FCC TEST REPORT

Report No:STS1811022W11

Issued for

Winmate Inc.

9F,No.111-6,shing-De Rd., San-Chung District, New Taipei City 241, Taiwan

Product Name:	Rugged Tablet PC
Brand Name:	Winmate
Model Name:	M101P
Series Model:	M101PXXXXXXXXX (where x can be A-Z,a-z,0-9,"-",Blank or Slash)
FCC ID:	PX9M101P
Test Standard:	FCC Part 15.407

Shenzhen STS Test Services Co., Ltd.
1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road,
Fuyong Street, Bao'an District, Shenzhen, Guangdong, China
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TEST RESULT CERTIFICATION

Applicant's name	:	Winmate Inc.
Address	:	9F,No.111-6,shing-De Rd., San-Chung District, New Taipei City 241, Taiwan
Manufacture's Name	:	Winmate Inc.
Address	:	9F,No.111-6,shing-De Rd., San-Chung District, New Taipei City 241, Taiwan
Product description		
Product Name	:	Rugged Tablet PC
Brand Name	:	Winmate
Model Name	:	M101P
Series Model	:	M101PXXXXXXXXXX (where x can be A-Z,a-z,0-9,"-",Blank or Slash)
Test 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 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	:	02 Nov.2018~29 Nov.2018
Date of Issue	:	29 Nov.2018
Test Result	:	**Pass**

Testing Engineer : Chris chen

(Chris chen)

Technical Manager : Sunday Hu

(Sunday Hu)

Authorized Signatory : Vita Li

(Vita Li)

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Revision History

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	29 Nov.2018	STS1811022W11	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 v02r01

FCC Part 15.407			
FCC standard	Test Item	Results	Remark
15.207	AC Conducted Emission	PASS	--
§ 15.407 (2) (26 dB) / § 15.407 (e) (6 dB)/ § 15.407 (a) (99%)	26dB/6dB &99% Bandwidth	N/A	Reference to Single modular ID: PX9-AC9260NGW
15.407(a) (1).(2).(3).(4).(5)	Maximum Conducted Output Power	N/A	Reference to Single modular ID: PX9-AC9260NGW
15.407(b)	Peak Excursion Ratio	N/A	Reference to Single modular ID: PX9-AC9260NGW
15.407(b)& 15.209	Radiated Emission And (bandedge Emissions) Measurement	PASS	--
15.407(b)7	Conducted Emission And (bandedge Emissions) Measurement	N/A	Reference to Single modular ID: PX9-AC9260NGW
15.407(a) (1).(2).(3).(4).(5)	Power Spectral Density	N/A	Reference to Single modular ID: PX9-AC9260NGW
15.407(c)	Automatically Discontinue Transmission	N/A	Reference to Single modular ID: PX9-AC9260NGW
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

(3) We has been tested the output power,it is the same as the module .

1.1 TEST FACTORY

Shenzhen STS Test Services Co., Ltd.
Add. : 1/F., Building B, Zhuoke Science Park, No.190, Chongqing Road,
Fuyong Street, Bao'an District, Shenzhen, Guangdong, China
FCC Registration No.: 625569
IC Registration No.: 12108A; A2LA Certificate No.: 4338.01;

1.2 MEASUREMENT UNCERTAINTY

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

No.	Item	Uncertainty
1	RF output power,conducted	±0.71dB
2	Unwanted Emissions,conducted	±0.63dB
3	All emissions,radiated 30-200MHz	±3.43dB
4	All emissions,radiated 200MHz-1GHz	±3.57dB
5	All emissions,radiated>1G	±4.13dB
6	Conducted Emission(9KHz-150KHz)	±3.18dB
7	Conducted Emission(150KHz-30MHz)	±2.70dB

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF THE EUT

Product Name	Rugged Tablet PC
Trade Name	Winmate
Model Name	M101P
Series Model	M101PXXXXXXXXXX (where x can be A-Z,a-z,0-9,“-”,Blank or Slash)
Model Difference	Only for marketing purpose
Product Description	The EUT is Rugged Tablet PC Operation Frequency: IEEE 802.11a/ n/ac(HT20) 5.180GHz-5.240GHz IEEE 802.11n/ac(HT40) 5.190GHz-5.230GHz IEEE 802.11ac(HT80) 5.210GHz Modulation Type: 802.11a(OFDM):BPSK,QPSK,16-QAM,64-QAM 802.11n(OFDM):BPSK,QPSK,16-QAM,64-QAM 802.11ac(OFDM):BPSK,QPSK,16-QAM,64-QAM Antenna Designation: See Note 3 Max.Output Power(Conducted): ANT A:0.22 dbi ANT B:-0.07 dbi Duty Cycle: >98% More details of EUT technical specification, please refer to the User's Manual.
Test Channel	Please refer to the Note 2.
Adapter	Power supply and ADP(rating): Input: AC 100V-240V, 2000 mA, 50-60Hz Output: DC 19V, 3420mA
Battery	Battery(rating): Rated Voltage: 7.4V Charge Limit: 8.4V Capacity: 5140mAh
Hardware version number	M101P-300
Software version number	M101P_M6E_50.1.17
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			
Channel	Frequency	Channel	Frequency
36	5180	44	5220
38	5190	46	5230
40	5200	48	5240
42	5210		

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	40	5200
48	5240		

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

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

2. Emissions Testing of Transmitters with Multiple Outputs in the Same Band.
For devices having two outputs driving a cross-polarized pair of antennas, see Attachment 662911 D02 of this publication for additional guidance.

d) *Unequal antenna gains, with equal transmit powers.* For antenna gains given by G1, G2, …, GN dBi
(i) If transmit signals are *correlated*, then Directional gain = 10 log[(10$^{G1/20}$ + 10$^{G2/20}$ + … + 10$^{GN/20}$)^2 /NANT] dBi [Note the “20”s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

(ii) If all transmit signals are *completely uncorrelated*, then Directional gain = 10 log[(10$^{G1/10}$ + 10$^{G2/10}$ + … + 10$^{GN/10}$)/NANT] dBi
Not: If transmit signals are *correlated*, then Directional gain.

ANT-A=0.22 dBi
ANT-B=-0.07 dBi

Total gain=10 log[(10$^{G1/20}$ + 10$^{G2/20}$ + … + 10$^{GN/20}$)^2 /NANT] dBi
=10*LOG10((10^(0.22/20)+10^(-0.07/20))^2/2)=3.09 dBi

Ant	Brand	Model Name	Ant Type	Connector	Gain (dBi)	NOTE
A	Winmate	M101P	PIFA	N/A	ANT A: 0.22dBi ANT B: -0.07dBi	WLAN Ant

2.2 DESCRIPTION OF THE 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.

Worst Mode	Description	Data Rate
Mode 1	TX IEEE 802.11a HT20 CH36&CH40&CH48	6 Mbps
Mode 2	TX IEEE 802.11n HT20 CH36&CH40&CH48	MCS 0
Mode 3	TX IEEE 802.11ac HT20 CH36&CH40&CH48	NSS1 MCS0
Mode 4	TX IEEE 802.11n HT40 CH38&CH46	MCS 0
Mode 5	TX IEEE 802.11ac HT40 CH38&CH46	NSS1 MCS0
Mode 6	TX IEEE 802.11ac HT80 CH42	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

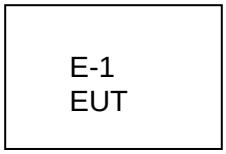
(3) We have be tested for all avaiable U.S. voltage and frequencies(For 120V,50/60Hz and 240V, 50/60Hz) for which the device is capable of operation, and the worst case of 120V/60Hz is shown in the report

AC Conducted Emission

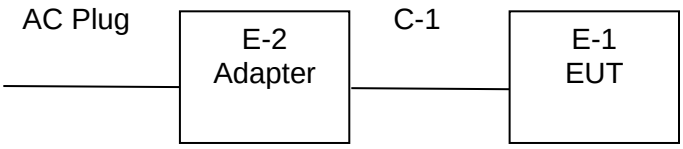
Test Case	
AC Conducted Emission	Mode7: Keeping TX + WLAN Link

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiation Test Set



conduction Test Set



2.4 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS

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.

Necessary accessories

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note
E-2	Adapter	EDAC	EA10633B-190	N/A	N/A
C-1	DC Cable	N/A	N/A	N/A	N/A

Support units

Item	Equipment	Mfr/Brand	Model/Type No.	Serial No.	Note
N/A	N/A	N/A	N/A	N/A	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

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2018.10.13	2019.10.12
Signal Analyzer	Agilent	N9020A	MY51110105	2018.03.08	2019.03.07
Active loop Antenna	ZHINAN	ZN30900C	16035	2017.03.11	2020.03.10
Bilog Antenna	TESEQ	CBL6111D	34678	2017.11.02	2020.11.1
Horn Antenna	Schwarzbeck	BBHA 9120D(1201)	9120D-1343	2017.10.27	2020.10.26
SHF-EHF Horn Antenna (15G-40GHz)	A-INFO	LB-180400-KF	J211020657	2018.03.11	2019.03.10
Pre-mplifier (0.1M-3GHz)	EM	EM330	060665	2018.03.09	2019.03.08
PreAmplifier (1G-18GHz)	SKET	LNPA-01018G-45	SK2018080901	2018.10.13	2019.10.12
Temperature & Humitidy	HH660	Mieo	N/A	2018.10.11	2019.10.10
turn table	EM	SC100_1	60531	N/A	N/A
Antenna mast	EM	SC100	N/A	N/A	N/A

Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
Test Receiver	R&S	ESCI	101427	2018.10.13	2019.10.12
LISN	R&S	ENV216	101242	2018.10.13	2019.10.12
LISN	EMCO	3810/2NM	23625	2018.10.13	2019.10.12
Temperature & Humitidy	HH660	Mieo	N/A	2018.10.11	2019.10.10

RF Connected Test

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
USB RF power sensor	DARE	RPR3006W	15I00041SNO03	2018.10.13	2019.10.12
Signal Analyzer	Agilent	N9020A	MY49100060	2018.10.13	2019.10.12
Temperature & Humitidy	HH660	Mieo	N/A	2018.10.11	2019.10.10

3. EMC EMISSION TEST

3.1CONDUCTED 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

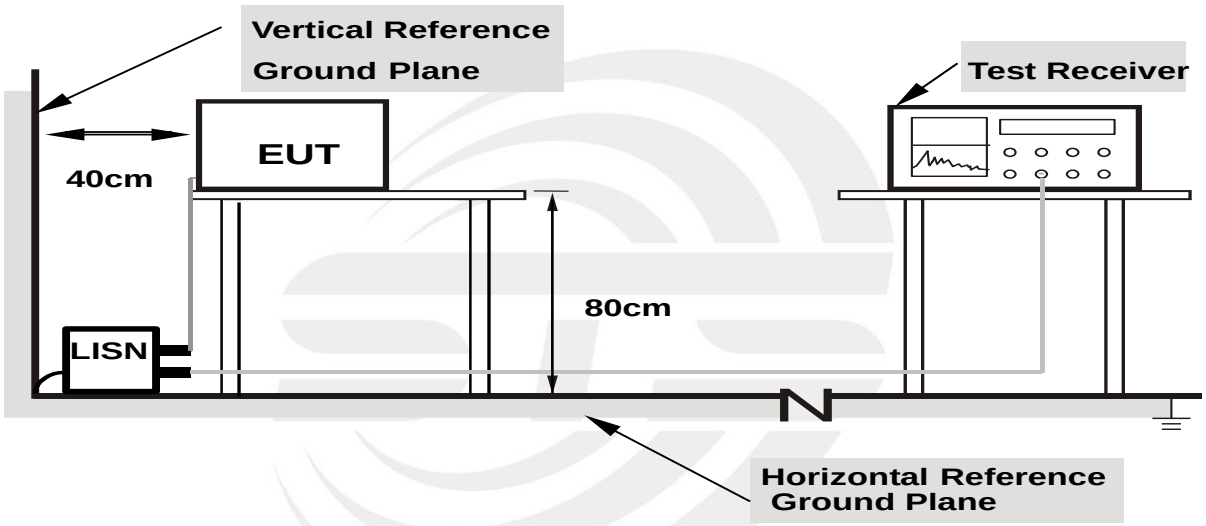
3.1.2 TEST PROCEDURE

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

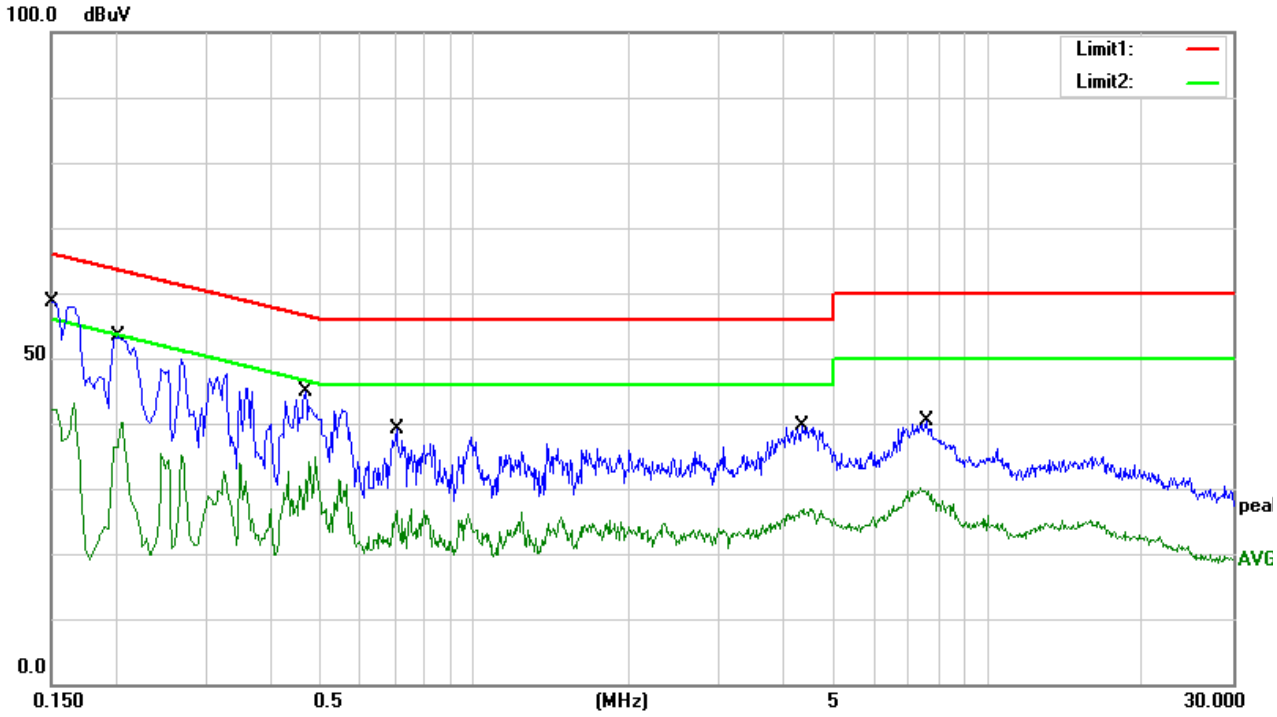
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

3.1.6 TEST RESULTS

Temperature:	26 ℃	Relative Humidity:	61%
Test Voltage ：	AC 120V/60Hz	Phase:	L
Test Mode：	Mode 7		

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
0.1500	38.39	20.23	58.62	66.00	-7.38	QP
0.1500	22.80	20.23	43.03	56.00	-12.97	AVG
0.2020	33.06	20.25	53.31	63.53	-10.22	QP
0.2020	19.95	20.25	40.20	53.53	-13.33	AVG
0.4700	24.49	20.48	44.97	56.51	-11.54	QP
0.4700	14.44	20.48	34.92	46.51	-11.59	AVG
0.7060	18.88	20.26	39.14	56.00	-16.86	QP
0.7060	6.56	20.26	26.82	46.00	-19.18	AVG
4.3420	19.75	19.95	39.70	56.00	-16.30	QP
4.3420	7.01	19.95	26.96	46.00	-19.04	AVG
7.5860	20.35	19.95	40.30	60.00	-19.70	QP
7.5860	9.26	19.95	29.21	50.00	-20.79	AVG

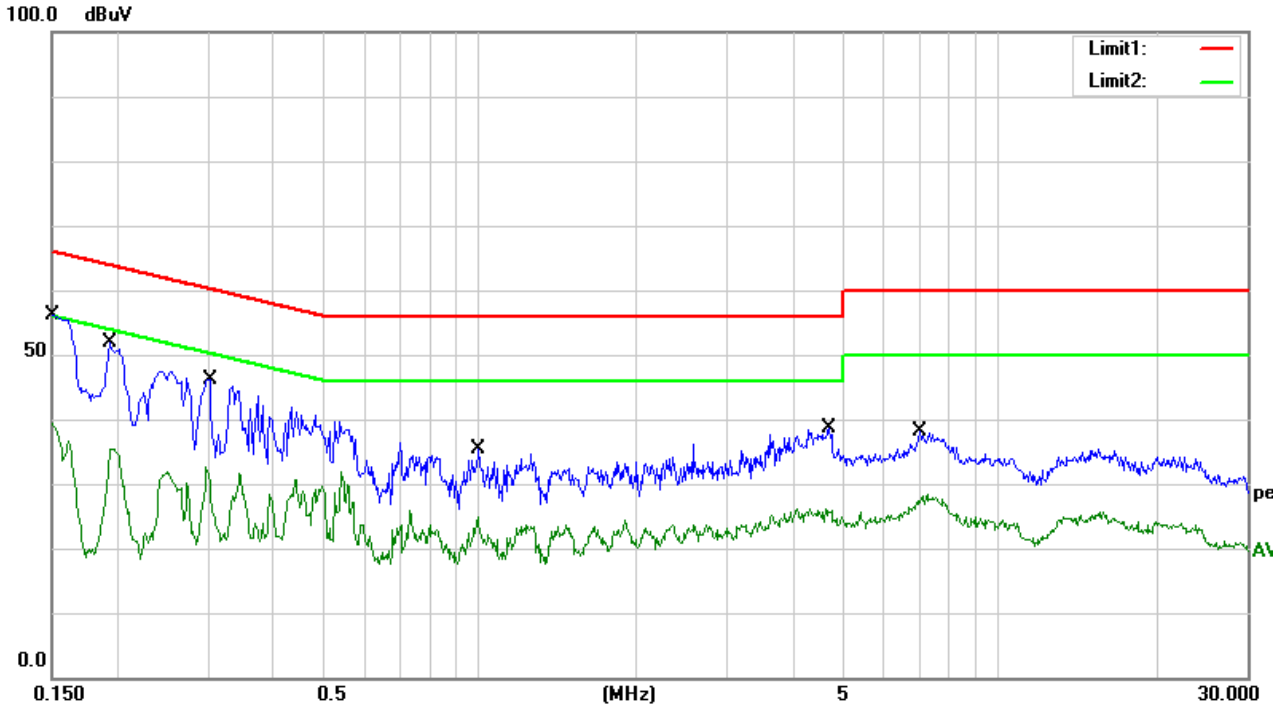
Remark:
1. Margin = Result (Result =Reading + Factor)–Limit



Temperature:	26 ℃	Relative Humidity:	61%
Test Voltage ：	AC 120V/60Hz	Phase:	N
Test Mode：	Mode 7		

Frequency (MHz)	Reading (dBuV)	Correct Factor(dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Remark
0.1500	35.91	20.19	56.10	66.00	-9.90	QP
0.1500	19.27	20.19	39.46	56.00	-16.54	AVG
0.1940	31.53	20.31	51.84	63.86	-12.02	QP
0.1940	15.10	20.31	35.41	53.86	-18.45	AVG
0.3020	25.40	20.76	46.16	60.19	-14.03	QP
0.3020	11.84	20.76	32.60	50.19	-17.59	AVG
0.9900	15.28	20.16	35.44	56.00	-20.56	QP
0.9900	4.61	20.16	24.77	46.00	-21.23	AVG
4.6980	18.54	20.03	38.57	56.00	-17.43	QP
4.6980	5.61	20.03	25.64	46.00	-20.36	AVG
7.0540	18.14	19.91	38.05	60.00	-21.95	QP
7.0540	8.51	19.91	28.42	50.00	-21.58	AVG

Remark:
1. 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

a. 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.
b. 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.
c. 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
d. 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.
e. 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.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

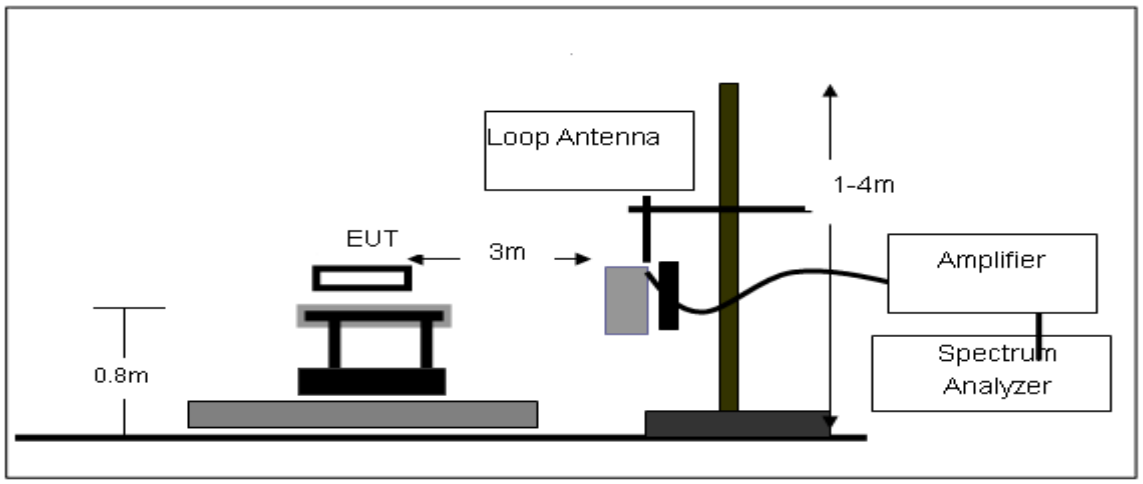
Both horizontal and vertical antenna polarities were tested and performed test to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

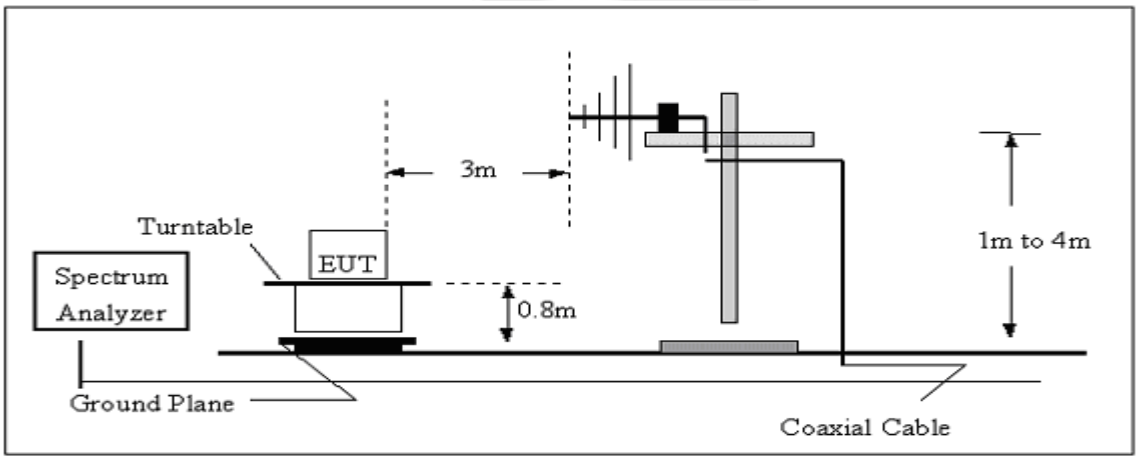
No deviation

3.2.4 TEST SETUP

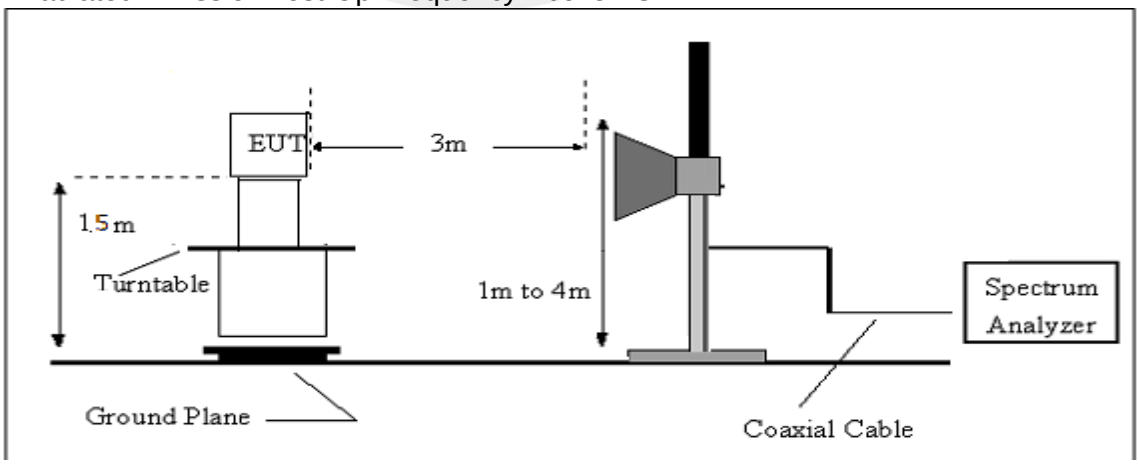
（A）Radiated Emission Test-Up Frequency Below 30MHz



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

3.2.6 FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + AF + CL - AG

Where

FS = Field Strength

CL = Cable Attenuation Factor (Cable Loss)

RA = Reading Amplitude

AG = Amplifier Gain

AF = Antenna Factor

For example

Frequency	FS	RA	AF	CL	AG	Factor
(MHz)	(dBμV/m)	(dBμV/m)	(dB)	(dB)	(dB)	(dB)
300	40	58.1	12.2	1.6	31.9	-18.1

Factor=AF+CL-AG

3.2.7 TEST RESULTS (Between 9KHz – 30 MHz)

Temperature:	24.3 ℃	Relative Humidtity:	47%
Test Voltage :	DC 7.4V	Polarization :	--
Test Mode :	TX Mode	Test Result :	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);

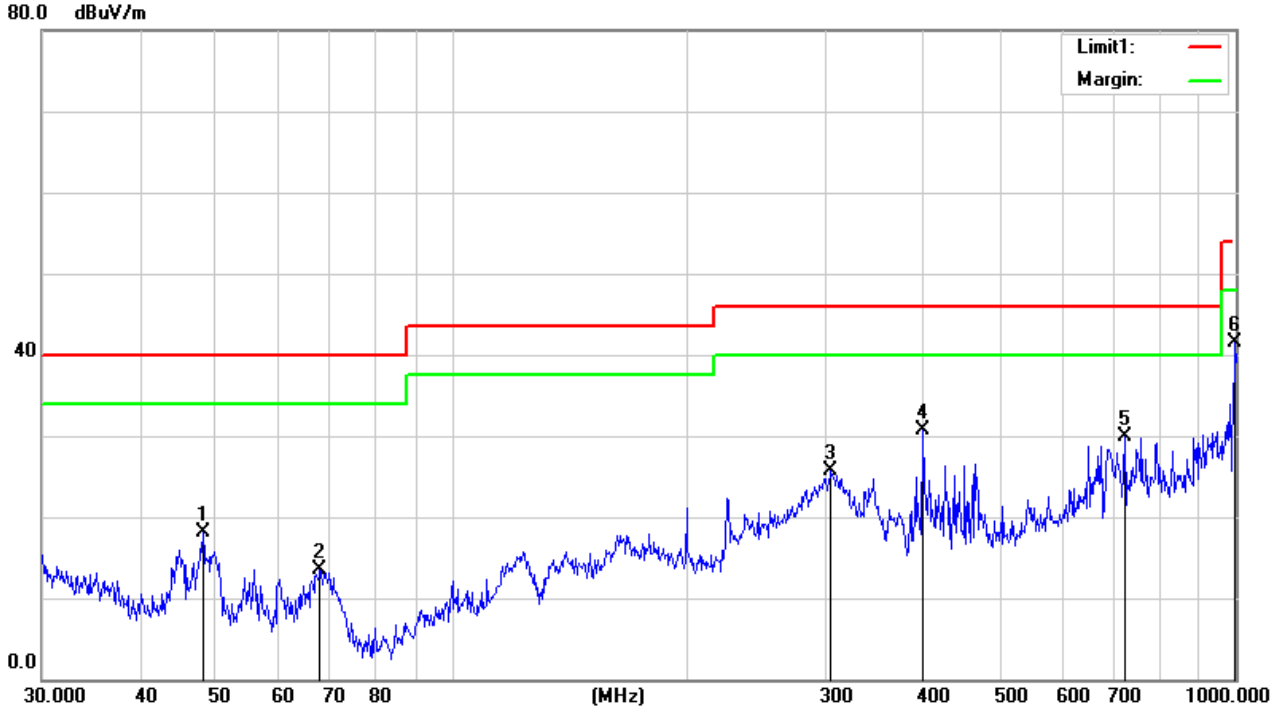
Limit line = specific limits(dBuv) + distance extrapolation factor.

3.2.8 TEST RESULTS (Between 30MHz – 1GHz)

Temperature	24.3 ℃	Relative Humidity	47%
Test Voltage	DC 7.4V	Polarization	Horizontal
Test Mode	Mode 1-6(Mode 2 worst mode)		

Frequency	Reading	Correct	Result	Limit	Margin	Remark
(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
48.1626	38.55	-20.53	18.02	40.00	-21.98	QP
67.9130	37.70	-24.15	13.55	40.00	-26.45	QP
304.6100	40.33	-14.66	25.67	46.00	-20.33	QP
399.0302	42.05	-11.28	30.77	46.00	-15.23	QP
721.7260	34.47	-4.54	29.93	46.00	-16.07	QP
996.4996	41.56	-0.09	41.47	54.00	-12.53	QP

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

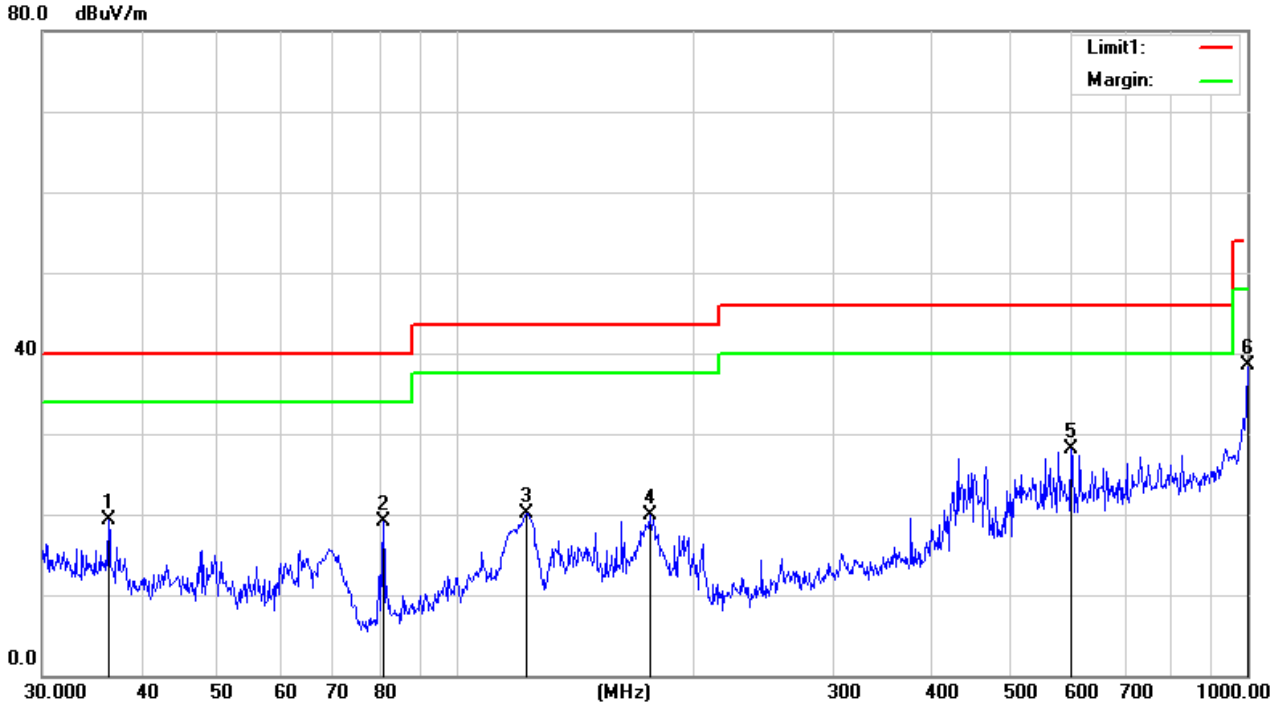


Temperature	24.3 ℃	Relative Humidity	47%
Test Voltage	DC 7.4V	Polarization	Vertical
Test Mode	Mode 1-6(Mode 2 worst mode)		

Frequency	Reading	Correct	Result	Limit	Margin	Remark
(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
36.3814	33.79	-14.47	19.32	40.00	-20.68	QP
80.9275	41.54	-22.47	19.07	40.00	-20.93	QP
122.8340	37.77	-17.65	20.12	43.50	-23.38	QP
175.6516	39.31	-19.39	19.92	43.50	-23.58	QP
599.3212	35.34	-7.14	28.20	46.00	-17.80	QP
1000.0000	38.65	-0.07	38.58	54.00	-15.42	QP

Remark:

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



3.2.9 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）	Orrected Factor （dB）	Emission Level (dBμV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Comment
Low Channel (802.11n20/ 5180 MHz)										
3257.45	44.94	44.70	6.70	28.20	-9.80	35.14	74.00	-38.86	PK	Vertical
3257.45	42.12	44.70	6.70	28.20	-9.80	32.32	54.00	-21.68	AV	Vertical
3250.53	44.19	44.70	6.70	28.20	-9.80	34.39	74.00	-39.61	PK	Horizontal
3250.53	41.37	44.70	6.70	28.20	-9.80	31.57	54.00	-22.43	AV	Horizontal
3993.58	39.33	44.20	7.90	29.70	-6.60	32.73	74.00	-41.27	PK	Vertical
3993.58	36.15	44.20	7.90	29.70	-6.60	29.55	54.00	-24.45	AV	Vertical
3988.87	39.66	44.20	7.90	29.70	-6.60	33.06	74.00	-40.94	PK	Horizontal
3988.87	37.01	44.20	7.90	29.70	-6.60	30.41	54.00	-23.59	AV	Horizontal
7232.41	37.87	43.50	11.40	35.50	3.40	41.27	74.00	-32.73	PK	Vertical
7232.41	34.36	43.50	11.40	35.50	3.40	37.76	54.00	-16.24	AV	Vertical
7220.98	36.78	43.50	11.40	35.50	3.40	40.18	74.00	-33.82	PK	Horizontal
7220.98	34.24	43.50	11.40	35.50	3.40	37.64	54.00	-16.36	AV	Horizontal
10360.22	39.38	44.50	13.80	38.80	8.10	47.48	74.00	-26.52	PK	Vertical
10360.22	35.81	44.50	13.80	38.80	8.10	43.91	54.00	-10.09	AV	Vertical
10360.01	38.83	44.50	13.80	38.80	8.10	46.93	74.00	-27.07	PK	Horizontal
10360.01	36.78	44.50	13.80	38.80	8.10	44.88	54.00	-9.12	AV	Horizontal
11029.29	32.79	43.60	14.30	39.50	10.20	42.99	74.00	-31.01	PK	Vertical
11029.29	30.25	43.60	14.30	39.50	10.20	40.45	54.00	-13.55	AV	Vertical
11017.28	32.70	43.60	14.30	39.50	10.20	42.90	74.00	-31.10	PK	Horizontal
11017.28	31.00	43.60	14.30	39.50	10.20	41.20	54.00	-12.80	AV	Horizontal
13282.03	31.96	42.60	15.90	38.90	12.20	44.16	74.00	-29.84	PK	Vertical
13282.03	29.49	42.60	15.90	38.90	12.20	41.69	54.00	-12.31	AV	Vertical
13296.64	32.33	42.60	15.90	38.90	12.20	44.53	74.00	-29.47	PK	Horizontal
13296.64	29.48	42.60	15.90	38.90	12.20	41.68	54.00	-12.32	AV	Horizontal

Mid Channel (802.11 n20/ 5200 MHz)										
3258.50	44.45	44.70	6.70	28.20	-9.80	34.65	74.00	-39.35	PK	Vertical
3258.50	40.98	44.70	6.70	28.20	-9.80	31.18	54.00	-22.82	AV	Vertical
3262.51	44.80	44.70	6.70	28.20	-9.80	35.00	74.00	-39.00	PK	Horizontal
3262.51	41.28	44.70	6.70	28.20	-9.80	31.48	54.00	-22.52	AV	Horizontal
3995.05	39.70	44.20	7.90	29.70	-6.60	33.10	74.00	-40.90	PK	Vertical
3995.05	35.97	44.20	7.90	29.70	-6.60	29.37	54.00	-24.63	AV	Vertical
3997.99	39.26	44.20	7.90	29.70	-6.60	32.66	74.00	-41.34	PK	Horizontal
3997.99	35.67	44.20	7.90	29.70	-6.60	29.07	54.00	-24.93	AV	Horizontal
7229.57	37.85	43.50	11.40	35.50	3.40	41.25	74.00	-32.75	PK	Vertical
7229.57	34.43	43.50	11.40	35.50	3.40	37.83	54.00	-16.17	AV	Vertical
7233.39	37.27	43.50	11.40	35.50	3.40	40.67	74.00	-33.33	PK	Horizontal
7233.39	33.83	43.50	11.40	35.50	3.40	37.23	54.00	-16.77	AV	Horizontal
10400.13	39.76	44.50	13.80	38.80	8.10	47.86	74.00	-26.14	PK	Vertical
10400.13	36.99	44.50	13.80	38.80	8.10	45.09	54.00	-8.91	AV	Vertical
10400.13	40.01	44.50	13.80	38.80	8.10	48.11	74.00	-25.89	PK	Horizontal
10400.13	36.67	44.50	13.80	38.80	8.10	44.77	54.00	-9.23	AV	Horizontal
11030.70	32.87	43.60	14.30	39.50	10.20	43.07	74.00	-30.93	PK	Vertical
11030.70	30.16	43.60	14.30	39.50	10.20	40.36	54.00	-13.64	AV	Vertical
11028.29	34.01	43.60	14.30	39.50	10.20	44.21	74.00	-29.79	PK	Horizontal
11028.29	31.02	43.60	14.30	39.50	10.20	41.22	54.00	-12.78	AV	Horizontal
13283.72	32.31	42.60	15.90	38.90	12.20	44.51	74.00	-29.49	PK	Vertical
13283.72	28.57	42.60	15.90	38.90	12.20	40.77	54.00	-13.23	AV	Vertical
13286.92	31.84	42.60	15.90	38.90	12.20	44.04	74.00	-29.96	PK	Horizontal
13286.92	29.70	42.60	15.90	38.90	12.20	41.90	54.00	-12.10	AV	Horizontal

High Channel (802.11 n20/ 5240 MHz)										
3257.81	45.03	44.70	6.70	28.20	-9.80	35.23	74.00	-38.77	PK	Vertical
3257.81	41.75	44.70	6.70	28.20	-9.80	31.95	54.00	-22.05	AV	Vertical
3264.73	44.94	44.70	6.70	28.20	-9.80	35.14	74.00	-38.86	PK	Horizontal
3264.73	41.82	44.70	6.70	28.20	-9.80	32.02	54.00	-21.98	AV	Horizontal
3998.34	39.30	44.20	7.90	29.70	-6.60	32.70	74.00	-41.30	PK	Vertical
3998.34	36.36	44.20	7.90	29.70	-6.60	29.76	54.00	-24.24	AV	Vertical
3986.99	39.73	44.20	7.90	29.70	-6.60	33.13	74.00	-40.87	PK	Horizontal
3986.99	36.36	44.20	7.90	29.70	-6.60	29.76	54.00	-24.24	AV	Horizontal
7217.44	36.82	43.50	11.40	35.50	3.40	40.22	74.00	-33.78	PK	Vertical
7217.44	33.54	43.50	11.40	35.50	3.40	36.94	54.00	-17.06	AV	Vertical
7223.14	36.56	43.50	11.40	35.50	3.40	39.96	74.00	-34.04	PK	Horizontal
7223.14	33.81	43.50	11.40	35.50	3.40	37.21	54.00	-16.79	AV	Horizontal
10480.19	38.71	44.50	13.80	38.80	8.10	46.81	74.00	-27.19	PK	Vertical
10480.19	36.56	44.50	13.80	38.80	8.10	44.66	54.00	-9.34	AV	Vertical
10480.06	39.48	44.50	13.80	38.80	8.10	47.58	74.00	-26.42	PK	Horizontal
10480.06	36.44	44.50	13.80	38.80	8.10	44.54	54.00	-9.46	AV	Horizontal
11026.60	33.48	43.60	14.30	39.50	10.20	43.68	74.00	-30.32	PK	Vertical
11026.60	30.41	43.60	14.30	39.50	10.20	40.61	54.00	-13.39	AV	Vertical
11024.30	33.36	43.60	14.30	39.50	10.20	43.56	74.00	-30.44	PK	Horizontal
11024.30	30.20	43.60	14.30	39.50	10.20	40.40	54.00	-13.60	AV	Horizontal
13296.82	31.95	42.60	15.90	38.90	12.20	44.15	74.00	-29.85	PK	Vertical
13296.82	29.59	42.60	15.90	38.90	12.20	41.79	54.00	-12.21	AV	Vertical
13287.29	32.75	42.60	15.90	38.90	12.20	44.95	74.00	-29.05	PK	Horizontal
13287.29	28.60	42.60	15.90	38.90	12.20	40.80	54.00	-13.20	AV	Horizontal

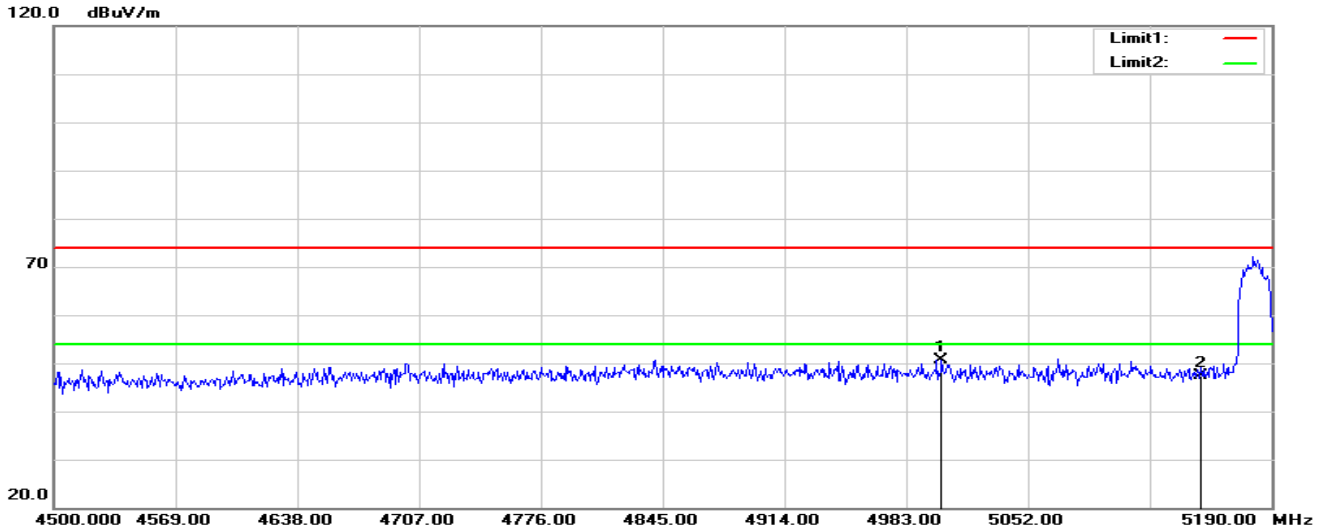
Remark:
1.Factor = Antenna Factor + Cable Loss – Pre-amplifier.
2. Scan with 802.11a,802.11n (HT-20),802.11n (HT-40), 802.11ac (HT-20),802.11ac (HT-40), 802.11ac (HT-80) the worst case is 802.11n (HT-20).
3. The frequency emission of peak points that did not show above the forms are at least 20dB below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

3.2.10 Band Edge

Band I (5.15-5.25)GHz

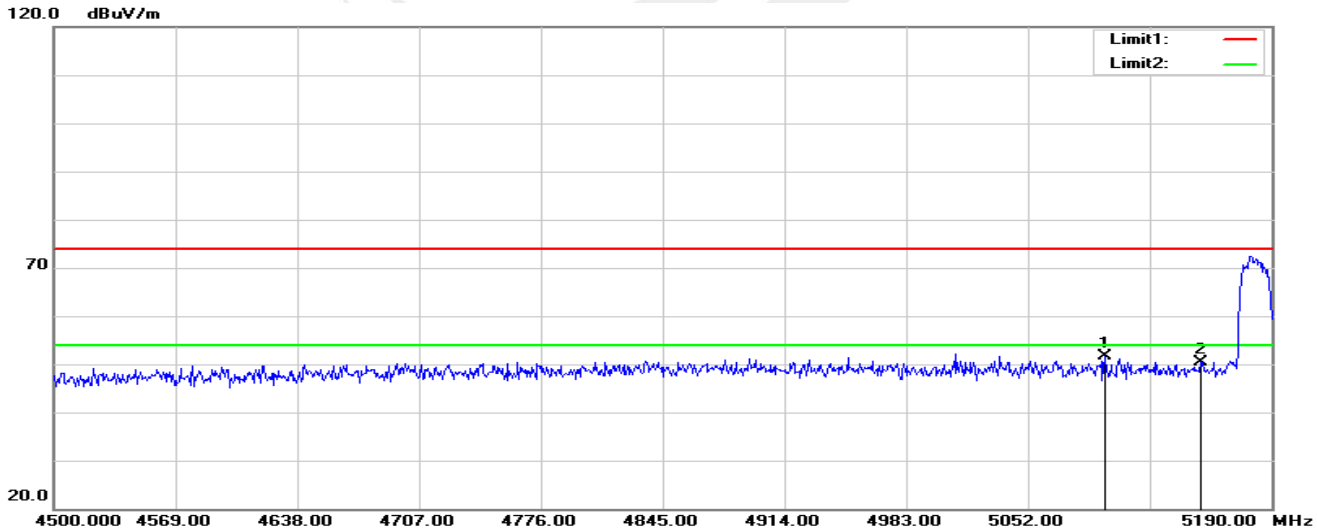
802.11 n (HT-20)-Low

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	5003.010	53.44	-2.76	50.68	74.00	-23.32	peak
2	5150.000	49.57	-2.22	47.35	74.00	-26.65	peak

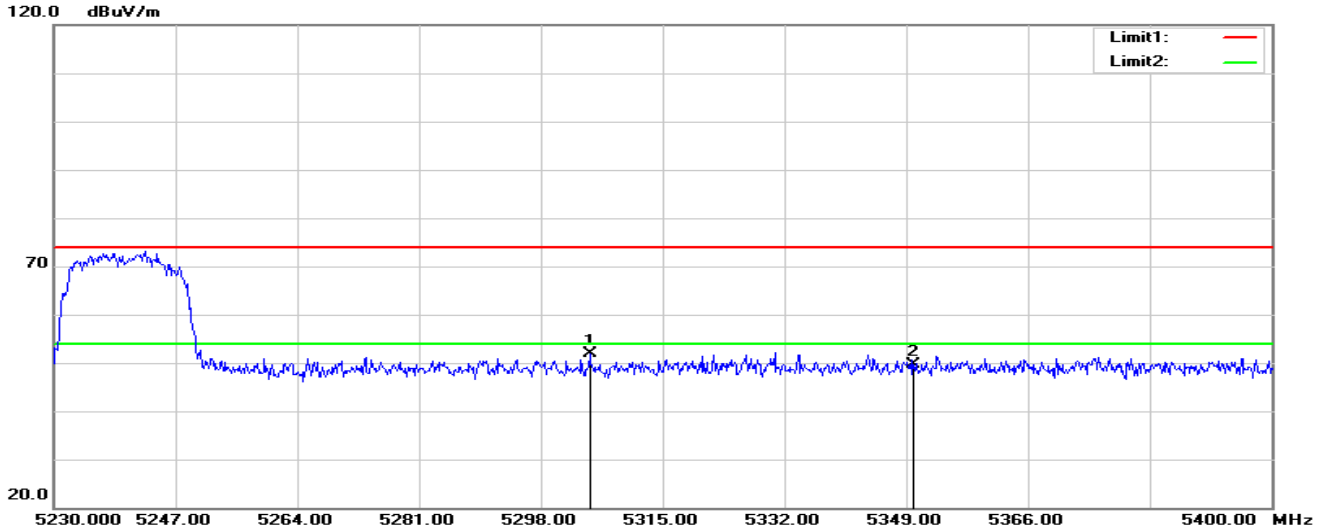
Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	5095.470	54.07	-2.41	51.66	74.00	-22.34	peak
2	5150.000	52.50	-2.22	50.28	74.00	-23.72	peak

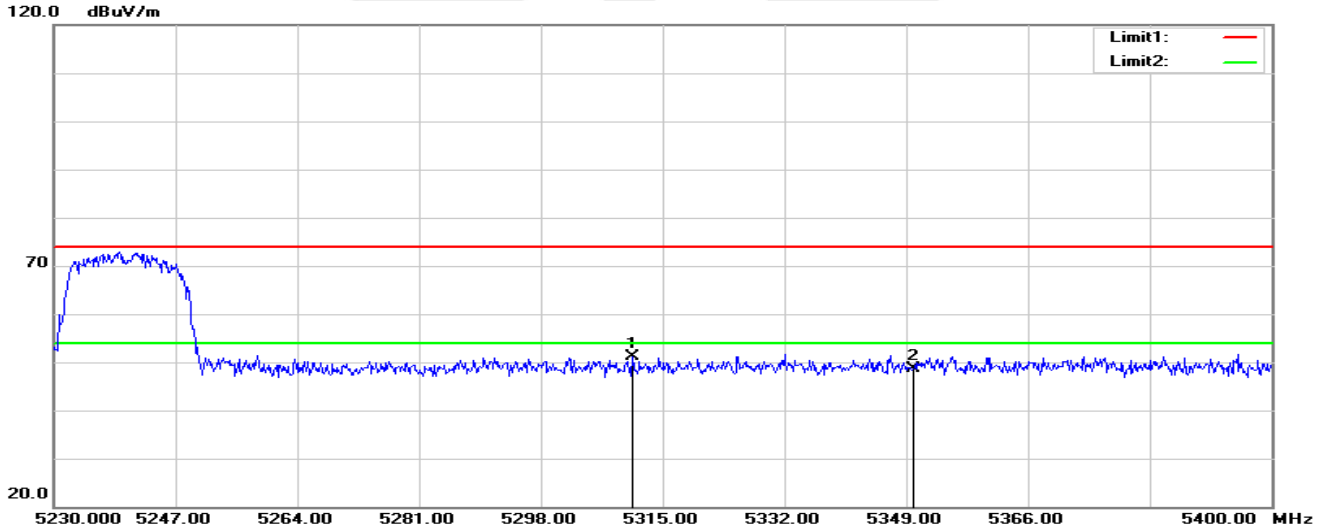
802.11 n (HT-20)-High

Horizontal



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	5304.800	53.81	-1.91	51.90	74.00	-22.10	peak
2	5350.000	51.54	-1.84	49.70	74.00	-24.30	peak

Vertical



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	Factor(dB/m)	(dBuV/m)	(dBuV/m)	(dB)	
1	5310.750	53.03	-1.89	51.14	74.00	-22.86	peak
2	5350.000	50.45	-1.84	48.61	74.00	-25.39	peak

Note:

1.802.11a, 802.11n (HT-20), 802.11n (HT-40), 802.11ac (HT-20), 802.11ac (HT-40) , 802.11ac (HT-80) mode all have been tested, the worst case is 802.11 n (HT-20), only show the worst case.

2. Pre-scan both the SISO and MIMO mode, only the worst-case results were reported.

4. CONDUCTED SPURIOUS EMISSIONS AND BANDEDGE

4.1 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

.

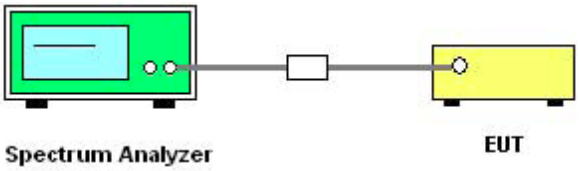
For Band edge

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

Note: reference module data, Single modular FCC ID:PX9-AC9260NGW

5. POWER SPECTRAL DENSITY TEST

5.1 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 ≥ 1/*T*, where *T* is defined in section II.B.l.a).

b) Set VBW ≥ 3 RBW.

c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10 log (500kHz/RBW) to the measured result, whereas RBW (< 500 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 (1MHz/RBW) to the measured result, whereas RBW (< 1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.

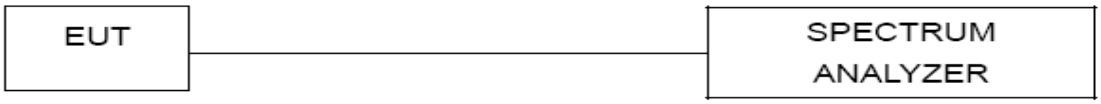
e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 kHz for the sections5.c) and 5.d) above, since RBW=100 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

Note: reference module data, Single modular FCC ID:PX9-AC9260NGW

6. BANDWIDTH MEASUREMENT

6.1 EMISSION BANDWIDTH (EBW) 26 BANDWID PROCEDURES / LIMIT

See list of measuring instruments of this test report.

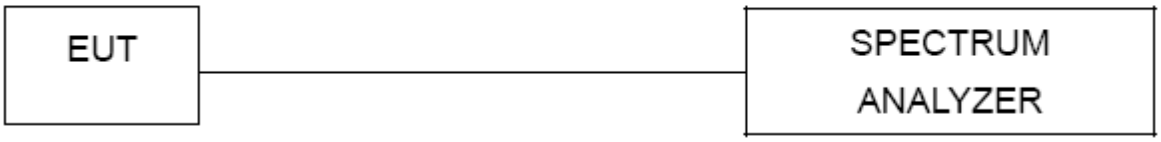
6.1.1 TEST PROCEDURE

1. The testing follows FCC KDB 789033 D02 General UNII Test Procedures New Rules v02r01
2. Set RBW = approximately 1% of the emission bandwidth.
3. Set the VBW > =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

Note: reference module data, Single modular FCC ID:PX9-AC9260NGW

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 v02r01.
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 ≥ 3 · 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.

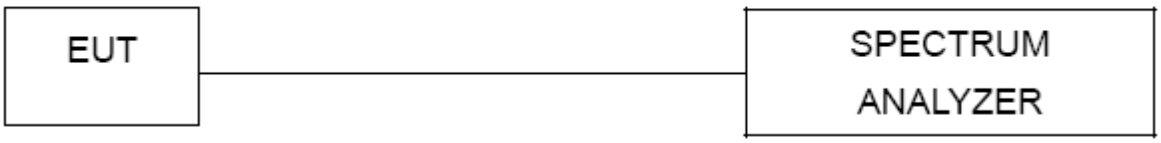
6. Use the 99 % power bandwidth function of the instrument (if available).

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

Note: reference module data, Single modular FCC ID:PX9-AC9260NGW

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 v02r01.

a) Set RBW = 100 kHz.

b) Set the video bandwidth (VBW) ≥ 3 × 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

Note: reference module data, Single modular FCC ID:PX9-AC9260NGW

7. MAXIMUM CONDUCTED OUTPUT POWER

7.1 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.

<table>
<tr><td colspan="5">FCC Part15 (15.407) , Subpart E</td></tr>
<tr><td>Section</td><td>Test Item</td><td>Limit</td><td>Frequency Range (MHz)</td><td>Result</td></tr>
<tr><td rowspan="2">15.407(a) (1) (iv)</td><td rowspan="3">Peak Output Power</td><td>0.25 watt</td><td>5150-5250</td><td rowspan="3">PASS</td></tr>
<tr><td>The lesser of 250 mW or 11 dBm + 10 log (26 dB emission bandwidth)</td><td>5250-5350
5470-5725</td></tr>
<tr><td>15.407(a) (3)</td><td>1 watt</td><td>5725-5825</td></tr>
</table>

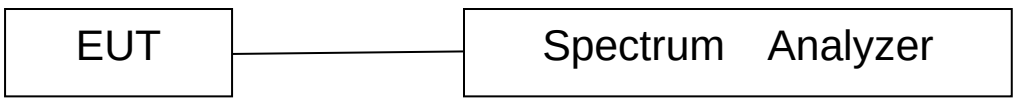
7.1.1 TEST PROCEDURE

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

Note: reference module data, Single modular FCC ID:PX9-AC9260NGW

8. AUTOMATICALLY DISCONTINUE TRANSMISSION

8.1 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.

8.2 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

9. ANTENNA REQUIREMENT

9.1 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.

9.2 EUT ANTENNA

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

10. EUT TEST PHOTO

Note: See test photos in setup photo document for the actual connections between Product and support equipment.

※※※※※END OF THE REPORT※※※※※