FCC RF TEST REPORT

ISSUED BY
Shenzhen BALUN Technology Co., Ltd.

FOR

LZ RFID Module

ISSUED TO
Shanghai ChargeDot New Energy Technology Co., Ltd

23Floor, No. 19 Building, No. 1515, Gumei Road, Xuhui District, Shanghai China

Tested by: Xiong Chong
Xiong Chong
Date Jul. 16, 2020

Approved by:
Liao Jianming
(Technical Director)
Date Jul. 16, 2020

Report No.:	BL-SZ2050363-401
EUT Name:	LZ RFID Module
Model Name:	LSD1NF-ST39NFC0
Brand Name:	Lierda
Test Standard:	47 CFR Part 15 Subpart C
FCC ID:	2AWGLLSD1NFST39NFC0
Test Conclusion:	Pass
Test Date:	May 09, 2020 ~ Jul. 15, 2020
Date of Issue:	Jul. 16, 2020

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Revision History

Version	Issue Date	Revisions Content
Rev. 01	Jul. 16, 2020	Initial Issue

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1 ADMINISTRATIVE DATA (GENERAL INFORMATION)

1.1 Identification of the Testing Laboratory

Company Name	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Phone Number	+86 755 6685 0100

1.2 Identification of the Responsible Testing Location

Test Location	Shenzhen BALUN Technology Co., Ltd.
Address	Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China
Accreditation Certificate	The laboratory has been listed by Industry Canada to perform electromagnetic emission measurements. The recognition numbers of test site are 11524A-1. The laboratory is a testing organization accredited by FCC as a accredited testing laboratory. The designation number is CN1196. The laboratory is a testing organization accredited by American Association for Laboratory Accreditation(A2LA) according to ISO/IEC 17025.The accreditation certificate is 4344.01. The laboratory is a testing organization accredited by China National Accreditation Service for Conformity Assessment (CNAS) according to ISO/IEC 17025. The accreditation certificate number is L6791.
Description	All measurement facilities used to collect the measurement data are located at Block B, FL 1, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong Province, P. R. China 518055

1.3 Laboratory Condition

Ambient Temperature	20℃ to 25℃
Ambient Relative Humidity	45% to 55%
Ambient Pressure	100 kPa to 102 kPa

1.4 Announce

(1) The test report reference to the report template version v6.3.

(2) The test report is invalid if not marked with the signatures of the persons responsible for preparing and approving the test report.

(3) The test report is invalid if there is any evidence and/or falsification.

(4) The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein.

(5) This document may not be altered or revised in any way unless done so by BALUN and all revisions are duly noted in the revisions section.

(6) Content of the test report, in part or in full, cannot be used for publicity and/or promotional purposes without prior written approval from the laboratory.

(7) The laboratory is only responsible for the data released by the laboratory, except for the part provided by the applicant.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	Shanghai ChargeDot New Energy Technology Co., Ltd
Address	23Floor, No. 19 Building, No. 1515, Gumei Road, Xuhui District, Shanghai China

2.2 Manufacturer Information

Manufacturer	Lierda Science & Technology Group Co., Ltd
Address	Room 1401, Building No.1, Lierda IoT park, No.1326 Wenyi Xi Road, Hangzhou, Zhejiang Prov., China

2.3 Factory Information

Factory	Zhejiang Xianxin Technology Co., Ltd
Address	Pearl Byland, Qiandaohu Town, Chun'an County, Hangzhou, Zhejiang Prov., China

2.4 General Description for Equipment under Test (EUT)

EUT Name	LZ RFID Module
Under Test Model Name	LSD1NF-ST39NFC0
Series Model Name	N/A
Description of Model name differentiation	N/A
Hardware Version	03
Software Version	01
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A

2.5 Technical Information

Network and Wireless connectivity	NFC

The requirement for the following technical information of the EUT was tested in this report:

Modulation Type	ASK
Product Type	☒ Mobile ☐ Portable ☐ Fix Location
Frequency Range	13.56 MHz
Receiver Categorization	3
Number of channel	1
Tested Channel	1
Antenna Type	PCB Antenna

3 SUMMARY OF TEST RESULTS

3.1 Test Standards

No.	Identity	Document Title
1	47 CFR Part 15, Subpart C (10-1-18 Edition)	Miscellaneous Wireless Communications Services
2	ANSI C63.10-2013	American National Standard for Testing Unlicensed Wireless Devices

3.2 Verdict

No.	Description	FCC Part No.	Test Result	Verdict
1	Antenna Requirement	15.203	--	Pass Note
2	Emissions Bandwidth	15.215	ANNEX A.1	Pass
3	Field Strength of Fundamental Emissions	15.225(a)	ANNEX A.2	Pass
4	Radiated Emissions	15.225(d) 15.209	ANNEX A.3	Pass
5	Frequency Stability	15.225(e)	ANNEX A.4	Pass
6	Conducted Emission	15.207	ANNEX A.5	Pass
Note: The EUT has a permanently and irreplaceable attached antenna, which complies with the requirement FCC 15.203.				

3.3 Test Uncertainty

The following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2.This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

Measurement	Value
Conducted emissions (9 kHz-30 MHz)	2.96 dB
Radiated emissions (9 kHz-30 MHz)	3.76 dB
Radiated emissions (30 MHz-1 GHz)	3.66 dB
Radiated emissions (1 GHz-18 GHz)	5.57 dB
Radiated emissions (18 GHz-40 GHz)	6.12 dB

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

During the measurement, the normal environmental conditions were within the listed ranges:

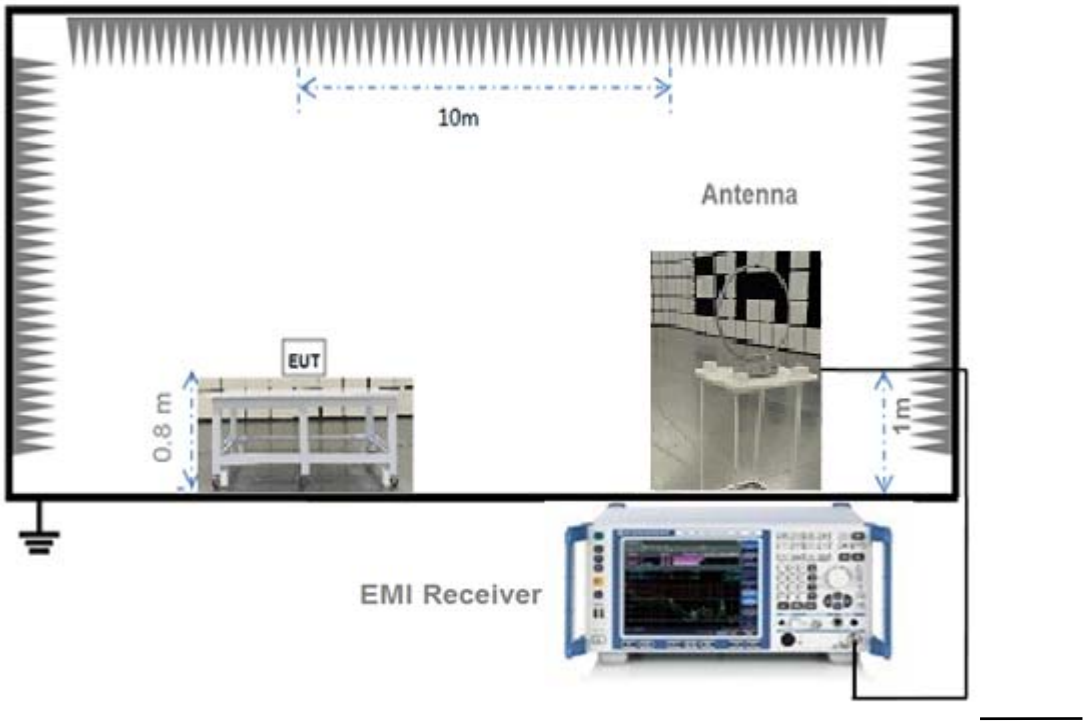
Relative Humidity	45% to 55%	
Atmospheric Pressure	100 kPa to 102 kPa	
Temperature	NT (Normal Temperature)	+22℃ to +25℃
Working Voltage of the EUT	NV (Normal Voltage)	3.3 V

4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2020.06.09	2021.06.08
LISN	SCHWARZBECK	NSLK 8127	8127-687	2020.06.09	2021.06.08
DC Power Supply	ROHDE&SCHWARZ	HMP2020	018141664	2020.06.09	2021.06.08
Temperature Chamber	ANGELANTIONI SCIENCE	NTH64-40A	1310	2020.06.09	2021.06.08
Test Antenna-Loop(9 kHz-30 MHz)	SCHWARZBECK	FMZB 1519	1519-037	2019.10.29	2021.10.28
Test Antenna-Bi-Log(30 MHz-3 GHz)	SCHWARZBECK	VULB 9163	9163-624	2018.08.22	2020.08.21
Test Antenna-Horn(1-18 GHz)	SCHWARZBECK	BBHA 9120D	9120D-1148	2020.07.10	2022.07.09
Anechoic Chamber	EMC TECHNOLOGY LTD	21.1m*11.6m*7.35m	N/A	2017.02.21	2021.02.20
Shielded Enclosure	YiHeng Electronic Co., Ltd	3.4m*3.1m*2.8m	N/A	2018.08.16	2021.08.15
Test Software	BALUN	BL410_E	V19.918	--	--

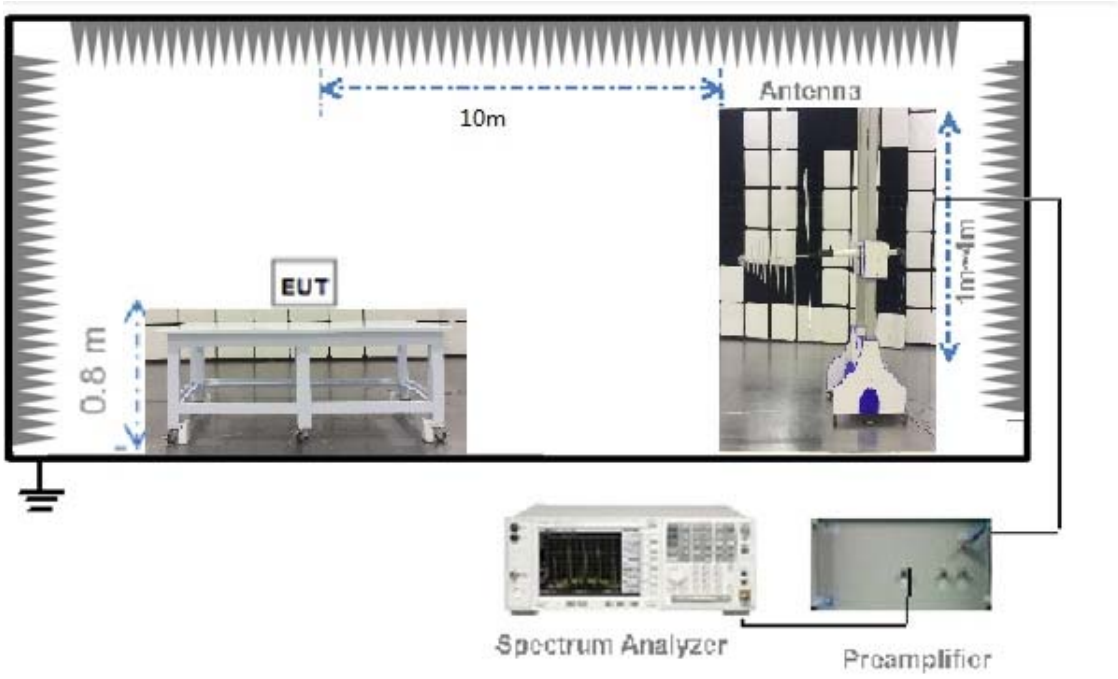
4.3 Description of Test Setup

4.3.1 For Radiated Test (Below 30 MHz)



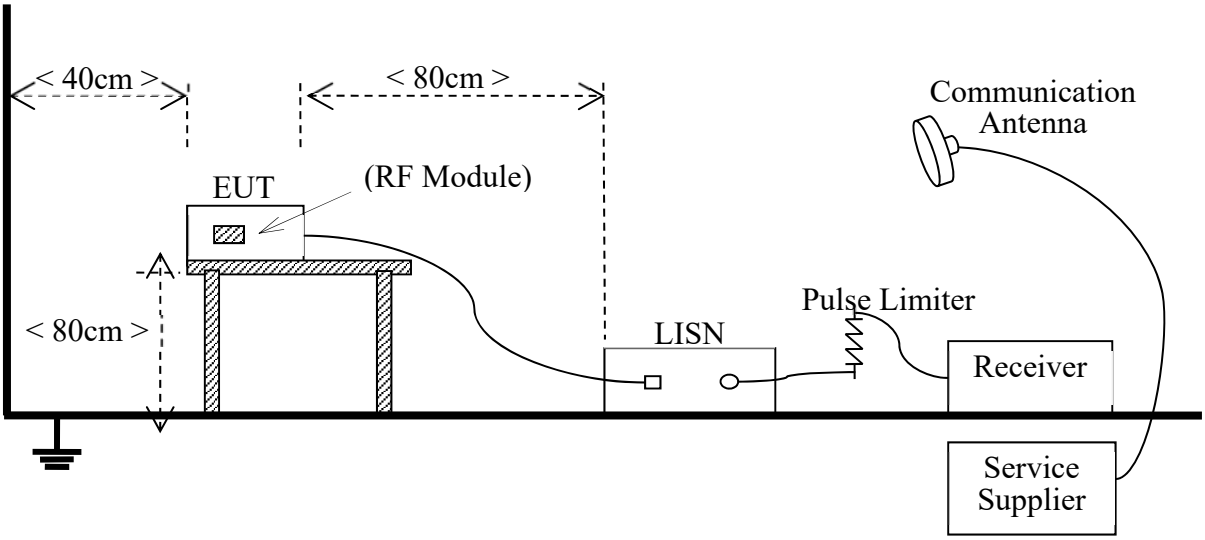
(Diagram 1)

4.3.2 For Radiated Test (30 MHz-1 GHz)



(Diagram 2)

4.3.3 For AC Power Supply Port Test



(Diagram 3)

5 TEST ITEMS

5.1 Antenna Requirements

5.1.1 Relevant Standards

FCC §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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of § 15.211, § 15.213, § 15.217, § 15.219, or § 15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

RSS-Gen 6.8
The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).

When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer.
The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.

For licence-exempt equipment with detachable antennas, the user manual shall also contain the following notice in a conspicuous location:
This radio transmitter [enter the device's ISED certification number] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Immediately following the above notice, the manufacturer shall provide a list of all antenna types which can be used with the transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna type.

5.1.2 Antenna Anti-Replacement Construction

The Antenna Anti-Replacement as following method:

Protected Method	Description
The antenna is embedded in the product.	An embedded-in antenna design is used.

Reference Documents	Item
Photo	Please refer EUT internal photos.

5.2 Emission Bandwidth

5.2.1 Definition

15.215(c);

Intentional radiators operating under the alternative provisions to the general emission limits must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

RSS-Gen 6.7

The occupied bandwidth or the “99% emission bandwidth” is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.

In some cases, the “x dB bandwidth” is required, which is defined as the frequency range between two points, one at the lowest frequency below and one at the highest frequency above the carrier frequency, at which the maximum power level of the transmitted emission is attenuated x dB below the maximum in-band power level of the modulated signal, where the two points are on the outskirts of the in-band emission.

The following conditions shall be observed for measuring the occupied bandwidth and x dB bandwidth:

- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- The span of the spectrum analyzer shall be set large enough to capture all products of the modulation process, including the emission skirts, around the carrier frequency, but small enough to avoid having other emissions (e.g. on adjacent channels) within the span.
- The detector of the spectrum analyzer shall be set to “Sample”. However, a peak, or peak hold, may be used in place of the sampling detector since this usually produces a wider bandwidth than the actual bandwidth (worst-case measurement). Use of a peak hold (or “Max Hold”) may be necessary to determine the occupied / x dB bandwidth if the device is not transmitting continuously.
- The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the actual occupied / x dB bandwidth and the video bandwidth (VBW) shall not be smaller than three times the RBW value. Video averaging is not permitted.

Note: It may be necessary to repeat the measurement a few times until the RBW and VBW are in compliance with the above requirement.

For the 99% emission bandwidth, the trace data points are recovered and directly summed in linear power level terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached, and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded. The difference between the two recorded frequencies is the occupied bandwidth (or the 99% emission bandwidth).

5.2.2 Test Setup

See section 4.1.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.2.3 Test Procedure

The 20dB bandwidth is measured with a spectrum analyzer connected via a receiver antenna placed near the EUT

while the EUT is operating in transmission mode.

Use the following spectrum analyzer settings:

Span = approximately 2 to 3 times the 20 dB bandwidth

RBW ≥ 1% of the 20 dB bandwidth & RBW = 1% to 5% OBW

VBW ≥ RBW & VBW = 3* RBW

Sweep = auto

Detector function = peak

Trace = max hold

5.2.4 Test Result

Please refer to ANNEX A.1

5.3 Field Strength of Fundamental Emissions and Radiated Emissions

5.3.1 Limit

FCC §15.225(a), (b), (c); RSS-210 B.6

According to FCC section 15.225, for <30 MHz, Radiated emissions were measured according to ANSI C63.4. The EUT was set to transmit at the highest output power. The EUT was set 10 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. (Note: During testing the receive antenna was rotated about its axis to maximize the emission from the EUT)

There was no detected Restricted bands and Radiated suprious emission below 30MHz. The 30m limit was converted to 3m Limit using square factor(x) as it was found by measurements as follows; 3 m Limit(dBuV/m) = 20log(X)+40log(30/3)= 20log(15848)+40log(30/3) = 124dBuV

Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency range (MHz)	Field Strength@30m		Field Strength@10m	Field Strength@3m
	μV/m	dBμV/m	dBμV/m	dBμV/m
Below 13.110	30	29.5	48.58	69.5
13.110 ~ 13.410	106	40.5	59.58	80.5
13.410 ~ 13.553	334	50.5	69.58	90.5
13.553 ~13.567	15848	84	103.08	124
13.567 ~ 13.710	334	50.5	69.58	90.5
13.710 ~14.010	106	40.5	59.58	80.5
Above 14.010	30	29.5	48.58	69.5

NOTE:

1. Field Strength (dBμV/m) = 20*log[Field Strength (μV/m)].
2. In the emission tables above, the tighter limit applies at the band edges.

FCC §15.225(d)

According to FCC section 15.209 (a), except as provided elsewhere in this subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (μV/m)
0.009 - 0.490	2400/F(kHz)
0.490 - 1.705	24000/F(kHz)
1.705 - 30.0	30
30 - 88	100
88 - 216	150
216 - 960	200
Above 960	500

Note:

1. For Above 1000 MHz, the emission limit in this paragraph is based on measurement instrumentation employing an average detector, measurement using instrumentation with a peak detector function, corresponding to 20 dB above the maximum permitted average limit.

2. For above 1000 MHz, limit field strength of harmonics: 54dBuV/m@3m (AV) and 74dBuV/m@3m (PK).

5.3.2 Test Setup

See section 4.1.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.3.3 Test Procedure

The measurement frequency range is from 9 kHz to the 10th harmonic of the fundamental frequency. The Turn Table is actuated to turn from 0° to 360°, and both horizontal and vertical polarizations of the Test Antenna are used to find the maximum radiated power. Mid channels on all channel bandwidth verified. Only the worst RB size/offset presented. The power of the EUT transmitting frequency should be ignored.

All Spurious Emission tests were performed in X, Y, Z axis direction. And only the worst axis test condition was recorded in this test report.

Use the following spectrum analyzer settings:

Span = wide enough to fully capture the emission being measured
RBW = 1 MHz for f ≥ 1 GHz, 100 kHz for f < 1 GHz
VBW ≥ RBW
Sweep = auto
Detector function = peak
Trace = max hold

5.3.4 Test Result

Please refer to ANNEX A.2

NOTE:

1. Results (dBuV/m) = Reading (dBuV) + Factor (dB/m)

The reading level is calculated by software which is not shown in the sheet

2. Factor (dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Amplifier Gain (dB)

3. Over limit = Results – Limit.

5.4 Frequency Tolerance

5.4.1 Limit

FCC §15.225(e)

The frequency tolerance of the carrier signal shall be maintained within ±0.01% of the operating frequency over a temperature variation of −20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

RSS-210 B.6

(a) at the temperatures of -30°C (-22°F), +20°C (+68°F) and +50°C (+122°F), and at the manufacturer's rated supply voltage; and

(b) at the temperature of +20° C (+68° F) and at ±15% of the manufacturer's rated supply voltage.

If the frequency stability limits are only met within a temperature range that is smaller than the -30° C to +50° C range specified in (a), the frequency stability requirement will be deemed to be met if the transmitter is automatically prevented from operating outside this smaller temperature range and if the published operating characteristics for the equipment are revised to reflect this restricted temperature range.

5.4.2 Test Setup

See section 4.1.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.4.3 Test Procedure

1. The test is performed in a Temperature Chamber.
2. The EUT is configured as MS + DC Power Supply.

5.4.4 Test Result

Please refer to ANNEX A.4.

5.5 Conducted Emission

5.5.1 Limit

FCC §15.207; RSS-Gen

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 within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50μH/50Ω line impedance stabilization network (LISN).

Frequency range (MHz)	Conducted Limit (dBμV)	
	Quai-peak	Average
0.15 - 0.50	66 to 56	56 to 46
0.50 - 5	56	46
0.50 - 30	60	50

5.5.2 Test Setup

See section 4.1.1 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.5.3 Test Procedure

The maximum conducted interference is searched using Peak (PK), if the emission levels more than the AV and QP limits, and that have narrow margins from the AV and QP limits will be re-measured with AV and QP detectors. Tests for both L phase and N phase lines of the power mains connected to the EUT are performed. Refer to recorded points and plots below.
Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 50/60 Hz and 240 VAC, 50/60 Hz) for which the device is capable of operation. A device rated for 50/60 Hz operation need not be tested at both frequencies provided the radiated and line conducted emissions are the same at both frequencies.

5.5.4 Test Result

Please refer to ANNEX A.5.

NOTE:

1. Results (dBuV/m) = Reading (dBuV) + Factor (dB/m)

The reading level is calculated by software which is not shown in the sheet

2. Factor = Insertion loss + Cable loss

3. Over limit = Results – Limit.

ANNEX A TEST RESULT

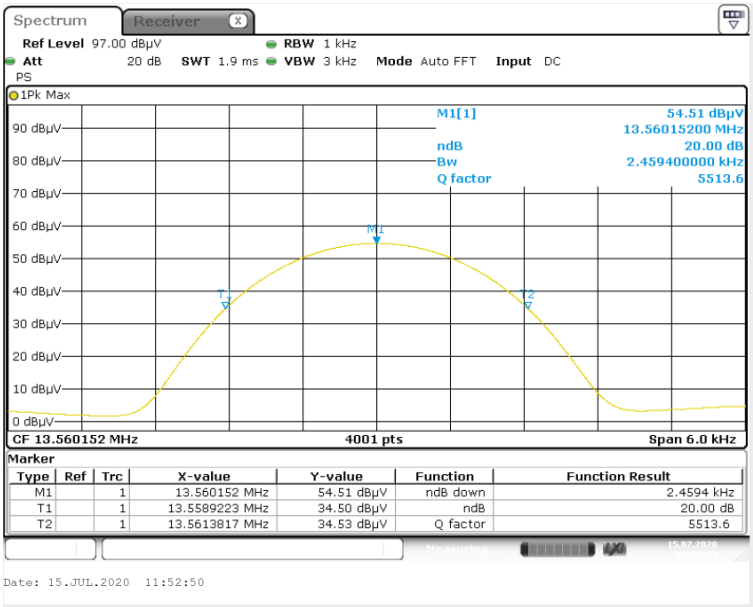
A.1 Emission Bandwidth

Test Data

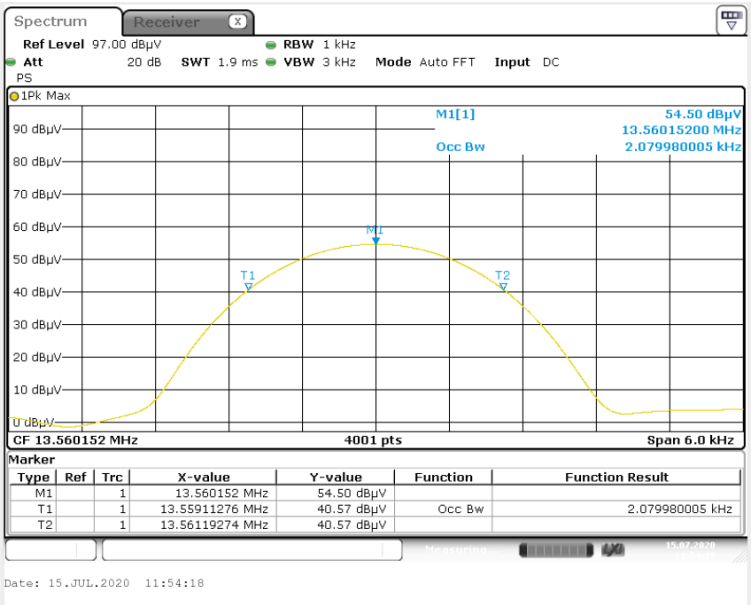
Frequency (MHz)	Emission Bandwidth(20dB down) (kHz)	Occupied Bandwidth(99%) (kHz)
13.56	2.459	2.080

Test plots

Emission Bandwidth



99% Occupied Bandwidth



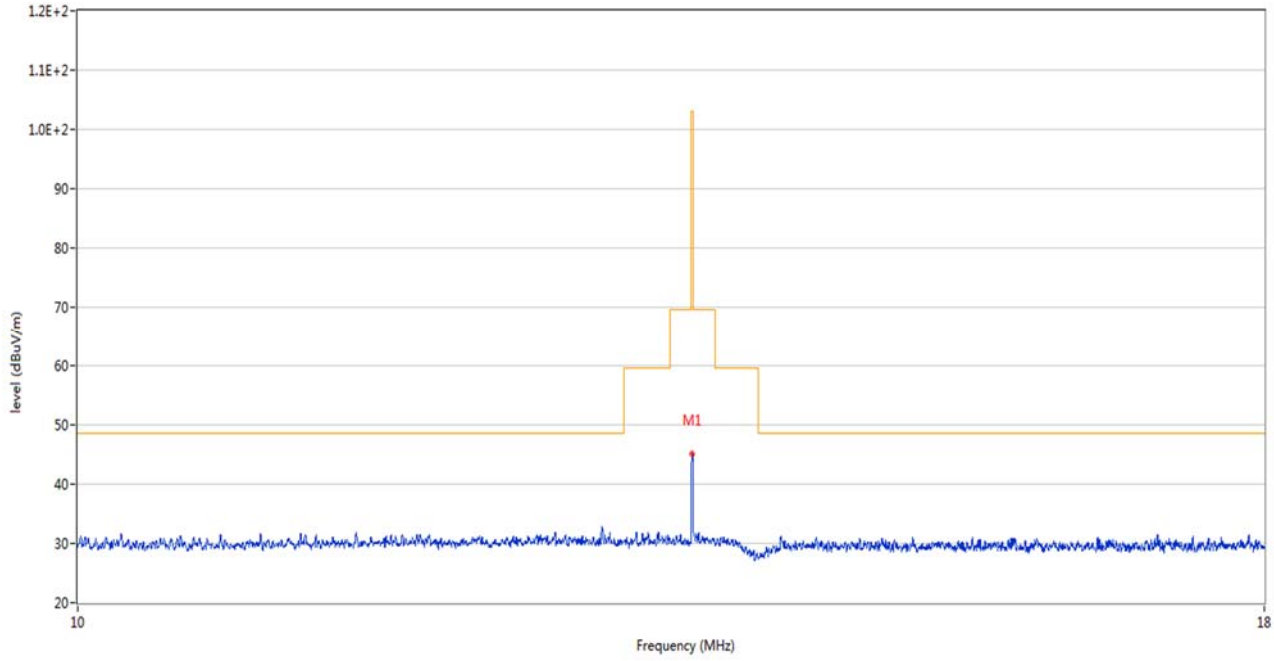
A.2 Field Strength of Fundamental Emissions

Test Data

Field Strength of Fundamental Emissions Value					
Frequency (MHz)	Detector	Field Strength (dBuV/m)	Limit @10m (dBuV/m)	Antenna	Margin (dB)
13.559	PEAK	45.18	103.0	Vertical	57.82

Test Plot

ANT-LOOP ANT Vertical

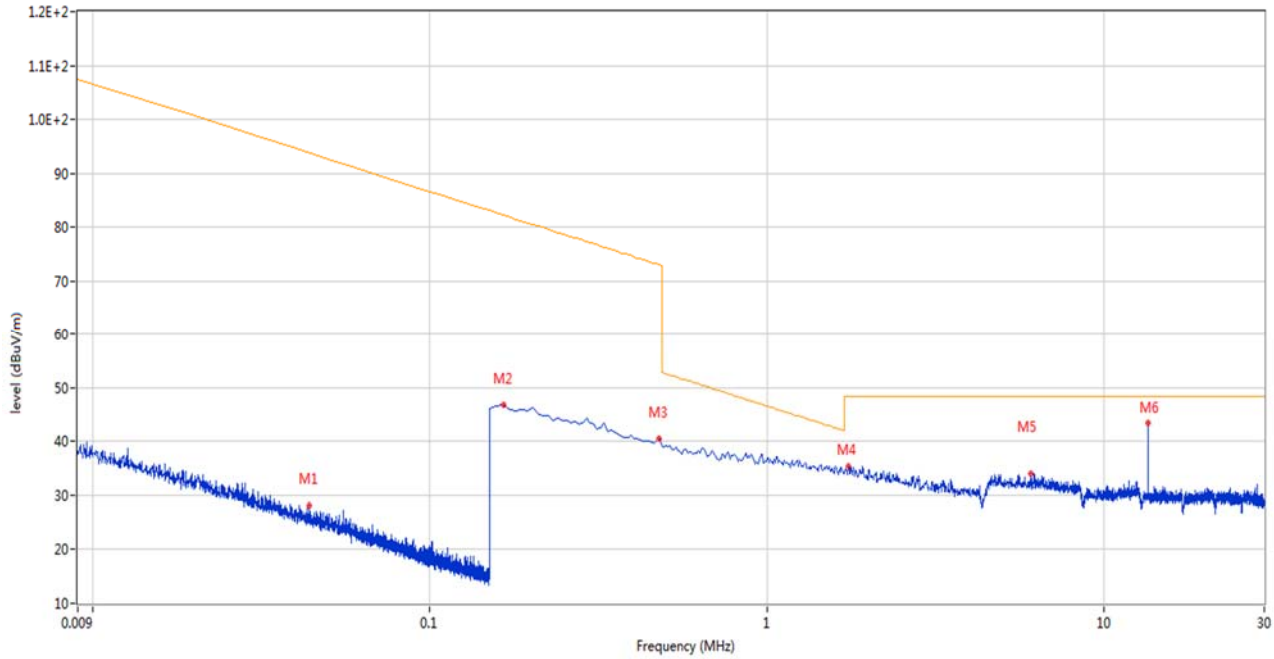


A.3 Radiated Emissions

Note: This frequency which near 13.560 MHz with circle should be ignored because they are NFC carrier frequency.

The Data and Plots (9 kHz ~ 30 MHz)(at 10m chamber)

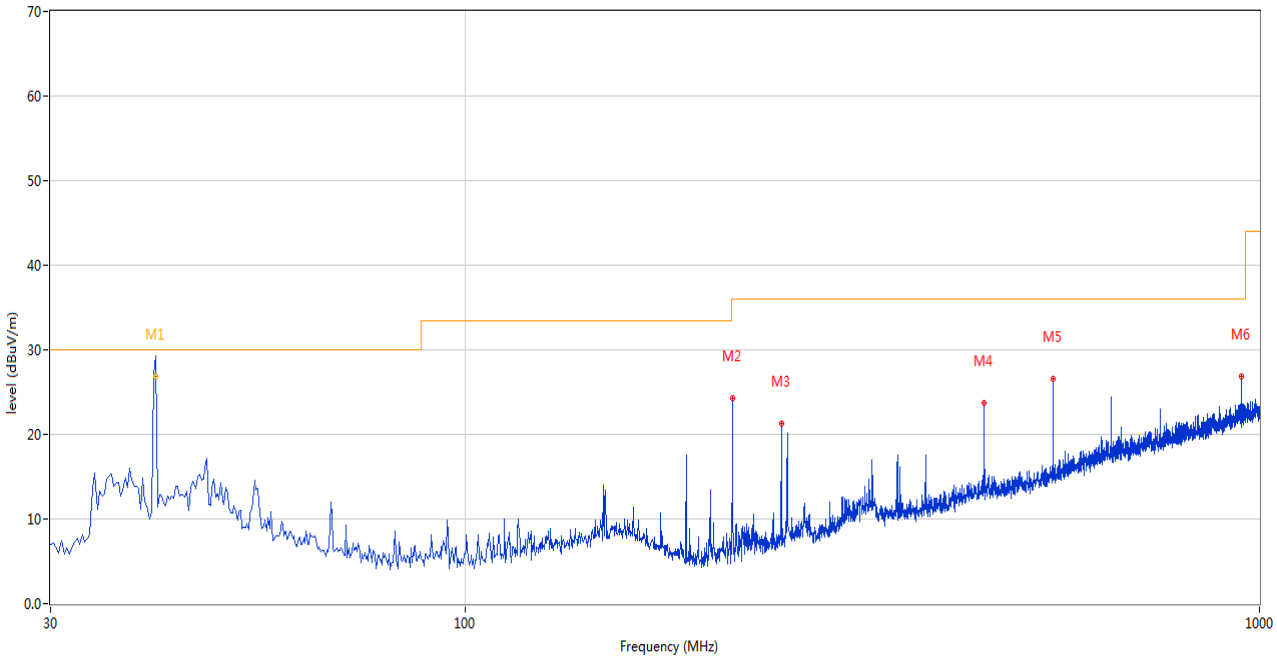
Below 30 MHz ANT Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	0.044	25.04	20.25	93.8	-68.76	Peak	105.00	100	Vertical	Pass
2	0.165	46.75	20.10	82.2	-35.45	Peak	78.00	100	Vertical	Pass
3	0.478	40.58	20.23	73.0	-32.42	Peak	307.00	100	Vertical	Pass
4	1.747	35.38	20.47	48.5	-13.12	Peak	184.00	100	Vertical	Pass
5	6.096	34.10	20.82	48.5	-14.40	Peak	140.00	100	Vertical	Pass
6	13.557	44.07	20.86	48.5	-4.43	Peak	157.00	100	Vertical	N/A

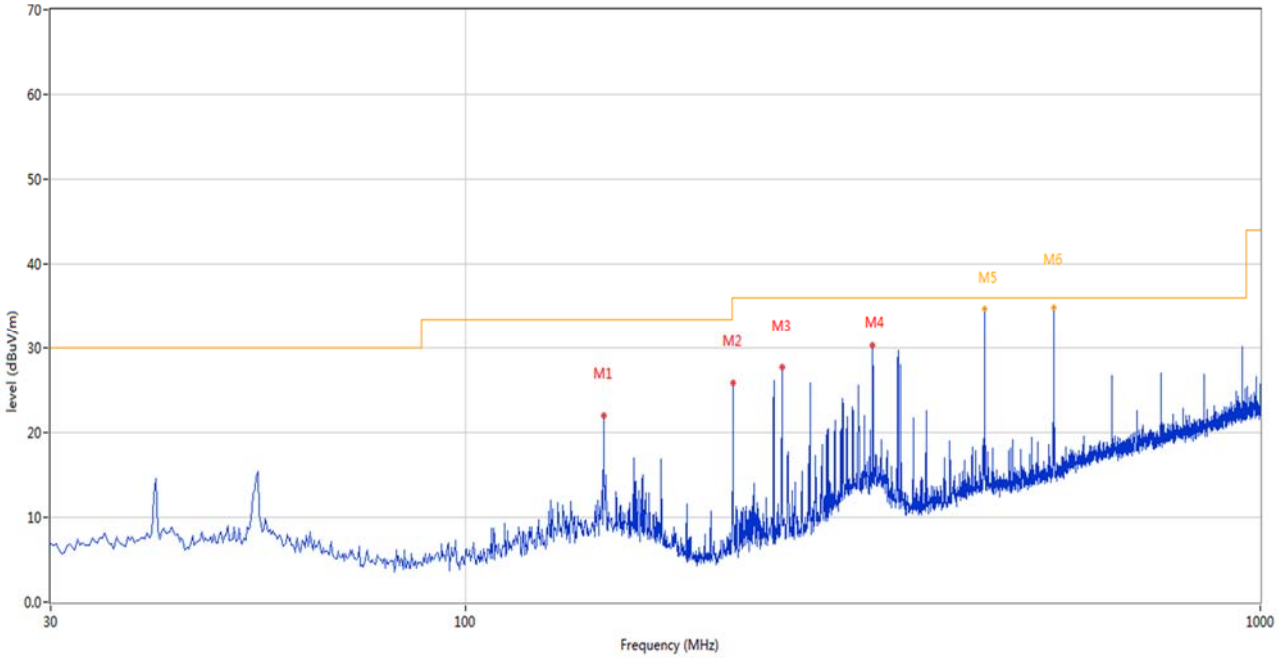
Test Data and Plots (30 MHz ~ 10th Harmonic)

30 MHz to 1 GHz, ANT Vertical



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	40.679	30.37	-26.79	30.0	0.37	Peak	73.00	100	Vertical	N/A
1*	40.679	26.84	-26.79	30.0	-3.16	QP	73.00	100	Vertical	Pass
2	216.921	24.27	-28.65	36.0	-11.73	Peak	0.00	200	Vertical	Pass
3	249.893	21.30	-27.39	36.0	-14.70	Peak	139.00	100	Vertical	Pass
4	449.905	23.69	-21.47	36.0	-12.31	Peak	295.00	300	Vertical	Pass
5	550.032	26.61	-19.51	36.0	-9.39	Peak	325.00	100	Vertical	Pass
6	949.815	26.85	-11.82	36.0	-9.15	Peak	277.00	200	Vertical	Pass

30 MHz to 1 GHz, ANT Horizontal



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Over Limit (dB)	Detector	Table (Degree)	Height (cm)	Antenna	Verdict
1	149.038	22.06	-25.94	33.5	-11.44	Peak	1.00	400	Horizontal	Pass
2	216.921	25.80	-28.65	36.0	-10.20	Peak	235.00	300	Horizontal	Pass
3	249.893	27.66	-27.39	36.0	-8.34	Peak	189.00	300	Horizontal	Pass
4	325.291	30.30	-24.77	36.0	-5.70	Peak	169.00	300	Horizontal	Pass
5	450.018	35.28	-21.47	36.0	-0.72	Peak	241.00	221	Horizontal	N/A
5*	450.018	34.71	-21.47	36.0	-1.29	QP	241.00	221	Horizontal	Pass
6	550.024	35.41	-19.51	36.0	-0.59	Peak	241.00	171	Horizontal	N/A
6*	550.024	34.96	-19.51	36.0	-1.04	QP	241.00	171	Horizontal	Pass

A.4 Frequency Stability

Note 1: The operating temperature range of the EUT is -20°C to 65°C.

OPERATING FREQUENCY:	13560000 Hz
REFERENCE VOLTAGE:	3.3 V
DEVIATION LIMIT:	±0.01%

VOLTAGE (%)	Test Conditions		Frequency(MHz)	Deviation(ppm)	Verdict
	Power (VDC)	Temperature (°C)			
100	3.3	+20°C(Ref)	13.560148	0.00001091	Pass
100		-30	N.A	N.A	
100		-20	13.560287	0.00002117	
100		-10	13.558743	0.00009270	
100		0	13.560575	0.00004240	
100		+10	13.559324	0.00004985	
100		+20	13.559699	0.00002220	
100		+25	13.560853	0.00006291	
100		+30	13.560917	0.00006763	
100		+40	13.561006	0.00007419	
100		+50	13.560021	0.00000155	
MAX(Battery End Point, 85)	2.8	+20	13.558729	0.00009373	
MIN(Battery End Point, 115)	3.8	+20	13.559290	0.00005236	

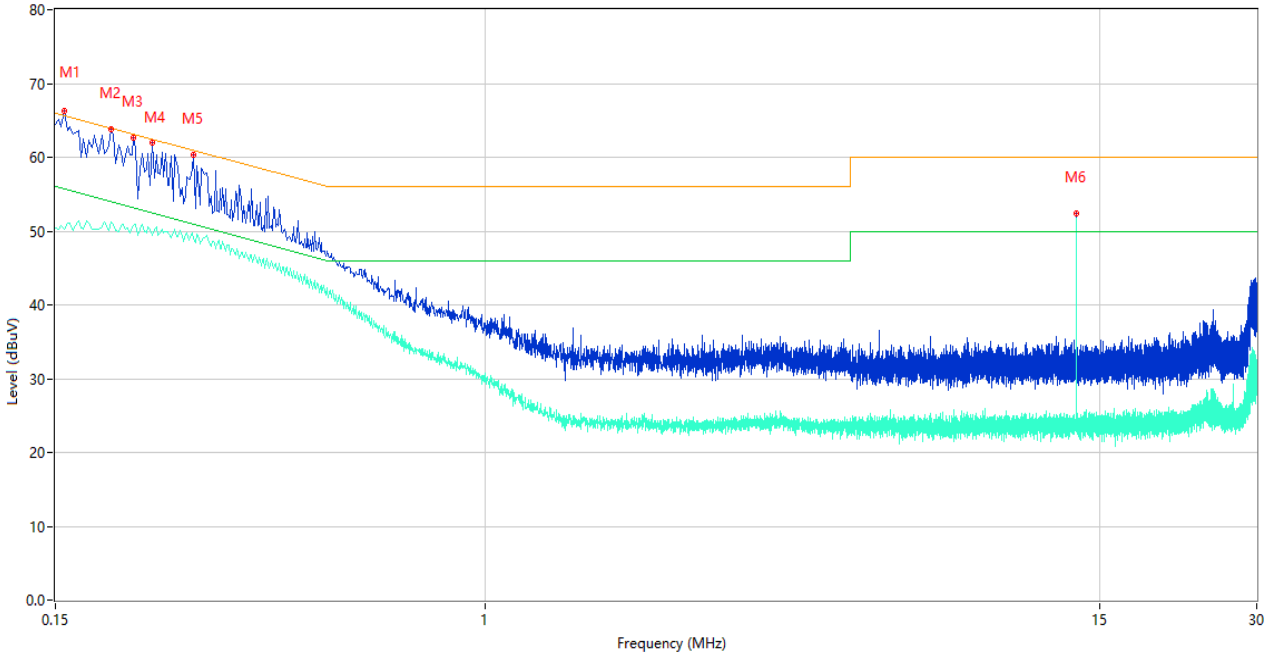
A.5 Conducted Emissions

Note 1: Devices subject to Part 15 must be tested for all available U.S. voltages and frequencies (such as a nominal 120 VAC, 60 Hz and 240 VAC, 50 Hz) for which the device is capable of operation. So, The configuration 120 VAC, 60 Hz and 240 VAC, 50 Hz were tested respectively, but only the worst configuration (120 VAC, 60 Hz) shown here.

Note 2: This frequency which near 13.560 MHz with circle should be ignored because they are NFC carrier frequency.

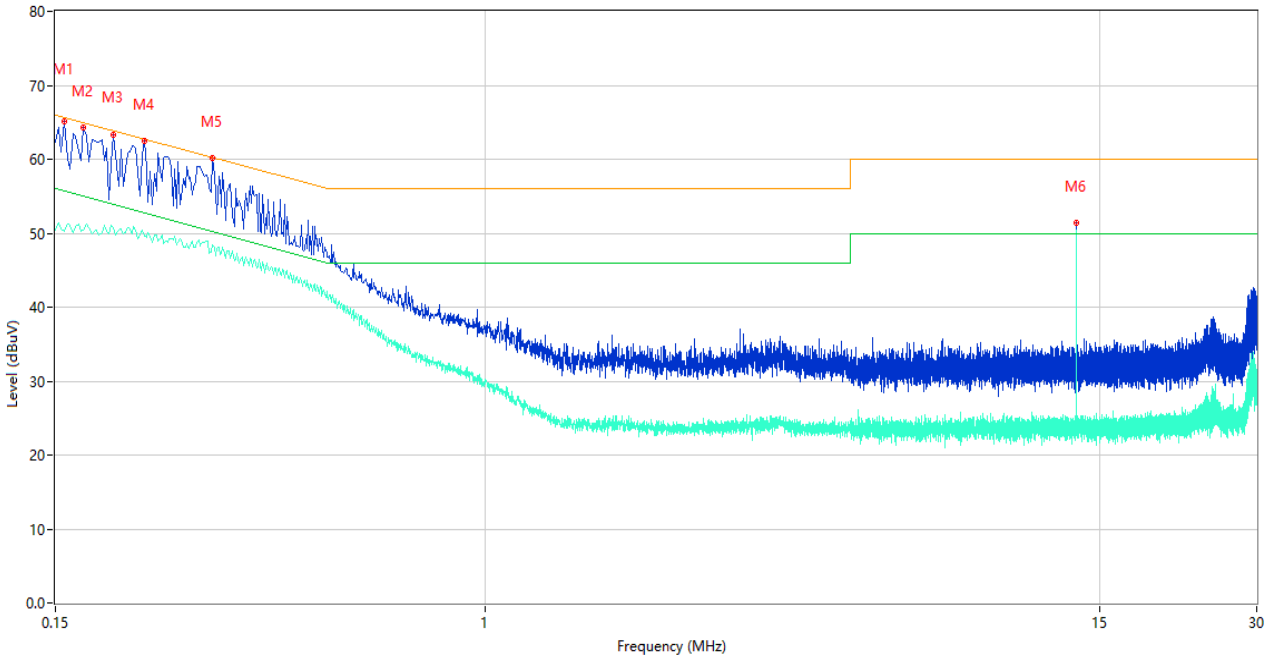
Test Data and Plots

PHASE L



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.156	66.20	10.41	65.67	0.53	Peak	L	N/A
1*	0.156	59.77	10.41	65.67	-5.90	QP	L	Pass
1**	0.156	50.26	10.41	55.67	-5.41	AV	L	Pass
2	0.192	65.01	10.38	63.95	1.06	Peak	L	N/A
2*	0.192	59.02	10.38	63.95	-4.93	QP	L	Pass
2**	0.192	51.28	10.38	53.95	-2.67	AV	L	Pass
3	0.212	64.34	10.38	63.13	1.21	Peak	L	N/A
3*	0.212	58.15	10.38	63.13	-4.98	QP	L	Pass
3**	0.212	50.68	10.38	53.13	-2.45	AV	L	Pass
4	0.230	63.76	10.36	62.45	1.31	Peak	L	N/A
4*	0.230	57.53	10.36	62.45	-4.92	QP	L	Pass
4**	0.230	49.50	10.36	52.45	-2.95	AV	L	Pass
5	0.276	62.06	10.34	60.94	1.12	Peak	L	N/A
5*	0.276	55.85	10.34	60.94	-5.09	QP	L	Pass
5**	0.276	48.93	10.34	50.94	-2.01	AV	L	Pass
6	13.560	52.38	10.39	60.00	-7.62	Peak	L	N/A
6**	13.560	51.73	10.39	50.00	1.73	AV	L	N/A

PHASE N



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Over Limit (dB)	Detector	Line	Verdict
1	0.156	65.30	10.41	65.67	-0.37	Peak	N	N/A
1*	0.156	58.98	10.41	65.67	-6.69	QP	N	Pass
1**	0.156	50.22	10.41	55.67	-5.45	AV	N	Pass
2	0.170	64.91	10.40	64.96	-0.05	Peak	N	N/A
2*	0.170	58.69	10.40	64.96	-6.27	QP	N	Pass
2**	0.170	50.37	10.40	54.96	-4.59	AV	N	Pass
3	0.194	64.53	10.38	63.86	0.67	Peak	N	N/A
3*	0.194	58.15	10.38	63.86	-5.71	QP	N	Pass
3**	0.194	50.68	10.38	53.86	-3.18	AV	N	Pass
4	0.222	63.42	10.37	62.74	0.68	Peak	N	N/A
4*	0.222	57.14	10.37	62.74	-5.60	QP	N	Pass
4**	0.222	49.55	10.37	52.74	-3.19	AV	N	Pass
5	0.300	59.49	10.33	60.24	-0.75	Peak	N	N/A
5*	0.300	53.63	10.33	60.24	-6.61	QP	N	Pass
5**	0.300	48.44	10.33	50.24	-1.80	AV	L	Pass
6	13.560	51.40	10.39	60.00	-8.60	Peak	L	N/A
6**	13.560	50.45	10.39	50.00	0.45	AV	L	N/A

ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-SZ2050363-AE.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ2050363-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SZ2050363-AI.PDF”.

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