

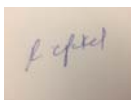
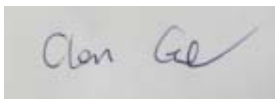
RF TEST REPORT



Report No.: FCC_IC_RF_SL15041501-CPC-004_DTS Rev 1.0
Supersede Report No.: FCC_IC_RF_SL15041501-CPC-004_DTS

Applicant	:	ChargePoint, Inc.
Product Name	:	Network Communication
Model No.	:	28010077
Test Standard	:	47 CFR 15.247 RSS-247 Issue 1, May 2015
Test Method	:	ANSI C63.10:2013 RSS-Gen Issue 4, Nov 2014 558074 D01 DTS Meas Guidance v03r02
FCC ID	:	W38-28010077
IC ID	:	8854A-28010077
Dates of test	:	08/31/2015 to 09/05/2015
Issue Date	:	10/28/2015
Test Result	:	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
Equipment complied with the specification [X] Equipment did not comply with the specification []		

This Test Report is Issued Under the Authority of:

	
Ronak Patel	Chen Ge
Test Engineer	Engineer Reviewer

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



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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/RAA, 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_IC_RF_SL15041501-CPC-004_DTS	None	Original	09/30/2015
FCC_IC_RF_SL15041501-CPC-004_DTS Rev 1.0	Rev 1.0	Updated per reviewer	10/27/2015

2 Executive Summary

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

Company: ChargePoint, Inc.
Product: Network Communication
Model: 28010077

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	ChargePoint, Inc.
Applicant Address	254 E. Hacienda Ave Campbell, CA 95148
Manufacturer Name	ChargePoint, Inc.
Manufacturer Address	254 E. Hacienda Ave Campbell, CA 95148

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	Network Communication
Model No.	28010077
Trade Name	ChargePoint, Inc.
Serial No.	N/A
Host Model No.	CPH25 & CPH12
Input Power	100-240VDC, 50/60Hz
Power Adapter Manu/Model	Condor/HK-CH13-A05
Power Adapter SN	N/A
Product Hardware version	27-010077
Product Software version	4.0.0.41
Radio Hardware version	27-010077
Radio Software version	4.0.0.41
Test Software version	4.0.0.41
Date of EUT received	May 01, 2015
Equipment Class/ Category	DTS
Operating Frequencies	2412-2462MHz
Port/Connectors	USB

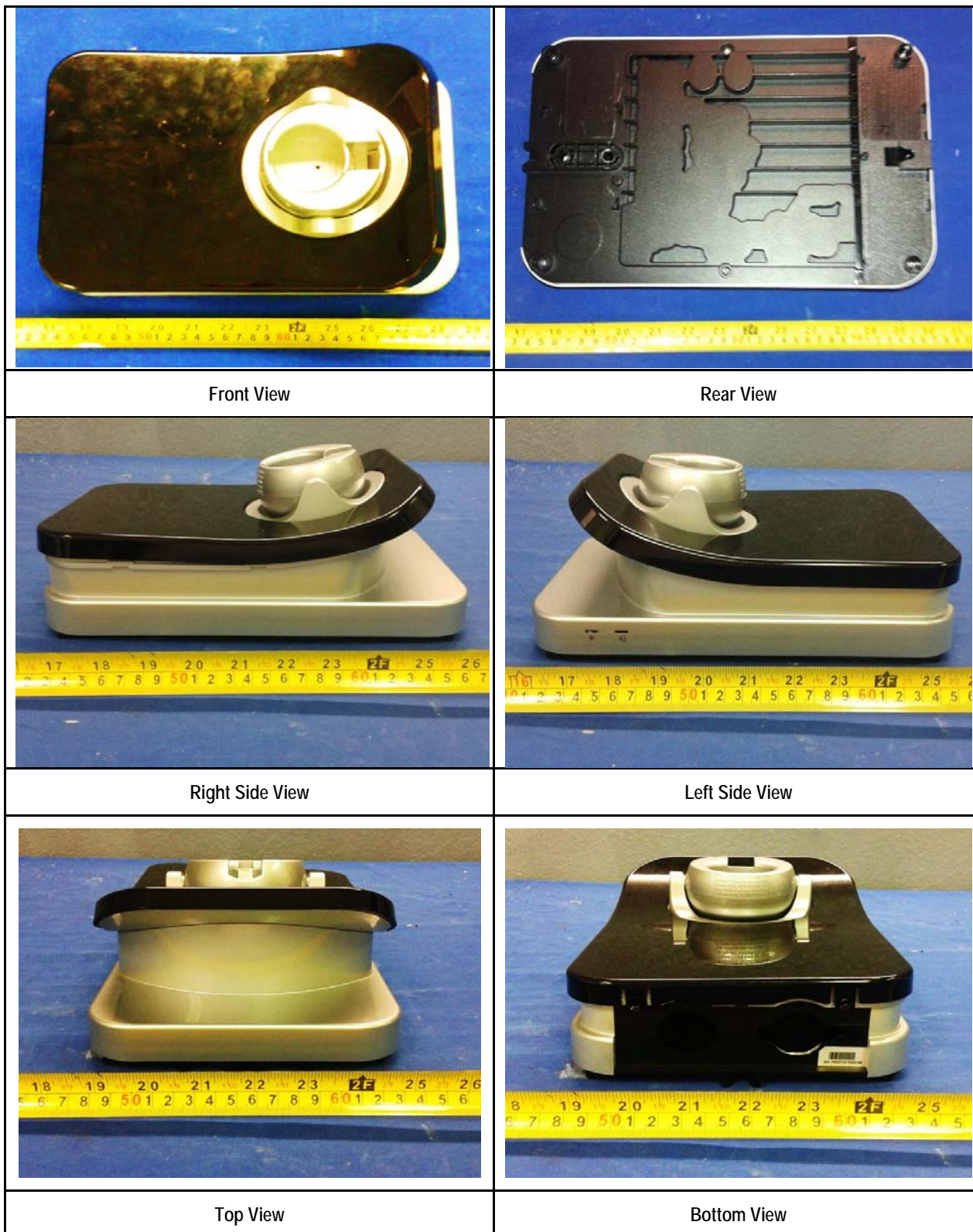
6.2 Radio Description

Radio Type	802.11b	802.11g	802.11n-20M
Operating Frequency	2412-2462MHz	2412-2462MHz	2412-2462MHz
Modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)
Channel Spacing	5MHz	5MHz	5MHz(2.4GHz)
Number of Channels	11	11	11(2.4GH)
Antenna Type	Prestta WLAN Embedded Antenna		
Antenna Gain (Peak)	2.5dBi (for 2.4GHz)		
Antenna Connector Type	On Board		

EUT Power level setting

Mode	Frequency (MHz)	Power setting
802.11-b	2412	20
802.11-b	2437	20
802.11-b	2462	20
802.11-g	2412	20
802.11-g	2437	20
802.11-g	2462	20
802.11-n-20	2412	20
802.11-n-20	2437	20
802.11-n-20	2462	20
802.11-n-20	2422	20
802.11-n-20	2437	20
802.11-n-20	2452	20

6.3 EUT Photos



6.4 EUT Photos – Internal



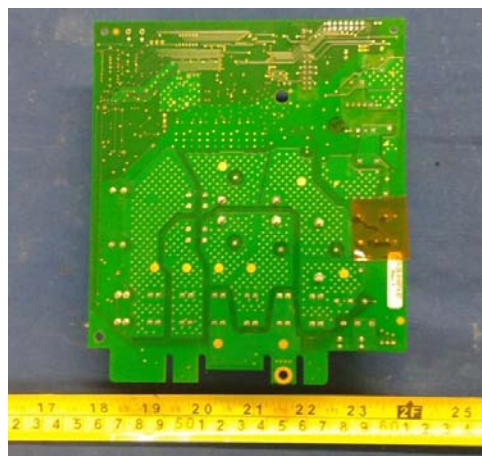
EUT with housing



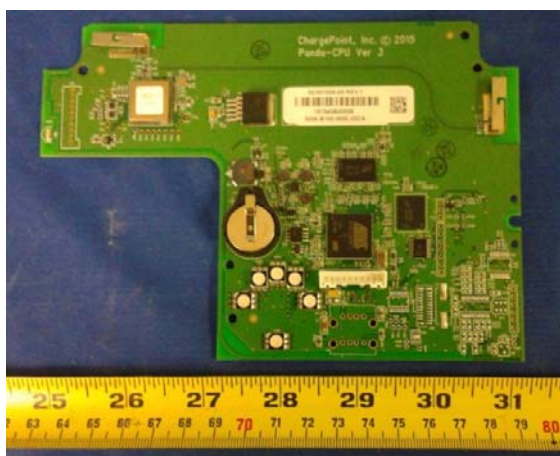
EUT cover off



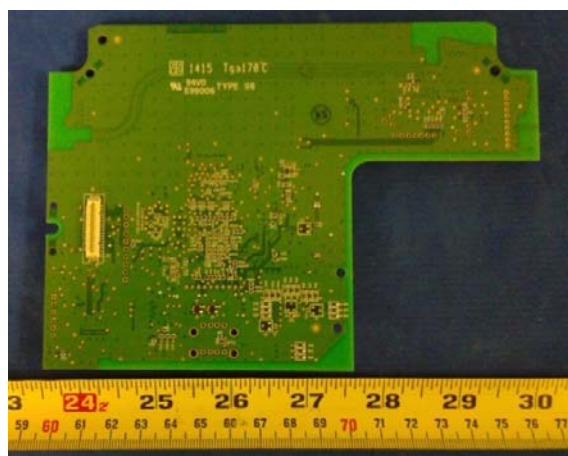
Main Board Top View



Main Board Bottom View



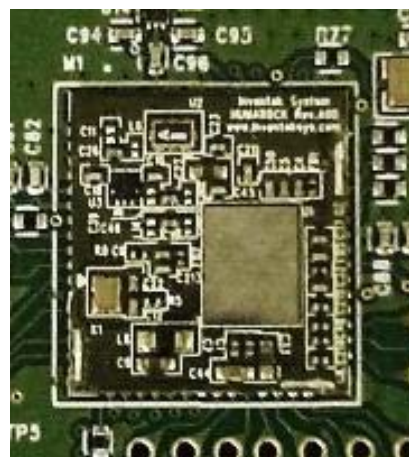
Network Communication Board Top View



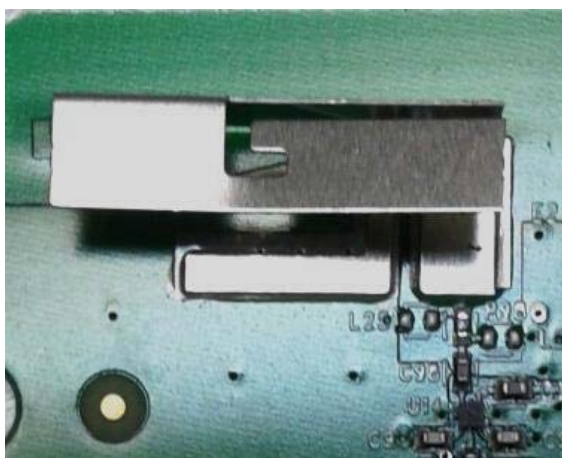
Network Communication Board Top View



Radio Board with shielding



Radio Board without shielding



Antenna 1



Antenna 2

6.5 EUT Test Setup Photos



AC Line Conducted Emission – Front View



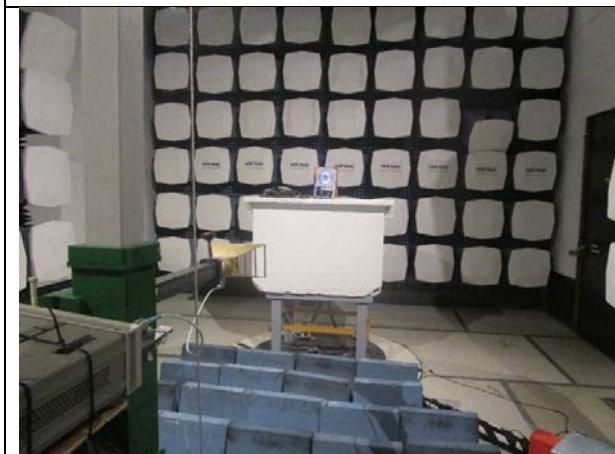
AC Line Conducted Emission – Rear View



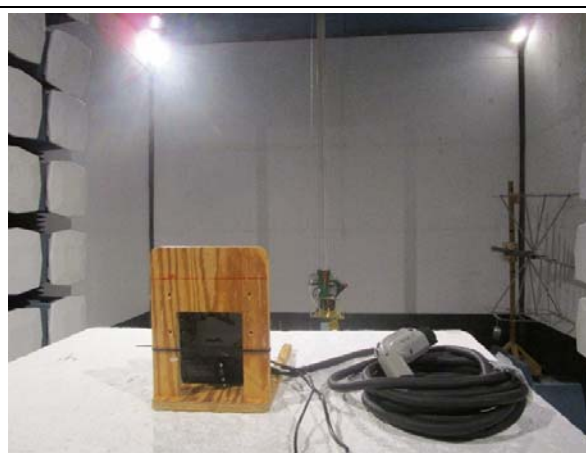
Radiated Emissions (<1GHz) – Front View



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	P05F Latitude E5510	N/A	Dell	-

7.2 Cabling Description

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

7.3 Test Software Description

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

8 Test Summary

Test Item	Test standard		Test Method/Procedure		Pass / Fail
Restricted Band of Operation	FCC	15.205	FCC	ANSI C63.10:2013 558074 D01 DTS Meas Guidance v03r03	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> N/A
AC Conducted Emissions Voltage	FCC	15.207(a)	FCC	ANSI C63.10:2013	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> N/A

Test Item	Test standard		Test Method/Procedure		Pass / Fail
Channel Separation	FCC	15.247 (a)(1)	FCC	-	<input type="checkbox"/> Pass <input checked="" type="checkbox"/> N/A
6 dB Bandwidth	FCC	15.247(a)(2)	FCC	558074 D01 DTS Meas Guidance v03r03	<input type="checkbox"/> Pass <input checked="" type="checkbox"/> N/A
Number of Hopping Channels	FCC	15.247(a)(1)	FCC	-	<input type="checkbox"/> Pass <input checked="" type="checkbox"/> N/A
Band Edge and Radiated Spurious Emissions	FCC	15.247(d)	FCC	ANSI C63.10:2013 558074 D01 DTS Meas Guidance v03r03	<input type="checkbox"/> Pass <input checked="" type="checkbox"/> N/A
Time of Occupancy	FCC	15.247(a)(1)	FCC	-	<input type="checkbox"/> Pass <input checked="" type="checkbox"/> N/A
Output Power	FCC	15.247(b)	FCC	558074 D01 DTS Meas Guidance v03r03	<input type="checkbox"/> Pass <input checked="" type="checkbox"/> N/A
Receiver Spurious Emissions	FCC	15.247(d)	FCC	-	<input type="checkbox"/> Pass <input checked="" type="checkbox"/> N/A
Antenna Gain > 6 dBi	FCC	15.247(e)	FCC	-	<input type="checkbox"/> Pass <input checked="" type="checkbox"/> N/A
Power Spectral Density	FCC	15.247(e)	FCC	558074 D01 DTS Meas Guidance v03r03	<input type="checkbox"/> Pass <input checked="" type="checkbox"/> N/A
Hybrid System Requirement	FCC	15.247(f)	FCC	-	<input type="checkbox"/> Pass <input checked="" type="checkbox"/> N/A
Hopping Capability	FCC	15.247(g)	FCC	-	<input type="checkbox"/> Pass <input checked="" type="checkbox"/> N/A
Hopping Coordination Requirement	FCC	15.247(h)	FCC	-	<input type="checkbox"/> Pass <input checked="" type="checkbox"/> N/A
RF Exposure requirement	FCC	15.247(i)	FCC	-	<input type="checkbox"/> Pass <input checked="" type="checkbox"/> N/A

Remark	<ol style="list-style-type: none"> 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. N/A: Please refer to original radio report FCC_IC_RF_SL15041501-CPC-006_DTS, FCC ID: W38-28010077 IC ID: 8854A-28010077
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9 Measurement Uncertainty

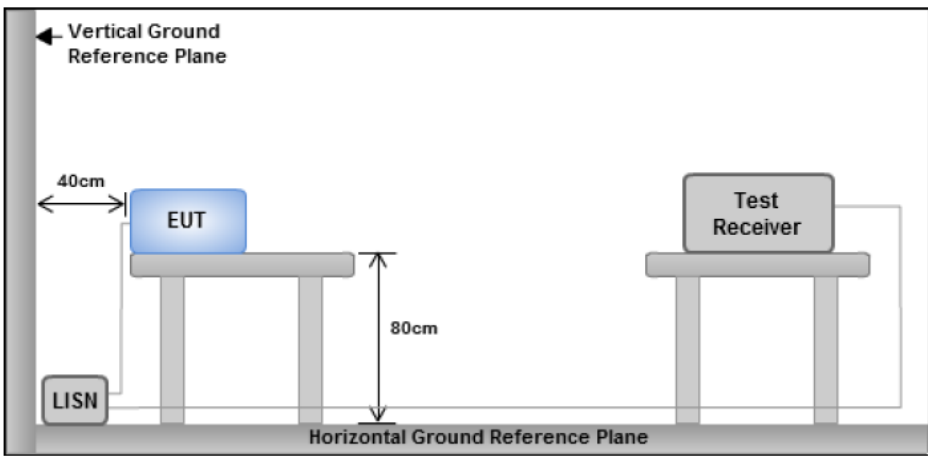
Emissions			
Test Item	Frequency Range	Description	Uncertainty
Radiated Spurious Emissions	30MHz – 1GHz	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+5.6dB/-4.5dB
Radiated Spurious Emissions	1GHz – 40GHz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

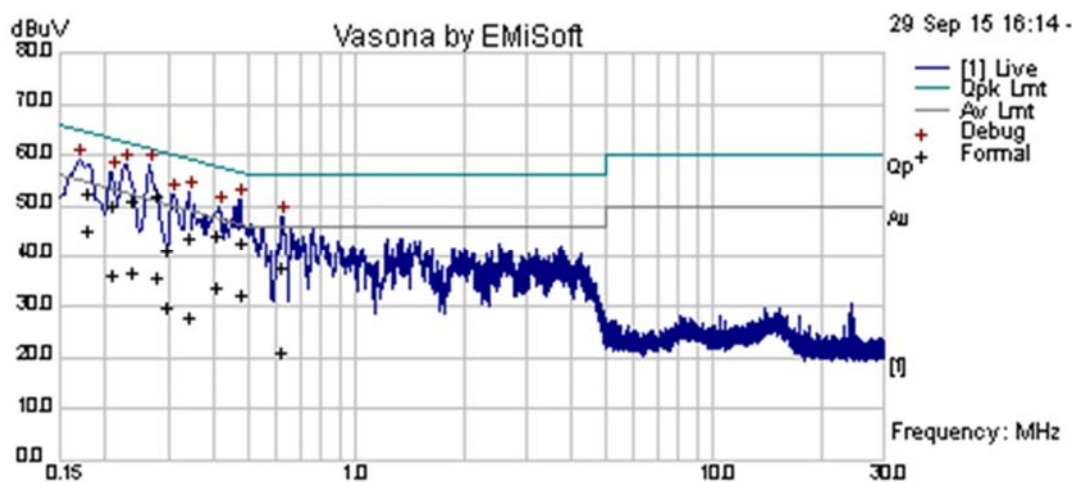
Spec	Item	Requirement	Applicable
§ 15.205 RSS Gen Issue 4: 2014 (8.8)	a)	For Low-power radio-frequency devices that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the 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.	<input checked="" type="checkbox"/>
Test Setup	 <p>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</p>		
Procedure	<ul style="list-style-type: none"> - 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 120V 60Hz		
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail		

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Conducted Emission Test Results

Test specification:	Conducted Emissions			
Environmental Conditions:	Temp(°C):	21	Result:	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
	Humidity (%):	42		
	Atmospheric(mbar):	1021		
Mains Power:	120Vac, 60Hz			
Tested by:	Ronak Patel			
Test Date:	09/29/2015			
Remarks	AC Line @ Line			

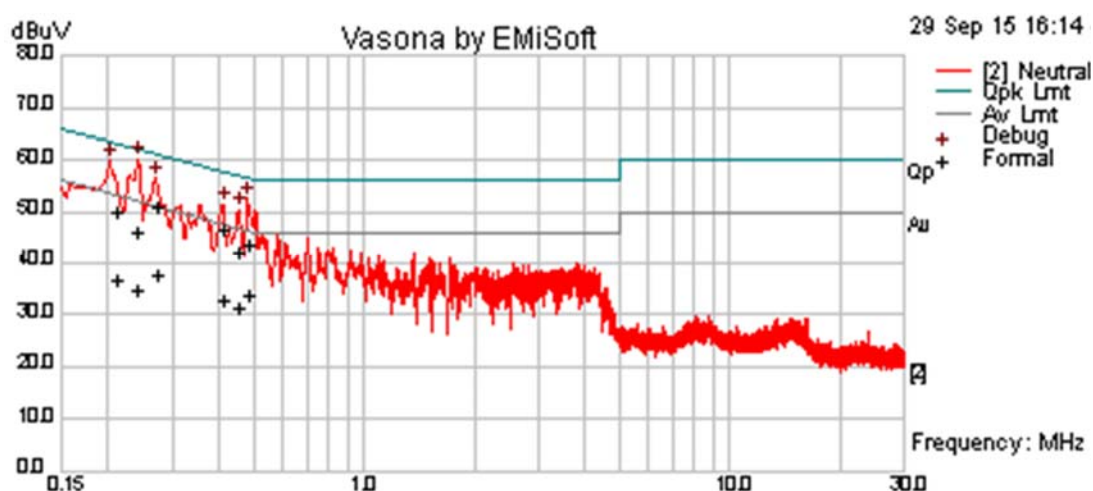


Line Plot at 120Vac, 60Hz

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	Factors (dB)	Level (dBuV)	Measurement Type	Line	Limit (dBuV)	Margin (dB)	Pass /Fail
0.27	41.20	10.00	0.98	52.19	Quasi Peak	Live	60.99	-8.80	Pass
0.24	39.91	10.00	1.12	51.04	Quasi Peak	Live	62.23	-11.19	Pass
0.48	31.83	10.01	0.69	42.54	Quasi Peak	Live	56.38	-13.84	Pass
0.18	41.03	10.00	1.50	52.53	Quasi Peak	Live	64.70	-12.17	Pass
0.34	32.90	10.01	0.83	43.74	Quasi Peak	Live	59.19	-15.45	Pass
0.21	38.79	10.00	1.27	50.06	Quasi Peak	Live	63.31	-13.24	Pass
0.30	30.04	10.00	0.92	40.96	Quasi Peak	Live	60.37	-19.41	Pass
0.41	33.34	10.01	0.75	44.10	Quasi Peak	Live	57.73	-13.63	Pass
0.61	27.34	10.01	0.64	37.98	Quasi Peak	Live	56.00	-18.02	Pass
0.27	24.73	10.00	0.98	35.72	Average	Live	50.99	-15.27	Pass
0.24	25.66	10.00	1.12	36.79	Average	Live	52.23	-15.44	Pass
0.48	21.85	10.01	0.69	32.55	Average	Live	46.38	-13.83	Pass
0.18	33.42	10.00	1.50	44.93	Average	Live	54.70	-9.78	Pass
0.34	17.11	10.01	0.83	27.94	Average	Live	49.19	-21.25	Pass
0.21	24.86	10.00	1.27	36.13	Average	Live	53.31	-17.17	Pass
0.30	18.94	10.00	0.92	29.87	Average	Live	50.37	-20.50	Pass
0.41	23.23	10.01	0.75	33.98	Average	Live	47.73	-13.75	Pass
0.61	10.47	10.01	0.64	21.12	Average	Live	46.00	-24.88	Pass

Conducted Emission Test Results

Test specification:	Conducted Emissions			
Environmental Conditions:	Temp(°C):	21	Result:	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
	Humidity (%):	42		
	Atmospheric(mbar):	1021		
Mains Power:	120Vac, 60Hz			
Tested by:	Ronak Patel			
Test Date:	09/29/15			
Remarks	AC Line @ Neutral			



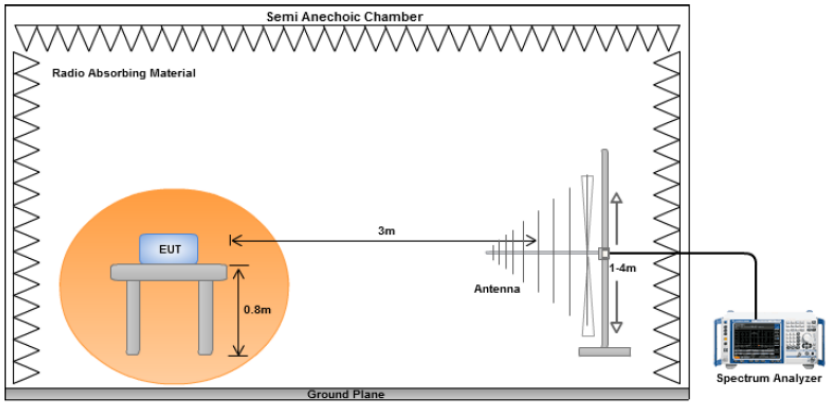
Neutral Plot at 120Vac, 60Hz

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	Factors (dB)	Level (dBuV)	Measurement Type	Line	Limit (dBuV)	Margin (dB)	Pass /Fail
0.24	34.90	10.00	1.11	46.02	Quasi Peak	Neutral	62.12	-16.10	Pass
0.48	32.94	10.01	0.69	43.64	Quasi Peak	Neutral	56.30	-12.66	Pass
0.21	38.83	10.00	1.26	50.09	Quasi Peak	Neutral	63.24	-13.15	Pass
0.27	40.10	10.00	0.99	51.09	Quasi Peak	Neutral	61.02	-9.93	Pass
0.41	35.97	10.01	0.74	46.72	Quasi Peak	Neutral	57.62	-10.90	Pass
0.45	31.42	10.01	0.71	42.14	Quasi Peak	Neutral	56.80	-14.66	Pass
0.24	23.83	10.00	1.11	34.94	Average	Neutral	52.12	-17.18	Pass
0.48	23.16	10.01	0.69	33.86	Average	Neutral	46.30	-12.44	Pass
0.21	25.54	10.00	1.26	36.80	Average	Neutral	53.24	-16.44	Pass
0.27	26.86	10.00	0.99	37.85	Average	Neutral	51.02	-13.17	Pass
0.41	22.25	10.01	0.74	33.00	Average	Neutral	47.62	-14.62	Pass
0.45	20.53	10.01	0.71	31.25	Average	Neutral	46.80	-15.55	Pass

Note: The results above show only the worst case.

10.2 Radiated Spurious Emissions in restricted band

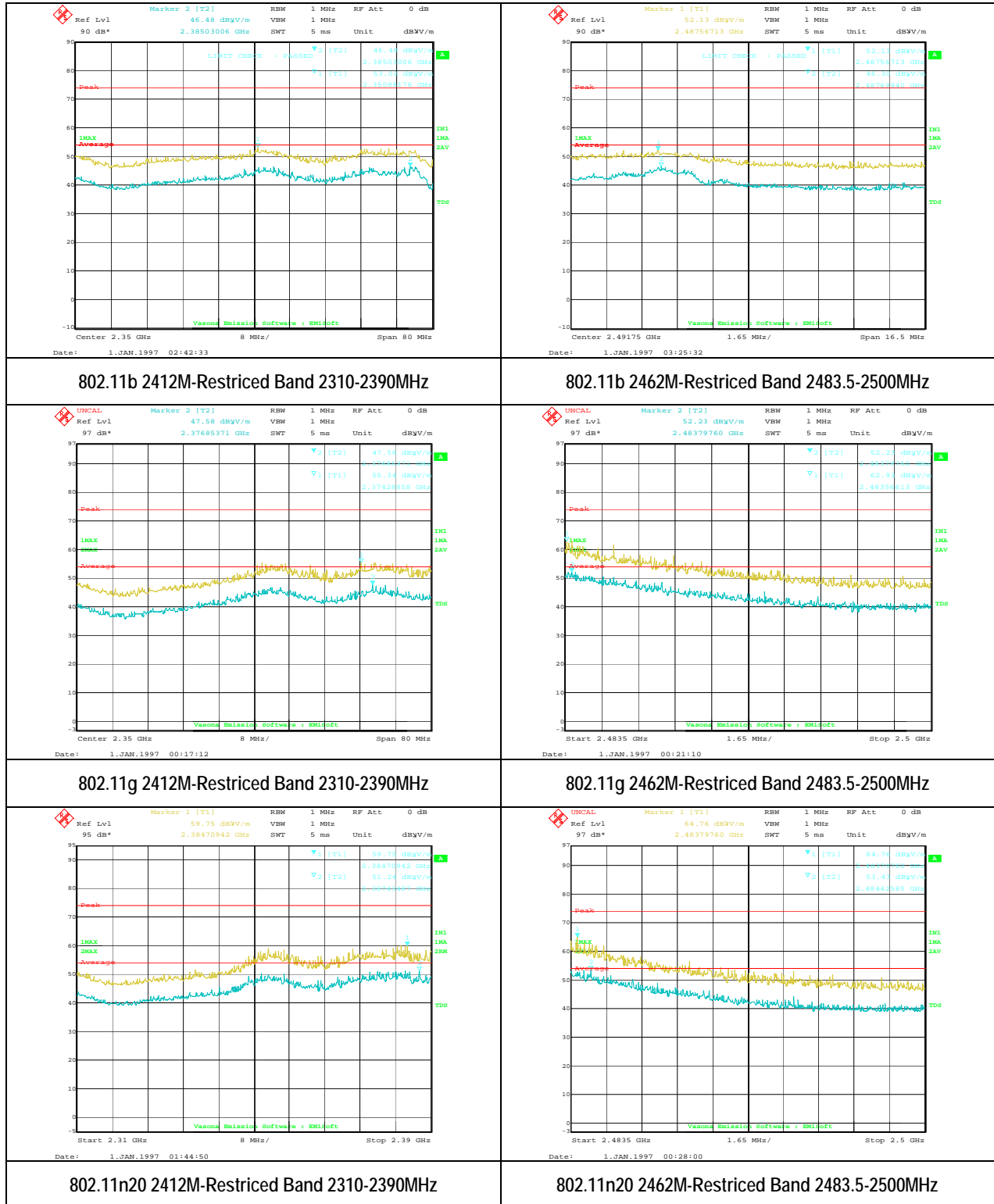
Requirement(s):

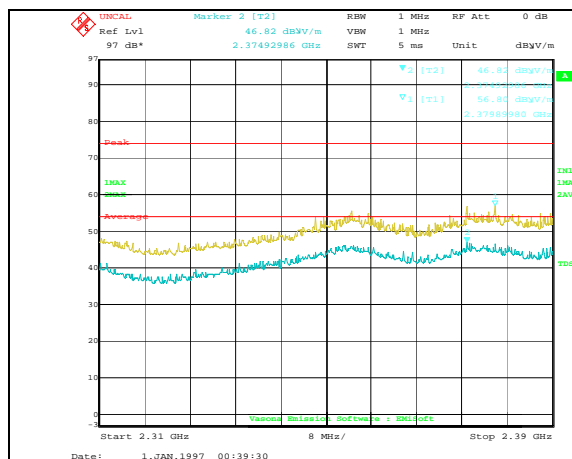
Spec	Item	Requirement	Applicable
47CFR§15.247(d), RSS Gen Iss 4 : 2014 (8.10)	a)	For non-restricted band, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional 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 <input type="checkbox"/> 20 dB down <input checked="" type="checkbox"/> 30 dB down	<input type="checkbox"/>
	b)	or restricted band, emission must also comply with the radiated emission limits specified in 15.209	<input checked="" type="checkbox"/>
Test Setup			
Procedure	<ol style="list-style-type: none"> 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: <ol style="list-style-type: none"> 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 25GHz. 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	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail		

Test Data ☐ Yes (See below) ☒ N/A

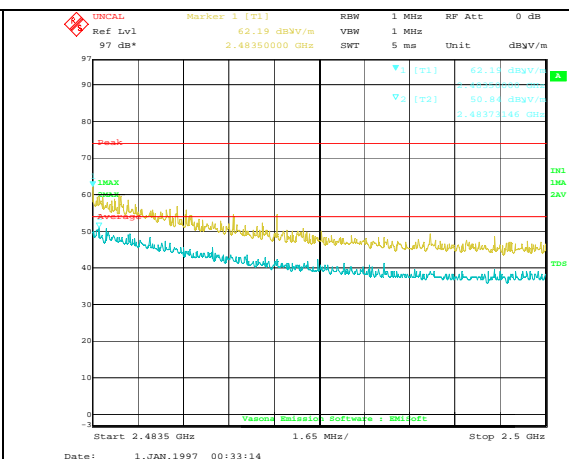
Test Plot ☒ Yes (See below) ☐ N/A

Restricted Band Measurement Plots:





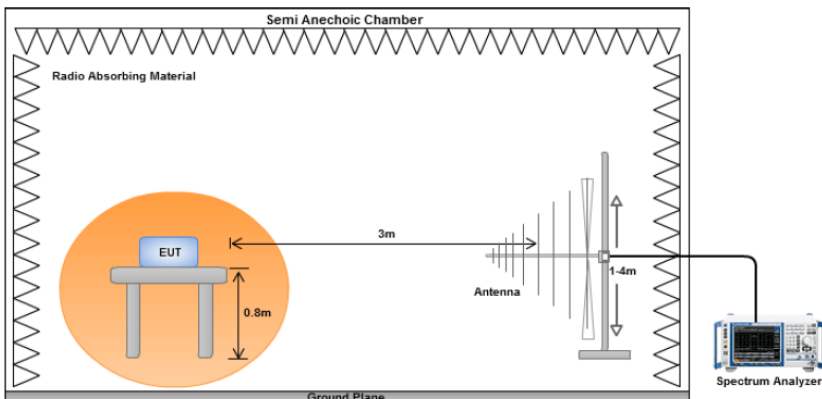
802.11n40 2422M-Restricted Band 2310-2390MHz



802.11n40 2452M-Restricted Band 2483.5-2500MHz

10.3 Radiated Spurious Emissions below 1GHz

Requirement(s):

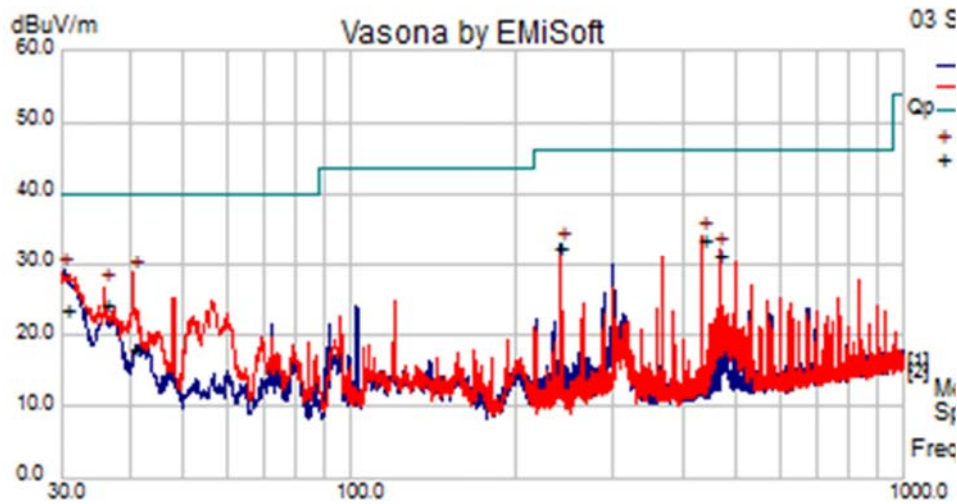
Spec	Item	Requirement	Applicable										
47CFR§15.247(d) RSS Gen Iss 4 : 2014 (6.13)	a)	<p>Except higher limit as specified elsewhere in other section, the emissions from the low-power radio-frequency devices shall not exceed the field strength levels specified in the following table and the level of any unwanted emissions shall not exceed the level of the fundamental emission. The tighter limit applies at the band edges</p> <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	<input checked="" type="checkbox"/>
Frequency range (MHz)	Field Strength (uV/m)												
30 – 88	100												
88 – 216	150												
216 960	200												
Above 960	500												
Test Setup													
Procedure	<div><div>1.</div><div>The EUT was switched on and allowed to warm up to its normal operating condition.</div></div> <div><div>2.</div><div>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:<div><div>a.</div><div>Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen.</div></div><div><div>b.</div><div>The EUT was then rotated to the direction that gave the maximum emission.</div></div><div><div>c.</div><div>Finally, the antenna height was adjusted to the height that gave the maximum emission.</div></div></div></div> <div><div>3.</div><div>A Quasi-peak measurement was then made for that frequency point.</div></div> <div><div>4.</div><div>Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.</div></div>												
Remark	The EUT was scanned up to 1GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case.												
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail												

Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Radiated Emission Test Results (Below 1GHz)

Test specification	Below 1GHz			
Environmental Conditions:	Temp (°C):	26.1	Result	Pass
	Humidity (%)	47.5		
	Atmospheric (mbar):	1020		
Mains Power:	120VAC, 60Hz			
Tested by:	Ronak Patel			
Test Date:	09/03/2015			
Remarks:	802.11b 2412MHz			

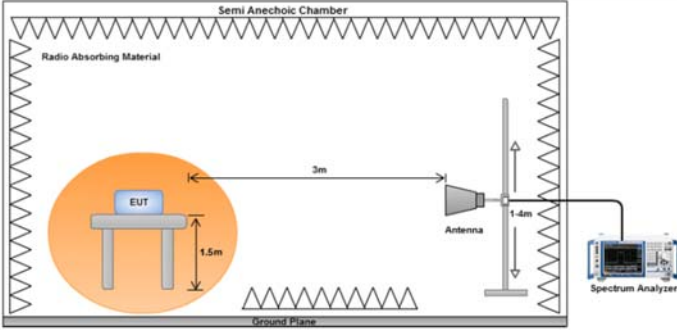


Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
30.55	39.47	-0.84	-14.9	23.73	Quasi Max	H	271	108	40.00	-16.27	Pass
40.73	41.97	-0.94	-23.13	17.89	Quasi Max	V	130	159	40.00	-22.11	Pass
433.31	58.75	-3.23	-22.09	33.43	Quasi Max	V	101	230	46.02	-12.59	Pass
240.03	61.54	-2.33	-26.84	32.37	Quasi Max	H	101	119	46.02	-13.65	Pass
36.00	44.89	-0.87	-19.59	24.43	Quasi Max	V	101	33	40.00	-15.57	Pass
466.64	56.25	-3.37	-21.69	31.19	Quasi Max	V	101	274	46.02	-14.83	Pass

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

10.4 Radiated Spurious Emissions between 1GHz – 25GHz

Requirement(s):

Spec	Item	Requirement	Applicable
47CFR§15.247(d), RSS Gen Iss 4 : 2014 (6.13)	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 <input type="checkbox"/> 20 dB down <input checked="" type="checkbox"/> 30 dB down	<input checked="" type="checkbox"/>
	b)	or restricted band, emission must also comply with the radiated emission limits specified in 15.209	<input checked="" type="checkbox"/>
Test Setup			
Procedure	<ol style="list-style-type: none"> 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: <ol style="list-style-type: none"> 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 25GHz. 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	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail		

Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☐ Yes (See below) ☒ N/A

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
4132.27	39.59	5.94	11.65	57.19	Peak Max	H	229	242	74.00	-16.81	Pass
1033.39	44.46	2.46	9.62	56.55	Peak Max	V	159	284	74.00	-17.45	Pass
4816.30	38.23	6.24	9.71	54.18	Peak Max	H	117	22	74.00	-19.82	Pass
17710.63	40.83	13.00	10.61	64.44	Peak Max	V	225	9	74.00	-9.56	Pass
14591.19	42.21	13.26	8.17	63.65	Peak Max	V	282	322	74.00	-10.35	Pass
4132.27	26.93	5.94	11.65	44.52	Average Max	H	229	242	54.00	-9.48	Pass
1033.39	31.76	2.46	9.62	43.84	Average Max	V	159	284	54.00	-10.16	Pass
4816.30	25.33	6.24	9.71	41.28	Average Max	H	117	22	54.00	-12.72	Pass
17710.63	27.18	13.00	10.61	50.79	Average Max	V	225	9	54.00	-3.21	Pass
14591.19	29.42	13.26	8.17	50.86	Average Max	V	282	322	54.00	-3.14	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
1052.26	44.61	2.47	9.59	56.67	Peak Max	V	128	113	74.00	-17.33	Pass
4135.69	40.1	5.95	11.63	57.68	Peak Max	V	296	84	74.00	-16.32	Pass
14541.34	42.53	13.17	8.31	64.01	Peak Max	V	202	81	74.00	-9.99	Pass
3059.53	40.62	5.5	10.07	56.19	Peak Max	V	290	271	74.00	-17.81	Pass
17728.78	41.09	13	10.63	64.73	Peak Max	V	100	345	74.00	-9.27	Pass
1052.26	31.48	2.47	9.59	43.54	Average Max	V	128	113	54.00	-10.46	Pass
4135.69	26.89	5.95	11.63	44.47	Average Max	V	296	84	54.00	-9.53	Pass
14541.34	29.26	13.17	8.31	50.75	Average Max	V	202	81	54.00	-3.25	Pass
3059.53	27.52	5.5	10.07	43.09	Average Max	V	290	271	54.00	-10.91	Pass
17728.78	27.2	13	10.63	50.83	Average Max	V	100	345	54.00	-3.17	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
17796.10	40.28	13.00	10.70	63.98	Peak Max	V	208	328	74.00	-10.02	Pass
14574.56	43.07	13.23	8.22	64.52	Peak Max	H	193	75	74.00	-9.48	Pass
6347.53	44.38	7.93	10.24	62.55	Peak Max	V	110	206	74.00	-11.45	Pass
2207.56	39.71	4.11	10.83	54.66	Peak Max	V	112	146	74.00	-19.34	Pass
17796.10	26.54	13.00	10.70	50.24	Average Max	V	208	328	54.00	-3.76	Pass
14574.56	29.44	13.23	8.22	50.89	Average Max	H	193	75	54.00	-3.11	Pass
6347.53	31.33	7.93	10.24	49.5	Average Max	V	110	206	54.00	-4.50	Pass
2207.56	26.02	4.11	10.83	40.97	Average Max	V	112	146	54.00	-13.03	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
1051.65	44.18	2.47	9.59	56.25	Peak Max	H	191	169	74.00	-17.75	Pass
17643.93	39.89	13.00	10.55	63.44	Peak Max	V	100	20	74.00	-10.56	Pass
14541.93	42.41	13.17	8.31	63.89	Peak Max	H	289	234	74.00	-10.11	Pass
4083.73	39.36	5.90	11.86	57.12	Peak Max	V	174	179	74.00	-16.88	Pass
1051.65	31.39	2.47	9.59	43.46	Average Max	H	191	169	54.00	-10.54	Pass
17643.93	27.02	13.00	10.55	50.57	Average Max	V	100	20	54.00	-3.43	Pass
14541.93	29.27	13.17	8.31	50.75	Average Max	H	289	234	54.00	-3.25	Pass
4083.73	26.52	5.90	11.86	44.28	Average Max	V	174	179	54.00	-9.72	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
1033.95	44.75	2.46	9.62	56.83	Peak Max	V	172	88	74.00	-17.17	Pass
4068.07	40.40	5.89	11.93	58.21	Peak Max	V	201	277	74.00	-15.79	Pass
6177.18	44.60	7.42	10.64	62.66	Peak Max	H	273	204	74.00	-11.34	Pass
17709.69	40.96	13.00	10.61	64.57	Peak Max	V	261	47	74.00	-9.43	Pass
1033.95	31.71	2.46	9.62	43.79	Average Max	V	172	88	54.00	-10.21	Pass
4068.07	26.64	5.89	11.93	44.45	Average Max	V	201	277	54.00	-9.55	Pass
6177.18	31.57	7.42	10.64	49.64	Average Max	H	273	204	54.00	-4.36	Pass
17709.69	27.16	13.00	10.61	50.77	Average Max	V	261	47	54.00	-3.23	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
1001.43	45.69	2.44	9.68	57.81	Peak Max	H	214	303	74.00	-16.19	Pass
4169.73	40.48	5.97	11.49	57.94	Peak Max	H	281	161	74.00	-16.06	Pass
2091.45	43.82	3.68	11.19	58.69	Peak Max	H	240	0	74.00	-15.31	Pass
6211.54	45.05	7.52	10.56	63.14	Peak Max	V	190	128	74.00	-10.86	Pass
1001.43	32.16	2.44	9.68	44.28	Average Max	H	214	303	54.00	-9.72	Pass
4169.73	26.80	5.97	11.49	44.26	Average Max	H	281	161	54.00	-9.74	Pass
2091.45	30.21	3.68	11.19	45.08	Average Max	H	240	0	54.00	-8.92	Pass
6211.54	31.46	7.52	10.56	49.55	Average Max	V	190	128	54.00	-4.45	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
1001.05	45.16	2.44	9.68	57.28	Peak Max	V	280	119	74.00	-16.72	Pass
14747.65	42.02	13.54	7.76	63.32	Peak Max	H	153	310	74.00	-10.68	Pass
17370.23	40.00	12.74	10.01	62.75	Peak Max	H	128	211	74.00	-11.25	Pass
1001.05	32.18	2.44	9.68	44.30	Average Max	V	280	119	54.00	-9.70	Pass
14747.65	29.06	13.54	7.76	50.35	Average Max	H	153	310	54.00	-3.65	Pass
17370.23	26.97	12.74	10.01	49.72	Average Max	H	128	211	54.00	-4.28	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
1017.29	44.61	2.45	9.65	56.71	Peak Max	H	287	281	74.00	-17.29	Pass
17780.31	39.75	13.000	10.69	63.44	Peak Max	H	114	162	74.00	-10.56	Pass
4050.30	39.48	5.87	12.01	57.35	Peak Max	V	126	100	74.00	-16.65	Pass
1017.29	31.23	2.45	9.65	43.33	Average Max	H	287	281	54.00	-10.67	Pass
17780.31	26.86	13.000	10.69	50.55	Average Max	H	114	162	54.00	-3.45	Pass
4050.30	26.75	5.87	12.01	44.63	Average Max	V	126	100	54.00	-9.37	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
17729.35	40.15	13	10.63	63.78	Peak Max	V	99	48	74.00	-10.22	Pass
6178.42	45.03	7.43	10.64	63.09	Peak Max	V	275	180	74.00	-10.91	Pass
4186.71	38.68	5.99	11.41	56.09	Peak Max	H	273	305	74.00	-17.91	Pass
1052.73	39.06	2.47	9.59	51.12	Peak Max	V	142	97	74.00	-22.88	Pass
17729.35	27.14	13	10.63	50.78	Average Max	V	99	48	54.00	-3.22	Pass
6178.42	31.47	7.43	10.64	49.53	Average Max	V	275	180	54.00	-4.47	Pass
4186.71	24.87	5.99	11.41	42.27	Average Max	H	273	305	54.00	-11.73	Pass
1052.73	25.78	2.47	9.59	37.85	Average Max	V	142	97	54.00	-16.15	Pass

Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Cycle	Cal Due	In use
Conducted Emissions						
R & S Receiver	ESIB 40	100179	05/23/2015	1 Year	05/23/2016	<input checked="" type="checkbox"/>
CHASE LISN	MN2050B	1018	08/07/2015	1 Year	08/07/2016	<input checked="" type="checkbox"/>
Radiated Emissions						
R & S Receiver	ESL6	100178	05/27/2015	1 Year	05/27/2016	<input checked="" type="checkbox"/>
R & S Receiver	ESIB 40	100179	05/23/2015	1 Year	05/23/2016	<input checked="" type="checkbox"/>
ETS-Lingren Loop Antenna	6512	00049120	05/12/2015	1 Year	05/12/2016	<input checked="" type="checkbox"/>
Bi-Log antenna (30MHz~2GHz)	JB1	A030702	08/12/2015	1 Year	08/12/2016	<input checked="" type="checkbox"/>
3 Meters SAC	3M	N/A	08/08/2015	1 Year	08/08/2016	<input checked="" type="checkbox"/>
10 Meters SAC	10M	N/A	09/05/2015	1 Year	09/05/2016	<input checked="" type="checkbox"/>
RF Conducted Measurement						
Spectrum Analyzer	N9010A	10SL0219	08/20/2015	1 Year	08/20/2016	<input checked="" type="checkbox"/>
R & S Receiver	ESIB 40	100179	05/23/2015	1 Year	05/23/2016	<input checked="" type="checkbox"/>
Test Equity Environment Chamber	1007H	61201	07/31/2015	1 Year	07/31/2016	<input checked="" type="checkbox"/>

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