



FCC TEST REPORT

Report No: STS1705233F02

Issued for

Grandstream Networks, Inc.

126 Brookline Ave, 3rd Floor Boston, MA 02215,USA

Product Name:	IP phone
Brand Name:	Grandstream
Model Name:	GXP1760W
Series Model:	N/A
FCC ID:	YZZGXP1760W
Test Standard:	FCC Part 15.407

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## TEST RESULT CERTIFICATION

**Applicant's name** ..... : Grandstream Networks, Inc.  
**Address** ..... : 126 Brookline Ave, 3rd Floor Boston, MA 02215, USA  
**Manufacture's Name** ..... : Grandstream Networks, Inc.  
**Address** ..... : 126 Brookline Ave, 3rd Floor Boston, MA 02215, USA

### Product description

**Product name**..... : IP phone  
**Model and/or type reference** : GXP1760W  
**Series Model** ..... : N/A

**Standards**..... : FCC Part15.407

**Test procedure**..... ANSI C63.10-2013

This device described above has been tested by STS, the test results show that the equipment under test (EUT) is in compliance with the FCC&IC requirements. And it is applicable only to the tested sample identified in the report.

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**Date of Test**..... :  
**Date (s) of performance of tests**..... : 25 May. 2017~20 Jun. 2017  
**Date of Issue**..... : 20 Jun. 2017  
**Test Result**..... : **Pass**

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Authorized Signatory :

*Vita Li*

(Vita Li)





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**Revision History**

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	20 Jun. 2017	STS1705233F02	ALL	Initial Issue





## 1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

§ 15.407, KDB 789033 D02 General U-NII Test Procedures New Rules v01r03

FCC Part 15.407		
FCC standard	Test Item	Results
15.207	AC Conducted Emission	PASS
§ 15.407 (2) (26 dB) / § 15.407 (e) (6 dB) / § 15.407 (a) (99%)	26dB/6dB & 99% Bandwidth	PASS
15.407(a) (1).(2).(3).(4).(5)	Maximum Conducted Output Power	PASS
15.407(b) & 15.209	Radiated Emission And (bandedge Emissions) Measurement	PASS
15.407(b)7	Conducted Emission And (bandedge Emissions) Measurement	PASS
15.407(a) (1).(2).(3).(4).(5)	Power Spectral Density	PASS
15.407(g)	Frequency Stability	PASS
15.407(c)	Automatically Discontinue Transmission	PASS
15.203/15.204	Antenna Requirement	PASS

NOTE:

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

(2) all tests are according to ANSI C63.10-2013



## 1.1 TEST FACTORY

BZT Testing Technology Co., Ltd.

Add. : Buliding 17, Xinghua Road Xingwei industrial Park Fuyong,  
Baoan District, Shenzhen, Guangdong, China

FCC Registration No.: 701733

## 1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement  $y \pm U$ , 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 (9KHz-150KHz)	$\pm 2.88\text{dB}$
2	Conducted Emission (150KHz-30MHz)	$\pm 2.67\text{dB}$
3	RF power,conducted	$\pm 0.70\text{dB}$
4	Spurious emissions,conducted	$\pm 1.19\text{dB}$
5	All emissions,radiated(<1G) 30MHz-200MHz	$\pm 2.83\text{dB}$
6	All emissions,radiated(<1G) 200MHz-1000MHz	$\pm 2.94\text{dB}$
7	All emissions,radiated(>1G)	$\pm 3.03\text{dB}$
8	Temperature	$\pm 0.5^{\circ}\text{C}$
9	Humidity	$\pm 2\%$



## 2. GENERAL INFORMATION

### 2.1 GENERAL DESCRIPTION OF EUT

Equipment	IP phone		
Trade Name	Grandstream		
Model Name	GXP1760W		
Series Model	N/A		
Model Difference	N/A		
Product Description	The EUT is a IP phone		
	Operation Frequency:	IEEE 802.11a/ n/ac(HT20) 5.180GHz-5.240GHz	
		IEEE 802.11n/ac(HT40) 5.190GHz-5.310GHz	
		IEEE 802.11ac(HT80) 5.210GHz	
		IEEE 802.11a/ n/ac(HT20)5.260GHz-5.320GHz	
		IEEE 802.11n/ac(HT40)5.270GHz-5.310GHz	
		IEEE 802.11ac(HT80) 5.290GHz	
		IEEE 802.11a/ n/ac(HT20)5.500GHz-5.700GHz	
		IEEE 802.11n/ac(HT40)5.510GHz-5.670GHz	
		IEEE 802.11ac(HT80) 5.530GHz-5.610GHz	
Modulation Type:	IEEE 802.11a/ n/ac(HT20)5.745GHz-5.825GHz		
	IEEE 802.11a/ n/ac(HT40)5.755GHz-5.795GHz		
	IEEE 802.11ac(HT80) 5.775GHz		
Antenna Designation:	IEEE for 802.11a/n/ac: OFDM(BPSK/QPSK/ 16QAM)		
	See Note 3		
Max.Output Power(Conducted):	9.12dBm		
	The duty cycle of WLAN 802.11a/n were 98 %		
More details of EUT technical specification, please refer to the User's Manual.			
Test Channel	Please refer to the Note 2.		
Adapter	Input:100V-240V,50/60Hz,0.3A Output: DC5V,2A		
Hardware version number	GXP1760_KP_V1.3A		
Software version number	0.5.4.27		
Connecting I/O Port(s)	Please refer to the User's Manual		

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



1. Operation Frequency of channel			
5.180GHz-5.240GHz		5.500GHz-5.720GHz	
Channel	Frequency	Channel	Frequency
36	5180	100	5500
38	5190	102	5510
40	5200	104	5520
42	5210	108	5540
44	5220	110	5550
46	5230	112	5560
48	5240	116	5580
		118	5590
		120	5600
5.260GHz-5.320GHz		124	5620
Channel	Frequency	126	5630
52	5260	128	5640
54	5270	132	5660
56	5280	134	5670
58	5290	136	5680
60	5300	140	5700
62	5310		
64	5320		
5.745GHz-5.825GHz			
Channel	Frequency		
149	5745		
151	5755		
153	5765		
157	5785		
159	5795		
161	5805		
165	5825		

**Note:**

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

Carrier Frequency Channel

**5GHz:**

For 802.11a/n/ac (HT20)			
Channel	Freq.(MHz)	Channel	Freq.(MHz)
36	5180	52	5260
40	5200	60	5300
48	5240	64	5320

For 802.11a/n/ac (HT20)			
Channel	Freq.(MHz)	Channel	Freq.(MHz)
149	5745	149	5745
157	5785	157	5785
165	5825	165	5825





For 802.11n/ac (HT40)			
Channel	Freq.(MHz)	Channel	Freq.(MHz)
38	5190	54	5270
46	5230	62	5310

For 802.11n/ac (HT40)			
Channel	Freq.(MHz)	Channel	Freq.(MHz)
102	5510	151	5755
110	5550	159	5795
134	5670		

For 802.11ac (HT80)			
Channel	Freq.(MHz)	Channel	Freq.(MHz)
42	5210	58	5290

For 802.11ac (HT80)			
Channel	Freq.(MHz)	Channel	Freq.(MHz)
106	5530	155	5775
122	5610		

Ant	Brand	Model Name	Ant Type	Connector	Gain (dBi)	NOTE
A	Grandstream	GXP1760W	PCB Ant	N/A	(5 180 -5 240)MHz: 3dBi (5260-5320)MHz: 3dBi (5500-5700)MHz: 3dBi (5745 -5825)MHz: 3dBi	WIFI Ant



## 2.2 DESCRIPTION OF TEST MODES

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

Worst Mode	Description	Data Rate
Mode 1	TX IEEE 802.11a HT20 CH36&CH40&CH48	6 Mbps
Mode 2	TX IEEE 802.11a HT20 CH52&CH60&CH64	6 Mbps
Mode 3	TX IEEE 802.11a HT20 CH100&CH116&CH140	6 Mbps
Mode 4	TX IEEE 802.11a HT20 CH149&CH157&CH165	6 Mbps
Mode 5	TX IEEE 802.11n HT20 CH36&CH40&CH48	MCS 0
Mode 6	TX IEEE 802.11ac HT20 CH36&CH40&CH48	NSS1 MCS0
Mode 7	TX IEEE 802.11n HT20 CH52&CH60&CH64	MCS 0
Mode 8	TX IEEE 802.11ac HT20 CH52&CH60&CH64	NSS1 MCS0
Mode 9	TX IEEE 802.11n HT20 CH100&CH116&CH140	MCS 0
Mode 10	TX IEEE 802.11ac HT20 CH100&CH116&CH140	NSS1 MCS0
Mode 11	TX IEEE 802.11n HT20 CH149&CH157&CH165	MCS 0
Mode 12	TX IEEE 802.11n HT20 CH149&CH157&CH165	NSS1 MCS0
Mode 13	TX IEEE 802.11n HT40 CH38&CH46	MCS 0
Mode 14	TX IEEE 802.11ac HT40 CH38&CH46	NSS1 MCS0
Mode 15	TX IEEE 802.11n HT40 CH54 &CH62	MCS 0
Mode 16	TX IEEE 802.11ac HT40 CH54 &CH62	NSS1 MCS0
Mode 17	TX IEEE 802.11n HT40 CH102&CH110&CH134	MCS 0
Mode 18	TX IEEE 802.11ac HT40 CH102&CH110&CH134	NSS1 MCS0
Mode 19	TX IEEE 802.11n HT40 CH151&CH159	MCS 0
Mode 20	TX IEEE 802.11ac HT40 CH151&CH159	NSS1 MCS0
Mode 21	TX IEEE 802.11ac HT80 CH42	NSS1 MCS0
Mode 22	TX IEEE 802.11ac HT80 CH58	NSS1 MCS0
Mode 23	TX IEEE 802.11ac HT80 CH106&122	NSS1 MCS0
Mode 24	TX IEEE 802.11ac HT80 CH155	NSS1 MCS0

- Note: (1) The measurements are performed at the highest, middle, lowest available channels.  
(2) The measurements are performed at all Bit Rate of Transmitter, the worst data was reported  
(3) We have been tested for all available U.S. voltage and frequencies (For 120V, 50/60Hz and 240V, 50/60Hz) for which the device is capable of operation.



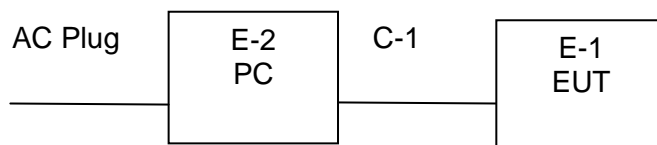
## AC Conducted Emission

Test Case	
AC Conducted Emission	Mode 25: Keeping TX + WLAN Link

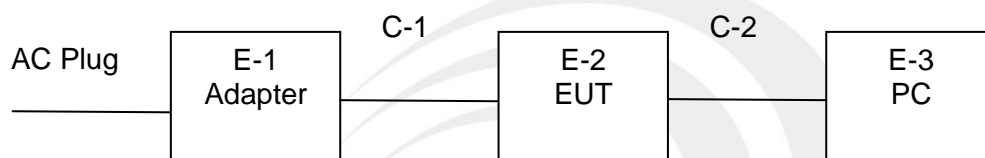


## 2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

### Radiated Spurious Emission Test



### 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	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	Adapter	N/A	NBS12E050200VU, F12US0500200A	N/A	EUT
E-2	IP phone	Grandstream	GXP1760W	N/A	EUT
E-3	PC	HP	500-320cx	N/A	N/A

Item	Shielded Type	Ferrite Core	Length	Note
C-1	USB Cable shielded line (Charging )	NO	100cm	N/A
C-2	Unshielded Cable	NO	110cm	N/A

Note:

- (1) The support equipment was authorized by Declaration of Confirmation.
- (2) For detachable type I/O cable should be specified the length in cm in 『Length』 column.
- (3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.



## 2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

### Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Spectrum Analyzer	Agilent	E4407B	MY50140340	2016.10.23	2017.10.22
Spectrum Analyzer	Agilent	AV4051F	Y20141343	2016.10.23	2017.10.22
Test Receiver	R&S	ESCI	101427	2016.10.23	2017.10.22
Bilog Antenna	TESEQ	CBL6111D	34678	2014.11.24	2017.11.23
Horn Antenna	Schwarzbeck	BBHA 9120D	9120D-1343	2015.03.05	2018.03.04
Horn Antenna	Schwarzbeck	BBHA 9170	9170-0741	2016.03.06	2019.03.03
50Ω Coaxial Switch	Anritsu	MP59B	6200264416	2016.10.23	2017.10.22
PreAmplifier	Agilent	8449B	60538	2016.10.23	2017.10.22
Loop Antenna	EMCO	6502	9003-2485	2016.03.06	2019.03.03
Low frequency cable	EM	R01	N/A	NCR	NCR
High frequency cable	SCHWARZBECK	AK9515H	SN-96286/96287	NCR	NCR

### Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
EMI Test Receiver	R&S	ESPI	102086	2016.10.23	2017.10.22
LISN	R&S	ENV216	101242	2016.10.23	2017.10.22
LISN	EMCO	3810/2NM	000-23625	2016.10.23	2017.10.22
Conduction Cable	EM	C01	N/A	NCR	NCR

### RF Connected Test

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
USB RF power sensor	DARE	RPR3006W	15I00041SNO03	2016.10.23	2017.10.22
Spectrum Analyzer	Agilent	E4407B	MY50140340	2016.10.23	2017.10.22
Signal Analyzer	Agilent	N9020A	MY49100060	2016.10.23	2017.10.22



### 3. EMC EMISSION TEST

#### 3.1 CONDUCTED EMISSION MEASUREMENT

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

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

0.15 -0.5	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

- (1) 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

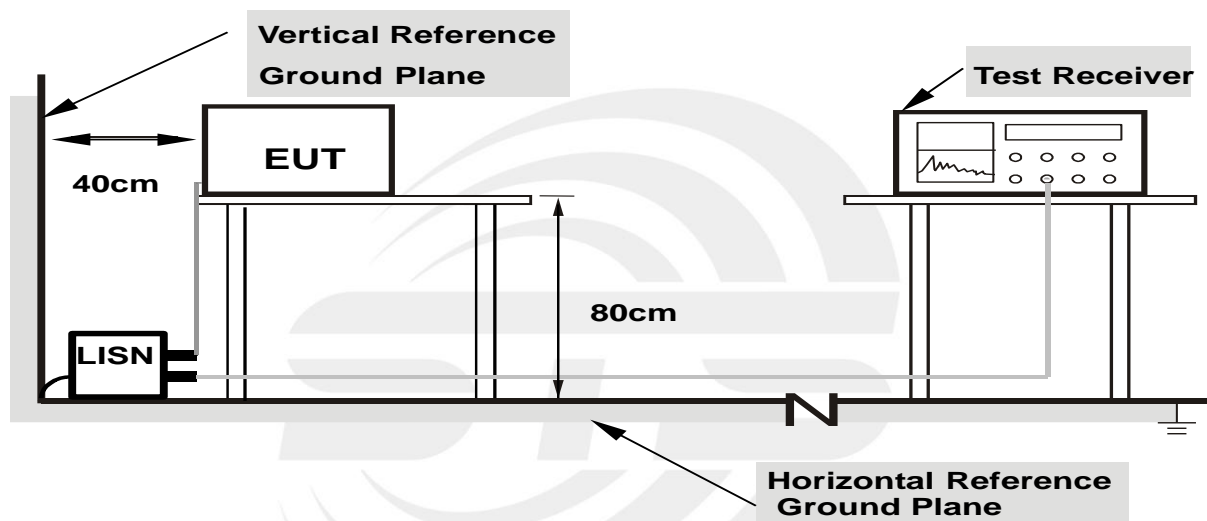
### 3.1.2 TEST PROCEDURE

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





### 3.1.6 TEST RESULTS

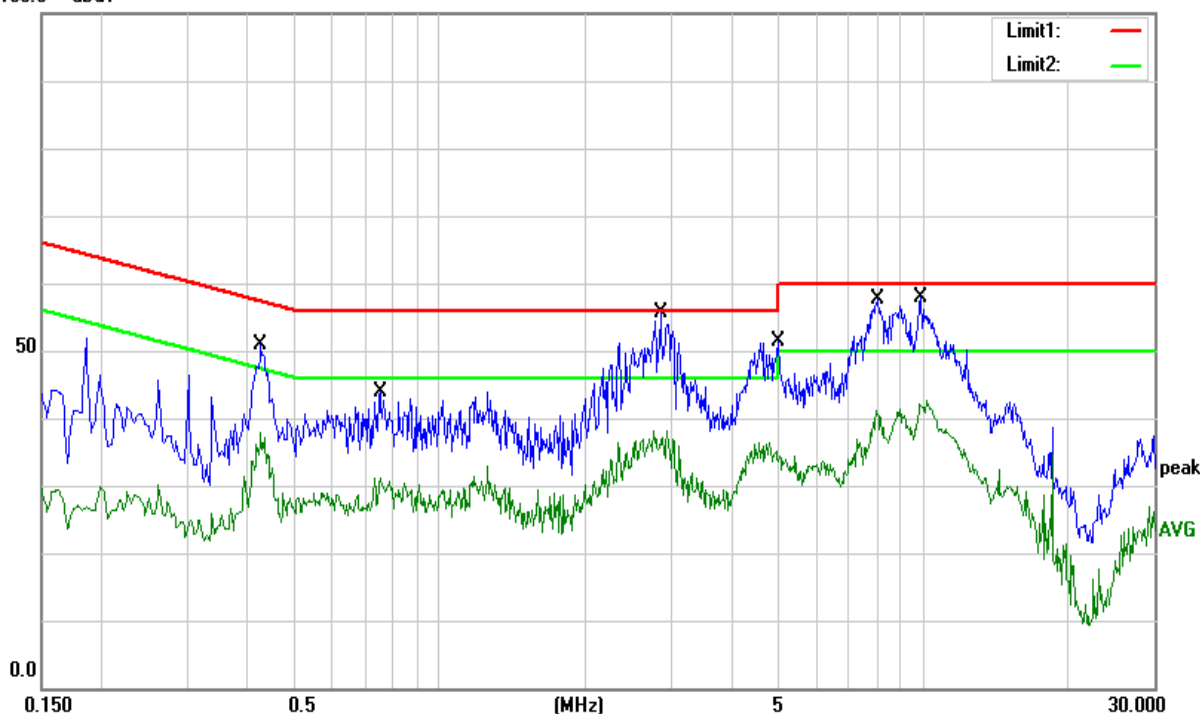
Temperature:	23.1 °C	Relative Humidity:	60%
Pressure:	1010hPa	Phase:	L
Test Voltage :	AC 120V/60Hz	Test Mode :	Mode 13

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
0.4260	41.77	9.21	50.98	57.33	-6.35	QP
0.4260	26.47	9.21	35.68	47.33	-11.65	AVG
0.7540	34.73	9.24	43.97	56.00	-12.03	QP
0.7540	20.63	9.24	29.87	46.00	-16.13	AVG
2.8828	36.18	9.26	45.44	56.00	-10.56	QP
2.8828	26.82	9.26	36.08	46.00	-9.92	AVG
5.0140	42.07	9.27	51.34	60.00	-8.66	QP
5.0140	23.18	9.27	32.45	50.00	-17.55	AVG
8.0728	43.46	9.33	52.79	60.00	-7.21	QP
8.0728	29.73	9.33	39.06	50.00	-10.94	AVG
9.8946	43.23	9.40	52.63	60.00	-7.37	QP
9.8946	32.21	9.40	41.61	50.00	-8.39	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result = Reading + Factor) – Limit

100.0 dBuV



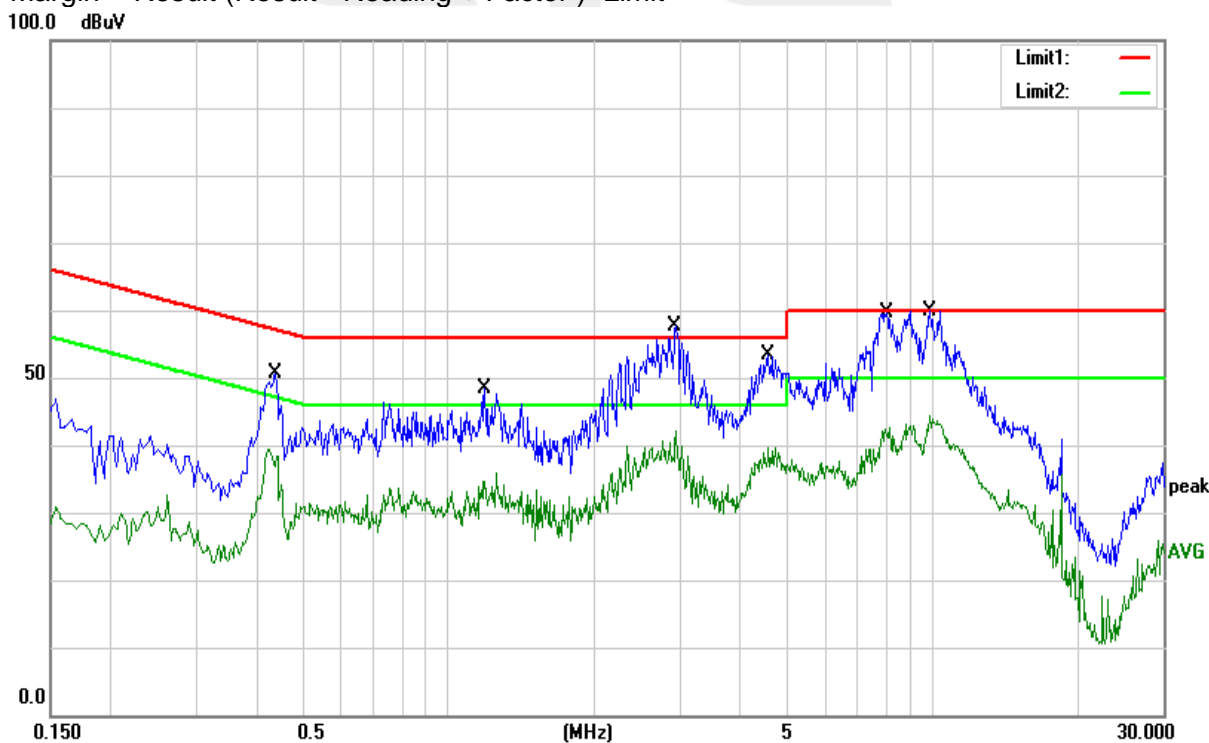


Temperature:	23.1 °C	Relative Humidity:	60%
Pressure:	1010hPa	Phase:	N
Test Voltage	AC 120V/60Hz	Test Mode	Mode 13

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
0.4380	41.47	9.20	50.67	57.10	-6.43	QP
0.4380	29.28	9.20	38.48	47.10	-8.62	AVG
1.1860	39.12	9.25	48.37	56.00	-7.63	QP
1.1860	24.57	9.25	33.82	46.00	-12.18	AVG
2.9525	44.95	9.26	54.21	56.00	-1.79	QP
2.9525	31.58	9.26	40.84	46.00	-5.16	AVG
4.5660	41.01	9.27	50.28	56.00	-5.72	QP
4.5660	27.88	9.27	37.15	46.00	-8.85	AVG
8.0801	44.37	9.33	53.70	60.00	-6.30	QP
8.0801	30.95	9.33	40.28	50.00	-9.72	AVG
9.8901	43.57	9.40	52.97	60.00	-7.03	QP
9.8901	33.01	9.40	42.41	50.00	-7.59	AVG

Remark:

1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result = Reading + Factor) – Limit



## 3.2 RADIATED EMISSION AND ( BANDEDGE) MEASUREMENT

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

In case the emission fall within the restricted band specified on 15.407(b)7& 15.205/209(a), then the (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)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15E.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak
Start Frequency	1000 MHz(Peak/AV)
Stop Frequency	10th carrier harmonic(Peak/AV)
RB / VB (emission in restricted band)	1 MHz / 1 MHz, AV=1 MHz /3 MHz

For Band edge

Spectrum Parameter	Setting
Detector	Peak
RB / VB (emission in restricted band)	1 MHz / 1 MHz, AV=1 MHz /3 MHz



Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~90kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	90kHz~110kHz / RB 200Hz for QP
Start ~ Stop Frequency	110kHz~490kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	490kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

### 3.2.2 TEST PROCEDURE

- The measuring distance of at 3 m shall be used for measurements at frequency 0.009MHz up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- The EUT was placed on the top of a rotating table 0.8 meters(above 1GHz is 1.5 m) above the ground at a 3 meter anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment shall be 0.8 m(above 1GHz is 1.5 m); the height of the test antenna shall vary between 1 m to 4 m. Horizontal and vertical polarizations of the antenna are set to make the measurement
- The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

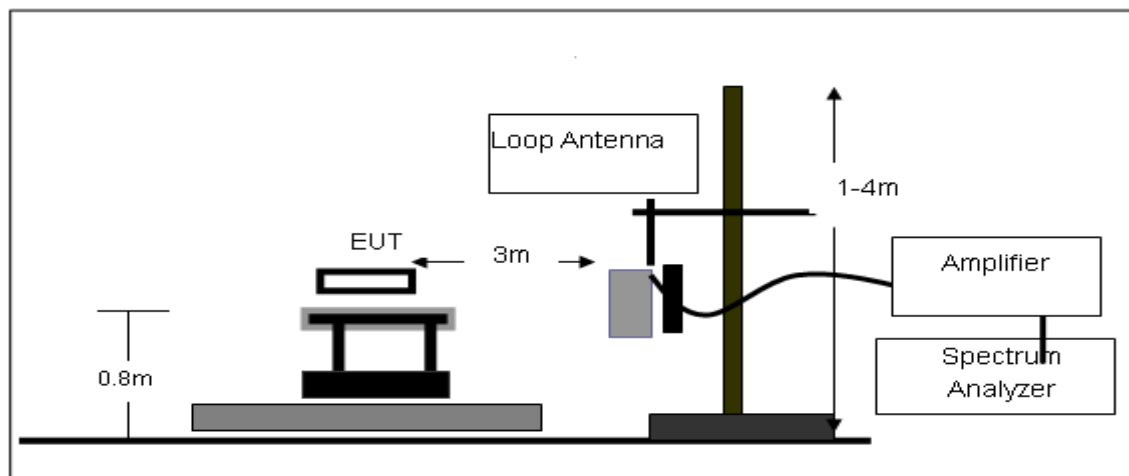
Both horizontal and vertical antenna polarities were tested and performed test to three orthogonal axis. The worst case emissions were reported

### 3.2.2 DEVIATION FROM TEST STANDARD

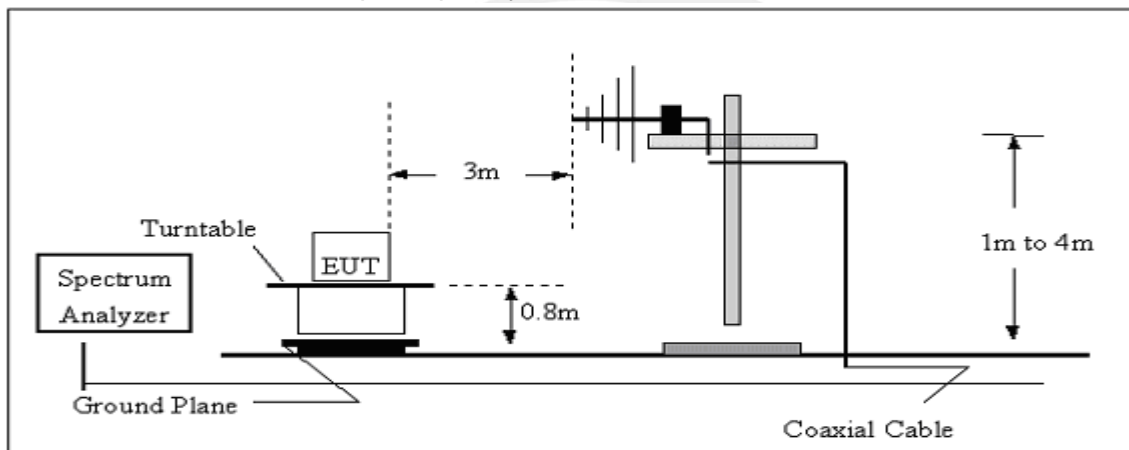
No deviation

### 3.2.3 TEST SETUP

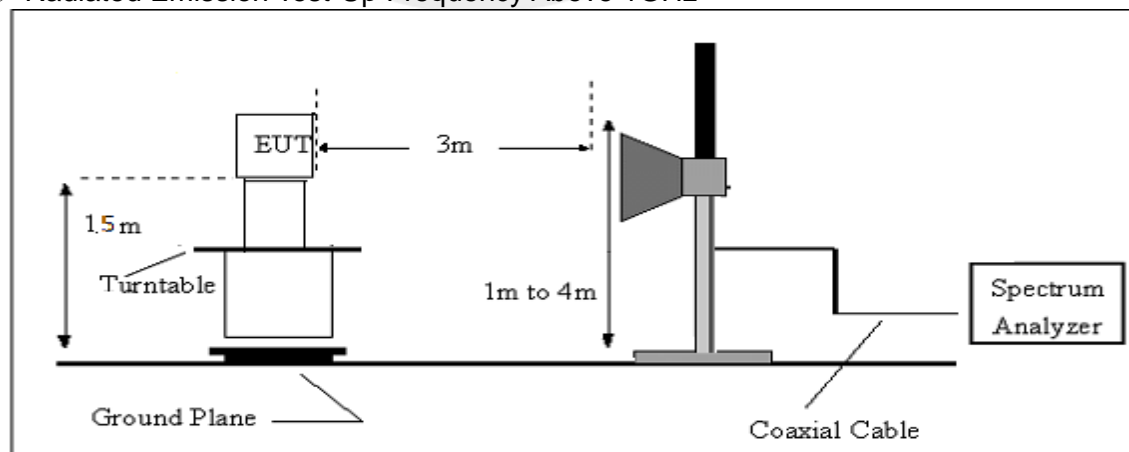
#### (A) Radiated Emission Test-Up Frequency Below 30MHz



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



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



### 3.2.4 EUT OPERATING CONDITIONS

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



### 3.2.5 TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)

Temperature:	23.1 °C	Relative Humidity:	60%
Pressure:	1010 hPa	Test Voltage :	DC 5V
Test Mode :	TX Mode	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 =  $40 \log (\text{specific distance/test distance})(\text{dB})$ ;

Limit line = specific limits(dBuV) + distance extrapolation factor.

**3.2.6 TEST RESULTS (BETWEEN 30MHZ – 1GHZ)**

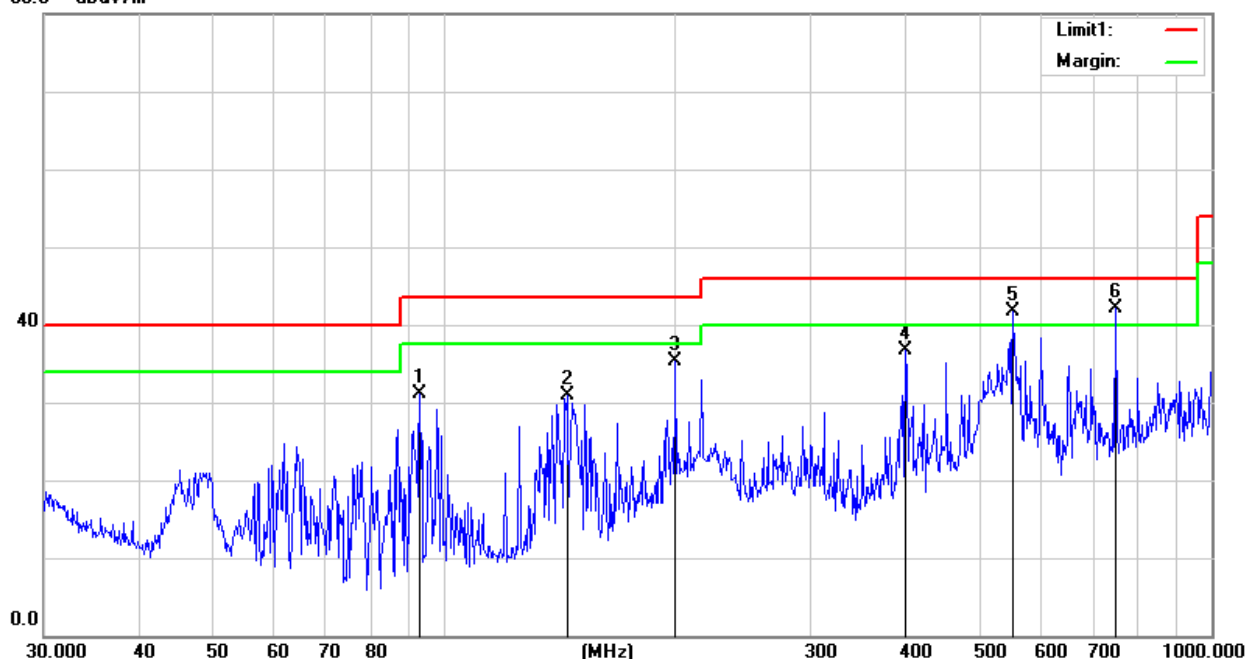
Temperature	26 °C	Relative Humidity	60%
Pressure	1010 hPa	Test Voltage	DC 5V
Test Mode	Mode 1-12(Mode1-6M worst mode)	Polarization	Horizontal

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
92.7871	50.93	-19.92	31.01	43.50	-12.49	QP
144.3348	48.68	-17.72	30.96	43.50	-12.54	QP
199.9856	55.52	-20.17	35.35	43.50	-8.15	QP
399.0302	48.05	-11.28	36.77	46.00	-9.23	QP
550.9480	48.48	-6.76	41.72	46.00	-4.28	QP
750.1083	45.62	-3.56	42.06	46.00	-3.94	QP

Remark:

1. Margin = Result (Result = Reading + Factor) – Limit

80.0 dBuV/m





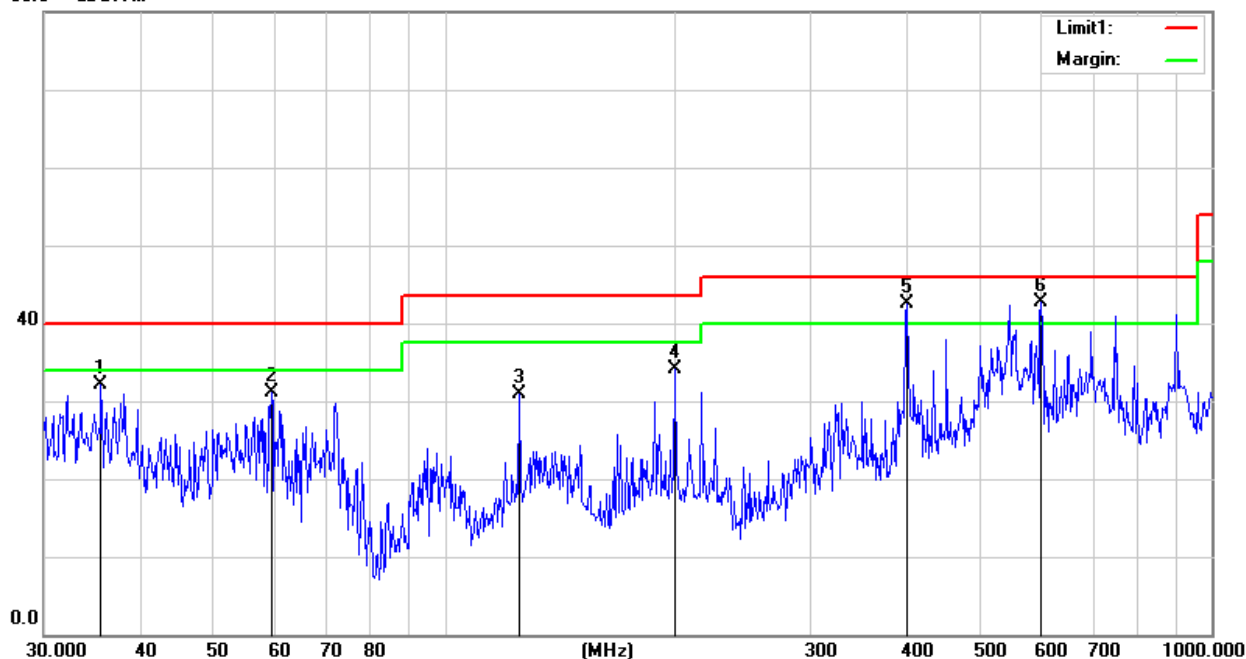
Temperature	26 °C	Relative Humidity	60%
Pressure	1010 hPa	Test Voltage	DC 5V
Test Mode	Mode 1-12(Mode 1-6M worst mode)	Polarization	Vertical

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
35.6240	46.18	-14.07	32.11	40.00	-7.89	QP
59.4405	55.32	-24.18	31.14	40.00	-8.86	QP
125.0066	48.46	-17.61	30.85	43.50	-12.65	QP
199.2855	54.36	-20.17	34.19	43.50	-9.31	QP
400.4320	53.78	-11.22	42.56	46.00	-3.44	QP
599.3212	49.88	-7.14	42.74	46.00	-3.26	QP

Remark:

1. Margin = Result (Result =Reading + Factor )-Limit

80.0 dBuV/m







### 3.2.7 TEST RESULTS (ABOVE 1000 MHZ)

#### Band I 5150-5250MHz

Band I(5.15-5.25) GHz										
Frequency (MHz)	Reading (dBuV)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Corrected Factor (dB)	Emission Level (dBμV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Comment
Low Channel (802.11n20/ 5180 MHz)										
3245.38	44.67	44.70	6.70	28.20	-9.80	34.87	74.00	-39.13	PK	Vertical
3245.38	41.94	44.70	6.70	28.20	-9.80	32.14	54.00	-21.86	AV	Vertical
3262.24	45.07	44.70	6.70	28.20	-9.80	35.27	74.00	-38.73	PK	Horizontal
3262.24	41.27	44.70	6.70	28.20	-9.80	31.47	54.00	-22.53	AV	Horizontal
3983.29	38.86	44.20	7.90	29.70	-6.60	32.26	74.00	-41.74	PK	Vertical
3983.29	36.01	44.20	7.90	29.70	-6.60	29.41	54.00	-24.59	AV	Vertical
3991.25	39.48	44.20	7.90	29.70	-6.60	32.88	74.00	-41.12	PK	Horizontal
3991.25	36.01	44.20	7.90	29.70	-6.60	29.41	54.00	-24.59	AV	Horizontal
7221.58	37.81	43.50	11.40	35.50	3.40	41.21	74.00	-32.79	PK	Vertical
7221.58	33.74	43.50	11.40	35.50	3.40	37.14	54.00	-16.86	AV	Vertical
7229.42	36.97	43.50	11.40	35.50	3.40	40.37	74.00	-33.63	PK	Horizontal
7229.42	34.05	43.50	11.40	35.50	3.40	37.45	54.00	-16.55	AV	Horizontal
10360.40	38.81	44.50	13.80	38.80	8.10	46.91	74.00	-27.09	PK	Vertical
10360.40	36.34	44.50	13.80	38.80	8.10	44.44	54.00	-9.56	AV	Vertical
10360.23	38.78	44.50	13.80	38.80	8.10	46.88	74.00	-27.12	PK	Horizontal
10360.23	35.73	44.50	13.80	38.80	8.10	43.83	54.00	-10.17	AV	Horizontal
11019.67	33.24	43.60	14.30	39.50	10.20	43.44	74.00	-30.56	PK	Vertical
11019.67	31.04	43.60	14.30	39.50	10.20	41.24	54.00	-12.76	AV	Vertical
11028.12	34.15	43.60	14.30	39.50	10.20	44.35	74.00	-29.65	PK	Horizontal
11028.12	30.79	43.60	14.30	39.50	10.20	40.99	54.00	-13.01	AV	Horizontal
13294.68	31.58	42.60	15.90	38.90	12.20	43.78	74.00	-30.22	PK	Vertical
13294.68	28.55	42.60	15.90	38.90	12.20	40.75	54.00	-13.25	AV	Vertical
13296.99	31.63	42.60	15.90	38.90	12.20	43.83	74.00	-30.17	PK	Horizontal
13296.99	29.29	42.60	15.90	38.90	12.20	41.49	54.00	-12.51	AV	Horizontal
15539.94	31.09	44.10	17.81	39.20	12.91	44.00	74.00	-30.00	PK	Vertical
15539.94	27.30	44.10	17.81	39.20	12.91	40.21	54.00	-13.79	AV	Vertical
15540.04	29.71	44.10	17.81	39.20	12.91	42.62	74.00	-31.38	PK	Horizontal
15540.04	27.25	44.10	17.81	39.20	12.91	40.16	54.00	-13.84	AV	Horizontal



Mid Channel (802.11 n20/ 5200 MHz)										
3262.62	45.08	44.70	6.70	28.20	-9.80	35.28	74.00	-38.72	PK	Vertical
3262.62	41.44	44.70	6.70	28.20	-9.80	31.64	54.00	-22.36	AV	Vertical
3250.22	44.80	44.70	6.70	28.20	-9.80	35.00	74.00	-39.00	PK	Horizontal
3250.22	40.91	44.70	6.70	28.20	-9.80	31.11	54.00	-22.89	AV	Horizontal
3999.94	39.80	44.20	7.90	29.70	-6.60	33.20	74.00	-40.80	PK	Vertical
3999.94	36.58	44.20	7.90	29.70	-6.60	29.98	54.00	-24.02	AV	Vertical
3989.80	40.06	44.20	7.90	29.70	-6.60	33.46	74.00	-40.54	PK	Horizontal
3989.80	36.90	44.20	7.90	29.70	-6.60	30.30	54.00	-23.70	AV	Horizontal
7233.02	36.63	43.50	11.40	35.50	3.40	40.03	74.00	-33.97	PK	Vertical
7233.02	34.84	43.50	11.40	35.50	3.40	38.24	54.00	-15.76	AV	Vertical
7216.51	36.53	43.50	11.40	35.50	3.40	39.93	74.00	-34.07	PK	Horizontal
7216.51	33.67	43.50	11.40	35.50	3.40	37.07	54.00	-16.93	AV	Horizontal
10400.14	40.07	44.50	13.80	38.80	8.10	48.17	74.00	-25.83	PK	Vertical
10400.14	35.97	44.50	13.80	38.80	8.10	44.07	54.00	-9.93	AV	Vertical
10400.43	39.70	44.50	13.80	38.80	8.10	47.80	74.00	-26.20	PK	Horizontal
10400.43	35.81	44.50	13.80	38.80	8.10	43.91	54.00	-10.09	AV	Horizontal
11025.00	34.12	43.60	14.30	39.50	10.20	44.32	74.00	-29.68	PK	Vertical
11025.00	30.92	43.60	14.30	39.50	10.20	41.12	54.00	-12.88	AV	Vertical
11024.16	33.66	43.60	14.30	39.50	10.20	43.86	74.00	-30.14	PK	Horizontal
11024.16	30.03	43.60	14.30	39.50	10.20	40.23	54.00	-13.77	AV	Horizontal
13288.36	32.05	42.60	15.90	38.90	12.20	44.25	74.00	-29.75	PK	Vertical
13288.36	29.71	42.60	15.90	38.90	12.20	41.91	54.00	-12.09	AV	Vertical
13289.31	32.32	42.60	15.90	38.90	12.20	44.52	74.00	-29.48	PK	Horizontal
13289.31	29.81	42.60	15.90	38.90	12.20	42.01	54.00	-11.99	AV	Horizontal
15600.02	31.09	42.70	18.00	37.10	12.40	43.49	74.00	-30.51	PK	Vertical
15600.02	27.03	42.70	18.00	37.10	12.40	39.43	54.00	-14.57	AV	Vertical
15600.00	29.96	42.70	18.00	37.10	12.40	42.36	74.00	-31.64	PK	Horizontal
15600.00	27.63	42.70	18.00	37.10	12.40	40.03	54.00	-13.97	AV	Horizontal
17988.03	28.25	42.70	19.40	46.50	23.20	51.45	74.00	-22.55	PK	Vertical
17988.03	24.90	42.70	19.40	46.50	23.20	48.10	54.00	-5.90	AV	Vertical
17998.24	28.08	42.70	19.40	46.50	23.20	51.28	74.00	-22.72	PK	Horizontal
17998.24	19.41	42.70	19.40	46.50	23.20	42.61	54.00	-11.39	AV	Horizontal



Mid Channel (802.11 n20/ 5240 MHz)										
3252.30	44.63	44.70	6.70	28.20	-9.80	34.83	74.00	-39.17	PK	Vertical
3252.30	41.80	44.70	6.70	28.20	-9.80	32.00	54.00	-22.00	AV	Vertical
3255.17	44.97	44.70	6.70	28.20	-9.80	35.17	74.00	-38.83	PK	Horizontal
3255.17	41.28	44.70	6.70	28.20	-9.80	31.48	54.00	-22.52	AV	Horizontal
3981.87	39.19	44.20	7.90	29.70	-6.60	32.59	74.00	-41.41	PK	Vertical
3981.87	36.55	44.20	7.90	29.70	-6.60	29.95	54.00	-24.05	AV	Vertical
3997.50	39.64	44.20	7.90	29.70	-6.60	33.04	74.00	-40.96	PK	Horizontal
3997.50	36.22	44.20	7.90	29.70	-6.60	29.62	54.00	-24.38	AV	Horizontal
7226.80	36.95	43.50	11.40	35.50	3.40	40.35	74.00	-33.65	PK	Vertical
7226.80	34.37	43.50	11.40	35.50	3.40	37.77	54.00	-16.23	AV	Vertical
7233.18	37.82	43.50	11.40	35.50	3.40	41.22	74.00	-32.78	PK	Horizontal
7233.18	33.45	43.50	11.40	35.50	3.40	36.85	54.00	-17.15	AV	Horizontal
10480.10	39.27	44.50	13.80	38.80	8.10	47.37	74.00	-26.63	PK	Vertical
10480.10	36.33	44.50	13.80	38.80	8.10	44.43	54.00	-9.57	AV	Vertical
10480.19	39.11	44.50	13.80	38.80	8.10	47.21	74.00	-26.79	PK	Horizontal
10480.19	36.10	44.50	13.80	38.80	8.10	44.20	54.00	-9.80	AV	Horizontal
11032.70	33.24	43.60	14.30	39.50	10.20	43.44	74.00	-30.56	PK	Vertical
11032.70	30.50	43.60	14.30	39.50	10.20	40.70	54.00	-13.30	AV	Vertical
11036.29	33.48	43.60	14.30	39.50	10.20	43.68	74.00	-30.32	PK	Horizontal
11036.29	30.35	43.60	14.30	39.50	10.20	40.55	54.00	-13.45	AV	Horizontal
13296.58	31.96	42.60	15.90	38.90	12.20	44.16	74.00	-29.84	PK	Vertical
13296.58	29.03	42.60	15.90	38.90	12.20	41.23	54.00	-12.77	AV	Vertical
13280.21	31.67	42.60	15.90	38.90	12.20	43.87	74.00	-30.13	PK	Horizontal
13280.21	29.92	42.60	15.90	38.90	12.20	42.12	54.00	-11.88	AV	Horizontal
15719.80	31.09	42.70	19.40	46.50	23.20	54.29	74.00	-19.71	PK	Vertical
15719.80	27.21	42.70	19.40	46.50	23.20	50.41	54.00	-3.59	AV	Vertical
15720.17	30.01	42.70	19.40	46.50	23.20	53.21	74.00	-20.79	PK	Horizontal
15720.17	27.78	42.70	19.40	46.50	23.20	50.98	54.00	-3.02	AV	Horizontal

**Remark:**

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Scan with 802.11a, 802.11n (HT-20), 802.11n (HT-40), 802.11ac (HT-20), 802.11ac (HT-40), 802.11ac (HT-80) the worst case is 802.11n (HT-20).
3. The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment noise.

**Band II 5250-5350MHz**

Band II(5.25-5.35) GHz										
Frequency (MHz)	Reading	Amplifier	Loss	Antenna Factor	Corrected Factor	Emission Level	Limit (dBuV/m)	Margin	Detector	Comment
	(dBuV)	(dB)	(dB)	(dB/m)	(dB)	(dBμV/m)		(dB)		
Low Channel (802.11 n20/ 5260 MHz)										
3254.43	45.20	44.70	6.70	28.20	-9.80	35.40	74.00	-38.60	PK	Vertical
3254.43	41.99	44.70	6.70	28.20	-9.80	32.19	54.00	-21.81	AV	Vertical
3245.45	43.99	44.70	6.70	28.20	-9.80	34.19	74.00	-39.81	PK	Horizontal
3245.45	41.98	44.70	6.70	28.20	-9.80	32.18	54.00	-21.82	AV	Horizontal
3983.55	38.71	44.20	7.90	29.70	-6.60	32.11	74.00	-41.89	PK	Vertical
3983.55	35.69	44.20	7.90	29.70	-6.60	29.09	54.00	-24.91	AV	Vertical
3990.80	39.58	44.20	7.90	29.70	-6.60	32.98	74.00	-41.02	PK	Horizontal
3990.80	36.87	44.20	7.90	29.70	-6.60	30.27	54.00	-23.73	AV	Horizontal
7235.56	37.85	43.50	11.40	35.50	3.40	41.25	74.00	-32.75	PK	Vertical
7235.56	34.77	43.50	11.40	35.50	3.40	38.17	54.00	-15.83	AV	Vertical
7225.92	36.89	43.50	11.40	35.50	3.40	40.29	74.00	-33.71	PK	Horizontal
7225.92	34.69	43.50	11.40	35.50	3.40	38.09	54.00	-15.91	AV	Horizontal
10519.97	39.12	44.50	13.90	38.80	8.20	47.32	74.00	-26.68	PK	Vertical
10519.97	36.51	44.50	13.90	38.80	8.20	44.71	54.00	-9.29	AV	Vertical
10520.02	39.47	44.50	13.90	38.80	8.20	47.67	74.00	-26.33	PK	Horizontal
10520.02	36.17	44.50	13.90	38.80	8.20	44.37	54.00	-9.63	AV	Horizontal
11017.02	33.40	43.60	14.30	39.50	10.20	43.60	74.00	-30.40	PK	Vertical
11017.02	30.89	43.60	14.30	39.50	10.20	41.09	54.00	-12.91	AV	Vertical
11033.27	32.70	43.60	14.30	39.50	10.20	42.90	74.00	-31.10	PK	Horizontal
11033.27	30.19	43.60	14.30	39.50	10.20	40.39	54.00	-13.61	AV	Horizontal
13280.90	31.75	42.60	15.90	38.90	12.20	43.95	74.00	-30.05	PK	Vertical
13280.90	29.40	42.60	15.90	38.90	12.20	41.60	54.00	-12.40	AV	Vertical
13281.01	32.22	42.60	15.90	38.90	12.20	44.42	74.00	-29.58	PK	Horizontal
13281.01	28.88	42.60	15.90	38.90	12.20	41.08	54.00	-12.92	AV	Horizontal
15780.04	31.09	42.70	18.00	37.10	12.40	43.49	74.00	-30.51	PK	Vertical
15780.04	27.01	42.70	18.00	37.10	12.40	39.41	54.00	-14.59	AV	Vertical
15779.95	30.45	42.70	18.00	37.10	12.40	42.85	74.00	-31.15	PK	Horizontal
15779.95	27.06	42.70	18.00	37.10	12.40	39.46	54.00	-14.54	AV	Horizontal
17986.08	27.04	42.70	19.40	46.50	23.20	50.24	74.00	-23.76	PK	Vertical
17986.08	26.05	42.70	19.40	46.50	23.20	49.25	54.00	-4.75	AV	Vertical
17998.24	27.75	42.70	19.40	46.50	23.20	50.95	74.00	-23.05	PK	Horizontal
17998.24	19.44	42.70	19.40	46.50	23.20	42.64	54.00	-11.36	AV	Horizontal



Mid Channel (802.11 n20/ 5300 MHz)										
3253.46	44.68	44.70	6.70	28.20	-9.80	34.88	74.00	-39.12	PK	Vertical
3253.46	41.95	44.70	6.70	28.20	-9.80	32.15	54.00	-21.85	AV	Vertical
3250.23	44.74	44.70	6.70	28.20	-9.80	34.94	74.00	-39.06	PK	Horizontal
3250.23	41.56	44.70	6.70	28.20	-9.80	31.76	54.00	-22.24	AV	Horizontal
3984.77	39.59	44.20	7.90	29.70	-6.60	32.99	74.00	-41.01	PK	Vertical
3984.77	36.64	44.20	7.90	29.70	-6.60	30.04	54.00	-23.96	AV	Vertical
3996.68	39.73	44.20	7.90	29.70	-6.60	33.13	74.00	-40.87	PK	Horizontal
3996.68	36.30	44.20	7.90	29.70	-6.60	29.70	54.00	-24.30	AV	Horizontal
7220.92	36.95	43.50	11.40	35.50	3.40	40.35	74.00	-33.65	PK	Vertical
7220.92	34.45	43.50	11.40	35.50	3.40	37.85	54.00	-16.15	AV	Vertical
7226.65	37.56	43.50	11.40	35.50	3.40	40.96	74.00	-33.04	PK	Horizontal
7226.65	34.86	43.50	11.40	35.50	3.40	38.26	54.00	-15.74	AV	Horizontal
10600.21	39.43	44.50	13.80	38.80	8.10	47.53	74.00	-26.47	PK	Vertical
10600.21	35.80	44.50	13.80	38.80	8.10	43.90	54.00	-10.10	AV	Vertical
10600.40	40.15	44.50	13.80	38.80	8.10	48.25	74.00	-25.75	PK	Horizontal
10600.40	37.14	44.50	13.80	38.80	8.10	45.24	54.00	-8.76	AV	Horizontal
11032.79	33.69	43.60	14.30	39.50	10.20	43.89	74.00	-30.11	PK	Vertical
11032.79	31.03	43.60	14.30	39.50	10.20	41.23	54.00	-12.77	AV	Vertical
11025.71	33.72	43.60	14.30	39.50	10.20	43.92	74.00	-30.08	PK	Horizontal
11025.71	30.84	43.60	14.30	39.50	10.20	41.04	54.00	-12.96	AV	Horizontal
13285.95	32.57	42.60	15.90	38.90	12.20	44.77	74.00	-29.23	PK	Vertical
13285.95	29.99	42.60	15.90	38.90	12.20	42.19	54.00	-11.81	AV	Vertical
13283.77	32.35	42.60	15.90	38.90	12.20	44.55	74.00	-29.45	PK	Horizontal
13283.77	29.15	42.60	15.90	38.90	12.20	41.35	54.00	-12.65	AV	Horizontal
15900.05	31.09	42.70	18.00	37.10	12.40	43.49	74.00	-30.51	PK	Vertical
15900.05	27.62	42.70	18.00	37.10	12.40	40.02	54.00	-13.98	AV	Vertical
15600.19	30.14	42.70	18.00	37.10	12.40	42.54	74.00	-31.46	PK	Horizontal
15600.19	26.70	42.70	18.00	37.10	12.40	39.10	54.00	-14.90	AV	Horizontal
17990.97	27.89	42.70	19.40	46.50	23.20	51.09	74.00	-22.91	PK	Vertical
17990.97	25.04	42.70	19.40	46.50	23.20	48.24	54.00	-5.76	AV	Vertical
17998.24	28.17	42.70	19.40	46.50	23.20	51.37	74.00	-22.63	PK	Horizontal
17998.24	20.13	42.70	19.40	46.50	23.20	43.33	54.00	-10.67	AV	Horizontal



Mid Channel (802.11 n20/ 5320 MHz)										
3250.17	44.73	44.70	6.70	28.20	-9.80	34.93	74.00	-39.07	PK	Vertical
3250.17	40.89	44.70	6.70	28.20	-9.80	31.09	54.00	-22.91	AV	Vertical
3252.94	44.32	44.70	6.70	28.20	-9.80	34.52	74.00	-39.48	PK	Horizontal
3252.94	42.08	44.70	6.70	28.20	-9.80	32.28	54.00	-21.72	AV	Horizontal
3984.68	39.50	44.20	7.90	29.70	-6.60	32.90	74.00	-41.10	PK	Vertical
3984.68	35.77	44.20	7.90	29.70	-6.60	29.17	54.00	-24.83	AV	Vertical
3992.58	39.26	44.20	7.90	29.70	-6.60	32.66	74.00	-41.34	PK	Horizontal
3992.58	36.72	44.20	7.90	29.70	-6.60	30.12	54.00	-23.88	AV	Horizontal
7216.96	37.19	43.50	11.40	35.50	3.40	40.59	74.00	-33.41	PK	Vertical
7216.96	34.91	43.50	11.40	35.50	3.40	38.31	54.00	-15.69	AV	Vertical
7231.63	37.40	43.50	11.40	35.50	3.40	40.80	74.00	-33.20	PK	Horizontal
7231.63	33.72	43.50	11.40	35.50	3.40	37.12	54.00	-16.88	AV	Horizontal
10639.96	40.19	44.50	13.80	38.80	8.10	48.29	74.00	-25.71	PK	Vertical
10639.96	36.25	44.50	13.80	38.80	8.10	44.35	54.00	-9.65	AV	Vertical
10640.34	38.98	44.50	13.80	38.80	8.10	47.08	74.00	-26.92	PK	Horizontal
10640.34	36.62	44.50	13.80	38.80	8.10	44.72	54.00	-9.28	AV	Horizontal
11026.32	33.31	43.60	14.30	39.50	10.20	43.51	74.00	-30.49	PK	Vertical
11026.32	29.91	43.60	14.30	39.50	10.20	40.11	54.00	-13.89	AV	Vertical
11025.07	33.62	43.60	14.30	39.50	10.20	43.82	74.00	-30.18	PK	Horizontal
11025.07	30.94	43.60	14.30	39.50	10.20	41.14	54.00	-12.86	AV	Horizontal
13289.04	32.48	42.70	18.00	37.10	12.40	44.88	74.00	-29.12	PK	Vertical
13289.04	29.81	42.70	18.00	37.10	12.40	42.21	54.00	-11.79	AV	Vertical
13281.92	32.53	42.70	18.00	37.10	12.40	44.93	74.00	-29.07	PK	Horizontal
13281.92	29.34	42.70	18.00	37.10	12.40	41.74	54.00	-12.26	AV	Horizontal
15960.18	31.09	42.70	19.40	46.50	23.20	54.29	74.00	-19.71	PK	Vertical
15960.18	26.93	42.70	19.40	46.50	23.20	50.13	54.00	-3.87	AV	Vertical
15959.97	30.12	42.70	19.40	46.50	23.20	53.32	74.00	-20.68	PK	Horizontal
15959.97	27.33	42.70	19.40	46.50	23.20	50.53	54.00	-3.47	AV	Horizontal

**Remark:**

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

2. Scan with 802.11a, 802.11n (HT-20), 802.11n (HT-40), 802.11ac (HT-20), 802.11ac (HT-40), 802.11ac (HT-80) the worst case is 802.11n (HT-20).

3. The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment noise.



**Band III 5470-5725MHz**

Band III(5.47-5.725) GHz										
Frequency (MHz)	Reading	Amplifier	Loss	Antenna Factor	Corrected Factor	Emission Level	Limit (dBuV/m)	Margin	Detector	Comment
	(dBuV)	(dB)	(dB)	(dB/m)	(dB)	(dBuV/m)		(dB)		
Low Channel (802.11 n20/ 5500 MHz)										
3249.22	44.66	44.70	6.70	28.20	-9.80	34.86	74.00	-39.14	PK	Vertical
3249.22	41.25	44.70	6.70	28.20	-9.80	31.45	54.00	-22.55	AV	Vertical
3265.16	44.23	44.70	6.70	28.20	-9.80	34.43	74.00	-39.57	PK	Horizontal
3265.16	41.10	44.70	6.70	28.20	-9.80	31.30	54.00	-22.70	AV	Horizontal
3983.94	39.94	44.20	7.90	29.70	-6.60	33.34	74.00	-40.66	PK	Vertical
3983.94	36.31	44.20	7.90	29.70	-6.60	29.71	54.00	-24.29	AV	Vertical
3989.33	39.62	44.20	7.90	29.70	-6.60	33.02	74.00	-40.98	PK	Horizontal
3989.33	36.08	44.20	7.90	29.70	-6.60	29.48	54.00	-24.52	AV	Horizontal
7232.95	37.84	43.50	11.40	35.50	3.40	41.24	74.00	-32.76	PK	Vertical
7232.95	33.85	43.50	11.40	35.50	3.40	37.25	54.00	-16.75	AV	Vertical
7223.26	36.98	43.50	11.40	35.50	3.40	40.38	74.00	-33.62	PK	Horizontal
7223.26	34.88	43.50	11.40	35.50	3.40	38.28	54.00	-15.72	AV	Horizontal
10340.75	39.63	44.50	13.80	38.80	8.10	47.73	74.00	-26.27	PK	Vertical
10340.75	36.62	44.50	13.80		-30.70	5.92	54.00	-48.08	AV	Vertical
10344.14	39.30	44.50	13.80	38.80	8.10	47.40	74.00	-26.60	PK	Horizontal
10344.14	35.99	44.50	13.80	38.80	8.10	44.09	54.00	-9.91	AV	Horizontal
11000.05	33.09	43.60	14.30	39.50	10.20	43.29	74.00	-30.71	PK	Vertical
11000.05	30.81	43.60	14.30	39.50	10.20	41.01	54.00	-12.99	AV	Vertical
11000.08	33.94	43.60	14.30	39.50	10.20	44.14	74.00	-29.86	PK	Horizontal
11000.08	29.84	43.60	14.30	39.50	10.20	40.04	54.00	-13.96	AV	Horizontal
13284.81	32.93	42.60	15.90	38.90	12.20	45.13	74.00	-28.87	PK	Vertical
13284.81	29.35	42.60	15.90	38.90	12.20	41.55	54.00	-12.45	AV	Vertical
13285.99	31.99	42.60	15.90	38.90	12.20	44.19	74.00	-29.81	PK	Horizontal
13285.99	28.74	42.60	15.90	38.90	12.20	40.94	54.00	-13.06	AV	Horizontal
16500.25	31.09	42.50	18.43	38.50	14.43	45.52	74.00	-28.48	PK	Vertical
16500.25	26.85	42.50	18.43	38.50	14.43	41.28	54.00	-12.72	AV	Vertical
16500.16	29.90	42.50	18.43	38.50	14.43	44.33	74.00	-29.67	PK	Horizontal
16500.16	27.99	42.50	18.43	38.50	14.43	42.42	54.00	-11.58	AV	Horizontal
17993.00	27.10	42.70	19.40	46.50	23.20	50.30	74.00	-23.70	PK	Vertical
17993.00	25.41	42.70	19.40	46.50	23.20	48.61	54.00	-5.39	AV	Vertical
17980.45	28.04	42.70	19.40	46.50	23.20	51.24	74.00	-22.76	PK	Horizontal
17980.45	19.98	42.70	19.40	46.50	23.20	43.18	54.00	-10.82	AV	Horizontal



Mid Channel (802.11 n20/ 5580 MHz)										
3262.60	44.38	44.70	6.70	28.20	-9.80	34.58	74.00	-39.42	PK	Vertical
3262.60	41.54	44.70	6.70	28.20	-9.80	31.74	54.00	-22.26	AV	Vertical
3256.56	45.13	44.70	6.70	28.20	-9.80	35.33	74.00	-38.67	PK	Horizontal
3256.56	41.87	44.70	6.70	28.20	-9.80	32.07	54.00	-21.93	AV	Horizontal
3983.13	39.55	44.20	7.90	29.70	-6.60	32.95	74.00	-41.05	PK	Vertical
3983.13	36.69	44.20	7.90	29.70	-6.60	30.09	54.00	-23.91	AV	Vertical
3988.31	38.98	44.20	7.90	29.70	-6.60	32.38	74.00	-41.62	PK	Horizontal
3988.31	37.06	44.20	7.90	29.70	-6.60	30.46	54.00	-23.54	AV	Horizontal
7229.62	37.73	43.50	11.40	35.50	3.40	41.13	74.00	-32.87	PK	Vertical
7229.62	34.62	43.50	11.40	35.50	3.40	38.02	54.00	-15.98	AV	Vertical
7217.74	36.87	43.50	11.40	35.50	3.40	40.27	74.00	-33.73	PK	Horizontal
7217.74	34.77	43.50	11.40	35.50	3.40	38.17	54.00	-15.83	AV	Horizontal
10391.12	39.47	44.50	13.80	38.80	8.10	47.57	74.00	-26.43	PK	Vertical
10391.12	36.85	44.50	13.80	38.80	8.10	44.95	54.00	-9.05	AV	Vertical
10383.87	39.69	44.50	13.80	38.80	8.10	47.79	74.00	-26.21	PK	Horizontal
10383.87	36.71	44.50	13.80	38.80	8.10	44.81	54.00	-9.19	AV	Horizontal
11159.97	34.00	43.60	14.30	39.50	10.20	44.20	74.00	-29.80	PK	Vertical
11159.97	29.91	43.60	14.30	39.50	10.20	40.11	54.00	-13.89	AV	Vertical
11159.99	33.79	43.60	14.30	39.50	10.20	43.99	74.00	-30.01	PK	Horizontal
11159.99	29.89	43.60	14.30	39.50	10.20	40.09	54.00	-13.91	AV	Horizontal
13286.05	31.65	42.60	15.90	38.90	12.20	43.85	74.00	-30.15	PK	Vertical
13286.05	28.56	42.60	15.90	38.90	12.20	40.76	54.00	-13.24	AV	Vertical
13297.60	32.31	42.60	15.90	38.90	12.20	44.51	74.00	-29.49	PK	Horizontal
13297.60	28.57	42.60	15.90	38.90	12.20	40.77	54.00	-13.23	AV	Horizontal
16740.27	31.09	42.50	18.43	38.50	14.43	45.52	74.00	-28.48	PK	Vertical
16740.27	27.25	42.50	18.43	38.50	14.43	41.68	54.00	-12.32	AV	Vertical
16740.10	30.42	42.50	18.43	38.50	14.43	44.85	74.00	-29.15	PK	Horizontal
16740.10	27.27	42.50	18.43	38.50	14.43	41.70	54.00	-12.30	AV	Horizontal
17981.37	27.37	42.70	19.40	46.50	23.20	50.57	74.00	-23.43	PK	Vertical
17981.37	25.56	42.70	19.40	46.50	23.20	48.76	54.00	-5.24	AV	Vertical
17985.85	27.13	42.70	19.40	46.50	23.20	50.33	74.00	-23.67	PK	Horizontal
17985.85	19.06	42.70	19.40	46.50	23.20	42.26	54.00	-11.74	AV	Horizontal





Mid Channel (802.11 n20/ 5700 MHz)										
3252.72	44.73	44.70	6.70	28.20	-9.80	34.93	74.00	-39.07	PK	Vertical
3252.72	42.06	44.70	6.70	28.20	-9.80	32.26	54.00	-21.74	AV	Vertical
3250.76	45.16	44.70	6.70	28.20	-9.80	35.36	74.00	-38.64	PK	Horizontal
3250.76	41.40	44.70	6.70	28.20	-9.80	31.60	54.00	-22.40	AV	Horizontal
3987.04	40.05	44.20	7.90	29.70	-6.60	33.45	74.00	-40.55	PK	Vertical
3987.04	35.91	44.20	7.90	29.70	-6.60	29.31	54.00	-24.69	AV	Vertical
3994.59	39.49	44.20	7.90	29.70	-6.60	32.89	74.00	-41.11	PK	Horizontal
3994.59	36.72	44.20	7.90	29.70	-6.60	30.12	54.00	-23.88	AV	Horizontal
7234.78	36.91	43.50	11.40	35.50	3.40	40.31	74.00	-33.69	PK	Vertical
7234.78	33.71	43.50	11.40	35.50	3.40	37.11	54.00	-16.89	AV	Vertical
7233.99	36.79	43.50	11.40	35.50	3.40	40.19	74.00	-33.81	PK	Horizontal
7233.99	34.90	43.50	11.40	35.50	3.40	38.30	54.00	-15.70	AV	Horizontal
10480.00	39.86	44.50	13.80	38.80	8.10	47.96	74.00	-26.04	PK	Vertical
10480.00	36.74	44.50	13.80	38.80	8.10	44.84	54.00	-9.16	AV	Vertical
10474.73	39.68	44.50	13.80	38.80	8.10	47.78	74.00	-26.22	PK	Horizontal
10474.73	36.73	44.50	13.80	38.80	8.10	44.83	54.00	-9.17	AV	Horizontal
11400.11	33.10	43.60	14.30	39.50	10.20	43.30	74.00	-30.70	PK	Vertical
11400.11	30.61	43.60	14.30	39.50	10.20	40.81	54.00	-13.19	AV	Vertical
11400.10	33.52	43.60	14.30	39.50	10.20	43.72	74.00	-30.28	PK	Horizontal
11400.10	30.30	43.60	14.30	39.50	10.20	40.50	54.00	-13.50	AV	Horizontal
13286.83	31.87	42.60	15.90	38.90	12.20	44.07	74.00	-29.93	PK	Vertical
13286.83	29.69	42.60	15.90	38.90	12.20	41.89	54.00	-12.11	AV	Vertical
13280.77	32.91	42.60	15.90	38.90	12.20	45.11	74.00	-28.89	PK	Horizontal
13280.77	28.70	42.60	15.90	38.90	12.20	40.90	54.00	-13.10	AV	Horizontal
17100.02	31.09	41.70	19.10	39.80	17.20	48.29	74.00	-25.71	PK	Vertical
17100.02	27.20	41.70	19.10	39.80	17.20	44.40	54.00	-9.60	AV	Vertical
17099.80	30.83	41.70	19.10	39.80	17.20	48.03	74.00	-25.97	PK	Horizontal
17099.80	26.84	41.70	19.10	39.80	17.20	44.04	54.00	-9.96	AV	Horizontal

**Remark:**

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Scan with 802.11a, 802.11n (HT-20), 802.11n (HT-40), 802.11ac (HT-20), 802.11ac (HT-40), 802.11ac (HT-80) the worst case is 802.11n (HT-20).
3. The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment noise.



## Band IV(5.725-5.850) GHz

Band IV(5.725-5.85) GHz										
Frequency (MHz)	Reading (dBuV)	Amplifier (dB)	Loss (dB)	Antenna Factor (dB/m)	Corrected Factor (dB)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Comment
Low Channel (802.11 n20/ 5745 MHz)										
3245.61	44.70	44.70	6.70	28.20	-9.80	34.90	74.00	-39.10	PK	Vertical
3245.61	42.03	44.70	6.70	28.20	-9.80	32.23	54.00	-21.77	AV	Vertical
3262.52	43.94	44.70	6.70	28.20	-9.80	34.14	74.00	-39.86	PK	Horizontal
3262.52	42.00	44.70	6.70	28.20	-9.80	32.20	54.00	-21.80	AV	Horizontal
3981.70	39.42	44.20	7.90	29.70	-6.60	32.82	74.00	-41.18	PK	Vertical
3981.70	37.14	44.20	7.90	29.70	-6.60	30.54	54.00	-23.46	AV	Vertical
3989.84	39.25	44.20	7.90	29.70	-6.60	32.65	74.00	-41.35	PK	Horizontal
3989.84	36.26	44.20	7.90	29.70	-6.60	29.66	54.00	-24.34	AV	Horizontal
7227.20	36.50	43.50	11.40	35.50	3.40	39.90	74.00	-34.10	PK	Vertical
7227.20	33.75	43.50	11.40	35.50	3.40	37.15	54.00	-16.85	AV	Vertical
7219.09	37.41	43.50	11.40	35.50	3.40	40.81	74.00	-33.19	PK	Horizontal
7219.09	34.08	43.50	11.40	35.50	3.40	37.48	54.00	-16.52	AV	Horizontal
10515.83	39.61	44.50	13.90	38.80	8.20	47.81	74.00	-26.19	PK	Vertical
10515.83	36.97	44.50	13.90	38.80	8.20	45.17	54.00	-8.83	AV	Vertical
10502.58	40.04	44.50	13.90	38.80	8.20	48.24	74.00	-25.76	PK	Horizontal
10502.58	37.14	44.50	13.90	38.80	8.20	45.34	54.00	-8.66	AV	Horizontal
11400.30	34.03	43.60	14.30	39.50	10.20	44.23	74.00	-29.77	PK	Vertical
11400.30	30.59	43.60	14.30	39.50	10.20	40.79	54.00	-13.21	AV	Vertical
11400.33	33.62	43.60	14.30	39.50	10.20	43.82	74.00	-30.18	PK	Horizontal
11400.33	30.96	43.60	14.30	39.50	10.20	41.16	54.00	-12.84	AV	Horizontal
13287.53	31.65	42.60	15.90	38.90	12.20	43.85	74.00	-30.15	PK	Vertical
13287.53	28.64	42.60	15.90	38.90	12.20	40.84	54.00	-13.16	AV	Vertical
13284.58	32.62	42.60	15.90	38.90	12.20	44.82	74.00	-29.18	PK	Horizontal
13284.58	28.59	42.60	15.90	38.90	12.20	40.79	54.00	-13.21	AV	Horizontal
15780.28	31.09	42.70	18.00	37.10	12.40	43.49	74.00	-30.51	PK	Vertical
15780.28	27.74	42.70	18.00	37.10	12.40	40.14	54.00	-13.86	AV	Vertical
15779.87	29.96	42.70	18.00	37.10	12.40	42.36	74.00	-31.64	PK	Horizontal
15779.87	27.53	42.70	18.00	37.10	12.40	39.93	54.00	-14.07	AV	Horizontal
17235.06	27.59	42.70	19.40	46.50	23.20	50.79	74.00	-23.21	PK	Vertical
17235.06	25.30	42.70	19.40	46.50	23.20	48.50	54.00	-5.50	AV	Vertical
17235.15	27.69	42.70	19.40	46.50	23.20	50.89	74.00	-23.11	PK	Horizontal
17235.15	19.35	42.70	19.40	46.50	23.20	42.55	54.00	-11.45	AV	Horizontal



Mid Channel (802.11 n20/ 5785 MHz)										
3253.68	44.50	44.70	6.70	28.20	-9.80	34.70	74.00	-39.30	PK	Vertical
3253.68	41.33	44.70	6.70	28.20	-9.80	31.53	54.00	-22.47	AV	Vertical
3255.76	43.90	44.70	6.70	28.20	-9.80	34.10	74.00	-39.90	PK	Horizontal
3255.76	40.94	44.70	6.70	28.20	-9.80	31.14	54.00	-22.86	AV	Horizontal
3984.55	39.04	44.20	7.90	29.70	-6.60	32.44	74.00	-41.56	PK	Vertical
3984.55	36.23	44.20	7.90	29.70	-6.60	29.63	54.00	-24.37	AV	Vertical
3982.31	39.30	44.20	7.90	29.70	-6.60	32.70	74.00	-41.30	PK	Horizontal
3982.31	36.19	44.20	7.90	29.70	-6.60	29.59	54.00	-24.41	AV	Horizontal
7230.03	37.10	43.50	11.40	35.50	3.40	40.50	74.00	-33.50	PK	Vertical
7230.03	33.69	43.50	11.40	35.50	3.40	37.09	54.00	-16.91	AV	Vertical
7224.86	36.86	43.50	11.40	35.50	3.40	40.26	74.00	-33.74	PK	Horizontal
7224.86	34.87	43.50	11.40	35.50	3.40	38.27	54.00	-15.73	AV	Horizontal
10586.10	39.31	44.50	13.80	38.80	8.10	47.41	74.00	-26.59	PK	Vertical
10586.10	36.05	44.50	13.80	38.80	8.10	44.15	54.00	-9.85	AV	Vertical
10593.79	39.09	44.50	13.80	38.80	8.10	47.19	74.00	-26.81	PK	Horizontal
10593.79	36.91	44.50	13.80	38.80	8.10	45.01	54.00	-8.99	AV	Horizontal
11570.05	33.80	43.60	14.30	39.50	10.20	44.00	74.00	-30.00	PK	Vertical
11570.05	30.30	43.60	14.30	39.50	10.20	40.50	54.00	-13.50	AV	Vertical
11570.40	33.80	43.60	14.30	39.50	10.20	44.00	74.00	-30.00	PK	Horizontal
11570.40	30.78	43.60	14.30	39.50	10.20	40.98	54.00	-13.02	AV	Horizontal
13279.99	31.53	42.60	15.90	38.90	12.20	43.73	74.00	-30.27	PK	Vertical
13279.99	29.07	42.60	15.90	38.90	12.20	41.27	54.00	-12.73	AV	Vertical
13286.68	31.83	42.60	15.90	38.90	12.20	44.03	74.00	-29.97	PK	Horizontal
13286.68	29.44	42.60	15.90	38.90	12.20	41.64	54.00	-12.36	AV	Horizontal
15897.06	31.09	42.70	18.00	37.10	12.40	43.49	74.00	-30.51	PK	Vertical
15897.06	27.15	42.70	18.00	37.10	12.40	39.55	54.00	-14.45	AV	Vertical
15582.55	30.64	42.70	18.00	37.10	12.40	43.04	74.00	-30.96	PK	Horizontal
15582.55	26.76	42.70	18.00	37.10	12.40	39.16	54.00	-14.84	AV	Horizontal
17354.98	27.96	41.80	19.20	42.80	20.20	48.16	74.00	-25.84	PK	Vertical
17354.98	25.20	41.80	19.20	42.80	20.20	45.40	54.00	-8.60	AV	Vertical
17355.23	27.50	41.80	19.20	42.80	20.20	47.70	74.00	-26.30	PK	Horizontal
17355.23	19.45	41.80	19.20	42.80	20.20	39.65	54.00	-14.35	AV	Horizontal



Mid Channel (802.11 n20/ 5825 MHz)										
3255.16	44.62	44.70	6.70	28.20	-9.80	34.82	74.00	-39.18	PK	Vertical
3255.16	41.09	44.70	6.70	28.20	-9.80	31.29	54.00	-22.71	AV	Vertical
3248.61	44.83	44.70	6.70	28.20	-9.80	35.03	74.00	-38.97	PK	Horizontal
3248.61	41.80	44.70	6.70	28.20	-9.80	32.00	54.00	-22.00	AV	Horizontal
3983.51	39.23	44.20	7.90	29.70	-6.60	32.63	74.00	-41.37	PK	Vertical
3983.51	36.62	44.20	7.90	29.70	-6.60	30.02	54.00	-23.98	AV	Vertical
3986.73	39.99	44.20	7.90	29.70	-6.60	33.39	74.00	-40.61	PK	Horizontal
3986.73	36.89	44.20	7.90	29.70	-6.60	30.29	54.00	-23.71	AV	Horizontal
7223.70	36.81	43.50	11.40	35.50	3.40	40.21	74.00	-33.79	PK	Vertical
7223.70	34.19	43.50	11.40	35.50	3.40	37.59	54.00	-16.41	AV	Vertical
7224.10	36.82	43.50	11.40	35.50	3.40	40.22	74.00	-33.78	PK	Horizontal
7224.10	33.48	43.50	11.40	35.50	3.40	36.88	54.00	-17.12	AV	Horizontal
10621.88	39.02	44.50	13.80	38.80	8.10	47.12	74.00	-26.88	PK	Vertical
10621.88	37.08	44.50	13.80	38.80	8.10	45.18	54.00	-8.82	AV	Vertical
10639.97	39.48	44.50	13.80	38.80	8.10	47.58	74.00	-26.42	PK	Horizontal
10639.97	35.83	44.50	13.80	38.80	8.10	43.93	54.00	-10.07	AV	Horizontal
11650.06	33.24	43.60	14.30	39.50	10.20	43.44	74.00	-30.56	PK	Vertical
11650.06	30.17	43.60	14.30	39.50	10.20	40.37	54.00	-13.63	AV	Vertical
11650.40	32.87	43.60	14.30	39.50	10.20	43.07	74.00	-30.93	PK	Horizontal
11650.40	29.89	43.60	14.30	39.50	10.20	40.09	54.00	-13.91	AV	Horizontal
13282.16	31.65	42.70	18.00	37.10	12.40	44.05	74.00	-29.95	PK	Vertical
13282.16	29.90	42.70	18.00	37.10	12.40	42.30	54.00	-11.70	AV	Vertical
13295.60	32.75	42.70	18.00	37.10	12.40	45.15	74.00	-28.85	PK	Horizontal
13295.60	29.73	42.70	18.00	37.10	12.40	42.13	54.00	-11.87	AV	Horizontal
17475.21	31.09	41.80	19.20	42.80	20.20	51.29	74.00	-22.71	PK	Vertical
17475.21	27.15	41.80	19.20	42.80	20.20	47.35	54.00	-6.65	AV	Vertical
17475.06	29.65	41.80	19.20	42.80	20.20	49.85	74.00	-24.15	PK	Horizontal
17475.06	27.97	41.80	19.20	42.80	20.20	48.17	54.00	-5.83	AV	Horizontal

**Remark:**

1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.

2. Scan with 802.11a, 802.11n (HT-20), 802.11n (HT-40), 802.11ac (HT-20), 802.11ac (HT-40), 802.11ac (HT-80) the worst case is 802.11n (HT-20).

3. The frequency emission of peak points that did not show above the forms are at least 20dB below the limit, the frequency emission is mainly from the environment noise.



### 3.2.8 BAND EDGE

#### Band I&II(5.15-5.35)GHz

Band I(5.15-5.35) GHz										
Frequency	Meter Reading	Amplifier	Loss	Antenna Factor	Corrected Factor	Emission Level	Limits	Margin	Detector	Comment
(MHz)	(dBμV)	(dB)	(dB)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	
802.11a BW20MHz										
5150	38.73	44.20	8.98	31.60	-3.62	35.11	74.00	-38.89	Peak	Vertical
5150	28.99	44.20	8.98	31.60	-3.62	25.37	54.00	-28.63	AVG	Vertical
5150	38.91	44.20	8.98	31.60	-3.62	35.29	74.00	-38.71	Peak	Horizontal
5150	28.95	44.20	8.98	31.60	-3.62	25.33	54.00	-28.67	AVG	Horizontal
5350	43.31	44.20	9.35	31.60	-3.25	40.06	74.00	-33.94	Peak	Vertical
5350	30.87	44.20	9.35	31.60	-3.25	27.62	54.00	-26.38	AVG	Vertical
5350	39.62	44.20	9.35	31.60	-3.25	36.37	74.00	-37.63	Peak	Horizontal
5350	28.61	44.20	9.35	31.60	-3.25	25.36	54.00	-28.64	AVG	Horizontal
802.11n BW20MHz										
5150	40.56	44.20	8.98	31.60	-3.62	36.94	74.00	-37.06	Peak	Vertical
5150	30.79	44.20	8.98	31.60	-3.62	27.17	54.00	-26.83	AVG	Vertical
5150	39.26	44.20	8.98	31.60	-3.62	35.64	74.00	-38.36	Peak	Horizontal
5150	31.62	44.20	8.98	31.60	-3.62	28.00	54.00	-26.00	AVG	Horizontal
5350	44.42	44.20	9.35	31.60	-3.25	41.17	74.00	-32.83	Peak	Vertical
5350	30.48	44.20	9.35	31.60	-3.25	27.23	54.00	-26.77	AVG	Vertical
5350	41.87	44.20	9.35	31.60	-3.25	38.62	74.00	-35.38	Peak	Horizontal
5350	30.06	44.20	9.35	31.60	-3.25	26.81	54.00	-27.19	AVG	Horizontal
802.11n BW40MHz										
5150	40.77	44.20	8.98	31.60	-3.62	37.15	74.00	-36.85	Peak	Vertical
5150	30.85	44.20	8.98	31.60	-3.62	27.23	54.00	-26.77	AVG	Vertical
5150	40.69	44.20	8.98	31.60	-3.62	37.07	74.00	-36.93	Peak	Horizontal
5150	30.26	44.20	8.98	31.60	-3.62	26.64	54.00	-27.36	AVG	Horizontal
5350	46.05	44.20	9.35	31.60	-3.25	42.80	74.00	-31.20	Peak	Vertical
5350	28.59	44.20	9.35	31.60	-3.25	25.34	54.00	-28.66	AVG	Vertical
5350	39.48	44.20	9.35	31.60	-3.25	36.23	74.00	-37.77	Peak	Horizontal
5350	28.15	44.20	9.35	31.60	-3.25	24.90	54.00	-29.10	AVG	Horizontal



802.11ac BW20MHz										
5150	38.55	44.20	8.98	31.60	-3.62	34.93	74.00	-39.07	Peak	Vertical
5150	31.40	44.20	8.98	31.60	-3.62	27.78	54.00	-26.22	AVG	Vertical
5150	39.45	44.20	8.98	31.60	-3.62	35.83	74.00	-38.17	Peak	Horizontal
5150	28.56	44.20	8.98	31.60	-3.62	24.94	54.00	-29.06	AVG	Horizontal
5350	44.41	44.20	9.35	31.60	-3.25	41.16	74.00	-32.84	Peak	Vertical
5350	30.12	44.20	9.35	31.60	-3.25	26.87	54.00	-27.13	AVG	Vertical
5350	38.26	44.20	9.35	31.60	-3.25	35.01	74.00	-38.99	Peak	Horizontal
5350	29.72	44.20	9.35	31.60	-3.25	26.47	54.00	-27.53	AVG	Horizontal
802.11ac BW40MHz										
5150	40.03	44.20	8.98	31.60	-3.62	36.41	74.00	-37.59	Peak	Vertical
5150	29.06	44.20	8.98	31.60	-3.62	25.44	54.00	-28.56	AVG	Vertical
5150	41.50	44.20	8.98	31.60	-3.62	37.88	74.00	-36.12	Peak	Horizontal
5150	27.76	44.20	8.98	31.60	-3.62	24.14	54.00	-29.86	AVG	Horizontal
5350	42.47	44.20	9.35	31.60	-3.25	39.22	74.00	-34.78	Peak	Vertical
5350	30.55	44.20	9.35	31.60	-3.25	27.30	54.00	-26.70	AVG	Vertical
5350	41.71	44.20	9.35	31.60	-3.25	38.46	74.00	-35.54	Peak	Horizontal
5350	29.78	44.20	9.35	31.60	-3.25	26.53	54.00	-27.47	AVG	Horizontal
802.11ac BW80MHz										
5150	41.71	44.20	8.98	31.60	-3.62	38.09	74.00	-35.91	Peak	Vertical
5150	29.05	44.20	8.98	31.60	-3.62	25.43	54.00	-28.57	AVG	Vertical
5150	39.89	44.20	8.98	31.60	-3.62	36.27	74.00	-37.73	Peak	Horizontal
5150	27.89	44.20	8.98	31.60	-3.62	24.27	54.00	-29.73	AVG	Horizontal
5350	42.63	44.20	9.35	31.60	-3.25	39.38	74.00	-34.62	Peak	Vertical
5350	28.27	44.20	9.35	31.60	-3.25	25.02	54.00	-28.98	AVG	Vertical
5350	42.09	44.20	9.35	31.60	-3.25	38.84	74.00	-35.16	Peak	Horizontal
5350	30.44	44.20	9.35	31.60	-3.25	27.19	54.00	-26.81	AVG	Horizontal



**Band III 5470-5725MHz**

Band III(5.47-5.725 GHz)										
Frequency	Meter Reading	Amplifier	Loss	Antenna Factor	Corrected Factor	Emission Level	Limits	Margin	Detector	Comment
(MHz)	(dBμV)	(dB)	(dB)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	
802.11a BW20MHz										
5470	41.73	44.20	9.67	32.00	-2.53	39.20	74.00	-34.80	Peak	Vertical
5470	29.09	44.20	9.67	32.00	-2.53	26.56	54.00	-27.44	AVG	Vertical
5470	40.96	44.20	9.67	32.00	-2.53	38.43	74.00	-35.57	Peak	Horizontal
5470	31.41	44.20	9.67	32.00	-2.53	28.88	54.00	-25.12	AVG	Horizontal
5725	45.81	44.20	10.00	32.00	-2.20	43.61	74.00	-30.39	Peak	Vertical
5725	29.57	44.20	10.00	32.00	-2.20	27.37	54.00	-26.63	AVG	Vertical
5725	41.99	44.20	10.00	32.00	-2.20	39.79	74.00	-34.21	Peak	Horizontal
5725	32.08	44.20	10.00	32.00	-2.20	29.88	54.00	-24.12	AVG	Horizontal
802.11n BW20MHz										
5470	38.70	44.20	9.67	32.00	-2.53	36.17	74.00	-37.83	Peak	Vertical
5470	31.88	44.20	9.67	32.00	-2.53	29.35	54.00	-24.65	AVG	Vertical
5470	38.50	44.20	9.67	32.00	-2.53	35.97	74.00	-38.03	Peak	Horizontal
5470	29.64	44.20	9.67	32.00	-2.53	27.11	54.00	-26.89	AVG	Horizontal
5725	45.23	44.20	10.00	32.00	-2.20	43.03	74.00	-30.97	Peak	Vertical
5725	31.63	44.20	10.00	32.00	-2.20	29.43	54.00	-24.57	AVG	Vertical
5725	37.68	44.20	10.00	32.00	-2.20	35.48	74.00	-38.52	Peak	Horizontal
5725	32.03	44.20	10.00	32.00	-2.20	29.83	54.00	-24.17	AVG	Horizontal
802.11n BW40MHz										
5470	40.57	44.20	9.67	32.00	-2.53	38.04	74.00	-35.96	Peak	Vertical
5470	29.99	44.20	9.67	32.00	-2.53	27.46	54.00	-26.54	AVG	Vertical
5470	41.83	44.20	9.67	32.00	-2.53	39.30	74.00	-34.70	Peak	Horizontal
5470	31.83	44.20	9.67	32.00	-2.53	29.30	54.00	-24.70	AVG	Horizontal
5725	46.60	44.20	10.00	32.00	-2.20	44.40	74.00	-29.60	Peak	Vertical
5725	28.99	44.20	10.00	32.00	-2.20	26.79	54.00	-27.21	AVG	Vertical
5725	41.35	44.20	10.00	32.00	-2.20	39.15	74.00	-34.85	Peak	Horizontal
5725	31.69	44.20	10.00	32.00	-2.20	29.49	54.00	-24.51	AVG	Horizontal



802.11ac BW20MHz										
5470	38.88	44.20	9.67	32.00	-2.53	36.35	74.00	-37.65	Peak	Vertical
5470	29.75	44.20	9.67	32.00	-2.53	27.22	54.00	-26.78	AVG	Vertical
5470	42.16	44.20	9.67	32.00	-2.53	39.63	74.00	-34.37	Peak	Horizontal
5470	31.62	44.20	9.67	32.00	-2.53	29.09	54.00	-24.91	AVG	Horizontal
5725	45.50	44.20	10.00	32.00	-2.20	43.30	74.00	-30.70	Peak	Vertical
5725	31.05	44.20	10.00	32.00	-2.20	28.85	54.00	-25.15	AVG	Vertical
5725	40.56	44.20	10.00	32.00	-2.20	38.36	74.00	-35.64	Peak	Horizontal
5725	28.85	44.20	10.00	32.00	-2.20	26.65	54.00	-27.35	AVG	Horizontal
802.11ac BW40MHz										
5470	40.87	44.20	9.67	32.00	-2.53	38.34	74.00	-35.66	Peak	Vertical
5470	28.01	44.20	9.67	32.00	-2.53	25.48	54.00	-28.52	AVG	Vertical
5470	39.45	44.20	9.67	32.00	-2.53	36.92	74.00	-37.08	Peak	Horizontal
5470	27.66	44.20	9.67	32.00	-2.53	25.13	54.00	-28.87	AVG	Horizontal
5725	42.75	44.20	10.00	32.00	-2.20	40.55	74.00	-33.45	Peak	Vertical
5725	28.81	44.20	10.00	32.00	-2.20	26.61	54.00	-27.39	AVG	Vertical
5725	38.83	44.20	10.00	32.00	-2.20	36.63	74.00	-37.37	Peak	Horizontal
5725	30.32	44.20	10.00	32.00	-2.20	28.12	54.00	-25.88	AVG	Horizontal
802.11ac BW80MHz										
5470	41.89	44.20	9.67	32.00	-2.53	39.36	74.00	-34.64	Peak	Vertical
5470	31.32	44.20	9.67	32.00	-2.53	28.79	54.00	-25.21	AVG	Vertical
5470	38.58	44.20	9.67	32.00	-2.53	36.05	74.00	-37.95	Peak	Horizontal
5470	31.17	44.20	9.67	32.00	-2.53	28.64	54.00	-25.36	AVG	Horizontal
5725	42.62	44.20	10.00	32.00	-2.20	40.42	74.00	-33.58	Peak	Vertical
5725	29.51	44.20	10.00	32.00	-2.20	27.31	54.00	-26.69	AVG	Vertical
5725	40.31	44.20	10.00	32.00	-2.20	38.11	74.00	-35.89	Peak	Horizontal
5725	28.71	44.20	10.00	32.00	-2.20	26.51	54.00	-27.49	AVG	Horizontal



**Band IV(5.725-5.85 GHz)**

Band IV(5.725-5.85 GHz)										
Frequency	Meter Reading	Amplifier	Loss	Antenna Factor	Corrected Factor	Emission Level	Limits	Margin	Detector	Comment
(MHz)	(dBμV)	(dB)	(dB)	(dB/m)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	Type	
802.11a BW20MHz										
5725	39.86	44.20	10.00	32.00	-2.20	37.66	74.00	-36.34	Peak	Vertical
5725	29.09	44.20	10.00	32.00	-2.20	26.89	54.00	-27.11	AVG	Vertical
5725	41.90	44.20	10.00	32.00	-2.20	39.70	74.00	-34.30	Peak	Horizontal
5725	29.10	44.20	10.00	32.00	-2.20	26.90	54.00	-27.10	AVG	Horizontal
5850	45.84	44.20	10.20	32.00	-2.00	43.84	74.00	-30.16	Peak	Vertical
5850	29.30	44.20	10.20	32.00	-2.00	27.30	54.00	-26.70	AVG	Vertical
5850	41.77	44.20	10.20	32.00	-2.00	39.77	74.00	-34.23	Peak	Horizontal
5850	28.68	44.20	10.20	32.00	-2.00	26.68	54.00	-27.32	AVG	Horizontal
802.11n BW20MHz										
5725	40.82	44.20	10.00	32.00	-2.20	38.62	74.00	-35.38	Peak	Vertical
5725	28.74	44.20	10.00	32.00	-2.20	26.54	54.00	-27.46	AVG	Vertical
5725	40.84	44.20	10.00	32.00	-2.20	38.64	74.00	-35.36	Peak	Horizontal
5725	27.59	44.20	10.00	32.00	-2.20	25.39	54.00	-28.61	AVG	Horizontal
5850	43.79	44.20	10.20	32.00	-2.00	41.79	74.00	-32.21	Peak	Vertical
5850	31.81	44.20	10.20	32.00	-2.00	29.81	54.00	-24.19	AVG	Vertical
5850	41.82	44.20	10.20	32.00	-2.00	39.82	74.00	-34.18	Peak	Horizontal
5850	27.69	44.20	10.20	32.00	-2.00	25.69	54.00	-28.31	AVG	Horizontal
802.11n BW40MHz										
5725	41.96	44.20	10.00	32.00	-2.20	39.76	74.00	-34.24	Peak	Vertical
5725	31.78	44.20	10.00	32.00	-2.20	29.58	54.00	-24.42	AVG	Vertical
5725	38.75	44.20	10.00	32.00	-2.20	36.55	74.00	-37.45	Peak	Horizontal
5725	30.05	44.20	10.00	32.00	-2.20	27.85	54.00	-26.15	AVG	Horizontal
5850	43.75	44.20	10.20	32.00	-2.00	41.75	74.00	-32.25	Peak	Vertical
5850	30.97	44.20	10.20	32.00	-2.00	28.97	54.00	-25.03	AVG	Vertical
5850	37.75	44.20	10.20	32.00	-2.00	35.75	74.00	-38.25	Peak	Horizontal
5850	28.21	44.20	10.20	32.00	-2.00	26.21	54.00	-27.79	AVG	Horizontal



802.11ac BW20MHz										
5725	38.56	44.20	10.00	32.00	-2.20	36.36	74.00	-37.64	Peak	Vertical
5725	30.31	44.20	10.00	32.00	-2.20	28.11	54.00	-25.89	AVG	Vertical
5725	41.14	44.20	10.00	32.00	-2.20	38.94	74.00	-35.06	Peak	Horizontal
5725	30.86	44.20	10.00	32.00	-2.20	28.66	54.00	-25.34	AVG	Horizontal
5850	45.03	44.20	10.20	32.00	-2.00	43.03	74.00	-30.97	Peak	Vertical
5850	30.54	44.20	10.20	32.00	-2.00	28.54	54.00	-25.46	AVG	Vertical
5850	39.79	44.20	10.20	32.00	-2.00	37.79	74.00	-36.21	Peak	Horizontal
5850	29.37	44.20	10.20	32.00	-2.00	27.37	54.00	-26.63	AVG	Horizontal
802.11ac BW40MHz										
5725	39.73	44.20	10.00	32.00	-2.20	37.53	74.00	-36.47	Peak	Vertical
5725	27.77	44.20	10.00	32.00	-2.20	25.57	54.00	-28.43	AVG	Vertical
5725	38.27	44.20	10.00	32.00	-2.20	36.07	74.00	-37.93	Peak	Horizontal
5725	29.67	44.20	10.00	32.00	-2.20	27.47	54.00	-26.53	AVG	Horizontal
5850	46.58	44.20	10.20	32.00	-2.00	44.58	74.00	-29.42	Peak	Vertical
5850	29.32	44.20	10.20	32.00	-2.00	27.32	54.00	-26.68	AVG	Vertical
5850	42.03	44.20	10.20	32.00	-2.00	40.03	74.00	-33.97	Peak	Horizontal
5850	31.19	44.20	10.20	32.00	-2.00	29.19	54.00	-24.81	AVG	Horizontal
802.11ac BW80MHz										
5725	38.52	44.20	10.00	32.00	-2.20	36.32	74.00	-37.68	Peak	Vertical
5725	29.76	44.20	10.00	32.00	-2.20	27.56	54.00	-26.44	AVG	Vertical
5725	40.32	44.20	10.00	32.00	-2.20	38.12	74.00	-35.88	Peak	Horizontal
5725	29.89	44.20	10.00	32.00	-2.20	27.69	54.00	-26.31	AVG	Horizontal
5850	43.23	44.20	10.20	32.00	-2.00	41.23	74.00	-32.77	Peak	Vertical
5850	31.43	44.20	10.20	32.00	-2.00	29.43	54.00	-24.57	AVG	Vertical
5850	39.43	44.20	10.20	32.00	-2.00	37.43	74.00	-36.57	Peak	Horizontal
5850	30.04	44.20	10.20	32.00	-2.00	28.04	54.00	-25.96	AVG	Horizontal

## 4. CONDUCTED SPURIOUS EMISSIONS AND BANDEDGE

### 4.1 APPLIED PROCEDURES / LIMIT

Undesirable emission limits. Except as shown in paragraph (b)(7) 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 5.15-5.25 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.
- (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 5.47-5.725 GHz 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 in the 5.725-5.85 GHz band:
  - (i) 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 10 dBm/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.

#### 4.1.1 TEST PROCEDURE

Spectrum Parameter	Setting
Detector	Peak
Start/Stop Frequency	30 MHz to 10th carrier harmonic
RB / VB (emission in restricted band)	1000 KHz/3000 KHz
Trace-Mode:	Max hold

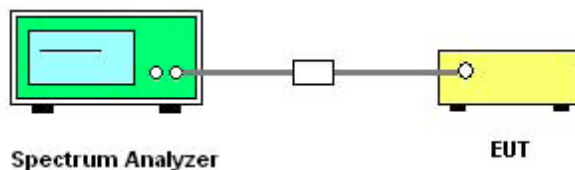
For Band edge

Spectrum Parameter	Setting
Detector	Peak
Start/Stop Frequency	Lower Band Edge: 5700 to 5725 MHz Upper Band Edge: 5850 to 5870 MHz
RB / VB (emission in restricted band)	1000 KHz/3000 KHz
Trace-Mode:	Max hold

#### 4.1.2 DEVIATION FROM STANDARD

No deviation.

### 4.1.3 TEST SETUP



The EUT which is powered by the Battery, is coupled to the Spectrum Analyzer; the RF load attached to the EUT antenna terminal is 50Ohm; the path loss as the factor is calibrated to correct the reading.

Make the measurement with the spectrum analyzer's resolution bandwidth (RBW) = 1000 kHz. In order to make an accurate measurement, set the span greater than RBW.

### 4.1.4 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.

### 4.1.5 TEST RESULTS

Data See Appendix A





## 5. POWER SPECTRAL DENSITY TEST

### 5.1 APPLIED PROCEDURES / LIMIT

1. For mobile and portable client devices in the 5.15-5.25 GHz band, , the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
2. For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.
3. For the band 5.725-5.850 GHz, the peak power spectral density shall not exceed 30 dBm in any 500KHz band. If transmitting antenna directional gain is greater than 6 dBi, both the maximum conducted output power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

#### 5.1.1 TEST PROCEDURE

1. The setting follows Method SA-1 of FCC KDB D02 General UNII Test Procedures New Rules v01r03.

For devices operating in the band, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, "provided that the measured power is integrated over the full reference bandwidth" to show the total power over the specified measurement bandwidth (*i.e.*, 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply:

- a) Set  $RBW \geq 1/T$ , where  $T$  is defined in section II.B.I.a).
- b) Set  $VBW \geq 3 RBW$ .
- c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add  $10 \log (500\text{kHz}/RBW)$  to the measured result, whereas  $RBW (< 500 \text{ kHz})$  is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
- d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add  $10 \log (1\text{MHz}/RBW)$  to the measured result, whereas  $RBW (< 1 \text{ MHz})$  is the reduced resolution bandwidth of spectrum analyzer set during measurement.
- e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 kHz for the sections 5.c) and 5.d) above, since  $RBW=100 \text{ KHZ}$  is available on nearly all spectrum analyzers.

### 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 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

### 5.1.5 TEST RESULTS

Data see Appendix B





## 6. BANDWIDTH MEASUREMENT

### 6.1 EMISSION BANDWIDTH (EBW) 26 BANDWID PROCEDURES / LIMIT

See list of measuring instruments of this test report.

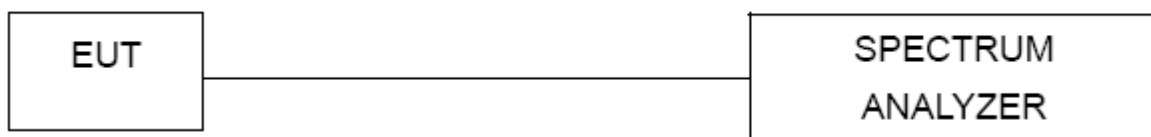
#### 6.1.1 TEST PROCEDURE

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v01r03
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW  $\geq$  RBW.
4. Detector = Peak.
5. Trace mode = max hold.
6. Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer. Readjust RBW and repeat measurement as needed until the RBW/EBW ratio is approximately 1%.

#### 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 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

#### 6.1.5 TEST RESULTS

Data see Appendix C



## 6.2 OCCUPIED BANDWIDTH ( 99%) TEST APPLIED PROCEDURES / LIMIT

The following procedure shall be used for measuring (99 %) power bandwidth:

### 6.2.1 TEST PROCEDURE

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures v01r03.

The following procedure shall be used for measuring (99 %) power bandwidth:

1. Set center frequency to the nominal EUT channel center frequency.
2. Set span = 1.5 times to 5.0 times the OBW.
3. Set RBW = 1 % to 5 % of the OBW
4. Set VBW  $\geq 3 \cdot$  RBW
5. Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
6. Use the 99 % power bandwidth function of the instrument (if available).
7. If the instrument does not have a 99 % power bandwidth function, the trace data points are recovered and directly summed in power units. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5 % of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5 % of the total is reached; that frequency is recorded as the upper frequency. The 99% occupied bandwidth is the difference between these two frequencies.

### 6.2.2 DEVIATION FROM STANDARD

No deviation.

### 6.2.3 TEST SETUP



### 6.2.4 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.

### 6.2.5 TEST RESULTS

Data See Appendix C



### 6.3 MINIMUM EMISSION BANDWIDTH(6 DB) PROCEDURES / LIMIT

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band 5.725-5.85 GHz. The following procedure shall be used for measuring this bandwidth:

#### 6.3.1 TEST PROCEDURE

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures v01r03.
  - a) Set RBW = 100 kHz.
  - b) Set the video bandwidth (VBW)  $\geq 3 \times$  RBW.
  - c) Detector = Peak.
  - d) Trace mode = max hold.
  - e) Sweep = auto couple.
  - f) Allow the trace to stabilize.
  - g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

#### 6.3.2 DEVIATION FROM STANDARD

No deviation.

#### 6.3.3 TEST SETUP



#### 6.3.4 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.

#### 6.3.5 TEST RESULTS

Data see Appendix D

## 7. MAXIMUM CONDUCTED OUTPUT POWER

### 7.1 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. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm + 10 log B, where B is the 26 dB emission bandwidth in megahertz, If transmitting antennas of directional gain greater than 6 dBi are used.

For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. If transmitting antennas of directional gain greater than 6 dBi are used.

FCC Part15 (15.407) , Subpart E				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.407(a) (1) (iv)	Peak Output Power	0.25 watt	5150-5250	PASS
		The lesser of 250 mW or 11 dBm + 10 log (26 dB emission bandwidth)	5250-5350 5470-5725	
15.407(a) (3)		1 watt	5725-5825	

#### 7.1.1 TEST PROCEDURE

The EUT was directly connected to the Power Sensor&PC

#### 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 5 Unless otherwise a special operating condition is specified in the follows during the testing.



## 7.1.5 TEST RESULTS

### Band I (5.15-5.25GHz)

Band I (5.15-5.25GHz)				
Test Channel	Frequency (MHz)	PK Power (dBm)	AV Power (dBm)	LIMIT (dBm)
802.11a				
36	5180	9.12	7.43	23.98
40	5200	9.08	7.01	23.98
48	5240	9.03	7.32	23.98
802.11n(HT20)				
36	5180	9.11	7.25	23.98
40	5200	9.06	7.55	23.98
48	5240	9.02	6.79	23.98
802.11n(HT40)				
38	5190	5.13	3.16	23.98
46	5230	5.22	3.70	23.98
802.11ac(HT20)				
36	5180	9.09	6.75	23.98
40	5200	9.05	7.17	23.98
48	5240	9.01	7.38	23.98
802.11ac(HT40)				
38	5190	5.06	3.31	23.98
46	5230	5.19	3.08	23.98
802.11ac(HT80)				
42	5210	3.12	1.22	23.98

**Note:**

1. 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 the lesser of 0.25 W.

**Band II (5.25-5.35GHz)**

<b>Band II(5.25-5.35GHz)</b>				
Test Channel	Frequency (MHz)	PK Power (dBm)	AV Power (dBm)	LIMIT (dBm)
802.11a				
52	5260	9.06	6.94	23.21
60	5300	9.02	6.99	23.21
64	5320	9.01	6.74	23.21
802.11n(HT20)				
52	5260	9.03	7.32	23.50
60	5300	8.98	7.31	23.50
64	5320	8.95	7.19	23.50
802.11n(HT40)				
54	5270	5.08	3.51	23.98
62	5310	5.06	2.64	23.98
802.11ac(HT20)				
52	5260	9.02	7.17	23.49
60	5300	8.95	7.07	23.49
64	5320	8.93	7.19	23.49
802.11ac(HT40)				
54	5270	5.02	3.28	23.98
62	5310	5.02	2.52	23.98
802.11ac(HT80)				
58	5290	3.09	0.66	23.98

**Note:**

1. For mobile and portable client devices in the 5.25-5.35 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 0.25 W.

**Band III (5.47-5.725GHz)**

<b>Band9 III(5.47-5.725GHz)</b>				
Test Channel	Frequency (MHz)	PK Power (dBm)	AV Power (dBm)	LIMIT (dBm)
802.11a				
100	5500	9.03	7.00	23.21
116	5580	9.02	6.76	23.21
140	5700	9.02	7.00	23.21
802.11n(HT20)				
100	5500	8.98	6.97	23.49
116	5580	8.96	7.29	23.49
140	5700	8.92	6.54	23.49
802.11n(HT40)				
102	5510	5.03	2.99	23.98
110	5550	5.01	2.93	23.98
134	5670	5.02	2.92	23.98
802.11ac(HT20)				
100	5500	8.92	6.86	23.51
116	5580	8.89	6.56	23.51
140	5700	8.86	6.51	23.51
802.11ac(HT40)				
102	5510	5.02	2.82	5.02
110	5550	5.01	3.31	5.01
134	5670	4.99	2.55	4.99
802.11ac(HT80)				
106	5530	3.05	1.01	23.98
122	5610	3.03	0.64	23.98

Note:

1. For mobile and portable client devices in the 5.47-5.725 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 0.25 W.

**Band IV (5.725-5.85GHz)**

<b>Band IV (5.725-5.85GHz)</b>				
Test Channel	Frequency (MHz)	PK Power (dBm)	AV Power (dBm)	LIMIT (dBm)
802.11a				
149	5745	8.89	6.42	30
157	5785	8.76	6.71	30
165	5825	8.73	7.10	30
802.11n(HT20)				
149	5745	8.86	6.41	30
157	5785	8.75	6.34	30
165	5825	8.71	7.04	30
802.11n(HT40)				
151	5755	5.03	3.12	30
159	5795	5.09	3.59	30
802.11ac(HT20)				
149	5745	8.81	6.46	30
157	5785	8.72	6.88	30
165	5825	8.69	6.99	30
802.11ac(HT40)				
151	5755	5.02	2.55	30
159	5795	5.06	2.57	30
802.11ac(HT80)				
155	5775	3.01	1.17	30

Note:

1. For the band 5.745-5.850 GHz, the maximum conducted output power over the frequency band of operation shall not exceed the lesser of 1 W.

## 8. FREQUENCY STABILITY MEASUREMENT

### 8.1 LIMIT OF FREQUENCY STABILITY

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 MEASURING INSTRUMENTS

See list of measuring instruments of this test report.

#### 8.1.2 TEST PROCEDURES

1. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
2. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10dB lower than the measured peak value.
3. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

#### 8.1.3 TEST SETUP





### 8.1.4 TEST RESULTS

NOTE: 1. all bandwidth and mode been test, Only the worst data.

Voltage	Band I (5.15-5.25GHz)Measurement Frequency(MHz)
AC (V)	5200
MAX	5199.9219
Nom	5199.9243
MIN	5199.9262
Max.Deviation(MHz)	0.0781
Max.Deviation(ppm)	15.02

Temperature Vs. Frequency Stability:

Temperature	Measurement Frequency(MHz)
(°C)	5200
-30	5199.9312
-20	5199.9265
-10	5199.9221
0	5199.9256
10	5199.9232
20	5199.9241
30	5199.9216
40	5199.9233
50	5199.9231
Max.Deviation(MHz)	0.0784
Max.Deviation(ppm)	15.08





Voltage	Band II (5.25-5.35GHz) Measurement Frequency(MHz)
AC (V)	5300
MAX	5299.9971
Nom	5299.9964
MIN	5299.9965
Max.Deviation(MHz)	0.0036
Max.Deviation(ppm)	0.69

Temperature Vs. Frequency Stability:

Temperature	Measurement Frequency(MHz)
(°C)	5300
-30	5299.9985
-20	5299.9972
-10	5299.9955
0	5299.9935
10	5299.996
20	5299.9947
30	5299.9963
40	5299.996
50	5299.996
Max.Deviation(MHz)	0.0065
Max.Deviation(ppm)	1.23



Voltage	Band III (5.47-5.725GHz) Measurement Frequency(MHz)
AC (V)	5580
MAX	5579.9928
Nom	5579.9891
MIN	5579.9918
Max.Deviation(MHz)	0.0109
Max.Deviation(ppm)	2.10

Temperature Vs. Frequency Stability:

Temperature	Measurement Frequency(MHz)
(°C)	5580
-30	5579.998
-20	5579.9963
-10	5579.9943
0	5579.9927
10	5579.9918
20	5579.9943
30	5579.9956
40	5579.9921
50	5579.9927
Max.Deviation(MHz)	0.0082
Max.Deviation(ppm)	1.47



Voltage	Band IV (5.725-5.85GHz) Measurement Frequency(MHz)
AC (V)	5785
MAX	5784.9238
Nom	5784.9265
MIN	5784.9235
Max.Deviation(MHz)	0.0765
Max.Deviation(ppm)	14.71

Temperature Vs. Frequency Stability:

Temperature	Measurement Frequency(MHz)
(°C)	5785
-30	5784.9326
-20	5784.9302
-10	5784.9272
0	5784.9287
10	5784.9276
20	5784.9262
30	5784.929
40	5784.9278
50	5784.9298
Max.Deviation(MHz)	0.0738
Max.Deviation(ppm)	12.76



## **9. AUTOMATICALLY DISCONTINUE TRANSMISSION**

### **9.1 LIMIT OF AUTOMATICALLY DISCONTINUE TRANSMISSION**

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 to describe how this requirement is met.

### **9.2 TEST RESULT OF AUTOMATICALLY DISCONTINUE TRANSMISSION**

During no any information transmission, the EUT can automatically discontinue transmission and become standby mode for power saving. The EUT can detect the controlling signal of ACK message transmitting from remote device and verify whether it shall resend or discontinue transmission





## 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.

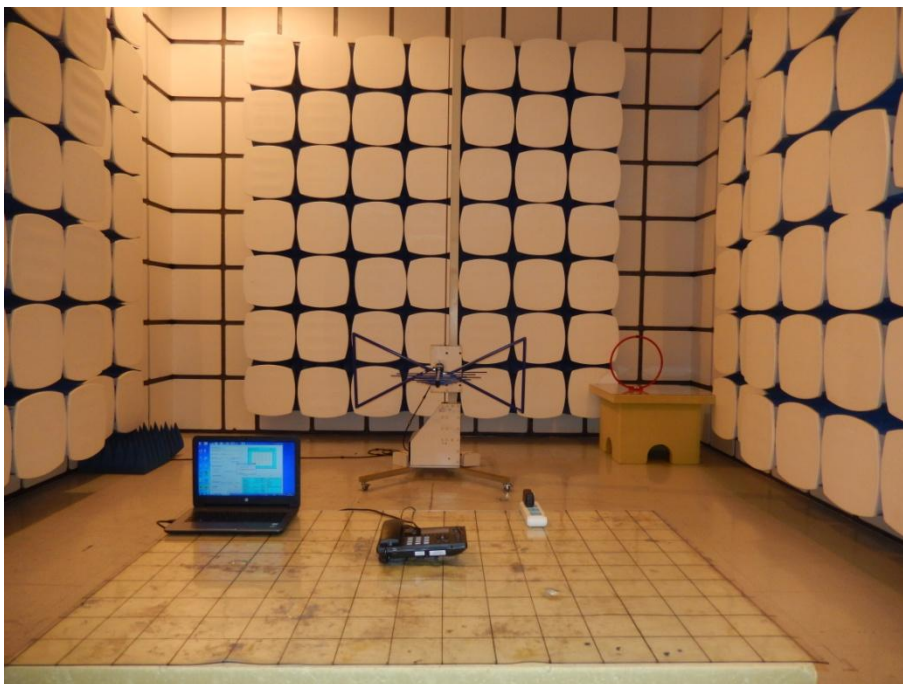
### 10.2 EUT ANTENNA

The EUT antenna is Internal PCB Antenna. It comply with the standard requirement.



## APPENDIX - PHOTOS OF TEST SETUP

### Radiated Measurement Photos





### Conducted Measurement Photos



\*\*\*\*\*END OF THE REPORT\*\*\*\*\*