RF TEST REPORT

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Report No.: **SL14082801-SLX-017_FCC-IC_Rev. 7.0 (15.247)**
Supersede Report No.: **SL14082801-SLX-017_FCC-IC_Rev. 6.0 (15.247)**

Applicant	:	ImageTech Corporation
Product Name	:	SDIO Wireless Module
Model No.	:	SX-SDMGN
Host Model No.	:	Print WiFi- 1500
Test Standard	:	FCC 15.247: 2013 RSS 210 Issue8: 2010
Test Method	:	ANSI C63.10:2013 FCC KDB 558074 D01 DTS Meas. Guidance v03r02
FCC ID	:	2AAD5-PRINTWIFI1500
IC ID	:	11687A-PRINTWIFI1
Dates of test	:	October 8th and 9th, 2014
Issue Date	:	03/17/2015
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:	
Osvaldo Casorla	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 representative sample only.**	

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

ilac-MRA
A2LA ACCREDITED
TESTING CERT # 2742-01

Laboratory Introduction

SIEMIC, headquartered in the heart of Silicon Valley, with superior facilities in US and Asia, is one of the leading independent testing and certification facilities providing customers with one-stop shop services for Compliance Testing and Global Certifications.

In addition to testing and certification, SIEMIC provides initial design reviews and compliance management throughout a project. Our extensive experience with China, Asia Pacific, North America, European, and International compliance requirements, assures the fastest, most cost effective way to attain regulatory compliance for the global markets.

Accreditations for Conformity Assessment

Country/Region	Accreditation Body	Scope
USA	FCC, A2LA	EMC, RF/Wireless, Telecom
Canada	IC, A2LA, NIST	EMC, RF/Wireless, Telecom
Taiwan	BSMI, NCC, NIST	EMC, RF, Telecom, Safety
Hong Kong	OFTA, NIST	RF/Wireless, Telecom
Australia	NATA, NIST	EMC, RF, Telecom, Safety
Korea	KCC/RRA, NIST	EMI, EMS, RF, Telecom, Safety
Japan	VCCI, JATE, TELEC, RFT	EMI, RF/Wireless, Telecom
Mexico	NOM, COFETEL, Caniety	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
SL14082801-SLX-017_FCC-IC (15.247)	Original	-	10/10/2014
SL14082801-SLX-017_FCC-IC_Rev. 1.0 (15.247)	1	Added model SX-SDMGN to also be installed inside portable host unit, model PTS01-WRL.	10/22/2014
SL14082801-SLX-017_FCC-IC_Rev. 2.0 (15.247)	2	Updated the radio description.	12/01/2014
SL14082801-SLX-017_FCC-IC_Rev. 3.0 (15.247)	3	Updated antenna information.	12/02/2014
SL14082801-SLX-017_FCC-IC_Rev. 4.0 (15.247)	4	Updated applicant information.	12/02/2014
SL14082801-SLX-017_FCC-IC_Rev. 5.0 (15.247)	5	Updated antenna information.	03/02/2015
SL14082801-SLX-017_FCC-IC_Rev. 6.0 (15.247)	6	Updated antenna information and standard version.	03/13/2015
SL14082801-SLX-017_FCC-IC_Rev. 7.0 (15.247)	7	Updated Standard requirements.	03/17/2015

2 Executive Summary

The purpose of this test program was to demonstrate compliance of the FCC, IC certified radio module, SDIO Wireless Module (FCC ID: 2AAD5-PRINTWIFI1500, IC ID: 11687A-PRINTWIFI1), from ImageTech Corporation, and Model: SX-SDMGN, to be installed inside portable host unit of PrintWiFi-1500 and PTS01-WRL against the current Stipulated Standards. The SDIO Wireless Module has demonstrated compliance with the standards listed on 1st page.

3 Customer information

Applicant Name	:	ImageTech Corporation
Applicant Address	:	3320 Caminito Cabo Viejo, Del Mar, CA, 912104 USA
Manufacturer Name	:	ImageTech Corporation
Manufacturer Address	:	3320 Caminito Cabo Viejo, Del Mar, CA, 912104 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

EUT Name	:	SDIO Wireless Module
EUT Model No.	:	SX-SDMGN
Host Model No.	:	PrintWiFi-1500
Trade Name	:	Imagetech Corporation
Serial No.	:	W2714000079
Input Power	:	5VDC (via MicroUSB)
Antenna Type	:	Taoglas FXP74.07.0100A Black Diamond
Power Adapter SN	:	N/A
Product SW/HW version	:	SW: v3.1.63.48 / HW: ver. A
Radio SW/HW version	:	SW: v3.1.63.48 / HW: ver. A
Test SW version	:	Athtestcmd v3.1
RF power setting in Test SW	:	• 802.11b: 2412MHz:13.0dBm; 2437MHz:13.0dBm; 2462MHz: 13.0dBm • 802.11g: 2412MHz:10.5dBm; 2437MHz:12.5dBm; 2462MHz: 10.5dBm • 802.11n-20: 2412MHz:10.0dBm; 2437MHz:12.5dBm; 2462MHz: 10.0dBm
Date of EUT received	:	October 7th, 2014
Equipment Class/ Category	:	DTS
Clock Frequencies	:	26 MHz
Port/Connectors	:	MicroUSB

6.2 Radio Description

Radio list	:	802.11b/g/n (2.4GHz)
Part No.	:	N/A

Antenna Information:

Radio Manufacturer	:	Silex Technology
Radio Model	:	SX-SDMGN

Specifications for Radio:

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
Number of Channels	11 Ch.	11 Ch.	11 Ch.
Antenna Type	Embedded Antenna (Omni-Directional)		
Antenna Gain	Taoglas Antenna: 4.0 dBi (2.4GHz)		
Antenna Connector Type	IPEX MHF I Connector (U.FL compatible)		

Note: Taoglas antenna is used in the following models: PrintWiFi-1500, PTS01-WRL.

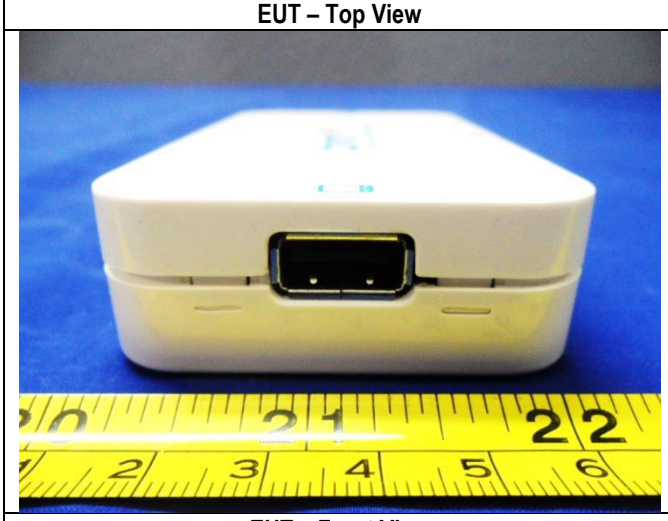
6.3 EUT test modes/configuration Description

Mode	Note	Rate (Mbps)	Power Level (dBm)
802.11b (11b): Low-CH: 2412MHz	Below 1GHz	1	+13
802.11b (11b): Low-CH: 2412MHz, Mid-CH: 2437MHz, High-CH: 2462MHz	Above 1GHz	1	+13
802.11g (11g): Low-CH: 2412MHz	Above 1GHz	6	+10.5
802.11g (11g): Mid-CH: 2437MHz	Above 1GHz	6	+12.5
802.11g (11g): High-CH: 2462MHz	Above 1GHz	6	+10.5
802.11n-HT20: Low-CH: 2412MHz	Above 1GHz	6.5	+10
802.11n-HT20: Mid-CH: 2437MHz	Above 1GHz	6.5	+12.5
802.11n-HT20: High-CH: 2462MHz	Above 1GHz	6.5	+10
Note:			

6.4 Host - External Photos

EUT – Top View

EUT – Bottom View



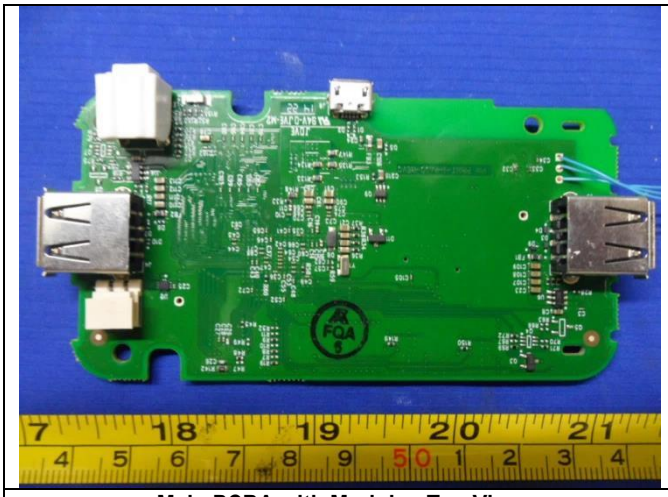
EUT – Front View

EUT – Rear View

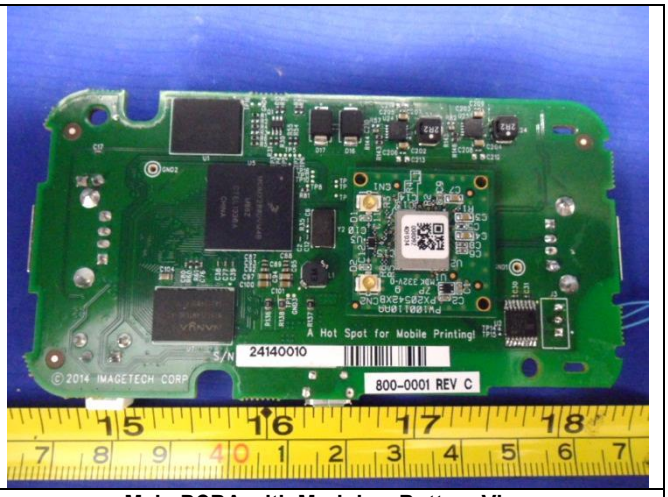
EUT – Left View

EUT – Right View

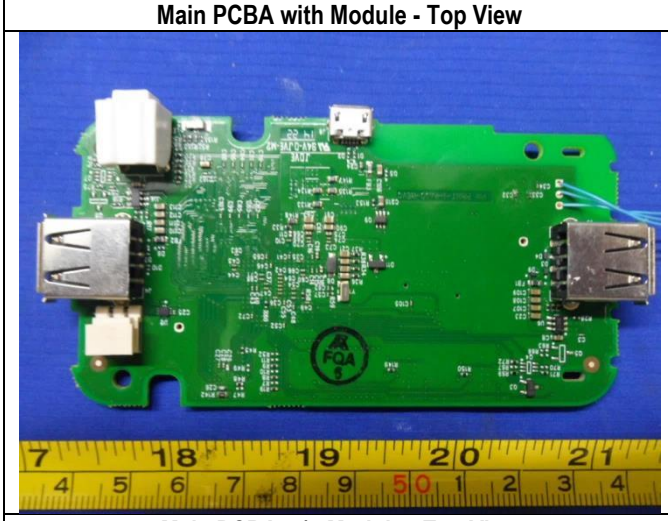
6.5 Host – Internal Photos



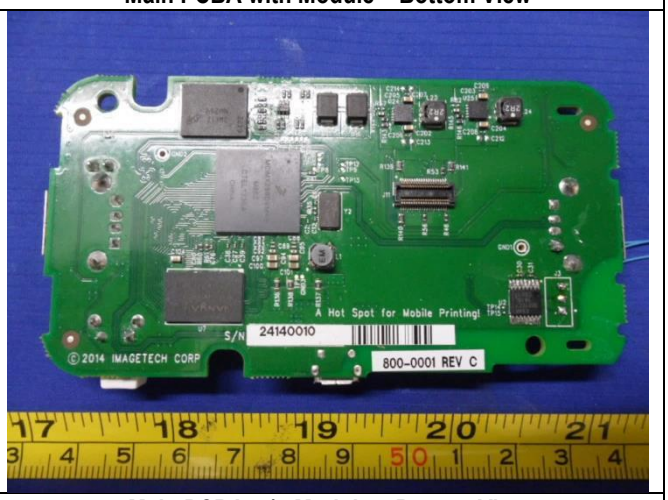
Main PCBA with Module - Top View



Main PCBA with Module – Bottom View

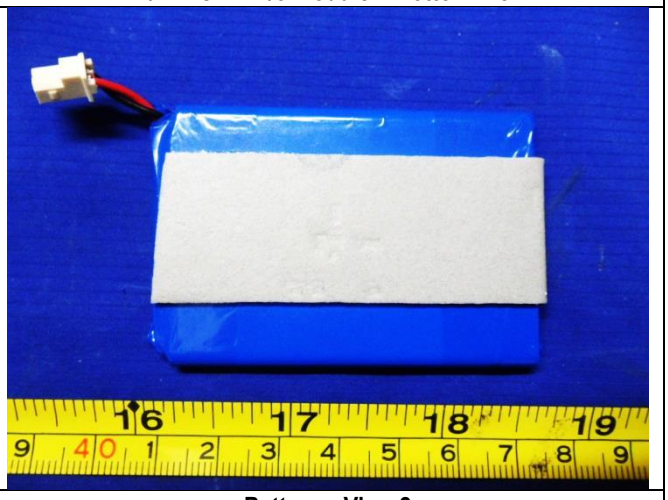


Main PCBA w/o Module - Top View



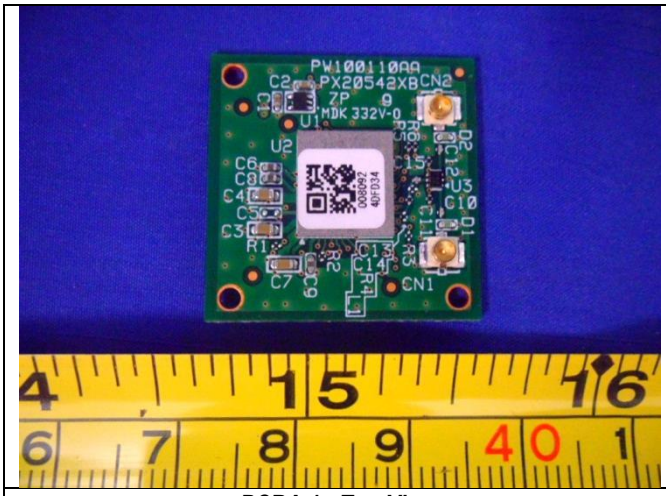
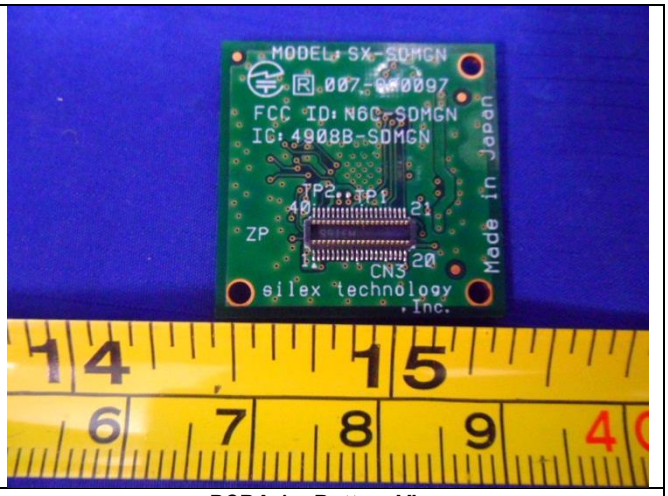
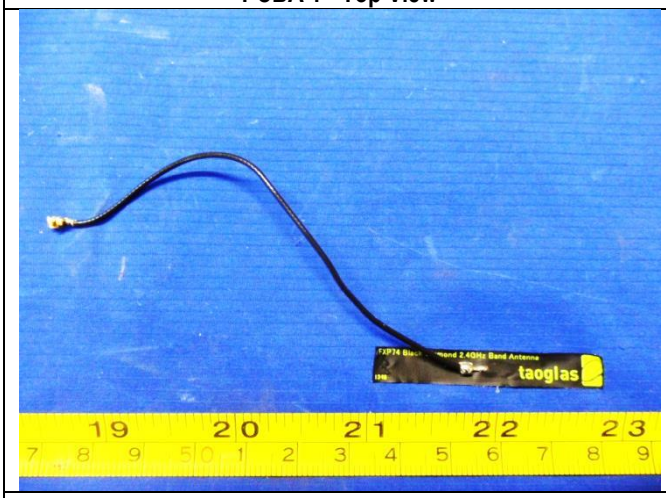
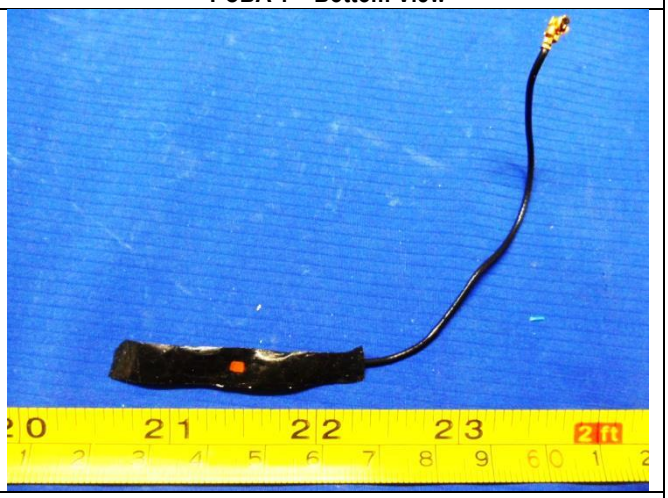
Main PCBA w/o Module – Bottom View

Battery – View 1

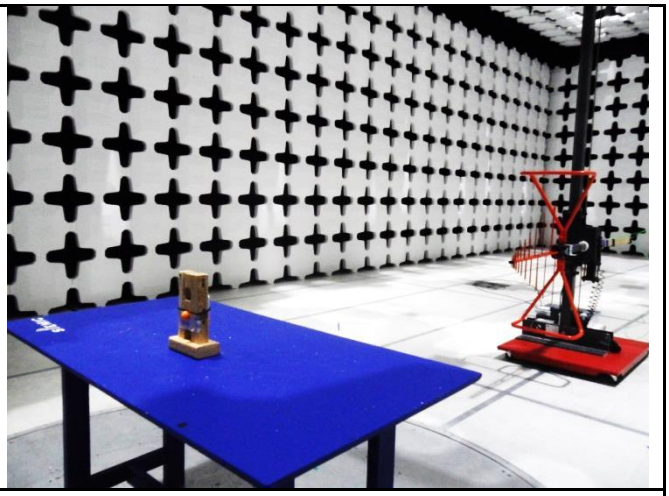
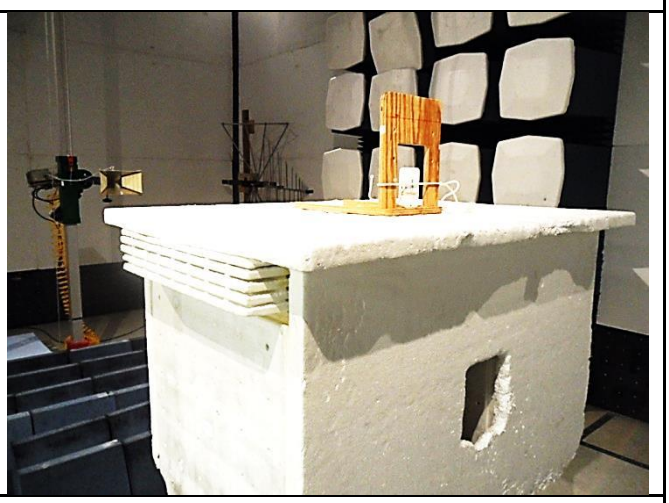


Battery – View 2

6.6 EUT Photo

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>PCBA 1 - Top View</td><td>PCBA 1 – Bottom View</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Taoglas Antenna – Top View</td><td>Taoglas Antenna –Bottom View</td></tr>
</table>

6.7 EUT Test Setup Photos

<table>
<tr><td>  </td><td>  </td></tr>
<tr><td>Test setup (<1GHz) - Front</td><td>Test setup (<1GHz) - Rear</td></tr>
<tr><td>  </td><td>  </td></tr>
<tr><td>Test setup (>1GHz) - Front</td><td>Test setup (>1GHz) - Rear</td></tr>
</table>

7 Supporting Equipment/Software and cabling Description

7.1 Supporting Equipment

Index	Supporting Equipment Description	Model	Serial Number	Manufacturer	Note
1	Laptop	Lenovo X61	LV-L44L3 08/02	ThinkPad	-

Note: Laptop was used to turn on the radio and not for testing purposes.

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/Serial	Laptop	USB	EUT	Serial	2	Unshielded	-

7.3 Test Software Description

Test Item	Software	Description
Radiated Testing	Procomm Plus	Set the EUT to different modulation and channels.

8 Test Summary

Test Item	Test standard		Test Method/Procedure	Pass / Fail
Restricted Band of Operation	FCC	15.205	ANSI C63.10 – 2013 558074 D01 DTS Meas. Guidance v03r02	☒ Pass ☐ N/A
	IC	RSS 210 (2.2)	ANSI C63.10 – 2013 558074 D01 DTS Meas. Guidance v03r02	☒ Pass ☐ N/A
AC Conducted Emissions Voltage	FCC	15.207(a)	ANSI C63.10 – 2013	☐ Pass ☒ N/A
	IC	RSS Gen Issue 4.0, Nov 2014 (8.8)	ANSI C63.10 – 2013 RSS Gen Issue 4.0, Nov 2014 (8.8)	☐ Pass ☒ N/A

Test Item	Test standard		Test Method/Procedure	Pass / Fail
Channel Separation	FCC	15.247 (a)(1)	-	☐ Pass ☒ N/A
	IC	RSS210 (A8.1)	-	☐ Pass ☒ N/A
Occupied Bandwidth	IC	RSS210(A8.1)	RSS Gen Issue 4.0, Nov 2014 (6.6)	☐ Pass ☒ N/A
6 dB Bandwidth	FCC	15.247(a)(2)	558074 D01 DTS Meas Guidance v03r02	☐ Pass ☒ N/A
	IC	RSS210 (A8.2)	558074 D01 DTS Meas Guidance v03r02	☐ Pass ☒ N/A
Number of Hopping Channels	FCC	15.247(a)(1)	-	☐ Pass ☒ N/A
	IC	RSS210(A8.1)	-	☐ Pass ☒ N/A
Band Edge and Radiated Spurious Emissions	FCC	15.247(d)	ANSI C63.10 – 2013 558074 D01 DTS Meas Guidance v03r02	☒ Pass ☐ N/A
	IC	RSS210(A8.5)	ANSI C63.10 – 2013 558074 D01 DTS Meas Guidance v03r02	☒ Pass ☐ N/A
Time of Occupancy	FCC	15.247(a)(1)	-	☐ Pass ☒ N/A
	IC	RSS210(A8.1)	-	☐ Pass ☒ N/A
Output Power	FCC	15.247(b)	558074 D01 DTS Meas Guidance v03r02	☐ Pass ☒ N/A
	IC	RSS210 (A8.4)	558074 D01 DTS Meas Guidance v03r02	☐ Pass ☒ N/A
Receiver Spurious Emissions	FCC	-	-	☐ Pass ☒ N/A
	IC	RSS Gen Issue 4.0, Nov 2014 (7.1)	RSS Gen Issue 4.0, Nov 2014 (7.1)	☐ Pass ☒ N/A
Antenna Gain > 6 dBi	FCC	15.247(e)	-	☐ Pass ☒ N/A
	IC	RSS210(A8.4)	-	☐ Pass ☒ N/A

Power Spectral Density	FCC	15.247(e)	558074 D01 DTS Meas Guidance v03r02	☐ Pass ☒ N/A
	IC	RSS210(A8.3)	558074 D01 DTS Meas Guidance v03r02	☐ Pass ☒ N/A
Hybrid System Requirement	FCC	15.247(f)	-	☐ Pass ☒ N/A
	IC	RSS210(A8.3)	-	☐ Pass ☒ N/A
Hopping Capability	FCC	15.247(g)	-	☐ Pass ☒ N/A
	IC	RSS210(A8.1)	-	☐ Pass ☒ N/A
Hopping Coordination Requirement	FCC	15.247(h)	-	☐ Pass ☒ N/A
	IC	RSS210(A8.1)	-	☐ Pass ☒ N/A
RF Exposure requirement	FCC	15.247(i)	-	☐ Pass ☒ N/A
Remark	1. All measurement uncertainties are not taken into consideration for all presented test result. 2. For all other test items refer to Test Report No. 32IE0153-HO-01-A-R2 with FCC ID: N6C-SDMGN. 3. 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	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

9.1 Radiated Measurement

Receiver/Spectrum analyser settings:

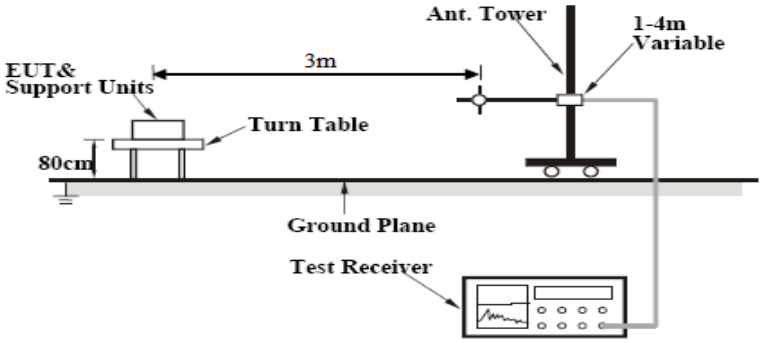
Test	Detector	RBW	VBW	Test Distance	Notes
Radiated Emission < 1GHz (30MHz – 1GHz)	PK/QP	100 KHz	300 KHz	3m	-
Radiated Emission > 1GHz (1GHz – 40GHz)	PK/AV	1 MHz	3 MHz / 10 Hz	3m	-

9.1.1 Radiated Measurement below 1GHz

Requirement(s):

Spec	Requirement	Applicable
§ 15.247(d), RSS210(A8.5)	Except higher limit as specified elsewhere in other section, the emissions from the low-power radio-frequency devices shall not exceed the field strength levels specified in the following table and the level of any unwanted emissions shall not exceed the level of the fundamental emission. The tighter limit applies at the band edges	☒

Frequency range (MHz)	Field Strength (uV/m)
30 – 88	100
88 – 216	150
216 960	200
Above 960	500

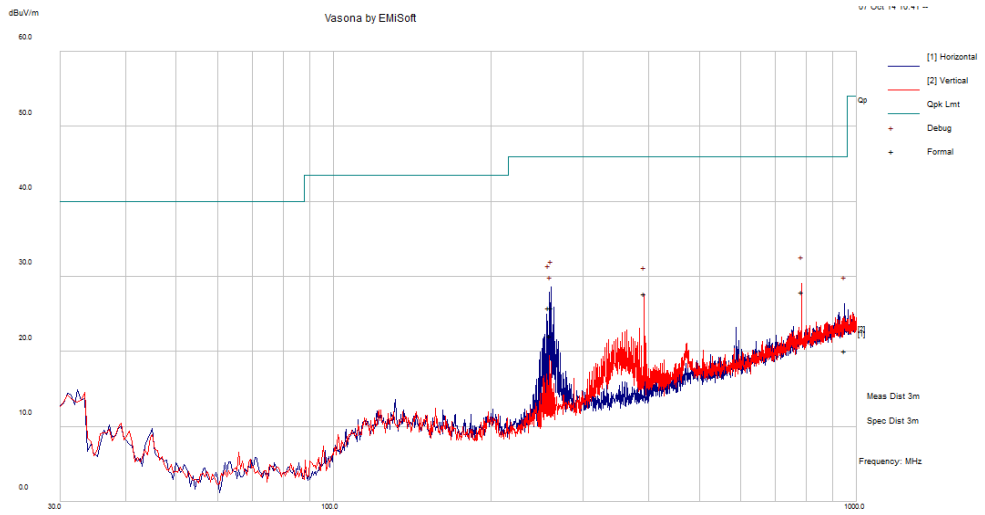
Test Setup	
Procedure	1. The EUT was switched on and allowed to warm up to its normal operating condition. 2. The test was carried out at the selected frequency points obtained from the EUT characterisation. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner: a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen. b. The EUT was then rotated to the direction that gave the maximum emission. c. Finally, the antenna height was adjusted to the height that gave the maximum emission. 3. A Quasi-peak measurement was then made for that frequency point. 4. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured.
Remark	None
Result	☒ Pass ☐ 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		Result	Pass
Environmental Conditions:	Temp (°C):	21		
	Humidity (%)	46		
	Atmospheric (mbar):	1021		
Tested by:	Osvaldo Casorla			
Test Date:	10/07/2014			
Remarks:	**802.11b – Low channel (2412MHz)**			

***f*=30MHz – 1000MHz plot at 3 meter distance**

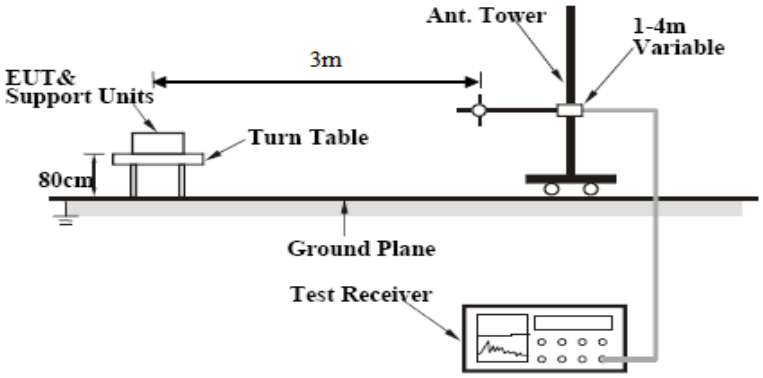


Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
258.00	50.65	2.81	-27.63	25.83	Quasi Max	H	101.00	297.00	46.00	-20.17	Pass
259.52	46.78	2.82	-27.47	22.12	Quasi Max	H	101.00	139.00	46.00	-23.88	Pass
261.07	50.28	2.83	-27.30	25.81	Quasi Max	H	111.00	295.00	46.00	-20.19	Pass
392.77	48.75	3.31	-24.31	27.75	Quasi Max	V	120.00	281.00	46.00	-18.25	Pass
785.52	41.17	4.79	-18.07	27.89	Quasi Max	V	101.00	184.00	46.00	-18.11	Pass
948.32	31.09	5.08	-16.05	20.13	Quasi Max	H	249.00	74.00	46.00	-25.87	Pass
258.00	50.65	2.81	-27.63	25.83	Quasi Max	H	101.00	297.00	46.00	-20.17	Pass

Note: Both horizontal and vertical polarizations were investigated. All radio types and modulations were investigated. Only the worst case is shown above.

9.1.2 Radiated Spurious Emissions above 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.	
Remark	Both horizontal and vertical polarizations have been verified for all the different mode measurements.		
Result	☒ Pass ☐ Fail		

Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☐ Yes (See below) ☒ N/A

Radiated Spurious Emission Test Results (Above 1GHz)

Test specification	Above 1GHz		Result	Pass
Environmental Conditions:	Temp (°C):	22		
	Humidity (%)	44		
	Atmospheric (mbar):	1020		
Tested by:	Osvaldo Casorla			
Test Date:	10/08/2014			
Remarks:	**802.11b**			

1GHz- 25GHz: 802.11b- Low Channel (2412MHz)

Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
14486.10	41.74	6.28	10.94	58.97	Peak Max	V	250.00	113.00	74.00	-15.03	Pass
15484.86	40.73	6.50	10.18	57.41	Peak Max	V	247.00	135.00	74.00	-16.59	Pass
17830.36	39.49	6.60	13.89	59.98	Peak Max	V	115.00	202.00	74.00	-14.02	Pass
14486.10	28.90	6.28	10.94	46.13	Average Max	V	250.00	113.00	54.00	-7.87	Pass
15484.86	27.70	6.50	10.18	44.38	Average Max	V	247.00	135.00	54.00	-9.62	Pass
17830.36	26.78	6.60	13.89	47.27	Average Max	V	115.00	202.00	54.00	-6.73	Pass

Note: Both horizontal and vertical polarization were verified.

Lower Restricted band at 2390MHz

Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
2390.00	42.39	2.69	-3.53	41.55	Peak Max	H	163.00	217.00	74.00	-32.45	Pass
2390.00	41.75	2.69	-3.54	40.90	Peak Max	V	221.00	132.00	74.00	-33.10	Pass
2390.00	28.68	2.69	-3.53	27.84	Average Max	H	163.00	217.00	54.00	-26.16	Pass
2390.00	28.69	2.69	-3.54	27.84	Average Max	V	221.00	132.00	54.00	-26.16	Pass

1GHz- 25GHz: 802.11b- Mid Channel (2437MHz)

Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
7448.96	43.12	4.46	3.54	51.12	Peak Max	V	275.00	301.00	74.00	-22.88	Pass
14485.63	41.87	6.28	10.94	59.10	Peak Max	V	283.00	210.00	74.00	-14.90	Pass
15419.51	40.93	6.50	10.00	57.43	Peak Max	H	206.00	262.00	74.00	-16.57	Pass
7448.96	29.42	4.46	3.54	37.41	Average Max	V	275.00	301.00	54.00	-16.59	Pass
14485.63	28.90	6.28	10.94	46.13	Average Max	V	283.00	210.00	54.00	-7.87	Pass
15419.51	28.10	6.50	10.00	44.60	Average Max	H	206.00	262.00	54.00	-9.40	Pass

Note: Both horizontal and vertical polarization were verified.

1GHz- 25GHz: 802.11b- High Channel (2462MHz)

Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
14484.91	41.74	6.28	10.94	58.96	Peak Max	H	202.00	194.00	74.00	-15.04	Pass
15484.27	40.46	6.50	10.18	57.14	Peak Max	V	210.00	147.00	74.00	-16.86	Pass
17838.58	39.49	6.60	13.92	60.01	Peak Max	V	176.00	248.00	74.00	-13.99	Pass
14484.91	28.89	6.28	10.94	46.11	Average Max	H	202.00	194.00	54.00	-7.89	Pass
15484.27	27.70	6.50	10.18	44.38	Average Max	V	210.00	147.00	54.00	-9.62	Pass
17838.58	26.70	6.60	13.92	47.21	Average Max	V	176.00	248.00	54.00	-6.79	Pass

Note: Both horizontal and vertical polarization were verified.

Higher Restricted band at 2483.5MHz

Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
2483.50	40.27	2.72	-3.32	39.68	Peak Max	V	125.00	248.00	74.00	-34.32	Pass
2483.50	40.00	2.72	-3.32	39.41	Peak Max	H	104.00	38.00	74.00	-34.59	Pass
2483.50	27.47	2.72	-3.32	26.88	Average Max	V	125.00	248.00	54.00	-27.12	Pass
2483.50	27.40	2.72	-3.32	26.81	Average Max	H	104.00	38.00	54.00	-27.19	Pass

Test specification	Above 1GHz		Result	Pass
Environmental Conditions:	Temp (°C):	22		
	Humidity (%)	44		
	Atmospheric (mbar):	1020		
Tested by:	Osvaldo Casorla			
Test Date:	10/08/2014			
Remarks:	**802.11g**			

1GHz- 25GHz: 802.11g- Low Channel (2412MHz)

Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
14489.27	42.00	6.28	10.95	59.23	Peak Max	V	121.00	51.00	74.00	-14.77	Pass
15600.26	40.50	6.51	9.33	56.33	Peak Max	V	173.00	161.00	74.00	-17.67	Pass
17948.36	39.35	6.61	14.29	60.25	Peak Max	H	255.00	90.00	74.00	-13.75	Pass
14489.27	28.94	6.28	10.95	46.17	Average Max	V	121.00	51.00	54.00	-7.83	Pass
15600.26	27.82	6.51	9.33	43.65	Average Max	V	173.00	161.00	54.00	-10.35	Pass
17948.36	26.72	6.61	14.29	47.62	Average Max	H	255.00	90.00	54.00	-6.38	Pass

Note: Both horizontal and vertical polarization were verified.

Lower Restricted Band at 2390MHz

Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
2390.00	45.86	2.69	-3.53	45.02	Peak Max	V	107.00	318.00	74.00	-28.98	Pass
2390.00	43.57	2.69	-3.53	42.72	Peak Max	H	195.00	301.00	74.00	-31.28	Pass
2390.00	30.81	2.69	-3.53	29.97	Average Max	V	107.00	318.00	54.00	-24.03	Pass
2390.00	28.97	2.69	-3.53	28.13	Average Max	H	195.00	301.00	54.00	-25.87	Pass

1GHz- 25GHz: 802.11g- Mid Channel (2437MHz)

Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
14499.50	41.45	6.29	10.97	58.70	Peak Max	V	154.00	263.00	74.00	-15.30	Pass
15442.41	40.38	6.50	10.06	56.94	Peak Max	V	245.00	313.00	74.00	-17.06	Pass
17742.93	40.25	6.59	13.60	60.43	Peak Max	H	126.00	278.00	74.00	-13.57	Pass
14499.50	29.05	6.29	10.97	46.31	Average Max	V	154.00	263.00	54.00	-7.69	Pass
15442.41	27.81	6.50	10.06	44.38	Average Max	V	245.00	313.00	54.00	-9.62	Pass
17742.93	26.88	6.59	13.60	47.06	Average Max	H	126.00	278.00	54.00	-6.94	Pass

Note: Both horizontal and vertical polarization were verified.

1GHz- 25GHz: 802.11g- High Channel (2462MHz)

Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
13366.01	41.92	5.81	8.26	55.99	Peak Max	H	227.00	203.00	74.00	-18.01	Pass
15372.21	40.40	6.50	9.87	56.76	Peak Max	H	291.00	58.00	74.00	-17.24	Pass
17770.94	39.74	6.59	13.69	60.02	Peak Max	H	247.00	268.00	74.00	-13.98	Pass
13366.01	29.24	5.81	8.26	43.30	Average Max	H	227.00	203.00	54.00	-10.70	Pass
15372.21	27.88	6.50	9.87	44.25	Average Max	H	291.00	58.00	54.00	-9.75	Pass
17770.94	26.79	6.59	13.69	47.07	Average Max	H	247.00	268.00	54.00	-6.93	Pass

Note: Both horizontal and vertical polarization were verified.

Higher Restricted Band at 2483.5MHz

Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
2483.50	44.66	2.72	-3.32	44.06	Peak Max	V	167.00	315.00	74.00	-29.94	Pass
2483.50	40.00	2.72	-3.32	39.41	Peak Max	H	313.00	58.00	74.00	-34.59	Pass
2483.50	29.44	2.72	-3.32	28.84	Average Max	V	167.00	315.00	54.00	-25.16	Pass
2483.50	27.61	2.72	-3.32	27.02	Average Max	H	313.00	58.00	54.00	-26.98	Pass

Test specification	Above 1GHz		Result	Pass
Environmental Conditions:	Temp (°C):	22		
	Humidity (%)	44		
	Atmospheric (mbar):	1020		
Tested by:	Osvaldo Casorla			
Test Date:	10/08/2014			
Remarks:	**802.11n-HT20**			

1GHz- 25GHz: 802.11n-HT20- Low Channel (2412MHz)

Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
14475.34	41.49	6.28	10.92	58.69	Peak Max	H	219.00	263.00	74.00	-15.31	Pass
15392.11	41.34	6.50	9.92	57.77	Peak Max	V	184.00	259.00	74.00	-16.23	Pass
17948.85	39.84	6.61	14.29	60.74	Peak Max	H	175.00	343.00	74.00	-13.26	Pass
14475.34	28.85	6.28	10.92	46.05	Average Max	H	219.00	263.00	54.00	-7.95	Pass
15392.11	28.06	6.50	9.92	44.49	Average Max	V	184.00	259.00	54.00	-9.51	Pass
17948.85	26.80	6.61	14.29	47.70	Average Max	H	175.00	343.00	54.00	-6.30	Pass

Note: Both horizontal and vertical polarization were verified.

Lower Restricted Band at 2390MHz

Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
2390.00	45.20	2.69	-3.53	44.36	Peak Max	V	107.00	293.00	74.00	-29.64	Pass
2390.00	41.62	2.69	-3.54	40.77	Peak Max	H	114.00	360.00	74.00	-33.23	Pass
2390.00	30.69	2.69	-3.53	29.85	Average Max	V	107.00	293.00	54.00	-24.15	Pass
2390.00	28.74	2.69	-3.54	27.90	Average Max	H	114.00	360.00	54.00	-26.10	Pass

1GHz- 25GHz: 802.11n-HT20- Mid Channel (2437MHz)

Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
14484.56	42.27	6.28	10.94	59.49	Peak Max	H	166.00	172.00	74.00	-14.51	Pass
15377.12	40.26	6.50	9.88	56.64	Peak Max	V	99.00	304.00	74.00	-17.36	Pass
17948.95	39.72	6.61	14.29	60.62	Peak Max	V	303.00	302.00	74.00	-13.38	Pass
14484.56	28.93	6.28	10.94	46.15	Average Max	V	117.00	190.00	54.00	-7.85	Pass
15377.12	27.95	6.50	9.88	44.33	Average Max	V	99.00	304.00	54.00	-9.67	Pass
17948.95	26.77	6.61	14.29	47.67	Average Max	V	303.00	302.00	54.00	-6.33	Pass

Note: Both horizontal and vertical polarization were verified.

1GHz- 25GHz: 802.11n-HT20-High Channel (2462MHz)

Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
14484.67	41.74	6.28	10.94	58.96	Peak Max	H	227.00	139.00	74.00	-15.04	Pass
15428.27	40.93	6.50	10.02	57.45	Peak Max	H	223.00	266.00	74.00	-16.55	Pass
17983.25	39.22	6.61	14.41	60.24	Peak Max	V	190.00	173.00	74.00	-13.76	Pass
14484.67	28.93	6.28	10.94	46.15	Average Max	H	227.00	139.00	54.00	-7.85	Pass
15428.27	28.09	6.50	10.02	44.62	Average Max	H	223.00	266.00	54.00	-9.38	Pass
17983.25	26.62	6.61	14.41	47.63	Average Max	V	190.00	173.00	54.00	-6.37	Pass

Note: Both horizontal and vertical polarization were verified.

Higher Restricted Band at 2483.5MHz

Frequency MHz	Raw dBµV	Cable Loss	AF dB	Level dBµV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBµV/m	Margin dB	Pass /Fail
2483.50	40.54	2.72	-3.32	39.95	Peak Max	H	158.00	206.00	74.00	-34.05	2482.84
2483.50	44.66	2.72	-3.31	44.07	Peak Max	V	119.00	326.00	74.00	-29.93	2484.68
2483.50	27.67	2.72	-3.32	27.08	Average Max	H	158.00	206.00	54.00	-26.92	2482.84
2483.50	28.48	2.72	-3.31	27.89	Average Max	V	119.00	326.00	54.00	-26.11	2484.68

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	07/13/2014	1 Year	07/13/2015	☑
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	10/13/2014	1 Year	10/13/2015	☑
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. 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

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