FCC RF TEST REPORT

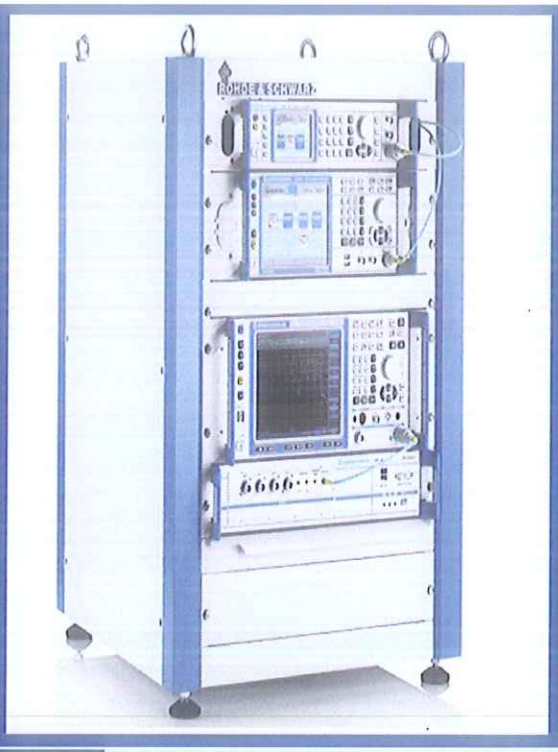
ISSUED BY
Shenzhen BALUN Technology Co., Ltd.

FOR

LED lamp

ISSUED TO
LEEDARSON LIGHTING CO., LTD.

Xingda Road, Xingtai Industrial Zone, Changtai County, Zhangzhou, Fujian, China



Tested by: Cao Shaodong (Engineer)
Date Mar. 15. 2017

Approved by: Liao Jianming (Technical director)
Date Mar. 15. 2017

Report No.:	BL-SZ1720190-601
EUT Name:	LED lamp
Model Name:	6VB-A806ST-Q1R
Brand Name:	LEEDARSON
Test Standard:	47 CFR Part 15 Subpart C
FCC ID:	2AB2Q6VY-A806ST-Q1R
Test conclusion:	Pass
Test Date:	Feb. 22, 2017 ~ Mar. 08, 2017
Date of Issue:	Mar. 15, 2017

Block B, 1st FL, Baisha Science and Technology Park, Shahe Xi Road, Nanshan District, Shenzhen, Guangdong, P. R. China 518055
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Revision History

Version	Issue Date	Revisions Content
Rev. 01	Mar. 15, 2017	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 has been listed by US Federal Communications Commission to perform electromagnetic emission measurements. The recognition numbers of test site are 832625. 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% - 55%
Ambient Pressure	100 kPa - 102 kPa

1.4 Announce

(1) The test report reference to the report template version v2.1.
(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.

2 PRODUCT INFORMATION

2.1 Applicant Information

Applicant	LEEDARSON LIGHTING CO., LTD.
Address	Xingda Road, Xingtai Industrial Zone, Changtai County, Zhangzhou, Fujian, China

2.2 Manufacturer Information

Manufacturer	LEEDARSON LIGHTING CO., LTD.
Address	Xingda Road, Xingtai Industrial Zone, Changtai County, Zhangzhou, Fujian, China

2.3 Factory Information

Factory	N/A
Address	N/A

2.4 General Description for Equipment under Test (EUT)

EUT Type	LED lamp
Model Name Under Test	6VB-A806ST-Q1R
Series Model Name	6Vy-A806ST-Q1R (y may be A~Z)
Description of Model name differentiation	The Circuit, PCB Layout, Electrical Parts of 6VB-A806ST-Q1R are identical to 6Vy-A806ST-Q1R (remark: y may be A~Z for different enclosure appearance design).
Hardware Version	N/A
Software Version	N/A
Dimensions (Approx.)	N/A
Weight (Approx.)	N/A
Network and Wireless connectivity	Z-WAVE

2.5 Ancillary Equipment

Note: Not application.

2.6 Technical Information

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

Modulation Type	Z-WAVE
Product Type	Portable
Frequency Range	902MHz-928MHz
Tested Channel	Low (908.4 MHz), Middle (908.42 MHz), High (916 MHz)
Antenna Type	Spring Antenna
Antenna Gain	-1.9 dBi (All involve the antenna gain test item, has been included in the final results)

All channel was listed on the following table:

Channel number	Frequency (MHz)
0	908.4
1	908.42
2	916

2.7 Additional Instructions

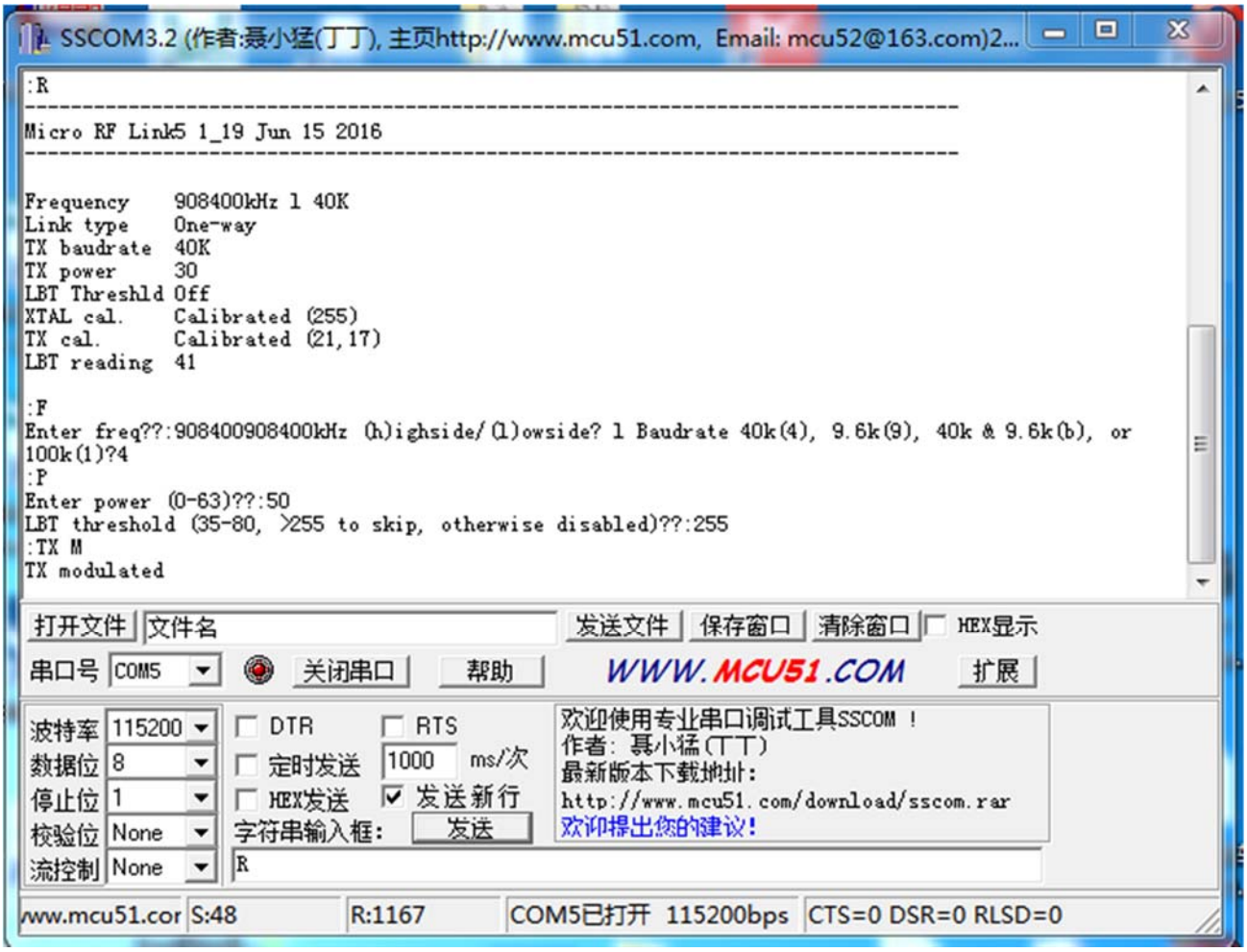
EUT Software Settings:

Mode	☒ Special software is used. The software provided by client to enable the EUT under transmission condition continuously at specific channel frequencies individually.

During testing, Channel and Power Controlling Software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the firmware of the final end product.

Power level setup in software			
Test Software Version	SSCOM3.2		
Support Units (Software installation media)	Description	Manufacturer	Model
	Notebook	Lenovo	E31-80
Mode	Channel	Frequency (MHz)	Soft Set
Z-WAVE	Low	908.40	Power parameter Settings is 50.
	Middle	908.42	
	High	916.00	

Run Software:



3 SUMMARY OF TEST RESULTS

3.1 Test Standards

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

3.2 Verdict

No.	Description	FCC Part No.	Test Result	Verdict	Remark
1	Antenna Requirement	15.203	--	Pass	Note[1]
2	20 dB Bandwidth	15.215(c)	ANNEX A.1	Pass	--
3	AC Conducted Emission	15.207	ANNEX A.2	Pass	--
4	Radiated Spurious Emission	15.249(a)	ANNEX A.3	Pass	--
5	Band Edge (Restricted-band band-edge)	15.249(a)	ANNEX A.4	Pass	--
Note[1]: The EUT has a permanently and irreplaceable attached antenna, which complies with the requirement FCC 15.203.					

4 GENERAL TEST CONFIGURATIONS

4.1 Test Environments

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

Relative Humidity	45% - 55%	
Atmospheric Pressure	100 kPa - 102 kPa	
Temperature	NT (Normal Temperature)	+22℃ to +25℃
Working Voltage of the EUT	NV (Normal Voltage)	120 V

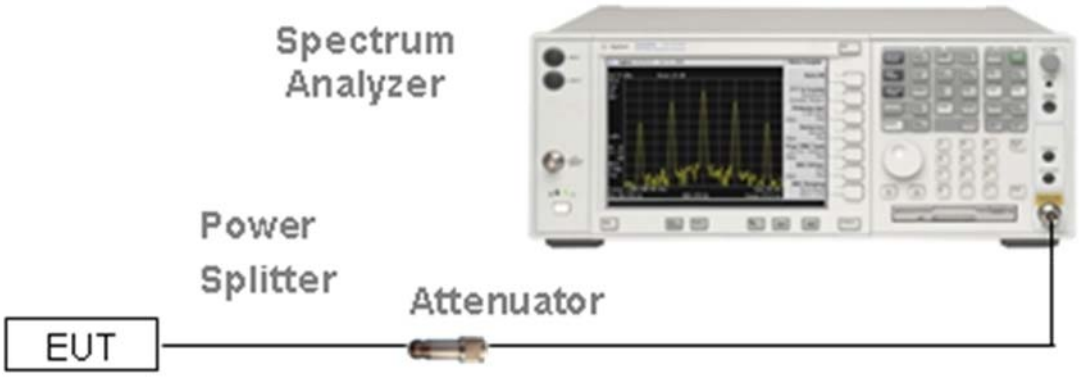
4.2 Test Equipment List

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Spectrum Analyzer	ROHDE&SCHWARZ	FSV-30	103118	2016.07.13	2017.07.12
Vector Signal Generator	ROHDE&SCHWARZ	SMBV100A	177746	2016.07.13	2017.07.12
Signal Generator	ROHDE&SCHWARZ	SMB100A	260592	2016.07.13	2017.07.12
Switch Unit with OSP-B157	ROHDE&SCHWARZ	OSP120	101270	2016.07.13	2017.07.12
Spectrum Analyzer	AGILENT	E4440A	MY45304434	2016.11.08	2017.11.07
EMI Receiver	ROHDE&SCHWARZ	ESRP	101036	2016.07.05	2017.07.04
LISN	SCHWARZBECK	NSLK 8127	8127-687	2016.07.05	2017.07.04
Bluetooth Tester	ROHDE&SCHWARZ	CBT	101005	2016.07.13	2017.07.12
Power Splitter	KMW	DCPD-LDC	1305003215	--	--
Power Sensor	ROHDE&SCHWARZ	NRP-Z21	103971	2016.07.13	2017.07.12
Attenuator (20 dB)	KMW	ZA-S1-201	110617091	--	--
Attenuator (6 dB)	KMW	ZA-S1-61	1305003189	--	--
DC Power Supply	ROHDE&SCHWARZ	HMP2020	018141664	2016.07.13	2017.07.12
Temperature Chamber	ANGELANTIONI SCIENCE	NTH64-40A	1310	2016.07.13	2017.07.12
Test Antenna-Loop(9 kHz-30 MHz)	SCHWARZBECK	FMZB 1519	1519-037	2015.07.22	2017.07.21
Test Antenna-Bi-Log(30 MHz-3 GHz)	SCHWARZBECK	VULB 9163	9163-624	2015.07.22	2017.07.21
Test Antenna-Horn(1-18 GHz)	SCHWARZBECK	BBHA 9120D	9120D-1148	2015.07.22	2017.07.21
Test Antenna-Horn(15-26.5 GHz)	SCHWARZBECK	BBHA 9170	9170-305	2015.07.22	2017.07.21
Anechoic Chamber	RAINFORD	9m*6m*6m	N/A	2017.02.21	2019.02.20
Anechoic Chamber	EMC TECHNOLOGY LTD	21.1m*11.6m*7.35m	N/A	2016.08.09	2018.08.08
Shielded Enclosure	ChangNing	CN-130701	130703	--	--
Signal Generator	ROHDE&SCHWARZ	SMB100A	177746	2016.07.13	2017.07.12
Power Amplifier	OPHIR RF	5225F	1037	2017.02.17	2018.02.16

Description	Manufacturer	Model	Serial No.	Cal. Date	Cal. Due
Power Amplifier	OPHIR RF	5273F	1016	2017.02.17	2018.02.16
Directional Coupler	Werlantone	C5982-10	109275	N/A	N/A
Directional Coupler	Werlantone	CHP-273E	S00801z-01	N/A	N/A
Feld Strength Meter	Narda	EP601	511WX51129	2017.02.23	2018.02.22
Mouth Simulator	B&K	4227	2423931	2016.11.15	2017.11.14
Sound Calibrator	B&K	4231	2430337	2016.11.09	2017.11.08
Sound Level Meter	B&K	NL-20	00844023	2016.11.11	2017.11.10
Ear Simulator	B&K	4185	2409449	2016.11.15	2017.11.14
Ear Simulator	B&K	4195	2418189	2016.11.15	2017.11.14
Audio analyzer	B&K	UPL 16	100129	2016.11.08	2017.11.07

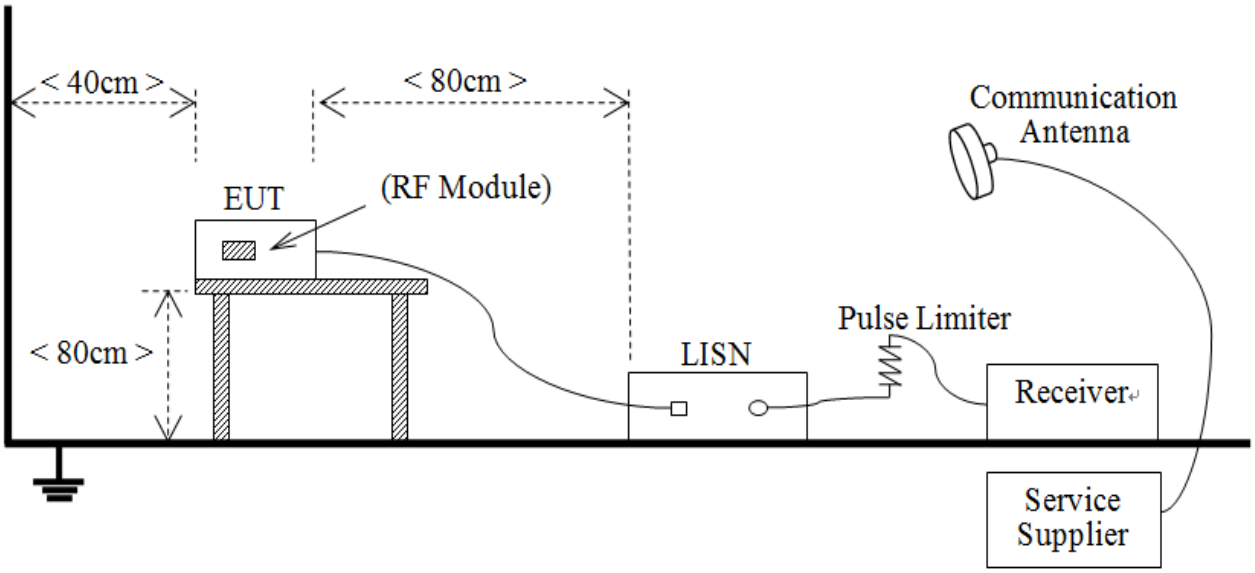
4.3 Description of Test Setup

4.3.1 For Antenna Port Test



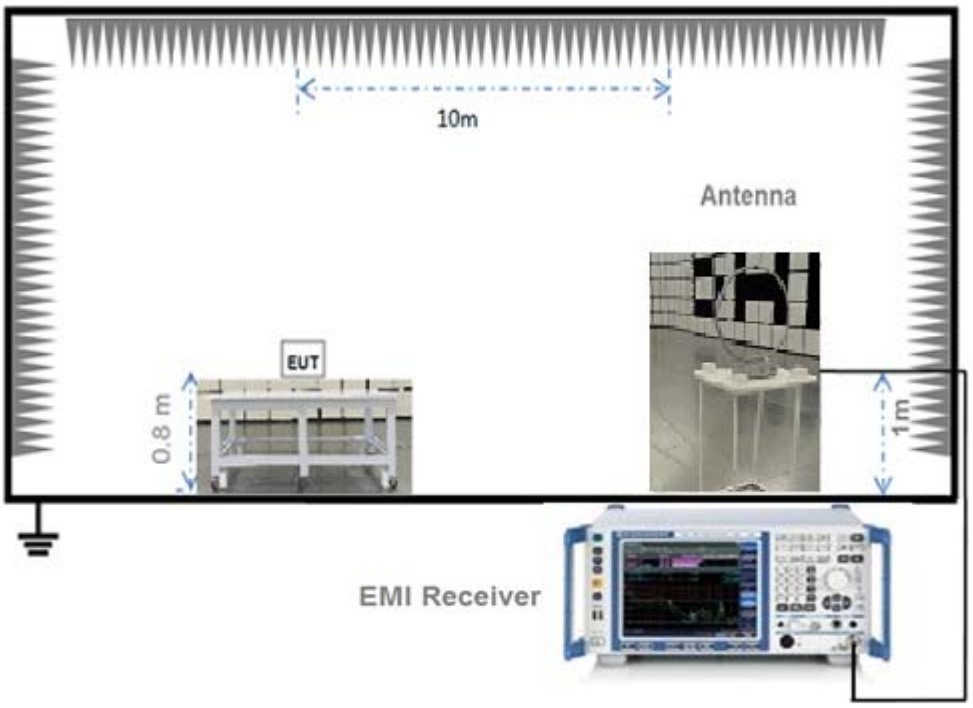
(Diagram 1)

4.3.2 For AC Power Supply Port Test



(Diagram 2)

4.3.3 For Radiated Test (Below 30 MHz)



(Diagram 3)

4.3.4 For Radiated Test (30 MHz-1 GHz)

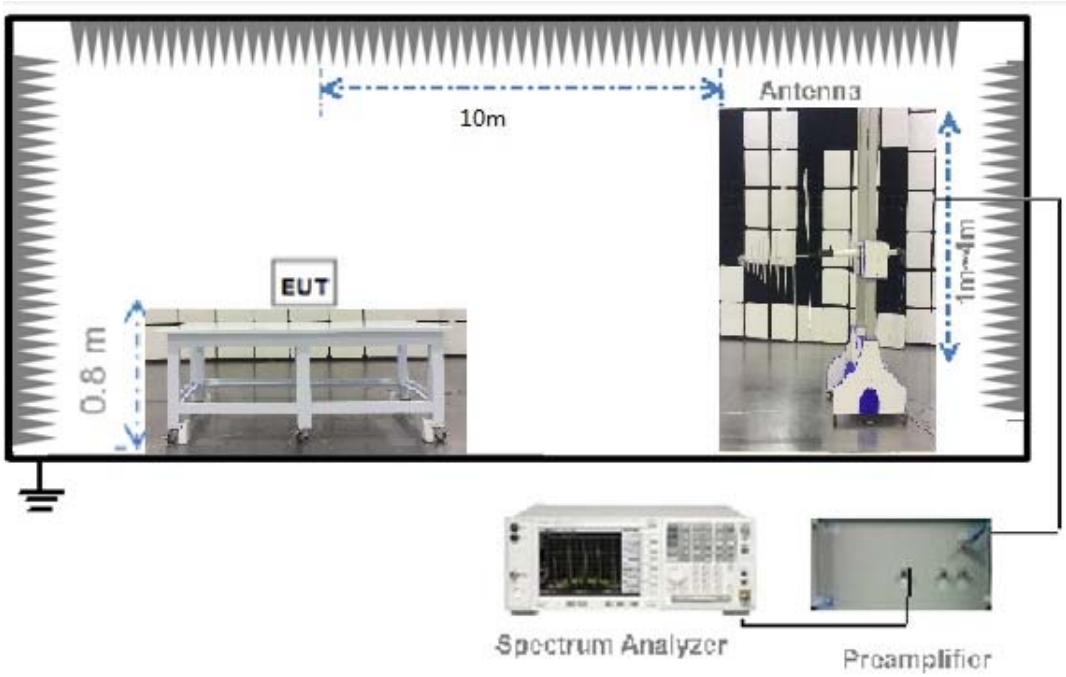
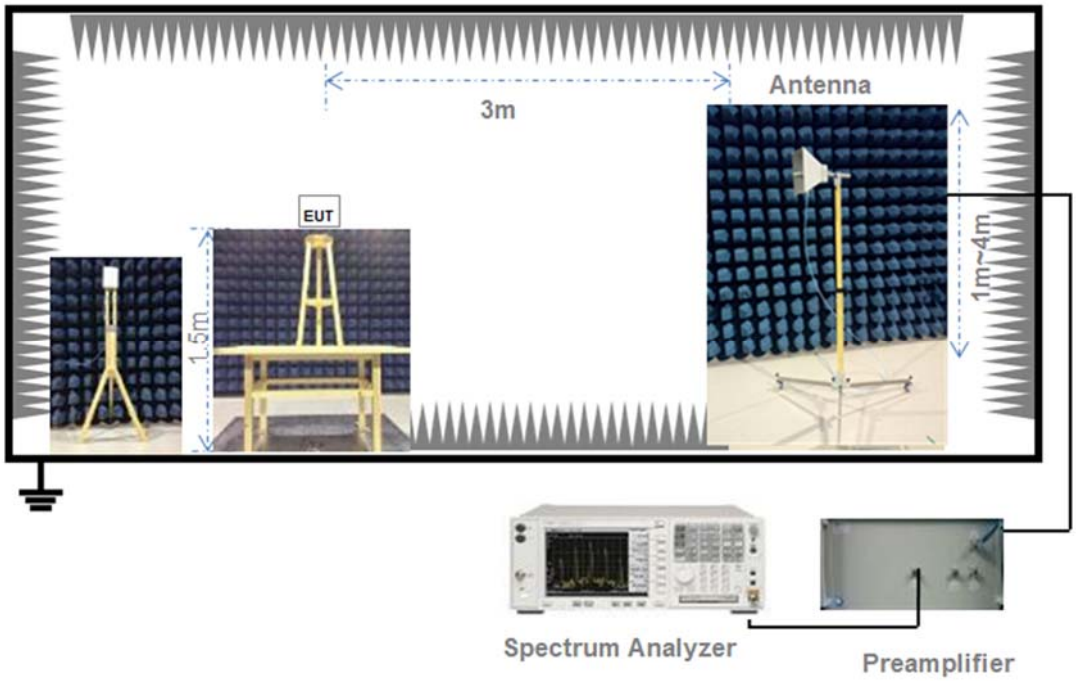


Diagram 4)

4.3.5 For Radiated Test (Above 1 GHz)



(Diagram 5)

5 TEST ITEMS

5.1 Antenna Requirements

5.1.1 Standard Applicable

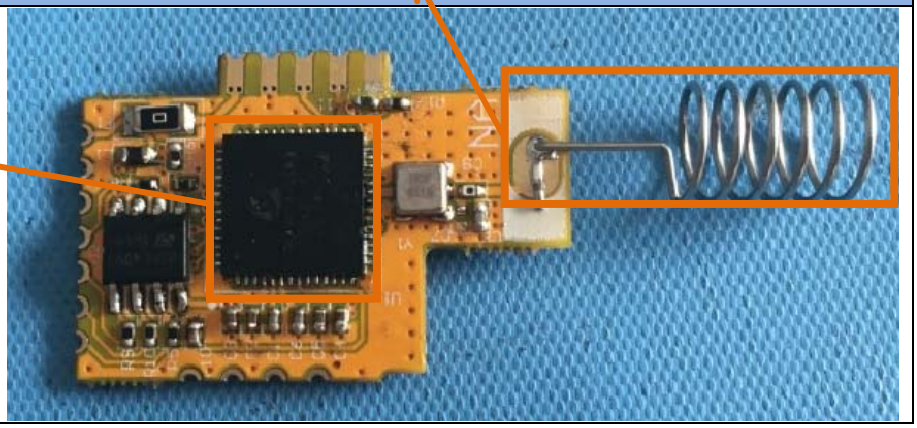
FCC §15.203 & 15.247(b)

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.
If directional gain of transmitting antennas is greater than 6 dBi, the power shall be reduced by the same level in dB comparing to gain minus 6 dBi. For the fixed point-to-point operation, the power shall be reduced by one dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi. 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 FCC rule.

5.1.2 Antenna Anti-Replacement Construction

The Antenna Anti-Replacement as following method:

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

Reference Documents	Item
Photo	

5.1.3 Antenna Gain

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

5.2 20 dB Bandwidth

5.2.1 Limit

FCC §15.215(c)

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in § 15.217 through 15.257 and in Subpart E of this part, 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.

5.2.2 Test Setups

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

Use the following spectrum analyzer settings:

Span = approximately 2 to 3 times the 20 dB bandwidth, centered on a hopping channel

RBW ≥ 1% of the 20 dB bandwidth

VBW ≥ RBW

Sweep = auto

Detector function = peak

Trace = max hold

5.2.4 Test Result

Please refer to ANNEX A.1.

5.3 AC Conducted Emission

5.3.1 Limit

FCC §15.207

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

5.3.2 Test Setups

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 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.
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.

5.3.4 Test Result

Please refer to ANNEX A.2.

5.4 Radiated Spurious Emission

5.4.1 Limit

FCC §15.249(a)

Except as provided in paragraph (a) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Frequency (MHz)	Field Strength of Fundamental (mV/m)	Field Strength of Harmonics (μV/m)
902-928	50	500
2400-2483.5	50	500
5725-5875	50	500
24000-24250	250	2500

Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

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)	Measurement Distance (m)
0.009 - 0.490	2400/F(kHz)	300
0.490 - 1.705	24000/F(kHz)	30
1.705 - 30.0	30	30
30 - 88	100	3
88 - 216	150	3
216 - 960	200	3
Above 960	500	3

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).

5.4.2 Test Setups

See section 4.1.2-4.4.5 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.4.3 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

5.4.4 Test Result

Please refer to ANNEX A.3.

5.5 Band Edge (Restricted-band band-edge)

5.5.1 Limit

FCC §15.249(a)

Radiated emission outside the frequency band attenuation below the general limits specified in FCC section 15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in FCC section 15.205(a), must also comply with the radiated emission limits specified in FCC section 15.209(a).

5.5.2 Test Setups

See section 4.3.3 to 4.3.5 for test setup description for the antenna port. The photo of test setup please refer to ANNEX B.

5.5.3 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

For measurement below 1GHz, If the emission level of the EUT measured by the peak detector is 3 dB lower than the applicable limit, the peak emission level will be reported, Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

5.5.4 Test Result

Please refer to ANNEX A.4.

ANNEX A TEST RESULT

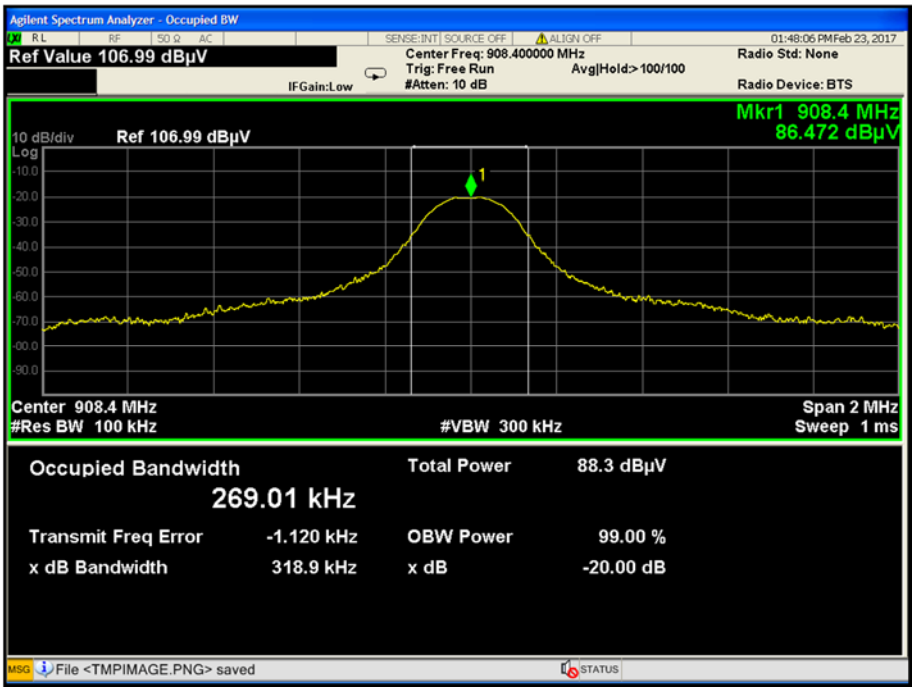
A.1 20dB bandwidth

Test Data

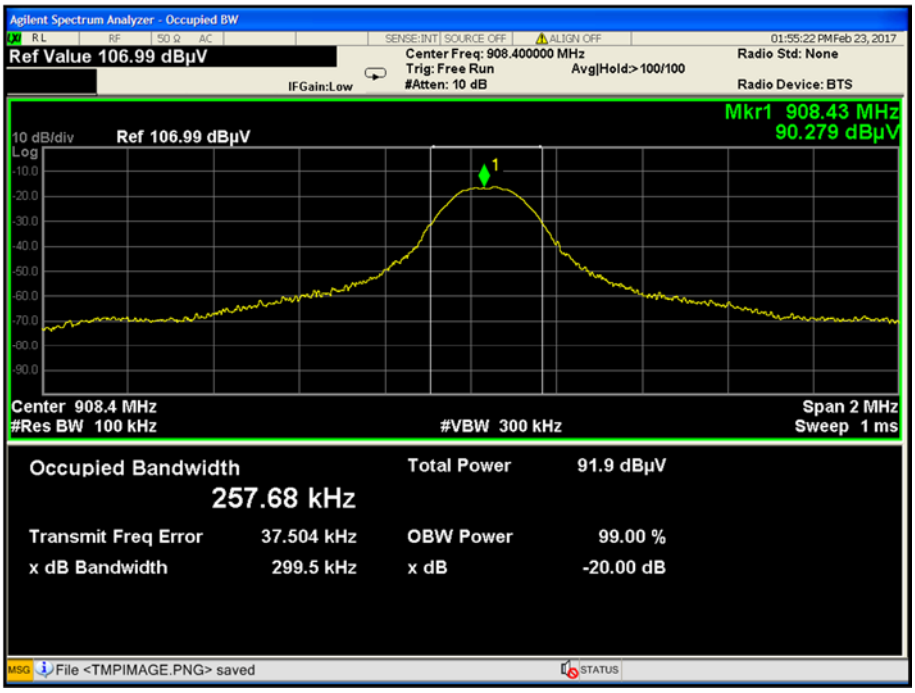
Channel	Frequency (MHz)	20 dB Bandwidth (KHz)	99% Bandwidth (KHz)
Low	908.40	318.90	269.01
Middle	908.42	299.50	257.68
High	916.00	322.30	269.02

Test plots

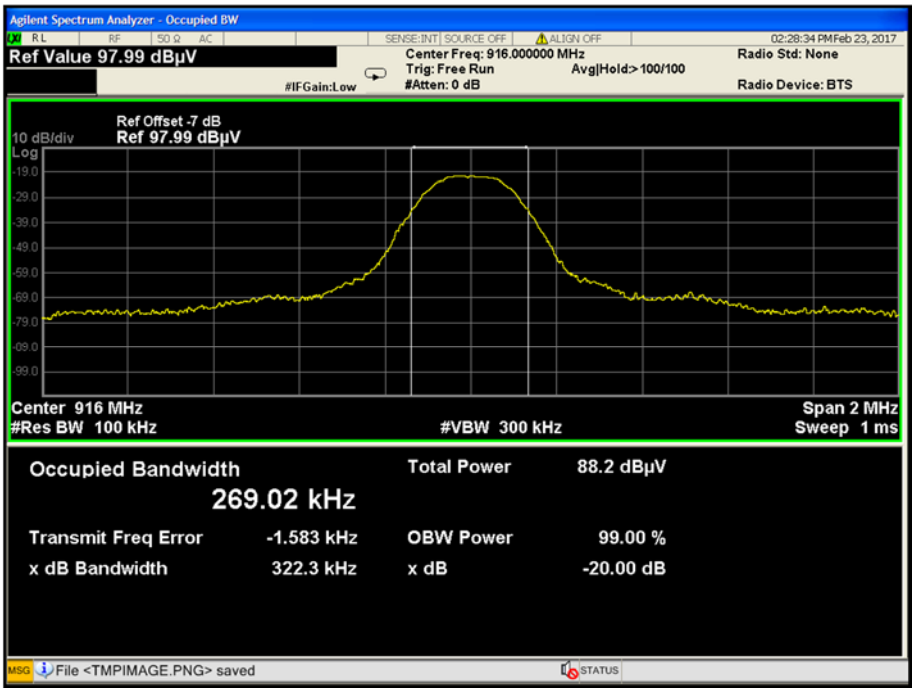
Low Channel



Middle Channel



High Channel

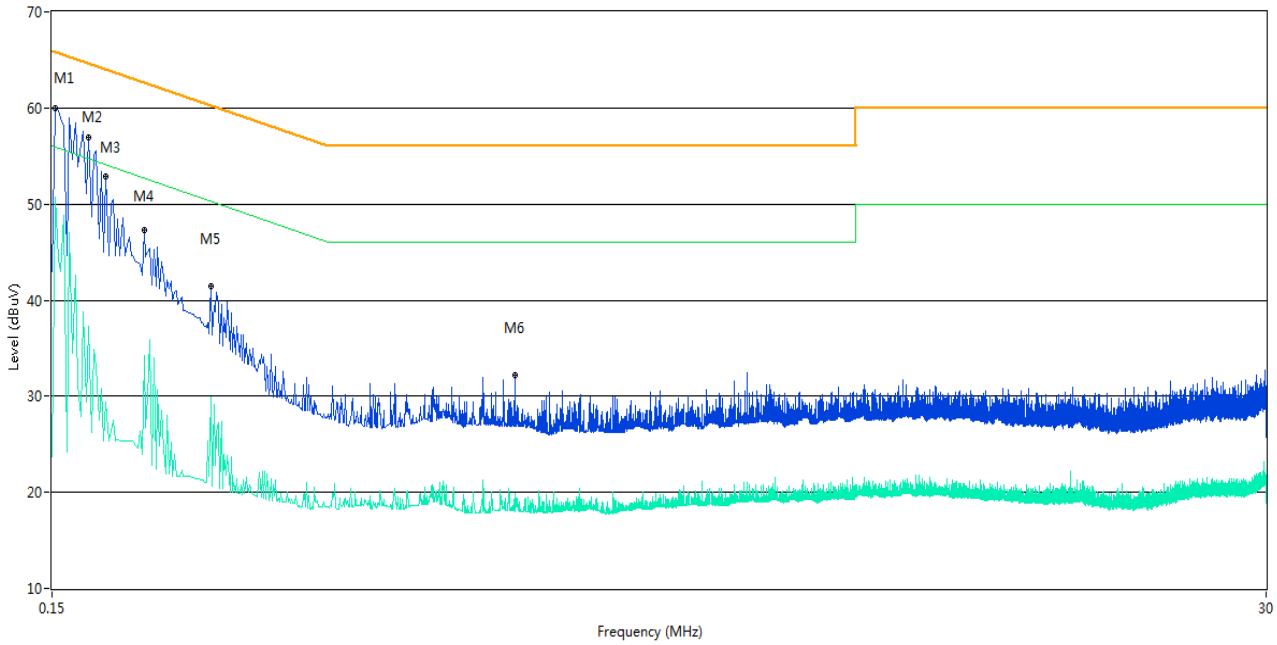


A.2 AC Conducted Emission

Note [1]: The EUT is working in the Normal link mode.

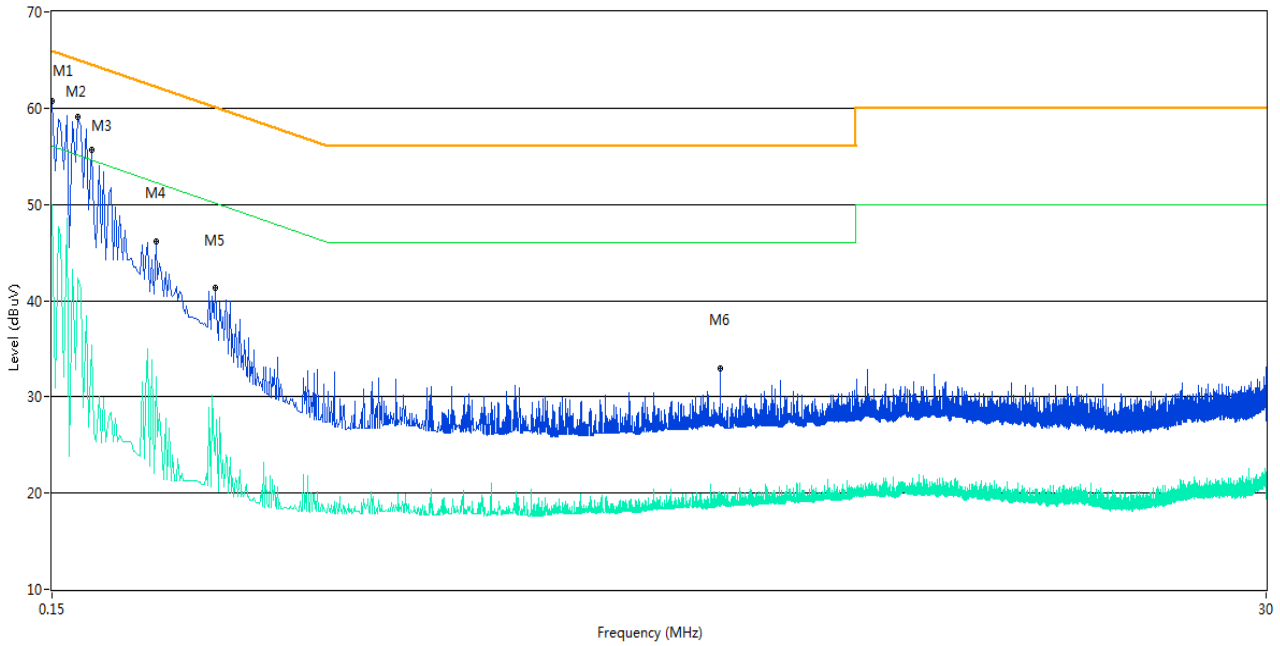
Note [2]: The Sample only supports 120 VAC, 60 Hz, So just only tested 120 VAC, 60 Hz.

PHASE L



No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.152	60.0	11.00	65.9	5.90	Peak	L Line	Pass
1**	0.152	50.7	11.00	55.9	5.20	AV	L Line	Pass
2	0.176	57.0	11.00	64.7	7.70	Peak	L Line	Pass
2**	0.176	37.2	11.00	54.7	17.50	AV	L Line	Pass
3	0.190	52.8	11.00	64.0	11.20	Peak	L Line	Pass
3**	0.190	29.4	11.00	54.0	24.60	AV	L Line	Pass
4	0.224	47.3	11.00	62.7	15.40	Peak	L Line	Pass
4**	0.224	34.2	11.00	52.7	18.50	AV	L Line	Pass
5	0.300	41.4	11.00	60.2	18.80	Peak	L Line	Pass
5**	0.300	29.9	11.00	50.2	20.30	AV	L Line	Pass
6	1.130	32.1	11.00	56.0	23.90	Peak	L Line	Pass
6**	1.130	19.8	11.00	46.0	26.20	AV	L Line	Pass

PHASE N



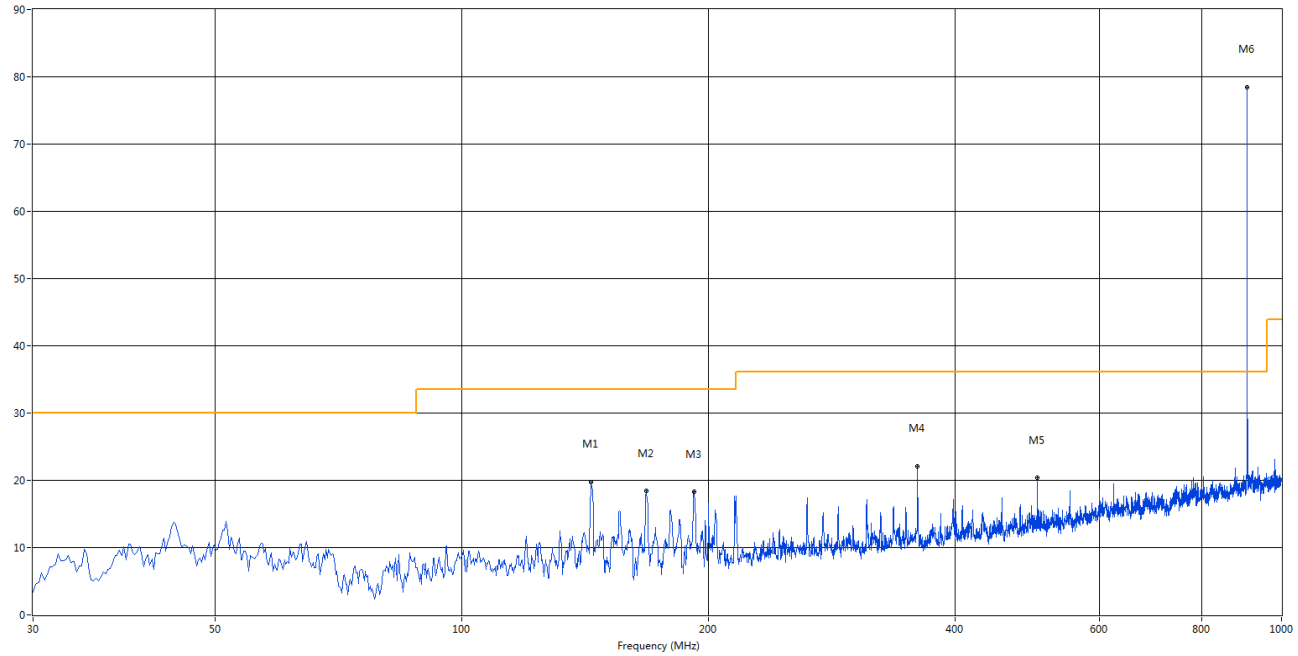
No.	Frequency (MHz)	Results (dBuV)	Factor (dB)	Limit (dBuV)	Margin (dB)	Detector	Line	Verdict
1	0.150	60.7	11.00	66.0	5.30	Peak	N Line	Pass
1**	0.150	50.0	11.00	56.0	6.00	AV	N Line	Pass
2	0.168	59.0	11.00	65.1	6.10	Peak	N Line	Pass
2**	0.168	42.3	11.00	55.1	12.80	AV	N Line	Pass
3	0.178	55.7	11.00	64.6	8.90	Peak	N Line	Pass
3**	0.178	35.4	11.00	54.6	19.20	AV	N Line	Pass
4	0.236	46.2	11.00	62.2	16.00	Peak	N Line	Pass
4**	0.236	32.1	11.00	52.2	20.10	AV	N Line	Pass
5	0.306	41.3	11.00	60.1	18.80	Peak	N Line	Pass
5**	0.306	23.9	11.00	50.1	26.20	AV	N Line	Pass
6	2.768	32.9	11.00	56.0	23.10	Peak	N Line	Pass
6**	2.768	19.0	11.00	46.0	27.00	AV	N Line	Pass

A.3 Radiated Emission

Note [1]: The low frequency, which started from 9 kHz to 30 MHz, was pre-scanned and the result which was 20 dB lower than the limit line per 15.31(o) was not reported.
Note [2]: The bold frequency is the fundamental.

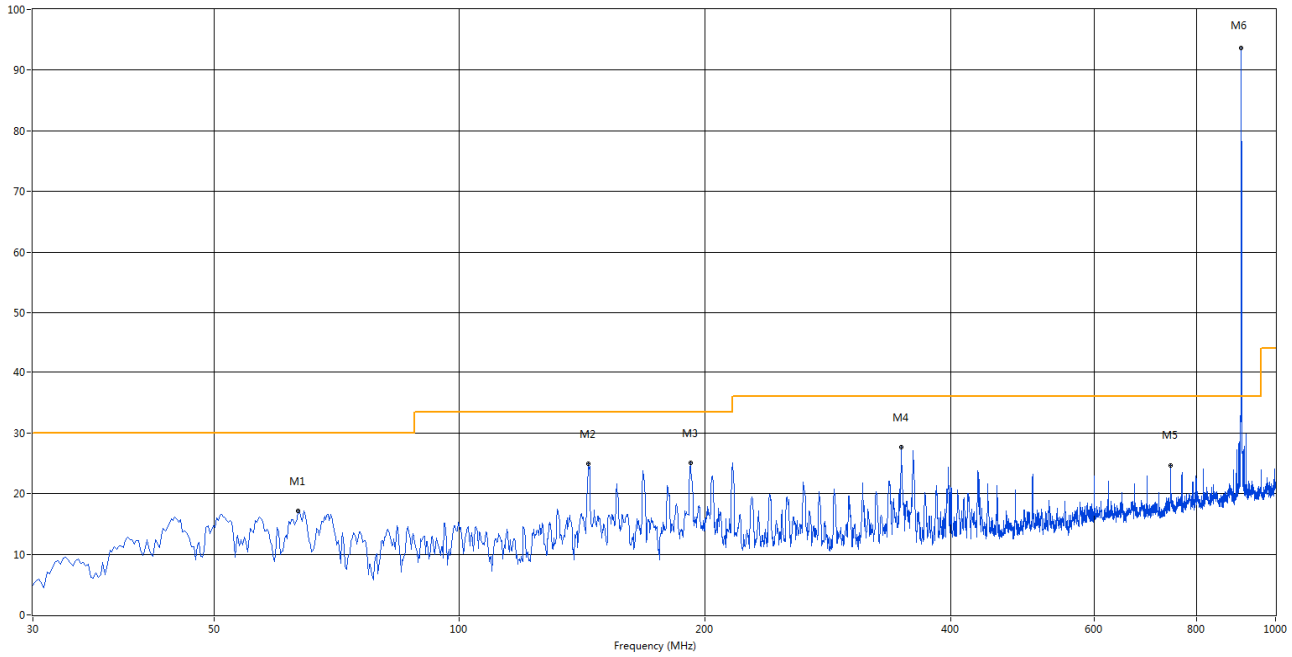
Test Data and Plots (30 MHz ~ 1 GHz)

Low Channel 30 MHz to 1 GHz, ANT V



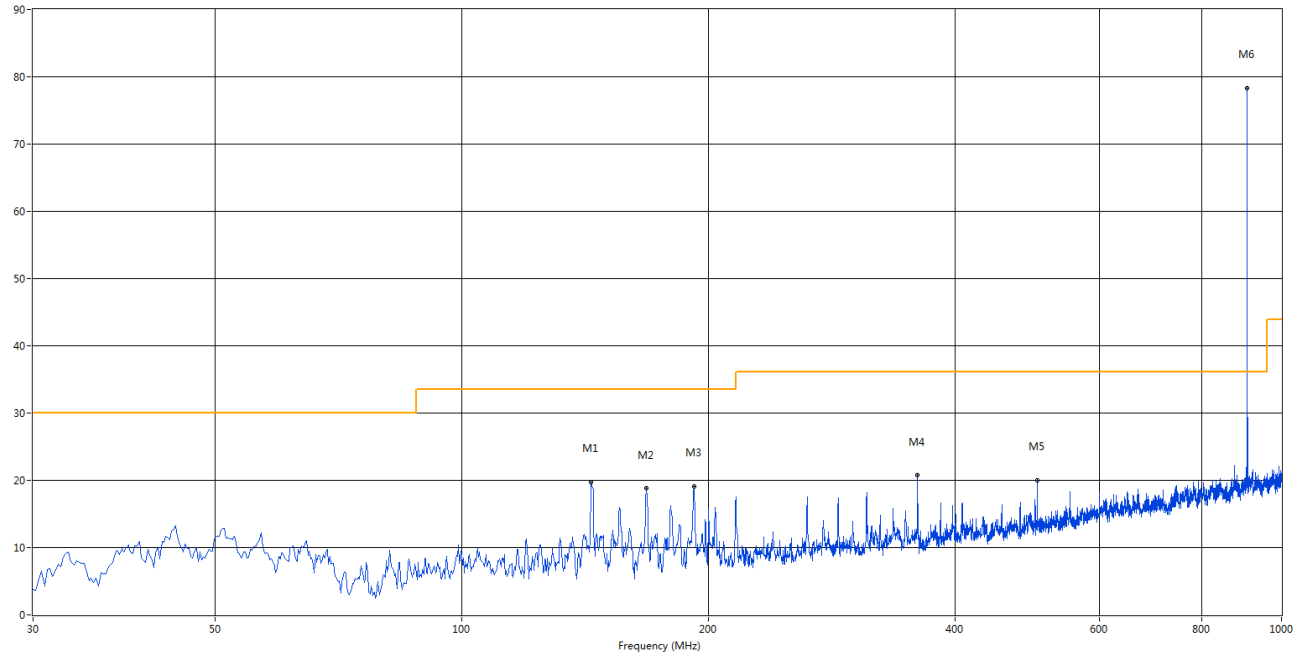
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	143.947	19.65	-19.60	33.5	13.85	Peak	149.00	100	Vertical	Pass
2	167.948	18.44	-18.57	33.5	15.06	Peak	360.00	100	Vertical	Pass
3	191.950	18.28	-16.72	33.5	15.22	Peak	52.00	100	Vertical	Pass
4	359.960	22.07	-11.69	36.0	13.93	Peak	52.00	100	Vertical	Pass
5	503.969	20.39	-9.07	36.0	15.61	Peak	360.00	100	Vertical	Pass
6	**908.358**	**78.43**	**-3.00**	**114.0**	**35.57**	**Peak**	**130.00**	**100**	**Vertical**	**Pass**

Low Channel 30 MHz to 1 GHz, ANT H



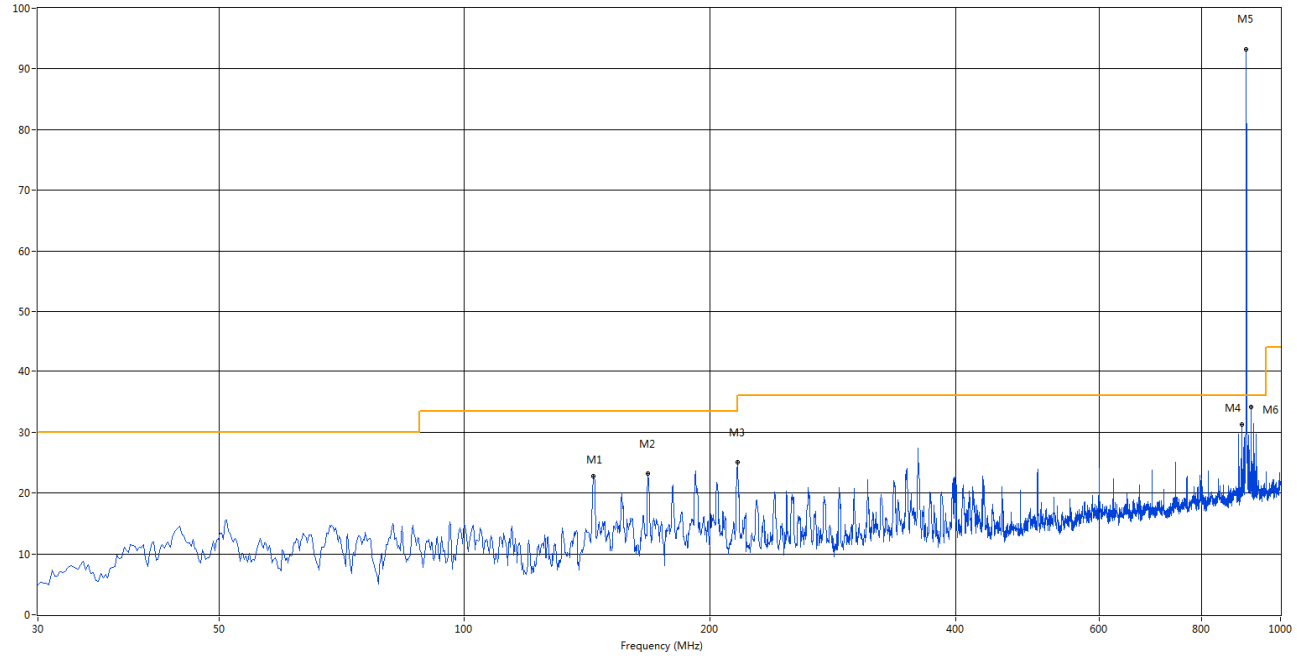
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	63.457	17.19	-16.14	30.0	12.81	Peak	346.00	400	Horizontal	Pass
2	143.947	24.88	-19.60	33.5	8.62	Peak	1.00	400	Horizontal	Pass
3	191.950	25.04	-16.72	33.5	8.46	Peak	360.00	400	Horizontal	Pass
4	347.838	27.60	-11.75	36.0	8.40	Peak	0.00	300	Horizontal	Pass
5	743.742	24.65	-4.48	36.0	11.35	Peak	115.00	400	Horizontal	Pass
6	**908.358**	**93.63**	**-3.00**	**114.0**	**20.37**	**Peak**	**226.00**	**100**	**Horizontal**	**Pass**

Middle Channel 30 MHz to 1 GHz, ANT V



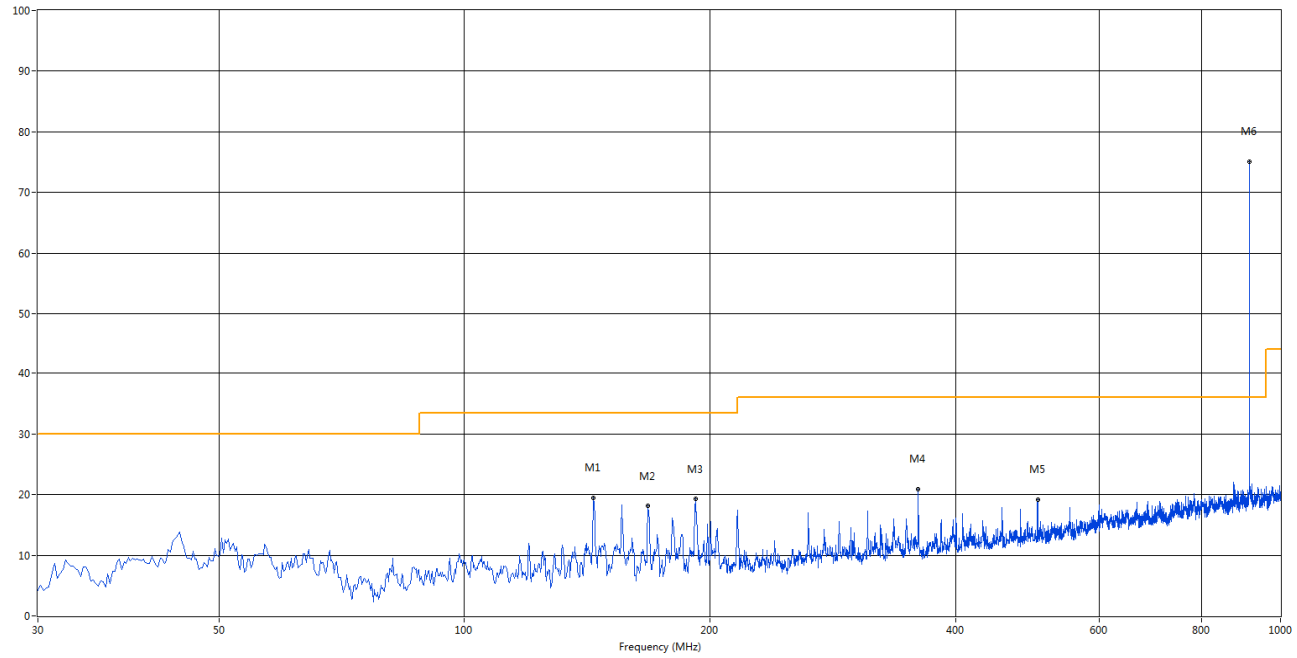
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	143.947	19.77	-19.60	33.5	13.73	Peak	18.00	100	Vertical	Pass
2	167.948	18.75	-18.57	33.5	14.75	Peak	346.00	100	Vertical	Pass
3	191.950	19.07	-16.72	33.5	14.43	Peak	360.00	100	Vertical	Pass
4	359.960	20.73	-11.69	36.0	15.27	Peak	18.00	100	Vertical	Pass
5	503.969	20.03	-9.07	36.0	15.97	Peak	0.00	100	Vertical	Pass
6	**908.358**	**78.34**	**-3.00**	**114.0**	**35.66**	**Peak**	**115.00**	**100**	**Vertical**	**Pass**

Middle Channel 30 MHz to 1 GHz, ANT H



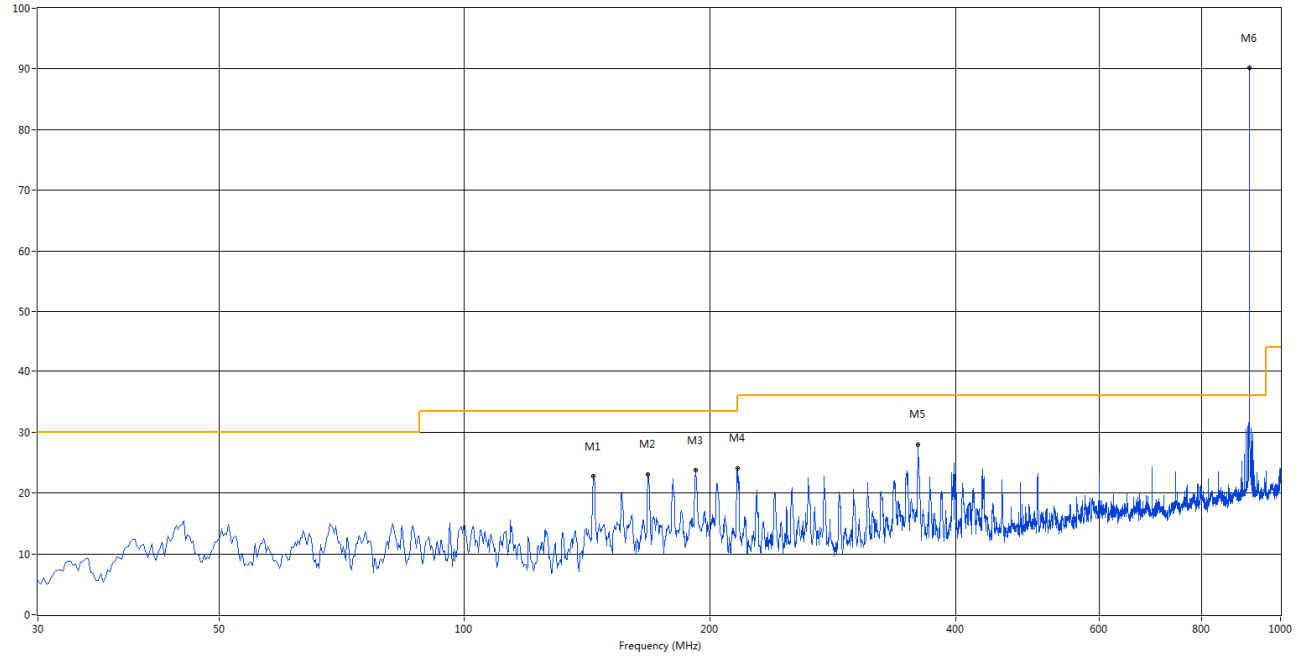
No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	143.947	22.72	-19.60	33.5	10.78	Peak	0.00	300	Horizontal	Pass
2	167.948	23.15	-18.57	33.5	10.35	Peak	360.00	300	Horizontal	Pass
3	215.951	25.03	-16.08	33.5	8.47	Peak	0.00	300	Horizontal	Pass
4	895.751	31.29	-2.82	36.0	4.71	Peak	52.00	100	Horizontal	Pass
5	**908.358**	**93.25**	**-3.00**	**114.0**	**20.75**	**Peak**	**226.00**	**100**	**Horizontal**	**Pass**
6	930.722	33.28	-2.58	36.0	2.72	Peak	52.00	100	Horizontal	Pass

High Channel 30 MHz to 1 GHz, ANT V



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	143.947	19.48	-19.60	33.5	14.02	Peak	115.00	100	Vertical	Pass
2	167.948	18.10	-18.57	33.5	15.40	Peak	1.00	100	Vertical	Pass
3	191.950	19.28	-16.72	33.5	14.22	Peak	1.00	100	Vertical	Pass
4	359.960	20.95	-11.69	36.0	15.05	Peak	38.00	100	Vertical	Pass
5	503.969	19.16	-9.07	36.0	16.84	Peak	360.00	100	Vertical	Pass
6	**915.874**	**75.10**	**-2.63**	**114.0**	**38.90**	**Peak**	**115.00**	**100**	**Vertical**	**Pass**

High Channel 30 MHz to 1 GHz, ANT H



No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	143.947	22.77	-19.60	33.5	10.73	Peak	0.00	300	Horizontal	Pass
2	167.948	23.05	-18.57	33.5	10.45	Peak	14.00	300	Horizontal	Pass
3	192.192	23.71	-16.73	33.5	9.79	Peak	342.00	300	Horizontal	Pass
4	215.951	24.09	-16.08	33.5	9.41	Peak	0.00	300	Horizontal	Pass
5	359.960	28.01	-11.69	36.0	7.99	Peak	0.00	300	Horizontal	Pass
6	**915.874**	**90.15**	**-2.63**	**114.0**	**23.85**	**Peak**	**226.00**	**100**	**Horizontal**	**Pass**

Test Data and Plots (1 GHz ~ 10th Harmonic)

Note [1]: Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency.

Note [2]: Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

Note [3]: Measurements above show only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin>20 dB from the applicable limit) and considered that's already beyond the background noise floor.

Note [4]: Radiated emissions measured in frequency above 1000 MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.

LOW CHANNEL 1 GHz to 10 GHz, ANT V

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1683.500	42.55	-0.80	74.0	31.45	Peak	195.50	150	Vertical	Pass
2	2173.500	45.33	1.30	74.0	28.67	Peak	154.30	150	Vertical	Pass
3	2846.500	46.73	3.60	74.0	27.27	Peak	113.00	150	Vertical	Pass
4	4542.000	46.82	9.76	74.0	27.18	Peak	299.30	150	Vertical	Pass
5	6010.000	45.26	11.59	74.0	28.74	Peak	35.00	150	Vertical	Pass
6	9100.000	48.26	18.00	74.0	25.74	Peak	49.70	150	Vertical	Pass

LOW CHANNEL 1 GHz to 10 GHz, ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1545.500	41.95	-2.65	74.0	32.05	Peak	0.00	150	Horizontal	Pass
2	2170.000	45.15	0.73	74.0	28.85	Peak	0.00	150	Horizontal	Pass
3	3590.250	42.30	7.77	74.0	31.70	Peak	106.90	150	Horizontal	Pass
4	4542.000	49.17	9.76	74.0	24.83	Peak	279.00	150	Horizontal	Pass
5	6100.000	44.97	12.00	74.0	29.03	Peak	57.70	150	Horizontal	Pass
6	8175.000	46.39	13.91	74.0	27.61	Peak	28.10	150	Horizontal	Pass

MIDDLE CHANNEL 1 GHz to 10 GHz, ANT V

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1804.000	42.94	-1.99	74.0	31.06	Peak	169.60	150	Vertical	Pass
2	2700.000	46.98	3.77	74.0	27.02	Peak	264.60	150	Vertical	Pass
3	4542.000	47.39	9.76	74.0	26.61	Peak	306.20	150	Vertical	Pass
4	6673.000	45.90	12.57	74.0	28.10	Peak	324.80	150	Vertical	Pass
5	7710.000	46.19	14.44	74.0	27.81	Peak	71.50	150	Vertical	Pass
6	9072.000	48.57	17.37	74.0	25.43	Peak	116.00	150	Vertical	Pass

MIDDLE CHANNEL 1 GHz to 10 GHz, ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1895.500	44.03	-1.16	74.0	29.97	Peak	0.00	150	Horizontal	Pass
2	2898.500	47.38	4.53	74.0	26.62	Peak	14.00	150	Horizontal	Pass
3	4542.000	50.19	9.76	74.0	23.81	Peak	288.10	150	Horizontal	Pass
4	6512.000	45.16	12.27	74.0	28.84	Peak	353.30	150	Horizontal	Pass
5	8176.000	48.00	13.91	74.0	26.00	Peak	27.60	150	Horizontal	Pass
6	9133.000	48.50	17.85	74.0	25.50	Peak	0.00	150	Horizontal	Pass

HIGH CHANNEL 1 GHz to 10 GHz, ANT V

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1993.500	46.70	-0.27	74.0	27.30	Peak	164.20	150	Vertical	Pass
2	2415.000	46.20	1.82	74.0	27.80	Peak	360.00	150	Vertical	Pass
3	3974.250	42.40	8.41	74.0	31.60	Peak	214.50	150	Vertical	Pass
4	4580.250	50.54	9.99	74.0	23.46	Peak	299.70	150	Vertical	Pass
5	8244.000	46.91	14.29	74.0	27.09	Peak	20.30	150	Vertical	Pass
6	9075.000	48.91	17.44	74.0	25.09	Peak	6.70	150	Vertical	Pass

HIGH CHANNEL 1 GHz to 10 GHz, ANT H

No.	Frequency (MHz)	Results (dBuV/m)	Factor (dB)	Limit (dBuV/m)	Margin (dB)	Detector	Table (o)	Height (cm)	ANT	Verdict
1	1363.500	43.75	-1.87	74.0	30.25	Peak	5.00	150	Horizontal	Pass
2	2411.500	45.06	1.16	74.0	28.94	Peak	0.00	150	Horizontal	Pass
3	2700.500	46.78	4.18	74.0	27.22	Peak	4.00	150	Horizontal	Pass
4	2897.000	46.43	4.27	74.0	27.57	Peak	222.00	150	Horizontal	Pass
5	4580.250	49.46	9.99	74.0	24.54	Peak	5.00	150	Horizontal	Pass
6	8244.000	47.62	14.29	74.0	26.38	Peak	239.00	150	Horizontal	Pass

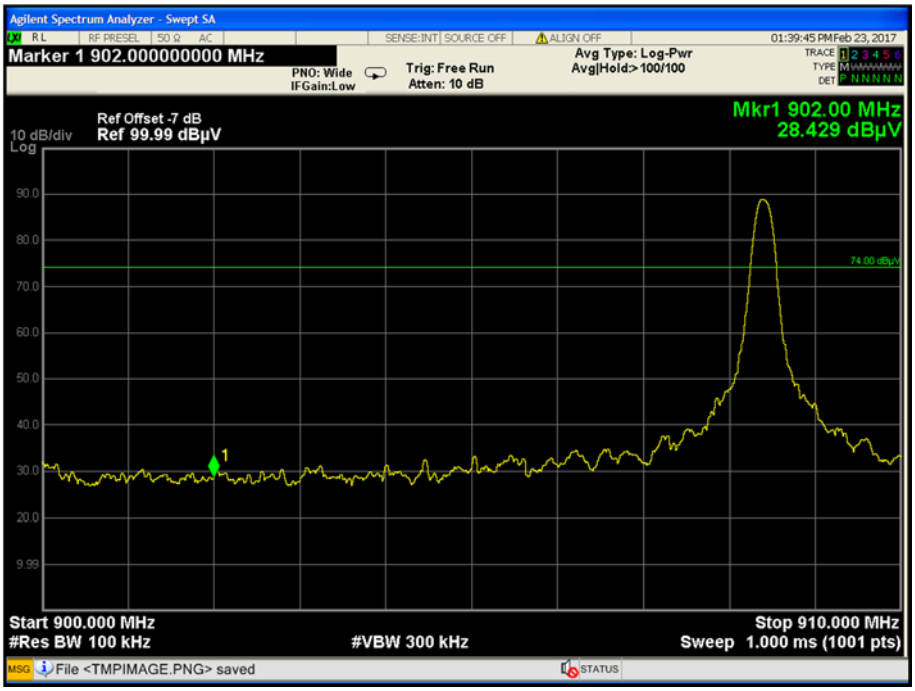
A.4 Band Edge (Restricted-band band-edge)

Test Data and Test Plots

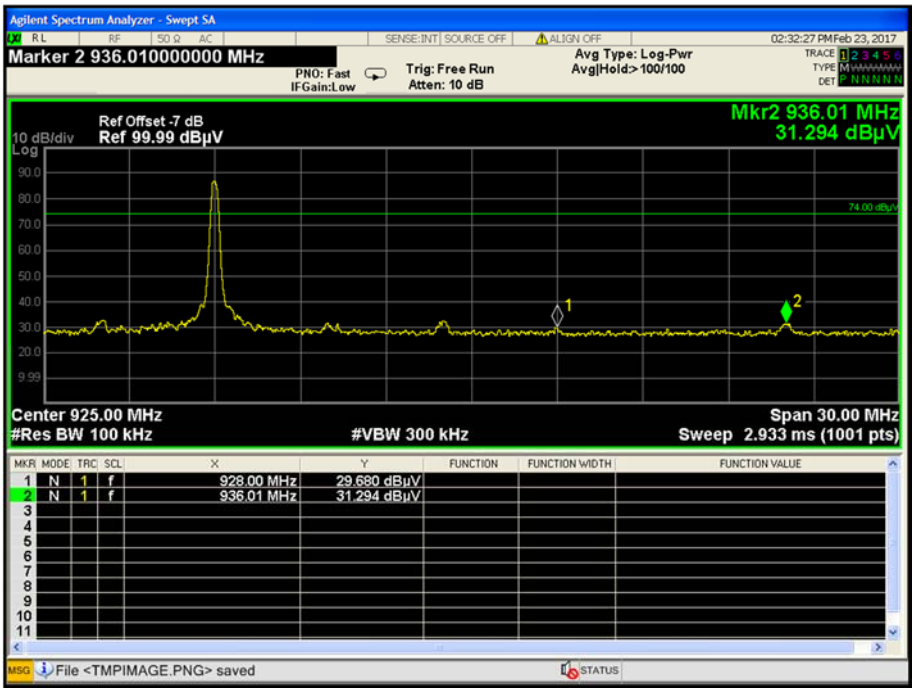
Note: The test data all are tested in the vertical and horizontal antenna which the trace is max hold. So these plots have shown the worst case.

Test Mode	Test Channel	Frequency (MHz)	Level (dBuV/m)	Limit Line (dBuV/m)	Margin (dB)	Remark	Verdict
Z-WAVE	Low	908.4	28.43	74	45.57	PEAK	Pass
			N/A	54	N/A	AVERAGE	Pass
	HIGH	916.0	29.68	74	44.32	PEAK	Pass
			N/A	54	N/A	AVERAGE	Pass

LOW CHANNEL



HIGH CHANNEL



ANNEX B TEST SETUP PHOTOS

Please refer the document “BL-SZ1720190-AR.PDF”.

ANNEX C EUT EXTERNAL PHOTOS

Please refer the document “BL-SZ1720190-AW.PDF”.

ANNEX D EUT INTERNAL PHOTOS

Please refer the document “BL-SZ1720190-AI.PDF”.

--END OF REPORT--