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FCC REPORT

Application No:	SZEM1806005521RG
Applicant:	Novatel Wireless, Inc.
Manufacturer:	Novatel Wireless, Inc.
Factory:	Fujian Star-net CommunicationCo.,Ltd
Product Name:	Industrial Cellular Gateway with Ethernet, WiFi, GPS/GLNSS and USB Connectivity
Model No.(EUT):	SKYUS 140
Trade Mark:	Inseego
FCC ID:	PKRNVWSK140
Standards:	47 CFR Part 15 Subpart C
Test Method	KDB 558074 D01 DTS Meas Guidance v04
rest method	ANSI C63.10 (2013)
Date of Receipt:	2018-04-18
Date of Test:	2018-06-25 to 2018-06-25
Date of Issue:	2018-06-25
Test Result:	PASS *

.* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Derde yang

Derek Yang

Wireless 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.



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2 Version

Revision Record								
Version Chapter Date Modifier Remark								
01		2018-06-25		Original				

Authorized for issue by:		
Tested By	Mike Mu	2018-06-25
	(Mike Hu) /Project Engineer	Date
Checked By	John Hing	2018-06-25
	(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 2013	PASS
AC Power Line Conducted Emission	47 CFR Part 15, Subpart C Section 15.207	ANSI C63.10 2013	PASS
Conducted Peak Output Power	47 CFR Part 15, Subpart C Section 15.247 (b)(3)	ANSI C63.10 2013	PASS
6dB Occupied Bandwidth	47 CFR Part 15, Subpart C Section 15.247 (a)(2)	ANSI C63.10 2013	PASS
Power Spectral Density	47 CFR Part 15, Subpart C Section 15.247 (e)	ANSI C63.10 2013	PASS
Band-edge for RF Conducted Emissions	47 CFR Part 15, Subpart C Section 15.247(d)	ANSI C63.10 2013	PASS
RF Conducted Spurious Emissions	47 CFR Part 15, Subpart C Section 15.247(d)	ANSI C63.10 2013	PASS
Radiated Spurious Emissions	47 CFR Part 15, Subpart C Section 15.205/15.209	ANSI C63.10 2013	PASS
Restricted bands around fundamental frequency (Radiated Emission)47 CFR Part 15, Subpart C Section 15.205/15.209		ANSI C63.10 2013	PASS



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5 General Information

5.1 Client Information

Applicant:	Novatel Wireless, Inc.
Address of Applicant:	9605 Scranton Rd., Suite 300, San Diego, CA 92121
Manufacturer:	Novatel Wireless, Inc.
Address of Manufacturer: 9605 Scranton Rd., Suite 300, San Diego, CA 92121	
Factory: Fujian Star-net CommunicationCo.,Ltd	
Address of Factory:	3F,Bldg 1,Star-Net Science-based Haixi Industrial Pack,No. 9 GaoxinRoad,MinhouCounty,Fuzhou, China

5.2 General Description of EUT

Product Name:	Industrial Cellular Gateway with Ethernet, WiFi, GPS/GLNSS and USB Connectivity		
Model No.:	SKYUS 140		
Trade Mark:	Inseego		
Operation Frequency:	IEEE 802.11b/g/n(HT20): 2412MHz to 2462MHz		
Channel Numbers:	IEEE 802.11b/g, IEEE 802.11n HT20: 11 Channels		
Channel Separation:	5MHz		
	IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK)		
Type of Modulation:	IEEE for 802.11g : OFDM(64QAM, 16QAM, QPSK, BPSK)		
	IEEE for 802.11n(HT20) : OFDM (64QAM, 16QAM,QPSK,BPSK)		
Antenna Type:	Internal Antenna		
Antenna Gain:	2.6dBi		
	Model:GB-S10-994268-010H		
Power Supply	DC3.8 (1 x 3.8V Rechargeable battery) 4400mAh,16.7Wh		
	Battery: Charge by DC 5V		
	Model:ASSA76a-050200		
AC adaptor:	Input: AC100-240V 50/60Hz 0.45A		
	Output:DC5.0VDC, 2.0A		



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Operation	Operation Frequency each of channel(802.11b/g/n HT20)								
Channel Frequency Channel Frequency Channel Frequency Channel Frequency									
1	2412MHz	4	2427MHz	7	2442MHz	10	2457MHz		
2	2417MHz	5	2432MHz	8	2447MHz	11	2462MHz		
3	3 2422MHz 6 2437MHz 9 2452MHz								

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:

Channel	Frequency for 802.11b/g/n (HT20)			
The Lowest channel	2412MHz			
The Middle channel	2437MHz			
The Highest channel	2462MHz			



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5.3 Test Environment and Mode

Operating Environment:			
Temperature:	25.0 °C		
Humidity:	50 % RH		
Atmospheric Pressure:	1010 MPa		
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

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.

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 – Designation Number: CN1178

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been recognized as an accredited testing laboratory.

Designation Number: CN1178. Test Firm Registration Number: 406779.

Industry Canada (IC)

Two 3m Semi-anechoic chambers and the 10m Semi-anechoic chamber of SGS-CSTC Standards

Technical Services Co., Ltd. Shenzhen Branch EMC Lab have been registered by Certification and



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Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1, 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.

5.10 Measurement Uncertainty (95% confidence levels, k=2)

No.	Item	Measurement Uncertainty	
1	Total RF power, conducted	0.75dB	
2	RF power density, conducted	2.84dB	
3	Spurious emissions, conducted	0.75dB	
		4.5dB (30MHz-1GHz)	
4	Radiated Spurious emission test	4.8dB (1GHz-25GHz)	
5	Conduct emission test	3.12 dB(9KHz- 30MHz)	
6	Temperature test	1 ℃	
7	Humidity test	3%	
8	DC and low frequency voltages	0.5%	



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5.11 Equipment List

	Conducted Emission					
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Duedate (yyyy-mm-dd)
1	Shielding Room	ZhongYu Electron	GB-88	SEM001-06	2017-05-10	2018-05-10
2	LISN	Rohde & Schwarz	ENV216	SEM007-01	2017-10-09	2018-10-09
3	LISN	ETS-LINDGREN	3816/2	SEM007-02	2018-02-14	2019-02-13
4	8 Line ISN	Fischer Custom Communications Inc.	FCC- TLISN-T8- 02	EMC0120	2017-09-28	2018-09-28
5	4 Line ISN	Fischer Custom Communications Inc.	FCC- TLISN-T4- 02	EMC0121	2017-09-28	2018-09-28
6	2 Line ISN	Fischer Custom Communications Inc.	FCC- TLISN-T2- 02	EMC0122	2017-09-28	2018-09-28
7	EMI Test Receiver	Rohde & Schwarz	ESCI	SEM004-02	2018-02-14	2019-02-13
8	DC Power Supply	Zhao Xin	RXN-305D	SEM011-02	2017-10-09	2018-10-09

	RF conducted test								
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. date (yyyy-mm-dd)	Cal.Duedate (yyyy-mm-dd)			
1	DC Power Supply	ZhaoXin	RXN-305D	SEM011-02	2017-10-09	2018-10-09			
2	Signal Analyzer	Rohde &Schwarz	FSV	W005-02	2018-03-13	2019-03-13			
3	Signal Generator	Rohde &Schwarz	SML03	SEM006-02	2018-02-14	2019-02-13			
4	Power Meter	Rohde &Schwarz	NRVS	SEM014-02	2017-10-09	2018-10-09			
5	Power Sensor	Agilent Technologies	U2021XA	SEM009-01	2017-10-09	2018-10-09			



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	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	SEM001-01	2017-05-10	2018-05-10		
2	EMI Test Receiver	Agilent Technologies	N9038A	SEM004-05	2017-10-09	2018-10-09		
3	BiConiLog Antenna (26-3000MHz)	ETS-LINDGREN	3142C	SEM003-01	2017-11-01	2020-11-01		
4	Double-ridged horn (1-18GHz)	ETS-LINDGREN	3117	SEM003-11	2015-10-17	2018-10-17		
5	Horn Antenna (18-26GHz)	ETS-LINDGREN	3160	SEM003-12	2017-11-24	2020-11-24		
6	Pre-amplifier (0.1-1300MHz)	Agilent Technologies	8447D	SEM005-01	2018-02-14	2019-02-13		
7	Band filter	Amindeon	Asi 3314	SEM023-01	N/A	N/A		
8	DC Power Supply	Zhao Xin	RXN-305D	SEM011-02	2017-10-09	2018-10-09		
9	Loop Antenna	Beijing Daze	ZN30401	SEM003-09	2015-05-13	2018-05-13		

	RE in Chamber							
Item	Test Equipment	Manufacturer	Model No.	Inventory No.	Cal. Date (yyyy-mm-dd)	Cal. Due date (yyyy-mm-dd)		
1	10m Semi-Anechoic Chamber	SAEMC	FSAC1018	SEM001-03	2017-05-10	2018-05-10		
2	EMI Test Receiver (9k-7GHz)	Rohde & Schwarz	ESR	SEM004-03	2018-02-14	2019-02-13		
3	Trilog-Broadband Antenna(30M-1GHz)	Schwarzbeck	VULB9168	SEM003-18	2016-06-29	2019-06-29		
4	Pre-amplifier	Sonoma Instrument Co	310N	SEM005-03	2017-07-06	2018-07-06		
5	.Loop Antenna	ETS-Lindgren	6502	SEM003-08	2015-08-14	2018-08-14		



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	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	AUDIX	N/A	SEM001-02	2017-05-10	2018-05-10		
2	EXA Spectrum Analyzer	Agilent Technologies Inc	N9010A	SEM004-09	2017-07-19	2018-07-19		
3	BiConiLog Antenna (26-3000MHz)	ETS-Lindgren	3142C	SEM003-02	2017-11-15	2020-11-15		
4	Amplifier (0.1-1300MHz)	HP	8447D	SEM005-02	2017-10-09	2018-10-09		
5	Horn Antenna (1-18GHz)	Rohde & Schwarz	HF907	SEM003-07	2015-06-14	2018-06-14		
6	Horn Antenna (18-26GHz)	ETS-Lindgren	3160	SEM003-12	2017-11-24	2020-11-24		
8	Low Noise Amplifier	Black Diamond Series	BDLNA- 0118- 352810	SEM005-05	2017-10-09	2018-10-09		
9	Band filter	Amindeon	Asi 3314	SEM023-01	N/A	N/A		



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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.

The antenna is integrated on the main PCB and no consideration of replacement. The best case gain of the antenna is 2.6dBi.



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6.2 Conducted	d Emissions					
Test Requirement:	47 CFR Part 15C Section 15.207					
Test Method:	ANSI C63.10: 2013					
Test Frequency Range:	150kHz to 30MHz					
		Limit (c	lBuV)			
	Frequency range (MHz)	Quasi-peak	Average			
Limite	0.15-0.5	66 to 56*	56 to 46*			
Limit:	0.5-5	56	46			
	5-30	60	50			
	* Decreases with the logarithm	n of the frequency.				
Test Procedure:	 1) The mains terminal disturbance voltage test was conducted in a shielded room. 2) The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides a 50Ω/50µH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN 2, which was bonded to the ground reference plane in the same way as the LISN 1 for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded. 3) The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane. The LISN 1 was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISNs mounted on top of the ground reference plane. This distance was between the closest points of the LISN 1 and the EUT. All other units of the EUT and associated equipment was at least 0.8 m from the LISN 2. 5) In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to 					
Test Setup:	Shielding Room	AE ES ES Ground Reference Plane	Test Receiver			

6.2 Conducted Emissions



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Exploratory Test Mode:	Transmitting with all kind of modulations, data rates at lowest, middle and highest channel.
	Charge + Transmitting mode.
	Through Pre-scan, find the 1Mbps of rate of 802.11b at lowest channel is the worst case.
Final Test Mode:	Charge + Transmitting mode.
	Only the worst case is recorded in the report.
Instruments Used:	Refer to section 5.10 for details
Test Results:	Pass



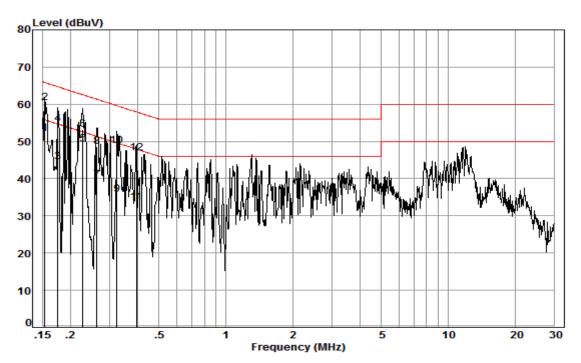
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Measurement Data

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:



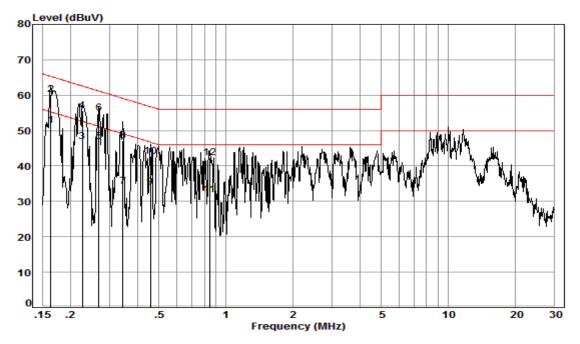
Site : Shielding Room Condition: Line Job No. : 02356RG Test mode: b

	Freq	Cable Loss	LISN Factor	Read Level	Level	Limit Line	Over Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.15	0.02	9.51	42.61	52.14	55.82	-3.68	Average
2	0.15	0.02	9.51	50.76	60.29	65.82	-5.53	QP
3	0.17	0.03	9.52	34.98	44.53	54.72	-10.19	Average
4	0.17	0.03	9.52	45.10	54.65	64.72	-10.07	QP
5	0.23	0.03	9.51	39.72	49.26	52.57	-3.31	Average
6	0.23	0.03	9.51	43.76	53.30	62.57	-9.27	QP
7	0.26	0.03	9.51	30.19	39.73	51.34	-11.61	Average
8	0.26	0.03	9.51	39.07	48.61	61.34	-12.73	QP
9	0.32	0.03	9.51	26.23	35.77	49.62	-13.85	Average
10	0.32	0.03	9.51	39.19	48.73	59.62	-10.89	QP
11	0.40	0.04	9.49	24.06	33.59	47.95	-14.36	Average
12	0.40	0.04	9.49	37.41	46.94	57.95	-11.01	QP



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Neutral Line:



Site :	Shielding	Room
Condition:	Neutral	
Job No. :	02356RG	
Test mode:	b	

		Cable	LISN	Read		Limit	0ver	
	Freq	Loss	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB	dBuV	dBuV	dBuV	dB	
1	0.16	0.02	9.59	41.76	51.37	55.30	-3.93	Average
2	0.16	0.02	9.59	50.61	60.22	65.30	-5.08	QP
3	0.23	0.03	9.58	37.23	46.84	52.61	-5.77	Average
4	0.23	0.03	9.58	46.02	55.63	62.61	-6.98	QP
5	0.27	0.03	9.58	37.33	46.94	51.16	-4.22	Average
6	0.27	0.03	9.58	45.24	54.85	61.16	-6.31	QP
7	0.34	0.03	9.58	24.66	34.27	49.09	-14.82	Average
8	0.34	0.03	9.58	37.42	47.03	59.09	-12.06	QP
9	0.46	0.04	9.60	24.43	34.07	46.71	-12.64	Average
10	0.46	0.04	9.60	33.11	42.75	56.71	-13.96	QP
11	0.84	0.08	9.61	22.07	31.76	46.00	-14.24	Average
12	0.84	0.08	9.61	32.53	42.22	56.00	-13.78	QP

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 :2013 Section 11.9.1.3				
Test Setup:	POWER METER E.U.T Non-Conducted Table Ground Reference Plane				
Test Instruments:	Refer to section 5.10 for details				
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates				
	Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b;				
Final Test Mode:	6Mbps of rate is the worst case of 802.11g ; 6.5Mbps of rate is the worst case of 802.11n(HT20)				
Limit:	30dBm				
Test Results:	Pass				



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802.11b mode									
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result						
Lowest	18.75	30.00	Pass						
Middle	18.63	30.00	Pass						
Highest	17.37	30.00	Pass						
	802.11g mode								
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result						
Lowest	20.53	30.00	Pass						
Middle	20.42	30.00	Pass						
Highest	20.20	30.00	Pass						
	802.11n(HT20)	mode							
Test channel	Peak Output Power (dBm)	Limit (dBm)	Result						
Lowest	19.79	30.00	Pass						
Middle	19.81	30.00	Pass						
Highest	19.84	30.00	Pass						



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6.4 6dB Occupied Bandwidth

Test Requirement:	47 CFR Part 15C Section 15.247 (a)(2)		
Test Method:	ANSI C63.10: 2013 Section 11.8.1 Option 1		
Test Setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane		
Instruments Used:	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).		
Limit:	≥ 500 kHz		
Test Results:	Pass		



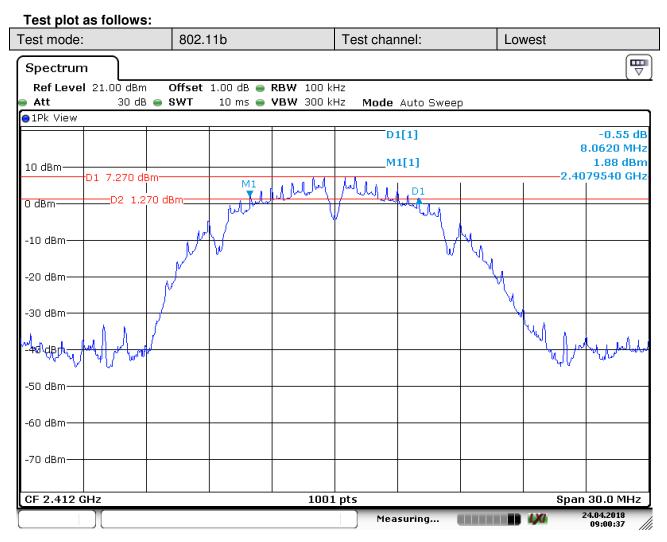
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Measurement Data

802.11b mode				
Test channel	6dB Occupy Bandwidth (MHz)	Limit (kHz)	Result	
Lowest	8.06	≥500	Pass	
Middle	8.09	≥500	Pass	
Highest	8.03	≥500	Pass	
	802.11g mode			
Test channel	6dB Occupy Bandwidth (MHz)	Limit (kHz)	Result	
Lowest	15.14	≥500	Pass	
Middle	15.32	≥500	Pass	
Highest	15.14	≥500	Pass	
	802.11n(HT20) mode			
Test channel	6dB Occupy Bandwidth (MHz)	Limit (kHz)	Result	
Lowest	16.06	≥500	Pass	
Middle	15.27	≥500	Pass	
Highest	15.94	≥500	Pass	



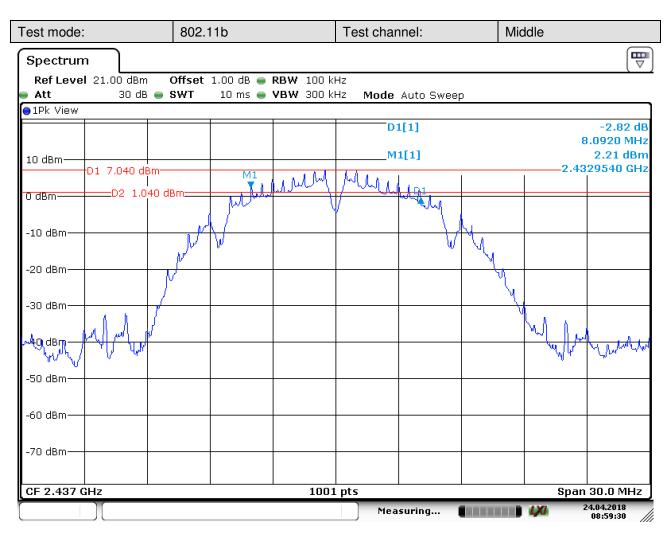
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Test mode:	802.11b	Test channel:	Highest	
Spectrum				
	Offset 1.00 dB 👄 RBW 100 ki			
	3WT 10 ms 👄 VBW 300 ki	Hz Mode Auto Sweep		
●1Pk View				
		D1[1]	-1.50 dB	
			8.0320 MHz	
10 dBm		M1[1]	0.56 dBm 2.4579840 GHz	
D1 5.830 dBm	Bm M1 phlathalalalalalalalalalalalalalalalalala	Munder	2.1075010 012	
0 dBm D2 -0.170 d	Bm	/~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		
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-10 dBm				
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l)*			м.	
-30 dBm				
-40 dBm				
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-50 dBm			. the day	
-60 dBm				
-70 dBm				
CF 2.462 GHz	1001	. pts	Span 30.0 MHz	
		Measuring		

Date: 24.APR.2018 08:58:09



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Test mode:	802.11g	Test channel:	Lowest
			_
Spectrum			
Ref Level 21.00 dBm	Offset 1.00 dB 👄 RBW 100 k		
● Att 30 dB ● ● 1Pk View	SWT 10 ms 🔵 VBW 300 k	Hz Mode Auto Sweep	
		D1[1]	-2.69 dB
		01[1]	15.1350 MHz
10 dBm		M1[1]	-2.10 dBm
			2.4044180 GHz
0 dBm D1 2.230 dBm-	dBm www.hundhumhumhumhum	pontured portunal and	
D2 -3.770	dBm ^{uthor}	The second secon	My
-10 dBm			
l l			Y.
-20 dBm			
J J			
-30 dBm			- Worth work Martine
			1 the Charlen and the
-40 dBm			
-50 dBm			
-60 dBm			
-70 dBm			
-70 4011			
CF 2.412 GHz	100		Span 30.0 MHz
	100.		
		Measuring	08:56:49

Date: 24.APR.2018 08:56:50



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Test mode:	802.11g	Test channel:	Middle	
Spectrum				
	Offset 1.00 dB 👄 RBW 100 kł			
	SWT 10 ms 👄 VBW 300 kł	Hz Mode Auto Sweep		
●1Pk View				
		D1[1]	-1.65 dB 15.3150 MHz	
		M1[1]	-2.88 dBm	
10 dBm			2.4292380 GHz	
D1 2.310 dBm				
0 dBm	Bm with million the market and the second	pantum hullmantur to have		
D2 -3.690 c	18m	/ manual and a manual in the second	հուլ	
-10 dBm				
J.			4	
-20 dBm			N .	
ln ^r			b ,	
-30 HBm			www.www.www.www.www.	
-30 HBM HANNANAN			"WWWWWWWWWWW	
-40 dBm				
-50 dBm				
-60 dBm				
-70 dBm				
CF 2.437 GHz	1001	ntc	Span 30.0 MHz	
	1001	·		
		Measuring 🔳		

Date: 24.APR.2018 08:55:44



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Test mode:	802.11g	Test channel:	Highest	
Spectrum				
	Offset 1.00 dB 👄 RBW 100 ki			
	SWT 10 ms 👄 VBW 300 kl	Hz Mode Auto Sweep		
●1Pk View		I		
		D1[1]	-2.43 dB	
		541[1]	15.1350 MHz -2.84 dBm	
10 dBm		M1[1]	-2.84 uBm 2.4544180 GHz	
0 dBm D1 1.900 dBm	18 marile will washing and when the world	pentural martine and		
D2 -4.100 c	18m + Aller Dar Charles and Ch	1		
-10 dBm		1 ~~	· M	
			Ն	
-20 dBm			W,	
-20 UBIII-			а.	
and the second se			N. I	
-30 dBm			mulation	
-30 dBm			Manuter Marcarena	
-40 dBm				
-50 dBm				
-60 dBm				
-70 dBm				
CF 2.462 GHz	1001	pts	Span 30.0 MHz	
		Measuring		

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Test mode:	802.11n(HT20)	Test channel:	Lowest	
Spectrum				
		kHz		
	SWT 10 ms 👄 VBW 300	kHz Mode Auto Sweep		
●1Pk View				
		D1[1]	-2.84 dB	
			16.0640 MHz	
10 dBm		M1[1]	-3.94 dBm 2.4034890 GHz	
0 dBm D1 1.630 dBm	a flavelly & Arealist	month all and word		
D2 -4.370 c	Ham Mauntur Martine Martin	1 Mar Const Charles March March		
-10 dBm		¥ 1	(
-20 dBm			h l	
-20 dBill			L.	
٧.			N N	
-30 dBm			Mada Lu	
-30 dBm			With about the work of the	
-40 dBm			* 10	
-50 dBm				
-60 dBm				
-70 dBm				
CF 2.412 GHz		D1 pts	Span 30.0 MHz	
		Measuring 🔳 🚺		

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Test mode:	802.11n(HT20)	Test channel:	Middle	
Spectrum				
	Offset 1.00 dB			
● Att 30 dB ● 5 ● 1Pk View	SWT 10 ms 👄 VBW 300	(Hz Mode Auto Sweep		
		D1[1]	-3.27 dB	
			15.4650 MHz	
10 dBm		M1[1]	-3.96 dBm	
			2.4290880 GHz	
0 dBm D1 1.600 dBm	1 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	under the the		
D2 -4.400 c	Bm walfur August months w	Jundram Congenter Manual Marine	Um sha	
-10 dBm			▲ ~r n	
-20 dBm				
J J			Υ.	
-30 dBm the Juli Mar				
mhinhtyph man			an under and the second of the	
-40 dBm			- v v P P ŋ	
-50 dBm				
-60 dBm				
-70 dBm				
CF 2.437 GHz	100	1 pts	Span 30.0 MHz	
		Measuring		

Date: 24.APR.2018 08:50:32



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Test mode:	802.11n(HT20)	Τe	est channel:	Hiç	ghest	
Spectrum						
Ref Level 21.00 dBm						
● Att 30 dB ● 1Pk View	😑 SWT 10 ms 👄 '	VBW 300 kHz	Mode Auto Sweep)		
			D1[1]			-0.74 dB
			5-[-]		15	.9440 MHz
10 dBm			M1[1]			-4.48 dBm
			I		2.45	36080 GHz
0 dBm D1 1.480 dE		t allana ara a n		λ		
D2 -4.5	3m 1 M2 520 dBm willfwrlywrless	MANNO AND MAN	trastry Inalised	Multin D1		
-10 dBm		T				
-20 dBm					<u></u>	
					Ι\ I	
-30 dBm					Maha	1
-30 dBm					~ administry	Month of the Manufactory
-40 dBm						10.1 1
-50 dBm						
-60 dBm						
-70 dBm						
CF 2.462 GHz	II	1001 pts	5		Span	30.0 MHz
			Measuring		1) (1)	4.04.2018

Date: 24.APR.2018 08:51:52



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6.5 Power Spectral Density

Test Requirement:	47 CFR Part 15C Section 15.247 (e)		
Test Method:	ANSI C63.10 :2013 Section 11.10.2		
Test Setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane		
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		



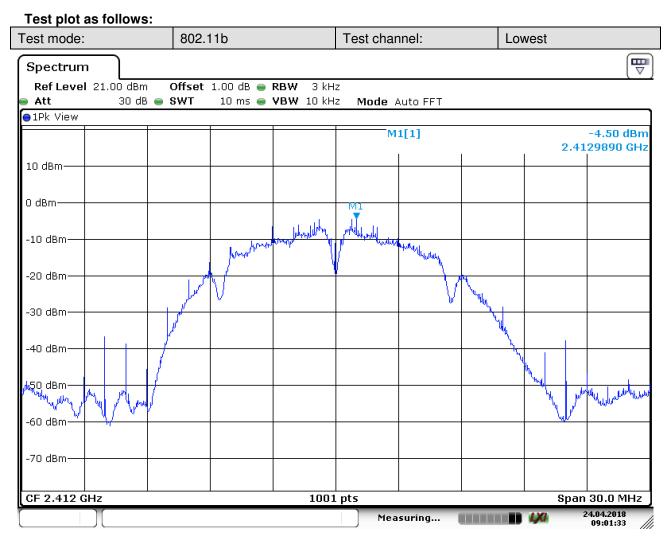
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Measurement Data

802.11b mode				
Test channel	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result	
Lowest	-4.50	≤8.00	Pass	
Middle	-6.72	≤8.00	Pass	
Highest	-6.70	≤8.00	Pass	
	802.11g mode			
Test channel	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result	
Lowest	-11.27	≤8.00	Pass	
Middle	-10.38	≤8.00	Pass	
Highest	-10.89	≤8.00	Pass	
	802.11n(HT20) mode			
Test channel	Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)	Result	
Lowest	-11.05	≤8.00	Pass	
Middle	-11.53	≤8.00	Pass	
Highest	-11.37	≤8.00	Pass	



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Test mode:	802.11b	Test channel:	Middle
Spectrum			
Ref Level 21.00 dBm (Att 30 dB ()	Offset 1.00 dB		
●1Pk View	1 1		
		M1[1]	-6.72 dBm 2.4362810 GHz
10 dBm			
0 dBm	M1		
-10 dBm	mannant	Mudden www.	
-20 dBm			
-30 dBm	pha W	V W	
-40 dBm			
-50 dBm			mariling personal hours and a second
-60 dBm \/			
CF 2.437 GHz	1001	pts Measuring M easuring	Span 30.0 MHz

Date: 24.APR.2018 09:02:28



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Test mode:	802.11b	Test channel:	Highest		
Spectrum					
Ref Level 21.00 dBm Att 30 dB •		kHz kHz Mode Auto FFT			
●1Pk View]		
		M1[1]	-6.70 dBm 2.4609810 GHz		
10 dBm					
0 dBm	M				
-10 dBm	phast which the state and	and many many many many			
-20 dBm			Nu l		
-30 dBm			- MA		
-40 dBm					
-50 dBm			here with with and the with		
-70 dBm			1 Martin		
CF 2.462 GHz 1001 pts Span 30.0 MHz Maximing 24.04.2018					
1		Measuring			

Date: 24.APR.2018 09:02:59



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Test mode:	802.11g	Test channel:	Lowest		
Spectrum					
Ref Level 21.00 dBm Offset 1.00 dB 👄 RBW 3 kHz					
● Att 30 dB ● SWT 10 ms ● VBW 10 kHz Mode Auto FFT					
●1Pk View		MATAL	11.07.40.0		
		M1[1]	-11.27 dBm 2.4116700 GHz		
10 dBm					
0 dBm					
	M1				
-10 dBm		ROBAND BAR LINE			
	www.www.www.	PAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	M		
-20 dBm)			
-30 dBm			4		
N N N			lu _μ		
-40 dBm			H		
MPRHATMANAMANA			Juryahoran harrison		
MARAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA			~ asiyyy hydroddorad		
			· · ·		
-60 dBm					
-70 dBm					
-70 ubiii					
CF 2.412 GHz	1001	nts	Span 30.0 MHz		
	1001	Measuring			

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Test mode:	802.11g	Test channel:	Middle			
Spectrum						
Ref Level 21.00 dBm Offset 1.00 dB RBW 3 kHz Att 30 dB SWT 10 ms VBW 10 kHz Mode Auto FFT						
⊖1Pk View						
		M1[1]	-10.38 dBm 2.4357110 GHz			
10 dBm						
0 dBm						
-10 dBm	M1	navala				
-20 dBm	www.www.www.www.www.	1	VA			
-30 dBm						
-40 dBm			' (I) (I) (I)			
Managethan www.			Winter Winterson			
Martenna			**************************************			
-60 dBm						
-70 dBm						
CF 2.437 GHz	1001	pts	Span 30.0 MHz			
		Measuring				

Date: 24.APR.2018 09:04:40



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Test mode:	802.11g	Test channel:	Highest					
Spectrum								
	Offset 1.00 dB							
		M1[1]	-10.89 dBm 2.4607110 GHz					
10 dBm								
0 dBm								
-10 dBm	MANA WANNAN MANAM	MALATA HABIARIA HABBA						
-20 dBm	MANA Mar - MONORANA MORAN	1	ΛΛ					
-30 dBm			4					
-40 dBm			4					
15046ANW/WWW			WWWWWWWWWWW					
-60 dBm								
-70 dBm								
CF 2.462 GHz	1001	pts	Span 30.0 MHz					
		Measuring						

Date: 24.APR.2018 09:04:00



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Test mode:	802.11n(HT20)	Test channel:	Lowest						
Spectrum									
	🗃 Att 🛛 30 dB 🖷 SWT 10 ms 🖷 VBW 10 kHz Mode Auto FFT								
●1Pk View									
		M1[1]	-11.05 dBm 2.4132290 GHz						
10 dBm									
0 dBm									
-10 dBm		M1 RAALL LEVELS							
-20 dBm	www.www.www.www.	In white the second sec	volg						
-30 dBm									
-40 dBm									
NTS ABININA MAN			WUNNAW WWWWWWWWW						
-60 dBm			40000						
-70 dBm									
CF 2.412 GHz	1001	nts	Span 30.0 MHz						
	1001	Measuring							

Date: 24.APR.2018 09:07:52



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Test mode:	802.11n(HT20)	Test channel:	Middle						
Spectrum									
RefLevel 21.00 dBm Att 30 dB 👄									
●1Pk View									
		M1[1]	-11.53 dBm 2.4357410 GHz						
10 dBm									
0 dBm									
-10 dBm	M1	<u>плплик, 11 им., 1, имлли</u>							
-20 dBm	anna manager	1							
-30 dBm									
-40 dBm			4 V.						
N-990-444-64-64-64-64-64-64-64-64-64-64-64-64			What when the second						
-60 dBm									
-70 dBm									
CF 2.437 GHz	1001	pts	Span 30.0 MHz						
		Measuring	24.04.2018 09:06:54						

Date: 24.APR.2018 09:06:55



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Test mode:	802.11n(HT20)	Test channel:	Highest						
Spectrum									
RefLevel 21.00 dBm Att 30 dB (Att 30 dB 🖷 SWT 10 ms 🖷 VBW 10 kHz Mode Auto FFT								
●1Pk View		1							
		M1[1]	-11.37 dBm 2.4632290 GHz						
10 dBm									
0 dBm									
-10 dBm		M1							
-20 dBm	NAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	na hanna anna	Manga MAN						
-30 dBm									
-40 dBm			<u> </u>						
NZBARRAANAMANA			WWWWWWWWWWW						
-60 dBm									
-70 dBm									
CF 2.462 GHz		1001 pts	Span 30.0 MHz						
		Measuring 🚺	24.04.2018 09:06:18						

Date: 24.APR.2018 09:06:19



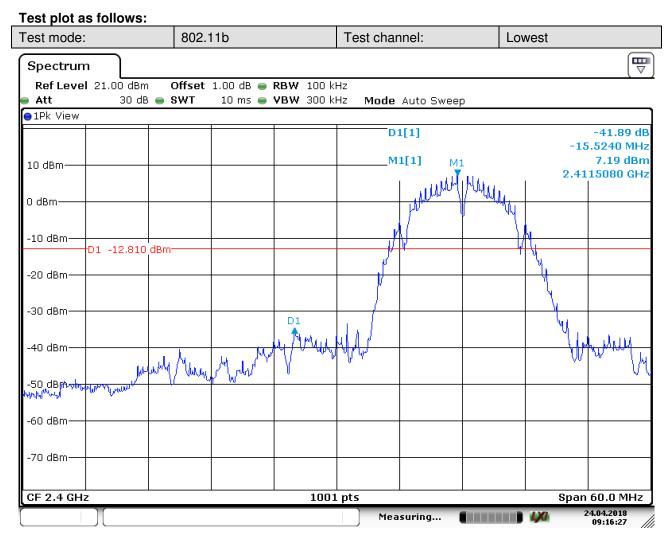
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6.6 Band-edge for RF Conducted Emissions

Test Requirement:	47 CFR Part 15C Section 15.247 (d)						
Test Method:	ANSI C63.10: 2013 Section 11.13						
Test Setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane						
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).						
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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Date: 24.APR.2018 09:16:28



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Test mode:	802.11b	Test char	nnel:	Highest					
Spectrum									
	_	100 kHz							
●1Pk View	II								
		D	1[1]	-51.21 dB 28.0520 MHz					
		м	1[1]	5.78 dBm					
10 dBm			-(-)	2.4609630 GHz					
-10rdBm	/4								
D1 -14.220 dBm	∖ <mark>\{</mark>								
-20 dBm									
Y	4 I								
-30 dBm	<u> </u>								
	Y I								
-40 dBm									
	M phillip	DI							
-50 dBm		An I AL							
30 0.5.1		Man Martin V I	Mulling						
60 dPm		w W	r www.mathurtur	hele manufanter and here as					
-60 dBm									
-70 dBm									
CF 2.4835 GHz	•	1001 pts	· · ·	Span 60.0 MHz					
		Mea	suring						

Date: 24.APR.2018 09:17:34



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Test mode:		802.1	1g		Tes	t char	nnel:		Lowest		
Spectrum											
Ref Level 2 Att	21.00 dBm 30 dB 👄	Offset SWT		RBW 100 ki VBW 300 ki							
• All • 1Pk View	30 UB 👅	501	10 ms 🥃 '	VEW JUUK	12	Moae	Auto Swee	ep			
						D1	l[1]				-33.15 dB
										-13	.4270 MHz
10 dBm						M:	1[1]			9 4 1	2.12 dBm 32470 GHz
						1		M1		2.71	02470 GHZ
0 dBm						العرار	multiplication	growthington	han and the		
						PNIC			""""""""""""""""""""""""""""""""""""""		
-10 dBm											
n	1 -17.880 dBr					1					
-20 dBm	I -17.880 UBI									4	
				_		ļ				1	
-30 dBm				ը Լեստել	Mph					- Heller	mark to a
-30 dBm -40 dBm หรืดเชือสมุมแล้งเชื่			. It was befored	Arthon							amphiludually
-40 dBm		1 Marth	all the contraction of the contr								
1 march rade	faint during the prost	Manut.									
vater well and the second s											
-60 dBm											
-70 dBm											
CF 2.4 GHz				1001	pts	_				-	60.0 MHz
						Mea	suring		u i i i i ja	2	4.04.2018 09:14:58

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Test mode:	802.11g	Test channel:	Highest					
Spectrum								
	Offset 1.00 dB 👄 RBW 100 k		, , , , , , , , , , , , , , , , , , ,					
	SWT 10 ms 🖷 VBW 300 k	Hz Mode Auto Swe	ep					
1Pk View								
		D1[1]	-45.81 dB					
		M1[1]	20.3200 MHz 2.20 dBm					
10 dBm		mili	2.20 GBT					
M1								
O dem when when when when her								
o deminute will private huter	u un un							
-10 dBm								
-20 dBm								
20 02	N I							
-30 dBm	U.L.							
-30 0811	and March March							
	· · · · · · · · · · · · · · · · · · ·							
-40 dBm	UNITE CONTRACTOR	1						
	1.05	the the state of t						
-50 dBm		· · · · · · · · · · · · · · · · · · ·	Well Minister and the t					
		ľ ľ	a morning for the white was a stranger and the and					
-60 dBm			und ultration white and a second second					
-70 dBm								
CF 2.4835 GHz	 1001		Span 60.0 MHz					
	100.	Measuring	24.04.2018 09:13:42					

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Test mode:	802.11n(HT20)	Test channel:	Lowest
Spectrum			
Ref Level 21.00 dBm (Att 30 dB (Offset 1.00 dB		
IPk View	3 WI 10 HIS - YEW 300 KI	Hz Mode Auto Sweep	
		D1[1]	-31.98 dB
			-14.3860 MHz
10 dBm		M1[1]	1.96 dBm 2.4132470 GHz
		M1	
0 dBm		rolling hand will a frank of the strategy with a strategy with	Muntulling
		Marina manufalara	mannation
-10 dBm			
-20 dBm D1 -18.040 dBm			
-30 dBm	D1		
	and the second of the second o	fwi., .	William Maria
-40 dBm	avertruutered water warder and a second and the sec		
1. M. Jeans Mables	Arter de Care a		
water water water and a second and as second and a second			
-60 dBm			
-70 dBm			
CF 2.4 GHz		nts	Span 60.0 MHz
	1001	· .	24.04.2018 09:10:11

Date: 24.APR.2018 09:10:12



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Test mode:	802.11n(HT20)	Test channel:	Highest						
Spectrum									
	Offset 1.00 dB								
IPk View									
JPK VIEW		D1[1]	-44.22 dB						
		DI[I]	20.3200 MHz						
10 dBm		M1[1]	1.72 dBm						
M1			2.4632400 GHz						
o demt	when the								
with the first	"Wallowy by								
-10 dBm									
-20 dBm D1 -18.280 dBm									
	1								
-30 dBm									
	May rely shall be a								
-40 dBm	1000 y y ply Marthane								
-40 dBm	* ur Hu Walke	-/⊥ //••••							
		Mary Mary Market and a							
-50 dBm			and the second						
			~ manuful and						
-60 dBm									
			uttelanter and a lagendariche						
-70 dBm									
CF 2.4835 GHz	100	1 pts	Span 60.0 MHz						
	100	•							
し 一 月		Measuring							

Date: 24.APR.2018 09:11:45



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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: 2013 Section 11.11						
Test Setup:	Spectrum Analyzer E.U.T Non-Conducted Table Ground Reference Plane						
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).						
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 fo	ollows:								
Test mode:		802.1	1b		Test char	nnel:	L	owest	
Spectrum									₽
Ref Level 21	00 dBm	Offset	1.00 dB 😑	RBW 100 kł	Ηz				
🖷 Att	30 dB 🧉	SWT	250 ms 😑	VBW 300 kł	Hz Mode	Auto Sweep	2		
●1Pk View									
					M	2[1]			51.69 dBm
								19.7	75580 GHz
10 dBm					M	1[1]		2.4	4.71 dBm 13390 GHz
T T								1	10050 012
0 dBm									
-10 dBm—									
	-15.290 dB								
-20 dBm	-13,290 ut	////							
-20 dbm									
-30 dBm									
-40 dBm									
-50 dBm							P	12 T	
		المقاملين		الارتبا المرا	فوريقار الكامروني الر	المعالمية والمالية	المحاولة فرام مقف		
HERING BOT	Mandan Parts	r yn	ale ang alla tha tang a	ייראשי קיינקינא ייקראן ג		ndestan n. K. a	and a single second	The second se	
And the second state	a called all all a	N N NA	and along the second	and the off product	A sufficiency of the second	marining	al an an the second	Tobalantanti	
-70 dBm									
, o donn									
Start 30.0 MH	z			3200:	1 pts				25.0 GHz
					Mea	suring (, 17 0	24.04.2018 09:35:01

Date: 24.APR.2018 09:35:01



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Test mode:		802.	11b		Test channel:			liddle	
Spectrum	')								
Ref Level Att	21.00 dBm 30 dB	Offset SWT	1.00 dB 👄 250 ms 👄	RBW 100 kł VBW 300 kł		Auto Sweer)		
●1Pk View			-						
					M	2[1]			-52.04 dBm 803670 GHz
10 dBm MI					M	1[1]		2.4	4.62 dBm 436020 GHz
0 dBm									
-10 dBm									
-20 dBm	D1 -15.380	dBm							
-30 dBm									
-40 dBm									
-50 dBm		. In rat Ideala				ملاحدا با		м <u>а</u> И.,	
u-6Ω ^{rti} lβnt∳	And and a state of the second s		an a	ng Chang Sang Sang Sang Ng Chang Sang Sang Sang Sang Sang Sang Sang S		ارو ^{ار در} بر المراجع الم المحمد الم	unistenen einen		la president en propulsion Na provincia de la constancia de la constan
-70 dBm	·								
Start 30.0	MHz			3200	1 pts			Sto	p 25.0 GHz
][]				Mea	suring (1 ,70	24.04.2018 09:30:35

Date: 24.APR.2018 09:30:35



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Test mode:		802.1	l1b		Test char	nnel:	Hi	ghest	
Spectrum									
Ref Level			1.00 dB 👄 1						
Att 1Pk View	30 dB	SWT	250 ms 😑 '	VBW 300 kł	Hz Mode	Auto Sweep)		
JPK VIEW					M	2[1]			-52.60 dBm
					171.	2[1]			986260 GHz
10 dBm					M	1[1]			3.42 dBm
MÞ						1	I	2.4	462550 GHz
-10 dBm									
		10							
-20 dBm	01 -16.580	aBm							
-30 dBm									
-40 dBm									
-50 dBm-								<u>ve</u>	
		المليس مش		فالمتا المراجع	أمراط لتعريق والر		والمراجع والقرور	Marine Contraction	
HERE HERE		nale" 193 Lingung ang sang sang sang sang sang sang san	hall a share a			ineestel needla needla	an dia mangana kanalan di	and the second s	
and the second second	a the state of the	and , Alt	eestaa pitekataa	alan oo ahaa ahaa ahaa ahaa ahaa ahaa ahaa	ydhaantoord footbaadd	مرسم والم	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Shadoo a ata ata ata	ويلومنا ممليه ليبر يلغ
-70 dBm									ļ
Start 30.0 M	/IHz			3200	1 nts			Stor	p 25.0 GHz
	Л					saring			09:29:32 ///

Date: 24.APR.2018 09:29:33



Report No.: SZEM180600552101 Page: 52 of 97

Test mode:		802.1	l1g		Test cha	nnel:	Lo	owest		
Spectrum	')									
Ref Level Att	21.00 dBm 30 dB		_	RBW 100 ki VBW 300 ki		4				
All 1Pk View	30 UB	- 9WI	230 IIIS 👅	YDW SUUKI	12 Moue	Auto Swee	μ			
10 dBm						12[1]		-52.44 dBm 20.002640 GHz 0.13 dBm		
						1	1	2.4	412610 GHz	
0 dBm										
-10 dBm										
- 20 dBm -	D1 -19.970	dBm								
-30 dBm										
-40 dBm										
-50 dBm		uther the state of		e. kilis satsida matikali	r den sternetenskere	And a start of a start			nan Jahr, ada yan da adam da	
	in a second s	nde ^{fr} einseren.	an an an Anna an Anna an Anna An an Anna an Anna an Anna an An		n <mark>den sekselen sekselen</mark>	inelijine Aktige	parity proposal in	Maria and Anna Anna Anna Anna Anna Anna Anna	dhachadhannan an Allap	
-70 dBm										
Start 30.0	MHz			3200	1 pts				p 25.0 GHz	
	П				Mea	asuring		1,70	24.04.2018	

Date: 24.APR.2018 09:36:11



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Test mode:		802.1	11g		Test char	nnel:	Mi	ddle		
Spectrum	<u> </u>									
Ref Level Att	21.00 dBm 30 dB			RBW 100 ki VBW 300 ki						
Att 1Pk View	30 UB	- awi	250 ms 👅	YDYY SUU KI	72 Moue	Auto Sweep	<u> </u>			
					M	2[1]		-	-52.06 dBm	
					19.953490 GH					
10 dBm					M	1[1]		2.4	-0.81 dBm +38360 GHz	
MI										
0 dBm 🕂 📍										
10 -10										
-10 dBm										
-20 dBm										
	D1 -20.810	dBm								
-30 dBm										
-40 dBm										
-50 dBm							N	12		
	الأسطى	L. Confitting Confitting	and the second		المحاطرة والقرور عاريا	holisticstophy	أريعوا لجائع والمرجع والوج	The section is a section of the	and the set of the set of the last	
M60 ^{HI} Brillin A	and a second	a standard and	and a substance	a state a developed	and an addition of	Manager and the state of the st	والواطانين والمانس	the second state	a fan de la castada , bilina di	
a Manahata ang katalang sa		н. л .								
-70 dBm									<u> </u>	
Start 30.0 I	Start 30.0 MHz 32001 pts Stop 25.0 GHz									
					Mea	suring		L)(I	24.04.2018 09:36:56	

Date: 24.APR.2018 09:36:57



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Test mode:		802.1	l1g		Test channel:			Highest		
Spectrum										
Ref Level	21.00 dBm 30 dB			RBW 100 kł VBW 300 kł		Auto Sweep				
●1Pk View		• • • • •				<u> </u>				
		19.939440							-51.82 dBm 939440 GHz -1.48 dBm	
10 dBm						-[-]		2.4	462550 GHz	
0 dBm M1										
-10 dBm										
<u>-20 dBm</u>)1 -21.480	dBm 								
-30 dBm										
-40 dBm——										
-50 dBm	64.0. 1			n, all la alt des al	hand a strategic	h hadded a line and a state of the second	a line has detaid			
169/dBithyil <mark>141</mark> analishaalaa	al a sector a	and the second s	na n	and a participation of	A Contemport	^{ถึงถึง} การที่หล ้ างปรุงชุ	սեննչողսեսեն	And a stranger of the state of	fr Smelleurifieksephile th ier	
-70 dBm										
Start 30.0 M	1Hz			3200	1 pts		1	Sto	p 25.0 GHz	
][]				Mea	suring		1 <i>13</i> 0	24.04.2018 09:37:50	

Date: 24.APR.2018 09:37:51



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Test mode:	802.11n(HT20)		Test char	nnel:	Lo	owest			
Spectrum									
Ref Level 21.00 dBm	Offset 1.00 dB 👄								
● Att 30 dB ● ● 1Pk View	SWT 250 ms 🖷	VBW 300 kł	Hz Mode	Auto Sweep)				
			M	2[1]		-	52.47 dBm		
							42560 GHz		
10 dBm			M1[1]			2.4	-0.27 dBm		
ML						2.1	17250 0112		
0 dBm									
-10 dBm									
- 20 dBm D1 -20,270 dBn									
- 20 dBm - + D1 -20.270 dBn	n								
-30 dBm						_			
-40 dBm									
-50 dBm						MP			
اللابدية ومنافر وراري الألا	وجرر وتأسيل والمراجع والمحاصر والمحاطين فال	an linear and and an	أول المترجعين والمراجل	ومرود المراجع والمراجع	وتواليا أريب وتاس	and the second large	بالطابين واريق ويتعار		
-69 Brow -	يرويان ^{اري} درياري ويروي الريا	a defendence and a second	and the second second	and the second	and and a second second	A La A Martin Martin	a dia kaominina dia dia m		
dealed for a second second for the									
-70 dBm									
Start 30.0 MHz	Start 30.0 MHz 32001 pts Stop 25.0 GHz								
			Mea	suring (24.04.2018 09:40:33		

Date: 24.APR.2018 09:40:34



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Test mode:		802.1	l1n(HT20)		Test char	nnel:	Ν	liddle	
Spectrum									
Ref Level 3 Att			1.00 dB 👄						
Att 1Pk View	30 QB	SWT	250 ms 👅	VBW 300 kł	HZ MODE	Auto Sweep	2		
						2[1]			-52.04 dBm 950370 GHz
10 dBm					M	1[1]		2.	-1.02 dBm 436800 GHz
0 dBm									
-10 dBm									
20. dBmD	1 -21.020	dBm 							
-30 dBm									
-40 dBm									
-50 dBm	ماريوا والاليان		ale on the other line of	المروادر وأوروالقاوي	and a strand and the f	alkhilden terre it.	, and the state of	MP Multul du	والمراجع والمراجع والمراجع
in ^{li} 5S th lβrn−l −ha	and the second	and a second	uniter ficter blockly	السادي والتدوية العرية	hallon alternational	<mark>lamata pitu Awa</mark>	langarapan kanang	and the state of t	and the solution of all all
-70 dBm	'								
Start 30.0 M	1Hz			3200	1 pts			Sto	p 25.0 GHz
)[]					suring		II 4 7 0	24.04.2018 09:39:46

Date: 24.APR.2018 09:39:46



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Test mode:	802.11n(HT20)	Test channel:	Highest
Spectrum			
Ref Level 21.00 dBm (Att 30 dB ()	Offset 1.00 dB		n
1Pk View	541 230 m5 - 464 30	IN NIZ MOUE AUTO SWEE	ب _ه .
10 dBm		M2[1]	-52.65 dBm 19.943340 GHz -1.94 dBm
			2.460990 GHz
-10 dBm			
-20 dBm			
D1 -21.940 dBm-			
-30 dBm			
-40 dBm			
-50 dBm			мр
160 MB (the transformed all the second s	Note the second state of t	a na si n Na sa si na si n	a dan daga alian kata da sa
-70 dBm	ويقارى والملقانيان برياهي ولايتها المراد		ւ քելուտ կեսերին անհամաներին։
Start 30.0 MHz			
	32	2001 pts Measuring	Stop 25.0 GHz

Date: 24.APR.2018 09:38:45

Remark:

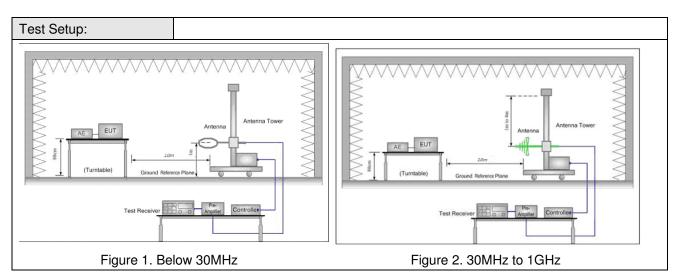
Scan from 9kHz to 25GHz, the disturbance below 30MHz was very low, and the above harmonics were the highest point could be found when testing, The amplitude of spurious emissions from the radiator which are attenuated more than 20dB below the limit need not be reported



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6.8 Radiated Spurious Emissions

Test Requirement:	47 CFR Part 15C Section	on 15.209 and 15.2	205		
Test Method:	ANSI C63.10 :2013 Sec	ction 11.12			
Test Site:	Measurement Distance	: 3m or 10m (Semi	-Anechoic Cham	ber)	
	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
Dessiver Setur	0.110MHz-0.490MHz	Peak	10kHz	30kHz	Peak
Receiver Setup:	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
	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
Limit:	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	l, the limit on pea	k radio freque	ncy
	emissions is 20dB abov	ve the maximum pe	ermitted average	emission limit	
	applicable to the equipr level radiated by the de		is peak limit appl	ies to the total	peak emission





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	Image: second control of the second
Test Procedure:	a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter semi-anechoic camber. The table
	was rotated 360 degrees to determine the position of the highest radiation.
	b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 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
	c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
	d. 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.
	e. 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.
	f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
	g. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.
	h. Test the EUT in the lowest channel ,the middle channel ,the Highest channel
	i. 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.
	j. Repeat above procedures until all frequencies measured was complete.
Exploratory Test Mode:	Transmitting with all kind of modulations, data rates.
	Charge + Transmitting mode.
Final Test Mode:	Pretest the EUT at Charge + Transmitting 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



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	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

The test was performed at a 10m test site. According to below formulate and the test data at 10m test distance,

 $L_3 / L_{10} = D_{10} / D_3$

Note:

L3: Level @ 3m distance. Unit: uV/m;

L10: Level @ 10m distance. Unit: uV/m;

D₃: 3m distance. Unit: m

D₁₀: 10m distance. Unit: m

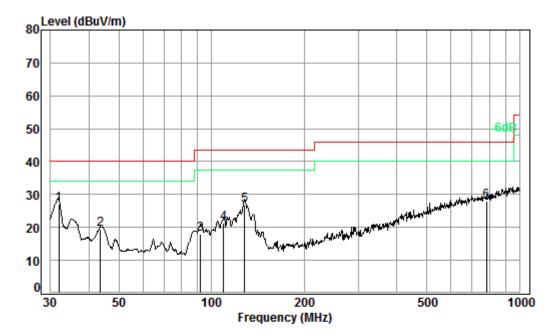
The level at 3m test distance is below:

Frequency (MHz)	Level @ 10m (dBuV/m)	Level @ 10m (uV/m)	Level @ 3m (uV/m)	Level @ 3m (dBuV/m)	Limit @ 3m (dBuV/m)	Over Limit (dB)	Ant. Polarization
31.95	27.21	22.94	76.45	37.67	40	-2.33	V
43.51	19.35	9.28	30.93	29.81	40	-10.19	V
92.14	17.93	7.88	26.27	28.39	43.5	-15.11	V
109.41	21.15	11.42	38.05	31.61	46	-14.39	V
128.11	26.66	21.53	71.76	37.12	46	-8.88	V
782.35	28.12	25.47	84.89	38.58	46	-7.42	V
30.96	19.17	9.09	30.30	29.63	40	-10.37	Н
128.11	16.61	6.77	22.56	27.07	40	-12.93	Н
294.11	24.46	16.71	55.70	34.92	43.5	-8.58	Н
331.35	24.14	16.11	53.69	34.60	46	-11.40	Н
444.85	27.18	22.86	76.19	37.64	46	-8.36	Н
771.45	27.3	23.17	77.25	37.76	46	-8.24	Н



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



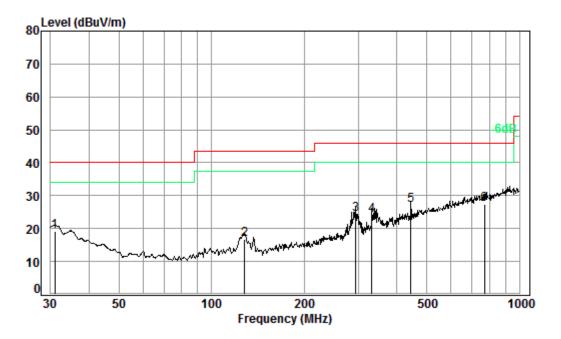
Condition: 3m VERTICAL Job No. : 02536RG Test mode: a

	Frea			Preamp Factor				Over
	неч	LUSS	ractor	ractor	Level	Level	LTHE	LIMIC
_	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1 pp	31.95	0.60	21.40	27.66	32.87	27.21	40.00	-12.79
2	43.51	0.68	16.26	27.62	30.03	19.35	40.00	-20.65
3	92.14	1.12	13.30	27.51	31.02	17.93	43.50	-25.57
4	109.41	1.23	13.56	27.51	33.87	21.15	43.50	-22.35
5	128.11	1.27	13.35	27.52	39.56	26.66	43.50	-16.84
6	782.35	3.15	28.40	27.44	24.01	28.12	46.00	-17.88



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Test mode: Charge + Transmitting Horizontal	Test mode:	Charge + Transmitting	Horizontal
---------------------------------------------	------------	-----------------------	------------



Condition:	3m HORIZONTAL
Job No. :	02536RG
Test mode:	а

	-			Preamp				0ver
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB
1	30.96	0.60	21.95	27.67	24.29	19.17	40.00	-20.83
2	128.11	1.27	13.35	27.52	29.51	16.61	43.50	-26.89
3	294.11	1.87	19.37	27.54	30.76	24.46	46.00	-21.54
4	331.35	2.00	20.57	27.61	29.18	24.14	46.00	-21.86
5	444.85	2.39	23.45	27.80	29.14	27.18	46.00	-18.82
6 pp	771.45	3.12	28.34	27.46	23.30	27.30	46.00	-18.70

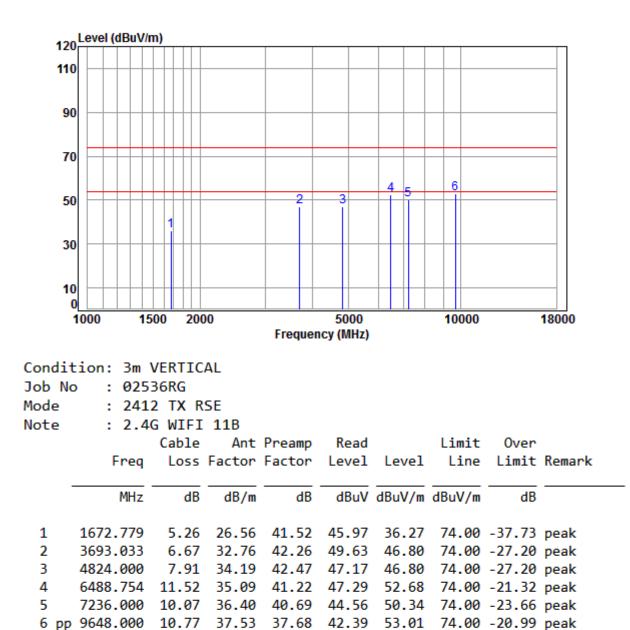


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Peak

Vertical

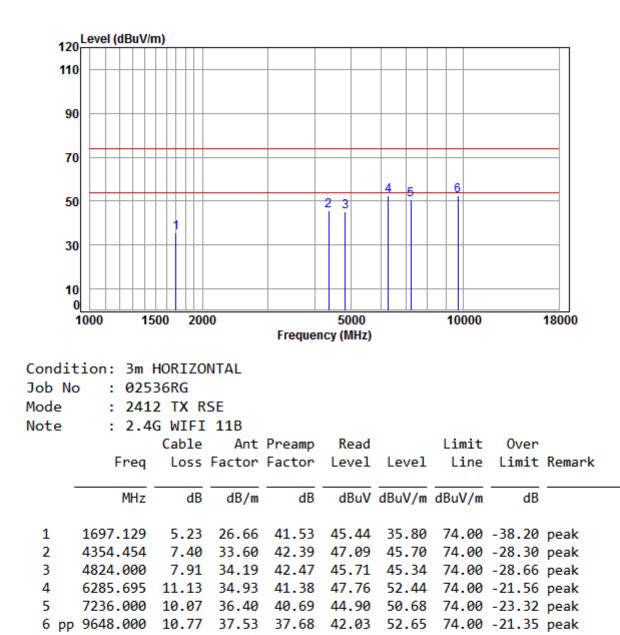
6.8.2 Transmitter emission above 1GHz					
Test mode:	802.11b	Test channel:	Lowest	Remark:	





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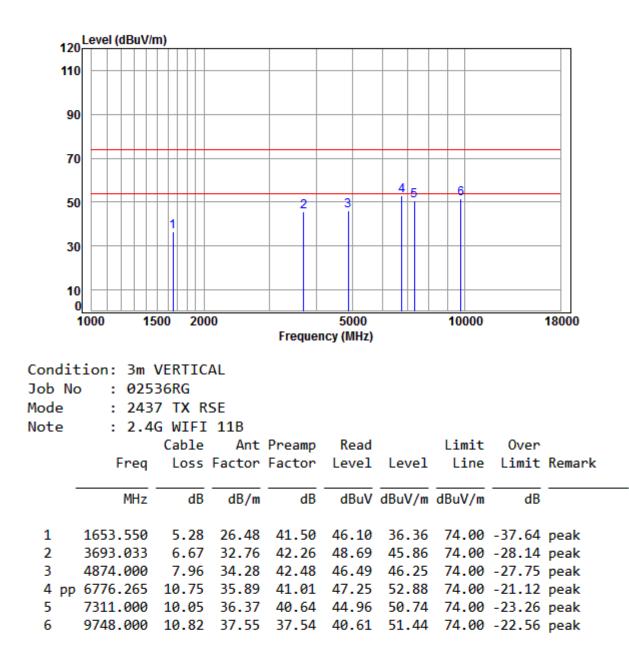
Test mode: 802.11b	Test channel:	Lowest	Remark:	Peak	Horizontal
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Test mode: 802.11b	Test channel:	Middle	Remark:	Peak	Vertical
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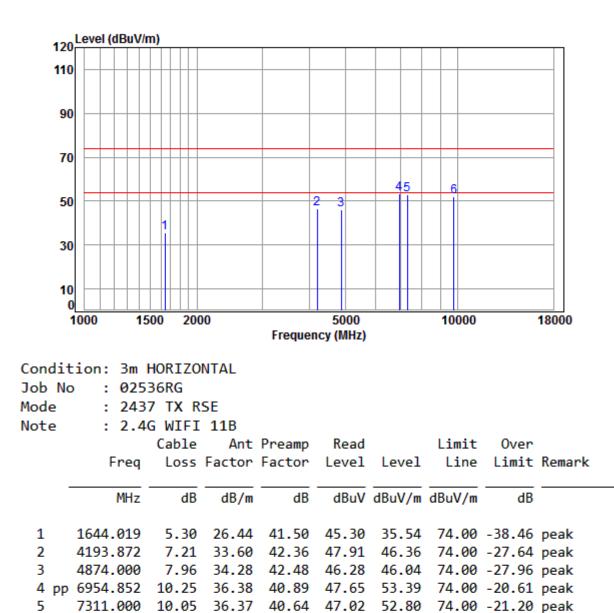
6

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

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Test mode: 802.11b	Test channel:	Middle	Remark:	Peak	Horizontal
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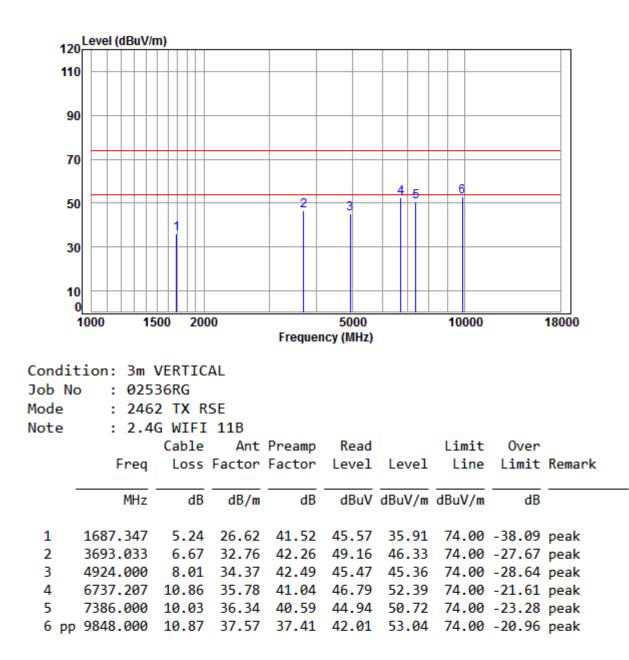
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10.82 37.55 37.54 41.23 52.06 74.00 -21.94 peak



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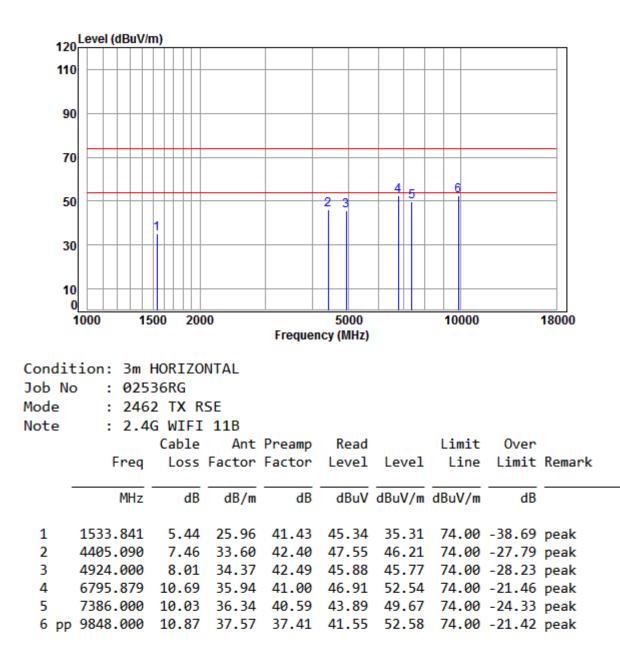
Test mode: 802.11b	Test channel:	Highest	Remark:	Peak	Vertical
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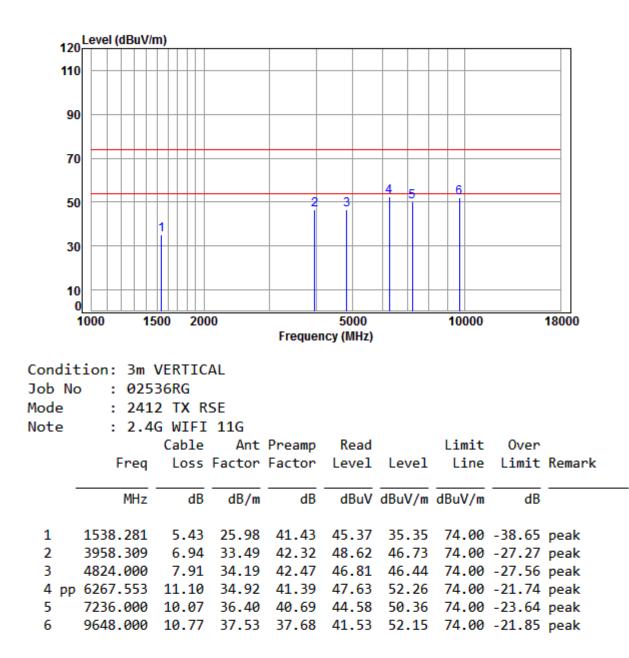
Test mode: 802.11b	Test channel:	Highest	Remark:	Peak	Horizontal
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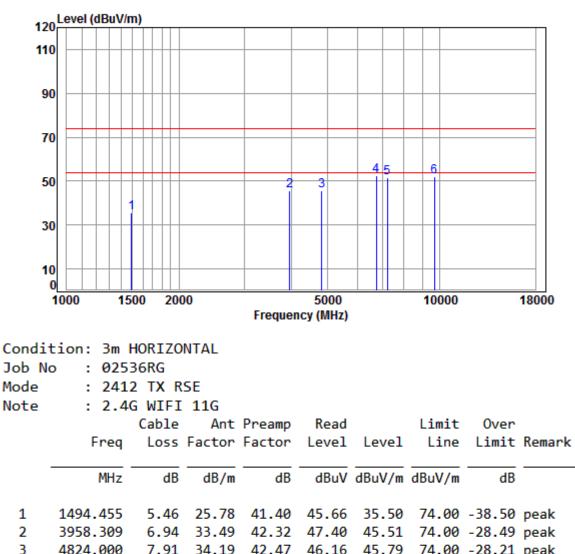
Test mode:	802.11g	Test channel:	Lowest	Remark:	Peak	Vertical
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Test mode: 802.11g	Test channel:	Lowest	Remark:	Peak	Horizontal
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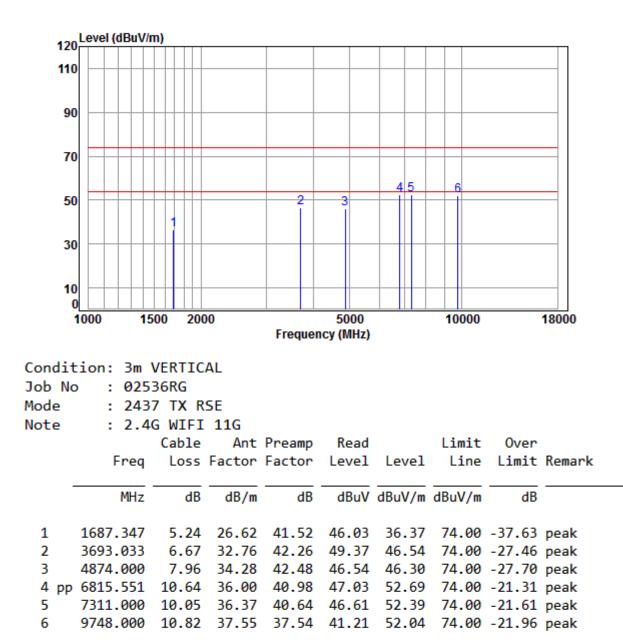


mer peak
.50 peak
.60 peak
.99 peak



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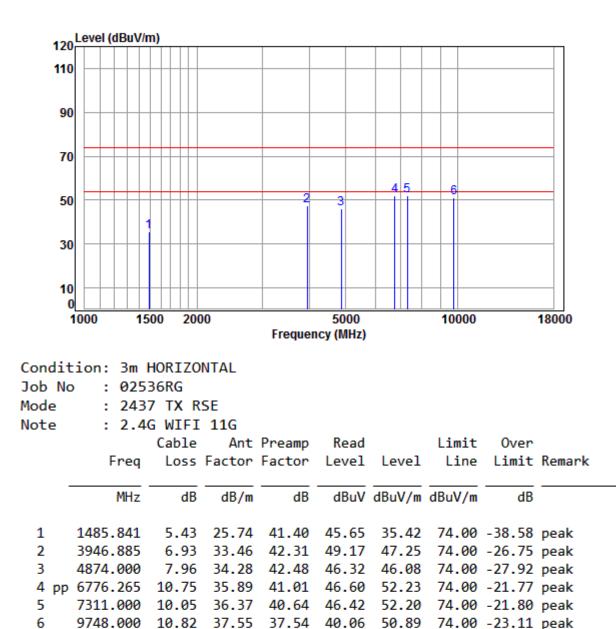
Test mode: 802.11g	Test channel:	Middle	Remark:	Peak	Vertical
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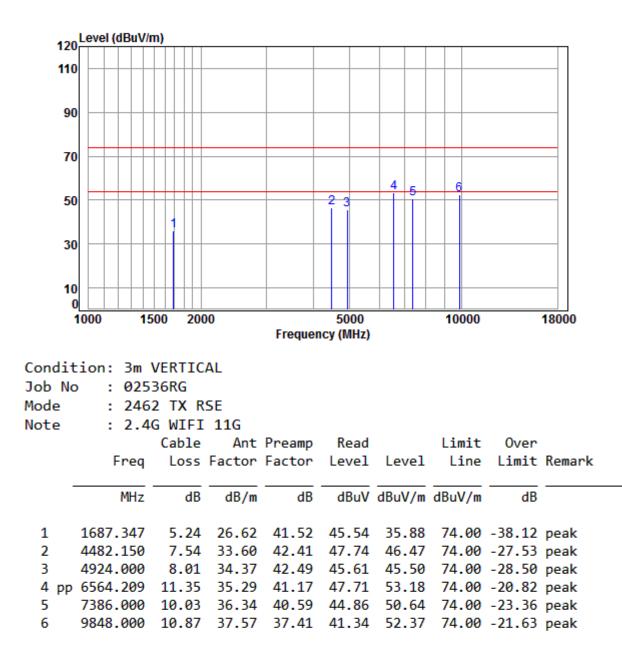
Test mode: 802.11g	Test channel:	Middle	Remark:	Peak	Horizontal
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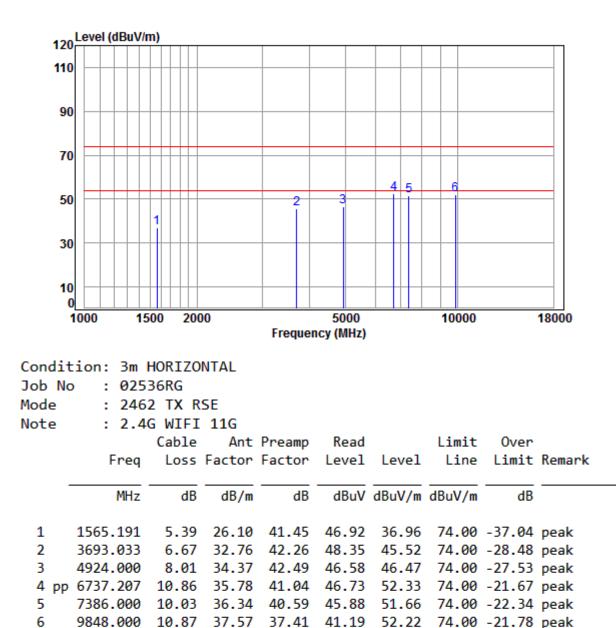
Test mode: 802.11g	Test channel:	Highest	Remark:	Peak	Vertical
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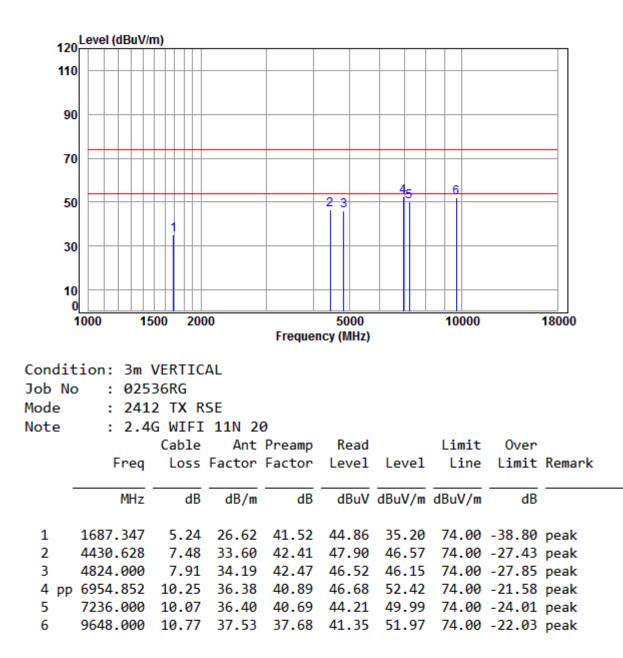
Test mode: 802.11g	Test channel:	Highest	Remark:	Peak	Horizontal
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Test mode:	802.11n(HT20)	Test channel:	Lowest	Remark:	Peak	Vertical
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4 pp 6776.265

5

6

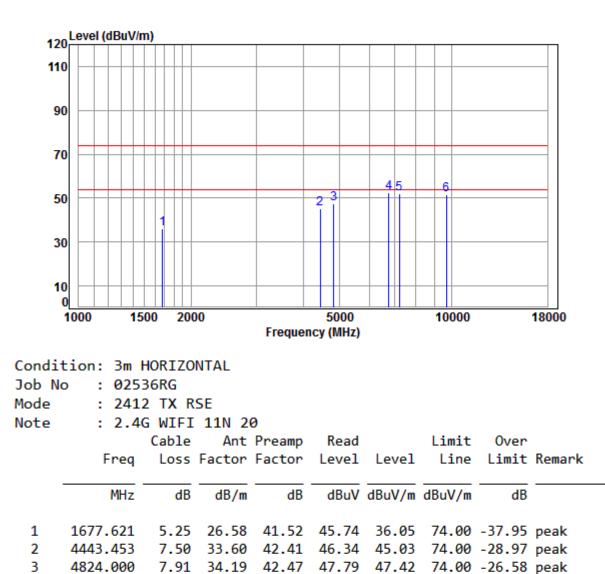
7236.000

9648.000

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Test mode:	802.11n(HT20)	Test channel:	Lowest	Remark:	Peak	Horizontal
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10.75 35.89 41.01 46.95 52.58 74.00 -21.42 peak

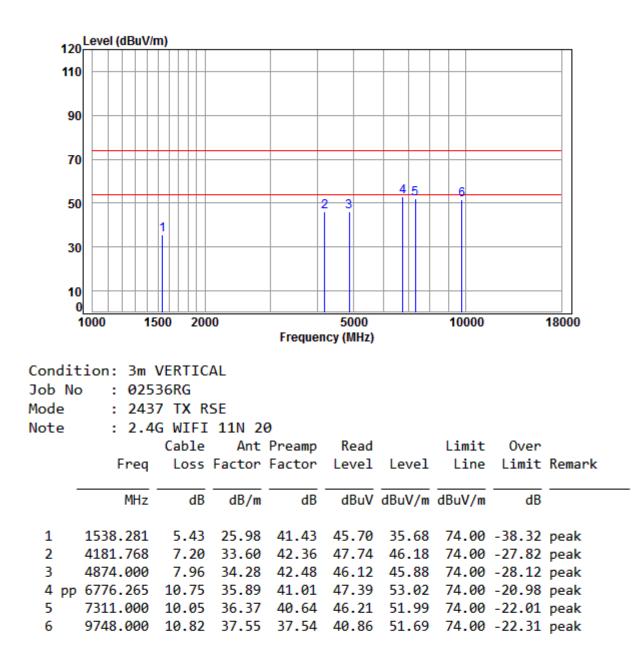
10.07 36.40 40.69 46.34 52.12 74.00 -21.88 peak

10.77 37.53 37.68 41.04 51.66 74.00 -22.34 peak



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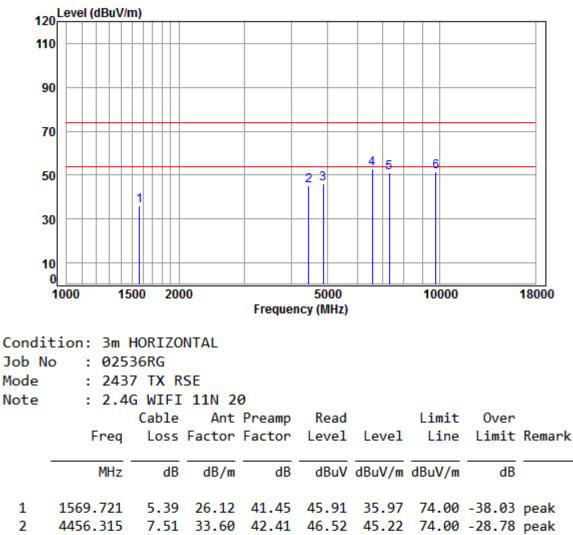
Test mode: 802.11n(HT20)	Test channel:	Middle	Remark:	Peak	Vertical
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Test mode: 8	302.11n(HT20)	Test channel:	Middle	Remark:	Peak	Horizontal
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 3
 4874.000
 7.96
 34.28
 42.48
 46.26
 46.02
 74.00
 -27.98
 peak

 4 pp
 6583.209
 11.30
 35.34
 41.15
 47.55
 53.04
 74.00
 -20.96
 peak

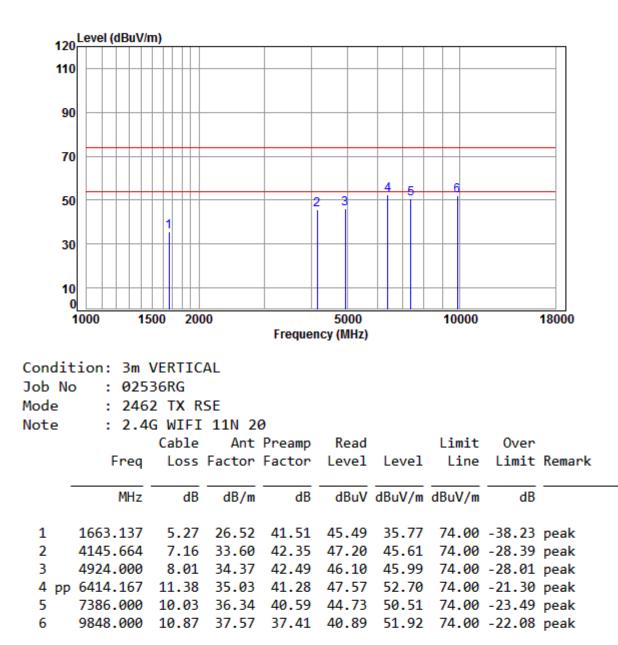
 5
 7311.000
 10.05
 36.37
 40.64
 45.51
 51.29
 74.00
 -22.71
 peak

 6
 9748.000
 10.82
 37.55
 37.54
 40.82
 51.65
 74.00
 -22.35
 peak



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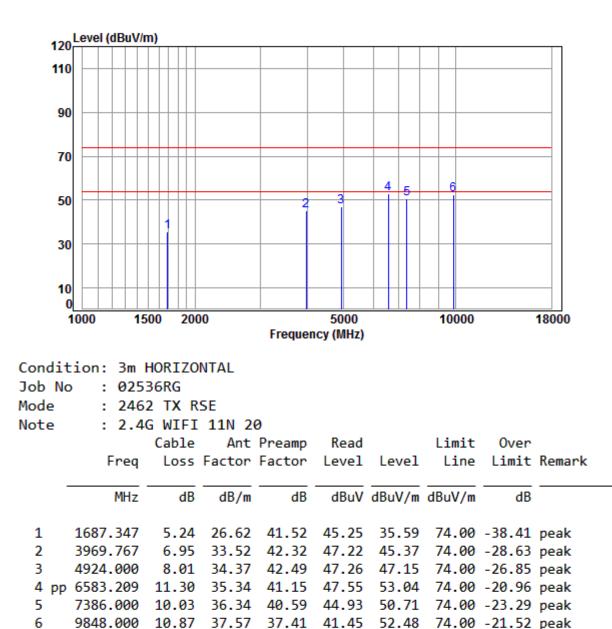
Test mode:	802.11n(HT20)	Test channel:	Highest	Remark:	Peak	Vertical
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Test mode: 80	302.11n(HT20)	Test channel:	Highest	Remark:	Peak	Horizontal
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Remark:

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.
- 3) As shown in this section, for frequencies above 1GHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation. So, only the peak measurements were shown in the report.

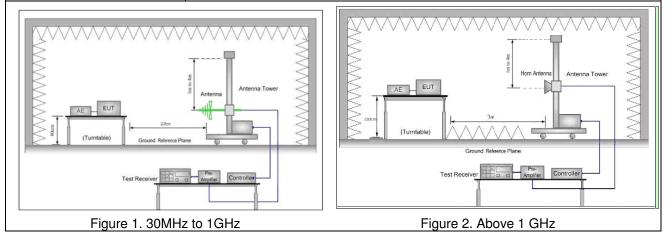


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6.9 Restricted bands around fundamental frequency

Test Requirement:	47 CFR Part 15C Section 1	47 CFR Part 15C Section 15.209 and 15.205							
Test Method:	ANSI C63.10: 2013 Section	ANSI C63.10: 2013 Section 11.12							
Test Site:	Measurement Distance: 3n	Measurement Distance: 3m or 10m (Semi-Anechoic Chamber)							
	Frequency	Limit (dBuV/m @3m)	Remark						
	30MHz-88MHz	40.0	Quasi-peak Value						
	88MHz-216MHz	43.5	Quasi-peak Value						
Limit:	216MHz-960MHz	46.0	Quasi-peak Value Quasi-peak Value						
	960MHz-1GHz	54.0							
	Above 1GHz	54.0	Average Value						
		74.0	Peak Value						

Test Setup:





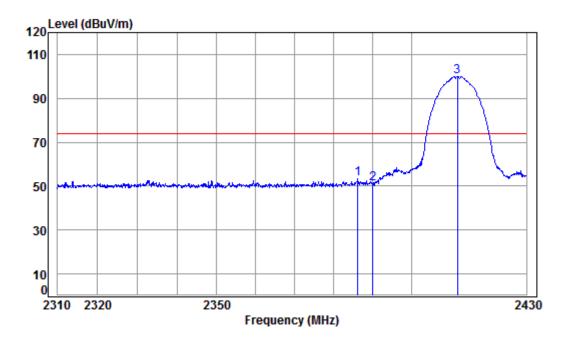
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a. For below 1GHz, the EUT was placed on the top of a rotating table 0.8 meters above the ground at a 10 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation. b. For above 1GHz, the EUT was placed on the top of a rotating table 1.5 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. c. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. d. 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. e. 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 curred from 0 degrees to 360 degrees to find the maximum reading. f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. g. 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 channel h. Test the EUT in the lowest channel, the Highest channel i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting widh all kind of modulations, data rates. Charge + Transmitting mode. Final Test Mode: Pretest the EUT at Charge +Transmitting mode. <		
Test Procedure: The antenna height is varied from one meter to four meters above the ground to determine the position of the highest radiation. The EUT was set 3 or 10 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower. 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. 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 above third the maximum reading. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. 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 The rest the EUT in the lowest channel , the Highest channel 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. Final Test Mode: Final Test Mede: Refer to section 5.10 for details		meters above the ground at a 10 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest
Test Procedure: antenna, which was mounted on the top of a variable-height antenna tower. d. 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. e. 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 notatable table was turned from 0 degrees to 360 degrees to find the maximum reading. f. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode. g. 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 h. Test the EUT in the lowest channel , the Highest channel i. The radiation measurements are performed in X, Y, Z axis positioning for Transmitting mode, And found the X axis positioning whore case. j. Repeat above procedures until all frequencies measured was complete. Final Test Mode: Pretest the EUT at Charge +Transmitting mode. Final Test Mode: Pretest the tist he worst case of 802.11b; 6Mbps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11b; 6Nubps of rate is the worst case of 802.11b; 6Mbps of rate is the worst case of 802.11b; 6Nups of rate is the worst case of 802.11b; <td></td> <td>meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest</td>		meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest
Test Procedure:ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.Test Procedure:e. 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.f.The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.g.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 channelh.Test the EUT in the lowest channel i, the Highest channelh.Test the EUT in the lowest channel in the rastiting mode,And found the X axis positioning worse case.j.Repeat above procedures until all frequencies measured was complete.Exploratory Test Mode:Pretest the EUT at Charge +Transmitting mode. Through Pre-scan, find the 1Mbps of rate is the worst case of 802.110; 6Mbps of rate is the worst case of 802.111g; 6.5Mbps of rate is the worst case of 802.111(HT20); 13.5Mbps of rate is the worst case of 802.111(HT40). Only the worst case is recorded in the report.Instruments Used:Refer to section 5.10 for details		antenna, which was mounted on the top of a variable-height antenna
Additionand 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.f.The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.g.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 channelh.Test the EUT in the lowest channel , the Highest channeli.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.j.Repeat above procedures until all frequencies measured was complete.Exploratory Test Mode:Pretest the EUT at Charge +Transmitting mode.Final Test Mode:Pretest the EUT at Charge +Transmitting mode.Final Test Mode:Refer to section 5.10 for details		ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the
Specified Bandwidth with Maximum Hold Mode.g. 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 channelh. Test the EUT in the lowest channel , the Highest channeli. 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.j. Repeat above procedures until all frequencies measured was complete.Exploratory Test Mode:Transmitting with all kind of modulations, data rates. Charge + Transmitting mode.Final Test Mode:Pretest the EUT at Charge +Transmitting mode.Final Test Mode:Pretest the EUT at Charge + Transmitting mode.Instruments Used:Refer to section 5.10 for details	Test Procedure:	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
Final Test Mode:Frequencyfrequency 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 h. Test the EUT in the lowest channel , the Highest channel 		
i.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.j.Repeat above procedures until all frequencies measured was complete.Exploratory Test Mode:Transmitting with all kind of modulations, data rates. Charge + Transmitting mode.Final Test Mode:Pretest the EUT at Charge +Transmitting mode.Final Test Mode:Only 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		frequency to show compliance. Also measure any emissions in the restricted bands. Save the spectrum analyzer plot. Repeat for each
for Transmitting mode,And found the X axis positioning which it is worse case.j. Repeat above procedures until all frequencies measured was complete.Exploratory Test Mode:Transmitting with all kind of modulations, data rates. Charge + Transmitting mode.Final Test Mode:Pretest the EUT at Charge +Transmitting mode.Final Test Mode:Offerson (1000)Final Test Mode:Refer to section 5.10 for details		h. Test the EUT in the lowest channel , the Highest channel
Exploratory Test Mode:Transmitting with all kind of modulations, data rates. Charge + Transmitting mode.Final Test Mode:Pretest the EUT at Charge +Transmitting 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		for Transmitting mode, And found the X axis positioning which it is
Exploratory Test Mode: Charge + Transmitting mode. Pretest the EUT at Charge +Transmitting mode. Pretest the EUT at Charge +Transmitting 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). Instruments Used: Refer to section 5.10 for details		
Final Test Mode: Charge + Transmitting mode. Final Test Mode: Pretest the EUT at Charge +Transmitting 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). Instruments Used: 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). Only the worst case is recorded in the report. Instruments Used: Refer to section 5.10 for details		Charge + Transmitting mode.
Final Test Mode: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		Pretest the EUT at Charge +Transmitting mode.
Instruments Used: 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		Through Pre-scan, find the 1Mbps of rate is the worst case of 802.11b;
Instruments Used: Refer to section 5.10 for details	Final Test Mode:	case of 802.11n(HT20); 13.5Mbps of rate is the worst case of
		Only the worst case is recorded in the report.
Test Results: Pass	Instruments Used:	Refer to section 5.10 for details
	Test Results:	Pass



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Test plot as follows	s:					
Worse case mode:	802.11b	Test channel:	Lowest	Remark:	Peak	Vertical

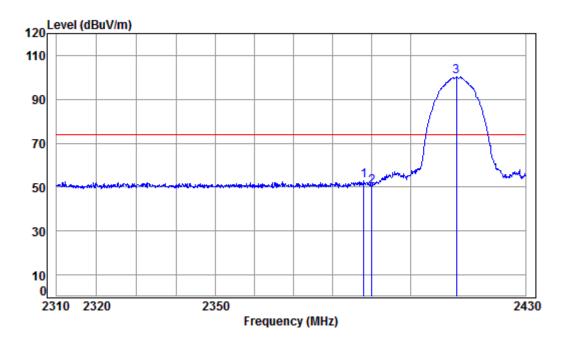


Condit	Condition: 3m VERTICAL										
Job No	Job No : 02536RG										
Mode	: 2412	2 Band	edge								
Note	: 2.40	G WiFi	11B								
		Cable	Ant	Preamp	Read		Limit	0ver			
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark		
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB			
1	2386.098	5.47	29.07	41.87	60.86	53.53	74.00	-20.47	Peak		
2	2390.000	5.47	29.08	41.87	58.31	50.99	74.00	-23.01	Peak		
3 рр	2412.000	5.50	29.14	41.88	107.28	100.04	74.00	26.04	Peak		



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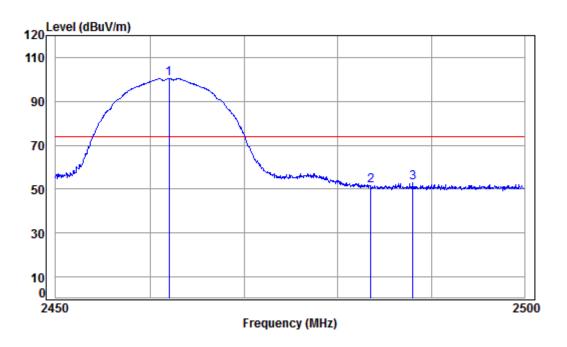
Worse case mode: 802.11b	Test channel:	Lowest	Remark:	Peak	Horizontal
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Condit	Condition: 3m HORIZONTAL										
Job No	Job No : 02536RG										
Mode	: 2412	2 Band	edge								
Note	: 2.40	G WiFi	11B								
		Cable	Ant	Preamp	Read		Limit	0ver			
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark		
										_	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		-	
										-	
1	MHz						dBuV/m		peak	-	
1 2		5.47	29.07	41.87	60.07	52 . 74		-21.26	•	-	
2	2387.912	5.47 5.47	29.07 29.08	41.87 41.87	60.07 57.65	52.74 50.33	74.00 74.00	-21.26 -23.67	peak	-	



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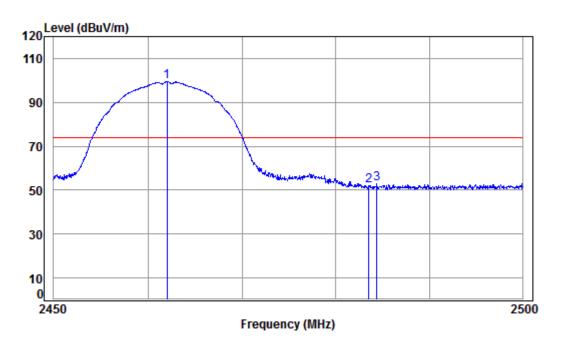


Condit	Condition: 3m VERTICAL										
Job No	o : 025	36RG									
Mode	: 246	2 Band	edge								
Note	: 2.40	G WiFi	11B								
		Cable	Ant	Preamp	Read		Limit	0ver			
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark		
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB			
1 pp	2462.000	5.57	29.29	41.90	107.56	100.52	74.00	26.52	Peak		
2	2483.500	5.60	29.35	41.91	58.57	51.61	74.00	-22.39	Peak		
3	2488.008	5.60	29.37	41.91	59.69	52.75	74.00	-21.25	Peak		



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Worse case mode:	802.11b	Test channel:	Highest	Remark:	Peak	Horizontal
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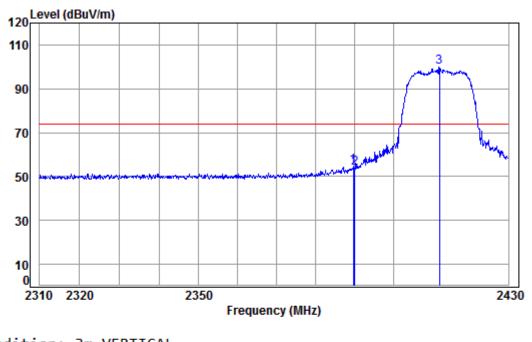


Condi	Condition: 3m HORIZONTAL										
Job No	Job No : 02536RG										
Mode	: 246	2 Band	edge								
Note	: 2.40	G WiFi	11B								
		Cable	Ant	Preamp	Read		Limit	0ver			
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark		
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB			
1 pp	2462.000	5.57	29.29	41.90	106.44	99.40	74.00	25.40	peak		
-		E 60	20.25	/1 01	59 15	52 19	74.00	-21 81	neak		
2	2483.500	5.60	29.35	41.91	55.15	52.15	/4.00	-21.01	peak		
2 3	2483.500 2484.342						74.00		•		



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Worse case mode:802.11gTest channel:	Lowest	Remark:	Peak	Vertical
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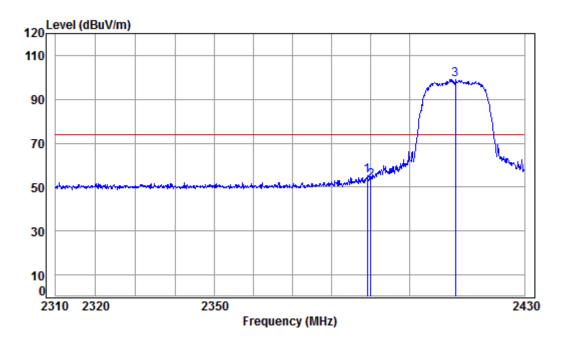


Condit	Condition: 3m VERTICAL										
Job No	o : 0253	36RG									
Mode	: 2412	2 Band	edge								
Note	: 2.40	G WiFi	11G								
		Cable	Ant	Preamp	Read		Limit	0ver			
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark		
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB			
4	2389.605	5.47	29 08	41.87	62.09	54.77	74.00	-19.23	Peak		
1	2505.005	2.4/	20.00								
2	2390.000	5.47			61.30				Peak		
2		5.47	29.08	41.87	61.30	53.98	74.00	-20.02			



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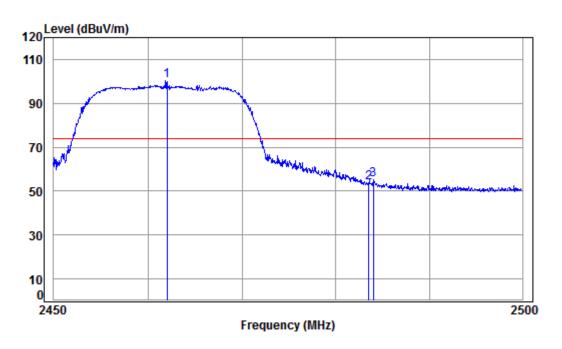
Worse case mode:802.11gTest channel:	Lowest	Remark:	Peak	Horizontal
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Condition: 3m HORIZONTAL										
Job No : 02536RG										
Mode :	2412 B	and	edge							
Note :	2.4G W	iFi	11G							
	Ca	ble	Ant	Preamp	Read		Limit	0ver		
F	req L	oss F	Factor	Factor	Level	Level	Line	Limit	Remark	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1 2389.	121 5	.47	29.07	41.87	62.57	55.24	74.00	-18.76	peak	
2 2390.	000 5	.47	29.08	41.87	60.36	53.04	74.00	-20.96	peak	
3 pp 2412.	000 5	.50	29.14	41.88	106.21	98.97	74.00	24.97	peak	
F 1 2389. 2 2390.	Ca req L MHz 121 5 000 5	ble oss F dB .47 .47	Ant Factor dB/m 29.07 29.08	Factor dB 41.87 41.87	Level dBuV 62.57 60.36	Level dBuV/m 55.24 53.04	Line dBuV/m 74.00 74.00	Limit dB -18.76 -20.96	peak peak	



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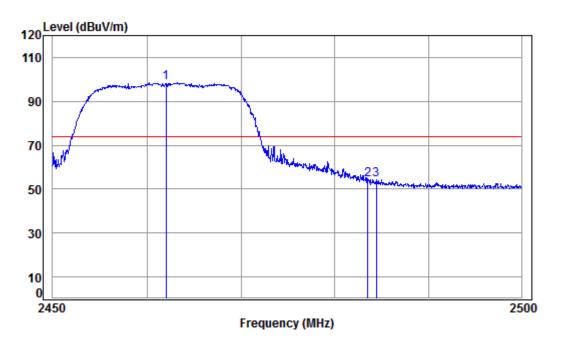


Condit	tion: 3m \	VERTIC	AL						
Job No	: 025	36RG							
Mode	: 2462	2 Band	edge						
Note	: 2.40	G WiFi	11G						
		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2462.000	5.57	29.29	41.90	107.28	100.24	74.00	26.24	Peak
2	2483.500	5.60	29.35	41.91	60.65	53.69	74.00	-20.31	Peak
3	2483.990	5.60	29.35	41.91	62.19	55.23	74.00	-18.77	Peak



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Worse case mode:	802.11g	Test channel:	Highest	Remark:	Peak	Horizontal
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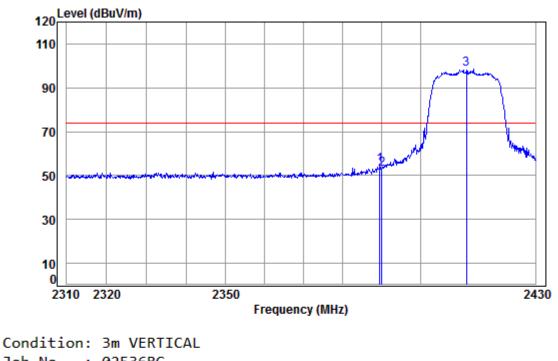


Condi	tion: 3m H	HORIZO	NTAL						
Job N	o : 0253	36RG							
Mode	: 2462	2 Band	edge						
Note	: 2.40	G WiFi	11G						
		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	2462.000	5.57	29.29	41.90	105.71	98.67	74.00	24.67	peak
2	2483.500	5.60	29.35	41.91	61.26	54.30	74.00	-19.70	peak
3	2484.442	5.60	29.36	41.91	61.29	54.34	74.00	-19.66	peak



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Worse case mode: 802.11n(HT20) Test channel: Lowest Remark: Peak Vertical

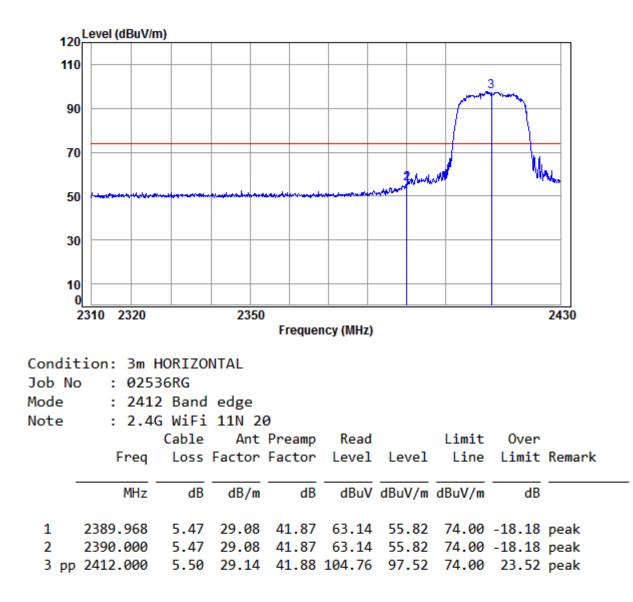


CONGL	LION. JII	VENTE:								
Job No	o : 025	36RG								
Mode	: 241	2 Band	edge							
Note	: 2.4	G WiFi	11N 20	9						
		Cable	Ant	Preamp	Read		Limit	0ver		
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
1	MHz 2389.484	dB				-	dBuV/m		Peak	•
1 2			29.08	41.87	62.16	54.84		-19.16		•
2	2389.484	5.47 5.47	29.08 29.08	41.87 41.87	62.16 60.47	54.84 53.15	74.00 74.00	-19.16 -20.85	Peak	-



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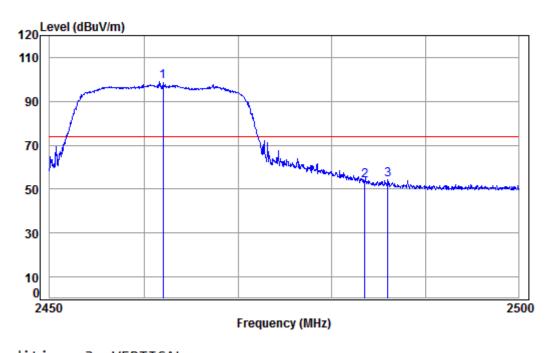
|--|





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Worse case mode: 802.11n(HT20)	Test channel:	Highest	Remark:	Peak	Vertical	
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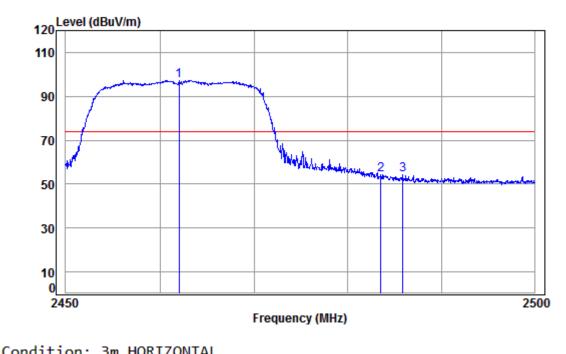


CONULI	tion: 3m \	VERITC	AL						
Job No	o : 025	36RG							
Mode	: 246	2 Band	edge						
Note	: 2.4	G WiFi	11N 20	9					
		Cable	Ant	Preamp	Read		Limit	0ver	
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB	
1 pp	MHz 2462.000						dBuV/m		Peak
1 pp 2		5.57	29.29	41.90	105.92	98.88		24.88	
	2462.000	5.57	29.29 29.35	41.90 41.91	105.92 60.62	98.88 53.66	74.00	24.88 -20.34	Peak



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Worse case mode: 802.11n(HT20)	Test channel:	Highest	Remark:	Peak	Horizontal
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		HURIZU	NIAL							
Job No	: 025	36RG								
Mode	: 246	2 Band	edge							
Note	: 2.4	G WiFi	11N 2	0						
		Cable	Ant	Preamp	Read		Limit	0ver		
	Freq	Loss	Factor	Factor	Level	Level	Line	Limit	Remark	
	MHz	dB	dB/m	dB	dBuV	dBuV/m	dBuV/m	dB		
			-							
1 pp	MHz 2462.000		-						peak	
1 pp 2		5.57	29.29	41.90	104.44	97.40		23.40	•	
	2462.000	5.57 5.60	29.29 29.35	41.90 41.91	104.44 61.47	97.40 54.51	74.00	23.40 -19.49	peak	



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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

7 Photographs - EUT Constructional Details

Refer to Appendix A - Photographs of EUT Constructional Details for SZEM1806005521RG.