RF TEST REPORT

SIEMIC
A Bureau Veritas Group Company

Report No.: RF_FCC IC_SL18091107-DME-003_Rev 1.0
Supersede Report No.:

Applicant (FCC)	:	Digital Matter Embedded
Applicant (IC)	:	Digital Matter
Product Name	:	Digital Matter LWAN 915
Model No.	:	DM-LWAN-915
Host model No.	:	Guppy LWAN 915
Test Standard	:	47 CFR 15.247 RSS 247 Iss 2: Feb 2017
Test Method	:	ANSI C63.10: 2013 RSS Gen Iss 5: Apr 2018
FCC ID	:	POJDMLWAN915
IC	:	23950-DMLWAN915
Dates of test	:	12/15/2018
Issue Date	:	04/08/2019
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:	
Gary Chou	
Gary Chou	**Chen Ge**
Test Engineer	Engineer Reviewer

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

ilac-MRA
A2LA ACCREDITED
TESTING CERT # 2742-01

Laboratory Introduction

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

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

Accreditations for Conformity Assessment

Country/Region	Accreditation Body	Scope
USA	FCC, A2LA	EMC, RF/Wireless, Telecom
Canada	IC, A2LA, NIST	EMC, RF/Wireless, Telecom
Taiwan	BSMI, NCC, NIST	EMC, RF, Telecom, Safety
Hong Kong	OFTA, NIST	RF/Wireless, Telecom
Australia	NATA, NIST	EMC, RF, Telecom, Safety
Korea	KCC/RRA, NIST	EMI, EMS, RF, Telecom, Safety
Japan	VCCI, JATE, TELEC, RFT	EMI, RF/Wireless, Telecom
Mexico	NOM, COFETEL, Caniety	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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1 Report Revision History

Report No.	Report Version	Description	Issue Date
RF_FCC IC_SL18091107-DME-003	None	Original	12/18/2018
RF_FCC IC_SL18091107-DME-003_Rev 1.0	1.0	Change Antenna TYPE and add 125KHz Test Data	04/08/2019

2 Executive Summary

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

Company: Digital Matter
Product: Digital Matter LWAN 915
Model: DM-LWAN-915
Host model: Guppy LWAN 915

against the current Stipulated Standards. The specified model product stated above has demonstrated compliance with the Stipulated Standard listed on 1st page. This test report covers the radiated emissions requirements of the standards referenced in the report to allow system level approval of the modules in specified Hosts.

3 Customer information

Applicant Name	:	Digital Matter
Applicant Address	:	The Oval, Kingsmead Building, CNR Meadowbrook and Sloane Rd, Bryanston Johannesburg, 2021, South Africa
Manufacturer Name	:	Digital Matter
Manufacturer Address	:	The Oval, Kingsmead Building, CNR Meadowbrook and Sloane Rd, Bryanston Johannesburg, 2021, South Africa

4 Test site information

Lab performing tests	SIEMIC Laboratories
Lab Address	775 Montague Expressway, Milpitas, CA 95035
FCC Test Site No.	540430
IC Test Site No.	4842D-2
VCCI Test Site No.	A0133

5 Modification

Index	Item	Description	Note
-	-	-	-

6 EUT Information

6.1 EUT Description

Module Model No.	DM-LWAN-915
Host model No.	Guppy LWAN 915
Trade Name	Digital Matter
Serial No.	70B3D5705000297A
Input Power	3VDC
Date of EUT received	12/01/2018
Equipment Class/ Category	DTS

6.2 Radio Description

Radio Type	LoRaWan
Operating Frequency	902.3-914.9MHz
Modulation	FSK
Channel Spacing	125kHz, 500kHz
Antenna Type	PCB Antenna
Antenna Gain (Peak)	-1 dBi
Antenna Connector Type	N/A

Type	Channel No.	Frequency (MHz)	Power Setting
LoRaWAN 125 KHz Bandwidth	01	902.3	20
	32	908.5	20
	64	914.9	20
LoRaWAN 500 KHz Bandwidth	65	903	20
	68	907.8	20
	72	914.2	20

6.1 EUT test modes/configuration Description

Mode	Note
LoRaWAN	LoRaWAN (FSK)

7 Supporting Equipment/Software and cabling Description

7.1 Supporting Equipment

Item	Supporting Equipment Description	Model	Serial Number	Manufacturer	Note
1	Laptop	PP01L Latitude E5440	F1WPF12	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	
USB to 4-pin cable	EUT	4-pin	Laptop	USB	1	Unshielded	-

7.3 Test Software Description

Test Item	Software	Description
Spurious emission	TeraTerm	Set the EUT to transmit continuously in diferent test mode

8 Test Summary

DTS Band Requirement

Test Item	Test standard		Test Method/Procedure		Pass / Fail
Radiated Spurious Emissions	FCC	15.247, 15.209	FCC	ANSI C63.10:2013	☒ Pass ☐ N/A
	IC	RSS 247, RSS-GEN	IC		
Remark	1. All measurement uncertainties do not take into consideration for all presented test results. 2. 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. 3. Only Radiated Spurious Emission was testing for Host configuration. 4. All other test items have been evaluated under the original limited modular approval certified under FCC ID: VPYCMABZ, IC: 772C-CMABZ, SGS test report no. SHEM160900621801.				

9 Measurement Uncertainty

9.1 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.

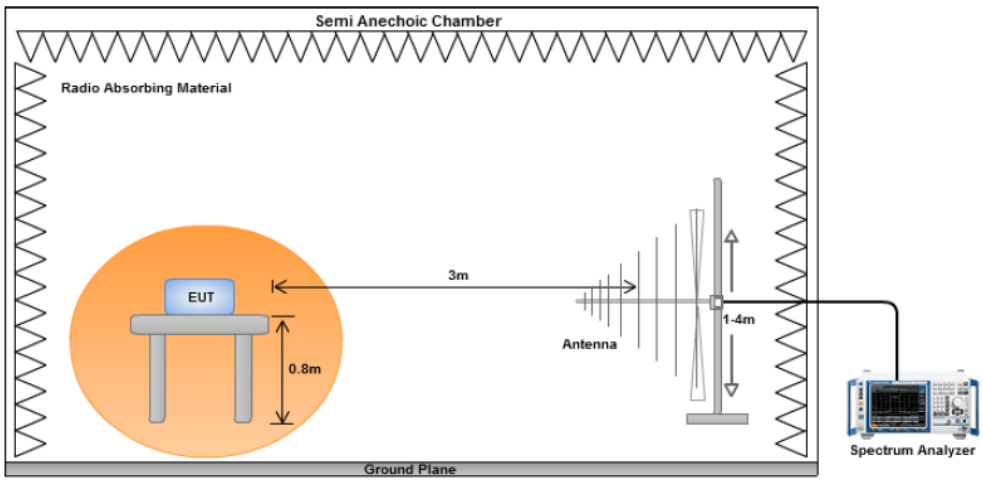
10 Measurements, Examination and Derived Results

10.1 Radiated Spurious Emissions below 1GHz

Requirement(s):

Spec	Item	Requirement	Applicable
47CFR§15.247, 15.209 RSS247	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	☒

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	1. The EUT was scanned up to 1GHz. Both horizontal and vertical polarities were investigated. The results show only the worst case. 2. Testing was done on Guppy Host.
Result	☒ Pass ☐ Fail

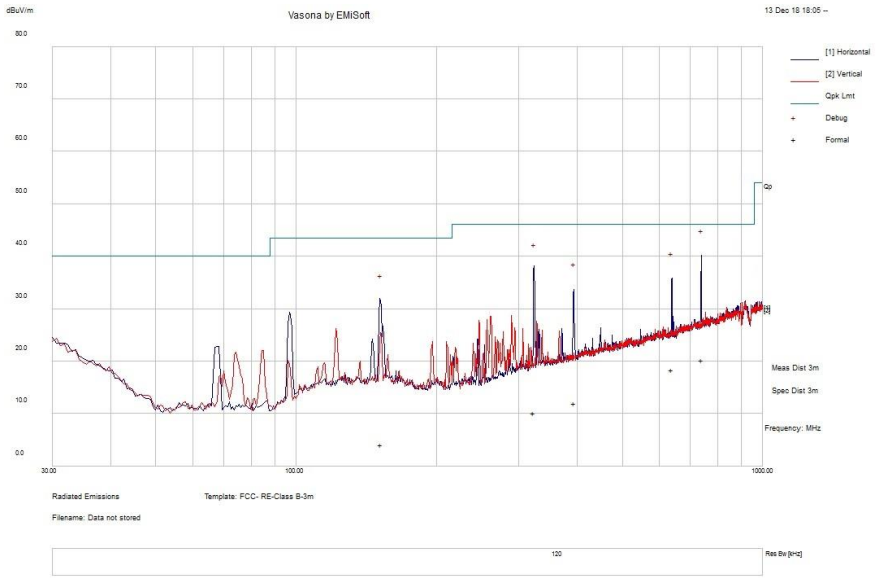
Test Data ☒ Yes (See below) ☐ N/A

Test Plot ☒ Yes (See below) ☐ N/A

Test was done by Gary Chou at 10m chamber.

Radiated Emission Test Results (Below 1GHz)

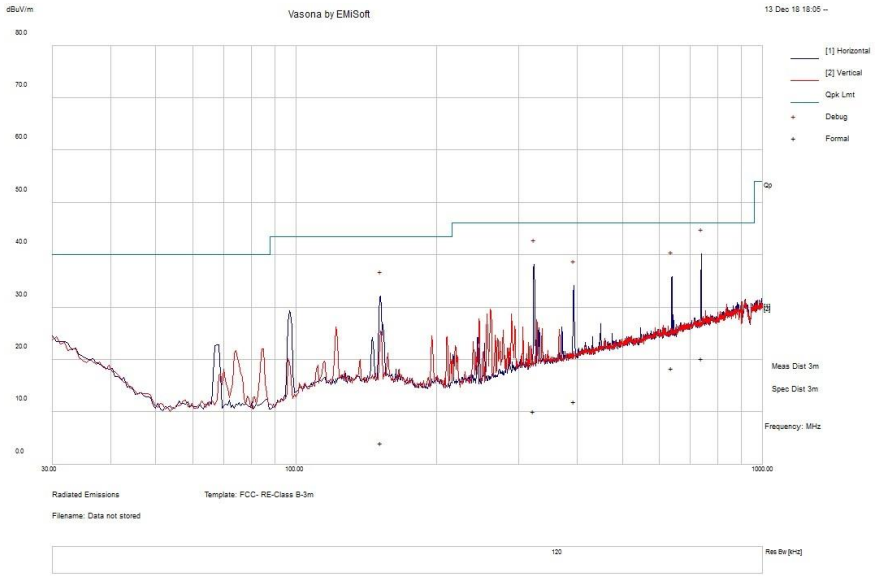
Test specification	below 1GHz			
Environmental Conditions:	Temp (°C):	26	Result	Pass
	Humidity (%)	47		
	Atmospheric (mbar):	1020		
Mains Power:	3V DC			
Tested by:	Gary Chou			
Test Date:	12/13/2018			
Remarks:	Middle channel, 125kHz			



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
738.53	20.52	15.17	-15.07	20.62	Quasi Max	H	233	244	46	-25.38	Pass
323.27	18.37	13.38	-21.45	10.3	Quasi Max	H	244	95	46	-35.7	Pass
638.17	19.43	14.88	-15.8	18.51	Quasi Max	H	340	293	46	-27.49	Pass
151.45	15.19	12.21	-23.33	4.07	Quasi Max	H	156	73	43.5	-39.43	Pass
393.26	18.44	13.65	-20.13	11.96	Quasi Max	H	101	273	46	-34.04	Pass
738.36	20.61	15.17	-15.07	20.71	Quasi Max	H	233	244	46	-25.29	Pass

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

Test specification	below 1GHz			
Environmental Conditions:	Temp (°C):	26	Result	Pass
	Humidity (%)	47		
	Atmospheric (mbar):	1020		
Mains Power:	3V DC			
Tested by:	Gary Chou			
Test Date:	12/13/2018			
Remarks:	Middle channel, 500kHz			



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
738.84	20.23	15.17	-15.07	20.32	Quasi Max	H	233	244	46	-25.68	Pass
323.31	18.21	13.38	-21.45	10.13	Quasi Max	H	244	95	46	-35.87	Pass
638.79	19.38	14.88	-15.8	18.46	Quasi Max	H	340	293	46	-27.54	Pass
151.82	15.24	12.21	-23.33	4.12	Quasi Max	H	156	73	43.5	-39.38	Pass
393.95	18.58	13.65	-20.13	12.1	Quasi Max	H	101	273	46	-33.9	Pass
738.84	20.23	15.17	-15.07	20.32	Quasi Max	H	233	244	46	-25.68	Pass

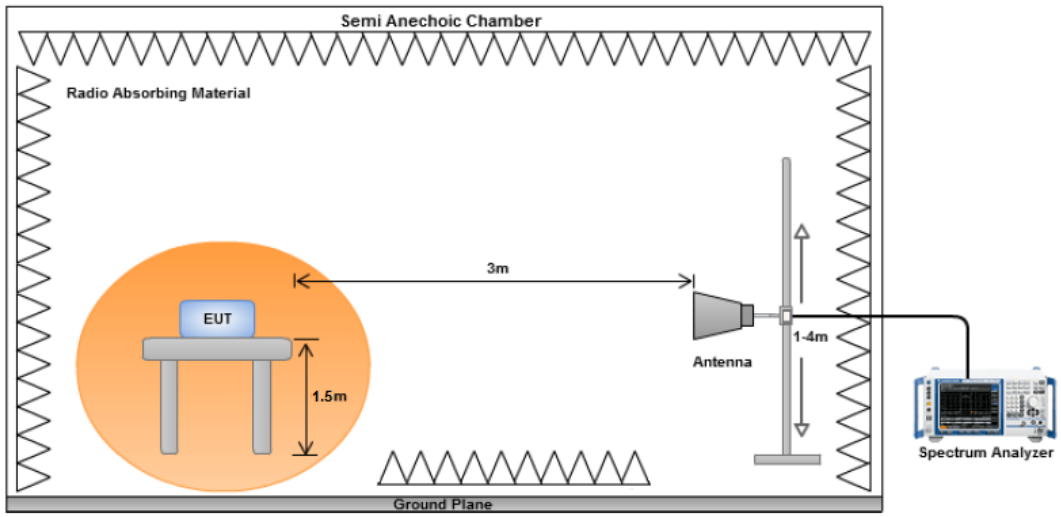
Note: Both horizontal and vertical polarities were investigated. The results above show only the worst case.

10.2 Radiated Spurious Emissions between 1GHz – 25GHz

Requirement(s):

Spec	Item	Requirement	Applicable
47CFR§15.247, 15.209 RSS247	1	Except higher limit as specified elsewhere in other section, the emissions from the low-power radio-frequency devices shall not exceed the field strength levels specified in the following table and the level of any unwanted emissions shall not exceed the level of the fundamental emission. The tighter limit applies at the band edges	☒

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

Test Setup	
Procedure	1. The EUT was switched on and allowed to warm up to its normal operating condition. 2. The test was carried out at the selected frequency points obtained from the EUT characterisation. Maximization of the emissions, was carried out by rotating the EUT, changing the antenna polarization, and adjusting the antenna height in the following manner: a. Vertical or horizontal polarisation (whichever gave the higher emission level over a full rotation of the EUT) was chosen. b. The EUT was then rotated to the direction that gave the maximum emission. c. Finally, the antenna height was adjusted to the height that gave the maximum emission. 3. An average 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 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 Gary Chou at 10m chamber.

Radiated Emission Test Results (Above 1GHz)

Test specification	Above 1GHz			
Environmental Conditions:	Temp (°C):	22	Result	Pass
	Humidity (%)	47.5		
	Atmospheric (mbar):	1020		
Mains Power:	3V DC			
Tested by:	Gary Chou			
Test Date:	12/13/2018			
Remarks:	Middle Channel, 125KHz			

Above 1GHz-25GHz – Low 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
8120.45	57.45	5.39	-7.08	55.76	Peak Max	V	209	301	74	-18.24	Pass
1805.27	53.27	2.62	-15.98	39.91	Peak Max	V	217	26	74	-34.09	Pass
2419.34	53.34	2.96	-14.36	41.94	Peak Max	V	169	146	74	-32.06	Pass
8120.19	48.52	5.39	-7.08	46.83	Average Max	V	209	301	54	-7.17	Pass
1805.47	39.16	2.62	-15.98	25.8	Average Max	V	217	26	54	-28.2	Pass
2419.52	40.25	2.96	-14.36	28.85	Average Max	V	169	146	54	-25.15	Pass

Above 1GHz-25GHz- Middle 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
8121.18	56.98	5.39	-7.08	55.29	Peak Max	V	206	299	74	-18.71	Pass
1816.65	52.79	2.62	-15.91	39.5	Peak Max	V	224	25	74	-34.5	Pass
2155.991	53.43	2.83	-15.05	41.21	Peak Max	V	163	150	74	-32.79	Pass
8121.18	48.73	5.39	-7.08	47.04	Average Max	V	206	299	54	-6.96	Pass
1816.65	39.43	2.62	-15.91	26.14	Average Max	V	224	25	54	-27.86	Pass
2155.991	39.46	2.83	-15.05	27.24	Average Max	V	163	150	54	-26.76	Pass

Above 1GHz-25GHz – High 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
8120.22	57.1	5.39	-7.08	55.41	Peak Max	V	210	292	74	-18.59	Pass
1829.96	52.57	2.63	-15.84	39.36	Peak Max	V	216	30	74	-34.64	Pass
2755.588	53.36	3.15	-14.21	42.3	Peak Max	V	164	148	74	-31.7	Pass
8120.22	49.26	5.39	-7.08	47.57	Average Max	V	210	292	54	-6.43	Pass
1829.96	38.64	2.63	-15.84	25.43	Average Max	V	216	30	54	-28.57	Pass
2755.588	39.66	3.15	-14.21	28.6	Average Max	V	164	148	54	-25.4	Pass

Note: The testing was based on highest power setting with 125kHz bandwidth.

Test specification	Above 1GHz			
Environmental Conditions:	Temp (°C):	22	Result	Pass
	Humidity (%)	47.5		
	Atmospheric (mbar):	1020		
Mains Power:	3V DC			
Tested by:	Gary Chou			
Test Date:	12/13/2018			
Remarks:	Middle Channel, 500KHz			

Above 1GHz-25GHz – Low 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
8120.78	57.03	5.39	-7.08	55.34	Peak Max	V	209	301	74	-18.66	Pass
1805.31	53.49	2.62	-15.98	40.13	Peak Max	V	217	26	74	-33.87	Pass
2419.298	53.89	2.96	-14.36	42.49	Peak Max	V	169	146	74	-31.51	Pass
8120.78	48.97	5.39	-7.08	47.28	Average Max	V	209	301	54	-6.72	Pass
1805.31	39.63	2.62	-15.98	26.27	Average Max	V	217	26	54	-27.73	Pass
2419.298	40.14	2.96	-14.36	28.74	Average Max	V	169	146	54	-25.26	Pass

Above 1GHz-25GHz- Middle 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
8121.18	56.98	5.39	-7.08	55.29	Peak Max	V	206	299	74	-18.71	Pass
1816.65	52.79	2.62	-15.91	39.5	Peak Max	V	224	25	74	-34.5	Pass
2155.991	53.43	2.83	-15.05	41.21	Peak Max	V	163	150	74	-32.79	Pass
8121.18	48.73	5.39	-7.08	47.04	Average Max	V	206	299	54	-6.96	Pass
1816.65	39.43	2.62	-15.91	26.14	Average Max	V	224	25	54	-27.86	Pass
2155.991	39.46	2.83	-15.05	27.24	Average Max	V	163	150	54	-26.76	Pass

Above 1GHz-25GHz – High 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
8120.22	57.1	5.39	-7.08	55.41	Peak Max	V	210	292	74	-18.59	Pass
1829.96	52.57	2.63	-15.84	39.36	Peak Max	V	216	30	74	-34.64	Pass
2755.588	53.36	3.15	-14.21	42.3	Peak Max	V	164	148	74	-31.7	Pass
8120.22	49.26	5.39	-7.08	47.57	Average Max	V	210	292	54	-6.43	Pass
1829.96	38.64	2.63	-15.84	25.43	Average Max	V	216	30	54	-28.57	Pass
2755.588	39.66	3.15	-14.21	28.6	Average Max	V	164	148	54	-25.4	Pass

Note: The testing was based on highest power setting with 500kHz bandwidth.

Annex A. TEST INSTRUMENT

Instrument	Model	Serial #	Cal Date	Cal Cycle	Cal Due	In use
Radiated Emissions						
Spectrum Analyzer	N9010A	10SL0219	08/20/2018	1 Year	08/20/2019	☑
Bi-Log antenna (30MHz~2GHz)	JB1	A030702	08/12/2018	1 Year	08/12/2019	☑
Horn Antenna (1GHz~26GHz)	3115	100059	08/25/2018	1 Year	08/25/2019	☑
Horn Antenna (26GHz~40GHz)	AH-840	101013	08/28/2018	1 Year	08/28/2019	☑
Pre-Amp (30MHz~40GHz)	LPA-6-30	11140711	02/10/2018	1 Year	02/10/2019	☑

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 & 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