

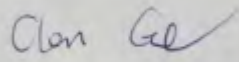
RF TEST REPORT



Report No.: FCC_RF_SL15101901-SLX-027_W5258 Rev 1.0
Supersede Report No.: FCC_RF_SL15101901-SLX-027_W5258

Applicant	:	Silex Technology, Inc.
Product Name	:	802.11a/b/g/n/ac + BT4.1 module
Model No.	:	SX-SDPAC
Test Standard	:	47 CFR 15.407
Test Method	:	ANSI C63.4: 2014 789033 D02 General UNII Test Procedures New Rules v01r02
FCC ID	:	N6C-SDPAC
IC ID	:	4908A-SDPAC
Dates of test	:	06/01/2016 to 06/30/2016
Issue Date	:	07/01/2016
Test Result	:	☒ Pass ☐ Fail
Equipment complied with the specification ☒		
Equipment did not comply with the specification ☐		

This Test Report is Issued Under the Authority of:

	
Gary Chou	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
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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.



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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/RRR, 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_SL16032301-RUC-014_W5258	None	Original	07/01/2016
FCC_RF_SL16032301-RUC-014_W5258 Rev 1.0	1.0	Updated per TCB reviewer	08/09/2016

2 Executive Summary

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

Company: Silex Technology, Inc.
Product: 802.11a/b/g/n/ac + BT 4.1 module
Model: SX-SDPAC

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	Silex Technology, Inc
Applicant Address	2-3-1 Hikaridai, Seika-cho, Kyoto, 619-0237 Japan
Manufacturer Name	Silex Technology, Inc
Manufacturer Address	2-3-1 Hikaridai, Seika-cho, Kyoto, 619-0237 Japan

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	802.11a/b/g/n/ac + BT 4.1 module
Model No.	SX-SDPAC
Trade Name	Silex
Serial No.	N/A
Host Model No.	N/A
Input Power	5VDC
Power Adapter Manu/Model	N/A
Power Adapter SN	N/A
Date of EUT received	05/26/2016
Equipment Class/ Category	DTS, UNII
Clock Frequencies	N/A
Port/Connectors	PoE, Ethernet

6.2 Radio Description

Radio Type	802.11a	802.11n-20M	802.11n-40M	802.11ac-80M
Operating Frequency	5180-5240MHz 5745-5825MHz	5180-5240MHz 5745-5825MHz	5190-5230MHz 5755-5795MHz	5210MHz 5775MHz
Modulation	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)
Channel Spacing	20MHz	20MHz	40MHz	80MHz
Number of Channels	9	9	4	2
Antenna Type	PCB Antenna			
Antenna Gain (Peak)	5GHz: 5.0 dBi			
Antenna Connector Type	U.FL			
Note	N/A			

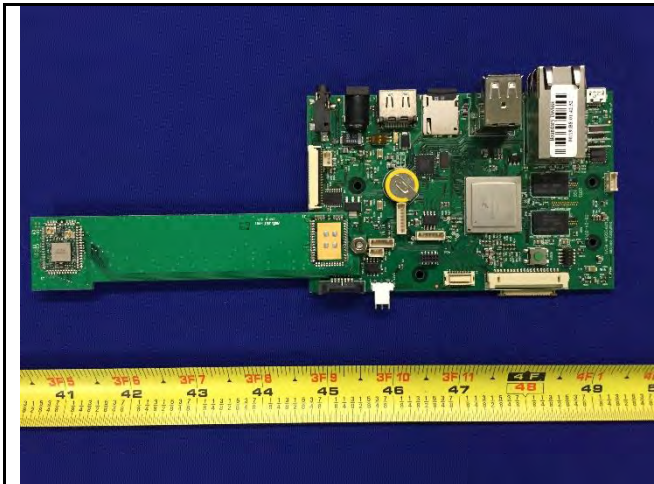
EUT Power level setting

Mode	Frequency	ART Power Setting
802.11-a	5180	14
802.11-a	5200	14
802.11-a	5240	13
802.11-n-20	5180	13
802.11-n-20	5200	13
802.11-n-20	5240	14
802.11-n-40	5190	14
802.11-n-40	5230	14
802.11-ac-80	5210	12
802.11-a	5745	14
802.11-a	5785	14
802.11-a	5825	14
802.11-n-20	5745	13
802.11-n-20	5785	14
802.11-n-20	5825	14
802.11-n-40	5755	14
802.11-n-40	5795	15
802.11-ac-80	5775	14

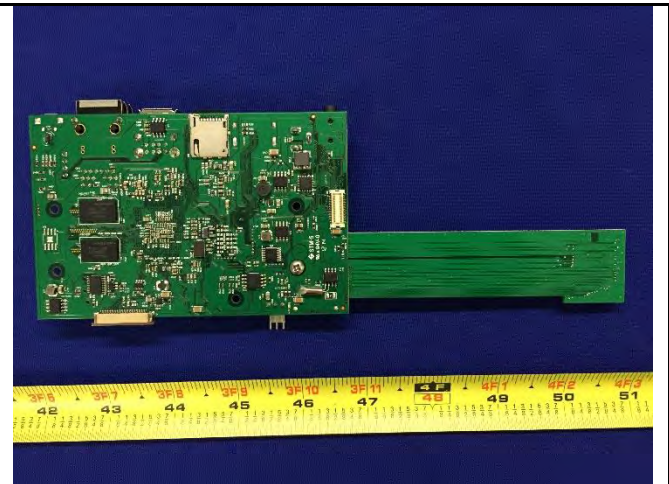
6.3 Antenna Description

Vendor	Part Number	Antenna type	W24	W52	W53	W56
Molex	146153	PCB type di-pole antenna	3.2	4.75	4.75	4.75
Unictron	H2B1PC1A1C (AA258)	PCB type di-pole antenna	2.67	3.35	3.35	3.35
Unictron	H2B1PD1A1C (AA222)	PCB type di-pole antenna	2.57	3.15	3.15	3.15

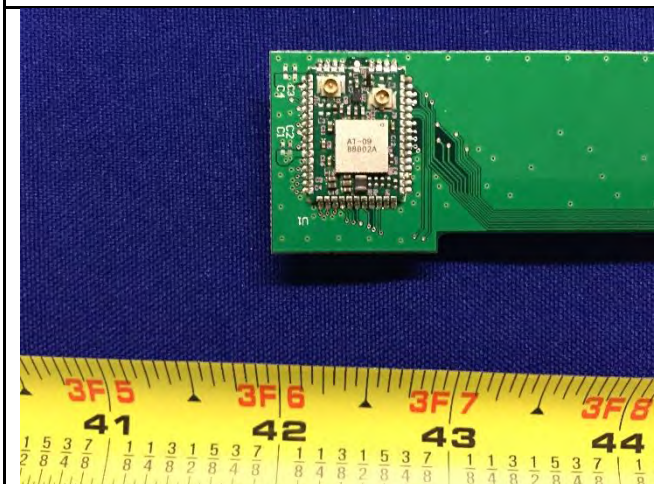
6.4 EUT Photos



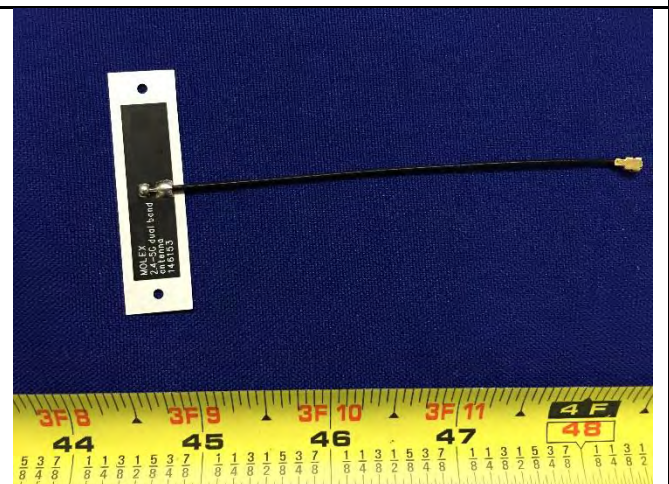
Top View



Bottom View



Radio Module View

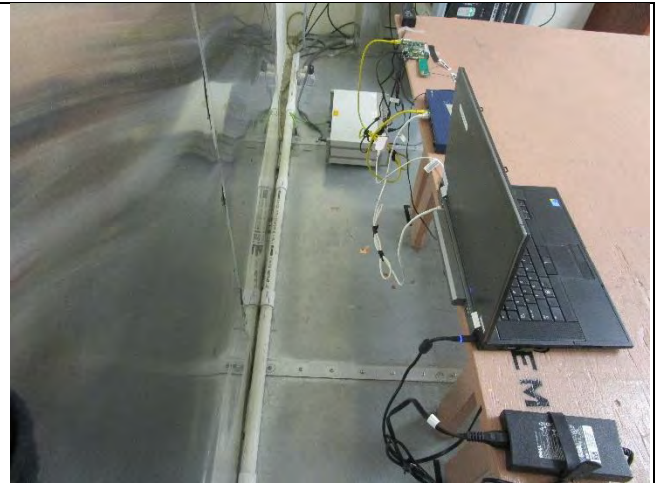


Antenna View

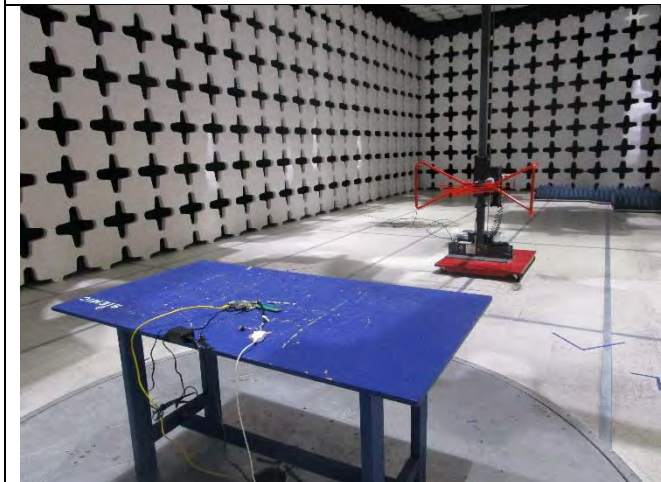
6.5 EUT Test Setup Photos



AC Line Conducted Emissions – Front View



AC Line Conducted Emissions – Rear View



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 E6510	N/A	Dell	-
2	Hub	DS108	N/A	NetGear	-

7.2 Cabling Description

Name	Connection Start		Connection Stop		Length / shielding Info		Note
	From	I/O Port	To	I/O Port	Length (m)	Shielding	
USB	EUT	Laptop	EUT	Laptop	1	Unshielded	-
RJ45	EUT	Hub	Laptop	Hub	1	Unshielded	-

7.3 Test Software Description

Test Item	Software	Description
RF Testing	QRCT	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.			

9 Measurement Uncertainty

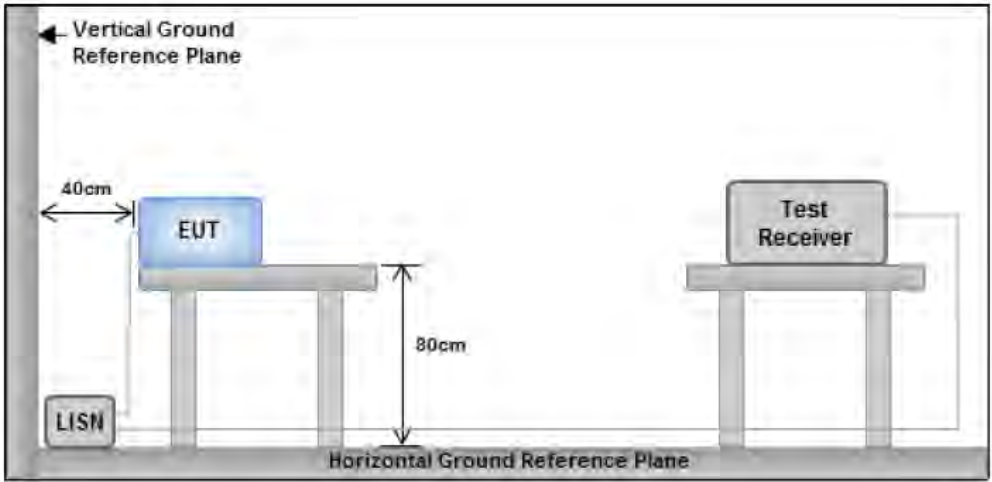
Emissions			
Test Item	Frequency Range	Description	Uncertainty
Band Edge and Radiated Spurious Emissions	30MHz – 1GHz	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+5.6dB/-4.5dB
Band Edge and Radiated Spurious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

Conducted Emission Limit

Frequency ranges (MHz)	Limit (dBuV)	
	QP	Average
0.15 ~ 0.5	66 – 56	56 – 46
0.5 ~ 5	56	46
5 ~ 30	60	50

Spec	Item	Requirement	Applicable
RSS247(A8.1)	a)	For Low-power radio-frequency devices that 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 μ H/50 ohms line impedance stabilization network (LISN). The lower limit applies at the boundary between the frequency ranges.	☒
Test Setup		 Note: 1. Support units were connected to second LISN. 2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes	
Procedure		- The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table, as shown in Annex B. - The power supply for the EUT was fed through a 50Ω/50μH EUT LISN, connected to filtered mains. - The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable. - All other supporting equipment was powered separately from another main supply.	
Remark		EUT was tested at 120VAC, 60Hz	
Result		☒ Pass ☐ Fail	

Test Data ☒ Yes ☐ N/A

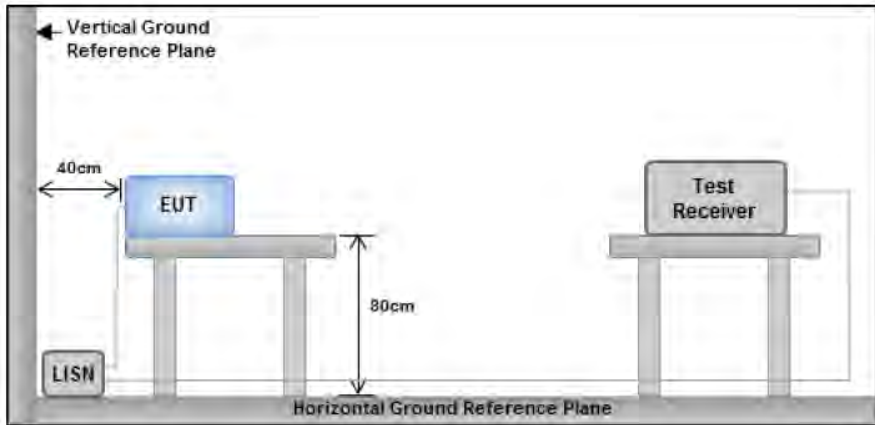
Test Plot ☒ Yes (See below) ☐ N/A

Test was done by **Chen Ge** at Conducted Emission test site.

10.2 Conducted Emissions

Conducted Emission Limit

Frequency ranges (MHz)	Limit (dBuV)	
	QP	Average
0.15 ~ 0.5	66 – 56	56 – 46
0.5 ~ 5	56	46
5 ~ 30	60	50

Spec	Item	Requirement	Applicable
47CFR§15.207	a)	For Low-power radio-frequency devices that 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 μ H/50 ohms line impedance stabilization network (LISN). The lower limit applies at the boundary between the frequency ranges.	☒
Test Setup		 Note: 1. Support units were connected to second LISN. 2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes	
Procedure		- The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table, as shown in Annex B. - The power supply for the EUT was fed through a 50Ω/50μH EUT LISN, connected to filtered mains. - The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable. - All other supporting equipment was powered separately from another main supply.	
Remark		EUT tested with AC 110V 60Hz	
Result		☒ Pass ☐ Fail	

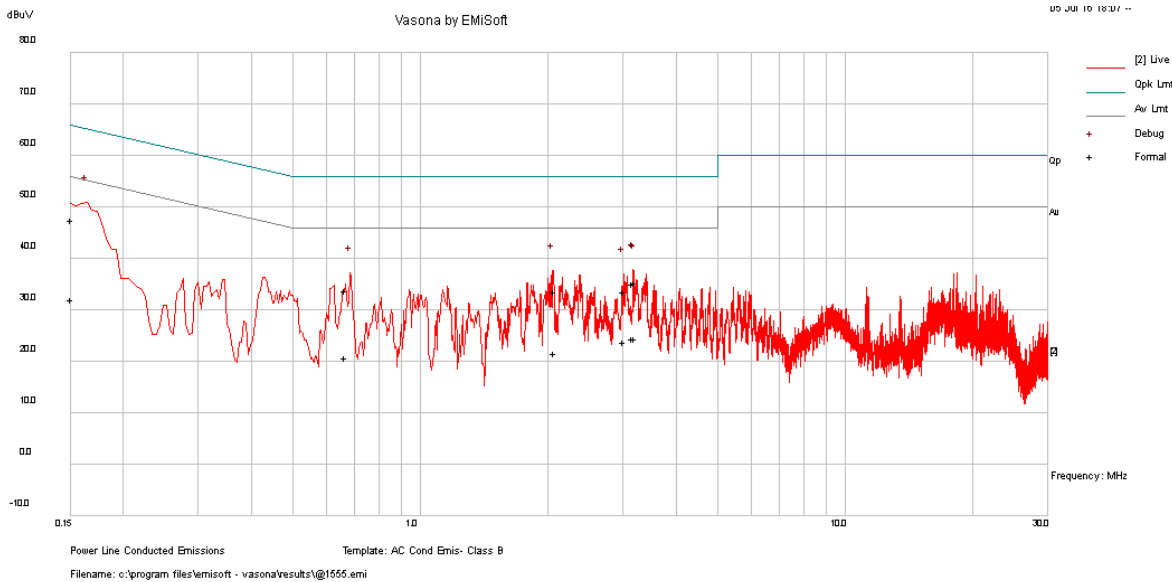
Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test was done by Chen Ge at Conducted Emission test site.

Conducted Emission Test Results

Test specification:	Conducted Emissions			
Environmental Conditions:	Temp(°C):	21	Result:	☒ Pass ☐ Fail
	Humidity (%):	42		
	Atmospheric(mbar):	1021		
Mains Power:	120VAC, 60Hz			
Tested by:	Chen Ge			
Test Date:	07/05/2016			
Remarks	AC Line @ Line			



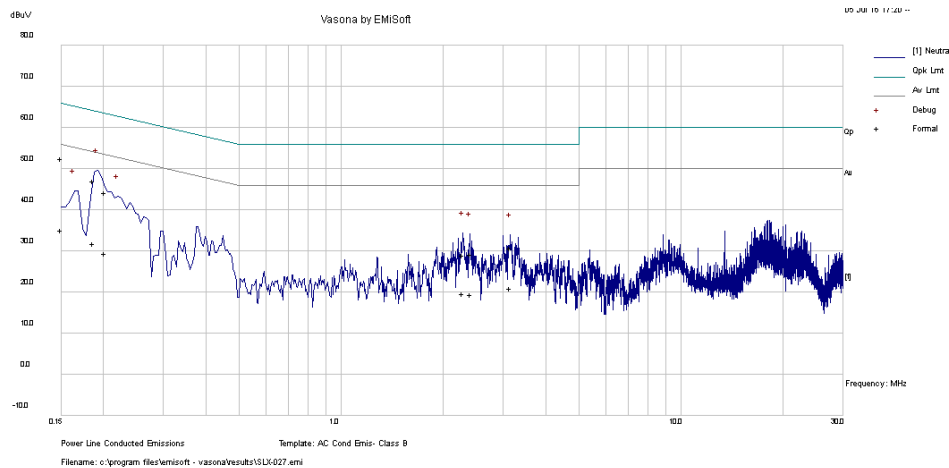
Line Plot at 120Vac, 60Hz

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	Factors (dB)	Level (dBuV)	Measurement Type	Line	Limit (dBuV)	Margin (dB)	Pass /Fail
0.15	35.87	10	1.78	47.65	Quasi Peak	Live	65.93	-18.27	Pass
3.16	24.6	10.03	0.55	35.18	Quasi Peak	Live	56	-20.82	Pass
2.07	23.11	10.02	0.55	33.69	Quasi Peak	Live	56	-22.31	Pass
3.20	24.82	10.03	0.55	35.4	Quasi Peak	Live	56	-20.6	Pass
0.67	23.32	10.01	0.62	33.95	Quasi Peak	Live	56	-22.05	Pass
3.01	23.11	10.03	0.55	33.69	Quasi Peak	Live	56	-22.31	Pass
0.15	20.43	10	1.78	32.22	Average	Live	55.93	-23.71	Pass
3.16	13.88	10.03	0.55	24.46	Average	Live	46	-21.54	Pass
2.07	11.19	10.02	0.55	21.76	Average	Live	46	-24.24	Pass
3.20	13.85	10.03	0.55	24.43	Average	Live	46	-21.57	Pass
0.67	10.1	10.01	0.62	20.73	Average	Live	46	-25.27	Pass
3.01	13.34	10.03	0.55	23.92	Average	Live	46	-22.08	Pass

Note: The results above show only the worst case.

Conducted Emission Test Results

Test specification:	Conducted Emissions			
Environmental Conditions:	Temp(°C):	21	Result:	☒ Pass ☐ Fail
	Humidity (%):	42		
	Atmospheric(mbar):	1021		
Mains Power:	120VAC, 60Hz			
Tested by:	Chen Ge			
Test Date:	07/05/2016			
Remarks	AC Line @ Neutral			



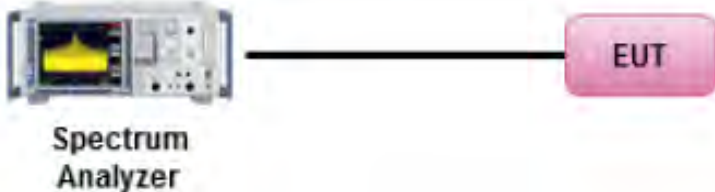
Neutral Plot at 120Vac, 60Hz

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	Factors (dB)	Level (dBuV)	Measurement Type	Line	Limit (dBuV)	Margin (dB)	Pass /Fail
0.19	35.67	10	1.41	47.09	Quasi Peak	Neutral	64.17	-17.09	Pass
0.20	33.08	10	1.3	44.39	Quasi Peak	Neutral	63.53	-19.14	Pass
0.15	40.7	10	1.8	52.5	Quasi Peak	Neutral	66	-13.5	Pass
2.29	18.5	10.02	0.55	29.08	Quasi Peak	Neutral	56	-26.92	Pass
2.41	18.74	10.03	0.55	29.32	Quasi Peak	Neutral	56	-26.68	Pass
3.15	20.21	10.03	0.55	30.79	Quasi Peak	Neutral	56	-25.21	Pass
0.19	20.57	10	1.41	31.99	Average	Neutral	54.17	-22.19	Pass
0.20	18.21	10	1.3	29.51	Average	Neutral	53.53	-24.02	Pass
0.15	23.43	10	1.8	35.24	Average	Neutral	56	-20.76	Pass
2.29	9.26	10.02	0.55	19.84	Average	Neutral	46	-26.16	Pass
2.41	8.91	10.03	0.55	19.49	Average	Neutral	46	-26.51	Pass
3.15	10.54	10.03	0.55	21.12	Average	Neutral	46	-24.88	Pass

Note: The results above show only the worst case.

10.3 26 dB & 6 dB & 99% Bandwidth

Requirement(s):

Spec	Item	Requirement	Applicable
§ 15.407	-	26 dB Emission BW: Report only for reference.	☒
	a) (2)	26 dB Emission BW: Report only for power limit calculation.	☐
	e)	Within the 5.725-5.85 GHz band, the minimum 6 dB bandwidth of U-NII devices shall be at least 500 kHz.	☒
Test Setup			
Test Procedure	789033 D02 General UNII Test Procedures New Rules v01r02 <u>26dB Emission bandwidth measurement procedure (Other than 5.725-5.85 GHz)</u> - Allow the trace to stabilize. - Use the spectrum analyzer built-in measurement function to determine the 26dB BW. - o Set RBW = around 1% of emission bandwidth - o Set VBW > RBW - o Detector = Peak - o Trace mode = max hold - Capture the plot. - Repeat above steps for different test channel and other modulation type. <u>6 dB Minimum emission bandwidth measurement procedure (for 5.725-5.85 GHz)</u> - Allow the trace to stabilize. - Use the spectrum analyzer built-in measurement function to determine the 6dB BW. - o Set RBW = 100 KHz - o Set VBW ≥ 3 x RBW - o Detector = Peak - o Trace mode = max hold - o Sweep = auto couple - Capture the plot. - Repeat above steps for different test channel and other modulation type.		
Test Date	06/18/2016 – 06/25/2016	Environmental condition	Temperature 22°C Relative Humidity 38% Atmospheric Pressure 1020mbar
Remark	99% BW result is presented here to show the channels in 5.1GHz is not crossing to DFS channel since the 26 dB BW is too wide.		
Result	☒ Pass ☐ Fail		

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes ☐ N/A

Test was done by Chen Ge at RF test site.

26dB Bandwidth measurement result for 5.2GHz

Type	Test mode	Freq (MHz)	CH	Result (MHz)	Limit (MHz)
26dB BW	802.11a	5180	Low	18.66	-
26dB BW	802.11a	5200	Mid	19.12	-
26dB BW	802.11a	5240	High	18.48	-
26dB BW	802.11n-20	5180	Low	19.30	-
26dB BW	802.11n-20	5200	Mid	19.85	-
26dB BW	802.11n-20	5240	High	19.37	-
26dB BW	802.11n-40	5190	Low	38.46	-
26dB BW	802.11n-40	5230	High	38.57	-
26dB BW	802.11ac-80	5210	Mid	82.88	-

6dB Bandwidth measurement result for 5.8GHz

Type	Test mode	Freq (MHz)	CH	Result (MHz)	Limit (MHz)	Result
6dB BW	802.11a	5745	Low	16.34	≥0.5	Pass
6dB BW	802.11a	5785	Mid	16.31	≥0.5	Pass
6dB BW	802.11a	5825	High	14.11	≥0.5	Pass
6dB BW	802.11n-20	5745	Low	13.45	≥0.5	Pass
6dB BW	802.11n-20	5785	Mid	16.32	≥0.5	Pass
6dB BW	802.11n-20	5825	High	15.89	≥0.5	Pass
6dB BW	802.11n-40	5755	Low	36.34	≥0.5	Pass
6dB BW	802.11n-40	5795	High	34.41	≥0.5	Pass
6dB BW	802.11ac-80	5775	Mid	71.39	≥0.5	Pass

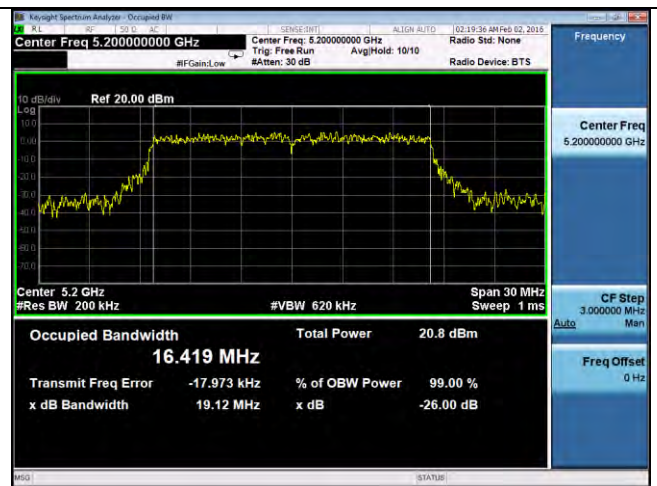
99% Occupied Bandwidth measurement result for 5.2GHz

Type	Test mode	Freq (MHz)	CH	Result (MHz)	Limit (MHz)
99% OBW	802.11a	5180	Low	16.39	-
99% OBW	802.11a	5200	Mid	16.41	-
99% OBW	802.11a	5240	High	16.43	-
99% OBW	802.11n-20	5180	Low	17.63	-
99% OBW	802.11n-20	5200	Mid	17.63	-
99% OBW	802.11n-20	5240	High	17.63	-
99% OBW	802.11n-40	5190	Low	35.97	-
99% OBW	802.11n-40	5230	High	35.92	-
99% OBW	802.11ac-80	5210	Mid	75.83	-

26dB Bandwidth Test Plots



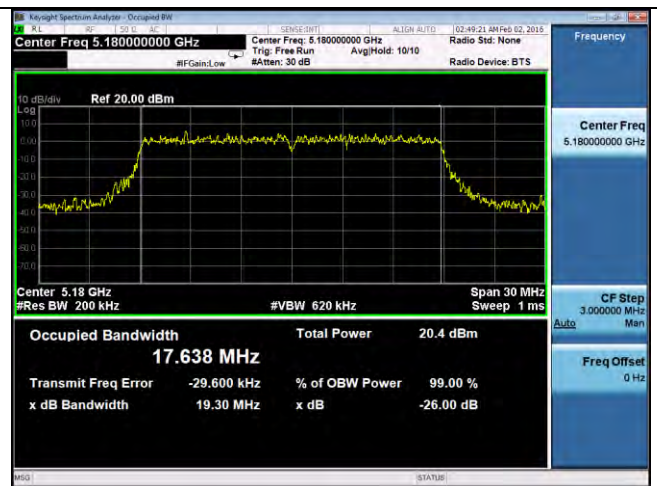
26dB BW - 802.11a 5180MHz



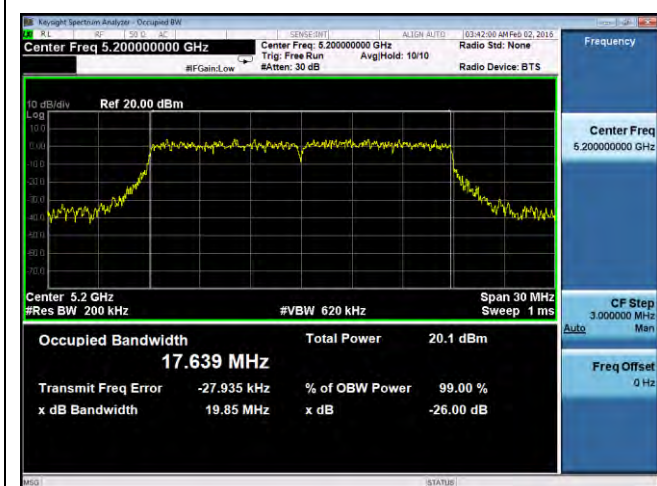
26dB BW - 802.11a 5200MHz



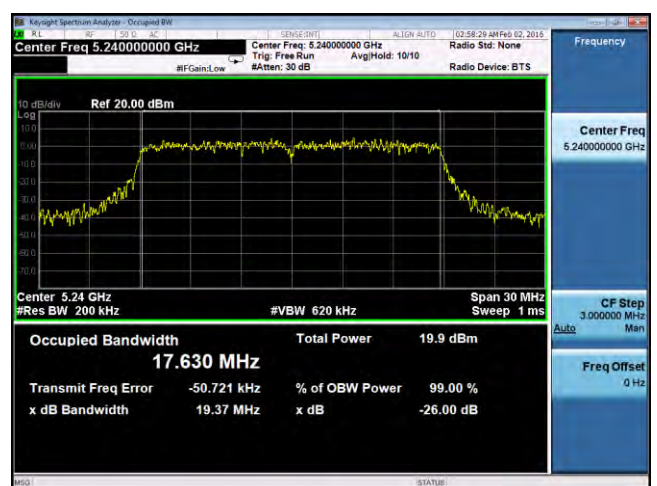
26dB BW - 802.11a 5240MHz



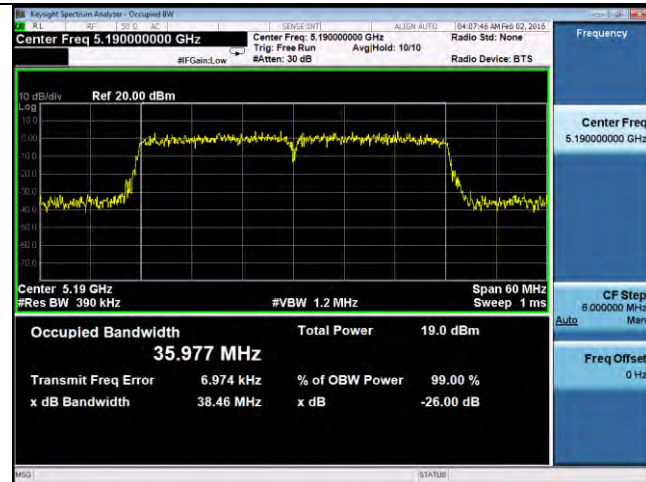
26dB BW - 802.11n-20M 5180MHz



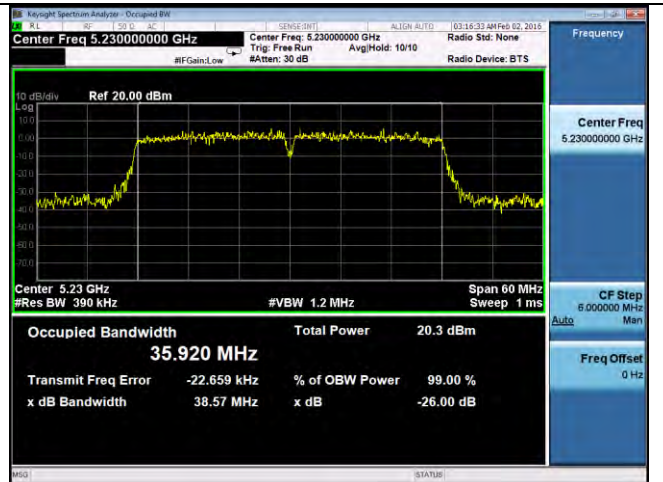
26dB BW - 802.11n-20M 5200MHz



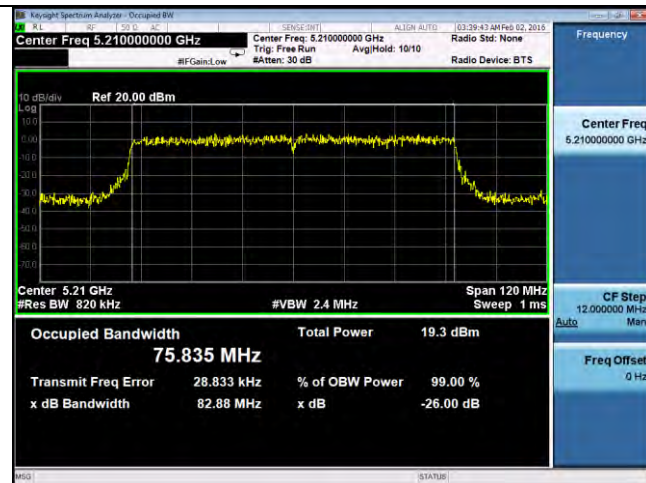
26dB BW - 802.11n-20M 5240MHz



26dB BW - 802.11n-40M 5190MHz

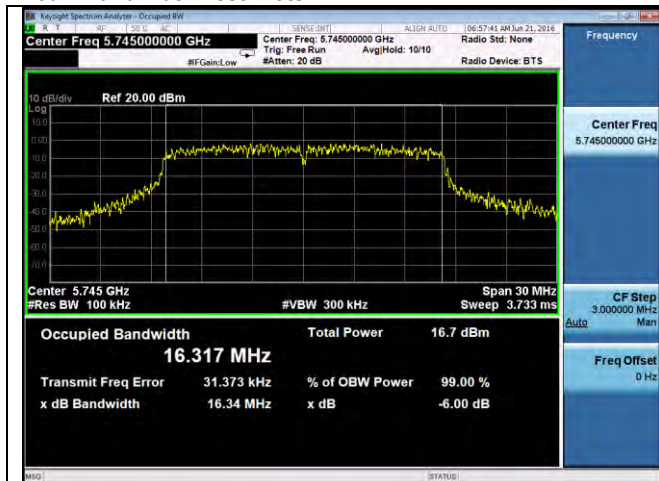


26dB BW - 802.11n-40M 5230MHz

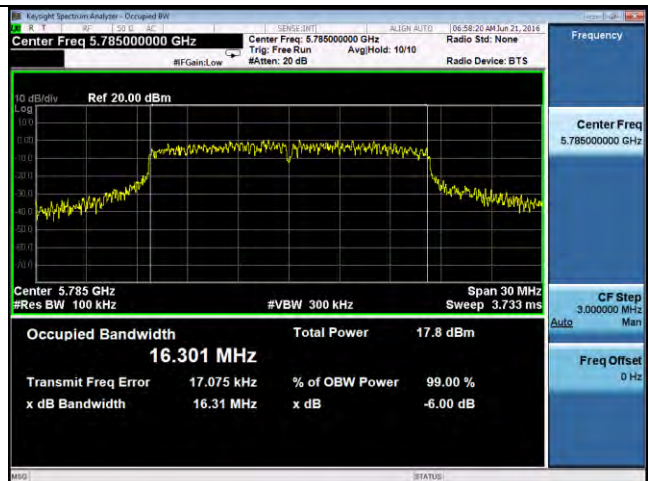


26dB BW - 802.11ac-80M 5210MHz

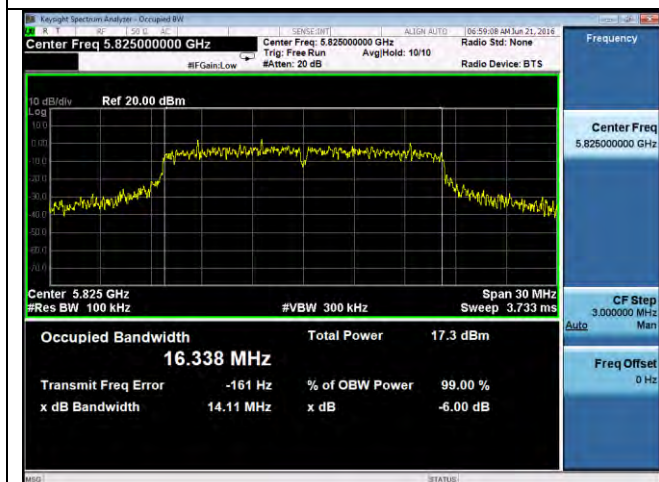
6dB Bandwidth Test Plots



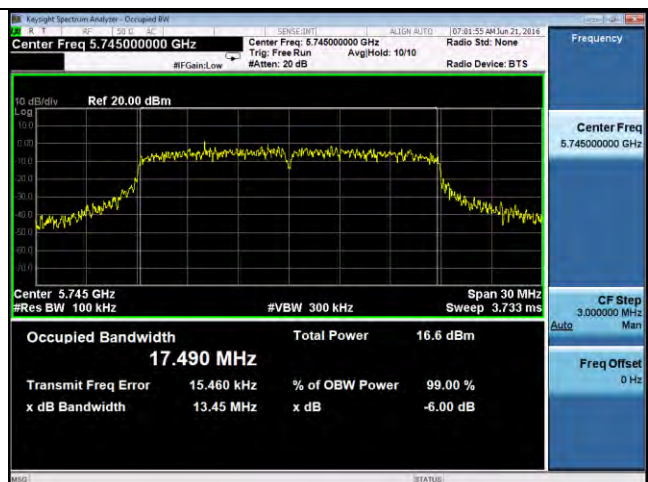
6dB BW 802.11a 5745MHz



6dB BW 802.11a 5785MHz



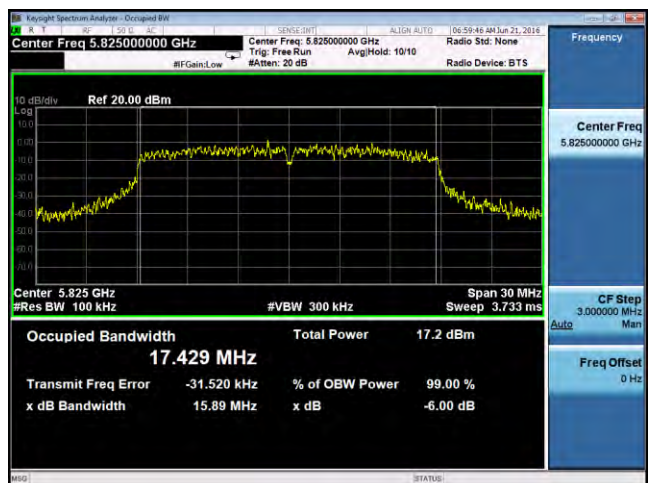
6dB BW 802.11a 5825MHz



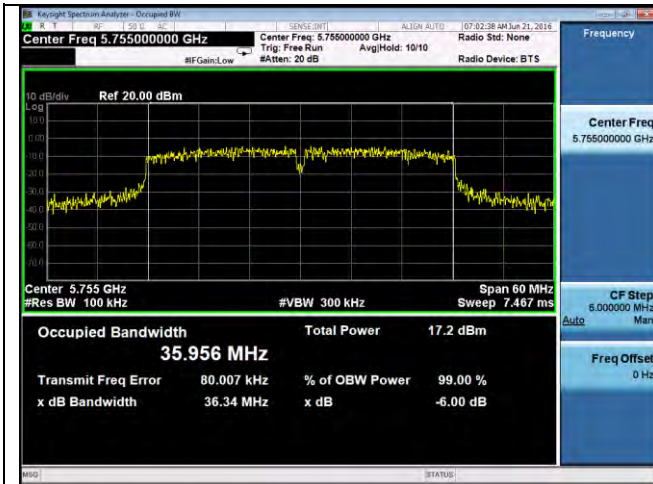
6dB BW 802.11n-20M 5745MHz



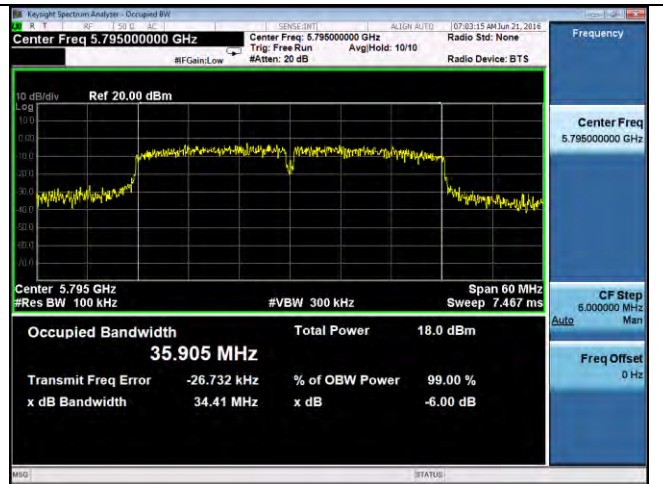
6dB BW 802.11n-20M 5785MHz



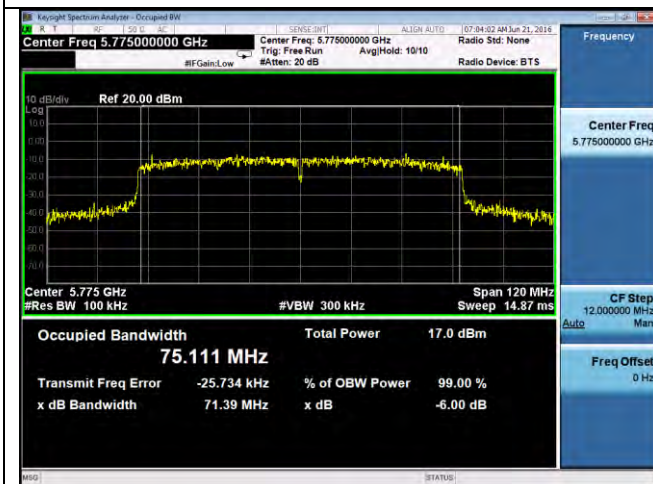
6dB BW 802.11n-20M 5825MHz



6dB BW 802.11n-40M 5755MHz



6dB BW 802.11n-40M 5795MHz



6dB BW 802.11ac-80M 5775MHz

10.4 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	06/18/2016 – 06/22/2016	Environmental condition	Temperature Relative Humidity Atmospheric Pressure	21°C 40% 1019mbar
Remark	N/A			
Result	☒ Pass ☐ Fail			

Test Data ☒ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☒ N/A

Test was done by Chen Ge at RF test site.

Output Power measurement result for 5.2GHz

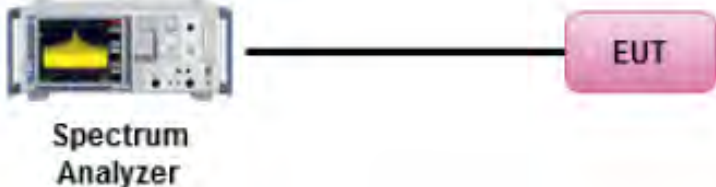
Type	Test mode	Freq (MHz)	CH	Conducted Power (dBm)	Limit (dBm)	Result
Output power	802.11a	5180	Low	13.63	30	Pass
		5200	Mid	14.11	30	Pass
		5240	High	12.59	30	Pass
	802.11n-20M	5180	Low	13.62	30	Pass
		5200	Mid	14.04	30	Pass
		5240	High	12.53	30	Pass
	802.11n-40M	5190	Low	13.80	30	Pass
		5230	High	13.83	30	Pass
	802.11ac-80M	5210	Mid	11.98	30	Pass

Output Power Measurement Results for 5.8GHz

Type	Test mode	Freq (MHz)	CH	Conducted Power (dBm)	Limit (dBm)	Result
Output power	802.11a	5745	Low	13.30	30	Pass
		5785	Mid	14.57	30	Pass
		5825	High	13.64	30	Pass
	802.11n-20M	5745	Low	12.98	30	Pass
		5785	Mid	14.34	30	Pass
		5825	High	13.61	30	Pass
	802.11n-40M	5755	Low	14.21	30	Pass
		5795	High	15.09	30	Pass
	802.11ac-80M	5775	Mid	14.06	30	Pass

10.5 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)(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 <u>Maximum spectral density measurement procedure</u> - 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	06/18/2016 – 06/22/2016	Environmental condition	Temperature 22°C Relative Humidity 42% Atmospheric Pressure 1020mbar
Remark	N/A		
Result	☒ Pass ☐ Fail		

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test was done by Chen Ge at RF test site.

PSD measurement result

Type	Test mode	Freq (MHz)	CH	Conducted Power (dBm/MHz)	Limit (dBm/MHz)	Result
PSD	802.11a	5180	Low	2.69	30	Pass
		5200	Mid	3.63	30	Pass
		5240	High	1.75	30	Pass
	802.11n-20M	5180	Low	2.39	30	Pass
		5200	Mid	3.26	30	Pass
		5240	High	1.71	30	Pass
	802.11n-40M	5190	Low	0.00	30	Pass
		5230	High	-0.25	30	Pass
	802.11ac-80M	5210	Mid	-4.61	30	Pass

Type	Test mode	Freq (MHz)	CH	PSD (dBm/100kHz)	Correction factor (dB)	PSD (dBm/500kHz)	Limit (dBm/500kHz)	Result
PSD	802.11a	5745	Low	-7.07	6.99	-0.08	30	Pass
		5785	Mid	-5.28	6.99	1.71	30	Pass
		5825	High	-5.90	6.99	1.09	30	Pass
	802.11n-20M	5745	Low	-6.73	6.99	0.26	30	Pass
		5785	Mid	-5.79	6.99	1.2	30	Pass
		5825	High	-5.77	6.99	1.22	30	Pass
	802.11n-40M	5755	Low	-8.72	6.99	-1.73	30	Pass
		5795	High	-8.07	6.99	-1.08	30	Pass
	802.11ac-80M	5775	Mid	-11.74	6.99	-4.75	30	Pass
Note	BW correction factor = $10\log(500\text{kHz}/\text{RBW})$, RBW was set to 100kHz during test.							

Test Plots



PSD-802.11a-5180M



PSD-802.11a-5200M



PSD-802.11a-5240M



PSD-802.11n-20M -5180M



PSD-802.11n-20M -5200M



PSD-802.11n-20M -5240M



PSD-802.11n-40M-5190M



PSD-802.11n-40M-5230M



PSD-802.11ac-80M-5210M



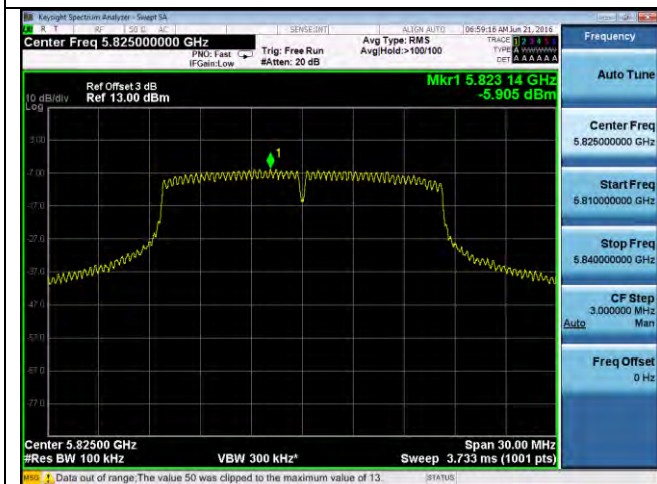
-



PSD-802.11a-5745M



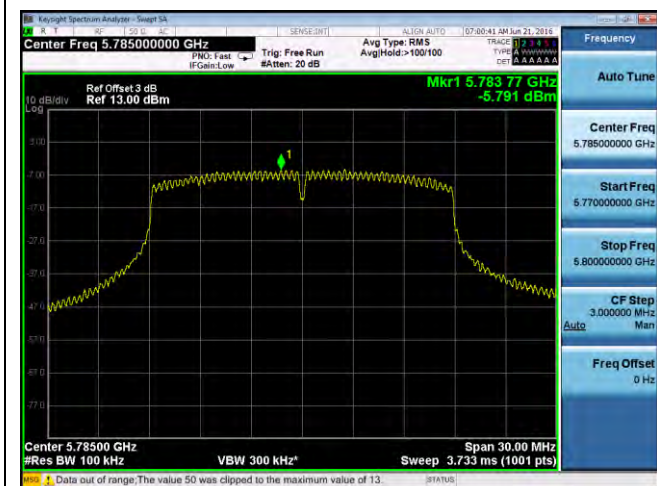
PSD-802.11a-5785M



PSD-802.11a-5825M



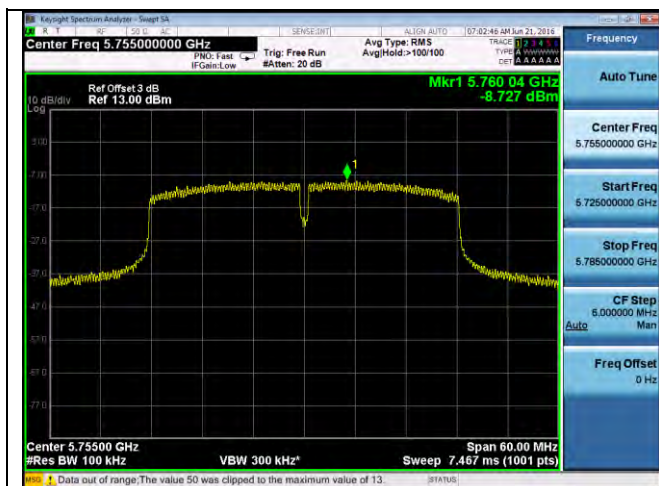
PSD-802.11n-20M -5745M



PSD-802.11n-20M -5785M



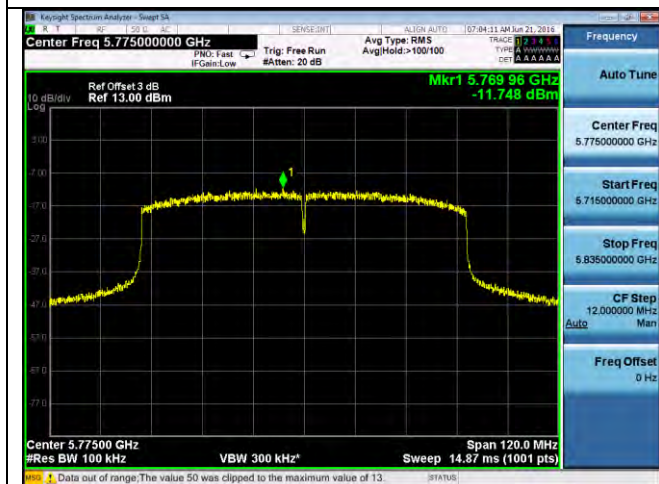
PSD-802.11n-20M -5825M



PSD-802.11n-40M-5755M



PSD-802.11n-40M-5795M



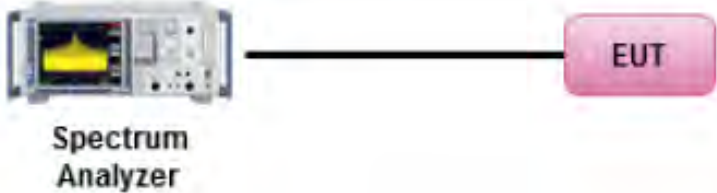
PSD-802.11ac-80M-5775M



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10.6 Band Edge and Emission Mask Measurement

Requirement(s):

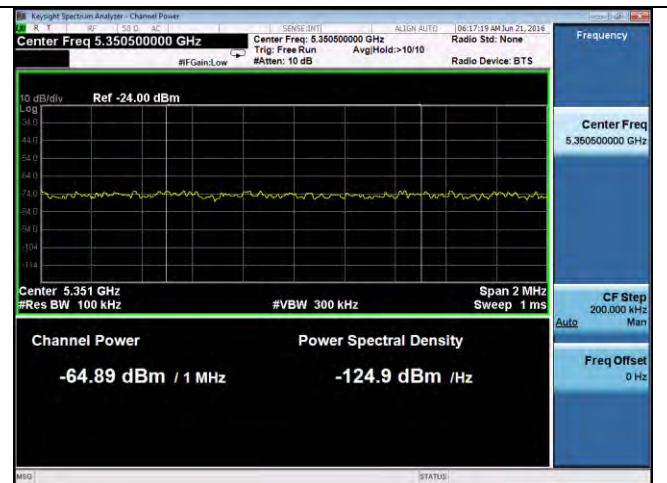
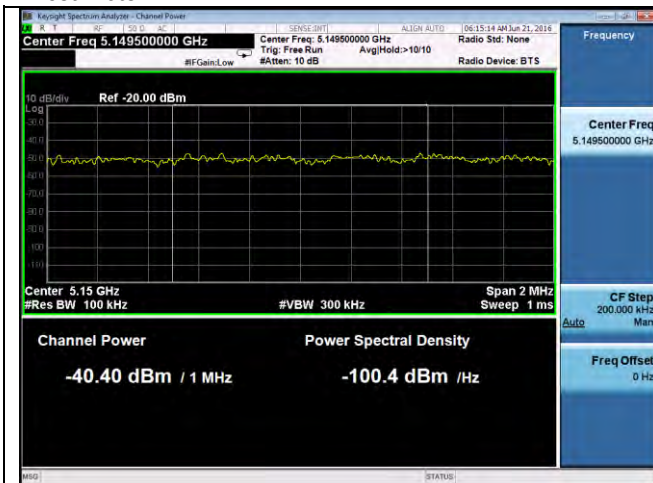
Spec	Item	Requirement	Applicable
47CFR§ 15.407(b)(2), 15.407(b)(6)	(1)	For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.	☒
	(2)	For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 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 5.725-5.85 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 e.i.r.p. of -17 dBm/MHz; for frequencies 10 MHz or greater above or below the band edge, emissions shall not exceed an e.i.r.p. of -27 dBm/MHz.	☒
Test Setup			
Procedure	789033 D02 General UNII Test Procedures New Rules v01r02, II.F. Method SA-1 <u>Band Edge measurement:</u> - For average emissions measurements, follow the procedures described in section II.G.6., "Procedures for Average Unwanted Emissions Measurements above 1000 MHz", except for the following changes: - Set RBW=100kHz - Set VBW=300kHz - Perform a band-power integration across the 1 MHz bandwidth in which the band-edge emission level is to be measured.		
Remark	Antenna gain was added to the offset.		
Result	☒ Pass ☐ Fail		

Test Data ☐ Yes (See below) ☒ N/A

Test Plot ☒ Yes (See below) ☐ N/A

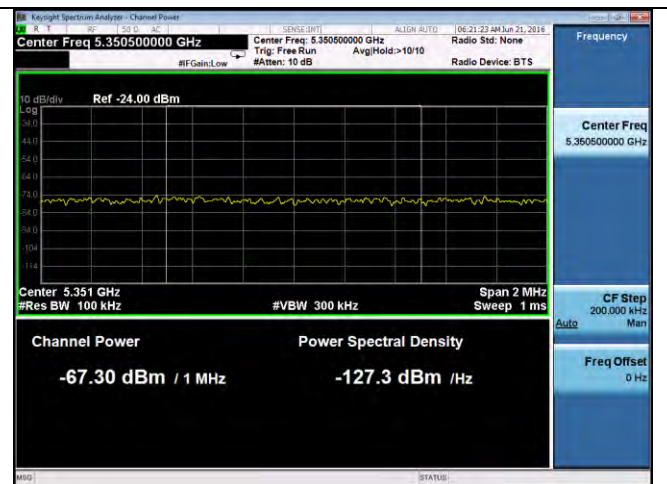
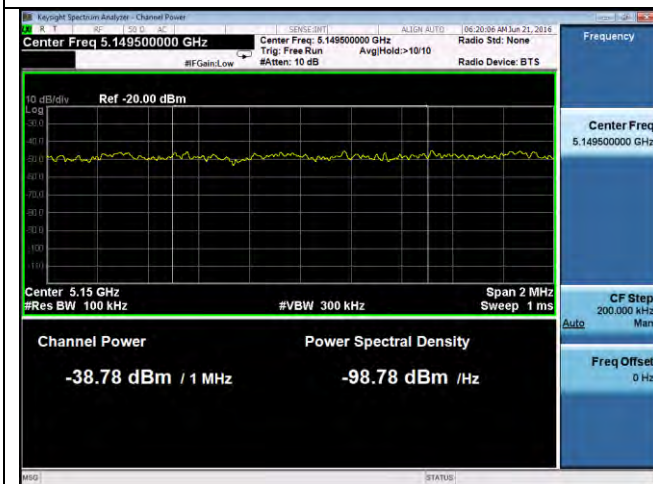
Test was done by **Chen Ge** at RF test site.

Test Plots



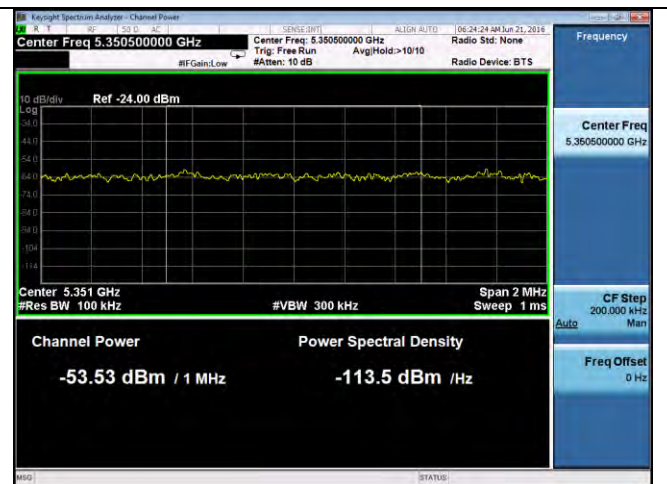
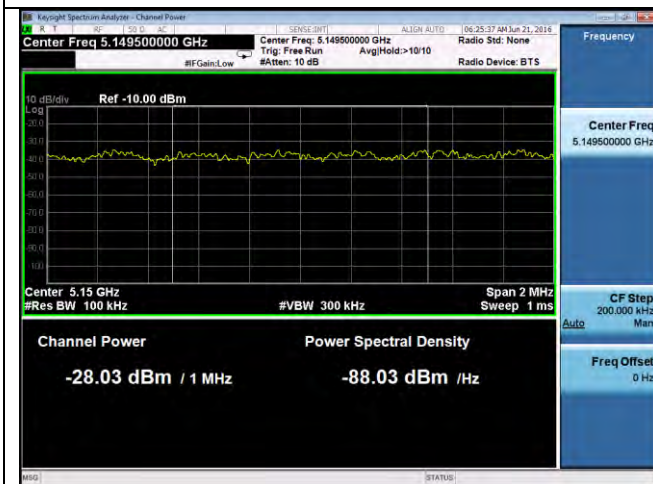
Band Edge -802.11a-5180M

Band Edge -802.11a-5240M



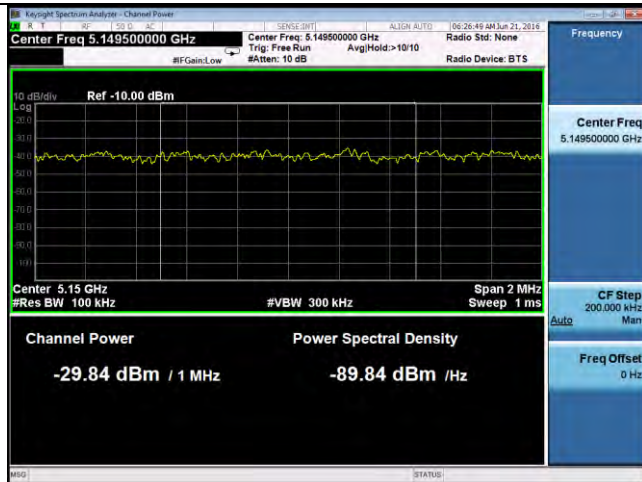
Band Edge -802.11n-20M -5180M

Band Edge -802.11n-20M -5240M



Band Edge -802.11n-40M -5190M

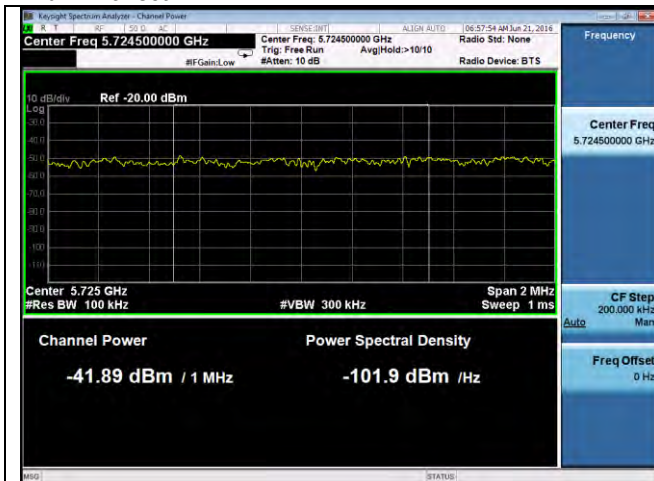
Band Edge -802.11n-40M -5230M



Band Edge -802.11ac-80M-5210M

-

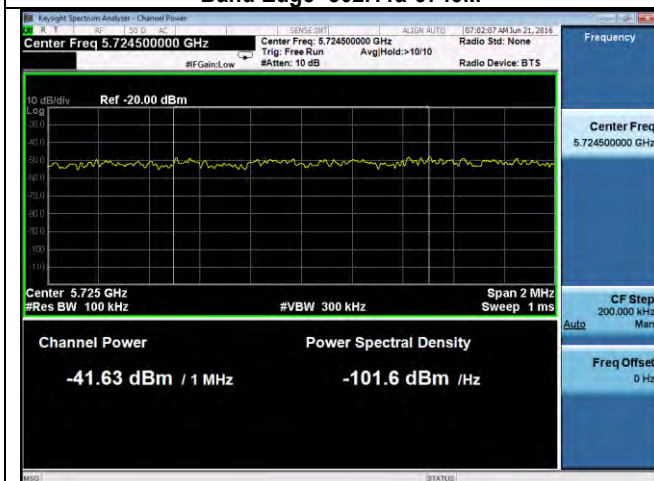
**5.8GHz band:
10MHz offset**



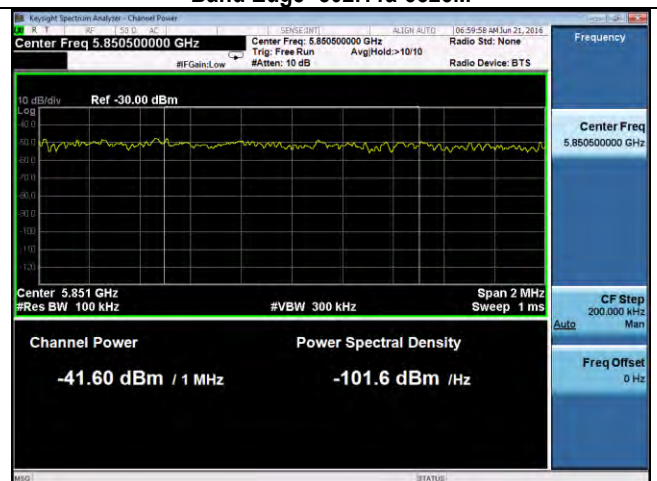
Band Edge -802.11a-5745M



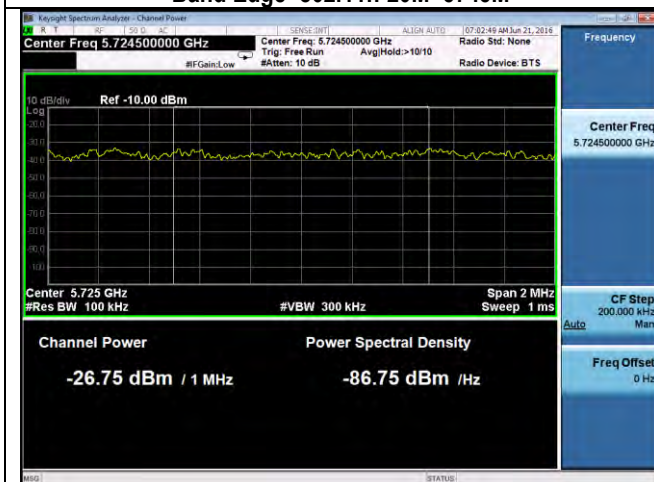
Band Edge -802.11a-5825M



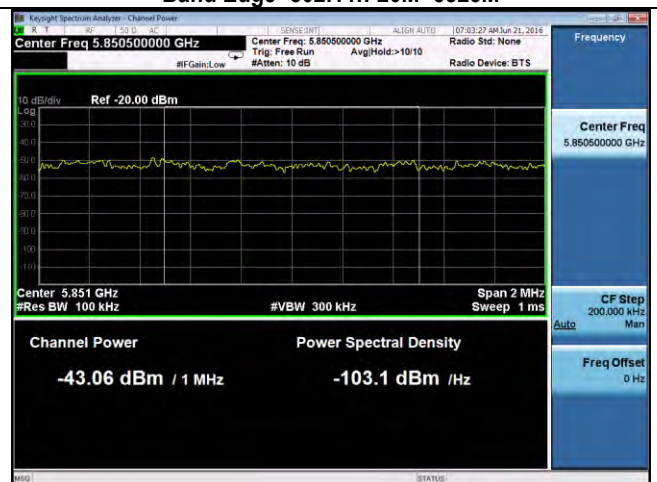
Band Edge -802.11n-20M -5745M



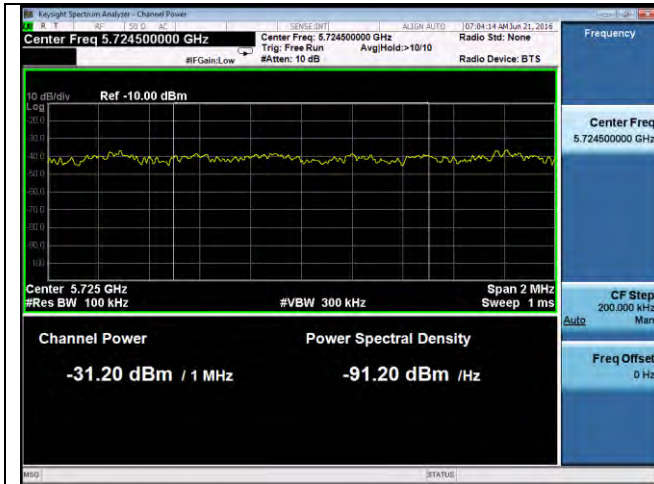
Band Edge -802.11n-20M -5825M



Band Edge -802.11n-40M -5755M



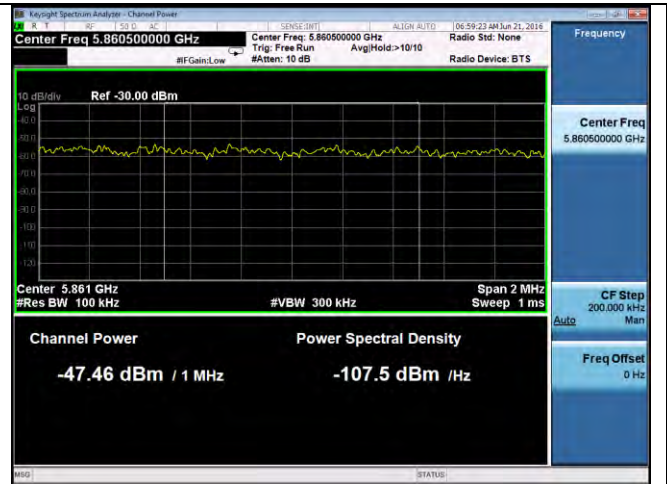
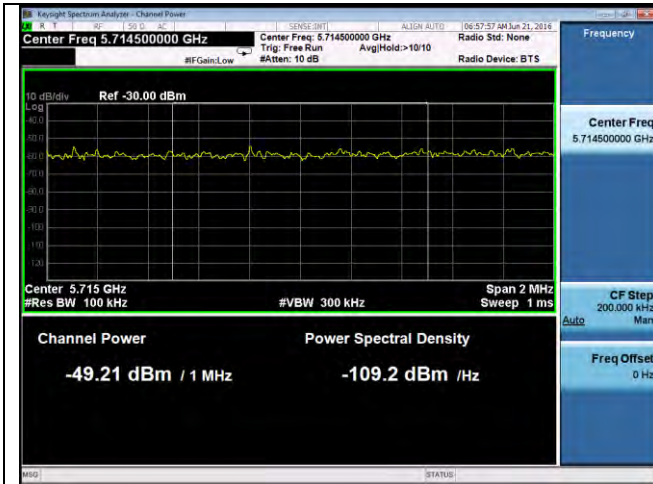
Band Edge -802.11n-40M -5795M



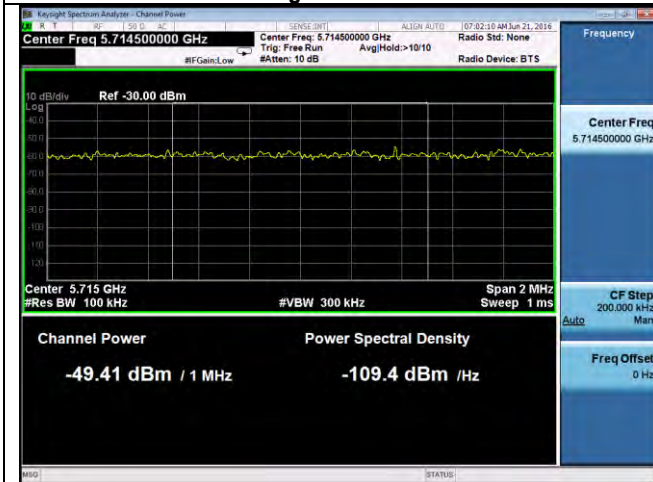
Band Edge -802.11ac-80M -5775M

-

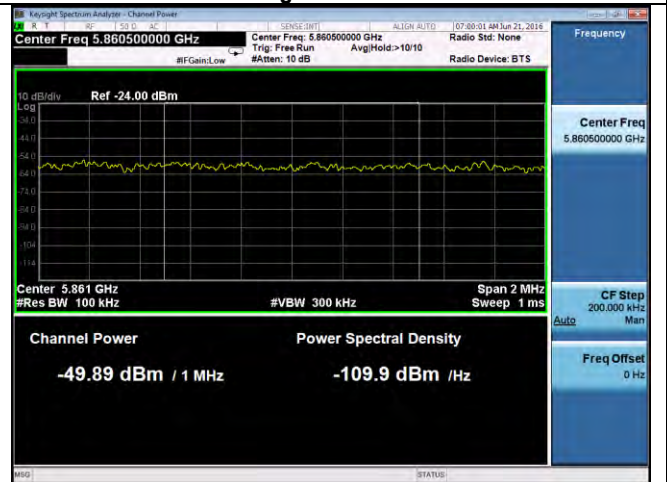
20MHz offset



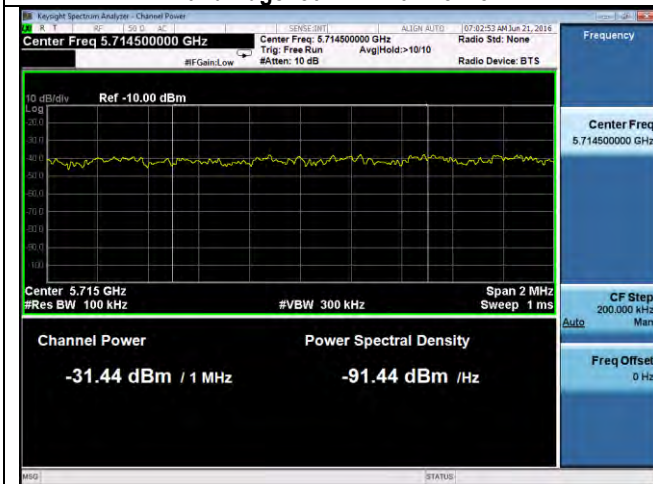
Band Edge -802.11a-5745M



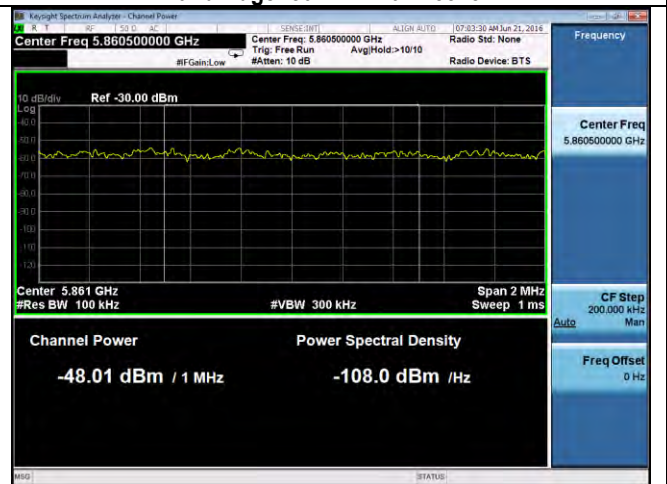
Band Edge -802.11a-5825M



Band Edge -802.11n-20M -5745M

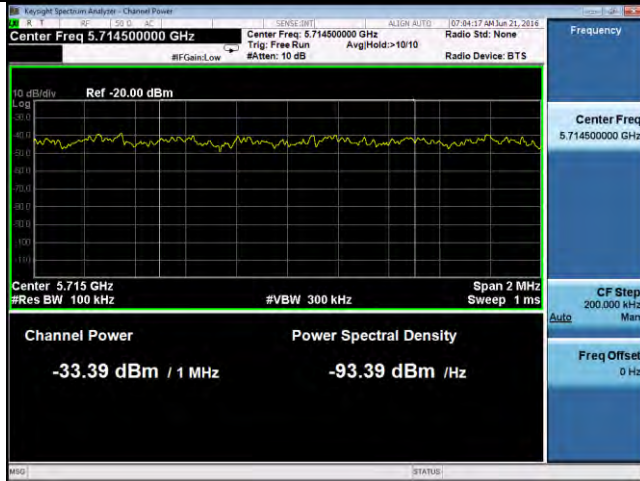


Band Edge -802.11n-20M -5825M



Band Edge -802.11n-40M -5755M

Band Edge -802.11n-40M -5795M

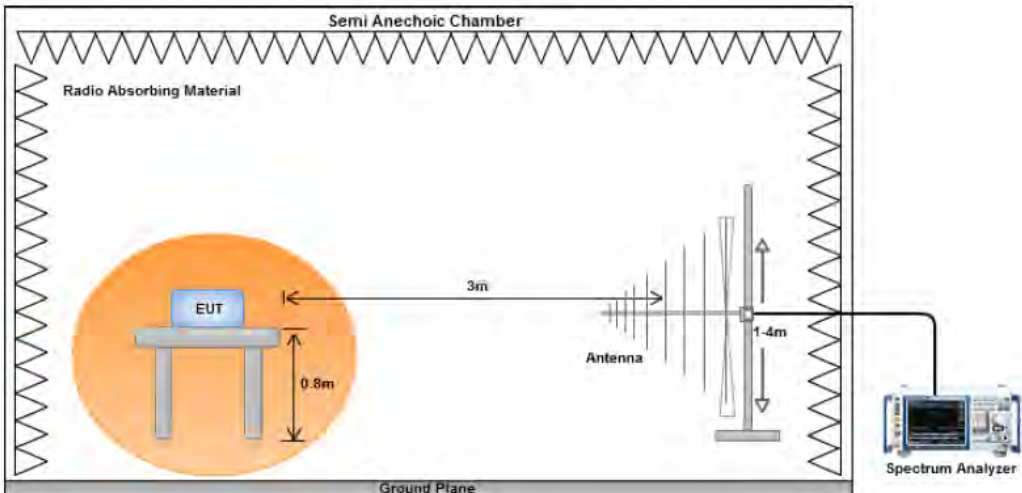


Band Edge -802.11ac-80M -5775M

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10.7 Radiated Emissions below 1GHz

Requirement(s):

Spec	Requirement	Applicable										
47CFR§ 15.407(b) 15.209 (a)	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>	Frequency range (MHz)	Field Strength (uV/m)	30 – 88	100	88 – 216	150	216 960	200	Above 960	500	☒
Frequency range (MHz)	Field Strength (uV/m)											
30 – 88	100											
88 – 216	150											
216 960	200											
Above 960	500											
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. 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.											
Remark	The EUT was scanned up to 1GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case.											
Result	☒ Pass ☐ Fail											

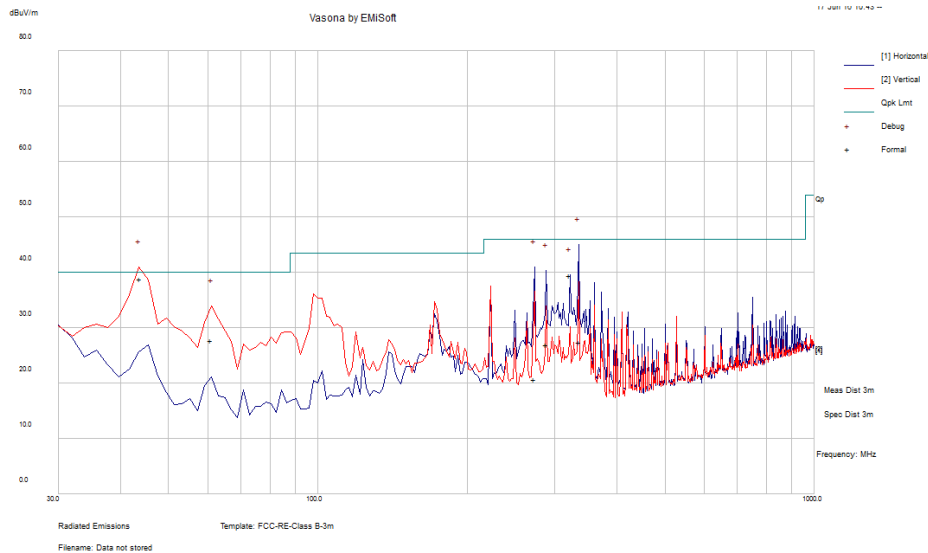
Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test was done by Chen Ge 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:	Chen Ge			
Test Date:	06/15/2016			
Remarks:	802.11ac VHT80, 5775MHz			

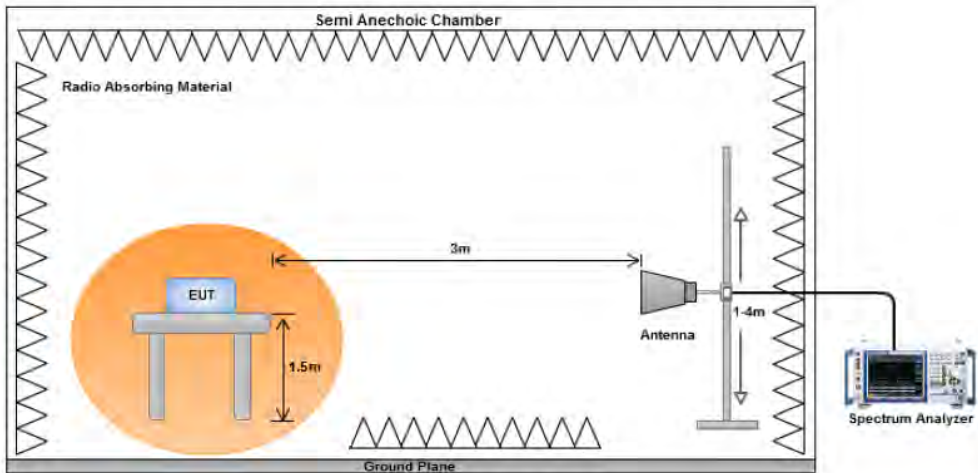


Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
43.81	64.18	0.99	-26.37	38.8	Quasi Max	V	101	164	40	-1.2	Pass
335.40	49.7	2.79	-25.15	27.34	Quasi Max	H	131	160	46.02	-18.68	Pass
273.01	44.42	2.53	-26.31	20.64	Quasi Max	H	172	188	46.02	-25.38	Pass
288.60	50.66	2.58	-26.32	26.93	Quasi Max	H	100	191	46.02	-19.09	Pass
60.85	57.63	1.21	-31.15	27.68	Quasi Max	V	153	205	40	-12.32	Pass
321.76	62	2.73	-25.25	39.48	Quasi Max	H	102	324	46.02	-6.54	Pass

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

10.8 Radiated Spurious Emissions above 1GHz

Requirement(s):

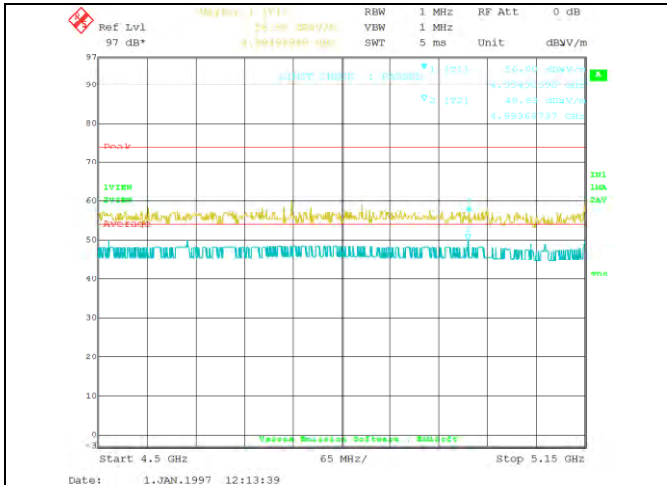
Spec	Item	Requirement	Applicable
47CFR§ 15.407(b)(2), 15.407(b)(6)	(1)	For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.	☒
	(2)	For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 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	- The EUT was switched on and allowed to warm up to its normal operating condition. - 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: - Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen. - The EUT was then rotated to the direction that gave the maximum emission. - Finally, the antenna height was adjusted to the height that gave the maximum emission. - An average measurement was then made for that frequency point. - Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.		
Remark	The EUT was scanned up to 40GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case.		
Result	☒ Pass ☐ Fail		

Test Data ☐ Yes (See below) ☒ N/A

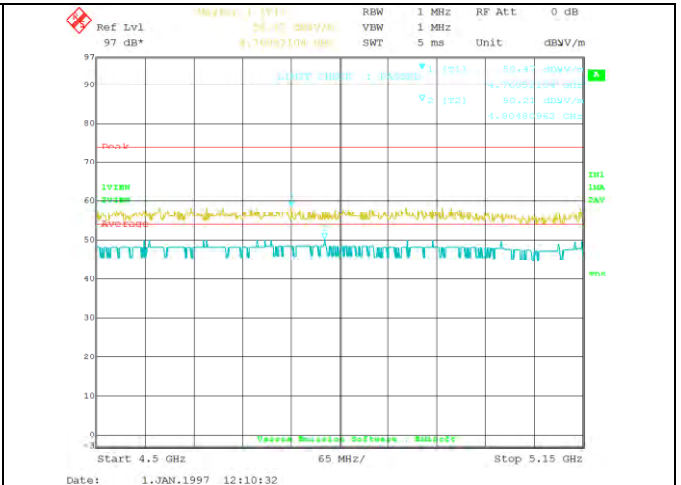
Test Plot ☒ Yes (See below) ☐ N/A

Test was done by Chen Ge at 3m and 10m chamber.

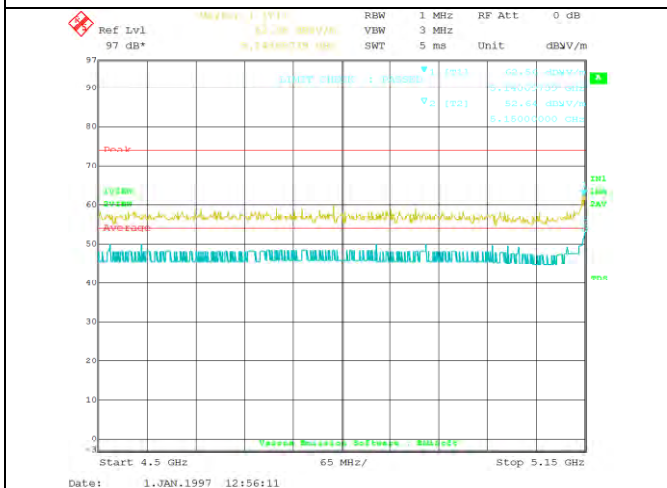
Restricted Band Measurement Plots:



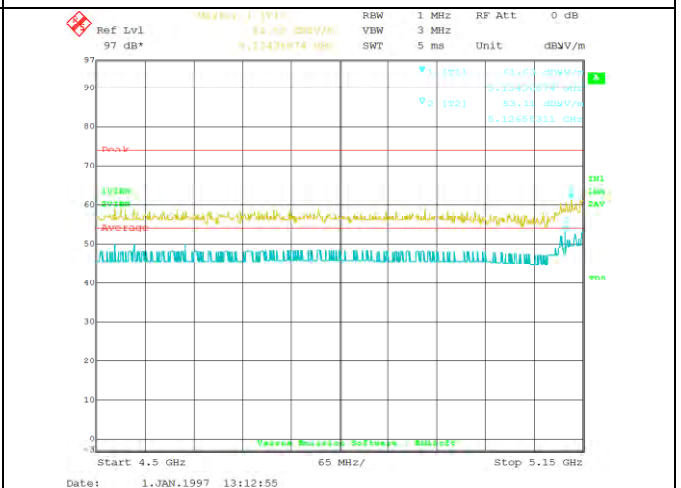
Restricted Band-802.11a 5180M- Edge Freq 5150MHz



Restricted Band-802.11n-20M 5180M- Edge Freq 5150MHz



Restricted Band-802.11n-40M 5190M- Edge Freq 5150MHz



Restricted Band-802.11ac-80M 5210M- Edge Freq 5150MHz

Radiated Emission Test Results (Above 1GHz)

W52 band:

1GHz-40GHz – 802.11a – 5180MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Amp dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10358.7	39.4	8.25	48.58	39.05	38.12	Peak Max	H	246	360	74	-35.88	Pass
15540.8	44.66	9.02	49.08	39.98	44.58	Peak Max	H	246	161	74	-29.42	Pass
10358.7	27.32	8.25	48.58	39.05	26.04	Average Max	V	145	252	54	-27.96	Pass
15540.8	32.21	9.02	49.08	39.98	32.13	Average Max	H	246	161	54	-21.87	Pass

1GHz-40GHz – 802.11a – 5200MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Amp dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10400.7	39.44	8.27	48.58	39.05	38.18	Peak Max	V	127	82	74	-35.82	Pass
15598.5	44.49	9.03	49.08	39.56	44	Peak Max	H	101	242	74	-30	Pass
10400.7	27.48	8.27	48.58	39.05	26.22	Average Max	V	127	82	54	-27.78	Pass
15598.5	32.43	9.03	49.08	39.56	31.94	Average Max	H	101	242	54	-22.06	Pass

1GHz-40GHz – 802.11a – 5240MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Amp dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10481.2	39.99	8.31	48.58	38.92	38.64	Peak Max	H	242	303	74	-35.36	Pass
15720.8	45	9.04	49.08	39.64	44.6	Peak Max	V	233	25	74	-29.4	Pass
10481.2	27.66	8.31	48.58	38.92	26.31	Average Max	V	165	0	54	-27.69	Pass
15720.8	32.02	9.04	49.08	39.64	31.62	Average Max	H	176	57	54	-22.38	Pass

1GHz-40GHz – 802.11n-20M – 5180MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Amp dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10358.4	39.58	8.24	48.58	39.05	38.29	Peak Max	H	117	337	74	-35.71	Pass
15540	44.46	9.02	49.08	39.98	44.38	Peak Max	H	244	159	74	-29.62	Pass
10358.4	27.36	8.24	48.58	39.05	26.07	Average Max	H	117	337	54	-27.93	Pass
15540	32.12	9.02	49.08	39.98	32.04	Average Max	H	244	159	54	-21.96	Pass

1GHz-40GHz – 802.11n-20M – 5200MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Amp dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10400.7	39.3	8.27	48.58	39.05	38.04	Peak Max	V	117	215	74	-35.96	Pass
15597.5	44.75	9.03	49.08	39.56	44.26	Peak Max	H	173	360	74	-29.74	Pass
10400.7	27.56	8.27	48.58	39.05	26.3	Average Max	V	117	215	54	-27.7	Pass
15597.5	32.46	9.03	49.08	39.56	31.97	Average Max	H	173	360	54	-22.03	Pass

1GHz-40GHz – 802.11n-20M – 5240MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Amp dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10480.3	41.08	8.31	48.58	38.92	39.73	Peak Max	H	151	248	74	-34.27	Pass
15721.8	44.14	9.04	49.08	39.64	43.74	Peak Max	V	147	207	74	-30.26	Pass
10480.3	27.85	8.31	48.58	38.92	26.5	Average Max	H	151	248	54	-27.5	Pass
15721.8	32.01	9.04	49.08	39.64	31.61	Average Max	V	147	207	54	-22.39	Pass

1GHz-40GHz – 802.11n-40M – 5190MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Amp dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10380.3	40.97	8.26	48.58	39.05	39.7	Peak Max	H	176	118	74	-34.3	Pass
15570.5	45.21	9.03	49.08	39.56	44.72	Peak Max	V	214	159	74	-29.28	Pass
10380.3	27.62	8.26	48.58	39.05	26.35	Average Max	V	217	32	54	-27.65	Pass
15570.5	32.71	9.03	49.08	39.56	32.22	Average Max	H	113	243	54	-21.78	Pass

1GHz-40GHz – 802.11n-40M – 5230MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Amp dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
10420.4	40.12	8.28	48.58	39.05	38.87	Peak Max	H	222	328	74	-35.13	Pass
15689.5	44.47	9.04	49.08	39.64	44.07	Peak Max	H	105	319	74	-29.93	Pass
10420.4	27.82	8.28	48.58	39.05	26.57	Average Max	V	184	329	54	-27.43	Pass
15689.5	32.04	9.04	49.08	39.64	31.64	Average Max	H	105	319	54	-22.36	Pass

1GHz-40GHz – 802.11ac-80M – 5210MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Amp dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
15628.9	44.68	9.03	49.08	39.56	44.19	Peak Max	V	161	219	74	-29.81	Pass
10417.4	39.53	8.28	48.58	39.05	38.28	Peak Max	V	100	194	74	-35.72	Pass
15628.9	32.25	9.03	49.08	39.56	31.76	Average Max	V	161	219	54	-22.24	Pass
10417.4	27.93	8.28	48.58	39.05	26.68	Average Max	H	192	360	54	-27.32	Pass

W58 band:

Above 1GHz-40GHz – 802.11a – 5745MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Amp dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11490.7	39.7	8.54	47.5	39.66	40.4	Peak Max	V	225	58	74	-33.6	Pass
17232.6	44.29	9.36	46.33	43.01	50.33	Peak Max	V	171	139	74	-23.67	Pass
11490.7	27.86	8.54	47.5	39.66	28.56	Average Max	H	150	256	54	-25.44	Pass
17232.6	32.47	9.36	46.33	43.01	38.51	Average Max	H	139	50	54	-15.49	Pass

Above 1GHz-40GHz – 802.11a – 5785MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Amp dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11569.5	40.02	8.57	47.5	39.41	40.5	Peak Max	V	145	68	74	-33.5	Pass
17356.6	44	9.38	46.64	43.22	49.96	Peak Max	H	176	360	74	-24.04	Pass
11569.5	27.83	8.57	47.5	39.41	28.31	Average Max	V	145	68	54	-25.69	Pass
17356.6	32.02	9.38	46.64	43.22	37.98	Average Max	H	176	360	54	-16.02	Pass

Above 1GHz-40GHz – 802.11a – 5825MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Amp dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11650	39.99	8.6	47.5	39.51	40.6	Peak Max	V	180	46	74	-33.4	Pass
17474.8	44.13	9.41	46.64	42.94	49.84	Peak Max	V	187	0	74	-24.16	Pass
11650	27.8	8.6	47.5	39.51	28.41	Average Max	V	180	46	54	-25.59	Pass
17474.8	32.01	9.41	46.64	42.94	37.72	Average Max	H	201	287	54	-16.28	Pass

Above 1GHz-40GHz – 802.11n-20M – 5745MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Amp dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11491.5	39.41	8.54	47.5	39.66	40.11	Peak Max	V	149	126	74	-33.89	Pass
17232.2	44.75	9.36	46.33	43.01	50.79	Peak Max	V	123	160	74	-23.21	Pass
11491.5	27.83	8.54	47.5	39.66	28.53	Average Max	V	149	126	54	-25.47	Pass
17232.2	32.46	9.36	46.33	43.01	38.5	Average Max	V	123	160	54	-15.5	Pass

Above 1GHz-40GHz – 802.11n-20M – 5785MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Amp dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11570.8	40.54	8.57	47.5	39.41	41.02	Peak Max	V	219	131	74	-32.98	Pass
17356.7	44.16	9.38	46.64	43.22	50.12	Peak Max	H	105	115	74	-23.88	Pass
11570.8	27.73	8.57	47.5	39.41	28.21	Average Max	V	219	131	54	-25.79	Pass
17356.7	32	9.38	46.64	43.22	37.96	Average Max	H	105	115	54	-16.04	Pass

Above 1GHz-40GHz – 802.11n-20M – 5825MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Amp dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11650.9	39.47	8.6	47.5	39.51	40.08	Peak Max	V	180	301	74	-33.92	Pass
17476.6	44.46	9.41	46.64	42.94	50.17	Peak Max	V	113	189	74	-23.83	Pass
11650.9	27.74	8.6	47.5	39.51	28.35	Average Max	V	180	301	54	-25.65	Pass
17476.6	31.99	9.41	46.64	42.94	37.7	Average Max	V	113	189	54	-16.3	Pass

Above 1GHz-40GHz – 802.11n-40M – 5755MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Amp dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11508.2	40.17	8.54	47.5	39.66	40.87	Peak Max	H	200	19	74	-33.13	Pass
17267.5	44.46	9.36	46.64	43.12	50.3	Peak Max	V	104	0	74	-23.7	Pass
11508.2	27.99	8.54	47.5	39.66	28.69	Average Max	H	200	19	54	-25.31	Pass
17267.5	32.34	9.36	46.64	43.12	38.18	Average Max	V	104	0	54	-15.82	Pass

Above 1GHz-40GHz – 802.11n-40M – 5795MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Amp dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
11587.8	40.16	8.57	47.5	39.41	40.64	Peak Max	H	185	231	74	-33.36	Pass
17387.5	44.29	9.39	46.64	43.22	50.26	Peak Max	H	160	0	74	-23.74	Pass
11587.8	27.71	8.57	47.5	39.41	28.19	Average Max	H	185	231	54	-25.81	Pass
17387.5	31.88	9.39	46.64	43.22	37.85	Average Max	H	160	0	54	-16.15	Pass

Above 1GHz-40GHz – 802.11ac-80M – 5775MHz

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Amp dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
17324.8	43.88	9.38	46.64	43.12	49.74	Peak Max	V	111	0	74	-24.26	Pass
11553	40.52	8.56	47.5	39.41	40.99	Peak Max	V	209	115	74	-33.01	Pass
17324.8	32.08	9.38	46.64	43.12	37.94	Average Max	H	142	238	54	-16.06	Pass
11553	27.77	8.56	47.5	39.41	28.24	Average Max	V	209	115	54	-25.76	Pass

Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Cycle	Cal Due	In use
Conducted Emissions						
R & S Receiver	ESIB 40	100179	06/08/2016	1 Year	06/08/2017	☒
CHASE LISN	MN2050B	1018	08/07/2015	1 Year	08/07/2016	☒
Radiated Emissions						
R & S Receiver	ESIB 40	1018	08/07/2015	1 Year	08/07/2016	☒
Bi-Log antenna (30MHz~2GHz)	JB1	A030702	08/12/2015	1 Year	08/12/2016	☒
Horn Antenna (1GHz~26GHz)	3115	100059	08/25/2015	1 Year	08/25/2016	☒
Pre-Amplifier	LPA-6-30	11140711	02/10/2016	1 Year	02/10/2017	☒
3 Meters SAC	3M	N/A	08/08/2015	1 Year	08/08/2016	☒
10 Meters SAC	10M	N/A	09/05/2015	1 Year	09/05/2016	☒
RF Conducted Measurement						
Spectrum Analyzer	N9010A	10SL0219	08/20/2015	1 Year	08/20/2016	☒
R & S Receiver	ESIB 40	100179	06/08/2016	1 Year	06/08/2017	☒
ETS-Lingren USB RF Power Sensor	7002-006	10SL0190	09/03/2015	1 Year	09/03/2016	☒

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