

TEST REPORT

Application No.: SUCR2509000915WM

Applicant: Guangdong OPPO Mobile Telecommunications Corp.,Ltd.

Address of Applicant: NO.18 HaiBin Road, Wusha Village, Chang'an Town, DongGuan City, Guangdong Province, P.R. China

Manufacturer: Guangdong OPPO Mobile Telecommunications Corp.,Ltd.

Address of Manufacturer: NO.18 HaiBin Road, Wusha Village, Chang'an Town, DongGuan City, Guangdong Province, P.R. China

Equipment Under Test (EUT):

EUT Description: Mobile Phone

Model No.: CPH2783, CPH2831

Trade Mark: OPPO

FCC ID: R9C-OP24361

Standard(s) : 47 CFR Part 15, Subpart C 15.247

Date of Receipt: 2025-09-15

Date of Test: 2025-10-21 to 2025-10-21

Date of Issue: 2025-10-28

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	Description	Date	Remark
01	Original	2025-10-28	/

Authorized for issue by:			
Tested By		<i>Nature Shen</i>	
		Nature Shen/Project Engineer	
Approved By		<i>Cedar cheng</i>	
		Cedar Cheng /Reviewer	

2 Test Summary

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

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2020) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass
Radiated Emissions which fall in the restricted bands		ANSI C63.10 (2020) Section 6.10.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions Below 1GHz		ANSI C63.10 (2020) Section 6.4,6.5	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Radiated Spurious Emissions Above 1GHz		ANSI C63.10 (2020) Section 6.6	47 CFR Part 15, Subpart C 15.205 & 15.209	Pass
Conducted Peak Output Power		ANSI C63.10 (2020) Section 11.9.1	47 CFR Part 15, Subpart C 15.247(b)(3)	Pass
Minimum 6dB Bandwidth		ANSI C63.10 (2020) Section 11.8.1	47 CFR Part 15, Subpart C 15.247a(2)	Pass
Power Spectrum Density		ANSI C63.10 (2020) Section 11.10.2	47 CFR Part 15, Subpart C 15.247(e)	Pass
Conducted Band Edges Measurement		ANSI C63.10 (2020) Section 6.10.4	47 CFR Part 15, Subpart C 15.247(d)	Pass
Conducted Spurious Emissions		ANSI C63.10 (2020) Section 11.11	47 CFR Part 15, Subpart C 15.247(d)	Pass



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Product Equality Declaration

According to the declaration from the applicant, the differences between CPH2783 and CPH2831 are listed below:

Model Name	Asia-Pacific Edition Model: CPH2783	Asia-Pacific Edition Model: CPH2831
Battery	BLPD79	BLPD65
Band	Initial	Same as Asia-Pacific Edition
Operate voltage	Maximum: 4.48V Nominal: 3.88V Minimum: 3.60V	Maximum: 4.53V Nominal: 3.92V Minimum: 3.60V
Adapter	15W,OP53CBEH, OP53CBUH, OP53CBYH,OP53CBAH,OP53CBTH	45W,VCB4HAEH,VCB4HAYH,VCB4 HAUH,VCB4HATH,VCB4HAAH,VCB 4JAEH,VCB4JAYH,VCB4JAUH,VCB4J AAH,VCB4JATH

Considering to the differences, pre-scans were performed on model CPH2783 and CPH2831, model CPH2831 was selected to perform the final test.

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4 General Information

4.1 Details of E.U.T.

Power supply:	3.88V
Operation Frequency:	2402MHz to 2480MHz
Bluetooth Version:	6.0
Modulation Type:	GFSK
Number of Channels:	40
Channel Spacing:	2MHz
Antenna Type:	FPC Antenna
Antenna Gain:	-1.5dBi (Ant7) (Provided by the manufacturer)
Antenna Number:	1

4.2 Description of Support Units

Description	Manufacturer	Model No.	Serial No.
Computer	Lenovo	T14	2YK6GR
Mouse	Lenovo	3D optical Mouse	N/A
Router	Smauwave Technology Co.,Ltd	SRT 421	RT421X02211300001



4.3 Measurement Uncertainty & Decision Rule

No.	Item	Measurement Uncertainty
1	Radio Frequency	$\pm 7.25 \times 10^{-8}$
2	Duty cycle	$\pm 0.37\%$
3	Occupied Bandwidth	$\pm 3\%$
4	Conduction emission	$\pm 3.0\text{dB}$ (150kHz to 30MHz)
5	RF conducted power	$\pm 0.75\text{dB}$
6	RF power density	$\pm 2.84\text{dB}$
7	Conducted Spurious emissions	$\pm 0.75\text{dB}$
8	RF Radiated power	$\pm 2.6\text{dB}$ (30MHz-1GHz)
		$\pm 2.7\text{dB}$ (1GHz-18GHz)
9	Temperature test	$\pm 1^\circ\text{C}$
10	Humidity test	$\pm 3\%$
11	Supply voltages	$\pm 1\%$
12	Time	$\pm 3\%$
Remark: The U_{lab} (lab Uncertainty) is less than $U_{\text{CISPR/ETSI}}$ (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.		

4.4 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Suzhou) Co., Ltd.

South of No. 6 Plant, No. 1, Runsheng Road, Suzhou Industrial Park, Suzhou Area, China (Jiangsu)
Pilot Free Trade Zone

No tests were sub-contracted.

Note:

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

4.5 Test Facility

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

- **A2LA**

SGS-CSTC Standards Technical Services (Suzhou) Co., Ltd.is accredited by the American Association for Laboratory Accreditation (A2LA). Certificate No. 6336.01.

- **FCC**

SGS-CSTC Standards Technical Services (Suzhou) Co., Ltd. has been recognized as an accredited testing laboratory. Designation Number: CN1312.

- **ISED**

SGS-CSTC Standards Technical Services (Suzhou) Co., Ltd. has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory. Company Number: 27594

4.6 Deviation from Standards

None

4.7 Abnormalities from Standard Conditions

None

5 Equipment List

Item	Equipment	Manufacturer	Model	Inventory No	Cal Date	Cal. Due Date
Conducted Emission at Mains Terminals						
1	EMI Test Receive	R&S	ESR7	SUWI-01-10-01	1/15/2025	1/14/2026
2	LISN	R&S	ENV216	SUWI-01-19-03	5/8/2025	5/7/2026
3	LISN	Schwarzbeck	ENV216	SUWI-01-19-04	5/8/2025	5/7/2026
4	Test Software	Tonscend	JS32-CE 4.0.0.2	SUWI-02-09-05	N.C.R	N.C.R
RF Conducted Test						
1	Shielding Room	Brilliant-emc	N/A	SUWI-04-08-01	11/9/2022	11/8/2025
2	Signal Analyzer	ROHDE&SCHWARZ	FSW43	SUWI-01-02-04	1/20/2025	1/19/2026
3	Signal Analyzer	KEYSIGHT	N9020A	SUWI-01-02-15	11/21/2024	11/20/2025
4	MXG Vector signal genitor	KEYSIGHT	N5182B	SUWI-01-38-01	1/15/2025	1/14/2026
5	Signal Generator	ROHDE&SCHWARZ	SMW200A	SUWI-01-07-08	3/27/2025	3/26/2026
6	Signal Generator	ROHDE&SCHWARZ	SMW100A	SUWI-01-08-01	1/16/2025	1/15/2026
7	MXG Vector Signal Generator	ROHDE&SCHWARZ	SMR20	SUWI-01-33-01	3/17/2025	3/16/2026
8	Wideband Radio Communication Tester	ROHDE&SCHWARZ	CMW500	SUWI-01-16-13	5/8/2025	5/7/2026
9	Wideband Radio Communication Test Sttion	Anritsu	MT8000A	SUWI-01-34-02	8/25/2025	8/24/2026
10	Wideband Radio Communication Tester	Anritsu	MT8821C	SUWI-01-26-03	8/25/2025	8/24/2026
11	Power meter	Anritsu	ML2495A	SUWI-01-31-01	8/25/2025	8/24/2026
12	Pulse power sensor	Anritsu	MA2411B	SUWI-01-32-01	8/25/2025	8/24/2026
13	DC Power Supply	HYELEC	HY3005B	SUWI-01-18-01	1/15/2025	1/14/2026
14	Temperature and humidity meter	MingGao	TH101B	SUWI-01-01-07	2/13/2025	2/12/2026
15	Temperature Chamber	GIANT FORCE	ICT-017-40-SP-SD	SUWI-01-13-02	5/7/2025	5/6/2026
16	Measurement Software	TST	TST 272 V2.02	SUWI-03-55-03	NCR	NCR
RF Radiated Test						
1	Semi-Anechoic Chamber	Brilliant-emc	N/A	SUWI-04-02-01	6/3/2023	6/2/2026
2	Signal Analyzer	ROHDE&SCHWARZ	FSW43	SUWI-01-02-04	1/20/2025	1/19/2026
3	Signal Analyzer	KEYSIGHT	N9020A	SUWI-01-02-09	11/21/2024	11/20/2025
4	Test receiver	ROHDE&SCHWARZ	ESR7	SUWI-01-10-01	1/15/2025	1/14/2026
5	Signal Generator	ROHDE&SCHWARZ	SMW100A	SUWI-01-18-01	1/16/2025	1/15/2026
6	Receiving antenna	SCHWRZBECK MESS-	VULB 9168	SUWI-01-11-04	9/10/2025	9/9/2027



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		ELEKTRONIK				
7	Receiving antenna	SCHWRZBECK MESS- ELEKTRONIK	BBHA 9120D	SUWI-01-11-02	5/7/2025	5/6/2027
8	Receiving antenna	SCHWRZBECK MESS- ELEKTRONIK	BBHA 9170	SUWI-01-11-03	5/7/2025	5/6/2027
9	Active Loop Antenna	SCHWRZBECK MESS- ELEKTRONIK	FMZB 1519B	SUWI-01-21-01	5/7/2025	5/6/2027
10	Amplifier	Tonscend	TAP9K3G40	SUWI-01-14-01	1/16/2025	1/15/2026
11	Amplifier	Tonscend	TAP01018050	SUWI-01-14-02	1/16/2025	1/15/2026
12	Amplifier	Tonscend	TAP18040048	SUWI-01-14-03	1/20/2025	1/19/2026
13	Wideband Radio Communication Tester	Anritsu	MT8820C	SUWI-01-26-01	8/25/2025	8/24/2026
14	Wideband Radio Communication Tester	Anritsu	MT8821C	SUWI-01-26-03	8/25/2025	8/24/2026
15	Wideband Radio Communication Tester	ROHDE&SCHWARZ	CMW500	SUWI-01-16-09	8/26/2025	8/25/2026
16	Radio Communication Analyzer	StarPoint	SP9500E	SUWI-01-28-02	11/19/2024	11/18/2025
17	Signal Generator	ROHDE&SCHWARZ	SMB100A	SUWI-01-08-01	1/16/2025	1/15/2026
18	DC Power Supply	HYELEC	HY3005B	SUWI-01-18-01	1/15/2025	1/14/2026
19	Temperature and humidity meter	MingGao	TH101B	SUWI-01-01-05	2/13/2025	2/12/2026
20	Measurement Software	Tonscend	JS32-RE 4.0.0.0	SUWI-02-09-06	NCR	NCR

6 Radio Spectrum Technical Requirement

6.1 Antenna Requirement

6.1.1 Test Requirement:

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

6.1.2 Conclusion

Standard Requirement:

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

15.247(b) (4) requirement:

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

EUT Antenna:

The antenna is FPC Antenna and no consideration of replacement. The best case gain of the antenna is -1.5dBi.

Antenna location: Refer to internal photo.



7 Radio Spectrum Matter Test Results

7.1 Conducted Emissions at AC Power Line (150kHz-30MHz)

Test Requirement 47 CFR Part 15, Subpart C 15.207

Test Method: ANSI C63.10 (2020) Section 6.2

Limit:

Frequency of emission(MHz)	Conducted limit(dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50
*Decreases with the logarithm of the frequency.		
Detector: Peak for pre-scan (9kHz resolution bandwidth) 0.15M to 30MHz		

7.1.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C

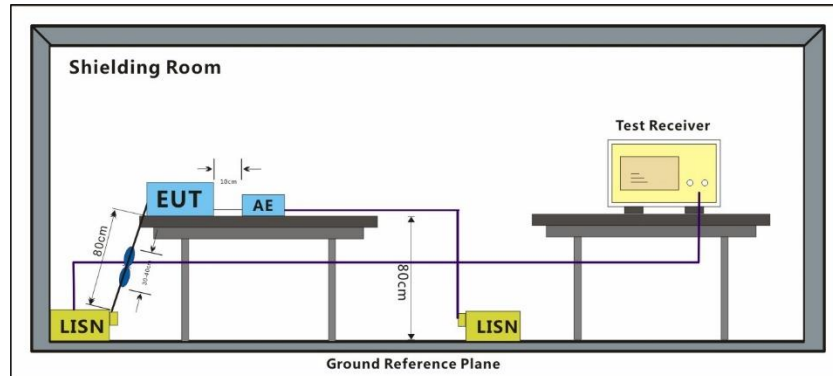
Humidity: 44 % RH

Atmospheric Pressure: 1024 mbar

7.1.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Charge + TX mode(1Mbps)_Keep the EUT in charging and continuously transmitting mode with GFSK modulation.
Final test	01	Charge + TX mode(2Mbps)_Keep the EUT in charging and continuously transmitting mode with GFSK modulation.

7.1.3 Test Setup Diagram

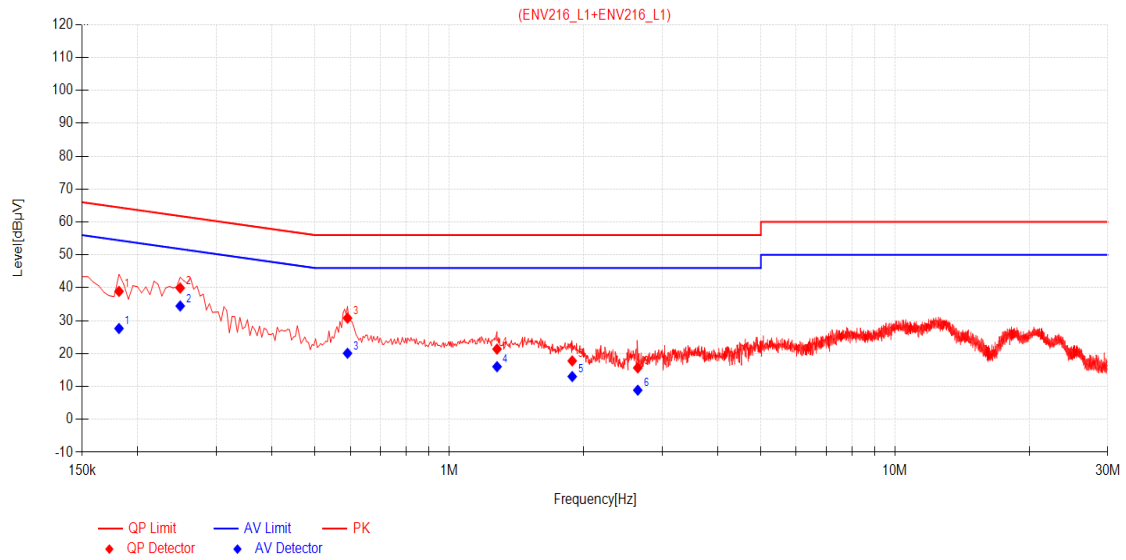


7.1.4 Measurement Procedure and Data

- 1) The mains terminal disturbance voltage test was conducted in a shielded room.
- 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50ohm/50μH + 5ohm linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded.
- 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane.
- 4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2.
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10 on conducted measurement.

Remark : Level=Read Level+ Cable Loss+ LISN Factor

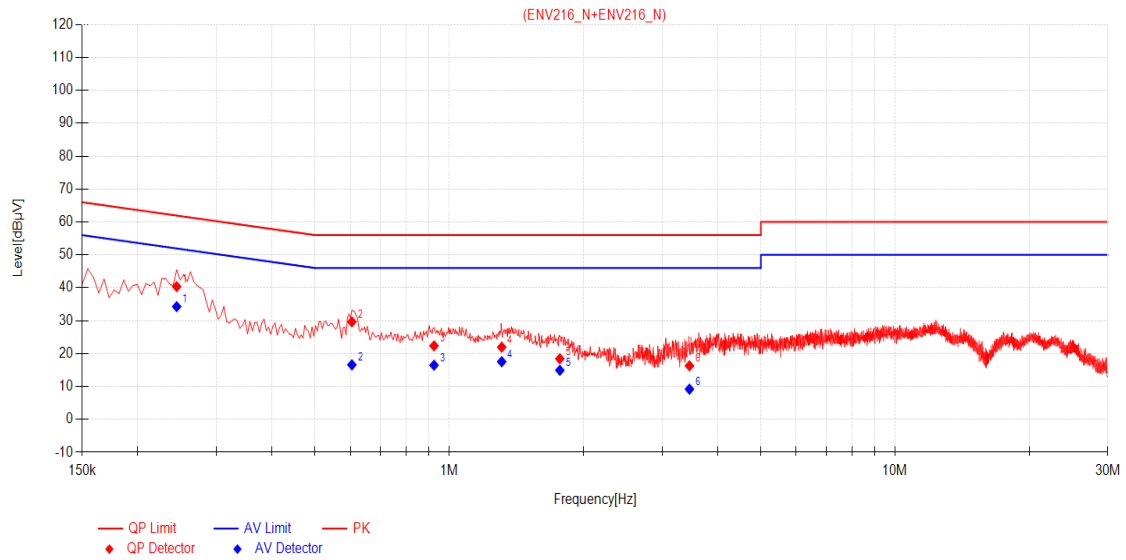
Test Mode: 00; Line: Live line



Final Data List

NO.	Frequency [MHz]	Factor [dB]	QP Reading [dBμV]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Reading [dBμV]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.1815	9.96	28.94	38.90	64.42	25.52	17.66	27.62	54.42	26.80	PASS
2	0.2490	9.97	29.95	39.92	61.79	21.87	24.49	34.46	51.79	17.33	PASS
3	0.5910	9.94	20.84	30.78	56.00	25.22	10.15	20.09	46.00	25.91	PASS
4	1.2795	9.94	11.43	21.37	56.00	34.63	6.08	16.02	46.00	29.98	PASS
5	1.8870	9.92	7.86	17.78	56.00	38.22	3.10	13.02	46.00	32.98	PASS
6	2.6475	10.25	5.40	15.65	56.00	40.35	-1.38	8.87	46.00	37.13	PASS

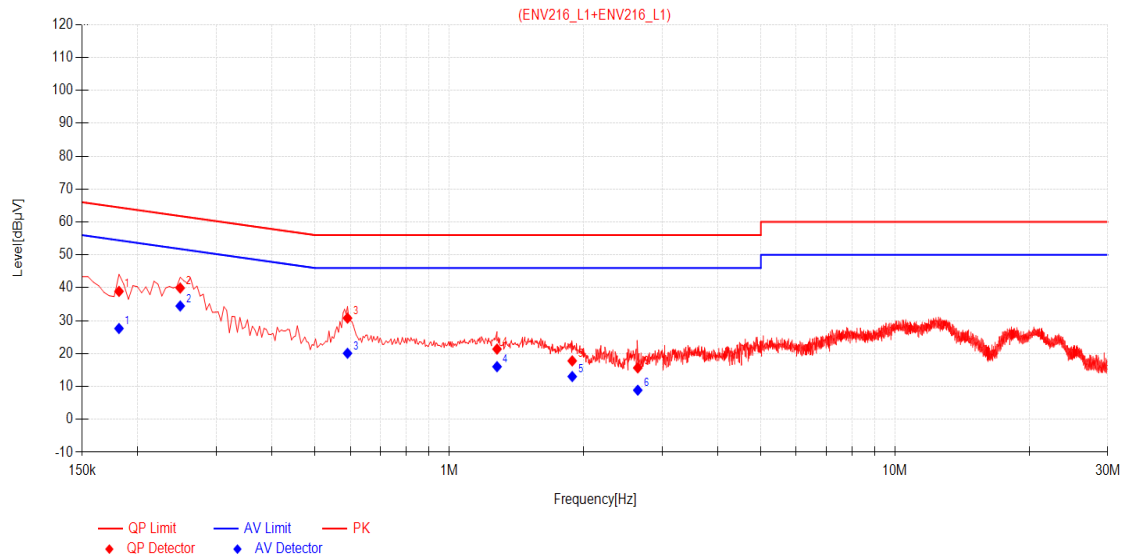
Test Mode: 00; Line: Neutral Line



Final Data List

NO.	Frequency [MHz]	Factor [dB]	QP Reading [dBμV]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Reading [dBμV]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.2445	9.97	30.38	40.35	61.94	21.59	24.30	34.27	51.94	17.67	PASS
2	0.6045	9.92	19.72	29.64	56.00	26.36	6.66	16.58	46.00	29.42	PASS
3	0.9240	9.91	12.45	22.36	56.00	33.64	6.56	16.47	46.00	29.53	PASS
4	1.3110	9.91	12.04	21.95	56.00	34.05	7.62	17.53	46.00	28.47	PASS
5	1.7700	9.91	8.52	18.43	56.00	37.57	5.01	14.92	46.00	31.08	PASS
6	3.4575	10.39	5.91	16.30	56.00	39.70	-1.20	9.19	46.00	36.81	PASS

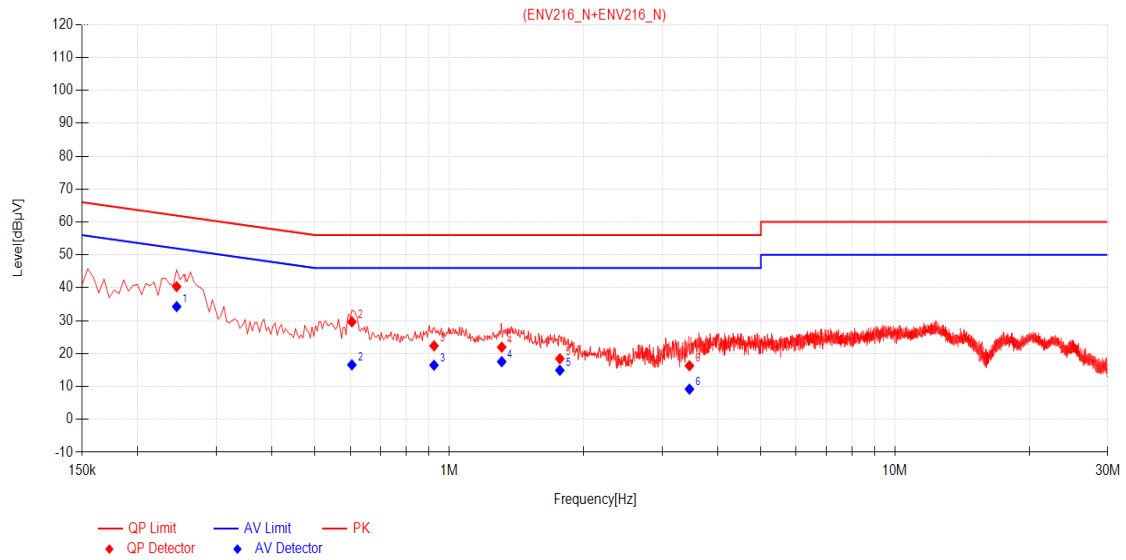
Test Mode: 01; Line: Live line



Final Data List

NO.	Frequency [MHz]	Factor [dB]	QP Reading [dBμV]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Reading [dBμV]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.1815	9.96	28.94	38.90	64.42	25.52	17.66	27.62	54.42	26.80	PASS
2	0.2490	9.97	29.95	39.92	61.79	21.87	24.49	34.46	51.79	17.33	PASS
3	0.5910	9.94	20.84	30.78	56.00	25.22	10.15	20.09	46.00	25.91	PASS
4	1.2795	9.94	11.43	21.37	56.00	34.63	6.08	16.02	46.00	29.98	PASS
5	1.8870	9.92	7.86	17.78	56.00	38.22	3.10	13.02	46.00	32.98	PASS
6	2.6475	10.25	5.40	15.65	56.00	40.35	-1.38	8.87	46.00	37.13	PASS

Test Mode: 01; Line: Neutral Line



Final Data List

NO.	Frequency [MHz]	Factor [dB]	QP Reading [dBμV]	QP Value [dBμV]	QP Limit [dBμV]	QP Margin [dB]	AV Reading [dBμV]	AV Value [dBμV]	AV Limit [dBμV]	AV Margin [dB]	Verdict
1	0.2445	9.97	30.38	40.35	61.94	21.59	24.30	34.27	51.94	17.67	PASS
2	0.6045	9.92	19.72	29.64	56.00	26.36	6.66	16.58	46.00	29.42	PASS
3	0.9240	9.91	12.45	22.36	56.00	33.64	6.56	16.47	46.00	29.53	PASS
4	1.3110	9.91	12.04	21.95	56.00	34.05	7.62	17.53	46.00	28.47	PASS
5	1.7700	9.91	8.52	18.43	56.00	37.57	5.01	14.92	46.00	31.08	PASS
6	3.4575	10.39	5.91	16.30	56.00	39.70	-1.20	9.19	46.00	36.81	PASS

7.2 Radiated Emissions which fall in the restricted bands

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

Test Method: ANSI C63.10 (2020) Section 6.10.5

Limit:

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

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

7.2.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C

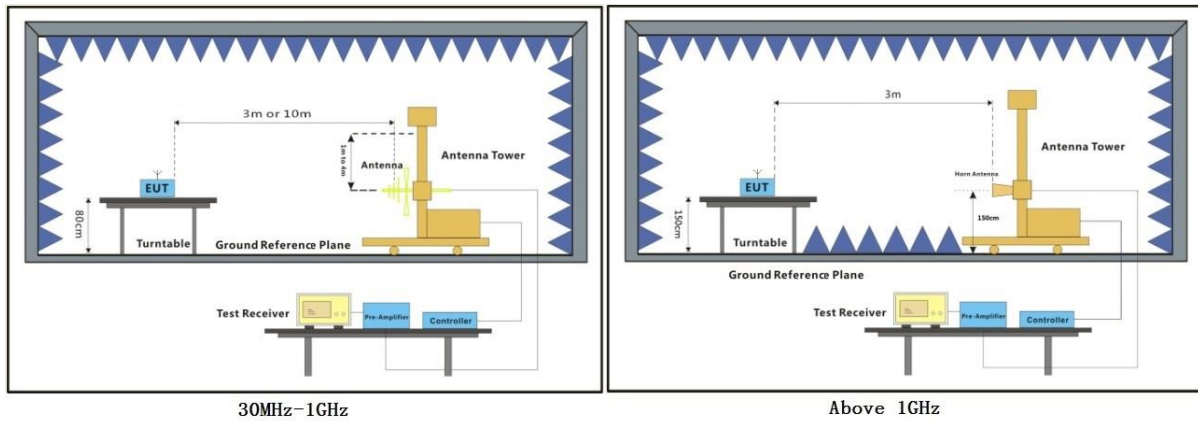
Humidity: 45 % RH

Atmospheric Pressure: 1024 mbar

7.2.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Charge + TX mode(1Mbps)_Keep the EUT in charging and continuously transmitting mode with GFSK modulation.
Final test	01	Charge + TX mode(2Mbps)_Keep the EUT in charging and continuously transmitting mode with GFSK modulation.

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 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.

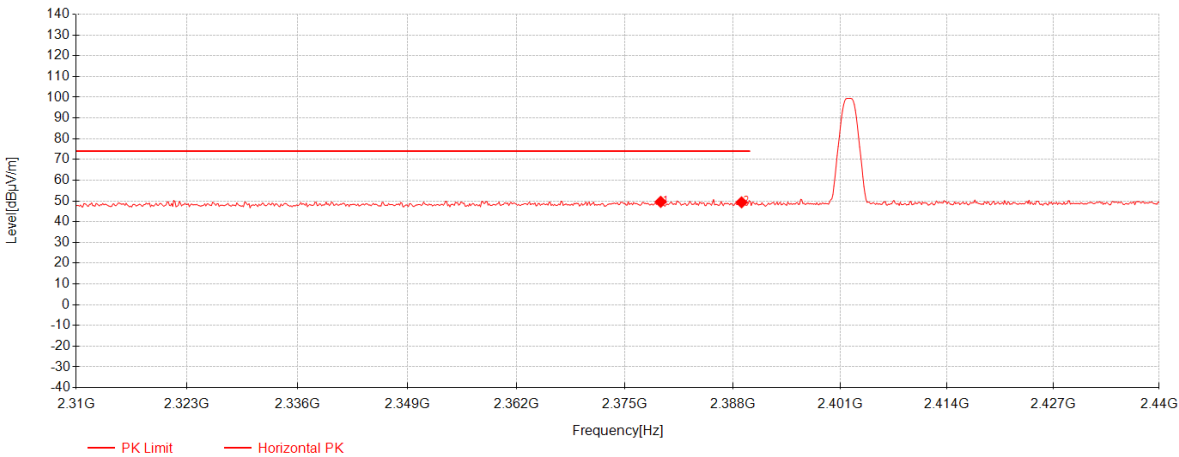
Remark 1: Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor

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.

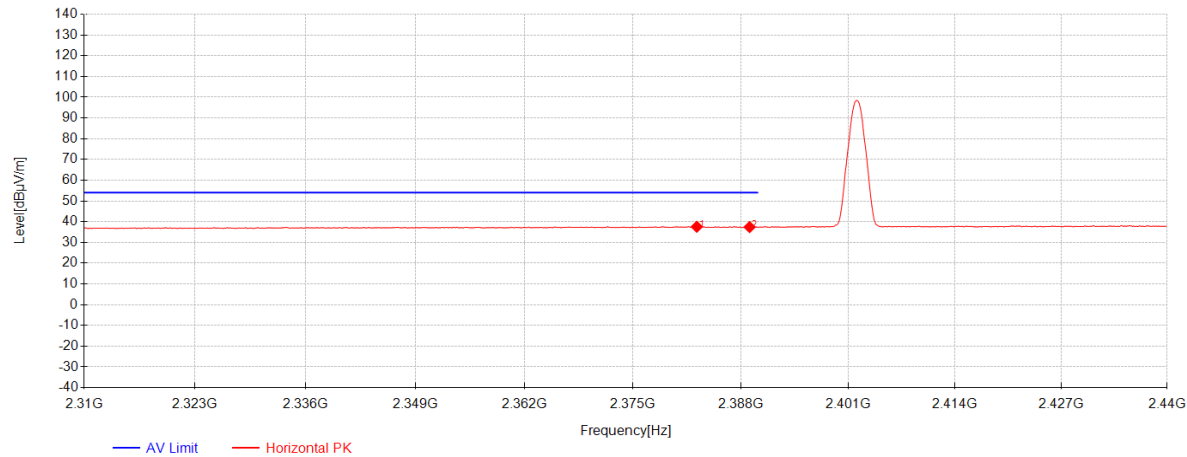
BLE_1M_TX_CH_00_Horizontal_Peak



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2379.29	47.13	27.26	-24.82	49.57	74.00	24.43	Horizontal
2	2389.04	46.86	27.29	-24.82	49.33	74.00	24.67	Horizontal

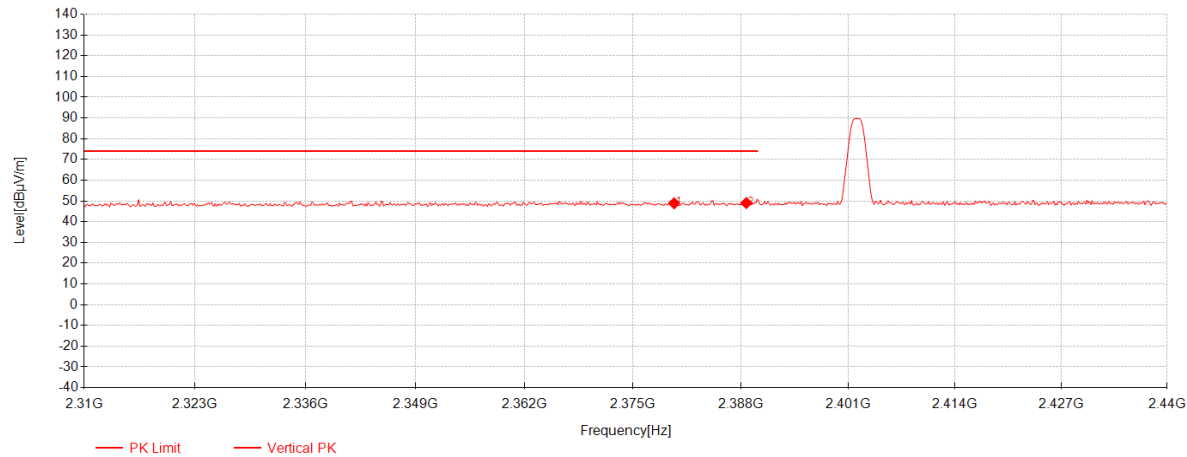


BLE_1M_TX_CH_00_Horizontal_Average



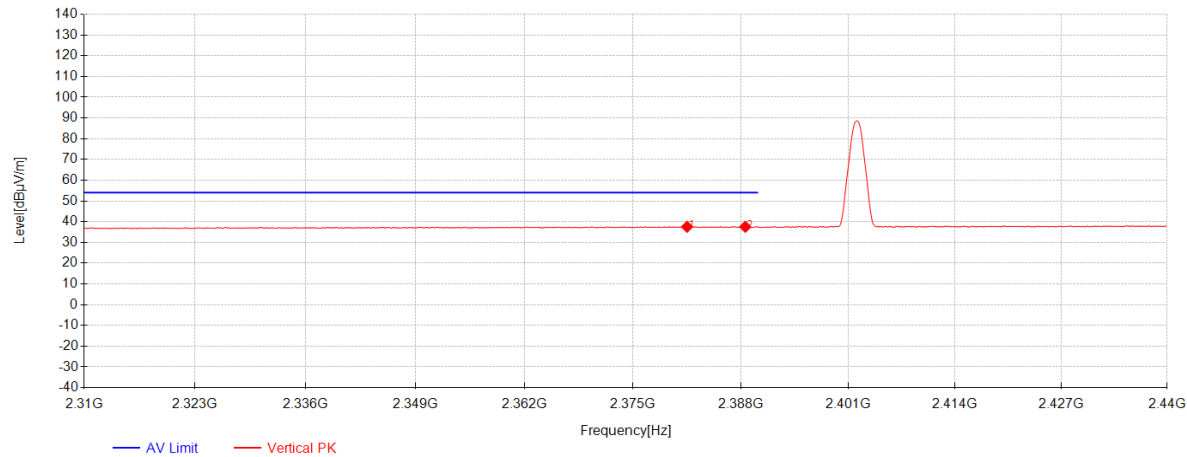
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2382.67	35.11	27.27	-24.82	37.56	54.00	16.44	Horizontal
2	2389.04	34.94	27.29	-24.82	37.41	54.00	16.59	Horizontal

BLE_1M_TX_CH_00_Vertical_Peak



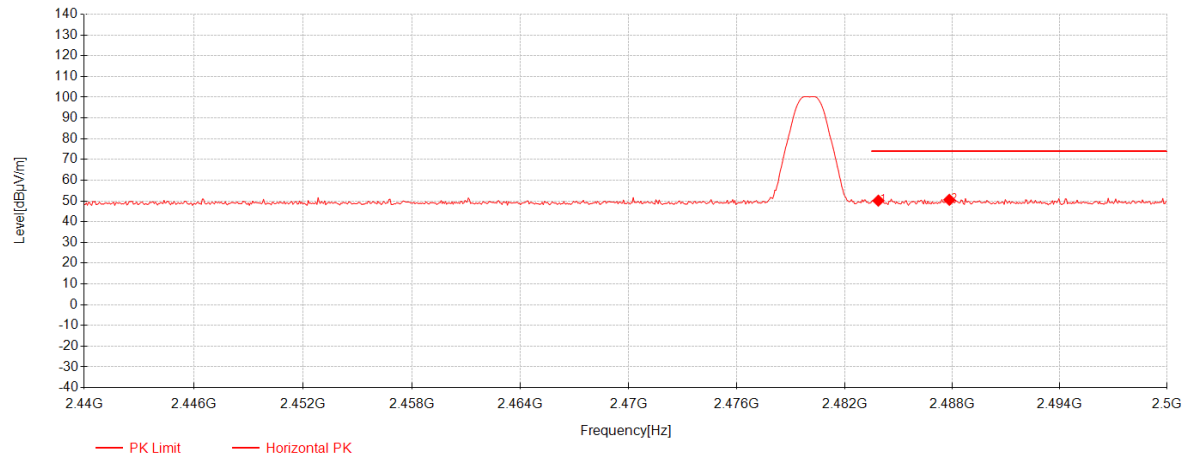
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2379.94	46.43	27.26	-24.82	48.87	74.00	25.13	Vertical
2	2388.65	46.54	27.29	-24.82	49.01	74.00	24.99	Vertical

BLE_1M_TX_CH_00_Vertical_Average



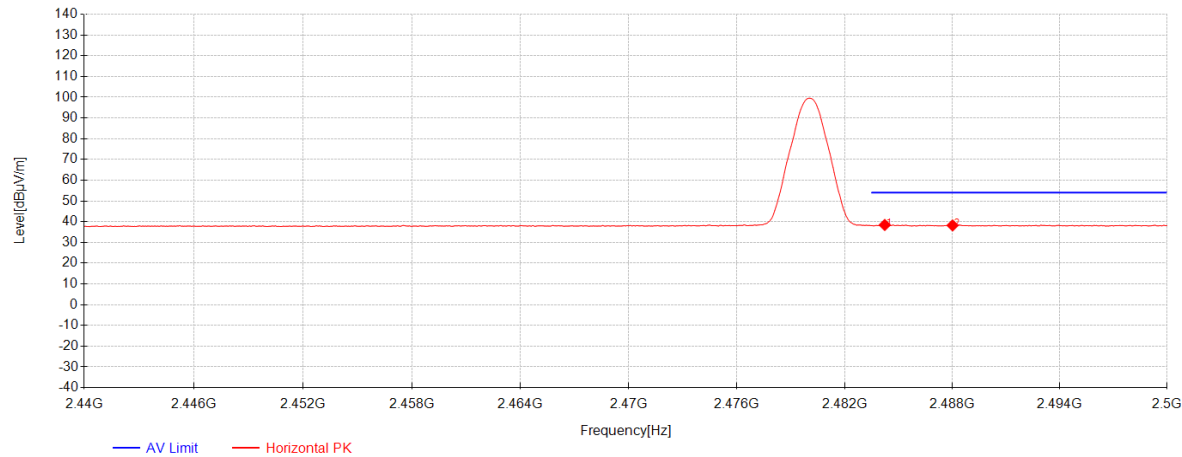
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2381.5	35.08	27.27	-24.82	37.53	54.00	16.47	Vertical
2	2388.52	35.07	27.29	-24.82	37.54	54.00	16.46	Vertical

BLE_1M_TX_CH_39_Horizontal_Peak



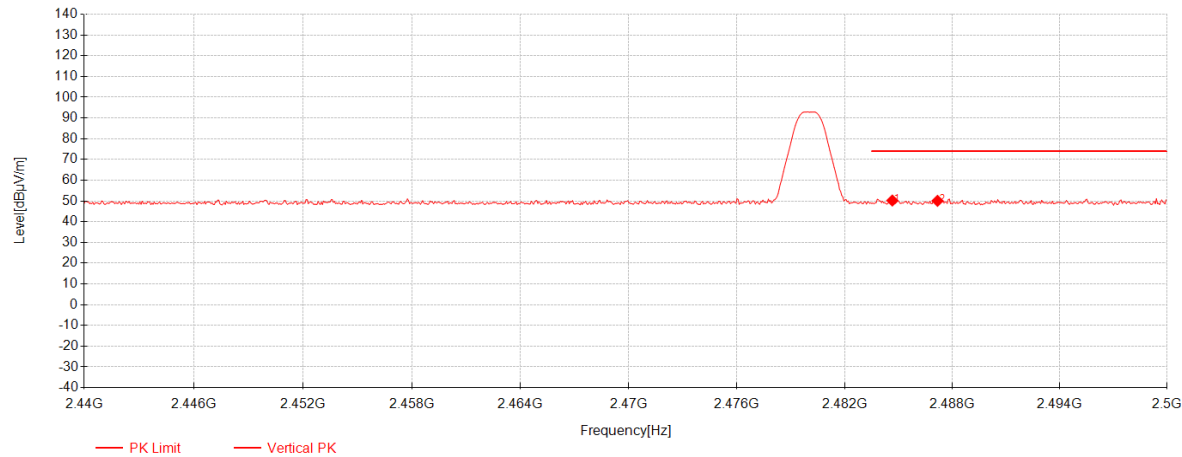
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2483.86	47.22	27.55	-24.63	50.14	74.00	23.86	Horizontal
2	2487.82	47.62	27.57	-24.63	50.56	74.00	23.44	Horizontal

BLE_1M_TX_CH_39_Horizontal_Average



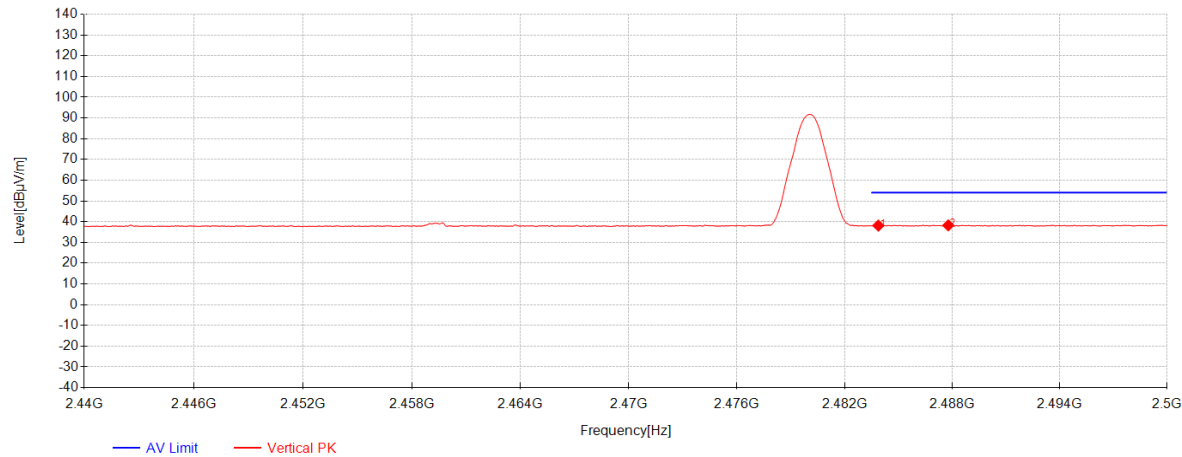
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2484.22	35.51	27.56	-24.63	38.43	54.00	15.57	Horizontal
2	2488	35.28	27.57	-24.63	38.22	54.00	15.78	Horizontal

BLE_1M_TX_CH_39_Vertical_Peak



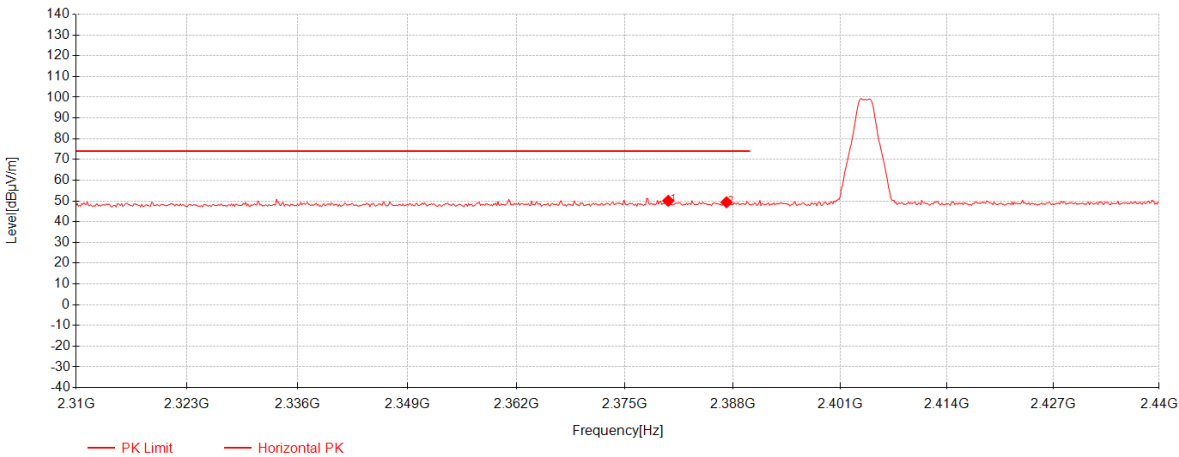
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2484.64	47.30	27.56	-24.63	50.22	74.00	23.78	Vertical
2	2487.16	47.11	27.56	-24.63	50.05	74.00	23.95	Vertical

BLE_1M_TX_CH_39_Veritical_Average



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2483.86	35.21	27.55	-24.63	38.13	54.00	15.87	Vertical
2	2487.76	35.30	27.57	-24.63	38.24	54.00	15.76	Vertical

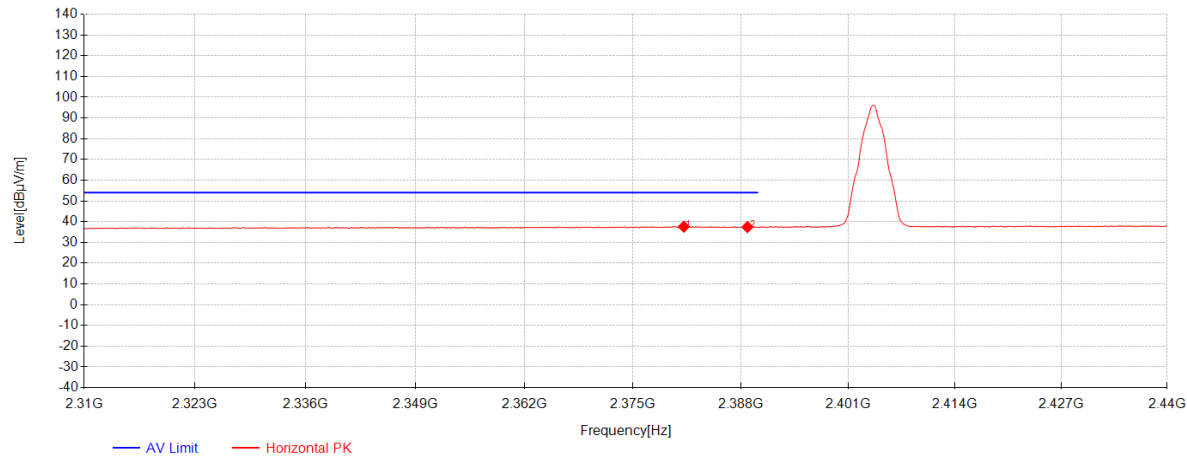
BLE_2M_TX_CH_00_Horizontal_Peak



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2380.2	47.64	27.26	-24.82	50.08	74.00	23.92	Horizontal
2	2387.22	46.90	27.28	-24.82	49.37	74.00	24.63	Horizontal

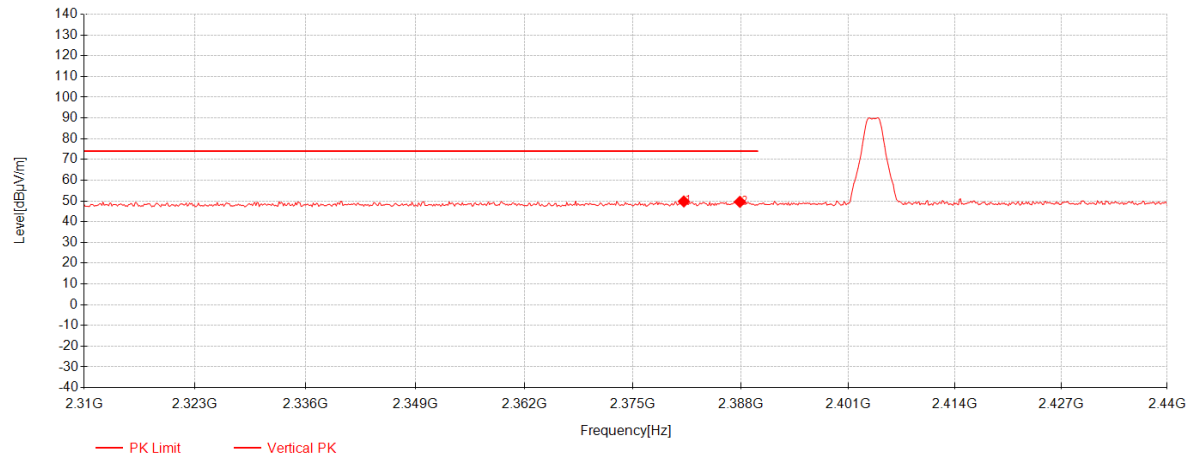


BLE_2M_TX_CH_00_Horizontal_Average



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2381.11	35.16	27.27	-24.82	37.60	54.00	16.40	Horizontal
2	2388.78	34.95	27.29	-24.82	37.42	54.00	16.58	Horizontal

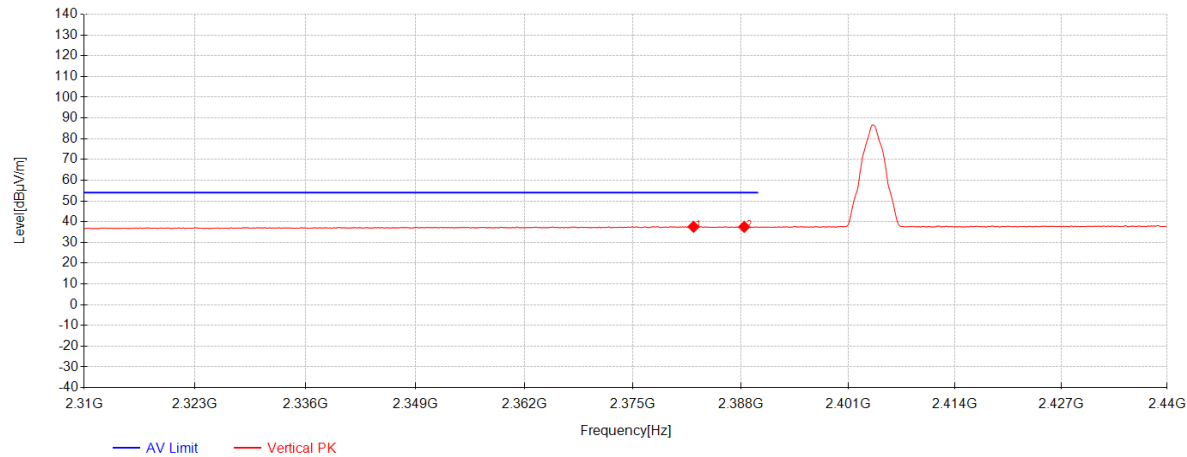
BLE_2M_TX_CH_00_Vertical_Peak



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2381.11	47.33	27.27	-24.82	49.77	74.00	24.23	Vertical
2	2387.87	47.11	27.29	-24.82	49.58	74.00	24.42	Vertical

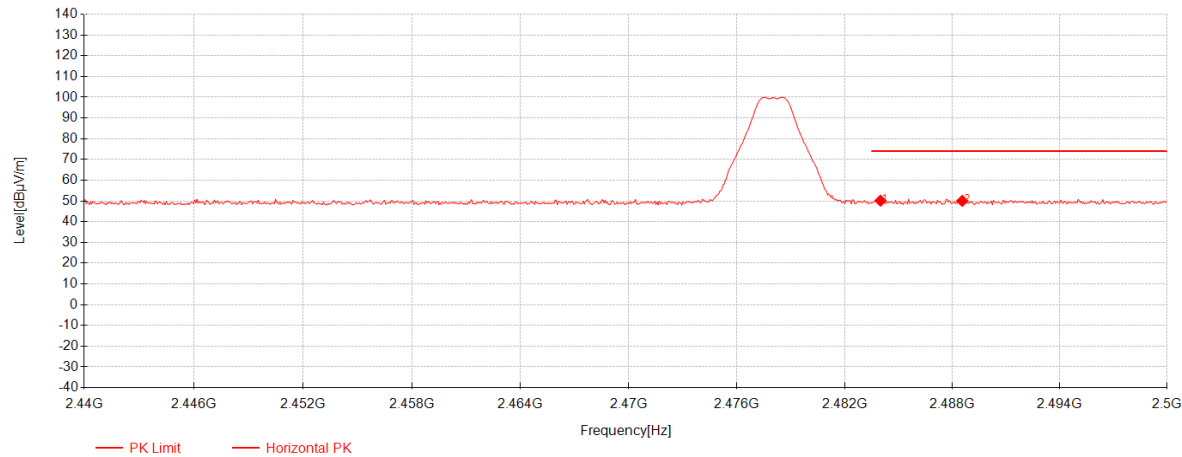


BLE_2M_TX_CH_00_Vertical_Average



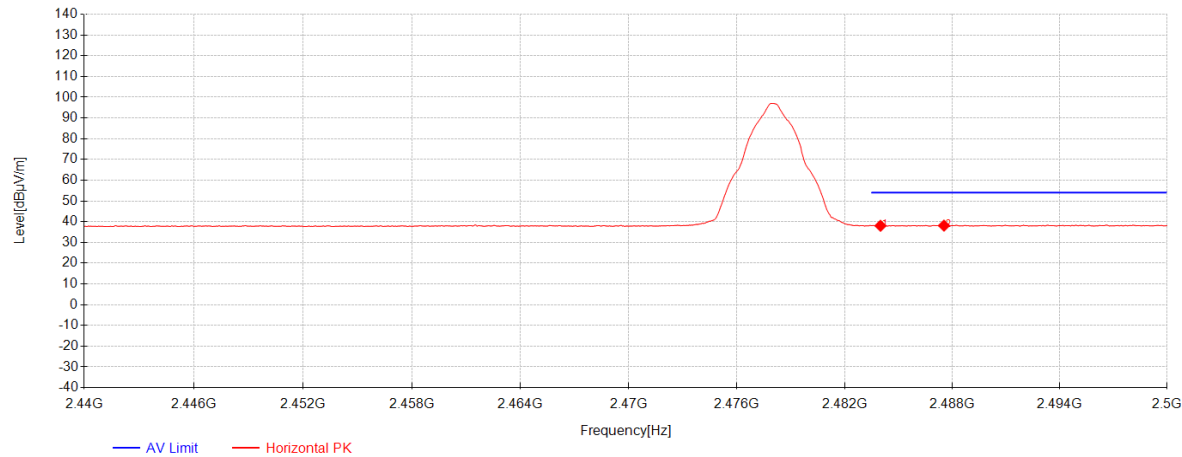
Data List								
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity
1	2382.28	35.11	27.27	-24.82	37.56	54.00	16.44	Vertical
2	2388.39	35.05	27.29	-24.82	37.52	54.00	16.48	Vertical

BLE_2M_TX_CH_39_Horizontal_Peak



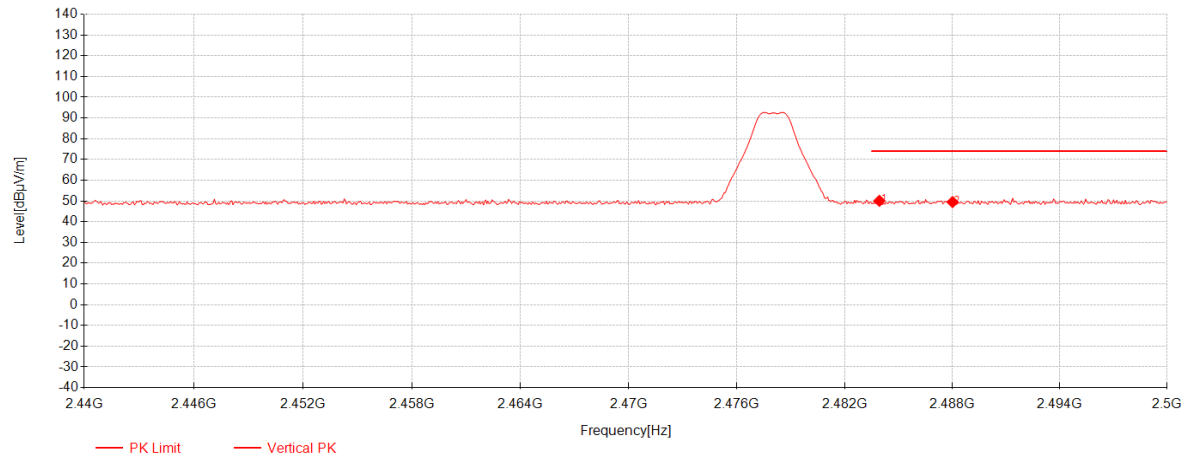
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2483.98	47.20	27.56	-24.63	50.12	74.00	23.88	Horizontal
2	2488.54	47.09	27.57	-24.62	50.03	74.00	23.97	Horizontal

BLE_2M_TX_CH_39_Horizontal_Average



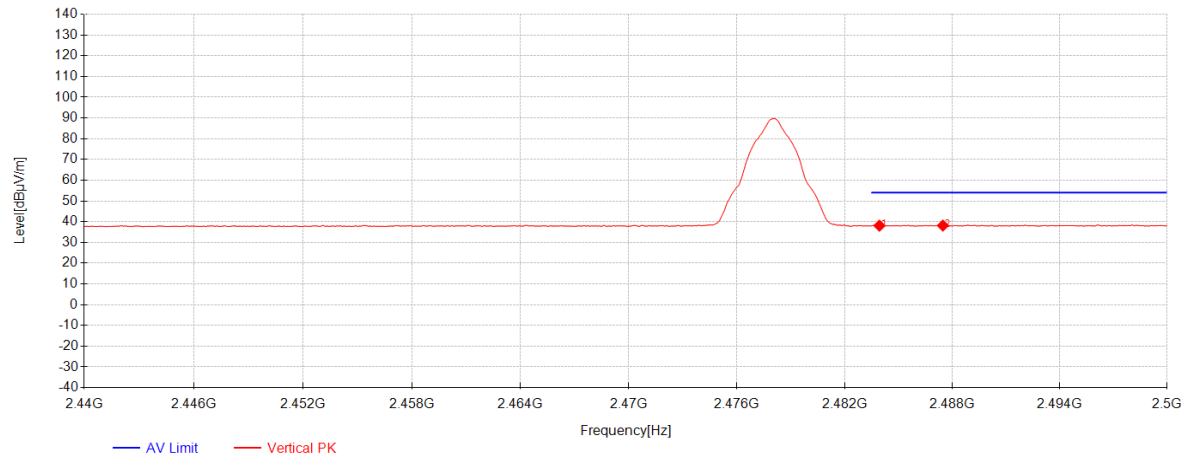
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2483.98	35.11	27.56	-24.63	38.03	54.00	15.97	Horizontal
2	2487.52	35.17	27.57	-24.63	38.11	54.00	15.89	Horizontal

BLE_2M_TX_CH_39_Vertical_Peak



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2483.92	47.14	27.55	-24.63	50.06	74.00	23.94	Vertical
2	2488	46.53	27.57	-24.63	49.47	74.00	24.53	Vertical

BLE_2M_TX_CH_39_Veritical_Average



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2483.92	35.16	27.55	-24.63	38.08	54.00	15.92	Vertical
2	2487.46	35.19	27.56	-24.63	38.13	54.00	15.87	Vertical

7.3 Radiated Spurious Emissions Below 1GHz

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

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

Limit:

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

7.3.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C

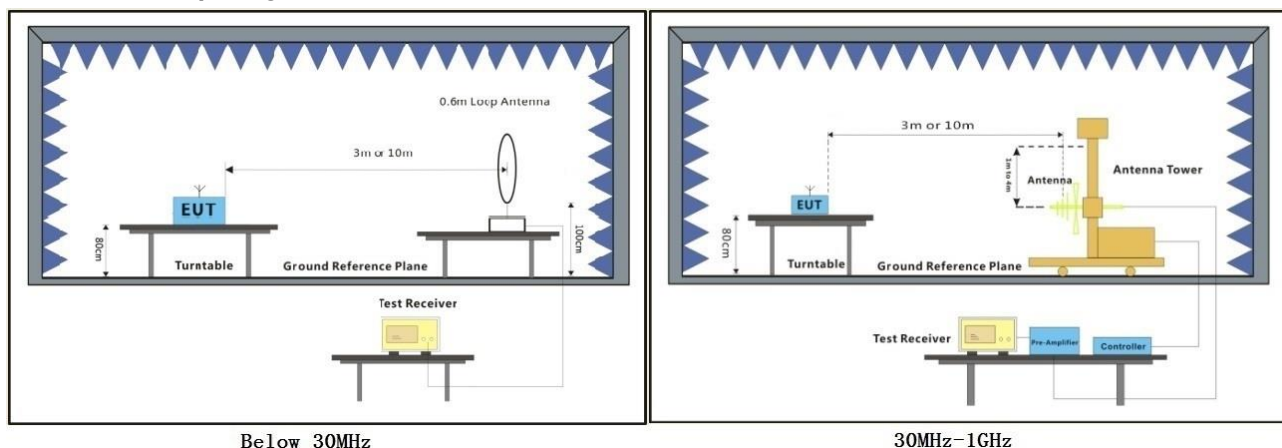
Humidity: 44 % RH

Atmospheric Pressure: 1024 mbar

7.3.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Charge + TX mode(1Mbps)_Keep the EUT in charging and continuously transmitting mode with GFSK modulation.
Final test	01	Charge + TX mode(2Mbps)_Keep the EUT in charging and continuously transmitting mode with GFSK modulation.

7.3.3 Test Setup Diagram



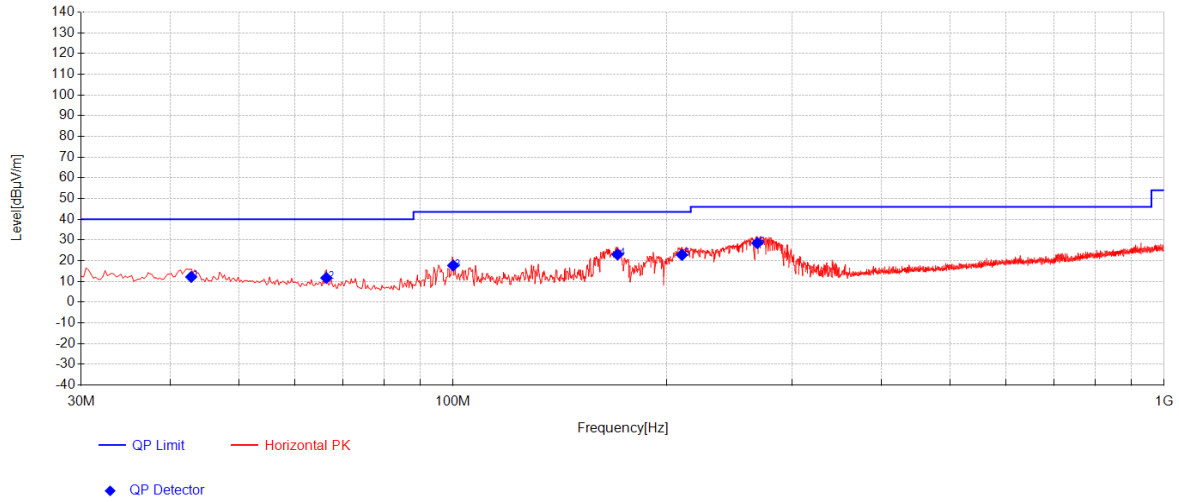
7.3.4 Measurement Procedure and Data

- a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 or 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. 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.
- 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.

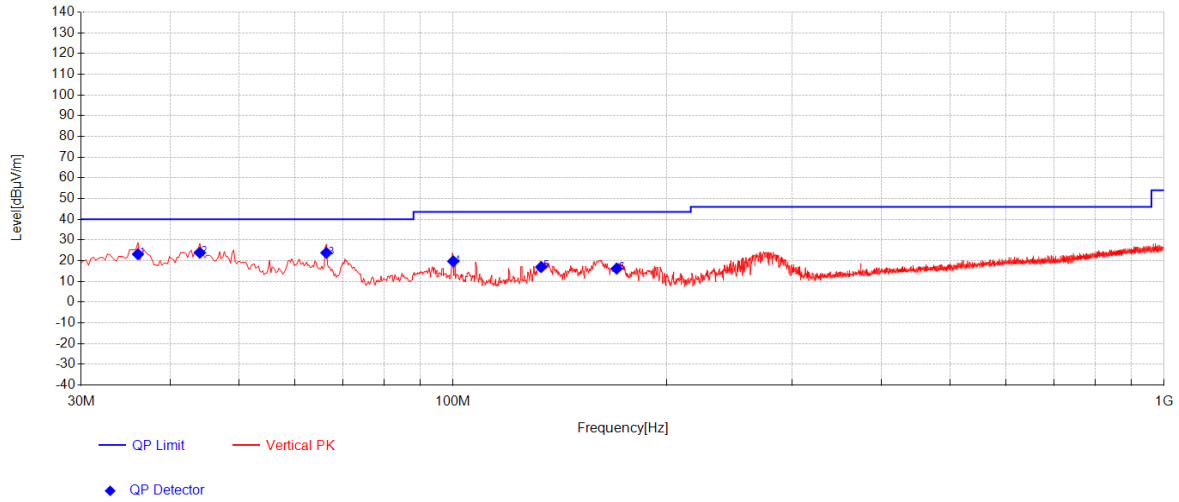
BLE_1M_TX_CH_39_Horizontal



Final Data List

NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	42.8525	32.69	13.29	-33.81	12.16	40.00	27.84	136	259	Horizontal
2	66.375	34.17	10.96	-33.47	11.66	40.00	28.34	185	18	Horizontal
3	100.0825	41.59	9.21	-33.12	17.68	43.50	25.82	161	65	Horizontal
4	170.4075	43.69	11.71	-32.42	22.98	43.50	20.52	157	243	Horizontal
5	209.935	44.87	10.10	-32.17	22.80	43.50	20.70	132	190	Horizontal
6	267.8925	48.33	11.98	-31.82	28.49	46.00	17.51	174	360	Horizontal

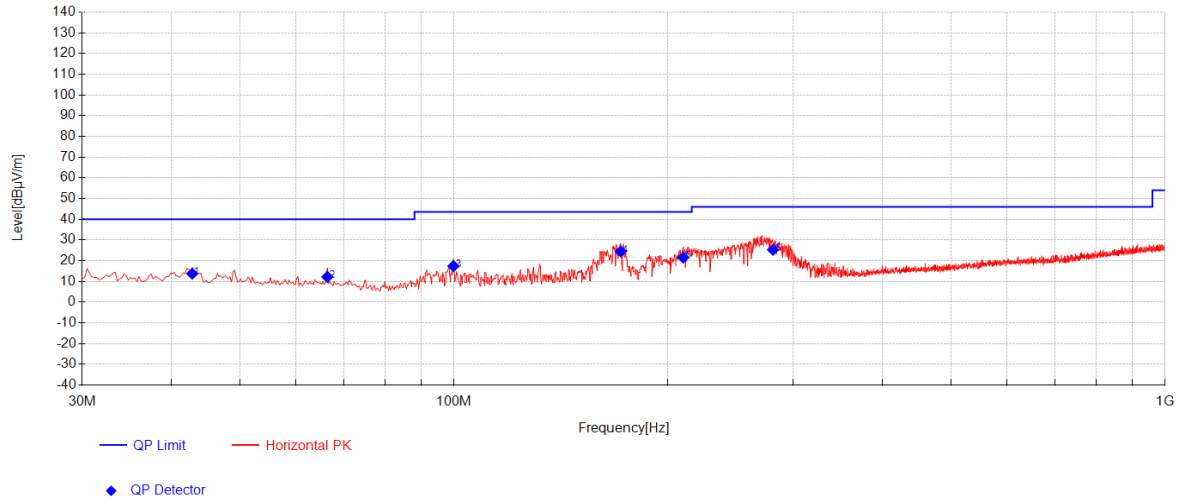
BLE_1M_TX_CH_39_Verical



Final Data List

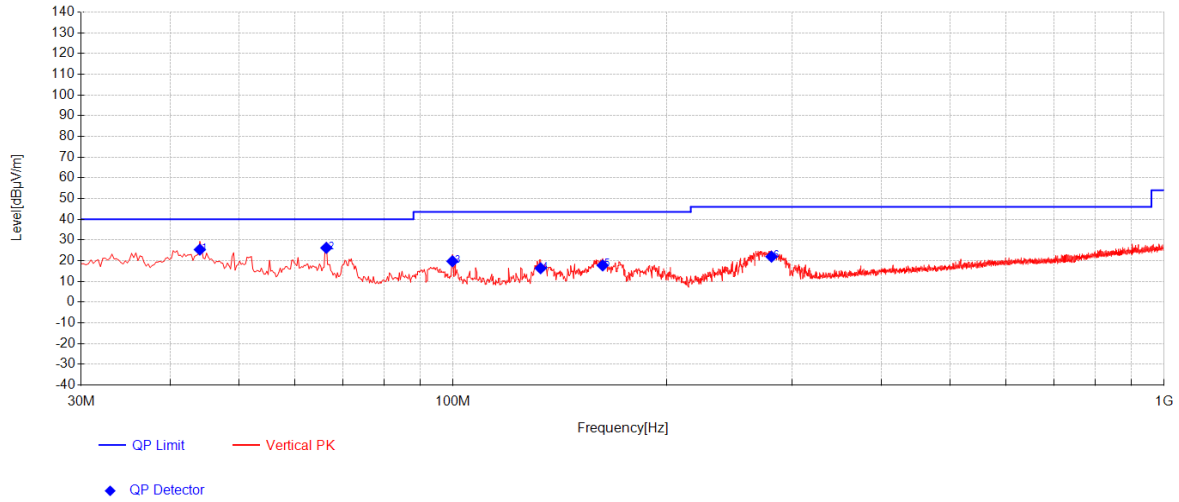
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	36.0625	44.15	12.89	-33.93	23.11	40.00	16.89	132	101	Vertical
2	44.065	44.29	13.32	-33.79	23.82	40.00	16.18	168	171	Vertical
3	66.375	46.28	10.96	-33.47	23.77	40.00	16.23	195	342	Vertical
4	100.0825	43.61	9.21	-33.12	19.70	43.50	23.80	154	248	Vertical
5	133.0625	37.43	12.28	-32.82	16.90	43.50	26.60	135	202	Vertical
6	169.9225	36.82	11.76	-32.42	16.16	43.50	27.34	127	16	Vertical

BLE_2M_TX_CH_39_Horizontal



Final Data List										
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	42.8525	34.25	13.29	-33.81	13.72	40.00	26.28	132	35	Horizontal
2	66.375	34.69	10.96	-33.47	12.18	40.00	27.82	169	354	Horizontal
3	99.84	41.29	9.20	-33.13	17.36	43.50	26.14	158	281	Horizontal
4	171.62	45.28	11.58	-32.41	24.45	43.50	19.05	174	259	Horizontal
5	210.1775	43.59	10.11	-32.17	21.53	43.50	21.97	124	196	Horizontal
6	280.9875	44.58	12.42	-31.73	25.27	46.00	20.73	185	358	Horizontal

BLE_2M_TX_CH_39_Vertical



Final Data List										
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	44.065	45.82	13.32	-33.79	25.35	40.00	14.65	157	118	Vertical
2	66.375	48.69	10.96	-33.47	26.18	40.00	13.82	169	311	Vertical
3	99.84	43.62	9.20	-33.13	19.69	43.50	23.81	185	334	Vertical
4	132.82	36.89	12.27	-32.82	16.34	43.50	27.16	152	118	Vertical
5	162.405	37.69	12.55	-32.52	17.71	43.50	25.79	136	59	Vertical
6	280.5025	41.25	12.41	-31.74	21.92	46.00	24.08	187	66	Vertical

7.4 Radiated Spurious Emissions Above 1GHz

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

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

Limit:

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

7.4.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C

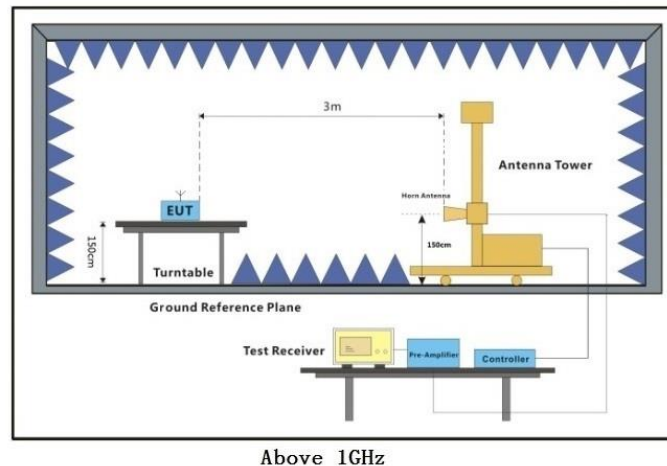
Humidity: 45 % RH

Atmospheric Pressure: 1024 mbar

7.4.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Charge + TX mode(1Mbps)_Keep the EUT in charging and continuously transmitting mode with GFSK modulation.
Final test	01	Charge + TX mode(2Mbps)_Keep the EUT in charging and continuously transmitting mode with GFSK modulation.

7.4.3 Test Setup Diagram



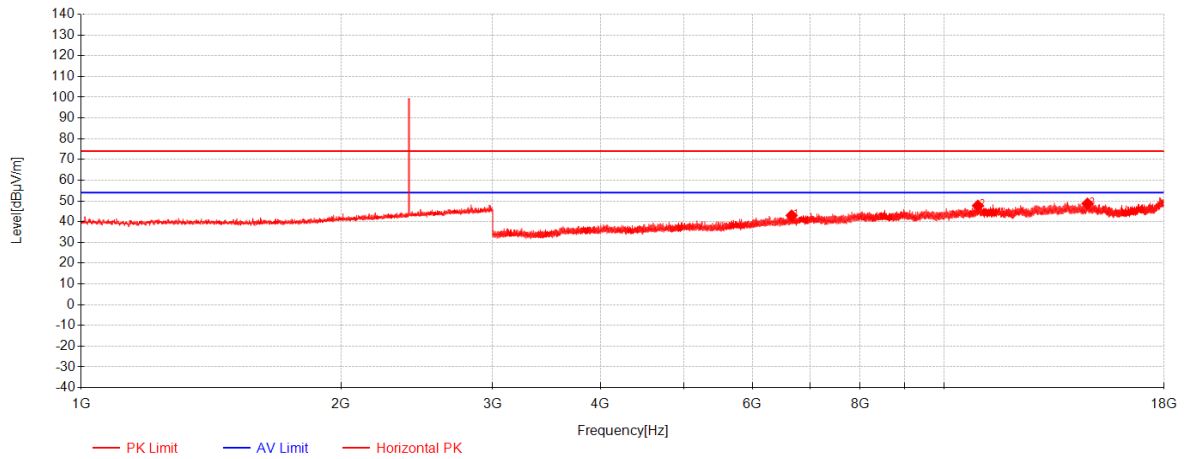
7.4.4 Measurement Procedure and Data

- a. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter 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:

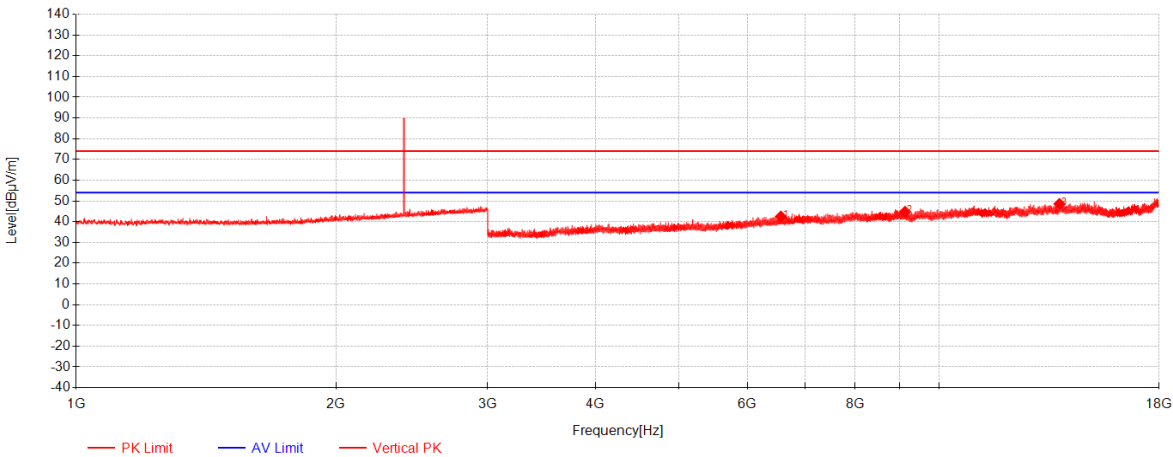
1. Level= Read Level+ Cable Loss+ Antenna Factor- Preamp Factor
2. Scan from 1GHz to 25GHz, the disturbance above 18GHz was very low. The points marked on above plots are the highest emissions could be found when testing, so only above points had been displayed. The amplitude of spurious emissions from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

BLE_1M_TX_CH_00_Horizontal



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	6661.5	50.31	35.76	-43.08	42.99	74.00	31.01	Horizontal
2	10951.5	44.73	39.24	-36.26	47.71	74.00	26.29	Horizontal
3	14672.625	42.48	40.00	-33.77	48.71	74.00	25.29	Horizontal

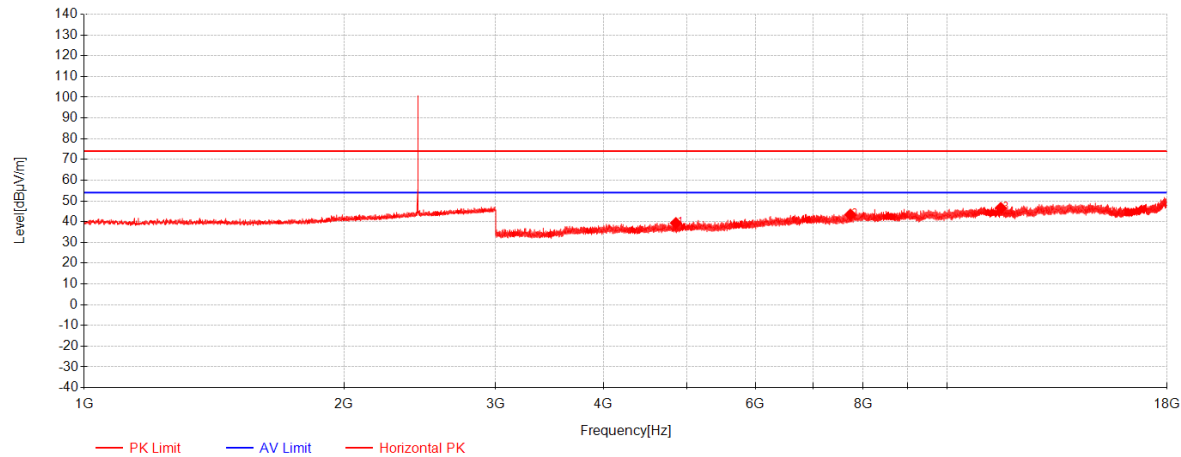
BLE_1M_TX_CH_00_Vetical



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	6560.25	50.30	35.60	-43.45	42.45	74.00	31.55	Vertical
2	9138.375	46.32	38.01	-39.59	44.75	74.00	29.25	Vertical
3	13799.25	43.64	40.30	-35.40	48.54	74.00	25.46	Vertical



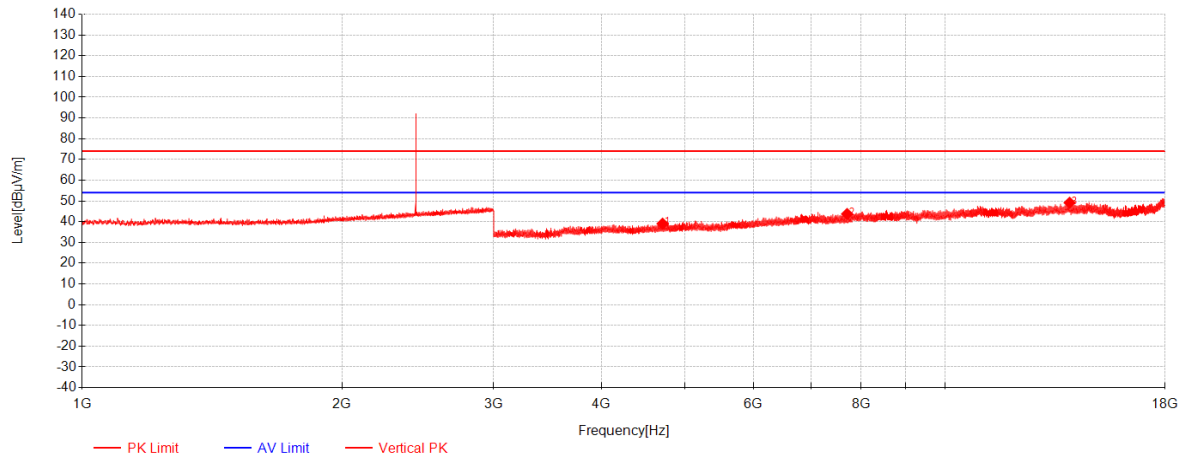
BLE_1M_TX_CH_19_Horizontal



Data List								
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity
1	4852.5	51.58	32.75	-44.99	39.33	74.00	34.67	Horizontal
2	7729.875	48.35	36.76	-41.69	43.42	74.00	30.58	Horizontal
3	11550	43.37	38.97	-35.74	46.61	74.00	27.39	Horizontal

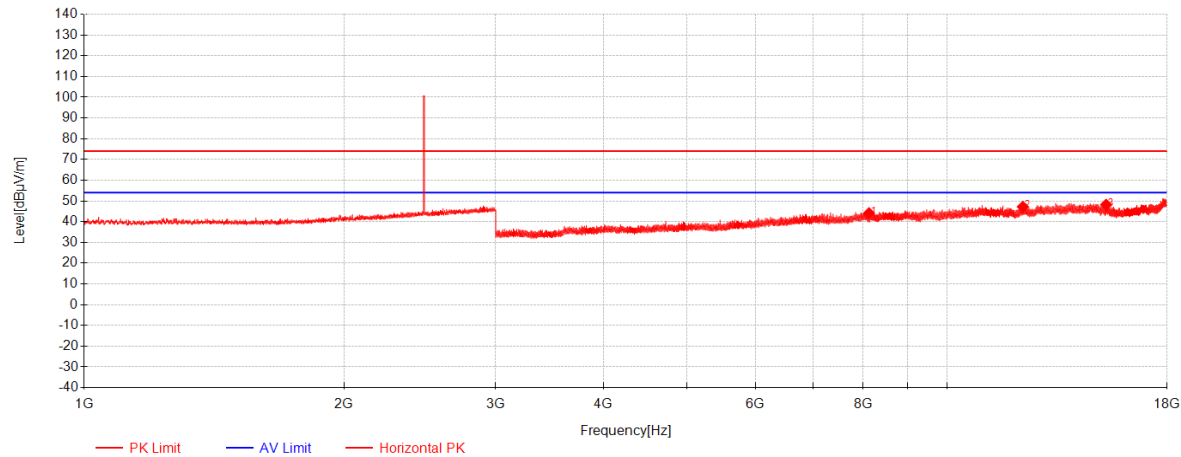


BLE_1M_TX_CH_19_Vertical



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	4707.75	51.51	32.40	-44.86	39.05	74.00	34.95	Vertical
2	7704	48.93	36.71	-41.92	43.71	74.00	30.29	Vertical
3	13951.125	43.81	40.38	-35.04	49.15	74.00	24.85	Vertical

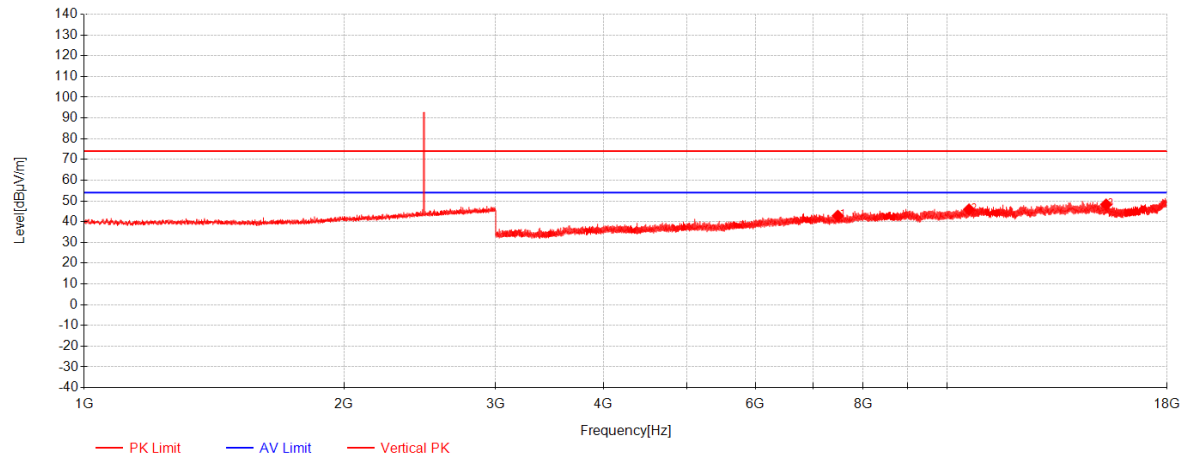
BLE_1M_TX_CH_39_Horizontal



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	8124	47.70	37.39	-40.99	44.10	74.00	29.90	Horizontal
2	12248.25	43.35	39.00	-35.16	47.19	74.00	26.81	Horizontal
3	15298.875	42.26	39.26	-33.33	48.19	74.00	25.81	Horizontal



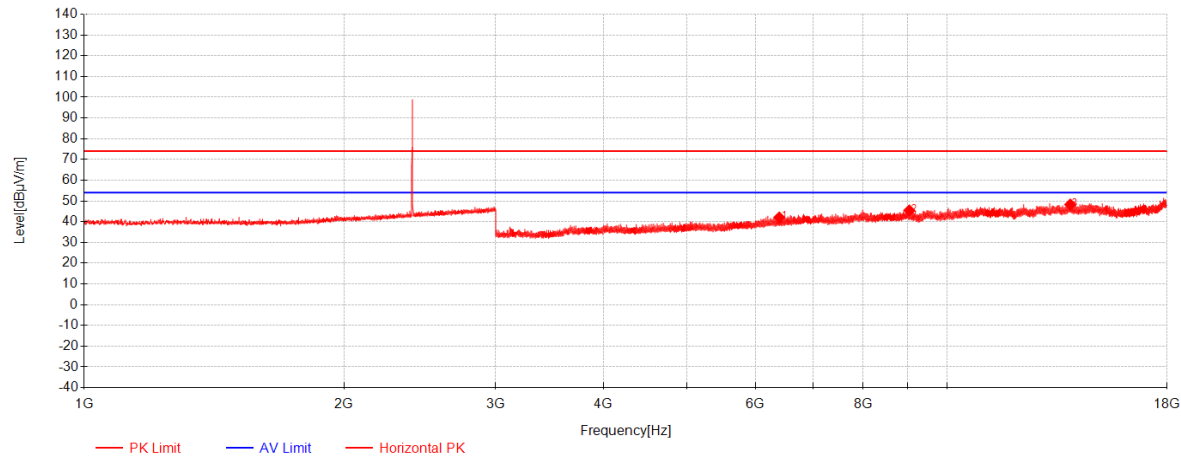
BLE_1M_TX_CH_39_Vertical



Data List								
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity
1	7475.625	48.87	36.30	-42.33	42.84	74.00	31.16	Vertical
2	10609.875	44.01	38.83	-36.93	45.91	74.00	28.09	Vertical
3	15297.75	42.36	39.26	-33.34	48.29	74.00	25.71	Vertical



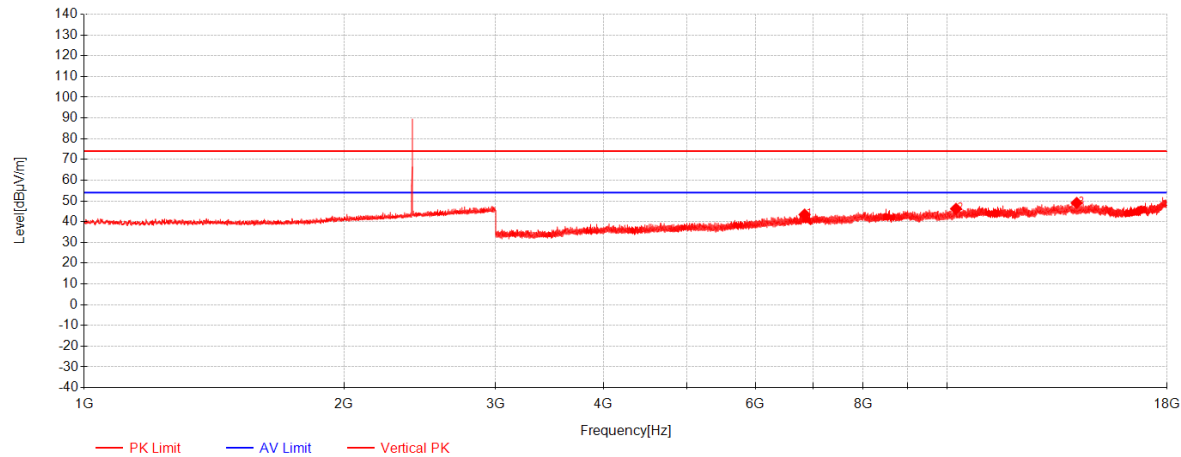
BLE_2M_TX_CH_00_Horizontal



Data List								
NO.	Frequency [MHz]	Reading [dBµV]	AF [dB/m]	Factor [dB]	Level [dBµV/m]	Limit [dBµV/m]	Margin [dB]	Polarity
1	6394.875	50.16	35.29	-43.43	42.02	74.00	31.98	Horizontal
2	9046.125	46.98	38.00	-39.55	45.44	74.00	28.56	Horizontal
3	13902.75	42.38	40.35	-34.48	48.25	74.00	25.75	Horizontal

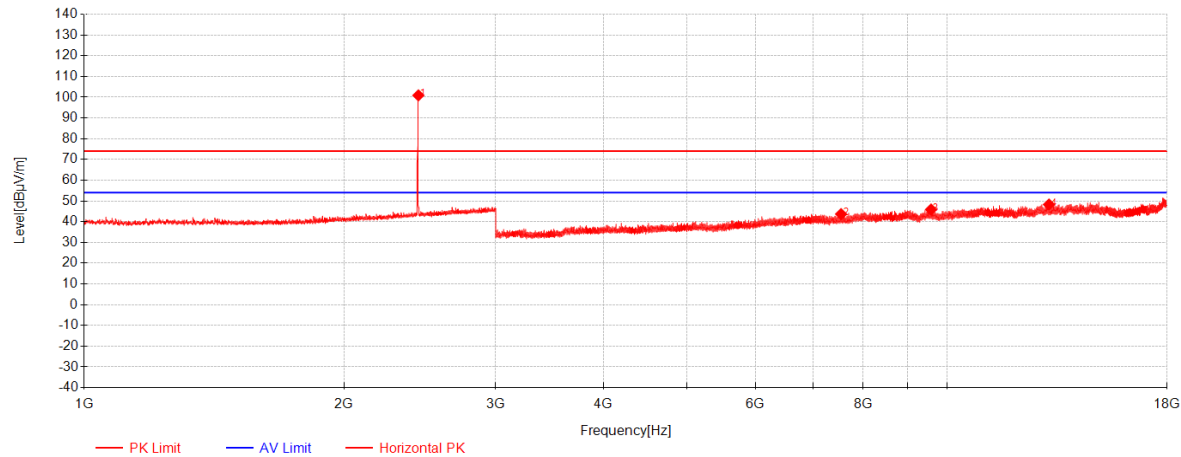


BLE_2M_TX_CH_00_Vetical



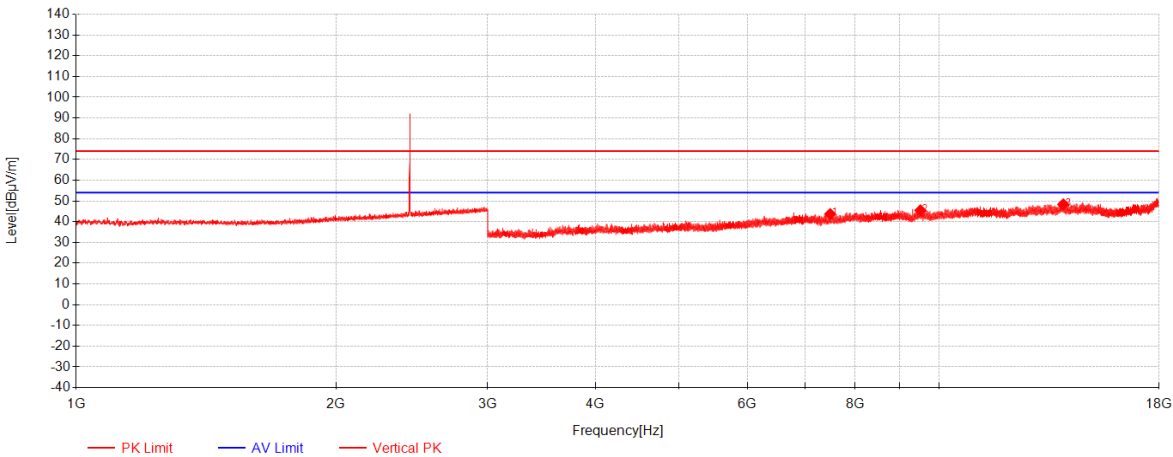
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	6841.125	50.37	36.05	-42.99	43.43	74.00	30.57	Vertical
2	10248.75	44.96	38.40	-37.13	46.23	74.00	27.77	Vertical
3	14142.75	44.14	40.31	-35.42	49.04	74.00	24.96	Vertical

BLE_2M_TX_CH_19_Horizontal



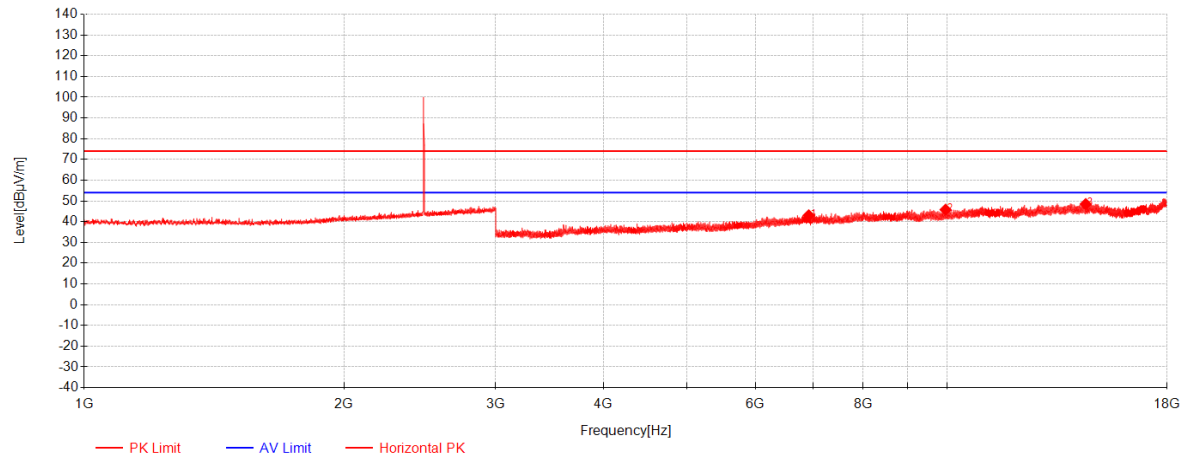
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	2440.5	98.19	27.43	-24.72	100.90	74.00	-26.90	Horizontal
2	7540.875	49.37	36.38	-42.08	43.67	74.00	30.33	Horizontal
3	9587.625	46.11	38.06	-38.31	45.86	74.00	28.14	Horizontal
4	13133.625	43.25	39.97	-34.94	48.28	74.00	25.72	Horizontal

BLE_2M_TX_CH_19_Vertical



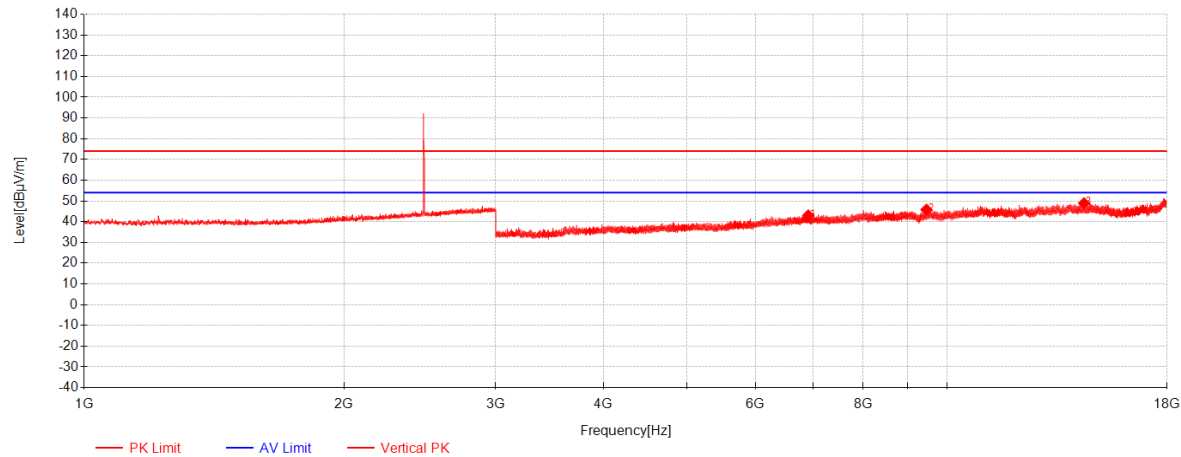
Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	7483.125	49.69	36.30	-42.32	43.67	74.00	30.33	Vertical
2	9519.375	46.00	38.05	-38.59	45.46	74.00	28.54	Vertical
3	13938.75	42.88	40.37	-34.90	48.35	74.00	25.65	Vertical

BLE_2M_TX_CH_39_Horizontal



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	6917.625	49.68	36.17	-42.80	43.05	74.00	30.95	Horizontal
2	9966.75	45.37	38.10	-37.69	45.78	74.00	28.22	Horizontal
3	14485.125	43.45	40.11	-35.08	48.48	74.00	25.52	Horizontal

BLE_2M_TX_CH_39_Vetical



Data List								
NO.	Frequency [MHz]	Reading [dBμV]	AF [dB/m]	Factor [dB]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Polarity
1	6908.625	49.65	36.15	-42.75	43.05	74.00	30.95	Vertical
2	9470.625	46.48	38.05	-38.71	45.81	74.00	28.19	Vertical
3	14421	43.37	40.15	-34.61	48.90	74.00	25.10	Vertical



7.5 Conducted Peak Output Power

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

Test Method: ANSI C63.10 (2020) Section 11.9.1

Limit:

Frequency range(MHz)	Output power of the intentional radiator(watt)
902-928	1 for ≥ 50 hopping channels
	0.25 for $25 \leq$ hopping channels < 50
	1 for digital modulation
2400-2483.5	1 for ≥ 75 non-overlapping hopping channels
	0.125 for all other frequency hopping systems
	1 for digital modulation
5725-5850	1 for frequency hopping systems and digital modulation

7.5.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C

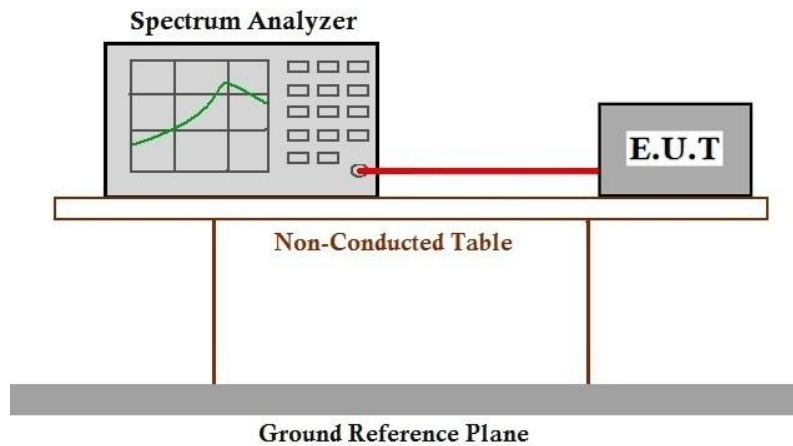
Humidity: 56 % RH

Atmospheric Pressure: 1024 mbar

7.5.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Charge + TX mode(1Mbps)_Keep the EUT in charging and continuously transmitting mode with GFSK modulation.
Final test	01	Charge + TX mode(2Mbps)_Keep the EUT in charging and continuously transmitting mode with GFSK modulation.

7.5.3 Test Setup Diagram



7.5.4 Measurement Procedure and Data

Note: Since the verify power the same operating range bandwidth and smaller power can be covered by the higher power.

Please Refer to Appendix for Details



7.6 Minimum 6dB Bandwidth

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

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

Limit:

 ≥ 500 kHz

7.6.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C

Humidity: 56 % RH

Atmospheric Pressure: 1024 mbar

7.6.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Charge + TX mode(1Mbps)_Keep the EUT in charging and continuously transmitting mode with GFSK modulation.
Final test	01	Charge + TX mode(2Mbps)_Keep the EUT in charging and continuously transmitting mode with GFSK modulation.

7.6.3 Measurement Procedure and Data

Please Refer to Appendix for Details



7.7 Power Spectrum Density

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

Test Method: ANSI C63.10 (2020) Section 11.10.2

Limit:

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

7.7.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C

Humidity: 56 % RH

Atmospheric Pressure: 1024 mbar

7.7.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Charge + TX mode(1Mbps)_Keep the EUT in charging and continuously transmitting mode with GFSK modulation.
Final test	01	Charge + TX mode(2Mbps)_Keep the EUT in charging and continuously transmitting mode with GFSK modulation.

7.7.3 Measurement Procedure and Data

Please Refer to Appendix for Details



7.8 Conducted Band Edges Measurement

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

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

Limit:

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

7.8.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C

Humidity: 56 % RH

Atmospheric Pressure: 1024 mbar

7.8.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Charge + TX mode(1Mbps)_Keep the EUT in charging and continuously transmitting mode with GFSK modulation.
Final test	01	Charge + TX mode(2Mbps)_Keep the EUT in charging and continuously transmitting mode with GFSK modulation.

7.8.3 Measurement Procedure and Data

Please Refer to Appendix for Details



7.9 Conducted Spurious Emissions

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

Test Method: ANSI C63.10 (2020) Section 11.11

Limit:

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

7.9.1 E.U.T. Operation

Operating Environment:

Temperature: 23 °C

Humidity: 56 % RH

Atmospheric Pressure: 1024 mbar

7.9.2 Test Mode Description

Pre-scan / Final test	Mode Code	Description
Final test	00	Charge + TX mode(1Mbps)_Keep the EUT in charging and continuously transmitting mode with GFSK modulation.
Final test	01	Charge + TX mode(2Mbps)_Keep the EUT in charging and continuously transmitting mode with GFSK modulation.

7.9.3 Measurement Procedure and Data

Please Refer to Appendix for Details



Report No.: SUCR250900091505

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8 Test Setup Photo

Refer to Appendix - Test Setup Photo for SUCR2509000915WM

9 EUT Constructional Details (EUT Photos)

Refer to Appendix_Photographs of EUT Constructional Details for SUCR2509000915WM



10 Appendix

1. Duty Cycle

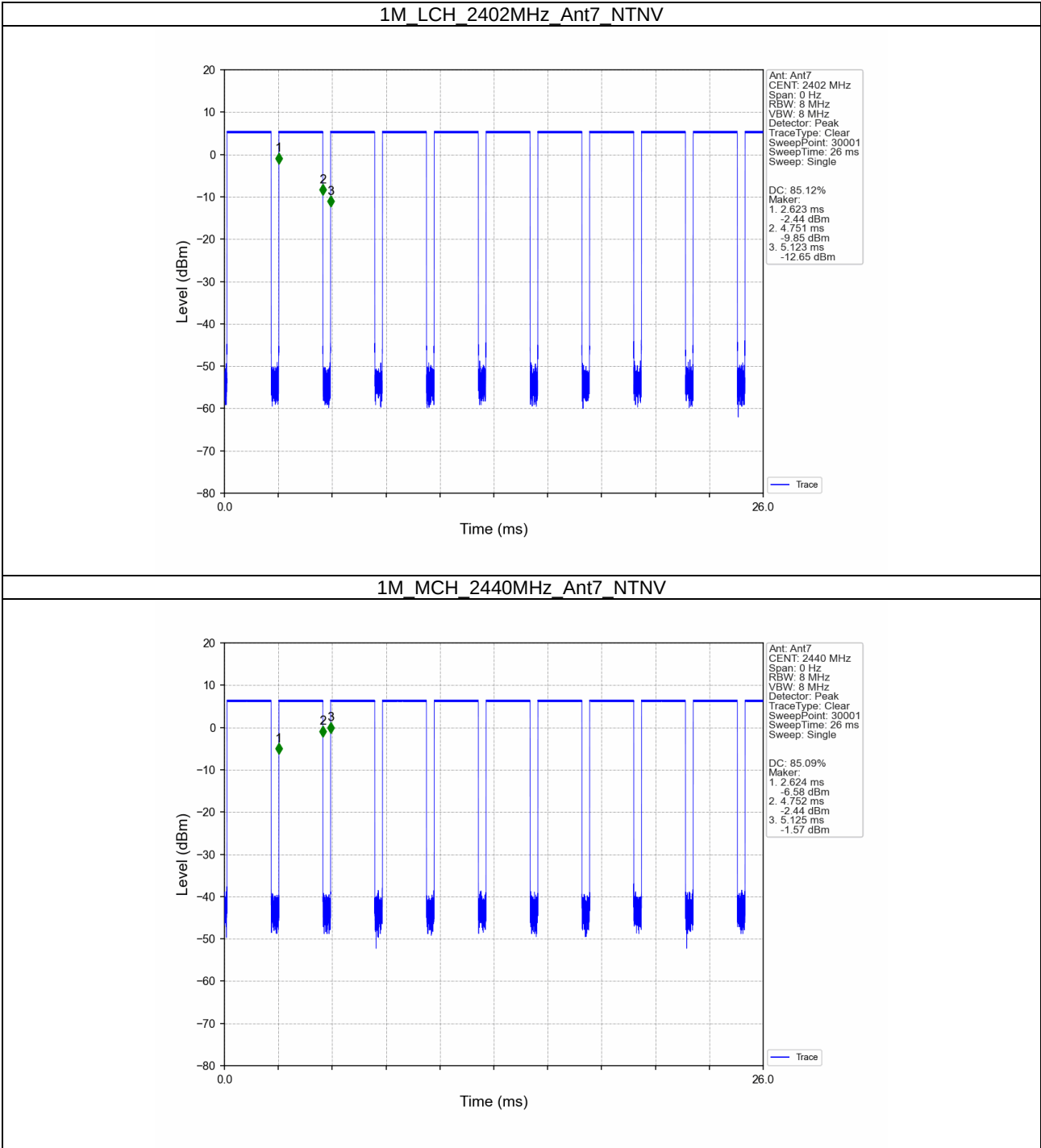
1.1 Test Result

1.1.1 Ant7

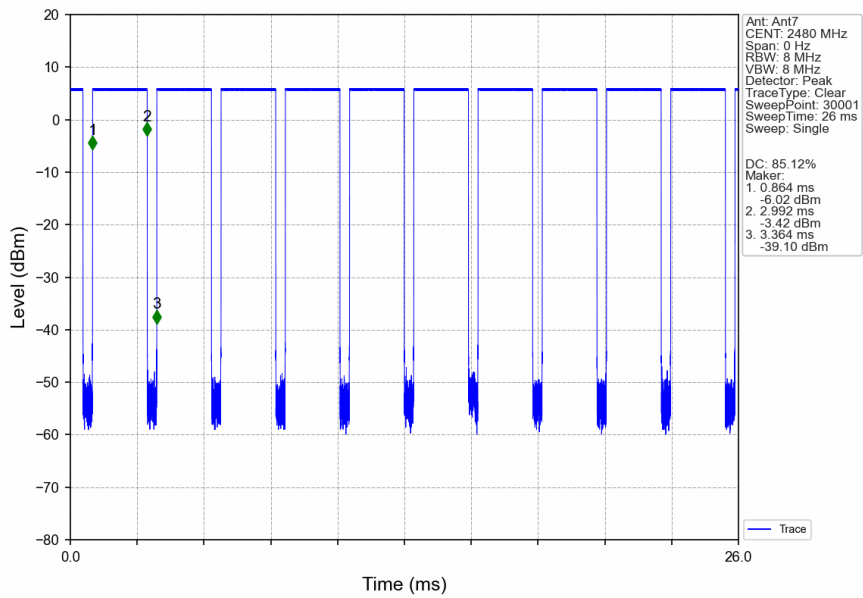
Ant7							
Mode	TX Type	Frequency (MHz)	T_on (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle Correction Factor (dB)	Max. DC Variation (%)
1M	SISO	2402	2.128	2.500	85.12	0.70	0.01
		2440	2.128	2.501	85.09	0.70	0.03
		2480	2.128	2.500	85.12	0.70	0.01
2M	SISO	2404	1.072	1.875	57.17	2.43	0.03
		2440	1.072	1.875	57.17	2.43	0.01
		2478	1.072	1.875	57.17	2.43	0.01

1.2 Test Graph

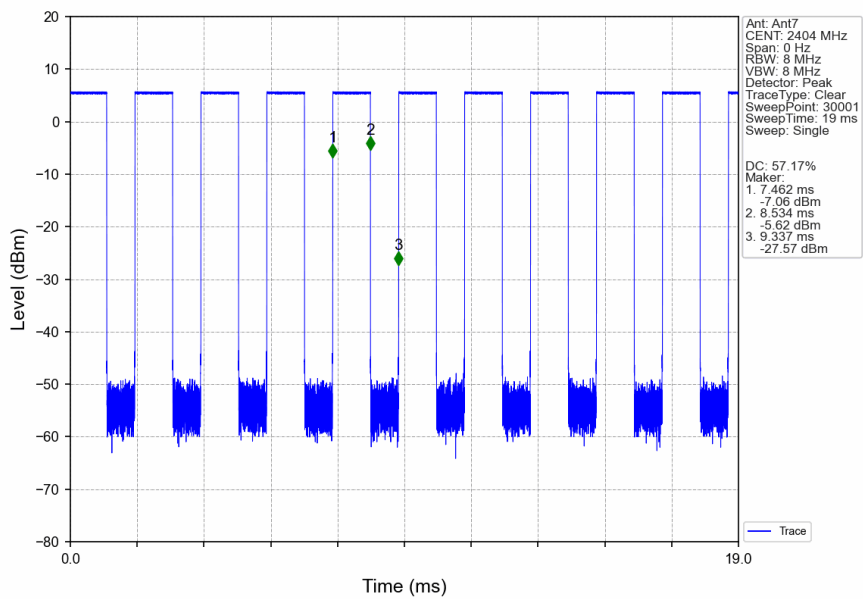
1.2.1 Ant7



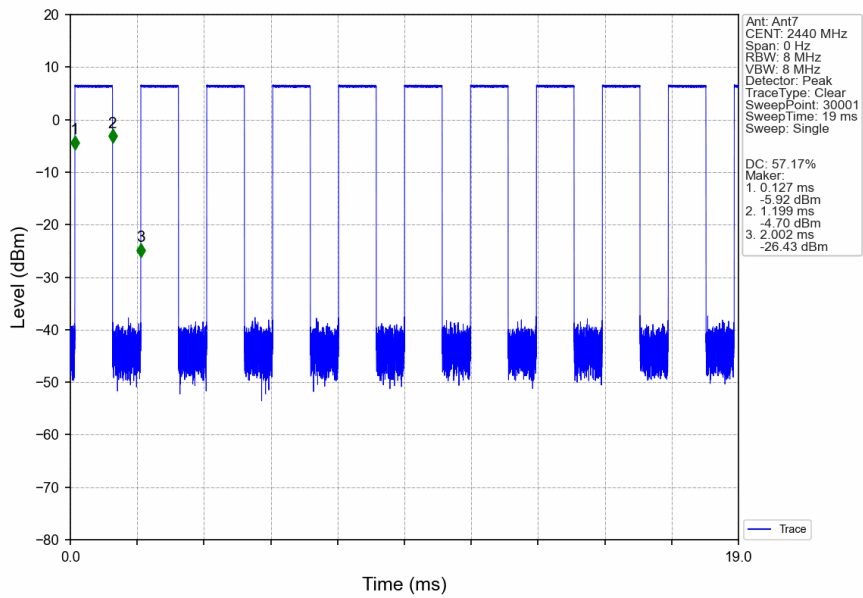
1M HCH 2480MHz Ant7 NTN



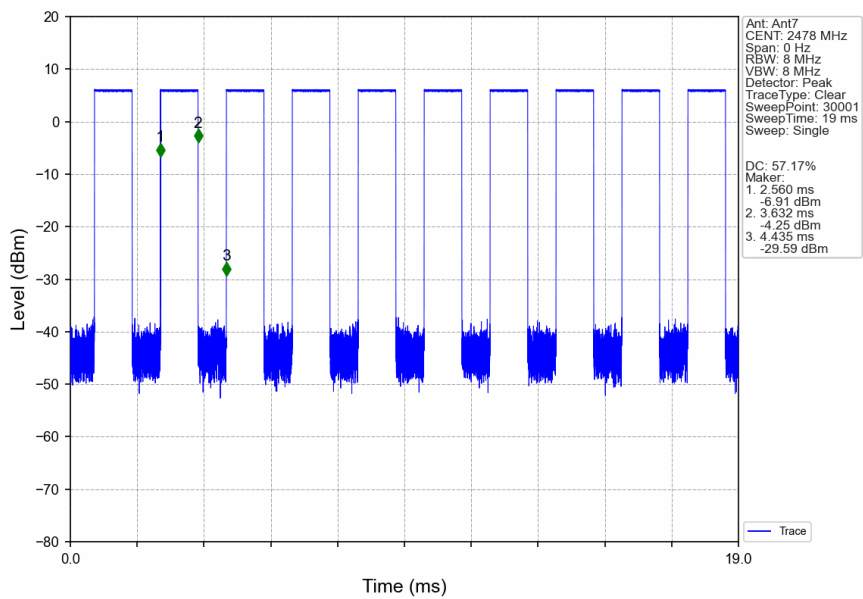
2M LCH 2404MHz Ant7 NTN



2M MCH 2440MHz Ant7 NTN



2M HCH 2478MHz Ant7 NTN





2. Bandwidth

2.1 Test Result

2.1.1 OBW

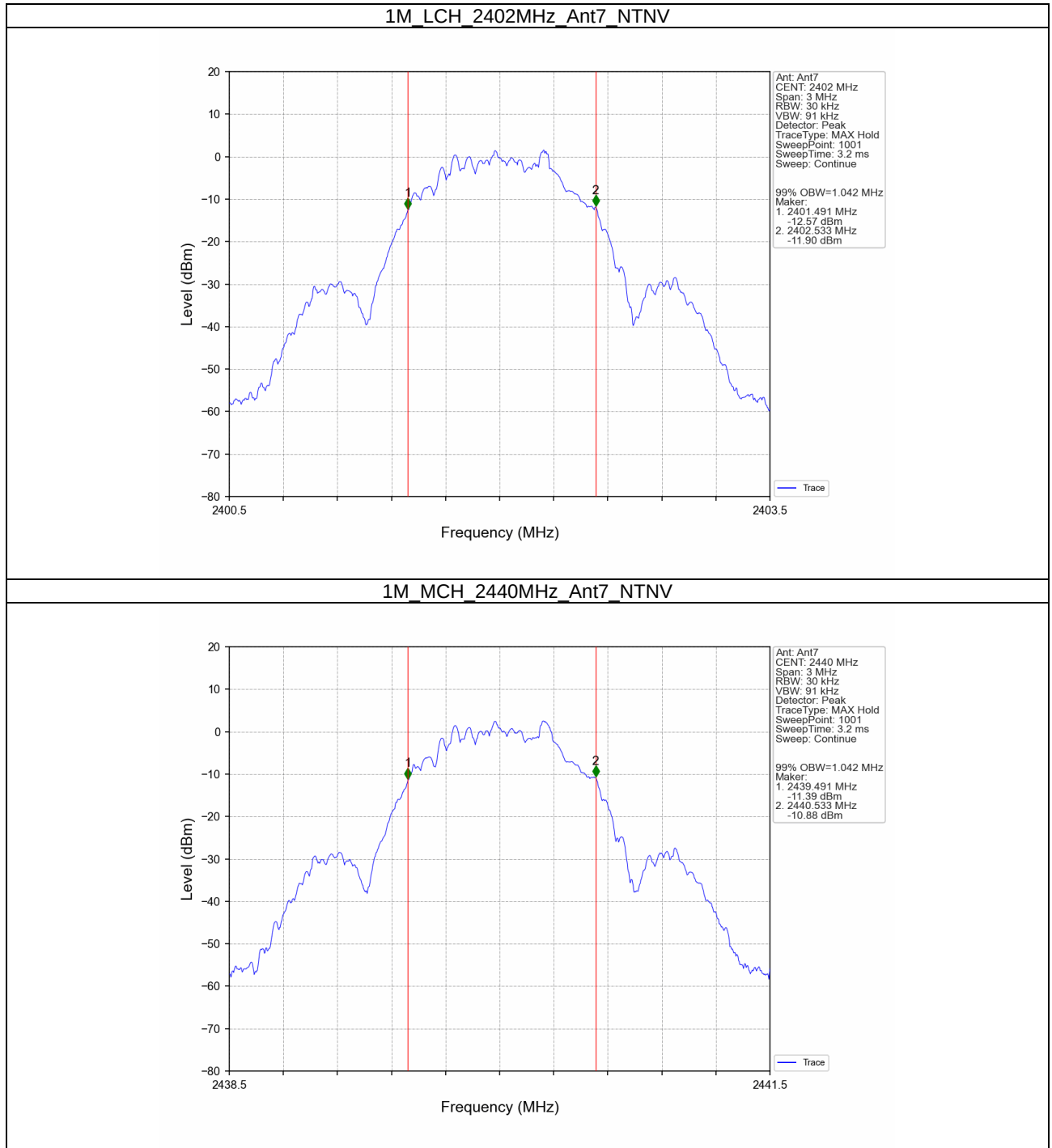
Mode	TX Type	Frequency (MHz)	ANT	99% Occupied Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	7	1.042	/	Pass
		2440	7	1.042	/	Pass
		2480	7	1.048	/	Pass
2M	SISO	2404	7	2.075	/	Pass
		2440	7	2.078	/	Pass
		2478	7	2.077	/	Pass

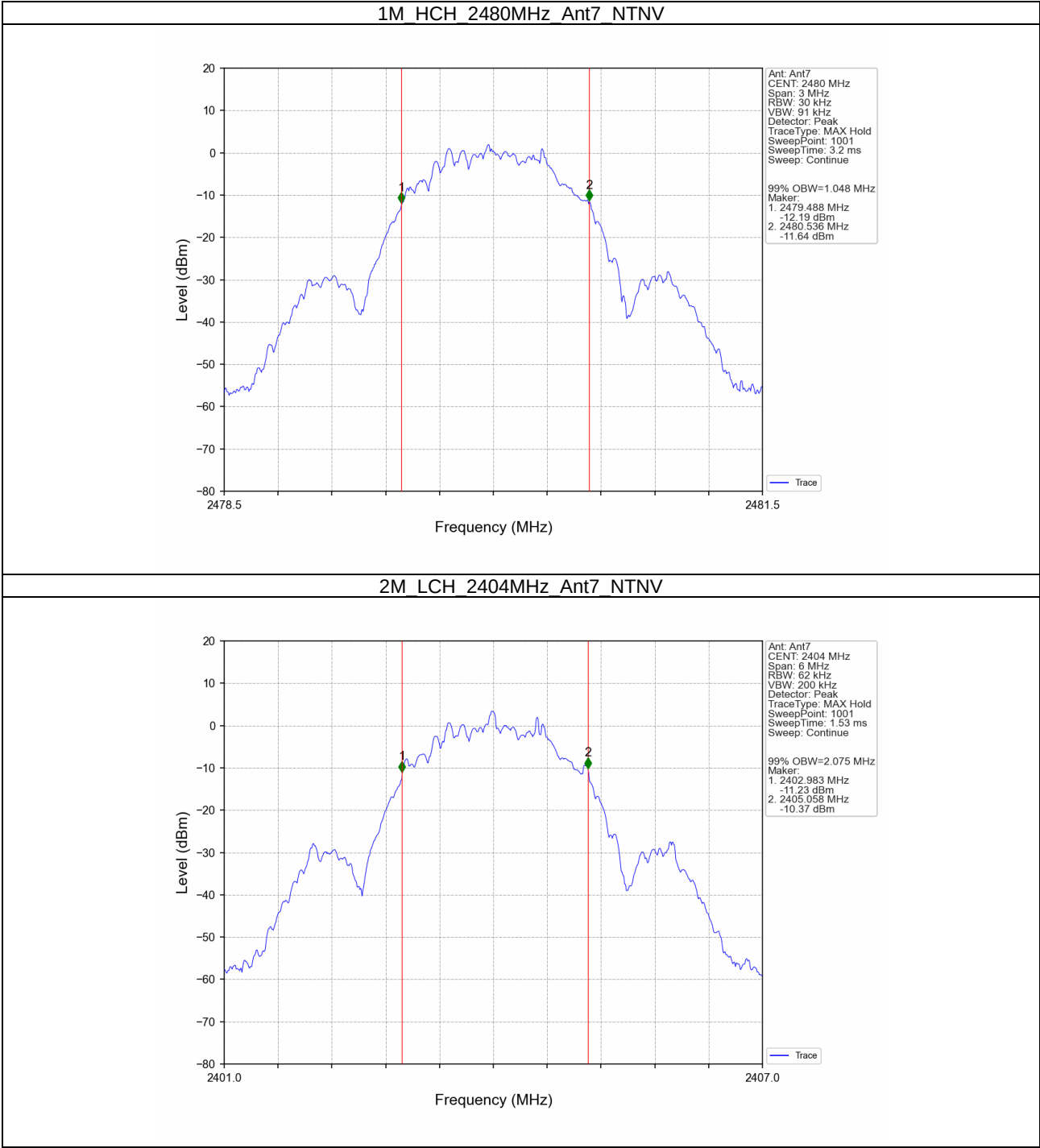
2.1.2 6dB BW

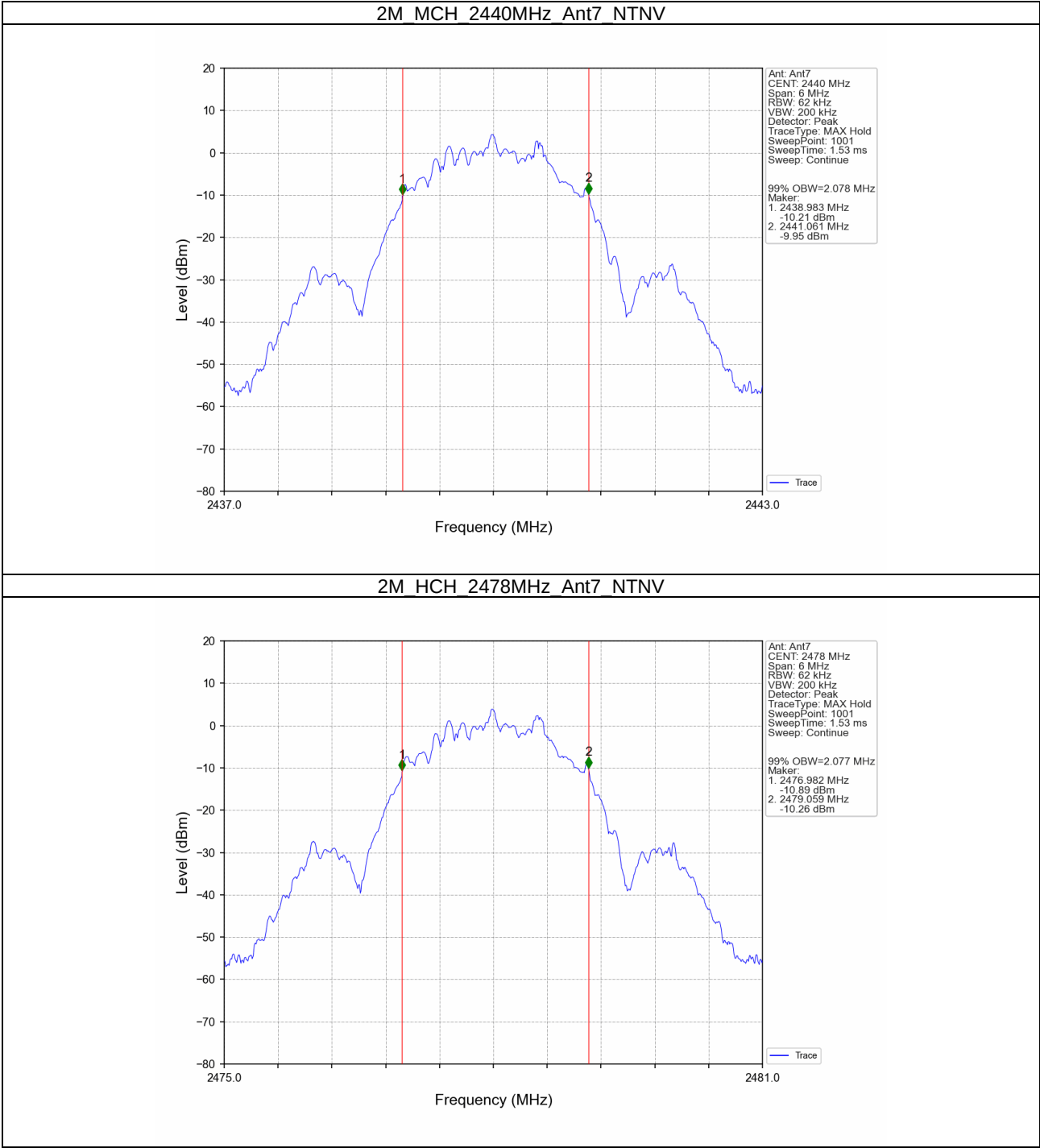
Mode	TX Type	Frequency (MHz)	ANT	6dB Bandwidth (MHz)		Verdict
				Result	Limit	
1M	SISO	2402	7	0.667	≥ 0.5	Pass
		2440	7	0.664	≥ 0.5	Pass
		2480	7	0.664	≥ 0.5	Pass
2M	SISO	2404	7	1.176	≥ 0.5	Pass
		2440	7	1.163	≥ 0.5	Pass
		2478	7	1.194	≥ 0.5	Pass

2.2 Test Graph

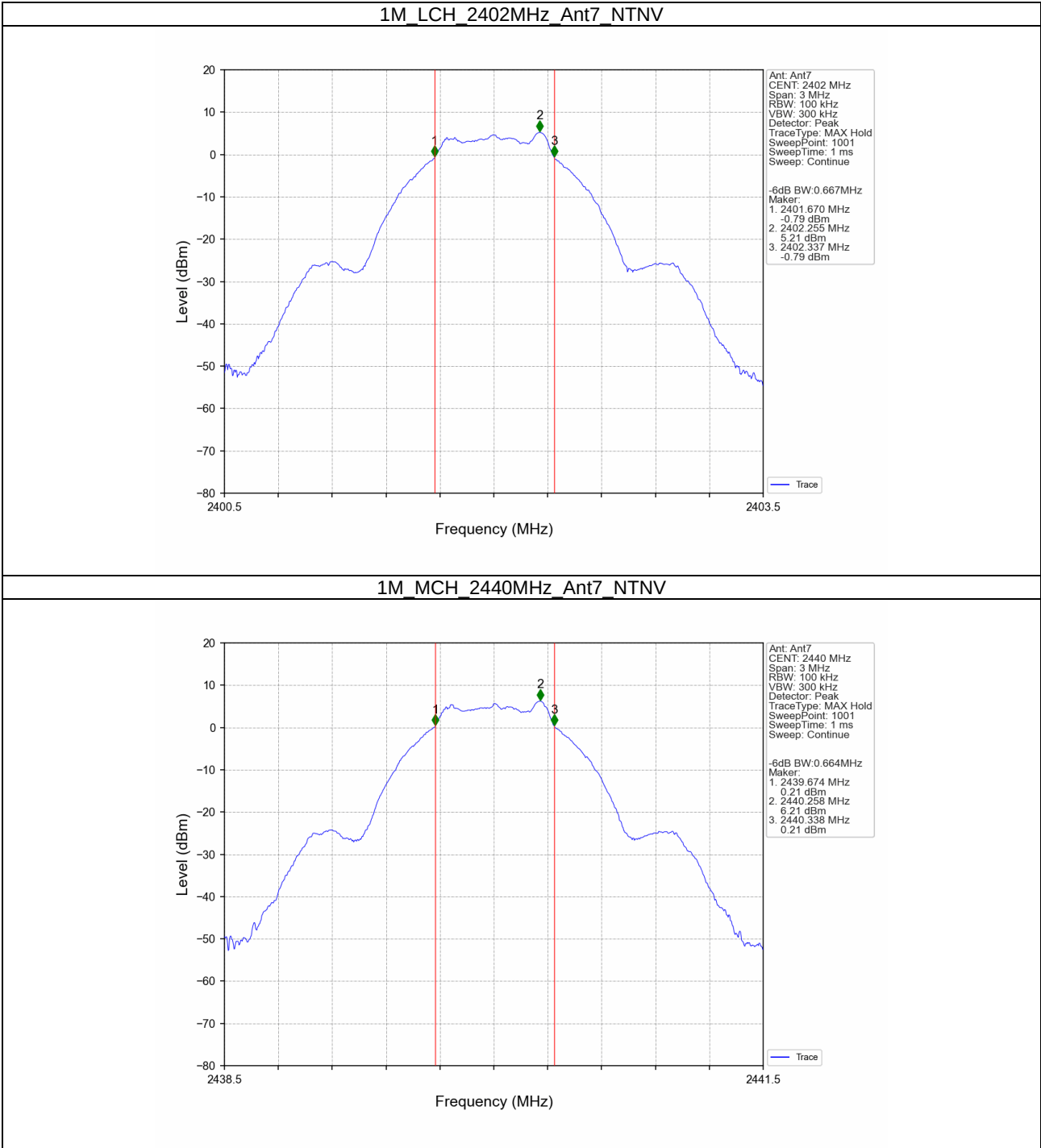
2.2.1 OBW

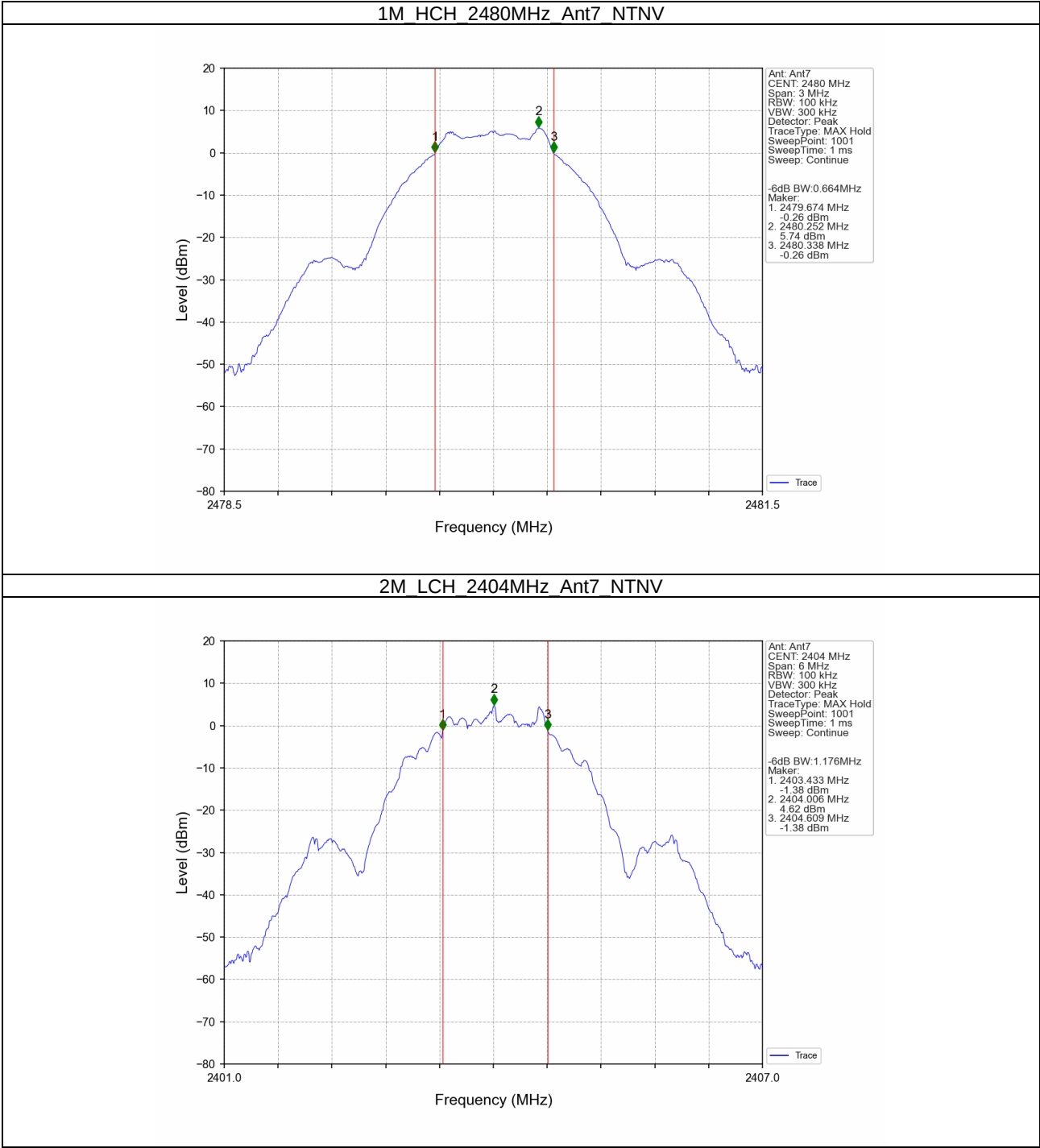


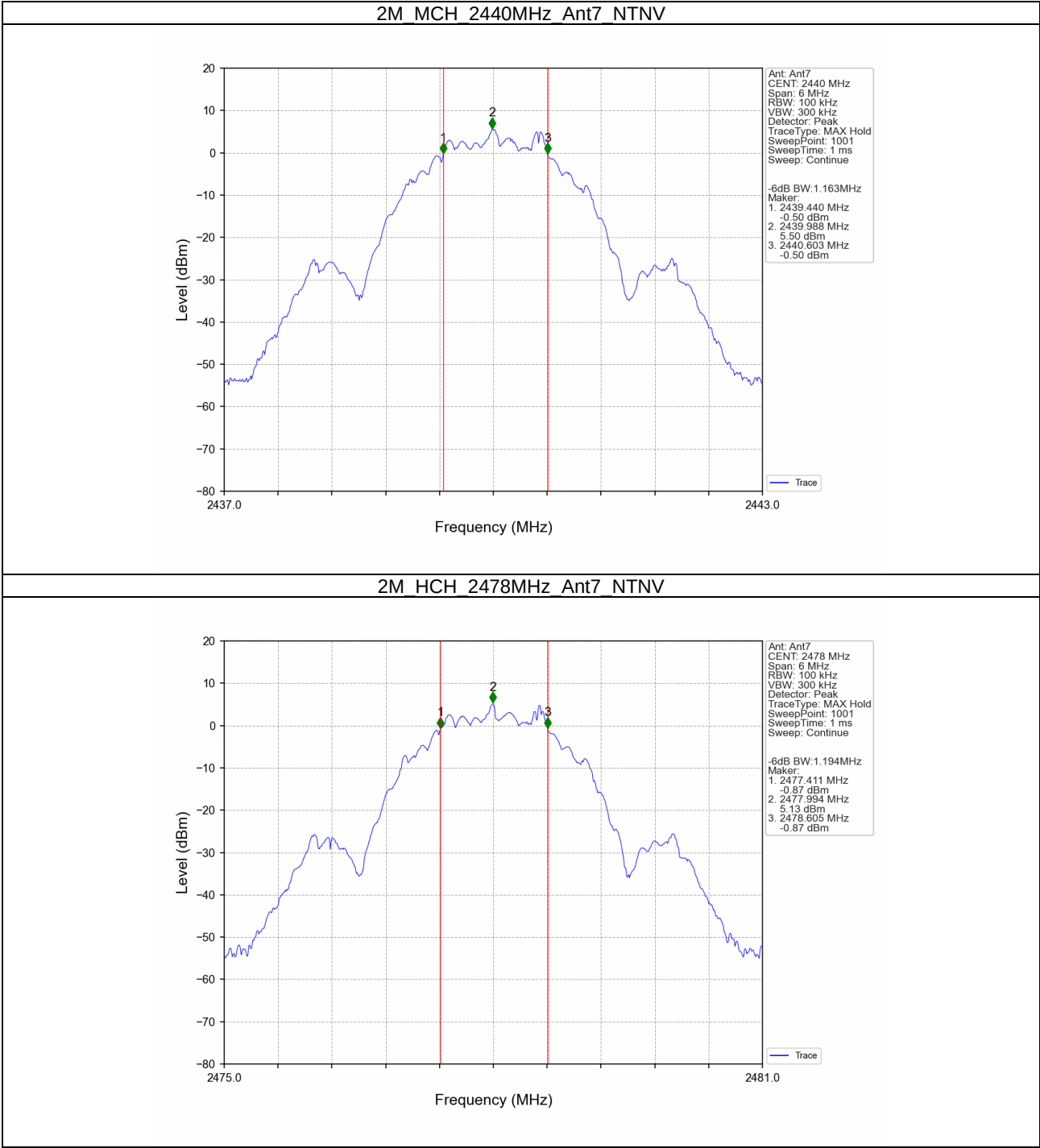




2.2.2 6dB BW









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
			ANT7	Limit	
1M	SISO	2402	6.06	<=30	Pass
		2440	7.08	<=30	Pass
		2480	6.64	<=30	Pass
2M	SISO	2404	6.29	<=30	Pass
		2440	7.15	<=30	Pass
		2478	6.71	<=30	Pass

Note1: Antenna Gain: Ant7: -1.50dBi;

4. Maximum Power Spectral Density

4.1 Test Result

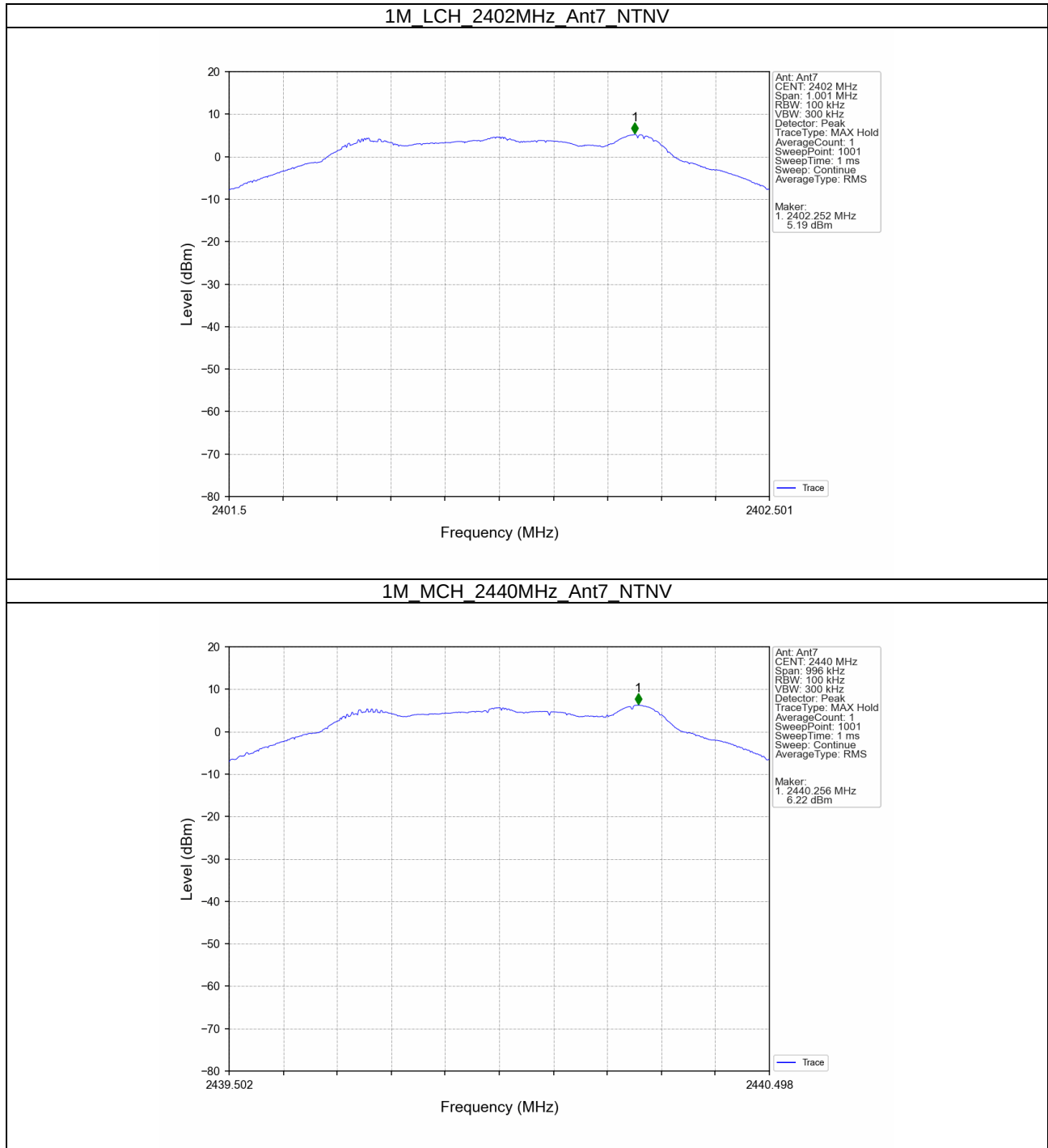
4.1.1 PSD

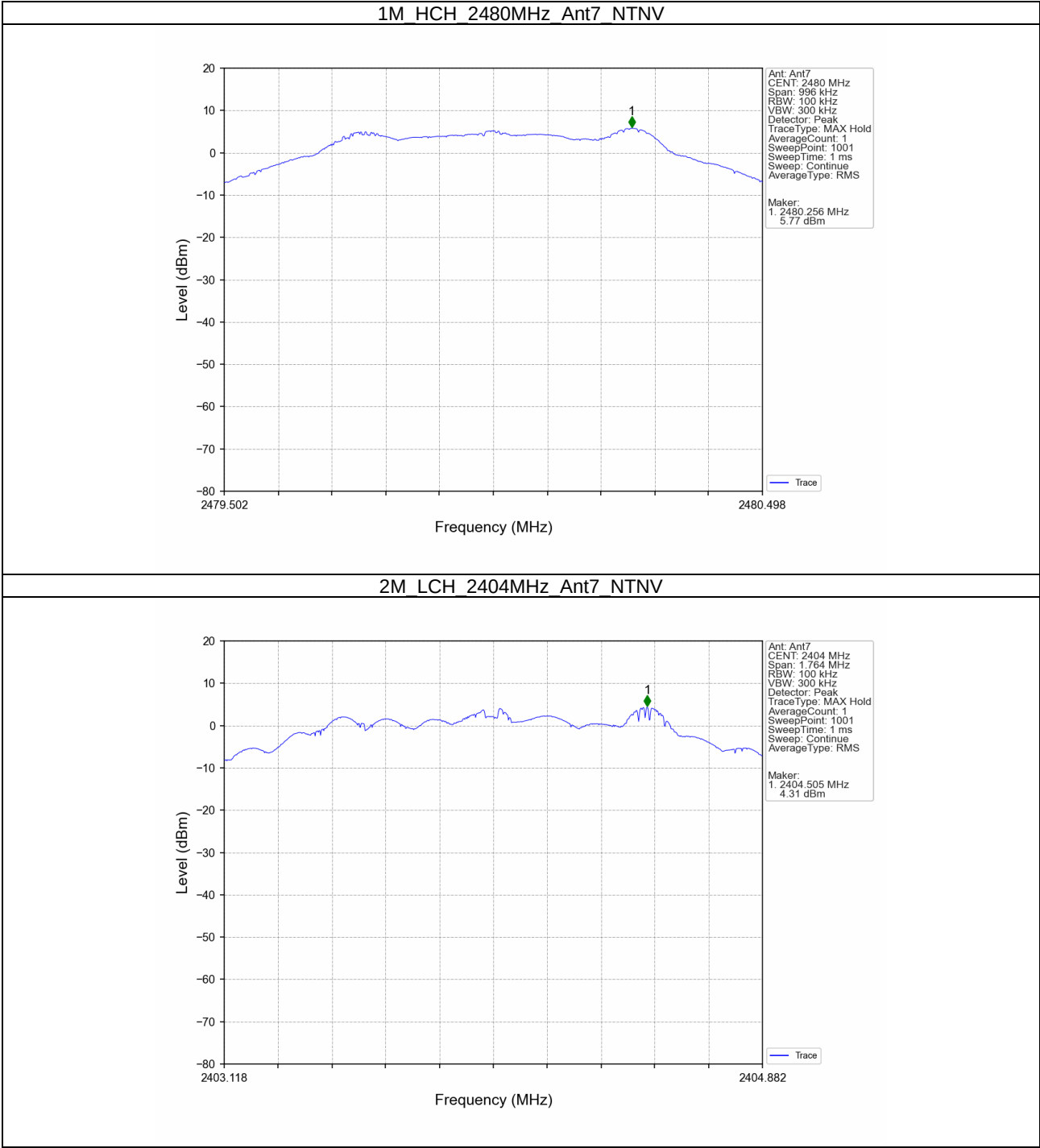
Mode	TX Type	Frequency (MHz)	Maximum PSD (dBm)		Verdict
			ANT7	Limit	
1M	SISO	2402	5.19	<=8	Pass
		2440	6.22	<=8	Pass
		2480	5.77	<=8	Pass
2M	SISO	2404	4.31	<=8	Pass
		2440	5.50	<=8	Pass
		2478	5.00	<=8	Pass

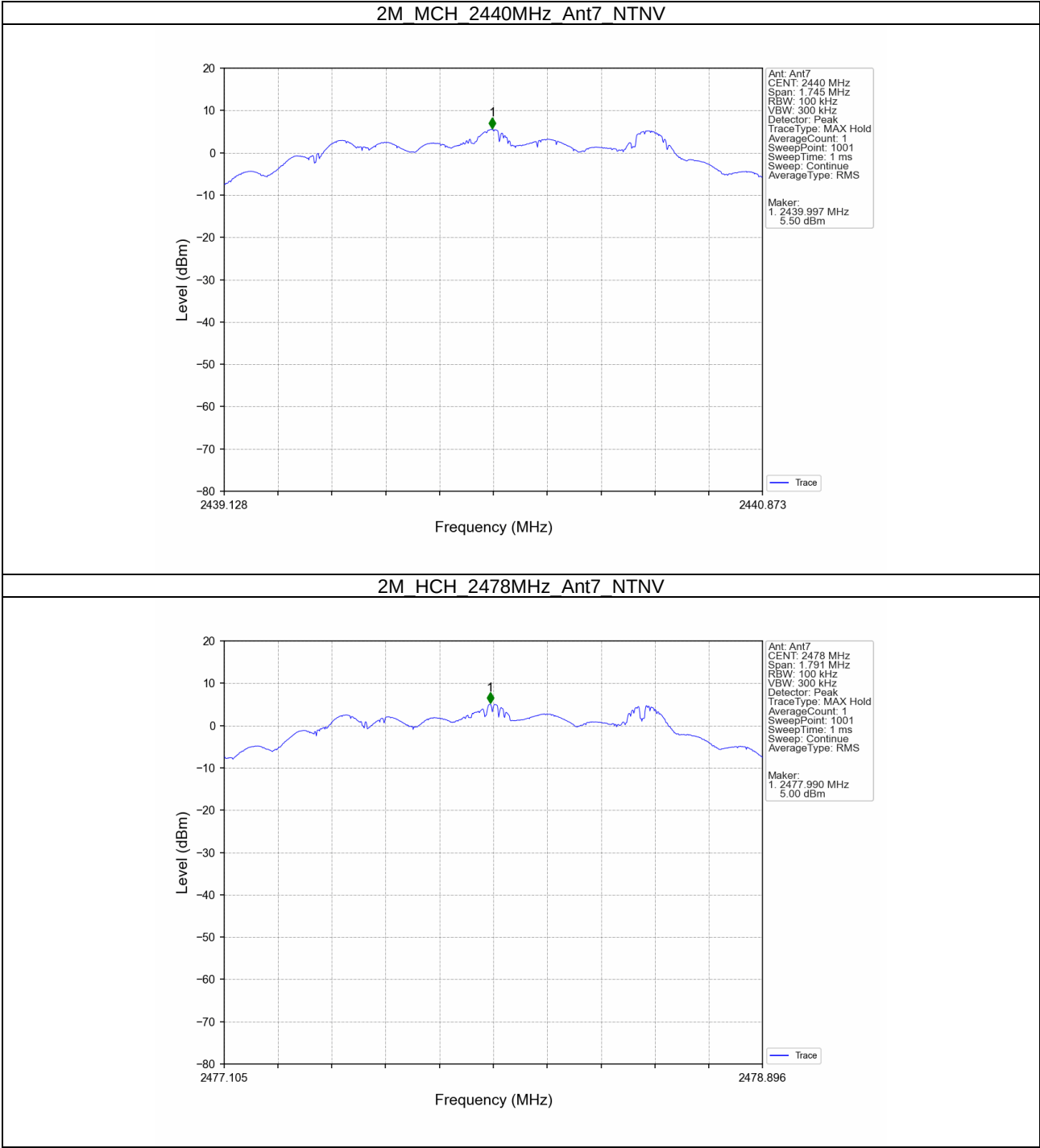
Note1: Antenna Gain: Ant7: -1.50dBi;

4.2 Test Graph

4.2.1 PSD









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	7	5.17
		2440	7	6.20
		2480	7	5.76
2M	SISO	2404	7	4.63
		2440	7	5.51
		2478	7	5.05

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

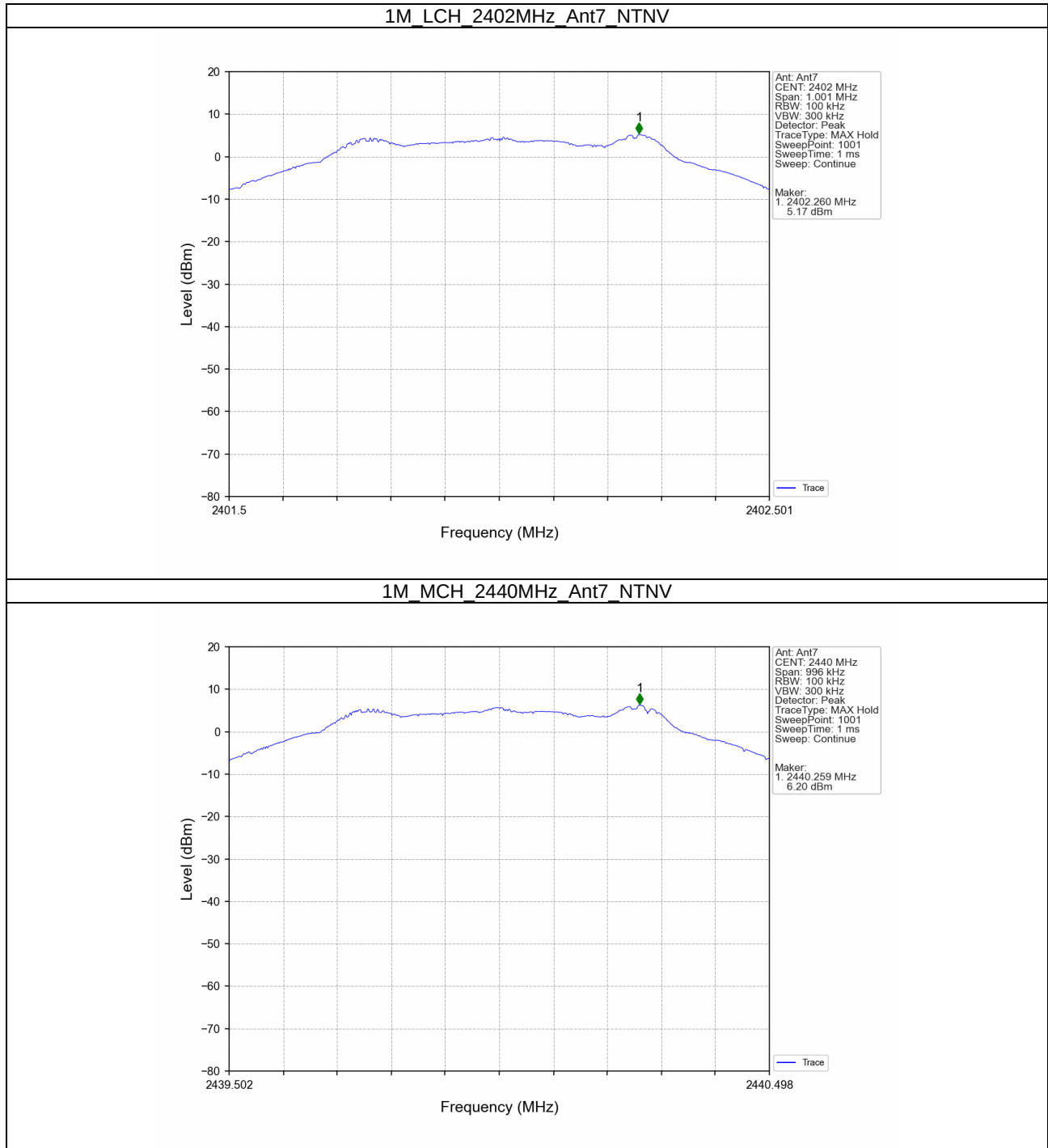
5.1.2 CSE

Mode	TX Type	Frequency (MHz)	ANT	Level of Reference (dBm)	Limit (dBm)	Verdict
1M	SISO	2402	7	6.20	-13.80	Pass
		2440	7	6.20	-13.80	Pass
		2480	7	6.20	-13.80	Pass
2M	SISO	2404	7	5.51	-14.49	Pass
		2440	7	5.51	-14.49	Pass
		2478	7	5.51	-14.49	Pass

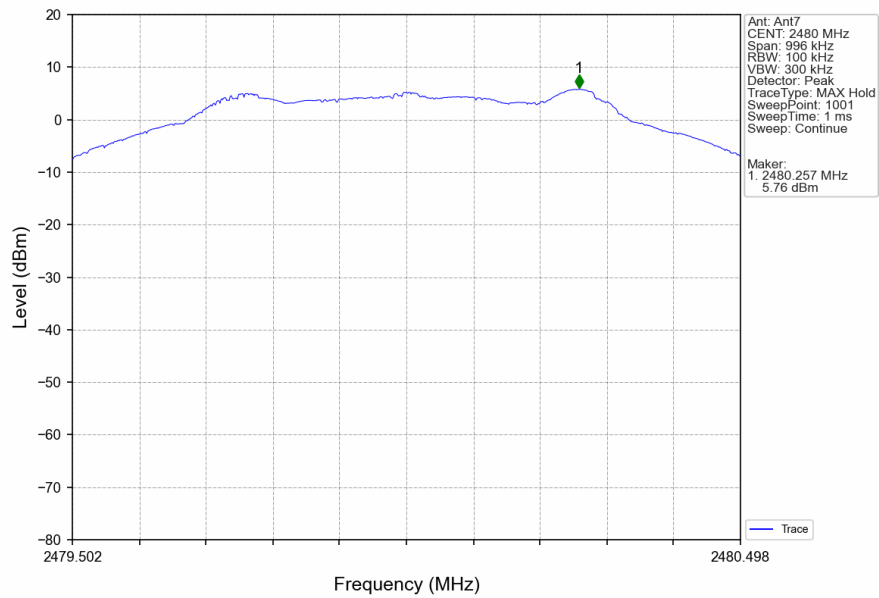
Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2020, the channel contains the maximum PSD level was used to establish the reference level.

5.2 Test Graph

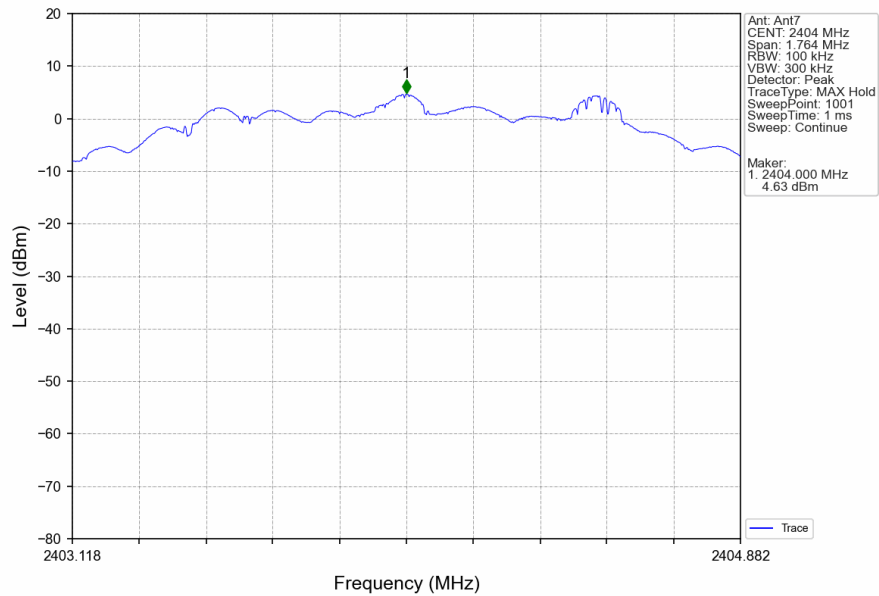
5.2.1 Ref



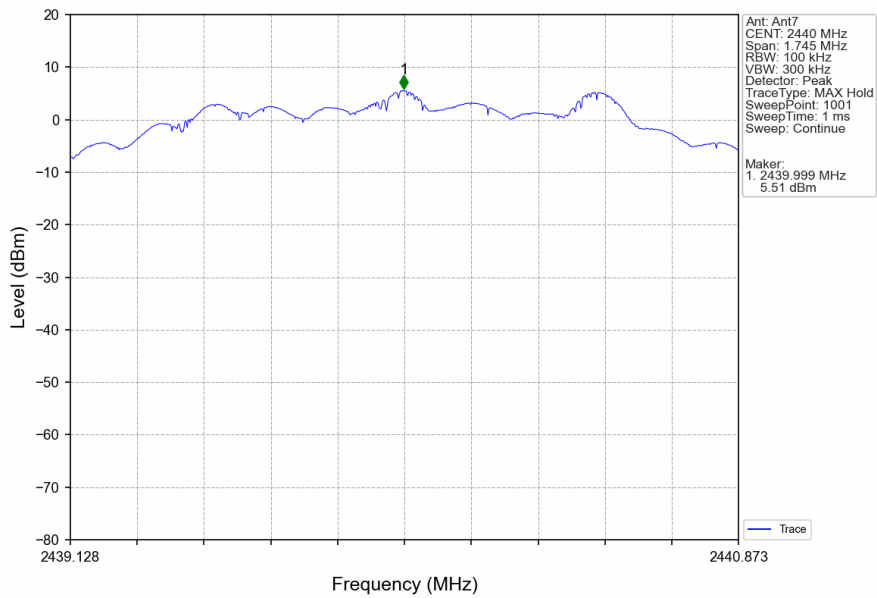
1M HCH 2480MHz Ant7 NTV



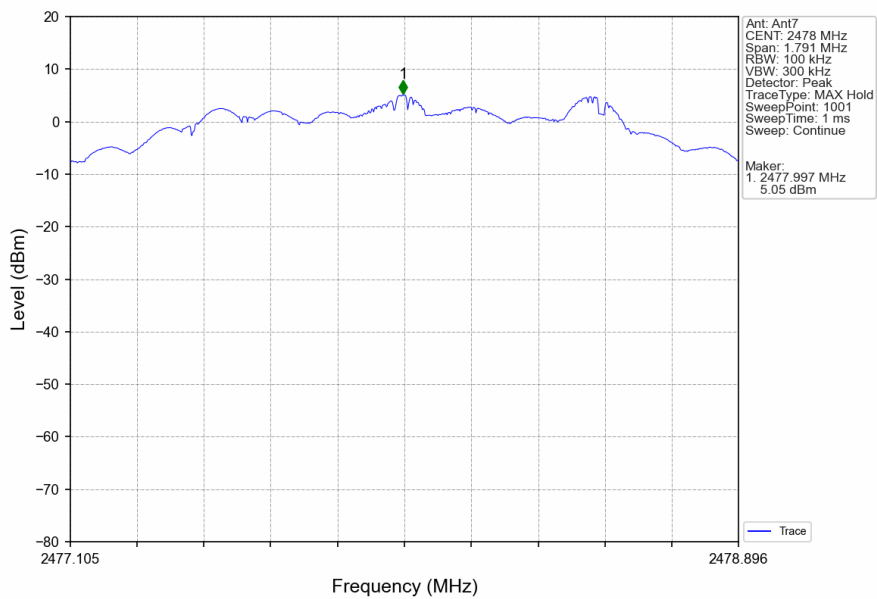
2M LCH 2404MHz Ant7 NTV



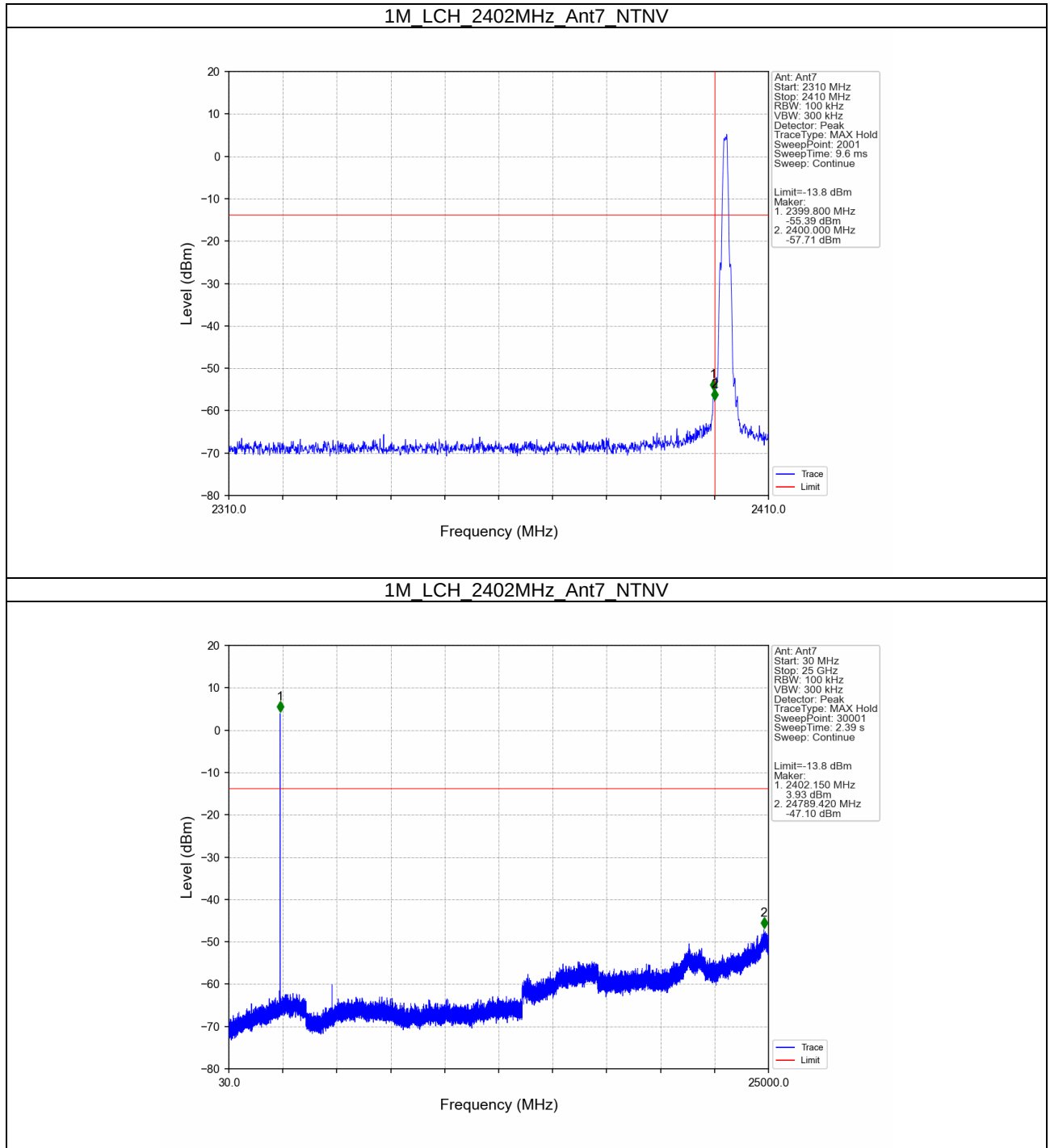
2M MCH 2440MHz Ant7 NTN



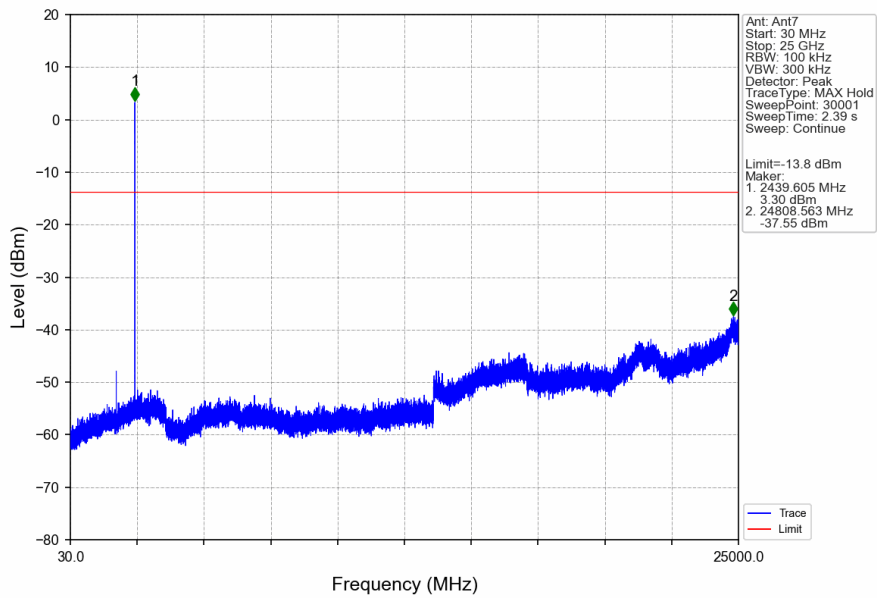
2M HCH 2478MHz Ant7 NTN



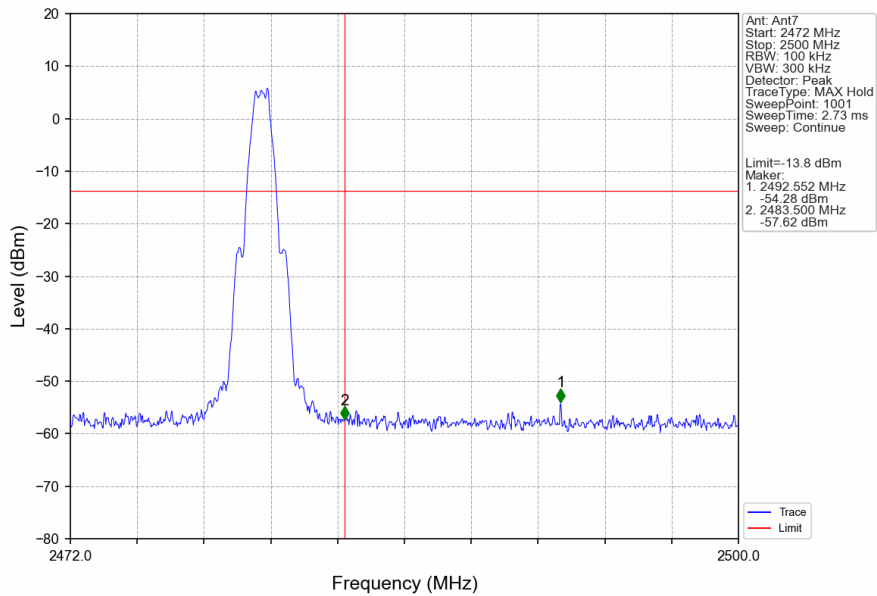
5.2.2 CSE



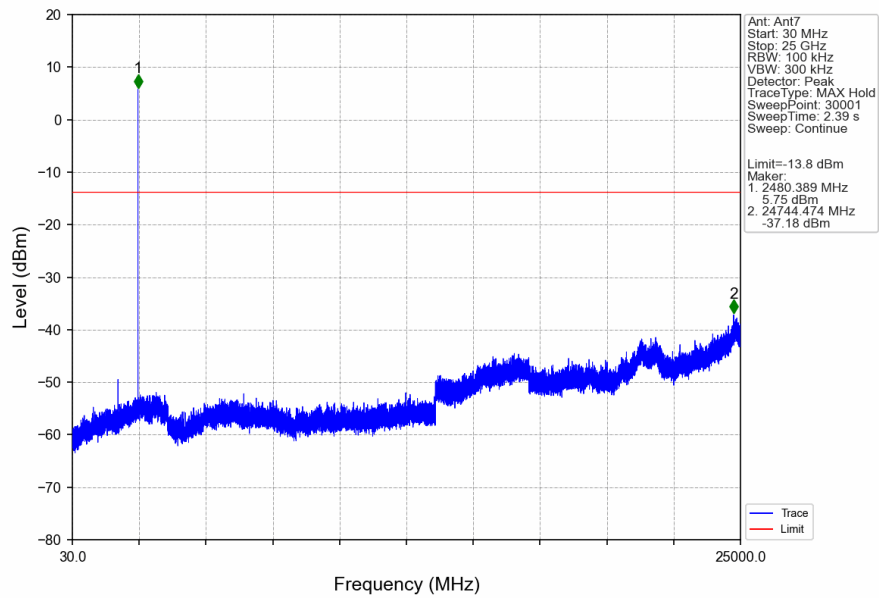
1M MCH 2440MHz Ant7 NTN



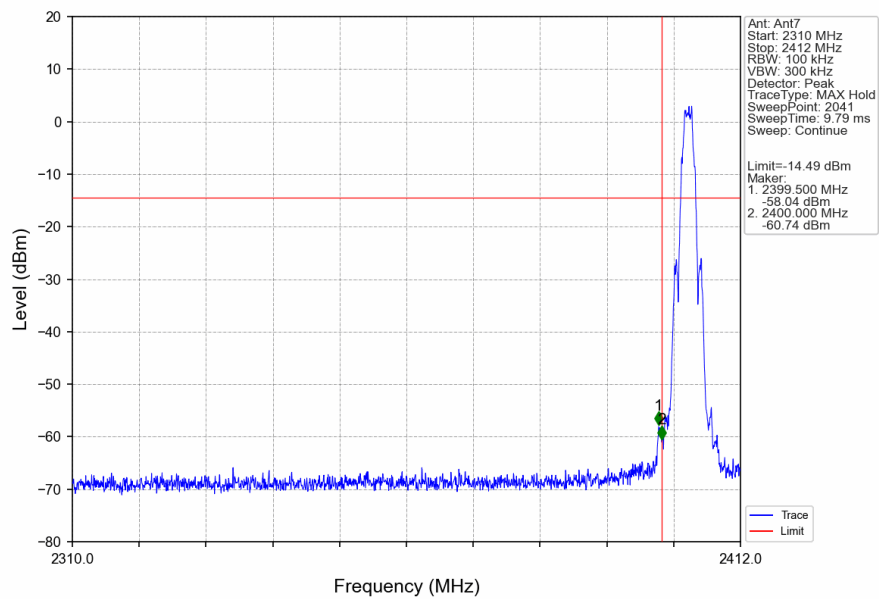
1M HCH 2480MHz Ant7 NTN

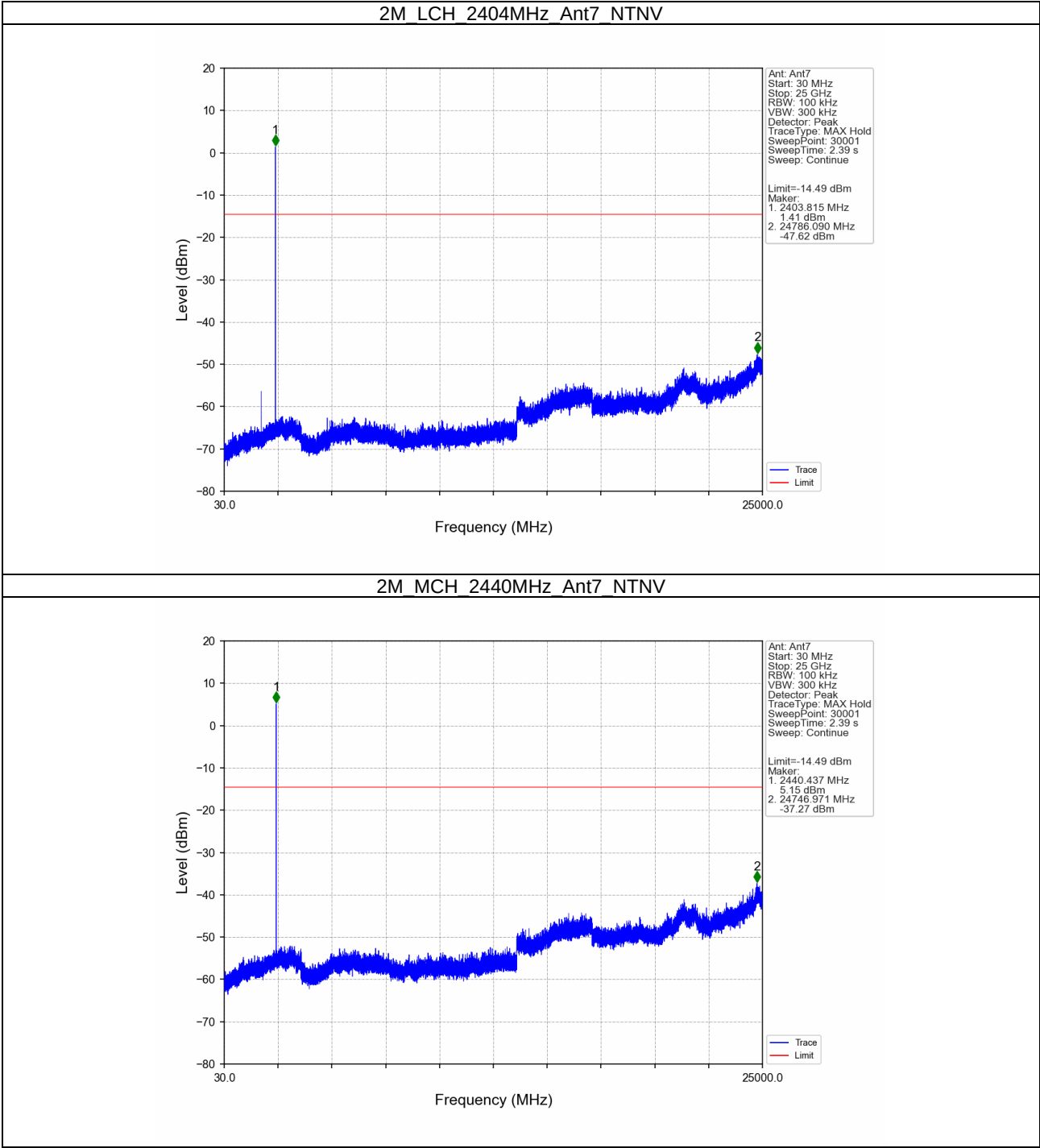


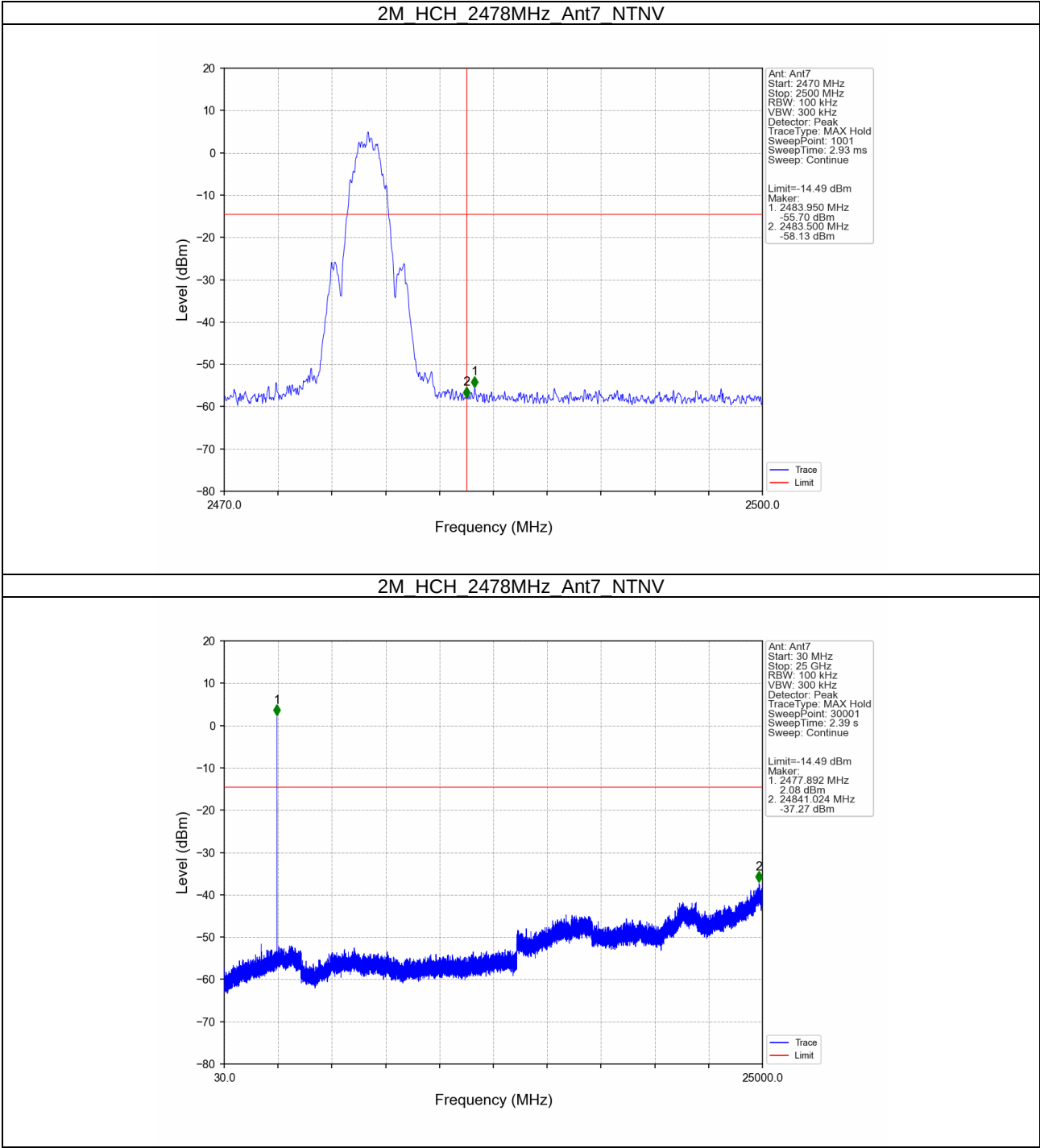
1M HCH 2480MHz Ant7 NTN



2M LCH 2404MHz Ant7 NTN







- End of the Report -