

RF TEST REPORT



Report No.: FCC_IC_SL17052001-SLX-014_DTS

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 15.247 RSS-247 Issue 2, February 2017
Test Method	:	ANSI C63.10: 2013 RSS Gen Iss 4: Nov 2014 558074 D01 DTS Meas Guidance v04
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

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.



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

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1 Report Revision History

Report No.	Report Version	Description	Issue Date
FCC_IC_SL17052001-SLX-014_DTS	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

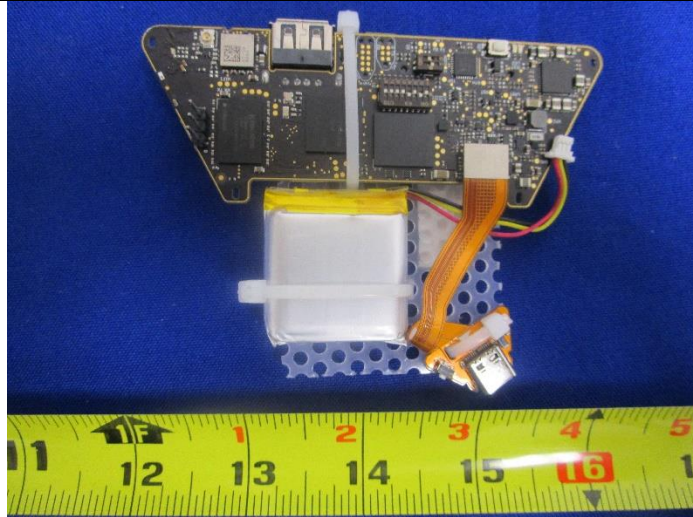
6.1 EUT Description

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	802.11b	802.11g	802.11n-20M	802.11n-40M
Operating Frequency	2412-2462MHz	2412-2462MHz	2412-2462MHz	2422-2452MHz
Modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)
Channel Spacing	5MHz	5MHz	5MHz	5MHz
Number of Channels	11	11	11	7
Antenna Type	Chip Antenna			
Antenna Gain (Peak)	2.4GHz: 1 dBi			
Antenna Connector Type	-			
Note	Johanson 2450AD14A5500			

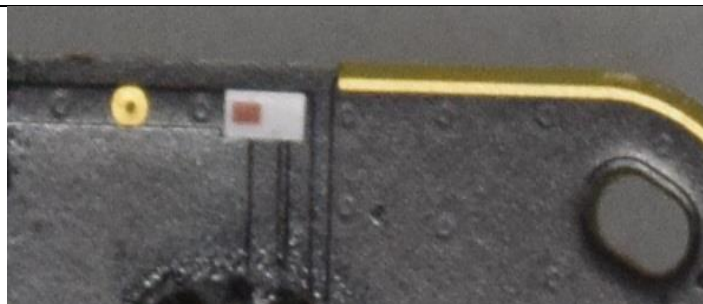
6.3 EUT Photos



EUT-Top View with Battery

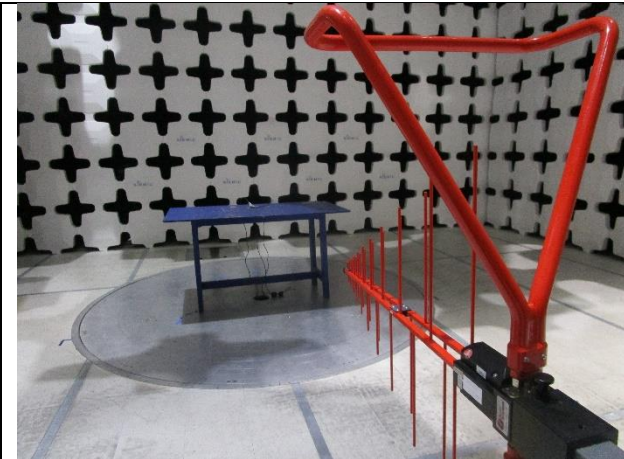


EUT- Bottom View

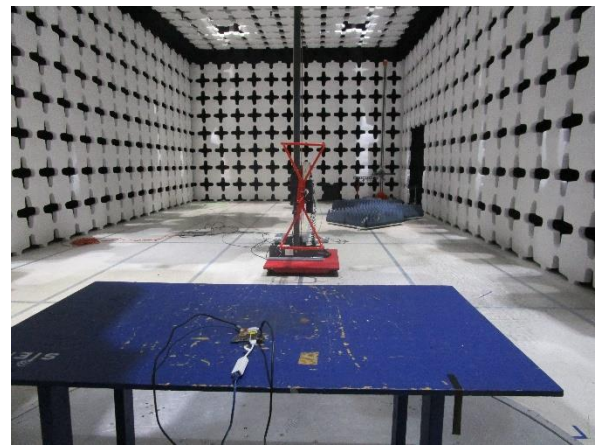


EUT- Bottom View

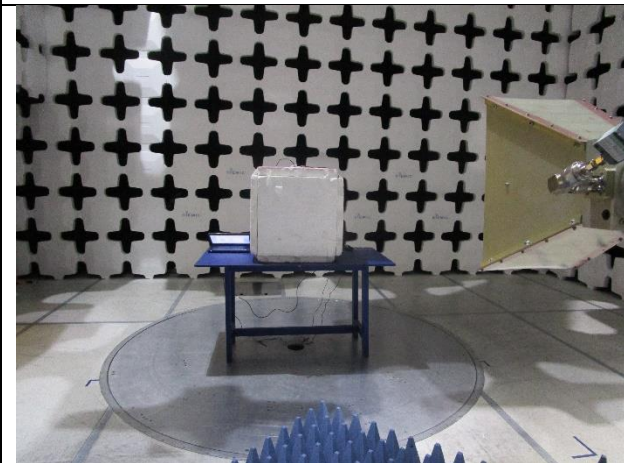
6.4 EUT Test Setup Photos



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 mode

8 Test Summary

Test Item	Test standard		Test Method/Procedure		Pass / Fail
Restricted Band of Operation	FCC	15.205	FCC	ANSI C63.10:2013	☒ Pass
	IC	RSS Gen 8.10	IC	558074 D01 DTS Meas Guidance v04	☐ N/A
AC Conducted Emissions	FCC	15.207(a)	FCC	ANSI C63.10:2013	☐ Pass
	IC	RSS Gen 8.8	IC	RSS Gen Issue 4: 2014	☒ N/A

DTS Band Requirement

Test Item	Test standard		Test Method/Procedure		Pass / Fail
99% Occupied Bandwidth	-	-	-	-	☐ Pass
	IC	RSS Gen 6.6	IC	RSS Gen Issue 4: 2014 -	☒ N/A
6dB Bandwidth	FCC	15.247(a)(2)	FCC	558074 D01 DTS Meas Guidance v04	☐ Pass
	IC	RSS247 (5.2.1)	IC		☒ N/A
Band Edge and Radiated Spurious Emissions	FCC	15.247(d)	FCC	ANSI C63.10:2013 558074 D01 DTS Meas Guidance v04	☒ Pass
	IC	RSS247 (5.5)	IC		☐ N/A
Output Power	FCC	15.247(b)	FCC	558074 D01 DTS Meas Guidance v04	☐ Pass
	IC	RSS247 (5.4.4)	IC		☒ N/A
Receiver Spurious Emissions	IC	RSS Gen (4.8)	IC	RSS Gen Issue 4: 2014	☐ Pass ☒ N/A
Antenna Gain > 6 dBi	FCC	15.247(e)	FCC	-	☐ Pass
	IC	-	IC	-	☒ N/A
Power Spectral Density	FCC	15.247(e)	FCC	558074 D01 DTS Meas Guidance v04	☐ Pass
	IC	RSS247 (5.2.2)	IC		☒ N/A
RF Exposure requirement	FCC	15.247(i)	FCC	-	☐ Pass
	IC	RSS Gen(5.5)	IC	RSS Gen Issue 4: 2014	☒ N/A
Remark	- All measurement uncertainties do not take into consideration for all presented test results. - 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. - 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

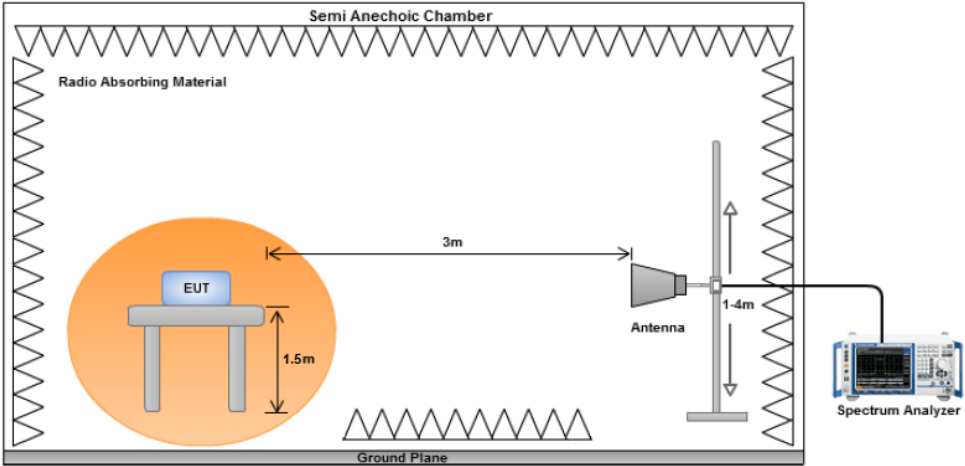
Source of Uncertainty	Value (dB)	Probability Distribution	Division	Sensitivity Coefficient	Expanded Uncertainty
Reference Level	0.12	Rectangular	1.732	1	0.069284
Cable Insertion Loss	0.21	Normal	2	1	0.105
Attenuator	0.25	Normal	2	1	0.125
Mismatch	0.25	U-Shape	1.414	1	0.1768033
Combined Standard Uncertainty					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 Spurious Emissions in restricted band

Requirement(s):

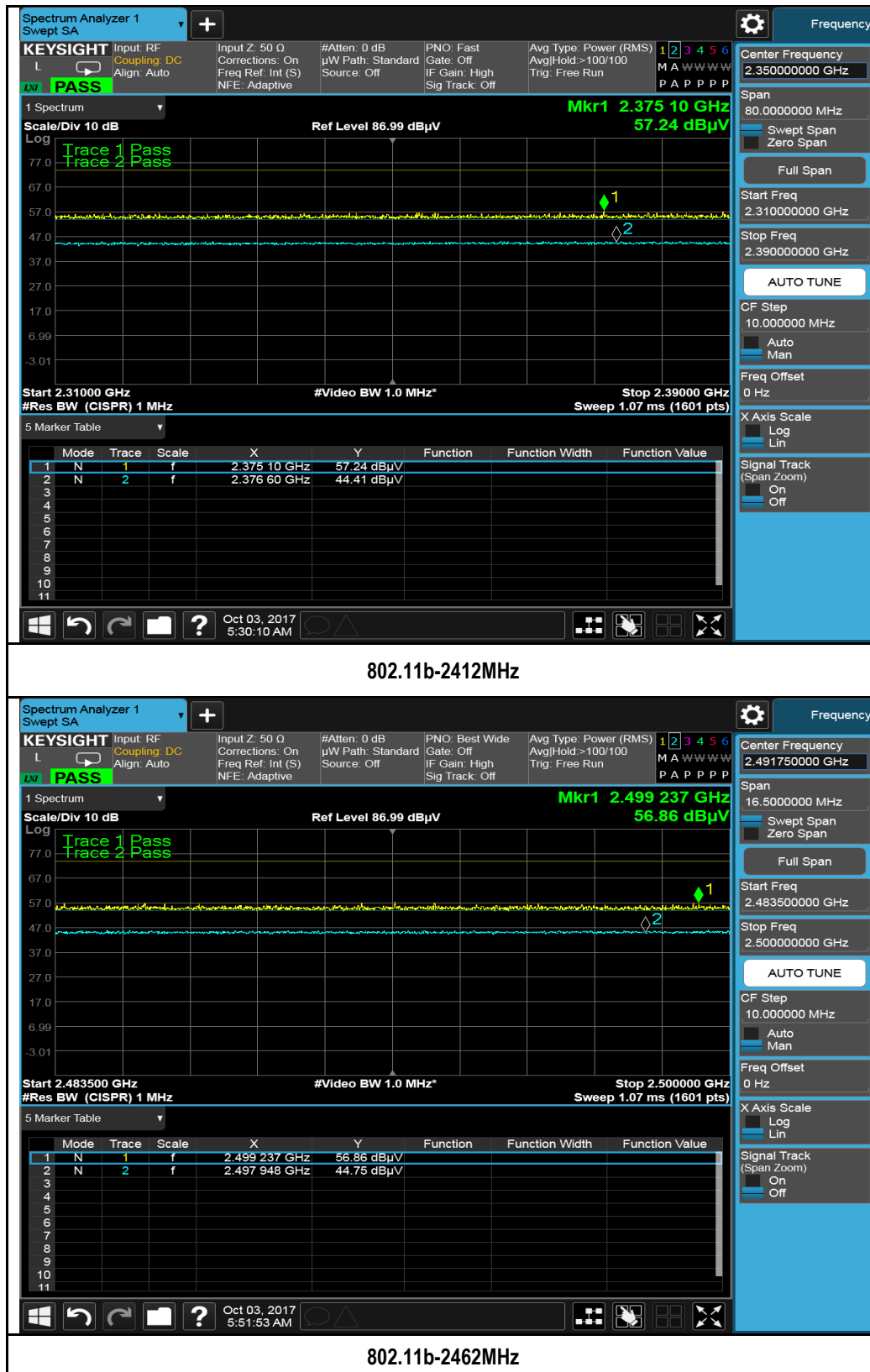
Spec	Item	Requirement	Applicable
47CFR§15.247(d), RSS247(A8.5)	a)	For non-restricted band, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB or 30dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, determined by the measurement method on output power to be used. Attenuation below the general limits specified in § 15.209(a) is not required ☐ 20 dB down ☒ 30 dB down	☒
	b)	or 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. Radiated measurement was measured with antenna port terminated, there isn't outstanding emission found at the edge of restricted frequency, within x dB margin		
Result	☒ Pass ☐ Fail		

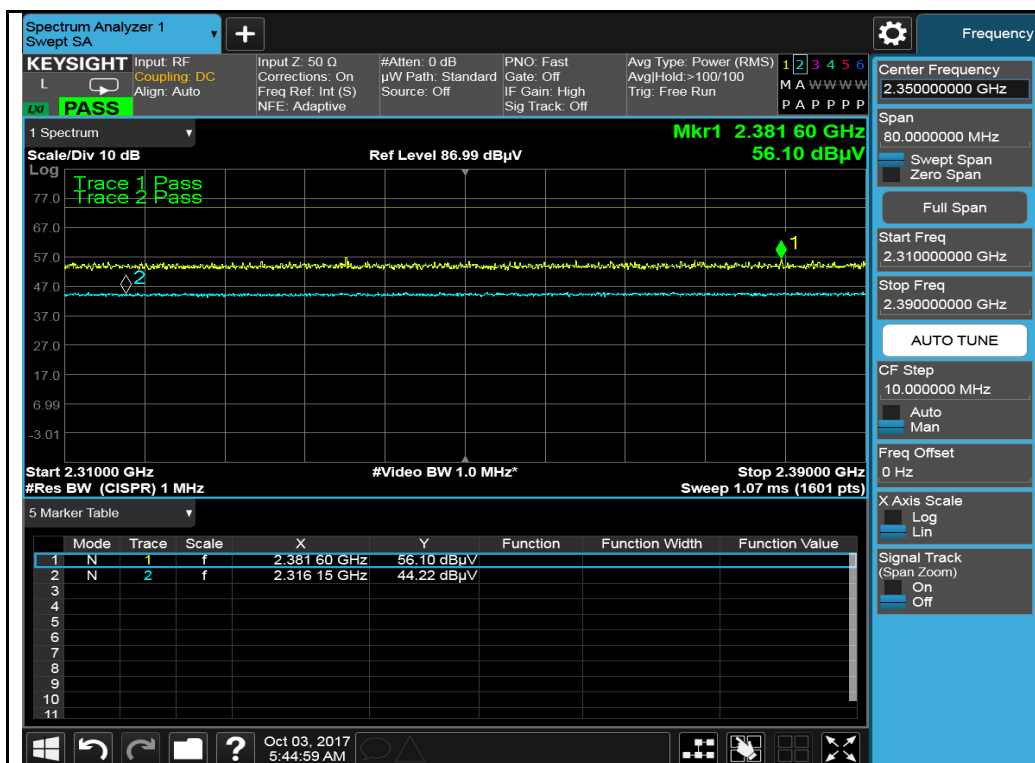
Test Data ☐ Yes (See below) ☒ N/A

Test Plot ☒ Yes (See below) ☐ N/A

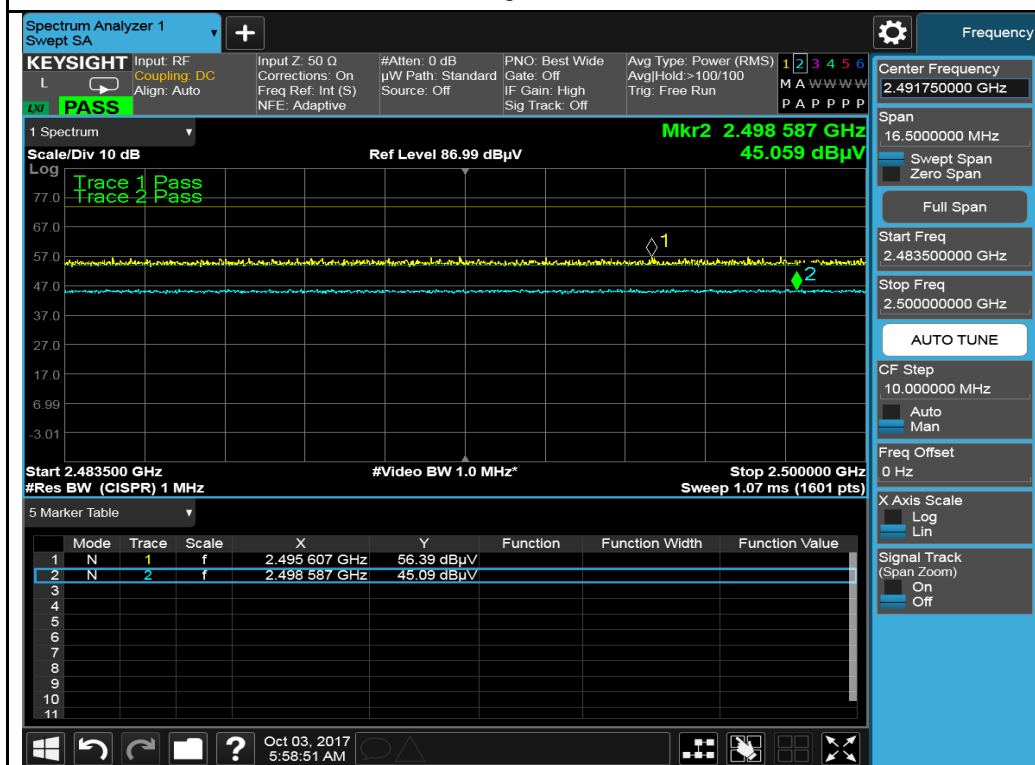
Test was done by Rachana Khanduri at 10m chamber.

Restricted Band Measurement Plots:

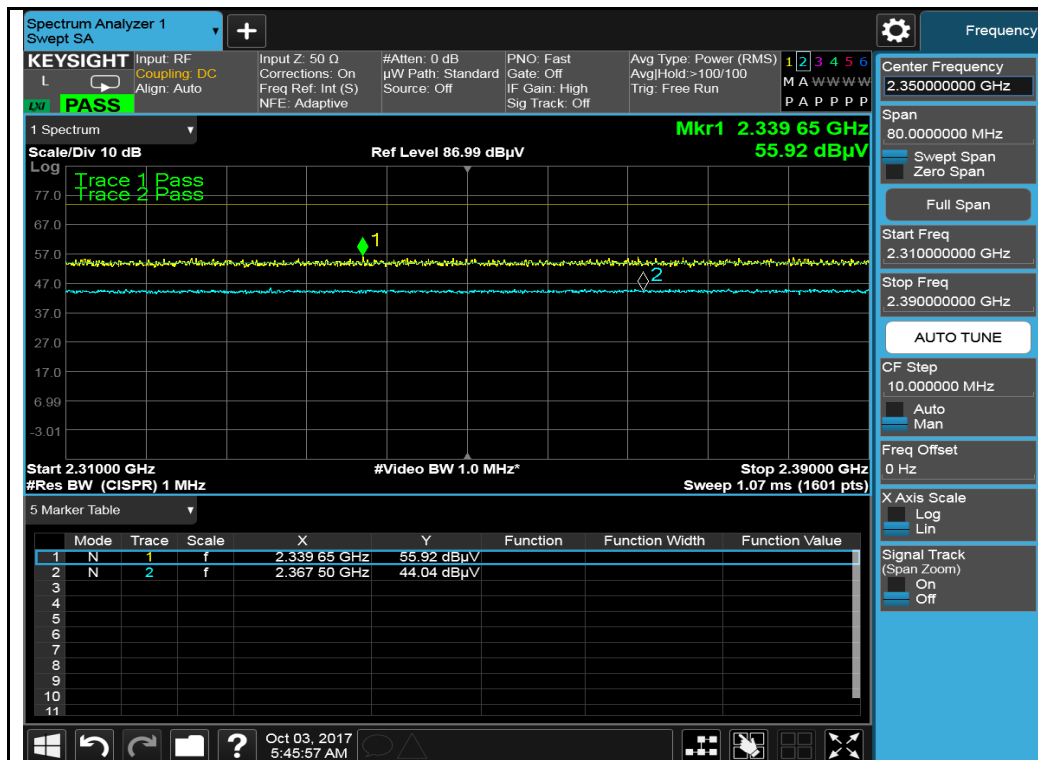




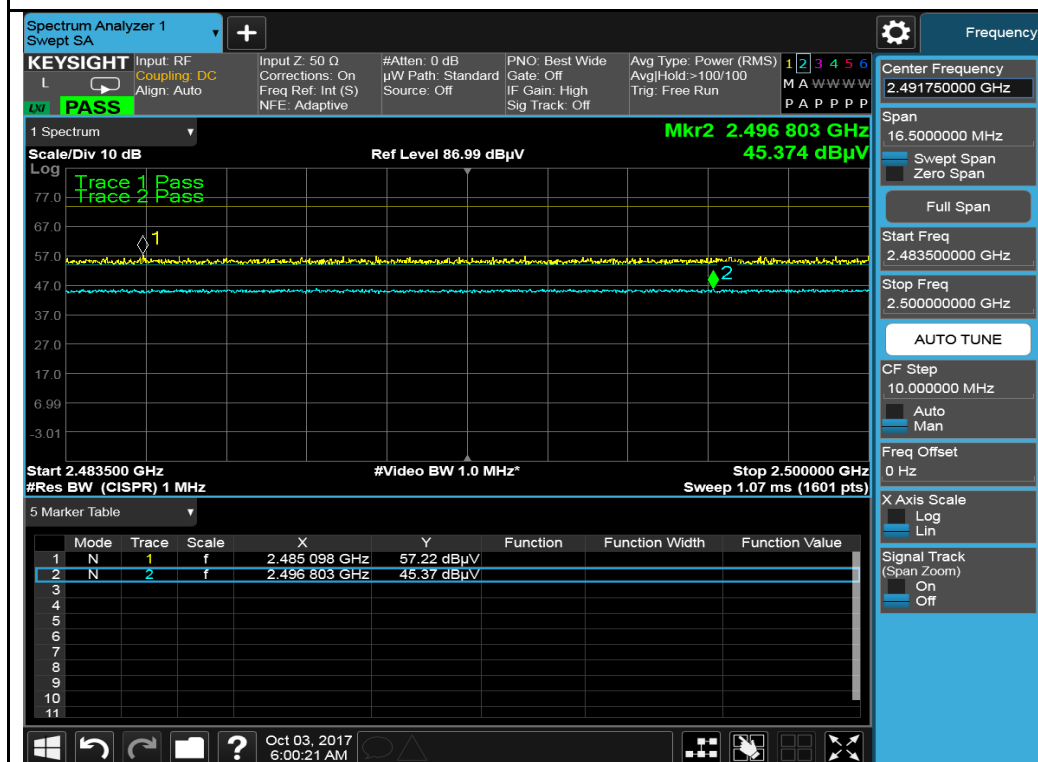
802.11g-2412MHz



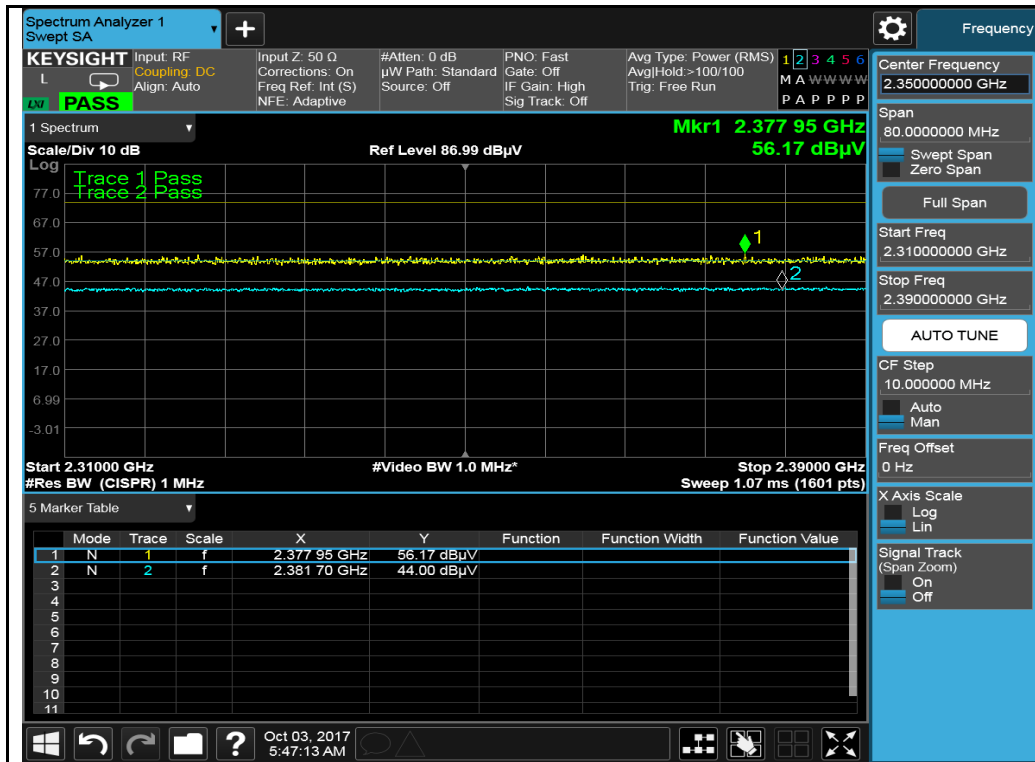
802.11g-2462MHz



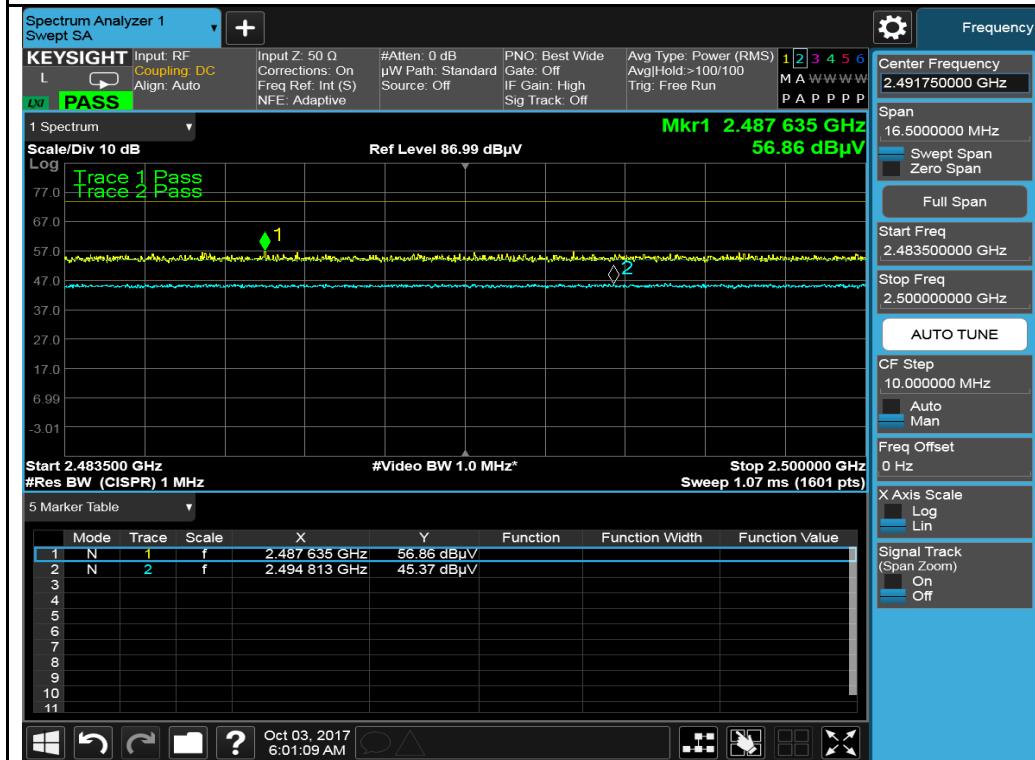
802.11n-HT20-2412MHz



802.11n-HT20-2462MHz



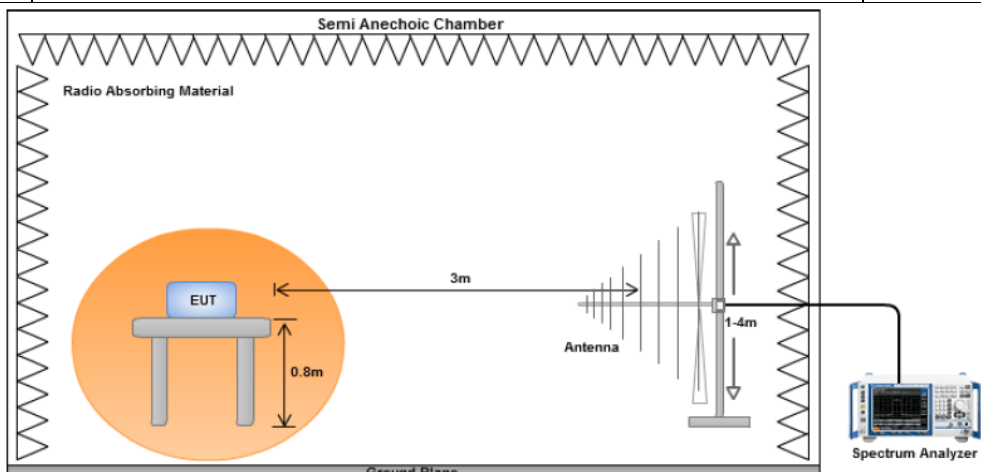
802.11n-HT40-2422MHz



802.11n-HT40-2452MHz

10.2 Radiated Spurious Emissions below 1GHz

Requirement(s):

Spec	Item	Requirement	Applicable										
47CFR§15.247(d) RSS247 (5.5)	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. 2. 3. 4. 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: a. b. c. 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. A Quasi-peak 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 1GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case.												
Result	☒ Pass ☐ Fail												

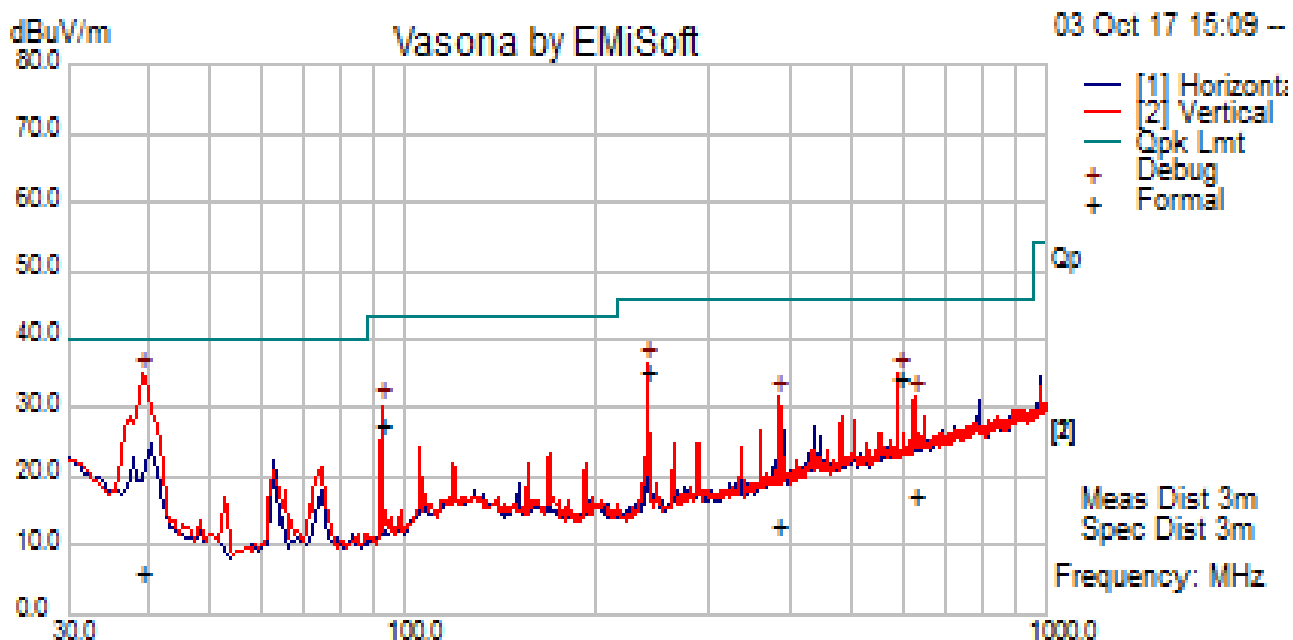
Test Data ☒ Yes (See below) ☐ N/A

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				Result	Pass
Environmental Conditions:	Temp (°C):	23				
	Humidity (%)	46				
	Atmospheric (mbar):	1018				
Mains Power:	120VAC, 60Hz					
Tested by:	Rachana Khanduri					
Test Date:	10/03/2017					
Remarks:	802.11n HT40, Middle Channel					



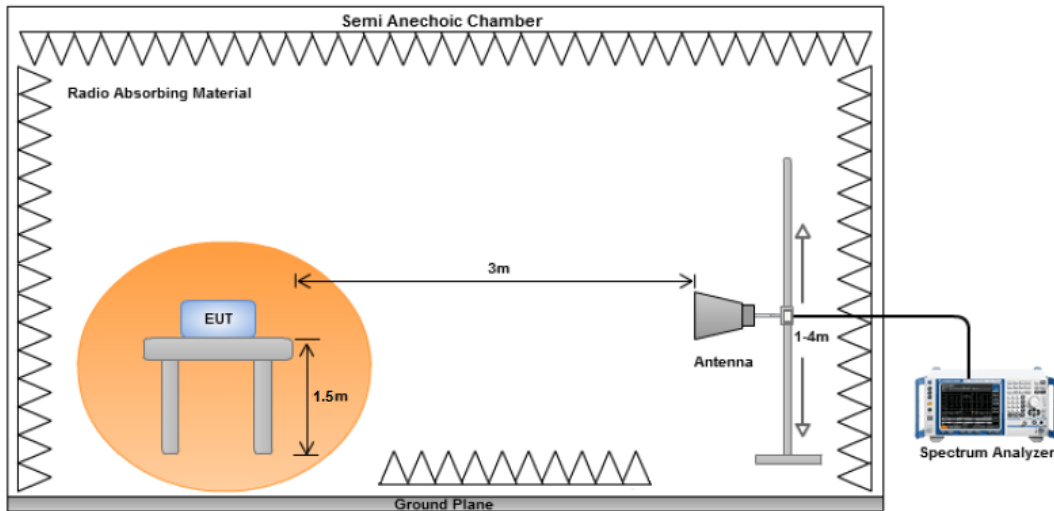
Quasi Max Measurements

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
38.98	15.82	11.43	-21.11	6.14	Quasi Max	V	168	357	40	-33.86	Pass
240.01	46.86	13.08	-24.87	35.07	Quasi Max	V	100	260	46	-10.93	Pass
589.09	37.17	15.07	-17.92	34.32	Quasi Max	V	100	15	46	-11.68	Pass
92.38	43.31	11.97	-27.73	27.55	Quasi Max	V	99	200	43.5	-15.95	Pass
383.57	20.15	13.94	-21.22	12.86	Quasi Max	V	253	233	46	-33.14	Pass
627.66	18.93	15.15	-16.99	17.08	Quasi Max	V	273	258	46	-28.92	Pass

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

10.3 Radiated Spurious Emissions between 1GHz – 25GHz

Requirement(s):

Spec	Item	Requirement	Applicable
47CFR§15.247(d), RSS210(A8.5)	a)	For non-restricted band, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB or 30dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, determined by the measurement method on output power to be used. Attenuation below the general limits specified in § 15.209(a) is not required ☐ 20 dB down ☒ 30 dB down	☒
	b)	or 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. There isn't outstanding emission found at the edge of restricted frequency.		
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 (Above 1GHz)

Above 1GHz-25GHz – 802.11b – 2412MHz

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
1999.70	46.72	2.75	-6.04	43.43	Peak Max	V	396	223	74	-30.57	Pass
1199.88	59.84	2.31	-10.57	51.58	Peak Max	V	117	159	74	-22.42	Pass
7945.78	40.04	5.93	0.74	46.72	Peak Max	V	124	223	74	-27.28	Pass
1999.70	28.12	2.75	-6.04	24.82	Average Max	V	396	223	54	-29.18	Pass
1199.88	36.69	2.31	-10.57	28.42	Average Max	V	117	159	54	-25.58	Pass
7945.78	26.74	5.93	0.74	33.41	Average Max	V	124	223	54	-20.59	Pass

Above 1GHz-25GHz- 802.11b - 2437MHz

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
4876.99	46.18	4.2	-2.15	48.23	Peak Max	H	99	190	74	-25.77	Pass
1990.11	61.86	2.75	-6.08	58.52	Peak Max	V	120	296	74	-15.48	Pass
1200.07	52.52	2.31	-10.57	44.26	Peak Max	V	386	173	74	-29.74	Pass
4876.99	40.88	4.2	-2.15	42.94	Average Max	H	99	190	54	-11.07	Pass
1990.11	31.21	2.75	-6.08	27.88	Average Max	V	120	296	54	-26.12	Pass
1200.07	31.77	2.31	-10.57	23.51	Average Max	V	386	173	54	-30.49	Pass

Above 1GHz-25GHz – 802.11b – 2462MHz

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
4920.79	46.03	4.22	-2.18	48.07	Peak Max	H	130	200	74	-25.93	Pass
1990.00	47.00	2.74	-6.08	43.66	Peak Max	V	274	204	74	-30.34	Pass
14894.76	38.57	8.08	7.87	54.53	Peak Max	V	269	344	74	-19.48	Pass
4920.79	40.93	4.22	-2.18	42.97	Average Max	H	130	200	54	-11.03	Pass
1990.00	28.62	2.74	-6.08	25.28	Average Max	V	274	204	54	-28.72	Pass
14894.76	26.35	8.08	7.87	42.30	Average Max	V	269	344	54	-11.70	Pass

Above 1GHz-25GHz- 802.11g - 2412MHz

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
1989.93	59.54	2.74	-6.08	56.20	Peak Max	V	131	184	74	-17.80	Pass
12166.98	38.84	7.51	4.2	50.56	Peak Max	V	392	17	74	-23.44	Pass
4825.95	49.53	4.17	-2.06	51.64	Peak Max	H	117	202	74	-22.37	Pass
1989.93	30.40	2.74	-6.08	27.06	Average Max	V	131	184	54	-26.94	Pass
12166.98	26.26	7.51	4.20	37.98	Average Max	V	392	17	54	-16.02	Pass
4825.95	35.61	4.17	-2.06	37.71	Average Max	H	117	202	54	-16.29	Pass

Above 1GHz-25GHz – 802.11g – 2437MHz

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
1990.07	52.53	2.74	-6.08	49.19	Peak Max	V	127	257	74	-24.81	Pass
4869.12	49.94	4.19	-2.13	52.00	Peak Max	H	159	211	74	-22.00	Pass
9587.64	39.74	6.57	1.51	47.82	Peak Max	V	354	122	74	-26.18	Pass
1990.07	29.34	2.74	-6.08	26.00	Average Max	V	127	257	54	-28.00	Pass
4869.12	35.26	4.19	-2.13	37.32	Average Max	H	159	211	54	-16.68	Pass
9587.64	27.02	6.57	1.51	35.10	Average Max	V	354	122	54	-18.90	Pass

Above 1GHz-25GHz- 802.11g - 2462MHz

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
1990.07	58.06	2.74	-6.08	54.72	Peak Max	V	110	312	74	-19.28	Pass
4922.57	49.85	4.23	-2.18	51.90	Peak Max	H	194	190	74	-22.10	Pass
9655.05	39.19	6.56	1.23	46.99	Peak Max	V	387	326	74	-27.01	Pass
1990.07	29.87	2.74	-6.08	26.54	Average Max	V	110	312	54	-27.47	Pass
4922.57	36.69	4.23	-2.18	38.74	Average Max	H	194	190	54	-15.26	Pass
9655.05	26.73	6.56	1.23	34.53	Average Max	V	387	326	54	-19.47	Pass

Above 1GHz-25GHz- 802.11n20 - 2412MHz

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
1990.00	50.95	2.74	-6.08	47.61	Peak Max	V	131	344	74	-26.39	Pass
11890.32	39.31	7.98	3.16	50.45	Peak Max	V	169	273	74	-23.55	Pass
4826.45	46.61	4.17	-2.07	48.71	Peak Max	H	100	186	74	-25.29	Pass
1990.00	28.85	2.74	-6.08	25.51	Average Max	V	131	344	54	-28.49	Pass
11890.32	26.68	7.98	3.16	37.82	Average Max	V	169	273	54	-16.18	Pass
4826.45	33.31	4.17	-2.07	35.42	Average Max	H	100	186	54	-18.58	Pass

Above 1GHz-25GHz – 802.11n20 – 2437MHz

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
1990.11	57.05	2.75	-6.08	53.71	Peak Max	V	210	169	74	-20.29	Pass
9502.92	40.01	6.59	2.04	48.64	Peak Max	V	141	230	74	-25.36	Pass
4877.23	46.10	4.20	-2.15	48.15	Peak Max	H	149	194	74	-25.85	Pass
1990.11	30.05	2.75	-6.08	26.71	Average Max	V	210	169	54	-27.29	Pass
9502.92	27.09	6.59	2.04	35.72	Average Max	V	141	230	54	-18.28	Pass
4877.23	32.87	4.20	-2.15	34.92	Average Max	H	149	194	54	-19.08	Pass

Above 1GHz-25GHz- 802.11n20 - 2462MHz

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
1997.93	55.13	2.75	-6.05	51.83	Peak Max	V	122	157	74	-22.18	Pass
4919.64	51.10	4.22	-2.18	53.15	Peak Max	H	159	196	74	-20.85	Pass
9462.59	38.98	6.55	1.81	47.34	Peak Max	V	364	70	74	-26.66	Pass
1997.93	29.28	2.75	-6.05	25.98	Average Max	V	122	157	54	-28.02	Pass
4919.64	37.05	4.22	-2.18	39.10	Average Max	H	159	196	54	-14.90	Pass
9462.59	26.70	6.55	1.81	35.06	Average Max	V	364	70	54	-18.95	Pass

Above 1GHz-25GHz- 802.11n40 - 2422MHz

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
9690.74	39.41	6.56	1.11	47.07	Peak Max	H	165	321	74	-26.93	Pass
1998.80	58.84	2.75	-6.05	55.54	Peak Max	V	220	154	74	-18.46	Pass
4826.47	44.04	4.17	-2.07	46.14	Peak Max	H	192	197	74	-27.86	Pass
9690.74	27.12	6.56	1.11	34.78	Average Max	H	165	321	54	-19.22	Pass
1998.80	30.89	2.75	-6.05	27.60	Average Max	V	220	154	54	-26.40	Pass
4826.47	31.26	4.17	-2.07	33.37	Average Max	H	192	197	54	-20.63	Pass

Above 1GHz-25GHz – 802.11n40 – 2437MHz

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
1998.39	47.84	2.75	-6.05	44.54	Peak Max	V	357	163	74	-29.46	Pass
9584.46	39.57	6.57	1.53	47.67	Peak Max	V	286	291	74	-26.33	Pass
4901.92	39.67	4.21	-2.18	41.70	Peak Max	V	182	23	74	-32.30	Pass
1998.39	28.52	2.75	-6.05	25.23	Average Max	V	357	163	54	-28.78	Pass
9584.46	26.90	6.57	1.53	35.00	Average Max	V	286	291	54	-19.00	Pass
4901.92	26.35	4.21	-2.18	28.38	Average Max	V	182	23	54	-25.62	Pass

Above 1GHz-25GHz- 802.11n40 - 2452MHz

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
1998.56	54.92	2.75	-6.05	51.62	Peak Max	V	151	127	74	-22.38	Pass
9528.83	39.33	6.58	1.88	47.79	Peak Max	V	144	296	74	-26.21	Pass
4918.10	41.29	4.22	-2.18	43.34	Peak Max	V	123	181	74	-30.67	Pass
1998.56	29.34	2.75	-6.05	26.04	Average Max	V	151	127	54	-27.96	Pass
9528.83	27.12	6.58	1.88	35.59	Average Max	V	144	296	54	-18.41	Pass
4918.10	28.89	4.22	-2.18	30.93	Average Max	V	123	181	54	-23.07	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	08/11/2016	1 Year	08/11/2017	☒
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