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FCC RADIO TEST REPORT

FCC ID:2AOND-IKAMAND19

Product : IKAMAND Trade Name : N/A Model Name : IKAMAND V2 Serial Model : N/A Report No. : UNIA2018121208FR-01

Prepared for

Premier Specialty Brands, LLC

3400 Rivergreen Ct Ste 600, Duluth, GA 30096, United States

Prepared by

Shenzhen United Testing Technology Co., Ltd.

2F, Annex Bldg, Jiahuangyuan Tech Park, #365 Baotian 1 Rd, Tiegang Community, Xixiang Str, Bao'an District, Shenzhen, China

深圳市优耐检测技术有限公司 Shenzhen United Testing Technology Co.,Ltd. United Testing Technology(Hong Kong) Limited

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TEST RESULT CERTIFICATION

Applicant's name:	Premier Specialty Brands, LLC
Address:	3400 Rivergreen Ct Ste 600, Duluth, GA 30096, United States
Manufacture's Name:	Align Machine Works
Address:	7th Floor, B Building HuaQiang Square, HuaQiangBei Road, ShenZhen, China
Product description	
Product name:	IKAMAND
Trade Mark:	N/A
Model and/or type reference :	IKAMAND V2
Standards	FCC Rules and Regulations Part 15 Subpart C Section 15.247 ANSI C63.10: 2013

This device described above has been tested by Shenzhen United Testing Technology Co., Ltd., and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

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Date of Test:	
Date (s) of performance of tests:	
Date of Issue:	
Test Result	

Dec.13, 2018 ~ Dec. 24, 2018 Dec. 24, 2018 Pass

Prepared by:

Reviewer:

Approved & Authorized Signer:



Liuze/Manager

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1.TEST SUMMARY

1.1TEST PROCEDURES AND RESULTS

DESCRIPTION OF TEST CONDUCTED EMISSIONS TEST RADIATED EMISSION TEST BAND EDGE OCCUPIED BANDWIDTH MEASUREMENT POWER SPECTRAL DENSITY PEAK OUTPUT POWER OUT OF BAND EMISSIONS ANTENNA REQUIREMENT RESULT COMPLIANT COMPLIANT COMPLIANT COMPLIANT COMPLIANT COMPLIANT COMPLIANT

1.2 TEST FACILITY

Test Firm : Shenzhen United Testing Technology Co., Ltd.

Address

Community, Xixiang Str, Bao'an District, Shenzhen, China

:2F, Annex Bldg, Jiahuangyuan Tech Park, #365 Baotian 1 Rd, Tiegang

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.The testing quality system of our laboratory meets with ISO/IEC-17025 requirements, which is approved by CNAS. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

CNAS-LAB Code: L6494

The EMC Laboratory has been assessed and in compliance with CNAS-CL01 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2017 General Requirements) for the Competence of testing Laboratories.

Designation Number: CN1227

Test Firm Registration Number: 674885

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files.

1.3 MEASUREMENT UNCERTAINTY

Measurement Uncertainty		
Conducted Emission Expanded Uncertainty	= 1	2.23dB, k=2
Radiated emission expanded uncertainty(9kHz-30MHz)	=	3.08dB, k=2
Radiated emission expanded uncertainty(30MHz-1000MHz)	=	4.42dB, k=2
Radiated emission expanded uncertainty(Above 1GHz)	=	4.06dB, k=2

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2. GENERAL INFORMATION

2.1GENERAL DESCRIPTION OF EUT

Equipment	IKAMAND
Trade Mark	N/A
Model Name	IKAMAND V2
Serial No.	N/A
Model Difference	N/A
FCC ID	2AOND-IKAMAND19
Antenna Type	Internal Antenna
Antenna Gain	0dBi
Frequency Range	802.11b/g/n20:2412~2462 MHz
Number of Channels	802.11b/g/n20: 11CH
Modulation Type	CCK, OFDM, DBPSK, DAPSK
Battery	N/A
PowerSource	DC 12V from adapter withAC 120(240)V/60Hz
	M/N: UWP-18W-1215S
Adapter Model	Input: AC 100-240V, 50/60Hz, 0.4A
	Output: DC 12V, 1.5A

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2.2 Carrier Frequency of Channels

1	Channel List for 802.11b/g/n(20MHz)									
Channel	Frequency (MHz)	Channel		Channel Channel C		Channel Frequence (MHz)		Channel	Frequency (MHz)	
01	2412	04	2427	07	2442	10	2457			
02	2417	05	2432	08	2447	11	2462			
03	2422	06	2437	09	2452	5				

2.3 Operation of EUT during testing

Operating Mode

The mode is used: Transmitting modefor 802.11b/g/n(20MHz)

Low Channel: 2412MHz Middle Channel: 2437MHz High Channel: 2462MHz

2.4DESCRIPTION OF TEST SETUP

Operation of EUT during Conducted testing:



Operation of EUT duringRadiation and Above1GHz Radiation testing:



Table forauxiliary equipment:

Equipment Description	Manufacturer	Model	Calibration Due Date	
Adapter	Suoyuan	DC12030017A	N/A	
Resistance	Ditong	24W	N/A	

2.5MEASUREMENT INSTRUMENTS LIST

Item	Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
		CONDUCTED	EMISSIONS TEST	4	
1	AMN	Schwarzbeck	NNLK8121	8121370	2019.9.9
2	AMN	ETS	3810/2	00020199	2019.9.9
3	EMI TEST RECEIVER	Rohde&Schwarz	ESCI	101210	2019.9.9
4	AAN	TESEQ	T8-Cat6	38888	2019.9.9
	4	RADIATED E	EMISSION TEST		
1	Horn Antenna	Sunol	DRH-118	A101415	2019.9.29
2	BicoNILog Antenna	Sunol	JB1 Antenna	A090215	2019.9.29
3	PREAMP	HP	8449B	3008A00160	2019.9.9
4	PREAMP	HP	8447D	2944A07999	2019.9.9
5	EMI TEST RECEIVER	Rohde&Schwarz	ESR3	101891	2019.9.9
6	VECTOR Signal Generator	Rohde&Schwarz	SMU200A	101521	2019.9.28
7	Signal Generator	Agilent	E4421B	MY4335105	2019.9.28
8	MXA Signal Analyzer	Agilent	N9020A	MY50510140	2019.9.28
9	MXA Signal Analyzer	XA Signal Analyzer Agilent N9020A		MY51110104	2019.9.9
10	ANT Tower&Turn table Controller			60764	2019.9.28
11	Anechoic Chamber Taihe Maore		9m*6m*6m	966A0001	2019.9.9
12	Shielding Room	Taihe Maorui	6.4m*4m*3m	643A0001	2019.9.9
13	RF Power sensor	DARE	RPR3006W	15100041SNO88	2019.3.14
14	RF Power sensor	DARE RPR3006W		15100041SNO89	2019.3.14
15	RF power divider	power divider Anritsu K241B		992289	2019.9.28
16	Wideband radio communication tester	Robde&Schwarz (IM		154987	2019.9.28
17	Biconical antenna	Schwarzbeck	VHA 9103	91032360	2019.9.8
18	Biconical antenna	Schwarzbeck	VHA 9103	91032361	2019.9.8
19	Broadband Hybrid Antennas	Schwarzbeck	VULB9163	VULB9163#958	2019.9.8
20	Horn Antenna	Schwarzbeck	BBHA9120D	9120D-1680	2019.1.12
21	Active Receive Loop Antenna	SCOWARZDECK EMIZE 1919B		00023	2019.9.8
22	Horn Antenna Schwarzbeck		BBHA 9170	BBHA9170651	2019.03.14
23	Microwave Broadband Preamplifier	Schwarzbeck	BBV 9721	100472	2019.9.8
24	Active Loop Antenna	Com-Power	AL-130R	10160009	2019.05.10
25	Power Meter	KEYSIGHT	N1911A	MY50520168	2019.05.10
26	Frequency Meter	VICTOR	VC2000	997406086	2019.05.10
27	DC Power Source	HYELEC	HY5020E	055161818	2019.05.10

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3. CONDUCTED EMISSIONS TEST

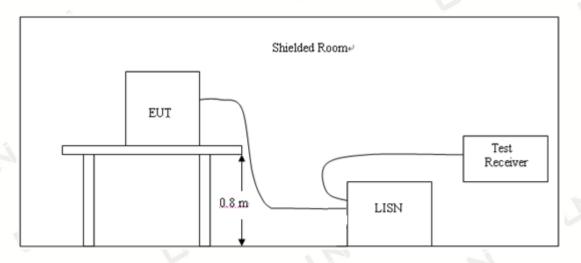
3.1 Conducted Power Line Emission Limit

For unintentional device, according to § 15.107(a) Line Conducted Emission Limits is as following

Frequency	Maximum RF Line Voltage(dBµV)						
	CLA	SS A	CLASS B				
(MHz)	(MHz) Q.P.		Q.P.	Ave.			
0.15~0.50	79	66	66~56*	56~46*			
0.50~5.00	73	60	56	46			
5.00~30.0	73	60	60	50			

* Decreasing linearly with the logarithm of the frequency For intentional device, according to §15.207(a) Line Conducted Emission Limit is same as above table.

3.2 Test Setup



3.3 Test Procedure

- 1, The equipment was set up as per the test configuration to simulate typical actual usage per the user'smanual. A wooden table with a height of 0.8 meters is used and is placed on the ground plane as per ANSI C63.10.
- 2, Support equipment, if needed, was placed as per ANSI C63.10.
- 3, All I/O cables were positioned to simulate typical actual usage as per ANSI C63.10.
- 4, If a EUT received DC power from the USB Port of Notebook PC, the PC's adapter received AC120V/60Hzpower through a Line Impedance Stabilization Network (LISN) which supplied power source and wasgrounded to the ground plane.
- 5, All support equipments received AC power from a second LISN, if any.
- 6, The EUT test program was started. Emissions were measured on each current carrying line of the EUTusing a spectrum Analyzer / Receiver connected to the LISN powering the EUT. The LISN has twomonitoring points: Line 1 (Hot Side) and Line 2 (Neutral Side). Two scans were taken: one with Line 1 connected to Analyzer / Receiver and Line 2 connected to a 50 ohm load; the second scan had Line 1 connected to a 50 ohm load and Line 2 connected to the Analyzer / Receiver.
- 7, Analyzer / Receiver scanned from 150 KHz to 30MHz for emissions in each of the test modes.

3.4 Test Result

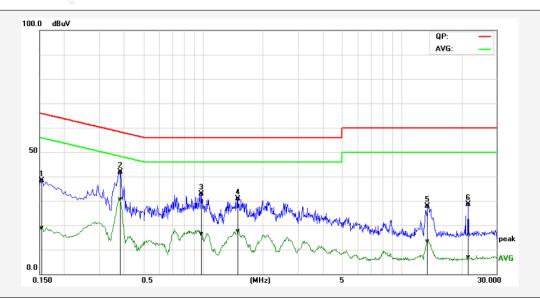
Pass

Remark:

All modes were tested at AC 120V and 240V, only the worst result of AC 120V was reported.
All modeswere tested at Low, Middle, and High channel, only the worst result of 802.11b Low Channel was reported as below:

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Temperature:	24°C	Relative Humidity:	49%			
Test Date:	Dec. 13, 2018	Pressure:	1010hPa			
Test Voltage:	AC 120V, 60Hz	Phase:	Line			
Test Mode:	ransmitting mode of 802.11b 2412MHz					



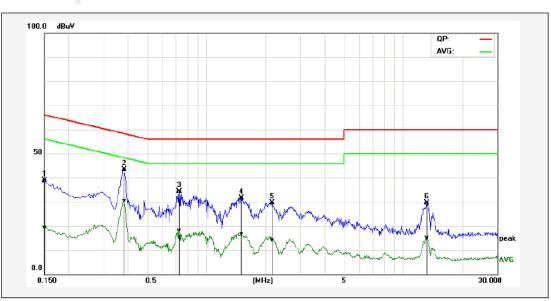
No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1P	0.1539	28.83	9.23	9.65	38.48	18.88	65.79	55.79	-27.31	-36.91	Pass
2*	0.3820	32.16	20.88	9.82	41.98	30.70	58.24	48.24	-16.26	-17.54	Pass
3P	0.9820	23.02	6.53	9.87	32.89	16.40	56.00	46.00	-23.11	-29.60	Pass
4P	1.4980	20.98	7.68	9.86	30.84	17.54	56.00	46.00	-25.16	-28.46	Pass
5P	13.5060	27.64	13.16	0.25	27.89	13.41	60.00	50.00	-32.11	-36.59	Pass
6P	21.7099	28.19	6.36	0.52	28.71	6.88	60.00	50.00	-31.29	-43.12	Pass

Remark: Factor = Insertion Loss + Cable Loss, Result=Reading + Factor, Margin=Result - Limit.

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Temperature:	24°C	Relative Humidity:	49%			
Test Date:	Dec. 13, 2018	Pressure:	1010hPa			
Test Voltage:	AC 120V, 60Hz	Phase:	Neutral			
Test Mode: Transmitting mode of 802.11b 2412MHz						



No.	Frequency	QuasiPeak reading	Average reading	Correction factor	QuasiPeak result	Average result	QuasiPeak limit	Average limit	QuasiPeak margin	Average margin	Remark
	(MHz)	(dBuV)	(dBuV)	(dB)	(dBuV)	(dBuV)	(dBuV)	(dBuV)	(dB)	(dB)	
1P	0.1500	29.19	9.86	9.64	38.83	19.50	66.00	56.00	-27.17	-36.50	Pass
2*	0.3820	33.53	20.49	9.82	43.35	30.31	58.24	48.24	-14.89	-17.93	Pass
3P	0.7300	24.56	8.32	9.82	34.38	18.14	56.00	46.00	-21.62	-27.86	Pass
4P	1.5100	21.76	6.85	9.86	31.62	16.71	56.00	46.00	-24.38	-29.29	Pass
5P	2.1660	19.78	4.32	9.90	29.68	14.22	56.00	46.00	-26.32	-31.78	Pass
6P	13.1620	29.42	14.82	0.24	29.66	15.06	60.00	50.00	-30.34	-34.94	Pass

Remark: Factor = Insertion Loss + Cable Loss, Result=Reading + Factor, Margin=Result - Limit.

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4 RADIATED EMISSION TEST

4.1 Radiation Limit

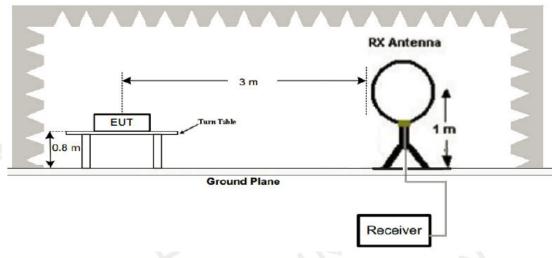
For unintentional device, according to § 15.109(a), except for Class A digital devices, the field strength ofradiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the followingvalues:

i en e ming i ana e e i			
Frequency	Distance	Radiated	Radiated
(MHz)	(Meters)	(dBµV/m)	(µV/m)
30-88	3	40	100
88-216	3	43.5	150
216-960	3	46	200
Above 960	3	54	500

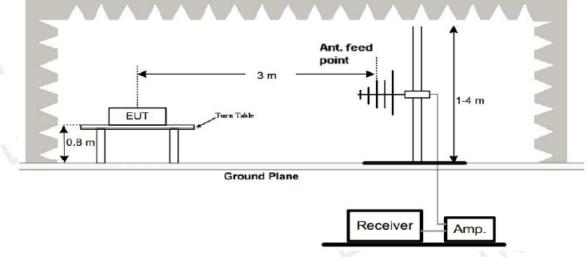
For intentional device, according to § 15.209(a), the general requirement of field strength of radiatedemissions from intentional radiators at a distance of 3 meters shall not exceed the above table.

4.2 Test Setup

1. Radiated Emission Test-Up Frequency Below 30MHz



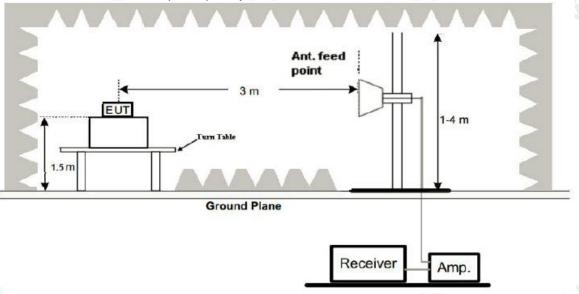
2. Radiated Emission Test-Up Frequency 30MHz~1GHz



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3. Radiated Emission Test-Up Frequency Above 1GHz



- 4.3 Test Procedure
 - 1. Below 1GHz measurement the EUT is placed on turntable which is 0.8m above ground plane. And above 1GHz measurement EUT was placed on low permittivity and low tangent turn table which is 1.5m above ground plane.
 - 2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
 - 3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highestemissions.
 - 4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
 - 5. And also, each emission was to be maximized by changing the polarization of receiving antenna bothhorizontal and vertical.
 - 6. Repeat above procedures until the measurements for all frequencies are complete.
 - 7. The test frequency range from 9KHz to25GHz per FCC PART 15.33(a).

Note:

For battery operated equipment, the equipment tests shall be performed using a new battery.

4.4 Test Result

PASS

Remark:

1. All modes of 802.11b/g/n20 were test at Low, Middle, and High channel, only the worst result of 802.11b Low Channel was reported for below 1GHz test.

2. By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that "Z axis" position was the worst, and test data recorded in this report.

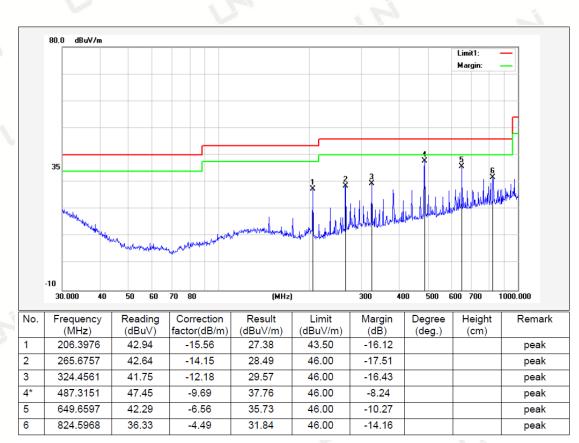
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Below 1GHz Test Results:

Temperature:	24°C	Relative Humidity:	49%
Test Date:	Dec. 13, 2018	Pressure:	1010hPa
Test Voltage:	AC 120V, 60Hz	Polarization:	Horizontal
Test Mode:	Transmitting mode of 802.11b 241	12MHz	

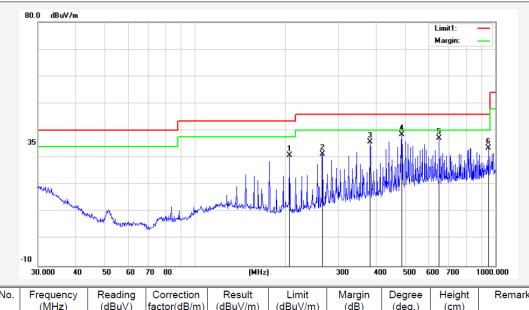


Remark: Absolute Level= Reading Level+ Factor, Margin= Absolute Level – Limit Factor=Ant. Factor + Cable Loss – Pre-amplifier

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Temperature:	24°C	Relative Humidity:	49%
Test Date:	Dec. 13, 2018	Pressure:	1010hPa
Test Voltage:	AC 120V, 60Hz	Polarization:	Vertical
Test Mode:	Transmitting mode of 802.11b	2412MHz	1



No.	Frequency (MHz)	Reading (dBuV)	Correction factor(dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Degree (deg.)	Height (cm)	Remark
1	206.3976	47.89	-17.05	30.84	43.50	-12.66			peak
2	265.6757	47.13	-15.87	31.26	46.00	-14.74			peak
3	382.5880	49.54	-13.75	35.79	46.00	-10.21			peak
4*	487.3151	50.55	-12.09	38.46	46.00	-7.54			peak
5	649.6597	46.42	-9.38	37.04	46.00	-8.96			peak
6	945.4400	39.32	-5.85	33.47	46.00	-12.53			peak

Remark: Absolute Level= Reading Level+ Factor, Margin= Absolute Level – Limit Factor=Ant. Factor + Cable Loss – Pre-amplifier

Remark:

- (1) Measuring frequencies from 9 KHz to the 1 GHz, Radiated emission test from 9KHz to 30MHzwas verified, and no any emission was found except system noise floor.
- (2) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.
- (3) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.

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Above 1 GHz Test Results:

CH Low of 802.11b Mode (2412MHz)

Horizontal:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4824	62.36	-3.64	58.72	74	-15.28	PK
4824	51.03	-3.64	47.39	54	-6.61	AV
7236	58.26	-0.95	57.31	74	-16.69	PK
7236	47.69	-0.95	46.74	54	-7.26	AV
Remark: Fact	or = Antenna I	Factor + Cable	e Loss – Pre-ampli	fier. Margin=	Absolute Le	vel – Limit

Vertical:

Frequen	cy Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4824	62.88	-3.64	59.24	74	-14.76	РК
4824	51.16	-3.64	47.52	54	-6.48	AV
7236	57.86	-0.95	56.91	74	-17.09	РК
7236	47.69	-0.95	46.74	54	-7.26	AV

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin= Absolute Level – Limit

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CH Middle of 802.11b Mode (2437MHz)

Horizontal:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4874	61.32	-3.51	57.81	74	-16.19	РК
4874	50.62	-3.51	47.11	54	-6.89	AV
7311	58.09	-0.82	57.27	74	-16.73	PK
7311	47.25	-0.82	46.43	54	-7.57	AV
Remark: Fact	or = Antenna	Factor + Cabl	e Loss – Pre-ampli	fier. Margin=	Absolute Le	vel – Limit

Vertical:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4874	61.27	-3.51	57.76	74	-16.24	РК
4874	50.35	-3.51	46.84	54	-7.16	AV
7311	58.65	-0.82	57.83	74	-16.17	PK
7311	47.32	-0.82	46.5	54	-7.50	AV

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin= Absolute Level – Limit

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CH High of 802.11b Mode (2462MHz)

Horizontal:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4924	62.21	-3.43	58.78	74	-15.22	РК
4924	50.31	-3.43	46.88	54	-7.12	AV
7386	58.36	-0.75	57.61	74	-16.39	PK
7386	47.29	-0.75	46.54	54	-7.46	AV
Remark: Fact	tor = Antenna	Factor + Cabl	e Loss – Pre-ampl	ifier. Margin=	Absolute Le	vel – Limit

Vertical:

		1 m				
Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4924	62.71	-3.43	59.28	74	-14.72	PK
4924	50.85	-3.43	47.42	54	-6.58	AV
7386	58.23	-0.75	57.48	74	-16.52	РК
7386	47.18	-0.75	46.43	54	-7.57	AV
Remark: Fact	or = Antenna	Factor + Cabl	e Loss – Pre-ampli	fier. Margin=	Absolute Le	vel – Limit

Remark :

(1) Measuring frequencies from 1 GHz to the 25 GHz.

(2) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.

(3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.

(4) Data of measurement within this frequency range shown "--- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.The resolution bandwidth of test receiver/spectrum analyzer is 1MHzand video bandwidth is 3MHz for peak measurement with peak detectorat frequency above 1GHz.The resolution bandwidth of test receiver/spectrum analyzer is 1MHzand video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.

(6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.

CH Low of 802.11g Mode (2412MHz)

Horizontal:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4824	61.95	-3.64	58.31	74	-15.69	PK
4824	50.3	-3.64	46.66	54	-7.34	AV
7236	57.82	-0.95	56.87	74	-17.13	PK
7236	47.68	-0.95	46.73	54	-7.27	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin= Absolute Level – Limit						

Vertical:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4824	62.35	-3.64	58.71	74	-15.29	PK
4824	50.13	-3.64	46.49	54	-7.51	AV
7236	58.23	-0.95	57.28	74	-16.72	PK
7236	47.56	-0.95	46.61	54	-7.39	AV
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin= Absolute Level – Limit

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CH Middle of 802.11g Mode (2437MHz)

Horizontal:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4874	61.65	-3.51	58.14	74	-15.86	PK
4874	50.89	-3.51	47.38	54	-6.62	AV
7311	57.82	-0.82	57.00	74	-17.00	PK
7311	47.25	-0.82	46.43	54	-7.57	AV

Vertical:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4874	61.76	-3.51	58.25	74	-15.75	РК
4874	50.31	-3.51	46.80	54	-7.20	AV
7311	57.68	-0.82	56.86	74	-17.14	РК
7311	47.25	-0.82	46.43	54	-7.57	AV
	-	-	•	-		

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin= Absolute Level – Limit

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CH High of 802.11g Mode (2462MHz)

Horizontal:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4924	62.35	-3.43	58.92	74	-15.08	PK
4924	50.13	-3.43	46.70	54	-7.30	AV
7386	58.23	-0.75	57.48	74	-16.52	PK
7386	47.56	-0.75	46.81	54	-7.19	AV
Remark: Fact	tor = Antenna	Factor + Cabl	e Loss – Pre-ampli	ifier. Margin=	Absolute Le	vel – Limit

Vertical:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4924	62.09	-3.43	58.66	74	-15.34	PK
4924	51.07	-3.43	47.64	54	-6.36	AV
7386	58.3	-0.75	57.55	74	-16.45	РК
7386	47.25	-0.75	46.50	54	-7.50	AV
Remark: Fact	or = Antenna	Factor + Cabl	e Loss – Pre-ampli	fier. Margin=	Absolute Le	vel – Limit

Remark :

(1) Measuring frequencies from 1 GHz to the 25 GHz.

(2) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.

(3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.

(4) Data of measurement within this frequency range shown "--- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHzand video bandwidth is 3MHz for peak measurement with peak detectorat frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1MHzand video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.

(6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.

CH Low of 802.11n/H20 Mode (2412MHz)

Horizontal:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4824	61.23	-3.64	57.59	74	-16.41	PK
4824	50.65	-3.64	47.01	54	-6.99	AV
7236	58.24	-0.95	57.29	74	-16.71	PK
7236	47.62	-0.95	46.67	54	-7.33	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin= Absolute Level – Limit						

Vertical:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4824	61.85	-3.64	58.21	74	-15.79	РК
4824	50.68	-3.64	47.04	54	-6.96	AV
7236	58.35	-0.95	57.4	74	-16.6	РК
7236	47.68	-0.95	46.73	54	-7.27	AV
		100 C				

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin= Absolute Level – Limit

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CH Middle of 802.11n/H20 Mode (2437MHz)

Unrigontal	1 A A
Horizontal	

Reading Result	Factor	Emission Level	Limits	Margin	Detector
(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
61.98	-3.51	58.47	74	-15.53	PK
50.36	-3.51	46.85	54	-7.15	AV
57.11	-0.82	56.29	74	-17.71	PK
47.12	-0.82	46.30	54	-7.70	AV
	(dBµV) 61.98 50.36 57.11	Result (dBµV) (dB) 61.98 -3.51 50.36 -3.51 57.11 -0.82	Result (dB) (dBµV/m) (dBµV) (dB) (dBµV/m) 61.98 -3.51 58.47 50.36 -3.51 46.85 57.11 -0.82 56.29	Result (dB) (dBµV/m) (dBµV/m) (dBµV) (dB) (dBµV/m) (dBµV/m) 61.98 -3.51 58.47 74 50.36 -3.51 46.85 54 57.11 -0.82 56.29 74	Kesuit General (dBµV) (dB) (dBµV/m) (dBµV/m) (dB) 61.98 -3.51 58.47 74 -15.53 50.36 -3.51 46.85 54 -7.15 57.11 -0.82 56.29 74 -17.71

Vertical:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4874	62.12	-3.51	58.61	74	-15.39	РК
4874	50.16	-3.51	46.65	54	-7.35	AV
7311	57.15	-0.82	56.33	74	-17.67	PK
7311	47.32	-0.82	46.50	54	-7.50	AV

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier. Margin= Absolute Level – Limit

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CH High of 802.11n/H20 Mode (2462MHz)

Horizontal:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4924	62.85	-3.43	59.42	74	-14.58	PK
4924	50.65	-3.43	47.22	54	-6.78	AV
7386	57.06	-0.75	56.31	74	-17.69	PK
7386	47.63	-0.75	46.88	54	-7.12	AV
Remark: Fact	or = Antenna	Factor + Cabl	e Loss – Pre-ampli	ifier. Margin=	Absolute Le	vel – Limit

Vertical:

Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
4924	62.86	-3.43	59.43	74	-14.57	РК
4924	50.63	-3.43	47.20	54	-6.80	AV
7386	57.89	-0.75	57.14	74	-16.86	РК
7386	47.68	-0.75	46.93	54	-7.07	AV
Remark: Fact	or = Antenna I	Factor + Cabl	e Loss – Pre-ampli	fier. Margin=	Absolute Le	vel – Limit

Remark :

(1) Measuring frequencies from 1 GHz to the 25 GHz.

(2) "F" denotes fundamental frequency; "H" denotes spurious frequency. "E" denotes band edge frequency.

(3) * denotes emission frequency which appearing within the Restricted Bands specified in provision of 15.205, then the general radiated emission limits in 15.209 apply.

(4) Data of measurement within this frequency range shown "--- " in the table above means the reading of emissions are attenuated more than 20dB below the permissible limits or the field strength is too small to be measured.

(5) The IF bandwidth of EMI Test Receiver between 30MHz to 1GHz was 120KHz, 1 MHz for measuring above 1 GHz, below 30MHz was 10KHz.The resolution bandwidth of test receiver/spectrum analyzer is 1MHzand video bandwidth is 3MHz for peak measurement with peak detectorat frequency above 1GHz.The resolution bandwidth of test receiver/spectrum analyzer is 1MHzand video bandwidth is 10Hz for Average measurement with peak detection at frequency above 1GHz.

(6) When the test results of Peak Detected below the limits of Average Detected, the Average Detected is not need completed. For example: Top Channel at Fundamental 73.16dBuV/m(PK Value) <93.98(AV Limit), at harmonic 53.20 dBuV/m(PK Value) <54 dBuV/m(AV Limit), the Average Detected not need to completed.



5 BAND EDGE

5.1 Limits

FCC PART 15.247 Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

5.2 Test Procedure

The band edge compliance of RF radiated emission should be measured by following the guidance in ANSIC63.10 with respect to maximizing the emission by rotating the EUT, measuring the emission while the EUT issituated in three orthogonal planes (if appropriate), adjusting the measurement antenna height andpolarization etc. Set RBW to 100KHz and VBM to 300KHz to measure the peak field strength and setRBW to 1MHz and VBW to 10Hz to measure the average radiated field strength. The conducted RF band edge was measured by using a spectrum analyzer. Set span wide enough to capture the highest in-band emission and the emission at the band edge. Set RBW to 100 KHz and VBW to 300 KHz, to measure the conducted peak band edge.

5.3 Test Result

PASS

Operation Mode:802.11b Mode TX CH Low (2412MHz)

Horizontal:

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Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2310	57.19	-5.81	51.38	74	-22.62	РК
2310	15	-5.81	Ň	54	/	AV
2390	64.52	-5.84	58.68	74	-15.32	PK
2390	50.21	-5.84	44.37	54	-9.63	AV
2400	65.65	-5.84	59.81	74	-14.19	PK
2400	49.56	-5.84	43.72	54	-10.28	AV
_						

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

Vertical:						
Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2310	55.78	-5.81	49.97	74	-24.03	PK
2310	/	-5.81	1	54	1	AV
2390	65.56	-5.84	59.72	74	-14.28	PK
2390	48.03	-5.84	42.19	54	-11.81	AV
2400	67.87	-5.84	62.03	74	-11.97	PK
2400	50.23	-5.84	44.39	54	-9.61	AV
Remark: Fac	tor = Antenna Facto	or + Cable Lo	oss – Pre-amplifier.	V		

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Operation Mode:802.11b Mode TX CH High (2462MHz)

Horizontal:

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Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2483.5	56.32	-5.65	50.67	74	-23.33	PK
2483.5	1	-5.65	/	54	/	AV
2500	55.21	-5.72	49.49	74	-24.51	PK
2500		-5.72	γ /	54	/	AV
Remark: Fac	tor = Antenna Facto	or + Cable Lo	oss – Pre-amplifier	5		1

Vertical:			S		L'	
Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2483.5	57.03	-5.65	51.38	74	-22.62	PK
2483.5		-5.65	/	54	/	AV
2500	55.86	-5.72	50.14	74	-23.86	РК
2500	/	-5.72	/	54	/	AV

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Operation Mode:802.11g Mode TX CH Low (2412MHz)

Horizontal:						
Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2310	55.68	-5.81	49.87	74	-24.13	PK
2310	1	-5.81	/	54	/	AV
2390	65.35	-5.84	59.51	74	-14.49	PK
2390	47.96	-5.84	42.12	54	-11.88	AV
2400	67.86	-5.84	62.02	74	-11.98	PK
2400	50.26	-5.84	44.42	54	-9.58	AV

Vertical:		4.	_			
Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2310	55.86	-5.81	50.05	74	-23.95	РК
2310	/	-5.81	/	54	/	AV
2390	66.12	-5.84	60.28	74	-13.72	PK
2390	47.56	-5.84	41.72	54	-12.28	AV
2400	65.21	-5.84	59.37	74	-14.63	PK
2400	50.23	-5.84	44.39	54	-9.61	AV
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Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

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Operation Mode:802.11g Mode TX CH High (2462MHz)

Horizontal:

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Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2483.5	56.23	-5.65	50.58	74	-23.42	РК
2483.5	1	-5.65	/	54	/	AV
2500	55.23	-5.72	49.51	74	-24.49	PK
2500		-5.72		54	/	AV
Remark: Fac	tor = Antenna Facto	or + Cable Lo	oss – Pre-amplifier	V.		15

Vertical:			5		L'	
Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2483.5	57.23	-5.65	51.58	74	-22.42	PK
2483.5	51	-5.65	/	54	/	AV
2500	55.69	-5.72	49.97	74	-24.03	РК
2500	/	-5.72	/	54	/	AV

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Operation Mode:802.11n/H20 Mode TX CH Low (2412MHz)

Horizontal:						
Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2310	56.12	-5.81	50.31	74	-23.69	PK
2310	1	-5.81	1	54	/	AV
2390	64.23	-5.84	58.39	74	-15.61	PK
2390	47.36	-5.84	41.52	54	-12.48	AV
2400	63.85	-5.84	58.01	74	-15.99	PK
2400	50.63	-5.84	44.79	54	-9.21	AV

Vertical:		17.		1		-
Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2310	56.39	-5.81	50.58	74	-23.42	РК
2310	/	-5.81	/	54	/	AV
2390	65.59	-5.84	59.75	74	-14.25	РК
2390	47.68	-5.84	41.84	54	-12.16	AV
2400	64.23	-5.84	58.39	74	-15.61	РК
2400	50.64	-5.84	44.80	54	-9.20	AV
	1. C.					

Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.

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Operation Mode:802.11n/H20 Mode TX CH High (2462MHz)

	-
HORIZONTAL	•
Horizontal	

Tionzontal.						
Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2483.5	57.23	-5.65	51.58	74	-22.42	PK
2483.5	1	-5.65	/	54	/	AV
2500	56.24	-5.72	50.52	74	-23.48	PK
2500		-5.72		54	/	AV
Remark: Factor = Antenna Factor + Cable Loss – Pre-amplifier.						

Vertical:	L		S		in in	
Frequency	Reading Result	Factor	Emission Level	Limits	Margin	Detector
(MHz)	(dBµV)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	Туре
2483.5	57.63	-5.65	51.98	74	-22.02	PK
2483.5		-5.65	/	54	/	AV
2500	56.25	-5.72	50.53	74	-23.47	РК
2500	/	-5.72	/	54	/	AV
Remark: Fact	or = Antenna Facto	or + Cable Lo	bss – Pre-amplifier			

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6 OCCUPIED BANDWIDTH MEASUREMENT

6.1 Test Limit

FCC Part15(15.247), Subpart C					
Section	Test Item	Limit	Frequency Range (MHz)	Result	
15.247(a)(2)	Bandwidth	>= 500KHz (6dB bandwidth)	2400-2483.5	PASS	

6.2 Test Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.

2. Set EUT as normal operation.

3. Based on FCC Part15 C Section 15.247: RBW=100KHz, VBW=300KHz.

4. The useful radiated emission from the EUT was detected by the spectrum analyzer with peak detector.

6.3 Measurement Equipment Used

Same asRadiated Emission Measurement

6.4 Test Result

PASS



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	S				
TX 802.11b Mode					
Frequency (MHz)	6dB Bandwidth (MHz)	Channel Separation (MHz)	Result		
2412	9.764	>=500KHz	PASS		
2437	8.654	>=500KHz	PASS		
2462	10.01	>=500KHz	PASS		

CH: 2412MHz



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CH: 2437MHz



CH: 2462MHz



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TX 802.11g Mode					
Frequency (MHz)	6dB Bandwidth (MHz)	Channel Separation (MHz)	Result		
2412	16.39	>=500KHz	PASS		
2437	15.62	>=500KHz	PASS		
2462	16.37	>=500KHz	PASS		

CH: 2412MHz

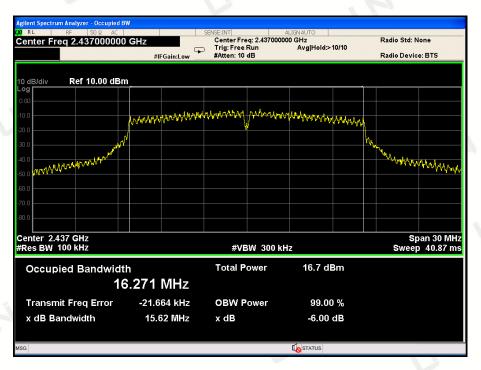


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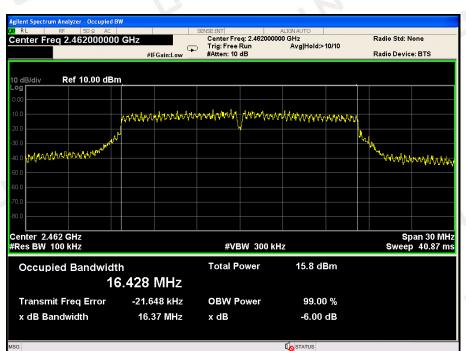
LNi

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CH: 2437MHz



CH: 2462MHz

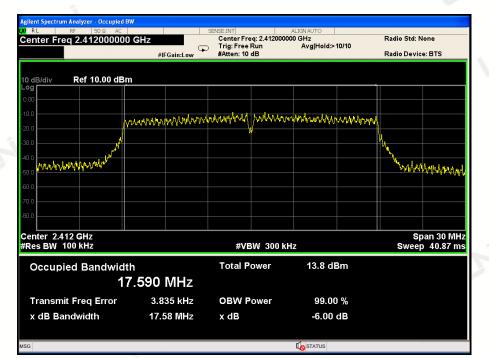


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TX 802.11n/HT20 Mode					
Frequency (MHz)	6dB Bandwidth (MHz)	Channel Separation (MHz)	Result		
2412	17.58	>=500KHz	PASS		
2437	14.39	>=500KHz	PASS		
2462	17.58	>=500KHz	PASS		
		1			

CH: 2412MHz

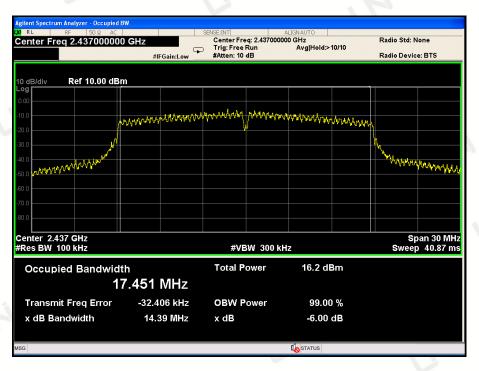


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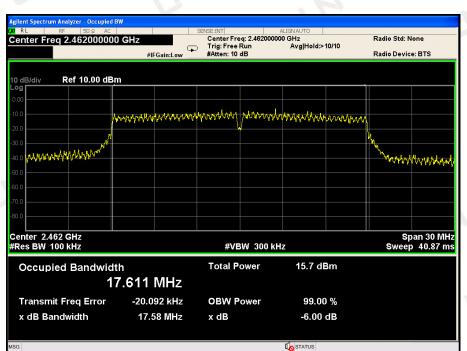
LNi

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CH: 2437MHz



CH: 2462MHz



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7POWER SPECTRAL DENSITYTEST

7.1 Test Limit

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

7.2 Test Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.

2. Set EUT as normal operation.

3. Based on FCC Part15 C Section 15.247: RBW=3KHz, VBW=10KHz.

4. The useful radiated emission from the EUT was detected by the spectrum analyzer with peak detector.

7.3 Measurement Equipment Used

Same asRadiated Emission Measurement

7.4 Test Result

PASS



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TX 802.11b Mode				
Frequency (MHz)	Power Density (dBm/3KHz)	Limit (dBm/3KHz)	Result	
2412	-9.304	8	PASS	
2437	-8.692	8	PASS	
2462	-7.688	8	PASS	

CH: 2412MHz



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CH: 2437MHz



CH: 2462MHz



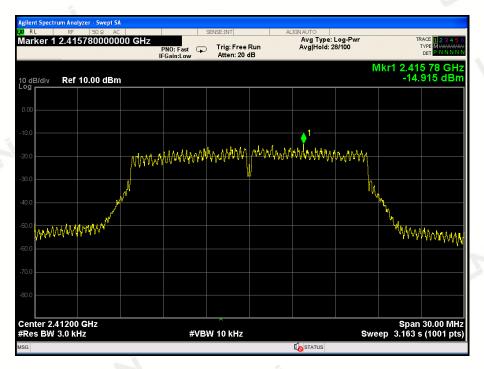
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TX 802.11g Mode				
Frequency (MHz)	Power Density (dBm/3KHz)	Limit (dBm/3KHz)	Result	
2412	-14.915	8	PASS	
2437	-11.787	8	PASS	
2462	-12.144	8	PASS	
		1		

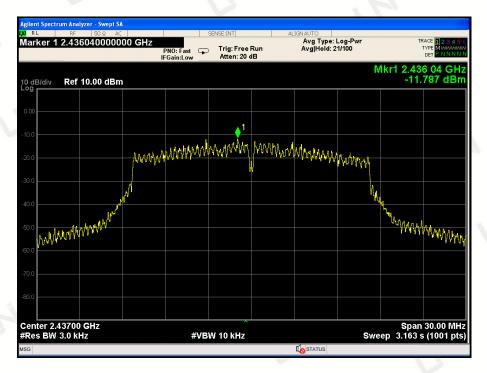
CH: 2412MHz



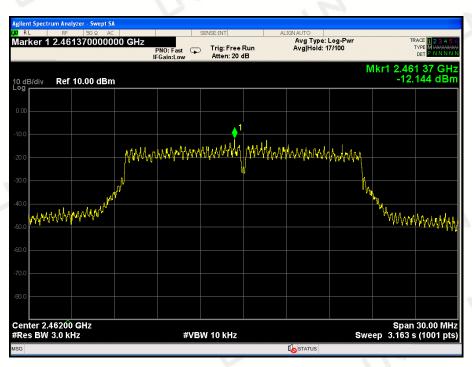
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CH: 2437MHz



CH: 2462MHz



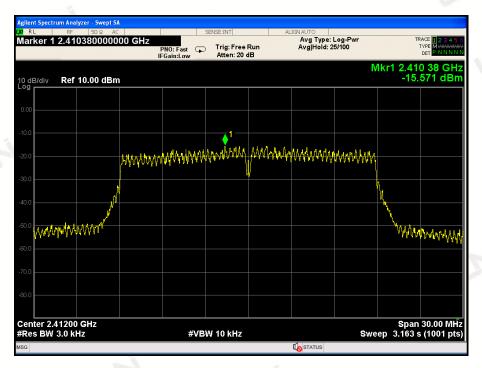
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TX 802.11n/HT20 Mode				
Frequency (MHz)	Power Density (dBm/3KHz)	Limit (dBm/3KHz)	Result	
2412	-15.571	8	PASS	
2437	-13.147	8	PASS	
2462	-13.966	8	PASS	

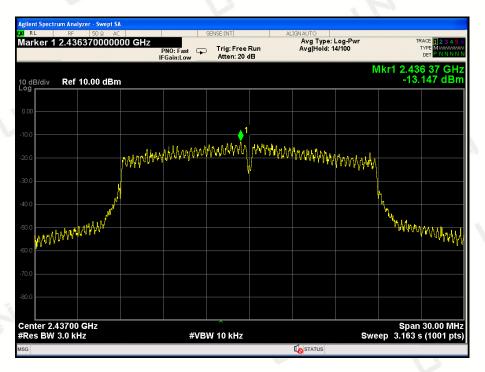
CH: 2412MHz



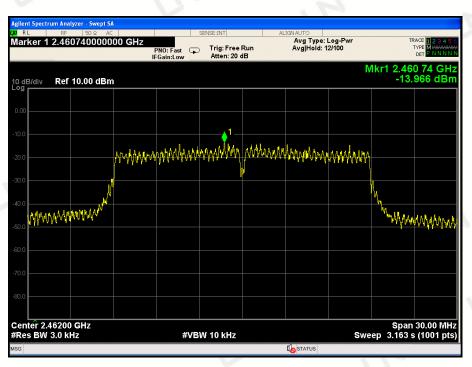
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CH: 2437MHz



CH: 2462MHz



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8PEAK OUTPUT POWERTEST

8.1 Test Limit

FCC Part15(15.247), Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

8.2 Test Procedure

1. The EUT was placed on a turn table which is 0.8m above ground plane.

- 2. The EUT was directly connected to the Power meter.
- 8.3 Measurement Equipment Used

Same asRadiated Emission Measurement

8.4 Test Result

PASS

All the test modes completed for test.

		TX 802.11b Mode	, pi		
Test	Frequency	Maximum Peak Conducted Output Power	LIMIT		
Channel	(MHz)	(dBm)	(dBm)		
CH01	2412	12.95	30		
CH06	2437	12.70	30		
CH11	2462	12.85	30		
	TX 802.11g Mode				
CH01	2412	11.32	30		
CH06	2437	11.25	30		
CH11	2462	11.17	30		
TX 802.11n20 Mode					
CH01	2412	9.85	30		
CH06	2437	10.12	30		
CH11	2462	9.78	30		

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90UT OF BAND EMISSIONSTEST

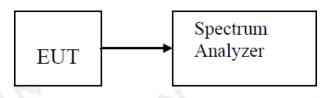
9.1 Test Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB.

9.2 Test Procedure

- 1. The EUT was placed on a turn table which is 0.8m above ground plane.
- 2. Set EUT as TX operation and connect directly to the spectrum analyzer.
- 3. Based on FCC Part15 C Section 15.247: RBW=100KHz, VBW=300KHz.
- 4. Set detected by the spectrum analyzer with peak detector.

9.3 TestSetup



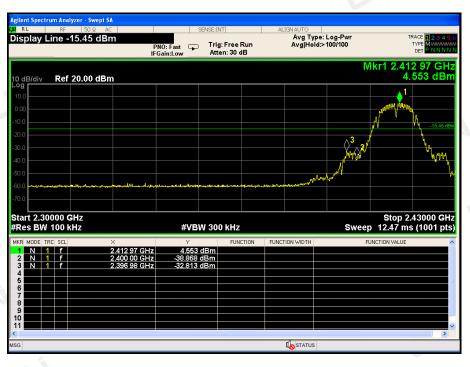
9.4 Test Result

PASS

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TX 802.11b Mode CH: 2412MHz



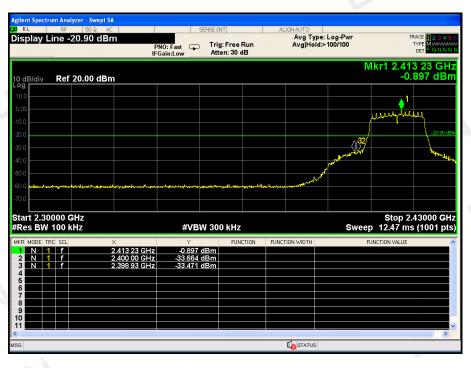
CH: 2462MHz



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TX 802.11g Mode CH: 2412MHz



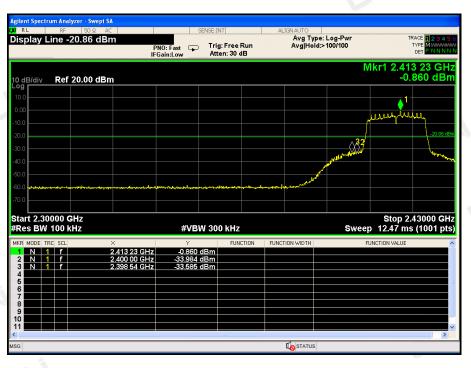
CH: 2462MHz



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CH: 2462MHz



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10 ANTENNA REQUIREMENT

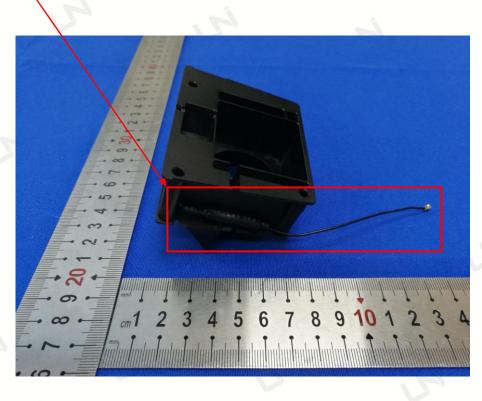
Standard Applicable:

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed toensure that no antenna other than that furnished by the responsible party shall be used with the device.

Antenna Connected Construction

The antenna used in this product is an Internal Antenna, The directional gains of antenna used for transmitting is 0dBi.

ANTENNA:



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11PHOTOGRAPH OF TEST

11.1 Radiated Emission





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End of Report

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