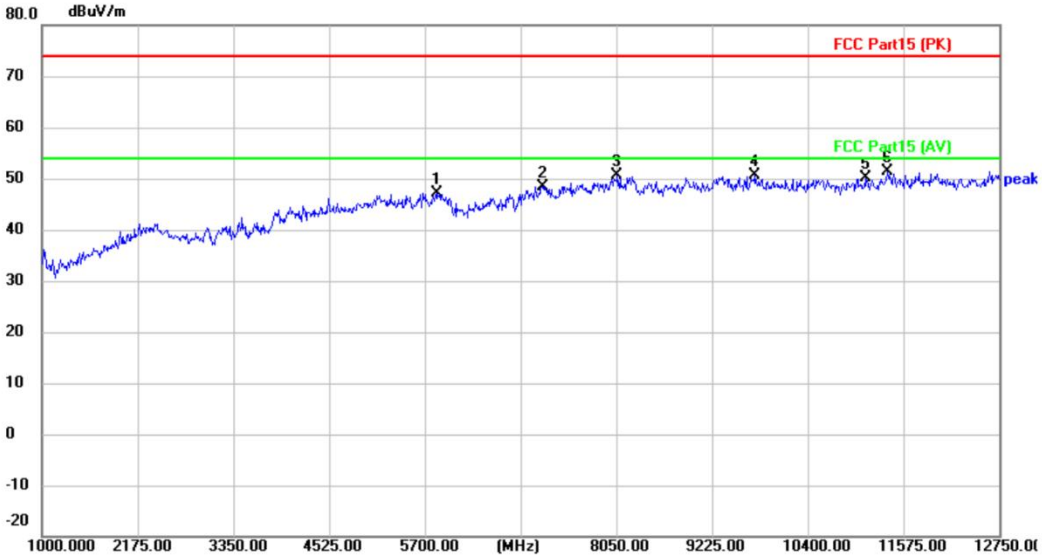
[Test mode: TX middle channel]; [Polarity: Horizontal]

Radiated Emission Measurement

Project No.: REH Data :#15 2025/6/17



Site
Limit: FCC Part15 (PK)
EUT: Wireless Speaker
M/N: X7
Mode: BLE-TX-2442
Note:

Polarization: ***Horizontal***
Power:

Temperature: (C)
Humidity: %RH

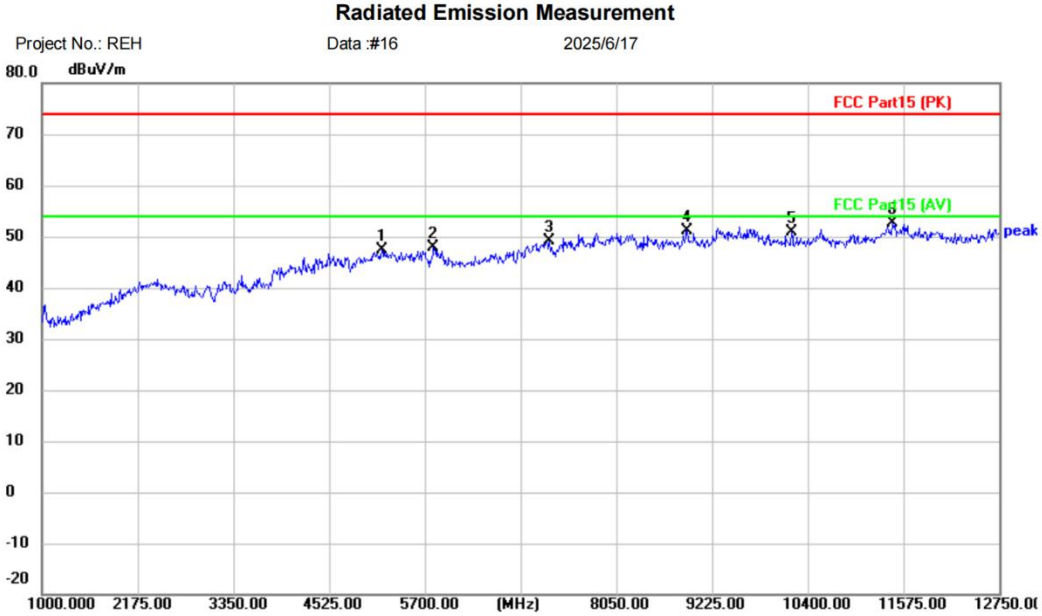
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5852.750	38.37	8.88	47.25	74.00	-26.75	peak	
2		7145.250	37.86	10.64	48.50	74.00	-25.50	peak	
3		8061.750	38.98	11.72	50.70	74.00	-23.30	peak	
4		9753.750	36.93	13.80	50.73	74.00	-23.27	peak	
5		11105.00	36.84	13.27	50.11	74.00	-23.89	peak	
6	*	11375.25	37.48	13.99	51.47	74.00	-22.53	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

Receiver: ESR_1 Spectrum Analyzer: FSP40

Test Result: Pass

[Test mode: TX middle channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: Wireless Speaker
M/N: X7
Mode: BLE-TX-2442
Note:

Polarization: *Vertical*
Power:

Temperature: (C)
Humidity: %RH

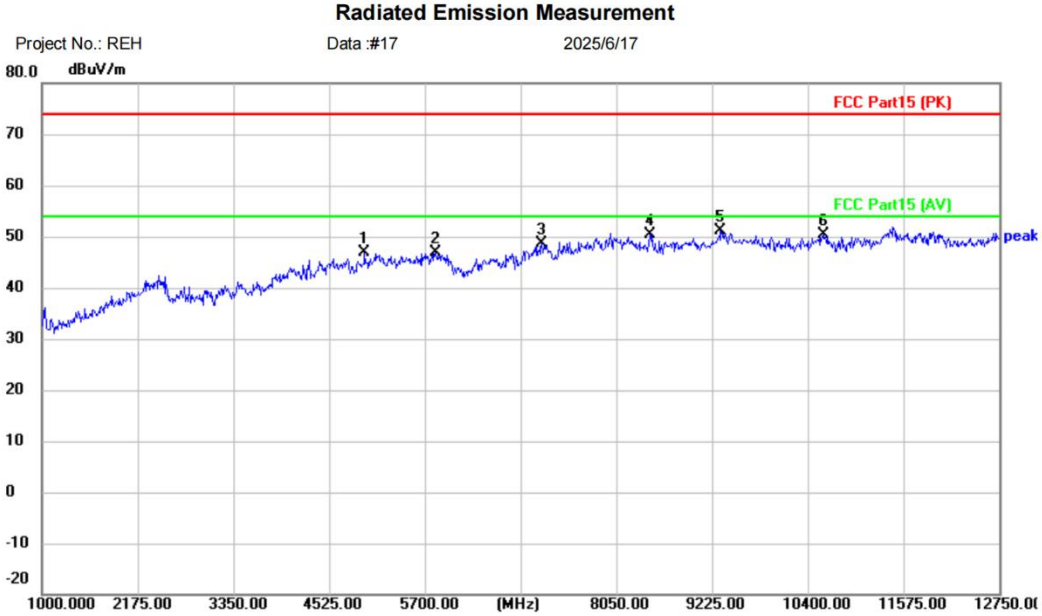
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		5171.250	39.48	7.84	47.32	74.00	-26.68	peak	
2		5805.750	38.90	9.00	47.90	74.00	-26.10	peak	
3		7227.500	38.64	10.44	49.08	74.00	-24.92	peak	
4		8919.500	38.83	12.38	51.21	74.00	-22.79	peak	
5		10200.25	37.57	13.22	50.79	74.00	-23.21	peak	
6	*	11434.00	38.04	14.47	52.51	74.00	-21.49	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

Receiver: ESR_1 Spectrum Analyzer: FSP40

Test Result: Pass

[Test mode: TX High channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: Wireless Speaker
M/N: X7
Mode: BLE-TX-2480
Note:

Polarization: ***Horizontal***
Power:

Temperature: (C)
Humidity: %RH

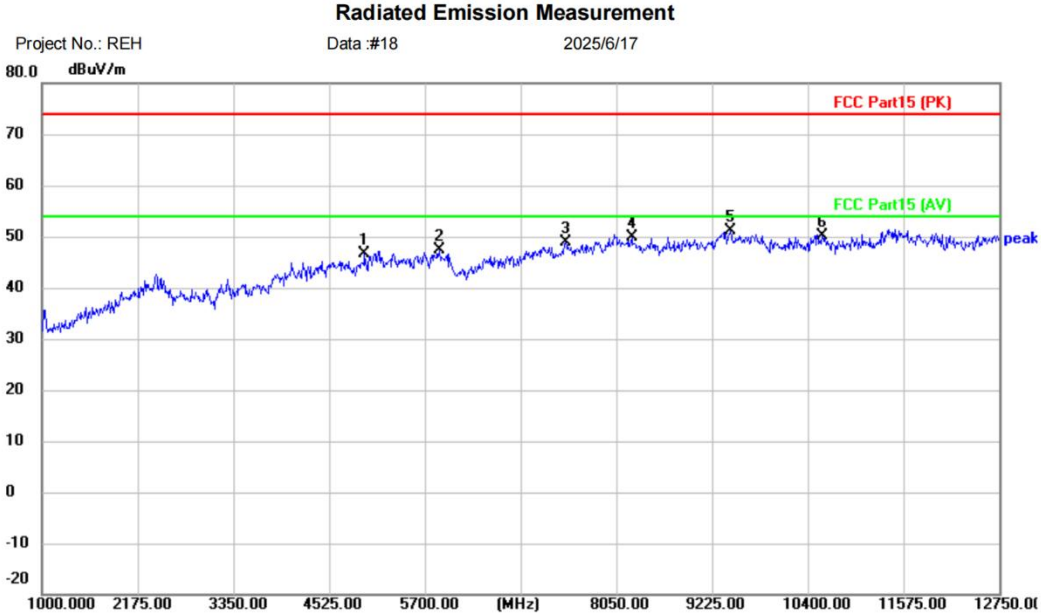
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4959.750	39.42	7.41	46.83	74.00	-27.17	peak	
2		5829.250	37.84	8.93	46.77	74.00	-27.23	peak	
3		7133.500	37.95	10.57	48.52	74.00	-25.48	peak	
4		8461.250	38.86	11.47	50.33	74.00	-23.67	peak	
5	*	9330.750	37.90	13.29	51.19	74.00	-22.81	peak	
6		10588.00	36.78	13.61	50.39	74.00	-23.61	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

Receiver: ESR_1 Spectrum Analyzer: FSP40

Test Result: Pass

[Test mode: TX High channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: Wireless Speaker
M/N: X7
Mode: BLE-TX-2480
Note:

Polarization: ***Vertical***
Power:

Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		4959.750	39.34	7.41	46.75	74.00	-27.25	peak	
2		5876.250	38.50	8.99	47.49	74.00	-26.51	peak	
3		7427.250	38.03	10.80	48.83	74.00	-25.17	peak	
4		8238.000	38.69	11.26	49.95	74.00	-24.05	peak	
5	*	9448.250	38.03	13.10	51.13	74.00	-22.87	peak	
6		10576.25	36.57	13.63	50.20	74.00	-23.80	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

Receiver: ESR_1 Spectrum Analyzer: FSP40

Test Result: Pass

6.9 Radiated emissions which fall in the restricted bands

Test Standard	47 CFR Part 15, Subpart C 15.247(d)
Test Method	ANSI C63.10-2013 Clause 6.12
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX

6.9.1 Limit

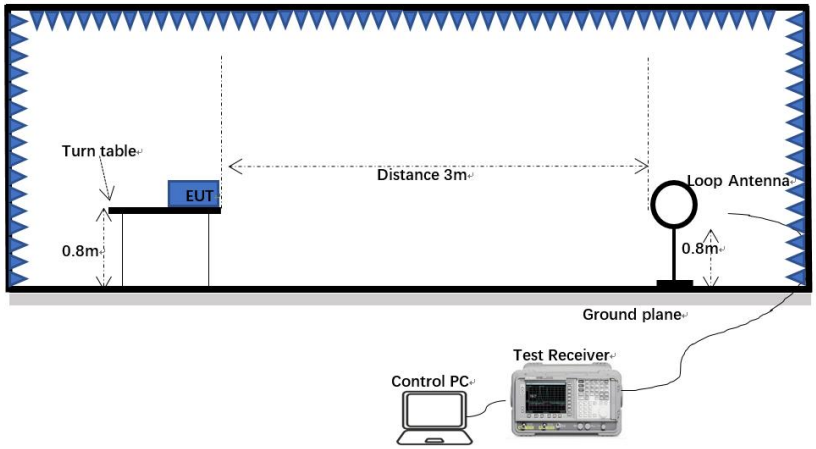
Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

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.

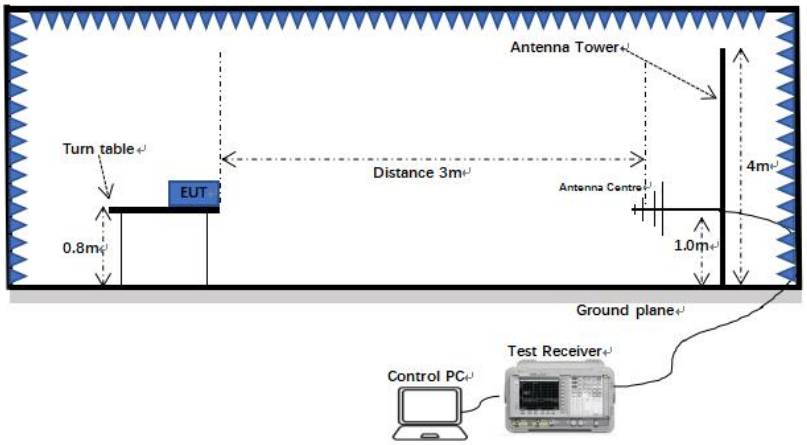
BlueAsia

6.9.2 Test setup

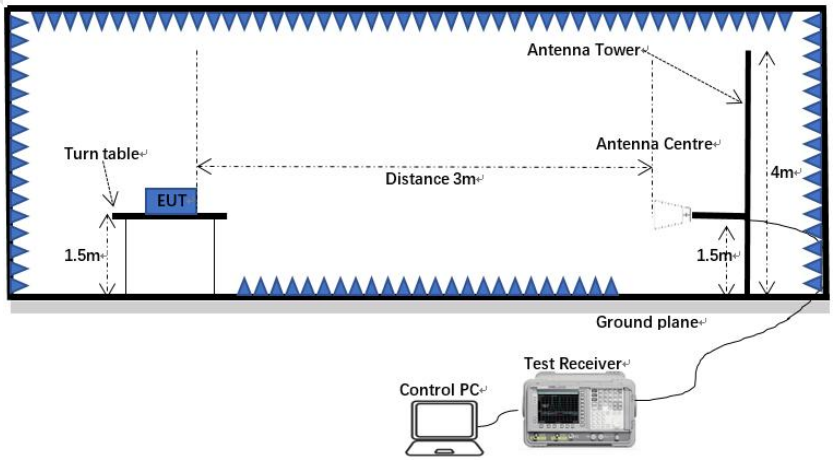
Below 1GHz：



30MHz-1GHz：



Above 1GHz：



6.9.3 Procedure

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.

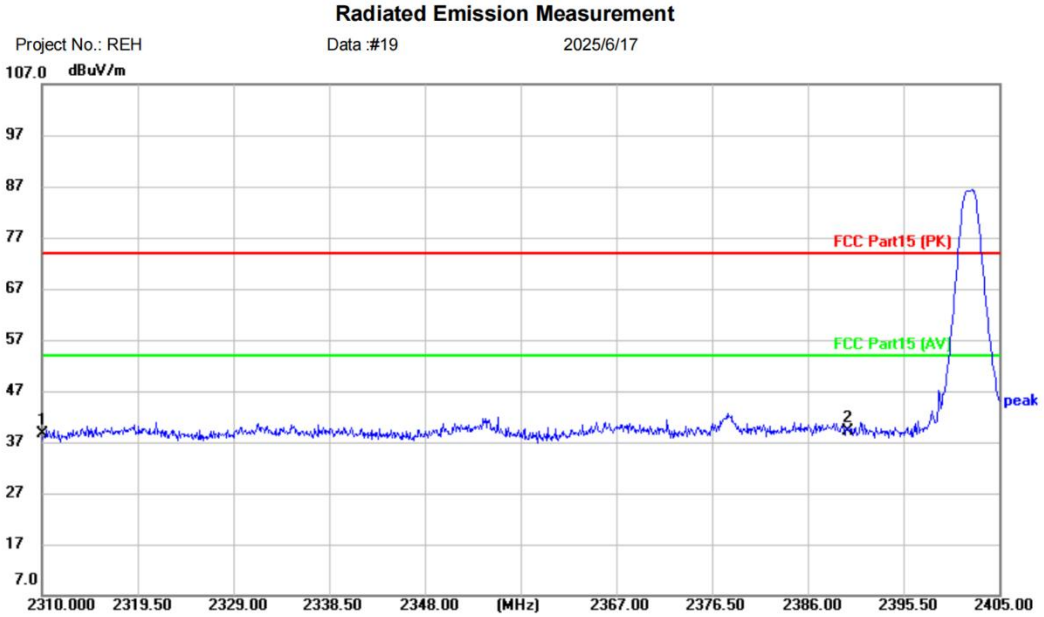
j) Repeat above procedures until all frequencies measured was complete.

Note 1: Level (dBuV) = Reading (dBuV) + Factor (dB/m)
Note 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.

6.9.4 Test data

Remark: During the test, pre-scan the BLE1M/BLE2M mode, and found the BLE1M mode which it is worse case.

[Test mode: TX low channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: Wireless Speaker
M/N: X7
Mode: BLE1M-2402
Note:

Polarization: ***Horizontal***
Power:

Temperature: (C)
Humidity: %RH

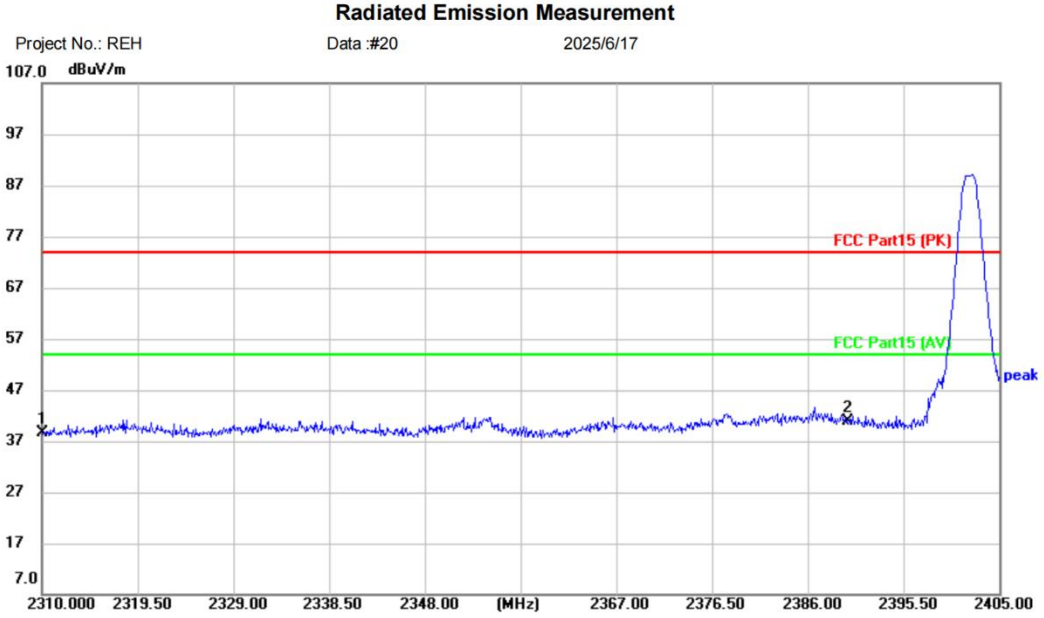
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2310.000	41.59	-2.87	38.72	74.00	-35.28	peak	
2	*	2390.000	41.54	-2.44	39.10	74.00	-34.90	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

Receiver: ESR_1 Spectrum Analyzer: FSP40

Test Result: Pass

[Test mode:TX low channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: Wireless Speaker
M/N: X7
Mode: BLE1M-2402
Note:

Polarization: ***Vertical***
Power:

Temperature: (C)
Humidity: %RH

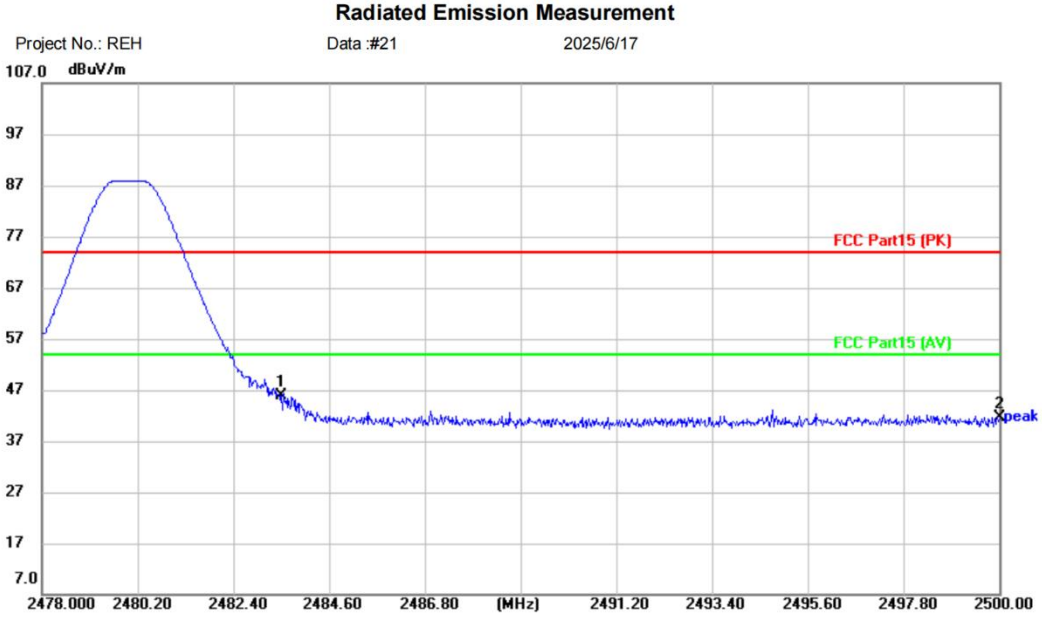
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2310.000	41.52	-2.87	38.65	74.00	-35.35	peak	
2	*	2390.000	43.25	-2.44	40.81	74.00	-33.19	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

Receiver: ESR_1 Spectrum Analyzer: FSP40

Test Result: Pass

[Test mode: TX High channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: Wireless Speaker
M/N: X7
Mode: BLE1M-2480
Note:

Polarization: ***Horizontal***
Power:

Temperature: (C)
Humidity: %RH

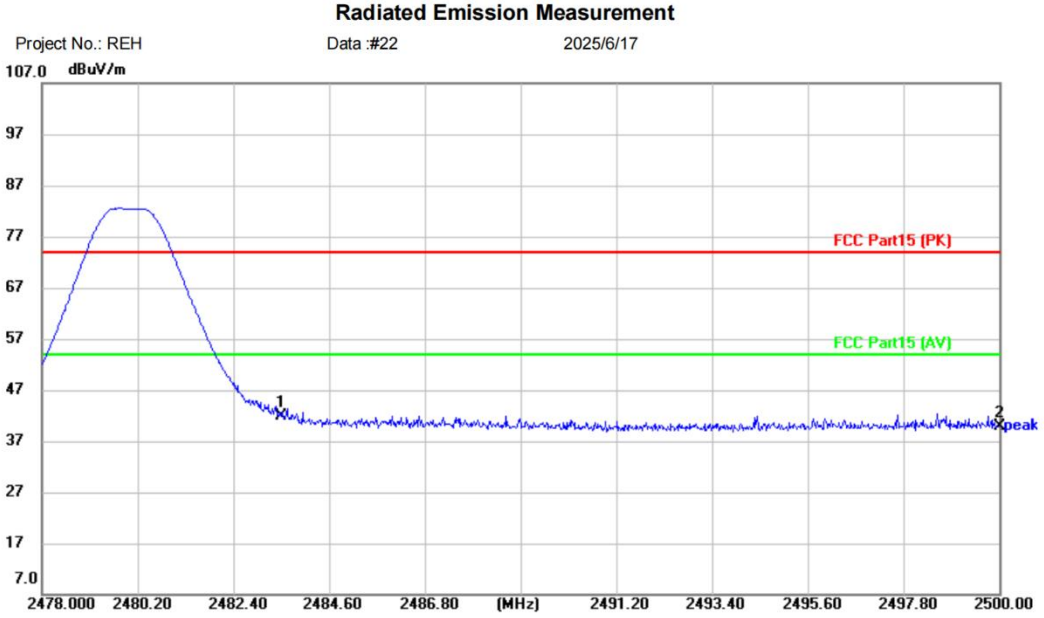
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2483.500	48.73	-2.91	45.82	74.00	-28.18	peak	
2		2500.000	44.58	-3.00	41.58	74.00	-32.42	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

Receiver: ESR_1 Spectrum Analyzer: FSP40

Test Result: Pass

[Test mode:TX High channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: Wireless Speaker
M/N: X7
Mode: BLE1M-2480
Note:

Polarization: ***Vertical***
Power:

Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2483.500	44.91	-2.91	42.00	74.00	-32.00	peak	
2		2500.000	42.79	-3.00	39.79	74.00	-34.21	peak	

*:Maximum data x:Over limit !:over margin 〈Reference Only

Receiver: ESR_1 Spectrum Analyzer: FSP40

Test Result: Pass

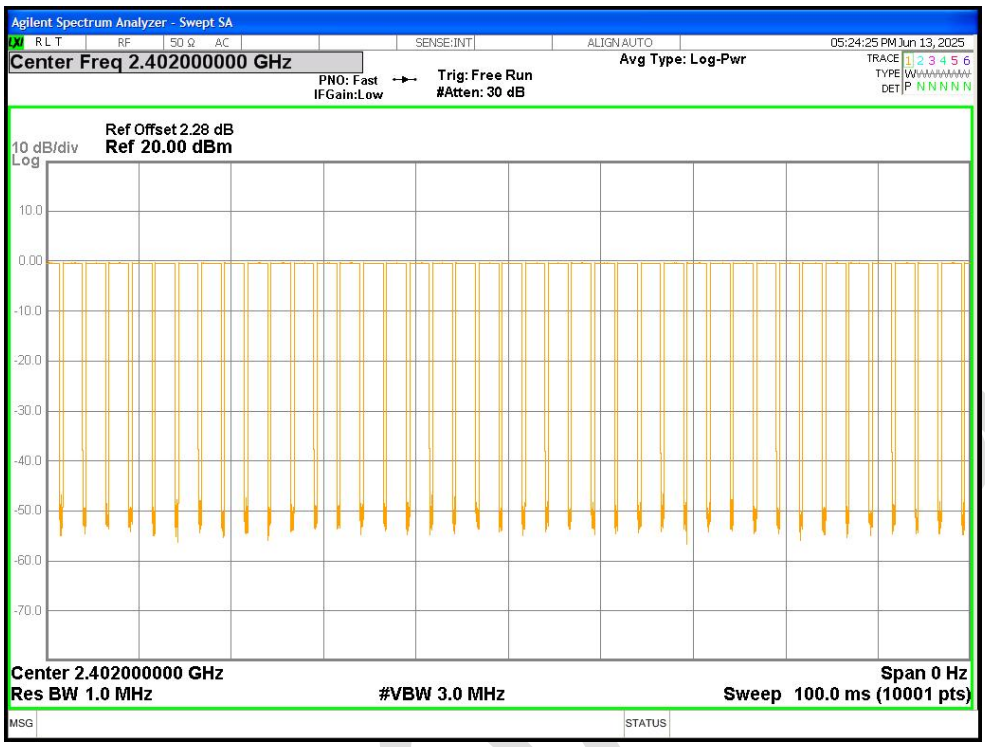
7 Appendix A

7.1 Duty Cycle

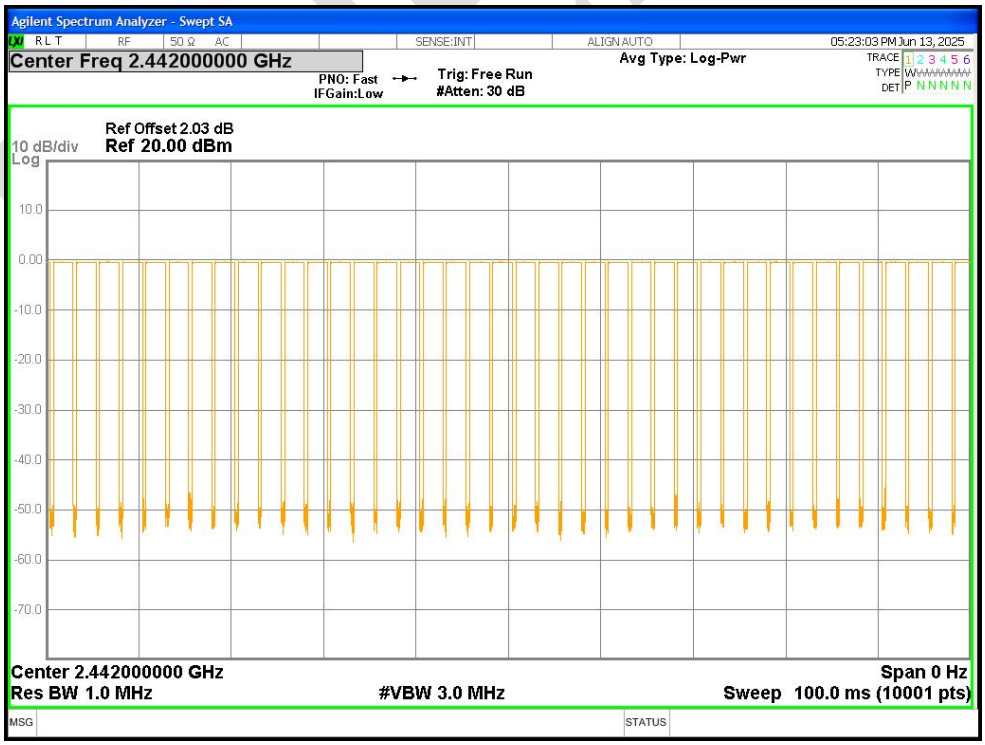
Condition	Mode	Frequency (MHz)	Antenna	Duty Cycle (%)	Correction Factor (dB)
NVNT	BLE 1M	2402	Ant1	86	0.65
NVNT	BLE 1M	2442	Ant1	85.97	0.66
NVNT	BLE 1M	2480	Ant1	85.63	0.67
NVNT	BLE 2M	2402	Ant1	44	3.57
NVNT	BLE 2M	2442	Ant1	43.61	3.6
NVNT	BLE 2M	2480	Ant1	43.61	3.6

BlueAsia

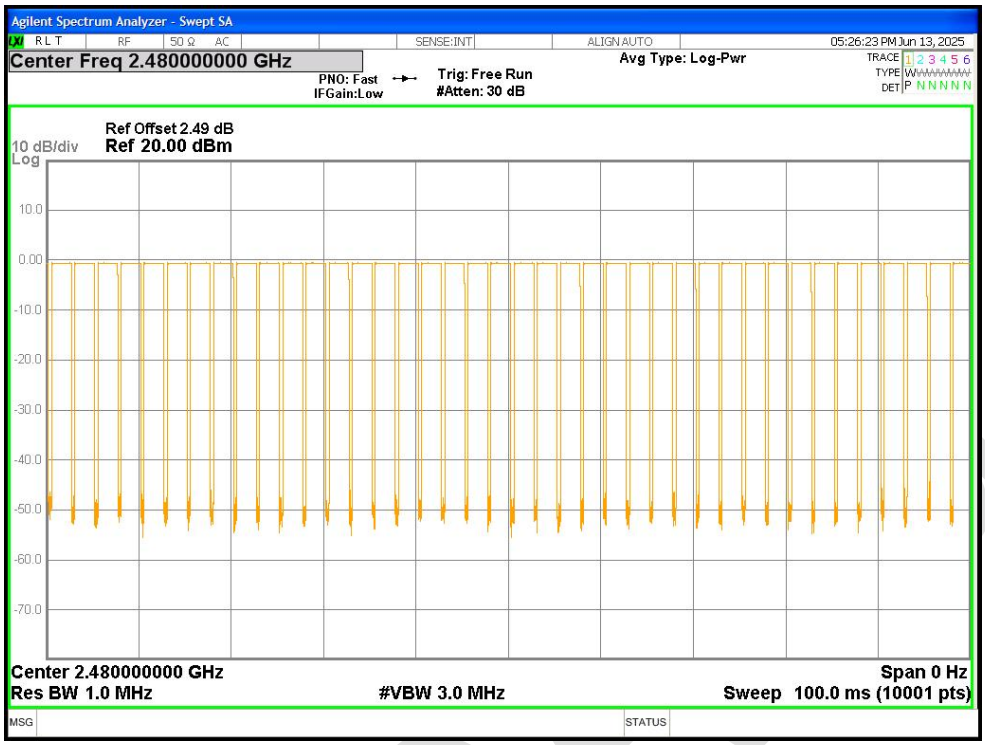
Duty Cycle NVNT BLE 1M 2402MHz Ant1



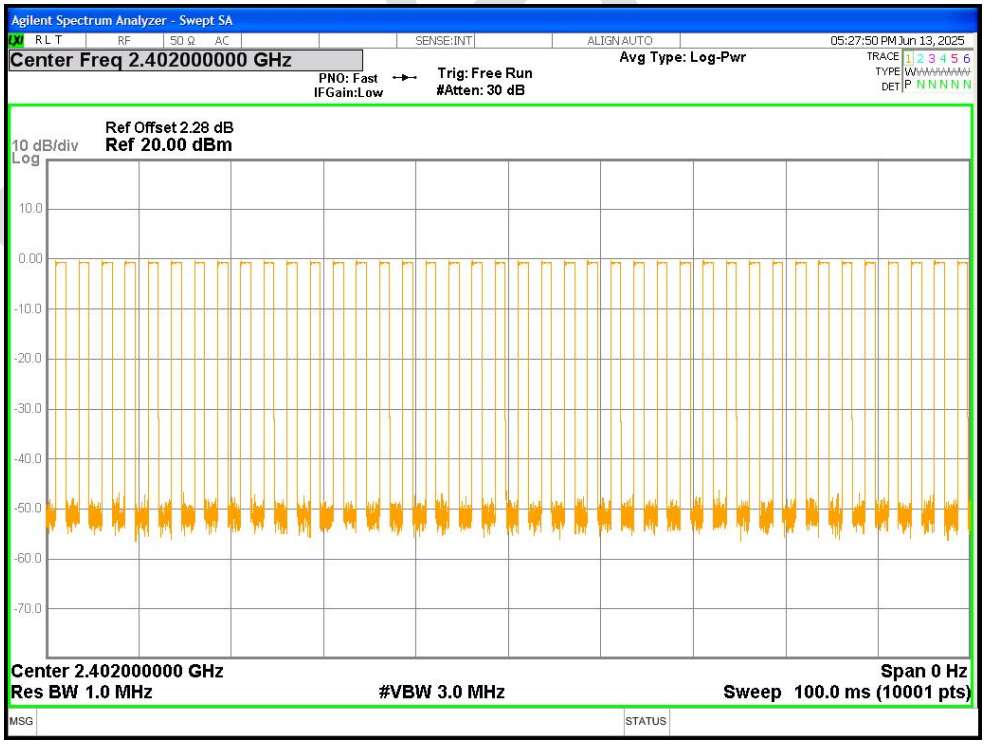
Duty Cycle NVNT BLE 1M 2442MHz Ant1



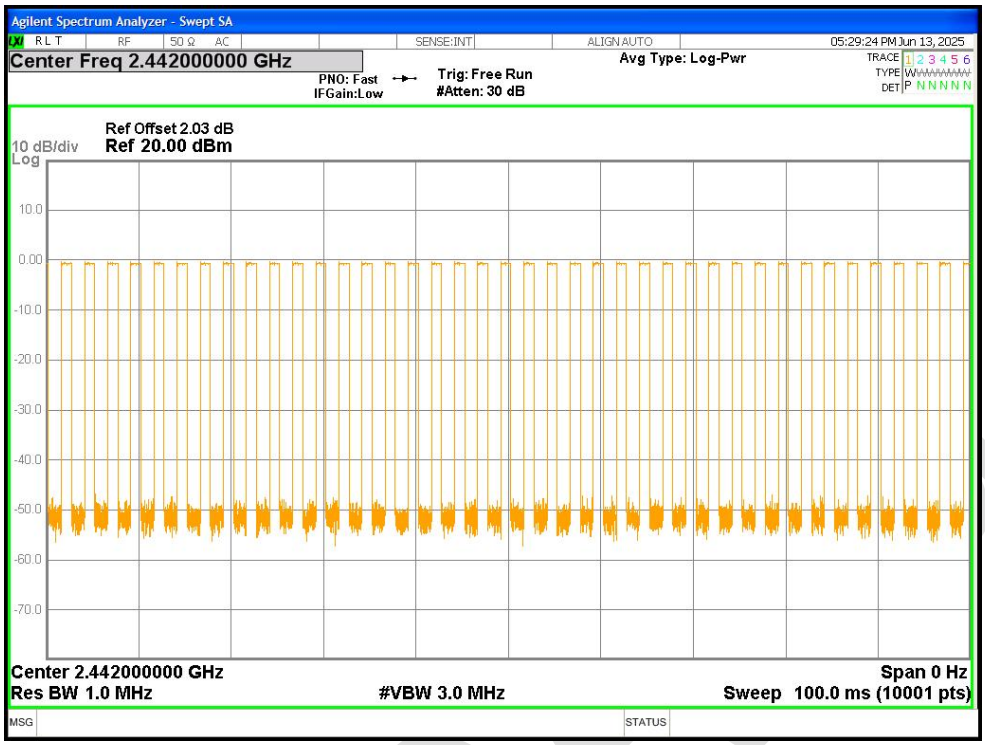
Duty Cycle NVNT BLE 1M 2480MHz Ant1



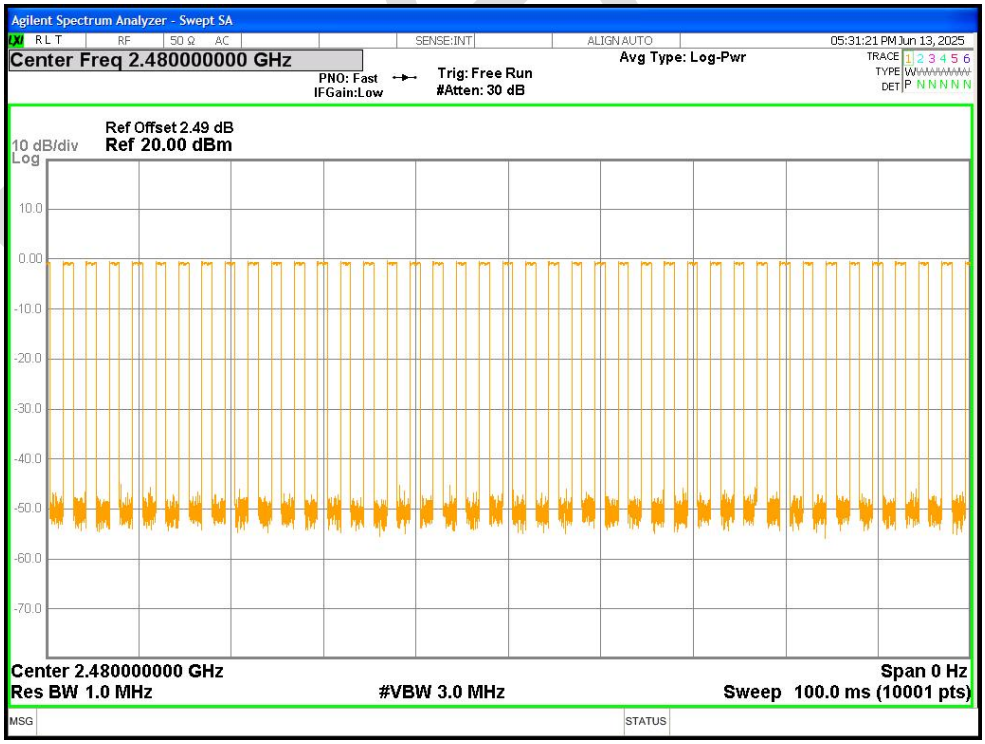
Duty Cycle NVNT BLE 2M 2402MHz Ant1



Duty Cycle NVNT BLE 2M 2442MHz Ant1



Duty Cycle NVNT BLE 2M 2480MHz Ant1

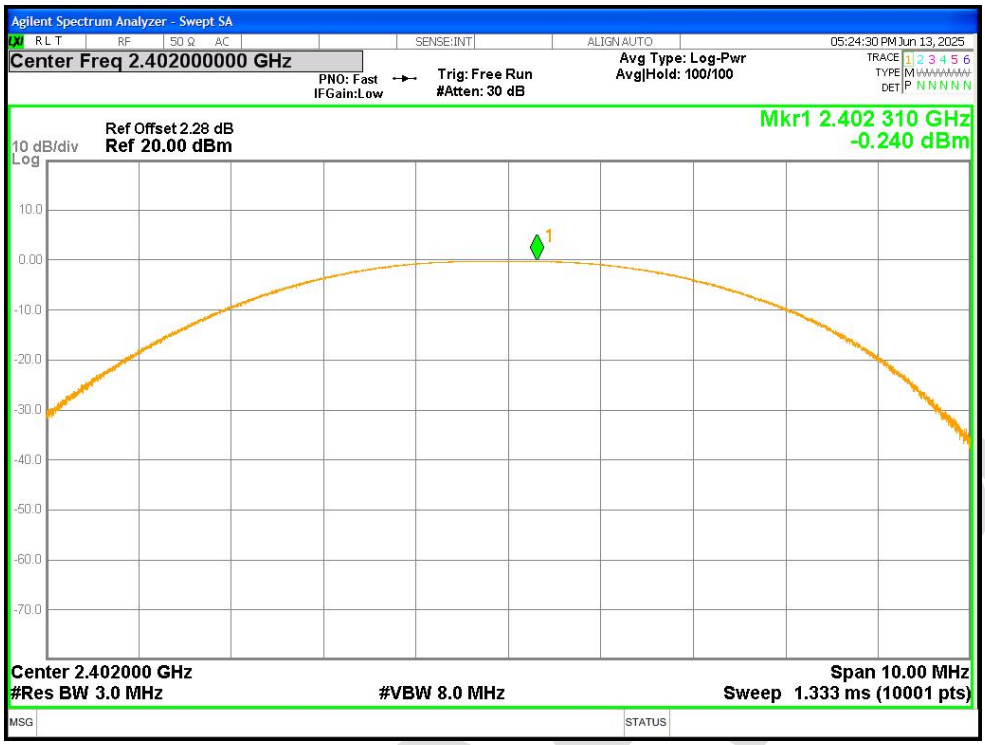


7.2 Maximum Conducted Output Power

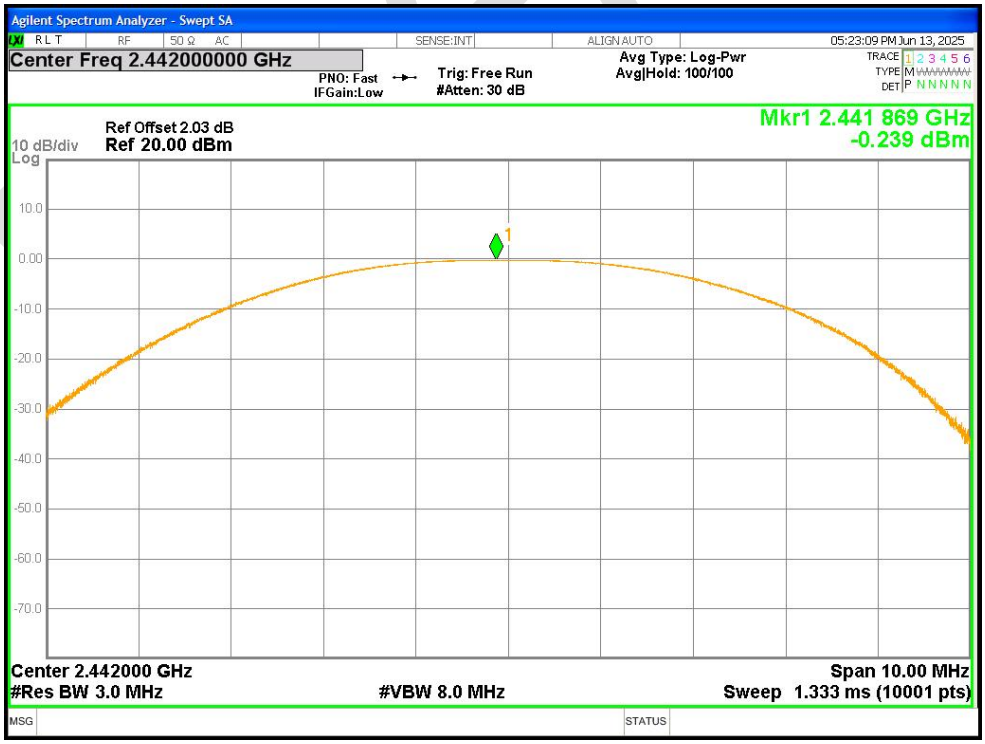
Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	-0.24	30	Pass
NVNT	BLE 1M	2442	Ant1	-0.239	30	Pass
NVNT	BLE 1M	2480	Ant1	-0.419	30	Pass
NVNT	BLE 2M	2402	Ant1	-0.212	30	Pass
NVNT	BLE 2M	2442	Ant1	-0.187	30	Pass
NVNT	BLE 2M	2480	Ant1	-0.331	30	Pass

BlueAsia

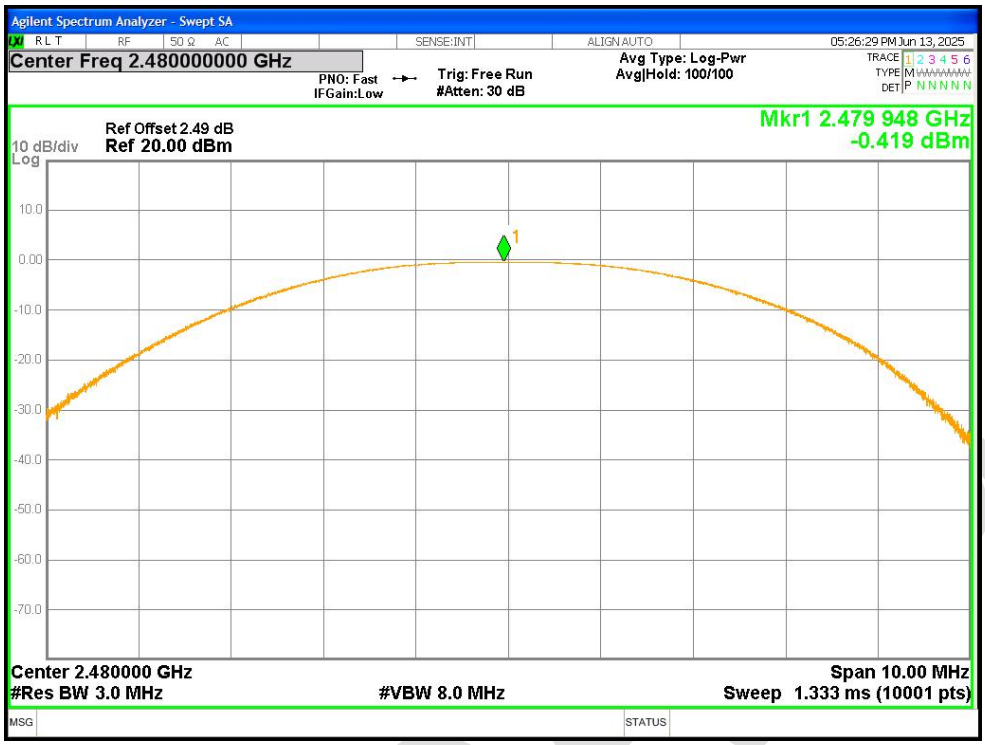
Power NVNT BLE 1M 2402MHz Ant1



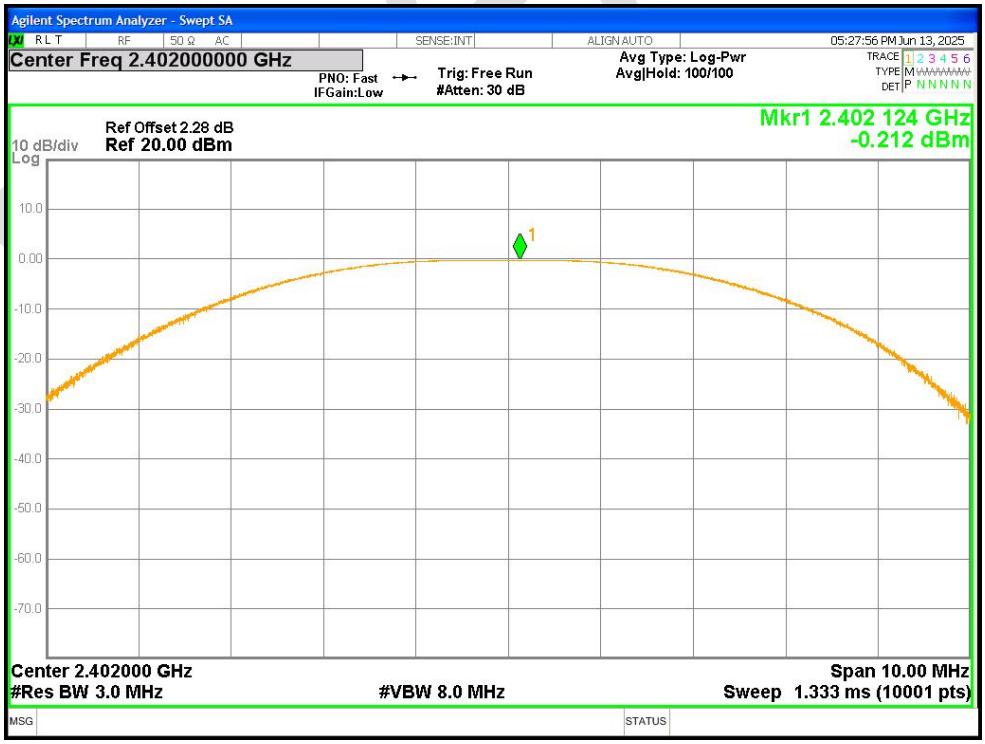
Power NVNT BLE 1M 2442MHz Ant1



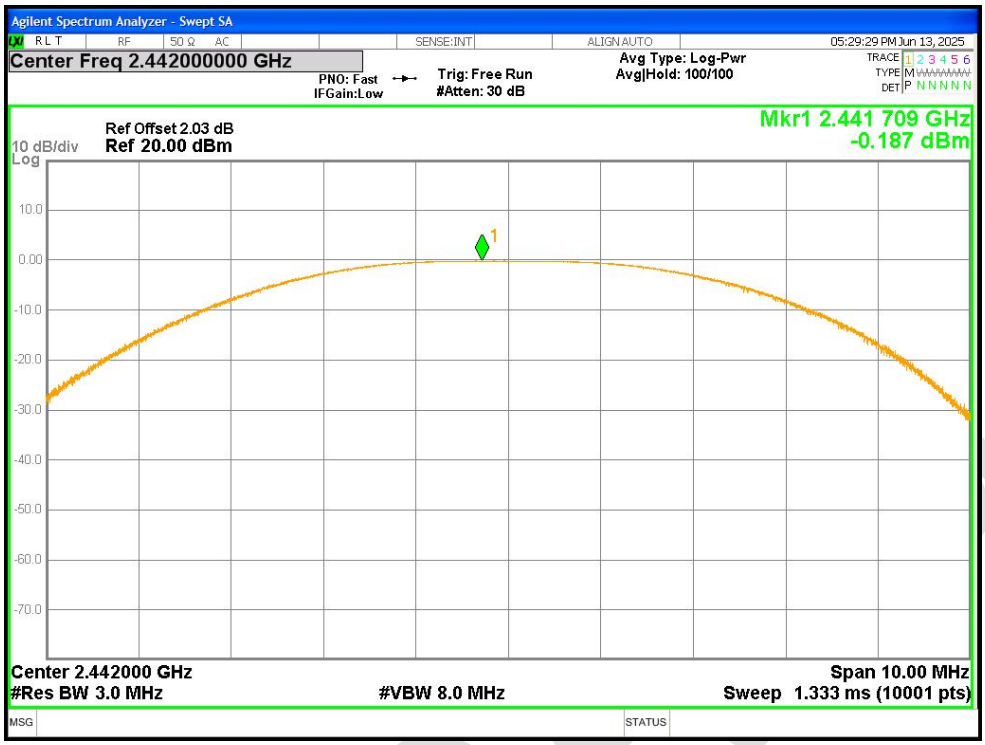
Power NVNT BLE 1M 2480MHz Ant1



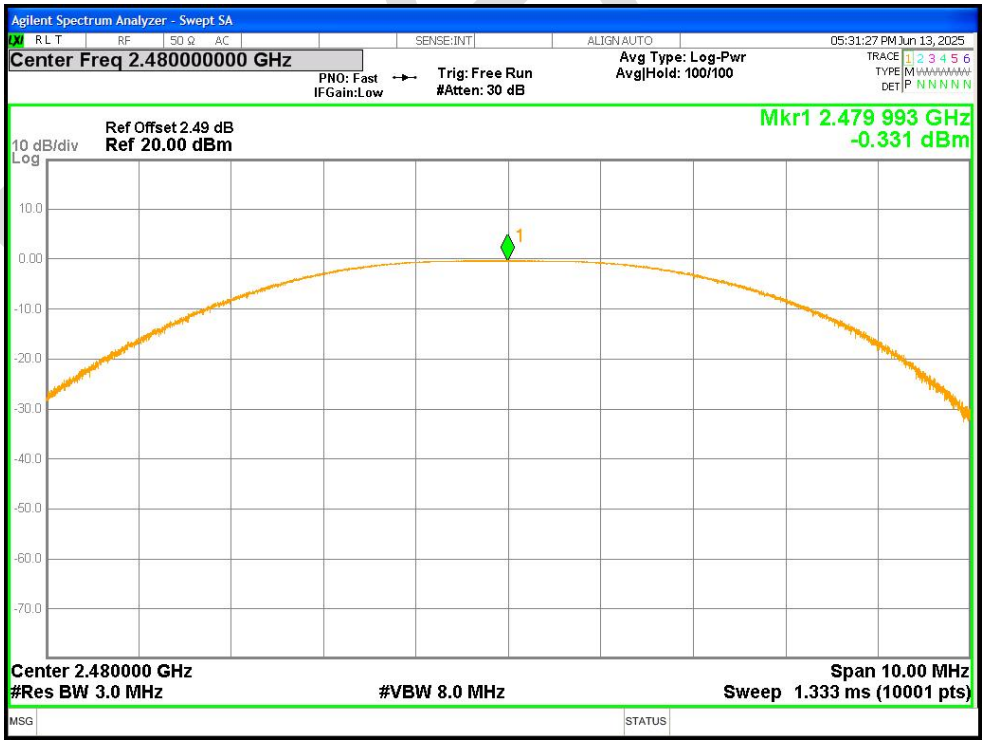
Power NVNT BLE 2M 2402MHz Ant1



Power NVNT BLE 2M 2442MHz Ant1



Power NVNT BLE 2M 2480MHz Ant1

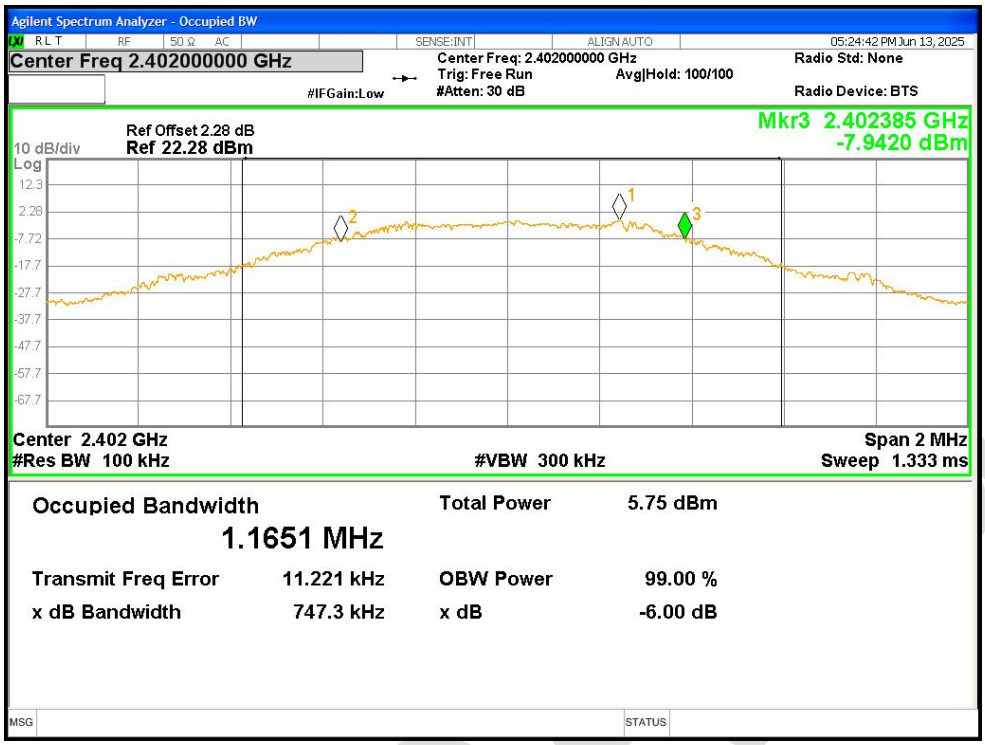


7.3 -6dB Bandwidth

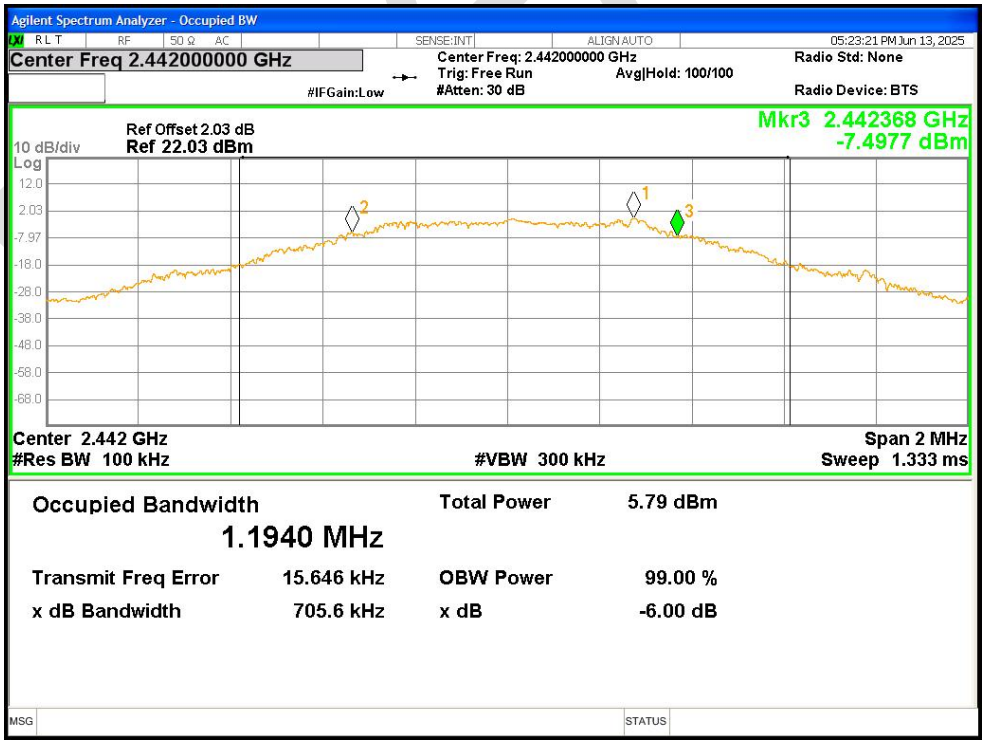
Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE 1M	2402	Ant1	0.747	0.5	Pass
NVNT	BLE 1M	2442	Ant1	0.706	0.5	Pass
NVNT	BLE 1M	2480	Ant1	0.681	0.5	Pass
NVNT	BLE 2M	2402	Ant1	1.227	0.5	Pass
NVNT	BLE 2M	2442	Ant1	1.203	0.5	Pass
NVNT	BLE 2M	2480	Ant1	1.216	0.5	Pass

BlueAsia

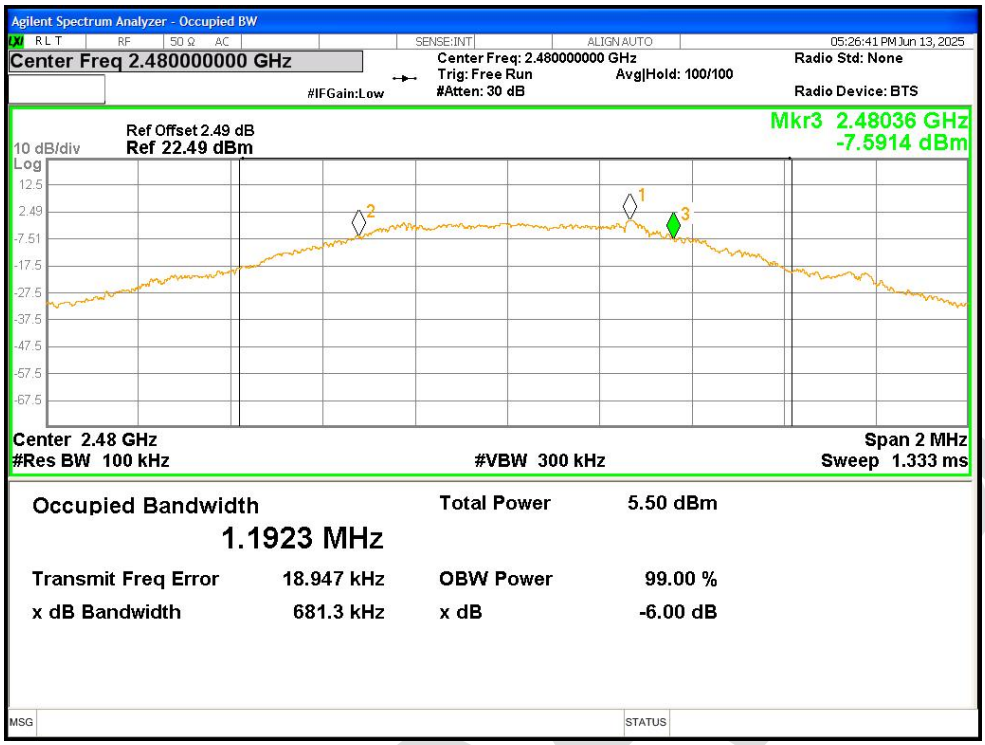
-6dB Bandwidth NVNT BLE 1M 2402MHz Ant1



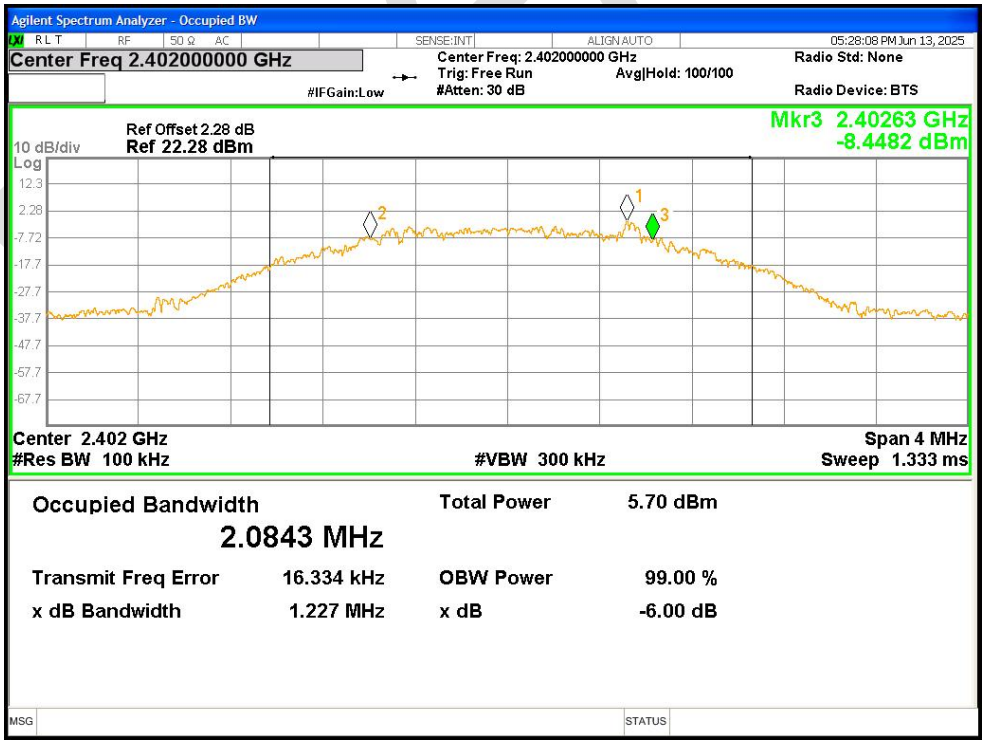
-6dB Bandwidth NVNT BLE 1M 2442MHz Ant1



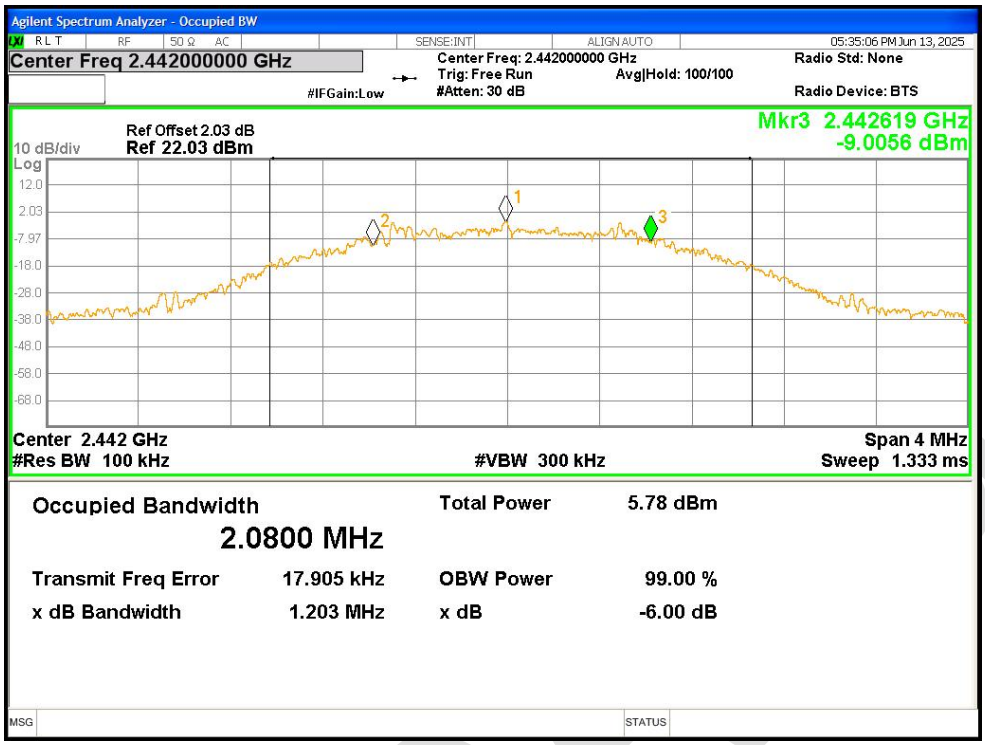
-6dB Bandwidth NVNT BLE 1M 2480MHz Ant1



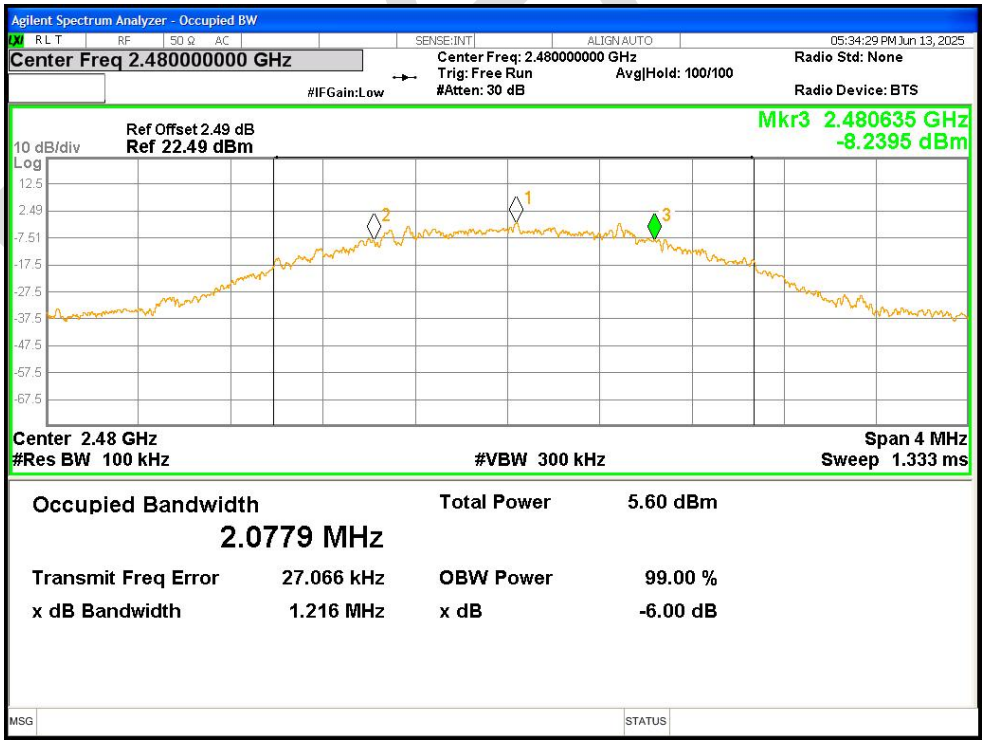
-6dB Bandwidth NVNT BLE 2M 2402MHz Ant1



-6dB Bandwidth NVNT BLE 2M 2442MHz Ant1



-6dB Bandwidth NVNT BLE 2M 2480MHz Ant1

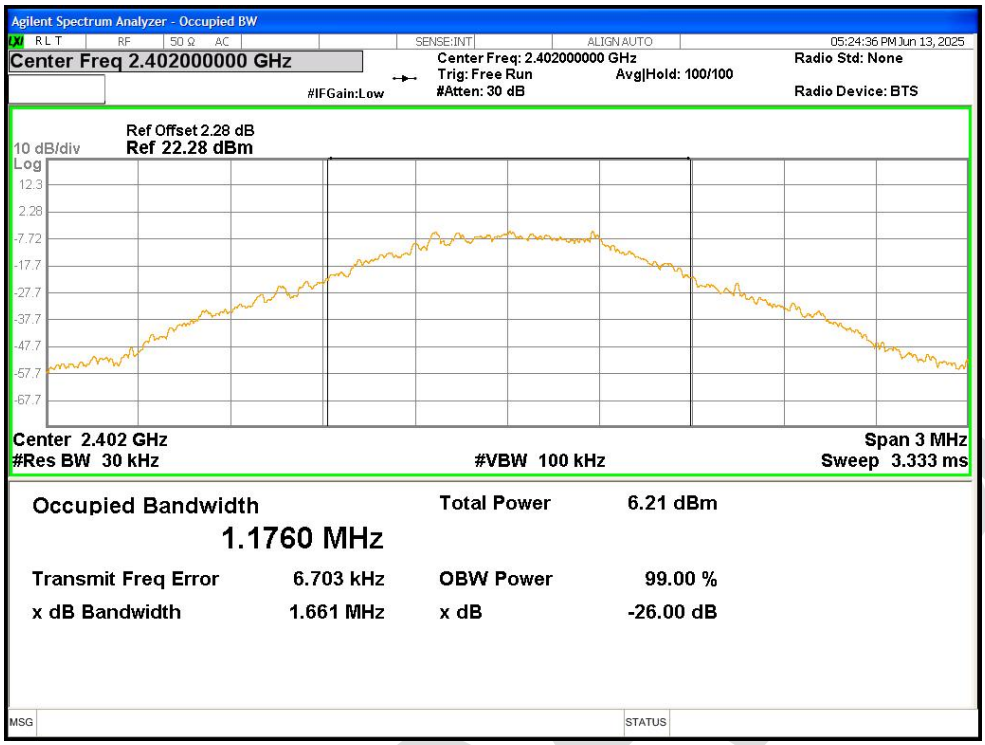


7.4 Occupied Channel Bandwidth

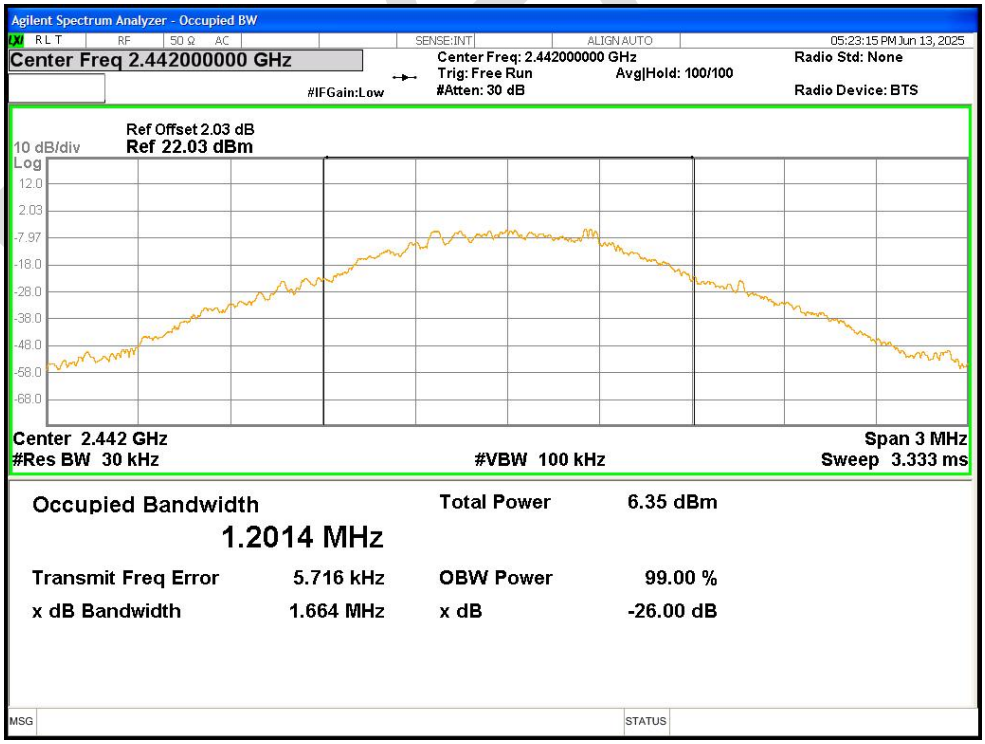
Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	BLE 1M	2402	Ant1	1.1760
NVNT	BLE 1M	2442	Ant1	1.2014
NVNT	BLE 1M	2480	Ant1	1.2160
NVNT	BLE 2M	2402	Ant1	2.0894
NVNT	BLE 2M	2442	Ant1	2.1017
NVNT	BLE 2M	2480	Ant1	2.0983

BlueAsia

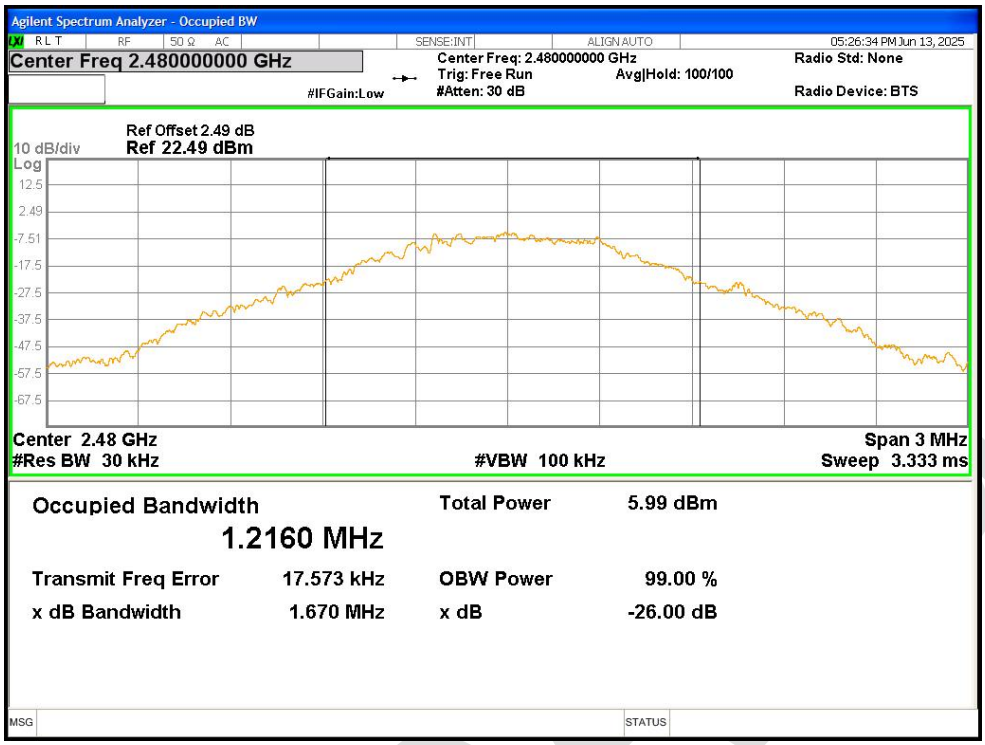
OBW NVNT BLE 1M 2402MHz Ant1



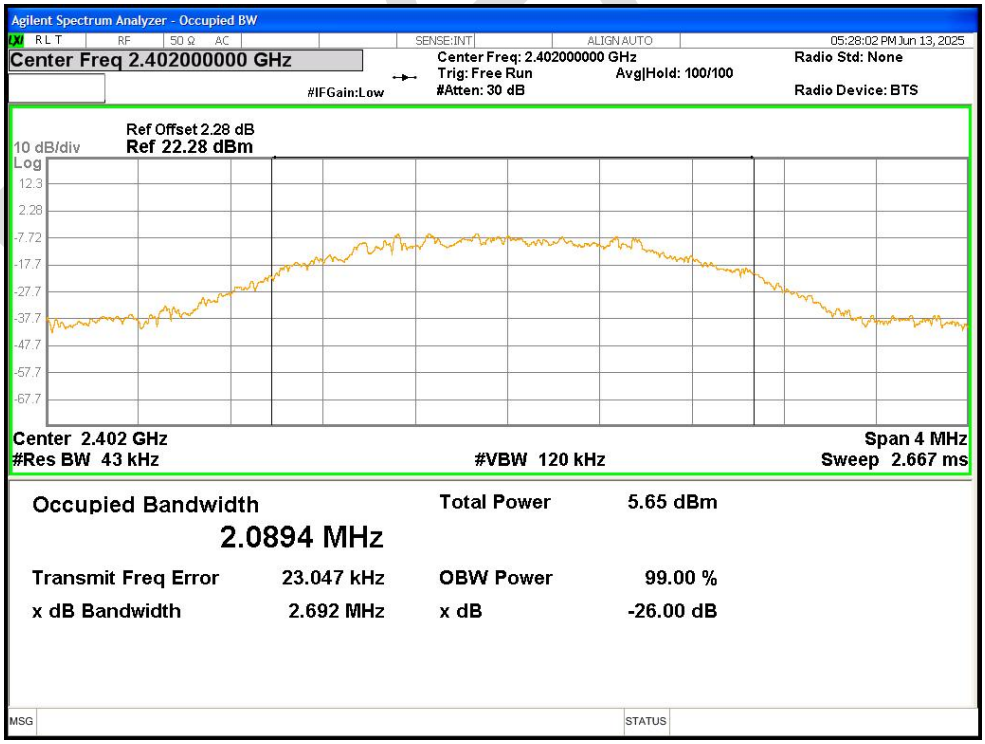
OBW NVNT BLE 1M 2442MHz Ant1



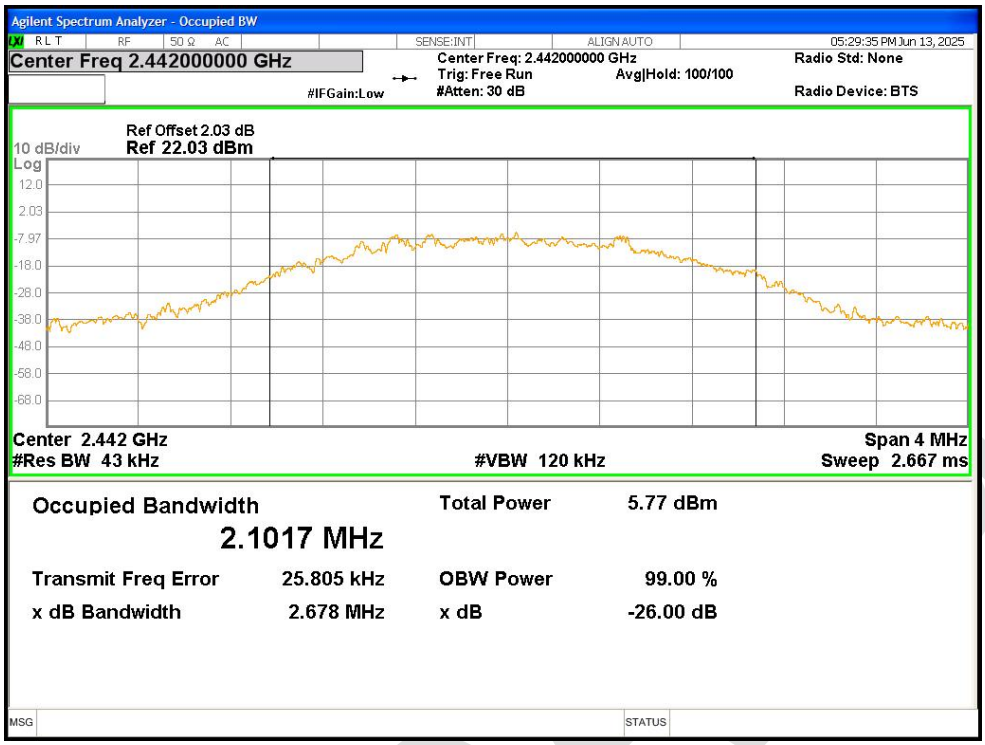
OBW NVNT BLE 1M 2480MHz Ant1



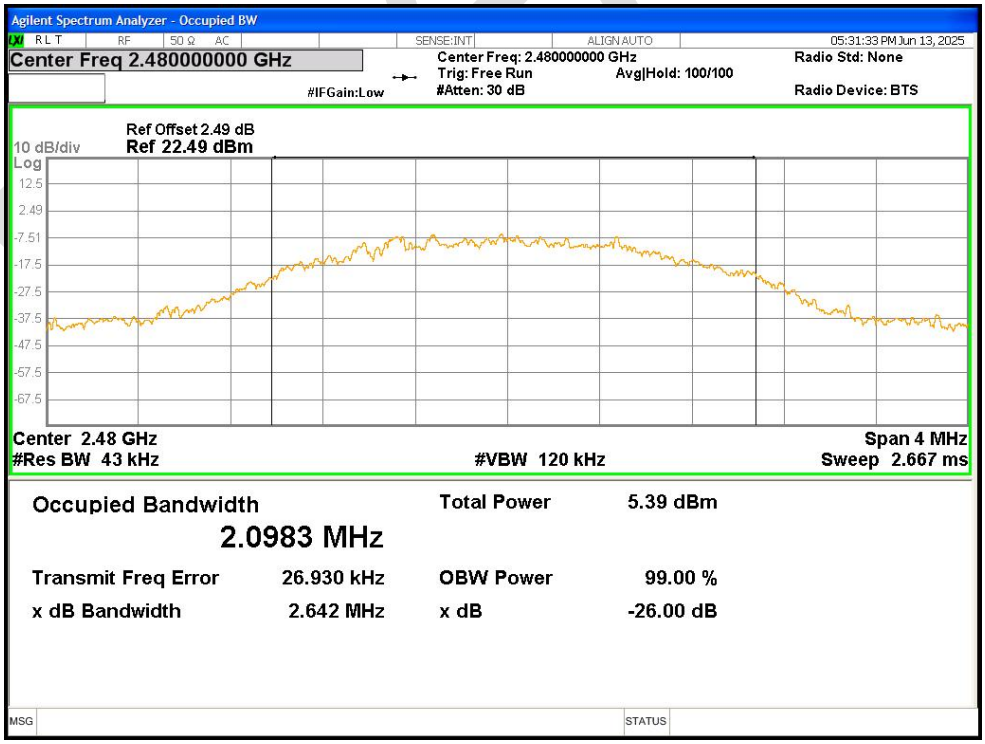
OBW NVNT BLE 2M 2402MHz Ant1



OBW NVNT BLE 2M 2442MHz Ant1



OBW NVNT BLE 2M 2480MHz Ant1

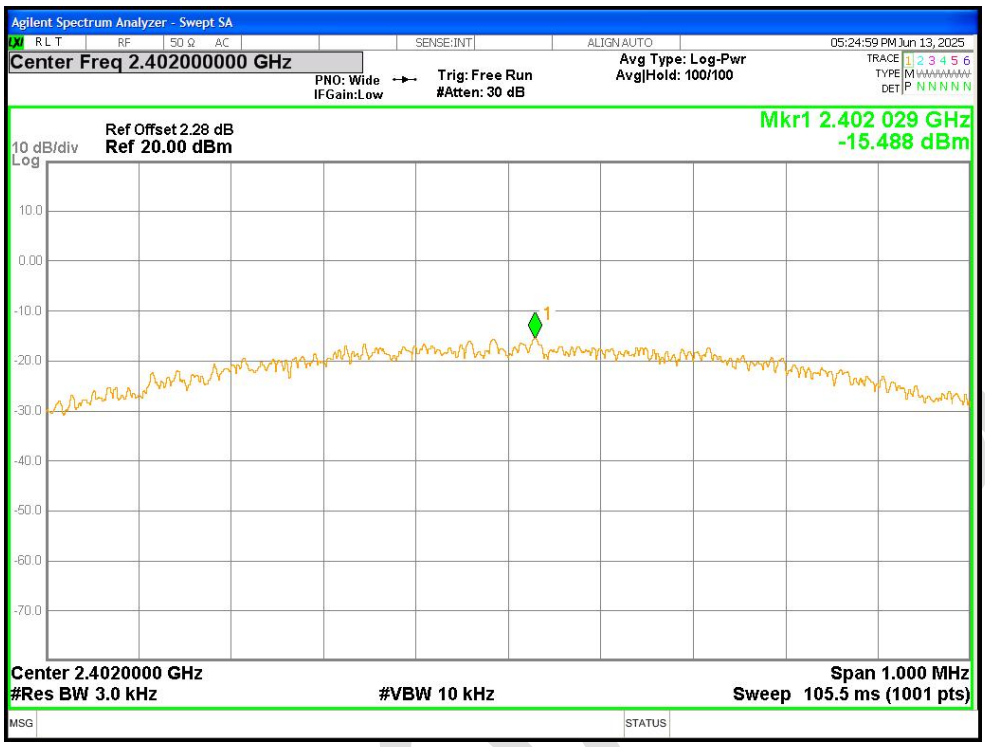


7.5 Maximum Power Spectral Density Level

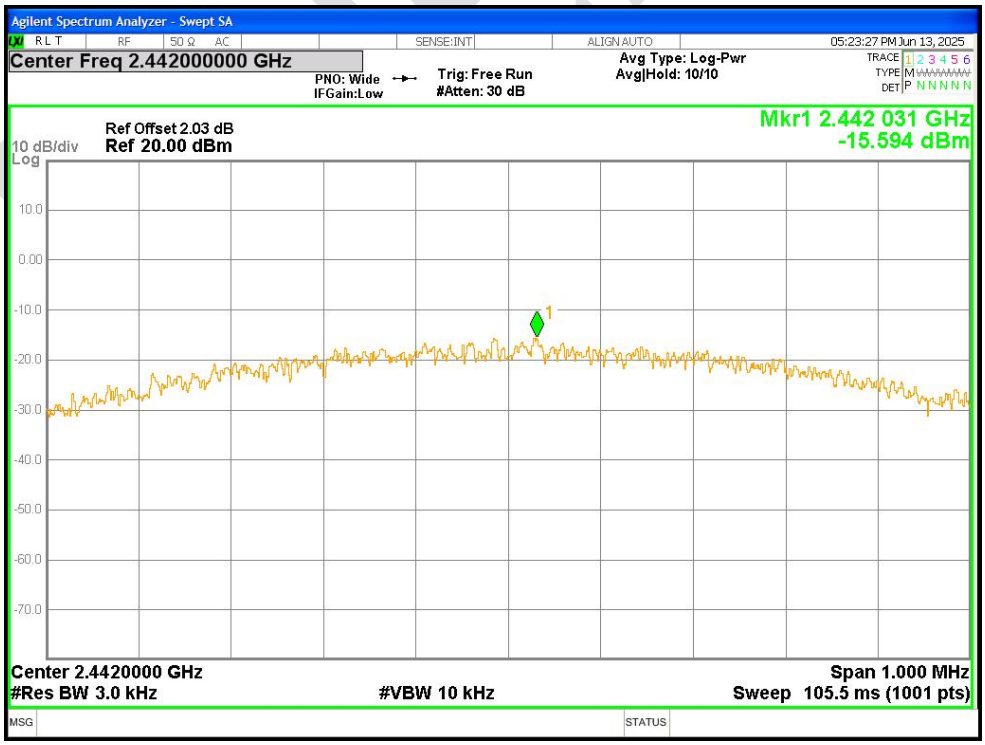
Condition	Mode	Frequency (MHz)	Antenna	Max PSD (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	-15.488	8	Pass
NVNT	BLE 1M	2442	Ant1	-15.594	8	Pass
NVNT	BLE 1M	2480	Ant1	-15.753	8	Pass
NVNT	BLE 2M	2402	Ant1	-20.015	8	Pass
NVNT	BLE 2M	2442	Ant1	-19.94	8	Pass
NVNT	BLE 2M	2480	Ant1	-19.505	8	Pass

BlueAsia

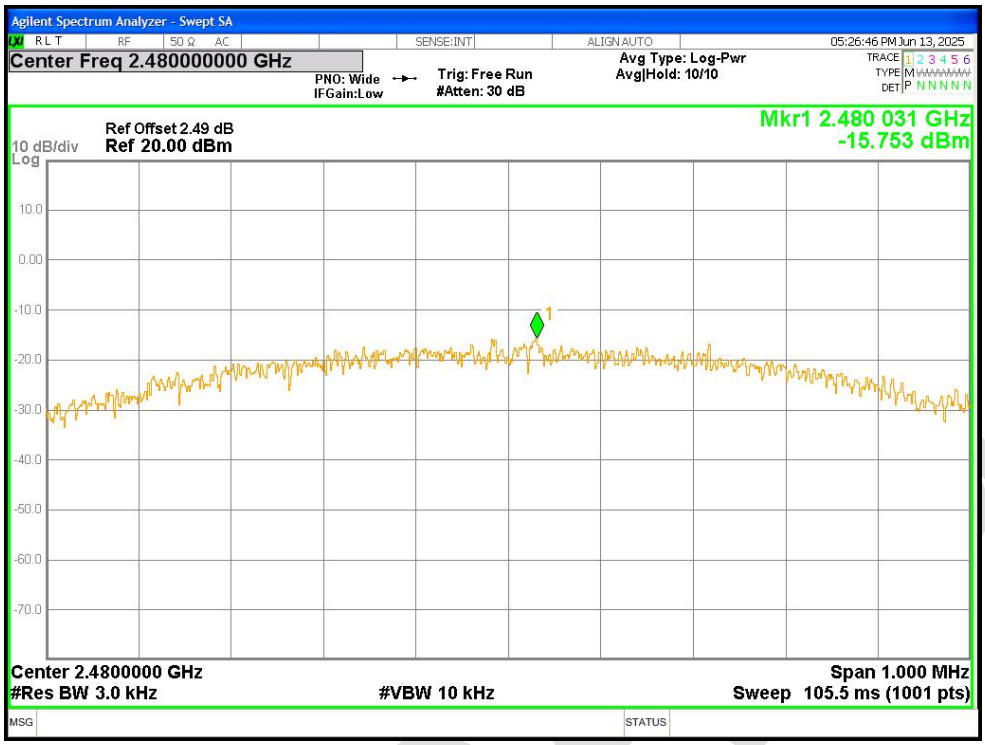
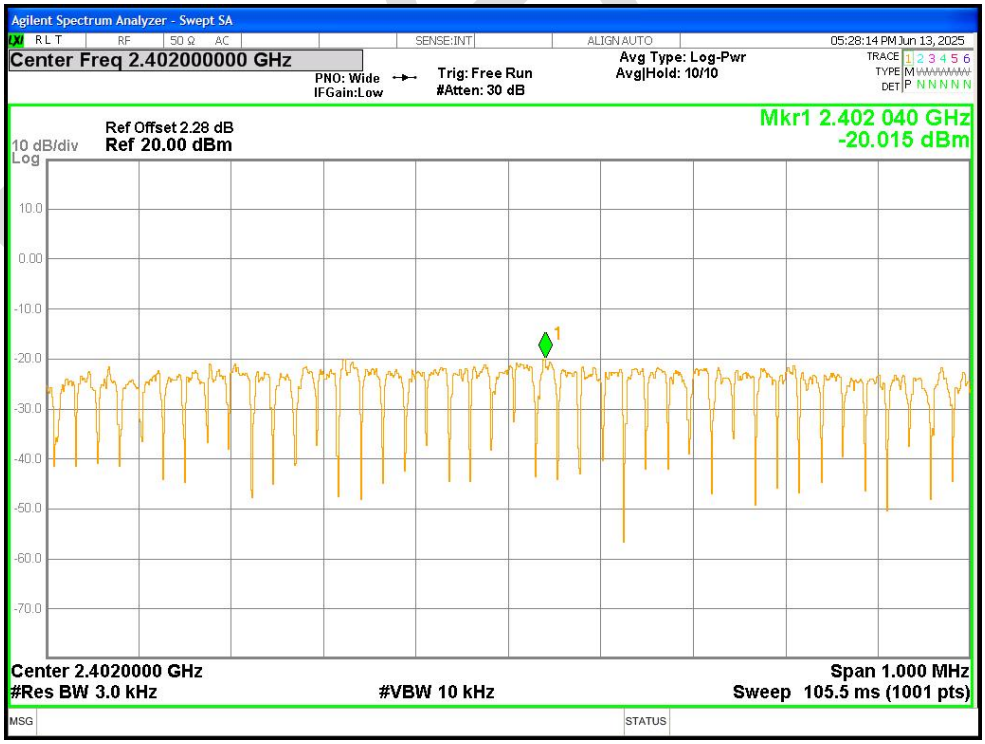
PSD NVNT BLE 1M 2402MHz Ant1



PSD NVNT BLE 1M 2442MHz Ant1



PSD NVNT BLE 1M 2480MHz Ant1



PSD NVNT BLE 2M 2402MHz Ant1