RF TEST REPORT

SIEMIC
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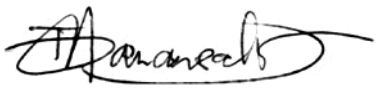
Report No.: FCC_RF_SL14090901-CPC-006 WLAN_Rev1.0
Supersede Report No.: FCC_RF_SL14090901-CPC-006 WLAN

Applicant	:	ChargePoint, Inc.
Product Name	:	Communication Board with 802.11 WLAN module
Model No.	:	241083G
Test Standard	:	47 CRF 15.247: 2013 RSS-210 Issue 8: 2010
Test Method	:	ANSI C63.10: 2009 RSS-Gen Issue 3: 2010 558074 D01 DTS Meas Guidance v03r02
FCC ID	:	WLAN Module: W38-241083G
IC ID	:	WLAN Module: 8854A-241083G
Dates of test	:	Oct 2, 2014 to Oct 10, 2014
Issue Date	:	11/03/2014
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:	
	
Teody Manansala	**Nima Molaei**
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

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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	EMC, RF/Wireless, Telecom, Safety
Europe	A2LA, NIST	EMC, RF, Telecom, Safety
Israel	MOC, NIST	EMC, RF, Telecom, Safety

Accreditations for Product Certifications

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

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1 Report Revision History

Report No.	Report Version	Description	Issue Date
FCC_RF_SL14090901-CPC-006 WLAN	None	Original	10/15/2014
FCC_RF_SL14090901-CPC-006 WLAN_Rev1.0	1.0	Change the product name	11/03/2014
		Change PSD result and limit	11/03/2014
		Change conducted band edge to 100KHz	11/03/2014

2 Executive Summary

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

Company: ChargePoint, Inc.
Product: Communication Board with 802.11 WLAN module
Model: 241083G

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	:	1692 Dell Ave. Campbell, CA 95008, USA
Manufacturer Name	:	ChargePoint, Inc.
Manufacturer Address	:	1692 Dell Ave. Campbell, CA 95008, USA

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	:	Communication Board with 802.11 WLAN module
Model No.	:	241083G
Trade Name	:	ChargePoint
Serial No.	:	N/A
Host Model No.	:	N/A
Input Power	:	5VDC
Power Adapter Manu/Model	:	N/A
Power Adapter SN	:	N/A
Hardware version	:	N/A
Software version	:	N/A
Date of EUT received	:	10/02/2014
Equipment Class/ Category	:	DTS
Clock Frequencies	:	N/A
Port/Connectors	:	Ethernet, Console

6.2 Radio Description

Spec for Radio -

Radio Type	802.11b	802.11g	802.11n-20
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
Number of Channels	11	11	11
Antenna Type	WLAN: Embedded; WWAN: Embedded		
Antenna Gain	WLAN: 2.5 dBi; WWAN: 2.5 dBi		
Antenna Connector Type	UFL		

Channel List

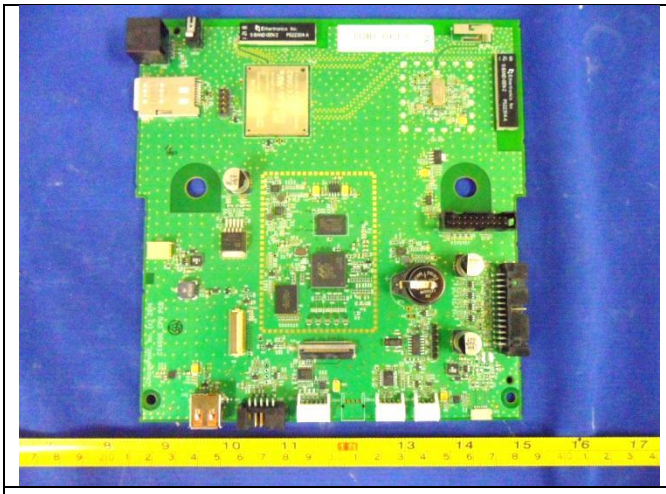
Type		Channel No.	Frequency (MHz)	Available (Y/N)
802.11b/g/n-20	2412-2462	1	2412	Y
		2	2417	Y
		3	2422	Y
		4	2427	Y
		5	2432	Y
		6	2437	Y
		7	2442	Y
		8	2447	Y
		9	2452	Y
		10	2457	Y
		11	2462	Y
		12	2467	N
		13	2472	N

6.3 EUT test modes/configuration Description

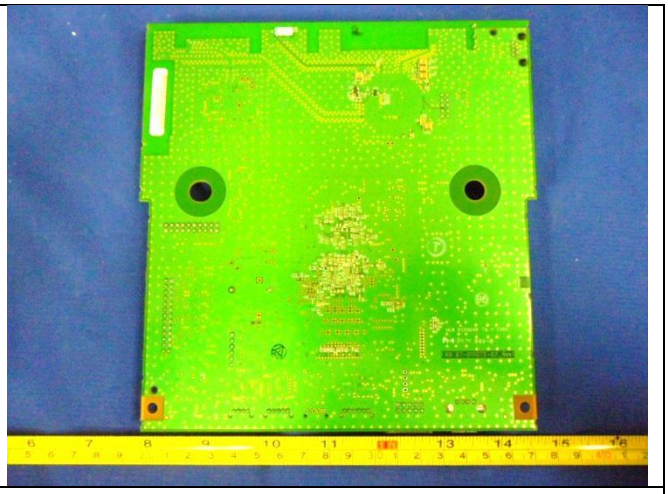
Test mode

Final Test Mode		Note
Final_test_mode_1	EUT set to continuous transmit (802.11b/g/n-20)	Conducted Measurements
Final_test_mode_2	EUT set to continuous transmit (802.11b/g/n-20)	Radiated spurious emissions above and below 1GHz
Remarks:		

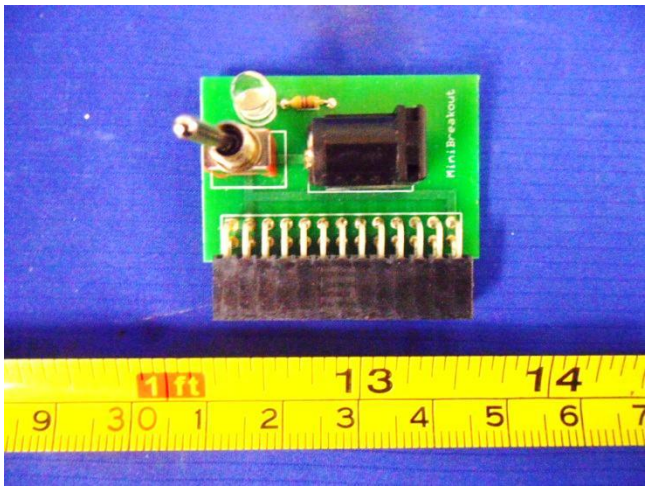
6.4 EUT Photos



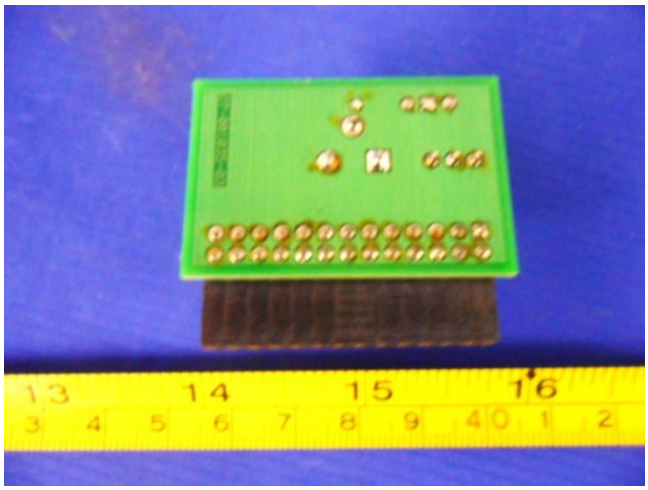
EUT – PCBA 1 Component Side



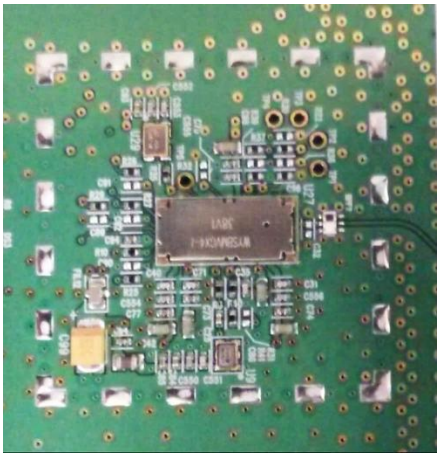
EUT – PCBA 1 Solder Side



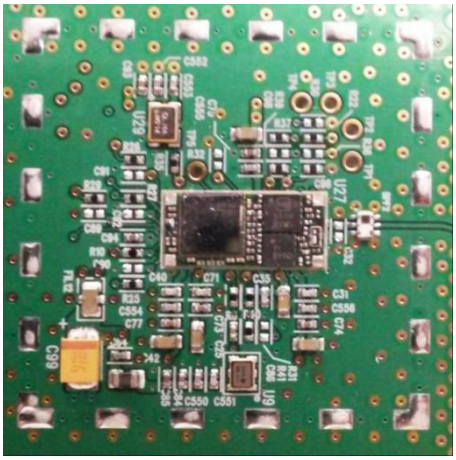
EUT – PCBA1 Component Side



EUT – PCBA1 Solder Side

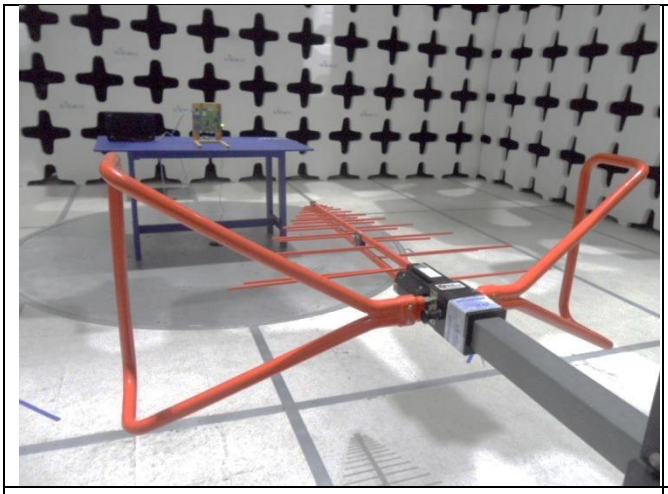


EUT – WLAN Radio with Shielding

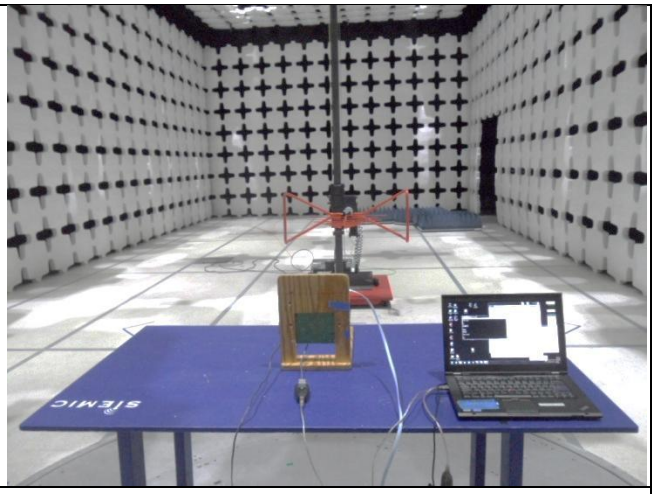


EUT – WLAN Radio without Shielding

6.5 EUT Test Setup Photos

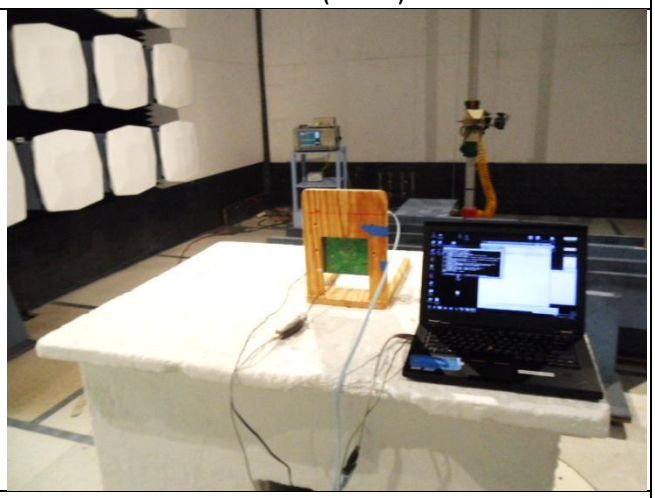


Radiated Emissions (<1GHz) – Front View

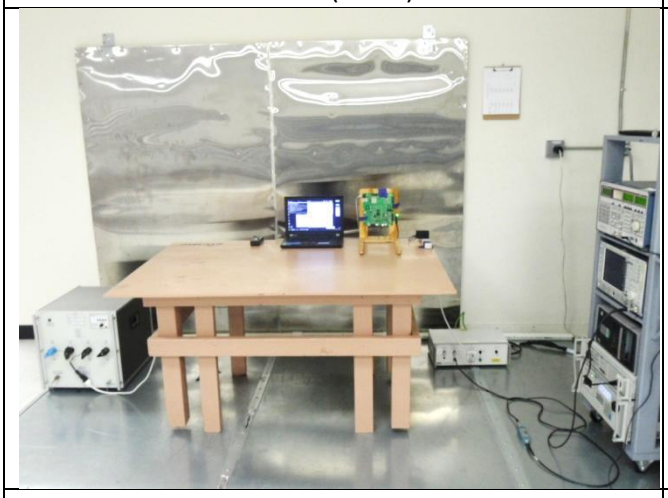


Radiated Emissions (<1GHz) – Rear View

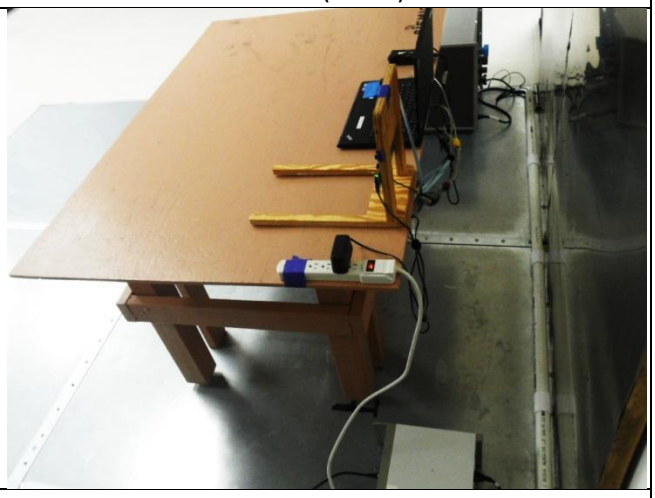
Radiated Emissions (>1GHz) – Front View



Radiated Emissions (>1GHz) – Rear View



Conducted Emissions – AC Line Front View



Conducted Emissions – AC Line Rear View

7 Supporting Equipment/Software and cabling Description

7.1 Supporting Equipment

Item	Supporting Equipment Description	Model	Serial Number	Manufacturer	Note
1	Laptop	ThinkPad	R90152737	Lenovo	-
2	AC/DC Power Supply	EPSA050250U	-	V-Infinity	-

7.2 Cabling Description

Name	Connection Start		Connection Stop		Length / shielding Info		Note
	From	I/O Port	To	I/O Port	Length (m)	Shielding	
-	EUT	Ethernet	Laptop	USB	0.5M	No	-
-	EUT	I/O	Laptop	USB	0.5M	No	

7.3 Test Software Description

Test Item	Software	Description
RF Testing	Labtool and Tera Term	Set the EUT to transmit continuously in different test modes

8 Test Summary

Test Item	Test standard		Test Method/Procedure		Pass / Fail
Restricted Band of Operation	FCC/IC	15.205 RSS 210 (2.2)	FCC/IC	ANSI C63.10 – 2009 558074 D01 DTS Meas Guidance v03r02	☒ Pass ☐ N/A
AC Conducted Emissions Voltage	FCC/IC	15.207(a) RSS Gen (7.2.4)	FCC/IC	ANSI C63.10 – 2009 RSS Gen (7.2.4)	☒ Pass ☐ N/A

Test Item	Test standard		Test Method/Procedure		Pass / Fail
Channel Separation	FCC/IC	15.247 (a)(1) RSS210 (A8.1)	FCC/IC	-	☐ Pass ☒ N/A
Occupied Bandwidth	FCC/IC	15.247 (a)(1) RSS210 (A8.1)	FCC/IC	RSS Gen (4.6.1)	☒ Pass ☐ N/A
6 dB Bandwidth	FCC/IC	15.247(a)(2) RSS210 (A8.2)	FCC/IC	558074 D01 DTS Meas Guidance v03r02	☒ Pass ☐ N/A
Number of Hopping Channels	FCC/IC	15.247(a)(1) RSS210(A8.1)	FCC/IC	-	☐ Pass ☒ N/A
Band Edge and Radiated Spurious Emissions	FCC/IC	15.247(d) RSS210(A8.5)	FCC/IC	ANSI C63.10 – 2009 558074 D01 DTS Meas Guidance v03r02	☒ Pass ☐ N/A
Time of Occupancy	FCC/IC	15.247(a)(1) RSS210(A8.1)	FCC/IC	-	☐ Pass ☒ N/A
Output Power	FCC/IC	15.247(b) RSS210 (A8.4)	FCC/IC	558074 D01 DTS Meas Guidance v03r02	☒ Pass ☐ N/A
Receiver Spurious Emissions	FCC/IC	15.247(d) RSS Gen (4.8)	FCC/IC	RSS Gen (4.6.1)	☐ Pass ☒ N/A
Antenna Gain > 6 dBi	FCC/IC	15.247(e) RSS210(A8.4)	FCC/IC	-	☐ Pass ☒ N/A
Power Spectral Density	FCC/IC	15.247(e) RSS210(A8.3)	FCC/IC	558074 D01 DTS Meas Guidance v03r02	☒ Pass ☐ N/A
Hybrid System Requirement	FCC/IC	15.247(f) RSS210(A8.3)	FCC/IC	-	☐ Pass ☒ N/A
Hopping Capability	FCC/IC	15.247(g) RSS210(A8.1)	FCC/IC	-	☐ Pass ☒ N/A
Hopping Coordination Requirement	FCC/IC	15.247(h) RSS210(A8.1)	FCC/IC	-	☐ Pass ☒ N/A
RF Exposure requirement	FCC/IC	15.247(i) RSS Gen (5.5)	FCC/IC	-	☐ Pass ☒ N/A
Remark	1. All measurement uncertainties do not take into consideration for all presented test results. 2. The applicant shall ensure frequency stability by showing that an emission is maintained within the band of operation under all normal operating conditions as specified in the user's manual.				

9 Measurement Uncertainty

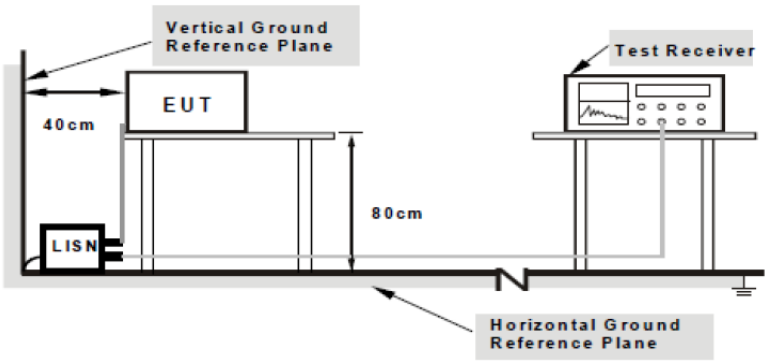
Emissions			
Test Item	**Frequency Range**	**Description**	**Uncertainty**
Band Edge and Radiated Spurious Emissions	30MHz – 1GHz	Confidence level of approximately 95% (in the case where distributions are normal), with a coverage factor of 2 (for EUTs < 0.5m X 0.5m X 0.5m)	+5.6dB/-4.5dB
Band Edge and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

10 Measurements, Examination and Derived Results

10.1 Conducted Emissions

Conducted Emission Limit

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

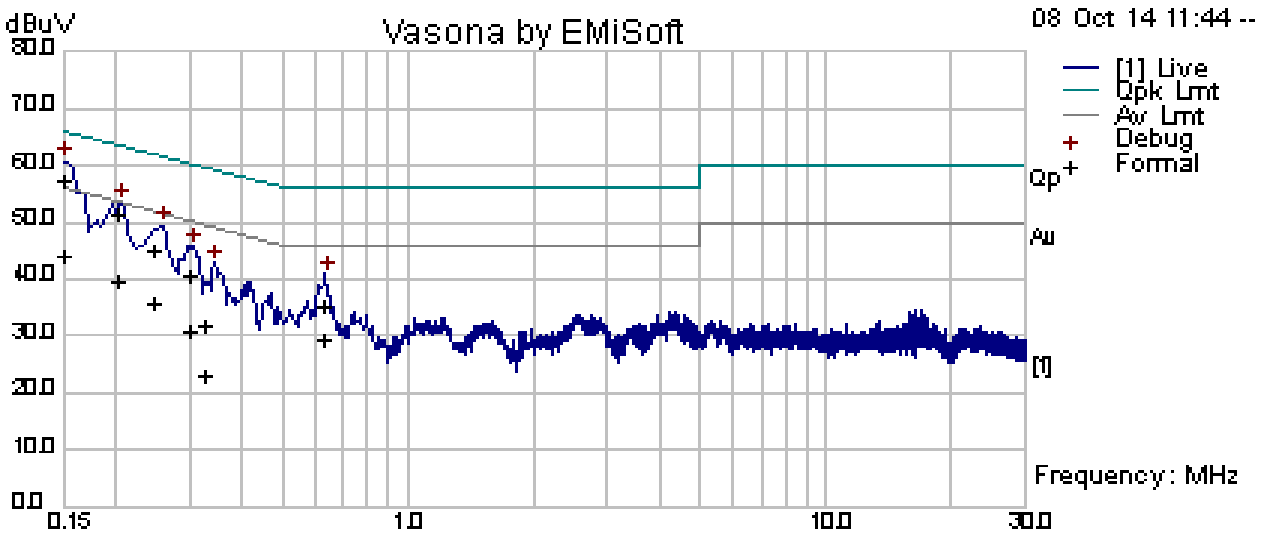
Spec	Item	Requirement	Applicable
47CFR§15.207 RSS210(A8.1)	a)	For Low-power radio-frequency devices that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). The lower limit applies at the boundary between the frequency ranges.	☒
Test Setup	 Note: 1.Support units were connected to second LISN. 2.Both of LISNs (AMN) are 80cm from EUT and at least 80cm from other units and other metal planes support units.		
Procedure	- The EUT and supporting equipment were set up in accordance with the requirements of the standard on top of a 1.5m x 1m x 0.8m high, non-metallic table, as shown in Annex B. - The power supply for the EUT was fed through a 50Ω/50μH EUT LISN, connected to filtered mains. - The RF OUT of the EUT LISN was connected to the EMI test receiver via a low-loss coaxial cable. - All other supporting equipment was powered separately from another main supply.		
Remark	EUT tested with an AC/DC power adapter at 120VAC/ 60Hz		
Result	☒ Pass ☐ Fail		

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Conducted Emission Test Results (Live)

Test specification	Conducted Emission s			
Environmental Conditions:	Temp (°C):	24.5	Result	Pass
	Humidity (%)	48.2		
	Atmospheric (mbar):	1020		
Mains Power:	120VAC, 60Hz			
Tested by:	Teody Manansala			
Test Date:	10/08/2014			
Remarks:	Live Line			

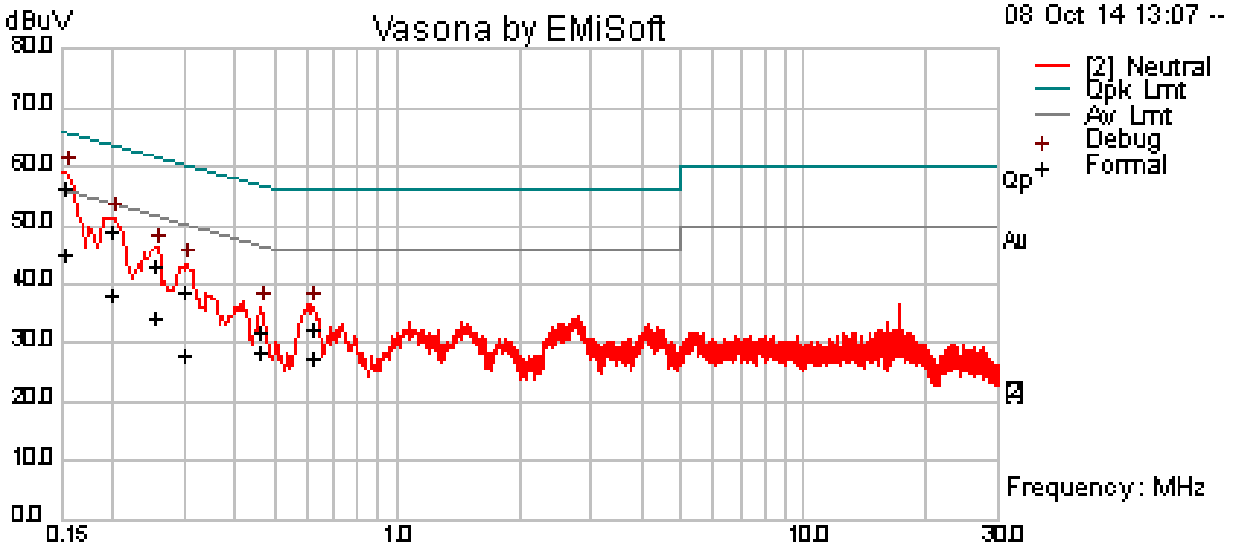


Live Line Plot at 120Vac, 60Hz

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	Factors (dB)	Level (dBuV)	Measurement Type	Line	Limit (dBuV)	Margin (dB)	Pass /Fail
0.15	46.60	10.00	0.76	57.35	Quasi Peak	Live	65.99	-8.63	Pass
0.20	40.93	10.00	0.74	51.68	Quasi Peak	Live	63.53	-11.85	Pass
0.25	34.32	10.00	0.73	45.05	Quasi Peak	Live	61.84	-16.79	Pass
0.30	29.96	10.00	0.71	40.67	Quasi Peak	Live	60.29	-19.62	Pass
0.63	24.57	10.01	0.75	35.33	Quasi Peak	Live	56.00	-20.67	Pass
0.33	21.32	10.01	0.71	32.04	Quasi Peak	Live	59.52	-27.48	Pass
0.15	33.41	10.00	0.76	44.17	Average	Live	55.99	-11.82	Pass
0.20	28.77	10.00	0.74	39.52	Average	Live	53.53	-14.01	Pass
0.25	25.16	10.00	0.73	35.89	Average	Live	51.84	-15.95	Pass
0.30	20.41	10.00	0.71	31.12	Average	Live	50.29	-19.17	Pass
0.63	18.77	10.01	0.75	29.53	Average	Live	46.00	-16.47	Pass
0.33	12.11	10.01	0.71	22.83	Average	Live	49.52	-26.69	Pass

Conducted Emission Test Results (Neutral)

Test specification	Conducted Emissions			
Environmental Conditions:	Temp (°C):	24.5	Result	Pass
	Humidity (%)	48.2		
	Atmospheric (mbar):	1020		
Mains Power:	120VAC, 60Hz			
Tested by:	Teody Manansala			
Test Date:	10/08/2014			
Remarks:	Neutral Line			



Live Line Plot at 120Vac, 60Hz

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	Factors (dB)	Level (dBuV)	Measurement Type	Line	Limit (dBuV)	Margin (dB)	Pass /Fail
0.15	45.72	10.00	0.76	56.48	Quasi Peak	Neutral	65.92	-9.44	Pass
0.20	38.17	10.00	0.74	48.92	Quasi Peak	Neutral	63.66	-14.74	Pass
0.25	32.50	10.00	0.72	43.23	Quasi Peak	Neutral	61.62	-18.40	Pass
0.30	27.84	10.00	0.71	38.55	Quasi Peak	Neutral	60.19	-21.64	Pass
0.62	21.73	10.01	0.75	32.49	Quasi Peak	Neutral	56.00	-23.51	Pass
0.46	21.18	10.01	0.73	31.92	Quasi Peak	Neutral	56.69	-24.77	Pass
0.15	34.19	10.00	0.76	44.95	Average	Neutral	55.92	-10.97	Pass
0.20	27.63	10.00	0.74	38.38	Average	Neutral	53.66	-15.28	Pass
0.25	23.75	10.00	0.72	34.48	Average	Neutral	51.62	-17.15	Pass
0.30	17.35	10.00	0.71	28.06	Average	Neutral	50.19	-22.13	Pass
0.62	16.75	10.01	0.75	27.51	Average	Neutral	46.00	-18.49	Pass
0.46	17.77	10.01	0.73	28.51	Average	Neutral	46.69	-18.18	Pass

10.2 6dB Bandwidth

Requirement(s):

Spec	Item	Requirement	Applicable
RSS210 (A8.2)	a)	6dB BW≥500KHz;	☒
RSS Gen	(4.6.1)	99% BW: For FCC reference only; required by IC.	☒

Test Setup	
Test Procedure	6dB Emission bandwidth measurement procedure - Set RBW = 100 kHz. - Set the video bandwidth (VBW) ⩾ 3 x RBW. - Detector = Peak. - Trace mode = max hold. - Sweep = auto couple. - Allow the trace to stabilize. - Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission. 99% Occupied bandwidth measurement procedure - Allow the trace to stabilize. - Use the spectrum analyzer built-in measurement function to determine the 99% OBW. o Set RBW = close to 1% of the selected span o Set VBW = 3 x RBW o Detector = Peak o Trace mode = max hold o Sweep = auto couple - Capture the plot. - Repeat above steps for different test channel and other modulation type.

Test Date	10/09/2014	Environmental condition	Temperature Relative Humidity Atmospheric Pressure	22ºC 42% 1021mbar
Remark	N/A			
Result	☒ Pass ☐ Fail			

Equipment Setting

Test	RBW	VBW	Span	Detector	Sweep	Trace	Notes
6 dB DTS Bandwidth	1-5% of DTS BW (≤100KHz)	3 x RBW	>EBW	PK	Auto	Max hold	-
99% OBW	1% of selected span	3 x RBW	>EBW	PK	Auto	Max hold	-

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes ☐ N/A

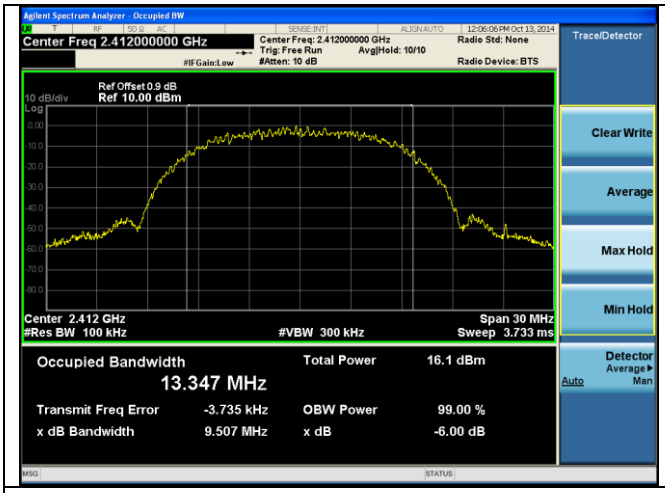
6dB Bandwidth measurement result for 2.4GHz

Type	Test mode	Freq (MHz)	CH	Result (MHz)	Limit (MHz)	Result
6dB BW	802.11b	2412	Low	9.507	≥0.5	Pass
6dB BW	802.11b	2437	Mid	9.510	≥0.5	Pass
6dB BW	802.11b	2462	High	9.506	≥0.5	Pass
6dB BW	802.11g	2412	Low	16.530	≥0.5	Pass
6dB BW	802.11g	2437	Mid	16.520	≥0.5	Pass
6dB BW	802.11g	2462	High	16.520	≥0.5	Pass
6dB BW	802.11n-20M	2412	Low	17.660	≥0.5	Pass
6dB BW	802.11n-20M	2437	Mid	17.800	≥0.5	Pass
6dB BW	802.11n-20M	2462	High	17.790	≥0.5	Pass

99% Bandwidth measurement result

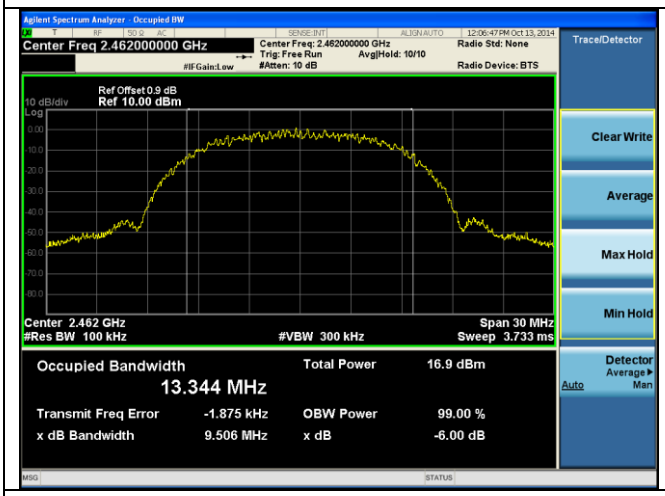
Type	Test mode	Freq (MHz)	CH	Result (MHz)	Limit (MHz)	Result
99% OBW	802.11b	2412	Low	13.298	-	-
99% OBW	802.11b	2437	Mid	13.288	-	-
99% OBW	802.11b	2462	High	13.302	-	-
99% OBW	802.11g	2412	Low	16.657	-	-
99% OBW	802.11g	2437	Mid	16.655	-	-
99% OBW	802.11g	2462	High	16.663	-	-
99% OBW	802.11n-20M	2412	Low	17.807	-	-
99% OBW	802.11n-20M	2437	Mid	17.806	-	-
99% OBW	802.11n-20M	2462	High	17.811	-	-

6dB Bandwidth Test Plots

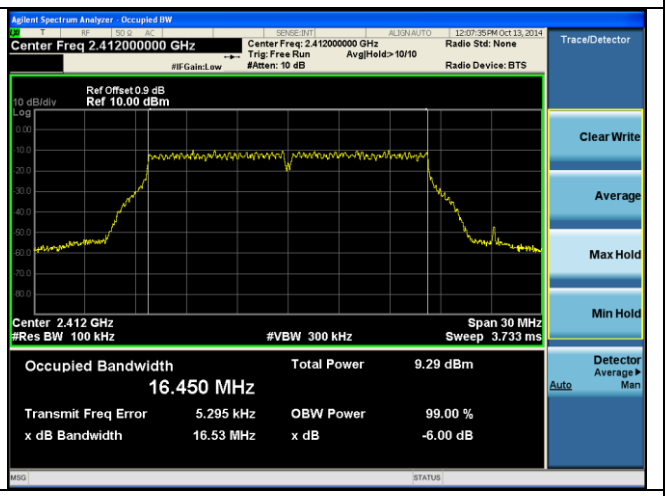


6dB BW - 2.4G 802.11b 2412MHz

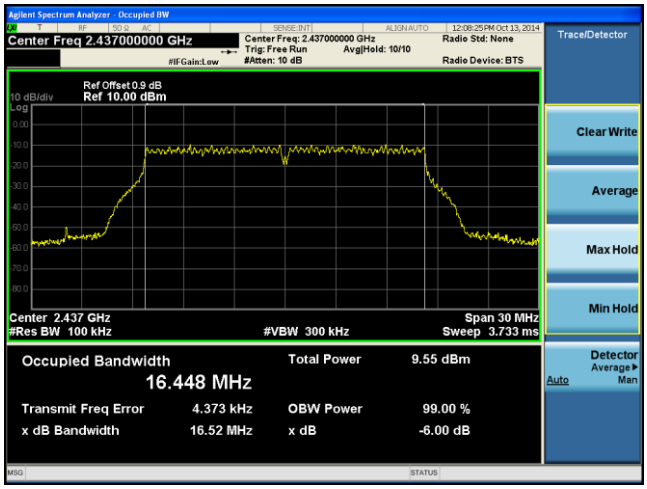
6dB BW - 2.4G 802.11b 2437MHz



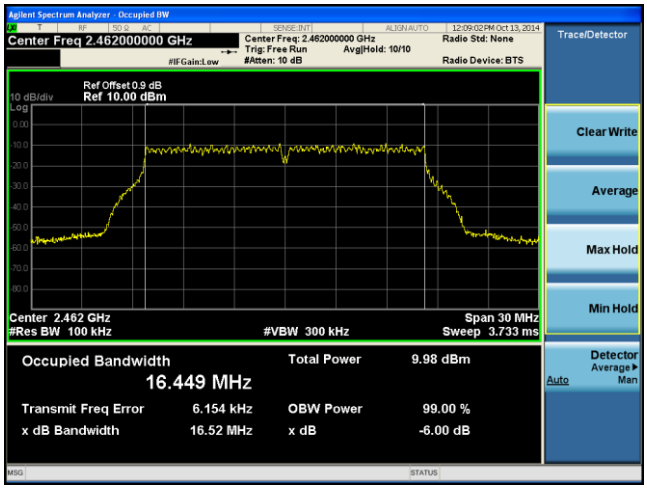
6dB BW - 2.4G 802.11b 2462MHz



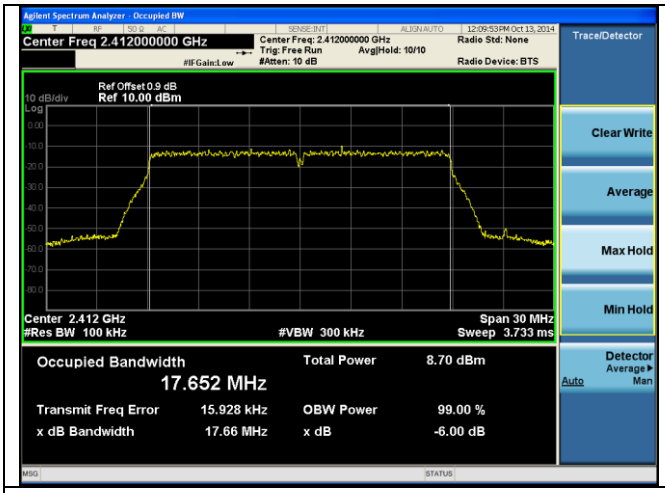
6dB BW - 2.4G 802.11g 2412MHz



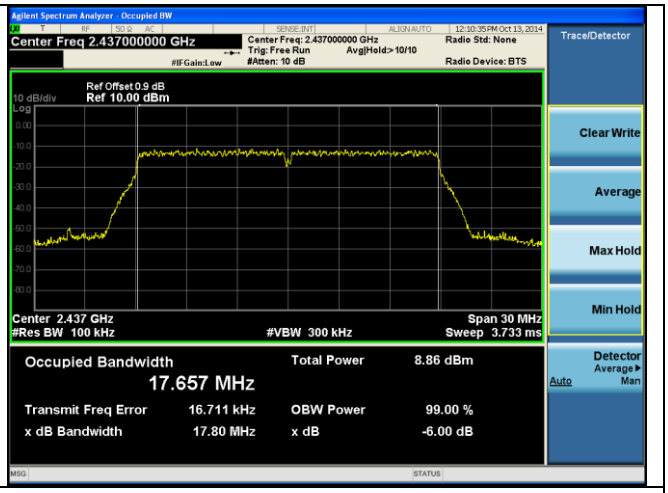
6dB BW - 2.4G 802.11g 2437MHz



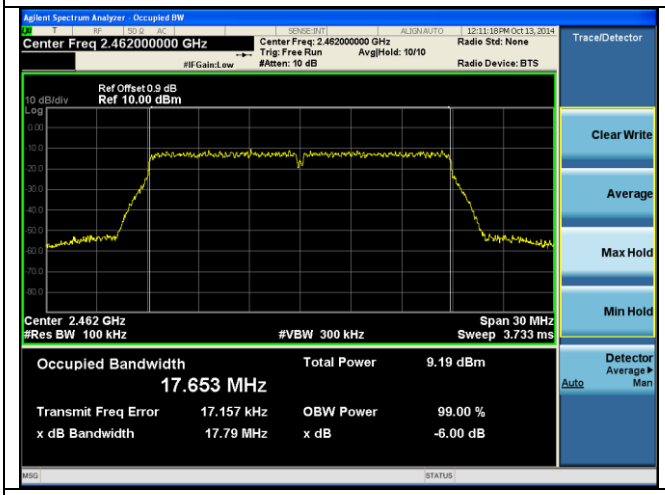
6dB BW - 2.4G 802.11g 2462MHz



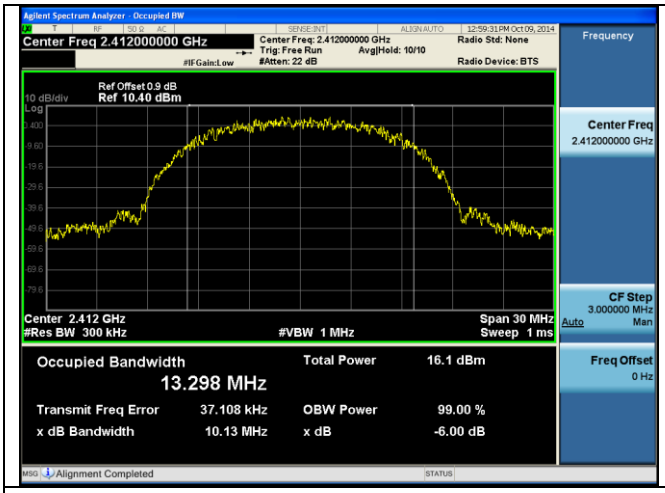
6dB BW - 2.4G 802.11n 2412MHz



6dB BW - 2.4G 802.11n 2437MHz

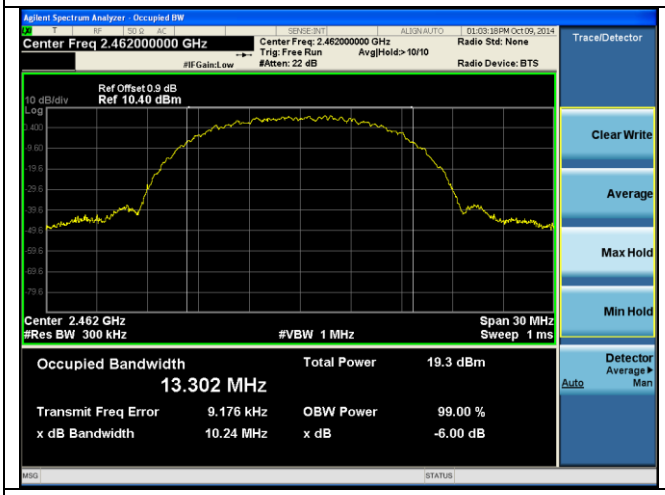


6dB BW - 2.4G 802.11n 246MHz

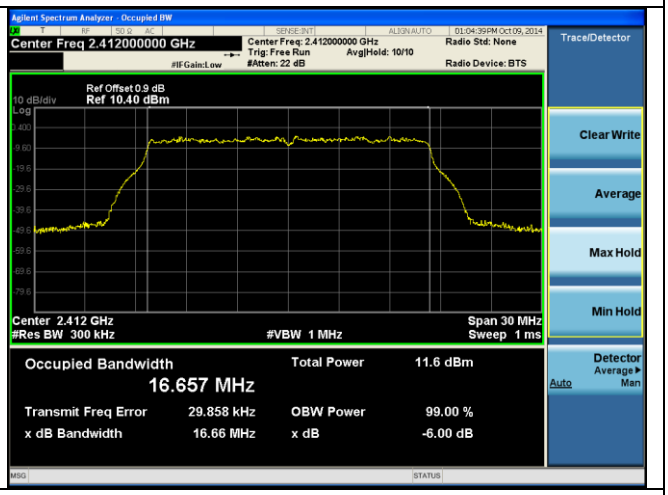


99% OBW - 2.4G 802.11b 2412MHz

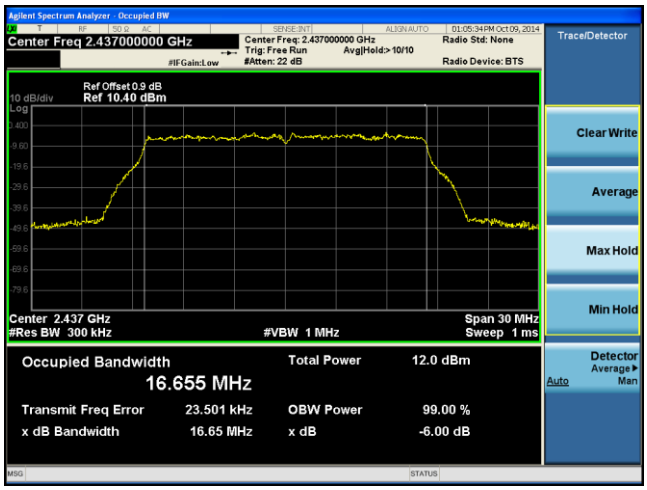
99% OBW - 2.4G 802.11b 2437MHz



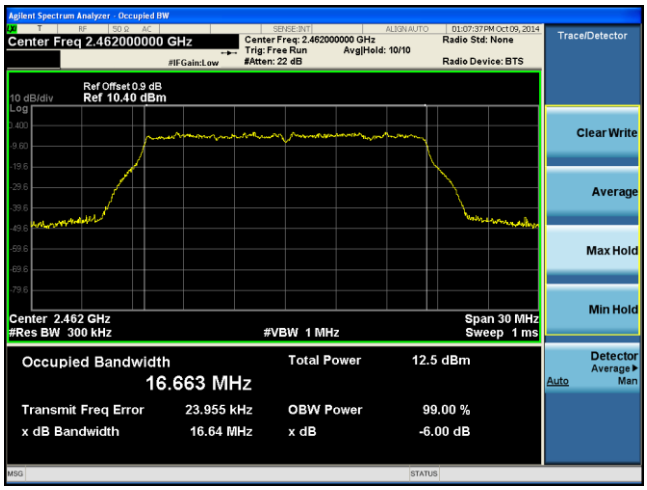
99% OBW - 2.4G 802.11b 2462MHz



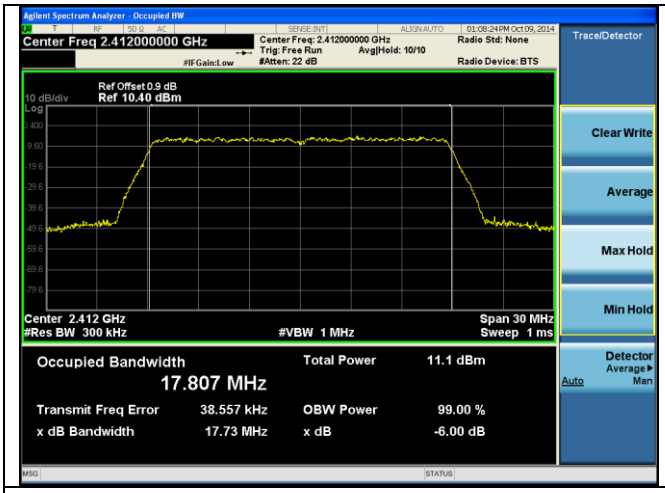
99% OBW - 2.4G 802.11g 2412MHz



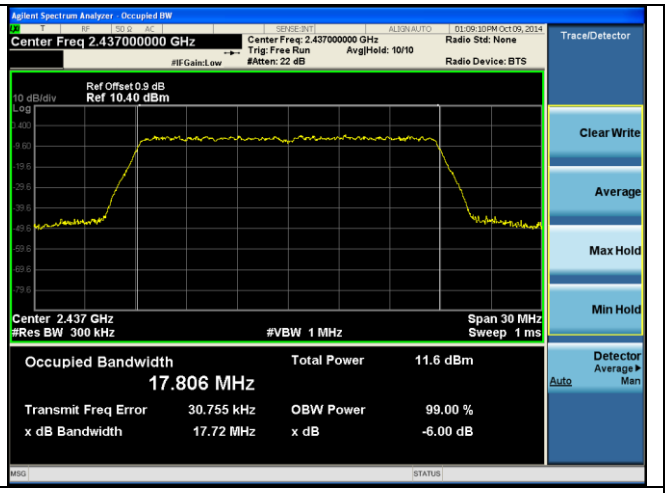
99% OBW - 2.4G 802.11g 2437MHz



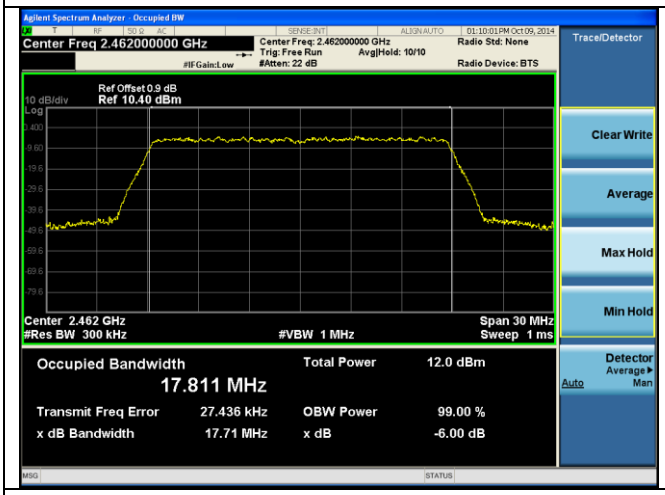
99% OBW - 2.4G 802.11g 2462MHz



99% OBW - 2.4G 802.11n 2412MHz



99% OBW - 2.4G 802.11n 2437MHz



99% OBW - 2.4G 802.11n 246MHz

10.3 Peak Output Power

Requirement(s):

Spec	Item	Requirement	Applicable
§ 15.247 RSS210 (A8.4)	a)	FHSS in 2400-2483.5MHz with ≥ 75 channels: ≤1 Watt	☐
	b)	FHSS in 5725-5850MHz: ≤1 Watt	☐
	c)	For all other FHSS in the 2400-2483.5MHz band: ≤0.125 Watt.	☐
	d)	FHSS in 902-928MHz with ≥ 50 channels: ≤1 Watt	☐
	e)	FHSS in 902-928MHz with ≥ 25 & <50 channels: ≤0.25 Watt	☐
	f)	DSSS in 902-928MHz, 2400-2483.5MHz, 5725-5850MHz: ≤1 Watt	☒

Test Setup			
Test Procedure	558074 D01 DTS Meas Guidance v03r02, 9.2.2.2 Maximum output power measurement procedure - Set the RBW = 1-5% of the OBW, not to exceed 1 MHz - Set the VBW ⩾ 3x RBW - Set the span ⩾ 1.5 x OBW - Detector = RMS - Sweep time = auto couple. - Trace mode = Trace average - Allow trace to fully stabilize. - Compute power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function, with band limits set equal to the OBW band edges.		
Test Date	10/09/2014	Environmental condition	Temperature 23ºC Relative Humidity 44% Atmospheric Pressure 1021mbar
Remark	-		
Result	☒ Pass ☐ Fail		

Equipment Setting

Test	RBW	VBW	Span	Detector	Sweep	Trace	Notes
PK output power	1MHz	≥3 X RBW	≥1.5 X OBW	RMS	Auto	Trace average	-

Test Data ☒ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☒ N/A

Output Power measurement results

Type	Test mode	Freq (MHz)	CH	Conducted Power (dBm)	Limit (dBm)	Result
Output power	802.11b	2412	Low	14.1	30	Pass
Output power	802.11b	2437	Mid	17.9	30	Pass
Output power	802.11b	2462	High	17.8	30	Pass
Output power	802.11g	2412	Low	12.9	30	Pass
Output power	802.11g	2437	Mid	12.4	30	Pass
Output power	802.11g	2462	High	12.0	30	Pass
Output power	802.11n	2412	Low	13.0	30	Pass
Output power	802.11n	2437	Mid	12.5	30	Pass
Output power	802.11n	2462	High	12.1	30	Pass

10.4 Band Edge

Requirement(s):

Spec	Requirement	Applicable
§ 15.247 (d) RSS210 (A8.5)	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	☒
Test Setup		
Test Procedure	558074 D01 DTS Meas Guidance v03r02, 13.3 Method Band Edge measurement procedure (Integration Method) - Set analyzer center frequency to the frequency of the emission to be measured. - Set the span to 2 MHz. - Set RBW = 100 kHz - Set VBW ⩾ 3 · RBW - Detector = RMS - Averaging type = power - Sweep time = auto - Compute the power by integrating the spectrum over 1 MHz using the analyzer's band power measurement function with band limits set equal to the emission frequency (femission) ± 0.5 MHz. If the instrument does not have a band power function, then sum the amplitude levels (in power units) at 100 kHz intervals extending across the 1 MHz spectrum defined by femission ± 0.5 MHz.	

Test Date	10/09/2014	Environmental condition	Temperature 22°C Relative Humidity 46% Atmospheric Pressure 1020mbar
Remark	–		
Result	☒ Pass ☐ Fail		

Equipment Setting

Test	RBW	VBW	Span	Detector	Sweep	Trace	Notes
Band Edge	100KHz	≥3 x RBW	2MHz	RMS	Auto	Trace average	-

Test Data ☒ Yes ☐ N/A

Test Plot ☐ Yes (See below) ☒ N/A

Band Edge Test Results

Type	Freq (MHz)	CH	Conducted Band Edge (dBm/100KHz)	PSD (dBm/100KHz)	Difference (dB)	Limit (dB)	Result
802.11b Band Edge	2400	Low	-63.13	-11.14	51.99	≥30	Pass
802.11b Band Edge	2483.5	High	-75.20	-11.37	63.83	≥30	Pass
802.11g Band Edge	2400	Low	-64.08	-19.22	44.86	≥30	Pass
802.11g Band Edge	2483.5	High	-75.15	-19.33	55.82	≥30	Pass
802.11n Band Edge	2400	Low	-64.02	-19.38	44.64	≥30	Pass
802.11n Band Edge	2483.5	High	-75.10	-19.60	55.50	≥30	Pass

10.5 Peak Spectral Density

Requirement(s):

Spec	Item	Requirement	Applicable
§ 15.247(e) RSS210 (A8.3)	e)	DSSS: ≤ 8dBm/3KHz	☒
	f)	DSSS in hybrid sys with FH turned off: ≤8dBm/3KHz	☐
Test Setup			
Test Procedure	558074 D01 DTS Meas Guidance v03r02, 10.3 Method AVGPSD-1 Peak spectral density measurement procedure - Set analyzer center frequency to DTS channel center frequency. - Set the span to 1.5 times the DTS bandwidth. - Set the RBW to: 3 kHz ≤ RBW ≤ 100 kHz. - Set the VBW ≥ 3 x RBW. - Detector = RMS - Sweep time = auto couple. - Trace mode = Trace average over 100 traces - Allow trace to fully stabilize. - Use the peak marker function to determine the maximum amplitude level within the RBW. - If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.		
Test Date	10/09/2014	Environmental condition	Temperature 24°C Relative Humidity 46% Atmospheric Pressure 1020mbar
Remark	-		
Result	☒ Pass ☐ Fail		

Equipment Setting

Test	RBW	VBW	Span	Detector	Sweep	Trace	Notes
PSD	100KHz	≥3x RBW	1.5x DTS BW	RMS	Auto	Trace average	-

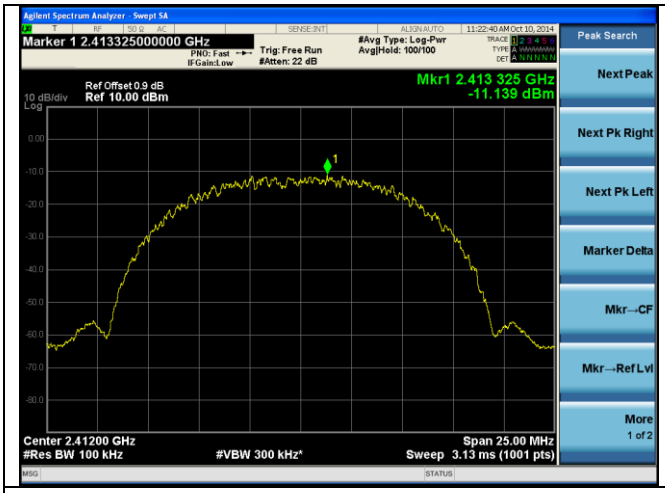
Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

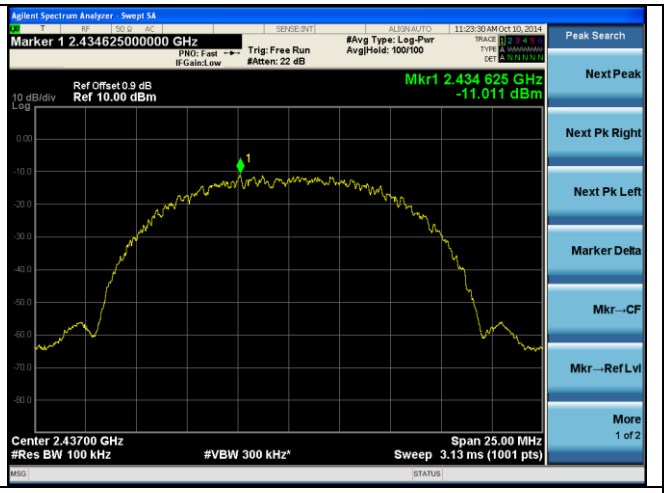
PSD Test Results

Type	Freq (MHz)	Test mode	CH	Conducted PSD (dBm/100KHz)	Limit (dBm/3KHz)	Result
PSD	802.11b	2412	Low	-11.139	≤8	Pass
PSD	802.11b	2437	Mid	-11.011	≤8	Pass
PSD	802.11b	2462	High	-11.369	≤8	Pass
PSD	802.11g	2412	Low	-19.216	≤8	Pass
PSD	802.11g	2437	Mid	-19.316	≤8	Pass
PSD	802.11g	2462	High	-19.331	≤8	Pass
PSD	802.11n	2412	Low	-19.376	≤8	Pass
PSD	802.11n	2437	Mid	-19.317	≤8	Pass
PSD	802.11n	2462	High	-19.604	≤8	Pass

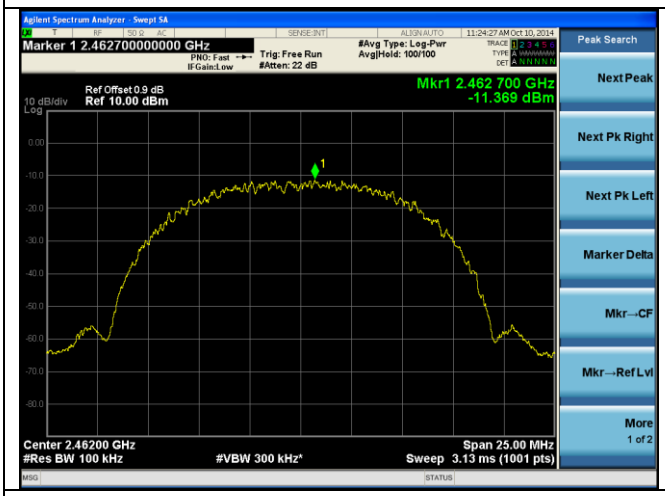
Test Plots



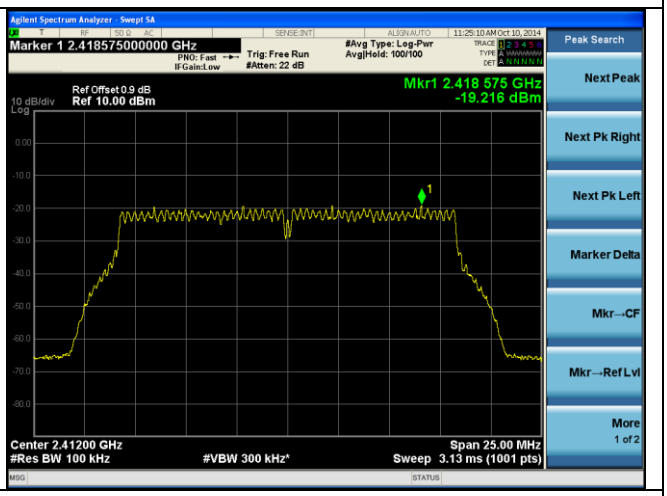
PSD-2.4G - 802.11b Low



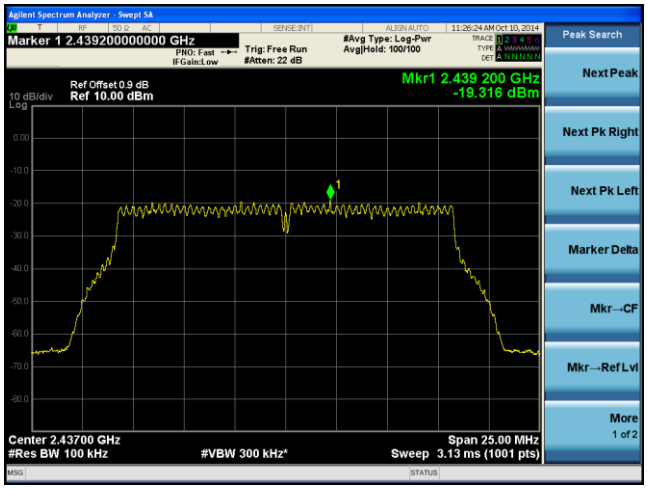
PSD-2.4G - 802.11b Mid



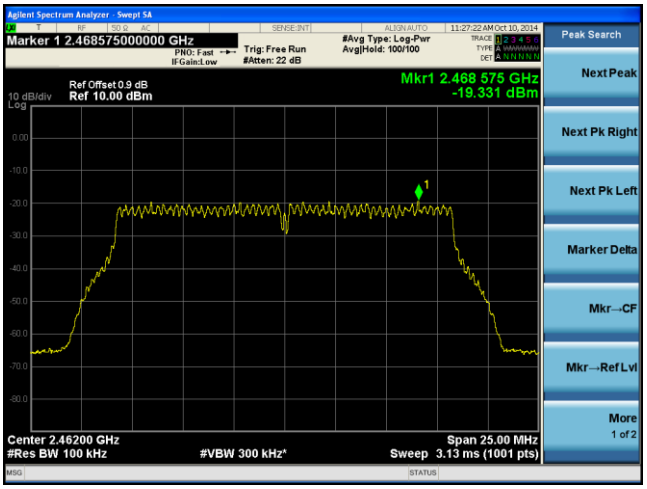
PSD-2.4G - 802.11b High



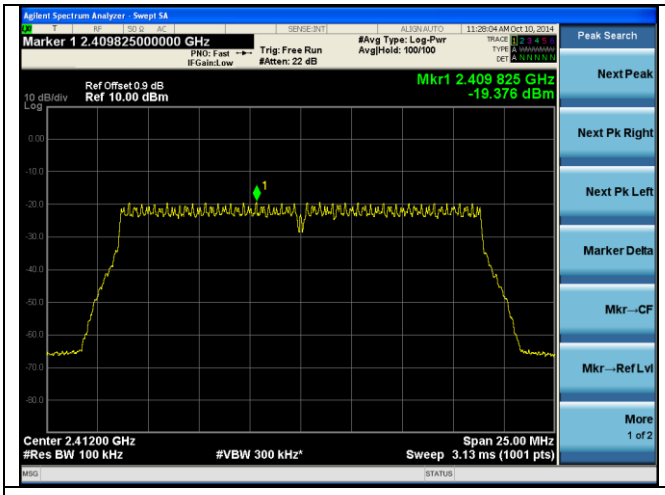
PSD-2.4G - 802.11g Low



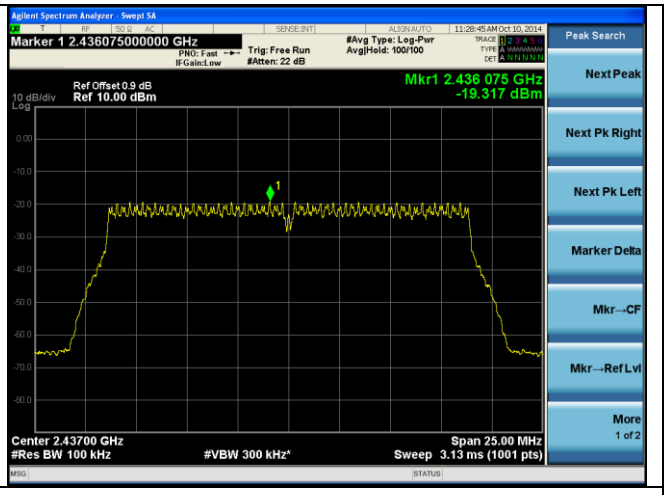
PSD-2.4G - 802.11g Mid



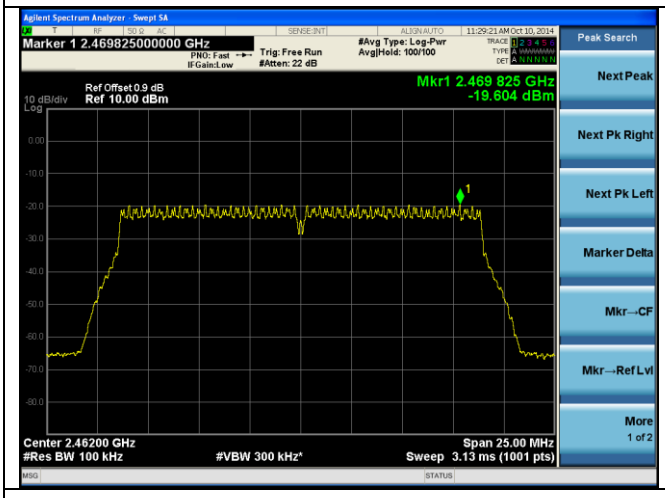
PSD-2.4G - 802.11g High



PSD-2.4G - 802.11n Low



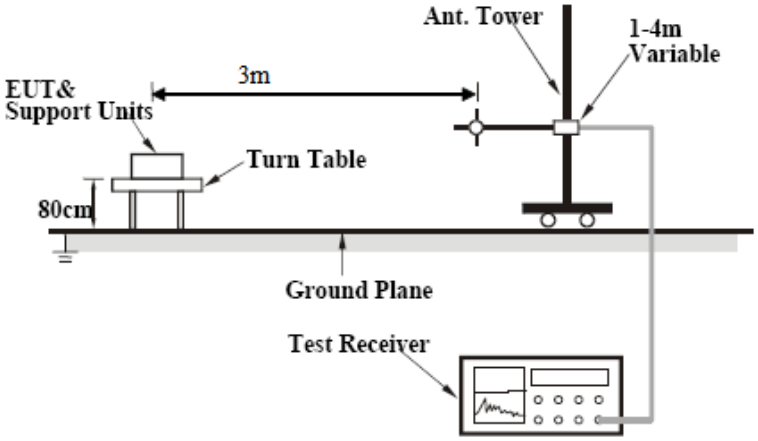
PSD-2.4G - 802.11n Mid



PSD-2.4G - 802.11n High

10.6 Radiated Emissions below 1GHz

Requirement(s):

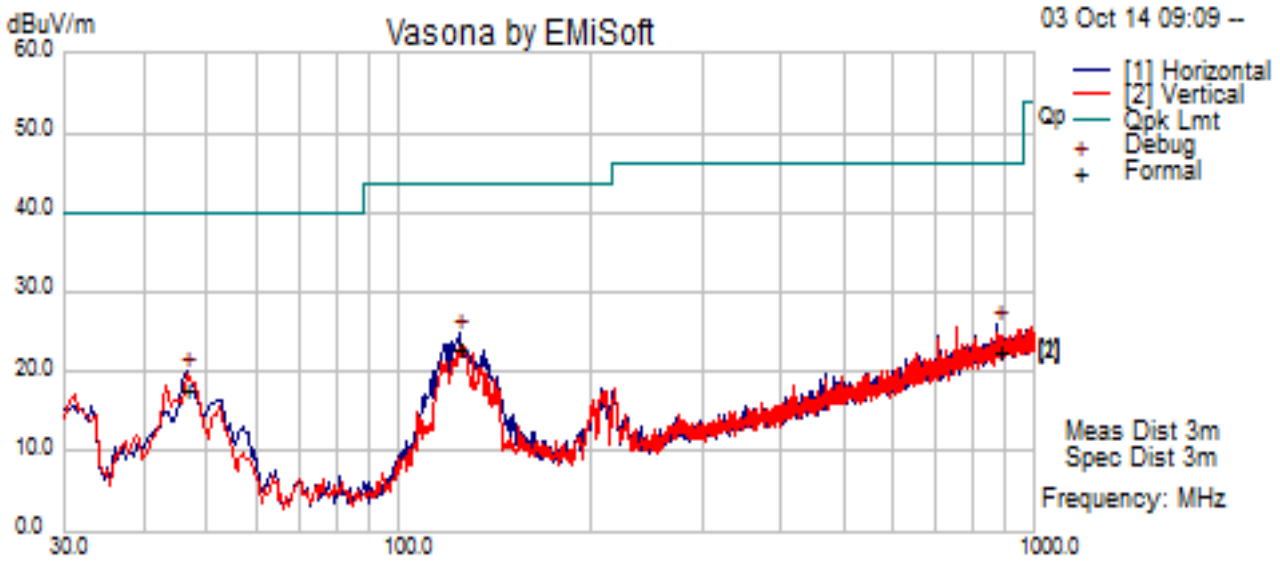
<table>
<tr><th>Spec</th><th>Item</th><th>Requirement</th><th>Applicable</th></tr>
<tr><td>47CFR§15.247(d), RSS210(A8.5)</td><td>a)</td><td>Except higher limit as specified elsewhere in other section, the emissions from the low-power radio-frequency devices shall not exceed the field strength levels specified in the following table and the level of any unwanted emissions shall not exceed the level of the fundamental emission. The tighter limit applies at the band edges
<table>
<tr><th>Frequency range (MHz)</th><th>Field Strength (uV/m)</th></tr>
<tr><td>30 – 88</td><td>100</td></tr>
<tr><td>88 – 216</td><td>150</td></tr>
<tr><td>216 960</td><td>200</td></tr>
<tr><td>Above 960</td><td>500</td></tr>
</table></td><td>☒</td></tr>
<tr><td>Test Setup</td><td colspan="3"> 
</td></tr>
<tr><td>Procedure</td><td colspan="3">1. The EUT was switched on and allowed to warm up to its normal operating condition.
2. The test was carried out at the selected frequency points obtained from the EUT characterisation. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner:
a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen.
b. The EUT was then rotated to the direction that gave the maximum emission.
c. Finally, the antenna height was adjusted to the height that gave the maximum emission.
3. A Quasi-peak measurement was then made for that frequency point.
4. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.</td></tr>
<tr><td>Remark</td><td colspan="3">The EUT was scanned up to 1GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case.</td></tr>
<tr><td>Result</td><td colspan="3">☒ Pass ☐ Fail</td></tr>
</table>

Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Radiated Emission Test Results (Below 1GHz)

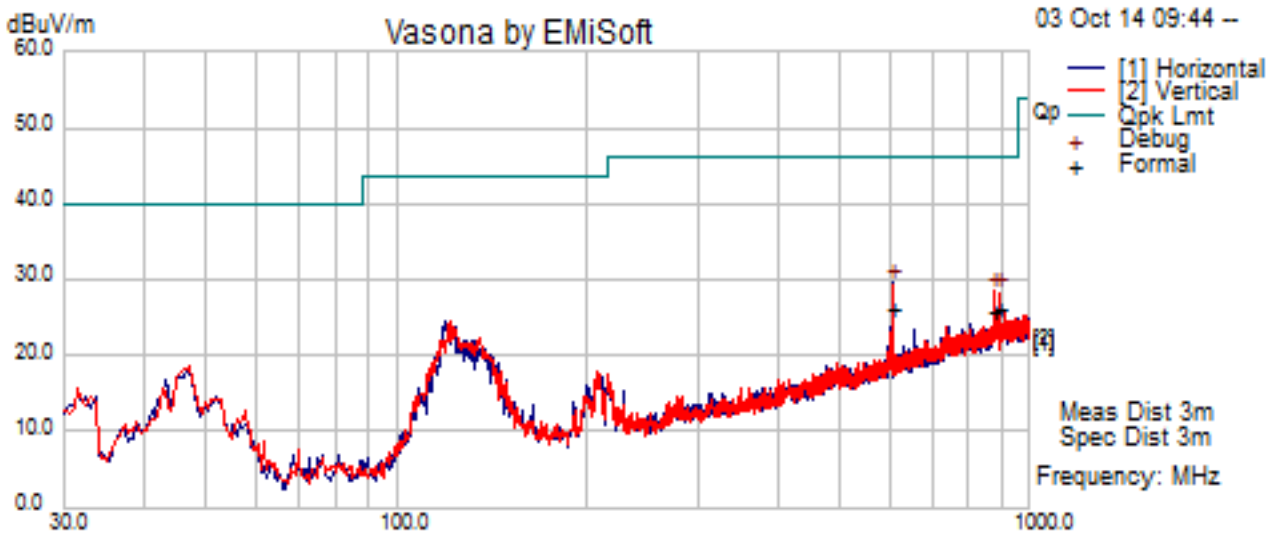
Test specification	below 1GHz			
Environmental Conditions:	Temp (°C):	26.1	Result	Pass
	Humidity (%)	47.5		
	Atmospheric (mbar):	1020		
Mains Power:	120VAC, 60Hz			
Tested by:	Teody Manansala			
Test Date:	10/03/2014			
Remarks:	2.4GHz, 802.11b – 2437MHz			



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
46.54	44.99	1.16	-28.53	17.62	Quasi Max	H	170.00	252.00	40.00	-22.38	Pass
124.56	46.72	2.04	-25.92	22.84	Quasi Max	H	275.00	65.00	43.50	-20.66	Pass
874.67	34.36	4.96	-17.05	22.27	Quasi Max	H	372.00	247.00	46.00	-23.73	Pass

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

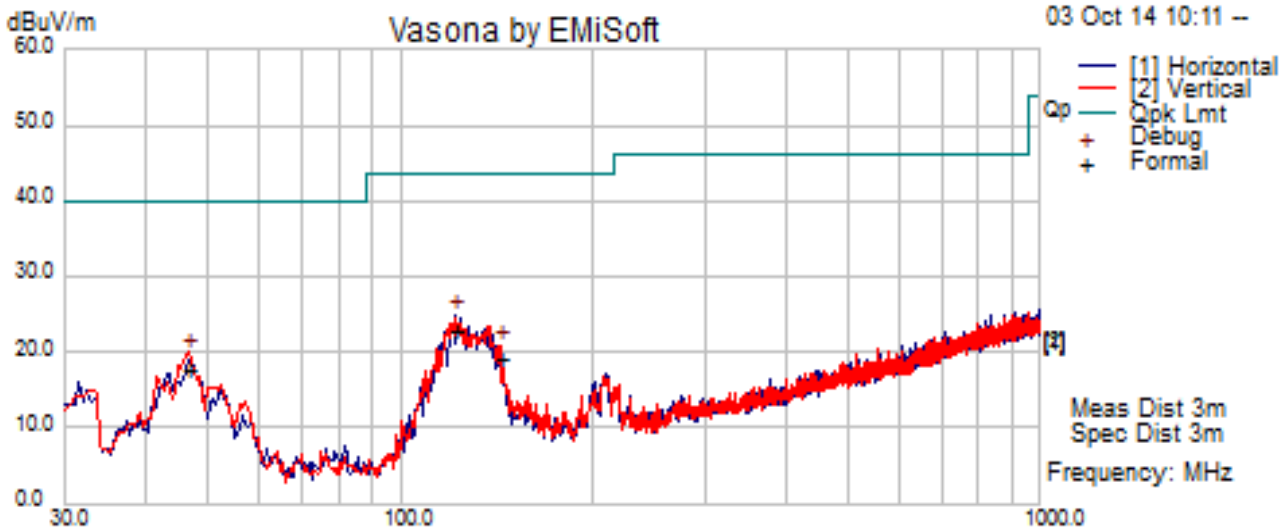
Test specification	below 1GHz			
Environmental Conditions:	Temp (°C):	26.1	Result	Pass
	Humidity (%)	47.5		
	Atmospheric (mbar):	1020		
Mains Power:	120VAC, 60Hz			
Tested by:	Teody Manansala			
Test Date:	10/03/2014			
Remarks:	2.4GHz, 802.11g – 2437MHz			



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
607.45	42.69	4.20	-20.69	26.20	Quasi Max	H	293.00	115.00	46.00	-19.80	Pass
874.65	37.95	4.96	-17.05	25.86	Quasi Max	V	178.00	31.00	46.00	-20.14	Pass
890.23	38.03	4.99	-16.81	26.20	Quasi Max	V	230.00	58.00	46.00	-19.80	Pass

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

Test specification	below 1GHz			
Environmental Conditions:	Temp (°C):	26.1	Result	Pass
	Humidity (%)	47.5		
	Atmospheric (mbar):	1020		
Mains Power:	120VAC, 60Hz			
Tested by:	Teody Manansala			
Test Date:	10/03/2014			
Remarks:	2.4GHz, 802.11n – 2437MHz			

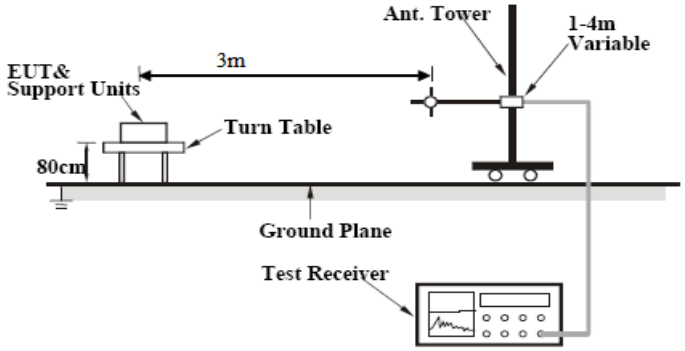


Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
121.23	46.80	2.02	-26.04	22.78	Quasi Max	H	379.00	241.00	43.50	-20.72	Pass
46.41	44.84	1.16	-28.46	17.55	Quasi Max	V	223.00	229.00	40.00	-22.45	Pass
143.06	43.69	2.18	-26.78	19.09	Quasi Max	V	204.00	55.00	43.50	-24.41	Pass

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

10.7 Radiated Spurious Emissions above 1GHz

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	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 25GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case.		
Result	☒ Pass ☐ Fail		

Equipment Setting

Test	RBW	VBW	Span	Detector	Sweep	Trace	Notes
Radiated Spurious Emission	1MHz	3MHz	1GHz - 25 GHz	Peak	Auto	Max hold	PK Measurement
Radiated Spurious Emission	1MHz	10Hz	1GHz - 25 GHz	Peak	Auto	Max hold	Ave Measurement

Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☐ Yes (See below) ☒ N/A

Radiated Emission Test Results (Above 1GHz)

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
17932.15	39.48	6.61	14.24	60.32	Peak Max	H	349.00	102.00	74.00	-13.68	Pass
4048.61	40.47	3.33	-0.19	43.60	Peak Max	H	318.00	209.00	74.00	-30.40	Pass
1075.65	45.40	1.81	-7.03	40.19	Peak Max	V	140.00	10.00	74.00	-33.81	Pass
17932.15	26.74	6.61	14.24	47.59	Average Max	H	349.00	102.00	54.00	-6.41	Pass
1075.65	32.70	1.81	-7.03	27.48	Average Max	V	140.00	10.00	54.00	-26.52	Pass
4048.61	27.43	3.33	-0.19	30.57	Average Max	V	225.00	55.00	54.00	-23.43	Pass

Restricted Band – Lower band (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
2390.00	41.75	2.69	-3.53	40.91	Peak Max	V	104.00	113.00	74.00	-33.09	Pass
2390.00	41.35	2.69	-3.54	40.50	Peak Max	H	280.00	12.00	74.00	-33.50	Pass
2390.00	28.10	2.69	-3.53	27.26	Average Max	V	104.00	113.00	54.00	-26.74	Pass
2390.00	28.07	2.69	-3.54	27.22	Average Max	H	280.00	12.00	54.00	-26.78	Pass

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
17888.42	39.61	6.60	14.09	60.30	Peak Max	H	234.00	97.00	74.00	-13.70	Pass
4194.51	41.42	3.37	-0.22	44.56	Peak Max	V	210.00	119.00	74.00	-29.44	Pass
1017.00	46.93	1.76	-7.15	41.53	Peak Max	H	150.00	282.00	74.00	-32.47	Pass
17888.42	26.85	6.60	14.09	47.54	Average Max	H	234.00	97.00	54.00	-6.46	Pass
4194.51	27.96	3.37	-0.22	31.10	Average Max	V	210.00	119.00	54.00	-22.90	Pass
1017.00	34.36	1.76	-7.15	28.97	Average Max	H	150.00	282.00	54.00	-25.03	Pass

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
17984.66	39.96	6.61	14.41	60.98	Peak Max	H	279.00	187.00	74.00	-13.02	Pass
4100.34	40.49	3.34	-0.20	43.62	Peak Max	V	298.00	47.00	74.00	-30.38	Pass
1008.10	47.10	1.75	-7.17	41.68	Peak Max	V	101.00	261.00	74.00	-32.32	Pass
17984.66	26.66	6.61	14.41	47.69	Average Max	H	279.00	187.00	54.00	-6.31	Pass
4100.34	27.34	3.34	-0.20	30.48	Average Max	V	298.00	47.00	54.00	-23.52	Pass
1008.10	34.28	1.75	-7.17	28.85	Average Max	V	101.00	261.00	54.00	-25.15	Pass

Restricted Band – Higher band (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
2483.50	39.88	2.72	-3.32	39.28	Peak Max	V	128.00	183.00	74.00	-34.72	Pass
2483.50	40.00	2.72	-3.32	39.41	Peak Max	H	185.00	46.00	74.00	-34.59	Pass
2483.50	26.81	2.72	-3.32	26.21	Average Max	V	128.00	183.00	54.00	-27.79	Pass
2483.50	26.87	2.72	-3.32	26.27	Average Max	H	185.00	46.00	54.00	-27.73	Pass

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
17941.70	39.84	6.61	14.27	60.72	Peak Max	V	345.00	254.00	74.00	-13.28	Pass
15469.41	40.21	6.50	10.14	56.85	Peak Max	V	269.00	82.00	74.00	-17.15	Pass
4076.28	39.58	3.33	-0.20	42.72	Peak Max	H	233.00	105.00	74.00	-31.28	Pass
17941.70	26.88	6.61	14.27	47.76	Average Max	V	345.00	254.00	54.00	-6.24	Pass
15469.41	27.87	6.50	10.14	44.51	Average Max	V	269.00	82.00	54.00	-9.49	Pass
4076.28	26.95	3.33	-0.20	30.09	Average Max	H	233.00	105.00	54.00	-23.91	Pass

Restricted Band – Lower band (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
2390.00	41.62	2.69	-3.54	40.77	Peak Max	V	168.00	332.00	74.00	-33.23	Pass
2390.00	41.22	2.69	-3.54	40.37	Peak Max	H	131.00	52.00	74.00	-33.63	Pass
2390.00	28.28	2.69	-3.54	27.43	Average Max	V	168.00	332.00	54.00	-26.57	Pass
2390.00	28.27	2.69	-3.54	27.42	Average Max	H	131.00	52.00	54.00	-26.58	Pass

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
17891.20	39.48	6.60	14.10	60.19	Peak Max	V	99.00	329.00	74.00	-13.81	Pass
11926.52	41.43	5.25	6.44	53.12	Peak Max	V	271.00	131.00	74.00	-20.88	Pass
1008.33	47.62	1.75	-7.17	42.20	Peak Max	H	313.00	123.00	74.00	-31.80	Pass
17891.20	26.80	6.60	14.10	47.50	Average Max	V	99.00	329.00	54.00	-6.50	Pass
11926.52	28.33	5.25	6.44	40.02	Average Max	V	271.00	131.00	54.00	-13.98	Pass
1008.33	34.45	1.75	-7.17	29.03	Average Max	H	313.00	123.00	54.00	-24.97	Pass

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
17932.24	39.48	6.61	14.24	60.32	Peak Max	H	222.00	156.00	74.00	-13.68	Pass
1009.35	47.36	1.75	-7.17	41.94	Peak Max	V	271.00	114.00	74.00	-32.06	Pass
4074.58	40.75	3.33	-0.20	43.88	Peak Max	H	348.00	184.00	74.00	-30.12	Pass
17932.24	26.76	6.61	14.24	47.61	Average Max	H	222.00	156.00	54.00	-6.39	Pass
1009.35	34.30	1.75	-7.17	28.88	Average Max	V	271.00	114.00	54.00	-25.12	Pass
4074.58	27.69	3.33	-0.20	30.82	Average Max	H	348.00	184.00	54.00	-23.18	Pass

Restricted Band – Higher band (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
2483.50	40.27	2.72	-3.32	39.68	Peak Max	H	264.00	90.00	74.00	-34.32	Pass
2483.50	40.00	2.72	-3.32	39.41	Peak Max	V	310.00	254.00	74.00	-34.59	Pass
2483.50	27.11	2.72	-3.32	26.51	Average Max	H	264.00	90.00	54.00	-27.49	Pass
2483.50	27.10	2.72	-3.32	26.51	Average Max	V	310.00	254.00	54.00	-27.49	Pass

1GHz-25GHz – 802.11n- 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
17957.37	39.84	6.61	14.32	60.77	Peak Max	H	205.00	57.00	74.00	-13.23	Pass
14490.48	41.86	6.29	10.95	59.10	Peak Max	V	333.00	212.00	74.00	-14.90	Pass
1017.25	46.66	1.76	-7.15	41.27	Peak Max	V	312.00	115.00	74.00	-32.73	Pass
17957.37	26.71	6.61	14.32	47.64	Average Max	H	205.00	57.00	54.00	-6.36	Pass
14490.48	28.97	6.29	10.95	46.20	Average Max	V	333.00	212.00	54.00	-7.80	Pass
1017.25	33.89	1.76	-7.15	28.49	Average Max	V	312.00	115.00	54.00	-25.51	Pass

Restricted Band – Lower band (802.11n-20M-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
2390.00	40.41	2.69	-3.54	39.56	Peak Max	H	236.00	224.00	74.00	-34.44	Pass
2390.00	40.81	2.69	-3.53	39.97	Peak Max	V	154.00	2.00	74.00	-34.03	Pass
2390.00	27.94	2.69	-3.54	27.10	Average Max	H	236.00	224.00	54.00	-26.90	Pass
2390.00	28.02	2.69	-3.53	27.18	Average Max	V	154.00	2.00	54.00	-26.82	Pass

1GHz-25GHz- 802.11n-20M - 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
17770.44	40.25	6.59	13.69	60.53	Peak Max	V	197.00	2.00	74.00	-13.47	Pass
5138.39	42.30	3.63	0.51	46.45	Peak Max	V	315.00	272.00	74.00	-27.55	Pass
1009.76	47.23	1.75	-7.17	41.81	Peak Max	H	202.00	2.00	74.00	-32.19	Pass
17770.44	26.93	6.59	13.69	47.21	Average Max	V	197.00	2.00	54.00	-6.79	Pass
5138.39	29.28	3.63	0.51	33.42	Average Max	V	315.00	272.00	54.00	-20.58	Pass
1009.76	34.46	1.75	-7.17	29.04	Average Max	H	202.00	2.00	54.00	-24.96	Pass

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
17931.78	39.97	6.61	14.24	60.81	Peak Max	V	302.00	354.00	74.00	-13.19	Pass
4161.00	40.75	3.36	-0.22	43.89	Peak Max	H	134.00	348.00	74.00	-30.11	Pass
1007.44	46.98	1.75	-7.17	41.55	Peak Max	V	123.00	182.00	74.00	-32.45	Pass
17931.78	26.72	6.61	14.24	47.56	Average Max	V	302.00	354.00	54.00	-6.44	Pass
4161.00	27.65	3.36	-0.22	30.79	Average Max	H	134.00	348.00	54.00	-23.21	Pass
1007.44	34.02	1.75	-7.17	28.60	Average Max	V	123.00	182.00	54.00	-25.40	Pass

Restricted Band – Higher band (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
2483.50	39.88	2.72	-3.32	39.28	Peak Max	V	250.00	195.00	74.00	-34.72	Pass
2483.50	40.00	2.72	-3.31	39.42	Peak Max	H	310.00	81.00	74.00	-34.58	Pass
2483.50	26.87	2.72	-3.32	26.27	Average Max	V	250.00	195.00	54.00	-27.73	Pass
2483.50	26.78	2.72	-3.31	26.20	Average Max	H	310.00	81.00	54.00	-27.80	Pass

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

Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Cycle	Cal Due	In use
Conducted Emissions						
R & S Receiver	ESIB 40	100179	04/20/2014	1 Year	04/20/2015	☑
R&S LISN	ESH2-Z5	861741/013	05/18/2014	1 Year	05/18/2015	☑
CHASE LISN	MN2050B	1018	07/24/2014	1 Year	07/24/2015	☑
Sekonic Hygro Hermograph	ST-50	HE01-000092	05/25/2014	1 Year	05/25/2015	☑
Radiated Emissions						
R & S Receiver	ESL6	100178	03/01/2014	1 Year	03/01/2015	☑
R & S Receiver	ESIB 40	100179	04/20/2014	1 Year	04/20/2015	☑
ETS-Lingren Loop Antenna	6512	00049120	05/13/2014	1 Year	05/13/2015	☐
Bi-Log antenna (30MHz~2GHz)	JB1	A030702	07/03/2014	1 Year	07/03/2015	☑
Horn Antenna (1-26.5GHz)	3115	10SL0059	04/26/2014	1 Year	04/26/2015	☑
Horn Antenna (18-40 GHz)	AH-840	101013	04/23/2014	1 Year	04/23/2015	☑
Pre-Amplifier (1-26.5GHz)	8449B	3008A00715	05/30/2014	1 Year	05/30/2015	☑
Microwave Preamplifier (18-40 GHz)	PA-840	181251	05/30/2014	1 Year	05/30/2015	☑
3 Meters SAC	3M	N/A	10/13/2013	1 Year	10/13/2014	☑
10 Meters SAC	10M	N/A	06/05/2014	1 Year	06/05/2015	☑
Sekonic Hygro Hermograph	ST-50	HE01-000092	05/25/2014	1 Year	05/25/2015	☑
RF Conducted Measurement						
Spectrum Analyzer	N9010A	MY50210206	05/30/2014	1 Year	05/30/2015	☑
Spectrum Analyzer	E4407B	US88441016	05/31/2014	1 Year	05/31/2015	☐
R & S Receiver	ESIB 40	100179	04/20/2014	1 Year	04/20/2015	☑

Annex B. USER MANUAL, BLOCK & CIRCUIT DIAGRAM

Please see attachment

Annex C. 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