

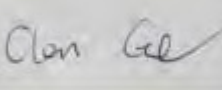
RF TEST REPORT



Report No.: FCC IC_RF_SL16071501-ZBR-014_RFID_Collocation_Rev 1.0
Supersede Report No.: None

Applicant	:	Zebra Technologies Corporation
Host Model No.	:	ZQ520
Module Name	:	LMA M6e RFID Module , N Radio Module
Module Model No.	:	M6e-Micro , WYSBMVGXB
Test Standard	:	47 CFR 15.247 RSS-247 Issue 1.0, May 2015
Test Method	:	ANSI C63.10: 2013 RSS-Gen Issue 4, Nov 2014 FCC Public Notice DA 00-705
FCC ID	:	128-RFIDM6EM , I28MD-EXLAN11N
IC ID	:	3798B-RFID6EM , 3798B-EXLAN11N
Dates of test	:	07/26/2016 – 07/27/2016
Issue Date	:	09/01/2016
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:

	
Rachana Khanduri	Chen Ge
Test Engineer	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

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 Photos	8
6.4	Host Printer Photos - External.....	10
6.5	Host Printer Photos – Internal	11
6.6	EUT Test Setup Photos	15
7	SUPPORTING EQUIPMENT/SOFTWARE AND CABLING DESCRIPTION.....	16
7.1	Supporting Equipment	16
7.2	Cabling Description	16
7.3	Test Software Description	16
8	TEST SUMMARY	17
9	MEASUREMENT UNCERTAINTY	18
10	MEASUREMENTS, EXAMINATION AND DERIVED RESULTS	19
10.1	Radiated Spurious Emissions below 1GHz	19
10.2	Radiated Spurious Emissions above 1GHz.....	24
ANNEX A. TEST INSTRUMENT		27
ANNEX B. SIEMIC ACCREDITATION		28

1 Report Revision History

Report No.	Report Version	Description	Issue Date
FCC IC_RF_SL16071501-ZBR-014_RFID	None	Original	08/17/2016
FCC IC_RF_SL16071501-ZBR-014_RFID_Rev 1.0	Rev 1.0	Updated test data for N radio Module	09/01/2016

2 Executive Summary

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

Company: Zebra Technologies Corporation
Product: LMA M6e RFID Module , N Radio Module
Model: M6e-Micro , WYSBMVGXB

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 Corporation
Applicant Address	:	333 Corporate Woods Parkway, Vernon Hills, IL 60061 USA
Manufacturer Name	:	Zebra Technologies Corporation
Manufacturer Address	:	333 Corporate Woods Parkway, Vernon Hills, IL 60061 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

Host Product Name	UHF RFID Module
Host Model No.	ZQ520
Trade Name	Zebra
Serial No.	XXRBJ154800539
Module Model Name	LMA M6e RFID, N Radio Module
Module Model Number	M6e-Micro, WYSBMVGXB
Input Power	100-240VAC,50-60Hz
Poe Power Adapter Manu/Model	FSP025-DYAA3
PoE Power Adapter SN	H00000839
Product Hardware version	N/A
Product Software version	N/A
Radio Hardware version	N/A
Radio Software version	N/A
Date of EUT received	07/25/2016
Equipment Class/ Category	FHSS
Clock Frequencies	24MHz
Port/Connectors	USB, N Radio (WLAN , BT)

6.2 Radio Description

Spec for UHF RFID -

Radio Type	UHF RFID
Operating Frequency	902.75-927.25 MHz
Modulation	ASK
Antenna Type	Loop/Coil
Antenna Gain	-28dBi
Channel Separation	500 KHz
Number of Channels	50

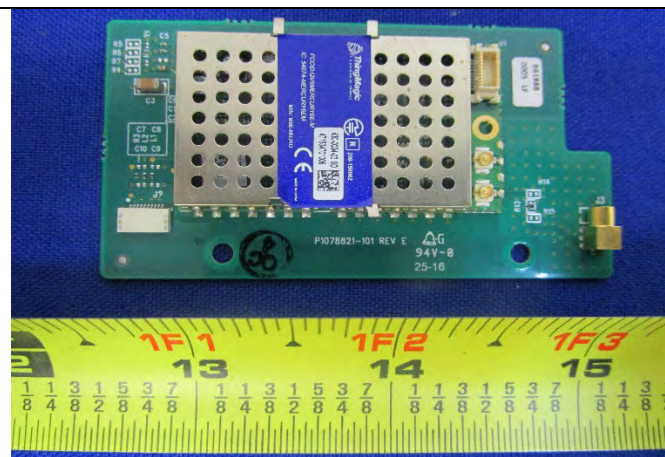
Spec for WLAN -

Radio Type	802.11b	802.11g	802.11a	802.11n-20M	802.11n-40M
Operating Frequency	2412-2462MHz	2412-2462MHz	5180-5320MHz 5500-5700MHz 5745-5825MHz	2412-2462MHz 5180-5320MHz 5500-5700MHz 5745-5825MHz	5190-5310MHz 5510-5670MHz 5755-5795MHz
Modulation	DSSS (CCK, DQPSK, DBPSK)	OFDM-CCK (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)	OFDM (BPSK, QPSK, 16QAM, 64QAM)
Channel Spacing	5MHz	5MHz	20MHz	5MHz(2.4GHz), 20MHz (5GHz)	40MHz
Number of Channels	11	11	21	11(2.4GH) 21 (5GHz)	7 (2.4GH) 9 (5GHz)
Antenna Type	Patch Antenna				
Antenna Gain	3.81 dBi (2.4GHz), 5.0 dBi (5GHz)				
Antenna Connector Type	U. FL connector				

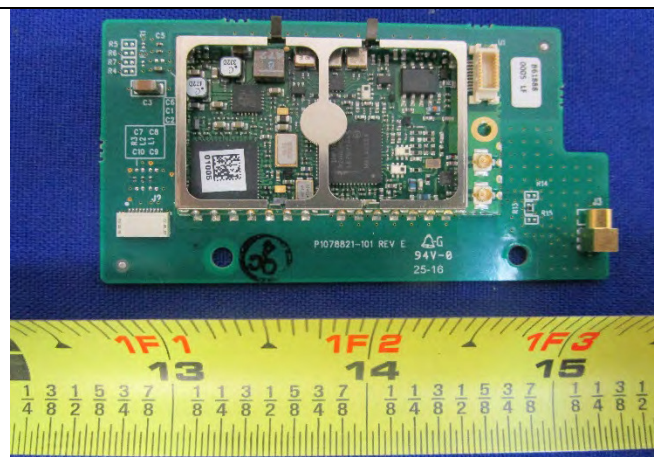
Spec for Bluetooth Radio –

Radio Type	Blue Tooth
Operating Frequency	2402-2480MHz
Modulation	FHSS (GFSK , $\pi/4$ -DQPSK, 8-DPSK)
Channel Spacing	1MHz
Number of Channels	79
Antenna Type	Patch Antenna
Antenna Gain	3.81 dBi (2.4GHz)
Antenna Connector Type	U. FL connector

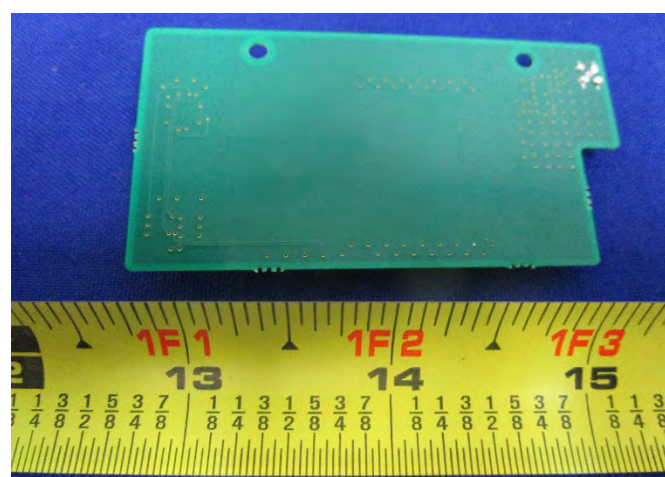
6.3 EUT Photos



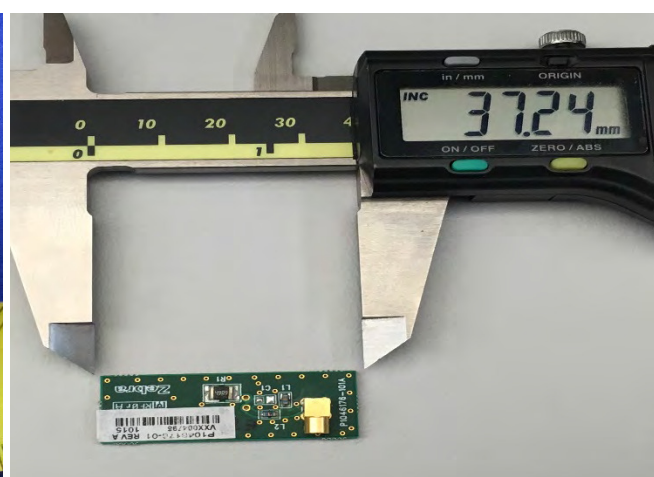
LMA M6e RFID Module Top View With Cover



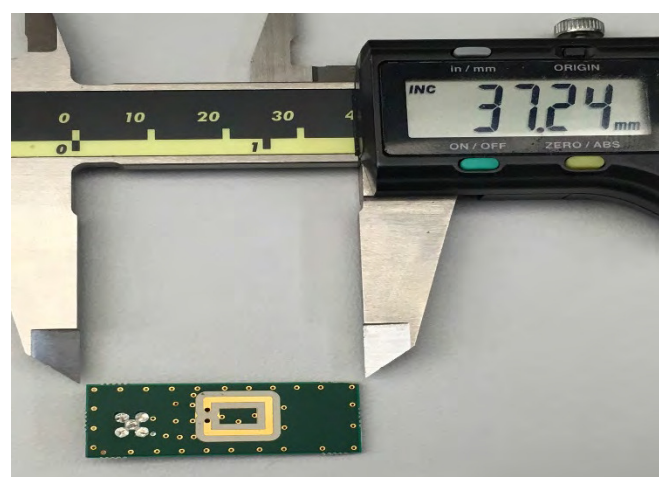
LMA M6e RFID Module Top View Without Cover



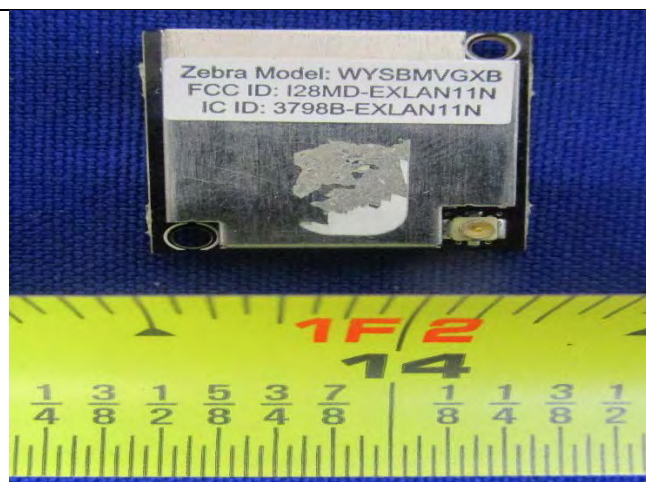
LMA M6e RFID Module Bottom View



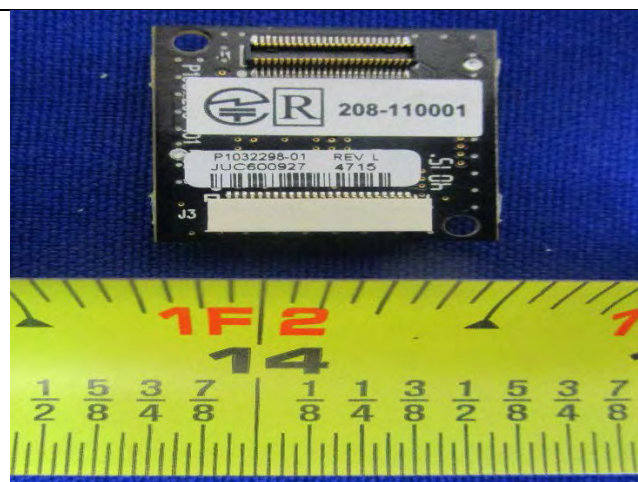
LMA M6e RFID Antenna Top View



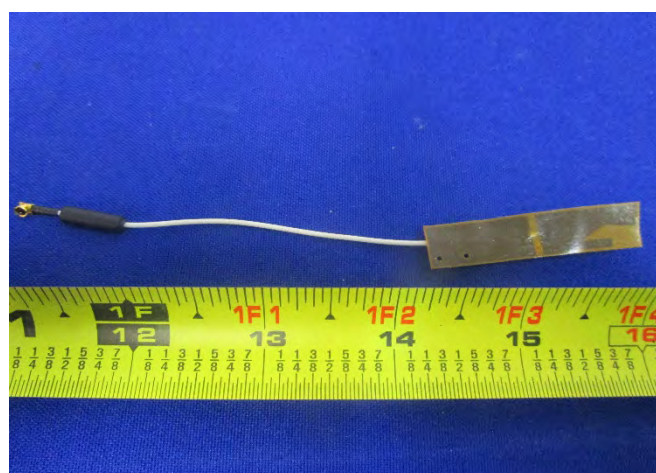
LMA M6e RFID Antenna Bottom View



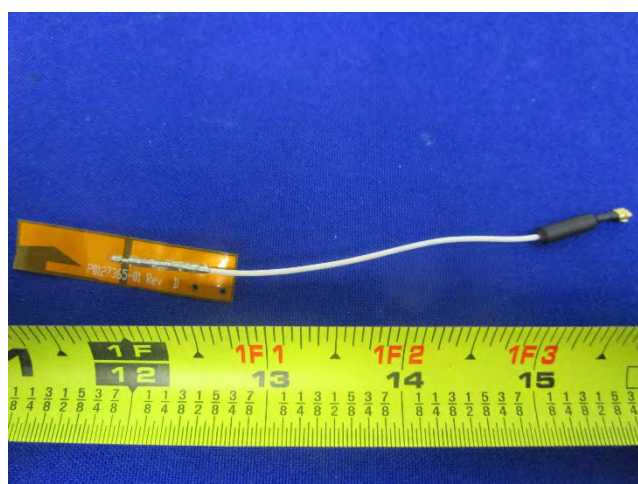
N Radio Module Top View



N Radio Module Bottom View



WLAN/BT Antenna Top View



WLAN/BT Antenna Bottom View

6.4 Host Printer Photos - External



Host Printer Top View



Host Printer Bottom View



Host Printer Left Side View



Host Printer Right Side View



Host Printer Front View

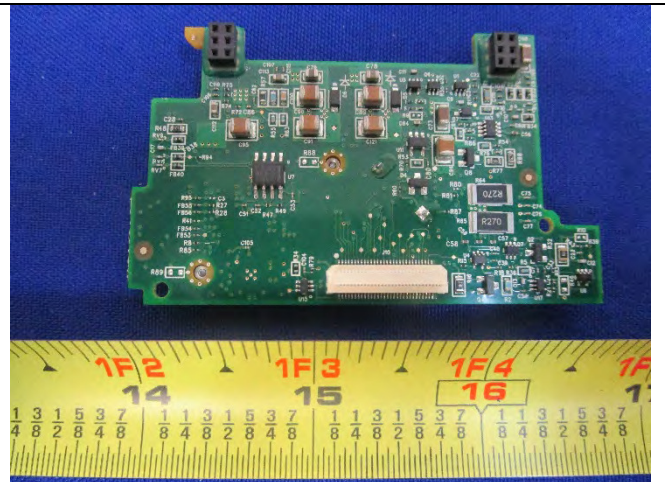


Host Printer Rear View

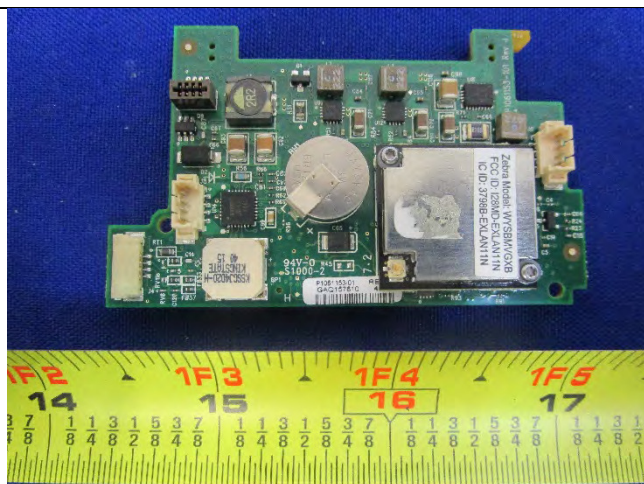
6.5 Host Printer Photos – Internal



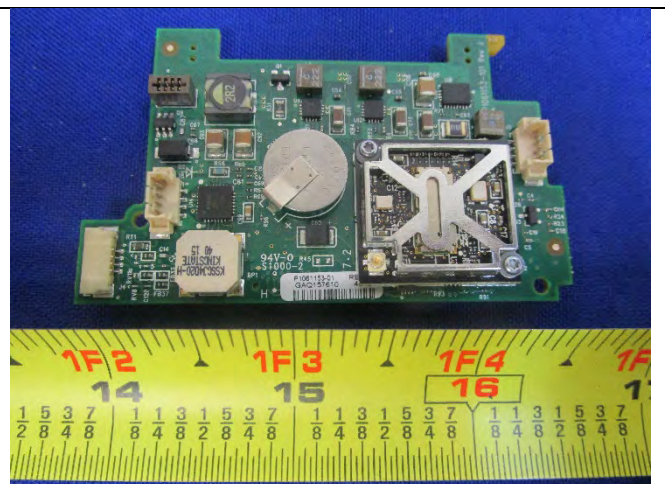
Host Printer Cover Off View



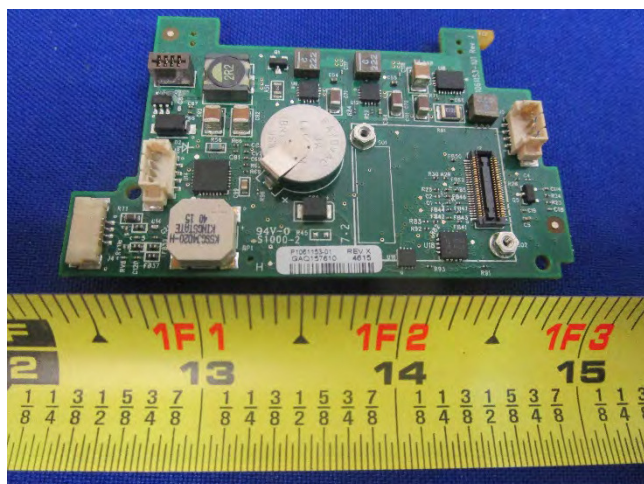
PCB1 Bottom View



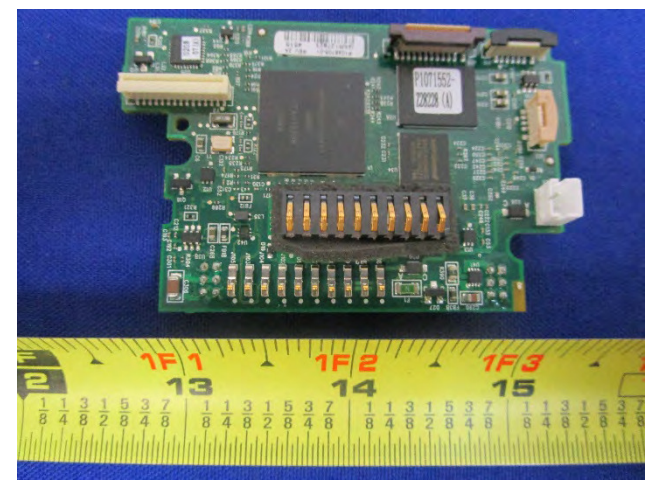
PCB1 Bottom View



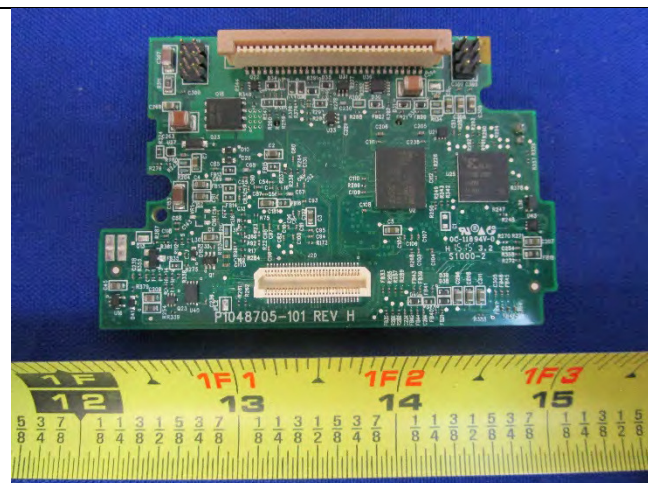
PCB1 Top View 2



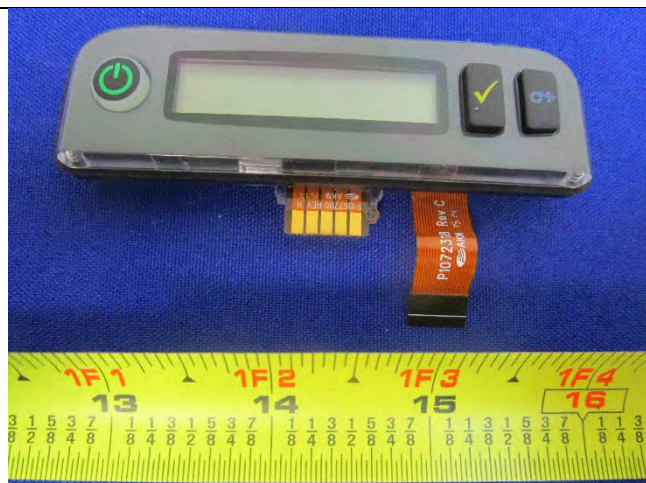
PCB1 Top View 3



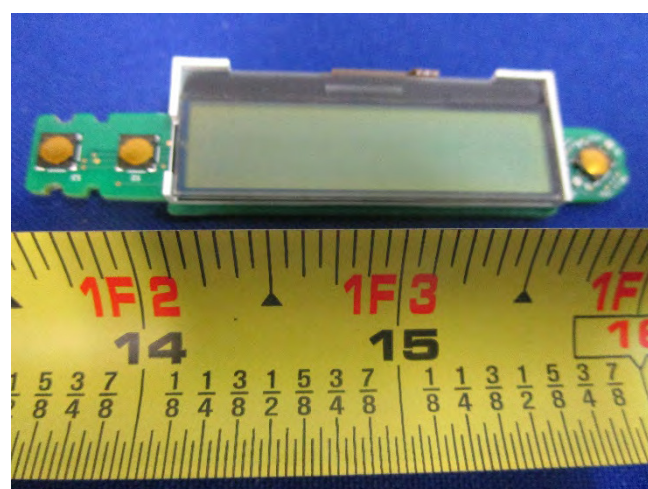
PCB2 Top View



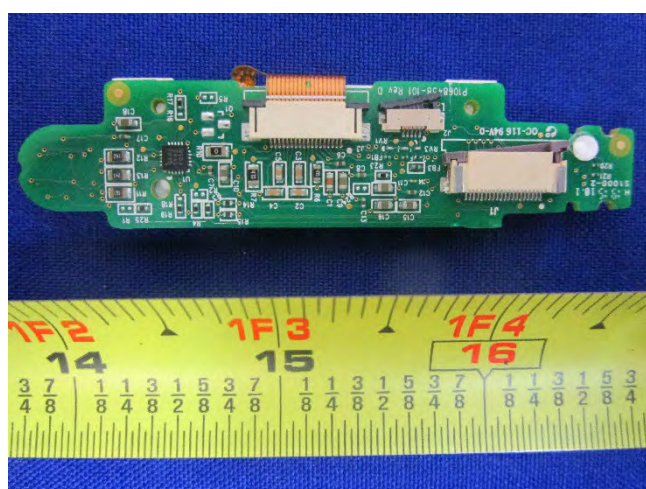
PCB2 Bottom View



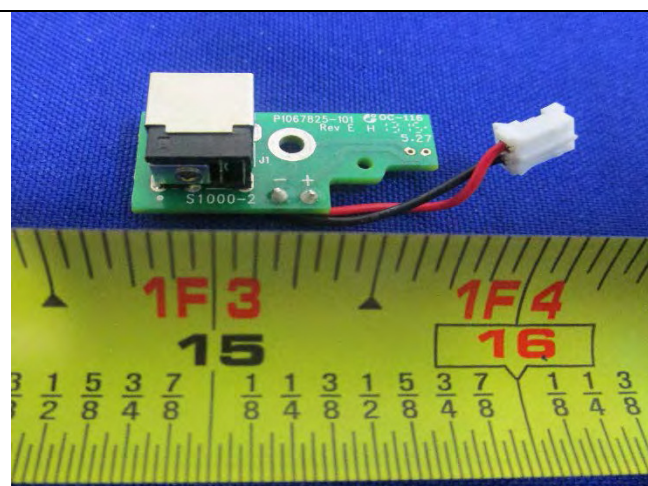
LCD Board View



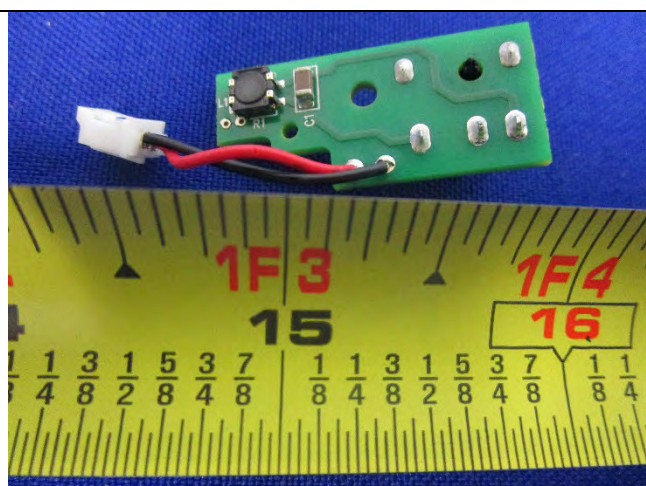
LCD Board Top View



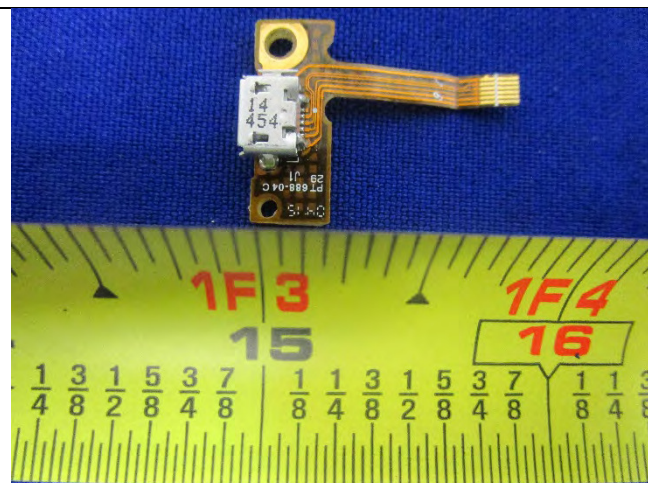
LCD Board Bottom View



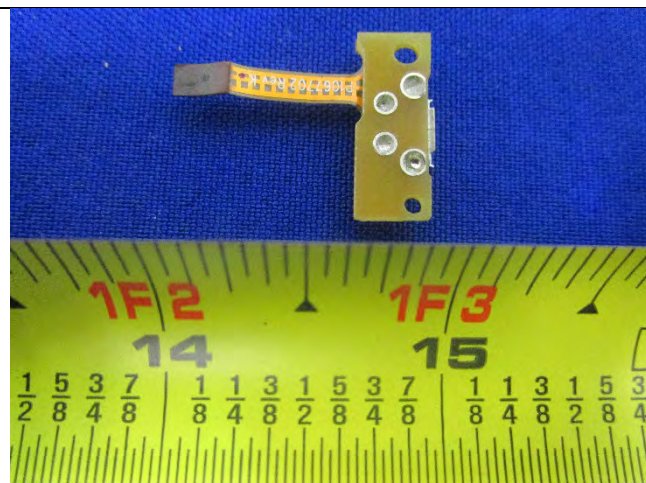
Power Board Top View



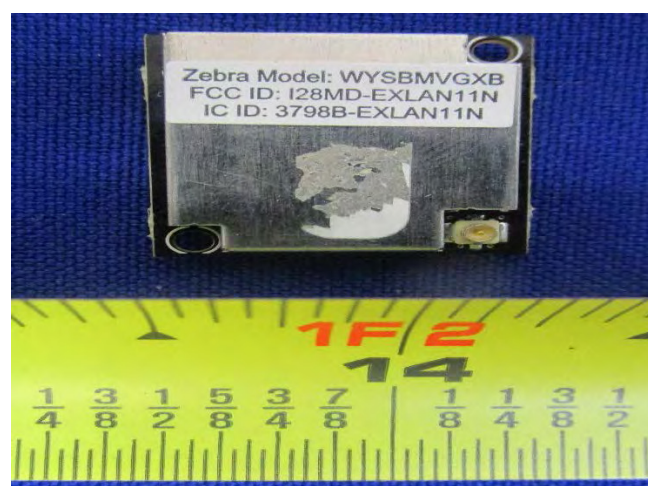
Power Board Bottom View



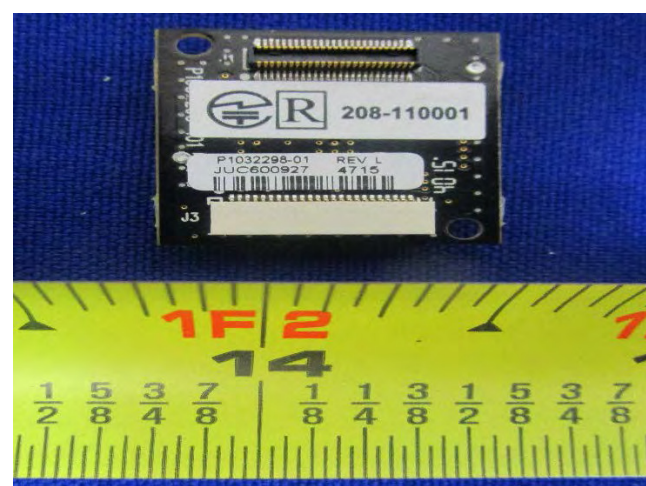
PCB3 Top View



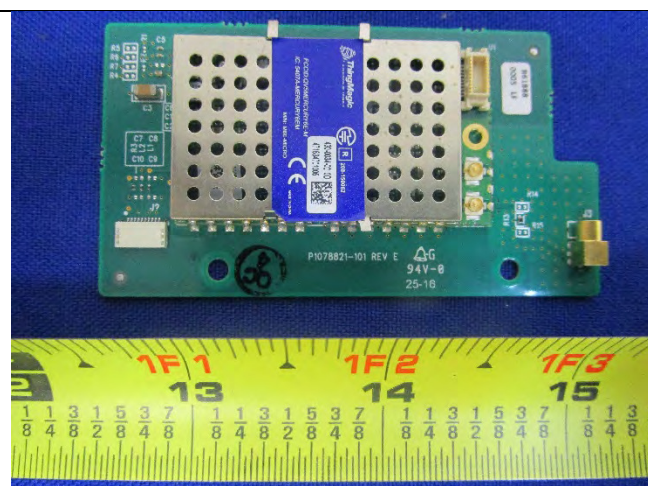
PCB3 Bottom View



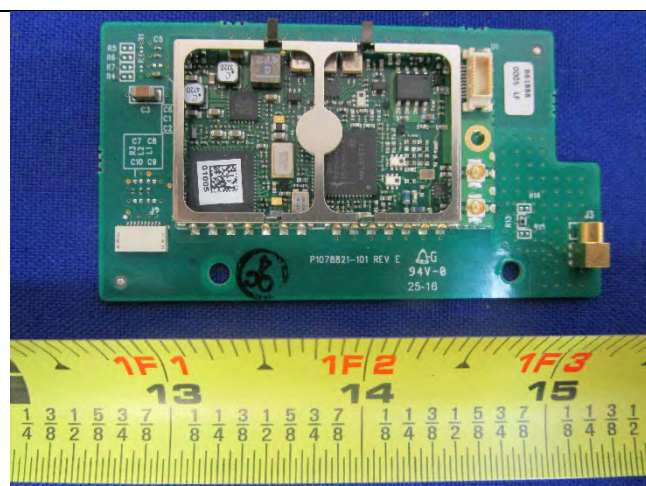
N Radio Module Top View



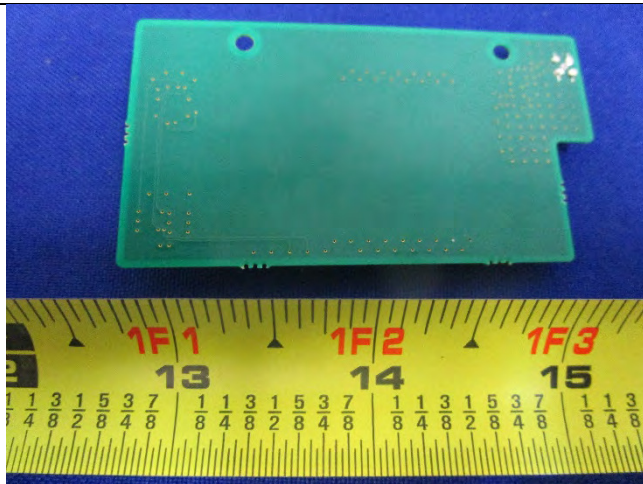
N Radio Module Bottom View



LMA M6e RFID Module Top View with Cover



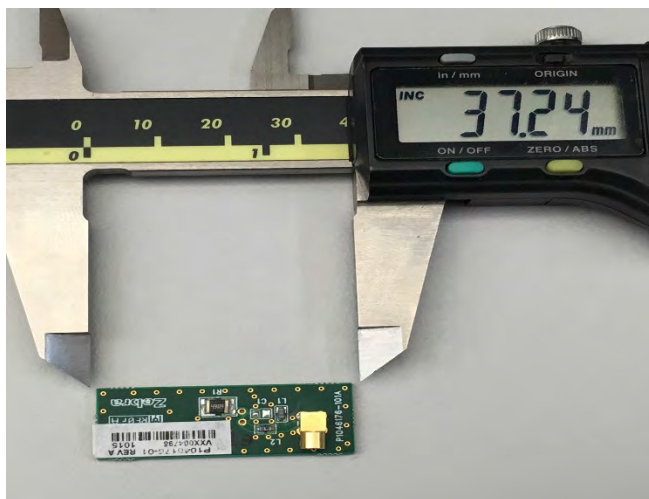
LMA M6e RFID Module Top View Without Cover



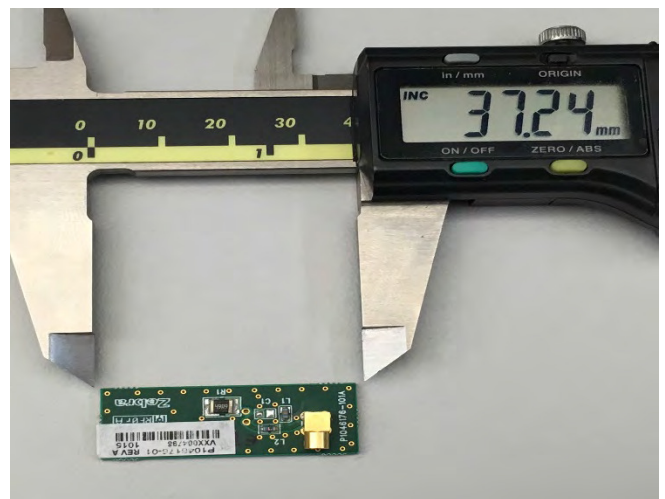
LMA M6e RFID Module Bottom View



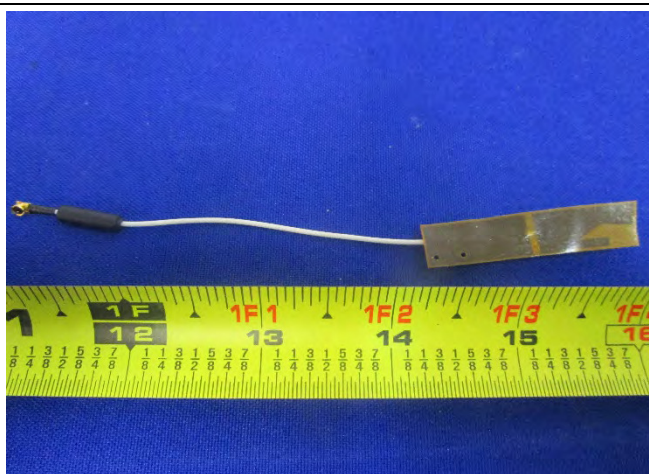
Battery View



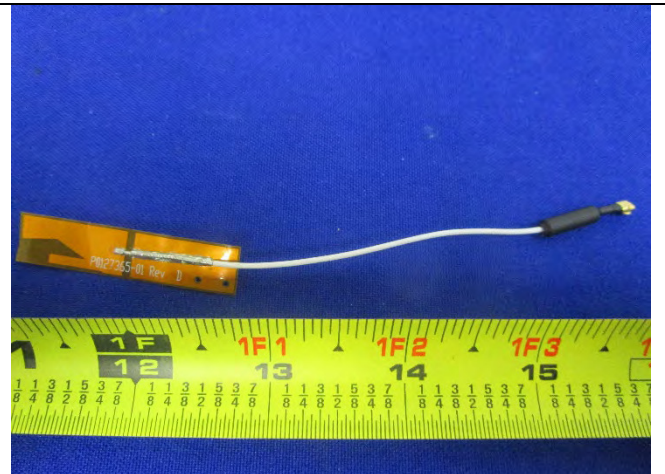
RFID Antenna Top View



RFID Antenna Bottom View

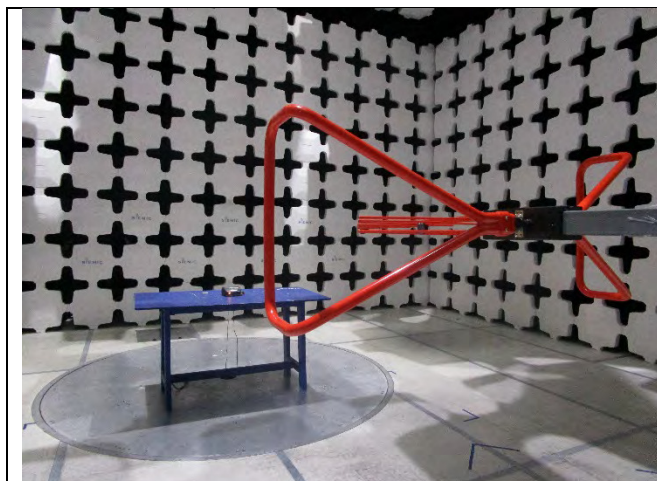


WLAN/BT Antenna Top View

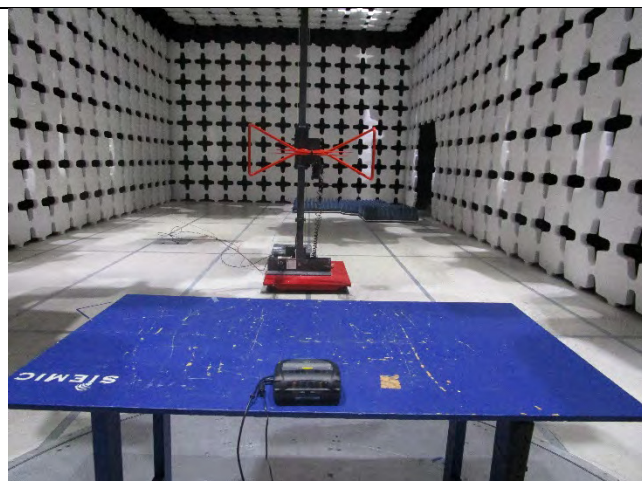


WLAN/BT Antenna Bottom View

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	ThinkPad T420s	N/A	Lenovo	-

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	EUT	USB	Laptop	USB	2	Unshielded	-

7.3 Test Software Description

Test Item	Software	Description
RF Testing	Tool Box	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	☐ Pass ☒ 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	☐ Pass ☒ N/A
	IC	RSS Gen 8.8		RSS Gen Issue 4: 2014	

Test Item	Test standard		Test Method/Procedure		Pass / Fail
Channel Separation	FCC	15.247 (a)(1)	FCC	Public Notice DA 00-705	☐ Pass ☒ N/A
	IC	RSS247 (5.1.5)	IC	-	
20dB Occupied Bandwidth	FCC	15.247(a)(1)	FCC	Public Notice DA 00-705	☐ Pass ☒ N/A
	IC	RSS247 (5.1.2)	IC	-	
99% Occupied Bandwidth	FCC	15.247(a)(2)	FCC		☐ Pass ☒ 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	☐ Pass ☒ N/A
	IC	RSS247 (5.1.5)	IC	-	
Band Edge and Radiated Spurious Emissions	FCC	15.247(d)	FCC	Public Notice DA 00-705	☒ Pass ☐ N/A
	IC	RSS247(5.5)	IC	-	
Time of Occupancy	FCC	15.247(a)(1)	FCC	Public Notice DA 00-705	☐ Pass ☒ N/A
	IC	RSS247 (5.1.5)	IC	-	
Output Power	FCC	15.247(b)	FCC	Public Notice DA 00-705	☐ Pass ☒ N/A
	IC	RSS247 (5.4.2)	IC	-	
Receiver Spurious Emissions	FCC	15.247(d)	FCC	-	☐ Pass ☒ 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	☐ Pass ☒ N/A
	IC	RSS247 (5.4.6)	IC	-	
Power Spectral Density	FCC	15.247(e)	FCC	Public Notice DA 00-705	☐ Pass ☒ N/A
	IC	RSS247 (5.2.2)	IC	-	
Hybrid System Requirement	FCC	15.247(f)	FCC	Public Notice DA 00-705	☐ Pass ☒ N/A
	IC	RSS247 (5.3)	IC	-	
Hopping Capability	FCC	15.247(g)	FCC	Public Notice DA 00-705	☐ Pass ☒ N/A
	IC	RSS247 (5.1.5)	IC	-	
RF Exposure requirement	FCC	15.247(i)	FCC	Public Notice DA 00-705	☐ Pass ☒ N/A
	IC	RSS Gen(3.2)	IC	-	

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.

Note

Only Radiated Spurious Emissions was tested for ZQ520. Please refer to the FCC ID: 128-RFIDM6EM for rest of the items.

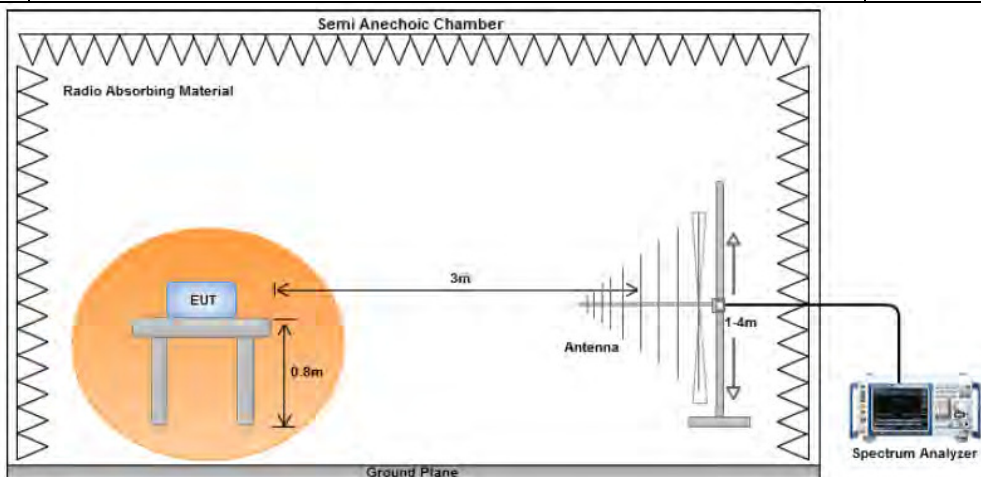
9 Measurement Uncertainty

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 below 1GHz

Requirement(s):

Spec	Item	Requirement	Applicable										
47CFR§15.247(d) RSS247 (5.5)	a)	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	☒										
		<table><tr><th>Frequency range (MHz)</th><th>Field Strength (uV/m)</th></tr><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></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.												
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												

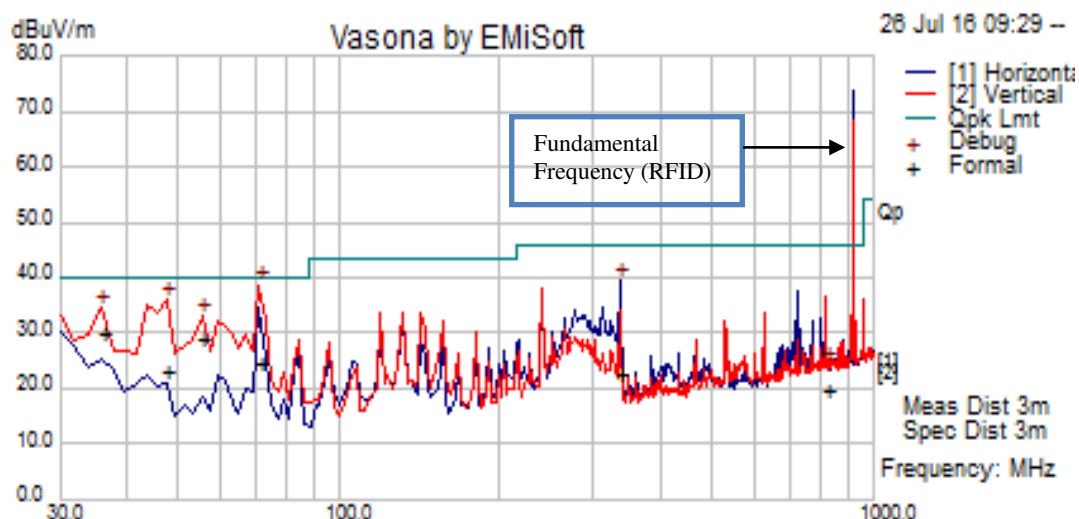
Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test was done by **Rachana Khanduri** at **10m Chamber**.

Radiated Emission Test Results (Below 1GHz)

Test specification	below 1GHz				Result	Pass
Environmental Conditions:	Temp (°C):	25				
	Humidity (%)	45				
	Atmospheric (mbar):	1011				
Mains Power:	120VAC, 60Hz					
Tested by:	Rachana Khanduri					
Test Date:	07/26/2016					
Remarks:	RFID at Mid Channel					

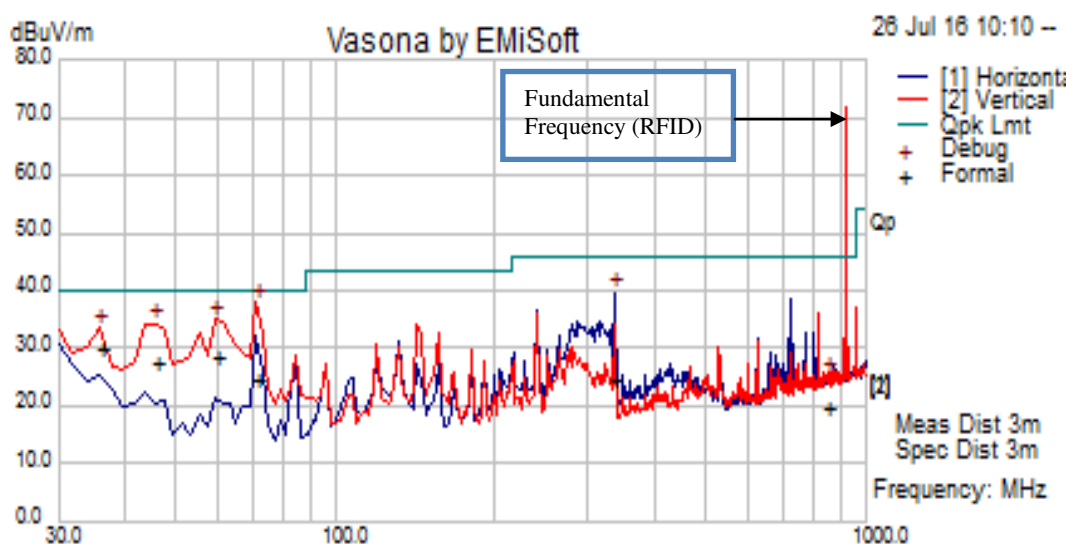


Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
70.95	54.30	1.26	-30.87	24.69	Quasi Max	V	123	8	40.00	-15.31	Pass
47.35	50.70	1.04	-28.86	22.87	Quasi Max	V	139	148	40.00	-17.13	Pass
36.00	50.15	0.87	-21.08	29.94	Quasi Max	V	144	37	40.00	-10.06	Pass
335.44	45.49	2.79	-25.59	22.70	Quasi Max	H	109	275	46.02	-23.32	Pass
55.33	58.89	1.17	-30.94	29.12	Quasi Max	V	109	348	40.00	-10.88	Pass
823.22	32.50	4.56	-17.54	19.52	Quasi Max	H	400	145	46.02	-26.50	Pass

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

Radiated Emission Test Results (Below 1GHz)

Test specification	below 1GHz			
Environmental Conditions:	Temp (°C):	25	Result	Pass
	Humidity (%)	45		
	Atmospheric (mbar):	1011		
Mains Power:	120VAC, 60Hz			
Tested by:	Rachana Khanduri			
Test Date:	07/26/2016			
Remarks:	RFID- Mid Channel and N Radio at Bluetooth Mode			

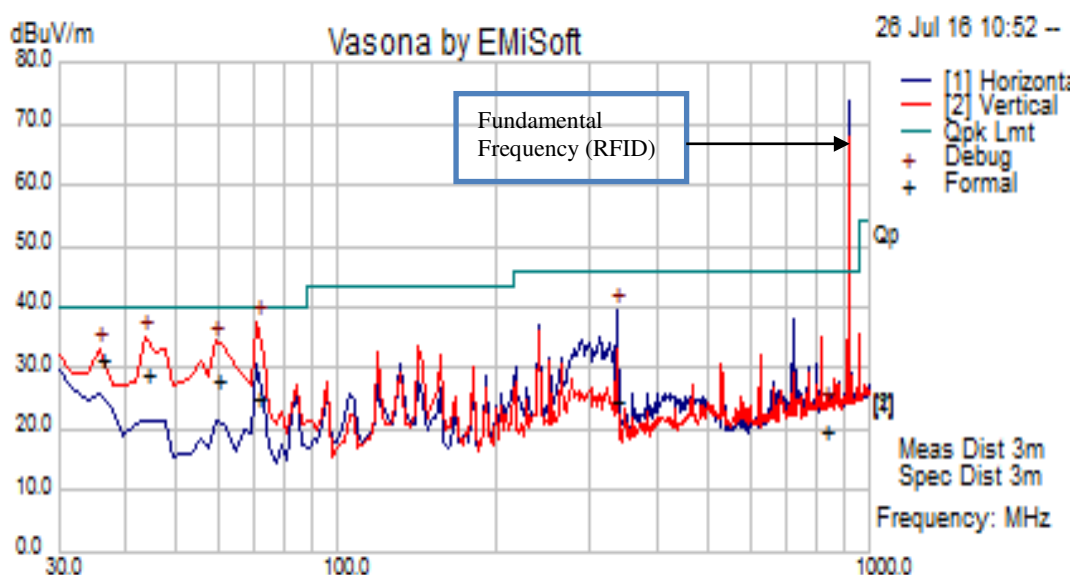


Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
70.97	54.39	1.26	-30.88	24.77	Quasi Max	V	112	45	40.00	-15.23	Pass
59.34	58.48	1.18	-31.32	28.34	Quasi Max	V	113	320	40.00	-11.66	Pass
45.68	54.41	0.98	-27.86	27.54	Quasi Max	V	102	260	40.00	-12.46	Pass
35.97	50.15	0.87	-21.06	29.95	Quasi Max	V	116	46	40.00	-10.05	Pass
335.40	47.11	2.79	-25.59	24.32	Quasi Max	H	101	217	46.02	-21.70	Pass
846.38	32.55	4.60	-17.45	19.70	Quasi Max	H	266	207	46.02	-26.32	Pass

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

Radiated Emission Test Results (Below 1GHz)

Test specification	below 1GHz			
Environmental Conditions:	Temp (°C):	25	Result	Pass
	Humidity (%)	45		
	Atmospheric (mbar):	1011		
Mains Power:	120VAC, 60Hz			
Tested by:	Rachana Khanduri			
Test Date:	07/26/2016			
Remarks:	RFID- Mid Channel and N radio at 11b-2412			

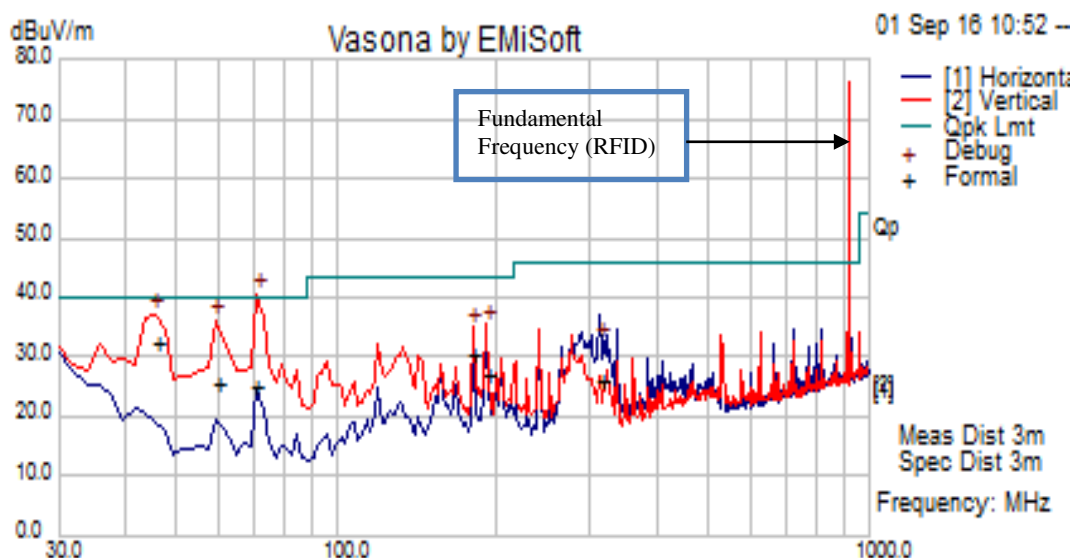


Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
70.97	54.56	1.26	-30.87	24.95	Quasi Max	V	105	26	40.00	-15.05	Pass
43.74	54.66	0.99	-26.64	29.01	Quasi Max	V	142	284	40.00	-10.99	Pass
59.33	58.09	1.18	-31.32	27.95	Quasi Max	V	125	340	40.00	-12.05	Pass
335.44	47.18	2.79	-25.59	24.39	Quasi Max	H	103	214	46.02	-21.63	Pass
36.016	51.48	0.87	-21.10	31.25	Quasi Max	V	100	33	40.00	-8.75	Pass
827.34	32.48	4.59	-17.52	19.54	Quasi Max	H	265	4	46.02	-26.48	Pass

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

Radiated Emission Test Results (Below 1GHz)

Test specification	below 1GHz			
Environmental Conditions:	Temp (°C):	25	Result	Pass
	Humidity (%)	45		
	Atmospheric (mbar):	1011		
Mains Power:	120VAC, 60Hz			
Tested by:	Rachana Khanduri			
Test Date:	07/26/2016			
Remarks:	RFID- Mid Channel and N radio at 11n20-5320			

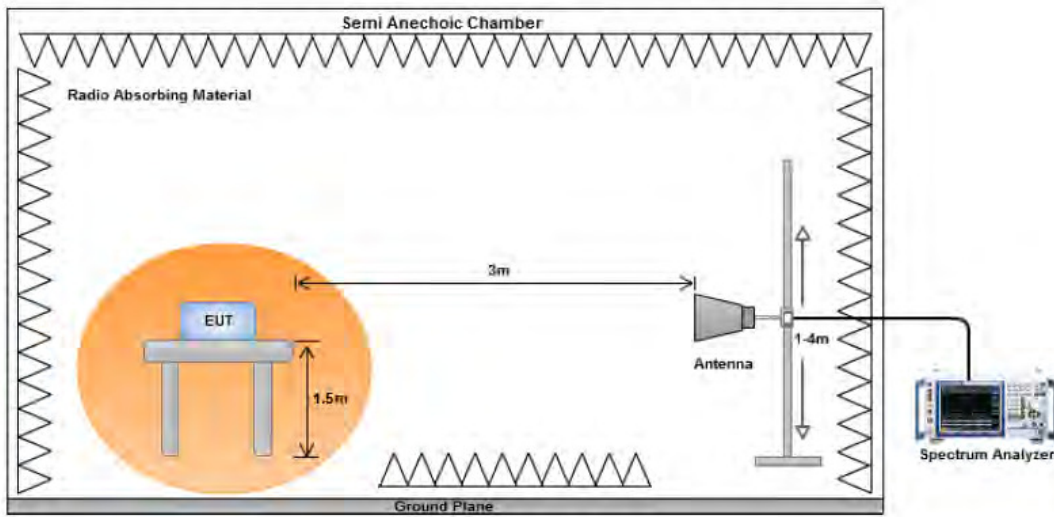


Frequency MHz	Raw dBuV	Cable Loss	AF dB	Level dBuV/m	Measurement Type	Pol	Hgt cm	Azt Deg	Limit dBuV/m	Margin dB	Pass /Fail
70.58	54.28	1.44	-30.85	24.87	Quasi Max	V	102	170	40.00	-15.13	Pass
45.66	59.01	1.16	-27.84	32.33	Quasi Max	V	107	177	40.00	-7.67	Pass
59.39	55.79	1.29	-31.32	25.75	Quasi Max	V	184	313	40.00	-14.25	Pass
191.51	52.31	2.33	-27.89	26.75	Quasi Max	V	108	321	43.52	-16.77	Pass
179.92	56.34	2.24	-28.33	30.26	Quasi Max	V	114	356	43.52	-13.26	Pass
313.43	48.66	2.99	-25.63	26.02	Quasi Max	H	111	237	46.02	-20.00	Pass

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

10.2 Radiated Spurious Emissions above 1GHz

Requirement(s):

Spec	Item	Requirement	Applicable
47CFR§15.247(d), RSS247(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	☐
Test Setup			
Procedure	- 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: - 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 40GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case. There isn't outstanding emission found at the edge of restricted frequency.		
Result	☒ Pass ☐ Fail		

Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☐ Yes (See below) ☒ N/A

Test was done by Rachana Khanduri at 3m Chamber.

Radiated Emission Test Results (Above 1GHz)

Low Channel Continus TX @ 902.75MHz

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
6350.90	38.78	7.22	-14.47	31.53	Peak Max	V	118	15	74	-42.47	Pass
4515.81	40.61	6.95	-18.48	29.08	Peak Max	V	184	359	74	-44.92	Pass
1806.69	42.26	4.76	-29.02	18.01	Peak Max	H	216	59	74	-55.99	Pass
6350.90	27.41	7.22	-14.47	20.16	Average Max	V	118	15	54	-33.84	Pass
4515.81	29.03	6.95	-18.48	17.51	Average Max	V	184	359	54	-36.50	Pass
1806.69	30.98	4.76	-29.02	6.73	Average Max	H	216	59	54	-47.27	Pass

Mid Channel Continus TX @ 915.25MHz

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
6470.12	40.46	7.24	-14.03	33.67	Peak Max	V	236	0	74	-40.33	Pass
4874.06	40.81	7.06	-17.09	30.77	Peak Max	V	230	84	74	-43.23	Pass
1830.61	54.96	4.76	-28.89	30.83	Peak Max	H	112	191	74	-43.17	Pass
6470.12	28.66	7.24	-14.03	21.87	Average Max	V	236	0	54	-32.13	Pass
4874.06	29.15	7.06	-17.09	19.11	Average Max	V	230	84	54	-34.89	Pass
1830.61	47.63	4.76	-28.89	23.5	Average Max	H	112	191	54	-30.50	Pass

High Channel Continus TX @ 927.25MHz

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
7097.60	39.80	7.38	-12.15	35.03	Peak Max	V	163	195	74	-38.97	Pass
5201.13	40.20	7.02	-16.51	30.72	Peak Max	V	179	31	74	-43.28	Pass
1851.70	43.03	4.76	-28.79	19.01	Peak Max	H	110	51	74	-54.99	Pass
7097.60	27.51	7.38	-12.15	22.75	Average Max	V	163	195	54	-31.25	Pass
5201.13	28.55	7.02	-16.51	19.06	Average Max	V	179	31	54	-34.94	Pass
1851.70	31.08	4.76	-28.79	7.05	Average Max	H	110	51	54	-46.95	Pass

RFID + N Radio at 2412MHz @ 802.11b-11Mbps

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
6081.77	40.72	7.18	-15.16	32.73	Peak Max	V	235	137	74	-41.27	Pass
4692.30	41.32	7.01	-17.92	30.40	Peak Max	V	112	322	74	-43.60	Pass
1827.01	43.68	4.76	-28.91	19.53	Peak Max	H	242	284	74	-54.47	Pass
6081.77	28.80	7.18	-15.16	20.81	Average Max	V	235	137	54	-33.19	Pass
4692.30	28.81	7.01	-17.92	17.89	Average Max	V	112	322	54	-36.11	Pass
1827.012	31.43	4.76	-28.91	7.28	Average Max	H	242	284	54	-46.72	Pass

RFID + N Radio at 5320MHz @ 802.11a-6Mbps

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
7099.20	39.57	7.38	-12.14	34.82	Peak Max	H	119	285	74	-39.18	Pass
4085.57	40.20	6.83	-18.82	28.21	Peak Max	V	141	215	74	-45.79	Pass
1828.02	42.64	4.76	-28.91	18.50	Peak Max	H	215	78	74	-55.50	Pass
7099.20	27.82	7.38	-12.14	23.06	Average Max	H	119	285	54	-30.94	Pass
4085.57	28.46	6.83	-18.82	16.47	Average Max	V	141	215	54	-37.53	Pass
1828.02	30.92	4.76	-28.91	6.78	Average Max	H	215	78	54	-47.23	Pass

RFID + N Radio at Bluetooth mode

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
6221.54	39.64	7.20	-14.89	31.95	Peak Max	V	147	113	74	-42.05	Pass
4126.63	42.12	6.84	-18.97	29.99	Peak Max	V	221	339	74	-44.01	Pass
1830.72	52.29	4.76	-28.89	28.16	Peak Max	H	116	226	74	-45.84	Pass
6221.54	27.87	7.20	-14.89	20.18	Average Max	V	147	113	54	-33.82	Pass
4126.63	29.49	6.84	-18.97	17.37	Average Max	V	221	339	54	-36.63	Pass
1830.72	45.02	4.76	-28.89	20.89	Average Max	H	116	226	54	-33.11	Pass

Annex A. TEST INSTRUMENT

Instrument	Model	Manufacturer	Serial #	Cal Date	Cal Cycle	Cal Due	In use
Conducted Emissions							
R & S Receiver	ESIB 40	Rohde & Schwarz	100179	06/08/2016	1 Year	06/08/2017	☐
CHASE LISN (9k-30MHz)	MN2050B	Chase	1018	08/16/2016	1 Year	08/16/2017	☐
Radiated Emissions							
R & S Receiver	ESIB 40	Rohde & Schwarz	100179	06/08/2016	1 Year	06/08/2017	☒
Spectrum Analyzer	N9010A	Keysight	10SL0219	10/27/2015	1 Year	10/27/2016	☒
Pre-Amplifier (1-26.5GHz)	8449B	Hewlett Packard	3008A00715	03/30/2016	1 Year	03/30/2017	☒
Preamplifier (100KHz-7GHz)	LPA-6-30	RF Bay, Inc.	11140711	02/10/2016	1 Year	02/10/2017	☒
ETS-Lingren Loop Antenna	6512	ETS-Lingren	00049120	07/14/2016	1 Year	07/14/2017	☐
Bi-Log antenna (30MHz~2GHz)	JB1	Sunol Sciences	A030702	07/08/2016	1 Year	07/08/2017	☒
Horn Antenna (1-26.5GHz)	3115	EMCO	10SL0059	08/11/2016	1 Year	08/11/2017	☒
3 Meters SAC	3M	ETS-Lingren	N/A	06/09/2016	1 Year	06/09/2017	☒
10 Meters SAC	10M	ETS-Lingren	N/A	07/06/2016	1 Year	07/06/2017	☒
RF Conducted Measurement							
Spectrum Analyzer	N9010A	Keysight	10SL0219	10/27/2015	1 Year	10/27/2016	☐
USB RF Power Sensor	7002-006	ETS-Lingren	10SL0190	09/03/2015	1 Year	09/03/2016	☐

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