6.8.3 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.

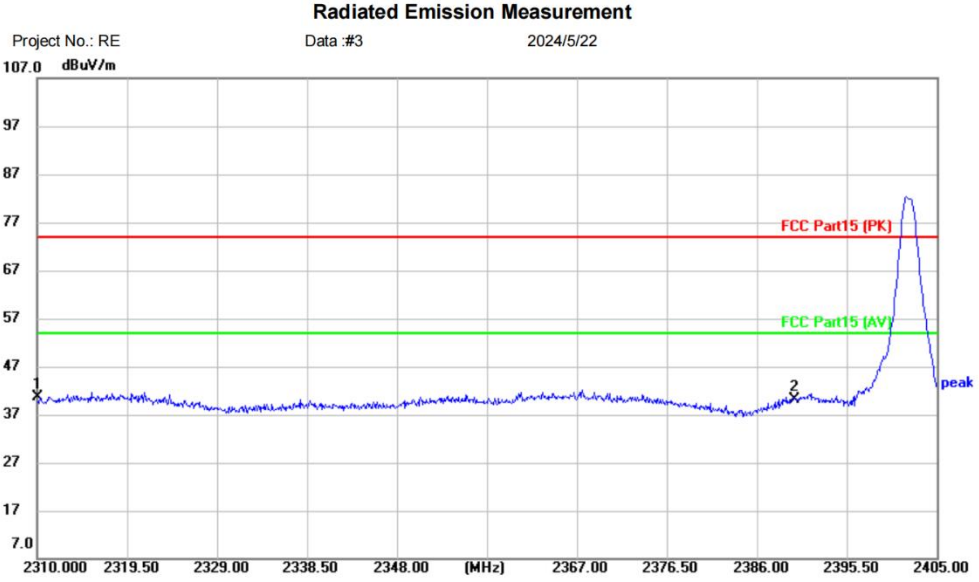
i) The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.

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.

6.8.4 Test data

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



Site
Limit: FCC Part15 (PK)
EUT: U-Prox access control system
M/N: Universal reader U-Prox SE slim
Mode: BLE-TX-2402
Note:

Polarization: ***Horizontal***
Power:

Temperature: (C)
Humidity: %RH

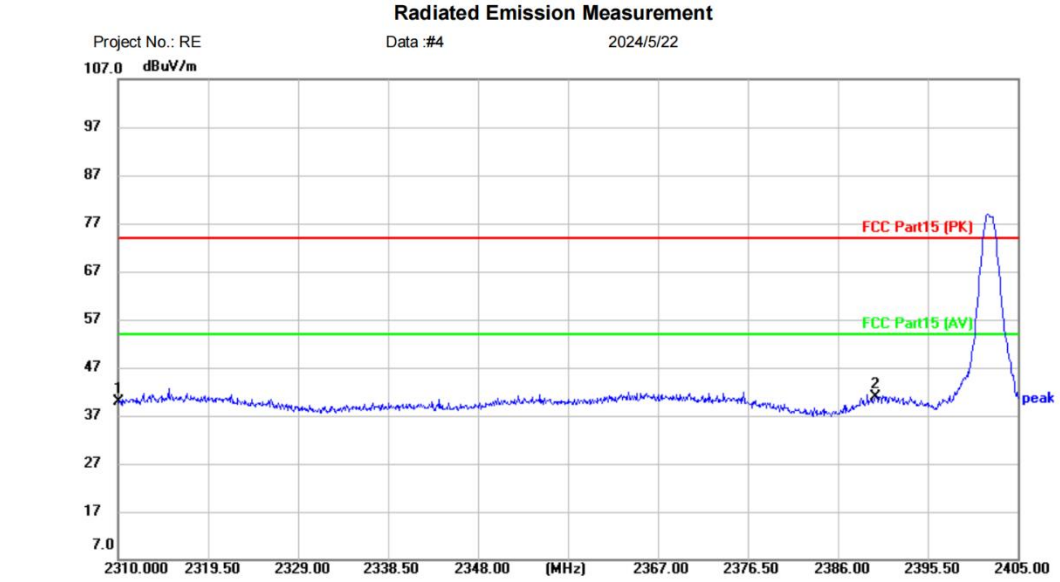
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2310.000	43.63	-2.89	40.74	74.00	-33.26	peak	
2		2390.000	42.77	-2.70	40.07	74.00	-33.93	peak	

*: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: U-Prox access control system
M/N: Universal reader U-Prox SE slim
Mode: BLE-TX-2402
Note:

Polarization: *Vertical*
Power:

Temperature: (C)
Humidity: %RH

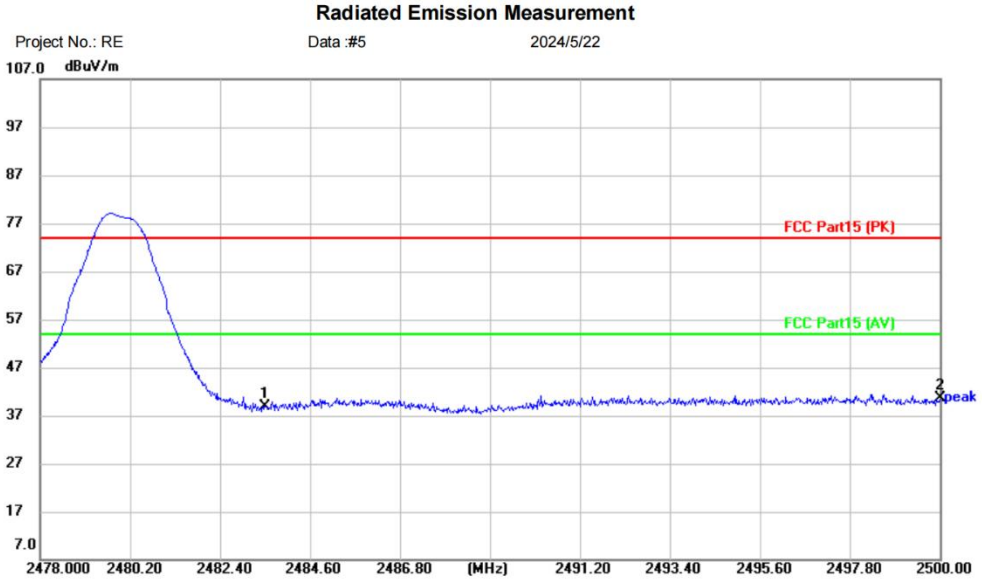
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2310.000	42.66	-2.89	39.77	74.00	-34.23	peak	
2	*	2390.000	43.65	-2.70	40.95	74.00	-33.05	peak	

*: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: U-Prox access control system
M/N: Universal reader U-Prox SE slim
Mode: BLE-TX-2480
Note:

Polarization: ***Horizontal***
Power:

Temperature: (C)
Humidity: %RH

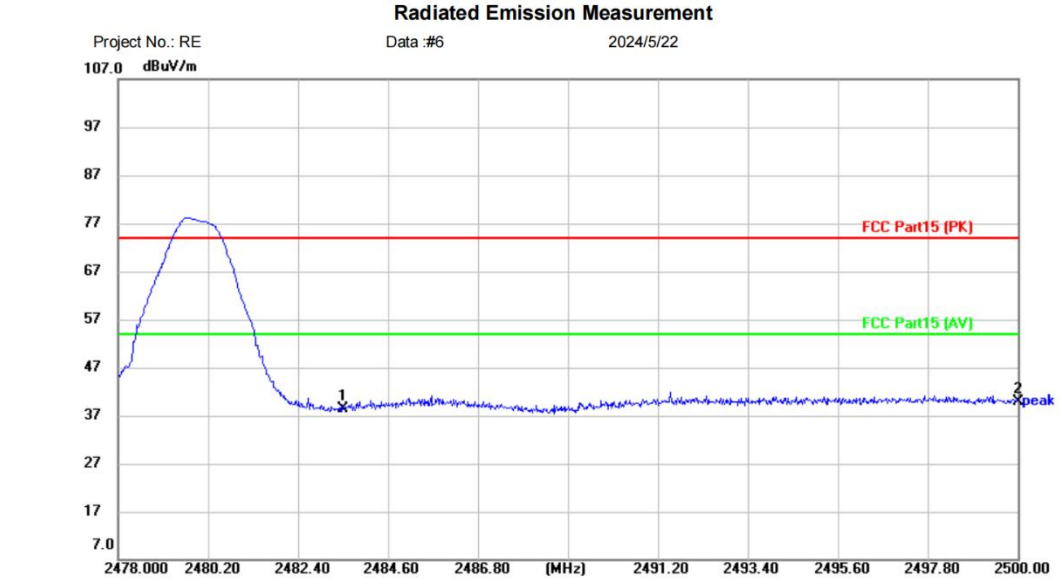
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	Comment
1		2483.500	41.81	-2.91	38.90	74.00	-35.10	peak	
2	*	2500.000	43.67	-3.00	40.67	74.00	-33.33	peak	

*: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: U-Prox access control system
M/N: Universal reader U-Prox SE slim
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		2483.500	41.28	-2.91	38.37	74.00	-35.63	peak	
2	*	2500.000	42.98	-3.00	39.98	74.00	-34.02	peak	

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

Receiver: ESR_1 Spectrum Analyzer: FSP40

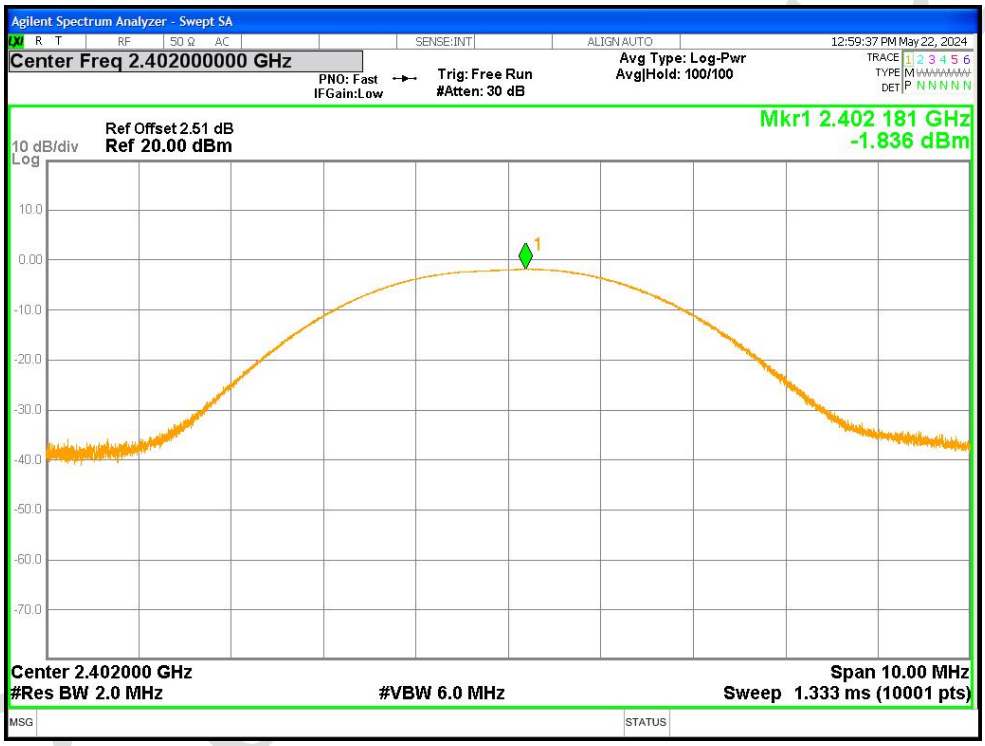
Test Result: Pass

7 Appendix A

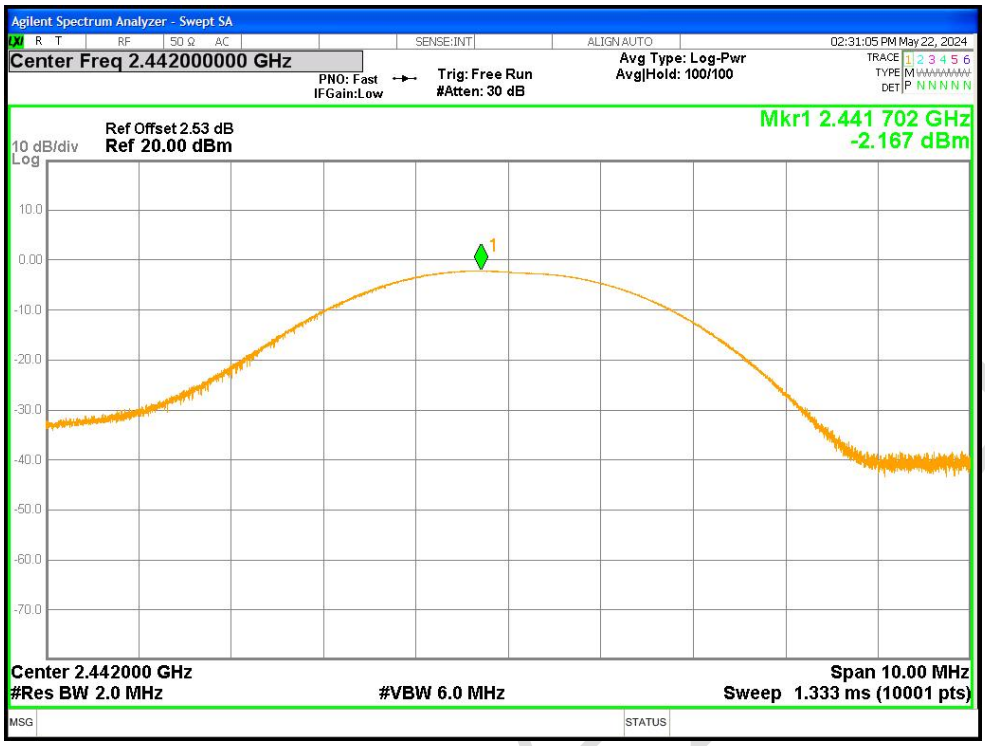
7.1 Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE	2402	Ant1	-1.836	30	Pass
NVNT	BLE	2442	Ant1	-2.167	30	Pass
NVNT	BLE	2480	Ant1	-2.986	30	Pass

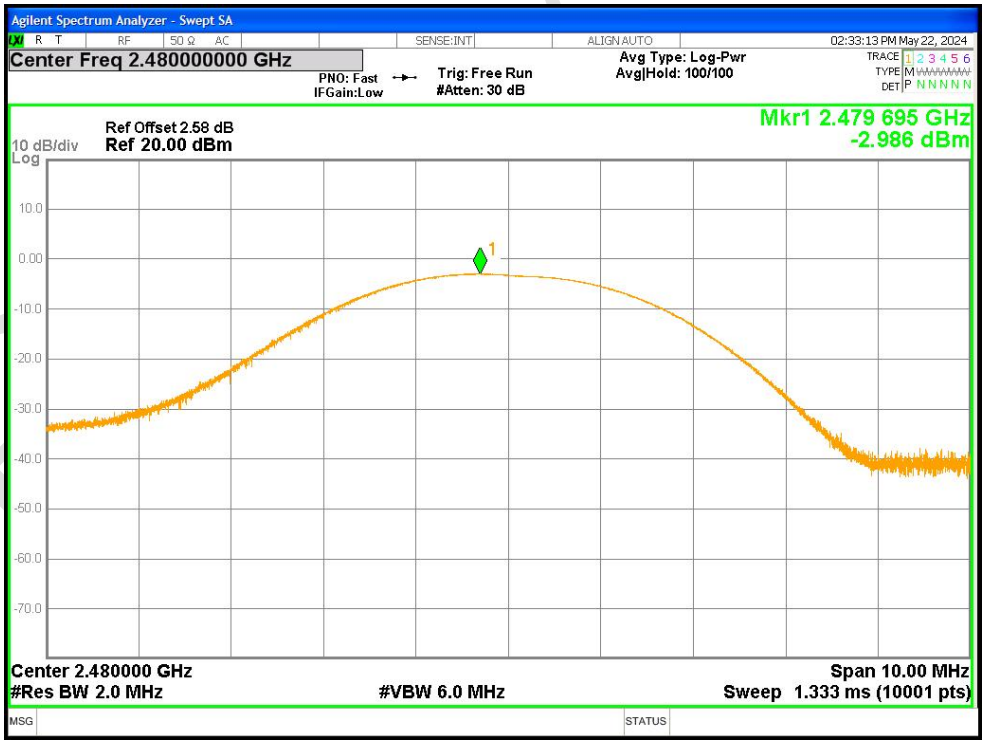
Power NVNT BLE 2402MHz Ant1



Power NVNT BLE 2442MHz Ant1



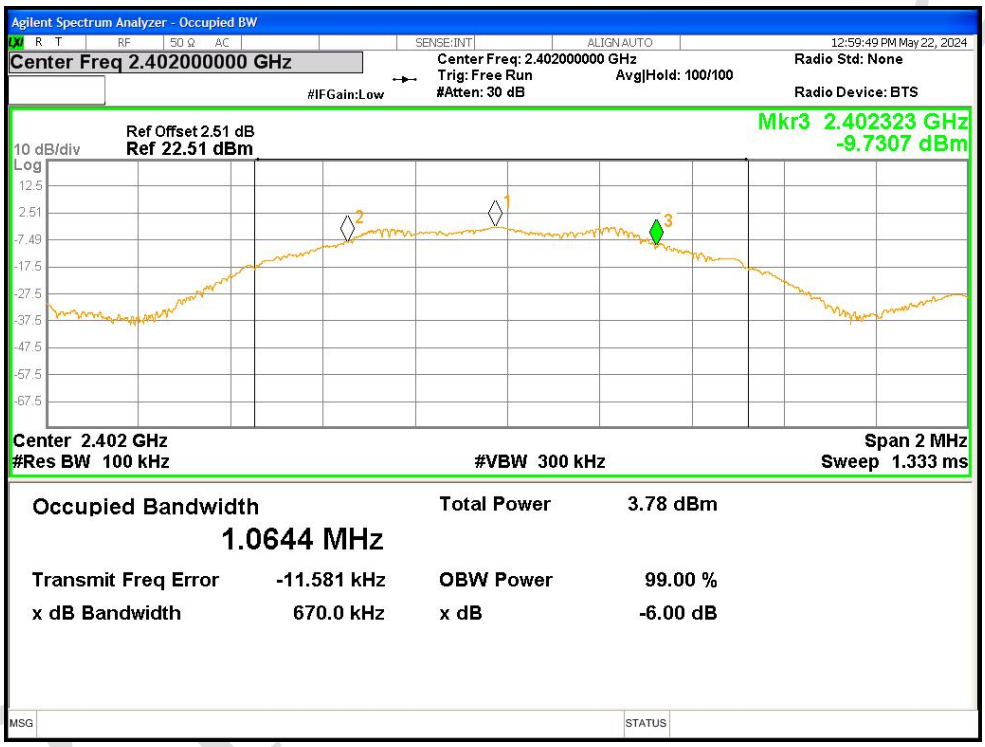
Power NVNT BLE 2480MHz Ant1



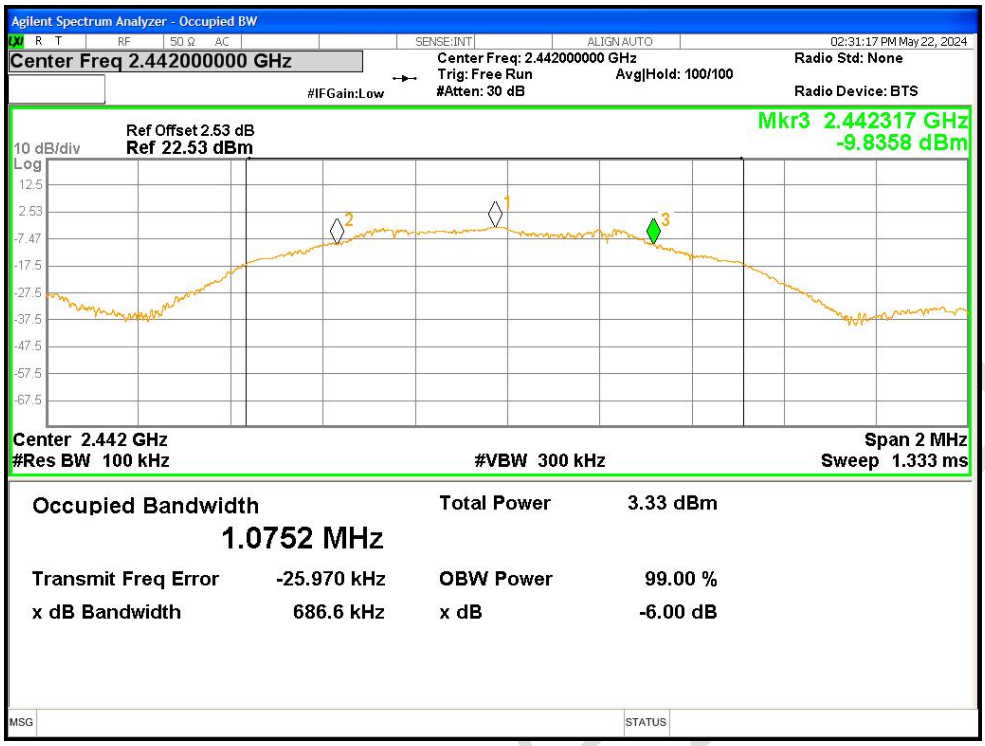
7.2 -6dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE	2402	Ant1	0.67	0.5	Pass
NVNT	BLE	2442	Ant1	0.687	0.5	Pass
NVNT	BLE	2480	Ant1	0.683	0.5	Pass

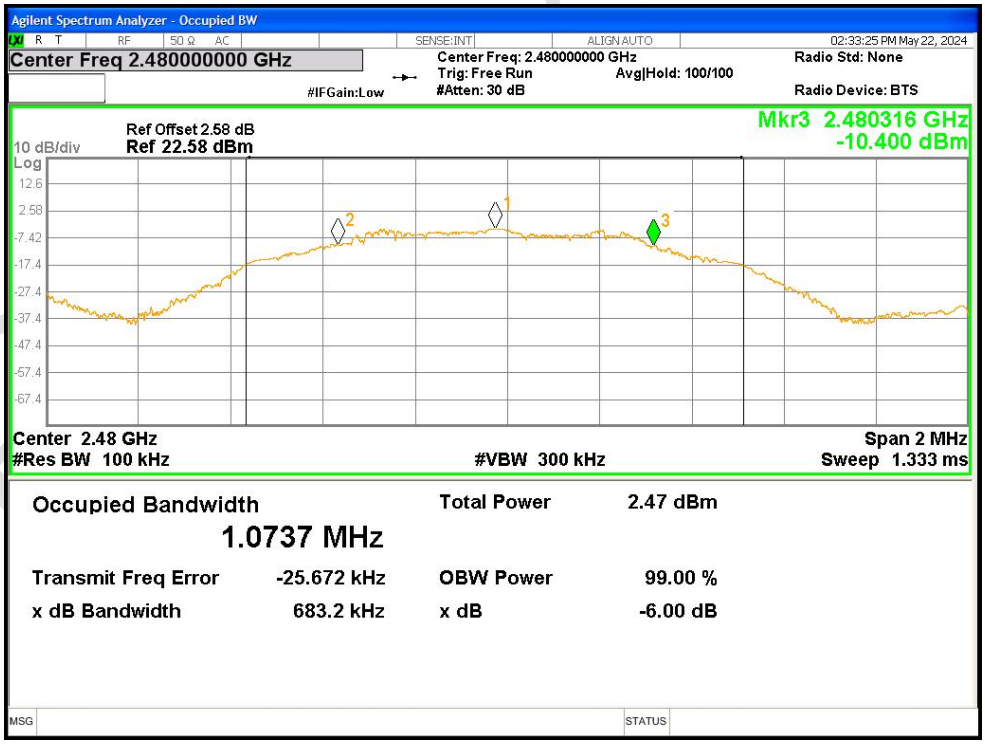
-6dB Bandwidth NVNT BLE 2402MHz Ant1



-6dB Bandwidth NVNT BLE 2442MHz Ant1



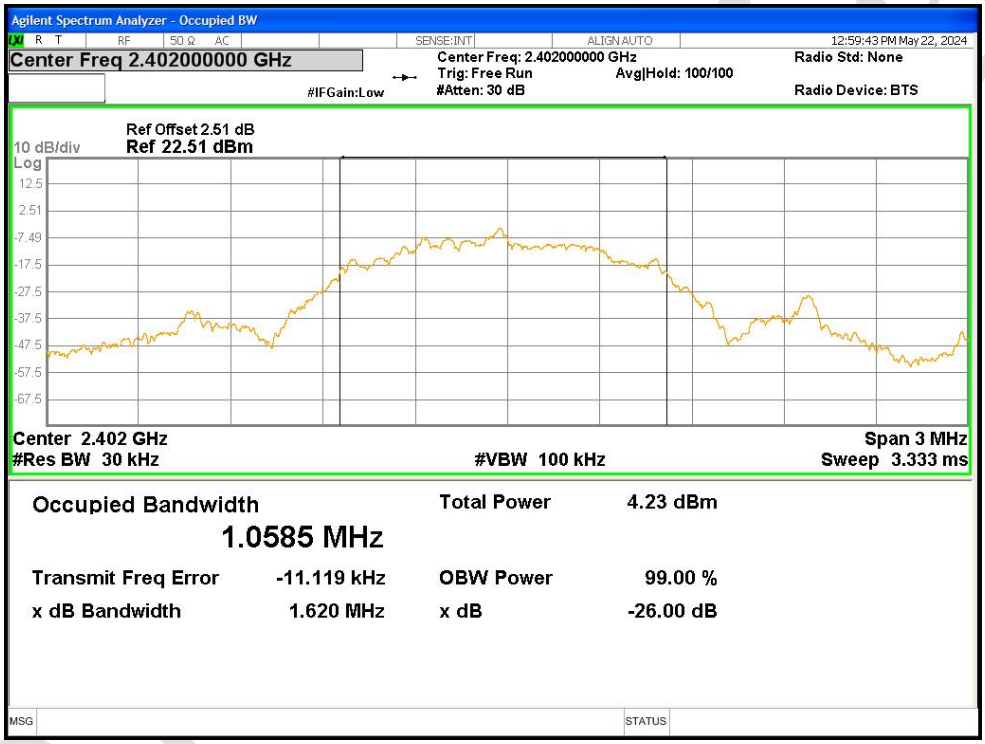
-6dB Bandwidth NVNT BLE 2480MHz Ant1



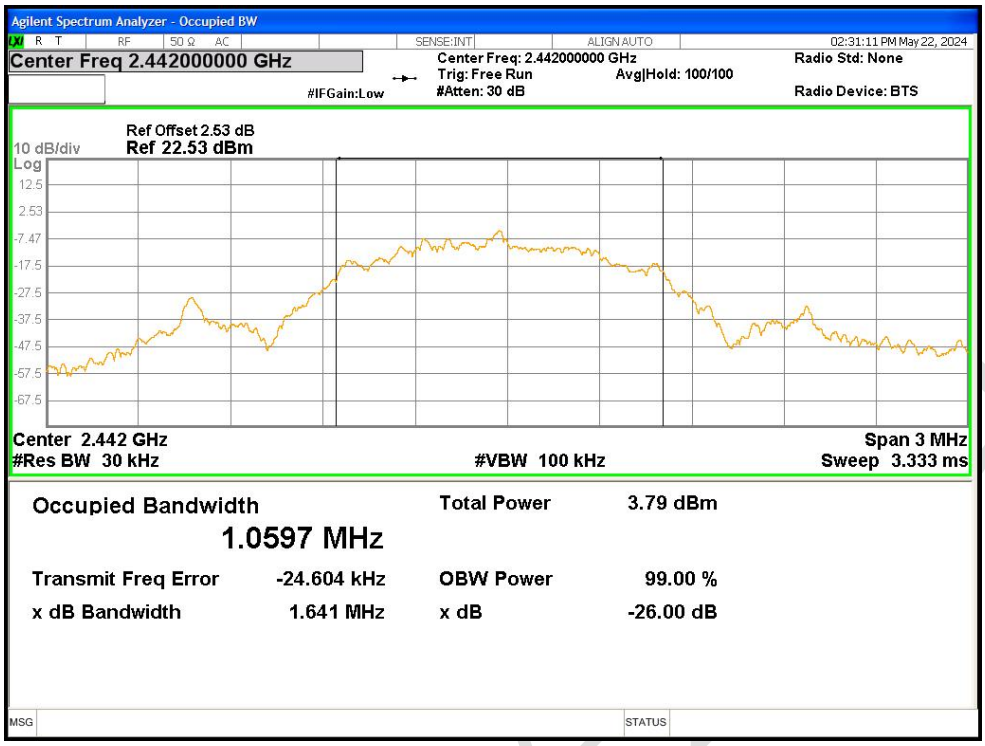
7.3 Occupied Channel Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	BLE	2402	Ant1	1.0585
NVNT	BLE	2442	Ant1	1.0597
NVNT	BLE	2480	Ant1	1.0566

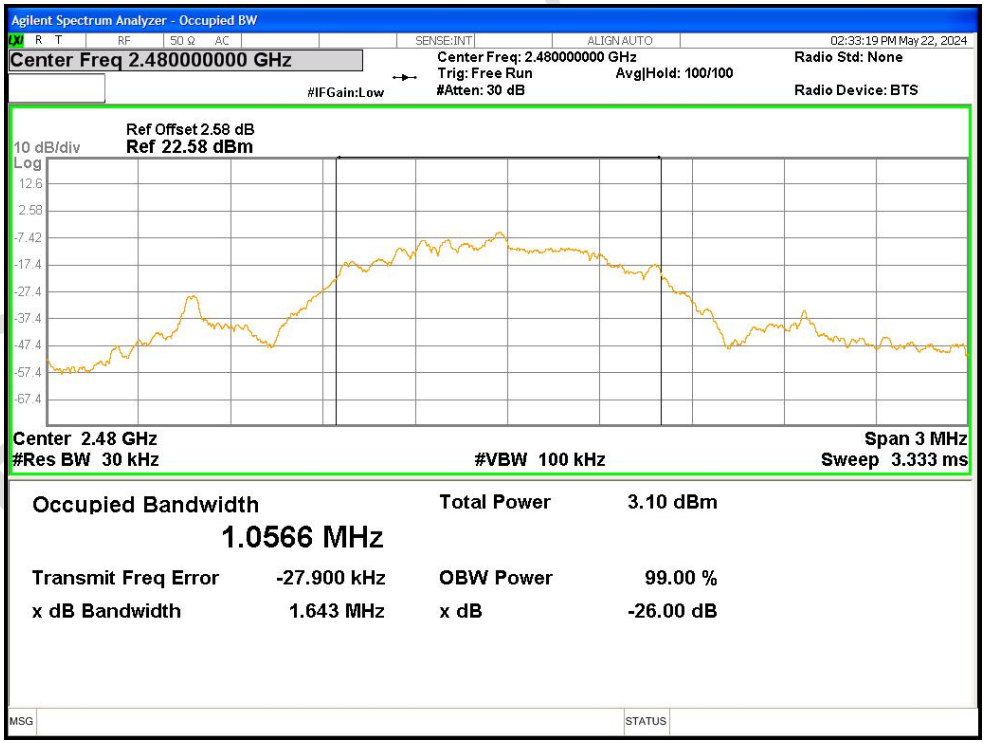
OBW NVNT BLE 2402MHz Ant1



OBW NVNT BLE 2442MHz Ant1



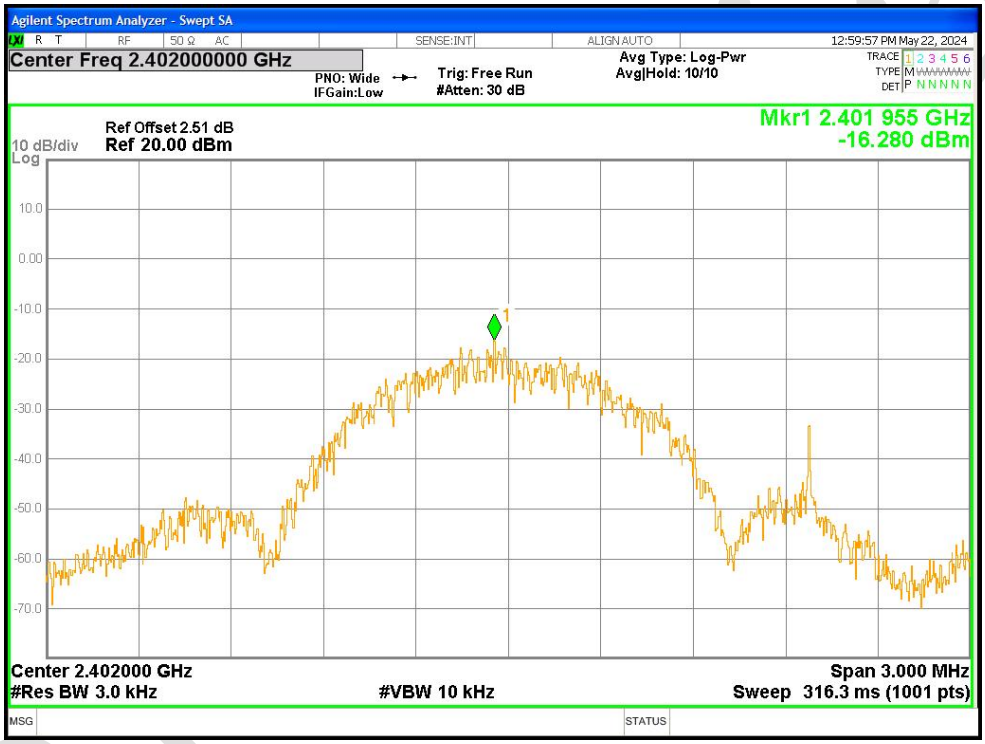
OBW NVNT BLE 2480MHz Ant1



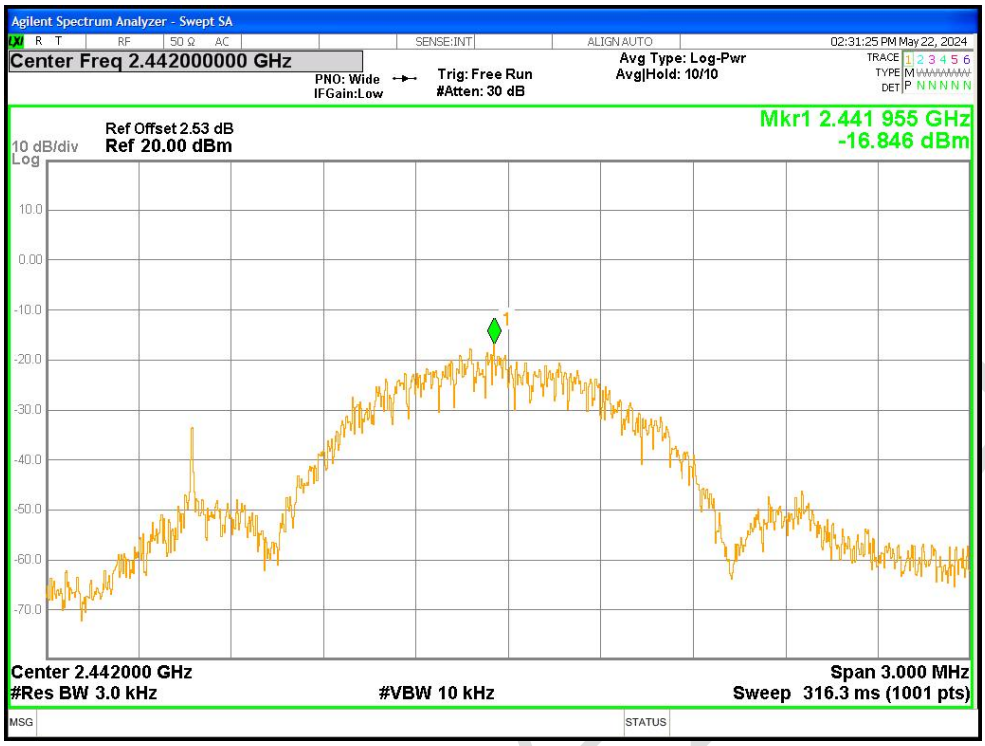
7.4 Maximum Power Spectral Density Level

Condition	Mode	Frequency (MHz)	Antenna	Max PSD (dBm)	Limit (dBm)	Verdict
NVNT	BLE	2402	Ant1	-16.28	8	Pass
NVNT	BLE	2442	Ant1	-16.846	8	Pass
NVNT	BLE	2480	Ant1	-17.911	8	Pass

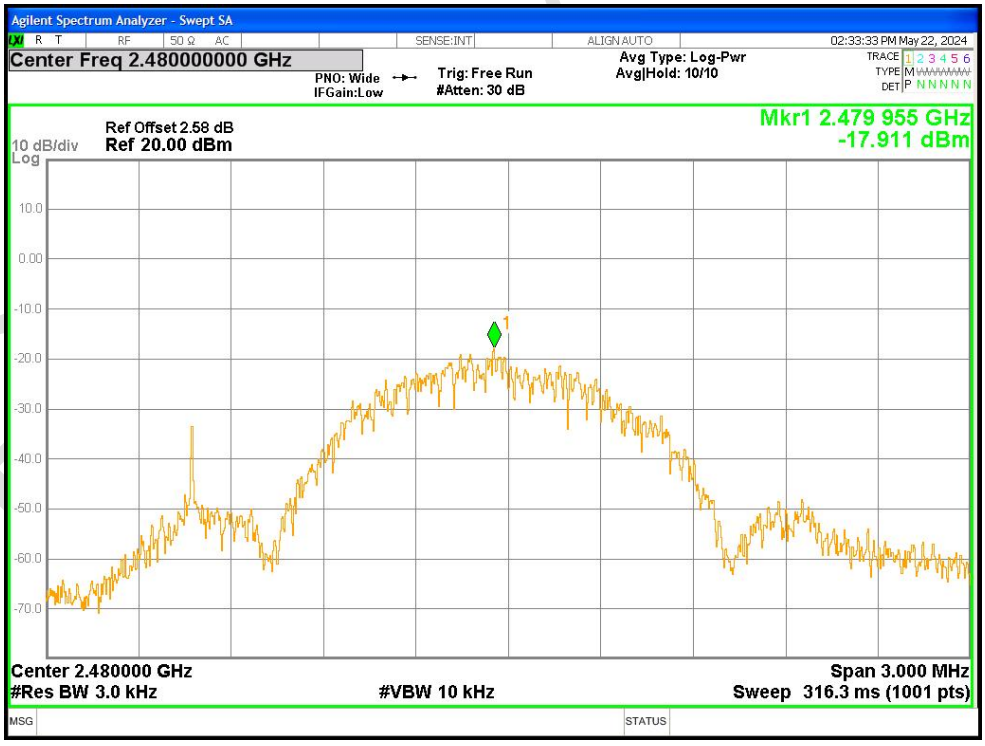
PSD NVNT BLE 2402MHz Ant1



PSD NVNT BLE 2442MHz Ant1



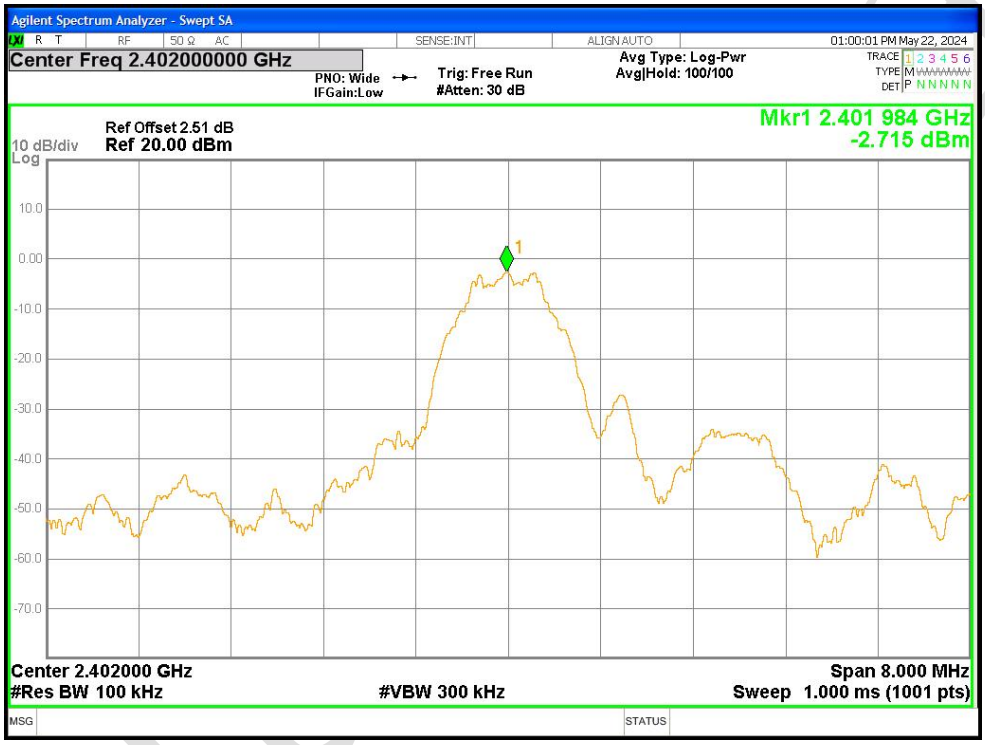
PSD NVNT BLE 2480MHz Ant1



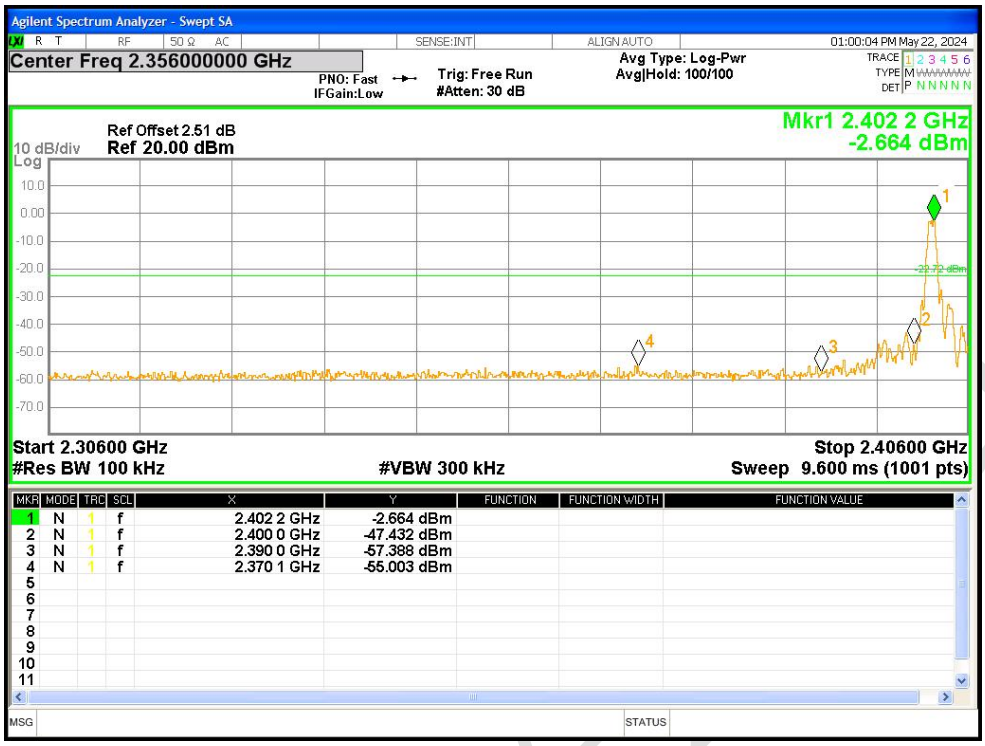
7.5 Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE	2402	Ant1	-52.29	-20	Pass
NVNT	BLE	2480	Ant1	-45.49	-20	Pass

Band Edge NVNT BLE 2402MHz Ant1 Ref

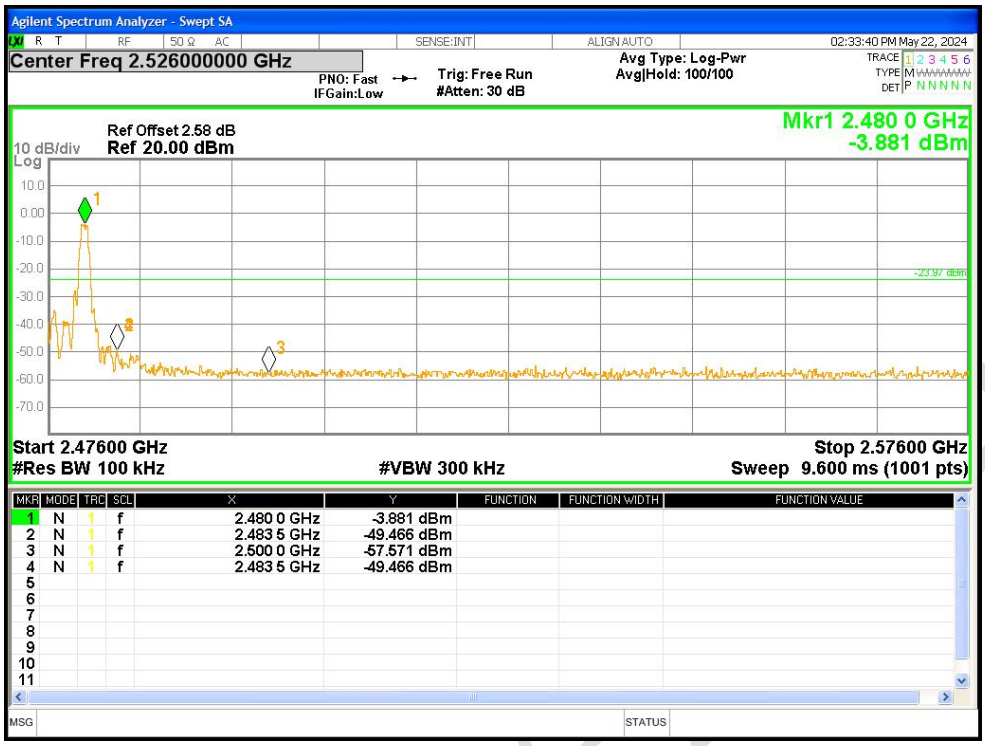


Band Edge NVNT BLE 2402MHz Ant1 Emission



Band Edge NVNT BLE 2480MHz Ant1 Ref

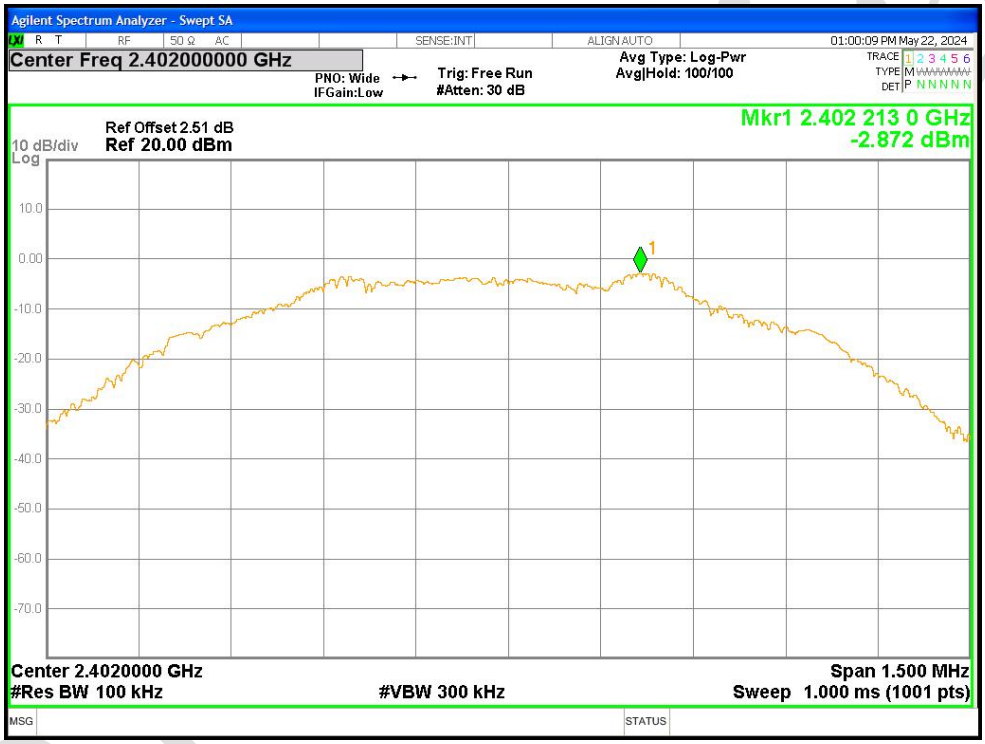
Band Edge NVNT BLE 2480MHz Ant1 Emission


Agilent Spectrum Analyzer - Swept SA
Center Freq 2.526000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
02:33:40 PM May 22, 2024
Ref Offset 2.58 dB
10 dB/div
Ref 20.00 dBm
Mkr1 2.480 0 GHz
-3.881 dBm
-23.97 dBm
Start 2.47600 GHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 2.57600 GHz
Sweep 9.600 ms (1001 pts)
1 N 1 f 2.480 0 GHz -3.881 dBm
2 N 1 f 2.483 5 GHz -49.466 dBm
3 N 1 f 2.500 0 GHz -57.571 dBm
4 N 1 f 2.483 5 GHz -49.466 dBm

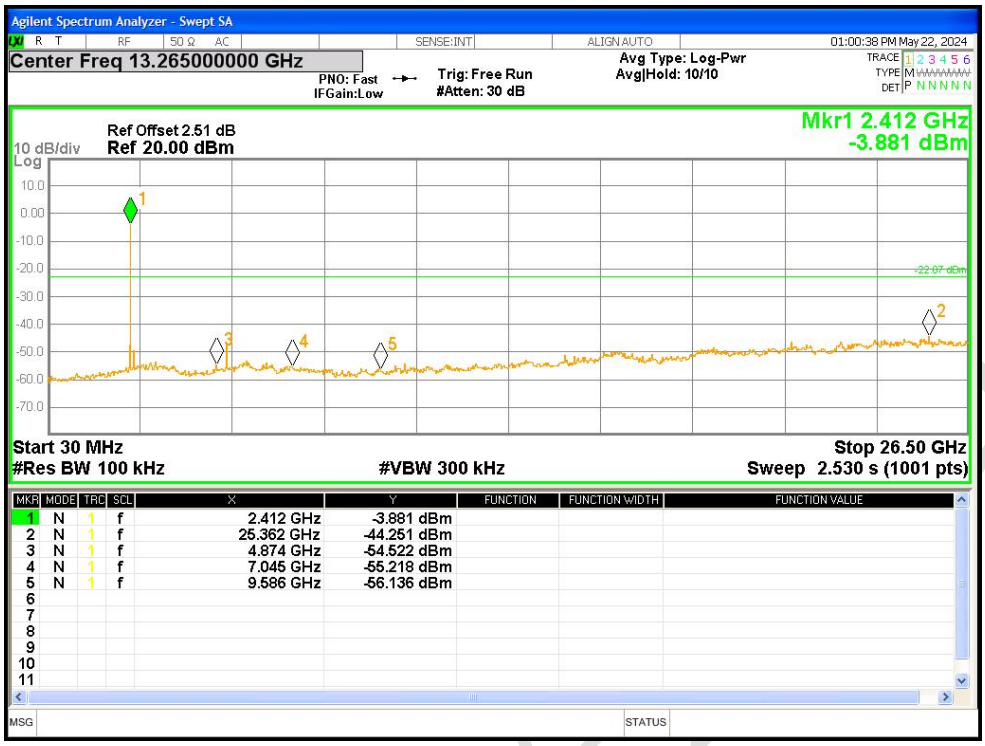
7.6 Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE	2402	Ant1	-41.38	-20	Pass
NVNT	BLE	2442	Ant1	-41.84	-20	Pass
NVNT	BLE	2480	Ant1	-40.83	-20	Pass

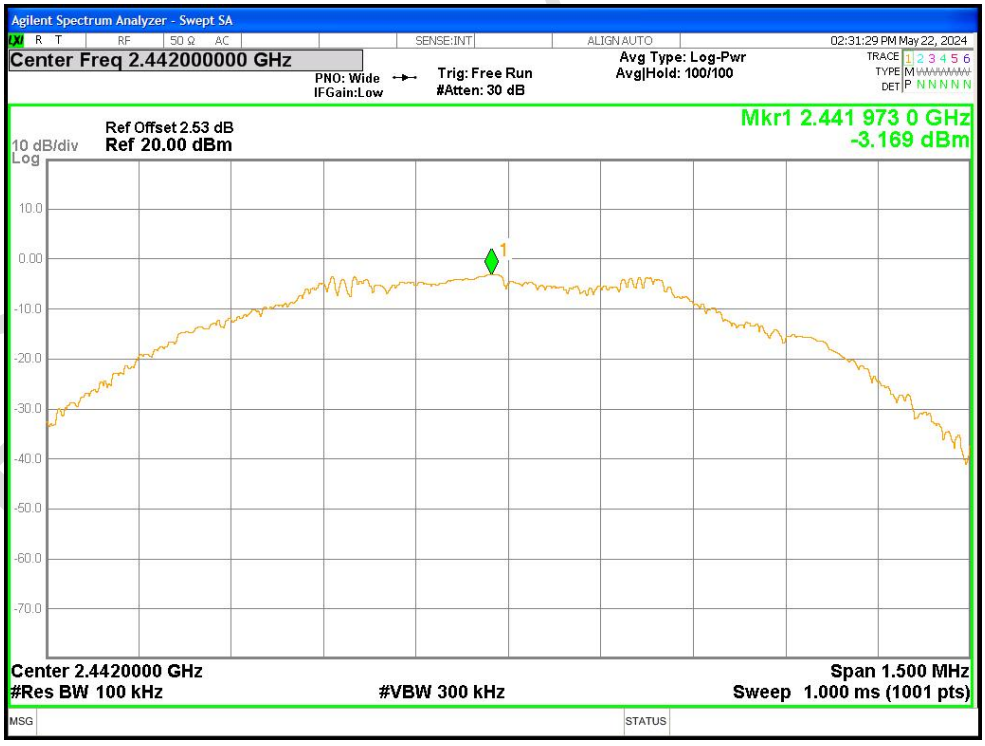
Tx. Spurious NVNT BLE 2402MHz Ant1 Ref



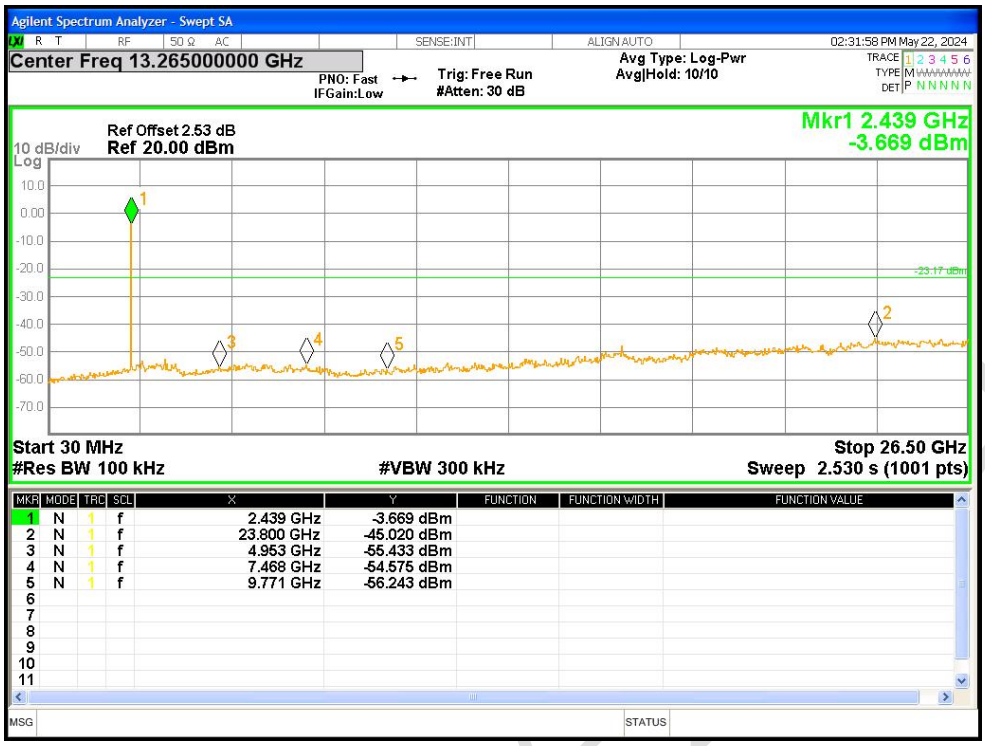
Tx. Spurious NVNT BLE 2402MHz Ant1 Emission



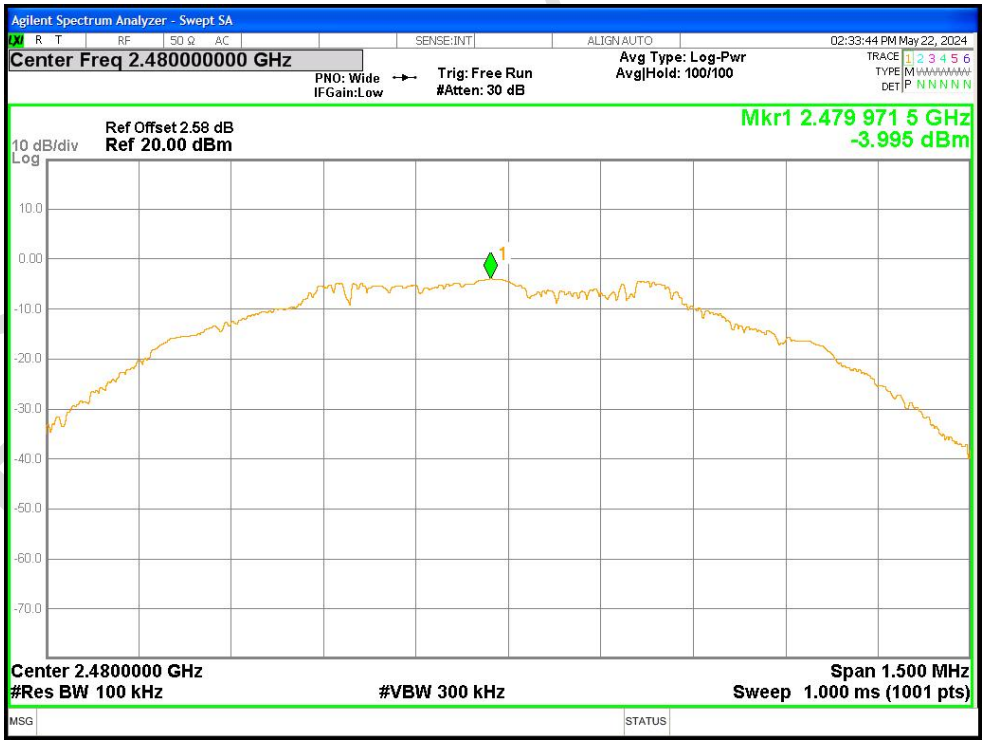
Tx. Spurious NVNT BLE 2442MHz Ant1 Ref



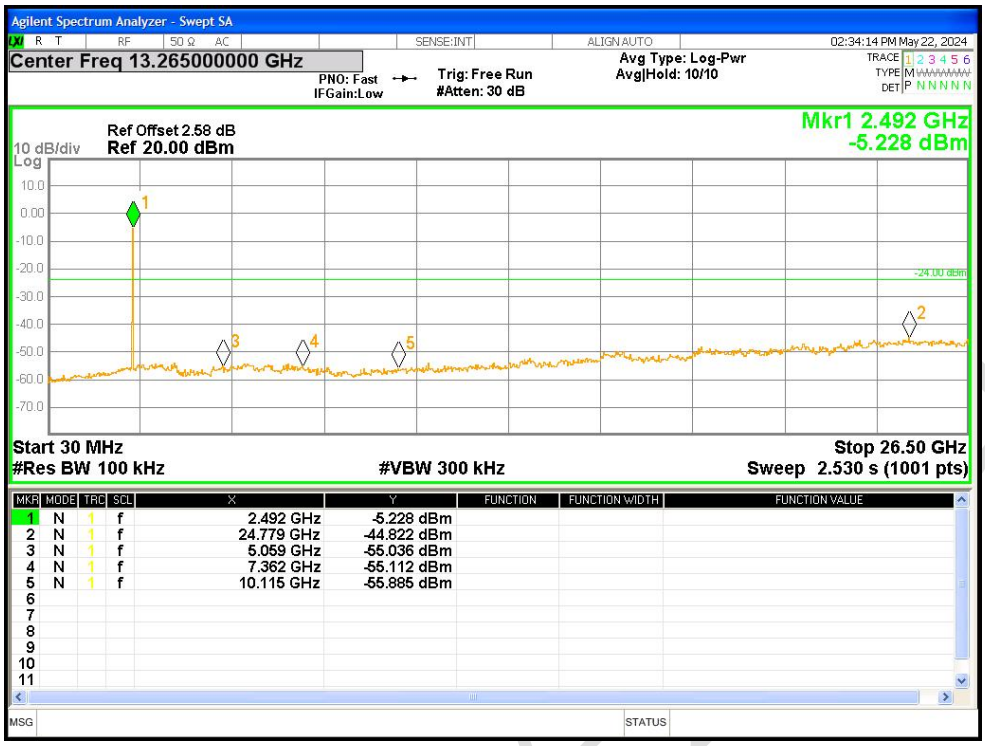
Tx. Spurious NVNT BLE 2442MHz Ant1 Emission



Tx. Spurious NVNT BLE 2480MHz Ant1 Ref

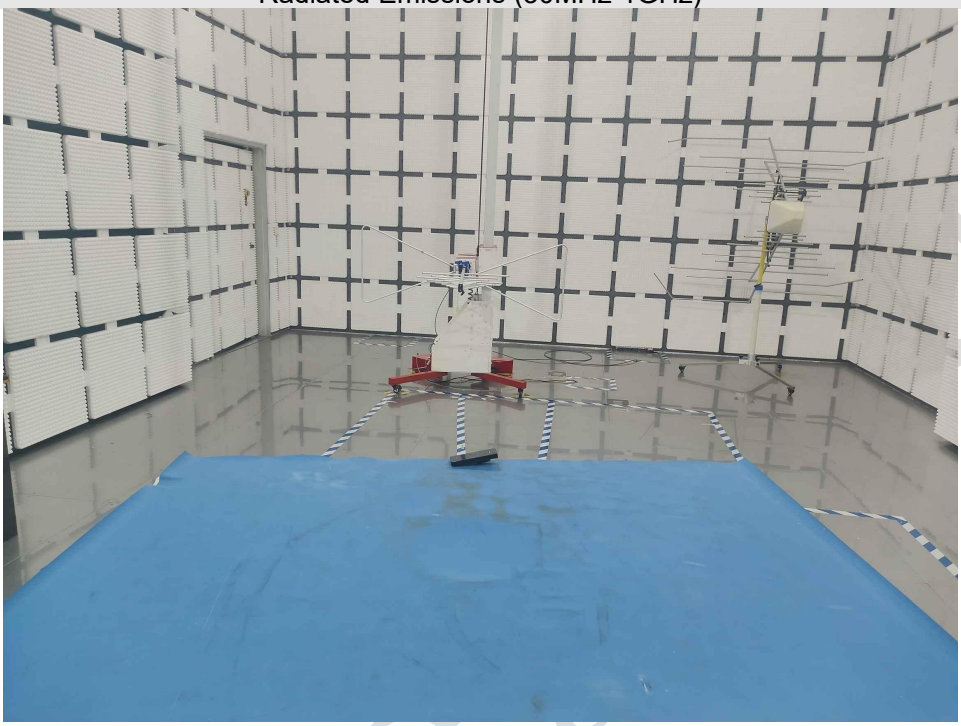


Tx. Spurious NVNT BLE 2480MHz Ant1 Emission

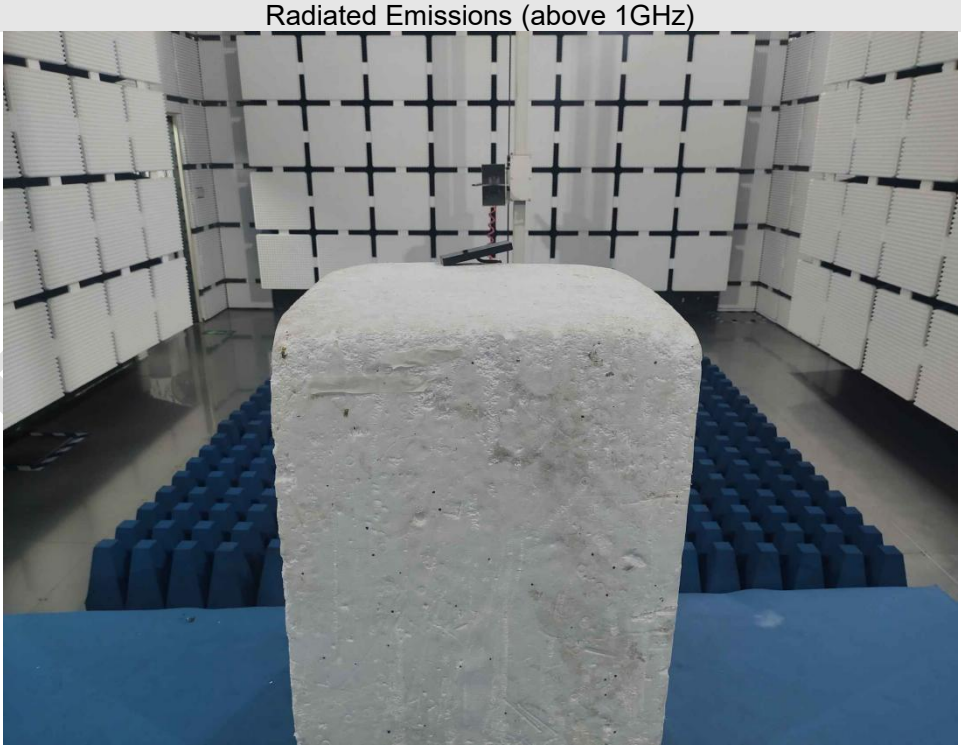

Agilent Spectrum Analyzer - Swept SA
Center Freq 13.265000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 10/10
02:34:14 PM May 22, 2024
Ref Offset 2.58 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 2.492 GHz
-5.228 dBm
-24.00 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.50 GHz
Sweep 2.530 s (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 2.492 GHz -5.228 dBm
2 N 1 f 24.779 GHz -44.822 dBm
3 N 1 f 5.059 GHz -55.036 dBm
4 N 1 f 7.362 GHz -55.112 dBm
5 N 1 f 10.115 GHz -55.885 dBm
MSG
STATUS

Appendix B: photographs of test setup

Radiated Emissions (30MHz-1GHz)



Radiated Emissions (above 1GHz)



Appendix C: photographs of EUT

Reference to the test report no. BLA-EMC-202405-A0401

----END OF REPORT----