



RF TEST REPORT



Report No.: RF_SL14102101-MIM-001_FCC-UNII
Supersede Report No.: None

Applicant	Mimosa Networks, Inc.
Product Name	Point to Point Device
Model No.	B5c Connectorized
Test Standard	47 CFR Part 15.407: 2014
Test Procedure	ANSI C63.4: 2009 789033 D02 General UNII Test Procedures New Rules v01
FCC ID	2ABZJ-100-00014
Date of test	10/27/2014 - 10/29/2014
Issue Date	11/18/2014
Test Result	<u>Pass</u> Fail
Equipment complied with the specification	[x]
Equipment did not comply with the specification	[]
	
Angel Escamilla	David Zhang
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:
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Laboratory Introduction

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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/RRR, NIST	EMI, EMS, RF, Telecom, Safety
Japan	VCCI, JATE, TELEC, RFT	EMI, RF/Wireless, Telecom
Mexico	NOM, COFETEL, Caniety	Safety, EMC, RF/Wireless, Telecom
Europe	A2LA, NIST	EMC, RF, Telecom, Safety
Israel	COM, 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
RF_SL14102101-MIM-001_FCC-UNII	-	Original	11/18/2014

2 Executive Summary

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

Company: Mimosa Networks, Inc.
Product: Point to Point Device
Model: B5c Connectorized

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	Mimosa Networks, Inc.
Applicant Address	300 Orchard City Dr. Suite 100, Campbell, CA 95008, USA
Manufacturer Name	Mimosa Networks, Inc.
Manufacturer Address	300 Orchard City Dr. Suite 100, 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	Point to Point Device
Model No.	B5c Connectorized
Trade Name	Mimosa
Serial No.	Prototype
Input Power via PoE	48VDC
PoE Adapter Manu/Model	Fortune Power / GRT 480125A
Power Adapter SN	N/A
Hardware version	N/A
Software version	N/A
Date of EUT received	10/27/2014
Equipment Class/ Category	TNB
Highest Clock Frequency	N/A
Port/Connectors	RJ45, N-Type

6.2 Radio Description

Spec for Radio -

Radio Type	
Operating Frequency	4950MHz – 4980MHz 5260MHz – 5320MHz 5500MHz – 5700MHz 5165MHz – 5240MHz 5745MHz – 5825MHz
Modulation	OFDM, 16-QAM, 64-QAM, 256-QAM
Channel Spacing	20MHz
Number of Channels	7
Antenna Gain	0dBi: Dual-pol antenna 25dBi: Dual-pol antenna
Antenna Type	0dBi: External antenna 25dBi: External antenna
Antenna Connector Type	N-type

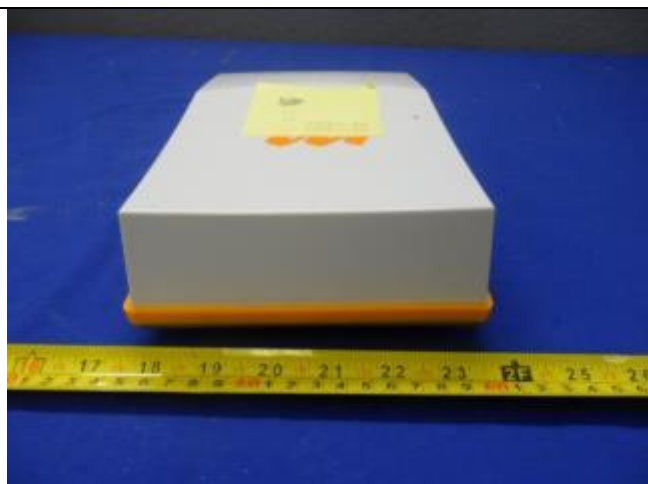
6.3 EUT test modes/configuration Description

Test Mode		Note
Test_mode_1	Continuous Transmit	-
Test_mode_2	-	-
Remark:		

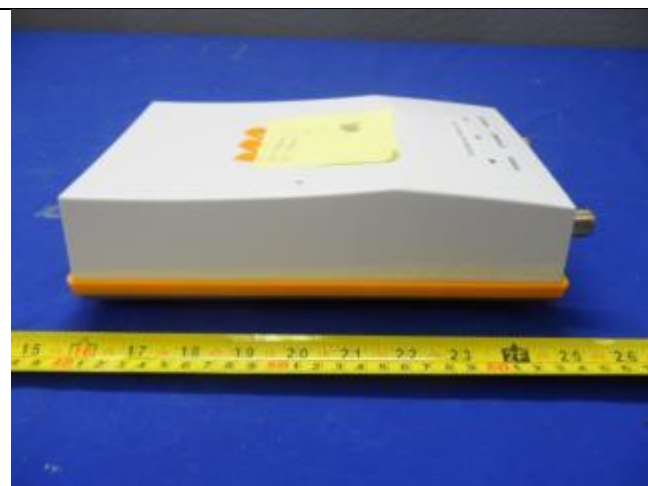
6.4 EUT Photos - External



EUT – Front View



EUT – Rear View



EUT – Left View



EUT – Right View



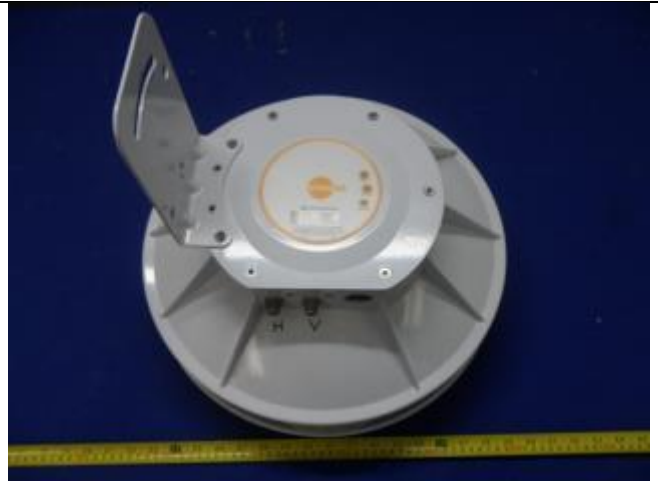
EUT – Top View



EUT – Bottom View



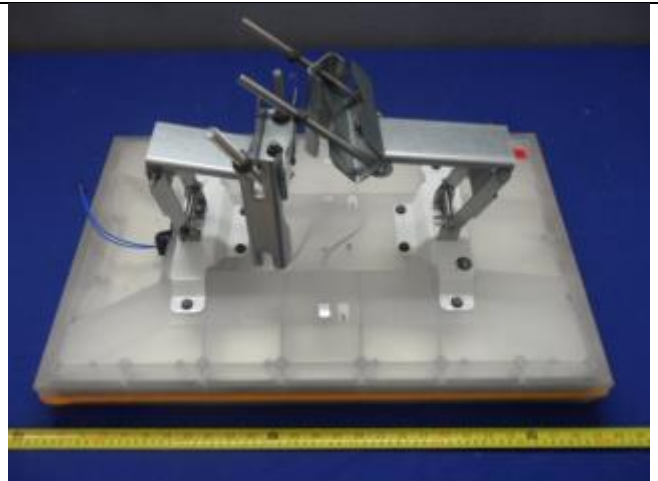
25dBi Antenna – Top View



25dBi Antenna – Bottom View

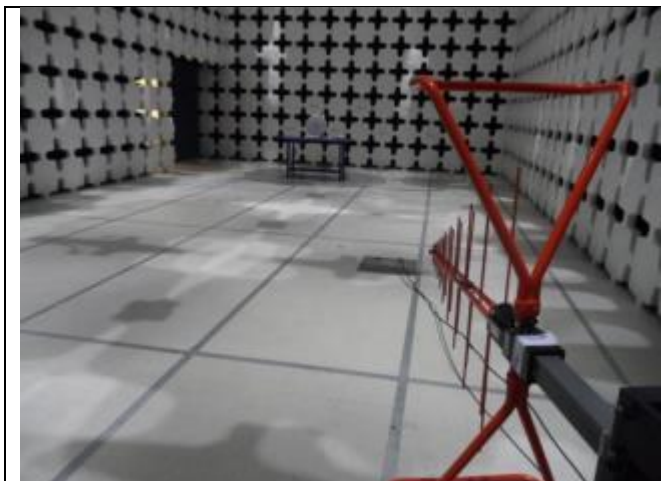


0dBi Antenna – Top View

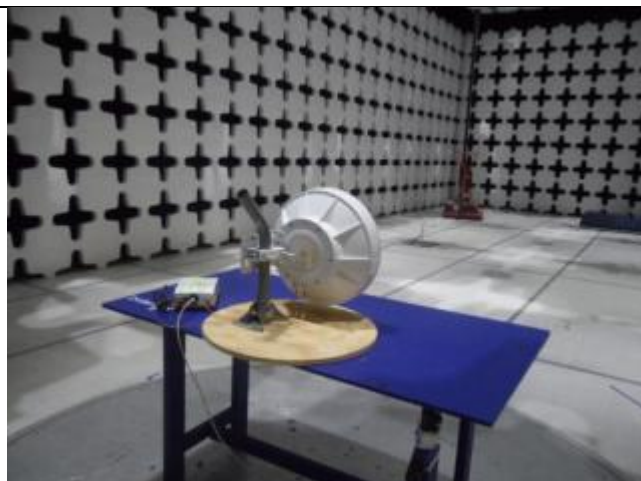


0dBi Antenna – Bottom View

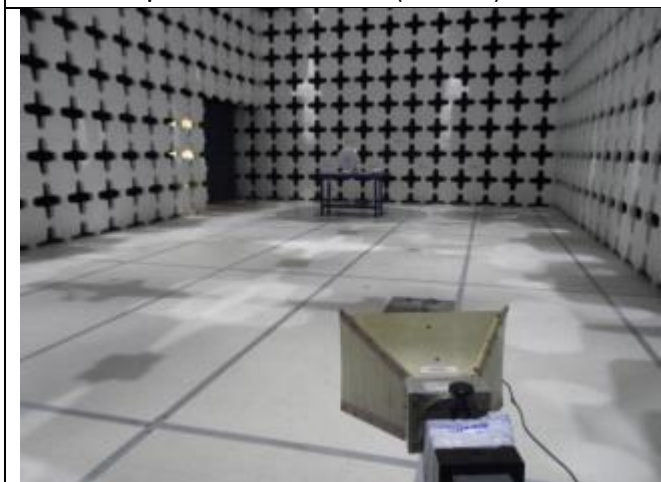
6.5 EUT Test Setup Photos



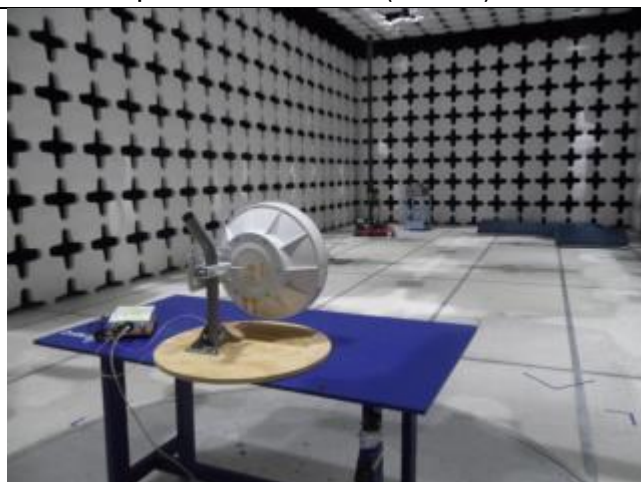
Radiated Spurious Emissions <1GHz (25dBi Ant) – Front View



Radiated Spurious Emissions <1GHz (25dBi Ant) – Rear View



Radiated Spurious Emissions 1-18GHz (25dBi Ant) – Front View



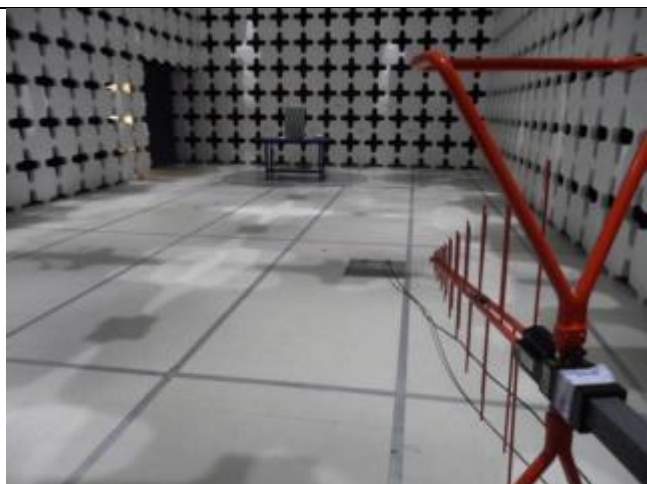
Radiated Spurious Emissions 1-18GHz (25dBi Ant) – Rear View



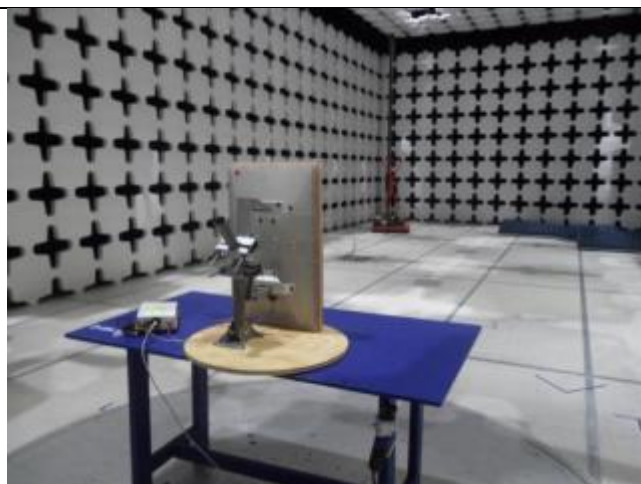
Radiated Spurious Emissions 18-40GHz (25dBi Ant) – Front View



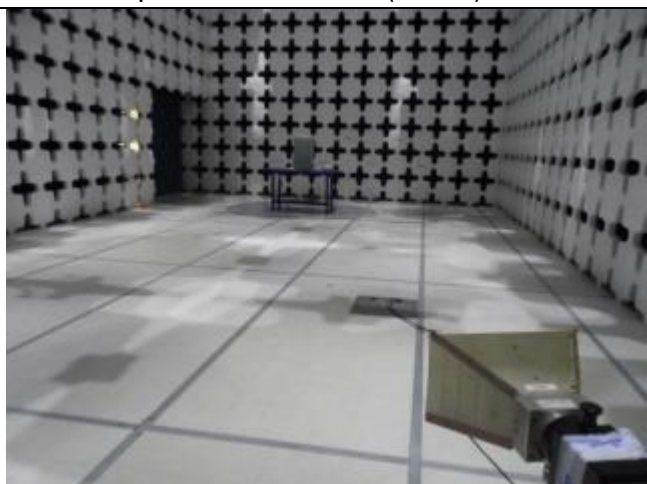
Radiated Spurious Emissions 18-40GHz (25dBi Ant) – Rear View



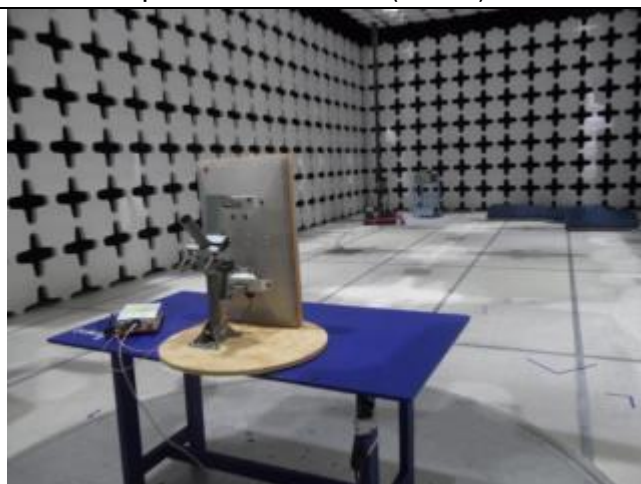
Radiated Spurious Emissions <1GHz (0dBi Ant) – Front View



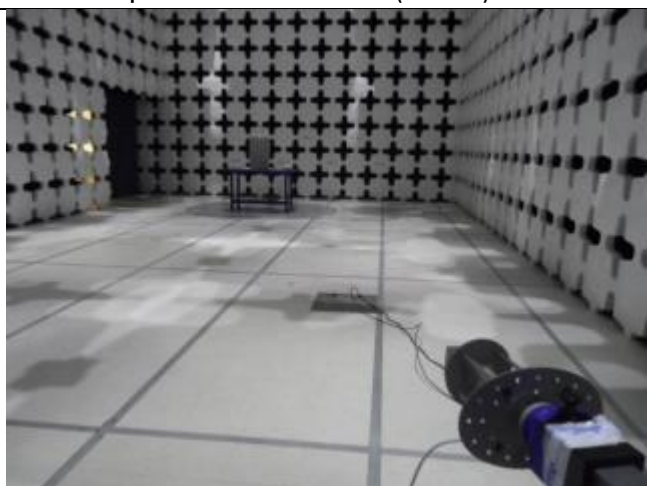
Radiated Spurious Emissions <1GHz (0dBi Ant) – Rear View



Radiated Spurious Emissions 1-18GHz (0dBi Ant) – Front View



Radiated Spurious Emissions 1-18GHz (0dBi Ant) – Rear View



Radiated Spurious Emissions 18-40GHz (0dBi Ant) – Front View



Radiated Spurious Emissions 18-40GHz (0dBi Ant) – Rear View

7 Supporting Equipment/Software and cabling Description

7.1 Supporting Equipment

Item	Supporting Equipment Description	Model	Serial Number	Manufacturer	Note
1	Laptop	T530	-	Lenovo	-
2	PoE Adapter	GRT 280125A	-	Fortune Power	-

7.2 Test Software Description

Test Item	Software	Description
RF Tests	Software provided by manufacturer	Set the EUT to different channels and modulations

8 Test Summary

Test Item	Test standard		Test Method/Procedure	Pass / Fail
Radiated Spurious Emissions	FCC	15.407(b) 15.209(a)	ANSI C63.4 – 2009 789033 D02 General UNII Test Procedures New Rules v01	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> N/A
Remark	<ol style="list-style-type: none"> All measurement uncertainties do not take into consideration for all presented test results. The applicant shall ensure frequency stability by showing that an emission is maintained within the band of operation under all normal operating conditions as specified in the user's manual. 			

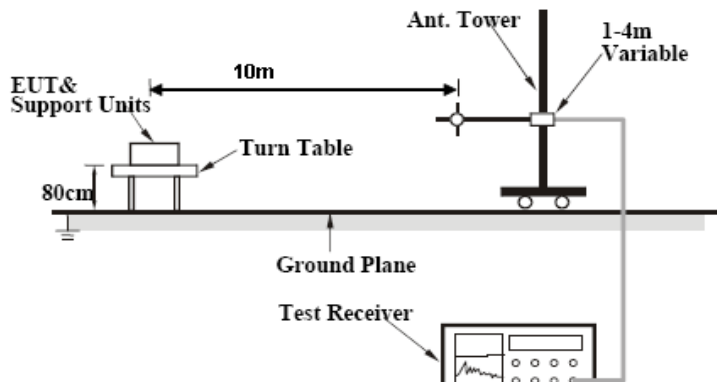
9 Measurement Uncertainty

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

10 Measurements, Examination and Derived Results

10.1 Radiated Spurious Emissions

Requirement(s):

Spec	Requirement	Applicable										
FCC §15.407 FCC §15.209	<p>Except as provided elsewhere, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table at a measurement distance of 3 meters:</p> <table><thead><tr><th>Frequency range (MHz)</th><th>Field Strength (uV/m)</th></tr></thead><tbody><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></tbody></table>	Frequency range (MHz)	Field Strength (uV/m)	30 – 88	100	88 – 216	150	216 960	200	Above 960	500	<input checked="" type="checkbox"/>
Frequency range (MHz)	Field Strength (uV/m)											
30 – 88	100											
88 – 216	150											
216 960	200											
Above 960	500											
Test Setup												
Test Procedure	<ol style="list-style-type: none">1. The EUT was switched on and allowed to warm up to its normal operating condition.2. Measurement was made at a distance of 10 m.3. The measuring antenna was set to 1 meter away from the ground plain.4. Maximization of the emissions was carried out by rotating the EUT, and adjusting the antenna azimuth.5. The test was done in both horizontal and vertical antenna polarizations.6. The measurement shall be made with the transmitter set to the lowest operating frequency and with the transmitter set to the highest operating frequency											
Remark												
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail											

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Radiated Emission Test Results (Below 1GHz)

Test specification	Radiated Spurious Emissions			
Environmental Conditions:	Temp (°C):	22	Result	PASS
	Humidity (%)	41		
	Atmospheric (mbar):	1021		
Mains Power:	120VAC/60Hz			
Tested by:	Angel Escamilla			
Test Date:	10/28/2014			
Remarks:	Chains 1 and 2 transmitting simultaneously at 4950MHz with 0dBi antenna Chains 3 and 4 transmitting simultaneously at 5165MHz with 0dBi antenna			

30MHz – 1000MHz at 10m distance

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
76.09	56.27	1.47	-31.33	26.41	Quasi Max	V	139.00	79.00	30.00	-3.59	Pass
56.19	56.44	1.25	-31.52	26.17	Quasi Max	V	200.00	0.00	30.00	-3.83	Pass
35.44	47.31	1.16	-22.92	25.55	Quasi Max	V	139.00	79.00	30.00	-4.45	Pass
150.18	49.60	2.22	-27.21	24.61	Quasi Max	V	139.00	79.00	33.50	-8.89	Pass
306.94	48.35	3.02	-26.14	25.23	Quasi Max	V	139.00	79.00	36.00	-10.77	Pass
239.79	50.10	2.72	-28.08	24.74	Quasi Max	V	139.00	79.00	36.00	-11.26	Pass

Test specification	Radiated Spurious Emissions			
Environmental Conditions:	Temp (°C):	23	Result	PASS
	Humidity (%)	43		
	Atmospheric (mPa):	1021		
Mains Power:	120VAC/60Hz			
Tested by:	Angel Escamilla			
Test Date:	10/28/2014			
Remarks:	Chains 1 and 2 transmitting simultaneously at 4950MHz with 25dBi antenna Chains 3 and 4 transmitting simultaneously at 5165MHz with 25dBi antenna			

30MHz – 1000MHz at 10m distance

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
36.61	49.52	1.16	-23.74	26.94	Quasi Max	V	139.00	79.00	30.00	-3.06	Pass
48.91	55.74	1.16	-30.05	26.85	Quasi Max	V	139.00	79.00	30.00	-3.15	Pass
76.11	56.13	1.46	-31.31	26.28	Quasi Max	V	100.00	4.00	30.00	-3.72	Pass
62.96	54.99	1.32	-31.24	25.07	Quasi Max	H	139.00	79.00	30.00	-4.93	Pass
307.72	51.16	3.03	-26.08	28.11	Quasi Max	V	139.00	79.00	36.00	-7.89	Pass
239.56	53.19	2.72	-28.08	27.83	Quasi Max	V	139.00	79.00	36.00	-8.17	Pass

Radiated Emission Test Results (1GHz-40GHz) – 0dBi Antenna at 10m Distance

Chains 1 and 2 transmitting simultaneously at 4965MHz with 0dBi antenna, Chains 3 and 4 transmitting simultaneously at 5165MHz with 0dBi antenna

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
8784.82	35.30	4.25	-5.55	34.00	Peak Max	V	100.00	21.00	64.00	-30.00	Pass
14269.54	43.49	6.00	-11.35	38.14	Peak Max	V	200.00	32.00	64.00	-25.86	Pass
8784.82	32.30	4.25	-5.55	31.00	Average	V	100.00	21.00	44.00	-13.00	Pass
14269.54	43.49	6.00	-11.35	38.14	Average	V	200.00	32.00	44.00	-5.86	Pass
Remark	Emissions were 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 polarizations were verified.										

Radiated Emission Test Results (1GHz-40GHz) – 25dBi Antenna at 10m Distance
















Chains 1 and 2 transmitting simultaneously at 4965MHz with 25dBi antenna, Chains 3 and 4 transmitting simultaneously at 5165MHz with 25dBi antenna







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
6979.79	33.70	4.68	-2.41	35.97	Peak Max	H	100.00	312.00	64.00	-28.03	Pass
8764.98	41.20	4.25	-5.55	39.90	Peak Max	V	100.00	234.00	64.00	-24.10	Pass
14005.59	43.25	6.00	-11.35	37.90	Peak Max	V	100.00	353.00	64.00	-26.10	Pass
6979.79	31.70	4.68	-2.41	33.97	Average	H	100.00	312.00	44.00	-10.03	Pass
8764.98	35.20	4.25	-5.55	33.90	Average	V	100.00	234.00	44.00	-10.10	Pass
14005.59	43.45	6.00	-11.55	37.90	Average	V	100.00	353.00	44.00	-6.10	Pass
Remark	Emissions were 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 polarizations were verified.										

Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Cycle	Cal Due	In use
Radiated Spurious Emissions						
R & S Receiver	ESL6	100178	03/01/2014	1 Year	03/01/2015	<input checked="" type="checkbox"/>
R & S Receiver	ESIB 40	100179	05/24/2014	1 Year	05/24/2015	<input checked="" type="checkbox"/>
ETS-Lingren Loop Antenna	6512	00049120	08/22/2014	1 Year	08/22/2015	<input type="checkbox"/>
Bi-Log antenna (30MHz~2GHz)	JB1	A030702	08/12/2014	1 Year	08/12/2015	<input checked="" type="checkbox"/>
Horn Antenna (1-26.5GHz)	3115	10SL0059	04/26/2014	1 Year	04/26/2015	<input checked="" type="checkbox"/>
Horn Antenna (18-40 GHz)	AH-840	101013	04/23/2014	1 Year	04/23/2015	<input checked="" type="checkbox"/>
Pre-Amplifier (1-26.5GHz)	8449B	3008A00715	05/30/2014	1 Year	05/30/2015	<input checked="" type="checkbox"/>
Microwave Preamplifier (18-40 GHz)	PA-840	181251	05/30/2014	1 Year	05/30/2015	<input checked="" type="checkbox"/>
3 Meters SAC	3M	N/A	10/13/2014	1 Year	10/13/2015	<input type="checkbox"/>
10 Meters SAC	10M	N/A	06/05/2014	1 Year	06/05/2015	<input checked="" type="checkbox"/>
Sekonic Hygro Hermograph	ST-50	HE01-000092	05/25/2014	1 Year	05/25/2015	<input checked="" type="checkbox"/>

Annex B. SIEMIC Accreditation

Accreditations	Document	Scope / Remark
ISO 17025 (A2LA)		Please see the documents for the detailed scope
ISO Guide 65 (A2LA)		Please see the documents for the detailed scope
TCB Designation		A1, A2, A3, A4, B1, B2, B3, B4, C
FCC DoC Accreditation		FCC Declaration of Conformity Accreditation
FCC Site Registration		3 meter site
FCC Site Registration		10 meter site
IC Site Registration		3 meter site
IC Site Registration		10 meter site
EU NB		Radio & Telecommunications Terminal Equipment: EN45001 – EN ISO/IEC 17025
		Electromagnetic Compatibility: EN45001 – EN ISO/IEC 17025
Singapore iDA CB(Certification Body)		Phase I, Phase II
Vietnam MIC CAB Accreditation		Please see the document for the detailed scope
Hong Kong OFCA		(Phase II) OFCA Foreign Certification Body for Radio and Telecom
		(Phase I) Conformity Assessment Body for Radio and Telecom
Industry Canada CAB		Radio: Scope A – All Radio Standard Specification in Category I
		Telecom: CS-03 Part I, II, V, VI, VII, VIII

Japan Recognized Certification Body Designation		<p>Radio: A1. Terminal equipment for purpose of calling</p> <p>Telecom: B1. Specified radio equipment specified in Article 38-2, Paragraph 1, Item 1 of the Radio Law</p>
Korea CAB Accreditation		<p>EMI: KCC Notice 2008-39, RRL Notice 2008-3: CA Procedures for EMI KN22: Test Method for EMI</p> <p>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</p> <p>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</p> <p>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</p>
Taiwan NCC CAB Recognition		LP0002, PSTN01, ADSL01, ID0002, IS6100, CNS14336, PLMN07, PLMN01, PLMN08
Taiwan BSMI CAB Recognition		CNS 13438
Japan VCCI		<p>R-3083: Radiation 3 meter site</p> <p>C-3421: Main Ports Conducted Interference Measurement</p> <p>T-1597: Telecommunication Ports Conducted Interference Measurement</p>
Australia CAB Recognition		<p>EMC: AS/NZS CISPR 11, AS/NZS CISPR 14.1, AS/NZS CISPR22, AS/NZS 61000.6.3, AS/NZS 61000.6.4</p> <p>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</p> <p>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</p>
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