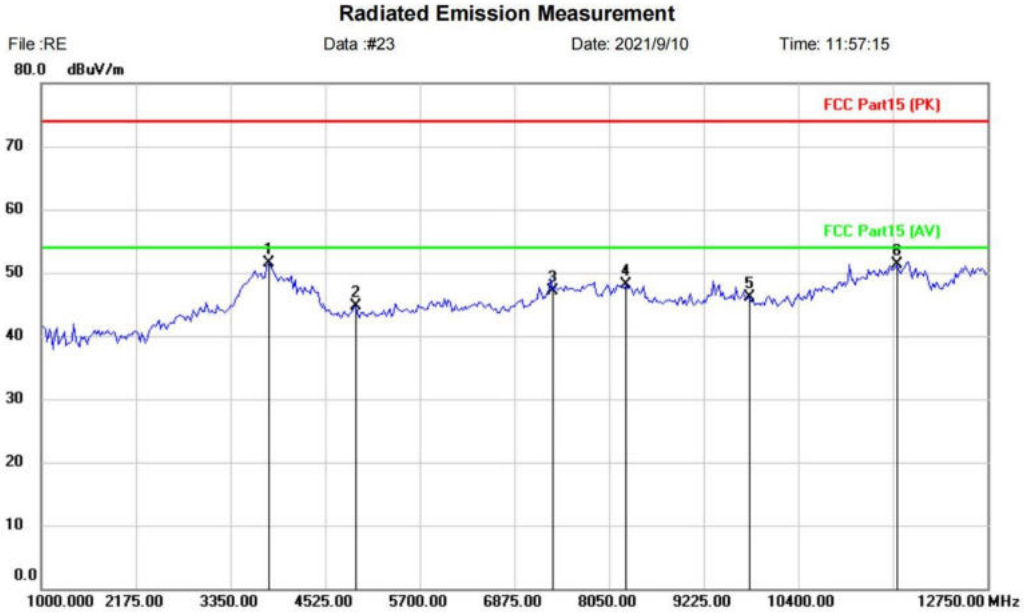
[TestMode: TX middle channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: Bluetooth module5.2
M/N: PTR5605
Mode: TX-M
Note:

Polarization: ***Horizontal***
Power:
Distance:

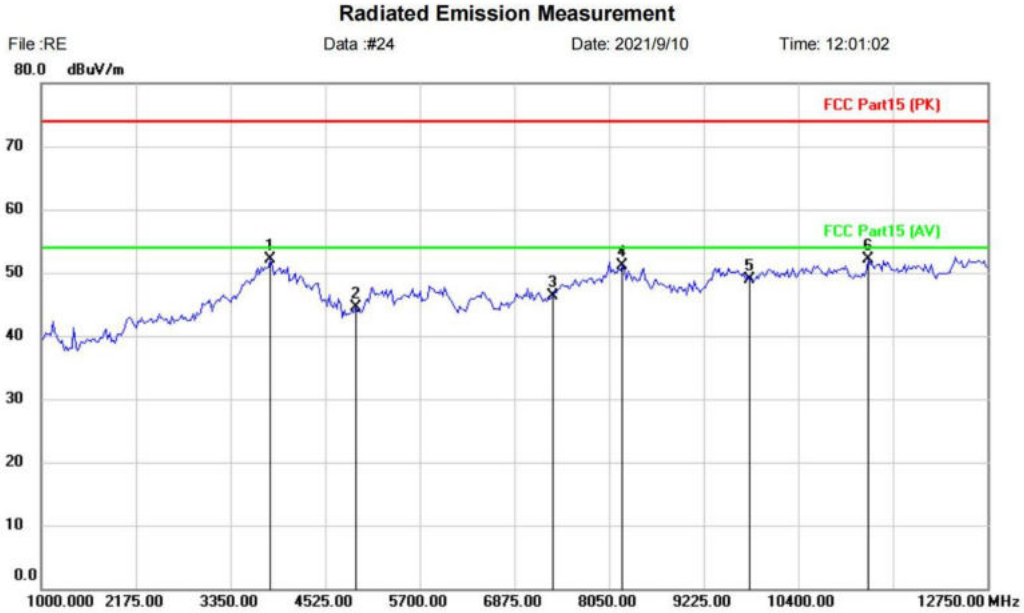
Temperature:
Humidity: %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	3820.000	44.17	7.41	51.58	74.00	-22.42	peak			
2		4884.000	41.27	3.34	44.61	74.00	-29.39	peak			
3		7326.000	40.75	6.44	47.19	74.00	-26.81	peak			
4		8261.500	39.93	8.23	48.16	74.00	-25.84	peak			
5		9768.000	36.45	9.63	46.08	74.00	-27.92	peak			
6		11622.000	39.33	12.00	51.33	74.00	-22.67	peak			

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

Test Result: Pass

[TestMode: TX middle channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: Bluetooth module5.2
M/N: PTR5605
Mode: TX-M
Note:

Polarization: ***Vertical***
Power:
Distance:

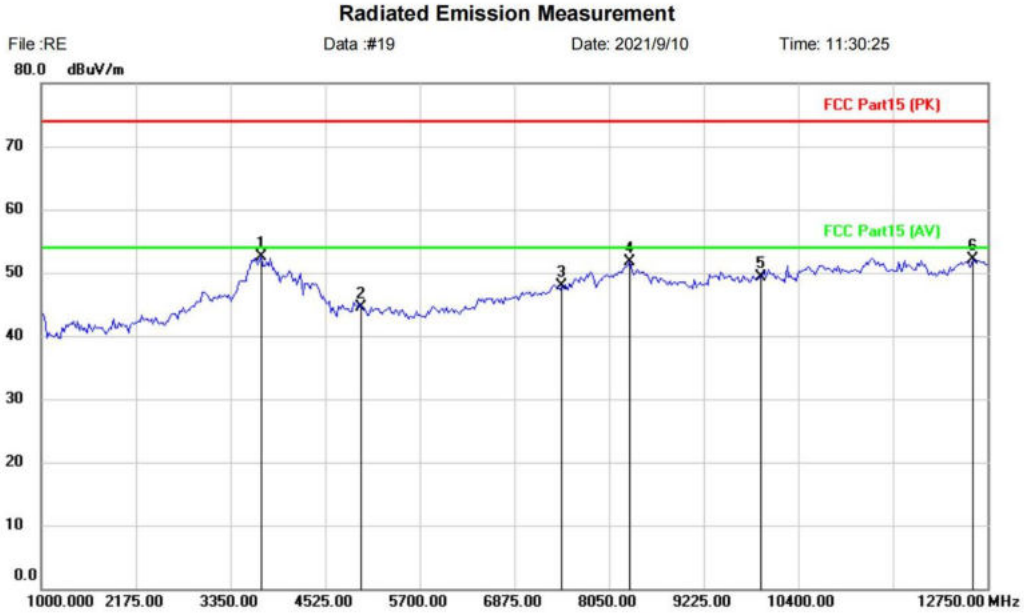
Temperature:
Humidity: %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	3843.500	44.92	7.12	52.04	74.00	-21.96	peak			
2		4884.000	41.10	3.34	44.44	74.00	-29.56	peak			
3		7326.000	39.77	6.44	46.21	74.00	-27.79	peak			
4		8214.500	42.95	8.21	51.16	74.00	-22.84	peak			
5		9768.000	39.23	9.63	48.86	74.00	-25.14	peak			
6		11269.500	40.10	11.94	52.04	74.00	-21.96	peak			

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

Test Result: Pass

[TestMode: TX high channel]; [Polarity: Horizontal]



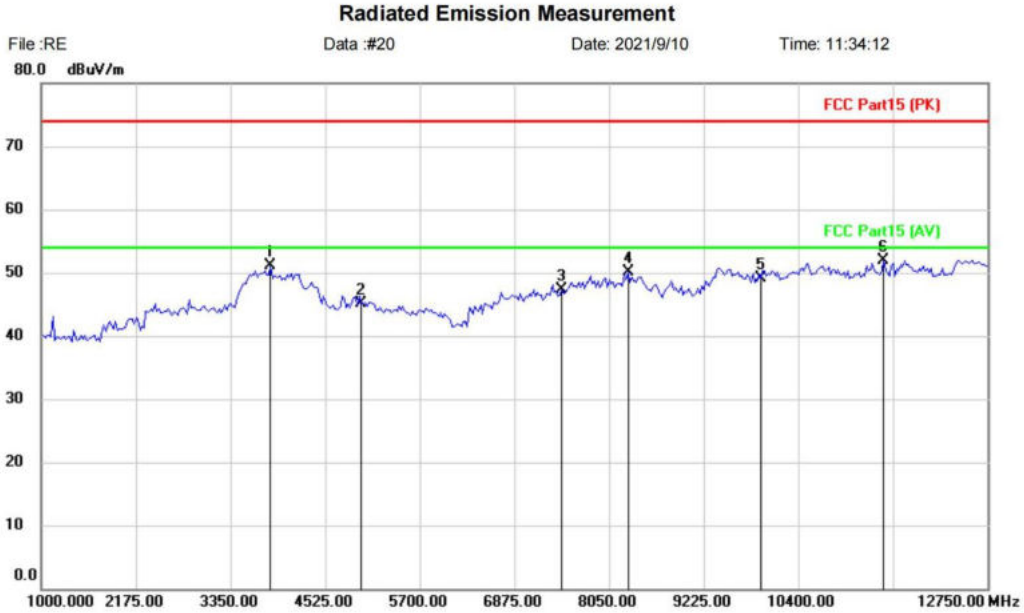
Site	Polarization: ***Horizontal***	Temperature:
Limit: FCC Part15 (PK)	Power:	Humidity: %
EUT: Bluetooth module5.2	Distance:	
M/N: PTR5605		
Mode: TX-H		
Note:		

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	3726.000	44.72	7.70	52.42	74.00	-21.58	peak			
2		4960.000	40.69	3.75	44.44	74.00	-29.56	peak			
3		7440.000	41.03	6.86	47.89	74.00	-26.11	peak			
4		8308.500	43.51	8.25	51.76	74.00	-22.24	peak			
5		9920.000	39.19	10.16	49.35	74.00	-24.65	peak			
6		12562.000	40.29	11.80	52.09	74.00	-21.91	peak			

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

Test Result: Pass

[TestMode: TX high channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: Bluetooth module5.2
M/N: PTR5605
Mode: TX-H
Note:

Polarization: ***Vertical***
Power:
Distance:

Temperature:
Humidity: %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		3843.500	43.93	7.12	51.05	74.00	-22.95	peak			
2		4960.000	41.28	3.75	45.03	74.00	-28.97	peak			
3		7440.000	40.50	6.86	47.36	74.00	-26.64	peak			
4		8285.000	41.80	8.24	50.04	74.00	-23.96	peak			
5		9920.000	38.95	10.16	49.11	74.00	-24.89	peak			
6	*	11457.500	40.12	11.84	51.96	74.00	-22.04	peak			

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

Test Result: Pass

18 RADIATED EMISSIONS WHICH FALL IN THE RESTRICTED BANDS

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 6.10.5
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Sven
Temperature	25℃
Humidity	52%

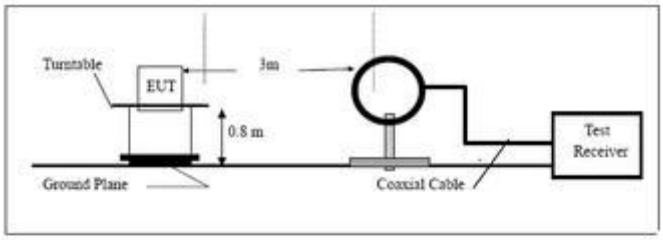
18.1 LIMITS

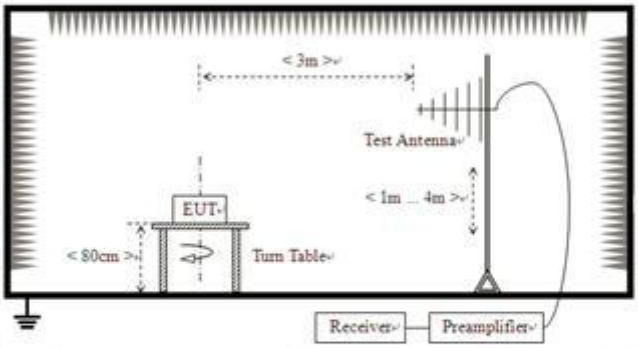
Frequency(MHz)	Field strength(microvolts/meter)	Measurement distance(meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

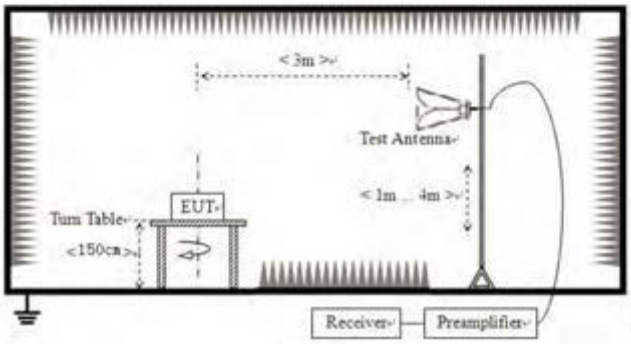
Remark: The emission limits shown in the above table are based on measurements employing a CISPR quasi-peak detector except for the frequency bands 9-90kHz, 110-490kHz and above 1000 MHz. Radiated emission limits in these three bands are based on measurements employing an average detector, the peak field 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

18.2 BLOCK DIAGRAM OF TEST SETUP







18.3 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.

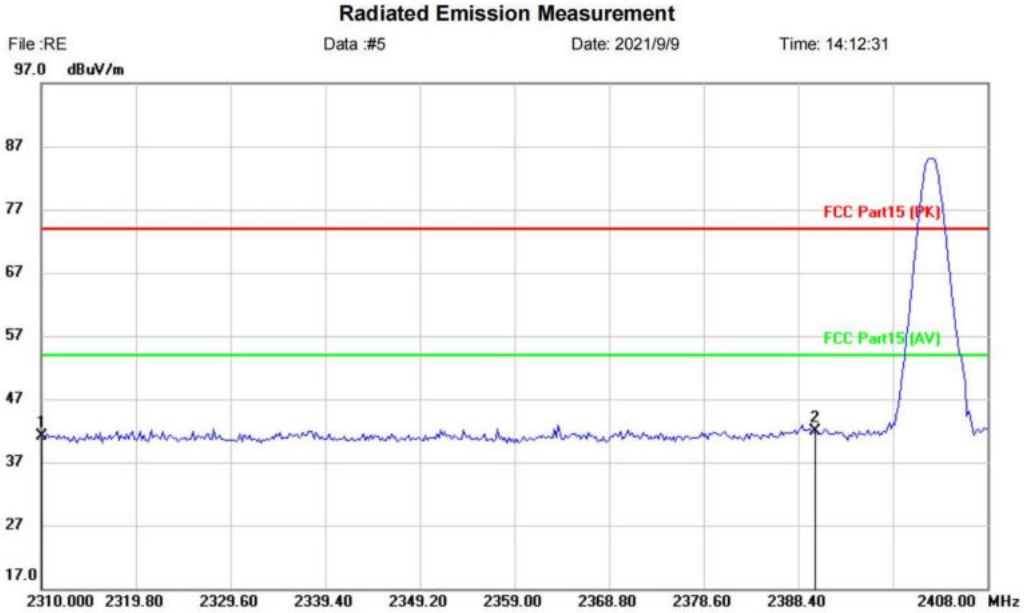
h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
j. Repeat above procedures until all frequencies measured was complete.
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.

BlueAsia

18.4 TEST DATA

BLE 1M Data:

[TestMode: TX Low channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: Bluetooth module5.2
M/N: PTR5605
Mode: TX-L
Note:

Polarization: ***Horizontal***
Power:
Distance:

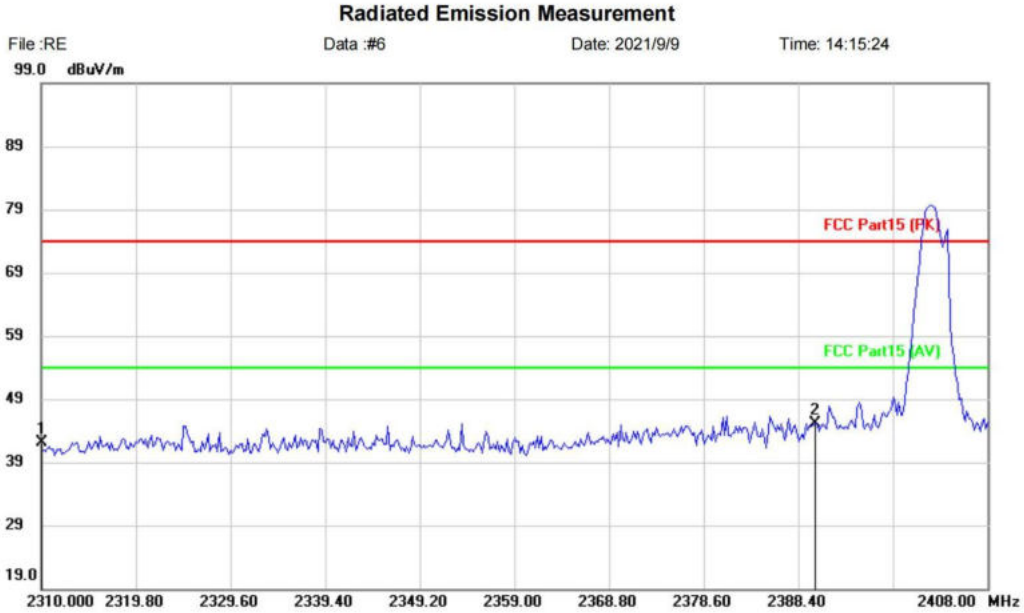
Temperature:
Humidity: %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2310.000	45.69	-4.61	41.08	74.00	-32.92	peak			
2	*	2390.000	46.23	-4.27	41.96	74.00	-32.04	peak			

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

Test Result: Pass

[TestMode: TX Low channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: Bluetooth module5.2
M/N: PTR5605
Mode: TX-L
Note:

Polarization: ***Vertical***
Power:
Distance:

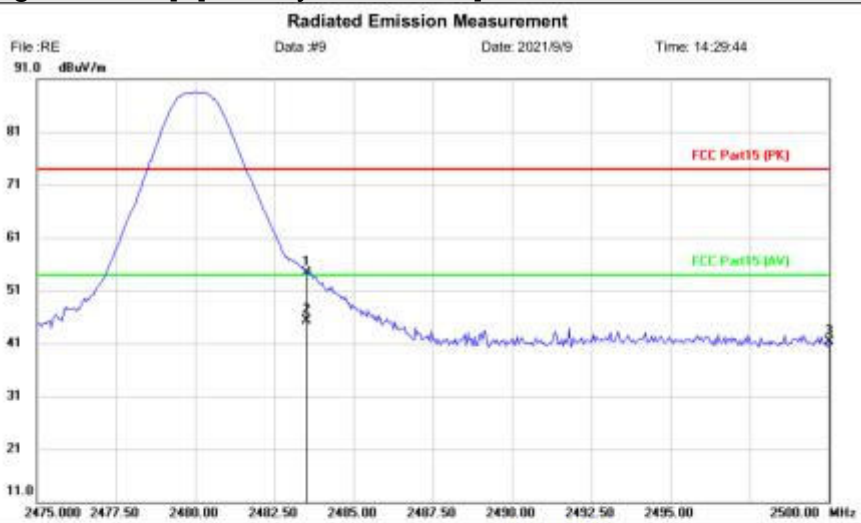
Temperature:
Humidity: %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2310.000	46.67	-4.61	42.06	74.00	-31.94	peak			
2	*	2390.000	49.32	-4.27	45.05	74.00	-28.95	peak			

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

Test Result: Pass

[TestMode: TX high channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: Bluetooth module5.2
M/N: PTR5605
Mode: TX-H
Note:

Polarization: *Horizontal*
Power:
Distance:

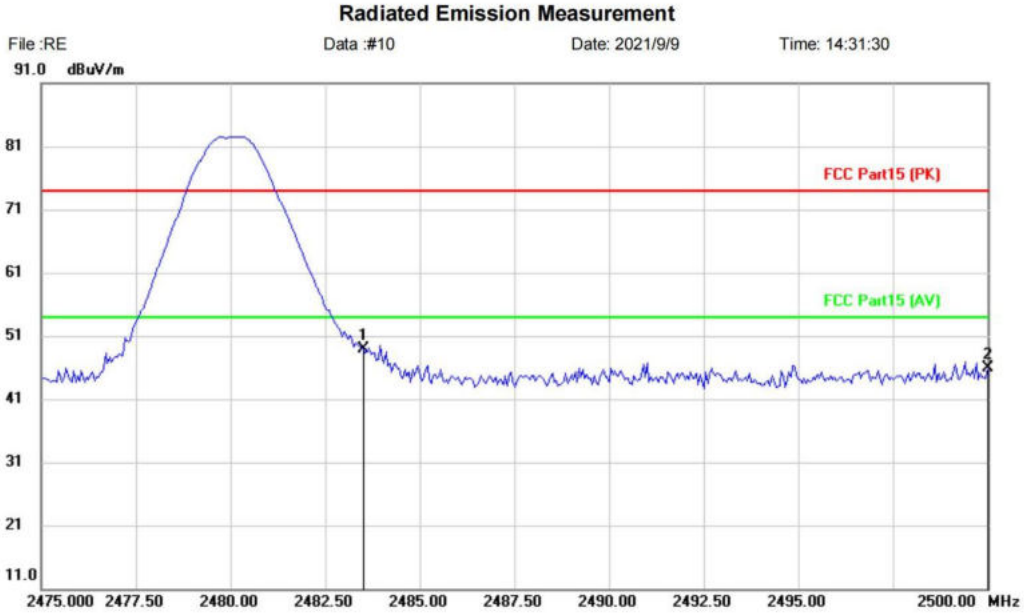
Temperature:
Humidity: %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	2483.500	58.24	-3.84	54.40	74.00	-19.60	peak			
2		2483.500	49.15	-3.84	45.31	74.00	-28.69	AVG			
3		2500.000	45.03	-3.78	41.25	74.00	-32.75	peak			

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

Test Result: Pass

[TestMode: TX high channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: Bluetooth module5.2
M/N: PTR5605
Mode: TX-H
Note:

Polarization: *Vertical*
Power:
Distance:

Temperature:
Humidity: %

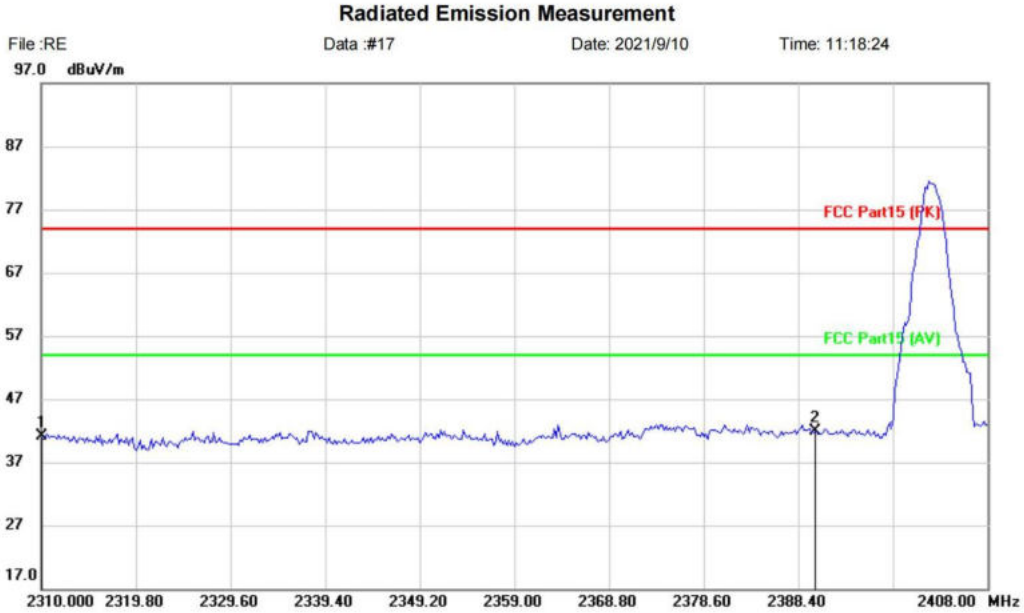
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	2483.500	52.71	-3.84	48.87	74.00	-25.13	peak			
2		2500.000	49.75	-3.78	45.97	74.00	-28.03	peak			

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

Test Result: Pass

BLE 2M Data:

[TestMode: TX Low channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: Bluetooth module5.2
M/N: PTR5605
Mode: TX-L
Note:

Polarization: ***Horizontal***
Power:
Distance:

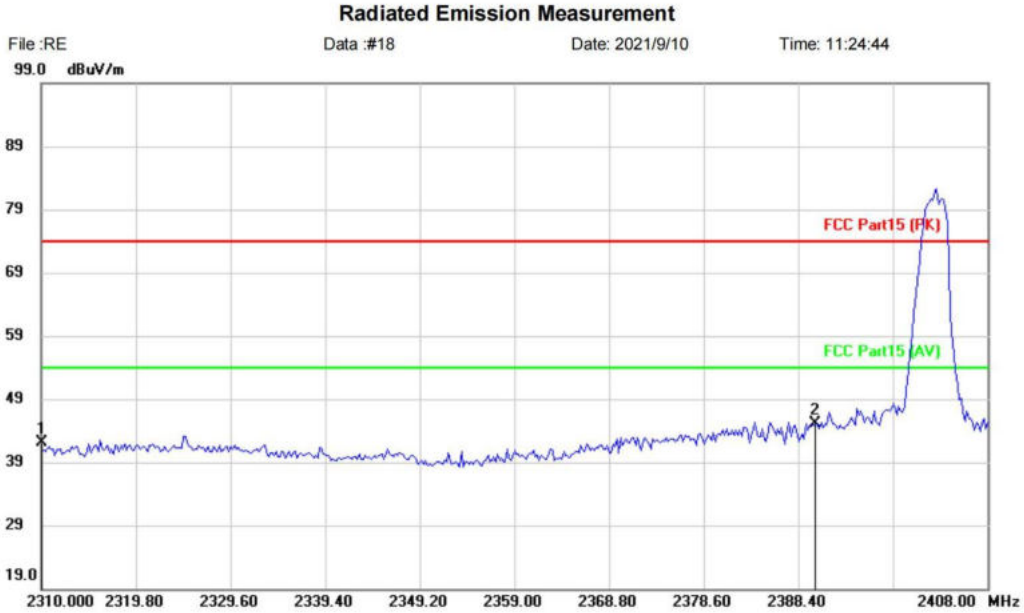
Temperature:
Humidity: %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2310.000	45.69	-4.61	41.08	74.00	-32.92	peak			
2	*	2390.000	46.23	-4.27	41.96	74.00	-32.04	peak			

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

Test Result: Pass

[TestMode: TX Low channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: Bluetooth module5.2
M/N: PTR5605
Mode: TX-L
Note:

Polarization: ***Vertical***
Power:
Distance:

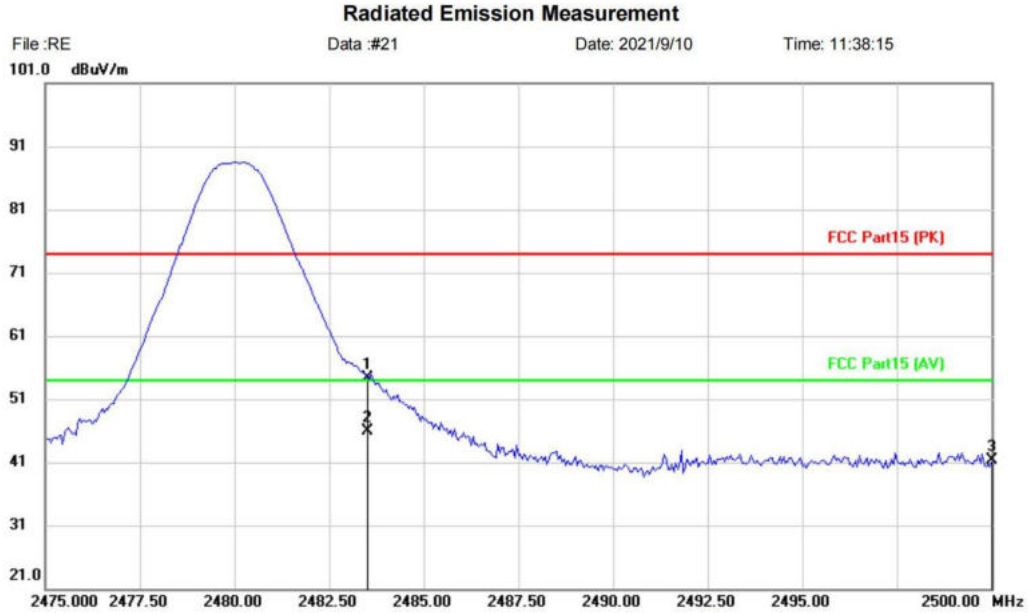
Temperature:
Humidity: %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2310.000	46.67	-4.61	42.06	74.00	-31.94	peak			
2	*	2390.000	49.32	-4.27	45.05	74.00	-28.95	peak			

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

Test Result: Pass

[TestMode: TX high channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: Bluetooth module5.2
M/N: PTR5605
Mode: TX-H
Note:

Polarization: ***Horizontal***
Power:
Distance:

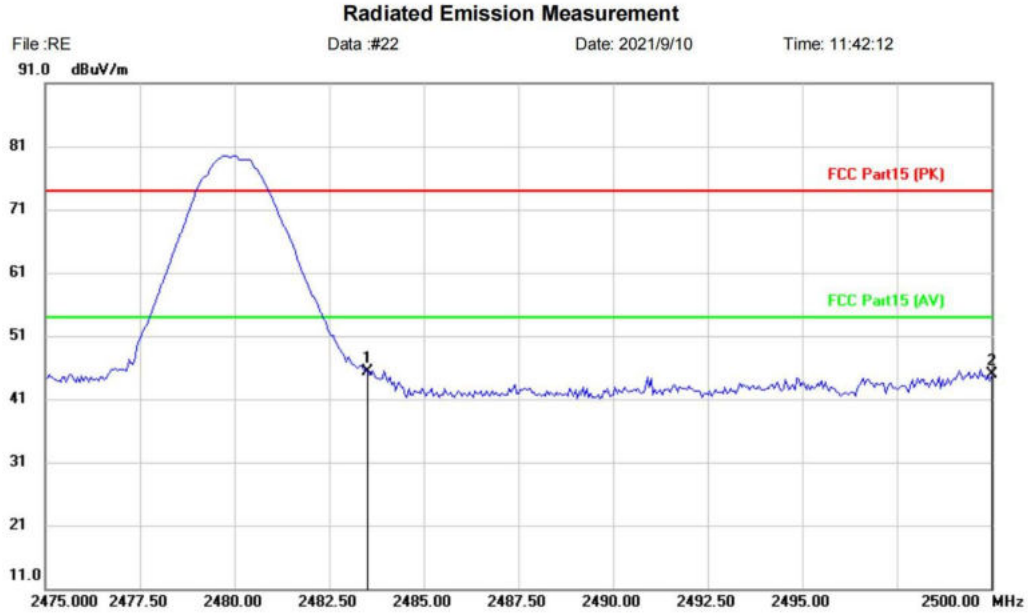
Temperature:
Humidity: %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		2483.500	58.24	-3.84	54.40	74.00	-19.60	peak			
2	*	2483.500	49.82	-3.84	45.98	54.00	-8.02	AVG			
3		2500.000	45.03	-3.78	41.25	74.00	-32.75	peak			

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

Test Result: Pass

[TestMode: TX high channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: Bluetooth module5.2
M/N: PTR5605
Mode: TX-H
Note:

Polarization: ***Vertical***
Power:
Distance:

Temperature:
Humidity: %

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	2483.500	49.21	-3.84	45.37	74.00	-28.63	peak			
2		2500.000	48.75	-3.78	44.97	74.00	-29.03	peak			

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

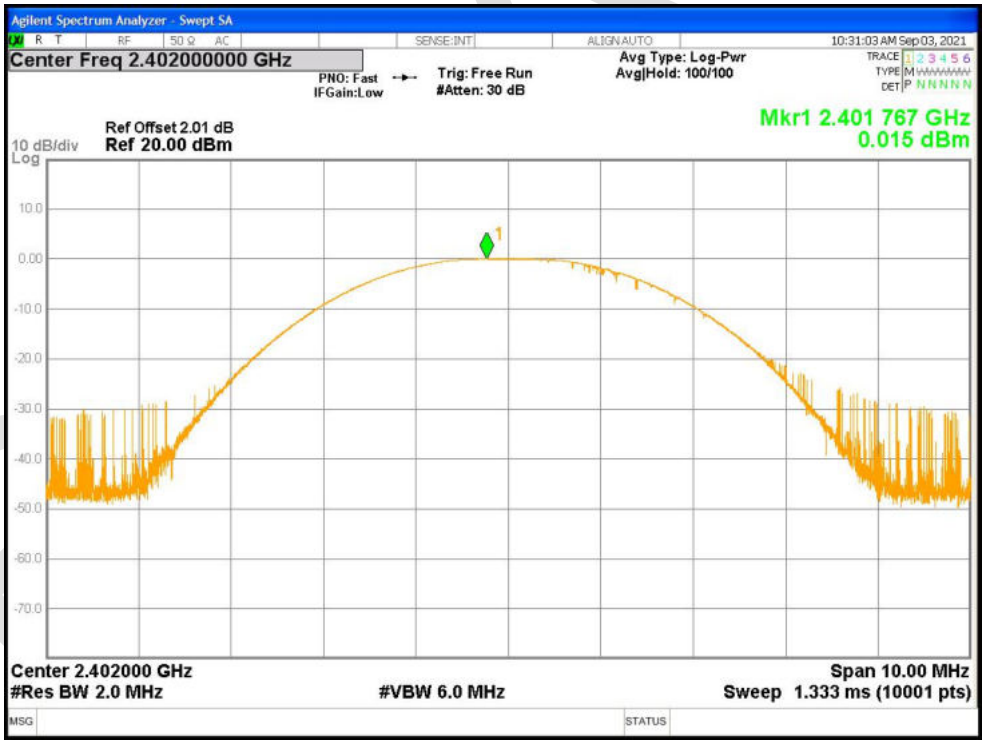
Test Result: Pass

19 APPENDIX

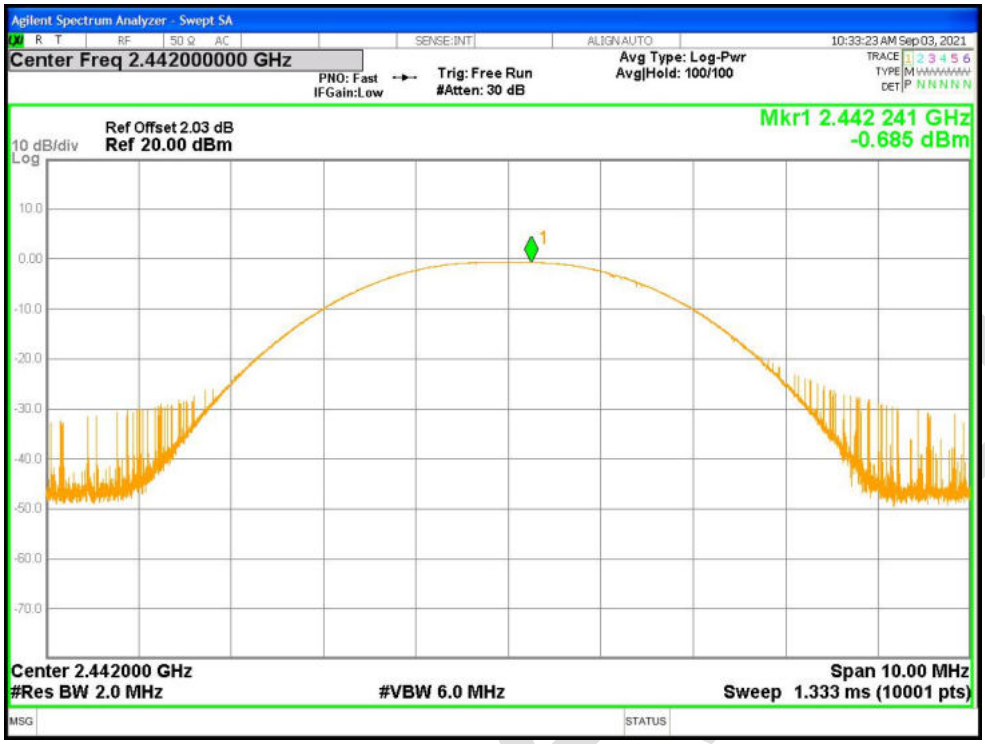
Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Total Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	0.015	0.015	30	Pass
NVNT	BLE 1M	2442	Ant1	-0.685	-0.685	30	Pass
NVNT	BLE 1M	2480	Ant1	-0.009	-0.009	30	Pass
NVNT	BLE 2M	2402	Ant1	0.027	0.027	30	Pass
NVNT	BLE 2M	2442	Ant1	-0.619	-0.619	30	Pass
NVNT	BLE 2M	2480	Ant1	0.005	0.005	30	Pass

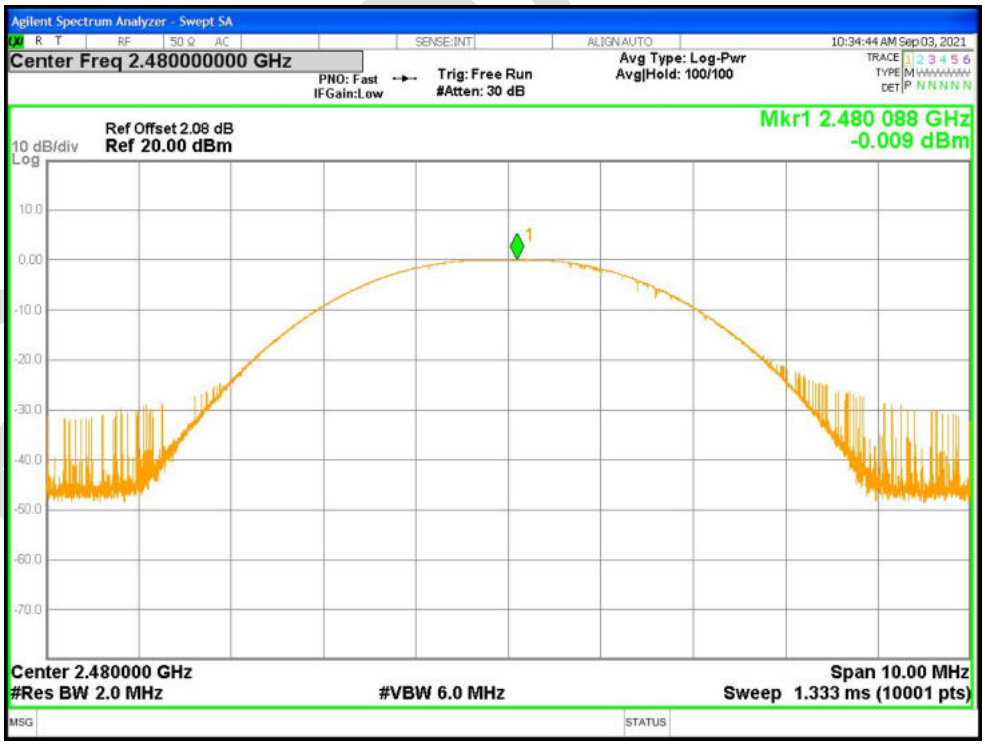
Power NVNT BLE 1M 2402MHz Ant1



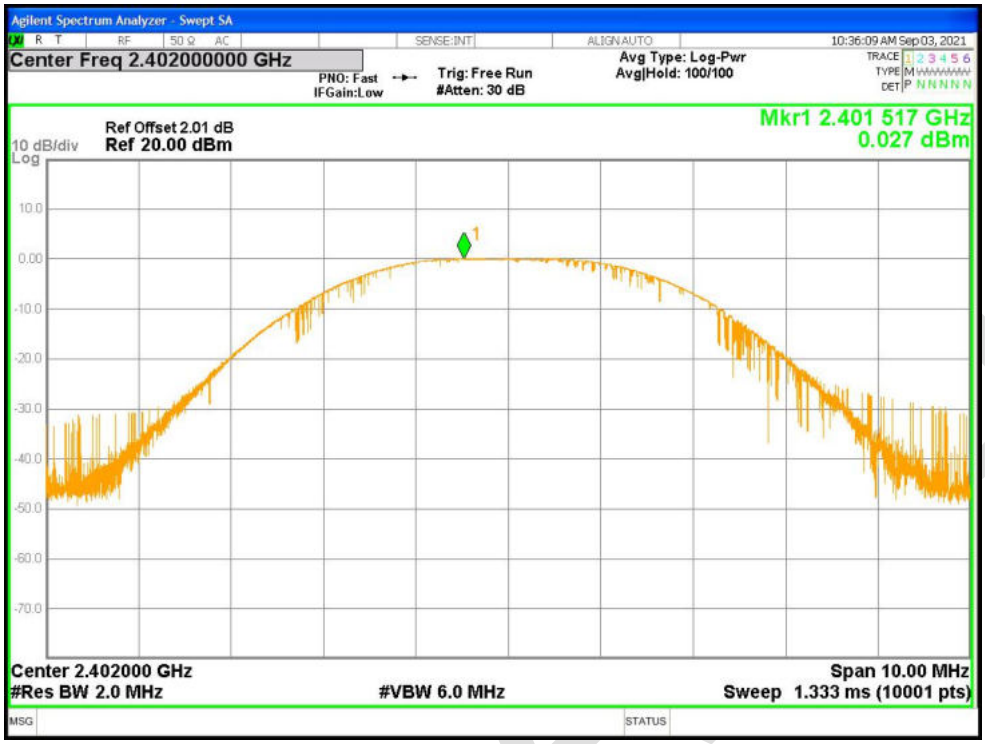
Power NVNT BLE 1M 2442MHz Ant1



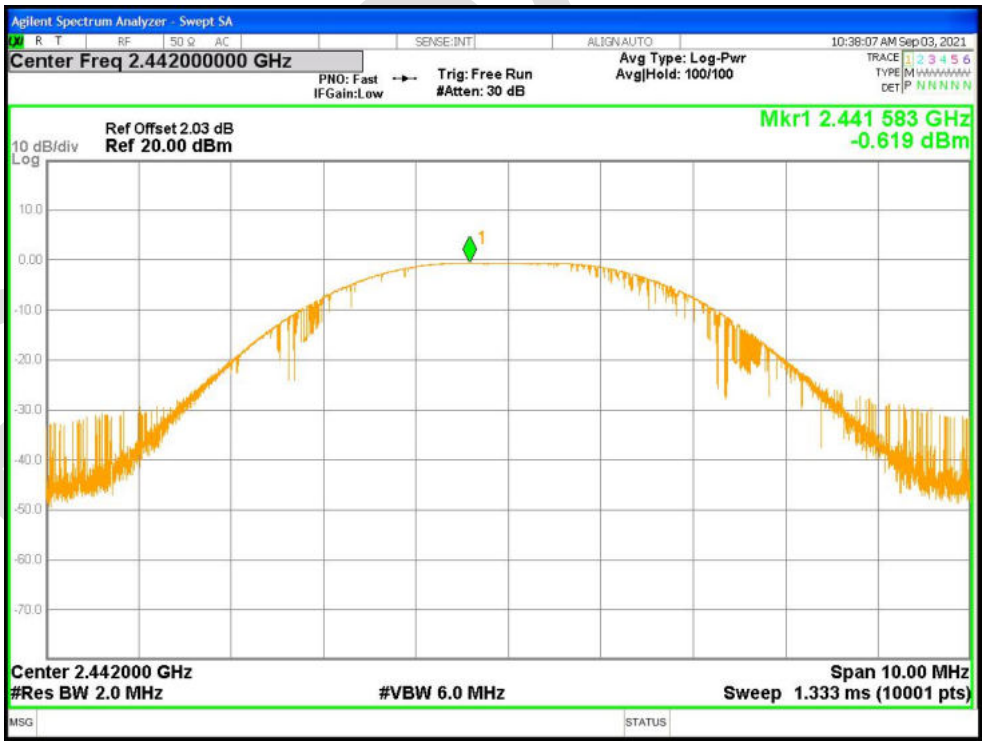
Power NVNT BLE 1M 2480MHz Ant1



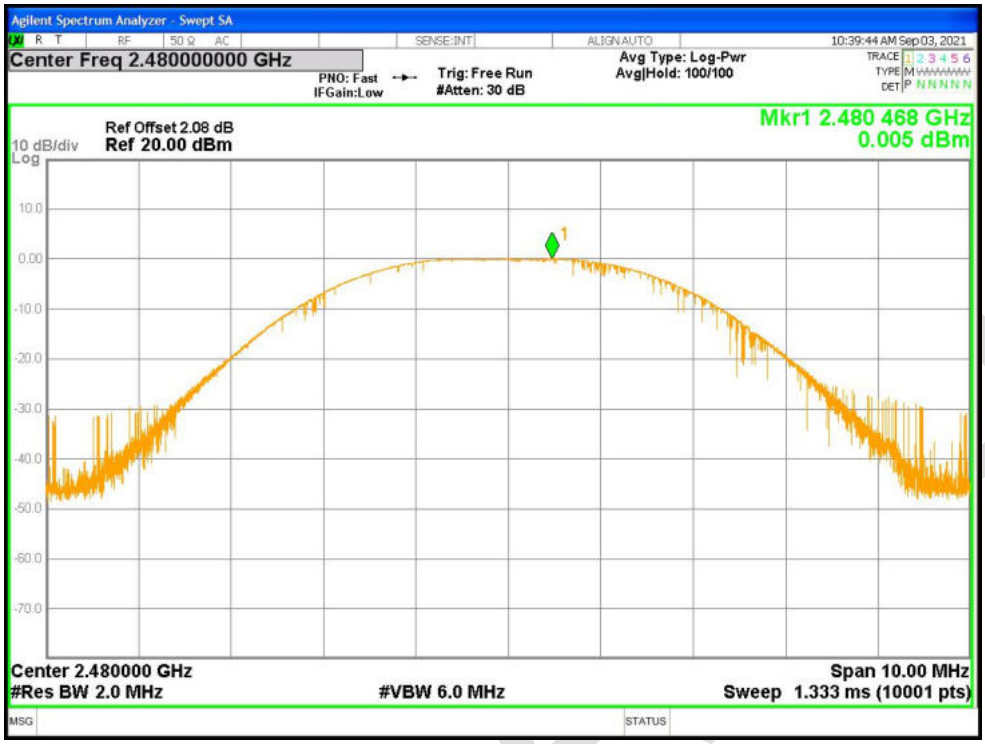
Power NVNT BLE 2M 2402MHz Ant1



Power NVNT BLE 2M 2442MHz Ant1



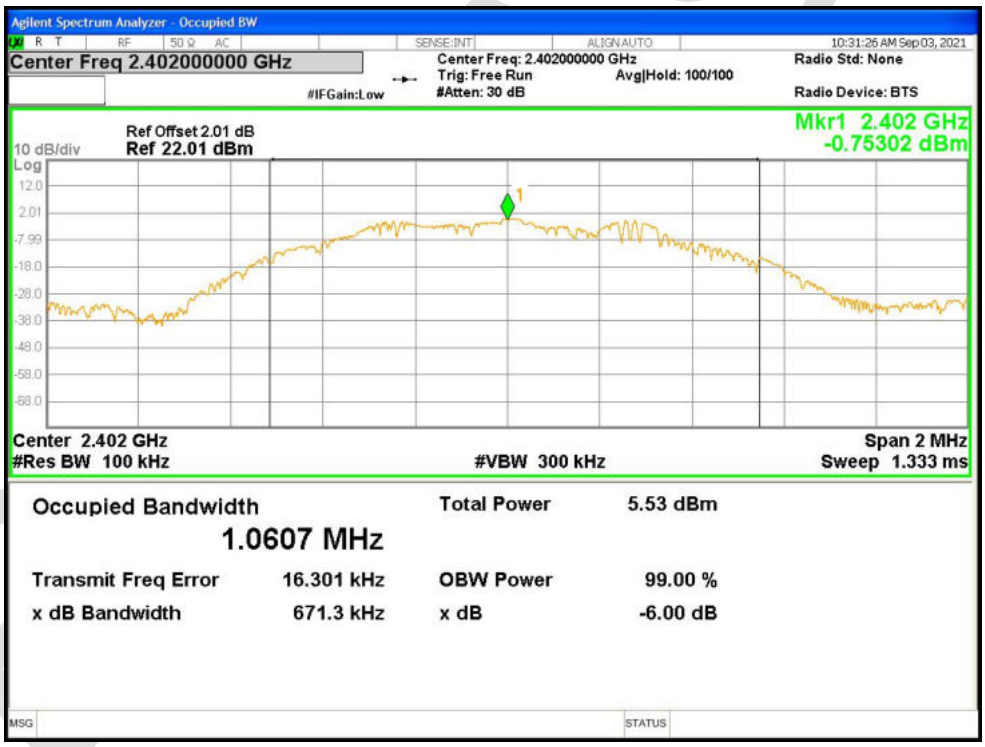
Power NVNT BLE 2M 2480MHz Ant1



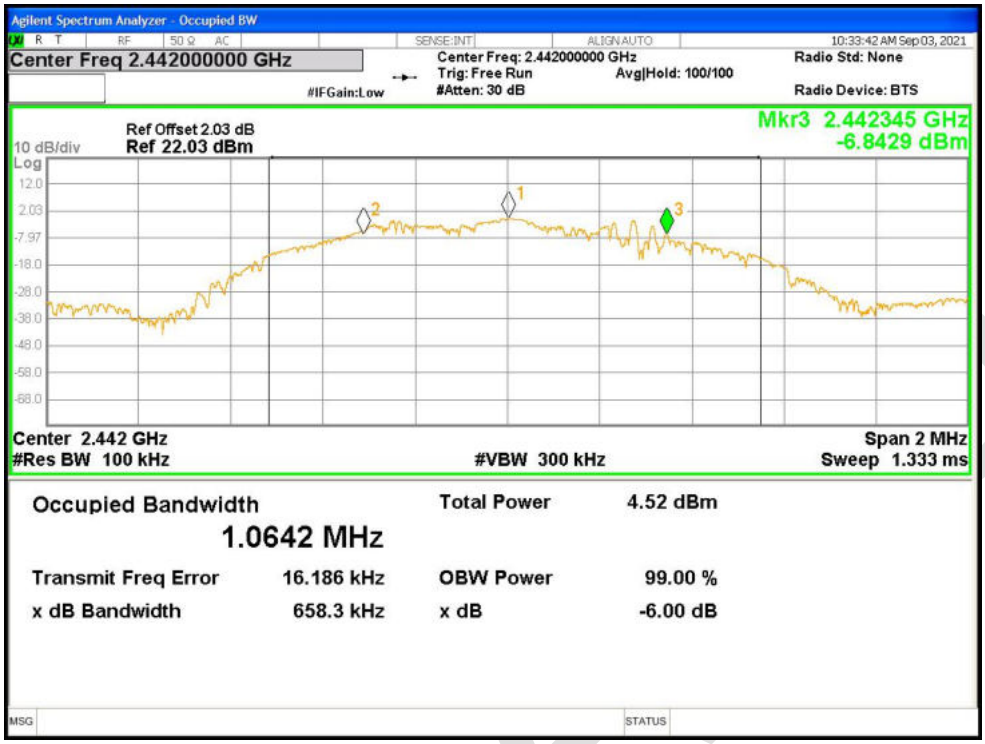
-6dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE 1M	2402	Ant1	0.671	0.5	Pass
NVNT	BLE 1M	2442	Ant1	0.658	0.5	Pass
NVNT	BLE 1M	2480	Ant1	0.675	0.5	Pass
NVNT	BLE 2M	2402	Ant1	1.151	0.5	Pass
NVNT	BLE 2M	2442	Ant1	1.165	0.5	Pass
NVNT	BLE 2M	2480	Ant1	1.15	0.5	Pass

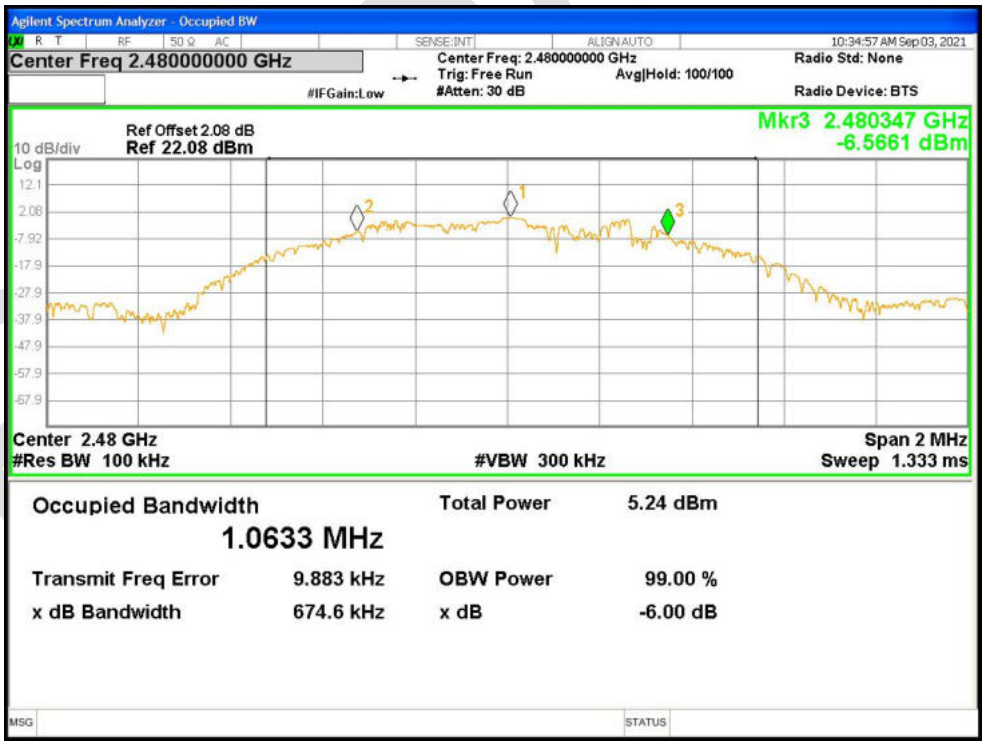
-6dB Bandwidth NVNT BLE 1M 2402MHz Ant1



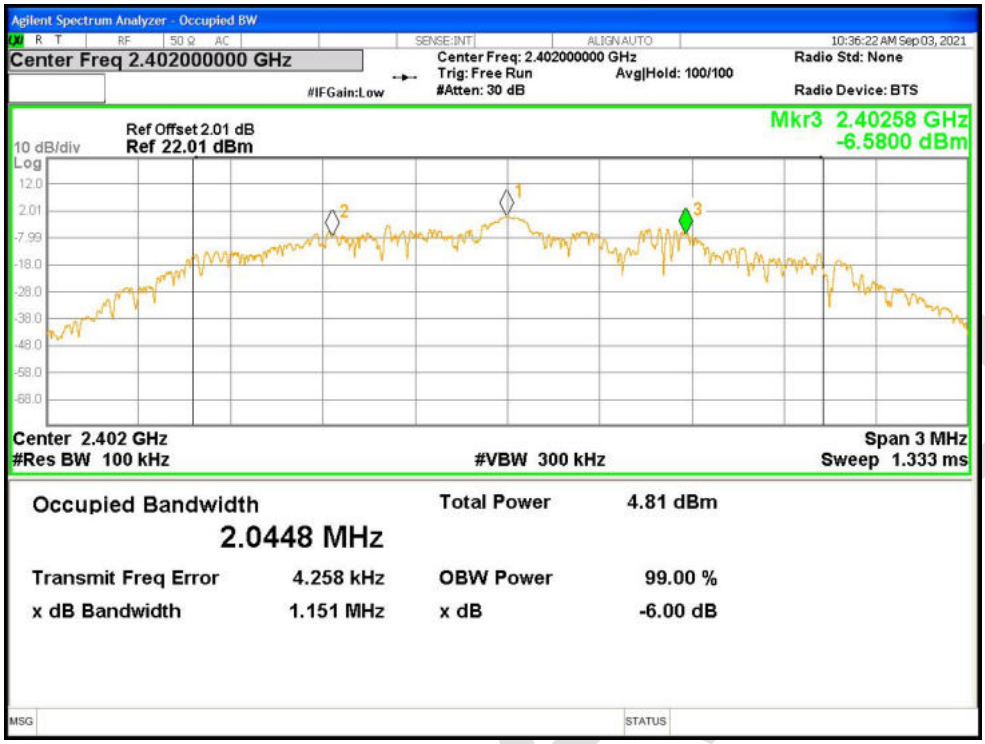
-6dB Bandwidth NVNT BLE 1M 2442MHz Ant1



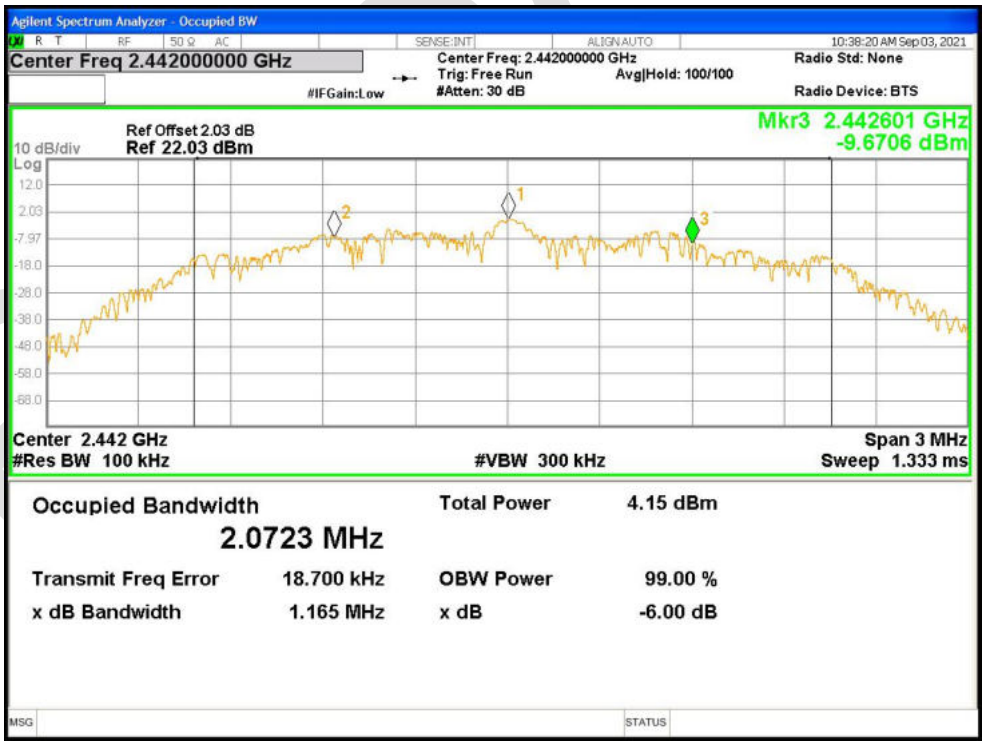
-6dB Bandwidth NVNT BLE 1M 2480MHz Ant1



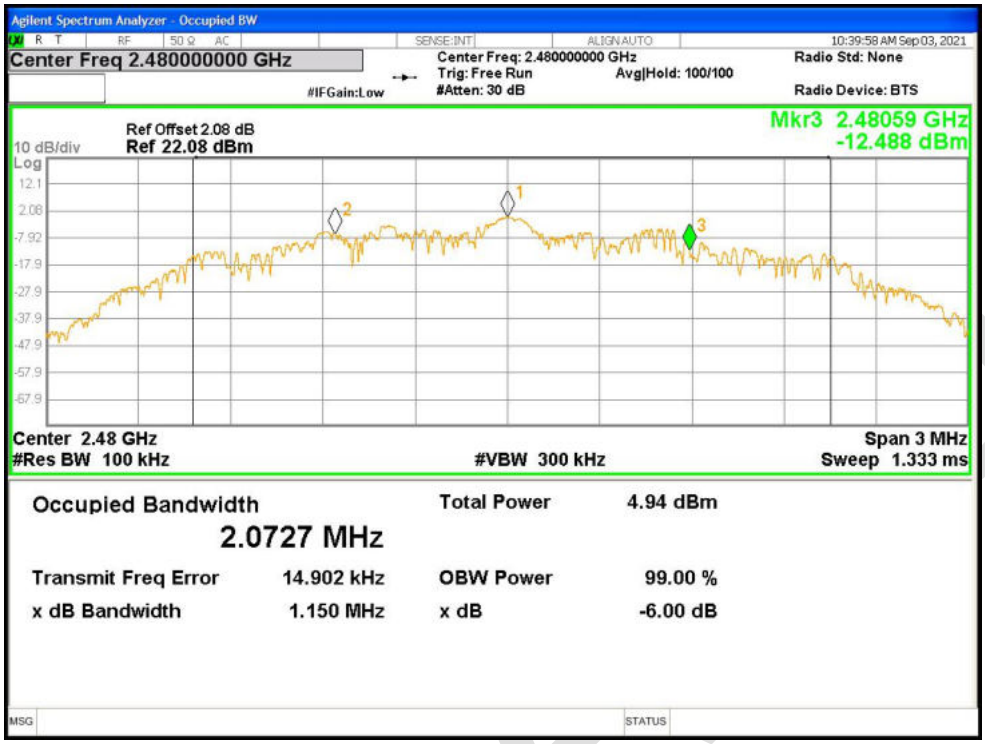
-6dB Bandwidth NVNT BLE 2M 2402MHz Ant1



-6dB Bandwidth NVNT BLE 2M 2442MHz Ant1



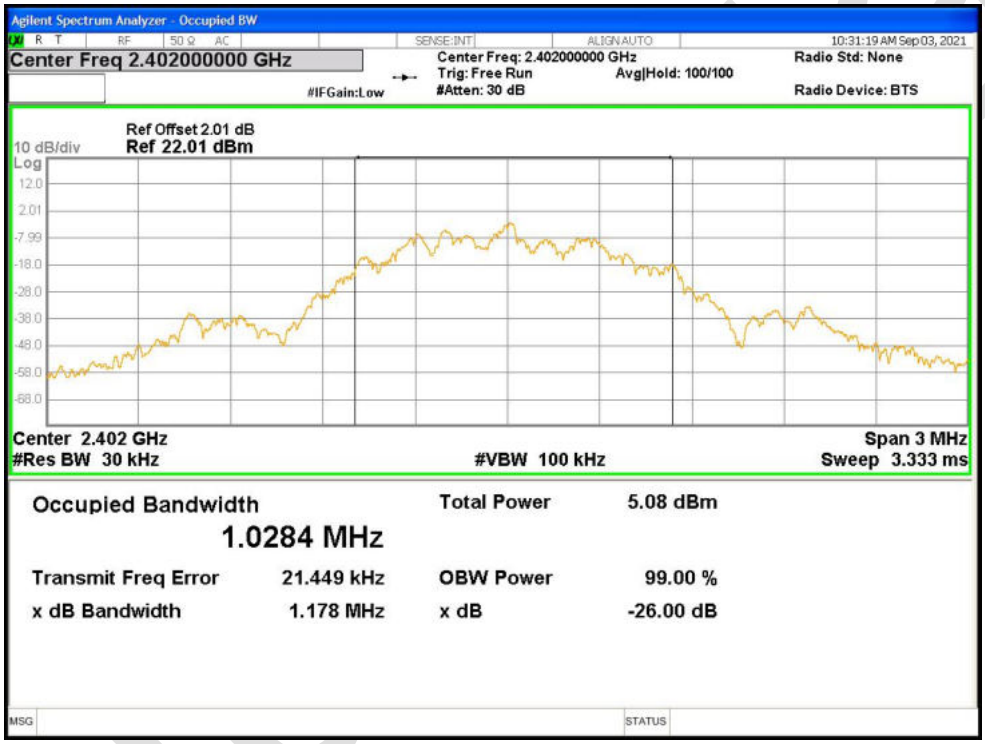
-6dB Bandwidth NVNT BLE 2M 2480MHz Ant1



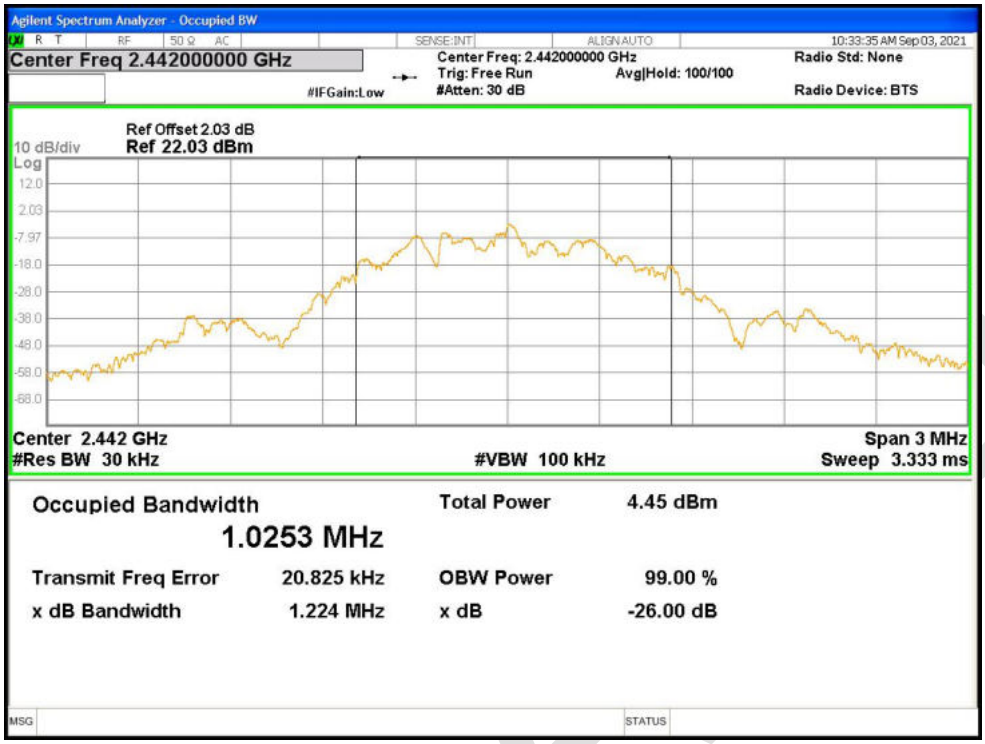
Occupied Channel Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	BLE 1M	2402	Ant1	1.028361946
NVNT	BLE 1M	2442	Ant1	1.025333087
NVNT	BLE 1M	2480	Ant1	1.023170266
NVNT	BLE 2M	2402	Ant1	2.02940328
NVNT	BLE 2M	2442	Ant1	2.034955653
NVNT	BLE 2M	2480	Ant1	2.050353236

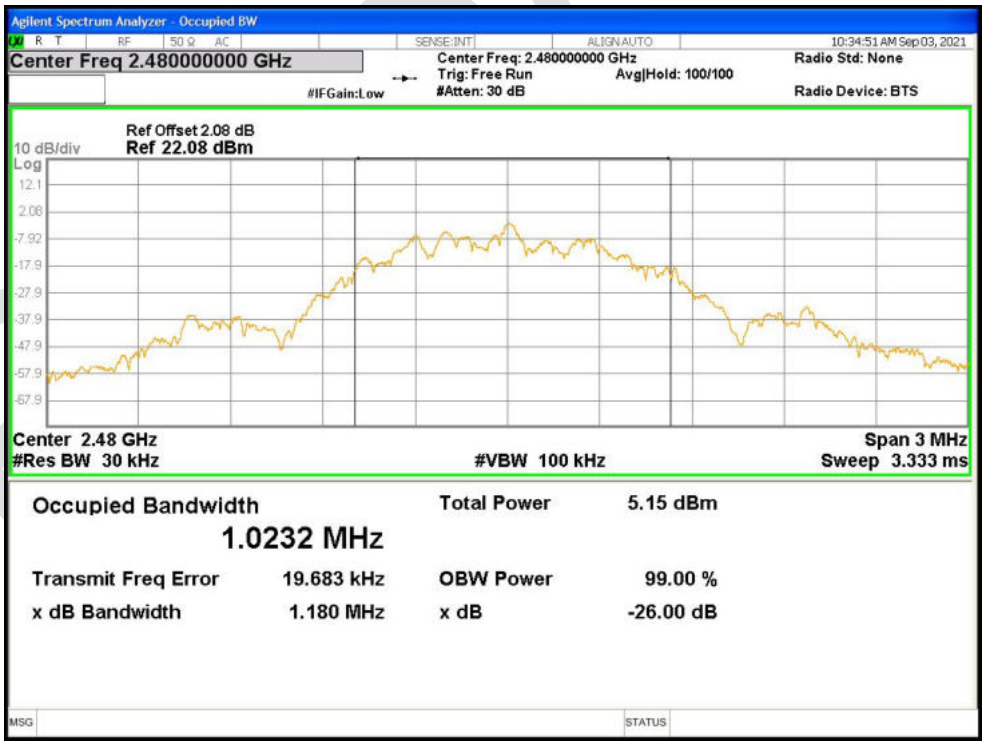
OBW NVNT BLE 1M 2402MHz Ant1



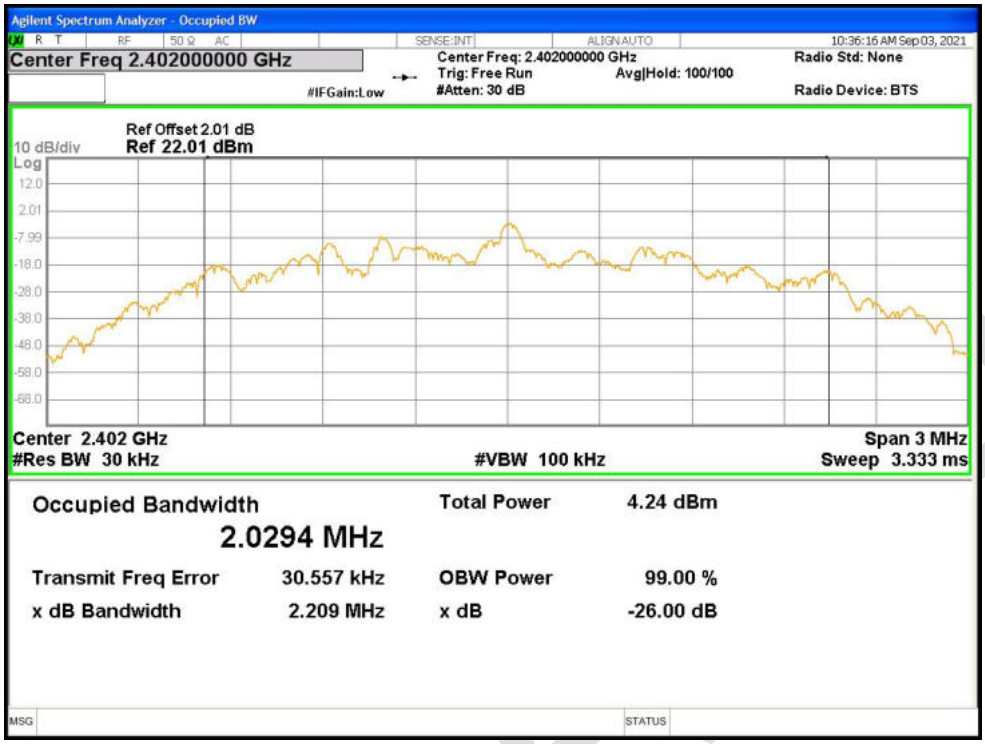
OBW NVNT BLE 1M 2442MHz Ant1



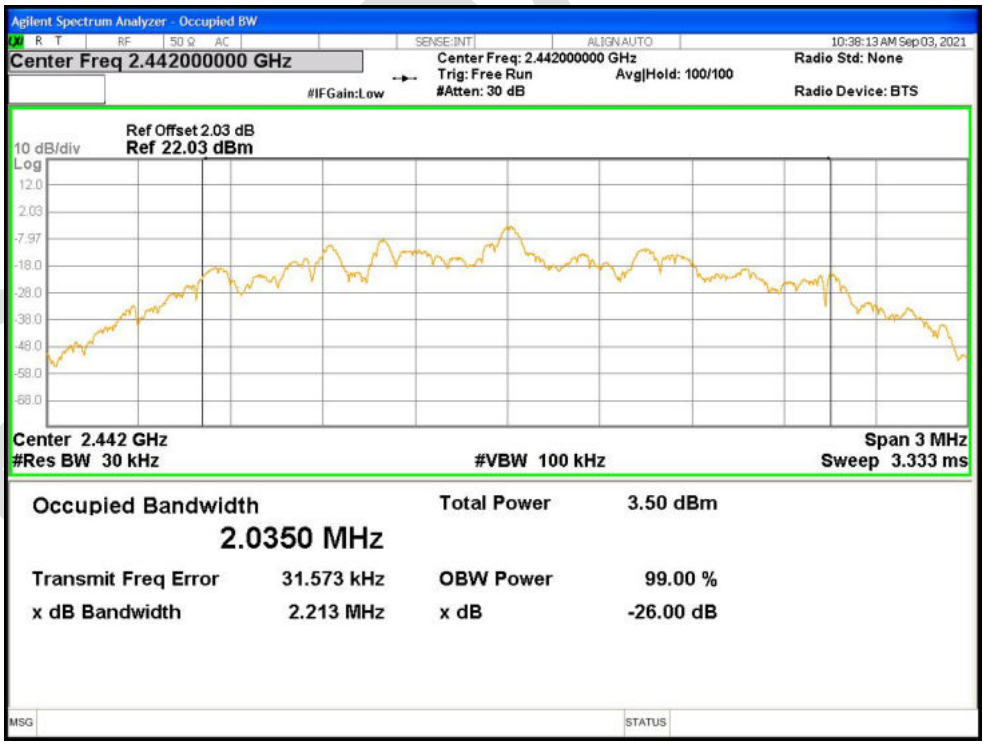
OBW NVNT BLE 1M 2480MHz Ant1



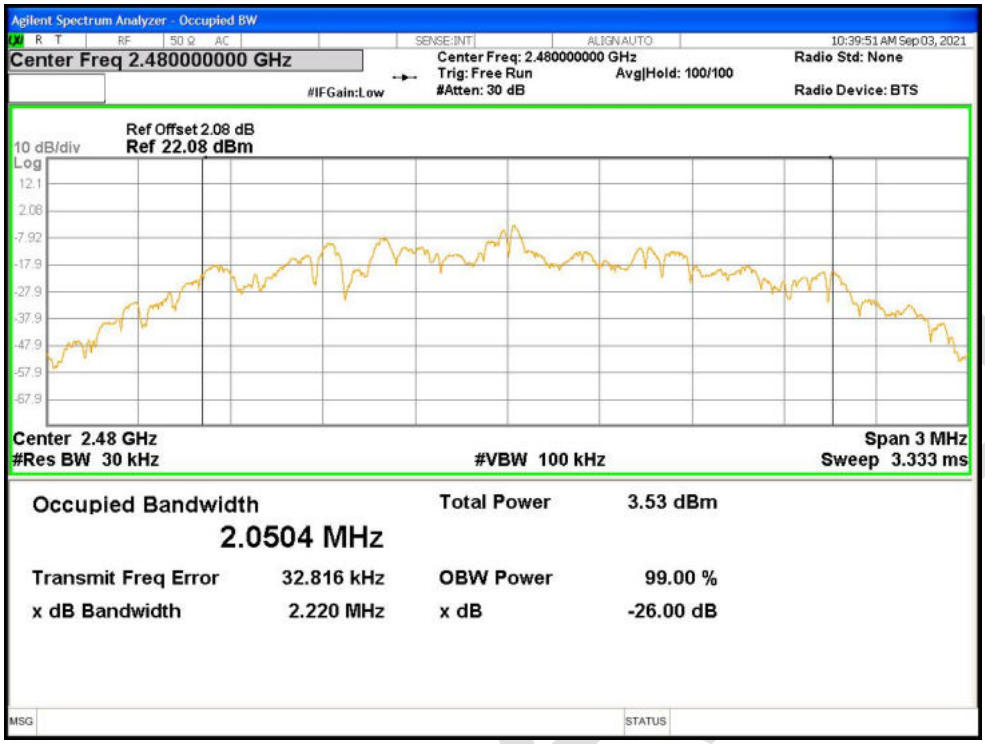
OBW NVNT BLE 2M 2402MHz Ant1



OBW NVNT BLE 2M 2442MHz Ant1



OBW NVNT BLE 2M 2480MHz Ant1



Maximum Power Spectral Density Level

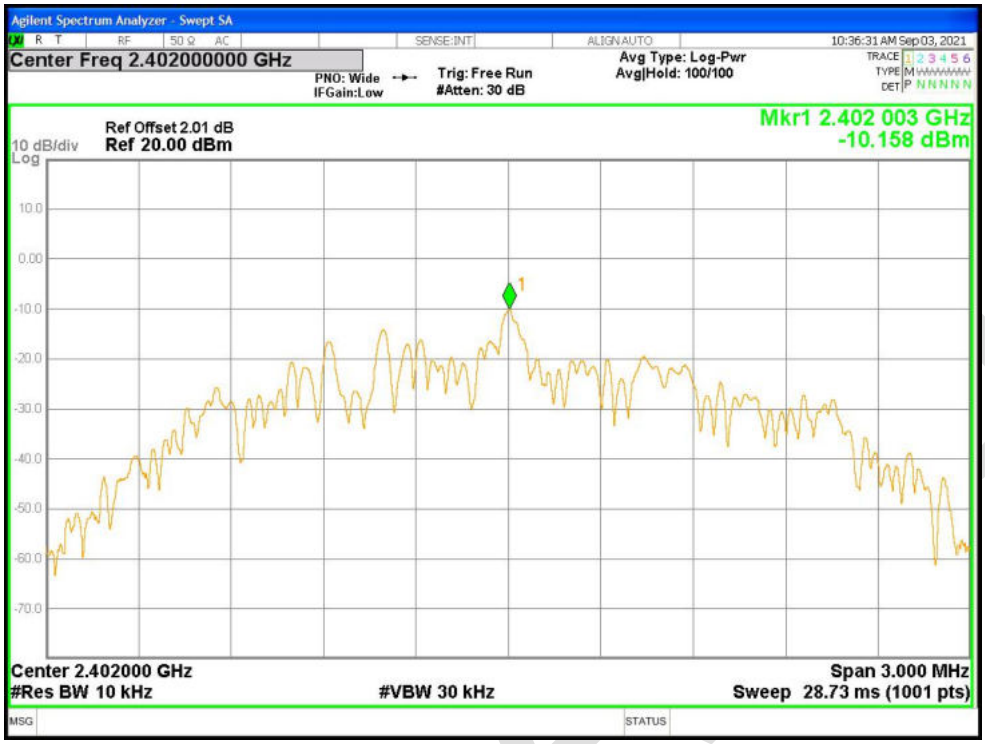
Condition	Mode	Frequency (MHz)	Antenna	Max PSD (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	-9.549	8	Pass
NVNT	BLE 1M	2442	Ant1	-10.202	8	Pass
NVNT	BLE 1M	2480	Ant1	-9.553	8	Pass
NVNT	BLE 2M	2402	Ant1	-10.158	8	Pass
NVNT	BLE 2M	2442	Ant1	-10.953	8	Pass
NVNT	BLE 2M	2480	Ant1	-10.23	8	Pass

PSD NVNT BLE 1M 2402MHz Ant1

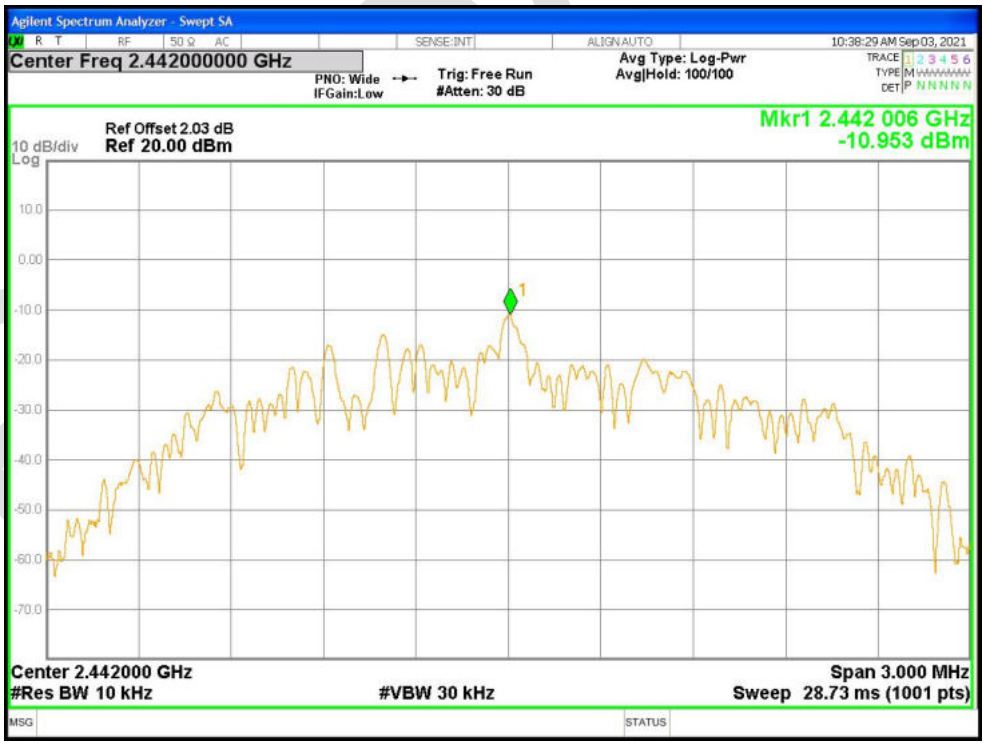
PSD NVNT BLE 1M 2442MHz Ant1

PSD NVNT BLE 1M 2480MHz Ant1

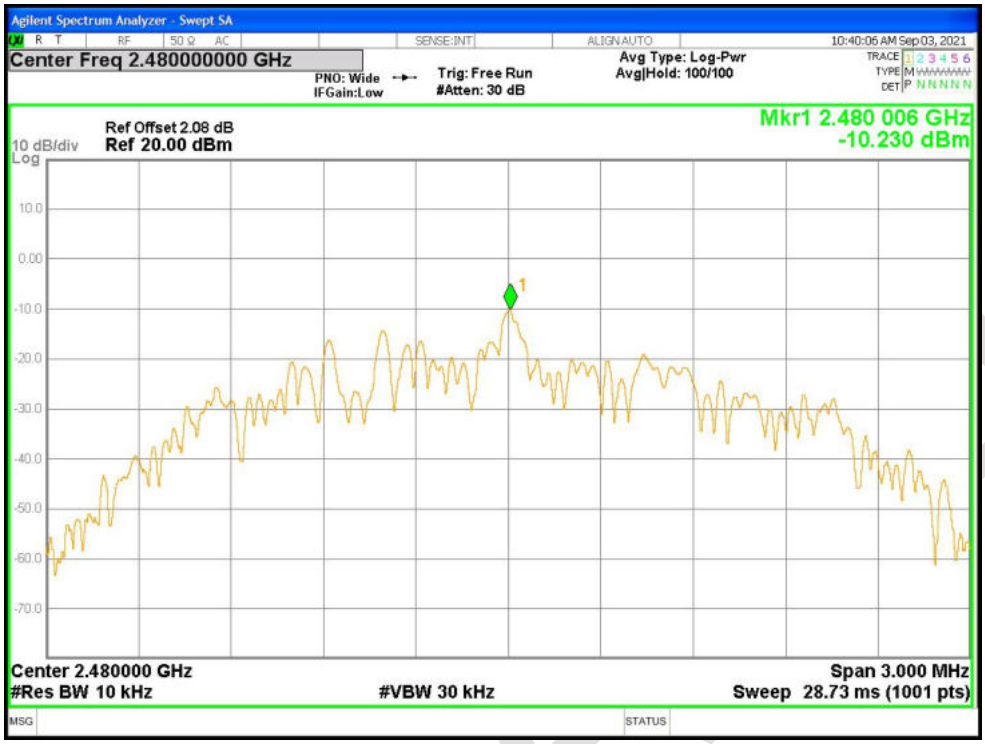
PSD NVNT BLE 2M 2402MHz Ant1



PSD NVNT BLE 2M 2442MHz Ant1



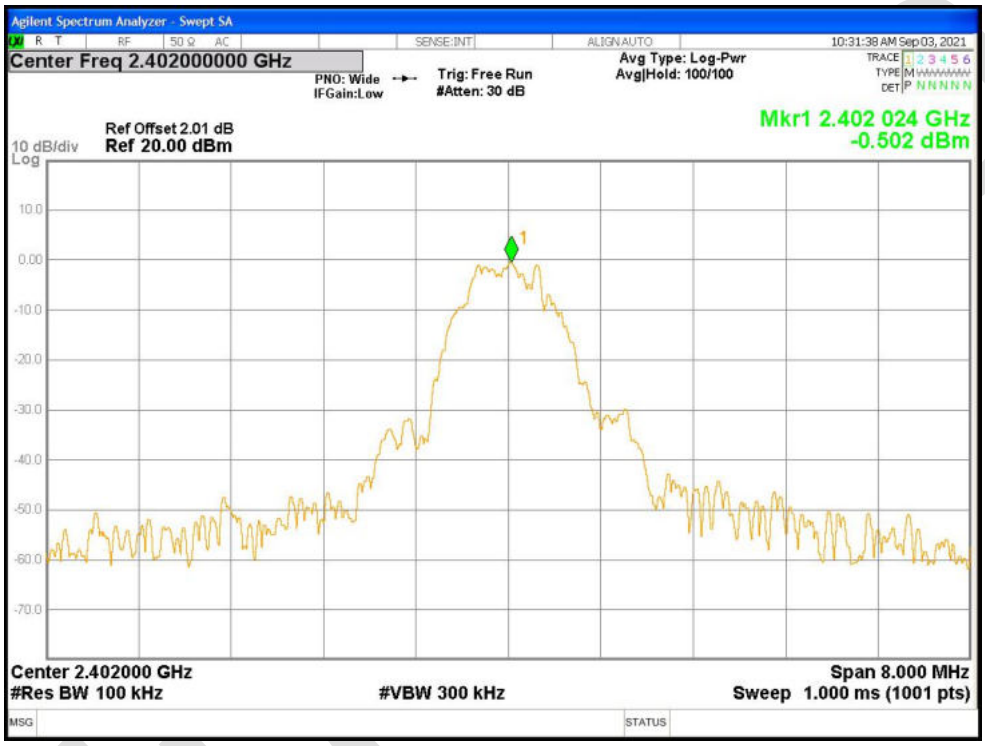
PSD NVNT BLE 2M 2480MHz Ant1



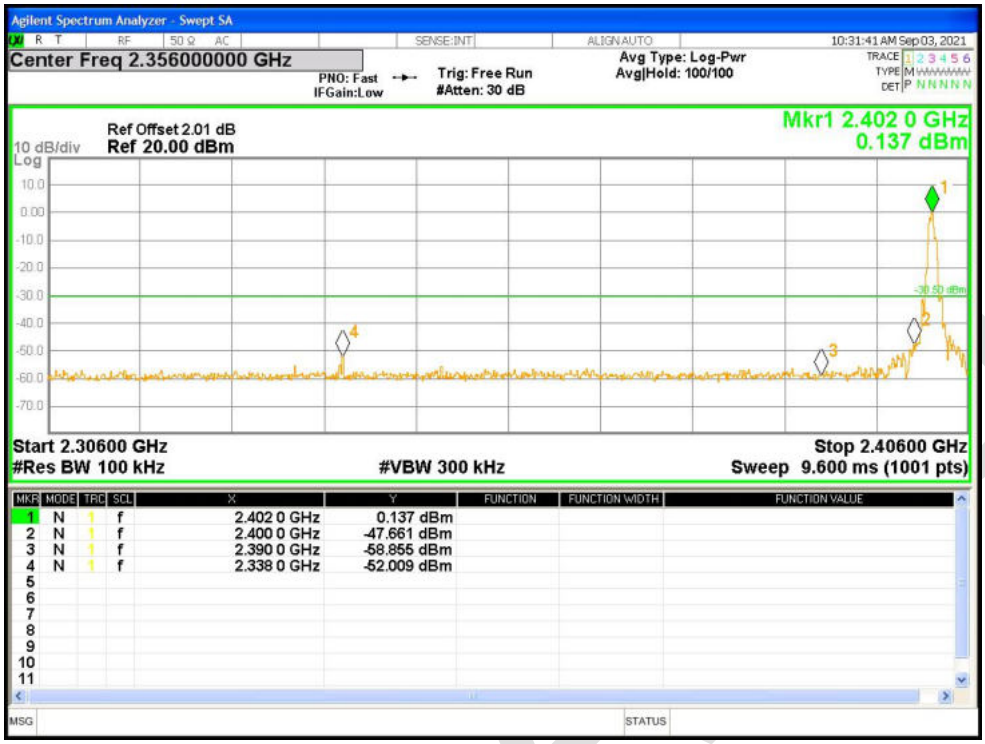
Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-51.5	-30	Pass
NVNT	BLE 1M	2480	Ant1	-53.31	-30	Pass
NVNT	BLE 2M	2402	Ant1	-54.75	-30	Pass
NVNT	BLE 2M	2480	Ant1	-49.8	-30	Pass

Band Edge NVNT BLE 1M 2402MHz Ant1 Ref

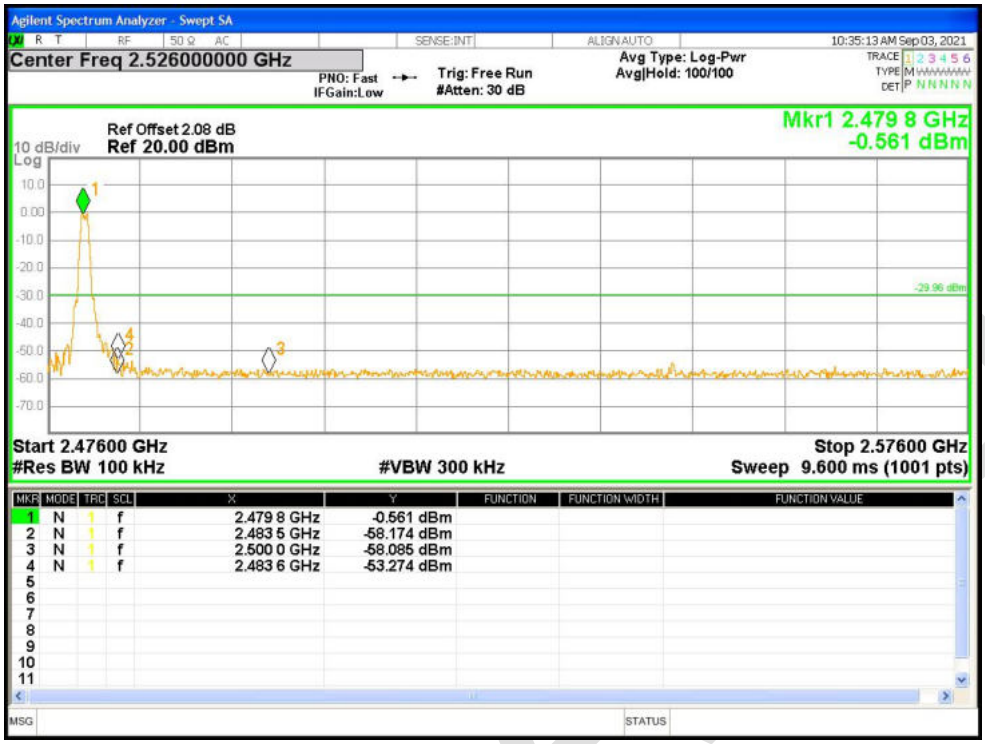


Band Edge NVNT BLE 1M 2402MHz Ant1 Emission



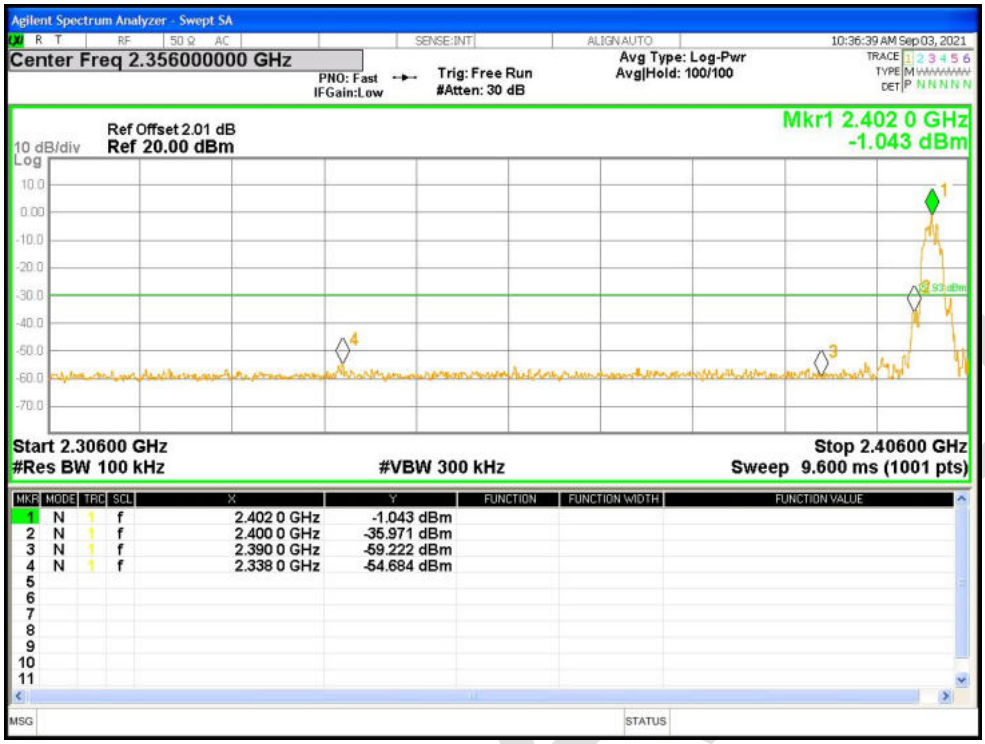
Band Edge NVNT BLE 1M 2480MHz Ant1 Ref

Band Edge NVNT BLE 1M 2480MHz Ant1 Emission



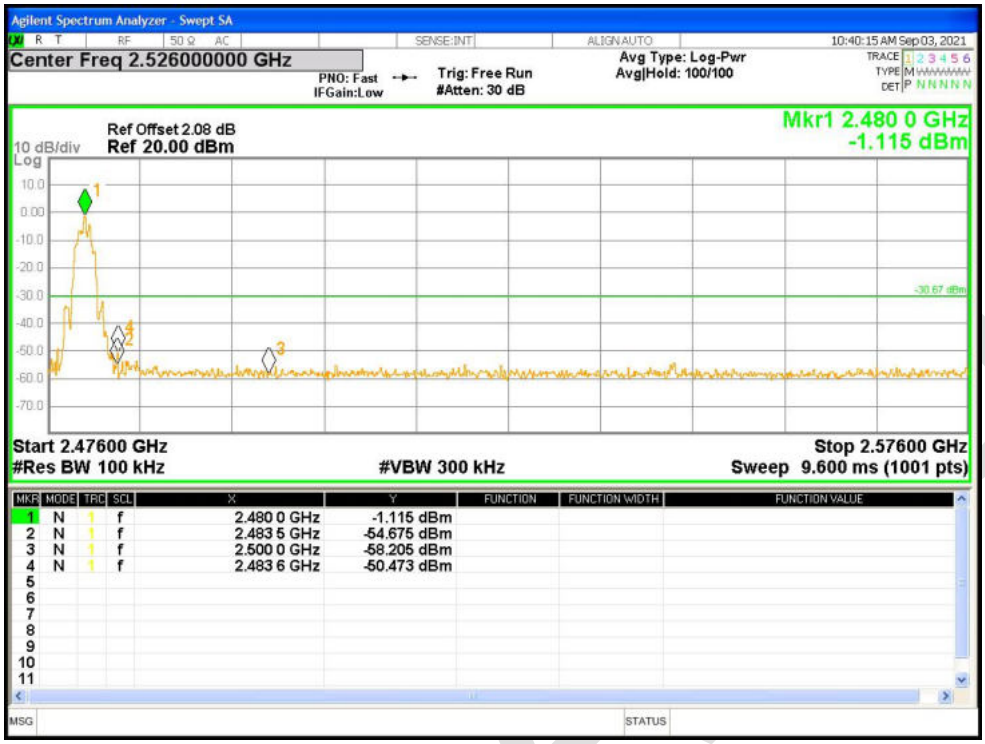
Band Edge NVNT BLE 2M 2402MHz Ant1 Ref

Band Edge NVNT BLE 2M 2402MHz Ant1 Emission



Band Edge NVNT BLE 2M 2480MHz Ant1 Ref

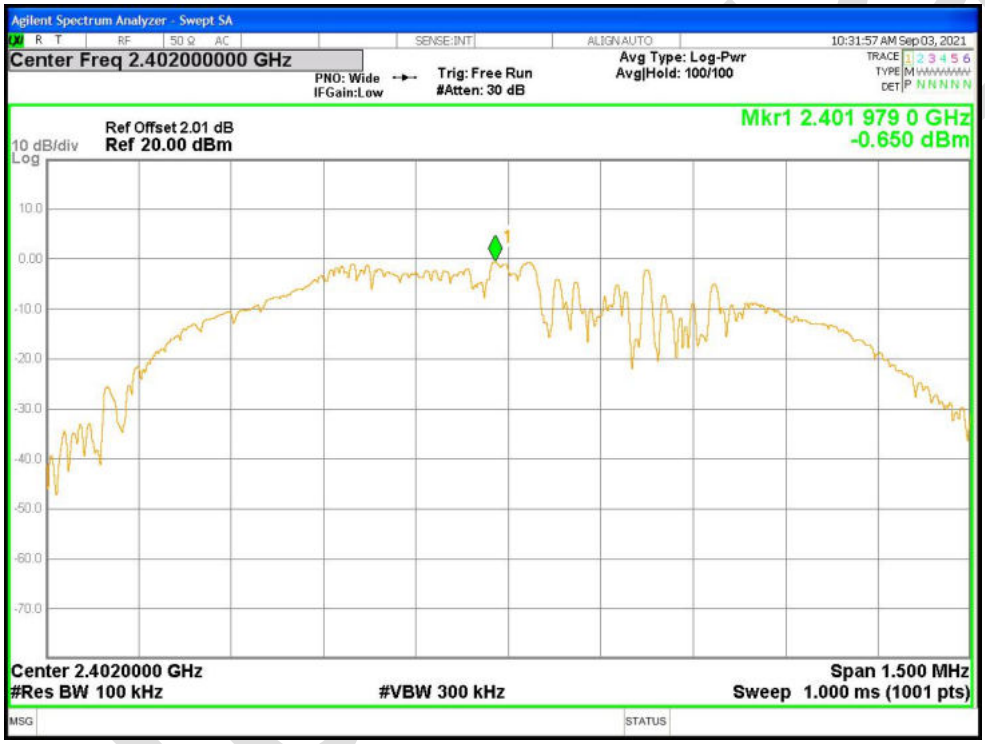
Band Edge NVNT BLE 2M 2480MHz Ant1 Emission



Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-44.5	-30	Pass
NVNT	BLE 1M	2442	Ant1	-44.66	-30	Pass
NVNT	BLE 1M	2480	Ant1	-45.21	-30	Pass
NVNT	BLE 2M	2402	Ant1	-45.6	-30	Pass
NVNT	BLE 2M	2442	Ant1	-44.5	-30	Pass
NVNT	BLE 2M	2480	Ant1	-44.27	-30	Pass

Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Ref



Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Emission

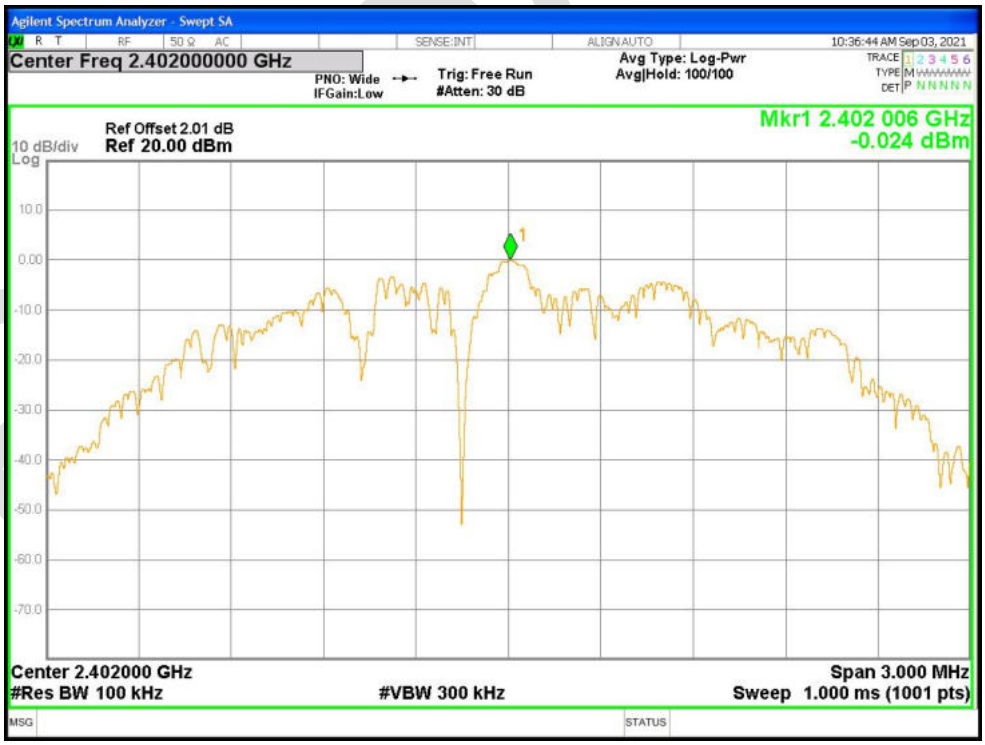
Tx. Spurious NVNT BLE 1M 2442MHz Ant1 Ref

Tx. Spurious NVNT BLE 1M 2442MHz Ant1 Emission

Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Ref

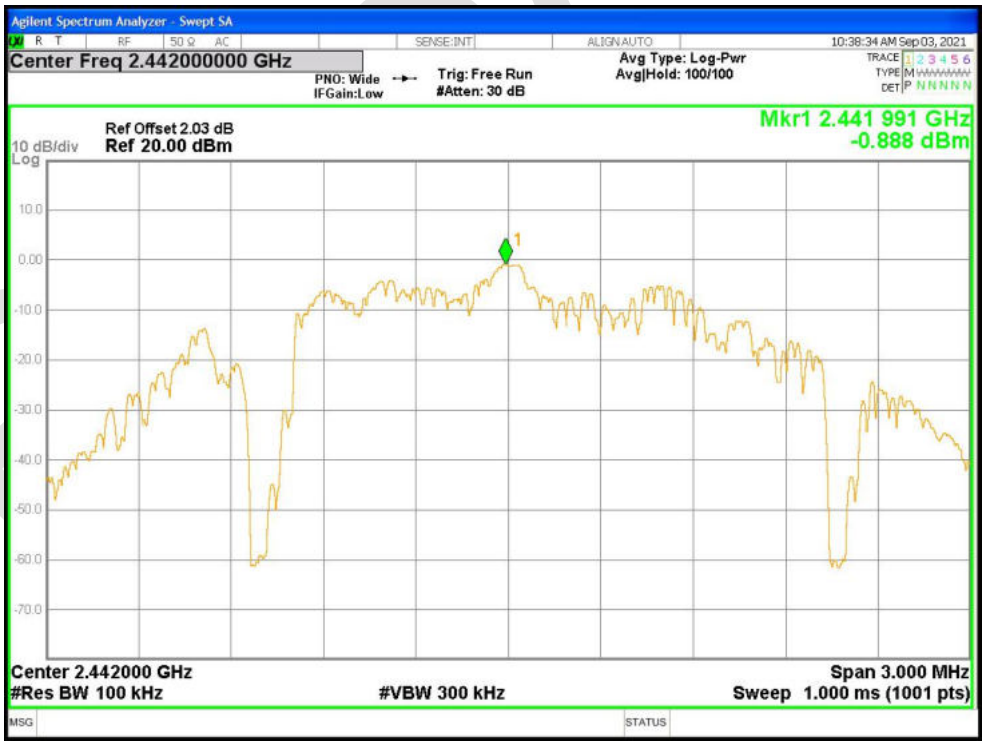
Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Emission

Tx. Spurious NVNT BLE 2M 2402MHz Ant1 Ref



Tx. Spurious NVNT BLE 2M 2402MHz Ant1 Emission

Tx. Spurious NVNT BLE 2M 2442MHz Ant1 Ref



Tx. Spurious NVNT BLE 2M 2442MHz Ant1 Emission

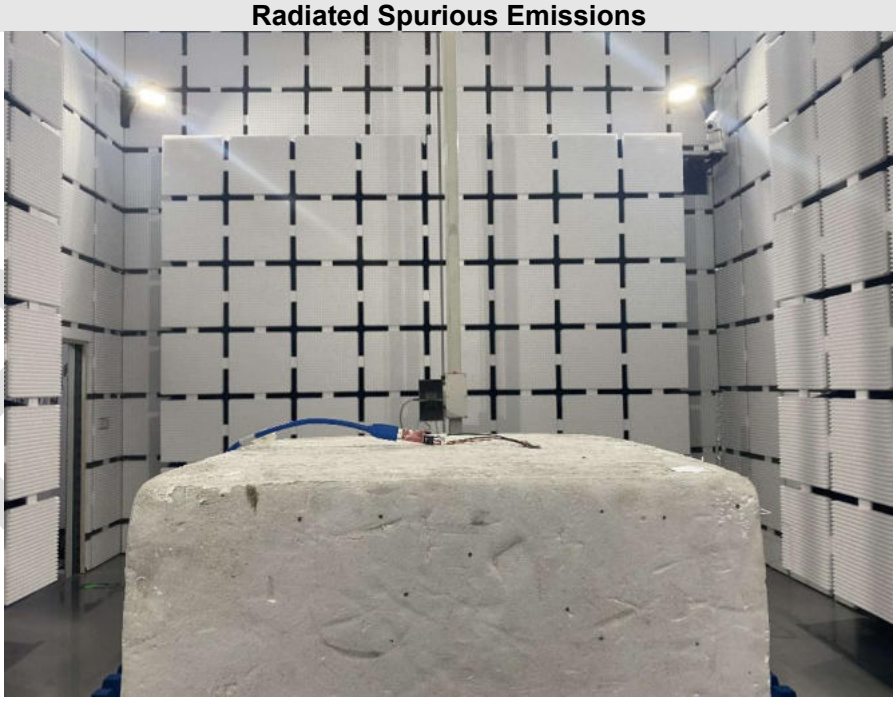
Tx. Spurious NVNT BLE 2M 2480MHz Ant1 Ref

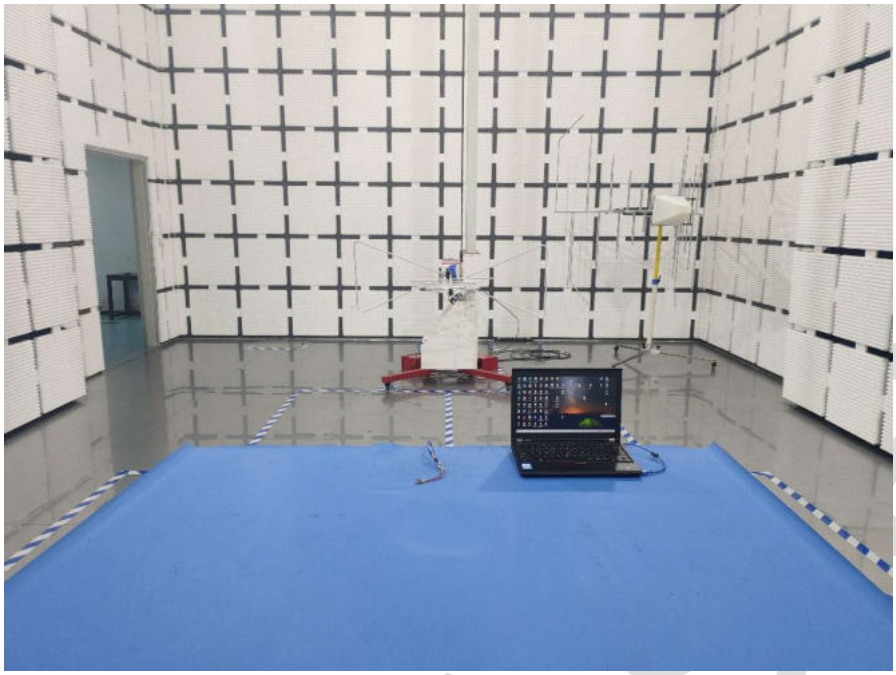
Tx. Spurious NVNT BLE 2M 2480MHz Ant1 Emission

APPENDIX A: PHOTOGRAPHS OF TEST SETUP

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

Radiated Spurious Emissions





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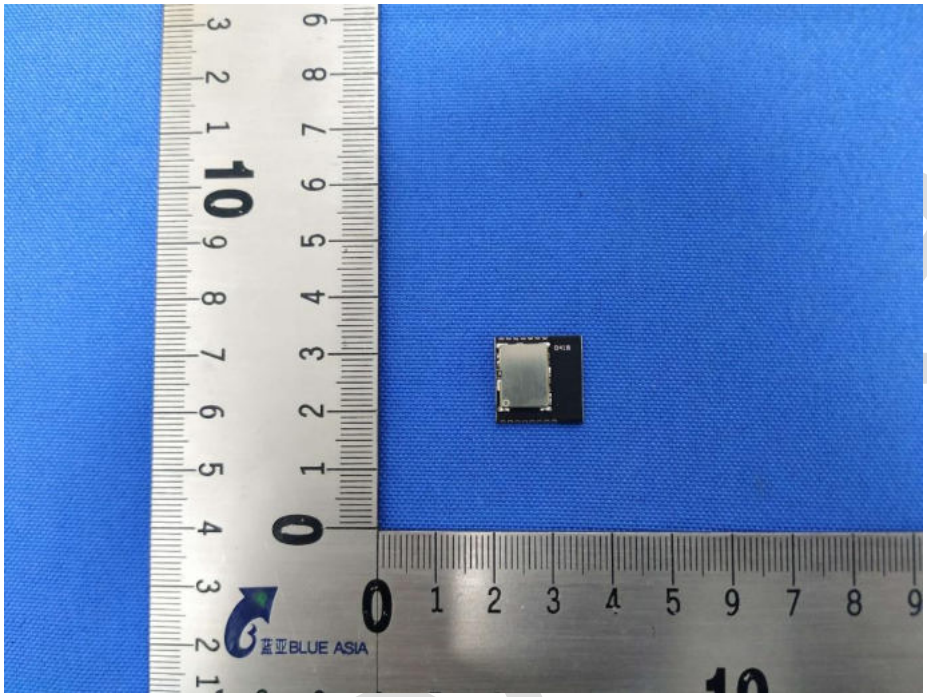
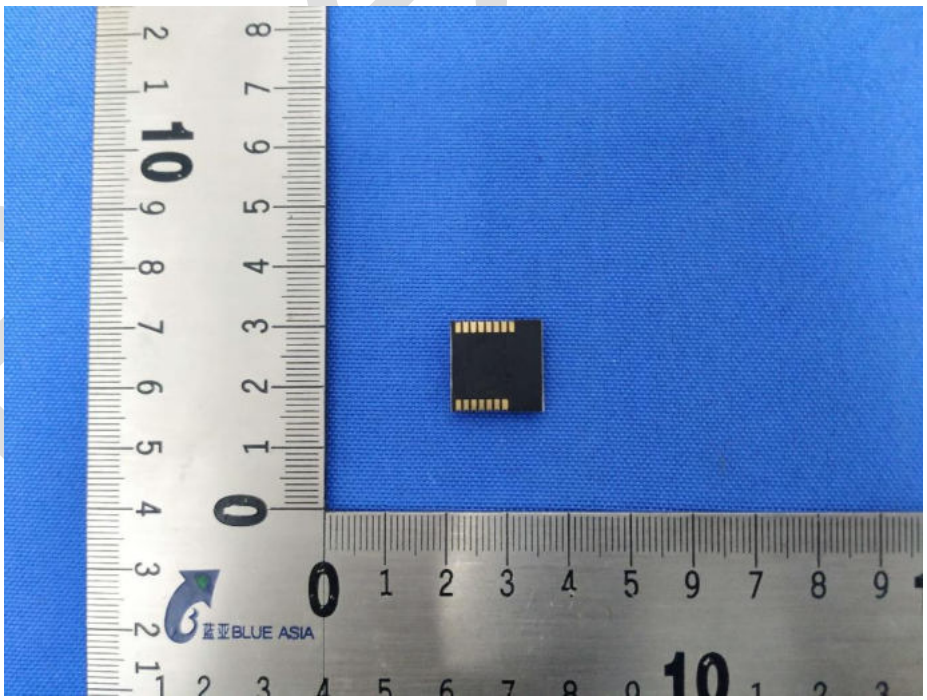
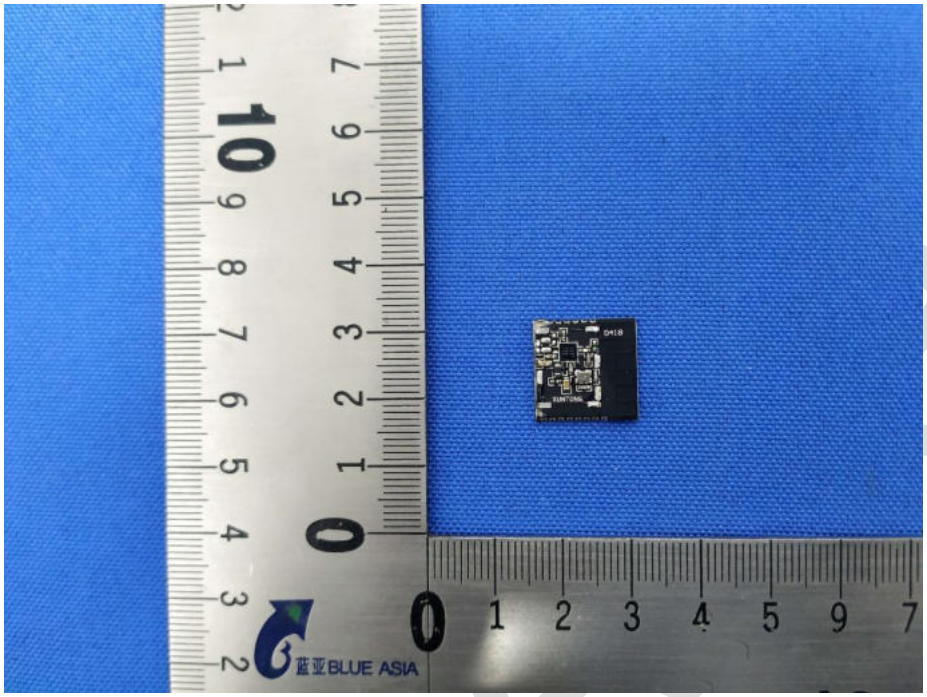
APPENDIX B: PHOTOGRAPHS OF EUT







----END OF REPORT----

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