TEST REPORT

Report No.:	8429EU120604W1
Applicant:	Dongguan Zohe Electronics Co., Ltd.
Address:	Room 202, Building 3, No. 91 West Shipai Avenue, Shipai Town, Dongguan City, Guangdong Province, 523330, P.R. China
Product Name:	CUSTOMIZE MECHANICAL KEYBOARD
Model No.:	ZH100
Trademark:	ZORNHER
FCC ID:	2BV5D-ZH100
Test Standard(s):	47 CFR Part 15.247
Test Result:	Pass
Date of Receipt:	Mar. 06, 2026
Test Date:	Mar. 09, 2026 - Mar. 13, 2026
Date of Issue:	May 21, 2026

ISSUED BY:

SHENZHEN EU TESTING LABORATORY LIMITED

SHENZHEN EU TESTING LABORATORY LIMITED APPROVED

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

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Revision Record

Report Version	Issued Date	Description	Status
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2 General Information

2.1 Applicant Information

Applicant	Dongguan Zohe Electronics Co., Ltd.
Address	Room 202, Building 3, No. 91 West Shipai Avenue, Shipai Town, Dongguan City, Guangdong Province, 523330, P.R. China

2.2 Manufacturer Information

Manufacturer	Dongguan Zohe Electronics Co., Ltd.
Address	Room 202, Building 3, No. 91 West Shipai Avenue, Shipai Town, Dongguan City, Guangdong Province, 523330, P.R. China

2.3 Factory Information

Factory	Dongguan Mile Electronic Technology Co., Ltd.
Address	Room 701, Building 3, No. 685, Tangxia Section, Dongshen Road, Tangxia Town, Dongguan City, Guangdong Province, China

2.4 General Description of E.U.T.

Product Name	CUSTOMIZE MECHANICAL KEYBOARD
Model No. Under Test	ZH100
List Model No.	N/A
Description of Model differentiation	N/A
Rating(s)	Input: 5VDC, 300mA Battery Capacity: 3.7VDC, 4000mAh, 14.8Wh
Product Type	☐ Mobile ☒ Portable ☐ Fix Location
Test Sample No.	8429EU120604W-1/2(Normal), 8429EU120604W-2/2(Engineering)
Hardware Version	BYK916_2.1_20250820_V20.04(1)
Software Version	ZH100USB10110E00001
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) 2.4G ISM Band (GFSK modulation)

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

Technology	Bluetooth
Operation Mode	BLE
Operating Frequency	2402MHz to 2480MHz
Modulation Type	GFSK
Number of Channels	40
Antenna Type	PCB Antenna
Antenna Gain(Peak)	1.22 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
Conducted Emission at AC power line	47 CFR Part 15.247	ANSI C63.10-2020+Cor.1-2023 section 6.2	47 CFR 15.207(a)	Pass
6dB Bandwidth	47 CFR Part 15.247	ANSI C63.10-2020+Cor.1-2023, 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+Cor 1-2023 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+Cor 1-2023, 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+Cor 1-2023 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+Cor 1-2023 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+Cor 1-2023 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+Cor 1-2023	47 CFR 15.247(d), 15.209, 15.205	Pass

		section 6.6.4 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 3.7VDC battery inside

4.2 Test Equipment

Conducted Emission at AC power line					
Equipment	**Manufacturer**	**Model No**	**Serial No**	**Cal Date**	**Cal Due Date**
Test Software	Farad	EZ-EMC	EE-014	/	/
EMI Test Receiver	Rohde & Schwarz	ESCI	EE-005	2026-01-07	2027-01-06
L.I.S.N. Artificial Mains Network	Rohde & Schwarz	ENV216	EE-004	2026-01-07	2027-01-06

6dB Bandwidth **Maximum Conducted Output Power** **Power Spectral Density** **Emissions in non-restricted frequency bands**					
Equipment	**Manufacturer**	**Model No**	**Serial No**	**Cal Date**	**Cal Due Date**
MXA Signal Analyzer	Agilent	N9020A	EE-011	2026-01-07	2027-01-06
MXG RF Vector Signal Generator	Agilent	N5182A	EE-012	2026-01-07	2027-01-06
MIMO Power Measurement Module	TSTPASS	TSPS 2023R	EE-016	2026-01-07	2027-01-06
Wideband Radio Communication Tester	ROHDE & SCHWARZ	CMW500	EE-402	2026-02-13	2027-02-12
MXG RF Analog Signal Generator	Agilent	N5181A	EE-406	2026-02-13	2027-02-12
Power Meter	Anritsu	ML2495A	EE-416	2026-02-13	2027-02-12
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	2026-01-07	2027-01-06
Double Ridged Horn Antenna	A-INFOMW	LB-10180-NF	EE-008	2026-01-11	2029-01-10
Pre-amplifier	Agilent	8449B	EE-010	2026-01-07	2027-01-06
MXG RF Vector Signal Generator	Agilent	N5182A	EE-012	2026-01-07	2027-01-06
DRG Horn Antenna	SCHWARZBECK	BBHA 9170	EE-410	2026-02-13	2027-02-12
Pre-amplifier	SKET	LNPA-1840-50	EE-411	2026-02-13	2027-02-12
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	2026-01-07	2027-01-06
Bilog Broadband Antenna	SCHWARZBECK	VULB 9163	EE-007	2026-01-13	2029-01-12
Pre-amplifier	Agilent	8447D	EE-009	2026-01-07	2027-01-06
MXA Signal Analyzer	Agilent	N9020A	EE-011	2026-01-07	2027-01-06
Loop Antenna	TESEQ	HLA6121	EE-403	2026-02-13	2027-02-12
Test Software	Farad	EZ-EMC	EE-015	/	/

4.3 Description of Support Unit

No.	Title	Manufacturer	Model No.	Serial No.
1	Adapter	Apple	A1443	EMC-PJ-001
2	Lenovo NoteBook	Lenovo	Lenovo ideapad 300	EMC-PJ-047

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 Radio Spectrum Matter Test Results (RF)

5.1 Conducted Emission at AC power line

5.1.1 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

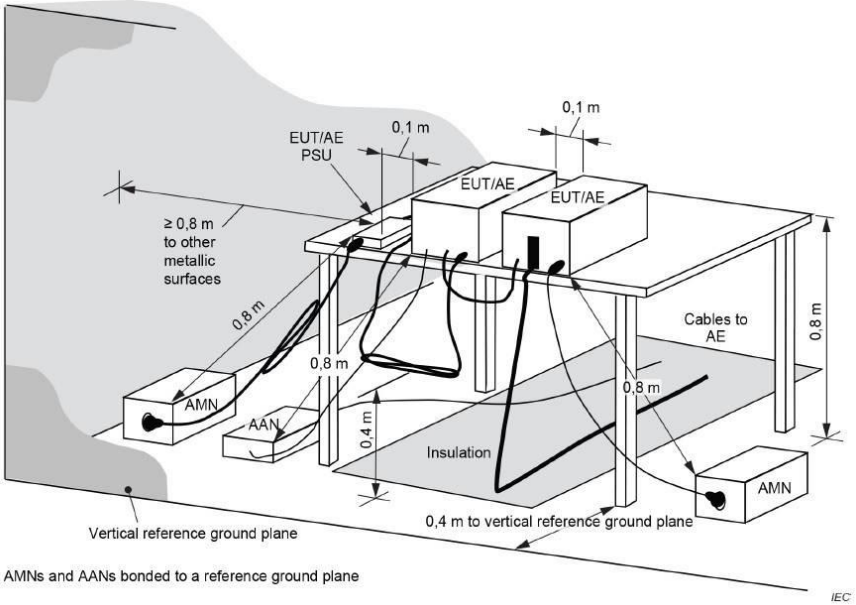
*Decreases with the logarithm of the frequency.

Test Method:	ANSI C63.10-2020+Cor.1-2023 section 6.2
Procedure:	Refer to ANSI C63.10-2020+Cor.1-2023 section 6.2, standard test method for ac power-line conducted emissions from unlicensed wireless devices

5.1.2 E.U.T. Operation

Pre test mode:	TM1
Final test mode:	TM1

5.1.3 Test Setup Diagram



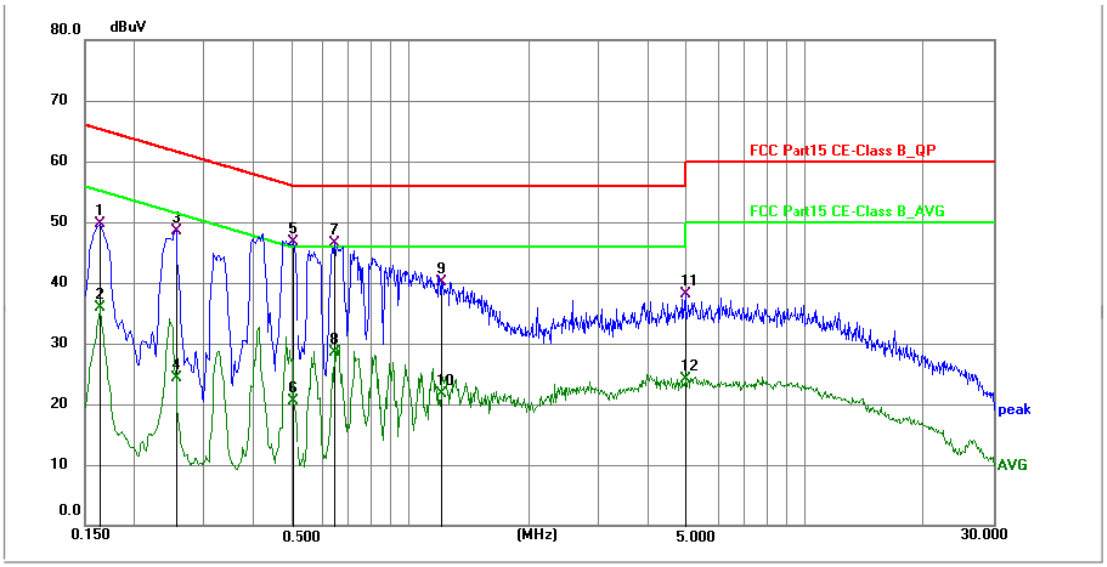
5.1.4 Test Data

PASS.

Only the worst case data was showed in the report, please to see the following pages.

Conducted Emission at AC power line Test Data

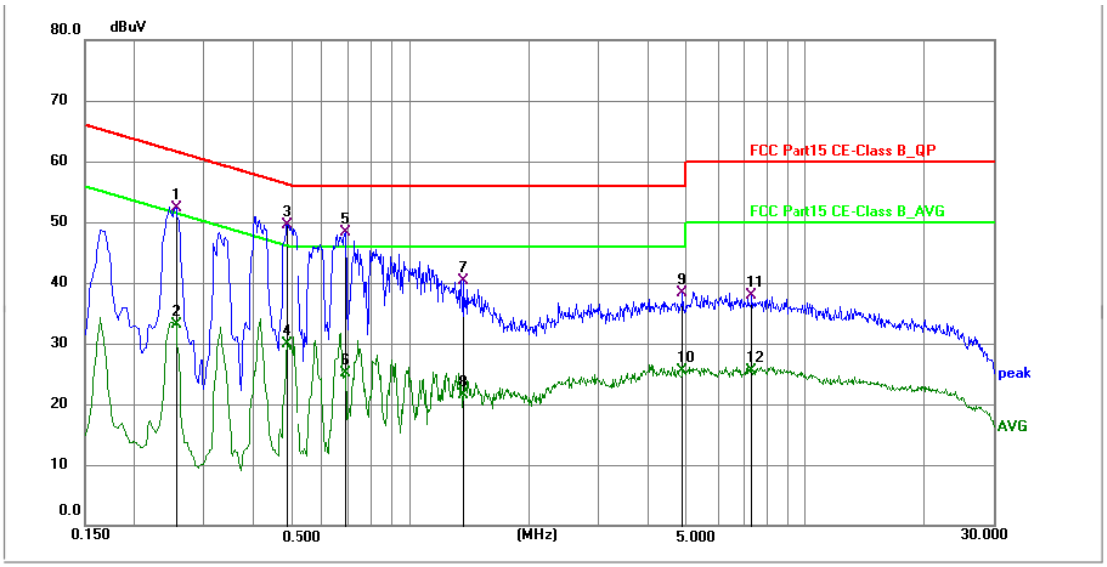
TM1 / Line: Line / Band: 2400-2483.5 MHz / BW: 1 / CH: L



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1635	39.81	9.98	49.79	65.28	-15.49	QP	P	
2	0.1635	25.85	9.98	35.83	55.28	-19.45	AVG	P	
3	0.2535	38.43	10.01	48.44	61.64	-13.20	QP	P	
4	0.2535	14.31	10.01	24.32	51.64	-27.32	AVG	P	
5 *	0.5055	36.70	10.07	46.77	56.00	-9.23	QP	P	
6	0.5055	10.49	10.07	20.56	46.00	-25.44	AVG	P	
7	0.6450	36.42	10.06	46.48	56.00	-9.52	QP	P	
8	0.6450	18.52	10.06	28.58	46.00	-17.42	AVG	P	
9	1.2030	30.11	10.06	40.17	56.00	-15.83	QP	P	
10	1.2030	11.65	10.06	21.71	46.00	-24.29	AVG	P	
11	4.9605	28.04	10.05	38.09	56.00	-17.91	QP	P	
12	4.9605	14.14	10.05	24.19	46.00	-21.81	AVG	P	

Conducted Emission at AC power line Test Data

TM1 / Line: Neutral / Band: 2400-2483.5 MHz / BW: 1 / CH: L



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.2548	42.28	10.01	52.29	61.60	-9.31	QP	P	
2	0.2548	23.08	10.01	33.09	51.60	-18.51	AVG	P	
3 *	0.4889	39.43	10.07	49.50	56.19	-6.69	QP	P	
4	0.4889	19.85	10.07	29.92	46.19	-16.27	AVG	P	
5	0.6863	38.20	10.06	48.26	56.00	-7.74	QP	P	
6	0.6863	14.99	10.06	25.05	46.00	-20.95	AVG	P	
7	1.3593	30.24	10.06	40.30	56.00	-15.70	QP	P	
8	1.3593	11.37	10.06	21.43	46.00	-24.57	AVG	P	
9	4.8738	28.30	10.05	38.35	56.00	-17.65	QP	P	
10	4.8738	15.54	10.05	25.59	46.00	-20.41	AVG	P	
11	7.2903	27.94	10.03	37.97	60.00	-22.03	QP	P	
12	7.2903	15.57	10.03	25.60	50.00	-24.40	AVG	P	

5.2 6dB Bandwidth

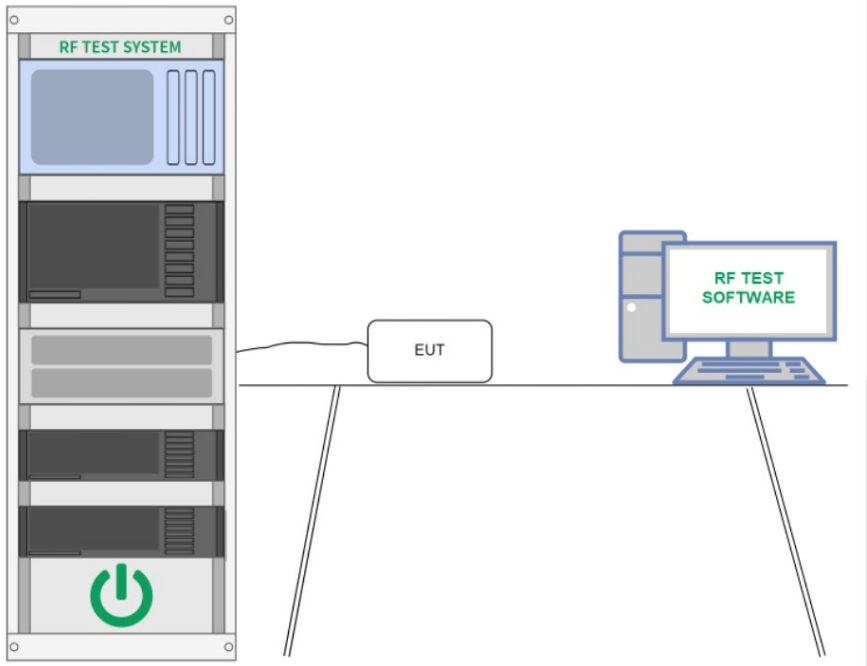
5.2.1 Test Specification

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+Cor.1-2023, 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.

5.2.2 E.U.T. Operation

Pre test mode:	TM1
Final test mode:	TM1

5.2.3 Test Setup Diagram



5.2.4 Test Data

PASS.

Please refer to Annex D for details.

5.3 Maximum Conducted Output Power

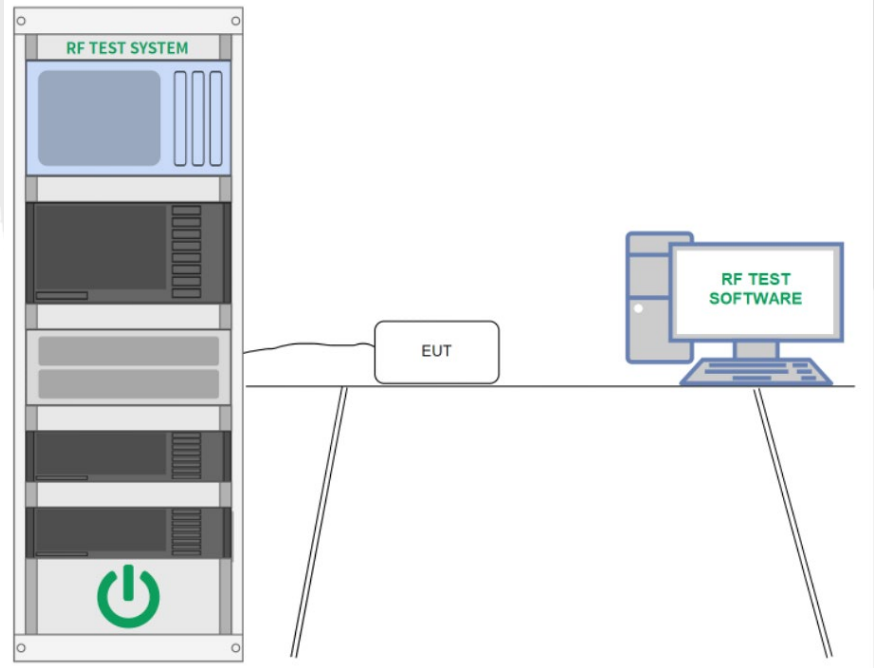
5.3.1 Test Specification

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+Cor 1-2023 section 11.9.1 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2020+Cor 1-2023, section 11.9.1.2 PKPM1 Peak power meter method

5.3.2 E.U.T. Operation

Pre test mode:	TM1
Final test mode:	TM1

5.3.3 Test Setup Diagram



5.3.4 Test Data

PASS.

Please refer to Annex D for details.

5.4 Power Spectral Density

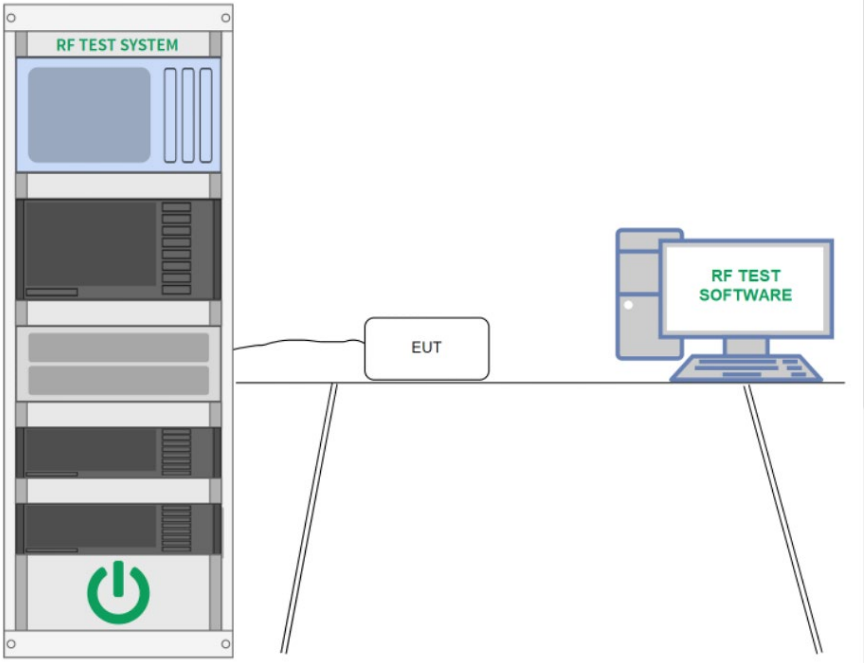
5.4.1 Test Specification

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+Cor 1-2023, section 11.10 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2020+Cor 1-2023, section 11.10, Maximum power spectral density level in the fundamental emission

5.4.2 E.U.T. Operation

Pre test mode:	TM1
Final test mode:	TM1

5.4.3 Test Setup Diagram



5.4.4 Test Data

PASS.

Please refer to Annex D for details.

5.5 Emissions in non-restricted frequency bands

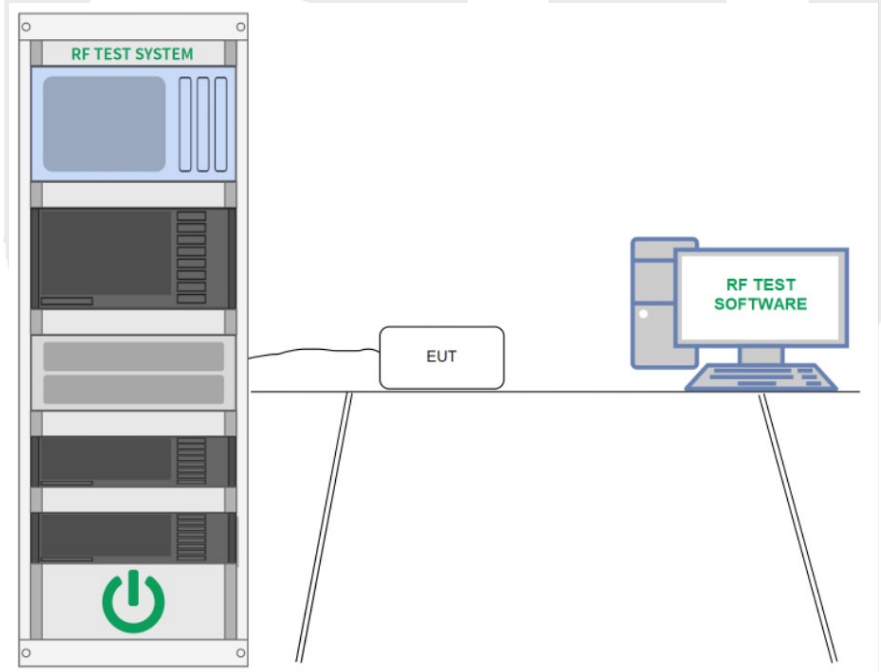
5.5.1 Test Specification

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+Cor 1-2023 section 11.11 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2020+Cor 1-2023 Section 11.11.1, Section 11.11.2, Section 11.11.3

5.5.2 E.U.T. Operation

Pre test mode:	TM1
Final test mode:	TM1

5.5.3 Test Setup Diagram



5.5.4 Test Data

PASS.

Please refer to Annex D for details.

5.6 Band edge emissions (Radiated)

5.6.1 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

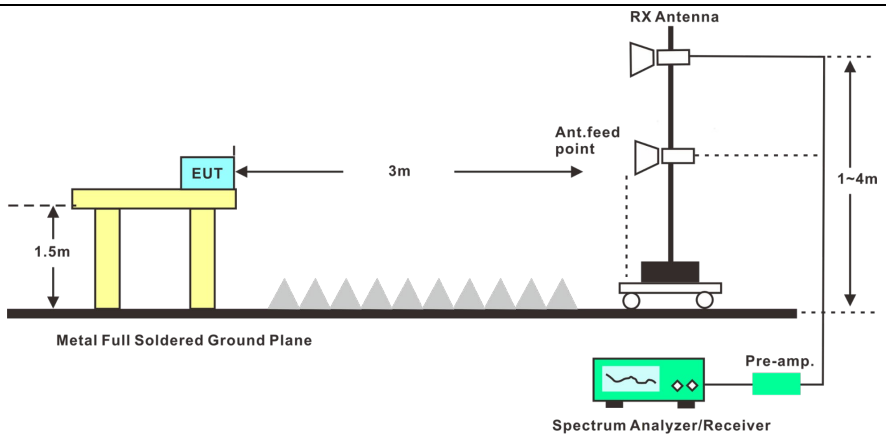
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this 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+Cor 1-2023 section 6.10 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2020+Cor 1-2023 section 6.10.5.2

5.6.2 E.U.T. Operation

Pre test mode:	TM1
Final test mode:	TM1

5.6.3 Test Setup Diagram



5.6.4 Test Data

PASS.

Please refer to the following pages.

Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
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	44.43	-2.81	41.62	74.00	-32.38	PK	PASS
H	2390.00	48.56	-2.69	45.87	74.00	-28.13	PK	PASS
H	**2400.00	62.79	-2.68	60.11	74.00	-13.89	PK	PASS
V	2310.00	43.31	-2.81	40.50	74.00	-33.50	PK	PASS
V	2390.00	47.63	-2.69	44.94	74.00	-29.06	PK	PASS
V	**2400.00	60.31	-2.68	57.63	74.00	-16.37	PK	PASS
H	2310.00	32.36	-2.81	29.55	54.00	-24.45	AV	PASS
H	2390.00	36.12	-2.69	33.43	54.00	-20.57	AV	PASS
H	**2400.00	49.15	-2.68	46.47	54.00	-7.53	AV	PASS
V	2310.00	33.47	-2.81	30.66	54.00	-23.34	AV	PASS
V	2390.00	35.52	-2.69	32.83	54.00	-21.17	AV	PASS
V	**2400.00	48.28	-2.68	45.60	54.00	-8.40	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	48.53	-2.56	45.97	74.00	-28.03	PK	PASS
H	2500.00	49.25	-2.54	46.71	74.00	-27.29	PK	PASS
V	**2483.50	46.18	-2.56	43.62	74.00	-30.38	PK	PASS
V	2500.00	47.90	-2.54	45.36	74.00	-28.64	PK	PASS
H	**2483.50	36.68	-2.56	34.12	54.00	-19.88	AV	PASS
H	2500.00	41.34	-2.54	38.80	54.00	-15.20	AV	PASS
V	**2483.50	35.44	-2.56	32.88	54.00	-21.12	AV	PASS
V	2500.00	38.64	-2.54	36.10	54.00	-17.90	AV	PASS

Remark:
Emission Level = Reading + Factor, Margin= Emission Level – Limit.

5.7 Emissions in frequency bands (below 1GHz)

5.7.1 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+Cor 1-2023 section 6.6.4 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2020+Cor 1-2023 section 6.6.4

5.7.2 E.U.T. Operation

Pre test mode:	TM1
Final test mode:	TM1

5.7.3 Test Setup Diagram

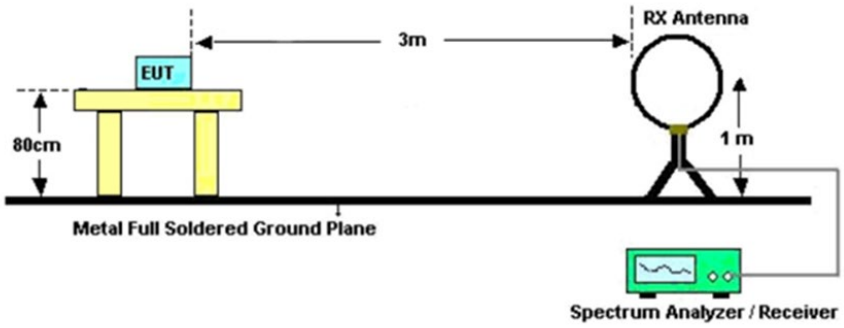


Figure 1. Below-30MHz

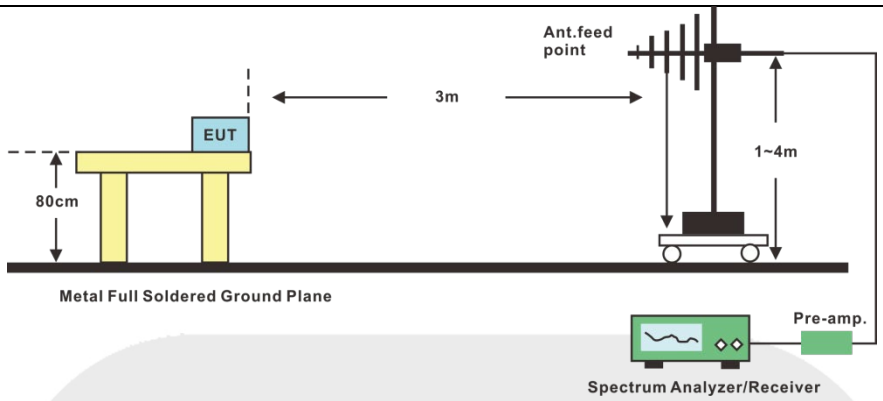


Figure 2. 30MHz to-1GHz-

5.7.4 Test Data

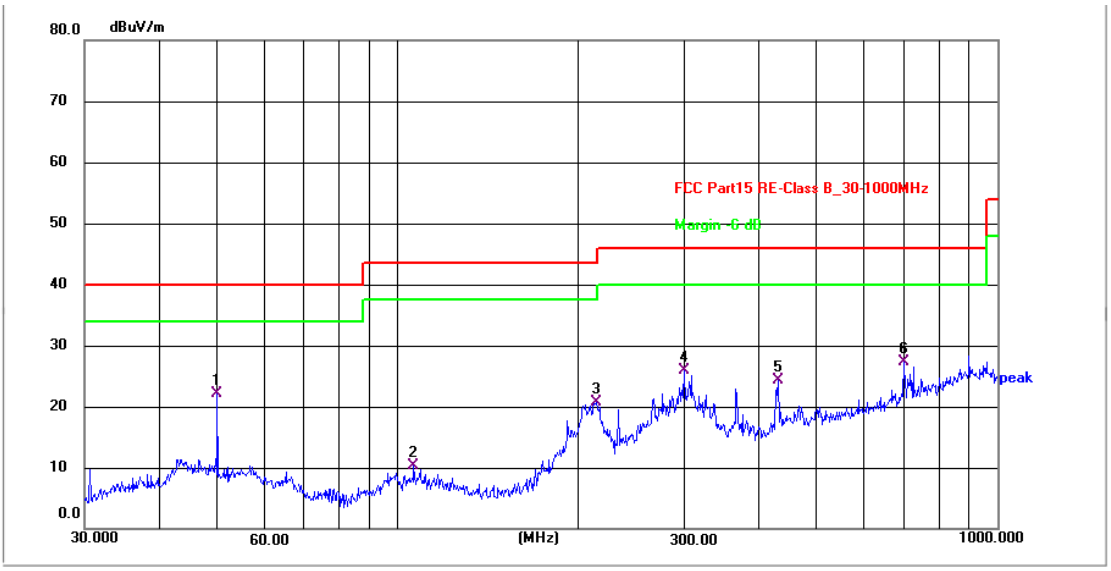
PASS.

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.

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 *	49.8814	39.39	-17.34	22.05	40.00	-17.95	QP	P	
2	106.3850	29.34	-18.99	10.35	43.50	-33.15	QP	P	
3	214.5143	38.55	-17.85	20.70	43.50	-22.80	QP	P	
4	299.3158	41.54	-15.62	25.92	46.00	-20.08	QP	P	
5	429.5228	36.42	-12.15	24.27	46.00	-21.73	QP	P	
6	699.3046	34.41	-7.01	27.40	46.00	-18.60	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	43.8119	40.24	-17.67	22.57	40.00	-17.43	QP	P	
2	98.4866	35.15	-18.91	16.24	43.50	-27.26	QP	P	
3	213.7634	33.94	-17.92	16.02	43.50	-27.48	QP	P	
4	337.2155	33.87	-14.54	19.33	46.00	-26.67	QP	P	
5 *	429.5228	41.12	-12.15	28.97	46.00	-17.03	QP	P	
6	489.0269	35.67	-10.79	24.88	46.00	-21.12	QP	P	

5.8 Emissions in frequency bands (above 1GHz)

5.8.1 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

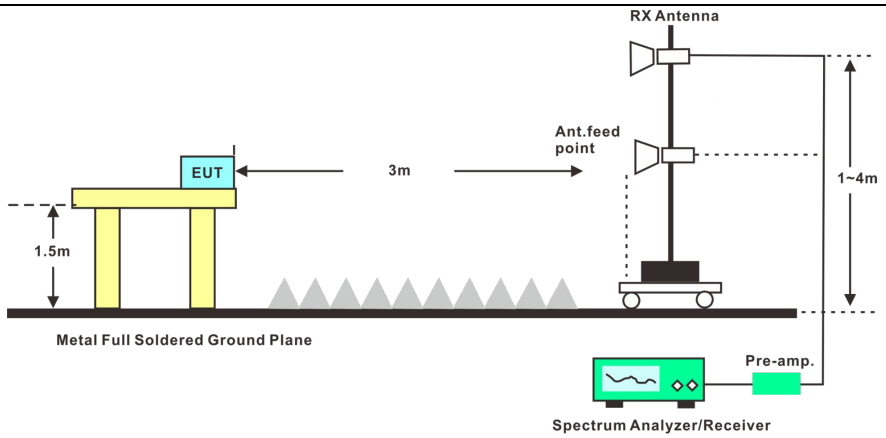
** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this 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+Cor 1-2023 section 6.6.4 KDB 558074 D01 15.247 Meas Guidance v05r02
Procedure:	ANSI C63.10-2020+Cor 1-2023 section 6.6.4

5.8.2 E.U.T. Operation

Pre test mode:	TM1
Final test mode:	TM1

5.8.3 Test Setup Diagram



5.8.4 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.

Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

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	4804.52	42.17	4.68	46.85	74.00	-27.16	PK	PASS
V	7206.36	33.97	9.84	43.81	74.00	-30.19	PK	PASS
V	9608.37	28.33	13.17	41.50	74.00	-32.51	PK	PASS
V	12010.07	*	*	*	74.00	*	PK	PASS
V	14412.73	*	*	*	74.00	*	PK	PASS
V	16814.34	*	*	*	74.00	*	PK	PASS
H	4804.15	40.15	4.68	44.83	74.00	-29.17	PK	PASS
H	7206.73	35.00	9.84	44.84	74.00	-29.17	PK	PASS
H	9608.86	28.12	13.17	41.29	74.00	-32.71	PK	PASS
H	12010.60	*	*	*	74.00	*	PK	PASS
H	14412.16	*	*	*	74.00	*	PK	PASS
H	16814.29	*	*	*	74.00	*	PK	PASS
V	4804.86	31.12	4.68	35.80	54.00	-18.20	AV	PASS
V	7206.22	23.53	9.84	33.37	54.00	-20.64	AV	PASS
V	9608.33	19.99	13.17	33.16	54.00	-20.84	AV	PASS
V	12010.19	*	*	*	54.00	*	AV	PASS
V	14412.15	*	*	*	54.00	*	AV	PASS
V	16814.46	*	*	*	54.00	*	AV	PASS
H	4804.58	30.39	4.68	35.07	54.00	-18.94	AV	PASS
H	7206.73	22.09	9.84	31.93	54.00	-22.08	AV	PASS
H	9608.86	19.02	13.17	32.19	54.00	-21.82	AV	PASS
H	12010.60	*	*	*	54.00	*	AV	PASS
H	14412.16	*	*	*	54.00	*	AV	PASS
H	16814.29	*	*	*	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.

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	4880.01	41.99	4.92	46.91	74.00	-27.09	PK	PASS
V	7320.10	34.30	9.83	44.13	74.00	-29.87	PK	PASS
V	9760.99	29.13	13.22	42.35	74.00	-31.65	PK	PASS
V	12200.26	*	*	*	74.00	*	PK	PASS
V	14640.62	*	*	*	74.00	*	PK	PASS
V	17080.42	*	*	*	74.00	*	PK	PASS
H	4880.90	40.22	4.92	45.14	74.00	-28.87	PK	PASS
H	7320.67	35.50	9.83	45.33	74.00	-28.68	PK	PASS
H	9760.13	28.69	13.22	41.91	74.00	-32.10	PK	PASS
H	12200.04	*	*	*	74.00	*	PK	PASS
H	14640.29	*	*	*	74.00	*	PK	PASS
H	17080.43	*	*	*	74.00	*	PK	PASS
V	4880.67	30.55	4.92	35.47	54.00	-18.53	AV	PASS
V	7320.75	22.00	9.83	31.83	54.00	-22.17	AV	PASS
V	9760.45	19.94	13.22	33.16	54.00	-20.84	AV	PASS
V	12200.63	*	*	*	54.00	*	AV	PASS
V	14641.00	*	*	*	54.00	*	AV	PASS
V	17080.97	*	*	*	54.00	*	AV	PASS
H	4880.90	31.96	4.92	36.88	54.00	-17.12	AV	PASS
H	7320.67	22.90	9.83	32.73	54.00	-21.27	AV	PASS
H	9760.13	18.00	13.22	31.22	54.00	-22.78	AV	PASS
H	12200.04	*	*	*	54.00	*	AV	PASS
H	14640.29	*	*	*	54.00	*	AV	PASS
H	17080.43	*	*	*	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	4960.26	40.53	4.92	45.45	74.00	-28.55	PK	PASS
V	7440.41	35.11	9.83	44.94	74.00	-29.06	PK	PASS
V	9920.91	28.75	13.22	41.97	74.00	-32.04	PK	PASS
V	12400.84	*	*	*	74.00	*	PK	PASS
V	14880.42	*	*	*	74.00	*	PK	PASS
V	17360.98	*	*	*	74.00	*	PK	PASS
H	4960.11	40.40	4.92	45.32	74.00	-28.68	PK	PASS
H	7440.13	34.35	9.83	44.18	74.00	-29.83	PK	PASS
H	9920.26	28.77	13.22	41.99	74.00	-32.02	PK	PASS
H	12400.69	*	*	*	74.00	*	PK	PASS
H	14880.75	*	*	*	74.00	*	PK	PASS
H	17360.76	*	*	*	74.00	*	PK	PASS
V	4958.77	31.71	4.92	36.63	54.00	-17.37	AV	PASS
V	7437.97	22.51	9.83	32.34	54.00	-21.66	AV	PASS
V	9916.24	18.03	13.22	31.25	54.00	-22.76	AV	PASS
V	12395.91	*	*	*	54.00	*	AV	PASS
V	14875.00	*	*	*	54.00	*	AV	PASS
V	17353.19	*	*	*	54.00	*	AV	PASS
H	4960.11	30.65	4.92	35.57	54.00	-18.43	AV	PASS
H	7440.13	22.93	9.83	32.76	54.00	-21.25	AV	PASS
H	9920.26	18.41	13.22	31.63	54.00	-22.38	AV	PASS
H	12400.69	*	*	*	54.00	*	AV	PASS
H	14880.75	*	*	*	54.00	*	AV	PASS
H	17360.76	*	*	*	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 "8429EU120604W1-ANNEX A.PDF"

ANNEX B EXTERNAL PHOTOS

Please refer to the document "8429EU120604W1-ANNEX B.PDF"

ANNEX C INTERNAL PHOTOS

Please refer to the document "8429EU120604W1-ANNEX C.PDF"

Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

ANNEX D TEST DATA

1. Duty Cycle

1.1 Test Result

1.1.1 Ant1

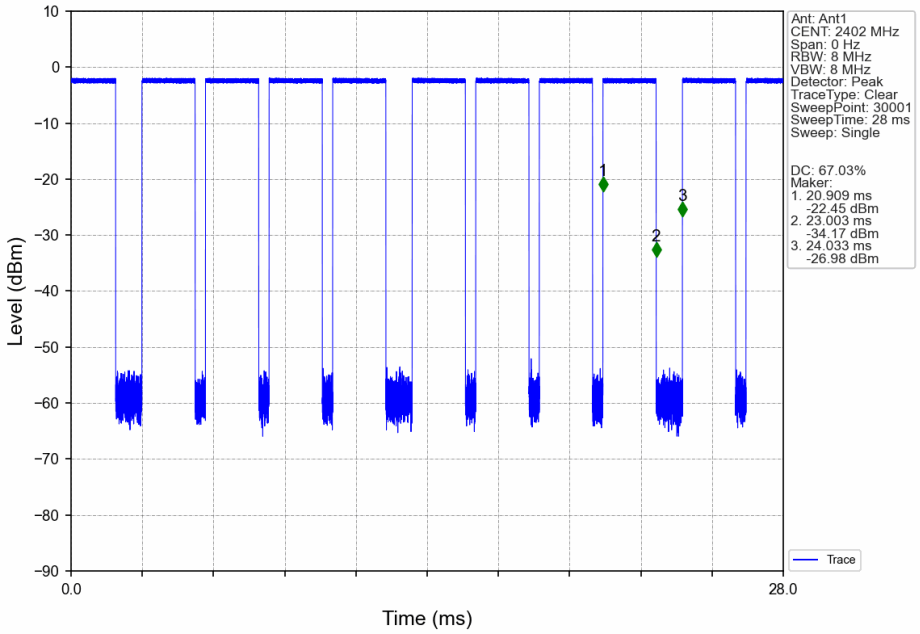
Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
1M	SISO	2402	2.094	3.124	67.03	1.74	16.78
		2440	2.092	3.124	66.97	1.74	16.76
		2480	2.094	3.125	67.01	1.74	16.78

Address: 101, Building B1, Fuqiao Fourth Area, Qiaotou Community, Fuhai Subdistrict, Baoan District, Shenzhen, Guangdong, China
Website: www.eu-test.com
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

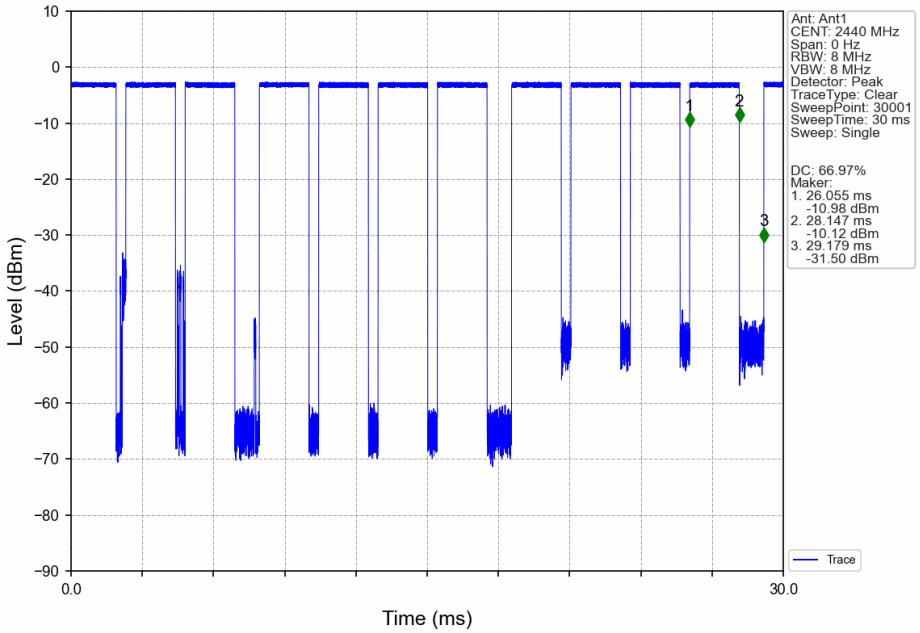
1.2 Test Graph

1.2.1 Ant1

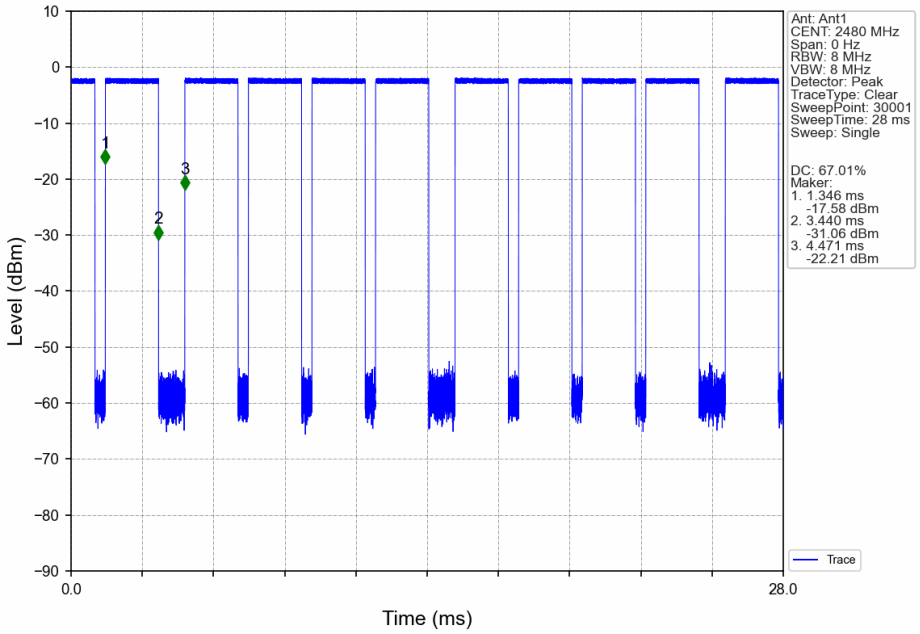
1M_LCH_2402MHz_Ant1_NTNV



1M_MCH_2440MHz_Ant1_NTNV



1M_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	1.020	/	Pass
		2440	1	1.020	/	Pass
		2480	1	1.019	/	Pass

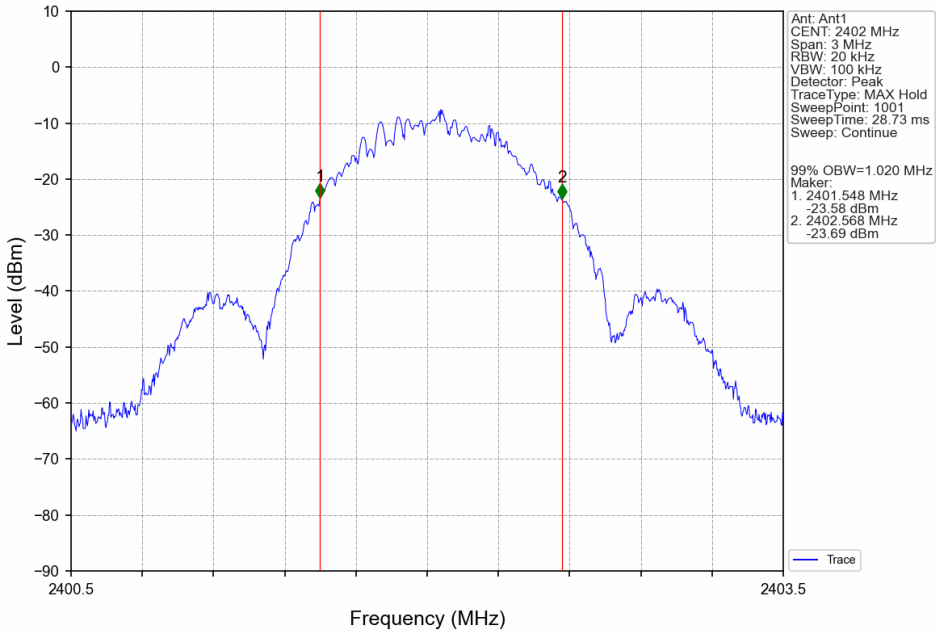
2.1.2 6dB BW

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	1	0.647	>=0.5	Pass
		2440	1	0.645	>=0.5	Pass
		2480	1	0.644	>=0.5	Pass

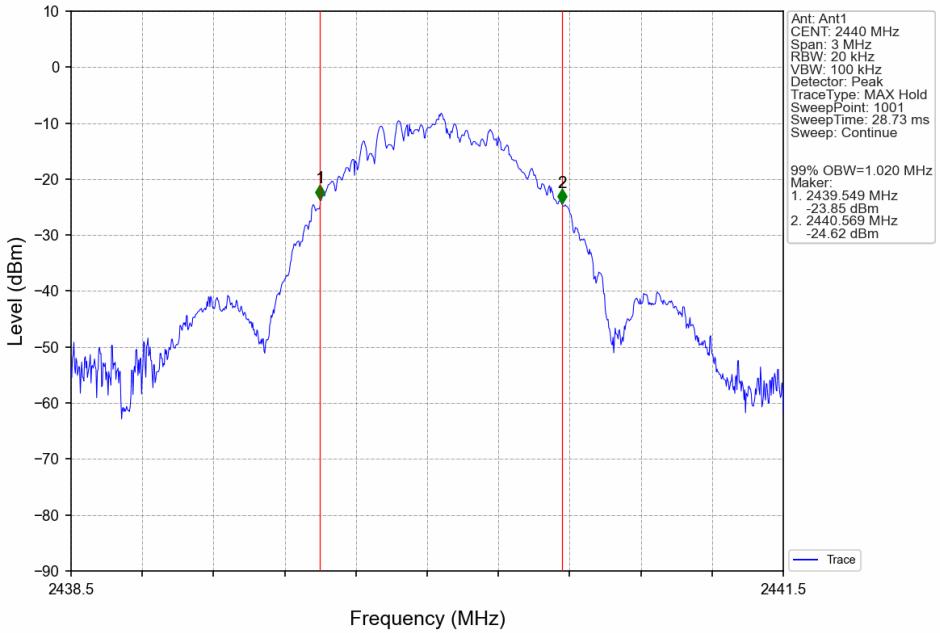
2.2 Test Graph

2.2.1 OBW

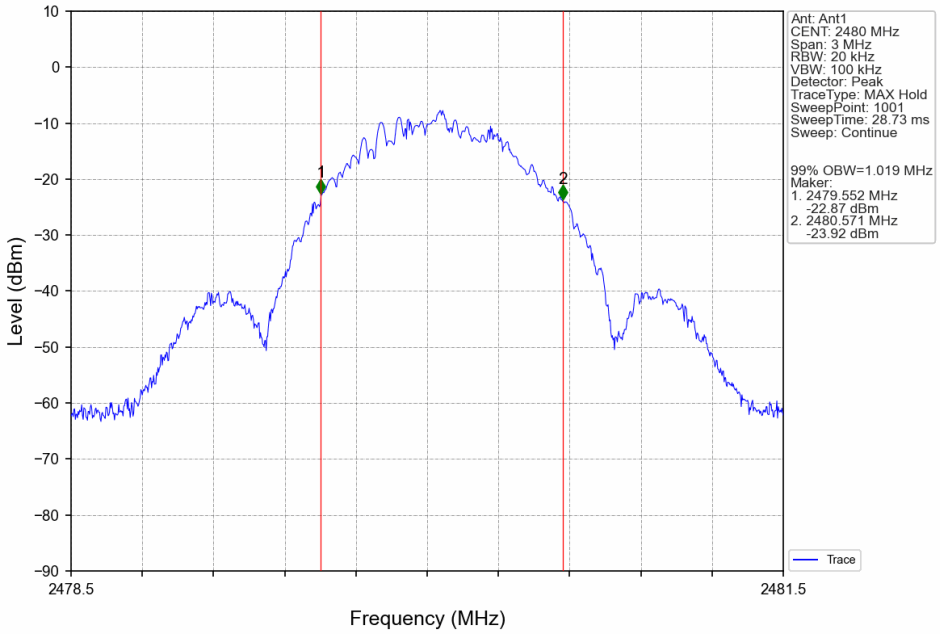
1M_LCH_2402MHz_Ant1_NTNV



1M_MCH_2440MHz_Ant1_NTNV

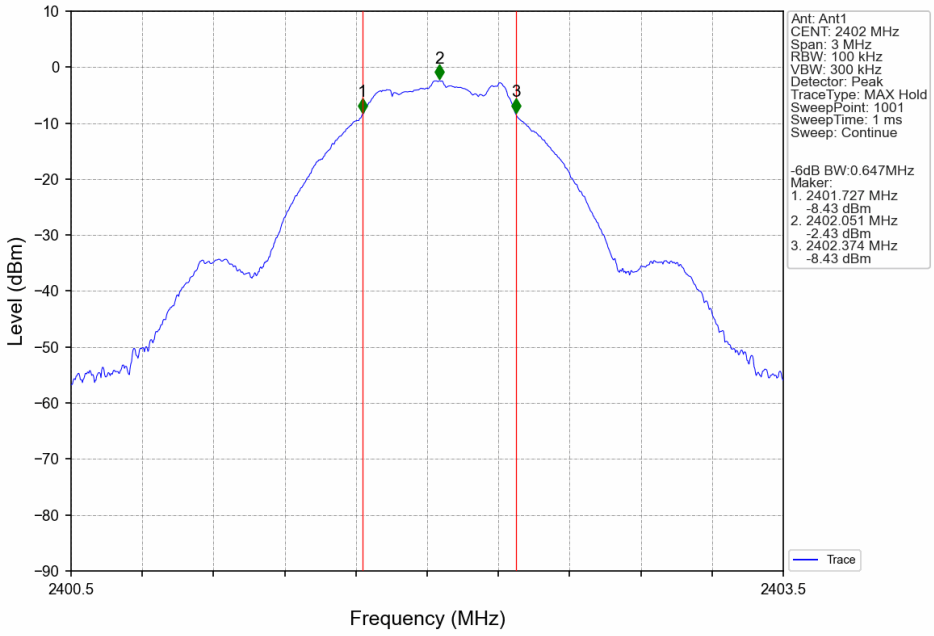


1M_HCH_2480MHz_Ant1_NTNV



2.2.2 6dB BW

1M_LCH_2402MHz_Ant1_NTNV



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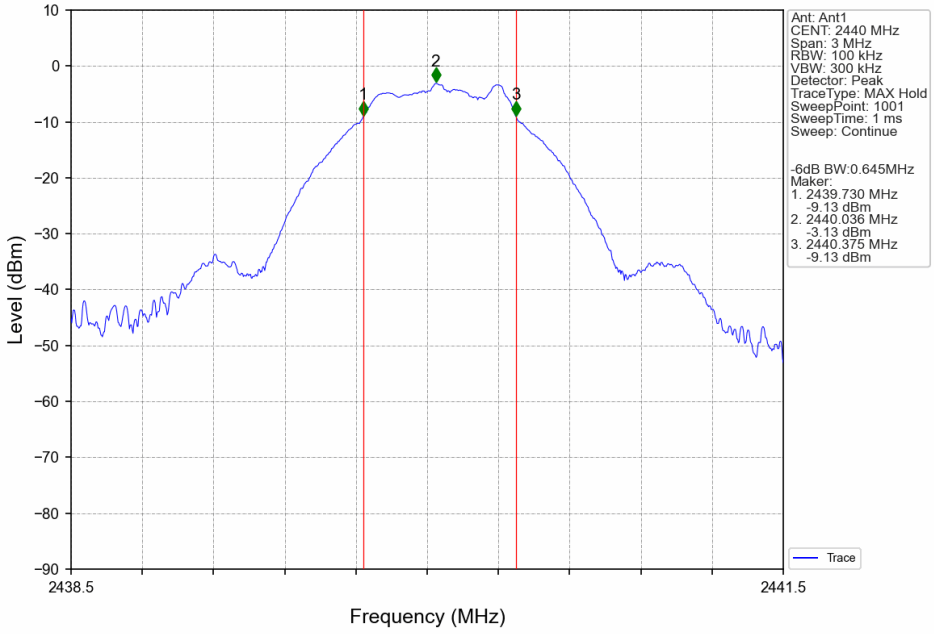
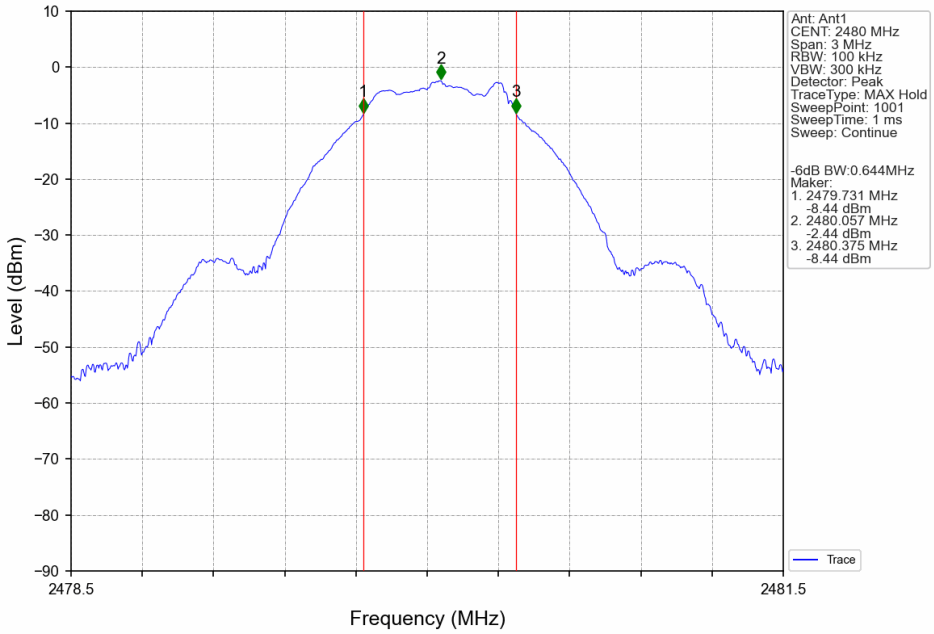


1M_HCH_2480MHz_Ant1_NTNV



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	-1.98	<=30	Pass
		2440	-2.61	<=30	Pass
		2480	-2.04	<=30	Pass

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	-2.33	<=8	Pass
		2440	-3.25	<=8	Pass
		2480	-2.27	<=8	Pass

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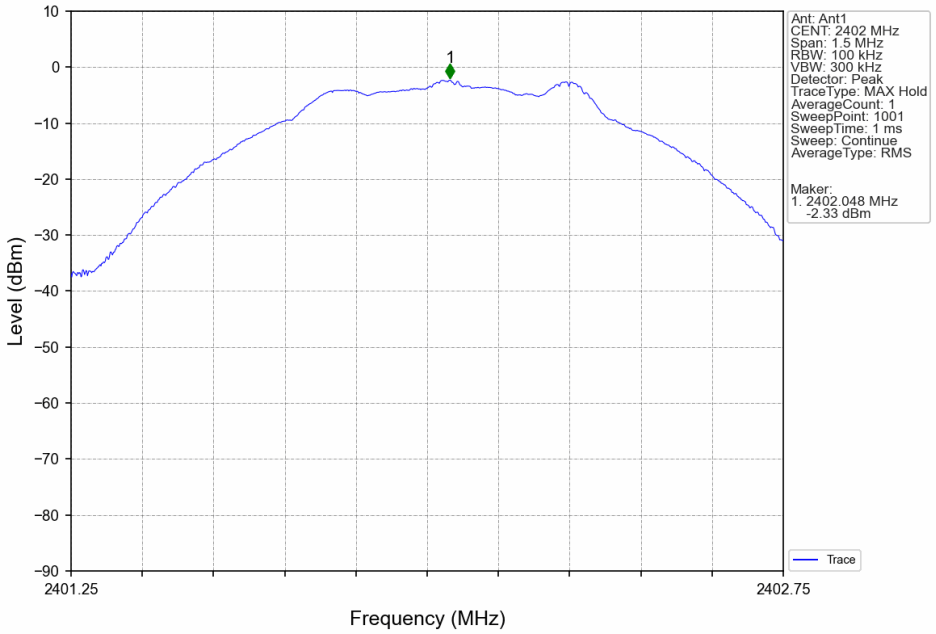
Tel: (86)-755-2357-9714 Email: Service@eu-test.com

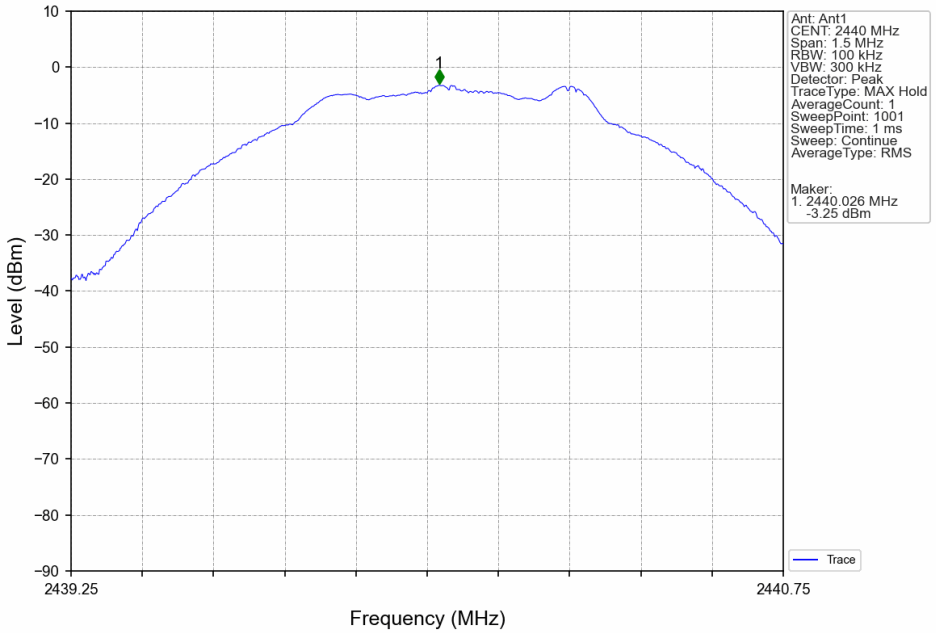
4.2 Test Graph

4.2.1 PSD

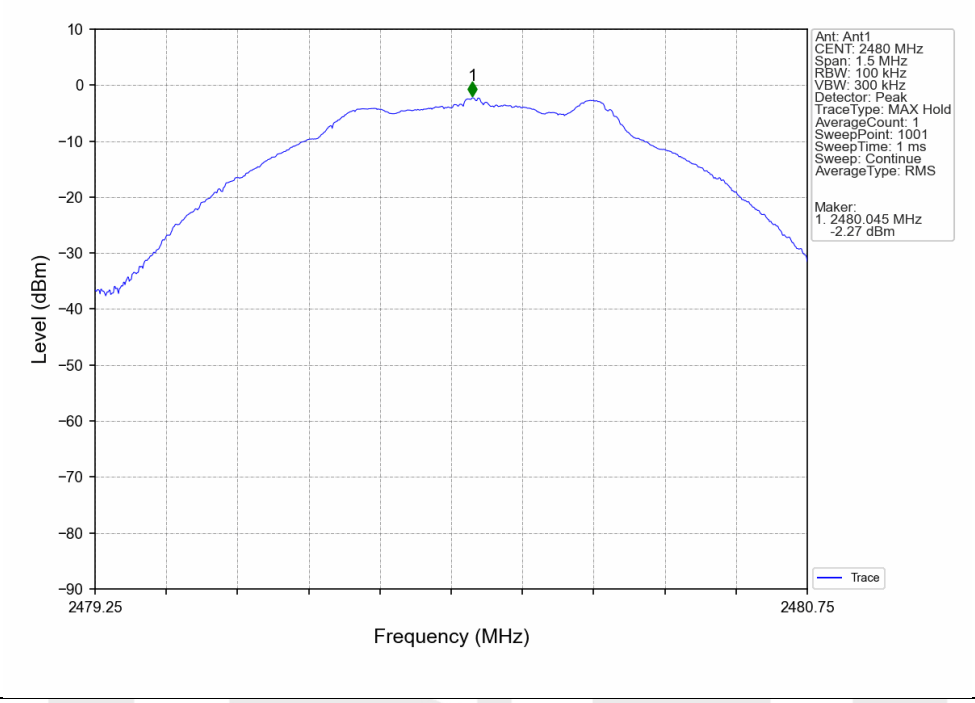
1M_LCH_2402MHz_Ant1_NTNV



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	-2.28
		2440	1	-3.00
		2480	1	-2.30

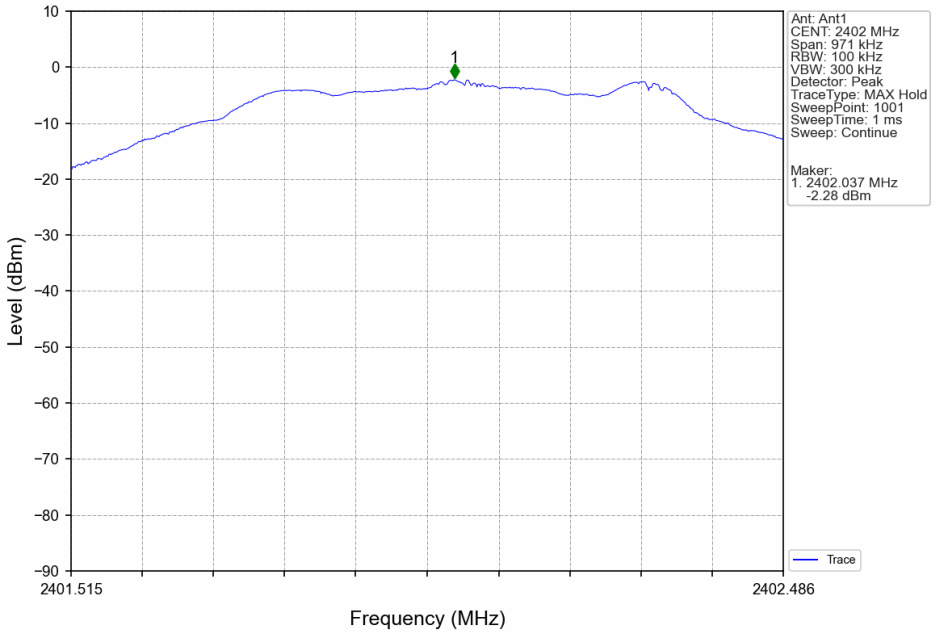
5.1.2 CSE

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
1M	SISO	2402	1	-2.28	-22.28	Pass
		2440	1	-3.00	-23.00	Pass
		2480	1	-2.30	-22.30	Pass

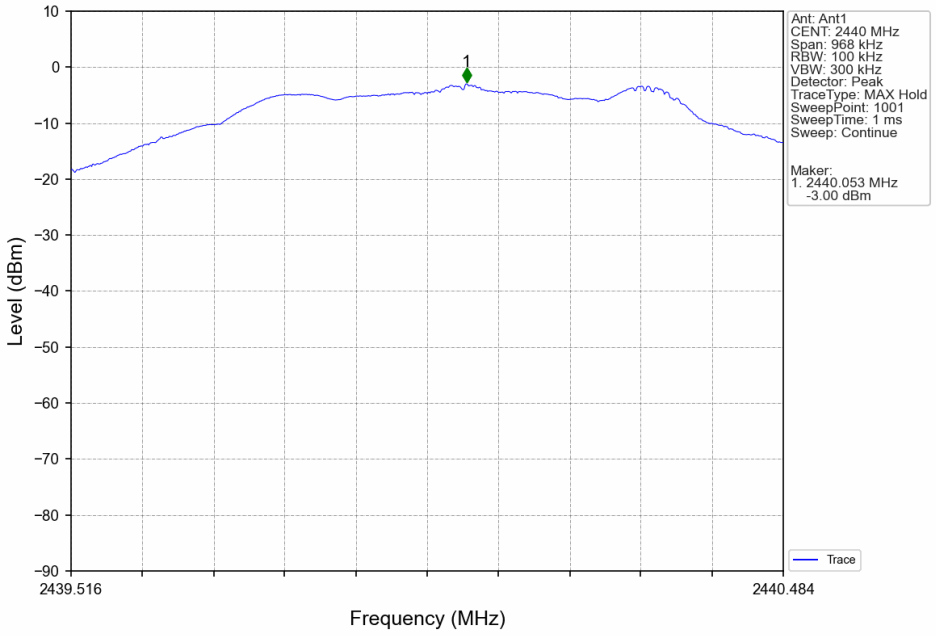
5.2 Test Graph

5.2.1 Ref

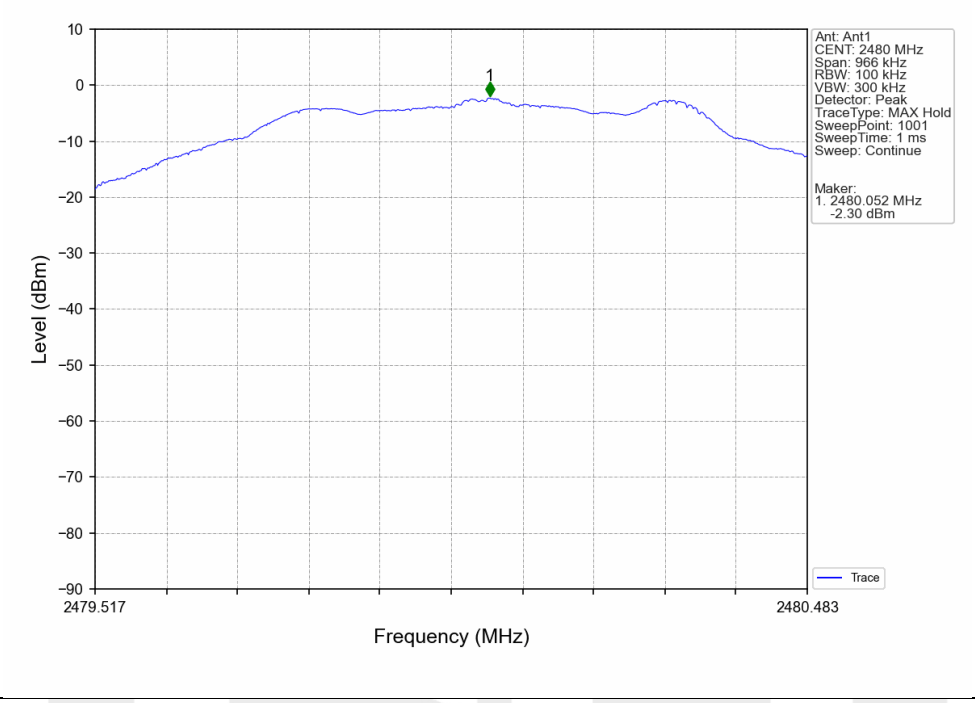
1M_LCH_2402MHz_Ant1_NTNV



1M_MCH_2440MHz_Ant1_NTNV

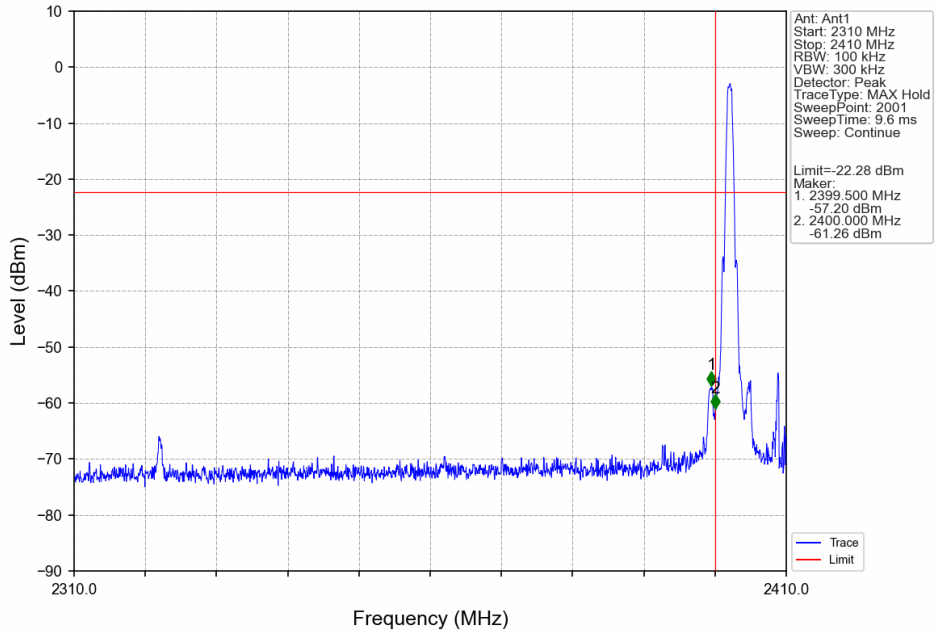


1M_HCH_2480MHz_Ant1_NTNV

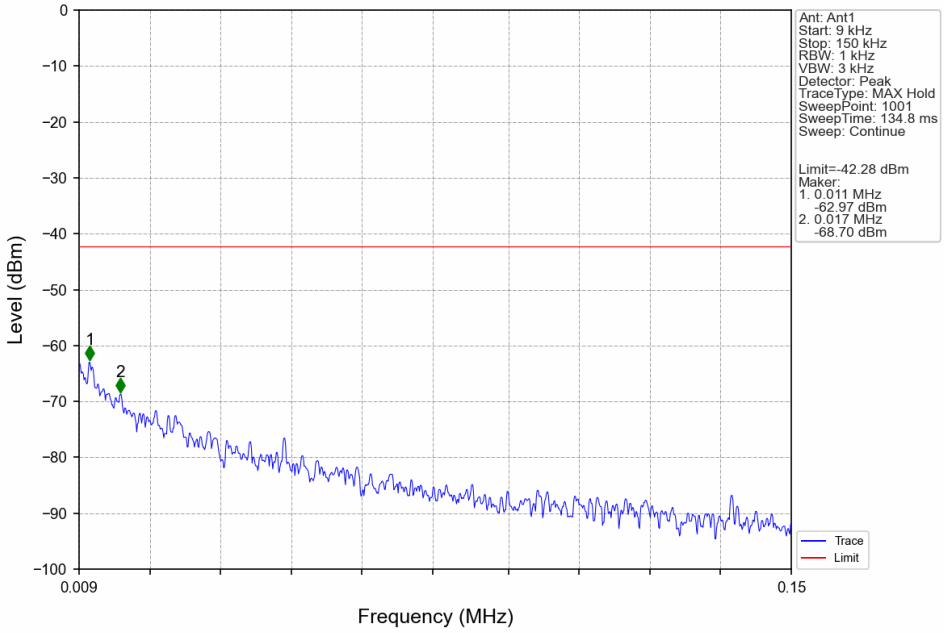


5.2.2 CSE

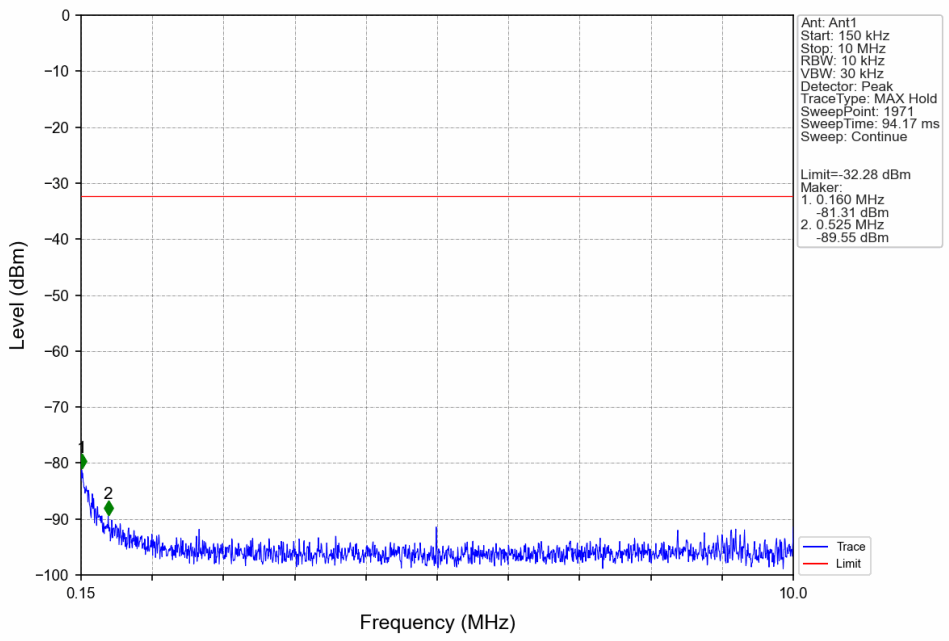
1M_LCH_2402MHz_Ant1_NTNV



1M_LCH_2402MHz_Ant1_NTNV



1M_LCH_2402MHz_Ant1_NTNV



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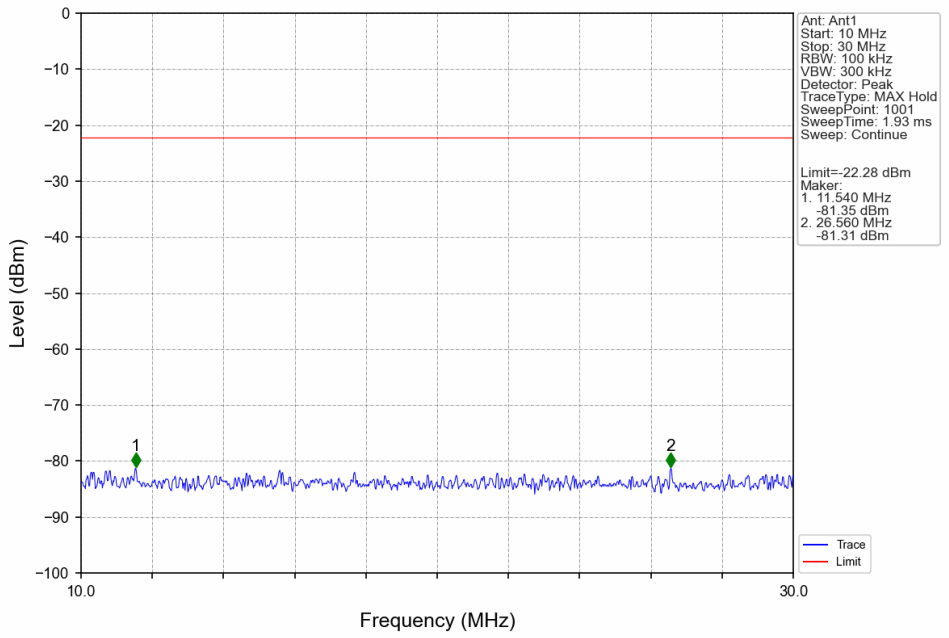
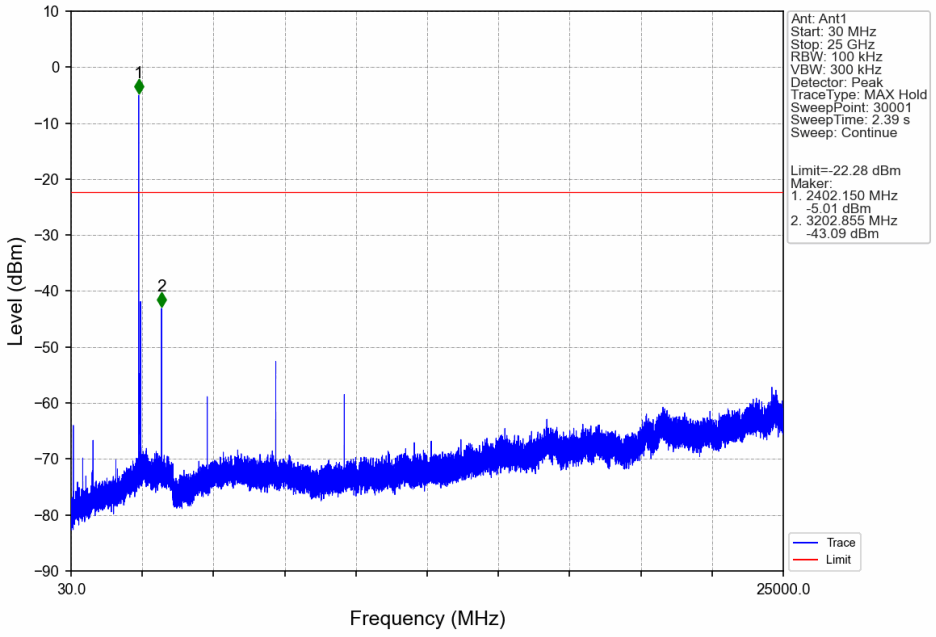


1M_LCH_2402MHz_Ant1_NTNV



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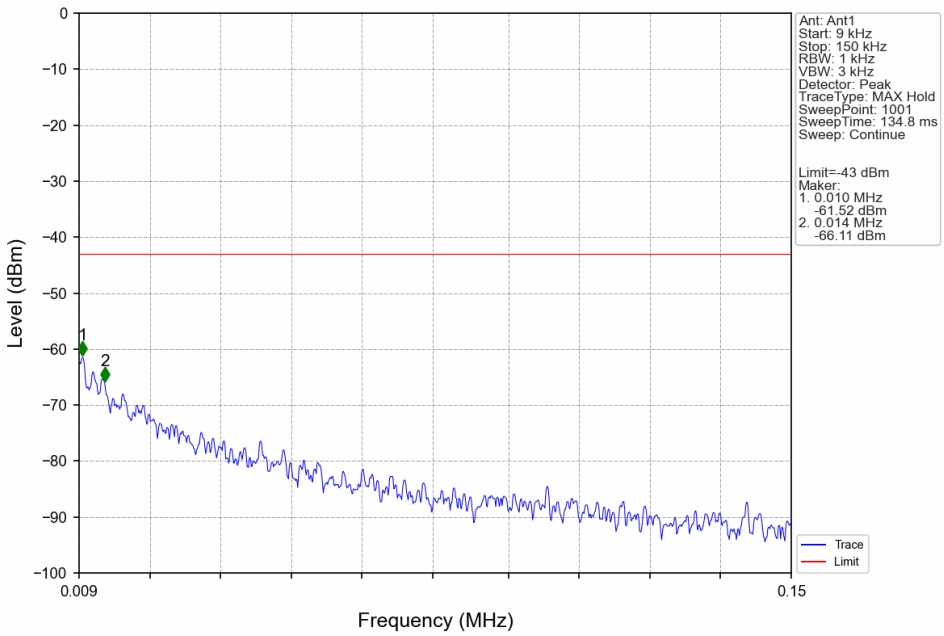

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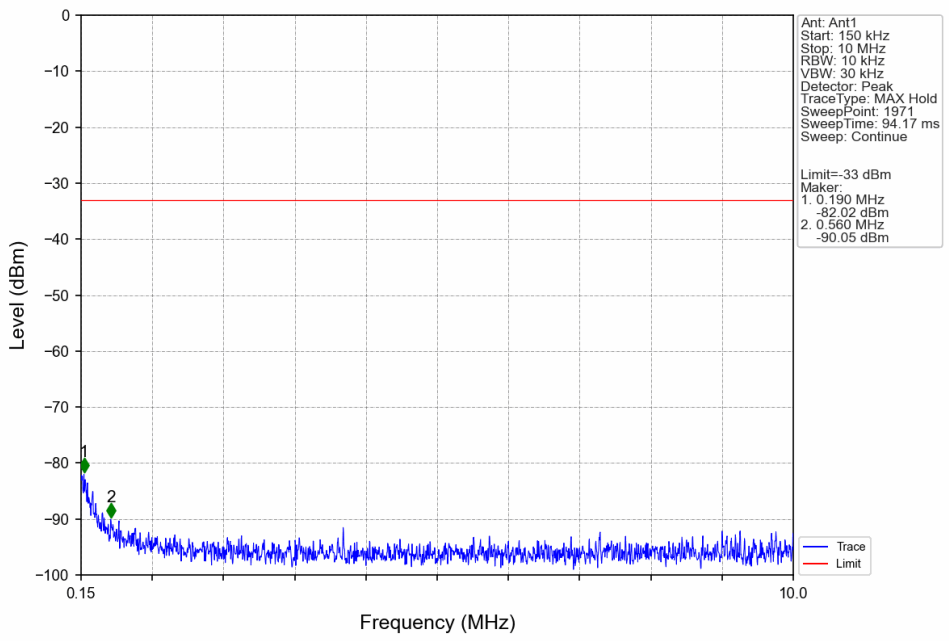

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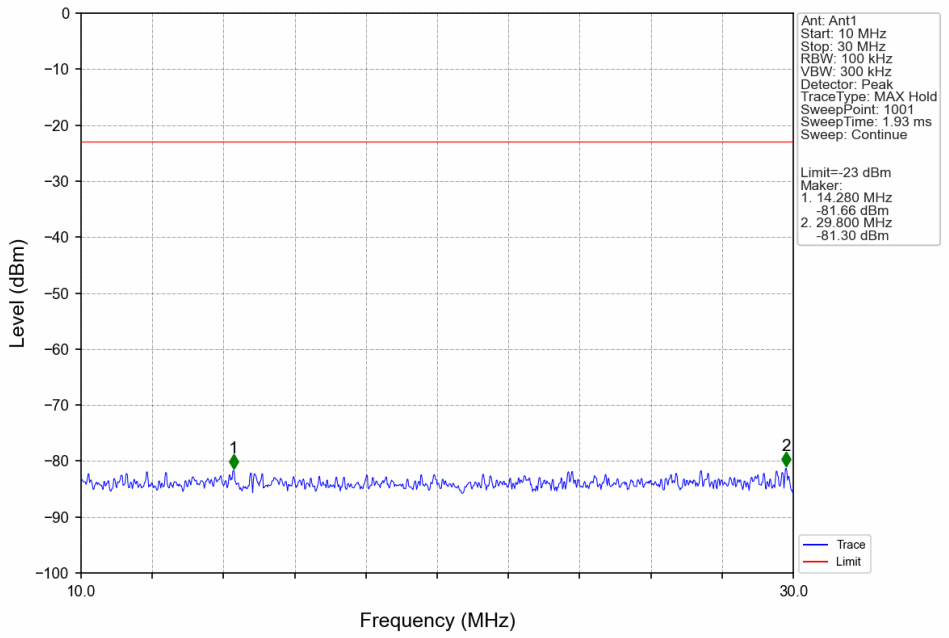

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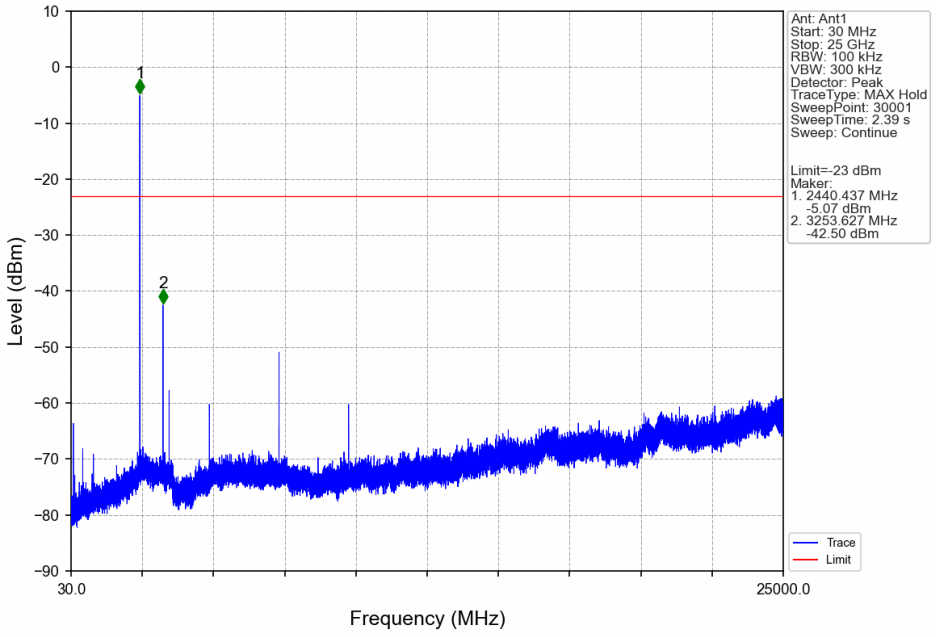
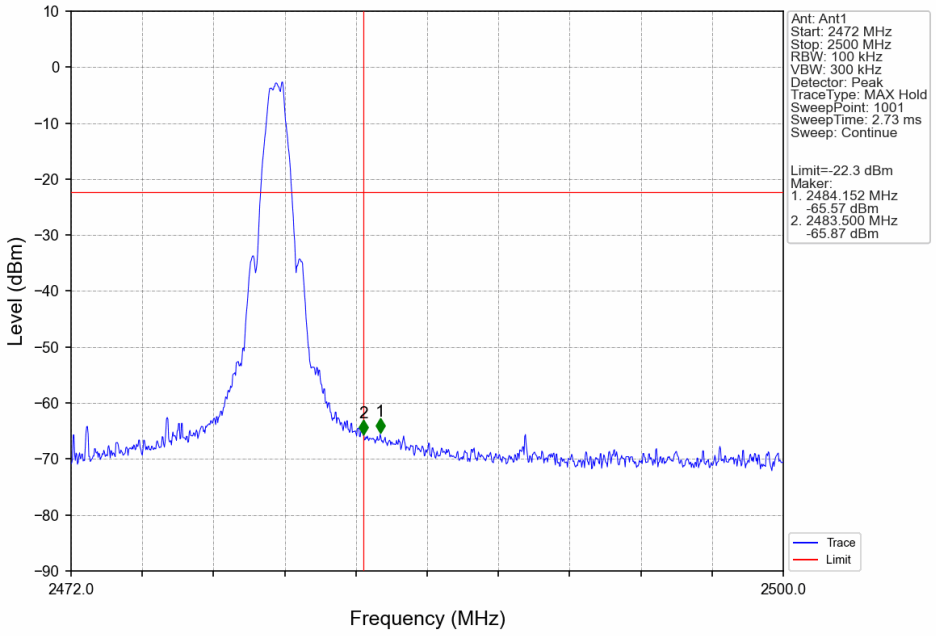


1M_HCH_2480MHz_Ant1_NTNV



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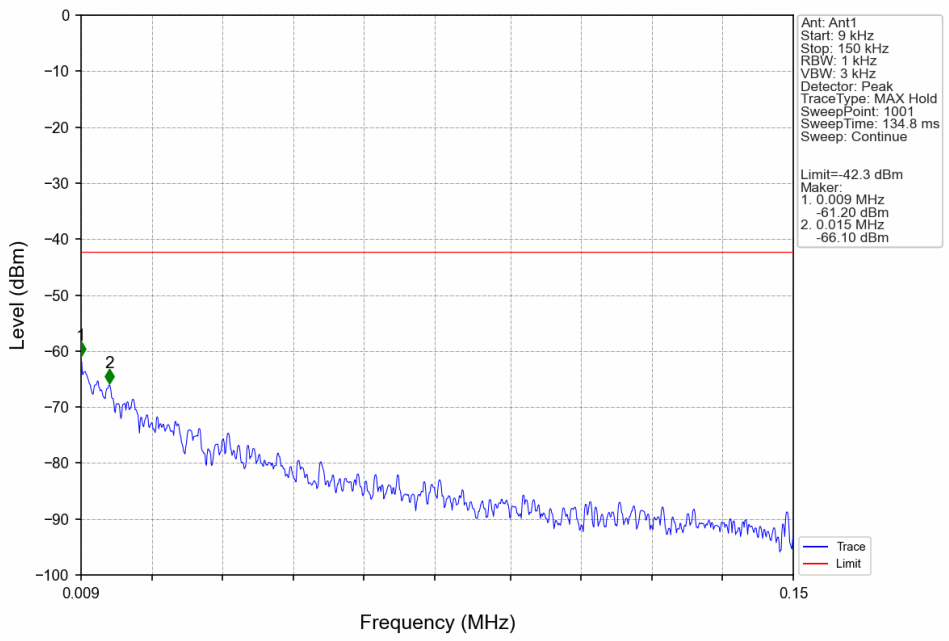

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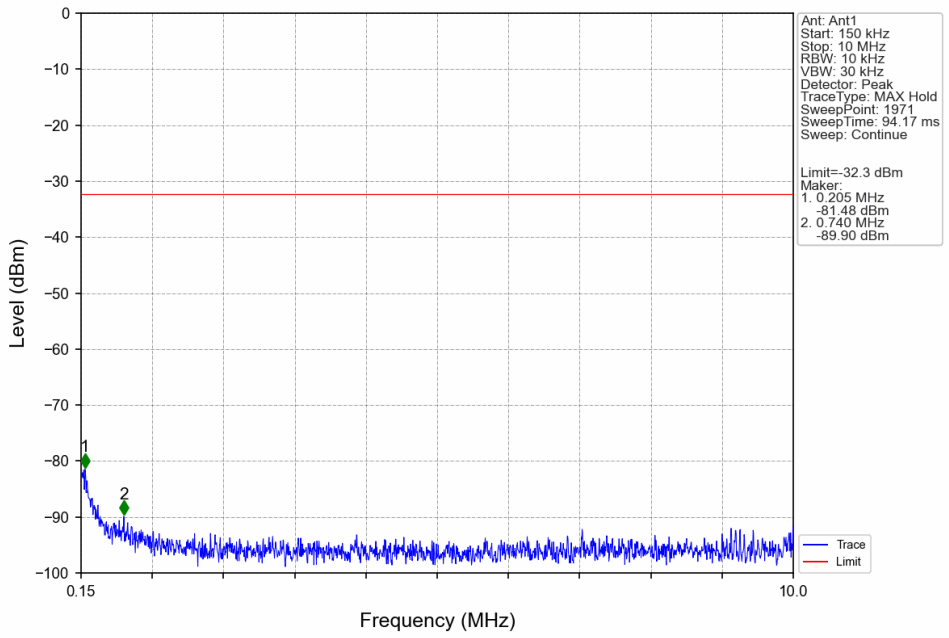

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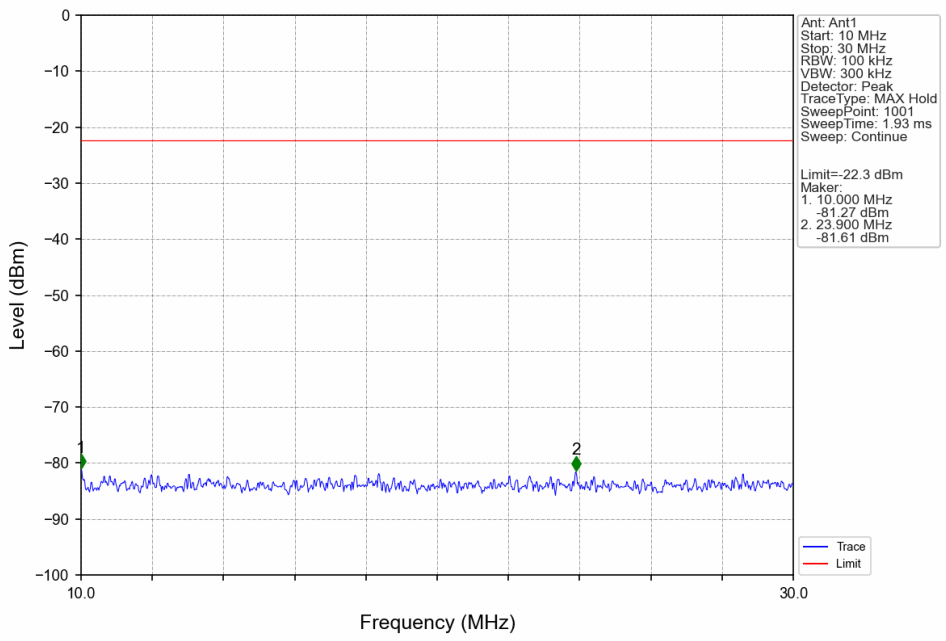
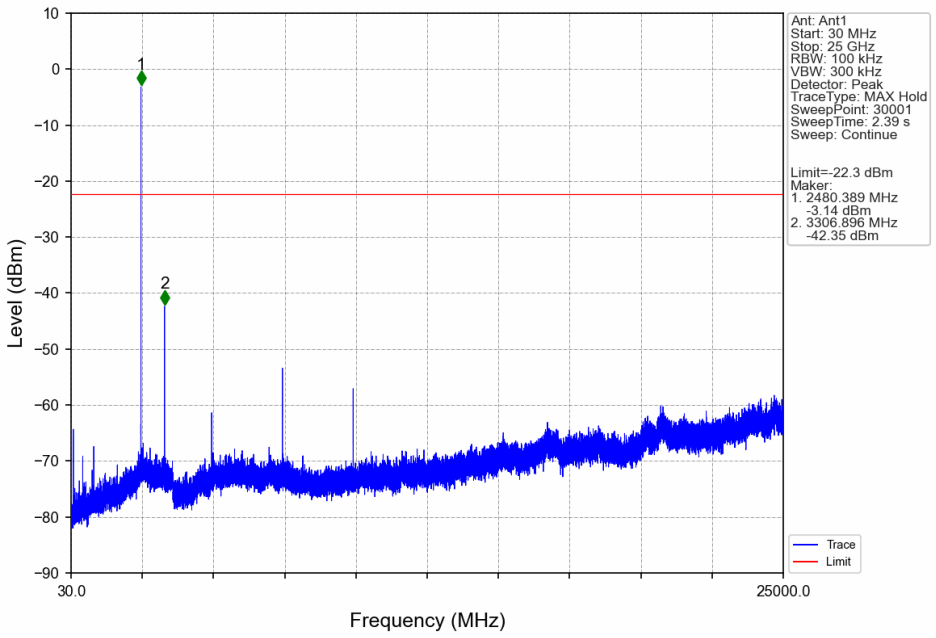


1M_HCH_2480MHz_Ant1_NTNV



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