TEST REPORT

Product Name:	WUUK Smart Doorbell Pro
FCC ID:	2AWHY-Y0210
Trademark:	WUUK
Model Number:	Y0210
Prepared For:	WUUK LABS CORP.
Address:	16192 COASTAL HWY LEWES Delaware United States 19958
Manufacturer:	WUUK LABS CORP.
Address:	16192 COASTAL HWY LEWES Delaware United States 19958
Prepared By:	Shenzhen CTB Testing Technology Co., Ltd.
Address:	Floor 1&2, Building A, No. 26 of Xinhe Road, Xinqiao Community, Xinqiao Street, Baoan District, Shenzhen, Guangdong China
Sample Received Date:	Apr. 28, 2022
Sample tested Date:	Apr. 28, 2022 to Apr. 29, 2022
Issue Date:	Apr. 29, 2022
Report No.:	CTB220509002RF
Test Standards	FCC Part15.247 ANSI C63.10:2013
Test Results	PASS
Remark:	This is WIFI-2.4GHz band radio test report.

Compiled by:	Reviewed by:	Approved by:
Chen Zheng	Arron Liu	Bin Mei / Director

The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen CTB Testing Technology Co., Ltd. This report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client.

TABLE OF CONTENT

Test Report Declaration Page
1. VERSION 4
2. TEST SUMMARY 5
3. MEASUREMENT UNCERTAINTY 6
4. PRODUCT INFORMATION AND TEST SETUP 7
4.1 Product Information 7
4.2 Test Setup Configuration 7
4.3 Support Equipment 7
4.4 Channel List 8
4.5 Test Mode 8
4.6 Test Environment 8
5. TEST FACILITY AND TEST INSTRUMENT USED 9
5.1 Test Facility 9
5.2 Test Instrument Used 9
6. AC POWER LINE CONDUCTED EMISSION 12
6.1 Block Diagram Of Test Setup 12
6.2 Limit 12
6.3 Test procedure 12
6.4 Test Result 14
7. RADIATED SPURIOUS EMISSION 16
7.1 Block Diagram Of Test Setup 16
7.2 Limit 16
7.3 Test procedure 17
7.4 Test Result 18
8. BAND EDGE AND RF COUNDUCTED SPURIOUS EMISSIONS 40
8.1 Block Diagram Of Test Setup 40
8.2 Limit 40
8.3 Test procedure 40
8.4 Test Result 41
9. COUDUCTED OUTPUT POWER 48
9.1 Block Diagram Of Test Setup 48
9.2 Limit 48
9.3 Test procedure 48
9.4 Test Result 49
10. 6DB OCCUPIED BANDWIDTH 50
10.1 Block Diagram Of Test Setup 50
10.2 Limit 50
10.3 Test procedure 50
10.4 Test Result 51
11. POWER SPECTRAL DENSITY 56
11.1 Block Diagram Of Test Setup 56
11.2 Limit 56
11.3 Test procedure 56

11.4 Test Result 57
12. ANTENNA REQUIREMENT 62
13. EUT PHOTOGRAPHS 63
14. EUT TEST SETUP PHOTOGRAPHS 64

(Note: N/A means not applicable)

1. VERSION

Report No.	Issue Date	Description	Approved
CTB220509002RF	Apr. 29, 2022	Original	Valid

2. TEST SUMMARY

The Product has been tested according to the following specifications:

Test Item	Test Requirement	Test method	Result
AC Power Line Conducted Emission	47 CFR Part 15 Subpart C Section 15.207	ANSI C63.10-2013	PASS
Radiated Spurious emissions	47 CFR Part 15 Subpart C Section 15.205/15.209	ANSI C63.10-2013	PASS
Band edge and RF Conducted Spurious Emissions	47 CFR Part 15 Subpart C Section 15.247(d)/15.205(a)	ANSI C63.10-2013	PASS
Conducted Peak Output Power	47 CFR Part 15 Subpart C Section 15.247 (b)(3)	ANSI C63.10-2013	PASS
6dB Occupied Bandwidth	47 CFR Part 15 Subpart C Section 15.247 (a)(2)	ANSI C63.10-2013	PASS
Power Spectral Density	47 CFR Part 15Subpart C Section 15.247 (e)	ANSI C63.10-2013/ KDB 558074 D05v02	PASS
Antenna Requirement	47 CFR Part 15 Subpart C Section 15.203/15.247 (b)	ANSI C63.10-2013	PASS
RF Exposure Evaluation	47 CFR Part 15 Subpart C Section 15.247 (i)/1.1310/2.1091	KDB447498D01v06	PASS

Remark:
Test according to ANSI C63.4-2014 & ANSI C63.10-2013.

3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Item	Uncertainty
Occupancy bandwidth	U=±54.3Hz
Conducted output power Above 1G	U=±1.0dB
Conducted output power below 1G	U=±0.9dB
Power Spectral Density , Conduction	U=±1.0dB
Conduction spurious emissions	U=±2.8dB
Out of band emission	U=±54Hz
3m camber Radiated spurious emission(9KHz-30MHz)	U=±4.8dB
3m camber Radiated spurious emission(30MHz-1GHz)	U=±4.3dB
3m chamber Radiated spurious emission(1GHz-18GHz)	U=±4.5dB
3m chamber Radiated spurious emission(18GHz-40GHz)	U=±3.4dB
humidity uncertainty	U=±5.3%
Temperature uncertainty	U=±0.59℃
Supply voltages	U=±3%
Time	U=±5%

4. PRODUCT INFORMATION AND TEST SETUP

4.1 Product Information

Model(s):	Y0210
Model Description:	N/A
Wi-Fi Specification:	IEEE 802.11b/g/n
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	WiFi: IEEE 802.11b/g/n 20: 2412-2462MHz/ 11 channel IEEE 802.11n 40: 2422-2452MHz/ 7 channel
Max. RF output power:	WiFi (2.4G) : 14.882dBm
Type of Modulation:	WiFi: DSSS, OFDM, CCK
Antenna installation:	WiFi: Internal Antenna
Antenna Gain:	WiFi (2.4G) : 1.0dBi
Ratings:	DC 5V charging by adapter DC 3.7V by battery

4.2 Test Setup Configuration

See test photographs attached in EUT TEST SETUP PHOTOGRAPHS for the actual connections between Product and support equipment.

4.3 Support Equipment

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
1.					
2.					

Notes:

1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4 Channel List

CH	Frequency (MHz)	CH	Frequency (MHz)	CH	Frequency (MHz)	CH	Frequency (MHz)
1	2412	2	2417	3	2422	4	2427
5	2432	6	2437	7	2442	8	2447
9	2452	10	2457	11	2462		

4.5 Test Mode

All test mode(s) and condition(s) mentioned were considered and evaluated respectively by performing full tests, the worst data were recorded and reported.

Test mode	Low channel	Middle channel	High channel
Transmitting(802.11b/g/n20)	2412MHz	2437MHz	2462MHz
Transmitting(802.11n40)	2422MHz	2437MHz	2452MHz

NOTE: Dutycycle>98%.

Test mode	rate
802.11b	11M
802.11g	54M
802.11/n20	65M
802.11/n40	65M

4.6 Test Environment

Humidity(%):	54
Atmospheric Pressure(kPa):	101
Normal Voltage(AC):	120V
Normal Temperature(℃)	23
Low Temperature(℃)	0
High Temperature(℃)	50

5. TEST FACILITY AND TEST INSTRUMENT USED

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at Floor 1&2, Building A, No. 26 of Xinhe Road, Xinqiao Street, Baoan District, Shenzhen China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

5.2 Test Instrument Used

No.	Equipment	Manufacturer	Model No.	Serial No.	Calibrated date	Calibrated until
1	Spectrum Analyzer	Agilent	N9020A	MY52090073	2021.09.27	2022.08.05
2	Power Sensor	Agilent	U2021XA	MY56120032	2021.09.27	2022.08.05
3	Power Sensor	Agilent	U2021XA	MY56120034	2021.09.27	2022.08.05
4	Communication test set	R&S	CMW500	108058	2021.09.27	2022.08.05
5	Spectrum Analyzer	R&S	FSP40	100550	2021.09.27	2022.08.05
6	Signal Generator	Agilent	N5181A	MY49060920	2021.09.27	2022.08.16
7	Signal Generator	Agilent	N5182A	MY47420195	2021.09.27	2022.08.05
8	Communication test set	Agilent	E5515C	MY50102567	2021.09.27	2022.08.16
9	band rejection filter	Shenxiang	MSF2400-2483.5MS-1154	20181015001	2021.09.27	2022.08.05
10	band rejection filter	Shenxiang	MSF5150-5850MS-1155	20181015001	2021.09.27	2022.08.05
11	band rejection filter	Xingbo	XBLBQ-DZA120	190821-1-1	2021.09.27	2022.08.05
12	BT&WI-FI Automatic test software	Micowave	MTS8310	Ver. 2.0.0.0	2021.09.27	2022.08.05
13	Rohde & Schwarz SFU Broadcast Test System	R&S	SFU	101017	2021.09.27	2022.08.05
14	Temperature humidity chamber	Hongjing	TH-80CH	DG-15174	2021.09.27	2022.08.05
15	234G Automatic test	Micowave	MTS8200	Ver. 2.0.0.0	2021.09.27	2022.08.05

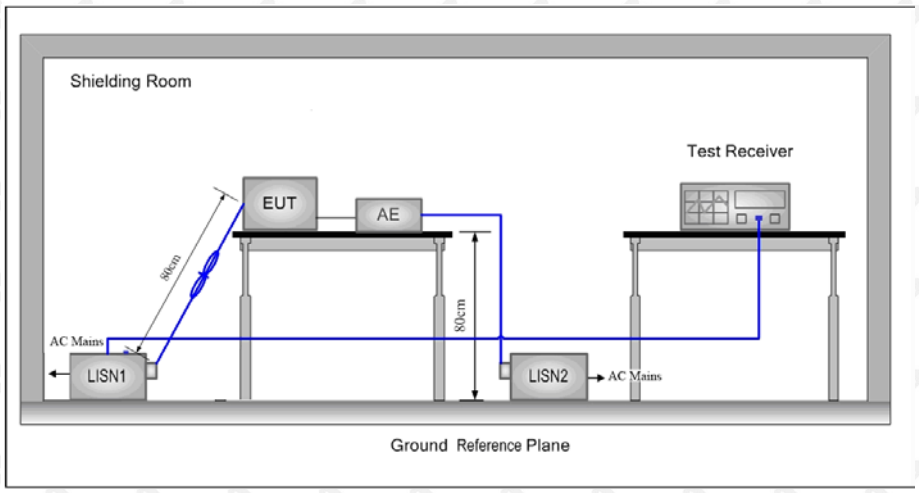
	software					
16	966 chamber	C.R.T.	966 Room	966	2021.09.27	2024.08.11
17	Receiver	R&S	ESPI	100362	2021.09.27	2022.08.05
18	Amplifier	HP	8447E	2945A02747	2021.09.27	2022.08.05
19	Amplifier	Agilent	8449B	3008A01838	2021.09.27	2022.08.05
20	TRILOG Broadband Antenna	Schwarzbeck	VULB 9163	869	2021.09.27	2022.08.07
21	Horn Antenna	Schwarzbeck	BBHA9120D	1911	2021.09.27	2022.08.08
22	Software	Fala	EZ-EMC	FA-03A2 RE	2021.09.27	2022.08.05
23	3-Loop Antenna	Daze	ZN30401	17014	2021.09.27	2022.08.05
24	loop antenna	ZHINAN	ZN30900A	/	2021.09.27	2022.08.05
25	Horn antenna	A/H/System	SAS-574	588	2021.09.27	2022.08.05
26	Amplifier	AEROFLEX	/	S/N/ 097	2021.09.27	2022.08.05

Continuous disturbance						
No.	Equipment	Manufacturer	Model No.	Serial No.	Calibrated date	Calibrated until
1	AMN	ROHDE&SCHWARZ	ESH3-Z5	831551852	2021.09.27	2022.08.05
2	Pulse limiter	ROHDE&SCHWARZ	ESH3Z2	357881052	2021.09.27	2022.08.05
3	EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCS30	834115/006	2021.09.27	2022.08.05
4	Coaxial cable	ZDECL	Z302S	18091904	2021.09.27	2022.08.05
5	AAN	Schwarzbeck	NTFM8158	183	2021.09.27	2022.08.05
6	Communication test set	Agilent	E5515C	MY50102567	2021.09.27	2022.08.05
7	Communication test set	R&S	CMW500	108058	2021.09.27	2022.08.05
8	EZ-EMC	Frad	EMC-con3A1.1	/	/	/

Radiated emission						
No.	Equipment	Manufacturer	Model No.	Serial No.	Calibrated date	Calibrated until
1	Double Ridged Broadband Horn Antenna	Schwarzbeck	BBHA 9120D	1911	2021.09.27	2022.08.05
2	TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	869	2021.09.27	2022.08.05
3	Amplifier	Agilent	8449B	3008A01838	2021.09.27	2022.08.05
4	Amplifier	HP	8447E	2945A02747	2021.09.27	2022.08.05
5	EMI TEST RECEIVER	ROHDE&SCHWARZ	ESPI7	100362	2021.09.27	2022.08.05
6	Coaxial cable	ETS	RFC-SNS-100-NMS-80 NI	/	2021.09.27	2022.08.05
7	Coaxial cable	ETS	RFC-SNS-100-NMS-20 NI	/	2021.09.27	2022.08.05
8	Coaxial cable	ETS	RFC-SNS-100-SMS-20 NI	/	2021.09.27	2022.08.05
9	Coaxial cable	ETS	RFC-NNS-100-NMS-30 0 NI	/	2021.09.27	2022.08.05
10	Communication test set	Agilent	E5515C	MY50102567	2021.09.27	2022.08.05
11	Communication test set	R&S	CMW500	108058	2021.09.27	2022.08.05
12	EZ-EMC	Frad	EMC-con3A1.1	/	/	/

6. AC POWER LINE CONDUCTED EMISSION

6.1 Block Diagram Of Test Setup



6.2 Limit

Table 4 – AC power-line conducted emissions limits

Frequency (MHz)	Conducted limit (dBµV)	
	Quasi-peak	Average
0.15 - 0.5	66 to 56[Note 1]	56 to 46[Note 1]
0.5 – 5	56	46
5 – 30	60	50

Note 1: The level decreases linearly with the logarithm of the frequency.

* Decreasing linearly with the logarithm of the frequency

6.3 Test 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 50Ω/50µH + 5Ω 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,

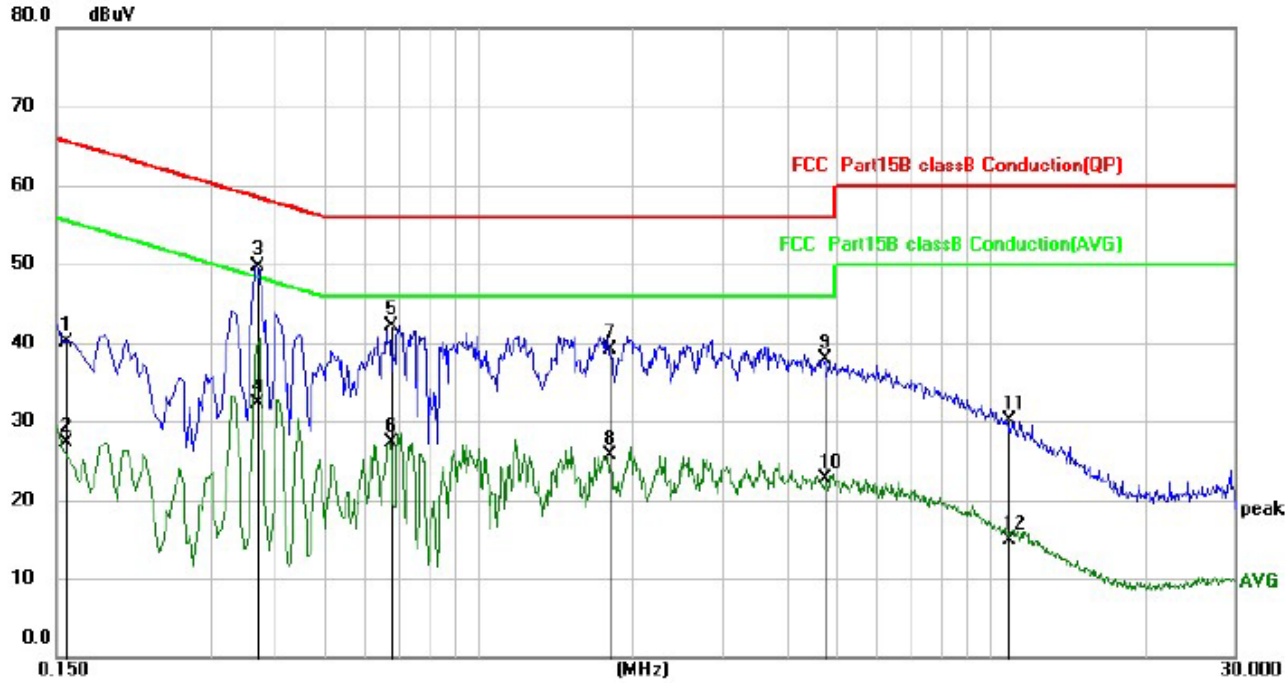
4) The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0,4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN 1 was placed

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.

6.4 Test Result

Test Specification: Line
AC 120V 60Hz

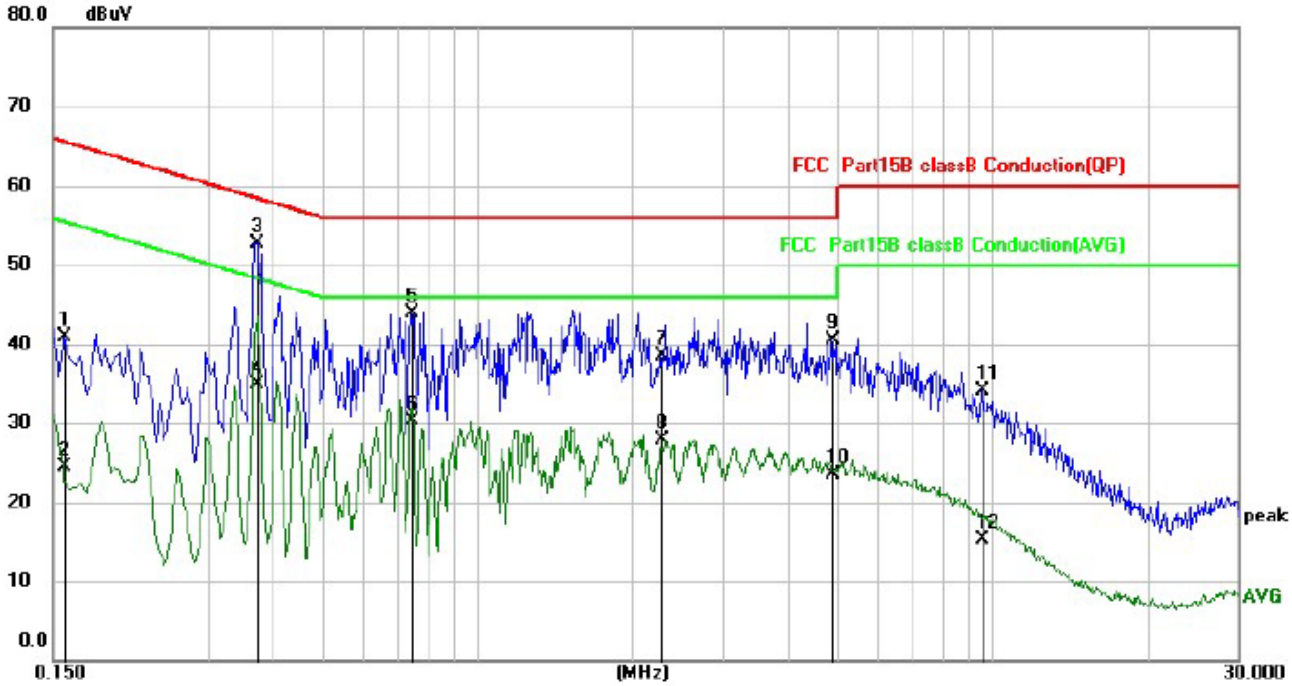


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.1565	29.47	10.72	40.19	65.65	-25.46	QP
2		0.1565	16.54	10.72	27.26	55.65	-28.39	AVG
3	*	0.3700	39.19	10.59	49.78	58.50	-8.72	QP
4		0.3700	21.72	10.59	32.31	48.50	-16.19	AVG
5		0.6740	31.58	10.55	42.13	56.00	-13.87	QP
6		0.6740	16.79	10.55	27.34	46.00	-18.66	AVG
7		1.8020	28.50	10.63	39.13	56.00	-16.87	QP
8		1.8020	15.09	10.63	25.72	46.00	-20.28	AVG
9		4.7660	27.28	10.65	37.93	56.00	-18.07	QP
10		4.7660	12.07	10.65	22.72	46.00	-23.28	AVG
11		10.8380	19.19	10.83	30.02	60.00	-29.98	QP
12		10.8380	4.03	10.83	14.86	50.00	-35.14	AVG

Remark:

Factor = Cable loss + LISN factor, Margin = Measurement – Limit

Test Specification: Neutral
AC 120V 60Hz



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	
		MHz	dBuV	dB	dBuV	dBuV	dB	Detector
1		0.1580	30.22	10.72	40.94	65.57	-24.63	QP
2		0.1580	13.82	10.72	24.54	55.57	-31.03	AVG
3	*	0.3740	42.21	10.59	52.80	58.41	-5.61	QP
4		0.3740	24.36	10.59	34.95	48.41	-13.46	AVG
5		0.7460	33.40	10.57	43.97	56.00	-12.03	QP
6		0.7460	19.83	10.57	30.40	46.00	-15.60	AVG
7		2.2820	27.82	10.63	38.45	56.00	-17.55	QP
8		2.2820	17.27	10.63	27.90	46.00	-18.10	AVG
9		4.8780	29.92	10.65	40.57	56.00	-15.43	QP
10		4.8780	12.76	10.65	23.41	46.00	-22.59	AVG
11		9.5420	23.29	10.80	34.09	60.00	-25.91	QP
12		9.5420	4.58	10.80	15.38	50.00	-34.62	AVG

Remark:

Factor = Cable loss + LISN factor, Margin = Measurement – Limit

7. RADIATED SPURIOUS EMISSION

7.1 Block Diagram Of Test Setup

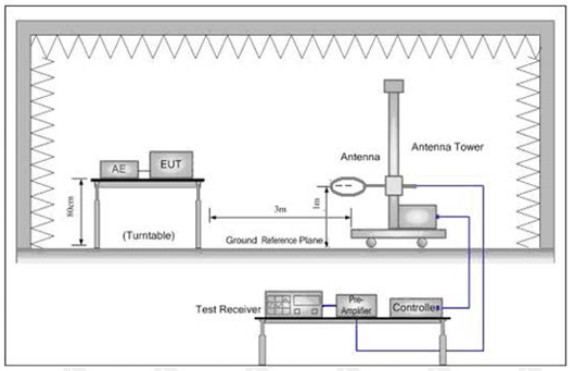


Figure 1. Below 30MHz

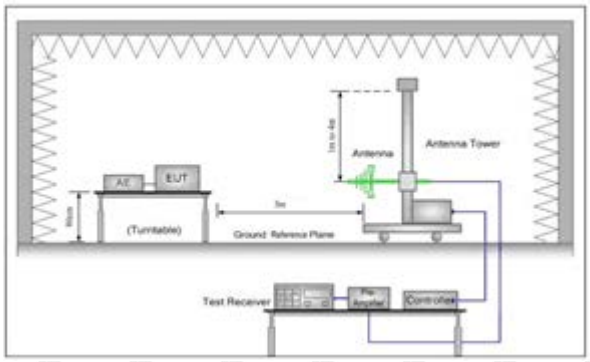


Figure 2. 30MHz to 1GHz

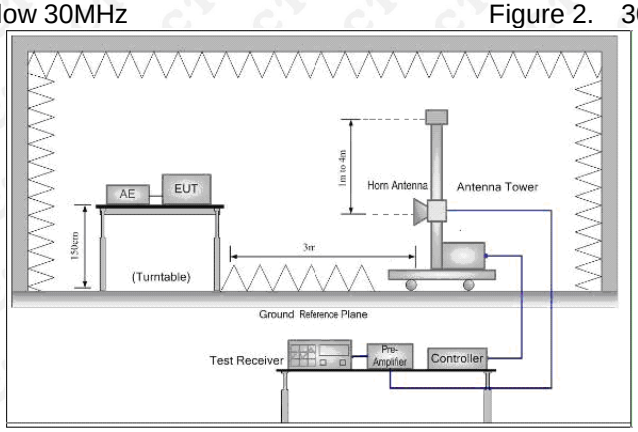


Figure 3. Above 1GHz

7.2 Limit

Spurious Emissions:

Frequency	Field strength (microvolt/meter)	Limit (dBμV/m)	Remark	Measurement distance (m)
0.009MHz-0.490MHz	2400/F(kHz)	-	-	300
0.490MHz-1.705MHz	24000/F(kHz)	-	-	30
1.705MHz-30MHz	30	-	-	30
30MHz-88MHz	100	40.0	Quasi-peak	3
88MHz-216MHz	150	43.5	Quasi-peak	3
216MHz-960MHz	200	46.0	Quasi-peak	3
960MHz-1GHz	500	54.0	Quasi-peak	3
Above 1GHz	500	54.0	Average	3

Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

7.3 Test procedure

Below 1GHz test procedure as below:

a.The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.

b.The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c.The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d.For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rota table table was turned from 0 degrees to 360 degrees to find the maximum reading.

e.The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

f.If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

g.Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 meter to 1.5 meter(Above 18GHz the distance is 1 meter and table is 1.5 meter).

h.Test the EUT in the lowest channel ,the middle channel ,the Highest channel

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

.

Receiver set:

Frequency	Detector	RBW	VBW	Remark
0.009MHz-0.090MHz	Peak	10kHz	30KHz	Peak
0.009MHz-0.090MHz	Average	10kHz	30KHz	Average
0.090MHz-0.110MHz	Quasi-peak	10kHz	30KHz	Quasi-peak
0.110MHz-0.490MHz	Peak	10kHz	30KHz	Peak
0.110MHz-0.490MHz	Average	10kHz	30KHz	Average
0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak
30MHz-1GHz	Quasi-peak	120 kHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

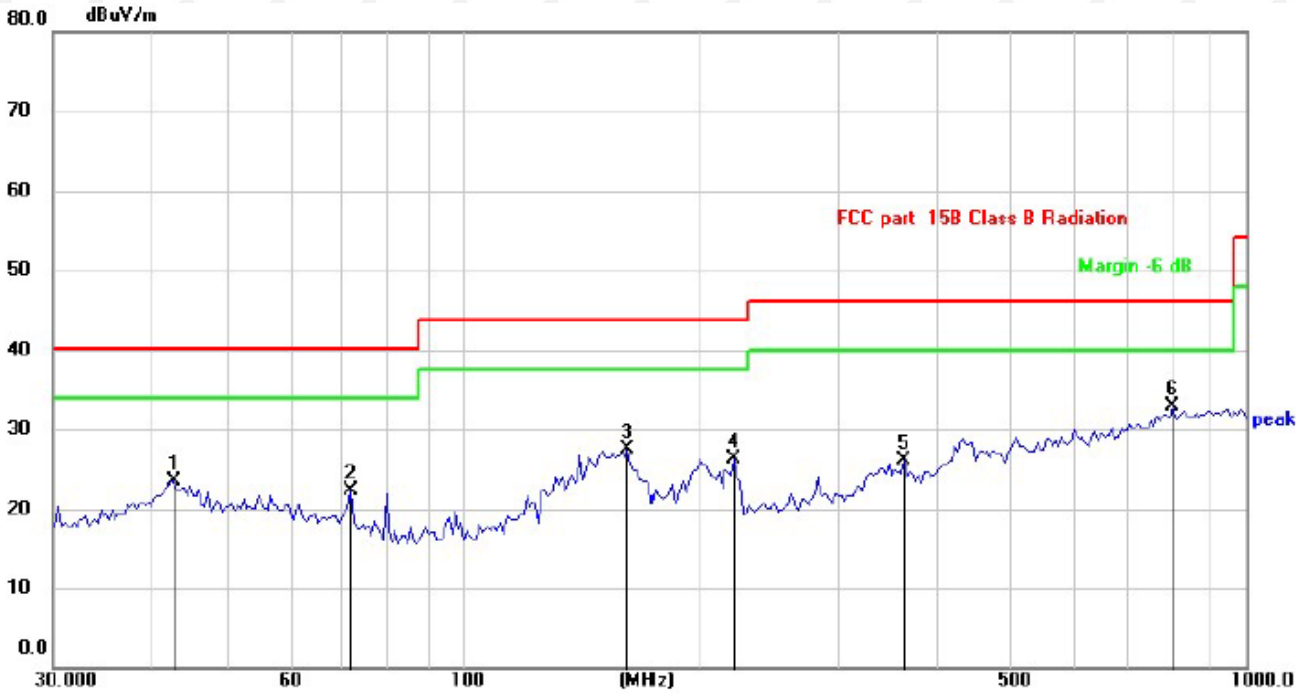
7.4 Test Result

Below 1GHz Test Results:
Antenna polarity: H

No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		43.7352	27.41	-5.41	22.00	40.00	-18.00	QP
2		160.0648	31.61	-5.57	26.04	43.50	-17.46	QP
3	*	223.3415	39.41	-6.42	32.99	43.50	-10.51	QP
4		293.0842	34.27	-5.29	28.98	46.00	-17.02	QP
5		384.6055	32.55	-2.22	30.33	46.00	-15.67	QP
6		892.2909	27.48	6.20	33.68	46.00	-12.32	QP

Remark: Factor = Cable lose + Antenna factor - Pre-amplifier; Margin = Limit – Level

Antenna polarity: V



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		42.6000	28.87	-5.37	23.50	40.00	-16.50	QP
2		72.0843	30.61	-8.31	22.30	40.00	-17.70	QP
3		162.8959	33.23	-5.74	27.49	43.50	-16.01	QP
4		221.3921	32.88	-6.58	26.30	43.50	-17.20	QP
5		364.8987	28.93	-2.92	26.01	46.00	-19.99	QP
6	*	803.1933	26.86	6.04	32.90	46.00	-13.10	QP

Remark: Factor = Cable lose + Antenna factor - Pre-amplifier; Margin = Limit – Level

1. The margin of 9K-30MH measurement exceeds 20dB, so the test chart is not included. Test Mode: TM1 (the worst)
2. All modes have been tested, and the test results show that b-mode data is the worst, only b-mode test chart is put. Test Mode: TM1 (the worst)
3. After pre-scanning three directions, the report recorded the worst case Test Mode: TM1 (the worst)

Above 1 GHz Test Results:

LOW CH1 (802.11b Mode)/2412

Horizontal:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4824	65.27	-3.64	61.63	74	-12.37	peak
4824	49.61	-3.64	45.97	54	-8.03	AVG
7236	57.44	-0.95	56.49	74	-17.51	peak
7236	44.96	-0.95	44.01	54	-9.99	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4824	66.82	-3.64	63.18	74	-10.82	peak
4824	47.67	-3.64	44.03	54	-9.97	AVG
7236	56.54	-0.95	55.59	74	-18.41	peak
7236	44.54	-0.95	43.59	54	-10.41	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

MID CH6 (802.11b Mode)/2437

Horizontal:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4874	65.51	-3.51	62.00	74	-12.00	peak
4874	48.71	-3.51	45.20	54	-8.80	AVG
7311	59.02	-0.82	58.20	74	-15.80	peak
7311	45.61	-0.82	44.79	54	-9.21	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4874	63.79	-3.51	60.28	74	-13.72	peak
4874	48.58	-3.51	45.07	54	-8.93	AVG
7311	59.94	-0.82	59.12	74	-14.88	peak
7311	44.56	-0.82	43.74	54	-10.26	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

HIGH CH11 (802.11b Mode)/2462

Horizontal:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4924	64.91	-3.43	61.48	74	-12.52	peak
4924	46.08	-3.43	42.65	54	-11.35	AVG
7386	59.40	-0.75	58.65	74	-15.35	peak
7386	43.58	-0.75	42.83	54	-11.17	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4924	62.88	-3.43	59.45	74	-14.55	peak
4924	48.34	-3.43	44.91	54	-9.09	AVG
7386	58.80	-0.75	58.05	74	-15.95	peak
7386	43.07	-0.75	42.32	54	-11.68	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Remark:
(1) Measuring frequencies from 1 GHz to the 25 GHz.
(2) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
(3) Data of measurement within this frequency range shown "--- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
(4) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.

LOW CH1 (802.11g Mode)/2412

Horizontal:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4824	64.07	-3.64	60.43	74	-13.57	peak
4824	49.56	-3.64	45.92	54	-8.08	AVG
7236	57.93	-0.95	56.98	74	-17.02	peak
7236	44.86	-0.95	43.91	54	-10.09	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4824	62.90	-3.64	59.26	74	-14.74	peak
4824	47.67	-3.64	44.03	54	-9.97	AVG
7236	59.95	-0.95	59.00	74	-15.00	peak
7236	43.82	-0.95	42.87	54	-11.13	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

MID CH6 (802.11g Mode)/2437

Horizontal:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4874	64.55	-3.51	61.04	74	-12.96	peak
4874	48.37	-3.51	44.86	54	-9.14	AVG
7311	59.85	-0.82	59.03	74	-14.97	peak
7311	45.33	-0.82	44.51	54	-9.49	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4874	63.86	-3.51	60.35	74	-13.65	peak
4874	46.78	-3.51	43.27	54	-10.73	AVG
7311	56.85	-0.82	56.03	74	-17.97	peak
7311	42.18	-0.82	41.36	54	-12.64	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

HIGH CH11 (802.11g Mode)/2462

Horizontal:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4924	63.97	-3.43	60.54	74	-13.46	peak
4924	49.59	-3.43	46.16	54	-7.84	AVG
7386	58.69	-0.75	57.94	74	-16.06	peak
7386	41.72	-0.75	40.97	54	-13.03	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4924	63.63	-3.43	60.20	74	-13.80	peak
4924	46.89	-3.43	43.46	54	-10.54	AVG
7386	57.87	-0.75	57.12	74	-16.88	peak
7386	42.56	-0.75	41.81	54	-12.19	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Remark:
(1) Measuring frequencies from 1 GHz to the 25 GHz.
(2) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
(3) Data of measurement within this frequency range shown "--- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
(4) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.

LOW CH1 (802.11n/H20 Mode)/2412

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4824	63.03	-3.64	59.39	74	-14.61	peak
4824	48.97	-3.64	45.33	54	-8.67	AVG
7236	57.83	-0.95	56.88	74	-17.12	peak
7236	45.38	-0.95	44.43	54	-9.57	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4824	66.70	-3.64	63.06	74	-10.94	peak
4824	48.57	-3.64	44.93	54	-9.07	AVG
7236	58.34	-0.95	57.39	74	-16.61	peak
7236	42.92	-0.95	41.97	54	-12.03	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

MID CH6 (802.11n/H20 Mode)/2437

Horizontal:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4874.00	65.87	-3.51	62.36	74.00	-11.64	peak
4874.00	46.95	-3.51	43.44	54.00	-10.56	AVG
7311.00	59.94	-0.82	59.12	74.00	-14.88	peak
7311.00	46.46	-0.82	45.64	54.00	-8.36	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4874.00	63.39	-3.51	59.88	74.00	-14.12	peak
4874.00	46.84	-3.51	43.33	54.00	-10.67	AVG
7311.00	59.15	-0.82	58.33	74.00	-15.67	peak
7311.00	41.67	-0.82	40.85	54.00	-13.15	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

HIGH CH11 (802.11n/H20 Mode)/2462

Horizontal:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4924	62.43	-3.43	59.00	74	-15.00	peak
4924	48.23	-3.43	44.80	54	-9.20	AVG
7386	58.09	-0.75	57.34	74	-16.66	peak
7386	41.31	-0.75	40.56	54	-13.44	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4924	62.72	-3.43	59.29	74	-14.71	peak
4924	47.53	-3.43	44.10	54	-9.90	AVG
7386	56.15	-0.75	55.40	74	-18.60	peak
7386	42.60	-0.75	41.85	54	-12.15	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

LOW CH3 (802.11n/H40 Mode)/2422

Horizontal:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4844	64.39	-3.63	60.76	74	-13.24	peak
4844	49.76	-3.63	46.13	54	-7.87	AVG
7266	59.57	-0.94	58.63	74	-15.37	peak
7266	46.83	-0.94	45.89	54	-8.11	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4844	65.66	-3.63	62.03	74	-11.97	peak
4844	47.71	-3.63	44.08	54	-9.92	AVG
7266	58.22	-0.94	57.28	74	-16.72	peak
7266	45.56	-0.94	44.62	54	-9.38	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

MID CH6 (802.11n/H40 Mode)/2437

Horizontal:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874	62.57	-3.51	59.06	74	-14.94	peak
4874	49.66	-3.51	46.15	54	-7.85	AVG
7311	60.91	-0.82	60.09	74	-13.91	peak
7311	45.84	-0.82	45.02	54	-8.98	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
4874	62.30	-3.51	58.79	74	-15.21	peak
4874	46.52	-3.51	43.01	54	-10.99	AVG
7311	56.67	-0.82	55.85	74	-18.15	peak
7311	43.35	-0.82	42.53	54	-11.47	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

HIGH CH9 (802.11n/H40 Mode)/2452

Horizontal:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4904	63.84	-3.43	60.41	74	-13.59	peak
4904	47.68	-3.43	44.25	54	-9.75	AVG
7356	56.18	-0.75	55.43	74	-18.57	peak
7356	43.34	-0.75	42.59	54	-11.41	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
4904	62.40	-3.43	58.97	74	-15.03	peak
4904	48.24	-3.43	44.81	54	-9.19	AVG
7356	58.06	-0.75	57.31	74	-16.69	peak
7356	43.33	-0.75	42.58	54	-11.42	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Remark:
(1) Measuring frequencies from 1 GHz to the 25 GHz.
(2) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
(3) Data of measurement within this frequency range shown "--- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.
(4) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed
(5)Have tested in three orientations for radiated emissions, Only The worst record is in this report

Restricted bands around fundamental frequency (Radiated)

Operation Mode:
802.11b Mode TX CH Low (2412MHz)

Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2390	57.37	-5.81	51.56	74	-22.44	peak
2390	/	-5.81	/	54	/	AVG
2399	64.69	-5.84	58.85	74	-15.15	peak
2399	48.73	-5.84	42.89	54	-11.11	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2390	56.02	-5.81	50.21	74	-23.79	peak
2390	/	-5.81	/	54	/	AVG
2399	61.86	-5.84	56.02	74	-17.98	peak
2399	46.53	-5.84	40.69	54	-13.31	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Operation Mode:
802.11b Mode TX CH High (2462MHz)

Horizontal

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2483.5	55.96	-5.65	50.31	74	-23.69	peak
2483.5	/	-5.65	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Vertical:

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
2483.5	56.06	-5.65	50.41	74	-23.59	peak
2483.5	/	-5.65	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						
Remark: All the other emissions not reported were too low to read and deemed to comply with FCC limit.						

Operation Mode: 802.11g Mode TX CH Low (2412MHz)

Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2390	58.48	-5.81	52.67	74	-21.33	peak
2390	/	-5.81	/	54	/	AVG
2399	63.21	-5.84	57.37	74	-16.63	peak
2399	46.16	-5.84	40.32	54	-13.68	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2390	56.37	-5.81	50.56	74	-23.44	peak
2390	/	-5.81	/	54	/	AVG
2399	63.28	-5.84	57.44	74	-16.56	peak
2399	46.63	-5.84	40.79	54	-13.21	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Operation Mode: 802.11g Mode TX CH High (2462MHz)

Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	57.76	-5.65	52.11	74	-21.89	peak
2483.5	/	-5.65	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	57.70	-5.65	52.05	74	-21.95	peak
2483.5	/	-5.65	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						
Remark: All the other emissions not reported were too low to read and deemed to comply with FCC limit.						

Operation Mode: 802.11n/H20 Mode TX CH Low (2412MHz)

Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2390	57.05	-5.81	51.24	74	-22.76	peak
2390	/	-5.81	/	54	/	AVG
2399	62.00	-5.84	56.16	74	-17.84	peak
2399	48.71	-5.84	42.87	54	-11.13	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2390	56.94	-5.81	51.13	74	-22.87	peak
2390	/	-5.81	/	54	/	AVG
2399	61.63	-5.84	55.79	74	-18.21	peak
2399	47.37	-5.84	41.53	54	-12.47	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Operation Mode: 802.11n/H20 Mode TX CH High (2462MHz)

Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	57.12	-5.65	51.47	74	-22.53	peak
2483.5	/	-5.65	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	55.54	-5.65	49.89	74	-24.11	peak
2483.5	/	-5.65	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						
Remark: All the other emissions not reported were too low to read and deemed to comply with FCC limit.						

Operation Mode: 802.11n/H40 Mode TX CH Low (2422MHz)

Horizontal

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2390	59.25	-5.81	53.44	74	-20.56	peak
2390	/	-5.81	/	54	/	AVG
2399	63.63	-5.84	57.79	74	-16.21	peak
2399	47.36	-5.84	41.52	54	-12.48	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2390	58.39	-5.81	52.58	74	-21.42	peak
2390	/	-5.81	/	54	/	AVG
2399	62.11	-5.84	56.27	74	-17.73	peak
2399	45.63	-5.84	39.79	54	-14.21	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Operation Mode: 802.11n/H40 Mode TX CH High (2452MHz)

Horizontal

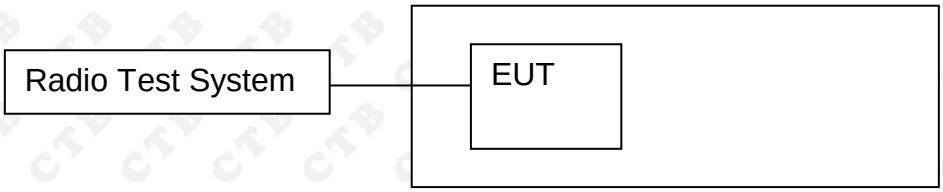
Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	58.24	-5.65	52.59	74	-21.41	peak
2483.5	/	-5.65	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						

Vertical:

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
2483.5	56.88	-5.65	51.23	74	-22.77	peak
2483.5	/	-5.65	/	54	/	AVG
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Emission level = Reading Result + Factor, Margin = Emission level - Limits						
Remark: All the other emissions not reported were too low to read and deemed to comply with FCC limit.						

8. BAND EDGE AND RF COUNDUCTED SPURIOUS EMISSIONS

8.1 Block Diagram Of Test Setup



8.2 Limit

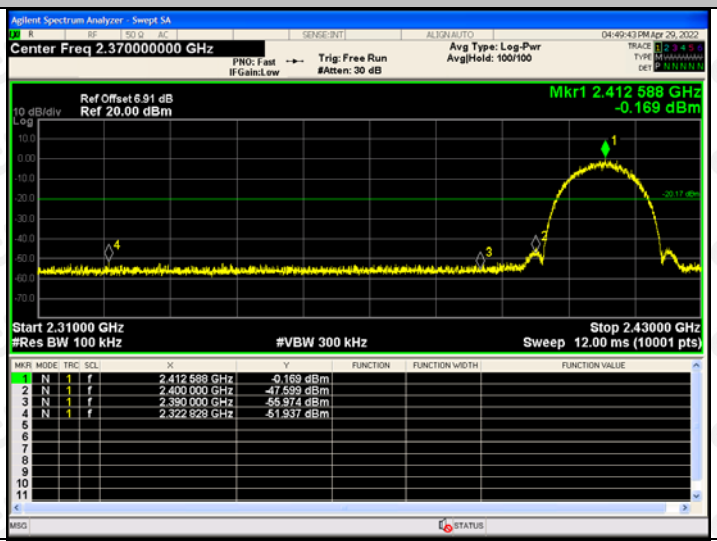
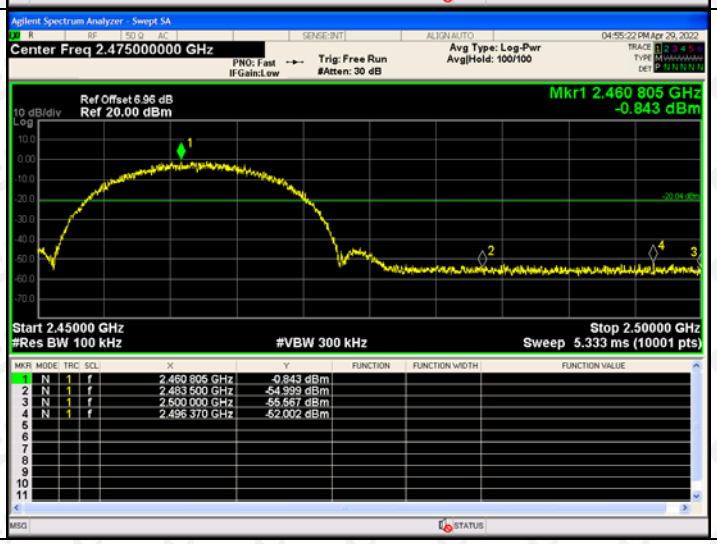
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the 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)).

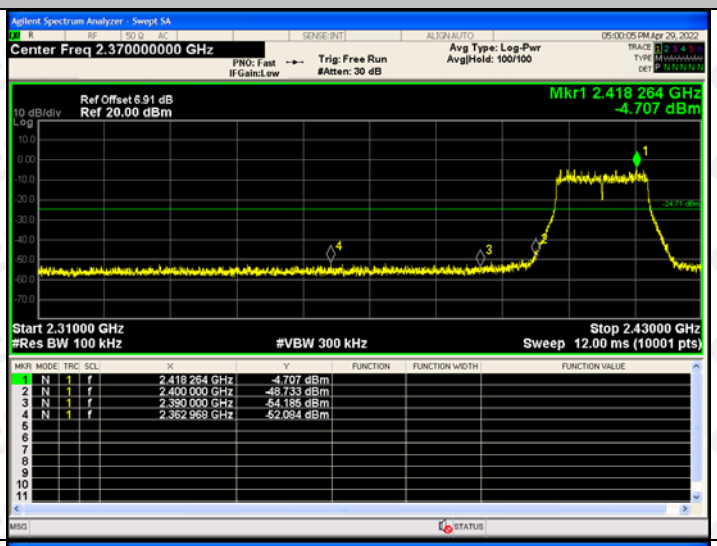
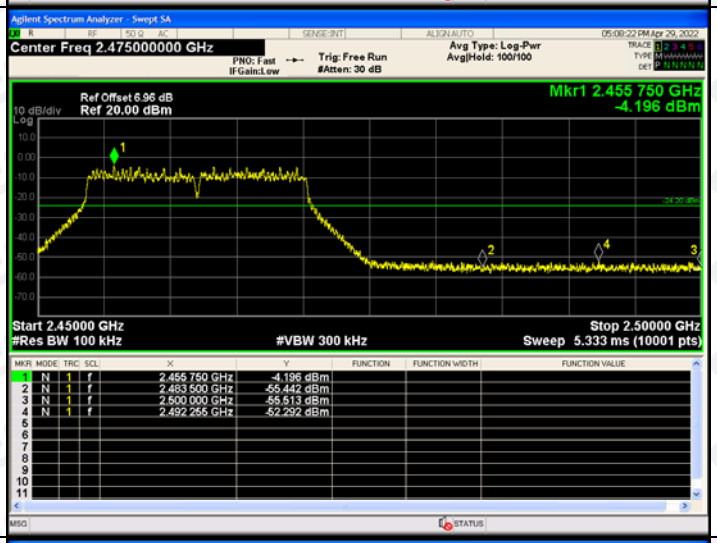
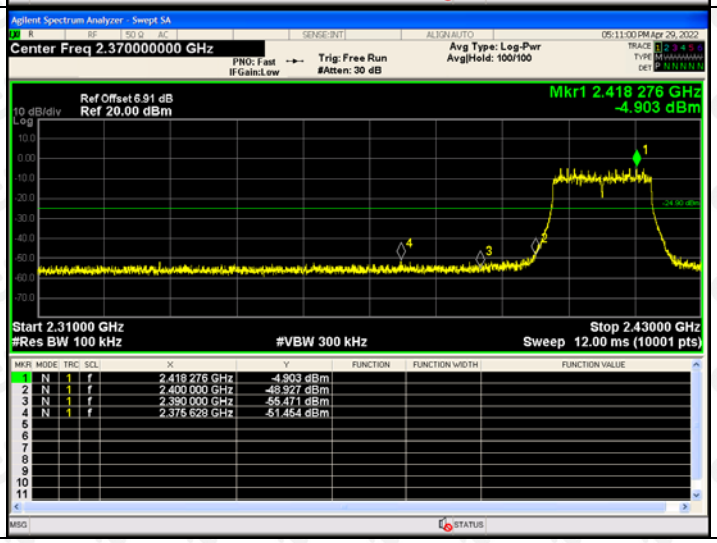
8.3 Test procedure

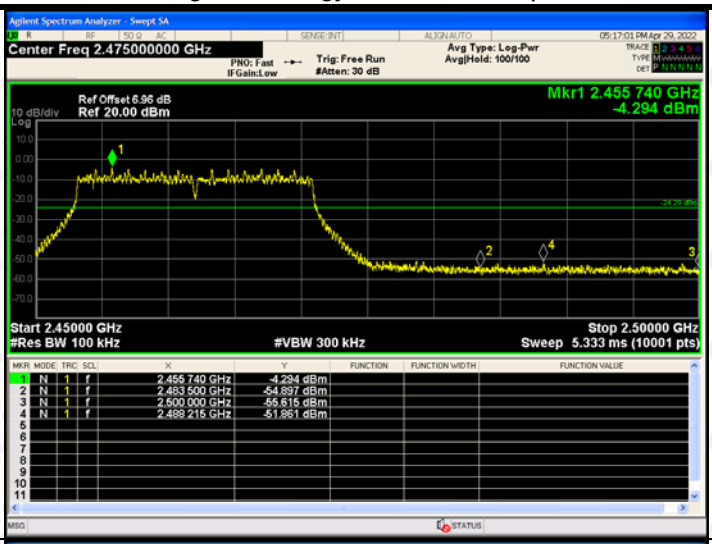
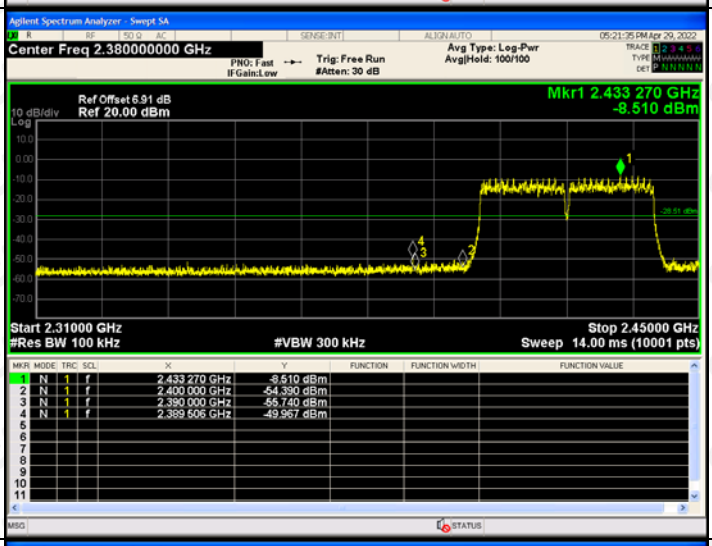
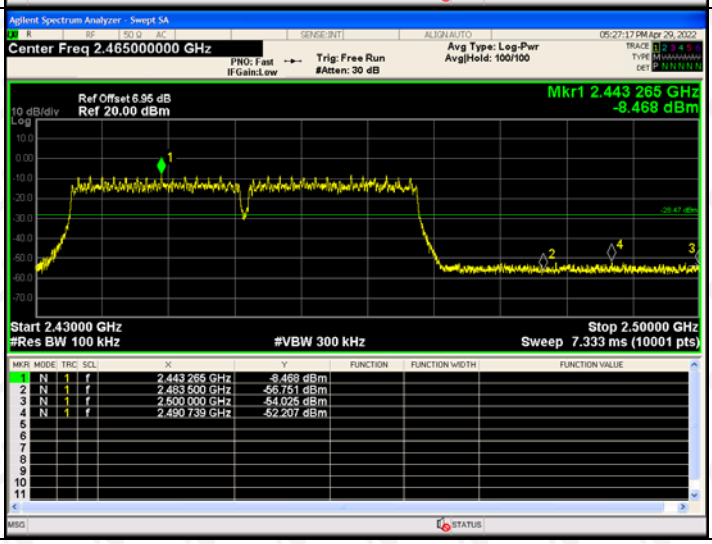
1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer:

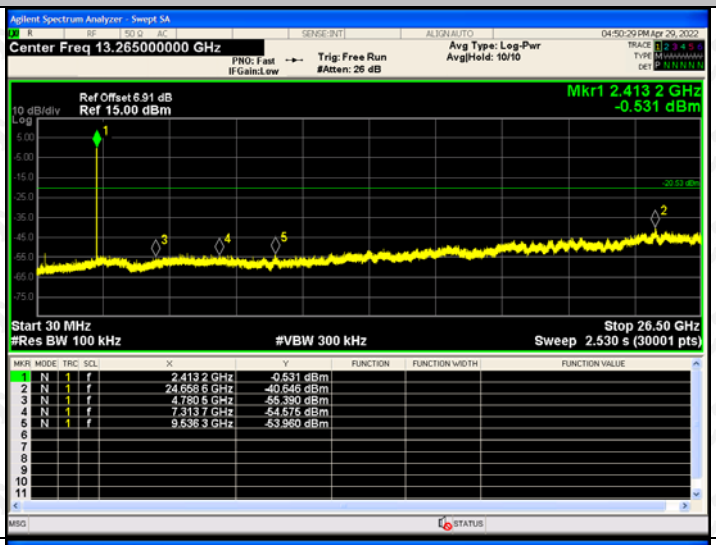
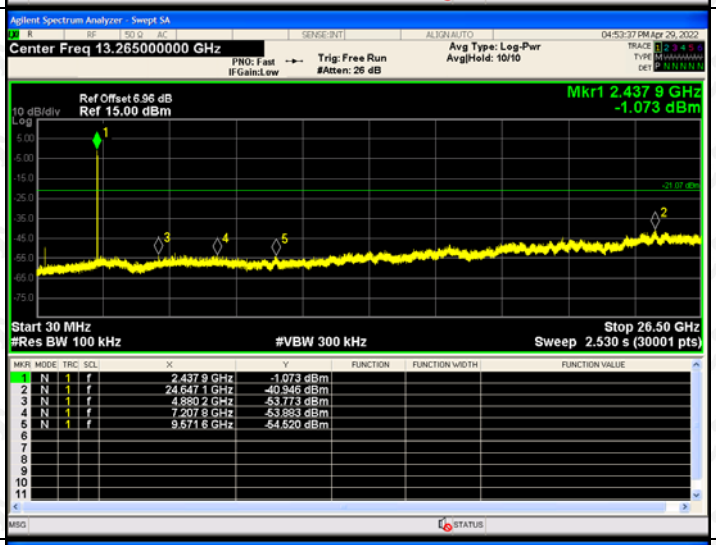
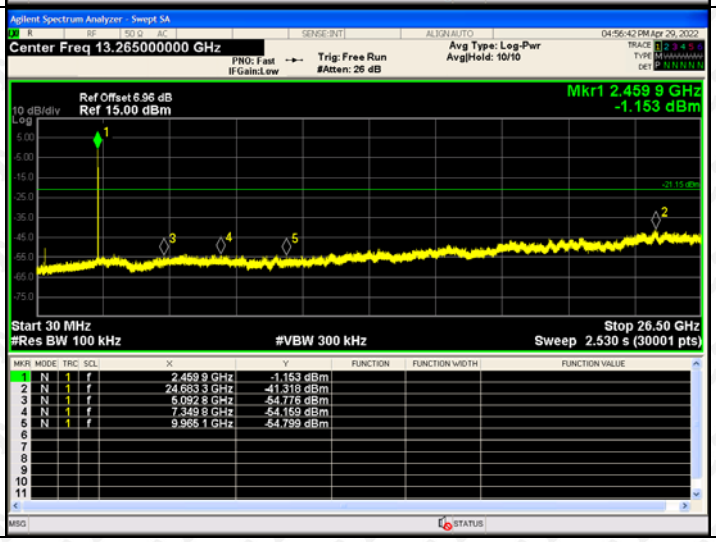
Blow 30MHz:
RBW = 100kHz, VBW = 300kHz, Sweep = auto
Detector function = peak, Trace = max hold
Above 30MHz:
RBW = 100KHz, VBW = 300KHz, Sweep = auto
Detector function = peak, Trace = max hold

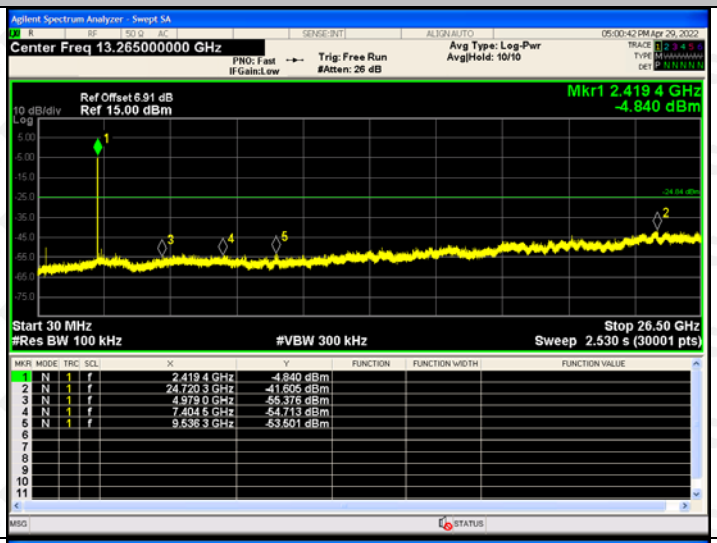
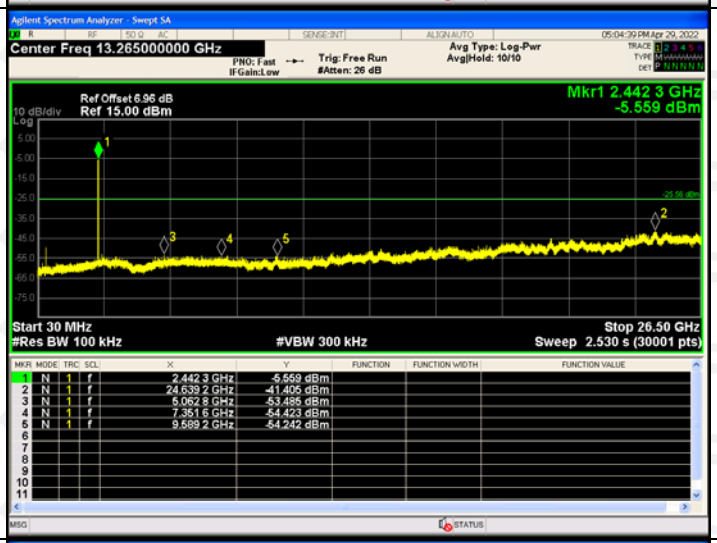
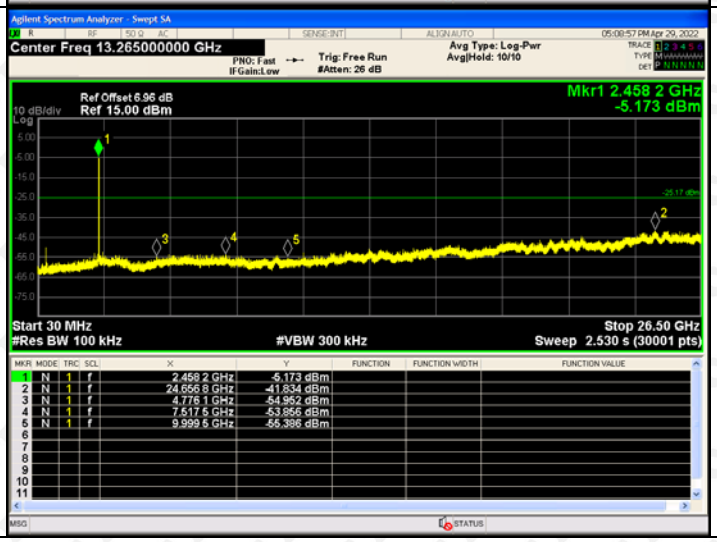
8.4 Test Result

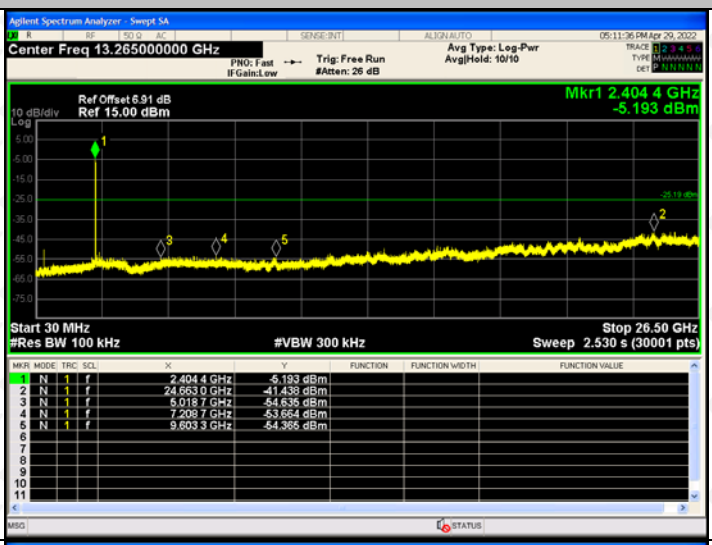
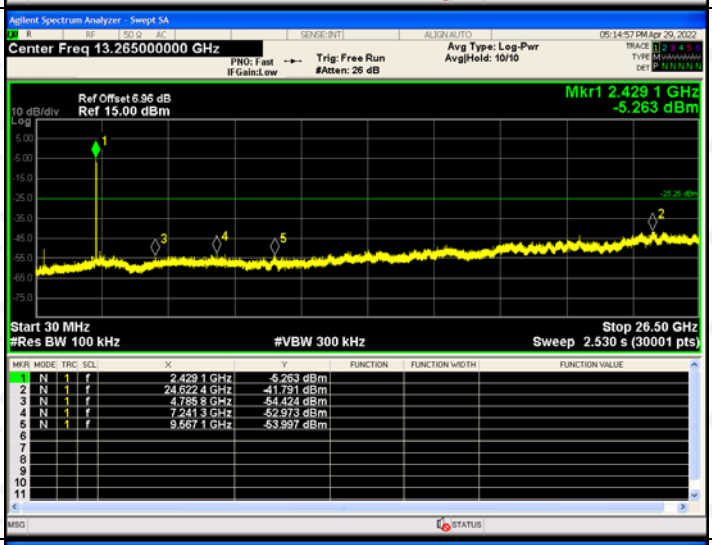
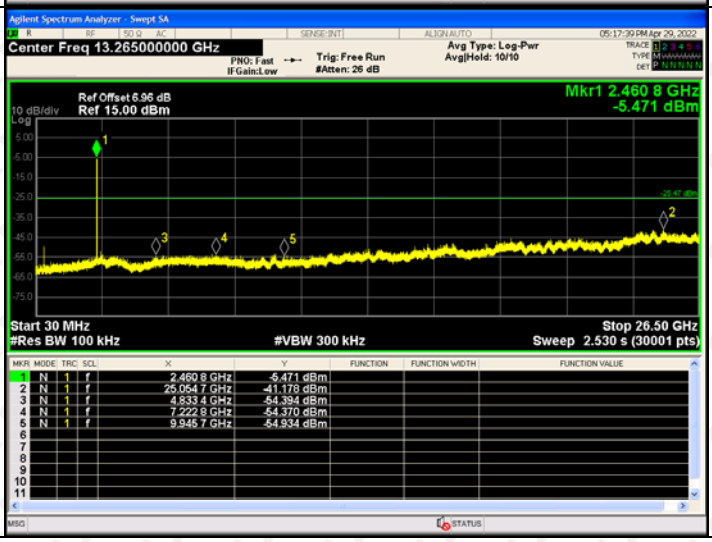
BAND EDGE Graphs			
802.11b/LCH			
802.11b/HCH			

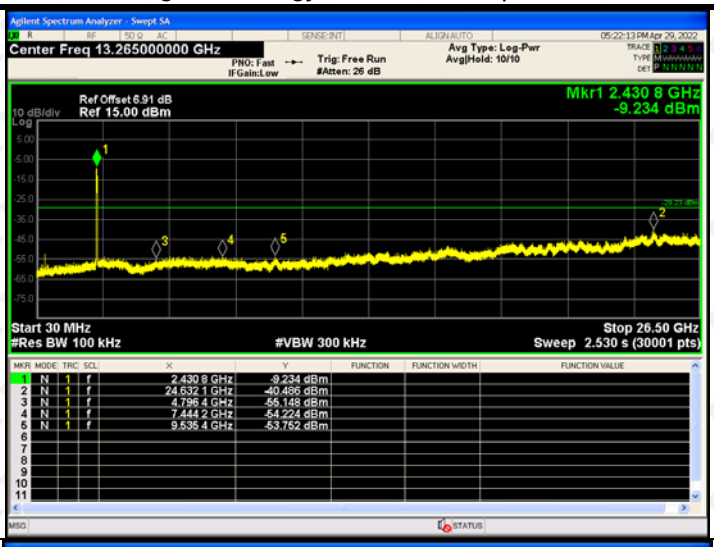
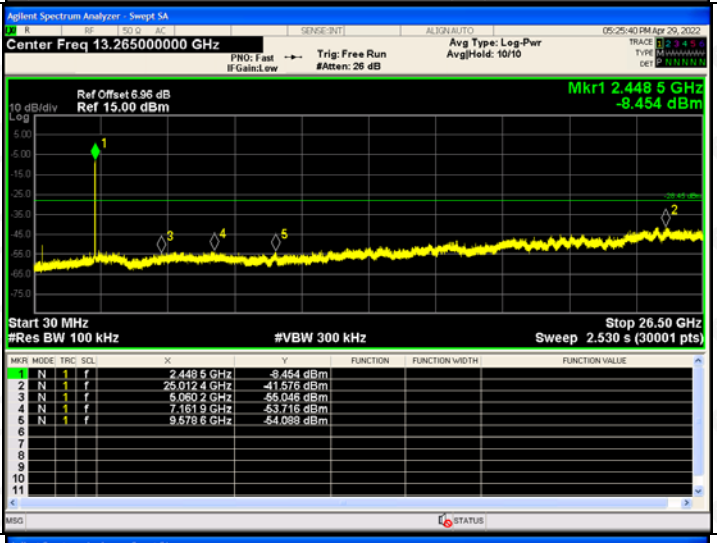
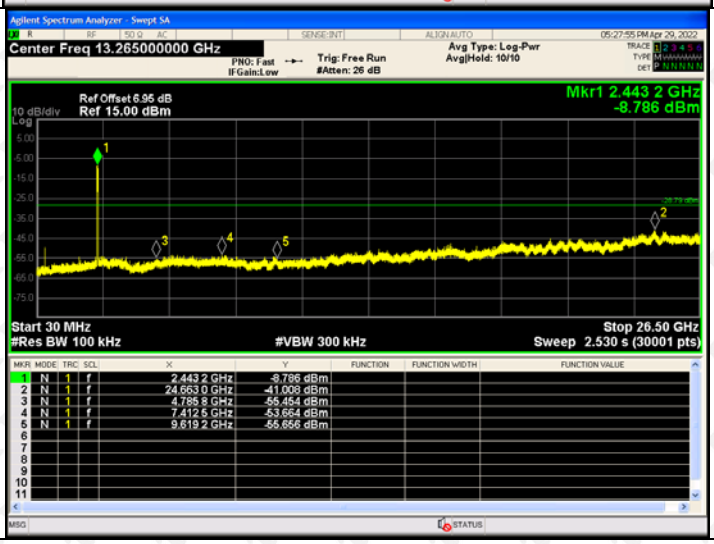
BAND EDGE Graphs			
802.11g/LCH			
802.11g/HCH			
802.11n(HT20)/LCH			

802.11n(HT20)/HCH			
802.11n(HT40)/LCH			
802.11n(HT40)/HCH			

RF Conducted Spurious Emissions Graphs			
802.11b/LCH			
802.11b/MCH			
802.11b/HCH			

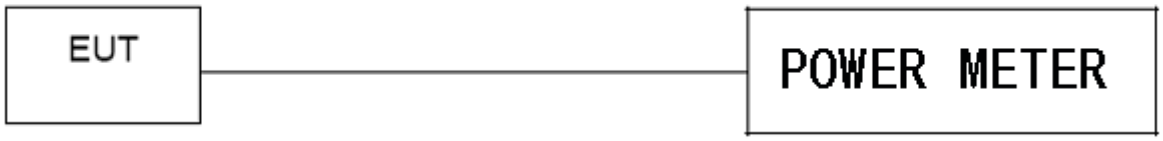
RF Conducted Spurious Emissions Graphs			
802.11g/LCH			
802.11g/MCH			
802.11g/HCH			

RF Conducted Spurious Emissions Graphs			
802.11n(HT20)/LCH			
802.11 n(HT20)/MCH			
802.11 n(HT20)/HCH			

802.11n(HT40)/LCH			
802.11 n(HT40)/MCH			
802.11 n(HT40)/HCH			

9. COUDUCTED OUTPUT POWER

9.1 Block Diagram Of Test Setup



9.2 Limit

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

9.3 Test procedure

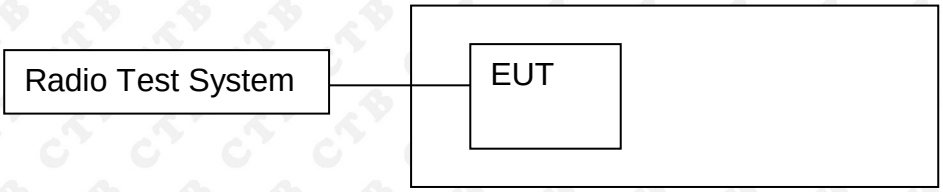
1. The EUT was directly connected to the Power meter

9.4 Test Result

Mode	Channel.	Peak Output Power [dBm]	Limit[dBm]	Verdict
802.11b	LCH	14.864	30	PASS
	MCH	14.882	30	PASS
	HCH	14.725	30	PASS
802.11g	LCH	13.727	30	PASS
	MCH	13.267	30	PASS
	HCH	14.03	30	PASS
802.11n(HT20)	LCH	13.326	30	PASS
	MCH	13.966	30	PASS
	HCH	13.823	30	PASS
802.11n(HT40)	LCH	12.647	30	PASS
	MCH	12.709	30	PASS
	HCH	12.8	30	PASS

10. 6DB OCCUPIED BANDWIDTH

10.1 Block Diagram Of Test Setup



10.2 Limit

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	>= 500KHz (6dB bandwidth)	2400-2483.5	PASS

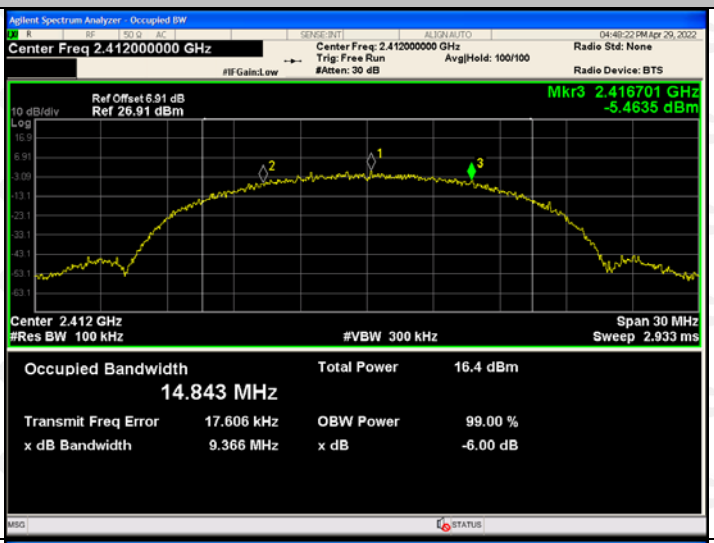
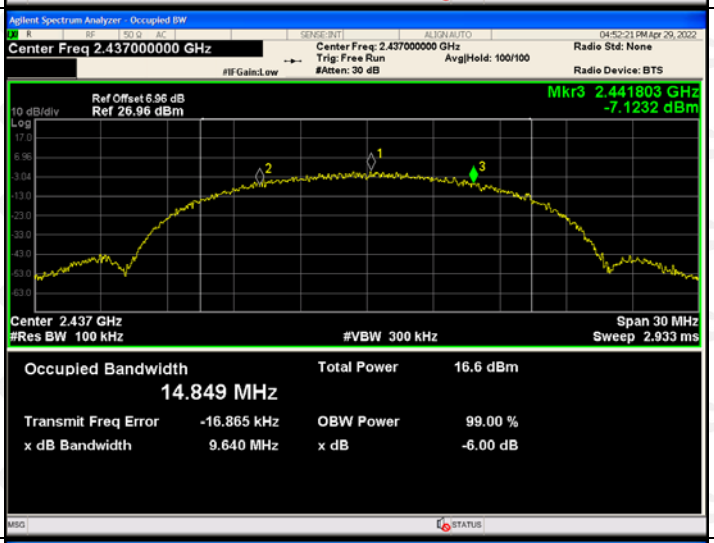
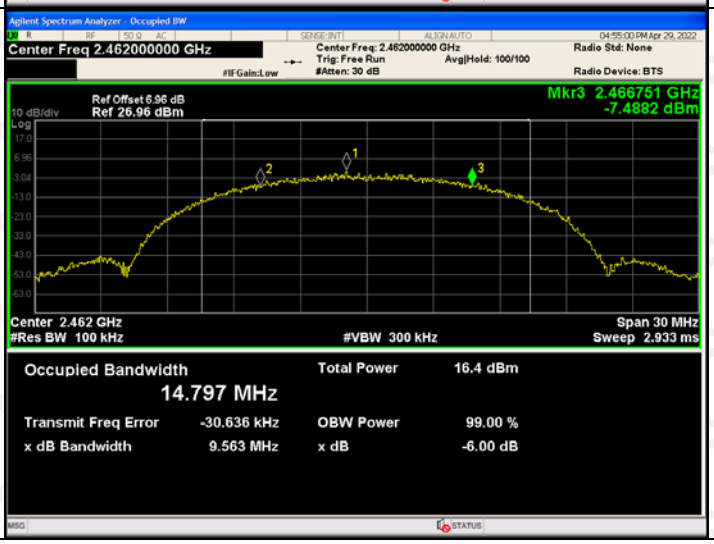
10.3 Test procedure

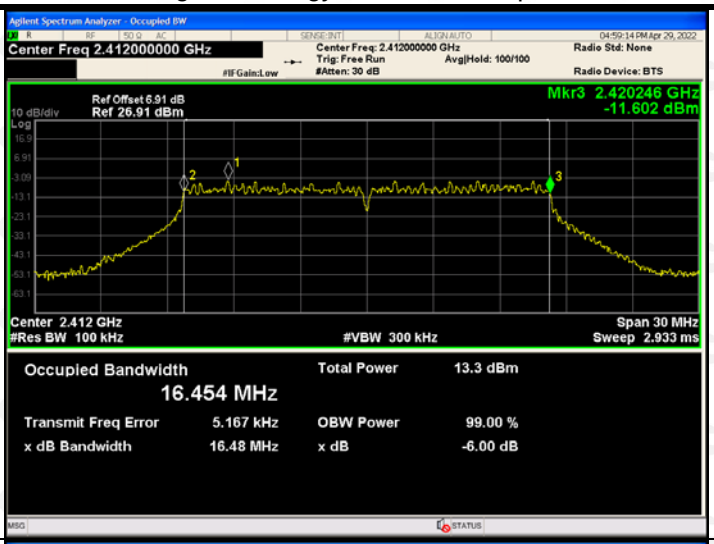
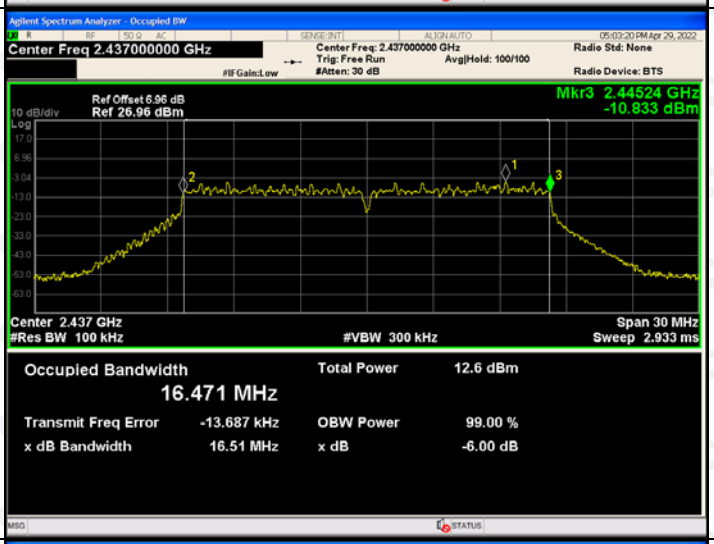
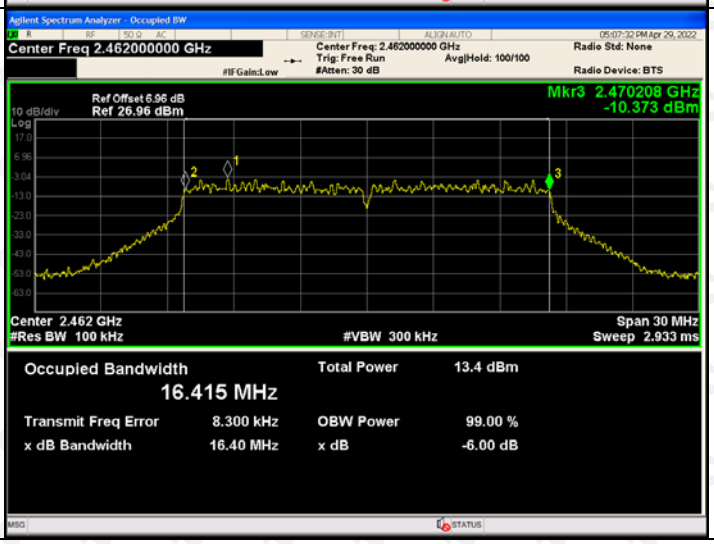
1. Rem1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 x RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

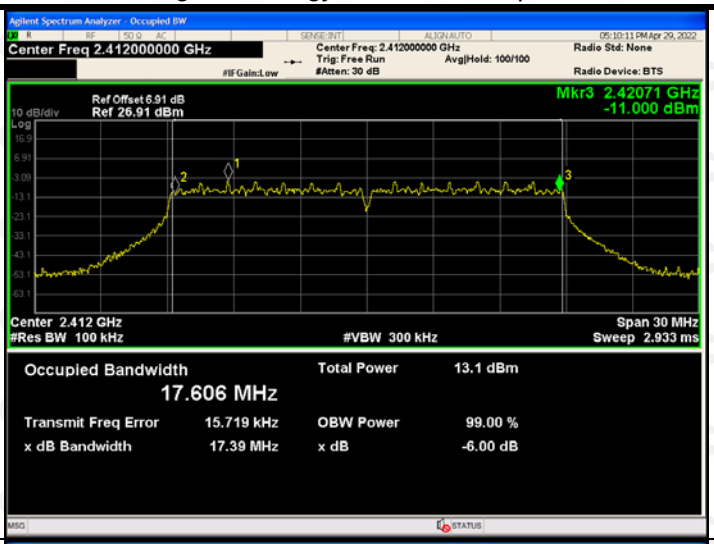
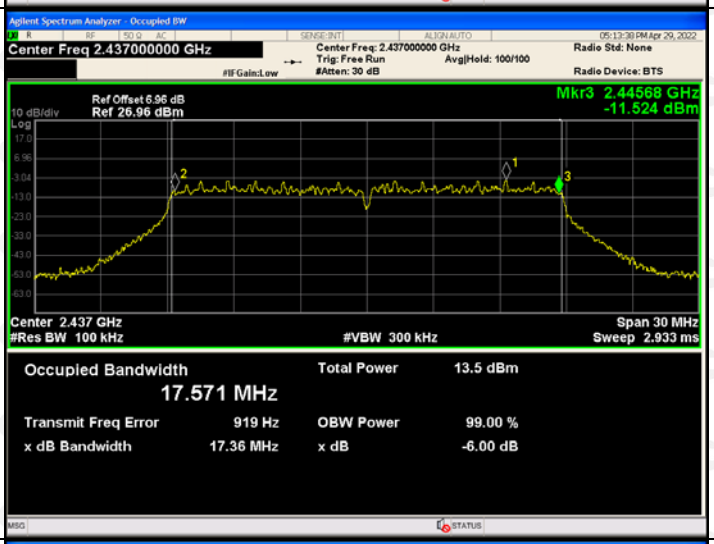
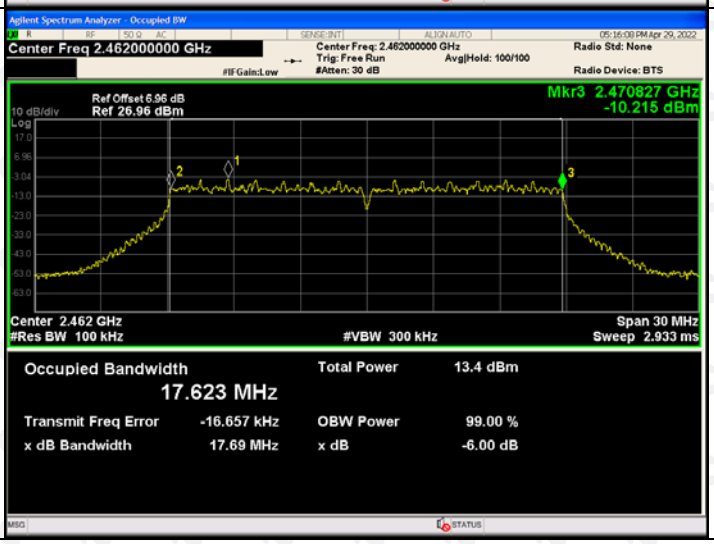
10.4 Test Result

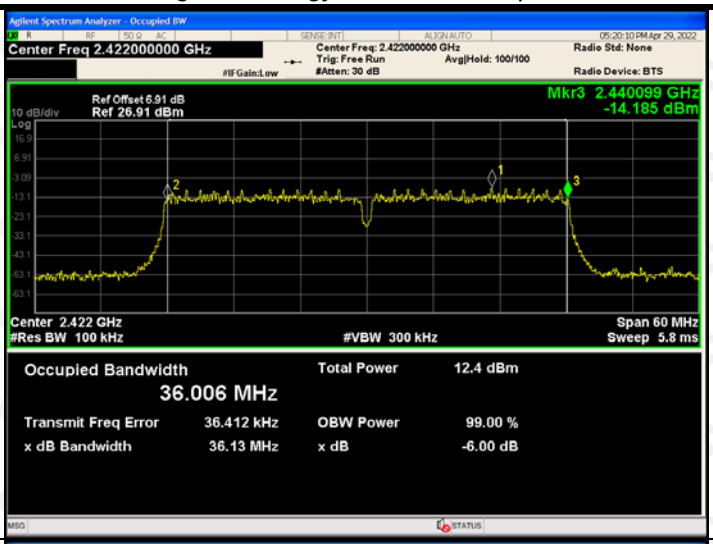
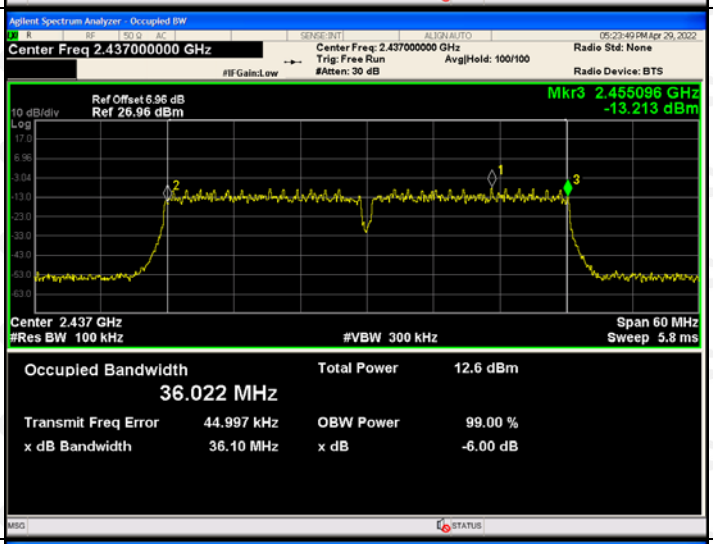
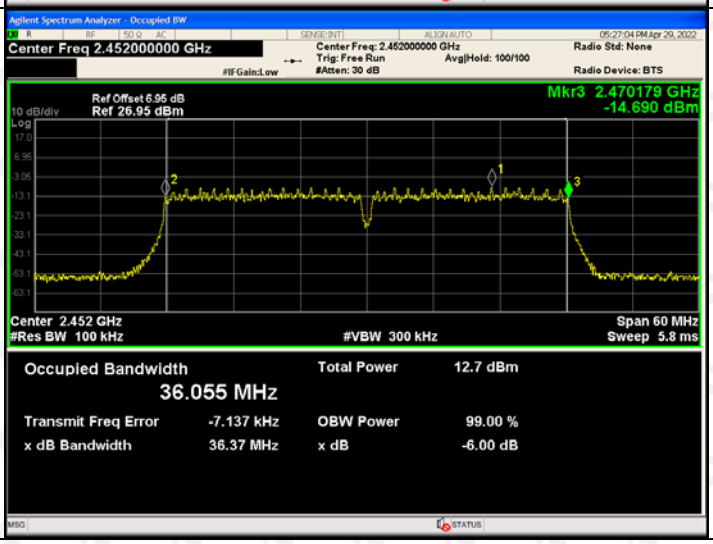
Test Mode	Frequency	6dB Bandwidth (MHz)	Limit(kHz)	Result
802.11b	LCH	9.366	500	PASS
	MCH	9.64	500	PASS
	HCH	9.563	500	PASS
802.11g	LCH	16.482	500	PASS
	MCH	16.508	500	PASS
	HCH	16.4	500	PASS
802.11n(HT20)	LCH	17.388	500	PASS
	MCH	17.359	500	PASS
	HCH	17.688	500	PASS
802.11n(HT40)	LCH	36.125	500	PASS
	MCH	36.103	500	PASS
	HCH	36.373	500	PASS

Test Graph:

Graphs			
802.11b /LCH			
802.11b /MCH			
802.11b/HCH			

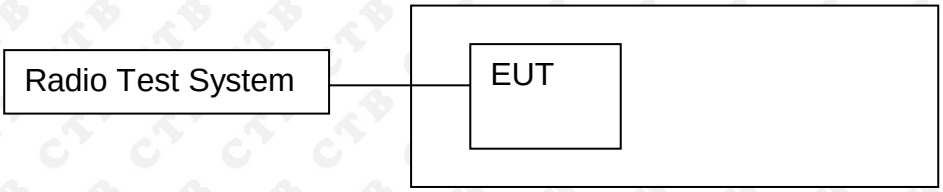
802.11g/LCH			
802.11g/MCH			
802.11g/HCH			

802.11n(HT20)/LCH			
802.11n(HT20)/MCH			
802.11n(HT20)/HCH			

802.11n(HT40)/LCH			
802.11n(HT40)/MCH			
802.11n(HT40)/HCH			

11. POWER SPECTRAL DENSITY

11.1 Block Diagram Of Test Setup



11.2 Limit

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

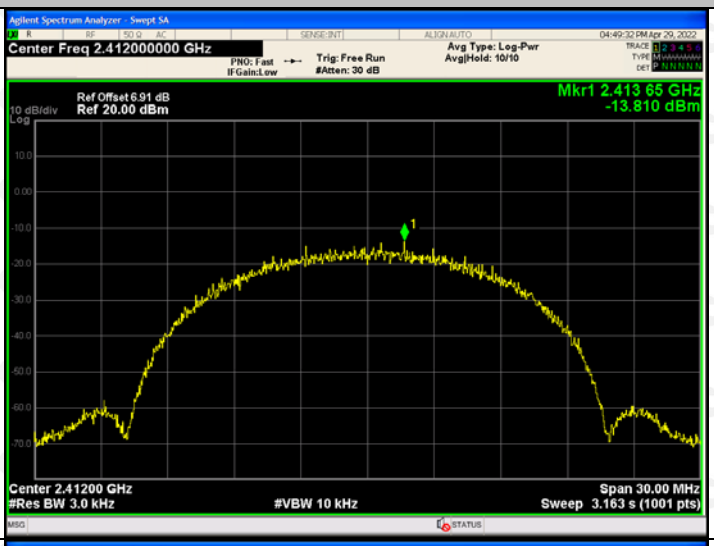
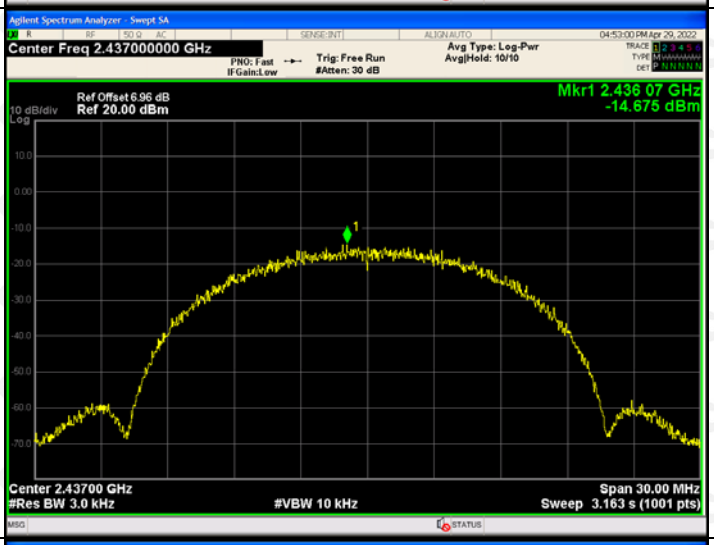
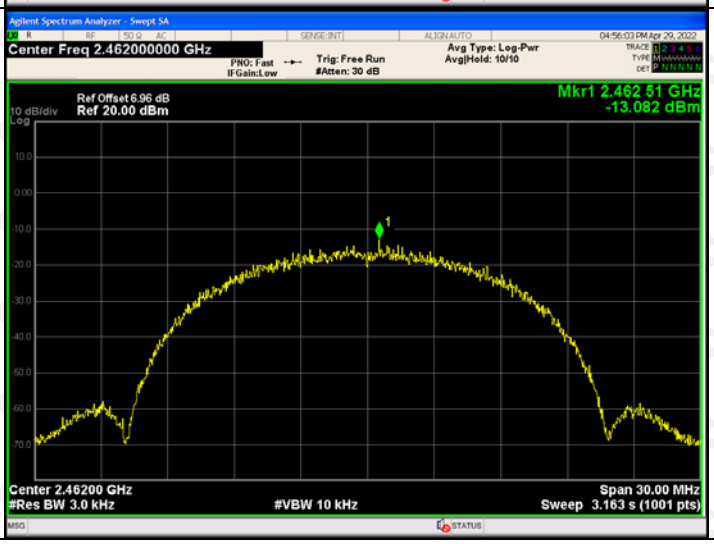
11.3 Test procedure

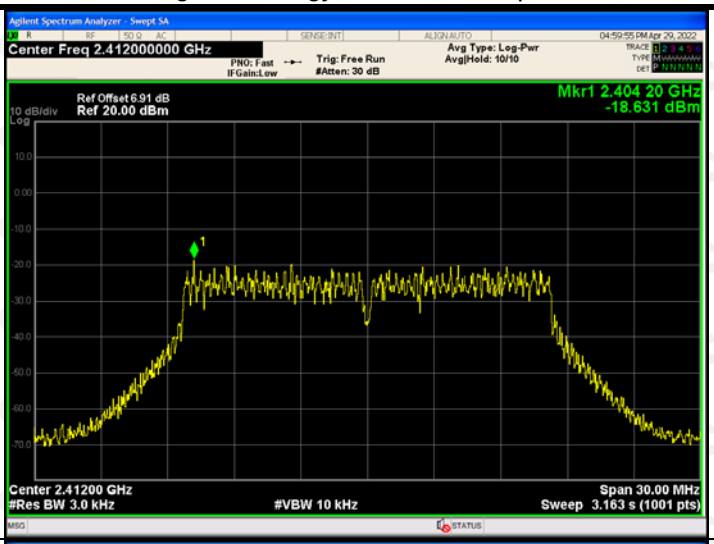
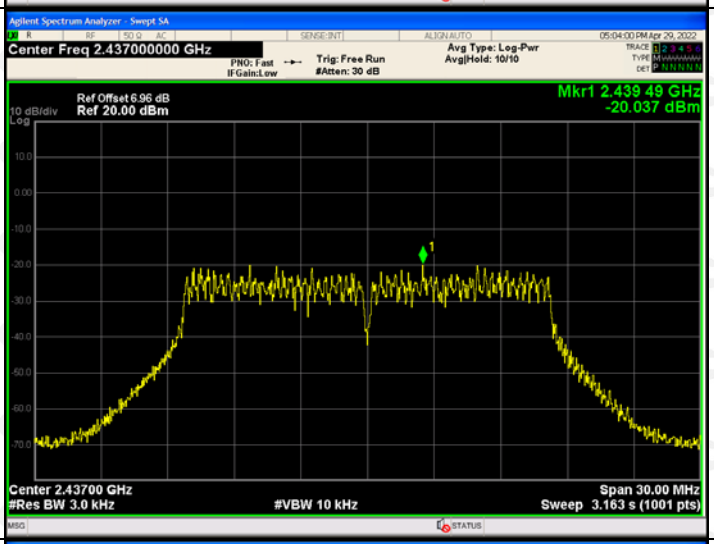
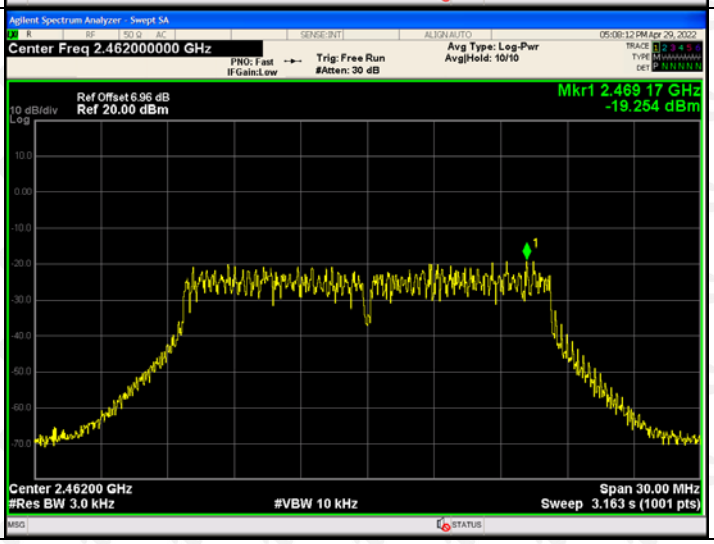
1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz.
4. Set the VBW ≥ 3 x RBW.
5. Detector = PEAK.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

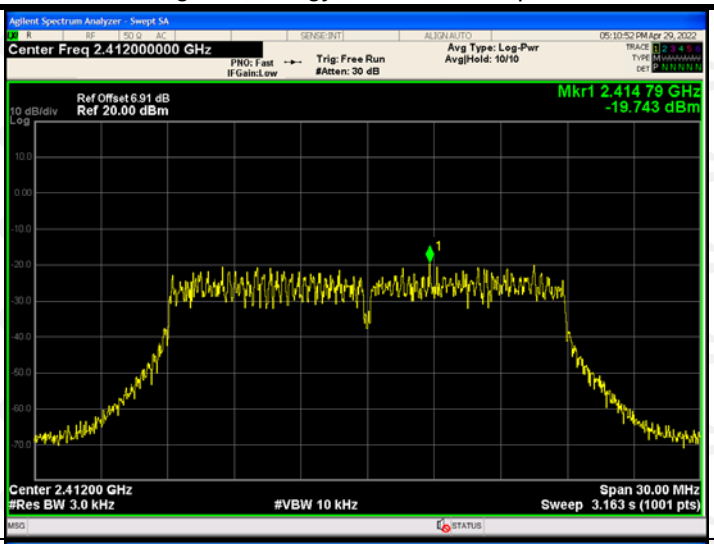
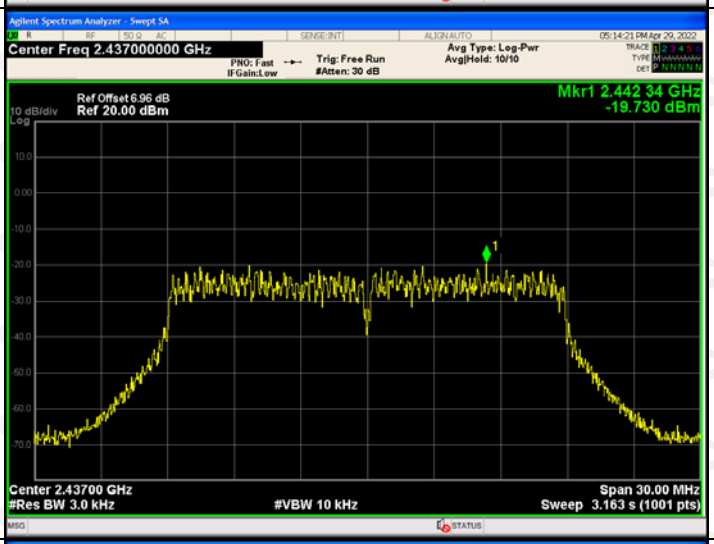
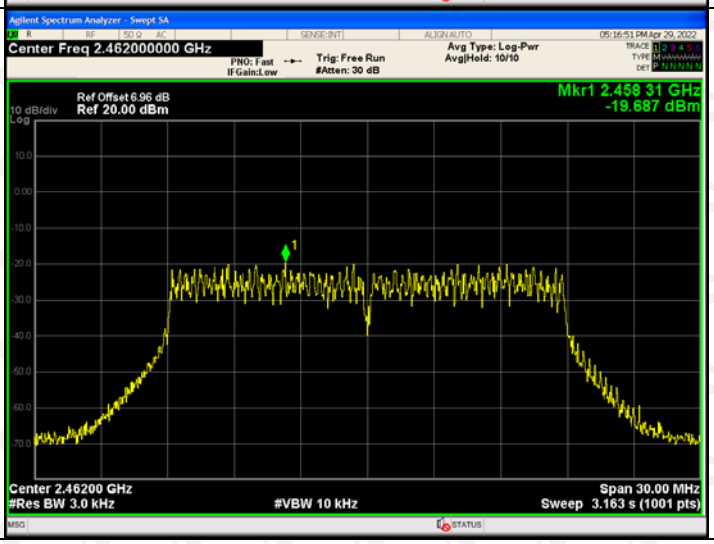
11.4 Test Result

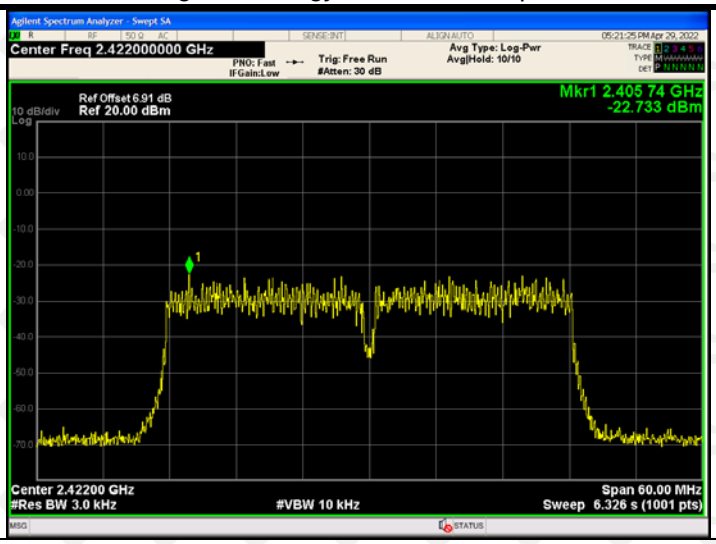
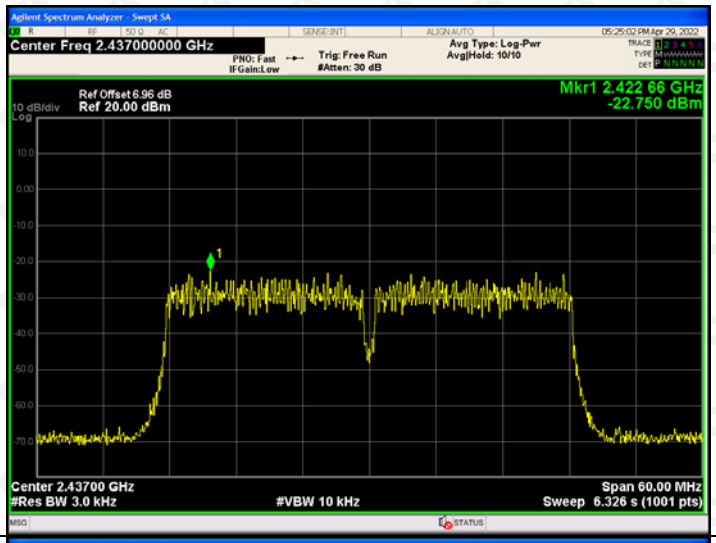
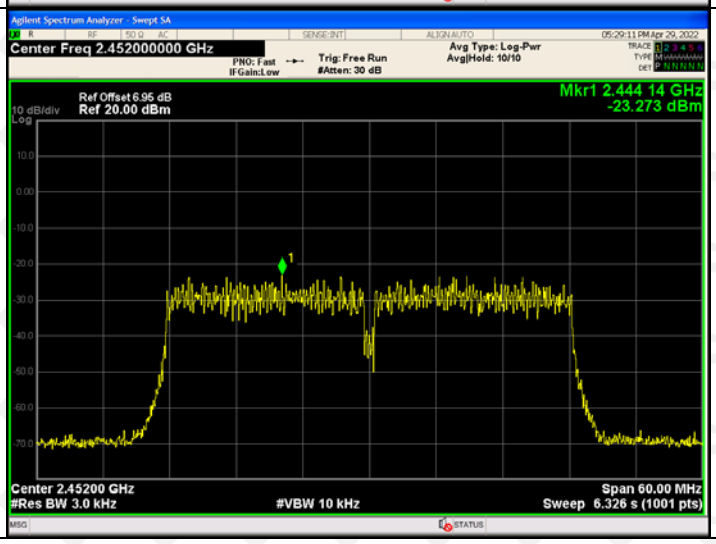
Mode	Channel.	Power Spectral Density [dBm /3KHz]	Limit(8 dBm (in any 3KHz))	Verdict
802.11b	LCH	-13.81	8	PASS
	MCH	-14.675	8	PASS
	HCH	-13.082	8	PASS
802.11g	LCH	-18.631	8	PASS
	MCH	-20.037	8	PASS
	HCH	-19.254	8	PASS
802.11n(HT20)	LCH	-19.743	8	PASS
	MCH	-19.73	8	PASS
	HCH	-19.687	8	PASS
802.11n(HT40)	LCH	-22.733	8	PASS
	MCH	-22.75	8	PASS
	HCH	-23.273	8	PASS

Test Graph

Graphs			
802.11b /LCH			
802.11b /MCH			
802.11b/HCH			

802.11g/LCH			
802.11g/MCH			
802.11g/HCH			

802.11n(HT20)/LCH			
802.11n(HT20)/MCH			
802.11n(HT20)/HCH			

802.11n(HT40)/LCH		
802.11n(HT40)/MCH		
802.11n(HT40)/HCH		

12. ANTENNA REQUIREMENT

15.203 requirement:

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

15.247(b) (4) requirement:

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

EUT Antenna:

The antenna is Internal Antenna and no consideration of replacement. The best case gain of the antenna is 1.0dBi.

13. EUT PHOTOGRAPHS

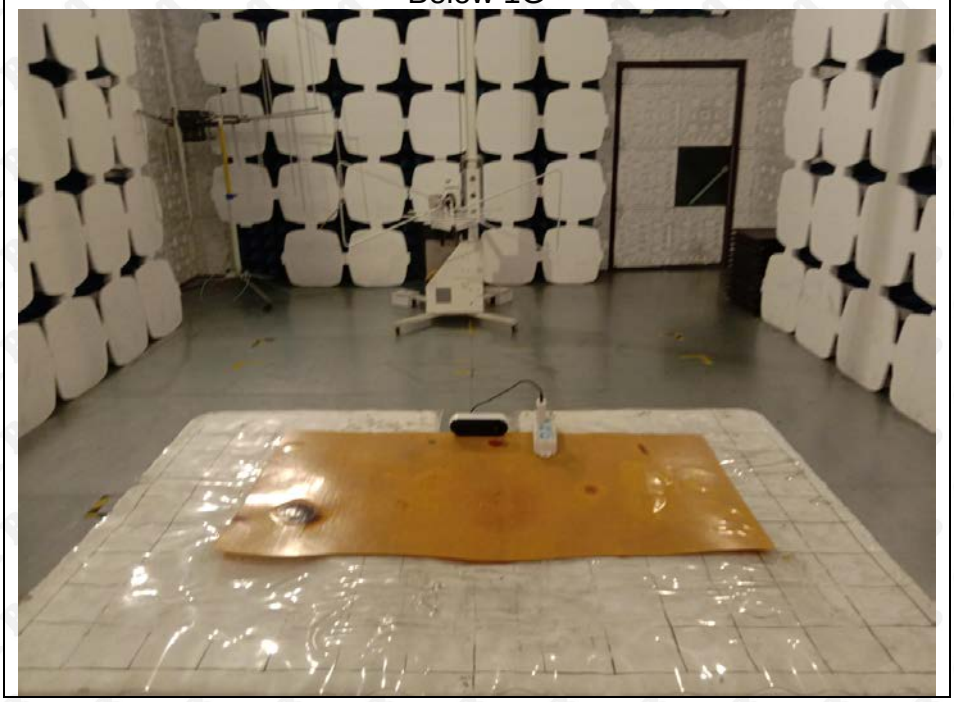
EUT Photo 1

EUT Photo 2

14. EUT TEST SETUP PHOTOGRAPHS

Radiated Emission

Below 1G



Above 1G

Conducted Emission

※※※※※ END OF REPORT ※※※※※