FCC Part 15E Test Report
FCC ID: 2AJDD-IDIAGSF9S1

Applicant:	SHENZHEN FCAR TECHNOLOGY CO.,LTD
Address:	8th Floor, Chuangyi Building, No. 3025 Nanhai Ave., Nanshan, Shenzhen, Guangdong, China 518060
Manufacturer:	SHENZHEN FCAR TECHNOLOGY CO.,LTD
Address:	8th Floor, Chuangyi Building, No. 3025 Nanhai Ave., Nanshan, Shenzhen, Guangdong, China 518060
EUT:	Auto Diagnostic System
Trade Mark:	FCAR
Model Number:	F9S, F9S-D, F9S-G, F9S-W, F9S-M, F9S-E, F9S-N, F9S-A, F9S-L, F9S Pro
Date of Receipt:	Aug. 12, 2023
Test Date:	Aug. 12, 2023 - Aug. 24, 2023
Date of Report:	Aug. 24, 2023
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:	BTF230718R02503

Prepared (Test Engineer):	Pxing Huang	Pxing Huang
Reviewer (Supervisor):	Jack Bu	Jack Bu
Approved (Manager):	Jade Yang	Jade Yang

Shenzhen DL Testing Technology Co.,Ltd. Approved

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

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: 692225

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°C
7	Humidity	±2%
8	Bandwidth	±0.2MHz

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Product Name:	Auto Diagnostic System
Trademark	FCAR
Model No.:	F9S, F9S-D, F9S-G, F9S-W, F9S-M, F9S-E, F9S-N, F9S-A, F9S-L, F9S Pro
Model Difference	The product's different for model number and appearance color.
Operation Frequency:	5180-5240, 5745-5825MHz(802.11a/n(HT20)) 5190-5230, 5755-5795MHz(802.11n(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
Antenna Type:	Internal Antenna
Antenna gain:	2.32dBi
Power supply:	DC 12V from adapter DC 3.7V from battery
Adapter 1:	Manufacturer: GME Technology(Shenzhen) Co., Ltd. Model: GME24A-120200FXR Input: 100-240V~ 50-60Hz, 0.8A Output: 12.0V⎓2.0A 24.0W
Adapter 2:	Manufacturer: GME Technology(Shenzhen) Co., Ltd. Model: AW025WR-1200200C Input: 100-240V~ 50-60Hz, 0.8A Output: 12.0V⎓2.0A 24.0W

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)			
Channel	Frequency (MHz)	Channel	Frequency (MHz)
36	5180	44	5220
40	5200	48	5240

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

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

Channel List for 802.11n(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.

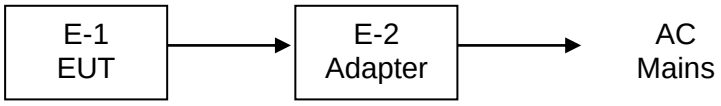
Description			
Pretest Mode	Channel	Band 1	Band 4
Mode 1	802.11a/n HT20	CH36, CH44, CH48	CH149, CH157, CH165
Mode 2	802.11n HT40	CH38, CH46	CH151, CH159
Mode 3	Link Mode		
Mode 4	Charging Mode		

For Radiated Emission			
Pretest Mode	Channel	Band 1	Band 4
Mode 1	802.11a/n HT20	CH36, CH44, CH48	CH149, CH157, CH165
Mode 2	802.11n HT40	CH38, CH46	CH151, CH159
Mode 3	Link Mode		
Mode 4	Charging 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 & Conducted Emission 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	Auto Diagnostic System	F9S	0023022	EUT
E-2	Adapter(provide by client)	GME24A-120200FXR	002304	

Item	Shielded Type	Ferrite Core	Length	Note
C1	No	No	0.5m	Mini USB Line

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: AP6xxx			
Mode	802.11a	802.11n HT20	802.11n HT40	
Data Rate	6Mbps	MSC0	MSC0	
Power Setting of Softwave	60	60	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. 05, 2022	Nov. 04, 2023
2	Test Receiver (9kHz-7GHz)	R&S	ESRP7	101393	Nov. 05, 2022	Nov. 04, 2023
3	Bilog Antenna (30MHz-1GHz)	R&S	VULB9162	00306	Nov. 05, 2022	Nov. 04, 2023
4	Horn Antenna (1GHz-18GHz)	Schwarzbeck	BBHA9120D	02139	Nov. 05, 2022	Nov. 04, 2023
5	Horn Antenna (18GHz-40GHz)	A.H. Systems	SAS-574	588	Nov. 05, 2022	Nov. 04, 2023
6	Amplifier (9KHz-6GHz)	Schwarzbeck	BBV9743B	00153	Nov. 05, 2022	Nov. 04, 2023
7	Amplifier (1GHz-18GHz)	EMEC	EM01G8GA	00270	Nov. 05, 2022	Nov. 04, 2023
8	Amplifier (18GHz-40GHz)	Quanjuda	DLE-161	97	Nov. 05, 2022	Nov. 04, 2023
9	Loop Antenna (9KHz-30MHz)	Schwarzbeck	FMZB1519B	00014	Nov. 05, 2022	Nov. 04, 2023
10	RF cables1 (9kHz-1GHz)	ChengYu	966	004	Nov. 05, 2022	Nov. 04, 2023
11	RF cables2 (1GHz-40GHz)	ChengYu	966	003	Nov. 05, 2022	Nov. 04, 2023
12	Antenna connector	Florida RF Labs	N/A	RF 01#	Nov. 05, 2022	Nov. 04, 2023
13	Power probe	KEYSIGHT	U2021XA	MY55210018	Nov. 05, 2022	Nov. 04, 2023
14	Signal Analyzer 9kHz-26.5GHz	Agilent	N9020A	MY55370280	Nov. 05, 2022	Nov. 04, 2023
15	Test Receiver 20kHz-40GHz	R&S	ESU 40	100376	Nov. 05, 2022	Nov. 04, 2023
16	D.C. Power Supply	LongWei	PS-305D	010964729	Nov. 05, 2022	Nov. 04, 2023

Conduction Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	843 Shielded Room	ChengYu	843 Room	843	Sep. 20, 2022	Sep. 19, 2025
2	EMI Receiver	R&S	ESR	101421	Nov. 05, 2022	Nov. 04, 2023
3	LISN	R&S	ENV216	102417	Nov. 05, 2022	Nov. 04, 2023
4	843 Cable 1#	ChengYu	CE Cable	001	Nov. 05, 2022	Nov. 04, 2023

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 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.

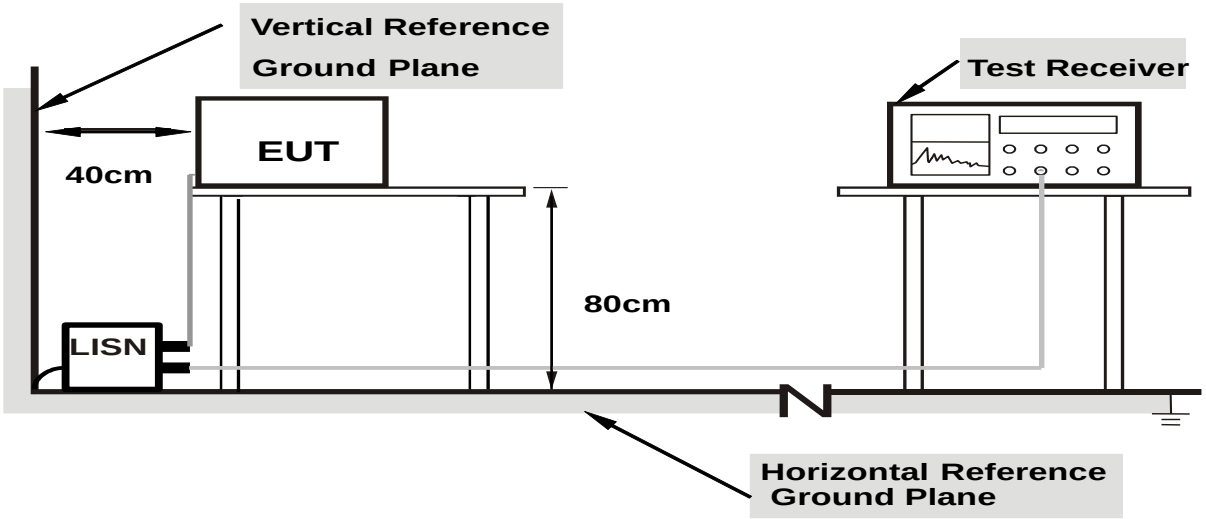
d. LISN at least 80 cm from nearest part of EUT chassis.

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

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



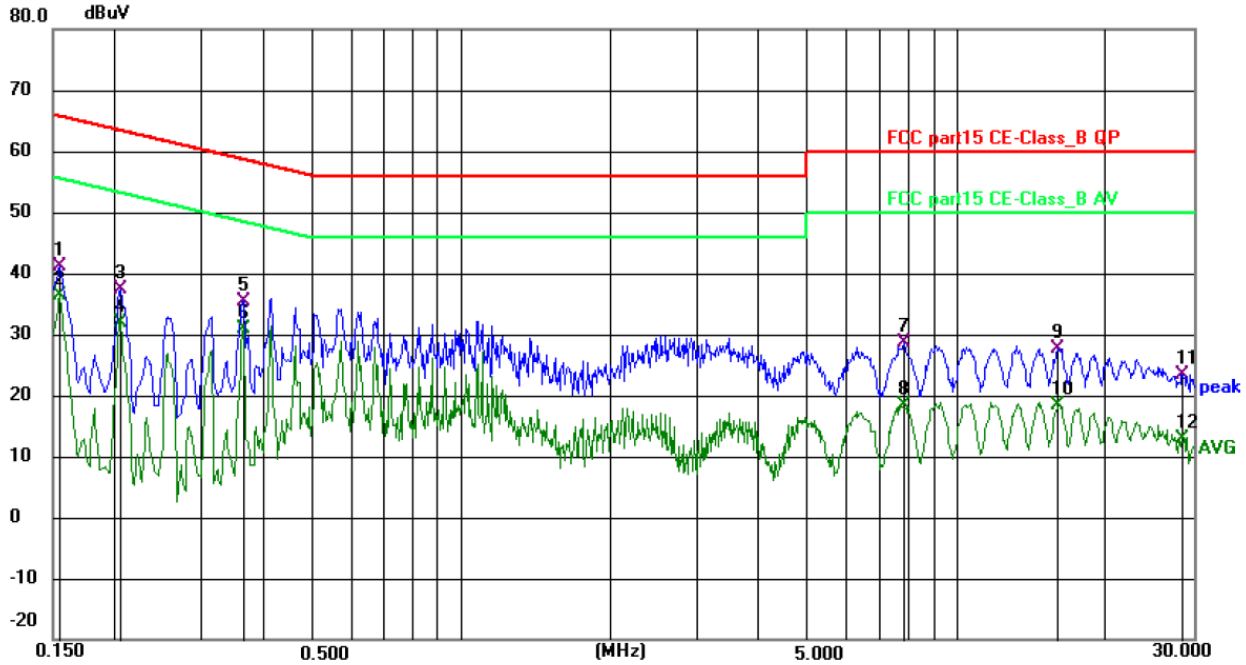
Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

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.
We pretest AC 120V and AC 230V, the worst voltage was AC 120V and the data recording in the report.

3.1.6 TEST RESULTS

Temperature:	25 ℃	Relative Humidity:	54%
Pressure:	1010hPa	Phase :	L
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 4

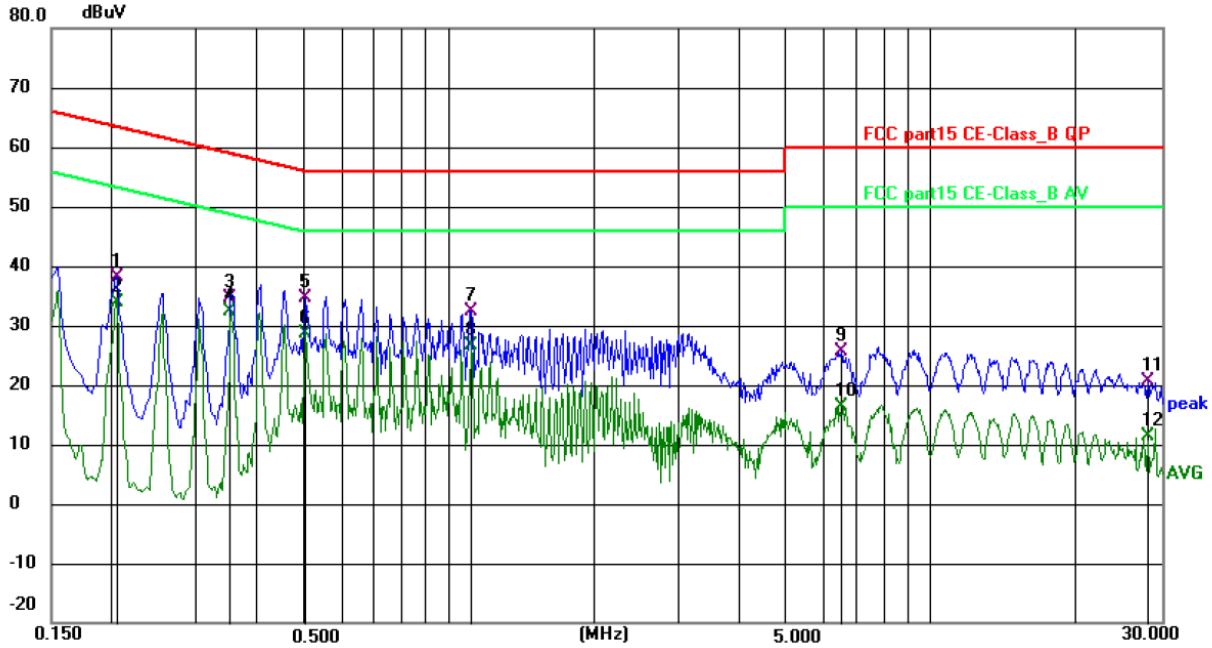


Remark:

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	0.154500	30.90	10.26	41.16	65.75	-24.59	QP	P	
2	0.154500	26.00	10.26	36.26	55.75	-19.49	AVG	P	
3	0.204000	28.37	8.90	37.27	63.45	-26.18	QP	P	
4	0.204000	23.10	8.90	32.00	53.45	-21.45	AVG	P	
5	0.361500	26.16	9.21	35.37	58.69	-23.32	QP	P	
6 *	0.361500	21.59	9.21	30.80	48.69	-17.89	AVG	P	
7	7.849500	18.48	10.18	28.66	60.00	-31.34	QP	P	
8	7.849500	8.31	10.18	18.49	50.00	-31.51	AVG	P	
9	15.958500	17.28	10.39	27.67	60.00	-32.33	QP	P	
10	15.958500	7.95	10.39	18.34	50.00	-31.66	AVG	P	
11	28.572000	12.35	11.09	23.44	60.00	-36.56	QP	P	
12	28.572000	1.88	11.09	12.97	50.00	-37.03	AVG	P	

Temperature:	25 ℃	Relative Humidity:	54%
Pressure:	1010hPa	Phase :	N
Test Voltage :	AC 120V/60Hz	Test Mode:	Mode 4



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	0.204000	28.58	9.50	38.08	63.45	-25.37	QP	P	
2	0.204000	24.46	9.50	33.96	53.45	-19.49	AVG	P	
3	0.352000	25.47	9.11	34.58	58.92	-24.34	QP	P	
4 *	0.352000	23.31	9.11	32.42	48.92	-16.50	AVG	P	
5	0.505500	25.46	9.27	34.73	56.00	-21.27	QP	P	
6	0.505500	19.43	9.27	28.70	46.00	-17.30	AVG	P	
7	1.113000	23.04	9.40	32.44	56.00	-23.56	QP	P	
8	1.113000	17.18	9.40	26.58	46.00	-19.42	AVG	P	
9	6.522000	15.75	9.99	25.74	60.00	-34.26	QP	P	
10	6.522000	6.39	9.99	16.38	50.00	-33.62	AVG	P	
11	28.054500	9.64	11.08	20.72	60.00	-39.28	QP	P	
12	28.054500	0.26	11.08	11.34	50.00	-38.66	AVG	P	

3.2 RADIATED EMISSION MEASUREMENT

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

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

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the 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:

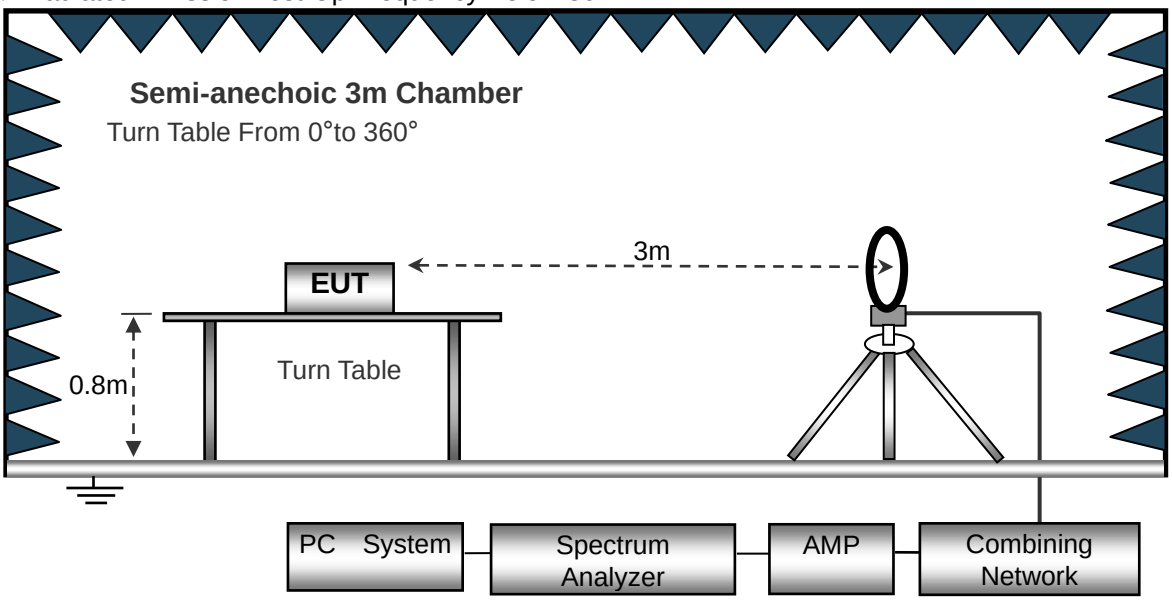
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

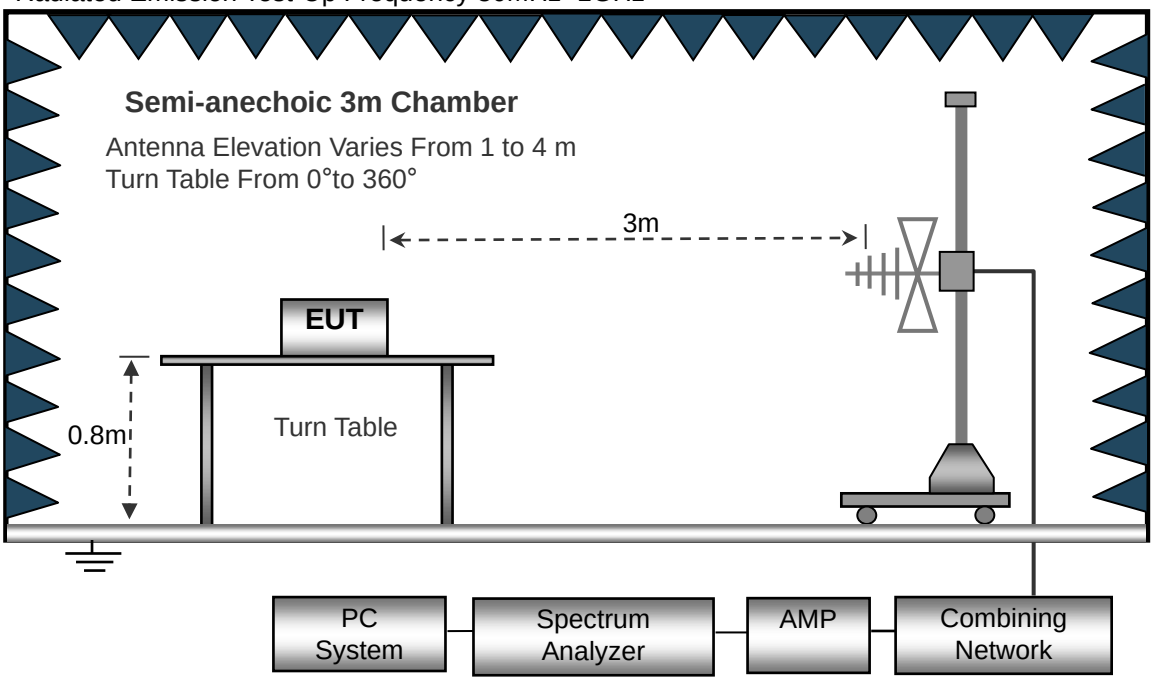
No deviation

3.2.4 TEST SETUP

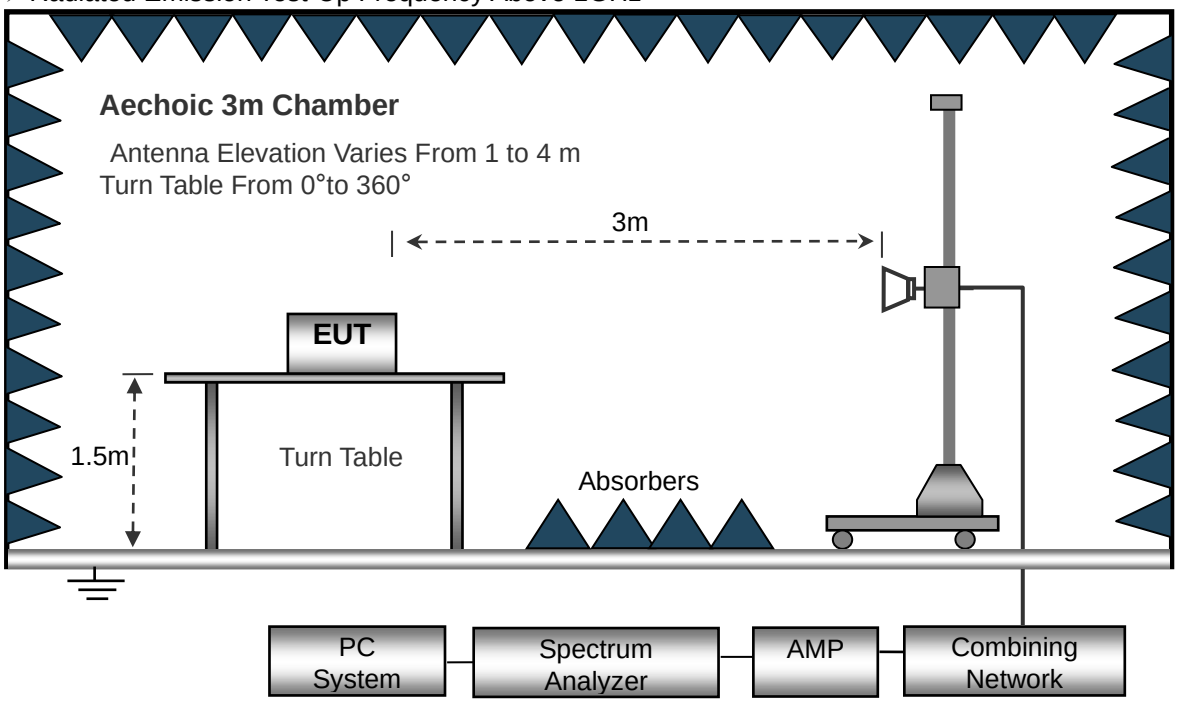
（A）Radiated Emission Test-Up Frequency Below 30MHz



（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 :	--

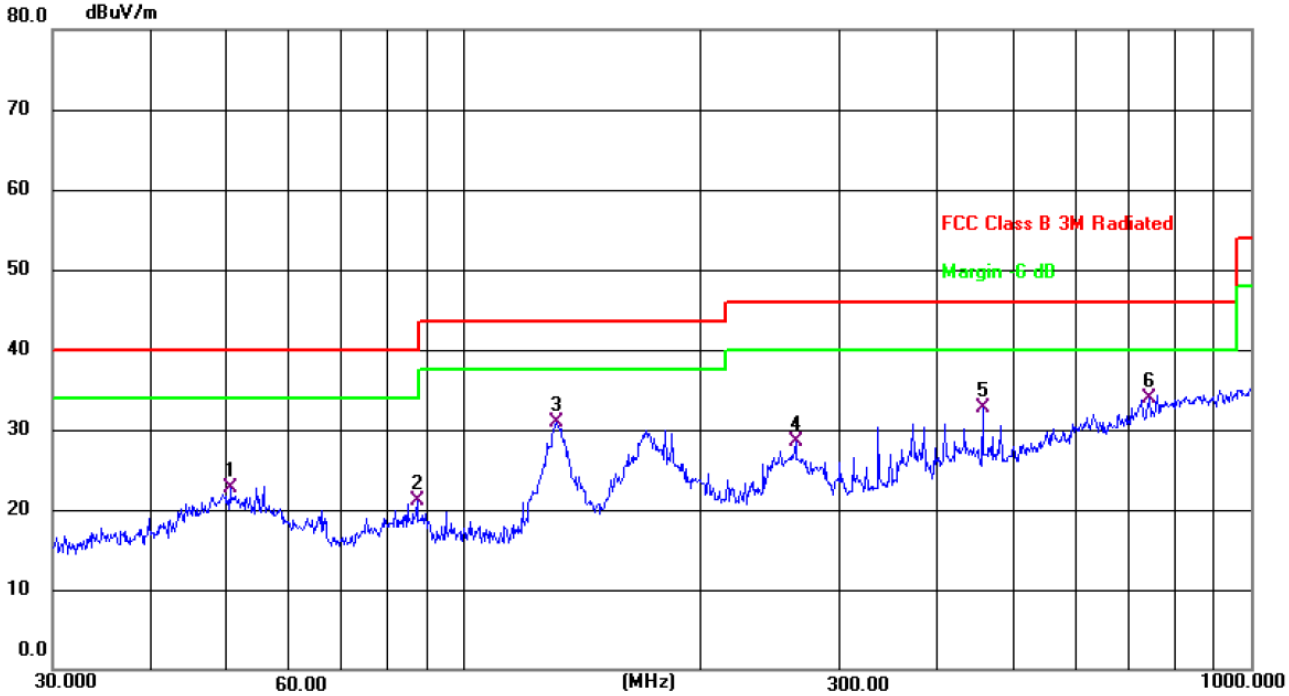
Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

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)

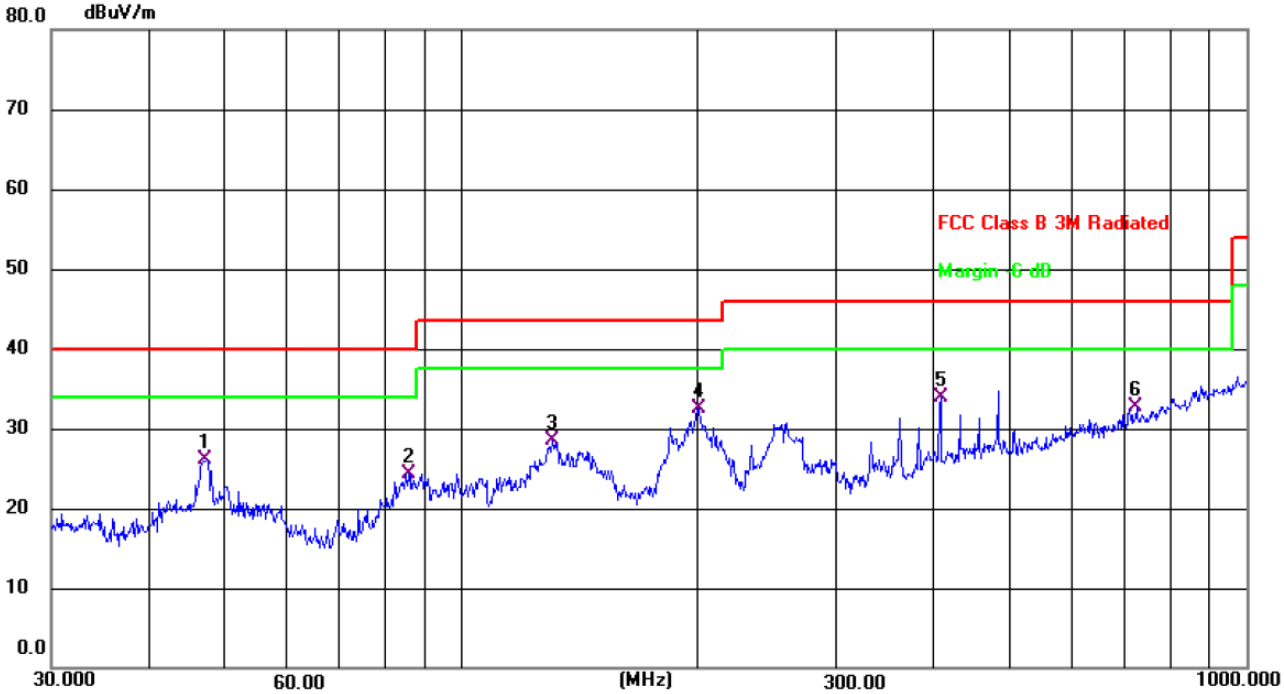
Temperature:	26℃	Relative Humidity:	54%
Pressure:	1010 hPa	Polarization :	Horizontal
Test Voltage :	AC 120V/60Hz		
Test Mode :	Mode 3		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		50.4089	36.60	-13.94	22.66	40.00	-17.34	QP
2		87.1115	39.48	-18.39	21.09	40.00	-18.91	QP
3		130.8369	49.14	-18.23	30.91	43.50	-12.59	QP
4		263.8190	41.83	-13.38	28.45	46.00	-17.55	QP
5		455.9057	41.37	-8.63	32.74	46.00	-13.26	QP
6	*	742.2586	36.68	-2.87	33.81	46.00	-12.19	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/m	dB/m	dB	Detector
1		47.3253	40.35	-14.18	26.17	40.00	-13.83	QP
2		85.5974	43.08	-18.72	24.36	40.00	-15.64	QP
3		130.3788	46.65	-18.22	28.43	43.50	-15.07	QP
4	*	200.6879	47.96	-15.53	32.43	43.50	-11.07	QP
5		407.5144	43.56	-9.65	33.91	46.00	-12.09	QP
6		724.2607	35.83	-3.17	32.66	46.00	-13.34	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	56.45	49.05	15.3	37.39	60.09	68.2	-8.11	PK
V	10360	41.36	49.05	15.3	37.39	45.00	54	-9.00	AV
V	15540	56.77	49.16	15.27	40.45	63.33	74	-10.67	PK
V	15540	39.24	49.16	15.27	40.45	45.80	54	-8.20	AV
H	10360	56.20	49.05	15.3	37.39	59.84	68.2	-8.36	PK
H	10360	40.54	49.05	15.3	37.39	44.18	54	-9.82	AV
H	15540	59.26	49.16	15.27	40.45	65.82	74	-8.18	PK
H	15540	38.15	49.16	15.27	40.45	44.71	54	-9.29	AV
operation frequency:5200									
V	10400	57.55	49.09	15.34	37.42	61.22	68.2	-6.98	PK
V	10400	39.46	49.09	15.34	37.42	43.13	54	-10.87	AV
V	15600	59.56	49.18	15.29	40.47	66.14	74	-7.86	PK
V	15600	38.24	49.18	15.29	40.47	44.82	54	-9.18	AV
H	10400	57.10	49.09	15.34	37.42	60.77	68.2	-7.43	PK
H	10400	39.81	49.09	15.34	37.42	43.48	54	-10.52	AV
H	15600	59.60	49.18	15.29	40.47	66.18	74	-7.82	PK
H	15600	38.41	49.18	15.29	40.47	44.99	54	-9.01	AV
operation frequency:5240									
V	10480	58.69	49.11	15.37	37.46	62.41	68.2	-5.79	PK
V	10480	39.34	49.11	15.37	37.46	43.06	54	-10.94	AV
V	15720	59.27	49.21	15.34	40.51	65.91	74	-8.09	PK
V	15720	38.44	49.21	15.34	40.51	45.08	54	-8.92	AV
H	10480	57.39	49.11	15.37	31.31	54.96	68.2	-13.24	PK
H	10480	45.65	49.11	15.37	31.31	43.22	54	-10.78	AV
H	15720	57.55	49.21	15.34	40.51	64.19	74	-9.81	PK
H	15720	37.62	49.21	15.34	40.51	44.26	54	-9.74	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	56.27	49.05	15.3	37.39	59.91	68.2	-8.29	PK
V	10360	38.74	49.05	15.3	37.39	42.38	54	-11.62	AV
V	15540	56.69	49.16	15.27	40.45	63.25	74	-10.75	PK
V	15540	38.32	49.16	15.27	40.45	44.88	54	-9.12	AV
H	10360	56.75	49.05	15.3	37.39	60.39	68.2	-7.81	PK
H	10360	39.46	49.05	15.3	37.39	43.10	54	-10.90	AV
H	15540	54.26	49.16	15.27	40.45	60.82	74	-13.18	PK
H	15540	38.41	49.16	15.27	40.45	44.97	54	-9.03	AV
operation frequency:5200									
V	10400	56.40	49.09	15.34	37.42	60.07	68.2	-8.13	PK
V	10400	39.82	49.09	15.34	37.42	43.49	54	-10.51	AV
V	15600	55.45	49.18	15.29	40.47	62.03	74	-11.97	PK
V	15600	38.36	49.18	15.29	40.47	44.94	54	-9.06	AV
H	10400	55.67	49.09	15.34	37.42	59.34	68.2	-8.86	PK
H	10400	40.44	49.09	15.34	37.42	44.11	54	-9.89	AV
H	15600	55.20	49.18	15.29	40.47	61.78	74	-12.22	PK
H	15600	39.33	49.18	15.29	40.47	45.91	54	-8.09	AV
operation frequency:5240									
V	10480	57.28	49.11	15.37	37.46	61.00	68.2	-7.20	PK
V	10480	40.66	49.11	15.37	37.46	44.38	54	-9.62	AV
V	15720	54.44	49.21	15.34	40.51	61.08	74	-12.92	PK
V	15720	38.73	49.21	15.34	40.51	45.37	54	-8.63	AV
H	10480	57.28	49.11	15.37	31.31	54.85	68.2	-13.35	PK
H	10480	44.76	49.11	15.37	31.31	42.33	54	-11.67	AV
H	15720	55.47	49.21	15.34	40.51	62.11	74	-11.89	PK
H	15720	39.34	49.21	15.34	40.51	45.98	54	-8.02	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	10380	56.90	49.07	15.33	37.41	60.57	68.2	-7.63	PK
V	10380	39.32	49.07	15.33	37.41	42.99	54	-11.01	AV
V	15570	56.38	49.17	15.28	40.46	62.95	74	-11.05	PK
V	15570	38.45	49.17	15.28	40.46	45.02	54	-8.98	AV
H	10380	56.77	49.07	15.33	37.41	60.44	68.2	-7.76	PK
H	10380	40.41	49.07	15.33	37.41	44.08	54	-9.92	AV
H	15570	54.76	49.17	15.28	40.46	61.33	74	-12.67	PK
H	15570	38.34	49.17	15.28	40.46	44.91	54	-9.09	AV
operation frequency:5230									
V	10460	57.26	49.11	15.37	37.46	60.98	68.2	-7.22	PK
V	10460	39.70	49.11	15.37	37.46	43.42	54	-10.58	AV
V	15690	54.55	49.21	15.34	40.51	61.19	74	-12.81	PK
V	15690	38.44	49.21	15.34	40.51	45.08	54	-8.92	AV
H	10460	57.39	49.11	15.37	31.31	54.96	68.2	-13.24	PK
H	10460	44.94	49.11	15.37	31.31	42.51	54	-11.49	AV
H	15690	55.48	49.21	15.34	40.51	62.12	74	-11.88	PK
H	15690	39.16	49.21	15.34	40.51	45.80	54	-8.20	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	54.34	49.05	15.3	37.39	57.98	74	-16.02	PK
V	11490	41.13	49.05	15.3	37.39	44.77	54	-9.23	AV
V	17235	55.48	49.16	15.27	40.45	62.04	68.2	-6.16	PK
V	17235	41.06	49.16	15.27	40.45	47.62	54	-6.38	AV
H	11490	52.46	49.05	15.3	37.39	56.10	74	-17.90	PK
H	11490	42.25	49.05	15.3	37.39	45.89	54	-8.11	AV
H	17235	51.44	49.16	15.27	40.45	58.00	68.2	-10.20	PK
H	17235	40.33	49.16	15.27	40.45	46.89	54	-7.11	AV
operation frequency:5785									
V	11570	51.79	49.09	15.34	37.42	55.46	74	-18.54	PK
V	11570	41.22	49.09	15.34	37.42	44.89	54	-9.11	AV
V	17355	50.46	49.18	15.29	40.47	57.04	68.2	-11.16	PK
V	17355	40.31	49.18	15.29	40.47	46.89	54	-7.11	AV
H	11570	50.58	49.09	15.34	37.42	54.25	74	-19.75	PK
H	11570	42.14	49.09	15.34	37.42	45.81	54	-8.19	AV
H	17355	48.83	49.18	15.29	40.47	55.41	68.2	-12.79	PK
H	17355	40.25	49.18	15.29	40.47	46.83	54	-7.17	AV
operation frequency:5825									
V	11650	52.17	49.11	15.37	37.46	55.89	74	-18.11	PK
V	11650	41.46	49.11	15.37	37.46	45.18	54	-8.82	AV
V	17475	49.35	49.21	15.34	40.51	55.99	68.2	-12.21	PK
V	17475	40.52	49.21	15.34	40.51	47.16	54	-6.84	AV
H	11650	57.55	49.11	15.37	31.31	55.12	74	-18.88	PK
H	11650	48.15	49.11	15.37	31.31	45.72	54	-8.28	AV
H	17475	49.46	49.21	15.34	40.51	56.10	68.2	-12.10	PK
H	17475	40.26	49.21	15.34	40.51	46.90	54	-7.10	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.

802.11n 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:5745									
V	11490	49.36	49.05	15.3	37.39	53.00	74	-21.00	PK
V	11490	42.27	49.05	15.3	37.39	45.91	54	-8.09	AV
V	17235	48.64	49.16	15.27	40.45	55.20	68.2	-13.00	PK
V	17235	40.31	49.16	15.27	40.45	46.87	54	-7.13	AV
H	11490	49.48	49.05	15.3	37.39	53.12	74	-20.88	PK
H	11490	41.23	49.05	15.3	37.39	44.87	54	-9.13	AV
H	17235	48.33	49.16	15.27	40.45	54.89	68.2	-13.31	PK
H	17235	40.66	49.16	15.27	40.45	47.22	54	-6.78	AV
operation frequency:5785									
V	11570	52.46	49.09	15.34	37.42	56.13	74	-17.87	PK
V	11570	42.35	49.09	15.34	37.42	46.02	54	-7.98	AV
V	17355	49.27	49.18	15.29	40.47	55.85	68.2	-12.35	PK
V	17355	40.61	49.18	15.29	40.47	47.19	54	-6.81	AV
H	11570	49.46	49.09	15.34	37.42	53.13	74	-20.87	PK
H	11570	43.36	49.09	15.34	37.42	47.03	54	-6.97	AV
H	17355	49.45	49.18	15.29	40.47	56.03	68.2	-12.17	PK
H	17355	40.24	49.18	15.29	40.47	46.82	54	-7.18	AV
operation frequency:5825									
V	11650	51.38	49.11	15.37	37.46	55.10	74	-18.90	PK
V	11650	41.53	49.11	15.37	37.46	45.25	54	-8.75	AV
V	17475	48.36	49.21	15.34	40.51	55.00	68.2	-13.20	PK
V	17475	40.72	49.21	15.34	40.51	47.36	54	-6.64	AV
H	11650	57.40	49.11	15.37	31.31	54.97	74	-19.03	PK
H	11650	44.43	49.11	15.37	31.31	42.00	54	-12.00	AV
H	17475	49.36	49.21	15.34	40.51	56.00	68.2	-12.20	PK
H	17475	40.96	49.21	15.34	40.51	47.60	54	-6.40	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

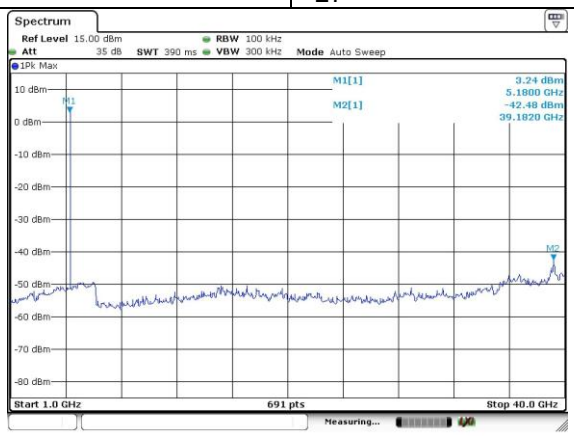
Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:5755									
V	11510	49.25	49.07	15.33	37.41	52.92	74	-21.08	PK
V	11510	41.65	49.07	15.33	37.41	45.32	54	-8.68	AV
V	17265	49.77	49.17	15.28	40.46	56.34	68.2	-11.86	PK
V	17265	40.33	49.17	15.28	40.46	46.90	54	-7.10	AV
H	11510	48.43	49.07	15.33	37.41	52.10	74	-21.90	PK
H	11510	41.23	49.07	15.33	37.41	44.90	54	-9.10	AV
H	17265	50.06	49.17	15.28	40.46	56.63	68.2	-11.57	PK
H	17265	40.36	49.17	15.28	40.46	46.93	54	-7.07	AV
operation frequency:5795									
V	11590	49.25	49.11	15.37	37.46	52.97	74	-21.03	PK
V	11590	41.35	49.11	15.37	37.46	45.07	54	-8.93	AV
V	17385	48.57	49.21	15.34	40.51	55.21	68.2	-12.99	PK
V	17385	40.43	49.21	15.34	40.51	47.07	54	-6.93	AV
H	11590	57.75	49.11	15.37	31.31	55.32	74	-18.68	PK
H	11590	44.84	49.11	15.37	31.31	42.41	54	-11.59	AV
H	17385	48.24	49.21	15.34	40.51	54.88	68.2	-13.32	PK
H	17385	40.31	49.21	15.34	40.51	46.95	54	-7.05	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.

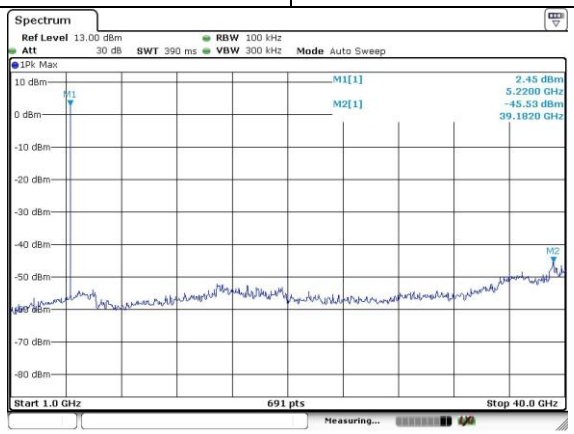
For Conducted
During the test, pre-scan the all modulation, the modulation below were found to have the worst test results, as reflected in the report.

Test channel:	Band 1/802.11a Lowest channel
Limits(dB/m):	-27



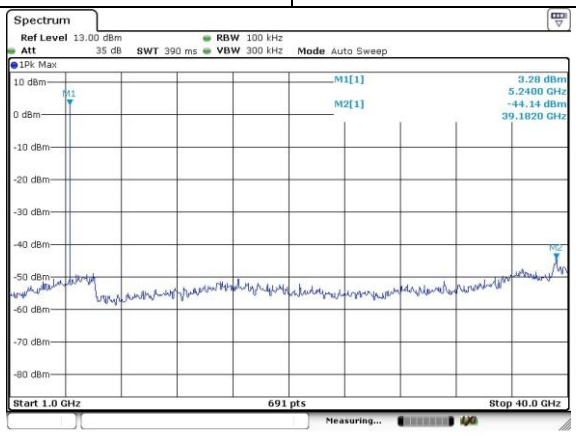
0.03Hz~40GHz

Test channel:	Band 1/802.11a Middle channel
Limits(dB/m):	-27



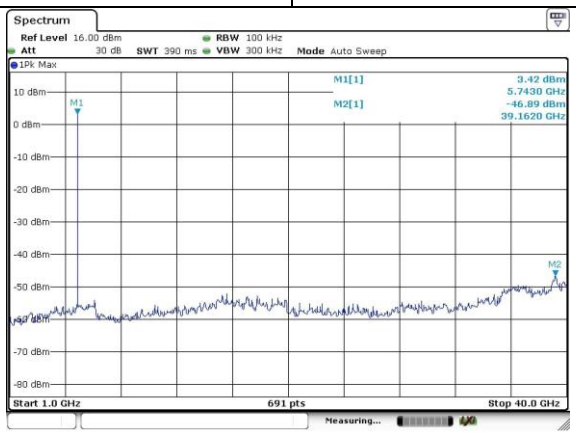
0.03GHz~40GHz

Test channel:	Band 1/802.11a Highest channel
Limits(dB/m):	-27



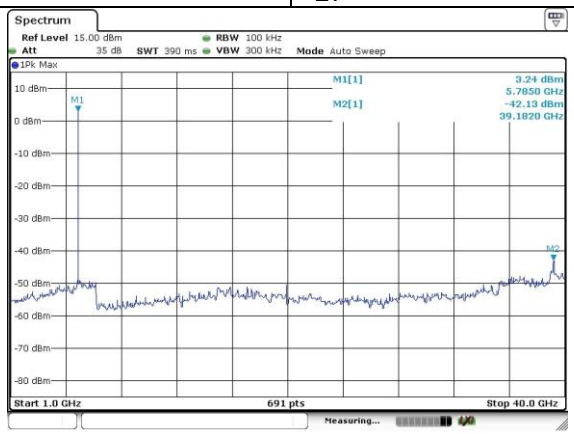
0.03GHz~40GHz

Test channel:	Band 4/802.11a Lowest channel
Limits(dB/m):	-27



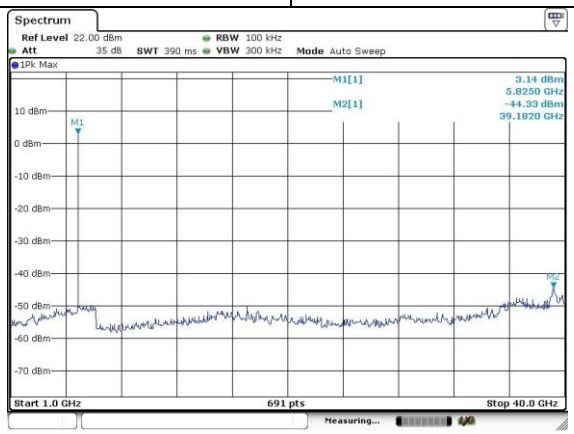
0.03Hz~40GHz

Test channel:	Band 4/802.11a Middle channel
Limits(dB/m):	-27



0.03GHz~40GHz

Test channel:	Band 4/802.11a Highest channel
Limits(dB/m):	-27



0.03GHz~40GHz

Note: The margin is more than cable loss and antenna gain, so the test result pass.

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 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 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:

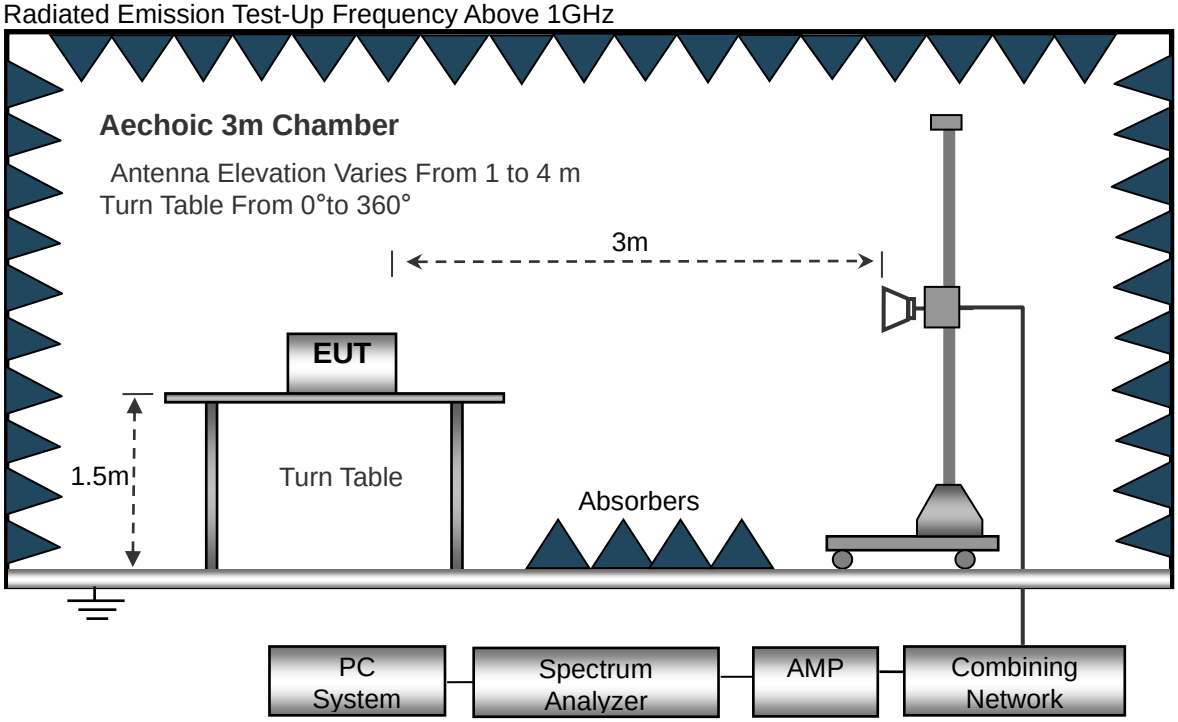
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

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	53.27	49.12	15.6	37.34	57.09	74	-16.91	PK
V	5150	39.45	49.12	15.6	37.34	43.27	54	-10.73	AV
V	5145	54.33	49.19	15.24	40.43	60.81	74	-13.19	PK
V	5145	36.44	49.19	15.24	40.43	42.92	54	-11.08	AV
H	5150	53.05	49.12	15.6	37.34	56.87	74	-17.13	PK
H	5150	37.64	49.12	15.6	37.34	41.46	54	-12.54	AV
H	5145	54.49	49.19	15.24	40.43	60.97	74	-13.03	PK
H	5145	33.20	49.19	15.24	40.43	39.68	54	-14.32	AV
operation frequency:5240									
V	5350	53.29	49.13	15.32	37.46	56.94	74	-17.06	PK
V	5350	35.62	49.13	15.32	37.46	39.27	54	-14.73	AV
V	5370	53.37	49.24	15.36	40.51	60.00	74	-14.00	PK
V	5370	32.35	49.24	15.36	40.51	38.98	54	-15.02	AV
H	5350	52.25	49.13	15.32	31.31	49.75	74	-24.25	PK
H	5350	40.34	49.13	15.32	31.31	37.84	54	-16.16	AV
H	5370	52.59	49.24	15.36	40.51	59.22	74	-14.78	PK
H	5370	32.63	49.24	15.36	40.51	39.26	54	-14.74	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	51.39	49.12	15.6	37.34	55.21	74	-18.79	PK
V	5150	33.20	49.12	15.6	37.34	37.02	54	-16.98	AV
V	5145	51.58	49.19	15.24	40.43	58.06	74	-15.94	PK
V	5145	33.22	49.19	15.24	40.43	39.70	54	-14.30	AV
H	5150	51.57	49.12	15.6	37.34	55.39	74	-18.61	PK
H	5150	33.55	49.12	15.6	37.34	37.37	54	-16.63	AV
H	5145	50.24	49.19	15.24	40.43	56.72	74	-17.28	PK
H	5145	32.75	49.19	15.24	40.43	39.23	54	-14.77	AV
operation frequency:5240									
V	5350	53.77	49.13	15.32	37.46	57.42	74	-16.58	PK
V	5350	34.25	49.13	15.32	37.46	37.90	54	-16.10	AV
V	5370	50.35	49.24	15.36	40.51	56.98	74	-17.02	PK
V	5370	33.63	49.24	15.36	40.51	40.26	54	-13.74	AV
H	5350	54.25	49.13	15.32	31.31	51.75	74	-22.25	PK
H	5350	36.34	49.13	15.32	31.31	33.84	54	-20.16	AV
H	5370	51.39	49.24	15.36	40.51	58.02	74	-15.98	PK
H	5370	33.60	49.24	15.36	40.51	40.23	54	-13.77	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	52.28	49.12	15.6	37.39	56.15	74	-17.85	PK
V	5150	35.52	49.12	15.6	37.39	39.39	54	-14.61	AV
V	5145	51.67	49.19	15.24	40.45	58.17	74	-15.83	PK
V	5145	34.74	49.19	15.24	40.45	41.24	54	-12.76	AV
H	5150	52.72	49.12	15.6	37.39	56.59	74	-17.41	PK
H	5150	34.80	49.12	15.6	37.39	38.67	54	-15.33	AV
H	5145	50.29	49.19	15.24	40.45	56.79	74	-17.21	PK
H	5145	35.70	49.19	15.24	40.45	42.20	54	-11.80	AV
operation frequency:5230									
V	5350	53.74	49.13	15.34	37.46	57.41	74	-16.59	PK
V	5350	37.75	49.13	15.34	37.46	41.42	54	-12.58	AV
V	5370	50.36	49.24	15.35	40.51	56.98	74	-17.02	PK
V	5370	36.44	49.24	15.35	40.51	43.06	54	-10.94	AV
H	5350	54.39	49.13	15.34	31.31	51.91	74	-22.09	PK
H	5350	41.33	49.13	15.34	31.31	38.85	54	-15.15	AV
H	5370	52.74	49.24	15.35	40.51	59.36	74	-14.64	PK
H	5370	36.96	49.24	15.35	40.51	43.58	54	-10.42	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	

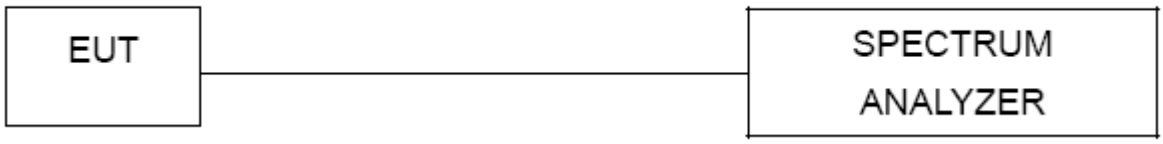
3.3.2 TEST PROCEDURE

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

Please see annex 2

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 power meter and antenna output port as show in the block diagram below,
b. Spectrum Setting : RBW > the 20 dB bandwidth of the emission being measured
Span = approximately 5 times the 20 dB bandwidth, centered on a hopping channel
VBW ≥ 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

Please see annex 2

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	Max Hold
Sweep Time	Auto

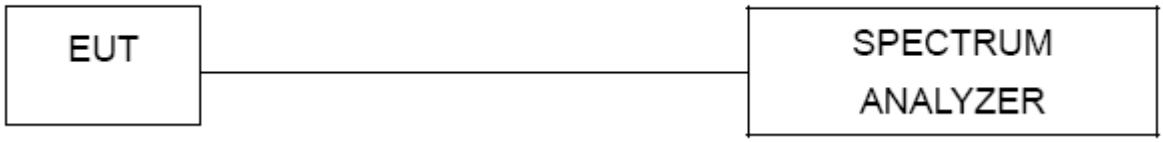
5.1.1 TEST PROCEDURE

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

Please see annex 2

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

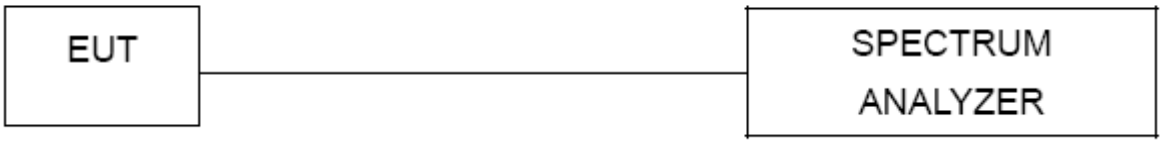
26dB Bandwidth	
Spectrum Parameters	Setting
RBW	approximately 1% of the emission bandwidth
VBW	>RBW
Span	30MHz(20MHz Bandwidth mode) 60MHz(40MHz Bandwidth mode) 120MHz(80MHz Bandwidth mode)
Sweep Time	Auto
Detector	Peak
Trace Mode	Max Hold

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

Please see annex 2

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

Please see annex 2

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.

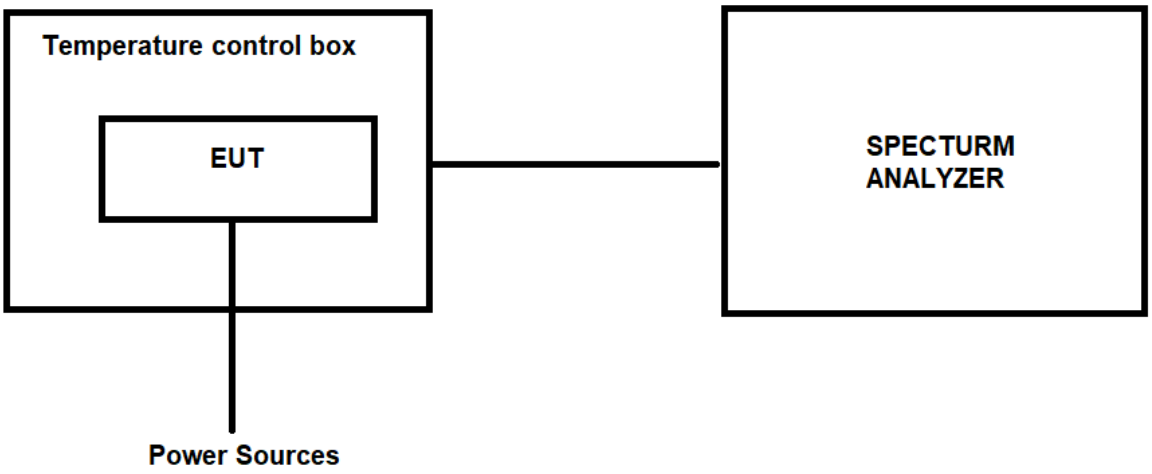
8.1.1 TEST PROCEDURE

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	Spectrum Frequency (MHz)		Δ Frequency (MHz)	
		(MHz)	802.11a	802.11n HT20	802.11a	802.11n HT20
3.7V	-20℃	5180	5180.0287	5180.0308	-0.0287	-0.0308
		5220	5220.0321	5220.0299	-0.0321	-0.0299
		5240	5240.0197	5240.0237	-0.0197	-0.0237
		5745	5745.0326	5745.0303	-0.0326	-0.0303
		5785	5785.0348	5785.0291	-0.0348	-0.0291
		5825	5825.0284	5825.0327	-0.0284	-0.0327
4.2V		5180	5180.0230	5180.0188	-0.0230	-0.0188
		5220	5220.0315	5220.0348	-0.0315	-0.0348
		5240	5240.0204	5240.0227	-0.0204	-0.0227
		5745	5745.0223	5745.0186	-0.0223	-0.0186
		5785	5785.0347	5785.0341	-0.0347	-0.0341
		5825	5825.0374	5825.0414	-0.0374	-0.0414
3.3V	25℃	5180	5180.0507	5180.0478	-0.0507	-0.0478
		5220	5220.0227	5220.0204	-0.0227	-0.0204
		5240	5240.0321	5240.0280	-0.0321	-0.0280
		5745	5745.0294	5745.0283	-0.0294	-0.0283
		5785	5785.0446	5785.0373	-0.0446	-0.0373
		5825	5825.0207	5825.0230	-0.0207	-0.0230
4.2V	50℃	5180	5180.0277	5180.0329	-0.0277	-0.0329
		5220	5220.0218	5220.0209	-0.0218	-0.0209
		5240	5240.0289	5240.0317	-0.0289	-0.0317
		5745	5745.0628	5745.0598	-0.0628	-0.0598
		5785	5785.0384	5785.0386	-0.0384	-0.0386
		5825	5825.0635	5825.0587	-0.0635	-0.0587
3.3V	50℃	5180	5180.0281	5180.0290	-0.0281	-0.0290
		5220	5220.0178	5220.0227	-0.0178	-0.0227
		5240	5240.0289	5240.0315	-0.0289	-0.0315
		5745	5745.0387	5745.0396	-0.0387	-0.0396
		5785	5785.0204	5785.0218	-0.0204	-0.0218
		5825	5825.0690	5825.0694	-0.0690	-0.0694

Test Voltage	Test Temp.	Measured Frequency (MHz)	Spectrum Frequency (MHz)	Δ Frequency (MHz)
			802.11n HT40	802.11n HT40
3.7V	-20℃	5190	5190.0190	-0.0190
		5230	5230.0291	-0.0291
		5755	5755.0515	-0.0515
		5795	5795.0595	-0.0595
4.2V		5190	5190.0192	-0.0192
		5230	5230.0288	-0.0288
		5755	5755.0206	-0.0206
		5795	5795.0403	-0.0403
120V	25℃	5190	5190.0239	-0.0239
		5230	5230.0599	-0.0599
		5755	5755.0218	-0.0218
		5795	5795.0525	-0.0525
4.2V	50℃	5190	5190.0621	-0.0621
		5230	5230.0528	-0.0528
		5755	5755.0423	-0.0423
		5795	5795.0297	-0.0297
108V	50℃	5190	5190.0526	-0.0526
		5230	5230.0297	-0.0297
		5755	5755.0286	-0.0286
		5795	5795.0427	-0.0427

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 Internal Antenna, It comply with the standard requirement.

11. TEST SETUP PHOTO

Please see setup photo file.

12. EUT PHOTO

※※※※※ **END OF REPORT** ※※※※※