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Report No.: SZEM150900595703

FCC REPORT

Application No: SZEM1509005957HR

Applicant: SHENZHEN ZOWEE TECHNOLOGY CO., LTD

Manufacturer: Medion AG

Factory: Shenzhen Zowee Smart Manufacturing Co., Ltd

Product Name: LIFETAB

Model No.(EUT): PIC A0726.01

Add Model No.: PIC A0726.xx (PIC A0726.xx where x can be number 0 to 9) except for

PIC A0726.01

Trade Mark: MEDION AG **FCC ID:** 2AAP6A0726

Standards: 47 CFR Part 15, Subpart C (2014)

Date of Receipt: 2015-09-24

Date of Test: 2015-09-30 to 2015-10-22

Date of Issue: 2015-10-22

Test Result: PASS *

. * In the configuration tested, the EUT detailed in this report complied with the standards specified above.

Authorized Signature:



Jack Zhang EMC Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.



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2 Version

Revision Record								
Version Chapter Date Modifier Remark								
01		2015-10-22		Original				

Authorized for issue by:		
Tested By	Eric Fu	2015-10-22
	(Eric Fu) /Project Engineer	Date
Prepared By	Hedy Wen.	2015-10-22
	(Hedy Wen) /Clerk	Date
Checked By	Jihn Hog	2015-10-22
	(Jim Huang) /Reviewer	Date



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3 Test Summary

Test Item	Test Requirement	Test method	Result
Antenna Requirement	47 CFR Part 15, Subpart C Section 15.203/15.247 (c)	ANSI C63.10 2009	PASS
AC Power Line Conducted Emission	47 CFR Part 15, Subpart C Section 15.207	ANSI C63.10 2009	PASS
Conducted Peak Output Power	47 CFR Part 15, Subpart C Section 15.247 (b)(3)	ANSI C63.10 2009	PASS
6dB Occupied Bandwidth	47 CFR Part 15, Subpart C Section 15.247 (a)(2)	ANSI C63.10 2009	PASS
Power Spectral Density	47 CFR Part 15, Subpart C Section 15.247 (e)	ANSI C63.10 2009	PASS
Band-edge for RF Conducted Emissions	47 CFR Part 15, Subpart C Section 15.247(d)	ANSI C63.10 2009	PASS
RF Conducted Spurious Emissions	47 CFR Part 15, Subpart C Section 15.247(d)	ANSI C63.10 2009	PASS
Radiated Spurious Emissions	47 CFR Part 15, Subpart C Section 15.205/15.209	ANSI C63.10 2009	PASS
Restricted bands around fundamental frequency (Radiated Emission)	47 CFR Part 15, Subpart C Section 15.205/15.209	ANSI C63.10 2009	PASS

Remark:

Model No.: PIC A0726.xx (PIC A0726.xx where x can be number 0 to 9)

Only the model PIC A0726.01 was tested, since the electrical circuit design, layout, components used and internal wiring were identical for all above models. Only the item number is different.



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5 General Information

5.1 Client Information

Applicant:	SHENZHEN ZOWEE TECHNOLOGY CO., LTD			
Address of Applicant:	Science & Technology Industrial Park of Privately Owned Enterprises, Pingshan, Xili, Nanshan District, Shenzhen, PR CHINA			
Manufacturer:	Medion AG			
Address of Manufacturer:	Am Zehnthof 77 D-45307 Essen.Germany			
Factory:	Shenzhen Zowee Smart Manufacturing Co., Ltd			
Address of Factory:	No. 149, Second Industrial Road, TangXiachong, SongGang, Baoan District, Shenzhen, Guangdong, China			

5.2 General Description of EUT

Product Name:	LIFETAB		
Model No.:	PIC A0726.01		
Trade Mark:	MEDION AG		
Operation Frequency:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz		
	IEEE 802.11n(HT40): 2422MHz to 2452MHz		
Channel Numbers:	IEEE 802.11b/g, IEEE 802.11n HT20: 11 Channels		
	IEEE 802.11n HT40: 7 Channels		
Channel Separation:	5MHz		
Type of Modulation:	IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK)		
	IEEE for 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK)		
	IEEE for 802.11n(HT20 and HT40) : OFDM (64QAM, 16QAM,		
	QPSK,BPSK)		
Sample Type:	Portable production		
Antenna Type:	Integral		
Antenna Gain:	1dBi		
Battery:	Lithium-ion battery:3.7V 3400mAh(charge by USB)		
EUT power supply or	AC Adaptor Model: KSA29B0500200HU		
Adapter:	Input: AC100-240V 50/60Hz 0.5A		
	Output: DC 5V 2.0A		



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Operation Frequency each of channel(802.11b/g/n HT20)										
Channel	Fr	equency	Channe	I Frequency	Channel	Fre	quency Char		nel	Frequency
1	24	112MHz	4	2427MHz	7	244	12MHz	10)	2457MHz
2	24	117MHz	5	2432MHz	8	244	47MHz 11			2462MHz
3	24	122MHz	6	2437MHz	9	2452MHz				
Operation F	requ	ency each	of channe	el(802.11n HT40)					
Channel Frequency				Channel	Frequen	су	Chan	nel	ſ	requency
1 2422MHz		4	2437MF	2437MHz				2452MHz		
2 2427MHz		5	2442MF	lz						
3 2432MHz				6	2447MF	lz				

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:

For 802.11b/g/n (HT20):

Channel	Frequency
The Lowest channel	2412MHz
The Middle channel	2437MHz
The Highest channel	2462MHz

For 802.11n (HT40):

, ,	
Channel	Frequency
The Lowest channel	2422MHz
The Middle channel	2437MHz
The Highest channel	2452MHz



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5.3 Test Environment and Mode

Operating Environment:	Operating Environment:							
Temperature:	24.0 °C							
Humidity:	52 % RH							
Atmospheric Pressure:	1010 mbar							
Test mode:								
Transmitting mode:	Keep the EUT in transmitting mode with all kind of modulation and all kind of data rate.							

5.4 Description of Support Units

The EUT has been tested independent unit.

5.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen Branch E&E Lab,

No. 1 Workshop, M-10, Middle Section, Science & Technology Park, Shenzhen, Guangdong, China. 518057.

Tel: +86 755 2601 2053 Fax: +86 755 2671 0594

No tests were sub-contracted.



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5.6 Test Facility

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

• CNAS (No. CNAS L2929)

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

A2LA (Certificate No. 3816.01)

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 3816.01.

VCCI

The 10m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

• FCC - Registration No.: 556682

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen 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. Registration No.: 556682.

Industry Canada (IC)

The 3m Semi-anechoic chambers and the 10m Semi-anechoic chambers of SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-2, 4620C-3.

5.7 Deviation from Standards

None.

5.8 Abnormalities from Standard Conditions

None.

5.9 Other Information Requested by the Customer

None.



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5.10Equipment List

	Conducted Emission								
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)			
1	Shielding Room	ZhongYu Electron	GB-88	SEL0042	2015-05-13	2016-05-13			
2	LISN	Rohde & Schwarz	ENV216	SEL0152	2014-10-24	2015-10-24			
3	LISN	ETS-LINDGREN	3816/2	SEL0021	2015-05-13	2016-05-13			
4	8 Line ISN	Fischer Custom Communications Inc.	FCC-TLIS N-T8-02	SEL0162	2015-08-30	2016-08-30			
5	4 Line ISN	Fischer Custom Communications Inc.	FCC-TLIS N-T4-02	SEL0163	2015-08-30	2016-08-30			
6	2 Line ISN	Fischer Custom Communications Inc.	FCC-TLIS N-T2-02	SEL0164	2015-08-30	2016-08-30			
7	EMI Test Receiver	Rohde & Schwarz	ESCI	SEL0022	2015-05-13	2016-05-13			
8	Coaxial Cable	SGS	N/A	SEL0025	2015-05-13	2016-05-13			
9	DC Power Supply	Zhao Xin	RXN-305D	SEL0117	2014-10-24	2015-10-24			
10	Humidity/ Temperature Indicator	Shanhai Qixiang	ZJ1-2B	SEL0103	2014-10-24	2015-10-24			
11	Barometer	Chang Chun	DYM3	SEL0088	2015-05-13	2016-05-13			



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				raye.	10 01 1			
	RE in Chamber							
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)		
1	3m Semi-Anechoic Chamber	ETS-LINDGREN	N/A	SEL0017	2015-05-13	2016-05-13		
2	EMI Test Receiver	Agilent Technologies	N9038A	SEL0312	2015-09-16	2016-09-16		
3	EMI Test software	AUDIX	E3	SEL0050	N/A	N/A		
4	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEL0015	2014-10-24	2015-10-24		
5	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEL0006	2014-10-24	2015-10-24		
6	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEL0076	2014-11-24	2015-11-24		
7	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEL0053	2015-05-13	2016-05-13		
8	Pre-Amplifier (0.1-26.5GHz)	Compliance Directions Systems Inc.	PAP-0126	SEL0168	2014-10-24	2015-10-24		
9	Coaxial cable	SGS	N/A	SEL0027	2015-05-13	2016-05-13		
10	Coaxial cable	SGS	N/A	SEL0189	2015-05-13	2016-05-13		
11	Coaxial cable	SGS	N/A	SEL0121	2015-05-13	2016-05-13		
12	Coaxial cable	SGS	N/A	SEL0178	2015-05-13	2016-05-13		
13	Band filter	Amindeon	82346	SEL0094	2015-05-13	2016-05-13		
14	Barometer	Chang Chun	DYM3	SEL0088	2015-05-13	2016-05-13		
15	DC Power Supply	Zhao Xin	RXN-305D	SEL0117	2014-10-24	2015-10-24		
16	Humidity/ Temperature Indicator	Shanhai Qixiang	ZJ1-2B	SEL0103	2014-10-24	2015-10-24		
17	Signal Generator (10M-27GHz)	Rohde & Schwarz	SMR27	SEL0067	2015-05-13	2016-05-13		
18	Signal Generator	Rohde & Schwarz	SMY01	SEL0155	2014-10-24	2015-10-24		
19	Loop Antenna	Beijing Daze	ZN30401	SEL0203	2015-05-13	2016-05-13		



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	RF connected test							
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Due date (yyyy-mm-dd)		
1	DC Power Supply	Zhao Xin	RXN-305D	SEL0117	2014-10-24	2015-10-24		
2	Humidity/ Temperature Indicator	HYGRO	ZJ1-2B	SEL0033	2014-10-24	2015-10-24		
3	Spectrum Analyzer	Rohde & Schwarz	FSP	SEL0154	2014-10-24	2015-10-24		
4	Coaxial cable	SGS	N/A	SEL0178	2015-05-13	2016-05-13		
5	Coaxial cable	SGS	N/A	SEL0179	2015-05-13	2016-05-13		
6	Barometer	ChangChun	DYM3	SEL0088	2015-05-13	2016-05-13		
7	Signal Generator	Rohde & Schwarz	SML03	SEL0068	2015-04-25	2016-04-25		
8	Band filter	amideon	82346	SEL0094	2015-05-13	2016-05-13		
9	POWER METER	R&S	NRVS	SEL0144	2014-10-24	2015-10-24		
10	Attenuator	Beijin feihang taida	TST-2-6dB	SEL0205	2015-04-25	2016-04-25		
11	Power Divider(splitter)	Agilent Technologies	11636B	SEL0130	2014-10-24	2015-10-24		



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6 Test results and Measurement Data

6.1 Antenna Requirement

Standard requirement: 47 CFR Part 15C Section 15.203 /247(c)

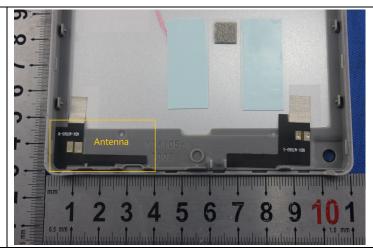
15.203 requirement:

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

15.247(b) (4) requirement:

The conducted output power limit specified in paragraph (b) of this section is based on the use of antennas with directional gains that do not exceed 6 dBi. Except as shown in paragraph (c) of this section, if transmitting antennas of directional gain greater than 6 dBi are used, the conducted output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1), (b)(2), and (b)(3) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

EUT Antenna:



The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 1dBi.



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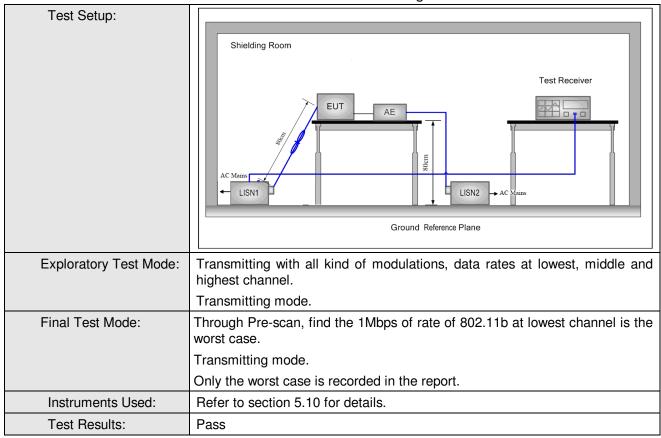
6.2 Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.207			
Test Method:	ANSI C63.10: 2009			
Test Frequency Range:	150kHz to 30MHz			
Limit:	Francisco (MIII-)	Limit (c	dBuV)	
	Frequency range (MHz)	Quasi-peak	Average	
	0.15-0.5	66 to 56*	56 to 46*	
	0.5-5	56	46	
	5-30	60	50	
	* Decreases with the logarithm	n of the frequency.		1
Test Procedure:	1) The mains terminal disturbation. 2) The EUT was connected Impedance Stabilization linear impedance. The position connected to a second reference plane in the semeasured. A multiple soon power cables to a single exceeded. 3) The tabletop EUT was planground reference plane. was placed on the horizon. 4) The test was performed we of the EUT shall be 0.4 me vertical ground reference reference plane. The LISM unit under test and born mounted on top of the between the closest points the EUT and associated ends of the me equipment and all of the	Dance voltage test was pance voltage test was pance voltage test was left to AC power source Network) which provided the LISN 2, which was tame way as the LISC can be utiled to a mon-metal and for floor-standing tal ground reference plant a vertical ground reference plane was bonded to a ground reference plane was placed 0.8 m flood to a ground reference plant of the LISN 1 and the quipment was at least 0 aximum emission, the	through a LISN 1 (des a 50Ω/50μH + er units of the EUT value bonded to the grown of the LISN was lice table 0.8m above a arrangement, the lane. The horizontal grown the boundary of the boundary of the erence plane for LI ane. This distance e EUT. All other units of the relative positions are solutions.	Line 5Ω were pund eing tiple in not eithe EUT rear The pund of the SNs was to of 2.
	,	interface cables must	be changed accordin	



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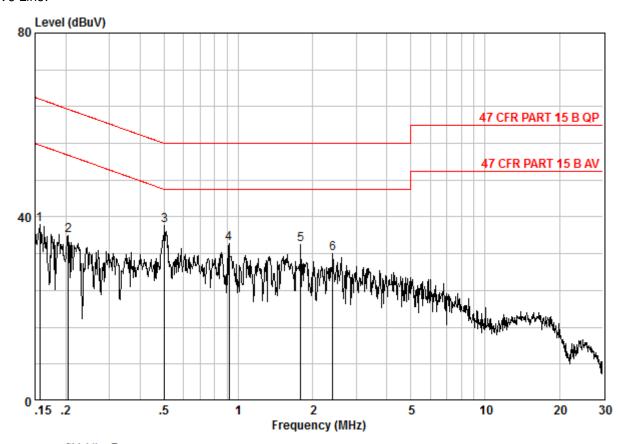
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Measurement Data

An initial pre-scan was performed on the live and neutral lines with peak detector.

Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission were detected.

Live Line:



Site : Shielding Room

Condition : 47 CFR PART 15 B AV CE LINE

Job No. : 5957HR Test Mode : TX

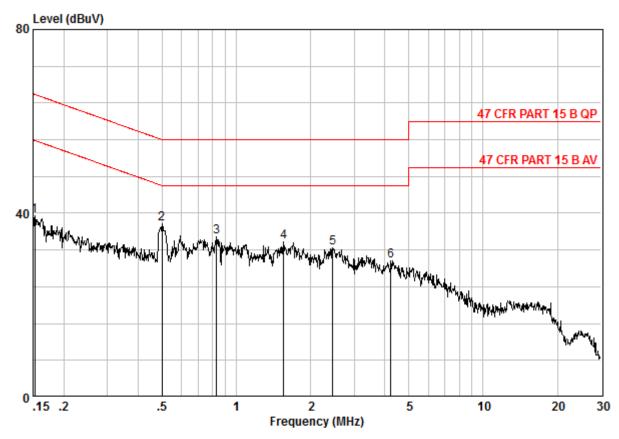
		Freq		LISN Factor			Limit Line		Remark	
	•	MHz	dB	dB	dBuV	dBuV	dBuV	dB		
1		0.15649	0.02	9.82	28.53	38.37	55.65	-17.28	Peak	
2		0.20505	0.02	9.83	26.21	36.06	53.40	-17.34	Peak	
3 @		0.50203	0.01	9.86	28.24	38.11	46.00	-7.89	Peak	
4		0.91842	0.02	9.89	24.26	34.16	46.00	-11.84	Peak	
5		1.790	0.02	9.94	24.08	34.04	46.00	-11.96	Peak	
6		2.409	0.02	9.98	22.03	32.03	46.00	-13.97	Peak	



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Neutral Line:



Site : Shielding Room

Condition : 47 CFR PART 15 B AV CE NEUTRAL

Job No. : 5957HR Test Mode : TX

	Freq		LISN Factor					Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.15240	0.02	9.78	29.62	39.42	55.87	-16.45	Peak
2	0.49937	0.01	9.88	27.82	37.71	46.01	-8.30	Peak
3	0.83047	0.02	9.99	24.96	34.97	46.00	-11.03	Peak
4	1.552	0.02	10.08	23.77	33.88	46.00	-12.12	Peak
5	2.461	0.02	10.12	22.32	32.46	46.00	-13.54	Peak
6	4.224	0.01	10.13	19.56	29.70	46.00	-16.30	Peak

Notes:

- 1. The following Quasi-Peak and Average measurements were performed on the EUT:
- 2. Final Test Level =Receiver Reading + LISN Factor + Cable Loss.



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6.3 Conducted Peak Output Power

Test Requirement:	47 CFR Part 15C Section 15.247 (b)(3)		
Test Method:	ANSI C63.10 2009		
Test Setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane		
	Remark:		
	Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.		
Test Instruments:	Refer to section 5.10 for details.		
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates.		
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20); 13.5Mbps of rate is the worst case of 802.11n(HT40).		
Limit:	30dBm		
Test Results:	Pass		



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Pre-scan under all rate at lowest channel 1								
Mode		802	.11b			_		
Data Rate	1Mbps	2Mbps	5.5Mbps	11Mbps				
Power (dBm)	15.32	15.06	14.92	14.83				
Mode	802.11g							
Data Rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
Power (dBm)	14.72	14.58	14.39	14.37	14.25	14.10	14.12	14.00
Mode				802.11	n(HT20)			
Data Rate	6.5Mbps	13Mbps	19.5Mbps	26Mbps	39Mbps	52Mbps	58.5Mbps	65Mbps
Power (dBm)	14.89	14.74	14.50	14.37	14.28	14.08	13.96	13.90
Mode				802.11	n(HT40)			
Data Rate	13.5Mbps	27Mbps	40.5Mbps	54Mbps	81Mbps	108Mbps	121.5Mbps	135Mbps
Power (dBm)	14.31	14.24	14.11	14.02	13.99	13.87	13.59	13.58

Through Pre-scan, 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20); 13.5Mbps of rate is the worst case of 802.11n(HT40).



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Measurement Data

Measurement Data						
	802.11b mo	de				
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result			
Lowest	15.32	30.00	Pass			
Middle	16.10	30.00	Pass			
Highest	16.48	30.00	Pass			
	802.11g mo	de				
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result			
Lowest	14.72	30.00	Pass			
Middle	15.39	30.00	Pass			
Highest	16.02	30.00	Pass			
	802.11n(HT20)mode					
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result			
Lowest	14.89	30.00	Pass			
Middle	15.64	30.00	Pass			
Highest	16.00	30.00	Pass			
802.11n(HT40)mode						
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result			
Lowest	14.31	30.00	Pass			
Middle	14.75	30.00	Pass			
Highest	14.90	30.00	Pass			

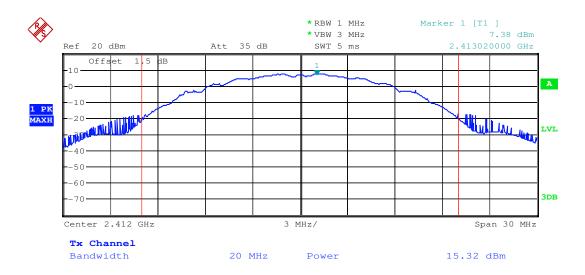


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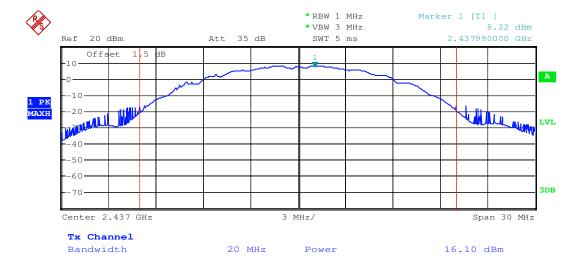
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Test plot as follows:

Test mode: 802.11b Test channel: Lowest



rest mode: 802.11b rest channel: Middle	Test mode:	802.11b	Test channel:	Middle
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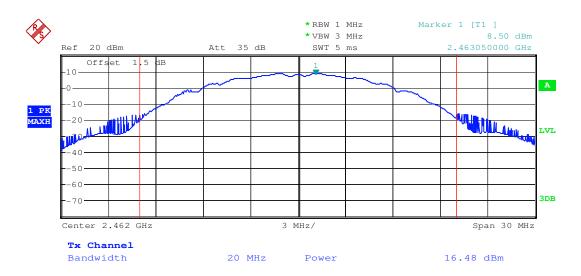




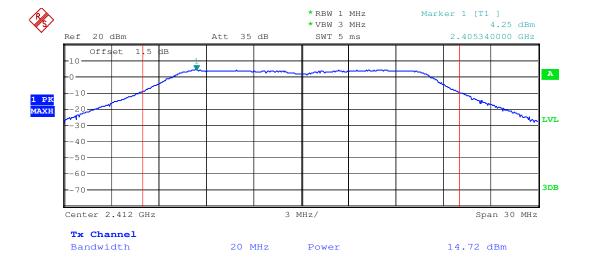
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Test mode: 802.11b Test channel: Highest





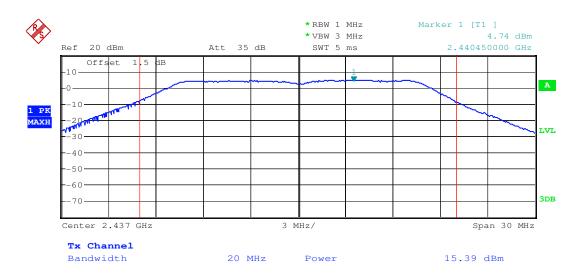




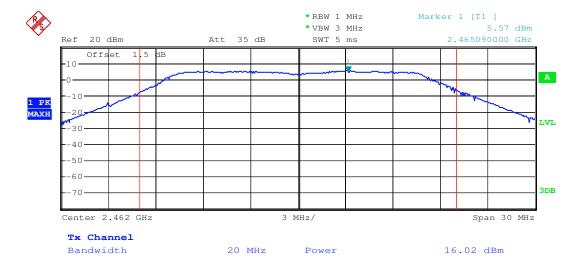
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Test mode: 802.11g Test channel: Middle





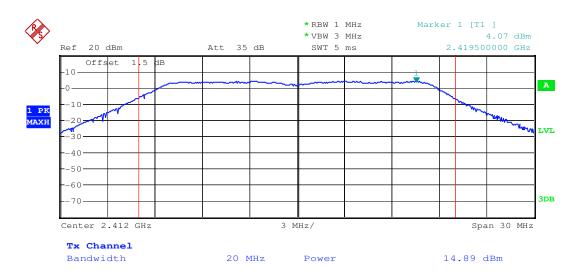




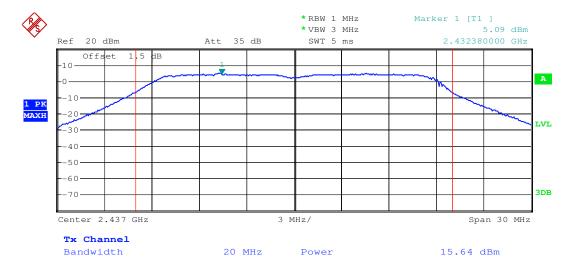
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Test mode: 802.11n(HT20) Test channel: Lowest





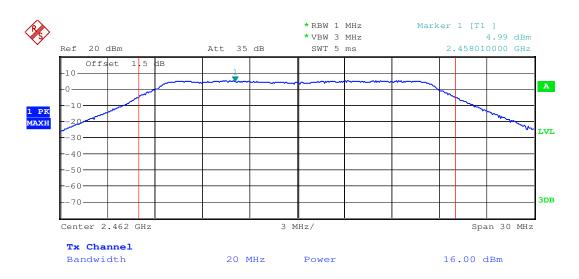




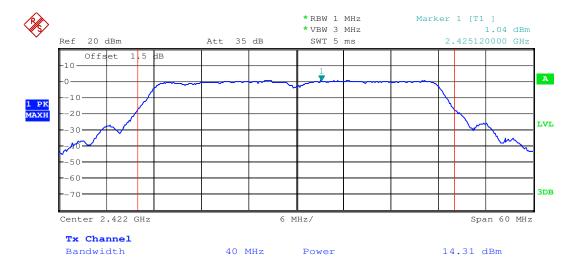
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Test mode: 802.11n(HT20) Test channel: Highest





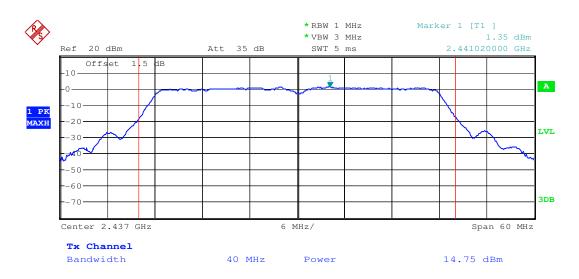




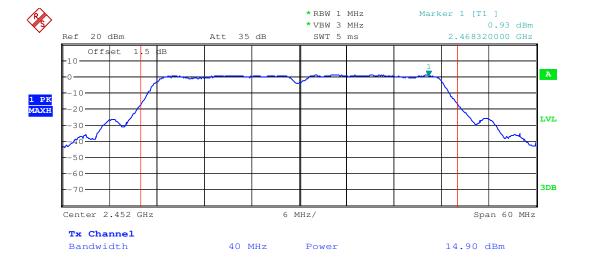
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Test mode: 802.11n(HT40) Test channel: Middle





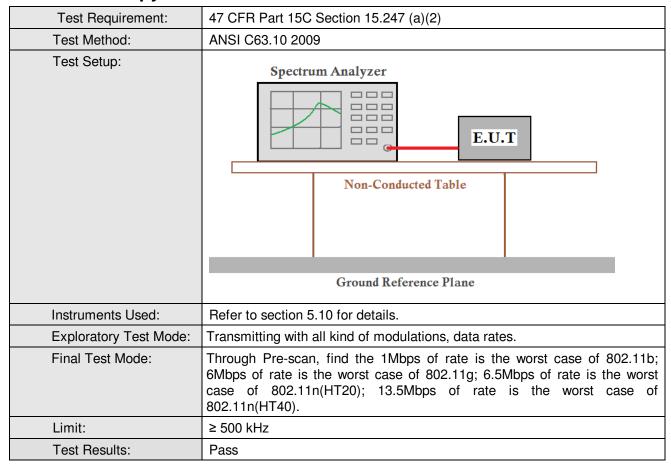




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6.4 6dB Occupy Bandwidth





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Measurement Data

measurement bata								
	802.11b mode							
Test channel	6dB Occupy Bandwidth (MHz)	Limit (kHz)	Result					
Lowest	10.14	≥500	Pass					
Middle	10.14	≥500	Pass					
Highest	10.14	≥500	Pass					
	802.11g mode							
Test channel	6dB Occupy Bandwidth (MHz)	Limit (kHz)	Result					
Lowest	16.65	≥500	Pass					
Middle	16.65	≥500	Pass					
Highest	16.65	≥500	Pass					
	802.11n(HT20) mode							
Test channel	6dB Occupy Bandwidth (MHz)	Limit (kHz)	Result					
Lowest	17.88	≥500	Pass					
Middle	17.88	≥500	Pass					
Highest	17.88	≥500	Pass					
802.11n(HT40)mode								
Test channel	6dB Occupy Bandwidth (MHz)	Limit (kHz)	Result					
Lowest	36.60	≥500	Pass					
Middle	36.60	≥500	Pass					
Highest	36.60	≥500	Pass					

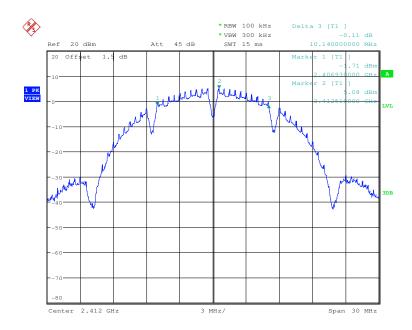


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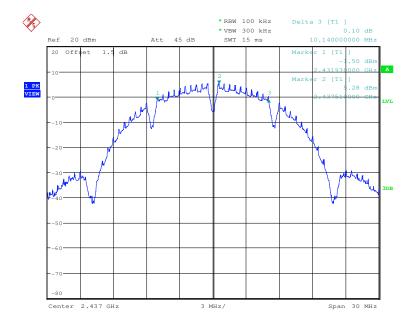
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Test plot as follows:

Test mode: 802.11b Test channel: Lowest



Test mode: 802.11b Test channel: Middle

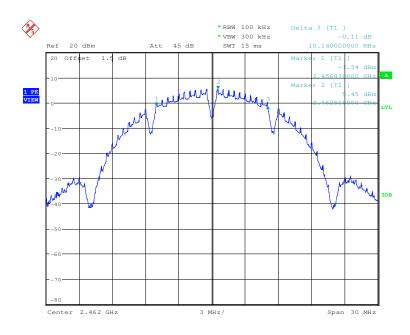




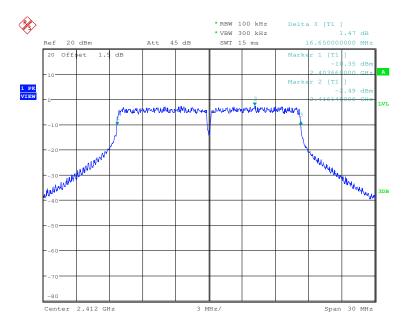
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Test mode: 802.11b Test channel: Highest



Test mode: 802.11g Test channel: Lowest

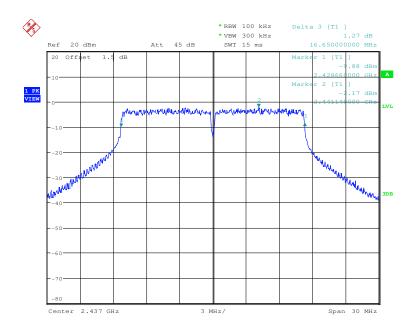




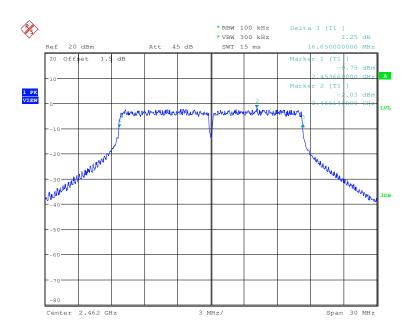
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Test mode: 802.11g Test channel: Middle



Test mode: 802.11g Test channel: Highest



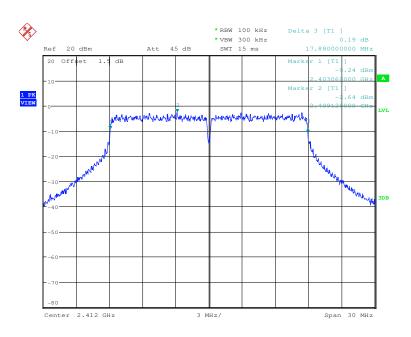




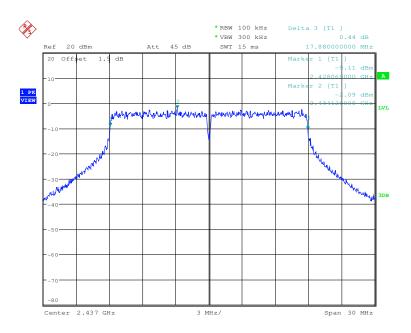
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Test mode: 802.11n(HT20) Test channel: Lowest





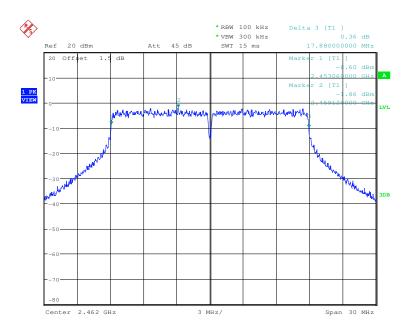




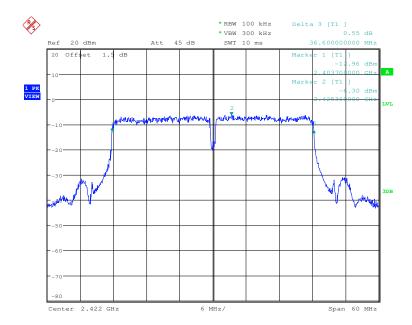
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Test mode: 802.11n(HT20) Test channel: Highest





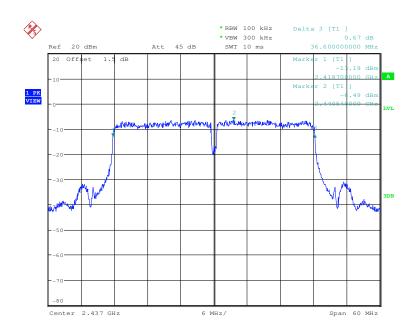




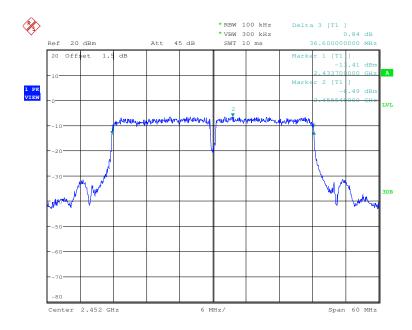
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Test mode: 802.11n(HT40) Test channel: Middle









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6.5 Power Spectral Density

Test Requirement:	47 CFR Part 15C Section 15.247 (e)		
Test Method:	ANSI C63.10 2009		
Test Setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane		
	Remark:		
	Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.		
Test Instruments:	Refer to section 5.10 for details.		
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates.		
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20); 13.5Mbps of rate is the worst case of 802.11n(HT40).		
Limit:	≤8.00dBm/3kHz		
Test Results:	Pass		



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Measurement Data

measurement bata								
	802.11b mode							
Test channel	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result					
Lowest	-10.23	≤8.00	Pass					
Middle	-10.85	≤8.00	Pass					
Highest	-9.77	≤8.00	Pass					
	802.11g mode							
Test channel	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result					
Lowest	-18.68	≤8.00	Pass					
Middle	-17.98	≤8.00	Pass					
Highest	-17.63	≤8.00	Pass					
	802.11n(HT20) mode							
Test channel	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result					
Lowest	-18.36	≤8.00	Pass					
Middle	-17.24	≤8.00	Pass					
Highest	-17.45	≤8.00	Pass					
802.11n(HT40) mode								
Test channel	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result					
Lowest	-21.54	≤8.00	Pass					
Middle	-22.02	≤8.00	Pass					
Highest	-21.88	≤8.00	Pass					

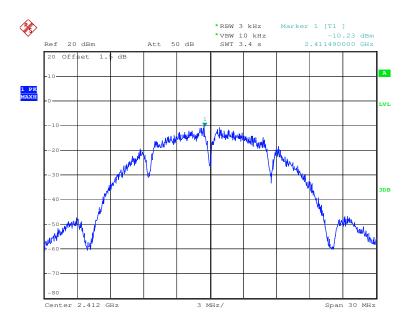


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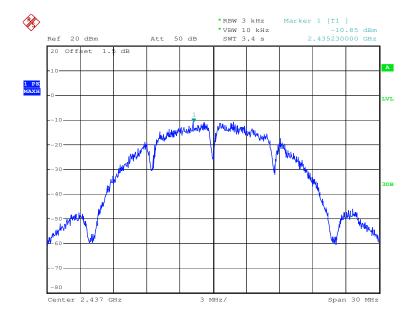
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Test plot as follows:

Test mode: 802.11b Test channel: Lowest









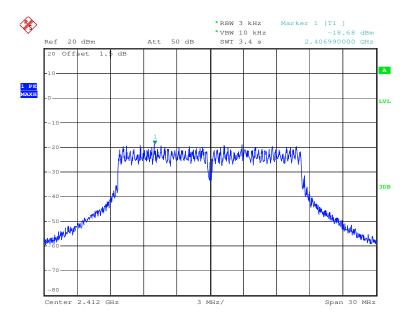
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Test mode: 802.11b Test channel: Highest





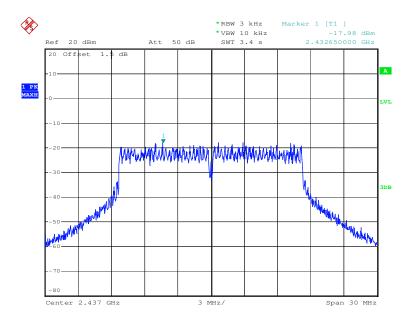




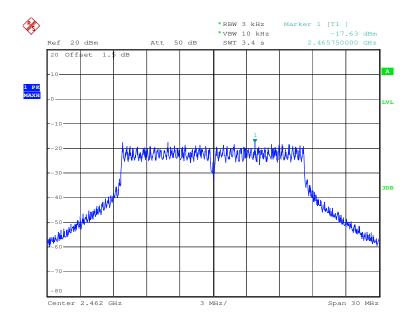
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Test mode: 802.11g Test channel: Middle





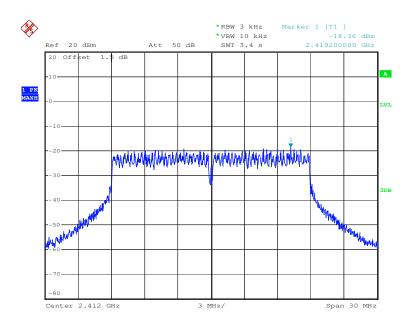




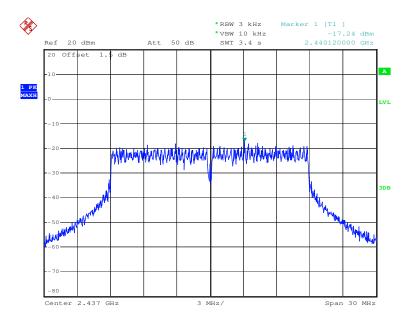
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Test mode: 802.11n(HT20) Test channel: Lowest





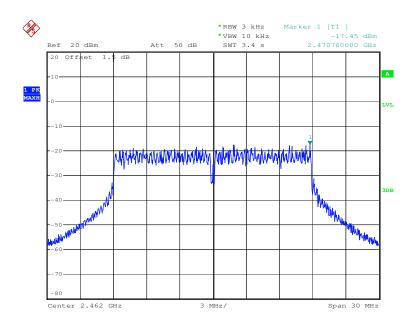




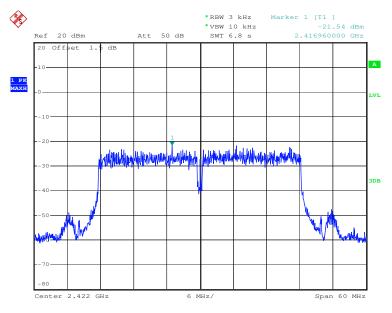
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Test mode: 802.11n(HT20) Test channel: Highest



Test mode: 802.11n(HT40) Test channel: Lowest



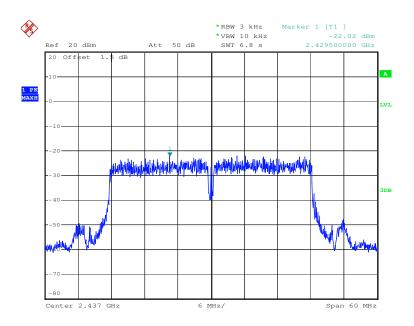




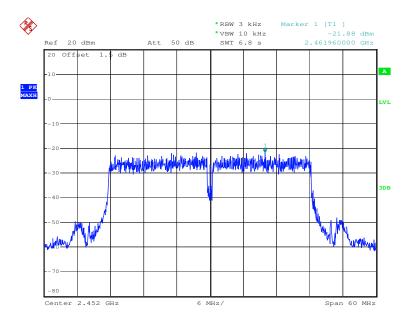
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Test mode: 802.11n(HT40) Test channel: Middle









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6.6 Band-edge for RF Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10 2009
Test Setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane Remark: Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates.
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20); 13.5Mbps of rate is the worst case of 802.11n(HT40).
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.
Instruments Used:	Refer to section 5.10 for details.
Test Results:	Pass

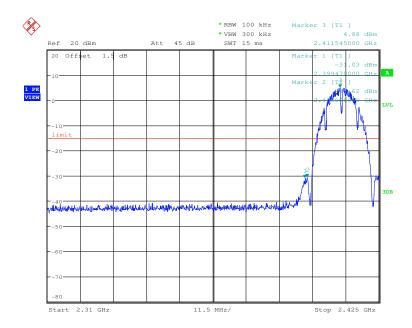


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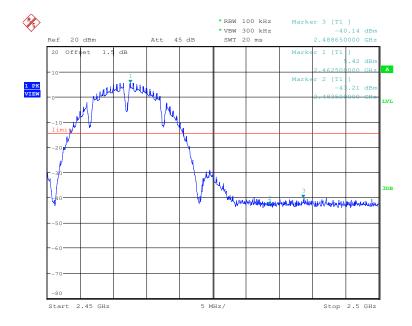
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Test plot as follows:

Test mode: 802.11b Test channel: Lowest





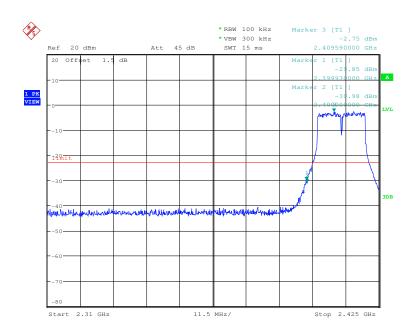




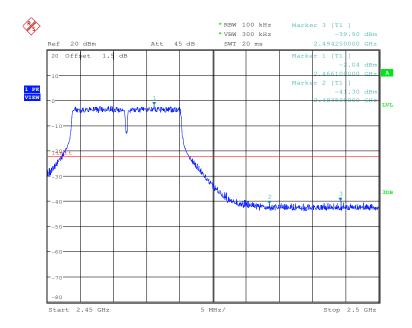
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Test mode: 802.11g Test channel: Lowest





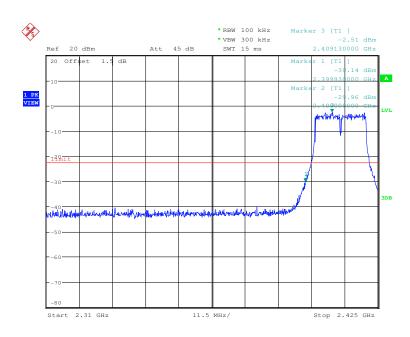




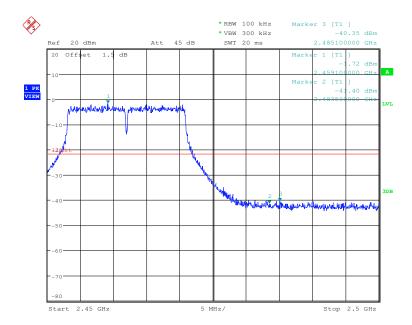
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Test mode: 802.11n(HT20) Test channel: Lowest



Test mode: 802.11n(HT20) Test channel: Highest

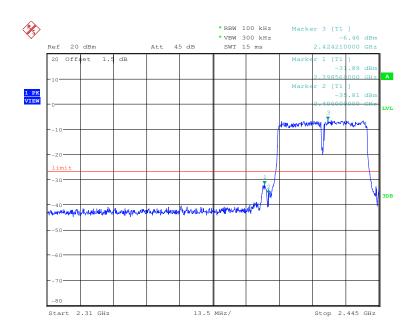




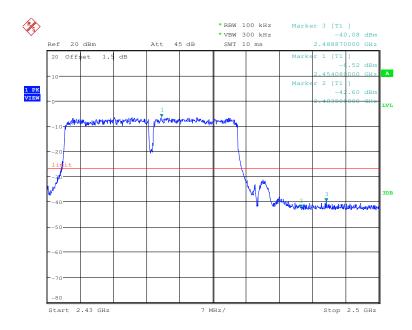
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Test mode: 802.11n(HT40) Test channel: Lowest









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6.7 RF Conducted Spurious Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)
Test Method:	ANSI C63.10 2009
Test Setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane Remark: Offset the High-Frequency cable loss 1.5dB in the spectrum analyzer.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates.
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20); 13.5Mbps of rate is the worst case of 802.11n(HT40).
Limit:	In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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.
Instruments Used:	Refer to section 5.10 for details.
Test Results:	Pass

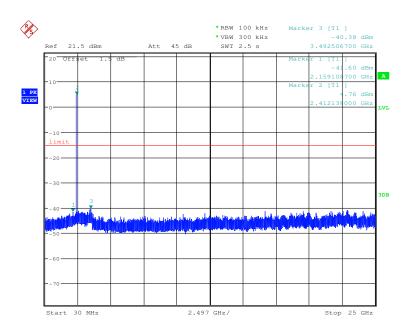


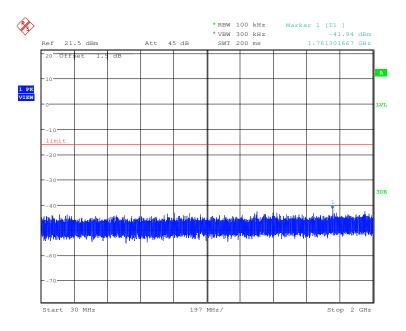
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Test plot as follows:

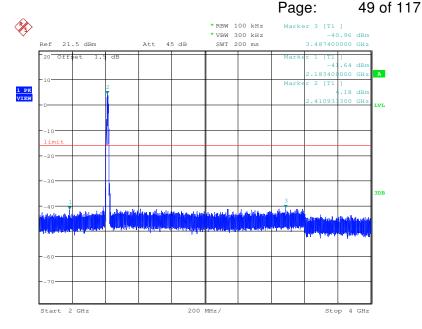
Test mode: 802.11b Test channel: Lowest

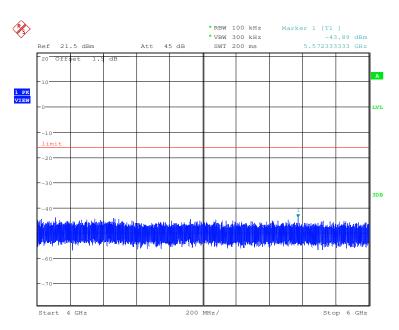






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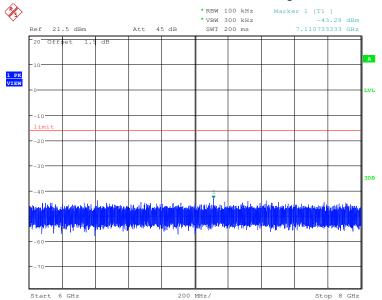


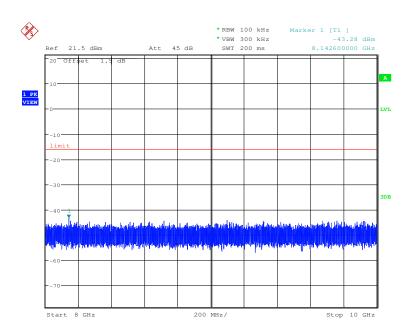




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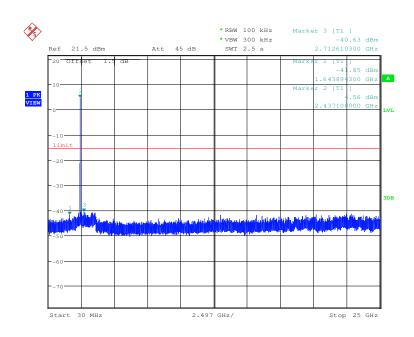


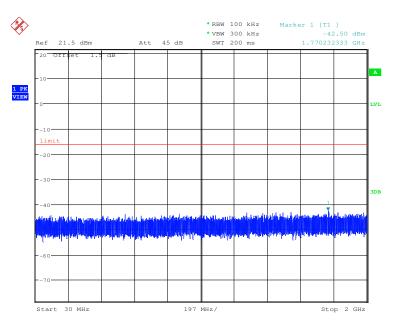


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Test mode: 802.11b Test channel: Middle

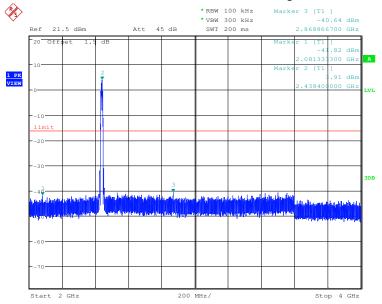


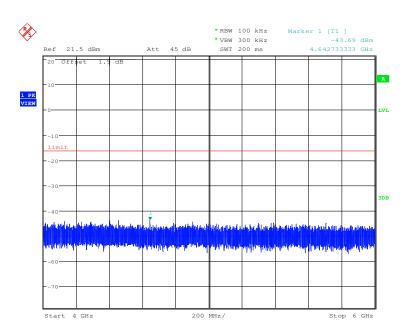




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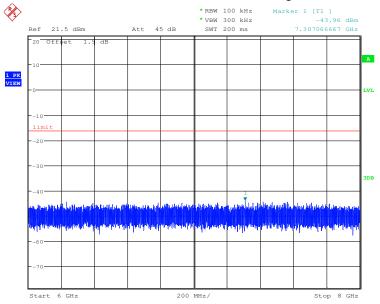


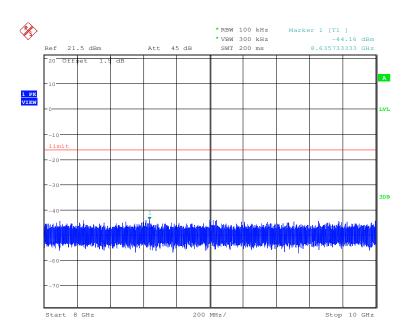




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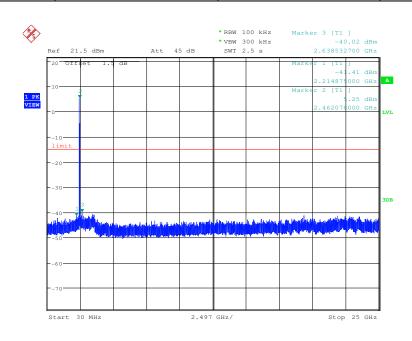


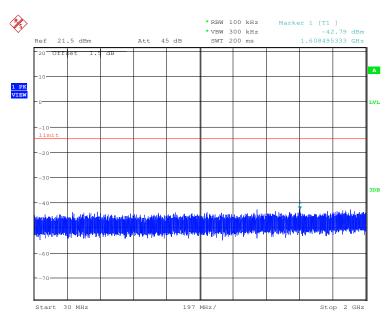


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Test mode: 802.11b Test channel: Highest

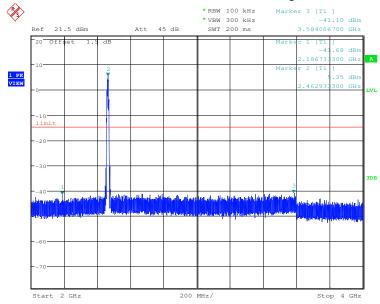


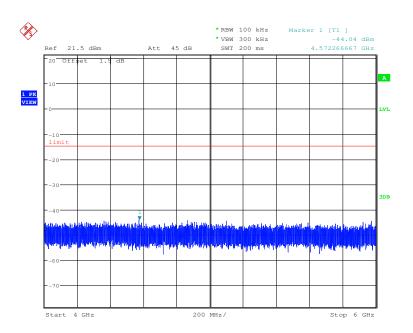




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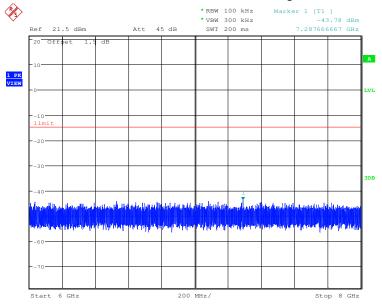


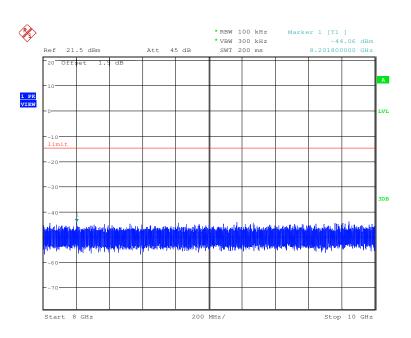




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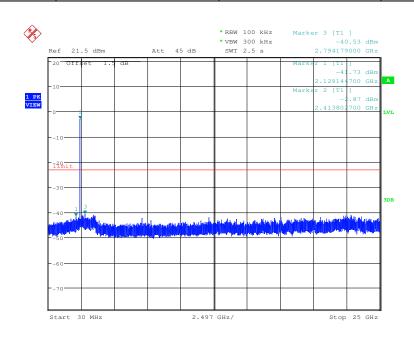


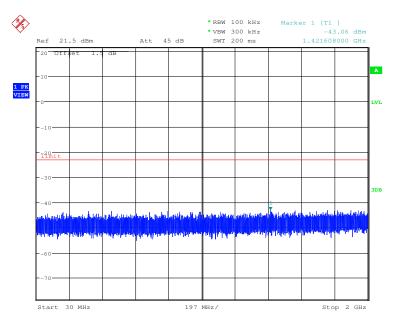


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Test mode: 802.11g Test channel: Lowest

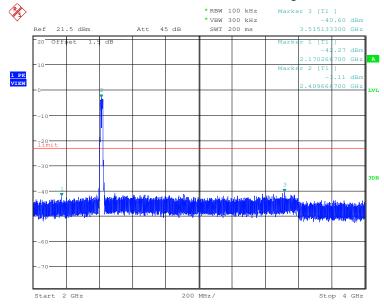


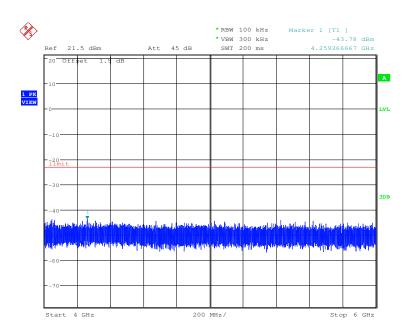




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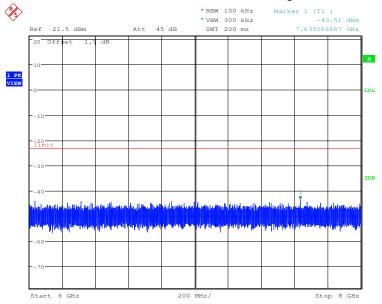


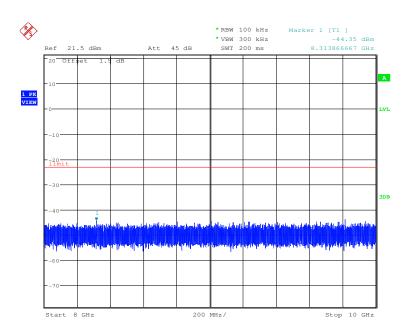




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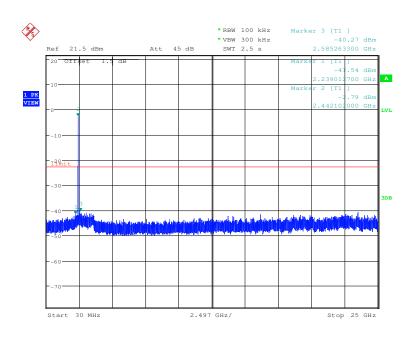


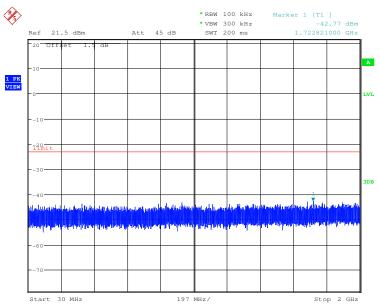


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Test mode: 802.11g Test channel: Middle



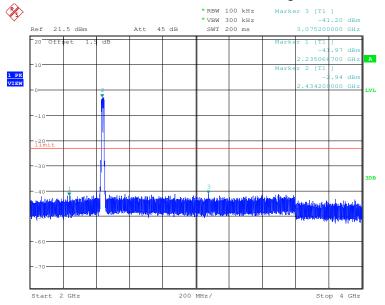


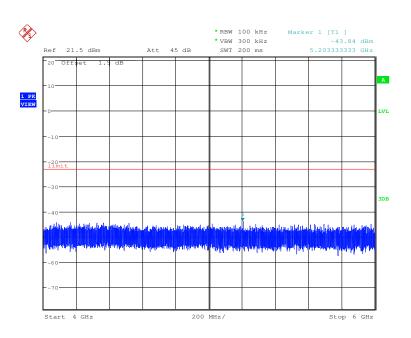




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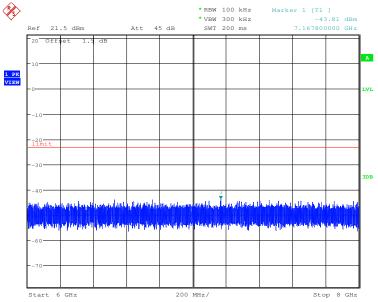


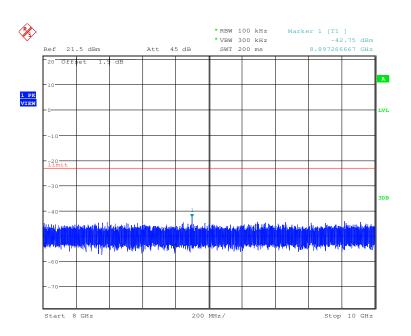




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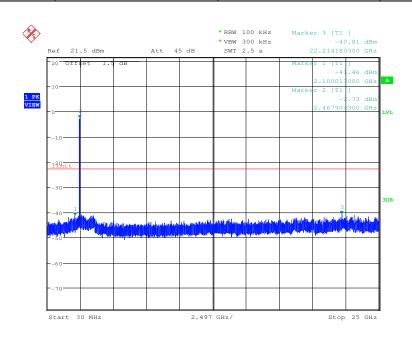


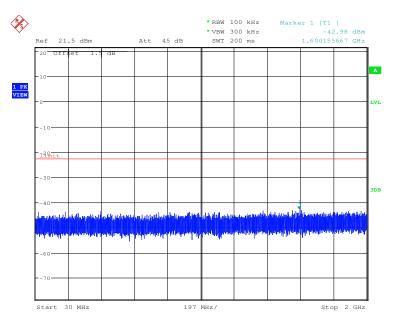


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Test mode: 802.11g Test channel: Highest

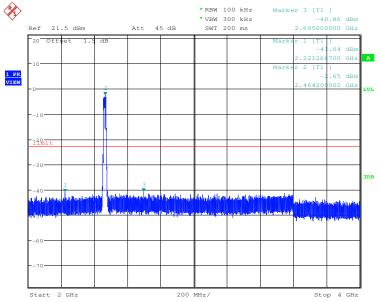


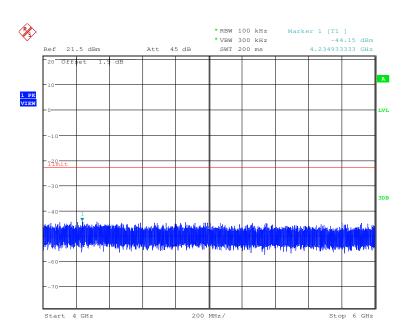




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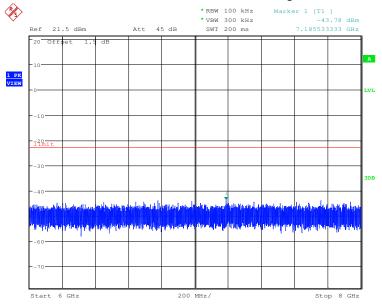


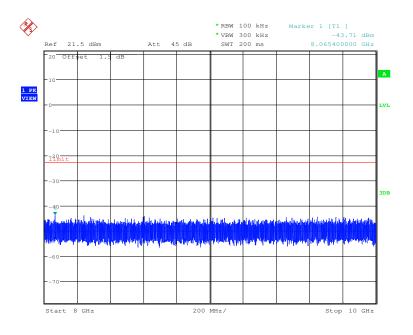




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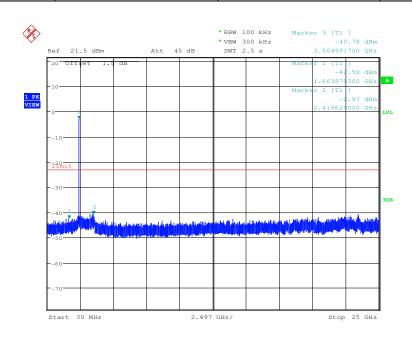


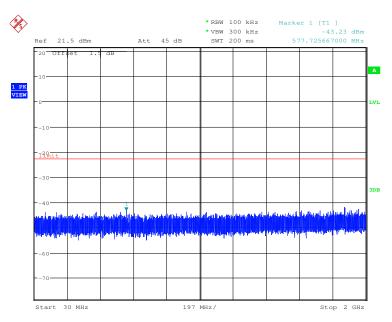


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Test mode: 802.11n(HT20) Test channel: Lowest

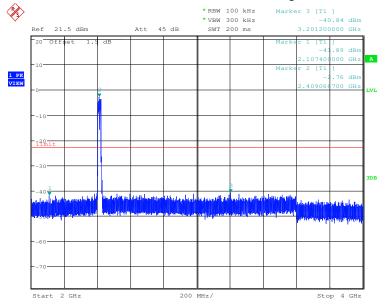


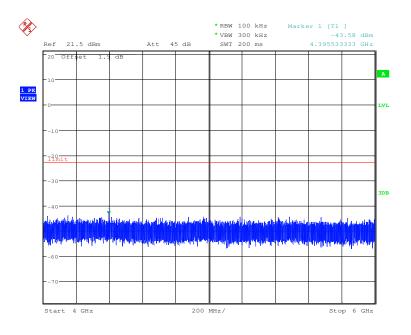




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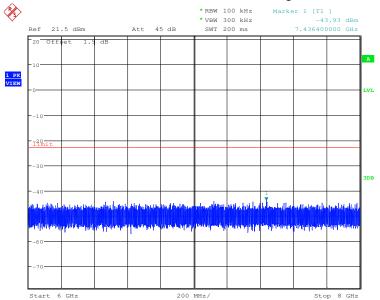


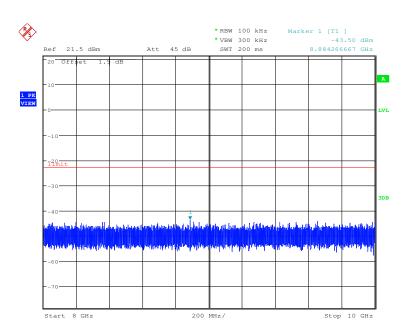




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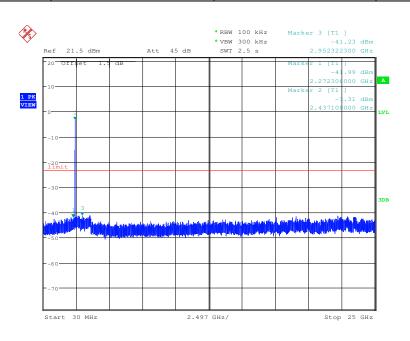


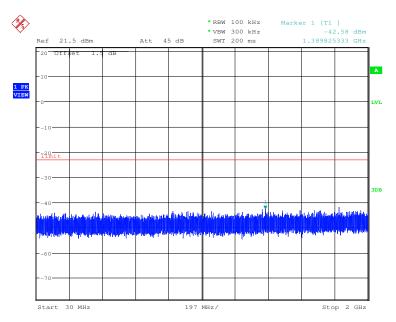


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Test mode: 802.11n(HT20) Test channel: Middle

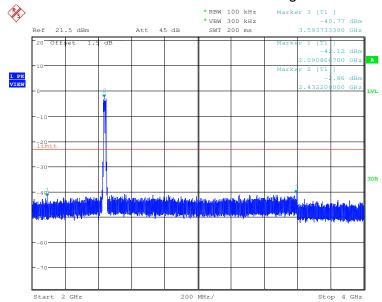


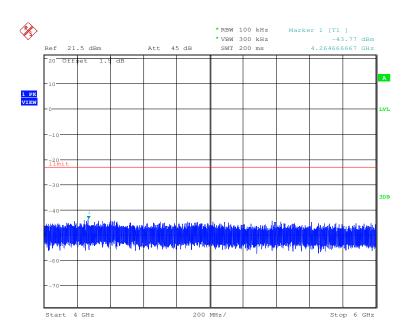




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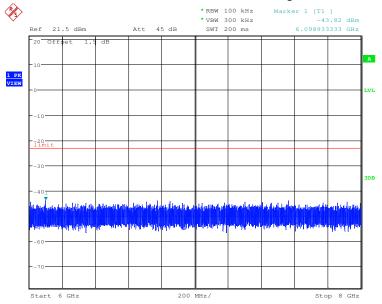


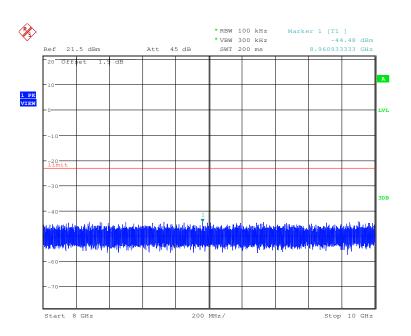




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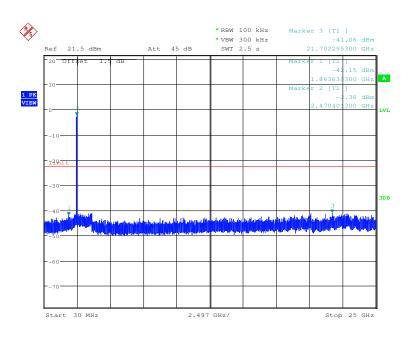


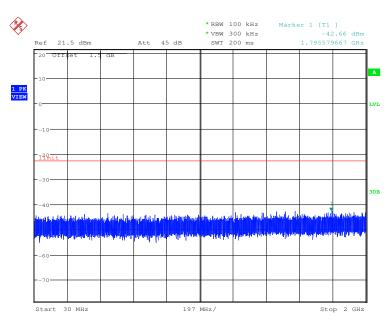


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Test mode: 802.11n(HT20) Test channel: Highest

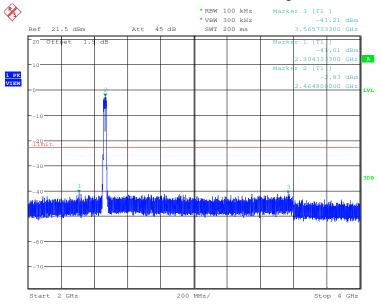


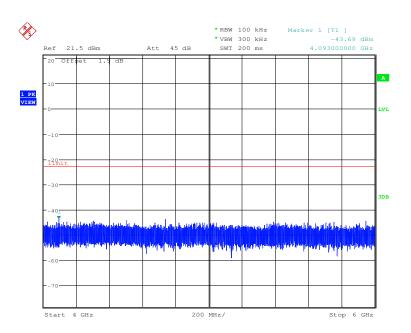




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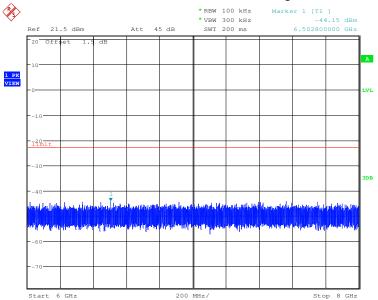


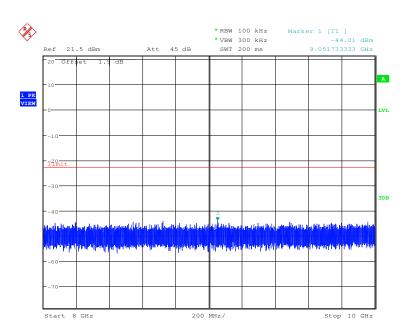




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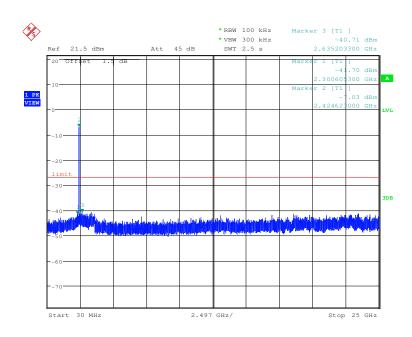


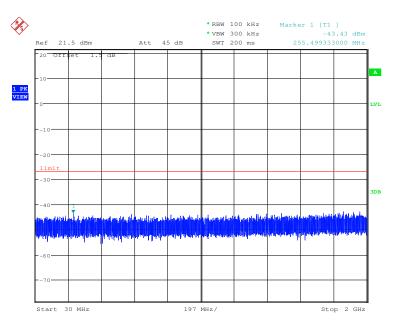


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Test mode: 802.11n(HT40) Test channel: Lowest

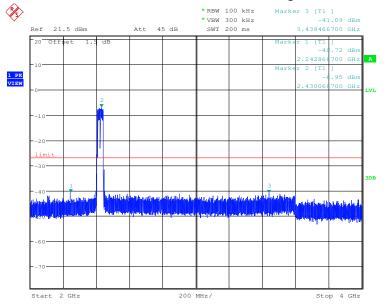


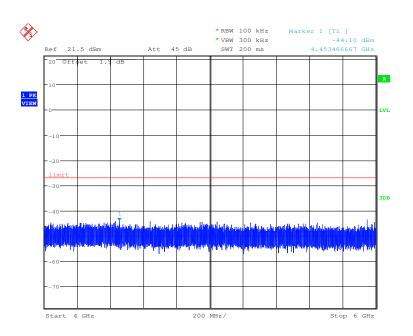




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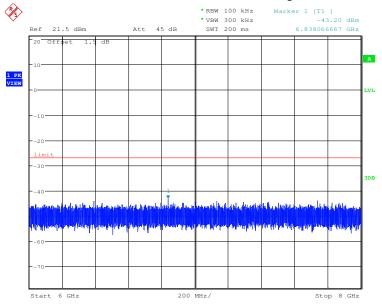


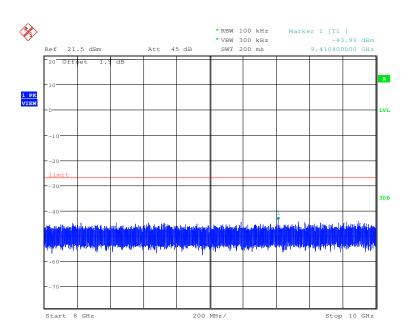




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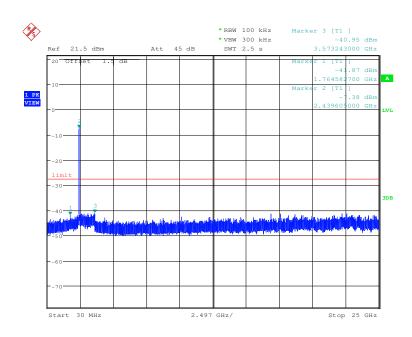


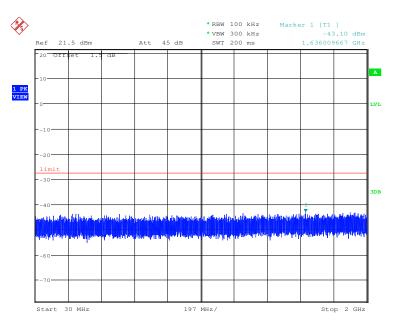


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Test mode: 802.11n(HT40) Test channel: Middle

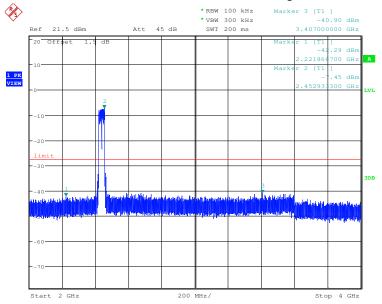


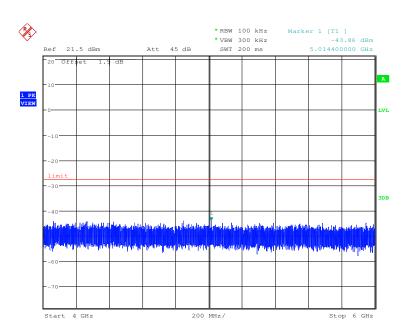




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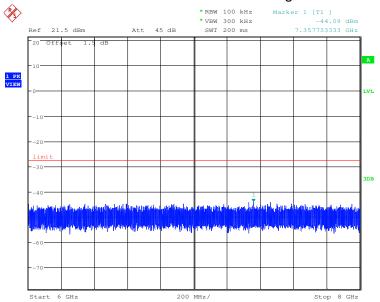


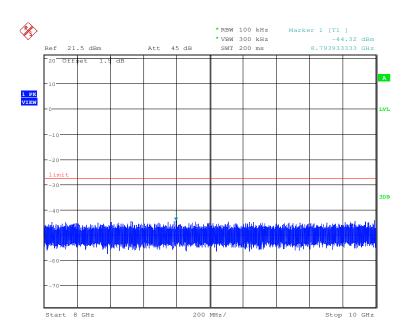




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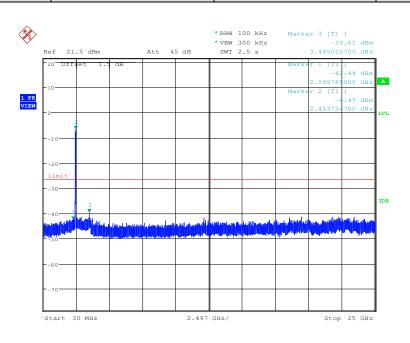


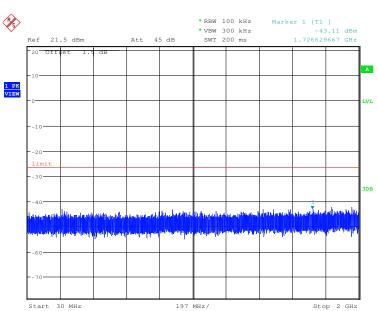


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Test mode: 802.11n(HT40) Test channel: Highest

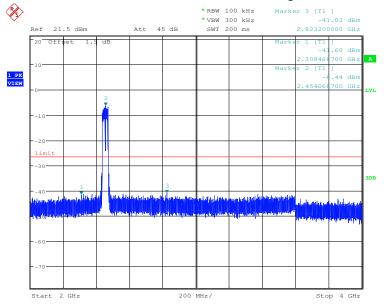


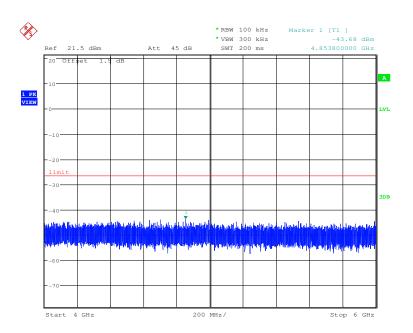




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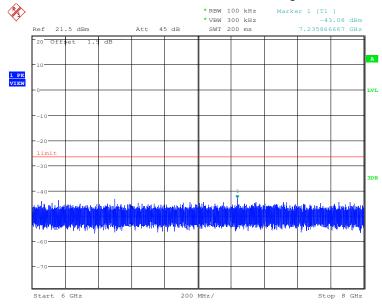


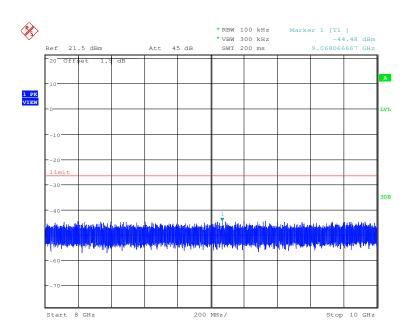




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Remark:

Pretest 9kHz to 25GHz, find the highest point when testing, so only the worst data were shown in the test report. Per FCC Part 15.33 (a) and 15.31 (o) ,The amplitude of spurious emissions from intentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this part.



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6.8 Radiated Spurious Emissions

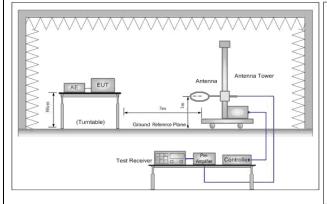
Test Requirement:	47 CFR Part 15C Section	n 15.209 and 15.2	05							
Test Method:	ANSI C63.10 2009									
Test Site:	Measurement Distance:	3m (Semi-Anecho	ic Chamber)							
Receiver Setup:	Frequency	Detector	RBW	VBW	Remark					
	0.009MHz-0.090MHz	Peak	10kHz	30kHz	Peak					
	0.009MHz-0.090MHz	Average	10kHz	30kHz	Average					
	0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz	Quasi-peak					
	0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak					
	0.110MHz-0.490MHz	Average	10kHz	30kHz	Average					
	0.490MHz -30MHz	Quasi-peak	10kHz	30kHz	Quasi-peak					
	30MHz-1GHz	Quasi-peak	100 kHz	300kHz	Quasi-peak					
	Above 1GHz	Peak	1MHz	3MHz	Peak					
	Above IGHZ	Peak	1MHz	10Hz	Average					
Limit:	Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)					
	0.009MHz-0.490MHz	2400/F(kHz)	-	-	300					
	0.490MHz-1.705MHz	24000/F(kHz)	-	-	30					
	1.705MHz-30MHz	30	-	-	30					
	30MHz-88MHz	100	40.0	Quasi-peak	3					
	88MHz-216MHz	150	43.5	Quasi-peak	3					
	216MHz-960MHz	200	46.0	Quasi-peak	3					
	960MHz-1GHz	500	54.0	Quasi-peak	3					
	Above 1GHz	500	54.0	Average	3					
	Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.									



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Test Setup:



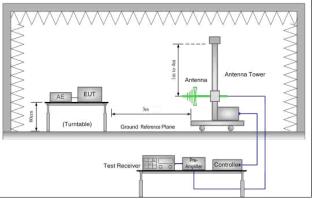


Figure 1. Below 30MHz

Figure 2. 30MHz to 1GHz

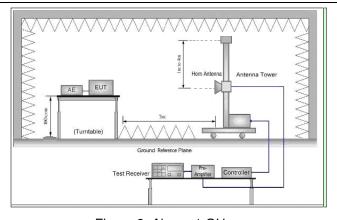


Figure 3. Above 1 GHz

Test Procedure:

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters(for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average



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	<u> </u>					
	method as specified and then reported in a data sheet.					
	g. Test the EUT in the lowest channel ,the middle channel ,the Highest channel					
	h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case.					
	i. Repeat above procedures until all frequencies measured was complete.					
Exploratory Test	Transmitting with all kind of modulations, data rates.					
Mode:	Transmitting mode.					
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20); 13.5Mbps of rate is the worst case of 802.11n(HT40).					
	For below 1GHz, through Pre-scan, find the 1Mbps of rate of 802.11b at lowest channel is the worst case.					
	Only the worst case is recorded in the report.					
Instruments Used:	Refer to section 5.10 for details.					
Test Results:	Pass					

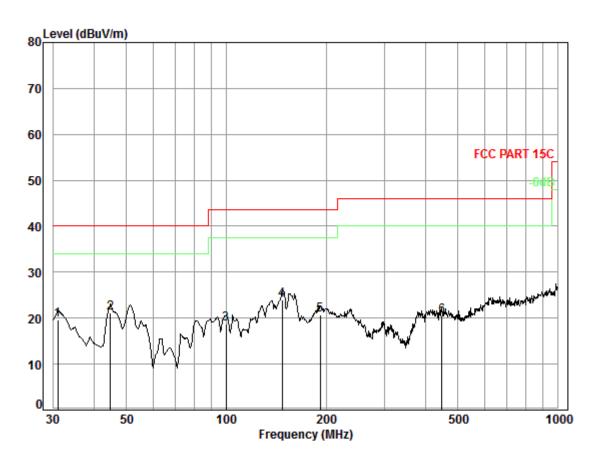


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6.8.1 Radiated emission below 1GHz

30MHz~1GHz (QP)		
Test mode:	Transmitting	Vertical



Condition: FCC PART 15C 3m 3142C Vertical

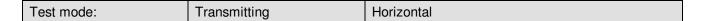
Job No. : 5957HR Test mode: TX mode

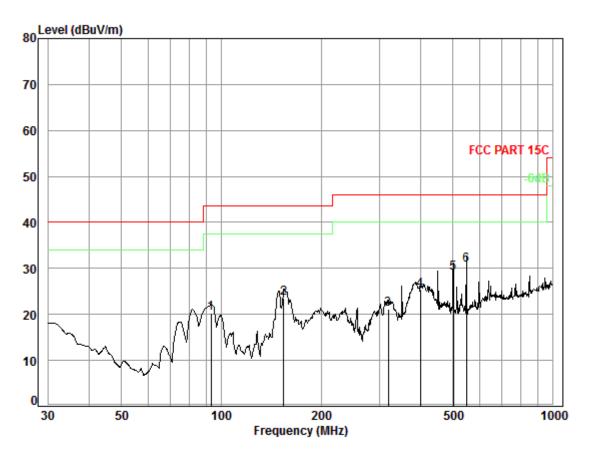
		Cable	Ant	Preamp	Read		Limit	0ver
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit
	MHz	dB	dB/m	——dB	dBuV	dBuV/m	dBuV/m	d B
1	30.96	0.60	18.16	27.35	28.30	19.71	40.00	-20.29
2	44.59	0.70	11.08	27.31	36.63	21.10	40.00	-18.90
3	99.88	1.20	9.10	27.20	35.54	18.64	43.50	-24.86
4	147.40	1.31	8.77	26.92	40.91	24.07	43.50	-19.43
5	191.75	1.39	10.12	26.73	35.87	20.65	43.50	-22.85
6	446.41	2.40	16.83	27.42	28.72	20.53	46.00	-25.47



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Condition: FCC PART 15C 3m 3142C Horizontal

Job No. : 5957HR Test mode: TX mode

	Freq			Preamp Factor				Over Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	93.11	1.13	8.82	27.21	37.60	20.34	43.50	-23.16
2	154.28	1.33	9.26	26.89	39.90	23.60	43.50	-19.90
3	318.82	1.96	14.58	26.54	31.16	21.16	46.00	-24.84
4	399.03	2.20	16.29	27.13	33.95	25.31	46.00	-20.69
5	501.18	2.60	17.83	27.69	36.33	29.07	46.00	-16.93
6	549.02	2.65	18.88	27.62	36.79	30.70	46.00	-15.30



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6.8.2 Transmitter emission above 1GHz

Test mode:	802	.11b	Test ch	annel:	Lowest	Remark	:	Peak
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3900.000	-31.30	33.20	0.00	40.00	41.90	74.00	-32.10	Vertical
4824.000	-30.40	34.40	0.00	39.90	43.90	74.00	-30.10	Vertical
5955.000	-29.00	34.70	0.00	39.30	45.00	74.00	-29.00	Vertical
7236.000	-27.90	35.80	0.00	37.20	45.10	74.00	-28.90	Vertical
9648.000	-25.00	37.20	0.00	38.00	50.20	74.00	-23.80	Vertical
12105.000	-23.00	37.90	0.00	34.90	49.80	74.00	-24.20	Vertical
3750.000	-31.10	32.90	0.00	40.10	41.90	74.00	-32.10	Horizontal
4824.000	-30.40	34.40	0.00	39.70	43.70	74.00	-30.30	Horizontal
6000.000	-28.80	34.90	0.00	39.90	46.00	74.00	-28.00	Horizontal
7236.000	-27.90	35.80	0.00	36.90	44.80	74.00	-29.20	Horizontal
9648.000	-25.00	37.20	0.00	40.70	52.90	74.00	-21.10	Horizontal
12315.000	-22.50	37.90	0.00	33.40	48.80	74.00	-25.20	Horizontal

Test mode:	802	.11b	Test ch	annel:	Middle	Remark		Peak
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3795.000	-31.20	33.10	0.00	39.60	41.50	74.00	-32.50	Vertical
4874.000	-30.40	34.50	0.00	39.80	43.90	74.00	-30.10	Vertical
5955.000	-29.00	34.70	0.00	39.40	45.10	74.00	-28.90	Vertical
7311.000	-27.90	35.70	0.00	37.10	44.90	74.00	-29.10	Vertical
9748.000	-25.00	37.30	0.00	38.70	51.00	74.00	-23.00	Vertical
12330.000	-22.60	37.90	0.00	34.30	49.60	74.00	-24.40	Vertical
3870.000	-31.30	33.30	0.00	39.30	41.30	74.00	-32.70	Horizontal
4874.000	-30.40	34.50	0.00	39.60	43.70	74.00	-30.30	Horizontal
5910.000	-29.20	34.60	0.00	39.60	45.00	74.00	-29.00	Horizontal
7311.000	-27.90	35.70	0.00	36.70	44.50	74.00	-29.50	Horizontal
9748.000	-25.00	37.30	0.00	41.80	54.10	74.00	-19.90	Horizontal
12525.000	-22.90	38.00	0.00	33.90	49.00	74.00	-25.00	Horizontal

Test mode:	802	.11b	Test ch	annel:	Middle	Remark	:	Average
Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Polarization
9748.000	-25.00	37.30	0.00	39.50	51.80	54.00	-2.20	Horizontal



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Test mode:	802	.11b	Test ch	annel:	Highest	Remark		Peak
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3900.000	-31.30	33.20	0.00	39.50	41.40	74.00	-32.60	Vertical
4924.000	-30.30	34.60	0.00	39.30	43.60	74.00	-30.40	Vertical
6000.000	-28.80	34.90	0.00	39.90	46.00	74.00	-28.00	Vertical
7386.000	-27.90	35.70	0.00	37.10	44.90	74.00	-29.10	Vertical
9848.000	-24.20	37.30	0.00	38.60	51.70	74.00	-22.30	Vertical
12540.000	-22.90	38.00	0.00	34.10	49.20	74.00	-24.80	Vertical
3855.000	-31.20	33.30	0.00	40.10	42.20	74.00	-31.80	Horizontal
4924.000	-30.30	34.60	0.00	40.30	44.60	74.00	-29.40	Horizontal
6000.000	-28.80	34.90	0.00	40.00	46.10	74.00	-27.90	Horizontal
7386.000	-27.90	35.70	0.00	37.20	45.00	74.00	-29.00	Horizontal
9848.000	-24.20	37.30	0.00	40.70	53.80	74.00	-20.20	Horizontal
12645.000	-23.10	38.10	0.00	34.60	49.60	74.00	-24.40	Horizontal

Test mode:	8	02.11g	Test ch	annel:	Lowest	Remark	:	Peak
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3890.032	-31.30	33.20	0.00	39.60	41.50	74.00	-32.50	Vertical
4824.000	-30.40	34.40	0.00	40.20	44.20	74.00	-29.80	Vertical
5910.000	-29.20	34.60	0.00	40.00	45.40	74.00	-28.60	Vertical
7236.000	-27.90	35.80	0.00	37.20	45.10	74.00	-28.90	Vertical
9648.000	-25.00	37.20	0.00	36.40	48.60	74.00	-25.40	Vertical
12135.000	-23.00	37.90	0.00	34.30	49.20	74.00	-24.80	Vertical
3840.000	-31.20	33.30	0.00	39.70	41.80	74.00	-32.20	Horizontal
4824.000	-30.40	34.40	0.00	39.20	43.20	74.00	-30.80	Horizontal
5925.000	-29.10	34.70	0.00	39.10	44.70	74.00	-29.30	Horizontal
7236.000	-27.90	35.80	0.00	37.00	44.90	74.00	-29.10	Horizontal
9648.000	-25.00	37.20	0.00	40.80	53.00	74.00	-21.00	Horizontal
12285.000	-22.50	37.90	0.00	33.30	48.70	74.00	-25.30	Horizontal



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Test mode:	802	.11g	Test ch	annel:	Middle	Remark	:	Peak
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3840.000	-31.20	33.30	0.00	39.70	41.80	74.00	-32.20	Vertical
4874.000	-30.40	34.50	0.00	39.40	43.50	74.00	-30.50	Vertical
6000.000	-28.80	34.90	0.00	41.00	47.10	74.00	-26.90	Vertical
7311.000	-27.90	35.70	0.00	38.50	46.30	74.00	-27.70	Vertical
9748.000	-25.00	37.30	0.00	39.00	51.30	74.00	-22.70	Vertical
12150.000	-23.00	37.90	0.00	33.80	48.70	74.00	-25.30	Vertical
3765.000	-31.10	32.90	0.00	40.30	42.10	74.00	-31.90	Horizontal
4874.000	-30.40	34.50	0.00	39.40	43.50	74.00	-30.50	Horizontal
5955.000	-29.00	34.70	0.00	39.60	45.30	74.00	-28.70	Horizontal
7311.000	-27.90	35.70	0.00	37.10	44.90	74.00	-29.10	Horizontal
9748.000	-25.00	37.30	0.00	42.10	54.40	74.00	-19.60	Horizontal
12315.000	-22.50	37.90	0.00	34.00	49.40	74.00	-24.60	Horizontal

Test mode:	802	.11g	Test ch	annel:	Middle	Remark:		Average
Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Polarization
9748.000	-25.00	37.30	0.00	40.30	52.60	54.00	-1.40	Horizontal



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Test mode:	802	.11g	Test ch	annel:	Highest	Remark	:	Peak
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3903.997	-31.30	33.20	0.00	39.50	41.40	74.00	-32.60	Vertical
4924.000	-30.30	34.60	0.00	38.70	43.00	74.00	-31.00	Vertical
6000.000	-28.80	34.90	0.00	39.20	45.30	74.00	-28.70	Vertical
7386.000	-27.90	35.70	0.00	37.00	44.80	74.00	-29.20	Vertical
9848.000	-24.20	37.30	0.00	38.70	51.80	74.00	-22.20	Vertical
12315.000	-22.50	37.90	0.00	34.20	49.60	74.00	-24.40	Vertical
3855.000	-31.20	33.30	0.00	39.30	41.40	74.00	-32.60	Horizontal
4924.000	-30.30	34.60	0.00	39.80	44.10	74.00	-29.90	Horizontal
6120.000	-29.20	35.00	0.00	39.90	45.70	74.00	-28.30	Horizontal
7386.000	-27.90	35.70	0.00	37.50	45.30	74.00	-28.70	Horizontal
9848.000	-24.20	37.30	0.00	40.10	53.20	74.00	-20.80	Horizontal
12345.000	-22.70	37.90	0.00	34.30	49.50	74.00	-24.50	Horizontal

Test mode:	80	2.11n(HT20)	Test ch	annel:	Lowest	Remark	:	Peak
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3870.000	-31.30	33.30	0.00	38.90	40.90	74.00	-33.10	Vertical
4824.000	-30.40	34.40	0.00	39.20	43.20	74.00	-30.80	Vertical
5850.000	-29.40	34.40	0.00	38.80	43.80	74.00	-30.20	Vertical
7236.000	-27.90	35.80	0.00	36.70	44.60	74.00	-29.40	Vertical
9648.000	-25.00	37.20	0.00	37.70	49.90	74.00	-24.10	Vertical
12315.000	-22.50	37.90	0.00	33.90	49.30	74.00	-24.70	Vertical
3840.000	-31.20	33.30	0.00	38.60	40.70	74.00	-33.30	Horizontal
4824.000	-30.40	34.40	0.00	39.70	43.70	74.00	-30.30	Horizontal
5940.000	-29.10	34.70	0.00	38.30	43.90	74.00	-30.10	Horizontal
7236.000	-27.90	35.80	0.00	37.20	45.10	74.00	-28.90	Horizontal
9648.000	-25.00	37.20	0.00	40.60	52.80	74.00	-21.20	Horizontal
11865.000	-23.20	37.70	0.00	35.10	49.60	74.00	-24.40	Horizontal



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Test mode:	8	302.11n(HT20) Test ch	annel:	Middle	Remark	:	Peak
Frequency (MHz)	Cable Loss (dB)	Factor	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3885.000	-31.3	0 33.20	0.00	39.40	41.30	74.00	-32.70	Vertical
4874.000	-30.4	0 34.50	0.00	40.20	44.30	74.00	-29.70	Vertical
6045.000	-29.0	0 35.00	0.00	38.80	44.80	74.00	-29.20	Vertical
7311.000	-27.9	0 35.70	0.00	37.30	45.10	74.00	-28.90	Vertical
9748.000	-25.0	0 37.30	0.00	38.60	50.90	74.00	-23.10	Vertical
12555.000	-22.9	0 38.00	0.00	34.30	49.40	74.00	-24.60	Vertical
3960.000	-31.0	0 33.10	0.00	40.80	42.90	74.00	-31.10	Horizontal
4874.000	-30.4	0 34.50	0.00	40.60	44.70	74.00	-29.30	Horizontal
7311.000	-27.9	0 35.70	0.00	37.80	45.60	74.00	-28.40	Horizontal
7311.000	-27.9	0 35.70	0.00	37.20	45.00	74.00	-29.00	Horizontal
9748.000	-25.0	0 37.30	0.00	42.20	54.50	74.00	-19.50	Horizontal
12075.000	-23.1	0 37.80	0.00	34.80	49.50	74.00	-24.50	Horizontal

Test mode:	80	2.11n(HT20)	Test ch	annel:	Middle	Remark	:	Average
Frequency (MHz)	Cable loss (dB)	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Polarization
9748.000	-25.00	37.30	0.00	40.00	52.30	54.00	-1.70	Horizontal



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Test mode:		802.	.11n(HT20)	Test ch	annel:	Highest	Remark	:	Peak
Frequency (MHz)	Cak Lo: (df	SS	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3750.000	-31.	.10	32.90	0.00	40.50	42.30	74.00	-31.70	Vertical
4924.000	-30.	.30	34.60	0.00	39.10	43.40	74.00	-30.60	Vertical
6030.000	-28.	.90	34.90	0.00	39.80	45.80	74.00	-28.20	Vertical
7386.000	-27.	.90	35.70	0.00	37.60	45.40	74.00	-28.60	Vertical
9848.000	-24.	.20	37.30	0.00	37.60	50.70	74.00	-23.30	Vertical
12300.000	-22.	.50	37.90	0.00	34.20	49.60	74.00	-24.40	Vertical
3900.000	-31.	.30	33.20	0.00	39.40	41.30	74.00	-32.70	Horizontal
4924.000	-30.	.30	34.60	0.00	39.20	43.50	74.00	-30.50	Horizontal
6210.000	-29.	.20	34.90	0.00	39.20	44.90	74.00	-29.10	Horizontal
7386.000	-27.	.90	35.70	0.00	36.50	44.30	74.00	-29.70	Horizontal
9848.000	-24.	.20	37.30	0.00	39.60	52.70	74.00	-21.30	Horizontal
12210.000	-22.	.80	37.90	0.00	33.90	49.00	74.00	-25.00	Horizontal

Test mode:		802	.11n(HT40)	Test ch	annel:	Lowest	Remark	:	Peak
Frequency (MHz)	Cal Lo: (dl	SS	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3885.000	-31	.30	33.20	0.00	40.20	42.10	74.00	-31.90	Vertical
4844.000	-30	.40	34.50	0.00	39.80	43.90	74.00	-30.10	Vertical
5925.000	-29	.10	34.70	0.00	39.40	45.00	74.00	-29.00	Vertical
7266.000	-27	.90	35.70	0.00	37.30	45.10	74.00	-28.90	Vertical
9688.000	-25	.00	37.20	0.00	38.10	50.30	74.00	-23.70	Vertical
12120.000	-23	.00	37.90	0.00	34.50	49.40	74.00	-24.60	Vertical
3720.000	-31	.10	32.80	0.00	40.10	41.80	74.00	-32.20	Horizontal
4844.000	-30	.40	34.50	0.00	39.70	43.80	74.00	-30.20	Horizontal
5940.000	-29	.10	34.70	0.00	39.00	44.60	74.00	-29.40	Horizontal
7266.000	-27	.90	35.70	0.00	37.90	45.70	74.00	-28.30	Horizontal
9688.000	-25	.00	37.20	0.00	40.90	53.10	74.00	-20.90	Horizontal
12105.000	-23	.00	37.90	0.00	34.20	49.10	74.00	-24.90	Horizontal



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Test mode:		802.	.11n(HT40)	Test ch	annel:	Middle	Remark	:	Peak
Frequency (MHz)	Cab Los (dE	SS	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3810.000	-31.	20	33.10	0.00	39.70	41.60	74.00	-32.40	Vertical
4874.000	-30.	40	34.50	0.00	39.00	43.10	74.00	-30.90	Vertical
6015.000	-28.	90	34.90	0.00	38.90	44.90	74.00	-29.10	Vertical
7311.000	-27.	90	35.70	0.00	37.00	44.80	74.00	-29.20	Vertical
9748.000	-25.	00	37.30	0.00	36.80	49.10	74.00	-24.90	Vertical
12030.000	-23.	10	37.80	0.00	34.40	49.10	74.00	-24.90	Vertical
3855.000	-31.	20	33.30	0.00	39.80	41.90	74.00	-32.10	Horizontal
4874.000	-30.	40	34.50	0.00	39.70	43.80	74.00	-30.20	Horizontal
5910.000	-29.	20	34.60	0.00	39.70	45.10	74.00	-28.90	Horizontal
7311.000	-27.	90	35.70	0.00	37.70	45.50	74.00	-28.50	Horizontal
9748.000	-25.	00	37.30	0.00	42.10	54.40	74.00	-19.60	Horizontal
12090.000	-23.	00	37.90	0.00	35.00	49.90	74.00	-24.10	Horizontal

Test mode:		802.11n(HT40)		Test ch	annel:	Middle	Remark		Average
Frequency (MHz)	Cab loss (dB	s	Antenna factors (dB/m)	Preamp factor (dB)	Reading Level (dBµV)	Emission Level (dBµV/m)	Limit (dBµV/m)	Over Limit (dB)	Polarization
9748.000	-25.0	00	37.30	0.00	39.40	51.70	54.00	-2.30	Horizontal



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Test mode:	8	02.11n(HT40)	Test ch	annel:	Highest	Remark	:	Peak
Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB/m)	Preamp Factor (dB)	Read Level (dBuV)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Polarization
3810.000	-31.20	33.10	0.00	39.90	41.80	74.00	-32.20	Vertical
4904.000	-30.30	34.60	0.00	38.80	43.10	74.00	-30.90	Vertical
5940.000	-29.10	34.70	0.00	39.40	45.00	74.00	-29.00	Vertical
7356.000	-27.90	35.70	0.00	37.10	44.90	74.00	-29.10	Vertical
9808.000	-24.50	37.30	0.00	37.80	50.60	74.00	-23.40	Vertical
12090.000	-23.00	37.90	0.00	35.40	50.30	74.00	-23.70	Vertical
3750.000	-31.10	32.90	0.00	39.70	41.50	74.00	-32.50	Horizontal
4904.000	-30.30	34.60	0.00	39.50	43.80	74.00	-30.20	Horizontal
5970.000	-28.90	34.80	0.00	39.10	45.00	74.00	-29.00	Horizontal
7356.000	-27.90	35.70	0.00	37.80	45.60	74.00	-28.40	Horizontal
9808.000	-24.50	37.30	0.00	40.10	52.90	74.00	-21.10	Horizontal
12630.000	-23.00	38.10	0.00	34.40	49.50	74.00	-24.50	Horizontal

Remark:

- 1) The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:
 - Final Test Level = Receiver Reading + Antenna Factor + Cable Factor Preamplifier Factor
- 2) Scan from 9kHz to 25GHz,The disturbance above 13GHz and below 30MHz was very low, and the above harmonics were the highest point could be found when testing, so only the above harmonics had been displayed. The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported.

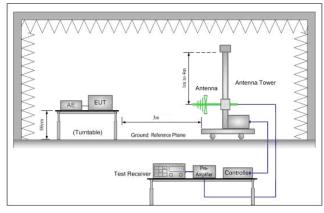


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6.9 Restricted bands around fundamental frequency

Test Requirement:	47 CFR Part 15C Section 1	7 CFR Part 15C Section 15.209 and 15.205									
Test Method:	ANSI C63.10 2009	NSI C63.10 2009									
Test Site:	Measurement Distance: 3m	Measurement Distance: 3m (Semi-Anechoic Chamber)									
Limit:	Frequency	Limit (dBuV/m @3m)	Remark								
	30MHz-88MHz	40.0	Quasi-peak Value								
	88MHz-216MHz	43.5	Quasi-peak Value								
	216MHz-960MHz	46.0	Quasi-peak Value								
	960MHz-1GHz	54.0	Quasi-peak Value								
	Above 1GHz	54.0 Average Value									
	Above IGHZ	74.0 Peak Value									
Test Setup:											



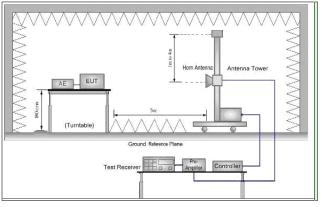


Figure 1. 30MHz to 1GHz

Figure 2. Above 1 GHz



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Test Procedure:	 a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
	 The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
	c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
	d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
	e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
	f. Place a marker at the end of the restricted band closest to the transmit frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each power and modulation for lowest and highest channel
	g. Test the EUT in the lowest channel, the Highest channel
	h. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning which it is worse case.
	 Repeat above procedures until all frequencies measured was complete.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates. Transmitting mode.
Final Test Mode:	Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11g; 6.5Mbps of rate is the worst case of 802.11n(HT20); 13.5Mbps of rate is the worst case of 802.11n(HT40).
	Only the worst case is recorded in the report.
Instruments Used:	Refer to section 5.10 for details.
Test Results:	Pass

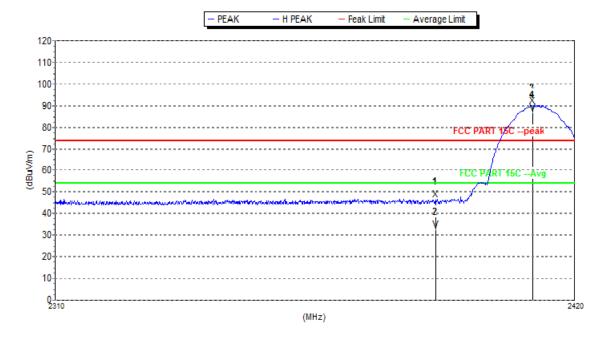


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Test plot as follows:

Test mode: 802.11b

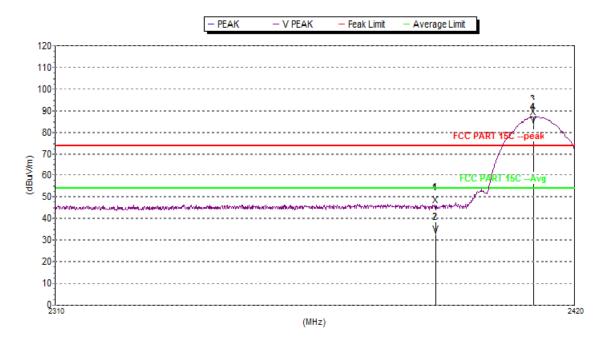


Mk.	Freq.(MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin(dB)	Ant.F.(dB/m)	Amp.G.(dB)	Cbl.L. (dB)	Pol.
Peak:								
1	2390	46.4	74.0	27.6	32.5	0.0	-19.3	Н
2 F	2410.870	90.1	74.0	-16.1	32.6	0.0	-19.3	Н
Avg								
1	2390	32.7	54.0	21.3	32.5	0.0	-19.3	Н
2 F	2410.870	86.5	54.0	-32.5	32.6	0.0	-19.3	Н



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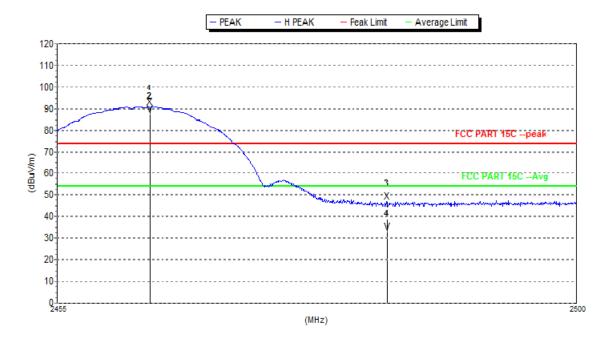
Mk.	Freq.(MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin(dB)	Deg.(deg.)	Amp.G.(dB)	Cbl.L. (dB)	Pol.
Peak:								
1	2390	46.3	74.0	27.7	199	0.0	-19.3	V
2 F	2410.980	87.2	74.0	-13.2	119	0.0	-19.3	V
Avg								
1	2390	32.5	54.0	21.5	53	0.0	-19.3	V
2 F	2410.980	83.3	54.0	-29.3	10	0.0	-19.3	V





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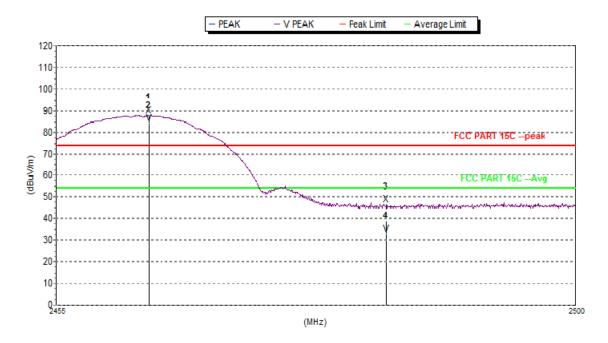


Mk.	Freq.(MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin(dB)	Ant.F.(dB/m)	Amp.G.(dB)	Cbl.L. (dB)	Pol.
Peak:								
1 F	2462.965	90.9	74.0	-16.9	32.5	0.0	-19.2	Н
2	2483.5	47.0	74.0	27.0	32.5	0.0	-19.1	Н
Avg								
1 F	2462.965	87.3	54.0	-33.3	32.5	0.0	-19.2	Н
2	2483.5	33.1	54.0	20.9	32.5	0.0	-19.1	Н



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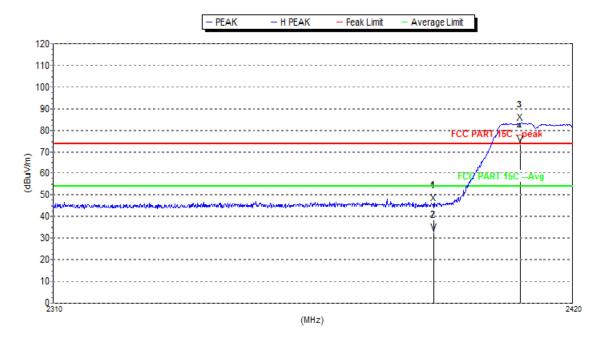
Mk.	Freq.(MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin(dB)	Ant.F.(dB/m)	Amp.G.(dB)	Cbl.L. (dB)	Pol.
Peak:								
1 F	2462.965	87.8	74.0	-13.8	32.5	0.0	-19.2	V
2	2483.5	46.4	74.0	27.6	32.5	0.0	-19.1	V
Avg								
1 F	2462.965	84.2	54.0	-30.2	32.5	0.0	-19.2	V
2	2483.5	32.8	54.0	21.2	32.5	0.0	-19.1	V



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Test mode: 802.11g

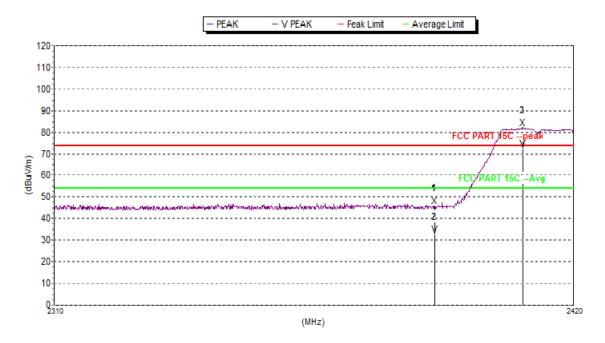


Mk.	Freq.(MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin(dB)	Ant.F.(dB/m)	Amp.G.(dB)	Cbl.L. (dB)	Pol.
Peak:								
1	2390	46.1	74.0	27.9	32.5	0.0	-19.3	Н
2 F	2408.670	83.4	74.0	-9.4	32.6	0.0	-19.3	Н
Avg								
1	2390	32.5	54.0	21.5	32.5	0.0	-19.3	Н
2 F	2408.670	73.5	54.0	-19.5	32.6	0.0	-19.3	Н



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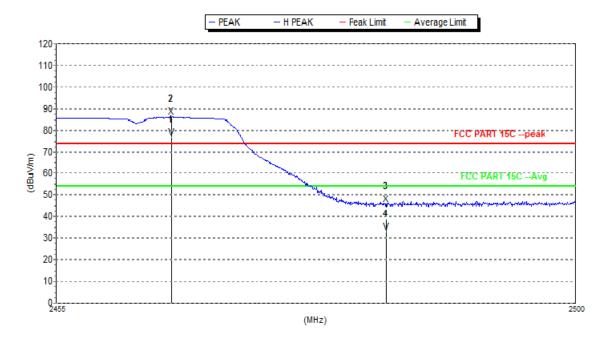


Mk.	Freq.(MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin(dB)	Ant.F.(dB/m)	Amp.G.(dB)	Cbl.L. (dB)	Pol.
Peak:								
1	2390	45.9	74.0	28.1	32.5	0.0	-19.3	V
2 F	2409.000	81.7	74.0	-7.7	32.6	0.0	-19.3	V
Avg								
1	2390	32.5	54.0	21.5	32.5	0.0	-19.3	V
2 F	2409.000	72.3	54.0	-18.3	32.6	0.0	-19.3	٧



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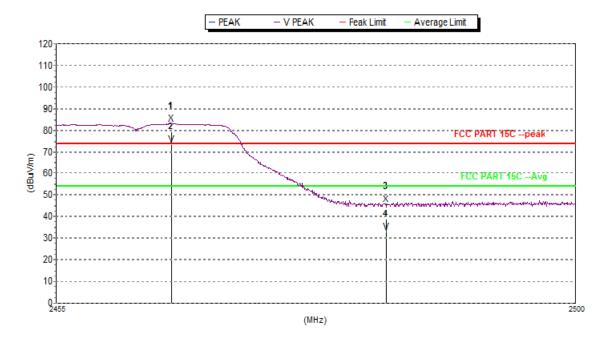


Mk.	Freq.(MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin(dB)	Ant.F.(dB/m)	Amp.G.(dB)	Cbl.L. (dB)	Pol.
Peak:								
1 F	2464.990	86.1	74.0	-12.1	32.5	0.0	-19.2	Н
2	2483.5	45.8	74.0	28.2	32.5	0.0	-19.1	Н
Avg								
1 F	2464.990	76.6	54.0	-22.6	32.5	0.0	-19.2	Н
2	2483.5	32.9	54.0	21.1	32.5	0.0	-19.1	Н



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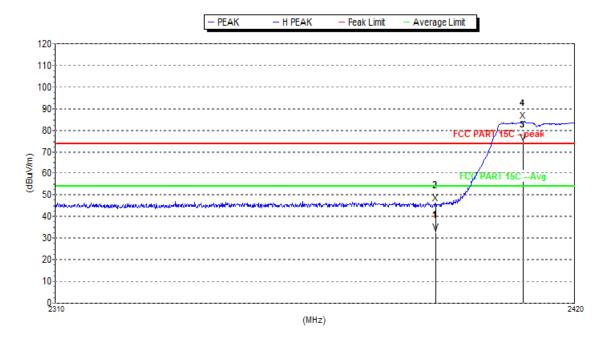
Mk.	Freq.(MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin(dB)	Ant.F.(dB/m)	Amp.G.(dB)	Cbl.L. (dB)	Pol.
Peak:								
1 F	2464.945	83.1	74.0	-9.1	32.5	0.0	-19.2	V
2	2483.5	45.7	74.0	28.3	32.5	0.0	-19.1	V
Avg								
1 F	2464.945	73.6	54.0	-19.6	32.5	0.0	-19.2	V
2	2483.5	32.8	54.0	21.2	32.5	0.0	-19.1	V



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Test mode: 802.11n(HT20)

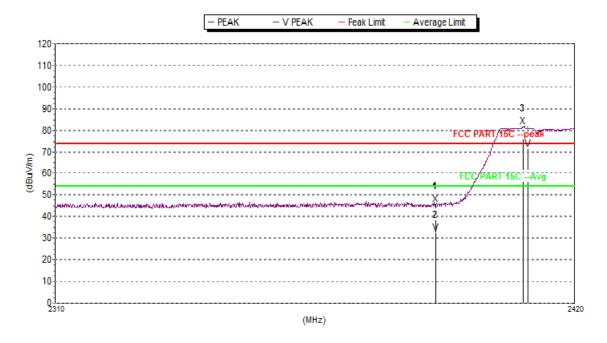


Mk.	Freq.(MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin(dB)	Ant.F.(dB/m)	Amp.G.(dB)	Cbl.L. (dB)	Pol.
Peak:								
1	2390	46.1	74.0	27.9	32.5	0.0	-19.3	Н
2 F	2408.780	84.4	74.0	-10.4	32.6	0.0	-19.3	Н
Avg								
1	2390	32.7	54.0	21.3	32.5	0.0	-19.3	Н
2 F	2408.780	74.2	54.0	-20.2	32.6	0.0	-19.3	Н



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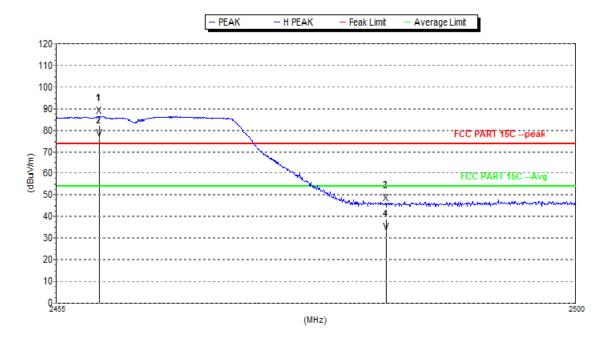


Mk.	Freq.(MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin(dB)	Ant.F.(dB/m)	Amp.G.(dB)	Cbl.L. (dB)	Pol.
Peak:								
1	2390	45.8	74.0	28.2	32.5	0.0	-19.3	٧
2 F	2408.780	81.7	74.0	-7.7	32.6	0.0	-19.3	V
Avg								
1	2390	32.5	54.0	21.5	32.5	0.0	-19.3	V
2 F	2409.780	71.3	54.0	-17.3	32.6	0.0	-19.3	V



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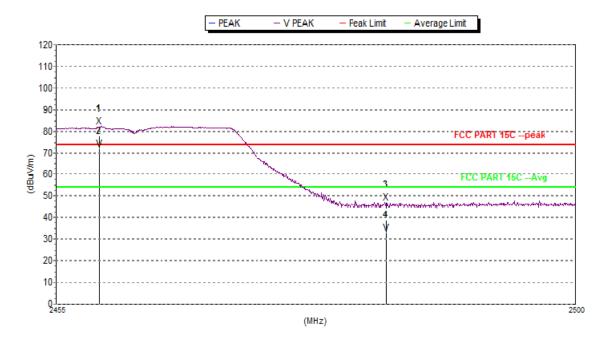


Mk.	Freq.(MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin(dB)	Ant.F.(dB/m)	Amp.G.(dB)	Cbl.L. (dB)	Pol.
Peak:								
1 F	2458.780	86.5	74.0	-12.5	32.5	0.0	-19.2	Н
2	2483.5	46.3	74.0	27.7	32.5	0.0	-19.1	Н
Avg								
1 F	2458.780	76.4	54.0	-22.4	32.5	0.0	-19.2	Н
2	2483.5	33.0	54.0	21.0	32.5	0.0	-19.1	Н



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Mk.	Freq.(MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin(dB)	Ant.F.(dB/m)	Amp.G.(dB)	Cbl.L. (dB)	Pol.
Peak:								
1 F	2458.780	82.1	74.0	-8.1	32.5	0.0	-19.2	٧
2	2483.5	47.0	74.0	27.0	32.5	0.0	-19.1	V
Avg								
1 F	2458.780	71.9	54.0	-17.9	32.5	0.0	-19.2	V
2	2483.5	32.8	54.0	21.2	32.5	0.0	-19.1	V

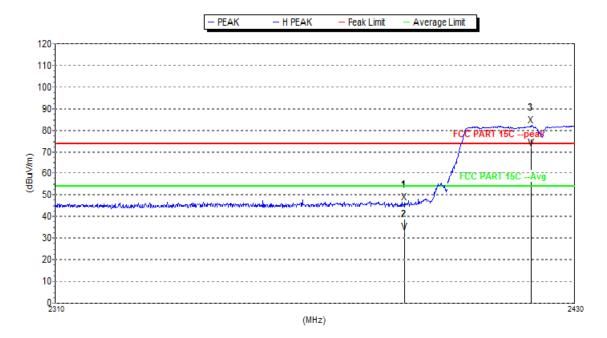




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Test mode: 802.11n(HT40)

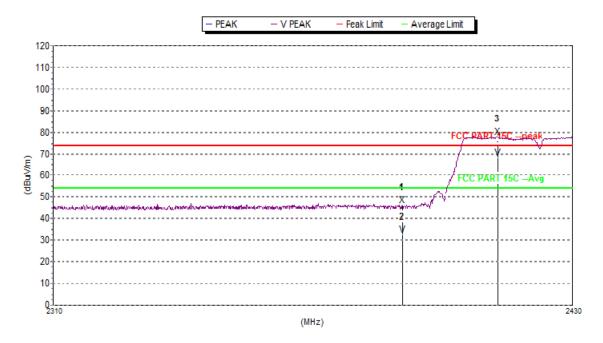


Mk.	Freq.(MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin(dB)	Ant.F.(dB/m)	Amp.G.(dB)	Cbl.L. (dB)	Pol.
Peak:								
1	2390	46.5	74.0	27.5	32.5	0.0	-19.3	Н
2 F	2419.680	82.3	74.0	-8.3	32.5	0.0	-19.4	Н
Avg								
1	2390	33.0	54.0	21.0	32.5	0.0	-19.3	Н
2 F	2419.680	71.9	54.0	-17.9	32.5	0.0	-19.4	Н



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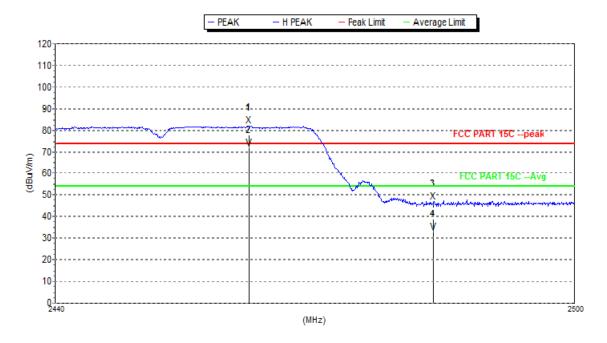


Mk.	Freq.(MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin(dB)	Ant.F.(dB/m)	Amp.G.(dB)	Cbl.L. (dB)	Pol.
Peak:								
1	2390	46.1	74.0	27.9	32.5	0.0	-19.3	V
2 F	2412.360	78.0	74.0	-4.0	32.6	0.0	-19.3	V
Avg								
1	2390	32.6	54.0	21.4	32.5	0.0	-19.3	V
2 F	2412.360	68.1	54.0	-14.1	32.6	0.0	-19.3	V



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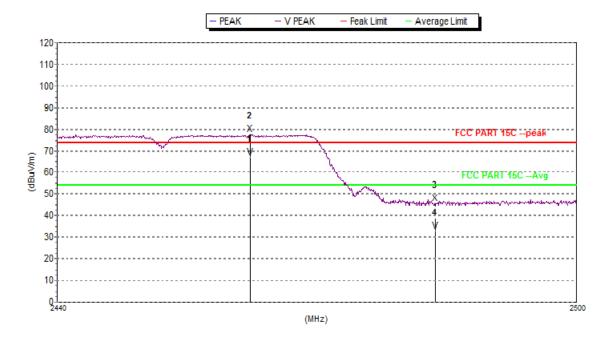


Mk.	Freq.(MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin(dB)	Ant.F.(dB/m)	Amp.G.(dB)	Cbl.L. (dB)	Pol.
Peak:								
1 F	2462.200	82.2	74.0	-8.2	32.5	0.0	-19.2	Н
2	2483.5	47.0	74.0	27.0	32.5	0.0	-19.1	Н
Avg								
1 F	2462.200	71.8	54.0	-17.8	32.5	0.0	-19.2	Н
2	2483.5	33.1	54.0	20.9	32.5	0.0	-19.1	Н



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Mk.	Freq.(MHz)	Level (dBuV/m)	Limit (dBuV/m)	Margin(dB)	Ant.F.(dB/m)	Amp.G.(dB)	Cbl.L. (dB)	Pol.
Peak:								
1 F	2462.140	77.7	74.0	-3.7	32.5	0.0	-19.2	V
2	2483.5	45.7	74.0	28.3	32.5	0.0	-19.1	V
Avg								
1 F	2462.140	67.2	54.0	-13.2	32.5	0.0	-19.2	V
2	2483.5	32.8	54.0	21.2	32.5	0.0	-19.1	V

Note:

The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows:

Final Test Level = Receiver Reading + Antenna Factor + Cable Factor - Preamplifier Factor



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7 Photographs - EUT Test Setup

Test model No.: PIC A0726.01

7.1 Conducted Emission



7.2 Radiated Spurious Emission





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8 Photographs - EUT Constructional Details

Refer to Report No. SZEM150900595701 for EUT external and internal photos.