TEST REPORT

Report No.:	8336EU122501W
Applicant:	GOKWH INC
Address:	8 The Green, Ste A, Dover County of Kent, DE 19901 United States
Product Name:	LiFePO4 Battery
Model No.:	12.8V 340Ah (refer to clause 2.4)
Trademark:	N/A
FCC ID:	2BTM8-128V340AH
Test Standard(s):	47 CFR Part 15.247
Test Result:	Pass
Date of Receipt:	Nov. 25, 2025
Test Date:	Nov. 26, 2025 - Dec. 08, 2025
Date of Issue:	Dec. 15, 2025

ISSUED BY:

SHENZHEN EU TESTING LABORATORY LIMITED

SHENZHEN EU TESTING LABORATORY LIMITED APPROVED

Prepared by: **Reviewed and Approved by:**

Landon Qiu/ Engineer

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Revision Record

Report Version	Issued Date	Description	Status
V0	Dec. 15, 2025	Original	Valid

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2 General Information

2.1 Applicant Information

Applicant	GOKWH INC
Address	8 The Green, Ste A, Dover County of Kent, DE 19901 United States

2.2 Manufacturer Information

Manufacturer	GOKWH INC
Address	8 The Green, Ste A, Dover County of Kent, DE 19901 United States

2.3 Factory Information

Factory	GOKWH INC
Address	8 The Green, Ste A, Dover County of Kent, DE 19901 United States

2.4 General Description of E.U.T.

Product Name	LiFePO4 Battery
Model No. Under Test	12.8V 340Ah
List Model No.	12.8V80AH, 12.8V120AH, 12.8V140AH, 12.8V160AH, 12.8V180AH, 12.8V200Ah, 12.8V220AH, 12.8V240AH, 12.8V260AH, 12.8V280Ah, 12.8V300Ah, 12.8V320Ah
Description of Model differentiation	All models are same with electrical parameters and internal circuit structure, but only differ in battery capacity and model name. (this information provided by the customer)
Rating(s)	Input: 14.6VDC, 100A Battery Capacity: 12.8VDC, 340Ah, 4352Wh
Product Type	☒ Mobile ☐ Portable ☐ Fix Location
Test Sample No.	8336EU122501W-1/2(Normal), 8336EU122501W-2/2(Engineering)
Hardware Version	N/A
Software Version	N/A
Remark	For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.5 Technical Information of E.U.T.

Network and Wireless Connectivity	Bluetooth Low Energy (BLE)

The requirement for the following technical information of the EUT was tested in this report:

Operating Frequency	2402MHz to 2480MHz
Modulation Type	GFSK
Number of Channels	40
Antenna Type	PCB Antenna
Antenna Gain(Peak)	1.72 dBi
Remark	The above information are declared by the applicant, EU-LAB is not responsible for the information accuracy provided by the applicant.

All channels were listed on the following table:

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

3 Test Summary

3.1 Test Standard

The tests were performed according to following standards:

47 CFR Part 15.247: Operation within the bands 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz

Remark:

Maintenance of compliance is the responsibility of the manufacturer. Any modification of the product maybe which result in lowering the emission/immunity should be checked to ensure compliance has been maintained.

3.2 Test Verdict

Test Items	Standard	Method	Requirement	Results
Antenna requirement	47 CFR Part 15.247	---	47 CFR 15.203	Pass
Conducted Emission at AC power line	47 CFR Part 15.247	ANSI C63.10-2020 section 6.2	47 CFR 15.207(a)	N/A
6dB Bandwidth	47 CFR Part 15.247	ANSI C63.10-2020, section 11.8 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(a)(2)	Pass
Maximum Conducted Output Power	47 CFR Part 15.247	ANSI C63.10-2020 section 11.9.1 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(b)(3)	Pass
Power Spectral Density	47 CFR Part 15.247	ANSI C63.10-2020, section 11.10 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(e)	Pass
Emissions in non-restricted frequency bands	47 CFR Part 15.247	ANSI C63.10-2020 section 11.11 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(d)	Pass
Band edge emissions (Radiated)	47 CFR Part 15.247	ANSI C63.10-2020 section 6.10 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(d), 15.209, 15.205	Pass
Emissions in frequency bands (below 1GHz)	47 CFR Part 15.247	ANSI C63.10-2020 section 6.6.4 KDB 558074 D01 15.247 Meas Guidance v05r02	47 CFR 15.247(d), 15.209, 15.205	Pass
Emissions in frequency bands (above 1GHz)	47 CFR Part 15.247	ANSI C63.10-2020 section 6.6.4	47 CFR 15.247(d), 15.209, 15.205	Pass

		KDB 558074 D01 15.247 Meas Guidance v05r02		
Note: (1) “N/A” denotes test is not applicable in this Test Report.				

3.3 Test Laboratory

Test Laboratory	Shenzhen EU Testing Laboratory Limited
Address	101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Designation Number	CN1368
Test Firm Registration Number	952583

4 Test Configuration

4.1 Test Environment

During the measurement, the normal environmental conditions were within the listed ranges:

Relative Humidity	30% to 60%	
Atmospheric Pressure	86 kPa to 106 kPa	
Temperature	NT (Normal Temperature)	+15℃ to +35℃
Working Voltage of the EUT	NV (Normal Voltage)	120VAC, 60Hz for adapter

4.2 Test Equipment

Conducted Emission at AC power line					
Equipment	**Manufacturer**	**Model No**	**Serial No**	**Cal Date**	**Cal Due Date**
L.I.S.N. Artificial Mains Network	Rohde & Schwarz	ENV216	EE-004	2025-01-08	2026-01-07
EMI Test Receiver	Rohde & Schwarz	ESCI	EE-005	2025-01-08	2026-01-07
Test Software	Farad	EZ-EMC	EE-014	/	/

Power Spectral Density **Emissions in non-restricted frequency bands** **6dB Bandwidth** **Maximum Conducted Output Power**					
Equipment	**Manufacturer**	**Model No**	**Serial No**	**Cal Date**	**Cal Due Date**
MXA Signal Analyzer	Agilent	N9020A	EE-011	2025-01-08	2026-01-07
MXG RF Vector Signal Generator	Agilent	N5182A	EE-012	2025-01-08	2026-01-07
MIMO Power Measurement Module	TSTPASS	TSPS 2023R	EE-016	2025-01-08	2026-01-07
Wideband Radio Communication Tester	ROHDE & SCHWARZ	CMW500	EE-402	2025-02-14	2026-02-13
MXG RF Analog Signal Generator	Agilent	N5181A	EE-406	2025-02-14	2026-02-13
Power Meter	Anritsu	ML2495A	EE-416	2025-02-14	2026-02-13
Constant Temperature Humidity Chamber	Guangxin	GXP-401	ES-002	2025-07-29	2026-07-28
RF Test Software	TSTPASS	TS32893 V2.0	EE-017	/	/

Band edge emissions (Radiated) Emissions in frequency bands (above 1GHz)					
Equipment	**Manufacturer**	**Model No**	**Serial No**	**Cal Date**	**Cal Due Date**
EMI Test Receiver	ROHDE & SCHWARZ	ESPI	EE-006	2025-01-08	2026-01-07
Double Ridged Horn Antenna	A-INFOMW	LB-10180-NF	EE-008	2023-01-12	2026-01-11
Pre-amplifier	Agilent	8449B	EE-010	2025-01-08	2026-01-07
MXG RF Vector Signal Generator	Agilent	N5182A	EE-012	2025-01-08	2026-01-07
DRG Horn Antenna	SCHWARZBECK	BBHA 9170	EE-410	2025-02-14	2026-02-13
Pre-amplifier	SKET	LNPA-1840-50	EE-411	2025-02-14	2026-02-13
Test Software	Farad	EZ-EMC	EE-015	/	/

Emissions in frequency bands (below 1GHz)					
Equipment	**Manufacturer**	**Model No**	**Serial No**	**Cal Date**	**Cal Due Date**
EMI Test Receiver	ROHDE & SCHWARZ	ESPI	EE-006	2025-01-08	2026-01-07
Bilog Broadband Antenna	SCHWARZBECK	VULB 9163	EE-007	2023-01-14	2026-01-13
Pre-amplifier	Agilent	8447D	EE-009	2025-01-08	2026-01-07
MXA Signal Analyzer	Agilent	N9020A	EE-011	2025-01-08	2026-01-07
Test Software	Farad	EZ-EMC	EE-015	/	/

4.3 Description of Support Unit

No.	Title	Manufacturer	Model No.	Serial No.
1	Adapter	Dongguan Gokwh Technology Co.,Ltd	YN-180WA1481000W3	---

4.4 Test Mode

No.	Test Modes	Description
TM1	BLE Mode-1M	Keep the EUT works in continuously transmitting mode with GFSK modulation with 1 Mbps rate at lowest, middle and highest channel.

4.5 Description of Calculation

4.5.1 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS (dBuV/m) = RA (dBuV) + AF (dB/m) + CL (dB) – AG (dB)

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

4.5.2 Disturbance Calculation

The AC mains conducted disturbance is calculated by adding the 10dB Pulse Limiter and Cable Factor and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

CD (dBuV) = RA (dBuV) + PL (dB) + CL (dB)

Where CD = Conducted Disturbance	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	PL = 10 dB Pulse Limiter Factor

4.6 Measurement Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Test Item	Measurement Uncertainty
Conducted Emission	2.64 dB
Occupied Channel Bandwidth	70 kHz
RF output power, conducted	1.04 dB
Power Spectral Density, conducted	0.91 dB
Unwanted Emissions, conducted	2.72 dB
Radiated Emission (1GHz- 18GHz)	Ur = 3.50 dB (Horizontal) Ur = 3.50 dB (Vertical)
Radiated Emission (9kHz- 30MHz)	Ur = 2.50 dB
Radiated Emission (30MHz- 1GHz)	Ur = 2.70 dB (Horizontal) Ur = 2.70 dB (Vertical)
Radiated Emission (18GHz-40GHz)	Ur = 5.15 dB (Horizontal) Ur = 5.24 dB (Vertical)

4.7 Deviation from Standards

None

4.8 Abnormalities from Standard Condition

None

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5 Evaluation Results (Evaluation)

5.1 Antenna requirement

5.1.1 Test Specification

Test Requirement:	Refer to 47 CFR Part 15.203, 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 shall be considered sufficient to comply with the provisions of this section.
Test Method:	---

5.1.2 Test Data

PASS.

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

6 Radio Spectrum Matter Test Results (RF)

6.1 Conducted Emission at AC power line

6.1.1 Test Specification

Test Requirement:	Refer to 47 CFR 15.207(a), Except as shown in paragraphs (b)and (c)of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN).
Test 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

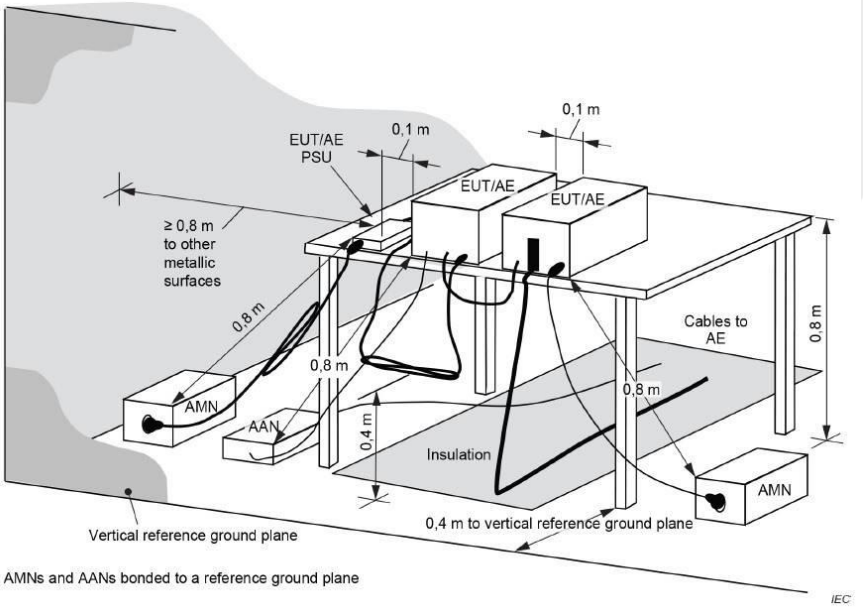
*Decreases with the logarithm of the frequency.

Test Method:	ANSI C63.10-2020 section 6.2
Procedure:	Refer to ANSI C63.10-2020 section 6.2, standard test method for ac power-line conducted emissions from unlicensed wireless devices

6.1.2 E.U.T. Operation

Pre test mode:	N/A
Final test mode:	N/A

6.1.3 Test Setup Diagram



6.1.4 Test Data

Not Applicable.

The EUT can not be connected to AC power lines, so there is no need to conduct this test item.

6.2 6dB Bandwidth

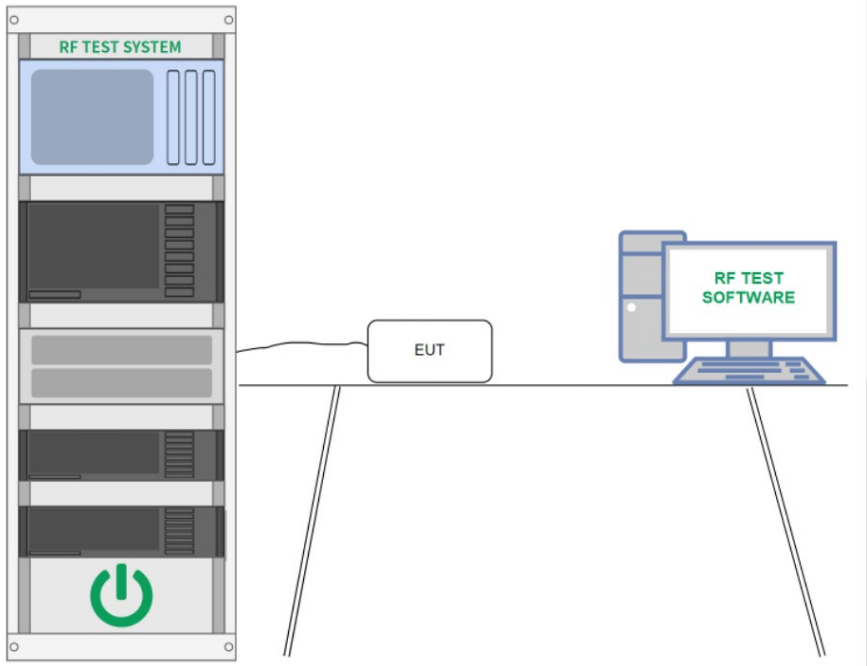
6.2.1 Test Specification

Test Requirement:	47 CFR 15.247(a)(2)
Test Limit:	Refer to 47 CFR 15.247(a)(2), Systems using digital modulation techniques may operate in the 902-928 MHz, and 2400-2483.5 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.
Test Method:	ANSI C63.10-2020, section 11.8 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	11.8.1 Option 1 The steps for the first option are as follows: a) Set RBW = shall be in the range of 1% to 5% of the OBW but not less than 100 kHz. b) Set the VBW ≥ [3 × RBW]. c) Detector = peak. d) Trace mode = max-hold. e) Sweep = No faster than coupled (auto) time. f) Allow the trace to stabilize. g) Measure the maximum width of the emission by placing two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the "−6 dB down amplitude". If a marker is below this "−6 dB down amplitude" value, then it shall be as close as possible to this value. 11.8.2 Option 2 The automatic bandwidth measurement capability of an instrument may be employed using the X dB bandwidth mode with X set to 6 dB, if the functionality described in 11.8.1 (i.e., RBW = 100 kHz, VBW ≥ 3 × RBW, and peak detector with maximum hold) is implemented by the instrumentation function. When using this capability, care shall be taken so that the bandwidth measurement is not influenced by any intermediate power nulls in the fundamental emission that might be ≥ 6 dB.

6.2.2 E.U.T. Operation

Pre test mode:	TM1
Final test mode:	TM1

6.2.3 Test Setup Diagram



6.2.4 Test Data

PASS.

Please refer to Annex D for details.

6.3 Maximum Conducted Output Power

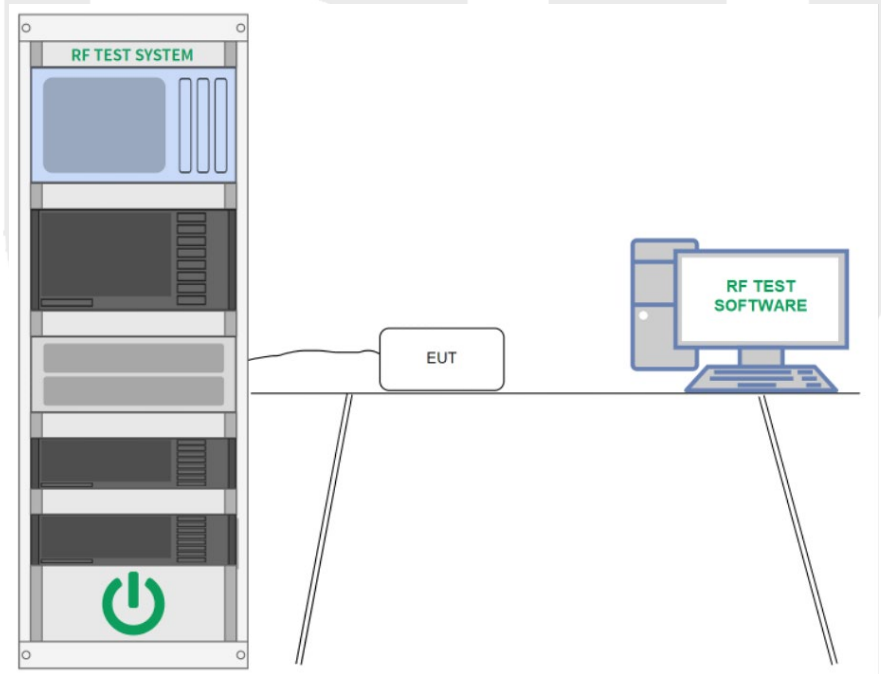
6.3.1 Test Specification

Test Requirement:	47 CFR 15.247(b)(3)
Test Limit:	Refer to 47 CFR 15.247(b)(3), For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.
Test Method:	ANSI C63.10-2020 section 11.9.1 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2020, section 11.9.1 Maximum peak conducted output power

6.3.2 E.U.T. Operation

Pre test mode:	TM1
Final test mode:	TM1

6.3.3 Test Setup Diagram



6.3.4 Test Data

PASS.

Please refer to Annex D for details.

6.4 Power Spectral Density

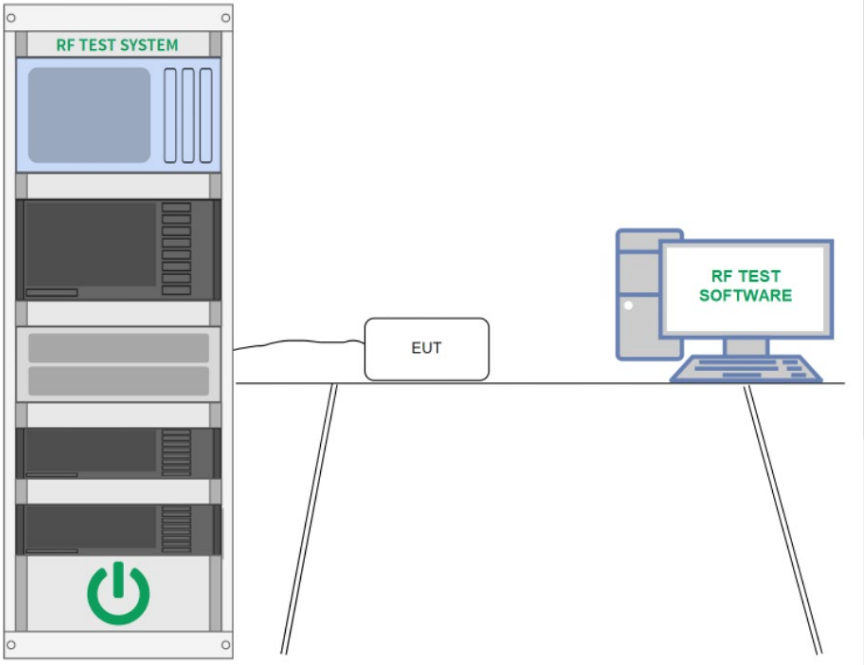
6.4.1 Test Specification

Test Requirement:	47 CFR 15.247(e)
Test Limit:	Refer to 47 CFR 15.247(e), For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.
Test Method:	ANSI C63.10-2020, section 11.10 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2020, section 11.10, Maximum power spectral density level in the fundamental emission

6.4.2 E.U.T. Operation

Pre test mode:	TM1
Final test mode:	TM1

6.4.3 Test Setup Diagram



6.4.4 Test Data

PASS.

Please refer to Annex D for details.

6.5 Emissions in non-restricted frequency bands

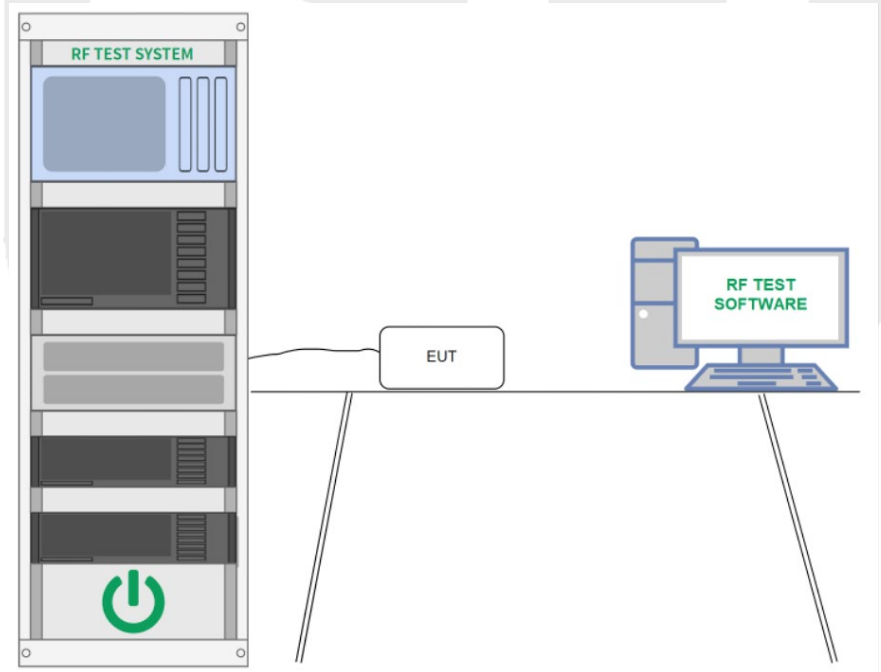
6.5.1 Test Specification

Test Requirement:	47 CFR 15.247(d)
Test Limit:	Refer to 47 CFR 15.247(d), 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.
Test Method:	ANSI C63.10-2020 section 11.11 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2020 Section 11.11.1, Section 11.11.2, Section 11.11.3

6.5.2 E.U.T. Operation

Pre test mode:	TM1
Final test mode:	TM1

6.5.3 Test Setup Diagram



6.5.4 Test Data

PASS.

Please refer to Annex D for details.

6.6 Band edge emissions (Radiated)

6.6.1 Test Specification

Test Requirement:	Refer to 47 CFR 15.247(d), 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)).
Test 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

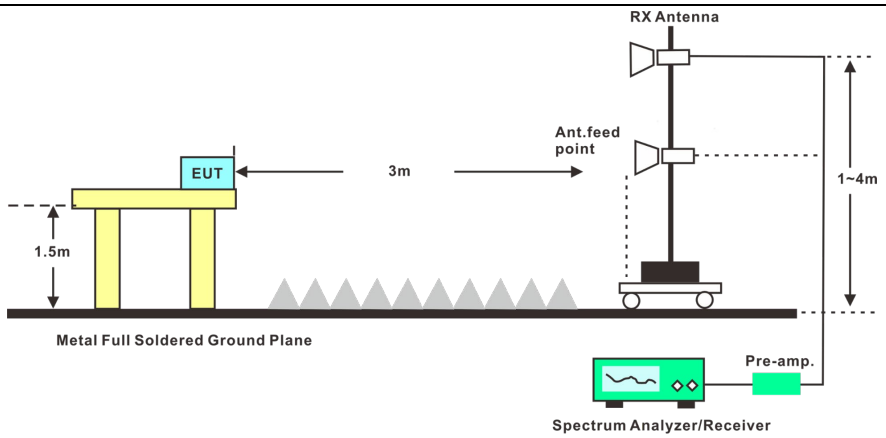
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.
In the emission table above, the tighter limit applies at the band edges.
The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

Test Method:	ANSI C63.10-2020 section 6.10 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2020 section 6.10.5.2

6.6.2 E.U.T. Operation

Pre test mode:	TM1
Final test mode:	TM1

6.6.3 Test Setup Diagram



6.6.4 Test Data

PASS.

Please refer to the following pages.

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Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

Band Edge Emissions (Restricted frequency bands):

Test Mode: GFSK-1M					CH Low: 2402 MHz			
Pol.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type	Result
H	2310.00	42.26	-2.81	39.45	74.00	-34.55	PK	PASS
H	2390.00	45.08	-2.69	42.39	74.00	-31.61	PK	PASS
H	**2400.00	64.06	-2.68	61.38	74.00	-12.62	PK	PASS
V	2310.00	44.00	-2.81	41.19	74.00	-32.81	PK	PASS
V	2390.00	45.33	-2.69	42.64	74.00	-31.36	PK	PASS
V	**2400.00	62.26	-2.68	59.58	74.00	-14.42	PK	PASS
H	2310.00	31.99	-2.81	29.18	54.00	-24.82	AV	PASS
H	2390.00	36.13	-2.69	33.44	54.00	-20.56	AV	PASS
H	**2400.00	48.59	-2.68	45.91	54.00	-8.09	AV	PASS
V	2310.00	31.81	-2.81	29.00	54.00	-25.00	AV	PASS
V	2390.00	34.19	-2.69	31.50	54.00	-22.50	AV	PASS
V	**2400.00	49.27	-2.68	46.59	54.00	-7.41	AV	PASS

Test Mode: GFSK-1M					CH High: 2480 MHz			
Pol.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type	Result
H	**2483.50	49.11	-2.56	46.55	74.00	-27.45	PK	PASS
H	2500.00	49.92	-2.54	47.38	74.00	-26.62	PK	PASS
V	**2483.50	47.61	-2.56	45.05	74.00	-28.95	PK	PASS
V	2500.00	49.92	-2.54	47.38	74.00	-26.62	PK	PASS
H	**2483.50	35.86	-2.56	33.30	54.00	-20.70	AV	PASS
H	2500.00	40.77	-2.54	38.23	54.00	-15.77	AV	PASS
V	**2483.50	36.87	-2.56	34.31	54.00	-19.69	AV	PASS
V	2500.00	41.00	-2.54	38.46	54.00	-15.54	AV	PASS

Remark:

1. Emission Level = Reading + Factor, Margin= Emission Level – Limit.

6.7 Emissions in frequency bands (below 1GHz)

6.7.1 Test Specification

Test Requirement:	Refer to 47 CFR 15.247(d), 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)).
Test 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

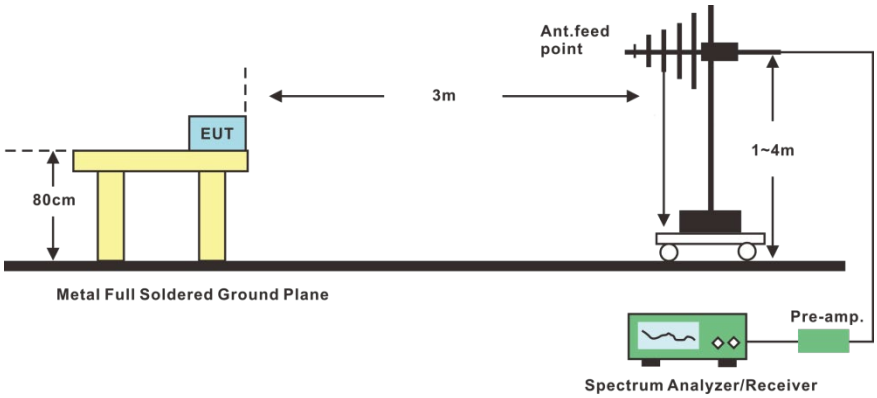
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.
In the emission table above, the tighter limit applies at the band edges.
The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

Test Method:	ANSI C63.10-2020 section 6.6.4 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2020 section 6.6.4

6.7.2 E.U.T. Operation

Pre test mode:	TM1
Final test mode:	TM1

6.7.3 Test Setup Diagram



6.7.4 Test Data

PASS.

The test results of 9kHz-30MHz was attenuated more than 20dB below the permissible limits, so the results don't record in the report.

During the test, for 30MHz to 1000MHz, pre-scan all modulations, and found the BLE 1M modulation Low channel which is the worst case, only the worst case is recorded in the report.

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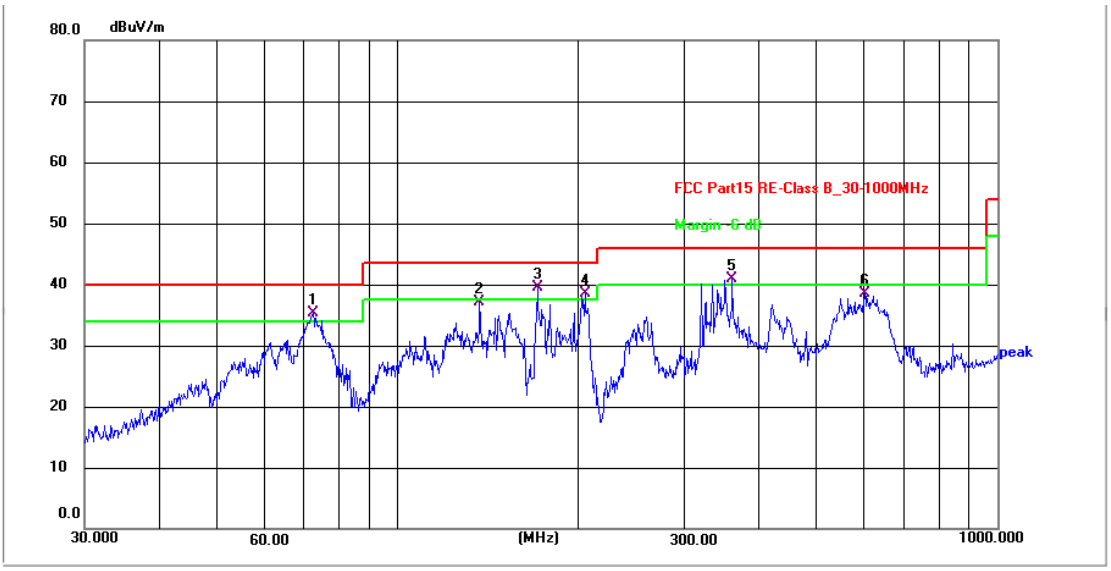
Emissions in frequency bands (below 1GHz) Test Data

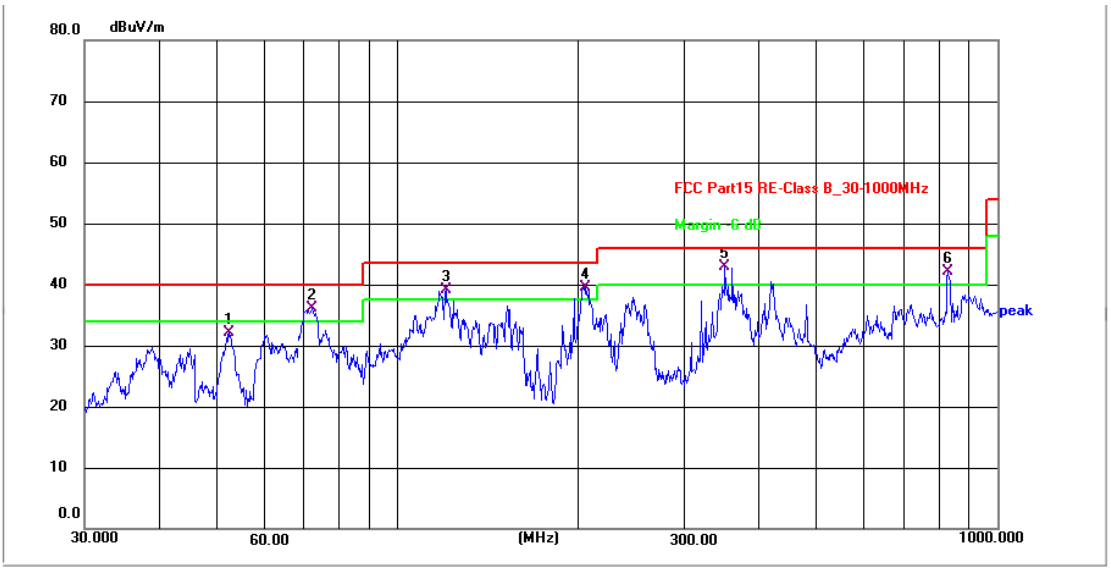
TM1 / Polarization: Horizontal / Band: 2400-2483.5 MHz / BW: 1 / CH: L



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 !	72.3375	53.89	-18.54	35.35	40.00	-4.65	QP	P	
2	136.9390	54.94	-17.92	37.02	43.50	-6.48	QP	P	
3 *	170.7923	56.65	-17.19	39.46	43.50	-4.04	QP	P	
4 !	204.9550	53.40	-14.89	38.51	43.50	-4.99	QP	P	
5 !	360.4476	51.51	-10.70	40.81	46.00	-5.19	QP	P	
6	601.4265	44.68	-6.20	38.48	46.00	-7.52	QP	P	

Emissions in frequency bands (below 1GHz) Test Data

TM1 / Polarization: Vertical / Band: 2400-2483.5 MHz / BW: 1 / CH: L



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	52.2077	46.45	-14.32	32.13	40.00	-7.87	QP	P	
2 !	72.0841	54.63	-18.48	36.15	40.00	-3.85	QP	P	
3 !	120.2766	56.01	-16.94	39.07	43.50	-4.43	QP	P	
4 !	205.6750	54.46	-14.88	39.58	43.50	-3.92	QP	P	
5 *	350.4766	53.75	-10.91	42.84	46.00	-3.16	QP	P	
6 !	827.4932	45.61	-3.54	42.07	46.00	-3.93	QP	P	

6.8 Emissions in frequency bands (above 1GHz)

6.8.1 Test Specification

Test Requirement:	Refer to 47 CFR 15.247(d), 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)).
Test 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

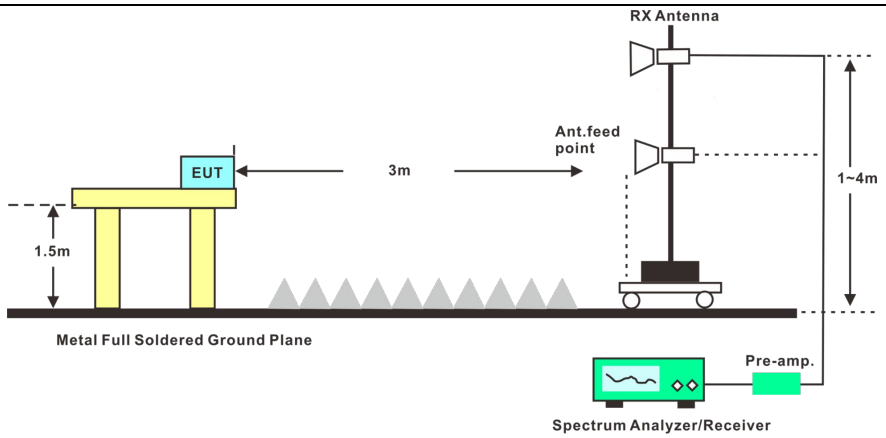
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this part, e.g., §§ 15.231 and 15.241.
In the emission table above, the tighter limit applies at the band edges.
The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector.

Test Method:	ANSI C63.10-2020 section 6.6.4 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2020 section 6.6.4

6.8.2 E.U.T. Operation

Pre test mode:	TM1
Final test mode:	TM1

6.8.3 Test Setup Diagram



6.8.4 Test Data

PASS.

During the test, for 1GHz- 25GHz, pre-scan all modulations, and found the BLE 1M modulation which is the worst case, only the worst case is recorded in the report.

Radiated Spurious Emission (1GHz-25GHz)

Test Mode: GFSK					CH Low: 2402 MHz			
Pol.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type	Result
V	4804.10	40.28	4.68	44.96	74.00	-29.05	PK	PASS
V	7206.06	34.99	9.84	44.83	74.00	-29.17	PK	PASS
V	9608.00	28.21	13.17	41.38	74.00	-32.63	PK	PASS
V	12010.88	*	*	*	74.00	*	PK	PASS
V	14412.50	*	*	*	74.00	*	PK	PASS
V	16814.17	*	*	*	74.00	*	PK	PASS
H	4804.36	41.19	4.68	45.87	74.00	-28.13	PK	PASS
H	7206.75	34.07	9.84	43.91	74.00	-30.10	PK	PASS
H	9608.25	28.23	13.17	41.40	74.00	-32.60	PK	PASS
H	12010.18	*	*	*	74.00	*	PK	PASS
H	14412.55	*	*	*	74.00	*	PK	PASS
H	16814.92	*	*	*	74.00	*	PK	PASS
V	4804.28	31.49	4.68	36.17	54.00	-17.84	AV	PASS
V	7206.63	22.37	9.84	32.21	54.00	-21.80	AV	PASS
V	9608.33	17.16	13.17	30.33	54.00	-23.68	AV	PASS
V	12010.16	*	*	*	54.00	*	AV	PASS
V	14412.26	*	*	*	54.00	*	AV	PASS
V	16814.43	*	*	*	54.00	*	AV	PASS
H	4804.09	31.86	4.68	36.54	54.00	-17.46	AV	PASS
H	7206.75	24.64	9.84	34.48	54.00	-19.53	AV	PASS
H	9608.25	19.12	13.17	32.29	54.00	-21.71	AV	PASS
H	12010.18	*	*	*	54.00	*	AV	PASS
H	14412.55	*	*	*	54.00	*	AV	PASS
H	16814.92	*	*	*	54.00	*	AV	PASS

Remark:

1. Emission Level = Reading + Factor, Margin= Emission Level – Limit.
2. “*” means the test results were attenuated more than 20dB below the permissible limits, so the results don't record in the report.

Radiated Spurious Emission (1GHz-25GHz)

Test Mode: GFSK					CH Middle: 2440 MHz			
Pol.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type	Result
V	4880.93	40.37	4.92	45.29	74.00	-28.71	PK	PASS
V	7320.82	34.36	9.83	44.19	74.00	-29.81	PK	PASS
V	9760.29	28.17	13.22	41.39	74.00	-32.61	PK	PASS
V	12200.58	*	*	*	74.00	*	PK	PASS
V	14640.61	*	*	*	74.00	*	PK	PASS
V	17080.02	*	*	*	74.00	*	PK	PASS
H	4880.85	42.87	4.92	47.79	74.00	-26.22	PK	PASS
H	7320.01	34.22	9.83	44.05	74.00	-29.95	PK	PASS
H	9760.63	30.49	13.22	43.71	74.00	-30.29	PK	PASS
H	12200.42	*	*	*	74.00	*	PK	PASS
H	14640.34	*	*	*	74.00	*	PK	PASS
H	17080.14	*	*	*	74.00	*	PK	PASS
V	4880.81	31.18	4.92	36.10	54.00	-17.91	AV	PASS
V	7320.86	24.51	9.83	34.34	54.00	-19.67	AV	PASS
V	9760.55	19.99	13.22	33.21	54.00	-20.79	AV	PASS
V	12200.13	*	*	*	54.00	*	AV	PASS
V	14640.62	*	*	*	54.00	*	AV	PASS
V	17080.59	*	*	*	54.00	*	AV	PASS
H	4880.85	32.88	4.92	37.80	54.00	-16.21	AV	PASS
H	7320.01	23.41	9.83	33.24	54.00	-20.76	AV	PASS
H	9760.63	18.70	13.22	31.92	54.00	-22.09	AV	PASS
H	12200.42	*	*	*	54.00	*	AV	PASS
H	14640.34	*	*	*	54.00	*	AV	PASS
H	17080.14	*	*	*	54.00	*	AV	PASS

Remark:

1. Emission Level = Reading + Factor, Margin= Emission Level – Limit.
2. “*” means the test results were attenuated more than 20dB below the permissible limits, so the results don't record in the report.

Radiated Spurious Emission (1GHz-25GHz)

Test Mode: GFSK					CH High: 2480 MHz			
Pol.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type	Result
V	4960.78	40.32	4.92	45.24	74.00	-28.76	PK	PASS
V	7440.98	33.53	9.83	43.36	74.00	-30.64	PK	PASS
V	9920.28	28.12	13.22	41.34	74.00	-32.67	PK	PASS
V	12400.54	*	*	*	74.00	*	PK	PASS
V	14880.77	*	*	*	74.00	*	PK	PASS
V	17360.39	*	*	*	74.00	*	PK	PASS
H	4960.21	40.40	4.92	45.32	74.00	-28.68	PK	PASS
H	7440.64	35.11	9.83	44.94	74.00	-29.07	PK	PASS
H	9920.48	29.70	13.22	42.92	74.00	-31.09	PK	PASS
H	12400.10	*	*	*	74.00	*	PK	PASS
H	14880.98	*	*	*	74.00	*	PK	PASS
H	17360.29	*	*	*	74.00	*	PK	PASS
V	4958.52	31.38	4.92	36.30	54.00	-17.71	AV	PASS
V	7437.86	24.45	9.83	34.28	54.00	-19.73	AV	PASS
V	9916.09	17.05	13.22	30.27	54.00	-23.73	AV	PASS
V	12395.54	*	*	*	54.00	*	AV	PASS
V	14874.93	*	*	*	54.00	*	AV	PASS
V	17353.08	*	*	*	54.00	*	AV	PASS
H	4960.21	31.58	4.92	36.50	54.00	-17.50	AV	PASS
H	7440.64	23.08	9.83	32.91	54.00	-21.09	AV	PASS
H	9920.48	18.43	13.22	31.65	54.00	-22.36	AV	PASS
H	12400.10	*	*	*	54.00	*	AV	PASS
H	14880.98	*	*	*	54.00	*	AV	PASS
H	17360.29	*	*	*	54.00	*	AV	PASS

Remark:

1. Emission Level = Reading + Factor, Margin= Emission Level – Limit.
2. “*” means the test results were attenuated more than 20dB below the permissible limits, so the results don't record in the report.

ANNEX A TEST SETUP PHOTOS

Please refer to the document "8336EU122501W-ANNEX A.PDF"

ANNEX B EXTERNAL PHOTOS

Please refer to the document "8336EU122501W-ANNEX B.PDF"

ANNEX C INTERNAL PHOTOS

Please refer to the document "8336EU122501W-ANNEX C.PDF"

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ANNEX D TEST DATA

1. Duty Cycle

1.1 Test Result

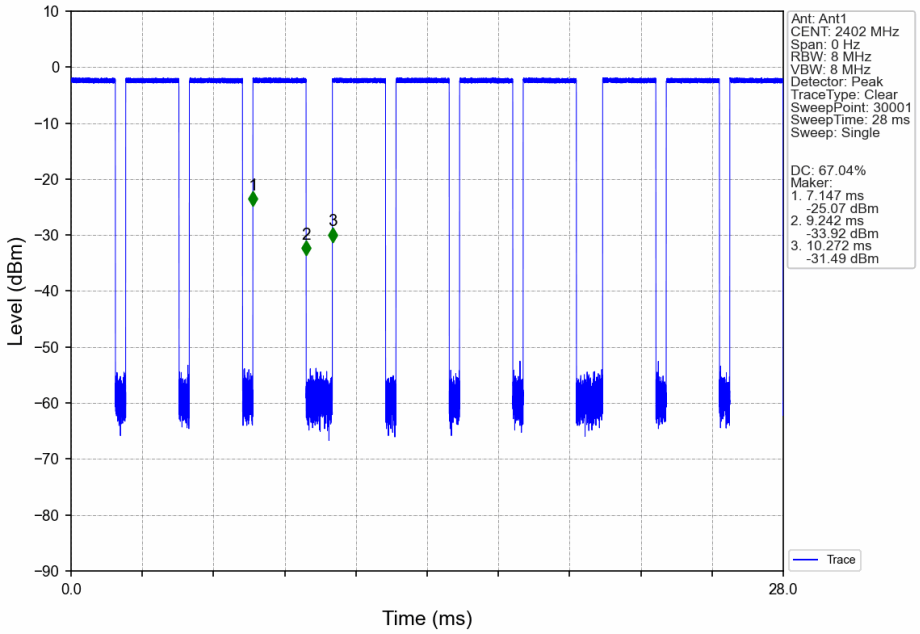
1.1.1 Ant1

Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
1M	SISO	2402	2.095	3.125	67.04	1.74	16.78

1.2 Test Graph

1.2.1 Ant1

1M_LCH_2402MHz_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	1.018	/	Pass
		2440	1	1.018	/	Pass
		2480	1	1.018	/	Pass

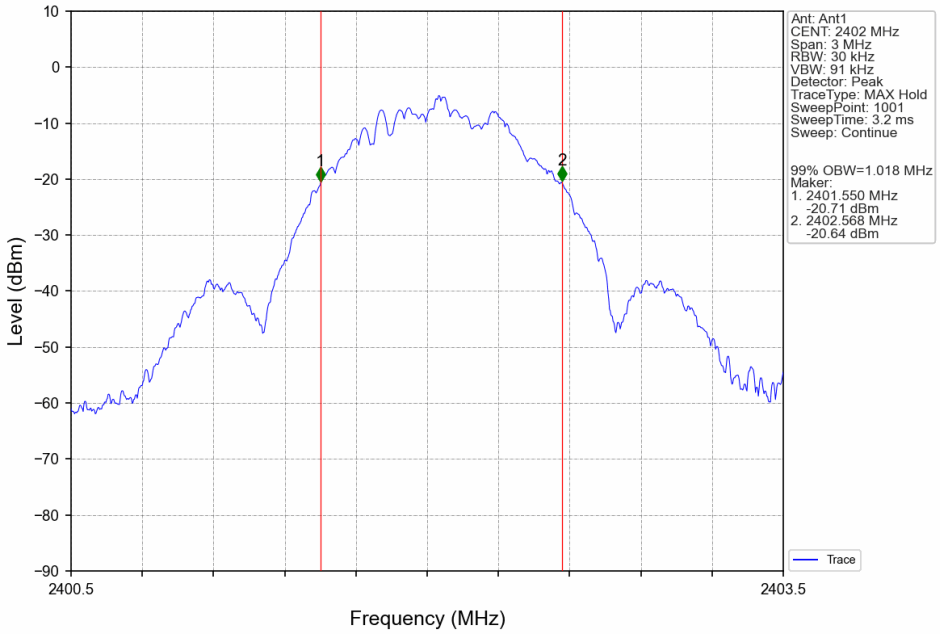
2.1.2 6dB BW

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	1	0.645	>=0.5	Pass
		2440	1	0.644	>=0.5	Pass
		2480	1	0.642	>=0.5	Pass

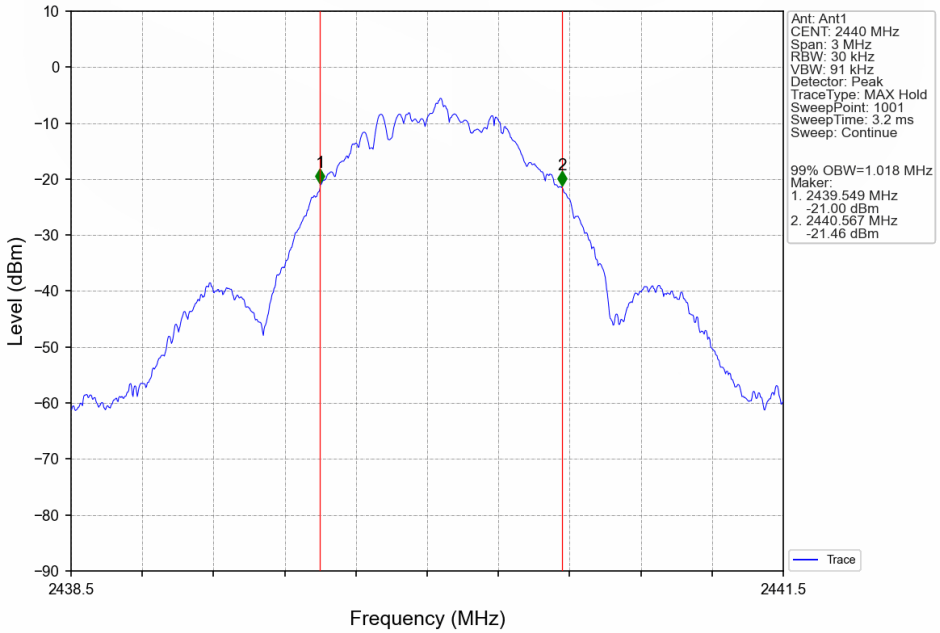
2.2 Test Graph

2.2.1 OBW

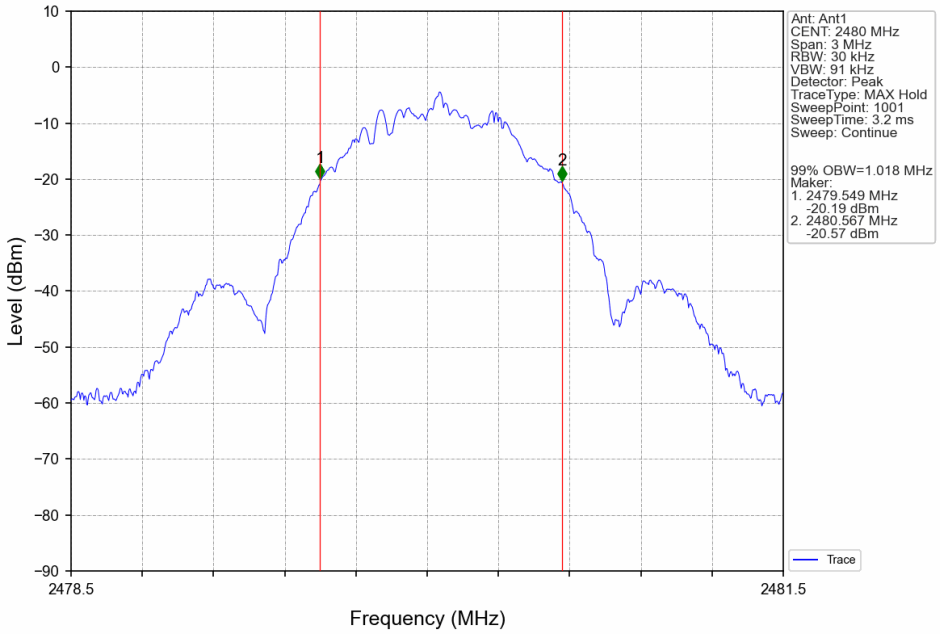
1M_LCH_2402MHz_Ant1_NTNV



1M_MCH_2440MHz_Ant1_NTNV

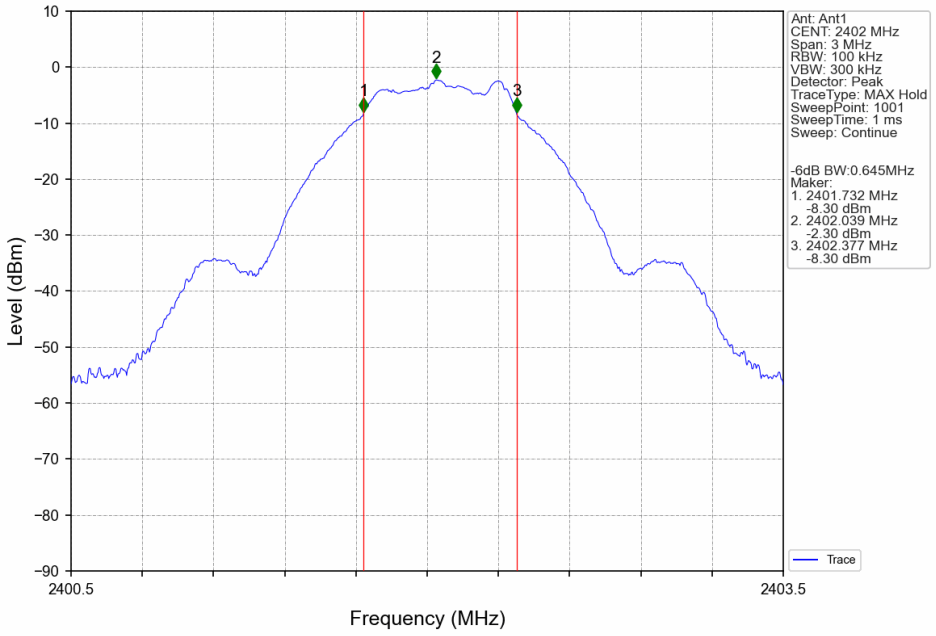


1M_HCH_2480MHz_Ant1_NTNV

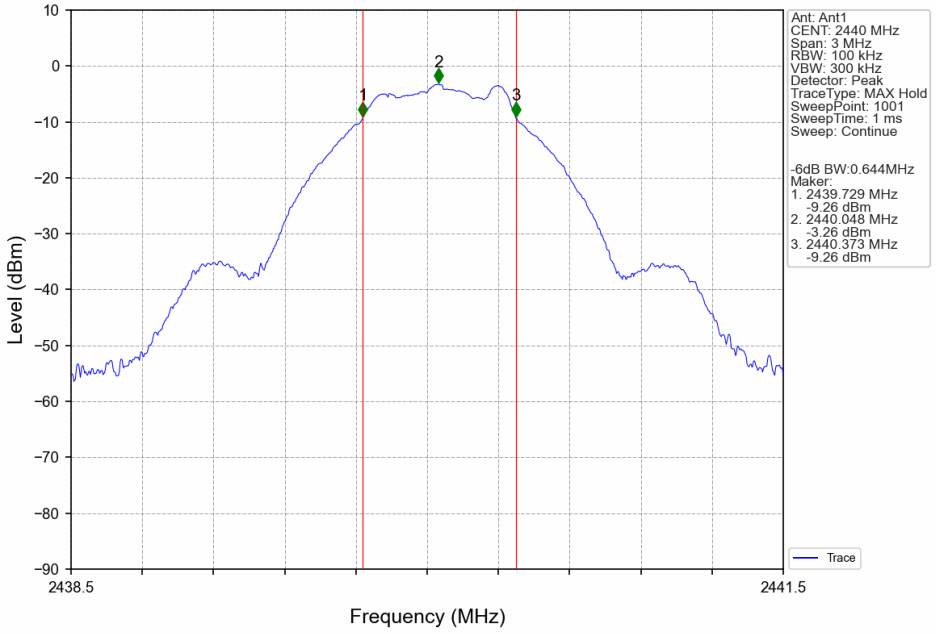


2.2.2 6dB BW

1M_LCH_2402MHz_Ant1_NTNV



1M_MCH_2440MHz_Ant1_NTNV



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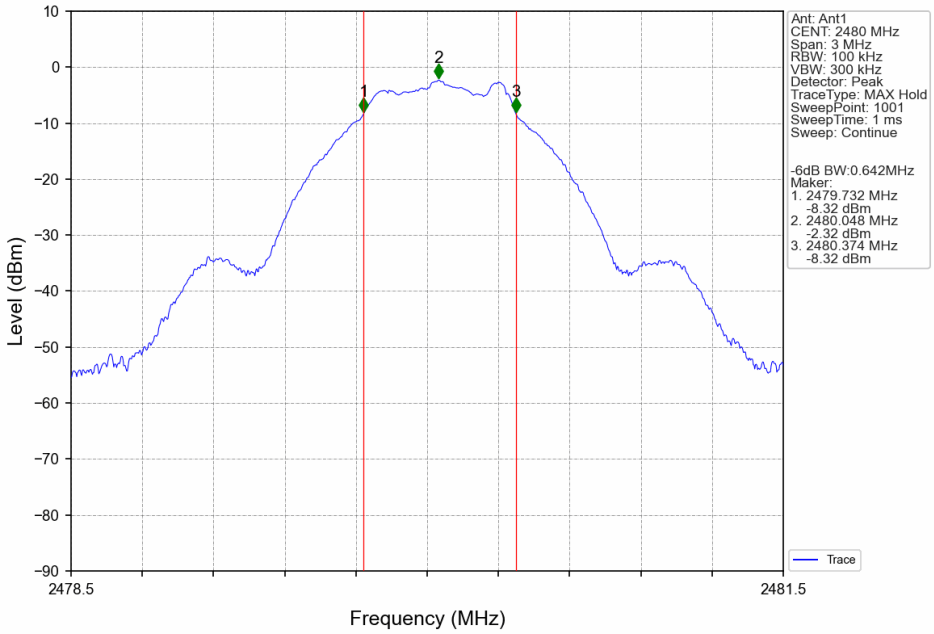
1M_HCH_2480MHz_Ant1_NTNV



3. Maximum Conducted Output Power

3.1 Test Result

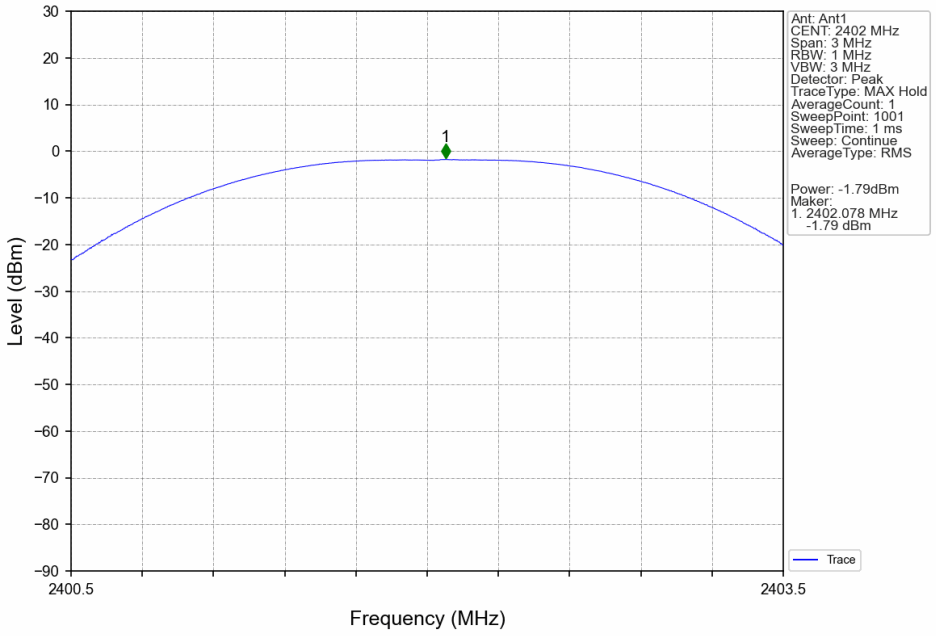
3.1.1 Power

Mode	TX Type	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
1M	SISO	2402	-1.79	<=30	Pass
		2440	-2.75	<=30	Pass
		2480	-1.94	<=30	Pass
Note1: Antenna Gain: Ant1: 1.72dBi;					

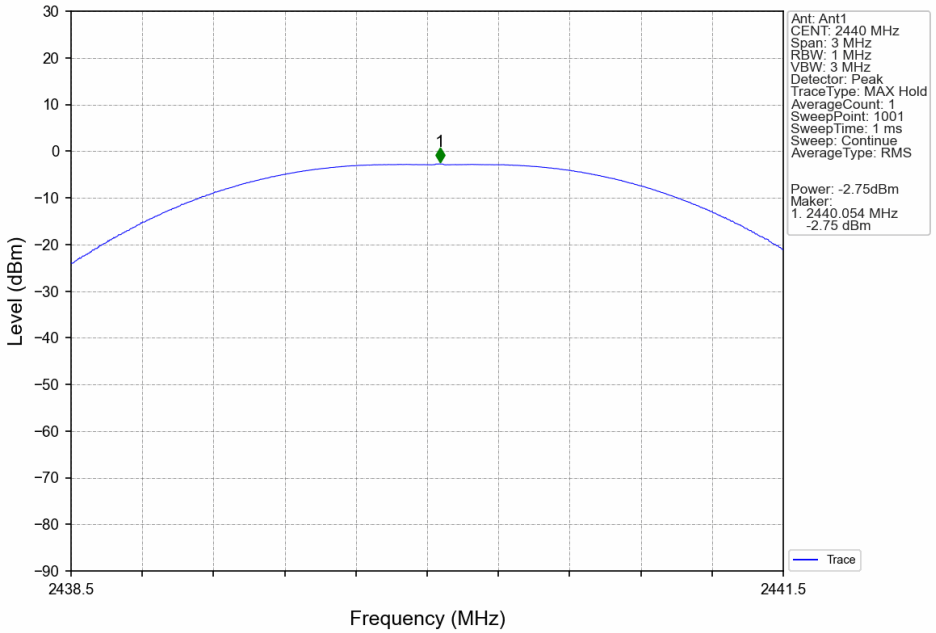
3.2 Test Graph

3.2.1 Power

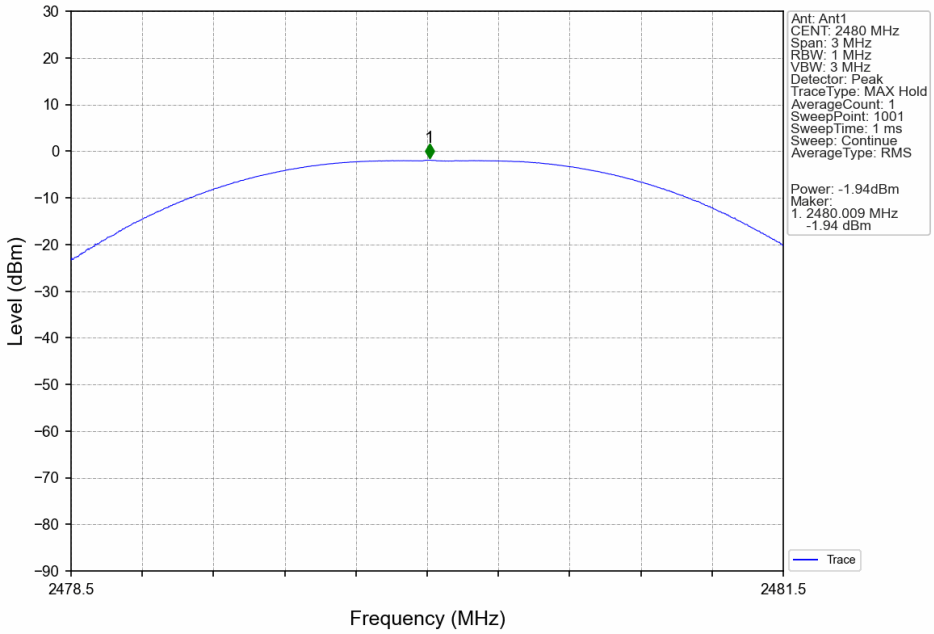
1M_LCH_2402MHz_Ant1_NTNV



1M_MCH_2440MHz_Ant1_NTNV



1M_HCH_2480MHz_Ant1_NTNV



4. Maximum Power Spectral Density

4.1 Test Result

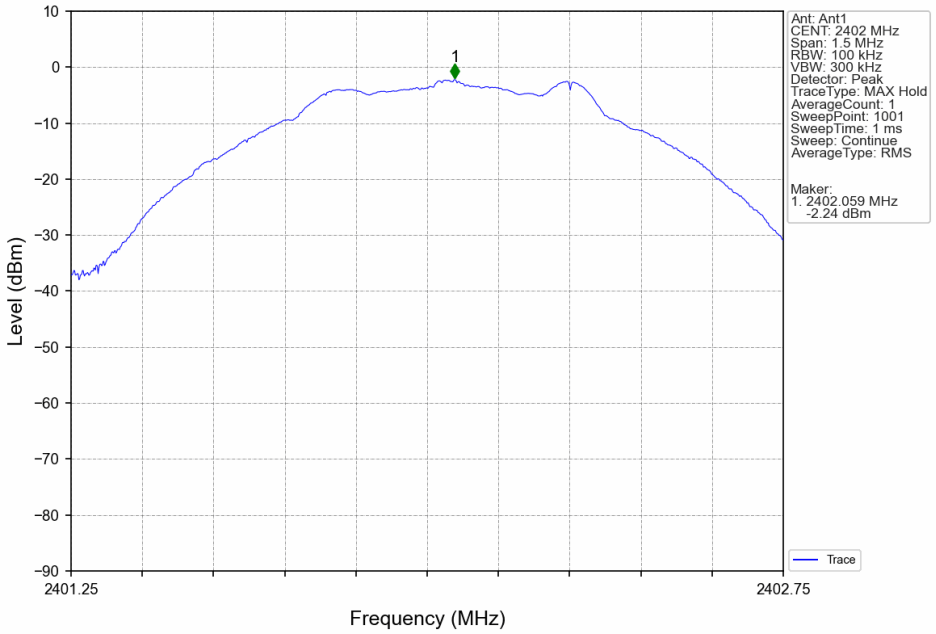
4.1.1 PSD

Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm)		Verdict
			ANT1	Limit	
1M	SISO	2402	-2.24	<=8	Pass
		2440	-3.12	<=8	Pass
		2480	-2.33	<=8	Pass
Note1: Antenna Gain: Ant1: 1.72dBi;					

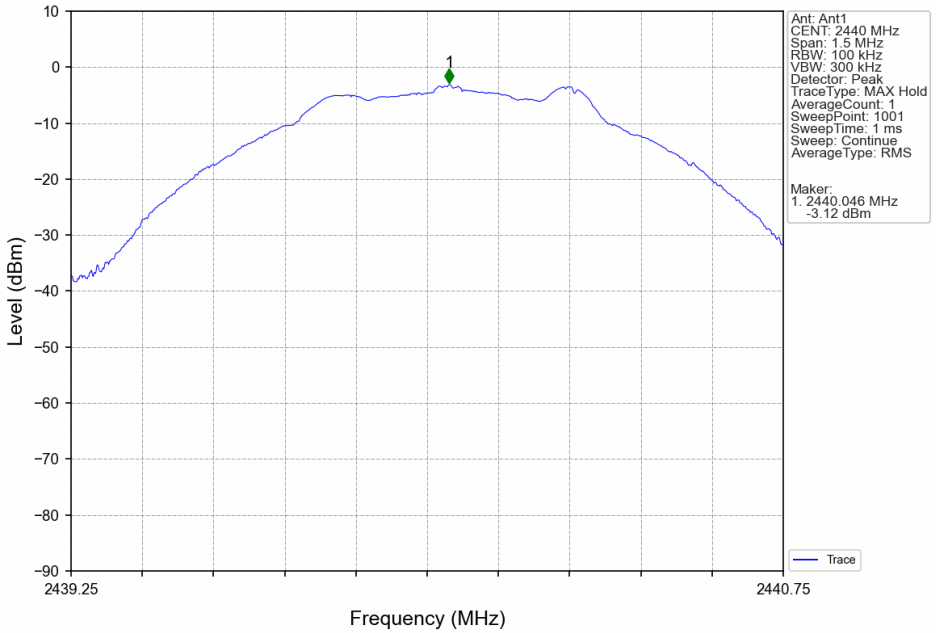
4.2 Test Graph

4.2.1 PSD

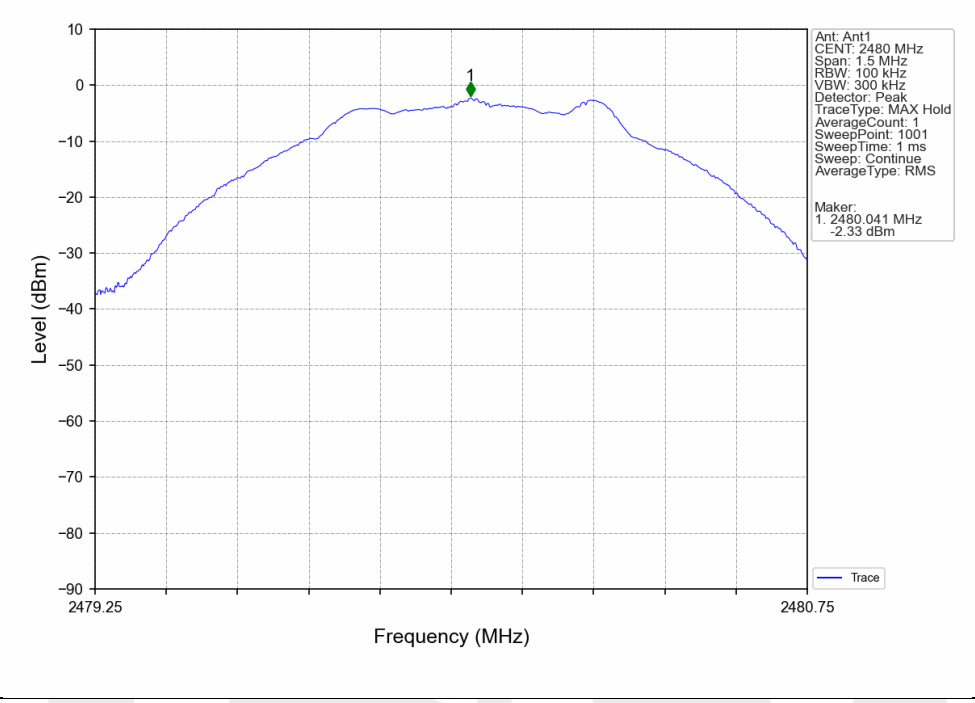
1M_LCH_2402MHz_Ant1_NTNV



1M_MCH_2440MHz_Ant1_NTNV



1M_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	-2.22
		2440	1	-3.06
		2480	1	-2.37
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.				

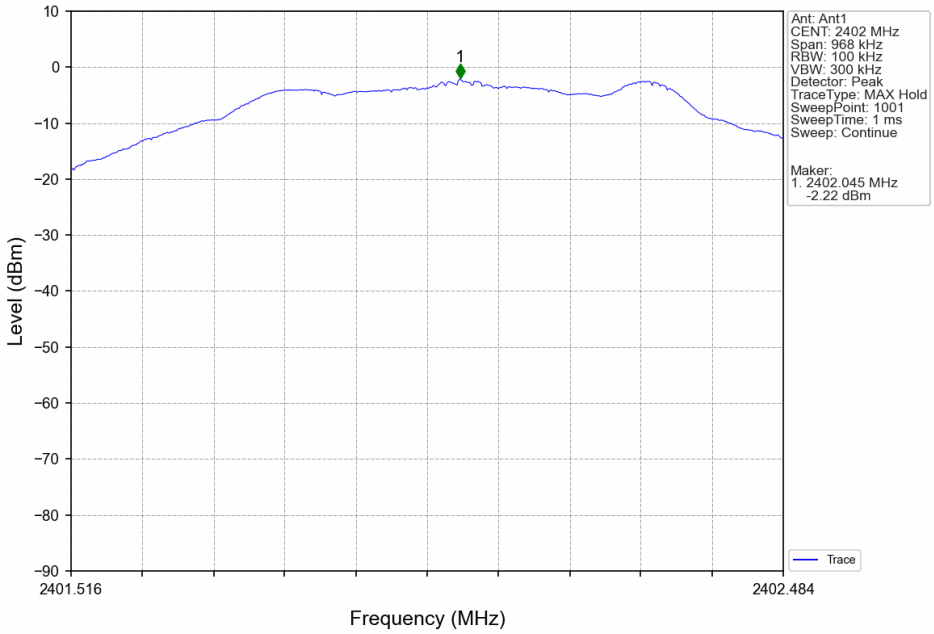
5.1.2 CSE

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
1M	SISO	2402	1	-2.22	-22.22	Pass
		2440	1	-3.06	-23.06	Pass
		2480	1	-2.37	-22.37	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.						

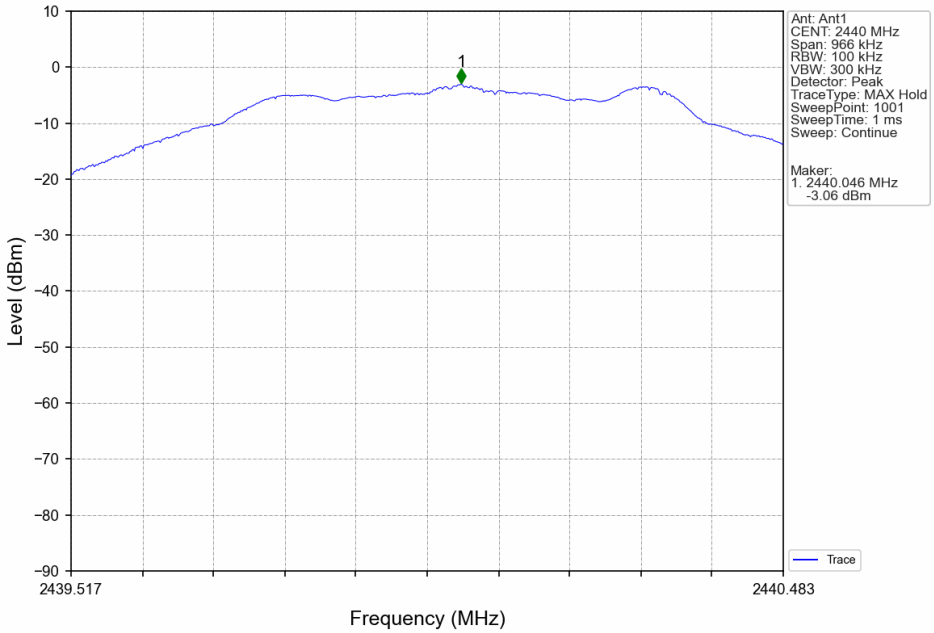
5.2 Test Graph

5.2.1 Ref

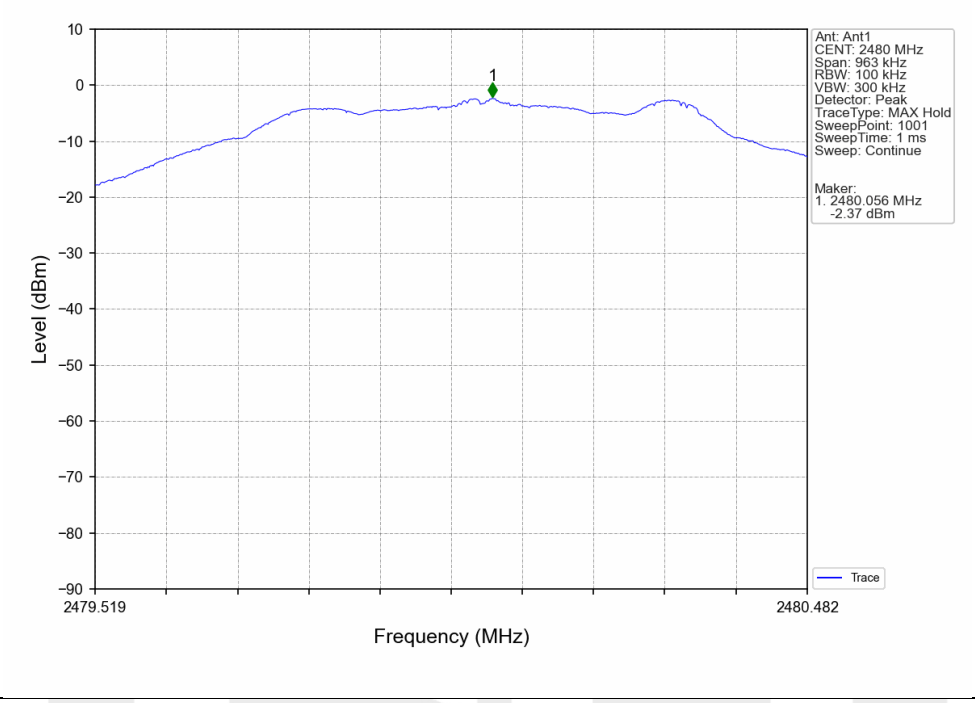
1M_LCH_2402MHz_Ant1_NTNV



1M_MCH_2440MHz_Ant1_NTNV

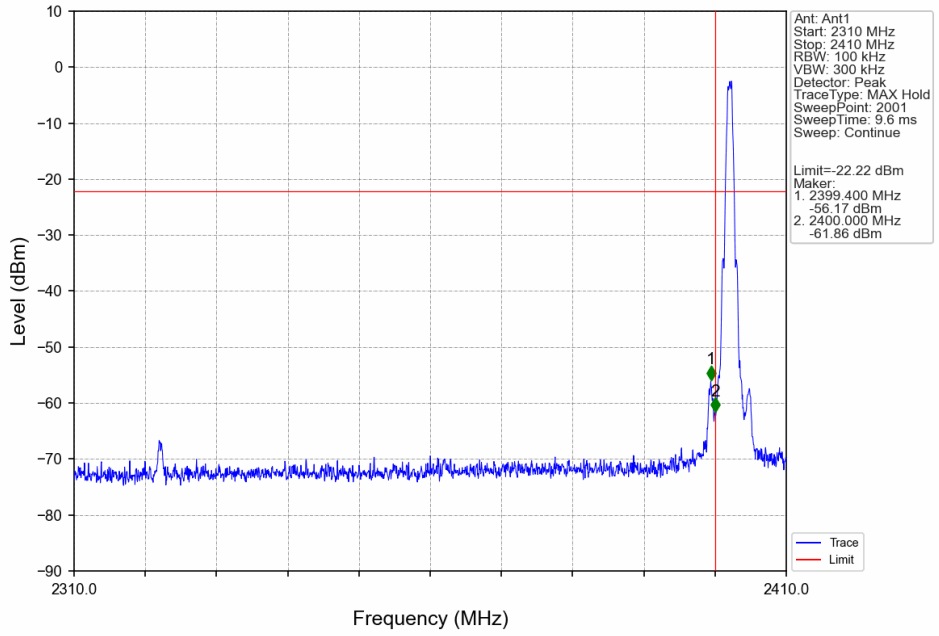


1M_HCH_2480MHz_Ant1_NTNV

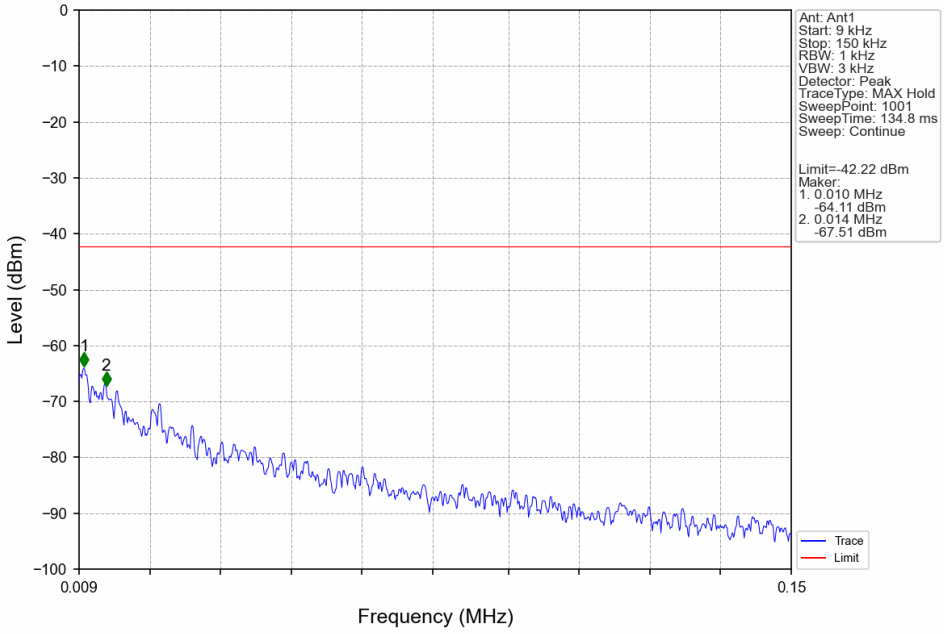


5.2.2 CSE

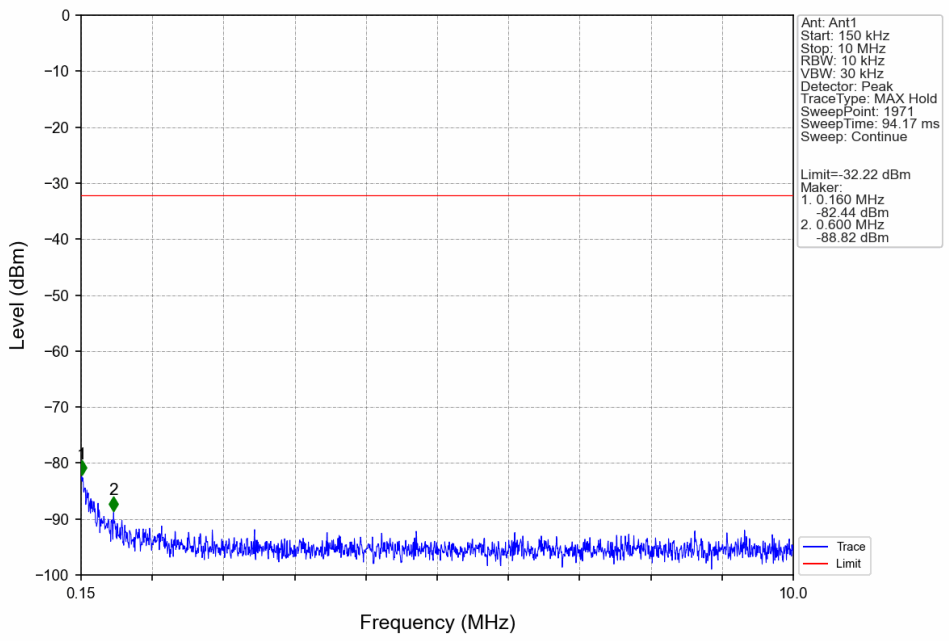
1M_LCH_2402MHz_Ant1_NTNV



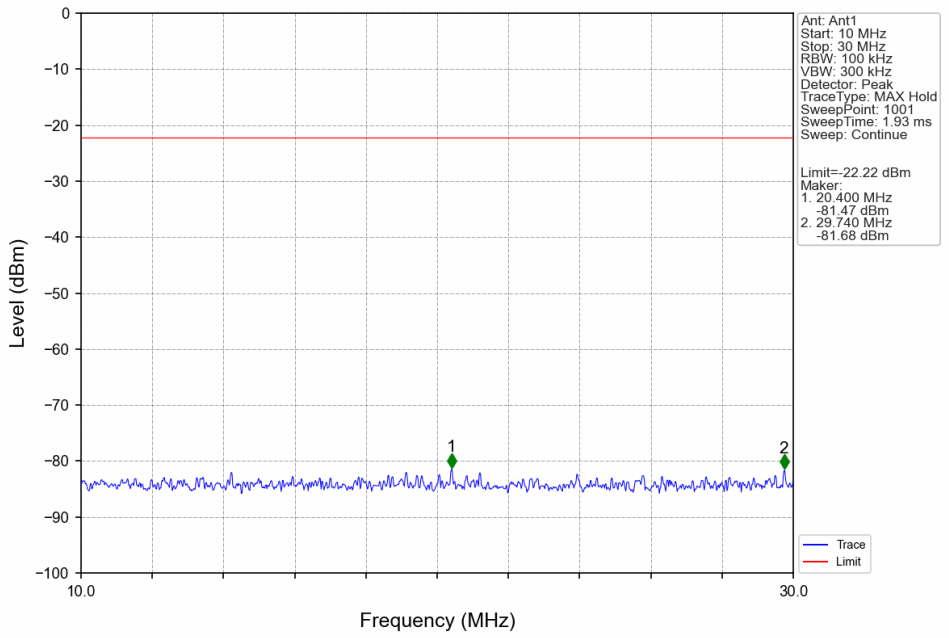
1M_LCH_2402MHz_Ant1_NTNV



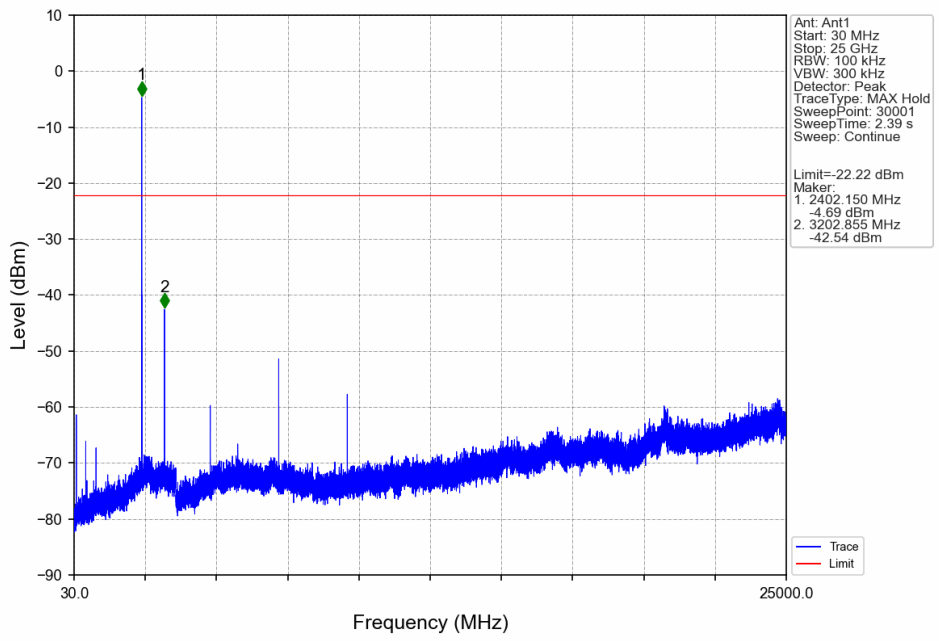
1M_LCH_2402MHz_Ant1_NTNV



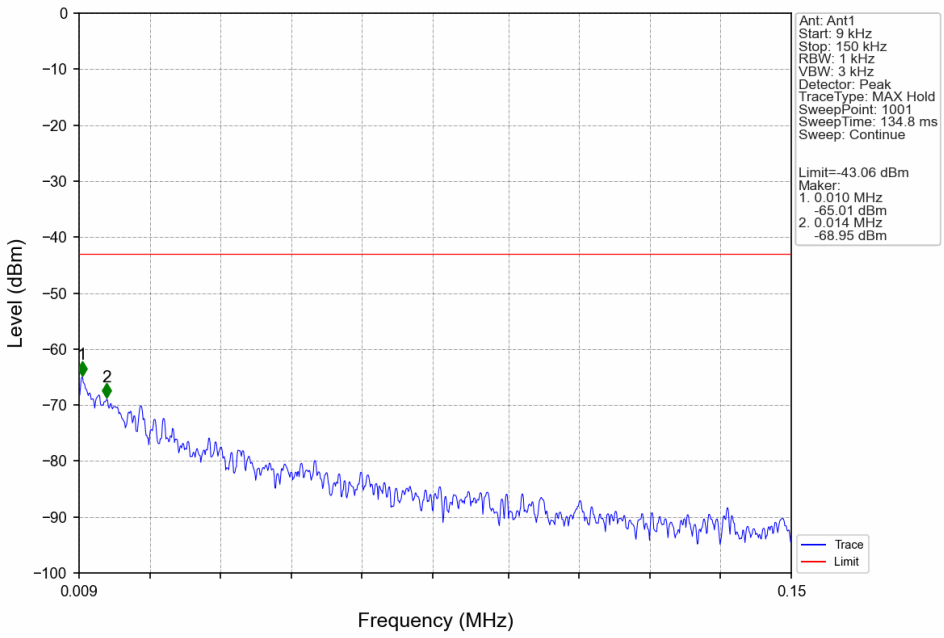
1M_LCH_2402MHz_Ant1_NTNV



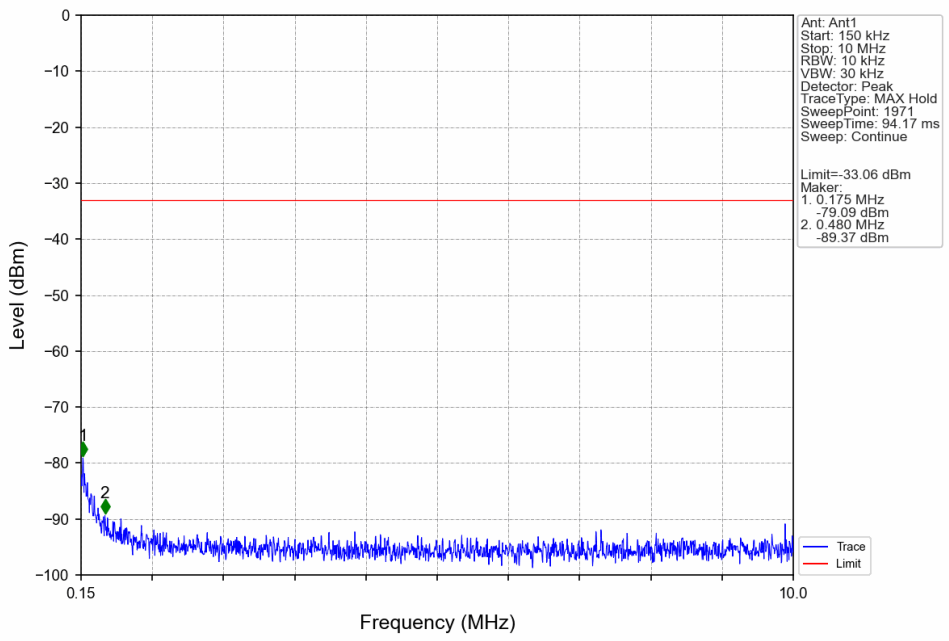
1M_LCH_2402MHz_Ant1_NTNV



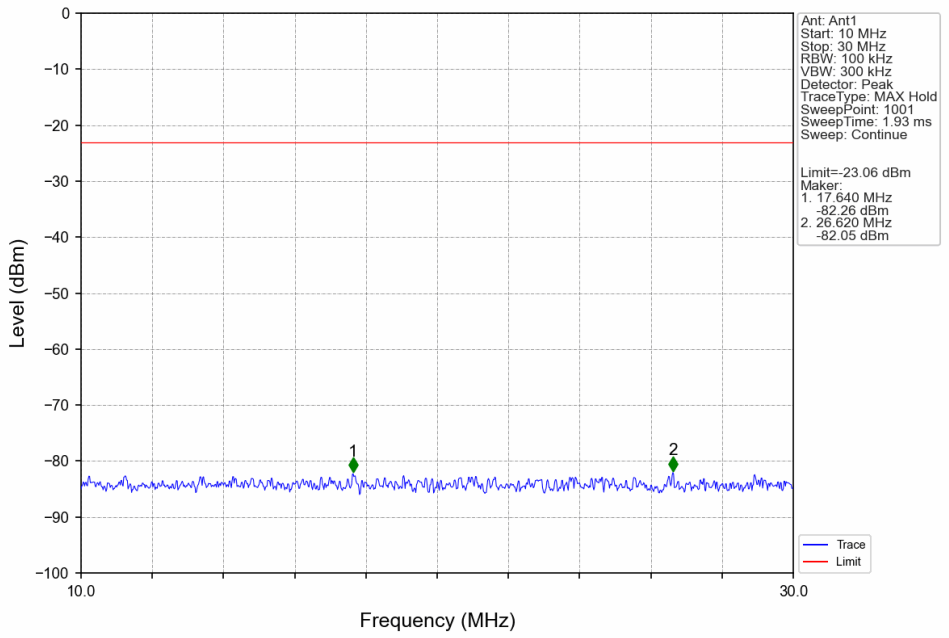
1M_MCH_2440MHz_Ant1_NTNV



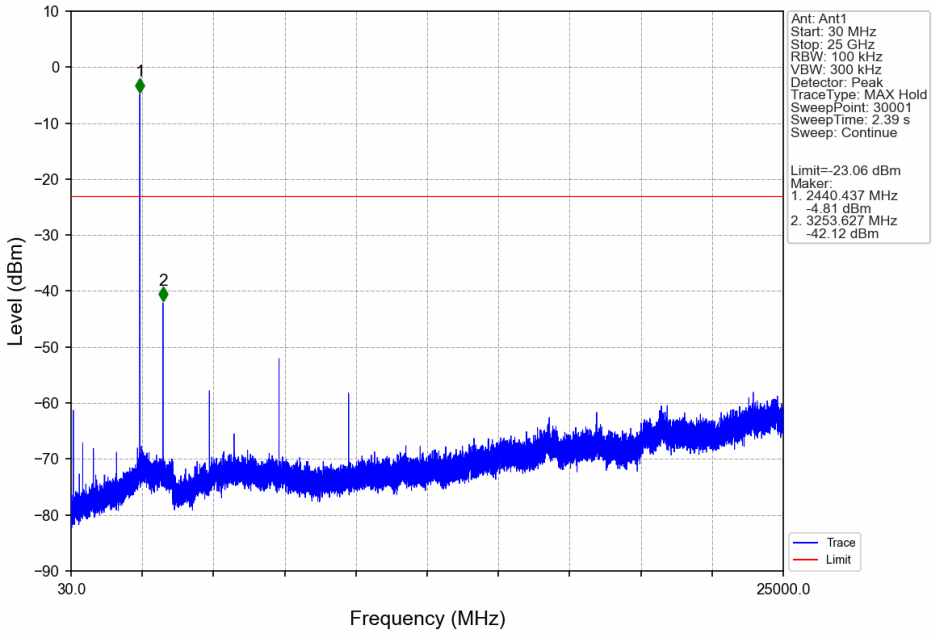
1M_MCH_2440MHz_Ant1_NTNV



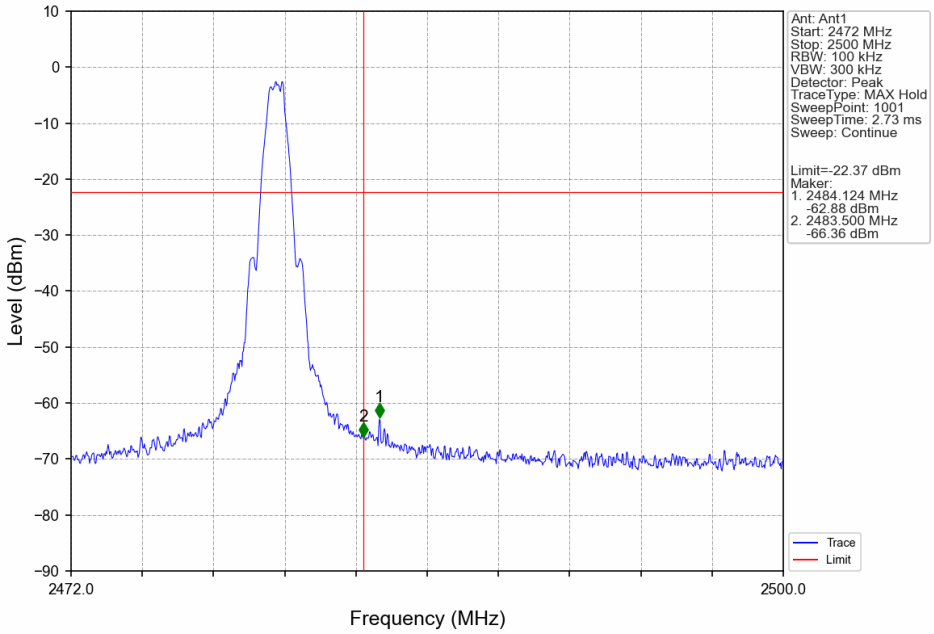
1M_MCH_2440MHz_Ant1_NTNV



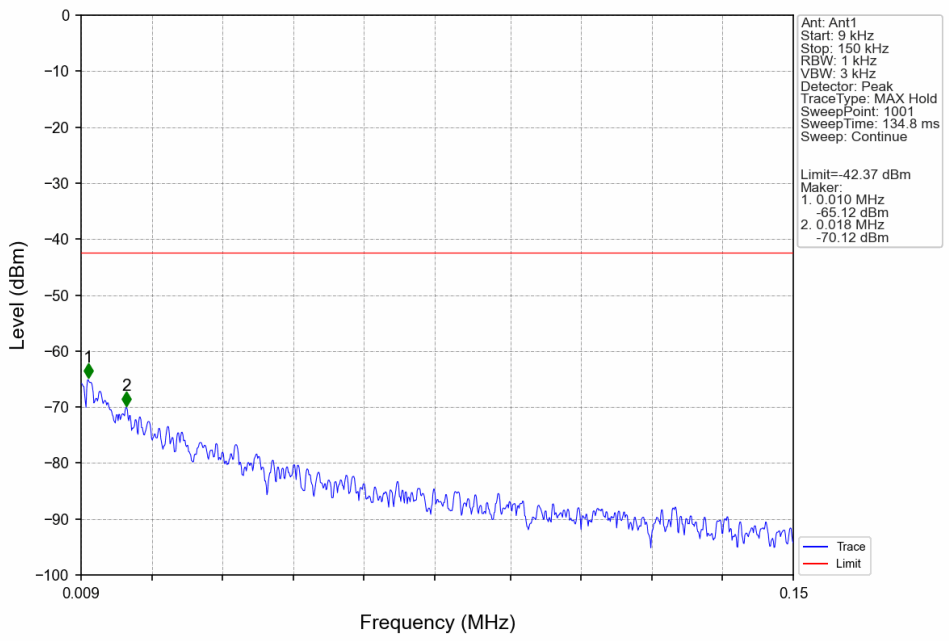
1M_MCH_2440MHz_Ant1_NTNV



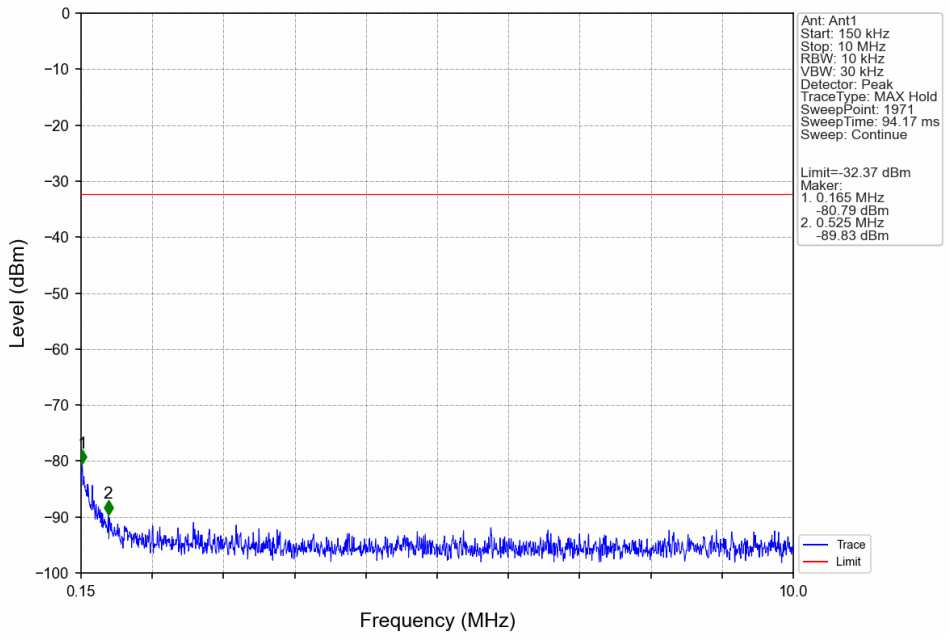
1M_HCH_2480MHz_Ant1_NTNV



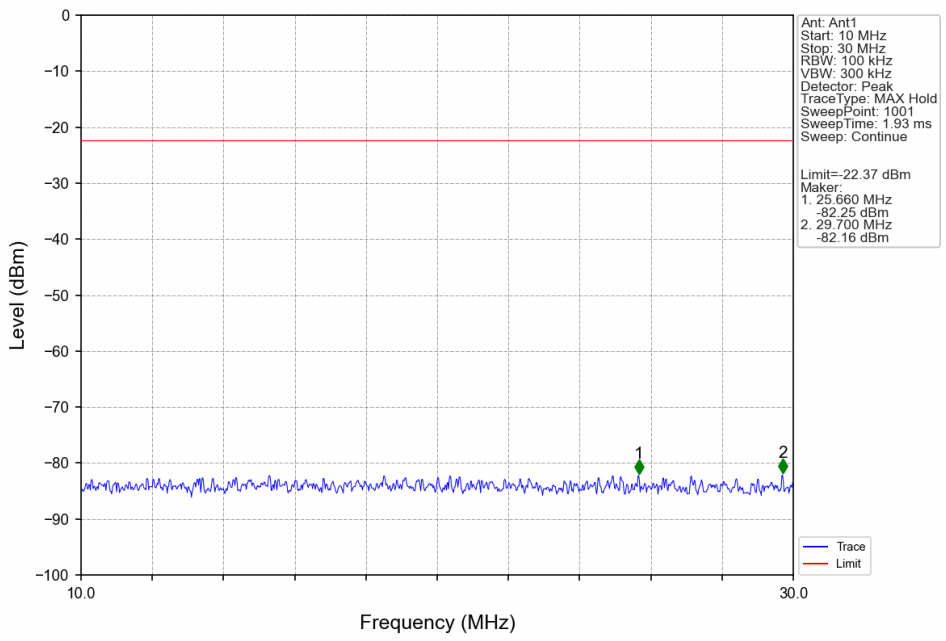
1M_HCH_2480MHz_Ant1_NTNV



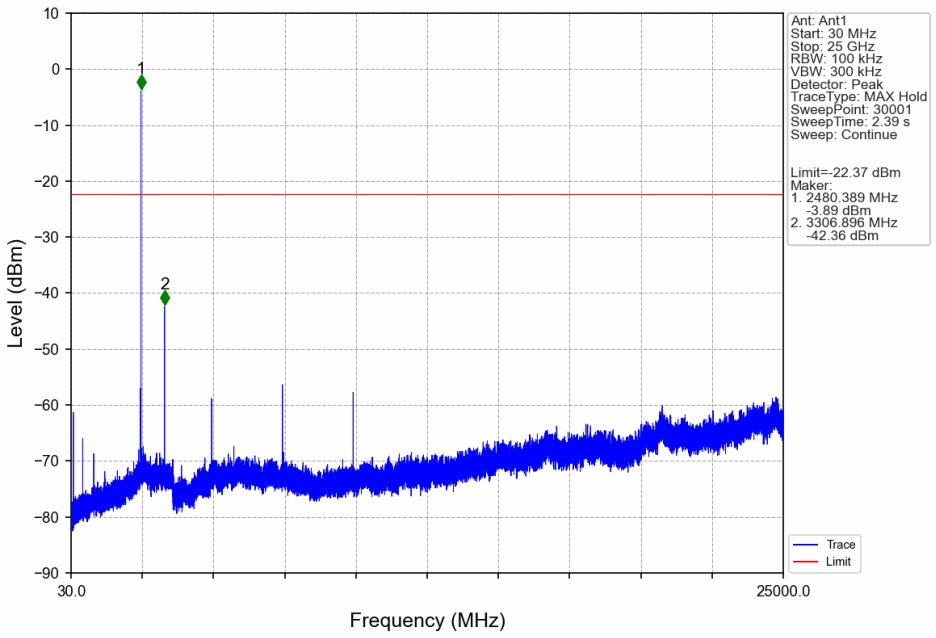
1M_HCH_2480MHz_Ant1_NTNV



1M_HCH_2480MHz_Ant1_NTNV



1M_HCH_2480MHz_Ant1_NTNV



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--- End of Report ---

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