TEST REPORT

Application No.:	GZCR2406000607MD
Applicant:	Maxphotonics Co., Ltd.
Address of Applicant:	Maxphotonics Industrial Park, Third Furong Road Furong Industrial Area, Shajing Town, BaoAn District Shenzhen, Guangdong, China.
Manufacturer:	Maxphotonics Co., Ltd.
Address of Manufacturer:	Maxphotonics Industrial Park, Third Furong Road Furong Industrial Area, Shajing Town, BaoAn District Shenzhen, Guangdong, China.
Factory:	Maxphotonics Co., Ltd.
Address of Factory:	Maxphotonics Industrial Park, Third Furong Road Furong Industrial Area, Shajing Town, BaoAn District Shenzhen, Guangdong, China.
Product Name:	MFSC 1000-6000X (G6.1) CW Fiber Laser Series
Model No.:	MFSC-6000X-BKW6.1, MFSC-####**-**W*.** ('####'=1000, 1500, 2000, 3000, 6000; the first'*'=H, M, X, C, W, W_Pro, plus, HW; the second'*'=(W), (C), (HMB) or blank space; the third'*'=A, B, C, D, E, F, G, H; the fourth'*'= A, B, C, D, E, F, G, H, I, J, K, L, M, X; the fifth'*'=1-99; the sixth'*'=0-99; the seventh'*'= C or Blank space) ♣
♣	Please refer to section 2 of this report which indicates which item was actually tested and which were electrically identical.
Trade Mark:	MAX 创鑫激光, MAX PHOTONICS
Standard(s) :	47 CFR Part 15, Subpart C 15.247
Date of Receipt:	2024-06-05
Date of Test:	2024-06-12 to 2024-06-25
Date of Issue:	2024-07-04
Test Result:	**Pass***

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

Ricky Liu
Manager

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Revision Record			
Version	**Report No.**	**Date**	**Remark**
01	GZCR240600060701	2024-07-04	Original

Authorized for issue by				
		Luke Lin **Luke Lin/Project Engineer**		
		vico cui **Vico Cui/Reviewer**		

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2 Test Summary

Radio Spectrum Technical Requirement				
Item	**Standard**	**Method**	**Requirement**	**Result**
Antenna Requirement	47 CFR Part 15, Subpart C 15.247	N/A	47 CFR Part 15, Subpart C 15.203 & 15.247(b)(4)	Pass

Radio Spectrum Matter Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass
Radiated Emissions which fall in the restricted bands		ANSI C63.10 (2013) Section 11.12	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions Below 1GHz		ANSI C63.10 (2013) Section 6.4,6.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass**
Radiated Spurious Emissions Above 1GHz		ANSI C63.10 (2013) Section 6.6	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Conducted Peak Output Power		ANSI C63.10 (2013) Section 11.9.1	47 CFR Part 15, Subpart C 15.247(b)(3)	Pass
Minimum 6dB Bandwidth		ANSI C63.10 (2013) Section 11.8.1	47 CFR Part 15, Subpart C 15.247a(2)	Pass
Power Spectrum Density		ANSI C63.10 (2013) Section 11.10.2	47 CFR Part 15, Subpart C 15.247(e)	Pass
Conducted Band Edges Measurement		ANSI C63.10 (2013) Section 11.13.3.2	47 CFR Part 15, Subpart C 15.247(d)	Pass
Conducted Spurious Emissions		ANSI C63.10 (2013) Section 11.11	47 CFR Part 15, Subpart C 15.247(d)	Pass
**: The EUT passed Radiated Spurious Emissions Below 1GHz test after modification.				

Note:

E.U.T./EUT means Equipment Under Test.

Pass means the test result passed the test standard requirement, please find the detailed decision rule in the report relative section.

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♣ **Declaration of EUT Family Grouping:**

Model No.: MFSC-6000X-BKW6.1, MFSC-####**-**W*.** ('####'=1000, 1500, 2000, 3000, 6000; the first'*'=H, M, X, C, W, W_Pro, plus, HW; the second'*'=(W), (C), (HMB) or blank space; the third'*'=A, B, C, D, E, F, G, H; the fourth'*'= A, B, C, D, E, F, G, H, I, J, K, L, M, X; the fifth'*'=1-99; the sixth'*'=0-99; the seventh'*'= C or Blank space)

According to the declaration from the applicant, the electrical circuit design, layout, components used and internal wiring were identical for all models, with only difference being the model name. More details are shown in the table below.

Therefore, only one model MFSC-6000X-BKW6.1 was tested in this report.

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Model:	MFSC-####*													
	MFSC-####**-**W*.**													
1	2	3		4	5	6		6	7	8	9		10	11
M	F	MC	-	####	*	*	-	*	*	W	*	.	*	*
Company	Fiber Laser	Code	/	Power	Characteristic	Application direction	/	Output type	Cable Length	Cooling	Optical path design and software operation, etc.	/	Changes in appearance, color, handle, etc.	Version

Code	Kind
F	Fiber laser

Code	Application
SC	Single-module CW

Code	Power（W）	Current(A)
1000	1000	12
1500	1500	18.5
2000	2000	28
3000	3000	12.5
6000	6000	31

Code	Characteristic
H	Characteristic
M	
X	
C	
W	
W_Pro	
Plus	
HW	

Code	Application direction
(W)	Application direction
(C)	
(HMB)	
	Blank space

Code	Output type
A	Collimator isolator
B	QBH
C	QCS
D	SMA-905
E	LOE
F	QD
G	Bare fiber
H	D80

Code	Cable Length
A	1.5M
B	1.9M
C	2.0M
D	2.5M
E	3.0M
F	4.0M
G	5.0M
H	10M
I	12M
J	15M
K	20M
L	25M
M	30M
X	Other

Code	Cooling
W	Water-cooling

Code	Kind
1	Optical path design and software operation, etc.
2	
3	
4	
5	
.	
.	
97	
98	
99	

Code	Kind
0	Changes in appearance, color, handle, etc.
1	
2	
3	
4	
.	
.	
97	
98	
99	

Code	Kind
	Blank space
C	Customized

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3 Contents

Page

1 Cover Page 1

2 Test Summary 3

3 Contents 6

4 General Information 8

4.1 Details of E.U.T. 8
4.2 Description of Support Units 8
4.3 Measurement Uncertainty 8
4.4 Test Location 9
4.5 Test Facility 9
4.6 Deviation from Standards 9
4.7 Abnormalities from Standard Conditions 9

5 Equipment List 10

6 Radio Spectrum Technical Requirement 13

6.1 Antenna Requirement 13
6.1.1 Test Requirement: 13
6.1.2 Conclusion 13

7 Radio Spectrum Matter Test Results 14

7.1 Conducted Emissions at AC Power Line (150kHz-30MHz) 14
7.1.1 E.U.T. Operation 14
7.1.2 Test Mode Description 14
7.1.3 Test Setup Diagram 15
7.1.4 Measurement Procedure and Data 15
7.2 Radiated Emissions which fall in the restricted bands 19
7.2.1 E.U.T. Operation 19
7.2.2 Test Mode Description 19
7.2.3 Test Setup Diagram 20
7.2.4 Measurement Procedure and Data 20
7.3 Radiated Spurious Emissions Below 1GHz 25
7.3.1 E.U.T. Operation 25
7.3.2 Test Mode Description 25
7.3.3 Test Setup Diagram 25
7.3.4 Measurement Procedure and Data 26
7.4 Radiated Spurious Emissions Above 1GHz 29
7.4.1 E.U.T. Operation 29
7.4.2 Test Mode Description 29
7.4.3 Test Setup Diagram 29
7.4.4 Measurement Procedure and Data 30
7.5 Conducted Peak Output Power 37
7.5.1 E.U.T. Operation 37
7.5.2 Test Mode Description 37
7.5.3 Test Setup Diagram 38

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7.5.4 Measurement Procedure and Data 38
7.6 Minimum 6dB Bandwidth 39
7.6.1 E.U.T. Operation 39
7.6.2 Test Mode Description 39
7.6.3 Test Setup Diagram 39
7.6.4 Measurement Procedure and Data 39
7.7 Power Spectrum Density 40
7.7.1 E.U.T. Operation 40
7.7.2 Test Mode Description 40
7.7.3 Test Setup Diagram 40
7.7.4 Measurement Procedure and Data 40
7.8 Conducted Band Edges Measurement 41
7.8.1 E.U.T. Operation 41
7.8.2 Test Mode Description 41
7.8.3 Test Setup Diagram 41
7.8.4 Measurement Procedure and Data 41
7.9 Conducted Spurious Emissions 42
7.9.1 E.U.T. Operation 42
7.9.2 Test Mode Description 42
7.9.3 Test Setup Diagram 42
7.9.4 Measurement Procedure and Data 42

8 Test Setup Photo 43

9 EUT Constructional Details (EUT Photos) 44

10 Appendix 45

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4 General Information

4.1 Details of E.U.T.

Power supply: AC 400V 50/60Hz
Test voltage: AC 400V, 60Hz
Cable(s): Three phase power line 2.5m
Operation Frequency: 2402MHz to 2480MHz
Modulation Type: GFSK
Number of Channels: 40
Channel Spacing: 2MHz
Antenna Type: Dedicated Antenna
Antenna Gain: 4.63dBi according to antenna specification
Antenna Number: 1

Remark: The information in this section is provided by the applicant or manufacturer, SGS is not liable to the accuracy, suitability, reliability or/and integrity of the information.

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Note Book Computer	LENOVO	ThinkPad T490	PF1D1MVJ

4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Conducted Emissions at AC Power Line (150kHz-30MHz)	±2.76dB
Radiated Emissions which fall in the restricted bands	±5.00dB (30MHz-1GHz; 3m);±4.38dB (30MHz-1GHz; 10m);± 5.12dB (1GHz-6GHz); ±5.38dB (6GHz-18GHz); ±5.61dB(18GHz-40GHz)
Radiated Spurious Emissions Below 1GHz	±5.00dB (3m); ±4.38dB (10m)
Radiated Spurious Emissions Above 1GHz	±5.12dB (1GHz-6GHz); ±5.38dB (6GHz-18GHz); ±5.61dB(18GHz-40GHz)
Conducted Peak Output Power	± 0.75dB
Minimum 6dB Bandwidth	± 3%
Power Spectrum Density	± 2.84dB
Conducted Band Edges Measurement	± 0.75dB
Conducted Spurious Emissions	± 0.75dB

Remark:
The U_{lab} (lab Uncertainty) is less than $U_{cispr/etsi}$ (CISPR/ETSI Uncertainty), so the test results
– compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
– non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.

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4.4 Test Location

All tests were performed at:

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No.198, Kezhu Road, Science City, Economic & Technological Development Area, Guangzhou, Guangdong, China 510663

Tel: +86 20 82155555

No tests were sub-contracted.

4.5 Test Facility

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

- **ACMA**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory can also perform testing for the Australian/New Zealand Regulatory Compliance Mark (RCM).

- **SGS UK(Certificate No.: 32), SGS-TUV SAARLAND and SGS-FIMKO**

Have approved SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory as a supplier of EMC TESTING SERVICES and SAFETY TESTING SERVICES.

- **FCC Recognized Accredited Test Firm(Registration No.: 486818)**

SGS-CSTC Standards Technical Services Co., Ltd., EMC Laboratory has been accredited and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Designation Number: CN5016, Test Firm Registration Number: 486818.

- **ISED (Registration No.: 4620B, CAB identifier: CN0052)**

SGS-CSTC Standards Technical Services Co., Ltd., has been registered by Innovation Science and Economic Development Canada for Wireless Device Testing laboratories to test to Canadian radio equipment requirements. Registration No. 4620B, CAB identifier: CN0052.

- **VCCI (Registration No.: R-12460, C-12584, G-20107 and T-11179)**

The 10m Semi-anechoic chamber, 966 Anechoic Chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-12460, C-12584, G-20107 and T-11179 respectively.

- **CBTL (Lab Code: TL129)**

SGS-CSTC Standards Technical Services Co., Ltd., E&E Laboratory has been assessed and fully comply with the requirements of ISO/IEC 17025:2017, the Basic Rules, IECEE 01 and Rules of procedure IECEE 02, and the relevant IECEE CB-Scheme Operational documents.

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

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5 Equipment List

Conducted Emissions at AC Power Line (150kHz-30MHz)					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
Coaxial Cable	HangTianXing	2m	EMC0107	2023-08-04	2024-08-03
Shielding Room	ChangZhou ZhongYu	8m x 3m x 3.8m	EMC0306	2022-10-16	2025-10-15
Artificial Mains Network (LISN)	AFJ Instruments	LT32C	EMC2046	2023-10-20	2024-10-19
EMI Test Receiver (9kHz-3.6GHz)	Rohde & Schwarz	ESR3	EMC2221	2024-05-13	2025-05-12
Test Software E3r	Audix	Ver.6.11812	GZE100-77	N/A	N/A

Radiated Emissions which fall in the restricted bands					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2023-11-10	2024-11-09
EMI Test Receiver (10Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2023-12-15	2024-12-14
Chamber cable (Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2022-08-24	2024-08-23
Horn Antenna (1GHz-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2022-09-23	2025-09-22
Horn Antenna (14-40GHz)	SCHWARZBECK	BBHA 9170	EMC2041	2023-06-18	2026-06-17
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2023-08-23	2024-08-22
MXE EMI Receiver (10Hz-8.4GHz)	Keysight	N9038A	EMC2139	2023-10-20	2024-10-19
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2023-12-20	2026-12-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

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Radiated Spurious Emissions Below 1GHz					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
10m Semi-Anechoic Chamber	ETS	N/A	EMC0530	2022-10-16	2025-10-15
Coaxial cable	Mirco-COAX UTIFLEX	311A	EMC0540	2023-06-14	2025-06-13
Amplifier (9kHz-1.3GHz)	HP	8447F	EMC2065	2024-06-17	2025-06-16
Active Loop Antenna-RED	ETS-Lindgren	6502	EMC2190	2024-04-08	2026-04-07
EMI Test Receiver (9kHz-7GHz)	Rohde & Schwarz	ESR7	EMC2220	2024-05-13	2025-05-12
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A
Trilog Broadband Antenna (25MHz-1GHz)	SCHWARZBECK MESS-ELEKTRONIK	VULB 9168	EMC2174	2022-06-19	2025-06-18

Radiated Spurious Emissions Above 1GHz					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
1GHz-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2023-11-10	2024-11-09
EMI Test Receiver (10Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2023-12-15	2024-12-14
Chamber cable (Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2022-08-24	2024-08-23
Horn Antenna (1GHz-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2022-09-23	2025-09-22
Horn Antenna (14-40GHz)	SCHWARZBECK	BBHA 9170	EMC2041	2023-06-18	2026-06-17
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2023-11-10	2024-11-09
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2023-08-23	2024-08-22
MXE EMI Receiver (10Hz-8.4GHz)	Keysight	N9038A	EMC2139	2023-10-20	2024-10-19
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2023-12-20	2026-12-19
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

RF Conducted Test					
Equipment	**Manufacturer**	**Model No.**	**Inventory No.**	**Cal Date**	**Cal Due Date**
MI CABLE	SGS-EMC	0.8M	EMC2136	2023-11-02	2025-11-01
4X4 Power sensor Unit	TST	TSPS2023R	EMC2257	2023-08-23	2024-08-22
Test Software	TST	V2.0	GZE100-82	N/A	N/A
EXA Signal Analyzer	Agilent Technologies	N9010A	EMC2222	2024-06-17	2025-06-16

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General used equipment					
Equipment	**Manufacturer**	**Model No**	**Inventory No**	**Cal Date**	**Cal Due Date**
DMM	Fluke	73	EMC0006	2024-06-13	2025-06-12

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6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

47 CFR Part 15, Subpart C 15.203 & 15.247(b)(4)

6.1.2 Conclusion

Standard Requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.15.247(b) (4) requirement: The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 4.63 dBi.

Antenna location: Refer to internal photo.

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7 Radio Spectrum Matter Test Results

7.1 Conducted Emissions at AC Power Line (150kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.207
Test Method: ANSI C63.10 (2013) Section 6.2
Limit:

Frequency of emission (MHz)	Conducted limit (dBμV)	
	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.		
Detector: Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz		

7.1.1 E.U.T. Operation

Operating Environment:
Temperature: 24.1 °C Humidity: 54.9 % RH Atmospheric Pressure: 1003 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Pre-scan	01	TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.

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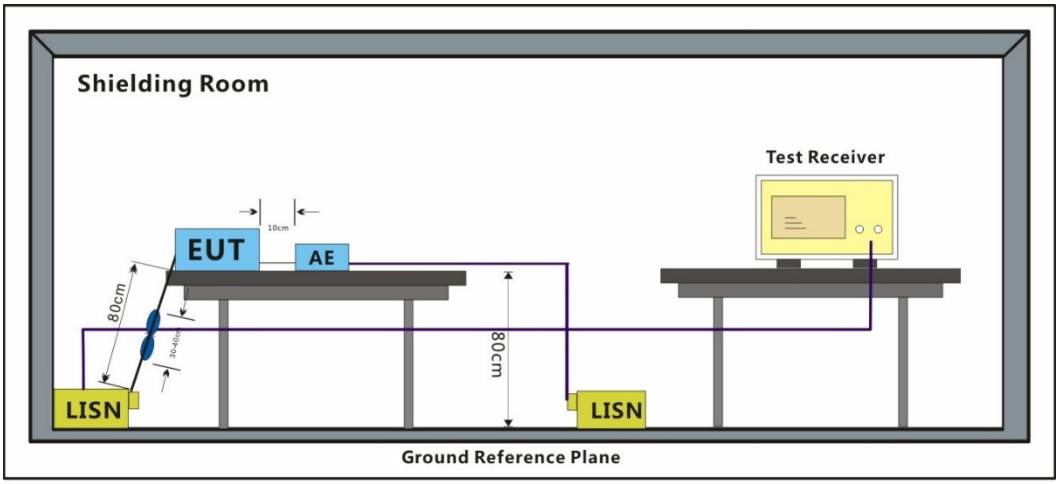
7.1.3 Test Setup Diagram



7.1.4 Measurement Procedure and Data

1) The mains terminal disturbance voltage test was conducted in a shielded room.

2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50μH + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.

3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane.

4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.

5) 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.

Remark: Level=Read Level+ Cable Loss+ LISN Factor

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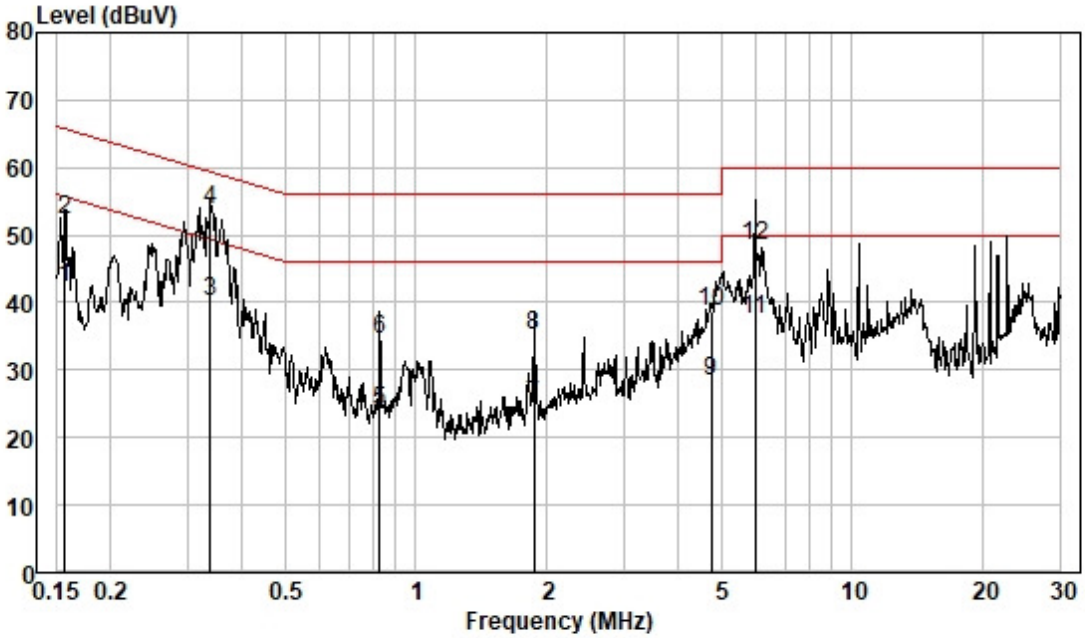
Test Mode: 00; Line: Live 1 line



Pol :LINE
Mode :L1
Model :
Power :

	Frequenc MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
1	0.156	42.13	0.04	0.18	42.35	55.65	-13.30	Average
2	0.156	51.91	0.04	0.18	52.13	65.65	-13.52	QP
3	0.337	40.02	0.05	0.16	40.23	49.27	-9.04	Average
4	0.337	53.63	0.05	0.16	53.84	59.27	-5.43	QP
5	0.826	23.76	0.06	0.18	24.00	46.00	-22.00	Average
6	0.826	34.36	0.06	0.18	34.60	56.00	-21.40	QP
7	1.868	24.39	0.12	0.22	24.73	46.00	-21.27	Average
8	1.868	34.89	0.12	0.22	35.23	56.00	-20.77	QP
9	4.746	27.88	0.19	0.29	28.36	46.00	-17.64	Average
10	4.746	38.17	0.19	0.29	38.65	56.00	-17.35	QP
11	5.993	36.89	0.21	0.34	37.44	50.00	-12.56	Average
12	5.993	47.91	0.21	0.34	48.46	60.00	-11.54	QP

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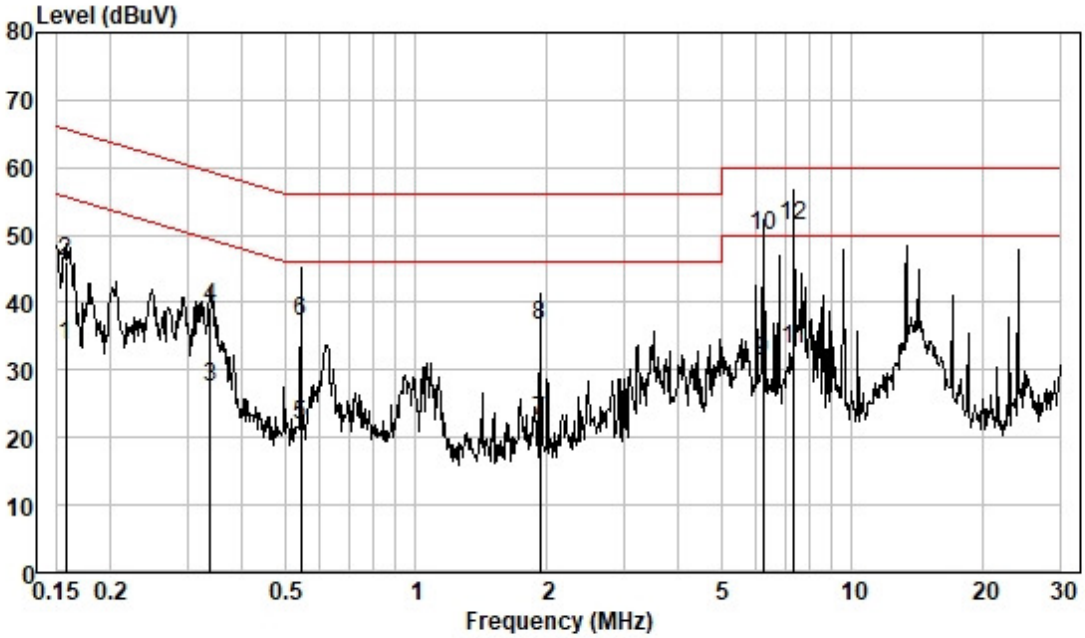
Test Mode: 00; Line: Live 2 line



Pol :LINE
Mode :L2
Model :
Power :

	Frequenc MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
1	0.157	33.32	0.04	0.18	33.54	55.60	-22.06	Average
2	0.157	45.94	0.04	0.18	46.16	65.60	-19.44	QP
3	0.337	27.26	0.05	0.16	27.47	49.27	-21.80	Average
4	0.337	39.18	0.05	0.16	39.39	59.27	-19.88	QP
5	0.544	21.56	0.05	0.17	21.78	46.00	-24.22	Average
6	0.544	36.91	0.05	0.17	37.13	56.00	-18.87	QP
7	1.928	22.06	0.12	0.22	22.40	46.00	-23.60	Average
8	1.928	36.19	0.12	0.22	36.53	56.00	-19.47	QP
9	6.252	30.70	0.21	0.35	31.26	50.00	-18.74	Average
10	6.252	49.28	0.21	0.35	49.84	60.00	-10.16	QP
11	7.368	32.48	0.23	0.40	33.11	50.00	-16.89	Average
12	7.368	50.78	0.23	0.40	51.41	60.00	-8.59	QP

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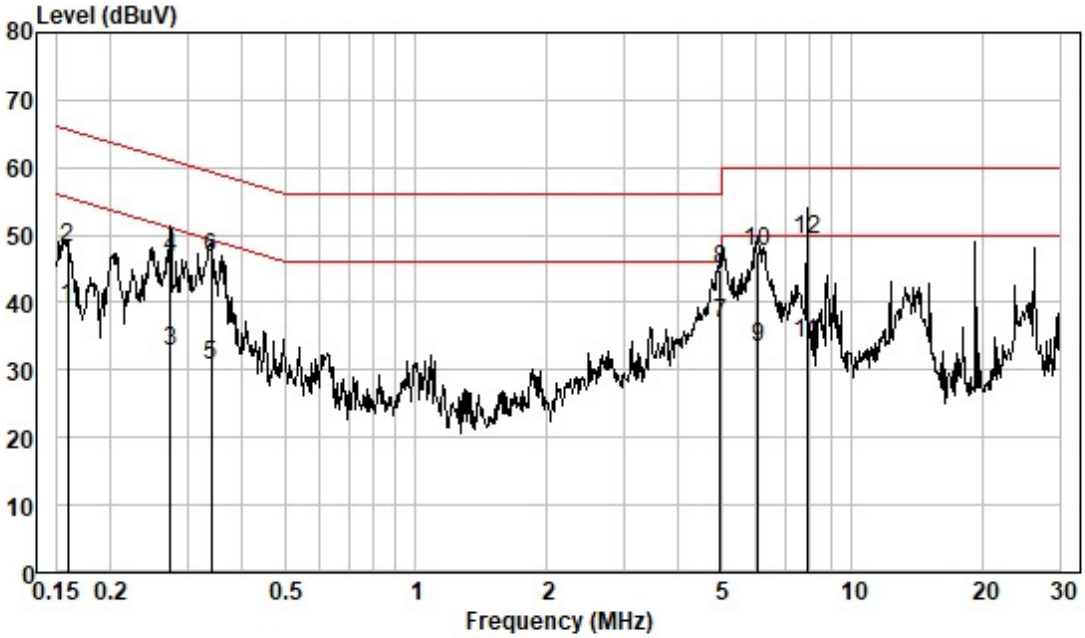

Pol :LINE
Mode :L3
Model :
Power :

	Frequenc MHz	Read Level dBuV	Cable Loss dB	LISN Factor dB	Measured Level dBuV	Limit Line dBuV	Over Limit dB	Remark
1	0.159	39.07	0.04	0.18	39.29	55.52	-16.23	Average
2	0.159	47.83	0.04	0.18	48.05	65.52	-17.47	QP
3	0.273	32.48	0.04	0.16	32.68	51.03	-18.35	Average
4	0.273	46.33	0.04	0.16	46.53	61.03	-14.50	QP
5	0.339	30.49	0.05	0.16	30.70	49.22	-18.52	Average
6	0.339	46.54	0.05	0.16	46.75	59.22	-12.47	QP
7	4.978	36.43	0.20	0.29	36.92	46.00	-9.08	Average
8	4.978	44.35	0.20	0.29	44.84	56.00	-11.16	QP
9	6.089	32.66	0.21	0.34	33.21	50.00	-16.79	Average
10	6.089	47.08	0.21	0.34	47.63	60.00	-12.37	QP
11	7.893	33.38	0.23	0.42	34.03	50.00	-15.97	Average
12	7.893	48.57	0.23	0.42	49.22	60.00	-10.78	QP

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7.2 Radiated Emissions which fall in the restricted bands

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2013) Section 11.12

Limit:

Test Distance: 3 m

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3
Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.		

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 25.2 °C Humidity: 55.0 % RH Atmospheric Pressure: 1003 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Pre-scan	01	TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.

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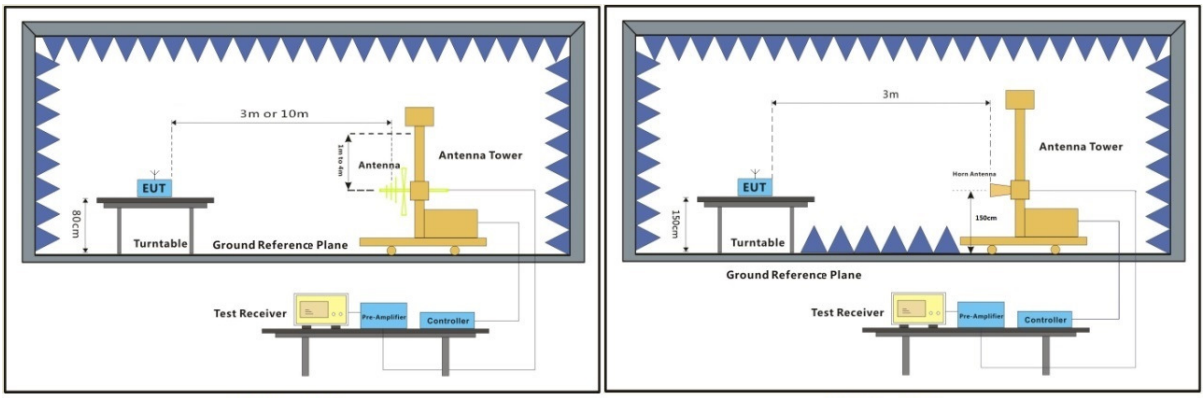
7.2.3 Test Setup Diagram



30MHz-1GHz Above 1GHz

7.2.4 Measurement Procedure and Data

a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

d. 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.

e. 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

g. 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.

h. Test the EUT in the lowest channel, the Highest channel.

i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

j. Repeat above procedures until all frequencies measured was complete.

Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

Remark 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

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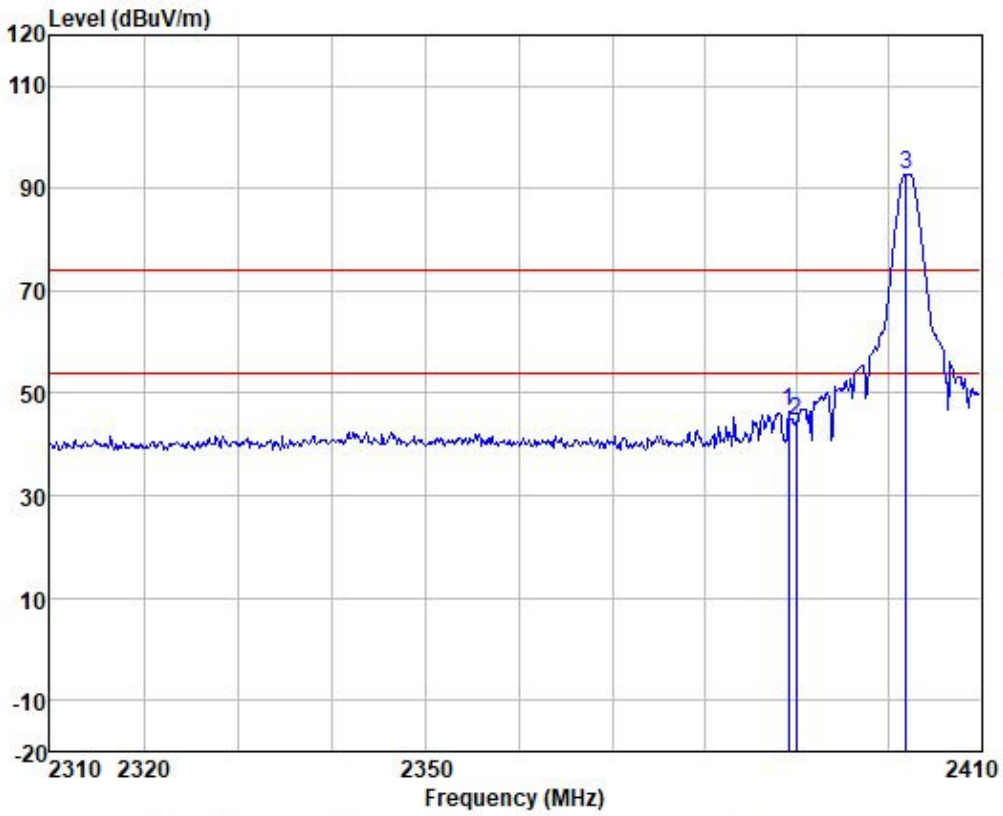
Test Mode: 00; Polarity: Vertical; Modulation:GFSK; Channel:Low



		Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1		2389.153	52.46	27.68	3.54	37.22	46.46	74.00	-27.54	VERTICAL	peak
2		2390.000	50.72	27.68	3.54	37.21	44.73	74.00	-29.27	VERTICAL	peak
3	*	2402.000	98.59	27.71	3.56	37.21	92.65	74.00	18.65	VERTICAL	peak

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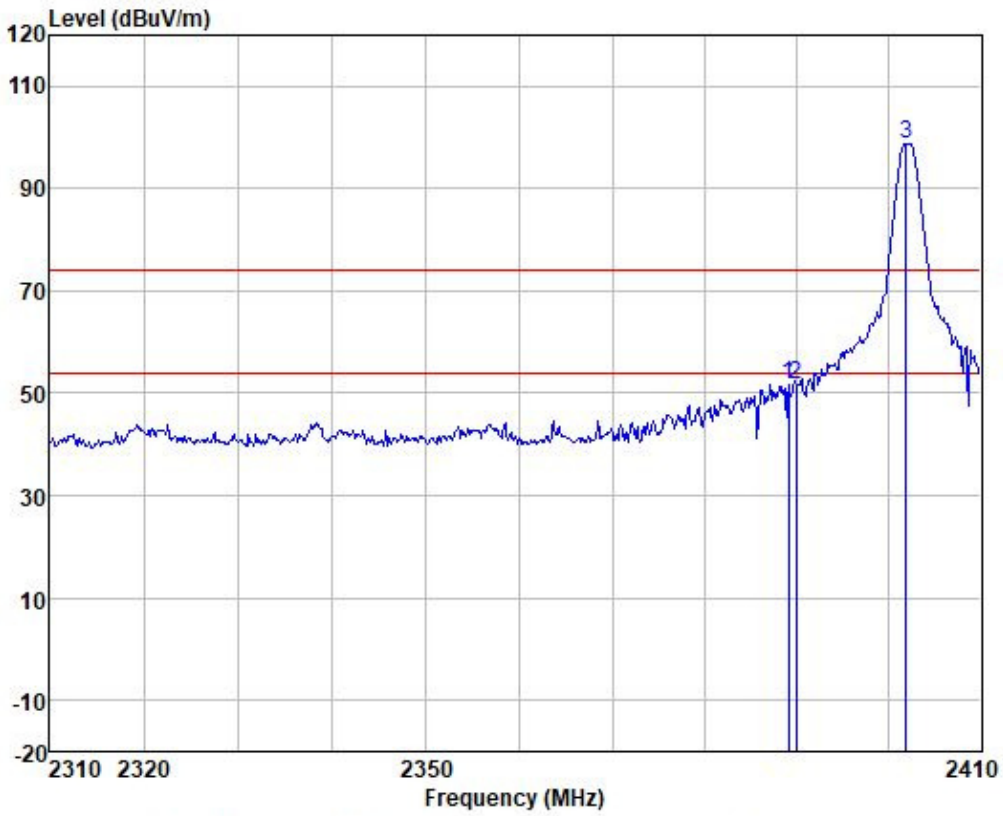
Test Mode: 00; Polarity: Horizontal; Modulation:GFSK; Channel:Low



		Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1		2389.153	57.55	27.68	3.54	37.22	51.55	74.00	-22.45	HORIZONTAL	peak
2		2390.000	57.67	27.68	3.54	37.21	51.68	74.00	-22.32	HORIZONTAL	peak
3	*	2402.000	104.55	27.71	3.56	37.21	98.61	74.00	24.61	HORIZONTAL	peak

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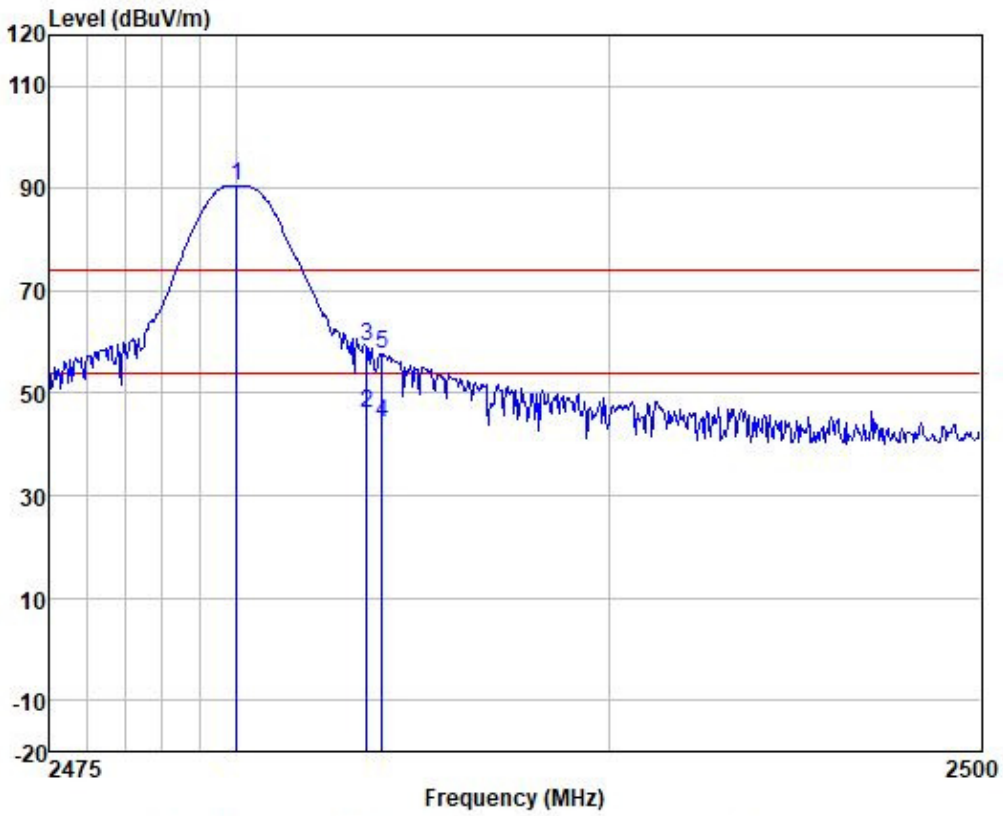
Test Mode: 00; Polarity: Vertical; Modulation:GFSK; Channel:High



		Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	*	2480.000	96.09	27.84	3.72	37.19	90.46	74.00	16.46	VERTICAL	peak
2		2483.500	51.65	27.85	3.74	37.19	46.05	54.00	-7.95	VERTICAL	Average
3		2483.500	64.63	27.85	3.74	37.19	59.03	74.00	-14.97	VERTICAL	peak
4		2483.921	49.69	27.85	3.74	37.19	44.09	54.00	-9.91	VERTICAL	Average
5		2483.921	63.42	27.85	3.74	37.19	57.82	74.00	-16.18	VERTICAL	peak

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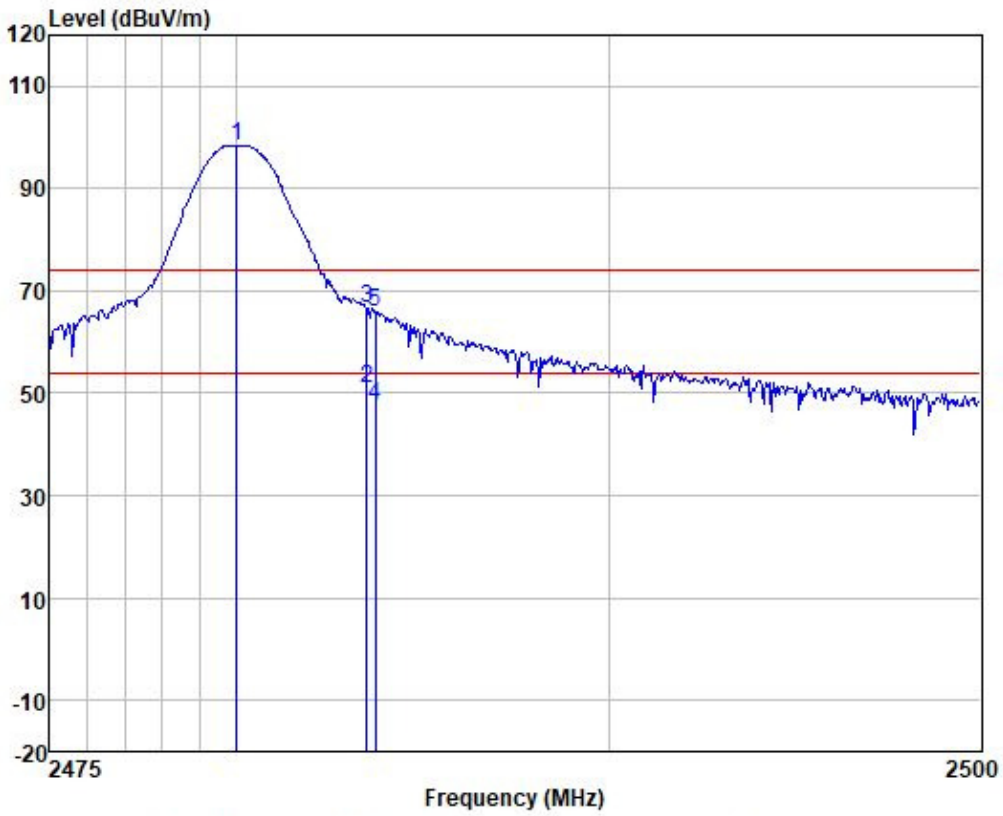
Test Mode: 00; Polarity: Horizontal; Modulation:GFSK; Channel:High



		Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
		MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	*	2480.000	104.01	27.84	3.72	37.19	98.38	74.00	24.38	HORIZONTAL	peak
2		2483.500	56.58	27.85	3.74	37.19	50.98	54.00	-3.02	HORIZONTAL	Average
3		2483.500	72.18	27.85	3.74	37.19	66.58	74.00	-7.42	HORIZONTAL	peak
4		2483.721	53.16	27.85	3.74	37.19	47.56	54.00	-6.44	HORIZONTAL	Average
5		2483.721	71.58	27.85	3.74	37.19	65.98	74.00	-8.02	HORIZONTAL	peak

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7.3 Radiated Spurious Emissions Below 1GHz

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2013) Section 6.4,6.5

Limit:

Test Distance: 10 m

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
960-1000	500	3

7.3.1 E.U.T. Operation

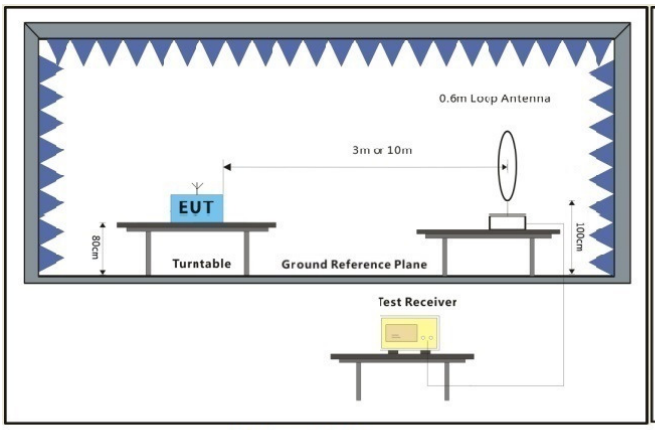
Operating Environment:

Temperature: 23.6 °C Humidity: 58.3 % RH Atmospheric Pressure: 1003 mbar

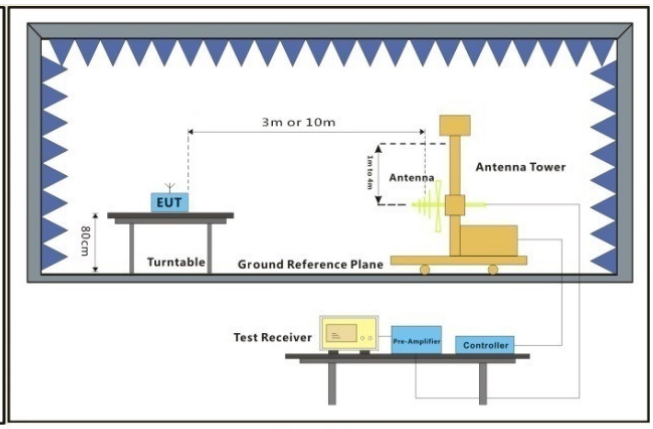
7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Pre-scan	01	TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.3.3 Test Setup Diagram



Below 30MHz



30MHz-1GHz

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7.3.4 Measurement Procedure and Data

a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. 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.

d. 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. 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 quasi-peak method as specified and then reported in a data sheet.

g. Test the EUT in the lowest channel, the middle channel, the Highest channel.

h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

i. Repeat above procedures until all frequencies measured was complete.

Remark:

1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

2. Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

3. Convert Factor (dB)=20*Log(3m/10m)

4. Level @ 3m (dBuV/m)= Level @ 10m (dBuV/m) - Convert Factor (dB)

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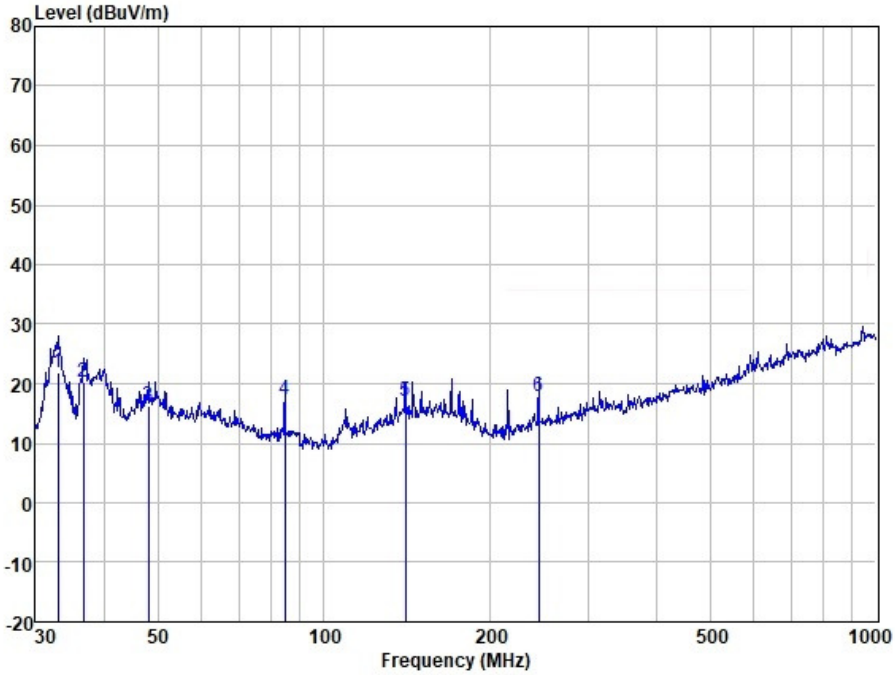
Test Mode: 00; Polarity: Horizontal



Site : SGS
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/ Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	32.979	36.70	12.85	0.38	28.16	21.77			HORIZONTAL	QP
2	36.637	34.76	13.20	0.41	28.14	20.23			HORIZONTAL	QP
3	47.994	29.95	13.97	0.46	28.10	16.28			HORIZONTAL	QP
4	84.999	36.77	8.18	0.61	28.10	17.46			HORIZONTAL	QP
5	140.342	31.22	13.05	0.79	27.95	17.11			HORIZONTAL	QP
6	245.090	32.74	11.69	1.07	27.52	17.98			HORIZONTAL	QP

Frequency (MHz)	Level @10m (dBuV/m)	Limit @3m (dBuV/m)	Convert Factor (dB)	Level @ 3m (dBuV/m)	Over limit (dB)	Remark
32.979	21.77	40.00	-10.46	32.23	-7.77	QP
36.637	20.23	40.00	-10.46	30.69	-9.31	QP
47.994	16.28	40.00	-10.46	26.74	-13.26	QP
84.999	17.46	40.00	-10.46	27.92	-12.08	QP
140.342	17.11	43.52	-10.46	27.57	-15.95	QP
245.09	17.98	46.02	-10.46	28.44	-17.58	QP

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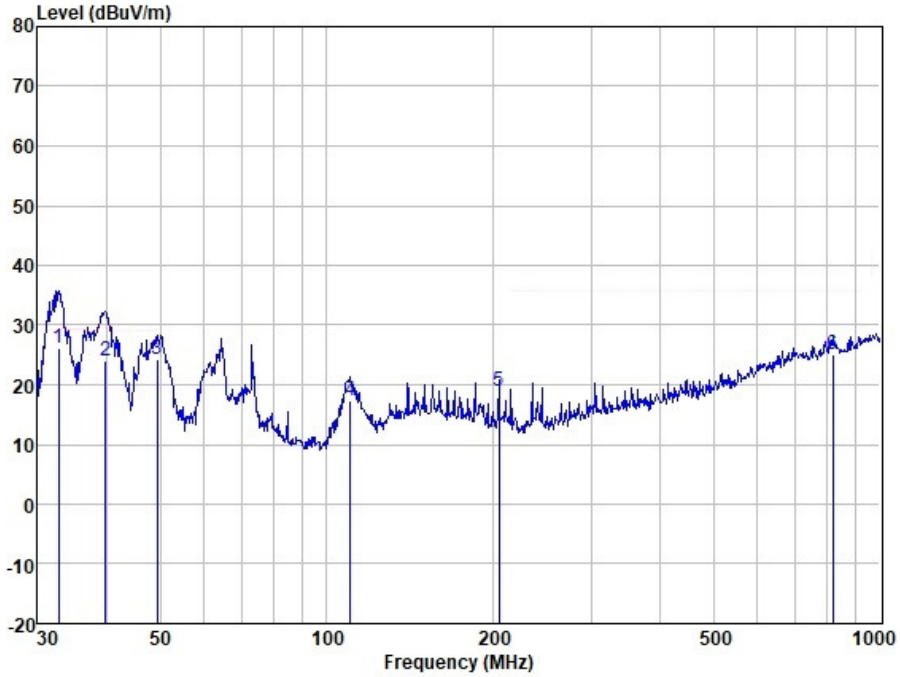
Test Mode: 00; Polarity: Vertical



Site : SGS
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Anterna Factor	Cable Loss	Preamp Factor	Measured Level	Limit Line	Over Limit	Pol/ Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	32.749	41.00	12.85	0.38	28.16	26.07			VERTICAL	QP
2	39.854	38.10	13.50	0.42	28.13	23.89			VERTICAL	QP
3	49.359	37.90	13.98	0.47	28.10	24.25			VERTICAL	QP
4	110.182	34.36	10.45	0.70	28.08	17.43			VERTICAL	QP
5	204.955	35.47	10.02	0.96	27.60	18.85			VERTICAL	QP
6	821.710	28.23	23.38	1.95	28.48	25.08			VERTICAL	QP

Frequency (MHz)	Level @10m (dBuV/m)	Limit @3m (dBuV/m)	Convert Factor (dB)	Level @ 3m (dBuV/m)	Over limit (dB)	Remark
32.749	26.07	40.00	-10.46	36.53	-3.47	QP
39.854	23.89	40.00	-10.46	34.35	-5.65	QP
49.359	24.25	40.00	-10.46	34.71	-5.29	QP
110.182	17.43	43.52	-10.46	27.89	-15.63	QP
204.955	18.85	43.52	-10.46	29.31	-14.21	QP
821.71	25.08	46.02	-10.46	35.54	-10.48	QP

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7.4 Radiated Spurious Emissions Above 1GHz

Test Requirement 47 CFR Part 15, Subpart C 15.205 & 15.209

Test Method: ANSI C63.10 (2013) Section 6.6

Limit:

Frequency (MHz)	Field strength (microvolts/meter)	Measurement distance(meters)
Above 1000	500	3

7.4.1 E.U.T. Operation

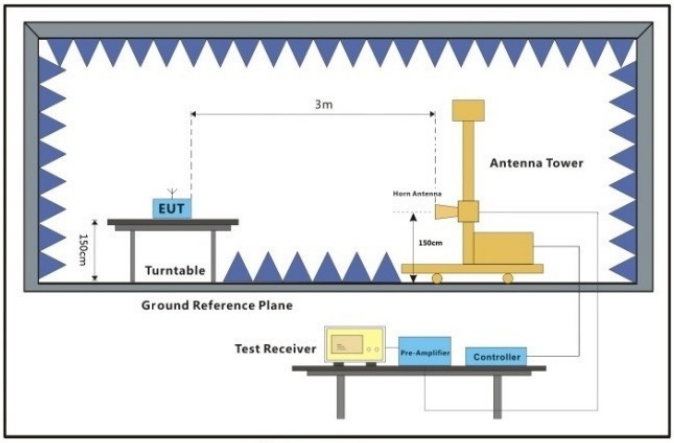
Operating Environment:

Temperature: 25.2 °C Humidity: 55.0 % RH Atmospheric Pressure: 1003 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Pre-scan	01	TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.4.3 Test Setup Diagram



Above 1GHz

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7.4.4 Measurement Procedure and Data

a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. 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.

d. 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 (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f. 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 or average method as specified and then reported in a data sheet.

g. Test the EUT in the lowest channel, the middle channel, the Highest channel.

h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

i. Repeat above procedures until all frequencies measured was complete.

Remark:

1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

2. Scan from 1GHz to 25GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.

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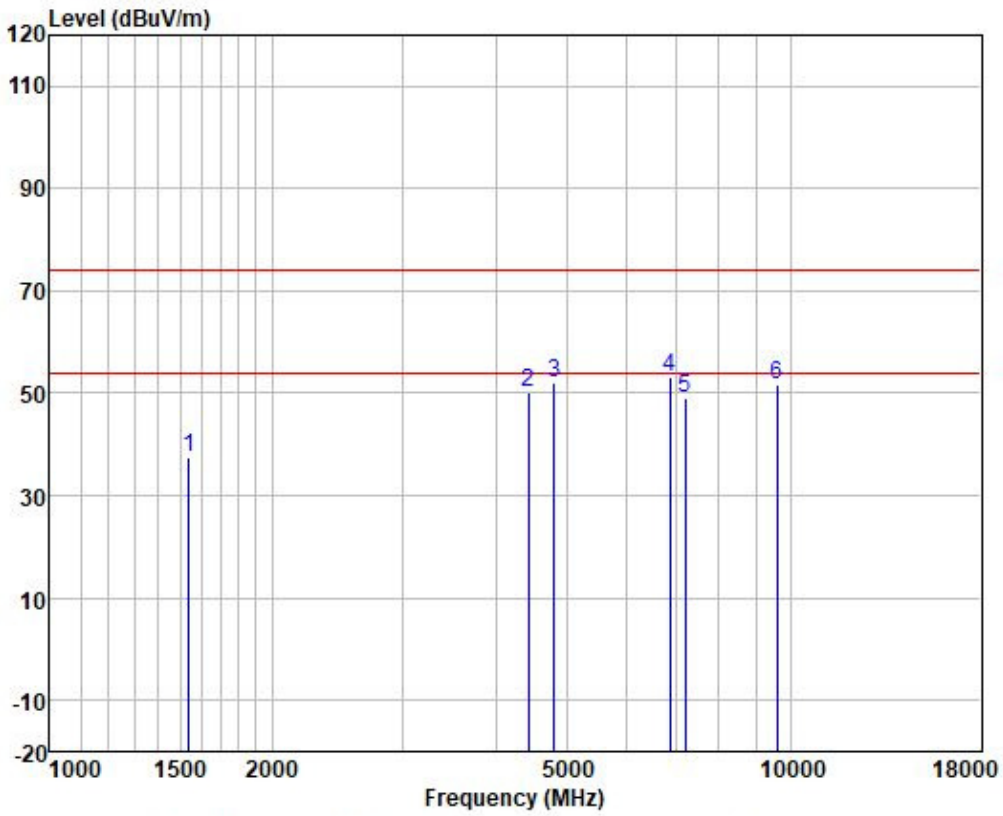
Test Mode: 00; Polarity: Vertical; Modulation:GFSK; Channel:Low



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1542.733	47.43	24.53	3.08	37.48	37.56	74.00	-36.44	VERTICAL	peak
2	4430.628	47.07	33.87	5.79	36.63	50.10	74.00	-23.90	VERTICAL	peak
3	4804.000	48.79	34.16	5.85	36.66	52.14	74.00	-21.86	VERTICAL	peak
4	6874.906	47.78	34.88	7.46	36.87	53.25	74.00	-20.75	VERTICAL	peak
5	7206.000	42.76	35.63	7.53	36.93	48.99	74.00	-25.01	VERTICAL	peak
6	9608.000	41.85	38.68	8.10	36.82	51.81	74.00	-22.19	VERTICAL	peak

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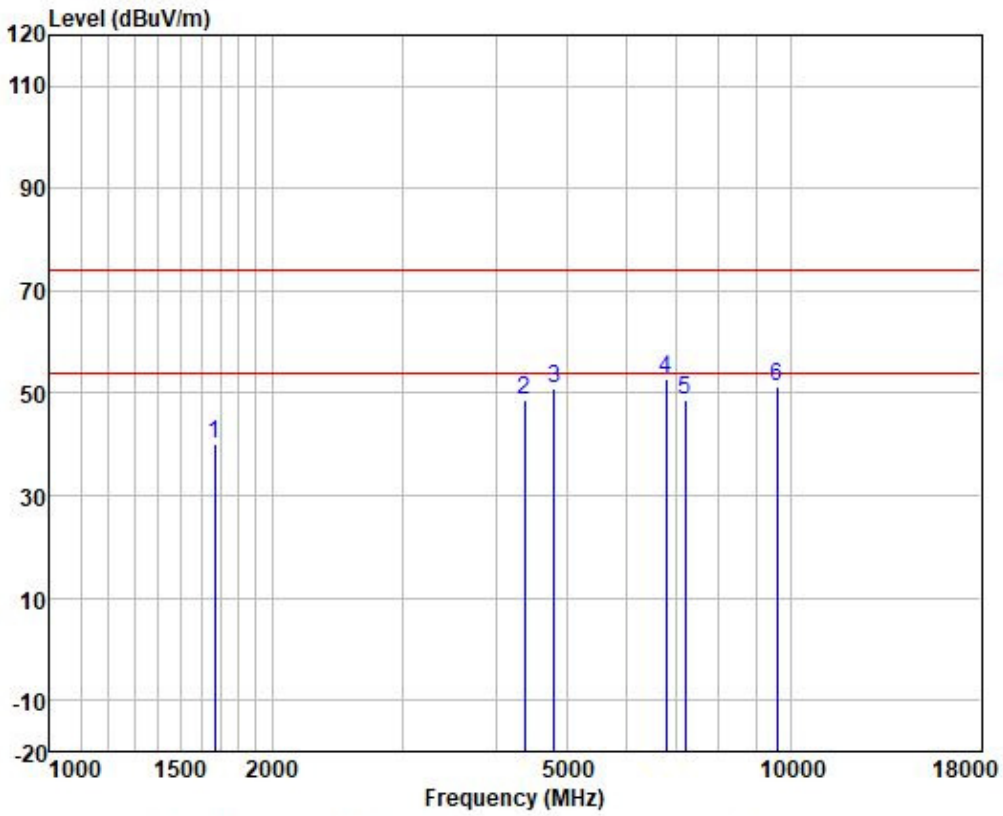
Test Mode: 00; Polarity: Horizontal; Modulation:GFSK; Channel:Low



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1672.779	49.18	24.98	3.17	37.41	39.92	74.00	-34.08	HORIZONTAL	peak
2	4379.699	45.88	33.59	5.78	36.62	48.63	74.00	-25.37	HORIZONTAL	peak
3	4804.000	47.75	34.16	5.85	36.66	51.10	74.00	-22.90	HORIZONTAL	peak
4	6795.879	47.40	34.69	7.42	36.86	52.65	74.00	-21.35	HORIZONTAL	peak
5	7206.000	42.61	35.63	7.53	36.93	48.84	74.00	-25.16	HORIZONTAL	peak
6	9608.000	41.49	38.68	8.10	36.82	51.45	74.00	-22.55	HORIZONTAL	peak

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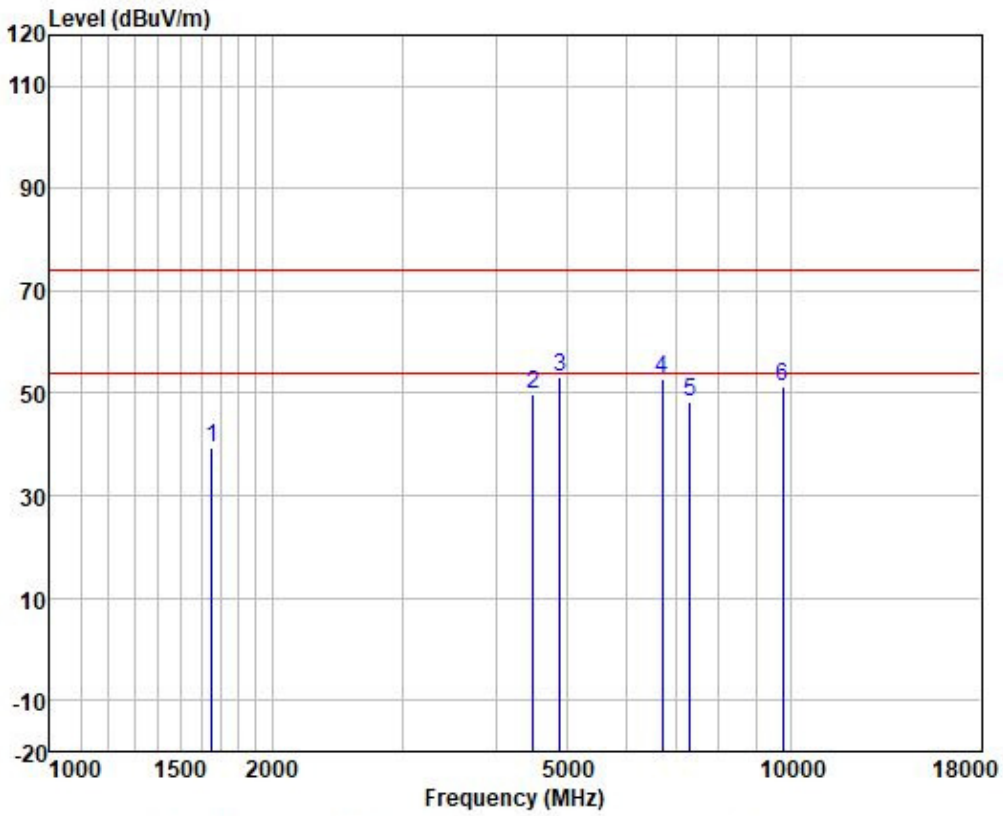
Test Mode: 00; Polarity: Vertical; Modulation:GFSK; Channel:middle



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1653.550	48.88	24.89	3.16	37.41	39.52	74.00	-34.48	VERTICAL	peak
2	4495.125	46.37	34.17	5.81	36.63	49.72	74.00	-24.28	VERTICAL	peak
3	4880.000	49.79	34.15	5.85	36.67	53.12	74.00	-20.88	VERTICAL	peak
4	6717.762	47.67	34.42	7.38	36.85	52.62	74.00	-21.38	VERTICAL	peak
5	7320.000	41.55	36.07	7.55	36.95	48.22	74.00	-25.78	VERTICAL	peak
6	9760.000	41.13	38.81	8.17	36.81	51.30	74.00	-22.70	VERTICAL	peak

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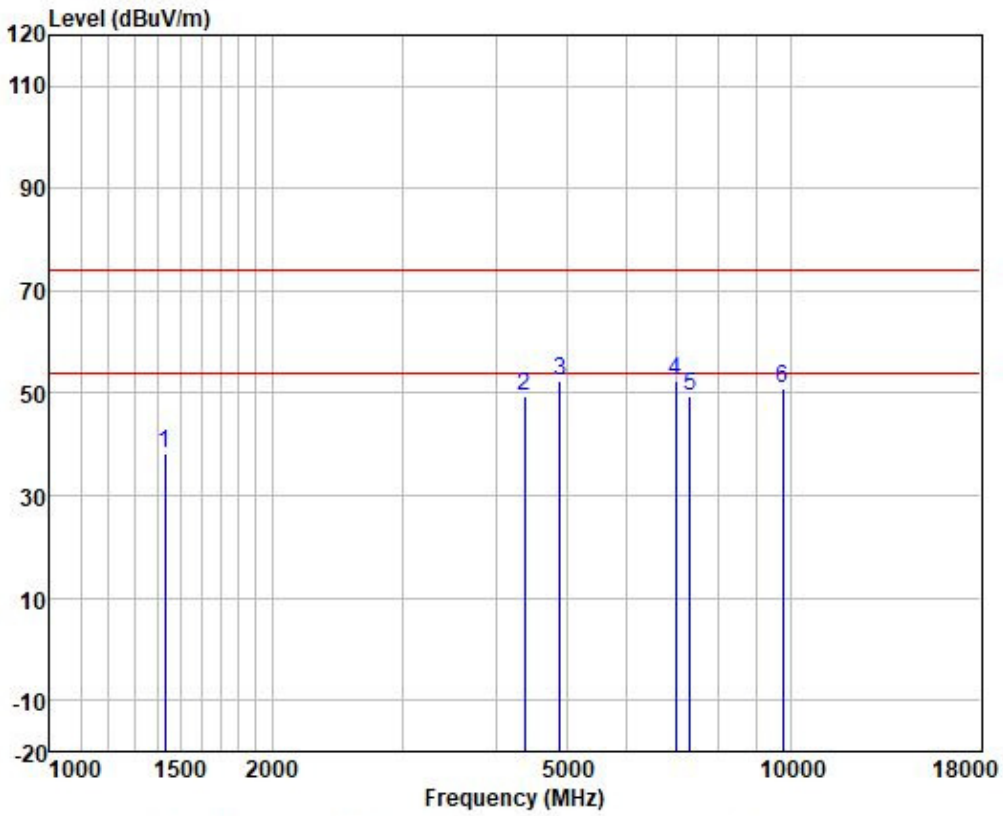

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1431.047	48.50	24.32	2.91	37.55	38.18	74.00	-35.82	HORIZONTAL	peak
2	4379.699	46.77	33.59	5.78	36.62	49.52	74.00	-24.48	HORIZONTAL	peak
3	4880.000	48.95	34.15	5.85	36.67	52.28	74.00	-21.72	HORIZONTAL	peak
4	6995.172	46.57	35.11	7.51	36.89	52.30	74.00	-21.70	HORIZONTAL	peak
5	7320.000	42.63	36.07	7.55	36.95	49.30	74.00	-24.70	HORIZONTAL	peak
6	9760.000	40.66	38.81	8.17	36.81	50.83	74.00	-23.17	HORIZONTAL	peak

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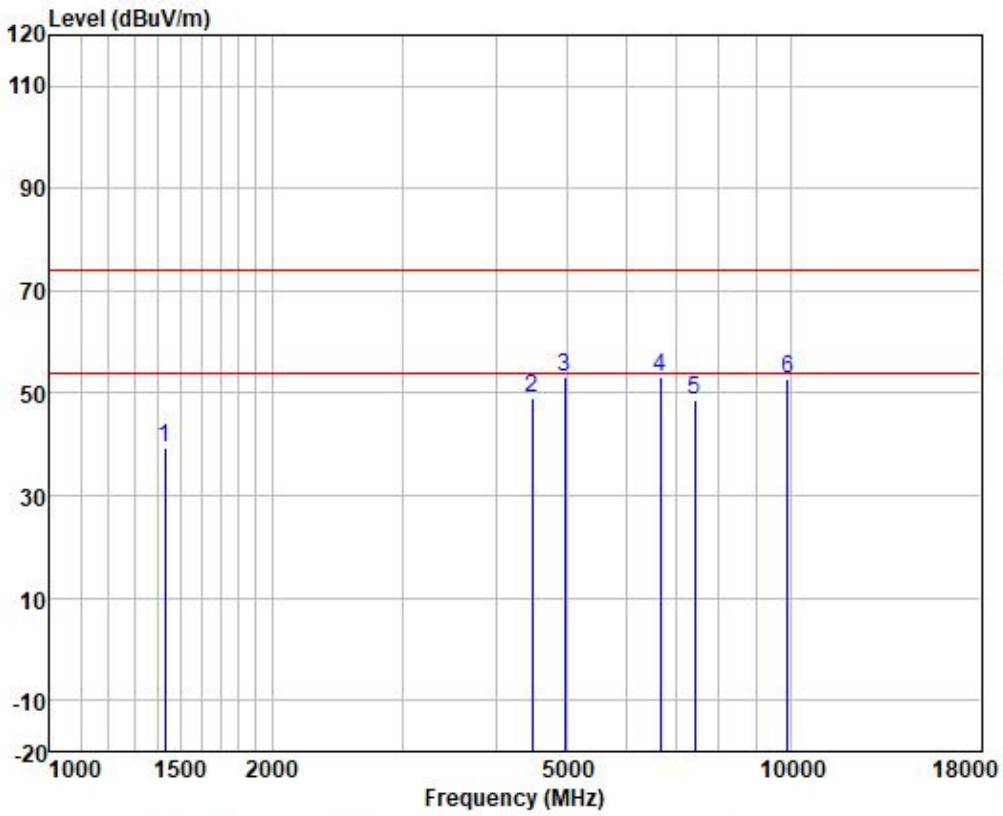

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1431.047	49.63	24.32	2.91	37.55	39.31	74.00	-34.69	VERTICAL	peak
2	4482.150	45.78	34.12	5.80	36.63	49.07	74.00	-24.93	VERTICAL	peak
3	4960.000	49.77	34.15	5.86	36.69	53.09	74.00	-20.91	VERTICAL	peak
4	6679.040	48.47	34.28	7.35	36.85	53.25	74.00	-20.75	VERTICAL	peak
5	7440.000	41.73	36.33	7.58	36.96	48.68	74.00	-25.32	VERTICAL	peak
6	9920.000	42.59	38.95	8.23	36.80	52.97	74.00	-21.03	VERTICAL	peak

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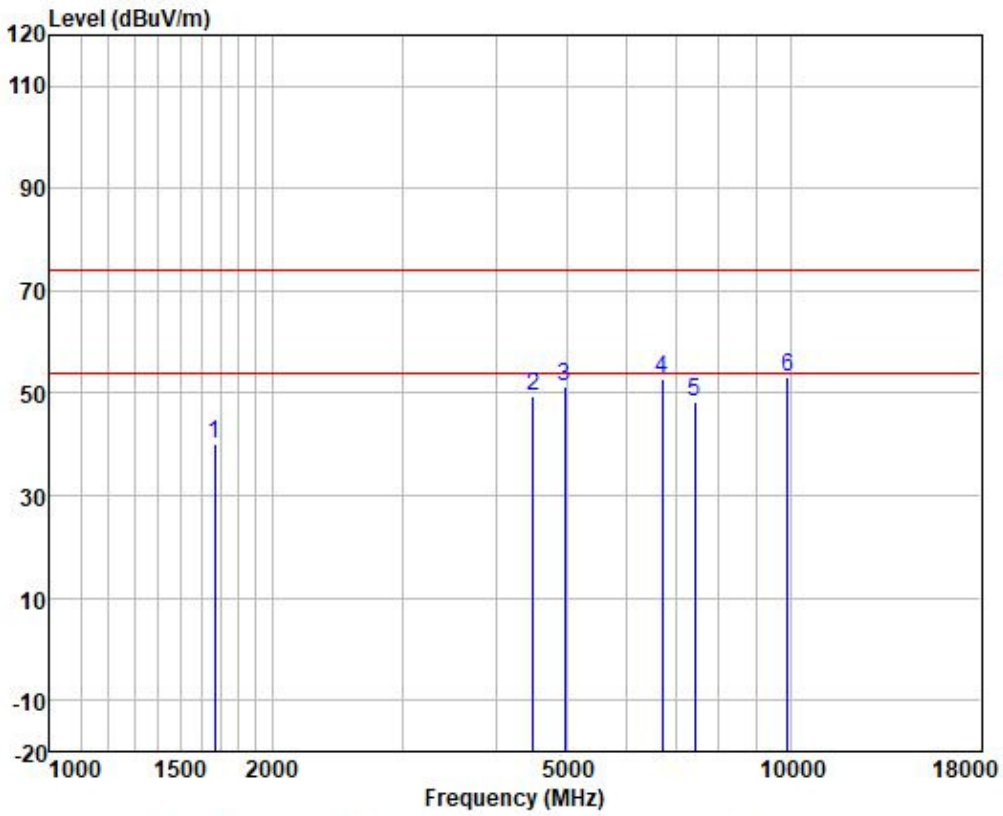
Test Mode: 00; Polarity: Horizontal; Modulation:GFSK; Channel:High



	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1672.779	49.46	24.98	3.17	37.41	40.20	74.00	-33.80	HORIZONTAL	peak
2	4495.125	46.16	34.17	5.81	36.63	49.51	74.00	-24.49	HORIZONTAL	peak
3	4960.000	47.84	34.15	5.86	36.69	51.16	74.00	-22.84	HORIZONTAL	peak
4	6717.762	47.81	34.42	7.38	36.85	52.76	74.00	-21.24	HORIZONTAL	peak
5	7440.000	41.22	36.33	7.58	36.96	48.17	74.00	-25.83	HORIZONTAL	peak
6	9920.000	42.70	38.95	8.23	36.80	53.08	74.00	-20.92	HORIZONTAL	peak

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7.5 Conducted Peak Output Power

Test Requirement 47 CFR Part 15, Subpart C 15.247(b)(3)

Test Method: ANSI C63.10 (2013) Section 11.9.1

Limit:

Frequency range(MHz)	Output power of the intentional radiator(watt)
902-928	1 for ≥50 hopping channels
	0.25 for 25≤ hopping channels <50
	1 for digital modulation
2400-2483.5	1 for ≥75 non-overlapping hopping channels
	0.125 for all other frequency hopping systems
	1 for digital modulation
5725-5850	1 for frequency hopping systems and digital modulation

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 22.3 °C Humidity: 63.4 % RH Atmospheric Pressure: 1003 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	01	TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.

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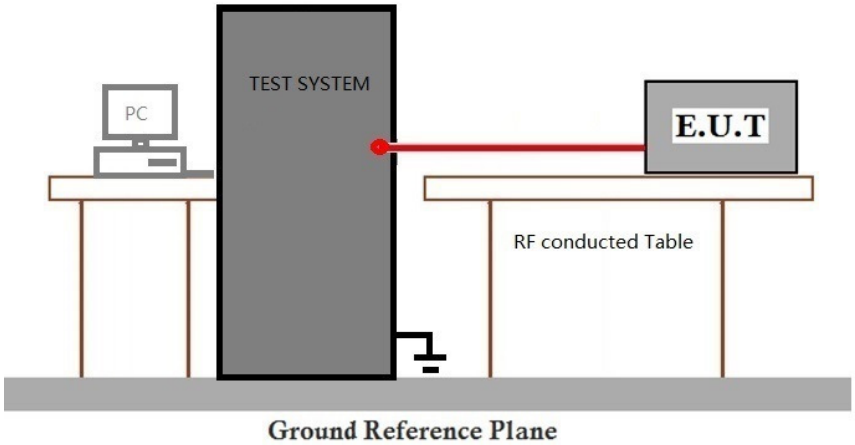
7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

Note: Since the verify power the same operating range bandwidth and smaller power can be covered by the higher power.

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7.6 Minimum 6dB Bandwidth

Test Requirement	47 CFR Part 15, Subpart C 15.247a(2)
Test Method:	ANSI C63.10 (2013) Section 11.8.1
Limit:	≥500 kHz

7.6.1 E.U.T. Operation

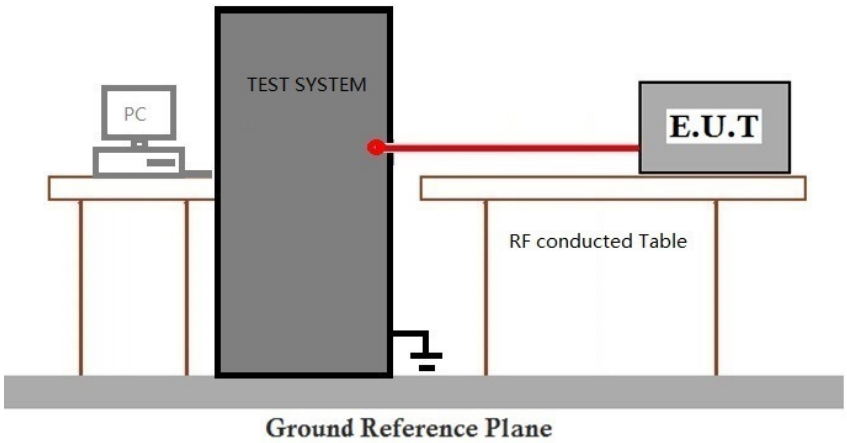
Operating Environment:

Temperature: 22.3 °C Humidity: 63.4 % RH Atmospheric Pressure: 1003 mbar

7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	01	TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.6.3 Test Setup Diagram



7.6.4 Measurement Procedure and Data

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7.7 Power Spectrum Density

Test Requirement 47 CFR Part 15, Subpart C 15.247(e)

Test Method: ANSI C63.10 (2013) Section 11.10.2

Limit:

≤8dBm in any 3 kHz band during any time interval of continuous transmission

7.7.1 E.U.T. Operation

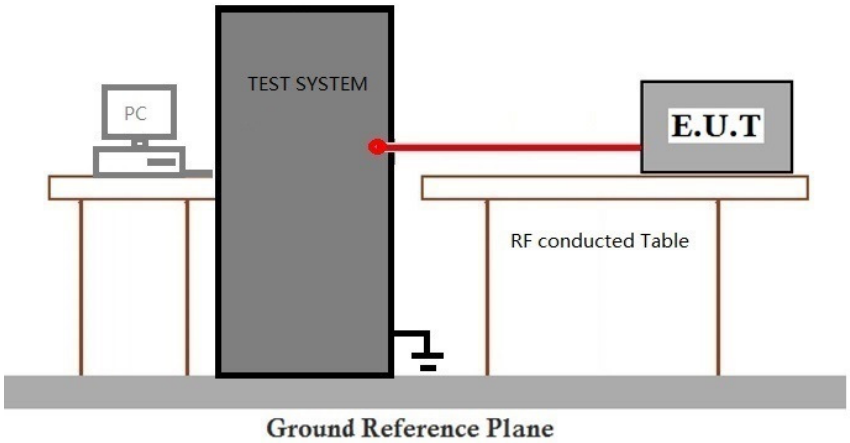
Operating Environment:

Temperature: 22.3 °C Humidity: 63.4 % RH Atmospheric Pressure: 1003 mbar

7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	01	TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.7.3 Test Setup Diagram



7.7.4 Measurement Procedure and Data

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7.8 Conducted Band Edges Measurement

Test Requirement 47 CFR Part 15, Subpart C 15.247(d)

Test Method: ANSI C63.10 (2013) Section 11.13.3.2

Limit:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c).

7.8.1 E.U.T. Operation

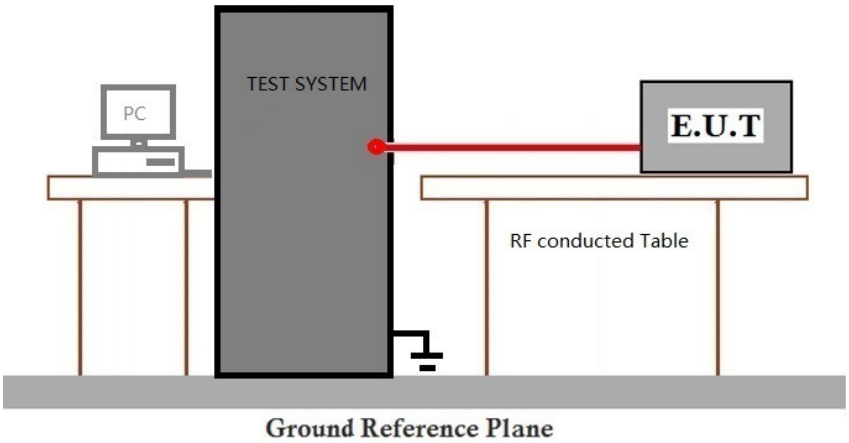
Operating Environment:

Temperature: 22.3 °C Humidity: 63.4 % RH Atmospheric Pressure: 1003 mbar

7.8.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	01	TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.8.3 Test Setup Diagram



7.8.4 Measurement Procedure and Data

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7.9 Conducted Spurious Emissions

Test Requirement 47 CFR Part 15, Subpart C 15.247(d)

Test Method: ANSI C63.10 (2013) Section 11.11

Limit:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated 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, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c).

7.9.1 E.U.T. Operation

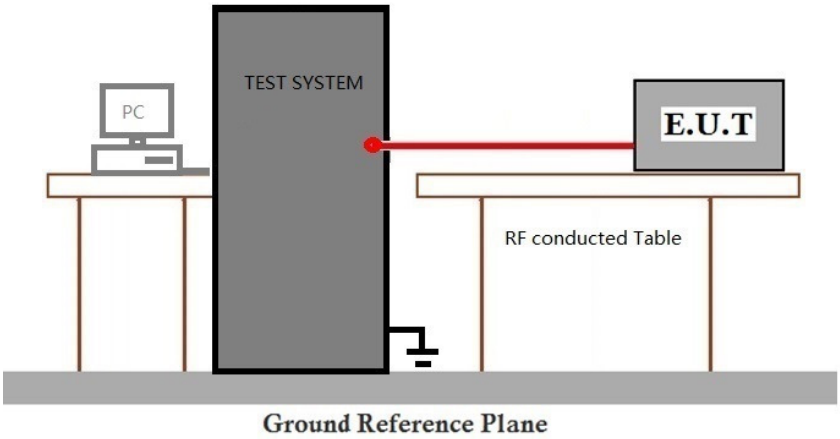
Operating Environment:

Temperature: 22.3 °C Humidity: 63.4 % RH Atmospheric Pressure: 1003 mbar

7.9.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	01	TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.9.3 Test Setup Diagram



7.9.4 Measurement Procedure and Data

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8 Test Setup Photo

Refer to Appendix - Test Setup Photo for GZCR240600060701

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9 EUT Constructional Details (EUT Photos)

Refer to Appendix - External and Internal Photos for GZCR2406000607MD

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10 Appendix

1. Duty Cycle

1.1 Test Result

1.1.1 Ant1

Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
1M	SISO	2402	0.108	0.625	17.28	7.62	0.03
		2440	0.108	0.625	17.28	7.62	0.03
		2480	0.108	0.625	17.28	7.62	0.00
2M	SISO	2402	0.065	0.625	10.40	9.83	0.00
		2440	0.066	0.625	10.56	9.76	0.03
		2480	0.066	0.625	10.56	9.76	0.03

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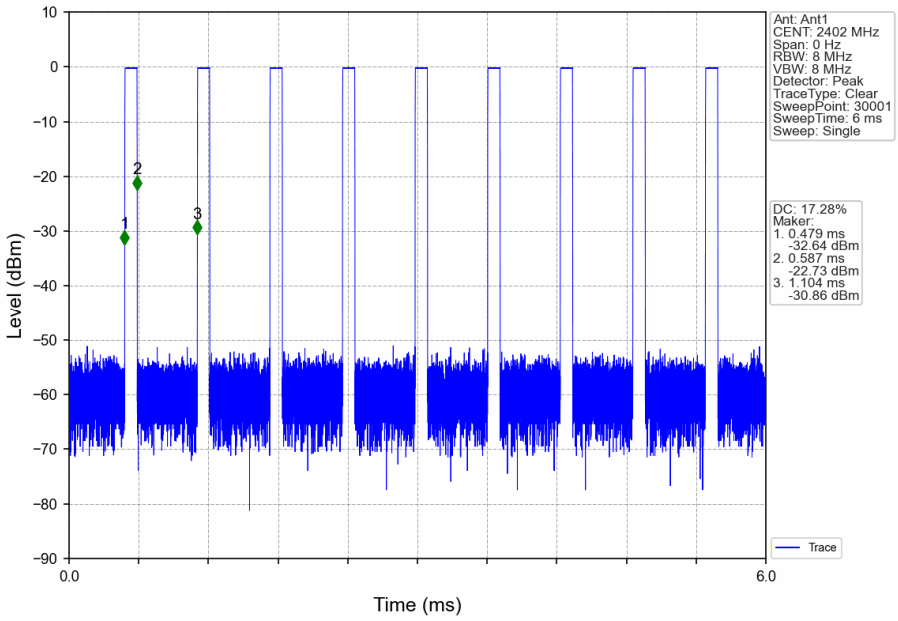
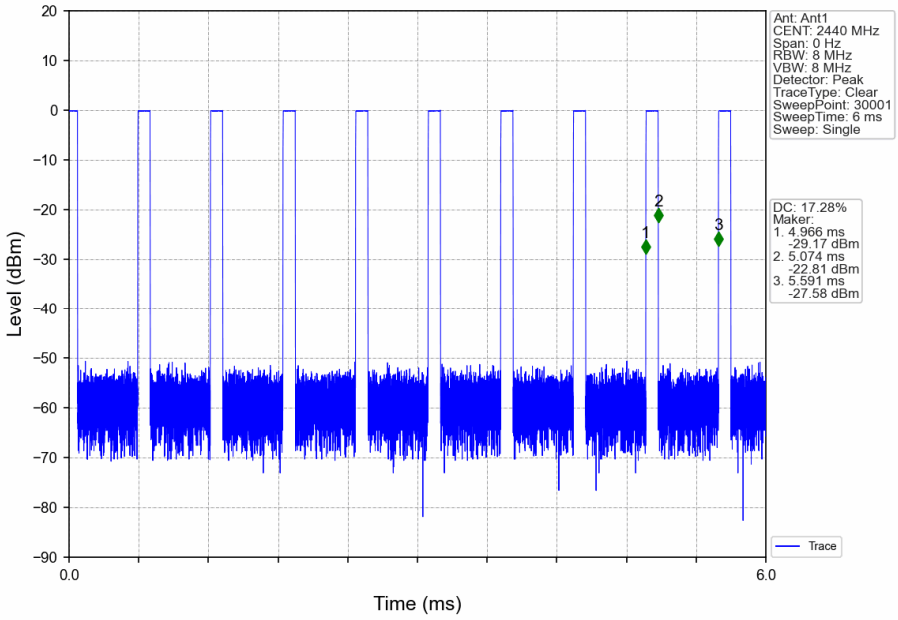
1.2 Test Graph

1.2.1 Ant1

1M_LCH_2402MHz_Ant1_NTNV



1M_MCH_2440MHz_Ant1_NTNV



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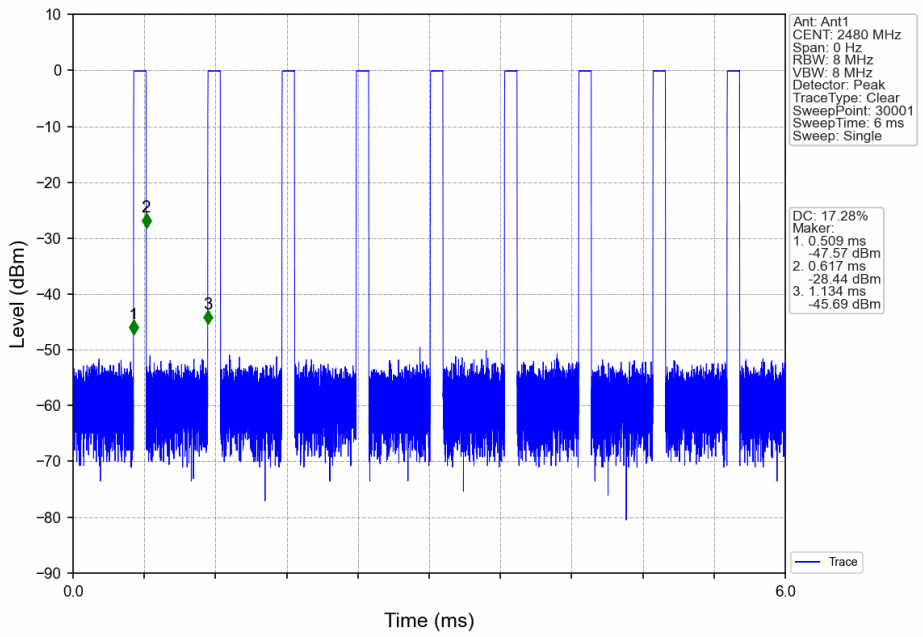
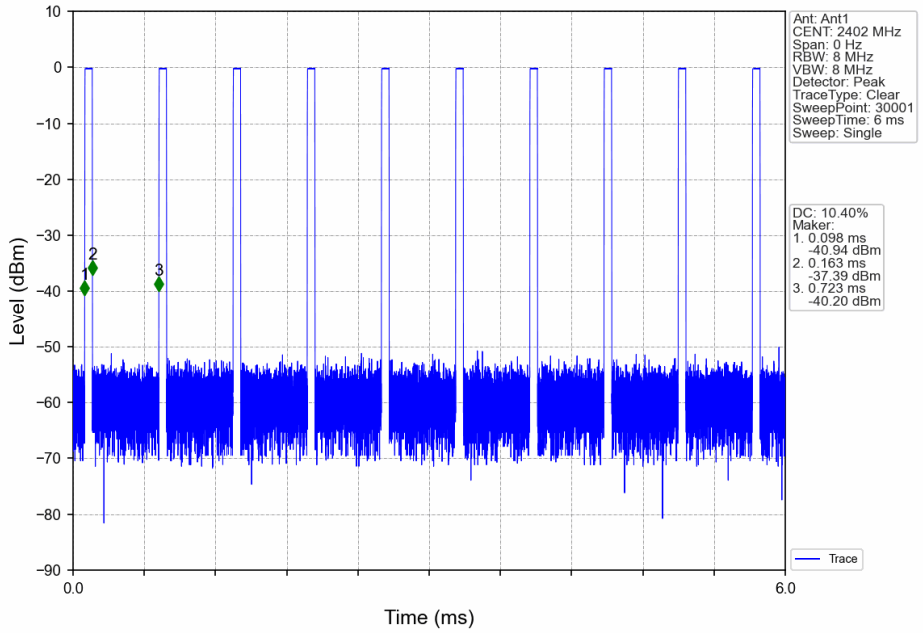
1M_HCH_2480MHz_Ant1_NTNV



2M_LCH_2402MHz_Ant1_NTNV



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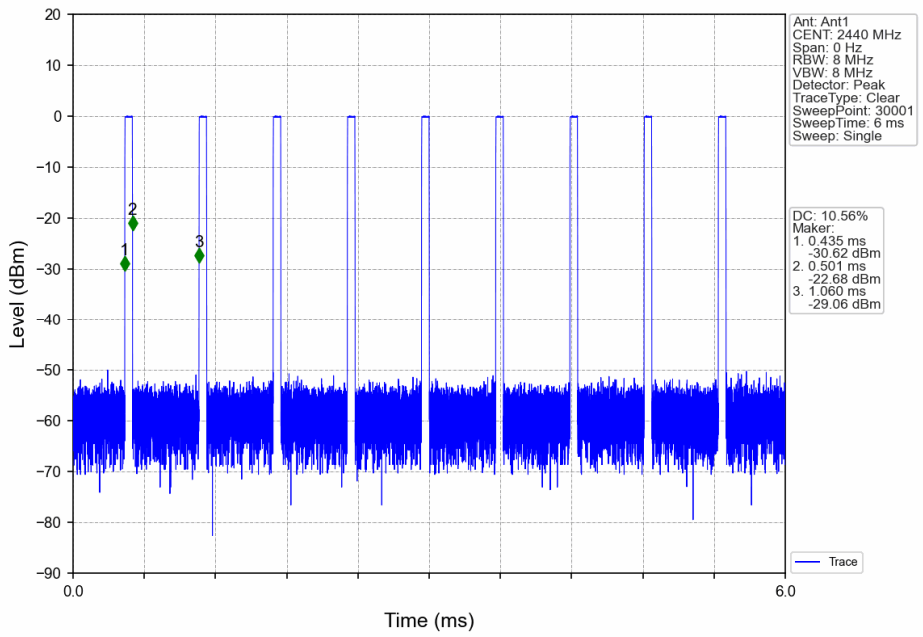
2M_MCH_2440MHz_Ant1_NTNV



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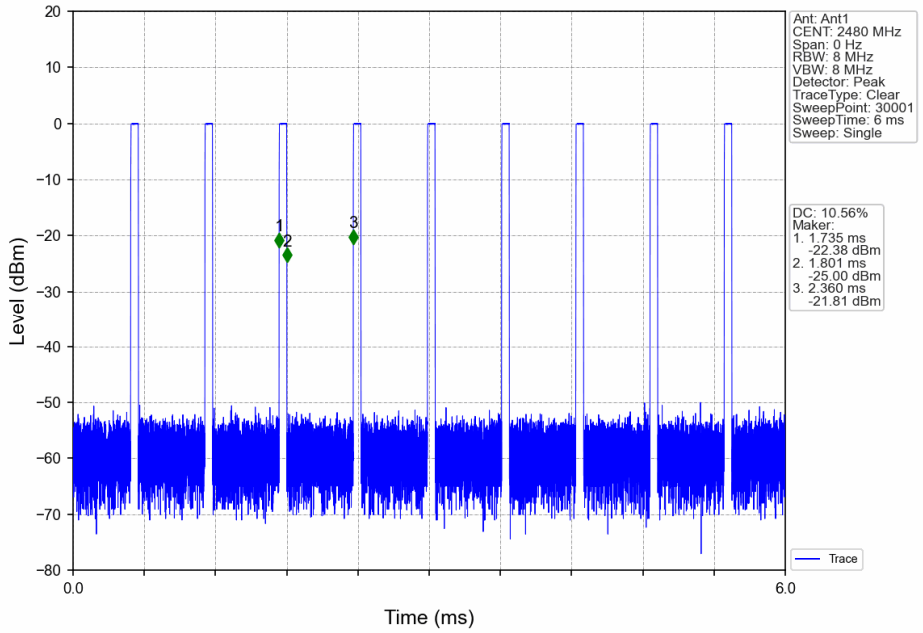

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2. Bandwidth

2.1 Test Result

2.1.2 6dB BW

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	1	0.692	>=0.5	Pass
		2440	1	0.689	>=0.5	Pass
		2480	1	0.688	>=0.5	Pass
2M	SISO	2402	1	1.183	>=0.5	Pass
		2440	1	1.176	>=0.5	Pass
		2480	1	1.186	>=0.5	Pass

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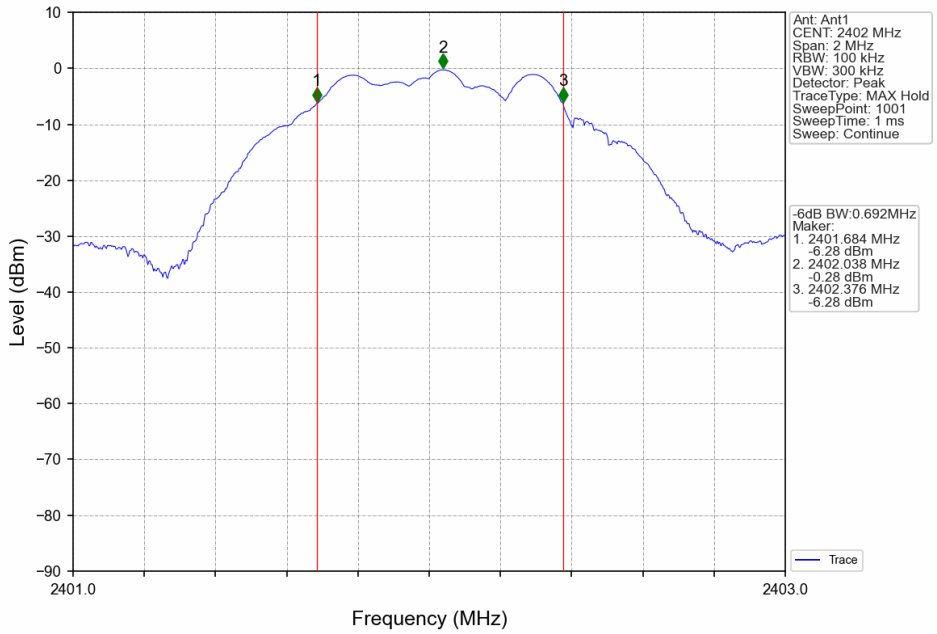
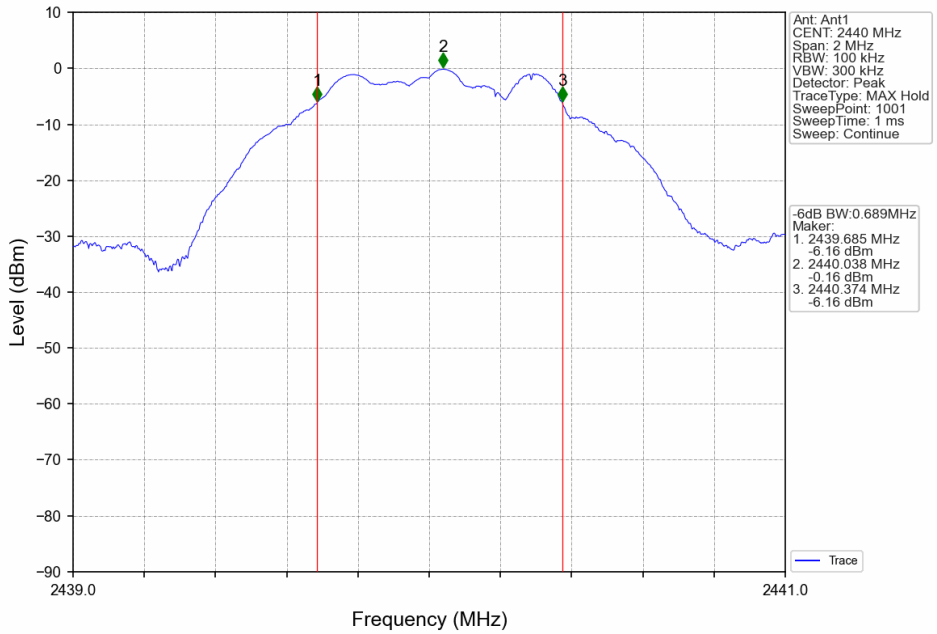
2.2 Test Graph

2.2.1 6dB BW

1M_LCH_2402MHz_Ant1_NTNV



1M_MCH_2440MHz_Ant1_NTNV



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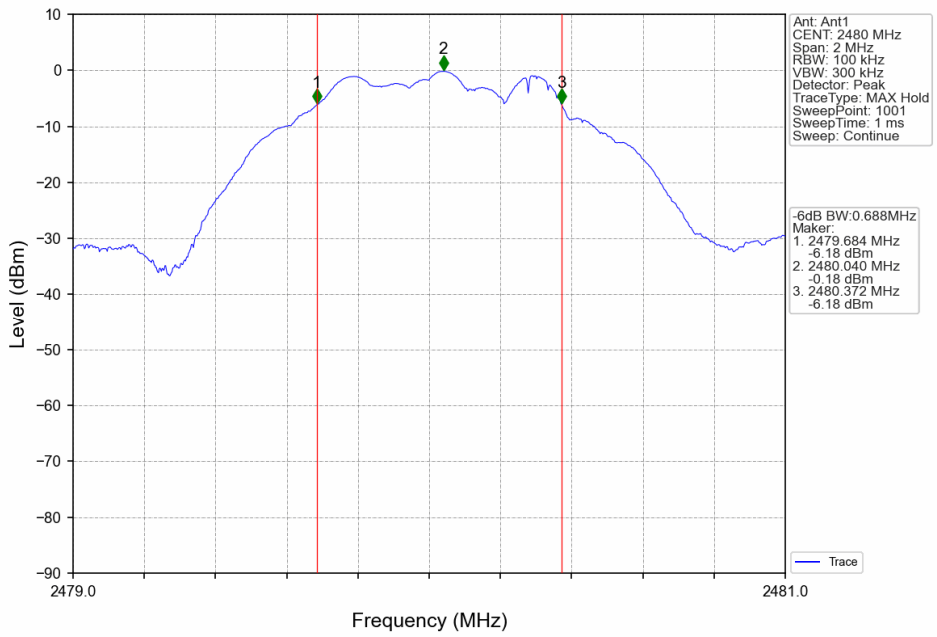
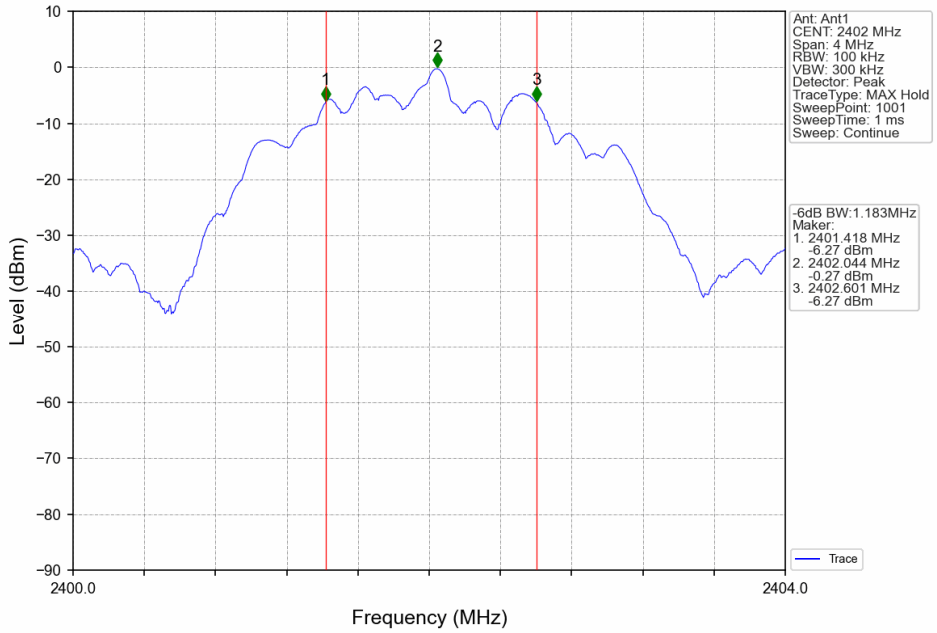
1M_HCH_2480MHz_Ant1_NTNV



2M_LCH_2402MHz_Ant1_NTNV



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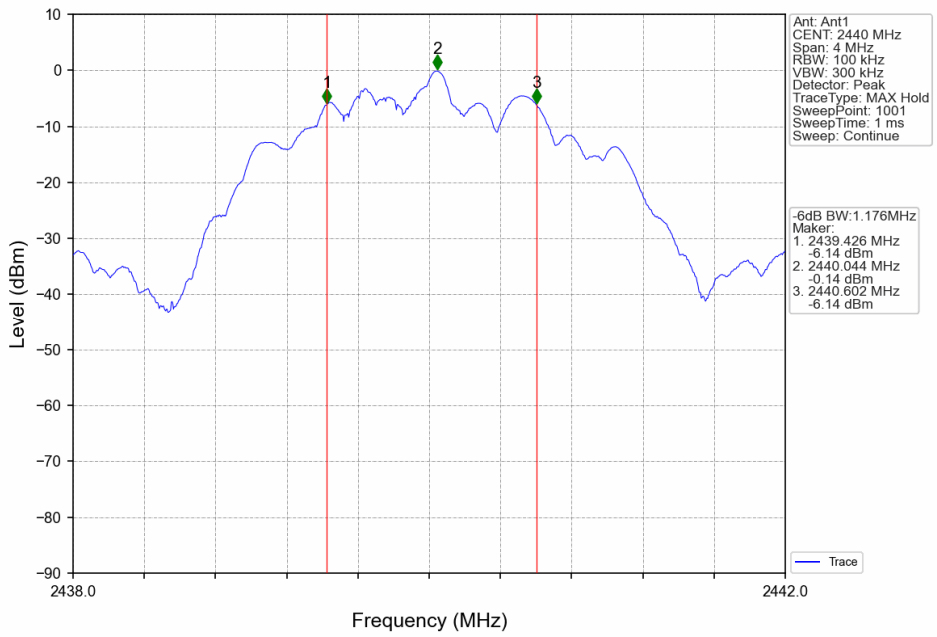
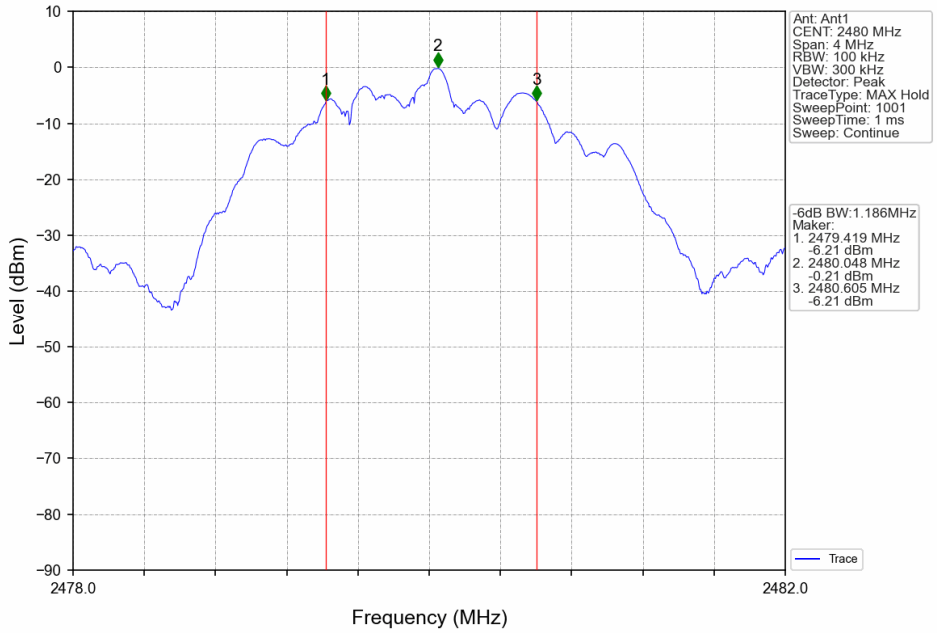
2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



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3. Maximum Conducted Output Power

3.1 Test Result

3.1.1 Power

Mode	TX Type	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
1M	SISO	2402	-0.23	<=30	Pass
		2440	-0.12	<=30	Pass
		2480	-0.12	<=30	Pass
2M	SISO	2402	-0.23	<=30	Pass
		2440	-0.10	<=30	Pass
		2480	-0.07	<=30	Pass
Note1: Antenna Gain: Ant1: 4.63dBi;					

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4. Maximum Power Spectral Density

4.1 Test Result

4.1.1 PSD

Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/3kHz)		Verdict
			ANT1	Limit	
1M	SISO	2402	-17.90	<=8	Pass
		2440	-17.88	<=8	Pass
		2480	-17.78	<=8	Pass
2M	SISO	2402	-19.79	<=8	Pass
		2440	-19.75	<=8	Pass
		2480	-19.69	<=8	Pass
Note1: Antenna Gain: Ant1: 4.63dBi;					

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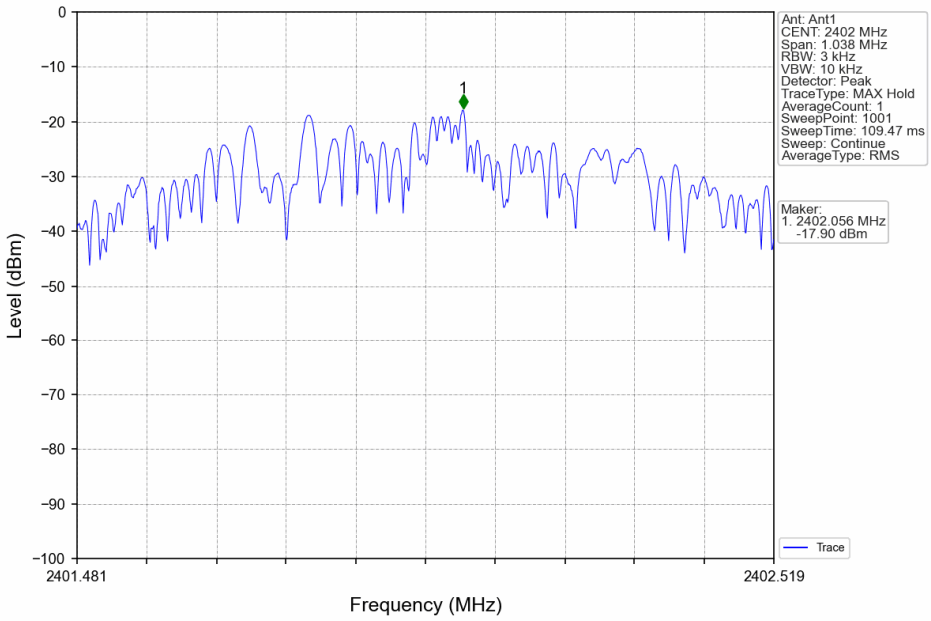
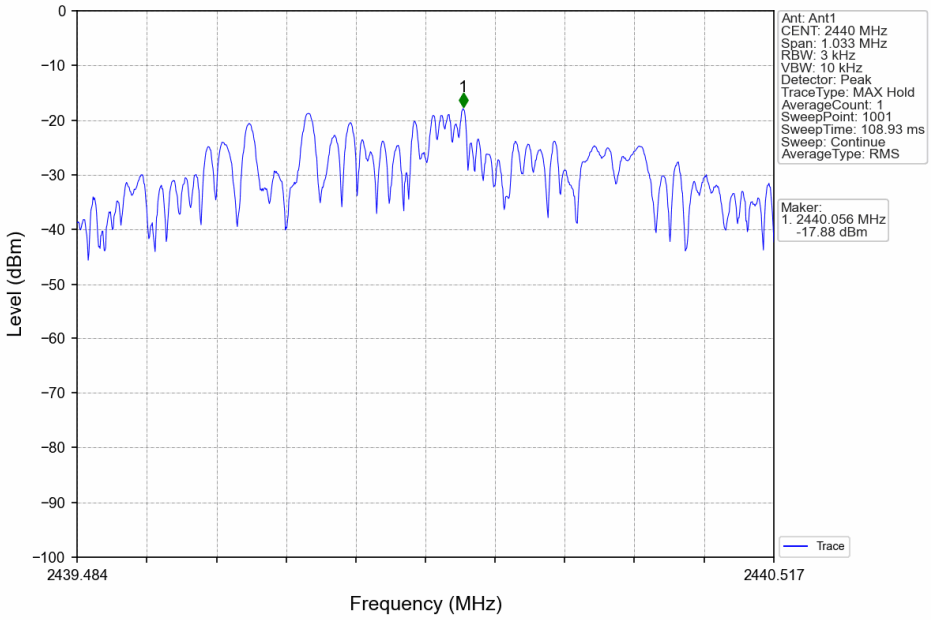
4.2 Test Graph

4.2.1 PSD

1M_LCH_2402MHz_Ant1_NTNV



1M_MCH_2440MHz_Ant1_NTNV



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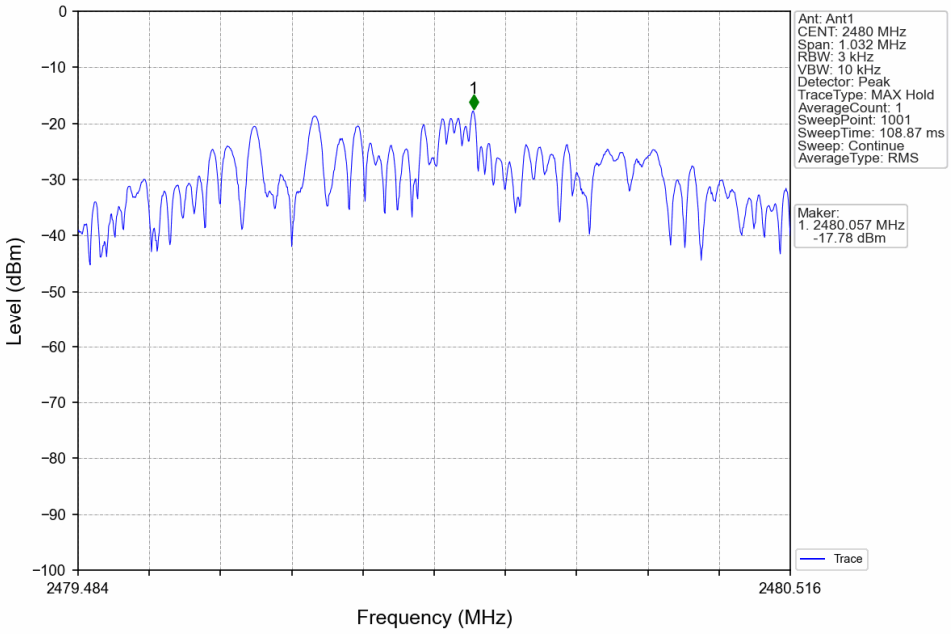
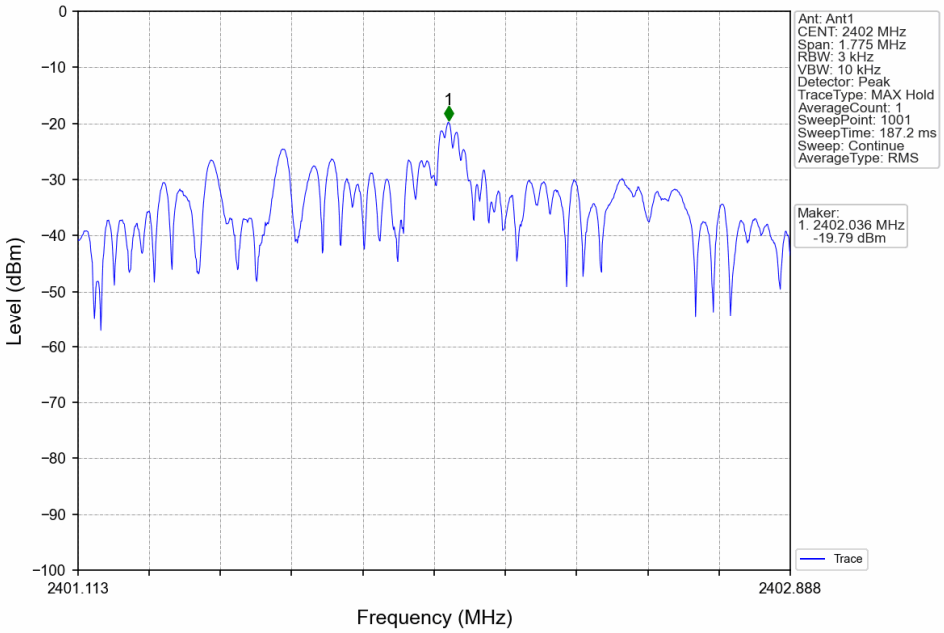


2M_LCH_2402MHz_Ant1_NTNV



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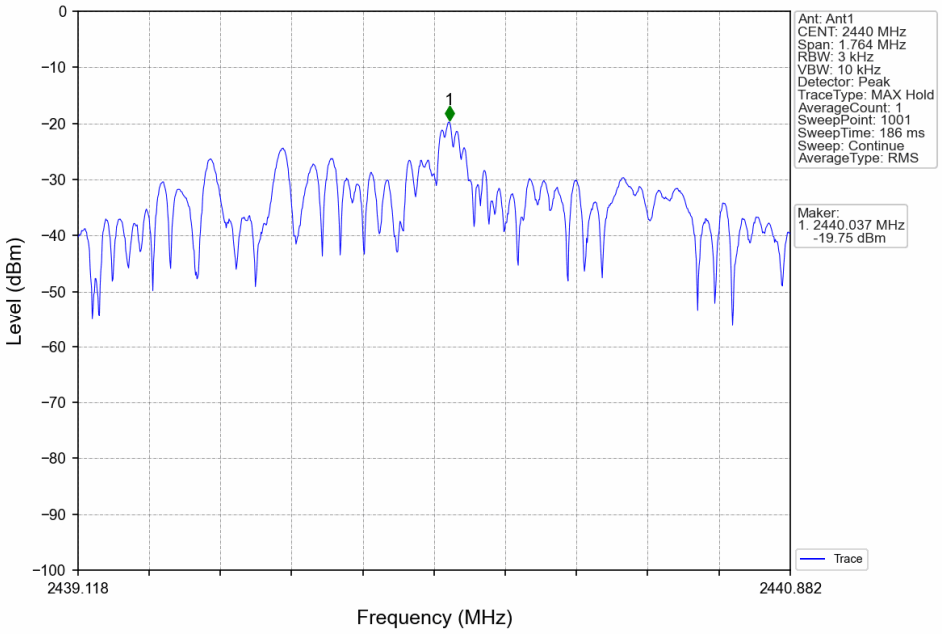
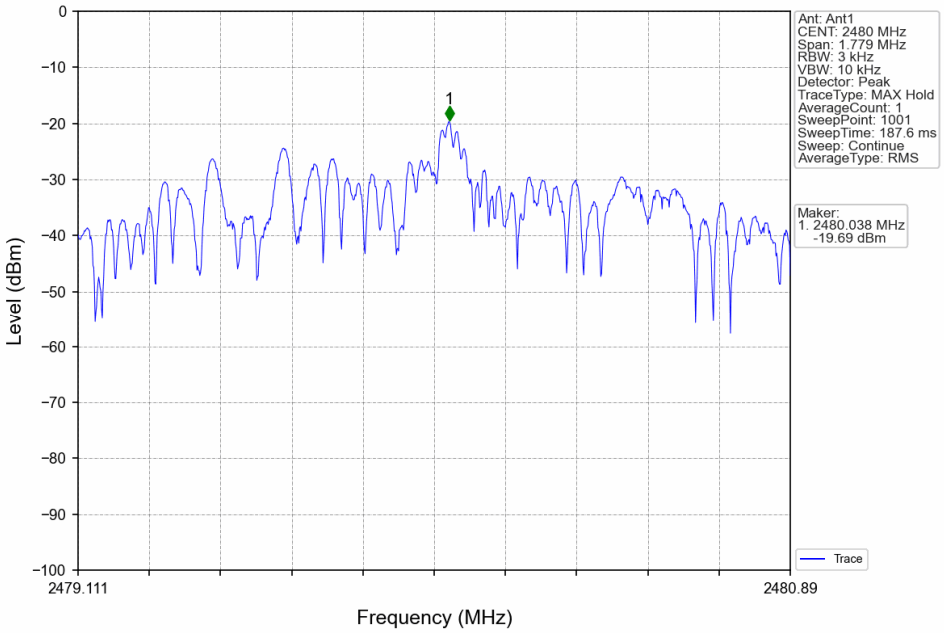


2M_HCH_2480MHz_Ant1_NTNV



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5. Unwanted Emissions In Non-restricted Frequency Bands

5.1 Test Result

5.1.1 Ref

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)
1M	SISO	2402	1	-0.29
		2440	1	-0.17
		2480	1	-0.18
2M	SISO	2402	1	-0.29
		2440	1	-0.17
		2480	1	-0.16
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.				

5.1.2 CSE and Band Edges

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
1M	SISO	2402	1	-0.17	-20.17	Pass
		2440	1	-0.17	-20.17	Pass
		2480	1	-0.17	-20.17	Pass
2M	SISO	2402	1	-0.16	-20.16	Pass
		2440	1	-0.16	-20.16	Pass
		2480	1	-0.16	-20.16	Pass
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.						

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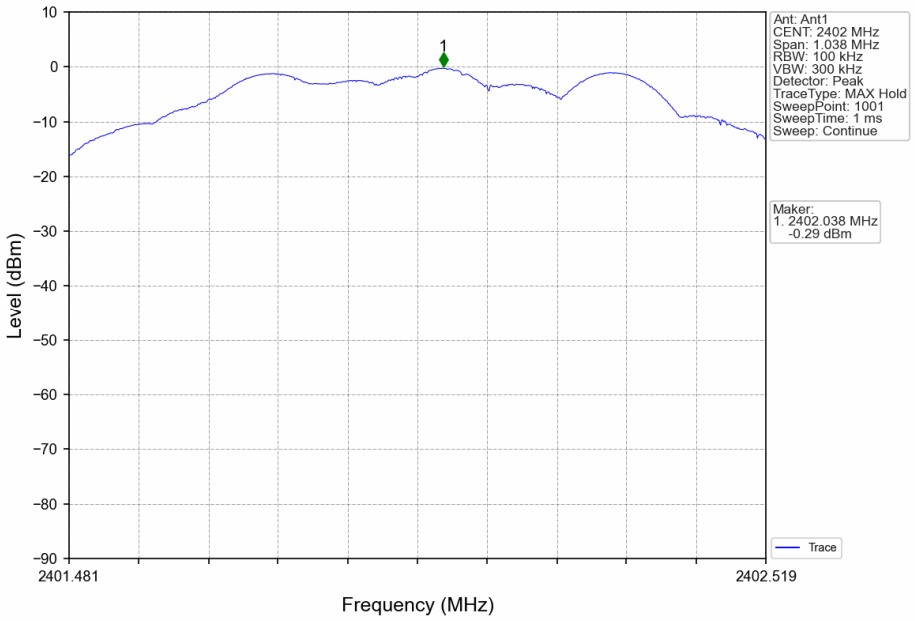
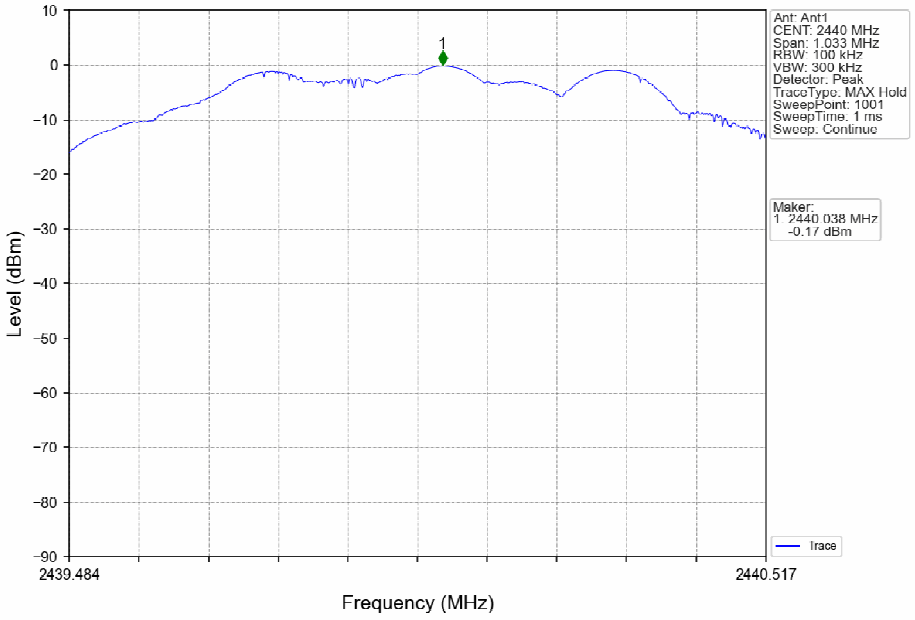
5.2 Test Graph

5.2.1 Ref

1M_LCH_2402MHz_Ant1_NTNV



1M_MCH_2440MHz_Ant1_NTNV



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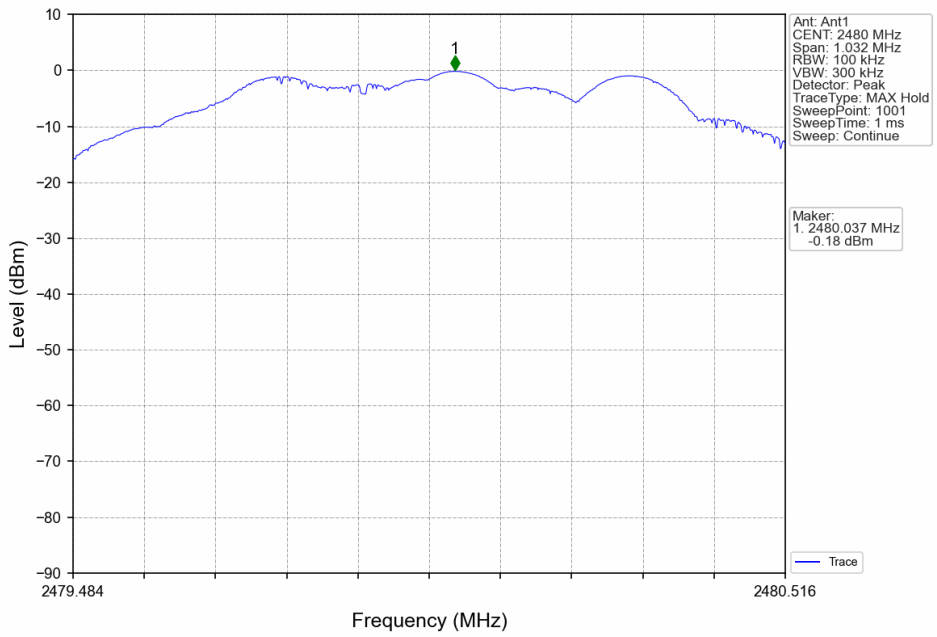
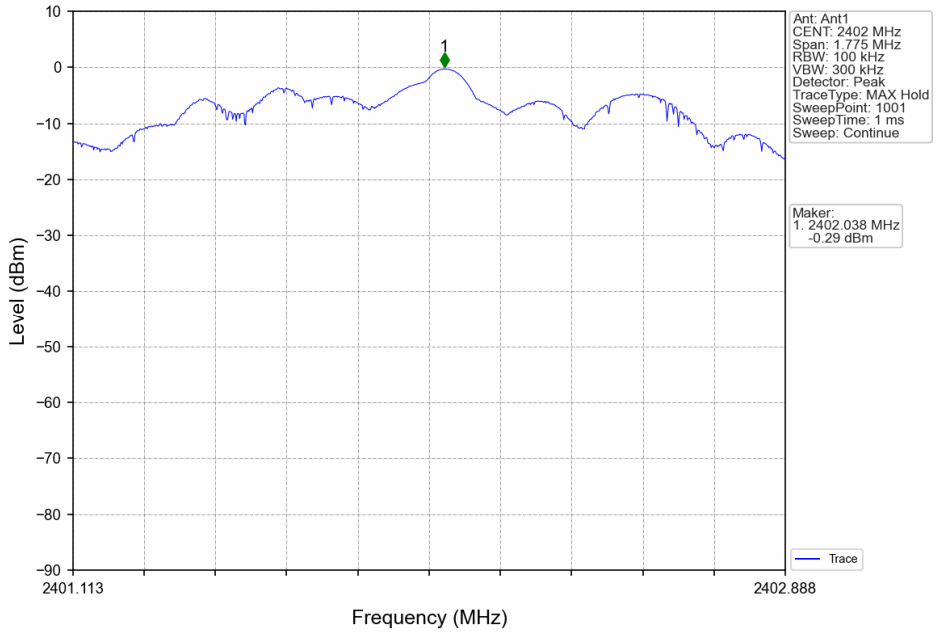
1M_HCH_2480MHz_Ant1_NTNV



2M_LCH_2402MHz_Ant1_NTNV



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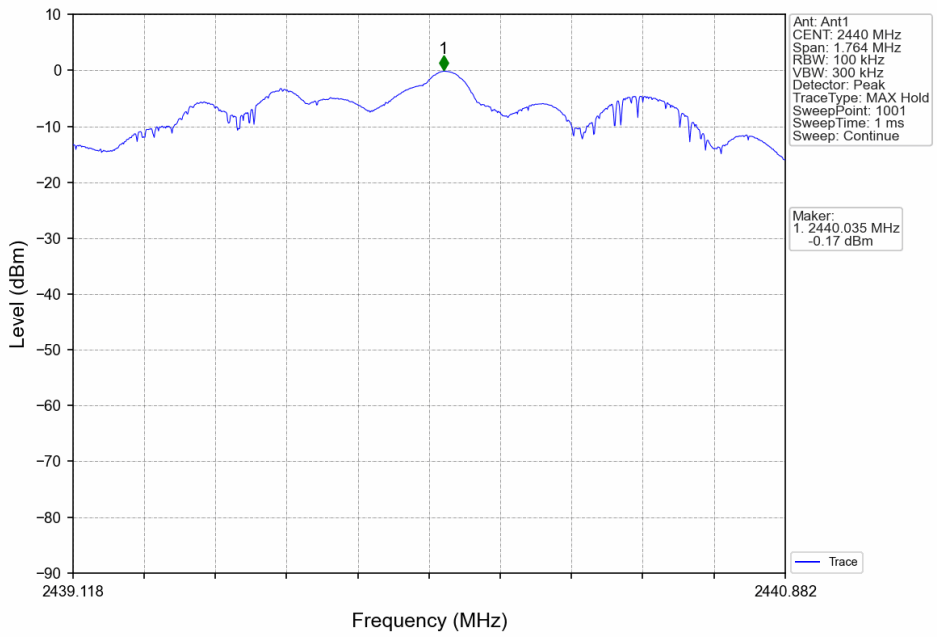
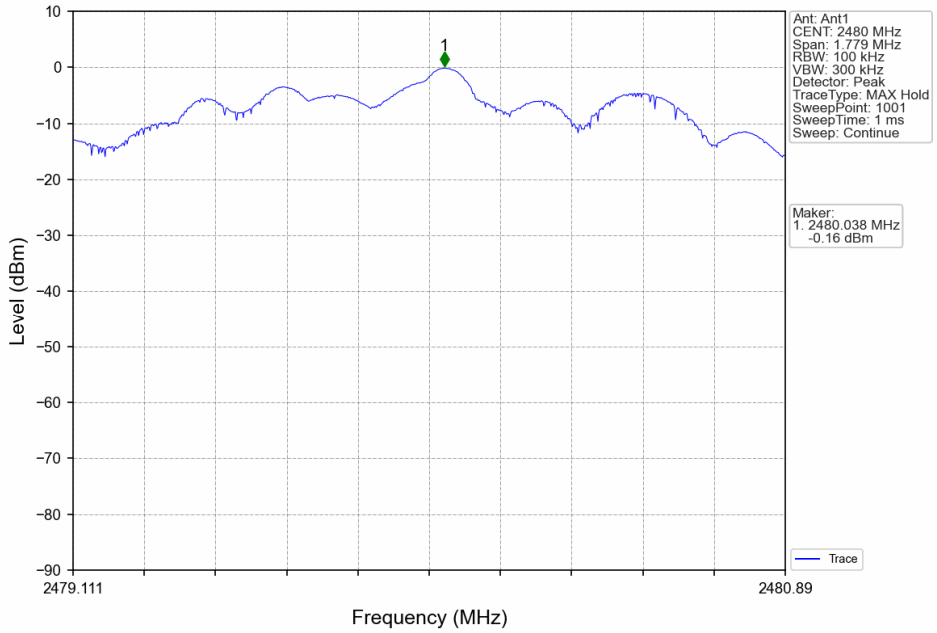
2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



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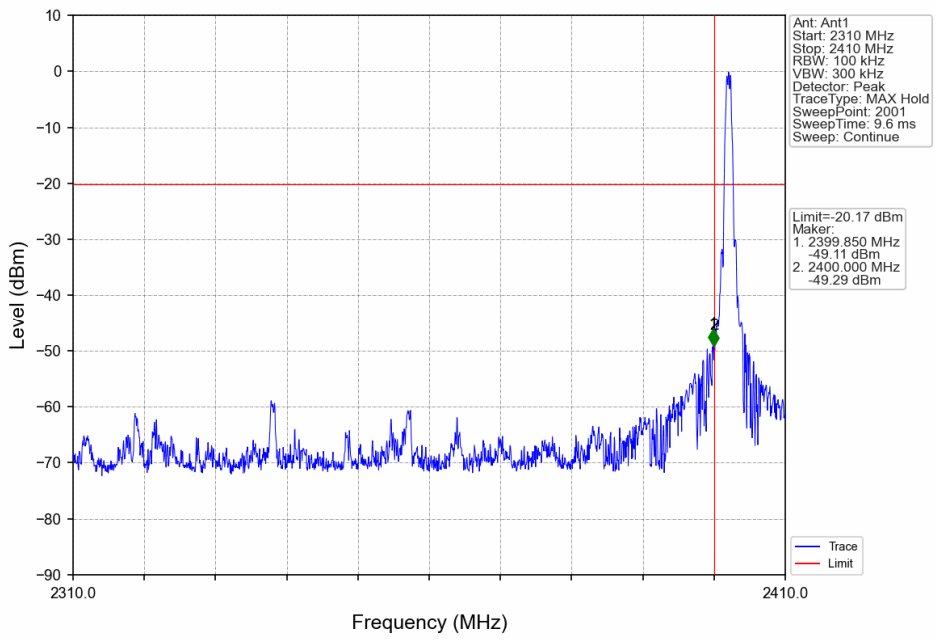
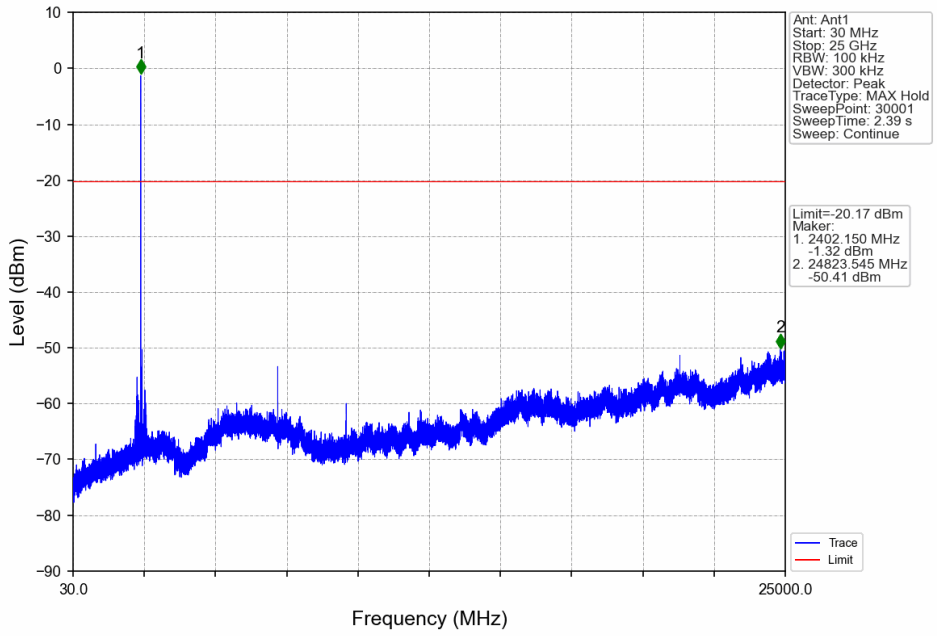
5.2.2 CSE and Band Edges

1M_LCH_2402MHz_Ant1_NTNV



1M_LCH_2402MHz_Ant1_NTNV



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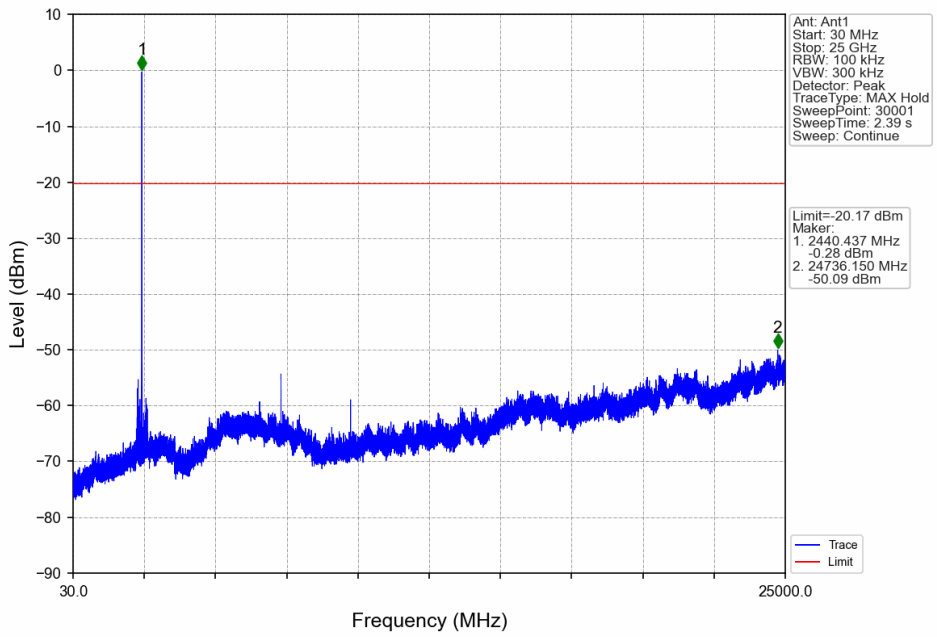
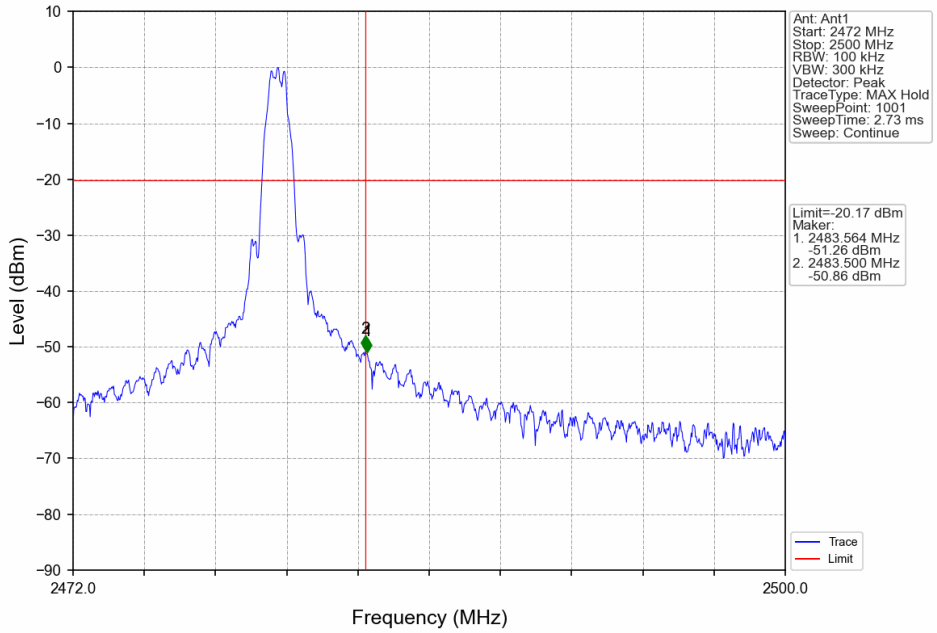
1M_MCH_2440MHz_Ant1_NTNV



1M_HCH_2480MHz_Ant1_NTNV



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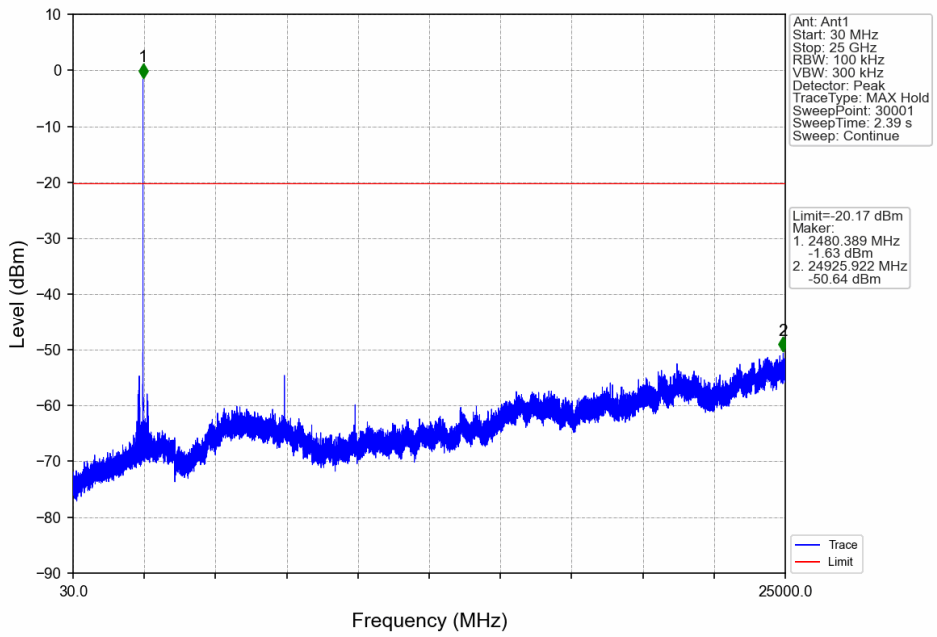
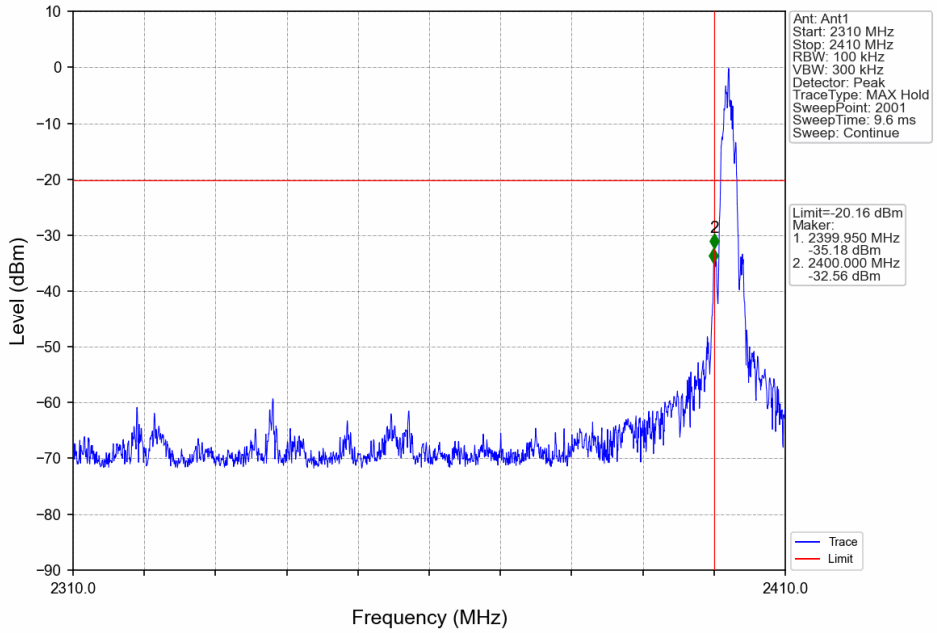
1M_HCH_2480MHz_Ant1_NTNV



2M_LCH_2402MHz_Ant1_NTNV



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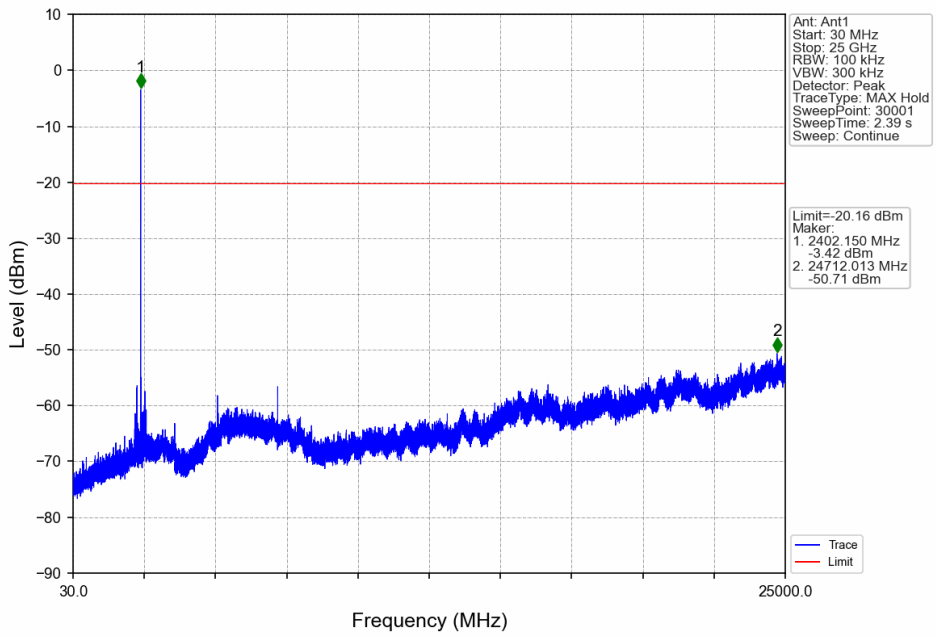
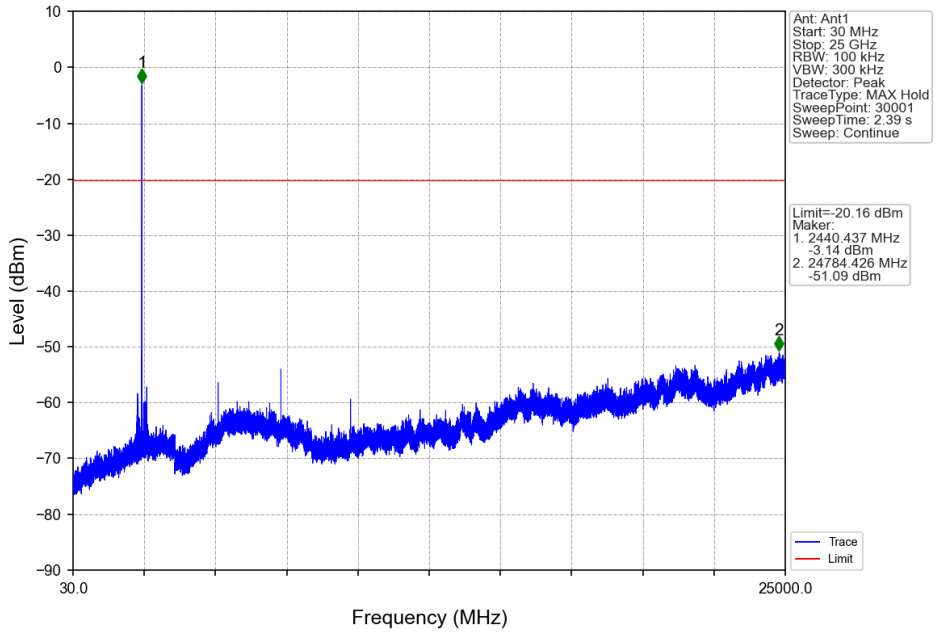
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



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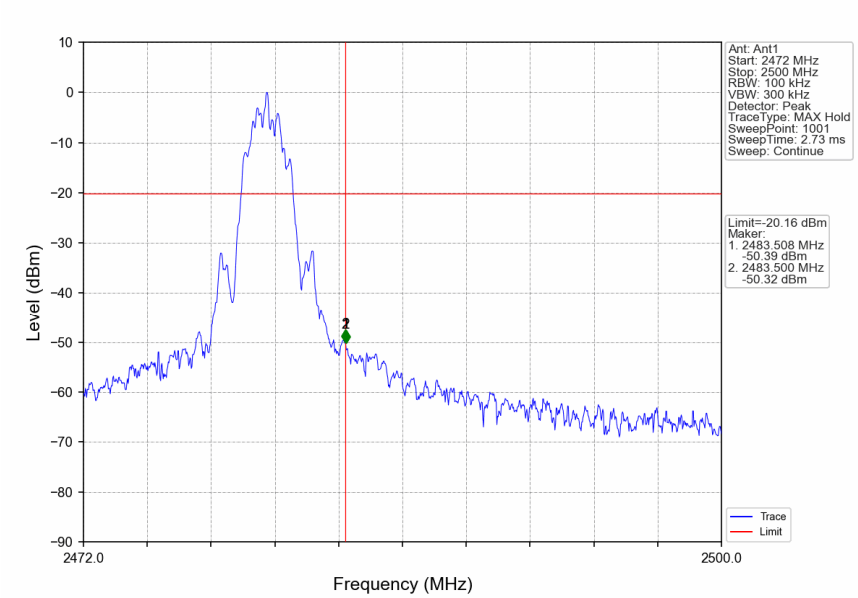
2M_HCH_2480MHz_Ant1_NTNV



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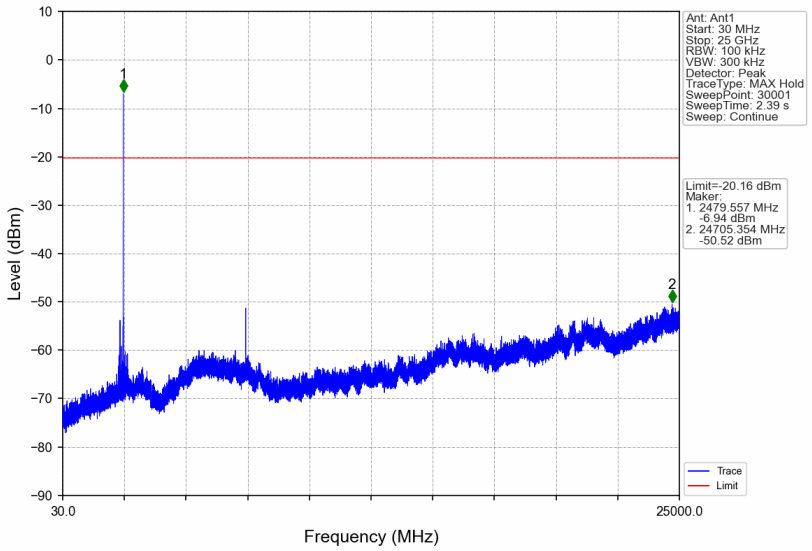

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