

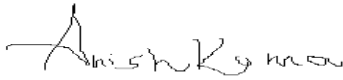
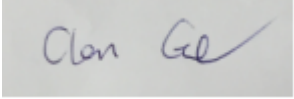
RF TEST REPORT



Report No.: FCC_IC_RF_SL16112301-ZBR-017R3_DSS
Supersede Report No.: N/A

Applicant	:	Zebra Technologies Corporation
Product Name	:	ZT610, ZT620 front panel
Model No.	:	UZ7211486030B
Test Standard	:	47 CFR 15.247 RSS-247 Issue 2.0, Feb 2017
Test Method	:	ANSI C63.10: 2013 RSS-Gen Issue 4, Nov 2014 FCC Public Notice DA 00-705
FCC ID	:	UZ7211486030B
IC ID	:	109AN-211486030B
Dates of test	:	05/22/2017 – 05/26/2017
Issue Date	:	06/17/2017
Test Result	:	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
Equipment complied with the specification <input checked="" type="checkbox"/>		
Equipment did not comply with the specification <input type="checkbox"/>		

This Test Report is Issued Under the Authority of:

	
Anish Kumar Test Engineer	Chen Ge Engineer Reviewer

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



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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	Safety, EMC, RF/Wireless, Telecom
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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10.4	Number of Hopping Channel (Bluetooth BDR/EDR)	Error! Bookmark not defined.
10.5	Time of Occupancy (Bluetooth BDR/EDR)	Error! Bookmark not defined.
10.6	Peak Output Power (Bluetooth BDR/EDR)	Error! Bookmark not defined.
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1 Report Revision History

Report No.	Report Version	Description	Issue Date
FCC_IC_RF_SL16112301-ZBR-017R3_DSS	None	Original	06/17/2017

2 Executive Summary

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

Company: Zebra Technologies Corp.
Product: ZT610, ZT620 front panel
Model: UZ7211486030B

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	Zebra Technologies Corp.
Applicant Address	3 Overlook Point Lincolnshire, IL 60069, USA
Manufacturer Name	Zebra Technologies Corp.
Manufacturer Address	3 Overlook Point Lincolnshire, IL 60069, 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	:	ZT610, ZT620 with new front panel
Model No.	:	UZ7211486030B
Trade Name	:	Zebra Technologies Corp.
Serial No.	:	N/A
Input Power	:	100-240VAC,50/60Hz
Power Adapter Manu/Model	:	N/A
Power Adapter SN	:	N/A
Product Hardware version	:	N/A
Product Software version	:	N/A
Radio Hardware version	:	N/A
Radio Software version	:	N/A
Date of EUT received	:	05/20/2017
Equipment Class/ Category	:	DTS
Port/Connectors	:	None

6.2 Spec for BT Radio

Radio Type	Bluetooth (Ver4.0+EDR)
Operating Frequency	2402MHz-2480MHz
Modulation	FHSS (BDR, EDR)
Channel Spacing	1MHz (BDR, EDR)
Antenna Type	PiFA
Antenna Gain	-0.55 dBi
Antenna Connector Type	U.FL connector

6.3 EUT test modes/configuration Description

Mode	Note
Bluetooth	BDR (GFSK)
Bluetooth	EDR (8-DPSK)

6.4 EUT Photos-External



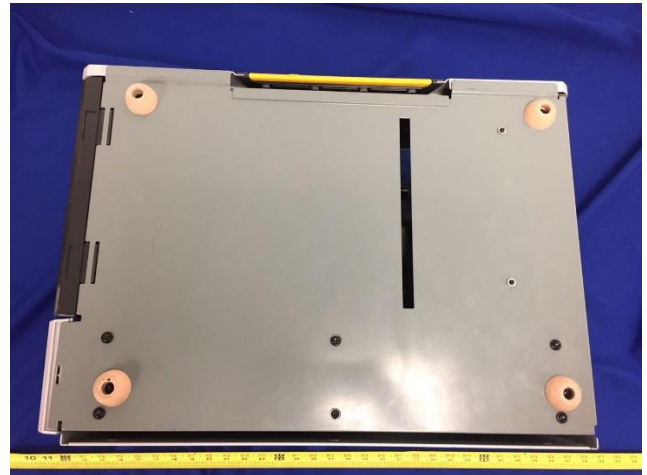
EUT – Front View



EUT – Rear View



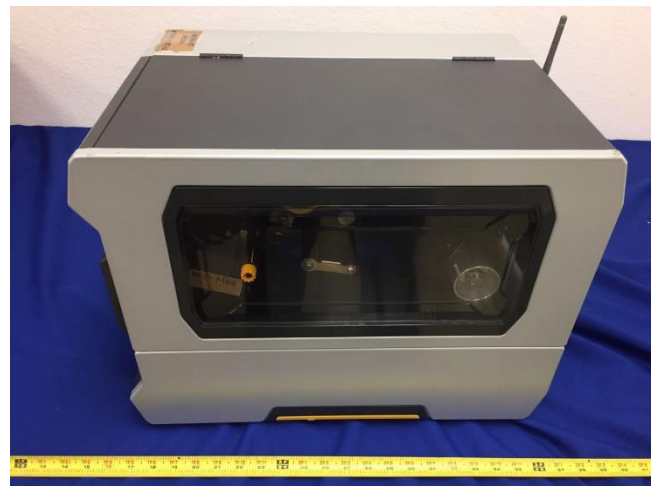
EUT – Top View



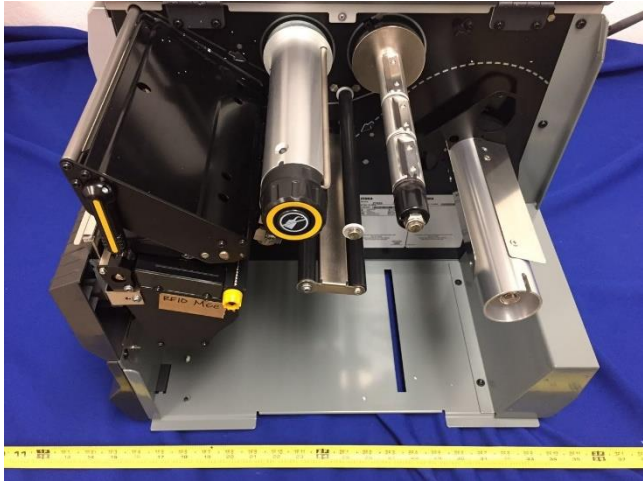
EUT – Bottom View



EUT – Left Side View



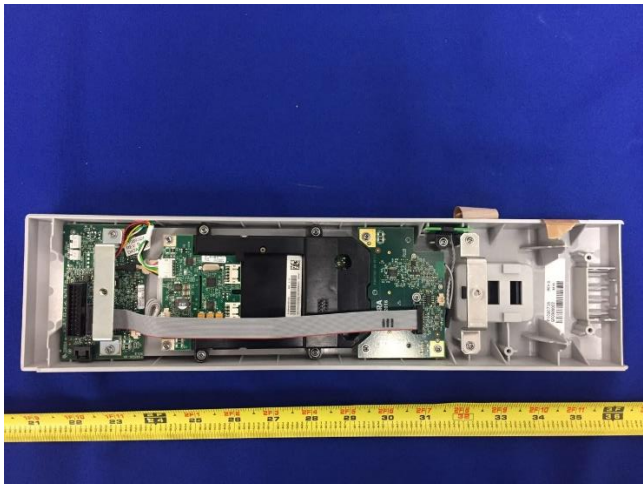
EUT – Right Side View



Open Case View

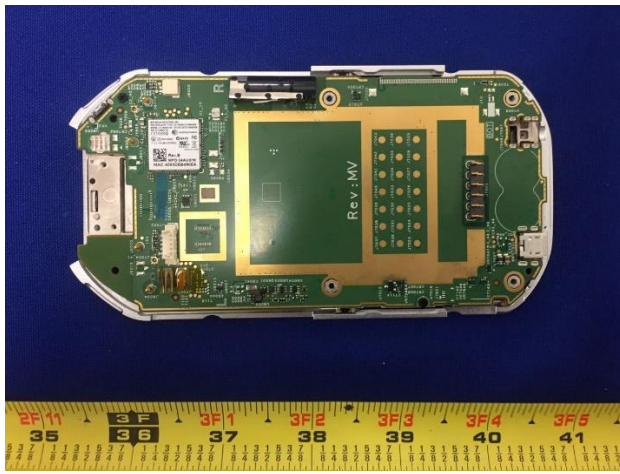
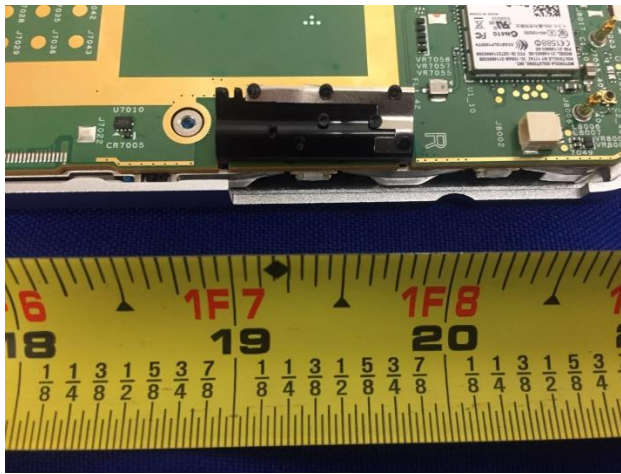



MC40 Panel Front

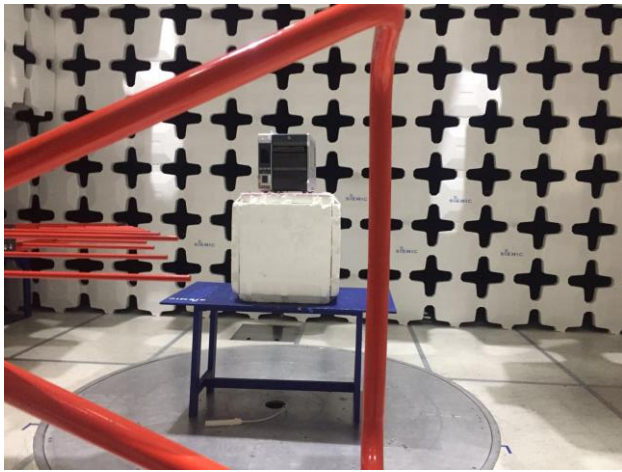


MC40 Panel Front

6.5 EUT Photos – Internal

	
<p style="text-align: center;">Radio Board View</p>	<p style="text-align: center;">Antenna View</p>
	
<p style="text-align: center;">Antenna View</p>	

6.6 EUT Test Setup Photos



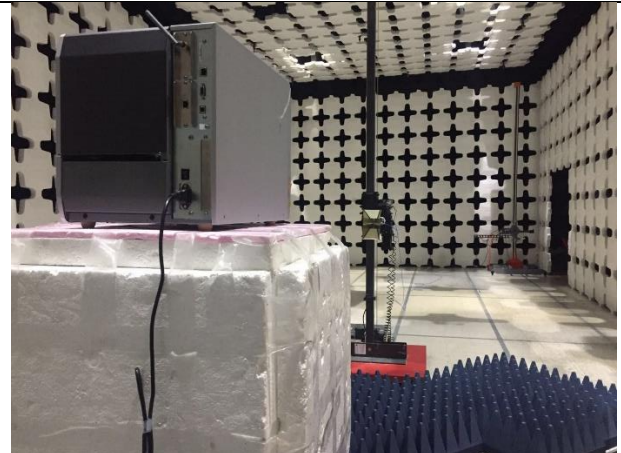
Radiated Emissions (<1GHz) – Front View



Radiated Emissions (<1GHz) – Rear View



Radiated Emissions (>1GHz) – Front View



Radiated Emissions (>1GHz) – Rear View

7 Supporting Equipment/Software and cabling Description

7.1 Supporting Equipment

Item	Supporting Equipment Description	Model	Serial Number	Manufacturer	Note
1	Laptop	N/A	3YZQ162	Dell	-

7.2 Cabling Description

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

7.3 Test Software Description

Test Item	Software	Description
RF Testing	Android Panel	Set the EUT to transmit continuously in diferent test mode

8 Test Summary

Test Item	Test standard		Test Method/Procedure		Pass / Fail
Restricted Band of Operation	FCC	15.205	FCC	ANSI C63.10: 2013 Public Notice DA 00-705	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> N/A
	IC	RSS Gen 8.10		RSS Gen Issue 4: 2014	
AC Conducted Emissions Voltage	FCC	15.207(a)	FCC	ANSI C63.10: 2013	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> N/A
	IC	RSS Gen 8.8		RSS Gen Issue 4: 2014	

DSS Band Requirement

Test Item	Test standard		Test Method/Procedure		Pass / Fail
Channel Separation	FCC	15.247 (a)(1)	FCC	Public Notice DA 00-705	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> N/A
	IC	RSS247 (5.1.5)	IC	-	
20dB Occupied Bandwidth	FCC	15.247(a)(1)	FCC	Public Notice DA 00-705	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> N/A
	IC	RSS247 (5.1.2)	IC	-	
99% Occupied Bandwidth	FCC	15.247(a)(2)	FCC		<input checked="" type="checkbox"/> Pass <input type="checkbox"/> N/A
	IC	RSS Gen 6.6	IC	RSS Gen Issue 4: 2014 -	
Number of Hopping Channels	FCC	15.247(a)(1)	FCC	Public Notice DA 00-705	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> N/A
	IC	RSS247 (5.1.5)	IC	-	
Band Edge and Radiated Spurious Emissions	FCC	15.247(d)	FCC	Public Notice DA 00-705	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> N/A
	IC	RSS247(5.5)	IC	-	
Time of Occupancy	FCC	15.247(a)(1)	FCC	Public Notice DA 00-705	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> N/A
	IC	RSS247 (5.1.5)	IC	-	
Output Power	FCC	15.247(b)	FCC	Public Notice DA 00-705	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> N/A
	IC	RSS247 (5.4.2)	IC	-	
Receiver Spurious Emissions	FCC	15.247(d)	FCC	-	<input type="checkbox"/> Pass <input checked="" type="checkbox"/> N/A
	IC	RSS Gen (7.1)	IC	RSS Gen (7.1)	
Antenna Gain > 6 dBi	FCC	15.247(e)	FCC	Public Notice DA 00-705	<input type="checkbox"/> Pass <input checked="" type="checkbox"/> N/A
	IC	RSS247 (5.4.6)	IC	-	
Power Spectral Density	FCC	15.247(e)	FCC	Public Notice DA 00-705	<input type="checkbox"/> Pass <input checked="" type="checkbox"/> N/A
	IC	RSS247 (5.2.2)	IC	-	
Hybrid System Requirement	FCC	15.247(f)	FCC	Public Notice DA 00-705	<input type="checkbox"/> Pass <input checked="" type="checkbox"/> N/A
	IC	RSS247 (5.3)	IC	-	
Hopping Capability	FCC	15.247(g)	FCC	Public Notice DA 00-705	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> N/A
	IC	RSS247 (5.1.5)	IC	-	
RF Exposure requirement	FCC	15.247(i)	FCC	Public Notice DA 00-705	<input type="checkbox"/> Pass <input checked="" type="checkbox"/> N/A
	IC	RSS Gen(3.2)	IC	-	

- | | |
|--------|---|
| Remark | <ol style="list-style-type: none"> 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. |
|--------|---|

9 Measurement Uncertainty

9.1 Conducted Emissions

The test is to measure the conducted emissions to the mains port of the EUT.

Some error sources that can contribute to the total uncertainty:

- Uncertainty of the receiver
- Uncertainty of the LISN
- Uncertainty of cables
- Uncertainty due to the mismatches
- Etc, see the below table for details

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
LISN Insertion Loss	0.40	Normal	2	1	0.20
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 LISN - Receiver	0.25	U-Shape	1.414	1	0.1768033
LISN Impedance	2.5	Triangular	2.449	1	1.0208248
Combined Standard Uncertainty					1.928133
Expanded Uncertainty (K=2)					3.856266

The total derived measurement uncertainty is +/- 3.86 dB.

9.2 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.

9.3 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.

9.4 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

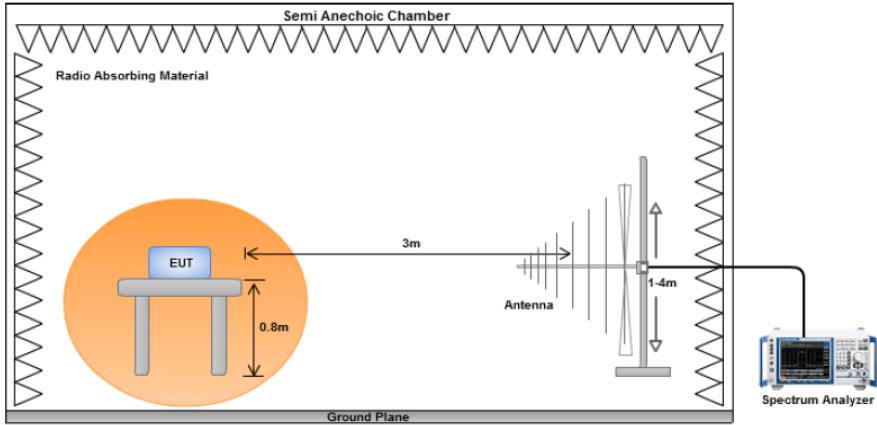
Source of Uncertainty	Value (dB)	Probability Distribution	Division	Sensitivity Coefficient	Expanded Uncertainty
Reference Level	0.12	Rectangular	1.732	1	0.069284
Cable Insertion Loss	0.21	Normal	2	1	0.105
Attenuator	0.25	Normal	2	1	0.125
Mismatch	0.25	U-Shape	1.414	1	0.1768033
Combined Standard Uncertainty					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 Transmitter Radiated Spurious Emissions Below 1GHz

Requirement(s):

Spec	Item	Requirement	Applicable										
47CFR§15.247(d), RSS247(5.5)	a)	<p>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</p> <table border="1"> <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	<ol style="list-style-type: none"> The EUT was switched on and allowed to warm up to its normal operating condition. 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: <ol style="list-style-type: none"> Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen. The EUT was then rotated to the direction that gave the maximum emission. Finally, the antenna height was adjusted to the height that gave the maximum emission. A Quasi-peak measurement was then made for that frequency point. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured. 												
Remark	The EUT was scanned up to 1GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case.												
Result	☒ Pass ☐ Fail												

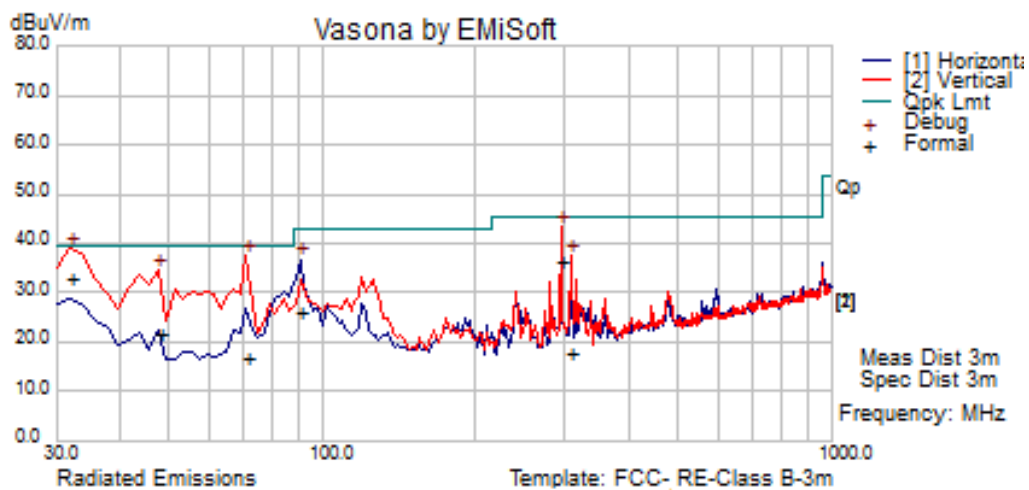
Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test was done by **Anish Kumar** at **10m Chamber**.

Radiated Emission Test Results (Below 1GHz)

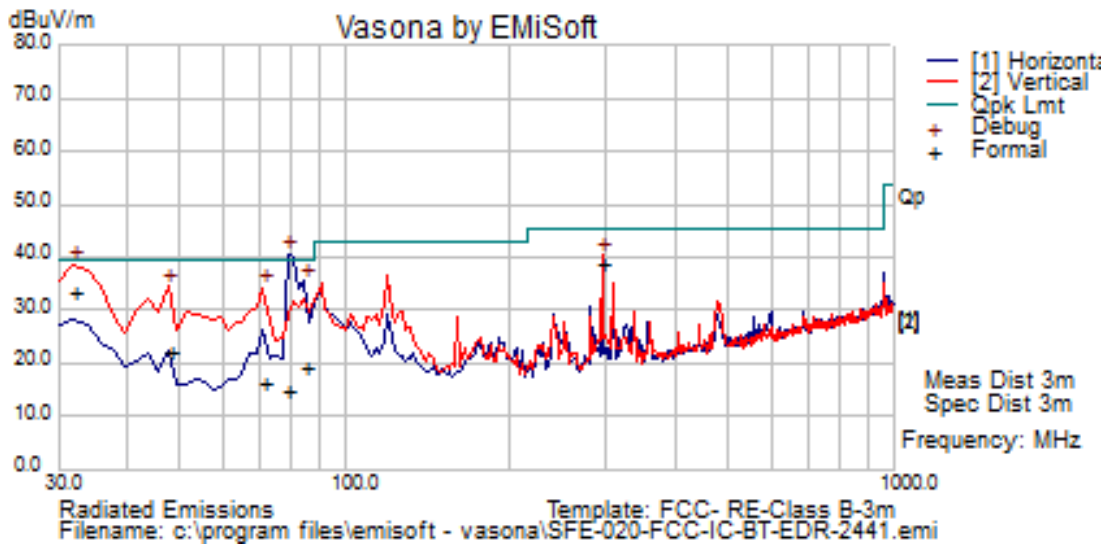
Test specification:	Radiated Spurious Emissions (30MHz – 1000MHz)		
Environmental Conditions:	Temp(°C):	22	Result : <input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail
	Humidity (%):	37	
	Atmospheric(mbar):	1021	
Mains Power:	120VAC, 60Hz		
Tested by:	Anish Kumar		
Test Date:	05/25/2017		
Remarks:	BDR 2441MHz		



Quasi Max Measurement

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	AF (dB)	Level (dBuV/m)	Measurement Type	Pol (V/H)	Hgt (cm)	Azt (Deg)	Limit (dBuV/m)	Margin (dB)	Pass /Fail
31.92	46.51	1.03	-15.60	31.94	Quasi Max	V	120	145	39.50	-7.56	Pass
70.92	41.25	1.48	-28.16	14.57	Quasi Max	V	212	286	39.50	-24.93	Pass
43.55	53.86	1.22	-24.14	30.93	Quasi Max	V	110	287	39.50	-8.57	Pass
294.62	56.46	2.87	-22.95	36.38	Quasi Max	H	110	172	45.50	-9.12	Pass
119.25	45.79	1.80	-22.80	24.79	Quasi Max	V	107	185	43.00	-18.21	Pass
90.17	50.64	1.59	-27.94	24.28	Quasi Max	V	318	199	43.00	-18.72	Pass

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

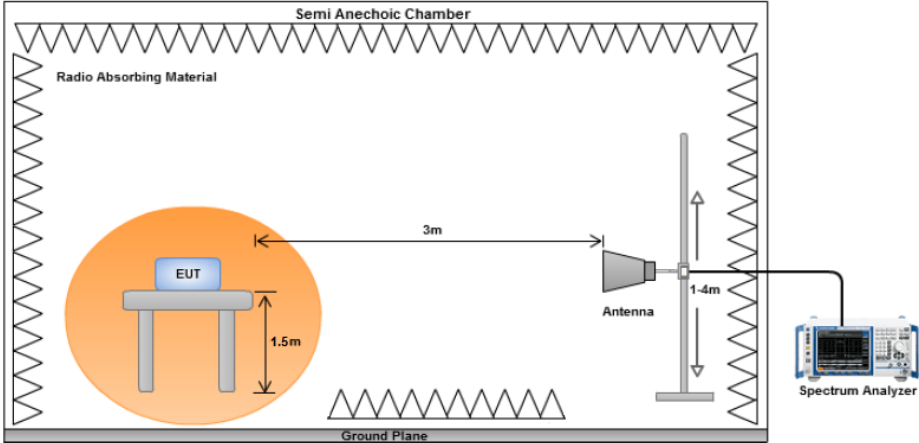


Quasi Max Measurement

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	AF (dB)	Level (dBuV/m)	Measurement Type	Pol (V/H)	Hgt (cm)	Azt (Deg)	Limit (dBuV/m)	Margin (dB)	Pass /Fail
78.80	41.36	1.52	-28.33	14.55	Quasi Max	H	281	105	39.50	-24.95	Pass
31.93	48.02	1.03	-15.60	33.45	Quasi Max	V	110	316	39.50	-6.05	Pass
84.37	46.22	1.55	-28.43	19.34	Quasi Max	H	145	126	39.50	-20.16	Pass
294.61	59.07	2.87	-22.95	38.99	Quasi Max	V	117	345	45.50	-6.51	Pass
47.74	47.49	1.29	-26.49	22.29	Quasi Max	V	113	322	39.50	-17.21	Pass
70.66	42.98	1.48	-28.19	16.27	Quasi Max	V	120	203	39.50	-23.23	Pass

10.2 Transmitter Radiated Spurious Emissions > 1GHz & Restricted band & non-restricted band emission

Requirement(s):

Spec	Item	Requirement	Applicable
47CFR§15.247(d), RSS247(5.5)	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 <input checked="" type="checkbox"/> 20 dB down <input type="checkbox"/> 30 dB down	<input checked="" type="checkbox"/>
	b)	or restricted band, emission must also comply with the radiated emission limits specified in 15.209	<input checked="" type="checkbox"/>
Test Setup			
Procedure	<ol style="list-style-type: none"> The EUT was switched on and allowed to warm up to its normal operating condition. 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: <ol style="list-style-type: none"> Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen. The EUT was then rotated to the direction that gave the maximum emission. Finally, the antenna height was adjusted to the height that gave the maximum emission. An average measurement was then made for that frequency point. Steps 2 and 3 were repeated for the next frequency point, until all selected frequency points were measured. 		
Remark	The EUT was scanned up to 26GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case.		
Result	<input checked="" type="checkbox"/> Pass <input type="checkbox"/> Fail		

Test Data Yes (See below) N/A

Test Plot Yes (See below) N/A

Test was done by **Anish Kumar** at **10m Chamber**.

Radiated Emission Test Results

Bluetooth BDR – 2402MHz

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	AF (dB)	Level (dBuV/m)	Measurement Type	Pol (V/H)	Hgt (cm)	Azt (Deg)	Limit (dBuV/m)	Margin (dB)	Pass /Fail
1882.584	45.73	3.15	-12.4	36.48	Peak Max	V	113	79	74	-37.52	Pass
4804.092	41.48	4.68	-5.01	41.15	Peak Max	V	100	18	74	-32.85	Pass
7206.153	40.02	5.89	0.02	45.93	Peak Max	V	182	105	74	-28.07	Pass
1882.584	33.41	3.15	-12.4	24.15	Average Max	V	113	79	54	-29.85	Pass
4804.092	28.71	4.68	-5.01	28.39	Average Max	V	100	18	54	-25.61	Pass
7206.153	28.18	5.89	0.02	34.08	Average Max	V	182	105	54	-19.92	Pass

Bluetooth BDR – 2441MHz

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	AF (dB)	Level (dBuV/m)	Measurement Type	Pol (V/H)	Hgt (cm)	Azt (Deg)	Limit (dBuV/m)	Margin (dB)	Pass /Fail
1885.277	45.6	3.15	-12.38	36.37	Peak Max	V	164	39	74	-37.63	Pass
4882.452	39.72	4.63	-5.09	39.25	Peak Max	V	163	223	74	-34.75	Pass
7323.821	39.33	5.92	0.07	45.31	Peak Max	V	167	134	74	-28.69	Pass
1885.277	33.47	3.15	-12.38	24.23	Average Max	V	164	39	54	-29.77	Pass
4882.452	28.01	4.63	-5.09	27.54	Average Max	V	163	223	54	-26.46	Pass
7323.821	27.98	5.92	0.07	33.96	Average Max	V	167	134	54	-20.04	Pass

Bluetooth BDR – 2480MHz

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	AF (dB)	Level (dBuV/m)	Measurement Type	Pol (V/H)	Hgt (cm)	Azt (Deg)	Limit (dBuV/m)	Margin (dB)	Pass /Fail
1885.254	44.99	3.15	-12.38	35.75	Peak Max	V	164	338	74	-38.25	Pass
4960.724	38.17	4.57	-5.14	37.6	Peak Max	V	129	158	74	-36.4	Pass
7410.662	40.47	5.95	-0.27	46.15	Peak Max	V	99	176	74	-27.85	Pass
1885.254	33.48	3.15	-12.38	24.24	Average Max	V	164	338	54	-29.76	Pass
4960.724	26.98	4.57	-5.14	26.42	Average Max	V	129	158	54	-27.59	Pass
7410.662	27.83	5.95	-0.27	33.51	Average Max	V	99	176	54	-20.49	Pass

Bluetooth EDR – 2402MHz

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	AF (dB)	Level (dBuV/m)	Measurement Type	Pol (V/H)	Hgt (cm)	Azt (Deg)	Limit (dBuV/m)	Margin (dB)	Pass /Fail
1884.0265	45.45	3.15	-12.39	36.21	Peak Max	V	194	283	74	-37.79	Pass
4804.5075	39.56	4.69	-5	39.25	Peak Max	V	182	264	74	-34.76	Pass
7206.628	40.1	5.89	0.02	46	Peak Max	V	155	128	74	-28	Pass
1884.0265	33.52	3.15	-12.39	24.27	Average Max	V	194	283	54	-29.73	Pass
4804.5075	27.18	4.69	-5	26.87	Average Max	V	182	264	54	-27.13	Pass
7206.628	28.15	5.89	0.02	34.06	Average Max	V	155	128	54	-19.94	Pass

Bluetooth EDR – 2441MHz

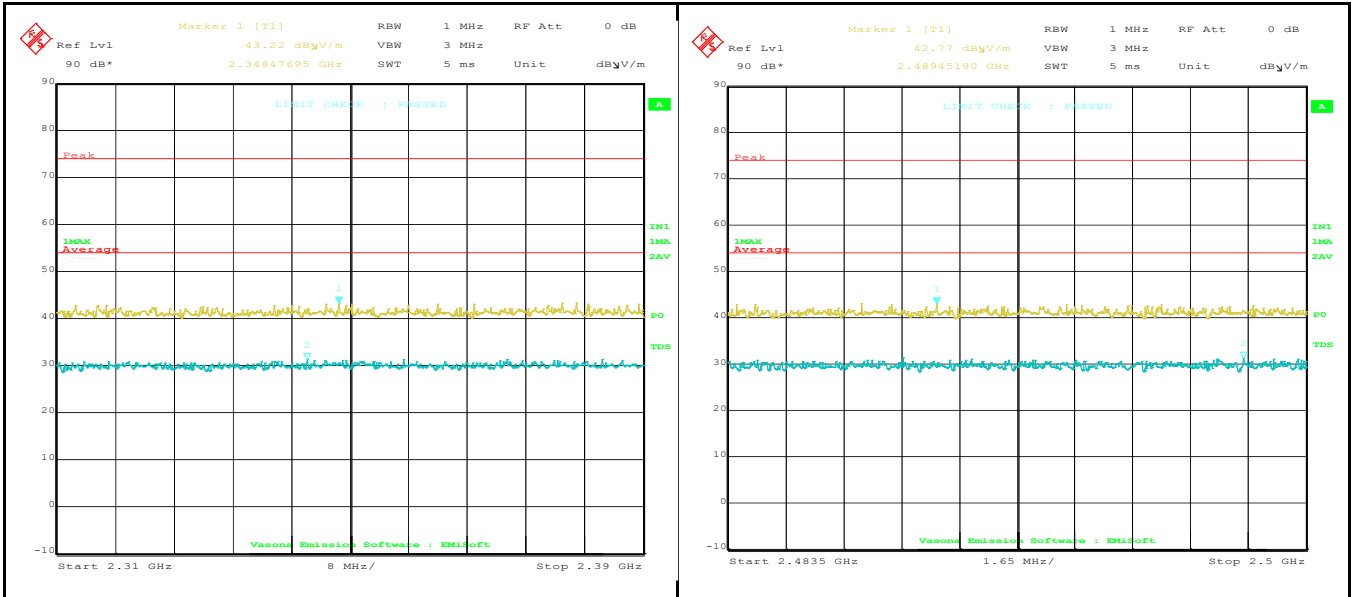
Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	AF (dB)	Level (dBuV/m)	Measurement Type	Pol (V/H)	Hgt (cm)	Azt (Deg)	Limit (dBuV/m)	Margin (dB)	Pass /Fail
1869.918	45.17	3.13	-12.49	35.81	Peak Max	V	137	132	74	-38.19	Pass
4882.513	39.54	4.62	-5.1	39.05	Peak Max	V	132	250	74	-34.95	Pass
7323.183	39.9	5.92	0.06	45.88	Peak Max	V	100	159	74	-28.12	Pass
1869.918	33.18	3.13	-12.49	23.82	Average Max	V	137	132	54	-30.18	Pass
4882.513	28.02	4.62	-5.1	27.54	Average Max	V	132	250	54	-26.46	Pass
7323.183	28.13	5.92	0.06	34.11	Average Max	V	100	159	54	-19.89	Pass

Bluetooth EDR – 2480MHz

Frequency (MHz)	Raw (dBuV)	Cable Loss (dB)	AF (dB)	Level (dBuV/m)	Measurement Type	Pol (V/H)	Hgt (cm)	Azt (Deg)	Limit (dBuV/m)	Margin (dB)	Pass /Fail
1917.545	33.12	3.18	-12.19	24.11	Average Max	V	192	50	54	-29.89	Pass
4960.157	40.53	4.57	-5.13	39.96	Peak Max	V	106	123	74	-34.04	Pass
7410.537	39.59	5.95	-0.26	45.28	Peak Max	V	112	299	74	-28.72	Pass
1917.545	33.12	3.18	-12.19	24.11	Average Max	V	192	50	54	-29.89	Pass
4960.157	28.72	4.57	-5.13	28.15	Average Max	V	106	123	54	-25.85	Pass
7410.537	27.78	5.95	-0.26	33.47	Average Max	V	112	299	54	-20.53	Pass

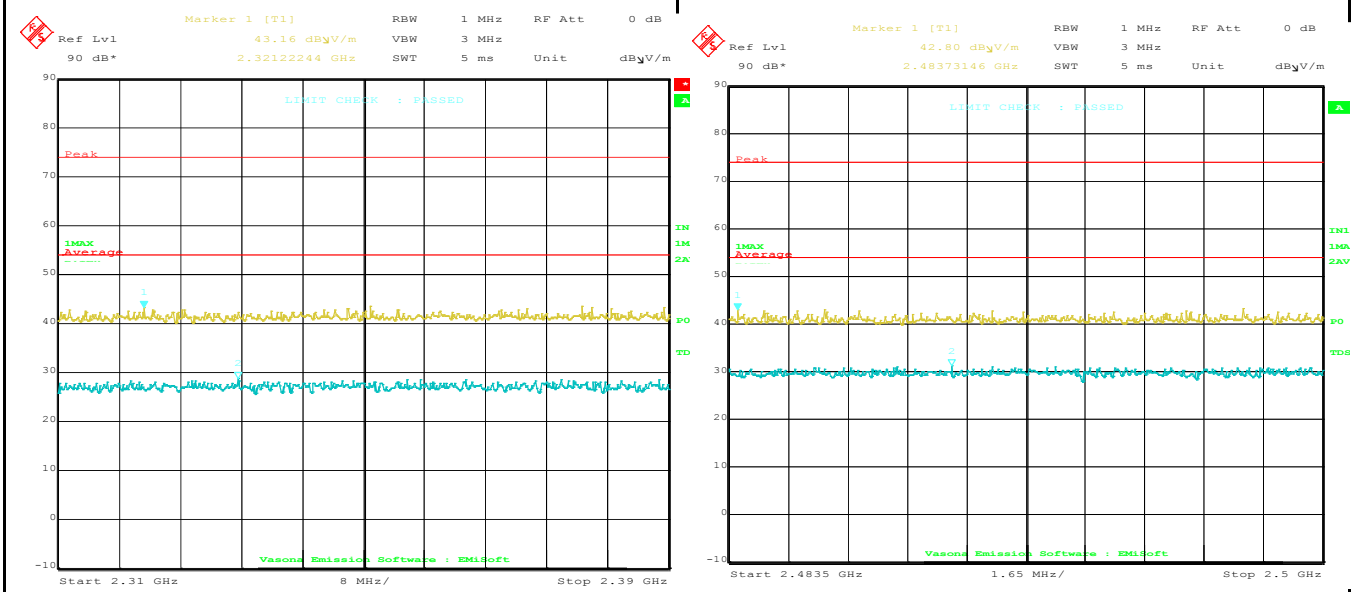
Note: Both horizontal and vertical polarities were investigated. The results above show only the worst case.

Restricted Band Test plot (Bluetooth BDR/EDR)



Restricted Band BDR 2402MHz

Restricted Band BDR 2480MHz



















Restricted Band EDR 2402MHz








Restricted Band EDR 2480MHz

Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Cycle	Cal Due	In use
Conducted Emissions						
R & S Receiver	ESIB 40	100179	06/08/2017	1 Year	06/08/2018	<input checked="" type="checkbox"/>
CHASE LISN	MN2050B	1018	08/16/2016	1 Year	08/16/2017	<input checked="" type="checkbox"/>
Radiated Emissions						
R & S Receiver	ESIB 40	1018	06/08/2017	1 Year	06/08/2019	<input checked="" type="checkbox"/>
Bi-Log antenna (30MHz~2GHz)	JB1	A030702	01/13/2017	1 Year	01/13/2018	<input checked="" type="checkbox"/>
Horn Antenna (1GHz~26GHz)	3115	100059	08/11/2016	1 Year	08/11/2017	<input checked="" type="checkbox"/>
Pre-Amplifier (1-26.5GHz)	8449B	3008A00715	03/30/2017	1 Year	03/30/2018	<input checked="" type="checkbox"/>
Preamplifier (100KHz-7GHz)	LPA-6-30	11140711	02/09/2017	1 Year	02/09/2018	<input checked="" type="checkbox"/>
3 Meters SAC	3M	N/A	06/09/2017	1 Year	06/09/2018	<input type="checkbox"/>
10 Meters SAC	10M	N/A	07/06/2016	1 Year	07/06/2017	<input checked="" type="checkbox"/>
RF Conducted Measurement						
Spectrum Analyzer	N9010A	10SL0219	11/16/2016	1 Year	11/16/2017	<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