# **FCC Test Report**

APPLICANT : CT Asia

**EQUIPMENT** : Smart Phone

BRAND NAME : BLU MODEL NAME : Selfie

FCC ID : YHLBLUSELFIE

STANDARD : FCC 47 CFR FCC Part 15 Subpart B

CLASSIFICATION : Certification

The product was received on Dec. 13, 2014 and testing was completed on Dec. 25, 2014. We, SPORTON INTERNATIONAL (SHENZHEN) INC., would like to declare that the tested sample has been evaluated in accordance with the test procedures given in ANSI C63.4-2009 and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL (SHENZHEN) INC., the test report shall not be reproduced except in full.

Reviewed by: Louis Wu / Manager

Louis Wu

Approved by: Jones Tsai / Manager

# SPORTON INTERNATIONAL (SHENZHEN) INC.

1F & 2F, Building A, Morning Business Center, No. 4003 ShiGu Rd., Xili Town, Nanshan District, Shenzhen, Guangdong, P. R. China

SPORTON INTERNATIONAL (SHENZHEN) INC.

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Report Issued Date : Jan. 13, 2015

Testing Laboratory 2353

Report No.: FC4D1301

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# **REVISION HISTORY**

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FC4D1301	Rev. 01	Initial issue of report	Jan. 13, 2015

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# **SUMMARY OF TEST RESULT**

Report Section	FCC Rule	Description	Limit	Result	Remark
					Under limit
3.1	15.107	AC Conducted Emission	< 15.107 limits	PASS	14.55 dB at
					11.680 MHz
					Under limit
3.2	15.109	Radiated Emission	< 15.109 limits	PASS	5.65 dB at
					33.510 MHz

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# 1. General Description

# 1.1. Applicant

#### **CT** Asia

Unit 01, 15/F, Seaview Centre, 139-141 Hoi bun road, Kwun Tong, Kowloon, Hongkong

### 1.2. Manufacturer

Longcheer Technology (Shanghai) Co., Ltd.

Building 1, No.401, Caobao Rd, Xuhui District, Shanghai, P.R.China

# 1.3. Product Feature of Equipment Under Test

	Product Feature
Equipment	Smart Phone
Brand Name	BLU
Model Name	Selfie
FCC ID	YHLBLUSELFIE
EUT supports Radios application	GSM/GPRS/EGPRS/WCDMA/HSPA/HSPA+(Downlink Only) WLAN 2.4GHz 802.11b/g/n HT20/HT40/ Bluetooth v3.0 + EDR/Bluetooth v4.0 LE
HW Version	LWDM030B
SW Version	BLU-S470A-V01-GENERIC_21-11-2014_16:39
EUT Stage	Production Unit

Remark:

The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

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# 1.4. Product Specification subjective to this standard

Product Specification subjective to this standard				
Tx Frequency  Rx Frequency	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz Bluetooth: 2402 MHz ~ 2480 MHz GSM850: 869.2 MHz ~ 893.8 MHz GSM1900: 1930.2 MHz ~ 1989.8 MHz WCDMA Band V: 871.4 MHz ~ 891.6 MHz WCDMA Band II: 1932.4 MHz ~ 1987.6 MHz 802.11b/g/n: 2412 MHz ~ 2462 MHz Bluetooth: 2402 MHz ~ 2480 MHz			
Antenna Type	GPS: 1.57542 GHz WWAN: IFA Antenna WLAN: IFA Antenna Bluetooth: IFA Antenna			
Type of Modulation	GPS: IFA Antenna GSM: GMSK GPRS: GMSK EDGE(MCS 0-4): GMSK / (MCS 5-9): 8PSK WCDMA: QPSK (Uplink) HSDPA: QPSK (Uplink) HSUPA: QPSK (Uplink) HSPA+ : 16QAM (Downlink Only) 802.11b : DSSS (DBPSK / DQPSK / CCK) 802.11g/n : OFDM (BPSK / QPSK / 16QAM / 64QAM) Bluetooth LE : GFSK Bluetooth (1Mbps) : GFSK Bluetooth (2Mbps) : π /4-DQPSK Bluetooth (3Mbps) : 8-DPSK GPS : BPSK			

# 1.5. Modification of EUT

No modifications are made to the EUT during all test items.

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## 1.6. Test Location

Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.			
	1F & 2F,Building A, Morning Business Center, No. 4003 ShiGu Rd., Xili Town,			
	Nanshan District, Shenzhen, Guangdong, P. R. China			
Test Site Location	TEL: +86-755-8637-9589			
	FAX: +86-755-8637-9595			
Took Site No	Sporton Site No.			
Test Site No.	CO01-SZ			

Test Site	SPORTON INTERNATIONAL (SHENZHEN) INC.			
Test Site Location	No. 3 Building, the third floor of south, Shahe River west, Fengzeyuan warehouse, Nanshan District, Shenzhen, Guangdong, P. R. China			
1001 0110 200411011	TEL: +86-755- 3320-2398			
Test Site No.	Sporton Site No.	FCC Registration No.		
rest site NO.	03CH01-SZ 831040			

# 1.7. Applicable Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC 47 CFR FCC Part 15 Subpart B
- ANSI C63.4-2009

**Remark:** All test items were verified and recorded according to the standards and without any deviation during the test.

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# 2. Test Configuration of Equipment Under Test

### 2.1. Test Mode

The EUT has been associated with peripherals pursuant to ANSI C63.4-2009 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.

Frequency range investigated: conduction (150 kHz to 30 MHz), radiation (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

The following tables are showing the test modes as the worst cases and recorded in this report.

		Test Condition			
Item	EUT Configuration	EMI	EMI	EMI	
			RE<1G	RE≥1G	
1.	Charging Mode (EUT with adapter)	$\boxtimes$	$\boxtimes$	Note 1	
2.	Data application transferred mode	$\boxtimes$	$\boxtimes$	$\boxtimes$	
	(EUT connected with notebook)				

#### Abbreviations:

EMI AC: AC conducted emissions

• EMI RE ≥ 1G: EUT radiated emissions ≥ 1GHz

• EMI RE < 1G: EUT radiated emissions < 1GHz

Note 1: Testing for this mode is not required or not the worst case.

Remark: For signal above 1GHz, the worst case was test item 2.

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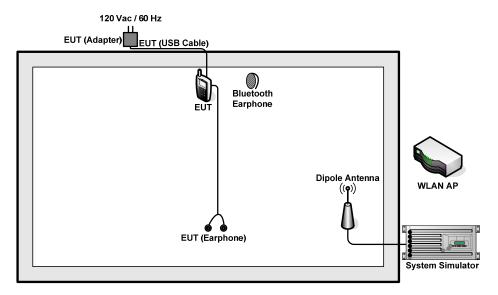
Test Items	EUT Configure Mode	Function Type
		Mode 1: GSM850 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Charging from Adapter) + Earphone + Camera + SIM 1 <fg.1></fg.1>
AC Conducted	1/2	Mode 2: GSM1900 Idle + Bluetooth Idle + WLAN Idle + Earphone + USB Cable (Charging from Adapter) + MPEG4 + SIM 2 <fg.1></fg.1>
Emission		Mode 3: WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + Earphone + USB Cable (Charging from Adapter) + GPS Rx + SIM 1 <fg.2></fg.2>
		Mode 4: WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + USB Cable (Data Link with Notebook) <fg.3></fg.3>
		Mode 1: GSM850 Idle + Bluetooth Idle + WLAN Idle + USB Cable (Charging from Adapter) + Earphone + Camera + SIM 1 <fg.1></fg.1>
Radiated Emissions < 1GHz	1/2	Mode 2: GSM1900 Idle + Bluetooth Idle + WLAN Idle + Earphone + USB Cable (Charging from Adapter) + MPEG4 + SIM 2 <fg.1></fg.1>
EIIIISSIOIIS < TGHZ		Mode 3: WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + Earphone + USB Cable (Charging from Adapter) + GPS Rx + SIM 1 <fg.2></fg.2>
		Mode 4: WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + USB Cable (Data Link with Notebook) <fg.3></fg.3>
Radiated Emissions ≥ 1GHz	2	Mode 1: WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + USB Cable (Data Link with Notebook) <fg.3></fg.3>

#### Remark:

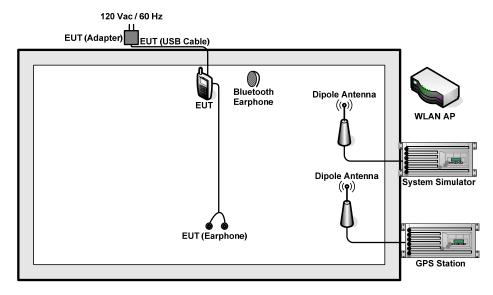
- 1. The worst case of AC is mode 4; only the test data of this mode was reported.
- 2. The worst case of RE < 1G is mode 4; only the test data of this mode was reported.
- 3. Link with Notebook means data application transferred mode between EUT and Notebook.

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# 2.2. Connection Diagram of Test System



<Fig.1>

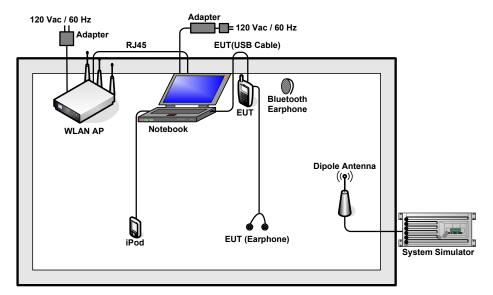


<Fig.2>

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<Fig.3>

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# 2.3. Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	Bluetooth Earphone	Nokia	BH-108	PYAHS-107W	N/A	N/A
2.	WLAN AP	D-link	DIR-615	N/A	N/A	Unshielded,1.8m
3.	WLAN AP	D-link	DIR-815	KA2IR815A1	N/A	Unshielded, 1.8 m
4.	WLAN AP	ASUSTek	RT-AC66U	MSQ-RTAC66U	N/A	Unshielded,2.7m
5.	GPS Station	ADIVIC	MP9000	N/A	N/A	Unshielded, 1.8 m
6.	System Simulator	Anitsu	MT8820C	N/A	N/A	Unshielded, 1.8 m
7.	Bluetooth Earphone	Lenovo	LBH301	N/A	N/A	N/A
8.	Base Station	Agilent	8960	N/A	N/A	Unshielded, 1.8 m
9.	Notebook	Lenovo	G480	FCC DoC	N/A	AC I/P: Unshielded, 1.2m DC O/P: Shielded, 1.8 m
10.	Notebook	Lenovo	E540	FCC DoC	N/A	AC I/P: Unshielded, 1.2m DC O/P: Shielded, 1.8 m
11.	SD Card	SanDisk	4G class 4	FCC DoC	N/A	N/A
12.	iPod	Apple	MC525 ZP/A	FCC DoC	Shielded, 1.0 m	N/A
13.	iPod nano 8GB	Apple	MC690 ZP/A	FCC DoC	Shielded, 1.2 m	N/A

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# 2.4. EUT Operation Test Setup

The EUT was in GSM or WCDMA idle mode during the testing. The EUT was synchronized to the BCCH, and was in continuous receiving mode by setting system simulator's paging reorganization.

At the same time, the EUT was attached to the Bluetooth earphone or WLAN AP, and the following programs installed in the EUT were programmed during the test.

- 1. Data application is transferred between Laptop and EUT via USB cable.
- 2. Execute "GPS Test" to make the EUT receive continuous signals from GPS station.
- 3. Play MPEG4 files.
- 4. Turn on camera to capture images.

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## 3. Test Result

### 3.1. Test of AC Conducted Emission Measurement

#### 3.1.1 Limits of AC Conducted Emission

For equipment 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 or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission	Conducted limit (dBuV)		
(MHz)	Quasi-peak	Average	
0.15-0.5	66 to 56*	56 to 46*	
0.5-5	56	46	
5-30	60	50	

<sup>\*</sup>Decreases with the logarithm of the frequency.

## 3.1.2 Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

#### 3.1.3 Test Procedure

- 1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
- 2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
- 3. All the support units are connecting to the other LISN.
- 4. The LISN provides 50 ohm coupling impedance for the measuring instrument.
- 5. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
- 6. Both sides of AC line were checked for maximum conducted interference.
- 7. The frequency range from 150 kHz to 30 MHz was searched.
- 8. Set the test-receiver system to Peak Detect Function and specified bandwidth (IF Bandwidth = 9kHz) with Maximum Hold Mode. Then measurement is also conducted by Average Detector and Quasi-Peak Detector Function respectively.

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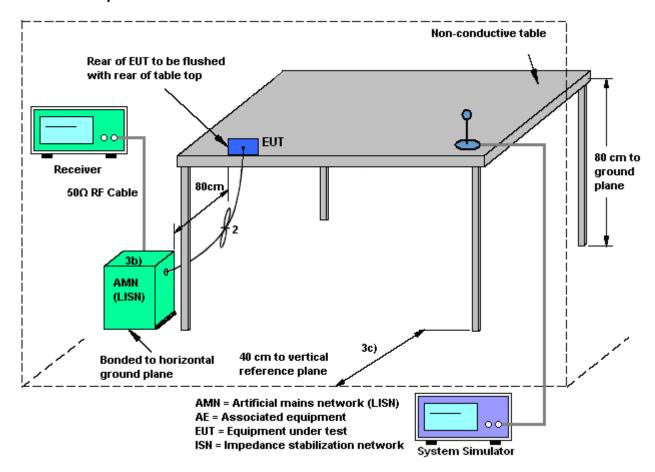
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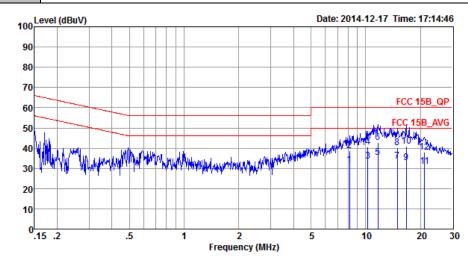
# 3.1.4 Test Setup



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## 3.1.5 Test Result of AC Conducted Emission

Test Mode :	Mode 4	Temperature :	<b>21~22</b> ℃	
Test Engineer :	Jack Tian	Relative Humidity: 41~42%		
Test Voltage :	120Vac / 60Hz	Phase :	Line	
Function Tune	WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + USB Cable (Data Link with			
Function Type :	Notebook)			



: CO01-SZ

Condition: FCC 15B\_QP LISN\_L\_20140304 LINE Project : (FC) 4D1301

Mode : Mode 4

	Freq	Level	Limit	Limit	Level	Factor	Loss	Remark
	MHz	dBu₹	dB	dBuV	dBu∇	dB	dB	
1	8.15	31.59	-18.41	50.00	20.80	0.49	10.30	Average
2	8.15	38.69	-21.31	60.00	27.90	0.49	10.30	QP
3	10.29	33.73	-16.27	50.00	22.70	0.70	10.33	Average
4	10.29	40.53	-19.47	60.00	29.50	0.70	10.33	QP
5 *	11.68	35.45	-14.55	50.00	24.10	0.95	10.40	Average
6	11.68	42.75	-17.25	60.00	31.40	0.95	10.40	QP
7	14.91	33.46	-16.54	50.00	21.50	1.43	10.53	Average
8	14.91	40.26	-19.74	60.00	28.30	1.43	10.53	QP
9	16.75	33.00	-17.00	50.00	20.89	1.54	10.57	Average
10	16.75	40.90	-19.10	60.00	28.79	1.54	10.57	QP
11	21.15	31.01	-18.99	50.00	18.60	1.80	10.61	Average
12	21.15	37.91	-22.09	60.00	25.50	1.80	10.61	QP

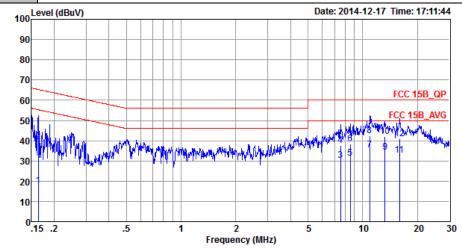
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Test Mode :	Mode 4	Temperature :	<b>21~22</b> ℃		
Test Engineer :	Jack Tian	Relative Humidity :	41~42%		
Test Voltage :	120Vac / 60Hz	Phase :	Neutral		
	CSM1000 Idlo + Pluotooth Idlo + WI AN Idlo + Farabano + USB Cabla (Charai				

Function Type : GSM1900 Idle + Bluetooth Idle + WLAN Idle + Earphone + USB Cable (Charging from Adapter) + MPEG4 + SIM 2



Site : CO01-SZ

Condition: FCC 15B\_QP LISN\_N\_20140304 NEUTRAL

Project : (FC) 4D1301 Mode : Mode 4

	Freq	Level	Over Limit	Limit Line	Read Level	LISN Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBu∇	dBu∇	dB	dB	
1	0.16	17.57	-37.73	55.30	6.90	0.33	10.34	Average
2	0.16	39.57	-25.73	65.30	28.90	0.33	10.34	QP
3	7.57	30.28	-19.72	50.00	19.49	0.50	10.29	Average
4	7.57	37.68	-22.32	60.00	26.89	0.50	10.29	QP
5	8.55	31.19	-18.81	50.00	20.30	0.59	10.30	Average
6	8.55	38.49	-21.51	60.00	27.60	0.59	10.30	QP
7 *	10.90	35.26	-14.74	50.00	24.00	0.90	10.36	Average
8	10.90	42.36	-17.64	60.00	31.10	0.90	10.36	QP
9	13.27	34.40	-15.60	50.00	22.60	1.33	10.47	Average
10	13.27	41.90	-18.10	60.00	30.10	1.33	10.47	QP
11	15.97	32.79	-17.21	50.00	20.60	1.64	10.55	Average
12	15.97	40.79	-19.21	60.00	28.60	1.64	10.55	OP

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### 3.2. Test of Radiated Emission Measurement

### 3.2.1. Limit of Radiated Emission

The emissions from an unintentional radiator shall not exceed the field strength levels specified in the following table:

Frequency	Field Strength	Measurement Distance		
(MHz)	(microvolts/meter)	(meters)		
30 – 88	100	3		
88 – 216	150	3		
216 - 960	200	3		
Above 960	500	3		

### 3.2.2. Measuring Instruments

The measuring equipment is listed in the section 4 of this test report.

#### 3.2.3. Test Procedures

- 1. The EUT was placed on a turntable with 0.8 meter above ground.
- 2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
- 3. The table was rotated 360 degrees to determine the position of the highest radiation.
- 4. The antenna is a Bi-Log antenna and its height is adjusted between one to four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
- 5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
- 6. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode (RBW=120kHz/VBW=300kHz for frequency below 1GHz; RBW=1MHz VBW=3MHz (Peak), RBW=1MHz/VBW=10Hz (Average) for frequency above 1GHz).
- 7. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, peak values of EUT will be reported. Otherwise, the emission will be repeated by using the quasi-peak method and reported.
- 8. Emission level (dB $\mu$ V/m) = 20 log Emission level ( $\mu$ V/m)
- 9. Corrected Reading: Antenna Factor + Cable Loss + Read Level Preamp Factor = Level

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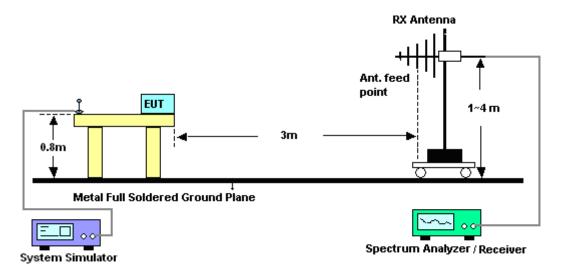
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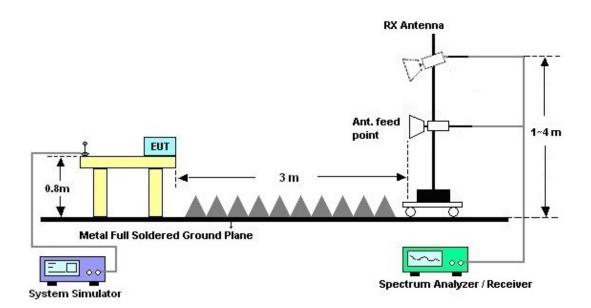
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# 3.2.4. Test Setup of Radiated Emission

### For radiated emissions from 30MHz to 1GHz



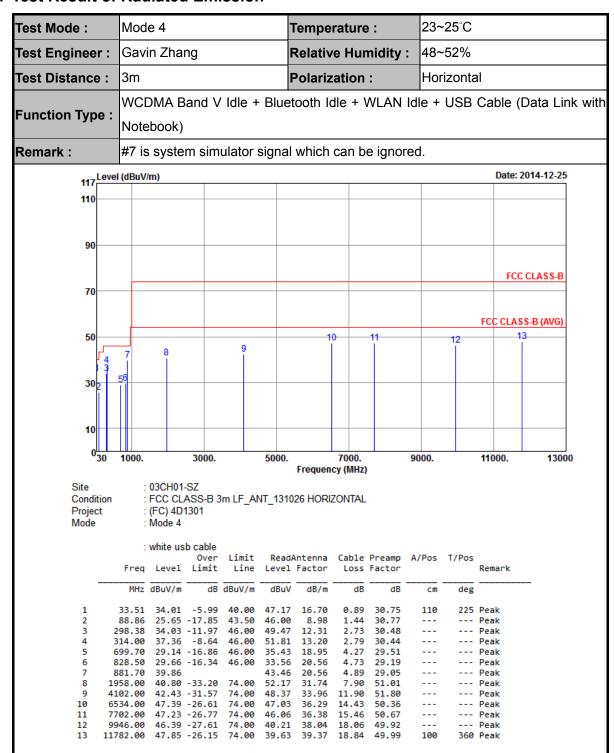
#### For radiated emissions above 1GHz



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### 3.2.5. Test Result of Radiated Emission



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23~25°C Test Mode: Mode 4 Temperature: Test Engineer: Gavin Zhang 48~52% Relative Humidity: Vertical Test Distance: 3m Polarization: WCDMA Band V Idle + Bluetooth Idle + WLAN Idle + USB Cable (Data Link with Function Type: Notebook) #7 is system simulator signal which can be ignored. Remark: 117 Level (dBuV/m) Date: 2014-12-25 110 90 FCC CLASS-B 70 FCC CLASS-B (AVG) 50 10 12 30 030 1000. 3000. 7000. 9000. 11000. 13000 Frequency (MHz) Site : 03CH01-SZ Condition : FCC CLASS-B 3m LF\_ANT\_131026 VERTICAL Project (FC) 4D1301 Mode : Mode 4 : white usb cable Over Limit ReadAntenna Cable Preamp A/Pos T/Pos Freq Level Limit Line Level Factor Remark Loss Factor MHz dBuV/m dB dBuV/m dBuV dB/m dB deg cm 140 Peak 33.51 34.35 -5.65 40.00 47.51 16.70 0.89 30.75 200 27.05 -16.45 104.25 11.60 --- Peak 43.50 44.63 1.58 30.76 ---31.57 -11.93 183.63 43.50 52.09 8.07 2.10 30.69 Peak 479.90 30.45 -15.55 46.00 39.68 17.40 3.50 30.13 Peak 500.20 31.18 -14.82 46.00 40.64 17.00 3.57 30.03 --- Peak --- Peak 861.40 28.64 -17.36 46.00 32.07 20.80 4.85 29.08 881.70 38.15 4.89 --- Peak 41.75 20.56 29.05 2052.00 41.15 -32.85 74.00 51.80 32.25 8.07 50.97 --- Peak 4762.00 43.49 -30.51 74.00 47.35 34.36 12.74 50.96 Peak ------ Peak 10 6612.00 46.93 -27.07 74.00 46.63 36.26 14.48 50.44 47.07 -26.93 47.27 -26.73 45.90 41.93 15.46 --- Peak ---11 7694.00 74.00 36.38 50.67 17.27 10570.00 74.00 38.54 Peak 12 50.47 48.21 -25.79 74.00 40.23 163 Peak 11890.00

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# 4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
ESCIO TEST Receiver	R&S	ESCI	100724	9kHz~3GHz	Feb. 21, 2014	Dec. 25, 2014	Feb. 20, 2015	Radiation (03CH01-SZ)
Spectrum Analyzer	Agilent Technologies	N9038A	MY52260185	20Hz~26.5GHz	May 26, 2014	Dec. 25, 2014	May 25, 2015	Radiation (03CH01-SZ)
Loop Antenna	R&S	HFH2-Z2	100354	9kHz~30MHz	May 09, 2014	Dec. 25, 2014	May 08, 2015	Radiation (03CH01-SZ)
Bilog Antenna	TESEQ	CBL 6112D	23188	30MHz~2GHz	Oct. 26, 2013	Dec. 25, 2014	Oct. 14, 2015	Radiation (03CH01-SZ)
Double Ridge Horn Antenna	ETS Lindgren	3117	00119436	1GHz~18GHz	Oct. 26, 2013	Dec. 25, 2014	Oct. 14, 2015	Radiation (03CH01-SZ)
Double Ridged Horn Antenna	COM-POWER	AH-840	101073	18GHz~40GHz	Jan. 27, 2014	Dec. 25, 2014	Jan. 26, 2015	Radiation (03CH01-SZ)
Amplifier	ADVANTEST	BB525C	E9007003	9kHz~3000MHz	Feb. 21, 2014	Dec. 25, 2014	Feb. 20, 2015	Radiation (03CH01-SZ)
Amplifier	Yiai	AV3860B	04030	2GHz~26.5GHz	May 08, 2014	Dec. 25, 2014	May 07, 2015	Radiation (03CH01-SZ)
AC Source(AVR)	Chroma	61601	61601000198 5	100Vac~250Vac	Mar. 25, 2014	Dec. 25, 2014	Mar. 24, 2015	Radiation (03CH01-SZ)
Turn Table	EM Electronics	EM 1000	N/A	0~360 degree	NCR	Dec. 25, 2014	NCR	Radiation (03CH01-SZ)
Antenna Mast	EM Electronics	EM 1000	N/A	1 m~4 m	NCR	Dec. 25, 2014	NCR	Radiation (03CH01-SZ)
ESCIO TEST Receiver	R&S	ESCI	100724	9kHz~3GHz	Feb. 21, 2014	Dec. 17, 2014	Feb. 20, 2015	Conduction (CO01-SZ)
AC LISN	EMCO	3816/2SH	00103912	9kHz~30MHz	Mar. 04, 2014	Dec. 17, 2014	Mar. 03, 2015	Conduction (CO01-SZ)
AC LISN (for auxiliary equipment)	EMCO	3816/2SH	00103892	9kHz~30MHz	Mar. 04, 2014	Dec. 17, 2014	Mar. 03, 2015	Conduction (CO01-SZ)
AC Power Source	Chroma	61602	61602000089 1	100Vac~250Vac	Sep. 29, 2014	Dec. 17, 2014	Sep. 28, 2015	Conduction (CO01-SZ)

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# 5. Uncertainty of Evaluation

### **Uncertainty of Conducted Emission Measurement (150 kHz ~ 30 MHz)**

Measuring Uncertainty for a Level of	2.2
Confidence of 95% (U = 2Uc(y))	2.3

### <u>Uncertainty of Radiated Emission Measurement (30 MHz ~ 1000 MHz)</u>

Measuring Uncertainty for a Level of	2.0
Confidence of 95% (U = 2Uc(y))	3.9

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