RF TEST REPORT

SIEMIC
GLOBAL TESTING & CERTIFICATIONS
YOUR CHOICE FOR- TCB FCB CB NB CAB RCB

Report No.: **SL13020802-SLX-002_FCC-IC(15.247)_Rev1.1**
Supersede Report No.: **SL13020802-SLX-002_FCC-IC(15.247)_Rev1.0**

Applicant	:	Abbott Point of Care
Product Name	:	SDIO Wireless Module
Model No.	:	SX-SDMAN
Test Standard	:	FCC 15.247: 2012 RSS 210 Issue8: 2010
Test Method	:	ANSI C63.4:2009 FCC KDB 558074 D01 v03 r01
FCC ID	:	2AAEX-SDABGN
IC ID	:	7228C-SDABGN
Dates of test	:	May 21rd - May 28th , 2013
Issue Date	:	7/18/2013
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:	
	
Nima Molaei	David Zhang
Test Engineer	Engineer Reviewer

Issued By:

SIEMIC Laboratories
775 Montague Expressway, Milpitas, 95035 CA

ACCREDITED
TESTING CERT # 2742-01

This test report may be reproduced in full only.
Test result presented in this test report is applicable to the representative sample only.

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

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
HongKong	OFTA (US002)	RF , Telecom

CONTENTS

1 Report Revision History

Report No.	Report Version	Description	Issue Date
SL13020802-SLX-002_FCC-IC(15.247)	Original	-	5/28/2013
SL13020802-SLX-002_FCC-IC(15.247)_Rev1.0	1.0	Change FCC and IC ID	7/2/2013
SL13020802-SLX-002_FCC-IC(15.247)_Rev1.1	1.1	Correct EUT internal photo	7/18/2013

2 Executive Summary

The purpose of this test programme was to demonstrate compliance of the FCC, IC certified radio module, SDIO Wireless Module (FCC ID: 2AAEX-SDABGN , IC ID: 7228C-SDABGN), from Abbott Point of Care , and Model: SX-SDMAN, to be installed inside portable host unit of Abbott POC DragonFly Hand-held Blood Analyzer, against the current Stipulated Standards. The SDIO Wireless Module to be installed inside portable host unit of Abbott POC DragonFly Hand-held Blood Analyzer has demonstrated compliance with listed on 1st page.

3 Customer information

Applicant Name	:	Abbott Point of Care
Applicant Address	:	400 College Road East, Princeton, New Jersey, US, 08540
Manufacturer Name	:	Abbott Point of Care
Manufacturer Address	:	400 College Road East, Princeton, New Jersey, US, 08540

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	:	SDIO Wireless Module
Model No.	:	SX-SDMAN
Trade Name	:	Abbott
Serial No.	:	PW100125BA
Input Power	:	3.3VDC
Power Adapter Manu/Model	:	-
Power Adapter SN	:	-
Hardware version	:	-
Software version	:	-
Date of EUT received	:	May 20rd, 2013
Equipment Class/ Category	:	DTS
Clock Frequencies	:	26 MHz
Port/Connectors	:	SDIO

6.2 Radio Description

Radio list	:	802.11a/b/g/n (2.4GHz and 5GHz)
Radio Manu	:	Abbott Point of Care
Radio Model	:	SX-SDMAN
Note: The Bluetooth radio function on this radio module is disabled via software by manufacturer.		

Spec for Radio -

Radio Type	802.11b	802.11g	802.11a	802.11n-20M	802.11n-40M
Operating Frequency	2412-2462MHz	2412-2462MHz	5180-5320MHz 5470-5725MHz 5725-5825MHz	2412-2462MHz 5180-5320MHz 5470-5725MHz 5725-5825MHz	5190-5310MHz 5510-5670MHz 5755-5795MHz
Modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)
Channel Spacing	5MHz	5MHz	20MHz	5MHz(2.4GHz), 20MHz (5GHz)	40MHz
Number of Channels	11 Ch.	11 Ch.	21 Ch.	32 Ch.	14 Ch.
Antenna Type	Embedded antenna: Laird Mini-NanoBlade				
Antenna Gain	Embedded antenna: 2.5 dBi (2.4GHz), 4.8 dBi (5GHz)				
Antenna Connector Type	U.FL connector				

6.3 EUT test modes/configuration Description

Mode	Note
802.11b (11b)	5.5 Mbps (Long GI), PN9
802.11g (11g)	24 Mbps (Long GI), PN9
802.11n 20MHz BW (11n-20: 2.4GHz)	MCS 3 (Long GI), PN9
802.11a (11a)	6 Mbps (Long GI), PN9
802.11n 20MHz BW (11n-20: 5GHz)	MCS0 (Long GI), PN9
802.11n 40MHz BW (11n-40: 5GHz)	MCS3 (Long GI), PN9

Note:

1. Testing purpose for current report is PCII. The worst case test modes were reference to original FCC test report (report number: 32IE0154-HO-01-C-R1).

2. Power setting are:

802.11b: 2412MHz: 13.0dBm, 2437MHz: 13.0dBm, 2462: 13.0dBm (Antenna Port 1)
802.11g: 2412MHz: 8.0dBm, 2437MHz: 13dBm, 2462: 8.5dBm (Antenna Port 1)
802.11n-20: 2412MHz: 7.0dBm, 2437MHz: 12.0dBm, 2462: 7.5dBm (Antenna Port 1)
802.11a: 5745MHz: 13.0dBm, 5785MHz: 13.0dBm, 5825MHz: 13.0dBm (Antenna Port 2)
802.11n-20(5GHz): 5745MHz: 13.0dBm, 5785MHz: 13.0dBm, 5825MHz: 13.0dBm (Antenna Port 2)
802.11n-40(5GHz): 5755 MHz: 13.0dBm, 5795MHz: 13.0dBm (Antenna Port 2)

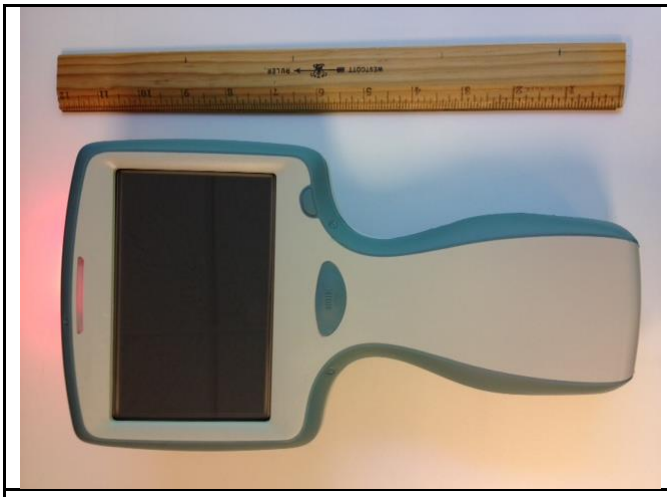
Test Item	Operating mode	Tested antenna port	Test frequencies
Band Edge and Radiated Spurious Emissions	802.11b, 802.11g, 802.11a, 802.11n-20 and 802.11n-40	TX1	2412, 2437, 2462 MHz (802.11 b/g/n-20) 5745, 5785, 5825 MHz (80211 a/n-20) 5755, 5775, 5795 MHz (802 11n-40)

Note:

1. Testing purpose for current report is PCII. The test port selection was reference to original FCC test report (report number: 32IE0154-HO-01-C-R1). The port CN1 was used for measurement due to higher output power (CN1 is TX1 port)

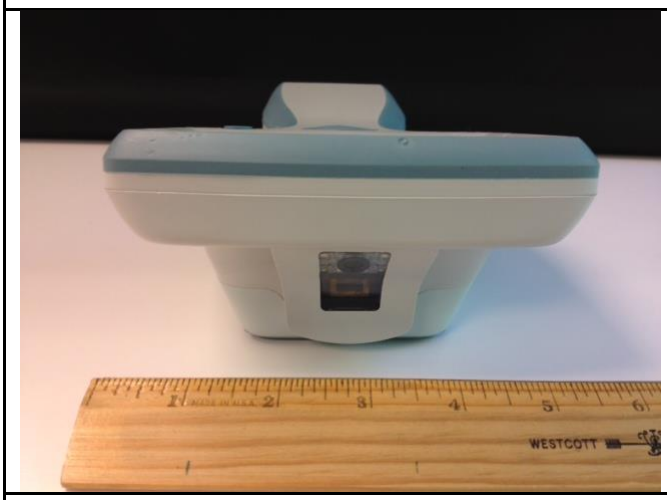
2. EUT has 2 TX ports but they're TX diversity, only one port will be chosen at single moment. They don't transmit simultaneously.

6.4 EUT Photos - External

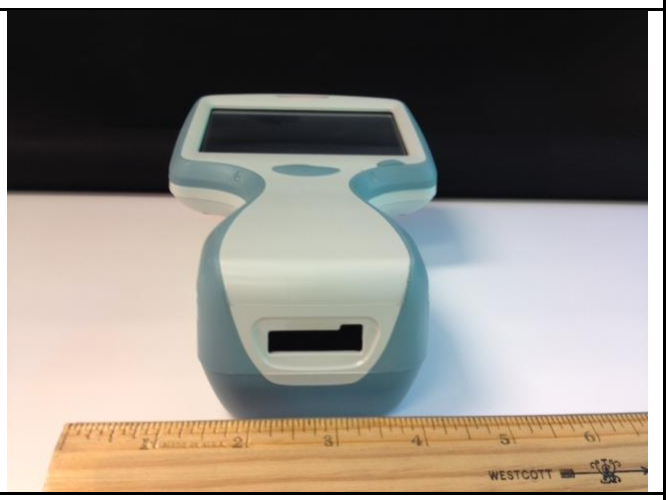


Top

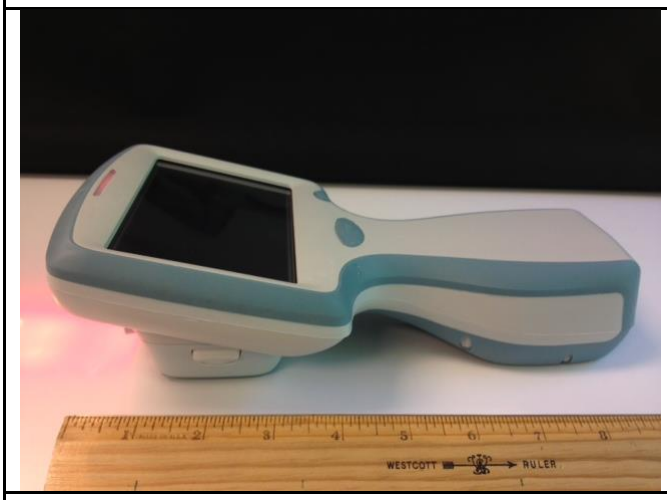
Bottom



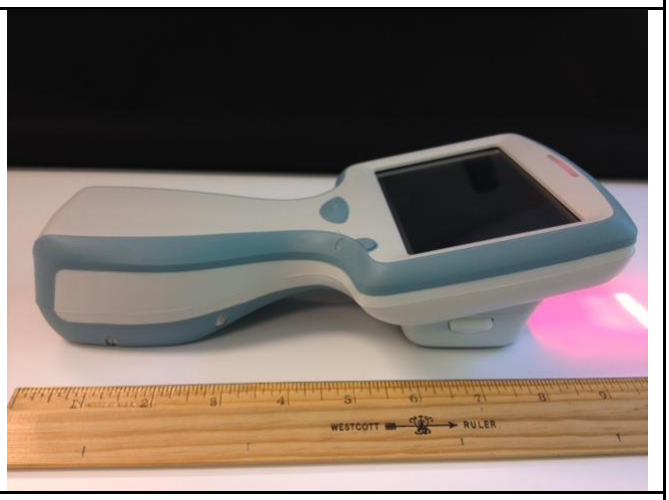
Front



Rear

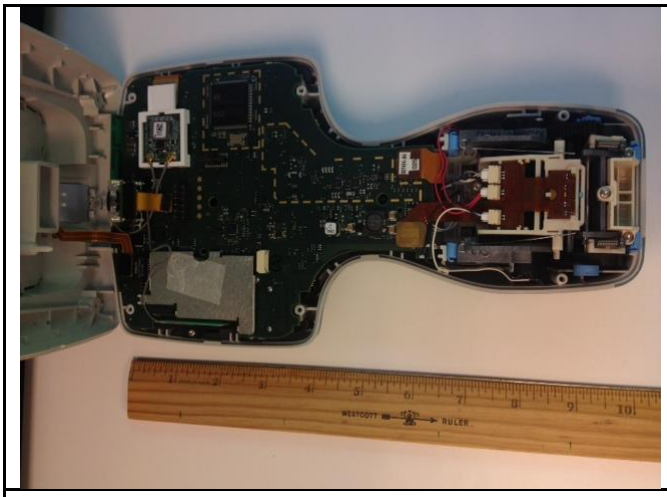


Left Side

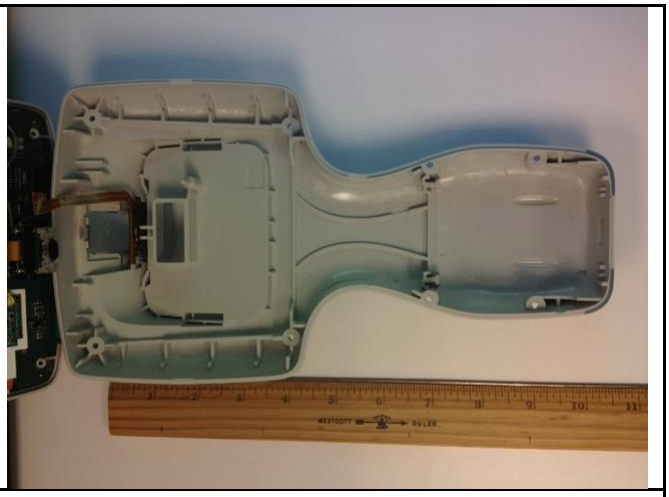


Right Side

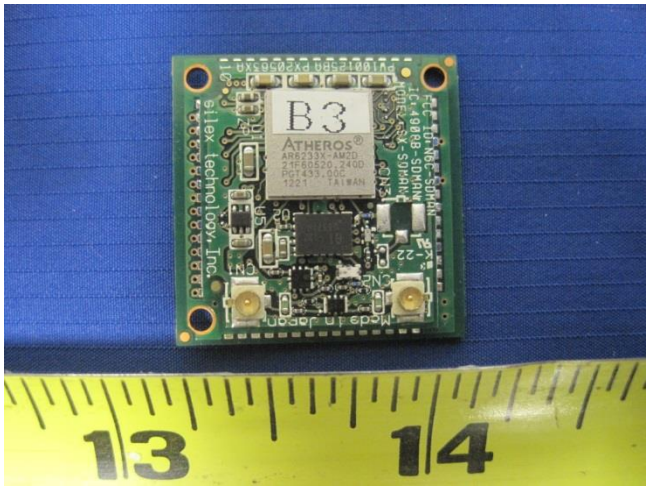
6.5 EUT Photos - Internal



Mainboard with Radio Module



EUT cover

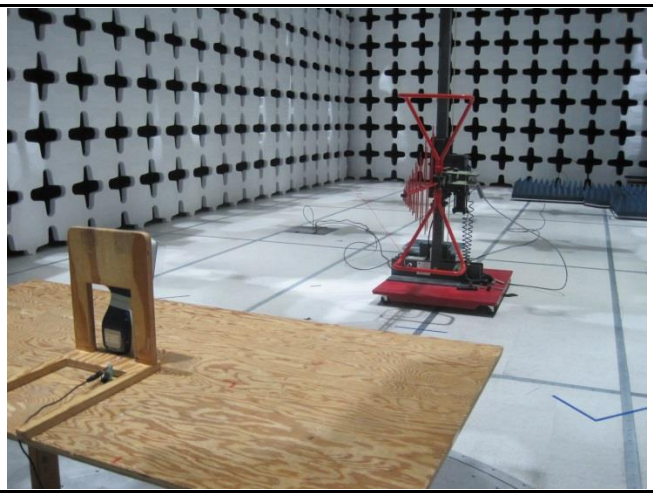


Radio Module – Top zoom in view

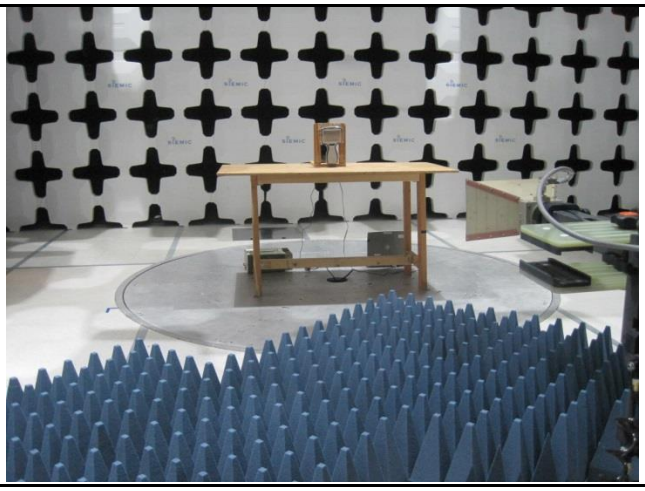
Radio Module – Bottom zoom in view

6.6 EUT Test Setup Photos

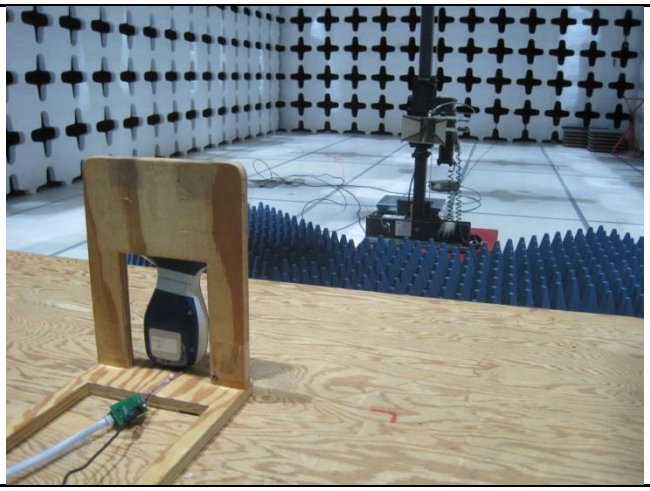
Test setup (<1GHz) - Front



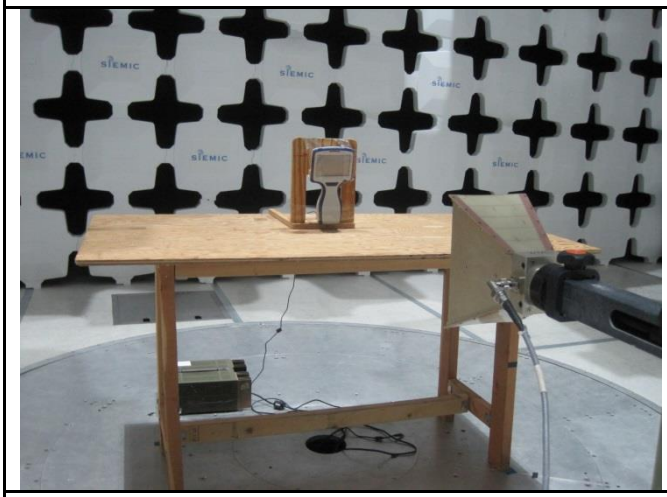
Test setup (<1GHz) - Rear



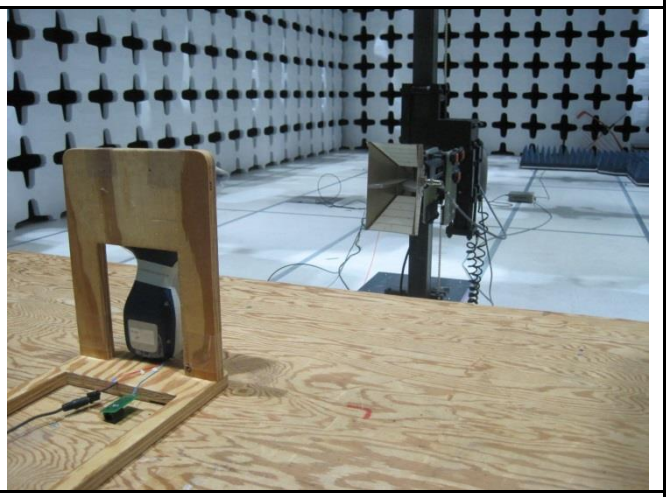
Test setup at 3 meter distance (>1GHz) - Front



Test setup at 3 meter distance (>1GHz) - Rear



Test setup at 1 meter distance (>1GHz) - Front



Test setup at 1 meter distance (>1GHz) - Rear

7 Supporting Equipment/Software and cabling Description

7.1 Supporting Equipment

Index	Supporting Equipment Description	Model	Serial No.	Manu	Note
-	-	-	-	-	-

7.2 Cabling Description

Name	Connection Start		Connection Stop		Length / shielding Info		Note
	From	I/O Port	To	I/O Port	Length (m)	Shielding	
-	-	-	-	-	-	-	-

7.3 Test Software Description

Test Item	Software	Description
Radiated Testing	TTE test software	Set the EUT to different modulation and channel

8 Test Summary

Test Item	Test standard		Test Method/Procedure		Pass / Fail
Restricted Band of Operation	FCC	15.205	FCC	Refer to original test report (32IE0154-HO-01-C-R1)	☐ Pass ☒ N/A
	IC	RSS 210 (2.2)	IC	-	
AC Conducted Emissions Voltage	FCC	15.207(a)	FCC	Refer to original test report (32IE0154-HO-01-C-R1)	☐ Pass ☒ N/A
	IC	RSS Gen (7.2.2)	IC	-	

Test Item	Test standard		Test Method/Procedure		Pass / Fail
Channel Separation	FCC	15.247(a)(1)	FCC	Refer to original test report (32IE0154-HO-01-C-R1)	☐ Pass ☒ N/A
	IC	RSS210(A8.1)	IC	-	
Occupied Bandwidth	FCC	15.247(a)(1)	FCC	Refer to original test report (32IE0154-HO-01-C-R1)	☐ Pass ☒ N/A
	IC	RSS210(A8.1)	IC	-	
Bandwidth	FCC	15.247(a)(2)	FCC	Refer to original test report (32IE0154-HO-01-C-R1)	☐ Pass ☒ N/A
	IC	RSS210 (A8.2)	IC	-	
Number of Hopping Channels	FCC	15.247(a)(1)	FCC	Refer to original test report (32IE0154-HO-01-C-R1)	☐ Pass ☒ N/A
	IC	RSS210(A8.1)	IC	-	
Band Edge and Radiated Spurious Emissions	FCC	15.247(d)	FCC	ANSI C63.4 – 2009 558074 D01 DTS Meas Guidance v03r01	☒ Pass ☐ N/A
	IC	RSS210(A8.5)	IC	-	
Time of Occupancy	FCC	15.247(a)(1)	FCC	Refer to original test report (32IE0154-HO-01-C-R1)	☐ Pass ☒ N/A
	IC	RSS210(A8.1)	IC	-	
Output Power	FCC	15.247(b)	FCC	Refer to original test report (32IE0154-HO-01-C-R1)	☐ Pass ☒ N/A
	IC	RSS210(A8.4)	IC	-	
Antenna Gain > 6 dBi	FCC	RSS210(A8.4)	FCC	Refer to original test report (32IE0154-HO-01-C-R1)	☐ Pass ☒ N/A
	IC	RSS210(A8.4)	IC	-	
Power Spectral Density	FCC	15.247(e)	FCC	Refer to original test report (32IE0154-HO-01-C-R1)	☐ Pass ☒ N/A
	IC	RSS210(A8.3)	IC	-	
Hybrid System Requirement	FCC	15.247(f)	FCC	Refer to original test report (32IE0154-HO-01-C-R1)	☐ Pass ☒ N/A
	IC	RSS210(A8.3)	IC	-	
Hopping Capability	FCC	15.247(g)	FCC	Refer to original test report (32IE0154-HO-01-C-R1)	☐ Pass ☒ N/A
	IC	RSS210(A8.1)	IC	-	
Hopping Coordination Requirement	FCC	15.247(h)	FCC	Refer to original test report (32IE0154-HO-01-C-R1)	☐ Pass ☒ N/A
	IC	RSS210(A8.1)	IC		
RF Exposure requirement	FCC	15.247(i)	FCC	Refer to original test report (32IE0154-HO-01-C-R1)	☐ Pass ☒ N/A
	IC	RSSGen(5.5)	IC		
Remark	1. All measurement uncertainties are not taken into consideration for all presented test result. 2. The applicant shall ensure frequency stability by showing that an emission is maintained within the band of operation under all normal operating conditions as specified in the user's manual.				

9 Measurement Uncertainty

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	1Hz – 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

9.1 Radiated Measurement

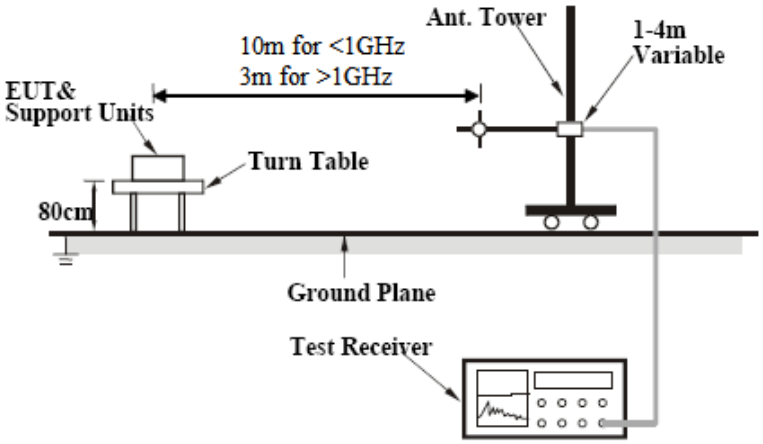
Receiver/Spectrum analyser setting

TEST	Detector	RBW	VBW	Test Distance	NOTES
Radiated Emission < 1GHz (30MHz – 1GHz)	PK/QP	100 KHz	300 KHz	3m	-
Radiated Emission > 1GHz (1GHz – 40GHz)	PK/AV	1 MHz	3 MHz / 10 Hz	1m	-
Band Edge	PK/AV	1 MHz	3 MHz	3m	-

9.1.1 Radiated Measurement below 1GHz

Requirement(s):

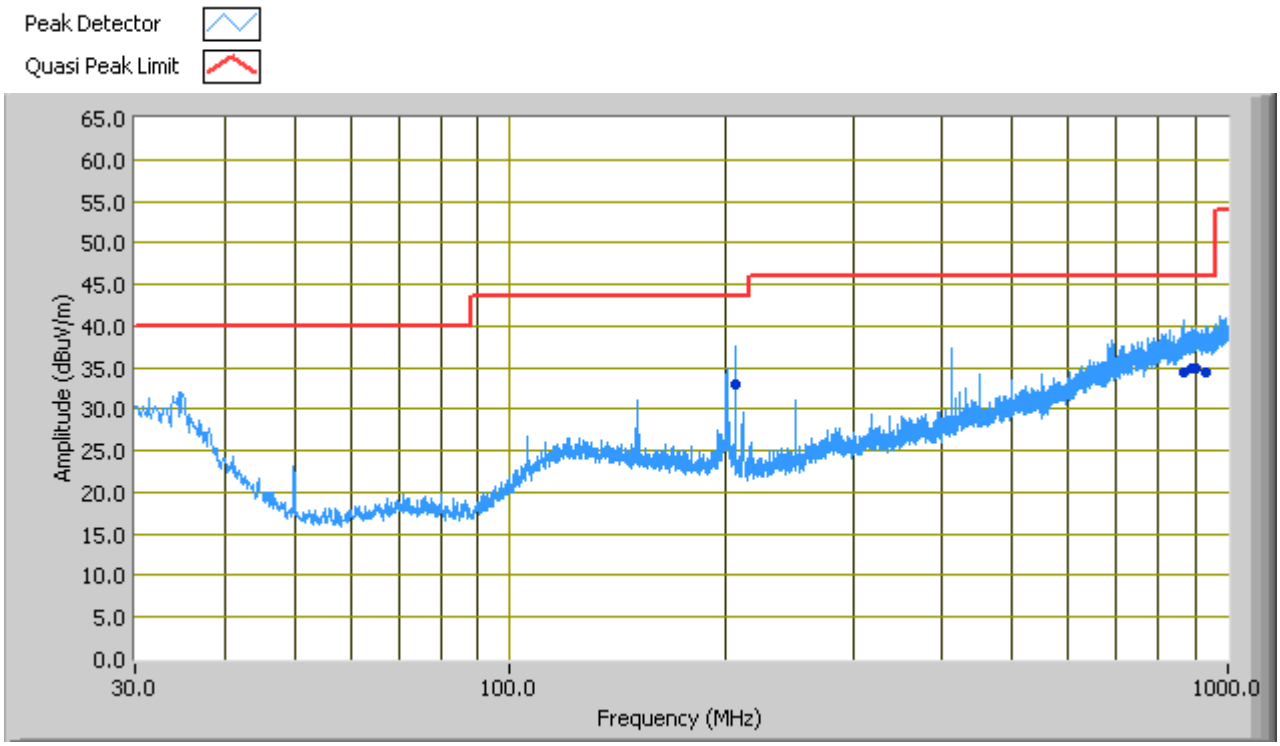
Spec	Item	Requirement	Applicable
§ 15.247(d), RSS210(A8.5)	a)	For non-restricted band, In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall 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(a)	☒

Test Setup				
Procedure	1. The EUT was switched on and allowed to warm up to its normal operating condition. 2. The test was carried out at the selected frequency points obtained from the EUT characterisation. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner: a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen. b. The EUT was then rotated to the direction that gave the maximum emission. c. Finally, the antenna height was adjusted to the height that gave the maximum emission. 3. A Quasi-peak measurement was then made for that frequency point. 4. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.			
Test Date	05/23/2013	Environmental condition	Temperature Relative Humidity Atmospheric Pressure	24oC 49% 1019mbar
Remark	None			
Result	☒ Pass ☐ Fail			

Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Graph-



Test Data

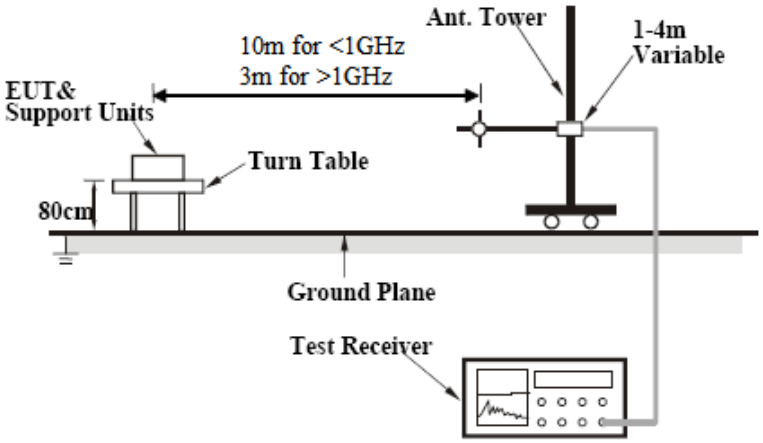
Frequency (MHz)	Quasi Peak (dBuV/m)	Azimuth	Polarity(H/V)	Height (cm)	Factors (dB)	Limit (dBuV)	Margin (dB)
870.73	34.44	51.00	H	333.00	25.30	46.00	-11.56
205.74	32.89	156.00	V	200.00	12.70	43.52	-10.63
928.90	34.35	187.00	H	224.00	25.51	46.00	-11.65
933.43	34.43	287.00	V	111.00	25.61	46.00	-11.57
904.38	34.80	0.00	H	358.00	25.98	46.00	-11.20
890.91	35.01	214.00	H	191.00	25.69	46.00	-10.99

All radio type and modulations are measured and only worst case show at above.

9.1.2 Radiated Spurious Emissions > 1GHz & Band Edge

Requirement(s):

Spec	Item	Requirement	Applicable
§ 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(a)	☒

Test Setup				
Procedure	1. The EUT was switched on and allowed to warm up to its normal operating condition. 2. The test was carried out at the selected frequency points obtained from the EUT characterisation. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner: a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen. b. The EUT was then rotated to the direction that gave the maximum emission. c. Finally, the antenna height was adjusted to the height that gave the maximum emission. 3. A Quasi-peak measurement was then made for that frequency point. 4. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.			
Test Date	05/24/2013	Environmental condition	Temperature Relative Humidity Atmospheric Pressure	25oC 48% 1019mbar
Remark	None			
Result	☒ Pass ☐ Fail			

Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test Result

802.11b - Radiated Spurious Emissions

Low Channel @ 2412MHz @ 3 Meter

Frequency (MHz)	Reading @ 3m (dBuV/m)	Direction (degree)	Height (m)	Polarity (H/V)	Antenna Loss (dB)	Cable Loss (dB)	Amplifier (dB)	Corrected Reading @ 3m (dBuV/m)	15.247 Limit @ 3m (dBuV/m)	Margin (dBuV/m)	Detector (pk/avg)
4824	41.00	65.7	1.00	H	32.9	8.83	32.55	50.18	74	-23.82	PK
4824	32.67	65.7	1.00	H	32.9	8.83	32.55	41.85	54	-12.15	AV
Remark	Emission was scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit; both horizontal and vertical polarization had been verified. The Horizontal test result is worst case.										

Mid Channel @ 2437MHz @ 3 Meter

Frequency (MHz)	Reading @ 3m (dBuV/m)	Direction (degree)	Height (m)	Polarity (H/V)	Antenna Loss (dB)	Cable Loss (dB)	Amplifier (dB)	Corrected Reading @ 3m (dBuV/m)	15.247 Limit @ 3m (dBuV/m)	Margin (dBuV/m)	Detector (pk/avg)
4874	39.73	52.3	1.00	H	32.9	8.83	32.55	48.91	74	-25.09	PK
4874	31.90	52.3	1.00	H	32.9	8.83	32.55	41.08	54	-12.92	AV
Remark	Emission was scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit; both horizontal and vertical polarization had been verified. The Horizontal test result is worst case.										

High Channel @ 2462MHz @ 3 Meter

Frequency (MHz)	Reading @ 3m (dBuV/m)	Direction (degree)	Height (m)	Polarity (H/V)	Antenna Loss (dB)	Cable Loss (dB)	Amplifier (dB)	Corrected Reading @ 3m (dBuV/m)	15.247 Limit @ 3m (dBuV/m)	Margin (dBuV/m)	Detector (pk/avg)
4924	40.85	69.4	1.00	H	32.9	8.83	32.55	50.03	74	-23.97	PK
4924	30.43	69.4	1.00	H	32.9	8.83	32.55	39.61	54	-14.39	AV
Remark	Emission was scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit; both horizontal and vertical polarization had been verified. The Horizontal test result is worst case.										

802.11b - Band Edge

2412MHz-2462MHz @ 3 Meter

Frequency (MHz)	Reading (dBuV/m)	Direction (degree)	Height (m)	Polarity (H/V)	Antenna Loss (dB)	Cable Loss (dB)	Amplifier (dB)	Corrected Reading @ 3m (dBuV/m)	15.247 Limit @ 3m (dBuV/m)	Margin (dBuV/m)	Detector (pk/avg)
2400	58.00	64.4	1.00	H	28.8	5	32.08	59.27	74	-14.73	PK
2400	43.83	64.4	1.00	H	28.8	5	32.08	45.55	54	-8.45	AV
2483.5	49.10	49.9	1.00	H	30.3	5	32.34	52.06	74	-21.94	PK
2483.5	33.27	49.9	1.00	H	30.3	5	32.34	36.23	54	-17.77	AV
Remark	Both horizontal and vertical polarization had been verified. The Horizontal test result is worst case.										

802.11g - Radiated Spurious Emissions

Low Channel @ 2412MHz @ 3 Meter

Frequency (MHz)	Reading @ 3m (dBuV/m)	Direction (degree)	Height (m)	Polarity (H/V)	Antenna Loss (dB)	Cable Loss (dB)	Amplifier (dB)	Corrected Reading @ 3m (dBuV/m)	15.247 Limit @ 3m (dBuV/m)	Margin (dBuV/m)	Detector (pk/avg)
4824	38.50	56.3	1.00	H	32.9	8.83	32.55	47.68	74	-26.32	PK
4824	30.14	56.3	1.00	H	32.9	8.83	32.55	39.32	54	-14.68	AV
Remark	Emission was scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit; both horizontal and vertical polarization had been verified. The Horizontal test result is worst case.										

Mid Channel @ 2437MHz @ 3 Meter

Frequency (MHz)	Reading @ 3m (dBuV/m)	Direction (degree)	Height (m)	Polarity (H/V)	Antenna Loss (dB)	Cable Loss (dB)	Amplifier (dB)	Corrected Reading @ 3m (dBuV/m)	15.247 Limit @ 3m (dBuV/m)	Margin (dBuV/m)	Detector (pk/avg)
4874	39.49	53.6	1.00	H	32.9	8.83	32.55	48.67	74	-25.33	PK
4874	31.08	53.6	1.00	H	32.9	8.83	32.55	40.26	54	-13.74	AV
Remark	Emission was scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit; both horizontal and vertical polarization had been verified. The Horizontal test result is worst case.										

High Channel @ 2462MHz @ 3 Meter

Frequency (MHz)	Reading @ 3m (dBuV/m)	Direction (degree)	Height (m)	Polarity (H/V)	Antenna Loss (dB)	Cable Loss (dB)	Amplifier (dB)	Corrected Reading @ 3m (dBuV/m)	15.247 Limit @ 3m (dBuV/m)	Margin (dBuV/m)	Detector (pk/avg)
4924	39.85	61.4	1.00	H	32.9	8.83	32.55	49.03	74	-24.97	PK
4924	31.23	61.4	1.00	H	32.9	8.83	32.55	40.41	54	-13.59	AV
Remark	Emission was scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit; both horizontal and vertical polarization had been verified. The Horizontal test result is worst case.										

802.11g - Band Edge

2412MHz-2462MHz @ 3 Meter

Frequency (MHz)	Reading (dBuV/m)	Direction (degree)	Height (m)	Polarity (H/V)	Antenna Loss (dB)	Cable Loss (dB)	Amplifier (dB)	Corrected Reading @ 3m (dBuV/m)	15.247 Limit @ 3m (dBuV/m)	Margin (dBuV/m)	Detector (pk/avg)
2400	68.11	45	1.00	H	28.8	5	32.08	69.83	74	-4.17	PK
2400	47.60	45	1.00	H	28.8	5	32.08	49.32	54	-4.68	AV
2483.5	56.10	45.6	1.00	H	30.3	5	32.34	59.06	74	-14.94	PK
2483.5	38.77	45.6	1.00	H	30.3	5	32.34	41.73	54	-12.27	AV
Remark	Both horizontal and vertical polarization had been verified. The Horizontal test result is worst case.										

802.11n (20 MHz) - Radiated Spurious Emissions

Low Channel @ 2412MHz @ 3 Meter

Frequency (MHz)	Reading @ 3m (dBuV/m)	Direction (degree)	Height (m)	Polarity (H/V)	Antenna Loss (dB)	Cable Loss (dB)	Amplifier (dB)	Corrected Reading @ 3m (dBuV/m)	15.247 Limit @ 3m (dBuV/m)	Margin (dBuV/m)	Detector (pk/avg)
4824	45.17	65.7	1.00	H	32.9	8.83	32.55	54.38	74	-19.65	PK
4824	31.50	65.7	1.00	H	32.9	8.83	32.55	40.68	54	-13.32	AV
Remark	Emission was scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit; both horizontal and vertical polarization had been verified. The Horizontal test result is worst case.										

Mid Channel @ 2437MHz @ 3 Meter

Frequency (MHz)	Reading @ 3m (dBuV/m)	Direction (degree)	Height (m)	Polarity (H/V)	Antenna Loss (dB)	Cable Loss (dB)	Amplifier (dB)	Corrected Reading @ 3m (dBuV/m)	15.247 Limit @ 3m (dBuV/m)	Margin (dBuV/m)	Detector (pk/avg)
4874	51.80	52.3	1.00	H	32.9	8.83	32.55	60.98	74	-13.02	PK
4874	36.17	52.3	1.00	H	32.9	8.83	32.55	45.35	54	-8.65	AV
Remark	Emission was scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit; both horizontal and vertical polarization had been verified. The Horizontal test result is worst case.										

High Channel @ 2462MHz @ 3 Meter

Frequency (MHz)	Reading @ 3m (dBuV/m)	Direction (degree)	Height (m)	Polarity (H/V)	Antenna Loss (dB)	Cable Loss (dB)	Amplifier (dB)	Corrected Reading @ 3m (dBuV/m)	15.247 Limit @ 3m (dBuV/m)	Margin (dBuV/m)	Detector (pk/avg)
4924	51.67	69.4	1.00	H	32.9	8.83	32.55	60.85	74	-13.15	PK
4924	36.50	69.4	1.00	H	32.9	8.83	32.55	45.68	54	-8.32	AV
Remark	Emission was scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit; both horizontal and vertical polarization had been verified. The Horizontal test result is worst case.										

802.11n (20 MHz) - Band Edge

2412MHz-2462MHz @ 3 Meter

Frequency (MHz)	Reading (dBuV/m)	Direction (degree)	Height (m)	Polarity (H/V)	Antenna Loss (dB)	Cable Loss (dB)	Amplifier (dB)	Corrected Reading @ 3m (dBuV/m)	15.247 Limit @ 3m (dBuV/m)	Margin (dBuV/m)	Detector (pk/avg)
2400	68.77	44.8	1.00	H	28.8	5	32.08	70.49	74	-3.51	PK
2400	46.93	44.8	1.00	H	28.8	5	32.08	48.65	54	-5.35	AV
2483.5	56.27	48.1	1.00	H	30.3	5	32.34	59.23	74	-14.77	PK
2483.5	39.60	48.1	1.00	H	30.3	5	32.34	42.56	54	-11.44	AV
Remark	Both horizontal and vertical polarization had been verified. The Horizontal test result is worst case.										

802.11a - Radiated Spurious Emissions

Low Channel @ 5745MHz @ 3 Meter

Frequency (MHz)	Reading @ 1m (dBuV/m)	Direction (degree)	Height (m)	Polarity (H/V)	Antenna Loss (dB)	Cable Loss (dB)	Amplifier (dB)	Corrected Reading @ 3m (dBuV/m)	15.247 Limit @ 3m (dBuV/m)	Margin (dBuV/m)	Detector (pk/avg)
11490	32.73	0	1.00	H	44.00	22.00	31.80	57.39	74	-16.61	PK
11490	22.87	0	1.00	H	44.00	22.00	31.80	47.53	54	-6.47	AV
Remark	Emission was scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit; both horizontal and vertical polarization had been verified. The Horizontal test result is worst case.										

Mid Channel @ 5785MHz @ 3 Meter

Frequency (MHz)	Reading @ 1m (dBuV/m)	Direction (degree)	Height (m)	Polarity (H/V)	Antenna Loss (dB)	Cable Loss (dB)	Amplifier (dB)	Corrected Reading @ 3m (dBuV/m)	15.247 Limit @ 3m (dBuV/m)	Margin (dBuV/m)	Detector (pk/avg)
11570	31.94	0	1.00	H	44.00	22.00	31.80	56.6	74	-17.4	PK
11570	23.18	0	1.00	H	44.00	22.00	31.80	47.84	54	-6.16	AV
Remark	Emission was scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit; both horizontal and vertical polarization had been verified. The Horizontal test result is worst case.										

High Channel @ 5825MHz @ 3 Meter

Frequency (MHz)	Reading @ 1m (dBuV/m)	Direction (degree)	Height (m)	Polarity (H/V)	Antenna Loss (dB)	Cable Loss (dB)	Amplifier (dB)	Corrected Reading @ 3m (dBuV/m)	15.247 Limit @ 3m (dBuV/m)	Margin (dBuV/m)	Detector (pk/avg)
11650	32.57	0	1.00	H	44.00	22.00	31.80	57.23	74	-16.77	PK
11650	23.08	0	1.00	H	44.00	22.00	31.80	47.74	54	-6.26	AV
Remark	Emission was scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit; both horizontal and vertical polarization had been verified. The Horizontal test result is worst case.										

802.11a - Band Edge

5745MHz-5825MHz @ 3 Meter

Frequency (MHz)	Reading (dBuV/m)	Direction (degree)	Height (m)	Polarity (H/V)	Antenna Loss (dB)	Cable Loss (dB)	Amplifier (dB)	Corrected Reading @ 3m (dBuV/m)	15.247 Limit @ 3m (dBuV/m)	Margin (dBuV/m)	Detector (pk/avg)
5725	43.60	39.5	1.00	H	33.4	9.67	32.48	54.19	74	-19.81	PK
5725	28.93	39.5	1.00	H	33.4	9.67	32.48	39.52	54	-14.48	AV
5850	41.60	47.2	1.00	H	33.9	9.84	32.32	52.98	74	-21.02	PK
5850	28.27	47.2	1.00	H	33.9	9.84	32.32	39.65	54	-14.35	AV
Remark	Both horizontal and vertical polarization had been verified. The Horizontal test result is worst case.										

802.11n (20 MHz) - Radiated Spurious Emissions

Low Channel @ 5745MHz @ 3 Meter

Frequency (MHz)	Reading @ 1m (dBuV/m)	Direction (degree)	Height (m)	Polarity (H/V)	Antenna Loss (dB)	Cable Loss (dB)	Amplifier (dB)	Corrected Reading @ 3m (dBuV/m)	15.407 Limit @ 3m (dBuV/m)	Margin (dBuV/m)	Detector (pk/avg)
11490	31.84	0	1.00	H	44.00	22.00	31.80	56.50	74	-17.5	PK
11490	21.73	0	1.00	H	44.00	22.00	31.80	46.39	54	-7.61	AV
Remark	Emission was scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit; both horizontal and vertical polarization had been verified. The Horizontal test result is worst case.										

Mid Channel @ 5785MHz @ 3 Meter

Frequency (MHz)	Reading @ 1m (dBuV/m)	Direction (degree)	Height (m)	Polarity (H/V)	Antenna Loss (dB)	Cable Loss (dB)	Amplifier (dB)	Corrected Reading @ 3m (dBuV/m)	15.407 Limit @ 3m (dBuV/m)	Margin (dBuV/m)	Detector (pk/avg)
11570	30.62	0	1.00	H	44.00	22.00	31.80	55.28	74	-18.72	PK
11570	20.16	0	1.00	H	44.00	22.00	31.80	44.82	54	-9.18	AV
Remark	Emission was scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit; both horizontal and vertical polarization had been verified. The Horizontal test result is worst case.										

High Channel @ 5825MHz @ 3 Meter

Frequency (MHz)	Reading @ 1m (dBuV/m)	Direction (degree)	Height (m)	Polarity (H/V)	Antenna Loss (dB)	Cable Loss (dB)	Amplifier (dB)	Corrected Reading @ 3m (dBuV/m)	15.407 Limit @ 3m (dBuV/m)	Margin (dBuV/m)	Detector (pk/avg)
11650	30.93	0	1.00	H	44.00	22.00	31.80	55.59	74	-18.41	PK
11650	20.67	0	1.00	H	44.00	22.00	31.80	45.33	54	-8.67	AV
Remark	Emission was scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit; both horizontal and vertical polarization had been verified. The Horizontal test result is worst case.										

802.11n (20 MHz) - Band Edge

5745MHz-5825MHz @ 3 Meter

Frequency (MHz)	Reading (dBuV/m)	Direction (degree)	Height (m)	Polarity (H/V)	Antenna Loss (dB)	Cable Loss (dB)	Amplifier (dB)	Corrected Reading @ 3m (dBuV/m)	15.247 Limit @ 3m (dBuV/m)	Margin (dBuV/m)	Detector (pk/avg)
5725	50.27	45.6	1.00	H	33.4	9.67	32.48	60.86	74	-13.14	PK
5725	29.60	45.6	1.00	H	33.4	9.67	32.48	40.19	54	-13.81	AV
5850	41.43	47.0	1.00	H	33.9	9.84	32.32	52.81	74	-21.19	PK
5850	28.43	47.0	1.00	H	33.9	9.84	32.32	39.81	54	-14.19	AV
Remark	Both horizontal and vertical polarization had been verified. The Horizontal test result is worst case.										

802.11n (40 MHz) - Radiated Spurious Emissions

Low Channel @ 5755MHz @ 3 Meter

Frequency (MHz)	Reading @ 1m (dBuV/m)	Direction (degree)	Height (m)	Polarity (H/V)	Antenna Loss (dB)	Cable Loss (dB)	Amplifier (dB)	Corrected Reading @ 3m (dBuV/m)	15.247 Limit @ 3m (dBuV/m)	Margin (dBuV/m)	Detector (pk/avg)
11510	33.59	0	1.00	H	44.00	22.00	31.80	58.25	74	-15.75	PK
11510	21.08	0	1.00	H	44.00	22.00	31.80	45.74	54	-8.26	AV
Remark	Emission was scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit; both horizontal and vertical polarization had been verified. The Horizontal test result is worst case.										

Mid Channel @ 5775MHz @ 3 Meter

Frequency (MHz)	Reading @ 1m (dBuV/m)	Direction (degree)	Height (m)	Polarity (H/V)	Antenna Loss (dB)	Cable Loss (dB)	Amplifier (dB)	Corrected Reading @ 3m (dBuV/m)	15.247 Limit @ 3m (dBuV/m)	Margin (dBuV/m)	Detector (pk/avg)
11550	33.91	0	1.00	H	44.00	22.00	31.80	58.57	74	-15.43	PK
11550	22.61	0	1.00	H	44.00	22.00	31.80	47.27	54	-6.73	AV
Remark	Emission was scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit; both horizontal and vertical polarization had been verified. The Horizontal test result is worst case.										

High Channel @ 5795MHz @ 3 Meter

Frequency (MHz)	Reading @ 1m (dBuV/m)	Direction (degree)	Height (m)	Polarity (H/V)	Antenna Loss (dB)	Cable Loss (dB)	Amplifier (dB)	Corrected Reading @ 3m (dBuV/m)	15.247 Limit @ 3m (dBuV/m)	Margin (dBuV/m)	Detector (pk/avg)
11590	32.73	0	1.00	H	44.00	22.00	31.80	57.39	74	-16.61	PK
11590	22.45	0	1.00	H	44.00	22.00	31.80	47.11	54	-6.89	AV
Remark	Emission was scanned up to 40GHz; no emissions were detected above the noise floor which was at least 20dB below the specification limit; both horizontal and vertical polarization had been verified. The Horizontal test result is worst case.										

802.11n (40 MHz) - Band Edge

5755MHz-5795MHz @ 3 Meter

Frequency (MHz)	Reading (dBuV/m)	Direction (degree)	Height (m)	Polarity (H/V)	Antenna Loss (dB)	Cable Loss (dB)	Amplifier (dB)	Corrected Reading @ 3m (dBuV/m)	15.247 Limit @ 3m (dBuV/m)	Margin (dBuV/m)	Detector (pk/avg)
5725	44.53	31.2	1.00	H	33.4	9.67	32.48	55.12	74	-18.88	PK
5725	29.37	31.2	1.00	H	33.4	9.67	32.48	39.96	54	-14.04	AV
5850	56.7	49.6	1.00	H	33.9	9.84	32.32	68.08	74	-5.92	PK
5850	36.2	49.6	1.00	H	33.9	9.84	32.32	47.58	54	-6.42	AV
Remark	Both horizontal and vertical polarization had been verified. The Horizontal test result is 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	04/20/2012	1 Year	04/20/2013	
R&S LISN	ESH2-Z5	861741/013	05/18/2012	1 Year	05/18/2013	☐
CHASE LISN	MN2050B	1018	07/24/2012	1 Year	07/24/2013	☐
Sekonic Hygro Hermograph	ST-50	HE01-000092	05/25/2012	1 Year	05/25/2013	☐
Radiated Emissions						
R & S Receiver	ESL6	100178	03/01/2013	1 Year	03/01/2014	☑
R & S Receiver	ESIB 40	100179	04/20/2013	1 Year	04/20/2014	☑
Bi-Log antenna (30MHz~2GHz)	JB1	A030702	02/09/2013	1 Year	02/09/2014	☑
Horn Antenna (1-26.5GHz)	3115	10SL0059	04/26/2013	1 Year	04/26/2014	☑
Horn Antenna (18-40 GHz)	AH-840	101013	04/23/2012	1 Year	04/23/2013	☐
Pre-Amplifier (1-26.5GHz)	8449B	3008A00715	05/30/2012	1 Year	05/30/2013	☑
Microwave Preamplifier (18-40 GHz)	PA-840	181251	05/30/2012	1 Year	05/30/2013	☐
3 Meters SAC	3M	N/A	10/13/2011	1 Year	10/13/2012	☐
10 Meters OATS	10M	N/A	06/05/2013	1 Year	06/05/2014	☑
Sekonic Hygro Hermograph	ST-50	HE01-000092	05/25/2013	1 Year	05/25/2014	☑
Sekonic Hygro Hermograph	ST-50	HE01-000092	05/25/2013	1 Year	05/25/2014	☑
Power Analyzer	PACS-1	72394	5/19/2013	1 Year	05/19/2014	☐
Sekonic Hygro Hermograph	ST-50	HE01-000092	05/25/2013	1 Year	05/25/2014	☑

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
HongKong 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 Regocnition		**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

This page has been left blank intentionally.