TEST REPORT

Product Name	:	McWong Wireless Control Module
Brand Mark	:	McWong, TruBlu
Model No.	:	WCM-02
FCC ID	:	ZZOWCM-02
Report Number	:	BLA-EMC-202205-A4401
Date of Sample Receipt	:	2022/5/18
Date of Test	:	2022/5/18 to 2022/7/8
Date of Issue	:	2022/7/8
Test Standard	:	47 CFR Part 15, Subpart C 15.247
Test Result	:	Pass

Prepared for:

MW McWong Internatioanl Inc

1921 Arena Blvd, Sacramento, CA 95834, United States

Prepared by:

BlueAsia of Technical Services(Shenzhen) Co.,Ltd.

Building C, No. 107, Shihuan Road, Shiyan Sub-District, Baoan District, Shenzhen, Guangdong Province, China

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Compiled by: Review by:

Approved by: Date: 2022/7/8

REPORT REVISE RECORD

Version No.	Date	Description
00	2022/7/8	Original

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1 TEST SUMMARY

Test item	Test Requirement	Test Method	Class/Severity	Result
Conducted Band Edges Measurement	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.8 & Section 11.13.3.2	47 CFR Part 15, Subpart C 15.247(d)	Pass
Radiated Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.4,6.5,6.6	47 CFR Part 15, Subpart C 15.209 & 15.247(d)	Pass
Radiated Emissions which fall in the restricted bands	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.10.5	47 CFR Part 15, Subpart C 15.209 & 15.247(d)	Pass
Conducted Spurious Emissions	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.6 & Section 11.11	47 CFR Part 15, Subpart C 15.247(d)	Pass
Power Spectrum Density	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.10.2	47 CFR Part 15, Subpart C 15.247(e)	Pass
Conducted Peak Output Power	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 7.8.5	47 CFR Part 15, Subpart C 15.247(b)(3)	Pass
Minimum 6dB Bandwidth	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 11.8.1	47 CFR Part 15, Subpart C 15.247a(2)	Pass
Antenna Requirement	47 CFR Part 15, Subpart C 15.247	N/A	47 CFR Part 15, Subpart C 15.203 & 15.247(c)	Pass
Conducted Emissions at AC Power Line (150kHz-30MHz)	47 CFR Part 15, Subpart C 15.247	ANSI C63.10 (2013) Section 6.2	47 CFR Part 15, Subpart C 15.207	Pass

2 GENERAL INFORMATION

Applicant	MW McWong Internatioanl Inc
Address	1921 Arena Blvd, Sacramento, CA 95834, United States
Manufacturer	MW McWong Internatioanl Inc
Address	1921 Arena Blvd, Sacramento, CA 95834, United States
Factory	McWong Lighting (Shanghai)Co.,Ltd.
Address	No.159 Fulian Yi Roud Shanghai Robot Industry Park, Gucun, Baoshan District Shanghai 201906 China
Product Name	McWong Wireless Control Module
Test Model No.	WCM-02

3 GENERAL DESCRIPTION OF E.U.T.

Hardware Version	N/A
Software Version	N/A

Operation Frequency:	2402MHz-2480MHz
Modulation Type:	GFSK
Rate data	1M(BLE1M), 2M(BLE2M)
Channel Spacing:	2MHz
Data Rate	1Mbps;2Mbps
Number of Channels:	40
Antenna Type:	External Antenna
Antenna Gain:	1.5dBi(Provided by the applicant)

4 TEST ENVIRONMENT

Environment	Temperature	Voltage
Normal	25℃	DC3.3V

5 TEST MODE

TEST MODE	TEST MODE DESCRIPTION
Transmitting mode	Keep the EUT in continuously transmitting mode with modulation.

6 MEASUREMENT UNCERTAINTY

Parameter	Expanded Uncertainty (Confidence of 95%)
Radiated Emission(9kHz-30MHz)	±4.34dB
Radiated Emission(30Mz-1000MHz)	±4.24dB
Radiated Emission(1GHz-18GHz)	±4.68dB
AC Power Line Conducted Emission(150kHz-30MHz)	±3.45dB

Parameter	Expanded Uncertainty (Confidence of 95%)
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±1.5 dB
Power Spectral Density, conducted	±3.0 dB
Unwanted Emissions, conducted	±3.0 dB
Temperature	±3 °C
Supply voltages	±3 %
Time	±5 %
Unwanted Radiated Emission (30MHz ~ 1000MHz)	±4.35 dB
Unwanted Radiated Emission (1GHz ~ 18GHz)	±4.44 dB

7 DESCRIPTION OF SUPPORT UNIT

Device Type	Manufacturer	Model Name	Serial No.	Remark
PC	HASEE	N/A	N/A	N/A

8 LABORATORY LOCATION

All tests were performed at:
BlueAsia of Technical Services(Shenzhen) Co., Ltd.
Building C, No. 107, Shihuan Road, Shiyan Sub-District, Baoan District, Shenzhen, Guangdong Province, China
Telephone: TEL: +86-755-28682673 FAX: +86-755-28682673
No tests were sub-contracted.

9 TEST INSTRUMENTS LIST

Test Equipment Of Conducted Band Edges Measurement					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal.Date**	**Cal.Due**
Spectrum	R&S	FSP40	100817	24/9/2021	23/9/2022
Spectrum	Agilent	N9020A	MY49100060	24/9/2021	23/9/2022
Signal Generator	Agilent	N5182A	MY49060650	24/9/2021	23/9/2022
Signal Generator	Agilent	E8257D	MY44320250	24/9/2021	23/9/2022

Test Equipment Of Radiated Spurious Emissions					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal.Date**	**Cal.Due**
Chamber	SKET	966	N/A	10/11/2020	9/11/2023
Spectrum	R&S	FSP40	100817	24/9/2021	23/9/2022
Receiver	R&S	ESR7	101199	24/9/2021	23/9/2022
broadband Antenna	Schwarzbeck	VULB9168	00836 P:00227	26/9/2020	25/9/2022
Horn Antenna	Schwarzbeck	9120D	01892 P:00331	26/9/2020	25/9/2022
Amplifier	SKET	LNPA-0118-45	N/A	24/9/2021	23/9/2022
EMI software	EZ	EZ-EMC	N/A	N/A	N/A
Loop antenna	SCHNARZBECK	FMZB1519B	00102	26/9/2020	25/9/2022

Test Equipment Of Radiated Emissions which fall in the restricted bands					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal.Date**	**Cal.Due**
Chamber	SKET	966	N/A	10/11/2020	9/11/2023
Spectrum	R&S	FSP40	100817	24/9/2021	23/9/2022

Receiver	R&S	ESR7	101199	24/9/2021	23/9/2022
broadband Antenna	Schwarzbeck	VULB9168	00836 P:00227	26/9/2020	25/9/2022
Horn Antenna	Schwarzbeck	9120D	01892 P:00331	26/9/2020	25/9/2022
Amplifier	SKET	LNPA-0118-45	N/A	24/9/2021	23/9/2022
EMI software	EZ	EZ-EMC	N/A	N/A	N/A
Loop antenna	SCHNARZBECK	FMZB1519B	00102	26/9/2020	25/9/2022

Test Equipment Of Conducted Spurious Emissions

Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Spectrum	R&S	FSP40	100817	24/9/2021	23/9/2022
Spectrum	Agilent	N9020A	MY49100060	24/9/2021	23/9/2022
Signal Generator	Agilent	N5182A	MY49060650	24/9/2021	23/9/2022
Signal Generator	Agilent	E8257D	MY44320250	24/9/2021	23/9/2022

Test Equipment Of Power Spectrum Density

Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Spectrum	R&S	FSP40	100817	24/9/2021	23/9/2022
Spectrum	Agilent	N9020A	MY49100060	24/9/2021	23/9/2022
Signal Generator	Agilent	N5182A	MY49060650	24/9/2021	23/9/2022
Signal Generator	Agilent	E8257D	MY44320250	24/9/2021	23/9/2022

Test Equipment Of Conducted Peak Output Power

Equipment	Manufacturer	Model	S/N	Cal.Date	Cal.Due
Spectrum	R&S	FSP40	100817	24/9/2021	23/9/2022

Spectrum	Agilent	N9020A	MY49100060	24/9/2021	23/9/2022
Signal Generator	Agilent	N5182A	MY49060650	24/9/2021	23/9/2022
Signal Generator	Agilent	E8257D	MY44320250	24/9/2021	23/9/2022

Test Equipment Of Minimum 6dB Bandwidth					
Equipment	**Manufacturer**	**Model**	**S/N**	**Cal.Date**	**Cal.Due**
Spectrum	R&S	FSP40	100817	24/9/2021	23/9/2022
Spectrum	Agilent	N9020A	MY49100060	24/9/2021	23/9/2022
Signal Generator	Agilent	N5182A	MY49060650	24/9/2021	23/9/2022
Signal Generator	Agilent	E8257D	MY44320250	24/9/2021	23/9/2022

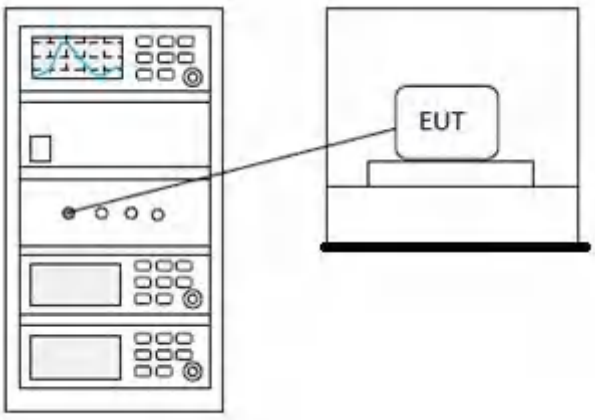
10 CONDUCTED BAND EDGES MEASUREMENT

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 7.8.8 & Section 11.13.3.2
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Jozu
Temperature	25℃
Humidity	60%

10.1 LIMITS

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)).

10.2 BLOCK DIAGRAM OF TEST SETUP



10.3 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

11 RADIATED SPURIOUS EMISSIONS

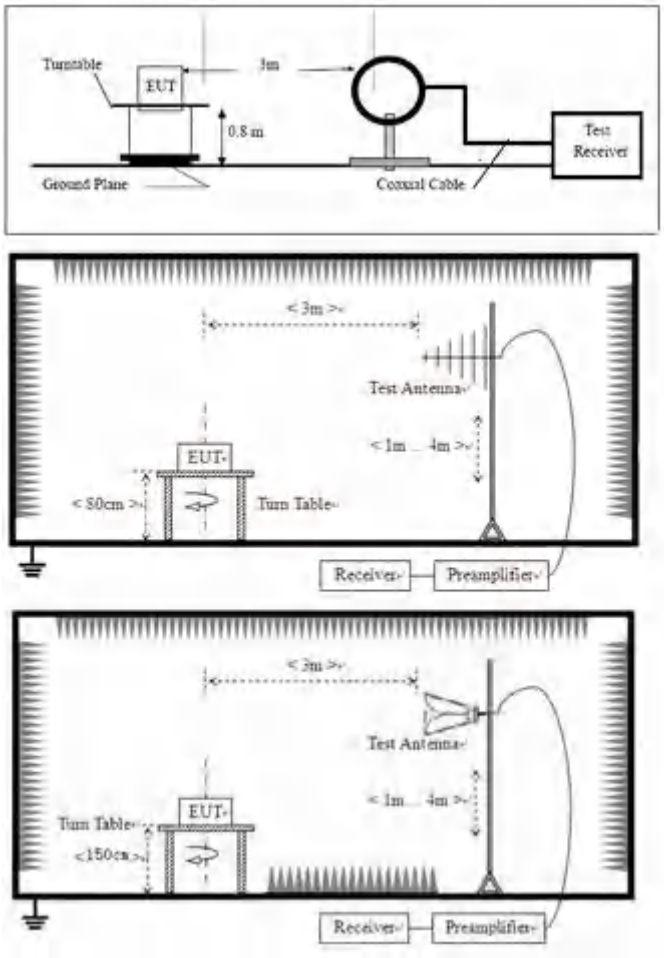
Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 6.4,6.5,6.6
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Jozu
Temperature	25℃
Humidity	60%

11.1 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.

11.2 BLOCK DIAGRAM OF TEST SETUP



11.3 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.

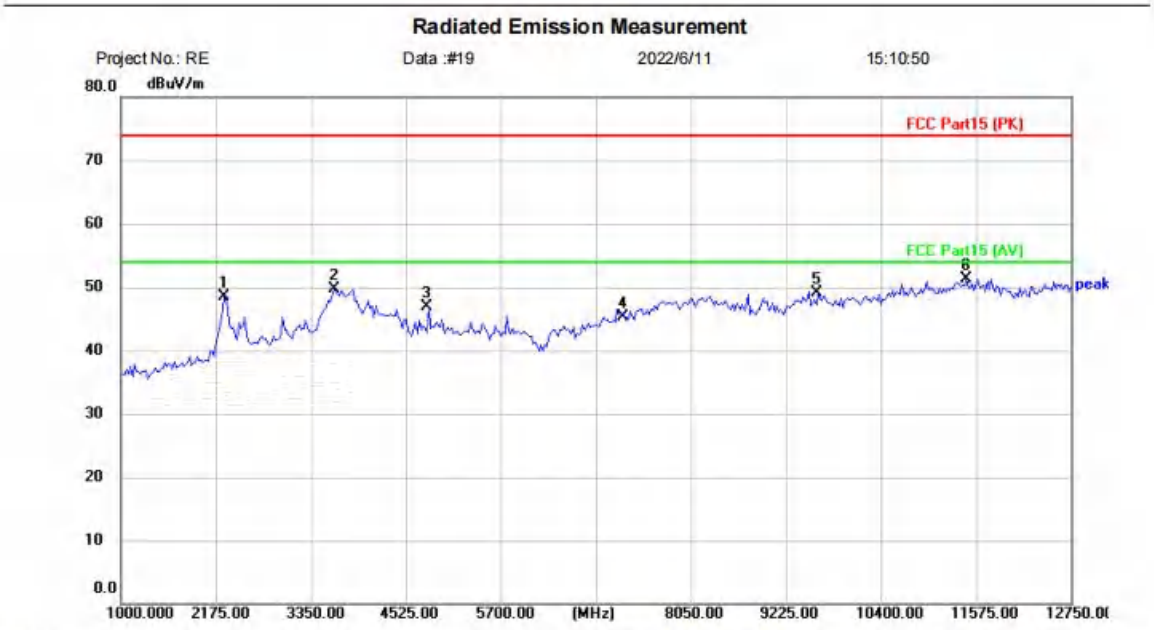
h. Test the EUT in the lowest channel, the middle channel, the Highest channel.
i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, and found the X axis positioning which it is the worst case.
j. Repeat above procedures until all frequencies measured was complete.

Remark:
1) For emission below 1GHz, through pre-scan found the worst case is the lowest channel. Only the worst case is recorded in the report.
2) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
Final Test Level =Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor
3) Scan from 9kHz to 25GHz, the disturbance above 12.75GHz and 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. fundamental frequency is blocked by filter, and only spurious emission is shown.
4) 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.

11.4 TEST DATA

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

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



Site
Limit: FCC Part15 (PK)
EUT: McWong Wireless Control Module
M/N: WCM-02
Mode: TX-L
Note:

Polarization: *Horizontal*
Power:

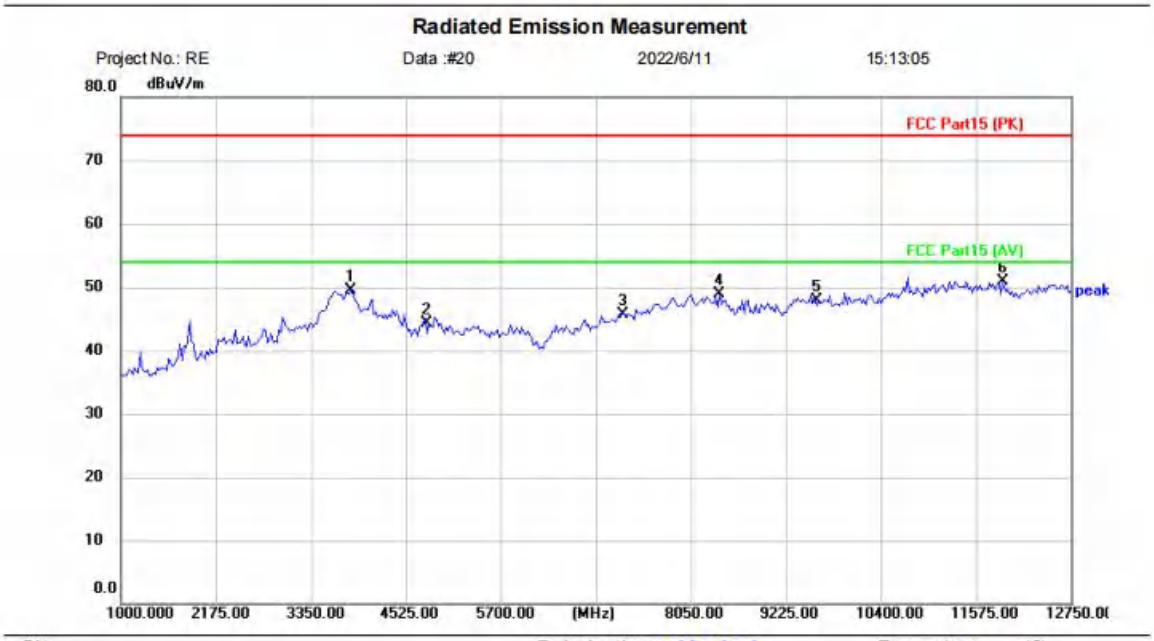
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		2269.000	51.37	-2.85	48.52	74.00	-25.48	peak	
2		3632.000	42.02	7.77	49.79	74.00	-24.21	peak	
3		4804.000	43.26	3.71	46.97	74.00	-27.03	peak	
4		7206.000	39.42	5.96	45.38	74.00	-28.62	peak	
5		9608.000	39.77	9.29	49.06	74.00	-24.94	peak	
6	*	11457.500	39.40	11.84	51.24	74.00	-22.76	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: McWong Wireless Control Module
M/N: WCM-02
Mode: TX-L
Note:

Polarization: *Vertical*
Power:

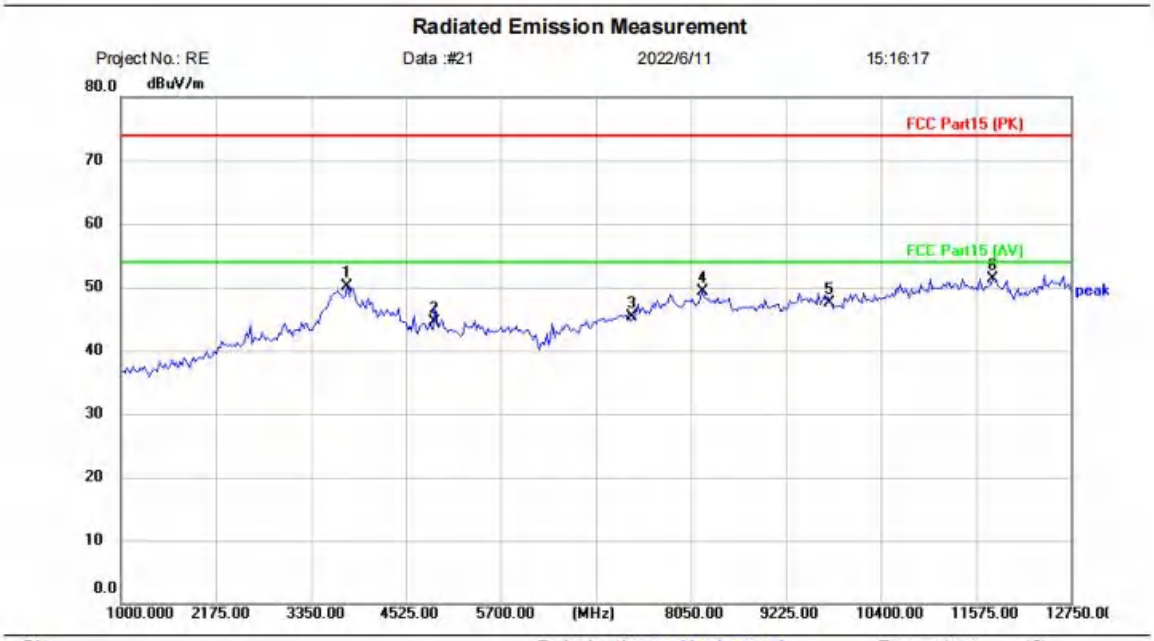
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		3843.500	42.33	7.12	49.45	74.00	-24.55	peak	
2		4804.000	40.64	3.71	44.35	74.00	-29.65	peak	
3		7206.000	39.67	5.96	45.63	74.00	-28.37	peak	
4		8402.500	40.71	8.28	48.99	74.00	-25.01	peak	
5		9608.000	38.71	9.29	48.00	74.00	-26.00	peak	
6	*	11904.000	39.57	11.42	50.99	74.00	-23.01	peak	

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

Test Result: Pass

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



Site
Limit: FCC Part15 (PK)
EUT: McWong Wireless Control Module
M/N: WCM-02
Mode: TX-M
Note:

Polarization: *Horizontal*
Power:

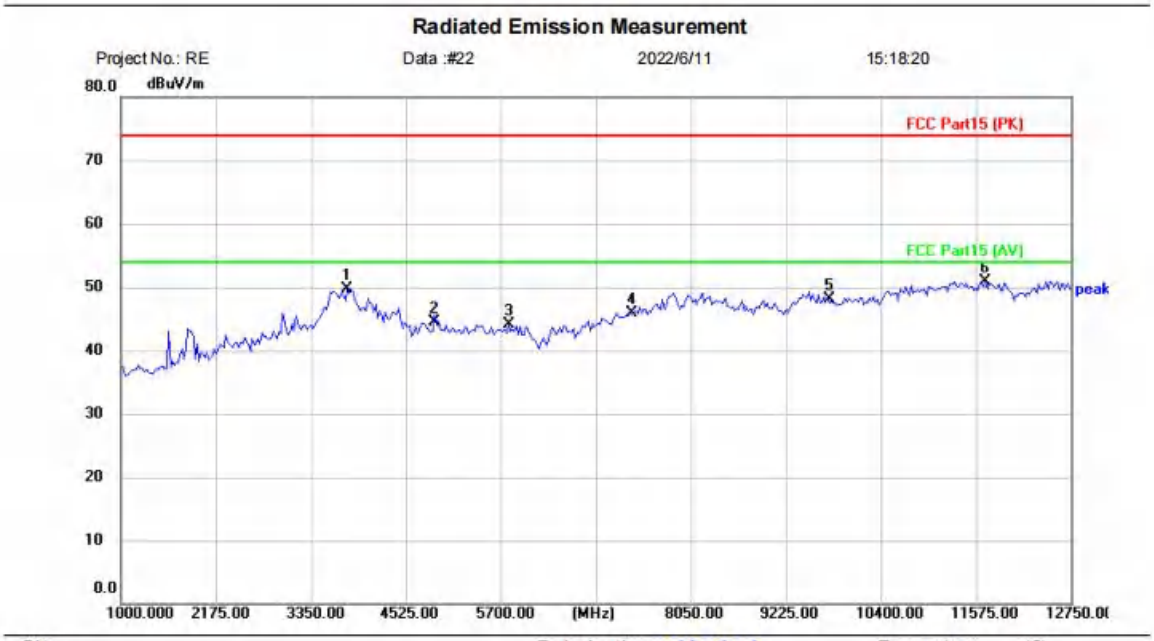
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		3796.500	42.55	7.65	50.20	74.00	-23.80	peak	
2		4884.000	41.21	3.34	44.55	74.00	-29.45	peak	
3		7326.000	38.78	6.44	45.22	74.00	-28.78	peak	
4		8191.000	41.13	8.20	49.33	74.00	-24.67	peak	
5		9768.000	37.90	9.63	47.53	74.00	-26.47	peak	
6	*	11786.500	39.69	11.57	51.26	74.00	-22.74	peak	

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

Test Result: Pass

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



Site
Limit: FCC Part15 (PK)
EUT: McWong Wireless Control Module
M/N: WCM-02
Mode: TX-M
Note:

Polarization: *Vertical*
Power:

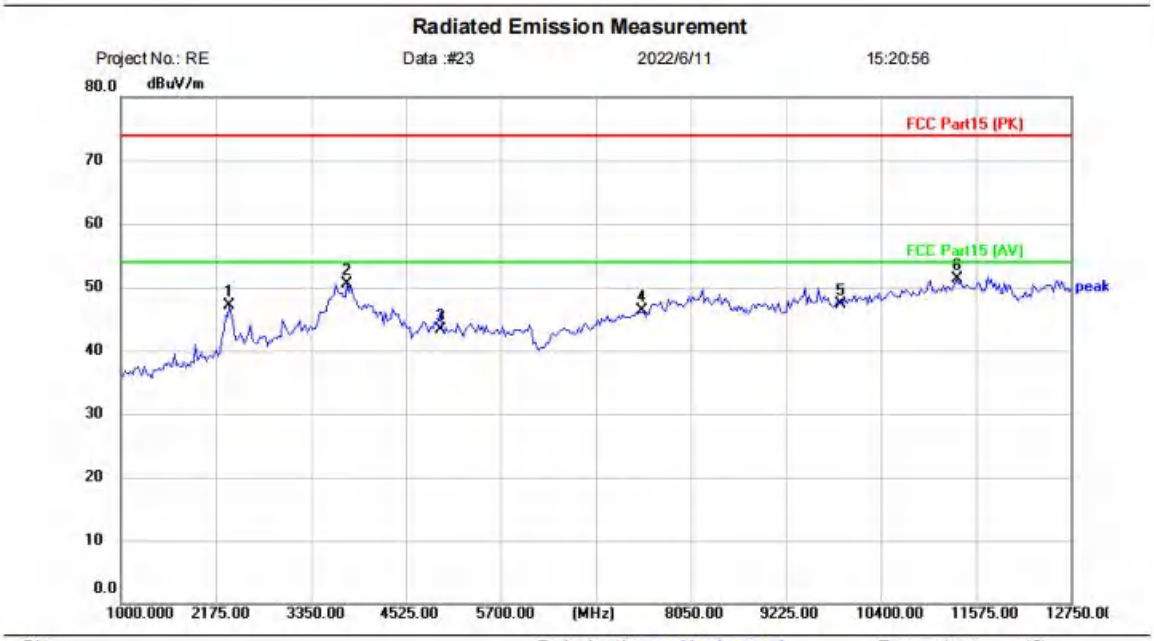
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		3796.500	42.10	7.65	49.75	74.00	-24.25	peak	
2		4884.000	41.10	3.34	44.44	74.00	-29.56	peak	
3		5794.000	40.30	3.88	44.18	74.00	-29.82	peak	
4		7326.000	39.44	6.44	45.88	74.00	-28.12	peak	
5		9768.000	38.56	9.63	48.19	74.00	-25.81	peak	
6	*	11692.500	39.04	11.82	50.86	74.00	-23.14	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: McWong Wireless Control Module
M/N: WCM-02
Mode: TX-H
Note:

Polarization: *Horizontal*
Power:

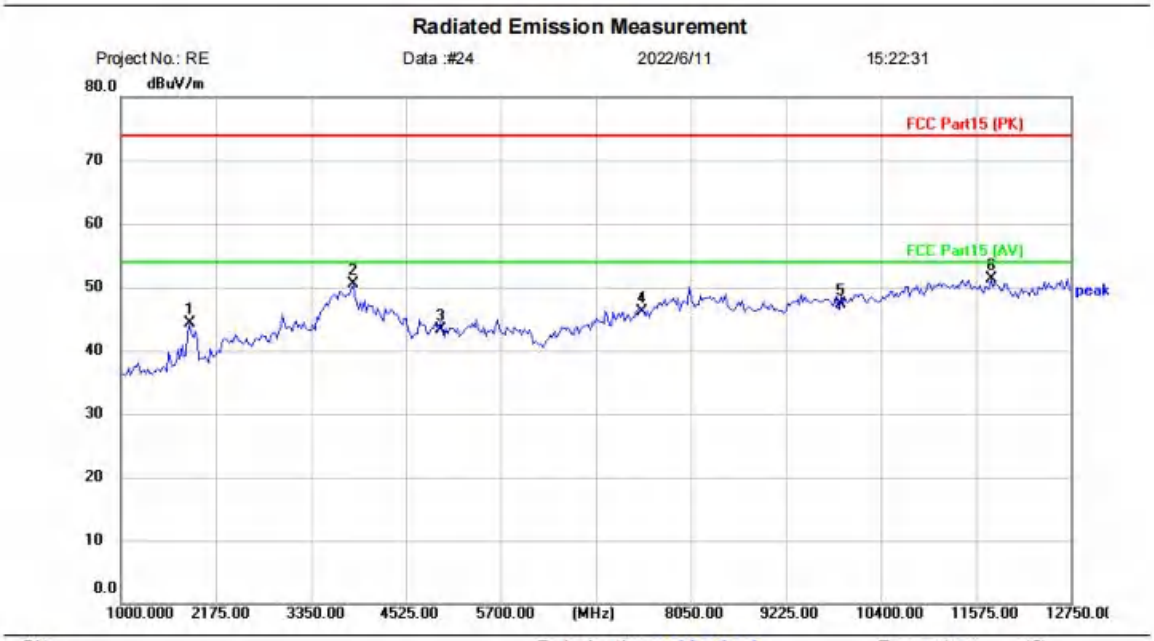
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		2339.500	48.44	-1.31	47.13	74.00	-26.87	peak	
2		3796.500	42.80	7.65	50.45	74.00	-23.55	peak	
3		4960.000	39.58	3.75	43.33	74.00	-30.67	peak	
4		7440.000	39.45	6.86	46.31	74.00	-27.69	peak	
5		9920.000	37.06	10.16	47.22	74.00	-26.78	peak	
6	*	11340.000	39.36	11.85	51.21	74.00	-22.79	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: McWong Wireless Control Module
M/N: WCM-02
Mode: TX-H
Note:

Polarization: *Vertical*
Power:

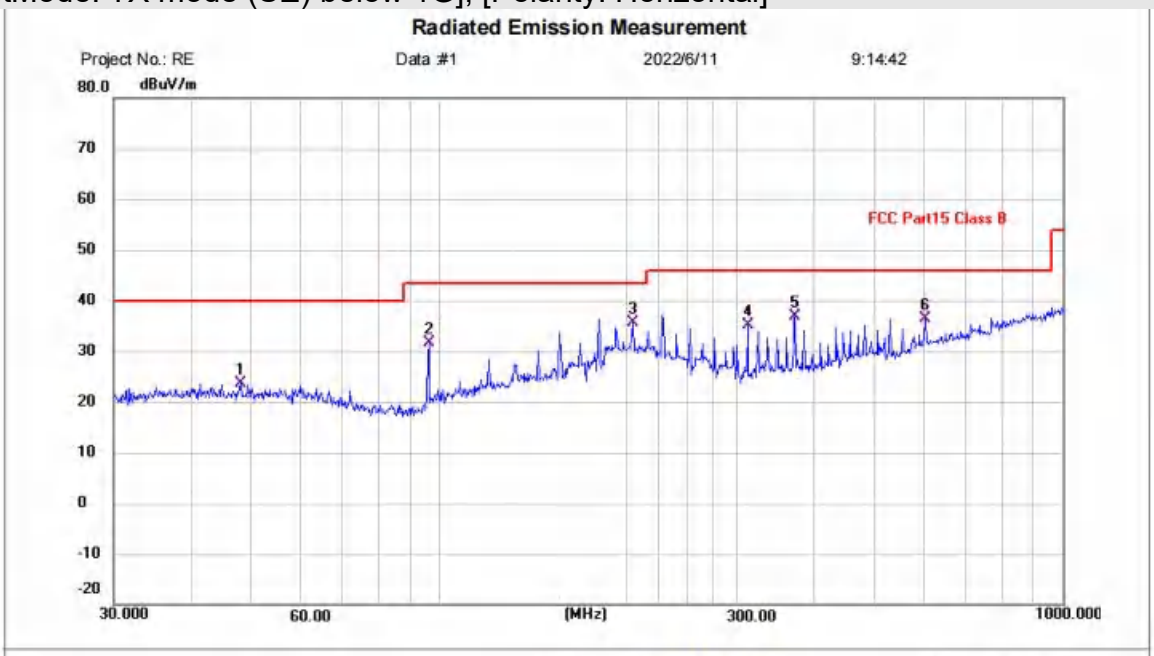
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		1846.000	49.47	-5.14	44.33	74.00	-29.67	peak	
2		3867.000	43.70	6.82	50.52	74.00	-23.48	peak	
3		4960.000	39.49	3.75	43.24	74.00	-30.76	peak	
4		7440.000	39.30	6.86	46.16	74.00	-27.84	peak	
5		9920.000	37.12	10.16	47.28	74.00	-26.72	peak	
6	*	11763.000	39.67	11.63	51.30	74.00	-22.70	peak	

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

Test Result: Pass

[TestMode: TX mode (SE) below 1G]; [Polarity: Horizontal]



Site
Limit: FCC Part15 Class B
EUT: McWong Wireless Control Module
M/N: WCM-02
Mode: BLE TX mode
Note:

Polarization: *Horizontal*
Power:
Distance: 3m

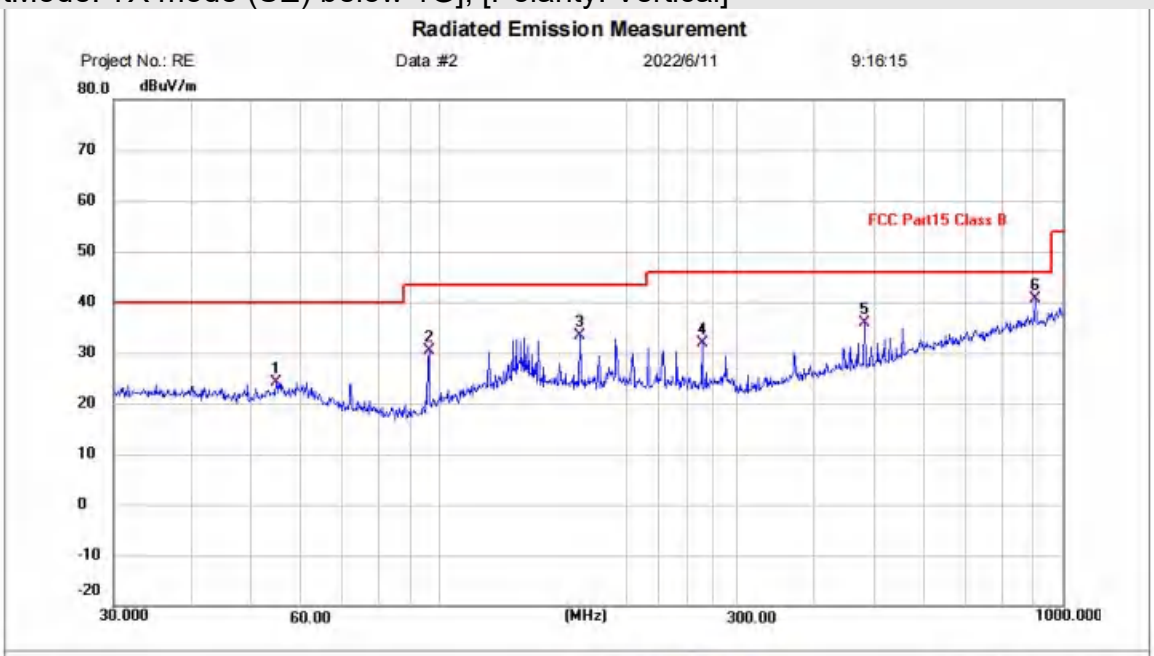
Temperature: (C)
Humidity: %RH

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	47.9940	-0.11	23.76	23.65	40.00	-16.35	QP	100	194	P	
2	96.0985	11.34	20.31	31.65	43.50	-11.85	QP	100	321	P	
3 *	204.2377	14.17	21.53	35.70	43.50	-7.80	QP	100	336	P	
4	312.1794	10.09	24.97	35.06	46.00	-10.94	QP	100	194	P	
5	372.0045	9.77	27.04	36.81	46.00	-9.19	QP	100	229	P	
6	601.4265	3.94	32.44	36.38	46.00	-9.62	QP	100	175	P	

*:Maximum data x:Over limit !:over margin

Test Result: Pass

[TestMode: TX mode (SE) below 1G]; [Polarity: Vertical]



Site
Limit: FCC Part15 Class B
EUT: McWong Wireless Control Module
M/N: WCM-02
Mode: BLE TX mode
Note:

Polarization: *Vertical*
Power:
Distance: 3m

Temperature: (C)
Humidity: %RH

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg.)	P/F	Remark
1	54.6429	0.50	23.61	24.11	40.00	-15.89	QP	100	26	P	
2	96.0986	10.00	20.31	30.31	43.50	-13.19	QP	100	217	P	
3	167.8243	10.26	23.17	33.43	43.50	-10.07	QP	100	127	P	
4	263.8190	8.41	23.51	31.92	46.00	-14.08	QP	100	217	P	
5	480.5276	6.76	29.09	35.85	46.00	-10.15	QP	100	242	P	
6 *	903.3094	3.74	36.80	40.54	46.00	-5.46	QP	100	289	P	

*:Maximum data x:Over limit l:over margin

Test Result: Pass

12 RADIATED EMISSIONS WHICH FALL IN THE RESTRICTED BANDS

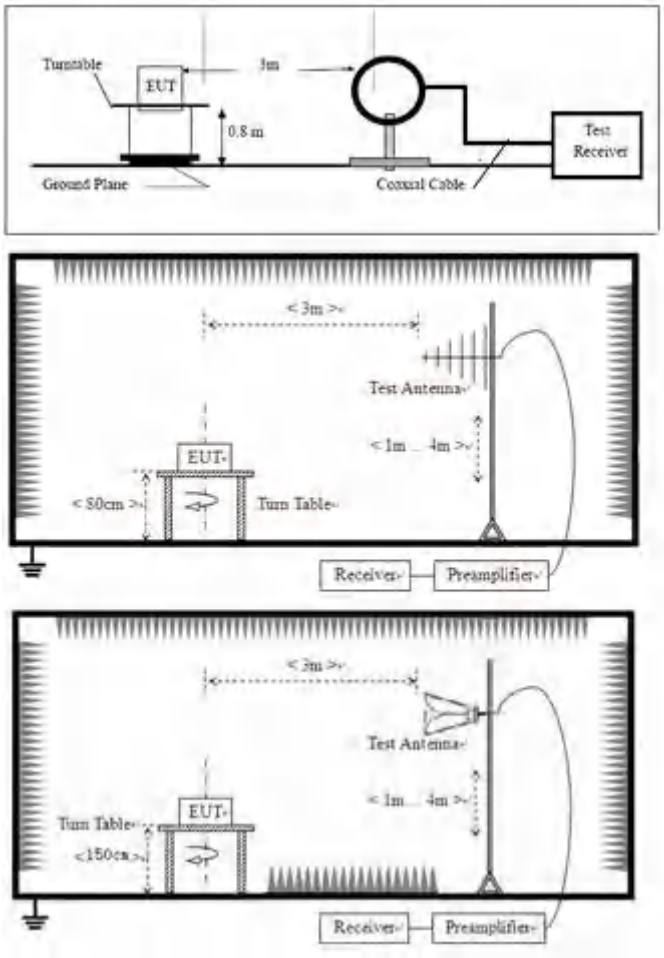
Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 6.10.5
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Jozu
Temperature	25℃
Humidity	60%

12.1 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.

12.2 BLOCK DIAGRAM OF TEST SETUP



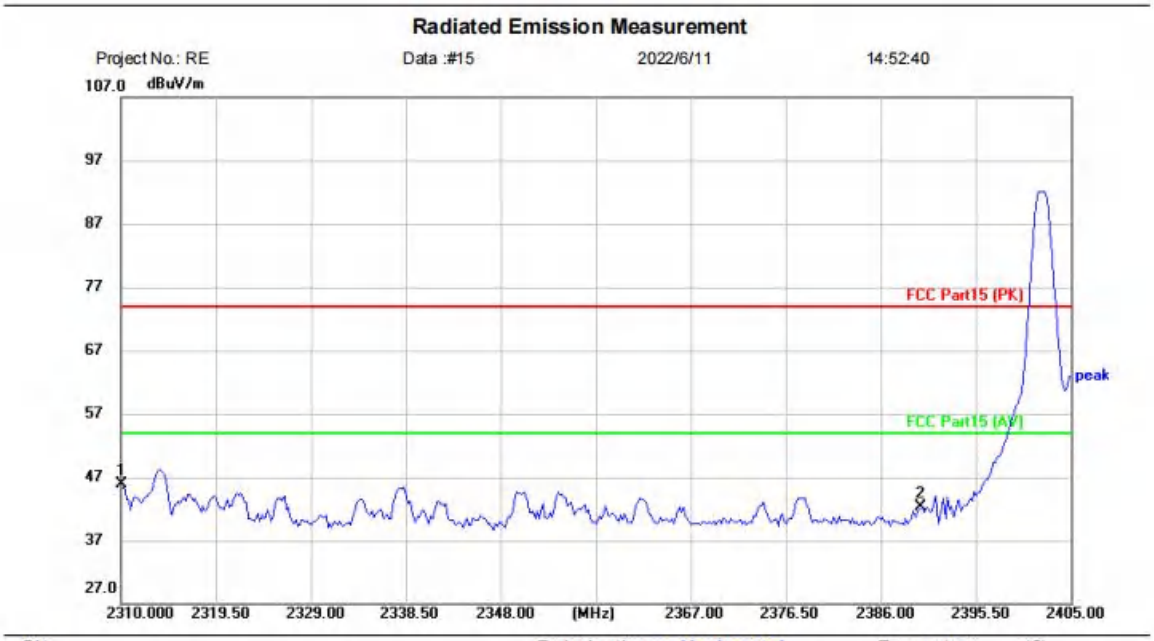
12.3 PROCEDURE

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.

12.4 TEST DATA

[TestMode: TX BLE1M low channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: McWong Wireless Control Module
M/N: WCM-02
Mode: TX-L
Note:

Polarization: *Horizontal*
Power:

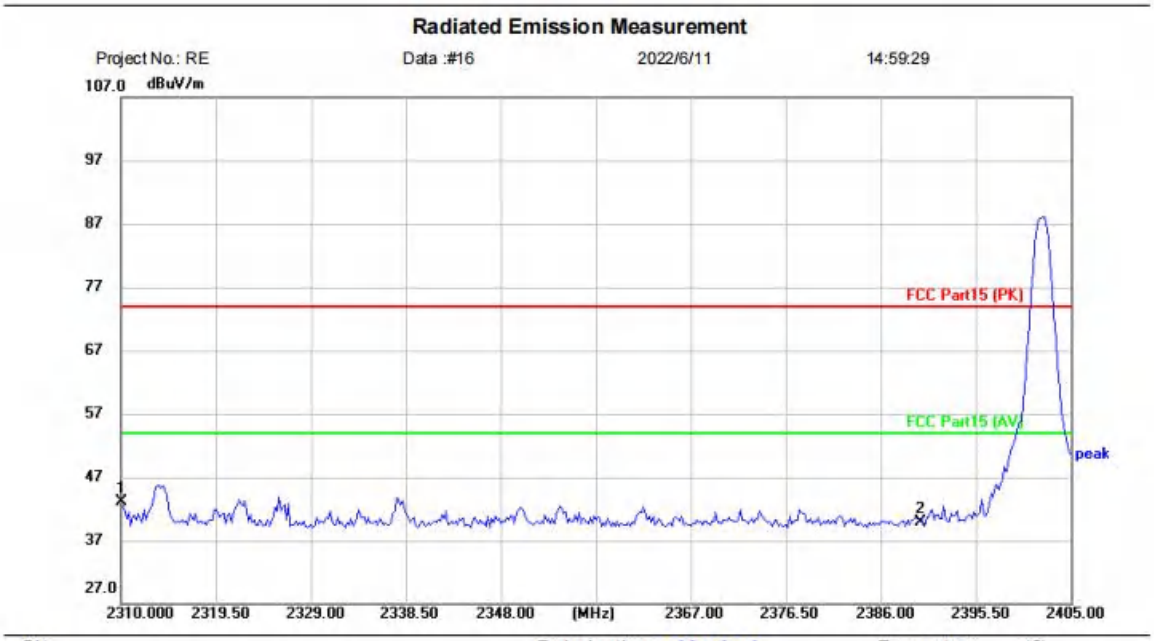
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2310.000	49.83	-3.93	45.90	74.00	-28.10	peak	
2		2390.000	45.93	-3.58	42.35	74.00	-31.65	peak	

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

Test Result: Pass

[TestMode: TX BLE1M low channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: McWong Wireless Control Module
M/N: WCM-02
Mode: TX-L
Note:

Polarization: *Vertical*
Power:

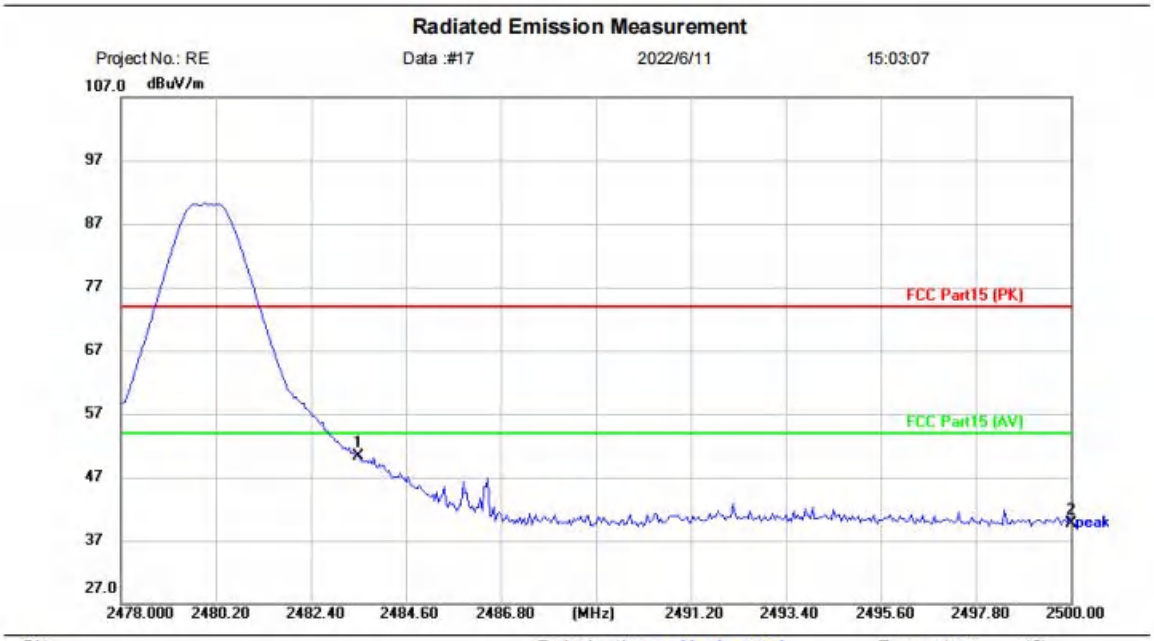
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2310.000	47.12	-3.93	43.19	74.00	-30.81	peak	
2		2390.000	43.49	-3.58	39.91	74.00	-34.09	peak	

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

Test Result: Pass

[TestMode: TX BLE1M high channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: McWong Wireless Control Module
M/N: WCM-02
Mode: TX-H
Note:

Polarization: *Horizontal*
Power:

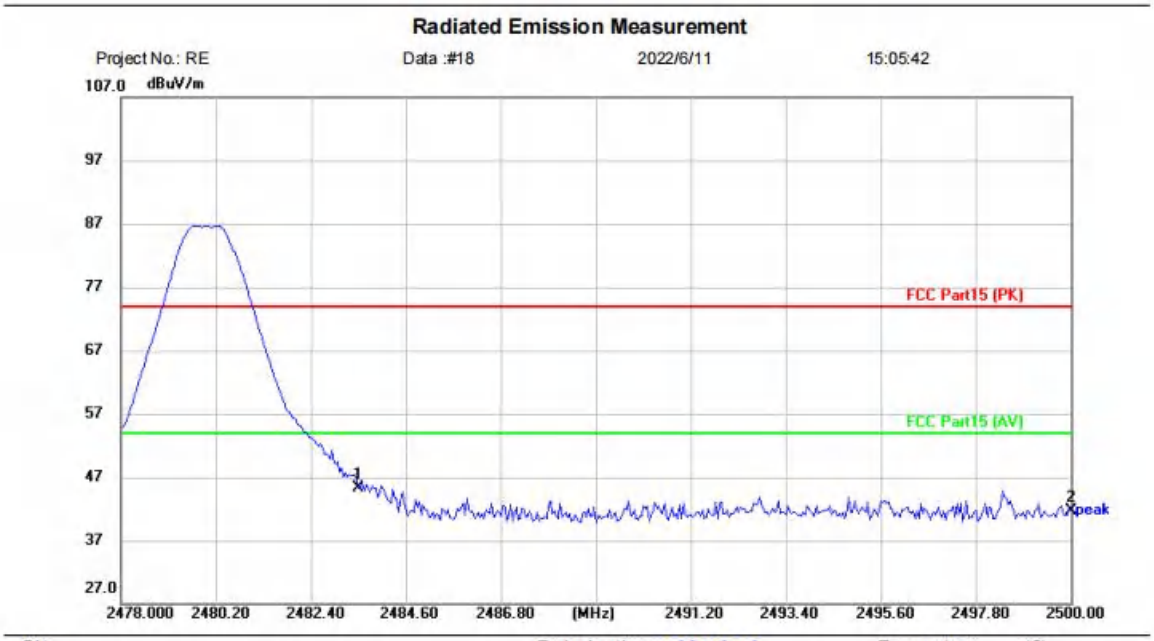
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2483.500	53.34	-3.14	50.20	74.00	-23.80	peak	
2		2500.000	42.68	-3.08	39.60	74.00	-34.40	peak	

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

Test Result: Pass

[TestMode: TX BLE1M high channel]; [Polarity: Vertical]



Site
Limit: FCC Part15 (PK)
EUT: McWong Wireless Control Module
M/N: WCM-02
Mode: TX-H
Note:

Polarization: *Vertical*
Power:

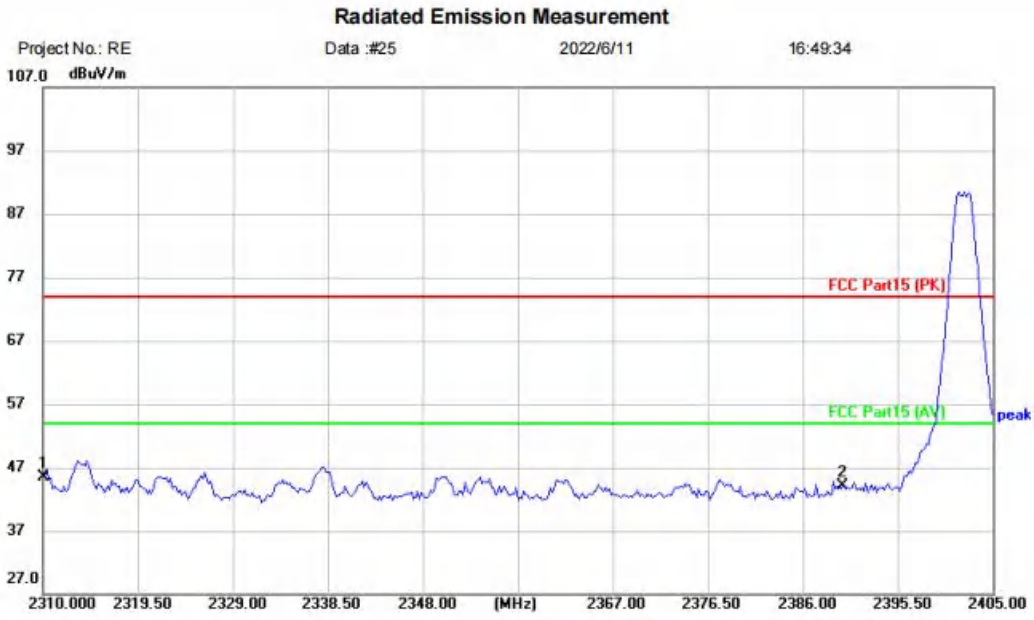
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2483.500	48.51	-3.14	45.37	74.00	-28.63	peak	
2		2500.000	44.84	-3.08	41.76	74.00	-32.24	peak	

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

Test Result: Pass

[TestMode: TX BLE2M low channel]; [Polarity: Horizontal]



Site
Limit: FCC Part15 (PK)
EUT: McWong Wireless Control Module
M/N: WCM-02
Mode: BLE 2M-TX-L
Note:

Polarization: ***Horizontal***
Power:

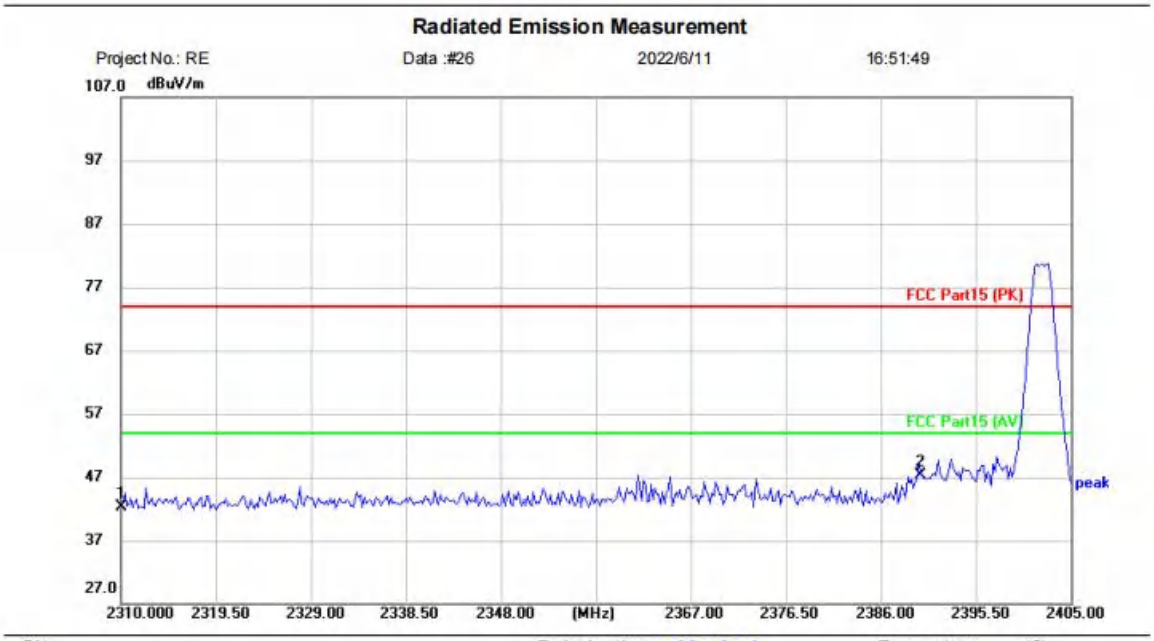
Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2310.000	49.38	-3.93	45.45	74.00	-28.55	peak	
2		2390.000	47.63	-3.58	44.05	74.00	-29.95	peak	

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

Test Result: Pass

[TestMode: TX BLE2M low channel]; [Polarity: Vertical]



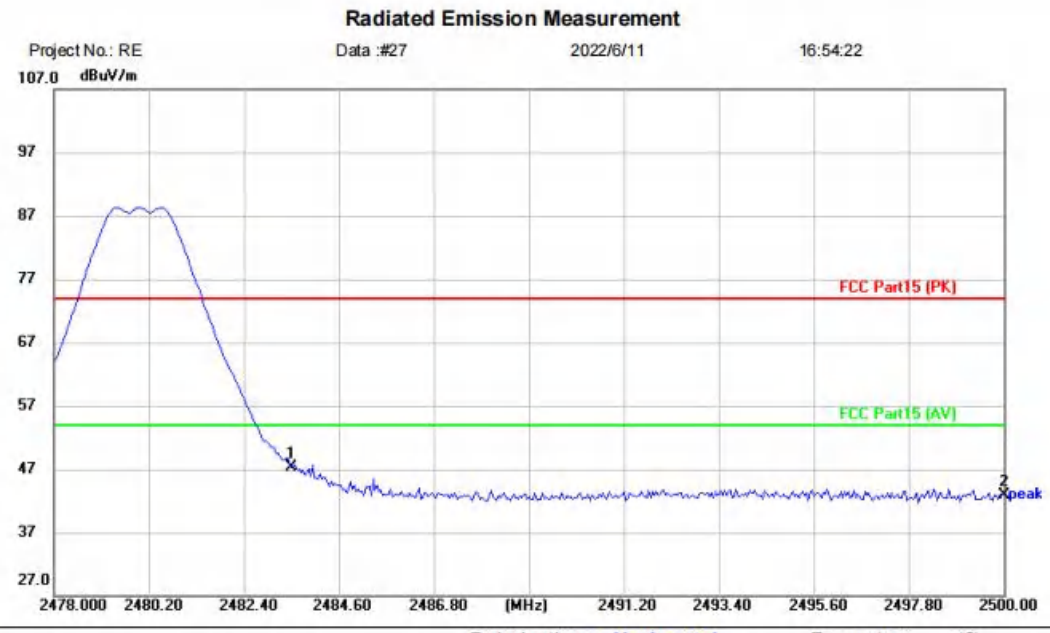
Site
Polarization: *Vertical*
Temperature: (C)
Limit: FCC Part15 (PK)
Power:
Humidity: %RH
EUT: McWong Wireless Control Module
M/N: WCM-02
Mode: BLE 2M-TX-L
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1		2310.000	46.25	-3.93	42.32	74.00	-31.68	peak	
2	*	2390.000	50.84	-3.58	47.26	74.00	-26.74	peak	

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

Test Result: Pass

[TestMode: TX BLE2M high channel]; [Polarity: Horizontal]



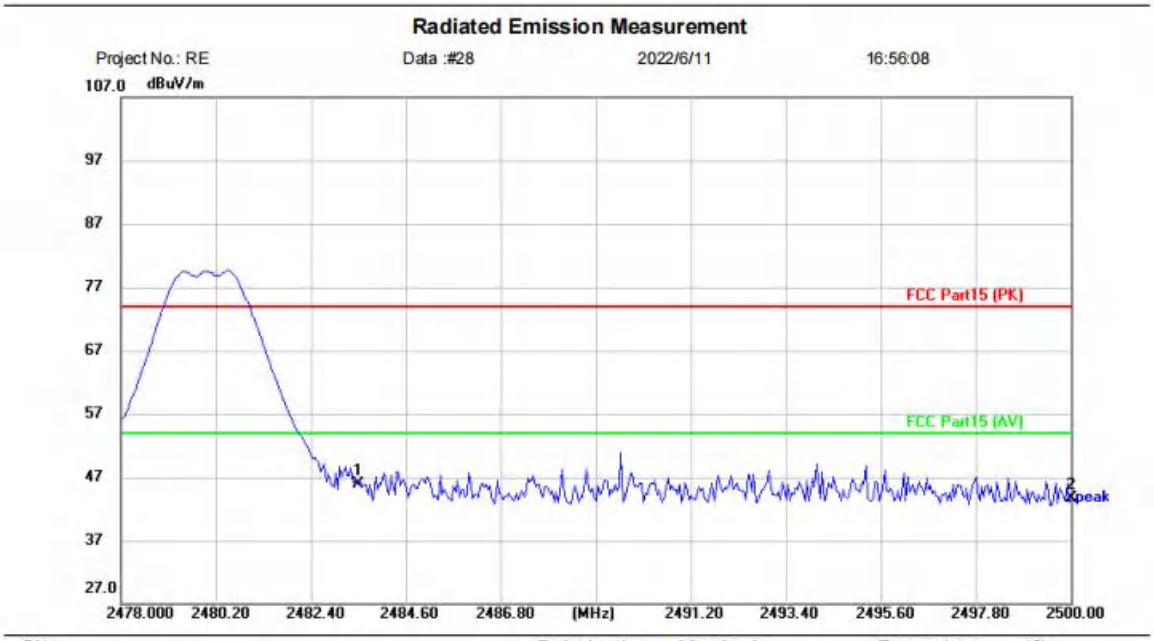
Site
Polarization: *Horizontal*
Temperature: (C)
Limit: FCC Part15 (PK)
Power:
Humidity: %RH
EUT: McWong Wireless Control Module
M/N: WCM-02
Mode: BLE 2M-TX-H
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2483.500	50.42	-3.14	47.28	74.00	-26.72	peak	
2		2500.000	46.04	-3.08	42.96	74.00	-31.04	peak	

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

Test Result: Pass

[TestMode: TX BLE2M high channel]; [Polarity: Vertical]



Site
Polarization: *Vertical*
Temperature: (C)
Limit: FCC Part15 (PK)
Power:
Humidity: %RH
EUT: McWong Wireless Control Module
M/N: WCM-02
Mode: BLE 2M-TX-H
Note:

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	Comment
1	*	2483.500	49.04	-3.14	45.90	74.00	-28.10	peak	
2		2500.000	46.75	-3.08	43.67	74.00	-30.33	peak	

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

Test Result: Pass

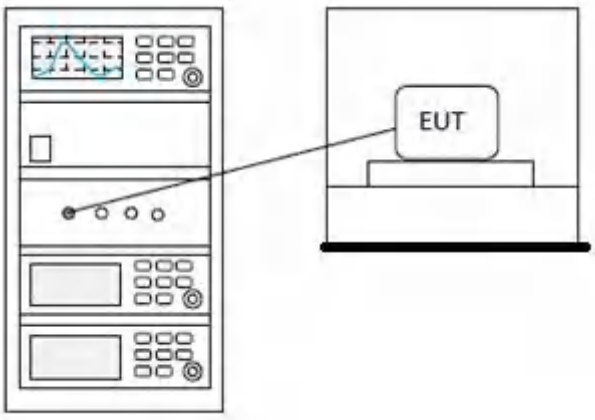
13 CONDUCTED SPURIOUS EMISSIONS

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 7.8.6 & Section 11.11
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Jozu
Temperature	25℃
Humidity	60%

13.1 LIMITS

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)).

13.2 BLOCK DIAGRAM OF TEST SETUP



13.3 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

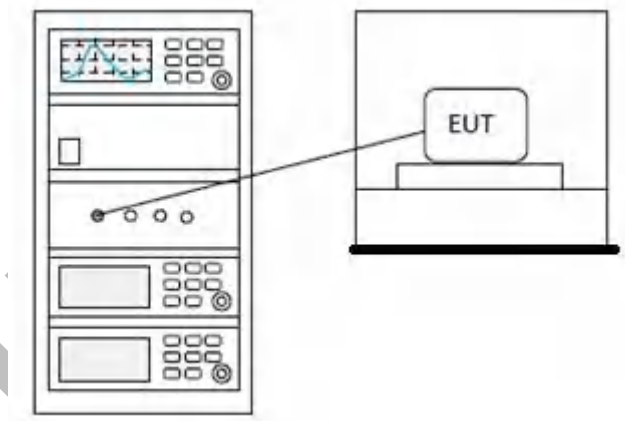
14 POWER SPECTRUM DENSITY

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 11.10.2
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Jozu
Temperature	25℃
Humidity	60%

14.1 LIMITS

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

14.2 BLOCK DIAGRAM OF TEST SETUP



14.3 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

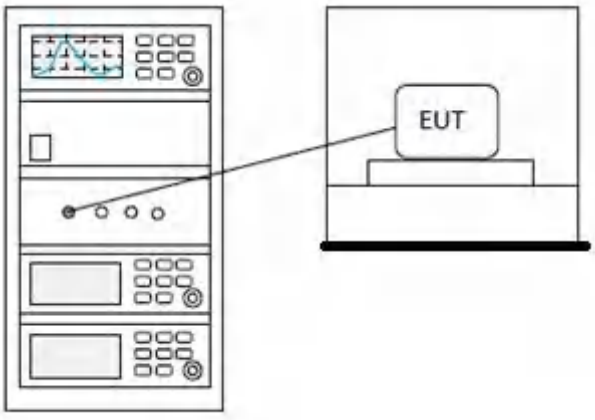
15 CONDUCTED PEAK OUTPUT POWER

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 7.8.5
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Jozu
Temperature	25℃
Humidity	60%

15.1 LIMITS

Frequency range(MHz)	Output power of the intentional radiator(watt)
902-928	1 for ≥50 hopping channels
	0.25 for 25≤ 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

15.2 BLOCK DIAGRAM OF TEST SETUP



15.3 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

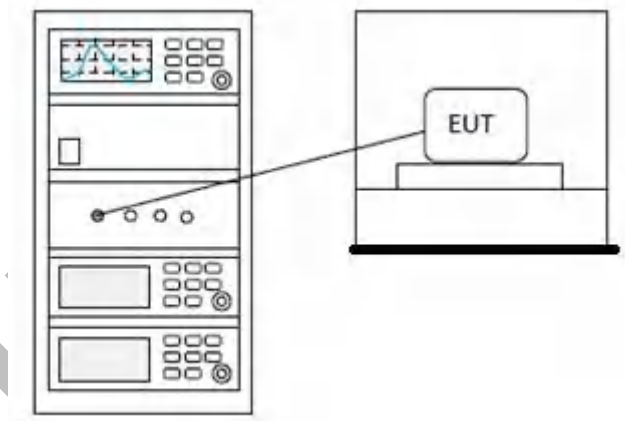
16 MINIMUM 6DB BANDWIDTH

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 11.8.1
Test Mode (Pre-Scan)	TX
Test Mode (Final Test)	TX
Tester	Jozu
Temperature	25℃
Humidity	60%

16.1 LIMITS

Limit:	≥500 kHz

16.2 BLOCK DIAGRAM OF TEST SETUP



16.3 TEST DATA

Pass: Please Refer To Appendix: Appendix1 For Details

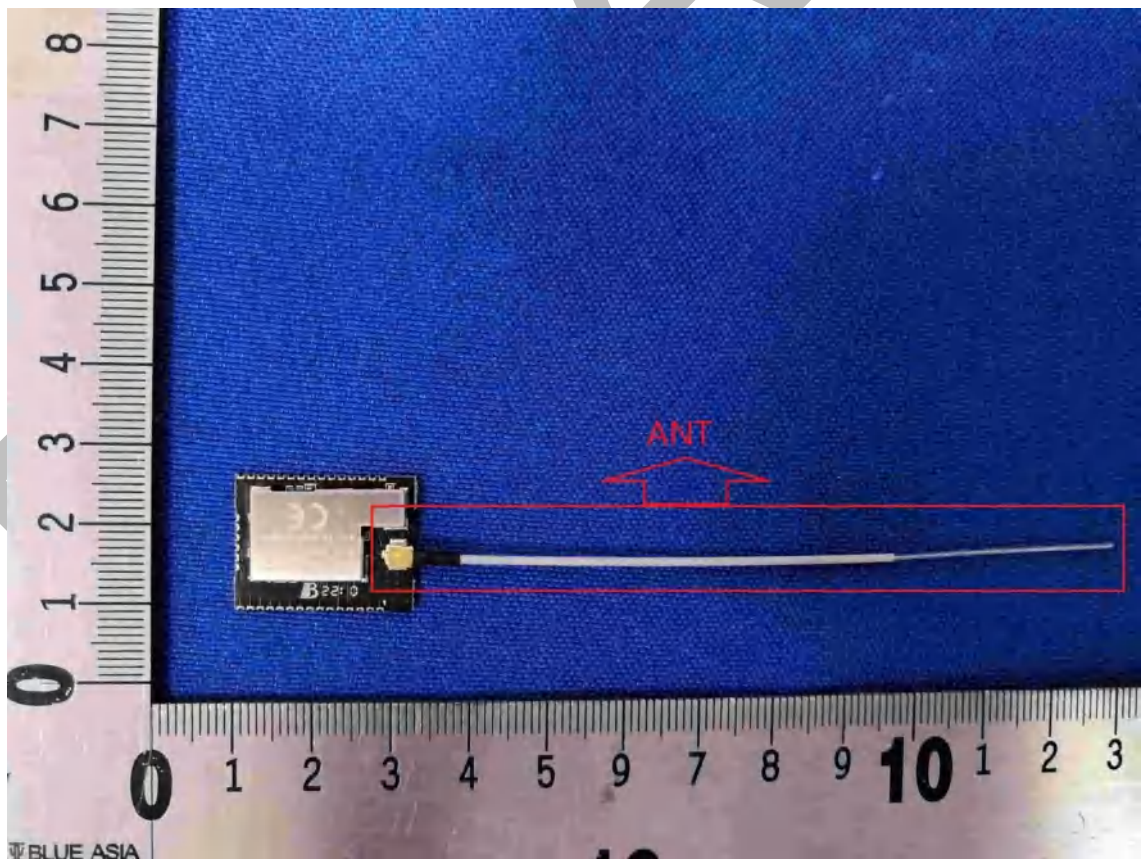
17 ANTENNA REQUIREMENT

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	N/A

17.1 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 antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit permanently attached antenna or of an so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

EUT Antenna:
Buckle antenna and no consideration of replacement. The best case gain of the antenna is 1.5dBi.



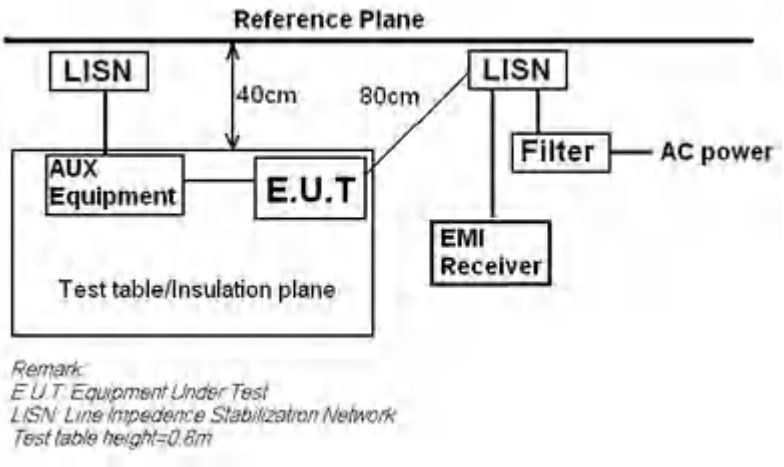
18 CONDUCTED EMISSIONS AT AC POWER LINE (150KHZ-30MHZ)

Test Standard	47 CFR Part 15, Subpart C 15.247
Test Method	ANSI C63.10 (2013) Section 6.2
Test Mode (Pre-Scan)	Transmitting mode
Test Mode (Final Test)	Transmitting mode
Tester	Jozu
Temperature	25℃
Humidity	60%

18.1 LIMITS

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.		

18.2 BLOCK DIAGRAM OF TEST SETUP



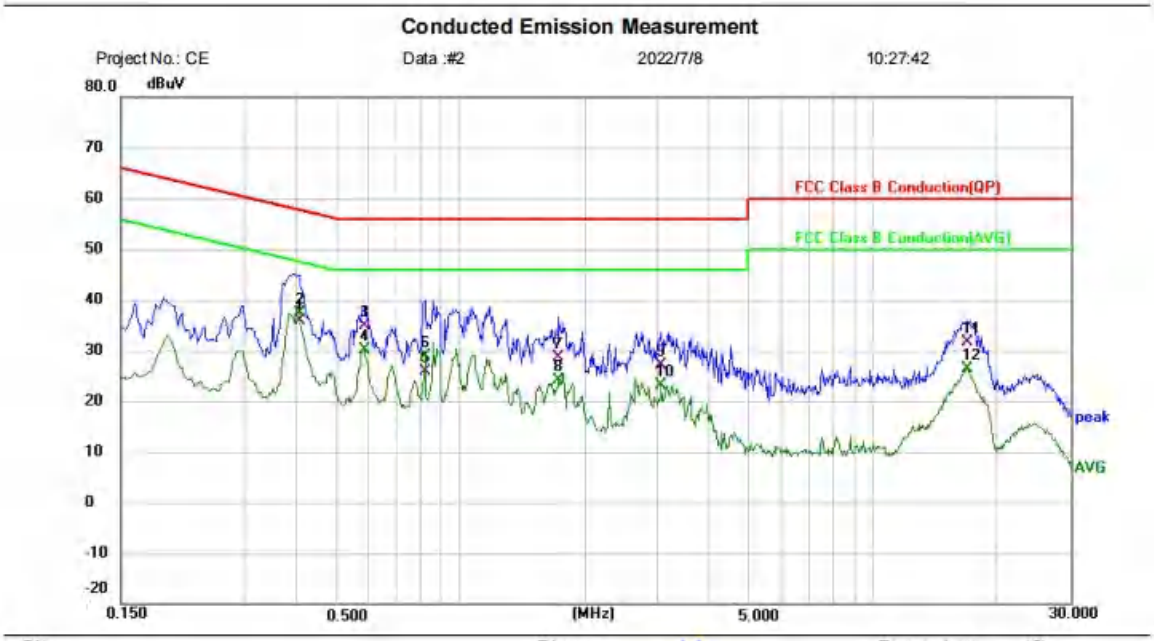
18.3 PROCEDURE

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/50H + 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: LISN=Read Level+ Cable Loss+ LISN Factor

18.4 TEST DATA

[TestMode: Transmitting mode]; [Line: Line]



Site
Limit: FCC Class B Conduction(QP)
EUT: McWong Wireless Control Module
M/N: WCM-02
Mode: TX Mode
Note:

Phase: L1
Power:

Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.4060	26.12	9.67	35.79	57.73	-21.94	QP	
2	*	0.4060	27.66	9.67	37.33	47.73	-10.40	AVG	
3		0.5820	25.24	9.74	34.98	56.00	-21.02	QP	
4		0.5820	20.44	9.74	30.18	46.00	-15.82	AVG	
5		0.8180	16.17	9.73	25.90	56.00	-30.10	QP	
6		0.8180	19.24	9.73	28.97	46.00	-17.03	AVG	
7		1.7340	18.89	9.83	28.72	56.00	-27.28	QP	
8		1.7340	14.18	9.83	24.01	46.00	-21.99	AVG	
9		3.0700	17.17	9.87	27.04	56.00	-28.96	QP	
10		3.0700	13.29	9.87	23.16	46.00	-22.84	AVG	
11		16.8500	21.74	9.99	31.73	60.00	-28.27	QP	
12		16.8500	16.35	9.99	26.34	50.00	-23.66	AVG	

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

Test Result: Pass

[TestMode: Transmitting mode]; [Line: Neutral]

Site
Limit: FCC Class B Conduction(QP)
EUT: McWong Wireless Control Module
M/N: WCM-02
Mode: TX Mode
Note:

Phase: N
Power:

Temperature: (C)
Humidity: %RH

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
1		0.3980	30.03	9.70	39.73	57.90	-18.17	QP	
2		0.3980	20.40	9.70	30.10	47.90	-17.80	AVG	
3		0.8020	19.93	9.75	29.68	56.00	-26.32	QP	
4	*	0.8020	19.79	9.75	29.54	46.00	-16.46	AVG	
5		1.2900	17.25	9.83	27.08	56.00	-28.92	QP	
6		1.2900	19.38	9.83	29.21	46.00	-16.79	AVG	
7		3.0260	21.22	9.89	31.11	56.00	-24.89	QP	
8		3.0260	16.42	9.89	26.31	46.00	-19.69	AVG	
9		6.7300	9.07	9.85	18.92	60.00	-41.08	QP	
10		6.7300	5.38	9.85	15.23	50.00	-34.77	AVG	
11		17.0500	17.84	10.04	27.88	60.00	-32.12	QP	
12		17.0500	13.96	10.04	24.00	50.00	-26.00	AVG	

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

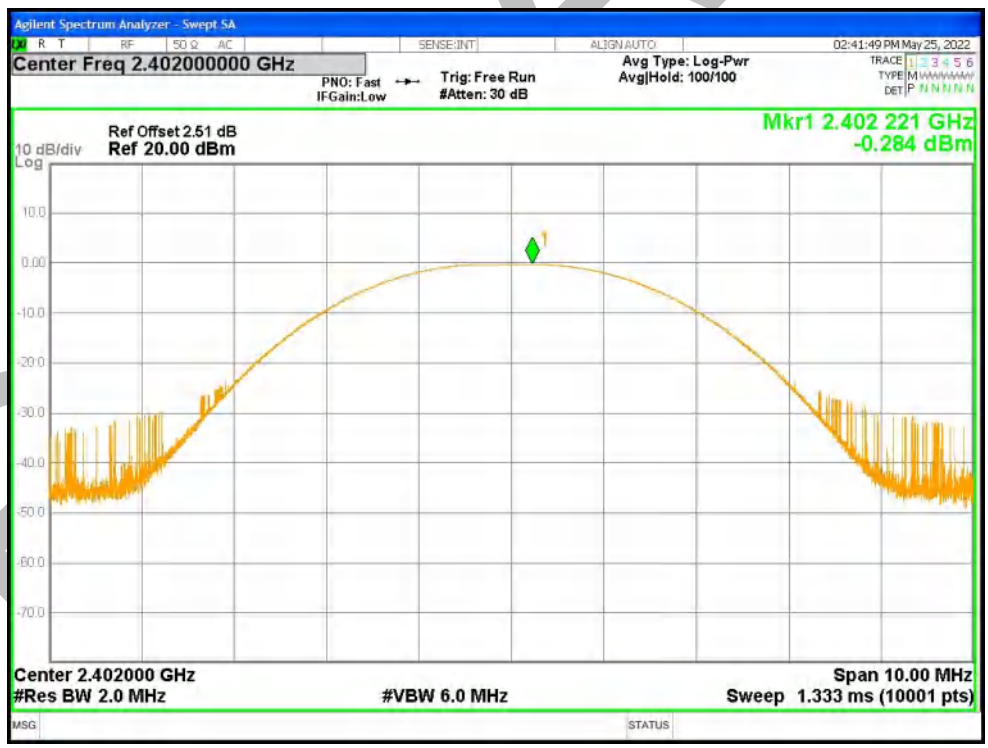
Test Result: Pass

19 APPENDIX

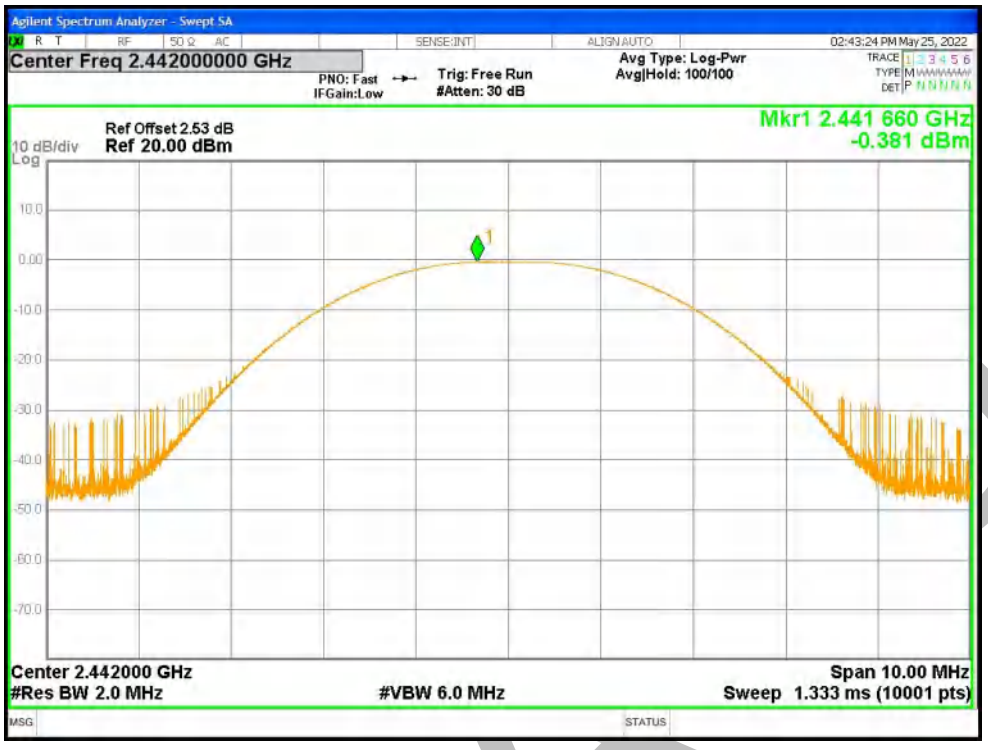
Maximum Conducted Output Power

Condition	Mode	Frequency (MHz)	Antenna	Conducted Power (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	-0.284	30	Pass
NVNT	BLE 1M	2442	Ant1	-0.381	30	Pass
NVNT	BLE 1M	2480	Ant1	-1.128	30	Pass
NVNT	BLE 2M	2402	Ant1	-0.295	30	Pass
NVNT	BLE 2M	2442	Ant1	-0.378	30	Pass
NVNT	BLE 2M	2480	Ant1	-1.115	30	Pass

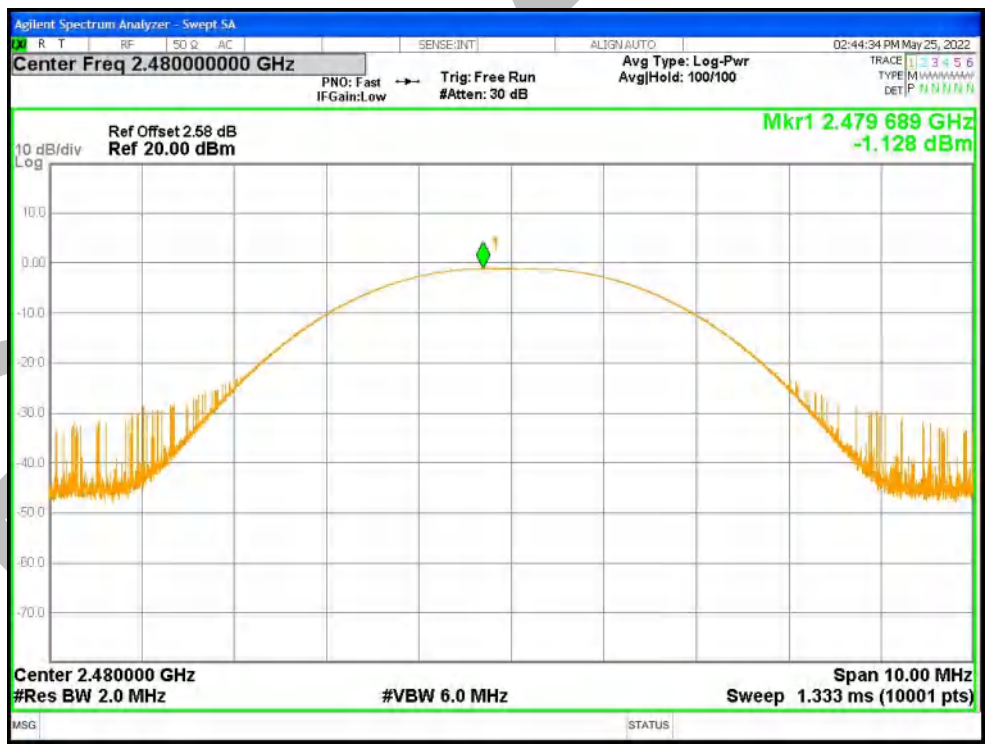
Power NVNT BLE 1M 2402MHz Ant1



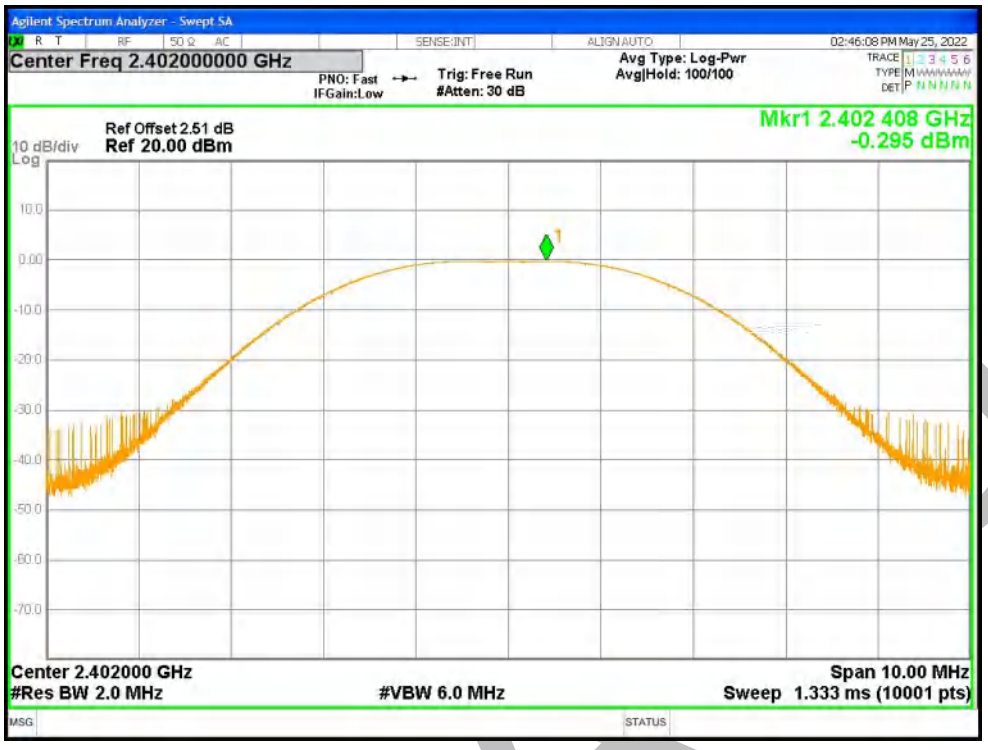
Power NVNT BLE 1M 2442MHz Ant1



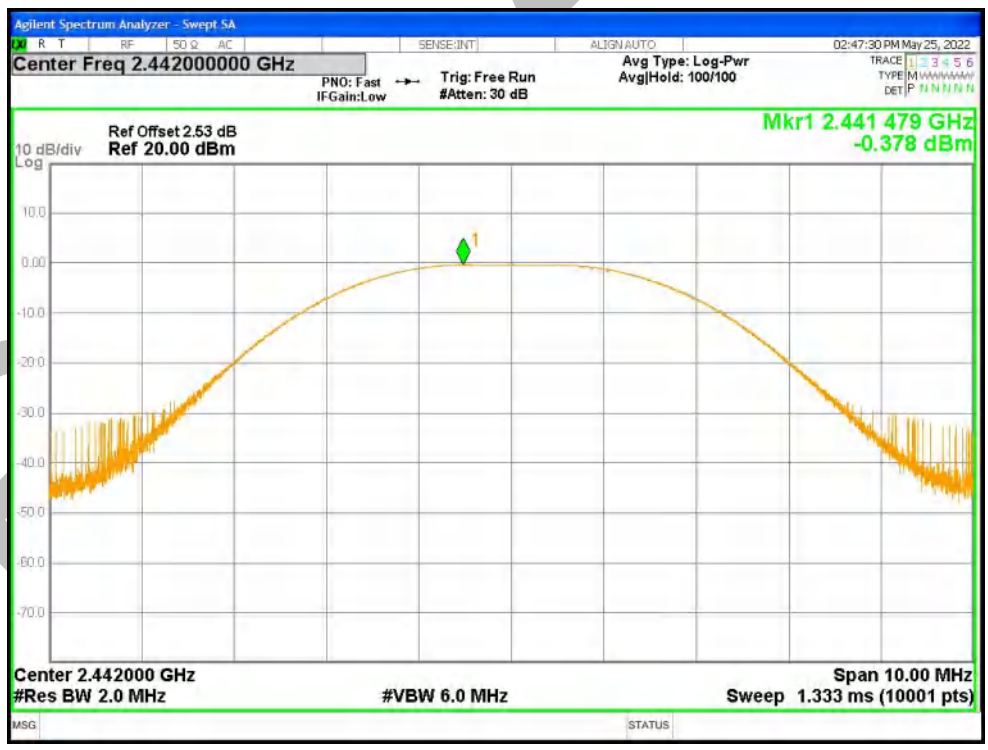
Power NVNT BLE 1M 2480MHz Ant1



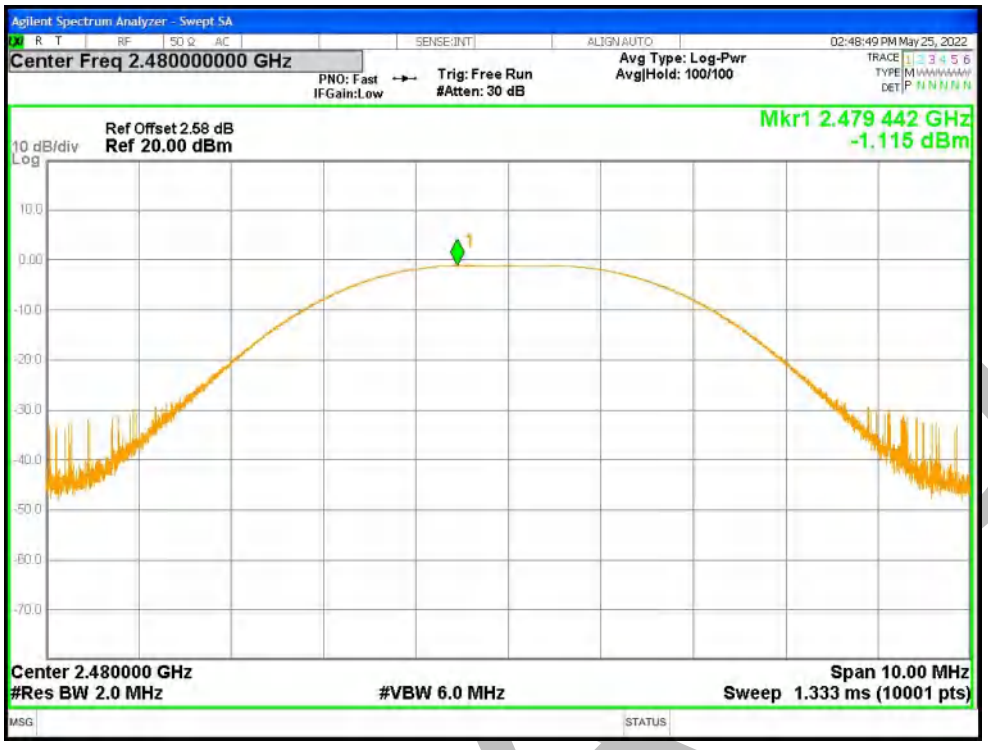
Power NVNT BLE 2M 2402MHz Ant1



Power NVNT BLE 2M 2442MHz Ant1



Power NVNT BLE 2M 2480MHz Ant1

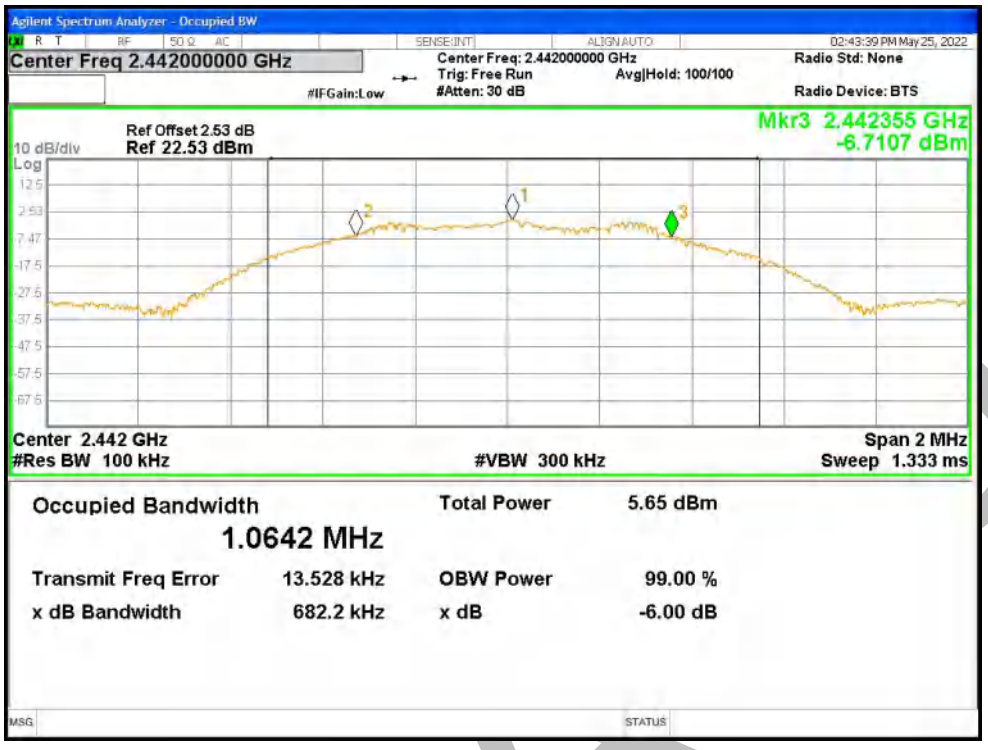

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
02:48:49 PM May 25, 2022
Ref Offset 2.58 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 2.479 442 GHz
-1.115 dBm
Center 2.480000 GHz
#Res BW 2.0 MHz
#VBW 6.0 MHz
Span 10.00 MHz
Sweep 1.333 ms (10001 pts)

-6dB Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	-6 dB Bandwidth (MHz)	Limit -6 dB Bandwidth (MHz)	Verdict
NVNT	BLE 1M	2402	Ant1	0.68	0.5	Pass
NVNT	BLE 1M	2442	Ant1	0.682	0.5	Pass
NVNT	BLE 1M	2480	Ant1	0.685	0.5	Pass
NVNT	BLE 2M	2402	Ant1	1.119	0.5	Pass
NVNT	BLE 2M	2442	Ant1	1.112	0.5	Pass
NVNT	BLE 2M	2480	Ant1	1.196	0.5	Pass

-6dB Bandwidth NVNT BLE 1M 2402MHz Ant1

-6dB Bandwidth NVNT BLE 1M 2442MHz Ant1

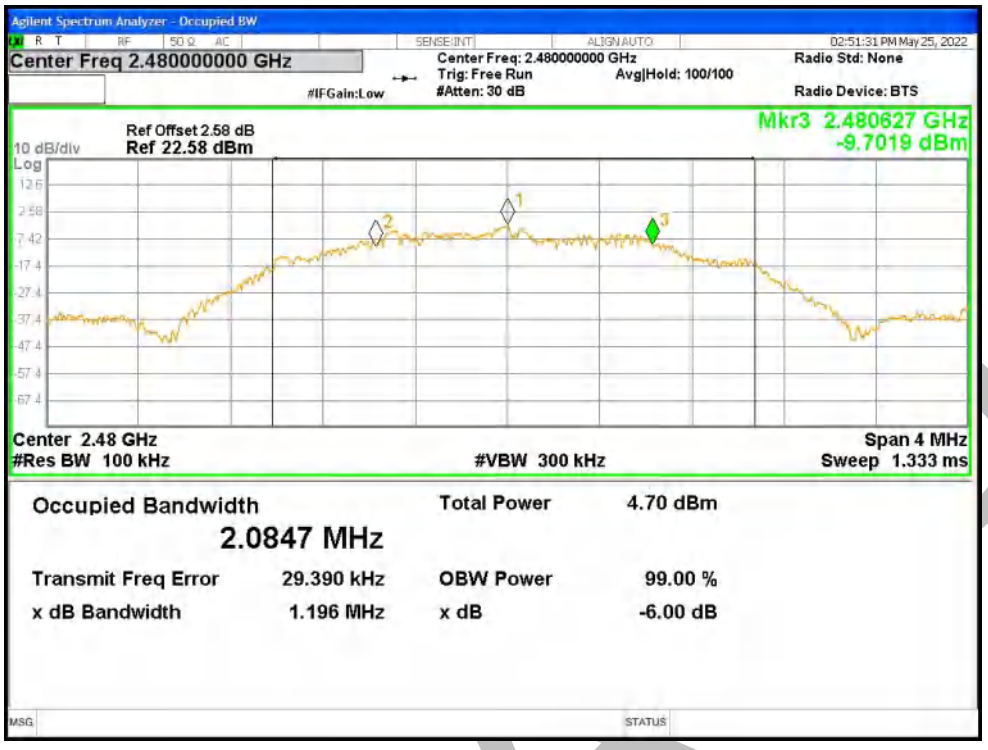


-6dB Bandwidth NVNT BLE 1M 2480MHz Ant1

-6dB Bandwidth NVNT BLE 2M 2402MHz Ant1

-6dB Bandwidth NVNT BLE 2M 2442MHz Ant1

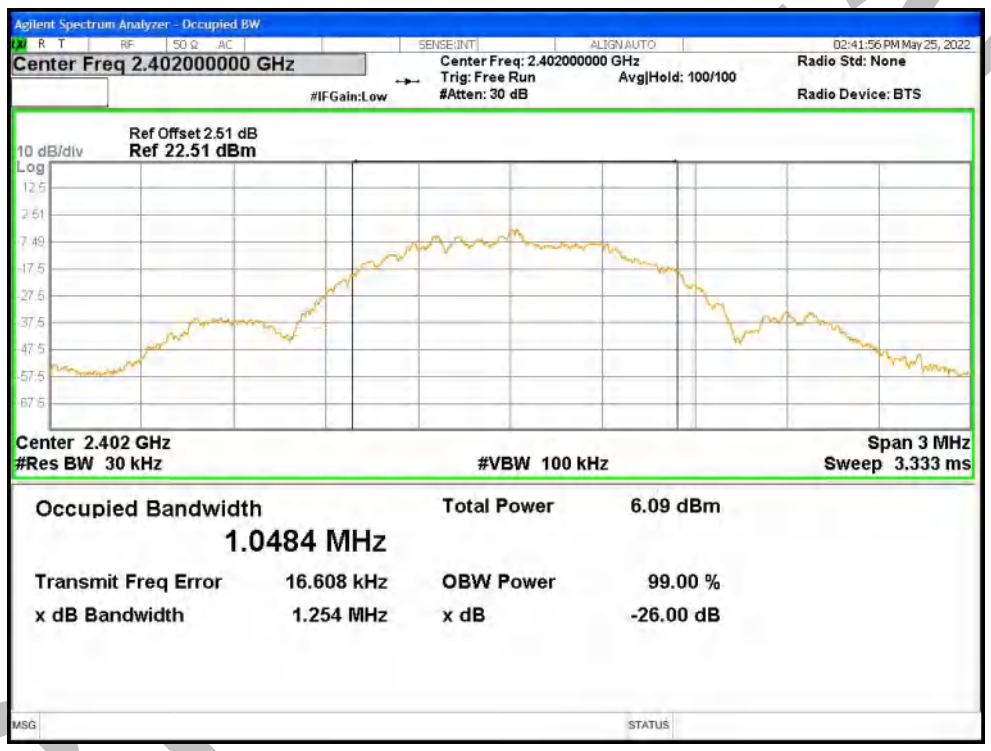
-6dB Bandwidth NVNT BLE 2M 2480MHz Ant1


Agilent Spectrum Analyzer - Occupied BW
02:51:31 PM May 25, 2022
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
Ref Offset 2.58 dB
10 dB/div
Ref 22.58 dBm
Log
Mkr3 2.480627 GHz
-9.7019 dBm
Center 2.48 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 4 MHz
Sweep 1.333 ms
Occupied Bandwidth
2.0847 MHz
Total Power 4.70 dBm
Transmit Freq Error 29.390 kHz
OBW Power 99.00 %
x dB Bandwidth 1.196 MHz
x dB -6.00 dB
MSG
STATUS

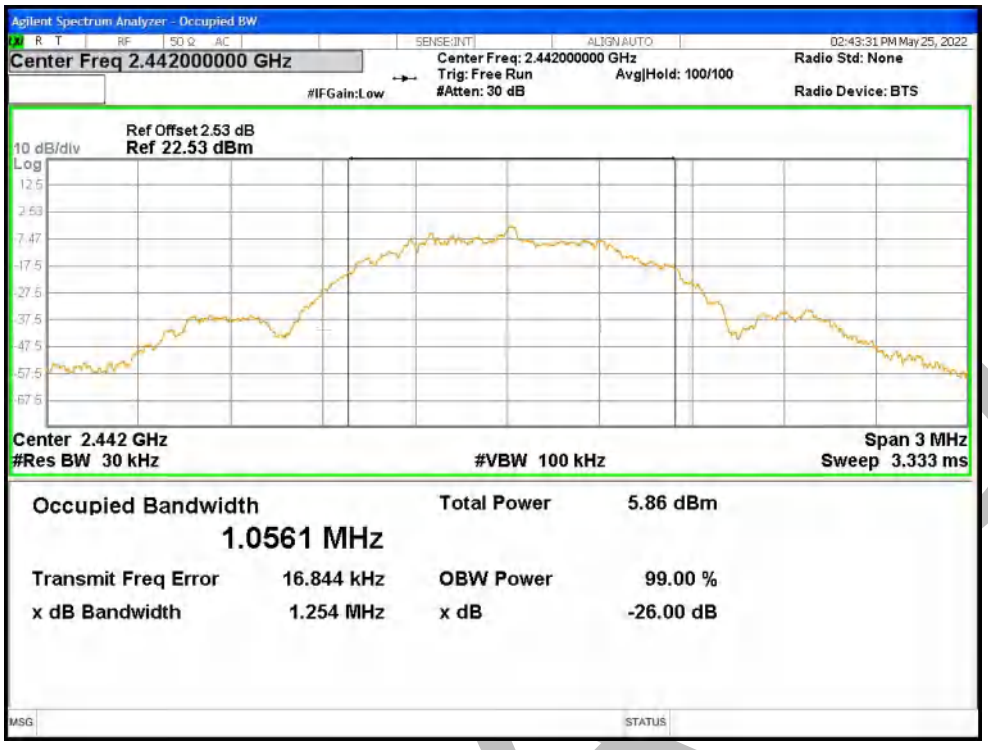
Occupied Channel Bandwidth

Condition	Mode	Frequency (MHz)	Antenna	99% OBW (MHz)
NVNT	BLE 1M	2402	Ant1	1.048375803
NVNT	BLE 1M	2442	Ant1	1.056115522
NVNT	BLE 1M	2480	Ant1	1.052582589
NVNT	BLE 2M	2402	Ant1	2.043600425
NVNT	BLE 2M	2442	Ant1	2.040187099
NVNT	BLE 2M	2480	Ant1	2.046705531

OBW NVNT BLE 1M 2402MHz Ant1

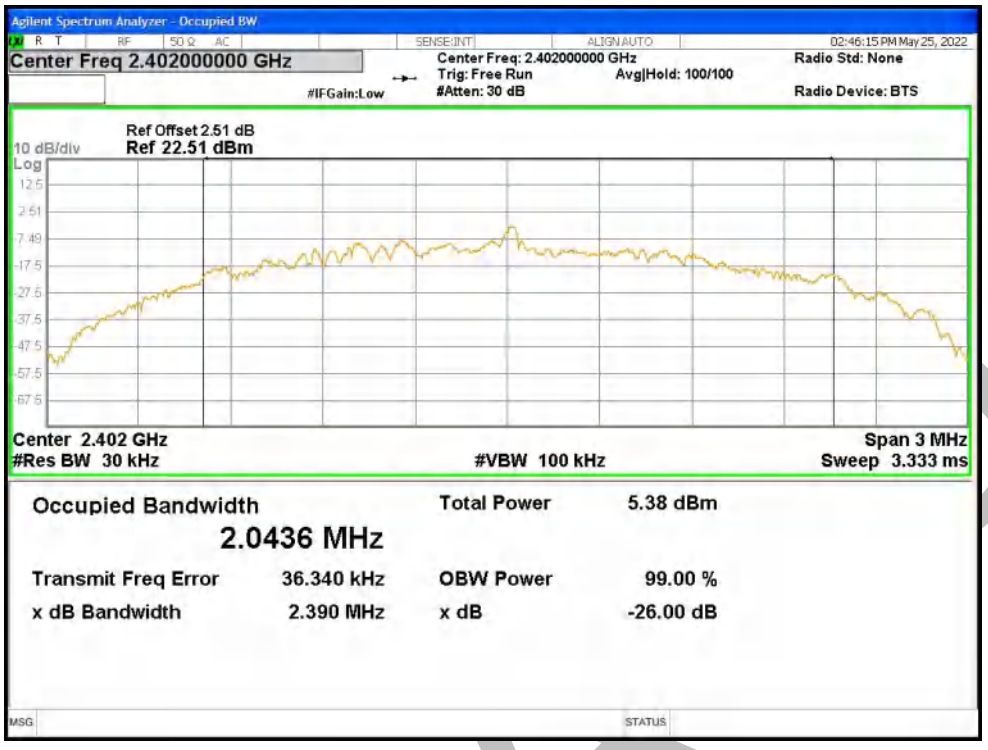


OBW NVNT BLE 1M 2442MHz Ant1

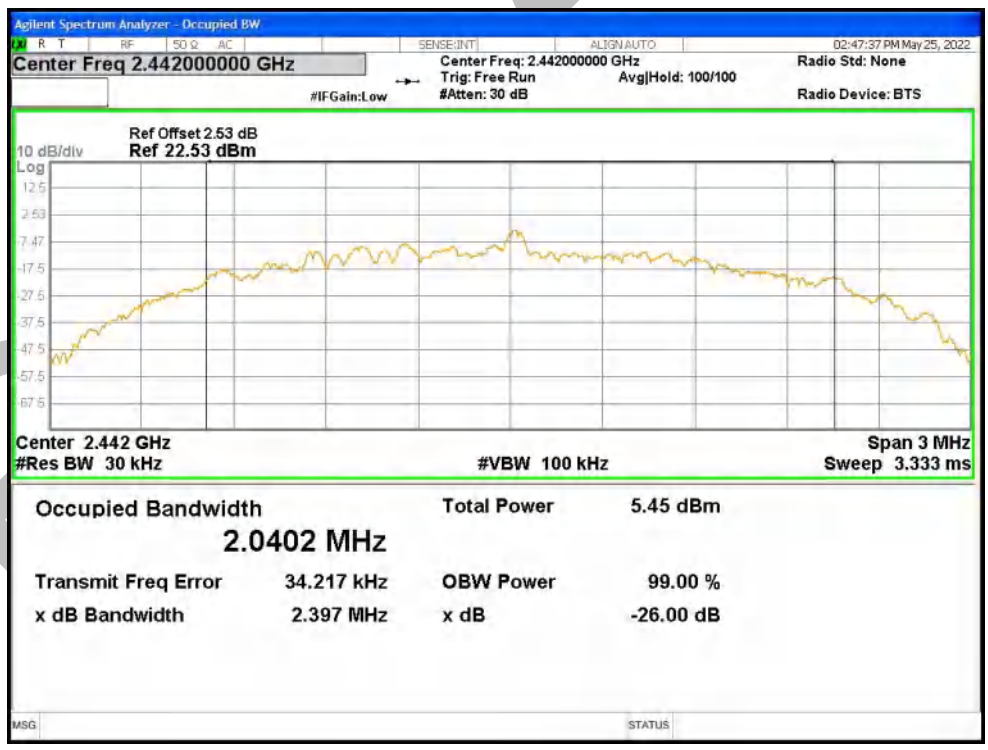


OBW NVNT BLE 1M 2480MHz Ant1

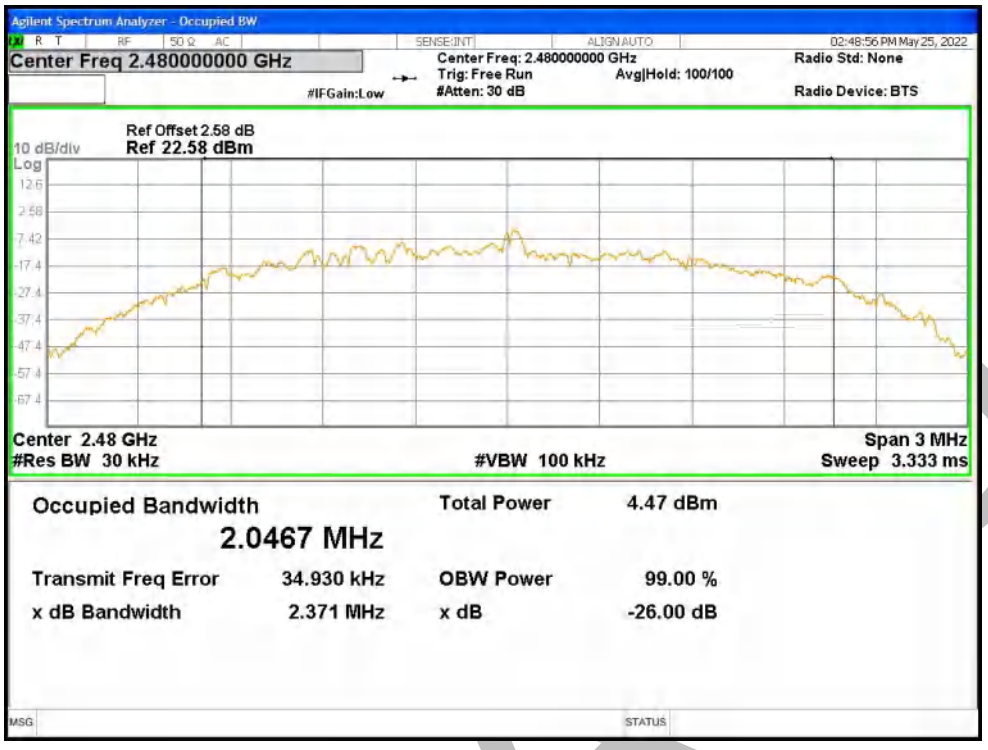
OBW NVNT BLE 2M 2402MHz Ant1



OBW NVNT BLE 2M 2442MHz Ant1



OBW NVNT BLE 2M 2480MHz Ant1

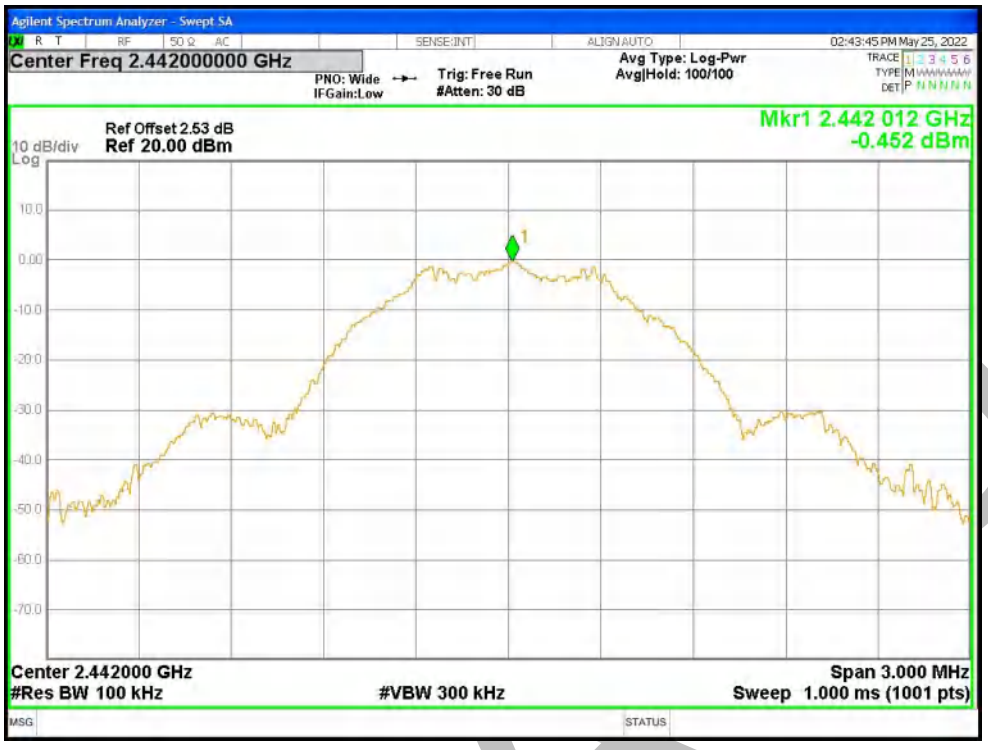

Agilent Spectrum Analyzer - Occupied BW
Center Freq 2.480000000 GHz
Center Freq: 2.480000000 GHz
Trig: Free Run
Avg|Hold: 100/100
#Atten: 30 dB
#IFGain:Low
02:48:56 PM May 25, 2022
Radio Std: None
Radio Device: BTS
Ref Offset 2.58 dB
10 dB/div
Ref 22.58 dBm
Log
Center 2.48 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 3 MHz
Sweep 3.333 ms
Occupied Bandwidth
2.0467 MHz
Total Power 4.47 dBm
Transmit Freq Error 34.930 kHz
OBW Power 99.00 %
x dB Bandwidth 2.371 MHz
x dB -26.00 dB
MSG
STATUS

Maximum Power Spectral Density Level

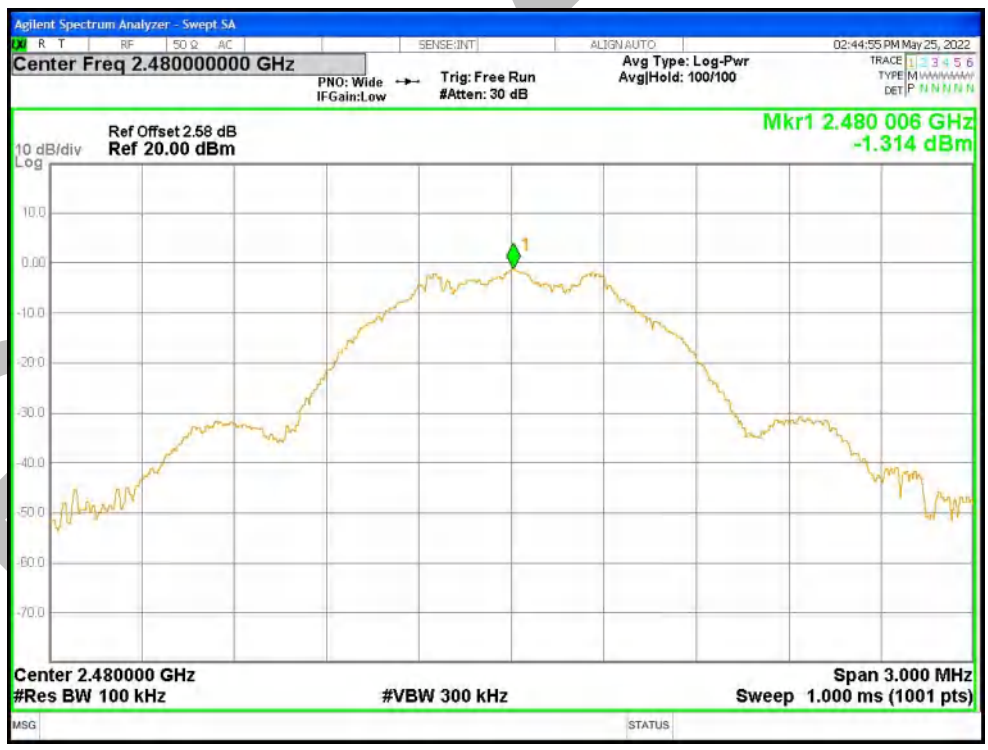
Condition	Mode	Frequency (MHz)	Antenna	Max PSD (dBm)	Limit (dBm)	Verdict
NVNT	BLE 1M	2402	Ant1	-0.392	8	Pass
NVNT	BLE 1M	2442	Ant1	-0.452	8	Pass
NVNT	BLE 1M	2480	Ant1	-1.314	8	Pass
NVNT	BLE 2M	2402	Ant1	-1.227	8	Pass
NVNT	BLE 2M	2442	Ant1	-0.453	8	Pass
NVNT	BLE 2M	2480	Ant1	-1.432	8	Pass

PSD NVNT BLE 1M 2402MHz Ant1

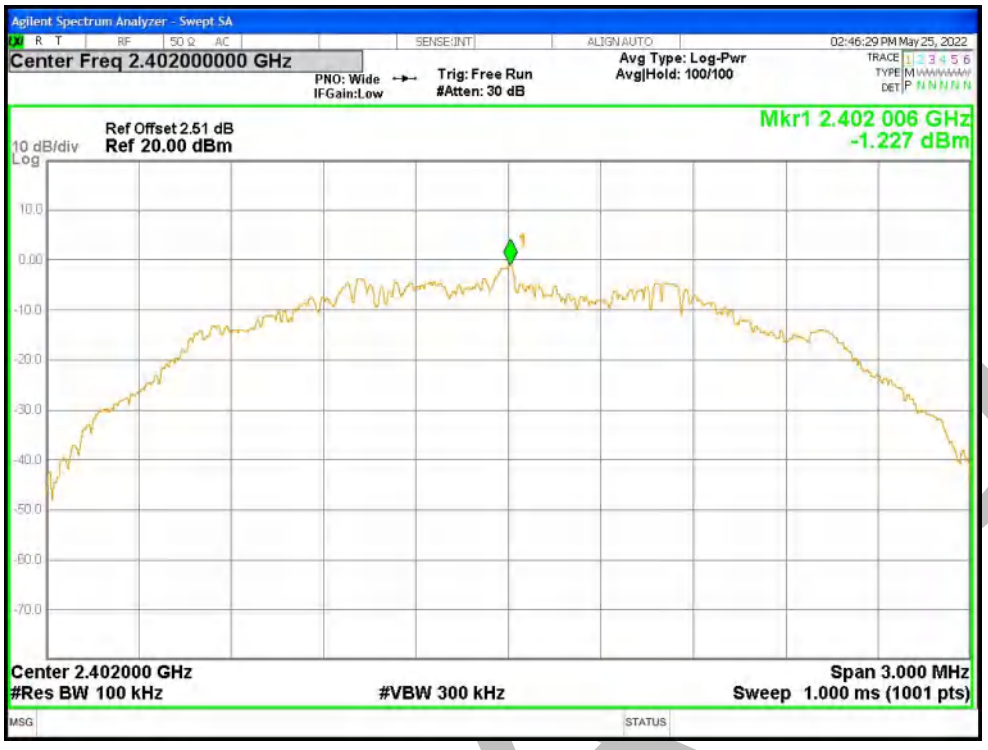
PSD NVNT BLE 1M 2442MHz Ant1



PSD NVNT BLE 1M 2480MHz Ant1

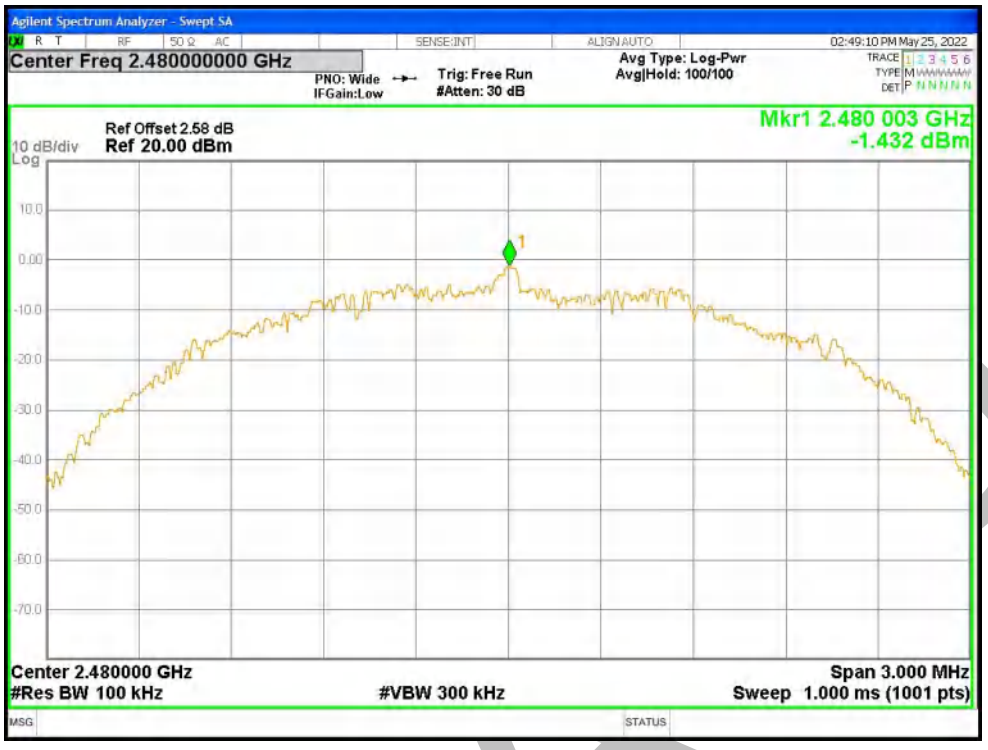


PSD NVNT BLE 2M 2402MHz Ant1



PSD NVNT BLE 2M 2442MHz Ant1

PSD NVNT BLE 2M 2480MHz Ant1

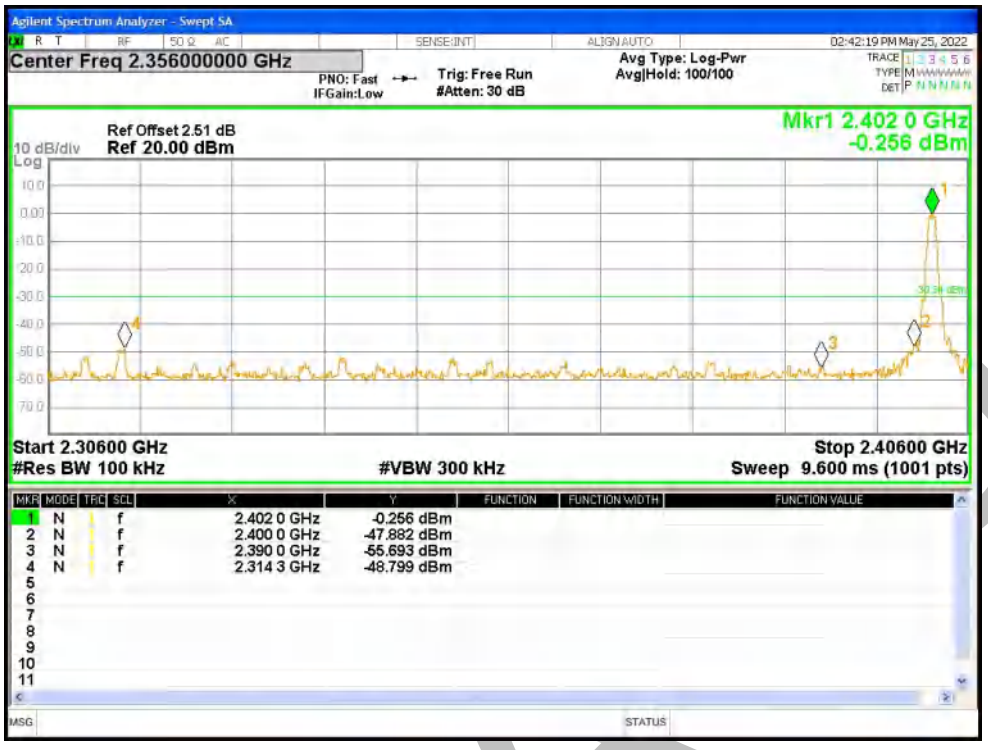

Agilent Spectrum Analyzer - Swept SA
Center Freq 2.480000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
02:49:10 PM May 25, 2022
Ref Offset 2.58 dB
10 dB/div
Log
Ref 20.00 dBm
Mkr1 2.480 003 GHz
-1.432 dBm
Center 2.480000 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 3.000 MHz
Sweep 1.000 ms (1001 pts)

Band Edge

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-48.45	-30	Pass
NVNT	BLE 1M	2480	Ant1	-53.56	-30	Pass
NVNT	BLE 2M	2402	Ant1	-47.67	-30	Pass
NVNT	BLE 2M	2480	Ant1	-51.49	-30	Pass

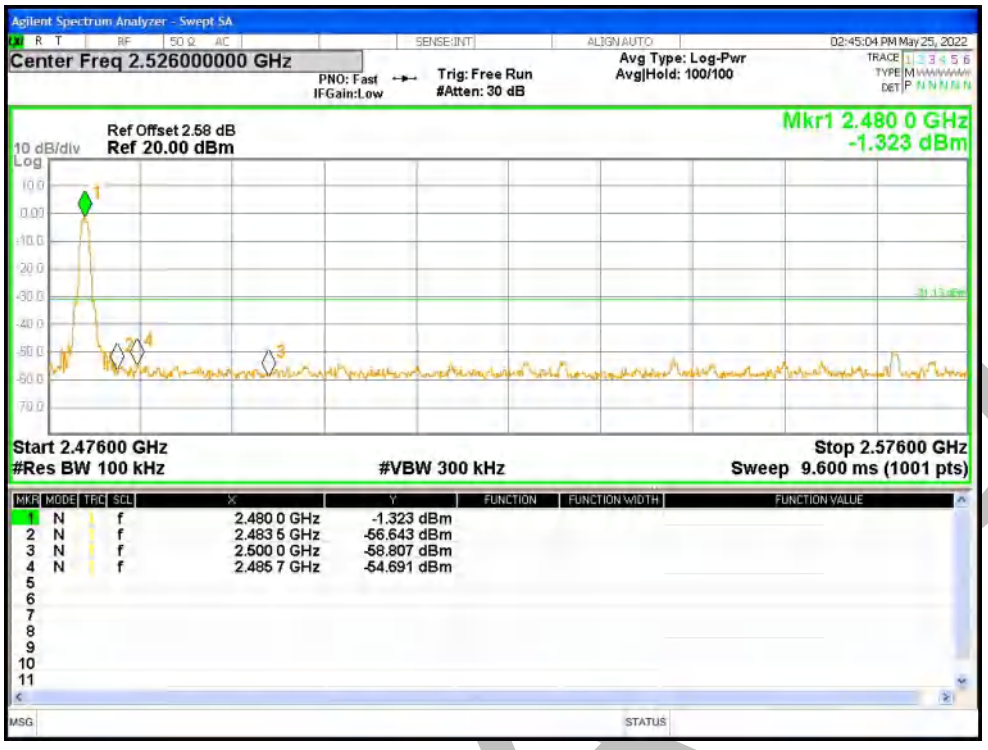
Band Edge NVNT BLE 1M 2402MHz Ant1 Ref

Band Edge NVNT BLE 1M 2402MHz Ant1 Emission



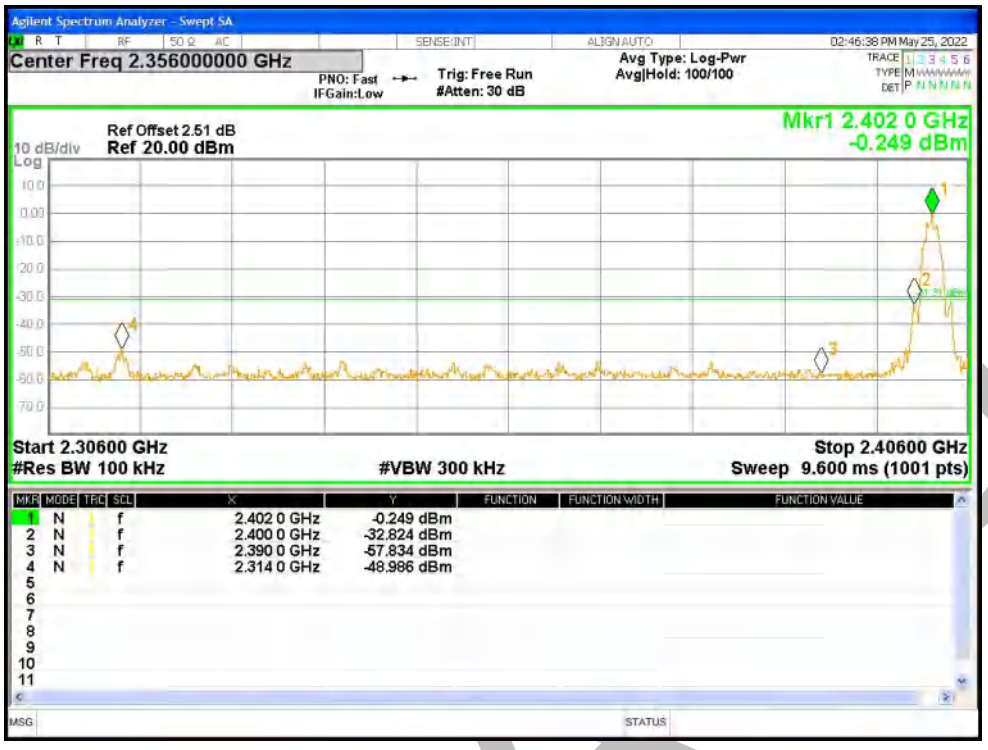
Band Edge NVNT BLE 1M 2480MHz Ant1 Ref

Band Edge NVNT BLE 1M 2480MHz Ant1 Emission



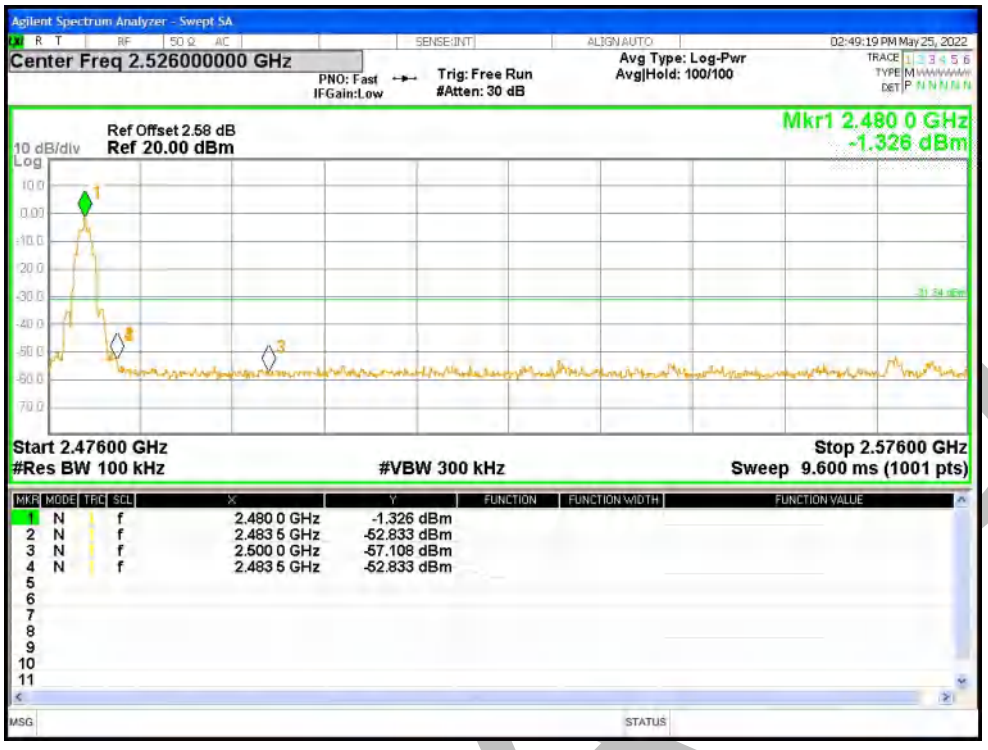
Band Edge NVNT BLE 2M 2402MHz Ant1 Ref

Band Edge NVNT BLE 2M 2402MHz Ant1 Emission



Band Edge NVNT BLE 2M 2480MHz Ant1 Ref

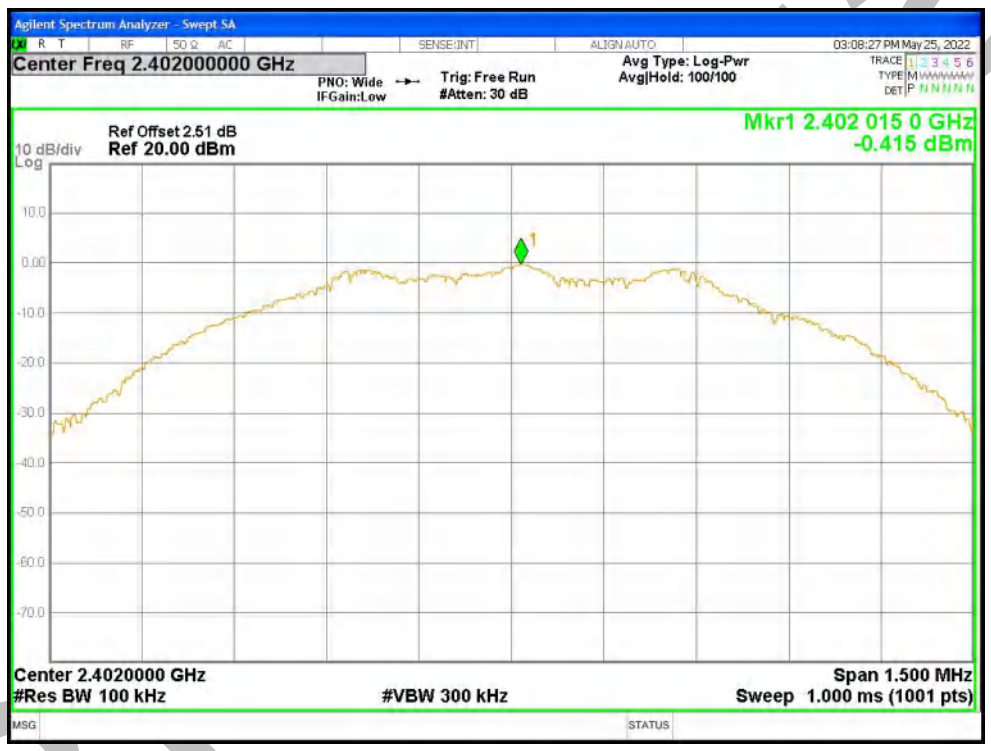
Band Edge NVNT BLE 2M 2480MHz Ant1 Emission


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
02:49:19 PM May 25, 2022
Ref Offset 2.58 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.480 0 GHz
-1.326 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 -1.326 dBm
2 N 1 f 2.483 5 GHz -52.833 dBm
3 N 1 f 2.500 0 GHz -57.108 dBm
4 N 1 f 2.483 5 GHz -52.833 dBm
MSG
STATUS

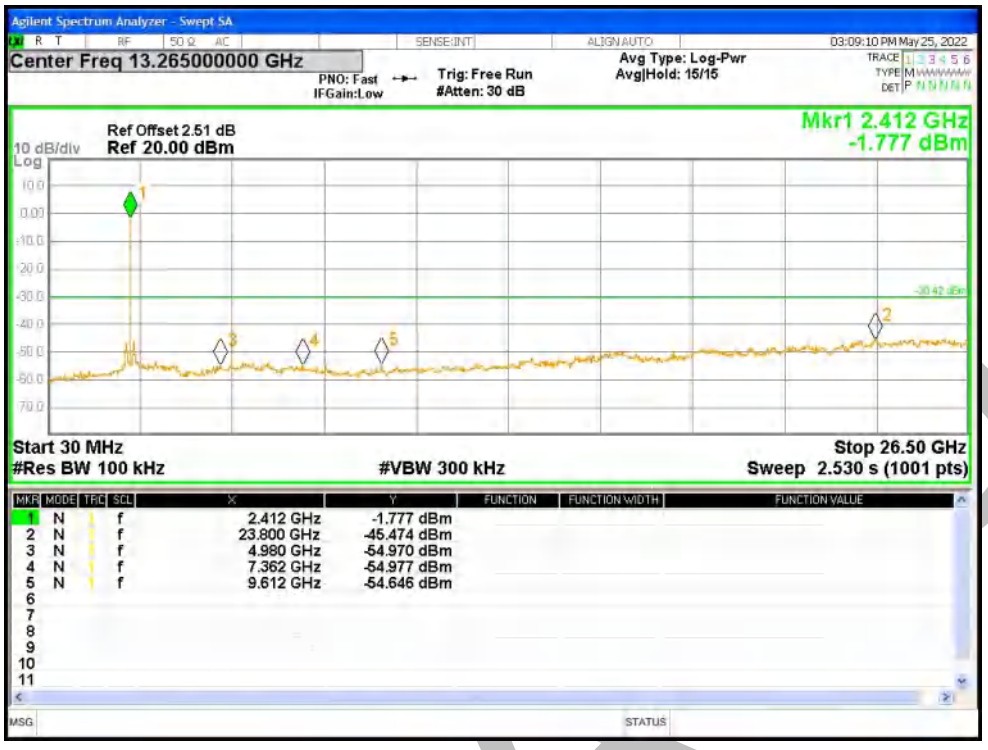
Conducted RF Spurious Emission

Condition	Mode	Frequency (MHz)	Antenna	Max Value (dBc)	Limit (dBc)	Verdict
NVNT	BLE 1M	2402	Ant1	-45.06	-30	Pass
NVNT	BLE 1M	2442	Ant1	-44.06	-30	Pass
NVNT	BLE 1M	2480	Ant1	-43.72	-30	Pass
NVNT	BLE 2M	2402	Ant1	-44.65	-30	Pass
NVNT	BLE 2M	2442	Ant1	-44.36	-30	Pass
NVNT	BLE 2M	2480	Ant1	-43.69	-30	Pass

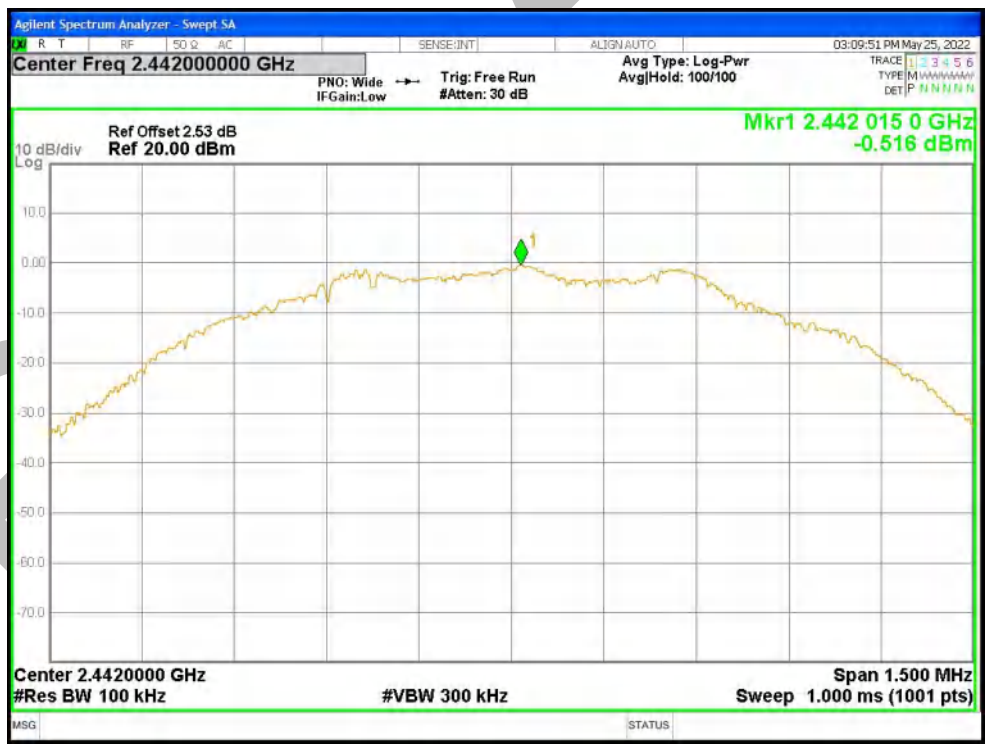
Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Ref



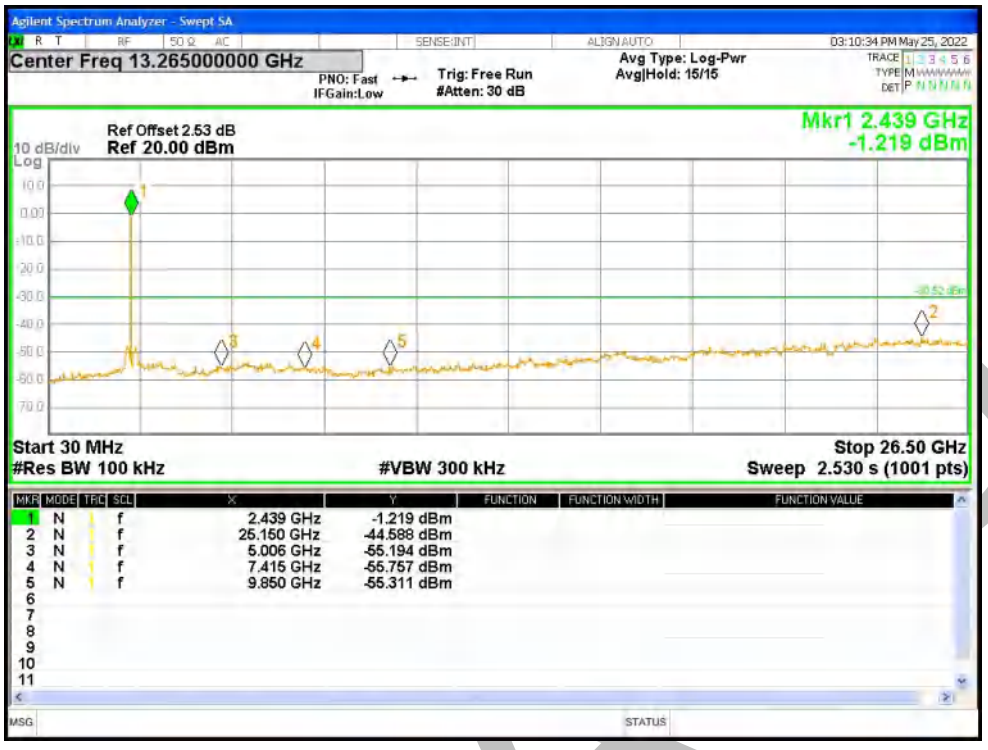
Tx. Spurious NVNT BLE 1M 2402MHz Ant1 Emission



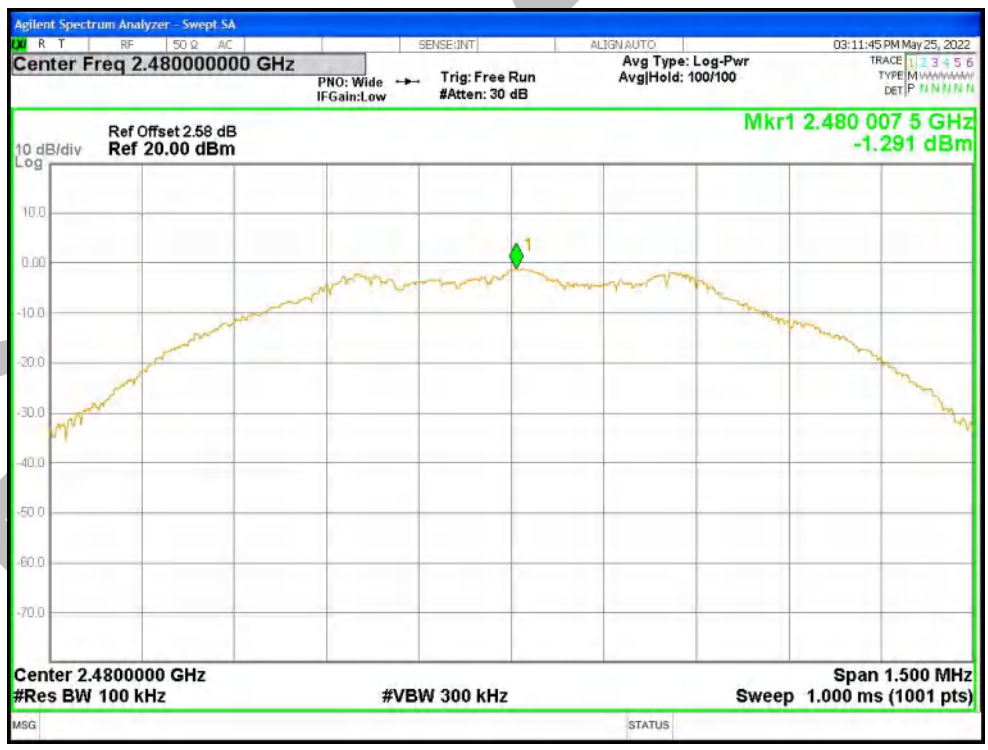
Tx. Spurious NVNT BLE 1M 2442MHz Ant1 Ref



Tx. Spurious NVNT BLE 1M 2442MHz Ant1 Emission



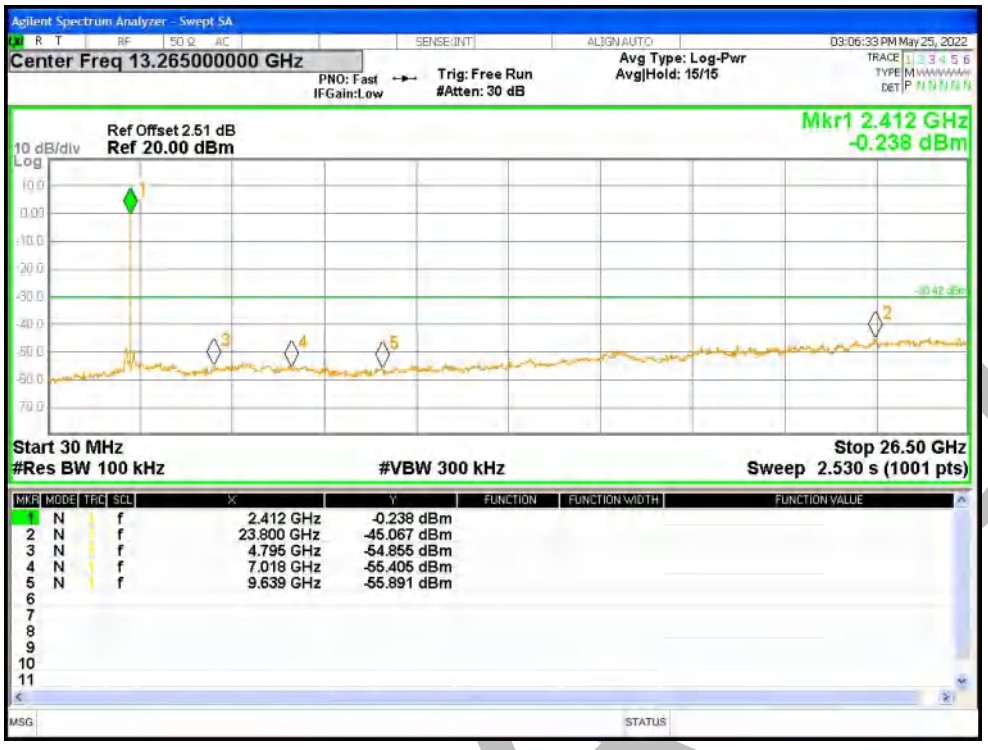
Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Ref



Tx. Spurious NVNT BLE 1M 2480MHz Ant1 Emission

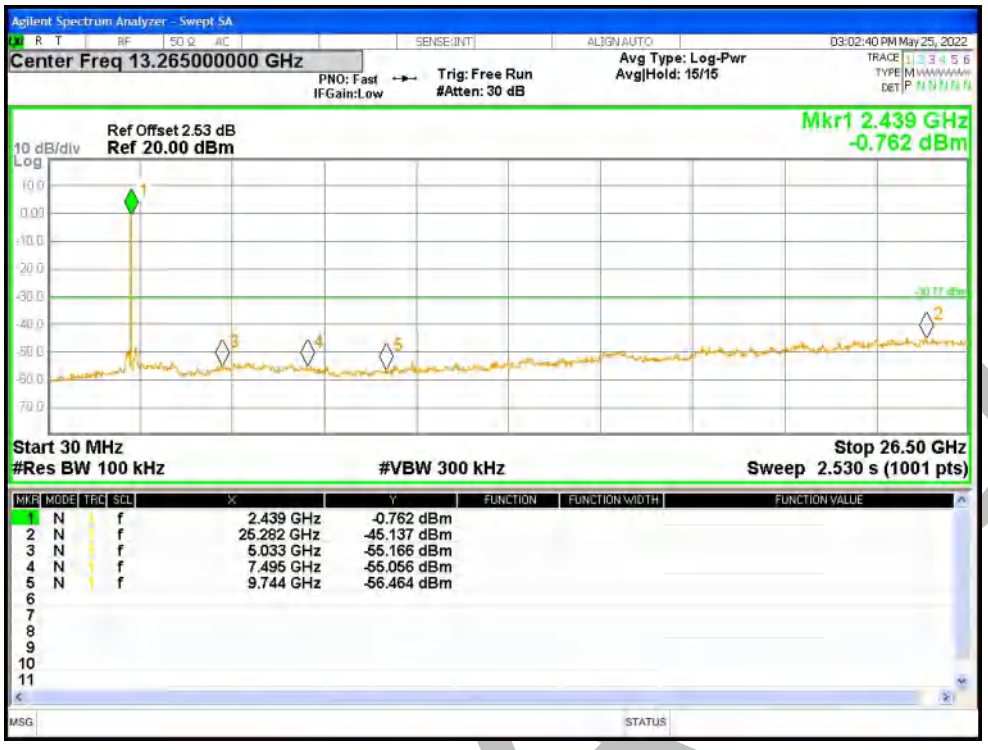
Tx. Spurious NVNT BLE 2M 2402MHz Ant1 Ref

Tx. Spurious NVNT BLE 2M 2402MHz Ant1 Emission



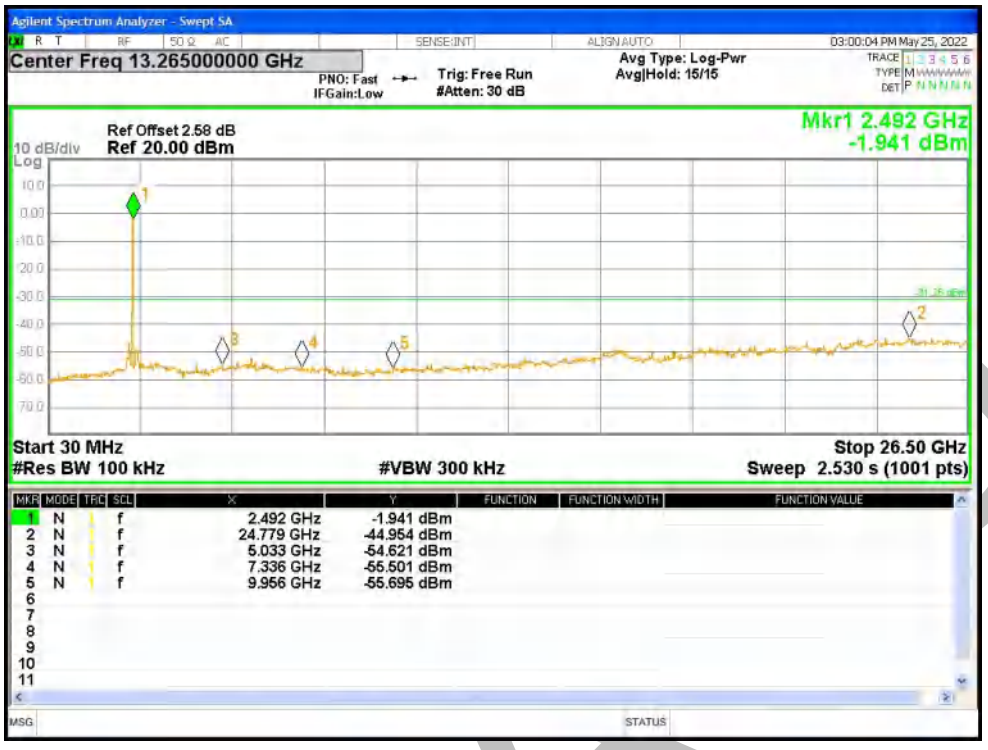
Tx. Spurious NVNT BLE 2M 2442MHz Ant1 Ref

Tx. Spurious NVNT BLE 2M 2442MHz Ant1 Emission



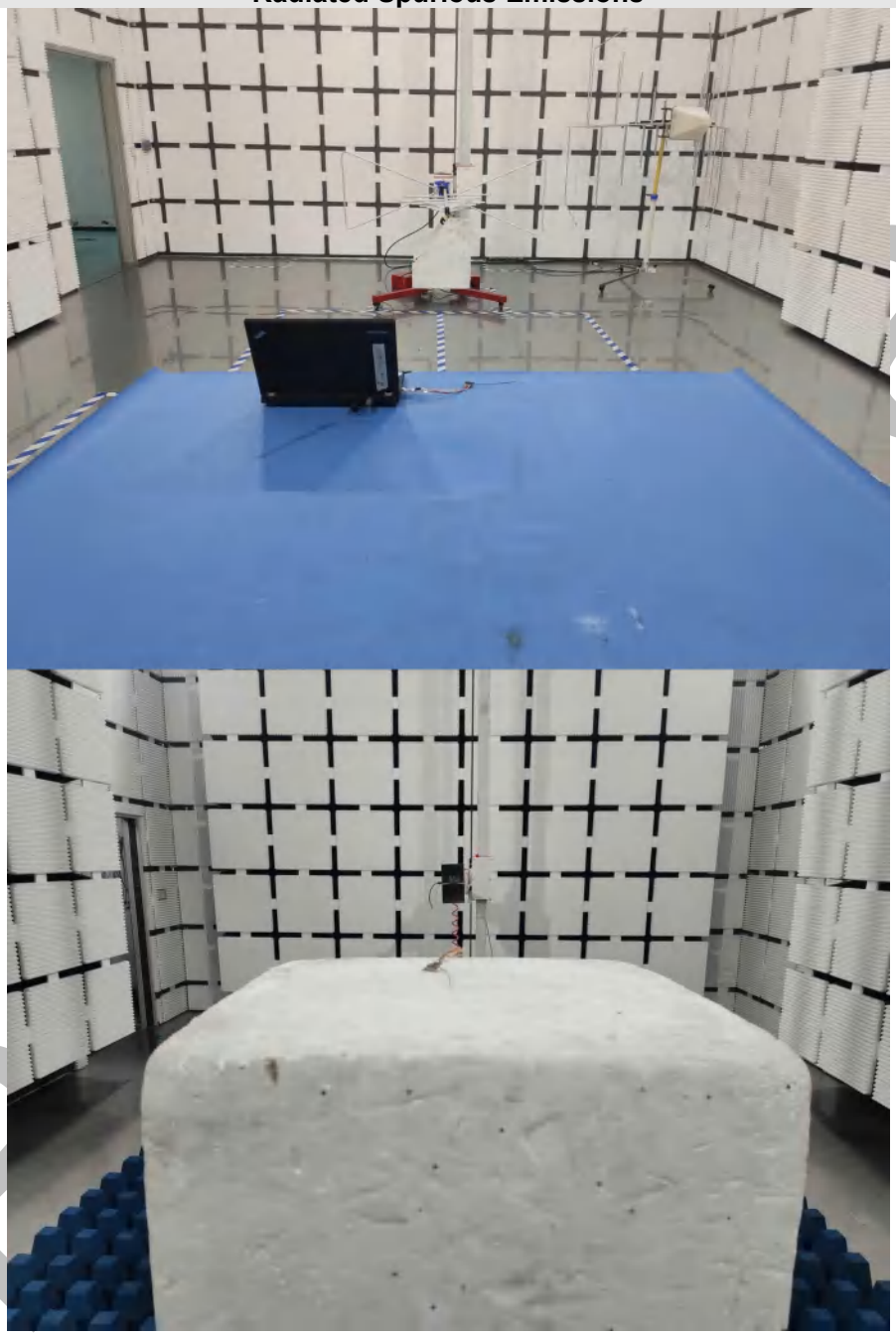
Tx. Spurious NVNT BLE 2M 2480MHz Ant1 Ref

Tx. Spurious NVNT BLE 2M 2480MHz Ant1 Emission

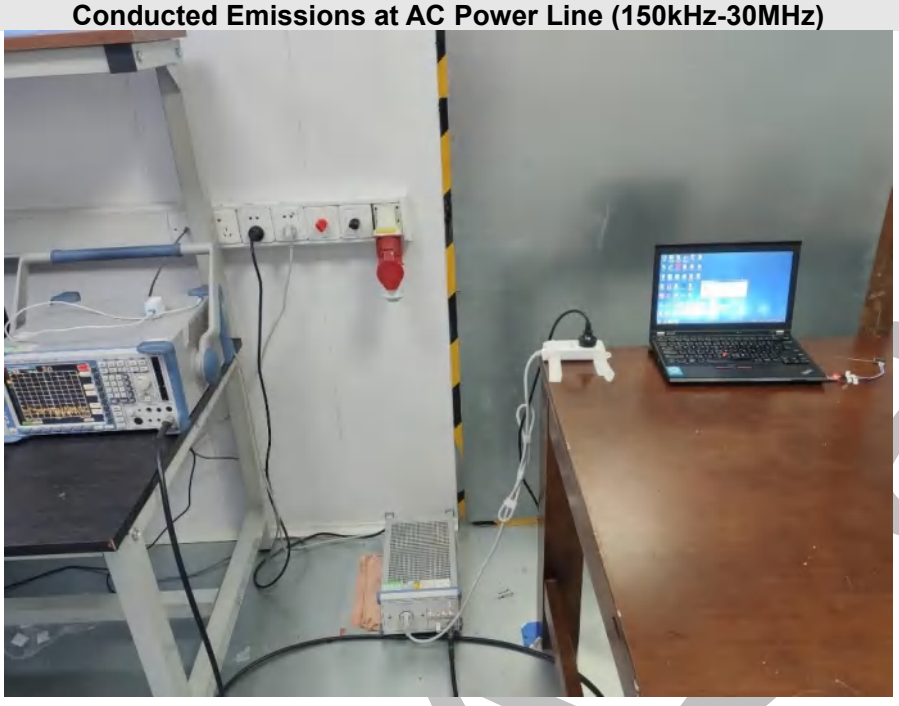

Agilent Spectrum Analyzer - Swept SA
Center Freq 13.265000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 15/15
03:00:04 PM May 25, 2022
Ref Offset 2.58 dB
10 dB/div
Ref 20.00 dBm
Log
Mkr1 2.492 GHz
-1.941 dBm
Start 30 MHz
#Res BW 100 kHz
#VBW 300 kHz
Stop 26.50 GHz
Sweep 2.530 s (1001 pts)
1 N 1 f 2.492 GHz -1.941 dBm
2 N 1 f 24.779 GHz -44.954 dBm
3 N 1 f 5.033 GHz -54.621 dBm
4 N 1 f 7.336 GHz -55.501 dBm
5 N 1 f 9.956 GHz -55.695 dBm
MSG
STATUS

APPENDIX A: PHOTOGRAPHS OF TEST SETUP

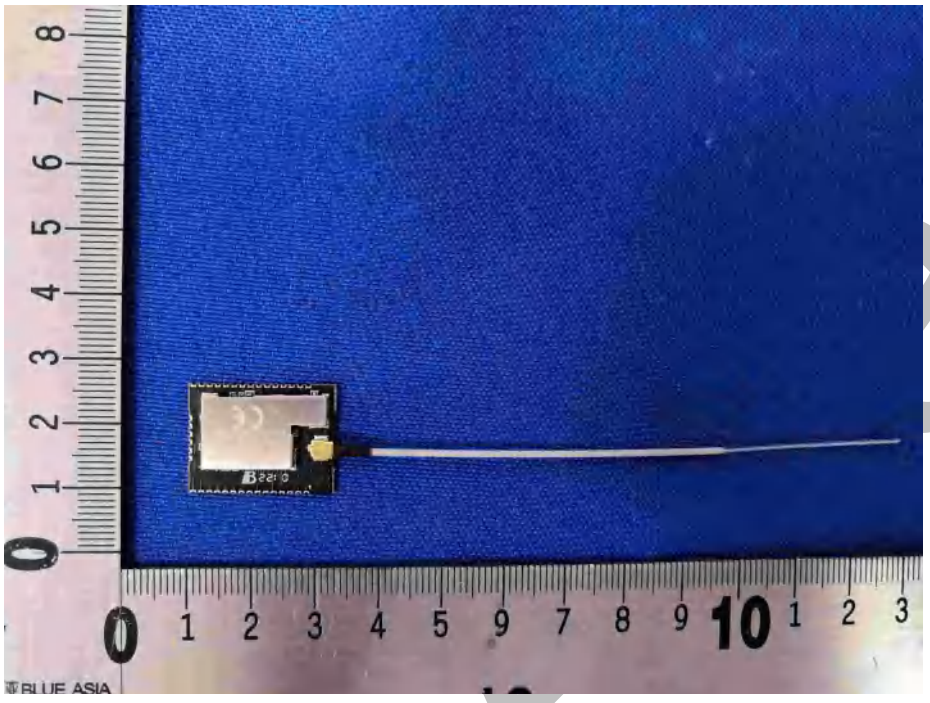
Radiated Spurious Emissions

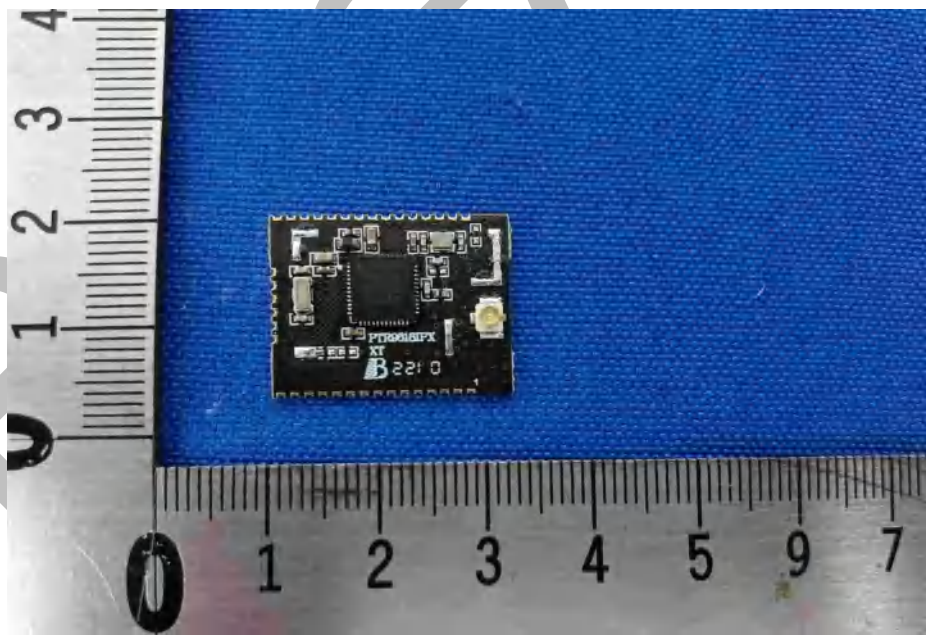


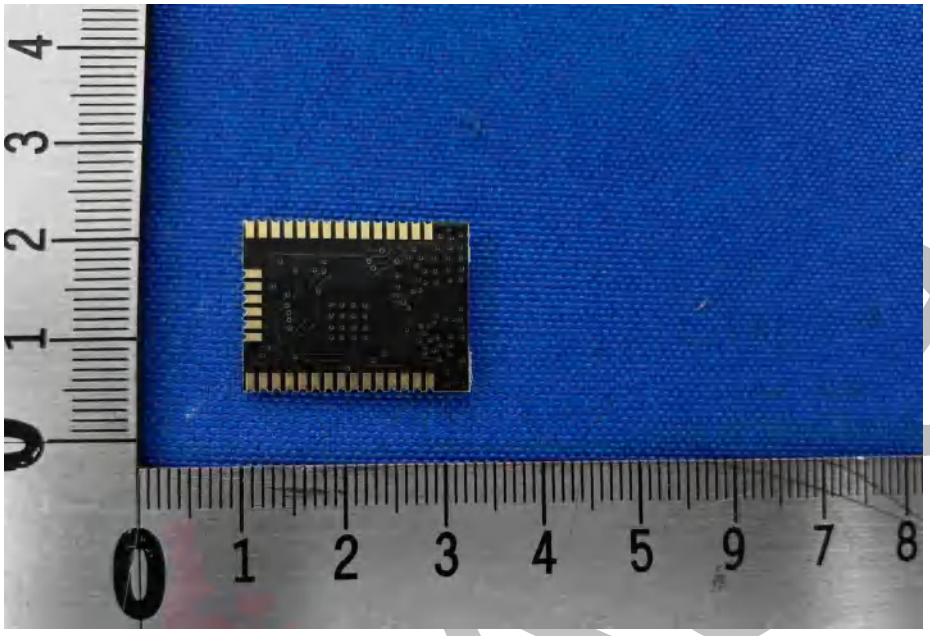
Conducted Emissions at AC Power Line (150kHz-30MHz)



APPENDIX B: PHOTOGRAPHS OF EUT







----END OF REPORT----

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