



FCC PART 15B, CLASS B  
TEST REPORT

For

**Xwireless LLC**

11565 Old Georgetown Road, Rockville, MD, USA

**FCC ID: 2ADLJSKYBELL**

<b>Report Type:</b> Original Report	<b>Product Type:</b> Home Phone
<b>Report Number:</b> RXM171115050-00A	
<b>Report Date:</b> 2017-12-05	
<b>Reviewed By:</b> RF Engineer	Rocky Kang <i>Rocky Kang</i>
<b>Prepared By:</b> Bay Area Compliance Laboratories Corp. (Shenzhen) 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China Tel: +86-755-33320018 Fax: +86-755-33320008 <a href="http://www.baclcorp.com.cn">www.baclcorp.com.cn</a>	

**Note:** This report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP\* or any agency of the Federal Government. \* This report may contain data that are not covered by the NVLAP accreditation and are marked with an asterisk “\*”.

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## GENERAL INFORMATION

### Product Description for Equipment under Test (EUT)

The *Xwireless LLC*'s product, model number: *SkyBell (FCC ID: 2ADLJSKYBELL)* or the "EUT" in this report was a *Home Phone*, which was measured approximately: 199 mm (L) \* 132 mm (W) \* 38 mm (H), rated with input voltage: DC 3.7 V from battery or DC 5.0V from adapter. The highest operating frequency is 1990 MHz.

#### Adapter Information:

Model: M050100E111

Input: AC 100-240V, 50/60Hz, 0.35 A

Output: DC 5V, 1000 mA

*\*All measurement and test data in this report was gathered from production sample serial number: 171115050 (Assigned by BACL, Shenzhen). The EUT supplied by the applicant was received on 2017-11-15.*

### Objective

This test report is prepared on behalf of *Xwireless LLC* in accordance with Part 2-Subpart J, Part 15-Subparts A, B of the Federal Communication Commissions rules.

The objective of the manufacturer is to determine the compliance of the EUT with FCC Part 15 B.

### Related Submittal(s)/Grant(s)

Part 22H/24E PCB submissions with FCC ID: 2ADLJSKYBELL.

### Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

### Measurement Uncertainty

Parameter		uncertainty
Conducted Emissions		±1.95dB
Emissions, radiated	Below 1GHz	±4.75dB
	Above 1GHz	±4.88dB

## **Test Facility**

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 6/F., West Wing, Third Phase of Wanli Industrial Building, Shihua Road, Futian Free Trade Zone, Shenzhen, Guangdong, China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 382179, the FCC Designation No. : CN5001.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062B

## SYSTEM TEST CONFIGURATION

### Description of Test Configuration

The system was configured for testing in a manufacturer testing fashion.

EUT operation mode: Talking

### EUT Exercise Software

No software was used to the EUT tested.

### Special Accessories

No special accessory.

### Equipment Modifications

No modification was made to the EUT tested.

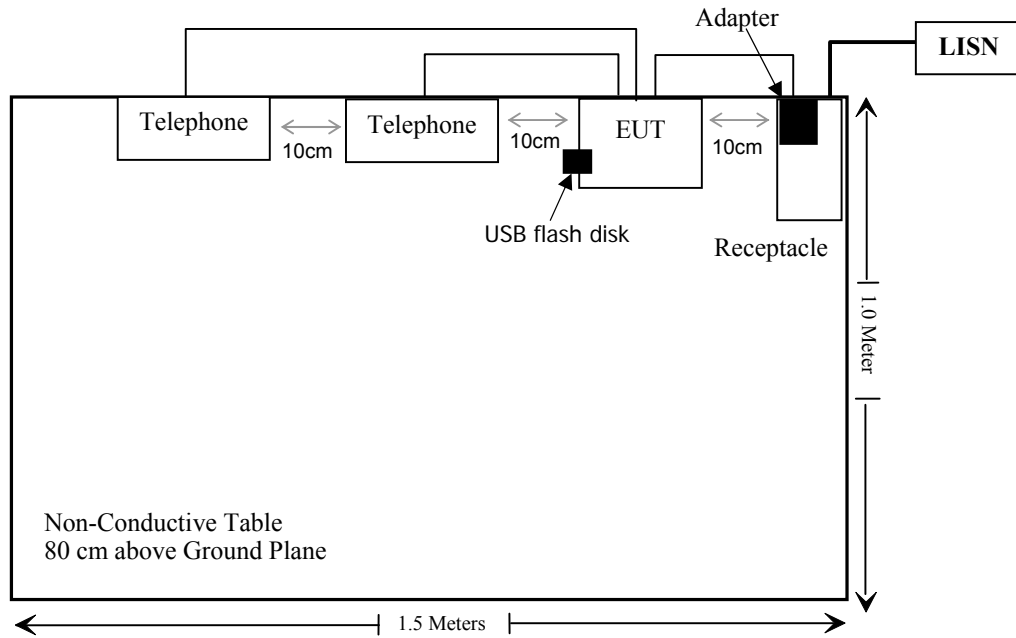
### Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Kinhao	Telephone	N/A	N/A
Doro	Telephone	AUB200H	PRC00110R01025
Kingston	USB flash disk	DTSE9G2	N/A

### External I/O Cable

Cable Description	Length (m)	From/Port	To
Un-shielded Detachable AC power Cable	1.5	EUT	Adapter
Un-shielded Detachable RJ11 Cable	2.0	Telephone	EUT
Un-shielded Detachable RJ11 Cable	1.2	Telephone	EUT

### Block Diagram of Test Setup



**SUMMARY OF TEST RESULTS**

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<b>FCC Rules</b>	<b>Description of Test</b>	<b>Results</b>
§15.107	AC Line Conducted Emissions	Compliance
§15.109	Radiated Spurious Emissions	Compliance

**TEST EQUIPMENT LIST**

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
<b>AC Line Conducted Emission Test</b>					
Rohde & Schwarz	EMI Test Receiver	ESCS30	100176	2017-08-04	2018-08-04
Rohde & Schwarz	LISN	ENV216	3560.6650.12-101613-Yb	2016-12-07	2017-12-07
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2017-11-19	2018-05-21
Rohde & Schwarz	CE Test software	EMC 32	V8.53.0	NCR	NCR
N/A	Conducted Emission Cable	N/A	UF A210B-1-0720-504504	2017-11-12	2018-05-12
<b>Radiated Emission Test</b>					
Sunol Sciences	Horn Antenna	DRH-118	A052604	2014-12-29	2017-12-28
Rohde & Schwarz	Signal Analyzer	FSIQ26	8386001028	2017-04-24	2018-04-24
Sunol Sciences	Bi-log Antenna	JB1	A040904-2	2014-12-17	2017-12-16
Mini	Pre-amplifier	ZVA-183-S+	5969001149	2017-05-21	2018-05-21
HP	Amplifier	HP8447E	1937A01046	2017-11-19	2018-05-21
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2016-12-07	2017-12-07
Ducommun technologies	RF Cable	UFA210A-1-4724-30050U	MFR64369223410-001	2017-11-19	2018-05-21
Ducommun technologies	RF Cable	104PEA	218124002	2017-11-19	2018-05-21
Ducommun technologies	RF Cable	RG-214	1	2017-11-19	2018-05-21
Ducommun technologies	RF Cable	RG-214	2	2017-11-22	2018-05-22

\* **Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

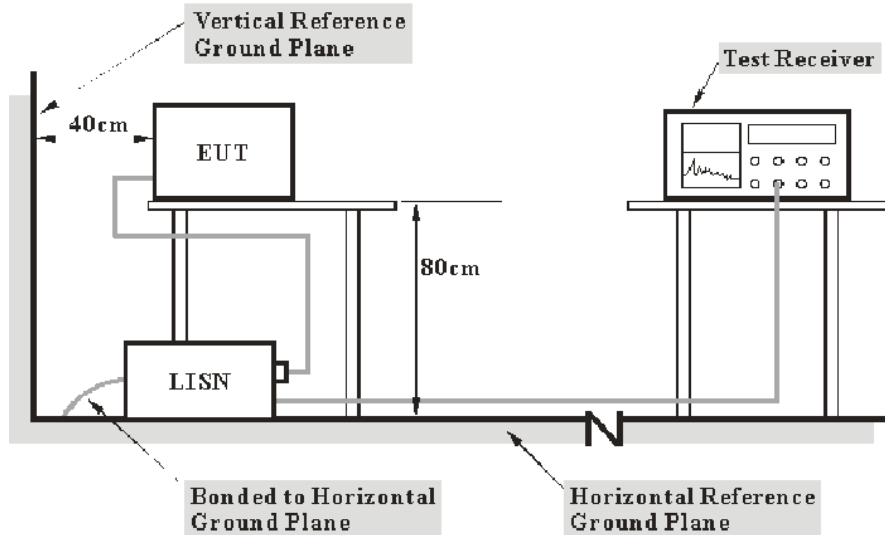


## FCC §15.107 – AC LINE CONDUCTED EMISSIONS

### Applicable Standard

According to FCC §15.107

### EUT Setup



- Note: 1. Support units were connected to second LISN.  
 2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The measurement procedure of EUT setup is according with per ANSI C63.4-2014. The related limit was specified in FCC Part 15.107 Class B.

The spacing between the peripherals was 10 cm.

### EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

### Test Procedure

During the conducted emission test, the EUT adapter was connected to the first LISN and the other relevant equipments were connected to the second LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All data was recorded in the Quasi-peak and average detection mode.

## Corrected Factor & Margin Calculation

The Corrected factor is calculated by adding LISN/ISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

$$\text{Correction Factor} = \text{LISN VDF} + \text{Cable Loss} + \text{Transient Limiter Attenuation}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

## Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.107,

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level is in compliance with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

In BACL.,  $U_{(Lm)}$  is less than  $U_{cispr}$ , if  $L_m$  is less than  $L_{lim}$ , it implies that the EUT complies with the limit.

## Test Data

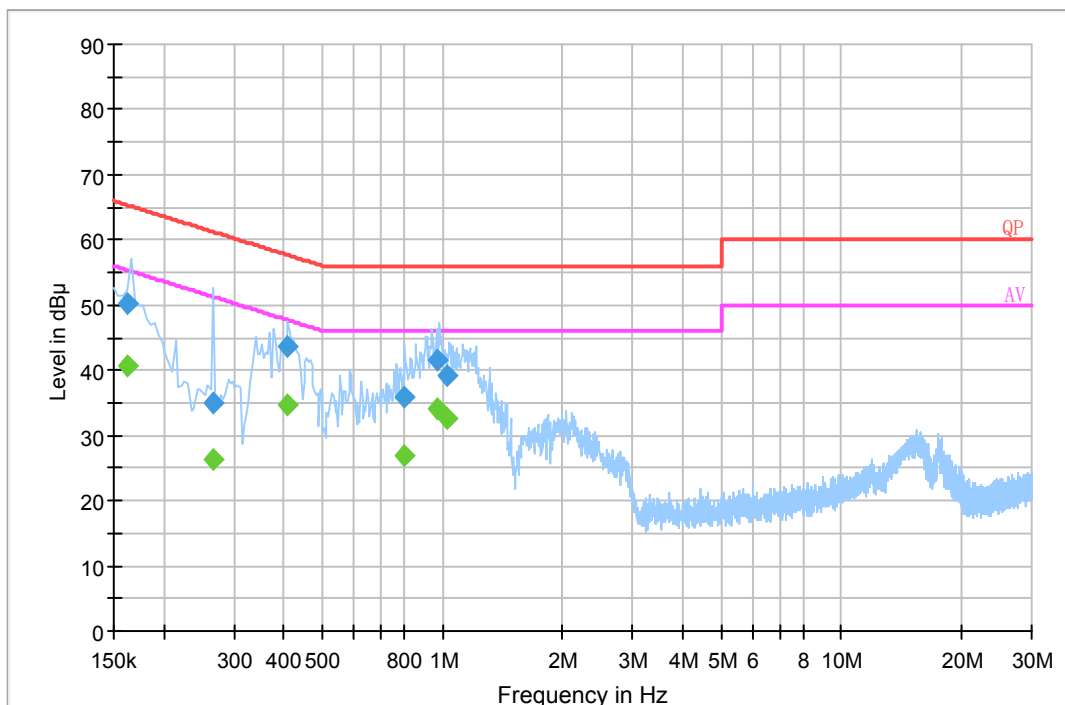
### Environmental Conditions

<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	101.0 kPa

*The testing was performed by Nancy Wang on 2017-12-04.*

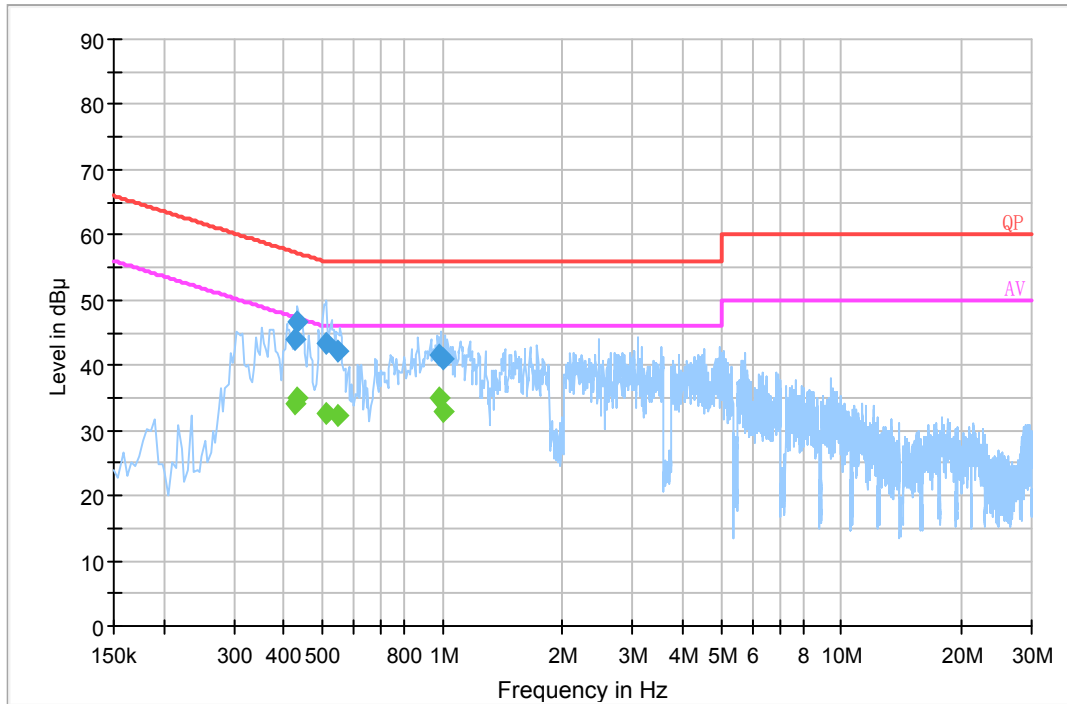
*EUT Operation Mode: Talking*

**AC 120V/60 Hz, Line**



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.161500	50.2	20.2	65.4	15.2	QP
0.265500	35.1	20.2	61.3	26.2	QP
0.407850	43.8	20.2	57.7	13.9	QP
0.797910	35.8	20.0	56.0	20.2	QP
0.971210	41.5	20.1	56.0	14.5	QP
1.026430	39.0	20.1	56.0	17.0	QP
0.161500	40.8	20.2	55.4	14.6	Ave.
0.265500	26.2	20.2	51.3	25.1	Ave.
0.407850	34.7	20.2	47.7	13.0	Ave.
0.797910	26.9	20.0	46.0	19.1	Ave.
0.971210	34.0	20.1	46.0	12.0	Ave.
1.026430	32.5	20.1	46.0	13.5	Ave.

**AC 120V/60 Hz, Neutral**



Frequency (MHz)	Corrected Amplitude (dBμV)	Correction Factor (dB)	Limit (dBμV)	Margin (dB)	Detector (PK/Ave./QP)
0.427490	44.1	20.2	57.3	13.2	QP
0.431550	46.5	20.2	57.2	10.7	QP
0.510290	43.4	20.2	56.0	12.6	QP
0.549690	42.0	20.2	56.0	14.0	QP
0.987090	41.7	20.1	56.0	14.3	QP
0.998790	41.0	20.1	56.0	15.0	QP
0.427490	34.0	20.2	47.3	13.3	Ave.
0.431550	34.9	20.2	47.2	12.3	Ave.
0.510290	32.6	20.2	46.0	13.4	Ave.
0.549690	32.3	20.2	46.0	13.7	Ave.
0.987090	34.9	20.1	46.0	11.1	Ave.
0.998790	32.8	20.1	46.0	13.2	Ave.

**Note:**

- 1) Correction Factor = LISN VDF (Voltage Division Factor) + Cable Loss + Transient Limiter Attenuation
- 2) Corrected Amplitude = Reading + Correction Factor
- 3) Margin = Limit – Corrected Amplitude

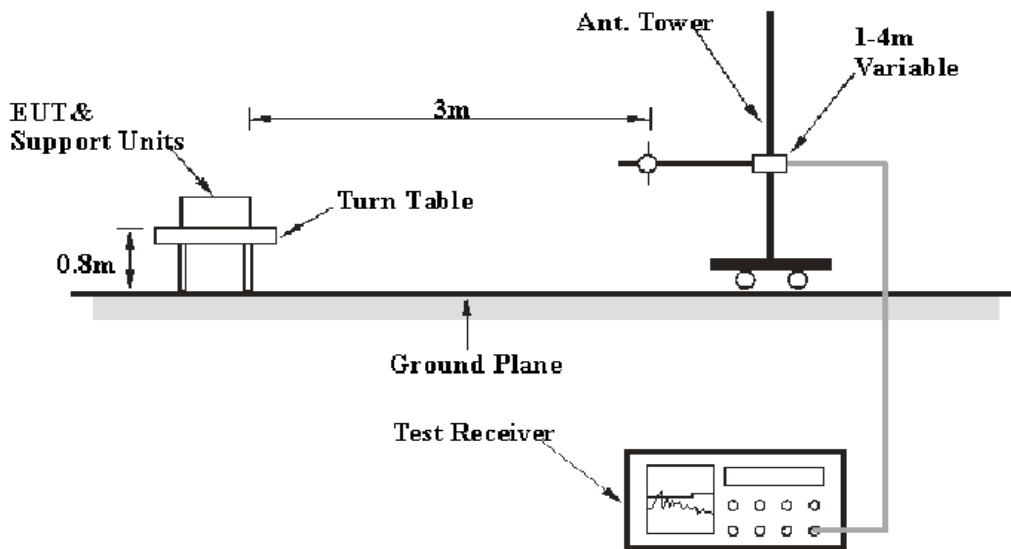
## FCC §15.109 - RADIATED SPURIOUS EMISSIONS

### Applicable Standard

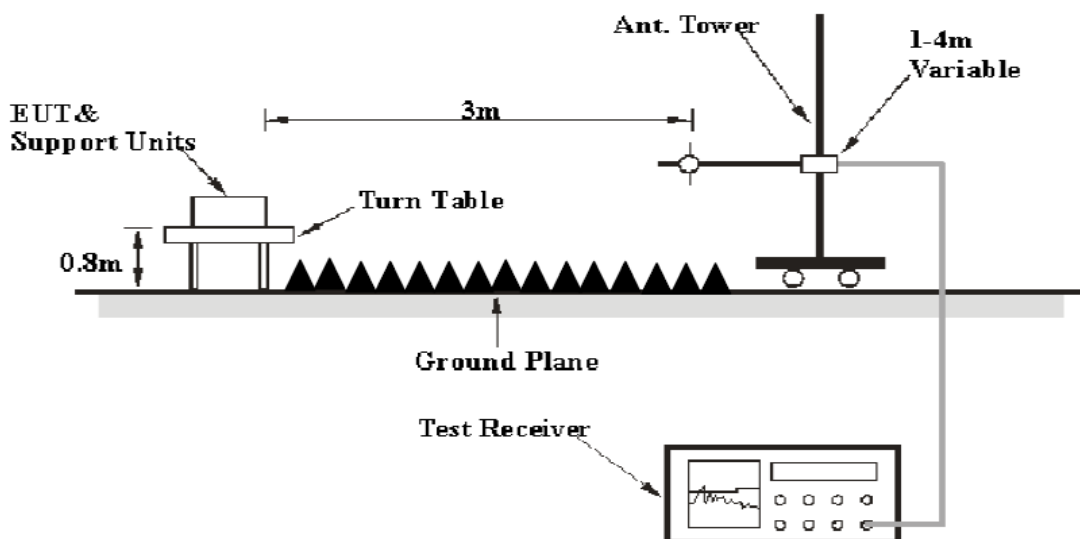
FCC §15.109

### EUT Setup

Below 1GHz:



Above 1GHz:



The radiated emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.4-2014. The specification used was the FCC Part 15.109 Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

### EMI Test Receiver Setup

The system was investigated from 30 MHz to 10 GHz.

During the radiated emission test, the EMI test receiver was set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
30 MHz – 1000 MHz	100 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	Ave.

### Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

All data was recorded in the Quasi-peak detector mode from 30 MHz to 1 GHz and PK and average detector modes for frequencies above 1 GHz.

### Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

The “**Margin**” column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

### Test Results Summary

According to the data in the following table, the EUT complied with the FCC §15.109 Class B,

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level is in compliance with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

In BACL,  $U_{(Lm)}$  is less than  $U_{cispr}$ , if  $L_m$  is less than  $L_{lim}$ , it implies that the EUT complies with the limit.

**Test Data**

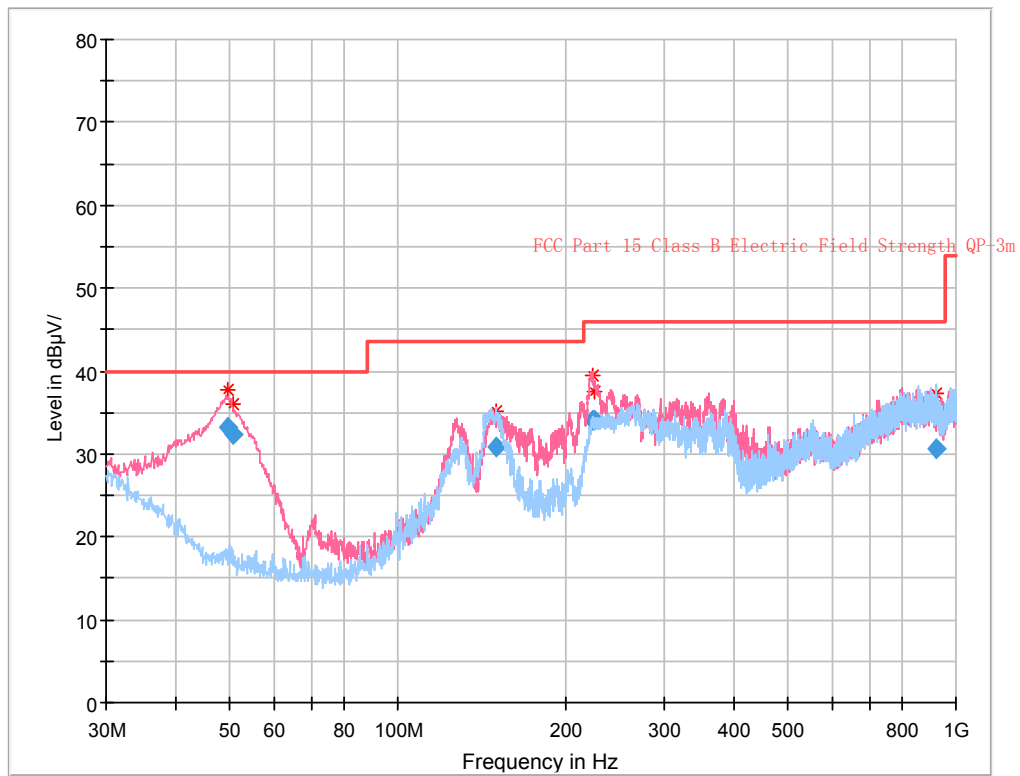
**Environmental Conditions**

<b>Temperature:</b>	25 °C
<b>Relative Humidity:</b>	56 %
<b>ATM Pressure:</b>	101.0 kPa

The testing was performed by Nancy Wang on 2017-11-26 and 2017-11-27.

EUT Operation Mode: Talking

**30 MHz – 1 GHz:**



Frequency (MHz)	Corrected Amplitude (dBµV/m)	Antenna height (cm)	Antenna Polarity	Turntable position (degree)	Correction Factor (dB/m)	Limit (dBµV/m)	Margin (dB)
49.721875	33.24	100.0	V	319.0	-10.9	40.00	6.76
50.590375	32.38	100.0	V	294.0	-11.0	40.00	7.62
150.020500	30.86	222.0	H	300.0	-4.5	43.50	12.64
222.821125	34.02	105.0	V	67.0	-6.6	46.00	11.98
225.512750	34.08	100.0	V	61.0	-6.3	46.00	11.92
920.547625	30.58	135.0	H	0.0	9.1	46.00	15.42

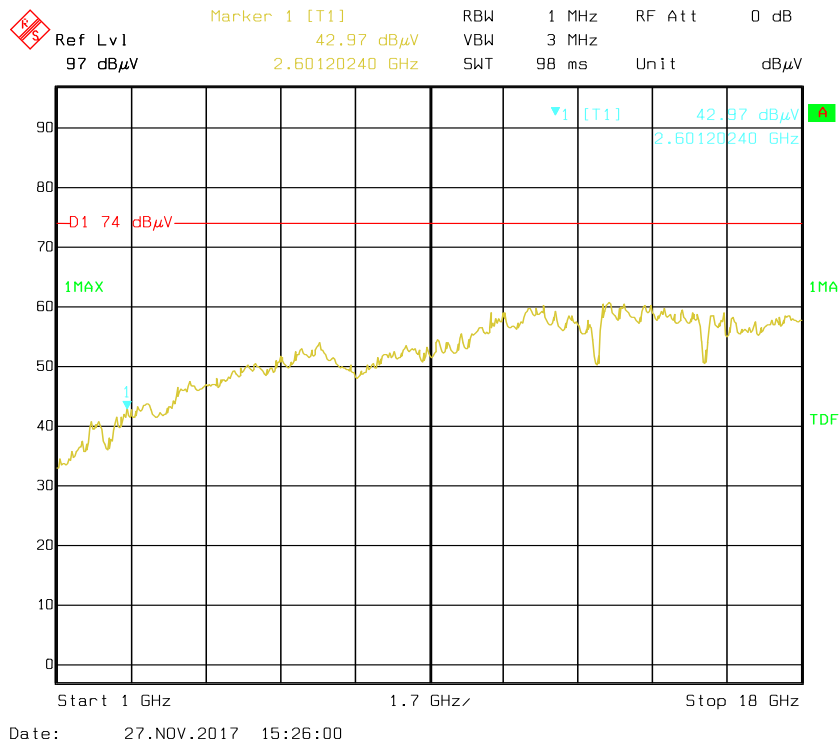
**1GHz – 10GHz:**

Frequency (MHz)	Measurement		Turntable Degree	Rx Antenna		Corrected Factor (dB/m)	Corrected Amplitude (dBµV/m)	FCC Part 15B	
	Reading (dBµV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H / V)			Limit (dBµV/m)	Margin (dB)
3798.74	43.87	PK	206	2.0	H	2.41	46.28	74	27.72
3798.74	28.60	Ave.	206	2.0	H	2.41	31.01	54	22.99
3793.58	45.32	PK	27	2.0	V	2.41	47.73	74	26.27
3793.58	29.10	Ave.	27	2.0	V	2.41	31.51	54	22.49
2601.20	44.23	PK	83	1.5	H	-0.72	43.51	74	30.49
2601.20	28.57	Ave.	83	1.5	H	-0.72	27.85	54	26.15
2632.83	43.72	PK	317	1.4	V	-0.72	43.00	74	31.00
2632.83	28.60	Ave.	317	1.4	V	-0.72	27.88	54	26.12

**Note:**

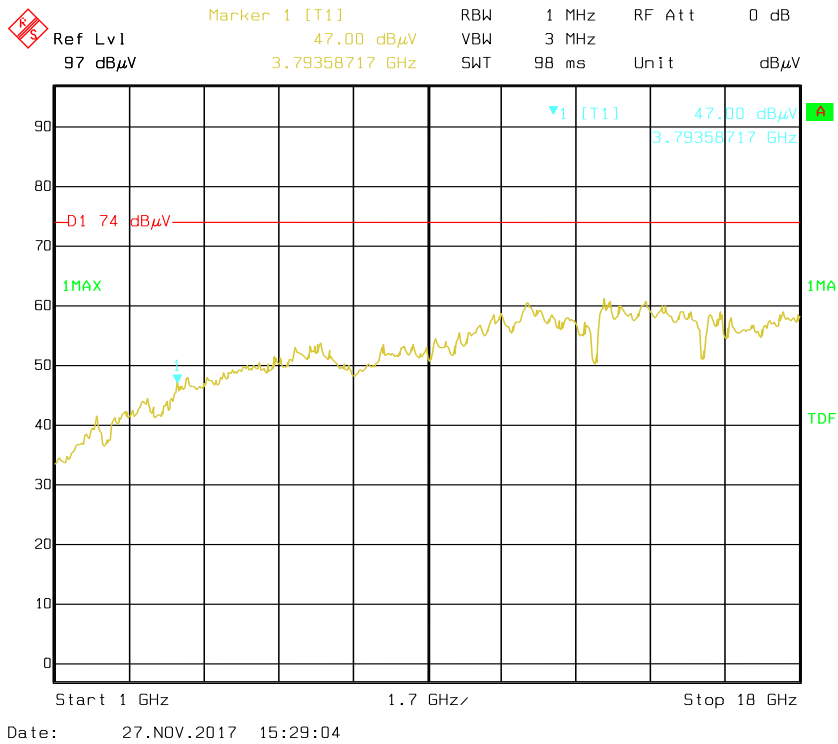
- 1) Correction Factor=Antenna factor (RX) + cable loss – amplifier factor
- 2) Corrected Amplitude = Correction Factor + Reading
- 3) Margin = Limit - Corrected Amplitude
- 4) All spurious emissions are 20 dB below the limit or are on the system noise floor level for above 6GHz.

**Prescan with Horizontal**





**Prescan with Vertical**



**\*\*\*\*\* END OF REPORT \*\*\*\*\***