

RF TEST RContactEPORT



Report No.: FCC_IC_SL18042402-SHU-001R1-MXC640

Supersede Report No.: NONE

Applicant	:	Shure Incorporated
Product Name	:	Wired Discussion System
Model No.	:	MXC640
Test Standard	:	FCC 15.225 RSS-210 Issue 9: 2016
Test Method	:	FCC 15.225 ANSI C63.10 2013 RSS Gen Issue 4 2014
FCC ID	:	DD4MXCNFC1
IC ID	:	616A-MXCNFC1
Dates of test	:	07/09/2018 – 07/11/2018
Issue Date	:	07/12/2018
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:

	
Ciper	Chen Ge
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, CA 95035



775 Montague Expressway, Milpitas, CA 95035, USA • Phone: (+1) 408 526 1188 • Facsimile (+1) 408 526 1088

Visit us at: www.siemic.com; Follow us at:



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/RRR, 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 & Radio Equipment Directive (RED)
Japan	MIC (RCB 208)	RF, Telecom
Hong Kong	OFTA (US002)	RF, Telecom

CONTENTS

1	REPORT REVISION HISTORY	4
2	EXECUTIVE SUMMARY	5
3	CUSTOMER INFORMATION	5
4	TEST SITE INFORMATION	5
5	MODIFICATION	5
6	EUT INFORMATION	6
6.1	EUT Description	6
6.2	Radio Description	6
6.3	EUT test modes/configuration Description.....	7
7	SUPPORTING EQUIPMENT/SOFTWARE AND CABLING DESCRIPTION.....	8
7.1	Supporting Equipment	8
7.2	Cabling Description	8
7.3	Test Software Description	8
8	TEST SUMMARY	9
9	MEASUREMENT UNCERTAINTY	10
9.1	Radiated Emissions (30MHz to 1GHz).....	10
9.2	Radiated Emissions (1GHz to 40GHz).....	10
9.3	RF conducted measurement.....	11
10	MEASUREMENTS, EXAMINATION AND DERIVED RESULTS	12
10.1	Antenna Requirement.....	12
10.2	Conducted Emissions Test Result	13
10.3	Radiated Measurements.....	16
10.3.1	Radiated Measurements 30MHz to 1GHz	16
10.3.2	Radiated Measurements below 30MHz.....	18
	ANNEX A. TEST INSTRUMENT	22
	ANNEX B. SIEMIC ACCREDITATION	23

1 Report Revision History

Report No.	Report Version	Description	Issue Date
FCC_IC_SL18042402-SHU-001R1-MXC640	None	Original	07/12/2018

2 Executive Summary

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

Company: Shure Incorporated
Product: Wired Discussion System
Model: MXC640

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	:	Shure Incorporated
Applicant Address	:	5800 Touhy Ave, Niles, IL 60714 USA
Manufacturer Name	:	Shure Incorporated
Manufacturer Address	:	5800 Touhy Ave, Niles, IL 60714 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	Wired Discussion System
Model No.	MXC640
Trade Name	SHURE
Serial No.	1
Input Power	48 VDC
Hardware version	N/A
Software version	N/A
Date of EUT received	07/09/2018
Equipment Class/ Category	DCD
Working Frequencies	13.56MHz
Port/Connectors	Microphone Connector, RJ45 (input and output) 3.5mm audio jack

6.2 Radio Description

Specifications for Radio:

Radio Type	RFID
Operating Frequency	13.56MHz
Modulation	ASK (13.56MHz)
Channel Spacing	None
Antenna Type	PCB
Antenna Gain	-39.9 dBi (NFC Coupler)
Antenna Connector Type	N/A

Channel List:

Type	Mode	Channel No.	Frequency (MHz)	Available (Y/N)
RFID	13.56MHz	1	13.56	Y

6.3 EUT test modes/configuration Description

Mode	Note
RF test	EUT is set to continuously transmit at 13.56MHz.
Note: None	

7 Supporting Equipment/Software and cabling Description

7.1 Supporting Equipment

Index	Supporting Equipment Description	Model	Serial No	Manu	Note
1	Laptop	PP01L Latitude E5440	F1WPF12	Dell	-
2	Central Control Unit	DIS-CCU	1723-02D	SHURE	-

7.2 Cabling Description

Name	Connection Start		Connection Stop		Length / shielding Info		Note
	From	I/O Port	To	I/O Port	Length (m)	Shielding	
RJ45	Central Control Unit	RJ45	EUT	RJ45	2	Unshielded	-

7.3 Test Software Description

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

8 Test Summary

Test Item	Test standard		Test Method/Procedure	Pass / Fail
Antenna Requirement	FCC	15.203	ANSI C63.10 – 2013 558074 D01 DTS Meas. Guidance v03r02	☒ Pass
	IC			☐ N/A
AC Conducted Emissions Voltage	FCC	15.225(a)	ANSI C63.10 2013 RSS Gen. 8.8	☒ Pass
	IC	RSS Gen (7.2.2)		☐ N/A

Test Item	Test standard		Test Method/Procedure		Pass / Fail
Radiated Measurements	FCC	15.225(d), 15.209	FCC	ANSI C63.10 2013	☒ Pass
	IC	RSS210(A2.6)	IC	RSS Gen 6.13	☐ N/A
Receiver Spurious Emission	IC	-	IC	RSS Gen 7.1	☐ Pass ☒ N/A
Frequency Stability	FCC	15.225(e)	FCC	-	☐ Pass
	IC	RSS210(A2.6)	IC	RSS Gen 6.11	☒ N/A
Occupied Bandwidth	FCC	-	FCC	-	☐ Pass
	IC	RSS-210(5.9.1)	IC	RSS Gen 6.6	☒ N/A
Remark	- All measurement uncertainties are not taken into consideration for all presented test result. - 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. - Conducted testing refer SL17080301-SHU-008, they are use same module.				

9 Measurement Uncertainty

9.1 Radiated Emissions (30MHz to 1GHz)

The test is to measure the radiated emissions of the EUT.

Some error sources that can contribute to the total uncertainty:

- Uncertainty of the receiver
- Uncertainty of the antenna
- Uncertainty of cables
- Uncertainty due to the mismatches
- NSA Calibration
- Etc., details see the below table

Source of Uncertainty	Value (dB)	Probability Distribution	Division	Sensitivity Coefficient	Expanded Uncertainty
Receiver Reading	0.12	Rectangular	1.732	1	0.069284
Cable Insertion Loss	0.21	Normal	2	1	0.105
Filter Insertion Loss	0.25	Normal	2	1	0.125
Antenna Factor	0.65	Normal	2	1	0.325
Receiver CW accuracy	0.5	Rectangular	1.732	1	0.2886836
Pulse Amplitude Response	1.5	Rectangular	1.732	1	0.86605081
PRF Response	1.5	Rectangular	1.732	1	0.86605081
Mismatch Filter - Receiver	0.25	U-Shape	1.414	1	0.1768033
NSA Calibration	4.0	U-Shape	1.414	1	2.8288543
Combined Standard Uncertainty					3.0059131
Expanded Uncertainty (K=2)					6.0118262

The total derived measurement uncertainty is +/- 6.00 dB.

9.2 Radiated Emissions (1GHz to 40GHz)

The test is to measure the radiated emissions of the EUT.

Some error sources that can contribute to the total uncertainty:

- Uncertainty of the receiver
- Uncertainty of the antenna
- Uncertainty of cables
- Uncertainty due to the mismatches
- VSWR Calibration
- Etc., details see the below table

Source of Uncertainty	Value (dB)	Probability Distribution	Division	Sensitivity Coefficient	Expanded Uncertainty
Receiver Reading	0.12	Rectangular	1.732	1	0.0692840
Cable Insertion Loss	0.21	Normal	2	1	0.1050000
Filter Insertion Loss	0.25	Normal	2	1	0.1250000
Antenna Factor	0.65	Normal	2	1	0.3250000
Receiver CW accuracy	0.5	Rectangular	1.732	1	0.2886836
Pulse Amplitude Response	1.5	Rectangular	1.732	1	0.8660508
PRF Response	1.5	Rectangular	1.732	1	0.8660508
Mismatch Filter - Receiver	0.25	U-Shape	1.414	1	0.1768033
VSWR Calibration	2.0	U-Shape	1.414	1	1.4144272
Combined Standard Uncertainty					4.2363
Expanded Uncertainty (K=2)					8.4726

The total derived measurement uncertainty is +/- 8.47 dB.

9.3 RF conducted measurement

The test is to measure the RF output power from the EUT.

Some error sources that can contribute to the total uncertainty:

- Uncertainty of the Reference Level Uncertainty
- Uncertainty of variable attenuators
- Uncertainty of cables
- Uncertainty due to the mismatches

Source of Uncertainty	Value (dB)	Probability Distribution	Division	Sensitivity Coefficient	Expanded Uncertainty
Reference Level	0.12	Rectangular	1.732	1	0.069284
Cable Insertion Loss	0.21	Normal	2	1	0.105
Attenuator	0.25	Normal	2	1	0.125
Mismatch	0.25	U-Shape	1.414	1	0.1768033
Combined Standard Uncertainty					0.476087
Expanded Uncertainty (K=2)					0.952174

The total derived measurement uncertainty is +/- 0.95 dB.

10 Measurements, examination and derived results

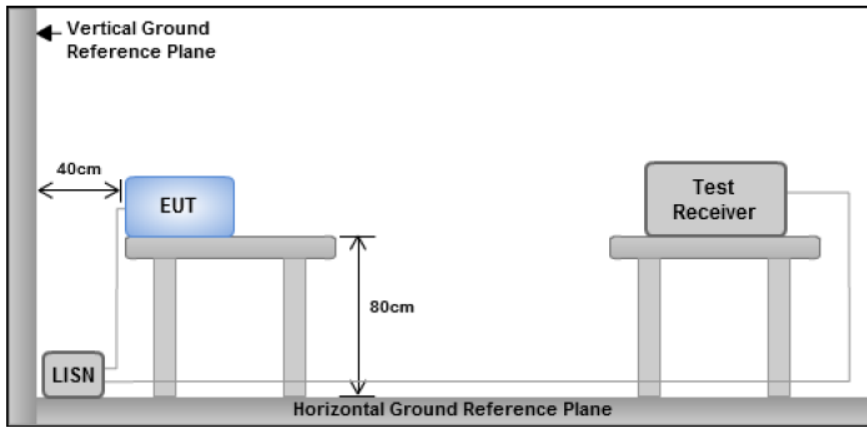
10.1 Antenna Requirement

Spec	Requirement	Applicable
§15.203	An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. Antenna requirement must meet at least one of the following: a) Antenna must be permanently attached to the device. b) The antenna must use a unique type of connector to attach to the device. c) Device must be professionally installed. The installer shall be responsible for ensuring that the correct antenna is employed by the device.	☒
Remark	The NFC antenna is integral to the PCB board permanently to the device which meets the requirement (See Internal Photographs submitted as another Exhibit).	
Result	☒ PASS ☐ FAIL	

10.2 Conducted Emissions Test Result

Conducted Emission Limit

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

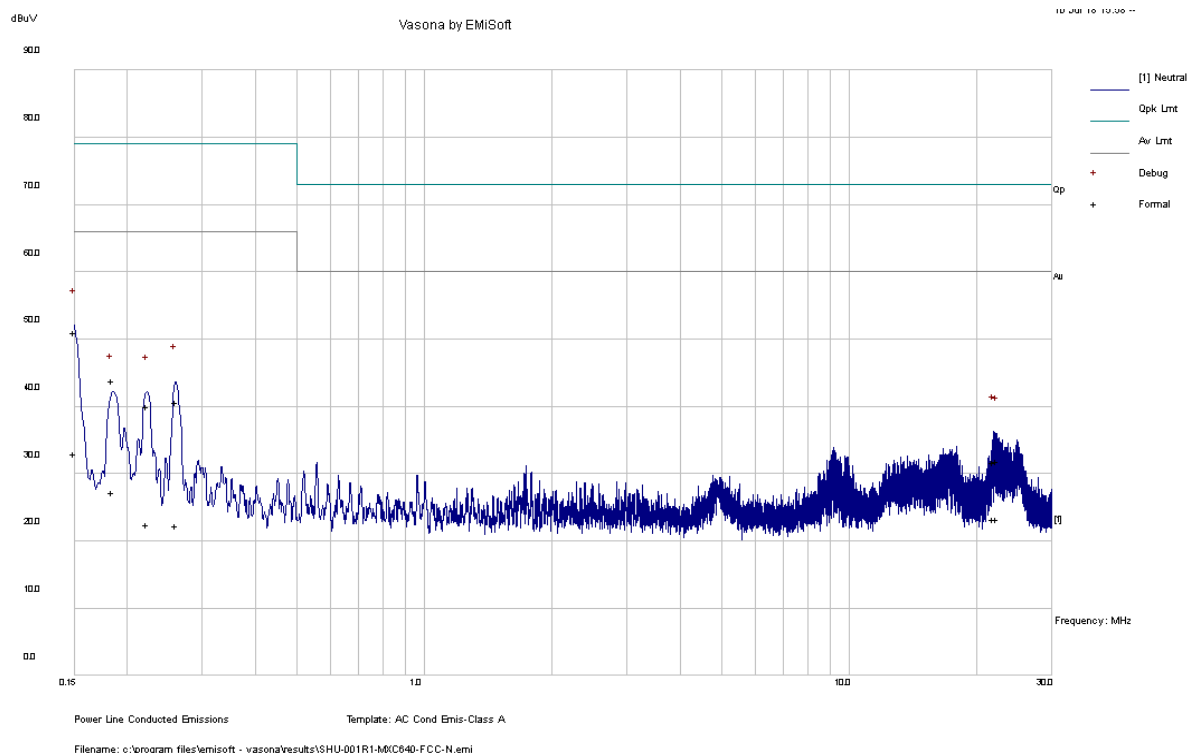
Spec	Item	Requirement	Applicable
§ 15.207, RSS210(A8.1)	a)	For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits set in § 15.207, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). AC Line conducted emission within the band 150kHz to 30MHz	☒
Test Setup	 Note: 1. Support units were connected to second LISN. 2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes		
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.		
Test Date	07/09/2018 – 07/11/2018	Environmental conditions	Temperature 21°C Relative Humidity 38 % Atmospheric Pressure 1025 mbar
Remark	The EUT was tested at 120VAC, 60Hz.		
Result	☒ Pass ☐ Fail		

Test Data ☒ Yes ☐ N/A

Test Plot ☒ Yes ☐ N/A

Test was done by Anish at Conducted Emission test site.

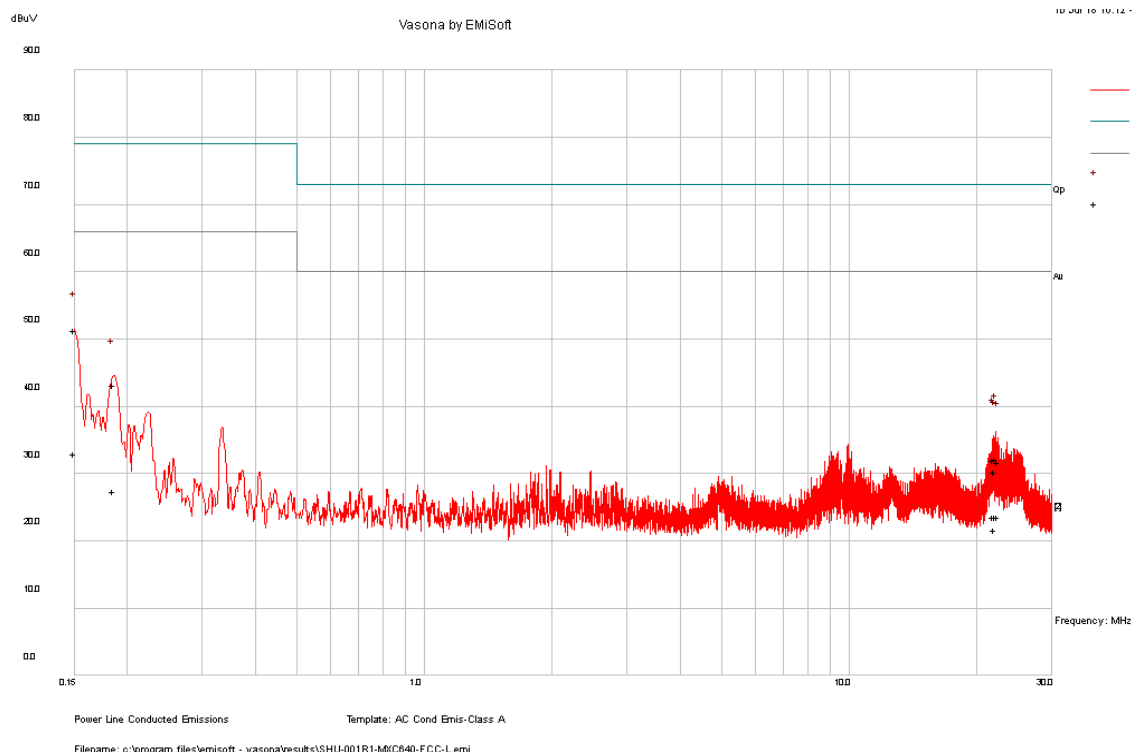
Test specification:	Conducted Emissions		
Mains Power:	120VAC, 60Hz	Result:	☒ Pass ☐ Fail
Tested by:	Anish		
Test Date:	07/09/2018 – 07/11/2018		
Remarks:	AC Line @ Neutral		



Neutral Measurements

Frequency MHz	Raw dBuV	Cable Loss	Factors dB	Level dBuV	Measurement Type	Line/ Neutral	Limit dBuV	Margin dB	Pass /Fail
0.15	41.66	9.33	0.05	51.04	Quasi Peak	Neutral	79	-27.97	Pass
0.26	31.35	9.32	0.04	40.71	Quasi Peak	Neutral	79	-38.29	Pass
21.90	21.72	9.46	0.49	31.68	Quasi Peak	Neutral	73	-41.32	Pass
0.19	34.47	9.32	0.04	43.84	Quasi Peak	Neutral	79	-35.16	Pass
0.22	30.62	9.32	0.04	39.99	Quasi Peak	Neutral	79	-39.01	Pass
22.29	21.91	9.46	0.5	31.86	Quasi Peak	Neutral	73	-41.14	Pass
0.15	23.67	9.33	0.05	33.05	Average	Neutral	66	-32.95	Pass
0.26	12.92	9.32	0.04	22.28	Average	Neutral	66	-43.72	Pass
21.90	13.32	9.46	0.49	23.28	Average	Neutral	60	-36.72	Pass
0.19	17.85	9.32	0.04	27.22	Average	Neutral	66	-38.78	Pass
0.22	13.07	9.32	0.04	22.44	Average	Neutral	66	-43.56	Pass
22.29	13.36	9.46	0.5	23.32	Average	Neutral	60	-36.68	Pass

Test specification:	Conducted Emissions			
Mains Power:	120VAC, 60Hz		Result:	☒ Pass ☐ Fail
Tested by:	Anish			
Test Date:	07/09/2018 – 07/11/2018			
Remarks:	AC Line @ Live			



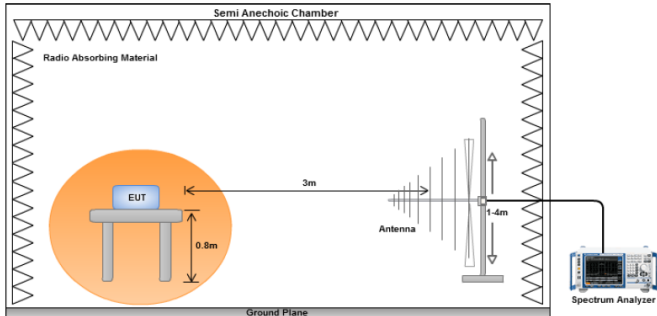
Live Measurements

Frequency MHz	Raw dBuV	Cable Loss	Factors dB	Level dBuV	Measurement Type	Line/Neutral	Limit dBuV	Margin dB	Pass /Fail
0.15	42.01	9.33	0.05	51.39	Quasi Peak	Live	79	-27.61	Pass
0.19	33.83	9.32	0.04	43.2	Quasi Peak	Live	79	-35.8	Pass
22.15	22.2	9.46	0.5	32.16	Quasi Peak	Live	73	-40.85	Pass
21.84	22.12	9.46	0.49	32.07	Quasi Peak	Live	73	-40.93	Pass
21.96	20.28	9.46	0.49	30.24	Quasi Peak	Live	73	-42.76	Pass
22.36	21.82	9.45	0.5	31.77	Quasi Peak	Live	73	-41.23	Pass
0.15	23.71	9.33	0.05	33.09	Average	Live	66	-32.91	Pass
0.19	18.14	9.32	0.04	27.51	Average	Live	66	-38.49	Pass
22.15	13.67	9.46	0.5	23.62	Average	Live	60	-36.38	Pass
21.84	13.69	9.46	0.49	23.65	Average	Live	60	-36.35	Pass
21.96	11.69	9.46	0.49	21.65	Average	Live	60	-38.35	Pass
22.36	13.61	9.45	0.5	23.57	Average	Live	60	-36.43	Pass

10.3 Radiated Measurements

10.3.1 Radiated Measurements 30MHz to 1GHz

Requirement(s):

Spec	Requirement	Applicable										
47 CFR §15.225 RSS-210 (A2.6)	Operation within the band 13.110–14.010 MHz: (a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters. (b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters. (c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters. (d) The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in §15.209. <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	☒
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.											
Test Date	07/09/2018 – 07/11/2018	Environmental conditions Temperature20.1°C Relative Humidity36% Atmospheric Pressure1026mbar										
Remark	-											
Result	☒ Pass☐ Fail											

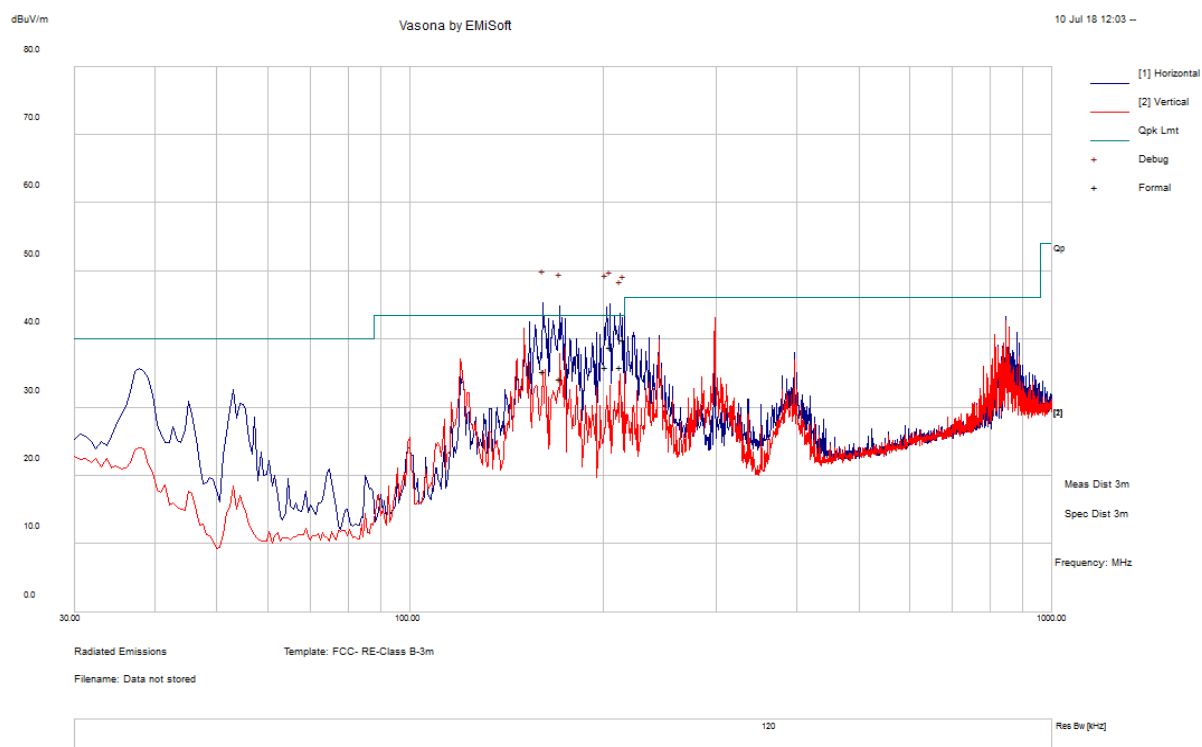
Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test was done by CIPHER at 10 meter chamber.

Test specification:	Radiated Emissions			
Mains Power:	120VAC, 60Hz		Result:	☒ Pass ☐ Fail
Tested by:	Cipher			
Test Date:	07/09//2018 – 07/11/2018			
Remarks:	f=30MHz – 1000MHz Measurements at 3m distance			

f=30MHz – 1000MHz plot and 3-meter distance

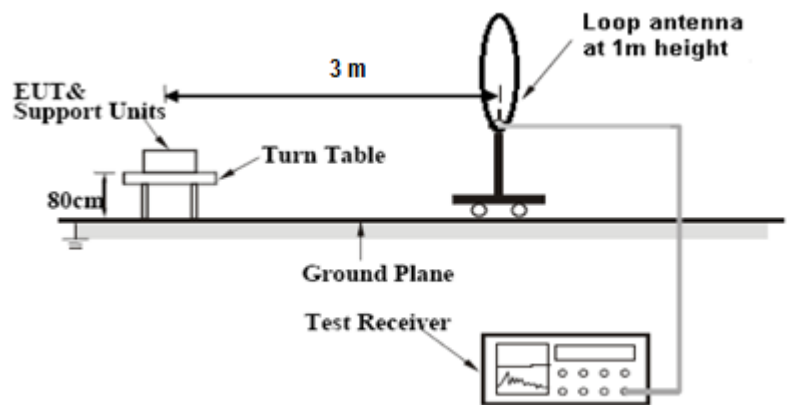


f=30MHz – 1000MHz Measurements

Frequency MHz	Raw dBμV/m	Cable Loss	AF dB	Level dBμV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBμV/m	Margin dB	Pass /Fail
161.00	46.77	12.28	-23.64	35.4	Quasi Max	H	223	339	43.5	-8.1	Pass
205.15	51.45	12.67	-25.13	38.99	Quasi Max	H	203	268	43.5	-4.51	Pass
171.26	46.18	12.36	-24.28	34.26	Quasi Max	H	290	31	43.5	-9.24	Pass
202.02	47.89	12.64	-24.57	35.96	Quasi Max	H	130	341	43.5	-7.54	Pass
215.45	52.98	12.76	-25.74	40.01	Quasi Max	H	200	38	43.5	-3.49	Pass
212.27	49.14	12.74	-25.86	36.02	Quasi Max	H	101	75	43.5	-7.48	Pass

10.3.2 Radiated Measurements below 30MHz

Requirement(s):

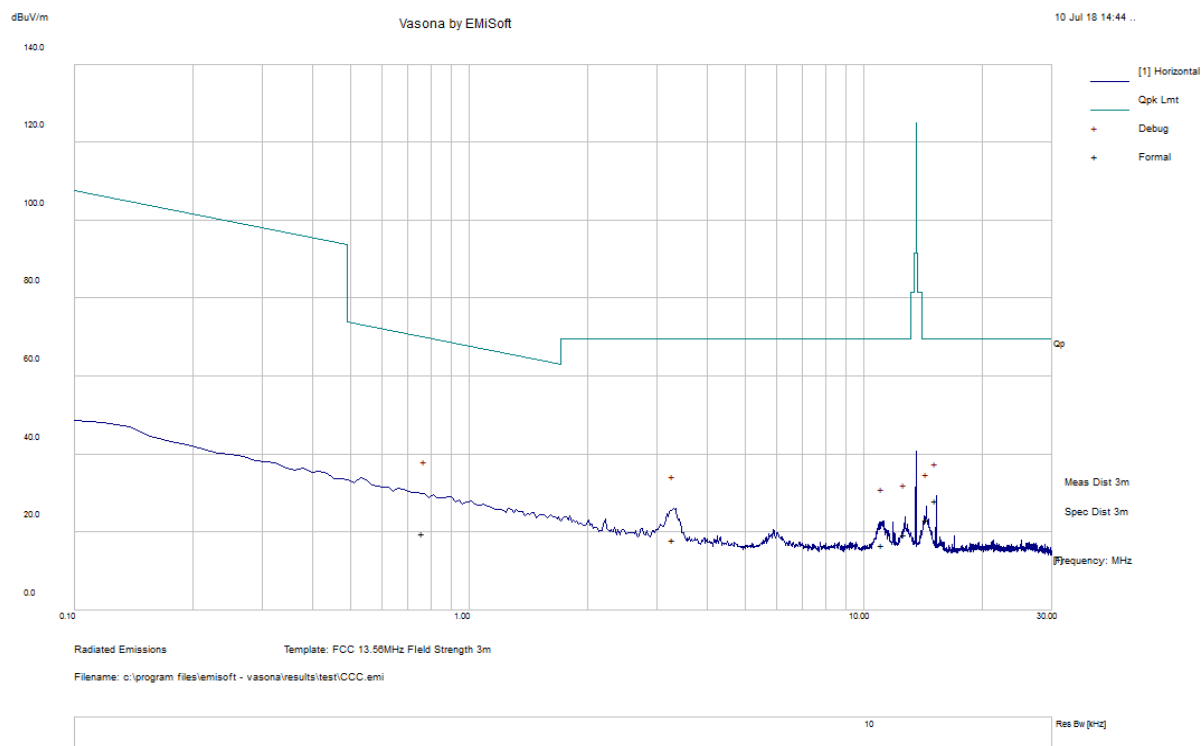
Spec	Requirement	Applicable									
47 CFR §15.225 RSS-210 (A2.6)	Operation within the band 13.110–14.010 MHz (a) The field strength of any emissions within the band 13.553–13.567 MHz shall not exceed 15,848 microvolts/meter at 30 meters. (b) Within the bands 13.410–13.553 MHz and 13.567–13.710 MHz, the field strength of any emissions shall not exceed 334 microvolts/meter at 30 meters. (c) Within the bands 13.110–13.410 MHz and 13.710–14.010 MHz the field strength of any emissions shall not exceed 106 microvolts/meter at 30 meters. (d) The field strength of any emissions appearing outside of the 13.110–14.010 MHz band shall not exceed the general radiated emission limits in §15.209.	☒									
Test Setup											
Procedure	For < 30MHz, Radiated emissions were measured according to ANSI C63.10. The EUT was set to transmit at the highest output power. The EUT was set 3 meter away from the measuring antenna. The loop antenna was positioned 1 meter above the ground from the center of the loop. The measuring bandwidth was set to 10 kHz. The limit is converted from microvolt/meter to decibel microvolt/meter.										
Test Date	07/09/2018 – 07/11/2018	<table border="1"> <tr> <td>Environmental conditions</td> <td>Temperature</td> <td>22°C</td> </tr> <tr> <td></td> <td>Relative Humidity</td> <td>40%</td> </tr> <tr> <td></td> <td>Atmospheric Pressure</td> <td>1026mbar</td> </tr> </table>	Environmental conditions	Temperature	22°C		Relative Humidity	40%		Atmospheric Pressure	1026mbar
Environmental conditions	Temperature	22°C									
	Relative Humidity	40%									
	Atmospheric Pressure	1026mbar									
Remark	-										
Result	☒ Pass ☐ Fail										

Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test was done by CIPHER at 10 meter chamber.

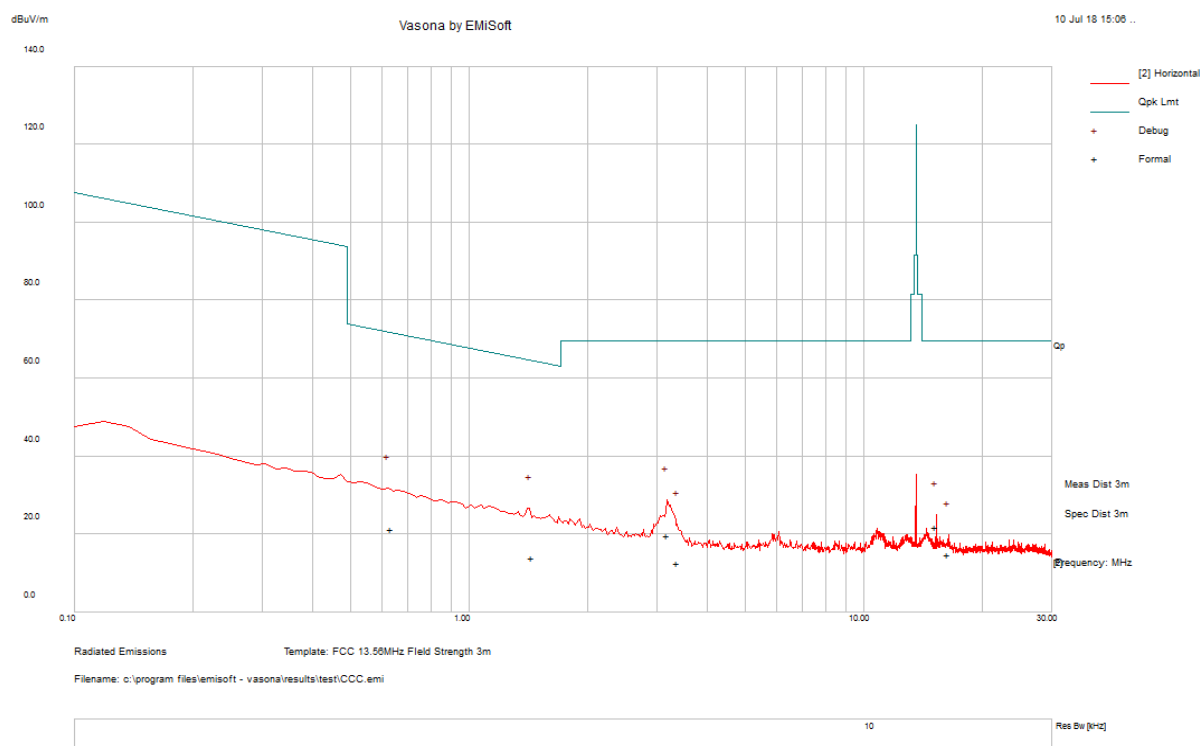
Test specification:	Radiated Spurious Emissions			
Mains Power:	120VAC, 60Hz		Result:	☒ Pass ☐ Fail
Tested by:	Cipher			
Test Date:	07/09/2018 – 07/11/2018			
Remarks:	f= 100kHz – 30MHz plot, and loop antenna at 0 degree			



Quasi Max Measurement

Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (0/90)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
0.76	4.16	0.48	14.98	19.62	Quasi Max	H	99	143	69.97	-50.34	Pass
15.25	25.61	0.87	1.64	28.12	Quasi Max	H	99	310	69.54	-41.42	Pass
14.40	20.67	0.86	1.68	23.21	Quasi Max	H	99	303	69.54	-46.33	Pass
3.29	13.46	0.64	4.02	18.12	Quasi Max	H	99	151	69.54	-51.42	Pass
12.71	16.93	0.82	1.62	19.38	Quasi Max	H	99	129	69.54	-50.16	Pass
11.13	14.41	0.79	1.58	16.78	Quasi Max	H	99	252	69.54	-52.76	Pass

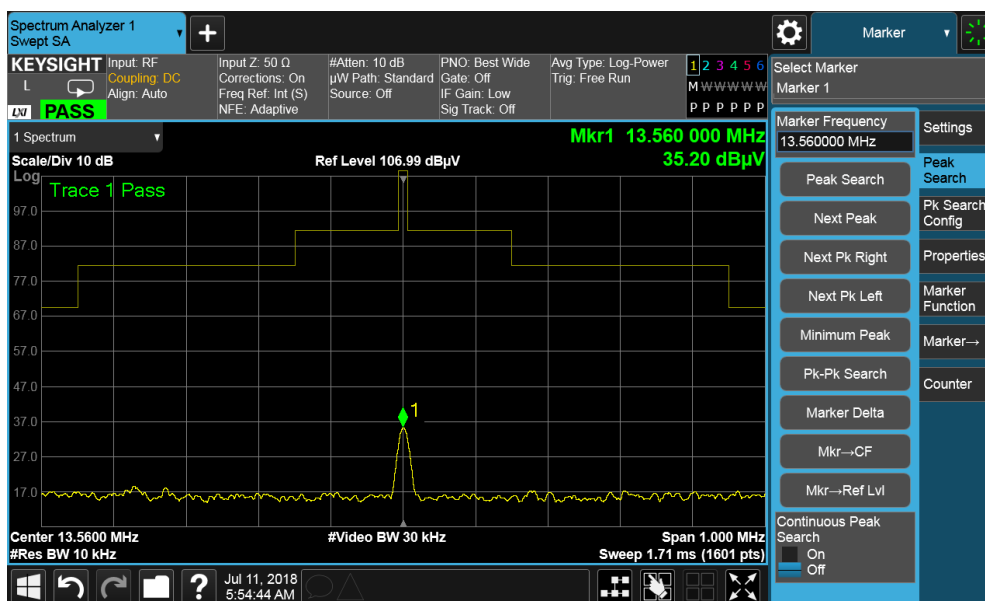
Test specification:	Radiated Spurious Emissions		
Mains Power:	120VAC, 60Hz	Result:	☒ Pass ☐ Fail
Tested by:	Cipher		
Test Date:	07/09/2018 – 07/11/2018		
Remarks:	f= 100kHz – 30MHz plot, and loop antenna at 90 degree		



Quasi Max Measurement

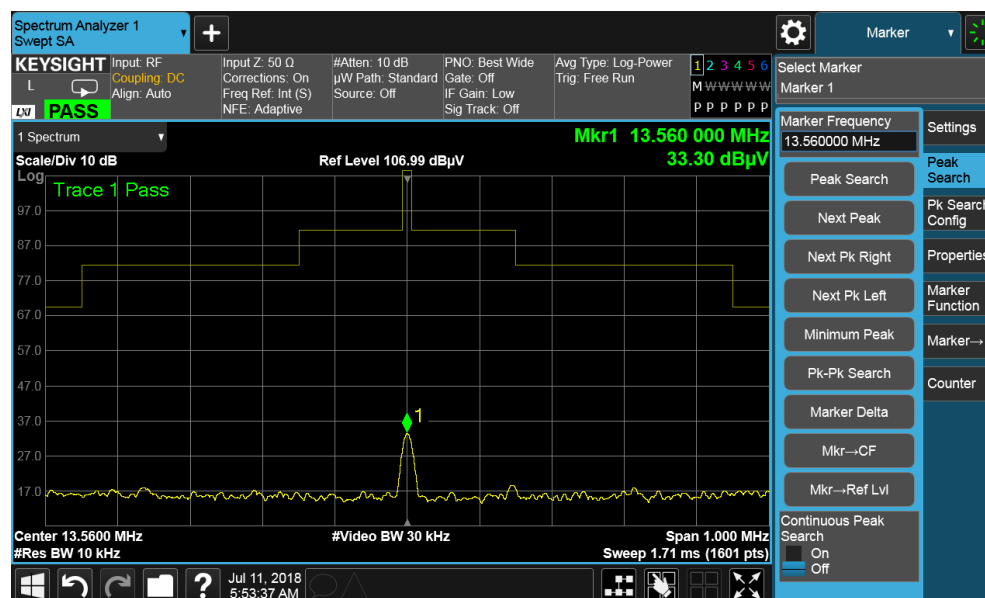
Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol (0/90)	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
1.44	3.36	0.55	10	13.91	Quasi Max	H	99	15	64.44	-50.53	Pass
0.63	4.51	0.46	16.46	21.43	Quasi Max	H	99	255	71.56	-50.13	Pass
3.17	14.78	0.64	4.24	19.65	Quasi Max	H	99	82	69.54	-49.89	Pass
15.26	19.44	0.87	1.64	21.95	Quasi Max	H	99	40	69.54	-47.59	Pass
3.37	8.24	0.64	3.85	12.73	Quasi Max	H	99	230	69.54	-56.81	Pass
16.38	12.55	0.89	1.47	14.92	Quasi Max	H	99	80	69.54	-54.63	Pass

Loop Antenna at 0 degree



Frequency (MHz)	Amplitude (dBμV/m)
13.5600	35.20

Loop Antenna at 90 degree



Frequency (MHz)	Amplitude (dBμV/m)
13.5600	33.30

Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Cycle	Cal Due	In use
Conducted Emissions						
R & S Receiver	ESIB 40	100179	04/21/2018	1 Year	04/21/2019	☒
LISN (9 kHz – 30 MHz)	3816/2NM	214372	09/27/2017	1 Year	09/27/2018	☒
Radiated Emissions						
Keysight EXA 44GHz Spectrum Analyzer	N9010A	MY51440112	11/08/2017	1 Year	11/08/2018	☒
Loop Antenna	6512	49120	10/14/2017	1 Year	10/14/2018	☒
Bi-Log antenna (30MHz~2GHz)	JB1	A030702	01/13/2018	1 Year	01/13/2019	☒
Pre-Amplifier (1-40GHz)	SAS-474	579	04/04/2018	1 Year	04/04/2019	☒
Preamplifier (100KHz-7GHz)	LPA-6-30	11140711	02/09/2018	1 Year	02/09/2019	☒

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 Equipment: EN45011: EN ISO/IEC 17065
		Electromagnetic Compatibility: EN45011 – EN ISO/IEC 17065
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 Measuremet
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 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