



TEST REPORT

APPLICANT : Glory Horse Industries Limited
PRODUCT NAME : BE322
MODEL NAME : WSR1801*BT*UL
BRAND NAME : BAUER
FCC ID : 2ABL5WSR1801-BE322
STANDARD(S) : 47 CFR Part 15 Subpart B
TEST DATE : 2018-11-01
ISSUE DATE : 2018-11-07

Tested by: Wu Zhongwen
Wu Zhongwen(Test Engineer)
Approved by: Andy Yeh
Andy Yeh(Technical Director)

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Change History		
Issue	Date	Reason for change
1.0	2018-11-07	First edition



1. Technical Information

Note: Provide by applicant

1.1. Applicant and Manufacturer Information

Applicant:	Glory Horse Industries Limited
Applicant Address:	No.8,4/F, World-Wide IND Centre, 43-47 Shan Mei ST., Fotan Shatin,NT,HKG,Hong Kong
Manufacturer:	Glory Horse Industries Limited
Manufacturer Address:	No 11,Jin Yu Ling Road,Sang Yuan District, Dongcheng , Dongguan ,Guangdong,China

1.2. Equipment Under Test (EUT) Description

EUT Type:	BE322
Serial No:	(N/A, marked #1 by test site)
Hardware Version:	V01
Software Version:	VER10_21080903
Frequency Range:	Bluetooth: 2402 MHz ~ 2480 MHz FM: 87.5 MHz ~ 108 MHz AM: 522 kHz ~ 1620 kHz

Note:

1. For a more detailed description, please refer to specification or user's manual supplied by the applicant and/or manufacturer.



2. Test Results

2.1. Applied Reference Documents

The objective of the report is to perform testing according to 47 CFR Part 15 Subpart B:

No.	Identity	Document Title
1	47 CFR Part 15	Radio Frequency Devices

Test detailed items/section required by FCC rules and results are as below:

No.	Section	Description	Test Date	Test Engineer	Result
1	15.107	Conducted Emission	N/A	N/A	N/A
2	15.109	Radiated Emission	2018.11.01	Wu Zhongwen	PASS

NOTE: The tests were performed according to the method of measurements prescribed in ANSI C63.4-2014.



2.2. EUT Setup and Operating Conditions

Test Item	
Radiated Emission	
Mode 1	: EUT + Battery + AUX Line + Mobile Phone + Bluetooth Idle
Mode 2	: EUT + Battery + AUX Line + Mobile Phone + Bluetooth Idle + FM
Mode 3	: EUT + Battery + AUX Line + Mobile Phone + Bluetooth Idle + AM
Remark: The above test mode in boldface was the worst cases of radiated emission test; only the test data of the mode was reported.	

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

Temperature (°C):	15 - 35
Relative Humidity (%):	30 - 60
Atmospheric Pressure (kPa):	86 - 106

3. 47 CFR Part 15B Requirements

3.1. Radiated Disturbance

3.1.1. Requirement

According to FCC section 15.109 (a), the field strength of radiated emissions from unintentional radiators at a distance of 3 meters shall not exceed the following values:

Frequency range (MHz)	Field Strength Limitation at 3m Measurement Dist	
	($\mu\text{V/m}$)	($\text{dB}\mu\text{V/m}$)
30.0 - 88.0	100	20log 100
88.0 - 216.0	150	20log 150
216.0 - 960.0	200	20log 200
Above 960.0	500	20log 500

As shown in FCC section 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector. When average radiated emission measurements are specified in this part, including emission measurements below 1000MHz, there also is a limit on the radio frequency emissions, as measured using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit for the frequency being investigated unless a different peak emission limit is otherwise specified in the rules.

Note:

- 1) The tighter limit shall apply at the boundary between two frequency range.
- 2) Limitation expressed in $\text{dB}\mu\text{V/m}$ is calculated by $20\log$ Emission Level($\mu\text{V/m}$).

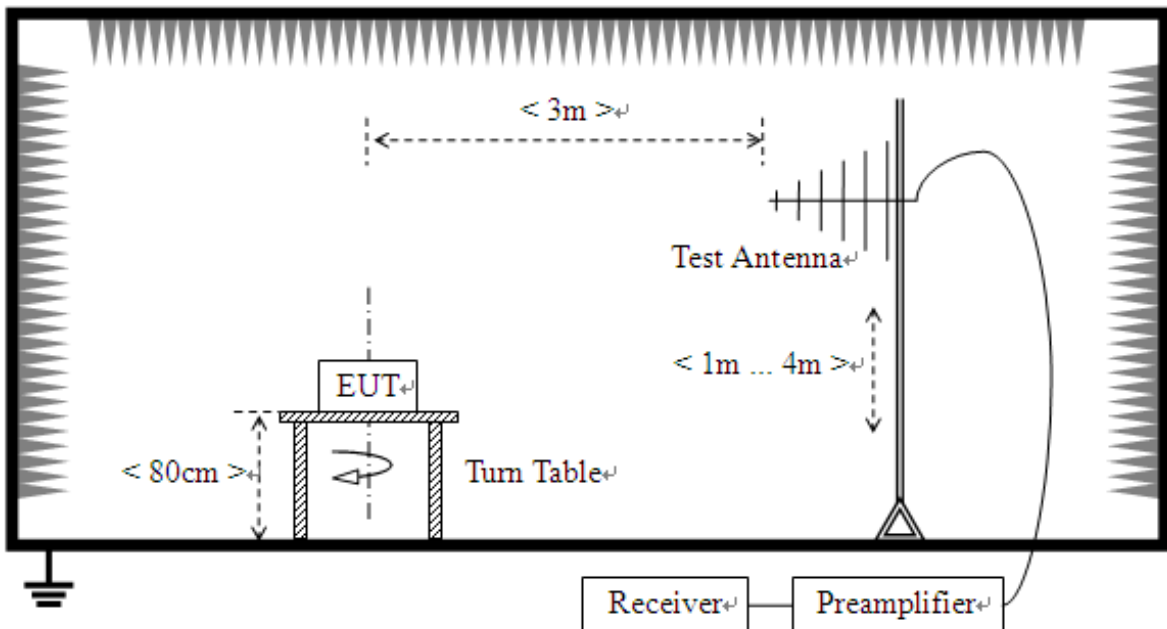
3.1.2. Frequency range of measurement

According to 15.33(b)(1), the frequency range of radiated measurement for the EUT is listed in the following table:

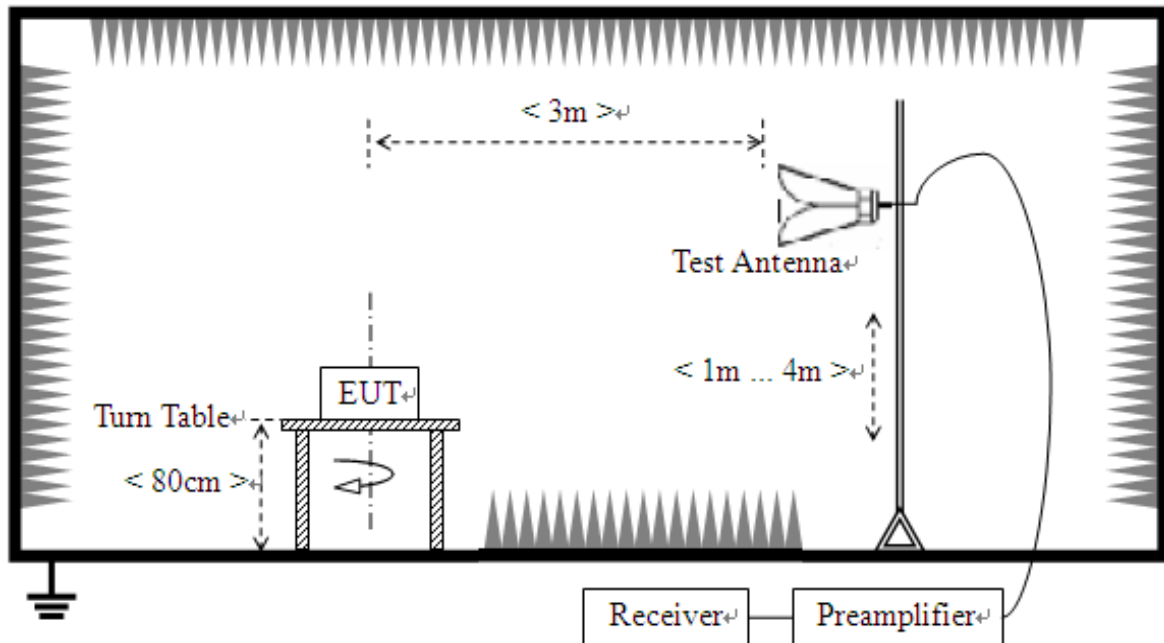
Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30.
1.705–108	1000.
108–500	2000.
500–1000	5000.
Above 1000	5th harmonic of the highest frequency or 40 GHz, whichever is lower.

3.1.3. Test Setup

- 1) For radiated emissions from 30MHz to1GHz



2) For radiated emissions above 1GHz



The test is performed in a 3m Semi-Anechoic Chamber; the antenna factor, cable loss and so on of the site (factors) is calculated to correct the reading. The EUT is placed on a 0.8m high insulating Turn Table, and keeps 3m away from the Test Antenna, which is mounted on a variable-height antenna master tower.

For the test Antenna:

In the frequency range above 30MHz, Bi-Log Test Antenna (30MHz to 1GHz) and Horn Test Antenna (above 1GHz) are used. Test Antenna is 3m away from the EUT. Test Antenna height is varied from 1m to 4m above the ground to determine the maximum value of the field strength. The emission levels at both horizontal and vertical polarizations should be tested.

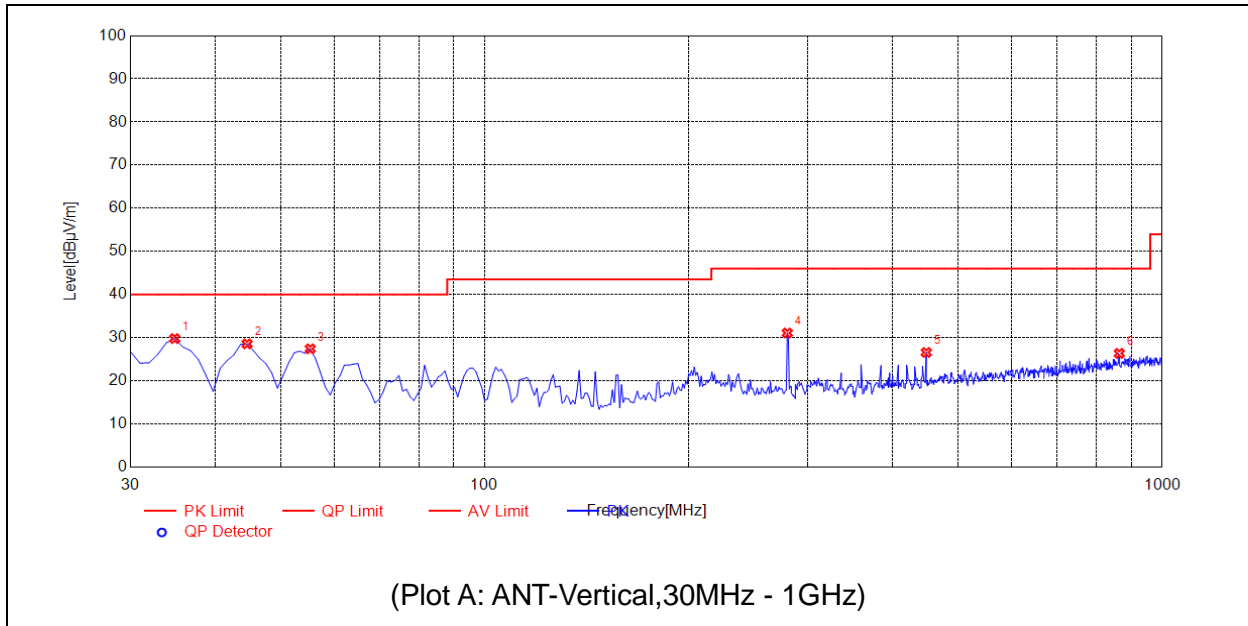
3.1.4. Test Result

The maximum radiated emission is searched using PK, QP and AV detectors; the emission levels more than the limits, and that have narrow margins from the limits will be re-measured with AV and QP detectors. Both the vertical and the horizontal polarizations of the Test Antenna are considered to perform the tests. All test modes are considered, refer to recorded points and plots below.

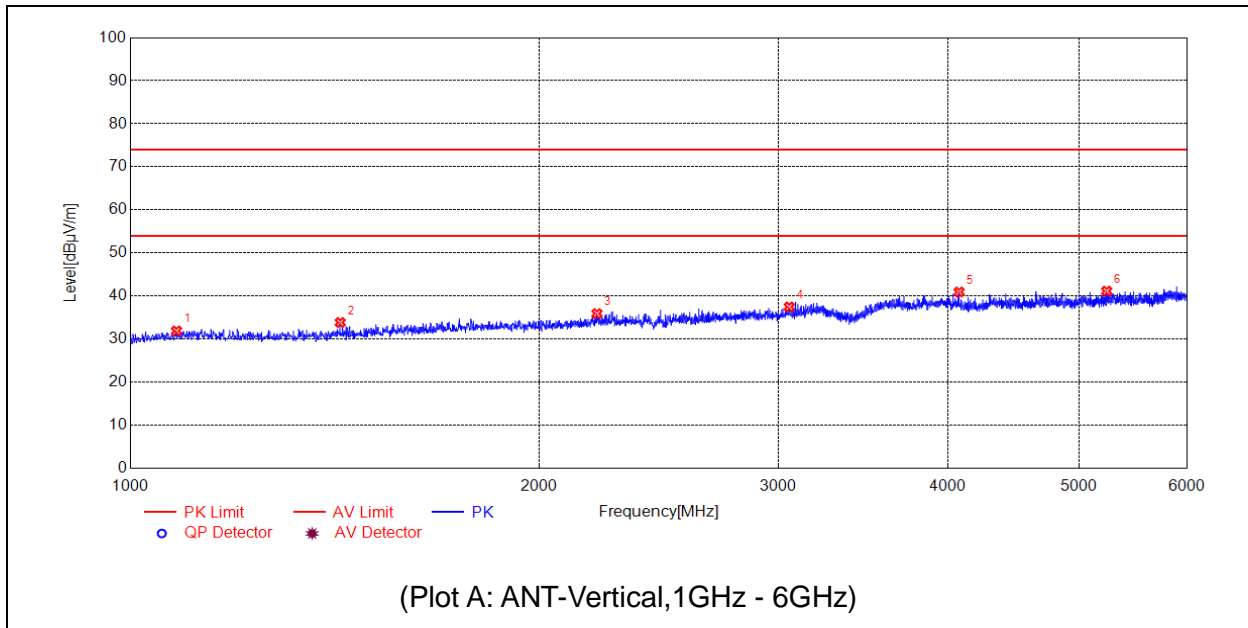
The amplitude of emissions which (6GHz-12.5GHz) are attenuated more than 20 dB below the permissible value need not be reported.



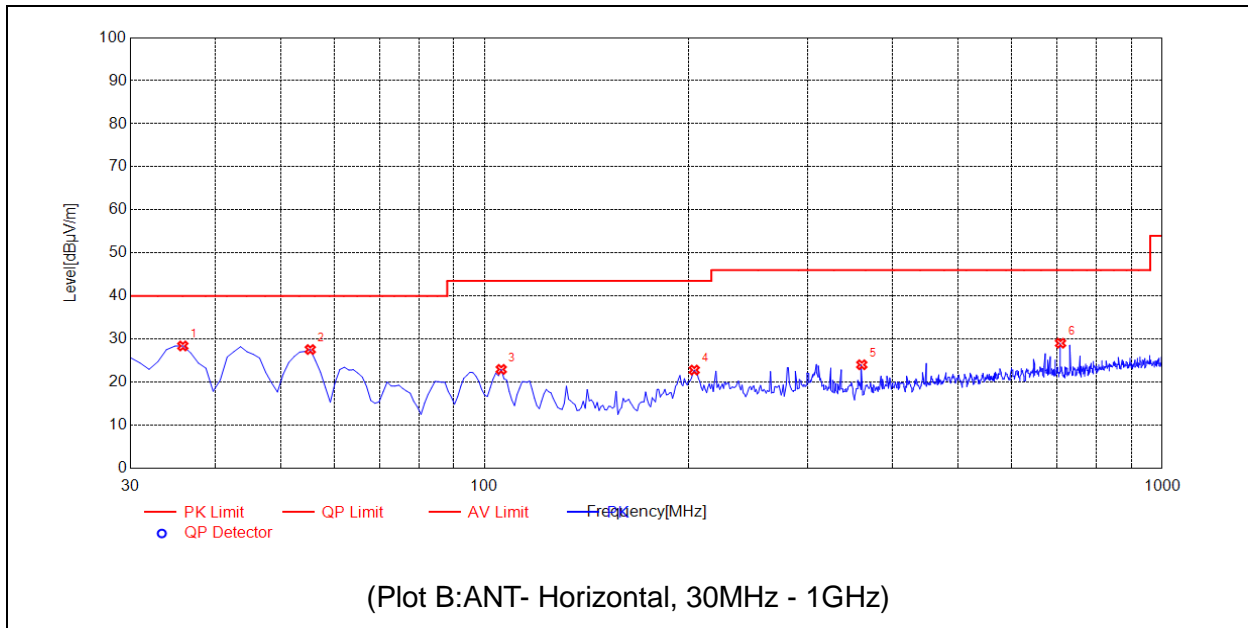
Note: All radiated emission tests were performed in X, Y, Z axis direction, and only the worst axis test condition was recorded in this test report.



No.	Fre. MHz	Pk dBµV/m	QP dBµV/m	AV dBµV/m	Limit-PK dBµV/m	Limit-QP dBµV/m	Limit-AV dBµV/m	ANT	Verdict
1	34.8549	29.80	N.A	N.A	N.A	40.00	N.A	V	PASS
2	44.5646	28.58	N.A	N.A	N.A	40.00	N.A	V	PASS
3	55.2452	27.43	N.A	N.A	N.A	40.00	N.A	V	PASS
4	279.5395	31.09	N.A	N.A	N.A	46.00	N.A	V	PASS
5	448.4885	26.59	N.A	N.A	N.A	46.00	N.A	V	PASS
6	864.0641	26.37	N.A	N.A	N.A	46.00	N.A	V	PASS

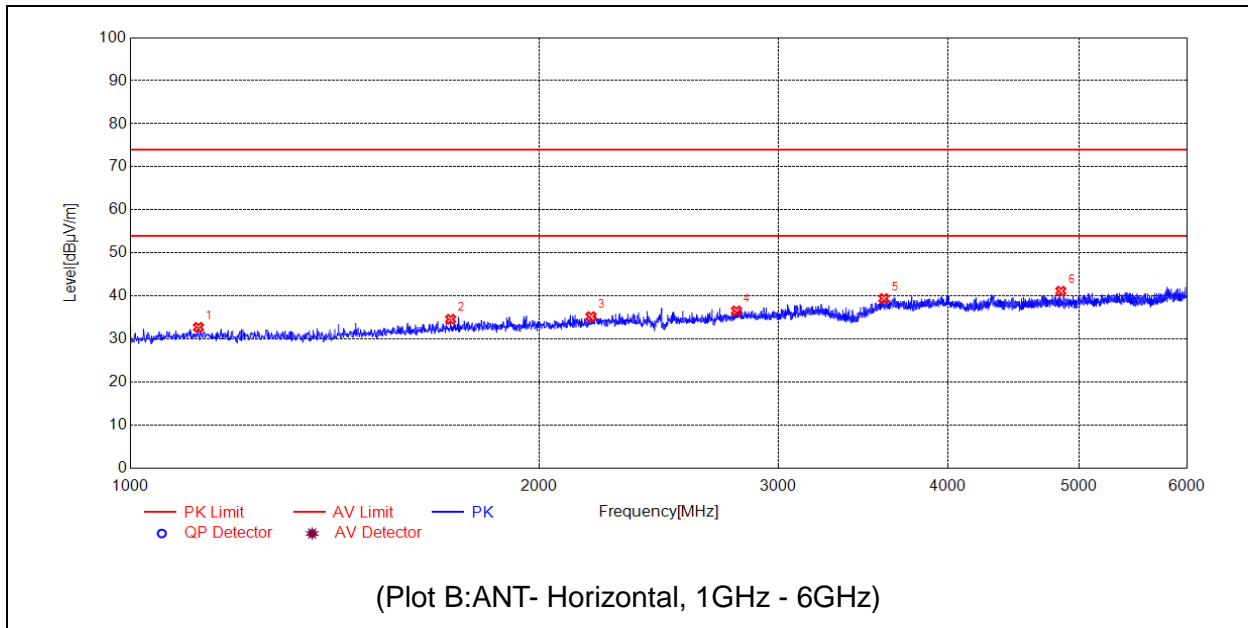


No.	Fre. MHz	Pk dBµV/m	QP dBµV/m	AV dBµV/m	Limit-PK dBµV/m	Limit-QP dBµV/m	Limit-AV dBµV/m	ANT	Verdict
1	1081.0162	31.91	N.A	N.A	74.00	N.A	54.00	V	PASS
2	1427.0854	33.86	N.A	N.A	74.00	N.A	54.00	V	PASS
3	2206.2412	35.93	N.A	N.A	74.00	N.A	54.00	V	PASS
4	3057.4115	37.48	N.A	N.A	74.00	N.A	54.00	V	PASS
5	4078.6157	40.95	N.A	N.A	74.00	N.A	54.00	V	PASS
6	5238.8478	41.16	N.A	N.A	74.00	N.A	54.00	V	PASS



No.	Fre. MHz	Pk dBµV/m	QP dBµV/m	AV dBµV/m	Limit-PK dBµV/m	Limit-QP dBµV/m	Limit-AV dBµV/m	ANT	Verdict
1	35.8258	28.41	N.A	N.A	N.A	40.00	N.A	H	PASS
2	55.2452	27.58	N.A	N.A	N.A	40.00	N.A	H	PASS
3	105.7357	22.97	N.A	N.A	N.A	43.50	N.A	H	PASS
4	203.8038	22.82	N.A	N.A	N.A	43.50	N.A	H	PASS
5	360.1301	24.05	N.A	N.A	N.A	46.00	N.A	H	PASS
6	707.7377	29.05	N.A	N.A	N.A	46.00	N.A	H	PASS

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No.	Fre. MHz	Pk dBµV/m	QP dBµV/m	AV dBµV/m	Limit-PK dBµV/m	Limit-QP dBµV/m	Limit-AV dBµV/m	ANT	Verdict
1	1122.0244	32.75	N.A	N.A	74.00	N.A	54.00	H	PASS
2	1721.1442	34.62	N.A	N.A	74.00	N.A	54.00	H	PASS
3	2184.2368	35.22	N.A	N.A	74.00	N.A	54.00	H	PASS
4	2795.3591	36.57	N.A	N.A	74.00	N.A	54.00	H	PASS
5	3589.5179	39.43	N.A	N.A	74.00	N.A	54.00	H	PASS
6	4846.7694	41.15	N.A	N.A	74.00	N.A	54.00	H	PASS

Annex A Photographs of Test Setup

1. Radiated Field Strength Measurement(30MHz-1GHz)



2. Radiated Field Strength Measurement(above 1GHz)





Annex B Test Uncertainty

The uncertainty is calculated using the methods suggested in the "Guide to the Expression of Uncertainty in Measurement" (GUM) published by ISO.

Uncertainty of Radiated Emission Measurement

Measuring Uncertainty for a Level of Confidence of 95%(U=2Uc(y))	30MHz-200MHz	±5.06dB
	200MHz-1000MHz	±5.24dB
	1GHz-6GHz	±5.18dB
	6GHz-18GHz	±5.48dB



Annex C Testing Laboratory Information

1. Identification of the Responsible Testing Laboratory

Company Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Department:	Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Responsible Test Lab Manager:	Mr. Su Feng
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China

3. Accreditation Certificate

Accredited Testing Laboratory:	The FCC designation number is CN1192. Test firm registration number is 226174. (Shenzhen Morlab Communications Technology Co., Ltd.)
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4. Test Software Utilized

Model	Version Number	Producer
JS32-RE	Version 2.0.2.0	Tonscend

**5. Test Equipments Utilized**

Description	Manufacturer	Model	Serial No.	Cal. Date	Due. Date
MXE EMI Receiver	Agilent	N9038A	MY54130016	2018.08.04	2019.08.03
Test Antenna - Bi-Log	Schwarzbeck	VULB 9163	9163-519	2018.05.08	2019.05.07
Test Antenna - Horn	Schwarzbeck	BBHA 9120D	1774	2018.03.03	2019.03.02
Radiated Disturbance Preampfier	rflight	S020180L320 3	61171/61172	2018.07.12	2019.07.11
Radiated Disturbance Preampfier	rflight	S10M100L38 02	46732	2018.07.12	2019.07.11
Semi-Anechoic Chamber	CRT	9m*6m*6m	N/A	2017.01.12	2020.01.11

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