RF TEST REPORT

SIEMIC
A Bureau Veritas Group Company

Report No.: FCC_IC_SL17052001-SLX-014-W52W58
Supersede Report No.:

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 RSS-247 Issue 2, February 2017
Test Method	:	RSS-Gen Issue 4, Nov 2014 ANSI C63.4: 2014 789033 D02 General UNII Test Procedures New Rules v01r02
FCC ID	:	N6C-SDPAC
IC ID	:	4908A-SDPAC
Dates of test	:	10/01/2017 – 10/03/2017
Issue Date	:	10/04/2017
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

ilac-MRA
A2LA ACCREDITED
TESTING CERT # 2742-01

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 & Radio Equipment Directive (RED)
Japan	MIC (RCB 208)	RF, Telecom
Hong Kong	OFTA (US002)	RF, Telecom

CONTENTS

1 Report Revision History

Report No.	Report Version	Description	Issue Date
FCC_IC_SL17052001-SLX-014-W52W58	None	Original	10/04/2017

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

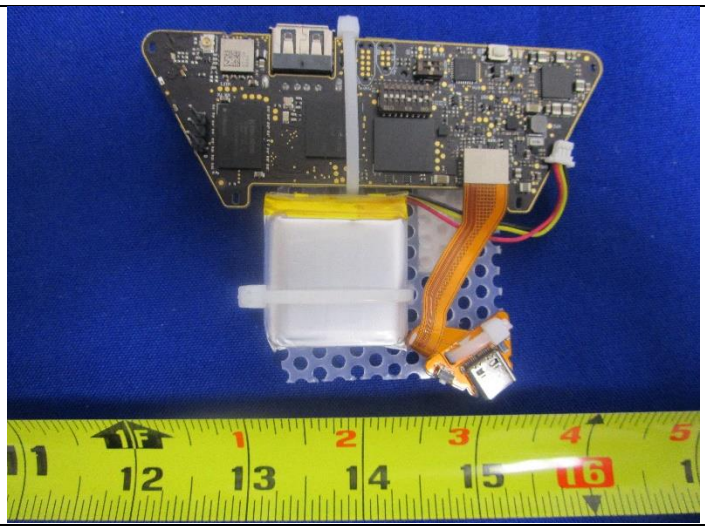
6.1 EUT Description

Product Name	802.11a/b/g/n/ac + BT 4.1 module
Model No.	SX-SDPAC
Trade Name	Silex
Serial No.	EVTQ216005
Input Power (EUT-Battery)	5VDC
Input Power (USB Hub)	100-240VAC 50/60Hz
Power Adapter Manu/Model	N/A
Power Adapter SN	N/A
Hardware Version	120005-PCBA_REV-05
Software Version	v20170911-MFG
Date of EUT received	09/28/2017
Equipment Class/ Category	DTS, UNII
Port/Connectors	USB

6.2 Radio Description

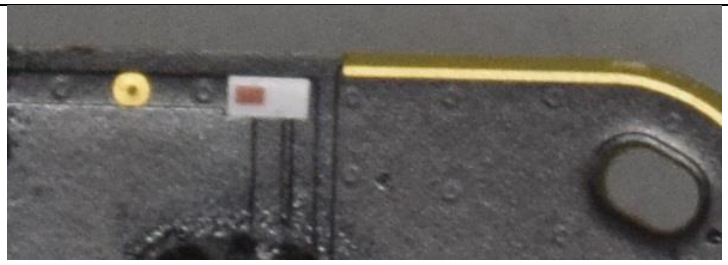
Radio Type	802.11a	802.11n-20M	802.11n-40M	802.11ac-80M
Operating Frequency	5180-5240MHz 5745-5825MHz	5180-5240MHz 5745-5825MHz	5190-5230MHz 5755-5795MHz	5210MHz 5775MHz
Modulation	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM, 256QAM)
Channel Spacing	20MHz	20MHz	40MHz	80MHz
Number of Channels	9	9	4	2
Antenna Type	Chip Antenna			
Antenna Gain (Peak)	5GHz: 4 dBi			
Antenna Connector Type	-			
Note	Johanson 2450AD14A5500			

6.3 EUT Photos



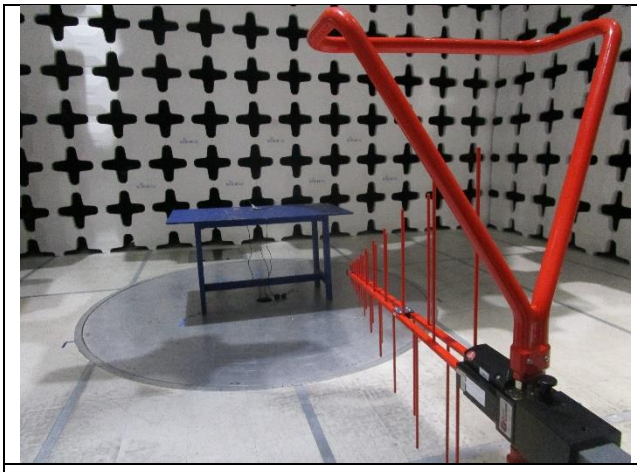
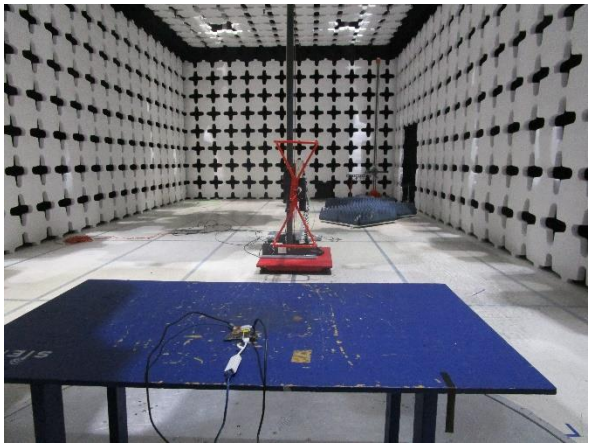
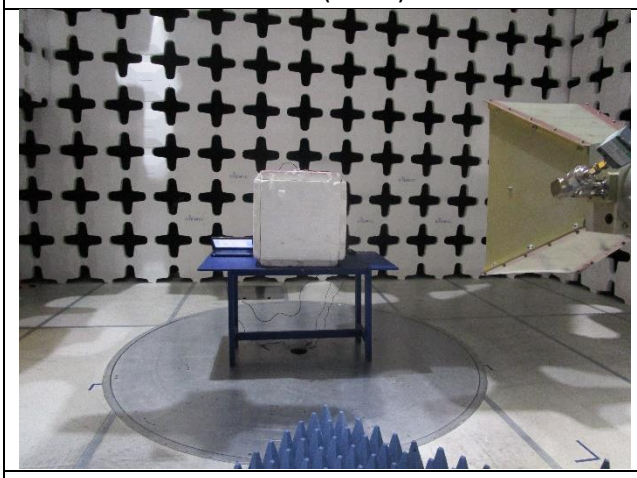
EUT-Top View with Battery

EUT- Bottom View



Antenna Photo

6.4 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	VOSTRO 1520	38031083173	Dell	-
2	USB Hub	TP-Link	N/A	N/A	-
3	Netgear Network Switch	DS106	DS06D05045896	Bay Networks	-

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	USB	USB Hub	USB	2	N/A	-
Serial-to-USB Adapter	EUT	Serial	Laptop	USB	2	N/A	-
USB to Ethernet Adapter	EUT	USB	RJ45	Ethernet Switch	2	N/A	-
RJ45	Laptop	RJ45	RJ45	Ethernet Switch	2	N/A	-

7.3 Test Software Description

Test Item	Software	Description
RF Testing	QRCT	Set the EUT to transmit continuously in diferent test modes and channels

8 Test Summary

Test Item	Test standard		Test Method/Procedure		Pass / Fail
Restricted Band of Operation	FCC	15.205	FCC	ANSI C63.4 – 2014 789033 D02 General UNII Test Procedures New Rules v01r02	☒ Pass ☐ N/A
	IC	RSS 247 (2.2)	IC		
AC Conducted Emissions Voltage	FCC	15.207(a)	FCC	ANSI C63.4 – 2014	☐ Pass ☒ N/A
	IC	RSS Gen 8.8	IC	RSS Gen Issue 4.0, Nov 2014 (8.8)	

Test Item	Test standard		Test Method/Procedure		Pass / Fail
99% Bandwidth	FCC	-	FCC	-	
	IC	RSS 247 (A6.2)	IC	RSS Gen Issue 4.0, Nov 2014 (6.6)	
26 & 6 dB Emission Bandwidth	FCC	15.407 (a) (2)	FCC	789033 D02 General UNII Test Procedures New Rules v01r02	☐ Pass ☒ N/A
	IC	RSS 247 (A6.2)	IC		
Maximum conducted Output Power	FCC	15.407 (a) (2)	FCC	789033 D02 General UNII Test Procedures New Rules v01r02	☐ Pass ☒ N/A
	IC	RSS247 (5.4.4)	IC		
Power reduction (Antenna Gain > 6 dBi)	FCC	15.407 (a) (2)	FCC	-	☐ Pass ☒ N/A
	IC		IC		
Band Edge and Radiated Spurious Emissions	FCC	15.407(b)(2), 15.407(b)(6)	FCC	ANSI C63.4 – 2014 789033 D02 General UNII Test Procedures New Rules v01r02	☒ Pass ☐ N/A
	IC	RSS 247(A6.3)	IC		
Power Spectral Density	FCC	15.407 (a) (2)	FCC	789033 D02 General UNII Test Procedures New Rules v01r02	☐ Pass ☒ N/A
	IC	RSS 247 (A6.2)	IC		
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. Please refer to test report SL15101901-SLX-027 for N/A test items.				

9 Measurement Uncertainty

9.1 Conducted Emissions

The test is to measure the conducted emissions to the mains port of the EUT.
Some error sources that can contribute to the total uncertainty:

- Uncertainty of the receiver
- Uncertainty of the LISN
- Uncertainty of cables
- Uncertainty due to the mismatches
- Etc, see the below table for details

Source of Uncertainty	Value (dB)	Probability Distribution	Division	Sensitivity Coefficient	Expanded Uncertainty
Receiver Reading	0.12	Rectangular	1.732	1	0.069284
Cable Insertion Loss	0.21	Normal	2	1	0.105
Filter Insertion Loss	0.25	Normal	2	1	0.125
LISN Insertion Loss	0.40	Normal	2	1	0.20
Receiver CW accuracy	0.5	Rectangular	1.732	1	0.2886836
Pulse Amplitude Response	1.5	Rectangular	1.732	1	0.86605081
PRF Response	1.5	Rectangular	1.732	1	0.86605081
Mismatch LISN - Receiver	0.25	U-Shape	1.414	1	0.1768033
LISN Impedance	2.5	Triangular	2.449	1	1.0208248
Combined Standard Uncertainty					1.928133
Expanded Uncertainty (K=2)					**3.856266**

The total derived measurement uncertainty is +/- 3.86 dB.

9.2 Radiated Emissions (30MHz to 1GHz)

The test is to measure the radiated emissions of the EUT.
Some error sources that can contribute to the total uncertainty:

- Uncertainty of the receiver
- Uncertainty of the antenna
- Uncertainty of cables
- Uncertainty due to the mismatches
- NSA Calibration
- Etc., details see the below table

Source of Uncertainty	Value (dB)	Probability Distribution	Division	Sensitivity Coefficient	Expanded Uncertainty
Receiver Reading	0.12	Rectangular	1.732	1	0.069284
Cable Insertion Loss	0.21	Normal	2	1	0.105
Filter Insertion Loss	0.25	Normal	2	1	0.125
Antenna Factor	0.65	Normal	2	1	0.325
Receiver CW accuracy	0.5	Rectangular	1.732	1	0.2886836
Pulse Amplitude Response	1.5	Rectangular	1.732	1	0.86605081
PRF Response	1.5	Rectangular	1.732	1	0.86605081
Mismatch Filter - Receiver	0.25	U-Shape	1.414	1	0.1768033
NSA Calibration	4.0	U-Shape	1.414	1	2.8288543
Combined Standard Uncertainty					3.0059131
Expanded Uncertainty (K=2)					**6.0118262**

The total derived measurement uncertainty is +/- 6.00 dB.

9.3 Radiated Emissions (1GHz to 40GHz)

The test is to measure the radiated emissions of the EUT.

Some error sources that can contribute to the total uncertainty:
- Uncertainty of the receiver
- Uncertainty of the antenna
- Uncertainty of cables
- Uncertainty due to the mismatches
- VSWR Calibration
- Etc., details see the below table

Source of Uncertainty	Value (dB)	Probability Distribution	Division	Sensitivity Coefficient	Expanded Uncertainty
Receiver Reading	0.12	Rectangular	1.732	1	0.0692840
Cable Insertion Loss	0.21	Normal	2	1	0.1050000
Filter Insertion Loss	0.25	Normal	2	1	0.1250000
Antenna Factor	0.65	Normal	2	1	0.3250000
Receiver CW accuracy	0.5	Rectangular	1.732	1	0.2886836
Pulse Amplitude Response	1.5	Rectangular	1.732	1	0.8660508
PRF Response	1.5	Rectangular	1.732	1	0.8660508
Mismatch Filter - Receiver	0.25	U-Shape	1.414	1	0.1768033
VSWR Calibration	2.0	U-Shape	1.414	1	1.4144272
Combined Standard Uncertainty					4.2363
Expanded Uncertainty (K=2)					**8.4726**

The total derived measurement uncertainty is +/- 8.47 dB.

9.4 RF conducted measurement

The test is to measure the RF output power from the EUT.

Some error sources that can contribute to the total uncertainty:

- Uncertainty of the Reference Level Uncertainty
- Uncertainty of variable attenuators
- Uncertainty of cables
- Uncertainty due to the mismatches

Source of Uncertainty	Value (dB)	Probability Distribution	Division	Sensitivity Coefficient	Expanded Uncertainty
Reference Level	0.12	Rectangular	1.732	1	0.069284
Cable Insertion Loss	0.21	Normal	2	1	0.105
Attenuator	0.25	Normal	2	1	0.125
Mismatch	0.25	U-Shape	1.414	1	0.1768033
Combined Standard Uncertainty					0.476087
Expanded Uncertainty (K=2)					**0.952174**

The total derived measurement uncertainty is +/- 0.95 dB.

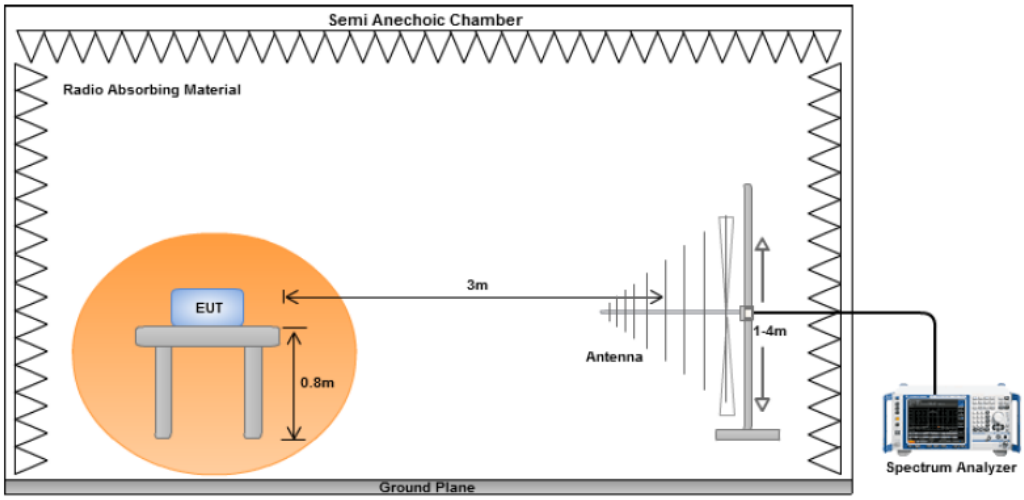
10 Measurements, Examination and Derived Results

10.1 Radiated Emissions below 1GHz

Requirement(s):

Spec	Requirement	Applicable
47CFR§ 15.407(b) 15.209 (a) RSS Gen	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	☒

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

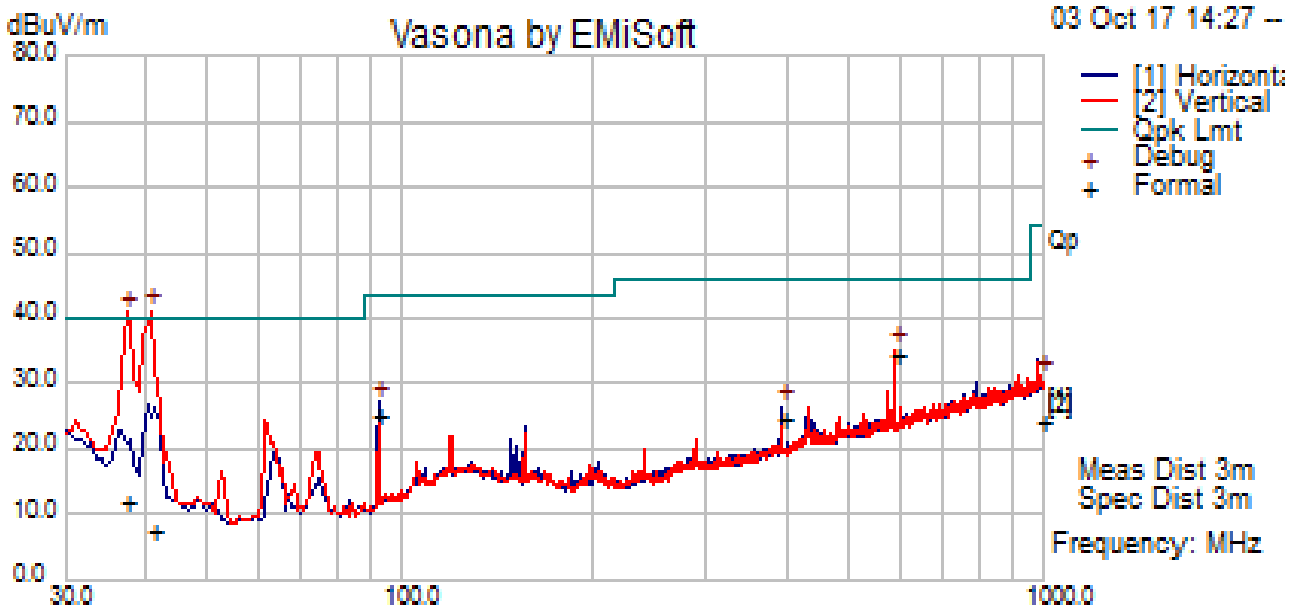
Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test was done by Rachana Khanduri at 10m chamber.

Radiated Emission Test Results (Below 1GHz)

Test specification	Below 1GHz			
Environmental Conditions:	Temp (°C):	23	Result	Pass
	Humidity (%)	46		
	Atmospheric (mbar):	1017		
Mains Power:	120VAC, 60Hz			
Tested by:	Rachana Khanduri			
Test Date:	10/03/2017			
Remarks:	802.11ac – VHT80, 5210MHz			



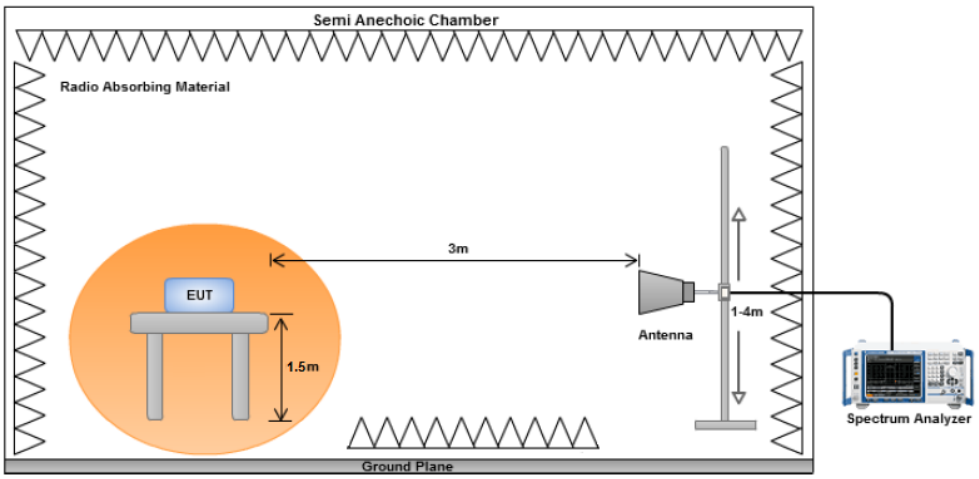
Quasi Max Measurement

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
41.14	18.20	11.47	-22.46	7.21	Quasi Max	V	258	19	40.00	-32.79	Pass
37.39	20.35	11.41	-20.01	11.75	Quasi Max	V	196	269	40.00	-28.25	Pass
589.09	37.20	15.07	-17.92	34.35	Quasi Max	V	101	9	46.00	-11.65	Pass
92.36	40.58	11.97	-27.73	24.82	Quasi Max	H	202	133	43.50	-18.69	Pass
392.74	31.64	13.98	-21.23	24.39	Quasi Max	H	102	137	46.00	-21.61	Pass
995.63	19.40	17.08	-12.49	23.98	Quasi Max	V	332	285	54.00	-30.02	Pass

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

10.2 Radiated Spurious Emissions above 1GHz

Requirement(s):

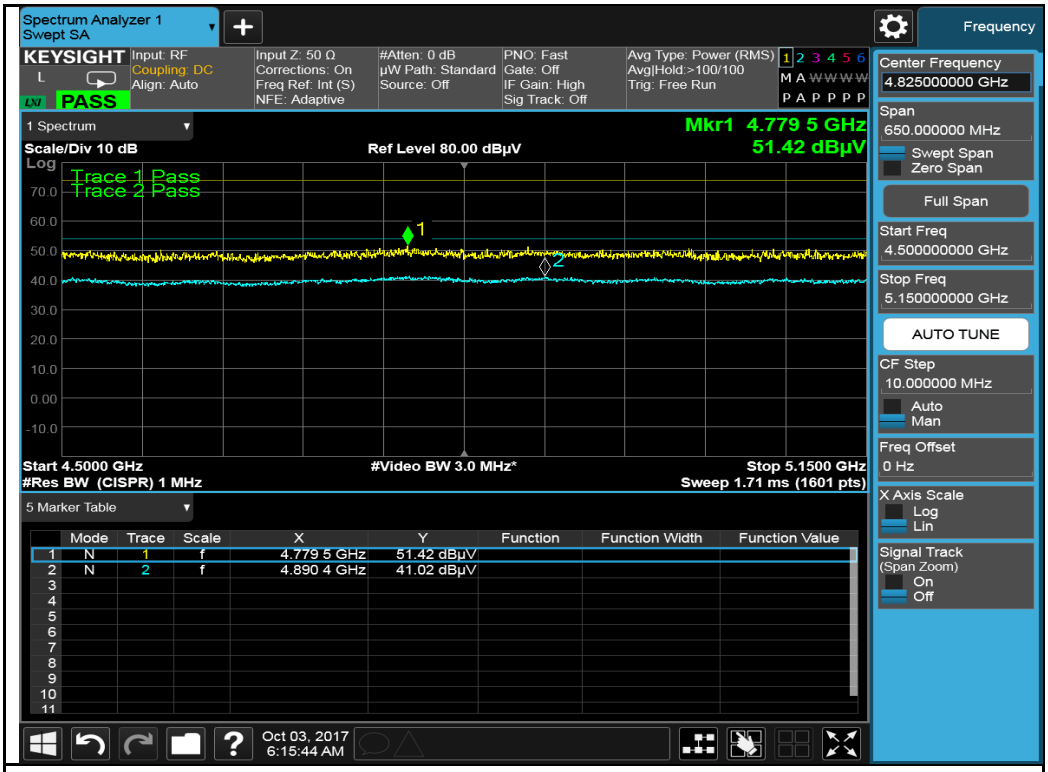
Spec	Item	Requirement	Applicable
47CFR§ 15.407(b)(2), 15.407(b)(6) RSS 247 Issue 2, 2017	(1)	For transmitters operating in the 5.15-5.25 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz.	☒
	(2)	For transmitters operating in the 5.25-5.35 GHz band: all 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	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

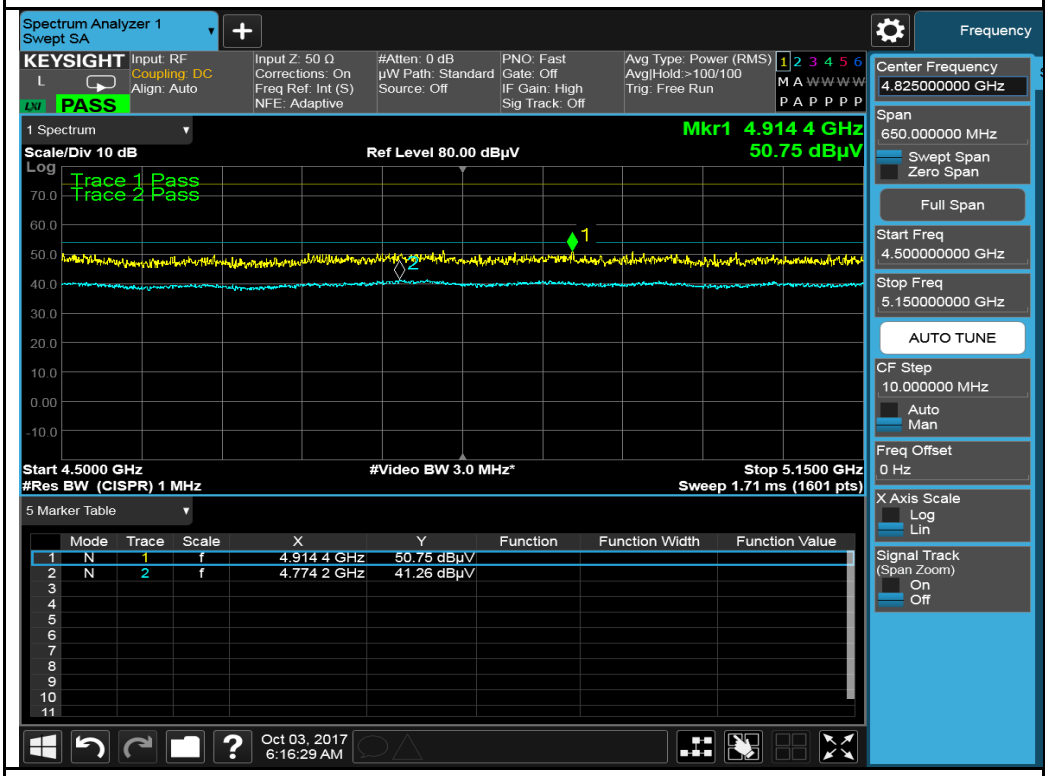
Test Plot ☒ Yes (See below) ☐ N/A

Test was done by Rachana Khanduri at 10m chamber.

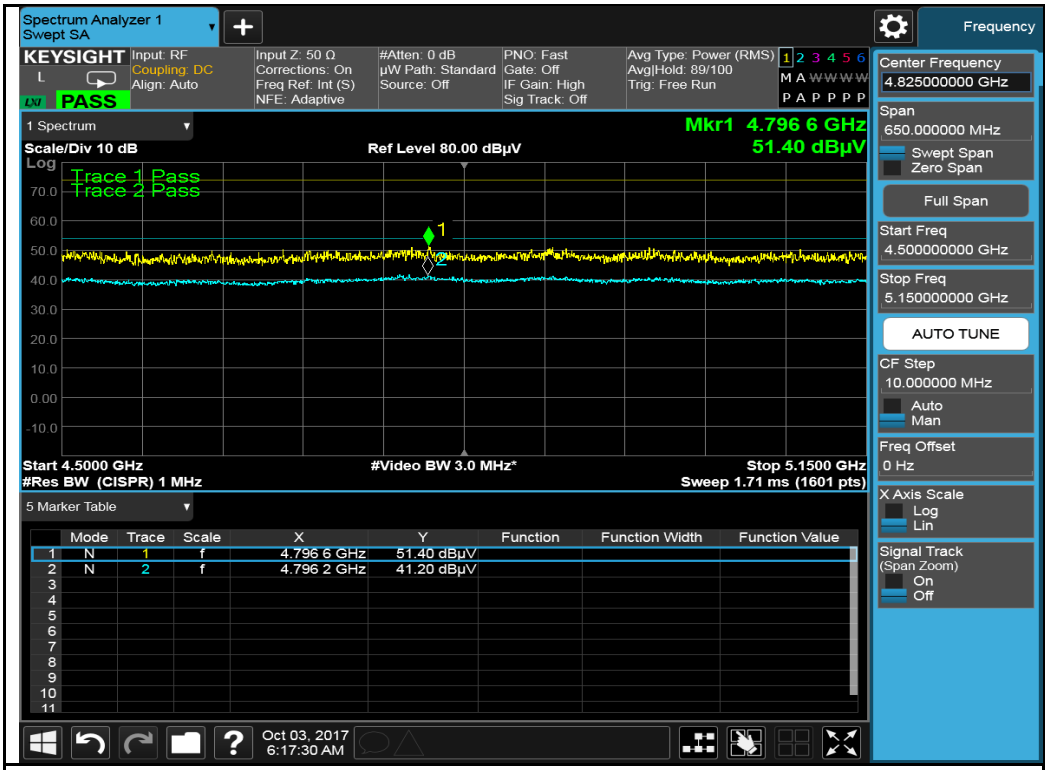
Restricted Band Measurement Plots:



802.11a-5180MHz



802.11n-HT20 5180MHz



802.11n-HT40 5190MHz

802.11ac-VHT80 5210MHz

Radiated Emission Test Results (Above 1GHz)

1GHz-40GHz – 802.11a – 5180MHz

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
1995.68	58.96	2.75	-6.06	55.65	Peak Max	V	216	149	74	-18.35	Pass
13580.17	37.38	8.78	6.17	52.33	Peak Max	V	186	56	74	-21.67	Pass
9501.16	39.55	6.59	2.05	48.19	Peak Max	V	293	297	74	-25.81	Pass
1995.68	30.30	2.75	-6.06	26.99	Average Max	V	216	149	54	-27.01	Pass
13580.17	25.28	8.78	6.17	40.24	Average Max	V	186	56	54	-13.77	Pass
9501.16	26.74	6.59	2.05	35.38	Average Max	V	293	297	54	-18.62	Pass

1GHz-40GHz – 802.11a – 5200MHz

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
1192.68	51.12	2.31	-10.62	42.81	Peak Max	V	106	150	74	-31.19	Pass
12011.18	38.95	8.01	3.55	50.51	Peak Max	V	184	139	74	-23.49	Pass
6933.19	40.60	5.21	0.89	46.71	Peak Max	V	202	245	74	-27.29	Pass
1192.68	29.78	2.31	-10.62	21.46	Average Max	V	106	150	54	-32.54	Pass
12011.18	26.25	8.01	3.55	37.81	Average Max	V	184	139	54	-16.19	Pass
6933.19	26.40	5.21	0.89	32.5	Average Max	V	202	245	54	-21.50	Pass

1GHz-40GHz – 802.11a – 5240MHz

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
14407.48	38.92	7.99	7.25	54.16	Peak Max	V	103	187	74	-19.84	Pass
1989.90	55.36	2.74	-6.08	52.02	Peak Max	H	129	144	74	-21.98	Pass
6981.02	38.80	5.23	0.98	45.00	Peak Max	V	201	80	74	-29.00	Pass
14407.48	26.16	7.99	7.25	41.39	Average Max	V	103	187	54	-12.61	Pass
1989.90	28.98	2.74	-6.08	25.64	Average Max	H	129	144	54	-28.36	Pass
6981.02	26.18	5.23	0.98	32.38	Average Max	V	201	80	54	-21.62	Pass

1GHz-40GHz – 802.11n-20M – 5180MHz

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
1999.33	63.28	2.75	-6.04	59.99	Peak Max	V	128	169	74	-14.01	Pass
14261.55	38.79	8.02	7.72	54.53	Peak Max	V	247	108	74	-19.47	Pass
6906.80	42.22	5.21	0.85	48.27	Peak Max	V	99	176	74	-25.73	Pass
1999.33	32.85	2.75	-6.04	29.56	Average Max	V	128	169	54	-24.44	Pass
14261.55	26.11	8.02	7.72	41.85	Average Max	V	247	108	54	-12.15	Pass
6906.80	32.48	5.21	0.85	38.53	Average Max	V	99	176	54	-15.47	Pass

1GHz-40GHz – 802.11n-20M – 5200MHz

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
1999.24	48.64	2.75	-6.04	45.35	Peak Max	V	174	357	74	-28.65	Pass
11402.22	38.92	7.58	3.16	49.66	Peak Max	V	320	71	74	-24.34	Pass
15602.15	39.30	8.28	6.36	53.95	Peak Max	V	336	219	74	-20.06	Pass
1999.24	28.54	2.75	-6.04	25.25	Average Max	V	174	357	54	-28.75	Pass
11402.22	26.45	7.58	3.16	37.19	Average Max	V	320	71	54	-16.81	Pass
15602.15	27.02	8.28	6.36	41.66	Average Max	V	336	219	54	-12.34	Pass

1GHz-40GHz – 802.11n-20M – 5240MHz

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
1991.26	59.83	2.75	-6.08	56.49	Peak Max	V	199	298	74	-17.51	Pass
11489.14	37.90	7.7	2.66	48.26	Peak Max	V	219	350	74	-25.74	Pass
15719.44	39.64	8.34	5.96	53.93	Peak Max	V	170	9	74	-20.07	Pass
1991.26	30.73	2.75	-6.08	27.39	Average Max	V	199	298	54	-26.61	Pass
11489.14	26.11	7.7	2.66	36.47	Average Max	V	219	350	54	-17.53	Pass
15719.44	27.43	8.34	5.96	41.72	Average Max	H	210	170	54	-12.28	Pass

1GHz-40GHz – 802.11n-40M – 5190MHz

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
10388.49	39.95	6.7	2.16	48.81	Peak Max	V	309	36	74	-25.19	Pass
15568.46	40.75	8.26	6.34	55.36	Peak Max	V	295	305	74	-18.64	Pass
2417.58	40.56	3.04	-6.02	37.57	Peak Max	V	104	136	74	-36.43	Pass
10388.49	26.84	6.70	2.16	35.70	Average Max	V	309	36	54	-18.30	Pass
15568.46	27.02	8.26	6.34	41.63	Average Max	H	294	342	54	-12.37	Pass
2417.58	27.52	3.04	-6.02	24.53	Average Max	V	104	136	54	-29.47	Pass

1GHz-40GHz – 802.11n-40M – 5230MHz

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
11458.81	38.33	7.66	2.84	48.82	Peak Max	V	205	97	74	-25.18	Pass
15690.40	39.98	8.32	5.90	54.20	Peak Max	H	100	216	74	-19.81	Pass
2015.83	45.36	2.76	-6.02	42.10	Peak Max	V	178	134	74	-31.90	Pass
11458.81	26.28	7.66	2.84	36.78	Average Max	V	205	97	54	-17.23	Pass
15690.40	27.40	8.32	5.90	41.62	Average Max	V	99	176	54	-12.38	Pass
2015.83	28.51	2.76	-6.02	25.25	Average Max	V	178	134	54	-28.75	Pass

1GHz-40GHz – 802.11ac-80M – 5210MHz

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
10428.19	38.7	6.72	2.26	47.69	Peak Max	V	283	17	74	-26.31	Pass
15630.54	39.78	8.29	6.21	54.29	Peak Max	H	234	141	74	-19.71	Pass
2406.34	44.24	3.03	-6.08	41.20	Peak Max	V	100	321	74	-32.80	Pass
10428.19	26.86	6.72	2.26	35.84	Average Max	V	283	17	54	-18.16	Pass
15630.54	27.28	8.29	6.21	41.79	Average Max	V	141	155	54	-12.21	Pass
2406.34	27.33	3.03	-6.08	24.29	Average Max	V	100	321	54	-29.71	Pass

1GHz-40GHz – 802.11a – 5745MHz

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
7663.40	39.15	5.61	0.79	45.55	Peak Max	V	353	325	74	-28.45	Pass
1199.91	56.23	2.31	-10.57	47.97	Peak Max	H	154	291	74	-26.04	Pass
17234.30	38.50	8.12	8.66	55.28	Peak Max	H	357	259	74	-18.72	Pass
7663.40	26.41	5.61	0.79	32.81	Average Max	V	353	325	54	-21.19	Pass
1199.91	36.84	2.31	-10.57	28.58	Average Max	H	154	291	54	-25.42	Pass
17234.30	26.65	8.12	8.66	43.43	Average Max	H	357	259	54	-10.57	Pass

1GHz-40GHz - 802.11a– 5785MHz

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
1999.65	49.83	2.75	-6.04	46.54	Peak Max	V	144	222	74	-27.46	Pass
11572.81	38.34	7.76	2.86	48.97	Peak Max	V	374	353	74	-25.03	Pass
17357.39	38.90	8.06	10.6	57.56	Peak Max	V	381	298	74	-16.45	Pass
1999.65	29.05	2.75	-6.04	25.76	Average Max	V	144	222	54	-28.24	Pass
11572.81	26.14	7.76	2.86	36.77	Average Max	V	374	353	54	-17.24	Pass
17357.39	26.62	8.06	10.6	45.28	Average Max	V	381	298	54	-8.72	Pass

1GHz-40GHz - 802.11a - 5825MHz

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
17477.86	44.04	8	10.60	62.64	Peak Max	H	112	325	74	-11.36	Pass
11488.78	38.51	7.7	2.66	48.87	Peak Max	H	210	209	74	-25.13	Pass
1981.45	44.11	2.74	-6.12	40.73	Peak Max	V	114	241	74	-33.27	Pass
17477.86	30.79	8	10.60	49.39	Average Max	H	112	325	54	-4.61	Pass
11488.78	26.15	7.7	2.66	36.51	Average Max	V	216	157	54	-17.49	Pass
1981.45	27.58	2.74	-6.12	24.2	Average Max	V	114	241	54	-29.8	Pass

1GHz-40GHz – 802.11n-20M – 5745MHz

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
11505.15	38.18	7.71	2.62	48.51	Peak Max	V	336	108	74	-25.49	Pass
17238.37	39.19	8.11	8.74	56.05	Peak Max	V	367	82	74	-17.95	Pass
1856.24	42.39	2.67	-6.77	38.29	Peak Max	V	149	288	74	-35.71	Pass
11505.15	26.13	7.71	2.62	36.46	Average Max	V	336	108	54	-17.54	Pass
17238.37	26.65	8.11	8.74	43.50	Average Max	V	367	82	54	-10.50	Pass
1856.24	27.46	2.67	-6.77	23.36	Average Max	V	149	288	54	-30.64	Pass

1GHz-40GHz - 802.11n-20M– 5785MHz

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
11584.24	38.16	7.77	2.9	48.84	Peak Max	V	249	294	74	-25.16	Pass
17355.86	38.92	8.06	10.58	57.56	Peak Max	H	100	124	74	-16.44	Pass
2558.72	40.29	3.13	-5.52	37.90	Peak Max	V	228	165	74	-36.10	Pass
11584.24	26.23	7.77	2.90	36.90	Average Max	V	249	294	54	-17.10	Pass
17355.86	26.64	8.06	10.58	45.28	Average Max	H	100	124	54	-8.72	Pass
2558.72	25.19	3.13	-5.52	22.80	Average Max	V	228	165	54	-31.20	Pass

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

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
11657.82	38.54	7.82	2.83	49.19	Peak Max	V	102	260	74	-24.81	Pass
17473.62	39.11	8.00	10.63	57.74	Peak Max	V	126	112	74	-16.26	Pass
1889.75	46.79	2.69	-6.56	42.92	Peak Max	V	112	294	74	-31.08	Pass
11657.82	26.55	7.82	2.83	37.20	Average Max	V	102	260	54	-16.80	Pass
17473.62	26.68	8.00	10.63	45.31	Average Max	V	126	112	54	-8.69	Pass
1889.75	27.87	2.69	-6.56	24.00	Average Max	V	112	294	54	-30.00	Pass

1GHz-40GHz – 802.11n-40M – 5755MHz

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
11503.71	39.34	7.71	2.61	49.67	Peak Max	V	176	215	74	-24.33	Pass
17258.10	39.45	8.11	9.12	56.68	Peak Max	V	99	138	74	-17.33	Pass
2085.68	45.87	2.81	-5.93	42.76	Peak Max	V	113	304	74	-31.25	Pass
11503.71	26.15	7.71	2.61	36.48	Average Max	V	176	215	54	-17.53	Pass
17258.10	26.78	8.11	9.12	44.01	Average Max	V	99	138	54	-10.00	Pass
2085.68	28.62	2.81	-5.93	25.51	Average Max	V	113	304	54	-28.49	Pass

1GHz-40GHz - 802.11n-40M– 5795MHz

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
1990.13	50.22	2.75	-6.08	46.88	Peak Max	H	229	194	74	-27.12	Pass
11613.29	38.95	7.79	2.93	49.67	Peak Max	V	277	70	74	-24.33	Pass
17387.04	38.89	8.04	10.94	57.88	Peak Max	H	238	22	74	-16.12	Pass
1990.13	28.05	2.75	-6.08	24.72	Average Max	H	229	194	54	-29.29	Pass
11613.29	26.42	7.79	2.93	37.14	Average Max	V	277	70	54	-16.86	Pass
17387.04	26.64	8.04	10.94	45.63	Average Max	V	99	66	54	-8.37	Pass

1GHz-40GHz - 802.11ac-80M - 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
11657.45	38.54	7.82	2.83	49.19	Peak Max	V	207	203	74	-24.81	Pass
17323.21	39.10	8.07	10.2	57.38	Peak Max	V	193	54	74	-16.62	Pass
2216.07	39.30	2.91	-6.44	35.77	Peak Max	V	383	227	74	-38.23	Pass
11657.45	26.60	7.82	2.83	37.25	Average Max	V	207	203	54	-16.75	Pass
17323.21	26.62	8.07	10.20	44.90	Average Max	V	193	54	54	-9.10	Pass
2216.07	26.10	2.91	-6.44	22.57	Average Max	V	383	227	54	-31.43	Pass

Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Cycle	Cal Due	In use
Radiated Emissions						
Keysight EXA 44GHz Spectrum Analyzer	N9010A	MY51440112	11/02/2016	1 Year	11/02/2017	☑
Bi-Log antenna (30MHz~2GHz)	JB1	A030702	01/13/2017	1 Year	01/13/2018	☑
Horn Antenna (1GHz~26GHz)	3115	100059	11/11/2016	1 Year	11/11/2017	☑
Horn Antenna (18GHz~40GHz)	PA-840	181251	06/23/2017	1 Year	06/23/2018	☑
Preamplifier (100KHz-7GHz)	LPA-6-30	11170602	02/09/2017	1 Year	02/09/2018	☑
Pre-Amplifier (1-40GHz)	SAS-474	579	05/04/2017	1 Year	05/04/2018	☑
10 Meters SAC	10M	N/A	10/06/2016	1 Year	10/06/2017	☑

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 Equipment: EN45011:** EN ISO/IEC 17065
		Electromagnetic Compatibility: EN45011 – EN ISO/IEC 17065
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 Measuremet
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
		Radiocommunications: 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