



TEST REPORT

Test item description: PROJECTOR
FCC ID: 2BFIZ-X4AR
Trademark(s): N/A
Model/Type reference: X4AR, X4 Ultra, X4 Pro Max, X4 Max, X4AI, X4 Plus, M5AR, M5, M5PR0, HT1, HT2, HT3, HT4, HT5, HT6, HT7, HT8, HT9, SKW2603, SDT2603, CW2603, QV2000, WV2000, TP400 NTV, TP400 GTV, X4AR, TP400, X4ER, PL800, PL900, X4
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Sample Received Date: Jun. 08, 2026
Sample tested Date: Jun. 08, 2026 to Jun. 29, 2026
Issue Date: Jun. 29, 2026
Report No.: CTB26060806402RF03
Test Standards: FCC CFR Title 47 Part 15 Subpart C Section 15.247
ANSI C63.10:2020
Test Results: PASS
Remark: This is WIFI-2.4GHz band radio test report.

Compiled by:

Reviewed by:

Approved by:

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Kai Chen

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Note: If there is any objection to the inspection results in this report, please submit a written report to the company within 15 days from the date of receiving the report. 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. The tested sample(s) and the sample information are provided by the applicant. The authenticity, accuracy, and completeness of the provided information are the sole responsibility of the applicant. Without written approval of Shenzhen CTB Testing Technology Co., Ltd. this report can't be reproduced except in full. The result decision rules of our laboratory are based solely on the direct comparison between the actual measured values of test results and the standard limits, without considering the measurement uncertainty. "★" indicates the testing items were fulfilled by subcontracted lab. "—" indicates the items are not in CNAS accreditation scope.

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	(NOTE: N/A MEANS NOT APPLICABLE)	



1. VERSION

Report No.	Issue Date	Description	Approved
CTB26060806402RF03	Jun. 29, 2026	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 C63.10-2020	PASS
Radiated Spurious emissions	47 CFR Part 15 Subpart C Section 15.205/15.209	ANSI C63.10-2020	PASS
Band edge and RF Conducted Spurious Emissions	47 CFR Part 15 Subpart C Section 15.247(d)/15.205(a)	ANSI C63.10-2020	PASS
Conducted Peak Output Power	47 CFR Part 15 Subpart C Section 15.247 (b)(3)	ANSI C63.10-2020	PASS
6dB Occupied Bandwidth	47 CFR Part 15 Subpart C Section 15.247 (a)(2)	ANSI C63.10-2020	PASS
Power Spectral Density	47 CFR Part 15 Subpart C Section 15.247 (e)	ANSI C63.10-2020/ KDB 558074 D05v02	PASS
Antenna Requirement	47 CFR Part 15 Subpart C Section 15.203/15.247 (b)	/	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 C63.10-2020

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	$U=\pm 54.3\text{Hz}$
Conducted output power above 1G	$U=\pm 1.0\text{dB}$
Conducted output power below 1G	$U=\pm 0.9\text{dB}$
Power Spectral Density, Conduction	$U=\pm 1.0\text{dB}$
Conduction spurious emissions	$U=\pm 2.8\text{dB}$
Out of band emission	$U=\pm 54\text{Hz}$
3m chamber Radiated spurious emission(9kHz-30MHz)	$U=\pm 4.8\text{dB}$
3m chamber Radiated spurious emission(30MHz-1GHz)	$U=\pm 4.3\text{dB}$
3m chamber Radiated spurious emission(1GHz-18GHz)	$U=\pm 4.5\text{dB}$
3m chamber Radiated spurious emission(18GHz-40GHz)	$U=\pm 3.4\text{dB}$
Humidity uncertainty	$U=\pm 5.3\%$
Temperature uncertainty	$U=\pm 0.59^{\circ}\text{C}$
Supply voltages	$U=\pm 3\%$
Time	$U=\pm 5\%$

4. PRODUCT INFORMATION AND TEST SETUP

4.1 Product Information

Model/Type reference:	X4AR, X4 Ultra, X4 Pro Max, X4 Max, X4AI, X4 Plus, M5AR, M5, M5PRO, HT1, HT2, HT3, HT4, HT5, HT6, HT7, HT8, HT9, SKW2603, SDT2603, CW2603, QV2000, WV2000, TP400 NTV, TP400 GTV, X4AR, TP400, X4ER, PL800, PL900, X4
Model Description:	All the model are the same circuit and RF module, only the name, appearance and colors are different. Test sample model: X4AR
Wi-Fi Specification:	IEEE 802.11b/g/n/ax
Hardware Version:	V1.0
Software Version:	V1.0
Operation Frequency:	WiFi: IEEE 802.11b/g/n/ax20: 2412-2462MHz/ 11 channel IEEE 802.11n/ax40: 2422-2452MHz/ 7 channel
Max. RF output power:	WiFi (2.4G): 14.97dBm
Type of Modulation:	WiFi (2.4G): DSSS, OFDM, OFDMA
Antenna installation:	WiFi (2.4G): FPC antenna
Antenna Gain:	WiFi (2.4G): 2.19dBi
Ratings:	AC 100-240V 1.5A 50/60HZ

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	Laptop	DELL	Vostro 5490	N/A	AE

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/n/ax20)	2412MHz	2437MHz	2462MHz
Transmitting(802.11n/ax40)	2422MHz	2437MHz	2452MHz

NOTE: Duty cycle>98%.

Test mode	Rate
802.11b	11M
802.11g	54M
802.11n20	288.9M
802.11n40	600M
802.11/ax20	1147.069M
802.11/ax40	2294.118M

4.6 Test Environment

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

5. TEST FACILITY AND TEST INSTRUMENT USED

5.1 Test Facility

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

FCC Test Firm Registration Number: CN1276

5.2 Test Instrument Used

No.	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Calibrated Date	Calibrated until
1	Spectrum Analyzer	Agilent	N9020A	MY52090073	A.14.16	2026/5/14	2027/5/13
2	Power Sensor	Agilent	U2021XA	MY56120032	/	2026/5/14	2027/5/13
3	Power Sensor	Agilent	U2021XA	MY56120034	/	2026/5/14	2027/5/13
4	Communication test set	R&S	CMW500	108058	V3.5.80	2026/5/14	2027/5/13
5	Spectrum Analyzer	KEYSIGHT	N9020A	MY51289897	A.14.16	2026/5/14	2027/5/13
6	Signal Generator	Agilent	N5181A	MY50140365	A.01.60	2026/5/14	2027/5/13
7	Vector signal generator	Agilent	N5182A	MY47420195	A.01.87	2026/5/14	2027/5/13
8	Communication test set	Agilent	E5515C	MY50102567	B.19.07 (E1962B)	2026/5/14	2027/5/13
9	2.4 GHz Filter	Shenxiang	MSF2400-2483.5MS-1154	20181015001	/	2026/5/16	2027/5/15
10	5 GHz Filter	Shenxiang	MSF5150-5850 MS-1155	20181015001	/	2026/5/16	2027/5/15
11	Filter	Xingbo	XBLBQ-DZA120	190821-1-1	/	2026/5/16	2027/5/15
12	BT&WI-FI Automatic test software	Microwave	MTS8310	Ver. 2.0.0.0	/	/	/
13	Rohde & Schwarz SFU Broadcast Test System	R&S	SFU	101017	/	2025/10/20	2026/10/19
14	Temperature humidity chamber	Hongjing	TH-80CH	DG-15174	/	2025/7/13	2026/7/12
15	234G Automatic test software	Microwave	MTS8200	Ver. 2.0.0.0	/	/	/
16	966 chamber	C.R.T.	966	/	/	2024/6/23	2027/6/22
17	Receiver	R&S	ESPI	100362	RF_ATTEN_7 (104489/003)	2026/5/15	2027/5/14

18	Amplifier	HP	8447E	2945A02747	/	2026/5/15	2027/5/14
19	Amplifier	Agilent	8449B	3008A01838	/	2026/5/14	2027/5/13
20	TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	00869	/	2026/5/17	2027/5/16
21	Double Ridged Broadband Horn Antenna	Schwarzbeck	BBHA9120D	01911	/	2026/5/15	2027/5/14
22	EMI test software	Fala	EZ-EMC	FA-03A2 RE	/	/	/
23	Loop Antenna	Schwarzbeck	FMZB 1519B	1519B-224	/	2026/5/17	2027/5/16
24	loop antenna	ZHINAN	ZN30900A	GTS534	/	/	/
25	40G Horn antenna	A/H/System	SAS-574	588	/	2026/6/1	2027/5/31
26	Amplifier	AEROFLEX	Aeroflex	097	/	2026/6/1	2027/5/31
27	Power Meter	KEYSIGHT	N1912AP	N/A	A.05.00	2026/6/1	2027/5/31

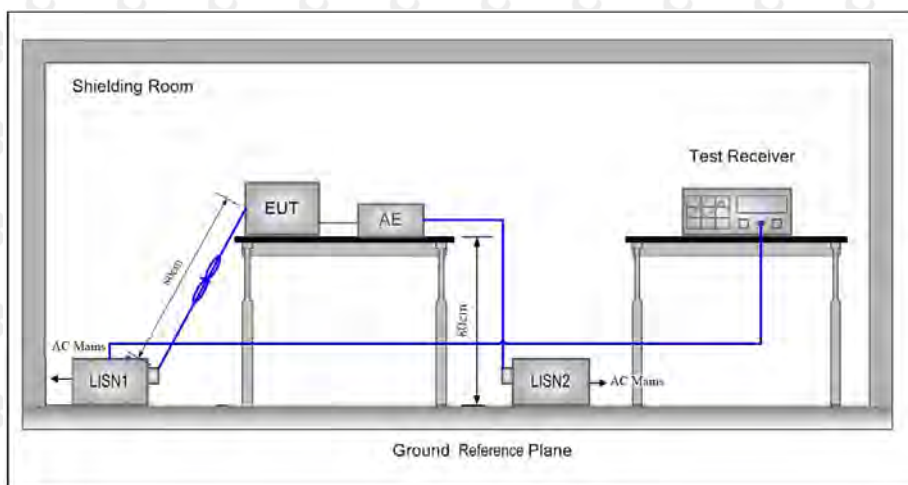
Continuous disturbance							
No.	Equipment	Manufacturer	Model No.	Serial No.	Firmware version	Calibrated Date	Calibrated until
1	843 Shield Room	C/ R/ T	843	/	/	2024/6/22	2027/6/21
2	LISN	ROHDE&SCHWARZ	ESH3-Z5	831551852	/	2026/5/14	2027/5/13
3	EMI TEST RECEIVER	ROHDE&SCHWARZ	ESCI	100428	V4.42.SP3	2026/5/15	2027/5/14
4	Coaxial cable	ZDECL	Z302S	18091904	/	2026/5/14	2027/5/13
5	ISN	Schwarzbeck	NTFM8158	183	/	2026/5/18	2027/5/17
6	Voltage sensor	Schwarzbeck	TK 9420	01189	/	2026/5/16	2027/5/15
7	EZ-EMC	Frad	EMC-con3A1.1	/	/	/	/
8	Current Probe	FCC	F-52B	199453	/	2026/5/22	2027/5/21
9	Communication test set	R&S	CMW500	108058	B.19.07 (E1962B)	2026/5/14	2027/5/13
10	Communication test set	Agilent	E5515C	MY50102567	V3.5.80	2026/5/14	2027/5/13

Radiated emission(No.2 Chamber)							
No.	Equipment	Manufacturer	Model No.	Serial No.	Firmware version	Calibrated Date	Calibrated until
1	966 Chamber	C/ R/ T	966	/	/	2024/6/8	2027/6/7
2	Double Ridged Broadband Horn Antenna	Schwarzbeck	BBHA 9120 D	01911	/	2026/5/15	2027/5/14
3	Broadband Antenna	Schwarzbeck	VULB 9168	1471	/	2025/9/19	2026/9/18
4	Amplifier	Agilent	8449B	3008A01838	/	2026/5/14	2027/5/13
5	Preamplifier	Schwarzbeck	BBV 9743 B	00500	/	2026/5/15	2027/5/14

6	EMI TEST RECEIVER	R&S	ESCI7	100861	/	2025/9/19	2026/9/18
7	Spectrum Analyzer	KEYSIGHT	N9020A	MY51289897	A.14.16	2026/5/14	2027/5/13
8	EMI test software	Farad	EZ-EMC	/	Ver. FARAD-3A1+	/	/
9	Coaxial cable	Rosenberg	8m	/	/	2026/5/16	2027/5/15
10	Coaxial cable	Times	2m	/	/	2026/5/16	2027/5/15
11	Coaxial cable	Times	2m	/	/	2026/5/16	2027/5/15
12	Coaxial cable	Times	1m	/	/	2026/5/16	2027/5/15
13	loop antenna	Schwarzbeck	FMZB 1519B	1519B-224	/	2026/5/17	2027/5/16
14	Communication test set	R&S	CMW500	108058	B.19.07 (E1962B)	2026/5/14	2027/5/13
15	Communication test set	Agilent	E5515C	MY50102567	V3.5.80	2026/5/14	2027/5/13

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 (dB μ V)	
	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 50 Ω /50 μ H + 5 Ω 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.

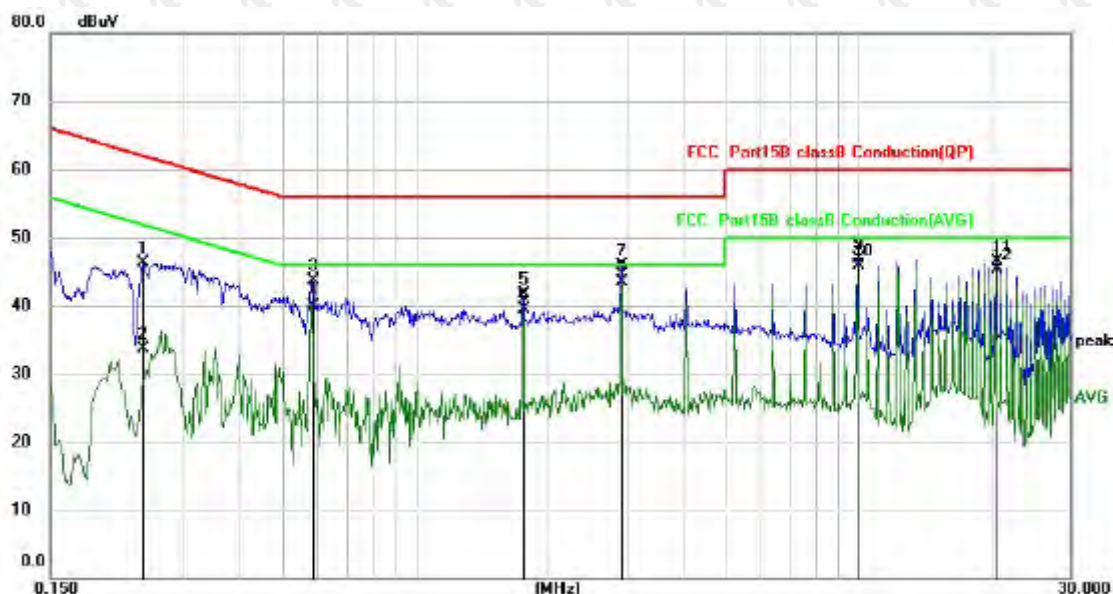
- 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.10:2020 on conducted measurement.

6.4 Test Result

Test Specification: Line

AC 120V 60Hz

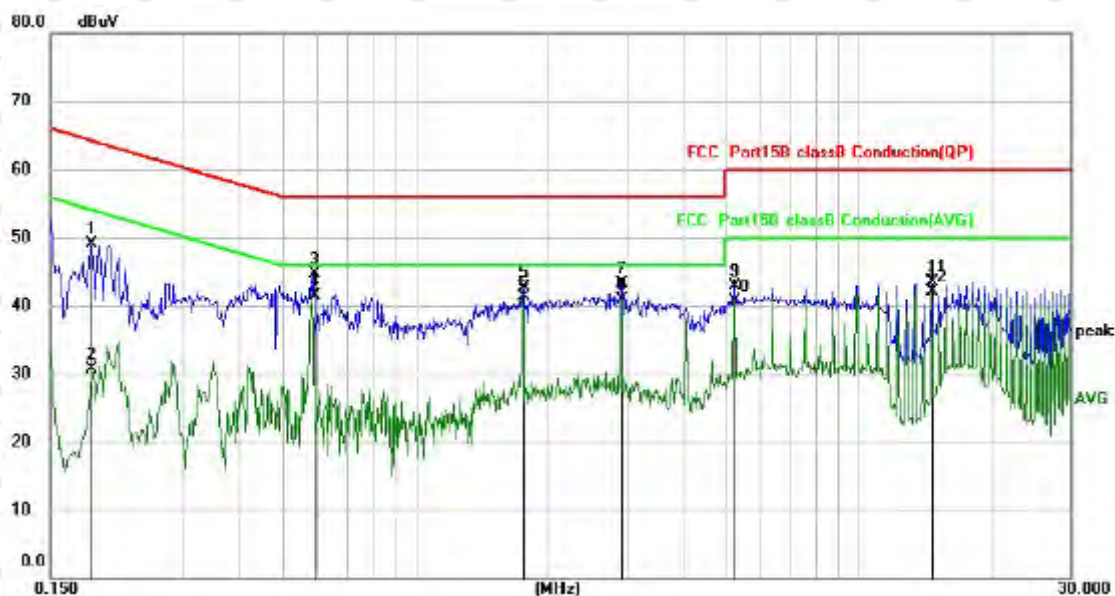
the worst: 802.11b (low channel)



Remark:

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

Test Specification: Neutral
AC 120V 60Hz
the worst: 802.11b (low channel)



No.	Mk.	Freq.	Reading	Correct	Measure-	Limit	Over	
		MHz	Level	Factor	ment			Detector
			dBuV	dB	dBuV	dBuV	dB	
1		0.1859	39.06	10.08	49.14	64.22	-15.08	QP
2		0.1859	20.72	10.08	30.80	54.22	-23.42	AVG
3		0.5899	34.54	10.10	44.64	56.00	-11.36	QP
4	*	0.5899	31.45	10.10	41.55	46.00	-4.45	AVG
5		1.7500	32.64	10.16	42.80	56.00	-13.20	QP
6		1.7500	31.17	10.16	41.33	46.00	-4.67	AVG
7		2.9140	33.07	10.20	43.27	56.00	-12.73	QP
8		2.9140	30.78	10.20	40.98	46.00	-5.02	AVG
9		5.2458	32.53	10.29	42.82	60.00	-17.18	QP
10		5.2458	30.50	10.29	40.79	50.00	-9.21	AVG
11		14.5739	32.82	10.71	43.53	60.00	-16.47	QP
12		14.5739	31.49	10.71	42.20	50.00	-7.80	AVG

Remark:

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

7. RADIATED SPURIOUS EMISSION

7.1 Block Diagram Of Test Setup

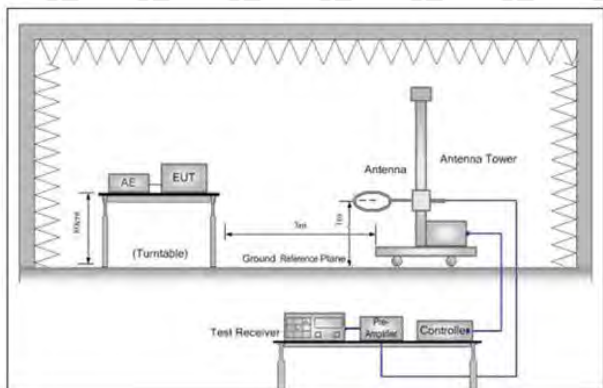


Figure 1. Below 30MHz

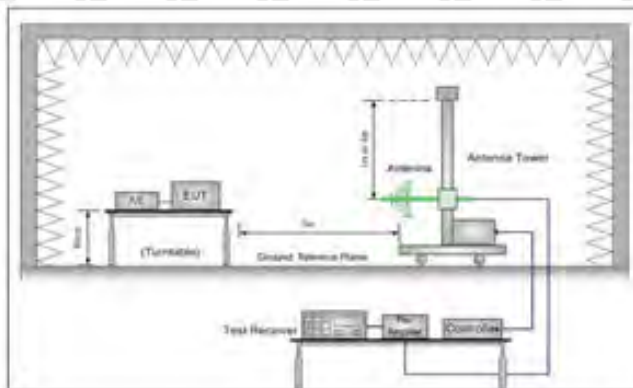


Figure 2. 30MHz to 1GHz

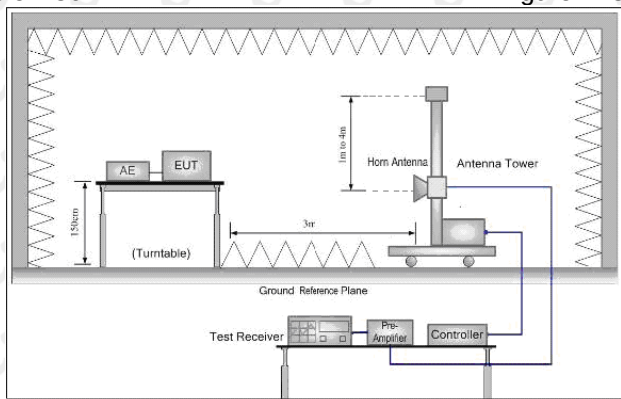


Figure 3. Above 1GHz

7.2 Limit

Spurious Emissions:

Frequency	Field strength (microvolt/meter)	Limit (dB μ V/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:

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.
- 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.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 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:

- 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).
- Test the EUT in the lowest channel ,the middle channel ,the Highest channel
- Repeat above procedures until all frequencies measured was complete.

Receiver set:

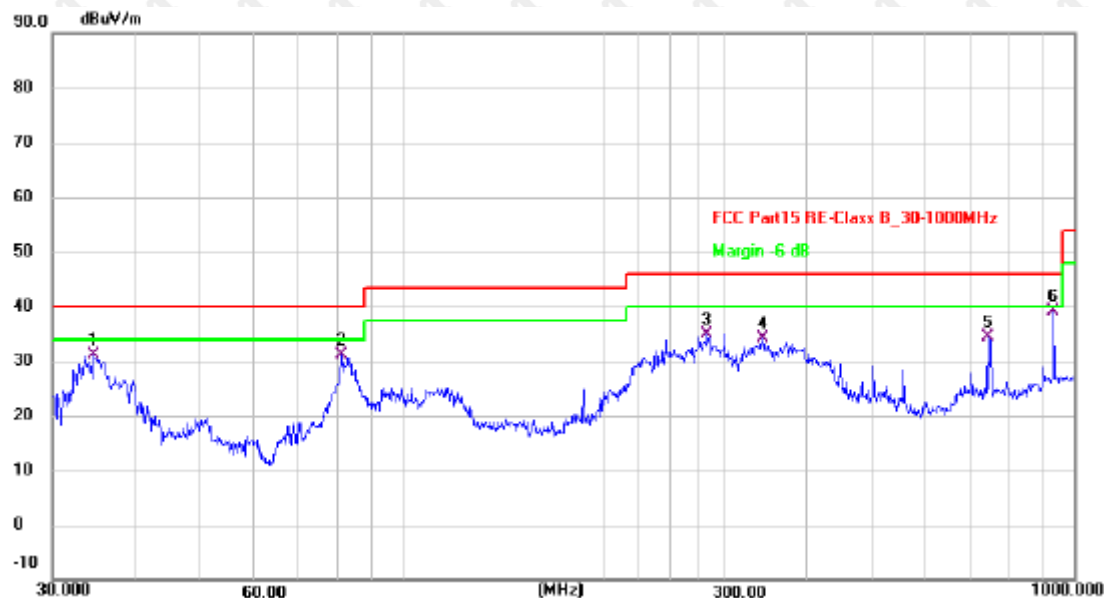
Frequency	Detector	RBW	VBW	Remark
0.009MHz-0.090MHz	Peak	10kHz	30KHz	Peak
0.009MHz-0.090MHz	Average	10kHz	30KHz	Average
0.090MHz-0.110MHz	Quasi-peak	10kHz	30KHz	Quasi-peak
0.110MHz-0.490MHz	Peak	10kHz	30KHz	Peak
0.110MHz-0.490MHz	Average	10kHz	30KHz	Average
0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak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

Remark: If the EUT D is < 98%, then set VBW 1/ T, where Tis defined in item a) of 12.2.

7.4 Test Result

Below 1GHz Test Results:

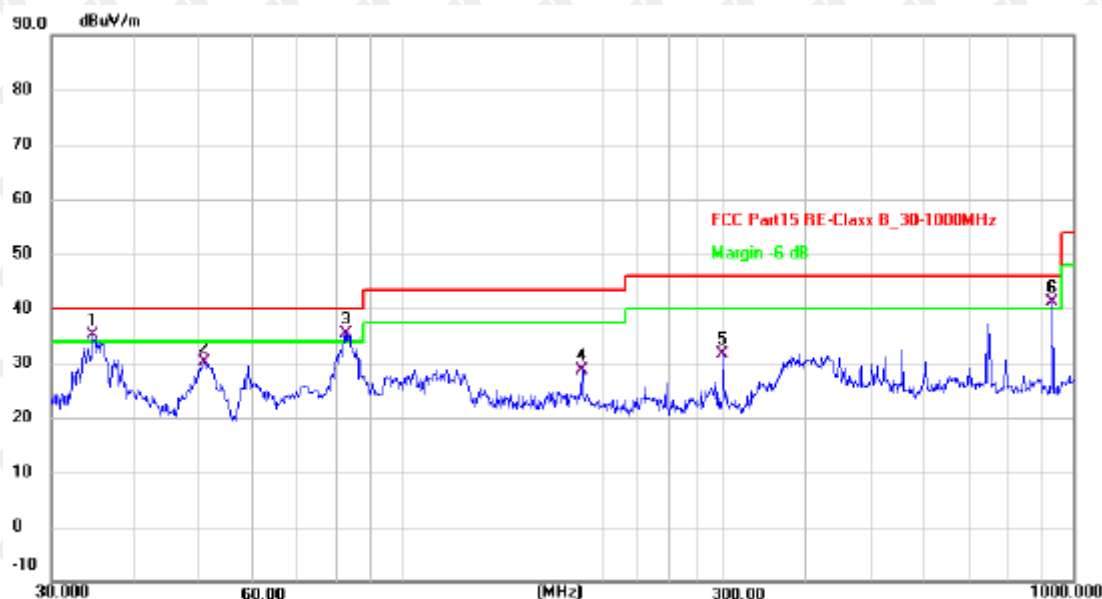
Antenna polarity: H



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	34.6385	44.44	-13.43	31.01	40.00	-8.99	QP
2	80.9274	48.02	-16.90	31.12	40.00	-8.88	QP
3	283.9791	47.62	-12.74	34.88	46.00	-11.12	QP
4	343.1800	45.53	-11.36	34.17	46.00	-11.83	QP
5	742.2586	37.36	-3.04	34.32	46.00	-11.68	QP
6 *	929.0081	39.49	-0.38	39.11	46.00	-6.89	QP

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

Antenna polarity: V



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 !	34.5172	48.50	-13.44	35.06	40.00	-4.94	QP
2	50.7635	43.42	-13.22	30.20	40.00	-9.80	QP
3 *	82.6480	52.45	-17.06	35.39	40.00	-4.61	QP
4	185.1375	43.64	-14.98	28.66	43.50	-14.84	QP
5	300.3672	43.82	-12.14	31.68	46.00	-14.32	QP
6 !	929.0081	41.47	-0.38	41.09	46.00	-4.91	QP

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

1. The margin of 9K-30MHz measurement exceeds 20dB, so the test chart is not included. Test Mode: 802.11b low channel (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: 802.11b low channel (the worst)
3. After pre-scanning three directions, the report recorded the worst case Test Mode: 802.11b low channel (the worst)

Above 1 GHz Test Results:

Antenna polarity: H

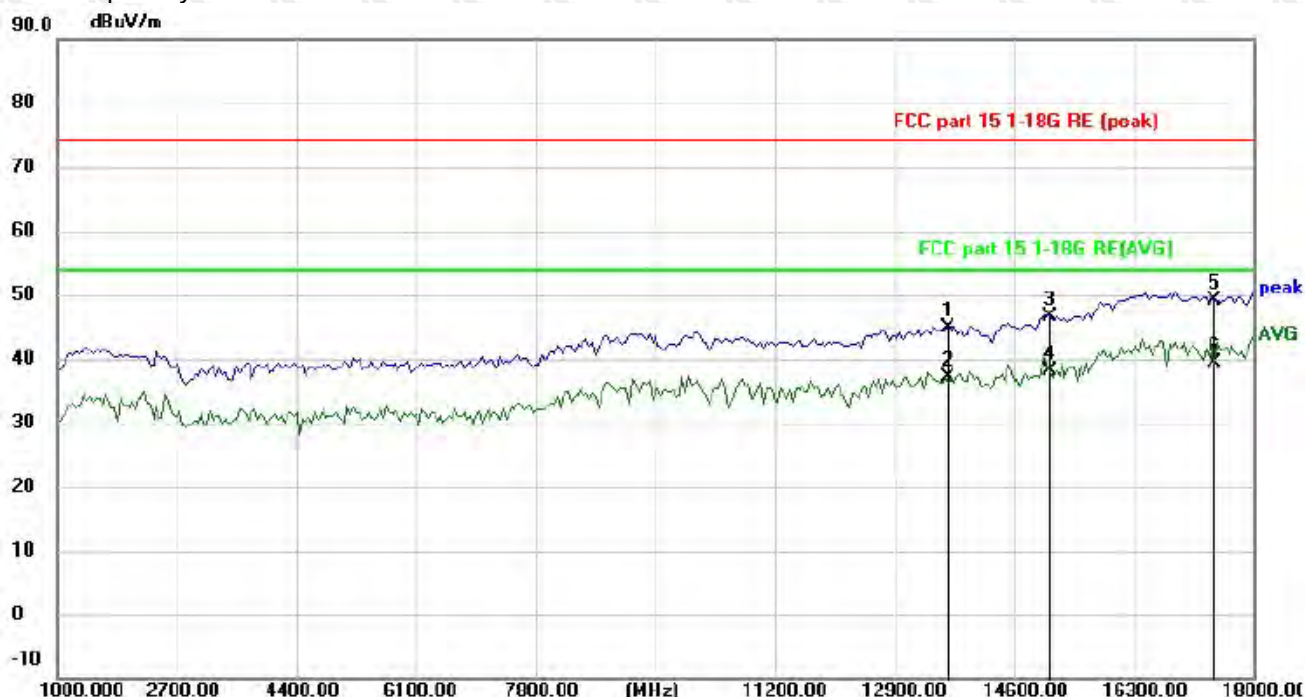
Worst mode : (802.11b Mode)/2412



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		13750.000	34.89	10.23	45.12	74.00	-28.88	peak
2		13750.000	27.83	10.23	38.06	54.00	-15.94	AVG
3		16045.000	39.87	9.84	49.71	74.00	-24.29	peak
4		16045.000	33.81	9.84	43.65	54.00	-10.35	AVG
5		17830.000	34.53	19.87	54.40	74.00	-19.60	peak
6	*	17830.000	25.57	19.87	45.44	54.00	-8.56	AVG

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

Antenna polarity: V



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		13665.000	34.67	10.09	44.76	74.00	-29.24	peak
2		13665.000	26.99	10.09	37.08	54.00	-16.92	AVG
3		15110.000	36.17	10.34	46.51	74.00	-27.49	peak
4		15110.000	27.83	10.34	38.17	54.00	-15.83	AVG
5		17447.500	32.11	17.07	49.18	74.00	-24.82	peak
6	*	17447.500	22.32	17.07	39.39	54.00	-14.61	AVG

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

Antenna polarity: H

Worst mode : (802.11b Mode)/2412

100.0 dBuV/m

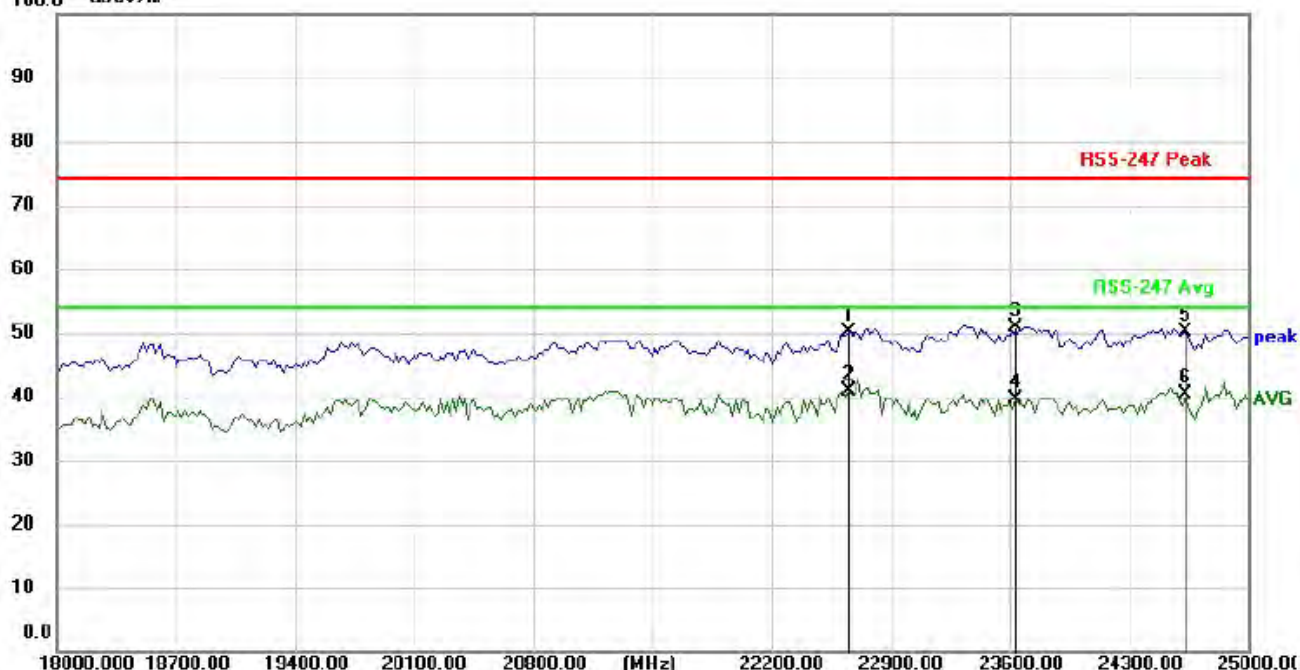


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		23302.500	57.66	-9.11	48.55	74.00	-25.45	peak
2		23302.500	46.03	-9.11	36.92	54.00	-17.08	AVG
3		23722.500	58.52	-8.48	50.04	74.00	-23.96	peak
4	*	23722.500	49.53	-8.48	41.05	54.00	-12.95	AVG
5		24597.500	55.93	-7.15	48.78	74.00	-25.22	peak
6		24597.500	46.78	-7.15	39.63	54.00	-14.37	AVG

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

Antenna polarity: V

100.0 dBuV/m



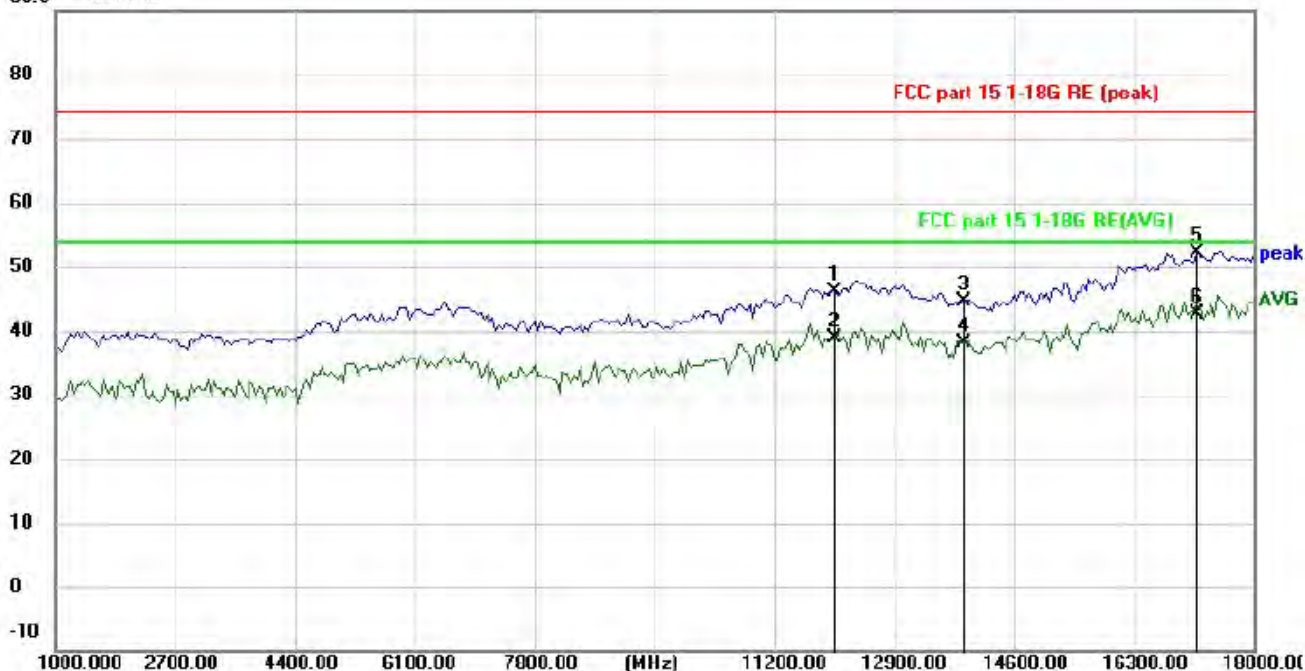
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		22655.000	59.82	-9.70	50.12	74.00	-23.88	peak
2	*	22655.000	50.49	-9.70	40.79	54.00	-13.21	AVG
3		23635.000	59.58	-8.61	50.97	74.00	-23.03	peak
4		23635.000	48.34	-8.61	39.73	54.00	-14.27	AVG
5		24632.500	57.32	-7.10	50.22	74.00	-23.78	peak
6		24632.500	47.57	-7.10	40.47	54.00	-13.53	AVG

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

Antenna polarity: H

Worst mode : (802.11b Mode)/2437

90.0 dBuV/m



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dBm	dB	Detector
1		12050.000	39.53	6.50	46.03	74.00	-27.97	peak
2		12050.000	32.31	6.50	38.81	54.00	-15.19	AVG
3		13877.500	34.23	10.45	44.68	74.00	-29.32	peak
4		13877.500	27.70	10.45	38.15	54.00	-15.85	AVG
5		17192.500	36.88	15.21	52.09	74.00	-21.91	peak
6	*	17192.500	27.42	15.21	42.63	54.00	-11.37	AVG

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

Antenna polarity: V

90.0 dBuV/m



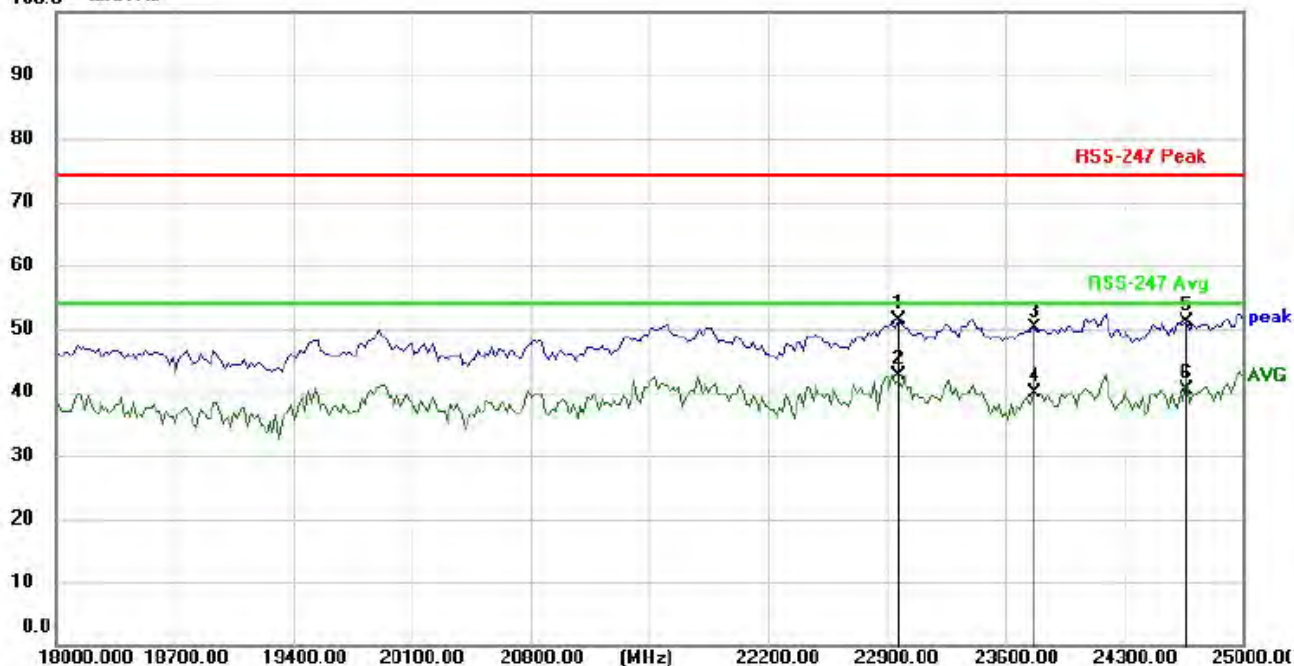
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		11497.500	38.53	5.60	44.13	74.00	-29.87	peak
2		11497.500	30.58	5.60	36.18	54.00	-17.82	AVG
3		15662.500	39.60	9.91	49.51	74.00	-24.49	peak
4		15662.500	32.24	9.91	42.15	54.00	-11.85	AVG
5		17447.500	33.61	17.07	50.68	74.00	-23.32	peak
6	*	17447.500	25.84	17.07	42.91	54.00	-11.09	AVG

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

Antenna polarity: H

Worst mode : (802.11b Mode)/2437

100.0 dBuV/m



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		22970.000	60.90	-9.57	51.33	74.00	-22.67	peak
2	*	22970.000	52.28	-9.57	42.71	54.00	-11.29	AVG
3		23775.000	58.56	-8.40	50.16	74.00	-23.84	peak
4		23775.000	48.34	-8.40	39.94	54.00	-14.06	AVG
5		24667.500	58.29	-7.05	51.24	74.00	-22.76	peak
6		24667.500	47.52	-7.05	40.47	54.00	-13.53	AVG

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

Antenna polarity: V

100.0 dBuV/m

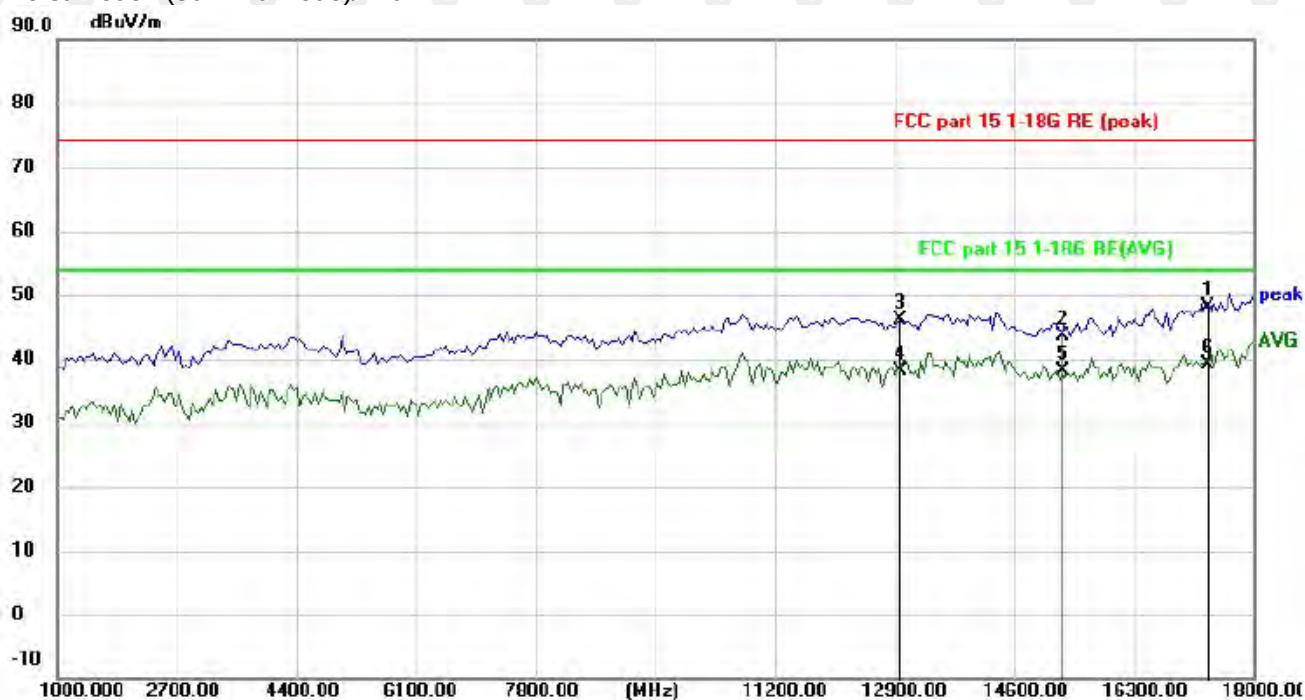


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		23932.500	59.72	-8.16	51.56	74.00	-22.44	peak
2	*	23932.500	50.69	-8.16	42.53	54.00	-11.47	AVG
3		24335.000	59.66	-7.55	52.11	74.00	-21.89	peak
4		24335.000	48.64	-7.55	41.09	54.00	-12.91	AVG
5		24860.000	58.05	-6.75	51.30	74.00	-22.70	peak
6		24860.000	46.41	-6.75	39.66	54.00	-14.34	AVG

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

Antenna polarity: H

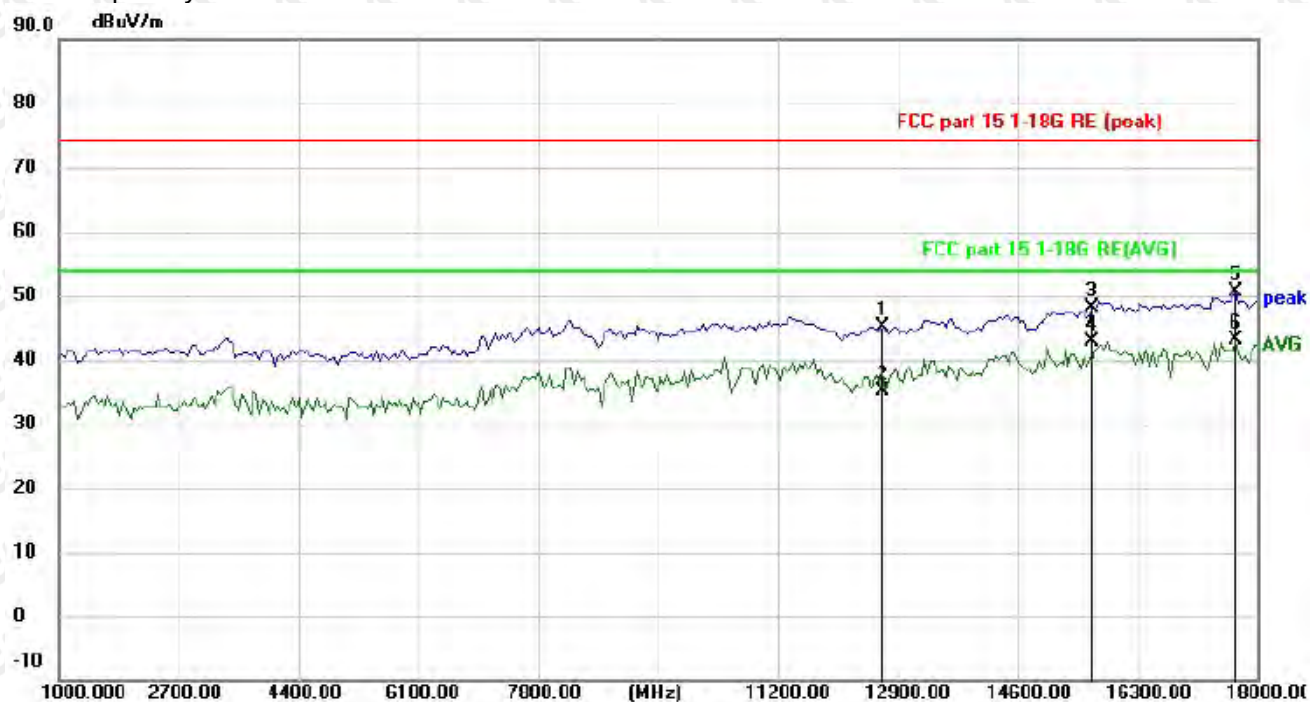
Worst mode : (802.11b Mode)/2462



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		17362.500	31.70	16.45	48.15	74.00	-25.85	peak
2		15280.000	33.31	10.21	43.52	74.00	-30.48	peak
3		12985.000	37.08	8.94	46.02	74.00	-27.98	peak
4		12985.000	29.30	8.94	38.24	54.00	-15.76	AVG
5		15280.000	27.96	10.21	38.17	54.00	-15.83	AVG
6	*	17362.500	22.68	16.45	39.13	54.00	-14.87	AVG

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

Antenna polarity: V



No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		12687.500	37.09	8.16	45.25	74.00	-28.75	peak
2		12687.500	26.96	8.16	35.12	54.00	-18.88	AVG
3		15662.500	38.10	9.91	48.01	74.00	-25.99	peak
4		15662.500	32.86	9.91	42.77	54.00	-11.23	AVG
5		17702.500	31.67	18.94	50.61	74.00	-23.39	peak
6	*	17702.500	24.08	18.94	43.02	54.00	-10.98	AVG

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

Antenna polarity: H

Worst mode : (802.11b Mode)/2462

100.0 dBuV/m

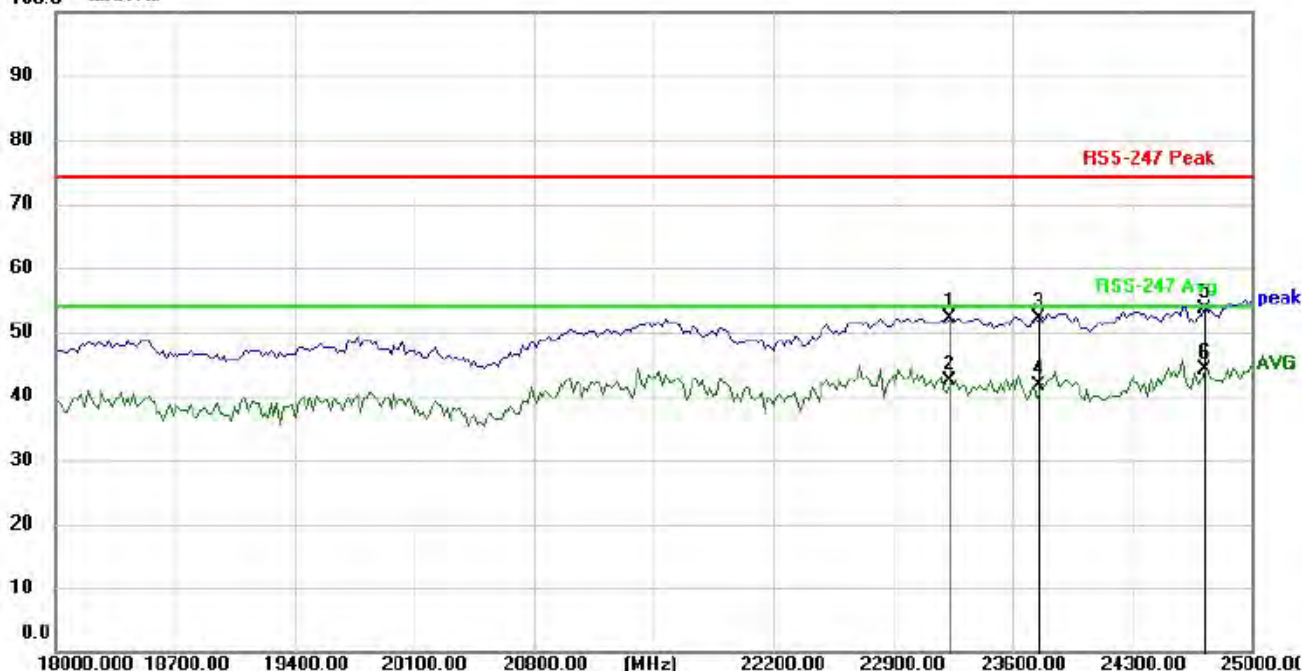


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		24212.500	59.61	-7.74	51.87	74.00	-22.13	peak
2	*	24212.500	50.90	-7.74	43.16	54.00	-10.84	AVG
3		24510.000	59.33	-7.28	52.05	74.00	-21.95	peak
4		24510.000	49.25	-7.28	41.97	54.00	-12.03	AVG
5		24895.000	59.88	-6.70	53.18	74.00	-20.82	peak
6		24895.000	48.93	-6.70	42.23	54.00	-11.77	AVG

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

Antenna polarity: V

100.0 dBuV/m



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		23232.500	61.44	-9.21	52.23	74.00	-21.77	peak
2		23232.500	51.50	-9.21	42.29	54.00	-11.71	AVG
3		23757.500	60.47	-8.42	52.05	74.00	-21.95	peak
4		23757.500	49.97	-8.42	41.55	54.00	-12.45	AVG
5		24720.000	60.72	-6.97	53.75	74.00	-20.25	peak
6	*	24720.000	51.17	-6.97	44.20	54.00	-9.80	AVG

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

Remark :

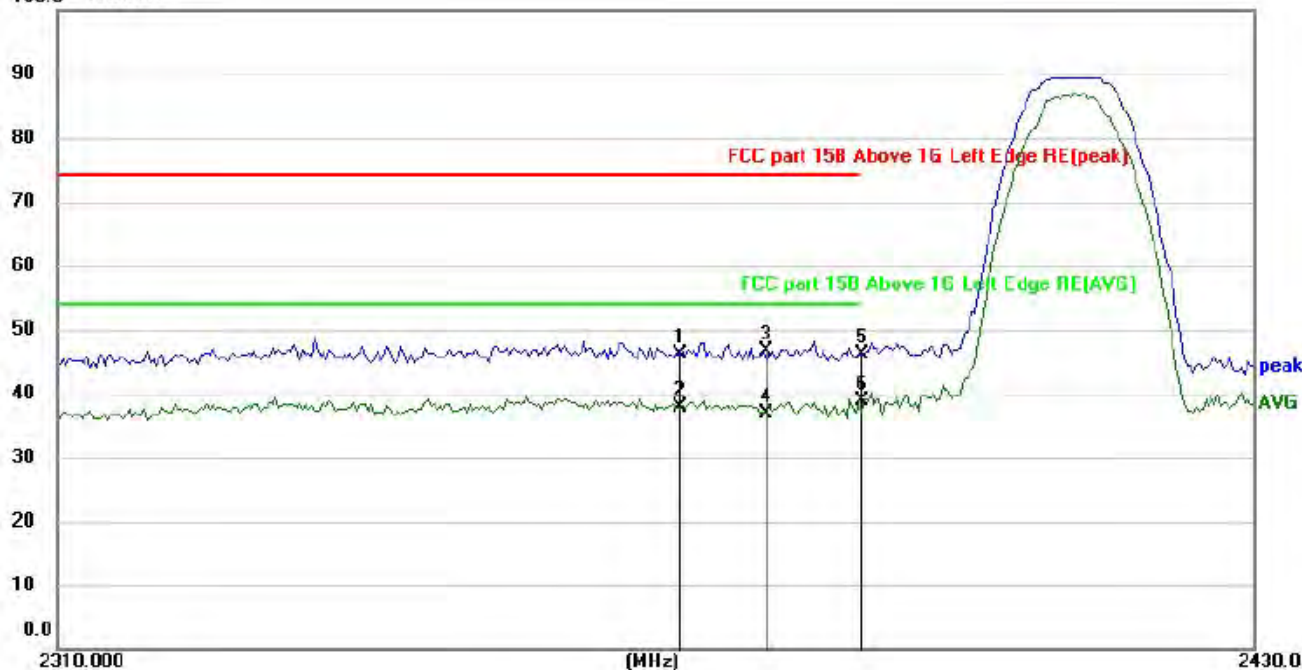
- (1) Measuring frequencies from 1 GHz to the 25 GHz .
- (2) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (3) Data of measurement within this frequency range shown “---” in the table 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)

Antenna polarity: H

Worst mode : (802.11b Mode)/2412

100.0 dBuV/m

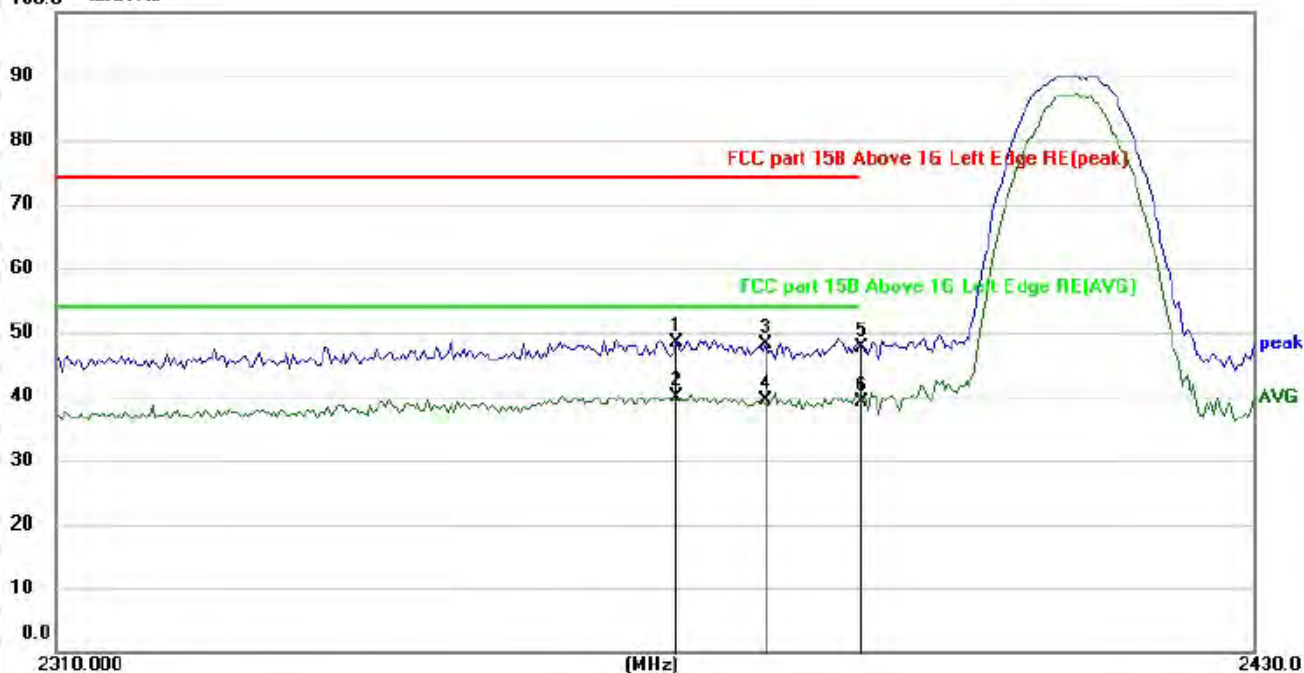


No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		2371.641	66.00	-19.78	46.22	74.00	-27.78	peak
2		2371.641	57.55	-19.78	37.77	54.00	-16.23	AVG
3		2380.064	66.26	-19.73	46.53	74.00	-27.47	peak
4		2380.064	56.55	-19.73	36.82	54.00	-17.18	AVG
5		2390.000	65.76	-19.68	46.08	74.00	-27.92	peak
6	*	2390.000	58.51	-19.68	38.83	54.00	-15.17	AVG

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

Antenna polarity: V

100.0 dBuV/m



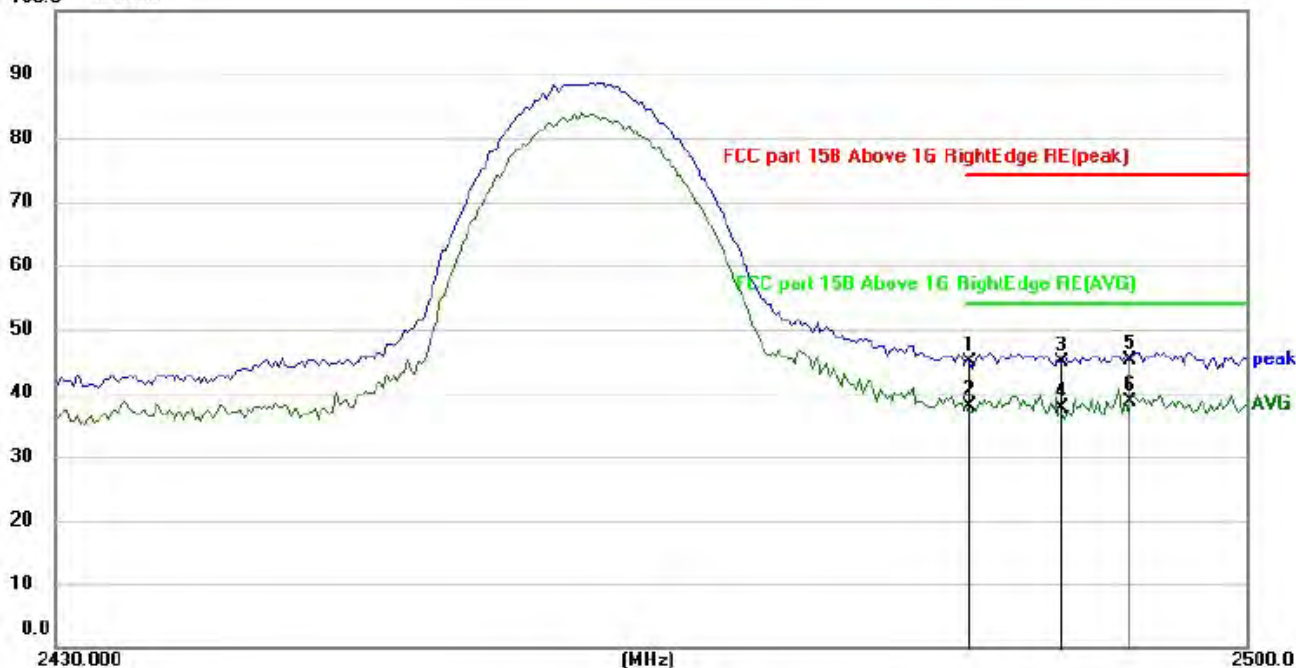
No.	Mk.	Freq. MHz	Reading Level dBuV	Correct Factor dB	Measure- ment dBuV/m	Limit dB/m	Over dB	Detector
1		2371.341	68.18	-19.78	48.40	74.00	-25.60	peak
2	*	2371.341	59.69	-19.78	39.91	54.00	-14.09	AVG
3		2380.365	67.95	-19.73	48.22	74.00	-25.78	peak
4		2380.365	59.16	-19.73	39.43	54.00	-14.57	AVG
5		2390.000	67.28	-19.68	47.60	74.00	-26.40	peak
6		2390.000	58.89	-19.68	39.21	54.00	-14.79	AVG

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

Antenna polarity: H

Worst mode : (802.11b Mode)/2462

100.0 dBuV/m

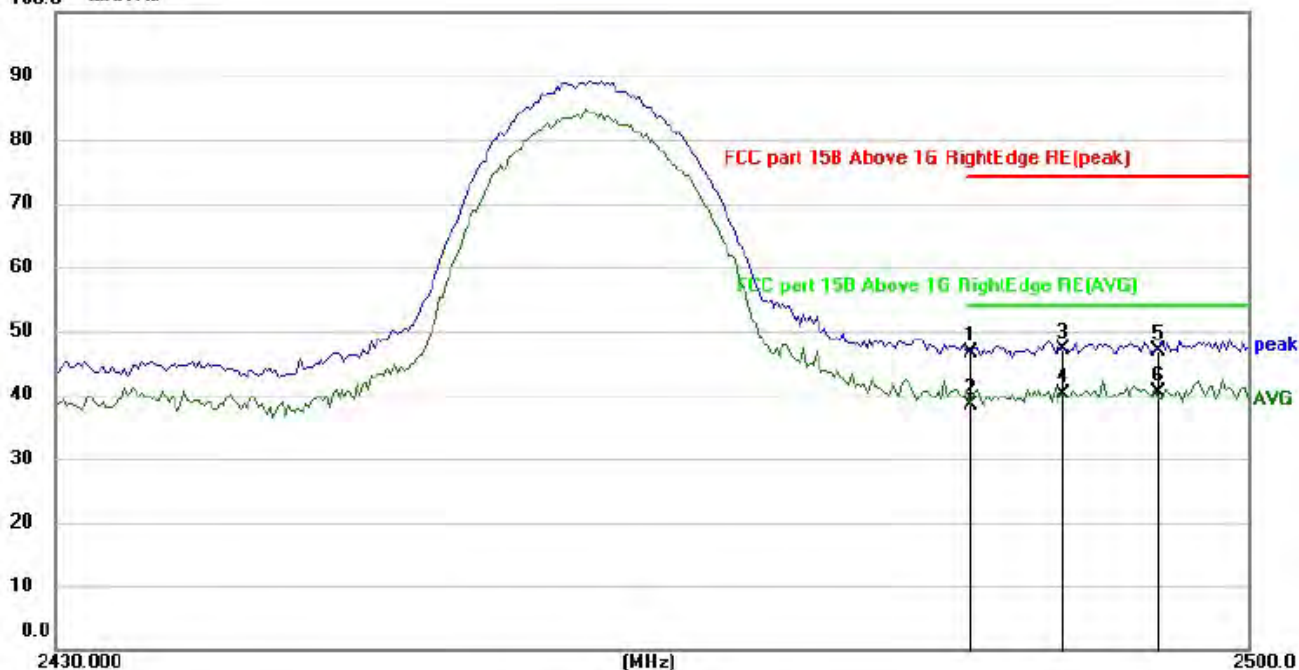


No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		2483.500	64.13	-19.15	44.98	74.00	-29.02	peak
2		2483.500	57.00	-19.15	37.85	54.00	-16.15	AVG
3		2488.843	63.95	-19.12	44.83	74.00	-29.17	peak
4		2488.843	56.85	-19.12	37.73	54.00	-16.27	AVG
5		2493.087	64.30	-19.10	45.20	74.00	-28.80	peak
6	*	2493.087	57.61	-19.10	38.51	54.00	-15.49	AVG

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

Antenna polarity: V

100.0 dBuV/m



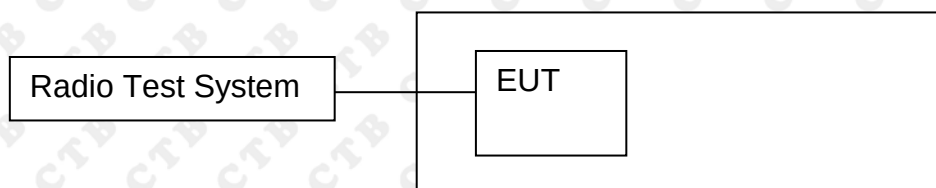
No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Over	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		2483.500	65.89	-19.15	46.74	74.00	-27.26	peak
2		2483.500	57.56	-19.15	38.41	54.00	-15.59	AVG
3		2488.843	66.25	-19.12	47.13	74.00	-26.87	peak
4		2488.843	59.17	-19.12	40.05	54.00	-13.95	AVG
5		2494.504	65.91	-19.09	46.82	74.00	-27.18	peak
6	*	2494.504	59.48	-19.09	40.39	54.00	-13.61	AVG

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

Note: All modes of 802.11b, 802.11g, 802.11n20, 802.11n40, 802.11ax20, 802.11ax40 were test at Low, High channel, the worst result of (802.11b Mode) was reported

8. BAND EDGE AND RF CONDUCTED 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:
 - Below 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

802.11g/LCH



802.11g/HCH

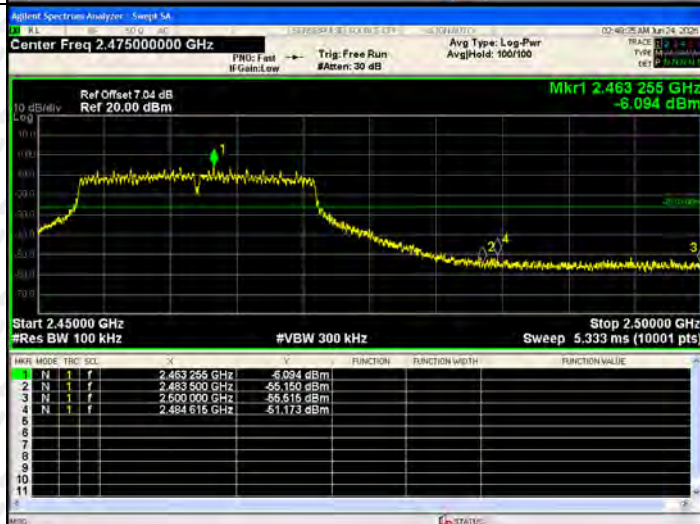


BAND EDGE Graphs

802.11n(HT20)/LCH

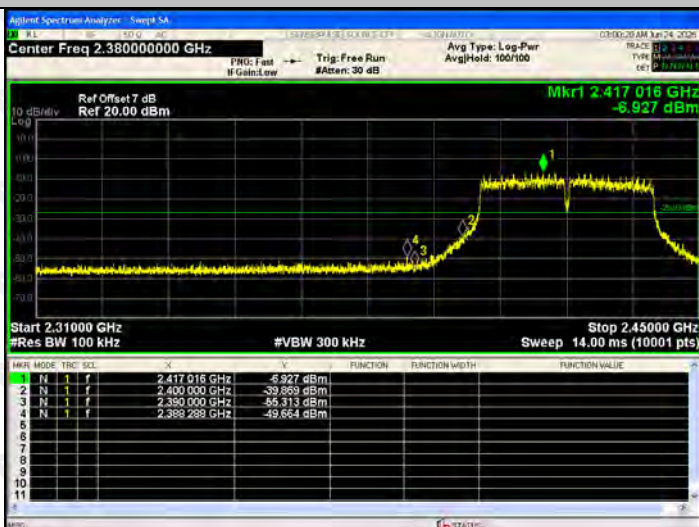


802.11n(HT20)/HCH

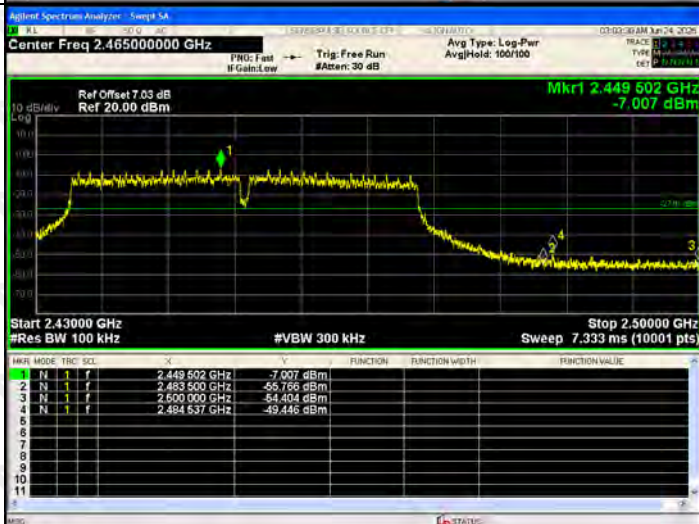


BAND EDGE Graphs

802.11n(HT40)/LCH

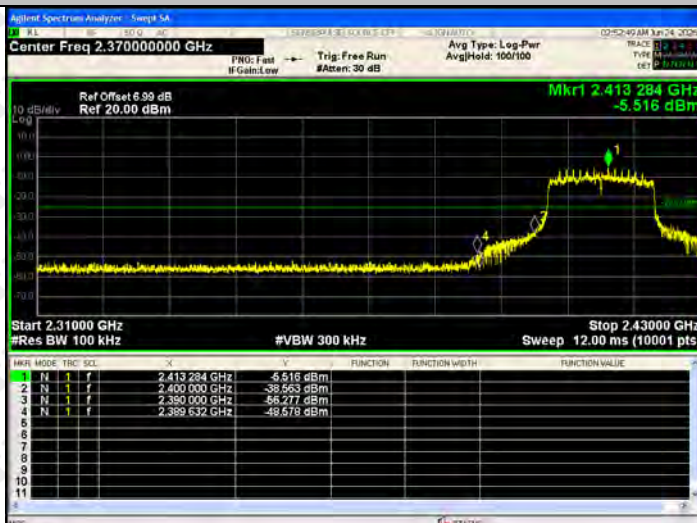


802.11n(HT40)/HCH



BAND EDGE Graphs

802.11ax(HE20)/LCH



802.11ax(HE20)/HCH



BAND EDGE Graphs

802.11ax(HE40)/LCH

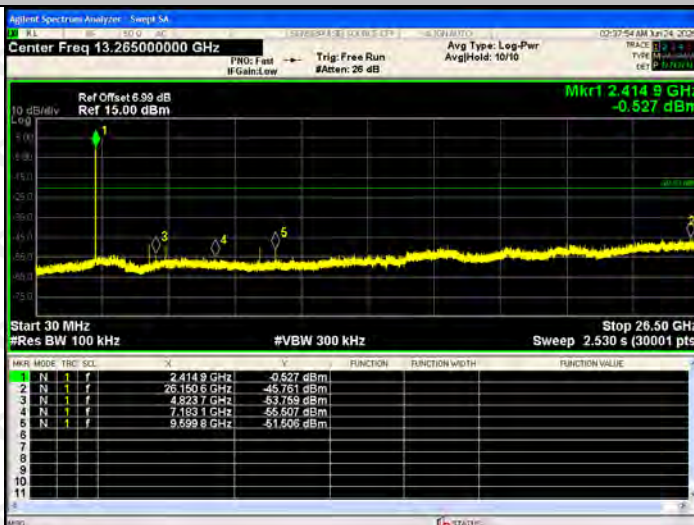


802.11ax(HE40)/HCH

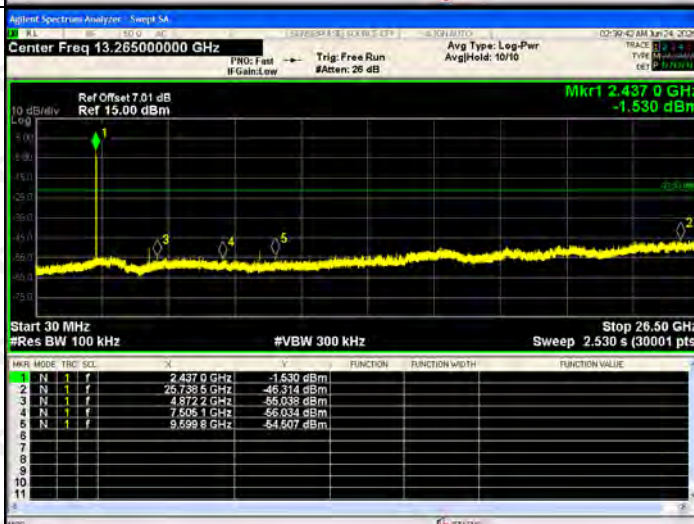


RF Conducted Spurious Emissions Graphs

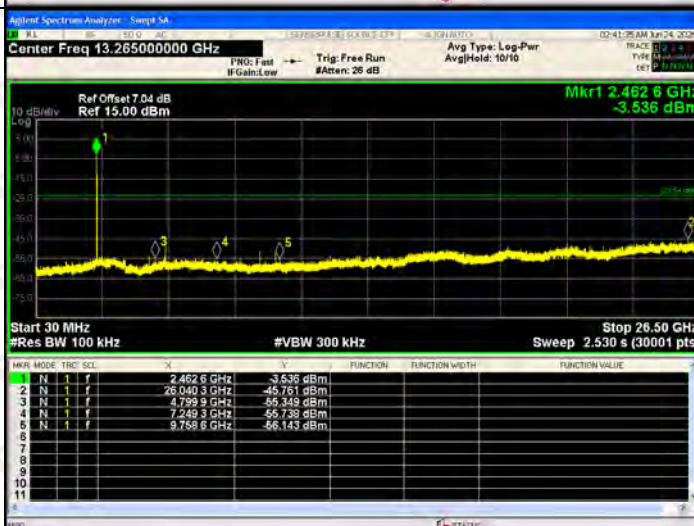
802.11b/LCH



802.11b/MCH



802.11b/HCH

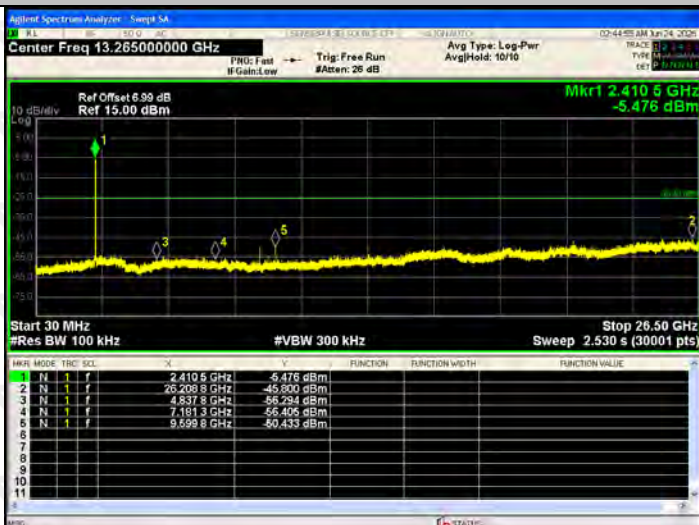


RF Conducted Spurious Emissions Graphs

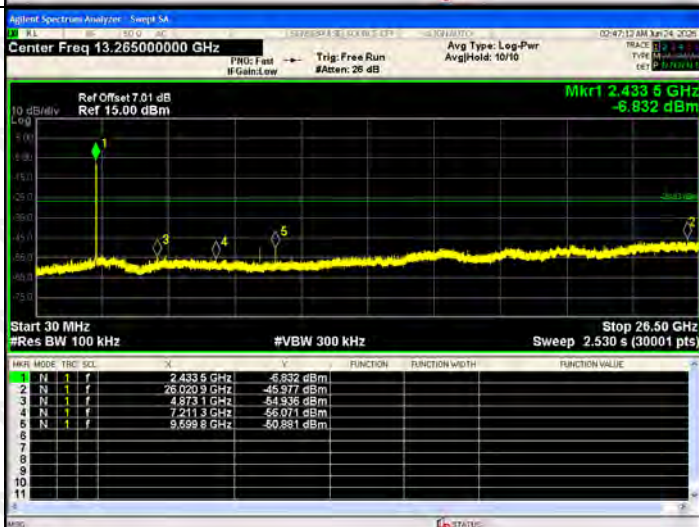


RF Conducted Spurious Emissions Graphs

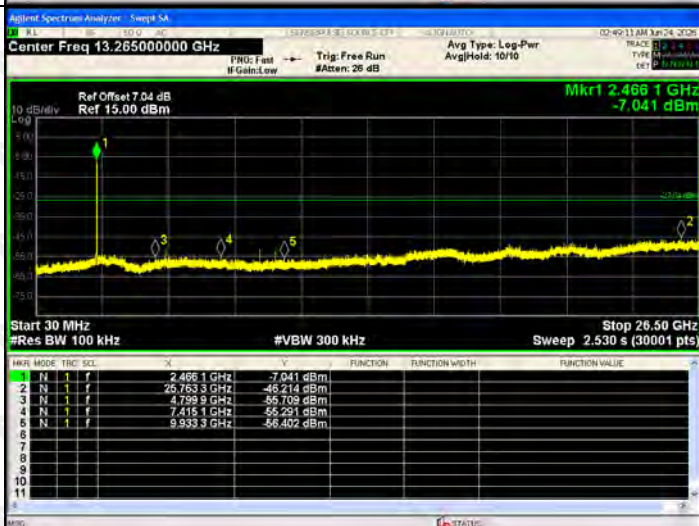
802.11n(HT20)/LCH



802.11n(HT20)/MCH

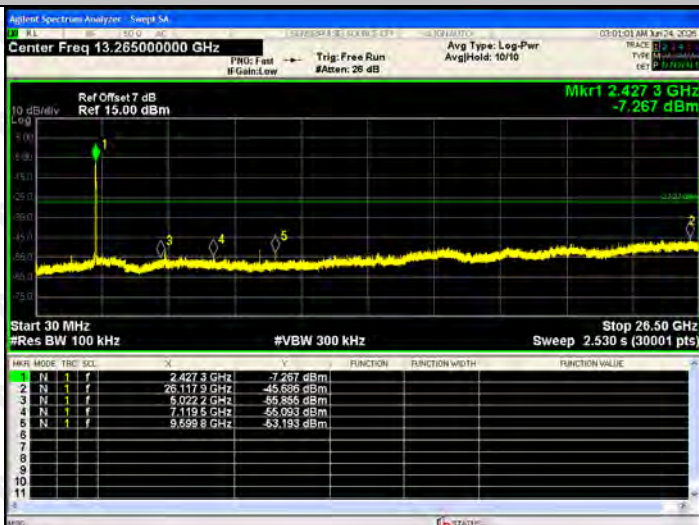


802.11n(HT20)/HCH

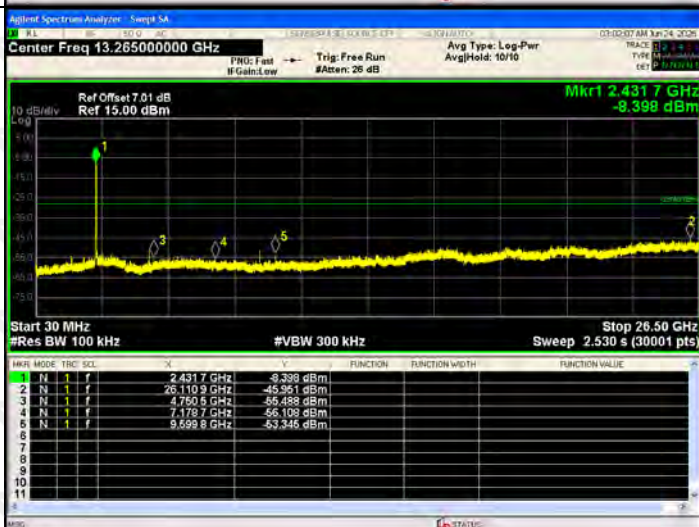


RF Conducted Spurious Emissions Graphs

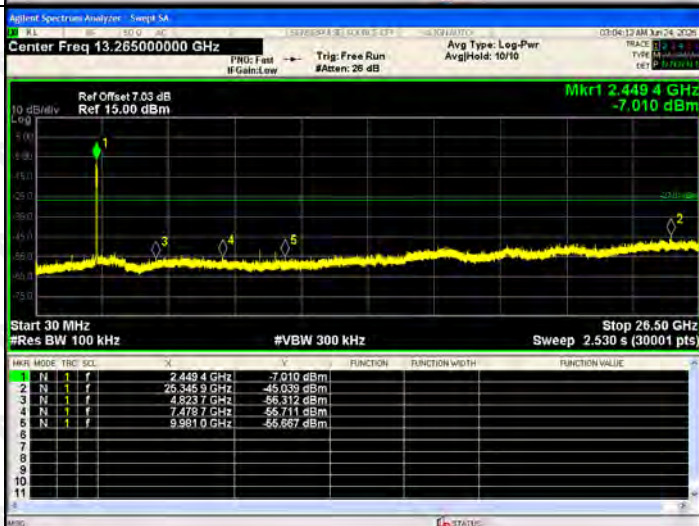
802.11n(HT40)/LCH



802.11n(HT40)/MCH

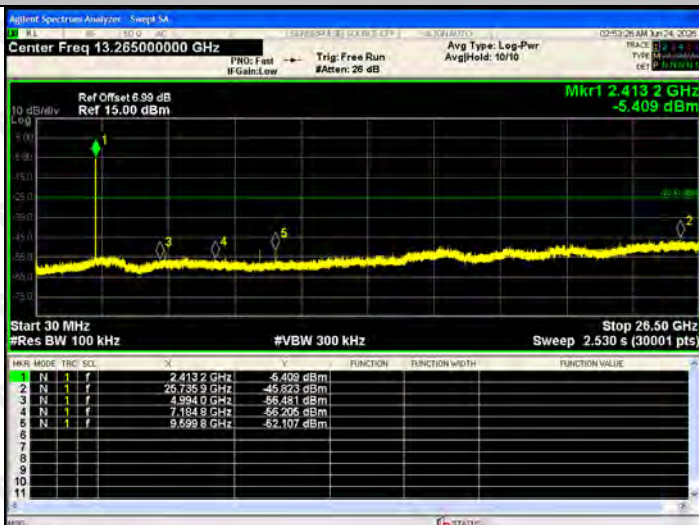


802.11n(HT40)/HCH

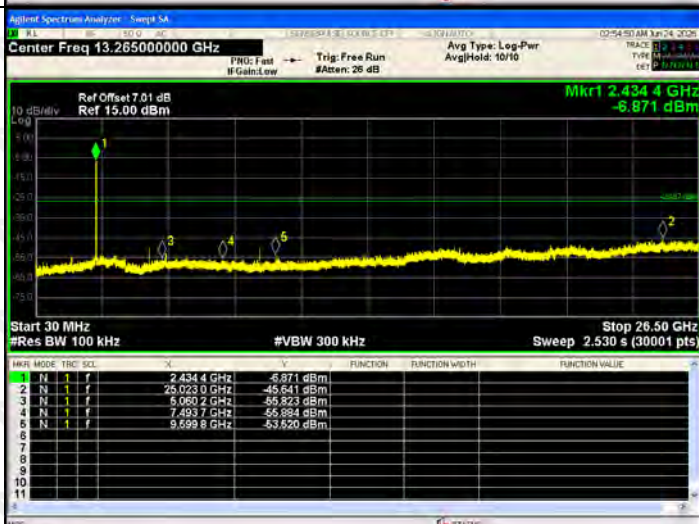


RF Conducted Spurious Emissions Graphs

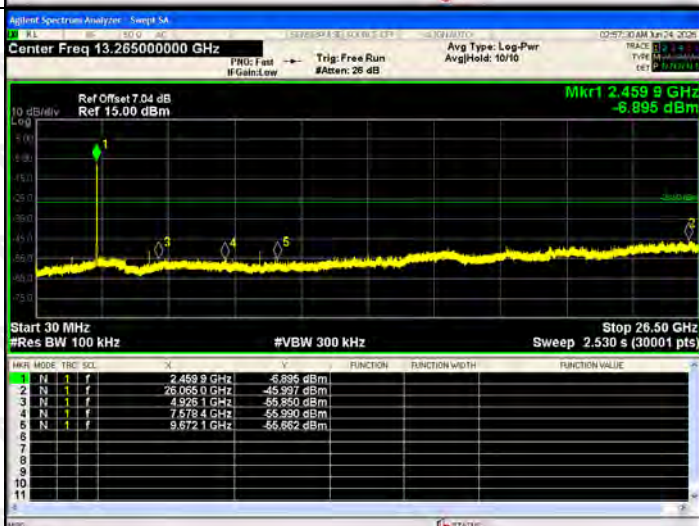
802.11ax(HE20)/LCH



802.11ax(HE20)/MCH

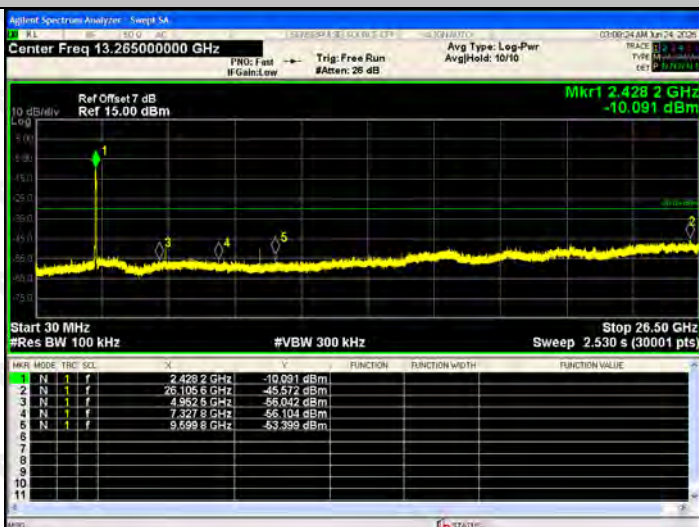


802.11ax(HE20)/HCH

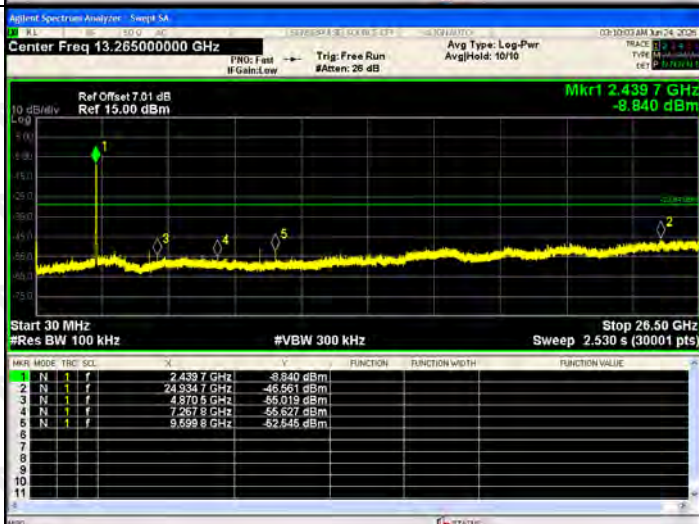


RF Conducted Spurious Emissions Graphs

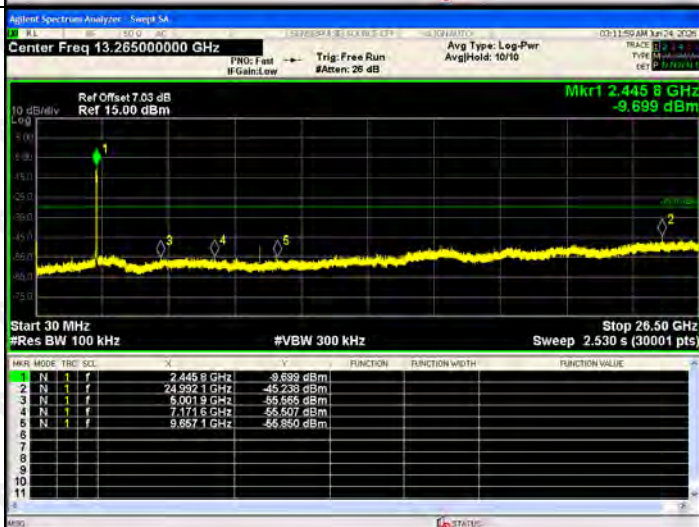
802.11ax(HE40)/LCH



802.11ax(HE40)/MCH



802.11ax(HE40)/HCH



9. CONDUCTED 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)	Maximum Conducted Output Power	1 watt or 30dBm	2400-2483.5	PASS

9.3 Test procedure

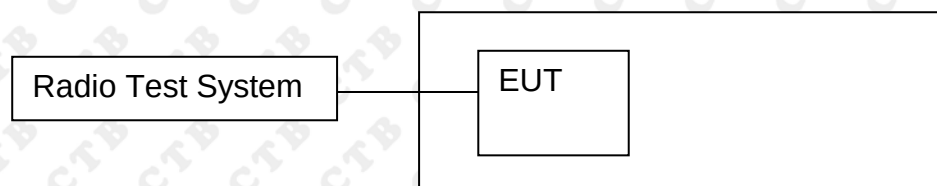
1. The EUT was directly connected to the Power meter

9.4 Test Result

Mode	Channel.	Maximum Peak Output Power [dBm]	Limit [dBm]	Verdict
802.11b	LCH	14.97	30	PASS
	MCH	13.826	30	PASS
	HCH	12.572	30	PASS
802.11g	LCH	12.697	30	PASS
	MCH	12.384	30	PASS
	HCH	11.99	30	PASS
802.11n(HT20)	LCH	12.7	30	PASS
	MCH	12.275	30	PASS
	HCH	11.84	30	PASS
802.11n(HT40)	LCH	13.835	30	PASS
	MCH	13.757	30	PASS
	HCH	13.384	30	PASS
802.11ax(HE20)	LCH	12.247	30	PASS
	MCH	12.05	30	PASS
	HCH	12.641	30	PASS
802.11ax(HE40)	LCH	11.826	30	PASS
	MCH	11.748	30	PASS
	HCH	11.378	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	$\geq 500\text{kHz}$ (6dB bandwidth)	2400-2483.5	PASS

10.3 Test procedure

1. Set RBW = shall be in the range of 1% to 5% of the OBW but not less than 100 kHz.
2. Set the video bandwidth (VBW) $\geq 3 \times$ 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.

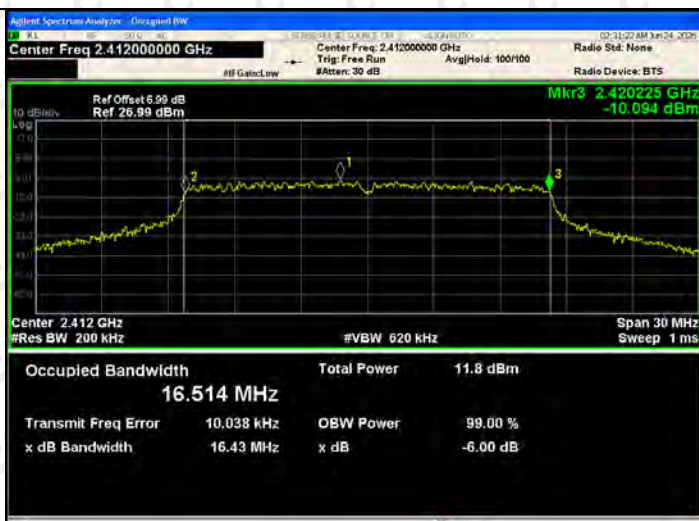
10.4 Test Result

Test Mode	Frequency	6dB Bandwidth (MHz)	Limit(kHz)	Result
802.11b	LCH	8.664	500	PASS
	MCH	9.127	500	PASS
	HCH	8.365	500	PASS
802.11g	LCH	16.429	500	PASS
	MCH	16.369	500	PASS
	HCH	16.345	500	PASS
802.11n(HT20)	LCH	17.5	500	PASS
	MCH	17.556	500	PASS
	HCH	17.607	500	PASS
802.11n(HT40)	LCH	36.183	500	PASS
	MCH	35.953	500	PASS
	HCH	36.002	500	PASS
802.11ax(HE20)	LCH	18.947	500	PASS
	MCH	18.797	500	PASS
	HCH	18.826	500	PASS
802.11ax(HE40)	LCH	37.009	500	PASS
	MCH	37.618	500	PASS
	HCH	37.75	500	PASS

Test Graph:

Graphs	
802.11b /LCH	Agilent Spectrum Analyzer - Occupied BW Center Freq 2.412000000 GHz Ref Offset 6.99 dB Ref 26.99 dBm Mkr3 2.416342 GHz -4.9585 dBm Center 2.412 GHz #Res BW 200 kHz #VBW 620 kHz Span 30 MHz Sweep 1 ms Occupied Bandwidth 12.991 MHz Total Power 16.2 dBm Transmit Freq Error 10.315 kHz OBW Power 99.00 % x dB Bandwidth 8.664 MHz x dB -6.00 dB
802.11b /MCH	Agilent Spectrum Analyzer - Occupied BW Center Freq 2.437000000 GHz Ref Offset 7.01 dB Ref 27.01 dBm Mkr3 2.441588 GHz -5.4887 dBm Center 2.437 GHz #Res BW 200 kHz #VBW 620 kHz Span 30 MHz Sweep 1 ms Occupied Bandwidth 13.039 MHz Total Power 15.0 dBm Transmit Freq Error 24.715 kHz OBW Power 99.00 % x dB Bandwidth 9.127 MHz x dB -6.00 dB
802.11b/HCH	Agilent Spectrum Analyzer - Occupied BW Center Freq 2.462000000 GHz Ref Offset 7.04 dB Ref 27.04 dBm Mkr3 2.466206 GHz -6.8197 dBm Center 2.462 GHz #Res BW 200 kHz #VBW 620 kHz Span 30 MHz Sweep 1 ms Occupied Bandwidth 12.975 MHz Total Power 13.7 dBm Transmit Freq Error 23.718 kHz OBW Power 99.00 % x dB Bandwidth 8.365 MHz x dB -6.00 dB

802.11g/LCH

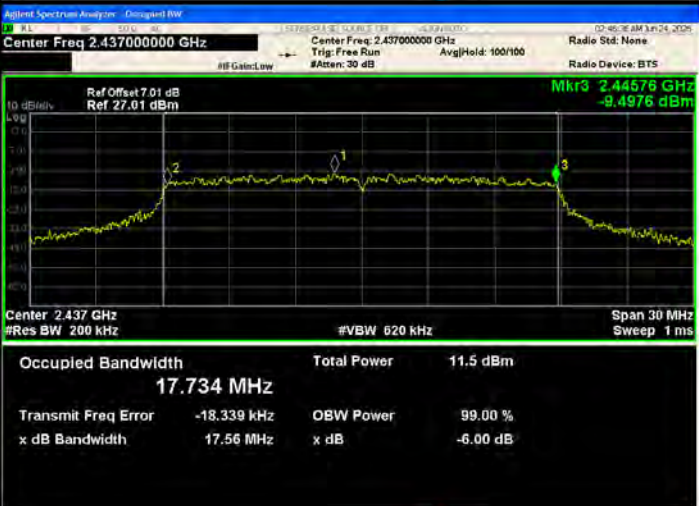
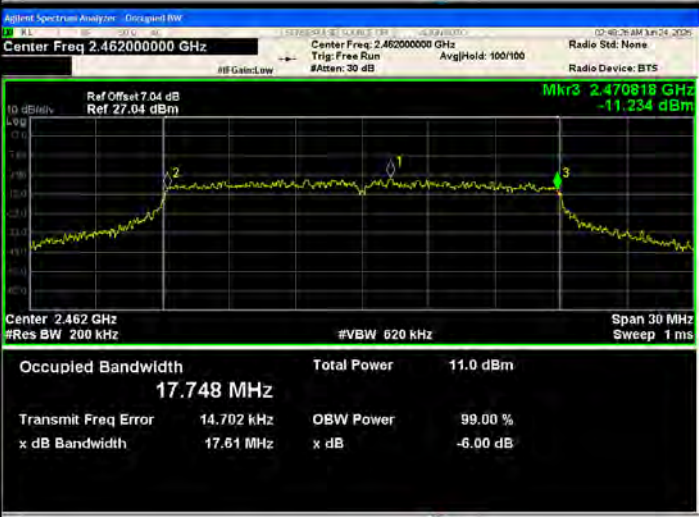


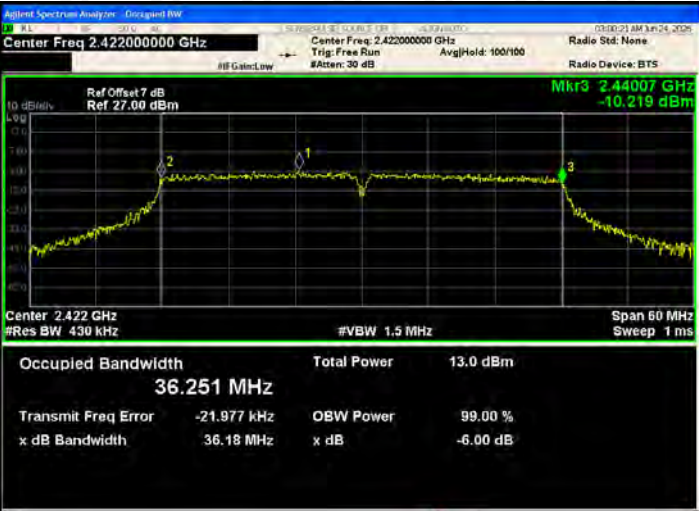
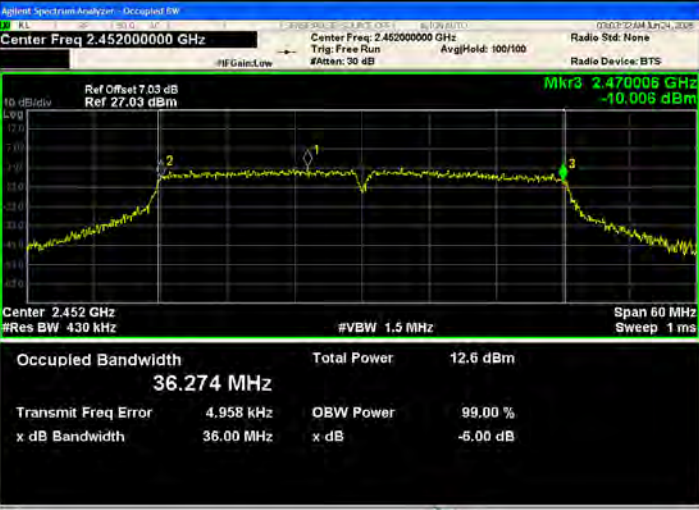
802.11g/MCH

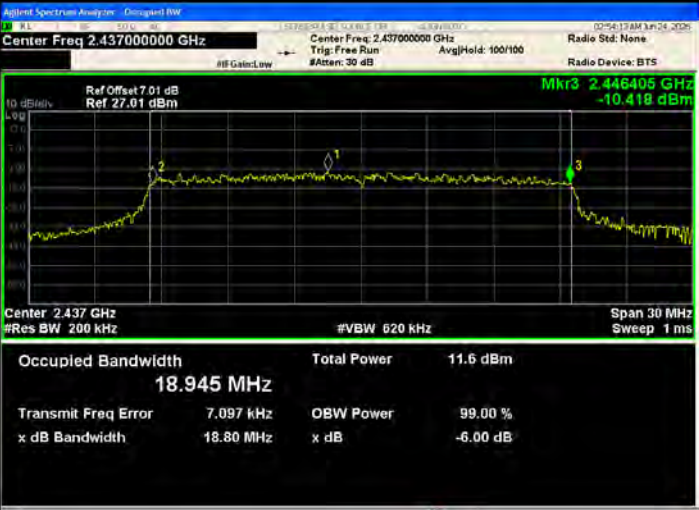
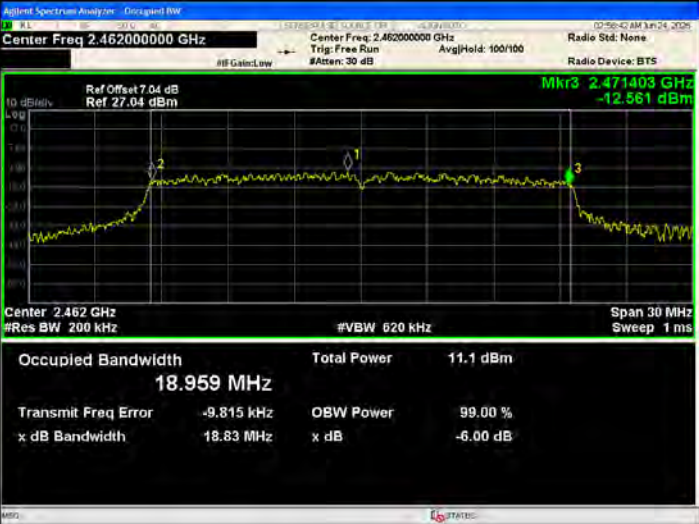


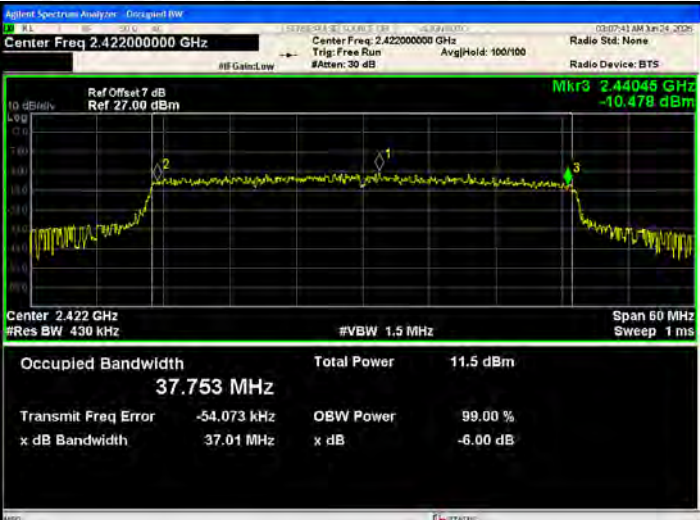
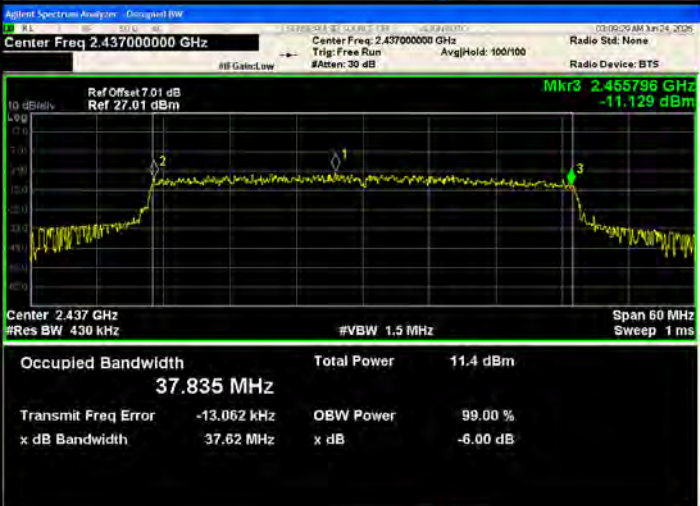
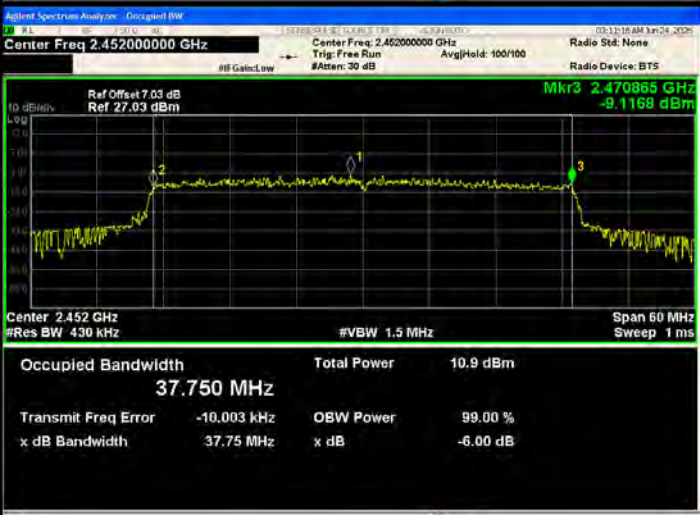
802.11g/HCH



802.11n(HT20)/LCH	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.412000000 GHz Center Freq: 2.412000000 GHz Trig: Free Run Avg/Hold: 100/100 Radio Std: None Radio Device: BTS Ref Offset 6.99 dB Ref 26.99 dBm Mkr3 2.42078 GHz -10.651 dBm Center 2.412 GHz #Res BW 200 kHz #VBW 620 kHz Span 30 MHz Sweep 1 ms Occupied Bandwidth 17.698 MHz Total Power 11.9 dBm Transmit Freq Error 9.897 kHz OSW Power 99.00 % x dB Bandwidth 17.50 MHz x dB -6.00 dB
802.11n(HT20)/MCH	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.437000000 GHz Center Freq: 2.437000000 GHz Trig: Free Run Avg/Hold: 100/100 Radio Std: None Radio Device: BTS Ref Offset 7.01 dB Ref 27.01 dBm Mkr3 2.44578 GHz -9.4976 dBm Center 2.437 GHz #Res BW 200 kHz #VBW 620 kHz Span 30 MHz Sweep 1 ms Occupied Bandwidth 17.734 MHz Total Power 11.5 dBm Transmit Freq Error -18.339 kHz OSW Power 99.00 % x dB Bandwidth 17.56 MHz x dB -6.00 dB
802.11n(HT20)/HCH	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.462000000 GHz Center Freq: 2.462000000 GHz Trig: Free Run Avg/Hold: 100/100 Radio Std: None Radio Device: BTS Ref Offset 7.04 dB Ref 27.04 dBm Mkr3 2.470818 GHz -11.234 dBm Center 2.462 GHz #Res BW 200 kHz #VBW 620 kHz Span 30 MHz Sweep 1 ms Occupied Bandwidth 17.748 MHz Total Power 11.0 dBm Transmit Freq Error 14.702 kHz OSW Power 99.00 % x dB Bandwidth 17.61 MHz x dB -6.00 dB

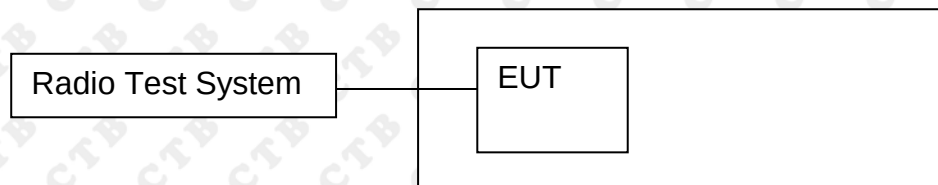
802.11n(HT40)/LCH	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.422000000 GHz Center Freq: 2.422000000 GHz Trig: Free Run Avg/Hold: 100/100 Radio Std: None Radio Device: BTS Ref Offset 7 dB Ref 27.00 dBm Mkr3 2.44007 GHz -10.219 dBm Center 2.422 GHz #Res BW 430 kHz #VBW 1.5 MHz Span 60 MHz Sweep 1 ms Occupied Bandwidth 36.251 MHz Total Power 13.0 dBm Transmit Freq Error -21.877 kHz OBW Power 99.00 % x dB Bandwidth 36.18 MHz x dB -6.00 dB
802.11n(HT40)/MCH	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.437000000 GHz Center Freq: 2.437000000 GHz Trig: Free Run Avg/Hold: 100/100 Radio Std: None Radio Device: BTS Ref Offset 7.01 dB Ref 27.01 dBm Mkr3 2.455012 GHz -8.7440 dBm Center 2.437 GHz #Res BW 430 kHz #VBW 1.5 MHz Span 60 MHz Sweep 1 ms Occupied Bandwidth 36.372 MHz Total Power 13.0 dBm Transmit Freq Error 35.361 kHz OBW Power 99.00 % x dB Bandwidth 35.95 MHz x dB -6.00 dB
802.11n(HT40)/HCH	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.452000000 GHz Center Freq: 2.452000000 GHz Trig: Free Run Avg/Hold: 100/100 Radio Std: None Radio Device: BTS Ref Offset 7.03 dB Ref 27.03 dBm Mkr3 2.470006 GHz -10.006 dBm Center 2.452 GHz #Res BW 430 kHz #VBW 1.5 MHz Span 60 MHz Sweep 1 ms Occupied Bandwidth 36.274 MHz Total Power 12.6 dBm Transmit Freq Error 4.958 kHz OBW Power 99.00 % x dB Bandwidth 36.00 MHz x dB -6.00 dB

802.11ax(HE20)/LCH	 Agilent Spectrum Analyzer - GDSGARD BW Center Freq: 2.412000000 GHz Ref Offset: 5.99 dB Ref: 26.99 dBm Occupied Bandwidth: 18.960 MHz Total Power: 11.7 dBm Transmit Freq Error: 27.775 kHz x dB Bandwidth: 18.95 MHz
802.11ax(HE20)/MCH	 Agilent Spectrum Analyzer - GDSGARD BW Center Freq: 2.437000000 GHz Ref Offset: 7.01 dB Ref: 27.01 dBm Occupied Bandwidth: 18.945 MHz Total Power: 11.6 dBm Transmit Freq Error: 7.097 kHz x dB Bandwidth: 18.80 MHz
802.11ax(HE20)/HCH	 Agilent Spectrum Analyzer - GDSGARD BW Center Freq: 2.462000000 GHz Ref Offset: 7.04 dB Ref: 27.04 dBm Occupied Bandwidth: 18.959 MHz Total Power: 11.1 dBm Transmit Freq Error: -9.815 kHz x dB Bandwidth: 18.83 MHz

802.11ax(HE40)/LCH	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.42200000 GHz Center Freq: 2.42200000 GHz Trig: Free Run Avg/Hold: 100/100 Radio Std: None Radio Device: BTS Ref Offset 7 dB Ref 27.00 dBm Mkr3 2.44045 GHz -10.478 dBm Center 2.422 GHz #Res BW 430 kHz #VBW 1.5 MHz Span 60 MHz Sweep 1 ms Occupied Bandwidth 37.753 MHz Total Power 11.5 dBm Transmit Freq Error -54.073 kHz OBW Power 99.00 % x dB Bandwidth 37.01 MHz x dB -6.00 dB
802.11ax(HE40)/MCH	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.43700000 GHz Center Freq: 2.43700000 GHz Trig: Free Run Avg/Hold: 100/100 Radio Std: None Radio Device: BTS Ref Offset 7.01 dB Ref 27.01 dBm Mkr3 2.465796 GHz -11.129 dBm Center 2.437 GHz #Res BW 430 kHz #VBW 1.5 MHz Span 60 MHz Sweep 1 ms Occupied Bandwidth 37.835 MHz Total Power 11.4 dBm Transmit Freq Error -13.062 kHz OBW Power 99.00 % x dB Bandwidth 37.62 MHz x dB -6.00 dB
802.11ax(HE40)/HCH	 Agilent Spectrum Analyzer - Occupied BW Center Freq 2.45200000 GHz Center Freq: 2.45200000 GHz Trig: Free Run Avg/Hold: 100/100 Radio Std: None Radio Device: BTS Ref Offset 7.03 dB Ref 27.03 dBm Mkr3 2.470865 GHz -9.1168 dBm Center 2.452 GHz #Res BW 430 kHz #VBW 1.5 MHz Span 60 MHz Sweep 1 ms Occupied Bandwidth 37.750 MHz Total Power 10.9 dBm Transmit Freq Error -10.003 kHz OBW Power 99.00 % x dB Bandwidth 37.75 MHz x dB -6.00 dB

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: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
4. Set the VBW $\geq 3 \times \text{RBW}$.
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	-14.614	8	PASS
	MCH	-16.268	8	PASS
	HCH	-17.191	8	PASS
802.11g	LCH	-20.947	8	PASS
	MCH	-19.465	8	PASS
	HCH	-21.269	8	PASS
802.11n(HT20)	LCH	-21.403	8	PASS
	MCH	-21.54	8	PASS
	HCH	-20.708	8	PASS
802.11n(HT40)	LCH	-22.631	8	PASS
	MCH	-22.612	8	PASS
	HCH	-22.694	8	PASS
802.11ax(HE20)	LCH	-21.744	8	PASS
	MCH	-23.246	8	PASS
	HCH	-22.285	8	PASS
802.11ax(HE40)	LCH	-25.767	8	PASS
	MCH	-25.193	8	PASS
	HCH	-25.832	8	PASS

Test Graph

Graphs

802.11b/LCH



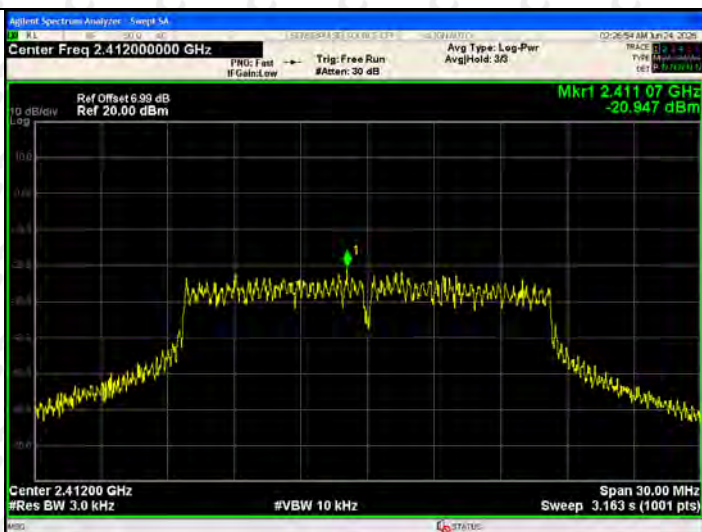
802.11b/MCH



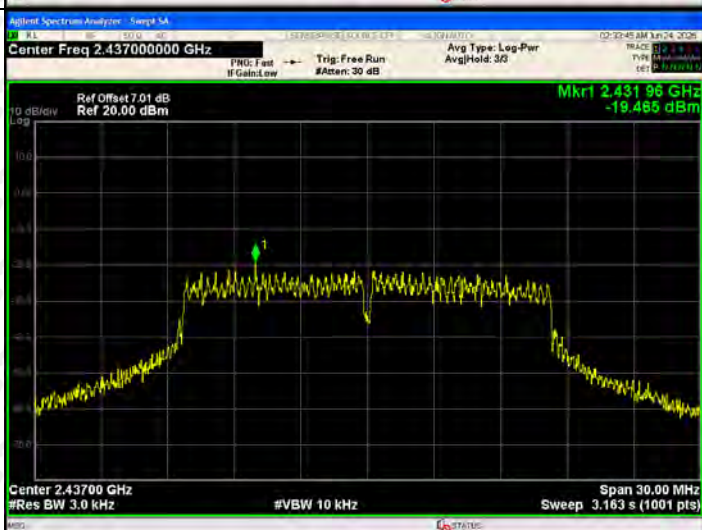
802.11b/HCH



802.11g/LCH



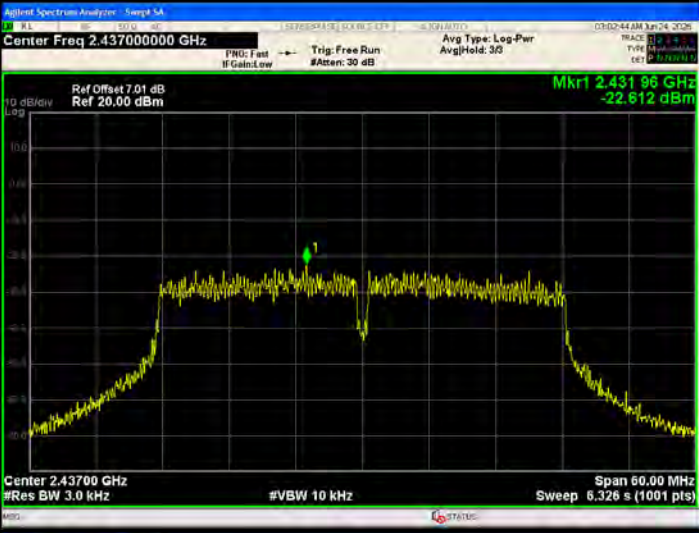
802.11g/MCH

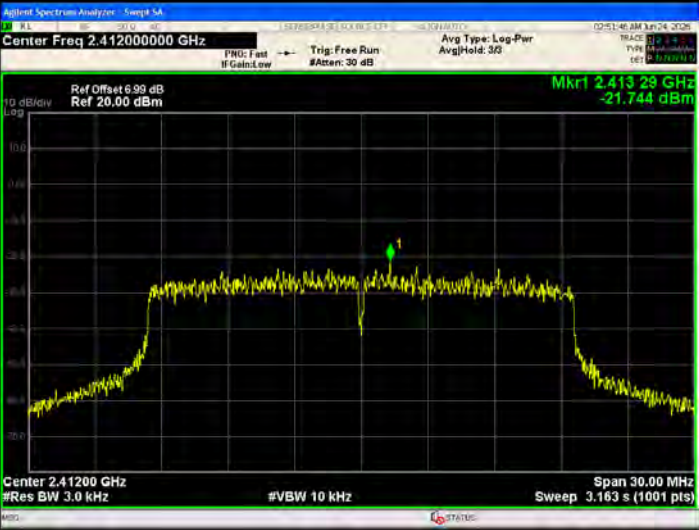
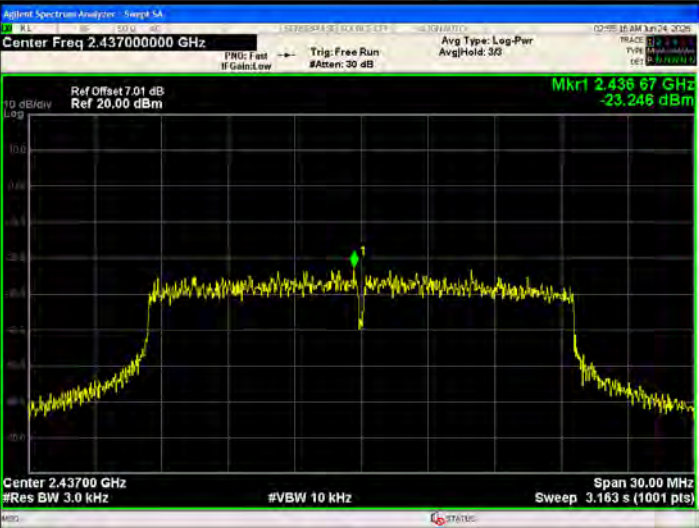


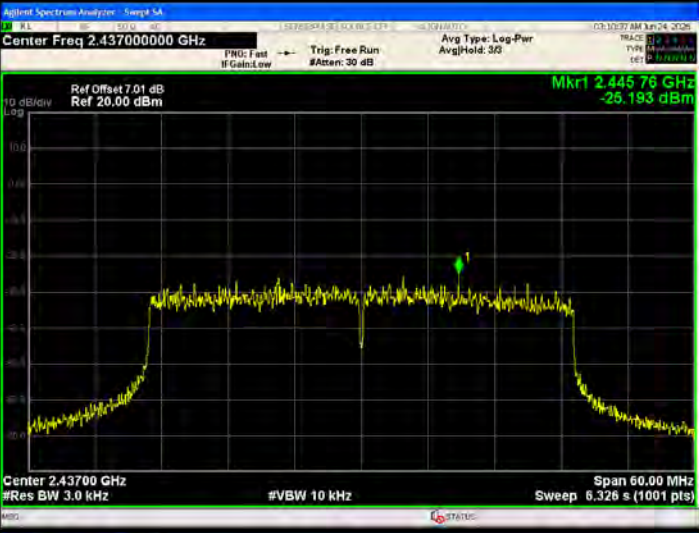
802.11g/HCH



802.11n(HT20)/LCH	Agilent Spectrum Analyzer - Sweep 5A Center Freq 2.412000000 GHz Ref Offset 6.99 dB Ref 20.00 dBm Mkr1 2.41140 GHz -21.403 dBm Center 2.41200 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 30.00 MHz Sweep 3.163 s (1001 pts)
802.11n(HT20)/MCH	Agilent Spectrum Analyzer - Sweep 5A Center Freq 2.437000000 GHz Ref Offset 7.01 dB Ref 20.00 dBm Mkr1 2.43828 GHz -21.540 dBm Center 2.43700 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 30.00 MHz Sweep 3.163 s (1001 pts)
802.11n(HT20)/HCH	Agilent Spectrum Analyzer - Sweep 5A Center Freq 2.462000000 GHz Ref Offset 7.04 dB Ref 20.00 dBm Mkr1 2.46071 GHz -20.708 dBm Center 2.46200 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 30.00 MHz Sweep 3.163 s (1001 pts)

802.11n(HT40)/LCH	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.422000000 GHz Ref Offset 7 dB Ref 20.00 dBm Mkr1 2.416 98 GHz -22.631 dBm Center 2.42200 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 60.00 MHz Sweep 6.326 s (1001 pts)
802.11n(HT40)/MCH	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.437000000 GHz Ref Offset 7.01 dB Ref 20.00 dBm Mkr1 2.431 96 GHz -22.612 dBm Center 2.43700 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 60.00 MHz Sweep 6.326 s (1001 pts)
802.11n(HT40)/HCH	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.452000000 GHz Ref Offset 7.03 dB Ref 20.00 dBm Mkr1 2.447 02 GHz -22.894 dBm Center 2.45200 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 60.00 MHz Sweep 6.326 s (1001 pts)

802.11ax(HE20)/LCH	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.41200000 GHz Ref Offset 6.99 dB Ref 20.00 dBm Mkr1 2.413 28 GHz -21.744 dBm Center 2.41200 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 30.00 MHz Sweep 3.163 s (1001 pts)
802.11ax(HE20)/MCH	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.43700000 GHz Ref Offset 7.01 dB Ref 20.00 dBm Mkr1 2.436 67 GHz -23.246 dBm Center 2.43700 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 30.00 MHz Sweep 3.163 s (1001 pts)
802.11ax(HE20)/HCH	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.46200000 GHz Ref Offset 7.04 dB Ref 20.00 dBm Mkr1 2.464 46 GHz -22.285 dBm Center 2.46200 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 30.00 MHz Sweep 3.163 s (1001 pts)

802.11ax(HE40)/LCH	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.42200000 GHz Ref Offset 7 dB Ref 20.00 dBm Mkr1 2.43076 GHz -25.767 dBm Center 2.42200 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 60.00 MHz Sweep 6.326 s (1001 pts)
802.11ax(HE40)/MCH	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.43700000 GHz Ref Offset 7.01 dB Ref 20.00 dBm Mkr1 2.44576 GHz -25.193 dBm Center 2.43700 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 60.00 MHz Sweep 6.326 s (1001 pts)
802.11ax(HE40)/HCH	 Agilent Spectrum Analyzer - Sweep SA Center Freq 2.45200000 GHz Ref Offset 7.03 dB Ref 20.00 dBm Mkr1 2.44696 GHz -25.832 dBm Center 2.45200 GHz #Res BW 3.0 kHz #VBW 10 kHz Span 60.00 MHz Sweep 6.326 s (1001 pts)

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.

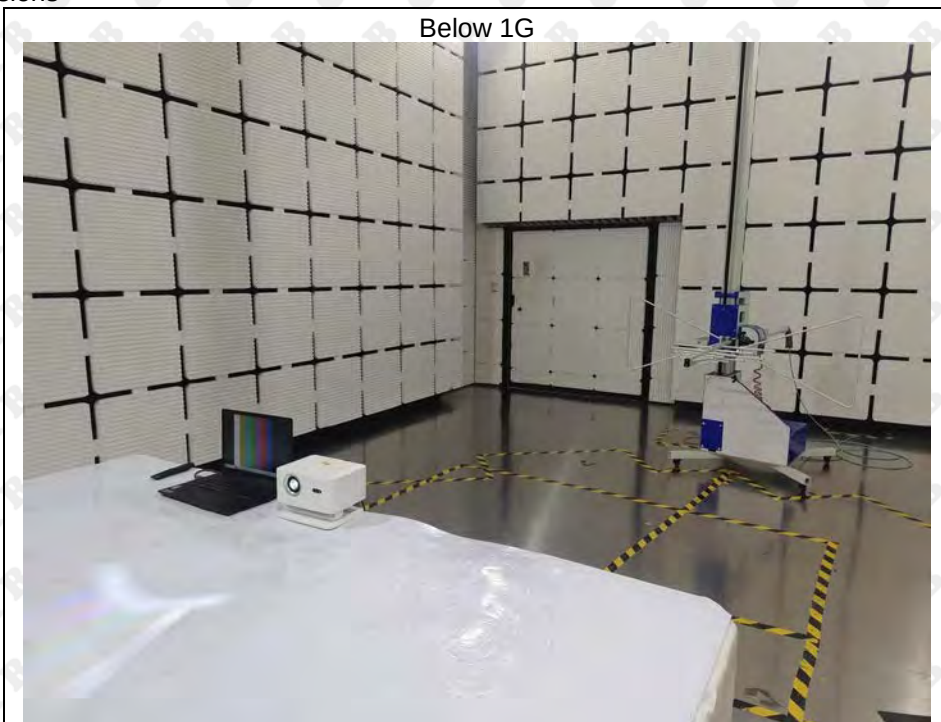
EUT Antenna:

The antenna is FPC antenna and no consideration of replacement. The best case gain of the antenna is 2.19dBi.

13. EUT TEST SETUP PHOTOGRAPHS

Radiated Emissions

Below 1G



Above 1G



Conducted emission



RF Conducted



***** END OF REPORT *****