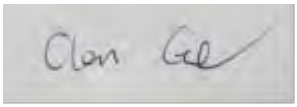
RF TEST REPORT

SIEMIC
GLOBAL TESTING & CERTIFICATIONS
YOUR CHOICE FOR- TCB FCB CB NB CAB RCB

Report No.: FCC_RF_SL16040101-AER-001A1_UNII _Rev 1.0
Supersede Report No.: None

Applicant	:	Aerohive Networks, Inc.
Product Name	:	Access Point
Model No.	:	AP245X
Test Standard	:	47 CFR 15.407
Test Method	:	ANSI C63.4: 2014 789033 D02 General UNII Test Procedures New Rules v01r02
FCC ID	:	WBV-AP245
IC ID	:	7774A-AP245
Dates of test	:	06/13/2016 – 06/20/2016
Issue Date	:	07/08/2016
Test Result	:	☒ Pass ☐ Fail
Equipment complied with the specification [X] Equipment did not comply with the specification [ ]		

This Test Report is Issued Under the Authority of:	
	
Rachana Khanduri	Chen Ge
Test Engineer	Engineer Reviewer
This test report may be reproduced in full only Test result presented in this test report is applicable to the tested sample only	

Issued By:
SIEMIC Laboratories
775 Montague Expressway, Milpitas, 95035 CA

Laboratory Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.

In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

Country/Region	Accreditation Body	Scope
USA	FCC, A2LA	EMC, RF/Wireless, Telecom
Canada	IC, A2LA, NIST	EMC, RF/Wireless, Telecom
Taiwan	BSMI, NCC, NIST	EMC, RF, Telecom, Safety
Hong Kong	OFTA, NIST	RF/Wireless, Telecom
Australia	NATA, NIST	EMC, RF, Telecom, Safety
Korea	KCC/RRA, NIST	EMI, EMS, RF, Telecom, Safety
Japan	VCCI, JATE, TELEC, RFT	EMI, RF/Wireless, Telecom
Mexico	NOM, COFETEL, Caniety	Safety, EMC, RF/Wireless, Telecom
Europe	A2LA, NIST	EMC, RF, Telecom, Safety
Israel	MOC, NIST	EMC, RF, Telecom, Safety

Accreditations for Product Certifications

Country	Accreditation Body	Scope
USA	FCC TCB, NIST	EMC, RF, Telecom
Canada	IC FCB, NIST	EMC, RF, Telecom
Singapore	iDA, NIST	EMC, RF, Telecom
EU	NB	EMC & R&TTE Directive
Japan	MIC (RCB 208)	RF, Telecom
Hong Kong	OFTA (US002)	RF, Telecom

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1 Report Revision History

Report No.	Report Version	Description	Issue Date
FCC_RF_SL16040101-AER-001A1_UNII	None	Original	06/23/2016
FCC_RF_SL16040101-AER-001A1_UNII_Rev 1.0	None	Updated Radio Description	07/08/2016

2 Executive Summary

The purpose of this test program was to demonstrate compliance of following product

Company: Aerohive Networks, Inc.
Product: Access Point
Model: AP245X

against the current Stipulated Standards. The specified model product stated above has demonstrated compliance with the Stipulated Standard listed on 1st page.

3 Customer information

Applicant Name	:	Aerohive Networks, Inc.
Applicant Address	:	1011 McCarthy Blvd, Milpitas, CA 95035, California, United States
Manufacturer Name	:	Aerohive Networks, Inc.
Manufacturer Address	:	1011 McCarthy Blvd, Milpitas, CA 95035, California, United States

4 Test site information

Lab performing tests	SIEMIC Laboratories
Lab Address	775 Montague Expressway, Milpitas, CA 95035
FCC Test Site No.	881796
IC Test Site No.	4842D-2
VCCI Test Site No.	A0133

5 Modification

Index	Item	Description	Note
-	-	-	-

6 EUT Information

6.1 EUT Description

Product Name	Access Point
Model No.	AP245X
Trade Name	Aerohive
Serial No.	N/A
Host Model No.	N/A
Input Power	100-240V, 50/60Hz
Power Adapter Manu/Model	Microsemi 9001GR
Power Adapter SN	C15336594000002605
Product Hardware version	1
Product Software version	HIVEOS 7.0r1
Radio Hardware version	1
Radio Software version	HIVEOS 7.0r1
Test Software version	N/A
Date of EUT received	05/07/2016
Equipment Class/ Category	DTS, UNII
Clock Frequencies	N/A
Port/Connectors	PoE, Ethernet

6.2 Radio Description

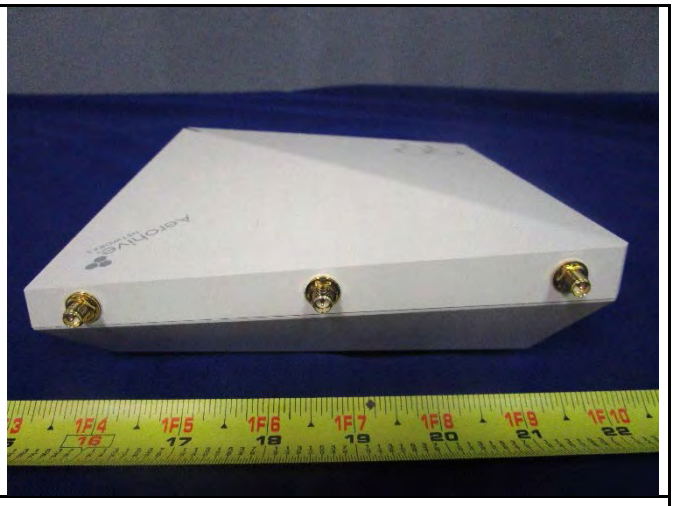
Radio Type	802.11a	802.11n/ac-20M	802.11n/ac-40M	802.11ac-80M
Operating Frequency	5260-5320MHz 5500-5700MHz	5240-5320MHz 5500-5700MHz	5270-5310MHz 5510-5670MHz	5290MHz 5530MHZ, 5610MHz
Modulation	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Channel Spacing	20MHz	20MHz	40MHz	80MHz
Number of Channels	15	15	7	3
Antenna Type	Sector Antenna			
Antenna Gain (Peak)	6 dBi (5GHz)			
Antenna Connector Type	U.FL connector			

EUT Power level setting

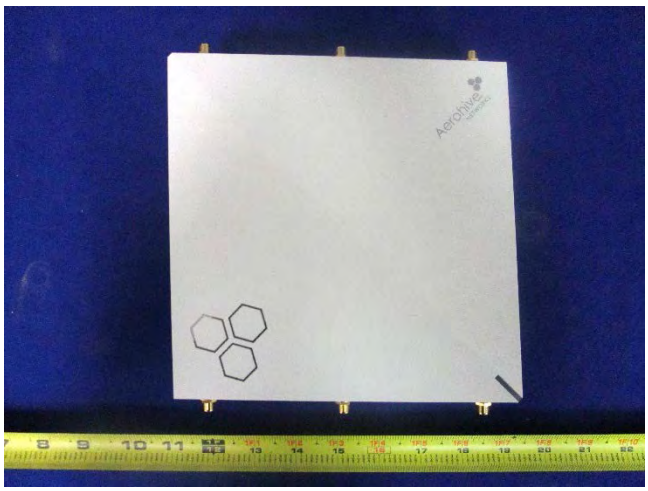
Mode	Frequency	Power Setting
802.11-a	5260	60
802.11-a	5280	60
802.11-a	5320	60
802.11-n-20	5260	60
802.11-n-20	5280	60
802.11-n-20	5320	60
802.11-n-40	5270	60
802.11-n-40	5310	60
802.11-ac-80	5290	60
802.11-a	5500	60
802.11-a	5580	60
802.11-a	5700	60
802.11-n-20	5500	60
802.11-n-20	5580	60
802.11-n-20	5700	60
802.11-n-40	5510	60
802.11-n-40	5590	60
802.11-n-40	5670	60
802.11-ac-80	5530	60
802.11-ac-80	5610	60

6.3 EUT Photos – External

EUT - Front View

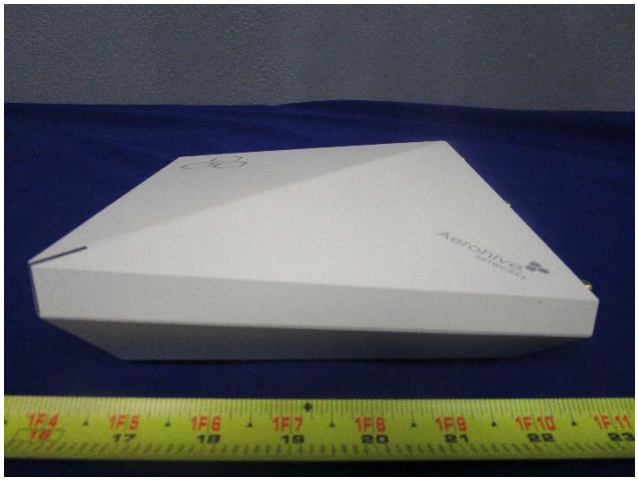


EUT – Rear View

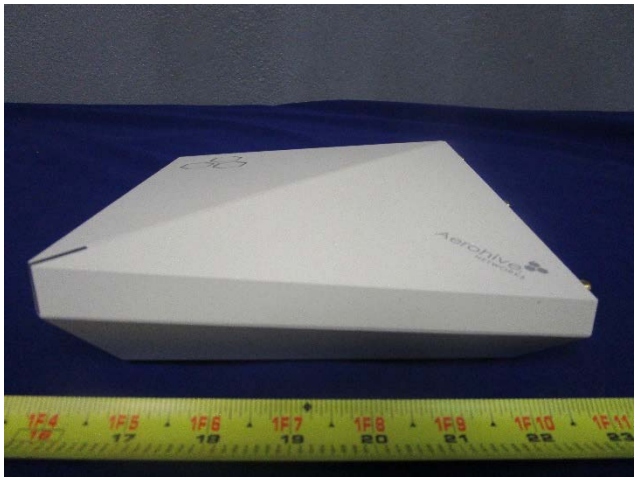


EUT - Top View

EUT – Bottom View



EUT – Left Side View



EUT – Right Side View

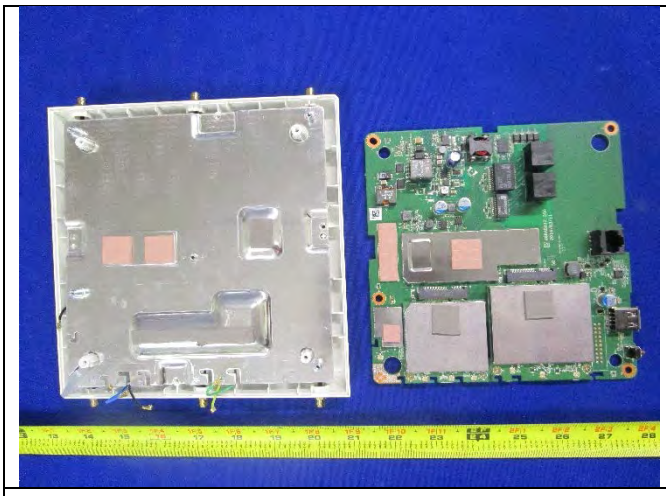
Antenna- View 1

Antenna –View 2

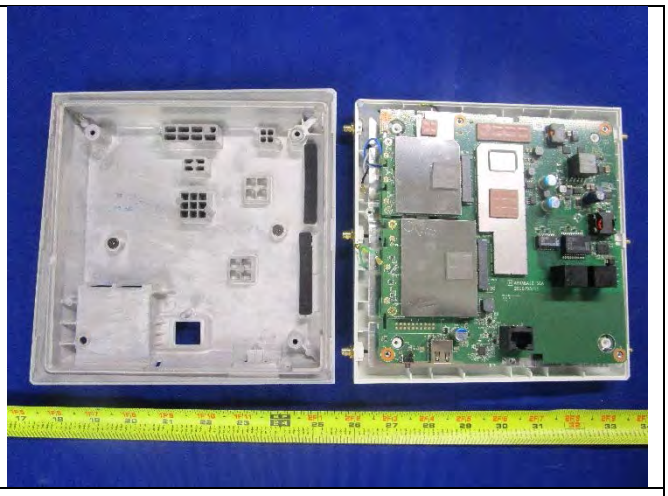
Support Equipment Power Supply Top View

Support Equipment Power Supply Bottom View

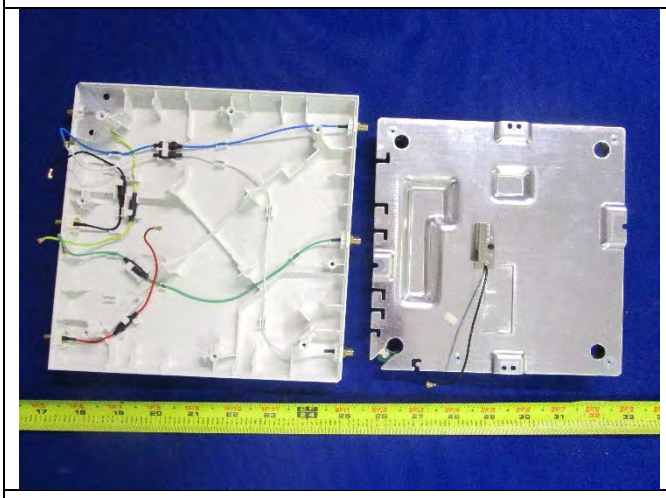
6.4 EUT Photos – Internal



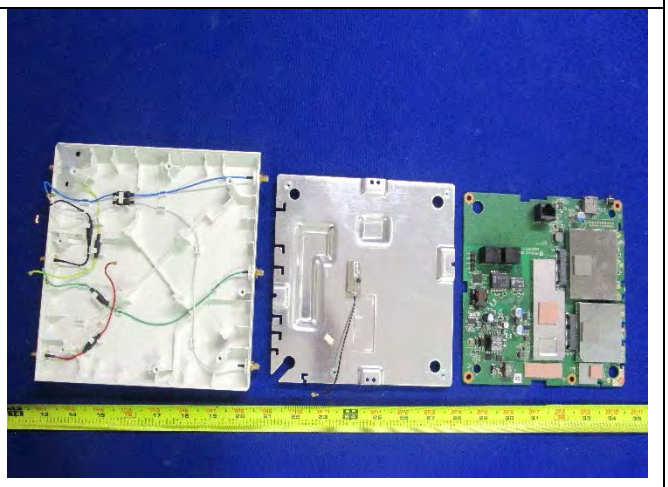
EUT: Cover Off View 1



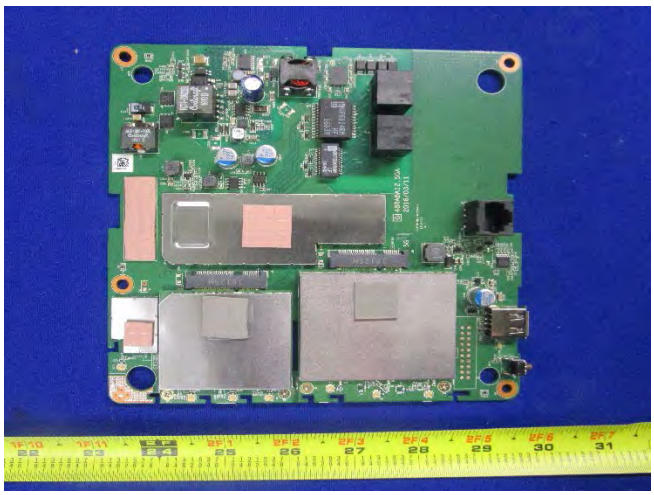
EUT: Cover Off View 2



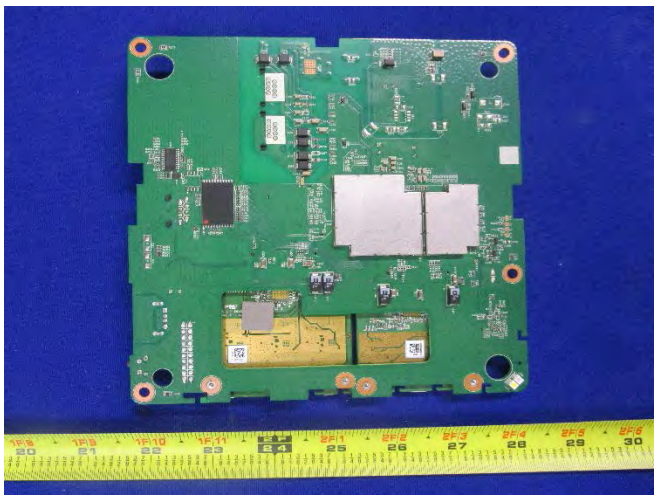
EUT: Cover Off View 3



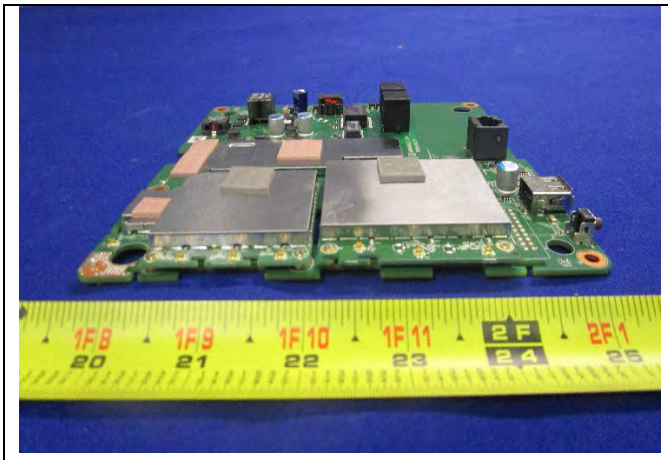
EUT: Cover Off View 4



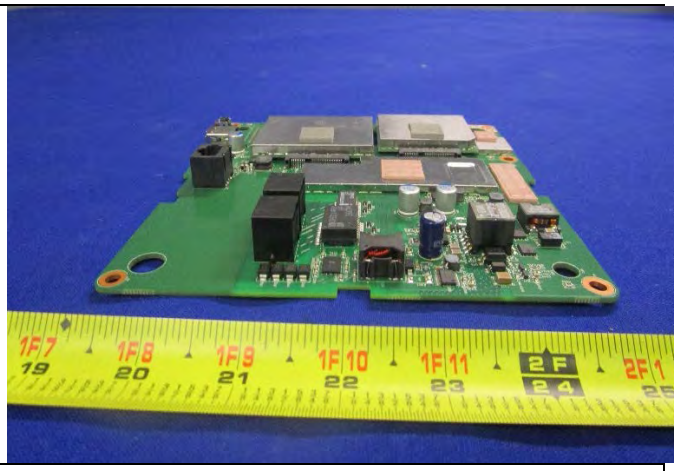
PCBA Top View



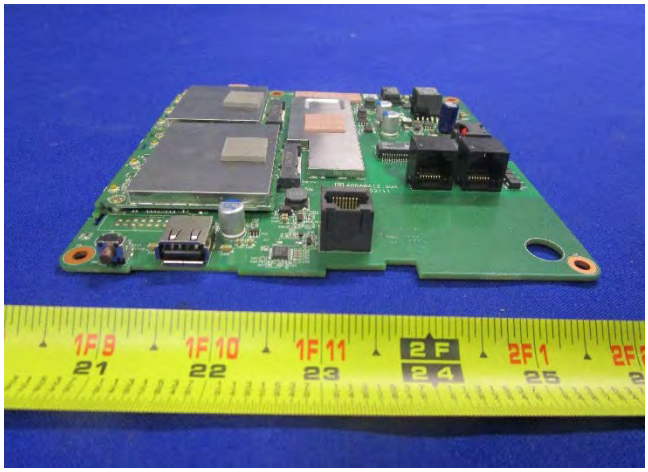
PCBA Bottom View



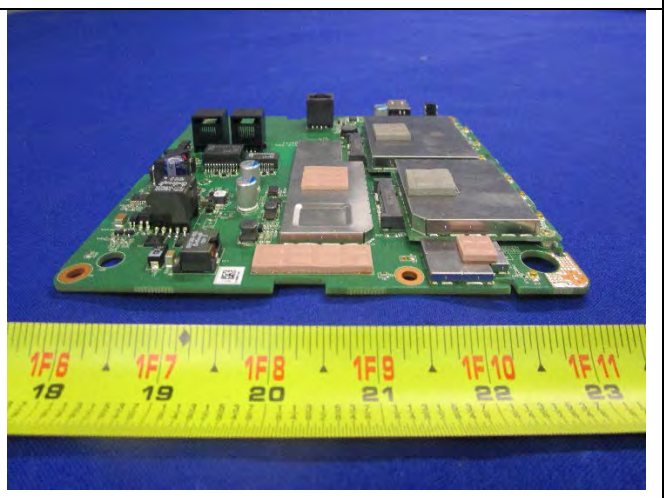
PCBA Front View



PCBA Rear View

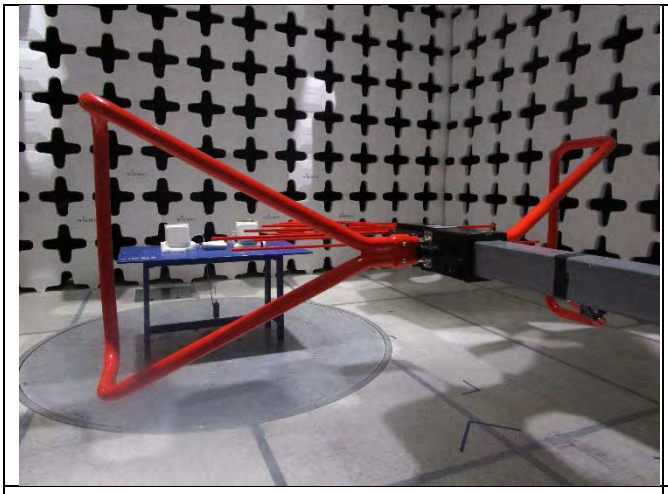


PCBA Left-Side View

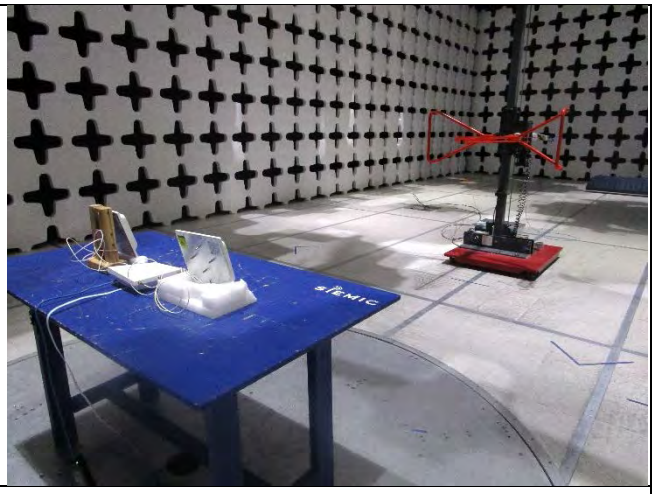


PCBA Right-Side View

6.5 EUT Test Setup Photos



Radiated Emissions (<1GHz) – Front View



Radiated Emissions (<1GHz) – Rear View

Radiated Emissions (>1GHz) – Front View

Radiated Emissions (>1GHz) – Rear View

7 Supporting Equipment/Software and cabling Description

7.1 Supporting Equipment

Item	Supporting Equipment Description	Model	Serial Number	Manufacturer	Note
1	Laptop	Latitude 3550	N/A	Dell	-

7.2 Cabling Description

Name	Connection Start		Connection Stop		Length / shielding Info		Note
	From	I/O Port	To	I/O Port	Length (m)	Shielding	
RJ45	EUT	RJ45	POE	RJ45	2	Unshielded	-
RJ45	EUT	RJ45	Laptop	USB	3	Unshielded	-

7.3 Test Software Description

Test Item	Software	Description
RF Testing	Tera Term	Set the EUT to transmit continuously in diferent test mode

8 Test Summary

Test Item	Test standard		Test Method/Procedure	Pass / Fail
Restricted Band of Operation	FCC	15.205	ANSI C63.4 – 2014 789033 D02 General UNII Test Procedures New Rules v01r02	☒ Pass ☐ N/A
AC Conducted Emissions Voltage	FCC	15.207(a)	ANSI C63.4 – 2014	☐ Pass ☒ N/A

Test Item	Test standard		Test Method/Procedure	Pass / Fail
26 & 6 dB Emission Bandwidth	FCC	15.407 (a) (2)	789033 D02 General UNII Test Procedures New Rules v01r02	☐ Pass ☒ N/A
Maximum conducted Output Power	FCC	15.407 (a) (2)	789033 D02 General UNII Test Procedures New Rules v01r02	☒ Pass ☐ N/A
Power reduction (Antenna Gain > 6 dBi)	FCC	15.407 (a) (2)	-	☐ Pass ☒ N/A
Band Edge and Radiated Spurious Emissions	FCC	15.407(b)(2), 15.407(b)(6)	ANSI C63.4 – 2014 789033 D02 General UNII Test Procedures New Rules v01r02	☒ Pass ☐ N/A
Power Spectral Density	FCC	15.407 (a) (2)	789033 D02 General UNII Test Procedures New Rules v01r02	☒ Pass ☐ N/A
Frequency Stability	FCC	15.407 (g)	-	☐ Pass ☒ N/A
Transmit Power Control (TPC)	FCC	15.407 (h)(1)	-	☐ Pass ☒ N/A
User Manual	FCC	-	-	☒ Pass ☐ N/A

Remark	1. All measurement uncertainties are not taken into consideration for all presented test result. 2. The applicant shall ensure frequency stability by showing that an emission is maintained within the band of operation under all normal operating conditions as specified in the user's manual. 3. The device is operating at near 98% duty cycle.
Note	1. Output Power, Power Spectral Density and Radiated Spurious Emission was tested for AP245X with Sector antenna. Please refer to FCC ID: WBV-AP245 for rest of the items. 2. Test Setup is same for Beamforming and Non-Beamforming mode. Only, limits are different for Beamforming and Non-Beamforming mode.

9 Measurement Uncertainty

Emissions			
Test Item	Frequency Range	Description	Uncertainty
Band Edge and Radiated Spurious Emissions	30MHz – 1GHz	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+5.6dB/-4.5dB
Band Edge and Radiated Spurious Emissions	1GHz – 40GHz	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+4.3dB/-4.1dB

10 Measurements, Examination and Derived Results

10.1 Output Power

Requirement(s):

Spec	Item	Requirement	Applicable
§ 15.407	a)(1)(i)	For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).	☐
	a)(1)(ii)	For an indoor access point operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W provided the maximum antenna gain does not exceed 6 dBi.	☐
	a)(1)(iii)	For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi.	☐
	a)(1)(iv)	For mobile and portable client devices in the 5.15-5.25 GHz band, the maximum conducted output power over the frequency band of operation shall not exceed 250 mW provided the maximum antenna gain does not exceed 6 dBi.	☐
	a)(2)	For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum conducted output power over the frequency bands of operation shall not exceed the lesser of 250 mW or 11 dBm 10 log B, where B is the 26 dB emission bandwidth in megahertz.	☒
	a)(3)	For the band 5.725-5.85 GHz, the maximum conducted output power over the frequency band of operation shall not exceed 1 W.	☒

Test Setup				
Test Procedure	789033 D02 General UNII Test Procedures New Rules v01r02 Measurement using a Power Meter (PM) Measurements may be performed 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 the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required. - Connect EUT's RF output power to power meter - Set EUT to be continuous transmission mode - Measurement the average output power using power meter and record the result - Repeat above steps for different test channel and other modulation type.			
Test Date	06/20/2016	Environmental condition	Temperature Relative Humidity Atmospheric Pressure	21°C 40% 1019mbar
Remark	Directional Gain = G_{ANT} + 10*log(N_{ANT}) dBi Antenna Gain (G_{ANT}) = 6 dBi, N_{ANT} = 3			
Result	☒ Pass ☐ Fail			

Test Data ☒ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☒ N/A

Test was done by *Rachana Khanduri* at *RF Test Site*.

Output Power measurement result for 5.3GHz

For Non-Beamforming

Type	Test mode	Freq (MHz)	CH	Conducted Power (dBm)				Limit (dBm)	Result
				Chain 1	Chain 2	Chain 3	Combined Power		
Output power	802.11a	5260	Low	13.56	10.92	11.29	16.86	24	Pass
Output power	802.11a	5280	Mid	13.46	10.83	11.41	16.82	24	Pass
Output power	802.11a	5320	High	13.30	11.03	11.42	16.81	24	Pass
Output power	802.11n-20M	5260	Low	13.37	11.67	13.14	17.56	24	Pass
Output power	802.11n-20M	5280	Mid	13.44	11.72	13.12	17.59	24	Pass
Output power	802.11n-20M	5320	High	13.20	11.44	13.10	17.42	24	Pass
Output power	802.11n-40M	5270	Low	12.22	11.57	13.84	17.42	24	Pass
Output power	802.11n-40M	5310	High	12.82	11.25	13.57	17.42	24	Pass
Output power	802.11ac-80M	5290	-	12.57	11.89	13.20	17.36	24	Pass

For Beamforming

Type	Test mode	Freq (MHz)	CH	Conducted Power (dBm)				Limit (dBm)	Result
				Chain 1	Chain 2	Chain 3	Combined Power		
Output power	802.11a	5260	Low	13.56	10.92	11.29	16.86	19.23	Pass
Output power	802.11a	5280	Mid	13.46	10.83	11.41	16.82	19.23	Pass
Output power	802.11a	5320	High	13.30	11.03	11.42	16.81	19.23	Pass
Output power	802.11n-20M	5260	Low	13.37	11.67	13.14	17.56	19.23	Pass
Output power	802.11n-20M	5280	Mid	13.44	11.72	13.12	17.59	19.23	Pass
Output power	802.11n-20M	5320	High	13.20	11.44	13.10	17.42	19.23	Pass
Output power	802.11n-40M	5270	Low	12.22	11.57	13.84	17.42	19.23	Pass
Output power	802.11n-40M	5310	High	12.82	11.25	13.57	17.42	19.23	Pass
Output power	802.11ac-80M	5290	-	12.57	11.89	13.20	17.36	19.23	Pass
Note	Directional Gain = 6 + 10* log(3) = 10.77dBi Directional Gain is greater than 6dBi. So, Limit = 24 – 4.77 = 19.23 dBm								

Output Power measurement result for 5.5GHz

For Non-Beamforming

Type	Test mode	Freq (MHz)	CH	Conducted Power (dBm)				Limit (dBm)	Result
				Chain 1	Chain 2	Chain 3	Combined Power		
Output power	802.11a	5500	Low	13.04	11.76	12.28	17.16	24	Pass
Output power	802.11a	5580	Mid	13.08	12.05	12.56	17.35	24	Pass
Output power	802.11a	5700	High	13.26	12.39	12.73	17.58	24	Pass
Output power	802.11n-20M	5500	Low	12.89	12.79	12.99	17.66	24	Pass
Output power	802.11n-20M	5580	Mid	13.07	12.66	12.97	17.67	24	Pass
Output power	802.11n-20M	5700	High	13.13	12.19	13.23	17.65	24	Pass
Output power	802.11n-40M	5510	Low	12.80	12.24	12.69	17.35	24	Pass
Output power	802.11n-40M	5550	Mid	12.81	12.13	12.68	17.32	24	Pass
Output power	802.11n-40M	5670	High	12.86	12.12	13.53	17.65	24	Pass
Output power	802.11ac-80M	5530	Low	13.27	12.80	13.23	17.88	24	Pass
Output power	802.11ac-80M	5610	High	13.70	12.36	13.4	17.96	24	Pass

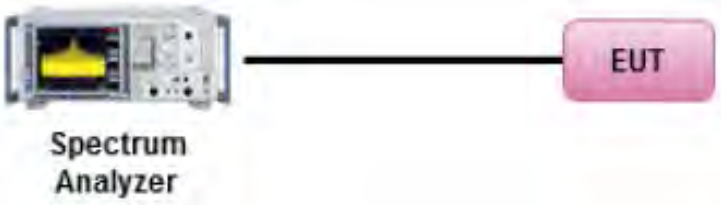
For Beamforming

Type	Test mode	Freq (MHz)	CH	Conducted Power (dBm)				Limit (dBm)	Result
				Chain 1	Chain 2	Chain 3	Combined Power		
Output power	802.11a	5500	Low	13.04	11.76	12.28	17.16	19.23	Pass
Output power	802.11a	5580	Mid	13.08	12.05	12.56	17.35	19.23	Pass
Output power	802.11a	5700	High	13.26	12.39	12.73	17.58	19.23	Pass
Output power	802.11n-20M	5500	Low	12.89	12.79	12.99	17.66	19.23	Pass
Output power	802.11n-20M	5580	Mid	13.07	12.66	12.97	17.67	19.23	Pass
Output power	802.11n-20M	5700	High	13.13	12.19	13.23	17.65	19.23	Pass
Output power	802.11n-40M	5510	Low	12.80	12.24	12.69	17.35	19.23	Pass
Output power	802.11n-40M	5550	Mid	12.81	12.13	12.68	17.32	19.23	Pass
Output power	802.11n-40M	5670	High	12.86	12.12	13.53	17.65	19.23	Pass
Output power	802.11ac-80M	5530	Low	13.27	12.80	13.23	17.88	19.23	Pass
Output power	802.11ac-80M	5610	High	13.70	12.36	13.40	17.96	19.23	Pass
Note	Directional Gain = 6 + 10* log(3) = 10.77dBi Directional Gain is greater than 6dBi. So, Limit = 24- 4.77 = 19.23dBm								

10.2 Peak Spectral Density

Requirement(s):

Spec	Item	Requirement	Applicable
§ 15.407	a)(1)(i)	For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.	☐
	a)(1)(ii)	For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band.	☐
	a)(2)	For the 5.25-5.35 GHz and 5.47-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band.	☒
	a)(3)	For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band.	☒

Test Setup				
Test Procedure	789033 D02 General UNII Test Procedures New Rules v01r02, II.F. Method SA-1 Maximum spectral density measurement procedure - Set span to encompass the entire emission bandwidth (EBW) (or, alternatively, the entire 99% occupied bandwidth) of the signal. - Set RBW = 1 MHz - Set VBW ⩾ 3 MHz - Detector = RMS. - Sweep time = auto couple. - Trace mode = max hold. - Trace average at least 100 traces in power averaging - Use the peak marker function to determine the maximum amplitude level within the RBW. Apply correction to the result if different RBW is used.			
Test Date	06/16//2016	Environmental condition	Temperature Relative Humidity Atmospheric Pressure	22ºC 42% 1020mbar
Remark	Directional Gain = G_{ANT} + 10*log(N_{ANT}) dBi Antenna Gain (G_{ANT}) = 6 dBi N_{ANT} = 3			
Result	☒ Pass ☐ Fail			

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test was done by *Rachana Khanduri* at *RF Test Site*.

PSD measurement result for 5.3GHz

For Non-Beamforming

Type	Test mode	Freq (MHz)	CH	Conducted PSD (dBm/MHz)				Limit (dBm)	Result
				Chain 1	Chain 2	Chain 3	Combined		
PSD	802.11a	5260	Low	1.70	0.13	1.25	5.85	11	Pass
PSD	802.11a	5280	Mid	1.75	0.08	1.02	5.77	11	Pass
PSD	802.11a	5320	High	1.64	-0.33	0.87	5.57	11	Pass
PSD	802.11n-20	5260	Low	1.73	-0.24	0.98	5.67	11	Pass
PSD	802.11n-20	5280	Mid	1.31	-0.13	1.04	5.55	11	Pass
PSD	802.11n-20	5320	High	1.35	-0.64	0.48	5.24	11	Pass
PSD	802.11n-40	5270	Low	-2.36	-3.34	-1.77	2.33	11	Pass
PSD	802.11n-40	5310	High	-2.09	-3.66	-1.37	2.50	11	Pass
PSD	802.11ac-80	5290	High	-5.32	-6.31	-5.04	-0.75	11	Pass

For Beamforming

Type	Test mode	Freq (MHz)	CH	Conducted PSD (dBm/MHz)				Limit (dBm)	Result
				Chain 1	Chain 2	Chain 3	Combined		
PSD	802.11a	5260	Low	1.70	0.13	1.25	5.85	6.23	Pass
PSD	802.11a	5280	Mid	1.75	0.08	1.02	5.77	6.23	Pass
PSD	802.11a	5320	High	1.64	-0.33	0.87	5.57	6.23	Pass
PSD	802.11n-20	5260	Low	1.73	-0.24	0.98	5.67	6.23	Pass
PSD	802.11n-20	5280	Mid	1.31	-0.13	1.04	5.55	6.23	Pass
PSD	802.11n-20	5320	High	1.35	-0.64	0.48	5.24	6.23	Pass
PSD	802.11n-40	5270	Low	-2.36	-3.34	-1.77	2.33	6.23	Pass
PSD	802.11n-40	5310	High	-2.09	-3.66	-1.37	2.50	6.23	Pass
PSD	802.11ac-80	5290	High	-5.32	-6.31	-5.04	-0.75	6.23	Pass
Note	Directional Gain = 6 + 10* log(3) = 10.77dBi Directional Gain is greater than 6dBi. So, Limit = 11- 4.77 = 6.23dBm								

PSD measurement result for 5.5GHz

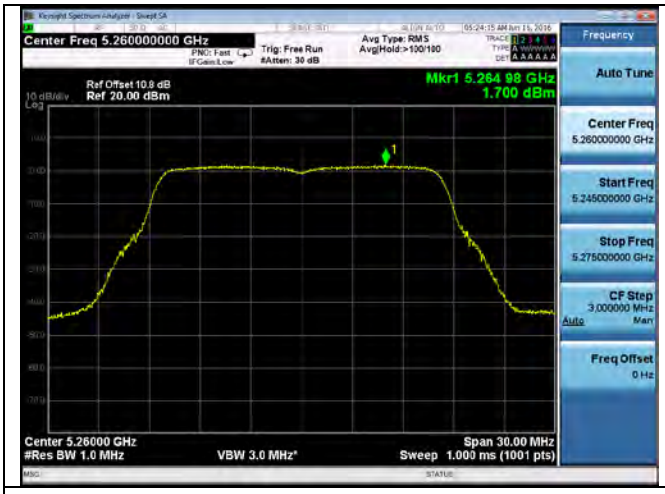
For Non-Beamforming

Type	Test mode	Freq (MHz)	CH	Conducted PSD (dBm/MHz)				Limit (dBm/MHz)	Result
				Chain 1	Chain 2	Chain 3	Combined PSD		
PSD	802.11a	5500	Low	1.03	0.71	1.18	5.75	11	Pass
PSD	802.11a	5580	Mid	1.26	0.62	0.69	5.64	11	Pass
PSD	802.11a	5700	High	0.97	0.23	0.93	5.49	11	Pass
PSD	802.11n-20	5500	Low	0.65	0.59	0.91	5.49	11	Pass
PSD	802.11n-20	5580	Mid	1.07	0.09	0.35	5.29	11	Pass
PSD	802.11n-20	5700	High	0.69	-0.24	0.61	5.14	11	Pass
PSD	802.11n-40	5510	Low	-2.17	-3.18	-2.75	2.09	11	Pass
PSD	802.11n-40	5550	Mid	-2.24	-3.13	-2.76	2.08	11	Pass
PSD	802.11n-40	5670	High	-2.53	-3.11	-2.56	2.05	11	Pass
PSD	802.11ac-80	5530	Low	-5.14	-5.56	-5.02	-0.46	11	Pass
PSD	802.11ac-80	5610	High	-4.79	-6.03	-5.00	-0.47	11	Pass

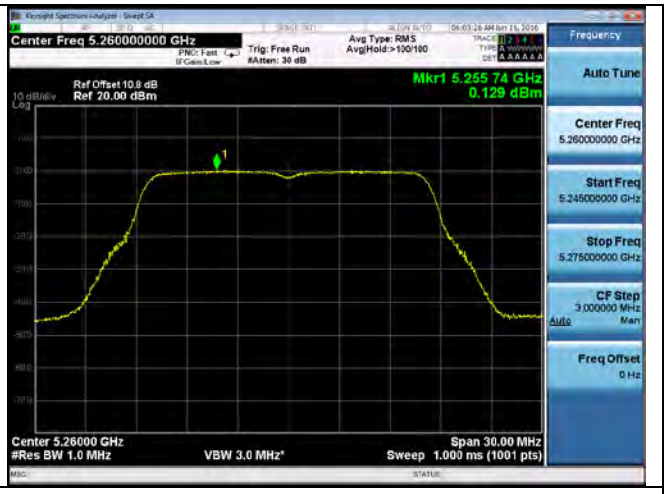
For Beamforming

Type	Test mode	Freq (MHz)	CH	Conducted PSD (dBm/MHz)				Limit (dBm/MHz)	Result
				Chain 1	Chain 2	Chain 3	Combined PSD		
PSD	802.11a	5500	Low	1.03	0.71	1.18	5.75	6.23	Pass
PSD	802.11a	5580	Mid	1.26	0.62	0.69	5.64	6.23	Pass
PSD	802.11a	5700	High	0.97	0.23	0.93	5.49	6.23	Pass
PSD	802.11n-20	5500	Low	0.65	0.59	0.91	5.49	6.23	Pass
PSD	802.11n-20	5580	Mid	1.07	0.09	0.35	5.29	6.23	Pass
PSD	802.11n-20	5700	High	0.69	-0.24	0.61	5.14	6.23	Pass
PSD	802.11n-40	5510	Low	-2.17	-3.18	-2.75	2.09	6.23	Pass
PSD	802.11n-40	5550	Mid	-2.24	-3.13	-2.76	2.08	6.23	Pass
PSD	802.11n-40	5670	High	-2.53	-3.11	-2.56	2.05	6.23	Pass
PSD	802.11ac-80	5530	Low	-5.14	-5.56	-5.02	-0.46	6.23	Pass
PSD	802.11ac-80	5610	High	-4.79	-6.03	-5.00	-0.47	6.23	Pass
Note	Directional Gain = 6 + 10* log(3) = 10.77dBi Directional Gain is greater than 6dBi. So, Limit = 11- 4.77 = 6.23dBm								

Test Plots



PSD-802.11a-5260M-chain1



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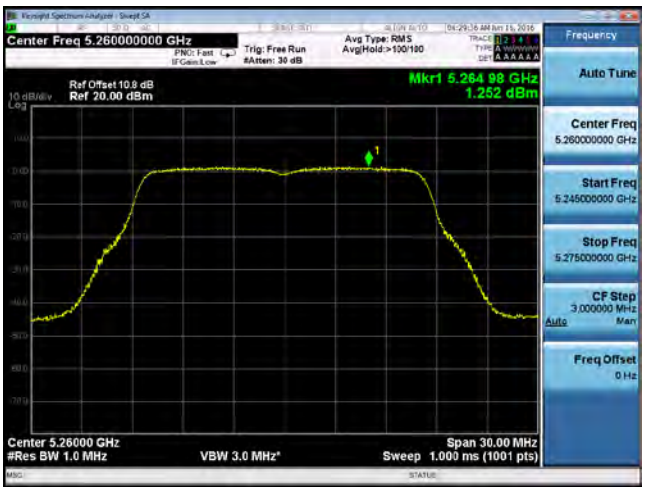
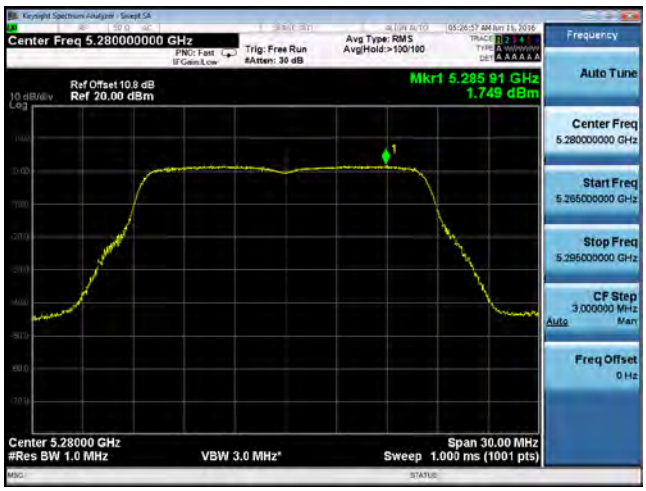


PSD-802.11a-5260M-chain3



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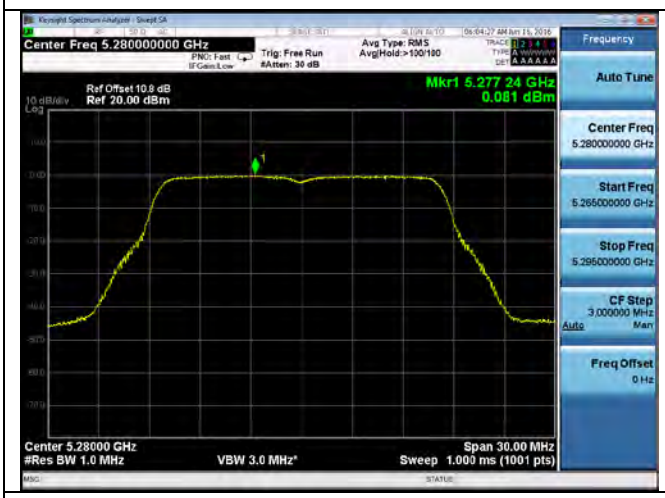

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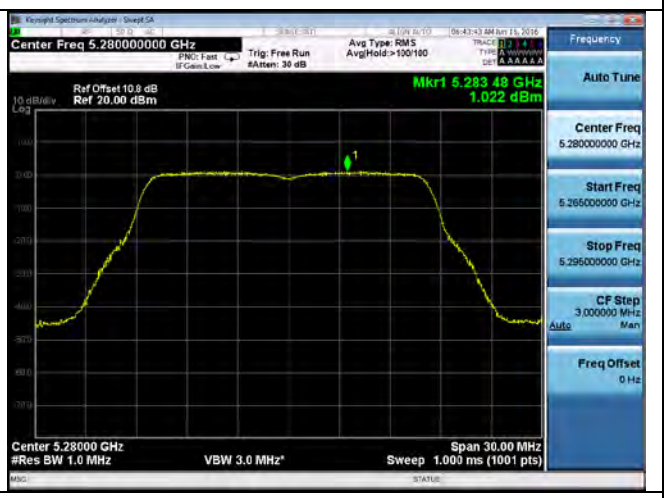

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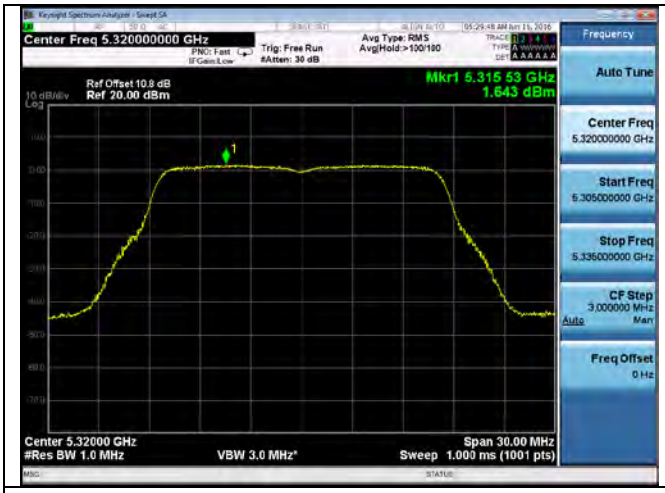

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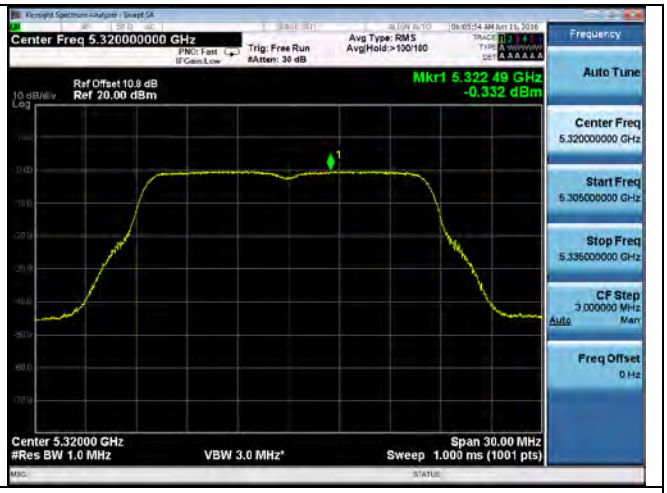

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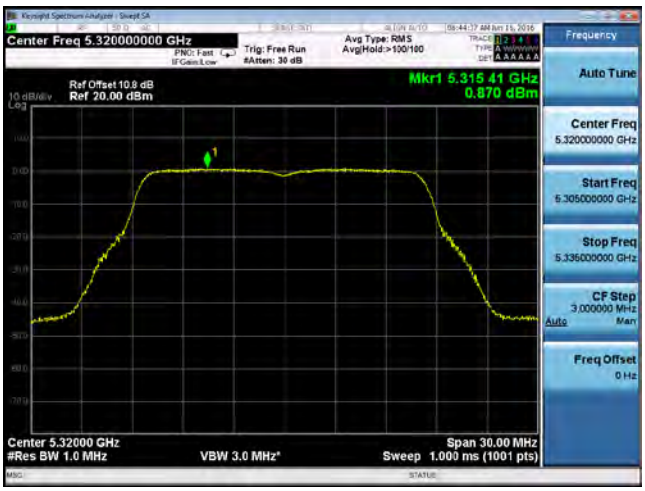

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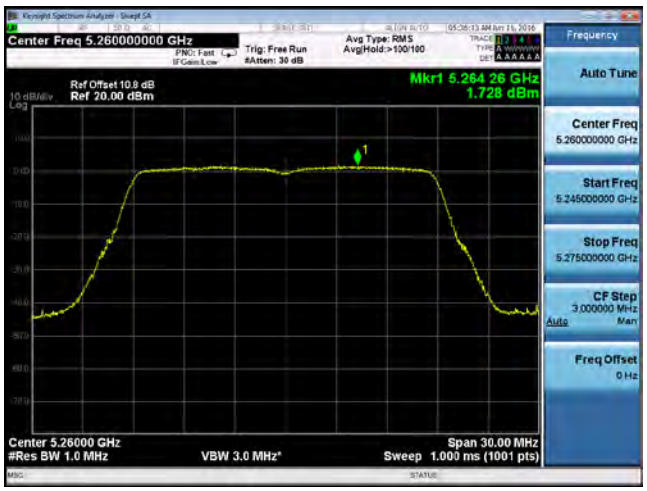
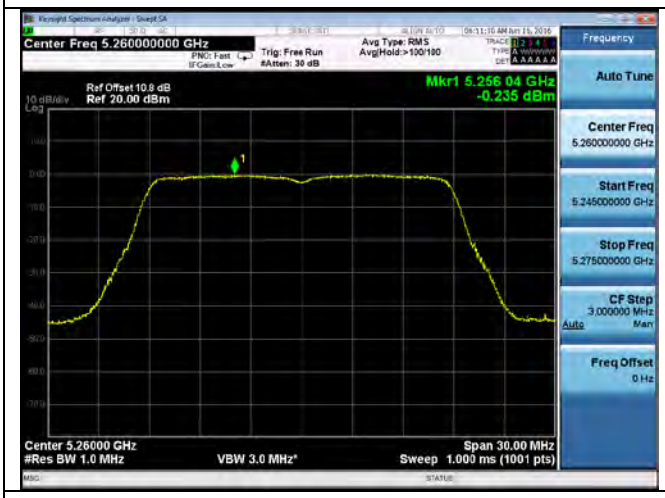


PSD-802.11n-20M -5260M-chain1



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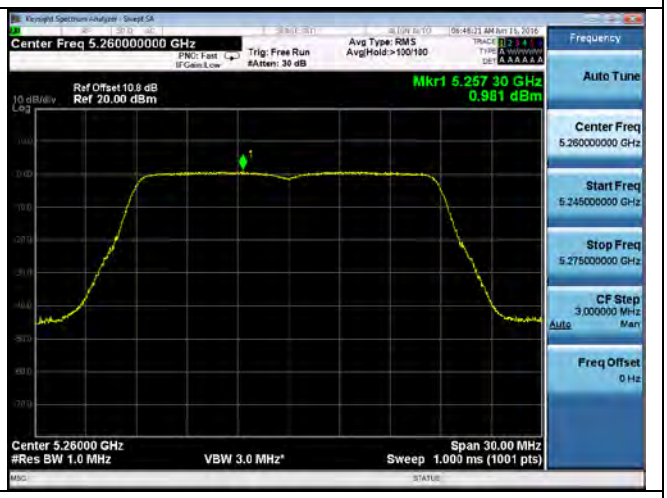
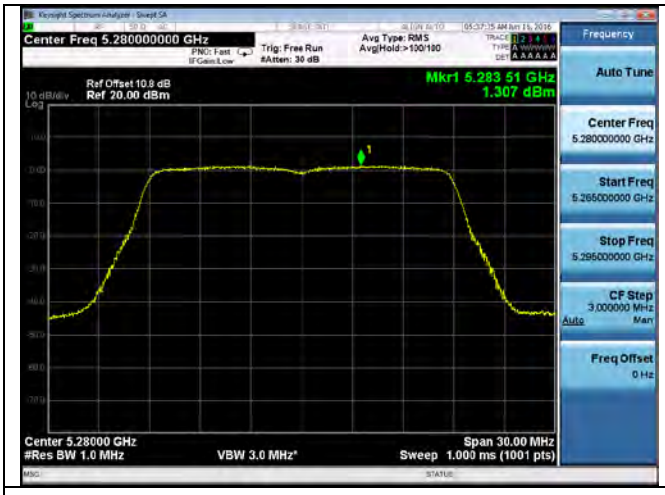


PSD-802.11n-20M -5260M-chain3



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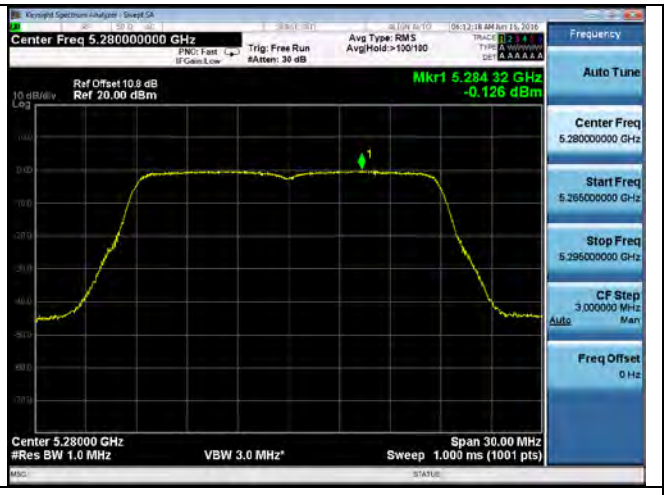

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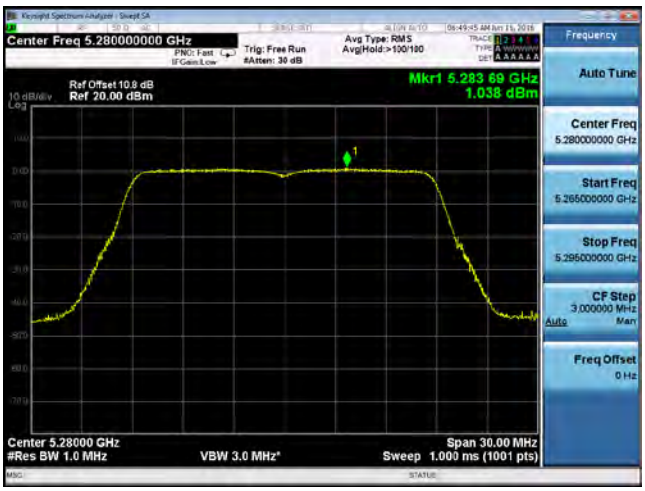

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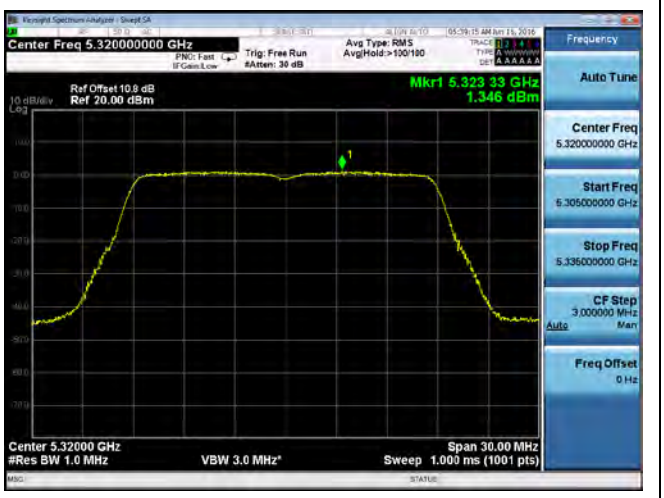

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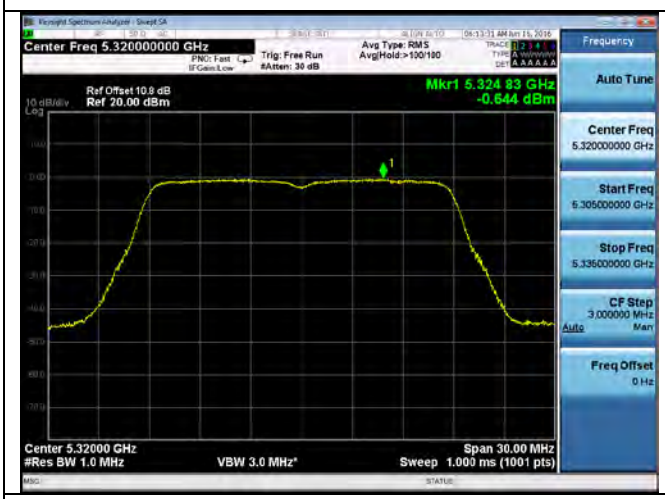

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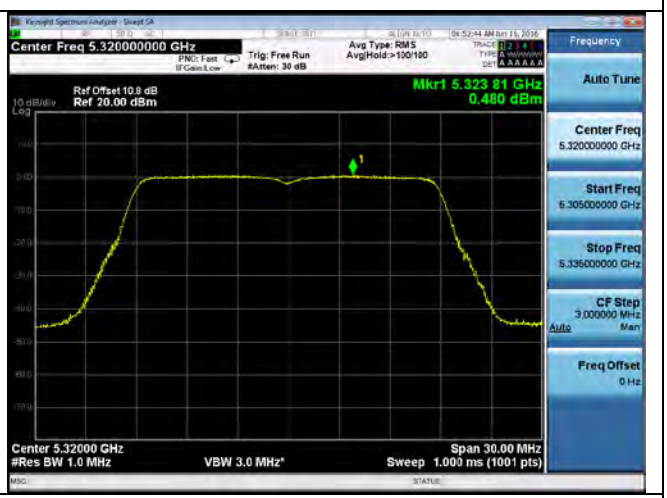

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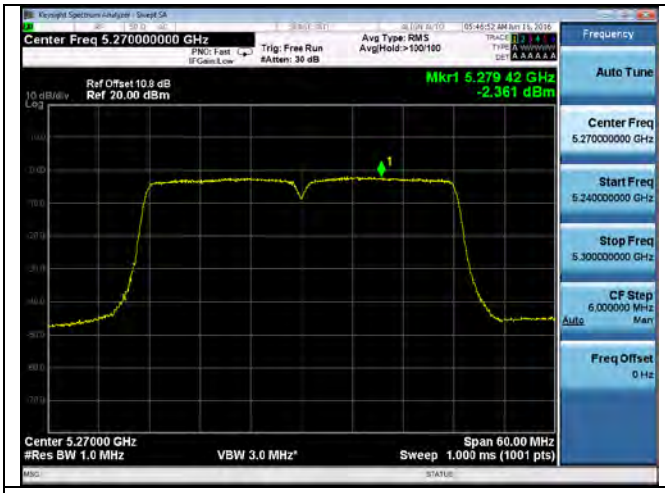
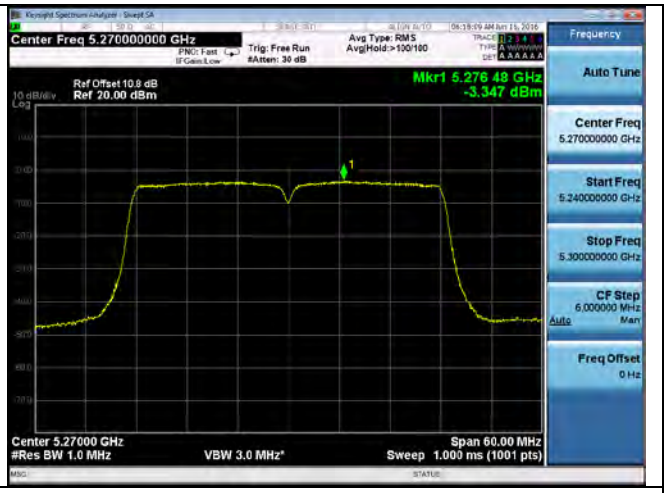


PSD-802.11n-40M-5270M-chain1



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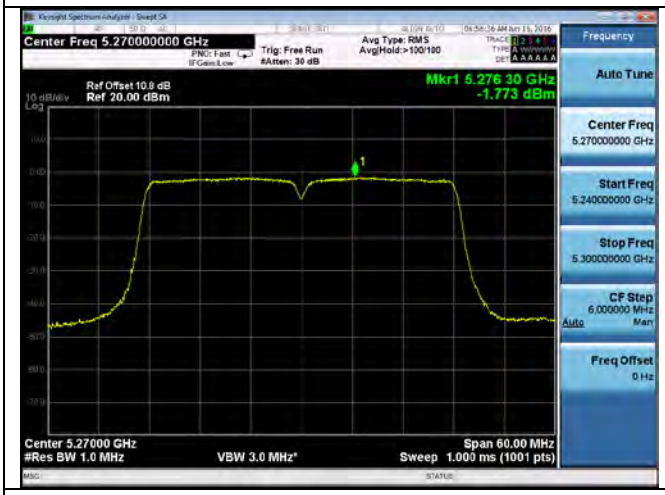

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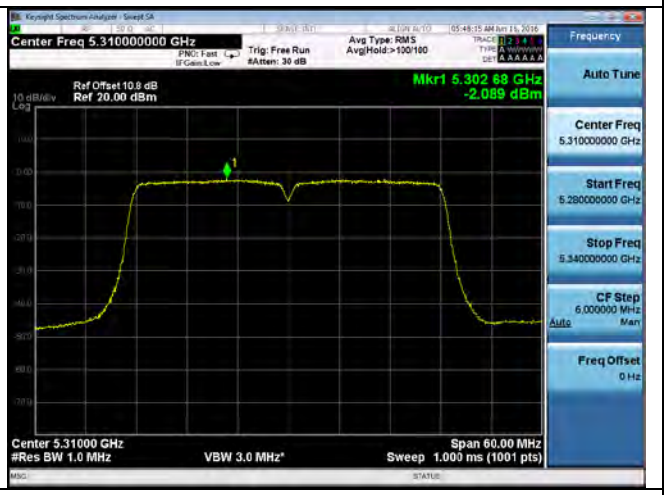
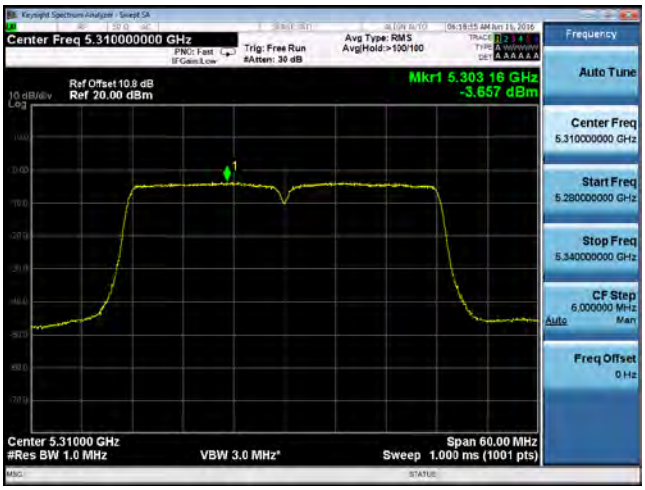


PSD-802.11n-40M-5310M-chain1



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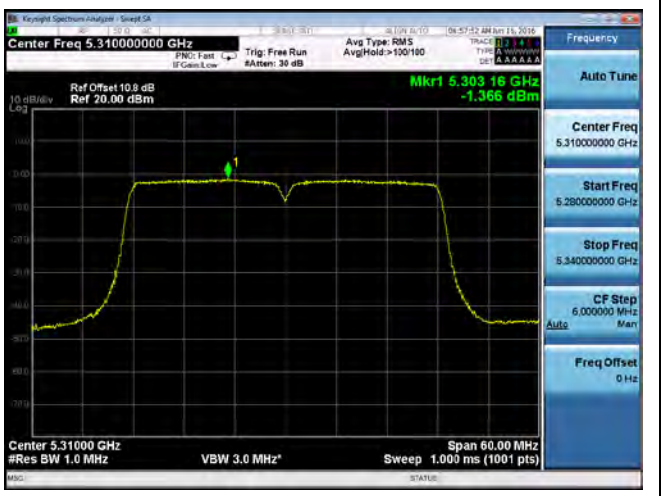
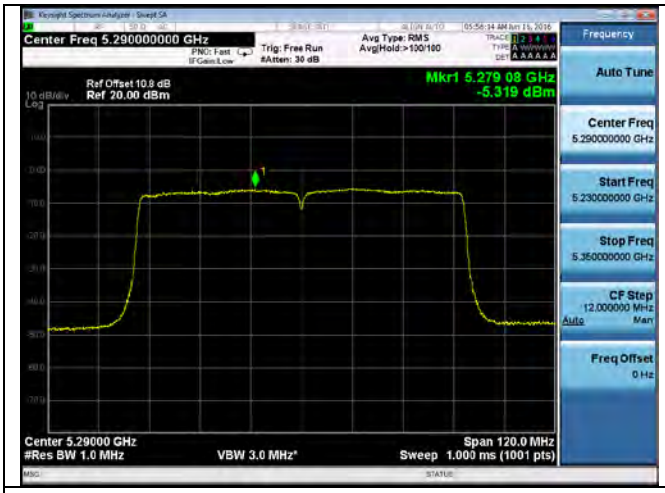
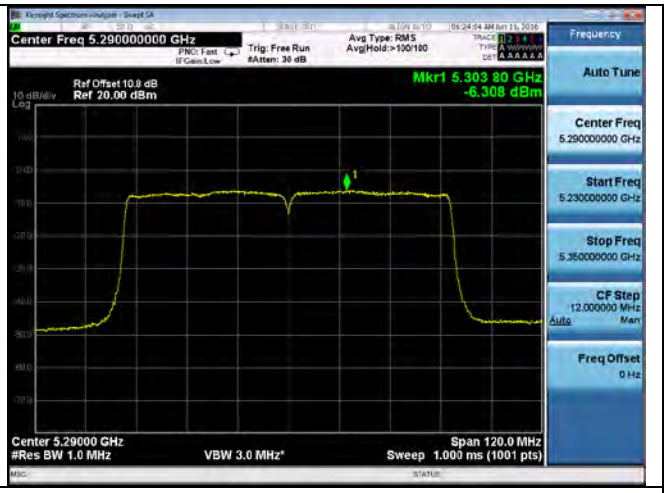


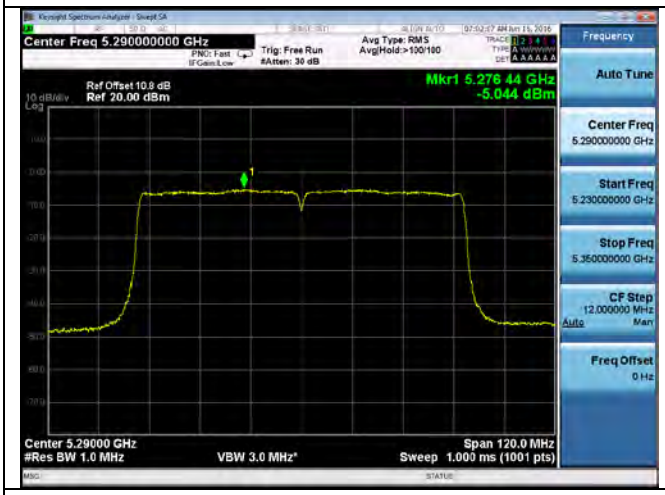
PSD-802.11n-40M-5310M-chain3



PSD-802.11ac-80M-5290M-chain1



PSD-802.11ac-80M-5290M-chain2



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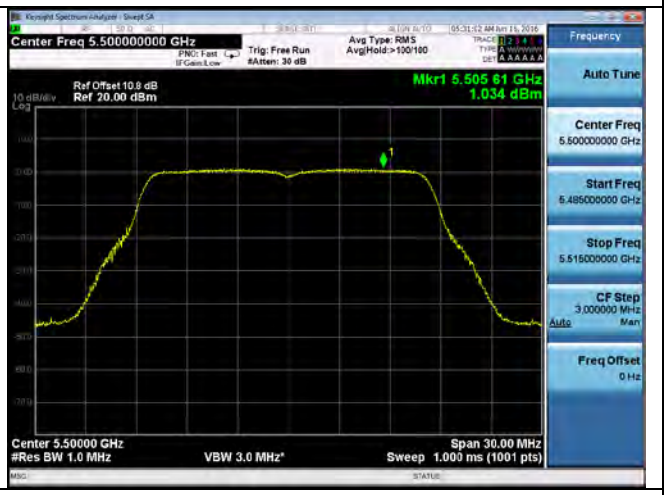

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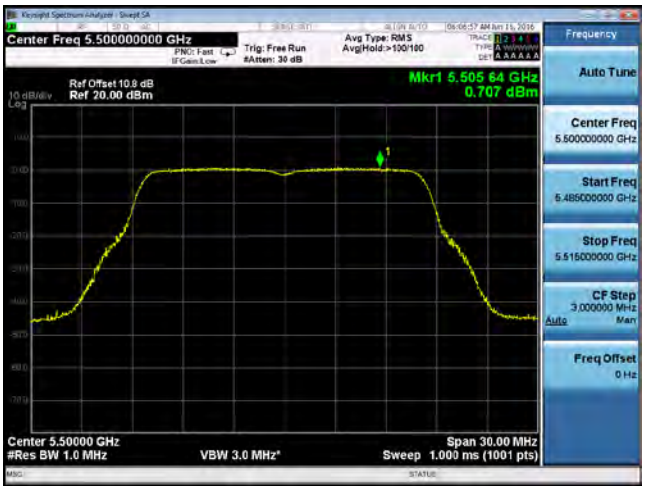

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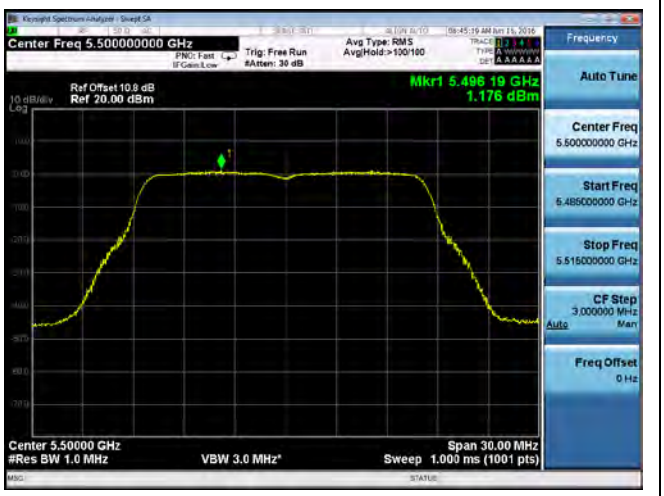
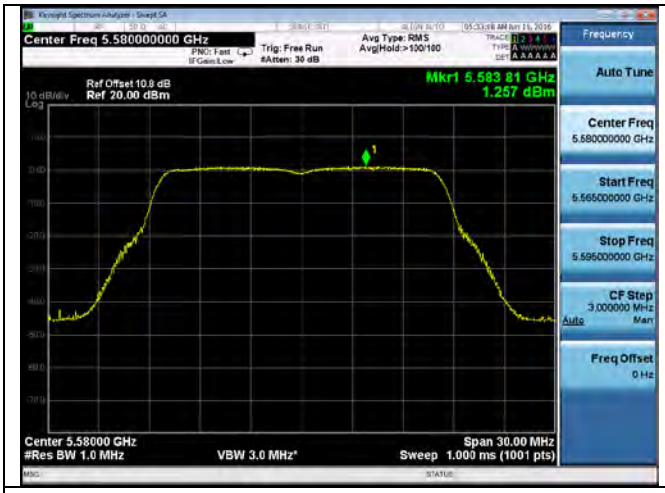
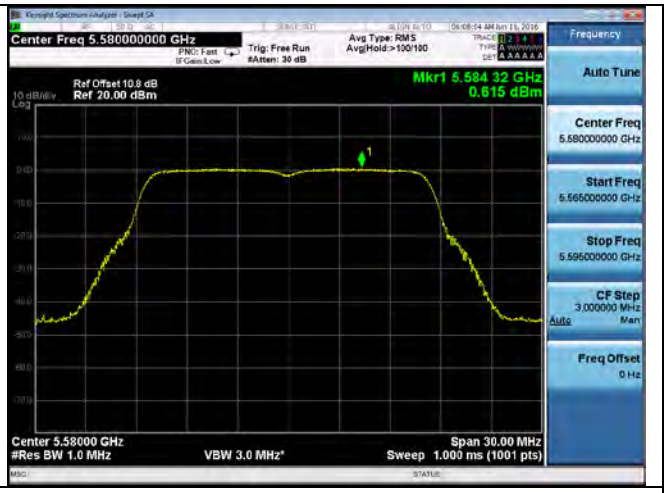


PSD-802.11a-5500M-chain3



PSD-802.11a-5580M-chain1



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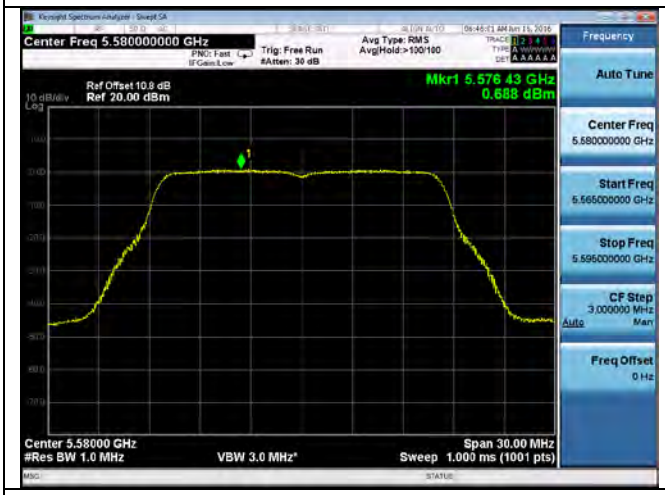
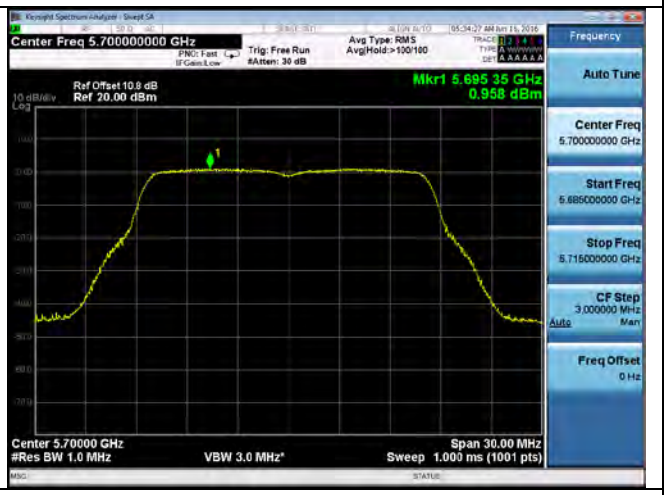
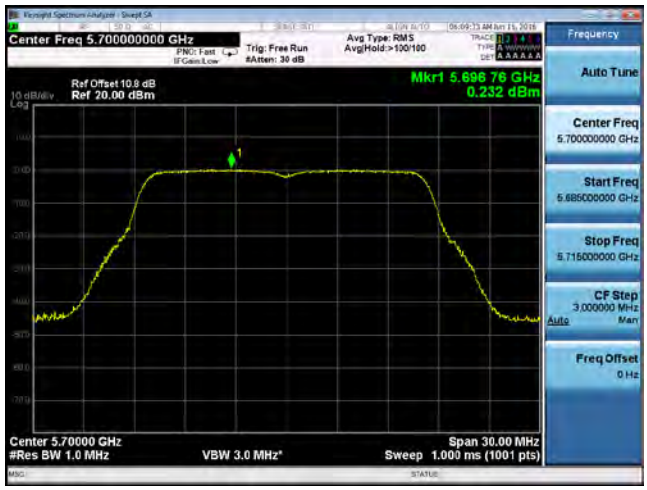


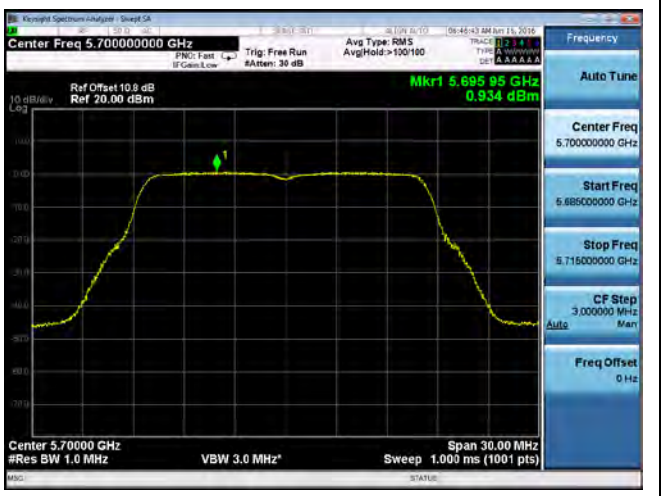
PSD-802.11a-5580M-chain3



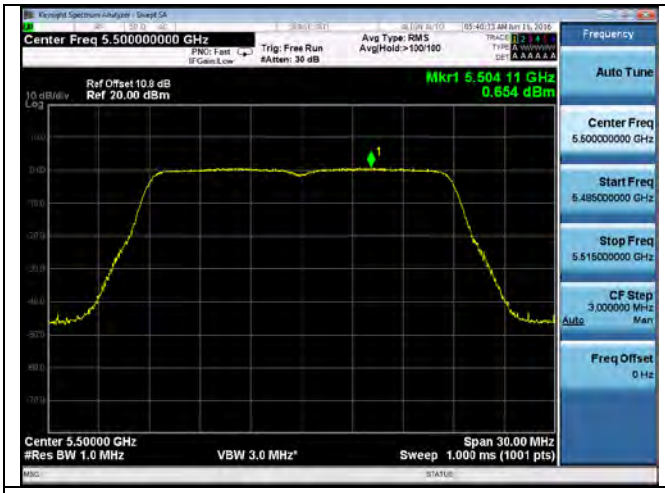
PSD-802.11a-5700M-chain1



PSD-802.11a-5700M-chain2



PSD-802.11a-5700M-chain3



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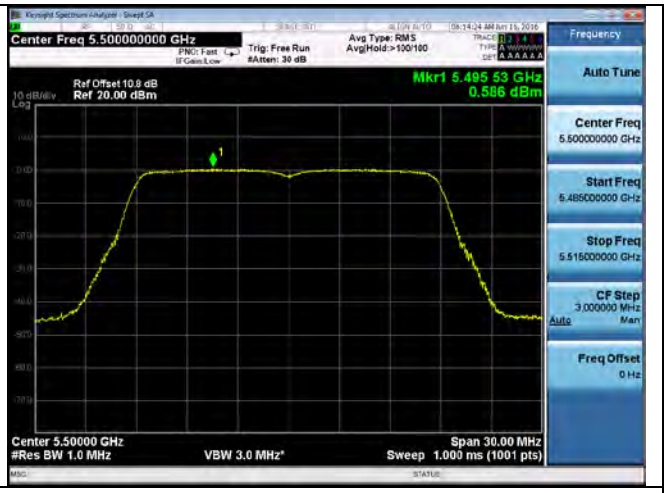
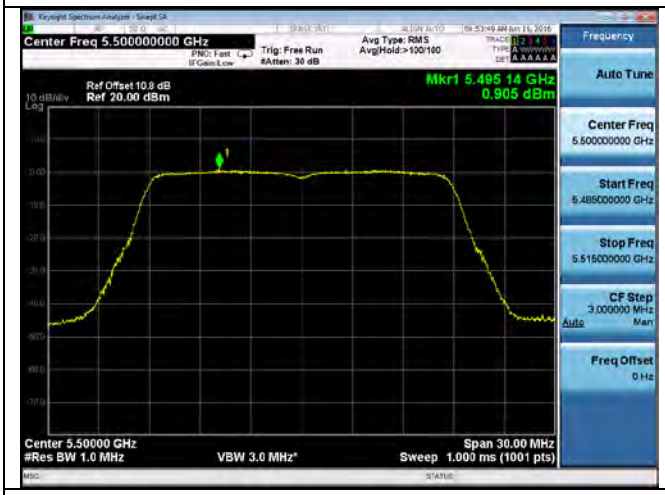
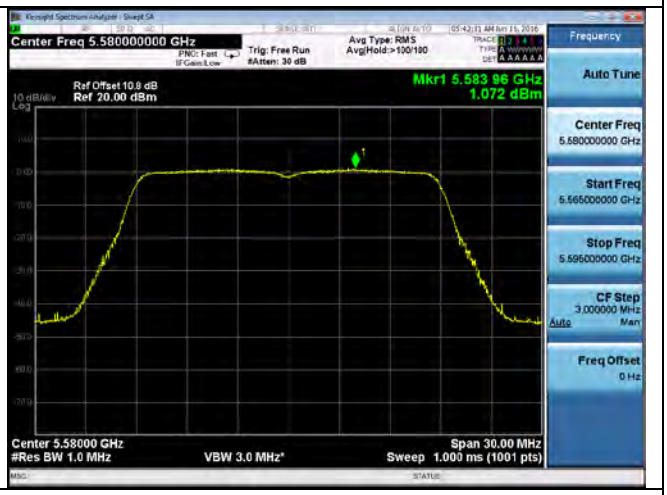


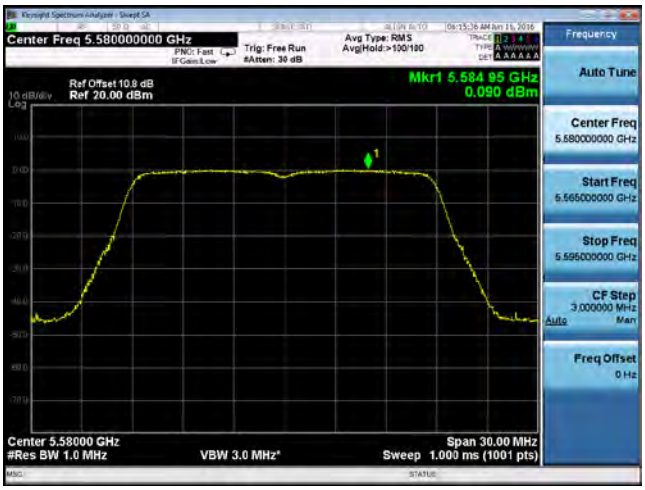
PSD-802.11n-20-5500M-chain2



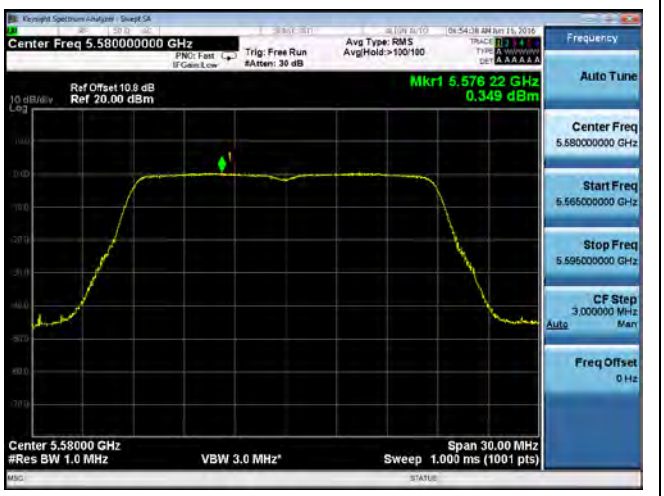
PSD-802.11n-20-5500M-chain3



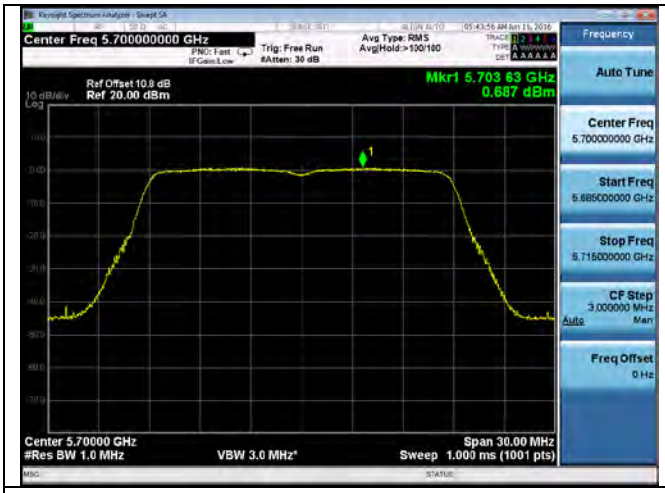
PSD-802.11n-20-5580M-chain1



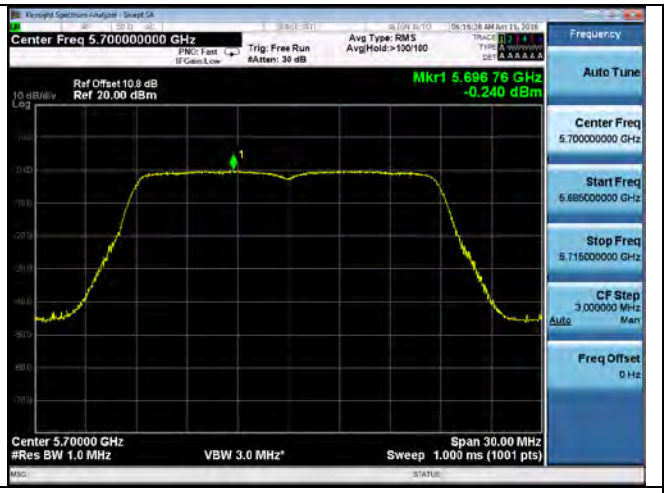
PSD-802.11n-20-5580M-chain2



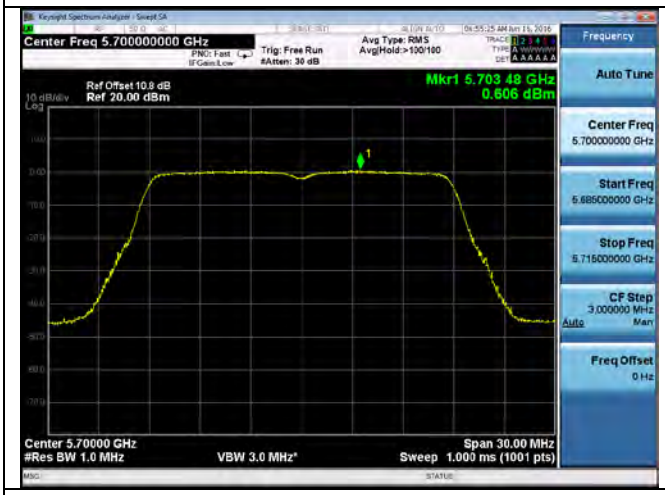
PSD-802.11n-20-5580M-chain3



PSD-802.11n-20-5700M-chain1

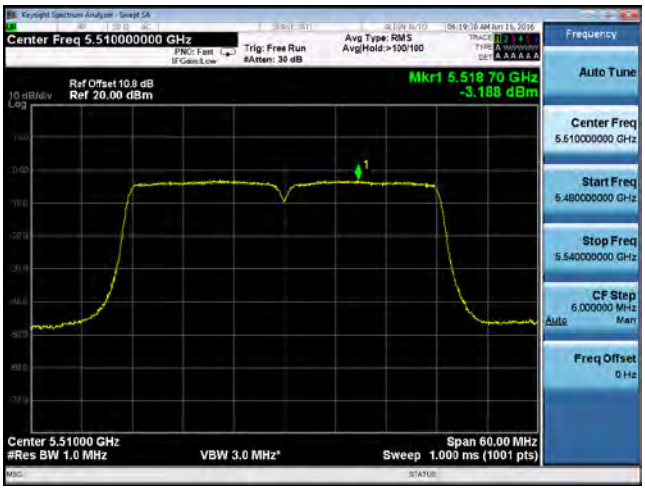


PSD-802.11n-20-5700M-chain2

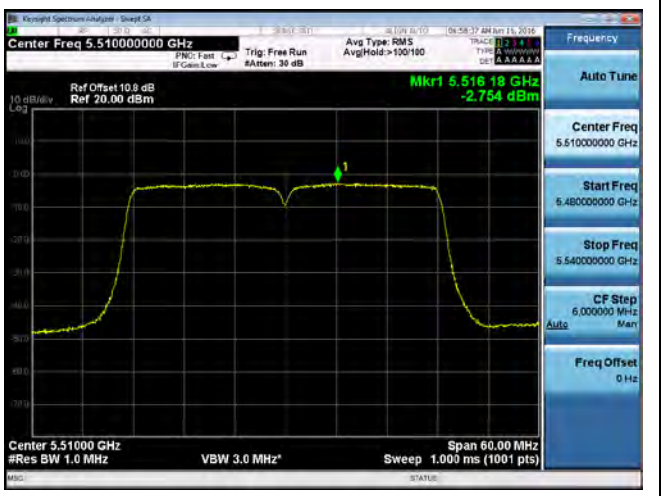


PSD-802.11n-20-5700M-chain3

PSD-802.11n-40-5510M-chain1



PSD-802.11n-40-5510M-chain2



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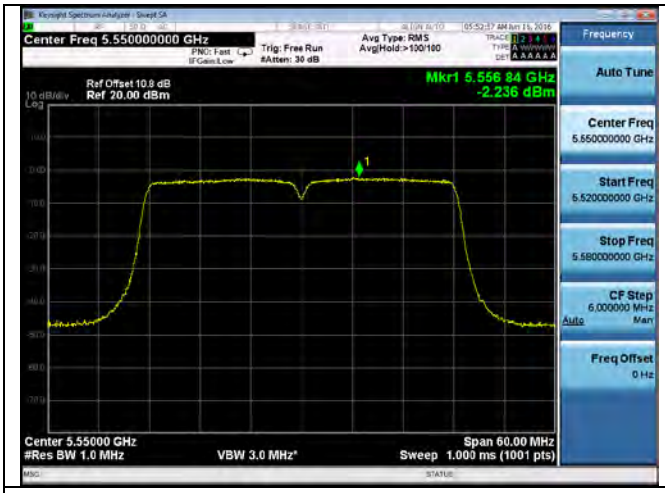
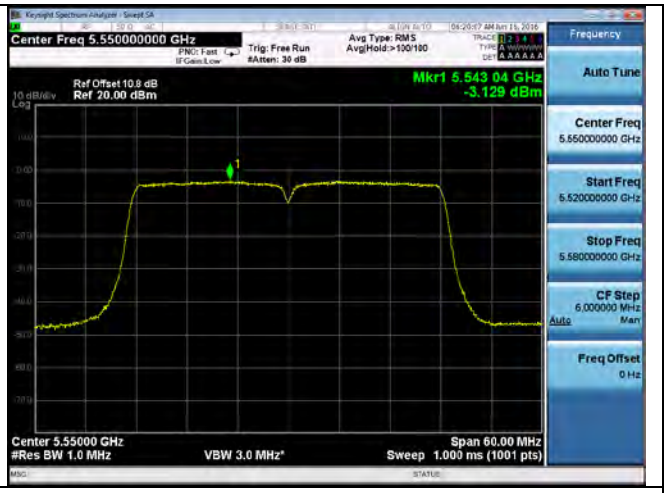
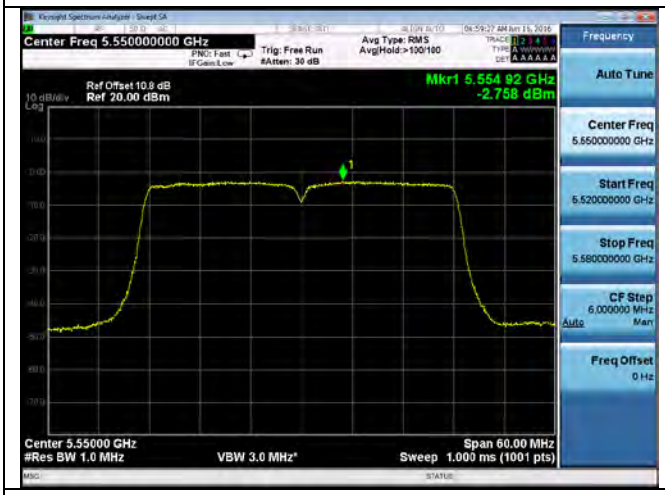


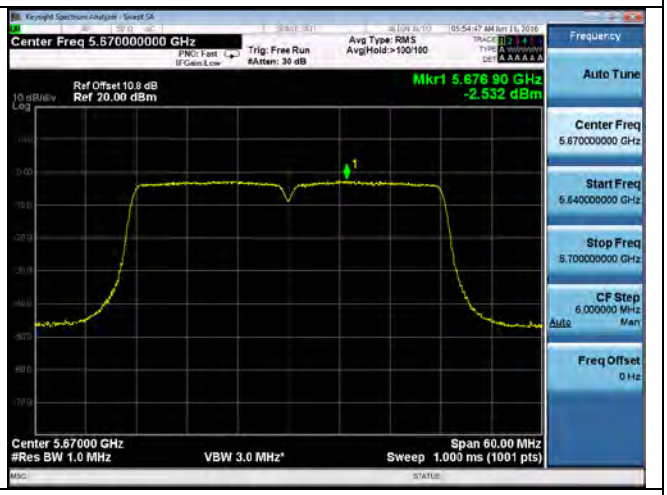
PSD-802.11n-40-5550M-chain1



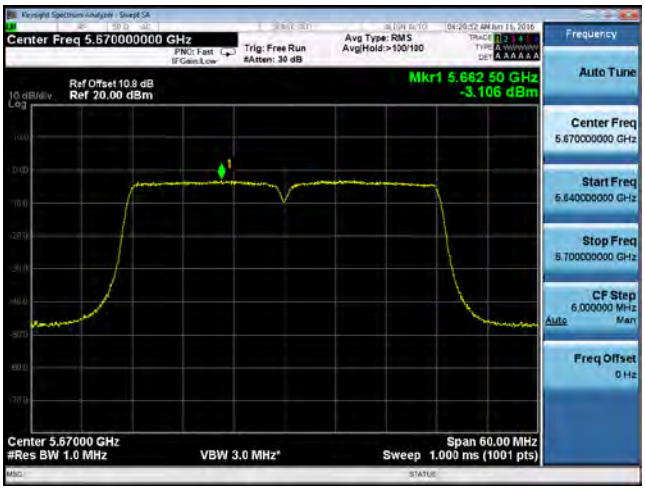
PSD-802.11n-40-5550M-chain2



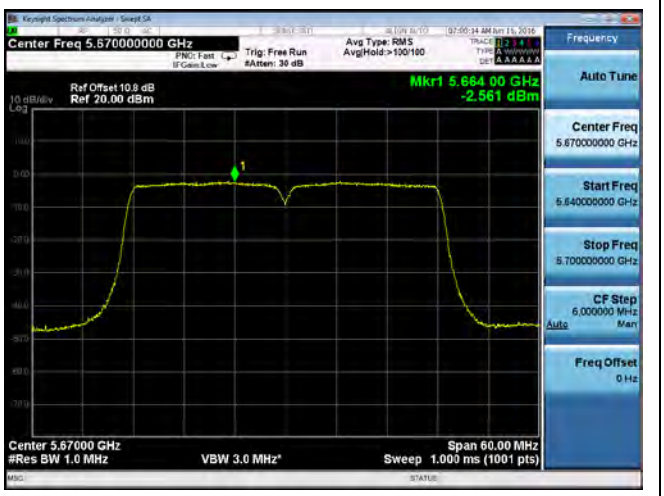
PSD-802.11n-40-5550M-chain3



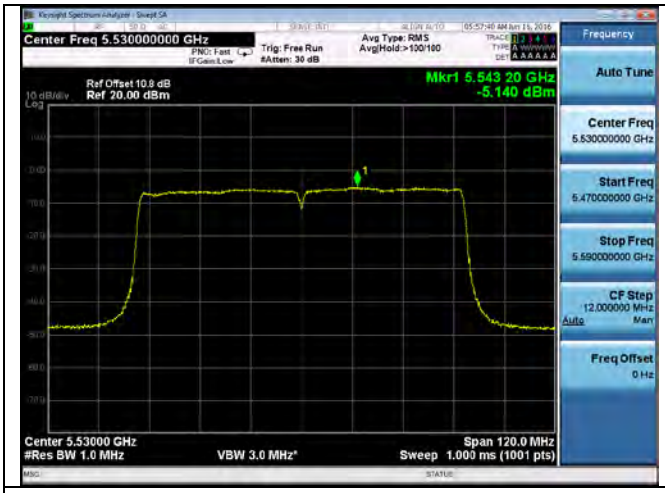
PSD-802.11n-40-5670M-chain1



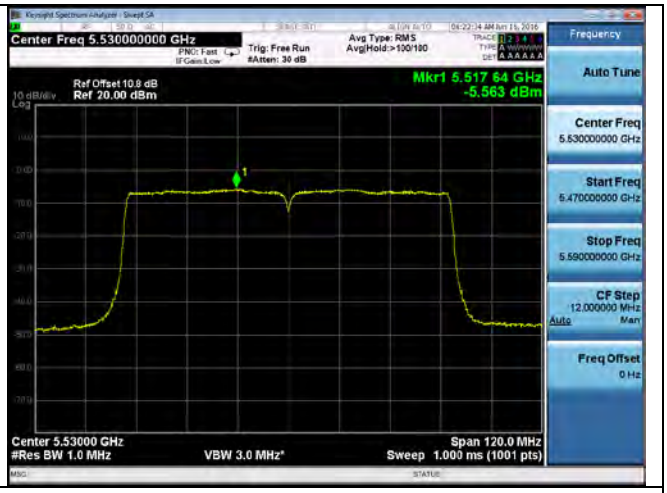
PSD-802.11n-40-5670M-chain2



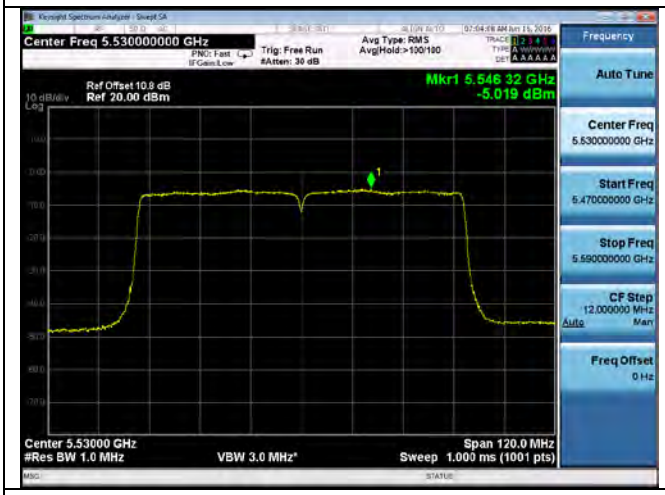
PSD-802.11n-40-5670M-chain3



PSD-802.11ac-80-5530M-chain1

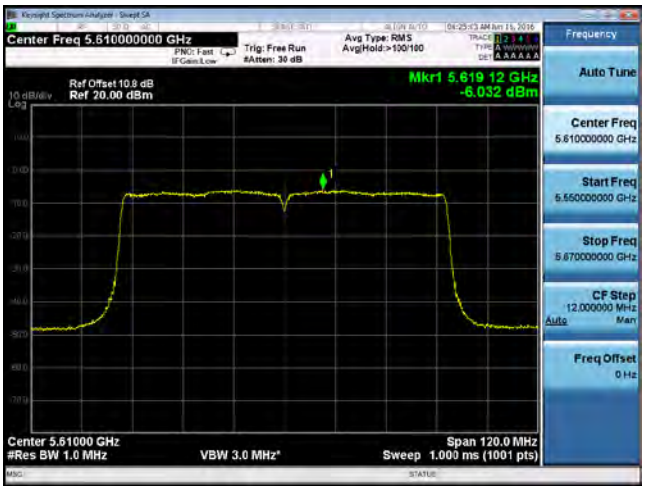


PSD-802.11ac-80-5530M-chain2

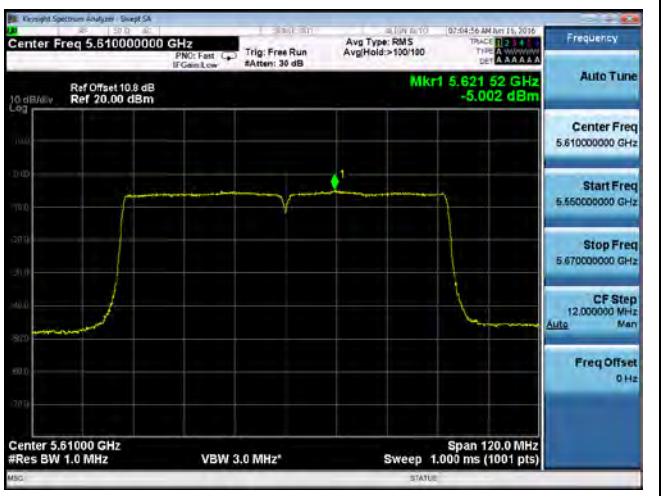


PSD-802.11ac-80-5530M-chain3

PSD-802.11ac-80-5610M-chain1



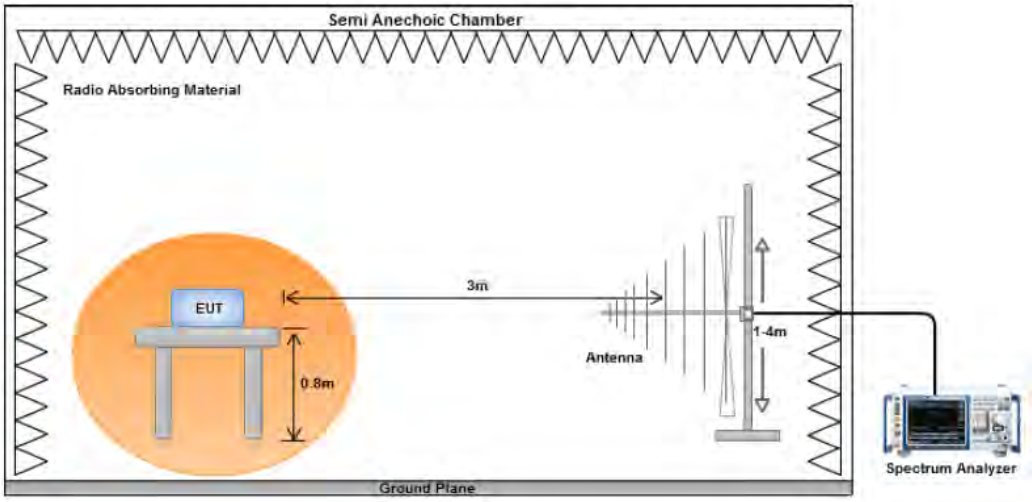
PSD-802.11ac-80-5610M-chain2



PSD-802.11ac-80-5610M-chain3

10.3 Radiated Spurious Emissions below 1GHz

Requirement(s):

<table>
<tr><th>Spec</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td>47CFR§
15.407(b)
15.209 (a)</td><td>Except higher limit as specified elsewhere in other section, the emissions from the low-power radio-frequency devices shall not exceed the field strength levels specified in the following table and the level of any unwanted emissions shall not exceed the level of the fundamental emission. The tighter limit applies at the band edges
<table>
<tr><th>Frequency range (MHz)</th><th>Field Strength (uV/m)</th></tr>
<tr><td>30 – 88</td><td>100</td></tr>
<tr><td>88 – 216</td><td>150</td></tr>
<tr><td>216 960</td><td>200</td></tr>
<tr><td>Above 960</td><td>500</td></tr>
</table></td><td>☒</td></tr>
<tr><td>Test Setup</td><td> 
</td><td></td></tr>
<tr><td>Procedure</td><td>1. The EUT was switched on and allowed to warm up to its normal operating condition.
2. The test was carried out at the selected frequency points obtained from the EUT characterisation. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner:
a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen.
b. The EUT was then rotated to the direction that gave the maximum emission.
c. Finally, the antenna height was adjusted to the height that gave the maximum emission.
3. A Quasi-peak measurement was then made for that frequency point.
4. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.</td><td></td></tr>
<tr><td>Remark</td><td>The EUT was scanned up to 1GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case.</td><td></td></tr>
<tr><td>Result</td><td>☒ Pass ☐ Fail</td><td></td></tr>
</table>

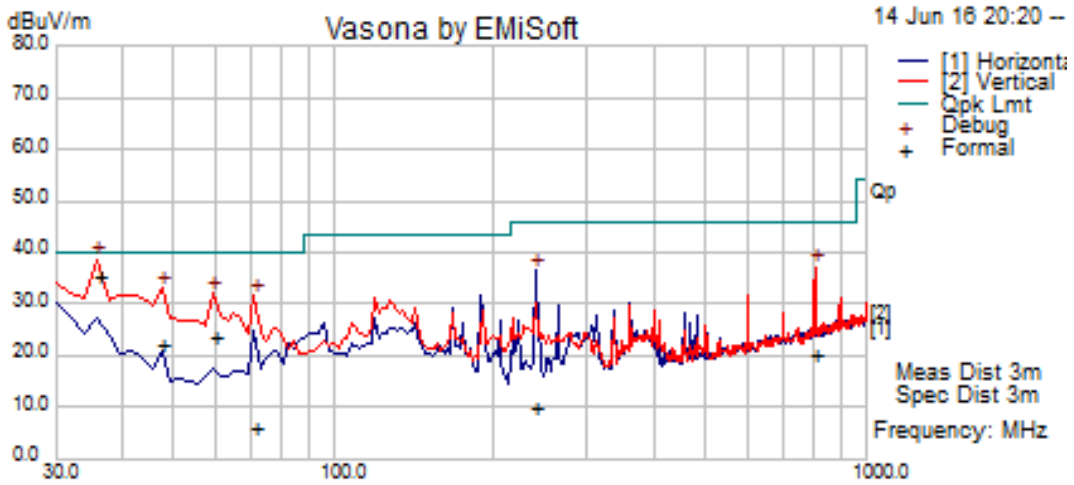
Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test was done by *Rachana Khanduri* at *10m Chamber*.

Radiated Emission Test Results (Below 1GHz)

Test specification	Below 1GHz			
Environmental Conditions:	Temp (°C):	26	Result	Pass
	Humidity (%)	47		
	Atmospheric (mbar):	1020		
Mains Power:	120VAC, 60Hz			
Tested by:	Rachana Khanduri			
Test Date:	06/14/2016			
Remarks:	802.11n HT40, 5550MHz			

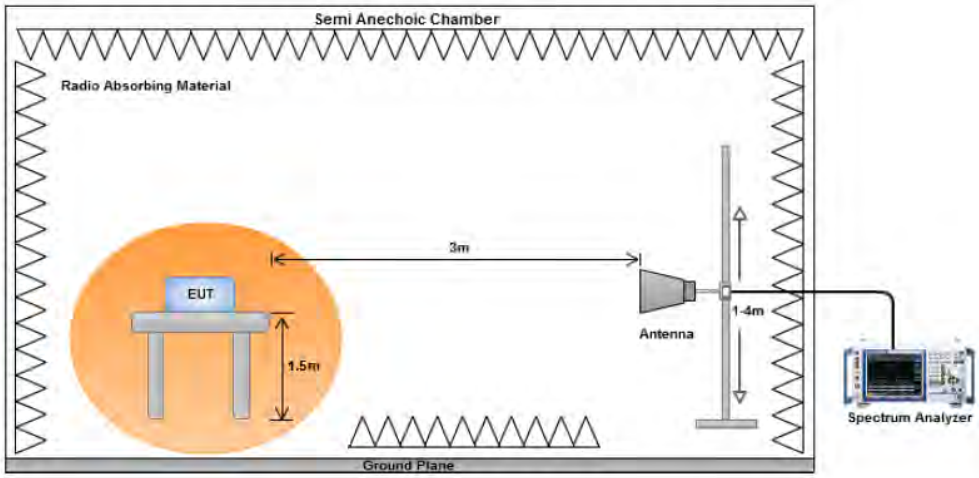


Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
36.02	55.31	0.87	-20.79	35.39	Quasi Max	V	119	254	40.00	-4.61	Pass
47.47	49.77	1.04	-28.62	22.18	Quasi Max	V	100	139	40.00	-17.82	Pass
59.40	53.37	1.18	-31.12	23.43	Quasi Max	V	113	77	40.00	-16.57	Pass
71.03	35.69	1.26	-30.92	6.03	Quasi Max	V	358	16	40.00	-33.97	Pass
801.83	32.77	4.54	-17.39	19.92	Quasi Max	V	100	357	46.02	-26.10	Pass
239.86	35.23	2.33	-27.59	9.97	Quasi Max	H	148	240	46.02	-36.05	Pass

Note: Both horizontal and vertical polarities were investigated. The results above show only the worst case.

10.4 Radiated Spurious Emissions above 1GHz

Requirement(s):

Spec	Item	Requirement	Applicable
47CFR§ 15.407(b)(2), 15.407(b)(6)	(1)	For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.	☐
	(2)	For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band.	☒
	(3)	For transmitters operating in the 5.47-5.725 GHz band: all emissions outside of the 5.47-5.725 GHz band shall not exceed an EIRP of −27 dBm/MHz.	☒
	(4)	For transmitters operating in the 5.725-5.825 GHz band: all emissions within the frequency range from the band edge to 10 MHz above or below the band edge shall not exceed an EIRP of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an EIRP of -27 dBm/MHz.	☐
	(5)	Restricted band, emission must also comply with the radiated emission limits specified in 15.209	☒
Test Setup			
Procedure	1. The EUT was switched on and allowed to warm up to its normal operating condition. 2. The test was carried out at the selected frequency points obtained from the EUT characterisation. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner: a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen. b. The EUT was then rotated to the direction that gave the maximum emission. c. Finally, the antenna height was adjusted to the height that gave the maximum emission. 3. An average measurement was then made for that frequency point. 4. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.		
Remark	Both horizontal and vertical polarities were investigated. The results show only the worst case.		
Result	☒ Pass ☐ Fail		

Test Data ☒ Yes (See below) ☐ N/A
Test Plot ☐ Yes (See below) ☒ N/A

Test was done by *Rachana Khanduri* at *3m Chamber*.

Radiated Emission Test Results (Above 1GHz)

Above 1GHz– 802.11a – 5260MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
12478.75	42.69	8.97	-7.36	44.30	Peak Max	V	143	0	74	-29.70	Pass
9585.03	42.52	7.88	-10.44	39.97	Peak Max	V	160	102	74	-34.04	Pass
7315.20	40.69	7.34	-11.52	36.51	Peak Max	V	219	59	74	-37.49	Pass
12478.75	30.74	8.97	-7.36	32.35	Average Max	V	143	0	54	-21.65	Pass
9585.03	30.03	7.88	-10.44	27.47	Average Max	V	160	102	54	-26.53	Pass
7315.20	28.81	7.34	-11.52	24.63	Average Max	V	219	59	54	-29.37	Pass

Above 1GHz– 802.11a – 5280MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
8463.97	43.62	7.55	-10.89	40.28	Peak Max	V	123	139	74	-33.72	Pass
7241.60	41.16	7.36	-11.55	36.96	Peak Max	V	197	44	74	-37.04	Pass
1945.17	44.49	4.76	-27.85	21.40	Peak Max	V	245	258	74	-52.60	Pass
8463.97	30.56	7.55	-10.89	27.22	Average Max	V	123	139	54	-26.78	Pass
7241.60	29.33	7.36	-11.55	25.13	Average Max	V	197	44	54	-28.87	Pass
1945.17	32.29	4.76	-27.85	9.20	Average Max	V	245	258	54	-44.80	Pass

Above 1GHz – 802.11a – 5320MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
12322.43	42.49	8.89	-7.27	44.11	Peak Max	V	177	80	74	-29.89	Pass
7662.62	41.16	7.31	-11.51	36.96	Peak Max	V	213	124	74	-37.04	Pass
1946.26	41.19	4.76	-27.83	18.12	Peak Max	V	221	175	74	-55.88	Pass
12322.43	30.71	8.89	-7.27	32.33	Average Max	V	177	80	54	-21.67	Pass
7662.62	29.69	7.31	-11.51	25.49	Average Max	V	213	124	54	-28.51	Pass
1946.26	26.89	4.76	-27.83	3.82	Average Max	V	221	175	54	-50.19	Pass

Above 1GHz– 802.11n-20M – 5260MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
12347.25	42.51	8.90	-7.24	44.18	Peak Max	V	236	85	74	-29.82	Pass
8465.85	42.33	7.55	-10.90	38.98	Peak Max	V	100	220	74	-35.02	Pass
1739.73	39.24	4.76	-28.52	15.48	Peak Max	V	102	189	74	-58.52	Pass
12347.25	30.15	8.90	-7.24	31.82	Average Max	V	236	85	54	-22.18	Pass
8465.85	30.26	7.55	-10.90	26.92	Average Max	V	100	220	54	-27.08	Pass
1739.73	26.67	4.76	-28.52	2.92	Average Max	V	102	189	54	-51.08	Pass

Above 1GHz- 802.11n-20M – 5280MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
12415.30	42.50	8.94	-7.20	44.23	Peak Max	H	174	13	74	-29.77	Pass
9783.05	42.57	7.96	-10.37	40.17	Peak Max	V	153	360	74	-33.83	Pass
8488.57	43.08	7.56	-10.98	39.67	Peak Max	V	232	70	74	-34.33	Pass
12415.30	30.57	8.94	-7.20	32.31	Average Max	H	174	13	54	-21.69	Pass
9783.05	30.20	7.96	-10.37	27.80	Average Max	V	153	360	54	-26.20	Pass
8488.57	30.51	7.56	-10.98	27.10	Average Max	V	232	70	54	-26.90	Pass

Above 1GHz- 802.11n-20M – 5320MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
12327.86	42.74	8.90	-7.26	44.38	Peak Max	V	157	37	74	-29.62	Pass
8381.26	43.41	7.51	-10.67	40.24	Peak Max	V	100	255	74	-33.76	Pass
1944.20	39.51	4.76	-27.86	16.41	Peak Max	V	136	132	74	-57.59	Pass
12327.86	30.61	8.90	-7.26	32.24	Average Max	V	157	37	54	-21.76	Pass
8381.26	30.49	7.51	-10.67	27.33	Average Max	V	100	255	54	-26.67	Pass
1944.20	29.12	4.76	-27.86	6.02	Average Max	V	136	132	54	-47.98	Pass

Above 1GHz- 802.11n-40M – 5270MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
12324.62	43.54	8.89	-7.27	45.17	Peak Max	H	223	190	74	-28.84	Pass
8688.21	41.44	7.62	-10.84	38.22	Peak Max	V	111	142	74	-35.78	Pass
1752.38	36.84	4.76	-28.63	12.98	Peak Max	H	247	237	74	-61.02	Pass
12324.62	30.74	8.89	-7.27	32.36	Average Max	H	223	190	54	-21.64	Pass
8688.21	30.20	7.62	-10.84	26.98	Average Max	V	111	142	54	-27.02	Pass
1752.38	26.50	4.76	-28.63	2.64	Average Max	H	247	237	54	-51.37	Pass

Above 1GHz- 802.11n-40M – 5310MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
12103.55	40.97	8.78	-7.21	42.55	Peak Max	H	174	180	74	-31.45	Pass
9532.03	41.45	7.85	-10.39	38.92	Peak Max	V	196	228	74	-35.09	Pass
7583.80	40.83	7.31	-10.86	37.27	Peak Max	V	125	263	74	-36.73	Pass
12103.55	29.49	8.78	-7.21	31.07	Average Max	H	174	180	54	-22.94	Pass
9532.03	30.00	7.85	-10.39	27.47	Average Max	V	196	228	54	-26.53	Pass
7583.80	29.2	7.31	-10.86	25.64	Average Max	V	125	263	54	-28.36	Pass

Above 1GHz- 802.11ac-80M – 5290MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
17916.05	39.80	9.46	-3.10	46.16	Peak Max	V	132	0	74	-27.84	Pass
8513.27	42.16	7.57	-11.00	38.73	Peak Max	V	211	12	74	-35.27	Pass
1948.46	37.90	4.76	-27.80	14.87	Peak Max	V	136	272	74	-59.13	Pass
17916.05	28.16	9.46	-3.10	34.52	Average Max	V	132	0	54	-19.48	Pass
8513.27	30.46	7.57	-11.00	27.04	Average Max	V	211	12	54	-26.96	Pass
1948.46	25.86	4.76	-27.80	2.82	Average Max	V	136	272	54	-51.18	Pass

Above 1GHz- 802.11a – 5500MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11945.29	42.17	8.71	-7.21	43.67	Peak Max	H	242	360	74	-30.33	Pass
7338.76	40.62	7.34	-11.56	36.40	Peak Max	V	145	139	74	-37.60	Pass
2130.47	38.60	5.09	-25.48	18.22	Peak Max	V	213	114	74	-55.78	Pass
11945.29	30.66	8.71	-7.21	32.16	Average Max	H	242	360	54	-21.84	Pass
7338.76	29.10	7.34	-11.56	24.88	Average Max	V	145	139	54	-29.13	Pass
2130.47	27.10	5.09	-25.48	6.72	Average Max	V	213	114	54	-47.29	Pass

Above 1GHz- 802.11a – 5580MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11976.58	42.23	8.72	-7.25	43.70	Peak Max	V	125	274	74	-30.30	Pass
8867.52	41.69	7.66	-10.87	38.49	Peak Max	V	223	182	74	-35.52	Pass
1942.39	35.83	4.76	-27.89	12.70	Peak Max	V	101	349	74	-61.30	Pass
11976.58	30.53	8.72	-7.25	32.00	Average Max	V	125	274	54	-22.00	Pass
8867.52	29.77	7.66	-10.87	26.57	Average Max	V	223	182	54	-27.43	Pass
1942.39	25.22	4.76	-27.89	2.09	Average Max	V	101	349	54	-51.91	Pass

Above 1GHz- 802.11a – 5700MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11925.09	42.64	8.70	-7.18	44.16	Peak Max	H	109	226	74	-29.84	Pass
8575.35	42.07	7.59	-10.90	38.76	Peak Max	V	234	360	74	-35.24	Pass
1951.49	42.68	4.76	-27.75	19.69	Peak Max	V	100	103	74	-54.31	Pass
11925.09	30.24	8.70	-7.18	31.76	Average Max	H	109	226	54	-22.24	Pass
8575.35	30.37	7.59	-10.90	27.07	Average Max	V	234	360	54	-26.93	Pass
1951.49	30.08	4.76	-27.75	7.09	Average Max	V	100	103	54	-46.91	Pass

Above 1GHz- 802.11n-20M – 5500MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
12491.49	42.15	8.98	-7.39	43.73	Peak Max	V	204	161	74	-30.27	Pass
9502.07	42.07	7.84	-10.36	39.55	Peak Max	V	234	137	74	-34.45	Pass
7640.36	41.52	7.31	-11.26	37.56	Peak Max	V	183	77	74	-36.44	Pass
12491.49	30.26	8.98	-7.39	31.84	Average Max	V	204	161	54	-22.16	Pass
9502.07	30.17	7.84	-10.36	27.65	Average Max	V	234	137	54	-26.35	Pass
7640.35	29.42	7.31	-11.26	25.46	Average Max	V	183	77	54	-28.54	Pass

Above 1GHz- 802.11n-20M – 5580MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
12566.87	41.94	8.96	-7.39	43.51	Peak Max	H	184	276	74	-30.49	Pass
9193.48	41.17	7.75	-10.44	38.48	Peak Max	V	119	215	74	-35.52	Pass
6256.94	41.19	7.21	-14.8	33.59	Peak Max	V	117	194	74	-40.41	Pass
12566.87	30.12	8.96	-7.39	31.69	Average Max	H	184	276	54	-22.31	Pass
9193.48	30.01	7.75	-10.44	27.32	Average Max	V	119	215	54	-26.68	Pass
6256.94	28.86	7.21	-14.8	21.27	Average Max	V	117	194	54	-32.73	Pass

Above 1GHz- 802.11n-20M – 5700MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
7220.69	41.19	7.36	-11.57	36.98	Peak Max	V	167	344	74	-37.02	Pass
8155.19	41.39	7.39	-11.30	37.47	Peak Max	V	130	0	74	-36.53	Pass
1950.95	39.67	4.76	-27.76	16.67	Peak Max	V	101	243	74	-57.33	Pass
7220.69	29.48	7.36	-11.57	25.27	Average Max	V	167	344	54	-28.73	Pass
8155.19	29.35	7.39	-11.30	25.43	Average Max	V	130	0	54	-28.57	Pass
1950.95	29.00	4.76	-27.76	6.00	Average Max	V	101	243	54	-48.00	Pass

Above 1GHz- 802.11n-40M – 5510MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
12409.38	43.74	8.94	-7.19	45.49	Peak Max	H	244	118	74	-28.51	Pass
6122.09	47.48	7.18	-15.10	39.57	Peak Max	V	158	292	74	-34.44	Pass
1755.08	39.22	4.76	-28.65	15.33	Peak Max	V	132	97	74	-58.67	Pass
12409.35	30.69	8.94	-7.19	32.44	Average Max	H	244	118	54	-21.56	Pass
6122.09	41.70	7.18	-15.10	33.79	Average Max	V	158	292	54	-20.21	Pass
1755.08	27.44	4.76	-28.65	3.55	Average Max	V	132	97	54	-50.45	Pass

Above 1GHz- 802.11n-40M – 5550MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
9844.08	42.17	7.99	-10.34	39.81	Peak Max	H	191	184	74	-34.19	Pass
17650.34	40.19	9.43	-3.30	46.31	Peak Max	V	122	213	74	-27.69	Pass
6167.07	40.78	7.19	-15.01	32.96	Peak Max	H	133	40	74	-41.04	Pass
9844.08	30.10	7.99	-10.34	27.75	Average Max	H	191	184	54	-26.26	Pass
17650.34	28.03	9.43	-3.30	34.16	Average Max	V	122	213	54	-19.84	Pass
6167.07	29.08	7.19	-15.01	21.26	Average Max	H	133	40	54	-32.74	Pass

Above 1GHz- 802.11n-40M – 5670MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
9652.78	41.41	7.91	-10.22	39.10	Peak Max	V	112	297	74	-34.91	Pass
17595.00	39.38	9.42	-3.55	45.25	Peak Max	V	193	39	74	-28.75	Pass
1752.88	36.20	4.76	-28.63	12.33	Peak Max	H	101	167	74	-61.67	Pass
9652.78	29.74	7.91	-10.22	27.42	Average Max	V	112	297	54	-26.58	Pass
17595.00	27.53	9.42	-3.55	33.40	Average Max	V	193	39	54	-20.60	Pass
1752.88	25.08	4.76	-28.63	1.21	Average Max	H	101	167	54	-52.79	Pass

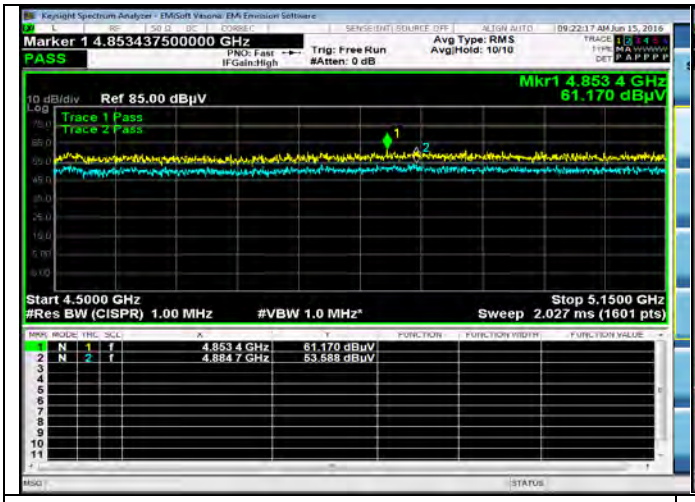
Above 1GHz- 802.11ac-80M – 5530MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
17913.68	39.97	9.46	-3.10	46.34	Peak Max	V	134	132	74	-27.66	Pass
6206.25	46.63	7.20	-14.93	38.89	Peak Max	V	151	40	74	-35.11	Pass
9434.88	41.57	7.82	-10.24	39.15	Peak Max	V	239	121	74	-34.85	Pass
17913.68	27.87	9.46	-3.10	34.23	Average Max	V	134	132	54	-19.77	Pass
6206.25	33.31	7.20	-14.93	25.58	Average Max	V	151	40	54	-28.42	Pass
9434.88	30.26	7.82	-10.24	27.83	Average Max	V	239	121	54	-26.17	Pass

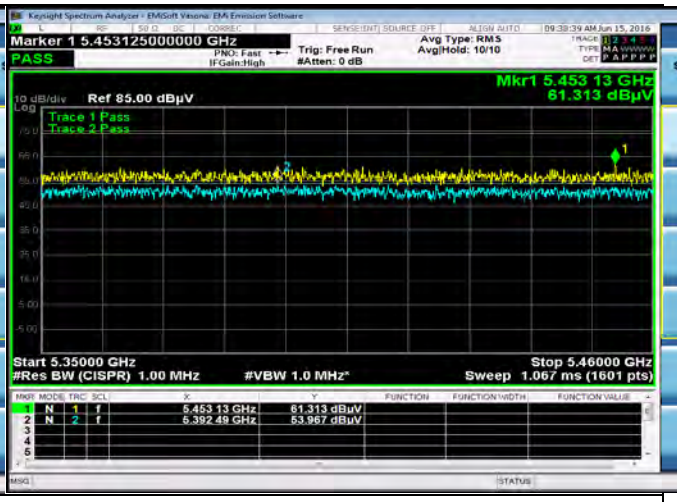
Above 1GHz- 802.11ac-80M – 5610MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
12007.91	41.26	8.73	-7.27	42.72	Peak Max	V	201	65	74	-31.28	Pass
9367.25	42.73	7.80	-10.31	40.22	Peak Max	V	140	195	74	-33.78	Pass
7222.78	42.45	7.36	-11.57	38.24	Peak Max	V	151	24	74	-35.76	Pass
12007.91	29.79	8.73	-7.27	31.25	Average Max	V	201	65	54	-22.75	Pass
9367.25	30.72	7.80	-10.31	28.21	Average Max	V	140	195	54	-25.79	Pass
7222.78	29.84	7.36	-11.57	25.63	Average Max	V	151	24	54	-28.37	Pass

Radiated Restricted band Measurement Plots:

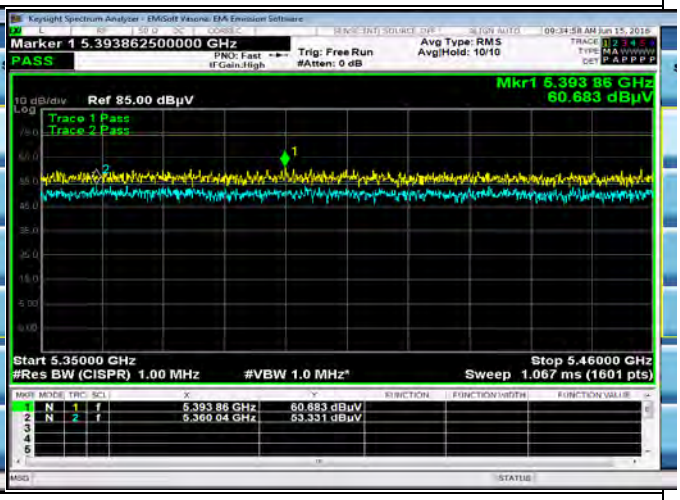


802.11a 5260M(4500-5150MHz)

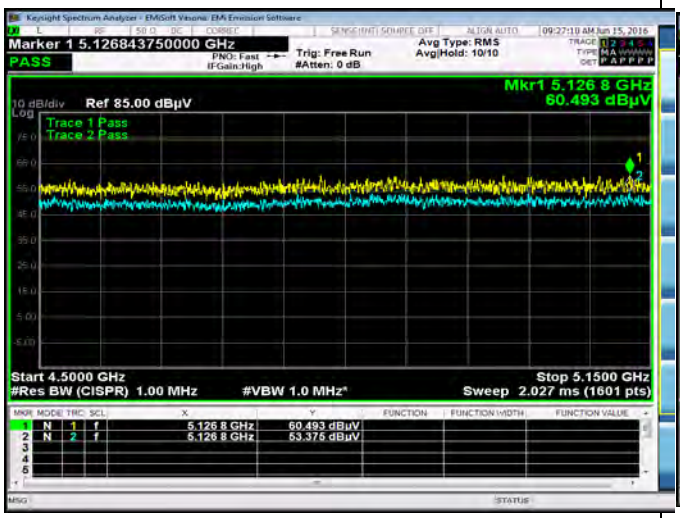


802.11a 5320M(5350-5460MHz)

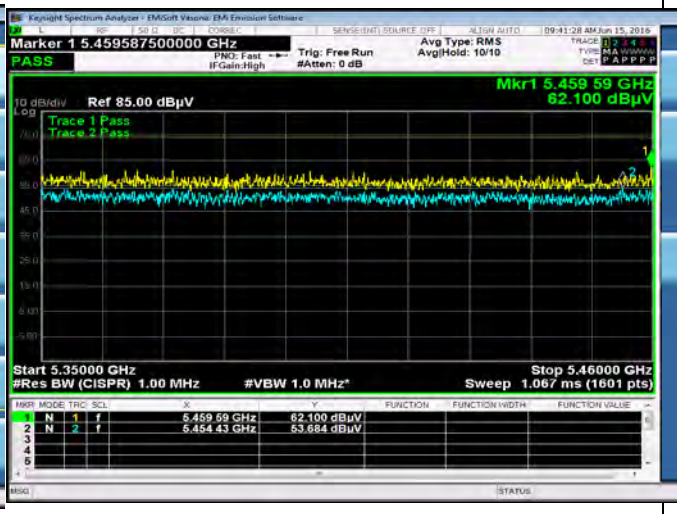
802.11n-HT20 5260M(4500-5150MHz)



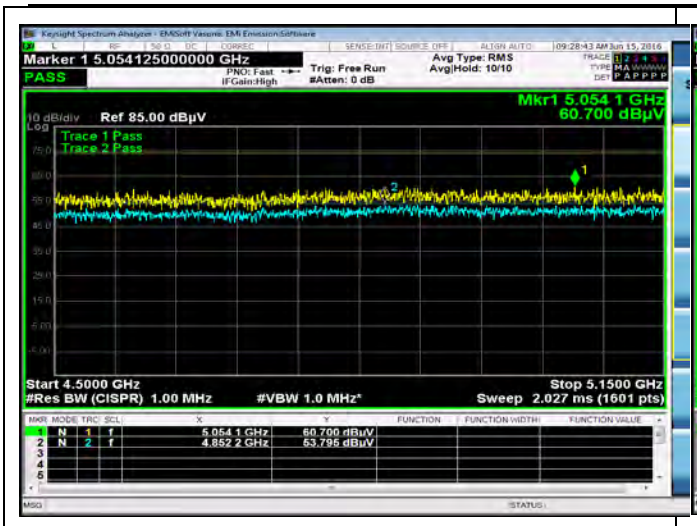
802.11n-HT20 5320M(5350-5460MHz)



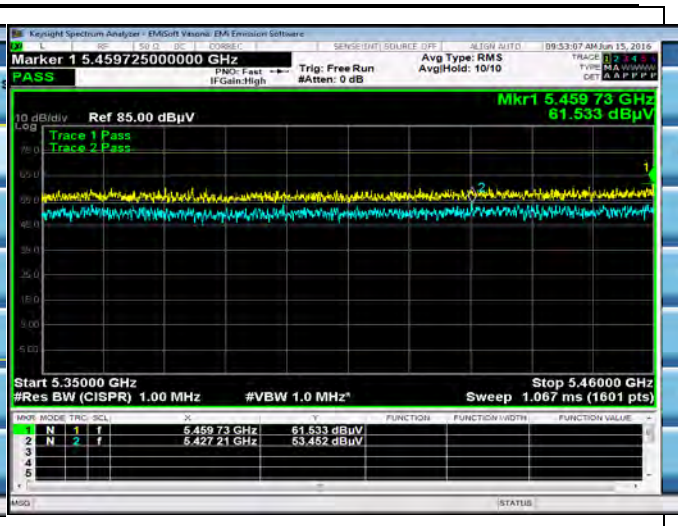
802.11n-HT40 5270M(4500-5150MHz)



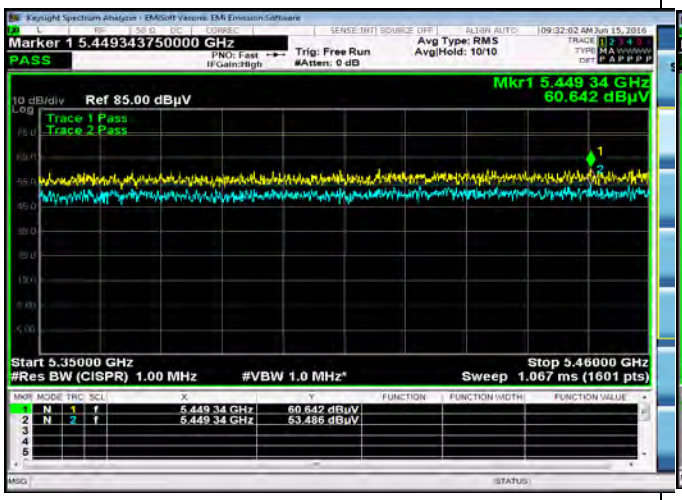
802.11n-HT40 5310M(5350-5460MHz)



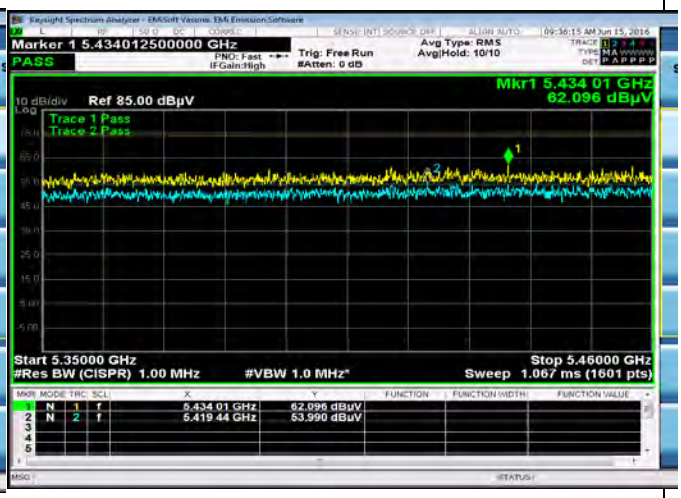
802.11ac-VHT80 5290M(4500-5150MHz)



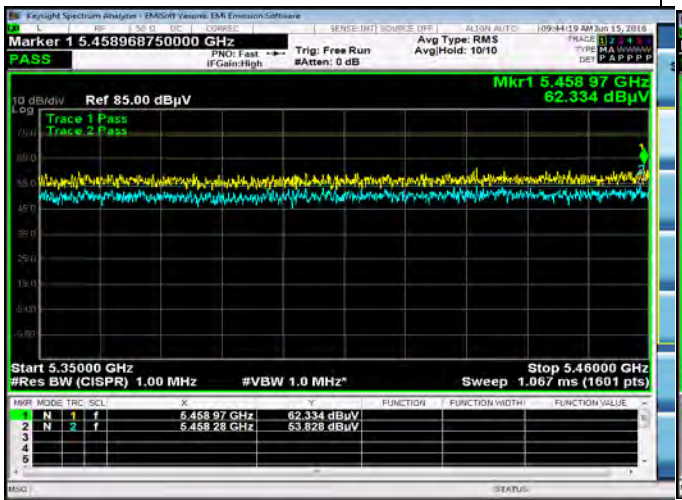
802.11ac-VHT 5290M(5350-5460MHz)



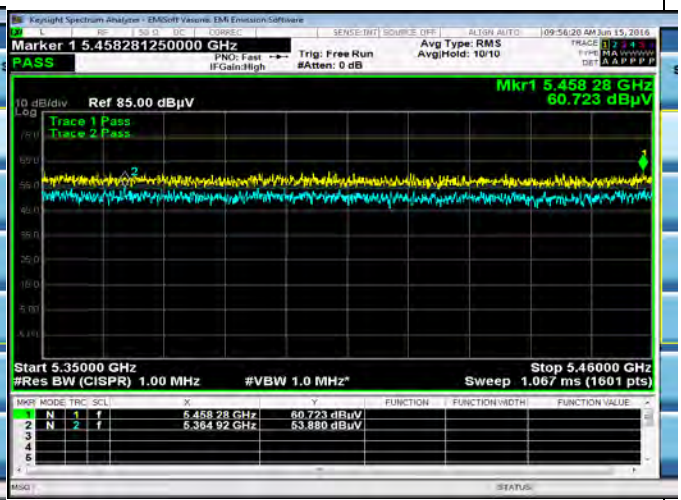
802.11a 5500M(5350-5460MHz)



802.11n-HT20 5500M(5350-5460MHz)



802.11n-HT40 5510M(5350-5460MHz)



802.11ac 5530M(5350-5460MHz)

Annex A. TEST INSTRUMENT

Instrument	Model	Manufacturer	Serial #	Cal Date	Cal Cycle	Cal Due	In use
Conducted Emissions							
R & S Receiver	ESIB 40	Rohde & Schwarz	100179	06/08/2016	1 Year	06/08/2017	☑
CHASE LISN (9k-30MHz)	MN2050B	Chase	1018	08/07/2015	1 Year	08/07/2016	☑
Radiated Emissions							
R & S Receiver	ESIB 40	Rohde & Schwarz	100179	06/08/2016	1 Year	06/08/2017	☑
Spectrum Analyzer	N9010A	Keysight	10SL0219	08/20/2015	1 Year	08/20/2016	☑
Pre-Amplifier (1-26.5GHz)	8449B	Hewlett Packard	3008A00715	03/30/2016	1 Year	03/30/2017	☑
Preamplifier (100KHz-7GHz)	LPA-6-30	RF Bay, Inc.	11140711	02/10/2016	1 Year	02/10/2017	☑
ETS-Lingren Loop Antenna	6512	ETS-Lingren	00049120	05/12/2015	1 Year	05/12/2016	☐
Bi-Log antenna (30MHz~2GHz)	JB1	Sunol Sciences	A030702	08/15/2015	1 Year	08/15/2016	☑
Horn Antenna (1-26.5GHz)	3115	EMCO	10SL0059	08/25/2015	1 Year	08/25/2016	☑
3 Meters SAC	3M	ETS-Lingren	N/A	06/09/2016	1 Year	06/09/2017	☑
10 Meters SAC	10M	ETS-Lingren	N/A	09/05/2015	1 Year	09/05/2016	☑
RF Conducted Measurement							
Spectrum Analyzer	N9010A	Keysight	10SL0219	08/20/2015	1 Year	08/20/2016	☑
USB RF Power Sensor	7002-006	ETS-Lingren	10SL0190	09/03/2015	1 Year	09/03/2016	☑

Test Software Version

Test Item	Vendor	Software	Version
Radiated Emission	EMISoft	EMISoft Vasona	V5.0

Annex B. SIEMIC Accreditation

Accreditations	Document	Scope / Remark
ISO 17025 (A2LA)		Please see the documents for the detailed scope
ISO Guide 65 (A2LA)		Please see the documents for the detailed scope
TCB Designation		A1, A2, A3, A4, B1, B2, B3, B4, C
FCC DoC Accreditation		FCC Declaration of Conformity Accreditation
FCC Site Registration		3 meter site
FCC Site Registration		10 meter site
IC Site Registration		3 meter site
IC Site Registration		10 meter site
EU NB		Radio & Telecommunications Terminal Equipment: EN45001 – EN ISO/IEC 17025
		Electromagnetic Compatibility: EN45001 – EN ISO/IEC 17025
Singapore iDA CB(Certification Body)		Phase I, Phase II
Vietnam MIC CAB Accreditation		Please see the document for the detailed scope
Hong Kong OFCA		(Phase II) OFCA Foreign Certification Body for Radio and Telecom
		(Phase I) Conformity Assessment Body for Radio and Telecom
Industry Canada CAB		Radio: Scope A – All Radio Standard Specification in Category I
		Telecom: CS-03 Part I, II, V, VI, VII, VIII

Japan Recognized Certification Body Designation		Radio: A1. Terminal equipment for purpose of calling Telecom: B1. Specified radio equipment specified in Article 38-2, Paragraph 1, Item 1 of the Radio Law
Korea CAB Accreditation		EMI: KCC Notice 2008-39, RRL Notice 2008-3: CA Procedures for EMI KN22: Test Method for EMI EMS: KCC Notice 2008-38, RRL Notice 2008-4: CA Procedures for EMS KN24, KN61000-4-2, -4-3, -4-4, -4-5, -4-6, -4-8, -4-11: Test Method for EMS
		Radio: RRL Notice 2008-26, RRL Notice 2008-2, RRL Notice 2008-10, RRL Notice 2007-49, RRL Notice 2007-20, RRL Notice 2007-21, RRL Notice 2007-80, RRL Notice 2004-68
		Telecom: President Notice 20664, RRL Notice 2007-30, RRL Notice 2008-7 with attachments 1, 3, 5, 6; President Notice 20664, RRL Notice 2008-7 with attachment 4
Taiwan NCC CAB Recognition		LP0002, PSTN01, ADSL01, ID0002, IS6100, CNS14336, PLMN07, PLMN01, PLMN08
Taiwan BSMI CAB Recognition		CNS 13438
Japan VCCI		R-3083: Radiation 3 meter site C-3421: Main Ports Conducted Interference Measurement T-1597: Telecommunication Ports Conducted Interference Measurement
Australia CAB Recognition		EMC: AS/NZS CISPR 11, AS/NZS CISPR 14.1, AS/NZS CISPR22, AS/NZS 61000.6.3, AS/NZS 61000.6.4
		Radio communications: AS/NZS 4281, AS/NZS 4268, AS/NZS 4280.1, AS/NZS 4280.2, AS/NZS 4295, AS/NZS 4582, AS/NZS 4583, AS/NZS 4769.1, AS/NZS 4769.2, AS/NZS 4770, AS/NZS 4771
		Telecommunications: AS/ACIF S002:05, AS/ACIF S003:06, AS/ACIF S004:06 AS/ACIF S006:01, AS/ACIF S016:01, AS/ACIF S031:01, AS/ACIF S038:01, AS/ACIF S040:01, AS/ACIF S041:05, AS/ACIF S043.2:06, AS/ACIF S60950.1
Australia NATA Recognition		AS/ACIF S002, AS/ACIF S003, AS/ACIF S004, AS/ACIF S006, AS/ACIF S016,AS/ACIF S031, AS/ACIF S038, AS/ACIF S040, AS/ACIF S041, AS/ACIF S043.2