

TEST REPORT

Application No.: SZCR2410003730AT
Applicant: Skullcandy Inc.
Address of Applicant: 6301 N Landmark Dr, Park City Utah 84098 United States
Manufacturer: Skullcandy Inc.
Address of Manufacturer: 6301 N Landmark Dr, Park City Utah 84098 United States
Equipment Under Test (EUT):
EUT Name: METHOD 360 ANC/METHOD 360 ANC X
Model No.: S2MTW
Trade Mark:  Skullcandy
FCC ID: Y22-S2MTW
Standard(s) : 47 CFR Part 15, Subpart C 15.247
Date of Receipt: 2024-10-10
Date of Test: 2024-10-16 to 2024-11-21
Date of Issue: 2024-12-08

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



Keny Xu
EMC Laboratory Manager




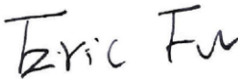
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SZEMC-TRF-01 Rev. A/1

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Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2024-12-08		Original

Authorized for issue by:				
				
		Charlie Dai/Project Engineer		
				
		Eric Fu/Reviewer		



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2 Test Summary

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

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Radiated Emissions which fall in the restricted bands	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.10.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions Below 1GHz		ANSI C63.10 (2013) Section 6.4,6.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions Above 1GHz		ANSI C63.10 (2013) Section 6.6	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Conducted Peak Output Power		ANSI C63.10 (2013) Section 11.9.1	47 CFR Part 15, Subpart C 15.247(b)(3)	Pass
Minimum 6dB Bandwidth		ANSI C63.10 (2013) Section 11.8.1	47 CFR Part 15, Subpart C 15.247a(2)	Pass
Power Spectrum Density		ANSI C63.10 (2013) Section 11.10.2	47 CFR Part 15, Subpart C 15.247(e)	Pass
Conducted Band Edges Measurement		ANSI C63.10 (2013) Section 11.13.3.2	47 CFR Part 15, Subpart C 15.247(d)	Pass
Conducted Spurious Emissions		ANSI C63.10 (2013) Section 11.11	47 CFR Part 15, Subpart C 15.247(d)	Pass



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4 General Information

4.1 Details of E.U.T.

Power supply:	Left earbuds: Li-Ion Polymer Battery 3.7V 57mAh(Charge by travel case) Right earbuds: Li-Ion Polymer Battery 3.7V 57mAh(Charge by travel case) travel case with backup battery: Li-Ion Polymer Battery 3.85V 500mAh (Charged by Type-C port)
Cable(s):	USB-A to C cable 11cm unshielded
Bluetooth Version:	V5.3 Dual mode
Operation Frequency:	BLE 1Mbps: 2402MHz to 2480MHz; BLE 2Mbps: 2404MHz to 2478MHz (Excluding 2426MHz)
Modulation Type:	GFSK
Data Rate:	1Mbps, 2Mbps
Channel Spacing:	2MHz
Number of Channels:	BLE 1Mbps: 40; BLE 2Mbps: 37
Antenna Type:	FPC Antenna
Antenna Gain:	Left earbuds: -1.44dBi; Right earbuds: -1.09dBi
Cable Loss (for RF conducted test):	0.7dB

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.
--	--	--	--

The EUT has been tested as an independent unit.

4.3 Measurement Uncertainty

Test Item	Measurement Uncertainty
Radiated Emissions which fall in the restricted bands	$\pm 6.0\text{dB}$ (Below 1GHz); $\pm 4.6\text{dB}$ (Above 1GHz)
Radiated Spurious Emissions Below 1GHz	$\pm 6.0\text{dB}$ for 3m; $\pm 5.0\text{dB}$ for 10m
Radiated Spurious Emissions Above 1GHz	$\pm 4.6\text{dB}$ (1-18GHz); $\pm 4.8\text{dB}$ (18-40GHz)
Conducted Peak Output Power	$\pm 0.75\text{dB}$
Minimum 6dB Bandwidth	$\pm 3\%$
Power Spectrum Density	$\pm 2.84\text{dB}$
Conducted Band Edges Measurement	$\pm 0.75\text{dB}$
Conducted Spurious Emissions	$\pm 0.75\text{dB}$



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Remark:

The U_{lab} (lab Uncertainty) is less than $U_{CISPR/ETSI}$ (CISPR/ETSI Uncertainty), so the test results

- compliance is deemed to occur if no measured disturbance level exceeds the disturbance limit;
- non-compliance is deemed to occur if any measured disturbance level exceeds the disturbance limit.



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4.4 Test Location

All tests were performed at:

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No tests were sub-contracted.

4.5 Test Facility

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

• A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

• VCCI (Member No. 1937)

The 3m Fully-anechoic chamber for above 1GHz, 10m Semi-anechoic chamber for below 1GHz, Shielded Room for Mains Port Conducted Interference Measurement and Telecommunication Port Conducted Interference Measurement of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen EMC laboratory have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-20026, R-14188, C-12383 and T-11153 respectively.

• FCC –Designation Number: CN1336

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1336. Test Firm Registration Number: 787754.

• Innovation, Science and Economic Development Canada

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0006.

IC#: 4620C.

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
Signal & Spectrum Analyzer	Rohde & Schwarz	FSV	SZ-WRG-M-048	2024-01-30	2025-01-29
Low Noise Amplifier 30M-8GHz	Tonscend	TAP30M8G30	SZ-WRG-M-050	2024-01-30	2025-01-29
Double Ridge Horn Antenna 1GHz-18GHz	SCHWARZBECK	BBHA 9120 D	SZ-WRG-M-055	2023-12-21	2025-12-20
RSE Test Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Chamber	CRTSGSSAC966	N/A	SZ-WRG-C-063	2022-01-05	2025-01-04
Humidity and Temperature Indicator	deli	8838	SEM002-46	2024-07-24	2025-07-23

Radiated Spurious Emissions Below 1GHz					
Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
10m Semi-Anechoic Chamber	SAEMC	FSAC1018	SEM001-03	2024-03-26	2025-03-25
MXE EMI receiver	KEYSIGHT	N9038A	SEM004-16	2024-08-14	2025-08-13
Trilog-Broadband Antenna	Schwarzbeck	VULB9168	SEM003-18	2023-09-23	2025-09-22
Pre-amplifier	Sonoma Instrument Co	310N	SEM005-04	2024-03-27	2025-03-26
Loop Antenna	ETS-Lindgren	6502	SEM003-08	2023-11-20	2025-11-19
Measurement Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM029-01	2024-07-06	2025-07-05



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Radiated Spurious Emissions Above 1GHz

Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Signal & Spectrum Analyzer	Rohde & Schwarz	FSV	SZ-WRG-M-048	2024-01-30	2025-01-29
Low Noise Amplifier 1G-18GHz	Tonscend	TAP01018050	SZ-WRG-M-051	2024-01-30	2025-01-29
Low Noise Amplifier 18G-40GHz	Tonscend	TAP18040048	SZ-WRG-M-052	2024-01-30	2025-01-29
Double Ridge Horn Antenna 1GHz-18GHz	SCHWARZBECK	BBHA 9120 D	SZ-WRG-M-055	2023-12-21	2025-12-20
SHF-EHF Horn 15GHz-40GHz	SCHWARZBECK	BBHA 9170	SZ-WRG-M-056	2023-12-25	2025-12-24
RSE Test Software	AUDIX	e3 V8.2014-6-27	N/A	N/A	N/A
Chamber	CRTSGSSAC966	N/A	SZ-WRG-C-063	2022-01-05	2025-01-04
Humidity and Temperature Indicator	deli	8838	SEM002-46	2024-07-24	2025-07-23

RF Conducted Test

Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Power Sensor	TST PASS	TSPS2023R	SEM009-26	2024-03-27	2025-03-26
Power Sensor	KEYSIGHT	U2021XA	SEM009-16	2024-03-14	2025-03-13
DC Power Supply	Chroma	62012P-80-60	SEM011-11	2024-08-14	2025-08-13
MXA Signal Analyzer	KEYSIGHT	N9020A	SEM004-19	2024-03-14	2025-03-13
Measurement Software	TST PASS	TST PASS V2.0	N/A	N/A	N/A
Coaxial Cable	SGS	N/A	SEM031-01	2024-07-06	2025-07-05
Attenuator	Huber+Suhner	6620_SMA-50-1	SEM021-09	2024-03-27	2025-03-26

General used equipment

Equipment	Manufacturer	Model No.	Inventory No.	Cal Date	Cal Due Date
Humidity/ Temperature Indicator	deli	8838	SEM002-32	2024-07-24	2025-07-23
Humidity/ Temperature Indicator	deli	8838	SEM002-33	2024-07-24	2025-07-23
Barometer	Changchun Meteorological Industry Factory	DYM3	SEM002-01	2024-03-18	2025-03-17



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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

15.203 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.

EUT Antenna:

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is Left earbuds: -1.44dBi; Right earbuds: -1.09dBi.

Antenna location: Refer to internal photos



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 (2013) Section 6.10.5

Measurement Distance: 3m

Limit:

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

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

7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 22.2 °C

Humidity: 58.5 % RH

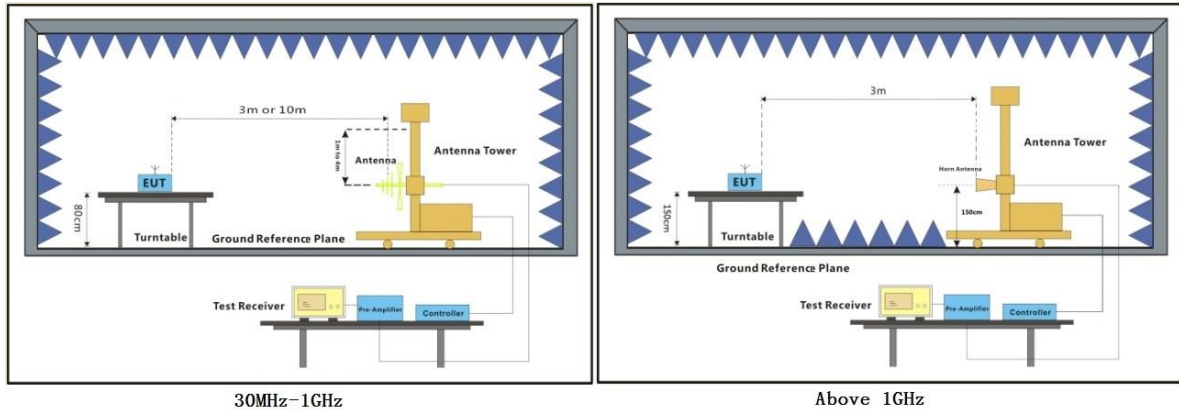
Atmospheric Pressure: 1020 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	02	TX mode(1Mbps_Left earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	03	TX mode(2Mbps_Left earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	06	TX mode(1Mbps_Right earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	07	TX mode(2Mbps_Right earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation



7.1.3 Test Setup Diagram



7.1.4 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- d. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
- h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- j. Repeat above procedures until all frequencies measured was complete.

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

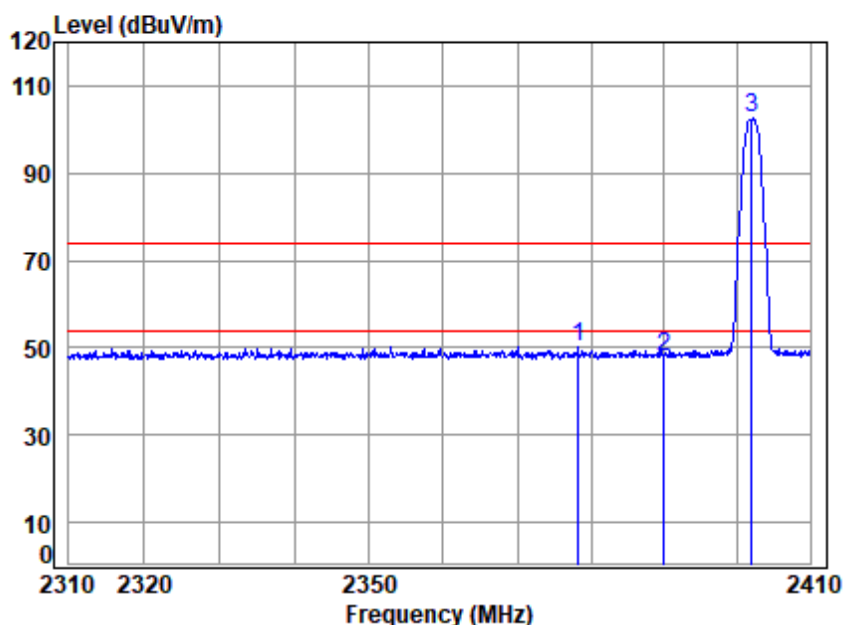
Remark 2: For frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level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

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: 02; Polarity: Horizontal; Modulation:GFSK; Channel:Low



Condition: 3m HORIZONTAL

Job No : 03730AT/03731AT

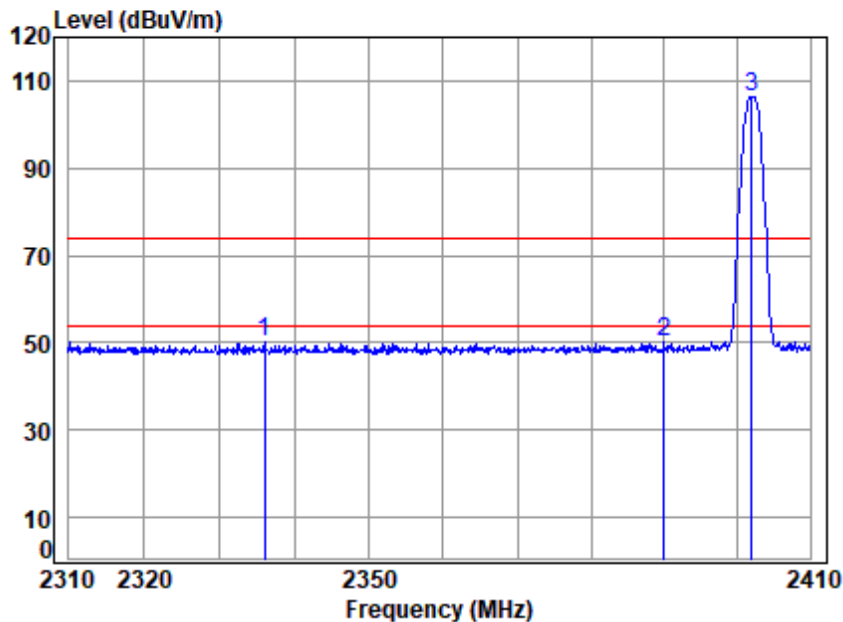
Mode : 2402 Band edge

: BLE 1M L

	Cable	Ant	Preamp	Read	Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 2378.243	6.82	27.41	31.54	47.57	50.26	74.00	-23.74 peak
2 2390.000	6.82	27.46	31.54	45.20	47.94	74.00	-26.06 peak
3 pp 2402.000	6.84	27.50	31.54	99.66	102.46	74.00	28.46 peak



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



Condition: 3m VERTICAL

Job No : 03730AT/03731AT

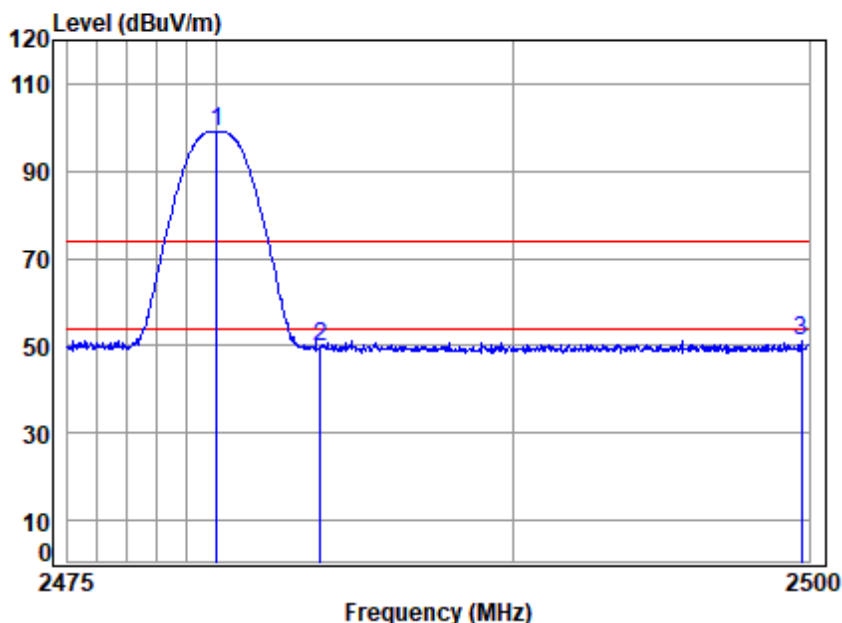
Mode : 2402 Band edge

: BLE 1M L

	Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 2335.990	6.80	27.27	31.53	47.45	49.99	74.00	-24.01	peak
2 2390.000	6.82	27.46	31.54	47.54	50.28	74.00	-23.72	peak
3 pp 2402.000	6.84	27.50	31.54	103.62	106.42	74.00	32.42	peak



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



Condition: 3m HORIZONTAL

Job No : 03730AT/03731AT

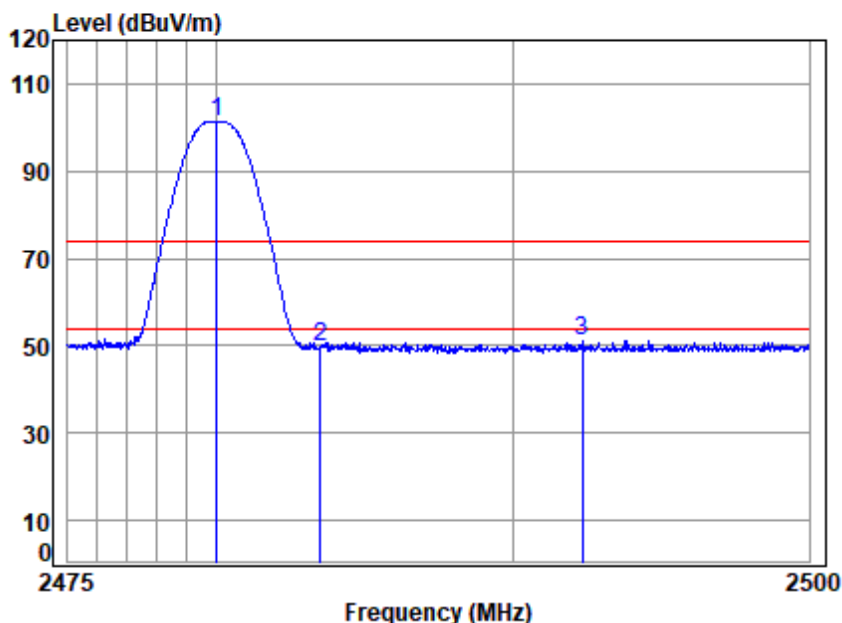
Mode : 2480 Band edge

: BLE 1M L

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2480.000	7.37	27.78	31.55	95.36	98.96	74.00	24.96	peak
2	2483.500	7.40	27.80	31.55	45.87	49.52	74.00	-24.48	peak
3	2499.749	7.51	27.90	31.55	47.40	51.26	74.00	-22.74	peak



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



Condition: 3m VERTICAL

Job No : 03730AT/03731AT

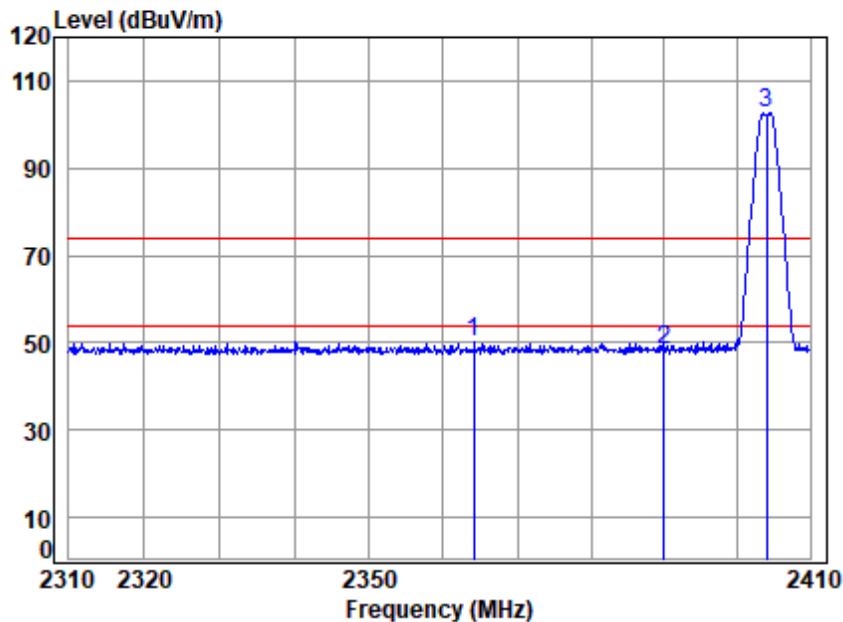
Mode : 2480 Band edge

: BLE 1M L

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2480.000	7.37	27.78	31.55	97.73	101.33	74.00	27.33	peak
2	2483.500	7.40	27.80	31.55	46.28	49.93	74.00	-24.07	peak
3	2492.323	7.46	27.85	31.55	47.24	51.00	74.00	-23.00	peak



Test Mode: 03; Polarity: Horizontal; Modulation:GFSK; Channel:Low



Condition: 3m HORIZONTAL

Job No : 03730AT/03731AT

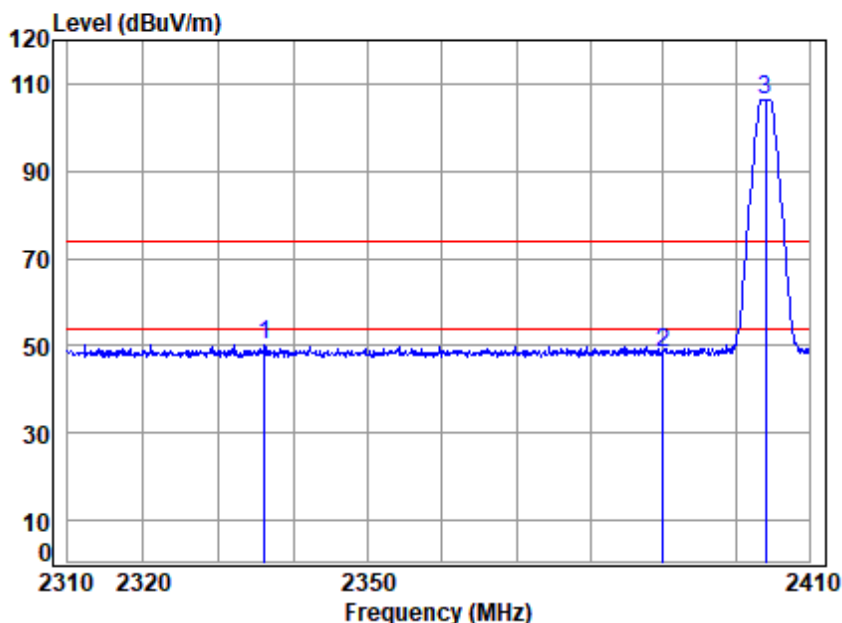
Mode : 2404 Band edge

: BLE 2M L

	Cable	Ant	Preamp	Read	Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 2364.175	6.81	27.36	31.54	47.60	50.23	74.00	-23.77 peak
2 2390.000	6.82	27.46	31.54	45.57	48.31	74.00	-25.69 peak
3 pp 2404.000	6.86	27.51	31.54	99.83	102.66	74.00	28.66 peak



Test Mode: 03; Polarity: Vertical; Modulation:GFSK; Channel:Low



Condition: 3m VERTICAL

Job No : 03730AT/03731AT

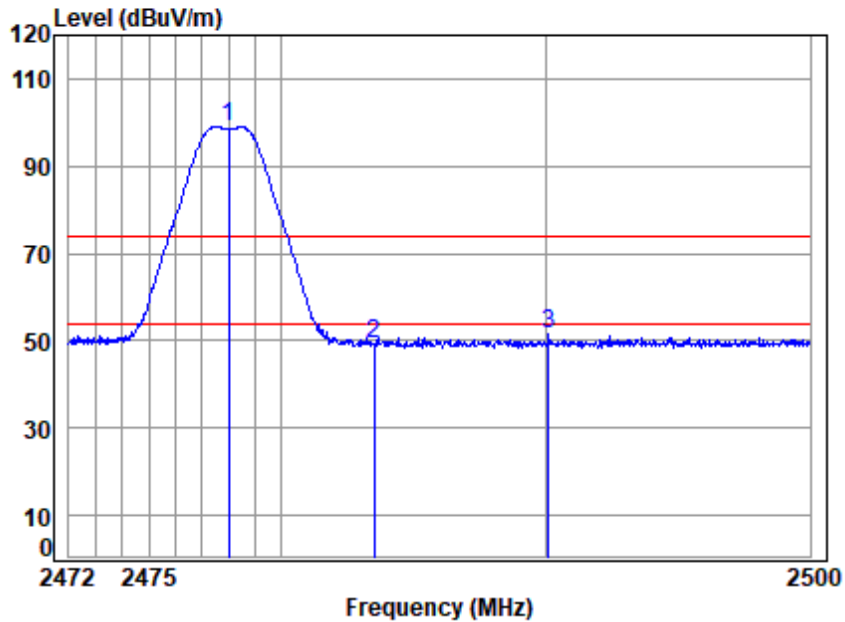
Mode : 2404 Band edge

: BLE 2M L

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2336.188	6.80	27.27	31.53	47.75	50.29	74.00	-23.71	peak
2	2390.000	6.82	27.46	31.54	45.49	48.23	74.00	-25.77	peak
3 pp	2404.000	6.86	27.51	31.54	103.61	106.44	74.00	32.44	peak



Test Mode: 03; Polarity: Horizontal; Modulation:GFSK; Channel:High



Condition: 3m HORIZONTAL

Job No : 03730AT/03731AT

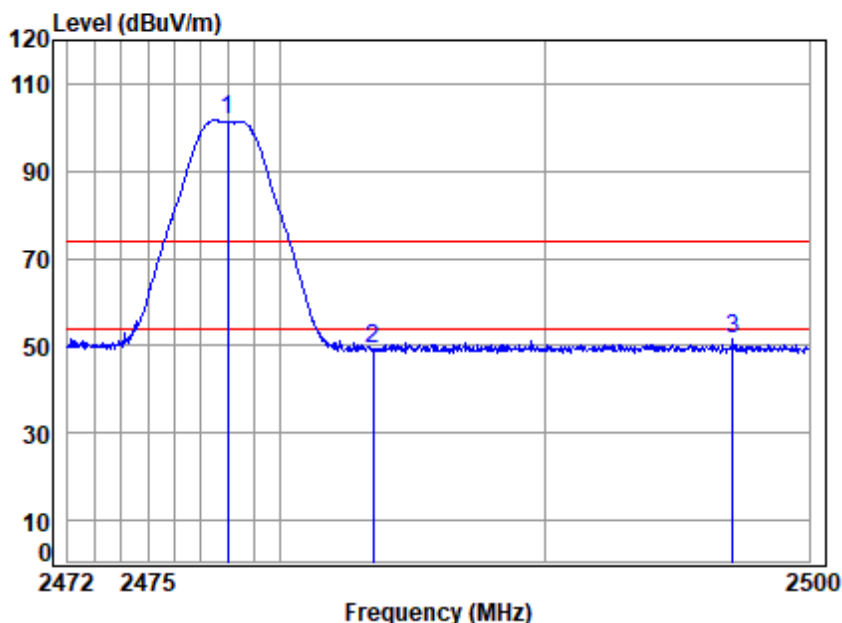
Mode : 2478 Band edge

: BLE 2M L

		Cable	Ant	Preamp	Read	Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp 2478.000	7.36	27.77	31.55	95.51	99.09	74.00	25.09	peak
2 2483.500	7.40	27.80	31.55	45.83	49.48	74.00	-24.52	peak
3 2490.080	7.44	27.84	31.55	47.64	51.37	74.00	-22.63	peak



Test Mode: 03; Polarity: Vertical; Modulation:GFSK; Channel:High



Condition: 3m VERTICAL

Job No : 03730AT/03731AT

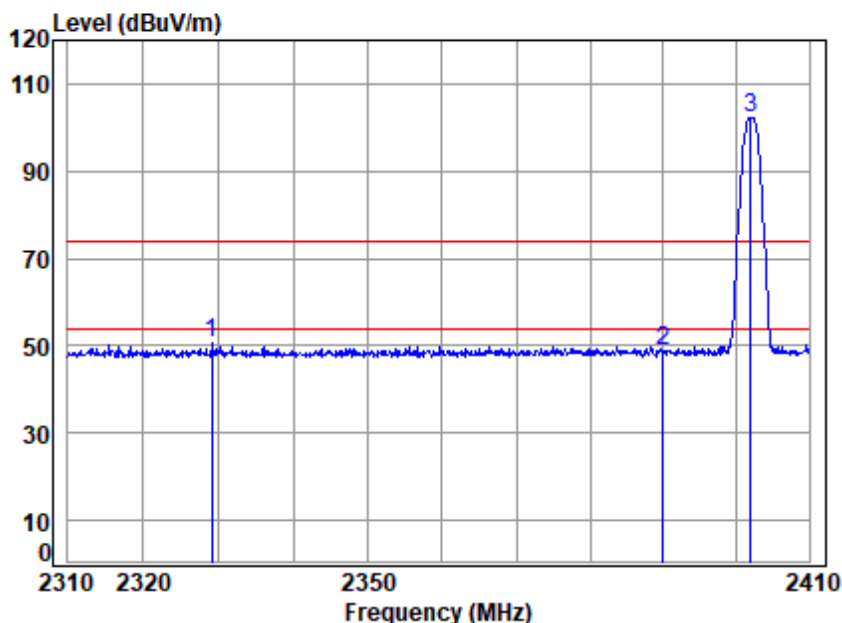
Mode : 2478 Band edge

: BLE 2M L

		Cable	Ant	Preamp	Read		Limit	Over	
Freq		Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz		dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2478.000	7.36	27.77	31.55	98.06	101.64	74.00	27.64	peak
2	2483.500	7.40	27.80	31.55	45.52	49.17	74.00	-24.83	peak
3	2497.101	7.49	27.88	31.55	47.56	51.38	74.00	-22.62	peak



Test Mode: 06; Polarity: Horizontal; Modulation:GFSK; Channel:Low



Condition: 3m HORIZONTAL

Job No : 03730AT/03731AT

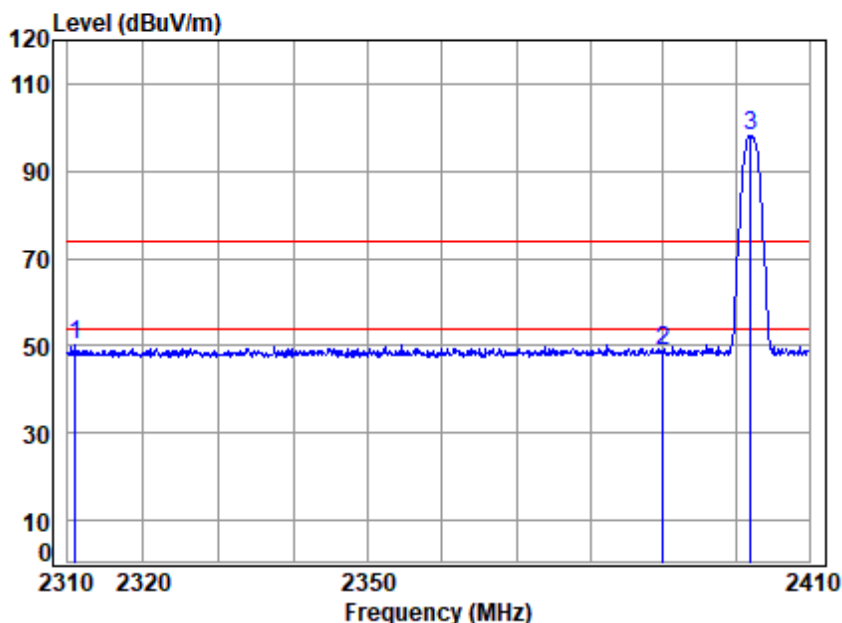
Mode : 2402 Band edge

: BLE 1M R

	Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
2329.070	6.79	27.26	31.53	48.21	50.73	74.00	-23.27	peak
2390.000	6.82	27.46	31.54	46.15	48.89	74.00	-25.11	peak
2402.000	6.84	27.50	31.54	99.39	102.19	74.00	28.19	peak



Test Mode: 06; Polarity: Vertical; Modulation:GFSK; Channel:Low



Condition: 3m VERTICAL

Job No : 03730AT/03731AT

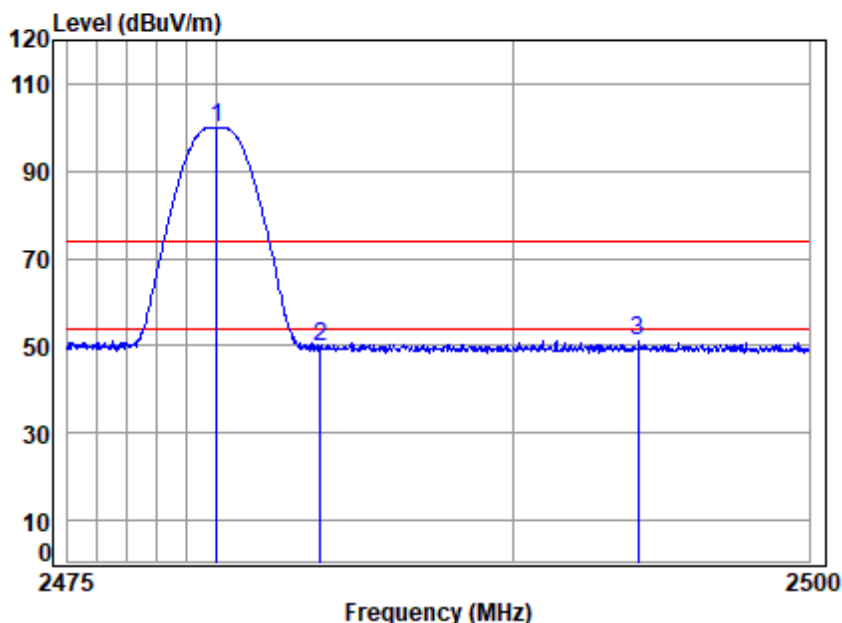
Mode : 2402 Band edge

: BLE 1M R

	Cable	Ant	Preamp	Read	Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 2310.979	6.79	27.22	31.53	47.78	50.26	74.00	-23.74 peak
2 2390.000	6.82	27.46	31.54	46.07	48.81	74.00	-25.19 peak
3 pp 2402.000	6.84	27.50	31.54	95.11	97.91	74.00	23.91 peak



Test Mode: 06; Polarity: Horizontal; Modulation:GFSK; Channel:High



Condition: 3m HORIZONTAL

Job No : 03730AT/03731AT

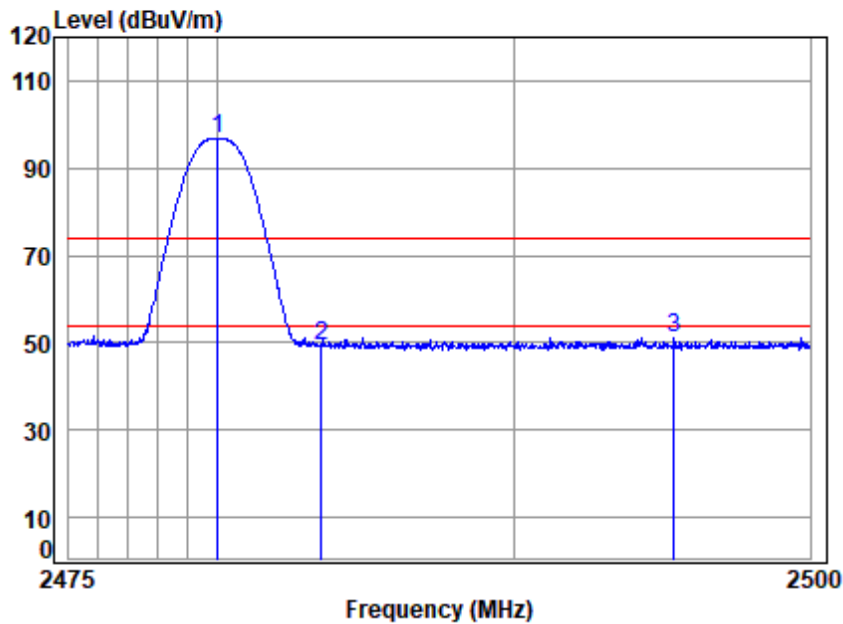
Mode : 2480 Band edge

: BLE 1M R

		Cable	Ant	Preamp	Read		Limit	Over	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2480.000	7.37	27.78	31.55	96.36	99.96	74.00	25.96	peak
2	2483.500	7.40	27.80	31.55	45.87	49.52	74.00	-24.48	peak
3	2494.228	7.47	27.87	31.55	47.33	51.12	74.00	-22.88	peak



Test Mode: 06; Polarity: Vertical; Modulation:GFSK; Channel:High



Condition: 3m VERTICAL

Job No : 03730AT/03731AT

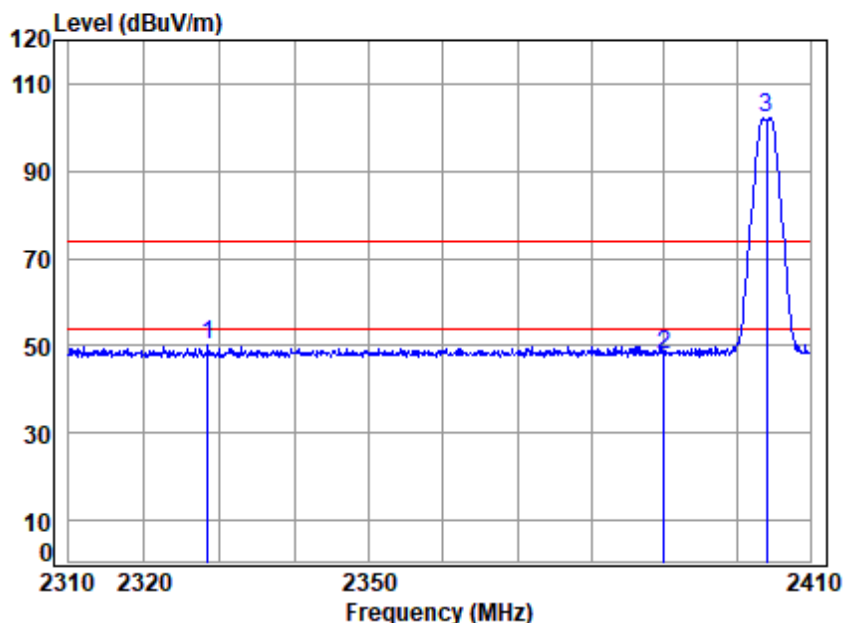
Mode : 2480 Band edge

: BLE 1M R

		Cable	Ant	Preamp	Read	Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp 2480.000	7.37	27.78	31.55	93.02	96.62	74.00	22.62	peak
2 2483.500	7.40	27.80	31.55	45.58	49.23	74.00	-24.77	peak
3 2495.406	7.48	27.87	31.55	47.50	51.30	74.00	-22.70	peak



Test Mode: 07; Polarity: Horizontal; Modulation:GFSK; Channel:Low



Condition: 3m HORIZONTAL

Job No : 03730AT/03731AT

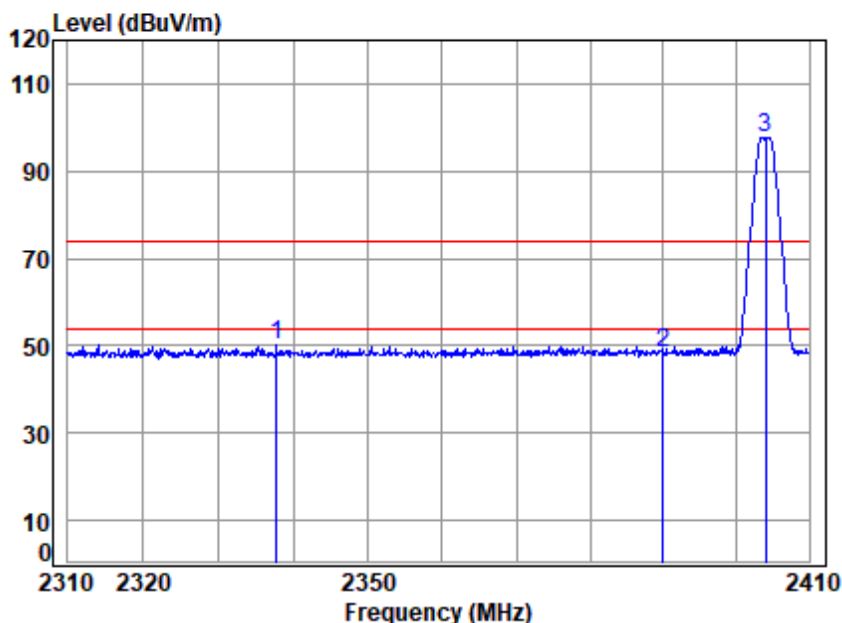
Mode : 2404 Band edge

: BLE 2M R

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	2328.478	6.79	27.26	31.53	47.55	50.07	74.00	-23.93	peak
2	2390.000	6.82	27.46	31.54	45.31	48.05	74.00	-25.95	peak
3 pp	2404.000	6.86	27.51	31.54	99.25	102.08	74.00	28.08	peak



Test Mode: 07; Polarity: Vertical; Modulation:GFSK; Channel:Low



Condition: 3m VERTICAL

Job No : 03730AT/03731AT

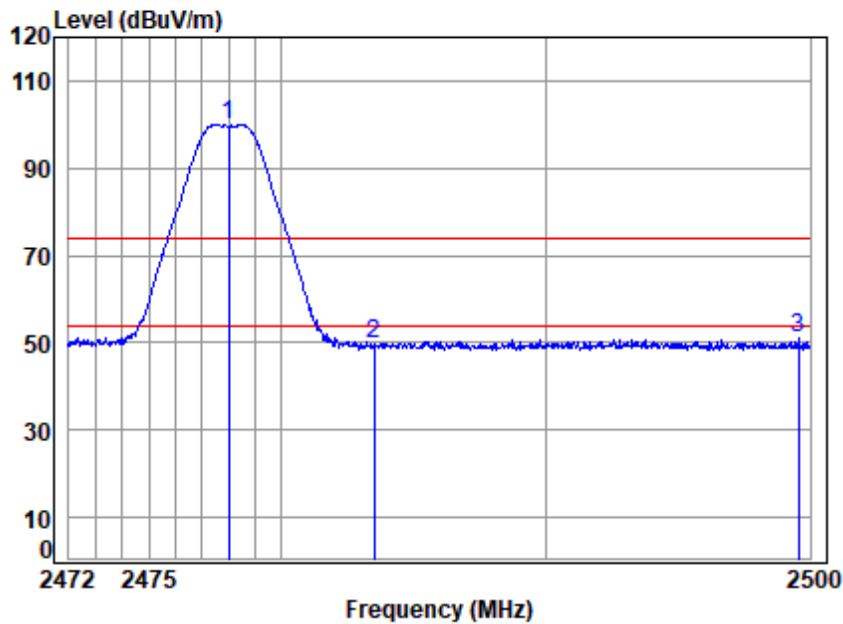
Mode : 2404 Band edge

: BLE 2M R

	Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 2337.673	6.80	27.28	31.53	47.54	50.09	74.00	-23.91	peak
2 2390.000	6.82	27.46	31.54	45.83	48.57	74.00	-25.43	peak
3 pp 2404.000	6.86	27.51	31.54	94.93	97.76	74.00	23.76	peak



Test Mode: 07; Polarity: Horizontal; Modulation:GFSK; Channel:High



Condition: 3m HORIZONTAL

Job No : 03730AT/03731AT

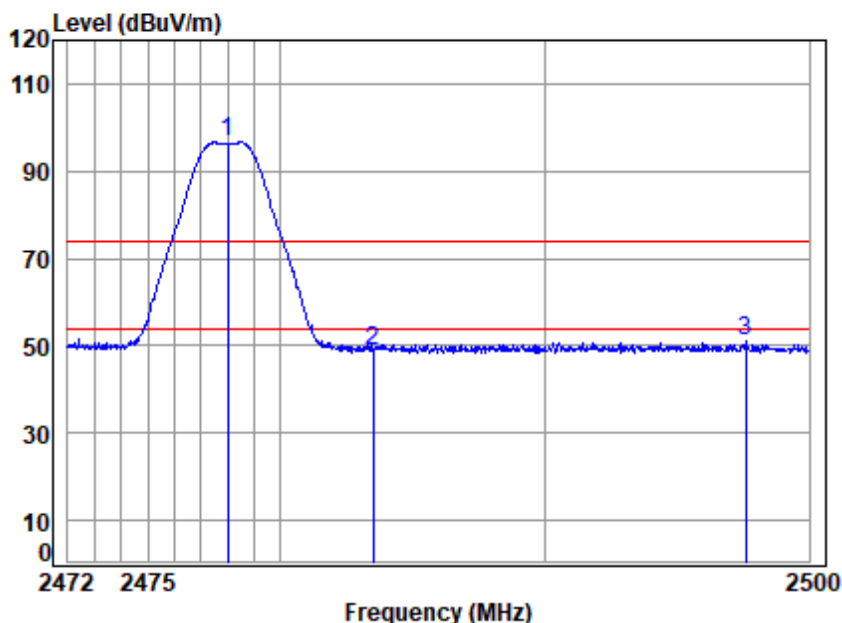
Mode : 2478 Band edge

: BLE 2M R

		Cable	Ant	Preamp	Read	Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp 2478.000	7.36	27.77	31.55	96.40	99.98	74.00	25.98	peak
2 2483.500	7.40	27.80	31.55	46.12	49.77	74.00	-24.23	peak
3 2499.578	7.51	27.90	31.55	47.27	51.13	74.00	-22.87	peak



Test Mode: 07; Polarity: Vertical; Modulation:GFSK; Channel:High



Condition: 3m VERTICAL

Job No : 03730AT/03731AT

Mode : 2478 Band edge

: BLE 2M R

		Cable	Ant	Preamp	Read	Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp 2478.000	7.36	27.77	31.55	93.03	96.61	74.00	22.61	peak
2 2483.500	7.40	27.80	31.55	45.37	49.02	74.00	-24.98	peak
3 2497.580	7.49	27.89	31.55	47.29	51.12	74.00	-22.88	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 (2013) Section 6.4,6.5

Measurement Distance: 10m

Limit:

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

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 23.6 °C

Humidity: 50.9 % RH

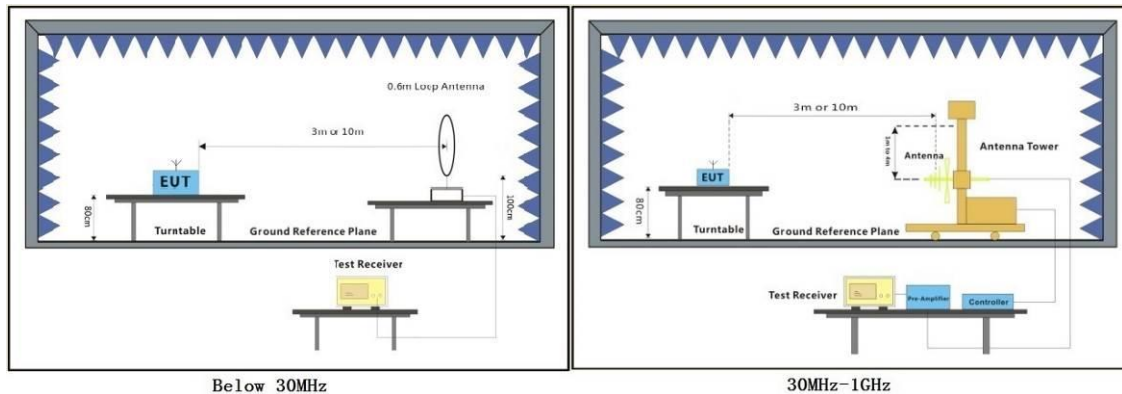
Atmospheric Pressure: 1020 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	02	TX mode(1Mbps_Left earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation
Pre-scan	03	TX mode(2Mbps_Left earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	06	TX mode(1Mbps_Right earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation
Pre-scan	07	TX mode(2Mbps_Right earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation



7.2.3 Test Setup Diagram



7.2.4 Measurement Procedure and Data

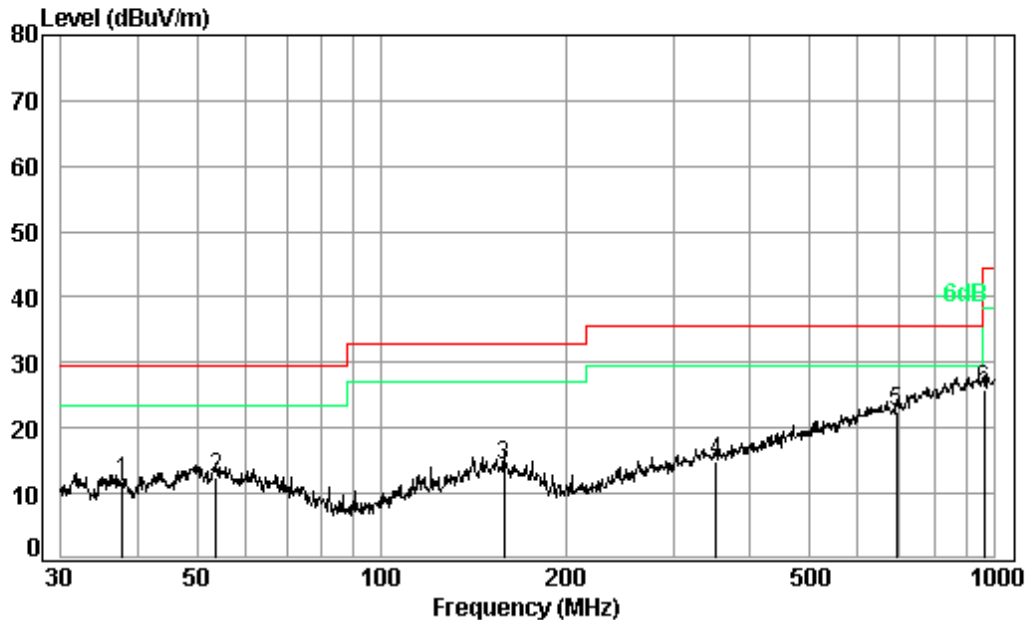
- For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 or 10 meters away from the interference-receiving antenna, 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 quasi-peak method as specified and then reported in a data sheet.
- Test the EUT in the lowest channel, the middle channel, the Highest channel.
- The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- Repeat above procedures until all frequencies measured was complete.

Remark:

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



Test Mode: 02; Polarity: Horizontal

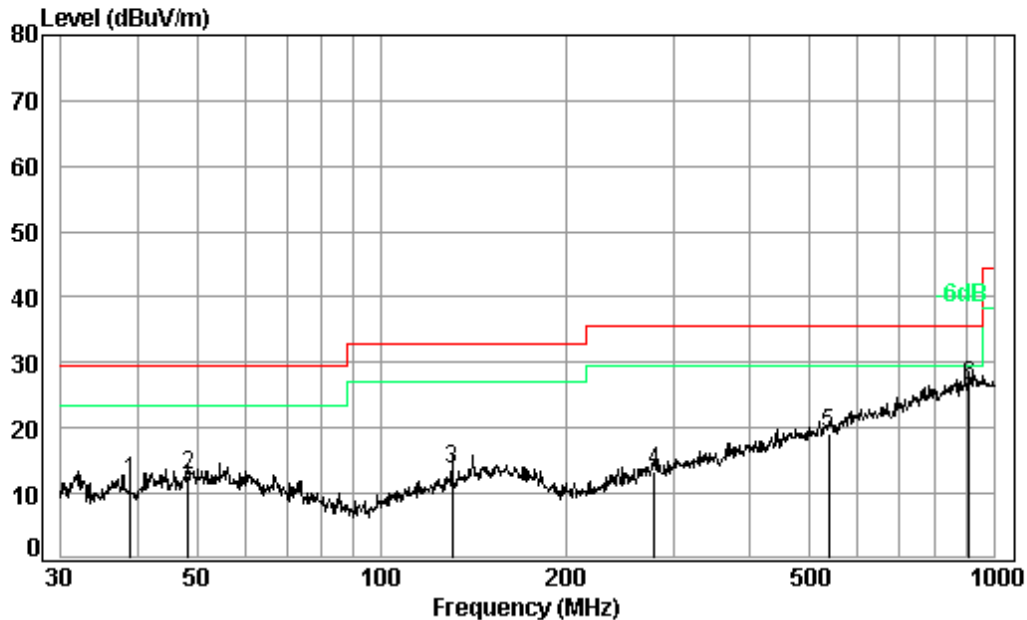


Condition: 10m HORIZONTAL
Job No. : 03730AT/03731AT
Test Mode: 02

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	37.812	27.10	16.70	0.44	32.50	11.74	29.50	-17.76	QP
2	53.693	26.43	18.10	0.53	32.49	12.57	29.50	-16.93	QP
3	158.668	27.88	17.81	0.99	32.40	14.28	33.00	-18.72	QP
4	351.708	27.11	18.54	1.53	32.30	14.88	35.60	-20.72	QP
5 pp	694.417	27.45	25.03	2.22	32.31	22.39	35.60	-13.21	QP
6	965.542	26.57	27.90	2.66	31.27	25.86	44.40	-18.54	QP



Test Mode: 02; Polarity: Vertical

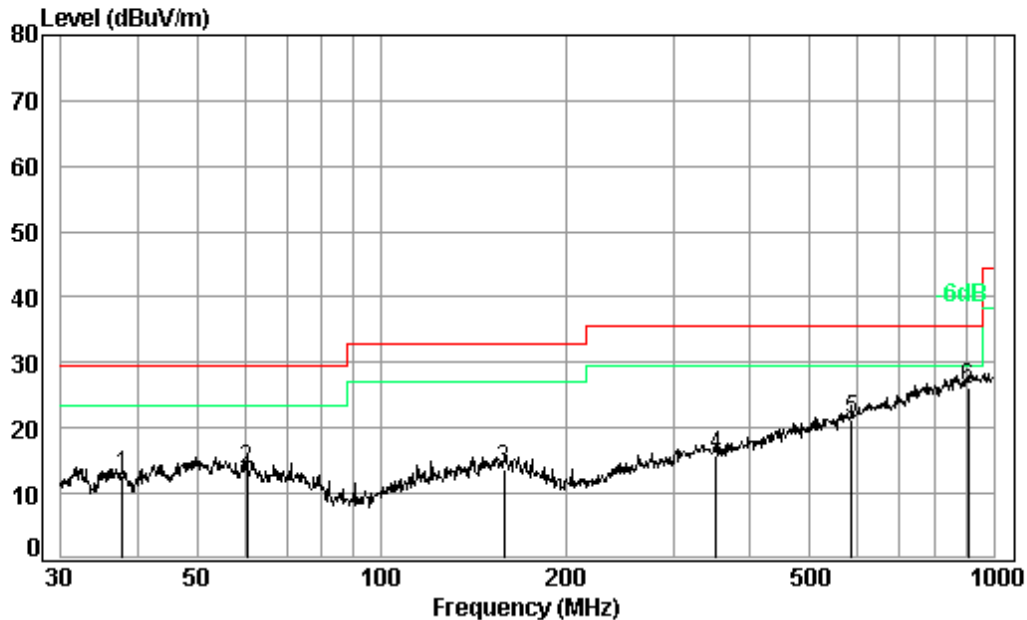


Condition: 10m VERTICAL
Job No. : 03730AT/03731AT
Test Mode: 02

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	38.888	27.26	16.67	0.44	32.50	11.87	29.50	-17.63	QP
2	48.332	26.70	17.99	0.50	32.50	12.69	29.50	-16.81	QP
3	130.379	28.96	16.29	0.87	32.40	13.72	33.00	-19.28	QP
4	279.044	27.21	17.02	1.36	32.32	13.27	35.60	-22.33	QP
5	537.589	26.80	22.64	1.93	32.34	19.03	35.60	-16.57	QP
6 pp	912.862	27.62	27.61	2.62	31.37	26.48	35.60	-9.12	QP



Test Mode: 06; Polarity: Horizontal



Condition: 10m HORIZONTAL
Job No. : 03730AT/03731AT
Test Mode: 06

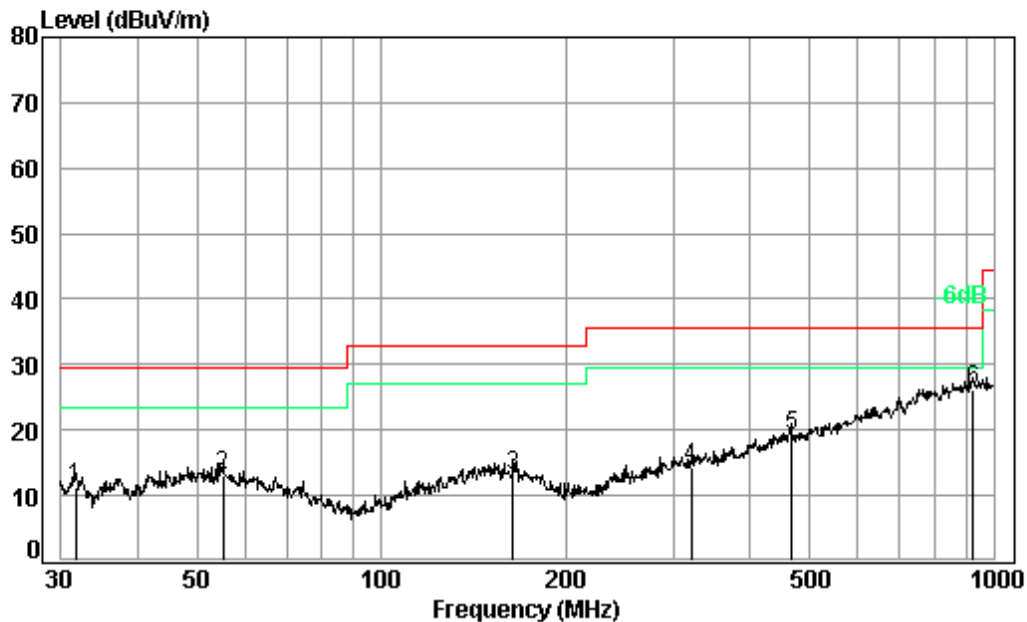
	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	37.812	28.10	16.70	0.44	32.50	12.74	29.50	-16.76	QP
2	60.280	28.30	17.26	0.55	32.47	13.64	29.50	-15.86	QP
3	158.668	27.28	17.81	0.99	32.40	13.68	33.00	-19.32	QP
4	351.708	27.91	18.54	1.53	32.30	15.68	35.60	-19.92	QP
5	586.844	28.01	23.60	2.06	32.39	21.28	35.60	-14.32	QP
6 pp	909.667	27.36	27.54	2.62	31.38	26.14	35.60	-9.46	QP



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Test Mode: 06; Polarity: Vertical



Condition: 10m VERTICAL
Job No. : 03730AT/03731AT
Test Mode: 06

	Freq	Read Level	Ant Factor	Cable Loss	Preamp Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	31.731	27.52	15.88	0.40	32.50	11.30	29.50	-18.20	QP
2	55.221	27.10	17.89	0.53	32.49	13.03	29.50	-16.47	QP
3	163.755	26.95	17.60	1.00	32.40	13.15	33.00	-19.85	QP
4	321.061	26.98	18.15	1.46	32.30	14.29	35.60	-21.31	QP
5	467.235	28.22	21.42	1.76	32.30	19.10	35.60	-16.50	QP
6 pp	925.756	27.00	27.84	2.63	31.35	26.12	35.60	-9.48	QP



SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

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The test was performed at a 10m test site. According to below formulate and the test data at 10m test distance,

$$L_3 / L_{10} = D_{10} / D_3$$

Note:

L₃: Level @ 3m distance. Unit: uV/m;

L₁₀: Level @ 10m distance. Unit: uV/m;

D₃: 3m distance. Unit: m

D₁₀: 10m distance. Unit: m

The level at 3m test distance is below:

Test Mode: 02

Frequency (MHz)	Level @ 10m (dBuV/m)	Level @ 10m (uV/m)	Level @ 3m (uV/m)	Level @ 3m (dBuV/m)	Limit @ 3m (dBuV/m)	Margin (dB)	Ant. Polarization
37.812	11.74	3.86	12.88	22.20	40.00	-17.80	H
53.693	12.57	4.25	14.17	23.03	40.00	-16.97	H
158.668	14.28	5.18	17.25	24.74	43.50	-18.76	H
351.708	14.88	5.55	18.49	25.34	46.00	-20.66	H
694.417	22.39	13.17	43.89	32.85	46.00	-13.15	H
965.542	25.86	19.63	65.45	36.32	54.00	-17.68	H
38.888	11.87	3.92	13.07	22.33	40.00	-17.67	V
48.332	12.69	4.31	14.37	23.15	40.00	-16.85	V
130.379	13.72	4.85	16.18	24.18	43.50	-19.32	V
279.044	13.27	4.61	15.36	23.73	46.00	-22.27	V
537.589	19.03	8.94	29.81	29.49	46.00	-16.51	V
912.862	26.48	21.09	70.29	36.94	46.00	-9.06	V



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SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch

SZEMC-TRF-01 Rev. A/1

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Test Mode: 06

Frequency (MHz)	Level @ 10m (dBuV/m)	Level @ 10m (uV/m)	Level @ 3m (uV/m)	Level @ 3m (dBuV/m)	Limit @ 3m (dBuV/m)	Margin (dB)	Ant. Polarization
37.812	12.74	4.34	14.45	23.20	40.00	-16.80	H
60.280	13.64	4.81	16.03	24.10	40.00	-15.90	H
158.668	13.68	4.83	16.10	24.14	43.50	-19.36	H
351.708	15.68	6.08	20.27	26.14	46.00	-19.86	H
586.844	21.28	11.59	38.63	31.74	46.00	-14.26	H
909.667	26.14	20.28	67.59	36.60	46.00	-9.40	H
31.731	11.30	3.67	12.24	21.76	40.00	-18.24	V
55.221	13.03	4.48	14.94	23.49	40.00	-16.51	V
163.755	13.15	4.54	15.15	23.61	43.50	-19.89	V
321.061	14.29	5.18	17.27	24.75	46.00	-21.25	V
467.235	19.10	9.02	30.05	29.56	46.00	-16.44	V
925.756	26.12	20.23	67.43	36.58	46.00	-9.42	V



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7.3 Radiated Spurious Emissions Above 1GHz

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

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

Measurement Distance: 3m

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

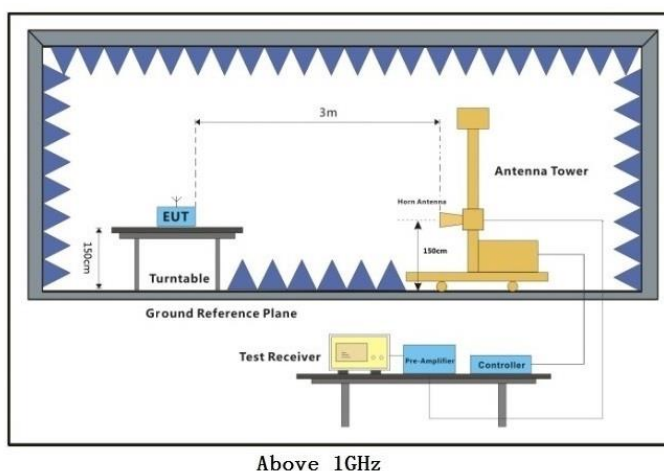
Humidity: 60.2 % RH

Atmospheric Pressure: 1020 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	02	TX mode(1Mbps_Left earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	03	TX mode(2Mbps_Left earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	06	TX mode(1Mbps_Right earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	07	TX mode(2Mbps_Right earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation

7.3.3 Test Setup Diagram



7.3.4 Measurement Procedure and Data

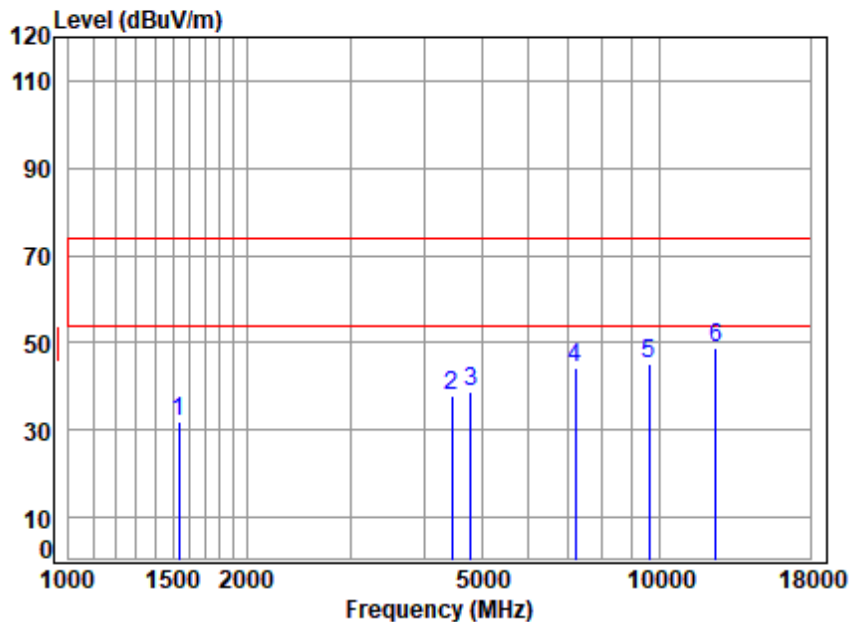
- a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter fully-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak or average method as specified and then reported in a data sheet.
- g. Test the EUT in the lowest channel, the middle channel, the Highest channel.
- h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
- i. Repeat above procedures until all frequencies measured was complete.

Remark:

1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
2. Scan from 1GHz to 25GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.
3. As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. For the emissions whose peak level is lower than the average limit, only the peak measurement is shown in the report.
- 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: 02; Polarity: Horizontal; Modulation:GFSK; Channel:Low



Condition: 3m HORIZONTAL

Job No : 03730AT/03731AT

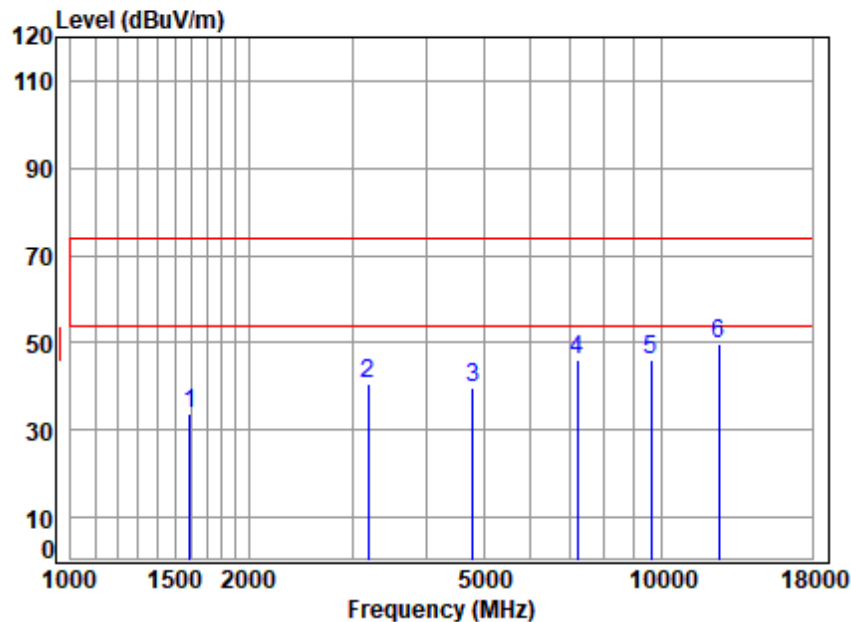
Mode : 2402 TX RSE

: BLE 1M L

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1533.841	7.18	24.97	54.70	54.28	31.73	74.00	-42.27	peak
2	4456.315	8.55	31.43	55.92	53.66	37.72	74.00	-36.28	peak
3	4804.000	8.90	31.92	56.16	53.91	38.57	74.00	-35.43	peak
4	7206.000	11.10	36.60	56.54	53.23	44.39	74.00	-29.61	peak
5	9608.000	12.38	38.78	54.45	48.34	45.05	74.00	-28.95	peak
6	pp12469.610	14.84	39.90	54.13	48.15	48.76	74.00	-25.24	peak



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



Condition: 3m VERTICAL

Job No : 03730AT/03731AT

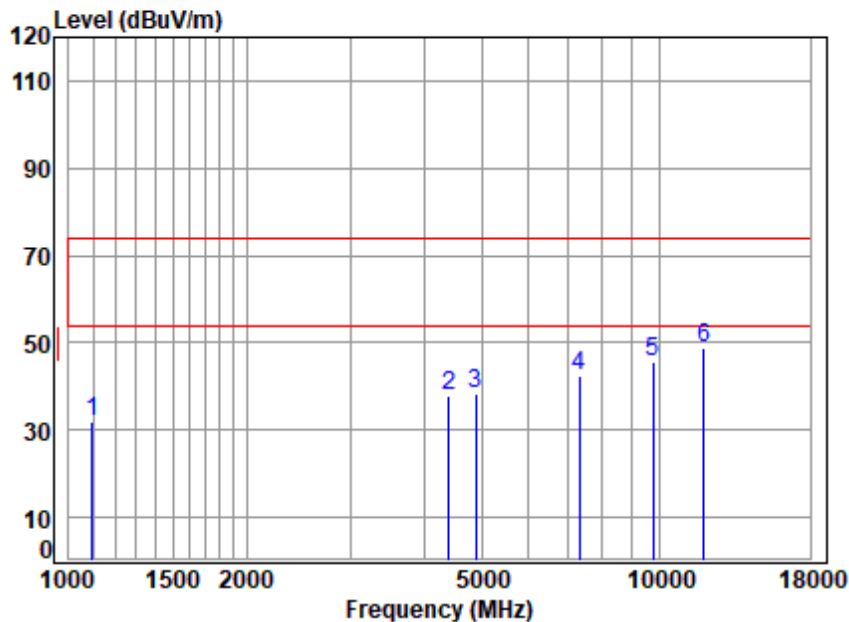
Mode : 2402 TX RSE

: BLE 1M L

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1592.571	7.11	25.09	54.70	56.47	33.97	74.00	-40.03	peak
2	3186.869	7.70	29.20	55.11	58.84	40.63	74.00	-33.37	peak
3	4804.000	8.90	31.92	56.16	54.91	39.57	74.00	-34.43	peak
4	7206.000	11.10	36.60	56.54	54.87	46.03	74.00	-27.97	peak
5	9608.000	12.38	38.78	54.45	49.60	46.31	74.00	-27.69	peak
6	pp12505.710	14.87	39.91	54.15	49.29	49.92	74.00	-24.08	peak



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



Condition: 3m HORIZONTAL

Job No : 03730AT/03731AT

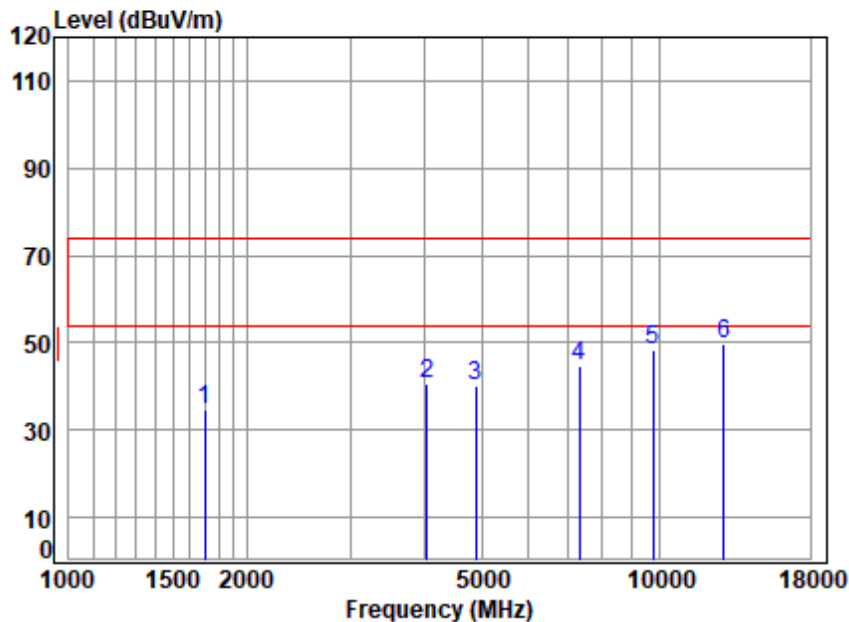
Mode : 2440 TX RSE

: BLE 1M L

	Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1096.904	7.10	25.59	54.70	54.16	32.15	74.00	-41.85 peak
2	4405.090	8.54	31.22	55.88	54.03	37.91	74.00	-36.09 peak
3	4880.000	8.98	32.16	56.22	53.45	38.37	74.00	-35.63 peak
4	7320.000	11.12	36.74	56.44	51.23	42.65	74.00	-31.35 peak
5	9760.000	12.84	38.60	54.32	48.44	45.56	74.00	-28.44 peak
6	pp11906.070	14.62	39.71	53.77	48.10	48.66	74.00	-25.34 peak



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



Condition: 3m VERTICAL

Job No : 03730AT/03731AT

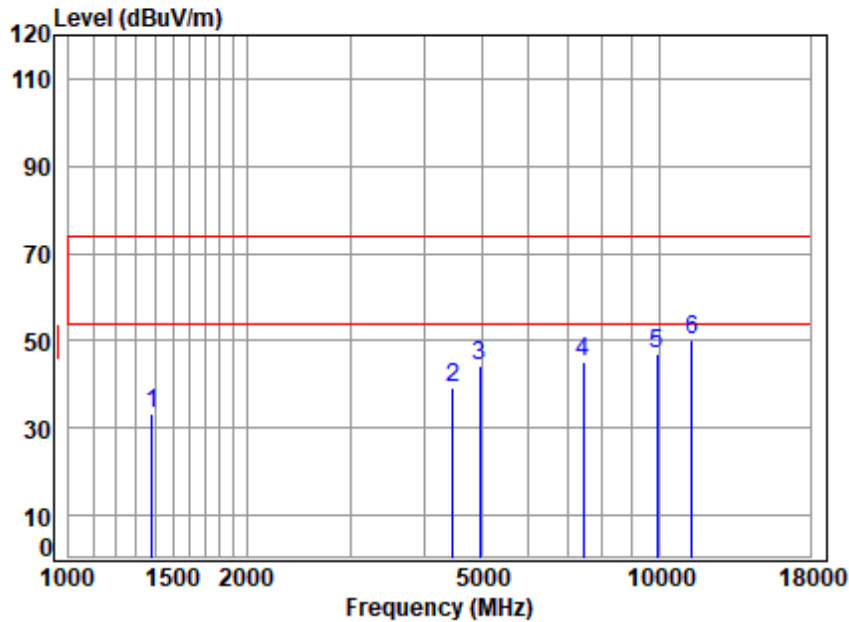
Mode : 2440 TX RSE

: BLE 1M L

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1702.042	7.20	25.11	54.70	56.92	34.53	74.00	-39.47	peak
2	4039.212	8.21	30.28	55.63	57.73	40.59	74.00	-33.41	peak
3	4880.000	8.98	32.16	56.22	55.17	40.09	74.00	-33.91	peak
4	7320.000	11.12	36.74	56.44	53.20	44.62	74.00	-29.38	peak
5	9760.000	12.84	38.60	54.32	51.41	48.53	74.00	-25.47	peak
6	pp12835.290	15.18	40.34	54.38	48.68	49.82	74.00	-24.18	peak



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



Condition: 3m HORIZONTAL

Job No : 03730AT/03731AT

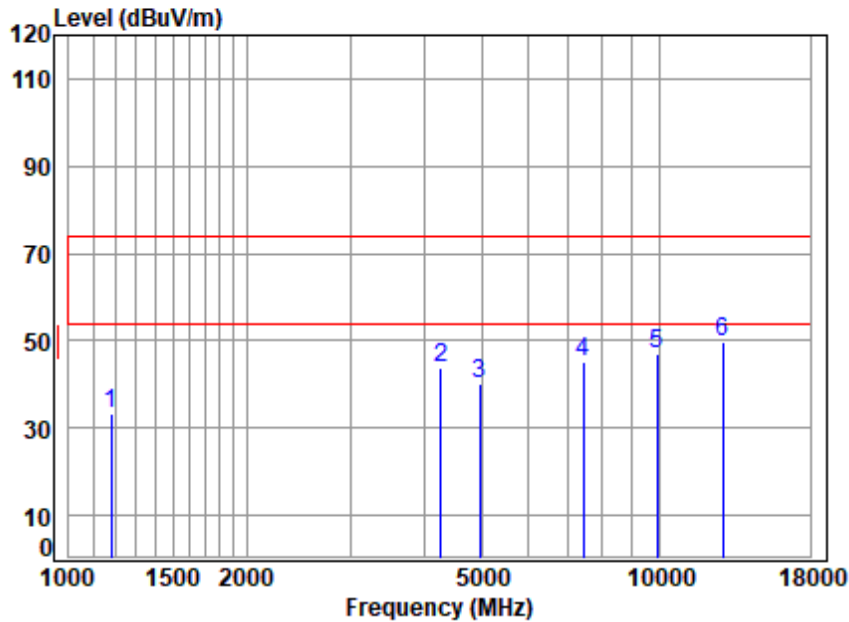
Mode : 2480 TX RSE

: BLE 1M L

	Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1386.264	7.20	25.03	54.70	55.91	33.44	74.00	-40.56 peak
2	4469.214	8.55	31.48	55.93	55.25	39.35	74.00	-34.65 peak
3	4960.000	9.07	32.20	56.27	59.11	44.11	74.00	-29.89 peak
4	7440.000	11.08	36.78	56.35	53.62	45.13	74.00	-28.87 peak
5	9920.000	12.73	38.90	54.17	49.62	47.08	74.00	-26.92 peak
6	pp11335.190	14.29	39.70	53.60	49.62	50.01	74.00	-23.99 peak



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



Condition: 3m VERTICAL

Job No : 03730AT/03731AT

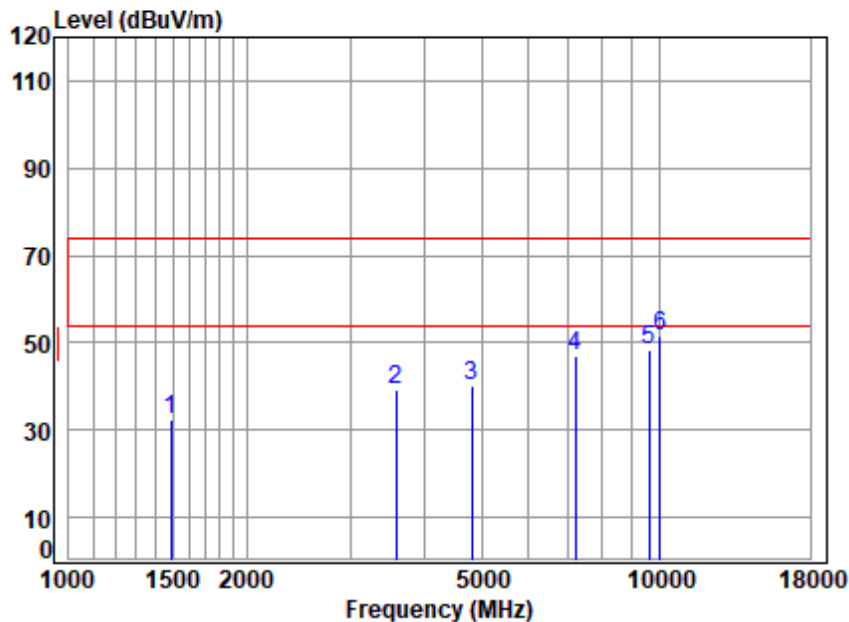
Mode : 2480 TX RSE

: BLE 1M L

	Cable	Ant	Preamp	Read	Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	1179.100	7.17	25.34	54.70	55.36	33.17	74.00 -40.83 peak
2	4267.237	8.47	31.17	55.79	60.14	43.99	74.00 -30.01 peak
3	4960.000	9.07	32.20	56.27	55.24	40.24	74.00 -33.76 peak
4	7440.000	11.08	36.78	56.35	53.55	45.06	74.00 -28.94 peak
5	9920.000	12.73	38.90	54.17	49.50	46.96	74.00 -27.04 peak
6	pp12798.240	15.15	40.30	54.36	48.65	49.74	74.00 -24.26 peak



Test Mode: 03; Polarity: Horizontal; Modulation:GFSK; Channel:Low



Condition: 3m HORIZONTAL

Job No : 03730AT/03731AT

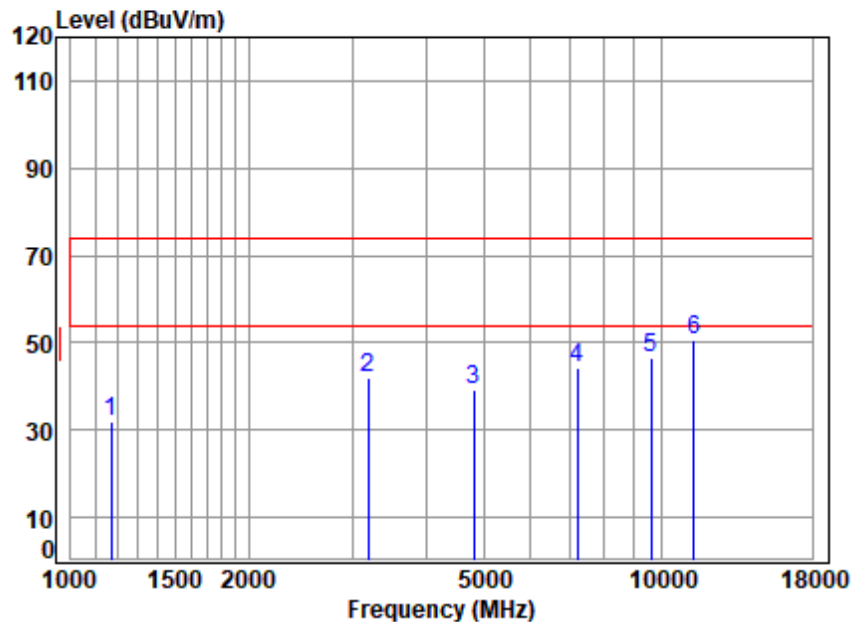
Mode : 2404 TX RSE

: BLE 2M L

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit	Over	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1490.142	7.22	24.94	54.70	54.77	32.23	74.00	-41.77	peak
2	3577.463	7.75	29.85	55.35	57.03	39.28	74.00	-34.72	peak
3	4808.000	8.91	31.93	56.17	55.52	40.19	74.00	-33.81	peak
4	7212.000	11.10	36.60	56.53	55.95	47.12	74.00	-26.88	peak
5	9616.000	12.40	38.77	54.45	51.68	48.40	74.00	-25.60	peak
6	10039.390	12.91	38.98	54.08	53.57	51.38	74.00	-22.62	peak



Test Mode: 03; Polarity: Vertical; Modulation:GFSK; Channel:Low



Condition: 3m VERTICAL

Job No : 03730AT/03731AT

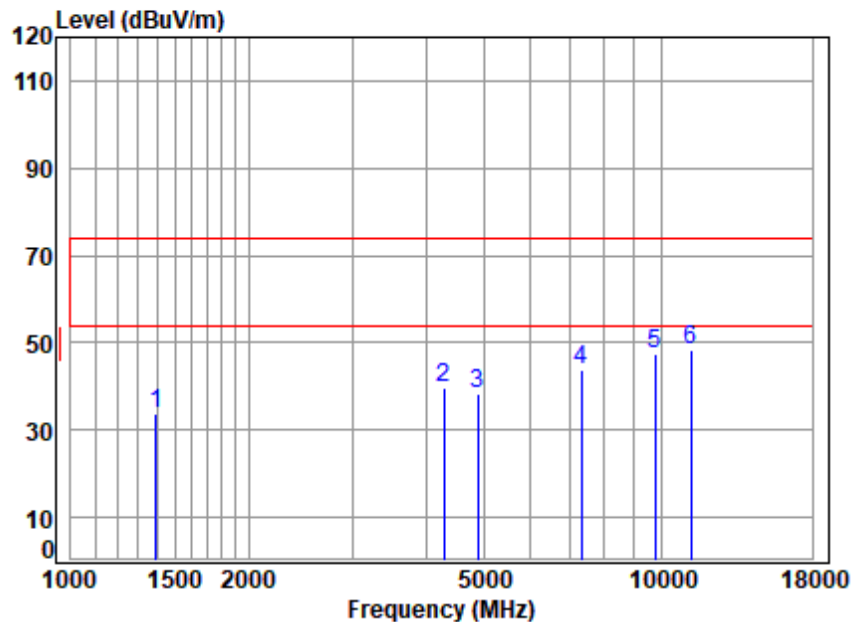
Mode : 2404 TX RSE

: BLE 2M L

	Cable	Ant	Preamp	Read	Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	7.16	25.36	54.70	54.06	31.88	74.00	-42.12 peak
2	7.70	29.20	55.11	60.15	41.94	74.00	-32.06 peak
3	8.91	31.93	56.17	54.62	39.29	74.00	-34.71 peak
4	11.10	36.60	56.53	52.99	44.16	74.00	-29.84 peak
5	12.40	38.77	54.45	49.90	46.62	74.00	-27.38 peak
6	14.29	39.70	53.60	50.07	50.46	74.00	-23.54 peak



Test Mode: 03; Polarity: Horizontal; Modulation:GFSK; Channel:middle



Condition: 3m HORIZONTAL

Job No : 03730AT/03731AT

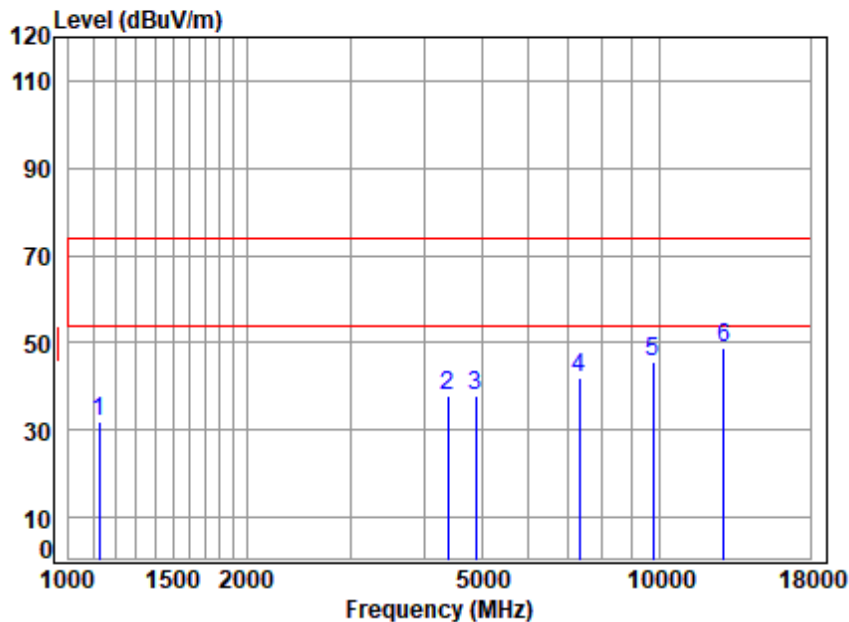
Mode : 2440 TX RSE

: BLE 2M L

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1394.300	7.21	25.01	54.70	56.05	33.57	74.00	-40.43	peak
2	4291.977	8.45	31.27	55.80	55.82	39.74	74.00	-34.26	peak
3	4880.000	8.98	32.16	56.22	53.59	38.51	74.00	-35.49	peak
4	7320.000	11.12	36.74	56.44	52.24	43.66	74.00	-30.34	peak
5	9760.000	12.84	38.60	54.32	50.47	47.59	74.00	-26.41	peak
6	11237.330	14.30	39.64	53.57	48.07	48.44	74.00	-25.56	peak



Test Mode: 03; Polarity: Vertical; Modulation:GFSK; Channel:middle



Condition: 3m VERTICAL

Job No : 03730AT/03731AT

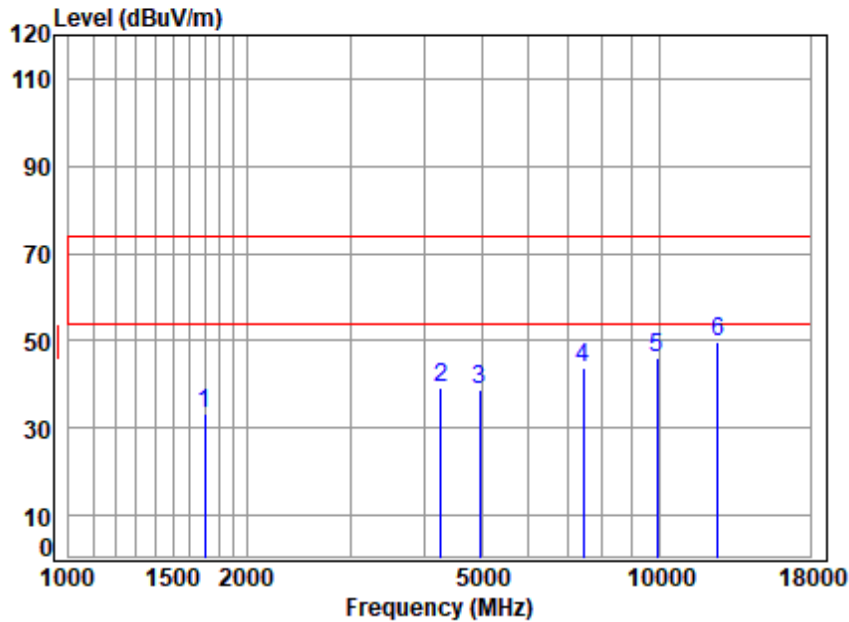
Mode : 2440 TX RSE

: BLE 2M L

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1125.813	7.12	25.50	54.70	53.91	31.83	74.00	-42.17	peak
2	4379.699	8.52	31.24	55.87	54.04	37.93	74.00	-36.07	peak
3	4880.000	8.98	32.16	56.22	52.87	37.79	74.00	-36.21	peak
4	7320.000	11.12	36.74	56.44	50.75	42.17	74.00	-31.83	peak
5	9760.000	12.84	38.60	54.32	48.61	45.73	74.00	-28.27	peak
6	pp12835.290	15.18	40.34	54.38	47.71	48.85	74.00	-25.15	peak



Test Mode: 03; Polarity: Horizontal; Modulation:GFSK; Channel:High



Condition: 3m HORIZONTAL

Job No : 03730AT/03731AT

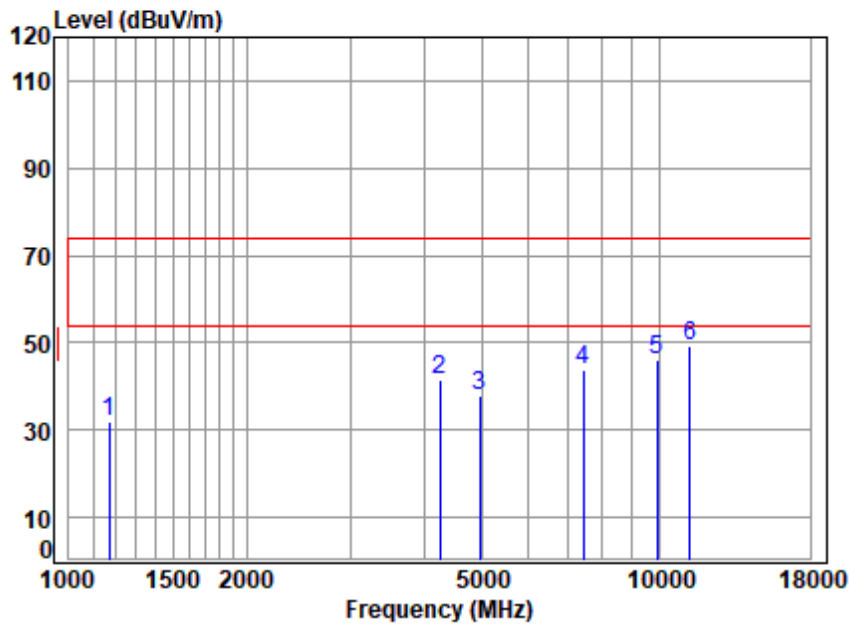
Mode : 2478 TX RSE

: BLE 2M L

	Cable	Ant	Preamp	Read	Limit	Over		
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	7.20	25.11	54.70	55.74	33.35	74.00	-40.65	peak
2	8.47	31.17	55.79	55.55	39.40	74.00	-34.60	peak
3	9.06	32.20	56.27	53.69	38.68	74.00	-35.32	peak
4	11.09	36.77	56.35	52.50	44.01	74.00	-29.99	peak
5	12.71	38.90	54.18	48.51	45.94	74.00	-28.06	peak
6	14.81	40.06	54.20	49.23	49.90	74.00	-24.10	peak



Test Mode: 03; Polarity: Vertical; Modulation:GFSK; Channel:High



Condition: 3m VERTICAL

Job No : 03730AT/03731AT

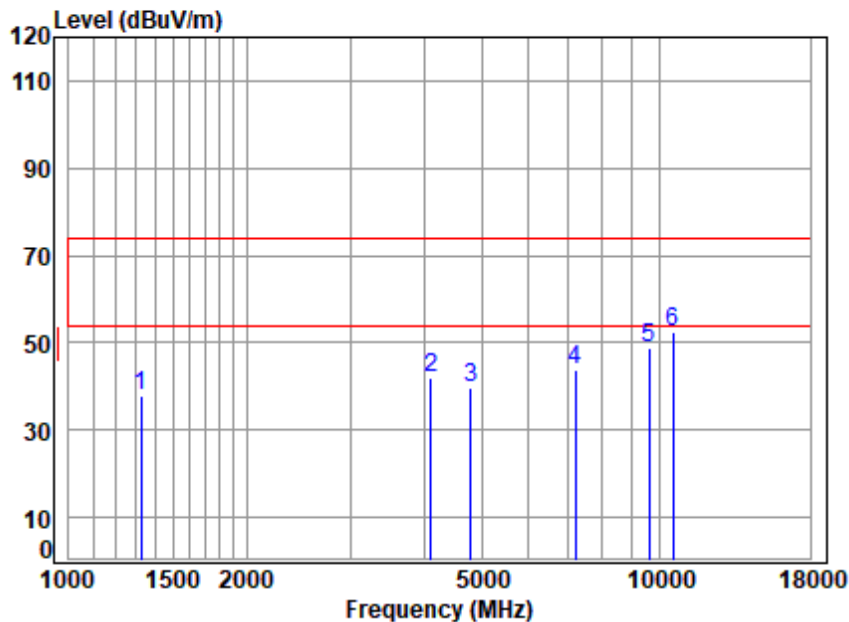
Mode : 2478 TX RSE

: BLE 2M L

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1168.920	7.16	25.36	54.70	53.98	31.80	74.00	-42.20	peak
2	4254.921	8.48	31.12	55.78	57.86	41.68	74.00	-32.32	peak
3	4956.000	9.06	32.20	56.27	52.95	37.94	74.00	-36.06	peak
4	7434.000	11.09	36.77	56.35	52.35	43.86	74.00	-30.14	peak
5	9912.000	12.71	38.90	54.18	48.64	46.07	74.00	-27.93	peak
6	pp11269.860	14.35	39.67	53.58	49.06	49.50	74.00	-24.50	peak



Test Mode: 06; Polarity: Horizontal; Modulation:GFSK; Channel:Low



Condition: 3m HORIZONTAL

Job No : 03730AT/03731AT

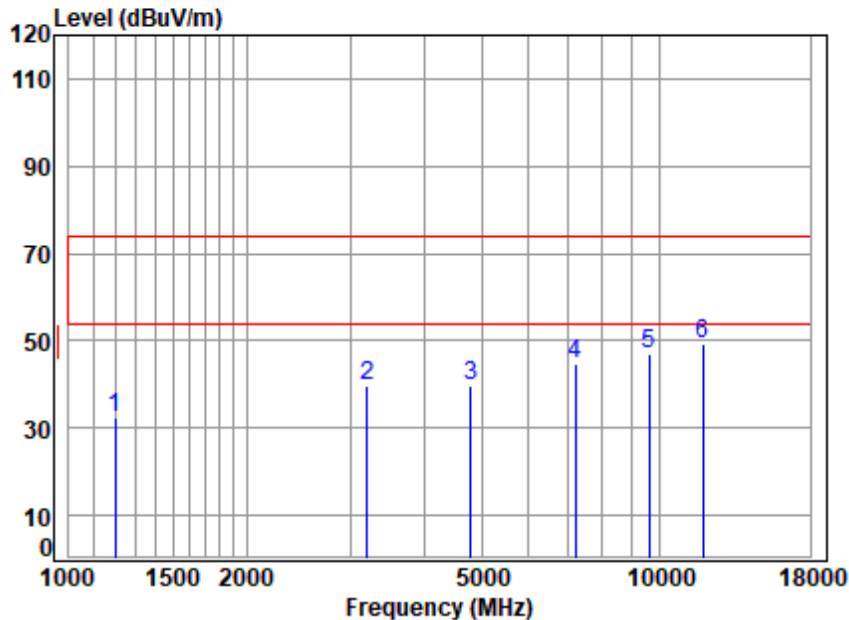
Mode : 2402 TX RSE

: BLE 1M R

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1327.446	7.17	25.15	54.70	60.36	37.98	74.00	-36.02	peak
2	4109.872	8.37	30.42	55.68	59.06	42.17	74.00	-31.83	peak
3	4804.000	8.90	31.92	56.16	54.97	39.63	74.00	-34.37	peak
4	7206.000	11.10	36.60	56.54	52.50	43.66	74.00	-30.34	peak
5	9608.000	12.38	38.78	54.45	52.31	49.02	74.00	-24.98	peak
6	pp10545.010	13.33	39.19	53.77	53.65	52.40	74.00	-21.60	peak



Test Mode: 06; Polarity: Vertical; Modulation:GFSK; Channel:Low



Condition: 3m VERTICAL

Job No : 03730AT/03731AT

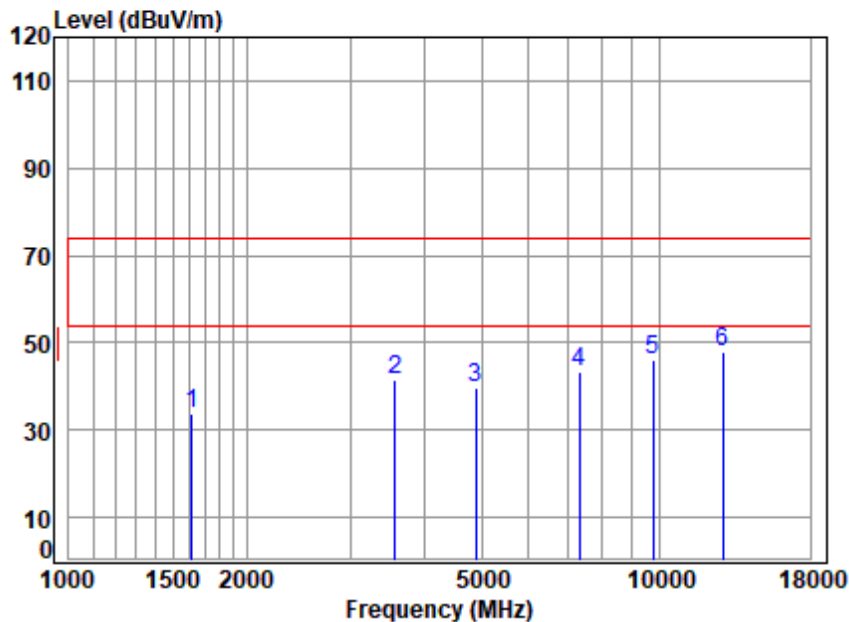
Mode : 2402 TX RSE

: BLE 1M R

	Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	7.19	25.31	54.70	54.64	32.44	74.00	-41.56	peak
2	7.70	29.20	55.12	57.95	39.73	74.00	-34.27	peak
3	8.90	31.92	56.16	55.17	39.83	74.00	-34.17	peak
4	11.10	36.60	56.54	53.76	44.92	74.00	-29.08	peak
5	12.38	38.78	54.45	50.15	46.86	74.00	-27.14	peak
6	14.61	39.64	53.75	48.98	49.48	74.00	-24.52	peak



Test Mode: 06; Polarity: Horizontal; Modulation:GFSK; Channel:middle



Condition: 3m HORIZONTAL

Job No : 03730AT/03731AT

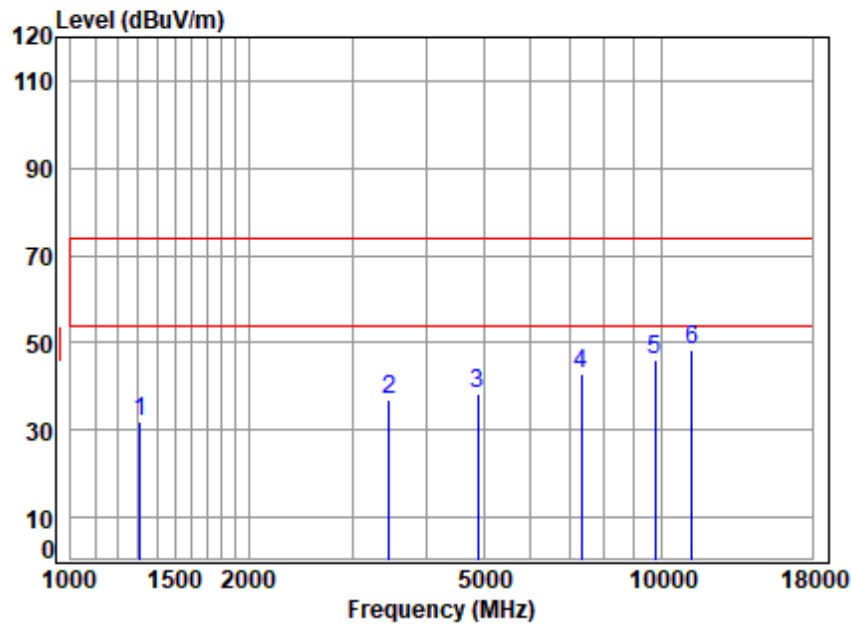
Mode : 2440 TX RSE

: BLE 1M R

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1615.754	7.12	25.07	54.70	56.24	33.73	74.00	-40.27	peak
2	3567.138	7.75	29.83	55.34	59.41	41.65	74.00	-32.35	peak
3	4880.000	8.98	32.16	56.22	54.81	39.73	74.00	-34.27	peak
4	7320.000	11.12	36.74	56.44	51.96	43.38	74.00	-30.62	peak
5	9760.000	12.84	38.60	54.32	48.85	45.97	74.00	-28.03	peak
6	12798.240	15.15	40.30	54.36	46.81	47.90	74.00	-26.10	peak



Test Mode: 06; Polarity: Vertical; Modulation:GFSK; Channel:middle



Condition: 3m VERTICAL

Job No : 03730AT/03731AT

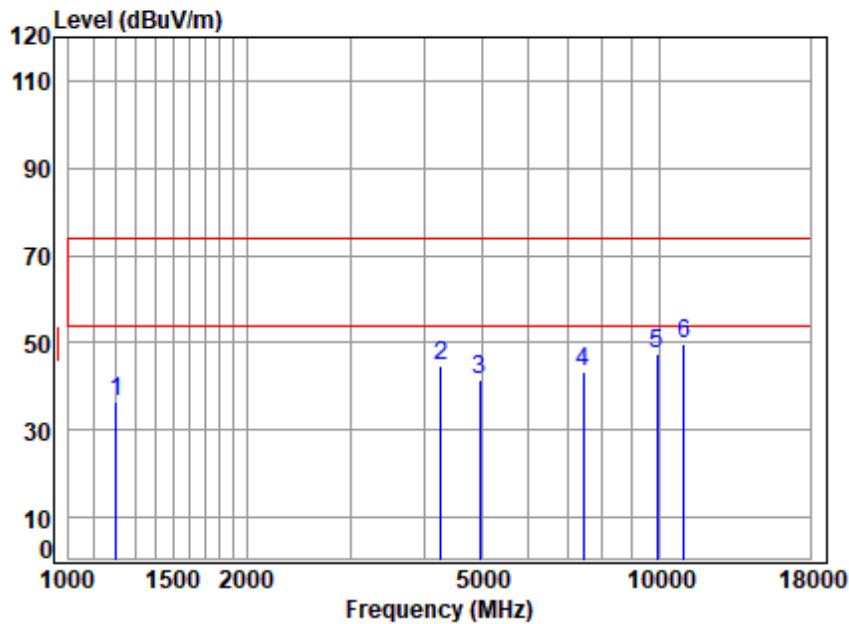
Mode : 2440 TX RSE

: BLE 1M R

	Cable	Ant	Preamp	Read	Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	1312.187	7.16	25.18	54.70	54.28	31.92	74.00 -42.08 peak
2	3465.510	7.70	29.46	55.28	54.87	36.75	74.00 -37.25 Peak
3	4880.000	8.98	32.16	56.22	53.60	38.52	74.00 -35.48 peak
4	7320.000	11.12	36.74	56.44	51.60	43.02	74.00 -30.98 peak
5	9760.000	12.84	38.60	54.32	49.08	46.20	74.00 -27.80 peak
6	pp11269.860	14.35	39.67	53.58	47.76	48.20	74.00 -25.80 peak



Test Mode: 06; Polarity: Horizontal; Modulation:GFSK; Channel:High



Condition: 3m HORIZONTAL

Job No : 03730AT/03731AT

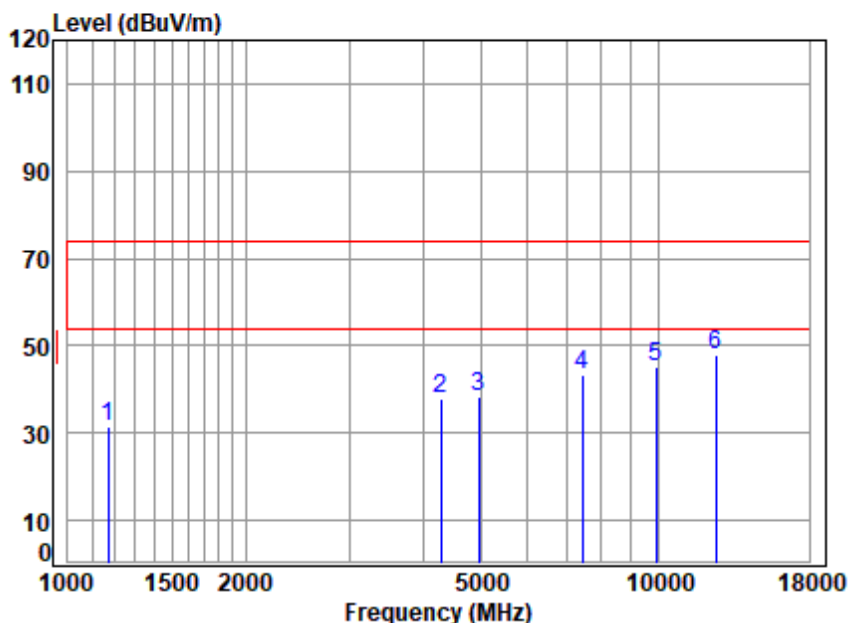
Mode : 2480 TX RSE

: BLE 1M R

	Cable	Ant	Preamp	Read	Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	7.19	25.30	54.70	58.90	36.69	74.00	-37.31 peak
2	8.47	31.17	55.79	60.75	44.60	74.00	-29.40 peak
3	9.07	32.20	56.27	56.60	41.60	74.00	-32.40 peak
4	11.08	36.78	56.35	51.89	43.40	74.00	-30.60 peak
5	12.73	38.90	54.17	49.82	47.28	74.00	-26.72 peak
6	14.21	39.41	53.50	49.82	49.94	74.00	-24.06 peak



Test Mode: 06; Polarity: Vertical; Modulation:GFSK; Channel:High



Condition: 3m VERTICAL

Job No : 03730AT/03731AT

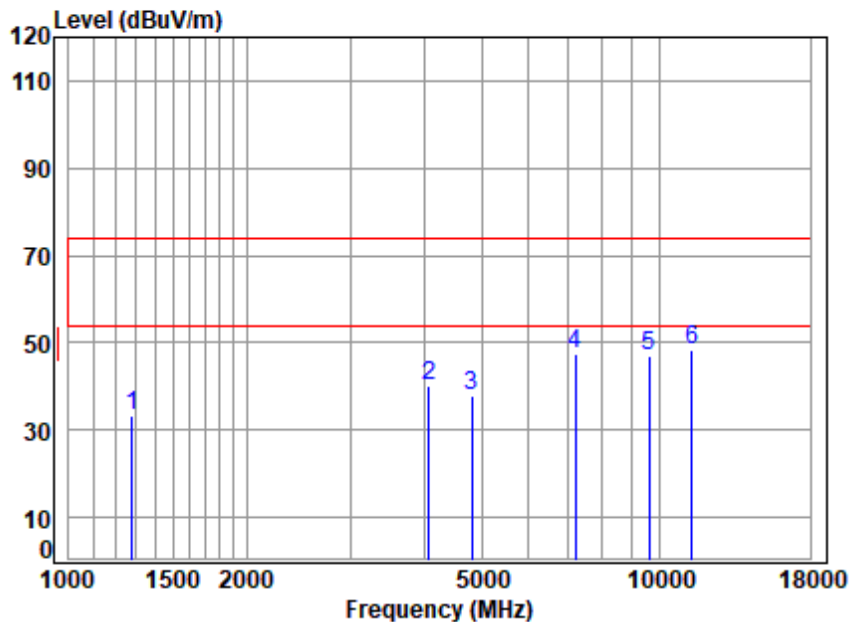
Mode : 2480 TX RSE

: BLE 1M R

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1168.920	7.16	25.36	54.70	53.69	31.51	74.00	-42.49	peak
2	4279.589	8.46	31.22	55.80	54.03	37.91	74.00	-36.09	peak
3	4960.000	9.07	32.20	56.27	53.28	38.28	74.00	-35.72	peak
4	7440.000	11.08	36.78	56.35	52.03	43.54	74.00	-30.46	peak
5	9920.000	12.73	38.90	54.17	47.78	45.24	74.00	-28.76	peak
6	pp12505.710	14.87	39.91	54.15	47.30	47.93	74.00	-26.07	peak



Test Mode: 07; Polarity: Horizontal; Modulation:GFSK; Channel:Low



Condition: 3m HORIZONTAL

Job No : 03730AT/03731AT

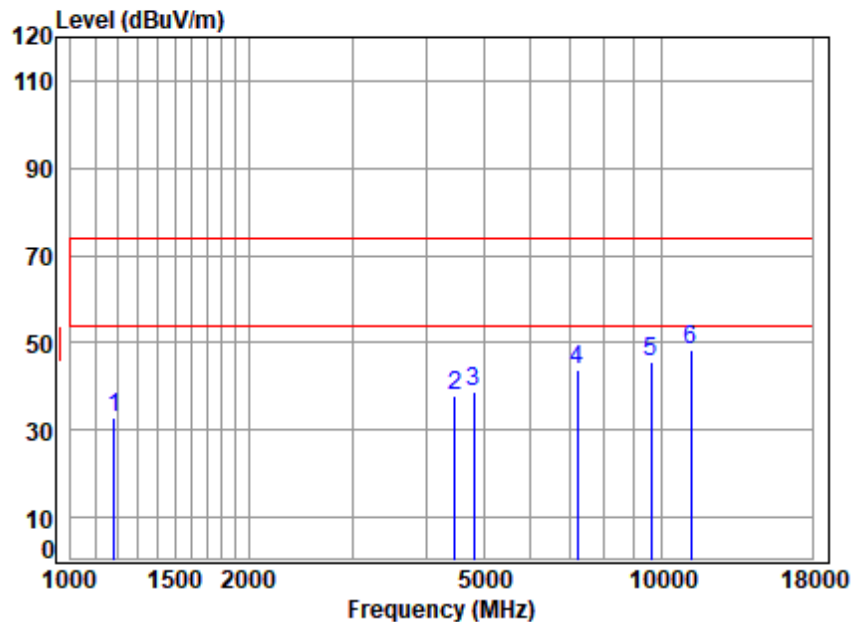
Mode : 2404 TX RSE

: BLE 2M R

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1282.193	7.16	25.24	54.70	55.42	33.12	74.00	-40.88	peak
2	4074.388	8.30	30.35	55.65	56.96	39.96	74.00	-34.04	peak
3	4808.000	8.91	31.93	56.17	53.39	38.06	74.00	-35.94	peak
4	7212.000	11.10	36.60	56.53	56.07	47.24	74.00	-26.76	peak
5	9616.000	12.40	38.77	54.45	50.20	46.92	74.00	-27.08	peak
6	pp11335.190	14.29	39.70	53.60	47.95	48.34	74.00	-25.66	peak



Test Mode: 07; Polarity: Vertical; Modulation:GFSK; Channel:Low



Condition: 3m VERTICAL

Job No : 03730AT/03731AT

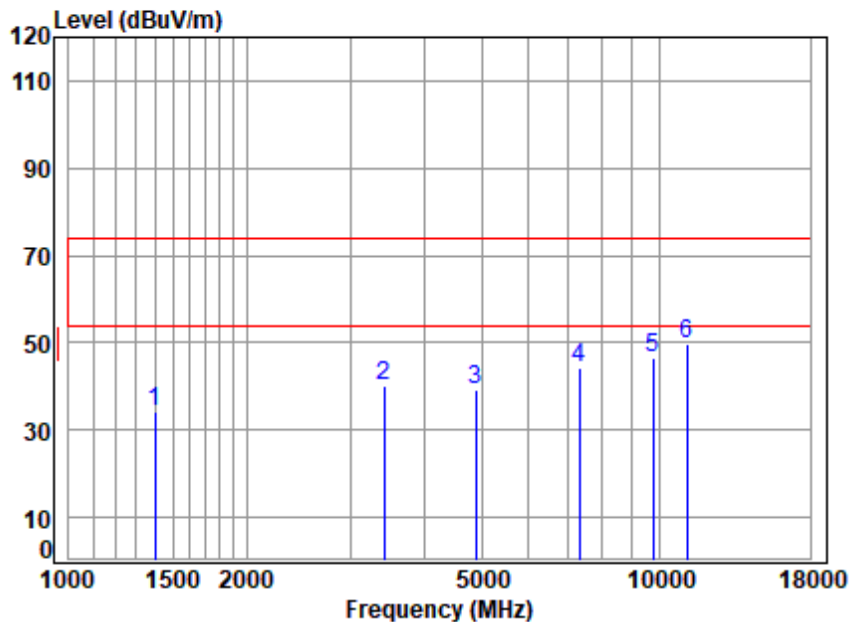
Mode : 2404 TX RSE

: BLE 2M R

	Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	7.18	25.33	54.70	54.87	32.68	74.00	-41.32	peak
2	8.55	31.48	55.93	53.66	37.76	74.00	-36.24	peak
3	8.91	31.93	56.17	53.97	38.64	74.00	-35.36	peak
4	11.10	36.60	56.53	52.58	43.75	74.00	-30.25	peak
5	12.40	38.77	54.45	49.00	45.72	74.00	-28.28	peak
6	14.30	39.64	53.57	47.99	48.36	74.00	-25.64	peak



Test Mode: 07; Polarity: Horizontal; Modulation:GFSK; Channel:middle



Condition: 3m HORIZONTAL

Job No : 03730AT/03731AT

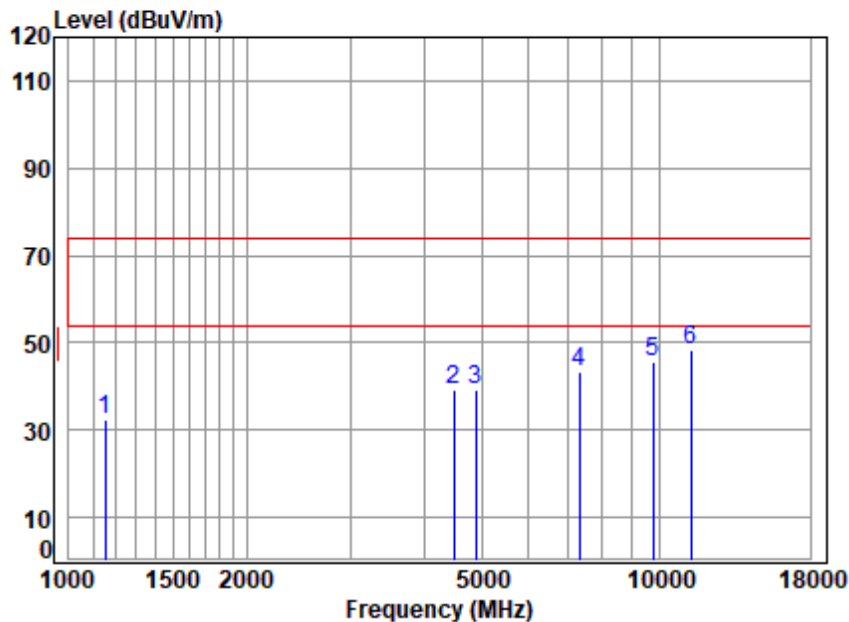
Mode : 2440 TX RSE

: BLE 2M R

	Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1398.336	7.21	25.00	54.70	56.84	34.35	74.00	-39.65 peak
2	3415.787	7.66	29.33	55.25	58.38	40.12	74.00	-33.88 peak
3	4880.000	8.98	32.16	56.22	54.47	39.39	74.00	-34.61 peak
4	7320.000	11.12	36.74	56.44	52.78	44.20	74.00	-29.80 peak
5	9760.000	12.84	38.60	54.32	49.58	46.70	74.00	-27.30 peak
6	pp11140.310	14.17	39.54	53.54	49.35	49.52	74.00	-24.48 peak



Test Mode: 07; Polarity: Vertical; Modulation:GFSK; Channel:middle



Condition: 3m VERTICAL

Job No : 03730AT/03731AT

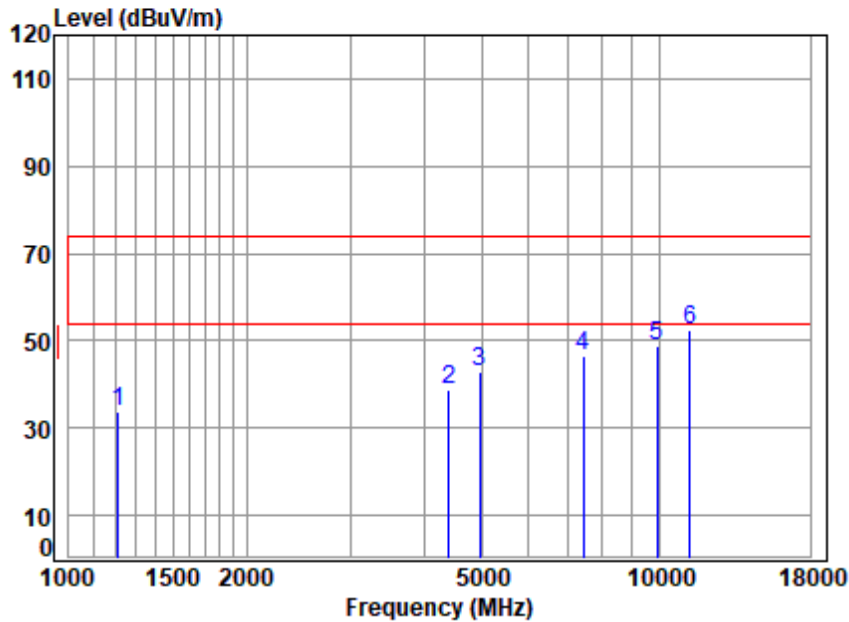
Mode : 2440 TX RSE

: BLE 2M R

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1152.148	7.15	25.40	54.70	54.38	32.23	74.00	-41.77	peak
2	4495.125	8.56	31.58	55.95	55.21	39.40	74.00	-34.60	peak
3	4880.000	8.98	32.16	56.22	54.47	39.39	74.00	-34.61	peak
4	7320.000	11.12	36.74	56.44	51.78	43.20	74.00	-30.80	peak
5	9760.000	12.84	38.60	54.32	48.65	45.77	74.00	-28.23	peak
6	pp11302.480	14.39	39.70	53.59	47.87	48.37	74.00	-25.63	peak



Test Mode: 07; Polarity: Horizontal; Modulation:GFSK; Channel:High



Condition: 3m HORIZONTAL

Job No : 03730AT/03731AT

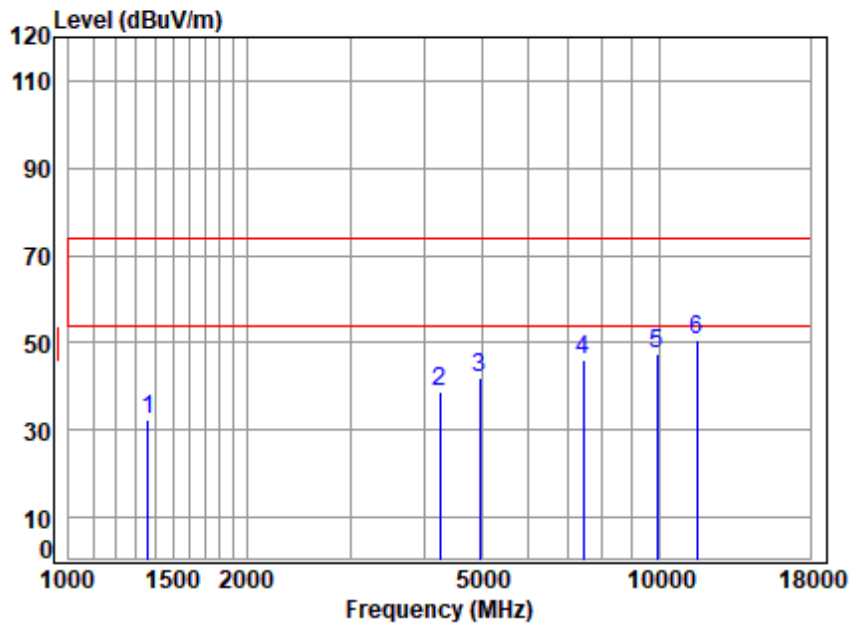
Mode : 2478 TX RSE

: BLE 2M R

	Cable	Ant	Preamp	Read		Limit	Over	
Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1213.677	7.18	25.30	54.70	56.02	33.80	74.00	-40.20 peak
2	4405.090	8.54	31.22	55.88	54.85	38.73	74.00	-35.27 peak
3	4956.000	9.06	32.20	56.27	58.02	43.01	74.00	-30.99 peak
4	7434.000	11.09	36.77	56.35	54.99	46.50	74.00	-27.50 peak
5	9912.000	12.71	38.90	54.18	51.40	48.83	74.00	-25.17 peak
6	pp11269.860	14.35	39.67	53.58	52.14	52.58	74.00	-21.42 peak



Test Mode: 07; Polarity: Vertical; Modulation:GFSK; Channel:High



Condition: 3m VERTICAL

Job No : 03730AT/03731AT

Mode : 2478 TX RSE

: BLE 2M R

	Freq	Cable Loss	Ant Factor	Preamp Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1	1362.430	7.19	25.08	54.70	54.86	32.43	74.00	-41.57	peak
2	4254.921	8.48	31.12	55.78	54.80	38.62	74.00	-35.38	peak
3	4956.000	9.06	32.20	56.27	56.84	41.83	74.00	-32.17	peak
4	7434.000	11.09	36.77	56.35	54.80	46.31	74.00	-27.69	peak
5	9912.000	12.71	38.90	54.18	50.15	47.58	74.00	-26.42	peak
6	pp11600.350	14.48	39.60	53.68	50.36	50.76	74.00	-23.24	peak



7.4 Conducted Peak Output Power

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

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

Limit:

Frequency range(MHz)	Output power of the intentional radiator(watt)
902-928	1 for ≥ 50 hopping channels
	0.25 for $25 \leq$ 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: 23.5 °C

Humidity: 40.1 % RH

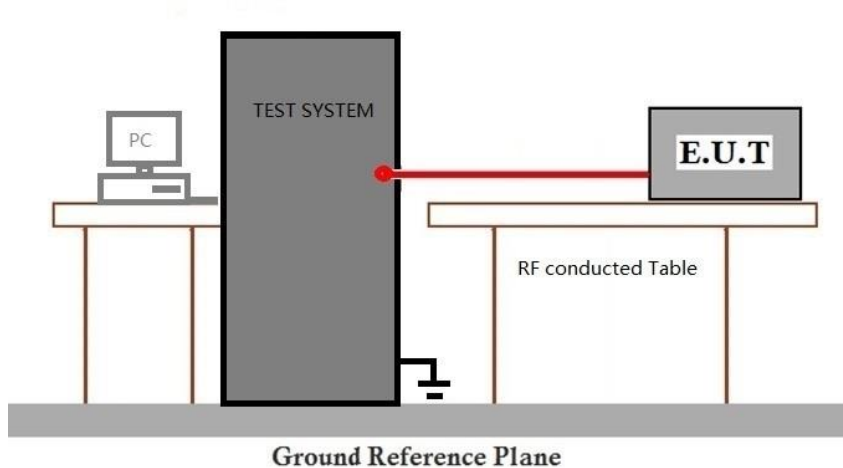
Atmospheric Pressure: 1020 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	02	TX mode(1Mbps_Left earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	03	TX mode(2Mbps_Left earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	06	TX mode(1Mbps_Right earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	07	TX mode(2Mbps_Right earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation



7.4.3 Test Setup Diagram



7.4.4 Measurement Procedure and Data

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 (2013) Section 11.8.1

Limit:

≥500 kHz

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C

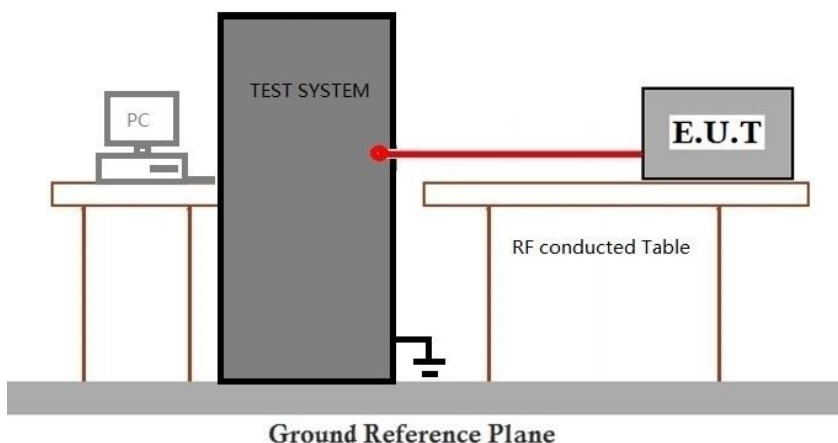
Humidity: 40.1 % RH

Atmospheric Pressure: 1020 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	02	TX mode(1Mbps_Left earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	03	TX mode(2Mbps_Left earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	06	TX mode(1Mbps_Right earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	07	TX mode(2Mbps_Right earbuds)_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



SGS-CSTC Standards Technical Services Co., Ltd.
Shenzhen Branch Inspection & Testing Laboratory

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7.6 Power Spectrum Density

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

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

Limit:

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

7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C

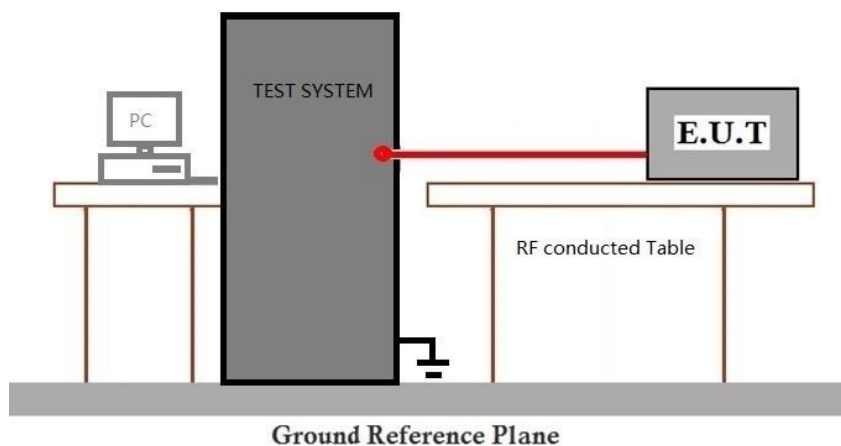
Humidity: 40.1 % RH

Atmospheric Pressure: 1020 mbar

7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	02	TX mode(1Mbps_Left earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	03	TX mode(2Mbps_Left earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	06	TX mode(1Mbps_Right earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	07	TX mode(2Mbps_Right earbuds)_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 (2013) Section 11.13.3.2

Limit:

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

7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C Humidity: 40.1 % RH Atmospheric Pressure: 1020 mbar

7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	02	TX mode(1Mbps_Left earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	03	TX mode(2Mbps_Left earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	06	TX mode(1Mbps_Right earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	07	TX mode(2Mbps_Right earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation



7.7.3 Test Setup Diagram



7.7.4 Measurement Procedure and Data

Please Refer to Appendix for Details



7.8 Conducted Spurious Emissions

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

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

Limit:

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

7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 23.5 °C

Humidity: 40.1 % RH

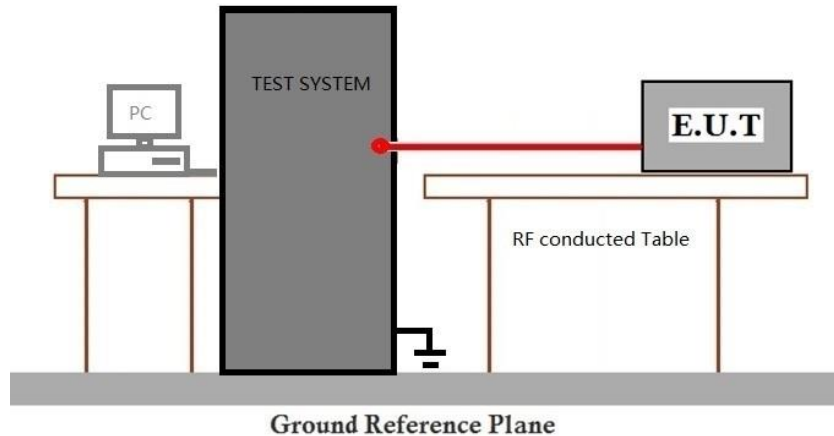
Atmospheric Pressure: 1020 mbar

7.8.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	02	TX mode(1Mbps_Left earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	03	TX mode(2Mbps_Left earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	06	TX mode(1Mbps_Right earbuds)_Keep the EUT in continuously transmitting mode with GFSK modulation
Final test	07	TX mode(2Mbps_Right earbuds)_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 Appendix - Test Setup Photo for SZCR2410003730AT

9 EUT Constructional Details (EUT Photos)

Refer to External and Internal Photos for SZCR2410003730AT



10 Appendix

For right earbud:

1. Duty Cycle

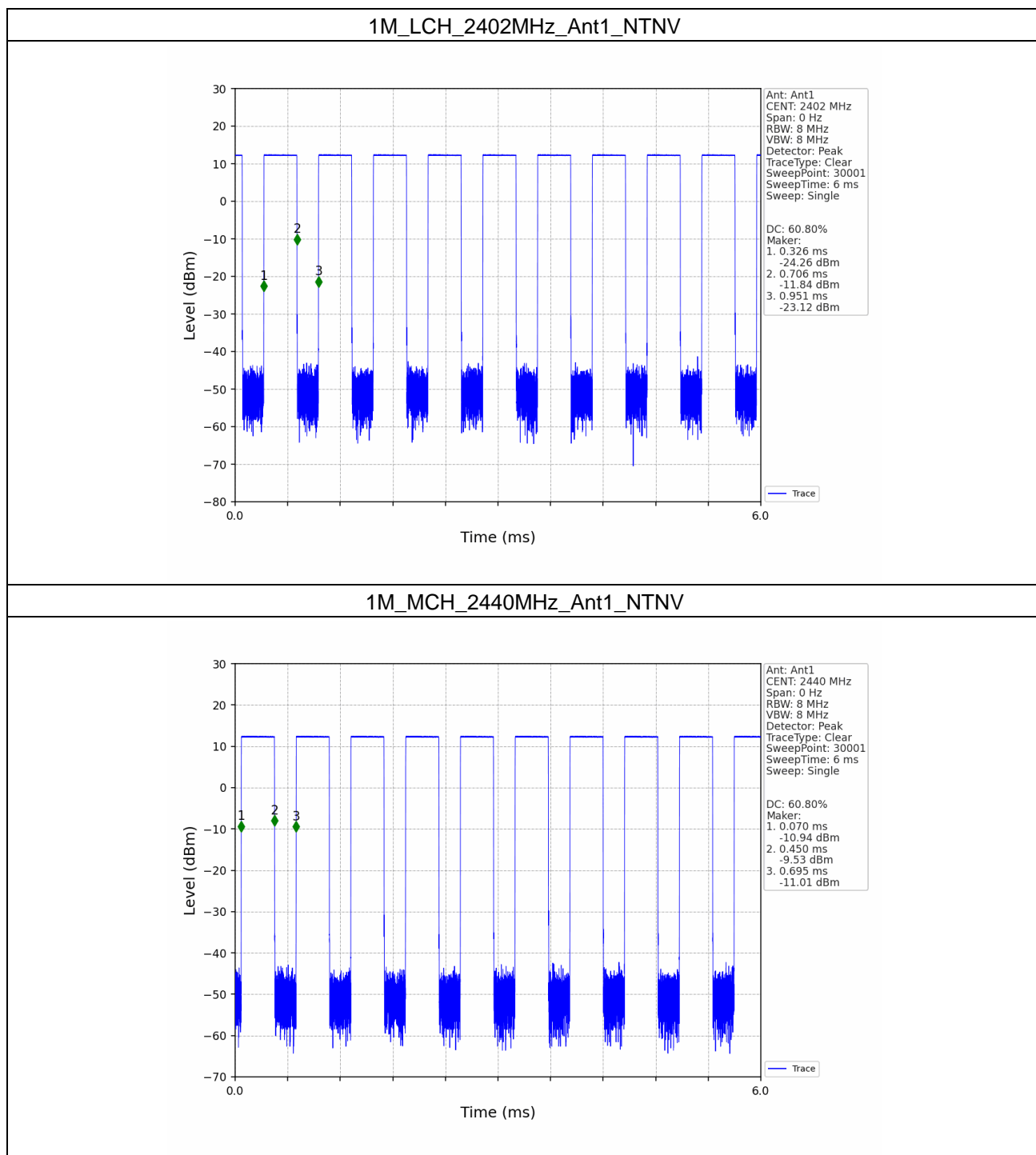
1.1 Test Result

1.1.1 Ant1

Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
1M	SISO	2402	0.380	0.625	60.80	2.16	0.00
		2440	0.380	0.625	60.80	2.16	0.02
		2480	0.380	0.625	60.80	2.16	0.00
2M	SISO	2404	0.201	0.625	32.16	4.93	0.03
		2440	0.201	0.625	32.16	4.93	0.02
		2478	0.201	0.625	32.16	4.93	0.00

1.2 Test Graph

1.2.1 Ant1



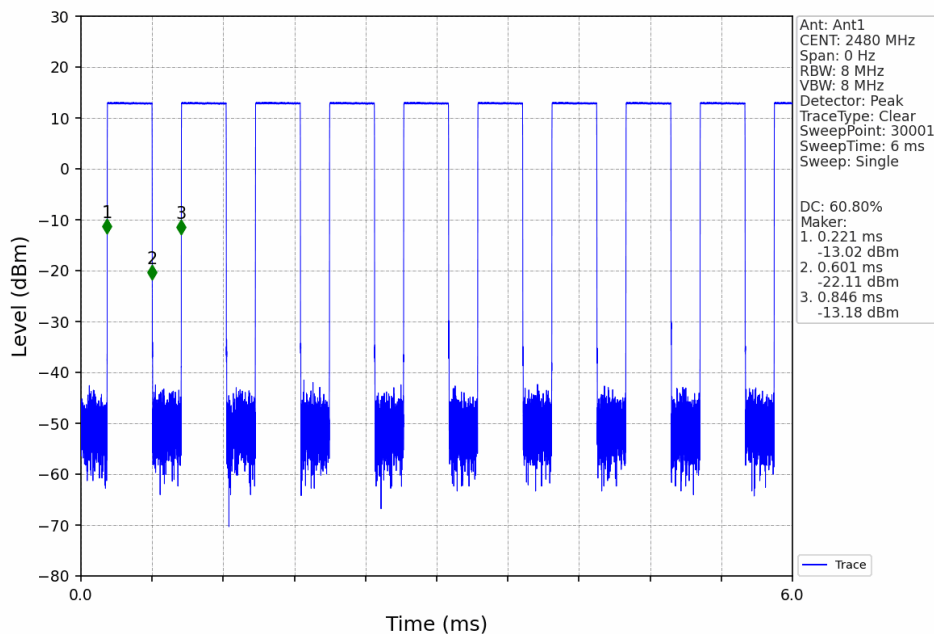
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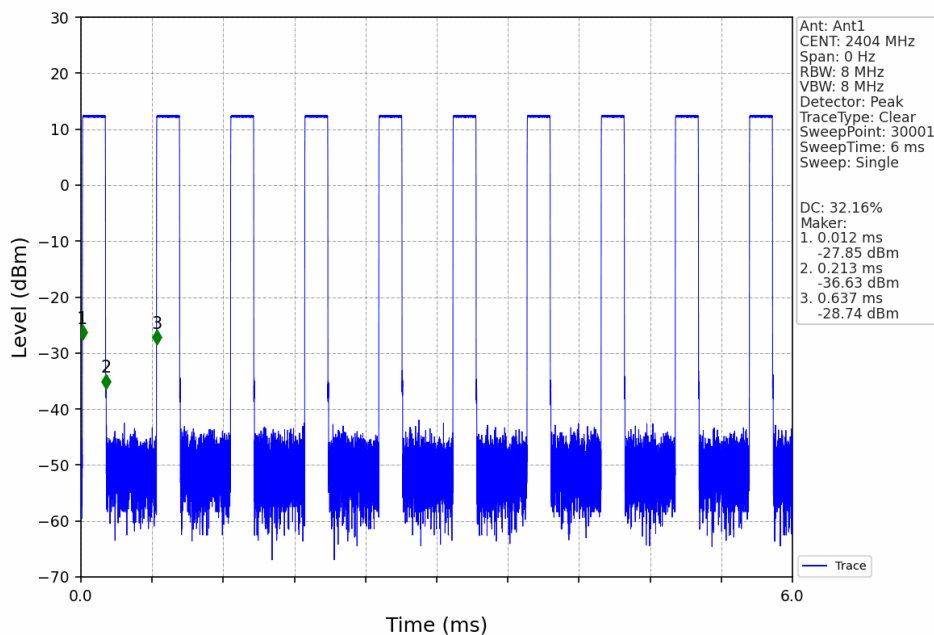
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1M_HCH_2480MHz_Ant1_NTNV



2M_LCH_2404MHz_Ant1_NTNV



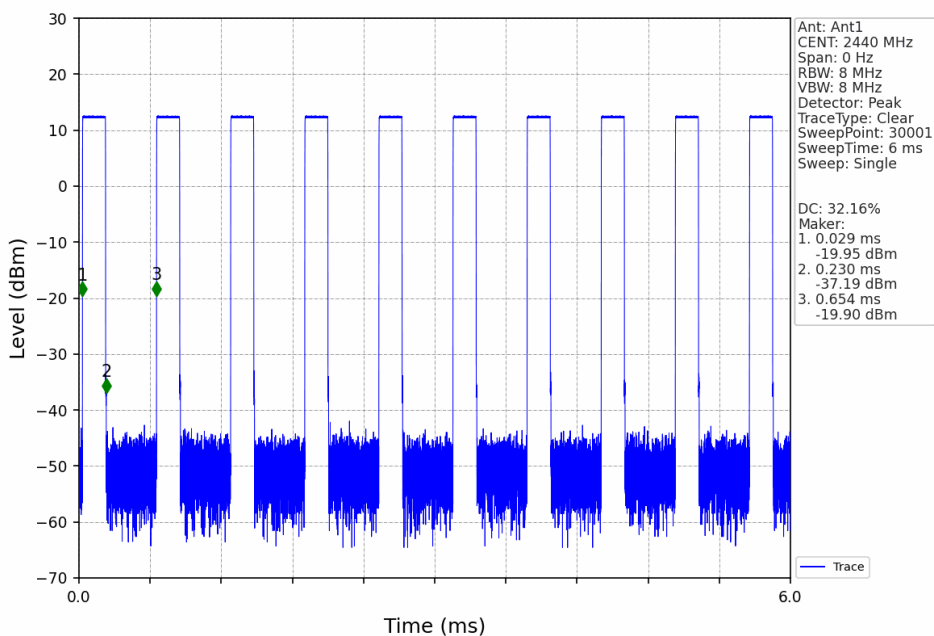
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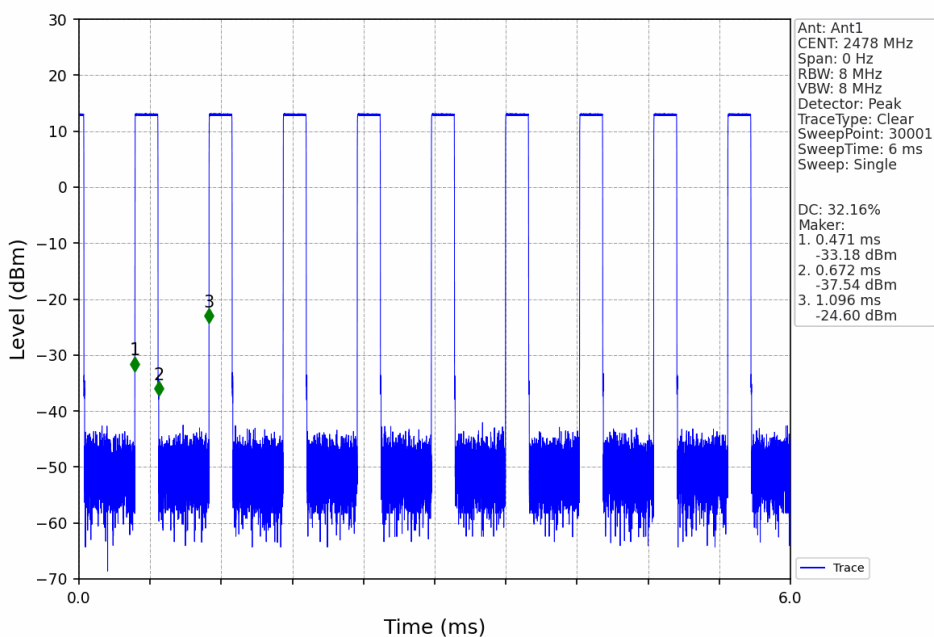
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2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2478MHz_Ant1_NTNV



2. Bandwidth

2.1 Test Result

2.1.1 OBW

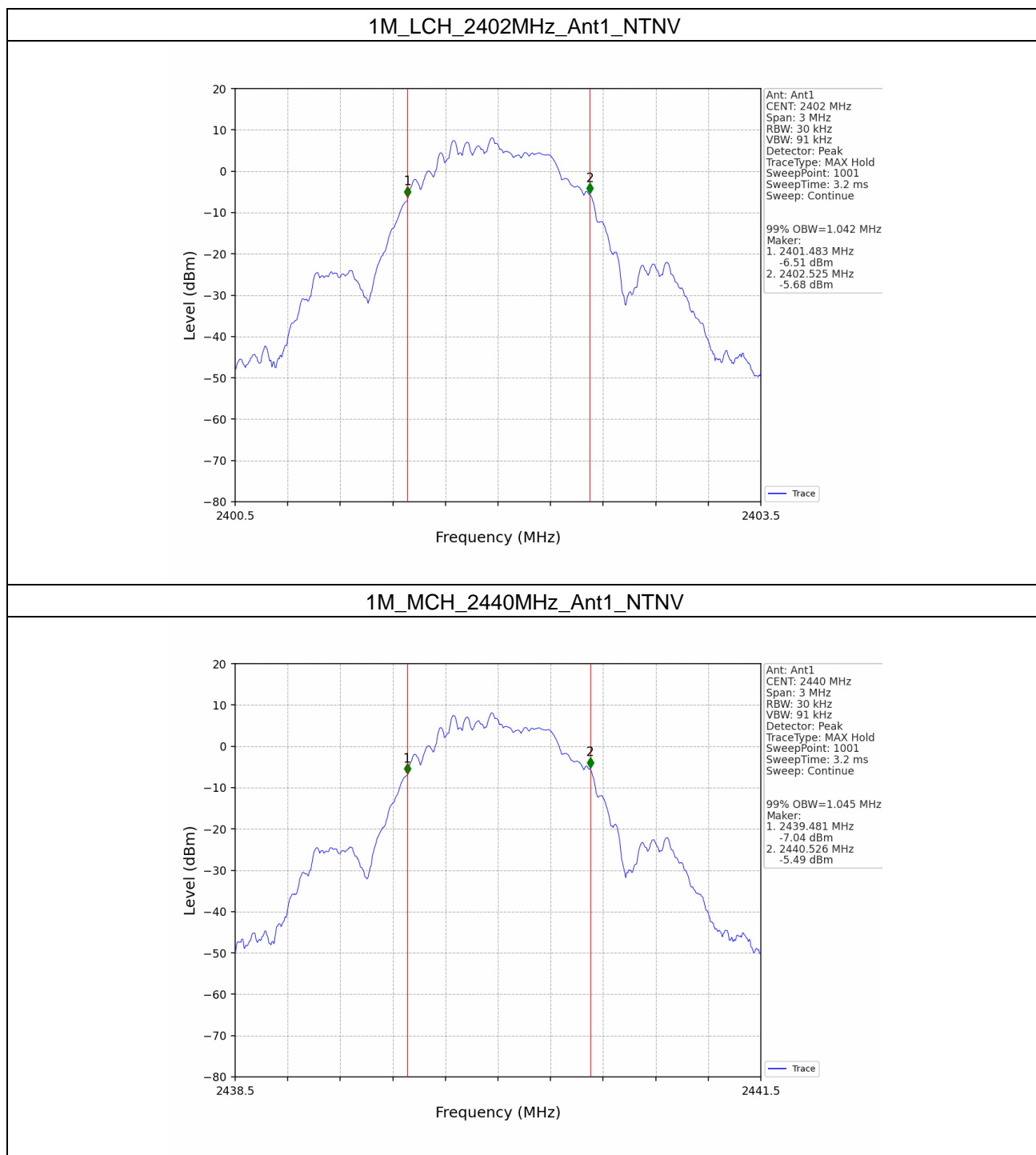
Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	1	1.042	/	Pass
		2440	1	1.045	/	Pass
		2480	1	1.039	/	Pass
2M	SISO	2404	1	2.080	/	Pass
		2440	1	2.084	/	Pass
		2478	1	2.077	/	Pass

2.1.2 6dB BW

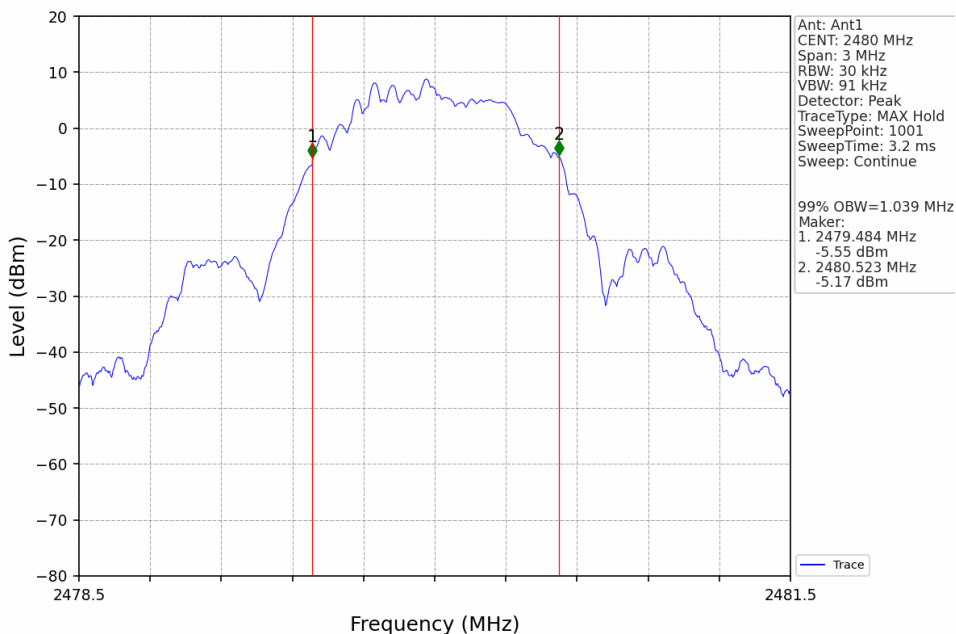
Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	1	0.714	≥ 0.5	Pass
		2440	1	0.714	≥ 0.5	Pass
		2480	1	0.709	≥ 0.5	Pass
2M	SISO	2404	1	1.264	≥ 0.5	Pass
		2440	1	1.264	≥ 0.5	Pass
		2478	1	1.268	≥ 0.5	Pass

2.2 Test Graph

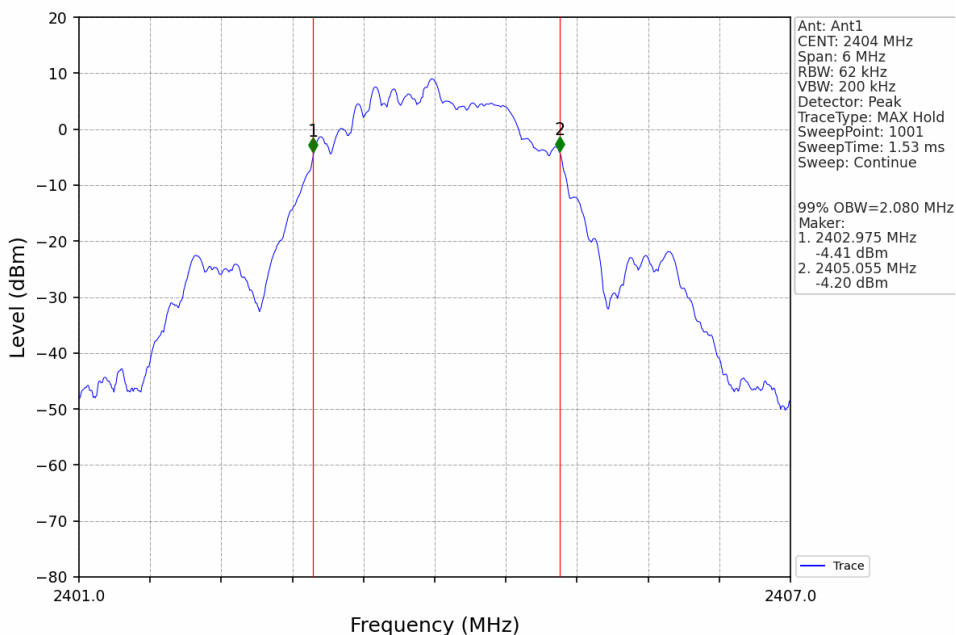
2.2.1 OBW



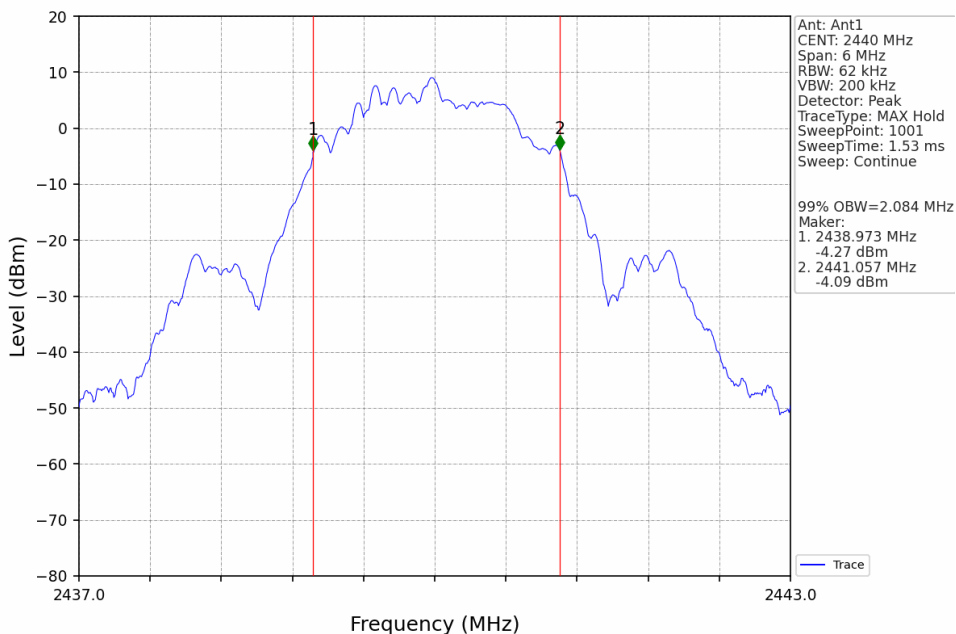
1M_HCH_2480MHz_Ant1_NTNV



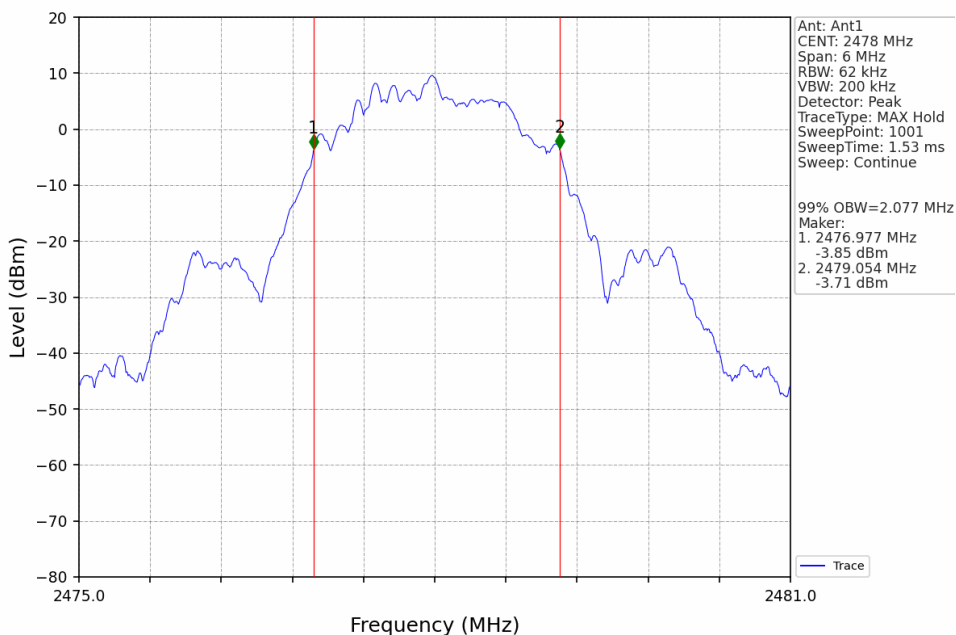
2M_LCH_2404MHz_Ant1_NTNV



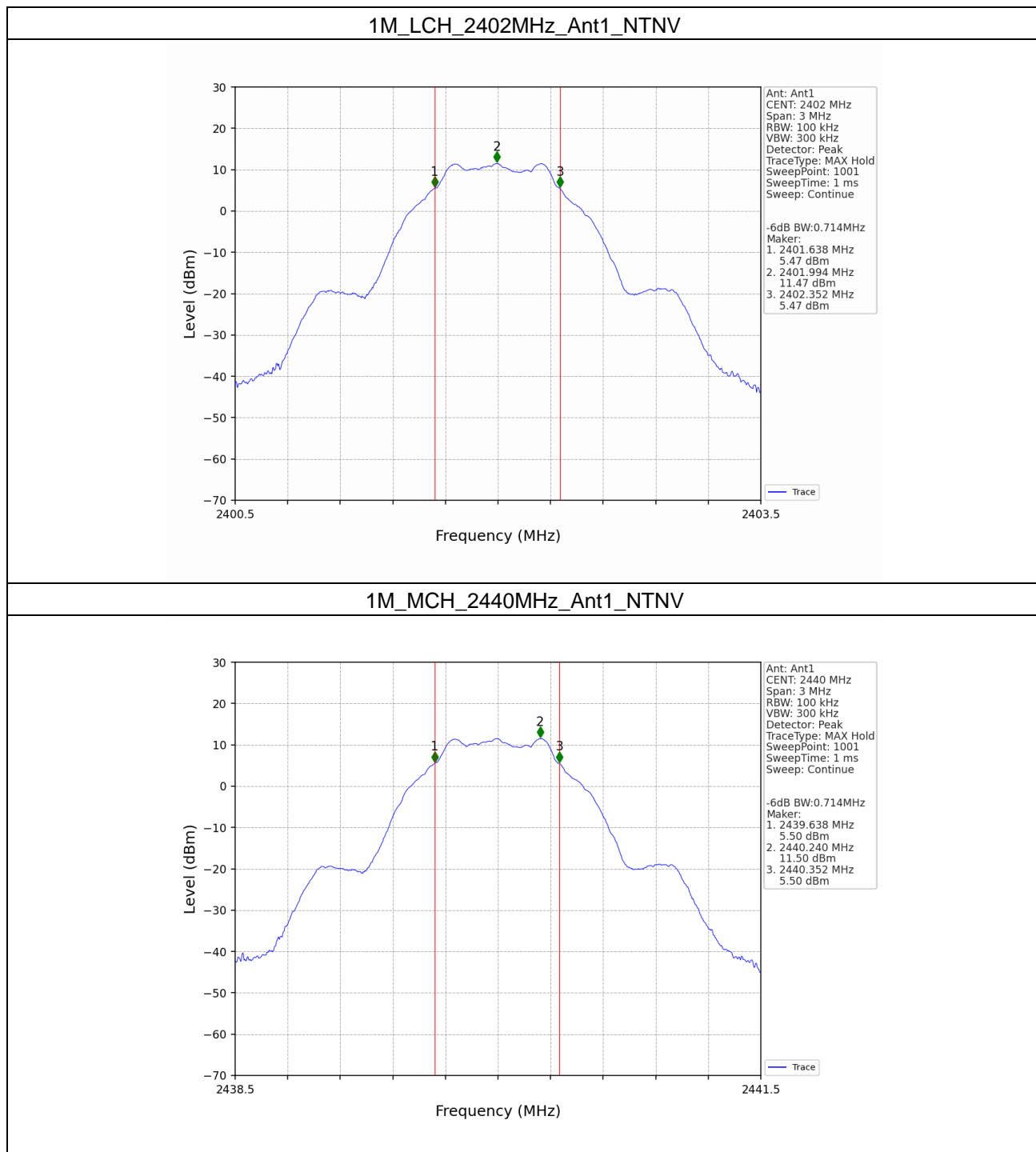
2M_MCH_2440MHz_Ant1_NTNV



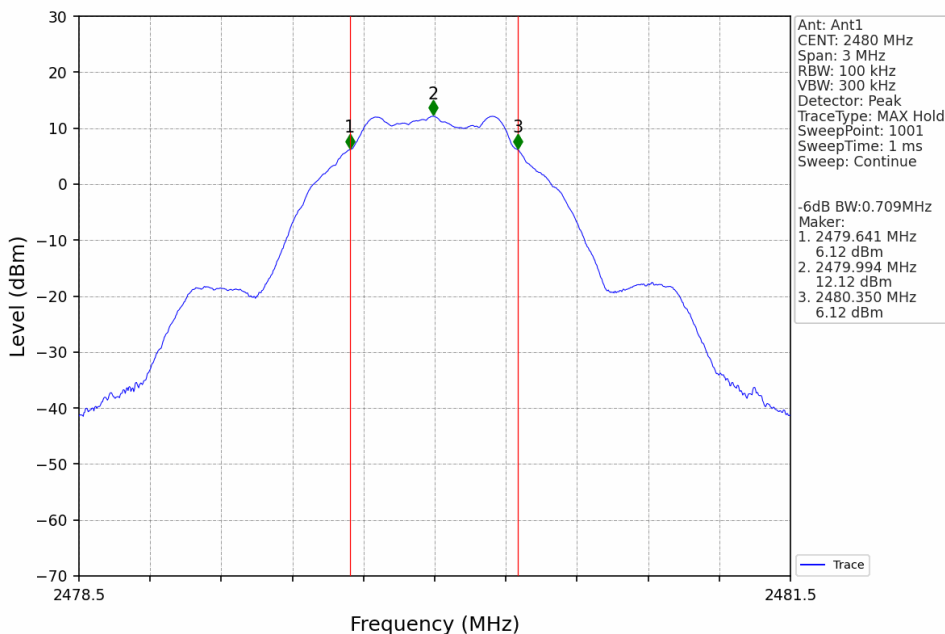
2M_HCH_2478MHz_Ant1_NTNV



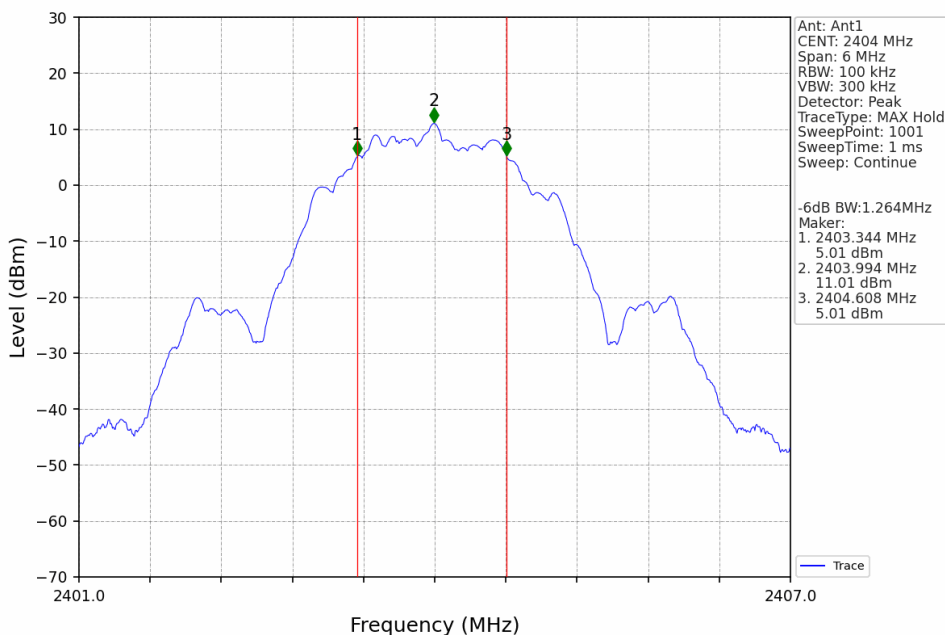
2.2.2 6dB BW



1M_HCH_2480MHz_Ant1_NTNV



2M_LCH_2404MHz_Ant1_NTNV



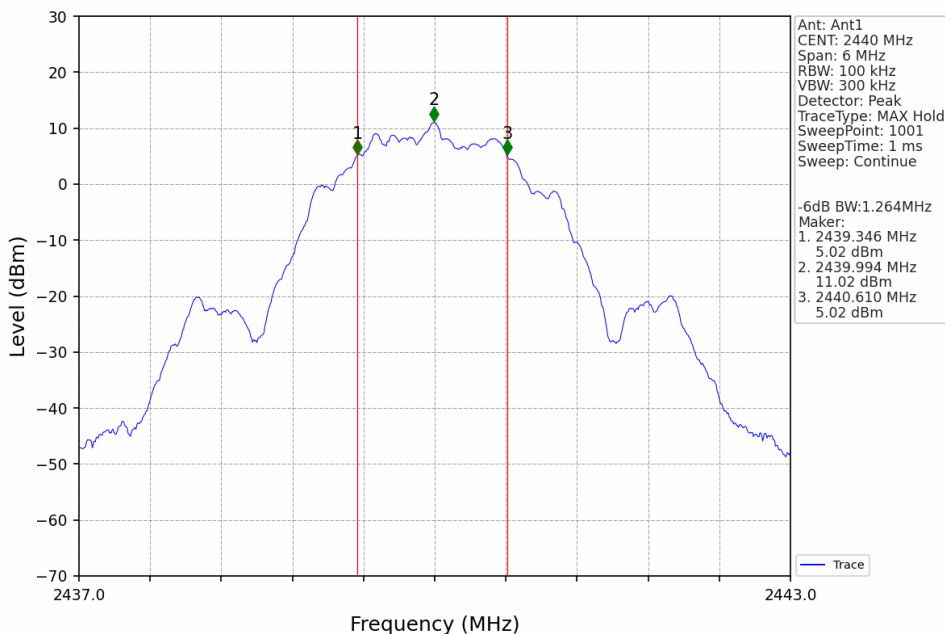
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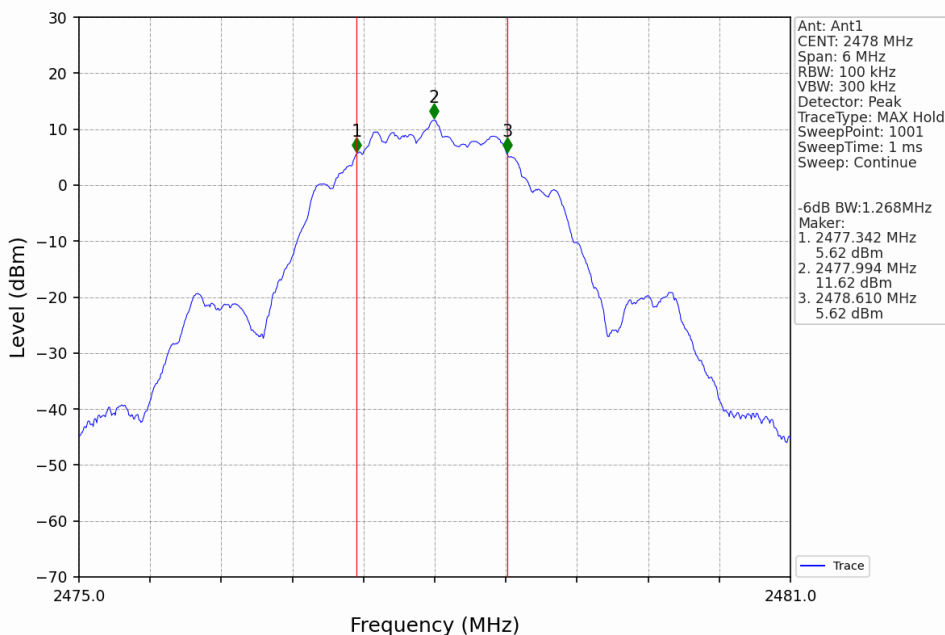
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2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2478MHz_Ant1_NTNV



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3. Maximum Conducted Output Power

3.1 Test Result

3.1.1 Power

Mode	TX Type	Frequency (MHz)	Maximum Peak Conducted Output Power (dBm)		Verdict
			ANT1	Limit	
1M	SISO	2402	6.72	<=30	Pass
		2440	6.73	<=30	Pass
		2480	7.65	<=30	Pass
2M	SISO	2404	6.71	<=30	Pass
		2440	6.77	<=30	Pass
		2478	7.65	<=30	Pass

4. Maximum Power Spectral Density

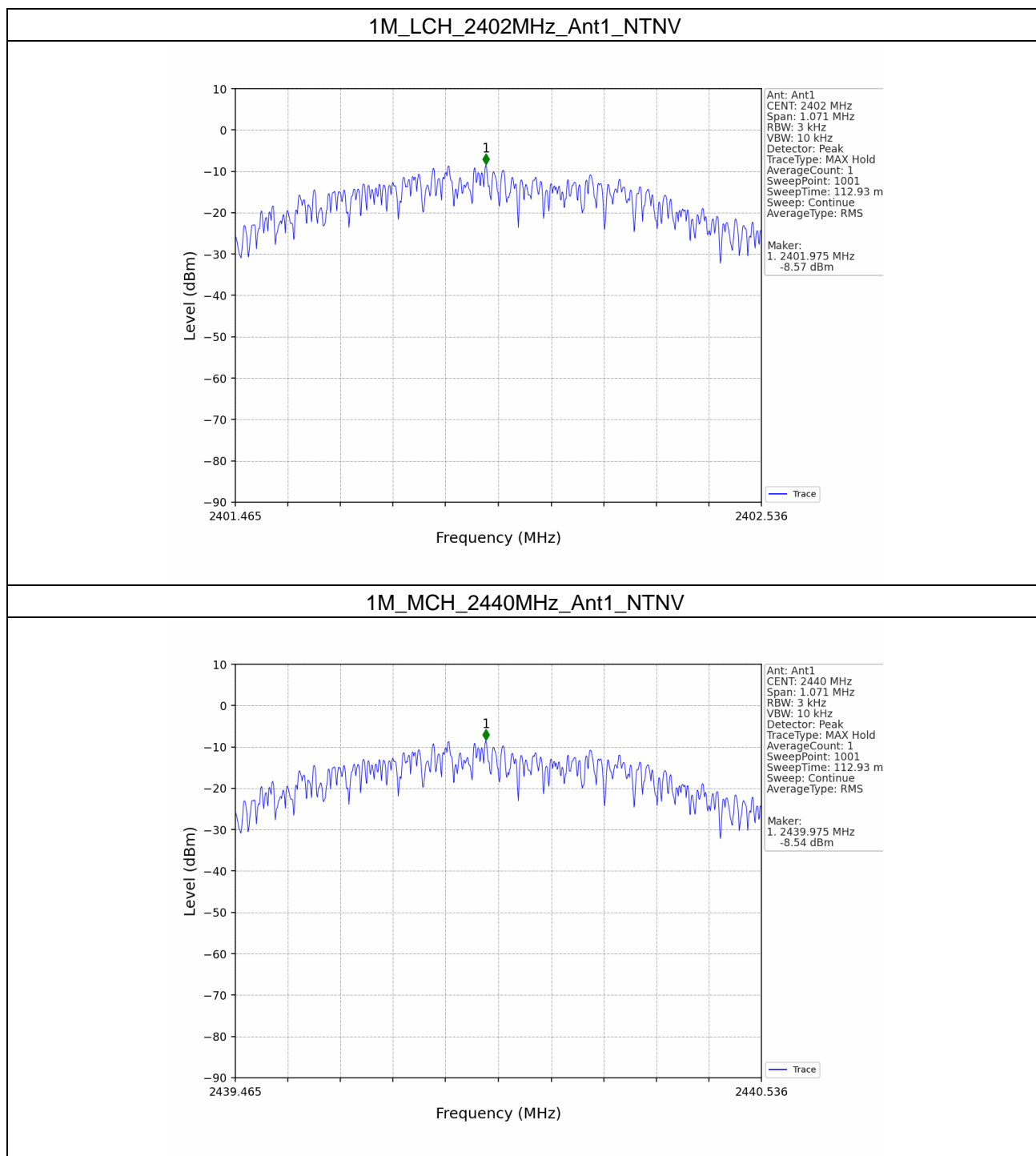
4.1 Test Result

4.1.1 PSD

Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm/3kHz)		Verdict
			ANT1	Limit	
1M	SISO	2402	-8.57	<=8	Pass
		2440	-8.54	<=8	Pass
		2480	-7.60	<=8	Pass
2M	SISO	2404	-10.82	<=8	Pass
		2440	-10.74	<=8	Pass
		2478	-9.95	<=8	Pass

4.2 Test Graph

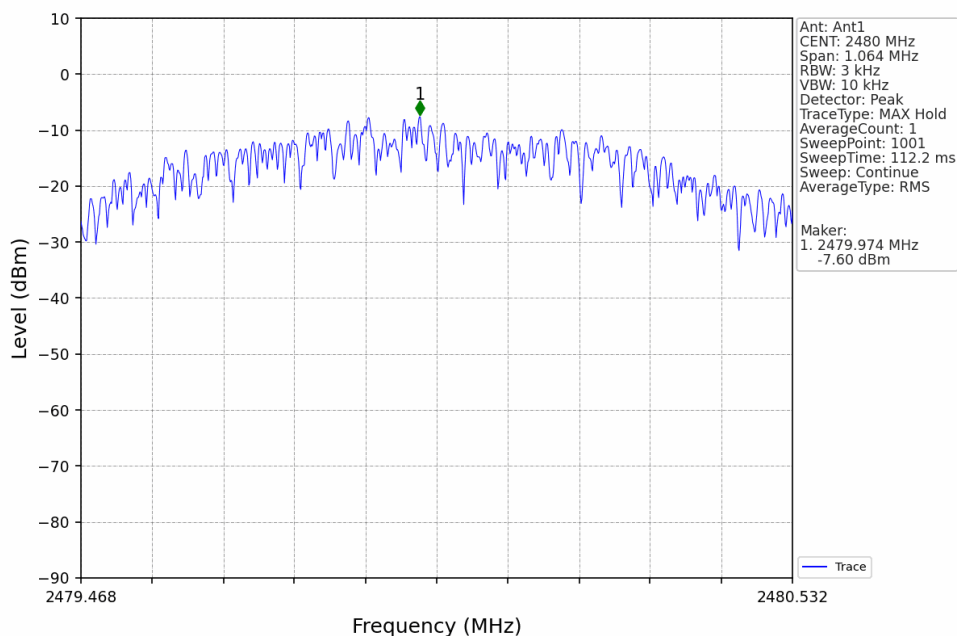
4.2.1 PSD



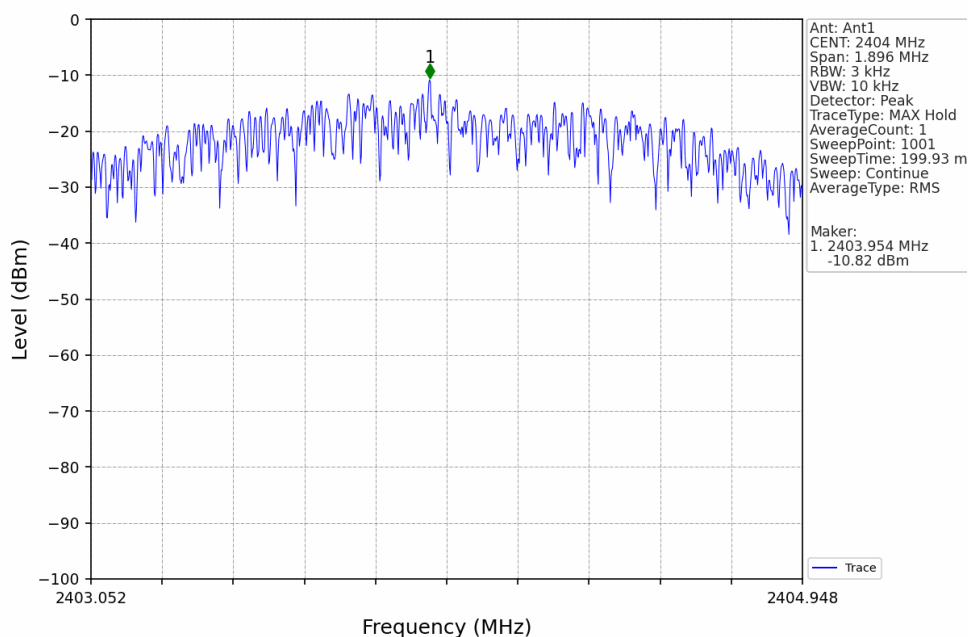
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1M_HCH_2480MHz_Ant1_NTNV



2M_LCH_2404MHz_Ant1_NTNV



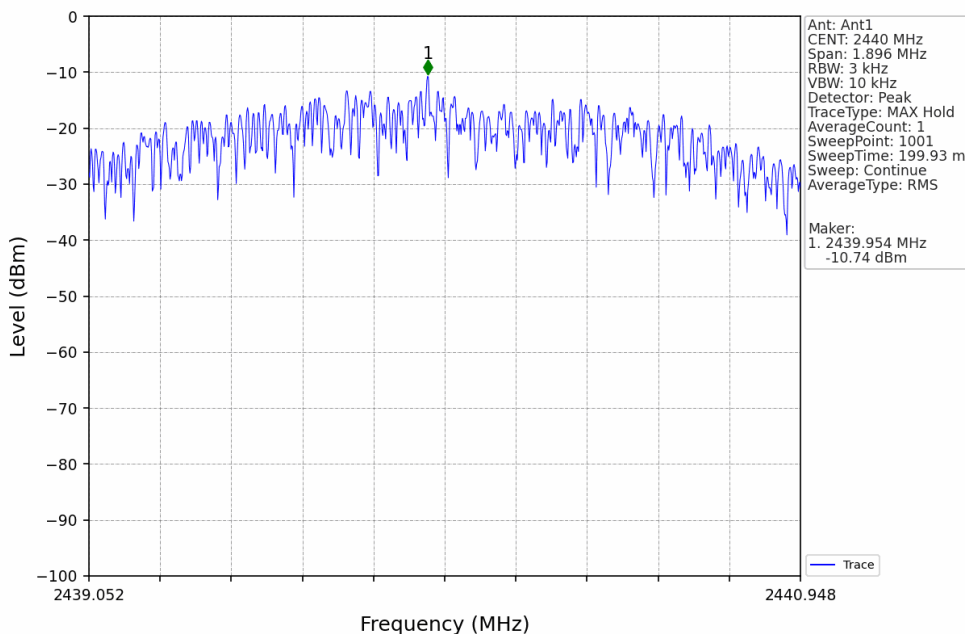
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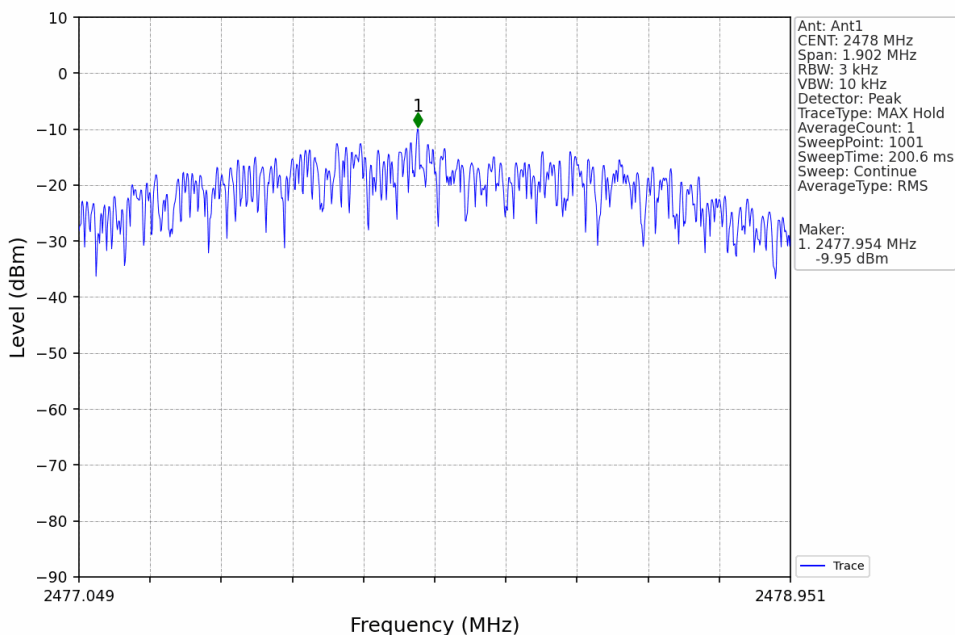
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2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2478MHz_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	5.90
		2440	1	5.92
		2480	1	6.84
2M	SISO	2404	1	5.36
		2440	1	5.40
		2478	1	6.24

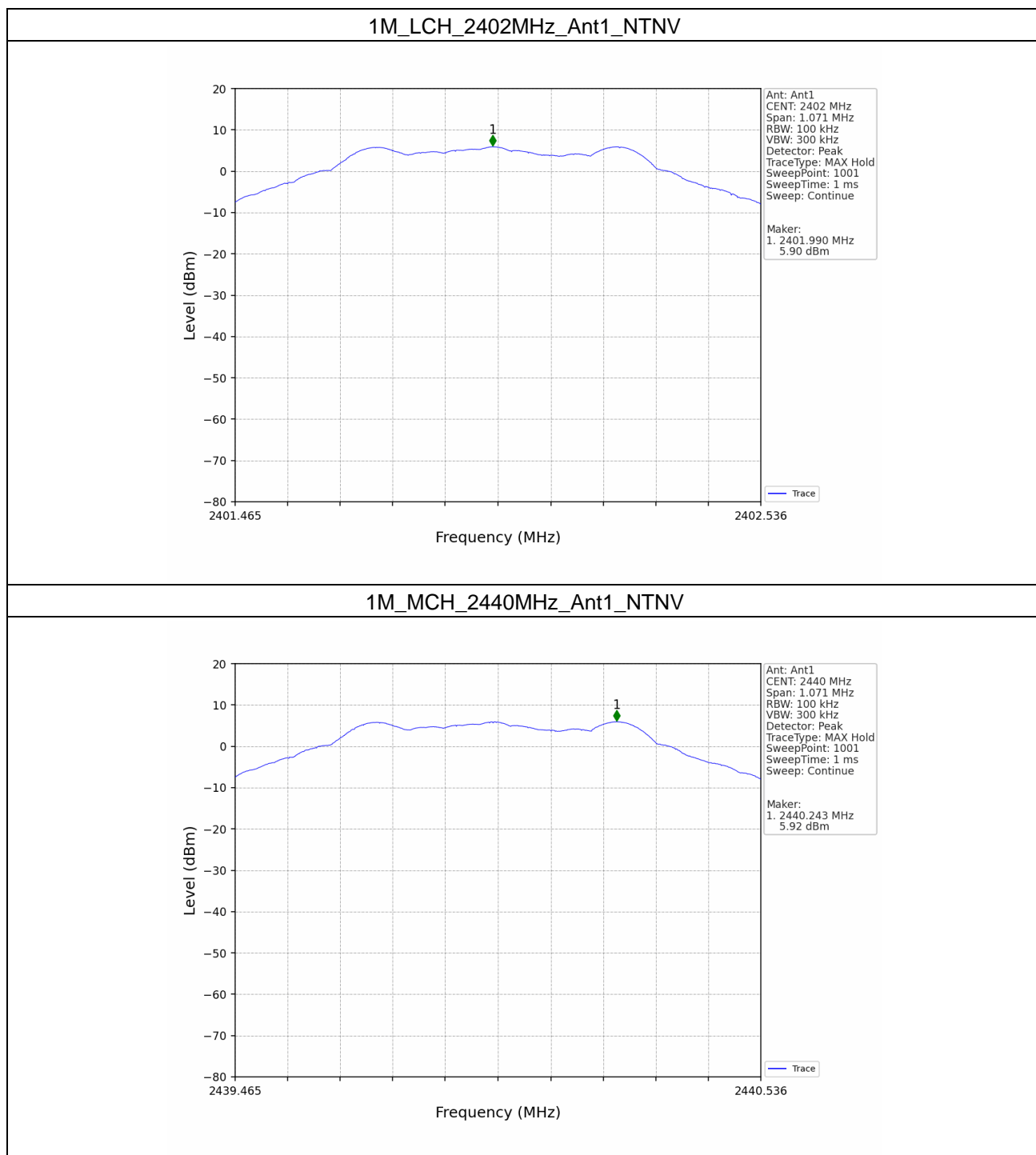
5.1.2 CSE

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
1M	SISO	2402	1	6.84	-13.16	Pass
		2440	1	6.84	-13.16	Pass
		2480	1	6.84	-13.16	Pass
2M	SISO	2404	1	6.24	-13.76	Pass
		2440	1	6.24	-13.76	Pass
		2478	1	6.24	-13.76	Pass



5.2 Test Graph

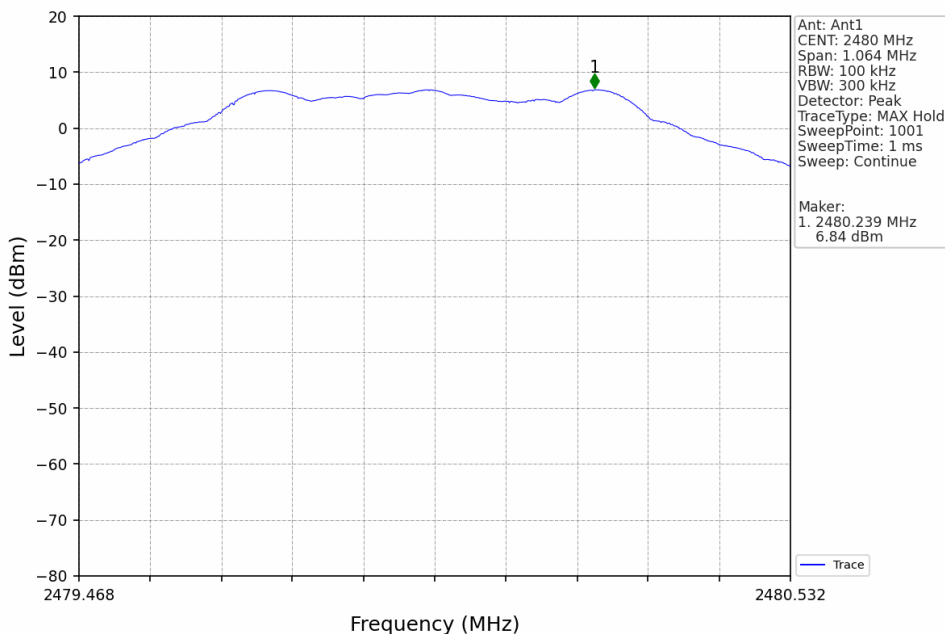
5.2.1 Ref



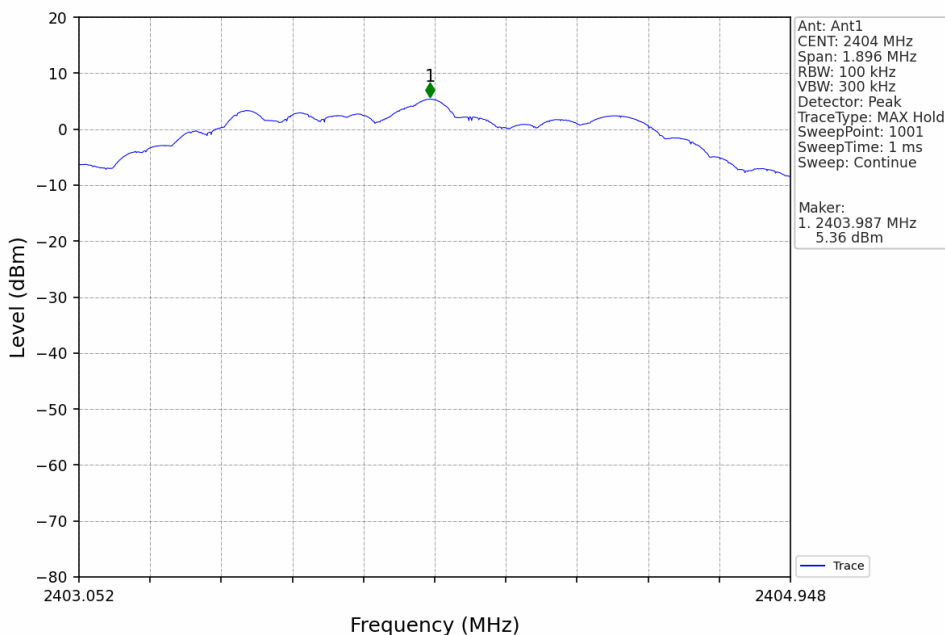
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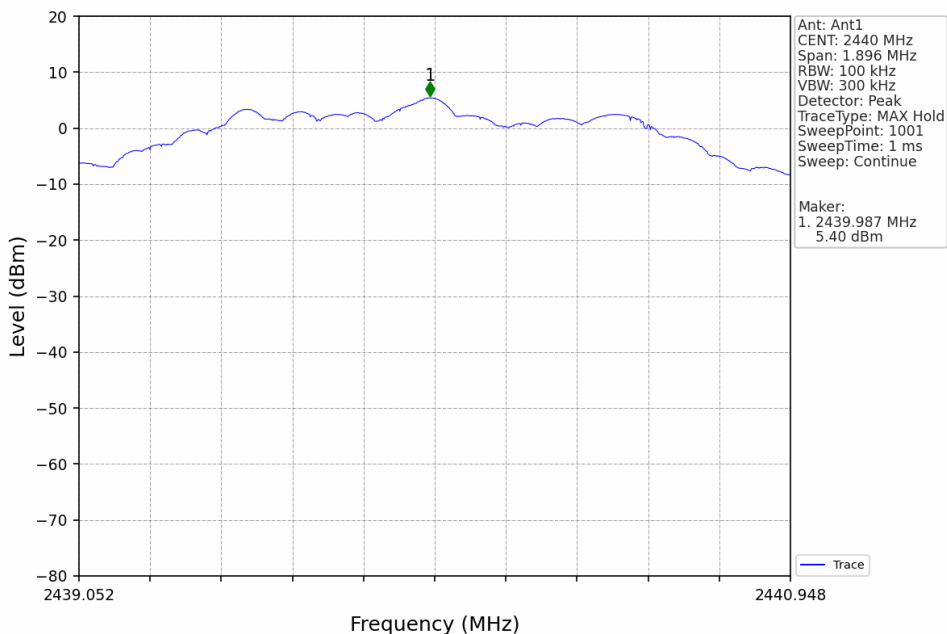
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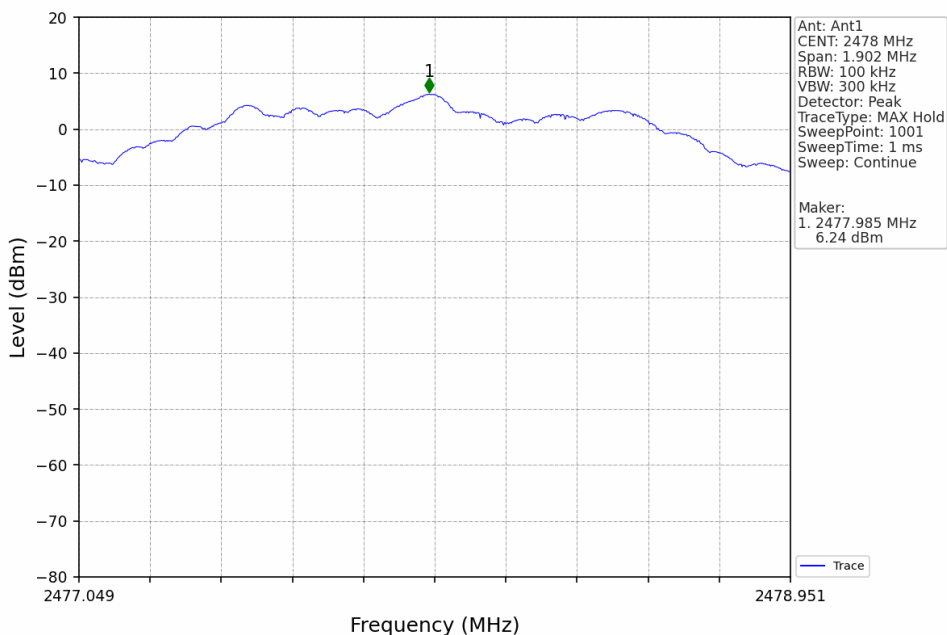
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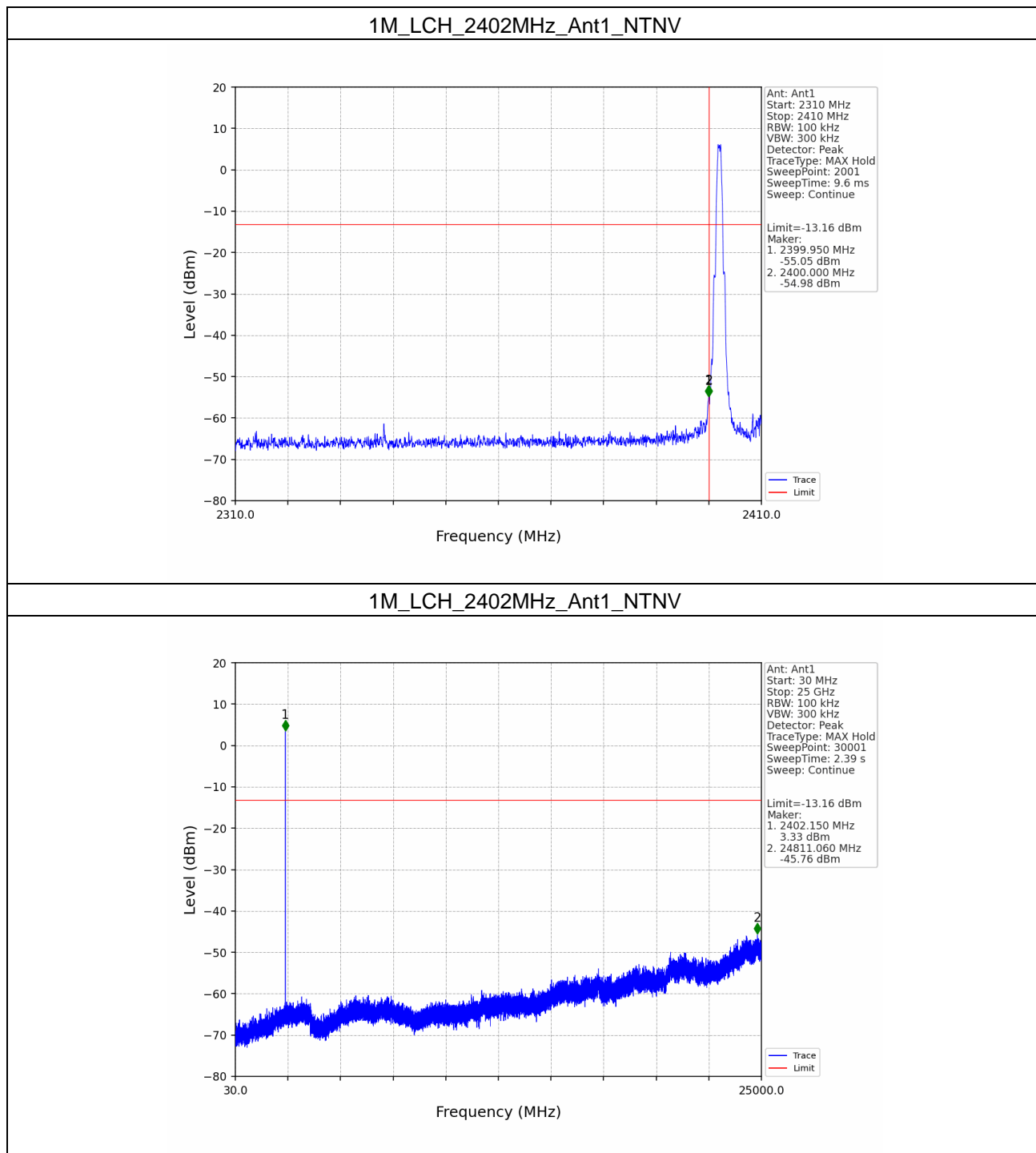
2M_MCH_2440MHz_Ant1_NTNV



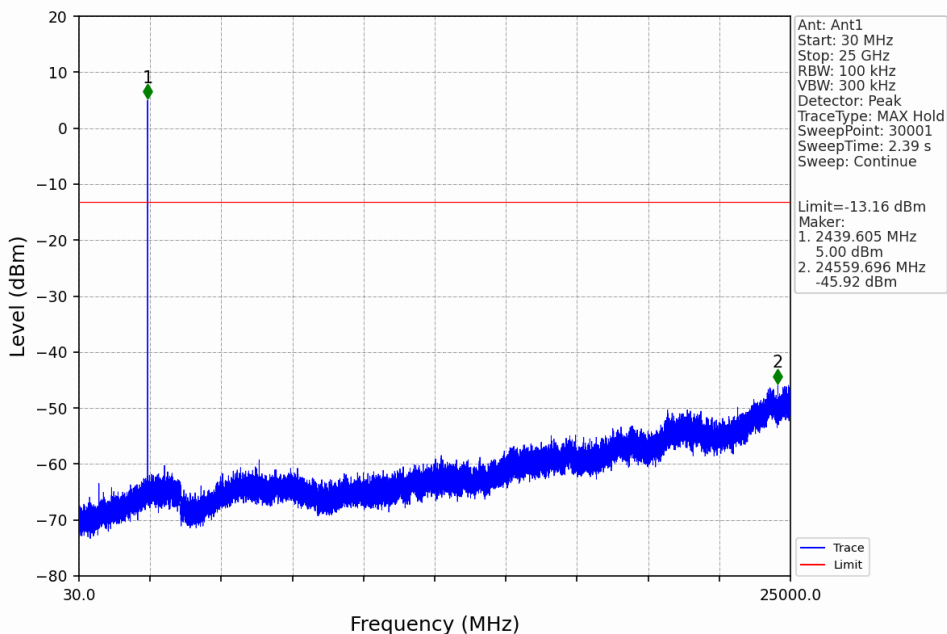
2M_HCH_2478MHz_Ant1_NTNV



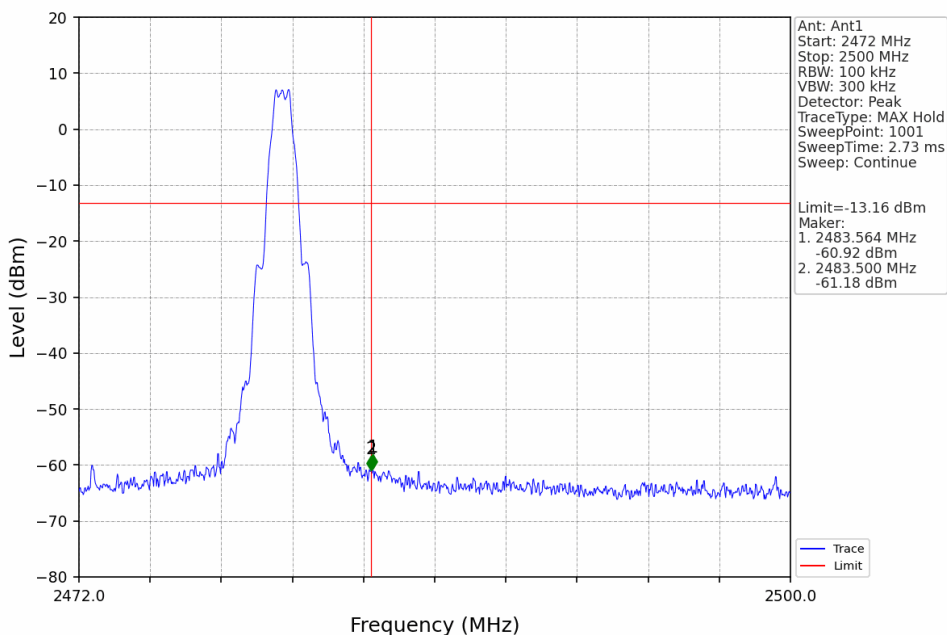
5.2.2 CSE



1M_MCH_2440MHz_Ant1_NTNV



1M_HCH_2480MHz_Ant1_NTNV



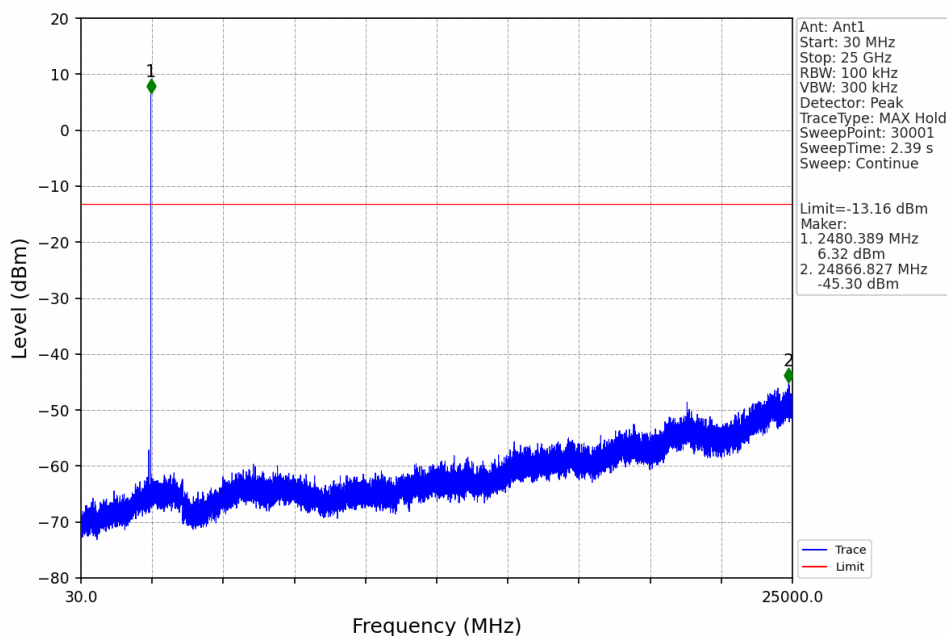
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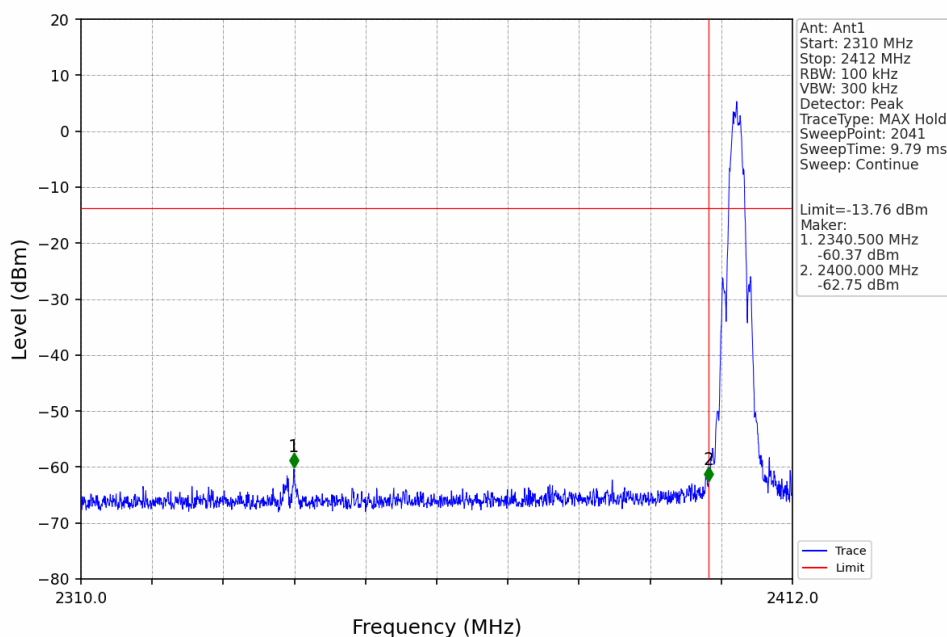
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1M_HCH_2480MHz_Ant1_NTNV



2M_LCH_2404MHz_Ant1_NTNV



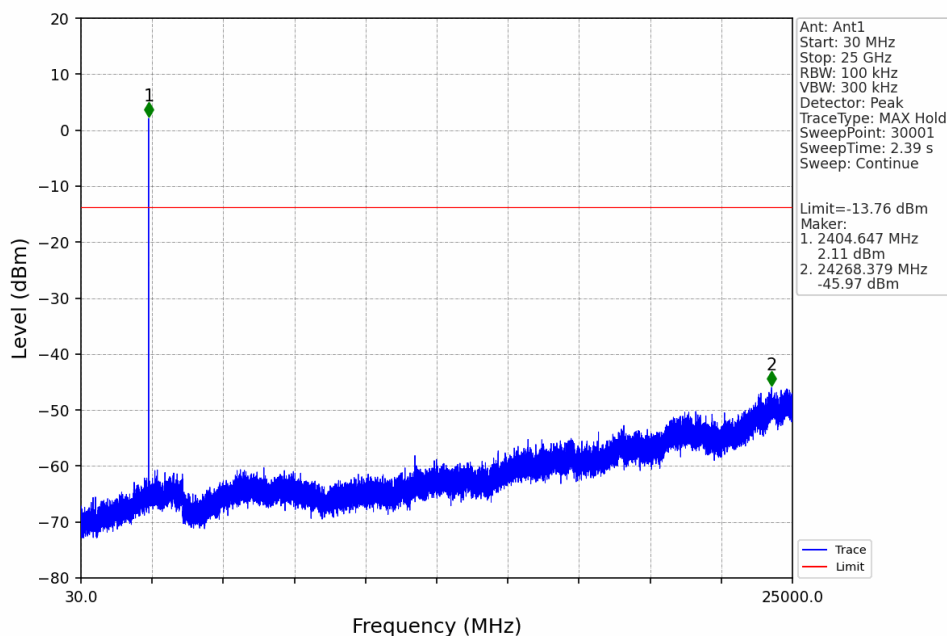
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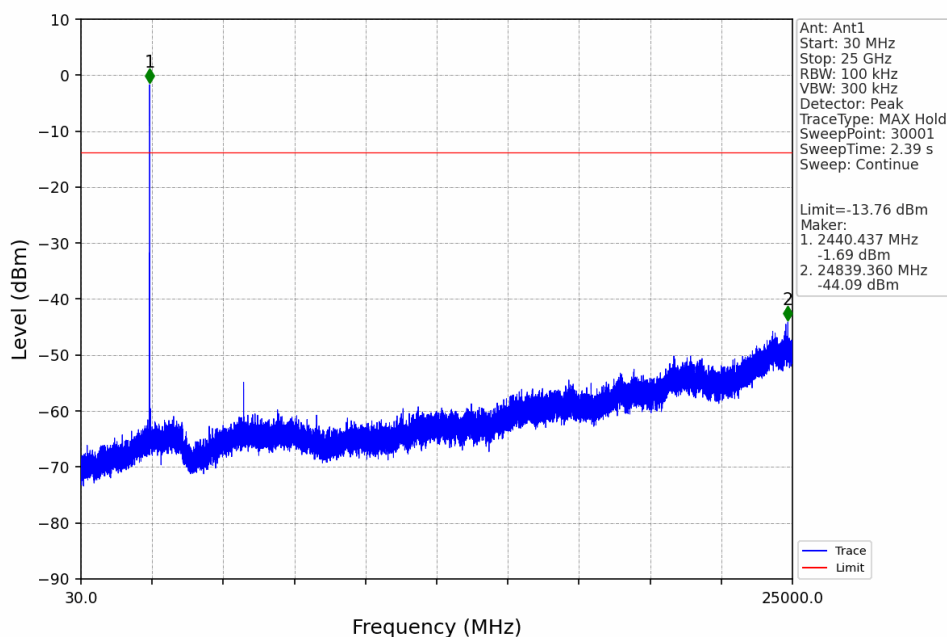
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2M_LCH_2404MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



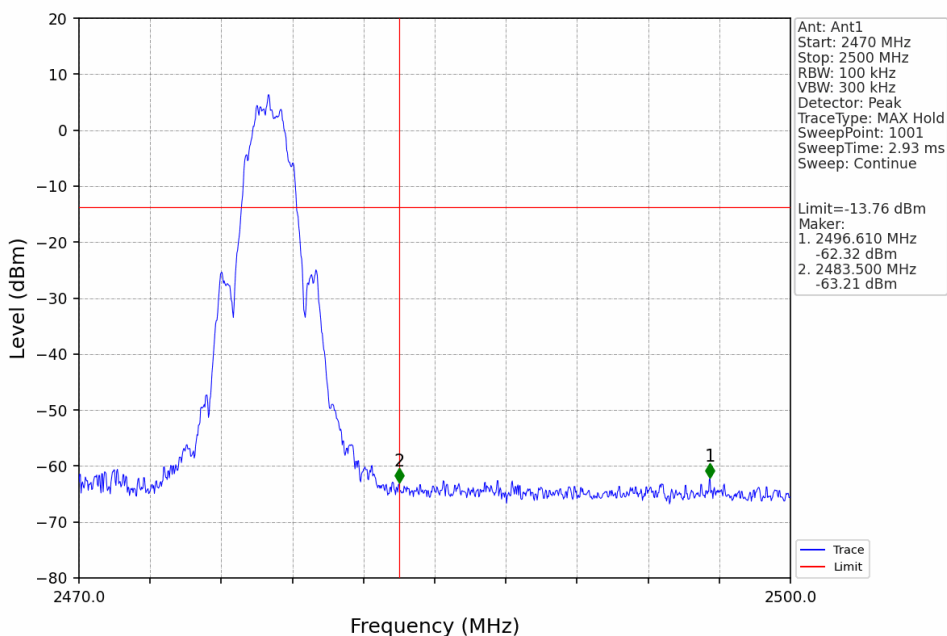
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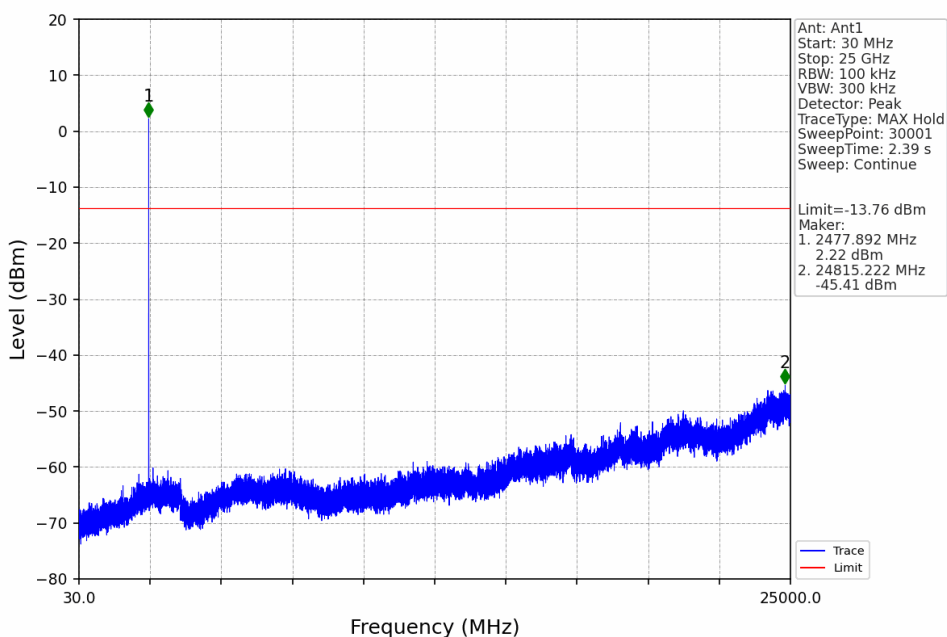
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2M_HCH_2478MHz_Ant1_NTNV



2M_HCH_2478MHz_Ant1_NTNV



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SZEMC-TRF-01 Rev. A/1

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For left earbud:

1. Duty Cycle

1.1 Test Result

1.1.1 Ant1

Ant1							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
1M	SISO	2402	0.380	0.625	60.80	2.16	0.00
		2440	0.380	0.625	60.80	2.16	0.00
		2480	0.380	0.625	60.80	2.16	0.00
2M	SISO	2404	0.196	0.625	31.36	5.04	0.00
		2440	0.196	0.625	31.36	5.04	0.00
		2478	0.195	0.625	31.20	5.06	0.00



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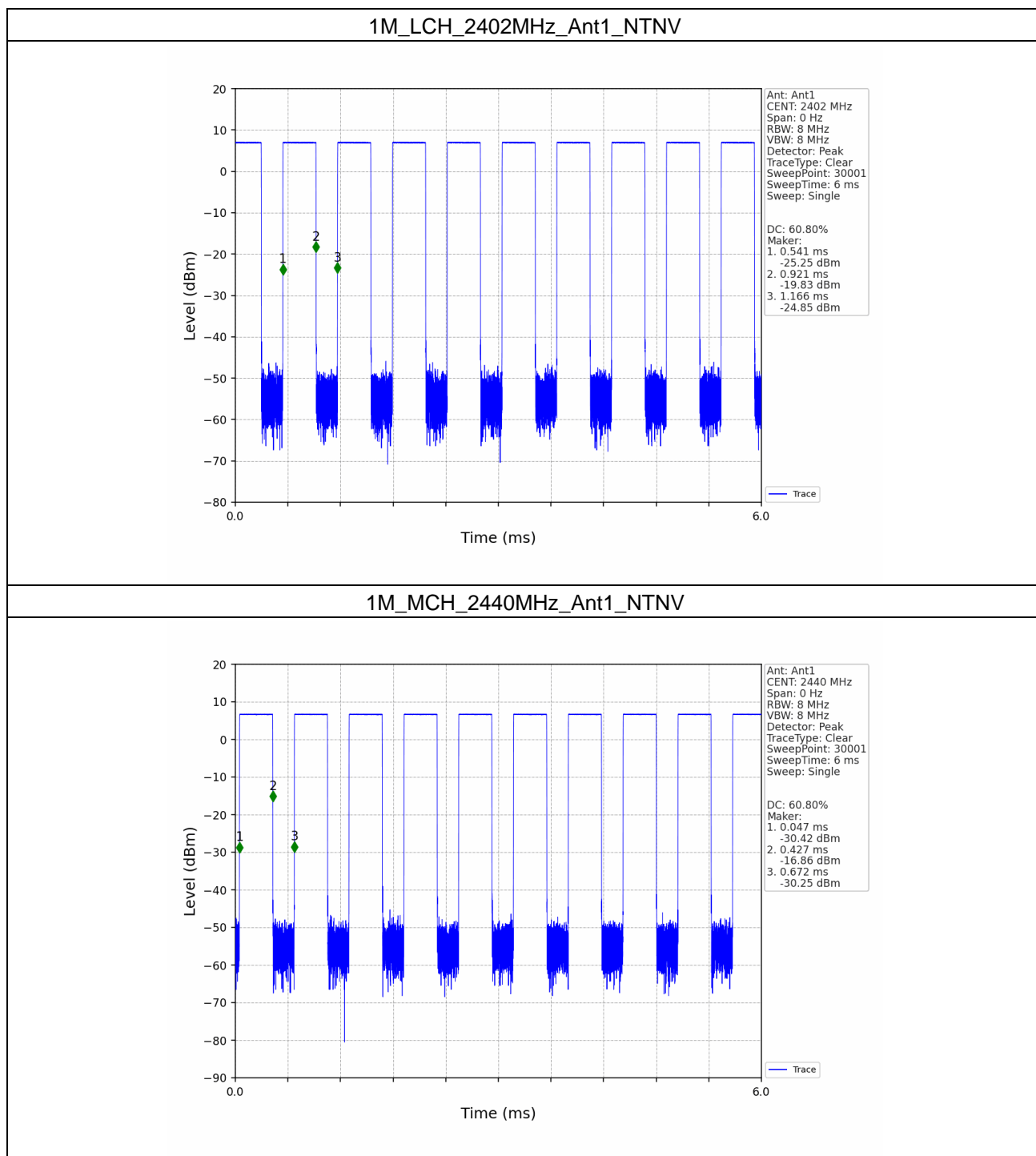
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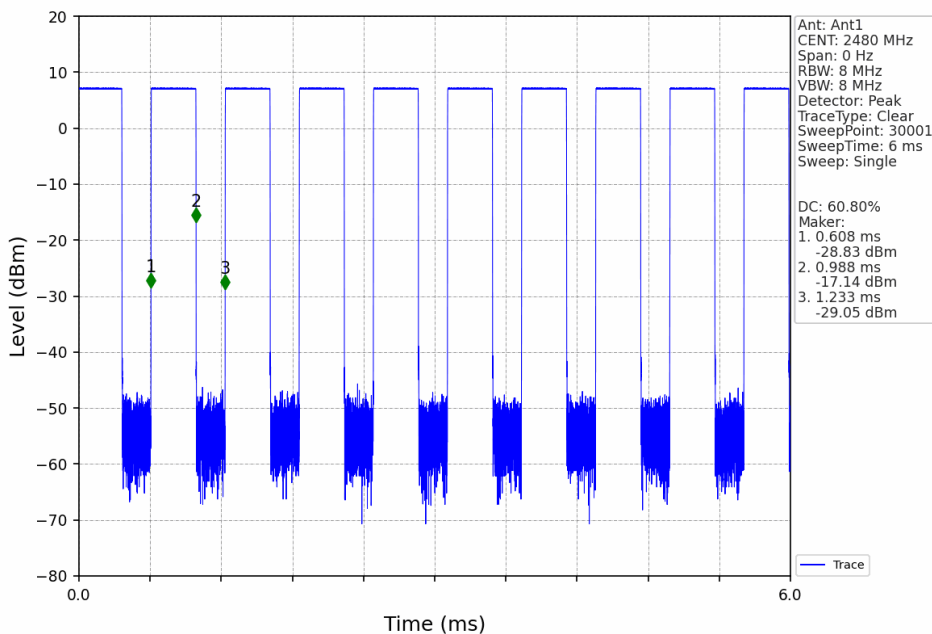
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1.2 Test Graph

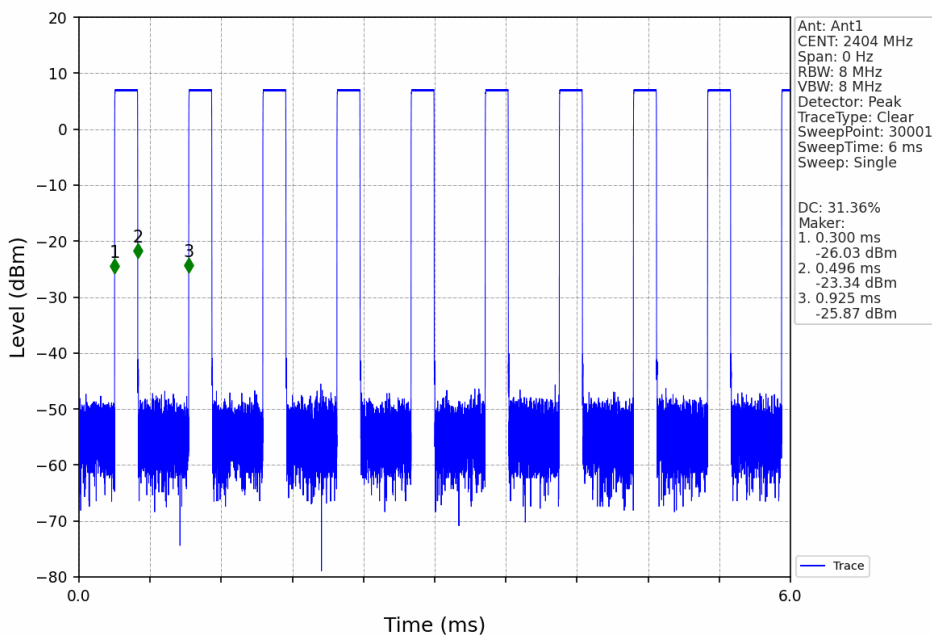
1.2.1 Ant1



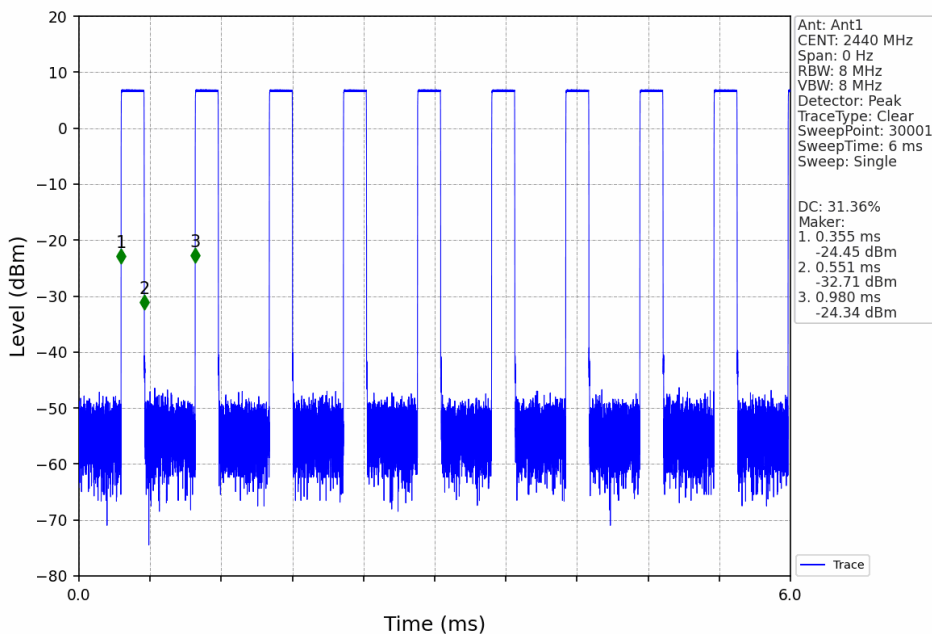
1M_HCH_2480MHz_Ant1_NTNV



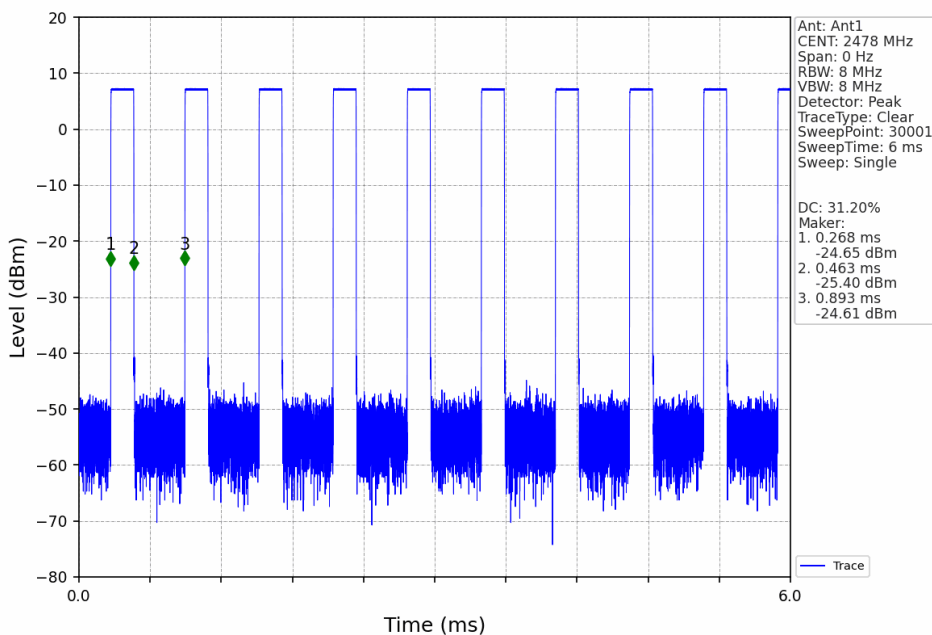
2M_LCH_2404MHz_Ant1_NTNV



2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2478MHz_Ant1_NTNV



2. Bandwidth

2.1 Test Result

2.1.1 OBW

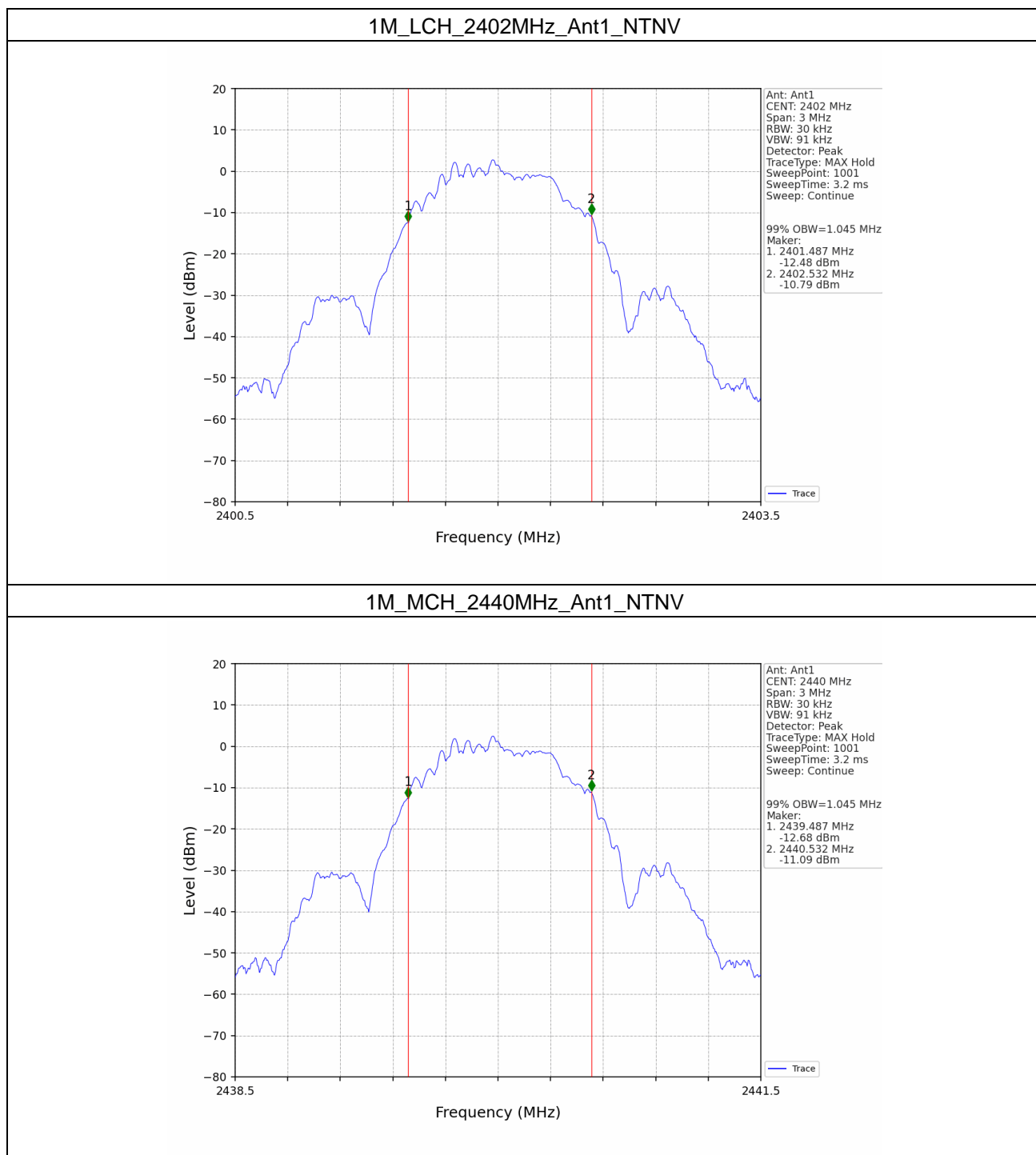
Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	1	1.045	/	Pass
		2440	1	1.045	/	Pass
		2480	1	1.046	/	Pass
2M	SISO	2404	1	2.086	/	Pass
		2440	1	2.086	/	Pass
		2478	1	2.086	/	Pass

2.1.2 6dB BW

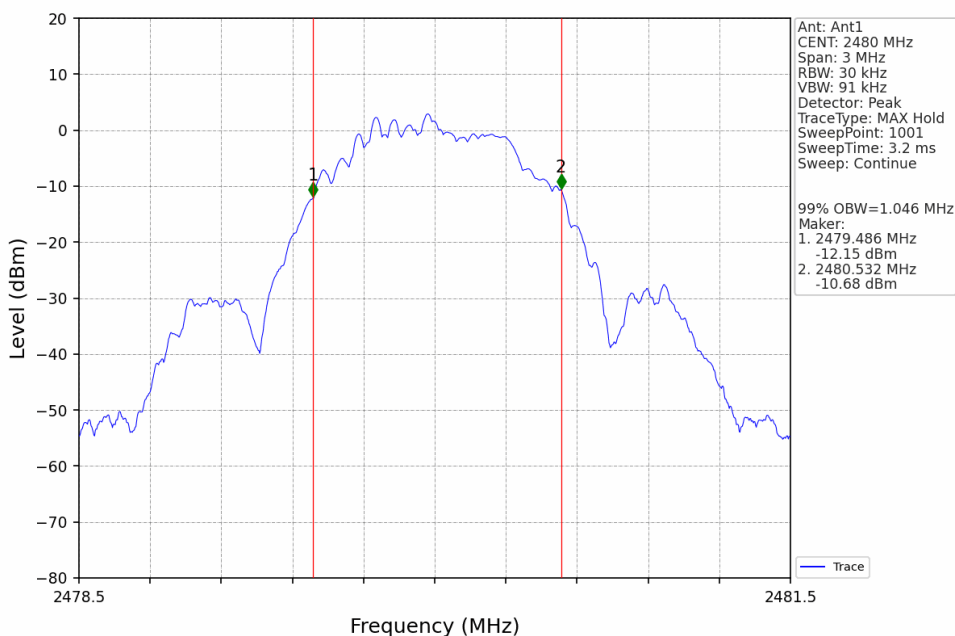
Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	1	0.716	≥ 0.5	Pass
		2440	1	0.717	≥ 0.5	Pass
		2480	1	0.708	≥ 0.5	Pass
2M	SISO	2404	1	1.273	≥ 0.5	Pass
		2440	1	1.271	≥ 0.5	Pass
		2478	1	1.275	≥ 0.5	Pass

2.2 Test Graph

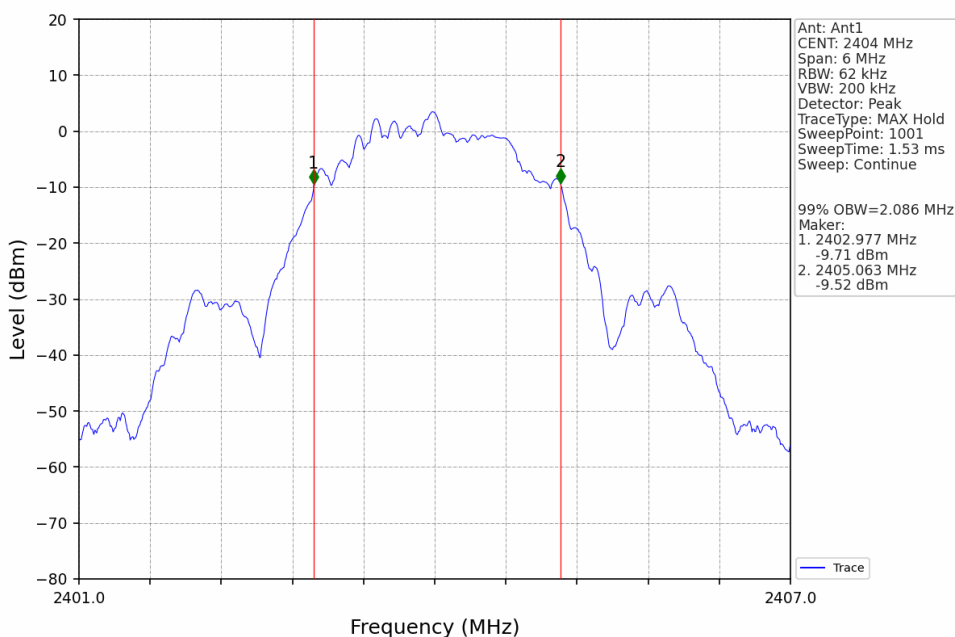
2.2.1 OBW



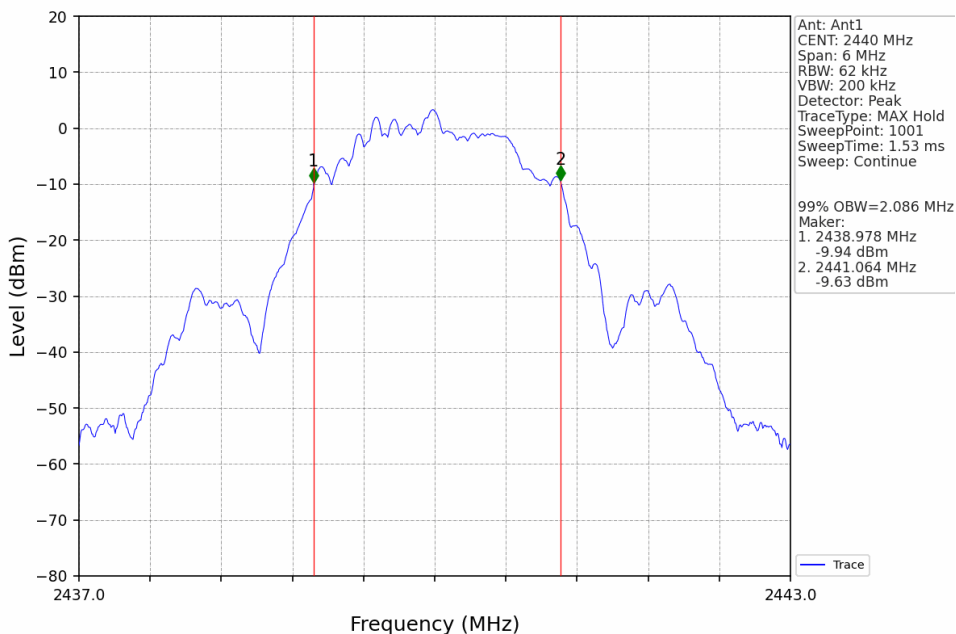
1M_HCH_2480MHz_Ant1_NTNV



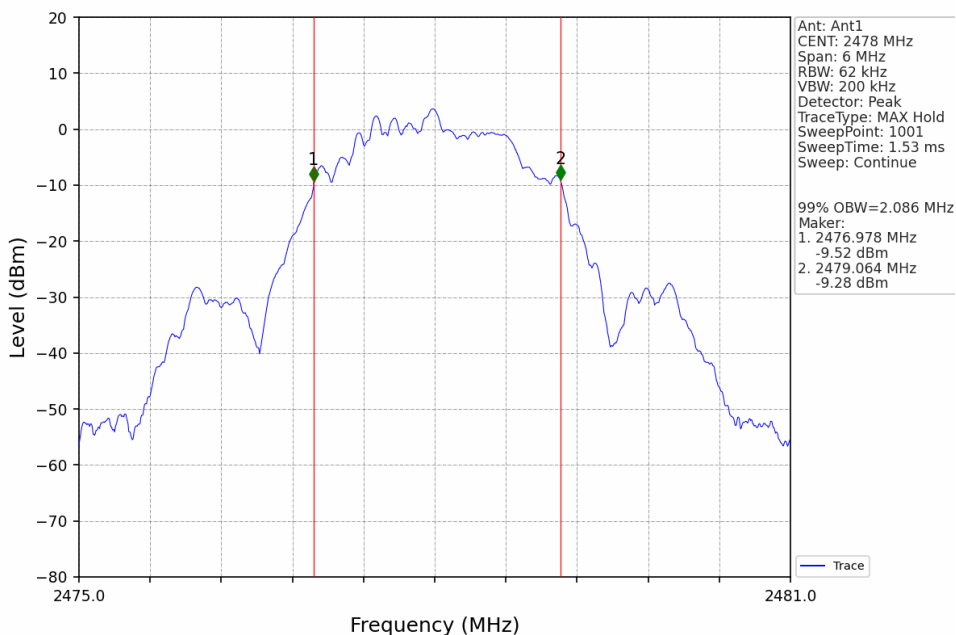
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2M_MCH_2440MHz_Ant1_NTNV



2M_HCH_2478MHz_Ant1_NTNV



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