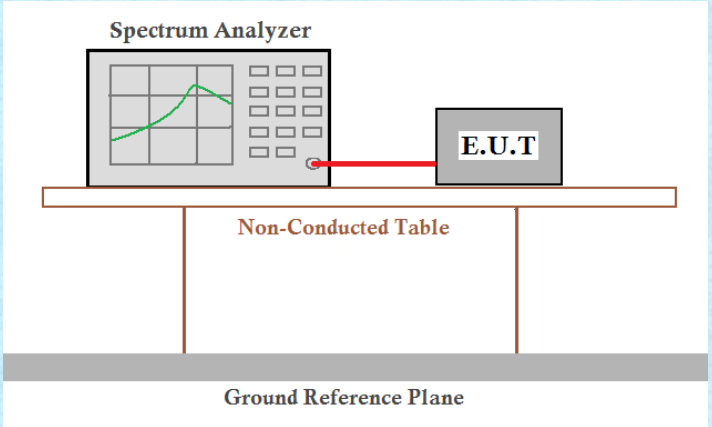
General used equipment:						
Item	**Test Equipment**	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal.Date (mm-dd-yy)**	**Cal.Due date (mm-dd-yy)**
1	Humidity/ Temperature Indicator	KTJ	TA328	GTS243	June. 24 2021	June. 23 2022
2	Barometer	ChangChun	DYM3	GTS255	June. 24 2021	June. 23 2022

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 integral antenna, reference to the appendix II for details.	

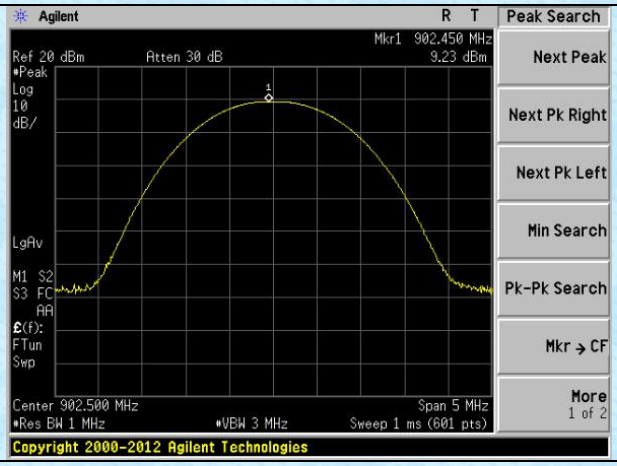
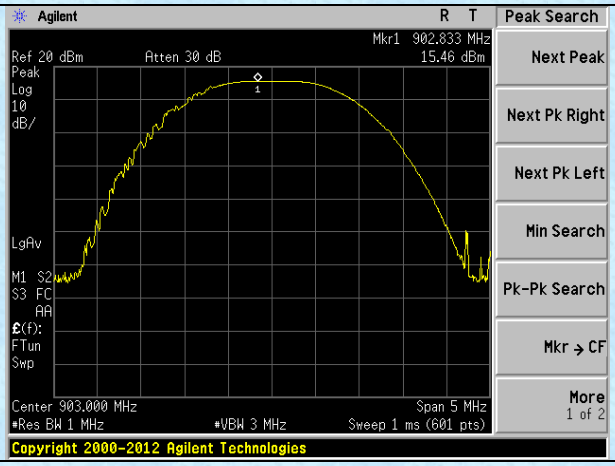
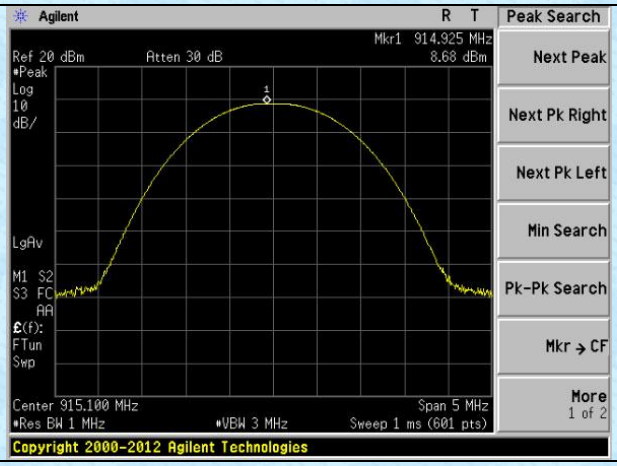
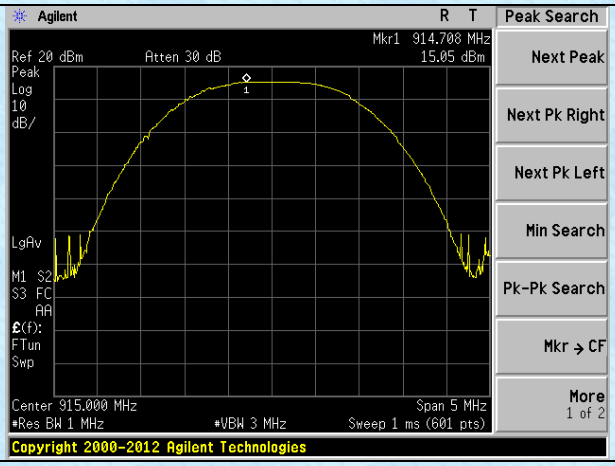
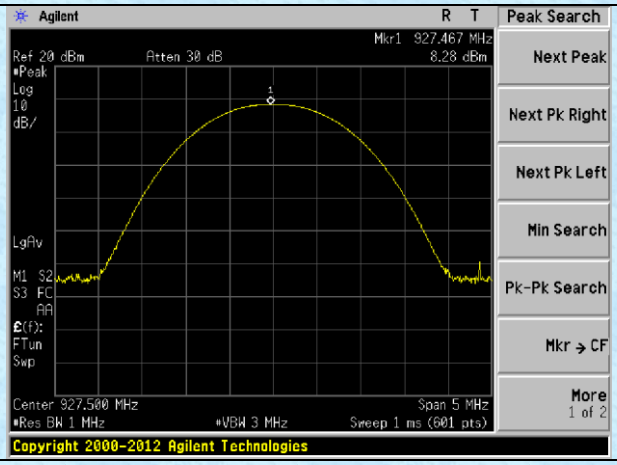
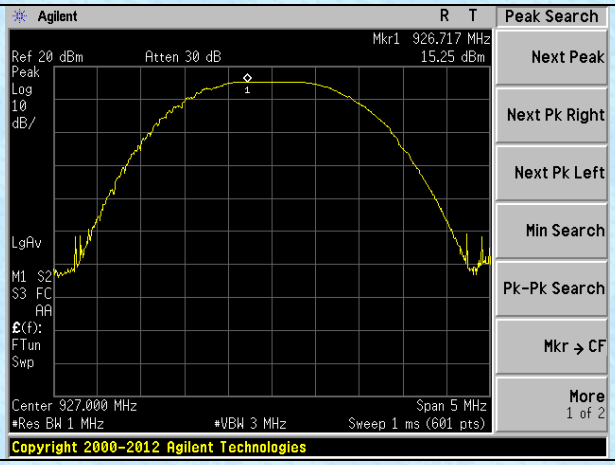
7.2 Conducted Peak Output Power

Test Requirement:	FCC Part15 C Section 15.247(b)(2)(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

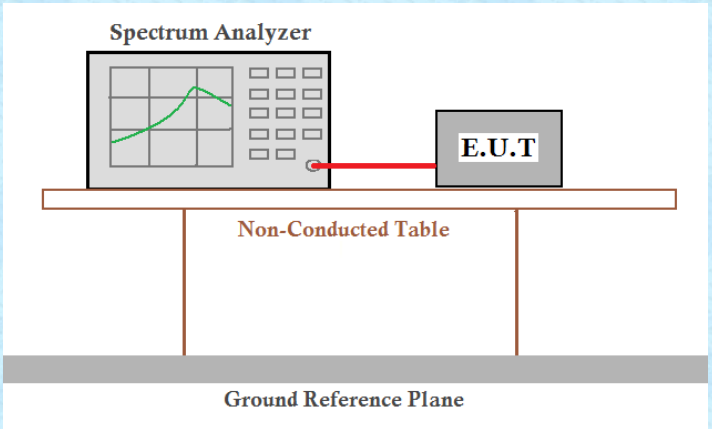
Measurement Data:

Channel	Measured power(dBm)	
	FHSS	DTS
Lowest	9.23	15.46
Middle	8.68	15.05
Highest	8.28	15.25

Test Graph:

FHSS	DTS
	
Lowest	Lowest
	
Middle	Middle
	
Highest	Highest

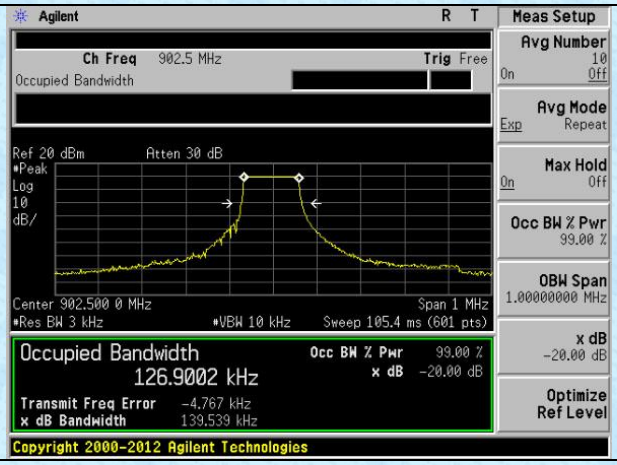
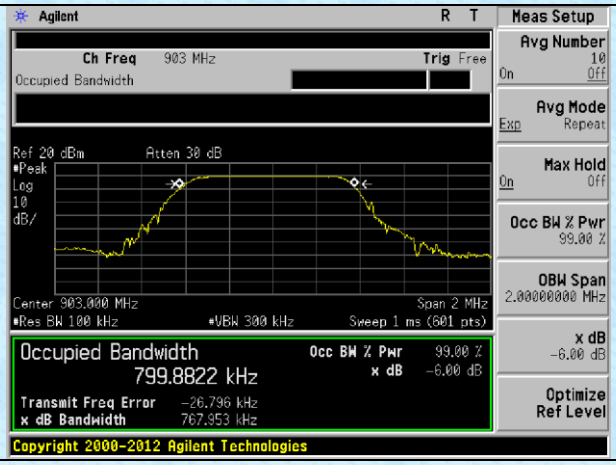
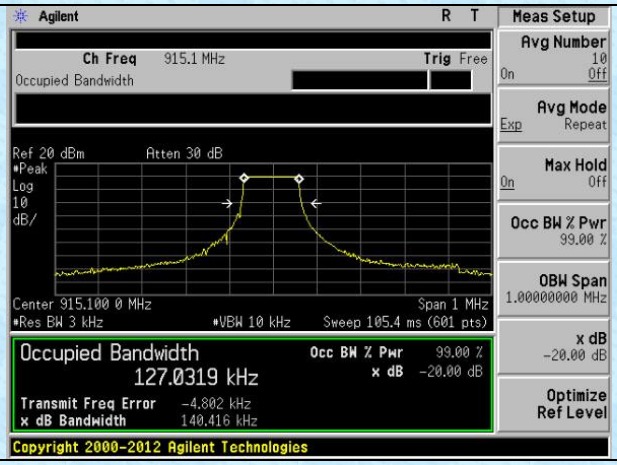
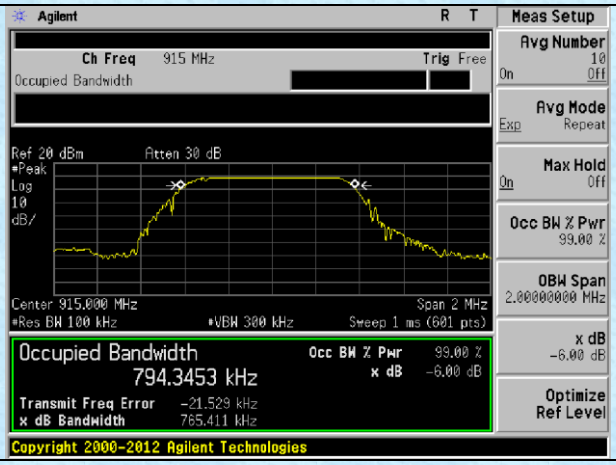
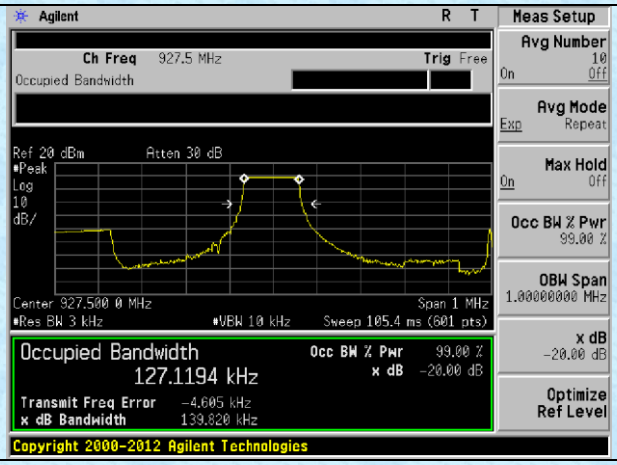
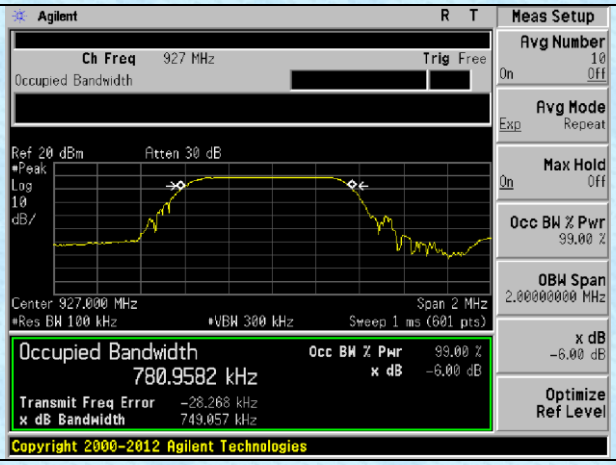
7.3 Channel Bandwidth

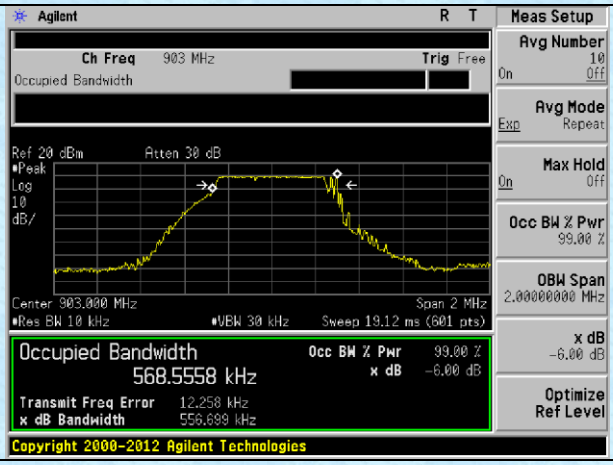
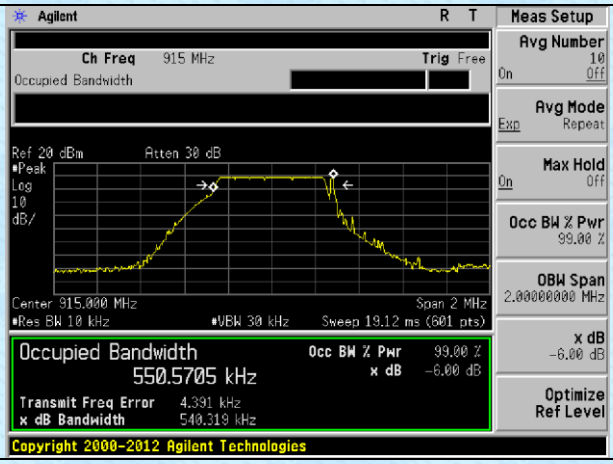
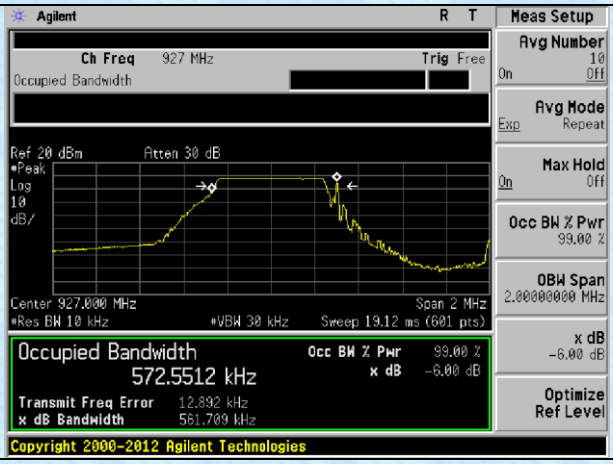
Test Requirement:	FCC Part15 C Section 15.247 (a)(1)(2)
Test Method:	ANSI C63.10:2013
Limit:	N/A
Test setup:	
Test Instruments:	Refer to section 6.0 for details
Test mode:	Refer to section 5.2 for details
Test results:	Pass

Measurement Data:.

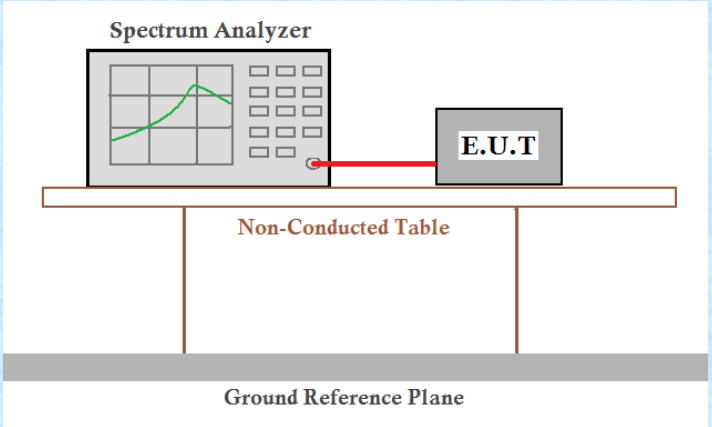
Channel	FHSS		DTS	
	20dB bandwidth(kHz)	99% bandwidth(kHz)	6dB bandwidth(kHz)	99% bandwidth(kHz)
Lowest	139.539	126.9002	767.953	568.5558
Middle	140.416	127.0319	765.411	550.5705
Highest	139.820	127.1194	749.057	572.5512

Test Graph:

20dB bandwidth	6dB bandwidth(kHz)
FHSS	DTS
	
Lowest	Lowest
	
Middle	Middle
	
Highest	Highest

99% bandwidth(kHz)
DTS

Lowest

Middle

Highest

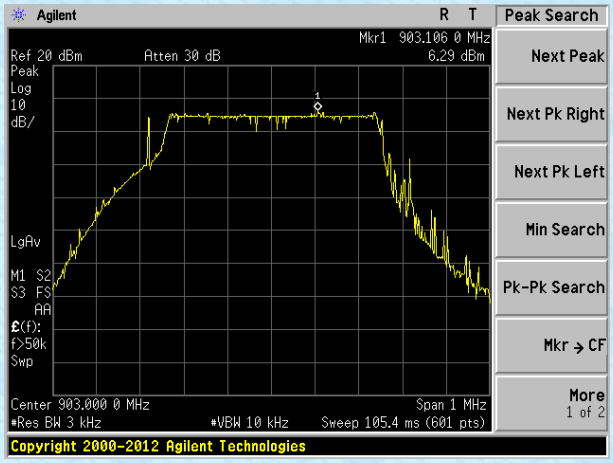
7.4 Power Spectral Density

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

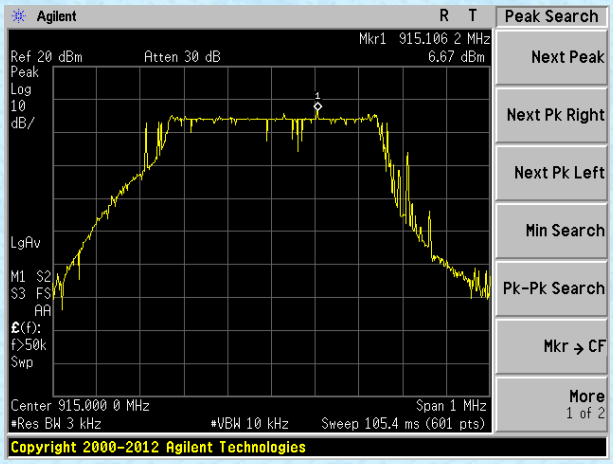
Measurement Data

Test channel	Power Spectral Density (dBm/3kHz)	Limit(dBm/3kHz)	Result
Lowest	6.29	8.00	Pass
Middle	6.67		
Highest	6.58		

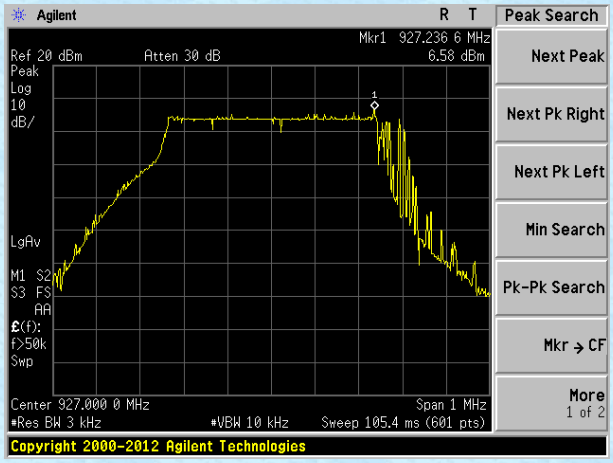
Test Graph:



Lowest channel

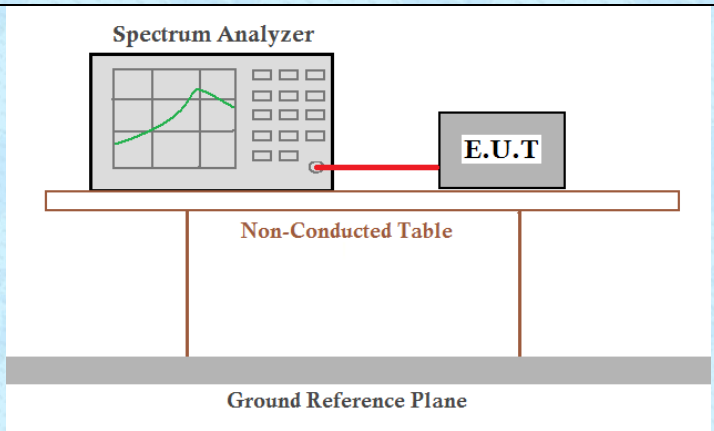


Middle channel



Highest channel

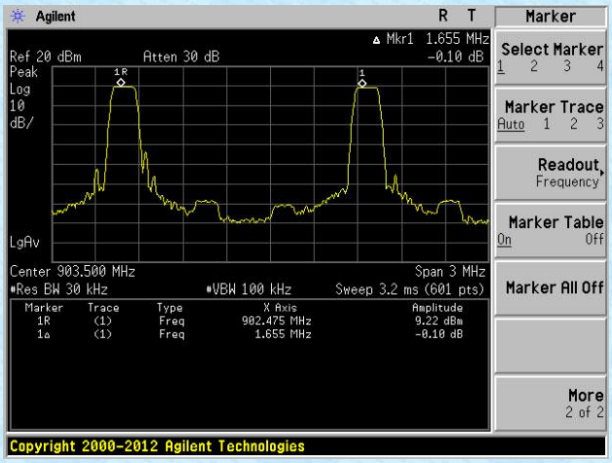
7.5 Carrier Frequencies Separation

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

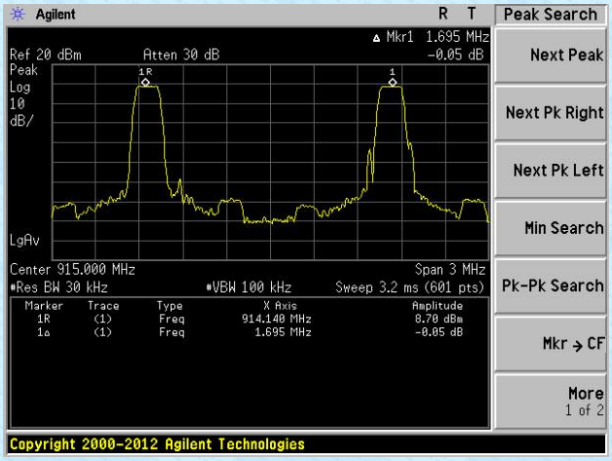
Measurement Data:

Test channel	Test Result(kHz)	Limit(kHz)	Result
Lowest	1655	139.539	Pass
Middle	1695	140.416	
Highest	1680	139.820	

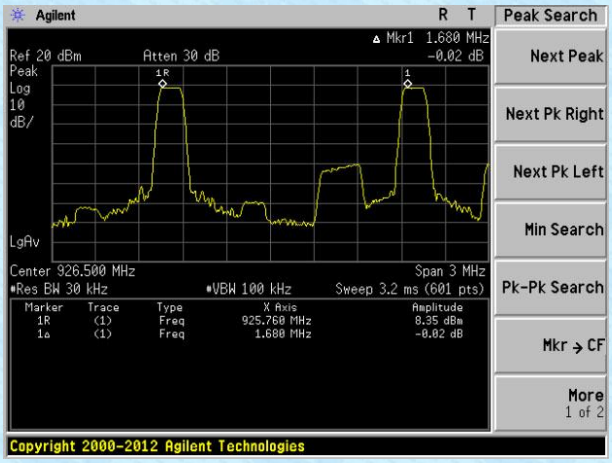
Test Graph:



Lowest channel

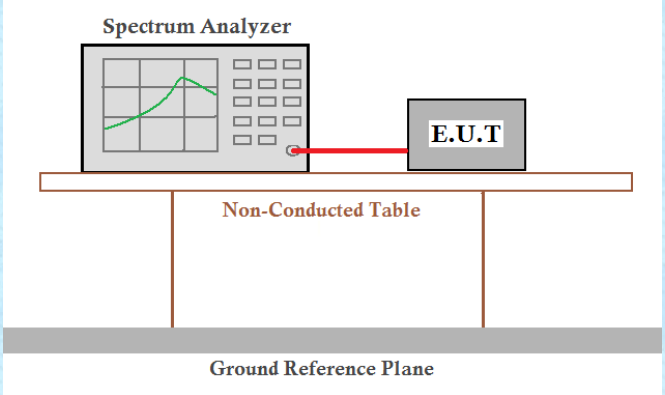


Middle channel



Highest channel

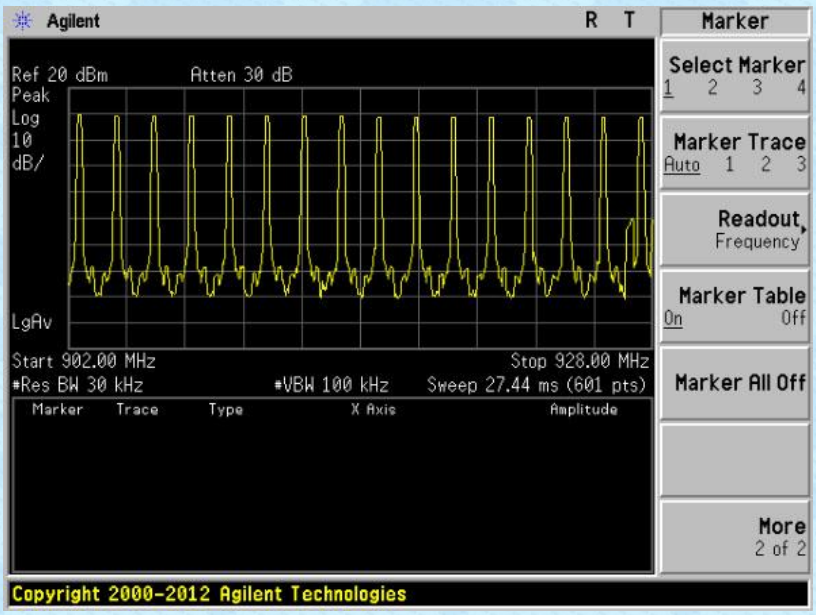
7.6 Hopping Channel Number

Test Requirement:	FCC Part15 C Section 15.247 (a)(1)(iii)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=30kHz, VBW=100kHz, Frequency range=902MHz-928MHz, 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

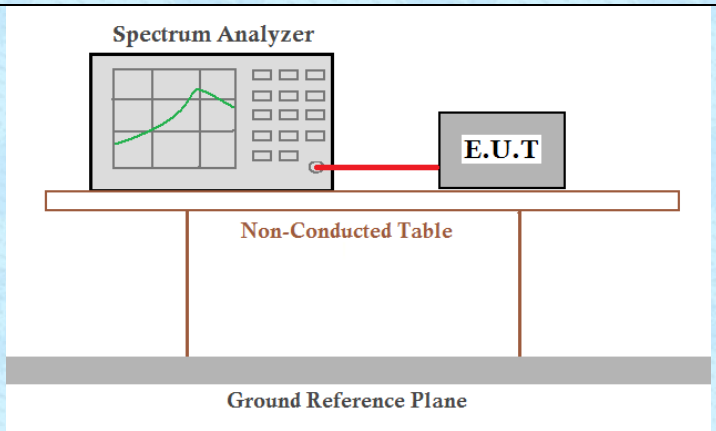
Measurement Data:

Hopping channel numbers	Result
16	Report for use

Test Graph:



7.7 Dwell Time

Test Requirement:	FCC Part15 C Section 15.247 (f)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=1MHz, VBW=1MHz, 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

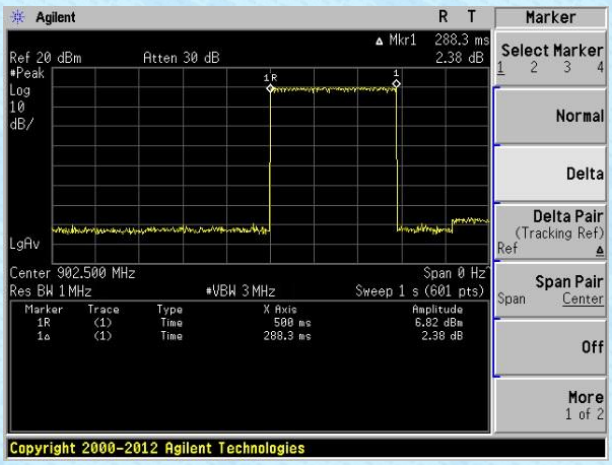
Measurement Data:

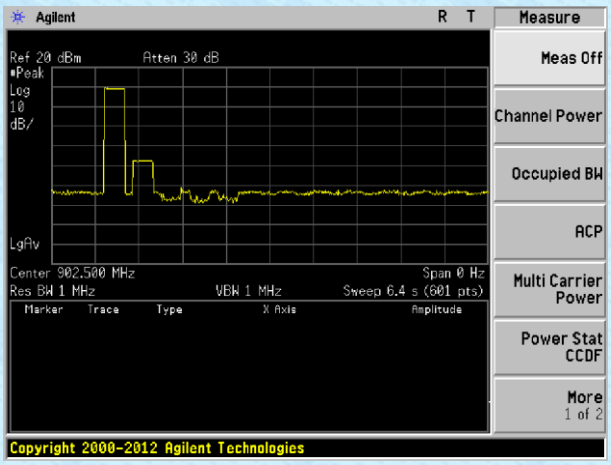
Channel	Ton (ms)	Dwell time(ms)	Limit(ms)	Result
Lowest	288.3	288.3	400	Pass

The formula as below:

Dwell time = Ton * Ton times in 0.4 multiplied hopping numbers =288.3ms*1=288.3ms

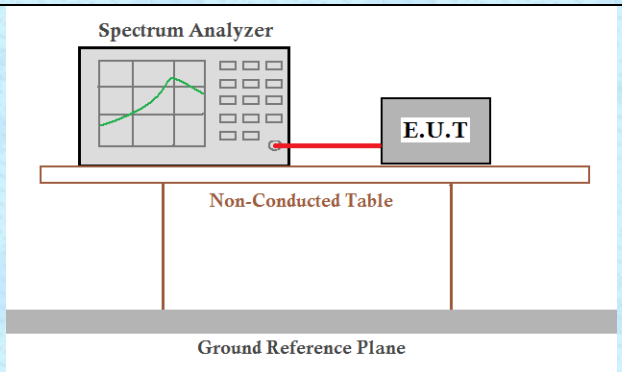
Test Graph:



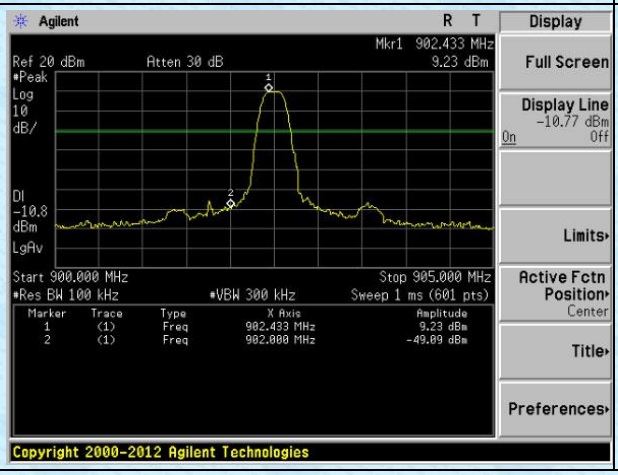
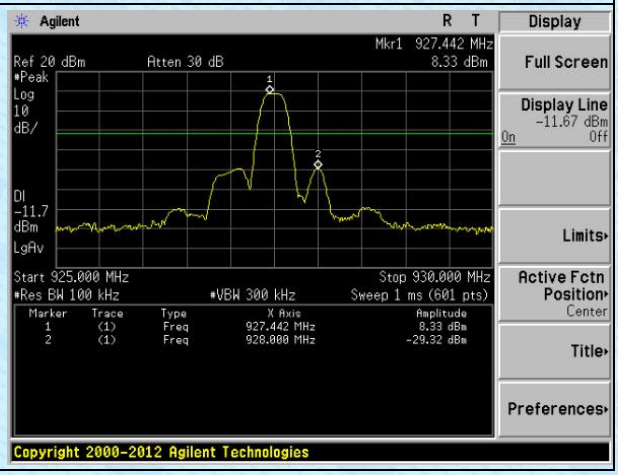


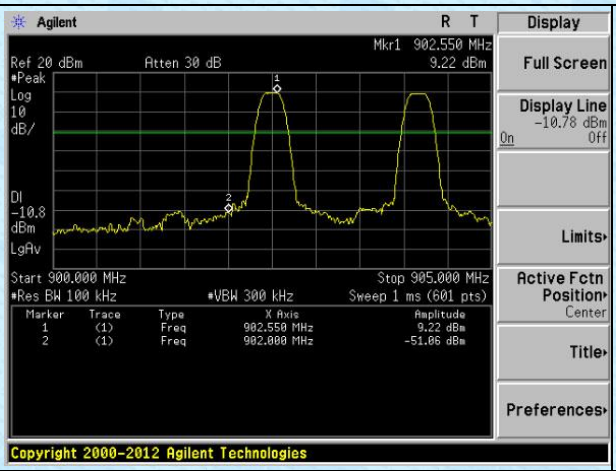
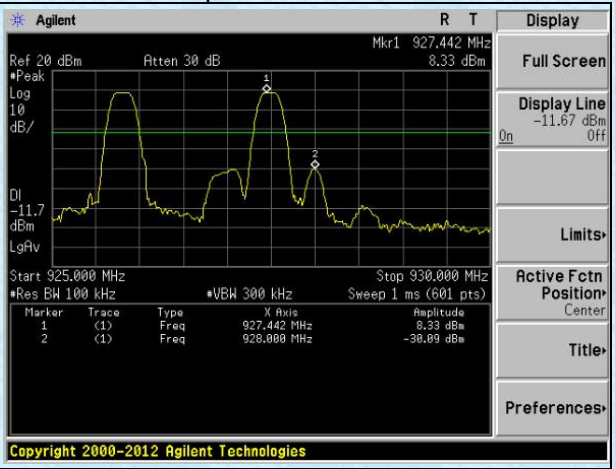
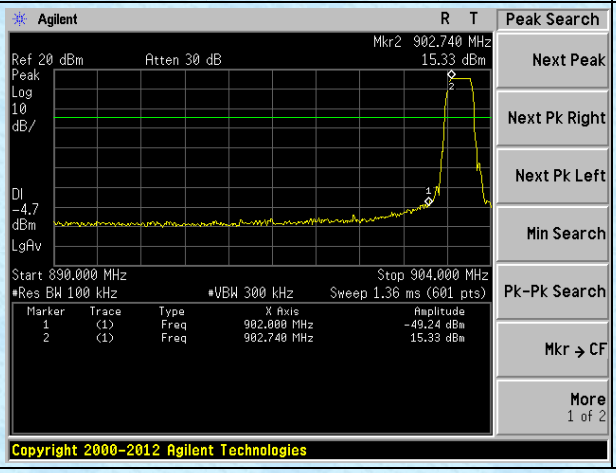
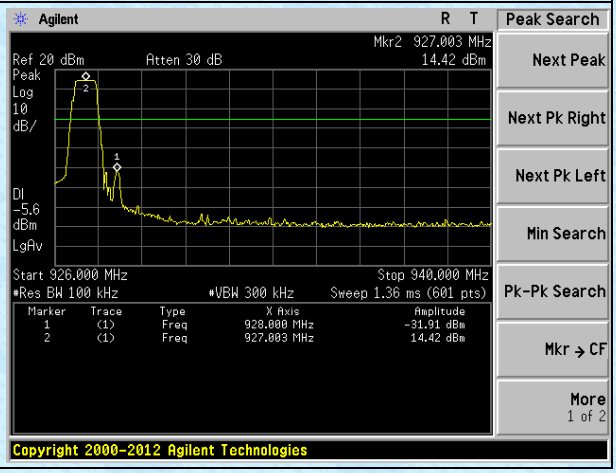
7.8 Spurious Emission

7.8.1 Conducted Emission Method

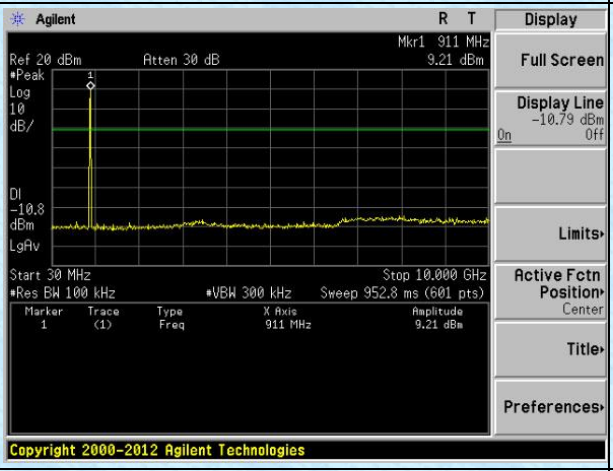
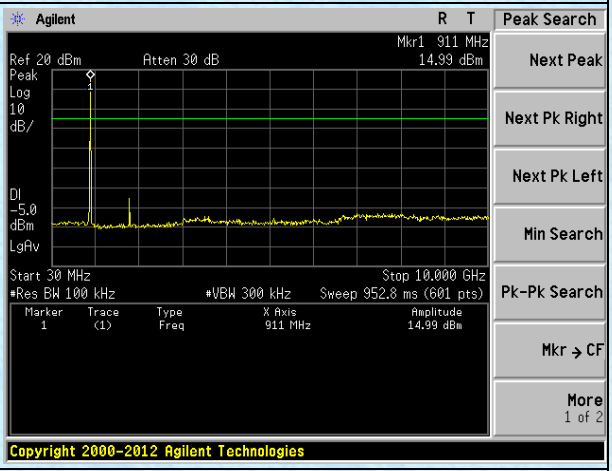
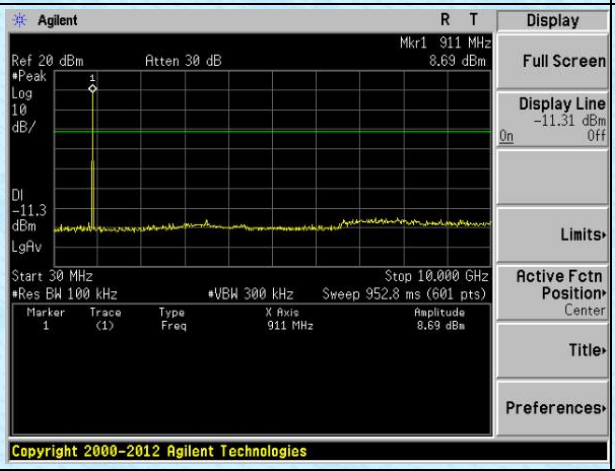
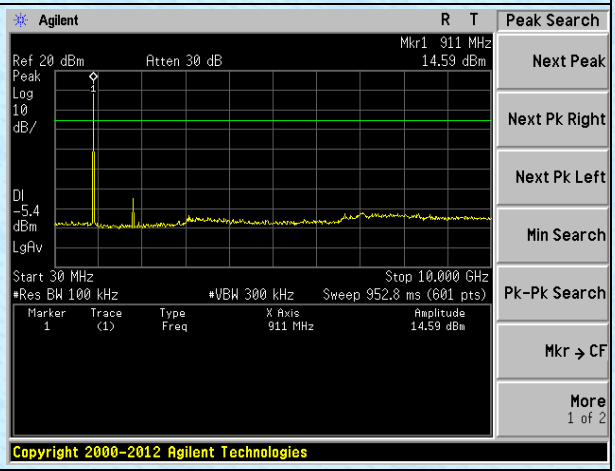
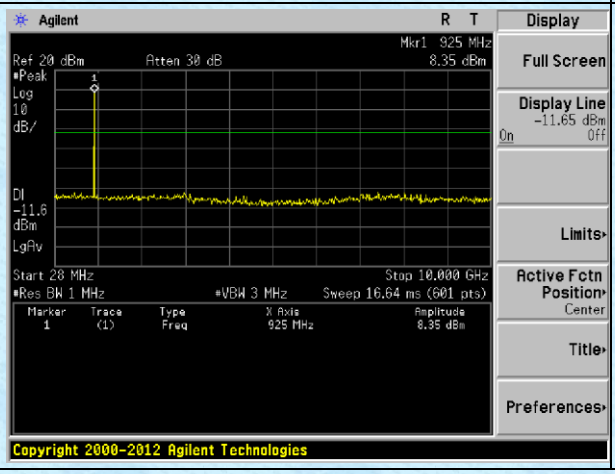
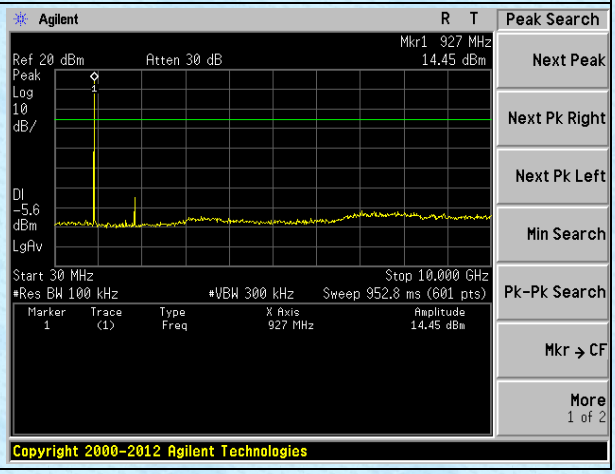
Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	ANSI C63.10:2013
Receiver setup:	RBW=100kHz, VBW=300kHz, Detector=Peak
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by 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

Test Graph:
Band Edge:

	Lowest	Highest
FHSS		

	 Agilent R T Display Mkr1 902.550 MHz Ref 20 dBm Atten 30 dB 9.22 dBm #Peak Log 10 dB/ Dl -10.8 dBm LgAv Start 900.000 MHz Stop 905.000 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 1 ms (601 pts) Marker Trace Type X Axis Amplitude 1 (1) Freq 902.550 MHz 9.22 dBm 2 (1) Freq 902.000 MHz -51.06 dBm Full Screen Display Line -10.78 dBm On Off Limits Active Fctn Position Center Title Preferences Copyright 2000-2012 Agilent Technologies	 Agilent R T Display Mkr1 927.442 MHz Ref 20 dBm Atten 30 dB 8.33 dBm #Peak Log 10 dB/ Dl -11.7 dBm LgAv Start 925.000 MHz Stop 930.000 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 1 ms (601 pts) Marker Trace Type X Axis Amplitude 1 (1) Freq 927.442 MHz 8.33 dBm 2 (1) Freq 928.000 MHz -30.09 dBm Full Screen Display Line -11.67 dBm On Off Limits Active Fctn Position Center Title Preferences Copyright 2000-2012 Agilent Technologies
DTS	 Agilent R T Peak Search Mkr2 902.740 MHz Ref 20 dBm Atten 30 dB 15.33 dBm Peak Log 10 dB/ Dl -4.7 dBm LgAv Start 890.000 MHz Stop 904.000 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 1.36 ms (601 pts) Marker Trace Type X Axis Amplitude 1 (1) Freq 902.000 MHz -49.24 dBm 2 (1) Freq 902.740 MHz 15.33 dBm Next Peak Next Pk Right Next Pk Left Min Search Pk-Pk Search Mkr → CF More 1 of 2 Copyright 2000-2012 Agilent Technologies	 Agilent R T Peak Search Mkr2 927.003 MHz Ref 20 dBm Atten 30 dB 14.42 dBm Peak Log 10 dB/ Dl -5.6 dBm LgAv Start 926.000 MHz Stop 940.000 MHz #Res BW 100 kHz #VBW 300 kHz Sweep 1.36 ms (601 pts) Marker Trace Type X Axis Amplitude 1 (1) Freq 928.000 MHz -31.91 dBm 2 (1) Freq 927.003 MHz 14.42 dBm Next Peak Next Pk Right Next Pk Left Min Search Pk-Pk Search Mkr → CF More 1 of 2 Copyright 2000-2012 Agilent Technologies

Spurious Emission:

	FHSS	DTS
Lowest		
Middle		
Highest		

7.8.2 Radiated Emission Method

Test Requirement:	FCC Part15 C Section 15.209 and 15.205
Test Method:	ANSI C63.10:2013
Test Frequency Range:	9kHz to 18GHz
Test site:	Measurement Distance: 3m

Receiver setup:

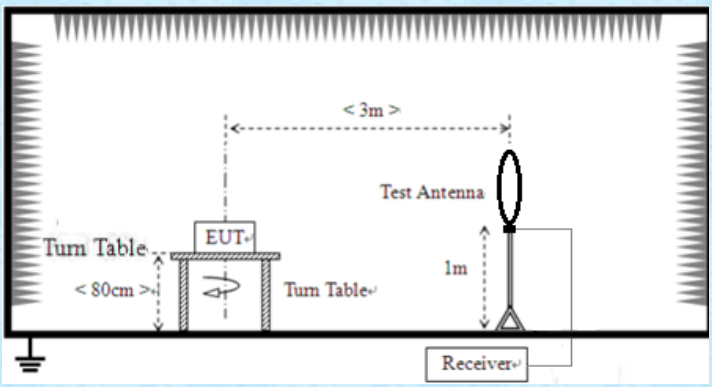
Frequency	Detector	RBW	VBW	Value
9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
30MHz-1GHz	Quasi-peak	120KHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

Limit:
(Spurious Emissions)

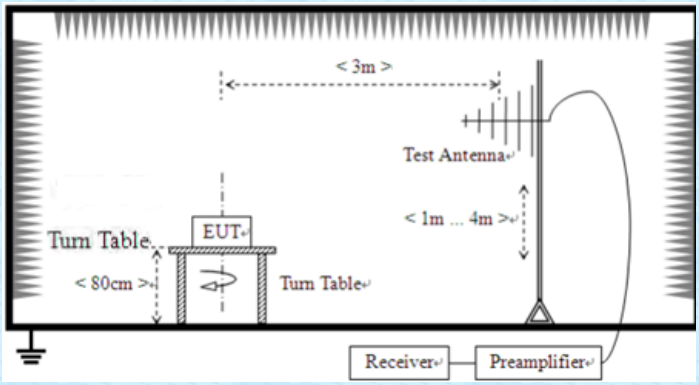
Frequency	Limit (uV/m)	Value	Measurement Distance
0.009MHz-0.490MHz	2400/F(KHz)	QP/PK/AV	300m
0.490MHz-1.705MHz	24000/F(KHz)	QP	300m
1.705MHz-30MHz	30	QP	30m
30MHz-88MHz	100	QP	3m
88MHz-216MHz	150	QP	
216MHz-960MHz	200	QP	
960MHz-1GHz	500	QP	
Above 1GHz	500	Average	
	5000	Peak	

Test setup:

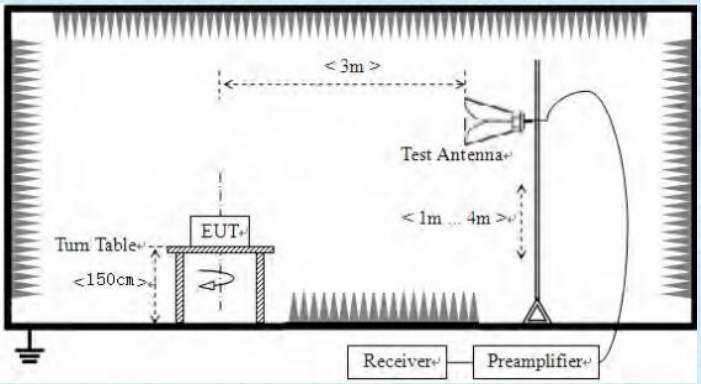
Below 30MHz



Below 1GHz



Above 1GHz



Test Procedure:	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.
Test Instruments:	Refer to section 5.8 for details
Test mode:	Refer to section 5.2 for details

Temp. / Hum.	Temp.:	25 °C	Humid.:	52%	Press.:	1 012mbar

Test results:	Pass
Test voltage:	DC 6V

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.

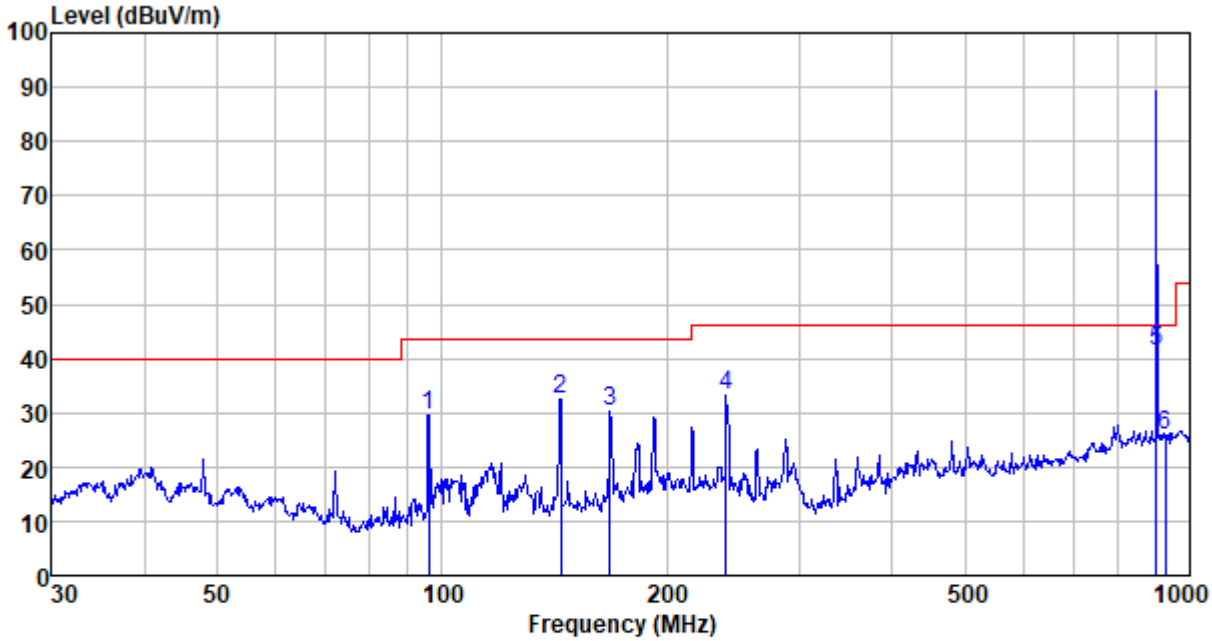
Measurement data:

■ **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.

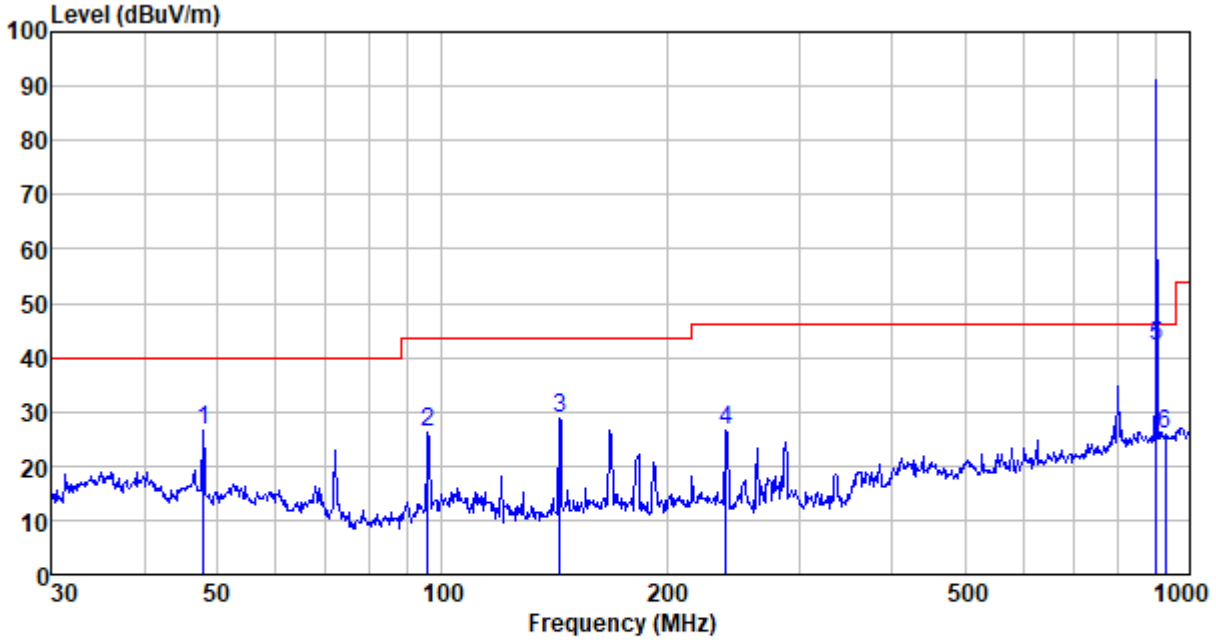
- **30MHz ~ 1GHz**
- **FHSS**

Test channel:	Lowest	Polarization:	Horizontal



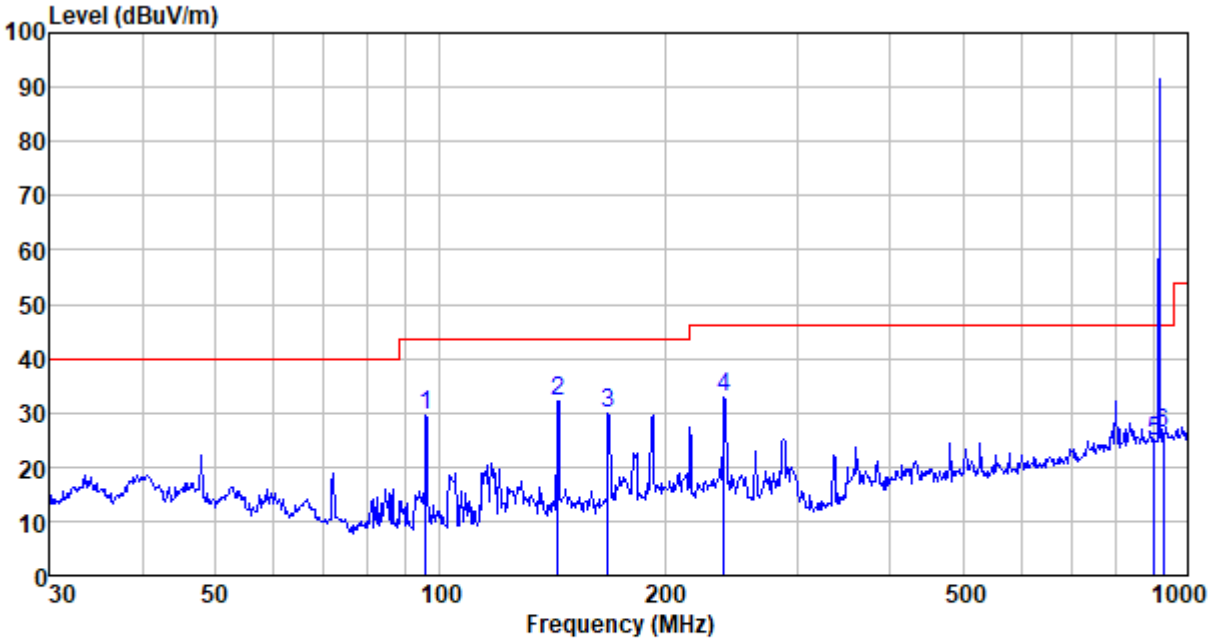
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
96.099	56.35	8.85	1.16	36.69	29.67	43.50	-13.83	QP
144.335	55.67	12.36	1.53	37.04	32.52	43.50	-10.98	QP
167.824	53.12	12.52	1.67	37.18	30.13	43.50	-13.37	QP
239.987	57.96	10.45	2.07	37.37	33.11	46.00	-12.89	QP
902.000	51.12	22.99	4.87	37.60	41.38	46.00	-4.62	QP
928.000	34.78	23.53	4.96	37.57	25.70	46.00	-20.30	QP

Test channel:	Lowest	Polarization:	Vertical



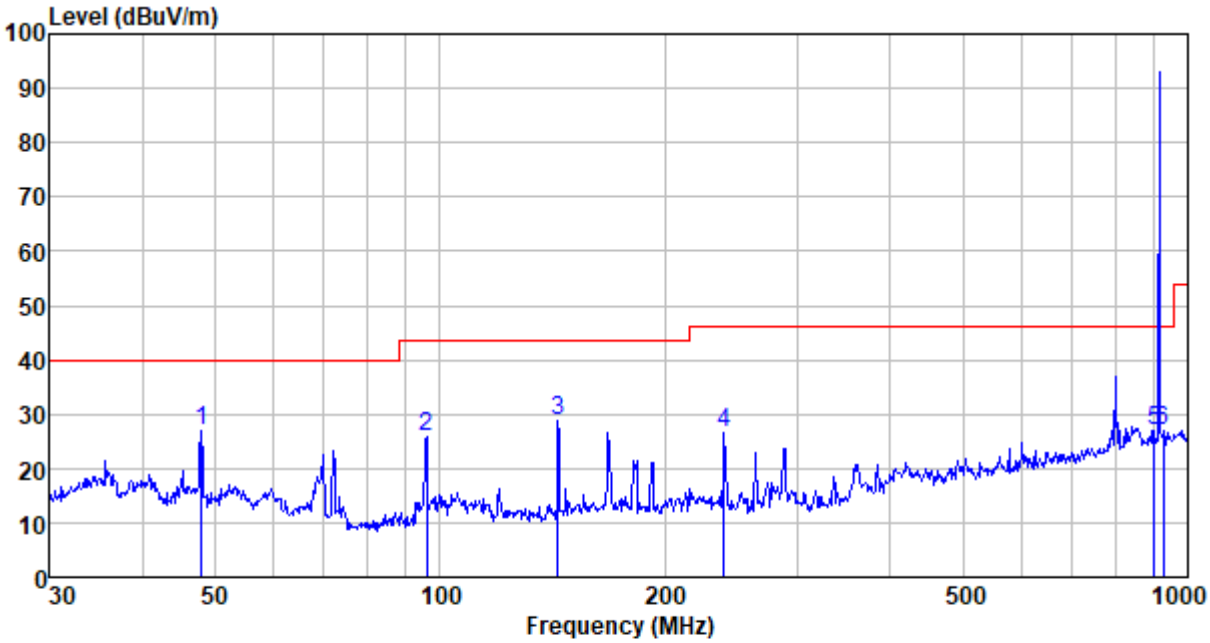
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
47.994	49.04	13.01	0.75	36.09	26.71	40.00	-13.29	QP
95.762	53.00	8.83	1.16	36.69	26.30	43.50	-17.20	QP
143.830	51.81	12.32	1.53	37.04	28.62	43.50	-14.88	QP
239.987	51.56	10.45	2.07	37.37	26.71	46.00	-19.29	QP
902.000	51.78	22.99	4.87	37.60	42.04	46.00	-3.96	QP
928.000	34.81	23.53	4.96	37.57	25.73	46.00	-20.27	QP

Test channel:	Middle	Polarization:	Horizontal



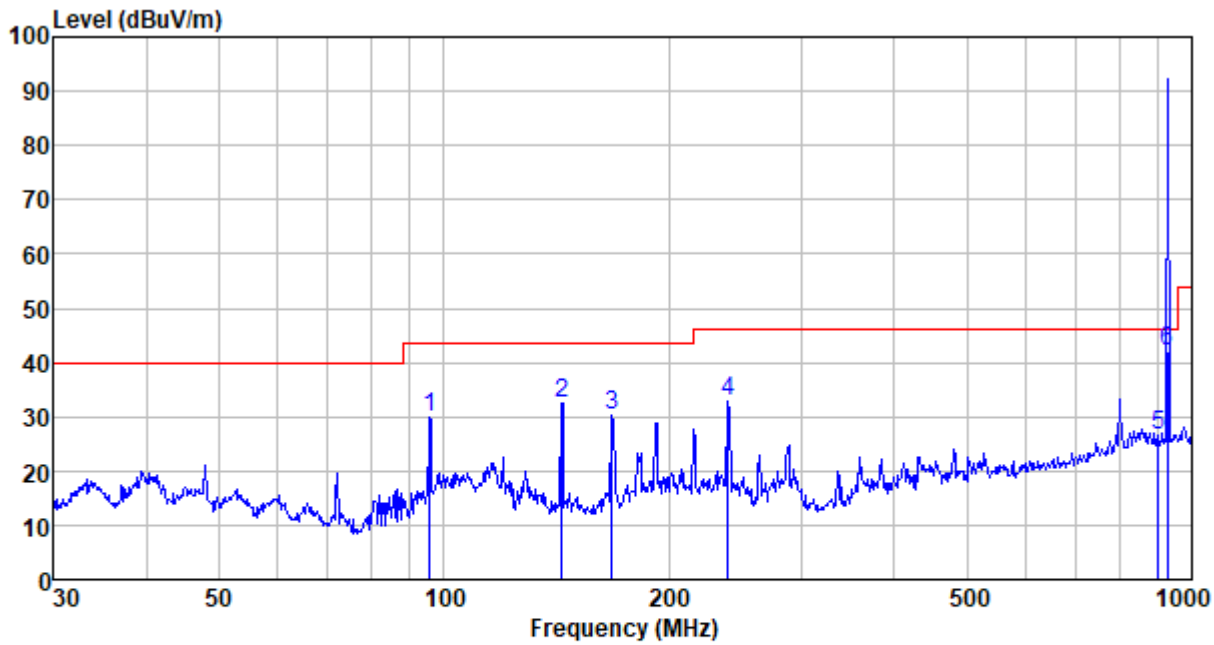
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
95.762	56.21	8.83	1.16	36.69	29.51	43.50	-13.99	QP
143.830	55.44	12.32	1.53	37.04	32.25	43.50	-11.25	QP
167.824	52.76	12.52	1.67	37.18	29.77	43.50	-13.73	QP
239.987	57.73	10.45	2.07	37.37	32.88	46.00	-13.12	QP
902.000	34.28	22.99	4.87	37.60	24.54	46.00	-21.46	QP
928.000	35.38	23.53	4.96	37.57	26.30	46.00	-19.70	QP

Test channel:	Middle	Polarization:	Vertical



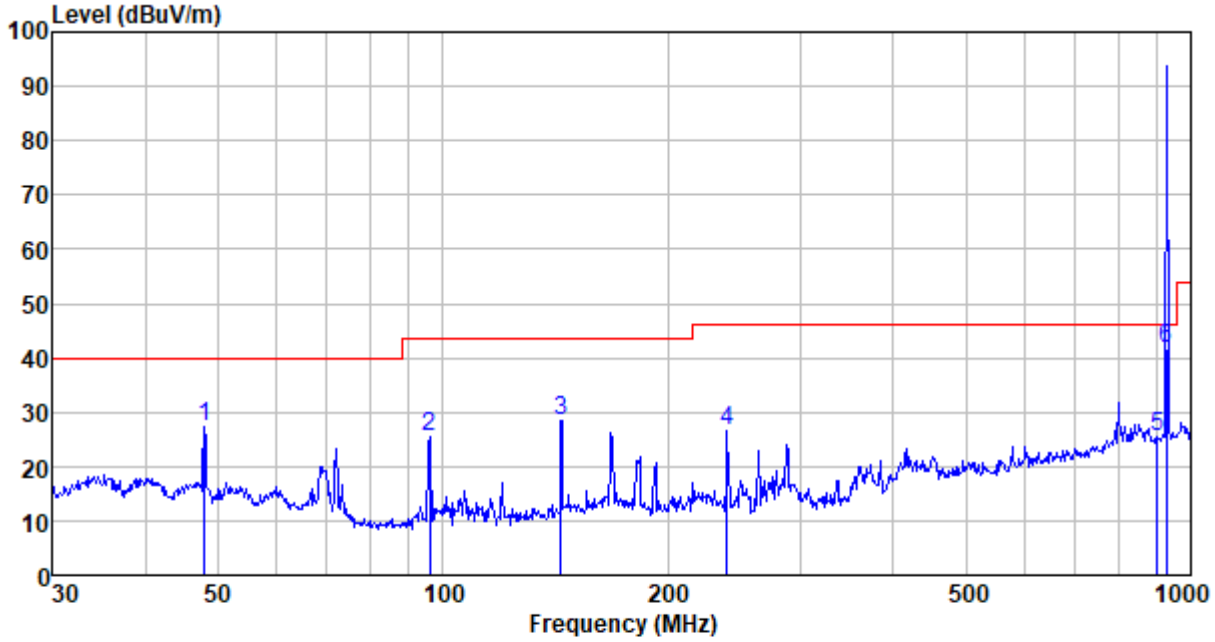
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
47.994	49.23	13.01	0.75	36.09	26.90	40.00	-13.10	QP
96.099	52.45	8.85	1.16	36.69	25.77	43.50	-17.73	QP
143.830	52.00	12.32	1.53	37.04	28.81	43.50	-14.69	QP
239.987	51.45	10.45	2.07	37.37	26.60	46.00	-19.40	QP
902.000	36.64	22.99	4.87	37.60	26.90	46.00	-19.10	QP
928.000	35.85	23.53	4.96	37.57	26.77	46.00	-19.23	QP

Test channel:	Highest	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
95.762	56.70	8.83	1.16	36.69	30.00	43.50	-13.50	QP
143.830	55.65	12.32	1.53	37.04	32.46	43.50	-11.04	QP
167.824	53.32	12.52	1.67	37.18	30.33	43.50	-13.17	QP
239.987	57.82	10.45	2.07	37.37	32.97	46.00	-13.03	QP
902.000	36.14	22.99	4.87	37.60	26.40	46.00	-19.60	QP
928.000	51.24	23.53	4.96	37.57	42.16	46.00	-3.84	QP

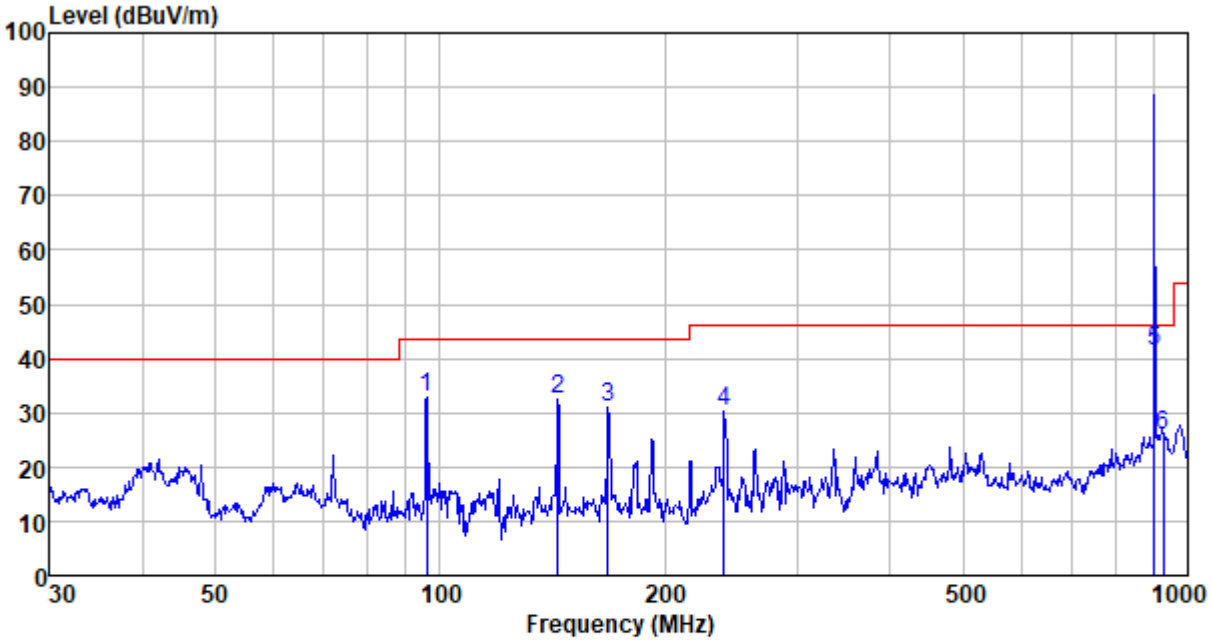
Test channel:	Highest	Polarization:	Vertical



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
47.994	49.60	13.01	0.75	36.09	27.27	40.00	-12.73	QP
96.099	52.09	8.85	1.16	36.69	25.41	43.50	-18.09	QP
143.830	51.78	12.32	1.53	37.04	28.59	43.50	-14.91	QP
239.987	51.53	10.45	2.07	37.37	26.68	46.00	-19.32	QP
902.000	35.31	22.99	4.87	37.60	25.57	46.00	-20.43	QP
928.000	50.77	23.53	4.96	37.57	41.69	46.00	-4.31	QP

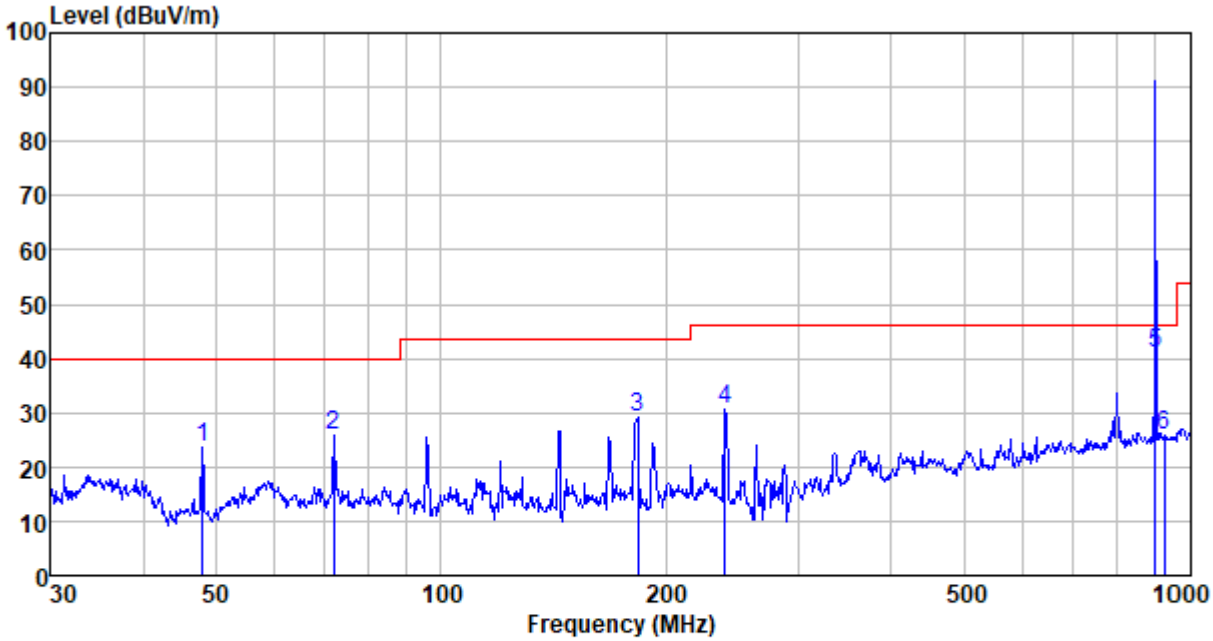
■ **DTS**

Test channel:	Lowest	Polarization:	Horizontal



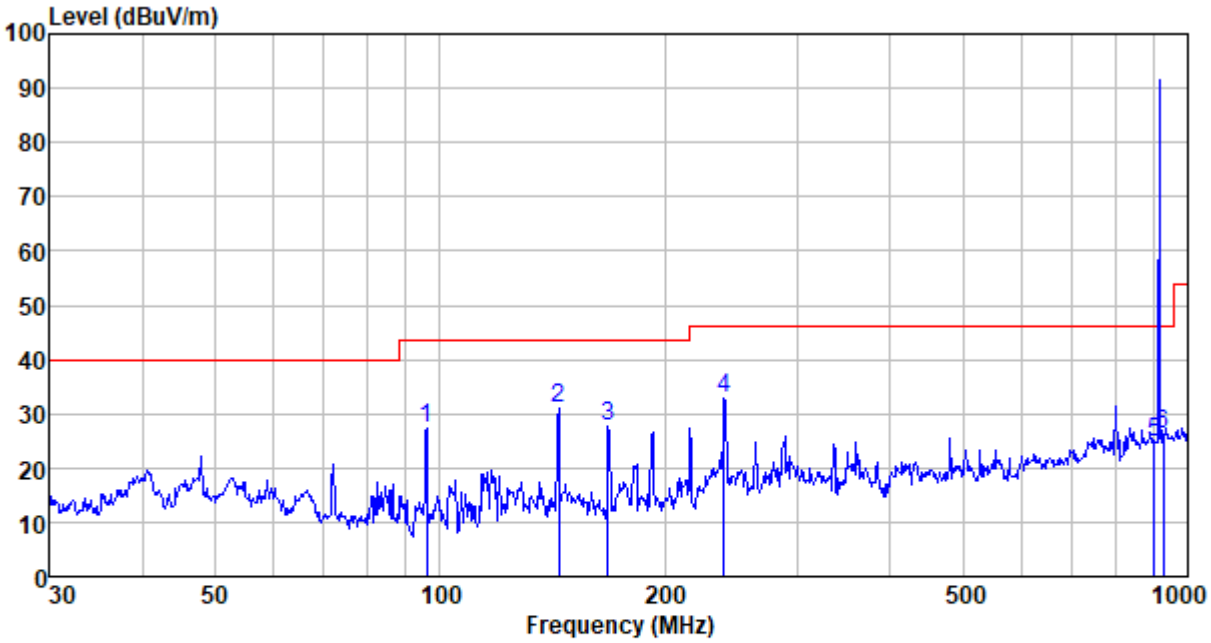
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
96.099	59.35	8.85	1.16	36.69	32.67	43.50	-10.83	QP
143.830	55.62	12.32	1.53	37.04	32.43	43.50	-11.07	QP
167.824	54.12	12.52	1.67	37.18	31.13	43.50	-12.37	QP
239.987	54.96	10.45	2.07	37.37	30.11	46.00	-15.89	QP
902.000	51.12	22.99	4.87	37.60	41.38	46.00	-4.62	QP
928.000	34.78	23.53	4.96	37.57	25.70	46.00	-20.30	QP

Test channel:	Lowest	Polarization:	Vertical



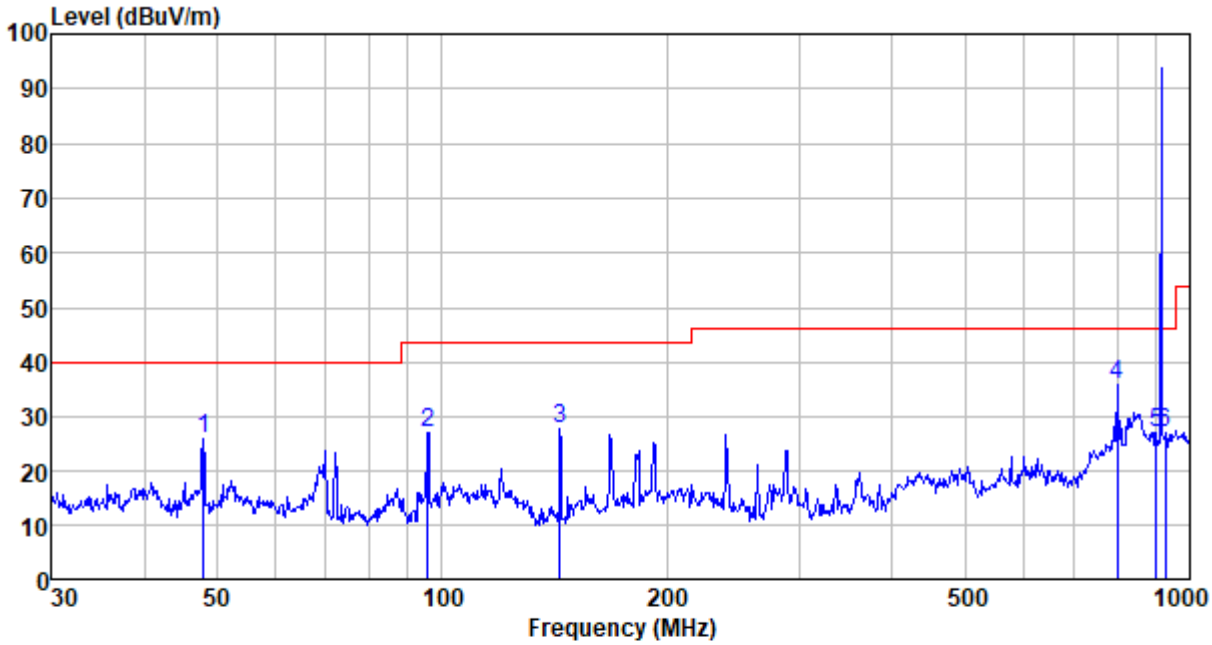
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
47.994	46.04	13.01	0.75	36.09	23.71	40.00	-16.29	QP
71.832	51.07	10.22	0.96	36.46	25.79	40.00	-14.21	QP
183.201	54.04	10.61	1.75	37.25	29.15	43.50	-14.35	QP
239.987	55.56	10.45	2.07	37.37	30.71	46.00	-15.29	QP
902.000	50.78	22.99	4.87	37.60	41.04	46.00	-4.96	QP
928.000	34.81	23.53	4.96	37.57	25.73	46.00	-20.27	QP

Test channel:	Middle	Polarization:	Horizontal



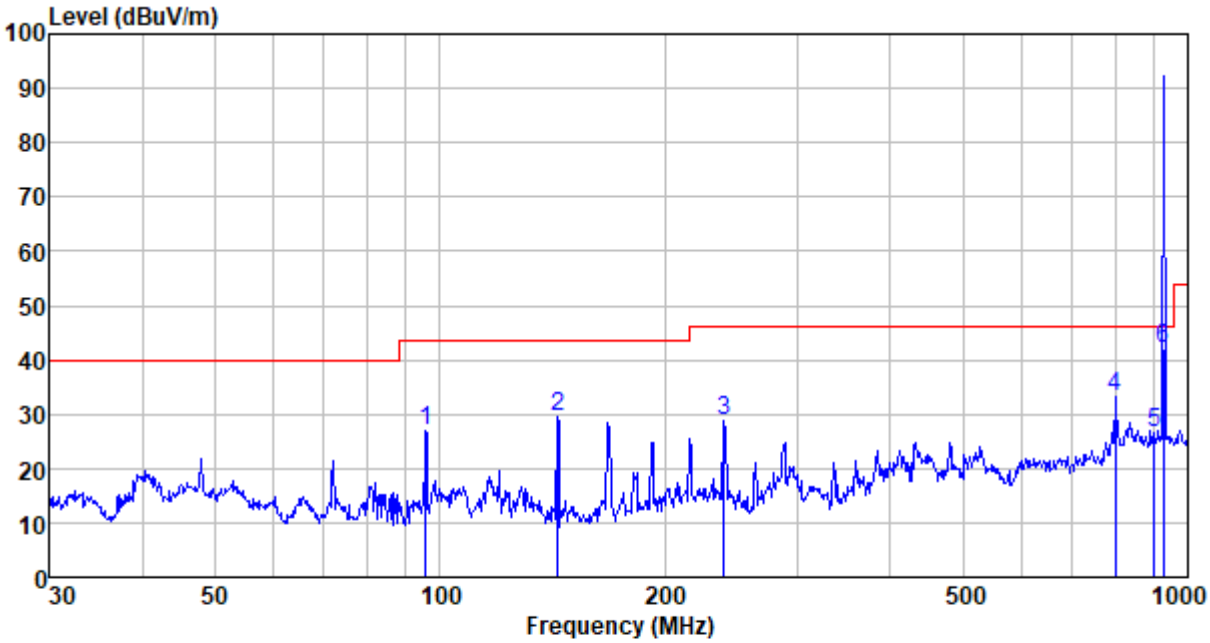
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
96.099	53.85	8.85	1.16	36.69	27.17	43.50	-16.33	QP
144.335	54.18	12.36	1.53	37.04	31.03	43.50	-12.47	QP
167.824	50.76	12.52	1.67	37.18	27.77	43.50	-15.73	QP
239.987	57.73	10.45	2.07	37.37	32.88	46.00	-13.12	QP
902.000	34.28	22.99	4.87	37.60	24.54	46.00	-21.46	QP
928.000	35.38	23.53	4.96	37.57	26.30	46.00	-19.70	QP

Test channel:	Middle	Polarization:	Vertical



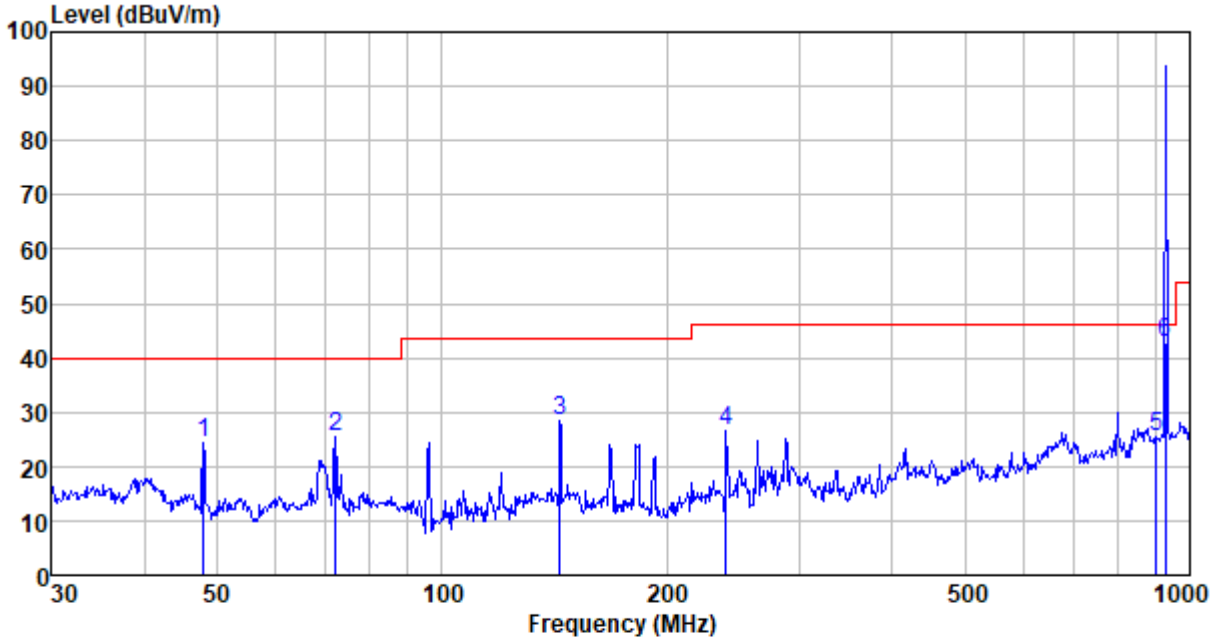
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
47.994	48.23	13.01	0.75	36.09	25.90	40.00	-14.10	QP
95.762	53.78	8.83	1.16	36.69	27.08	43.50	-16.42	QP
143.830	51.00	12.32	1.53	37.04	27.81	43.50	-15.69	QP
798.980	46.79	22.23	4.45	37.62	35.85	46.00	-10.15	QP
902.000	36.64	22.99	4.87	37.60	26.90	46.00	-19.10	QP
928.000	35.85	23.53	4.96	37.57	26.77	46.00	-19.23	QP

Test channel:	Highest	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
95.762	53.70	8.83	1.16	36.69	27.00	43.50	-16.50	QP
143.830	52.65	12.32	1.53	37.04	29.46	43.50	-14.04	QP
239.987	53.82	10.45	2.07	37.37	28.97	46.00	-17.03	QP
798.980	44.29	22.23	4.45	37.62	33.35	46.00	-12.65	QP
902.000	36.14	22.99	4.87	37.60	26.40	46.00	-19.60	QP
928.000	51.24	23.53	4.96	37.57	42.16	46.00	-3.84	QP

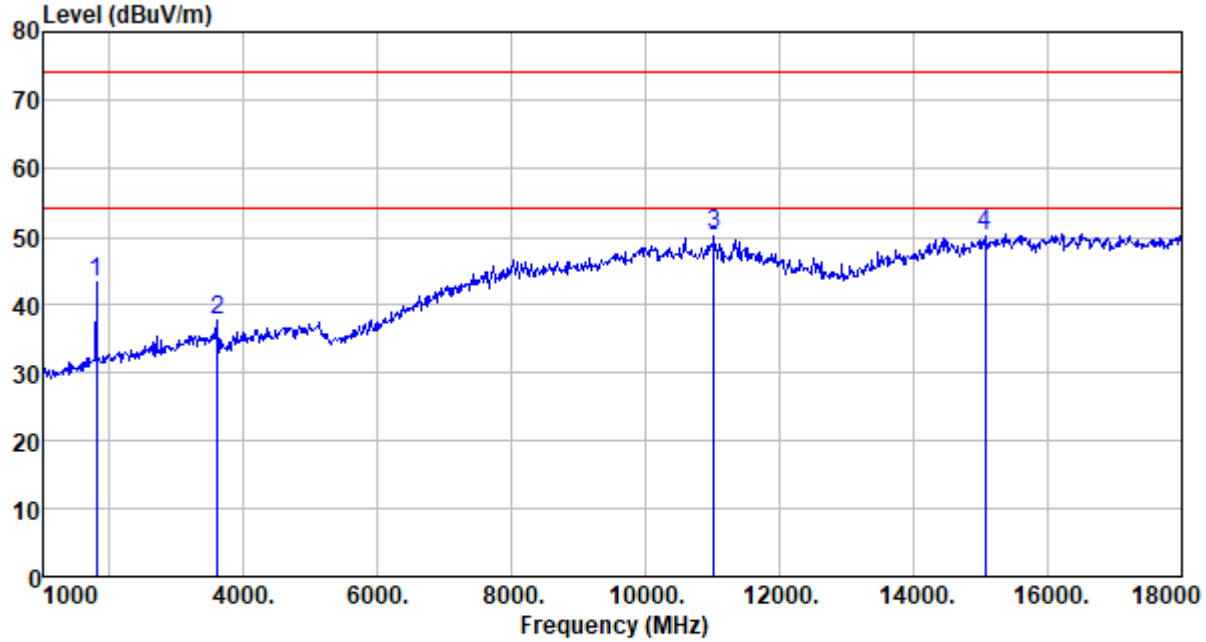
Test channel:	Highest	Polarization:	Vertical



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
47.994	46.60	13.01	0.75	36.09	24.27	40.00	-15.73	QP
72.084	50.69	10.17	0.96	36.46	25.36	40.00	-14.64	QP
143.830	51.78	12.32	1.53	37.04	28.59	43.50	-14.91	QP
239.987	51.53	10.45	2.07	37.37	26.68	46.00	-19.32	QP
902.000	35.31	22.99	4.87	37.60	25.57	46.00	-20.43	QP
928.000	51.77	23.53	4.96	37.57	42.69	46.00	-3.31	QP

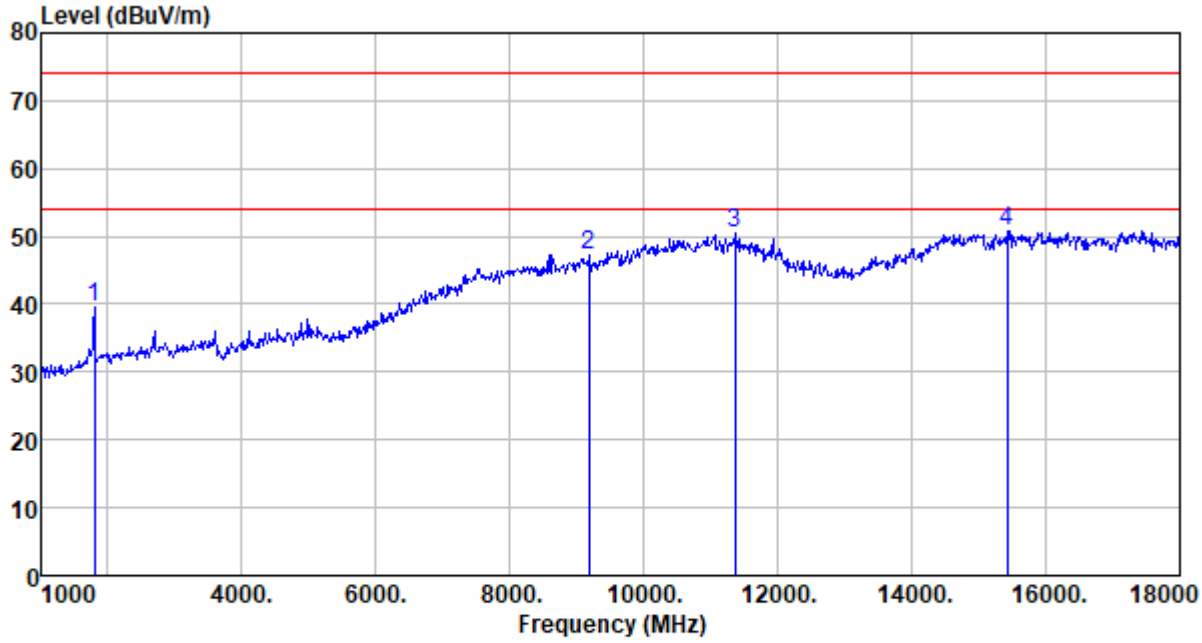
- **Above 1GHz**
- **FHSS**

Test channel:	Lowest	Polarization:	Horizontal



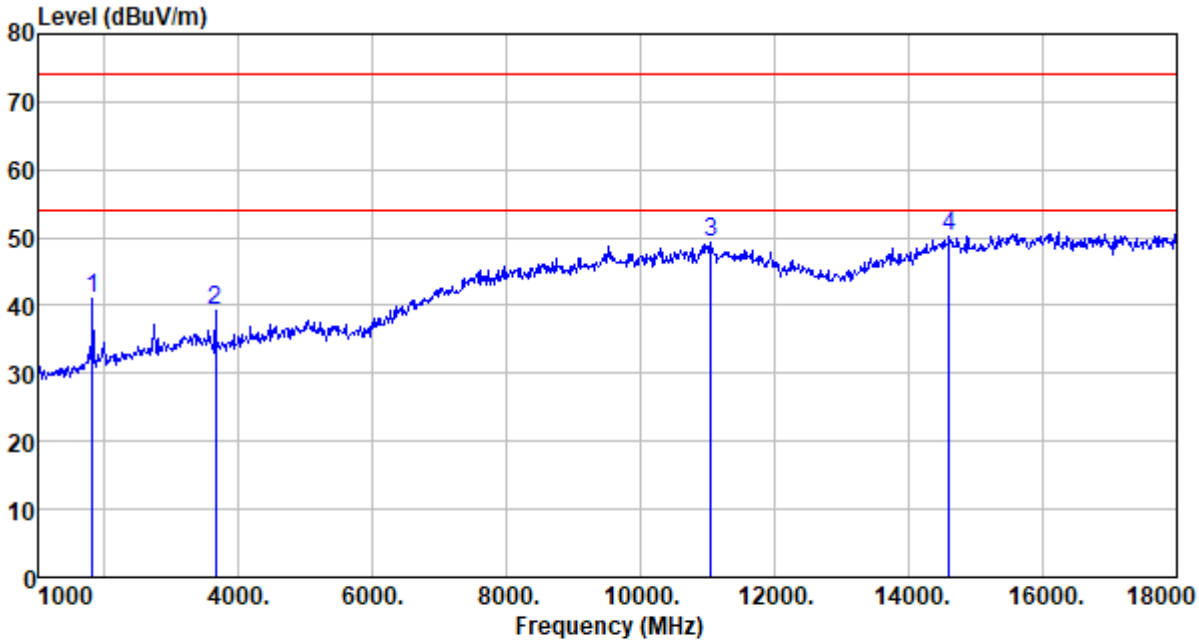
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
1799.000	53.56	25.80	2.48	38.42	43.42	74.00	-30.58	Peak
3601.000	43.40	28.70	3.84	38.16	37.78	74.00	-36.22	Peak
11013.000	39.40	39.30	8.54	37.03	50.21	74.00	-23.79	Peak
15059.000	37.01	40.14	10.17	37.06	50.26	74.00	-23.74	Peak

Test channel:	Lowest	Polarization:	Vertical



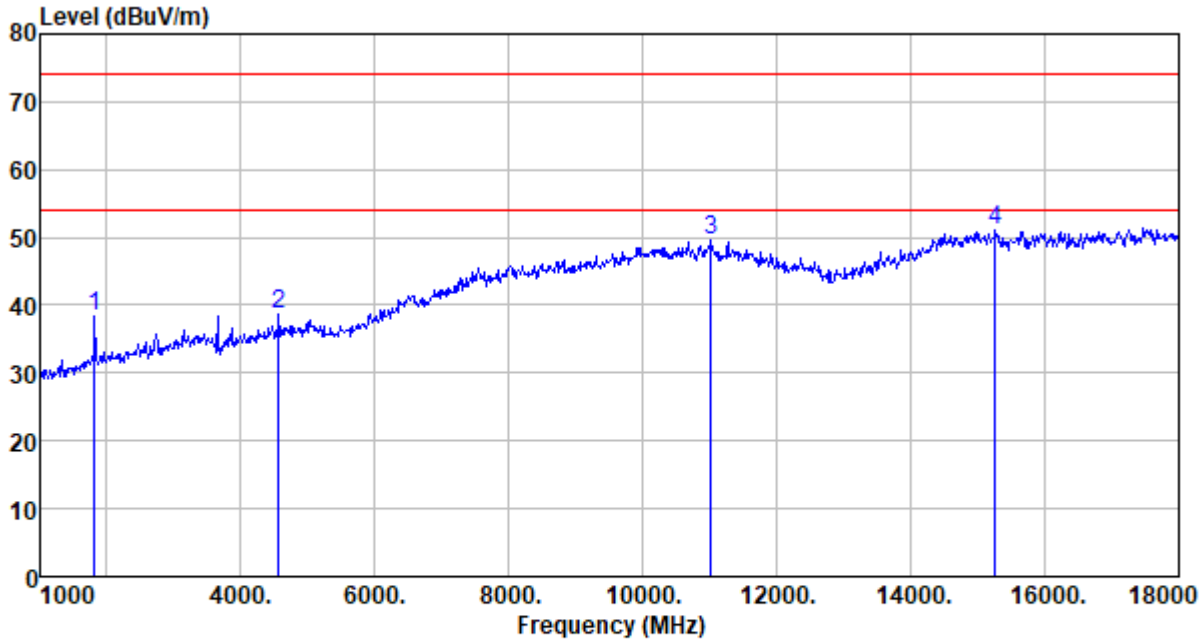
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
1799.000	49.69	25.80	2.48	38.42	39.55	74.00	-34.45	Peak
9177.000	39.84	37.61	7.70	37.84	47.31	74.00	-26.69	Peak
11353.000	40.14	39.37	8.68	37.74	50.45	74.00	-23.55	Peak
15416.000	37.59	38.83	10.47	36.24	50.65	74.00	-23.35	Peak

Test channel:	Middle	Polarization:	Horizontal



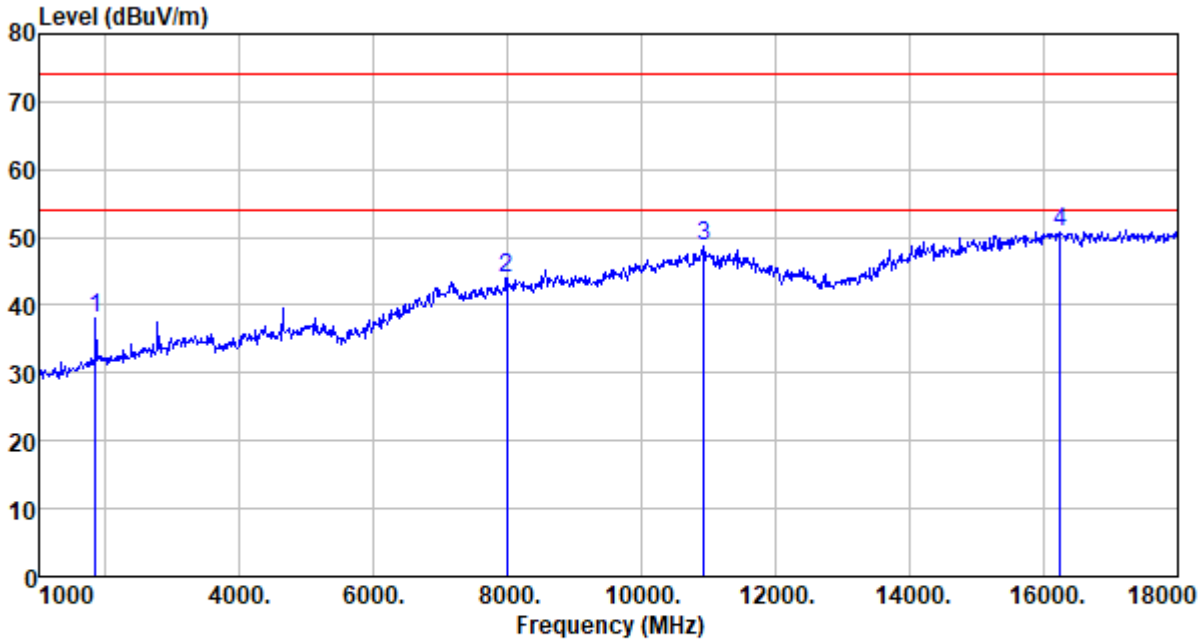
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
1816.000	51.13	25.83	2.49	38.38	41.07	74.00	-32.93	Peak
3652.000	44.77	28.85	3.86	38.09	39.39	74.00	-34.61	Peak
11047.000	38.45	39.31	8.55	37.10	49.21	74.00	-24.79	Peak
14600.000	36.92	41.20	9.92	37.88	50.16	74.00	-23.84	Peak

Test channel:	Middle	Polarization:	Vertical



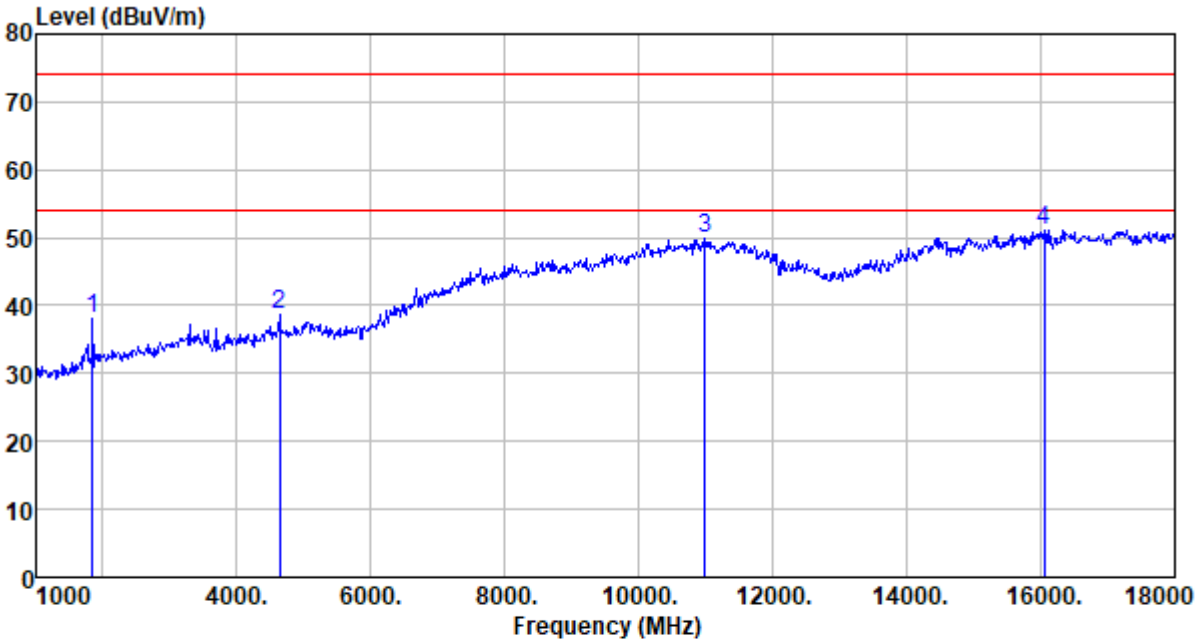
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
1816.000	48.54	25.83	2.49	38.38	38.48	74.00	-35.52	Peak
4570.000	41.27	30.83	4.48	37.93	38.65	74.00	-35.35	Peak
11013.000	38.73	39.30	8.54	37.03	49.54	74.00	-24.46	Peak
15263.000	38.16	39.32	10.34	36.60	51.22	74.00	-22.78	Peak

Test channel:	Highest	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
1850.000	47.99	25.88	2.49	38.29	38.07	74.00	-35.93	Peak
7987.000	37.51	37.40	6.73	37.51	44.13	74.00	-29.87	Peak
10928.000	38.13	39.28	8.50	37.07	48.84	74.00	-25.16	Peak
16249.000	36.48	38.44	11.01	35.01	50.92	74.00	-23.08	Peak

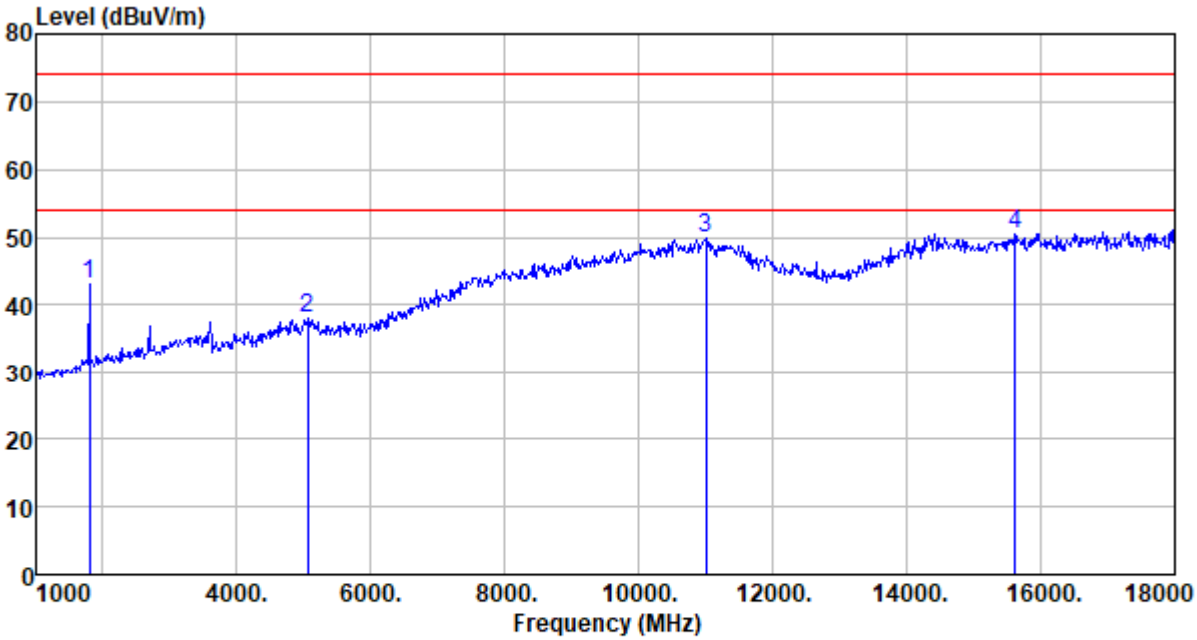
Test channel:	Highest	Polarization:	Vertical



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
1850.000	48.04	25.88	2.49	38.29	38.12	74.00	-35.88	Peak
4638.000	40.99	30.94	4.53	37.86	38.60	74.00	-35.40	Peak
10979.000	39.00	39.29	8.52	37.02	49.79	74.00	-24.21	Peak
16045.000	37.60	37.57	10.96	34.92	51.21	74.00	-22.79	Peak

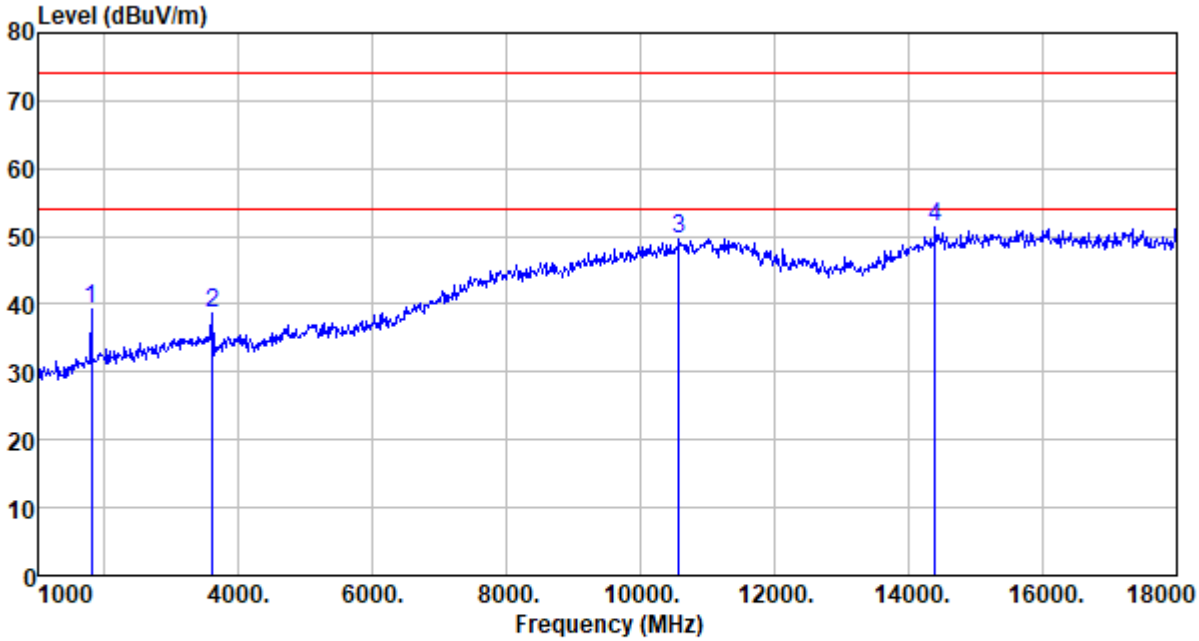
■ **DTS**

Test channel:	Lowest	Polarization:	Horizontal



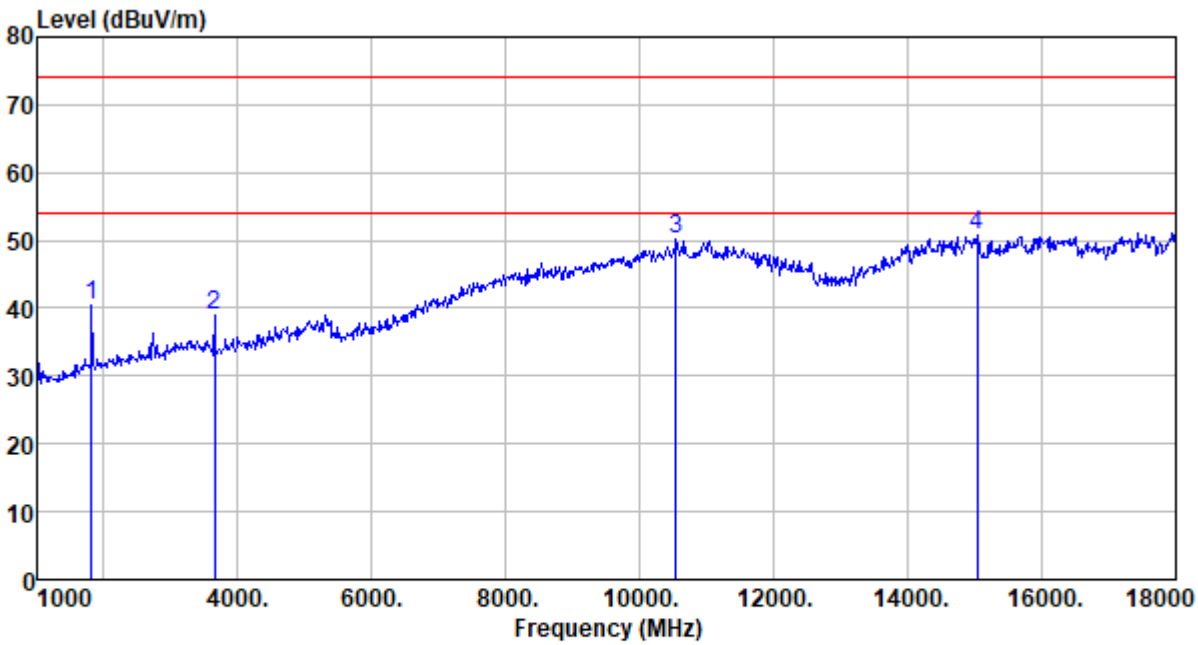
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
1799.000	53.27	25.80	2.48	38.42	43.13	74.00	-30.87	Peak
5063.000	39.20	31.52	4.88	37.53	38.07	74.00	-35.93	Peak
10996.000	38.99	39.29	8.53	37.00	49.81	74.00	-24.19	Peak
15620.000	37.43	38.20	10.64	35.77	50.50	74.00	-23.50	Peak

Test channel:	Lowest	Polarization:	Vertical



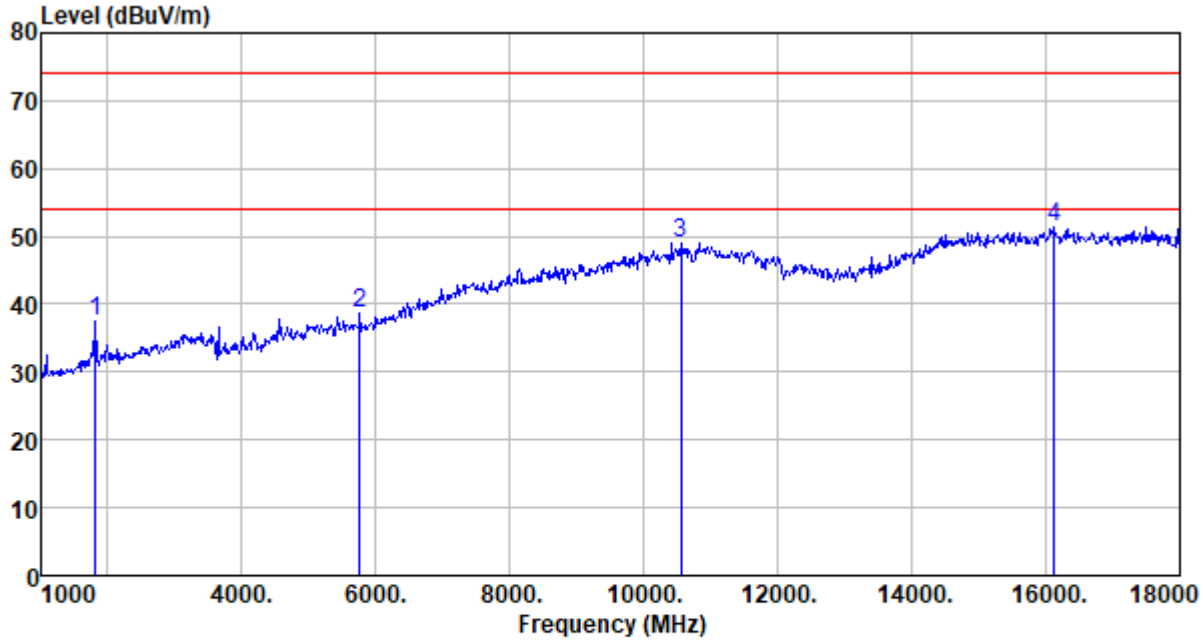
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
1799.000	49.51	25.80	2.48	38.42	39.37	74.00	-34.63	Peak
3601.000	44.37	28.70	3.84	38.16	38.75	74.00	-35.25	Peak
10571.000	39.51	39.21	8.36	37.43	49.65	74.00	-24.35	Peak
14396.000	38.27	41.48	9.82	38.23	51.34	74.00	-22.66	Peak

Test channel:	Middle	Polarization:	Horizontal



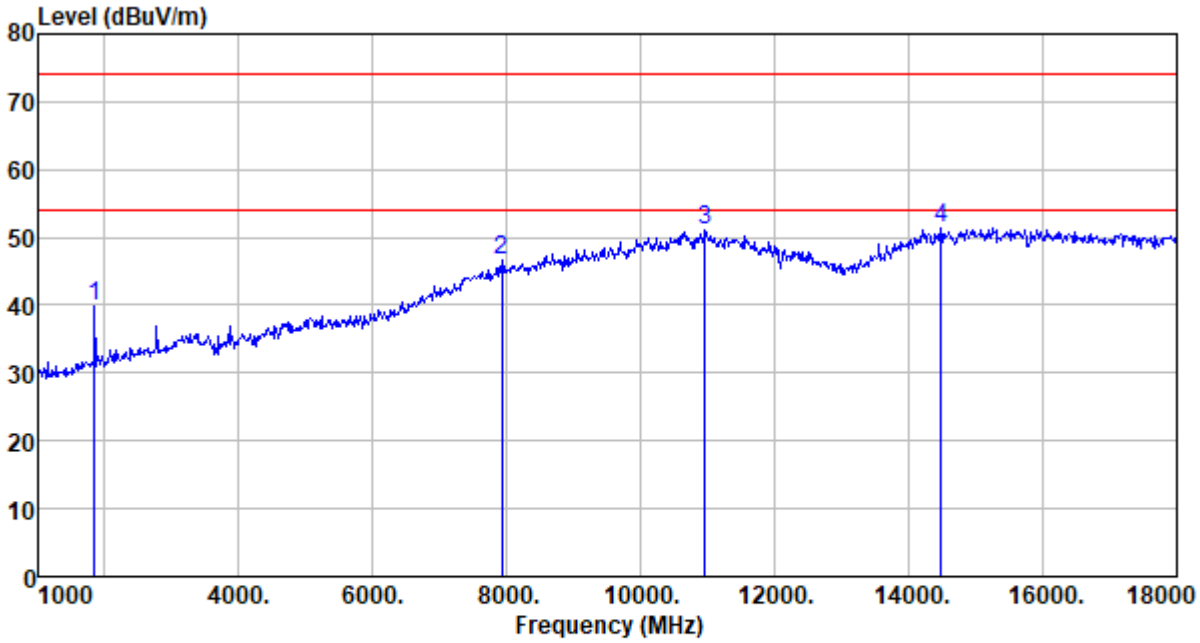
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
1816.000	50.46	25.83	2.49	38.38	40.40	74.00	-33.60	Peak
3652.000	44.22	28.85	3.86	38.09	38.84	74.00	-35.16	Peak
10537.000	40.01	39.21	8.34	37.46	50.10	74.00	-23.90	Peak
15042.000	37.59	40.14	10.16	37.10	50.79	74.00	-23.21	Peak

Test channel:	Middle	Polarization:	Vertical



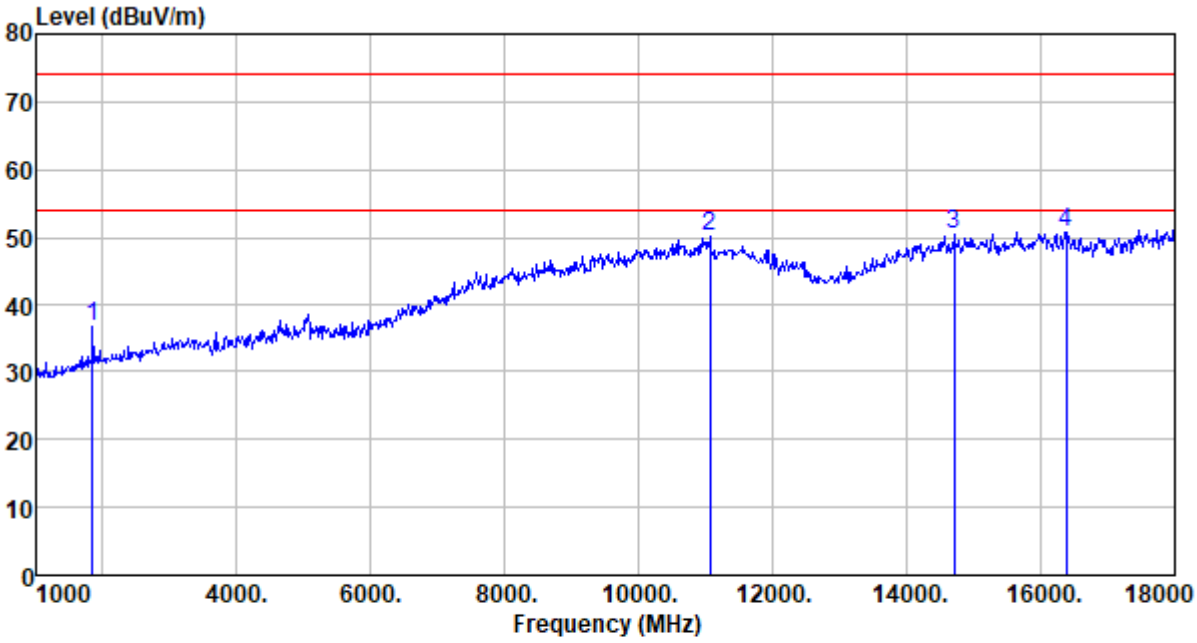
Freq MHz	Reading level dBuV	Antenna factor dB/m	Cable loss dB	Preamp factor dB	level dBuV/m	Limit level dBuV/m	Over limit dB	Remark
1816.000	47.57	25.83	2.49	38.38	37.51	74.00	-36.49	Peak
5760.000	38.81	32.18	5.43	37.75	38.67	74.00	-35.33	Peak
10554.000	39.03	39.21	8.35	37.45	49.14	74.00	-24.86	Peak
16130.000	37.34	37.92	10.98	34.96	51.28	74.00	-22.72	Peak

Test channel:	Highest	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
1850.000	49.63	25.88	2.49	38.29	39.71	74.00	-34.29	Peak
7919.000	40.05	37.32	6.75	37.53	46.59	74.00	-27.41	Peak
10962.000	40.24	39.29	8.52	37.04	51.01	74.00	-22.99	Peak
14481.000	38.08	41.50	9.86	38.08	51.36	74.00	-22.64	Peak

Test channel:	Highest	Polarization:	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
1850.000	46.88	25.88	2.49	38.29	36.96	74.00	-37.04	Peak
11064.000	39.57	39.31	8.56	37.13	50.31	74.00	-23.69	Peak
14702.000	37.36	41.00	9.97	37.71	50.62	74.00	-23.38	Peak
16385.000	36.06	38.78	11.04	35.07	50.81	74.00	-23.19	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---