FCC TEST REPORT
FCC ID: 2AT9B-AV1435

Report Number.....:	**BTF230719R00201**
Date of Test.....	June 26, 2023 to July 10, 2023
Date of issue.....:	July 10, 2023
Test Result .....:	PASS
Testing Laboratory.....:	**BTF Testing Lab (Shenzhen) Co., Ltd.**
Address .....:	F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China
Applicant's name .....:	**MAXMADE AUTO ELECTRONICS Co., LTD**
Address .....:	Building 2, GIEC Industrial Park, Puzai Road, Pingdi, Longgang District, Shenzhen. China
Manufacturer's name .....:	**MAXMADE AUTO ELECTRONICS Co., LTD**
Address .....:	Building 2, GIEC Industrial Park, Puzai Road, Pingdi, Longgang District, Shenzhen. China
Test specification:	
Standard.....:	FCC CFR Title 47 Part 15 Subpart C Section 15.247
Test procedure.....:	KDB558074 D01 15.247 Meas Guidance v05r02 ANSI C63.10:2013
Non-standard test method .....:	N/A

This device described above has been tested by BTF, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.
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Product name.....:	**Car multimedia player**
Trademark .....:	Dual, Jensen, Axxera
Model/Type reference.....:	D2WC7 DMD7W, JC7DM, DC7DWL, JDASHCP, JC7DM, JDM7WL
Ratings.....:	Input: DC 12V, 2A Output: DC 5V, 2.1A

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Testing procedure and testing location:

Testing Laboratory.....:	**BTF Testing Lab (Shenzhen) Co., Ltd.**
Address.....:	F101, 201 and 301, Building 1, Block 2, Tantou Industrial Park, Tantou Community, Songgang Street, Bao'an District, Shenzhen, China
Tested by (name + signature).....:	Chris Liu
Approved (name + signature).....:	Ryan.CJ

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1. VERSION

Report No.	Version	Description	Approved
BTF230719R00201	R_V0	Initial issue of report	July 10, 2023

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2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C			
Standard Section	Test Item	Result	Remark
FCC part 15.203/15.247 (b)(4)	Antenna requirement	PASS	
FCC part 15.207	AC Power Line Conducted Emission	N/A	
FCC part 15.247 (b)(3)	Conducted Peak Output Power	PASS	
FCC part 15.247 (a)(2)	Channel Bandwidth& 99% OCB	PASS	
FCC part 15.247 (e)	Power Spectral Density	PASS	
FCC part 15.247(d)	Band Edge	PASS	
FCC part 15.205/15.209	Spurious Emission	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

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2.1 TEST FACILITY

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FCC Test Firm Registration Number: 518915
Designation Number: CN1330
Company Number: 27844
CAB Identifier: CN0135

2.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ± U，where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2，providing a level of confidence of approximately 95 %。

Measurement	Value
Occupied Channel Bandwidth	69 KHz
RF output power, conducted	0.87 dB
Power Spectral Density, conducted	0.69 dB
Unwanted Emissions, conducted	0.94 dB
All emissions, radiated(<1GHz)	4.12 dB
All emissions, radiated(>1GHz)	4.16 dB
Temperature	0.82 °C
Humidity	4.1 %

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3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Product Name:	Car multimedia player
Model No.:	D2WC7 DMD7W, JC7DM, DC7DWL, JDASHCP, JC7DM, JDM7WL
Model Different:	All the model are of the same circuit and RF module, and the only difference are brand and packaging. The model D2WC7 is the tested sample.
Hardware Version:	R4
Software Version:	V1.0
Sample(s) Status:	Engineer sample
Channel numbers:	802.11b/802.11g /802.11n(HT20):11/ 802.11n(HT40):7
Operation Frequency:	802.11b/802.11g /802.11n(HT20): 2412-2462MHz 802.11n(HT40): 2422-2452MHz
Channel separation:	5MHz
Modulation technology:	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n: OFDM (64QAM, 16QAM, QPSK, BPSK)
SU mode:	Single User mode
Antenna Type:	FPC Antenna
Antenna gain:	6.42 dBi
Power supply:	Input: DC 12 V, 2 A Output: DC 5V, 2.1A

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Operation Frequency each of channel							
Channel	Frequency	Channel	Frequency	Channel	Frequency	Channel	Frequency
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz
3	2422MHz	6	2437MHz	9	2452MHz		

Note:
In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	Frequency (MHz)	
	802.11b/802.11g/802.11n(HT20)	802.11n(HT40)/
Lowest channel	2412MHz	2422MHz
Middle channel	2437MHz	2437MHz
Highest channel	2462MHz	2452MHz

3.2 DESCRIPTION OF TEST MODES

Transmitting mode	Keep the EUT in continuously transmitting mode
Remark: EUT use new battery during the test, the duty cycle >98%, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.	

We have verified the construction and function in typical operation. All the test modes were carried out with the EUT in transmitting operation, which was shown in this test report and defined as follows:

Pre-scan all kind of data rate in lowest channel, and found the follow list which it was worst case.

Mode	802.11b	802.11g	802.11n (HT20)	802.11n (HT40)
Data rate	1Mbps	6Mbps	6.5Mbps	13Mbps

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3.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Emission

EUT

Conducted Spurious

EUT

3.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Car multimedia player	N/A	D2WC7	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note

Note:

(1) The support equipment was authorized by Declaration of Confirmation.

(2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

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3.5EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	RFTest software	/	V1.00	/	/	/
2	RF Control Unit	Techy	TR1029-1	/	2022-11-24	2023-11-23
3	RF Sensor Unit	Techy	TR1029-2	/	2022-11-24	2023-11-23
4	Programmable constant temperature and humidity box	ZZCKONG	ZZ-K02A	20210928007	2022-11-24	2023-11-23
5	Adjustable Direct Current Regulated Power Supply	Tongmen	etm-6050c	20211026123	2022-11-24	2023-11-23
6	WIDEBAND RADIO COMMNUNICATIO N TESTER	Rohde & Schwarz	CMW500	161997	2022-11-24	2023-11-23
7	MXA Signal Analyzer	KEYSIGHT	N9020A	MY50410020	2022-11-24	2023-11-23
8	Coaxial cable Multiflex 141	Schwarzbeck	N/SMA 0.5m	517386	2023-03-24	2024-03-23
9	Preamplifier	SCHWARZBE CK	BBV9744	00246	2022-11-24	2023-11-23
10	RE Cable	REBES Talent	UF1-SMASMA M-10m	21101566	2022-11-24	2023-11-23
11	RE Cable	REBES Talent	UF2-NMNM-1 0m	21101570	2022-11-24	2023-11-23
12	RE Cable	REBES Talent	UF1-SMASMA M-1m	21101568	2022-11-24	2023-11-23
13	RE Cable	REBES Talent	UF2-NMNM-1 m	21101576	2022-11-24	2023-11-23
14	RE Cable	REBES Talent	UF2-NMNM-2. 5m	21101573	2022-11-24	2023-11-23
15	POSITIONAL CONTROLLER	SKET	PCI-GPIB	/	/	/
16	Horn Antenna	SCHWARZBE CK	BBHA9170	01157	2021-11-28	2023-11-27
17	EMI TEST RECEIVER	ROHDE&SCH WARZ	ESCI7	101032	2022-11-24	2023-11-23
18	SIGNAL ANALYZER	ROHDE&SCH WARZ	FSQ40	100010	2022-11-24	2023-11-23
19	POSITIONAL CONTROLLER	SKET	PCI-GPIB	/	/	/
20	Broadband Preamplilifier	SCHWARZBE CK	BBV9718D	00008	2023-03-24	2024-03-23
21	Horn Antenna	SCHWARZBE CK	BBHA9120D	2597	2022-05-22	2024-05-21
22	EZ_EMC	Frad	FA-03A2 RE+	/	/	/

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23	Power Sensor	MWRFtest	MW100-RFCB	/	2021-11-28	2023-11-27
24	POSITIONAL CONTROLLER	SKET	PCI-GPIB	/	/	/
25	Log periodic antenna	SCHWARZBECK	VULB 9168	01328	2021-11-28	2023-11-27
26	Loop Antenna	SCHWARZBECK	FMZB1519B	00191	2022.6.12	2024.6.11

Conduction Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Pulse Limiter	SCHWARZBECK	VTSD 9561-F	00953	2022-11-24	2023-11-23
2	Coaxial Switcher	SCHWARZBECK	CX210	CX210	2022-11-24	2023-11-23
3	V-LISN	SCHWARZBECK	NSLK 8127	01073	2022-11-24	2023-11-23
4	LISN	AFJ	LS16/110VAC	16010020076	2023-02-23	2024-02-22
5	EMI Receiver	ROHDE&SCHWARZ	ESCI3	101422	2022-11-24	2023-11-23
6	EZ_EMC	Frad	FA-03A2 RE+	/	/	/

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4. EMC EMISSION TEST

4.1 CONDUCTED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2013
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto

4.1.1 POWER LINE CONDUCTED EMISSION Limits

FREQUENCY (MHz)	Limit (dBuV)		Standard
	Quasi-peak	Average	
0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

(1) *Decreases with the logarithm of the frequency.

4.1.2 TEST PROCEDURE

a. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.3 DEVIATION FROM TEST STANDARD

No deviation

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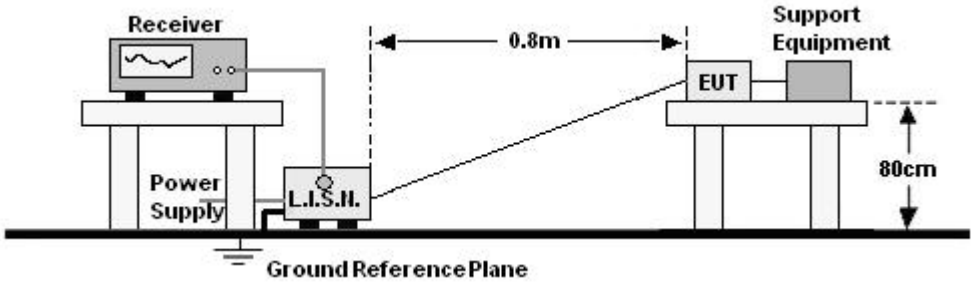
4.1.4 TEST SETUP



4.1.5 EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

4.1.6 test result

N/A

The EUT is powered by the DC only, the test item is not applicable.

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4.2 RADIATED EMISSION MEASUREMENT

Test Requirement:	FCC Part15 C Section 15.209
Test Method:	ANSI C63.10:2013
Test Frequency Range:	9kHz to 25GHz
Test site:	Measurement Distance: 3m
Receiver setup:	

Frequency	Detector	RBW	VBW	Value
9KHz-150KHz	Quasi-peak	200Hz	600Hz	Quasi-peak
150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

4.2.1 RADIATED EMISSION LIMITS

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT

FREQUENCY (MHz)	Limit (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

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4.2.2 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-anechoiccamber. 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 avariable-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 1meter) and the rotatable 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 10dBmargin 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

Note:

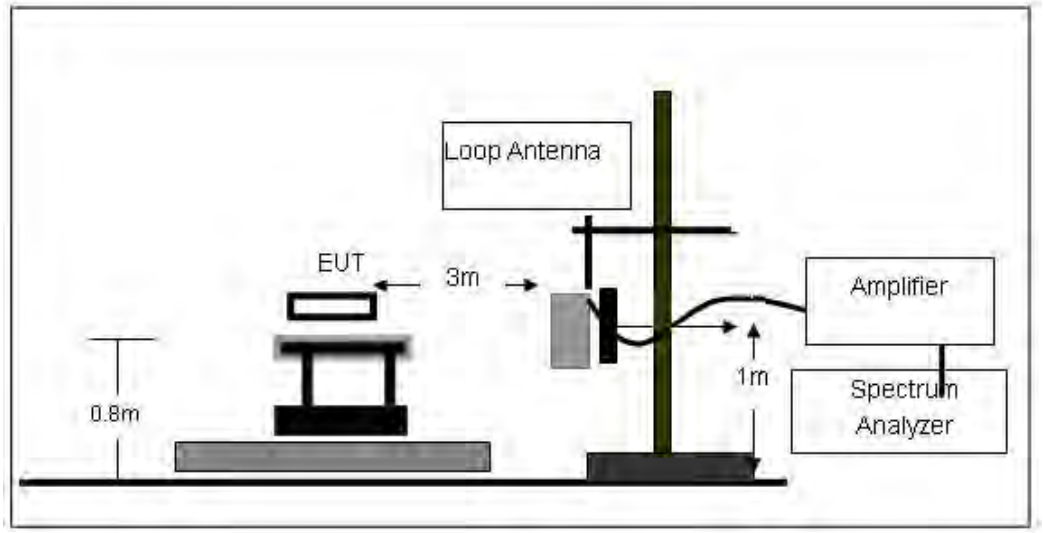
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

4.2.3 DEVIATION FROM TEST STANDARD

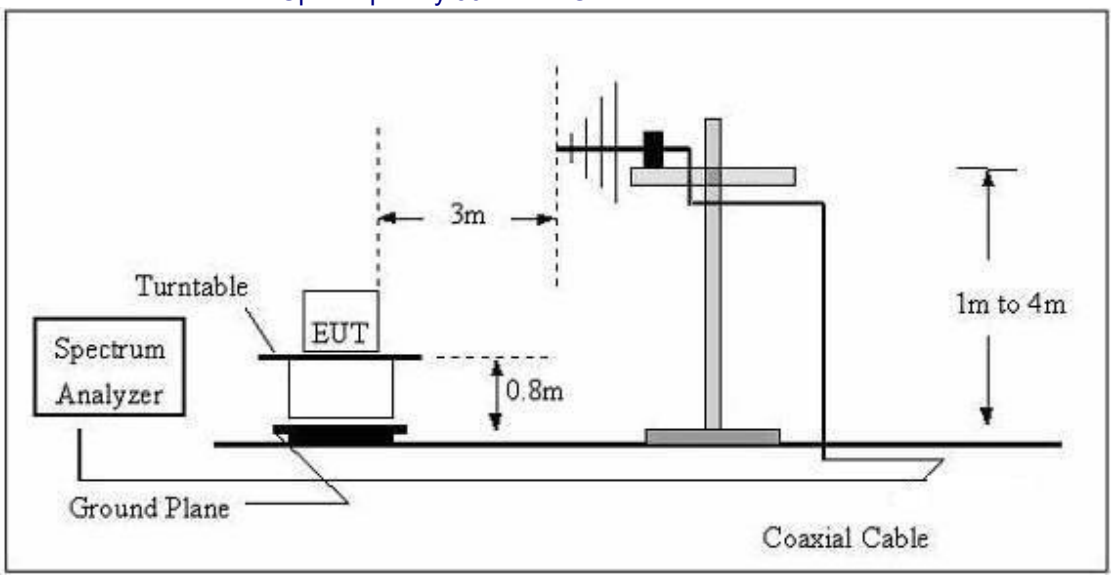
No deviation

4.2.4 TEST SETUP

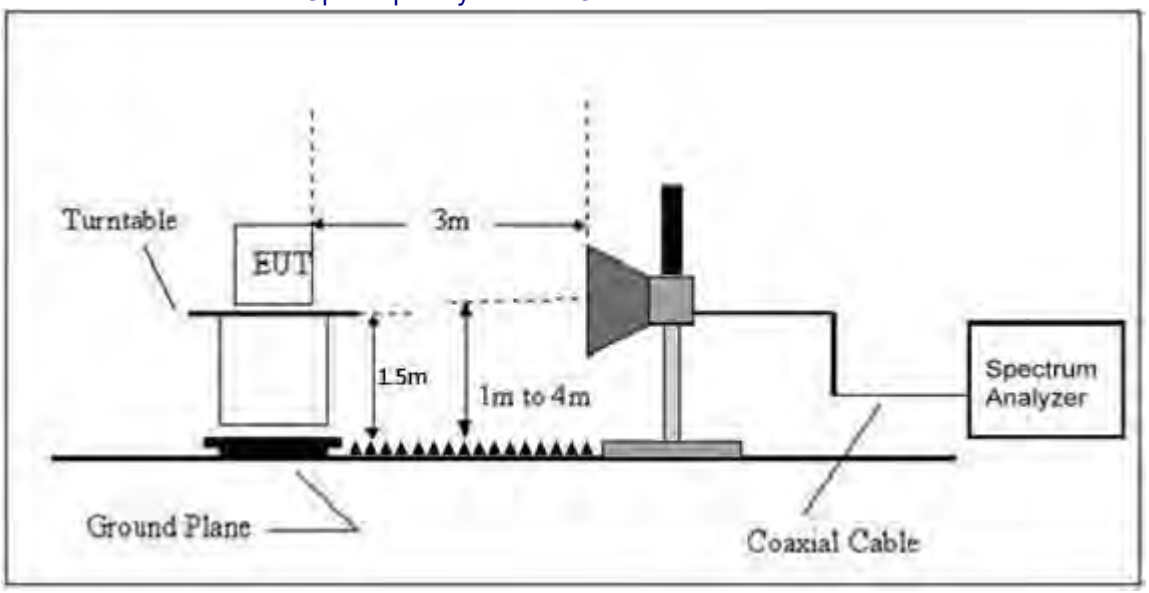
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



4.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

4.2.6 TEST RESULTS

Between 9KHz – 30MHz

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.

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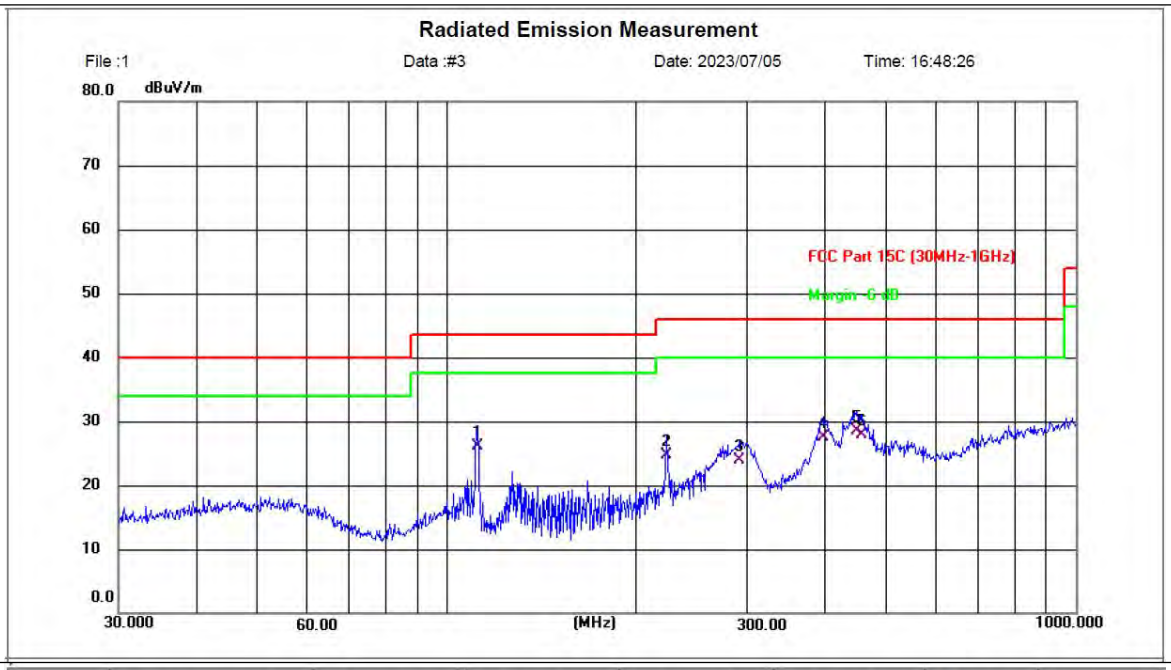
Between 30MHz – 1GHz

Temperature :	25.1℃	Relative Humidity :	50%
Pressure :	101kPa	Polarization :	Horizontal
Test Voltage :	AC 120V/60Hz		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	111.7380	37.90	-11.79	26.11	43.50	-17.39	QP
2	223.7333	34.40	-9.67	24.73	46.00	-21.27	QP
3	292.0583	31.75	-7.92	23.83	46.00	-22.17	QP
4	396.2415	33.49	-5.93	27.56	46.00	-18.44	QP
5	447.9822	33.49	-4.96	28.53	46.00	-17.47	QP
6	457.5073	32.62	-4.78	27.84	46.00	-18.16	QP

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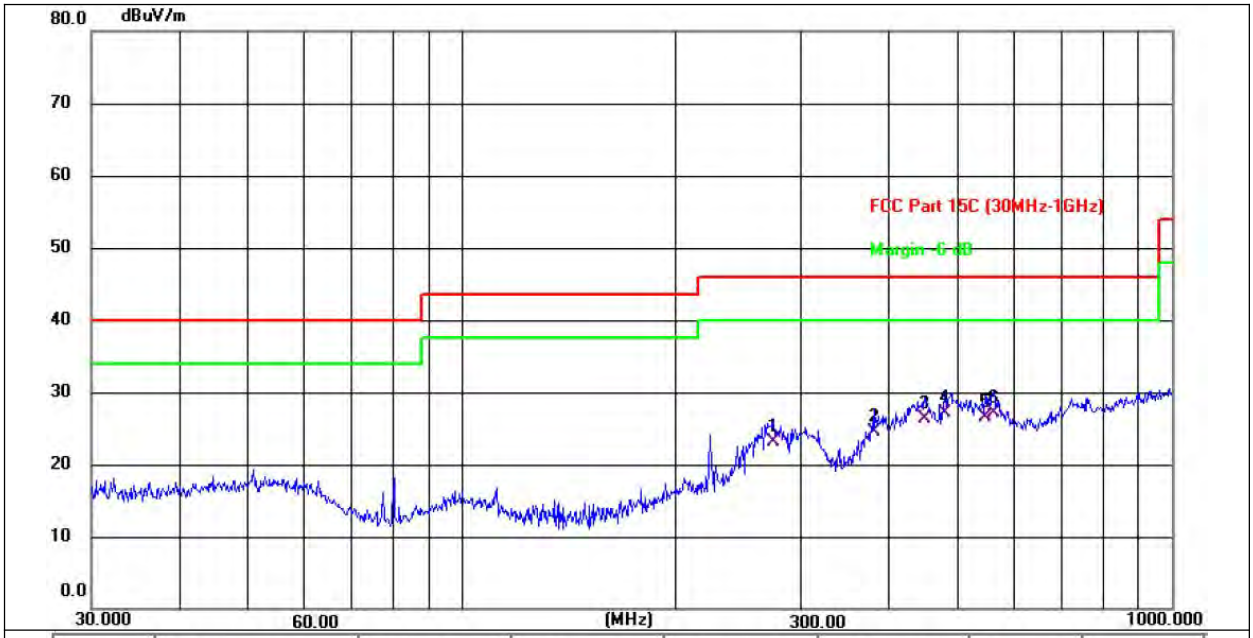
Temperature :	25.1℃	Relative Humidity :	50%
Pressure :	101kPa	Polarization :	Vertical
Test Voltage :	AC 120V/60Hz		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	274.1938	31.50	-8.32	23.18	46.00	-22.82	QP
2	379.9141	30.84	-6.24	24.60	46.00	-21.40	QP
3	447.9822	31.20	-4.96	26.24	46.00	-19.76	QP
4	478.8455	31.41	-4.38	27.03	46.00	-18.97	QP
5	545.1825	29.77	-3.20	26.57	46.00	-19.43	QP
6 *	560.6928	30.05	-2.93	27.12	46.00	-18.88	QP

Remarks:
1.Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
2.The emission levels of other frequencies are very lower than the limit and not show in test report.
3.The test data shows only the worst case 802.11b mode (Low Channel:2412MHz).

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1GHz~25GHz

802.11b

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel:2412MHz									
V	4824.00	61.26	30.55	5.77	24.66	61.14	74	-12.86	PK
V	4824.00	43.96	30.55	5.77	24.66	43.84	54	-10.16	AV
V	7236.00	53.62	30.33	6.32	24.55	54.16	74	-19.84	PK
V	7236.00	37.07	30.33	6.32	24.55	37.61	54	-16.39	AV
V	9648.00	51.87	30.85	7.45	24.69	53.16	74	-20.84	PK
V	9648.00	34.32	30.85	7.45	24.69	35.61	54	-18.39	AV
V	12060.00	55.82	31.02	8.99	25.57	59.36	74	-14.64	PK
V	12060.00	39.32	31.02	8.99	25.57	42.86	54	-11.14	AV
H	4824.00	53.68	30.55	5.77	24.66	53.56	74	-20.44	PK
H	4824.00	38.17	30.55	5.77	24.66	38.05	54	-15.95	AV
H	7236.00	51.31	30.33	6.32	24.55	51.85	74	-22.15	PK
H	7236.00	36.74	30.33	6.32	24.55	37.28	54	-16.72	AV
H	9648.00	50.04	30.85	7.45	24.69	51.33	74	-22.67	PK
H	9648.00	35.11	30.85	7.45	24.69	36.4	54	-17.6	AV
H	12060.00	47.04	31.02	8.99	25.57	50.58	74	-23.42	PK
H	12060.00	32.48	31.02	8.99	25.57	36.02	54	-17.98	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Middle Channel:2437MHz									
V	4874.00	61.83	30.55	5.77	24.66	61.71	74	-12.29	PK
V	4874.00	42.03	30.55	5.77	24.66	41.91	54	-12.09	AV
V	7311.00	52.68	30.33	6.32	24.55	53.22	74	-20.78	PK
V	7311.00	37.31	30.33	6.32	24.55	37.85	54	-16.15	AV
V	9748.00	51.82	30.85	7.45	24.69	53.11	74	-20.89	PK
V	9748.00	34.68	30.85	7.45	24.69	35.97	54	-18.03	AV
V	12185.00	56.75	31.02	8.99	25.57	60.29	74	-13.71	PK
V	12185.00	38.26	31.02	8.99	25.57	41.8	54	-12.2	AV
H	4874.00	54.49	30.55	5.77	24.66	54.37	74	-19.63	PK
H	4874.00	37.8	30.55	5.77	24.66	37.68	54	-16.32	AV
H	7311.00	51.64	30.33	6.32	24.55	52.18	74	-21.82	PK
H	7311.00	35.63	30.33	6.32	24.55	36.17	54	-17.83	AV
H	9748.00	49.34	30.85	7.45	24.69	50.63	74	-23.37	PK
H	9748.00	34.43	30.85	7.45	24.69	35.72	54	-18.28	AV
H	12185.00	47.19	31.02	8.99	25.57	50.73	74	-23.27	PK
H	12185.00	33.27	31.02	8.99	25.57	36.81	54	-17.19	AV

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Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
High Channel:2462MHz									
V	4924.00	61.45	30.55	5.77	24.66	61.33	74	-12.67	PK
V	4924.00	43.01	30.55	5.77	24.66	42.89	54	-11.11	AV
V	7386.00	54.06	30.33	6.32	24.55	54.6	74	-19.4	PK
V	7386.00	37.33	30.33	6.32	24.55	37.87	54	-16.13	AV
V	9848.00	51.94	30.85	7.45	24.69	53.23	74	-20.77	PK
V	9848.00	35.2	30.85	7.45	24.69	36.49	54	-17.51	AV
V	12310.00	55.61	31.02	8.99	25.57	59.15	74	-14.85	PK
V	12310.00	37.66	31.02	8.99	25.57	41.2	54	-12.8	AV
H	4924.00	54.23	30.55	5.77	24.66	54.11	74	-19.89	PK
H	4924.00	36.73	30.55	5.77	24.66	36.61	54	-17.39	AV
H	7386.00	50.29	30.33	6.32	24.55	50.83	74	-23.17	PK
H	7386.00	35.51	30.33	6.32	24.55	36.05	54	-17.95	AV
H	9848.00	49.05	30.85	7.45	24.69	50.34	74	-23.66	PK
H	9848.00	35.35	30.85	7.45	24.69	36.64	54	-17.36	AV
H	12310.00	48.41	31.02	8.99	25.57	51.95	74	-22.05	PK
H	12310.00	32.57	31.02	8.99	25.57	36.11	54	-17.89	AV

Remark:
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

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802.11g

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel:2412MHz									
V	4824.00	60.46	30.55	5.77	24.66	60.34	74	-13.66	PK
V	4824.00	43.68	30.55	5.77	24.66	43.56	54	-10.44	AV
V	7236.00	54.21	30.33	6.32	24.55	54.75	74	-19.25	PK
V	7236.00	37.76	30.33	6.32	24.55	38.3	54	-15.7	AV
V	9648.00	52.27	30.85	7.45	24.69	53.56	74	-20.44	PK
V	9648.00	35.04	30.85	7.45	24.69	36.33	54	-17.67	AV
V	12060.00	56.86	31.02	8.99	25.57	60.4	74	-13.6	PK
V	12060.00	39.13	31.02	8.99	25.57	42.67	54	-11.33	AV
H	4824.00	53.45	30.55	5.77	24.66	53.33	74	-20.67	PK
H	4824.00	37.14	30.55	5.77	24.66	37.02	54	-16.98	AV
H	7236.00	50.55	30.33	6.32	24.55	51.09	74	-22.91	PK
H	7236.00	35.97	30.33	6.32	24.55	36.51	54	-17.49	AV
H	9648.00	48.43	30.85	7.45	24.69	49.72	74	-24.28	PK
H	9648.00	35.05	30.85	7.45	24.69	36.34	54	-17.66	AV
H	12060.00	47.52	31.02	8.99	25.57	51.06	74	-22.94	PK
H	12060.00	32.44	31.02	8.99	25.57	35.98	54	-18.02	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Middle Channel:2437MHz									
V	4874.00	60.06	30.55	5.77	24.66	59.94	74	-14.06	PK
V	4874.00	44.24	30.55	5.77	24.66	44.12	54	-9.88	AV
V	7311.00	53.12	30.33	6.32	24.55	53.66	74	-20.34	PK
V	7311.00	36.23	30.33	6.32	24.55	36.77	54	-17.23	AV
V	9748.00	51.08	30.85	7.45	24.69	52.37	74	-21.63	PK
V	9748.00	35.17	30.85	7.45	24.69	36.46	54	-17.54	AV
V	12185.00	56.84	31.02	8.99	25.57	60.38	74	-13.62	PK
V	12185.00	39.28	31.02	8.99	25.57	42.82	54	-11.18	AV
H	4874.00	53.86	30.55	5.77	24.66	53.74	74	-20.26	PK
H	4874.00	38.03	30.55	5.77	24.66	37.91	54	-16.09	AV
H	7311.00	51.55	30.33	6.32	24.55	52.09	74	-21.91	PK
H	7311.00	35.93	30.33	6.32	24.55	36.47	54	-17.53	AV
H	9748.00	49.83	30.85	7.45	24.69	51.12	74	-22.88	PK
H	9748.00	36.26	30.85	7.45	24.69	37.55	54	-16.45	AV
H	12185.00	46.28	31.02	8.99	25.57	49.82	74	-24.18	PK
H	12185.00	33.46	31.02	8.99	25.57	37	54	-17	AV

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Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
High Channel:2462MHz									
V	4924.00	61.83	30.55	5.77	24.66	61.71	74	-12.29	PK
V	4924.00	44.04	30.55	5.77	24.66	43.92	54	-10.08	AV
V	7386.00	54.18	30.33	6.32	24.55	54.72	74	-19.28	PK
V	7386.00	36.49	30.33	6.32	24.55	37.03	54	-16.97	AV
V	9848.00	52.57	30.85	7.45	24.69	53.86	74	-20.14	PK
V	9848.00	34.46	30.85	7.45	24.69	35.75	54	-18.25	AV
V	12310.00	56.26	31.02	8.99	25.57	59.8	74	-14.2	PK
V	12310.00	39.22	31.02	8.99	25.57	42.76	54	-11.24	AV
H	4924.00	54.25	30.55	5.77	24.66	54.13	74	-19.87	PK
H	4924.00	38.13	30.55	5.77	24.66	38.01	54	-15.99	AV
H	7386.00	51.33	30.33	6.32	24.55	51.87	74	-22.13	PK
H	7386.00	35.9	30.33	6.32	24.55	36.44	54	-17.56	AV
H	9848.00	49.88	30.85	7.45	24.69	51.17	74	-22.83	PK
H	9848.00	35.79	30.85	7.45	24.69	37.08	54	-16.92	AV
H	12310.00	47.47	31.02	8.99	25.57	51.01	74	-22.99	PK
H	12310.00	33.21	31.02	8.99	25.57	36.75	54	-17.25	AV

Remark:
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

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802.11n20

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel:2412MHz									
V	4824.00	60.72	30.55	5.77	24.66	60.6	74	-13.4	PK
V	4824.00	43.44	30.55	5.77	24.66	43.32	54	-10.68	AV
V	7236.00	53.01	30.33	6.32	24.55	53.55	74	-20.45	PK
V	7236.00	36.66	30.33	6.32	24.55	37.2	54	-16.8	AV
V	9648.00	50.93	30.85	7.45	24.69	52.22	74	-21.78	PK
V	9648.00	34.53	30.85	7.45	24.69	35.82	54	-18.18	AV
V	12060.00	57.18	31.02	8.99	25.57	60.72	74	-13.28	PK
V	12060.00	37.74	31.02	8.99	25.57	41.28	54	-12.72	AV
H	4824.00	54.62	30.55	5.77	24.66	54.5	74	-19.5	PK
H	4824.00	36.81	30.55	5.77	24.66	36.69	54	-17.31	AV
H	7236.00	51.49	30.33	6.32	24.55	52.03	74	-21.97	PK
H	7236.00	37.07	30.33	6.32	24.55	37.61	54	-16.39	AV
H	9648.00	49.66	30.85	7.45	24.69	50.95	74	-23.05	PK
H	9648.00	34.8	30.85	7.45	24.69	36.09	54	-17.91	AV
H	12060.00	47.42	31.02	8.99	25.57	50.96	74	-23.04	PK
H	12060.00	33.14	31.02	8.99	25.57	36.68	54	-17.32	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Middle Channel:2437MHz									
V	4874.00	59.21	30.55	5.77	24.66	59.09	74	-14.91	PK
V	4874.00	42.01	30.55	5.77	24.66	41.89	54	-12.11	AV
V	7311.00	53.02	30.33	6.32	24.55	53.56	74	-20.44	PK
V	7311.00	37.84	30.33	6.32	24.55	38.38	54	-15.62	AV
V	9748.00	51.92	30.85	7.45	24.69	53.21	74	-20.79	PK
V	9748.00	34.43	30.85	7.45	24.69	35.72	54	-18.28	AV
V	12185.00	55.58	31.02	8.99	25.57	59.12	74	-14.88	PK
V	12185.00	38.14	31.02	8.99	25.57	41.68	54	-12.32	AV
H	4874.00	53.6	30.55	5.77	24.66	53.48	74	-20.52	PK
H	4874.00	37.82	30.55	5.77	24.66	37.7	54	-16.3	AV
H	7311.00	51.34	30.33	6.32	24.55	51.88	74	-22.12	PK
H	7311.00	35.32	30.33	6.32	24.55	35.86	54	-18.14	AV
H	9748.00	47.75	30.85	7.45	24.69	49.04	74	-24.96	PK
H	9748.00	35.03	30.85	7.45	24.69	36.32	54	-17.68	AV
H	12185.00	45.97	31.02	8.99	25.57	49.51	74	-24.49	PK
H	12185.00	33.25	31.02	8.99	25.57	36.79	54	-17.21	AV

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Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
High Channel:2462MHz									
V	4924.00	61.89	30.55	5.77	24.66	61.77	74	-12.23	PK
V	4924.00	43.94	30.55	5.77	24.66	43.82	54	-10.18	AV
V	7386.00	53.2	30.33	6.32	24.55	53.74	74	-20.26	PK
V	7386.00	38.76	30.33	6.32	24.55	39.3	54	-14.7	AV
V	9848.00	51.54	30.85	7.45	24.69	52.83	74	-21.17	PK
V	9848.00	35.65	30.85	7.45	24.69	36.94	54	-17.06	AV
V	12310.00	55.64	31.02	8.99	25.57	59.18	74	-14.82	PK
V	12310.00	39.23	31.02	8.99	25.57	42.77	54	-11.23	AV
H	4924.00	54.59	30.55	5.77	24.66	54.47	74	-19.53	PK
H	4924.00	37.36	30.55	5.77	24.66	37.24	54	-16.76	AV
H	7386.00	50.65	30.33	6.32	24.55	51.19	74	-22.81	PK
H	7386.00	37.03	30.33	6.32	24.55	37.57	54	-16.43	AV
H	9848.00	48.85	30.85	7.45	24.69	50.14	74	-23.86	PK
H	9848.00	33.98	30.85	7.45	24.69	35.27	54	-18.73	AV
H	12310.00	47.03	31.02	8.99	25.57	50.57	74	-23.43	PK
H	12310.00	32.71	31.02	8.99	25.57	36.25	54	-17.75	AV

Remark:
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

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802.11n40

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel:2422MHz									
V	4844	59.45	30.55	5.77	24.66	59.33	74	-14.67	PK
V	4844	42.65	30.55	5.77	24.66	42.53	54	-11.47	AV
V	7266	53.37	30.33	6.32	24.55	53.91	74	-20.09	PK
V	7266	37.8	30.33	6.32	24.55	38.34	54	-15.66	AV
V	9688	51.04	30.85	7.45	24.69	52.33	74	-21.67	PK
V	9688	36.06	30.85	7.45	24.69	37.35	54	-16.65	AV
V	12110	56.59	31.02	8.99	25.57	60.13	74	-13.87	PK
V	12110	38.11	31.02	8.99	25.57	41.65	54	-12.35	AV
H	4824.00	53.61	30.55	5.77	24.66	53.49	74	-20.51	PK
H	4824.00	38.09	30.55	5.77	24.66	37.97	54	-16.03	AV
H	7236.00	52.08	30.33	6.32	24.55	52.62	74	-21.38	PK
H	7236.00	36.31	30.33	6.32	24.55	36.85	54	-17.15	AV
H	9648.00	49.61	30.85	7.45	24.69	50.9	74	-23.1	PK
H	9648.00	34.01	30.85	7.45	24.69	35.3	54	-18.7	AV
H	12060.00	48.13	31.02	8.99	25.57	51.67	74	-22.33	PK
H	12060.00	33.1	31.02	8.99	25.57	36.64	54	-17.36	AV

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Middle Channel:2437MHz									
V	4874.00	60.92	30.55	5.77	24.66	60.8	74	-13.2	PK
V	4874.00	42.43	30.55	5.77	24.66	42.31	54	-11.69	AV
V	7311.00	53.5	30.33	6.32	24.55	54.04	74	-19.96	PK
V	7311.00	36.29	30.33	6.32	24.55	36.83	54	-17.17	AV
V	9748.00	51.35	30.85	7.45	24.69	52.64	74	-21.36	PK
V	9748.00	35.37	30.85	7.45	24.69	36.66	54	-17.34	AV
V	12185.00	56.25	31.02	8.99	25.57	59.79	74	-14.21	PK
V	12185.00	38.78	31.02	8.99	25.57	42.32	54	-11.68	AV
H	4874.00	53.29	30.55	5.77	24.66	53.17	74	-20.83	PK
H	4874.00	36.93	30.55	5.77	24.66	36.81	54	-17.19	AV
H	7311.00	51.45	30.33	6.32	24.55	51.99	74	-22.01	PK
H	7311.00	36.23	30.33	6.32	24.55	36.77	54	-17.23	AV
H	9748.00	48.44	30.85	7.45	24.69	49.73	74	-24.27	PK
H	9748.00	34.39	30.85	7.45	24.69	35.68	54	-18.32	AV
H	12185.00	46.76	31.02	8.99	25.57	50.3	74	-23.7	PK
H	12185.00	33.84	31.02	8.99	25.57	37.38	54	-16.62	AV

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Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
High Channel:2452MHz									
V	4904.00	62.32	30.55	5.77	24.66	62.2	74	-11.8	PK
V	4904.00	43.57	30.55	5.77	24.66	43.45	54	-10.55	AV
V	7356.00	53.63	30.33	6.32	24.55	54.17	74	-19.83	PK
V	7356.00	37.13	30.33	6.32	24.55	37.67	54	-16.33	AV
V	9808.00	50.63	30.85	7.45	24.69	51.92	74	-22.08	PK
V	9808.00	35.08	30.85	7.45	24.69	36.37	54	-17.63	AV
V	12260.00	56.69	31.02	8.99	25.57	60.23	74	-13.77	PK
V	12260.00	38.37	31.02	8.99	25.57	41.91	54	-12.09	AV
H	4904.00	54.37	30.55	5.77	24.66	54.25	74	-19.75	PK
H	4904.00	37.63	30.55	5.77	24.66	37.51	54	-16.49	AV
H	7356.00	50.94	30.33	6.32	24.55	51.48	74	-22.52	PK
H	7356.00	37.46	30.33	6.32	24.55	38	54	-16	AV
H	9808.00	50.37	30.85	7.45	24.69	51.66	74	-22.34	PK
H	9808.00	35.71	30.85	7.45	24.69	37	54	-17	AV
H	12260.00	48.04	31.02	8.99	25.57	51.58	74	-22.42	PK
H	12260.00	33.53	31.02	8.99	25.57	37.07	54	-16.93	AV

Remark:
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

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5.RADIATED BAND EMISSIONMEASUREMENT

5.1 TEST REQUIREMENT:

Test Requirement:	FCC Part15 C Section 15.209 and 15.205
Test Method:	ANSI C63.10: 2013
Test Frequency Range:	All of the restrict bands were tested, only the worst band's (2310MHz to 2500MHz) data was showed.
Test site:	Measurement Distance: 3m
Receiver setup:	

Frequency	Detector	RBW	VBW	Value
Above 1GHz	Peak	1MHz	3MHz	Peak
	Average	1MHz	3MHz	Average

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

5.2 TEST PROCEDURE

Above 1GHz test procedure as below:

a. 1. The EUT was placed on the top of a rotating table 1.5 meters above the ground at a 3 meter 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 and the rota 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 10dBmargin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

g. Test the EUT in the lowest channel, the Highest channel

Note:

Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

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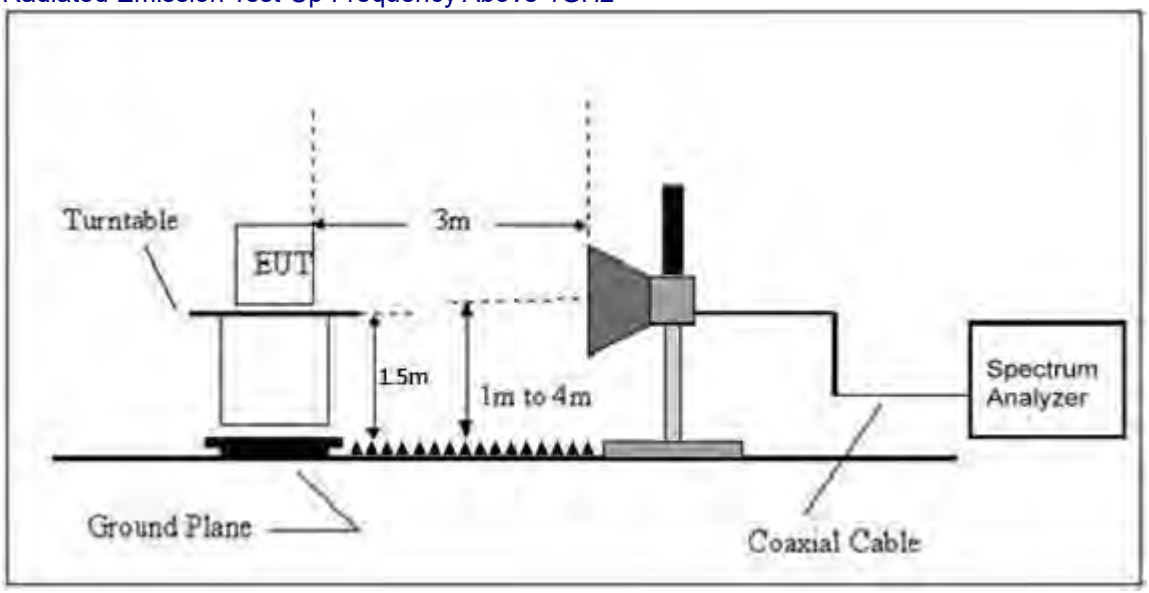
5.3 DEVIATION FROM TEST STANDARD

No deviation

5.4 TEST SETUP

Radiated Emission Test-Up Frequency Above 1GHz



5.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

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5.6 TEST RESULT

	Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector Type	Result
802.11b	Low Channel 2412MHz										
	H	2390.00	58.91	30.22	4.85	23.98	57.52	74	-16.48	PK	PASS
	H	2390.00	46.57	30.22	4.85	23.98	45.18	54	-8.82	AV	PASS
	H	2400.00	60.63	30.22	4.85	23.98	59.24	74	-14.76	PK	PASS
	H	2400.00	49.47	30.22	4.85	23.98	48.08	54	-5.92	AV	PASS
	V	2390.00	58.41	30.22	4.85	23.98	57.02	74	-16.98	PK	PASS
	V	2390.00	48.52	30.22	4.85	23.98	47.13	54	-6.87	AV	PASS
	V	2400.00	60.09	30.22	4.85	23.98	58.7	74	-15.3	PK	PASS
	V	2400.00	49.53	30.22	4.85	23.98	48.14	54	-5.86	AV	PASS
	High Channel 2462MHz										
	H	2483.50	58.92	30.22	4.85	23.98	57.53	74	-16.47	PK	PASS
	H	2483.50	46.8	30.22	4.85	23.98	45.41	54	-8.59	AV	PASS
	H	2485.50	61.7	30.22	4.85	23.98	60.31	74	-13.69	PK	PASS
	H	2485.50	50.89	30.22	4.85	23.98	49.5	54	-4.5	AV	PASS
	V	2483.50	59.75	30.22	4.85	23.98	58.36	74	-15.64	PK	PASS
	V	2483.50	48.85	30.22	4.85	23.98	47.46	54	-6.54	AV	PASS
	V	2485.50	58.16	30.22	4.85	23.98	56.77	74	-17.23	PK	PASS
	V	2485.50	48.29	30.22	4.85	23.98	46.9	54	-7.1	AV	PASS
802.11g	Low Channel 2412MHz										
	H	2390.00	59.4	30.22	4.85	23.98	58.01	74	-15.99	PK	PASS
	H	2390.00	46.52	30.22	4.85	23.98	45.13	54	-8.87	AV	PASS
	H	2400.00	60.14	30.22	4.85	23.98	58.75	74	-15.25	PK	PASS
	H	2400.00	48.4	30.22	4.85	23.98	47.01	54	-6.99	AV	PASS
	V	2390.00	57.92	30.22	4.85	23.98	56.53	74	-17.47	PK	PASS
	V	2390.00	48.3	30.22	4.85	23.98	46.91	54	-7.09	AV	PASS
	V	2400.00	60.18	30.22	4.85	23.98	58.79	74	-15.21	PK	PASS
	V	2400.00	49.64	30.22	4.85	23.98	48.25	54	-5.75	AV	PASS
	High Channel 2462MHz										
	H	2483.50	58.56	30.22	4.85	23.98	57.17	74	-16.83	PK	PASS
	H	2483.50	46.93	30.22	4.85	23.98	45.54	54	-8.46	AV	PASS
	H	2485.50	61.18	30.22	4.85	23.98	59.79	74	-14.21	PK	PASS
	H	2485.50	50.2	30.22	4.85	23.98	48.81	54	-5.19	AV	PASS
	V	2483.50	60.53	30.22	4.85	23.98	59.14	74	-14.86	PK	PASS
	V	2483.50	47.9	30.22	4.85	23.98	46.51	54	-7.49	AV	PASS
	V	2485.50	59.48	30.22	4.85	23.98	58.09	74	-15.91	PK	PASS
	V	2485.50	47.22	30.22	4.85	23.98	45.83	54	-8.17	AV	PASS
802.11n 20	Low Channel 2412MHz										
	H	2390.00	59.41	30.22	4.85	23.98	58.02	74	-15.98	PK	PASS
	H	2390.00	47.9	30.22	4.85	23.98	46.51	54	-7.49	AV	PASS
	H	2400.00	62.08	30.22	4.85	23.98	60.69	74	-13.31	PK	PASS
	H	2400.00	49.29	30.22	4.85	23.98	47.9	54	-6.1	AV	PASS
	V	2390.00	58.21	30.22	4.85	23.98	56.82	74	-17.18	PK	PASS
	V	2390.00	47.59	30.22	4.85	23.98	46.2	54	-7.8	AV	PASS
	V	2400.00	60.59	30.22	4.85	23.98	59.2	74	-14.8	PK	PASS
	V	2400.00	48.48	30.22	4.85	23.98	47.09	54	-6.91	AV	PASS

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	High Channel 2462MHz										
	H	2483.50	57.84	30.22	4.85	23.98	56.45	74	-17.55	PK	PASS
	H	2483.50	48.05	30.22	4.85	23.98	46.66	54	-7.34	AV	PASS
	H	2485.50	61.47	30.22	4.85	23.98	60.08	74	-13.92	PK	PASS
	H	2485.50	51.37	30.22	4.85	23.98	49.98	54	-4.02	AV	PASS
	V	2483.50	59.53	30.22	4.85	23.98	58.14	74	-15.86	PK	PASS
	V	2483.50	48.73	30.22	4.85	23.98	47.34	54	-6.66	AV	PASS
	V	2485.50	58.22	30.22	4.85	23.98	56.83	74	-17.17	PK	PASS
	V	2485.50	47.18	30.22	4.85	23.98	45.79	54	-8.21	AV	PASS
802.11n40	Low Channel 2422MHz										
	H	2390.00	59.29	30.22	4.85	23.98	57.9	74	-16.1	PK	PASS
	H	2390.00	46.49	30.22	4.85	23.98	45.1	54	-8.9	AV	PASS
	H	2400.00	61.25	30.22	4.85	23.98	59.86	74	-14.14	PK	PASS
	H	2400.00	48.83	30.22	4.85	23.98	47.44	54	-6.56	AV	PASS
	V	2390.00	59.03	30.22	4.85	23.98	57.64	74	-16.36	PK	PASS
	V	2390.00	46.44	30.22	4.85	23.98	45.05	54	-8.95	AV	PASS
	V	2400.00	60.77	30.22	4.85	23.98	59.38	74	-14.62	PK	PASS
	V	2400.00	49.33	30.22	4.85	23.98	47.94	54	-6.06	AV	PASS
	High Channel 2452MHz										
	H	2483.50	58.4	30.22	4.85	23.98	57.01	74	-16.99	PK	PASS
	H	2483.50	48.44	30.22	4.85	23.98	47.05	54	-6.95	AV	PASS
	H	2485.50	61.06	30.22	4.85	23.98	59.67	74	-14.33	PK	PASS
	H	2485.50	50.6	30.22	4.85	23.98	49.21	54	-4.79	AV	PASS
	V	2483.50	60.52	30.22	4.85	23.98	59.13	74	-14.87	PK	PASS
	V	2483.50	50.02	30.22	4.85	23.98	48.63	54	-5.37	AV	PASS
	V	2485.50	58.03	30.22	4.85	23.98	56.64	74	-17.36	PK	PASS
	V	2485.50	48.05	30.22	4.85	23.98	46.66	54	-7.34	AV	PASS

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier, Margin= Emission Level - Limit

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6.POWER SPECTRAL DENSITY TEST

Test Requirement:	FCC Part15 C Section 15.247 (e)
Test Method:	KDB558074 D0115.247 Meas Guidancev05r02

6.1 APPLIED PROCEDURES / LIMIT

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

6.2 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.

6.3 DEVIATION FROM STANDARD

No deviation.

6.4 TEST SETUP

6.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

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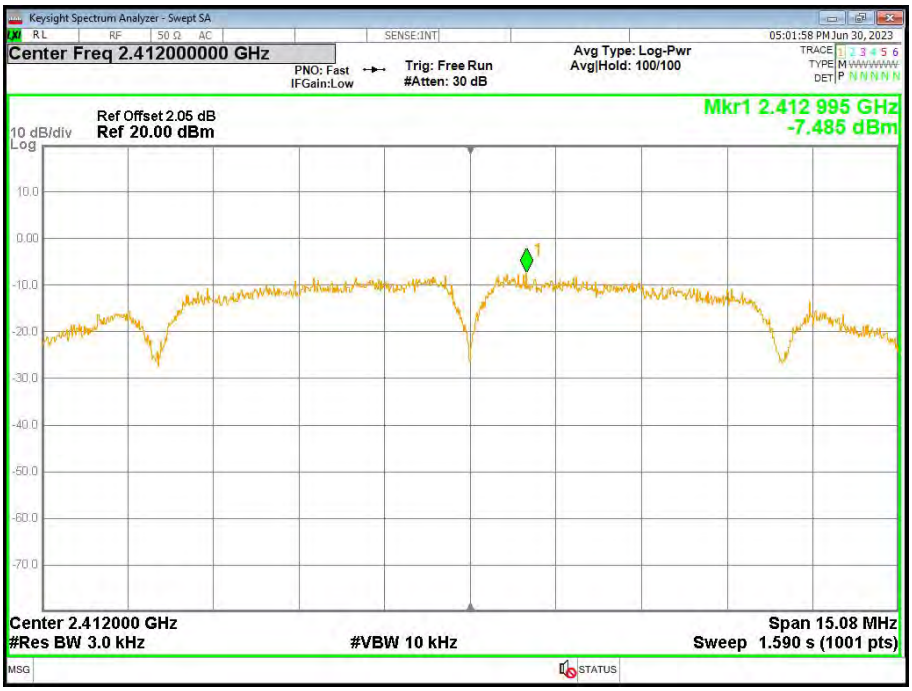
6.6 TEST RESULT

Temperature :	25.4℃	Relative Humidity :	52%
Pressure :	101kPa	Test Voltage :	DC 12V
Test Mode :	TX b Mode		

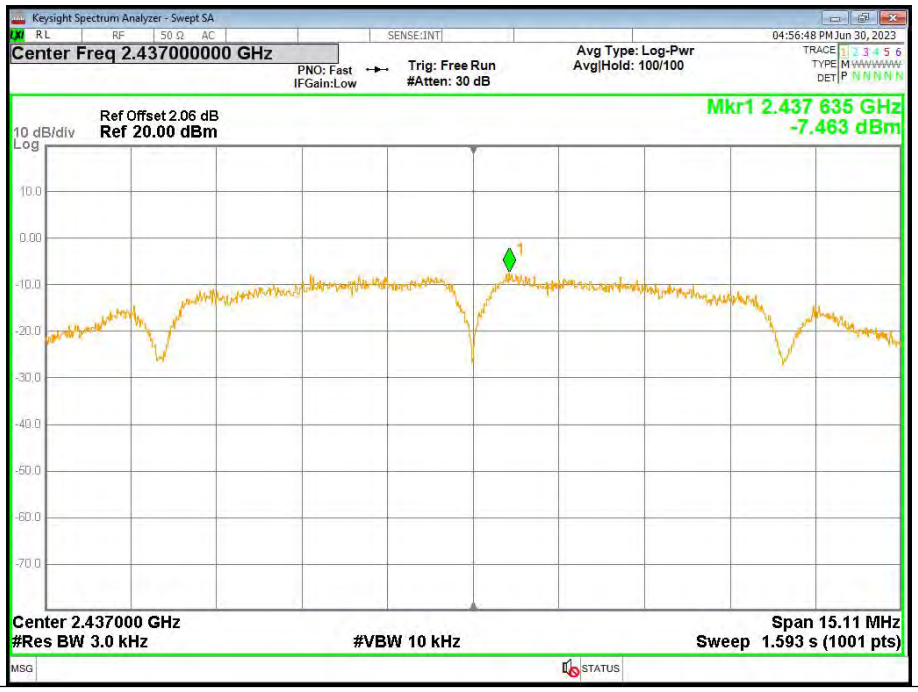
Frequency	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412 MHz	-7.49	7.58	PASS
2437 MHz	-7.46	7.58	PASS
2462 MHz	-7.29	7.58	PASS

Limit:8-0.42=7.58 dBm/3kHz

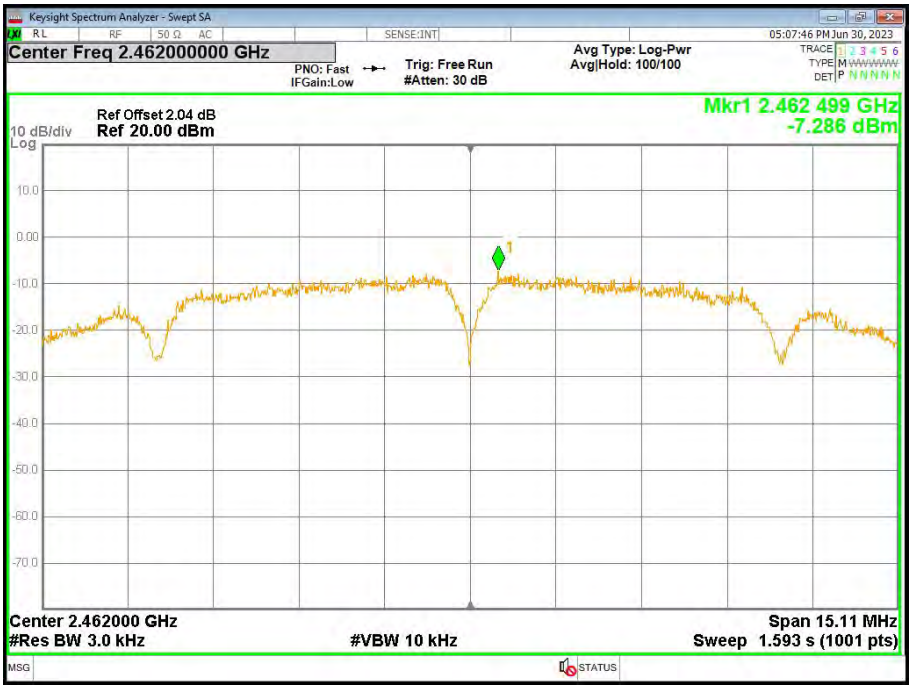
TX CH01



TX CH06



TX CH11



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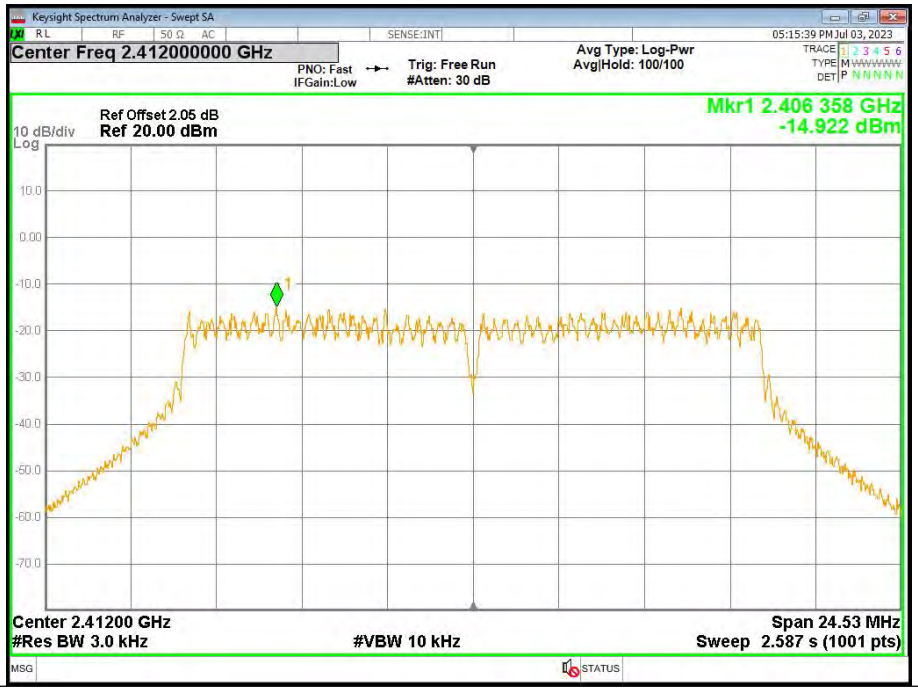
Temperature :	25.4℃	Relative Humidity :	52%
Pressure :	101kPa	Test Voltage :	DC 12V
Test Mode :	TX g Mode		

Frequency	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412 MHz	-14.92	7.58	PASS
2437 MHz	-14.53	7.58	PASS
2462 MHz	-15.33	7.58	PASS

Limit:8-0.42=7.58 dBm/3kHz

TX CH01



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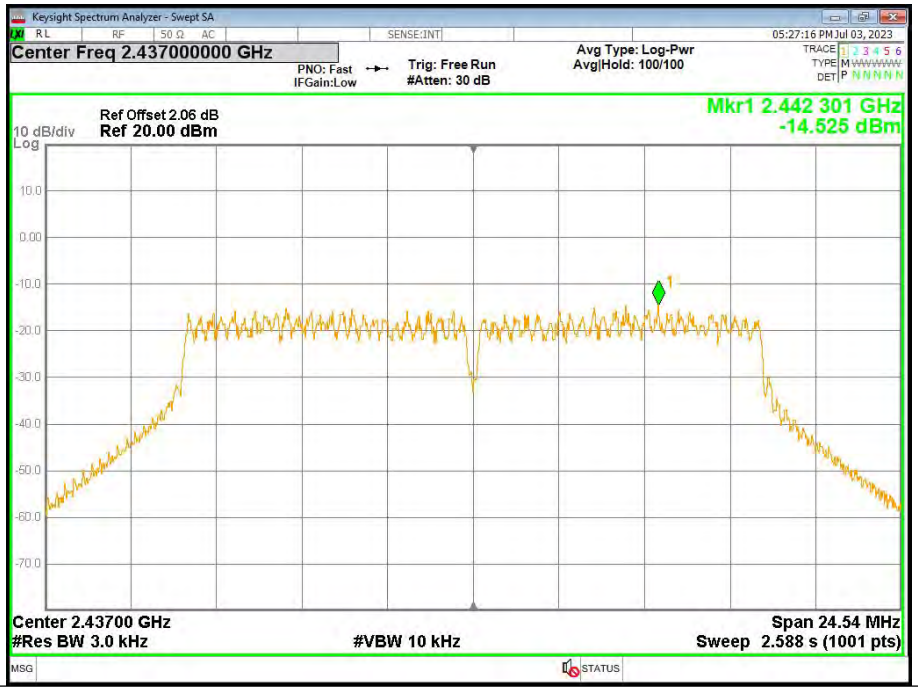
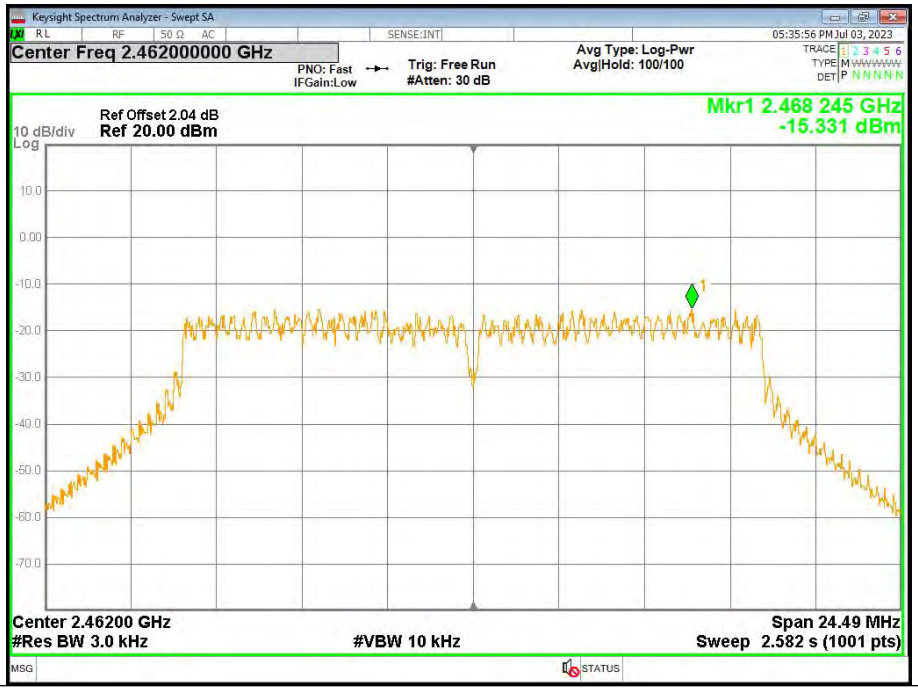


TX CH11



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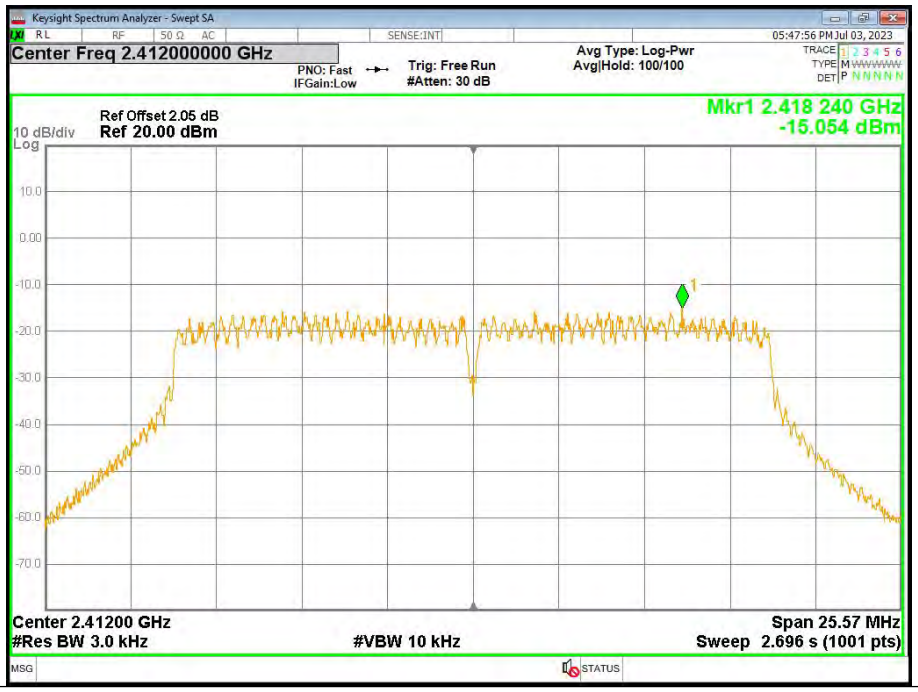
Temperature :	25.4℃	Relative Humidity :	52%
Pressure :	101kPa	Test Voltage :	DC 12V
Test Mode :	TX n Mode(20M)		

Frequency	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2412 MHz	-15.05	7.58	PASS
2437 MHz	-15.72	7.58	PASS
2462 MHz	-13.83	7.58	PASS

Limit:8-0.42=7.58 dBm/3kHz

TX CH01



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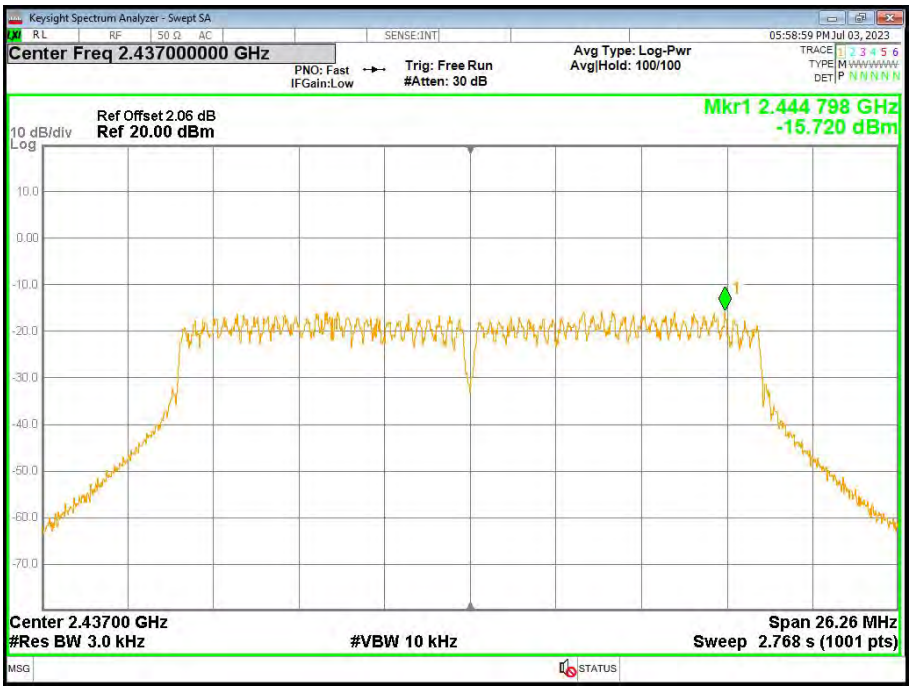
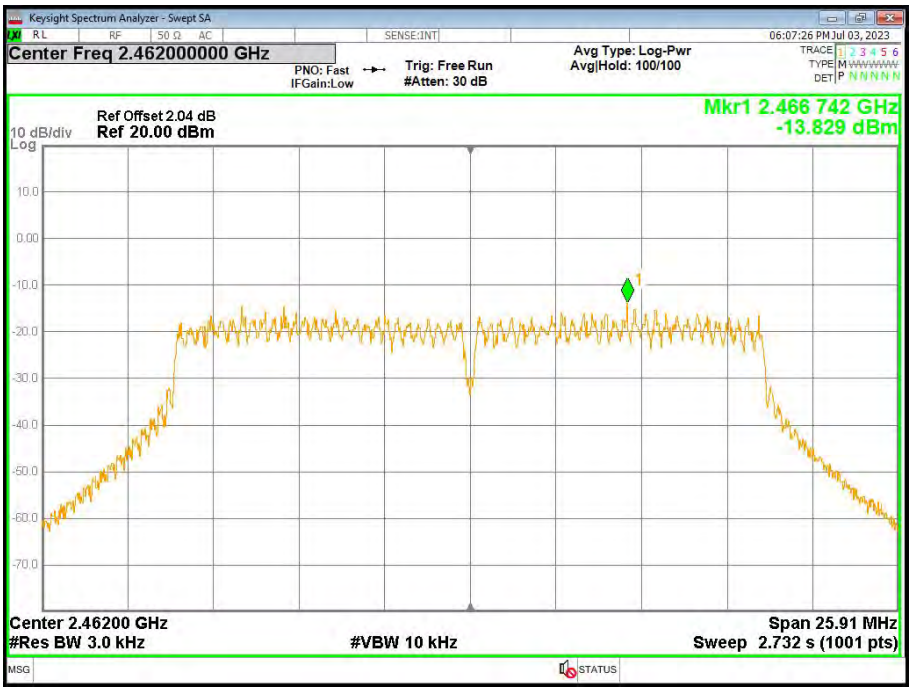


TX CH11



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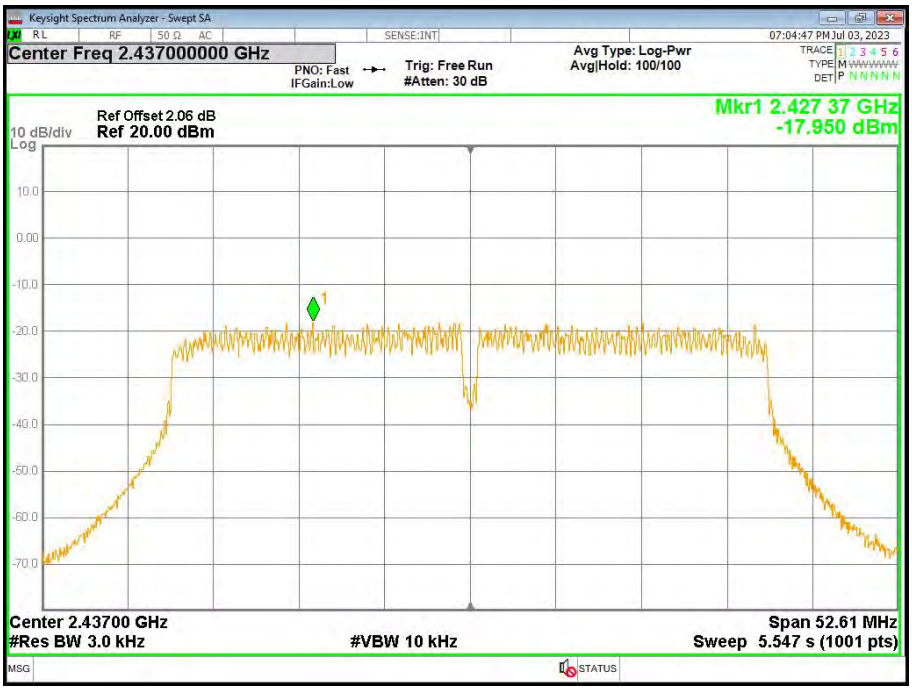
Temperature :	25.4℃	Relative Humidity :	52%
Pressure :	101kPa	Test Voltage :	DC 12V
Test Mode :	TX n Mode(40M)		

Frequency	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result
2422 MHz	-17.42	7.58	PASS
2437 MHz	-17.95	7.58	PASS
2452 MHz	-18.14	7.58	PASS

Limit:8-0.42=7.58 dBm/3kHz

TX CH03

TX CH06



TX CH09

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7. CHANNEL BANDWIDTH& 99% OCCUPY BANDWIDTH

Test Requirement:	FCC Part15 C Section 15.247 (a)(2)
Test Method:	KDB558074 D0115.247 Meas Guidancev05r02

7.1 APPLIED PROCEDURES / 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

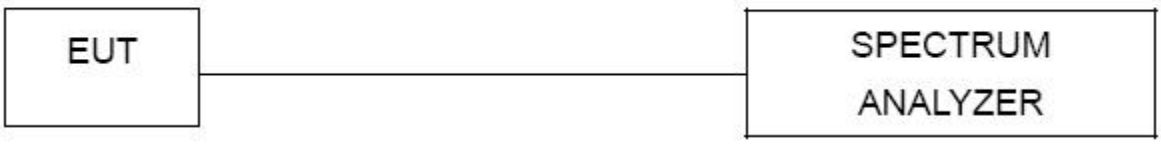
7.2 TEST PROCEDURE

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 xRBW.
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.

7.3 DEVIATION FROM STANDARD

No deviation.

7.4 TEST SETUP



7.5 EUT OPERATION CONDITIONS

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7.6 TEST RESULT

Temperature :	25.4℃	Relative Humidity :	52%
Pressure :	101kPa	Test Voltage :	DC 12V
Test Mode :	TX Mode		

Test CH	-6dB Occupy Bandwidth (MHz)					
	802.11b	802.11g	802.11n (HT20)	802.11n (HT40)	Limit(KHz)	Result
Lowest	10.05	16.354	17.049	35.247	>500	Pass
Middle	10.073	16.36	17.504	35.073		
Highest	10.074	16.328	17.276	35.478		

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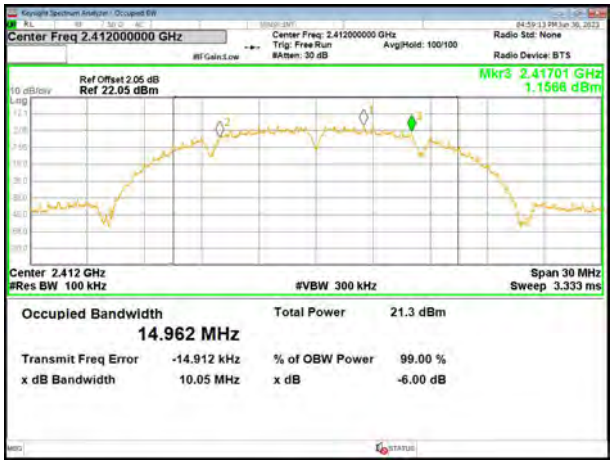
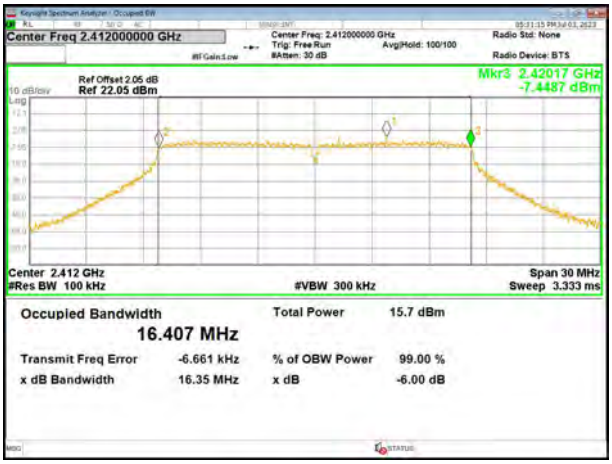
Test plot as follows:

802.11b

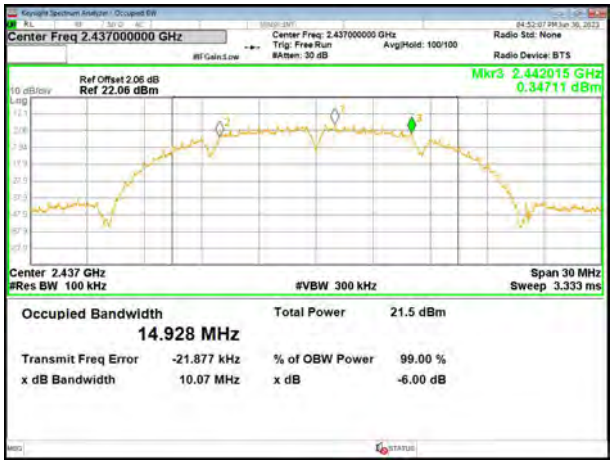
802.11g

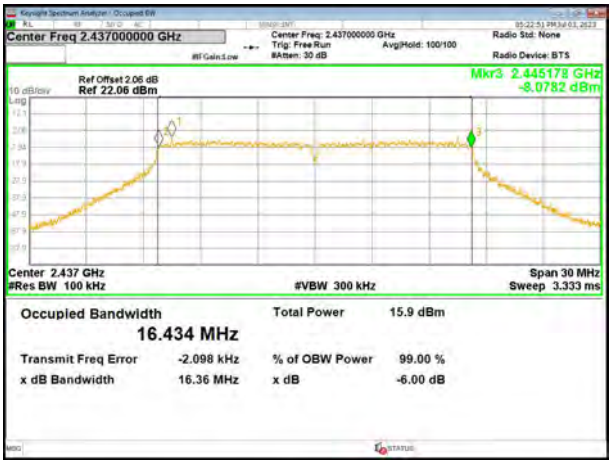
Lowest channel



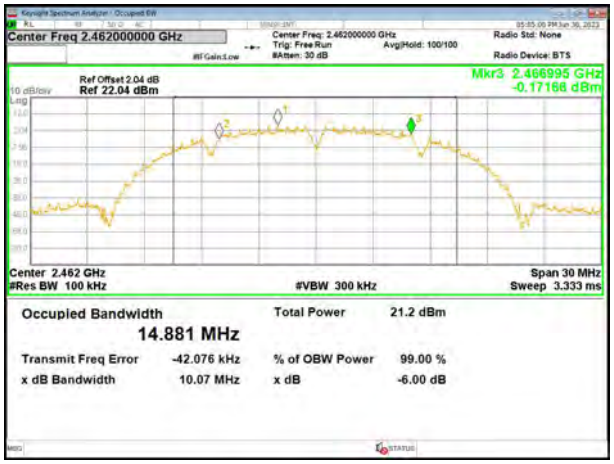


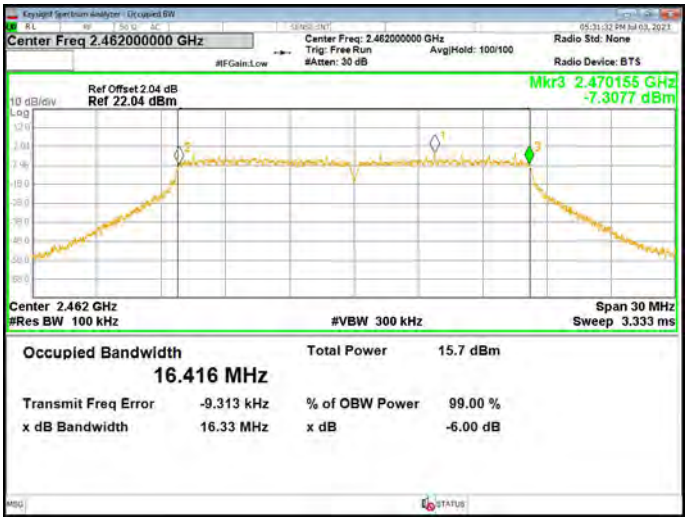
Middle channel





Highest channel





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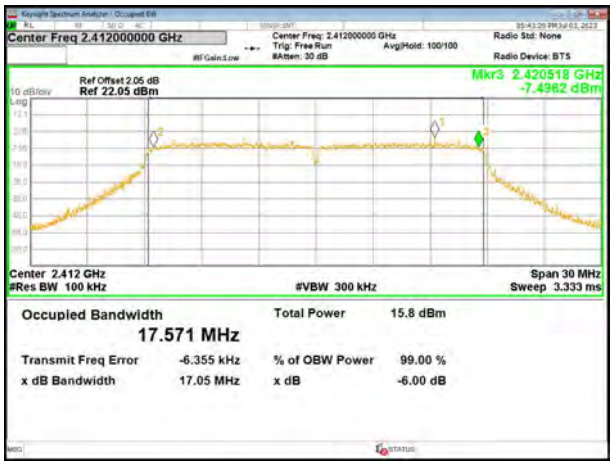
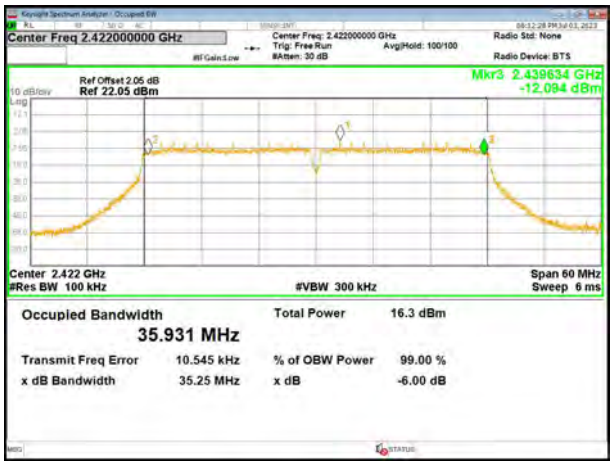
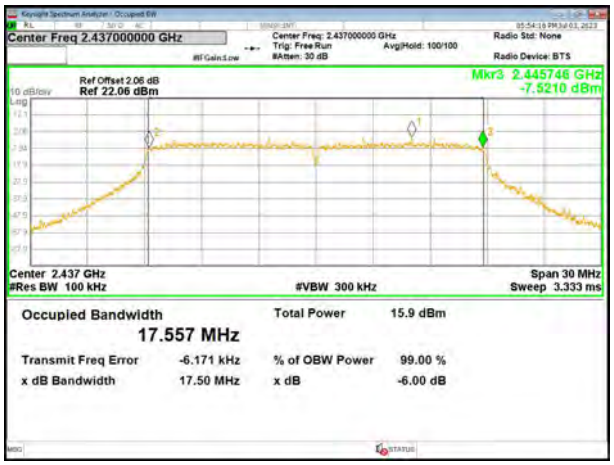
802.11n(HT20) 802.11n(HT40)

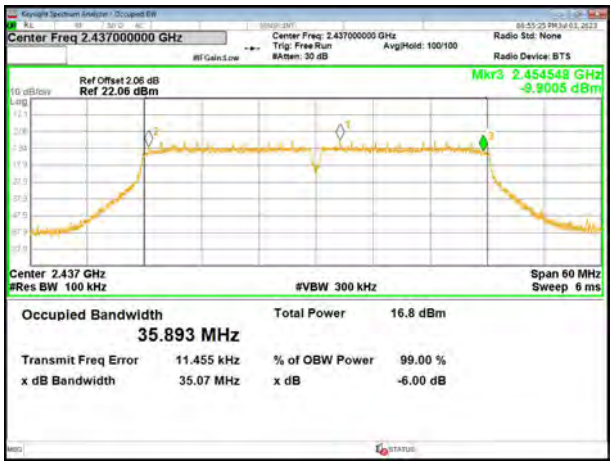
Lowest channel



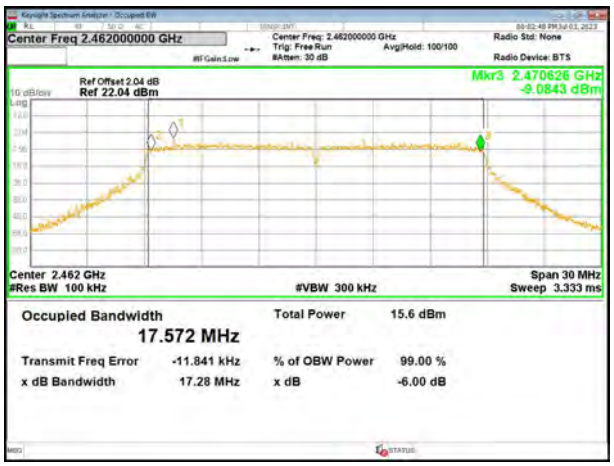


Middle channel





Highest channel



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8.PEAK OUTPUT POWER TEST

Test Requirement:	FCC Part15 C Section 15.247 (b)(3)
Test Method:	KDB558074 D0115.247 Meas Guidancev05r02

8.1 APPLIED PROCEDURES/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

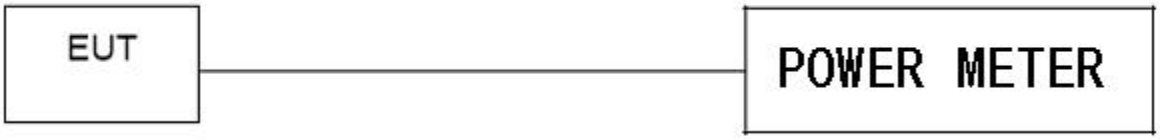
8.2 TEST PROCEDURE

a. The EUT was directly connected to the Power meter

8.3 DEVIATION FROM STANDARD

No deviation.

8.4 TEST SETUP



8.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

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8.6 TEST RESULT

Temperature :	25.2℃	Relative Humidity :	55%
Pressure :	101kPa	Test Voltage :	DC 12V

Test CH	Peak Output Power (dBm)					
	802.11b	802.11g	802.11n (HT20)	802.11 (HT40)	Limit(dBm)	Result
Lowest	16.4	14.51	14.6	14.6	29.58	Pass
Middle	16.64	14.86	14.7	14.7		
Highest	16.23	14.59	14.45	14.45		

Limit=30-0.42=29.58dBm

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9. CONDUCTED BAND EDGE AND SPURIOUS EMISSION

Test Requirement:	FCC Part15 C Section 15.247 (d)
Test Method:	KDB558074 D0115.247 Meas Guidancev05r02

9.1 APPLICABLE STANDARD

in any 100 kHz bandwidth outside the frequency bands in which the spread spectrum intentional radiator in operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, 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 in15.209(a).

9.2 TEST PROCEDURE

Using the following spectrum analyzer setting:

A) Set the RBW = 100KHz.
B) Set the VBW = 300KHz.
C) Sweep time = auto couple.
D) Detector function = peak.
E) Trace mode = max hold.
F) Allow trace to fully stabilize.

9.3 DEVIATION FROM STANDARD

No deviation.

9.4 TEST SETUP

9.5 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

9.6 TEST RESULTS

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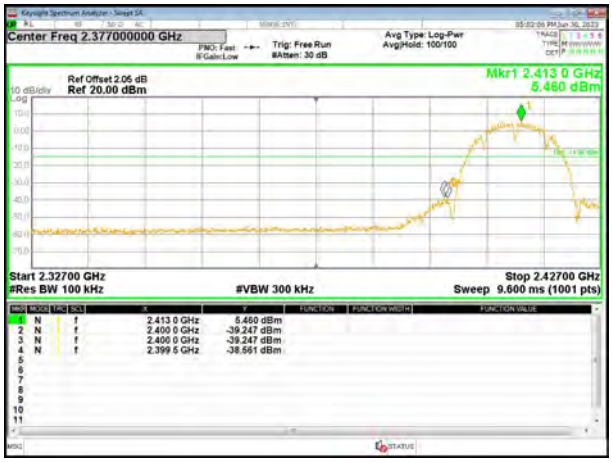
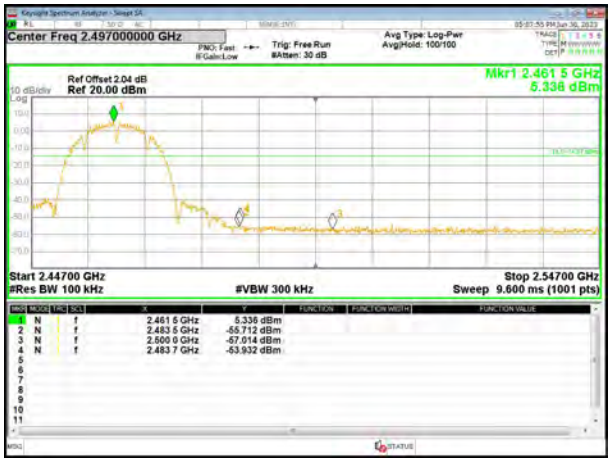
Test plot as follows:

Test mode:	802.11b



Lowest channel



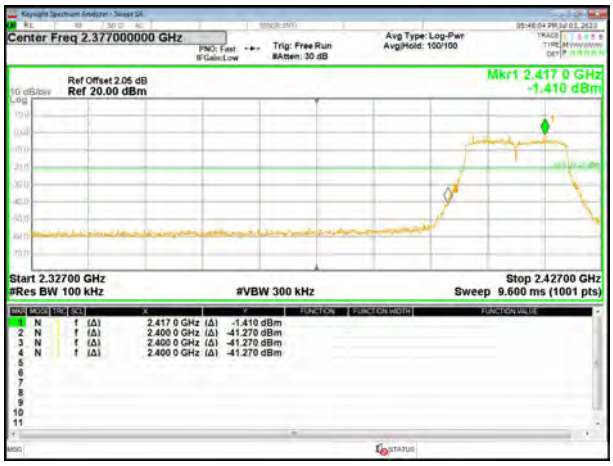
Highest channel

Test mode:	802.11g

Lowest channel

Highest channel

Test mode:	802.11n(HT20)



Lowest channel

Highest channel

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Test mode: 802.11n(HT40)

Lowest channel

Highest channel

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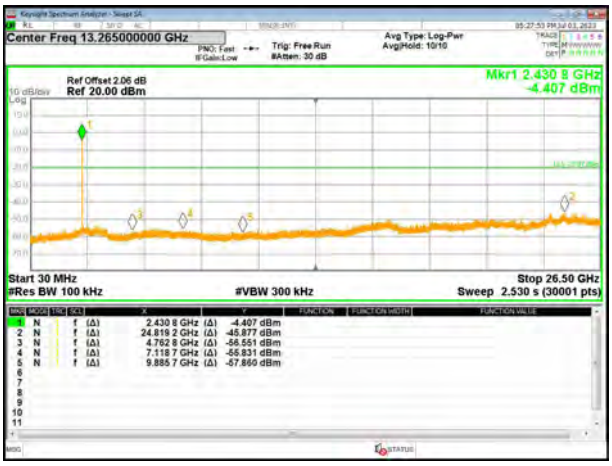
Test plot as follows:

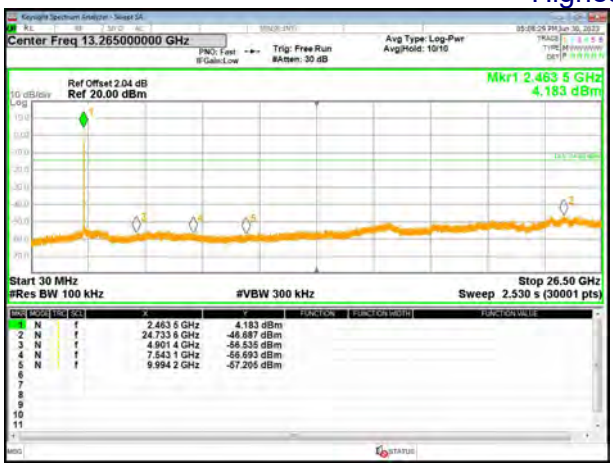
802.11b	802.11g

Lowest channel

Middle channel



Highest channel



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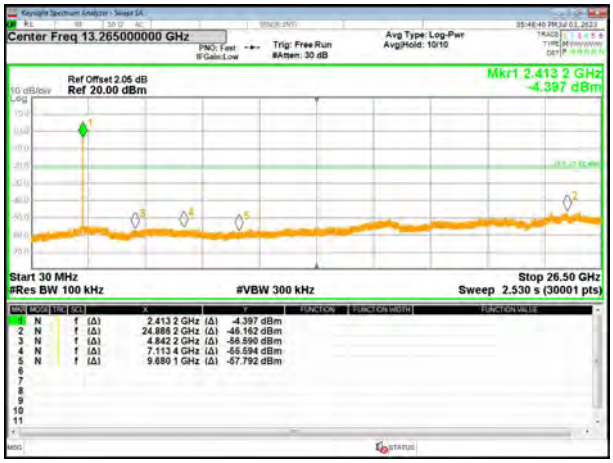
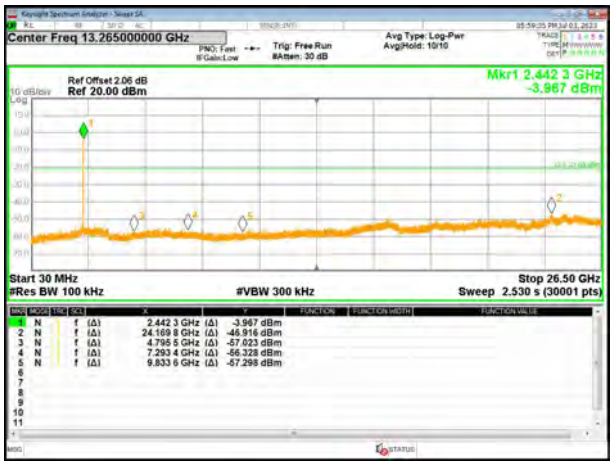
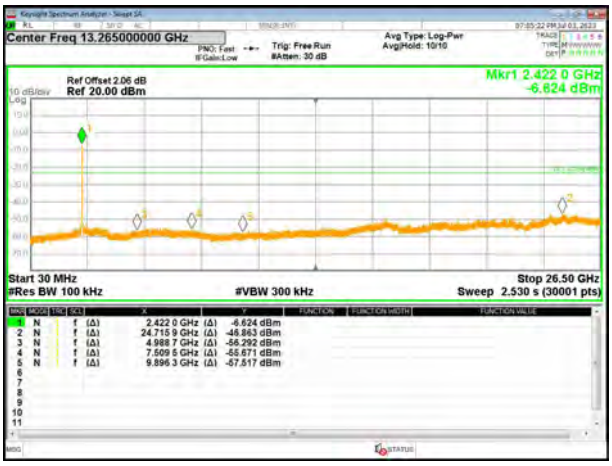
802.11n(HT20)	802.11n(HT40)

Lowest channel

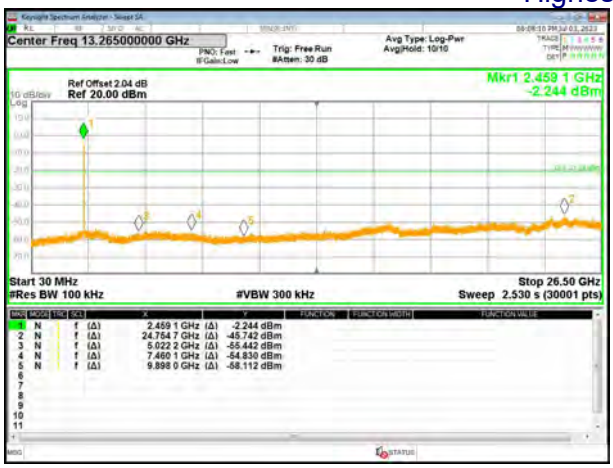


Middle channel





Highest channel



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10. ANTENNA REQUIREMENT

Standard requirement:	FCC Part15 C Section 15.203 /247(b)(4)
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: (4) 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, the best case gain of the antenna is 6.42 dBi, reference to the appendix II for details	

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11. TEST SETUP PHOTO

Reference to the appendix I for details.

12. EUT CONSTRUCTIONAL DETAILS

Reference to the appendix II for details.

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