TEST REPORT

DT&C Co., Ltd.

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Report No : DRTFCC1512-0274 Pages:(1) / (76) page



- 1. Customer
 - Name : POINTMOBILE CO., LTD.
 - Address : Gasan-dong B-9F, Kabul Great Valley 32 Digital-ro 9-gil, Geumcheon-gu, Seoul, Korea 153-709
- 2. Use of Report : FCC & IC Original Grant
- 3. Product Name (FCCID, IC) : Mobile Computer (V2X-PM80G, 10664A-PM80G)
- 4. Date of Test : 2015-10-12 ~ 2015-11-25
- 5. Test Method Used: FCC Part 15 Subpart C.247, RSS-247
- 6. Testing Environment : See appended test report
- 7. Test Result : 🛛 Pass 📋 Fail

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This Test Report cannot be reproduced, except in full.

Affirmation	Tested by Name : Jaejin Lee	(Signature)	Technical Manager Name : Bongjin Kim	(Signature)
		2015 . 12 . 2	9.	
		DT&C Co.,	Ltd.	
9. 				



Test Report Version

Test Report No.	Date	Description
DRTFCC1512-0274	Dec. 29, 2015	Initial issue



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1. GENERAL INFORMATION

Applicant	:	POINTMOBILE CO., LTD.
Address	:	Gasan-dong B-9F, Kabul Great Valley 32 Digital-ro 9-gil, Geumcheon-gu, Seoul, Korea 153-709
FCC ID	:	V2X-PM80G
IC	:	10664A-PM80G
EUT	:	Mobile Computer
Model	:	PM80
Additional Model(s)	:	CHD8, XT2, APT1
Date of Test	:	2015-10-12 ~ 2015-11-25
Contact person	:	W.S. Park

2. EUT DESCRIPTION

Product	Mobile Computer
Model Name	PM80
Add Model Name	CHD8, XT2, APT1
Power Supply	DC 3.8 V
Hardware version	ReV 4
Software version	80.00
Frequency Range	2.4GHz Band • 802.11b/g/n(20 MHz) : 2412 MHz ~ 2462 MHz
Max. RF Output Power	• 802.11b: 17.98 dBm • 802.11g: 22.34 dBm • 802.11n: 22.41 dBm
Modulation Type	• 802.11b: CCK, DSSS • 802.11g/n: OFDM
Antenna Specification	Internal Antenna (1TX) only • 2.4GHz Band Max. peak gain : -0.84 dBi



3. SUMMARY OF TESTS

FCC Part	RSS Std.	Parameter	Limit	Test Condition	Status Note 1					
15.247(a)	RSS-247 [5.2]	6 dB Bandwidth	> 500 kHz		С					
15.247(b)	RSS-247 [5.4]	Transmitter Output Power	< 1 Watt		С					
15.247(d)	RSS-247 [5.5]	Out of Band Emissions / Band Edge	20 dBc in any 100 kHz BW	Conducted	С					
15.247(e)	RSS-247 [5.2]	Transmitter Power Spectral Density	< 8 dBm/3 kHz		С					
-	RSS-Gen [6.6]	Occupied Bandwidth (99 %)	RSS-Gen(6.6)		С					
15.247(d) 15.205 15.209	RSS-247 [5.5] RSS-GEN [8.9] RSS-GEN [8.10]	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	FCC 15.209 limits	Radiated	C Note 2					
15.207	RSS-Gen [8.8]	AC Line Conducted Emissions	FCC 15.207 limits	AC Line Conducted	С					
15.203	-	FCC 15.203	-	С						
	Note 1: C=Comply NC=Not Comply NT=Not Tested NA=Not Applicable Note 2: This test item was performed in each axis and the worst case data was reported.									



4. TEST METHODOLOGY

Generally the tests were performed according to the KDB558074 v03r03. And ANSI C63.10-2013 was used to reference appropriate EUT setup and maximizing procedures of radiated spurious emission and AC line conducted emission testing.

4.1 EUT CONFIGURATION

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner that intends to maximize its emission characteristics in a continuous normal application.

4.2 EUT EXERCISE

The EUT was operated in the test mode to fix the TX frequency that was for the purpose of the measurements. According to its specifications, the EUT must comply with the requirements of the Section 15.207, 15.209 and 15.247 under the FCC Rules Part 15 Subpart C.

4.3 GENERAL TEST PROCEDURES

Conducted Emissions

The power-line conducted emission test procedure is not described on the KDB 558074. So this test was fulfilled with the requirements in Section 6.2 of ANSI C63.10.

The EUT is placed on the wooden table, which is 0.8 m above ground plane and the conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-peak and Average detector.

Radiated Emissions

Basically the radiated tests were performed with KDB 558074. But some requirements and procedures like test site requirements, EUT setup and maximizing procedure were fulfilled with the requirements in Section 5 and 6 of the ANSI C63.10 as stated on section 12.1 of the KDB 558074.

The EUT is placed on a non-conductive table. For emission measurements at or below 1 GHz, the table height is 80 cm. For emission measurements above 1 GHz, the table height is 1.5 m. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the highest emission, the relative positions of the EUT were rotated through three orthogonal axes.

4.4 DESCRIPTION OF TEST MODES

The EUT has been tested with all modes of operating conditions to determine the worst case emission characteristics. A test program is used to control the EUT for staying in continuous transmitting mode.



5. INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipments, which is traceable to recognized national standards.

6. FACILITIES AND ACCREDITATIONS

6.1 FACILITIES

The open area test site (OATS) or semi anechoic chamber and conducted measurement facility used to collect the radiated and conducted test data are located at the 42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 449-935. The site is constructed in conformance with the requirements.

- Semi anechoic chamber registration Number: 165783(FCC) & 5740A-2(IC)

6.2 EQUIPMENT

Radiated emissions are measured with one or more of the following types of Linearly polarized antennas: tuned dipole, bi-conical, log periodic, bi-log, and/or ridged waveguide, loop, horn. Spectrum analyzers with pre-selectors and peak, quasi-peak detectors are used to perform radiated measurements. Conducted emissions are measured with Line Impedance Stabilization Networks and EMI Test Receivers. Calibrated wideband preamplifiers, coaxial cables, and coaxial attenuators are also used for making measurements.

All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

7. ANTENNA REQUIREMENTS

7.1 According to FCC 47 CFR §15.203:

An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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 shall be considered sufficient to comply with the provisions of this section.

The internal antenna is attached on the main PCB using the special spring tension. Therefore this E.U.T Complies with the requirement of §15.203.



8. TEST RESULT

8.1 6 dB Bandwidth

Test Requirements and limit, §15.247(a)

The bandwidth at 6 dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the receive antenna while the EUT is operating in transmission mode at the appropriate frequencies.

The minimum permissible 6 dB bandwidth is 500 kHz.

TEST CONFIGURATION

Refer to the APPENDIX I.

TEST PROCEDURE

The transmitter output is connected to the Spectrum Analyzer and used following test procedure of KDB558074

- 1. Set resolution bandwidth (RBW) = 100 kHz.
- 2. Set the video bandwidth (VBW) \ge 3 x RBW.
- (RBW : 100 kHz / VBW : 300 kHz)
- 3. Detector = **Peak**.
- 4. Trace mode = **Max hold**.
- 5. Sweep = Auto couple.
- 6. Allow the trace to stabilize.
- 7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

TEST RESULTS: Comply

Test Mode	Data Rate	Frequency [MHz]	Test Results [MHz]
		2412	8.113
802.11b	1 Mbps	2437	8.085
		2462	8.575
		2412	16.390
802.11g	6 Mbps	2437	16.390
		2462	16.380
		2412	17.610
802.11n (20 MHz)	MCS 0	2437	17.600
		2462	17.620



RESULT PLOTS

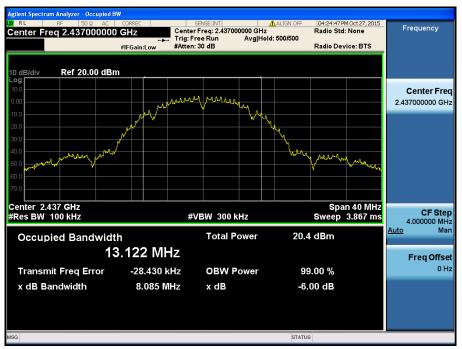
6 dB Bandwidth



6 dB Bandwidth

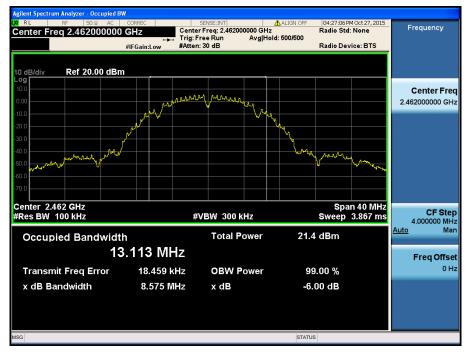
Test Mode: 802.11b & 1 Mbps & 2437 MHz

Test Mode: 802.11b & 1 Mbps & 2412 MHz





Test Mode: 802.11b & 1 Mbps & 2462 MHz





Test Mode: 802.11g & 6 Mbps & 2412 MHz



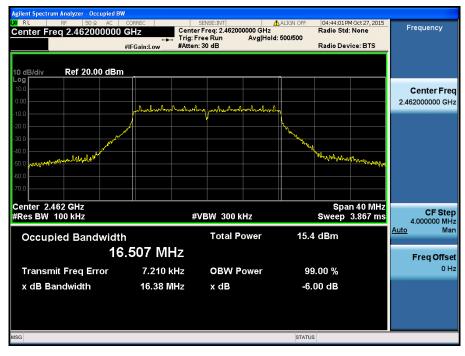
6 dB Bandwidth

Test Mode: 802.11g & 6 Mbps & 2437 MHz



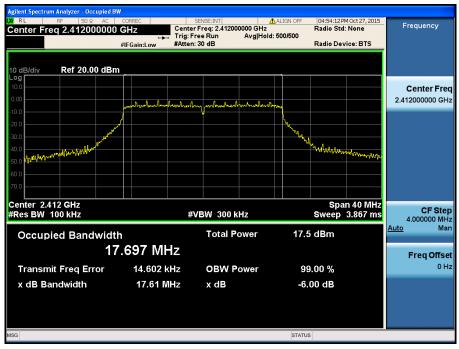


Test Mode: 802.11g & 6 Mbps & 2462 MHz



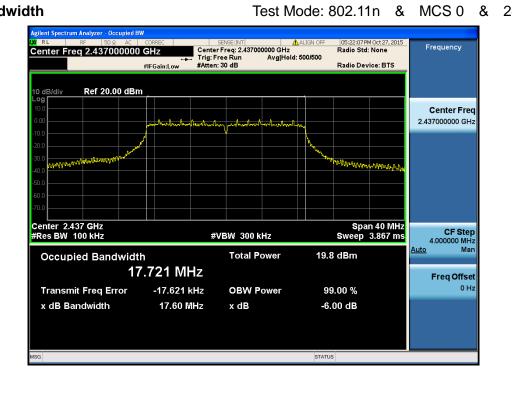


Test Mode: 802.11n & MCS 0 & 2412 MHz



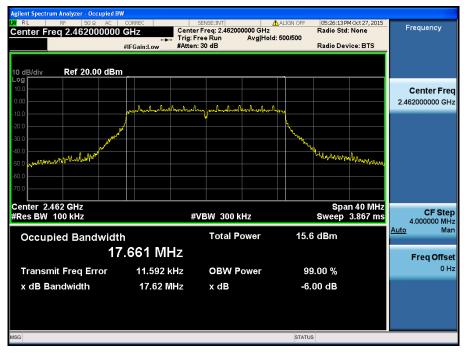
6 dB Bandwidth

& MCS 0 & 2437 MHz





Test Mode: 802.11n & MCS 0 & 2462 MHz



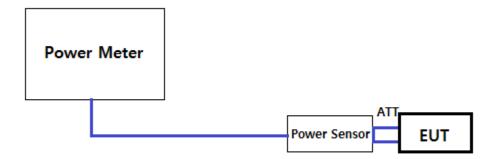


8.2 Maximum Peak Conducted Output Power

Test Requirements and limit, §15.247(b)

The maximum permissible conducted output power is 1 Watt.

TEST CONFIGURATION



TEST PROCEDURE

1. PKPM1 Peak power meter method of KDB558074

The maximum conducted output powers were measured using a broadband peak RF power meter which has greater video bandwidth than DUT's DTS bandwidth and utilize a fast-responding diode detector.

2. Method AVGPM-G (Measurement using a gated RF average power meter) of KDB558074

The average conducted output powers were measured using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since this measurement is made only during the ON time of the transmitter, no duty cycle correction is required.



TEST RESULTS: Comply

- Measurement Data:

- Test Results

Mode C				Test Result [dBm]							
	Channel	Frequency [MHz]	Detector			D	ATA RAT	E [Mbps]		
		[]		1	2	5.5	11	NA	NA	NA	NA
		2442	PK	17.98	17.94	17.93	17.92	-	-	-	-
	1	2412	AV	15.28	15.23	15.21	15.20	-	-	-	-
002 445	C	5 2437	PK	17.41	17.39	17.39	17.38	-	-	-	-
802.11b	6		AV	14.63	14.62	14.61	14.61	-	-	-	-
		2462	PK	17.75	17.73	17.72	17.72	-	-	-	-
11	11		AV	15.07	15.02	14.97	14.98	-	-	-	-

Mode Cha				Test Result [dBm]								
	Channel	Frequency [MHz]	Detector	DATA RATE [Mbps]								
		[]		6	9	12	18	24	36	48	54	
	4	2412	PK	21.14	21.11	21.12	21.11	21.09	21.08	21.08	21.06	
	1	2412	AV	12.55	12.54	12.53	12.53	12.54	12.52	12.50	12.48	
802.11g	6	2437	РК	22.34	22.15	22.29	22.32	22.32	22.26	22.23	22.24	
002.119	v		AV	14.84	14.81	14.77	14.75	14.72	14.78	14.74	14.80	
			PK	19.63	19.62	19.62	19.60	19.61	19.59	19.58	19.55	
11	2462	AV	10.41	10.40	10.39	10.39	10.40	10.39	10.38	10.36		

Mode Chan				Test Result [dBm]								
	Channel	Frequency [MHz]	Detector	tor DATA RATE [MCS]								
				0	1	2	3	4	5	6	7	
		2412	PK	20.54	20.53	20.52	20.53	20.52	20.51	20.49	20.47	
	1	2412	AV	11.56	11.55	11.53	11.53	11.54	11.52	11.51	11.49	
802.11n	c	6 2437	PK	22.41	22.32	22.31	22.40	22.36	22.35	22.27	22.41	
(HT20)	Ö		AV	14.93	14.93	14.85	14.95	14.87	14.91	14.86	14.90	
		2462	PK	19.25	19.24	19.23	19.21	19.21	19.19	19.18	19.16	
11	T1	2462	AV	9.91	9.90	9.88	9.88	9.89	9.87	9.86	9.85	



8.3 Maximum Power Spectral Density

Test requirements and limit, §15.247(e)

The power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

TEST CONFIGURATION

Refer to the APPENDIX I.

Test Procedure

Method PKPSD of KDB558074 is used.

- 1. Set analyzer center frequency to DTS channel center frequency.
- 2. Set the span to 1.5 times the DTS bandwidth.
- 3. Set the RBW to : **3 kHz** ≤ RBW ≤ **100 kHz**
- 4. Set the VBW \ge 3 x RBW
- 5. Detector = **Peak**
- 6. Sweep time = **Auto couple**
- 7. Trace mode = **Max hold.**
- 8. Allow trace to fully stabilize.

9. Use the **peak marker function** to determine the maximum amplitude level within the RBW.

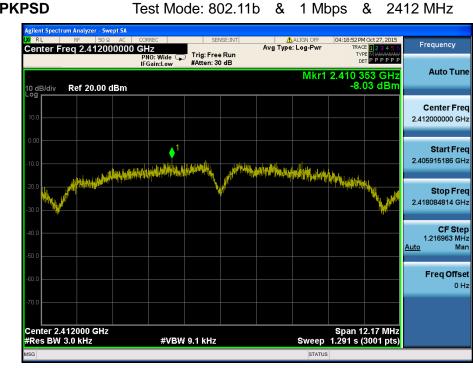
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

TEST RESULTS: Comply

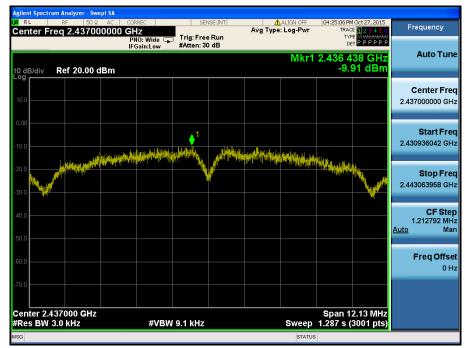
Test Mode	Data Rate	Frequency [MHz]	RBW	PKPSD [dBm]
		2412	3 kHz	-8.03
802.11b	1 Mbps	2437	3 kHz	-9.91
		2462	3 kHz	-8.68
		2412	3 kHz	-14.15
802.11g	6 Mbps	2437	3 kHz	-12.33
		2462	3 kHz	-17.24
		2412	3 kHz	-14.31
802.11n HT20	MCS 0	2437	3 kHz	-12.10
		2462	3 kHz	-16.98



RESULT PLOTS



Maximum PKPSD Test Mode: 802.11b & 1 Mbps & 2437 MHz



Maximum PKPSD

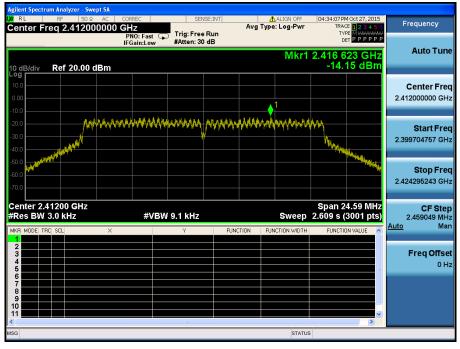


Test Mode: 802.11b & 1 Mbps & 2462 MHz





Test Mode: 802.11g & 6 Mbps & 2412 MHz



Maximum PKPSD

Test Mode: 802.11g & 6 Mbps & 2437 MHz



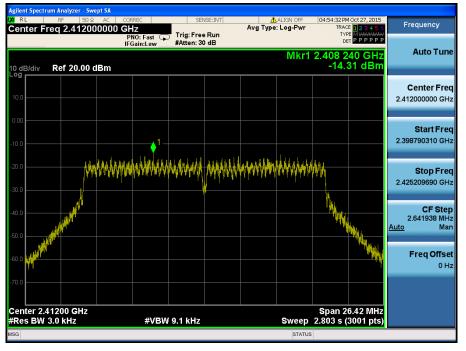


Test Mode: 802.11g & 6 Mbps & 2462 MHz



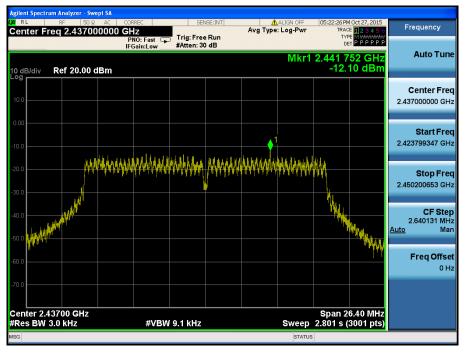


Test Mode: 802.11n(HT20) & MCS 0 & 2412 MHz



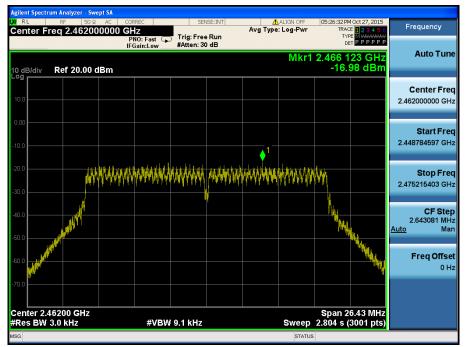
Maximum PKPSD

Test Mode: 802.11n(HT20) & MCS 0 & 2437 MHz





Test Mode: 802.11n(HT20) & MCS 0 & 2462 MHz





8.4 Out of Band Emissions at the Band Edge / Conducted Spurious Emissions

Test requirements and limit, §15.247(d)

§15.247(d) specifies that in any 100 kHz bandwidth outside of the authorized frequency band, the power shall be attenuated according to the following conditions :

If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to **15.247(b)(3)** requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to **15.247(b)(3)** requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured inband average PSD level. In either case, attenuation to levels below the general emission limits specified in **§15.209(a)** is not required.

TEST CONFIGURATION

Refer to the APPENDIX I.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer.

- Measurement Procedure 1 – Reference Level

- 1. Set instrument center frequency to DTS channel center frequency.
- 2. Set the span to \geq 1.5 times the DTS bandwidth.
- 3. Set the RBW = **100 kHz.**
- 4. Set the VBW \geq 3 x RBW.
- 5. Detector = Peak.
- 6. Sweep time = **Auto couple.**
- 7. Trace mode = **Max hold.**
- 8. Allow trace to fully stabilize.
- 9. Use the peak marker function to determine the maximum PSD level.

- Measurement Procedure 2 - Unwanted Emissions

- 1. Set the center frequency and span to encompass frequency range to be measured.
- 2. Set the RBW = 100 kHz. (Actual 1 MHz , See below note)
- 3. Set the VBW \geq 3 x RBW. (Actual 3 MHz, See below note)
- 4. Detector = **Peak**.
- 5. Ensure that the number of measurement points \geq Span / RBW.
- 6. Sweep time = Auto couple.
- 7. Trace mode = **Max hold.**
- 8. Allow the trace to stabilize. (this may take some time, depending on the extent of the span)
- 9. Use the peak marker function to determine the maximum amplitude level.

Note : The conducted spurious emission was tested with below settings.

Frequency range: 9 kHz ~ 30 MHz

RBW = 100 kHz, VBW = 300 kHz, SWEEP TIME = AUTO, DETECTOR = PEAK, TRACE = MAX HOLD, SWEEP POINT : 40001

Frequency range: 30 MHz ~ 10 GHz, 10 GHz ~25 GHz RBW = 1 MHz, VBW = 3 MHz, SWEEP TIME = AUTO, DETECTOR = PEAK, TRACE = MAX HOLD, SWEEP POINT : 40001

LIMIT LINE = 20 dB below of the reference level of above measurement procedure Step 2. (RBW = 100 kHz, VBW = 300 kHz)

If the emission level with above setting was close to the limit (ie, less than 3 dB margin) then zoom scan is required using RBW = 100 kHz, VBW = 300 kHz, SPAN = 100 MHz and BINS = 2001 to get accurate emission level within 100 kHz BW.

Also the path loss for conducted measurement setup was used as described on the Appendix I of this test report.



RESULT PLOTS

802.11b & 1 Mbps & 2412 MHz

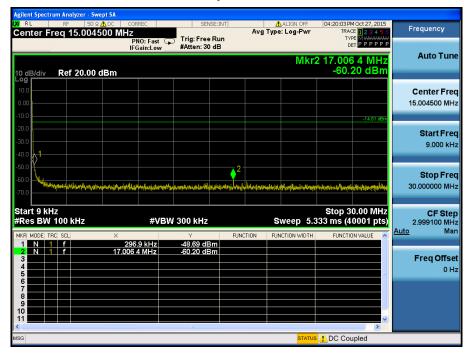


Reference

Low Band-edge







Agilent Spectrum Analyzer - Swi					
Center Freq 5.01500	AC CORREC 000000 GHz PNO: Fast	Trig: Free Run	ALIGN OFF	04:20:15 PM Oct 27, 2015 TRACE 1 2 3 4 5 6 TYPE M WWWWW DET P P P P P P	Frequency
10 dB/div Ref 20.00 (IFGain:Low	#Atten: 30 dB	Mkr1	0 7.789 40 GHz -44.53 dBm	Auto Tune
10.0 0.00 -10.0	1 				Center Freq 5.015000000 GHz
-20.0 -30.0 -40.0				$0 \xrightarrow{2} 9 \xrightarrow{7} 5$	Start Freq 30.000000 MHz
-50.0 -60.0 -70.0					Stop Freq 10.000000000 GHz
Start 30 MHz #Res BW 1.0 MHz		/ 3.0 MHz		Stop 10.000 GHz .67 ms (40001 pts)	CF Step 997.000000 MHz Auto Man
MKR MODE TRC SCL 1 N 1 F 2 N 1 F 3 N 1 F 4 N 1 F 6 N 1 F 7 N 1 F 8 N 1 F 9 N 1 F 10 N 1 F	× 2.411 09 GHz 8.398 82 GHz 3.292 39 GHz 7.379 88 GHz 7.379 88 GHz 7.841 74 GHz 9.369 86 GHz 7.934 6 GHz 7.789 40 GHz	Y FUN 8.75 dBm -44.03 dBm -44.03 dBm -44.11 dBm -44.11 dBm -44.23 dBm -44.23 dBm -44.26 dBm -44.26 dBm -44.27 dBm -44.50 dBm -44.50 dBm -44.50 dBm -44.50 dBm	FUNCTION WIDTH	FUNCTION VALUE	Freq Offset 0 Hz
MSG			STATUS		



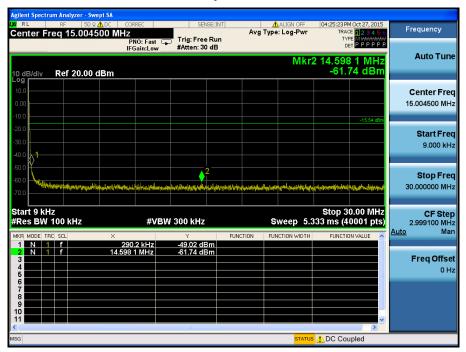
Agilent Spectrum Analyzer - S W RL RF 50 Center Freq 17.500	Ω AC CORREC	SENSE:INT	ALIGN OFF Avg Type: Log-Pwr	04:20:24 PM Oct 27, 2015 TRACE 1 2 3 4 5 6 TYPE M WANNAME DET P P P P P P	Frequency
10 dB/div Ref 20.00		#Atten: 50 dB	Mkr5 2	23.136 250 GHz -35.22 dBm	Auto Tune
Log 10.0 0.00 -10.0				-14.61 dBm	Center Freq 17.50000000 GHz
-20.0	CARLE STREET, CARLES , CARLES				Start Freq 10.000000000 GHz
-60.0 -60.0 -70.0					Stop Freq 25.00000000 GHz
Start 10.000 GHz #Res BW 1.0 MHz	#VB\ ×	N 3.0 MHz	Sweep 40	Stop 25.000 GHz .00 ms (40001 pts) FUNCTION VALUE	CF Step 1.500000000 GHz <u>Auto</u> Man
1 N 1 f 2 N 1 f 3 N 1 f 4 N 1 f 5 N 1 f 6	24.577 375 GHz 24.858 250 GHz 23.059 375 GHz 24.066 625 GHz 23.136 250 GHz	-33.69 dBm -34.75 dBm -34.85 dBm -35.09 dBm -35.22 dBm			Freq Offset 0 Hz
8 9 10 11		10		×	
MSG			STATUS		



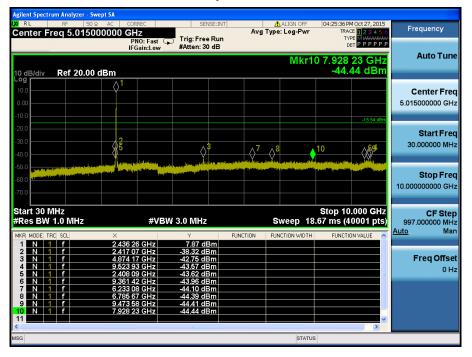
802.11b & 1 Mbps & 2437 MHz



Reference







Agilent Spectrum Analyzer - Swep	ot SA						
	AC CORREC	SENSE:IN		ALIGN OFF	04:25:45 PM Oct 27, 20:		
Center Freq 17.5000	200000 GHz PN0: Fast C	Trig: Free Run		Type: Log-Pwr	TRACE 1 2 3 4 5 TYPE M MANA	w.	
	IFGain:Low	#Atten: 30 dB			DETPPPF		
				Mkr5.2	3 796 250 GH	Auto Tune	
10 dB/div Ref 20.00 d	10 dB/diy Ref 20.00 dBm -35.47 dBm						
Log							
10.0						Center Freq	
0.00						17.50000000 GHz	
-10.0							
-20.0					-15.54 dB	m	
					A3 A51 A3	Start Freq	
-30.0					Q [™] _Q [™] _Q	10.00000000 GHz	
-40.0	لاستحمالا القرور والتروح ومعر	The Real Property of Street, or other	and the second s	A CONTRACT OF A	and the second state of th		
-50.0 Providence of the providence of the second se	and the second damage of the	the same of the local division of the local	and the second se				
-60.0						Stop Freq	
						25.00000000 GHz	
-70.0							
Start 10.000 GHz					Stop 25.000 GH		
#Res BW 1.0 MHz	#VB	W 3.0 MHz		Sweep 40	.00 ms (40001 pt	CF Step S) 1.50000000 GHz	
MKR MODE TRC SCL	X	Y	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	Auto Man	
	24.971 125 GHz	-34.01 dBm					
	24.513 625 GHz 23.139 625 GHz	-34.57 dBm -35.19 dBm				Freq Offset	
4 N 1 f	23.984 500 GHz	-35.41 dBm				0 Hz	
5 N 1 f	23.796 250 GHz	-35.47 dBm				UHZ	
6							
8							
9							
11						~	
<		10)		
MSG				STATUS			



802.11b & 1 Mbps & 2462 MHz

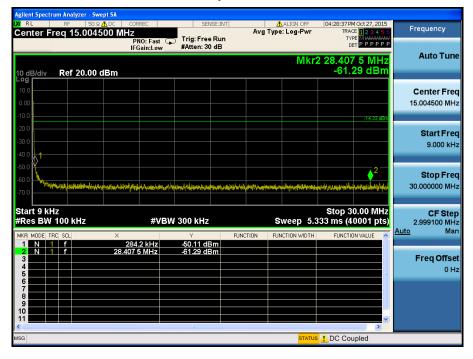




High Band-edge







Agilent Spectrum An XI RL RF Center Freq		CORREC GHZ PNO: Fast G IFGain:Low	SENSE:INT Trig: Free Run #Atten: 30 dB	ALIGN Avg Type: Log		50 PM Oct 27, 2015 TRACE 1 2 3 4 5 6 TYPE M WWWWW DET P P P P P P	Frequency
10 dB/div Re	f 20.00 dBm			N		04 41 GHz 4.27 dBm	Auto Tune
10.0 0.00 -10.0						-14.33 dBm	Center Fred 5.015000000 GH:
-20.0		8 8	2	9_07_∮1	0 3	65	Start Free 30.000000 MH:
-60.0 -60.0 -70.0							Stop Free 10.000000000 GH
Start 30 MHz FRes BW 1.0 I	. Х		V 3.0 MHz	Swee	p 18.67 ms	10.000 GHz s (40001 pts) NCTION VALUE	CF Stej 997.000000 MH <u>Auto</u> Ma
1 N 1 f 2 N 1 f 3 N 1 f 4 N 1 f 5 N 1 f 6 N 1 f	4.92 7.85 5.42 9.44	1 18 GHz 4 27 GHz 3 19 GHz 5 26 GHz 5 17 GHz 7 65 GHz	8.84 dBm -42.86 dBm -43.75 dBm -43.76 dBm -43.90 dBm -43.94 dBm				Freq Offse 0 H
0 N 1 f 7 N 1 f 8 N 1 f 9 N 1 f 10 N 1 f 11	6.75 3.23 6.19	3 02 GHz 2 36 GHz 9 69 GHz 4 41 GHz	-43.34 dBm -44.14 dBm -44.16 dBm -44.25 dBm -44.27 dBm				
sg			10		STATUS	>	



Agilent Spectrum Analyzer - S	wept SA	SENSE:INT	ALIGN OFF	04:28:59 PM Oct 27, 2015	
Center Freq 17.500	0000000 GHz		Avg Type: Log-Pwr	TRACE 123456 TYPE MWWWW	Frequency
	PNO: Fast G IFGain:Low	#Atten: 30 dB		DETPPPPP	Auto Tune
10 dB/div Ref 20.00) dBm		Mkr5 2	4.715 000 GHz -35.17 dBm	Auto Tune
10.0 0.00 -10.0				-14,33 dBm	Center Freq 17.50000000 GHz
-20.0 -30.0 -40.0		A Tradition for the many operation for the state of the s		$\bigcirc^2 \diamondsuit^4 \checkmark 5$	Start Freq 10.000000000 GHz
-50.0					Stop Freq 25.00000000 GHz
Start 10.000 GHz #Res BW 1.0 MHz		V 3.0 MHz		Stop 25.000 GHz .00 ms (40001 pts)	CF Step 1.50000000 GHz Auto Man
MKR MODE TRC SCL 1 N 1 f 2 N 1 f 3 N 1 f 4 N 1 f 6 N 1 f 6 8 9 9 9 9 9 9	× 24.573 625 GHz 23.725 750 GHz 24.784 750 GHz 24.213 625 GHz 24.715 000 GHz	-33.59 dBm -34.75 dBm -34.97 dBm -35.00 dBm -35.17 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	Freq Offset 0 Hz
11 MSG		THE REAL PROPERTY OF A	STATUS		

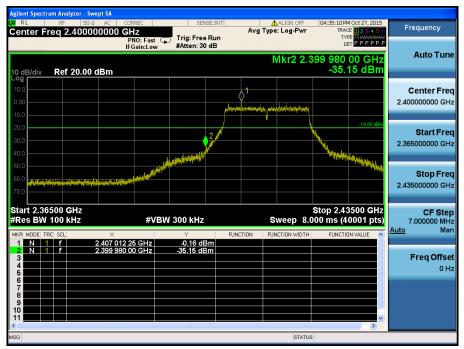


802.11g & 6 Mbps & 2412 MHz

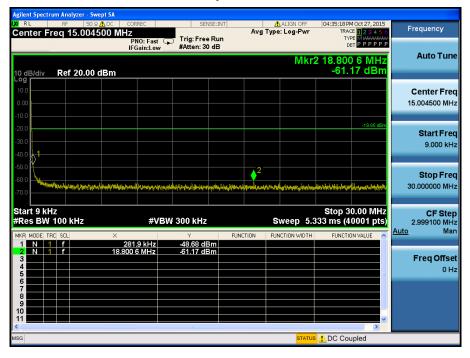




Low Band-edge







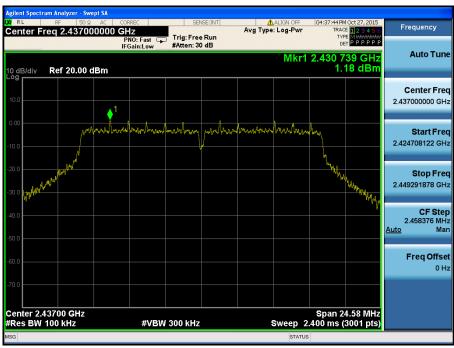
Agilent Spectrum Analyzer - Sv XI RL RF 50 S		SENSE:INT	A 212521 555		
Center Freq 5.0150	00000 GHz PN0: Fast		ALIGN OFF Avg Type: Log-Pwr	04:35:31 PM Oct 27, 2015 TRACE 1 2 3 4 5 6 TYPE M WWWWW DET P P P P P	Frequency
10 dB/div Ref 20.00	IFGain:Low	#Atten: 30 dB	Mkr1	0 6.907 56 GHz -44.59 dBm	Auto Tune
10.0 0.00					Center Fred 5.015000000 GHz
-20.0	3		5 10,8	-19.85 dBm	Start Free 30.000000 MHz
-50.0 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4					Stop Fred 10.000000000 GH:
Start 30 MHz Res BW 1.0 MHz	#VBW	7 3.0 MHz	Sweep 18	Stop 10.000 GHz .67 ms (40001 pts)	CF Step 997.000000 MH <u>Auto</u> Mar
1 N 1 f 2 N 1 f 3 N 1 f 4 N 1 f 5 N 1 f 6 N 1 f	2.416 32 GHz 8.361 18 GHz 2.466 17 GHz 9.435 20 GHz 6.366 93 GHz 7.286 17 GHz	7.69 dBm -43.67 dBm -43.76 dBm -44.17 dBm -44.19 dBm -44.42 dBm			Freq Offse 0 H
7 N 1 f 8 N 1 f 9 N 1 f 10 N 1 f 11	7.869 91 GHz 7.268 47 GHz 6.765 48 GHz 6.907 56 GHz	-44.54 dBm -44.57 dBm -44.57 dBm -44.59 dBm		×	
ISG			STATUS		



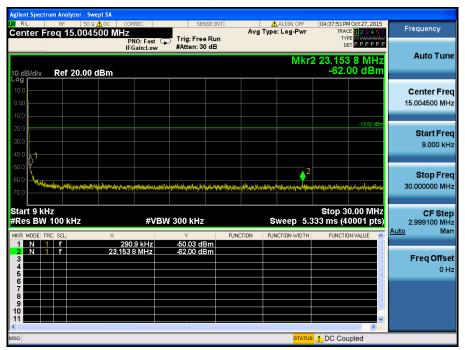
Agilent Spectrum Analyzer - S					
Center Freq 17.50		SENSE:INT	ALIGN OFF Avg Type: Log-Pwr	04:35:40 PM Oct 27, 2015 TRACE 1 2 3 4 5 6 TYPE M WARMAN	Frequency
	PNO: Fast G IFGain:Low	#Atten: 30 dB		DETPPPP	
10 dB/div Ref 20.00) dBm		Mkr5 2	23.763 625 GHz -34.95 dBm	Auto Tune
10.0 0.00					Center Freq 17.500000000 GHz
-20.0 -30.0 -40.0		al and the state of the state o		-19.85 dBn	Start Freq 10.000000000 GHz
-50.0					Stop Freq 25.00000000 GHz
Start 10.000 GHz #Res BW 1.0 MHz	#VB\	V 3.0 MHz	Sweep 40	Stop 25.000 GHz .00 ms (40001 pts)	CF Step 1.50000000 GHz Auto Man
MKR MODE ThC SCL 1 N 1 f 2 N 1 f 3 N 1 f 4 N 1 f 5 N 1 f 6 - - - 7 - - - 9 - - - 10 - - -	× 24,659,875,GHz 24,504,625,GHz 23,087,875,GHz 23,268,625,GHz 23,763,625,GHz	Y FU -33.36 dBm -33.56 dBm -34.62 dBm -34.86 dBm -34.95 dBm	NCTION FUNCTION WIDTH	FUNCTION VALUE	Freq Offset 0 Hz
MSG		Ш	STATUS	>	
Dom			STATUS		



802.11g & 6 Mbps & 2437 MHz



Reference



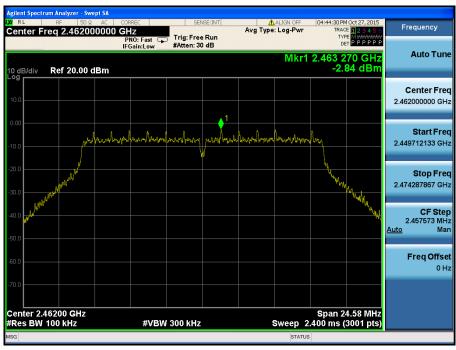


Agilent Spectrum Analyze					
Center Freq 5.01	50 Q AC CORREC	SENSE:INT	ALIGN OFF Avg Type: Log-Pwr	04:38:04 PM Oct 27, 2015 TRACE 1 2 3 4 5 6	Frequency
	PNO: Fast C IFGain:Low	Trig: Free Run #Atten: 30 dB		түре Милинин DET P P P P P P	Auto Tune
10 dB/div Ref 20	.00 dBm			-44.51 dBm	
10.0 0.00 -10.0					Center Freq 5.015000000 GHz
-20.0	4 4 6		 	-18.82 dBm 9 ↓7 ↓ 5	Start Freq 30.000000 MHz
-50.0 -60.0 -70.0					Stop Freq 10.00000000 GHz
Start 30 MHz #Res BW 1.0 MHz		N 3.0 MHz	-	Stop 10.000 GHz .67 ms (40001 pts)	CF Step 997.000000 MHz Auto Man
MKR MODE TRC SCL 1 N 1 f 2 N 1 f 3 N 1 f 4 N 1 f 5 N 1 f	× 2.439 75 GHz 2.450 47 GHz 2.418 31 GHz 2.412 33 GHz 9.431 21 GHz	8.36 dBm -18.95 dBm -23.14 dBm -36.92 dBm -43.03 dBm	NCTION FUNCTION WIDTH	FUNCTION VALUE	Freq Offset 0 Hz
6 N 1 F 7 N 1 F 8 N 1 F 9 N 1 F 10 N 1 F	3.299 91 GHz 8.416 76 GHz 7.792 39 GHz 7.874 89 GHz 7.508 25 GHz	-44.18 dBm -44.39 dBm -44.45 dBm -44.51 dBm -44.51 dBm			
MSG		TH	STATUS		

Agilent Spectrum Analyzer - S				040040000000000000	
Center Freq 17.500	0000000 GHz PN0: Fast	Trig: Free Run #Atten: 30 dB	ALIGN OFF Avg Type: Log-Pwr	04:38:13 PM Oct 27, 2015 TRACE 1 2 3 4 5 6 TYPE M WANNAM DET P P P P P P	Frequency
10 dB/div Ref 20.00	IFGain:Low	#Atten: 30 dB	Mkr5	23.629 000 GHz -35.49 dBm	Auto Tune
Log 10.0 0.00					Center Freq 17.500000000 GHz
-20.0 -30.0 -40.0				-18.82 dBm	Start Freq 10.000000000 GHz
-50.0 -60.0 -70.0					Stop Freq 25.00000000 GHz
Start 10.000 GHz #Res BW 1.0 MHz	#VB\	N 3.0 MHz	Sweep 40	Stop 25.000 GHz).00 ms (40001 pts)	CF Step 1.50000000 GHz Auto Man
MKR MODE TRC SCL 1 N 1 f 2 N 1 f 3 N 1 f 4 N 1 f 6 N 1 f 7	× 24.622 750 GHz 23.155 750 GHz 23.998 750 GHz 24.462 625 GHz 23.629 000 GHz	Y -34.66 dBm -34.82 dBm -34.86 dBm -35.33 dBm -35.49 dBm	FUNCTION FUNCTION WIDTH	FUNCTION VALUE	Freq Offset 0 Hz
MSG		III	STATU)	



802.11g & 6 Mbps & 2462 MHz



Reference

High Band-edge





	Spectru		lyzer - Sv											
LXI RL	or Er	RF		∝ <u>∧</u> . 500 Mi	CORREC		SEM	ISE:INT		ALIGN OFF		M Oct 27, 2015 CE 123456	Frequency	
Geni	GITI	σų	5.004	-300 Mi	PNO: I	Fast 🖵	Trig: Free				TY	PE MWWWWWW ET P P P P P P		
					IFGain	Low	#Atten: 30) dB					Auto Tu	ine
										Mki	2 28.82		Autore	
10 dE Log	3/div	Ref	20.00	dBm							-60.	92 dBm		
10.0													Center F	rea
0.00													15.004500 N	
-10.0														
-20.0												-22.05 dBm		
-30.0												-22.00 0.011	Start Fi	
-40.0	1												9.000	(Hz
	Ŷ'													
-50.0	L											² [−]	Stop Fr	rea
-60.0	WWW.	alington the		error internet	a distant of	di watar ha	the street with the	and have so it	-	with the second	entre destructions	الدورية الطامية ماميك	30.000000 N	
-70.0														
Star	t 9 kH	z									Stop 3	0.00 MHz	CF St	en
#Res	S BW	100	٢Hz			#VBW	300 kHz		:	Sweep 5.	.333 ms (4		2.999100 N	/Hz
MKR M	IODE TR	SCL		×			Y	FUN	ICTION FL	INCTION WIDTH	I FUNCTI	ON VALUE	Auto N	/lan
	N 1 N 1	f			283.4 k 324 4 Mi		-48.07 dE -60.92 dE	3m						
3				20.0	524 4 1911	ח 2	-60.92 at	5111					Freq Off	set
4													0	Hz
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7														
9 10														
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MSG										STATU	J <mark>S <u>1</u> DC Co</mark>	upled		

Agilent Spectrum Analyzer - Swe		SENSE:INT	ALIGN OFF	04:45:45 PM Oct 27, 2015	
Center Freq 5.01500			Avg Type: Log-Pwr		Frequency
10 dB/div Ref 20.00 d		#Atten: 30 dB	Mkr1	0 5.284 44 GHz -44.40 dBm	Auto Tune
10.0 0.00 -10.0					Center Freq 5.015000000 GHz
-20.0	3	<mark>∳</mark> 10 ♦	9 ₀ 7		Start Freq 30.000000 MHz
-50.0					Stop Freq 10.000000000 GHz
Start 30 MHz #Res BW 1.0 MHz		3.0 MHz		Stop 10.000 GHz .67 ms (40001 pts)	CF Step 997.000000 MHz Auto Man
MMR MODE FRC State 1 N 1 F 2 N 1 F 3 N 1 F 4 N 1 F 5 N 1 F 6 N 1 F 7 N 1 F 9 N 1 F 9 N 1 F 10 N 1 F	× 2.468 16 GHz 6.888 36 GHz 2.434 02 GHz 9.410 03 GHz 6.777 70 GHz 9.471 59 GHz 6.106 47 GHz 6.880 24 GHz 5.827 31 GHz 5.284 44 GHz	4.40 dBm 43.56 dBm 43.56 dBm 43.70 dBm 43.70 dBm 44.03 dBm 44.03 dBm 44.28 dBm 44.28 dBm 44.30 dBm	FUNCTION WIDTH		Freq Offset 0 Hz
MSG			STATUS		



Center Freq 17.500000000 GHz Trig: Free Run Aver Type: Log-Pwr Trig: Free Run Statten: 30 dB Aver Type: Log-Pwr Trig: Free Run Statten: 30 dB Frequency 10 dB/dlv Ref 20.00 dBm -35.26 dBm </th <th>Agilent Spectrum Analyzer - S</th> <th></th> <th></th> <th></th> <th></th> <th></th>	Agilent Spectrum Analyzer - S					
Interference #Atten: 30 dB Det PPPPP Auto Tune Mkr5 24.763.750 GHz -35.26 dBm -35.26 dBm -35.26 dBm 10 dB/div Ref 20.00 dBm -35.26 dBm -35.26 dBm -35.26 dBm 10 dB/div Ref 20.00 dBm -35.26 dBm -35.26 dBm -35.26 dBm -35.26 dBm 10 dB/div Ref 20.00 dBm -35.26 dBm -35.26 dBm -35.26 dBm -35.26 dBm 10 dB/div Ref 20.00 dBm -35.26 dBm -35.26 dBm -35.26 dBm -35.26 dBm 10 dB/div Ref 20.00 dBm -35.26 dBm -35.26 dBm -35.26 dBm -35.26 dBm 20 db/div -30 db/div -35.26 dBm -35.26 dBm -35.26 dBm -35.26 dBm 30 db/div -30 db/div -35.26 dBm -35.26 dBm -35.26 dBm -35.26 dBm 10 db/div -30 db/div -35.26 dBm -35.26 dBm -35.26 dBm -35.26 dBm 11 db/div -31.20 d75 GHz -35.26 dBm -35.26 dBm -35.26 dBm -35.26 dBm 11 db/div -35.26 dBm		0000000 GHz			TRACE 1 2 3 4 5 6	Frequency
WKR 524,763 750 GHz Center Freq 10 dB/div Ref 20.00 dBm -35.26 dBm 000 -35.26 dBm -35.26 dBm 000 -30.0 -30.0 000 -30.0 -30.0 000 -30.0 -30.0 000 -30.0 -30.0 000 -30.0 -30.0 000 -30.0 -30.0 000 -30.0 -30.0 000 -30.0 -30.0 000 -30.0 -30.0 000 -30.0 -30.0 000 -30.0 -30.0 000 -30.0 -30.0 000 -30.0 -30.0 000 -30.0 -30.0 000 -30.0 -30.0 000 -30.0 -30.0 200 -30.0 -30.0 7.00 -30.0 -30.0 8 1 1 -30.0 1 1 1 -34.53 dBm -34.53 dBm 1 1 1 -35.26 dBm -36.23 dBm <td></td> <td>PNO: Fast G IFGain:Low</td> <td></td> <td></td> <td>DETPPPP</td> <td></td>		PNO: Fast G IFGain:Low			DETPPPP	
100 1	10 dB/div Ref 20.00	0 dBm		Mkr5 2		Auto Tune
300 30 1 1 24.550 375 GHz 34.53 35.26 6Bm 6 7 35.26 35.26 35.26 35.26 35.26 35.26 35.26 35.26 35.26 35.26 35.26 35.26 35.26 35.26 35.26 35.26 35.26 35.2	0.00					Center Freq 17.500000000 GHz
500 600 700 600 700 700 700 700 700 700 700 700 700 700 7	-30.0	مان بالشور به الله بر المان ال	n a second and the second s		-22.05 dDm	Start Freq 10.000000000 GHz
#Res BW 1.0 MHz #VBW 3.0 MHz Sweep 40.00 ms (40001 pts) MKR MODE TRC SCI X Y 1 N 1 2 N 1 1 1 24.650 375 GHz 3 N 1 1 1 2 N 1 1 2 N 1 1 2 N 1 1 2 24.650 375 GHz 36.17 GHz -34.63 dBm 6 N 1 1 24.850 000 GHz -35.26 dBm - -	-60.0					
MRR MODE TRE State State <thstate< th=""> State State</thstate<>	Start 10.000 GHz #Res BW 1.0 MHz	#VBI	N 3.0 MHz	Sweep 40	.00 ms (40001 pts)	1.500000000 GHz
2 N 1 f 24.683 375 GHz -34.63 dBm				INCTION FUNCTION WIDTH	FUNCTION VALUE	
	2 N 1 f 3 N 1 f 4 N 1 f 5 N 1 f	24.688 375 GHz 23.120 875 GHz 24.856 000 GHz	-34.63 dBm -35.17 dBm -35.23 dBm		=	•
	7 7 8 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9					
	MSG			STATUS		

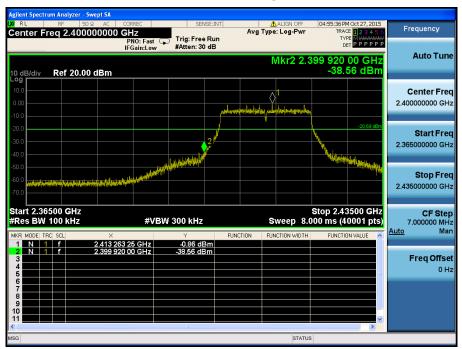


802.11n(HT20) & MCS 0 & 2412 MHz



Reference

Low Band-edge





			alyzer - S												
LXI RI		RF		Ω <u>Λ</u> DC 500 Μ	CORR	EC	SI	ENSE:INT	Ava		ALIGN OFF		M Oct 27, 2015	Freque	ncy
		eq	101004	500 W	PN	0:Fast (ain:Low_	Trig: Fre #Atten: 3					TY			
10 di Log	B/div	Re	20.00	dBm							Mk		3 5 MHz 59 dBm	Auto	o Tune
10.0 0.00 -10.0															e r Freq 00 MHz
-20.0 -30.0 -40.0													-20.69 dBm		rt Freq 000 kHz
-50.0 -60.0 -70.0	Ĭ,	2	lannaadu	aadairid ^{io} nfa	nne bigher	hallen an the	untettiger unite	esteret gertet bit	ann de bernetet de	ydy fyrlad	alaghillerigenegangangang	erittensendette	y han sin han sa si s		p Freq 00 MHz
	t9kH sBW		kHz			#VB	W 300 KH	z		S	weep 5.	Stop 3 333 ms (4	0.00 MHz 0001 pts)	2.9991	F Step 00 MHz Man
MKR 1 1 2	MODE TR	RC SCL		×	340.4 .623 5		- <u>48.68 c</u> -61.59 c	IBm	FUNCTION	FUN	ICTION WIDTH	FUNCTI	ON VALUE	<u>Auto</u>	wan
3 4 5 6				2	.023 5		-01.09 (=	Freq	Offset 0 Hz
7 8 9 10 11															
<							Ш				_		>		
MSG											STATU	DC Co	upled		

Agilent Spectrum Analyzer - S					
Center Freq 5.0150	PNO: Fast 🔾	Trig: Free Run	Avg Type: Log-Pwr	04:55:56 PM Oct 27, 2015 TRACE 1 2 3 4 5 6 TYPE M WAAWAAA DET P P P P P P	Frequency
10 dB/div Ref 20.00	IFGain:Low	¯ #Atten: 30 dB	Mkr1	0 7.339 75 GHz -44.30 dBm	Auto Tune
10.0 0.00 -10.0	¹				Center Freq 5.015000000 GHz
-20.0 -30.0 -40.0	4 4		<u> </u>	-20.69 dBm	Start Freq 30.000000 MHz
-50.0					Stop Freq 10.000000000 GHz
Start 30 MHz #Res BW 1.0 MHz	#VBV	/ 3.0 MHz	Sweep 18	Stop 10.000 GHz .67 ms (40001 pts)	CF Step 997.000000 MHz
MKR MODE TRC SCL	X		NCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
1 N 1 f 2 N 1 f 3 N 1 f 4 N 1 f 5 N 1 f	2.407 35 GHz 2.397 63 GHz 2.431 03 GHz 2.464 18 GHz 7.852 96 GHz	6.53 dBm -29.45 dBm -32.14 dBm -42.51 dBm -43.39 dBm			Freq Offset 0 Hz
6 N 1 f 7 N 1 f 8 N 1 f 9 N 1 f	6.058 61 GHz 9.501 50 GHz 8.394 58 GHz 6.978 34 GHz	-43.63 dBm -43.85 dBm -44.04 dBm -44.28 dBm			
10 N 1 f 11 <	7.339 75 GHz	-44.30 dBm		×	
MSG			STATUS	5	



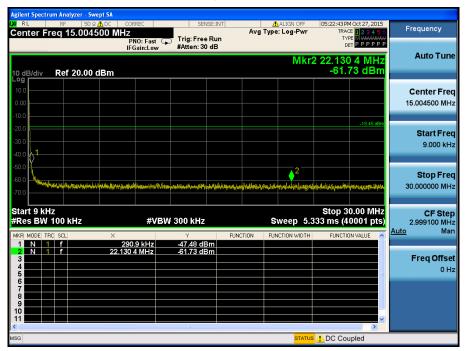
Agilent Spectrum Analyzer - S					
Center Freq 17.50		SENSE:INT	Avg Type: Log-Pwr	04:56:05 PM Oct 27, 2015 TRACE 1 2 3 4 5 6 TYPE M WARMAN	Frequency
	PNO: Fast G IFGain:Low	Trig: Free Run #Atten: 30 dB		DET PPPPP	
10 dB/div Ref 20.00) dBm		Mkr5 2	24.890 500 GHz -35.42 dBm	Auto Tune
10.0 0.00					Center Freq 17.500000000 GHz
-20.0 -30.0 -40.0	And the second se	an Alexandra Alexandra and and and and and and and and and an		-20.69 dBm	Start Freq 10.000000000 GHz
-60.0 -60.0 -70.0					Stop Freq 25.00000000 GHz
Start 10.000 GHz #Res BW 1.0 MHz	#VBI	N 3.0 MHz	Sweep 40	Stop 25.000 GHz .00 ms (40001 pts)	CF Step 1.50000000 GHz Auto Man
MKR MODE TAC SLI 1 N 1 7 7 2 N 1 7 7 3 N 1 7 7 4 N 1 7 6 7 - - 7 - 8 - - 9 - 10 - - 11 -	× 24,551 125 GHz 24,551 875 GHz 23,770 375 GHz 23,170 875 GHz 24,890 500 GHz	Y FU 34.21 dBm -34.39 dBm -35.24 dBm -35.26 dBm -35.42 dBm		FUNCTION VALUE	Freq Offset 0 Hz
MSG			STATUS	3	



802.11n(HT20) & MCS 0 & 2437 MHz



Reference







Agilent Spectrum Analyzer	- Swept SA					
	50 Ω AC CORREC	SENSE:IN		🛕 ALIGN OFF	05:23:05 PM Oct 27, 2015	Frequency
Center Freq 17.5	00000000 GHz PNO: Fast IFGain:Low			Type: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE M WWWWWW DET PPPPP	
10 dB/div Ref 20.	00 dBm			Mkr5 2	3.210 875 GHz -35.26 dBm	Auto Tune
10.0 0.00						Center Freq 17.50000000 GHz
-20.0 -30.0 -40.0			Theorem and the first of the state of the st		-18.45 dBm	Start Freq 10.000000000 GHz
-50.0 -60.0 -70.0						Stop Freq 25.000000000 GHz
Start 10.000 GHz #Res BW 1.0 MHz	#V	BW 3.0 MHz		Sweep 40	Stop 25.000 GHz 00 ms (40001 pts)	CF Step 1.50000000 GHz
MKR MODE TRC SCL	× 24.599 125 GHz	, -33.17 dBm	FUNCTION	FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
2 N 1 f 3 N 1 f 4 N 1 f	24.682 375 GHz 24.792 625 GHz 23.835 625 GHz	-34.20 dBm -34.58 dBm -35.10 dBm				Freq Offset 0 Hz
5 N 1 f 6 7 8 9 9	23.210 875 GHz	-35.26 dBm				
9 10 11					~	
MSG				STATUS		



802.11n(HT20) & MCS 0 & 2462 MHz

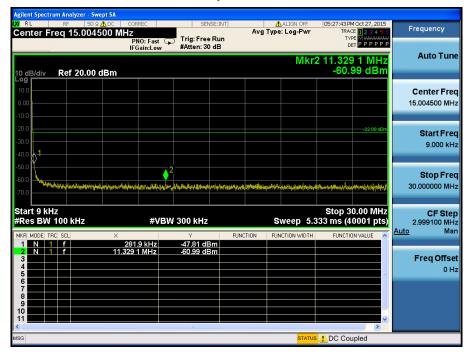


Reference

High Band-edge







Agilent Spectrum Analyzer - Sw X/ RL RF 50 ໑	AC CORREC	SENSE:INT	ALIGN OFF	05:27:56 PM Oct 27, 2015	Frequency
Center Freq 5.0150	00000 GHz PNO: Fast G IFGain:Low	Trig: Free Run #Atten: 30 dB	Avg Type: Log-Pwr	TRACE 123456 TYPE M WWWWWWW DET P P P P P P	
10 dB/div Ref 20.00	dBm		Mkr1	0 9.404 79 GHz -44.26 dBm	Auto Tune
-og 10.0 -0.00	¹				Center Free 5.015000000 GH:
20.0		a contraction of the start day of parameters	<u>5</u> 0 04 08		Start Free 30.000000 MH;
-50.0 U					Stop Fred 10.000000000 GH;
Start 30 MHz #Res BW 1.0 MHz	#VBW	3.0 MHz	Sweep 18	Stop 10.000 GHz .67 ms (40001 pts)	CF Step 997.000000 MH
IKR MODE TRC SCL	× 2.457 20 GHz	4.26 dBm	ICTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Ma
2 N 1 f 3 N 1 f 4 N 1 f 5 N 1 f	2.479 38 GHz 2.446 48 GHz 6.808 35 GHz 6.106 96 GHz	-32.45 dBm -32.77 dBm -43.67 dBm -44.01 dBm			Freq Offse 0 Hi
6 N 1 f 7 N 1 f 8 N 1 f 9 N 1 f	2.411 09 GHz 3.410 58 GHz 7.778 43 GHz 6.416 78 GHz	-44.04 dBm -44.17 dBm -44.19 dBm -44.25 dBm			
10 N 1 f 11	9.404 79 GHz	-44.26 dBm		~	
SG			STATUS		



Agilent Spectrum Analyzer					
Center Freq 17.5	50 Q AC CORREC	SENSE:INT	ALIGN OFF	05:28:05 PM Oct 27, 2015 TRACE 1 2 3 4 5 6	Frequency
	PNO: Fast ⊂ IFGain:Low	Trig: Free Run #Atten: 30 dB	• •	TYPE M WWWWWW DET P P P P P P	
	IFGain:Low_	#Atten: 50 dB	Mike C	2 440 605 611-	Auto Tune
10 dB/div Ref 20.0	00 dBm			3.142 625 GHz -35.44 dBm	
Log 10.0					Center Freq
0.00					17.500000000 GHz
-10.0					
-20.0				-22.00 dBm	
-30.0				$\wedge^{45} \wedge^{32} \wedge^{1}$	Start Freq 10.00000000 GHz
-40.0		The second s	a state of the second sec		10.00000000 GHz
-50.0	A second s				
-60.0					Stop Freq
-70.0					25.00000000 GHz
Start 10.000 GHz #Res BW 1.0 MHz	#VB	N 3.0 MHz	Sweep 40	Stop 25.000 GHz .00 ms (40001 pts)	CF Step 1.50000000 GHz
MKR MODE TRC SCL	×		UNCTION FUNCTION WIDTH	FUNCTION VALUE	<u>Auto</u> Man
1 N 1 f	24.616 750 GHz 24.068 500 GHz	-34.33 dBm -34.81 dBm			
3 N 1 f	23.801 500 GHz	-34.84 dBm			Freq Offset
4 N 1 f 5 N 1 f	22.966 375 GHz 23.142 625 GHz	-35.27 dBm -35.44 dBm		=	0 Hz
6					
8					
10					
11				×	
MSG			STATUS	3	



8.5 Radiated Spurious Emissions

Test Requirements and limit,

§15.247(d), §15.205, §15.209

In any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a) and (b), then the 15.209(a) limit in the table below has to be followed

• FCC Part 15.209(a) and (b)

Frequency (MHz)	Limit (uV/m)	Measurement Distance (meter)
0.009 - 0.490	2400/F (KHz)	300
0.490 – 1.705	24000/F (KHz)	30
1.705 – 30.0	30	30
30 ~ 88	100 **	3
88 ~ 216	150 **	3
216 ~ 960	200 **	3
Above 960	500	3

** Except as provided in 15.209(g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54 - 72 MHz, 76 - 88 MHz, 174 - 216 MHz or 470 - 806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g. 15.231 and 15.241.

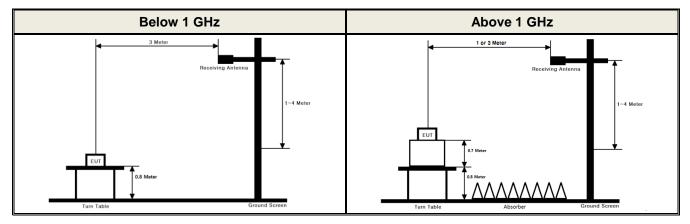
• FCC Part 15.205 (a): Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	MHz	GHz	GHz
0.009 ~ 0.110	8.41425 ~ 8.41475	108 ~ 121.94	1300 ~ 1427	4.5 ~ 5.15	14.47 ~ 14.5
0.495 ~ 0.505	12.29 ~ 12.293	123 ~ 138	1435 ~ 1626.5	5.35 ~ 5.46	15.35 ~ 16.2
2.1735 ~ 2.1905	12.51975 ~	149.9 ~ 150.05	1645.5 ~ 1646.5	7.25 ~ 7.75	17.7 ~ 21.4
4.125 ~ 4.128	12.52025	156.52475 ~	1660 ~ 1710	8.025 ~ 8.5	22.01 ~ 23.12
4.17725 ~ 4.17775	12.57675 ~	156.52525	1718.8 ~ 1722.2	9.0 ~ 9.2	23.6 ~ 24.0
4.20725 ~ 4.20775	12.57725	156.7 ~ 156.9	2200 ~ 2300	9.3 ~ 9.5	31.2 ~ 31.8
6.215 ~ 6.218	13.36 ~ 13.41	162.0125 ~ 167.17	2310 ~ 2390	10.6 ~ 12.7	36.43 ~ 36.5
6.26775 ~ 6.26825	16.42 ~ 16.423	167.72 ~ 173.2	2483.5 ~ 2500	13.25 ~ 13.4	Above 38.6
6.31175 ~ 6.31225	16.69475 ~	240 ~ 285	2655 ~ 2900		
8.291 ~ 8.294	16.69525	322 ~ 335.4	3260 ~ 3267		
8.362 ~ 8.366	16.80425 ~	399.90 ~ 410	3332 ~ 3339		
8.37625 ~ 8.38675	16.80475	608 ~ 614	3345.8 ~ 3358		
	25.5 ~ 25.67	960 ~ 1240	3600 ~ 4400		
	37.5 ~ 38.25				
	73 ~ 74.6				
	74.8 ~ 75.2				

• FCC Part 15.205(b): The field strength of emissions appearing within these frequency bands shall not exceed the limits shown in §15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in §15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in §15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in §15.35 apply to these measurements.



Test Configuration



TEST PROCEDURE

- 1. The EUT is placed on a non-conductive table, emission measurements at below 1 GHz, the table height is 80 cm and above 1 GHz, the table height is 1.5 m.
- 2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
- 3. EUT is set 1 or 3 m away from the receiving antenna, which is varied from 1 m to 4 m to find out the highest emissions.
- 4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- 6. Repeat above procedures until the measurements for all frequencies are complete.

Measurement Instrument Setting for Radiated Emission Measurements.

The radiated emission was tested according to the section 6.3, 6.4, 6.5 and 6.6 of the ANSI C63.10-2013 with following settings.

Peak Measurement:

RBW = As specified in below table , VBW ≥ 3 x RBW, Sweep = Auto, Detector = Peak, Trace mode = Max Hold until the trace stabilizes.

Frequency	RBW
9 - 150 kHz	200 - 300 Hz
0.15 - 30 MHz	9 - 10 kHz
30 - 1000 MHz	100 - 120 kHz
> 1000 MHz	1 MHz

Average Measurement:

- 1. RBW = 1 MHz (unless otherwise specified).
- 2. VBW ≥ 3 x RBW.
- 3. Detector = RMS (Number of points $\ge 2 \times \text{Span} / \text{RBW}$)
- 4. Averaging type = power. (i.e., RMS)
- 5. Sweep time = auto.
- 6. Perform a trace average of at least 100 traces.
- 7. A correction factor shall be added to the measurement results prior to comparing to the emission limit in order to compute the emission level that would have been measured had the test been performed at 100 percent duty cycle. The correction factor is computed as follows:
- 1) If power averaging (RMS) mode was used in step 4, then the applicable correction factor is 10 log(1/x), where x is the duty cycle.
- 2) If linear voltage averaging mode was used in step 4, then the applicable correction factor is 20 log(1/x), where x is the duty cycle.
- 3) If a specific emission is demonstrated to be continuous (≥ 98 percent duty cycle) rather than turning on and off with the transmit cycle, then no duty cycle correction is required for that emission.

Duty Cycle Corrections (Refer to appendix II for duty cycle measurement procedure and plots)

Band	Duty Cycle (%)	T _{on} (ms)	T _{on} + T _{off} (ms)	DCF = 10log(1 / Duty) (dB)
TM 1	97.62	8.200	8.400	0.10
TM 2	87.18	1.360	1.560	0.60
TM 3	86.39	1.270	1.470	0.64
-	-	-	-	-



9 kHz ~ 25 GHz Data(802.11b & 1 Mbps)

Lowest Channel

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2389.87	Н	Y	PK	62.24	2.84	N/A	N/A	65.08	74.00	8.92
2389.17	Н	Y	AV	44.95	2.84	0.10	N/A	47.89	54.00	6.11
4824.07	Н	Y	PK	46.16	7.99	N/A	N/A	54.15	74.00	19.85
4824.01	Н	Y	AV	37.25	7.99	0.10	N/A	45.34	54.00	8.66

Middle Channel

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4873.99	Н	Y	PK	49.19	8.03	N/A	N/A	57.22	74.00	16.78
4873.99	Н	Y	AV	43.72	8.03	0.10	N/A	51.85	54.00	2.15

Highest Channel

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2486.57	Н	Y	PK	59.57	3.19	N/A	N/A	62.76	74.00	11.24
2483.62	Н	Y	AV	44.77	3.19	0.10	N/A	48.06	54.00	5.94
4924.11	Н	Y	PK	47.31	8.19	N/A	N/A	55.50	74.00	18.50
4924.03	Н	Y	AV	40.05	8.19	0.10	N/A	48.34	54.00	5.66

Note.

1. Measurement Distance = 3 m for below 10 GHz, Measurement Distance = 1 m for above 10 GHz. So Distance Correction Factor : - 9.54 dB = 20*log(1 m / 3 m)

2. No other spurious and harmonic emissions were found greater than listed emissions on above table.

3. The band edge test has performed between 2310-2390 MHz for low channel and 2483.5-2500 MHz for high channel. The worst results were reported in the table.

4. Sample Calculation.

Margin = Limit – Result / Result = Reading + T.F+ DCF + Distance Factor / T.F = AF + CL – AG Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain, DCF = Duty Cycle Correction Factor.



9 kHz ~ 25 GHz Data(802.11g & 6 Mbps)

Lowest Channel

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2389.79	Н	Y	PK	60.91	2.84	N/A	N/A	63.75	74.00	10.25
2389.84	Н	Y	AV	46.51	2.84	0.60	N/A	49.95	54.00	4.05
4823.63	Н	Y	PK	43.88	7.99	N/A	N/A	51.87	74.00	22.13
4823.80	Н	Y	AV	32.55	7.99	0.60	N/A	41.14	54.00	12.86

Middle Channel

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4873.24	Н	Y	PK	44.18	8.03	N/A	N/A	52.21	74.00	21.79
4873.93	Н	Y	AV	33.44	8.03	0.60	N/A	42.07	54.00	11.93

Highest Channel

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2483.64	Н	Y	PK	62.09	3.19	N/A	N/A	65.28	74.00	8.72
2483.51	Н	Y	AV	47.90	3.19	0.60	N/A	51.69	54.00	2.31
4923.88	Н	Y	PK	44.60	8.19	N/A	N/A	52.79	74.00	21.21
4924.28	Н	Y	AV	33.14	8.19	0.60	N/A	41.93	54.00	12.07

Note.

1. Measurement Distance = 3 m for below 10 GHz, Measurement Distance = 1 m for above 10 GHz. So Distance Correction Factor : - 9.54 dB = 20*log(1 m / 3 m)

2. No other spurious and harmonic emissions were found greater than listed emissions on above table.

3. The band edge test has performed between 2310-2390 MHz for low channel and 2483.5-2500 MHz for high channel. The worst results were reported in the table.

4. Sample Calculation.

Margin = Limit – Result / Result = Reading + T.F+ DCF + Distance Factor / T.F = AF + CL – AG Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain, DCF = Duty Cycle Correction Factor.



9 kHz ~ 25 GHz Data(802.11n HT20 & MCS 0)

Lowest Channel

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2389.47	Н	Y	PK	59.94	2.84	N/A	N/A	62.78	74.00	11.22
2389.92	Н	Y	AV	46.58	2.84	0.64	N/A	50.06	54.00	3.94
4824.72	Н	Y	PK	44.52	7.99	N/A	N/A	52.51	74.00	21.49
4823.69	Н	Y	AV	33.05	7.99	0.64	N/A	41.68	54.00	12.32

Middle Channel

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
4874.22	Н	Y	PK	44.18	8.03	N/A	N/A	52.21	74.00	21.79
4874.12	Н	Y	AV	33.48	8.03	0.64	N/A	42.15	54.00	11.85

Highest Channel

Frequency (MHz)	ANT Pol	EUT Position (Axis)	Detector Mode	Reading (dBuV)	T.F (dB/m)	DCF (dB)	Distance Factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
2484.03	Н	Y	PK	63.81	3.19	N/A	N/A	67.00	74.00	7.00
2483.68	Н	Y	AV	47.52	3.19	0.64	N/A	51.35	54.00	2.65
4924.42	Н	Y	PK	43.90	8.19	N/A	N/A	52.09	74.00	21.91
4924.36	Н	Y	AV	33.20	8.19	0.64	N/A	42.03	54.00	11.97

Note.

1. Measurement Distance = 3 m for below 10 GHz, Measurement Distance = 1 m for above 10 GHz. So Distance Correction Factor : - $9.54 \text{ dB} = 20^{\circ} \log(1 \text{ m} / 3 \text{ m})$

2. No other spurious and harmonic emissions were found greater than listed emissions on above table.

3. The band edge test has performed between 2310-2390 MHz for low channel and 2483.5-2500 MHz for high channel. The worst results were reported in the table.

4. Sample Calculation.

Margin = Limit – Result / Result = Reading + T.F+ DCF + Distance Factor / T.F = AF + CL – AG Where, T.F = Total Factor, AF = Antenna Factor, CL = Cable Loss, AG = Amplifier Gain, DCF = Duty Cycle Correction Factor.



8.6 Power-line conducted emissions

Test Requirements and limit, §15.207

For an intentional radiator which is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 uH/50 ohm line impedance stabilization network(LISN).

Compliance with the provision of this paragraph shall on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower applies at the boundary between the frequency ranges.

Frequency Range	Conducted Limit (dBuV)							
(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 of the frequency

TEST PROCEDURE

- 1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
- 2. The EUT is connected via LISN to the test power supply.
- 3. The measurement results are obtained as described below:
- 4. Detectors Quasi Peak and Average Detector.

Test Results: Comply(Refer to next page.)

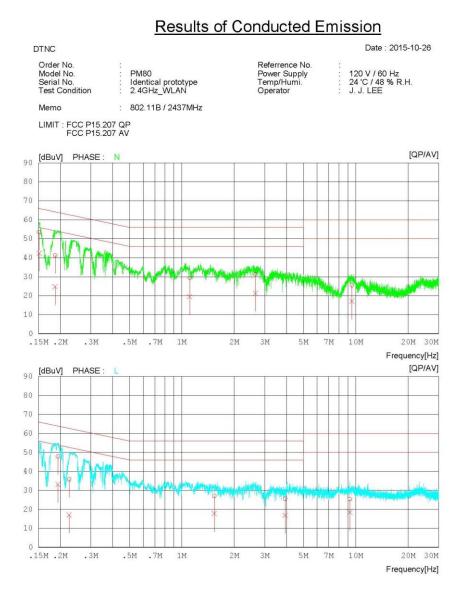
The worst data was reported.



RESULT PLOTS

AC Line Conducted Emissions (Graph)

Test Mode: 802.11b & 1 Mbps & 2437 MHz





AC Line Conducted Emissions (List)

Test Mode: 802.11b & 1 Mbps & 2437 MHz

Results of Conducted Emission

DTNC

Date : 2015-10-26

Order No. Model No. Serial No. Test Condition	PM80 Identical prototype 2.4GHz_WLAN	Referrence No. Power Supply Temp/Humi. Operator	: 120 V / 60 Hz 24 'C / 48 % R.H. J. J. LEE
Memo	: 802.11B / 2437MHz		

LIMIT : FCC P15.207 QP FCC P15.207 AV

NC	FREQ	READIN OP	G C.FACTO AV	R RES OP	ULT AV	LIM OP	IIT AV	MA OP	RGIN AV	PHASE
	[MHz]	[dBuV] [d	.BuV] [dB]	[dBuV]	[dBuV]	[dBuV]	[dBuV]	[dBuV][dBuV]	
1	0.15137	43.4 32	2.3 10.1	53.5	42.4	65.9	55.9	12.4	13.5	N
2	0.18668	31.2 14	4.7 10.1	41.3	24.8	64.2	54.2	22.9	29.4	Ν
3	1.11040	19.3 9	9.4 10.2	29.5	19.6	56.0	46.0	26.5	26.4	Ν
4	2.64880	21.1 13	1.1 10.2	31.3	21.3	56.0	46.0	24.7	24.7	Ν
5	9.51100	14.8 0	6.5 10.6	25.4	17.1	60.0	50.0	34.6	32.9	Ν
6	0.19395	37.7 23	3.0 10.1	47.8	33.1	63.9	53.9	16.1	20.8	L
7	0.22526	25.7 1	7.0 10.1	35.8	17.1	62.6	52.6	26.8	35.5	L
8	1.53640	16.8 1	7.5 10.2	27.0	17.7	56.0	46.0	29.0	28.3	L
9	3.92620	15.3 0	6.6 10.2	25.5	16.8	56.0	46.0	30.5	29.2	L
10	9.25660	14.7 1	7.8 10.6	25.3	18.4	60.0	50.0	34.7	31.6	L



Test Requirements, RSS-Gen [4.6.1]

When an occupied bandwidth value is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99 % emission bandwidth, as calculated or measured.

TEST CONFIGURATION

Refer to the APPENDIX I.

TEST PROCEDURE

The resolution bandwidth shall be set to as close to 1% of the selected span as is possible without being below 1 %. The video bandwidth shall be set to 3 times the resolution bandwidth. Video averaging is not permitted. Where practical a sampling detector shall be used given that a peak or peak hold may produce a wider bandwidth than actual.

TEST RESULTS: Comply

Test Mode	Data Rate	Frequency [MHz]	Test Results [MHz]				
		2412	13.120				
802.11b	1 Mbps	2437	13.253				
		2462	13.081				
		2412	16.652				
802.11g	6 Mbps	2437	16.741				
		2462	16.633				
		2412	17.754				
802.11n (20 MHz)	MCS 0	2437	17.807				
(20 1112)		2462	17.720				



RESULT PLOTS

Occupied Bandwidth



Occupied Bandwidth

Test Mode: 802.11b & 1 Mbps & 2437 MHz

Test Mode: 802.11b & 1 Mbps & 2412 MHz





Test Mode: 802.11b & 1 Mbps & 2462 MHz





Test Mode: 802.11g & 6 Mbps & 2412 MHz



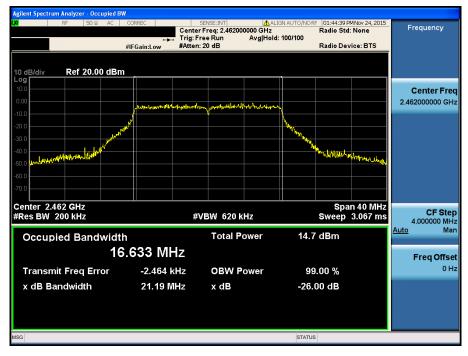
Occupied Bandwidth

Test Mode: 802.11g & 6 Mbps & 2437 MHz





Test Mode: 802.11g & 6 Mbps & 2462 MHz





Test Mode: 802.11n & MCS 0 & 2412 MHz



Occupied Bandwidth

Test Mode: 802.11n & MCS 0 & 2437 MHz





Test Mode: 802.11n & MCS 0 & 2462 MHz





9. LIST OF TEST EQUIPMENT

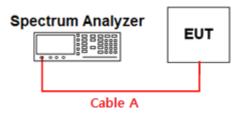
Туре	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal.Date (yy/mm/dd)	S/N	
MXA Signal Analyzer	Agilent Technologies	N9020A	15/09/09	16/09/09	MY46471248	
Multimeter	FLUKE	17B	15/04/27	16/04/27	26030065WS	
DC Power Supply	HP	66332A	15/01/22	16/01/22	US37471368	
Power Meter Power Sensor	Anritsu	ML2496A / MA2411B	15/06/25	16/06/25	1338004 1306053	
Vector Signal Generator	Rohde Schwarz	SMBV100A	15/01/06	16/01/06	255571	
Signal Generator	Rohde Schwarz	SMF100A	15/06/29	16/06/29	102341	
Thermohygrometer	BODYCOM	BJ5478	15/02/26	16/02/26	1209	
LOOP Antenna	Schwarzbeck	FMZB1513	14/04/29	16/04/29	1513-128	
TRILOG Broadband Test-Antenna	Schwarzbeck	VULB 9160	9160 14/04/30		3358	
Double-Ridged Guide Antenna	ETS	3117	14/05/12	16/05/12	140394	
Horn Antenna	A.H.Systems	SAS-574	15/04/30	17/04/30	154	
Low Noise Pre Amplifier	tsj	MLA-010K01-B01-27	15/04/09	16/04/09	1844538	
PreAmplifier	Agilent	8449B	15/02/26	16/02/26	3008A00370	
High-pass filter (3GHz)	Wainwright Instruments	WHKX3.0	15/01/06	16/01/06	12	
EMI TEST RECEIVER	R&S	ESR7	15/10/19	16/10/19	101109	
EMI TEST RECEIVER	R&S	ESCI	15/02/25	16/02/25	100364	
SINGLE-PHASE MASTER	NF	4420	15/09/09	16/09/09	3049354420023	
ARTIFICIAL MAINS NETWORK	Narda S.T.S. / PMM	PMM L2-16B	15/06/26	16/06/26	000WX20305	



APPENDIX I

Conducted Test set up Diagram & Path loss Information

Conducted Measurement



Path loss information

Frequency (GHz)	Path Loss (dB)	Frequency (GHz)	Path Loss (dB)
0.03	0.10	15	4.43
1	1.15	20	5.74
2.412 & 2.437 & 2.462	1.70	25	7.02
5	3.55	-	-
10	4.15	-	-

Note. 1: The path loss from EUT to Spectrum analyzer was measured and used for test.

Path loss (S/A's offset value) = Cable A (Attenuator, Applied only when it was used externally)



APPENDIX II

Duty cycle plots

TEST PROCEDURE

Duty Cycle measured using section 6.0 b) of KDB558074

The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal.

Set the center frequency of the instrument to the center frequency of the transmission. Set RBW \geq OBW if possible; otherwise, set RBW to the largest available value. Set VBW \geq RBW. Set detector = peak or average.

The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if T \leq 16.7 microseconds.)

Test Plots :

Duty Cycle

Test Mode: 802.11b & 1 Mbps & 2437 MHz

Agilent Spectrum	Analyzer - Swei	nt SA								
(XI	RF 50Ω	AC CORRI	EC D: Fast ↔⊷ iin:Low	SENSE Trig: Free F Atten: 40 d	Run	Avg Ty	ALIGNAUTO pe: Log-Pwr	TRAC	M Oct 29, 2015 CE 1 2 3 4 5 6 PE WWWWWW ET P N N N N N	Frequency
10 dB/div	Ref 30.00 d						Δ		400 ms 0.12 dB	Auto Tune
20.0	2		(3∆4						Center Freq 2.437000000 GHz
-10.0 -20.0 -30.0				L L L L L L L L L L L L L L L L L L L						Start Freq 2.437000000 GHz
-40.0 -50.0 -60.0										Stop Freq 2.437000000 GHz
Center 2.43 Res BW 8 M	Hz	Hz	#VBW	8.0 MHz	FUNC		Sweep 2	5.00 ms (pan 0 Hz 1001 pts)	CF Step 8.000000 MHz <u>Auto</u> Man
1 <u>A2</u> 1 2 F 1 3 <u>A4</u> 1 4 F 1 5 6 7	t (Δ) t (Δ) t (Δ) t (Δ)	8.20 1.90 8.40	0ms (Δ) 0ms 0ms (Δ) 0ms	-0.16 df 17.23 dBr 0.12 df 17.23 dBr	3 n B		UNCTION WIDTH	FUNCTION		Freq Offset 0 Hz
8 9 10 11 <							STATUS		~	

Duty Cycle

ilent Spectrum Analyzer - Swept SA ALIGN AUTO 01:03:28 PM Oct 29, 2015 Avg Type: Log-Pwr TRACE 12:345 6 Frequency Trig: Free Run Atten: 40 dB TYPE DET PNO: Fast • IFGain:Low Auto Tune ΔMkr3 1.560 ms -0.06 dB Ref 30.00 dBm dB/div \ominus **Center Freq** Venturth 2.437000000 GHz Start Freq 2.437000000 GHz Labo Stop Freq 2.437000000 GHz Center 2.437000000 GHz Res BW 8 MHz Span 0 Hz Sweep 5.000 ms (1001 pts) CF Step 8.000000 MHz Man #VBW 8.0 MHz <u>Auto</u> FUNCTION FUNCTION WIDTH FUNCTION V 1.360 ms (Δ) 1.975 ms 1.560 ms (Δ) 1.975 ms 0.77 dB 14.84 dBm -0.06 dB 14.84 dBm 1 t (Δ) 1 t **Freq Offset** F 0 Hz

Test Mode: 802.11g & 6Mbps & 2437 MHz

Duty Cycle

Test Mode: 802.11n (HT20) & MCS 0 & 2437 MHz

Agilent Spect		yzer - Swej												
L <mark>XI</mark>	RF	50 Ω	AC	CORREC			NSE:		Avg Ty	ALIGNAUTO		29 PM Oct 29, 2015 TRACE 1 2 3 4 5 1 TYPE WHAT	5	Frequency
10 dB/div	PRU: Past PRU: Past PRU: PAST PRU: PRU: PAST PRU: PRU: PAST PRU: PRU: PRU: PRU: PRU: PRU: PRU: PRU:													Auto Tune
20.0 10.0 0.00	energlewe (geo	Lowholes Intra	X	pr ^{av} ongkat ⁱ lup-typ			14	3∆4 dencovert	ikaryan kanan	haripath-ben-wa	phahh	u, Laketa Araphagilari		Center Freq 2.437000000 GHz
-10.0 -20.0 -30.0			hlve				rsile*				-			Start Freq 2.437000000 GHz
-40.0 -50.0 -60.0														Stop Freq 2.437000000 GHz
Center 2. Res BW 3			Hz	#V	BW	8.0 MHz	-			Sweep :	5.000 m	Span 0 Hz s (1001 pts))	CF Step 8.000000 MHz
MKR MODE T		[Δ]	Х	1.270 ms	/ 63	Y 0.26			CTION I	FUNCTION WIDTH	FUN			<u>Auto</u> Man
2 F 3 Δ4	1 t	(Δ)		1.270 ms 1.155 ms 1.470 ms 1.155 ms		0.20 15.02 d -0.12 15.02 d	Bm dB							Freq Offset 0 Hz
7 8 9 10														
K MSG						ш	_			STATU	s			
							_						_	

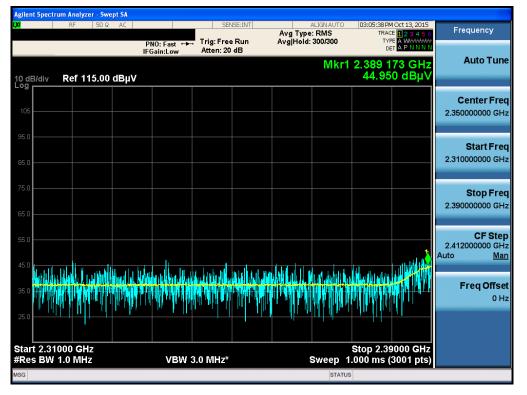


APPENDIX III

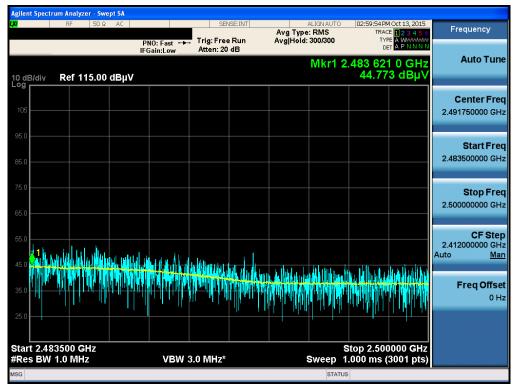
Unwanted Emissions (Radiated) Test Plot

802.11b & Lowest & Edge

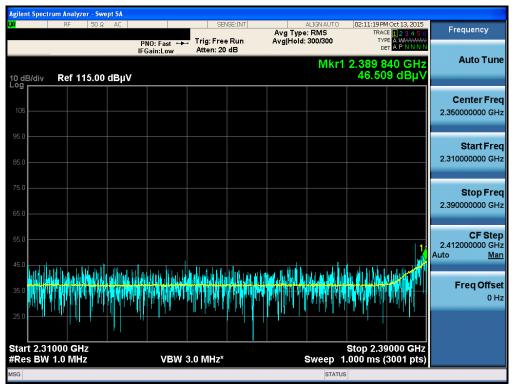
Detector Mode : AV



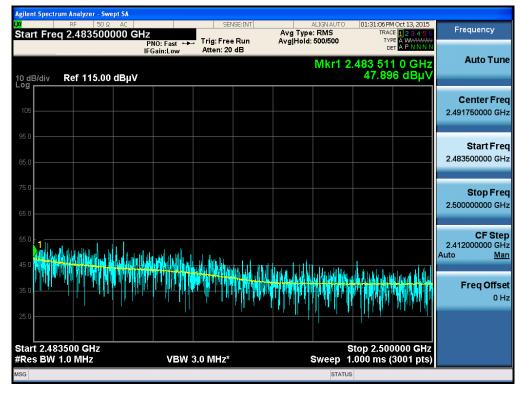
802.11b & Highest & Edge



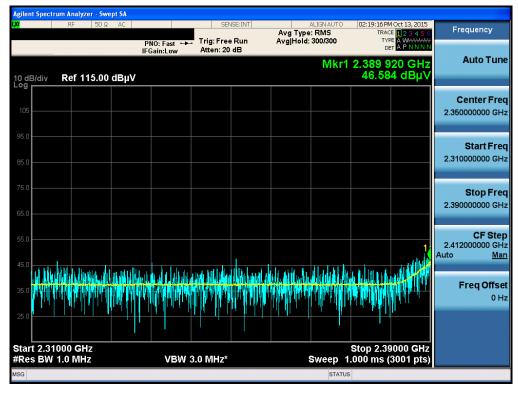
802.11g & Lowest & Edge



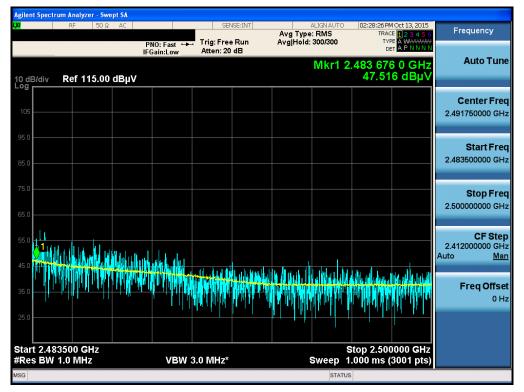
802.11g & Highest & Edge



802.11n (HT20) & Lowest & Edge

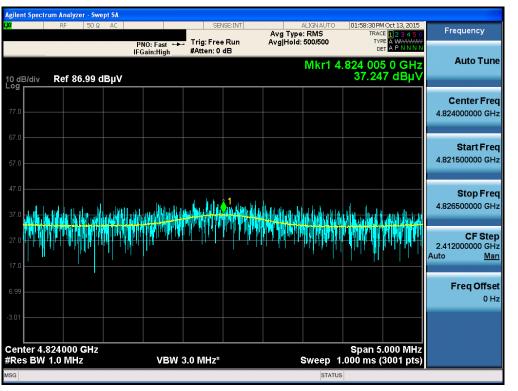


802.11n (HT20) & Highest & Edge





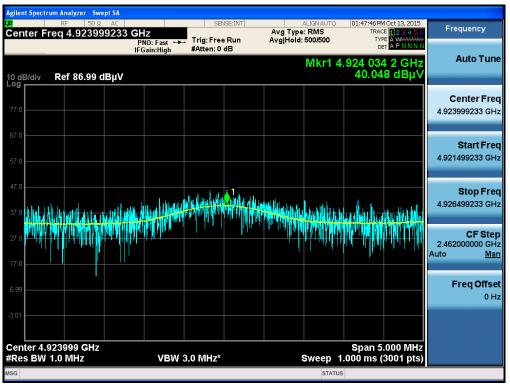
802.11b & Lowest & Harmonic



802.11b & Middle & Harmonic

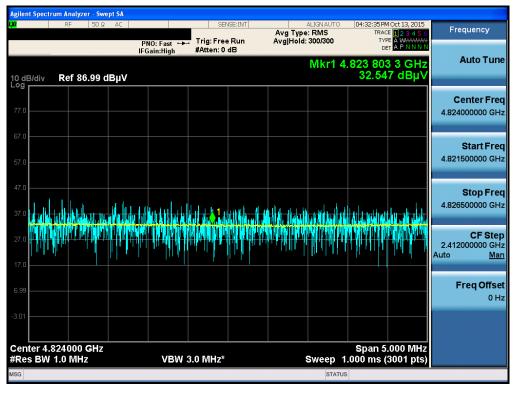


802.11b & Highest & Harmonic

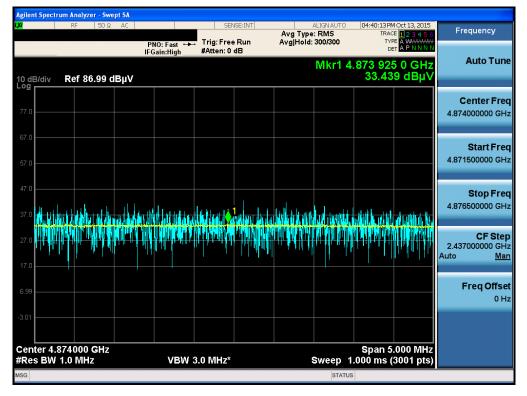


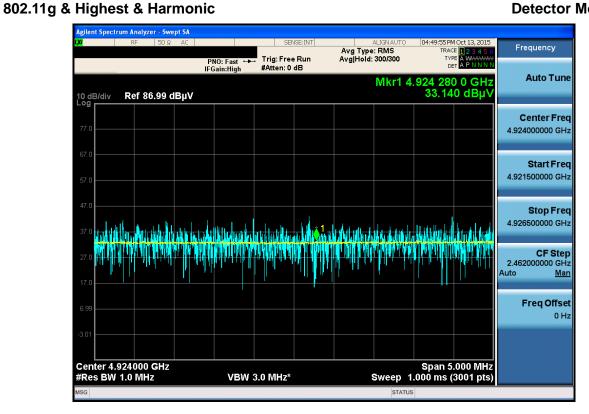


802.11g & Lowest & Harmonic

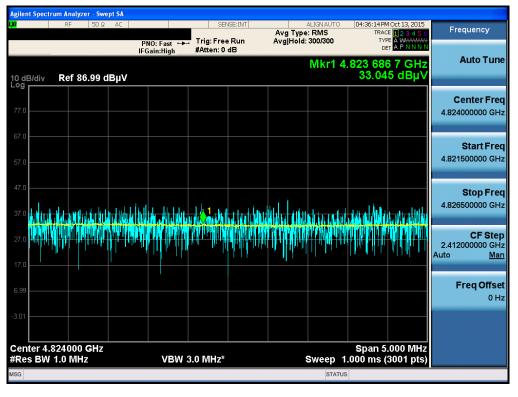


802.11g & Middle & Harmonic

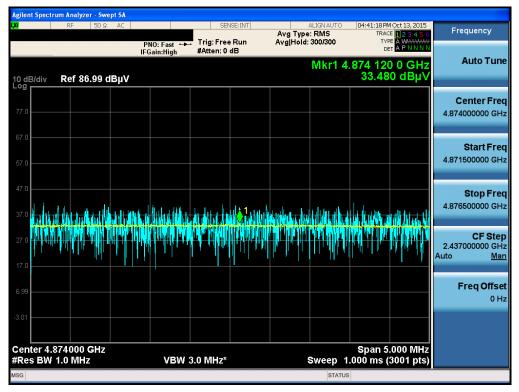




802.11n (HT20) & Lowest & Harmonic



802.11n (HT20) & Middle & Harmonic





802.11n (HT20) & Highest & Harmonic

