FCC Part 15E Test Report
FCC ID: 2BKSX-NCJK

Applicant:	Dongguan Zeeway Technology Co., LTD
Address:	5/F,Building 4, 23 Xinbao 2nd Street, Dalang Town, Dongguan City, Guangdong Province, China
Manufacturer:	Dongguan Zeeway Technology Co., LTD
Address:	5/F,Building 4, 23 Xinbao 2nd Street, Dalang Town, Dongguan City, Guangdong Province, China
EUT:	Intelligent Bubble Tea Machine
Trade Mark:	N/A
Model Number:	NCJ-K1.2
Date of Receipt:	Aug. 12, 2024
Test Date:	Aug. 12, 2024 - Sep. 04, 2024
Date of Report:	Sep. 04, 2024
Prepared By:	Shenzhen DL Testing Technology Co., Ltd.
Address:	101-201, Building C, Shuanghuan, No.8, Baoqing Road, Baolong Industrial Zone, Baolong Street, Longgang District, Shenzhen, Guangdong, China
Applicable Standards:	FCC PART 15 E 15.407 ANSI C63.10:2013
Test Result:	Pass
Report Number:	DL-240812011ER

Prepared (Test Engineer):	Alisa Song
Reviewer (Supervisor):	Jack Bu
Approved (Manager):	Jade Yang

This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Shenzhen DL Testing Technology Co., Ltd.

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1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.407) , Subpart E			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	PASS	
15.407(b), 15.209	Radiated Spurious Emission	PASS	
15.407 (b)	Band Edge Emission	PASS	
15.407 (a)	Peak Output Power	PASS	
15.407 (a)	Power Spectral Density	PASS	
15.403(i) 15.407(e)	26dB bandwidth and 99%dB Bandwidth 6dB bandwidth and 99%dB Bandwidth	PASS	
15.407(g)	Frequency Stability	PASS	
15.407(c)	Transmission in case of Absence of Information	PASS	
15.203	Antenna Requirement	PASS	

NOTE:

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

Test lab: Shenzhen DL Testing Technology Co., Ltd.

Address: 101-201, Building C, Shuanghuan, No.8, Baoqing Road, Baolong Industrial Zone, Baolong Street, Longgang District, Shenzhen, Guangdong, China

FCC Test Firm Registration Number: 854456
Designation Number: CN1307
IC Registered No.: 27485
CAB ID.: CN0118

1.1 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** %。

No.	Item	Uncertainty
1	Conducted Emission Test	±2.56dB
2	RF power,conducted	±0.42dB
3	Spurious emissions,conducted	±2.76dB
4	All emissions,radiated(<1G)	±3.65dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5℃
7	Humidity	±2%
8	Bandwidth	±0.2MHz
9	Power Spectral Density	±2.45dBm

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product Name:	Intelligent Bubble Tea Machine
Trademark	N/A
Model No.:	NCJ-K1.2
Model Difference	N/A
Operation Frequency:	5180-5240, 5745-5825MHz(802.11a/n/ac(HT20)) 5190-5230, 5755-5795MHz(802.11n/ac(HT40))
Channel numbers:	See channel list
Channel separation:	20MHz/40MHz
Modulation technology:	64QAM, 16QAM, QPSK, BPSK for OFDM
Rate of Transmitter	802.11a: 6Mbps, 9Mbps, 12Mbps, 18Mbps, 24Mbps, 36Mbps, 48Mbps,54Mbps 802.11n: Up to 300Mbps 802.11ac: up to 867Mbps
Antenna Type:	External Antenna
Antenna gain:	5.33dBi
Power Supply:	110-120VAC 60Hz

Note:

1.For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.

2.The EUT's all information provided by client.

2. Channel List

Channel List for 802.11a/n(HT20)/ac(HT20)			
Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220
40	5200	48	5240

Channel List for 802.11n(HT40)/ac(HT40)			
Channel	Frequency (MHz)	Channel	Frequency (MHz)
38	5190	46	5230

Channel List for 802.11a/n(HT20)/ac(HT20)			
Channel	Frequency (MHz)	Channel	Frequency (MHz)
149	5745	161	5805
153	5765	165	5825
157	5785		

Channel List for 802.11n(HT40)/ac(HT40)			
Channel	Frequency (MHz)	Channel	Frequency (MHz)
151	5755	159	5795

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

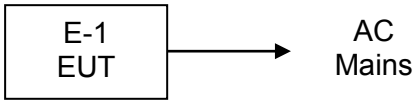
Description			
Pretest Mode	Channel	Band 1	Band 4
Mode 1	802.11a/n/acHT20	CH36, CH44, CH48	CH149, CH157, CH165
Mode 2	802.11n/acHT40	CH38, CH46	CH151, CH159
Mode 3	Link Mode		

For Radiated Emission			
Pretest Mode	Channel	Band 1	Band 4
Mode 1	802.11a/n/acHT20	CH36, CH44, CH48	CH149, CH157, CH165
Mode 2	802.11n/acHT40	CH38, CH46	CH151, CH159
Mode 3	Link Mode		

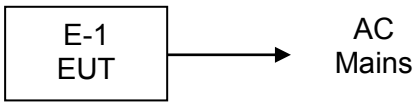
Note: 1. The measurements are performed at the highest, middle, lowest available channels.
2. During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Spurious Emission Test



AC power line conducted test



2.4 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	Model/Type No.	Series No.	Note
E-1	Intelligent Bubble Tea Machine	NCJ-K1.2	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note

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

2.5 TABLE OF PARAMETERS OF TEST SOFTWARE SETTING

During testing, channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the end product.

Max output power Setting				
Test software Version	Test program: aicrf_test			
Mode	802.11a	802.11n HT20	802.11n HT40	802.11ac HT20/HT40
Data Rate	6Mbps	MSC0	MSC0	MSC0
Power Setting of Softwave	60	60	66	66

2.6 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation test, Band-edge test and 6db bandwidth test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	Agilent	E4408B	MY50140780	Nov. 04, 2023	Nov. 03, 2024
2	Test Receiver (9kHz-7GHz)	R&S	ESRP7	101393	Nov. 04, 2023	Nov. 03, 2024
3	Bilog Antenna (30MHz-1GHz)	R&S	VULB9162	00306	Nov. 04, 2023	Nov. 03, 2024
4	Horn Antenna (1GHz-18GHz)	Schwarzbeck	BBHA9120D	02139	Nov. 04, 2023	Nov. 03, 2024
5	Horn Antenna (18GHz-40GHz)	A.H. Systems	SAS-574	588	Nov. 04, 2023	Nov. 03, 2024
6	Amplifier (9KHz-6GHz)	Schwarzbeck	BBV9743B	00153	Nov. 04, 2023	Nov. 03, 2024
7	Amplifier (1GHz-18GHz)	EMEC	EM01G8GA	00270	Nov. 04, 2023	Nov. 03, 2024
8	Amplifier (18GHz-40GHz)	Quanjuda	DLE-161	97	Nov. 04, 2023	Nov. 03, 2024
9	Loop Antenna (9KHz-30MHz)	Schwarzbeck	FMZB1519B	00014	Nov. 04, 2023	Nov. 03, 2024
10	RF cables1 (9kHz-1GHz)	ChengYu	966	004	Nov. 04, 2023	Nov. 03, 2024
11	RF cables2 (1GHz-40GHz)	ChengYu	966	003	Nov. 04, 2023	Nov. 03, 2024
12	Antenna connector	Florida RF Labs	N/A	RF 01#	Nov. 04, 2023	Nov. 03, 2024
13	Power probe	KEYSIGHT	U2021XA	MY55210018	Nov. 04, 2023	Nov. 03, 2024
14	Signal Analyzer 9kHz-26.5GHz	Agilent	N9020A	MY55370280	Nov. 04, 2023	Nov. 03, 2024
15	Test Receiver 20kHz-40GHz	R&S	ESU 40	100376	Nov. 04, 2023	Nov. 03, 2024
16	D.C. Power Supply	LongWei	PS-305D	010964729	Nov. 04, 2023	Nov. 03, 2024

Conduction Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	843 Shielded Room	YIHENG	843 Room	843	Nov. 05, 2023	Nov. 04, 2026
2	EMI Receiver	R&S	ESR	101421	Nov. 04, 2023	Nov. 03, 2024
3	LISN	R&S	ENV216	102417	Nov. 04, 2023	Nov. 03, 2024
4	843 Cable 1#	ChengYu	CE Cable	001	Nov. 04, 2023	Nov. 03, 2024

Other

Item	Name	Manufacturer	Model	Software version
1	EMC Conduction Test System	FALA	EZ_EMC	EMC-CON 3A1.1
2	EMC radiation test system	FALA	EZ_EMC	FA-03A2
3	RF test system	MAIWEI	MTS8310	2.0.0.0
4	RF communication test system	MAIWEI	MTS8200	2.0.0.0

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

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

Note:

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

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

3.1.2 TEST PROCEDURE

a. The EUT is placed on a 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.

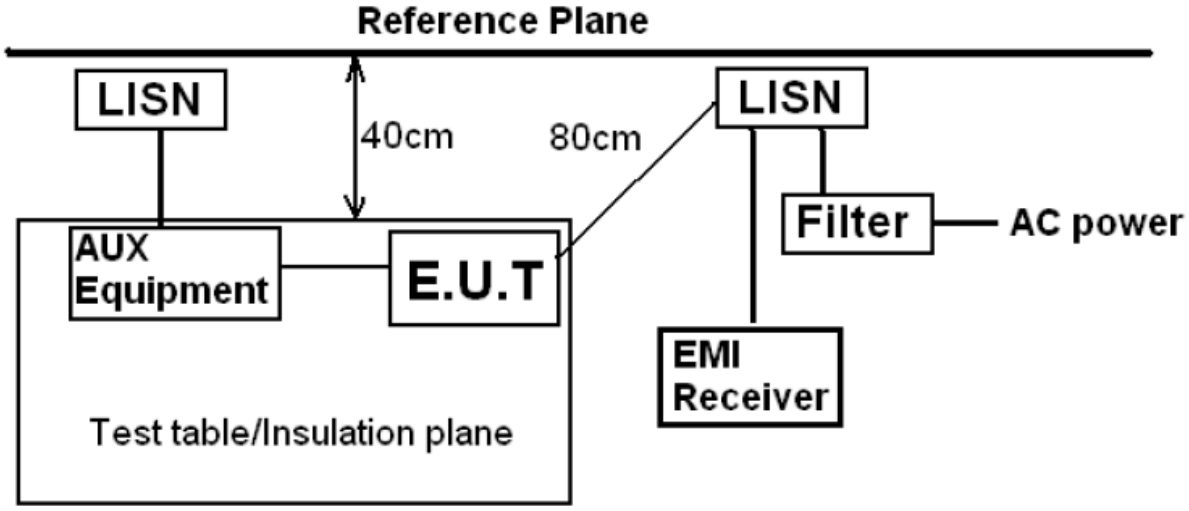
d. LISN at least 80 cm from nearest part of EUT chassis.

e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP

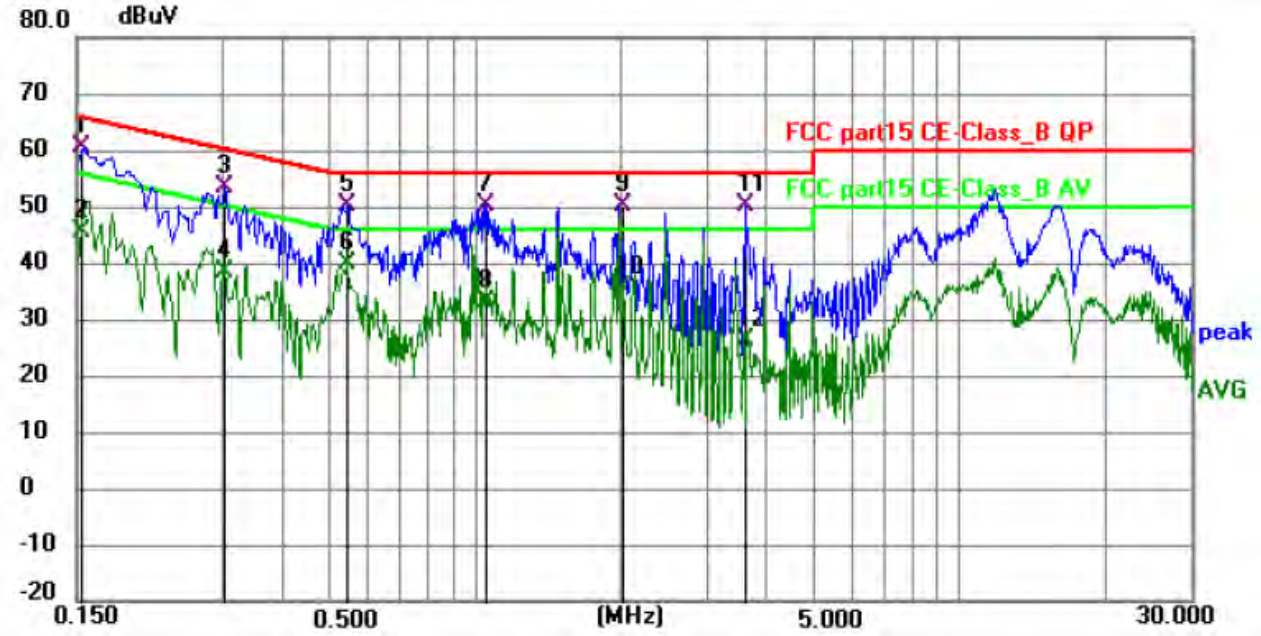


3.1.5 EUT OPERATING CONDITIONS

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.

3.1.6 TEST RESULTS

Temperature:	25 ℃	Relative Humidity:	54%
Pressure:	1010hPa	Phase :	L
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 3

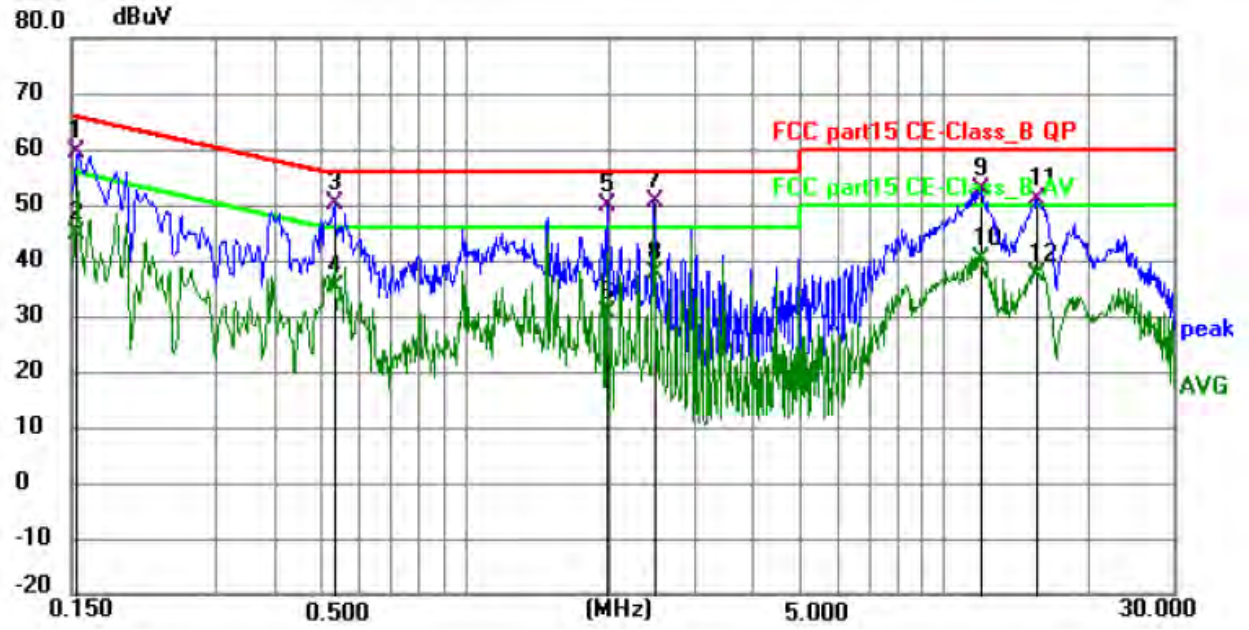


Remark:

Margin = Limit – Level, Correct Factor = Cable lose + LISN insertion loss, Level= Reading + Correct factor

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1 *	0.1544	50.48	9.89	60.37	65.76	-5.39	QP	P	
2	0.1544	35.71	9.89	45.60	55.76	-10.16	AVG	P	
3	0.3030	43.52	9.91	53.43	60.16	-6.73	QP	P	
4	0.3030	28.63	9.91	38.54	50.16	-11.62	AVG	P	
5	0.5434	40.22	9.82	50.04	56.00	-5.96	QP	P	
6	0.5434	30.09	9.82	39.91	46.00	-6.09	AVG	P	
7	1.0544	40.20	9.97	50.17	56.00	-5.83	QP	P	
8	1.0544	23.19	9.97	33.16	46.00	-12.84	AVG	P	
9	2.0175	40.14	9.99	50.13	56.00	-5.87	QP	P	
10	2.0175	25.59	9.99	35.58	46.00	-10.42	AVG	P	
11	3.6105	40.19	9.92	50.11	56.00	-5.89	QP	P	
12	3.6105	16.34	9.92	26.26	46.00	-19.74	AVG	P	

Temperature:	25 ℃	Relative Humidity:	54%
Pressure:	1010hPa	Phase :	N
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 3



Remark:

Margin = Limit – Level, Correct Factor = Cable lose + LISN insertion loss, Level= Reading + Correct factor

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1544	49.73	9.89	59.62	65.76	-6.14	QP	P	
2	0.1544	34.87	9.89	44.76	55.76	-11.00	AVG	P	
3	0.5322	40.33	9.83	50.16	56.00	-5.84	QP	P	
4	0.5322	25.27	9.83	35.10	46.00	-10.90	AVG	P	
5	1.9815	40.01	9.99	50.00	56.00	-6.00	QP	P	
6	1.9815	20.70	9.99	30.69	46.00	-15.31	AVG	P	
7 *	2.4765	40.56	9.97	50.53	56.00	-5.47	QP	P	
8	2.4765	27.54	9.97	37.51	46.00	-8.49	AVG	P	
9	11.9715	42.79	9.91	52.70	60.00	-7.30	QP	P	
10	11.9715	30.34	9.91	40.25	50.00	-9.75	AVG	P	
11	15.6432	41.06	9.98	51.04	60.00	-8.96	QP	P	
12	15.6432	27.27	9.98	37.25	50.00	-12.75	AVG	P	

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

15.407(b)Undesirable emission limits. Except as shown in paragraph (b) (10) of this section, the maximum emissions outside of the frequency bands of operation shall be attenuated in accordance with the following limits:

(1)For transmitters operating in the 5.15-5.25GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(2)For transmitters operating in the 5.25-5.35 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(3)For transmitters operating in the 5.47-5.725GHz band: All emissions outside of the 5.47-5.725 GHz band shall not exceed an e.i.r.p. of -27 dBm/MHz.

(4)For transmitters operating solely in the 5.725-5.850GHz band:
All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to10dBm/MHzat25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

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 (Above 1000MHz)

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).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	40GHz
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

Below 1GHz test procedure as below:

a. The EUT is placed on a horizontal ground plane above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the 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 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

g. Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre).
h. Test the EUT in the lowest channel, the middle channel, the Highest channel

Note:

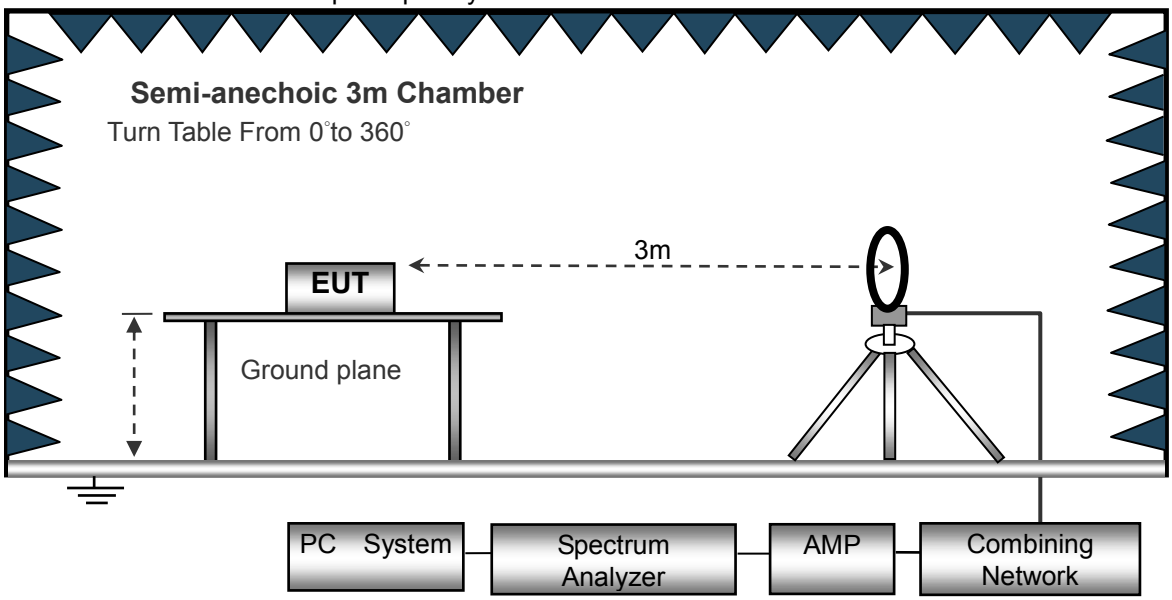
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

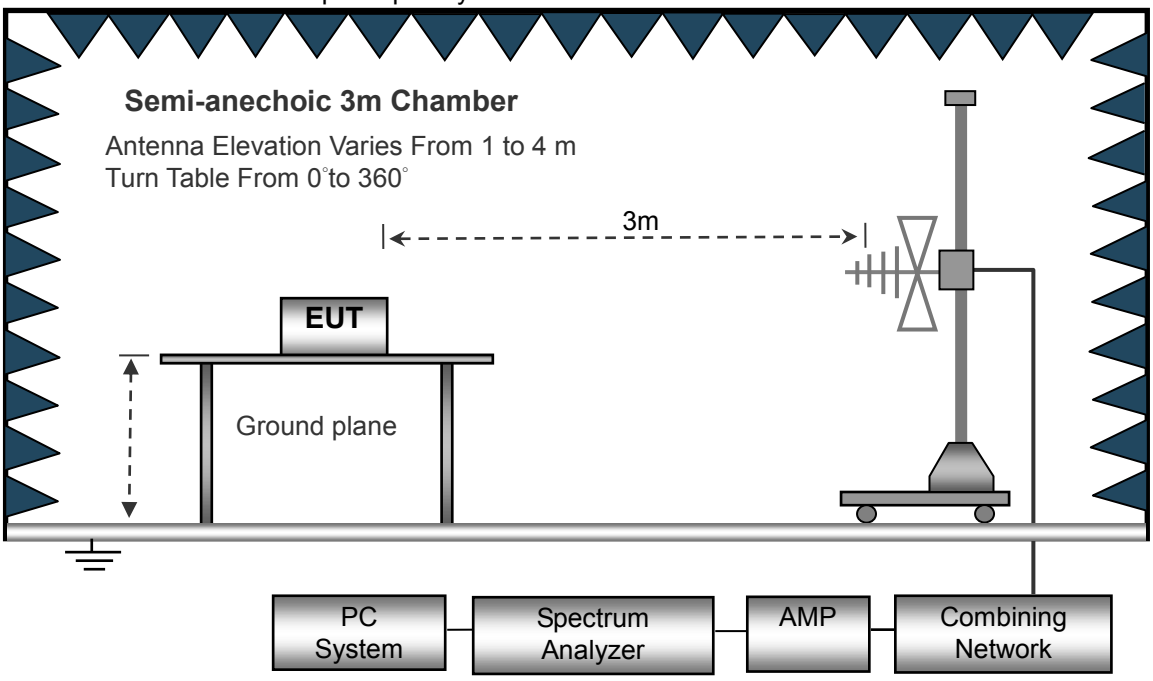
No deviation

3.2.4 TEST SETUP

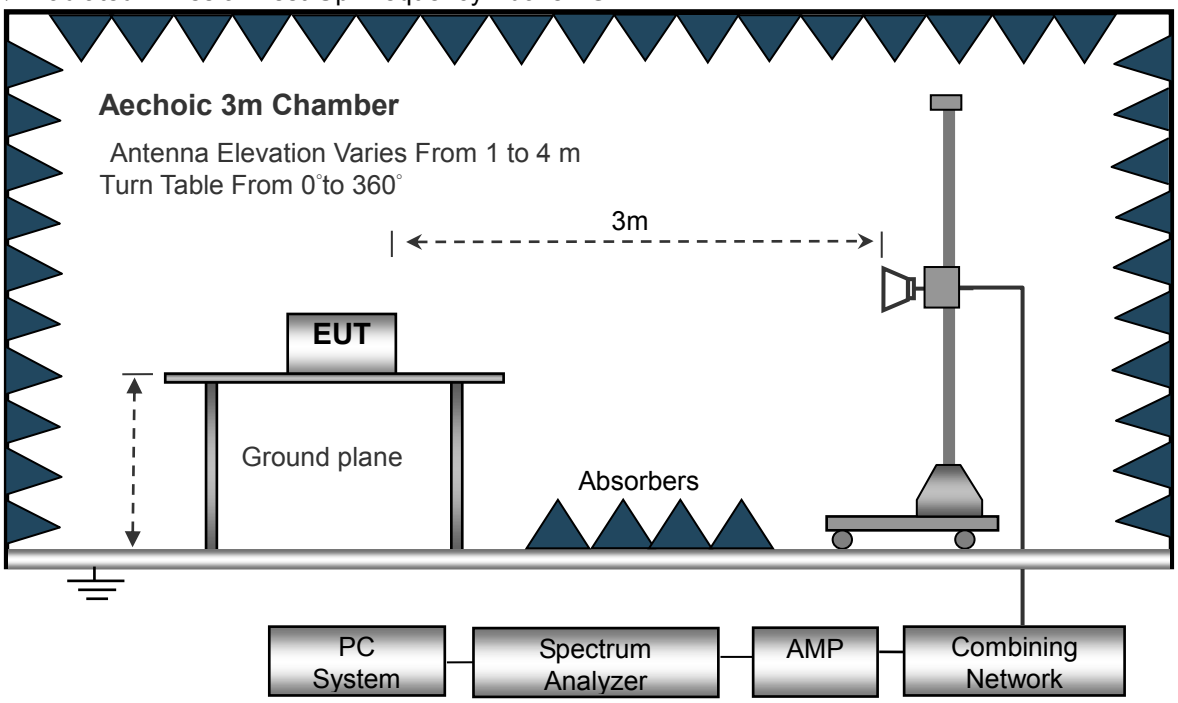
（A）Radiated Emission Test-Up Frequency Below 30MHz



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



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



3.2.5 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.

3.2.6 TEST RESULTS (Between 9KHz – 30 MHz)

Temperature:	20℃	Relative Humidtity:	48%
Pressure:	1010 hPa	Test Voltage :	AC 120V/60Hz
Test Mode :	Mode 3	Polarization :	--

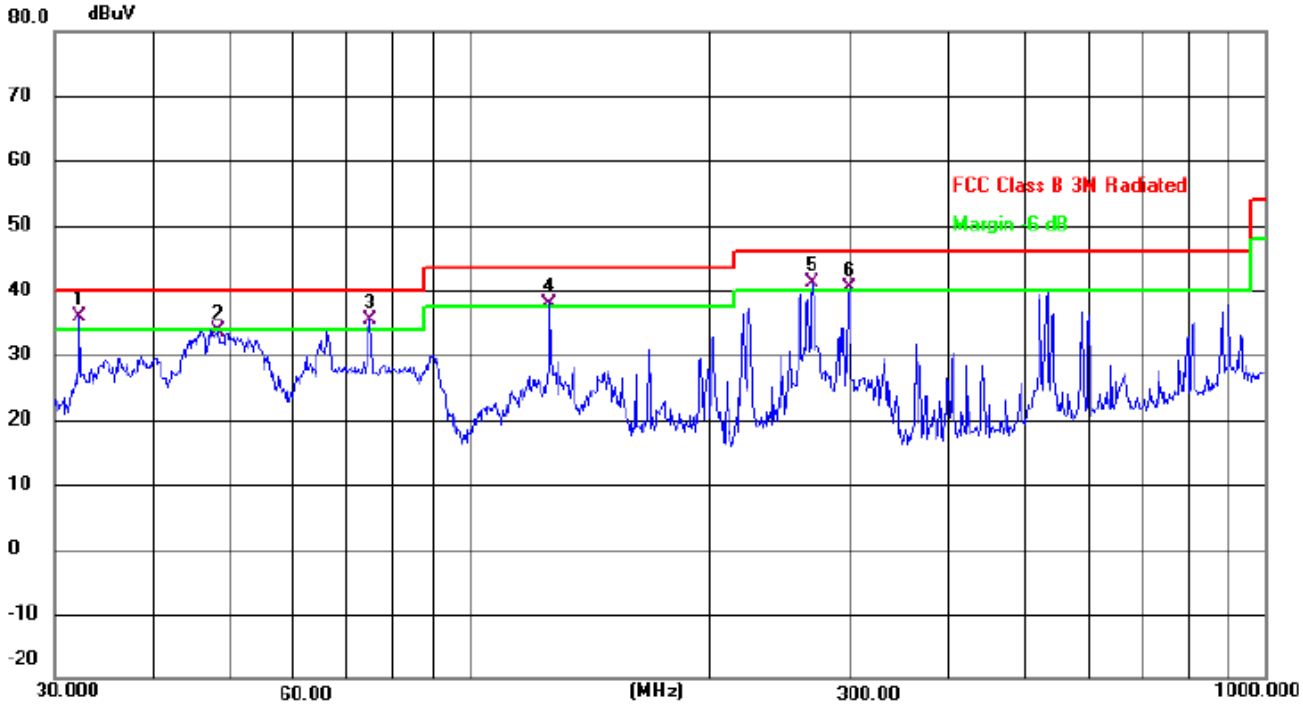
Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =40 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor.

3.2.7 TEST RESULTS (Between 30MHz – 1GHz)

Temperature:	26℃	Relative Humidity:	54%
Pressure:	1010 hPa	Polarization :	Horizontal
Test Voltage :	AC 120V/60Hz		
Test Mode :	Mode 3		



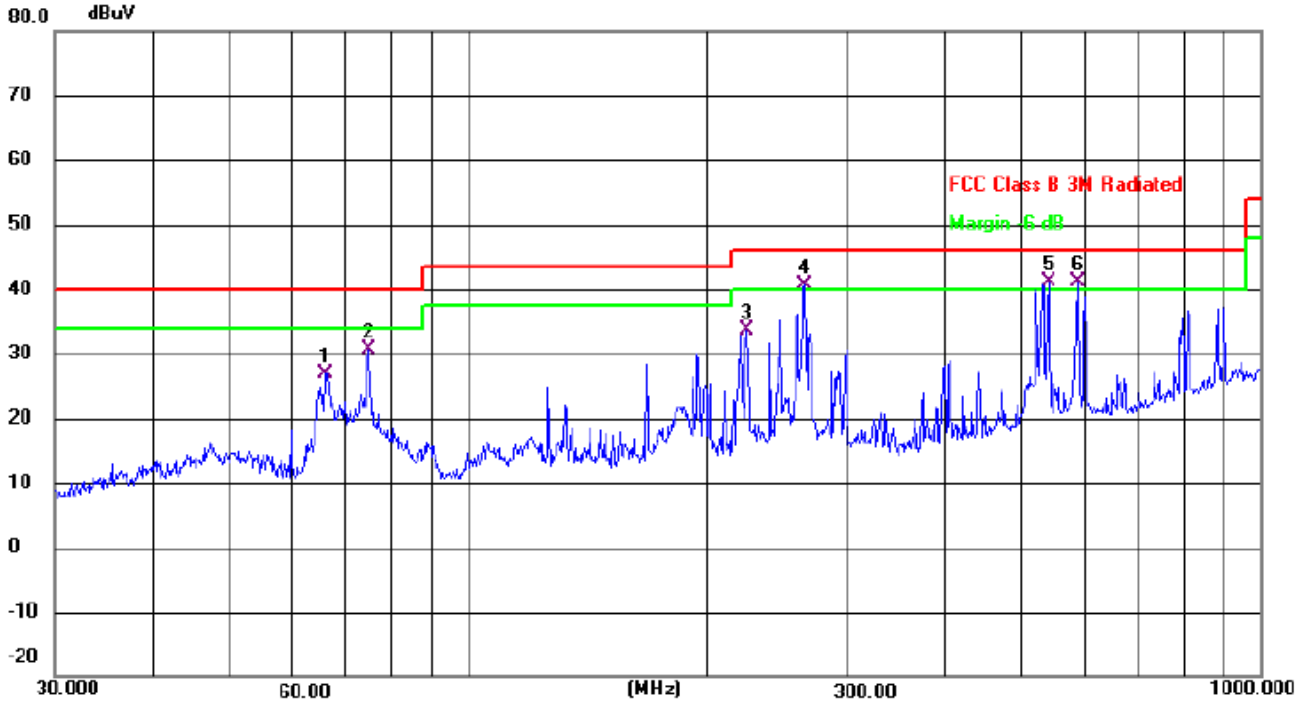
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	
		MHz	dBuV	dB	dBuV	dB	dB	Detector
1	*	32.2925	51.97	-16.08	35.89	40.00	-4.11	QP
2		48.1626	46.87	-13.12	33.75	40.00	-6.25	QP
3	!	74.6569	53.69	-18.19	35.50	40.00	-4.50	QP
4	!	125.8864	55.36	-17.48	37.88	43.50	-5.62	QP
5	!	269.4284	53.54	-12.52	41.02	46.00	-4.98	QP
6	!	299.3158	51.96	-11.68	40.28	46.00	-5.72	QP

Remark:

Correct Factor = Cable loss + Antenna factor – Preamplifier;

Level = Reading Level + Correct Factor; Margin = Level - Limit;

Temperature:	26℃	Relative Humidity:	54%
Pressure:	1010 hPa	Polarization :	Vertical
test voltage :	AC 120V/60Hz		
Test Mode :	Mode 3		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	
		MHz	dBuV	dB	dBuV	dB	dB	Detector
1		66.0342	42.10	-15.20	26.90	40.00	-13.10	QP
2		74.6569	48.80	-18.19	30.61	40.00	-9.39	QP
3		224.5193	47.67	-14.05	33.62	46.00	-12.38	QP
4	!	265.6757	53.36	-12.77	40.59	46.00	-5.41	QP
5	*	539.4775	47.89	-6.66	41.23	46.00	-4.77	QP
6	!	586.8437	46.63	-5.61	41.02	46.00	-4.98	QP

Remark:

Correct Factor = Cable loss + Antenna factor – Preamplifier;

Level = Reading Level + Correct Factor; Margin = Level - Limit;

3.2.8 TEST RESULTS (1ghz~40ghZ)

802.11a band 1

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:5180									
V	10360	56.25	49.05	15.3	37.39	59.89	74	-14.11	PK
V	10360	41.19	49.05	15.3	37.39	44.83	54	-9.17	AV
V	15540	52.54	49.16	15.27	40.45	59.1	68.2	-9.10	PK
V	15540	39.12	49.16	15.27	40.45	45.68	54	-8.32	AV
H	10360	56.39	49.05	15.3	37.39	60.03	74	-13.97	PK
H	10360	40.24	49.05	15.3	37.39	43.88	54	-10.12	AV
H	15540	51.32	49.16	15.27	40.45	57.88	68.2	-10.32	PK
H	15540	38.94	49.16	15.27	40.45	45.5	54	-8.50	AV
operation frequency:5200									
V	10400	57.61	49.09	15.34	37.42	61.28	74	-12.72	PK
V	10400	39.49	49.09	15.34	37.42	43.16	54	-10.84	AV
V	15600	52.51	49.18	15.29	40.47	59.09	68.2	-9.11	PK
V	15600	38.15	49.18	15.29	40.47	44.73	54	-9.27	AV
H	10400	56.22	49.09	15.34	37.42	59.89	74	-14.11	PK
H	10400	39.47	49.09	15.34	37.42	43.14	54	-10.86	AV
H	15600	53.63	49.18	15.29	40.47	60.21	68.2	-7.99	PK
H	15600	38.14	49.18	15.29	40.47	44.72	54	-9.28	AV
operation frequency:5240									
V	10480	58.23	49.11	15.37	37.46	61.95	74	-12.05	PK
V	10480	39.68	49.11	15.37	37.46	43.4	54	-10.60	AV
V	15720	53.41	49.21	15.34	40.51	60.05	68.2	-8.15	PK
V	15720	38.63	49.21	15.34	40.51	45.27	54	-8.73	AV
H	10480	57.48	49.11	15.37	31.31	55.05	74	-18.95	PK
H	10480	45.41	49.11	15.37	31.31	42.98	54	-11.02	AV
H	15720	54.13	49.21	15.34	40.51	60.77	68.2	-7.43	PK
H	15720	37.18	49.21	15.34	40.51	43.82	54	-10.18	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.

802.11n HT20

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:5180									
V	10360	56.26	49.05	15.3	37.39	59.9	74	-14.10	PK
V	10360	38.41	49.05	15.3	37.39	42.05	54	-11.95	AV
V	15540	52.35	49.16	15.27	40.45	58.91	68.2	-9.29	PK
V	15540	38.13	49.16	15.27	40.45	44.69	54	-9.31	AV
H	10360	56.84	49.05	15.3	37.39	60.48	74	-13.52	PK
H	10360	39.69	49.05	15.3	37.39	43.33	54	-10.67	AV
H	15540	51.91	49.16	15.27	40.45	58.47	68.2	-9.73	PK
H	15540	38.96	49.16	15.27	40.45	45.52	54	-8.48	AV
operation frequency:5200									
V	10400	56.52	49.09	15.34	37.42	60.19	74	-13.81	PK
V	10400	39.16	49.09	15.34	37.42	42.83	54	-11.17	AV
V	15600	52.25	49.18	15.29	40.47	58.83	68.2	-9.37	PK
V	15600	38.96	49.18	15.29	40.47	45.54	54	-8.46	AV
H	10400	55.54	49.09	15.34	37.42	59.21	74	-14.79	PK
H	10400	40.92	49.09	15.34	37.42	44.59	54	-9.41	AV
H	15600	53.27	49.18	15.29	40.47	59.85	68.2	-8.35	PK
H	15600	39.33	49.18	15.29	40.47	45.91	54	-8.09	AV
operation frequency:5240									
V	10480	57.25	49.11	15.37	37.46	60.97	74	-13.03	PK
V	10480	40.36	49.11	15.37	37.46	44.08	54	-9.92	AV
V	15720	52.14	49.21	15.34	40.51	58.78	68.2	-9.42	PK
V	15720	38.23	49.21	15.34	40.51	44.87	54	-9.13	AV
H	10480	57.68	49.11	15.37	31.31	55.25	74	-18.75	PK
H	10480	44.96	49.11	15.37	31.31	42.53	54	-11.47	AV
H	15720	51.61	49.21	15.34	40.51	58.25	68.2	-9.95	PK
H	15720	39.19	49.21	15.34	40.51	45.83	54	-8.17	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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Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:5190									
V	10380	56.81	49.07	15.33	37.41	60.48	74	-13.52	PK
V	10380	39.39	49.07	15.33	37.41	43.06	54	-10.94	AV
V	15570	52.34	49.17	15.28	40.46	58.91	68.2	-9.29	PK
V	15570	38.24	49.17	15.28	40.46	44.81	54	-9.19	AV
H	10380	56.29	49.07	15.33	37.41	59.96	74	-14.04	PK
H	10380	40.52	49.07	15.33	37.41	44.19	54	-9.81	AV
H	15570	52.23	49.17	15.28	40.46	58.8	68.2	-9.40	PK
H	15570	38.47	49.17	15.28	40.46	45.04	54	-8.96	AV
operation frequency:5230									
V	10460	57.69	49.11	15.37	37.46	61.41	74	-12.59	PK
V	10460	39.52	49.11	15.37	37.46	43.24	54	-10.76	AV
V	15690	52.84	49.21	15.34	40.51	59.48	68.2	-8.72	PK
V	15690	38.96	49.21	15.34	40.51	45.6	54	-8.40	AV
H	10460	57.35	49.11	15.37	31.31	54.92	74	-19.08	PK
H	10460	44.56	49.11	15.37	31.31	42.13	54	-11.87	AV
H	15690	52.85	49.21	15.34	40.51	59.49	68.2	-8.71	PK
H	15690	39.26	49.21	15.34	40.51	45.9	54	-8.10	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.

802.11ac HT20

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:5180									
V	10360	56.67	49.05	15.3	37.39	60.31	74	-13.69	PK
V	10360	39.14	49.05	15.3	37.39	42.78	54	-11.22	AV
V	15540	51.86	49.16	15.27	40.45	58.42	68.2	-9.78	PK
V	15540	38.38	49.16	15.27	40.45	44.94	54	-9.06	AV
H	10360	56.16	49.05	15.3	37.39	59.8	74	-14.20	PK
H	10360	38.34	49.05	15.3	37.39	41.98	54	-12.02	AV
H	15540	52.89	49.16	15.27	40.45	59.45	68.2	-8.75	PK
H	15540	39.34	49.16	15.27	40.45	45.9	54	-8.10	AV
operation frequency:5200									
V	10400	56.63	49.09	15.34	37.42	60.3	74	-13.70	PK
V	10400	41.25	49.09	15.34	37.42	44.92	54	-9.08	AV
V	15600	52.91	49.18	15.29	40.47	59.49	68.2	-8.71	PK
V	15600	40.29	49.18	15.29	40.47	46.87	54	-7.13	AV
H	10400	55.95	49.09	15.34	37.42	59.62	74	-14.38	PK
H	10400	40.56	49.09	15.34	37.42	44.23	54	-9.77	AV
H	15600	53.85	49.18	15.29	40.47	60.43	68.2	-7.77	PK
H	15600	41.24	49.18	15.29	40.47	47.82	54	-6.18	AV
operation frequency:5240									
V	10480	57.63	49.11	15.37	37.46	61.35	74	-12.65	PK
V	10480	40.84	49.11	15.37	37.46	44.56	54	-9.44	AV
V	15720	51.48	49.21	15.34	40.51	58.12	68.2	-10.08	PK
V	15720	39.69	49.21	15.34	40.51	46.33	54	-7.67	AV
H	10480	57.35	49.11	15.37	31.31	54.92	74	-19.08	PK
H	10480	44.25	49.11	15.37	31.31	41.82	54	-12.18	AV
H	15720	52.63	49.21	15.34	40.51	59.27	68.2	-8.93	PK
H	15720	40.18	49.21	15.34	40.51	46.82	54	-7.18	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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Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:5190									
V	10380	56.63	49.07	15.33	37.41	60.3	74	-13.70	PK
V	10380	40.64	49.07	15.33	37.41	44.31	54	-9.69	AV
V	15570	52.12	49.17	15.28	40.46	58.69	68.2	-9.51	PK
V	15570	39.63	49.17	15.28	40.46	46.2	54	-7.80	AV
H	10380	56.17	49.07	15.33	37.41	59.84	74	-14.16	PK
H	10380	40.86	49.07	15.33	37.41	44.53	54	-9.47	AV
H	15570	51.44	49.17	15.28	40.46	58.01	68.2	-10.19	PK
H	15570	39.19	49.17	15.28	40.46	45.76	54	-8.24	AV
operation frequency:5230									
V	10460	57.25	49.11	15.37	37.46	60.97	74	-13.03	PK
V	10460	41.24	49.11	15.37	37.46	44.96	54	-9.04	AV
V	15690	52.69	49.21	15.34	40.51	59.33	68.2	-8.87	PK
V	15690	39.52	49.21	15.34	40.51	46.16	54	-7.84	AV
H	10460	57.91	49.11	15.37	31.31	55.48	74	-18.52	PK
H	10460	44.29	49.11	15.37	31.31	41.86	54	-12.14	AV
H	15690	52.35	49.21	15.34	40.51	58.99	68.2	-9.21	PK
H	15690	40.19	49.21	15.34	40.51	46.83	54	-7.17	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.

802.11a band 4

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:5745									
V	11490	54.36	49.05	15.3	37.39	58	74	-16.00	PK
V	11490	41.27	49.05	15.3	37.39	44.91	54	-9.09	AV
V	17235	55.99	49.16	15.27	40.45	62.55	68.2	-5.65	PK
V	17235	40.29	49.16	15.27	40.45	46.85	54	-7.15	AV
H	11490	52.15	49.05	15.3	37.39	55.79	74	-18.21	PK
H	11490	42.18	49.05	15.3	37.39	45.82	54	-8.18	AV
H	17235	51.33	49.16	15.27	40.45	57.89	68.2	-10.31	PK
H	17235	40.19	49.16	15.27	40.45	46.75	54	-7.25	AV
operation frequency:5785									
V	11570	51.94	49.09	15.34	37.42	55.61	74	-18.39	PK
V	11570	41.19	49.09	15.34	37.42	44.86	54	-9.14	AV
V	17355	50.52	49.18	15.29	40.47	57.1	68.2	-11.10	PK
V	17355	40.21	49.18	15.29	40.47	46.79	54	-7.21	AV
H	11570	50.76	49.09	15.34	37.42	54.43	74	-19.57	PK
H	11570	42.34	49.09	15.34	37.42	46.01	54	-7.99	AV
H	17355	48.63	49.18	15.29	40.47	55.21	68.2	-12.99	PK
H	17355	40.38	49.18	15.29	40.47	46.96	54	-7.04	AV
operation frequency:5825									
V	11650	52.23	49.11	15.37	37.46	55.95	74	-18.05	PK
V	11650	41.29	49.11	15.37	37.46	45.01	54	-8.99	AV
V	17475	49.84	49.21	15.34	40.51	56.48	68.2	-11.72	PK
V	17475	40.33	49.21	15.34	40.51	46.97	54	-7.03	AV
H	11650	57.68	49.11	15.37	31.31	55.25	74	-18.75	PK
H	11650	48.34	49.11	15.37	31.31	45.91	54	-8.09	AV
H	17475	49.29	49.21	15.34	40.51	55.93	68.2	-12.27	PK
H	17475	40.52	49.21	15.34	40.51	47.16	54	-6.84	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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Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:5745									
V	11490	49.39	49.05	15.3	37.39	53.03	74	-20.97	PK
V	11490	42.41	49.05	15.3	37.39	46.05	54	-7.95	AV
V	17235	48.33	49.16	15.27	40.45	54.89	68.2	-13.31	PK
V	17235	40.18	49.16	15.27	40.45	46.74	54	-7.26	AV
H	11490	49.63	49.05	15.3	37.39	53.27	74	-20.73	PK
H	11490	41.24	49.05	15.3	37.39	44.88	54	-9.12	AV
H	17235	48.85	49.16	15.27	40.45	55.41	68.2	-12.79	PK
H	17235	40.33	49.16	15.27	40.45	46.89	54	-7.11	AV
operation frequency:5785									
V	11570	52.39	49.09	15.34	37.42	56.06	74	-17.94	PK
V	11570	42.11	49.09	15.34	37.42	45.78	54	-8.22	AV
V	17355	49.96	49.18	15.29	40.47	56.54	68.2	-11.66	PK
V	17355	40.24	49.18	15.29	40.47	46.82	54	-7.18	AV
H	11570	49.85	49.09	15.34	37.42	53.52	74	-20.48	PK
H	11570	43.63	49.09	15.34	37.42	47.3	54	-6.70	AV
H	17355	49.14	49.18	15.29	40.47	55.72	68.2	-12.48	PK
H	17355	40.24	49.18	15.29	40.47	46.82	54	-7.18	AV
operation frequency:5825									
V	11650	51.36	49.11	15.37	37.46	55.08	74	-18.92	PK
V	11650	41.21	49.11	15.37	37.46	44.93	54	-9.07	AV
V	17475	48.23	49.21	15.34	40.51	54.87	68.2	-13.33	PK
V	17475	40.14	49.21	15.34	40.51	46.78	54	-7.22	AV
H	11650	57.19	49.11	15.37	31.31	54.76	74	-19.24	PK
H	11650	44.52	49.11	15.37	31.31	42.09	54	-11.91	AV
H	17475	49.63	49.21	15.34	40.51	56.27	68.2	-11.93	PK
H	17475	40.27	49.21	15.34	40.51	46.91	54	-7.09	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.

802.11n HT40

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:5755									
V	11510	49.33	49.07	15.33	37.41	53	74	-21.00	PK
V	11510	41.96	49.07	15.33	37.41	45.63	54	-8.37	AV
V	17265	49.64	49.17	15.28	40.46	56.21	68.2	-11.99	PK
V	17265	40.22	49.17	15.28	40.46	46.79	54	-7.21	AV
H	11510	48.29	49.07	15.33	37.41	51.96	74	-22.04	PK
H	11510	41.18	49.07	15.33	37.41	44.85	54	-9.15	AV
H	17265	49.14	49.17	15.28	40.46	55.71	68.2	-12.49	PK
H	17265	40.49	49.17	15.28	40.46	47.06	54	-6.94	AV
operation frequency:5795									
V	11590	49.14	49.11	15.37	37.46	52.86	74	-21.14	PK
V	11590	41.59	49.11	15.37	37.46	45.31	54	-8.69	AV
V	17385	48.23	49.21	15.34	40.51	54.87	68.2	-13.33	PK
V	17385	40.78	49.21	15.34	40.51	47.42	54	-6.58	AV
H	11590	57.25	49.11	15.37	31.31	54.82	74	-19.18	PK
H	11590	44.36	49.11	15.37	31.31	41.93	54	-12.07	AV
H	17385	48.67	49.21	15.34	40.51	55.31	68.2	-12.89	PK
H	17385	40.99	49.21	15.34	40.51	47.63	54	-6.37	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.

802.11ac HT20

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:5745									
V	11490	49.34	49.05	15.3	37.39	52.98	74	-21.02	PK
V	11490	42.78	49.05	15.3	37.39	46.42	54	-7.58	AV
V	17235	48.53	49.16	15.27	40.45	55.09	68.2	-13.11	PK
V	17235	40.24	49.16	15.27	40.45	46.8	54	-7.20	AV
H	11490	48.92	49.05	15.3	37.39	52.56	74	-21.44	PK
H	11490	41.59	49.05	15.3	37.39	45.23	54	-8.77	AV
H	17235	48.68	49.16	15.27	40.45	55.24	68.2	-12.96	PK
H	17235	40.69	49.16	15.27	40.45	47.25	54	-6.75	AV
operation frequency:5785									
V	11570	48.41	49.09	15.34	37.42	52.08	74	-21.92	PK
V	11570	41.36	49.09	15.34	37.42	45.03	54	-8.97	AV
V	17355	49.58	49.18	15.29	40.47	56.16	68.2	-12.04	PK
V	17355	40.34	49.18	15.29	40.47	46.92	54	-7.08	AV
H	11570	49.63	49.09	15.34	37.42	53.3	74	-20.70	PK
H	11570	43.18	49.09	15.34	37.42	46.85	54	-7.15	AV
H	17355	49.25	49.18	15.29	40.47	55.83	68.2	-12.37	PK
H	17355	40.89	49.18	15.29	40.47	47.47	54	-6.53	AV
operation frequency:5825									
V	11650	49.28	49.11	15.37	37.46	53	74	-21.00	PK
V	11650	41.99	49.11	15.37	37.46	45.71	54	-8.29	AV
V	17475	48.41	49.21	15.34	40.51	55.05	68.2	-13.15	PK
V	17475	40.13	49.21	15.34	40.51	46.77	54	-7.23	AV
H	11650	57.25	49.11	15.37	31.31	54.82	74	-19.18	PK
H	11650	44.63	49.11	15.37	31.31	42.2	54	-11.80	AV
H	17475	48.19	49.21	15.34	40.51	54.83	68.2	-13.37	PK
H	17475	40.14	49.21	15.34	40.51	46.78	54	-7.22	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.

802.11ac HT40

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:5755									
V	11510	49.19	49.07	15.33	37.41	52.86	74	-21.14	PK
V	11510	42.53	49.07	15.33	37.41	46.2	54	-7.80	AV
V	17265	48.38	49.17	15.28	40.46	54.95	68.2	-13.25	PK
V	17265	41.64	49.17	15.28	40.46	48.21	54	-5.79	AV
H	11510	48.79	49.07	15.33	37.41	52.46	74	-21.54	PK
H	11510	42.37	49.07	15.33	37.41	46.04	54	-7.96	AV
H	17265	48.63	49.17	15.28	40.46	55.2	68.2	-13.00	PK
H	17265	40.25	49.17	15.28	40.46	46.82	54	-7.18	AV
operation frequency:5795									
V	11590	49.39	49.11	15.37	37.46	53.11	74	-20.89	PK
V	11590	41.64	49.11	15.37	37.46	45.36	54	-8.64	AV
V	17385	48.85	49.21	15.34	40.51	55.49	68.2	-12.71	PK
V	17385	40.99	49.21	15.34	40.51	47.63	54	-6.37	AV
H	11590	57.84	49.11	15.37	31.31	55.41	74	-18.59	PK
H	11590	44.68	49.11	15.37	31.31	42.25	54	-11.75	AV
H	17385	48.33	49.21	15.34	40.51	54.97	68.2	-13.23	PK
H	17385	40.29	49.21	15.34	40.51	46.93	54	-7.07	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.

3.3 RADIATED BAND EMISSION MEASUREMENT

3.3.1 TEST REQUIREMENT:

RSS-247 Section 5.5

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

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).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	5000MHz
Stop Frequency	5420MHz
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

3.3.2 TEST PROCEDURE

Above 1GHz test procedure as below:

a. 1. The EUT is placed on a horizontal ground plane 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 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.

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

Note:

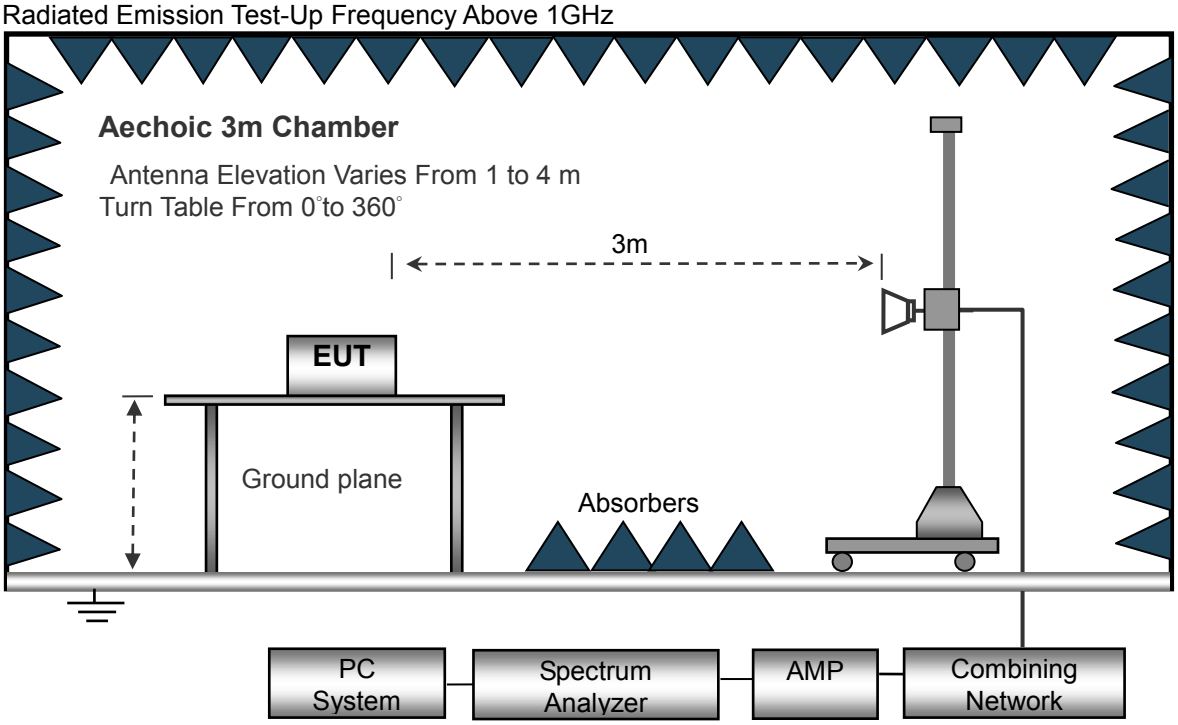
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.3.3 DEVIATION FROM TEST STANDARD

No deviation

3.3.4 TEST SETUP

Radiated Emission Test-Up Frequency Above 1GHz



3.3.5 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.

3.3.6 TEST RESULT

802.11a

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:5180									
V	5150	53.96	49.12	15.6	37.34	57.78	74	-16.22	PK
V	5150	39.14	49.12	15.6	37.34	42.96	54	-11.04	AV
V	5145	54.32	49.19	15.24	40.43	60.8	74	-13.2	PK
V	5145	36.47	49.19	15.24	40.43	42.95	54	-11.05	AV
H	5150	52.55	49.12	15.6	37.34	56.37	74	-17.63	PK
H	5150	37.52	49.12	15.6	37.34	41.34	54	-12.66	AV
H	5145	54.74	49.19	15.24	40.43	61.22	74	-12.78	PK
H	5145	33.96	49.19	15.24	40.43	40.44	54	-13.56	AV
operation frequency:5240									
V	5350	53.14	49.13	15.32	37.46	56.79	74	-17.21	PK
V	5350	35.39	49.13	15.32	37.46	39.04	54	-14.96	AV
V	5370	53.62	49.24	15.36	40.51	60.25	74	-13.75	PK
V	5370	32.11	49.24	15.36	40.51	38.74	54	-15.26	AV
H	5350	52.12	49.13	15.32	31.31	49.62	74	-24.38	PK
H	5350	40.74	49.13	15.32	31.31	38.24	54	-15.76	AV
H	5370	52.42	49.24	15.36	40.51	59.05	74	-14.95	PK
H	5370	32.49	49.24	15.36	40.51	39.12	54	-14.88	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.

802.11n HT20

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:5180									
V	5150	51.13	49.12	15.6	37.34	54.95	74	-19.05	PK
V	5150	33.17	49.12	15.6	37.34	36.99	54	-17.01	AV
V	5145	51.24	49.19	15.24	40.43	57.72	74	-16.28	PK
V	5145	33.22	49.19	15.24	40.43	39.7	54	-14.3	AV
H	5150	51.47	49.12	15.6	37.34	55.29	74	-18.71	PK
H	5150	33.56	49.12	15.6	37.34	37.38	54	-16.62	AV
H	5145	50.17	49.19	15.24	40.43	56.65	74	-17.35	PK
H	5145	32.33	49.19	15.24	40.43	38.81	54	-15.19	AV
operation frequency:5240									
V	5350	53.65	49.13	15.32	37.46	57.3	74	-16.7	PK
V	5350	34.49	49.13	15.32	37.46	38.14	54	-15.86	AV
V	5370	50.54	49.24	15.36	40.51	57.17	74	-16.83	PK
V	5370	33.39	49.24	15.36	40.51	40.02	54	-13.98	AV
H	5350	54.25	49.13	15.32	31.31	51.75	74	-22.25	PK
H	5350	36.39	49.13	15.32	31.31	33.89	54	-20.11	AV
H	5370	51.41	49.24	15.36	40.51	58.04	74	-15.96	PK
H	5370	33.83	49.24	15.36	40.51	40.46	54	-13.54	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.

802.11ac HT20

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:5180									
V	5150	52.64	49.12	15.33	37.41	56.26	74	-17.74	PK
V	5150	34.39	49.12	15.33	37.41	38.01	54	-15.99	AV
V	5145	51.25	49.19	15.28	40.46	57.8	74	-16.2	PK
V	5145	33.34	49.19	15.28	40.46	39.89	54	-14.11	AV
H	5150	52.19	49.12	15.33	37.41	55.81	74	-18.19	PK
H	5150	34.58	49.12	15.33	37.41	38.2	54	-15.8	AV
H	5145	50.54	49.19	15.28	40.46	57.09	74	-16.91	PK
H	5145	33.69	49.19	15.28	40.46	40.24	54	-13.76	AV
operation frequency:5240									
V	5350	53.25	49.13	15.32	37.46	56.9	74	-17.1	PK
V	5350	36.14	49.13	15.32	37.46	39.79	54	-14.21	AV
V	5370	50.13	49.24	15.36	40.51	56.76	74	-17.24	PK
V	5370	33.98	49.24	15.36	40.51	40.61	54	-13.39	AV
H	5350	53.41	49.13	15.32	31.31	50.91	74	-23.09	PK
H	5350	40.66	49.13	15.32	31.31	38.16	54	-15.84	AV
H	5370	51.85	49.24	15.36	40.51	58.48	74	-15.52	PK
H	5370	35.44	49.24	15.36	40.51	42.07	54	-11.93	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.

802.11n HT40

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:5190									
V	5150	52.36	49.12	15.6	37.39	56.23	74	-17.77	PK
V	5150	35.54	49.12	15.6	37.39	39.41	54	-14.59	AV
V	5145	51.63	49.19	15.24	40.45	58.13	74	-15.87	PK
V	5145	34.47	49.19	15.24	40.45	40.97	54	-13.03	AV
H	5150	52.55	49.12	15.6	37.39	56.42	74	-17.58	PK
H	5150	34.14	49.12	15.6	37.39	38.01	54	-15.99	AV
H	5145	50.59	49.19	15.24	40.45	57.09	74	-16.91	PK
H	5145	35.64	49.19	15.24	40.45	42.14	54	-11.86	AV
operation frequency:5230									
V	5350	53.65	49.13	15.34	37.46	57.32	74	-16.68	PK
V	5350	37.39	49.13	15.34	37.46	41.06	54	-12.94	AV
V	5370	50.12	49.24	15.35	40.51	56.74	74	-17.26	PK
V	5370	36.33	49.24	15.35	40.51	42.95	54	-11.05	AV
H	5350	54.97	49.13	15.34	31.31	52.49	74	-21.51	PK
H	5350	41.29	49.13	15.34	31.31	38.81	54	-15.19	AV
H	5370	52.14	49.24	15.35	40.51	58.76	74	-15.24	PK
H	5370	36.49	49.24	15.35	40.51	43.11	54	-10.89	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.

802.11ac HT40

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:5190									
V	5150	52.95	49.12	15.32	37.41	56.56	74	-17.44	PK
V	5150	37.12	49.12	15.32	37.41	40.73	54	-13.27	AV
V	5145	52.94	49.19	15.36	40.46	59.57	74	-14.43	PK
V	5145	36.32	49.19	15.36	40.46	42.95	54	-11.05	AV
H	5150	52.88	49.12	15.32	37.41	56.49	74	-17.51	PK
H	5150	37.36	49.12	15.32	37.41	40.97	54	-13.03	AV
H	5145	51.15	49.19	15.36	40.46	57.78	74	-16.22	PK
H	5145	36.37	49.19	15.36	40.46	43	54	-11	AV
operation frequency:5230									
V	5350	54.63	49.13	15.34	37.34	58.18	74	-15.82	PK
V	5350	36.55	49.13	15.34	37.34	40.1	54	-13.9	AV
V	5370	51.53	49.24	15.35	40.43	58.07	74	-15.93	PK
V	5370	36.96	49.24	15.35	40.43	43.5	54	-10.5	AV
H	5350	54.63	49.13	15.34	37.34	58.18	74	-15.82	PK
H	5350	41.24	49.13	15.34	37.34	44.79	54	-9.21	AV
H	5370	50.86	49.24	15.35	40.43	57.4	74	-16.6	PK
H	5370	35.17	49.24	15.35	40.43	41.71	54	-12.29	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.

3.3 CONDUCTED BAND EMISSION MEASUREMENT

3.3.1 TEST REQUIREMENT:

FCC Part15 C Section 15.209 and 15.407

(1) For transmitters operating in the 5.15-5.25 GHz band: All emissions outside of the 5.15-5.35 GHz band shall not exceed an e.i.r.p. of −27 dBm/MHz.
(4) For transmitters operating in the 5.725-5.85 GHz band: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

Spectrum Parameter	Setting	
Attenuation	Auto	
Start Frequency	5150MHz	5725MHz
Stop Frequency	5250MHz	5850MHz
RB / VB (emission in restricted band)	1 MHz / 3 MHz for Peak, 1 MHz / 10Hz for Average	

3.3.2 TEST PROCEDURE

Test method: FCC KDB 789033 G)& Parts 15.407(b)(4) & 15.209(a)

3.3.3 DEVIATION FROM TEST STANDARD

No deviation

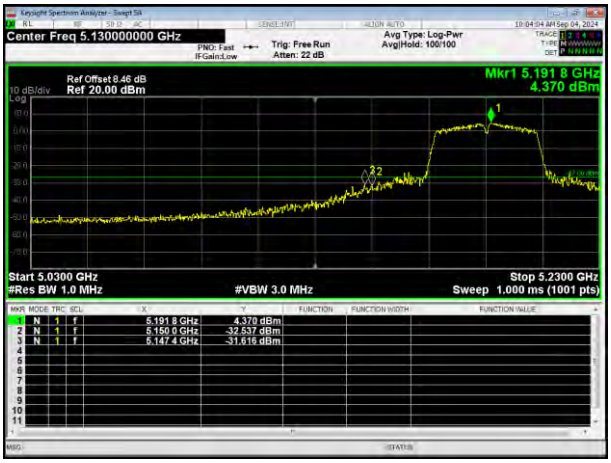
3.3.4 TEST SETUP

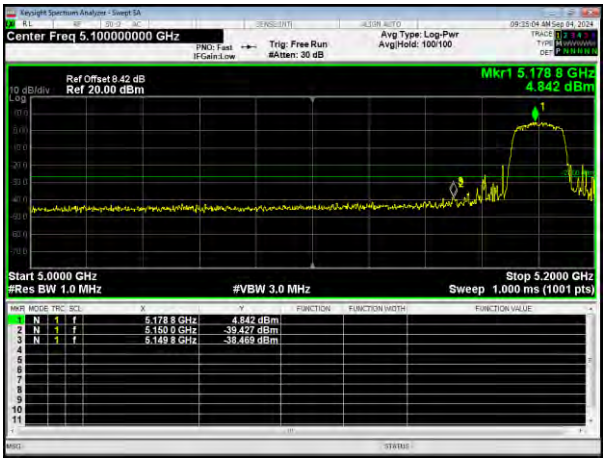
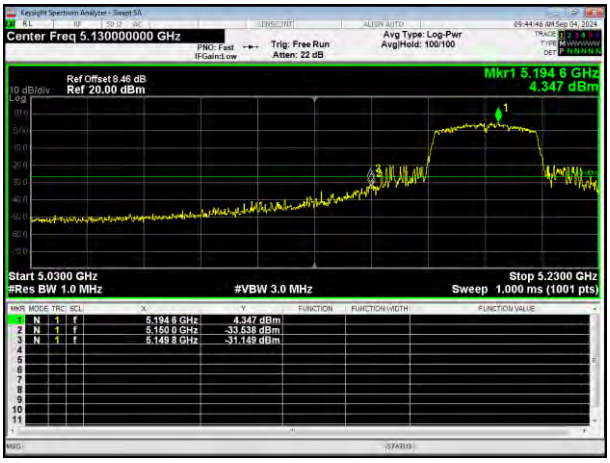
3.3.5 EUT OPERATING CONDITIONS

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.

3.3.6 TEST RESULT

The antenna gain is compensated in the test data.

802.11a	
5180MHz	5240MHz
802.11ac HT20	
5180MHz	5240MHz
802.11ac HT40	
	
5190MHz	5230MHz

802.11n HT20	
	
5180MHz	5240MHz
802.11n HT40	
	
5190MHz	5230MHz

802.11a

5745MHz

5825MHz

802.11ac HT20

5745MHz

5825MHz

802.11ac HT40

5755MHz

5795MHz

802.11n HT20	
5745MHz	5825MHz
802.11n HT40	
5755MHz	5795MHz

4. AVERAGING OUTPUT POWER

4.1 APPLIED PROCEDURES / LIMIT

For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.
For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.

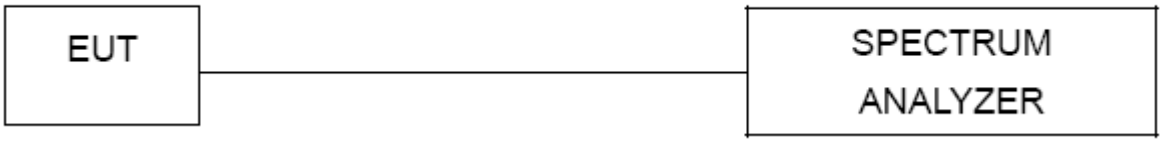
4.1.1 TEST PROCEDURE

a. The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
b. Spectrum Setting : RBW = 1MHz
Span≥99%OBW(30MHz/60MHz/120MHz etc.)
VBW≥3*RBW
Sweep = auto
Detector function = RMS (i.e., power averaging), if available. Otherwise, use sample detector mode.
Trace = max hold

4.1.2 DEVIATION FROM STANDARD

No deviation.

4.1.3 TEST SETUP



4.1.4 EUT OPERATION CONDITIONS

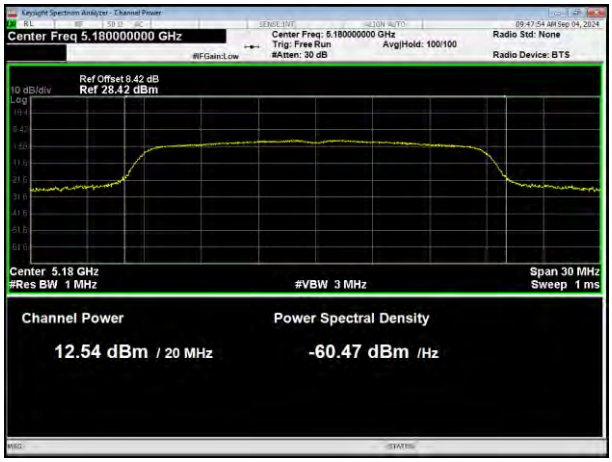
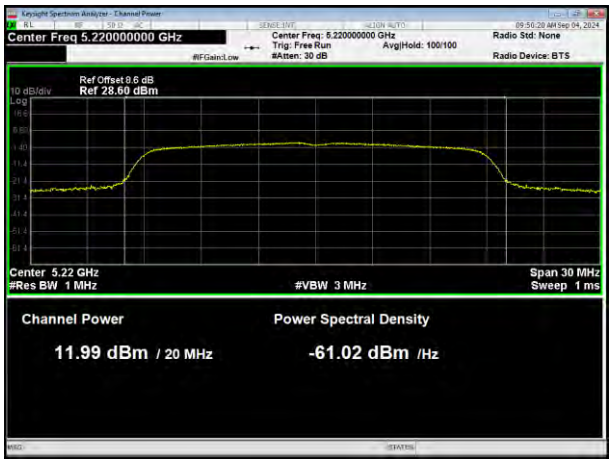
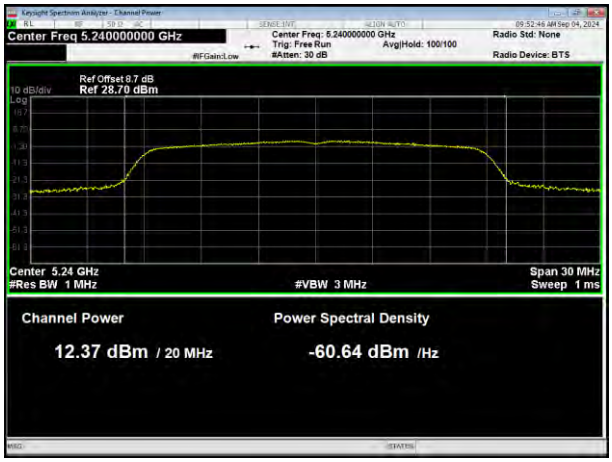
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

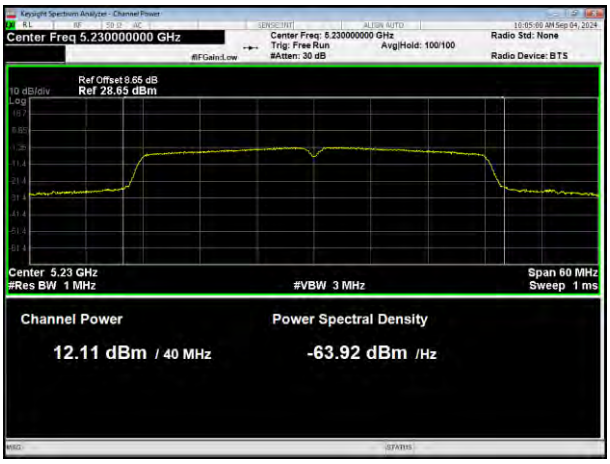
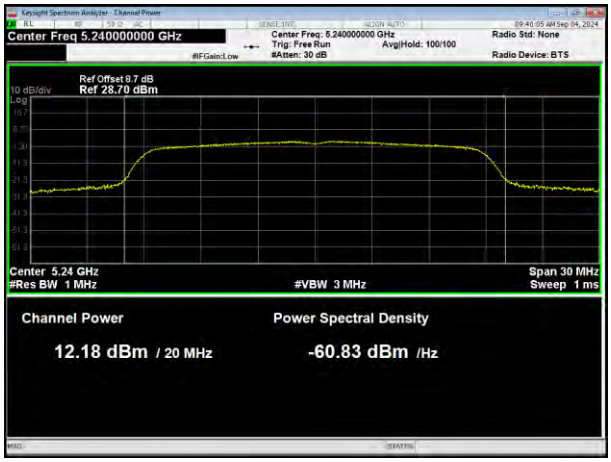
4.1.5 TEST RESULTS

Temperature:	25 ℃	Relative Humidity:	60%
Pressure:	1012 hPa	Test Voltage :	AC 120V/60Hz

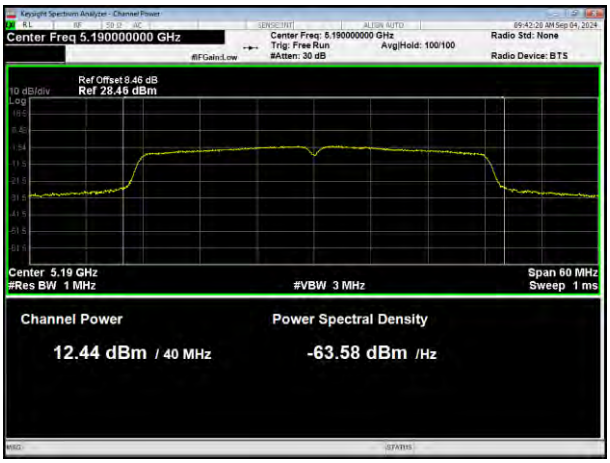
Band	Mode	Test Channel	Average Output Power (dBm)	Duty factor (dB)	Total Output Power(dB)	LIMIT (dBm)
Band 1	802.11a	Low	12.009	1.12	13.129	23.98
		Middle	11.268	1.12	12.388	23.98
		High	11.612	1.12	12.732	23.98
	802.11ac HT20	Low	12.537	0.13	12.667	23.98
		Middle	11.989	0.13	12.119	23.98
		High	12.373	0.13	12.503	23.98
	802.11ac HT40	Low	12.622	0.26	12.882	23.98
		High	12.105	0.26	12.365	23.98
	802.11n HT20	Low	12.376	0.13	12.506	23.98
		Middle	11.978	0.13	12.108	23.98
		High	12.18	0.13	12.31	23.98
	802.11n HT40	Low	12.439	0.26	12.699	23.98
		High	11.878	0.26	12.138	23.98

Band	Mode	Test Channel	Average Output Power (dBm)	Duty factor (dB)	Total Output Power(dB)	LIMIT (dBm)
Band 4	802.11a	Low	13.434	0.87	14.304	30
		Middle	12.59	0.87	13.46	30
		High	12.904	0.87	13.774	30
	802.11ac HT20	Low	14.036	0.13	14.166	30
		Middle	13.096	0.13	13.226	30
		High	13.675	0.13	13.805	30
	802.11ac HT40	Low	13.852	0.26	14.112	30
		High	13.536	0.26	13.796	30
	802.11n HT20	Low	14.217	0.13	14.347	30
		Middle	13.303	0.13	13.433	30
		High	13.61	0.13	13.74	30
	802.11n HT40	Low	13.894	0.26	14.154	30
		High	13.564	0.26	13.824	30

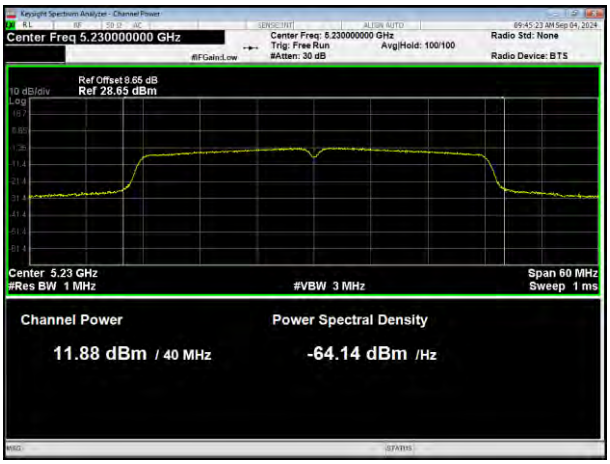
802.11a	802.11ac HT20
	
5180MHz	5180MHz
	
5200MHz	5200MHz
	
5240MHz	5240MHz

802.11ac HT40	802.11n HT20
5190MHz	5180MHz
	
5230MHz	5200MHz
	
	5240MHz

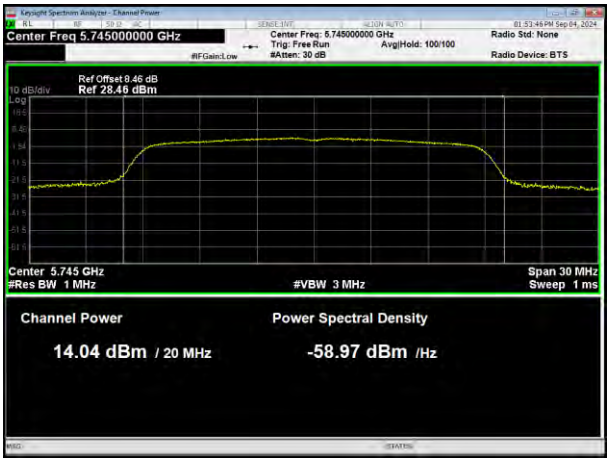
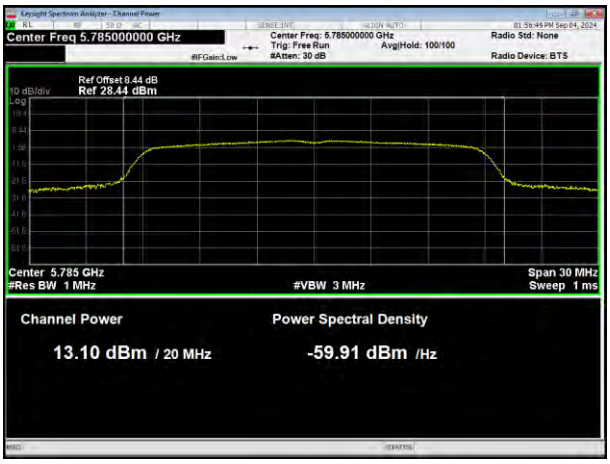
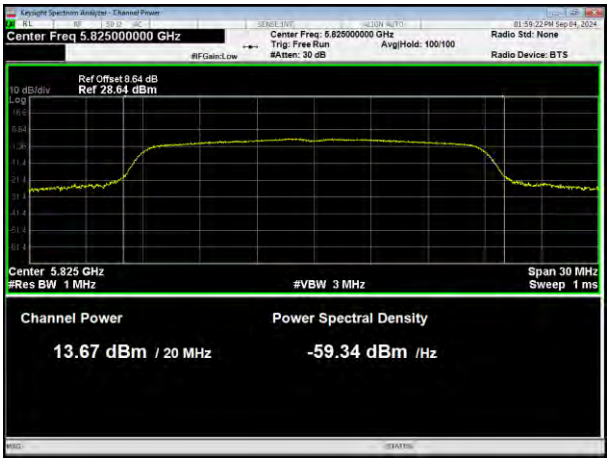
802.11n HT40

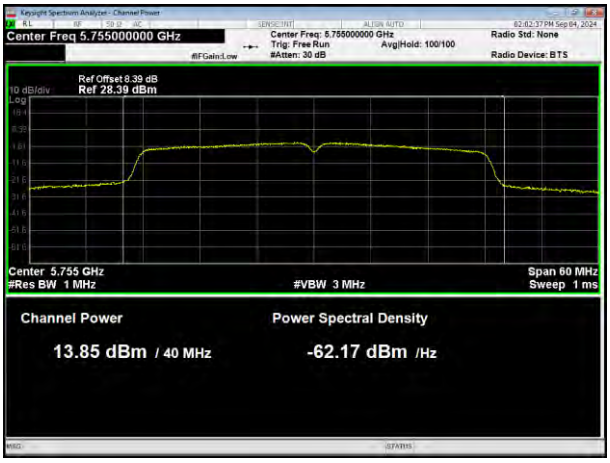
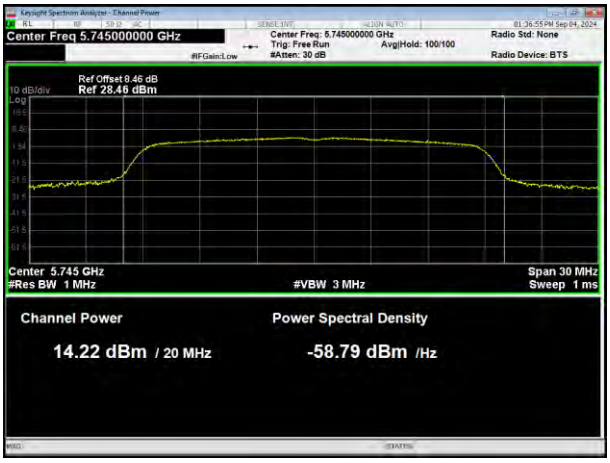
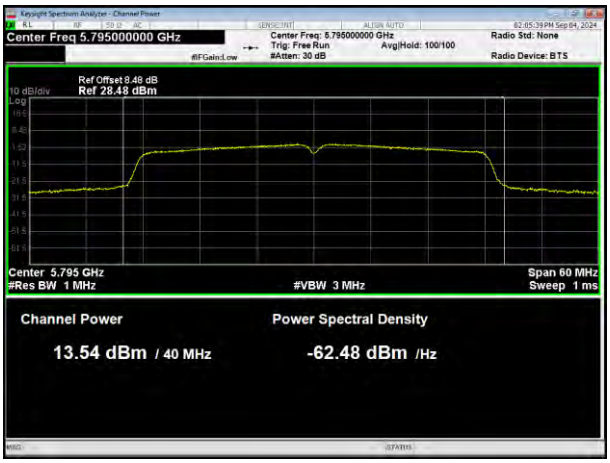
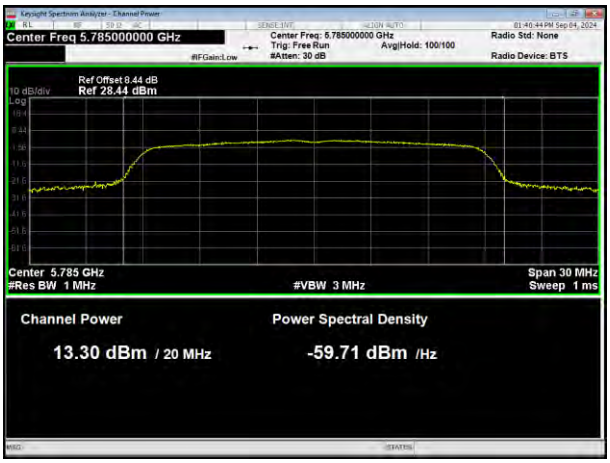
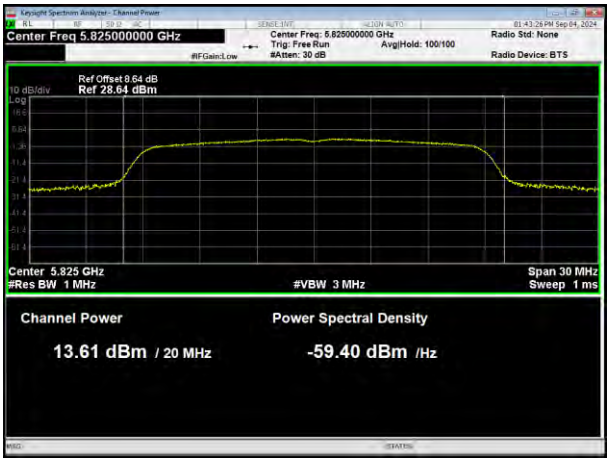


5190MHz



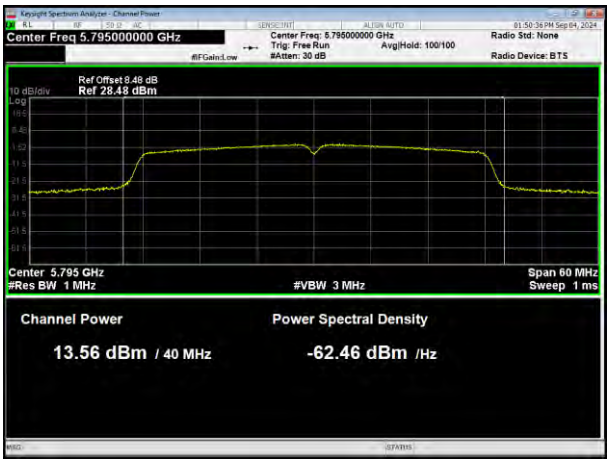
5230MHz

802.11a	802.11ac HT20
	
5745MHz	5745MHz
	
5785MHz	5785MHz
	
5825MHz	5825MHz

802.11ac HT40	802.11n HT20
	
5755MHz	5745MHz
	
5795MHz	5785MHz
	
	5825MHz

802.11n HT40

5755MHz



5795MHz

5. POWER SPECTRAL DENSITY TEST

5.1 APPLIED PROCEDURES / LIMIT

In addition, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.
In addition, the maximum power spectral density shall not exceed 30 dBm in any 500 kHz band.

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	= the frequency band of operation
RB	RBW = 1MHz for band 1 RBW = 510KHz for band 4
VB	VBW ≥ 3RBW
Detector	RMS (i.e., power averaging).
Trace	Averaging
Sweep Time	Auto

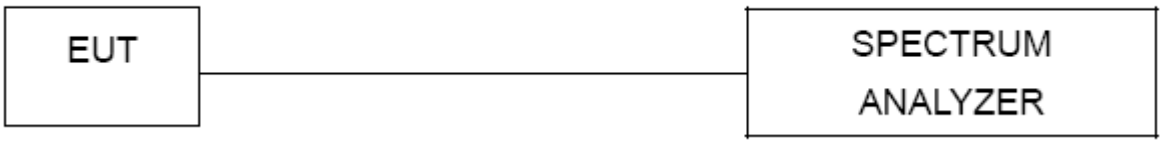
5.1.1 TEST PROCEDURE

1. Place the EUT on the table and set it in transmitting mode.
2. The testing follows FCC KDB 789033 D02.
3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to Spectrum.
4. For U-NII1, U-NII-2A, U-NII-2C Band:
Set RBW=1MHz, VBW=3MHz, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)
For U-NII-3 Band:
Set RBW=510 kHz, VBW=3*RBW, where span is enough to capture the entire bandwidth, Sweep time = Auto (601 pts), detector = sample, traces 100 sweeps of video averaging. (SA-2 with the omission of procedure x, the integration with 26dB EBW bandwidth)
5. User the cursor on spectrum to peak search the highest level of trace
6. Record the max. reading and add 10 log(1/duty cycle).
   we test all antennas, the antenna 1 was worst mode and the data recording in the report.
7. Duty factor Reference is made to the test results in Section 7.1.5.

5.1.2 DEVIATION FROM STANDARD

No deviation.

5.1.3 TEST SETUP



5.1.4 EUT OPERATION CONDITIONS

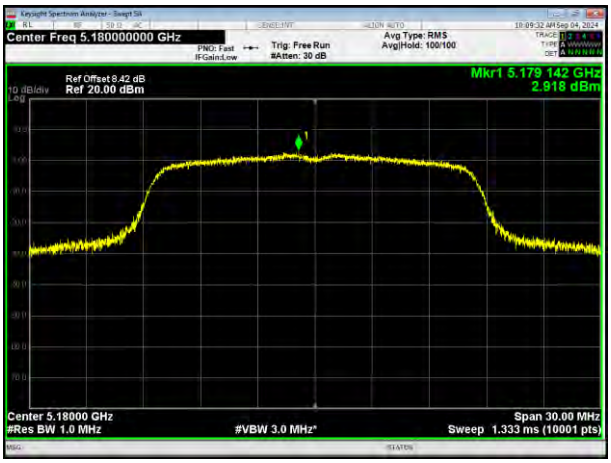
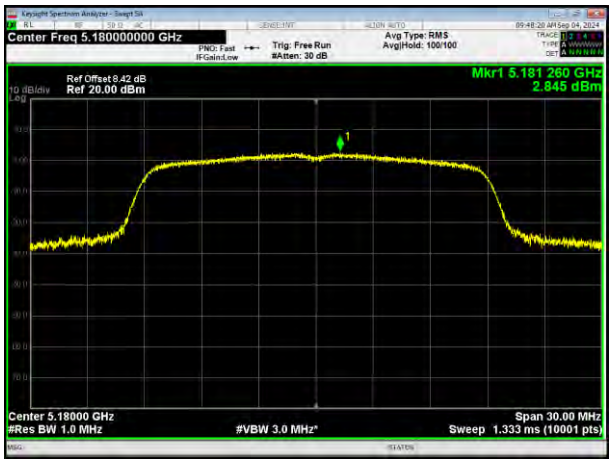
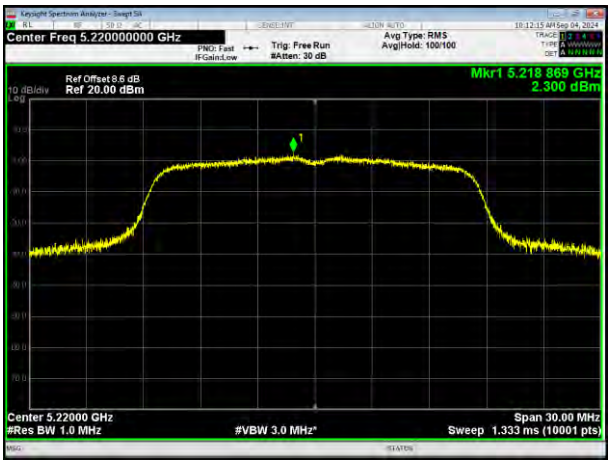
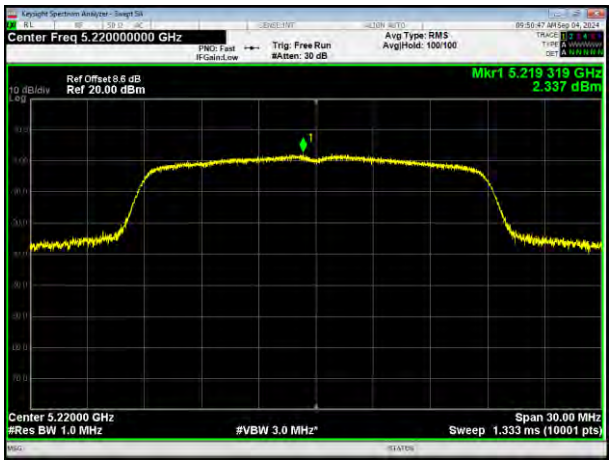
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

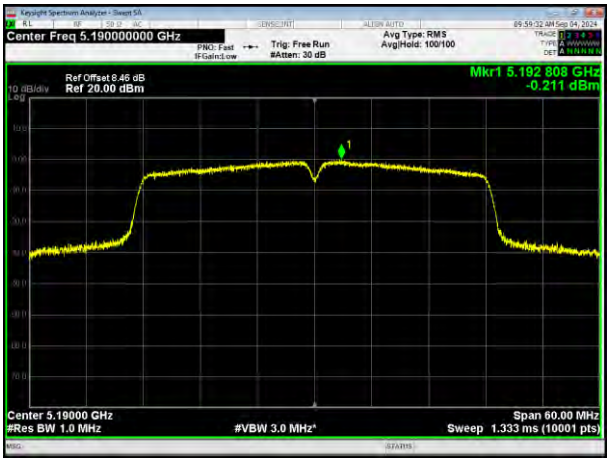
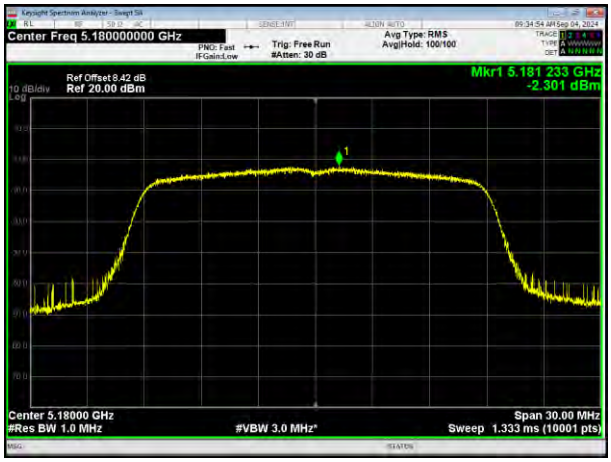
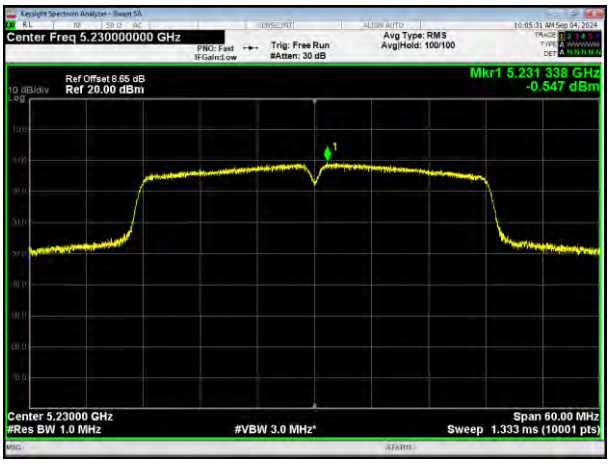
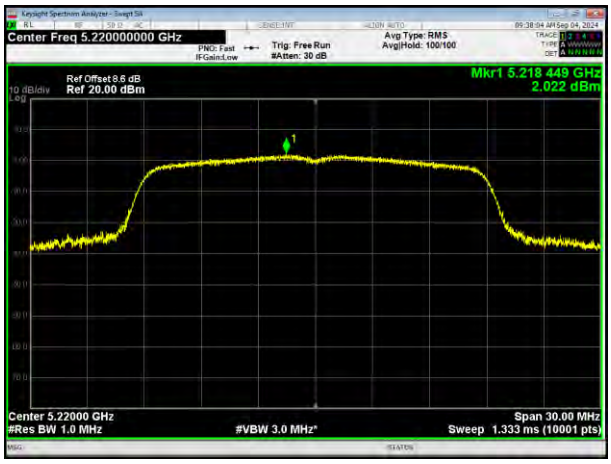
5.1.5 TEST RESULTS

	Mode	Test Channel	Reading Level (dBm/MHz)	Duty factor (dB)	PSD (dBm/MHz)	Limit (dBm)	Result
Band1	802.11a	Low	2.918	1.12	4.038	11.00	PASS
		Middle	2.3	1.12	3.42	11.00	PASS
		High	2.285	1.12	3.405	11.00	PASS
	802.11ac20	Low	2.845	0.13	2.975	11.00	PASS
		Middle	2.337	0.13	2.467	11.00	PASS
		High	2.627	0.13	2.757	11.00	PASS
	802.11ac40	Low	-0.211	0.26	0.049	11.00	PASS
		High	-0.547	0.26	-0.287	11.00	PASS
	802.11n20	Low	-2.301	0.13	-2.171	11.00	PASS
		Middle	2.022	0.13	2.152	11.00	PASS
		High	2.288	0.13	2.418	11.00	PASS
	802.11n40	Low	-0.271	0.26	-0.011	11.00	PASS
		High	-0.733	0.26	-0.473	11.00	PASS

	Mode	Test Channel	Reading Level (dBm/ 510kHz)	Duty factor (dB)	RB factor (dB)	PSD (dBm/ 500kHz)	Limit (dBm/ 500kHz)	Result
Band4	802.11a	Low	1.191	0.87	0.09	1.971	30.00	PASS
		Middle	0.452	0.87	0.09	1.232	30.00	PASS
		High	0.614	0.87	0.09	1.394	30.00	PASS
	802.11ac20	Low	1.209	0.13	0.09	1.249	30.00	PASS
		Middle	0.243	0.13	0.09	0.283	30.00	PASS
		High	0.965	0.13	0.09	1.005	30.00	PASS
	802.11ac40	Low	-1.956	0.26	0.09	-1.786	30.00	PASS
		High	-2.142	0.26	0.09	-1.972	30.00	PASS
	802.11n20	Low	1.408	0.13	0.09	1.448	30.00	PASS
		Middle	0.581	0.13	0.09	0.621	30.00	PASS
		High	0.95	0.13	0.09	0.99	30.00	PASS
	802.11n40	Low	-1.646	0.26	0.09	-1.476	30.00	PASS
		High	-1.765	0.26	0.09	-1.595	30.00	PASS

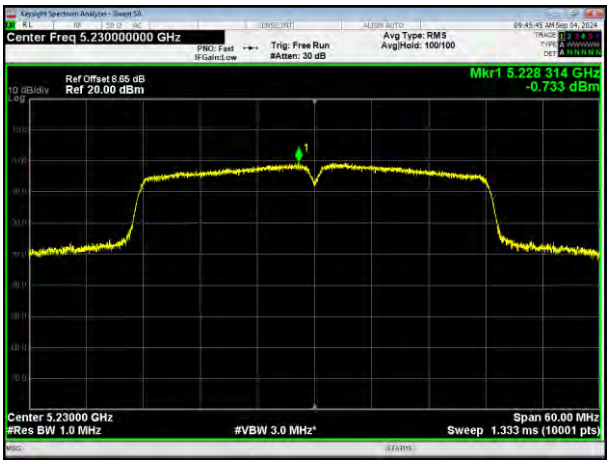
Note: RB factor=10log(510/500k)

802.11a	802.11ac HT20
	
5180MHz	5180MHz
	
5200MHz	5200MHz
5240MHz	5240MHz

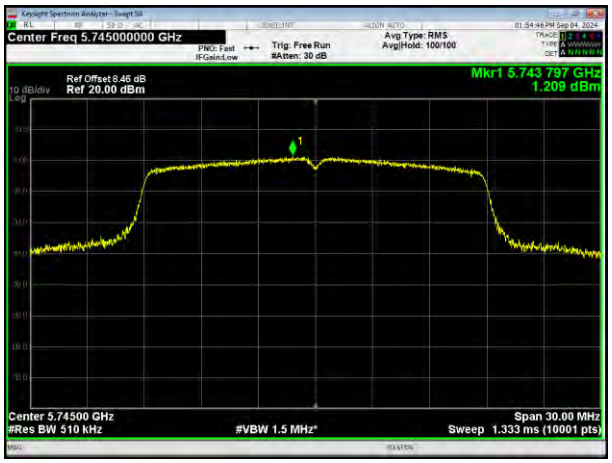
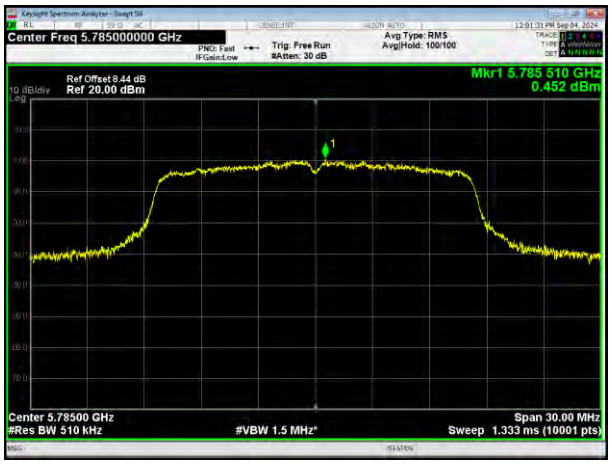
802.11ac HT40	802.11n HT20
	
5190MHz	5180MHz
	
5230MHz	5200MHz
	5240MHz

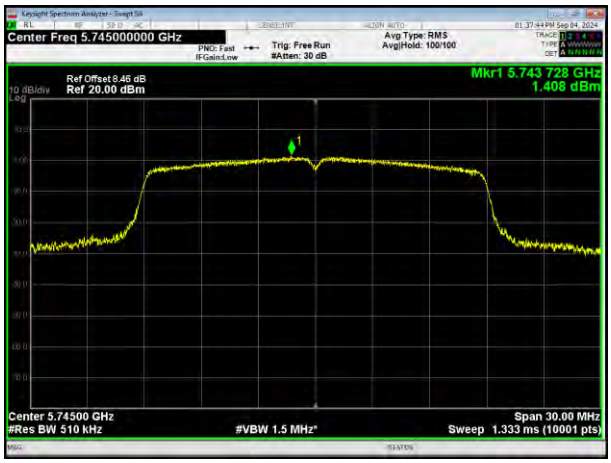
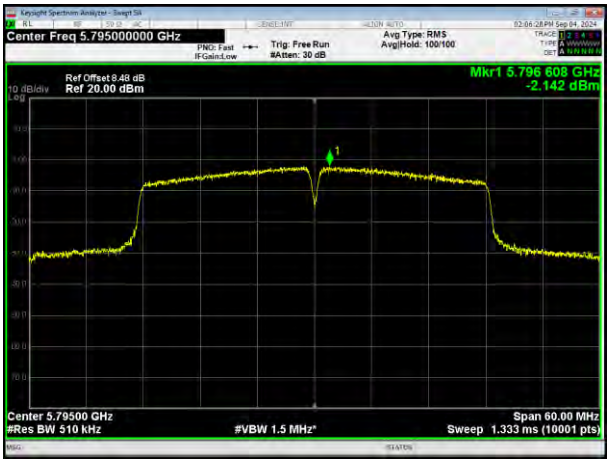
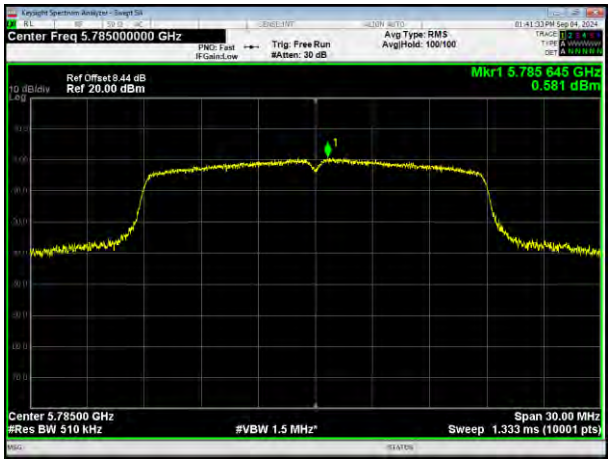
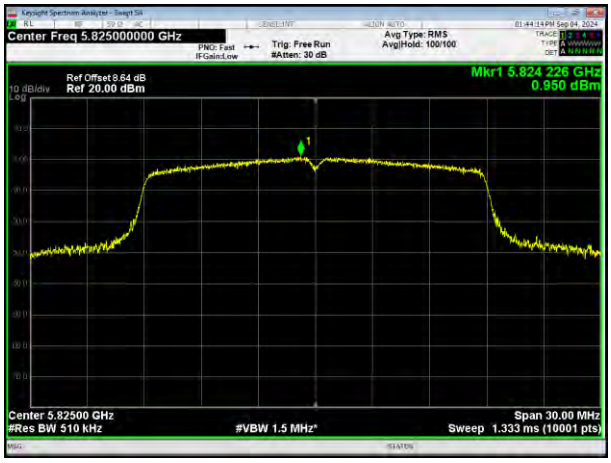
802.11n HT40

5190MHz

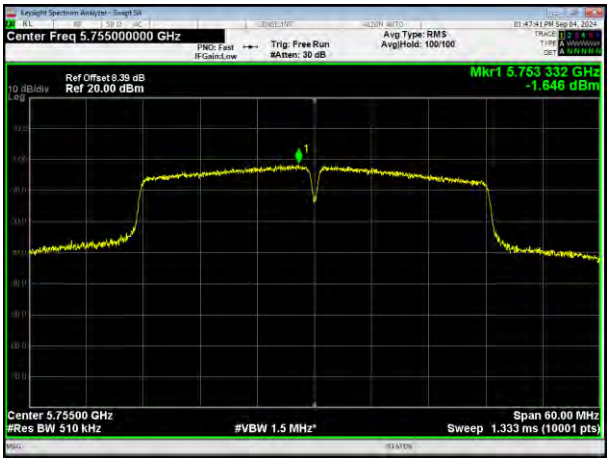


5230MHz

802.11a	802.11ac HT20
	
5745MHz	5745MHz
	
5785MHz	5785MHz
5825MHz	5825MHz

802.11ac HT40	802.11n HT20
	
5755MHz	5745MHz
	
5795MHz	5785MHz
	
	5825MHz

802.11n HT40



5755MHz

5795MHz

6. 6DB&26DB&99% BANDWIDTH TEST

6.1 APPLIED PROCEDURES / LIMIT

The 26 dB bandwidth is used to determine the conducted power limits. There is no limit bandwidth for U-NII-1, U-NII-2-A and U-NII-2-C. The minimum of 6dB Bandwidth measurement is 0.5 MHz for U-NII-3

6.1.1 TEST PROCEDURE

6dB Bandwidth	
Spectrum Parameters	Setting
RBW	100KHz
VBW	300KHz
Span	30MHz(20MHz Bandwidth mode) 60MHz(40MHz Bandwidth mode) 120MHz(80MHz Bandwidth mode)
Sweep Time	Auto
Detector	Peak
Trace Mode	Max Hold

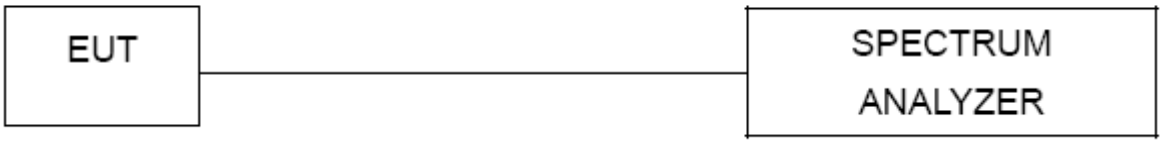
26dB Bandwidth	
Spectrum Parameters	Setting
RBW	approximately 1% of the emission bandwidth
VBW	>RBW
Span	30MHz(20MHz Bandwidth mode) 60MHz(40MHz Bandwidth mode) 120MHz(80MHz Bandwidth mode)
Sweep Time	Auto
Detector	Peak
Trace Mode	Max Hold

99% Occupied Bandwidth	
Spectrum Parameters	Setting
RBW	1% to 5% of the OBW
VBW	Approximately three times the RBW
Span	between 1.5 times and 5.0 times the OBW
Sweep Time	Auto
Detector	Peak
Trace Mode	Max Hold

6.1.2 DEVIATION FROM STANDARD

No deviation.

6.1.3 TEST SETUP



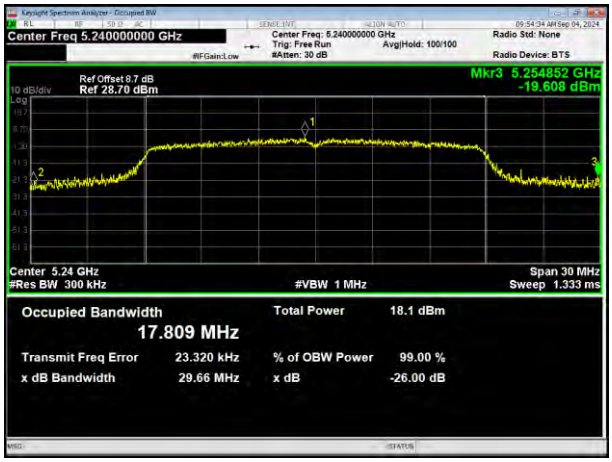
6.1.4 EUT OPERATION CONDITIONS

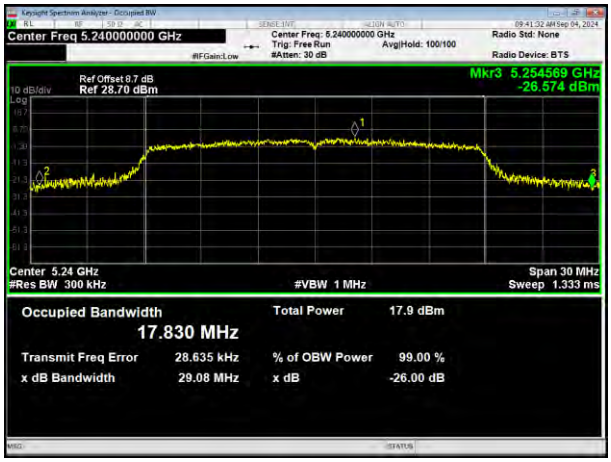
The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

6.1.5 TEST RESULTS

		Test Channel	26dB Bandwidth (MHz)	Result
Band 1	802.11a	Low	27.251	Pass
		Middle	25.348	Pass
		High	27.437	Pass
	802.11ac HT20	Low	28.941	Pass
		Middle	29.443	Pass
		High	29.658	Pass
	802.11ac HT40	Low	58.949	Pass
		High	59.023	Pass
	802.11n HT20	Low	20.398	Pass
		Middle	29.557	Pass
		High	29.08	Pass
	802.11n HT40	Low	58.648	Pass
		High	58.917	Pass

		Test Channel	6dB Bandwidth (MHz)	6dB Bandwidth Limit (MHz)	Result
Band 4	802.11a	Low	15.378	>0.5	Pass
		Middle	15.192	>0.5	Pass
		High	15.1	>0.5	Pass
	802.11ac HT20	Low	15.127	>0.5	Pass
		Middle	15.41	>0.5	Pass
		High	15.321	>0.5	Pass
	802.11ac HT40	Low	35.087	>0.5	Pass
		High	33.743	>0.5	Pass
	802.11n HT20	Low	16.505	>0.5	Pass
		Middle	15.063	>0.5	Pass
		High	13.879	>0.5	Pass
	802.11n HT40	Low	35.071	>0.5	Pass
		High	35.064	>0.5	Pass

802.11a	802.11ac HT20
5180MHz	5180MHz
5200MHz	5200MHz
	
5240MHz	5240MHz

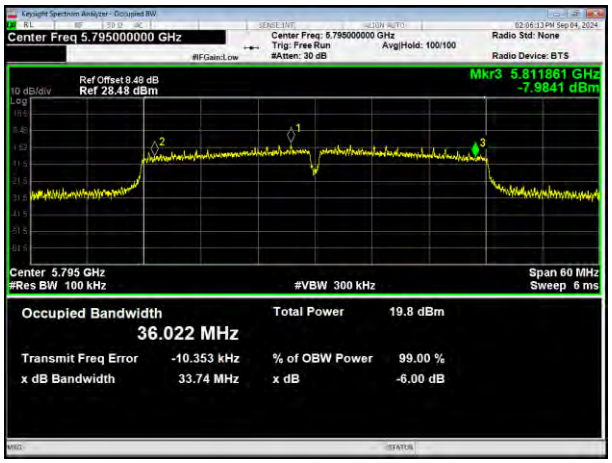
802.11ac HT40	802.11n HT20
5190MHz	5180MHz
5230MHz	5200MHz
	
	5240MHz

802.11n HT40

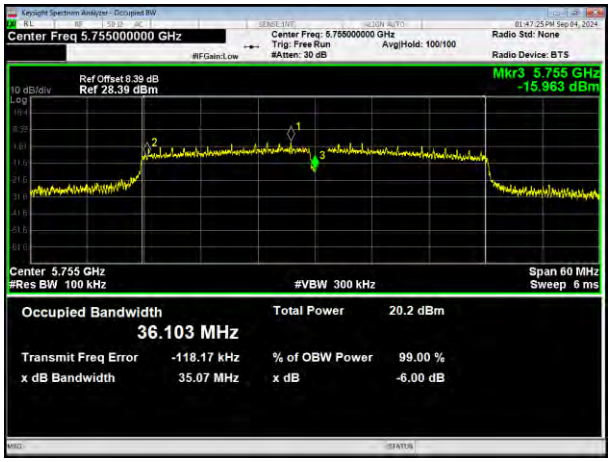
5190MHz

5230MHz

802.11a	802.11ac HT20
5745MHz	5745MHz
5785MHz	5785MHz
5825MHz	5825MHz

802.11ac HT40	802.11n HT20
5755MHz	5745MHz
	
5795MHz	5785MHz
	5825MHz

802.11n HT40



5755MHz

5795MHz

7. DUTY CYCLE TEST SIGNAL

7.1 APPLIED PROCEDURES / LIMIT

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle. All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

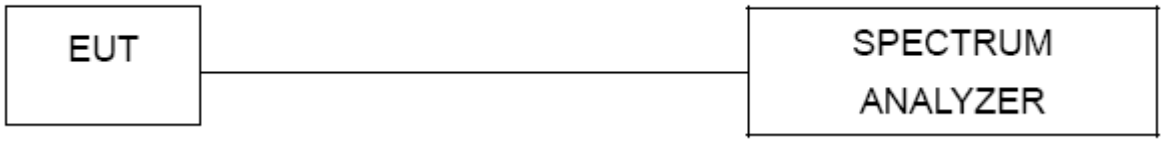
7.1.1 TEST PROCEDURE

1. Set RBW = 1 MHz.
2. Set the video bandwidth (VBW) ≥RBW.
3. Detector = Peak.
4. Sweep = auto couple.
5. Allow the trace to stabilize.
6. Span=0

7.1.2 DEVIATION FROM STANDARD

No deviation.

7.1.3 TEST SETUP



7.1.4 EUT OPERATION CONDITIONS

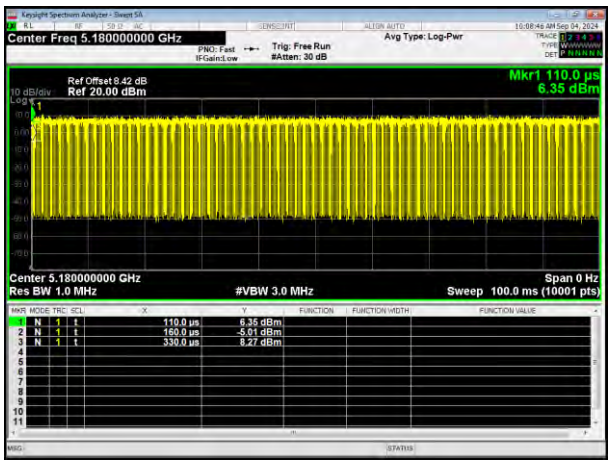
The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

7.1.5 TEST RESULTS

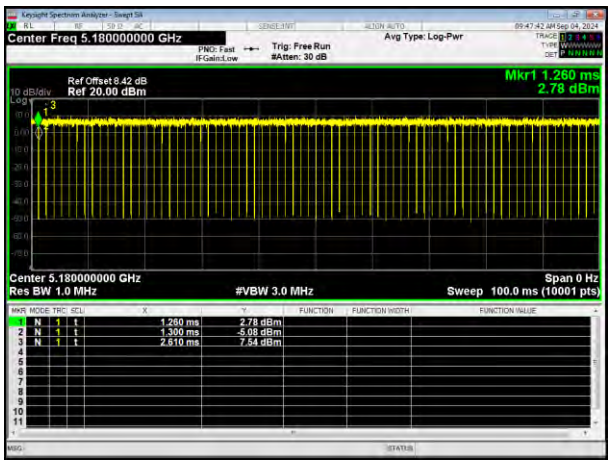
Operation Mode		Duty Cycle(%)	Duty Fator (dB) 10 * log (1/ Duty cycle)
Band 1	802.11a	77.27	1.12
	802.11ac(HT20)	97.04	0.13
	802.11ac(HT40)	94.29	0.26
	802.11n(HT20)	97.01	0.13
	802.11n(HT40)	94.2	0.26

Operation Mode		Duty Cycle(%)	Duty Fator (dB) 10 * log (1/ Duty cycle)
Band 4	802.11a	81.82	0.87
	802.11ac(HT20)	97.06	0.13
	802.11ac(HT40)	94.2	0.26
	802.11n(HT20)	97.04	0.13
	802.11n(HT40)	94.2	0.26

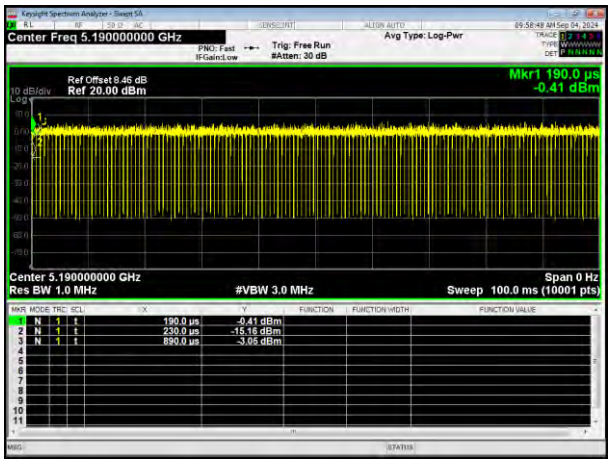
802.11a



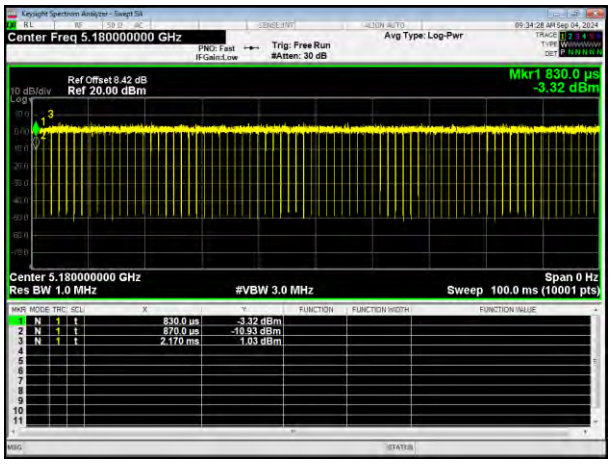
802.11ac HT20



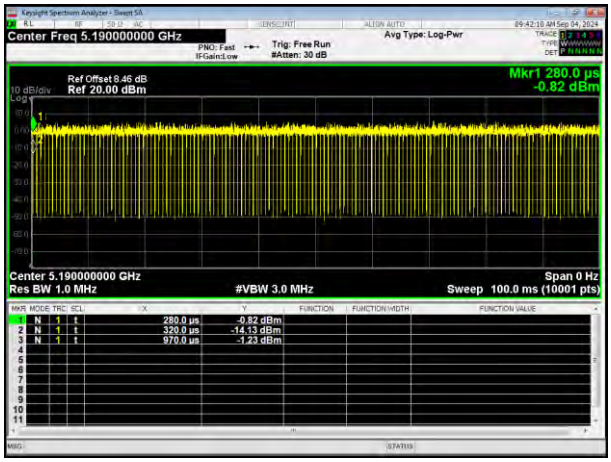
802.11ac HT40

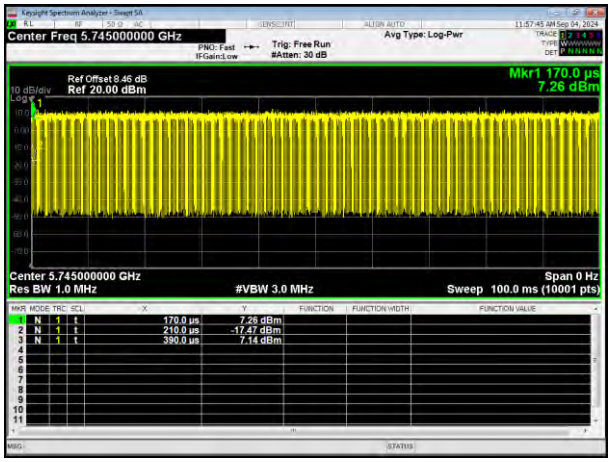
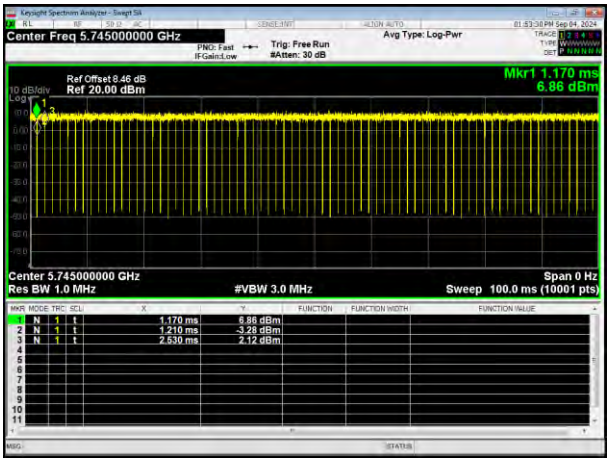


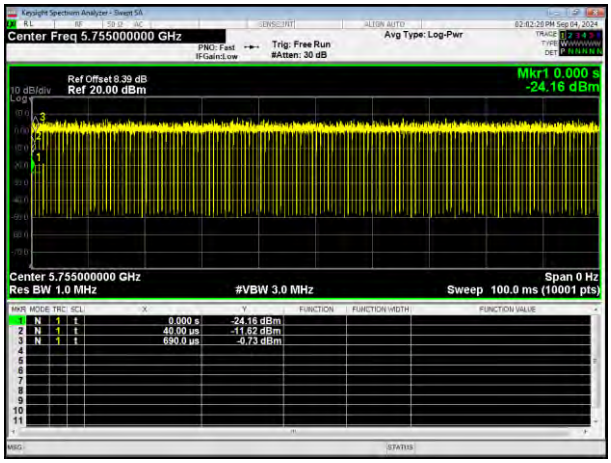
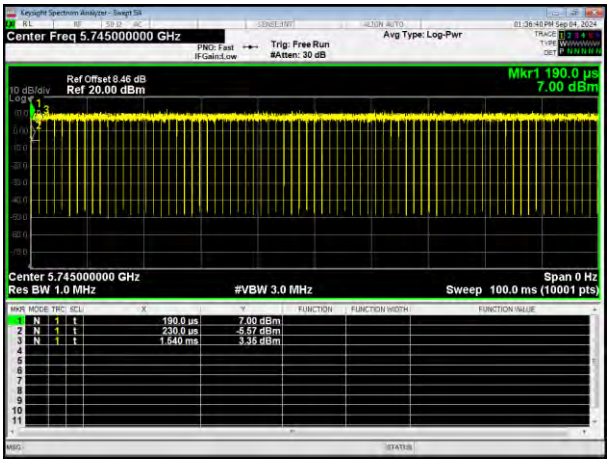
802.11n HT20

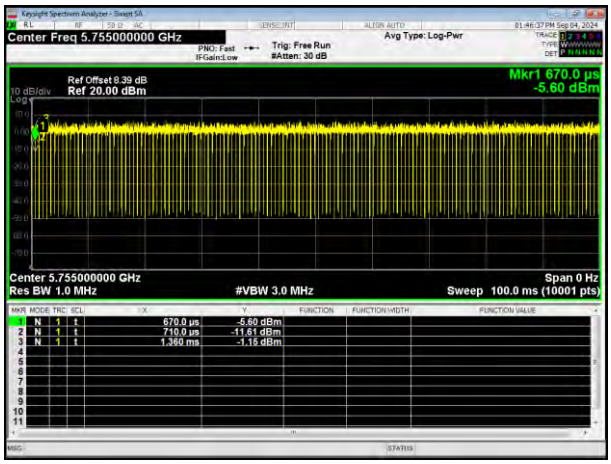


802.11n HT40



802.11a	802.11ac HT20
	

802.11ac HT40	802.11n HT20
	

802.11n HT40	
	

8. FREQUENCY STABILITY

8.1 APPLIED PROCEDURES / LIMIT

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

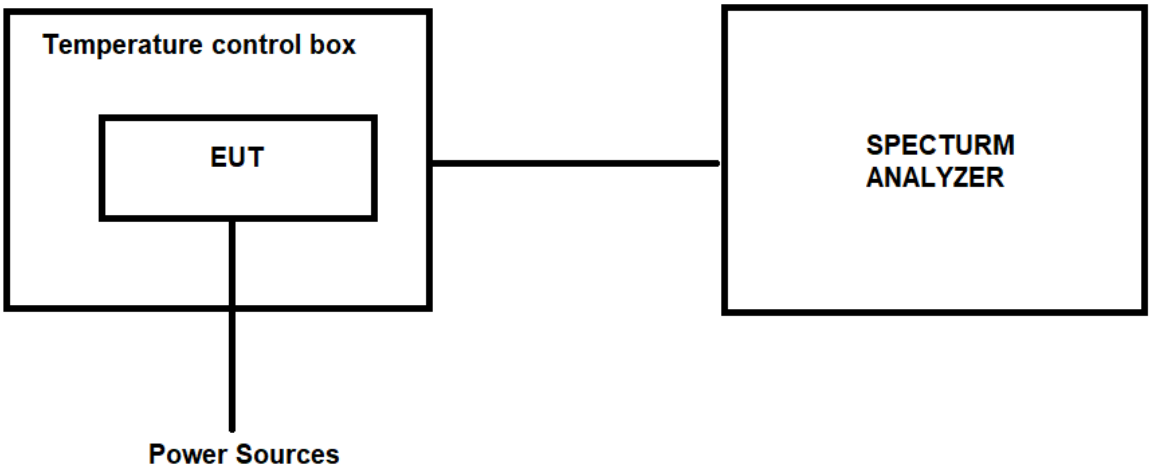
8.1.1 TEST PROCEDURE

1. The EUT was placed inside temperature chamber and powered and powered by nominal DC voltage.
2. Set EUT as normal operation.
3. Turn the EUT on and couple its output to spectrum.
4. Turn the EUT off and set the chamber to the highest temperature specified.
5. Allow sufficient time (approximately 30 min) for the temperature of the chamber to stabilize, turn the EUT and measure the operating frequency.
6. Repeat step with the temperature chamber set to the lowest temperature.

8.1.2 DEVIATION FROM STANDARD

No deviation.

8.1.3 TEST SETUP



8.1.4 EUT OPERATION 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.

8.1.5 TEST RESULTS

Test Voltage	Test Temp.	Measured Frequency (MHz)	Spectrum Frequency (MHz) 802.11a	802.11n HT20	802.11ac HT20	Δ Frequency (PPM) 802.11a	802.11n HT20	802.11ac HT20
132V	-20℃	5180	5180.0369	5180.0396	5180.0314	7.1236	7.6448	6.0618
		5220	5220.0352	5220.0324	5220.0336	6.7433	6.2069	6.4368
		5240	5240.0214	5240.0222	5240.0214	4.0840	4.2366	4.0840
		5745	5745.0354	5745.0396	5745.0327	6.1619	6.8930	5.6919
		5785	5785.0396	5785.0314	5785.0356	6.8453	5.4278	6.1538
		5825	5825.0314	5825.0352	5825.0365	5.3906	6.0429	6.2661
108V		5180	5180.0252	5180.0244	5180.0254	4.8649	4.7104	4.9035
		5220	5220.0318	5220.0363	5220.0352	6.0920	6.9540	6.7433
		5240	5240.0241	5240.0245	5240.0227	4.5992	4.6756	4.3321
		5745	5745.0269	5745.0225	5745.0263	4.6823	3.9164	4.5779
		5785	5785.0341	5785.0363	5785.0355	5.8946	6.2748	6.1366
		5825	5825.0417	5825.0441	5825.0412	7.1588	7.5708	7.0730
120V	25℃	5180	5180.0526	5180.0513	5180.0563	10.1544	9.9035	10.8687
		5220	5220.0268	5220.0239	5220.0244	5.1341	4.5785	4.6743
		5240	5240.0352	5240.0314	5240.0367	6.7176	5.9924	7.0038
		5745	5745.0354	5745.0322	5745.0325	6.1619	5.6049	5.6571
		5785	5785.0436	5785.0436	5785.0466	7.5367	7.5367	8.0553
		5825	5825.0218	5825.0223	5825.0224	3.7425	3.8283	3.8455
132V	50℃	5180	5180.0352	5180.0314	5180.0367	6.7954	6.0618	7.0849
		5220	5220.0245	5220.0244	5220.0272	4.6935	4.6743	5.2107
		5240	5240.0396	5240.0352	5240.0353	7.5573	6.7176	6.7366
		5745	5745.0614	5745.0658	5745.0641	10.6876	11.4534	11.1575
		5785	5785.0428	5785.0426	5785.0443	7.3984	7.3639	7.6577
		5825	5825.0644	5825.0625	5825.0667	11.0558	10.7296	11.4506
108V	50℃	5180	5180.0336	5180.0322	5180.0344	6.4865	6.2162	6.6409
		5220	5220.0251	5220.0267	5220.0253	4.8084	5.1149	4.8467
		5240	5240.0317	5240.0353	5240.0324	6.0496	6.7366	6.1832
		5745	5745.0463	5745.0424	5745.0462	8.0592	7.3803	8.0418
		5785	5785.0254	5785.0257	5785.0248	4.3907	4.4425	4.2869
		5825	5825.0739	5825.0736	5825.0763	12.6867	12.6352	13.0987

Test Voltage	Test Temp.	Measured Frequency (MHz)	Spectrum Frequency (MHz)		Δ Frequency (PPM)	
			802.11n HT40	802.11ac HT40	802.11n HT40	802.11ac HT40
132V	-20℃	5190	5190.0225	5190.0254	4.3353	4.8940
		5230	5230.0336	5230.0336	6.4245	6.4245
		5755	5755.0574	5755.0585	9.9739	10.1651
		5795	5795.0652	5795.0664	11.2511	11.4582
108V		5190	5190.0264	5190.0256	5.0867	4.9326
		5230	5230.0346	5230.0348	6.6157	6.6539
		5755	5755.0233	5755.0663	4.0487	11.5204
		5795	5795.0451	5795.0444	7.7826	7.6618
120V	25℃	5190	5190.0252	5190.0223	4.8555	4.2967
		5230	5230.0676	5230.0655	12.9254	12.5239
		5755	5755.0255	5755.0214	4.4309	3.7185
		5795	5795.0568	5795.0534	9.8016	9.2148
132V	50℃	5190	5190.0663	5190.0656	12.7746	12.6397
		5230	5230.0564	5230.0585	10.7839	11.1855
		5755	5755.0467	5755.0484	8.1147	8.4101
		5795	5795.0326	5795.0335	5.6255	5.7808
108V	50℃	5190	5190.0584	5190.0565	11.2524	10.8863
		5230	5230.0352	5230.0349	6.7304	6.6730
		5755	5755.0358	5755.0363	6.2207	6.3076
		5795	5795.0485	5795.0488	8.3693	8.4211

9. TRANSMISSION IN THE ABSENCE OF DATA

9.1 STANDARD REQUIREMENT

According to §15.407(c)
The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude the transmission of control or signaling information or the use of repetitive codes used by certain digital technologies to complete frame or burst intervals. Applicants shall include in their application for equipment authorization a description of how this requirement is met.

9.2 TEST RESULT

No non-compliance noted:
Refer to the theory of operation.

10. ANTENNA REQUIREMENT

10.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 15.203: 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.

10.2 EUT ANTENNA

The EUT antenna is External Antenna, It comply with the standard requirement.

11. TEST SEUUP PHOTO

Reference to the appendix I for details.

12. EUT PHOTO

Reference to the appendix II for details.

※※※※※ **END OF REPORT** ※※※※※