

TEST REPORT

Application No.: KSCR2512002777AT
FCC ID: 2AL8S-0235CBQK
Applicant: Zhejiang Uniview Technologies Co., Ltd.
Address of Applicant: No. 369, Xietong Road, Xixing Sub-district, Binjiang District, Hangzhou City, 310051, Zhejiang Province, China
Manufacturer: Zhejiang Uniview Technologies Co., Ltd.
Address of Manufacturer: No. 369, Xietong Road, Xixing Sub-district, Binjiang District, Hangzhou City, 310051, Zhejiang Province, China
Equipment Under Test (EUT):
EUT Name: Fast Lane Guard
Model No.: OFG8501N@L, OFG8501N Subcategory:L, OFG8501N-xxxxxxx-
yyyyyyy-zzz, ("x", "y", "z" can be 0-9, A-Z, a-z z, @ or blank; "-" may be blank);
OFG8501N@R, OFG8501N Subcategory:R, OFG8501N-rrrrrrrr-ssssssss-
ttt, ("r", "s", "t" can be 0-9, A-Z, a-z z, @ or blank; "-" may be blank);
OFG8501N@M, OFG8501N Subcategory:M, OFG8501N-mmmmmmmm-
nnnnnnnn-ooo, ("m", "n", "o" can be 0-9, A-Z, a-z z, @ or blank; "-" may be blank) ♣
♣ Please refer to section 2 of this report which indicates which model was actually tested and which were electrically identical.
Standard(s) : 47 CFR Part 15, Subpart C 15.247
Date of Receipt: 2025-12-18
Date of Test: 2025-12-30 to 2026-01-13
Date of Issue: 2026-01-22

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.

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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Revision Record			
Version	Description	Date	Remark
00	Original	2026-01-22	/

Authorized for issue by:			
Tested By		Maker Qi	
		Maker_Qi/Project Engineer	
Approved By		Terry Hou	
		Terry Hou /Reviewer	

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)	Customer Declaration

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 (2020) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass
Radiated Emissions which fall in the restricted bands		ANSI C63.10 (2020) Section 6.10.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions Below 1GHz		ANSI C63.10 (2020) Section 6.4,6.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions Above 1GHz		ANSI C63.10 (2020) Section 6.6	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Conducted Peak Output Power		ANSI C63.10 (2020) Section 11.9.1	47 CFR Part 15, Subpart C 15.247(b)(3)	Pass
Minimum 6dB Bandwidth		ANSI C63.10 (2020) Section 11.8.1	47 CFR Part 15, Subpart C 15.247a(2)	Pass
Power Spectrum Density		ANSI C63.10 (2020) Section 11.10.2	47 CFR Part 15, Subpart C 15.247(e)	Pass
Conducted Band Edges Measurement		ANSI C63.10 (2020) Section 6.10.4	47 CFR Part 15, Subpart C 15.247(d)	Pass
Conducted Spurious Emissions		ANSI C63.10 (2020) Section 11.11	47 CFR Part 15, Subpart C 15.247(d)	Pass

Declaration of EUT Family Grouping:

Note: There are series models mentioned in this report, and they are identical in electrical and electronic characters. Only the model OFG8501N@L was tested since their differences were the model number and appearance.

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4 General Information

4.1 Details of E.U.T.

Power supply:	AC 100-240V,50/60Hz,5.5A; 24Vdc,3.25A
Test Voltage:	AC 120V/60Hz(Pre-test AC 120V/50-60Hz&AC 240V/50-60Hz then choose the AC 120/60Hz as worst case)
Operation Frequency:	2402MHz to 2480MHz
Modulation Type:	GFSK
Number of Channels:	40
Channel Spacing:	2MHz
Antenna Type:	FPC antenna
Antenna Gain:	3.8dBi (Provided by the manufacturer)

4.2 Power level setting using in test

Channel	BLE	
	1M	2M
0	default	default
19	default	default
39	default	default

4.3 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Notebook	LENOVO	K27	EB24537645

4.4 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radio Frequency	8.4×10^{-8}
2	Timeout	2s
3	Duty Cycle	0.37%
4	Occupied Bandwidth	3%
5	RF Conducted Power	0.6dB
6	RF Power Density	2.9dB
7	Conducted Spurious Emissions	0.75dB
8	RF Radiated Power	5.2dB (Below 1GHz)
		5.9dB (Above 1GHz)
9	Radiated Spurious Emission Test	4.2dB (Below 30MHz)
		4.5dB (30MHz-1GHz)
		5.1dB (1GHz-18GHz)
		5.4dB (Above 18GHz)
10	Temperature Test	1°C
11	Humidity Test	3%
12	Supply Voltages	1.5%
13	Time	3%
Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.		

4.5 Test Location

All tests were performed at:

Compliance Certification Services (Kunshan) Inc.

No.10 Weiye Rd, Innovation park, Eco&Tec, Development Zone, Kunshan City, Jiangsu, China.

Tel: +86 512 5735 5888 Fax: +86 512 5737 0818

No tests were sub-contracted.

Note:

1. SGS is not responsible for wrong test results due to incorrect information (e.g., max. internal working frequency, antenna gain, cable loss, etc) is provided by the applicant. (If applicable).
2. SGS is not responsible for the authenticity, integrity and the validity of the conclusion based on results of the data provided by applicant. (If applicable).
3. Sample source: sent by customer.

4.6 Test Facility

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

- **A2LA (Certificate No. 2541.01)**

Compliance Certification Services (Kunshan) Inc. is accredited by the American Association for Laboratory Accreditation (A2LA).

- **FCC (Designation Number: CN1172)**

Compliance Certification Services (Kunshan) Inc. has been recognized as an accredited testing laboratory.

- **ISED (CAB Identifier: CN0072)**

Compliance Certification Services (Kunshan) Inc. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory.

Company Number: 2324E

- **VCCI (Member No:1938)**

The 3m and 10m Semi-anechoic chamber and Shielded Room of Compliance Certification Services (Kunshan) Inc. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-20134, R-11600, C-11707, T-11499, G-10216 respectively.

4.7 Deviation from Standards

None

4.8 Abnormalities from Standard Conditions

None

5 Equipment List

Item	Equipment	Manufacturer	Model	Inventory No	Cal Date	Cal. Due Date
Conducted Emission at Mains Terminals						
1	EMI Test Receive	R&S	ESCI	KS301196	07/09/2025	07/08/2026
2	LISN	R&S	ENV216	KS301197	01/15/2025	01/14/2026
3	LISN	Schwarzbeck	NNLK 8129	KS301091	01/15/2025	01/14/2026
4	Pulse Limiter	R&S	ESH3-Z2	KUS1902E001	12/04/2025	12/03/2026
5	CE test Cable	Thermax	/	CZ301102	01/14/2025	01/13/2026
6	Test Software	Farad	EZ-EMC	/	N.C.R	N.C.R
RF Conducted Test						
1	Spectrum Analyzer	Keysight	N9020A	KUS1911E004-2	07/09/2025	07/08/2026
2	Spectrum Analyzer	Keysight	N9020A	KUS2001M001-2	07/09/2025	07/08/2026
3	Spectrum Analyzer	Keysight	N9030B	KSEM021-1	01/15/2025	01/14/2026
4	Signal Generator	R&S	SMBV100B	KSEM032	02/19/2025	02/18/2026
5	Signal Generator	R&S	SMW200A	KSEM020-1	07/09/2025	07/08/2026
6	Signal Generator	Agilent	N5182A	KUS2001M001-1	07/08/2025	07/07/2026
7	Signal Generator	Agilent	E8257C	KS301066	07/22/2025	07/21/2026
8	Radio Communication Test Station	Anritsu	MT8000A	KSEM001-1	07/09/2025	07/08/2026
9	Radio Communication Analyzer	Anritsu	MT8821C	KSEM002-1	02/19/2025	02/18/2026
10	Universal Radio Communication Tester	R&S	CMW500	KUS1911E004-1	07/08/2025	07/07/2026
11	Switcher	TST	FY562	KUS2001M001-4	01/15/2025	01/14/2026
12	Conducted Test Cable	Thermax	RF01-RF04	CZ301111-CZ301120	01/14/2025	01/13/2026
13	Temp. / Humidity Chamber	TERCHY	MHK-120AK	KS301190	07/15/2025	07/14/2026
14	Temperature & Humidity Recorder	Renke Control	RS-WS-N01-6J	KSEM024-5	02/26/2025	02/25/2026
15	Software	BST	TST-PASS	/	NCR	NCR
RF Radiated Test						
1	Spectrum Analyzer	R&S	FSV40	KUS1806E003	07/09/2025	07/08/2026
2	Universal Radio Communication Tester	R&S	CMW500	KSEM009-1	02/18/2025	02/17/2026
3	Signal Generator	Agilent	E8257C	KS301066	07/22/2025	07/21/2026
4	Loop Antenna (9KHz-30MHz)	COM-POWER	AL-130R	KUS1806E001	07/11/2025	07/10/2026
5	Bilog Antenna (30MHz-1GHz)	TESEQ	CBL 6112D	KUS1806E005	07/12/2025	07/11/2026
6	Horn-antenna(1-18GHz)	Schwarzbeck	BBHA9120D	KS301079	03/23/2024	03/22/2026
7	Horn Antenna(18-40GHz)	Schwarzbeck	BBHA9170	CZ301058	01/07/2024 01/07/2026	01/06/2026 01/06/2028
8	Amplifier(30MHz~1GHz)	TST	LNA009100G30	KSEM061	01/15/2025	01/14/2026
9	Amplifier(400MHz~8GHz)	TST	LNA004080G30	KSEM062	01/15/2025	01/14/2026
10	Amplifier(1GHz~18GHz)	TST	LNA010180G45	KSEM039	07/09/2025	07/08/2026
11	Amplifier(18~40GHz)	TST	LNA180400G40	KSEM038	07/09/2025	07/08/2026
12	Temperature & Humidity Recorder	Renke Control	RS-WS-N01-6J	KSEM024-4	02/26/2025	02/25/2026
13	Software	ESE	E3_V 6.111221a	/	NCR	NCR
14	Measurement Software	Tonscend	JS32-RE V5.0.0.1	/	NCR	NCR



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15	Measurement Software	Tonscend	JS32-RSE V5.0.0.0	/	NCR	NCR
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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 FPC antenna and no consideration of replacement. The best case gain of the antenna is 3.8dBi.

Antenna location: Refer to internal photo.

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 (2020) 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: 25.3 °C

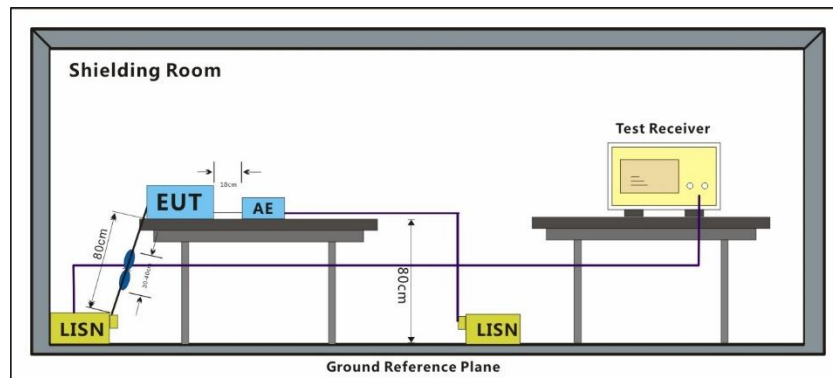
Humidity: 46.2 % RH

Atmospheric Pressure: 1010 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.1.3 Test Setup Diagram

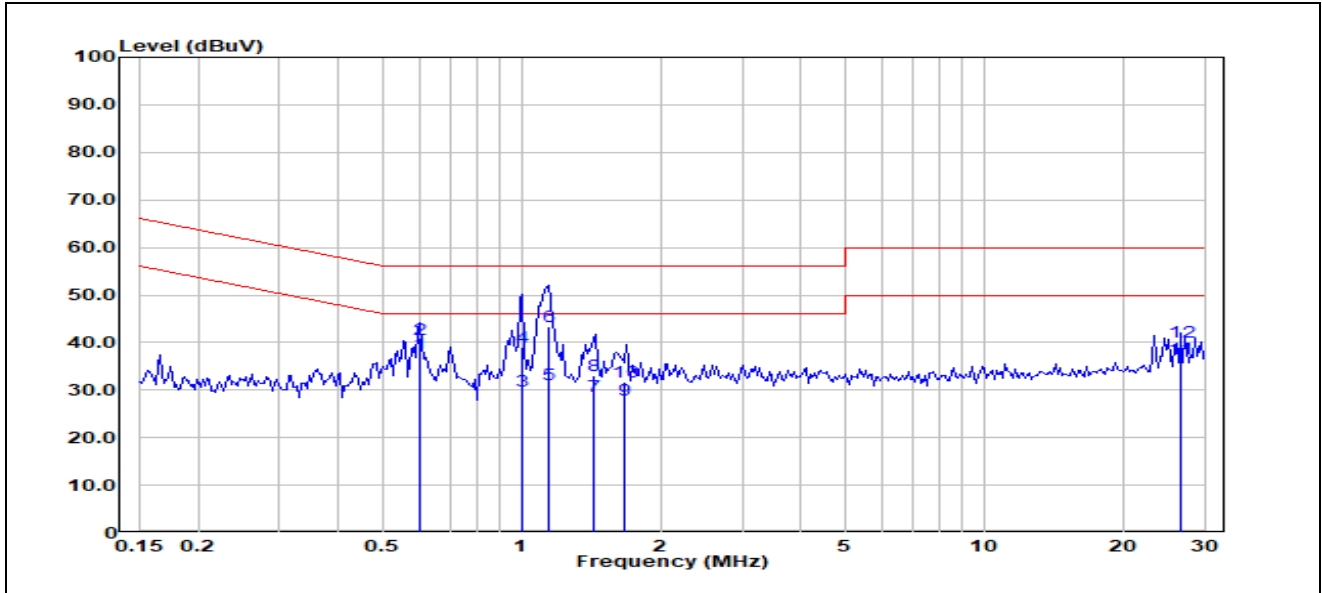


7.1.4 Measurement Procedure and Data

- 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.

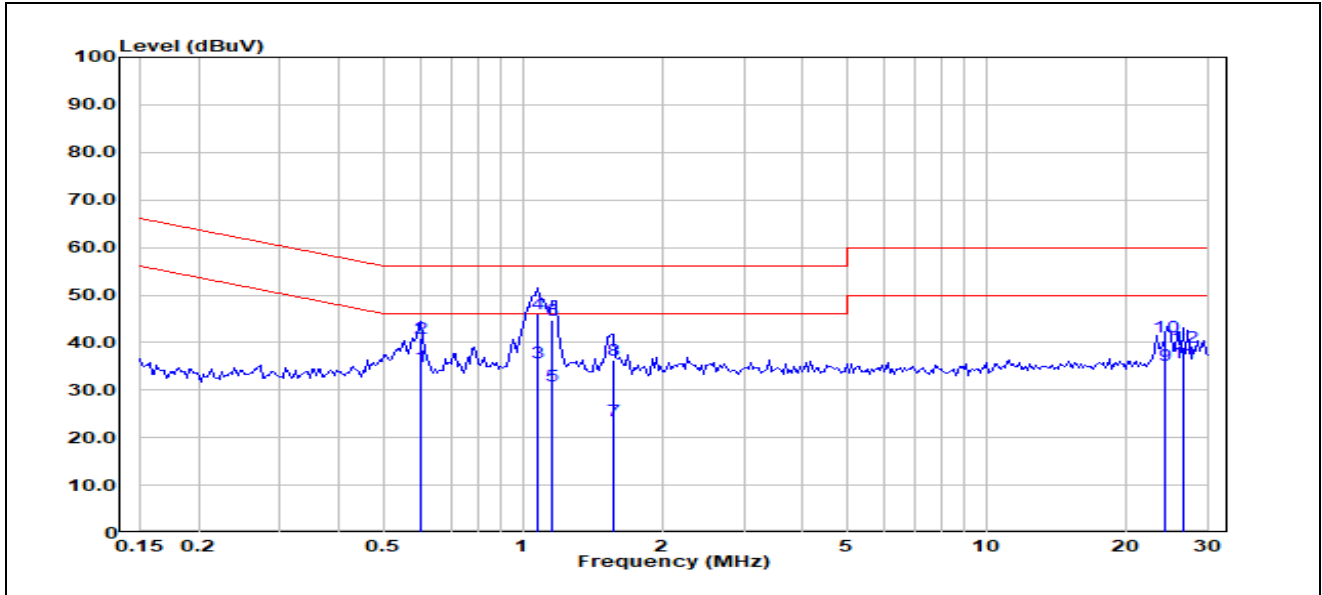
Remark : $\text{Level} = \text{Read Level} + \text{Cable Loss} + \text{LISN Factor}$

Test Mode: 03; Line: Live line



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.6010	17.91	19.72	37.63	46.00	-8.37	Average
2	0.6010	21.04	19.72	40.76	56.00	-15.24	QP
3	1.0070	9.96	19.89	29.85	46.00	-16.15	Average
4	1.0070	19.17	19.89	39.06	56.00	-16.94	QP
5	1.1470	11.40	19.90	31.30	46.00	-14.70	Average
6	1.1470	23.53	19.90	43.43	56.00	-12.57	QP
7	1.4350	8.80	19.92	28.72	46.00	-17.28	Average
8	1.4350	13.17	19.92	33.09	56.00	-22.91	QP
9	1.6720	7.94	19.93	27.87	46.00	-18.13	Average
10	1.6720	11.78	19.93	31.71	56.00	-24.29	QP
11	26.6080	16.14	20.41	36.55	50.00	-13.45	Average
12	26.6080	19.59	20.41	40.00	60.00	-20.00	QP

Test Mode: 03; Line: Neutral Line



No.	Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
1	0.6025	15.33	19.65	34.98	46.00	-11.02	Average
2	0.6025	21.38	19.65	41.03	56.00	-14.97	QP
3	1.0740	15.88	19.83	35.71	46.00	-10.29	Average
4	1.0740	26.17	19.83	46.00	56.00	-10.00	QP
5	1.1620	11.11	19.84	30.95	46.00	-15.05	Average
6	1.1620	24.98	19.84	44.82	56.00	-11.18	QP
7	1.5680	3.60	19.87	23.47	46.00	-22.53	Average
8	1.5680	16.56	19.87	36.43	56.00	-19.57	QP
9	24.3510	14.85	20.37	35.22	50.00	-14.78	Average
10	24.3510	20.77	20.37	41.14	60.00	-18.86	QP
11	26.6120	15.35	20.46	35.81	50.00	-14.19	Average
12	26.6120	18.64	20.46	39.10	60.00	-20.90	QP

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 (2020) Section 6.10.5

Measurement Distance: 3M

Limit:

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: 22.1 °C

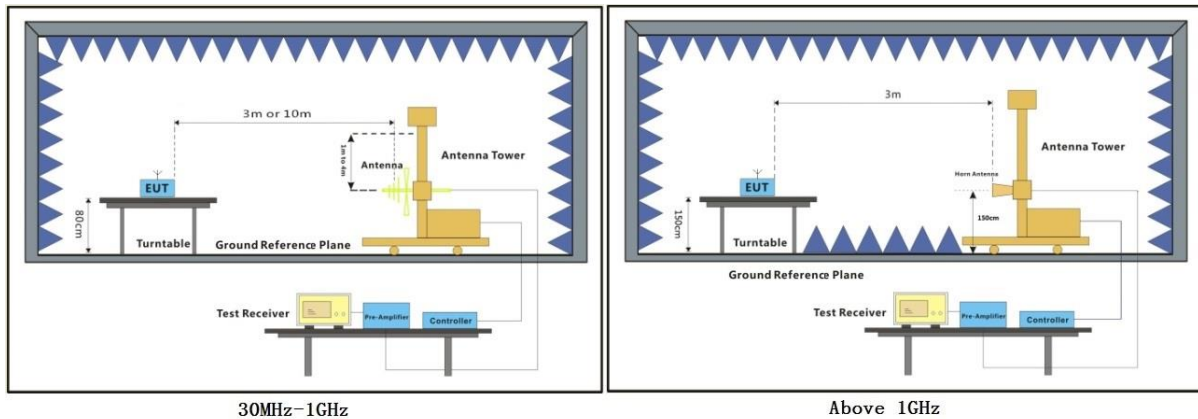
Humidity: 51.6 % RH

Atmospheric Pressure: 1010 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	04	TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data

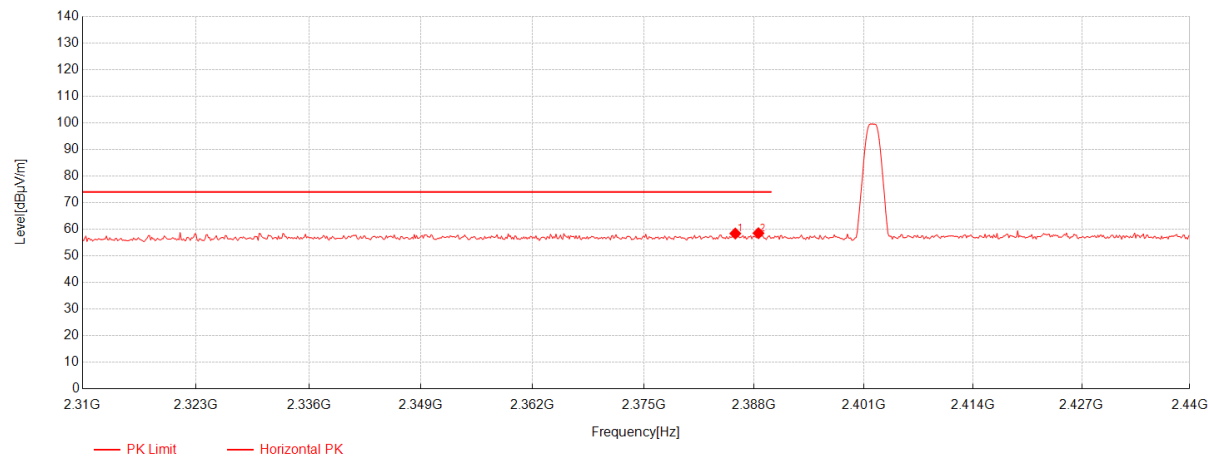
- For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- 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.
- 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.
- 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.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 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 the EUT in the lowest channel, the middle channel, the Highest channel.
- 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.
- 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.

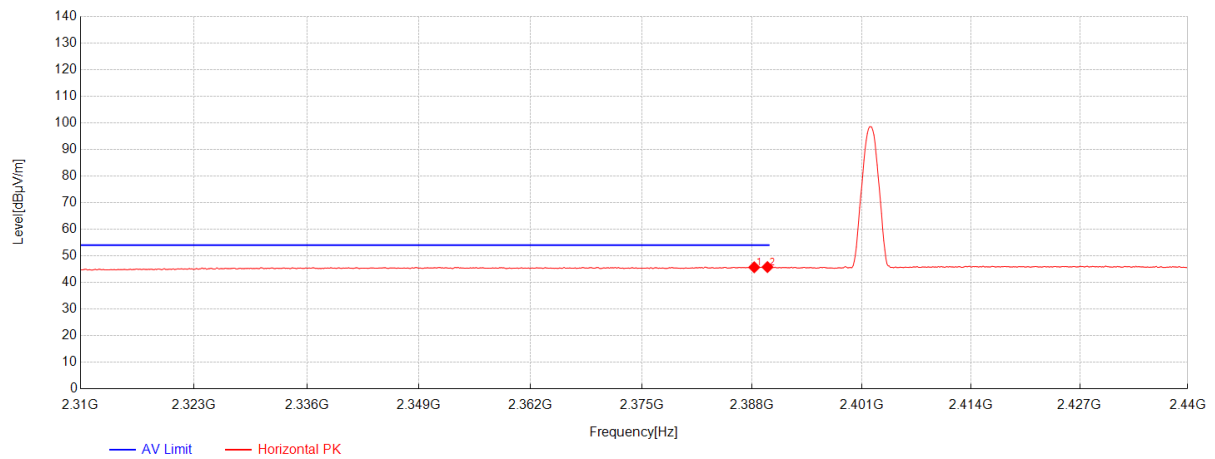


BLE_1M_TX_CH_00_Horizontal_Peak



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2385.79	57.85	26.66	-26.15	58.36	74.00	15.64	Horizontal
2	2388.52	57.93	26.69	-26.13	58.49	74.00	15.51	Horizontal

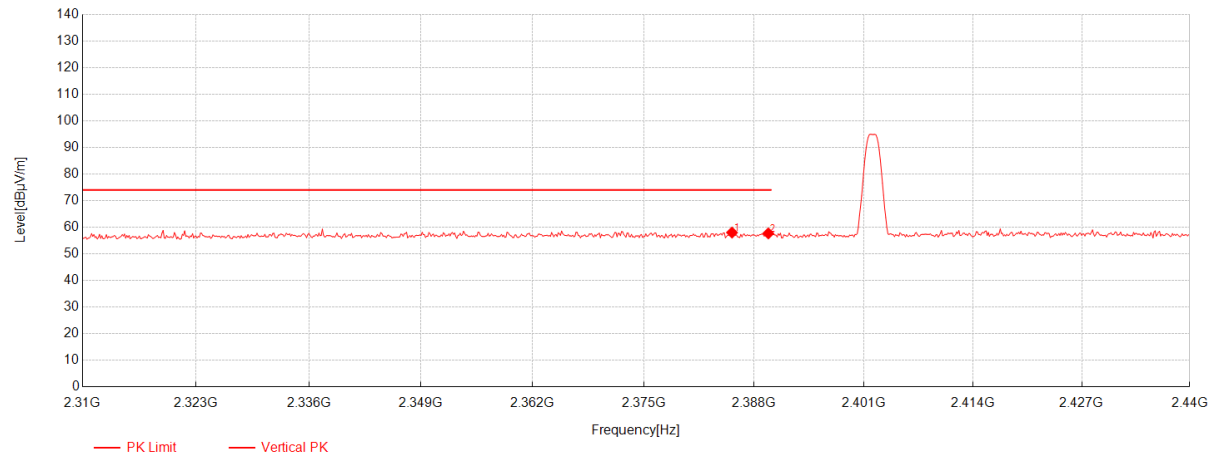
BLE_1M_TX_CH_00_Horizontal_Average



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2388.26	45.14	26.68	-26.14	45.68	54.00	8.32	Horizontal
2	2389.82	45.19	26.70	-26.13	45.76	54.00	8.24	Horizontal



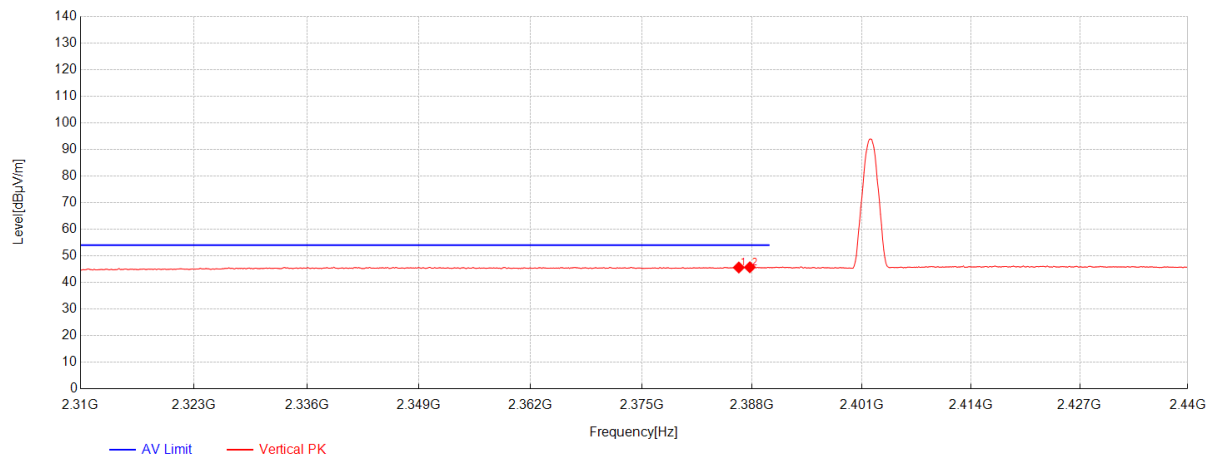
BLE_1M_TX_CH_00_Vertical_Peak



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2385.4	57.47	26.65	-26.15	57.97	74.00	16.03	Vertical
2	2389.69	57.09	26.70	-26.13	57.66	74.00	16.34	Vertical



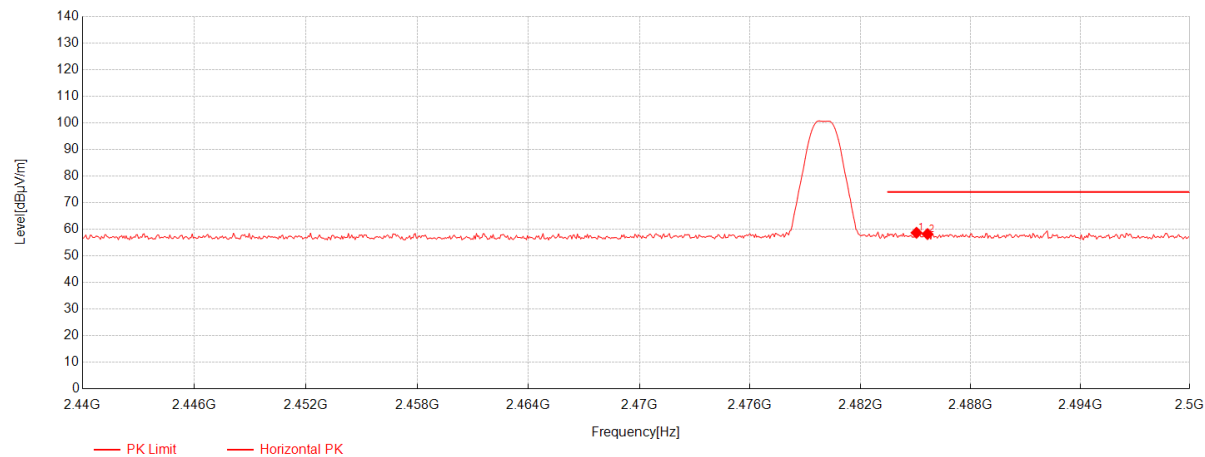
BLE_1M_TX_CH_00_Vertical_Average



Data List								
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity
1	2386.44	45.09	26.66	-26.14	45.61	54.00	8.39	Vertical
2	2387.74	45.15	26.68	-26.14	45.69	54.00	8.31	Vertical

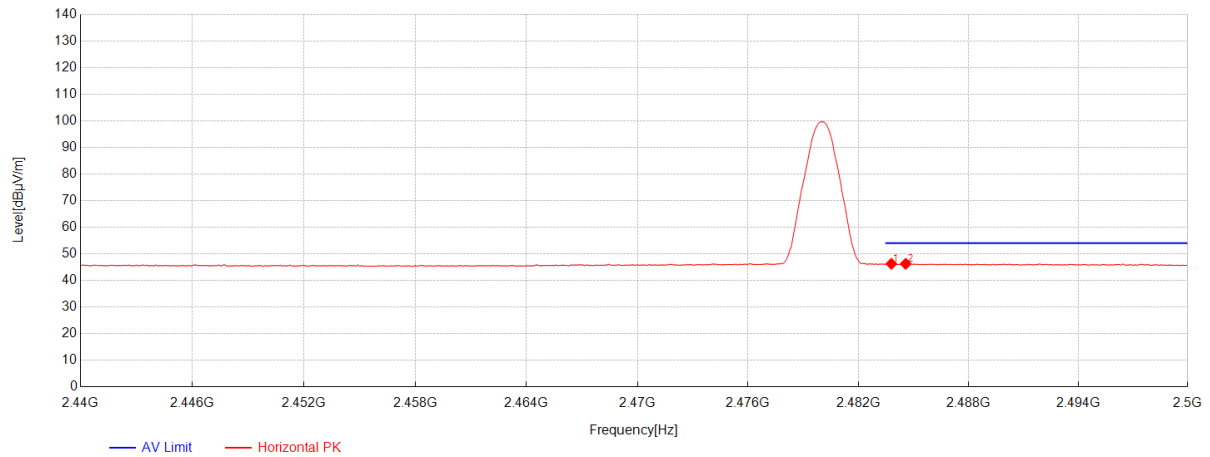


BLE_1M_TX_CH_39_Horizontal



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2485.06	57.74	27.15	-26.24	58.65	74.00	15.35	Horizontal
2	2485.66	57.27	27.14	-26.24	58.17	74.00	15.83	Horizontal

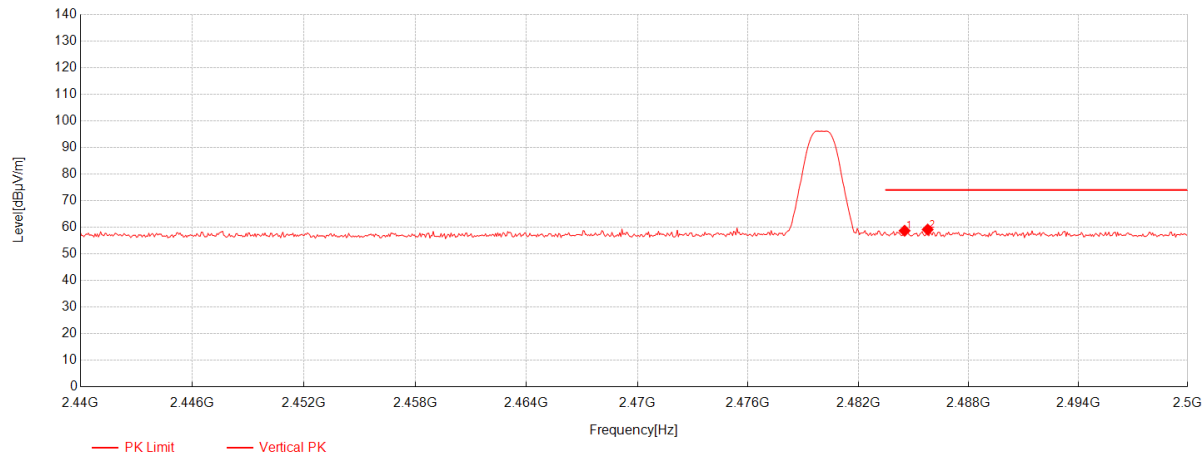
BLE_1M_TX_CH_39_Horizontal_Average



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2483.8	45.32	27.16	-26.24	46.24	54.00	7.76	Horizontal
2	2484.58	45.33	27.15	-26.24	46.24	54.00	7.76	Horizontal

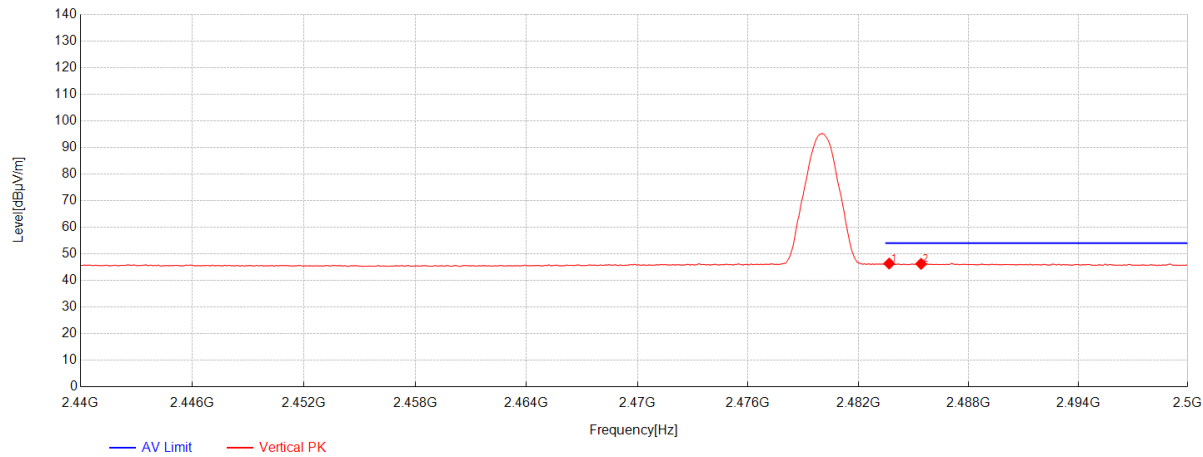


BLE_1M_TX_CH_39_Vertical



Data List								
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity
1	2484.52	57.75	27.15	-26.24	58.66	74.00	15.34	Vertical
2	2485.78	58.21	27.14	-26.24	59.11	74.00	14.89	Vertical

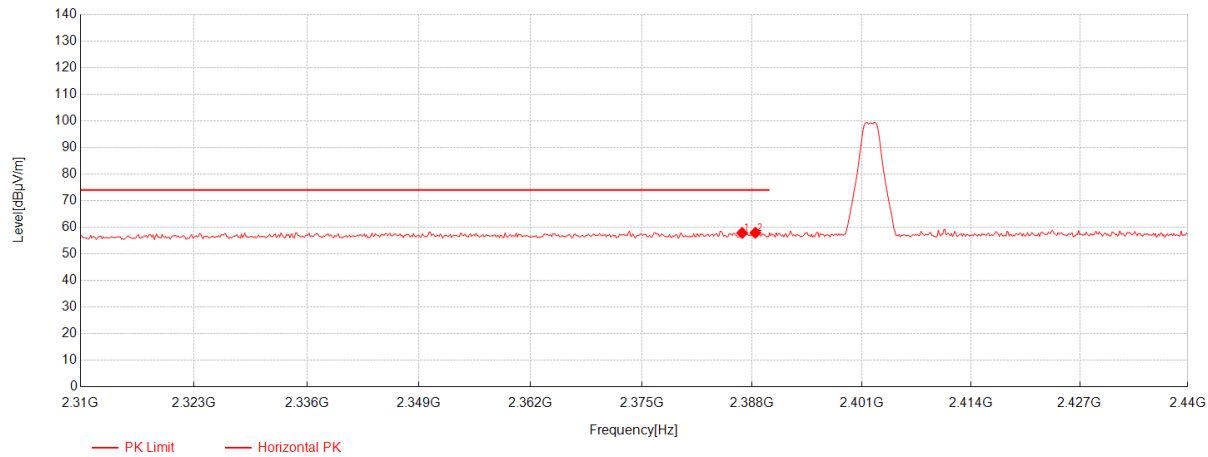
BLE_1M_TX_CH_39_Verical_Average



Data List								
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity
1	2483.68	45.42	27.16	-26.24	46.34	54.00	7.66	Vertical
2	2485.42	45.30	27.15	-26.24	46.21	54.00	7.79	Vertical



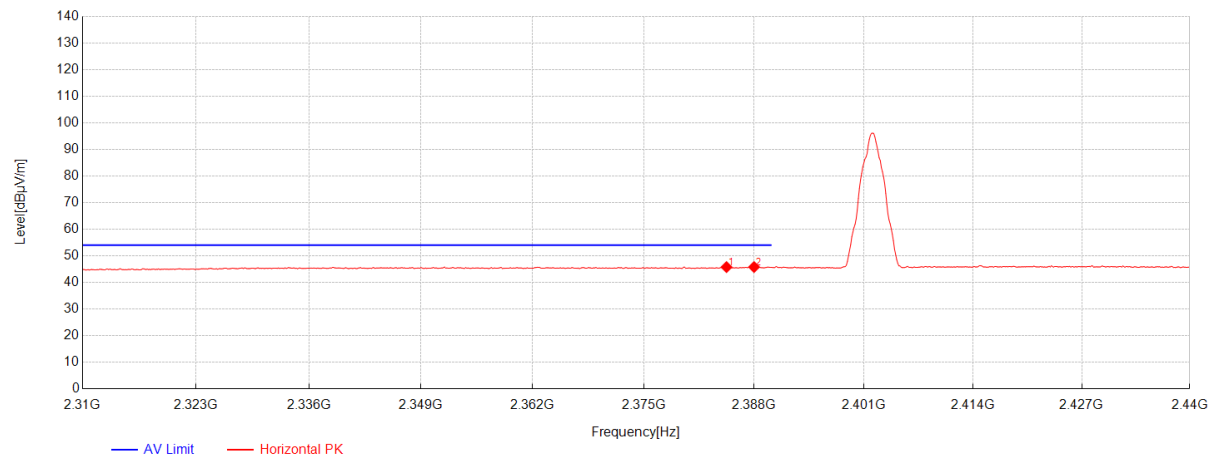
BLE_2M_TX_CH_00_Horizontal_Peak



Data List								
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity
1	2386.83	57.30	26.67	-26.14	57.83	74.00	16.17	Horizontal
2	2388.39	57.35	26.68	-26.13	57.90	74.00	16.10	Horizontal



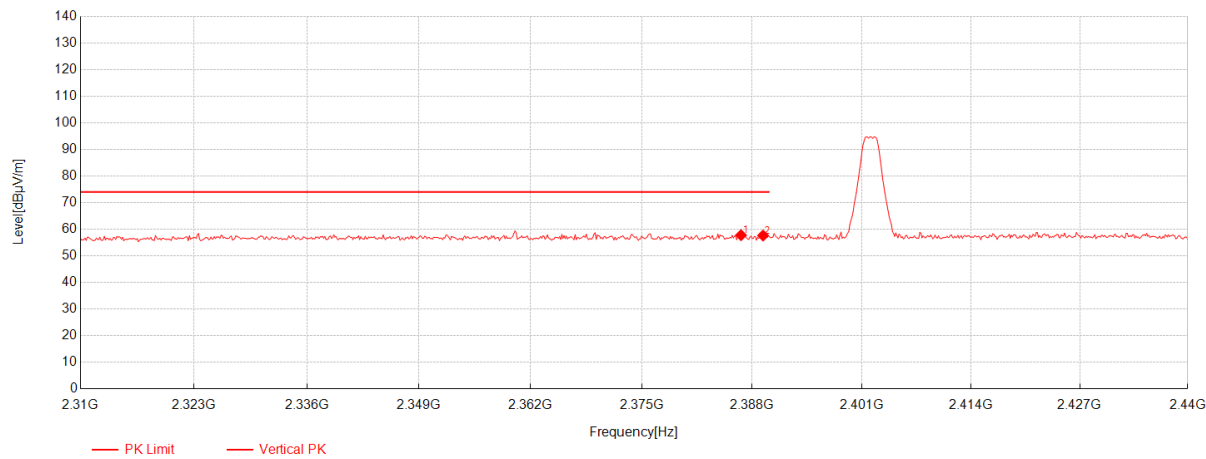
BLE_2M_TX_CH_00_Horizontal_Average



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2384.75	45.25	26.65	-26.15	45.75	54.00	8.25	Horizontal
2	2388	45.24	26.68	-26.14	45.78	54.00	8.22	Horizontal



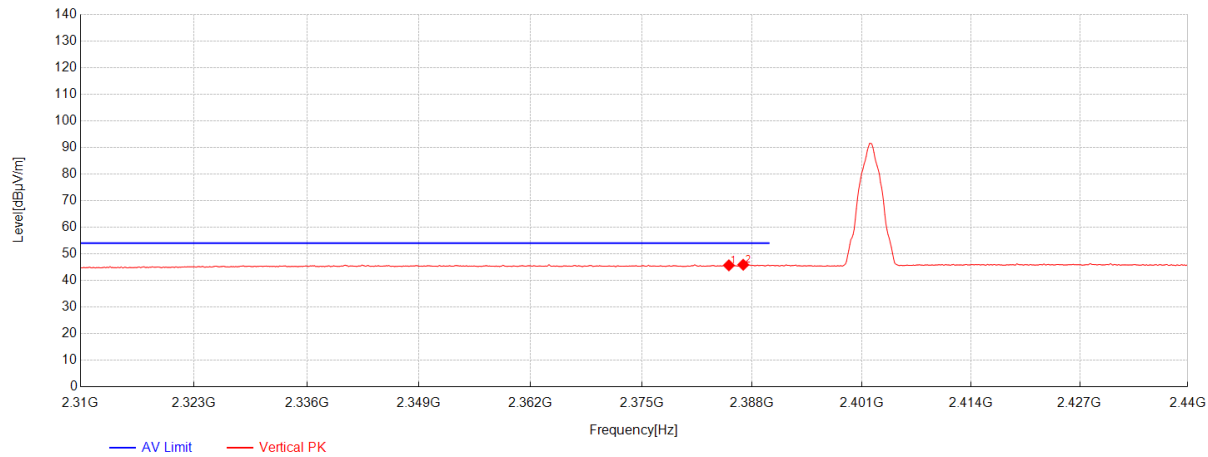
BLE_2M_TX_CH_00_Vertical



Data List								
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity
1	2386.7	57.21	26.67	-26.14	57.74	74.00	16.26	Vertical
2	2389.3	57.05	26.69	-26.13	57.61	74.00	16.39	Vertical



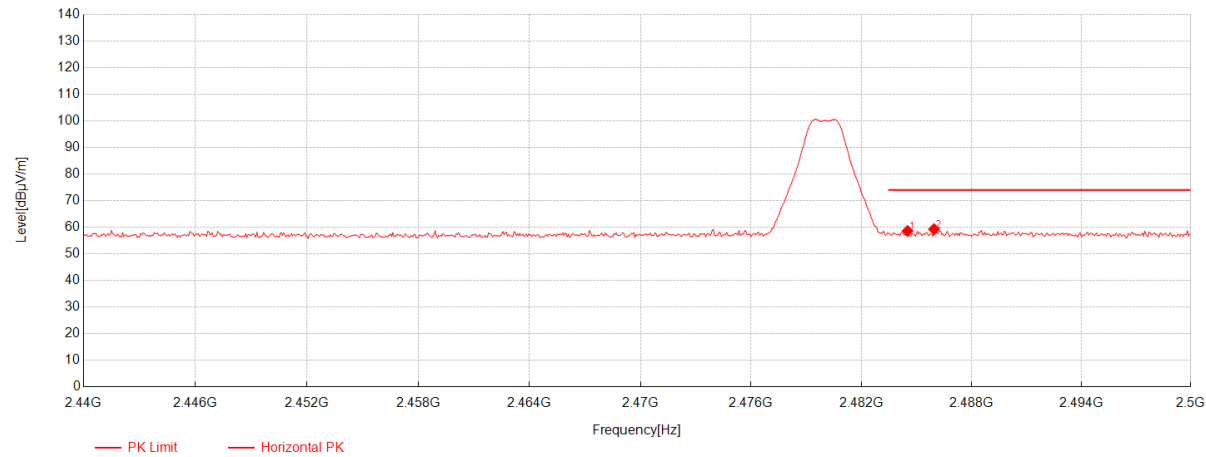
BLE_2M_TX_CH_00_Vertical_Average



Data List								
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity
1	2385.27	45.16	26.65	-26.15	45.66	54.00	8.34	Vertical
2	2386.96	45.35	26.67	-26.14	45.88	54.00	8.12	Vertical



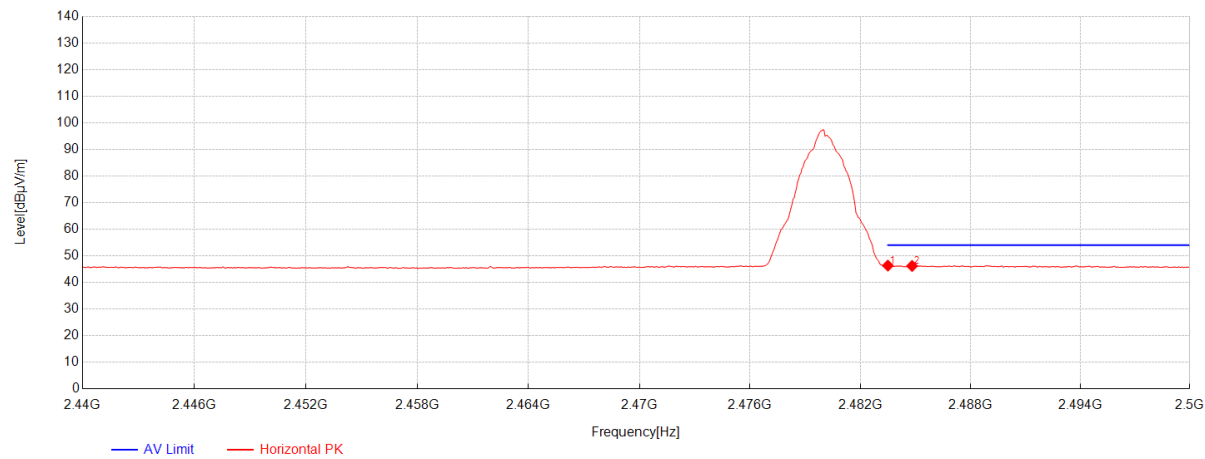
BLE_2M_TX_CH_39_Horizontal_Peak



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2484.52	57.65	27.15	-26.24	58.56	74.00	15.44	Horizontal
2	2485.96	58.35	27.14	-26.24	59.25	74.00	14.75	Horizontal



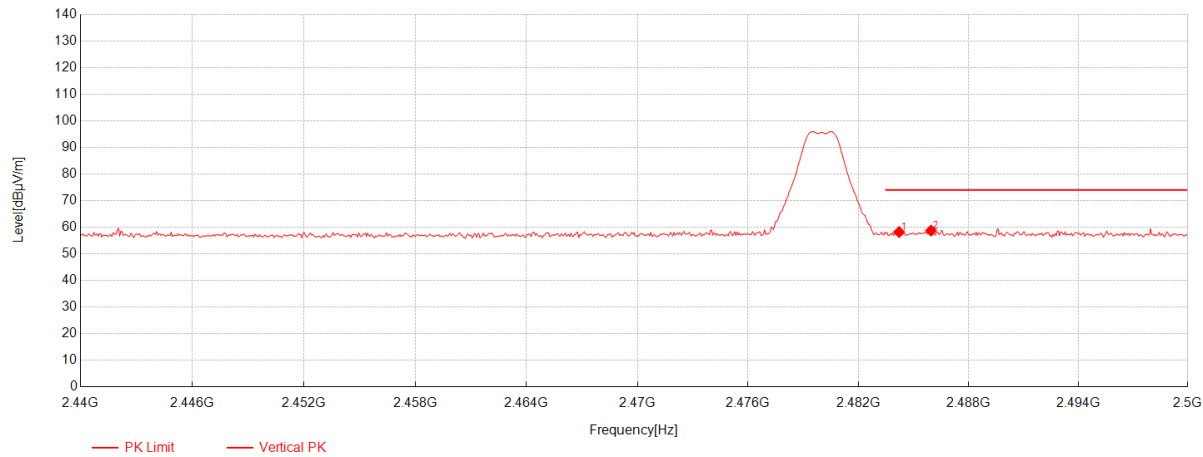
BLE_2M_TX_CH_39_Horizontal_Average



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2483.5	45.38	27.17	-26.24	46.31	54.00	7.69	Horizontal
2	2484.82	45.27	27.15	-26.24	46.18	54.00	7.82	Horizontal



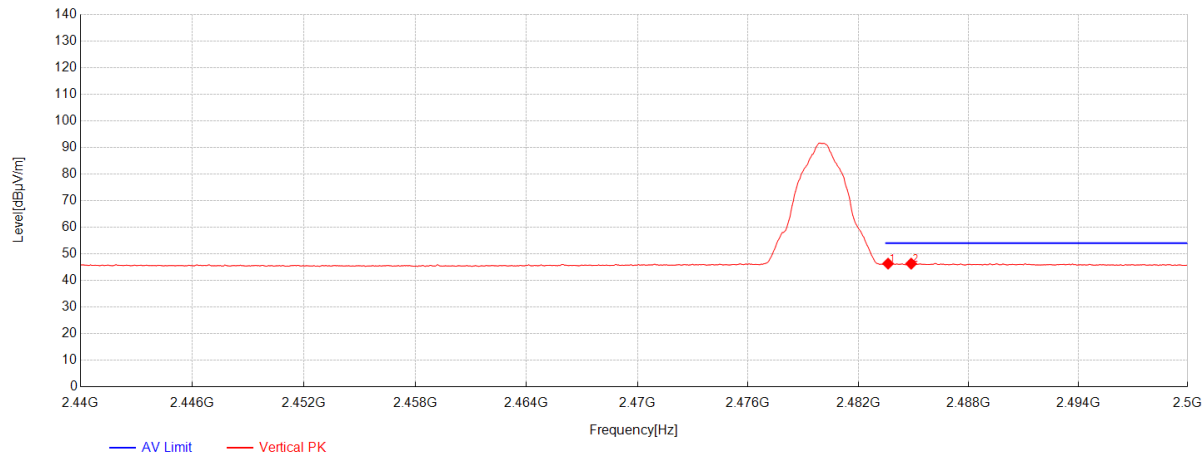
BLE_2M_TX_CH_39_Vertical



Data List								
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity
1	2484.22	57.26	27.16	-26.24	58.18	74.00	15.82	Vertical
2	2485.96	57.82	27.14	-26.24	58.72	74.00	15.28	Vertical



BLE_2M_TX_CH_39_Veritical_Average



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2483.62	45.39	27.16	-26.24	46.31	54.00	7.69	Vertical
2	2484.88	45.38	27.15	-26.24	46.29	54.00	7.71	Vertical

7.3 Radiated Spurious Emissions Below 1GHz

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

Test Method: ANSI C63.10 (2020) Section 6.4,6.5

Measurement Distance: 3M

Limit:

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: 22.1 °C

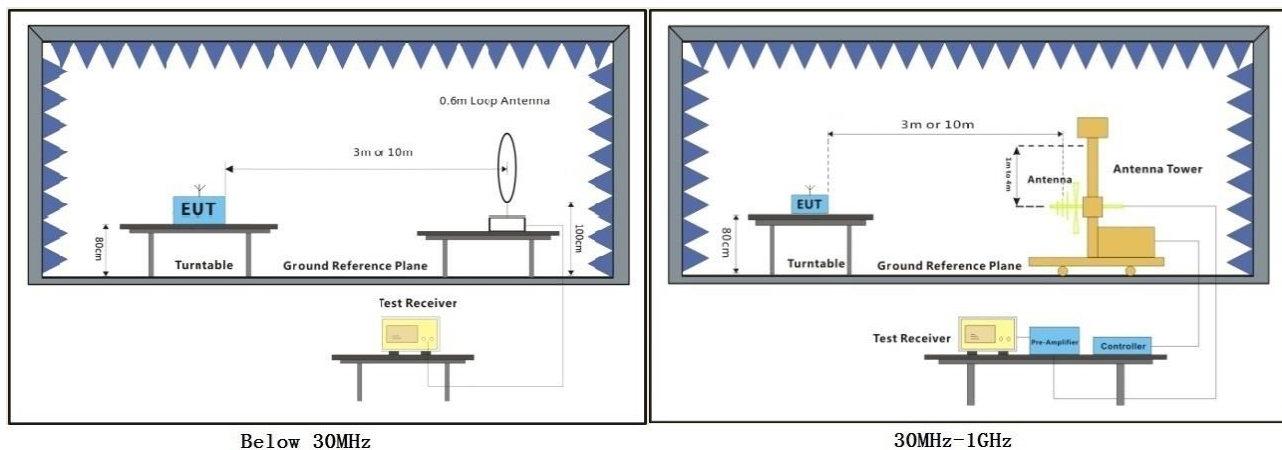
Humidity: 51.6 % RH

Atmospheric Pressure: 1010 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.3.3 Test Setup Diagram



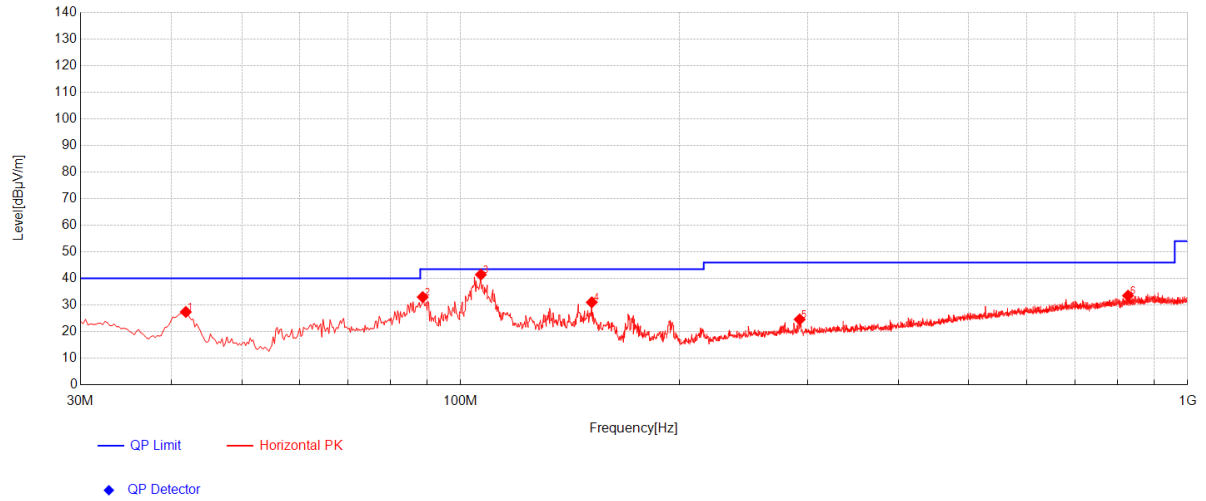
7.3.4 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-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 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:

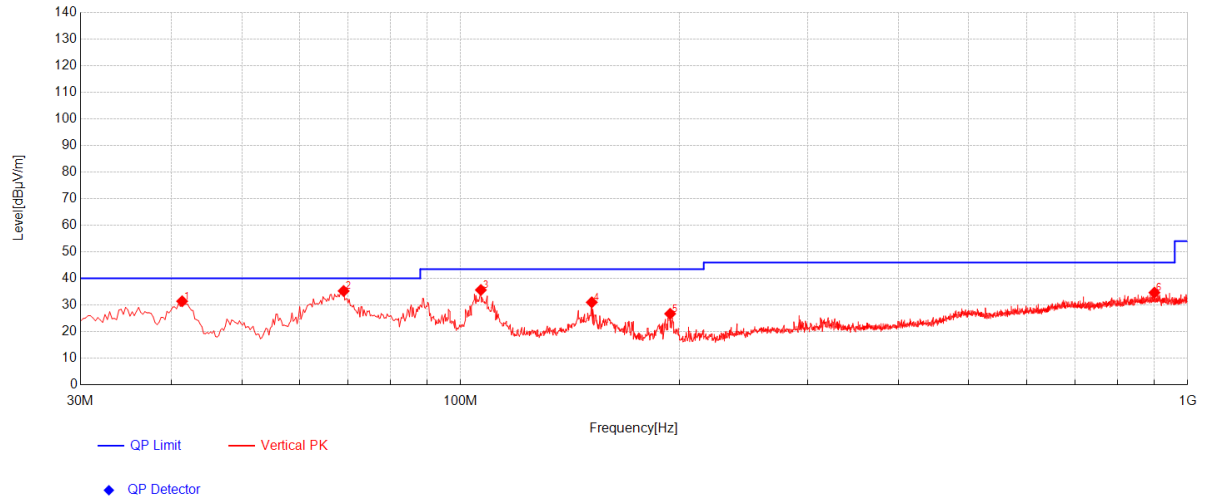
1. $\text{Level} = \text{Read Level} + \text{Cable Loss} + \text{Antenna Factor} - \text{Preamp Factor}$
2. Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

Test Mode: 03; Polarity: Horizontal



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	41.8825	49.41	10.38	-32.39	27.40	40.00	12.60	Horizontal
2	88.685	54.20	10.71	-31.92	32.99	43.50	10.51	Horizontal
3	106.63	60.72	12.51	-31.80	41.43	43.50	2.07	Horizontal
4	151.4925	50.97	11.50	-31.45	31.02	43.50	12.48	Horizontal
5	292.6275	41.10	14.55	-31.05	24.60	46.00	21.40	Horizontal
6	827.825	39.95	22.74	-29.15	33.54	46.00	12.46	Horizontal

Test Mode: 03; Polarity: Vertical



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	41.3975	53.10	10.72	-32.40	31.42	40.00	8.58	Vertical
2	69.0425	60.45	6.91	-32.09	35.27	40.00	4.73	Vertical
3	106.63	54.95	12.51	-31.80	35.66	43.50	7.84	Vertical
4	151.4925	50.98	11.50	-31.45	31.03	43.50	12.47	Vertical
5	194.1725	47.54	10.52	-31.33	26.73	43.50	16.77	Vertical
6	900.09	40.42	23.39	-29.14	34.67	46.00	11.33	Vertical

7.4 Radiated Spurious Emissions Above 1GHz

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

Test Method: ANSI C63.10 (2020) Section 6.6

Measurement Distance: 3M

Limit:

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

7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 22.1 °C

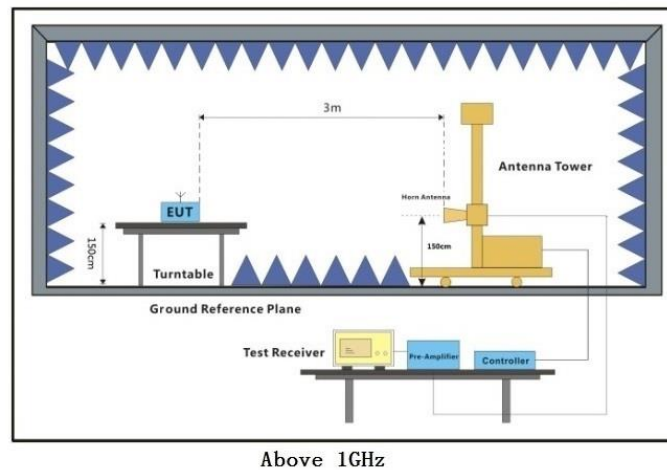
Humidity: 51.6 % RH

Atmospheric Pressure: 1010 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	04	TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.4.3 Test Setup Diagram



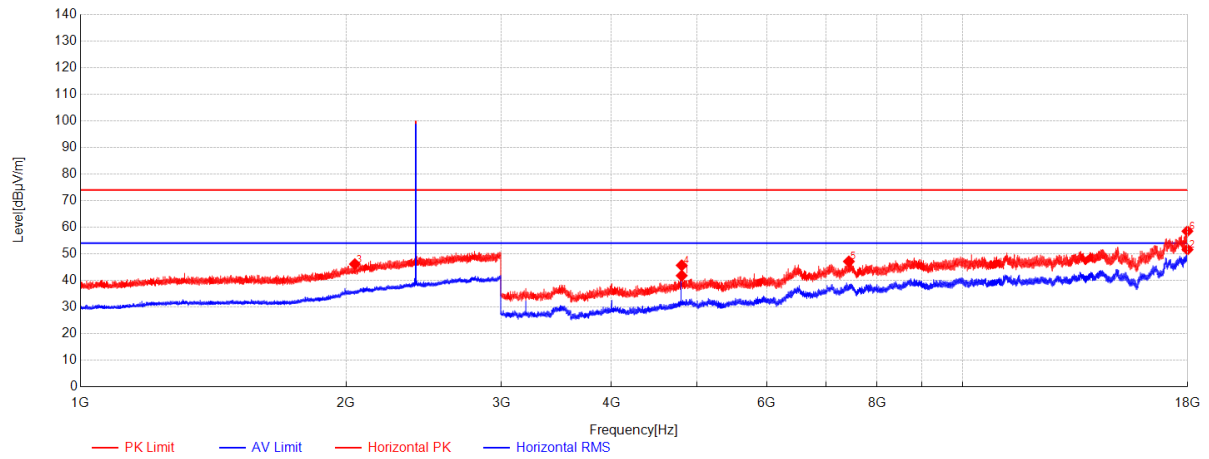
7.4.4 Measurement Procedure and Data

- 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 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:

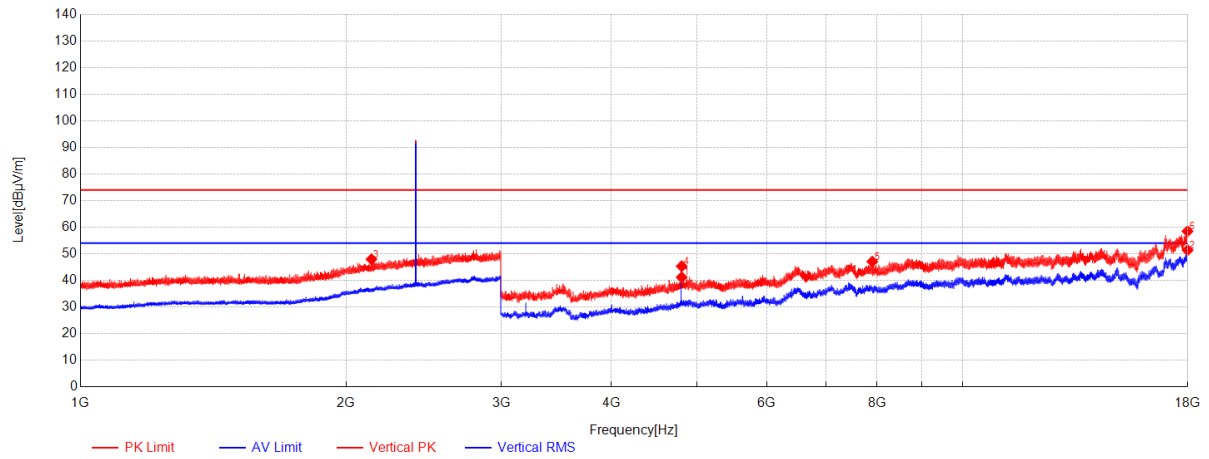
1. $\text{Level} = \text{Read Level} + \text{Cable Loss} + \text{Antenna Factor} - \text{Preamp Factor}$
2. Scan from 1GHz to 25GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. 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.

BLE_1M_TX_CH_00_Horizontal



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4804.5	60.35	31.49	-50.04	41.80	54.00	12.20	Horizontal
2	17995.5	49.61	43.20	-41.24	51.57	54.00	2.43	Horizontal
3	2046.8333	48.02	25.10	-27.00	46.12	74.00	27.88	Horizontal
4	4804.5	64.21	31.49	-50.04	45.66	74.00	28.34	Horizontal
5	7432.5	58.42	36.24	-47.54	47.12	74.00	26.88	Horizontal
6	17987	56.67	43.20	-41.38	58.49	74.00	15.51	Horizontal

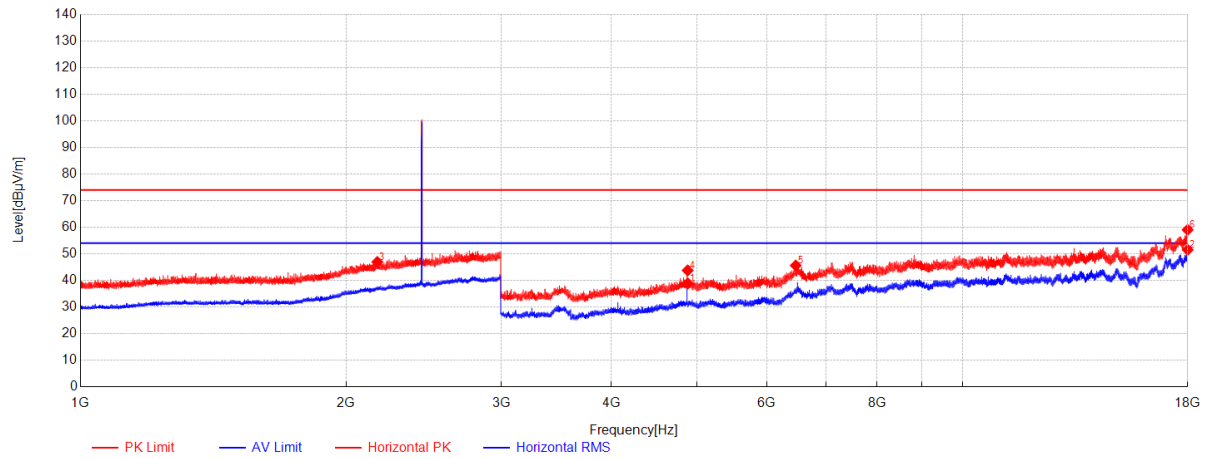
BLE_1M_TX_CH_00_Vertical



Data List

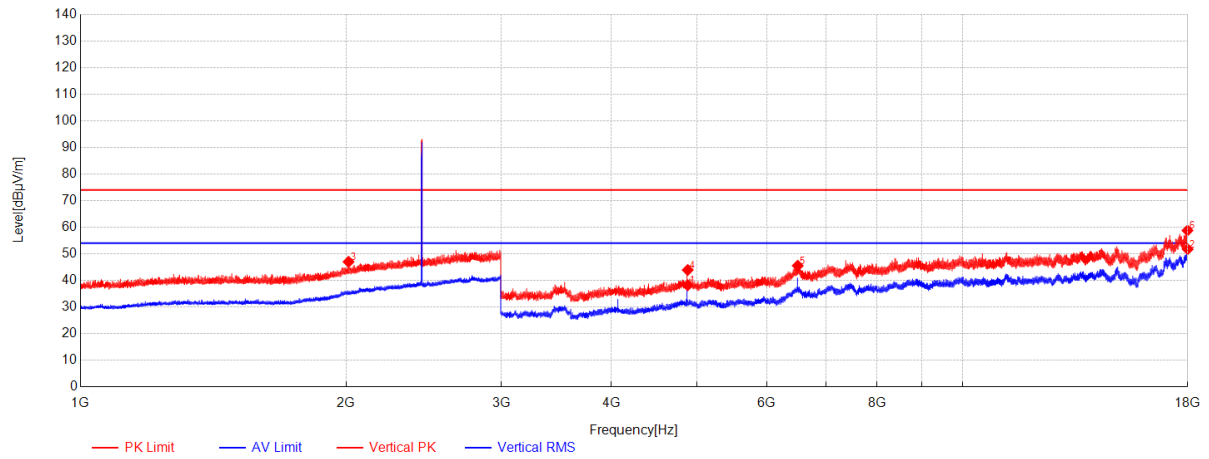
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4804	59.73	31.49	-50.04	41.18	54.00	12.82	Vertical
2	17995.5	49.40	43.20	-41.24	51.36	54.00	2.64	Vertical
3	2137.5	49.03	25.60	-26.69	47.94	74.00	26.06	Vertical
4	4804.5	63.87	31.49	-50.04	45.32	74.00	28.68	Vertical
5	7901.5	57.81	36.89	-47.64	47.06	74.00	26.94	Vertical
6	17989.5	56.58	43.20	-41.34	58.44	74.00	15.56	Vertical

BLE_1M_TX_CH_19_Horizontal



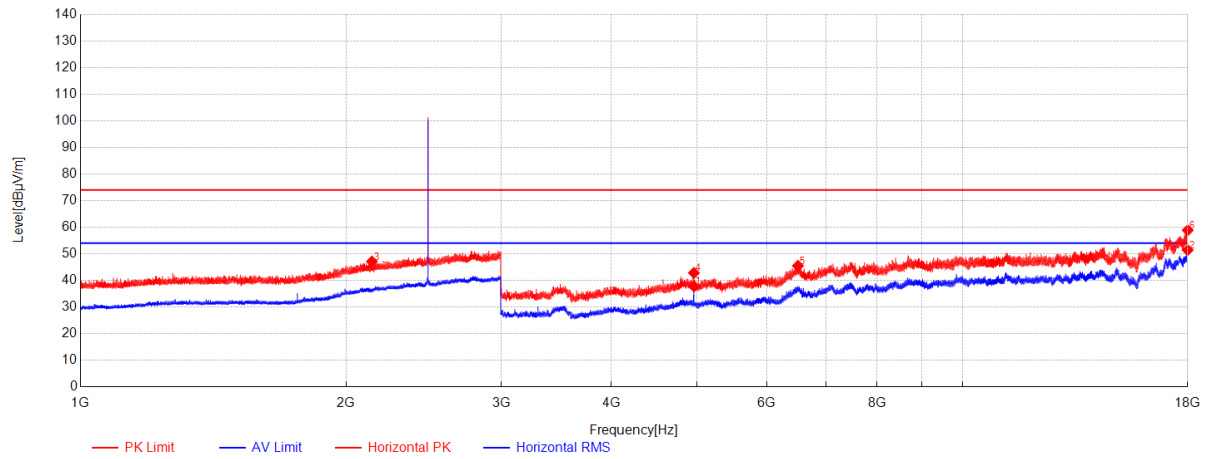
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4881	58.02	31.46	-50.61	38.87	54.00	15.13	Horizontal
2	18000	49.48	43.20	-41.16	51.52	54.00	2.48	Horizontal
3	2170.6667	47.35	26.09	-26.51	46.93	74.00	27.07	Horizontal
4	4879.5	62.89	31.46	-50.60	43.75	74.00	30.25	Horizontal
5	6470	58.05	34.20	-46.65	45.60	74.00	28.40	Horizontal
6	17998	56.99	43.20	-41.19	59.00	74.00	15.00	Horizontal

BLE_1M_TX_CH_19_Vertical



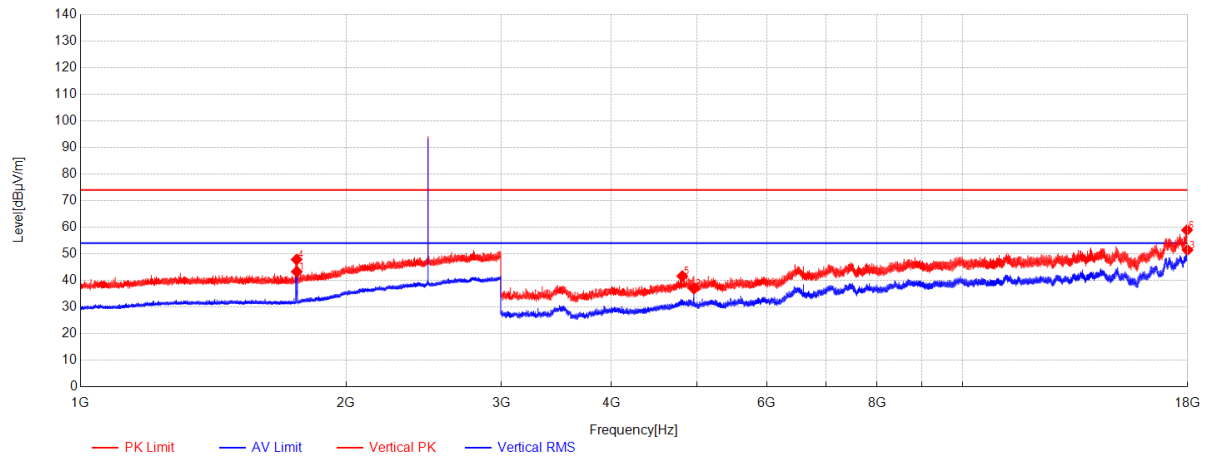
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4880.5	57.34	31.46	-50.61	38.19	54.00	15.81	Vertical
2	17999.5	49.70	43.20	-41.17	51.73	54.00	2.27	Vertical
3	2013.5	48.87	25.17	-27.06	46.98	74.00	27.02	Vertical
4	4880.5	63.06	31.46	-50.61	43.91	74.00	30.09	Vertical
5	6504	57.55	34.24	-46.28	45.51	74.00	28.49	Vertical
6	17990	56.86	43.20	-41.33	58.73	74.00	15.27	Vertical

BLE_1M_TX_CH_39_Horizontal



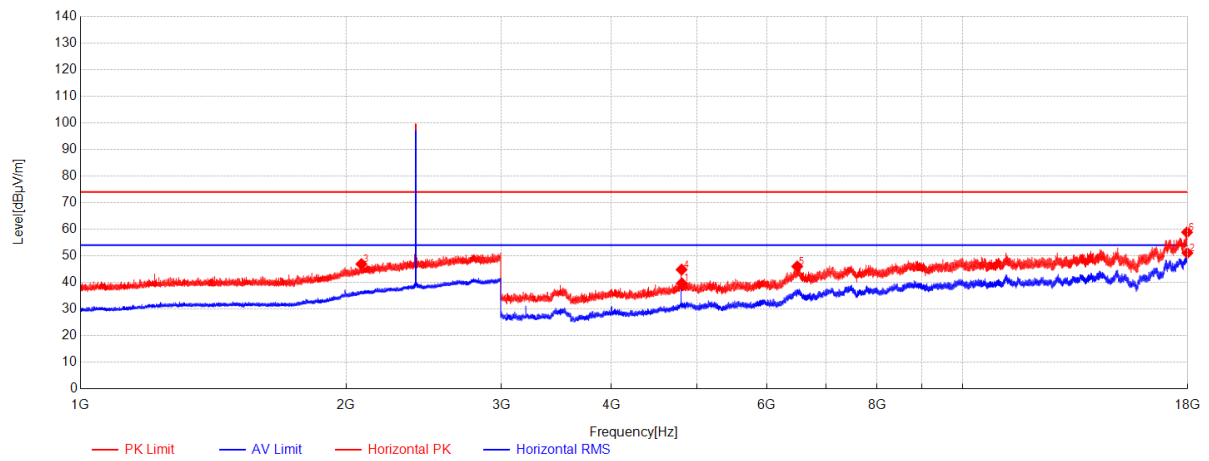
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4960.5	56.92	31.56	-50.71	37.77	54.00	16.23	Horizontal
2	18000	49.36	43.20	-41.16	51.40	54.00	2.60	Horizontal
3	2140	48.15	25.60	-26.67	47.08	74.00	26.92	Horizontal
4	4959.5	61.97	31.56	-50.71	42.82	74.00	31.18	Horizontal
5	6507.5	57.58	34.28	-46.37	45.49	74.00	28.51	Horizontal
6	17999.5	56.81	43.20	-41.17	58.84	74.00	15.16	Horizontal

BLE_1M_TX_CH_39_Vertical



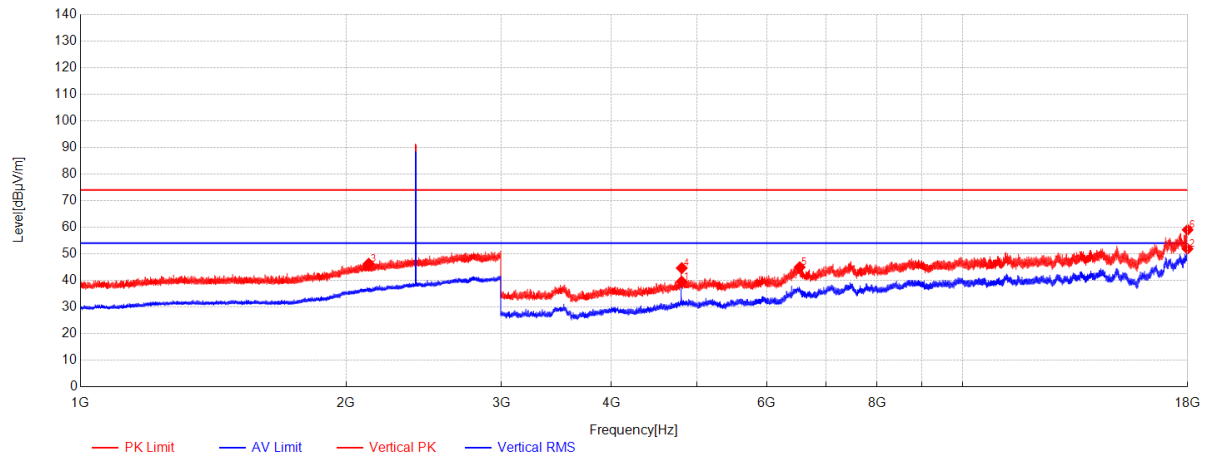
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	1759	47.29	23.78	-27.80	43.27	54.00	10.73	Vertical
2	4960	56.07	31.56	-50.71	36.92	54.00	17.08	Vertical
3	17992	49.53	43.20	-41.30	51.43	54.00	2.57	Vertical
4	1758.3333	51.88	23.77	-27.80	47.85	74.00	26.15	Vertical
5	4811.5	60.23	31.48	-50.10	41.61	74.00	32.39	Vertical
6	17970.5	57.37	43.20	-41.67	58.90	74.00	15.10	Vertical

BLE_2M_TX_CH_00_Horizontal



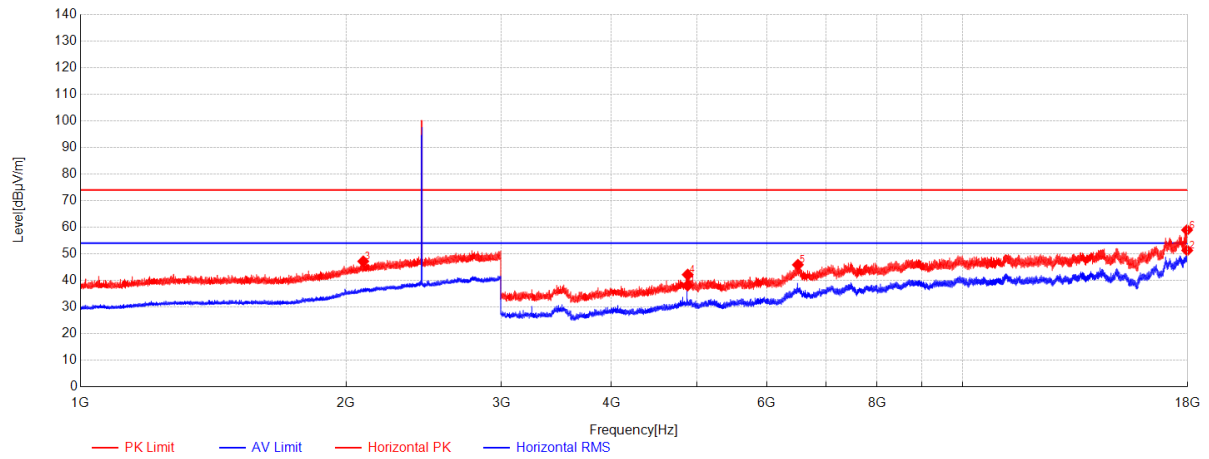
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4805.5	58.22	31.49	-50.05	39.66	54.00	14.34	Horizontal
2	17986.5	49.22	43.20	-41.39	51.03	54.00	2.97	Horizontal
3	2082.1667	48.05	25.76	-26.93	46.88	74.00	27.12	Horizontal
4	4803	63.34	31.49	-50.03	44.80	74.00	29.20	Horizontal
5	6495.5	58.04	34.20	-46.24	46.00	74.00	28.00	Horizontal
6	17970	57.32	43.20	-41.68	58.84	74.00	15.16	Horizontal

BLE_2M_TX_CH_00_Verical



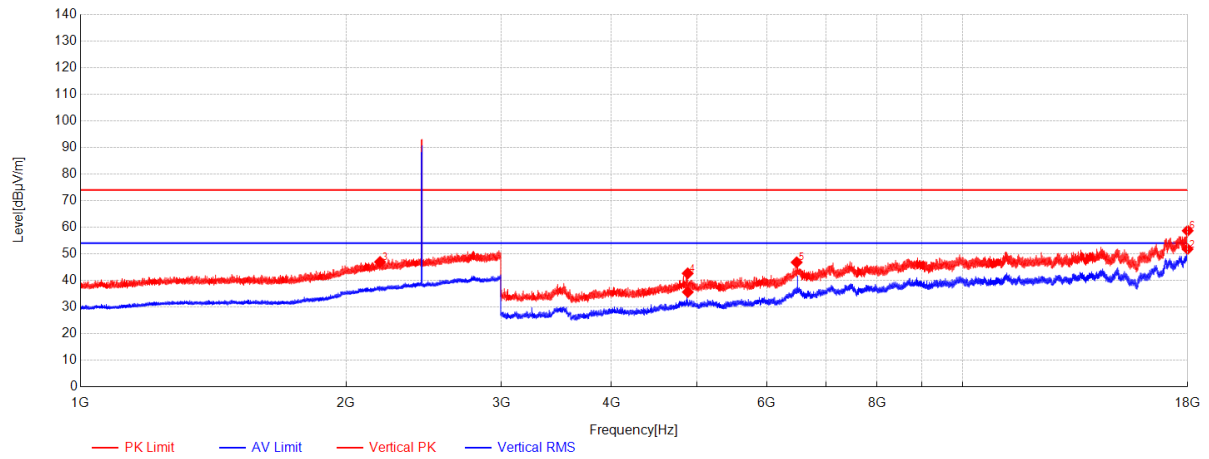
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4803.5	58.10	31.49	-50.04	39.55	54.00	14.45	Vertical
2	17991	49.97	43.20	-41.31	51.86	54.00	2.14	Vertical
3	2122.3333	47.22	25.83	-26.77	46.28	74.00	27.72	Vertical
4	4805	63.19	31.49	-50.05	44.63	74.00	29.37	Vertical
5	6537	57.55	34.57	-47.14	44.98	74.00	29.02	Vertical
6	17998.5	56.99	43.20	-41.19	59.00	74.00	15.00	Vertical

BLE_2M_TX_CH_19_Horizontal



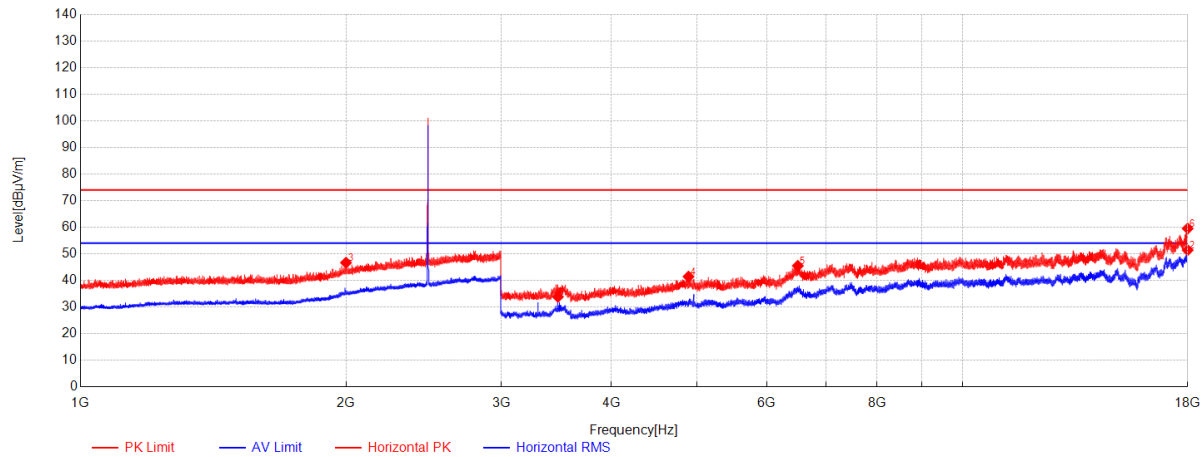
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4879.5	57.23	31.46	-50.60	38.09	54.00	15.91	Horizontal
2	17978	49.59	43.20	-41.54	51.25	54.00	2.75	Horizontal
3	2092.1667	48.44	25.64	-26.91	47.17	74.00	26.83	Horizontal
4	4880.5	61.32	31.46	-50.61	42.17	74.00	31.83	Horizontal
5	6506.5	57.93	34.27	-46.34	45.86	74.00	28.14	Horizontal
6	17973	57.34	43.20	-41.62	58.92	74.00	15.08	Horizontal

BLE_2M_TX_CH_19_Vertical



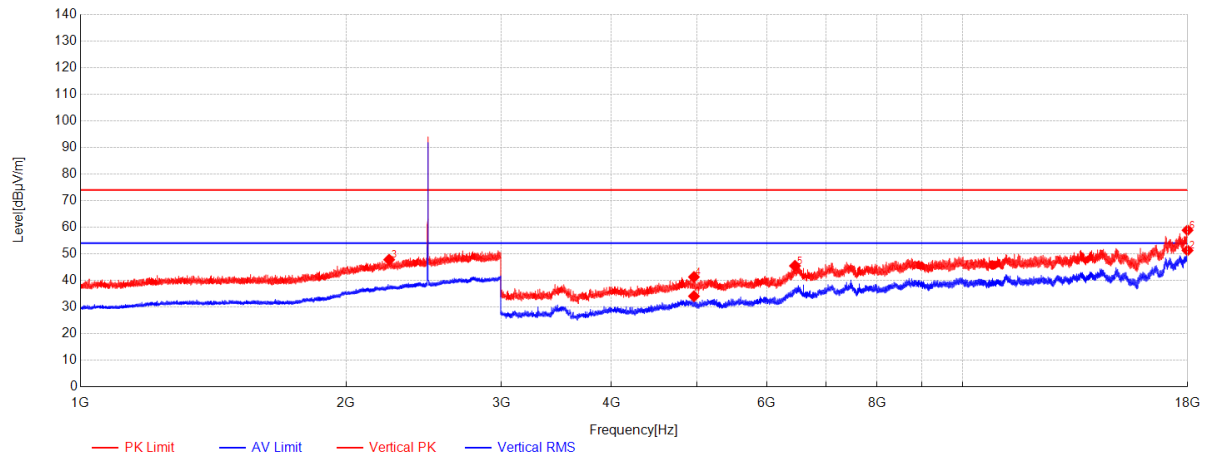
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4881.5	54.78	31.46	-50.61	35.63	54.00	18.37	Vertical
2	17996.5	49.78	43.20	-41.22	51.76	54.00	2.24	Vertical
3	2185.8333	47.46	25.90	-26.43	46.93	74.00	27.07	Vertical
4	4880	61.78	31.46	-50.60	42.64	74.00	31.36	Vertical
5	6486.5	58.98	34.20	-46.39	46.79	74.00	27.21	Vertical
6	18000	56.62	43.20	-41.16	58.66	74.00	15.34	Vertical

BLE_2M_TX_CH_39_Horizontal



Data List								
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity
1	3477.5	56.73	28.40	-51.30	33.83	54.00	20.17	Horizontal
2	17999.5	49.34	43.20	-41.17	51.37	54.00	2.63	Horizontal
3	2000	48.55	25.20	-27.09	46.66	74.00	27.34	Horizontal
4	4890.5	60.62	31.48	-50.68	41.42	74.00	32.58	Horizontal
5	6505.5	57.53	34.26	-46.31	45.48	74.00	28.52	Horizontal
6	17999	57.48	43.20	-41.18	59.50	74.00	14.50	Horizontal

BLE_2M_TX_CH_39_Verical



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4961	53.20	31.57	-50.71	34.06	54.00	19.94	Vertical
2	17992.5	49.35	43.20	-41.29	51.26	54.00	2.74	Vertical
3	2238.6667	47.73	26.49	-26.43	47.79	74.00	26.21	Vertical
4	4960.5	60.45	31.56	-50.71	41.30	74.00	32.70	Vertical
5	6457.5	58.11	34.20	-46.85	45.46	74.00	28.54	Vertical
6	17993.5	56.92	43.20	-41.27	58.85	74.00	15.15	Vertical

7.5 Conducted Peak Output Power

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

Test Method: ANSI C63.10 (2020) 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 $25 \leq$ 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: 25.3 °C

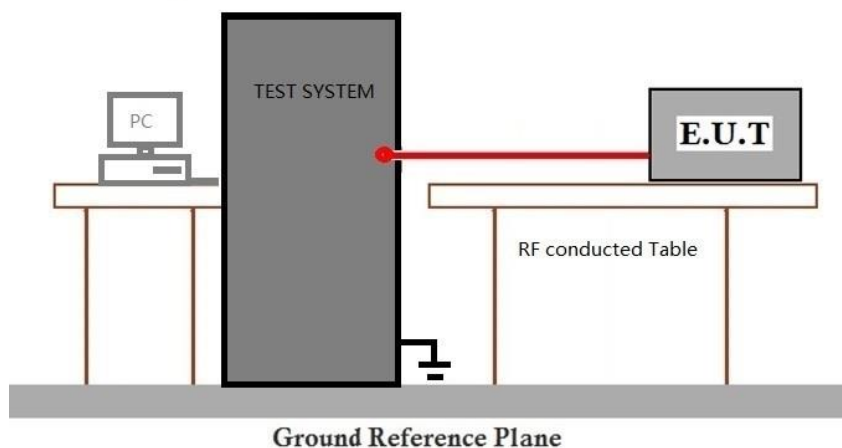
Humidity: 46.2 % RH

Atmospheric Pressure: 1010 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	04	TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.

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.

Please Refer to Appendix for Details

7.6 Minimum 6dB Bandwidth

Test Requirement 47 CFR Part 15, Subpart C 15.247a(2)

Test Method: ANSI C63.10 (2020) Section 11.8.1

Limit:

≥500 kHz

7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 25.3 °C

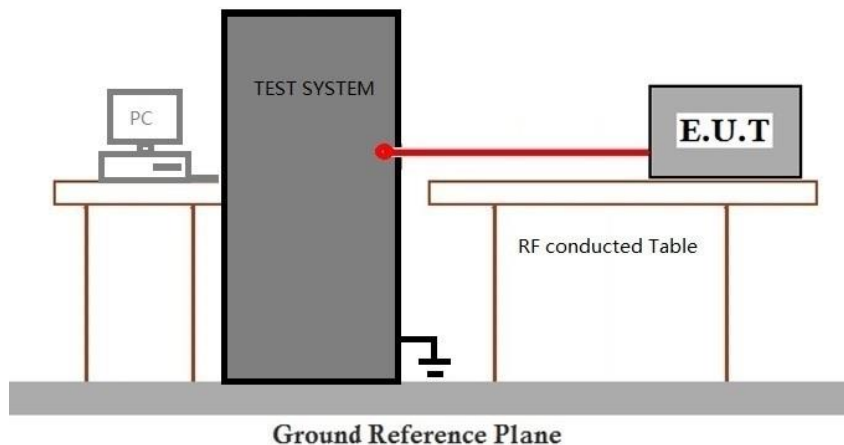
Humidity: 46.2 % RH

Atmospheric Pressure: 1010 mbar

7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	04	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

Please Refer to Appendix for Details

7.7 Power Spectrum Density

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

Test Method: ANSI C63.10 (2020) 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: 25.3 °C

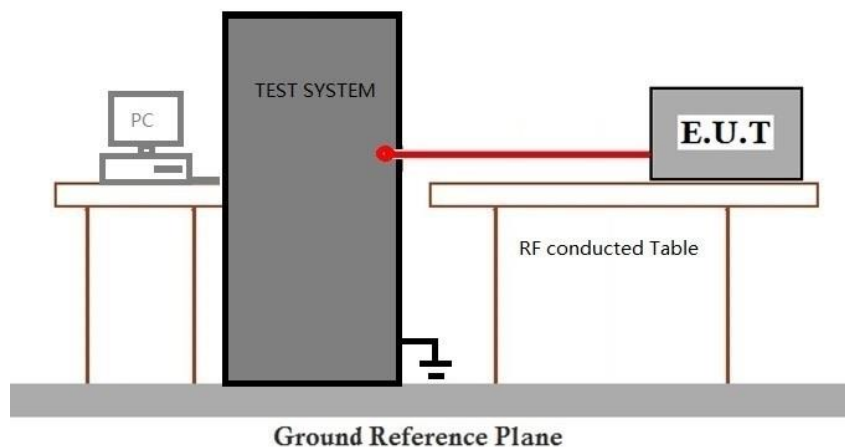
Humidity: 46.2 % RH

Atmospheric Pressure: 1010 mbar

7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	04	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

Please Refer to Appendix for Details

7.8 Conducted Band Edges Measurement

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

Test Method: ANSI C63.10 (2020) Section 6.10.4

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: 25.3 °C

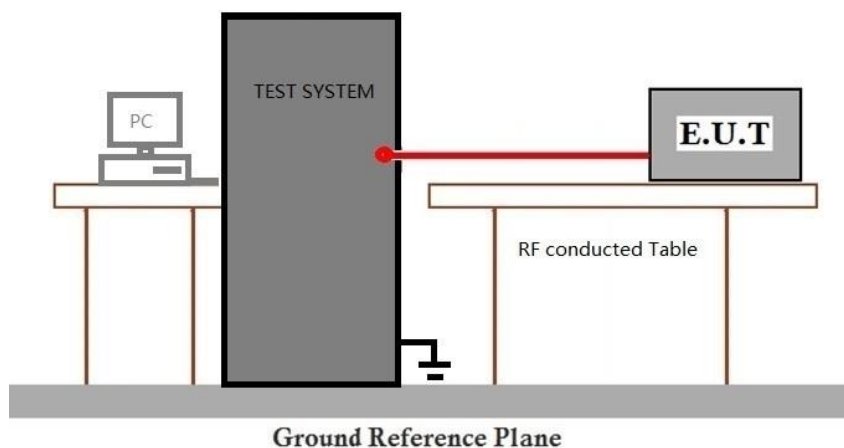
Humidity: 46.2 % RH

Atmospheric Pressure: 1010 mbar

7.8.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	04	TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.8.3 Test Setup Diagram





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7.8.4 Measurement Procedure and Data

Please Refer to Appendix for Details

7.9 Conducted Spurious Emissions

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

Test Method: ANSI C63.10 (2020) 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: 25.3 °C

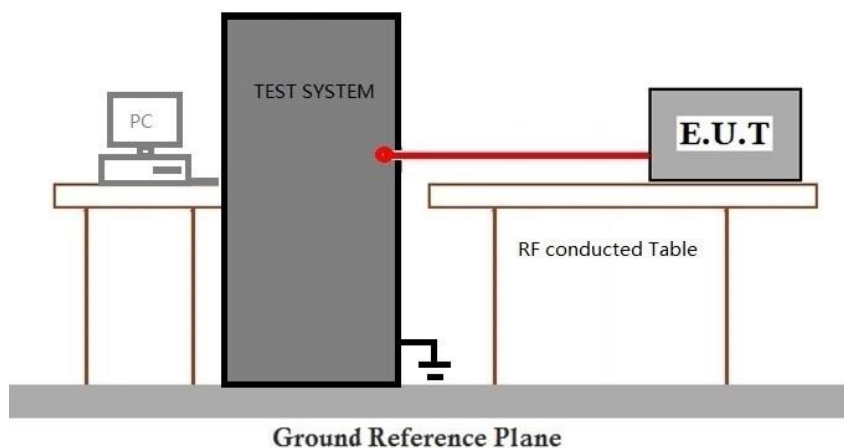
Humidity: 46.2 % RH

Atmospheric Pressure: 1010 mbar

7.9.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	03	TX mode(1Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	04	TX mode(2Mbps)_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.9.3 Test Setup Diagram





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7.9.4 Measurement Procedure and Data

Please Refer to Appendix for Details



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8 Test Setup Photo

Refer to Appendix - Test Setup Photo for KSCR2512002777AT

9 EUT Constructional Details (EUT Photos)

Refer to Appendix_Photographs of EUT Constructional Details for KSCR2512002777AT



10 Appendix

1. Duty Cycle

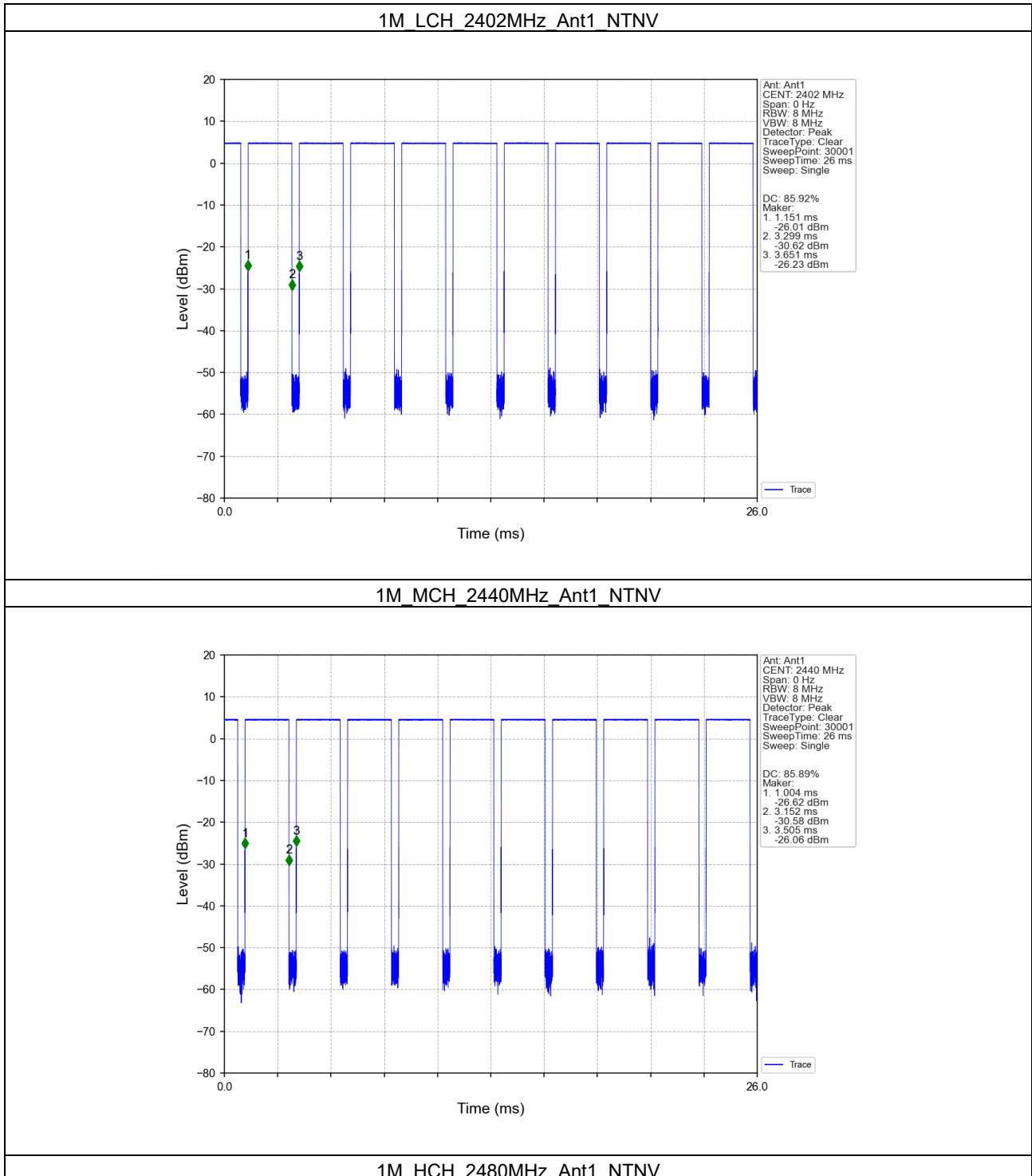
1.1 Test Result

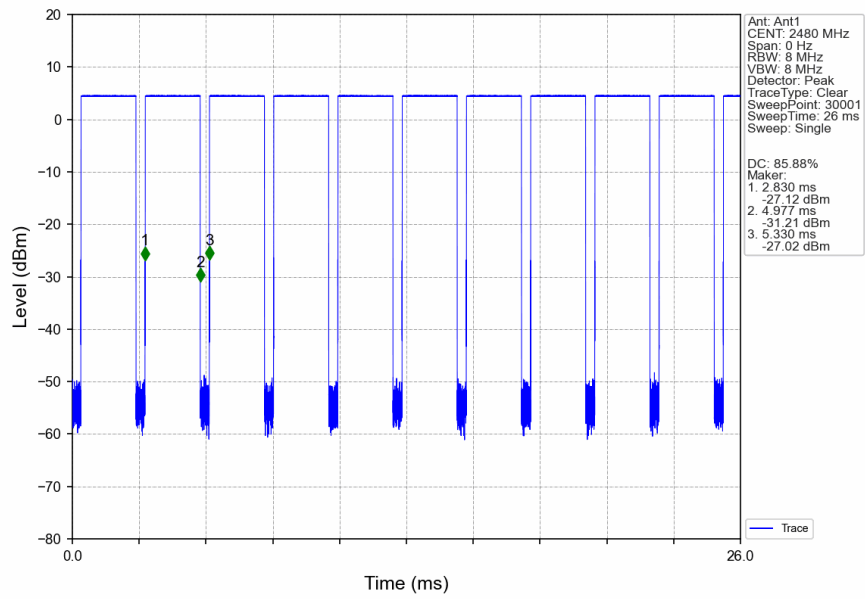
1.1.1 Ant1

Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
1M	SISO	2402	2.148	2.500	85.92	0.66	0.03
		2440	2.148	2.501	85.89	0.66	0.03
		2480	2.147	2.500	85.88	0.66	0.03
2M	SISO	2402	1.091	1.876	58.16	2.35	0.03
		2440	1.091	1.875	58.19	2.35	0.03
		2480	1.081	1.875	57.65	2.39	0.03

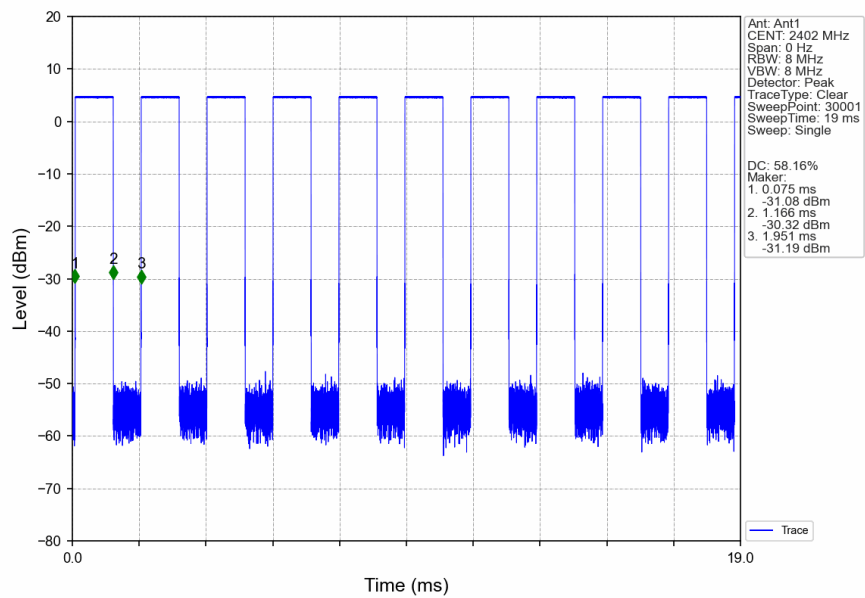
1.2 Test Graph

1.2.1 Ant1

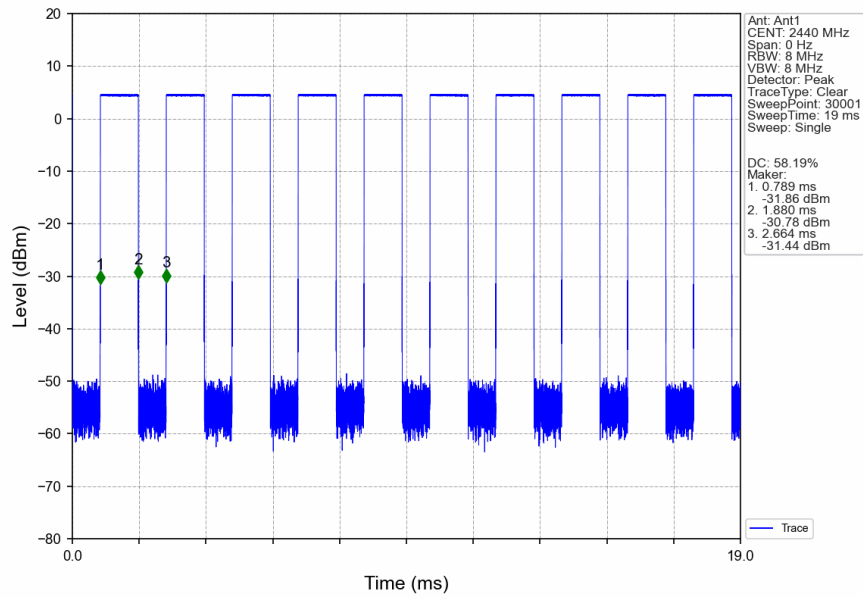




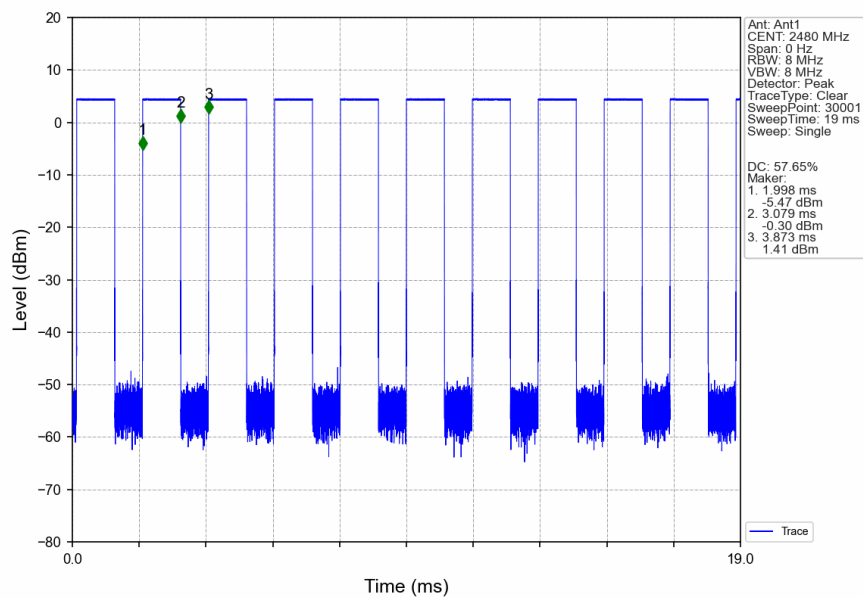
2M LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



2. Bandwidth

2.1 Test Result

2.1.1 OBW

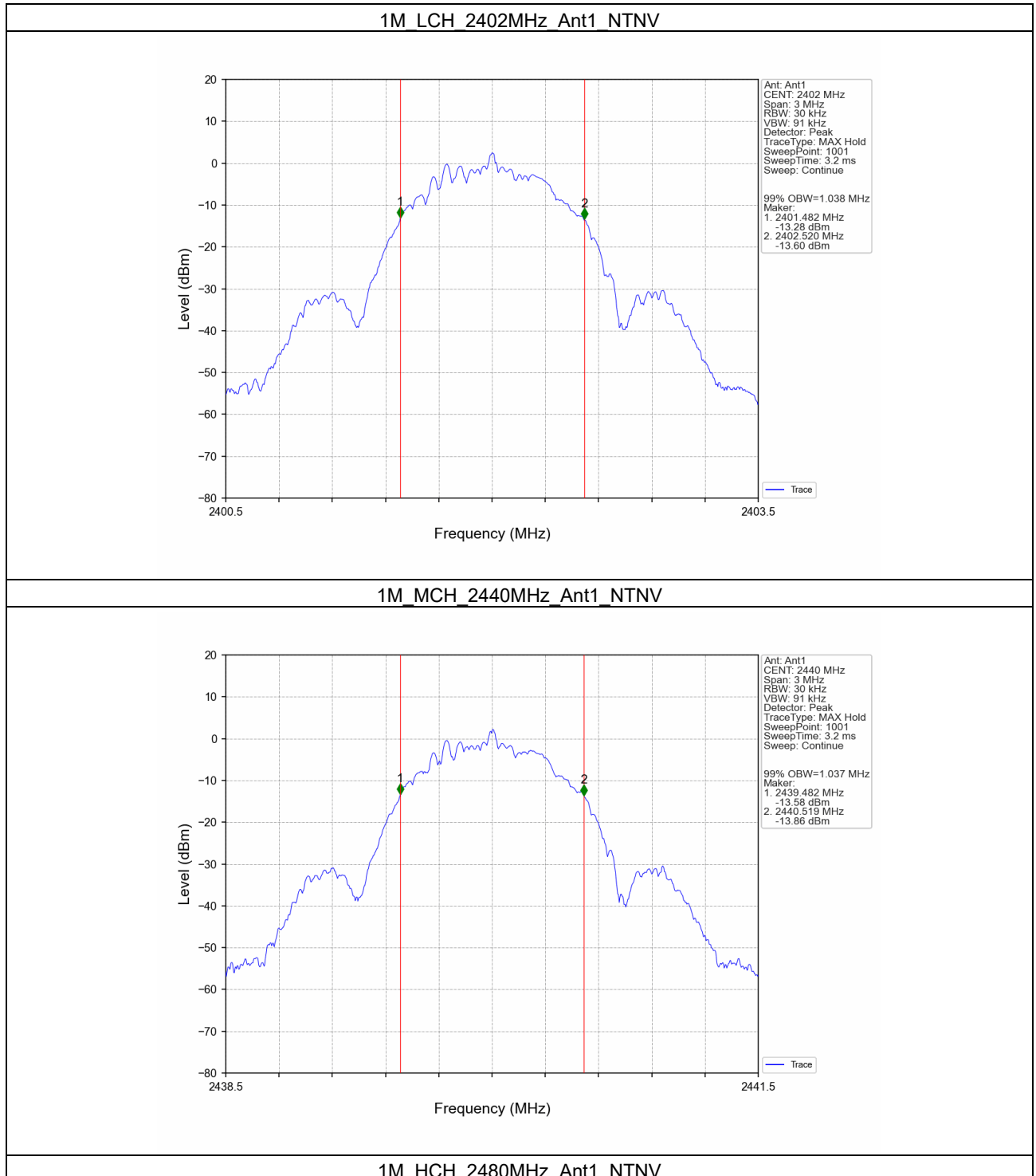
Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	1	1.038	/	Pass
		2440	1	1.037	/	Pass
		2480	1	1.037	/	Pass
2M	SISO	2402	1	2.077	/	Pass
		2440	1	2.076	/	Pass
		2480	1	2.076	/	Pass

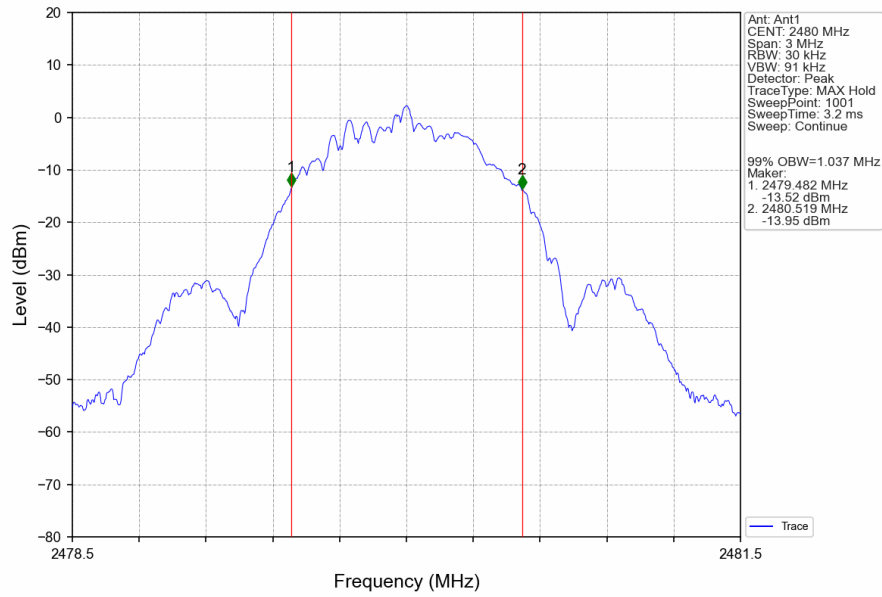
2.1.2 6dB BW

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	1	0.666	≥ 0.5	Pass
		2440	1	0.667	≥ 0.5	Pass
		2480	1	0.672	≥ 0.5	Pass
2M	SISO	2402	1	1.158	≥ 0.5	Pass
		2440	1	1.142	≥ 0.5	Pass
		2480	1	1.153	≥ 0.5	Pass

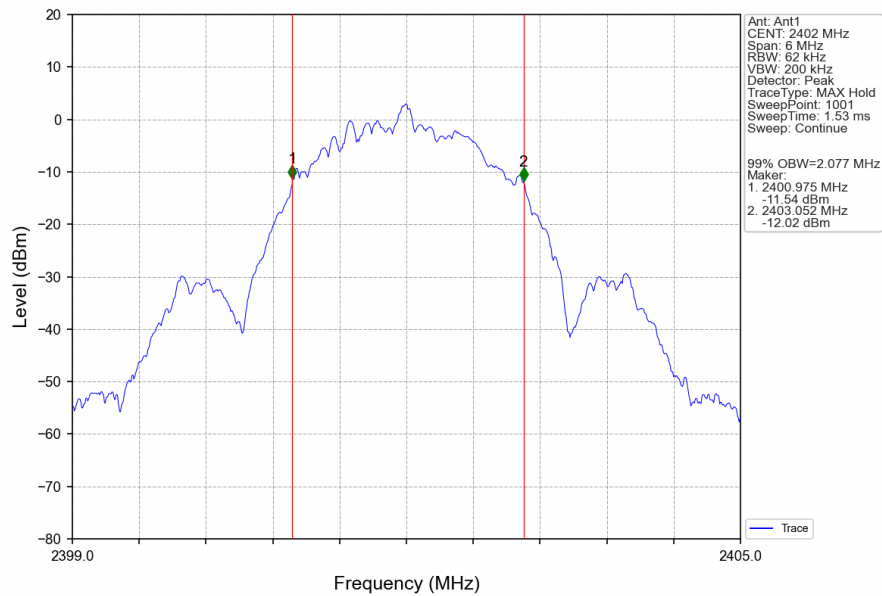
2.2 Test Graph

2.2.1 OBW

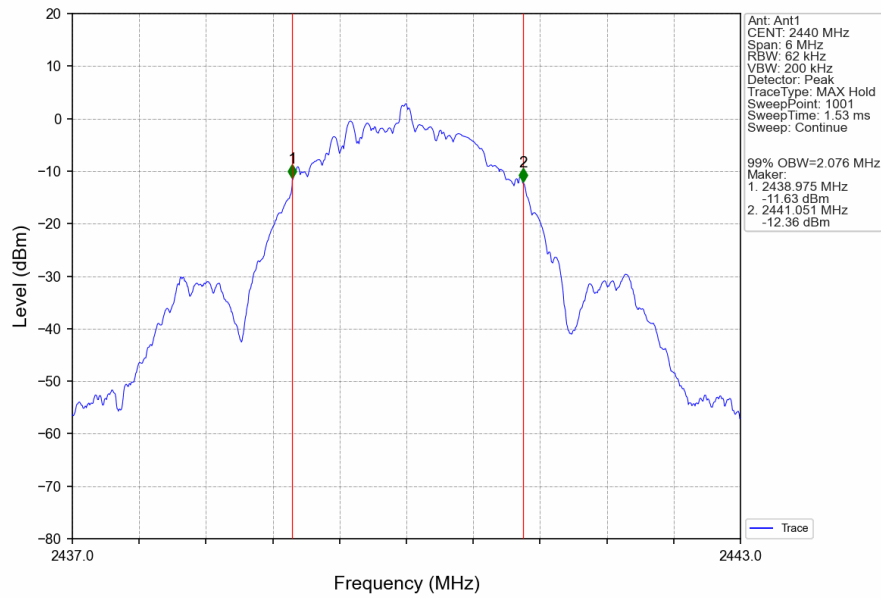




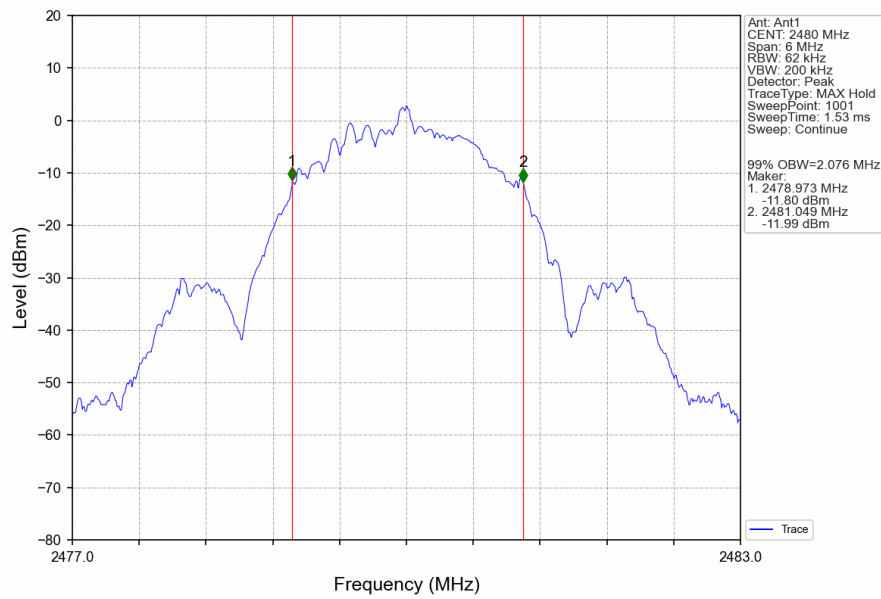
2M LCH 2402MHz Ant1 NTNV



2M_MCH_2440MHz_Ant1_NTNV

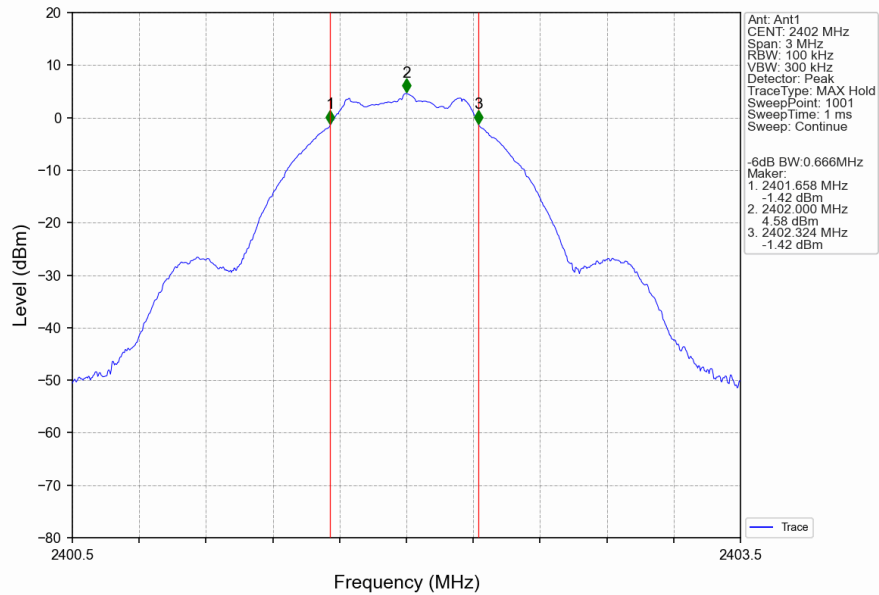


2M_HCH_2480MHz_Ant1_NTNV

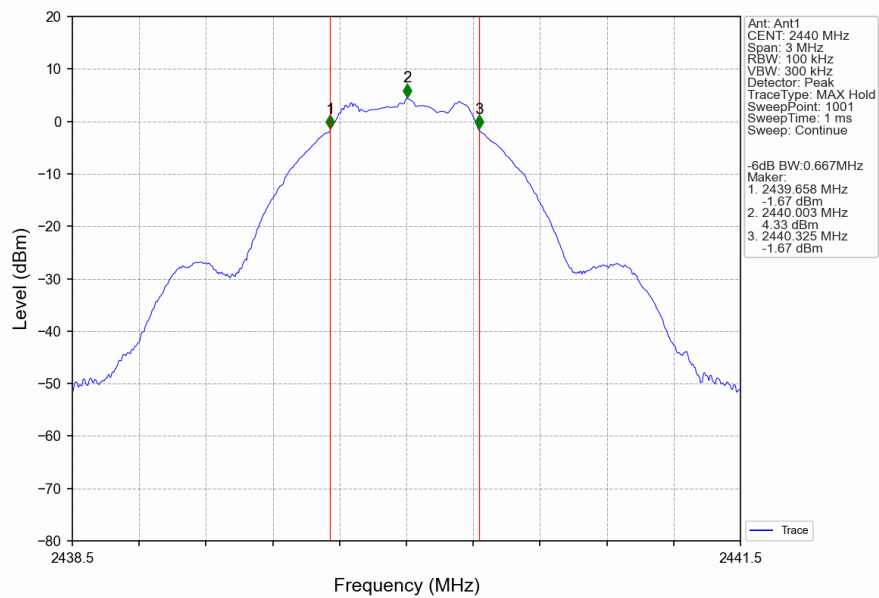


2.2.2 6dB BW

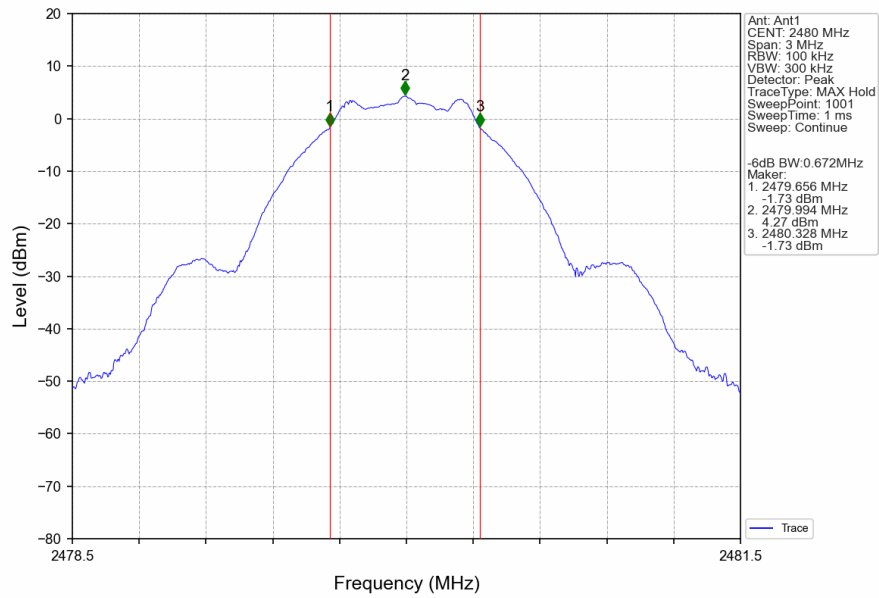
1M LCH 2402MHz_Ant1_NTNV



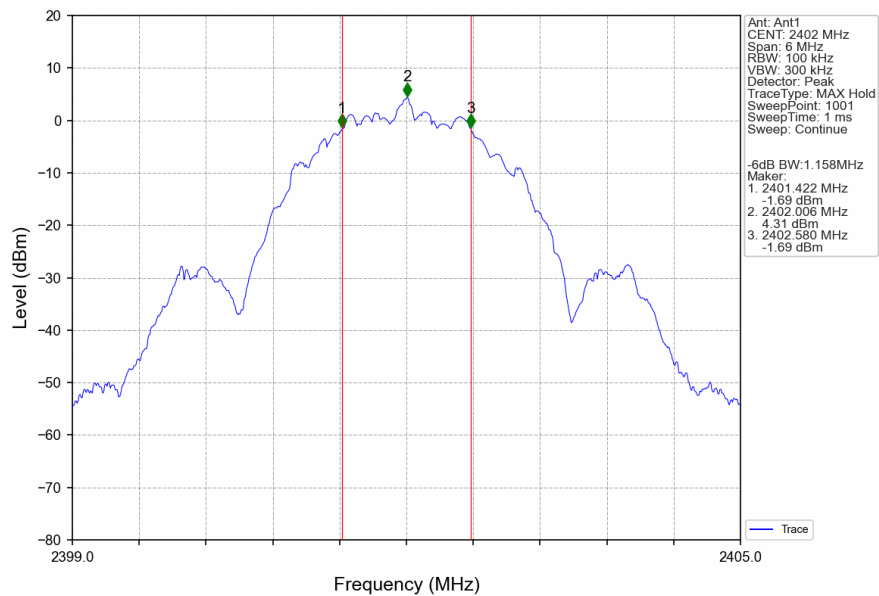
1M MCH 2440MHz_Ant1_NTNV



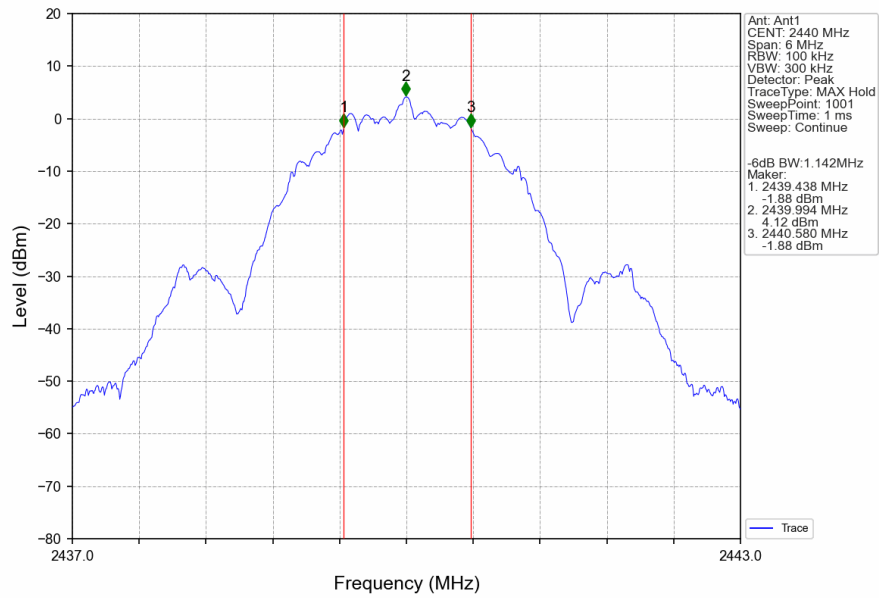
1M_HCH_2480MHz_Ant1_NTNV



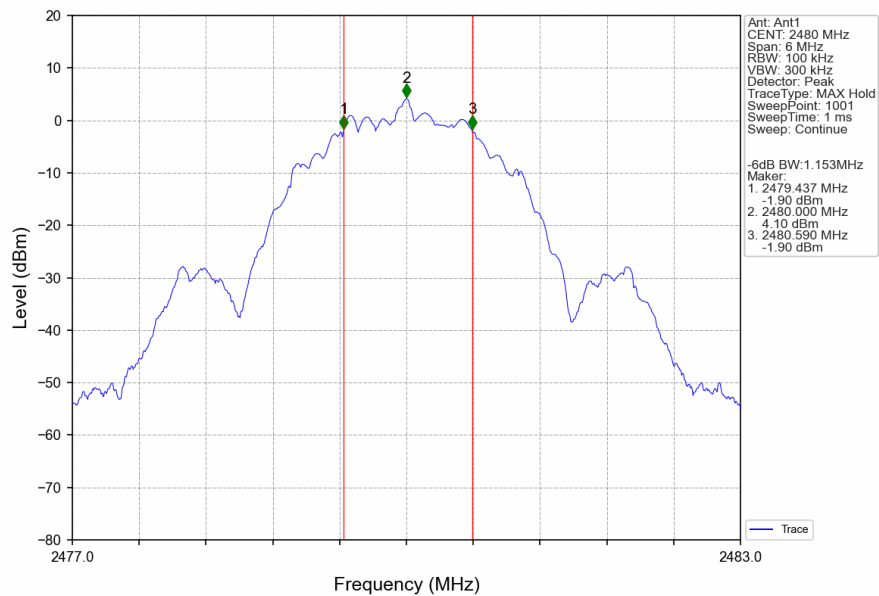
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



3. Maximum Conducted Output Power

3.1 Test Result

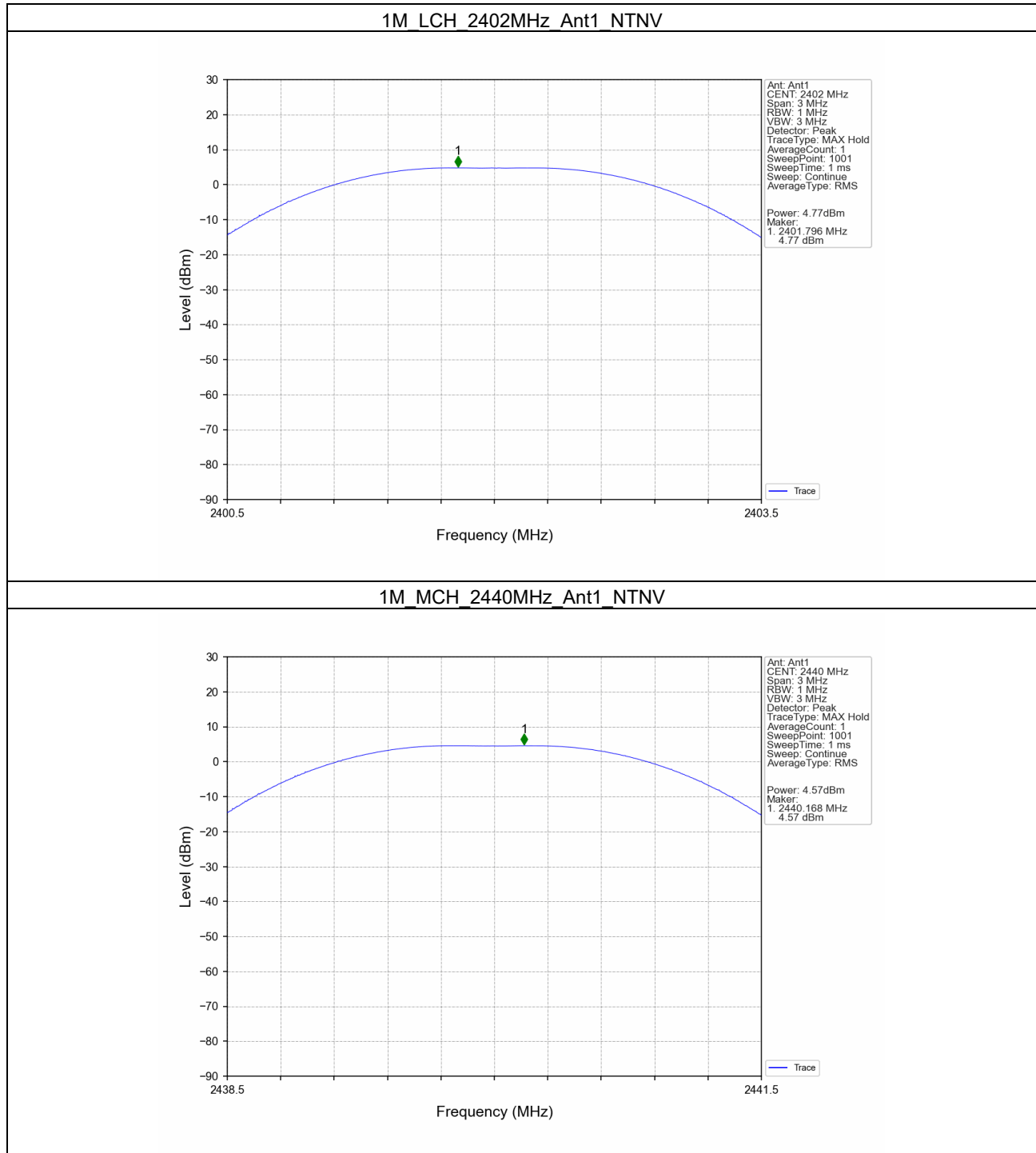
3.1.1 Power

Mode	TX Type	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
1M	SISO	2402	4.77	<=30	Pass
		2440	4.57	<=30	Pass
		2480	4.51	<=30	Pass
2M	SISO	2402	4.65	<=30	Pass
		2440	4.49	<=30	Pass
		2480	4.44	<=30	Pass

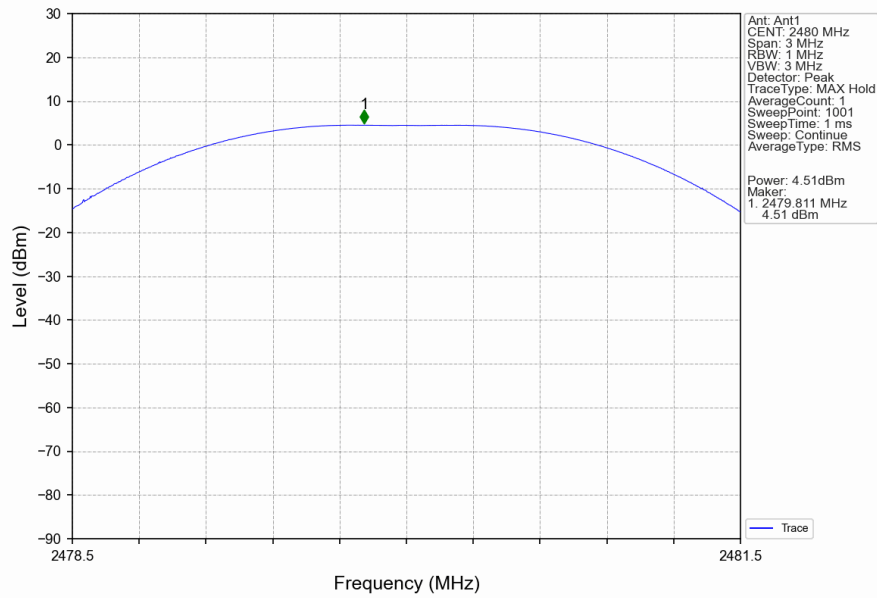
Note1: Antenna Gain: Ant1: 3.80dBi;

3.2 Test Graph

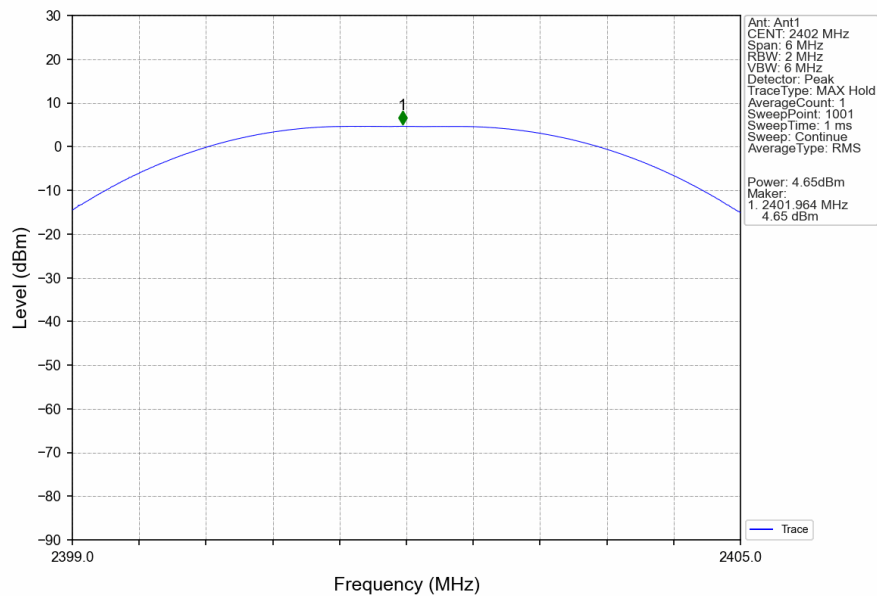
3.2.1 Power



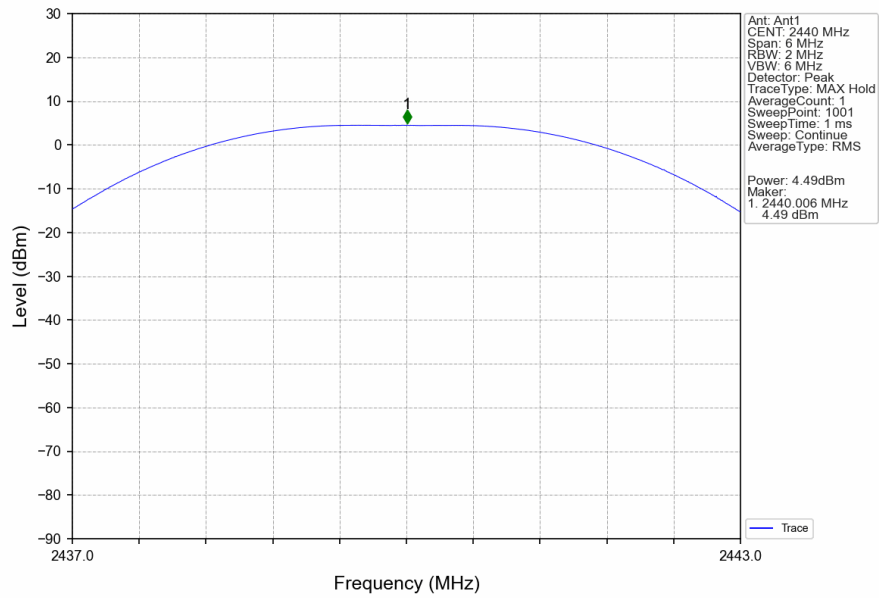
1M_HCH_2480MHz_Ant1_NTNV



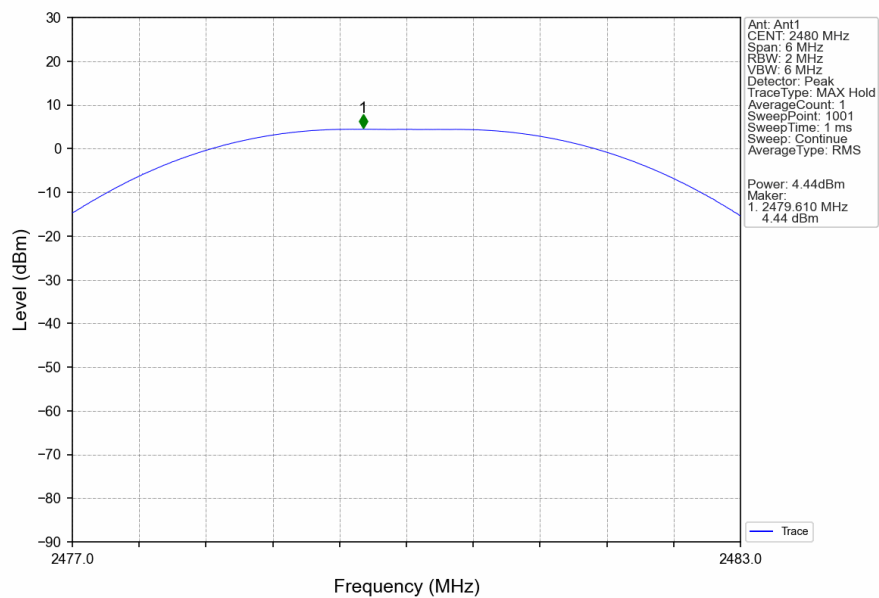
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV





4. Maximum Power Spectral Density

4.1 Test Result

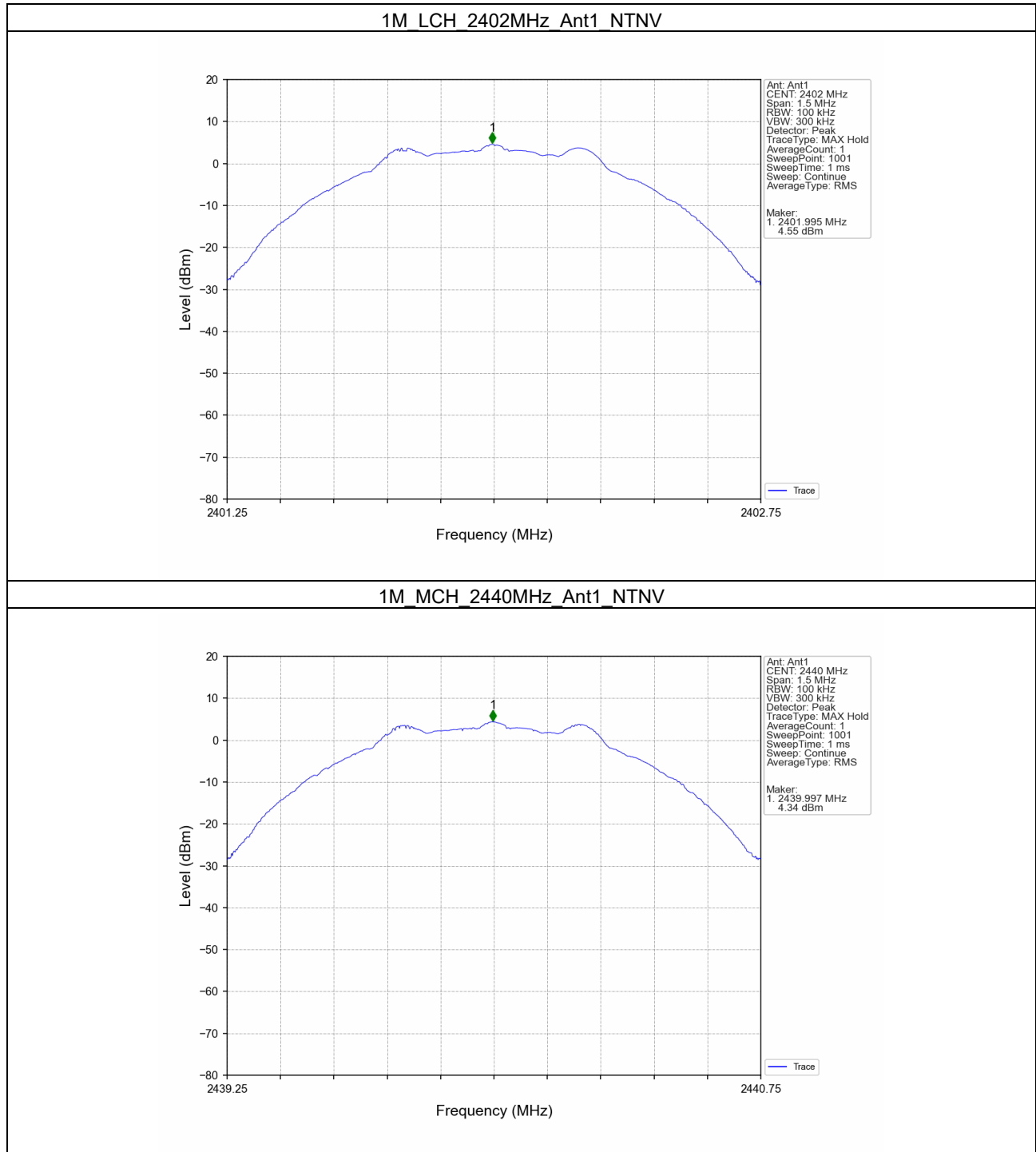
4.1.1 PSD

Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm)		Verdict
			ANT1	Limit	
1M	SISO	2402	4.55	<=8	Pass
		2440	4.34	<=8	Pass
		2480	4.29	<=8	Pass
2M	SISO	2402	4.32	<=8	Pass
		2440	4.13	<=8	Pass
		2480	4.06	<=8	Pass

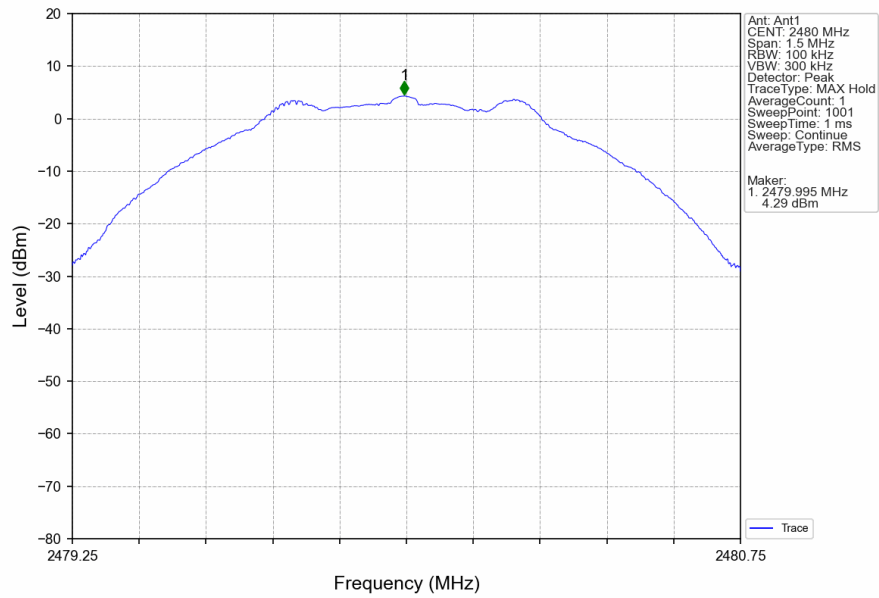
Note1: Antenna Gain: Ant1: 3.80dBi;

4.2 Test Graph

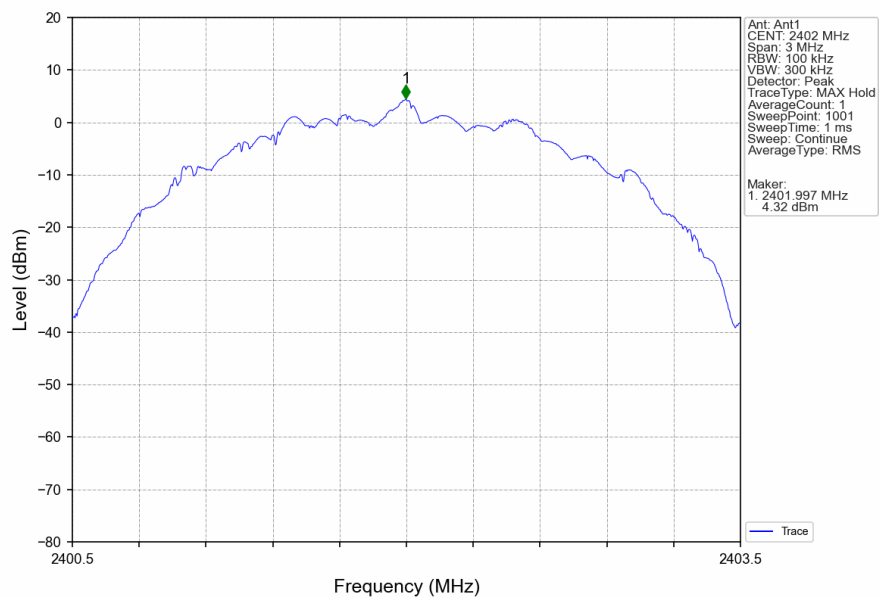
4.2.1 PSD



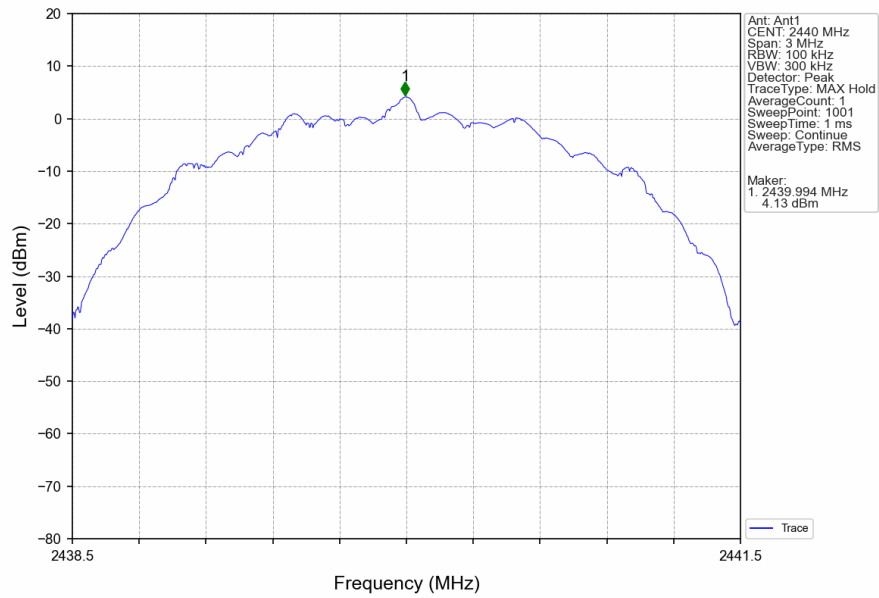
1M_HCH_2480MHz_Ant1_NTNV



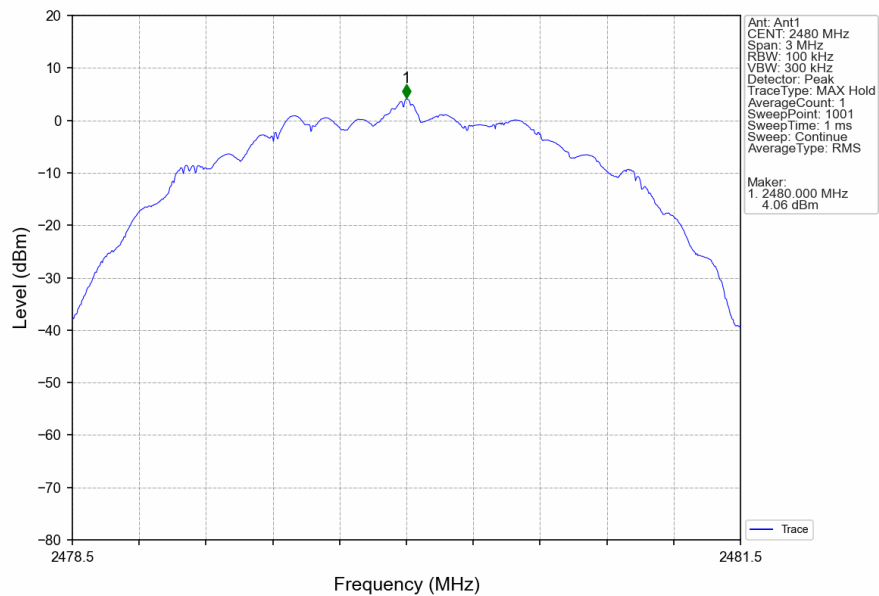
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



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	4.56
		2440	1	4.34
		2480	1	4.28
2M	SISO	2402	1	4.31
		2440	1	4.15
		2480	1	4.08

Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2020, the channel contains the maximum PSD level was used to establish the reference level.

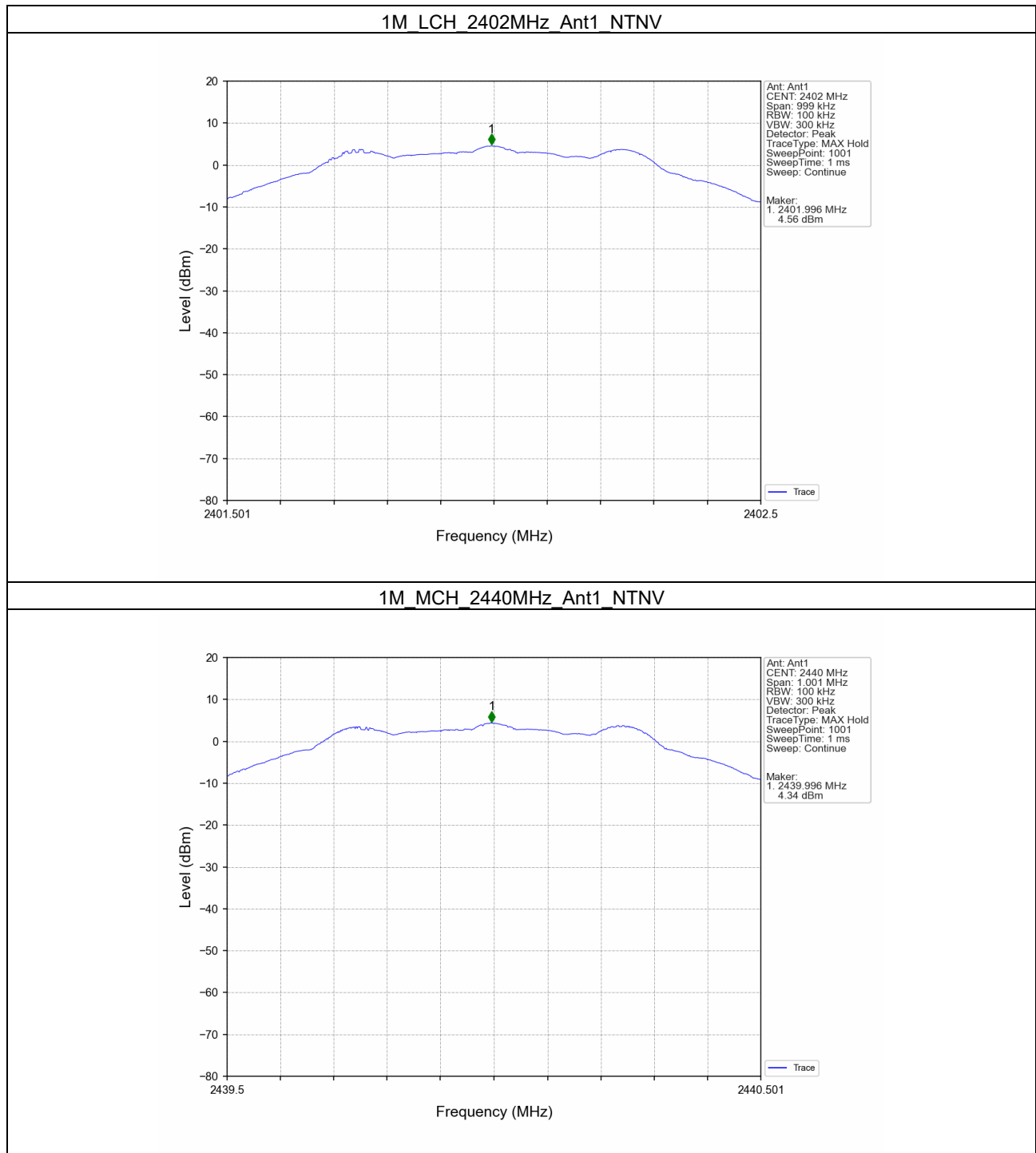
5.1.2 CSE

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
1M	SISO	2402	1	4.56	-15.44	Pass
		2440	1	4.56	-15.44	Pass
		2480	1	4.56	-15.44	Pass
2M	SISO	2402	1	4.31	-15.69	Pass
		2440	1	4.31	-15.69	Pass
		2480	1	4.31	-15.69	Pass

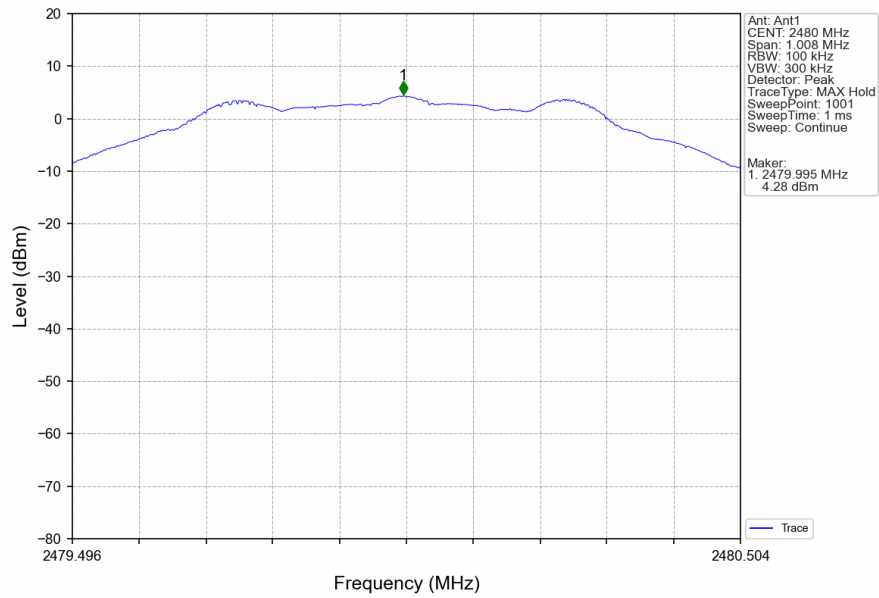
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2020, the channel contains the maximum PSD level was used to establish the reference level.

5.2 Test Graph

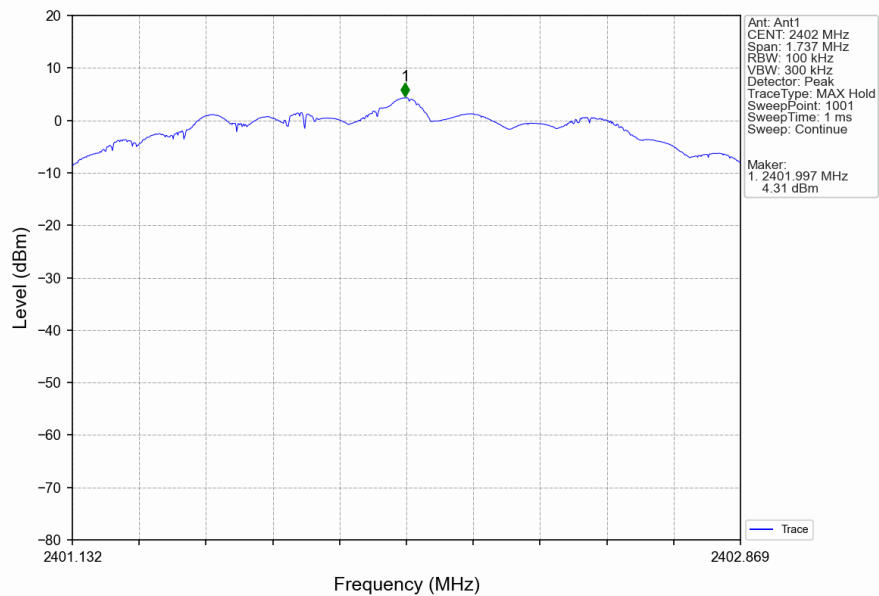
5.2.1 Ref



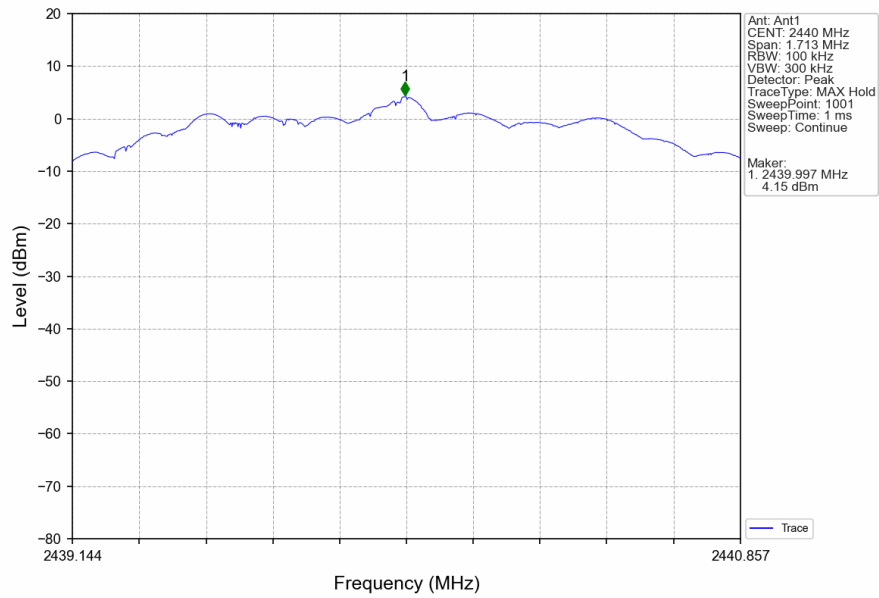
1M_HCH_2480MHz_Ant1_NTNV



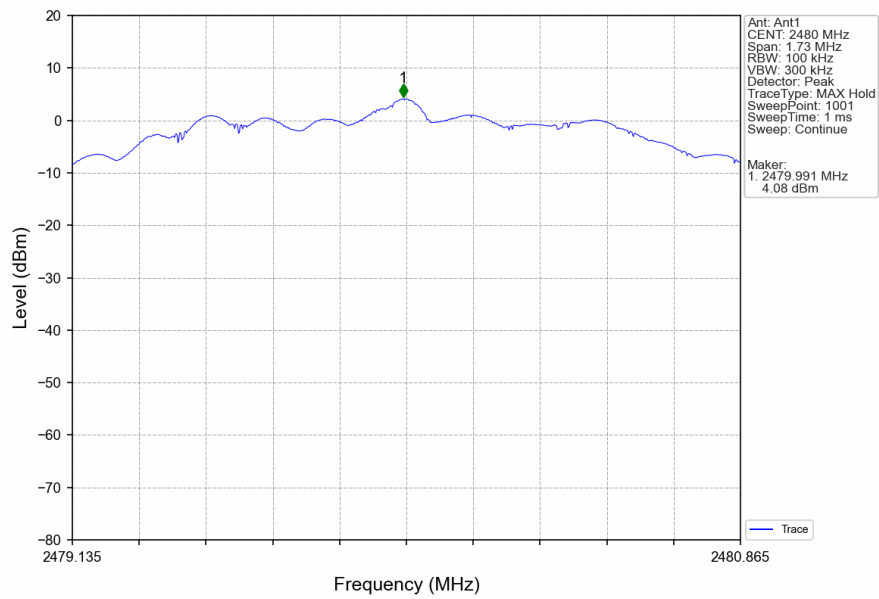
2M_LCH_2402MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV

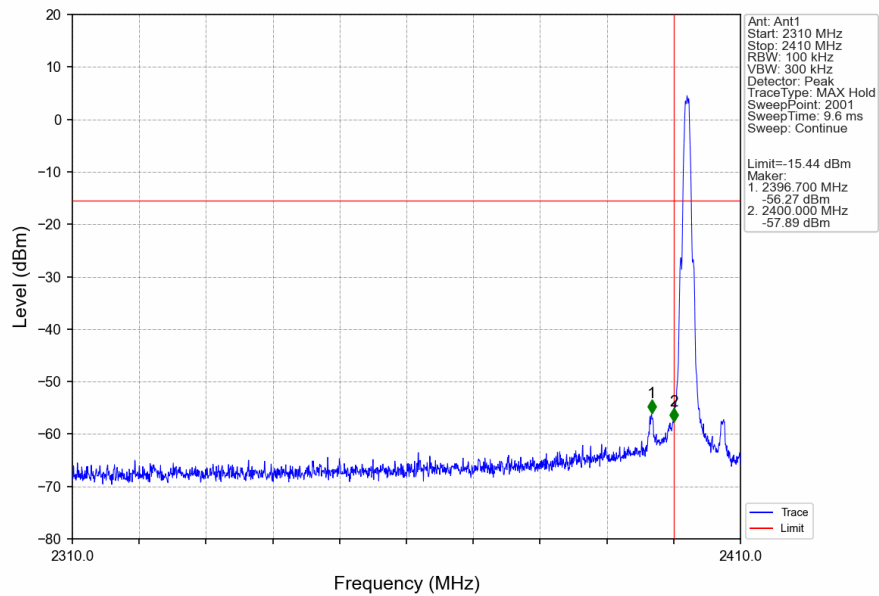


2M_HCH_2480MHz_Ant1_NTNV

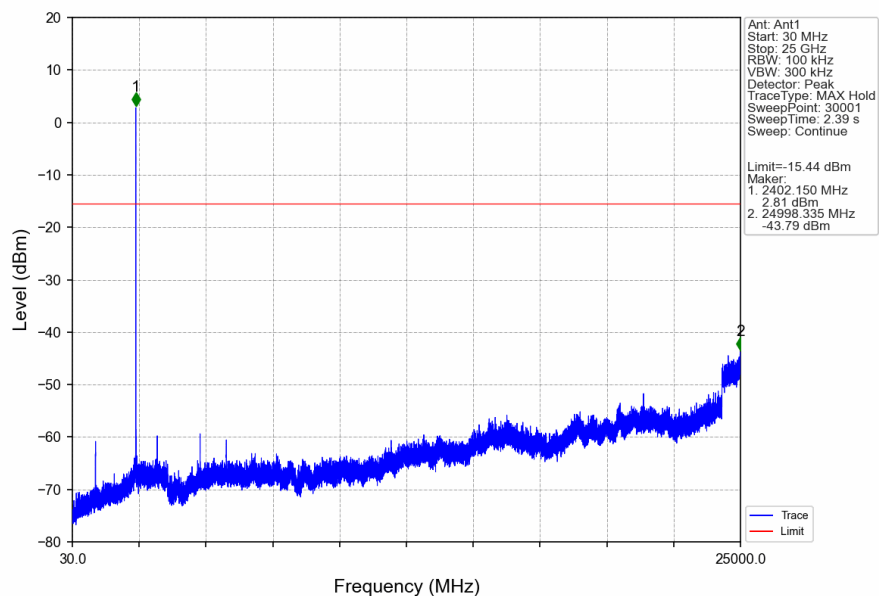


5.2.2 CSE

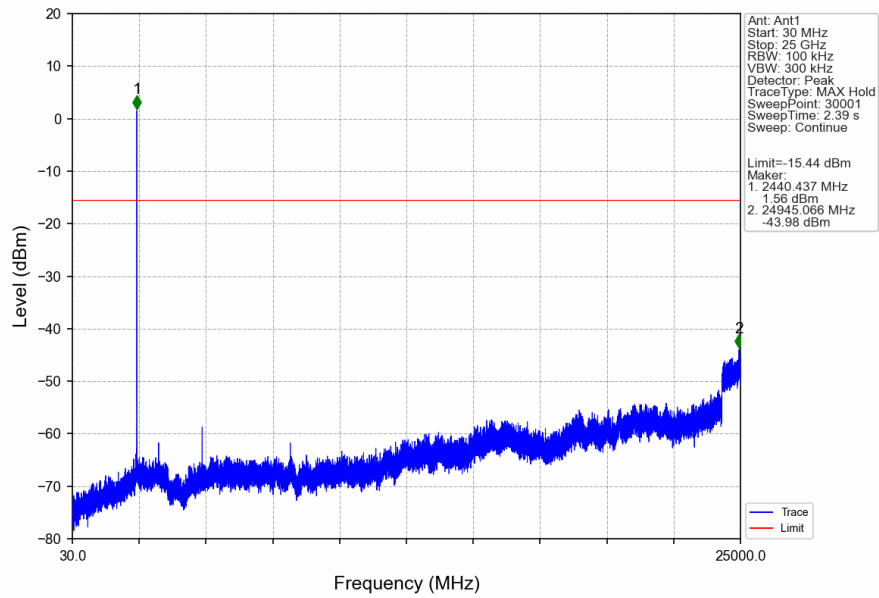
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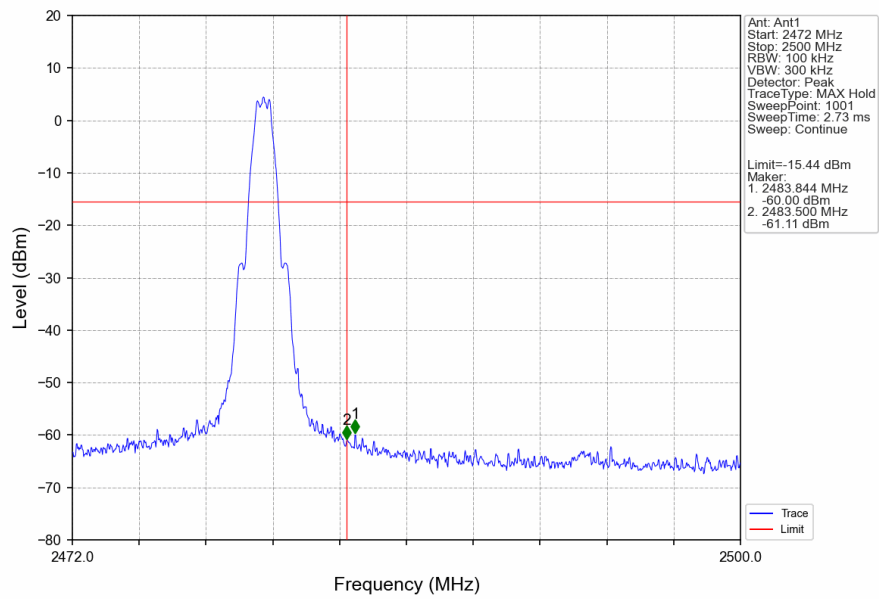
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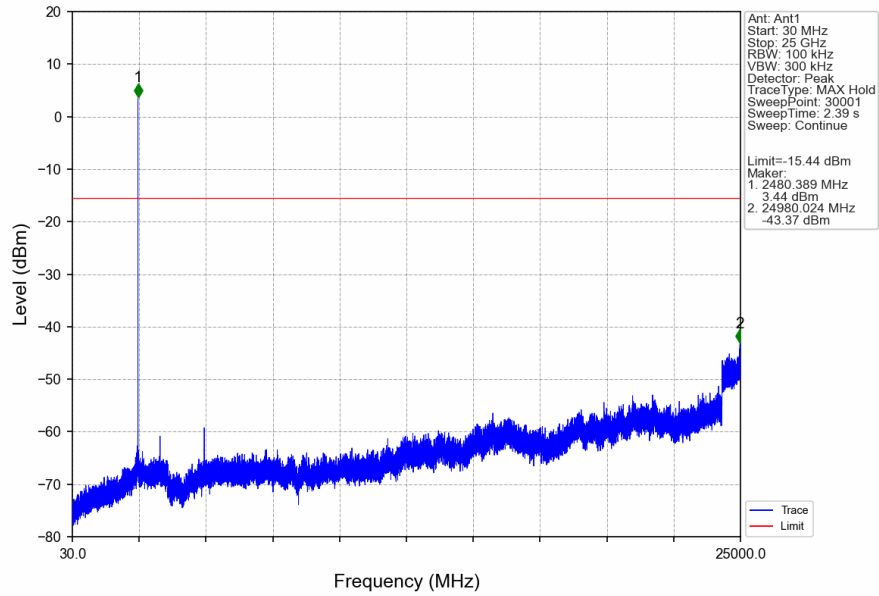
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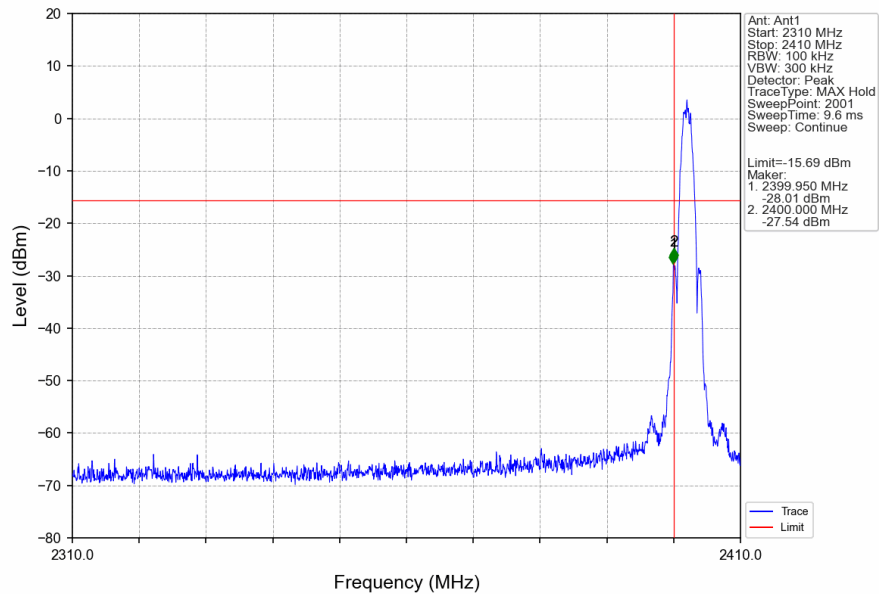
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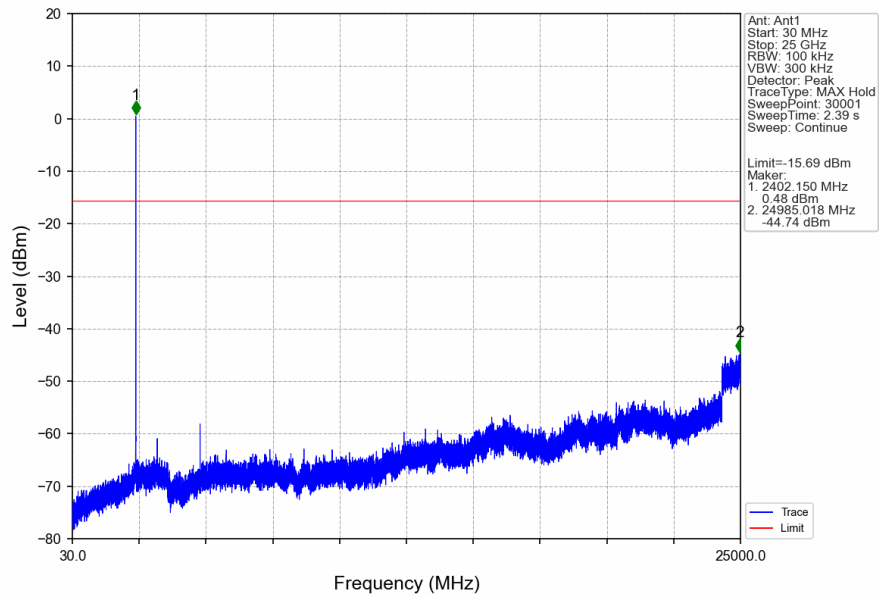
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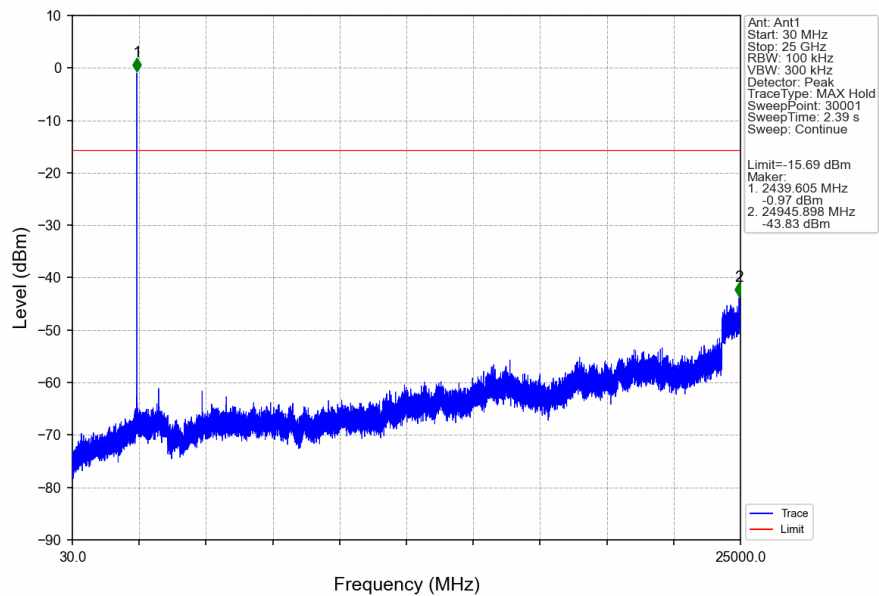
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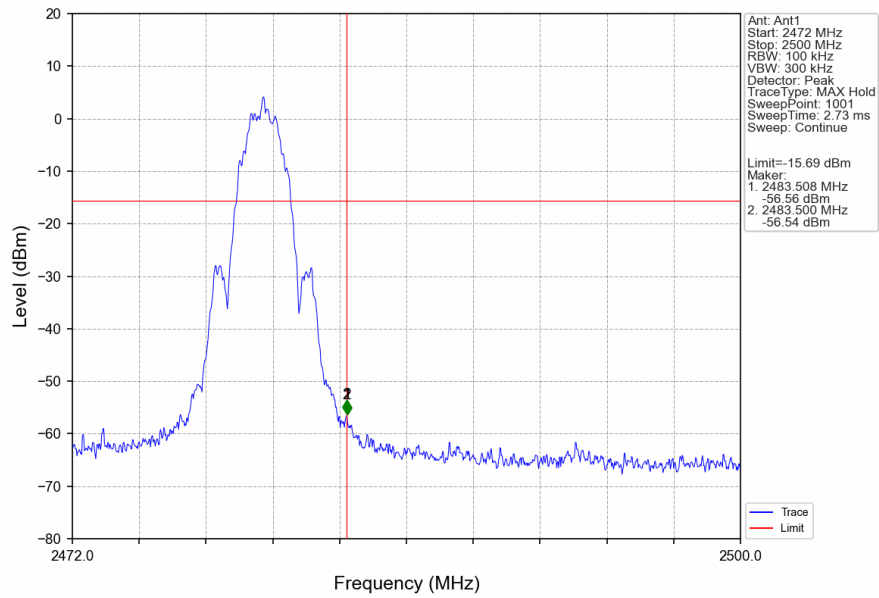
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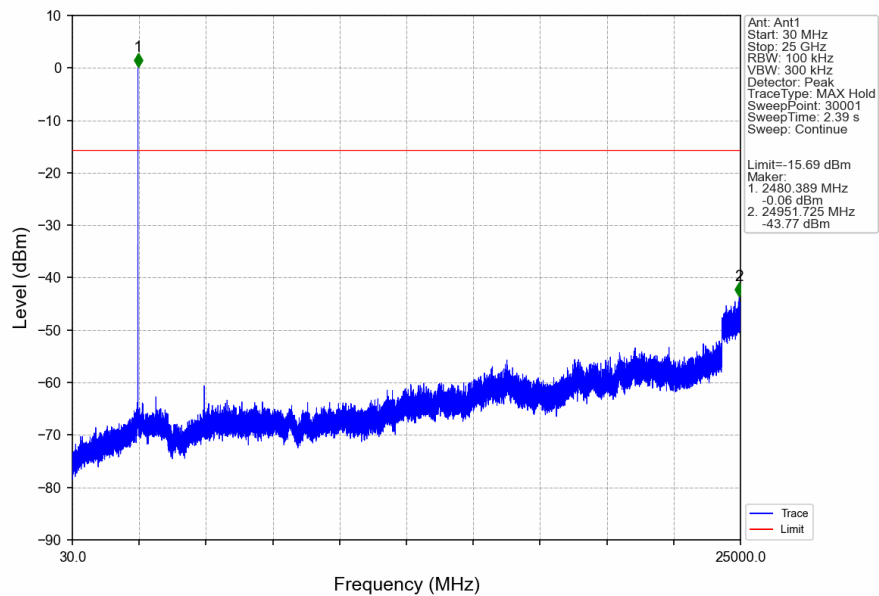
2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



2M_HCH_2480MHz_Ant1_NTNV



- End of the Report -