FCC TEST REPORT

FCC ID: 2AAU3TM77

Product Name:	TIRE PRESSURE MONITORING SYSTEM
Trademark:	N/A
Model Number:	TM77 TM-A1A, TM88, TM99, TT-500, TT-600, JET-M2-300M, JET-M-300M, JET-M2-700M, JET-M-700M
Prepared For: Address:	Shenzhen Jetson Electronic Technologies Co.,Ltd Rm1108 East Block 4,Seg sci-tech park,North Huaqiang Road, Shenzhen, China
Prepared By: Address:	Shenzhen BCTC Technology Co., Ltd. NO.101, Yousong Road, Longhua New District, Shenzhen, Guangdong, P.R.China
Report No.:	BCTC-160608360E

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Shenzhen BCTC Technology Co., Ltd.

Applicant	:	Shenzhen Jetson Electronic Technologies Co.,Ltd
Address	:	Rm1108 East Block 4,Seg sci-tech park,North Huaqiang Road, Shenzhen, China
Manufacturer	:	Shenzhen Jetson Electronic Co., Ltd.
Address	:	6/F, Block A, Jingdingsheng Industirial Park Qinghua Road, Bao'an District, Shenzhen 518109, China
EUT	:	TIRE PRESSURE MONITORING SYSTEM
Model Number	:	TM77 TM-A1A, TM88, TM99, TT-500, TT-600, JET-M2-300M, JET-M-300M, JET-M2-700M, JET-M-700M
Trademark:	:	N/A
Test Date	:	Jun. 28 - Jul. 5, 2016
Date of Report	:	Jul. 7, 2016
Test Result:	:	The equipment under test was found to be compliance with the requirements of the standards applied.

Test Procedure Used:

FCC Part 15 B

ANSI C63.4:2014

Testing Engineer : Sky Huang

Sky Huang

Reviewer (Supervisor) : Jade Yang

Jade Yang

Approved & Authorized Signer(Manager) : Carson Zhang

Carson Zhang

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.249) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	N/A	
15.209	Radiated Emission	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

2. GENERAL INFORMATION

1.1. Description of Device (EUT)

EUT	:	TIRE PRESSURE MONITORING SYSTEM
Model Number	:	TM77 TM-A1A, TM88, TM99, TT-500, TT-600, JET-M2-300M, JET-M-300M, JET-M2-700M, JET-M-700M
Trademark	:	N/A
Model Difference	:	All the models are the same circuit and RF module, except the model names.
Power Supply	:	DC 3.7V DC 5V from adapter
Modulation type	:	ASK
Antenna type	:	External antenna
Antenna gain	:	2dBi
Work Frequency	:	434MHz
Adapter(provide by test lab)	:	Model:BI-050100-C I/P:DC12-30V O/P: DC 5V 1A DC Line: unshielded, undetachable 1.0m

1.2. Tested System Details

TX Part: TIRE PRESSURE SENSOR
Manufacturer: Shenzhen Jetson Electronic Co., Ltd.
Model: JET-TMT-02

1.3. Test Uncertainty

Conducted Emission Uncertainty	:	±2.66dB
Radiated Emission Uncertainty	:	±4.26dB

1.4. Independent Operation Modes

Test Mode	Description
Mode 1	RX Mode(434MHz)

This product for 434MHz is receiver only.

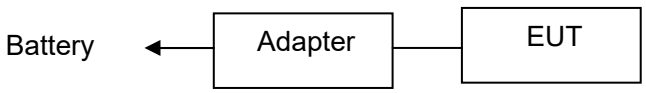
1.5. Test Facility

Site Description

Name of Firm	:	Shenzhen BCTC Technology Co., Ltd.
Site Location	:	NO.101, Yousong Road, Longhua New District, Shenzhen, Guangdong, P.R.China
Lab Qualifications	:	Certificated by Industry Canada Registration No.: 12655A Date of registration: January 19, 2015 Certificated by FCC, USA Registration No.: 187086 Date of registration: November 28, 2014 Certificated by CNAS China Registration No.: CNAS L6046 Date of registration: February 3, 2013

1.6. Block Diagram of Test Set-up

System Diagram of Connections between EUT and Simulators



(EUT: TIRE PRESSURE MONITORING SYSTEM)

3. TEST INSTRUMENT USED

For Conducted Emission at the mains terminals Test

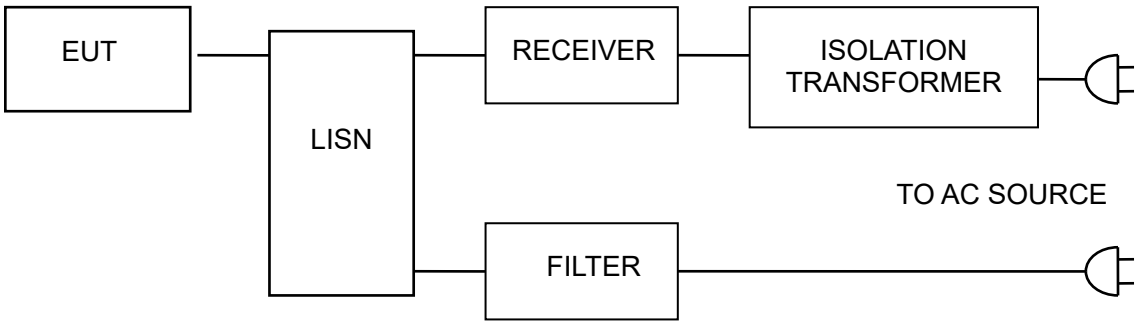
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
843 Shielded Room	ChengYu	843 Room	843	2015.08.24	2016.08.23
EMI Receiver	R&S	ESCI	101421	2015.08.24	2016.08.23
LISN	Schwarzbeck	NSLK8127	8127739	2015.08.24	2016.08.23
Attenuator	R&S	ESH3-Z2	BCTC021E	2015.08.24	2016.08.23
843 Cable 1#	FUJIKURA	843C1#	001	2015.08.24	2016.08.23

For Radiated Emission Test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Test Receiver	R&S	ESPI	101318	2015.08.24	2016.08.23
System Simulator	Agilent	E5515C	GB43130252	2015.08.24	2016.08.23
Power Splitter	Weinschel	1506A	NW534	2015.08.24	2016.08.23
Bilog Antenna	TESEQ	CBL6111D	31217	2015.08.24	2016.08.23
Loop antenna	ARA	PLA-1030/B	1029	2015.08.24	2016.08.23
Spectrum Analyzer	Agilent	E4411B	MY4511235	2015.08.24	2016.08.23
Signal Amplifier	SONOMA	313	187022	2015.08.24	2016.08.23
Signal Amplifier	Agilent	8449B	3008A00213	2015.08.24	2016.08.23
RF Cable	R&S	R203	R20X	2015.08.24	2016.08.23
MULTI-DEVICE Controller	ETS-LINDGREEN	31250	126821	N/A	N/A
Horn Antenna	EM	EM-AH-10180	2011071402	2015.08.25	2016.08.24
Horn Antenna	Schwarzbeck	BBHA 9170	9170-181	2015.08.25	2016.08.24
Spectrum Analyzer	Agilent	E4407B	MY45108040	2015.08.25	2016.08.24
Signal Amplifier	DAZE	ZN3380B	11235	2015.08.25	2016.08.24
DC Power Supply	LongWei	PS-305D	010965682	2015.08.25	2016.08.24

4. CONDUCTED EMISSION AT THE MAINS TERMINALS TEST

3.1. Block Diagram Of Test Setup



3.2. Test Standard

FCC PART 15 B

3.3. Power Line Conducted Emission Limit

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 ~ 0.50	66 ~ 56*	56 ~ 46*
0.50 ~ 5.00	56	46
5.00 ~ 30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.
2. The lower limit shall apply at the transition frequencies.

3.4. EUT Configuration on Test

The following equipments are installed on conducted emission test to meet FCC PART 15 B requirement and operating in a manner which tends to maximize its emission characteristics in a normal application.

3.5. Operating Condition of EUT

3.5.1 Setup the EUT and simulators as shown in Section 3.1.
3.5.2 Turn on the power of all equipments.
3.5.3 Let the EUT work in test modes and test it.

3.6. Test Procedure

The EUT is put on the ground and connected to the AC mains through a Artificial Mains Network (AMN). This provided a 50ohm coupling impedance for the tested equipments. Both sides of AC line are checked to find out the maximum conducted emission levels according to the **FCC PART 15 B** regulations during conducted emission test.

The bandwidth of the test receiver (R&S Test Receiver ESCI) is set at 10KHz.

The frequency range from 150 KHz to 30 MHz is investigated.

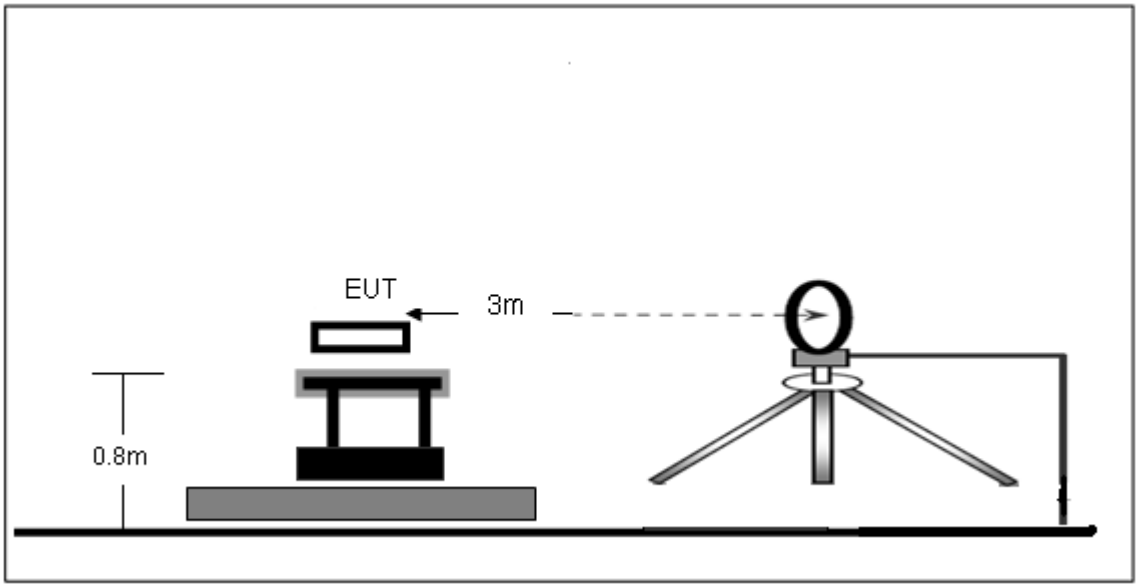
3.7. Test Result

The EUT's Power provide by battery, no requirements for this item.

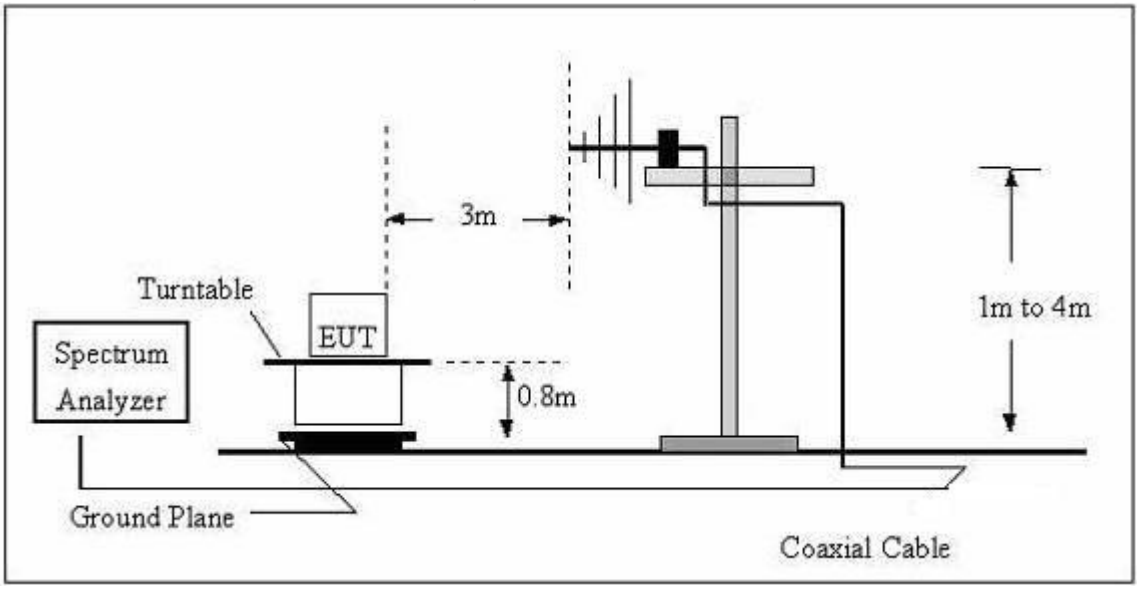
5. RADIATION EMISSION TEST

4.1. Block Diagram of Test Setup

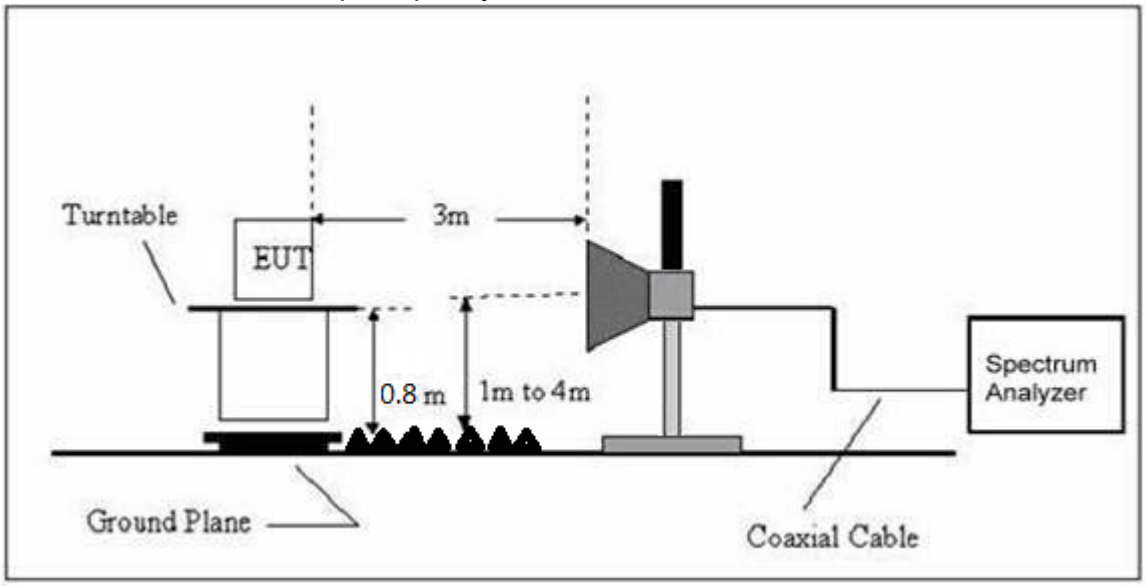
（A）Radiated Emission Test-Up Frequency Below 30MHz



（B）Radiated Emission Test-Up Frequency 30MHz~1GHz



（C）Radiated Emission Test-Up Frequency Above 1GHz



4.2. Test Standard

FCC PART 15 B

4.3. Radiation Limit

FREQUENCY (MHz)	DISTANCE (Meters)	FIELD STRENGTHS LIMITS (dBμV/m)
30 ~ 88	3	40.0
88 ~ 216	3	43.5
216 ~ 960	3	46.0
960 ~ 1000	3	54.0

4.4. EUT Configuration on Test

The FCC PART 15 B regulations test method must be used to find the maximum emission during radiated emission test.
The configuration of EUT is the same as used in conducted emission test. Please refer to Section 2.2.

4.5. Operating Condition of EUT

Same as conducted emission test, which is listed in Section 2.2 except the test set up replaced as Section 4.1.

4.6. Test Procedure

The EUT and its simulators are placed on a turned table that is 0.8 meter above the ground. The turned table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna that is mounted on the antenna tower. The antenna

can move up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated biconical and log periodical antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on test. In order to find the maximum emission levels, the interface cable must be manipulated according to FCC PART 15 B on radiated emission test.
The bandwidth setting on the field strength meter (R&S Test Receiver ESCI) is set at 120KHz below 1GHz, set at 1MHz above 1GHz
The frequency range from 30MHz to 1000MHz is checked.

The highest frequency of the internal sources of the EUT was 434MHz, so the measurement was only made up to 5GHz.

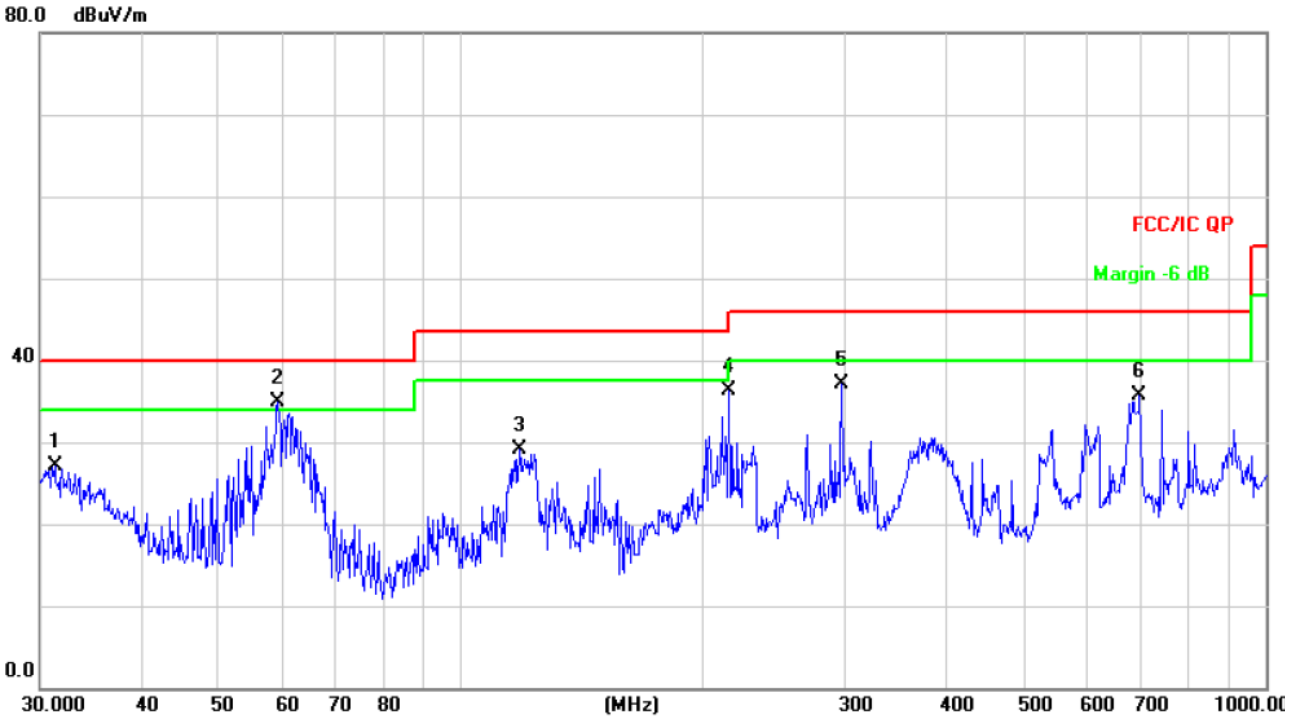
4.7. Test Result

PASS

Please refer to the following page.

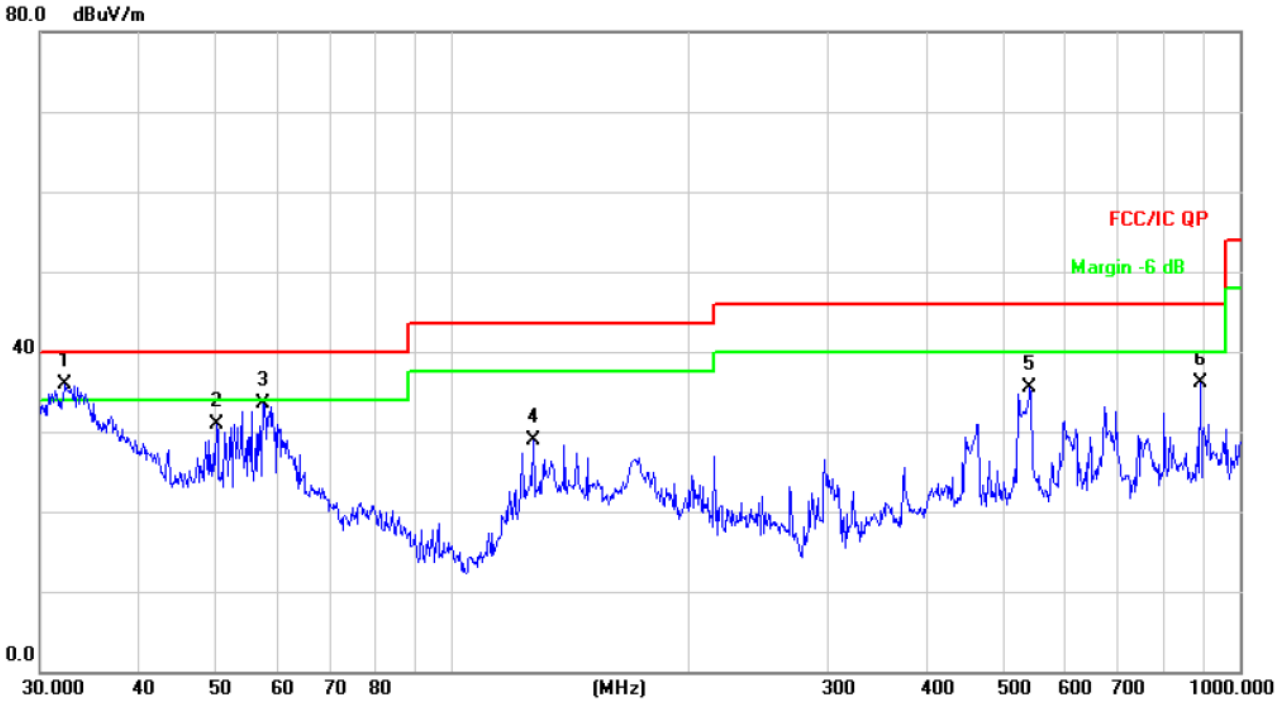
Below 1GHz

Radiation Emission Test Data			
Temperature:	24.5 ℃	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Horizontal
Test Voltage :	DC 12V	Test Mode:	RX Mode



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		31.2893	35.32	-8.20	27.12	40.00	-12.88	QP			
2	*	59.2325	46.33	-11.45	34.88	40.00	-5.12	QP			
3		118.1862	44.02	-14.88	29.14	43.50	-14.36	QP			
4		215.2678	52.05	-15.77	36.28	43.50	-7.22	QP			
5		297.2241	49.82	-12.66	37.16	46.00	-8.84	QP			
6		696.8567	40.11	-4.44	35.67	46.00	-10.33	QP			

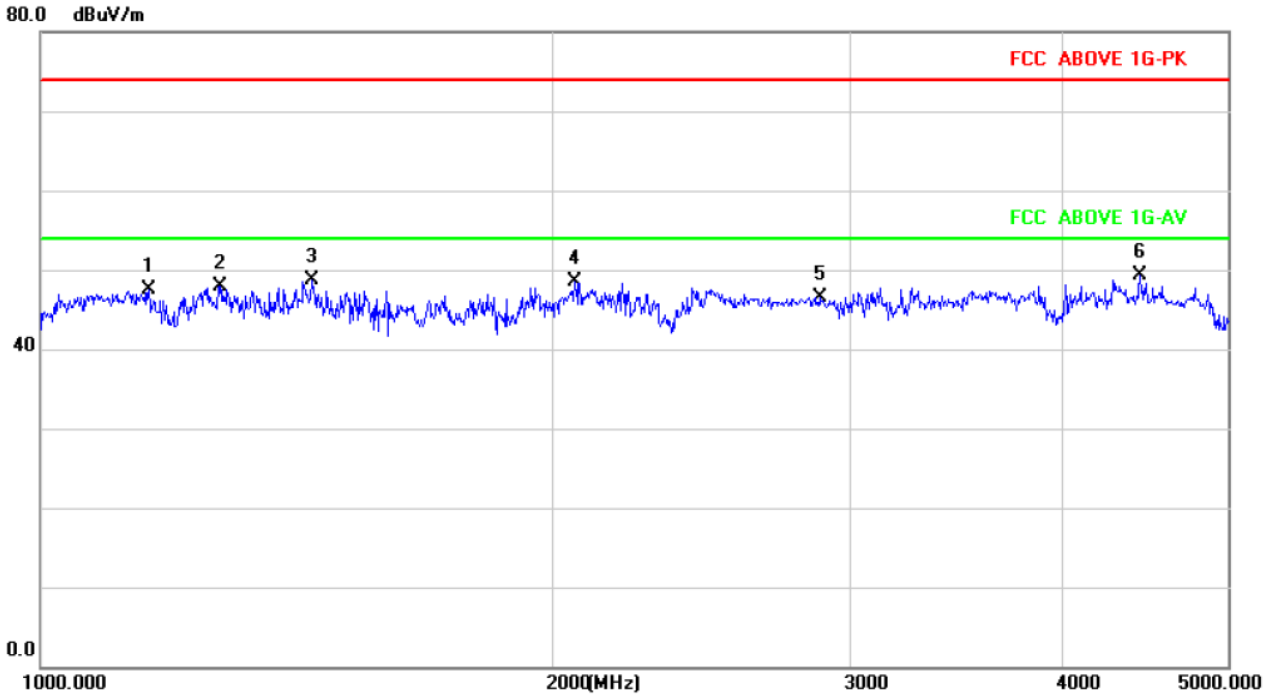
Radiation Emission Test Data			
Temperature:	24.5 ℃	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Vertical
Test Voltage :	DC 12V	Test Mode:	RX Mode



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	*	32.2925	44.29	-8.34	35.95	40.00	-4.05	QP			
2		50.2324	41.25	-10.33	30.92	40.00	-9.08	QP			
3		57.5939	44.86	-11.32	33.54	40.00	-6.46	QP			
4		126.7723	43.26	-14.31	28.95	43.50	-14.55	QP			
5		541.3725	42.82	-7.35	35.47	46.00	-10.53	QP			
6		890.7278	37.60	-1.57	36.03	46.00	-9.97	QP			

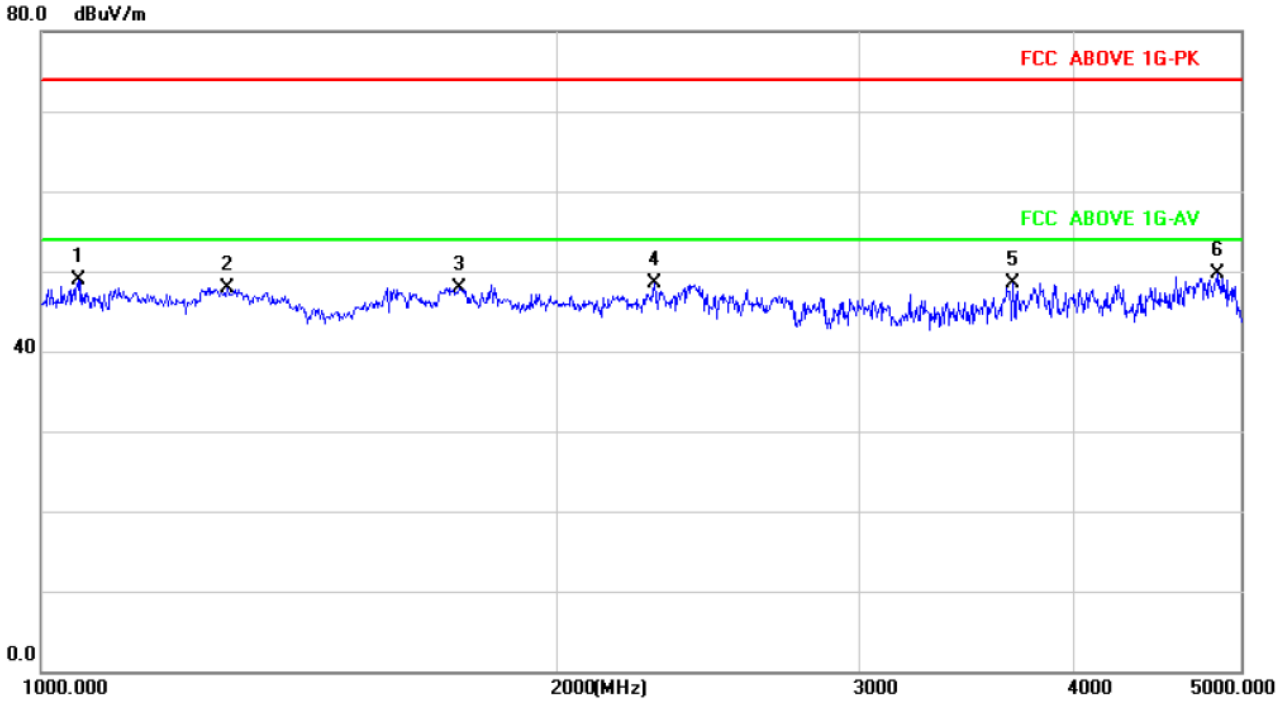
Above1GHz

Radiation Emission Test Data			
Temperature:	24.5 ℃	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Horizontal
Test Voltage :	DC 3.7V	Test Mode:	RX Mode



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1157.727	35.11	12.34	47.45	74.00	-26.55	peak			
2		1275.101	35.55	12.43	47.98	74.00	-26.02	peak			
3		1443.328	36.18	12.57	48.75	74.00	-25.25	peak			
4		2063.177	35.33	13.15	48.48	74.00	-25.52	peak			
5		2874.249	31.66	14.83	46.49	74.00	-27.51	peak			
6	*	4438.602	30.43	18.91	49.34	74.00	-24.66	peak			

Radiation Emission Test Data			
Temperature:	24.5 ℃	Relative Humidity:	54%
Pressure:	1009hPa	Phase :	Vertical
Test Voltage :	DC 3.7V	Test Mode:	RX Mode



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Over		Antenna Height	Table Degree	
		MHz	dBuV	dB/m	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1051.158	36.61	12.25	48.86	74.00	-25.14	peak			
2		1283.336	35.46	12.44	47.90	74.00	-26.10	peak			
3		1750.820	35.12	12.82	47.94	74.00	-26.06	peak			
4		2276.007	34.92	13.60	48.52	74.00	-25.48	peak			
5		3682.695	31.11	17.36	48.47	74.00	-25.53	peak			
6	*	4849.417	30.40	19.39	49.79	74.00	-24.21	peak			

6. EUT PHOTOGRAPHS

EUT Photo 1

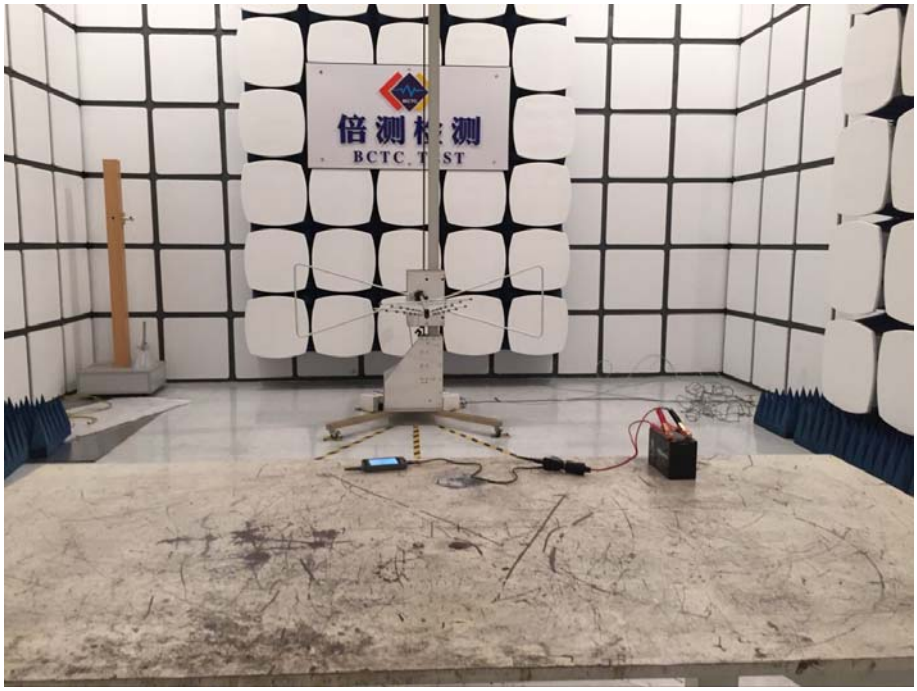
EUT Photo 2

EUT Photo 3

EUT Photo 4

7. EUT TEST PHOTOGRAPHS

RE



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