

TEST REPORT

Application No.: GZCR2509001363AT
Applicant: SkyCell AG
Address of Applicant: Bahnhofplatz, CH-6300 Zug, Switzerland
Manufacturer: SkyCell AG
Address of Manufacturer: Bahnhofplatz, CH-6300 Zug, Switzerland
Factory: Flextronics Manufacturing (ZhuHai) Co.,Ltd
Address of Factory: XinQing Science&Technology Industrial Park Jing An Town/Zhuhai
Product Name: Wireless Data Logger
Model No.: MR814B
Trade Mark: SKYCELL
Standard(s) : 47 CFR Part 15, Subpart C 15.247
Date of Receipt: 2025-09-04
Date of Test: 2025-09-23 to 2025-11-06
Date of Issue: 2025-12-11

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



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Revision Record			
Version	Report No.	Date	Remark
01	GZCR250900136302	2025-12-11	Original

Authorized for issue by			
		Key Liang	
		Key Liang/Project Engineer	
Approved By		Vico Cui	
		Vico Cui/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)	Pass

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Radiated Emissions which fall in the restricted bands	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2020) Section 11.12	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

** : The EUT passed Radiated Spurious Emissions Above 1GHz test after modifications.

Note:

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

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



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4 General Information

4.1 Details of E.U.T.

Power supply: DC 15.0V = 5 x 3.0V CR1632 button cell
Test voltage: DC 15.0V
Cable(s): None.
Antenna Type: Stamped Metal Antenna
Antenna Gain: 1.15 dBi according to antenna specification
Antenna Number: 1
For BLE
Operation Frequency: 2402MHz to 2480MHz
Bluetooth Version: V 4.2 for LE only
Modulation Type: GFSK
Number of Channels: 40
Channel Spacing: 2MHz
For LoRa
Operation Frequency: 2403MHz-2479MHz
Channel Spacing: 1MHz
Number of Channels: 77
Adaptive Type: Chirp Spread Spectrum (CSS)

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

4.2 Description of Support Units

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



4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Radiated Emissions which fall in the restricted bands	±5.14dB (3m); ±4.90dB (10m); ±4.88dB (1GHz-6GHz); ±5.06dB (6GHz-18GHz); ±5.30dB (18GHz-40GHz)
Radiated Spurious Emissions Below 1GHz	±3.08dB (9kHz to 150kHz); ±3.19dB(150kHz to 30MHz); ±5.14dB (30MHz-1GHz) (3m); ±4.90dB (30MHz-1GHz) (10m)
Radiated Spurious Emissions Above 1GHz	±4.88dB (1GHz-6GHz); ±5.06dB (6GHz-18GHz); ±5.30dB (18GHz-40GHz)
Conducted Peak Output Power	± 0.75dB
Minimum 6dB Bandwidth	± 0.274%
Power Spectrum Density	± 2.84dB
Conducted Band Edges Measurement	± 0.75dB
Conducted Spurious Emissions	± 0.75dB
Remark: The U_{lab} (lab Uncertainty) is less than U_{CISPR} (CISPR Uncertainty) or U_{ETSI} (ETSI Uncertainty). Emission decision rule: – Compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit, marked as Pass in the report. – Non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit, marked as Fail in the report.	

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Guangzhou Branch EMC Laboratory,

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

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No tests were sub-contracted.



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4.5 Test Facility

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

● ACMA

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

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

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

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

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

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

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

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

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

● CBTL (Lab Code: TL129)

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

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None



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5 Equipment List

Radiated Emissions which fall in the restricted bands					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
1-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2025-08-11	2026-08-10
EMI Test Receiver (10Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2025-08-11	2026-08-10
Chamber cable (Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2024-08-19	2026-08-18
Horn Antenna (1-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2025-05-13	2027-05-12
Horn Antenna (14-40GHz)	SCHWARZBECK	BBHA 9170	EMC2041	2023-06-18	2026-06-17
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2025-08-12	2026-08-11
MXE EMI Receiver (10Hz-8.4GHz)	Keysight	N9038A	EMC2139	2025-08-11	2026-08-10
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2023-12-23	2026-12-22
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

Radiated Spurious Emissions Below 1GHz					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
966 Anechoic Chamber	Shenzhen C.R.T	CRTSGSSAC966	EMC2230	2025-03-22	2028-03-21
EMI Test Receiver (1Hz-8GHz)	Rohde & Schwarz	ESW8	EMC2229	2024-12-03	2025-12-02
Amplifier(9k-1000MHz)	SONOMA	310	EMC2237	2024-12-03	2025-12-02
Trilog Broadband Antenna (25MHz-2GHz)	Schwarzbeck Mess-Elektronik	VULB 9168	EMC2238	2025-03-24	2027-03-23
Coaxial Cable	Mirco-COAX UTIFLEX ve	LA2-C125-8000	EMC2239	2024-12-04	2026-12-03
Test Software E3	Audix	Ver.6.191211	GZE100-81	N/A	N/A
Active Loop Antenna-RED	ETS-Lindgren	6502	EMC2190	2024-04-16	2026-04-15



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Radiated Spurious Emissions Above 1GHz					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
1-26.5 GHz Pre-Amplifier	Agilent	8449B	EMC0521	2025-08-11	2026-08-10
EMI Test Receiver (10Hz-26.5GHz)	Rohde & Schwarz	ESIB26	EMC0522	2025-08-11	2026-08-10
Chamber cable (Above 1GHz)	Scoflex	KMKM-8.0m	EMC0545	2024-08-19	2026-08-18
Horn Antenna (1-18GHz)	SCHWARZBECK MESS-ELEKTRONIK	BBHA 9120D	EMC2026	2025-05-13	2027-05-12
Horn Antenna (14-40GHz)	SCHWARZBECK	BBHA 9170	EMC2041	2023-06-18	2026-06-17
2.4GHz Filter	Micro-Tronics	BRM 50702	EMC2069	2025-08-12	2026-08-11
EXA Signal Analyzer (10Hz-44GHz)	Keysight	N9010A	EMC2138	2025-08-12	2026-08-11
MXE EMI Receiver (10Hz-8.4GHz)	Keysight	N9038A	EMC2139	2025-08-11	2026-08-10
966 Anechoic Chamber	C.R.T	9m x 6m x 6m	EMC2142	2023-12-23	2026-12-22
Test Software E3	Audix	Ver.6.120110a	GZE100-61	N/A	N/A

RF Conducted Test					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
MI CABLE	SGS-EMC	0.8M	EMC2136	2025-11-02	2027-11-01
EXA Signal Analyzer	Agilent Technologies	N9010A	EMC2222	2024-12-03	2025-12-02
4X4 Power sensor Unit	TST	TSPS2023R	EMC2257	2025-08-12	2026-08-11
Test Software	TST	V2.0	GZE100-82	N/A	N/A

General used equipment					
Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
DMM	Fluke	73	EMC0006	2025-06-03	2026-06-02



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6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

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

6.1.2 Conclusion

Standard Requirement:

An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. 15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 1.15 dBi.

Antenna location: Refer to internal photo.



7 Radio Spectrum Matter Test Results

7.1 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 11.12

Limit:

Test Distance: 3 m

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

Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 25.8 °C

Humidity: 56.1 % RH

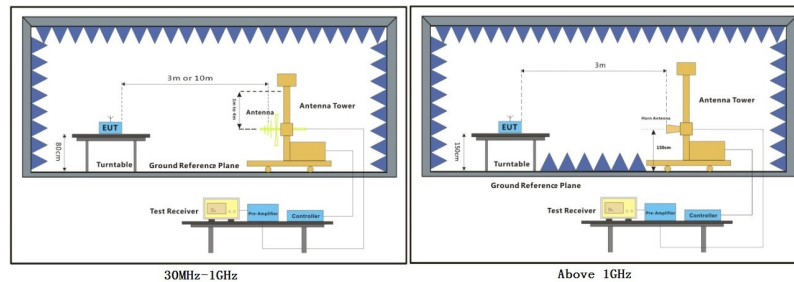
Atmospheric Pressure: 1015 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test	02	TX mode_Keep the EUT in transmitting with modulation mode.



7.1.3 Test Setup Diagram



7.1.4 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 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

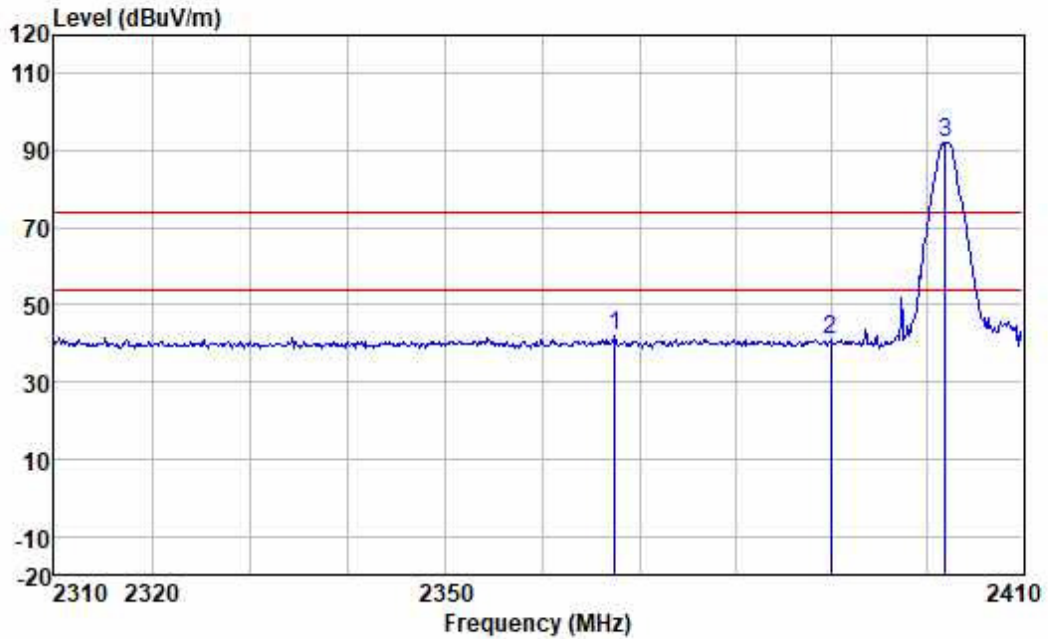
Remark 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level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

Remark 3: The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for Peak detection (PK) and Average detection (AV) at frequency above 1GHz.

Remark 4: For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.



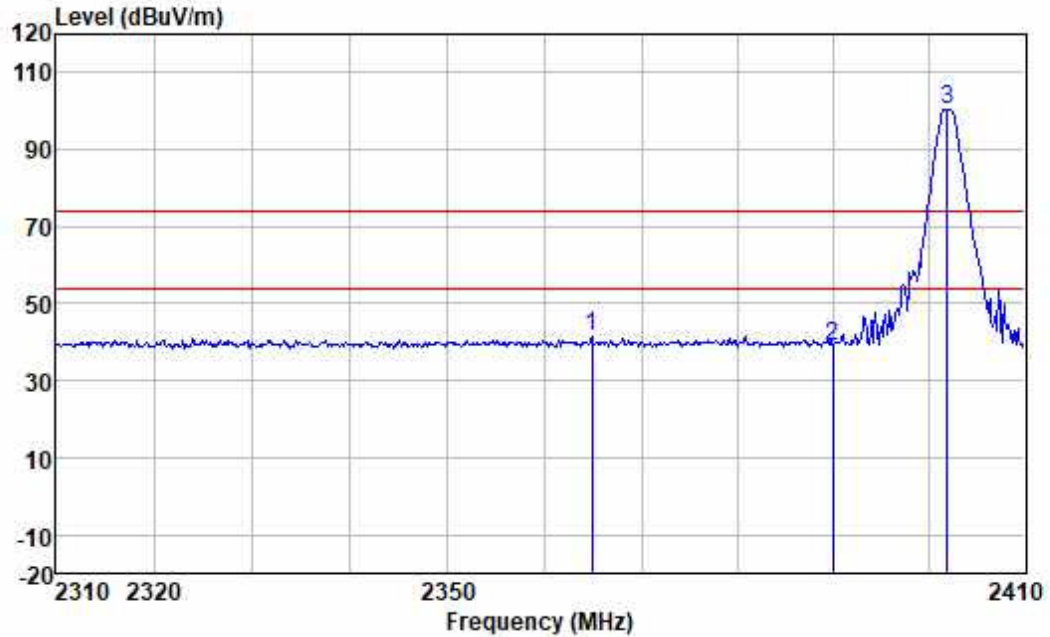
Test Mode: 00; Polarity: Vertical; Modulation: GFSK; Channel: Low



	Freq	ReadAntenna	Cable	Preamp	Limit	Over			
	MHz	Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2367.483	48.66	27.60	3.43	37.77	41.92	74.00	-32.08	VERTICAL peak
2	2390.000	47.50	27.63	3.44	37.77	40.80	74.00	-33.20	VERTICAL peak
3 *	2402.000	98.70	27.65	3.45	37.77	92.03	74.00	18.03	VERTICAL peak



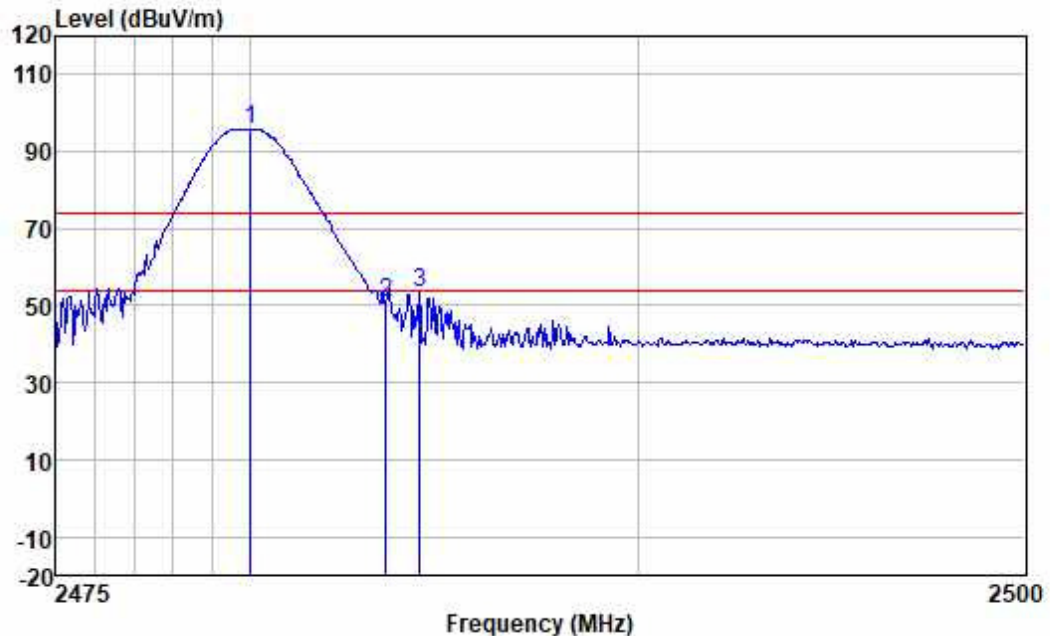
Test Mode: 00; Polarity: Horizontal; Modulation:GFSK; Channel:Low



	Freq	ReadAntenna	Cable	Preamp	Limit	Over			
	MHz	Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	2364.876	48.22	27.60	3.43	37.77	41.48	74.00	-32.52	HORIZONTAL peak
2	2390.000	45.76	27.63	3.44	37.77	39.06	74.00	-34.94	HORIZONTAL peak
3 *	2402.000	107.06	27.65	3.45	37.77	100.39	74.00	26.39	HORIZONTAL peak



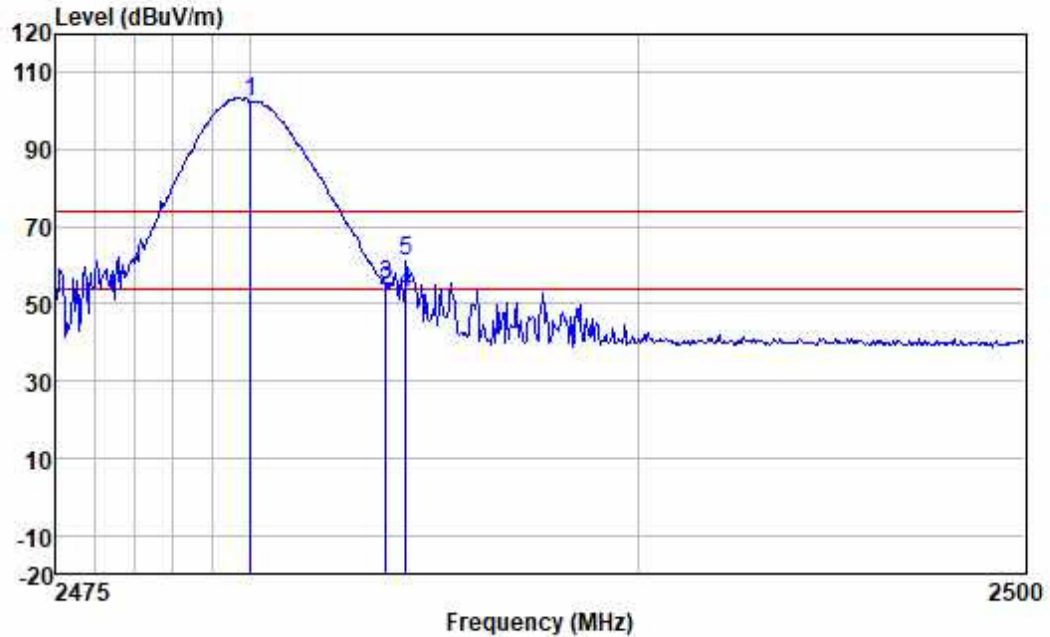
Test Mode: 00; Polarity: Vertical; Modulation: GFSK; Channel: High



	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
		Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 *	2480.000	102.14	27.75	3.48	37.76	95.61	74.00	21.61	VERTICAL	peak
2	2483.500	57.32	27.76	3.49	37.76	50.81	74.00	-23.19	VERTICAL	peak
3	2484.371	59.81	27.76	3.49	37.76	53.30	74.00	-20.70	VERTICAL	peak



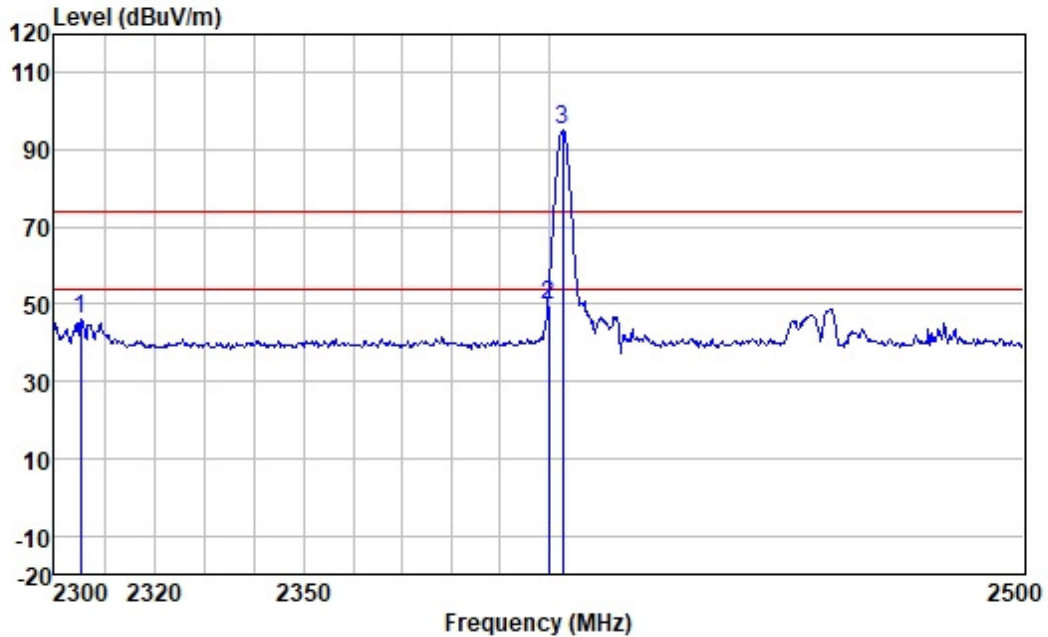
Test Mode: 00; Polarity: Horizontal; Modulation:GFSK; Channel:High



	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
		Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 *	2480.000	108.89	27.75	3.48	37.76	102.36	74.00	28.36	HORIZONTAL	peak
2	2483.500	60.08	27.76	3.49	37.76	53.57	54.00	-0.43	HORIZONTAL	Average
3	2483.500	61.42	27.76	3.49	37.76	54.91	74.00	-19.09	HORIZONTAL	peak
4	2484.021	59.38	27.76	3.49	37.76	52.87	54.00	-1.13	HORIZONTAL	Average
5	2484.021	67.38	27.76	3.49	37.76	60.87	74.00	-13.13	HORIZONTAL	peak



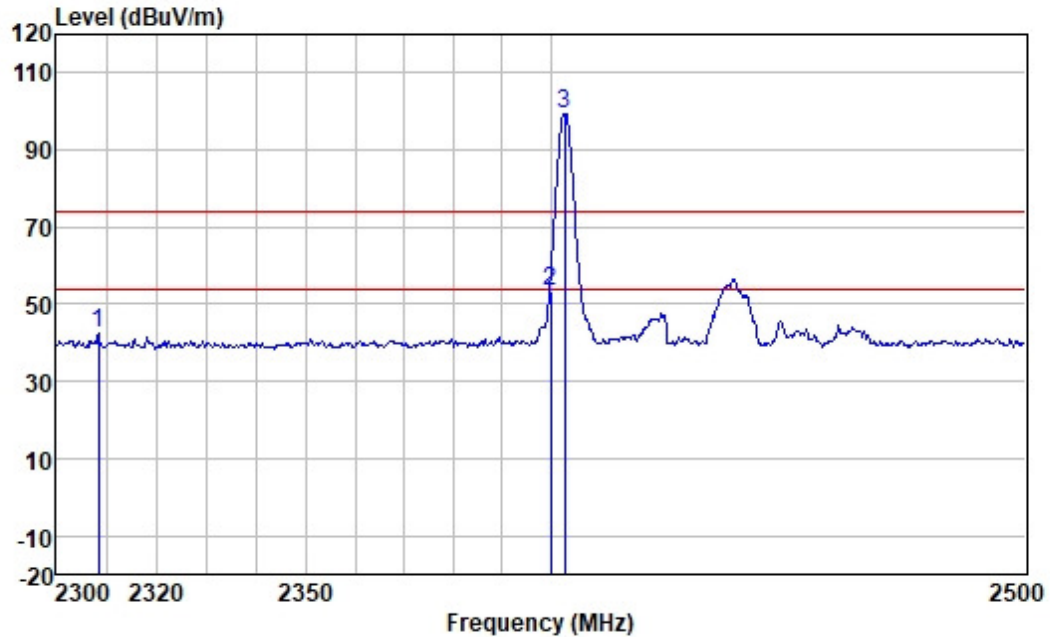
Test Mode: 02; Polarity: Vertical; Modulation: CSS; Channel: Low



		ReadAntenna	Cable	Preamp		Limit	Over			
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2305.184	53.00	27.47	3.39	37.78	46.08	74.00	-27.92	VERTICAL	peak
2	2400.000	56.48	27.65	3.45	37.77	49.81	74.00	-24.19	VERTICAL	peak
3 *	2403.000	101.83	27.65	3.45	37.77	95.16	74.00	21.16	VERTICAL	Peak



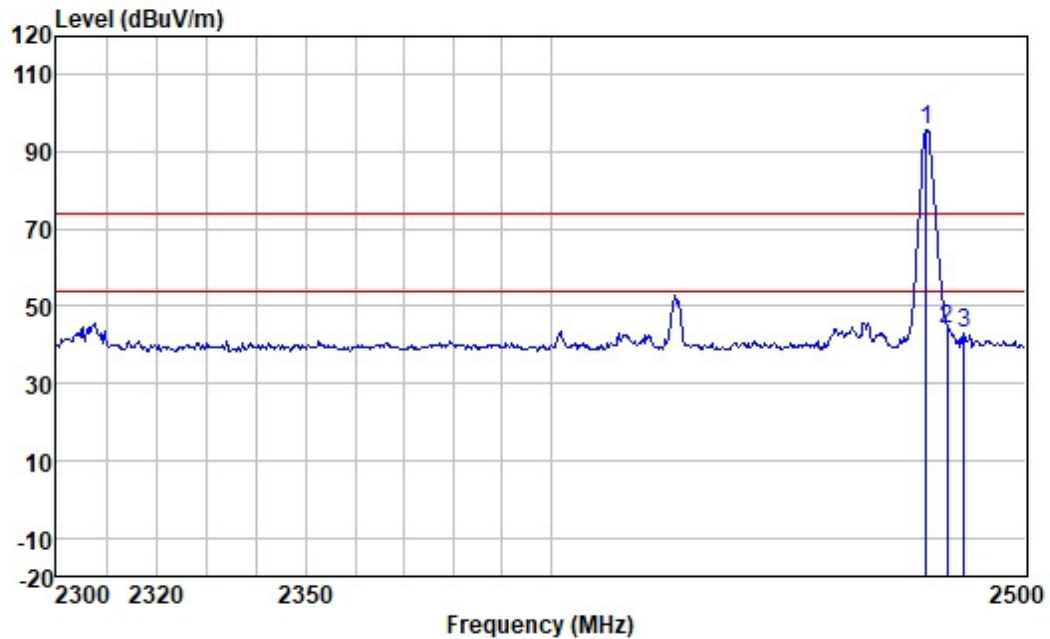
Test Mode: 02; Polarity: Horizontal; Modulation: CSS; Channel: Low



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	2308.454	49.43	27.47	3.39	37.78	42.51	74.00	-31.49	HORIZONTAL	peak
2	2400.000	59.92	27.65	3.45	37.77	53.25	74.00	-20.75	HORIZONTAL	peak
3 *	2403.000	106.26	27.65	3.45	37.77	99.59	74.00	25.59	HORIZONTAL	Peak



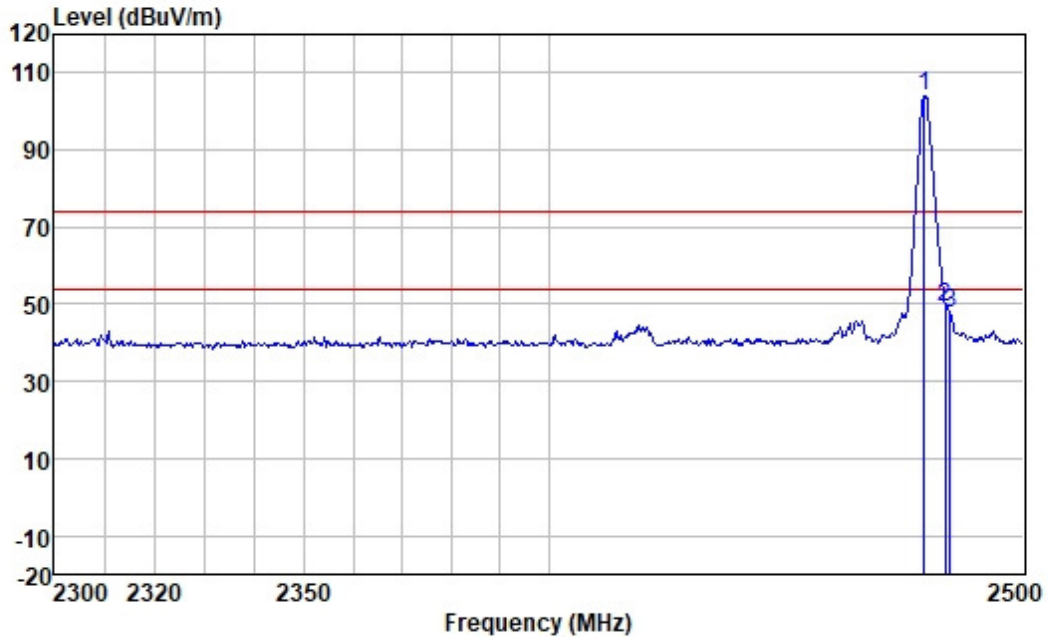
Test Mode: 02; Polarity: Vertical; Modulation: CSS; Channel: High



	Freq	ReadAntenna	Cable	Preamp	Limit	Over			
	MHz	Level	Factor	Loss	Factor	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 *	2479.000	102.33	27.75	3.48	37.76	95.80	74.00	21.80	VERTICAL Peak
2	2483.500	50.46	27.76	3.49	37.76	43.95	74.00	-30.05	VERTICAL peak
3	2487.109	49.47	27.76	3.49	37.76	42.96	74.00	-31.04	VERTICAL Peak



Test Mode: 02; Polarity: Horizontal; Modulation: CSS; Channel: High



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1 *	2479.000	110.67	27.75	3.48	37.76	104.14	74.00	30.14	HORIZONTAL	Peak
2	2483.500	55.88	27.76	3.49	37.76	49.37	74.00	-24.63	HORIZONTAL	peak
3	2484.415	54.28	27.76	3.49	37.76	47.77	74.00	-26.23	HORIZONTAL	Peak



7.2 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

Limit:

Test Distance: 3 m

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

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 24.9 °C

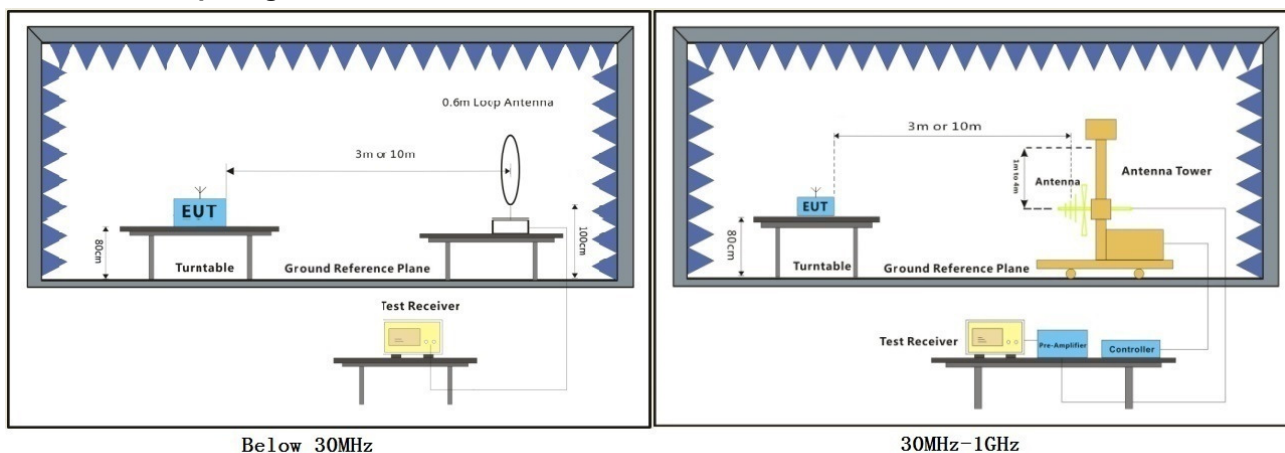
Humidity: 50.3 % RH

Atmospheric Pressure: 1010 mbar

7.2.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 00	TX mode_Keep the EUT in continuously transmitting mode with GFSK modulation.
Pre-scan 02	TX mode_Keep the EUT in transmitting with modulation mode.

7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 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. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
2. Scan from 9kHz to 30MHz, the disturbance below 30MHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.



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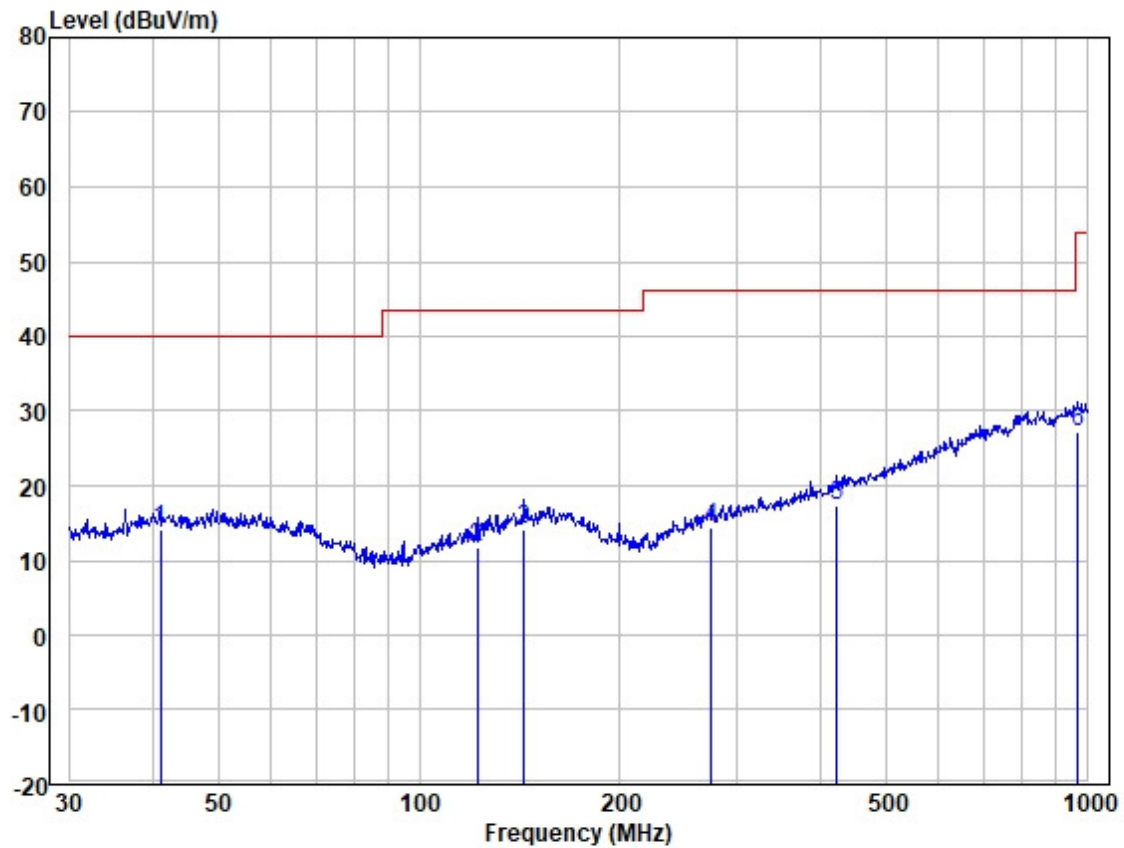
Attention: To check the authenticity of testing / inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

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t (86-20) 82155555 sgs.china@sgs.com

Test Mode: 00; Polarity: Horizontal

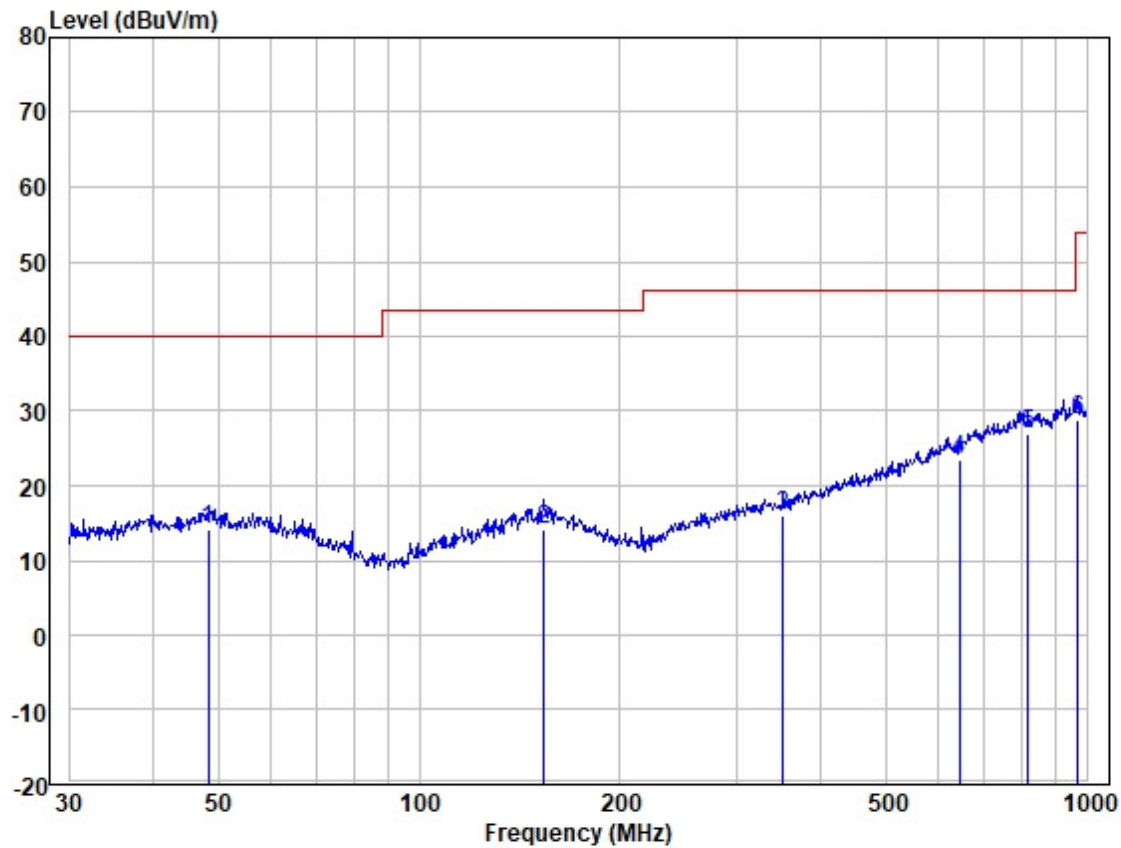


Site : 966 Chamber
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	40.988	27.37	19.29	0.35	32.78	14.23	40.00	-25.77	HORIZONTAL	QP
2	122.404	26.75	17.08	0.60	32.71	11.72	43.52	-31.80	HORIZONTAL	QP
3	143.830	27.44	18.88	0.65	32.74	14.23	43.52	-29.29	HORIZONTAL	QP
4	274.194	27.70	18.53	0.95	32.86	14.32	46.02	-31.70	HORIZONTAL	QP
5	422.058	27.22	21.97	1.18	32.92	17.45	46.02	-28.57	HORIZONTAL	QP
6	968.934	25.99	30.12	1.82	30.71	27.22	53.98	-26.76	HORIZONTAL	QP



Test Mode: 00; Polarity: Vertical



Site : 966 Chamber
Job :
Model :
Power :
Test Mode :

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Measured Level	Limit Line	Over Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	48.332	26.97	19.64	0.38	32.79	14.20	40.00	-25.80	VERTICAL	QP
2	153.739	27.15	19.18	0.68	32.77	14.24	43.52	-29.28	VERTICAL	QP
3	350.477	27.52	20.20	1.07	32.88	15.91	46.02	-30.11	VERTICAL	QP
4	645.120	28.30	26.15	1.47	32.37	23.55	46.02	-22.47	VERTICAL	QP
5	815.968	27.74	29.02	1.67	31.58	26.85	46.02	-19.17	VERTICAL	QP
6	968.934	27.58	30.12	1.82	30.71	28.81	53.98	-25.17	VERTICAL	QP



7.3 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

Limit:

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

7.3.1 E.U.T. Operation

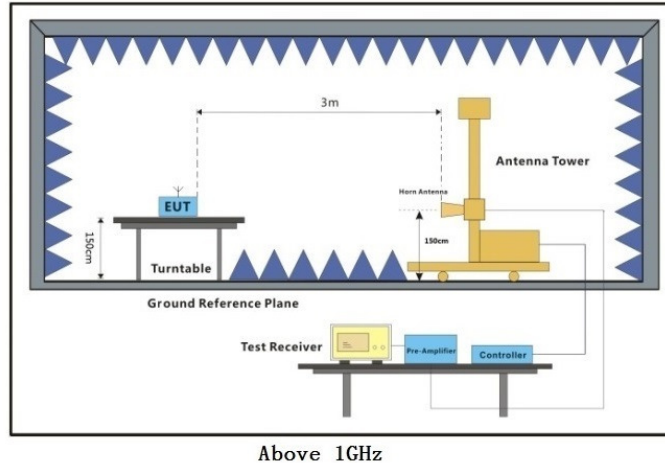
Operating Environment:

Temperature: 23.5 °C Humidity: 55.5 % RH Atmospheric Pressure: 1018 mbar

7.3.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 00	TX mode_Keep the EUT in continuously transmitting mode with GFSK modulation.
Final test 02	TX mode_Keep the EUT in transmitting with modulation mode.

7.3.3 Test Setup Diagram



7.3.4 Measurement Procedure and Data

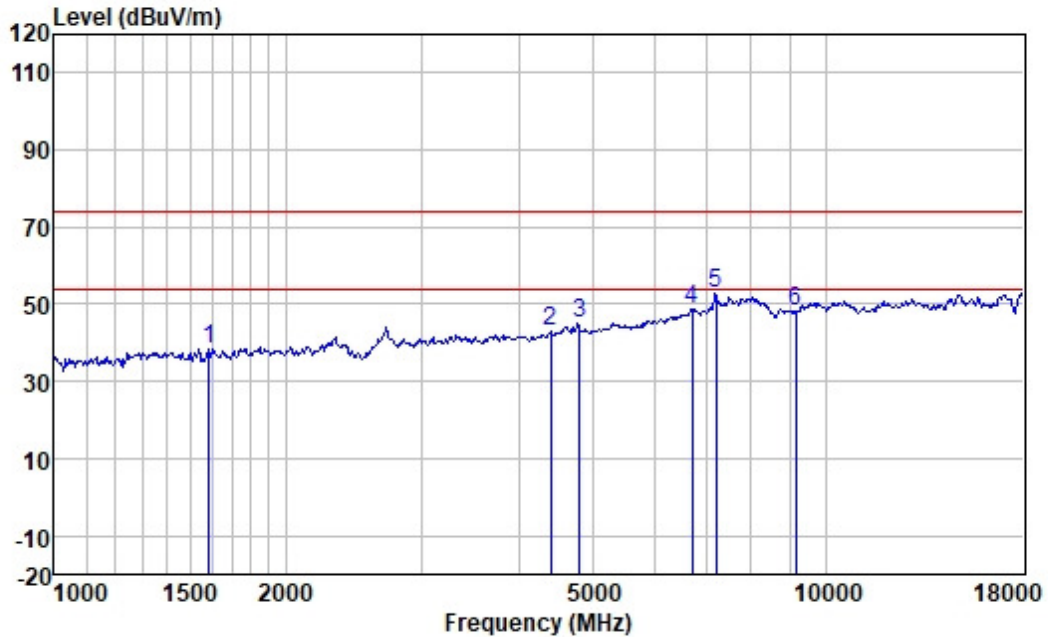
- a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was 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. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
2. Scan from 1GHz to 25GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for Peak detection (PK) and Average detection (AV) at frequency above 1GHz.
- 5:For fundamental and harmonic signal measurement, the resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.



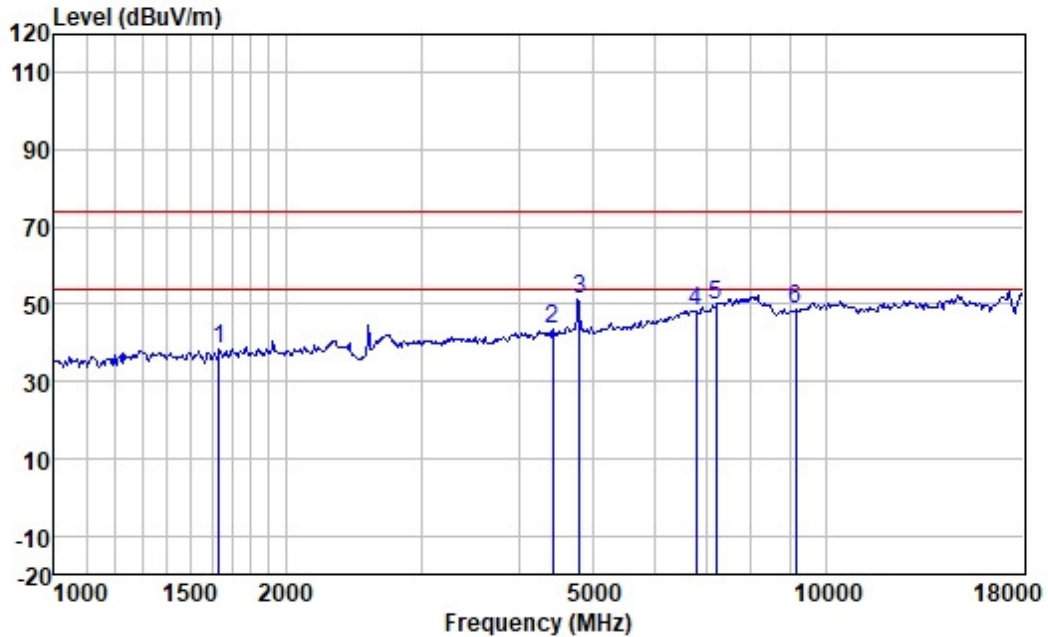
Test Mode: 00; Polarity: Vertical; Modulation: GFSK; Channel: Low



	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark	
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1587.975	48.01	25.99	2.75	38.15	38.60	74.00	-35.40	VERTICAL	peak
2	4405.090	45.09	30.80	4.61	37.46	43.04	74.00	-30.96	VERTICAL	peak
3	4804.000	46.17	31.51	4.81	37.38	45.11	74.00	-28.89	VERTICAL	peak
4	6717.762	45.48	34.64	5.75	37.12	48.75	74.00	-25.25	VERTICAL	peak
5	7206.000	48.48	35.80	5.93	37.17	53.04	74.00	-20.96	VERTICAL	peak
6	9152.479	45.15	37.86	6.68	41.30	48.39	74.00	-25.61	VERTICAL	peak



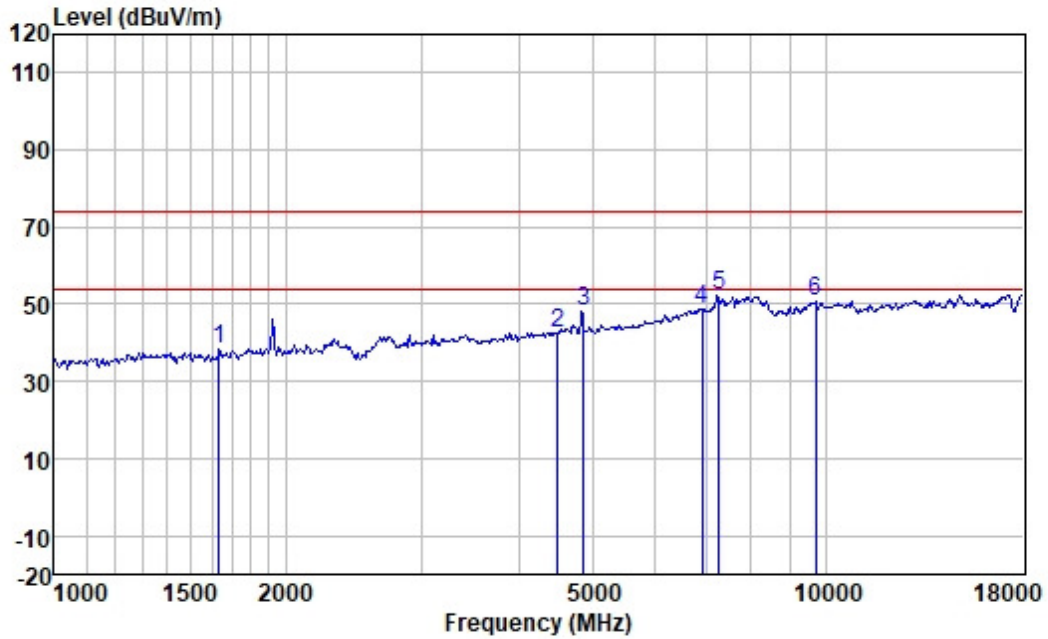
Test Mode: 00; Polarity: Horizontal; Modulation:GFSK; Channel:Low



	ReadAntenna	Cable	Preamp		Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1634.543	47.66	26.05	2.78	38.11	38.38	74.00	-35.62	HORIZONTAL peak
2	4430.628	45.56	30.83	4.61	37.45	43.55	74.00	-30.45	HORIZONTAL peak
3	4804.000	52.29	31.51	4.81	37.38	51.23	74.00	-22.77	HORIZONTAL peak
4	6795.879	44.73	34.87	5.79	37.13	48.26	74.00	-25.74	HORIZONTAL peak
5	7206.000	45.05	35.80	5.93	37.17	49.61	74.00	-24.39	HORIZONTAL peak
6	9152.479	45.36	37.86	6.68	41.30	48.60	74.00	-25.40	HORIZONTAL peak



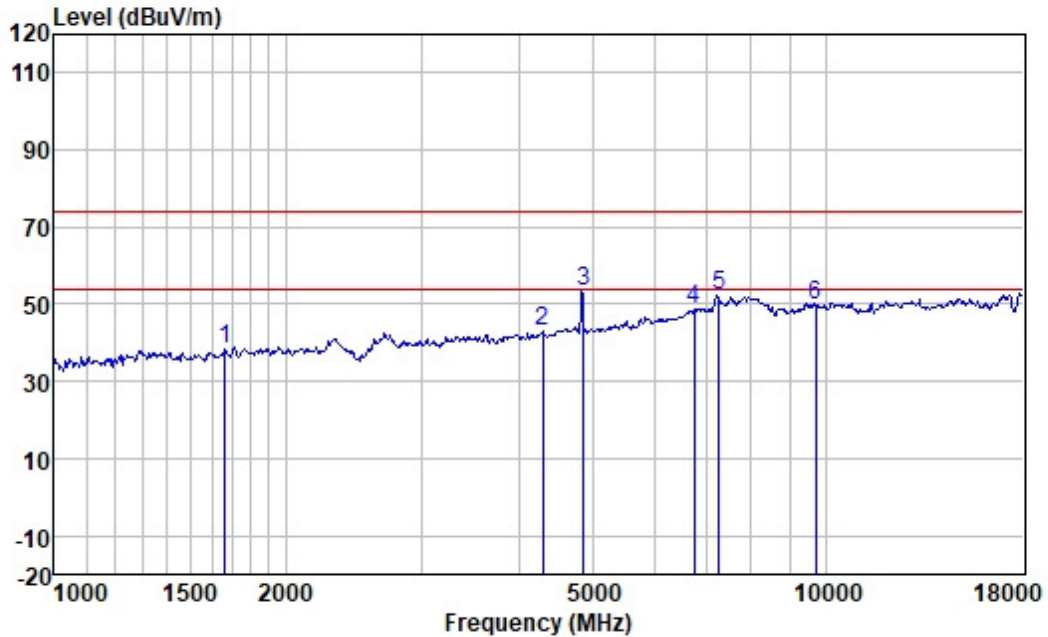
Test Mode: 00; Polarity: Vertical; Modulation: GFSK; Channel: middle



	ReadAntenna	Cable	Preamp		Limit	Over			
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1634.543	47.63	26.05	2.78	38.11	38.35	74.00	-35.65	VERTICAL peak
2	4495.125	44.51	30.91	4.62	37.44	42.60	74.00	-31.40	VERTICAL peak
3	4852.000	49.19	31.59	4.84	37.36	48.26	74.00	-25.74	VERTICAL peak
4	6914.763	44.87	35.11	5.84	37.14	48.68	74.00	-25.32	VERTICAL peak
5	7278.000	47.52	36.14	5.97	37.17	52.46	74.00	-21.54	VERTICAL peak
6	9704.000	46.74	38.79	7.08	41.99	50.62	74.00	-23.38	VERTICAL peak



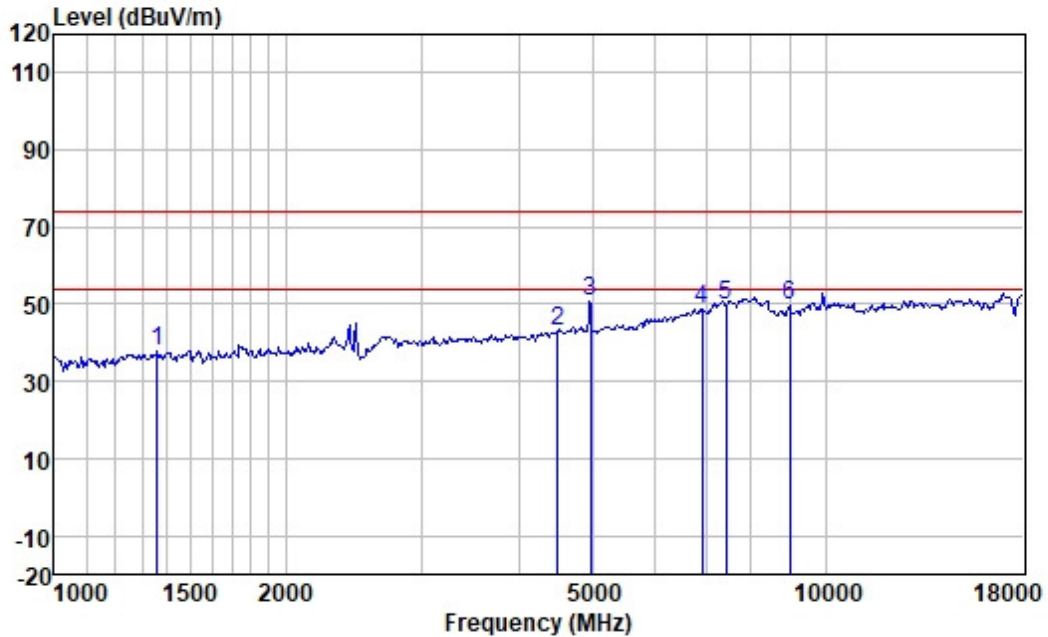
Test Mode: 00; Polarity: Horizontal; Modulation: GFSK; Channel: middle



	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1663.137	47.41	26.10	2.81	38.06	38.26	74.00	-35.74	HORIZONTAL peak
2	4304.400	45.38	30.62	4.58	37.47	43.11	74.00	-30.89	HORIZONTAL peak
3	4852.000	54.23	31.59	4.84	37.36	53.30	74.00	-20.70	HORIZONTAL peak
4	6756.708	45.35	34.77	5.77	37.13	48.76	74.00	-25.24	HORIZONTAL peak
5	7278.000	47.25	36.14	5.97	37.17	52.19	74.00	-21.81	HORIZONTAL peak
6	9704.000	45.96	38.79	7.08	41.99	49.84	74.00	-24.16	HORIZONTAL peak



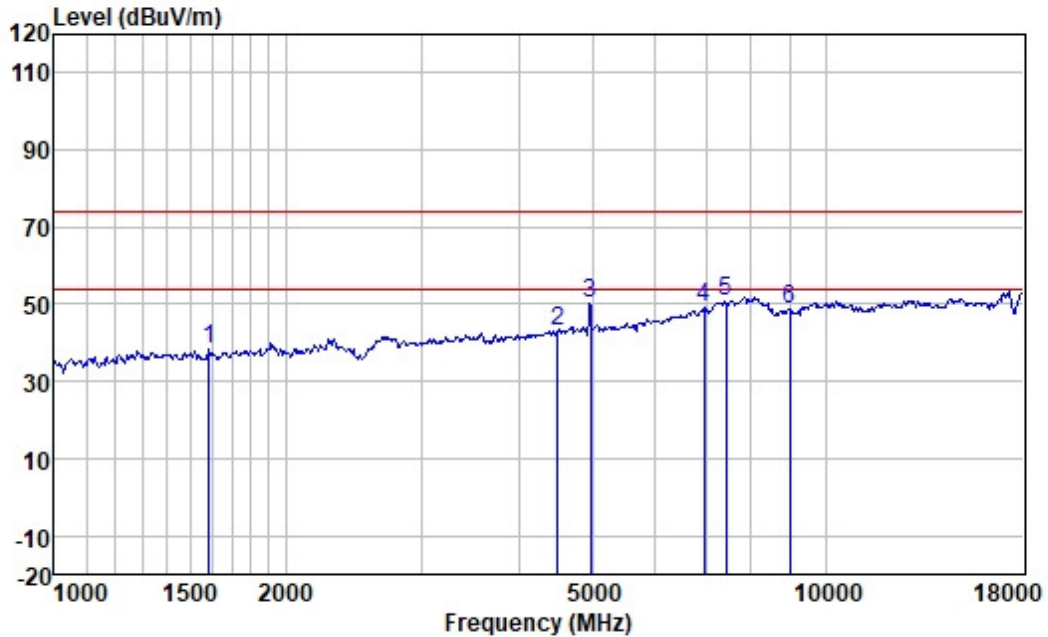
Test Mode: 00; Polarity: Vertical; Modulation: GFSK; Channel: High



	Freq	ReadAntenna	Cable	Preamp		Limit	Over			
	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark	
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1358.498	48.13	25.73	2.63	38.53	37.96	74.00	-36.04	VERTICAL	peak
2	4495.125	44.86	30.91	4.62	37.44	42.95	74.00	-31.05	VERTICAL	peak
3	4960.000	51.60	31.74	4.89	37.32	50.91	74.00	-23.09	VERTICAL	peak
4	6914.763	44.92	35.11	5.84	37.14	48.73	74.00	-25.27	VERTICAL	peak
5	7440.000	44.49	36.57	6.02	37.18	49.90	74.00	-24.10	VERTICAL	peak
6	8995.123	46.59	37.60	6.57	41.16	49.60	74.00	-24.40	VERTICAL	peak



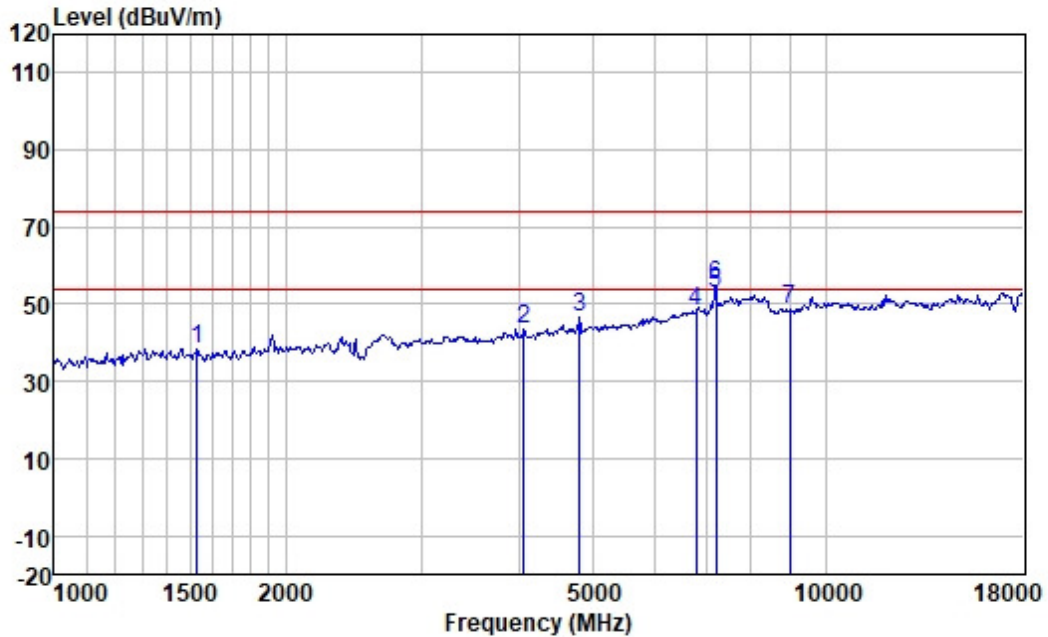
Test Mode: 00; Polarity: Horizontal; Modulation:GFSK; Channel:High



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1587.975	47.57	25.99	2.75	38.15	38.16	74.00	-35.84	HORIZONTAL	peak
2	4495.125	45.07	30.91	4.62	37.44	43.16	74.00	-30.84	HORIZONTAL	peak
3	4960.000	51.14	31.74	4.89	37.32	50.45	74.00	-23.55	HORIZONTAL	peak
4	6954.852	45.32	35.17	5.86	37.14	49.21	74.00	-24.79	HORIZONTAL	peak
5	7440.000	45.49	36.57	6.02	37.18	50.90	74.00	-23.10	HORIZONTAL	peak
6	8995.123	45.65	37.60	6.57	41.16	48.66	74.00	-25.34	HORIZONTAL	peak



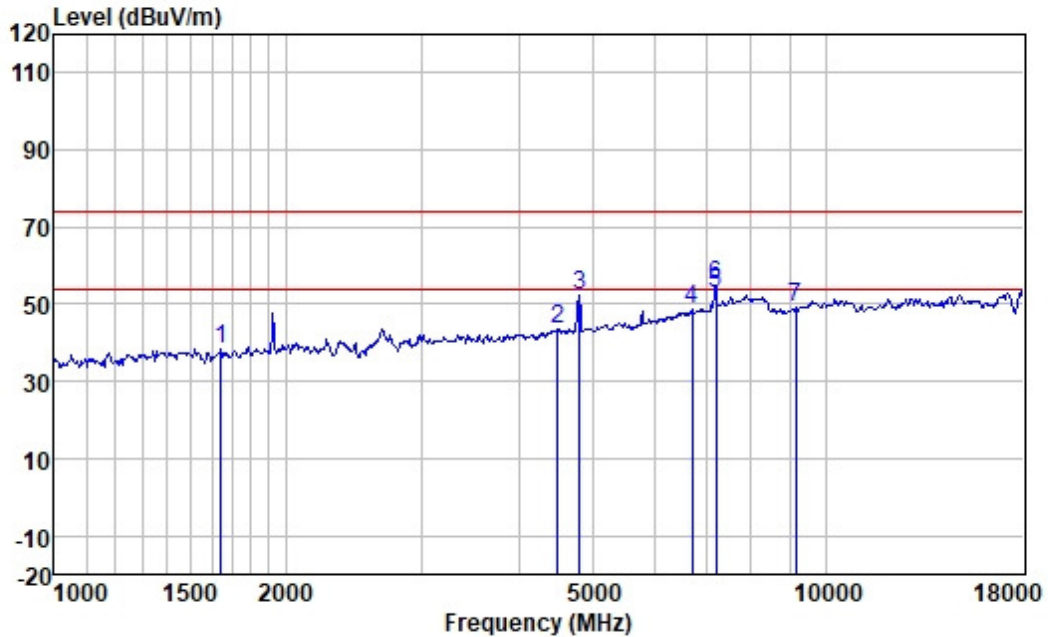
Test Mode: 02; Polarity: Vertical; Modulation: CSS; Channel: Low



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1533.841	48.11	25.94	2.72	38.26	38.51	74.00	-35.49	VERTICAL	peak
2	4062.629	46.64	30.08	4.51	37.49	43.74	74.00	-30.26	VERTICAL	peak
3	4806.000	47.52	31.51	4.81	37.38	46.46	74.00	-27.54	VERTICAL	peak
4	6795.879	44.63	34.87	5.79	37.13	48.16	74.00	-25.84	VERTICAL	peak
5	7209.000	48.23	35.80	5.93	37.17	52.79	54.00	-1.21	VERTICAL	Average
6	7209.000	50.37	35.80	5.93	37.17	54.93	74.00	-19.07	VERTICAL	peak
7	8995.123	45.62	37.60	6.57	41.16	48.63	74.00	-25.37	VERTICAL	peak



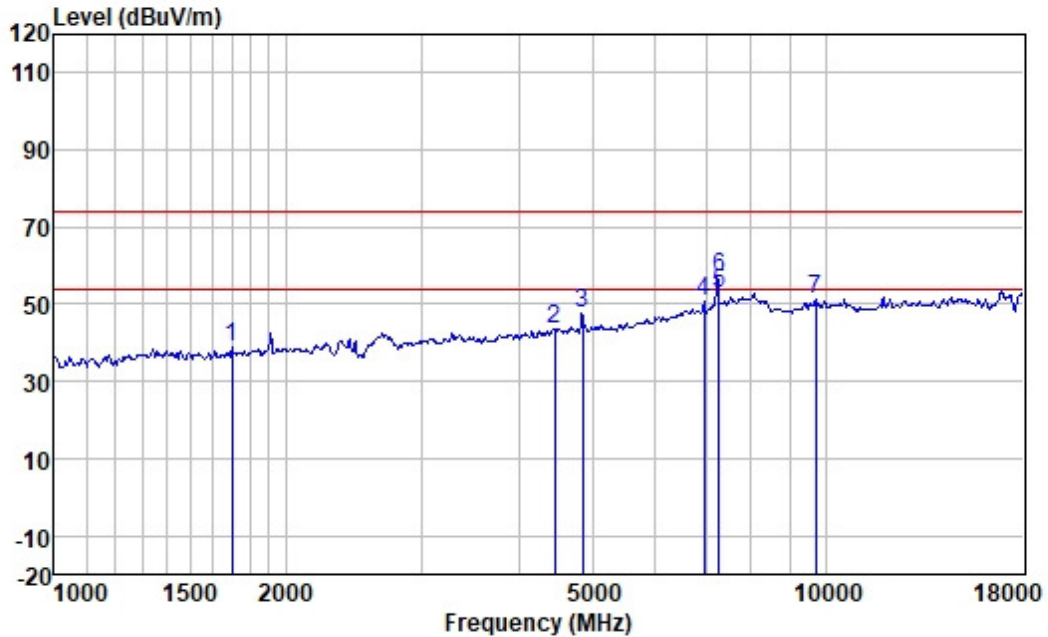
Test Mode: 02; Polarity: Horizontal; Modulation: CSS; Channel: Low



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1644.019	47.62	26.07	2.79	38.08	38.40	74.00	-35.60	HORIZONTAL	peak
2	4495.125	45.30	30.91	4.62	37.44	43.39	74.00	-30.61	HORIZONTAL	peak
3	4806.000	53.40	31.51	4.81	37.38	52.34	74.00	-21.66	HORIZONTAL	peak
4	6717.762	45.25	34.64	5.75	37.12	48.52	74.00	-25.48	HORIZONTAL	peak
5	7209.000	48.40	35.80	5.93	37.17	52.96	54.00	-1.04	HORIZONTAL	Average
6	7209.000	50.23	35.80	5.93	37.17	54.79	74.00	-19.21	HORIZONTAL	peak
7	9152.479	46.04	37.86	6.68	41.30	49.28	74.00	-24.72	HORIZONTAL	peak



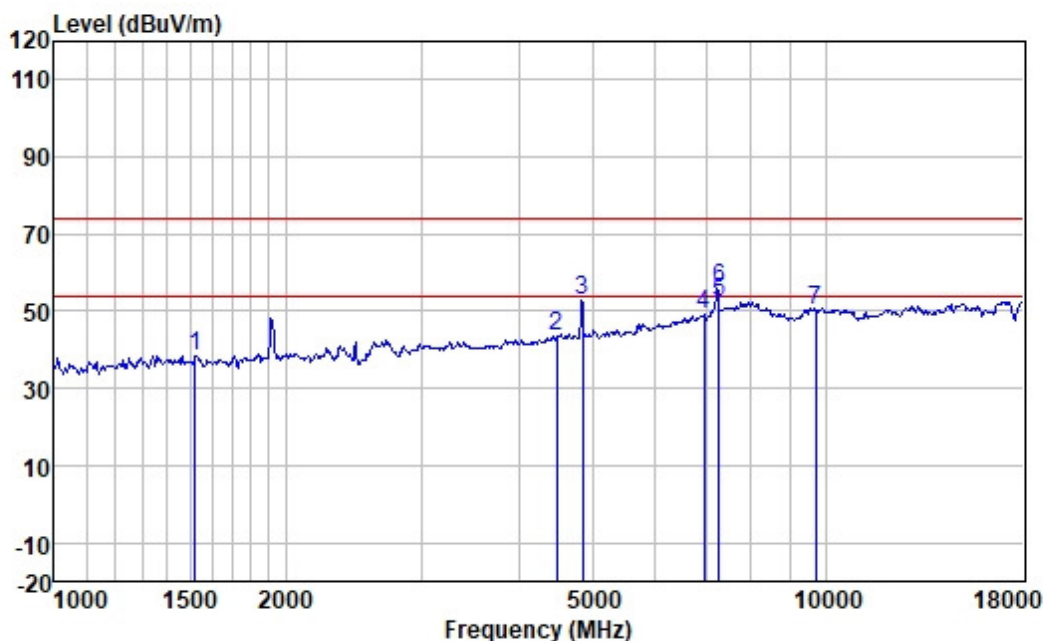
Test Mode: 02; Polarity: Vertical; Modulation: CSS; Channel: middle



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1702.042	47.88	26.18	2.85	38.03	38.88	74.00	-35.12	VERTICAL	peak
2	4456.315	45.74	30.87	4.61	37.45	43.77	74.00	-30.23	VERTICAL	peak
3	4850.000	48.44	31.59	4.84	37.37	47.50	74.00	-26.50	VERTICAL	peak
4	6954.852	46.72	35.17	5.86	37.14	50.61	74.00	-23.39	VERTICAL	peak
5	7275.000	47.73	36.14	5.97	37.17	52.67	54.00	-1.33	VERTICAL	Average
6	7275.000	51.96	36.14	5.97	37.17	56.90	74.00	-17.10	VERTICAL	peak
7	9700.000	47.24	38.79	7.08	41.99	51.12	74.00	-22.88	VERTICAL	peak



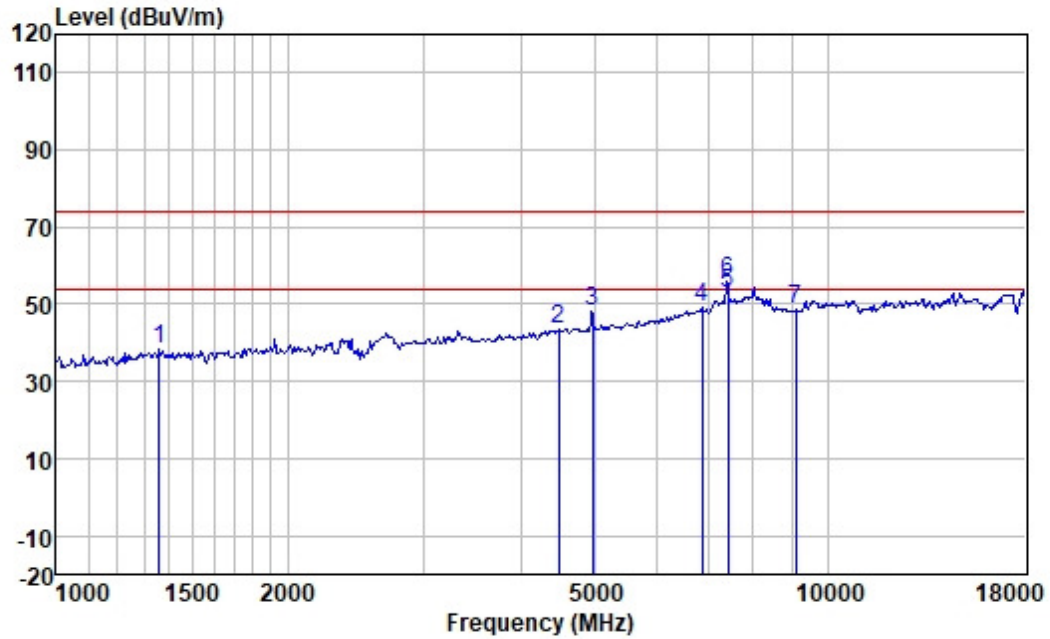
Test Mode: 02; Polarity: Horizontal; Modulation: CSS; Channel: middle



	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1525.000	48.21	25.93	2.71	38.26	38.59	74.00	-35.41	HORIZONTAL peak
2	4482.150	45.61	30.90	4.62	37.44	43.69	74.00	-30.31	HORIZONTAL peak
3	4850.000	53.57	31.59	4.84	37.37	52.63	74.00	-21.37	HORIZONTAL peak
4	6954.852	45.30	35.17	5.86	37.14	49.19	74.00	-24.81	HORIZONTAL peak
5	7275.000	47.41	36.14	5.97	37.17	52.35	54.00	-1.65	HORIZONTAL Average
6	7275.000	51.11	36.14	5.97	37.17	56.05	74.00	-17.95	HORIZONTAL peak
7	9700.000	46.56	38.79	7.08	41.99	50.44	74.00	-23.56	HORIZONTAL peak



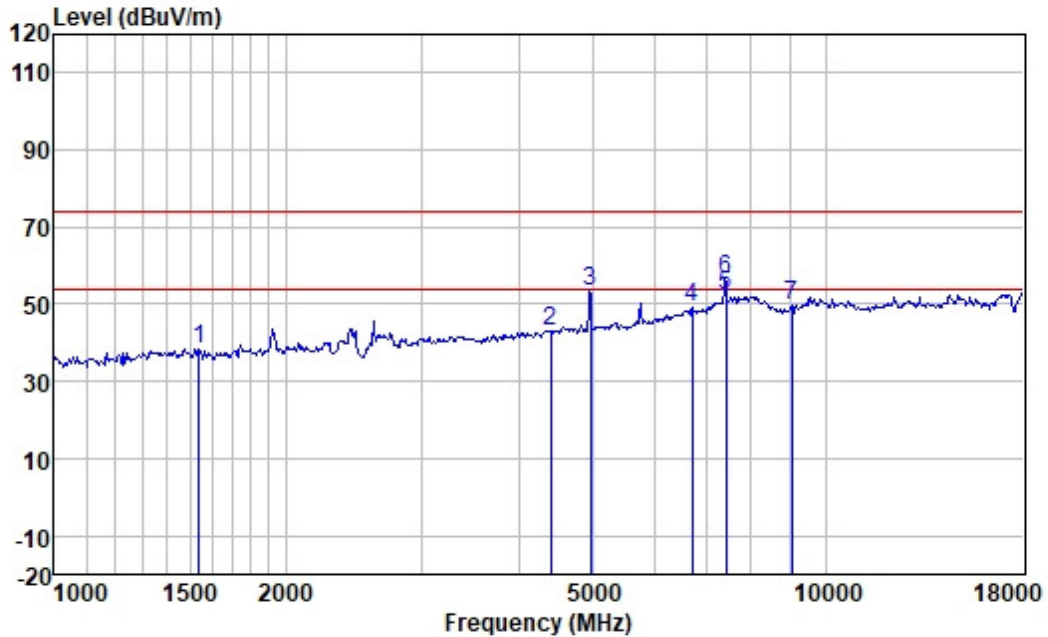
Test Mode: 02; Polarity: Vertical; Modulation: CSS; Channel: High



		ReadAntenna		Cable	Preamp		Limit	Over		
	Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB		
1	1358.498	48.68	25.73	2.63	38.53	38.51	74.00	-35.49	VERTICAL	peak
2	4482.150	45.55	30.90	4.62	37.44	43.63	74.00	-30.37	VERTICAL	peak
3	4958.000	49.04	31.74	4.89	37.32	48.35	74.00	-25.65	VERTICAL	peak
4	6874.906	45.34	35.04	5.83	37.14	49.07	74.00	-24.93	VERTICAL	peak
5	7437.000	47.18	36.57	6.02	37.18	52.59	54.00	-1.41	VERTICAL	Average
6	7437.000	50.59	36.57	6.02	37.18	56.00	74.00	-18.00	VERTICAL	peak
7	9099.724	45.31	37.76	6.64	41.25	48.46	74.00	-25.54	VERTICAL	peak



Test Mode: 02; Polarity: Horizontal; Modulation: CSS; Channel: High



	Freq	ReadAntenna	Cable	Preamp		Limit	Over		
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Pol/Phase
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1542.733	47.98	25.95	2.72	38.23	38.42	74.00	-35.58	HORIZONTAL peak
2	4405.090	45.14	30.80	4.61	37.46	43.09	74.00	-30.91	HORIZONTAL peak
3	4958.000	53.85	31.74	4.89	37.32	53.16	74.00	-20.84	HORIZONTAL peak
4	6717.762	45.99	34.64	5.75	37.12	49.26	74.00	-24.74	HORIZONTAL peak
5	7437.000	46.66	36.57	6.02	37.18	52.07	54.00	-1.93	HORIZONTAL Average
6	7437.000	50.85	36.57	6.02	37.18	56.26	74.00	-17.74	HORIZONTAL peak
7	9047.272	46.77	37.68	6.60	41.22	49.83	74.00	-24.17	HORIZONTAL peak



7.4 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

7.4.1 E.U.T. Operation

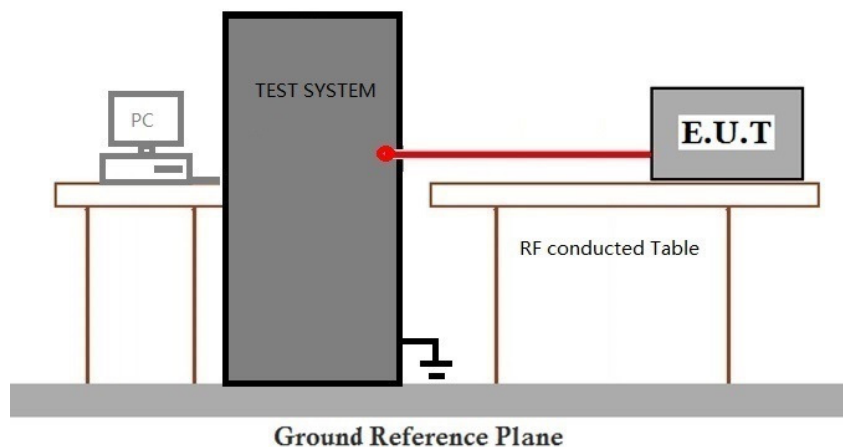
Operating Environment:

Temperature: 22.9 °C

Humidity: 63.4 % RH

Atmospheric Pressure: 1015 mbar

7.4.2 Test Setup Diagram



7.4.3 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

7.5 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

7.5.1 E.U.T. Operation

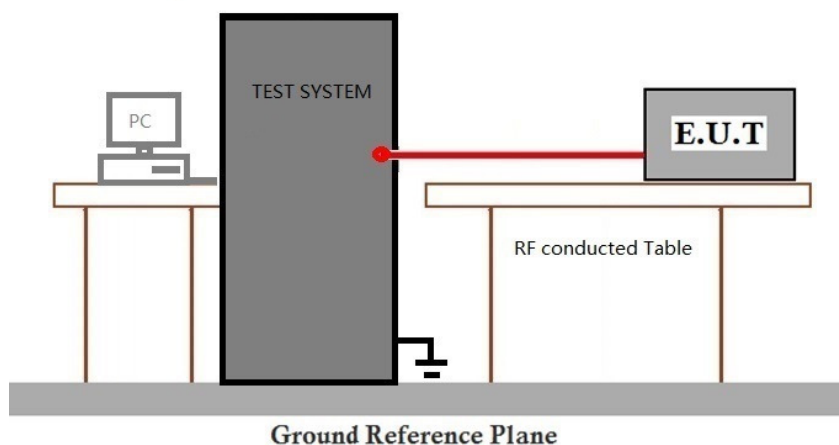
Operating Environment:

Temperature: 22.9 °C Humidity: 63.4 % RH Atmospheric Pressure: 1015 mbar

7.5.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 00	TX mode_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

Please Refer to Appendix for Details



7.6 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

7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 22.9 °C

Humidity: 63.4 % RH

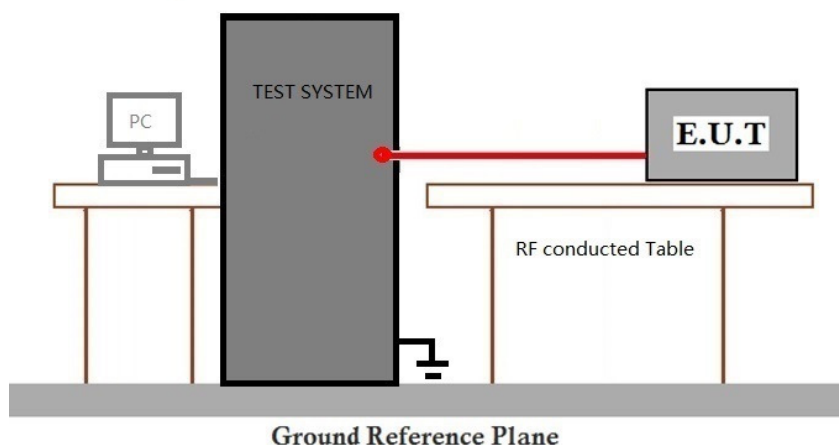
Atmospheric Pressure: 1015 mbar

7.6.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	

Final test	00	TX mode_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 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)).

7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 22.9 °C

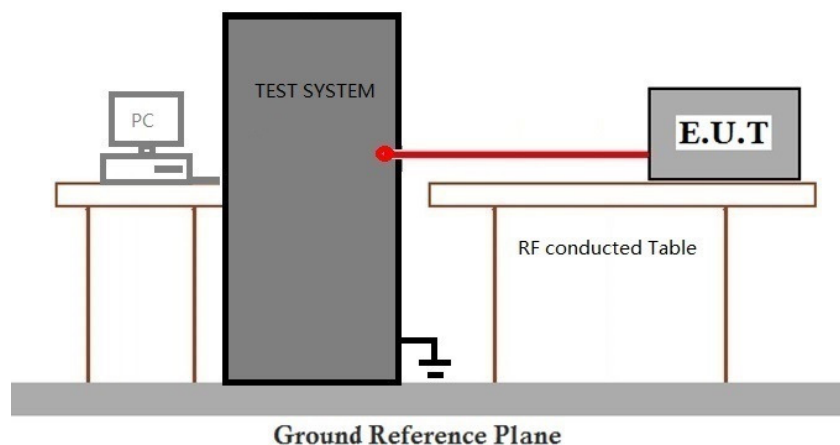
Humidity: 63.4 % RH

Atmospheric Pressure: 1015 mbar

7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	TX mode_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



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7.8 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)).

7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 22.9 °C

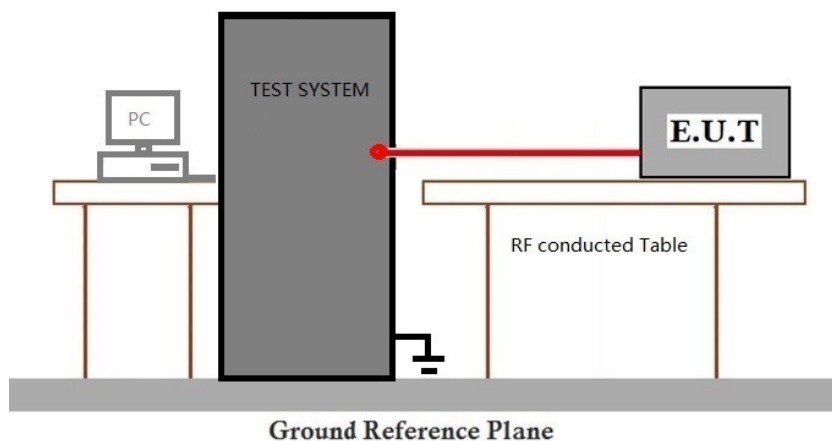
Humidity: 63.4 % RH

Atmospheric Pressure: 1015 mbar

7.8.2 Test Mode Description

Pre-scan / Mode	Description
Final test Code	
Final test 00	TX mode_Keep the EUT in continuously transmitting mode with GFSK modulation.

7.8.3 Test Setup Diagram



7.8.4 Measurement Procedure and Data

Please Refer to Appendix for Details

8 Test Setup Photo

Refer to Test Setup Photo for GZCR250900136302



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9 EUT Constructional Details (EUT Photos)

Refer to External and Internal Photos for GZCR2509001363AT



10 Appendix

1. Duty Cycle

1.1 Test Result

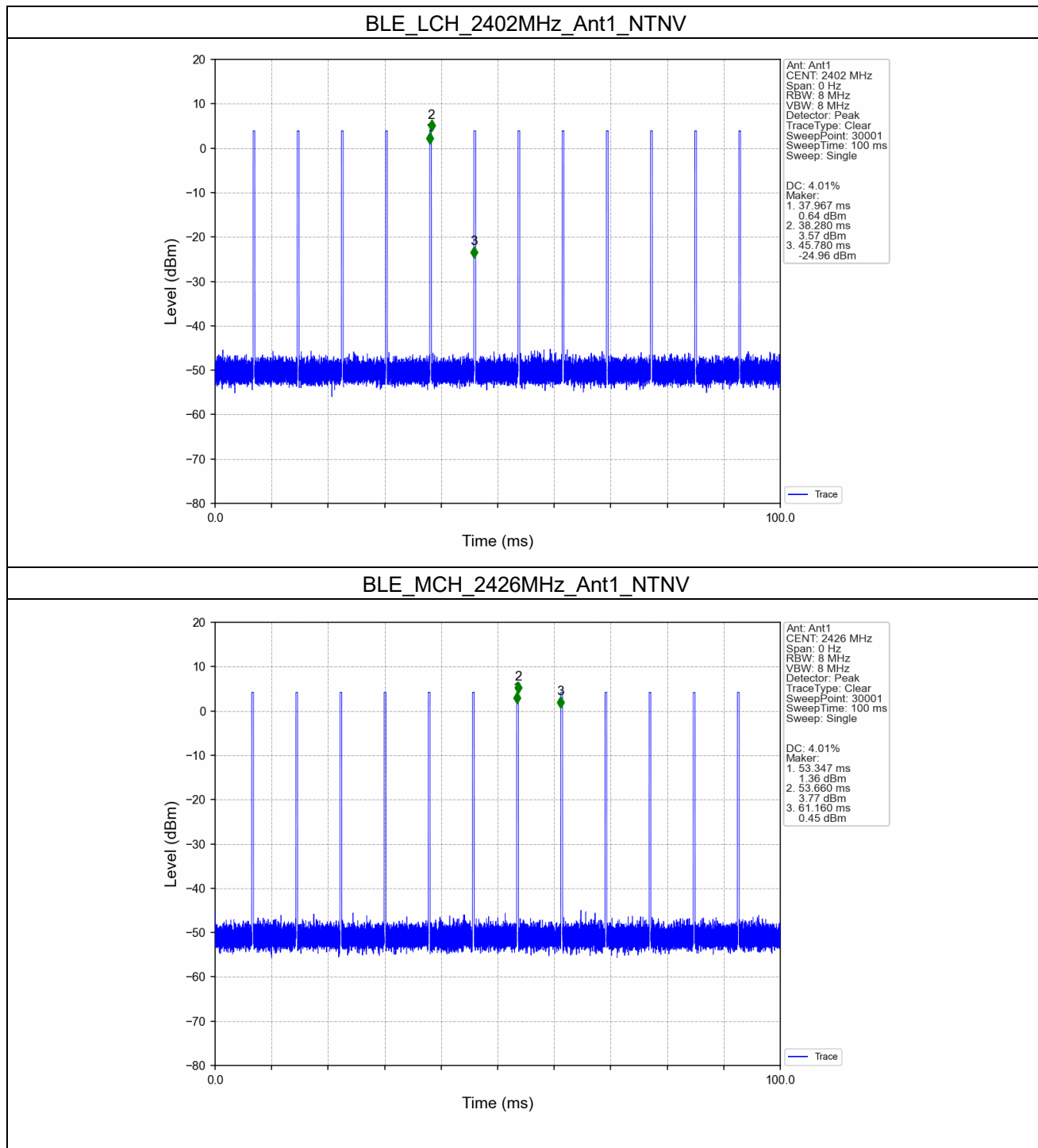
1.1.1 Ant1

Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
BLE	SISO	2402	0.313	7.813	4.01	13.97	0.04
		2426	0.313	7.813	4.01	13.97	0.04
		2480	0.316	7.817	4.04	13.93	0.01
LoRa		2403	100.000	100.000	100.00	0.00	0.00
		2425	100.000	100.000	100.00	0.00	0.00
		2479	100.000	100.000	100.00	0.00	0.00



1.2 Test Graph

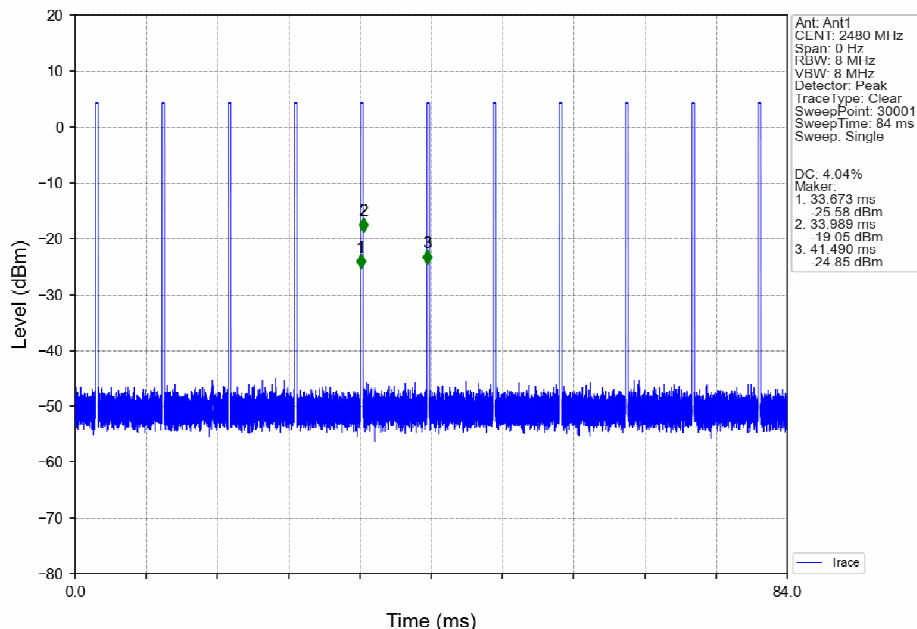
1.2.1 Ant1



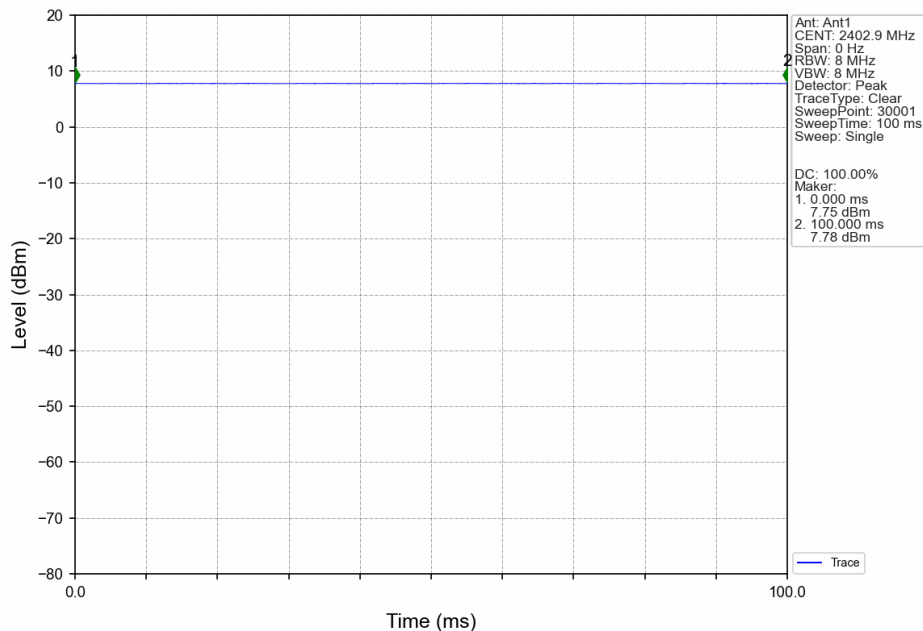
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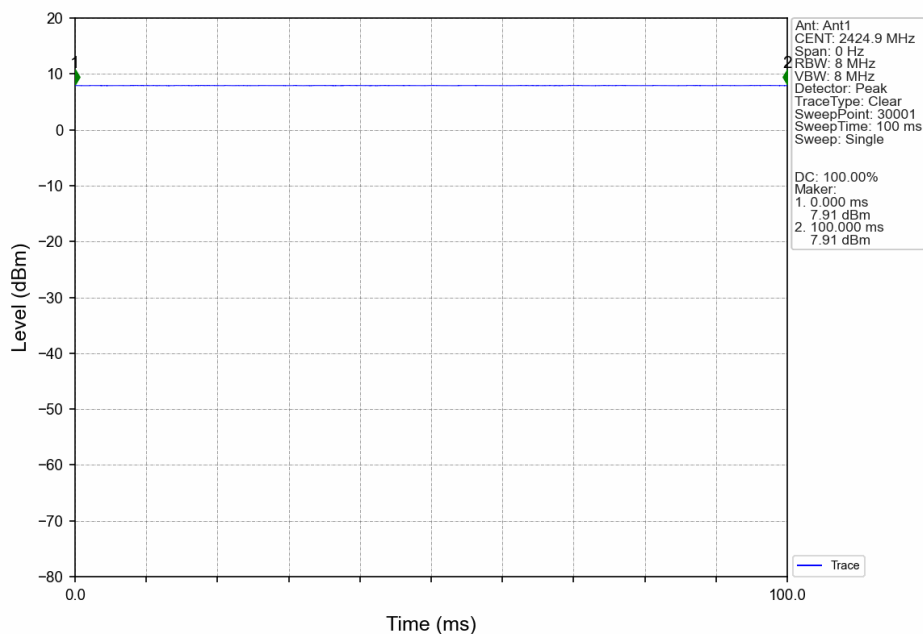
BLE_HCH_2480MHz_Ant1_NTNV



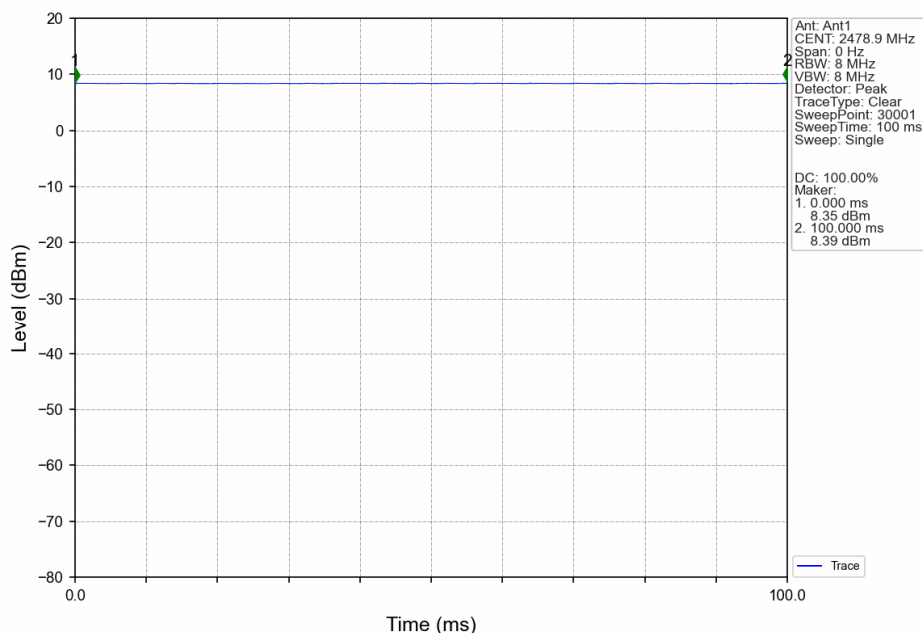
LoRa_LCH_2403MHz_Ant1_NTNV



LoRa_MCH_2425MHz_Ant1_NTNV



LoRa_HCH_2479MHz_Ant1_NTNV



2. Bandwidth

2.1 Test Result

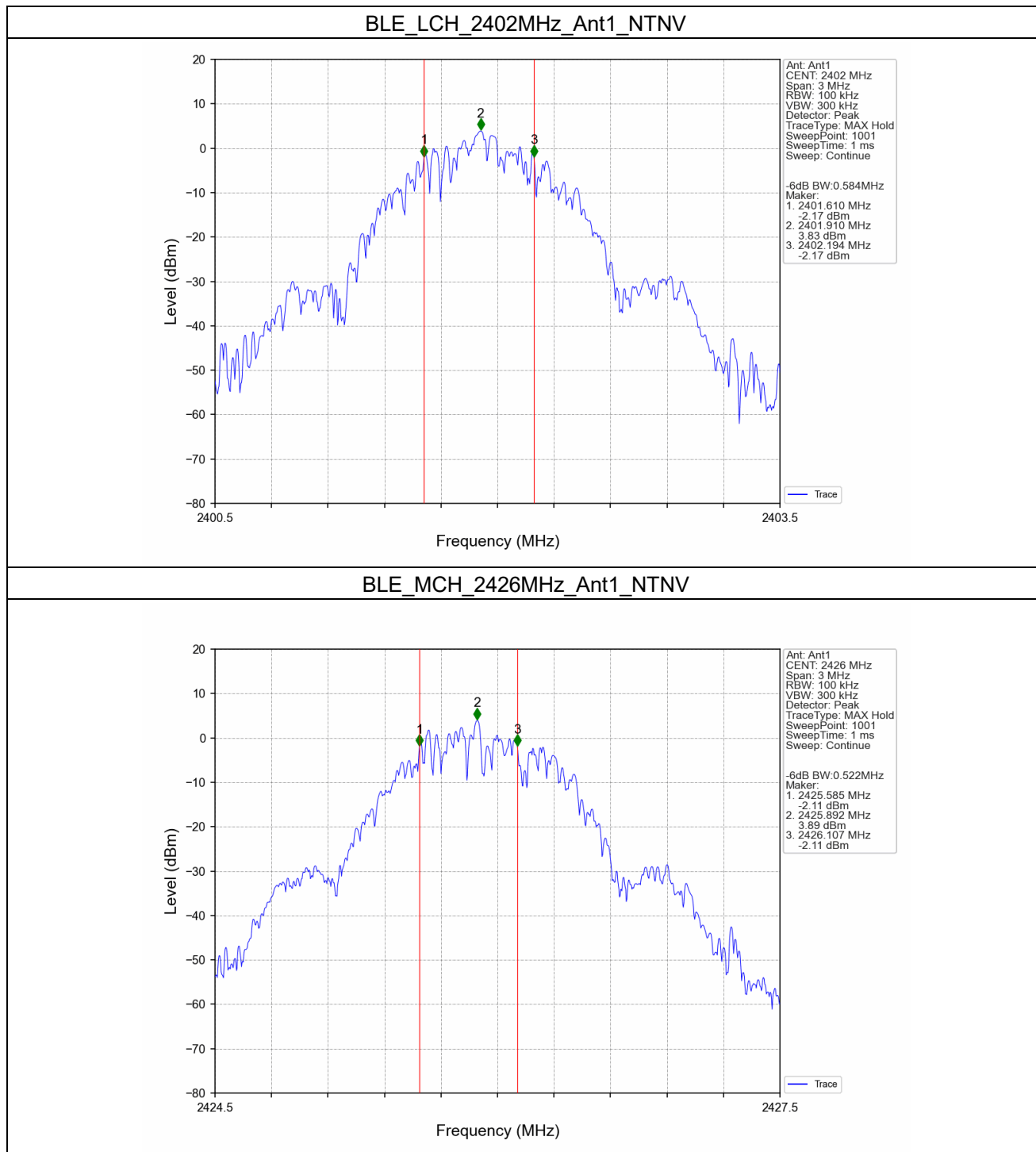
2.1.1 6dB BW

Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
BLE	SISO	2402	1	0.584	>=0.5	Pass
		2426	1	0.522	>=0.5	Pass
		2480	1	0.634	>=0.5	Pass
LoRa		2403	1	0.960	>=0.5	Pass
		2425	1	0.956	>=0.5	Pass
		2479	1	0.961	>=0.5	Pass



2.2 Test Graph

2.2.1 6dB BW



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Guangzhou Branch (CMA, CNAS, EEC Laboratory)

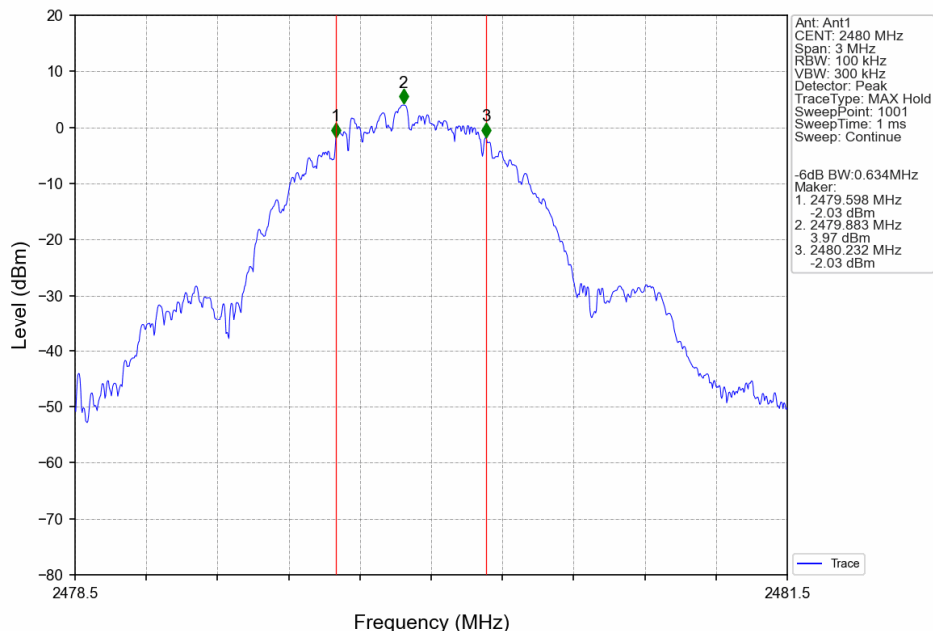
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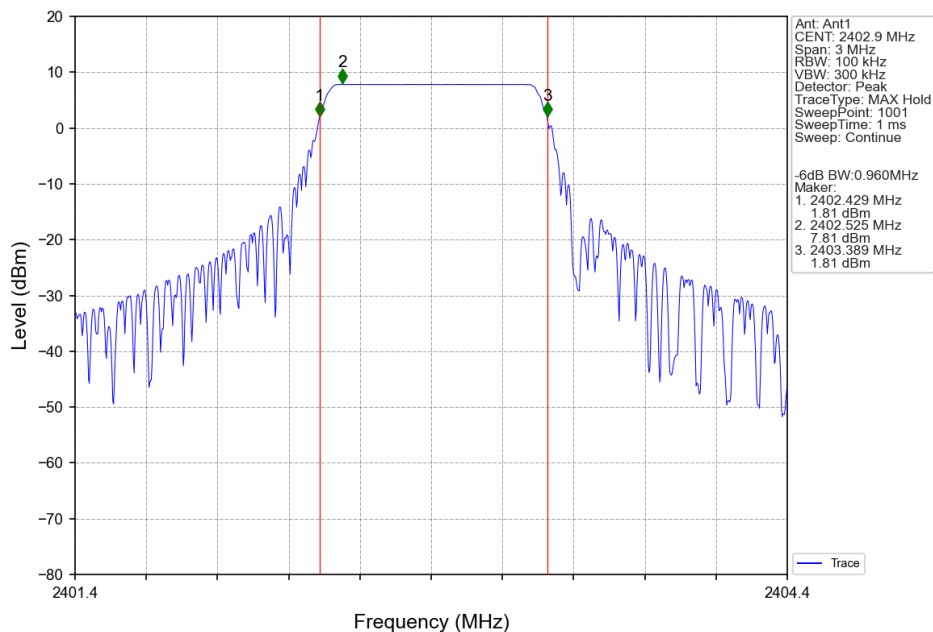
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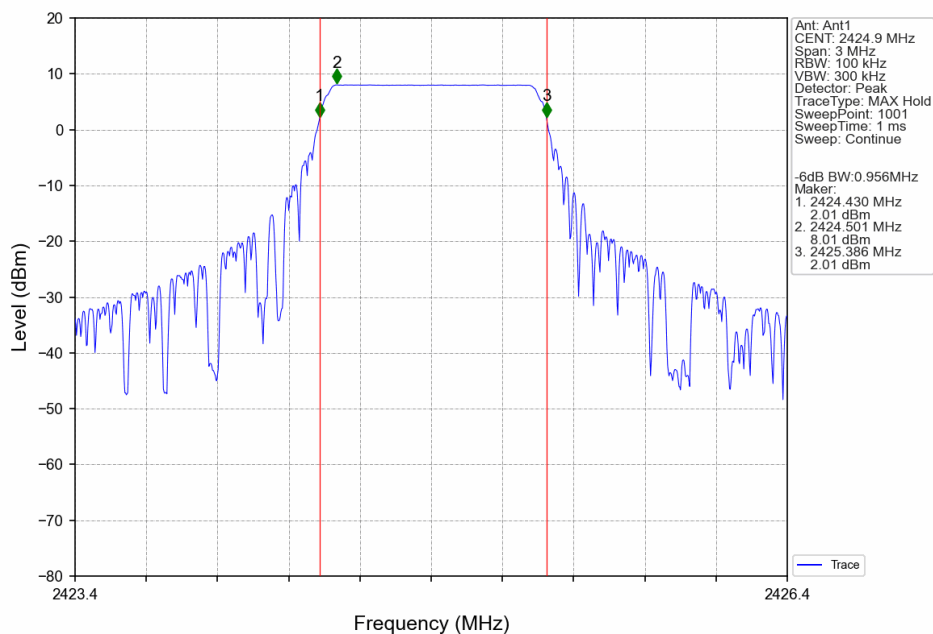
BLE_HCH_2480MHz_Ant1_NTNV



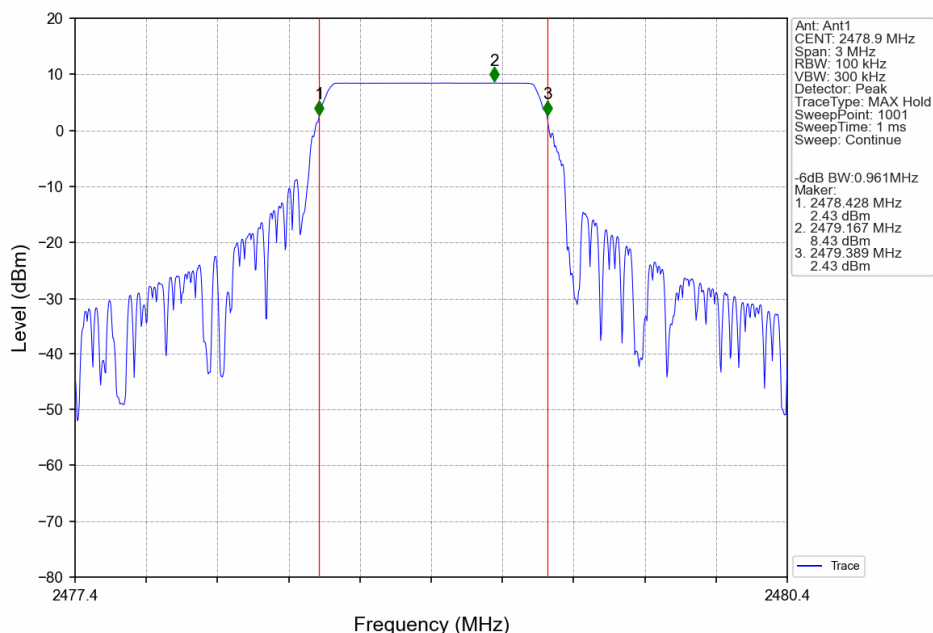
LoRa_LCH_2403MHz_Ant1_NTNV



LoRa_MCH_2425MHz_Ant1_NTNV



LoRa_HCH_2479MHz_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	
BLE	SISO	2402	3.91	<=30	Pass
		2426	4.19	<=30	Pass
		2480	4.26	<=30	Pass
LoRa		2403	7.77	<=30	Pass
		2425	8.01	<=30	Pass
		2479	8.20	<=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	
BLE	SISO	2402	3.73	<=8	Pass
		2426	4.14	<=8	Pass
		2480	4.14	<=8	Pass
LoRa		2403	7.79	<=8	Pass
		2425	7.98	<=8	Pass
		2479	7.59	<=8	Pass



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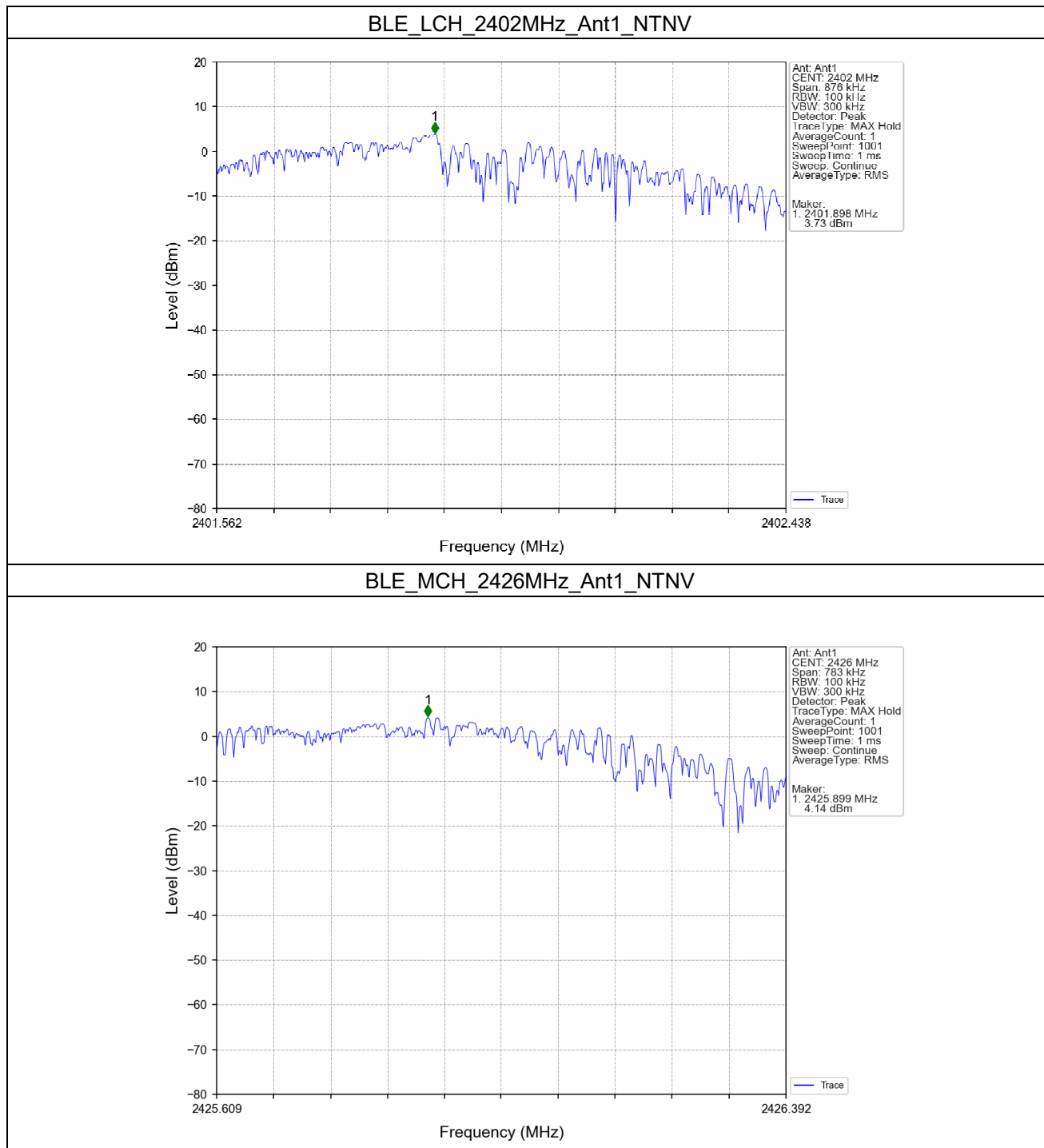
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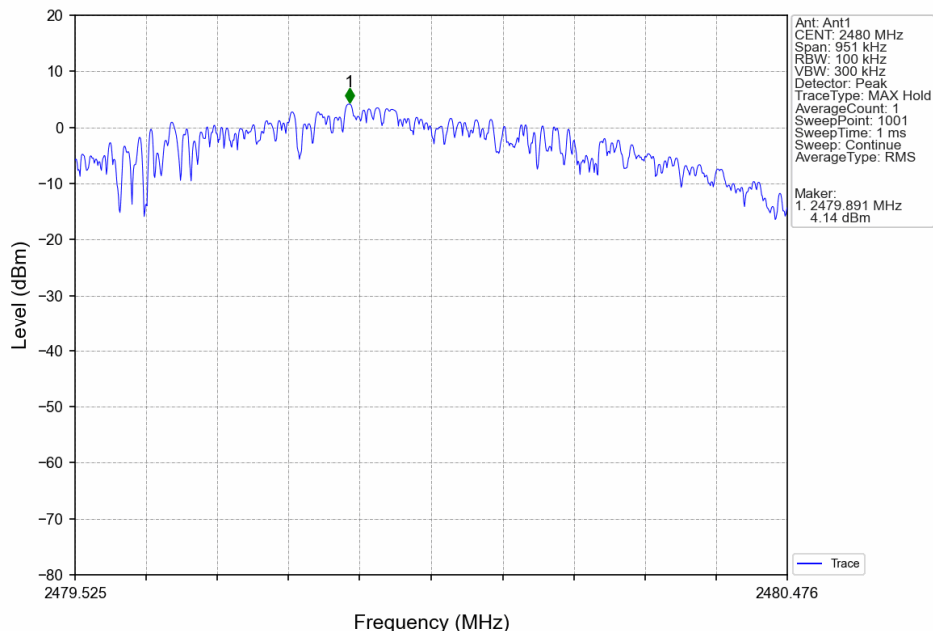
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4.2 Test Graph

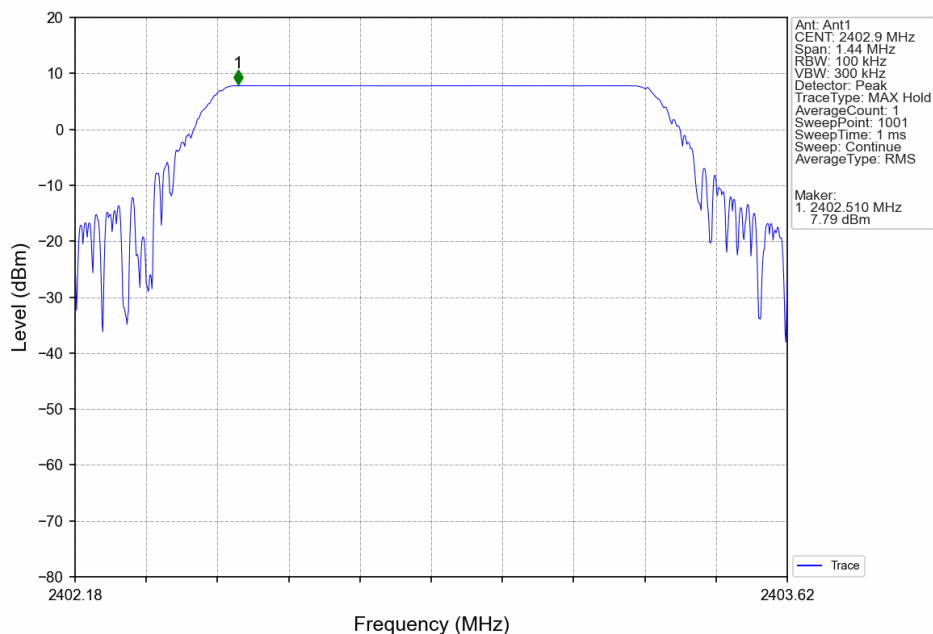
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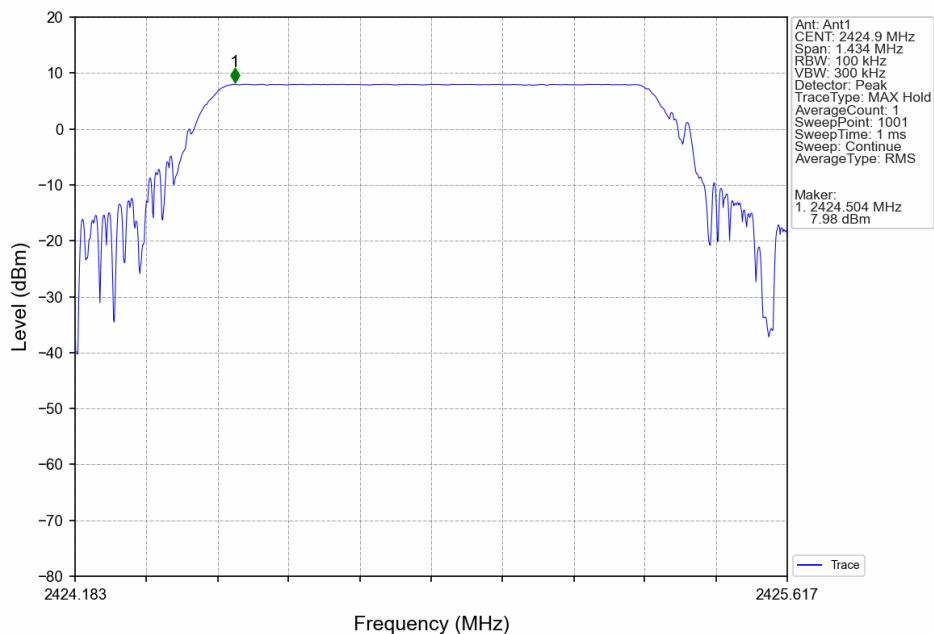
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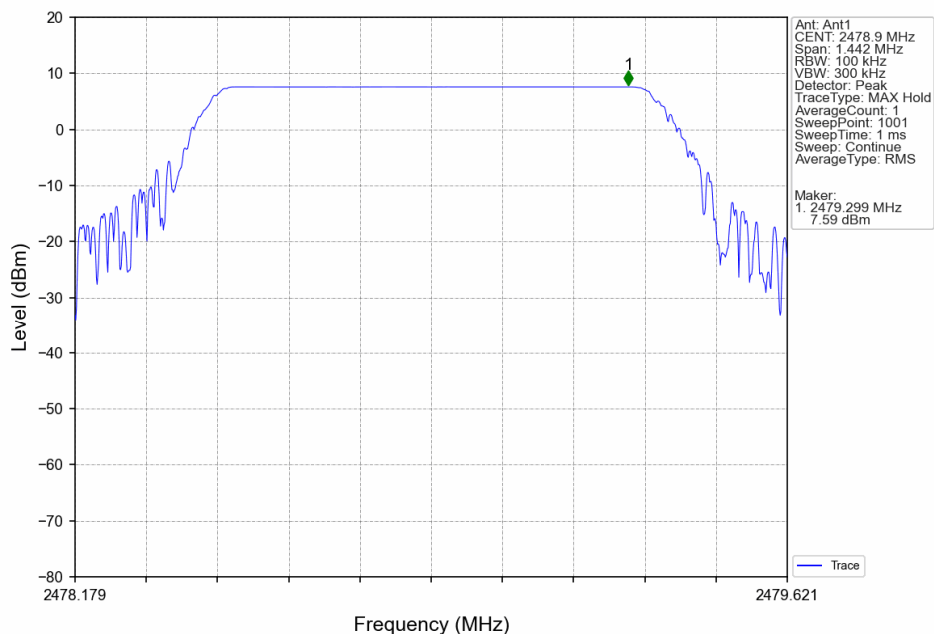
LoRa_LCH_2403MHz_Ant1_NTNV



LoRa_MCH_2425MHz_Ant1_NTNV



LoRa_HCH_2479MHz_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)
BLE	SISO	2402	1	3.52
		2426	1	2.02
		2480	1	3.95
LoRa	SISO	2403	1	7.79
		2425	1	8.03
		2479	1	8.44

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 and Band Edges

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
BLE	SISO	2402	1	3.95	-16.05	Pass
		2426	1	3.95	-16.05	Pass
		2480	1	3.95	-16.05	Pass
LoRa	SISO	2403	1	8.44	-11.56	Pass
		2425	1	8.44	-11.56	Pass
		2479	1	8.44	-11.56	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.



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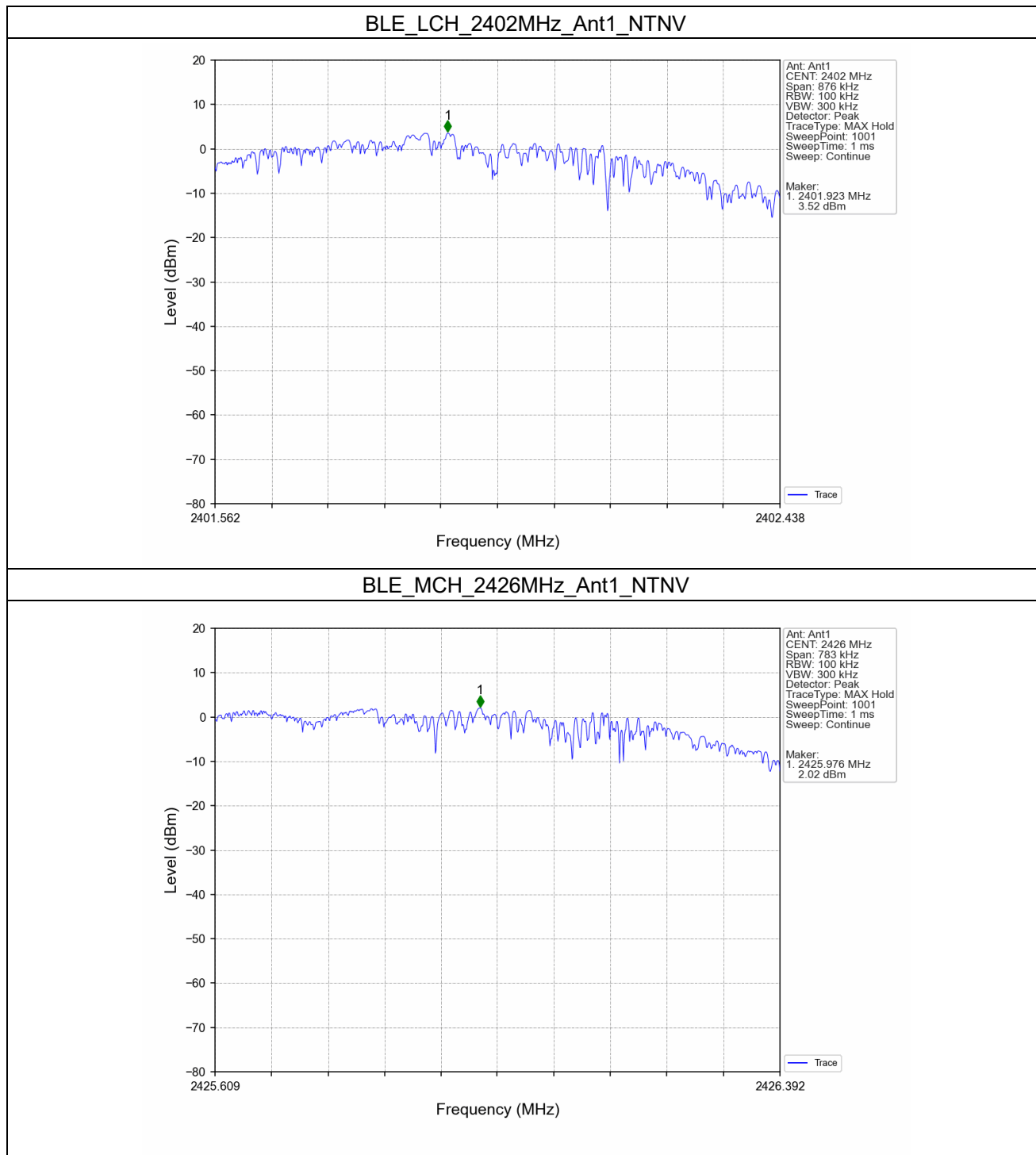
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5.2 Test Graph

5.2.1 Ref



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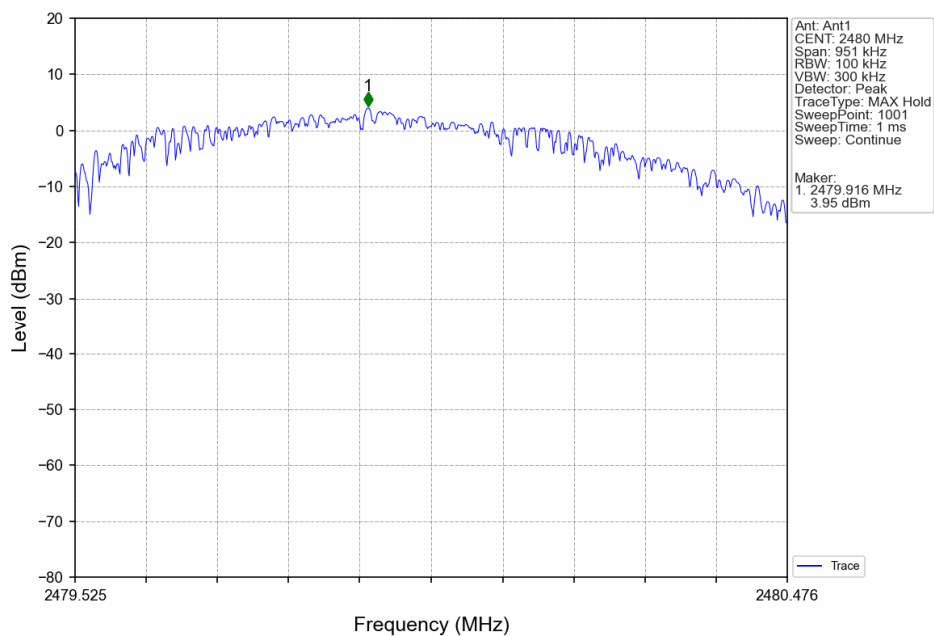
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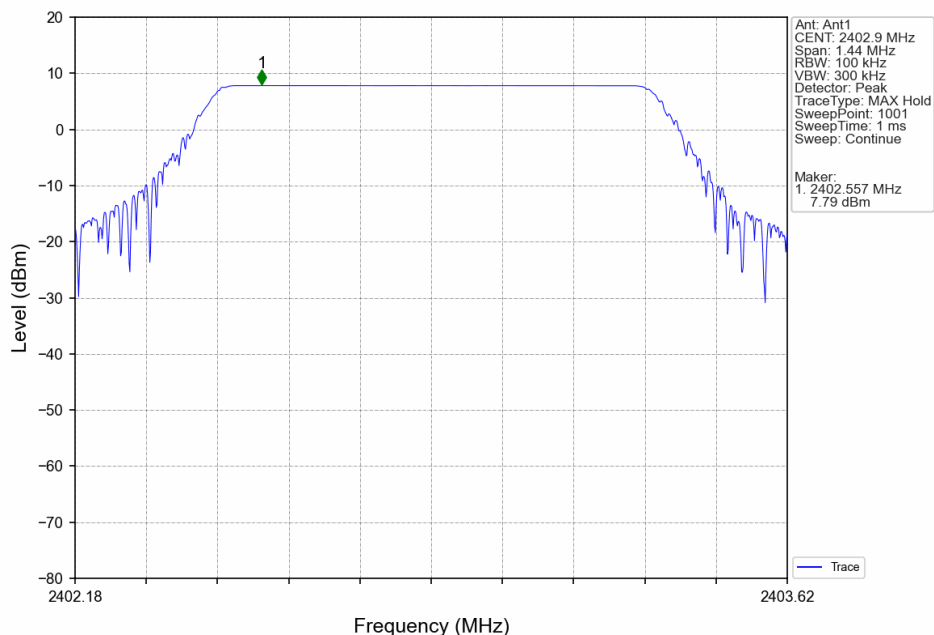
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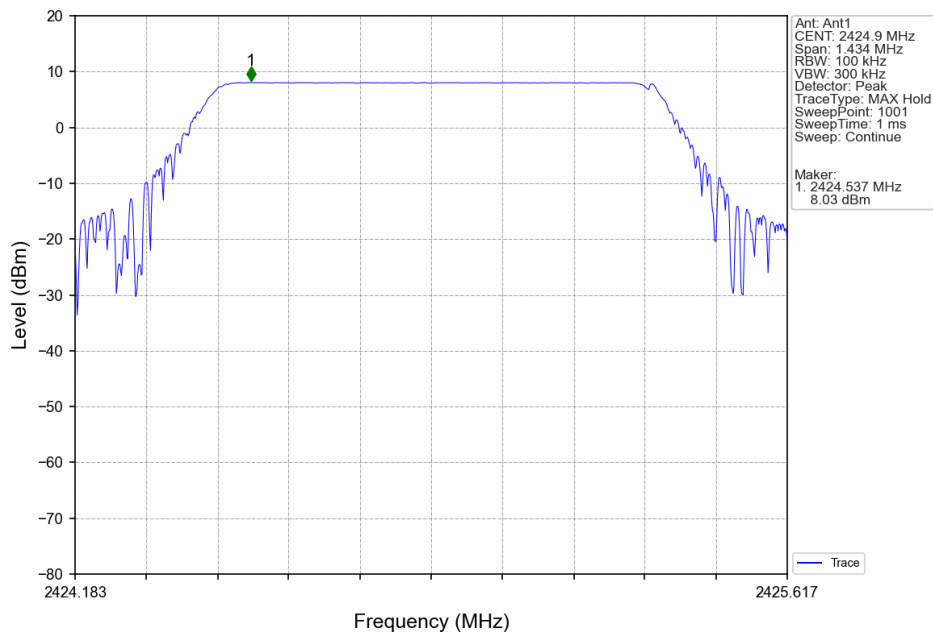
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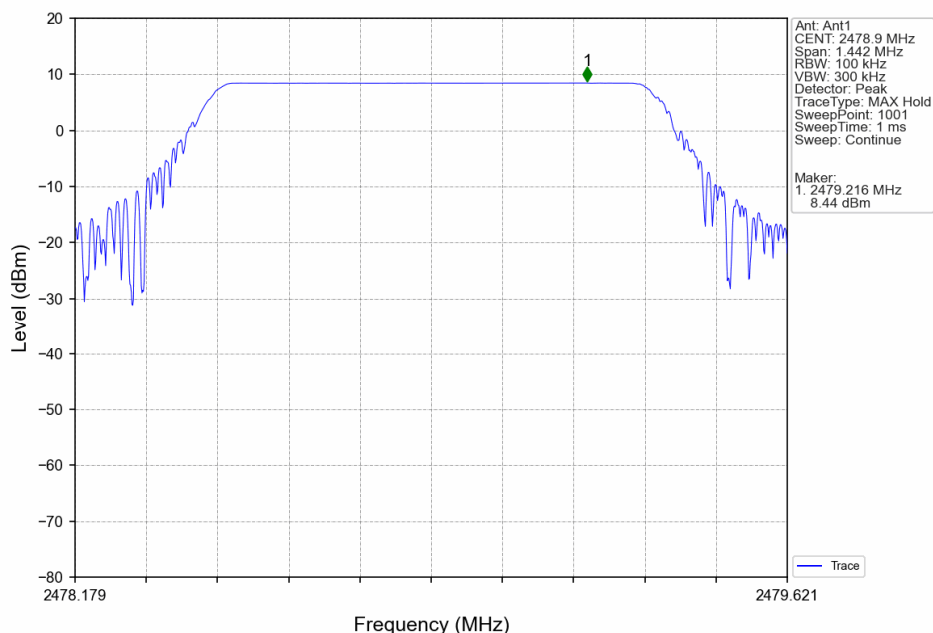
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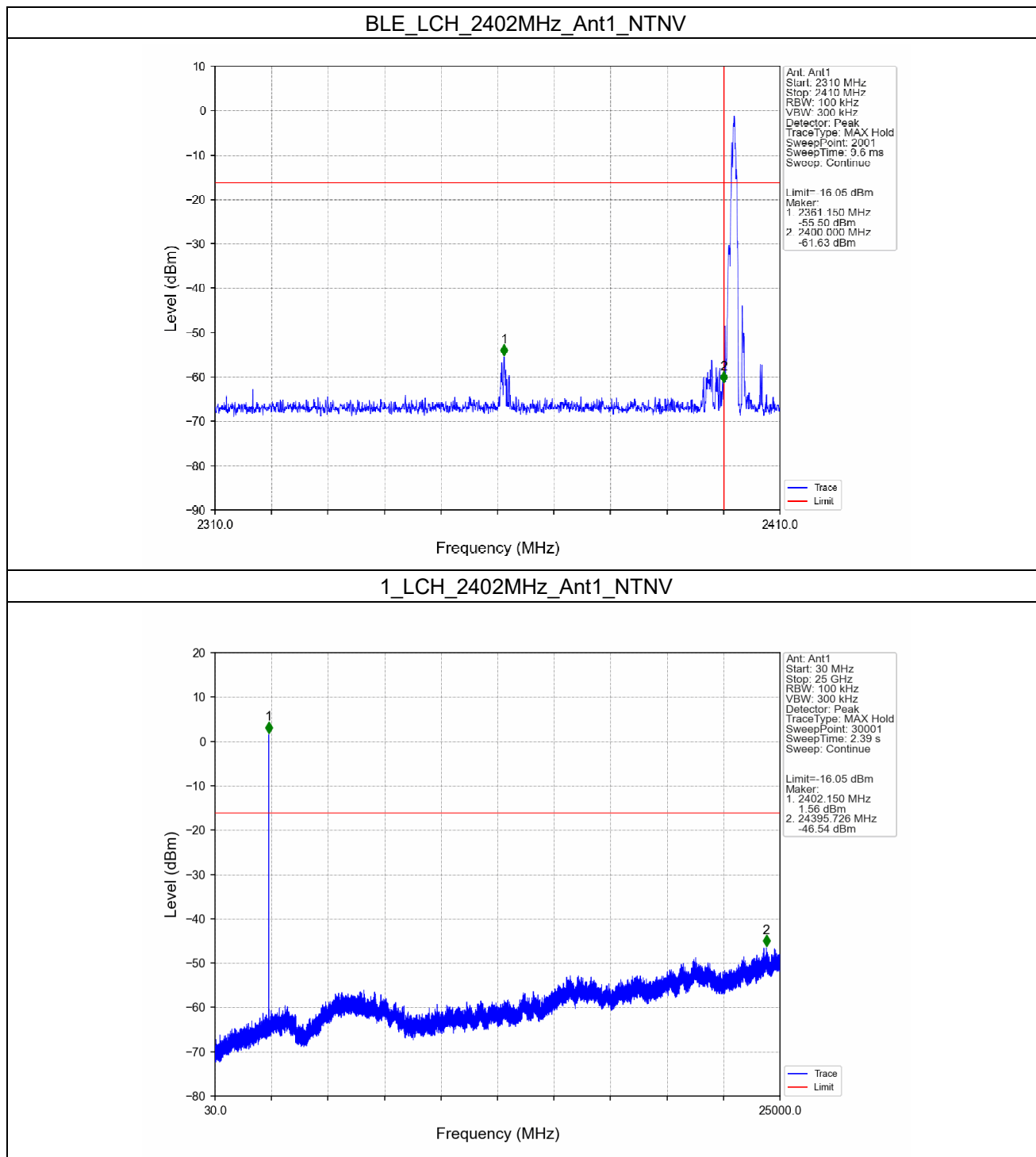
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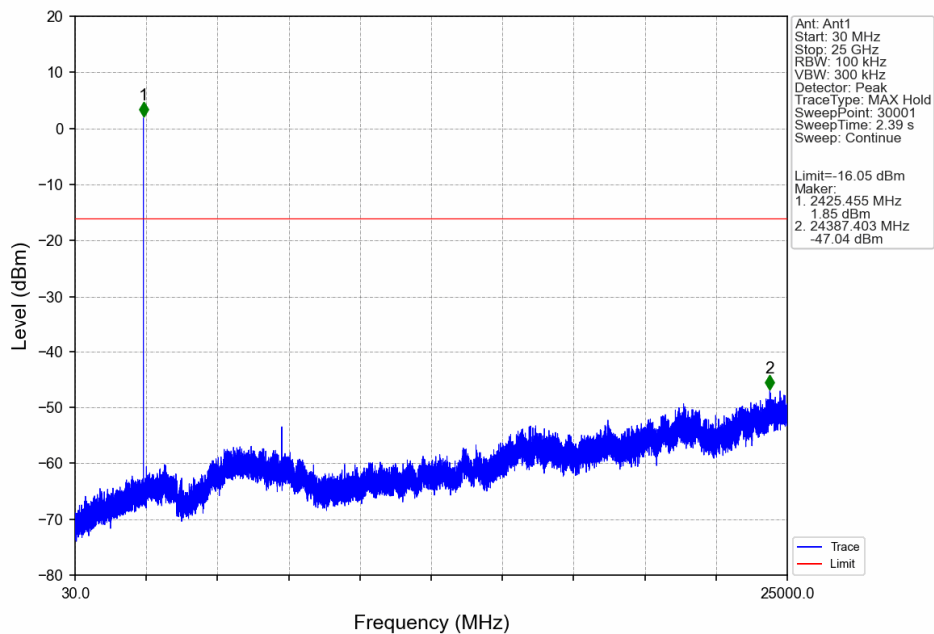
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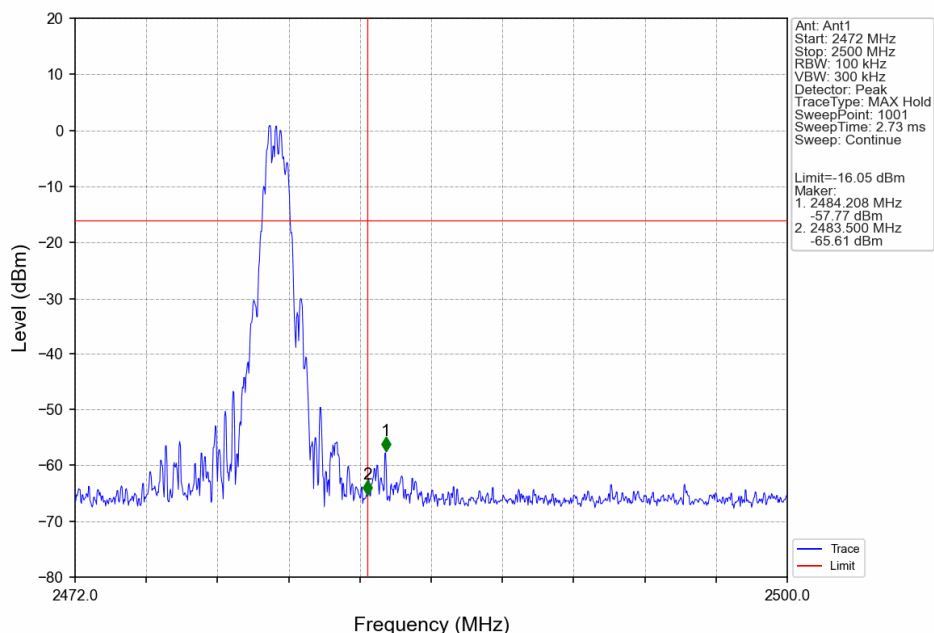
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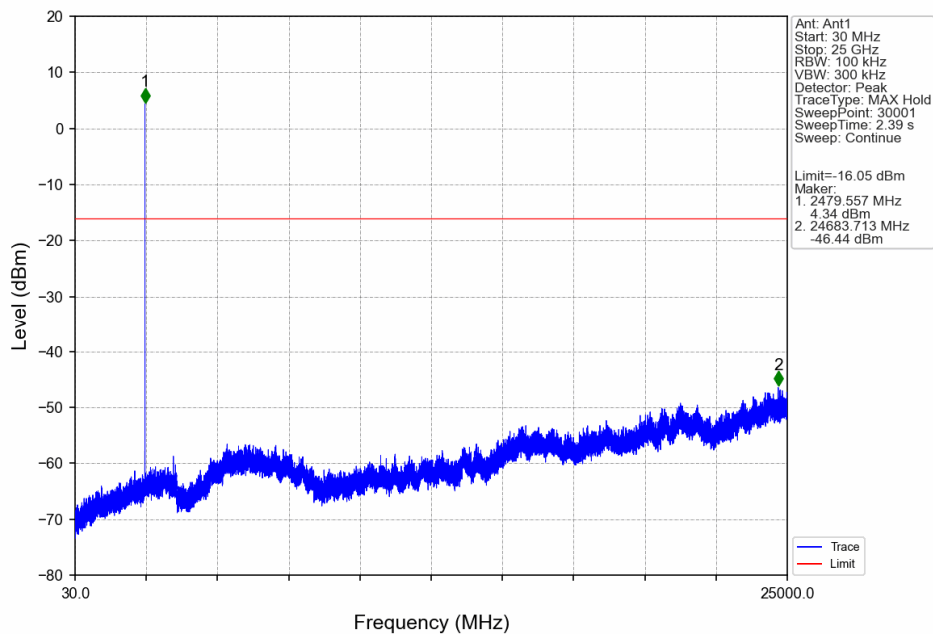
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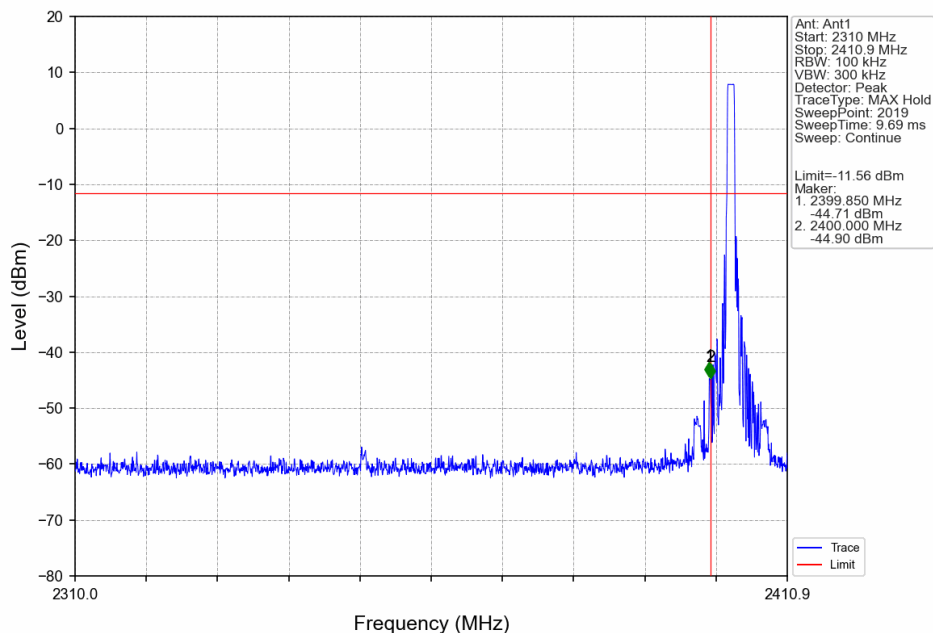
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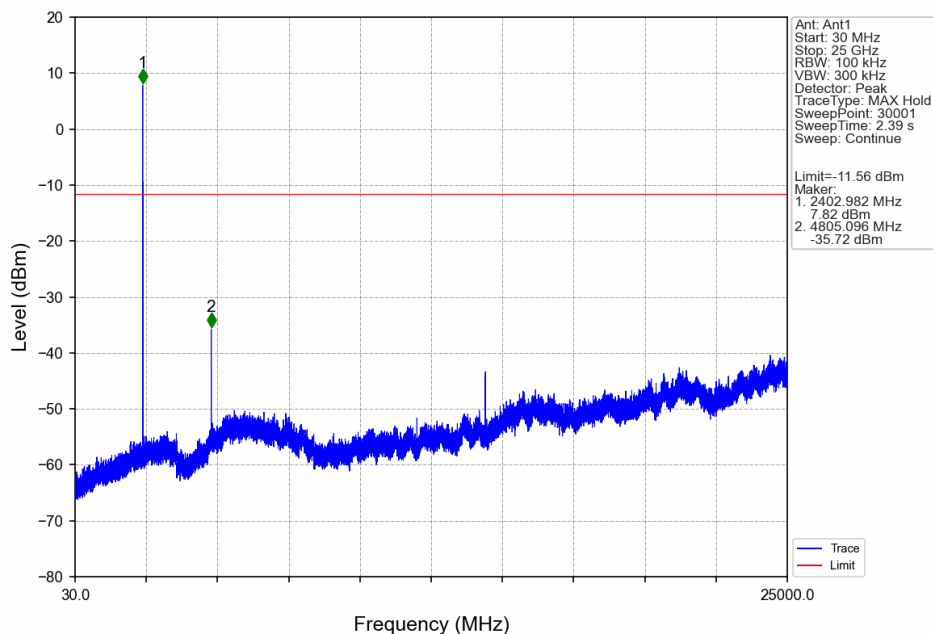
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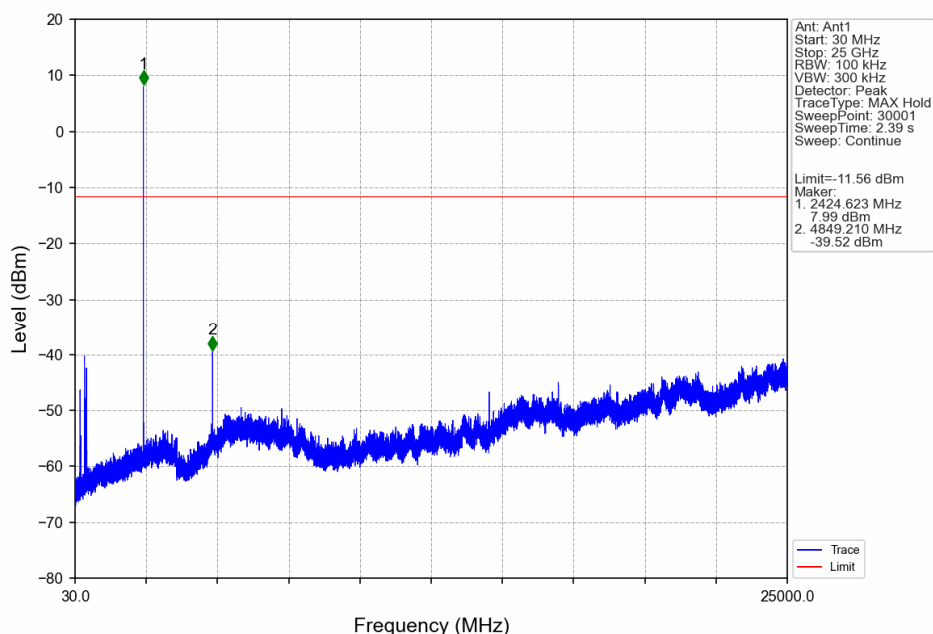
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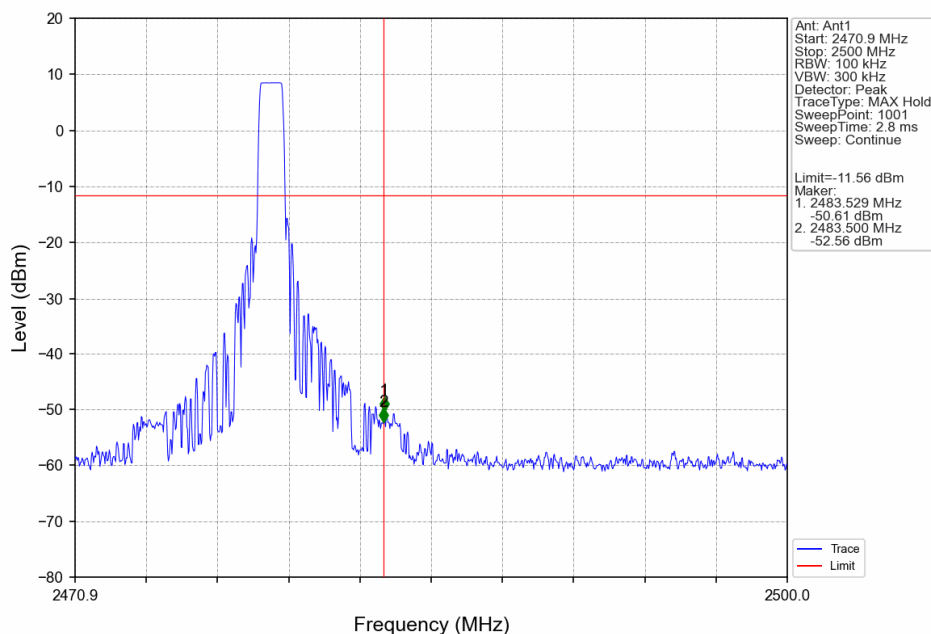
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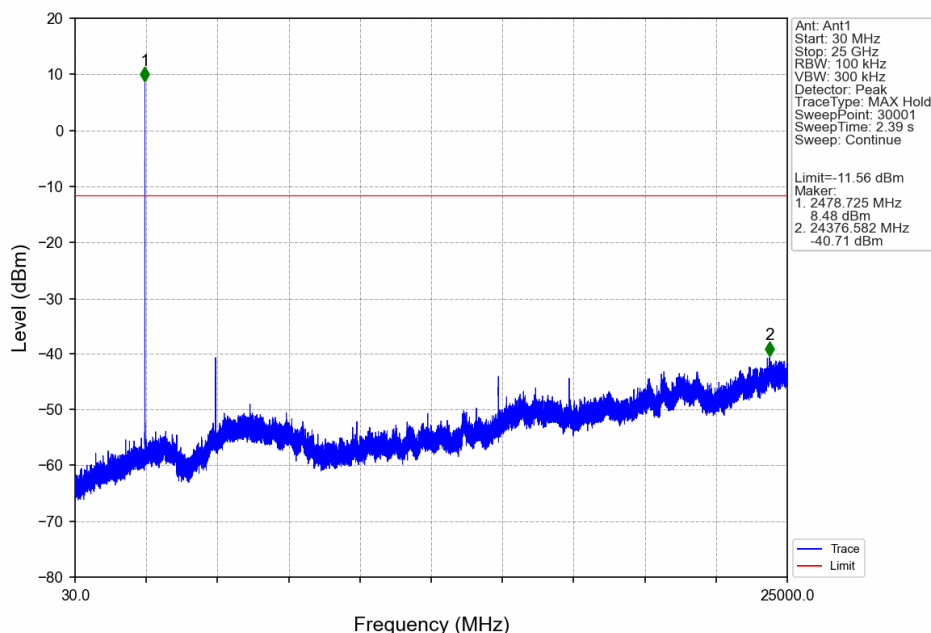
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LoRa_HCH_2479MHz_Ant1_NTNV



LoRa_HCH_2479MHz_Ant1_NTNV



- End of the Report -



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