FCC TEST REPORT(Bluetooth)

for

AcrossTechs, LLC

GSM bar phone

Model Number: 201401,C101A

FCC ID: 2AAUA201401

Prepared for : AcrossTechs, LLC

Address : 13601 Preston Road, Suite W615, Dallas, TX 75240 USA

Prepared by : Keyway Testing Technology Co., Ltd.

Address : Baishun Industrial Zone, Zhangmutou Town,

Dongguan, Guangdong, China

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Report No. : 14KWE05143501F Date of Test : May 16~25, 2014 Date of Report : May 25, 2014

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Keyway Testing Technology Co., Ltd.

Applicant: AcrossTechs, LLC

Address: 13601 Preston Road, Suite W615, Dallas, TX 75240 USA

Manufacturer: Honsung International Industry Ltd.

Address: 2FL, East Wing, WanYuan Building, Shangbu Industry Park,

Hongli Road, Futian District, Shenzhen, PRC

E.U.T: GSM bar phone

Model Number: 201401,C101A

Trade Name: AcrossTechs Serial No.: -----

Date of Receipt: May 15, 2014 **Date of Test:** May 16~25, 2014

Test Specification: FCC Part 15, Subpart C Section 15.249: Oct. 1, 2013

ANSI C63.4:2009

Test Result: The equipment under test was found to be compliance with the

requirements of the standards applied.

Issue Date: May 25, 2014

Tested by:

Reviewed by:

Approved by:

Andy Gao / Engineer

Jade Yang/ Supervisor

Chris Du / Manager

Other Aspects:

None.

Abbreviations: OK/P=passed

fail/F=failed

n.a/N=not applicable

E.U.T=equipment under tested

This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Keyway Testing Technology Co., Ltd.

1. TEST SUMMARY

Test Items	Test Requirement	Result
Conducted Emissions	15.207	PASS
Radiated Emissions	15.209/15.249(a)(d)	PASS
20dB Bandwidth	15.249	PASS
Emissions from out of band	15.249(d)	PASS
Antenna Requirement	15.203	PASS

2.GENERAL PRODUCT INFORMATION

2.1. Product Function

Refer to Technical Construction Form and User Manual.

2.2. Description of Device (EUT)

Product Name:	GSM bar phone				
Model No.:	201401,C101A				
	Bluetooth:2402~2480MHz				
	GSM 850MHz:				
	Tx: 824.20 - 848.80MHz (at intervals of 200kHz);				
Operation Frequency:	Rx: 869.20 - 893.80MHz (at intervals of 200kHz)				
	GSM 1900MHz:				
	Tx: 1850.20 - 1909.80MHz (at intervals of 200kHz);				
	Rx: 1930.20 - 1989.80MHz (at intervals of 200kHz)				
Channel numbers:	Bluetooth:79 Channels				
Channel separation:	Bluetooth:1M				
BT version:	2.0				
Mark lada a fash salar	Bluetooth: FHSS(GFSK 1Mbps)				
Modulation technology:	GSM Mode with GMSK Modulation				
Antenna Type:	Integral Antenna				
Antenna gain:	1dBi (BT),1.2dBi (GSM)				
Davier augusti	DC 5.2V from adapter				
Power supply:	Rechargeable lithium-ion battery 3.7V				

2.3. Difference between Model Numbers

The product different for model number and outlook color.

2.4. Independent Operation Modes

The basic operation modes are:

2.4.1. EUT work continues TX mode and frequency as below:

Modulation	Channel	Frequency
GFSK	Low	2402MHz
	Middle	2441MHz
	High	2480MHz

Note: Bluetooth signal has 3 packages DH1, DH3, DH5, DH5 package is largest; we are testing DH5 in the report.

2.5. Test Supporting System

AC Adapter:

Provide: Honsung International Industry Ltd.

M/N: HS-1000

I/P: AC 100~240V 0.2A
O/P: DC 5.2V 0.5A
FCC Approve: FCC VOC

2.6. Test Facilities

Lab Qualifications:

Certificated by Industry Canada

Registration No.: 9868A

Date of registration: December 8, 2011

Certificated by FCC, USA Registration No.: 370994

Date of registration: February 21, 2012

Certificated by CNAS China Registration No.: CNAS L5783 Date of registration: August 8, 2012

2.7. List of Test and Measurement Instruments

2.7.1. For conducted emission at the mains terminals test

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	EMI Test Receiver Rohde&Schwarz		101156	Apr. 27,14	Apr. 27,15
Artificial Mains Network	Rohde&Schwarz	ENV216	101315	Apr. 27,14	Apr. 27,15
Artificial Mains Network (AUX)	Rohde&Schwarz	ENV216	101314	Apr. 27,14	Apr. 27,15
RF Cable	FUJIKURA	3D-2W	944 Cable	Apr. 27,14	Apr. 27,15

2.7.2. For radiated emission test

Equipment Manufacturer Model No. Serial No. Last Cal. Next Cal. EMI Test Receiver Rohde&Schwarz ESCI 101156 Apr. 27,14 Apr. 27,15 System Simulator Agilent E5515C GB43130245 Apr. 30,14 Apr. 30,15 Power Splitter Weinschel 1506A NW425 Apr. 30,14 Apr. 30,15 Bilog Antenna ETS-LINDGREEN 3142D 135452 Apr. 27,14 Apr. 27,15 Loop antenna teseq HLA6120 22032 Apr. 30,14 Apr. 27,15 Spectrum Analyzer Agilent E4411B MY4511304 Apr. 27,14 Apr. 27,15 3m Semi-anechoic Chamber ETS-LINDGREEN 966 KW01 Apr. 27,14 Apr. 27,15 Signal Amplifier SONOMA 310 187016 Apr. 27,14 Apr. 27,15 Signal Amplifier Agilent 8449B 3008A00251 Apr. 27,14 Apr. 27,15 RF Cable IMRO IMRO-400 966 Cable 1# N/A N/A MULTI-DEVICE Control						
System Simulator Agilent E5515C GB43130245 Apr. 30,14 Apr. 30,15 Power Splitter Weinschel 1506A NW425 Apr. 30,14 Apr. 30,15 Bilog Antenna ETS-LINDGREEN 3142D 135452 Apr. 27,14 Apr. 27,15 Loop antenna teseq HLA6120 22032 Apr. 30,14 Apr. 30,15 Spectrum Analyzer Agilent E4411B MY4511304 Apr. 27,14 Apr. 27,15 3m Semi-anechoic Chamber ETS-LINDGREEN 966 KW01 Apr. 27,14 Apr. 27,15 Signal Amplifier SONOMA 310 187016 Apr. 27,14 Apr. 27,15 Signal Amplifier Agilent 8449B 3008A00251 Apr. 27,14 Apr. 27,15 RF Cable IMRO IMRO-400 966 Cable 1# N/A N/A MULTI-DEVICE Controller ETS-LINDGREEN 2090 126913 N/A N/A Horn Antenna DAZE ZN30701 11003 Apr. 27,14 Apr. 27,15 Spectrum Analyzer Agi	Equipment Manufacturer		Model No.	Serial No.	Last Cal.	Next Cal.
Power Splitter Weinschel 1506A NW425 Apr. 30,14 Apr. 30,15 Bilog Antenna ETS-LINDGREEN 3142D 135452 Apr. 27,14 Apr. 27,15 Loop antenna teseq HLA6120 22032 Apr. 30,14 Apr. 30,15 Spectrum Analyzer Agilent E4411B MY4511304 Apr. 27,14 Apr. 27,15 3m Semi-anechoic Chamber Chamber Bers-LINDGREEN 966 KW01 Apr. 27,14 Apr. 27,15 Signal Amplifier SONOMA 310 187016 Apr. 27,14 Apr. 27,15 Signal Amplifier Agilent 8449B 3008A00251 Apr. 27,14 Apr. 27,15 RF Cable IMRO IMRO-400 966 Cable 1# N/A N/A MULTI-DEVICE Controller ETS-LINDGREEN 2090 126913 N/A N/A Horn Antenna DAZE ZN30701 11003 Apr. 27,14 Apr. 27,15 Spectrum Analyzer Agilent 8593E 3911A04271 Apr. 27,14 Apr. 27,15 Spectrum Ana	EMI Test Receiver	Test Receiver Rohde&Schwarz		101156	Apr. 27,14	Apr. 27,15
Bilog Antenna ETS-LINDGREEN 3142D 135452 Apr. 27,14 Apr. 27,15 Loop antenna teseq HLA6120 22032 Apr. 30,14 Apr. 30,15 Spectrum Analyzer Agilent E4411B MY4511304 Apr. 27,14 Apr. 27,15 3m Semi-anechoic Chamber ETS-LINDGREEN 966 KW01 Apr. 27,14 Apr. 27,15 Signal Amplifier SONOMA 310 187016 Apr. 27,14 Apr. 27,15 RF Cable IMRO IMRO-400 966 Cable 1# N/A N/A MULTI-DEVICE Controller ETS-LINDGREEN 2090 126913 N/A N/A Horn Antenna DAZE ZN30701 11003 Apr. 27,14 Apr. 27,15 Spectrum Analyzer Agilent 8593E 3911A04271 Apr. 27,14 Apr. 27,15 Spectrum Analyzer Agilent E4408B MY44211125 Apr. 30,14 Apr. 30,15 Signal Amplifier DAZE ZN3380C 11001 Apr. 27,14 Apr. 27,15 Signal Amplifier DAZ	System Simulator	Agilent	E5515C	GB43130245	Apr. 30,14	Apr. 30,15
Loop antenna teseq HLA6120 22032 Apr. 30,14 Apr. 30,15 Spectrum Analyzer Agilent E4411B MY4511304 Apr. 27,14 Apr. 27,15 3m Semi-anechoic Chamber ETS-LINDGREEN 966 KW01 Apr. 27,14 Apr. 27,15 Signal Amplifier SONOMA 310 187016 Apr. 27,14 Apr. 27,15 RF Cable IMRO IMRO-400 966 Cable 1# N/A N/A MULTI-DEVICE Controller ETS-LINDGREEN 2090 126913 N/A N/A Horn Antenna DAZE ZN30701 11003 Apr. 27,14 Apr. 27,15 Spectrum Analyzer Agilent 8593E 3911A04271 Apr. 27,14 Apr. 27,15 Signal Amplifier DAZE ZN3380C 11001 Apr. 27,14 Apr. 27,15 Signal Amplifier DAZE ZN3380C 11001 Apr. 27,14 Apr. 27,15 Signal Amplifier DAZE ZN3380C 11001 Apr. 27,14 Apr. 27,15 High Pass filter Micro	Power Splitter	Weinschel	1506A	NW425	Apr. 30,14	Apr. 30,15
Spectrum Analyzer Agilent E4411B MY4511304 Apr. 27,14 Apr. 27,15 3m Semi-anechoic Chamber ETS-LINDGREEN 966 KW01 Apr. 27,14 Apr. 27,15 Signal Amplifier SONOMA 310 187016 Apr. 27,14 Apr. 27,15 RF Cable IMRO IMRO-400 966 Cable 1# N/A N/A MULTI-DEVICE Controller ETS-LINDGREEN 2090 126913 N/A N/A Horn Antenna DAZE ZN30701 11003 Apr. 27,14 Apr. 27,15 Spectrum Analyzer Agilent 8593E 3911A04271 Apr. 27,14 Apr. 27,15 Spectrum Analyzer Agilent E4408B MY44211125 Apr. 30,14 Apr. 27,15 Signal Amplifier DAZE ZN3380C 11001 Apr. 27,14 Apr. 27,15 Signal Amplifier DAZE ZN3380C 11001 Apr. 27,14 Apr. 27,15 High Pass filter Micro HPM50111 324216 Apr. 30,14 Apr. 30,15 Filter COM-MW	Bilog Antenna	ETS-LINDGREEN	3142D	135452	Apr. 27,14	Apr. 27,15
3m Semi-anechoic Chamber ETS-LINDGREEN 966 KW01 Apr. 27,14 Apr. 27,15 Signal Amplifier SONOMA 310 187016 Apr. 27,14 Apr. 27,15 Signal Amplifier Agilent 8449B 3008A00251 Apr. 27,14 Apr. 27,15 RF Cable IMRO IMRO-400 966 Cable 1# N/A N/A MULTI-DEVICE Controller ETS-LINDGREEN 2090 126913 N/A N/A Horn Antenna DAZE ZN30701 11003 Apr. 27,14 Apr. 27,15 Horn Antenna SCHWARZBECK BBHA9170 9170-068 Apr. 27,14 Apr. 27,15 Spectrum Analyzer Agilent 8593E 3911A04271 Apr. 27,14 Apr. 27,15 Spectrum Analyzer Agilent E4408B MY44211125 Apr. 30,14 Apr. 30,15 Signal Amplifier DAZE ZN3380C 11001 Apr. 27,14 Apr. 27,15 High Pass filter Micro HPM50111 324216 Apr. 30,14 Apr. 30,15 Filter COM-MW	Loop antenna	teseq	HLA6120	22032	Apr. 30,14	Apr. 30,15
Chamber ETS-LINDGREEN 966 KW01 Apr. 27,14 Apr. 27,15 Signal Amplifier SONOMA 310 187016 Apr. 27,14 Apr. 27,15 Signal Amplifier Agilent 8449B 3008A00251 Apr. 27,14 Apr. 27,15 RF Cable IMRO IMRO-400 966 Cable 1# N/A N/A MULTI-DEVICE Controller ETS-LINDGREEN 2090 126913 N/A N/A Horn Antenna DAZE ZN30701 11003 Apr. 27,14 Apr. 27,15 Horn Antenna SCHWARZBECK BBHA9170 9170-068 Apr. 27,14 Apr. 27,15 Spectrum Analyzer Agilent 8593E 3911A04271 Apr. 27,14 Apr. 27,15 Spectrum Analyzer Agilent E4408B MY44211125 Apr. 30,14 Apr. 30,15 Signal Amplifier DAZE ZN3380C 11001 Apr. 27,14 Apr. 27,15 High Pass filter Micro HPM50111 324216 Apr. 30,14 Apr. 30,15 Filter COM-MW <td< td=""><td>Spectrum Analyzer</td><td>Agilent</td><td>E4411B</td><td>MY4511304</td><td>Apr. 27,14</td><td>Apr. 27,15</td></td<>	Spectrum Analyzer	Agilent	E4411B	MY4511304	Apr. 27,14	Apr. 27,15
Signal Amplifier Agilent 8449B 3008A00251 Apr. 27,14 Apr. 27,15 RF Cable IMRO IMRO-400 966 Cable 1# N/A N/A MULTI-DEVICE Controller ETS-LINDGREEN 2090 126913 N/A N/A Horn Antenna DAZE ZN30701 11003 Apr. 27,14 Apr. 27,15 Horn Antenna SCHWARZBECK BBHA9170 9170-068 Apr. 27,14 Apr. 27,15 Spectrum Analyzer Agilent 8593E 3911A04271 Apr. 27,14 Apr. 27,15 Signal Amplifier DAZE ZN3380C 11001 Apr. 30,14 Apr. 30,15 Signal Amplifier DAZE ZN3380C 11001 Apr. 27,14 Apr. 27,15 High Pass filter Micro HPM50111 324216 Apr. 30,14 Apr. 30,15 Filter COM-MW ZBSF-C836.5-25-X KW032 Apr. 30,14 Apr. 30,15 Filter COM-MW ZBSF-C1747.5-75-X2 KW035 Apr. 30,14 Apr. 30,15 DC Power Supply LongWei		ETS-LINDGREEN	966	KW01	Apr. 27,14	Apr. 27,15
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MULTI-DEVICE Controller ETS-LINDGREEN 2090 126913 N/A N/A Horn Antenna DAZE ZN30701 11003 Apr. 27,14 Apr. 27,15 Horn Antenna SCHWARZBECK BBHA9170 9170-068 Apr. 27,14 Apr. 27,15 Spectrum Analyzer Agilent 8593E 3911A04271 Apr. 27,14 Apr. 27,15 Spectrum Analyzer Agilent E4408B MY44211125 Apr. 30,14 Apr. 30,15 Signal Amplifier DAZE ZN3380C 11001 Apr. 27,14 Apr. 27,15 High Pass filter Micro HPM50111 324216 Apr. 30,14 Apr. 30,15 Filter COM-MW ZBSF-C836.5-25-X KW032 Apr. 30,14 Apr. 30,15 Filter COM-MW ZBSF-C1747.5-75-X2 KW035 Apr. 30,14 Apr. 30,15 DC Power Supply LongWei PS-305D 010964729 Apr. 27,14 Apr. 27,15 Constant temperature and humidity box GF GTH-800-40-1P MAA9906-005 Apr. 27,14 Apr. 27,15	Signal Amplifier	Agilent	8449B	3008A00251	Apr. 27,14	Apr. 27,15
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Spectrum Analyzer Agilent E4408B MY44211125 Apr. 30,14 Apr. 30,15 Signal Amplifier DAZE ZN3380C 11001 Apr. 27,14 Apr. 27,15 High Pass filter Micro HPM50111 324216 Apr. 30,14 Apr. 30,15 Filter COM-MW ZBSF-C836.5-25-X KW032 Apr. 30,14 Apr. 30,15 Filter COM-MW ZBSF-C1747.5-75-X2 KW035 Apr. 30,14 Apr. 30,15 Filter COM-MW ZBSF-C1880-60-X2 KW037 Apr. 30,14 Apr. 30,15 DC Power Supply LongWei PS-305D 010964729 Apr. 27,14 Apr. 27,15 Constant temperature and humidity box GF GTH-800-40-1P MAA9906-005 Apr. 27,14 Apr. 27,15 Universal radio communication tester Rohde&Schwarz CMU200 3215420 Apr. 27,14 Apr. 27,15	Horn Antenna	SCHWARZBECK	BBHA9170	9170-068	Apr. 27,14	Apr. 27,15
Signal Amplifier DAZE ZN3380C 11001 Apr. 27,14 Apr. 27,15 High Pass filter Micro HPM50111 324216 Apr. 30,14 Apr. 30,15 Filter COM-MW ZBSF-C836.5-25-X KW032 Apr. 30,14 Apr. 30,15 Filter COM-MW ZBSF-C1747.5-75-X2 KW035 Apr. 30,14 Apr. 30,15 Filter COM-MW ZBSF-C1880-60-X2 KW037 Apr. 30,14 Apr. 30,15 DC Power Supply LongWei PS-305D 010964729 Apr. 27,14 Apr. 27,15 Constant temperature and humidity box GF GTH-800-40-1P MAA9906-005 Apr. 27,14 Apr. 27,15 Universal radio communication tester Rohde&Schwarz CMU200 3215420 Apr. 27,14 Apr. 27,15	Spectrum Analyzer	Agilent	8593E	3911A04271	Apr. 27,14	Apr. 27,15
High Pass filter Micro HPM50111 324216 Apr. 30,14 Apr. 30,15 Filter COM-MW ZBSF-C836.5-25-X KW032 Apr. 30,14 Apr. 30,15 Filter COM-MW ZBSF-C1747.5-75-X2 KW035 Apr. 30,14 Apr. 30,15 Filter COM-MW ZBSF-C1880-60-X2 KW037 Apr. 30,14 Apr. 30,15 DC Power Supply PS-305D 010964729 Apr. 27,14 Apr. 27,15 Constant temperature and humidity box GF GTH-800-40-1P MAA9906-005 Apr. 27,14 Apr. 27,15 Universal radio communication tester Rohde&Schwarz CMU200 3215420 Apr. 27,14 Apr. 27,15	Spectrum Analyzer	Agilent	E4408B	MY44211125	Apr. 30,14	Apr. 30,15
Filter COM-MW ZBSF-C836.5-25-X KW032 Apr. 30,14 Apr. 30,15 Filter COM-MW ZBSF-C1747.5-75-X2 KW035 Apr. 30,14 Apr. 30,15 Filter COM-MW ZBSF-C1880-60-X2 KW037 Apr. 30,14 Apr. 30,15 DC Power Supply LongWei PS-305D 010964729 Apr. 27,14 Apr. 27,15 Constant temperature and humidity box GF GTH-800-40-1P MAA9906-005 Apr. 27,14 Apr. 27,15 Universal radio communication tester Rohde&Schwarz CMU200 3215420 Apr. 27,14 Apr. 27,15	Signal Amplifier	DAZE	ZN3380C	11001	Apr. 27,14	Apr. 27,15
Filter COM-MW ZBSF-C1747.5-75-X2 KW035 Apr. 30,14 Apr. 30,15 Filter COM-MW ZBSF-C1880-60-X2 KW037 Apr. 30,14 Apr. 30,15 DC Power Supply LongWei PS-305D 010964729 Apr. 27,14 Apr. 27,15 Constant temperature and humidity box GF GTH-800-40-1P MAA9906-005 Apr. 27,14 Apr. 27,15 Universal radio communication tester Rohde&Schwarz CMU200 3215420 Apr. 27,14 Apr. 27,15	High Pass filter	Micro	HPM50111	324216	Apr. 30,14	Apr. 30,15
Filter COM-MW ZBSF-C1880-60-X2 KW037 Apr. 30,14 Apr. 30,15 DC Power Supply LongWei PS-305D 010964729 Apr. 27,14 Apr. 27,15 Constant temperature and humidity box GF GTH-800-40-1P MAA9906-005 Apr. 27,14 Apr. 27,15 Universal radio communication tester Rohde&Schwarz CMU200 3215420 Apr. 27,14 Apr. 27,15	Filter	COM-MW	ZBSF-C836.5-25-X	KW032	Apr. 30,14	Apr. 30,15
DC Power Supply LongWei PS-305D 010964729 Apr. 27,14 Apr. 27,15 Constant temperature and humidity box Universal radio communication tester CMU200 O10964729 Apr. 27,14 Apr. 27,15 Apr. 27,15 Apr. 27,15	Filter	COM-MW	ZBSF-C1747.5-75-X2	KW035	Apr. 30,14	Apr. 30,15
Constant temperature and humidity box Universal radio communication tester GF GTH-800-40-1P MAA9906-005 Apr. 27,14 Apr. 27,15 Apr. 27,15 Apr. 27,15 Apr. 27,15 Apr. 27,15	Filter	COM-MW	ZBSF-C1880-60-X2	KW037	Apr. 30,14	Apr. 30,15
and humidity box Universal radio communication tester GF GTH-800-40-1P MAA9906-005 Apr. 27,14 Apr. 27,15 CMU200 3215420 Apr. 27,14 Apr. 27,15	DC Power Supply	L ang\\/ai		010964729	Apr. 27,14	Apr. 27,15
communication tester Rohde&Schwarz CMU200 3215420 Apr. 27,14 Apr. 27,15	•	GF	GTH-800-40-1P	MAA9906-005	Apr. 27,14	Apr. 27,15
Splitter Agilent 11636B 0025164 Apr 27 14 Apr 27 15	Universal radio Robde&Schwarz		CMU200	3215420	Apr. 27,14	Apr. 27,15
Spilite	Splitter	Agilent	11636B	0025164	Apr. 27,14	Apr. 27,15

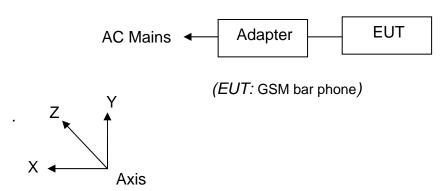
3. TEST SET-UP AND OPERATION MODES

3.1. Principle of Configuration Selection

Emission: The equipment under test (EUT) was configured to measure its highest possible radiation level. The test modes were adapted accordingly in reference to the Operating Instructions.

3.2. Block Diagram of Test Set-up

System Diagram of Connections between EUT and Simulators



Note:1: By preliminary testing and verifying three axis (X, Y and Z) position of EUT transmitted status, it was found that "X axis" position was the worst, then the final test was executed the worst condition and test data were recorded in this report. Test data as below.

Frequency	requency Field Strength		Antenna
(MHz)	Axis	(dBuV/m)	Polarization
2402	2402 X 103.40		Horizontal
2402	Y	100.67	Horizontal
2402	Z	101.29	Horizontal

- 3.3. Test Operation Mode and Test Software None.
- 3.4. Special Accessories and Auxiliary Equipment None.
- 3.5. Countermeasures to Achieve EMC Compliance None.

4. EMISSION TEST RESULTS

4.1. Conducted Emission at the Mains Terminals Test

4.1.1. Limit 15.209 limits

FREQUENCY OF EMISSION (MHz)	CONDUCTED	LIMIT (dBµV)
	Quasi-peak	Average
0.15-0.5 0.5-5 5-30	66 to 56 56 60	56 to 46 46 50

4.1.2. Test Setup

The EUT was put on a wooden table which was 0.8 m high above the ground and connected to the AC mains through the Artificial Mains Network (AMN). Where the mains cable supplied by the manufacture was longer than 0.8 m, the excess was folded back and forth parallel to the cable at the centre so as to form a bundle no longer than 0.4 m.

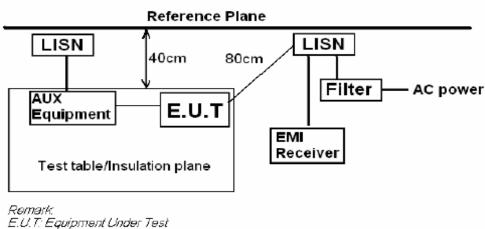
The EUT was kept 0.4 m from any other earthed conducting surface. Both sides of AC line were checked to find out the maximum conducted emission levels according to the test procedure during the conducted emission test.

The frequency range from 150 kHz to 30 MHz was investigated.

The bandwidth of the test receiver was set at 9 kHz.

Measurement Uncertainty: ±2.6 dB at a level of confidence of 95%.

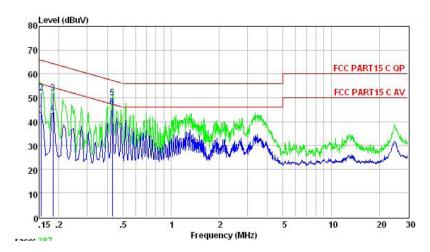
Pretest for all mode, The test data of the worst case condition(s) was reported on the following page.



LISN: Line Impedence Stabilization Network

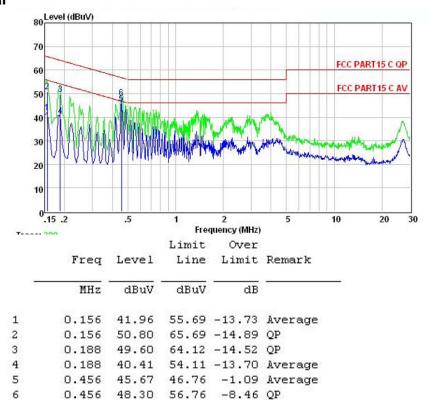
Test table height=0.8m

Line



	Freq	Level	107 80	Over Limit	Remark
0	MHz	dBuV	dBuV	dB	
1	0.155	43.34	55.74	-12.40	Average
2	0.155	52.10	65.74	-13.64	QP
3	0.183	51.90	64.33	-12.43	QP
4	0.183	43.56	54.33	-10.77	Average
5	0.430	50.10	57.25	-7.15	QP
6	0.431	46.03	47.24	-1.21	Average

Neutral



4.2. Radiated Emission Test

4.2.1. Limit 15.209 limits

FREQUENCY	DISTANCE	FIELD STRENGTHS LIMIT		
MHz	Meters	$\mu V/m$	dB(μV)/m	
30 ~ 88	3	100	40.0	
88 ~ 216	3	150	43.5	
216 ~ 960	3	200	46.0	
960 ~ 1000	3	500	54.0	
Above 1000	3	74.0 dB(μV)/m (Peak)		
		$54.0 \text{ dB}(\mu\text{V})/\text{m} \text{ (Average)}$		

4.2.2. Restricted bands of operation

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(2)

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

4.2.3. Test setup

The EUT was placed on a turn table which was 0.8 m above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 3 m away from the receiving antenna which was mounted on an antenna tower. The measuring antenna moved up and down to find out the maximum emission level. It moved from 1 m to 4 m for both horizontal and vertical polarizations.

The EUT was tested in the Chamber Site. It was pre-scanned with a Peak detector from the spectrum, and all the final readings from the test receiver were measured with the Quasi-Peak detector.

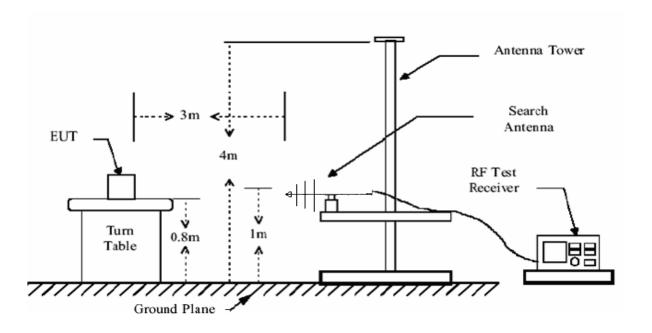
The bandwidth of the EMI test receiver is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's VBW is set at 3MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz.

The frequency range from 30MHz to 10th harmonic (25GHz) are checked. and no any emissions were found from 18GHz to 25 GHz, So the radiated emissions from 18GHz to 25GHz were not record.

Notes: 1. Emission Level = Antenna Factor + Cable Loss + Meter Reading-Preamp Factor.

- 2. Measurement Uncertainty: ±3.2 dB at a level of confidence of 95%.
- 3. For emissions above 1GHz, if peak level comply with average limit, then the average level is deemed to comply with average limit.
- 4. For emissions below 1GHz, pretest for all mode, The test data of the worst case condition(s) was reported on the following pages.
- 6: The emission of below 30MHz is background, the data no show it.



Below 1GHz BT Mode Horizontal polarizations

		Preamp	Read	Cable	lntenna		Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit	Remark
=	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	248.25	30.96	34.11	1.70	12.85	17.70	47.00	-29.30	QP
2	481.05	30.59	36.43	2.77	18.40	27.01	47.00	-19.99	QP
3	626.55	30.69	41.93	3.47	21.31	36.02	47.00	-10.98	QP
4	675.05	30.77	39.79	3.69	22.00	34.71	47.00	-12.29	QP
5	769.14	30.64	38.50	4.21	22.72	34.79	47.00	-12.21	QP
6	866.14	30.28	32.59	4.67	23.36	30.34	47.00	-16.66	QP

BT Mode Vertical polarizations

		Preamp	Read	Cable.	Antenna		Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit	Remark
*	MHz	dB	B dBuV	dB	dB dB/m	dBuV/m	dBuV/m	dB	()
1	44.38	31.40	49.95	0.56	11.10	30.21	40.00	-9.79	QP
2	266.57	30.96	43.52	1.78	12.97	27.31	47.00	-19.69	QP
3	492.86	30.59	47.07	2.77	18.59	37.84	47.00	-9.16	QP
4	524.28	30.70	44.91	2.94	19.19	36.34	47.00	-10.66	QP
5	674.87	30.77	43.20	3.69	22.00	38.12	47.00	-8.88	QP
6	768.85	30.64	41.03	4.21	22.72	37.32	47.00	-9.68	OP

Above 1GHz GFSK 2402MHz Horizontal polarizations

		Preamp	Read	Cablei	Antenna		Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	(3 - 1
1	2402.00	26.32	78.53	7.34	28.72	88.27	94.00	-5.73	Average
2	2402.00	26.32	93.66	7.34	28.72	103.40	114.00	-10.60	Peak
3	4804.00	27.49	31.21	11.96	32.94	48.62	74.00	-25.38	Peak
4	6950.00	27.89	17.97	16.60	37.07	43.75	74.00	-30.25	Peak
5	8820.00	28.34	15.63	16.84	37.18	41.31	74.00	-32.69	Peak
6	14719.00	29.51	14.30	19.83	39.69	44.31	74.00	-29.69	Peak

GFSK 2402MHz Vertical polarizations

		Preamp	Read	Cablei	Antenna		Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	()
1	2402.00	26.32	79.13	7.34	28.72	88.87	94.00	-5.13	Average
2	2402.00	26.32	88.94	7.34	28.72	98.68	114.00	-15.32	Peak
3	4804.00	27.49	30.53	11.96	32.94	47.94	74.00	-26.06	Peak
4	6491.00	27.80	17.09	16.60	35.88	41.77	74.00	-32.23	Peak
5	8344.00	28.20	16.88	16.73	36.68	42.09	74.00	-31.91	Peak
6	12951.00	29.19	15.15	18.17	40.58	44.71	74.00	-29.29	Peak

GFSK 2441MHz Horizontal polarizations

		Preamp	Read	Cablei	Antenna		Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	S T.
1	2441.00	26.33	78.82	7.48	28.76	88.73	94.00	-5.27	Average
2	2441.00	26.33	88.37	7.48	28.76	98.28	114.00	-15.72	Peak
3	4880.00	27.53	30.95	12.14	33.11	48.67	74.00	-25.33	Peak
4	9279.00	28.51	16.96	16.90	37.73	43.08	74.00	-30.92	Peak
5	12169.00	29.03	16.58	17.52	39.43	44.50	74.00	-29.50	Peak
6	14855.00	29.53	16.76	19.91	39.13	46.27	74.00	-27.73	Peak

GFSK 2441MHz Vertical polarizations

		Preamp	Read	Cable	Intenna		Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	()
1	2441.00	26.33	78.68	7.48	28.76	88.59	94.00	-5.41	Average
2	2441.00	26.33	89.00	7.48	28.76	98.91	114.00	-15.09	Peak
3	4880.00	27.53	30.34	12.14	33.11	48.06	74.00	-25.94	Peak
4	7341.00	27.97	16.69	16.62	37.34	42.68	74.00	-31.32	Peak
5	10146.00	28.82	18.45	16.99	38.64	45.26	74.00	-28.74	Peak
6	12237.00	29.05	19.77	17.56	39.45	47.73	74.00	-26.27	Peak

GFSK 2480MHz Horizontal polarizations

		Preamp	Read	Cable.	Antenna		Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	2480.00	26.34	79.19	7.57	28.79	89.21	94.00	-4.79	Average
2	2480.00	26.34	88.64	7.57	28.79	98.66	114.00	-15.34	Peak
3	4960.00	27.58	30.85	12.36	33.32	48.95	74.00	-25.05	Peak
4	7358.00	27.97	15.76	16.62	37.34	41.75	74.00	-32.25	Peak
5	10911.00	28.89	14.63	17.15	39.45	42.34	74.00	-31.66	Peak
6	14226.00	29.43	11.84	19.51	42.20	44.12	74.00	-29.88	Peak

GFSK 2480MHz Vertical polarizations

		Preamp	Read	Cable	Antenna		Limit	Over	
	Freq	Factor	Level	Loss	Factor	Level	Line	Limit	Remark
	MHz	dB	dBuV	dB	dB/m	dBuV/m	dBuV/m	dB	
1	2480.00	26.34	79.52	7.57	28.79	89.54	94.00	-4.46	Average
2	2480.00	26.34	88.64	7.57	28.79	98.66	114.00	-15.34	Peak
3	4960.00	27.58	30.46	12.36	33.32	48.56	74.00	-25.44	Peak
4	7460.00	27.99	17.72	16.62	37.39	43.74	74.00	-30.26	Peak
5	11132.00	28.91	15.55	17.19	39.61	43.44	74.00	-30.56	Peak
6	13818.00	29.36	10.96	19.14	43.32	44.06	74.00	-29.94	Peak

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5. 20DB OCCUPY BANDWIDTH

5.1. Limits

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. Test setup

- 1. Set the RBW =30kHz.
- 2. Set the VBW = 100kHz
- 3. Span=2.5MHz
- 4. Detector = peak.
- 5. Sweep time = auto couple.
- 6. Allow trace to fully stabilize, and view the plot.
- 7. Measure and record the result in the test report.

Test data:

	Channel Frequency (MHz)	20dB Bandwidth (MHz)	Result
	2402	0.832	Pass
GFSK	2441	0.838	Pass
	2480	0.839	Pass

Test plot as follows:

GFSK





2441 MHz



2480 MHz



6. BAND EDGE COMPLIANCE TEST

6.1. Limits

All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

6.2. Test setup

The EUT was placed on a turn table which was 0.8 m above the ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was set 3 m away from the receiving antenna which was mounted on an antenna tower. The measuring antenna moved up and down to find out the maximum emission level. It moved from 1 m to 4 m for both horizontal and vertical polarizations.

The bandwidth of the Spectrum's VBW is set at 3MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure.

Test plot as follows:

	Frequency (MHz)	Antenna polarization	Emission (dBuV/m)	Band ed (dBu\		Result
		(H/V)	PK	PK	AV	Pass
	<2400	Н	50.21	74.00	54.00	Pass
Hopping	<2400	V	48.97	74.00	54.00	Pass
Порринд	>2483.5	Н	50.03	74.00	54.00	Pass
	>2483.5	V	49.61	74.00	54.00	Pass
	<2400	Н	50.37	74.00	54.00	Pass
Unhopping	<2400	V	49.61	74.00	54.00	Pass
Стпоррпід	>2483.5	Н	49.82	74.00	54.00	Pass
	>2483.5	V	50.09	74.00	54.00	Pass

If the PK measured levels comply with average limit, then the average level were deemed to comply with average limit.

7. ANTENNA REQUIREMENTS

7.1. Limits

For intentional device, according to FCC 47 CFR Section 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. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

7.2. Result

The antennas used for this product are integral Antenna and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is only 1dBi.

8. PHOTOGRAPHS OF TEST SET-UP

Conducted Emission



Radiated Emission





9. PHOTOGRAPHS OF THE EUT



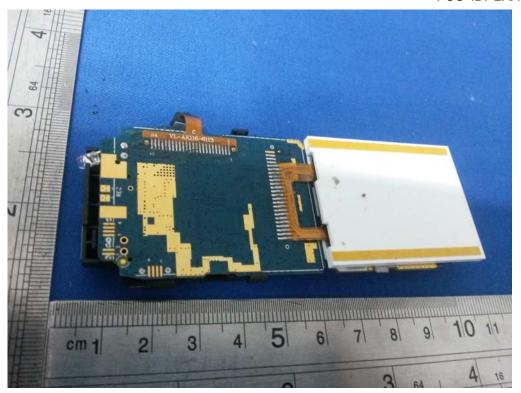


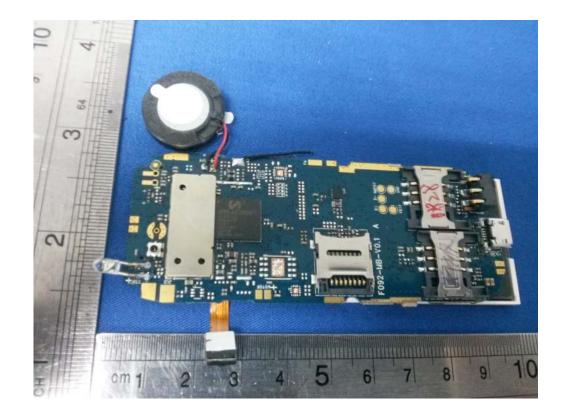












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