STSLAB-EMC Test Report

FCC Part 15B TEST REPORT
FCC ID: 2AC34CELLACOM707

Product：	**WCDMA SMART PHONE**
Trade Name：	**Cellacom**
Model Number：	**T707**
Serial Model：	**T707x(x=a-z)**
Report No.：	**STS140833E01**

Prepared for

Cellacom incorporation

20955 pathfinder road, ste 200, diamond bar, ca 91765, USA

Prepared by

Shenzhen STS Test Services Co., Ltd.
1/F, Building 2, Zhuoke Science Park, Chongqing Road, Fuyong, Baoan District, Shenzhen, China
TEL: +86-755 6119 6328
FAX: +86-755 6119 6328
E-mail:sts@stsapp.com

TEST RESULT CERTIFICATION

Applicant's name .....:	Cellacom incorporation
Address.....:	20955 pathfinder road, ste 200, diamond bar, ca 91765, USA
Manufacture's Name .....:	Shenzhen Joinhold Communication Technology Ltd.
Address.....:	Unit 3, Bldg. D2, TCL International E City, 1001 Zhongshanyuan Park Rd., Nanshan, Shenzhen, China

Product description

Product name.....:	WCDMA Smart Phone
Band name.....:	Cellacom
Model and/or type reference ..:	T707
Serial Model.....:	T707x(x=a-z)
DIFF .....:	All the model are the same, only different in model names and color.
Standards .....:	FCC 47 CFR Part 15 Subpart B
Test procedure……..:	ANSI C63.4-2003

This device described above has been tested by BZT, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

This report shall not be reproduced except in full, without the written approval of BZT, this document may be altered or revised by BZT, personal only, and shall be noted in the revision of the document.

Date of Test.....

Date (s) of performance of tests .. Aug 25, 2014 ~ Sep 04, 2014

Date of Issue..... Sep 05, 2014

Test Result ..... **Pass**

Testing Engineer **:** (Tony Liu)

Technical Manager **:** (Vita Li)

Authorized Signatory **:** (Bovey Yang)

Table of Contents

Page

1. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

EMISSION			
Standard	**Item**	**Result**	**Remarks**
FCC 47 CFR Part 15 Subpart B (10-1-05 Edition)	Conducted Emission	PASS	Meet Class B limit
	Radiated Emission	PASS	Meet Class B limit

NOTE:

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

1.1 TEST FACILITY

BZT Testing Technology Co., Ltd
Add. : 1/F, Building E, Fenda Science Park, Sanwei Community, Xixiang Street, Bao'an District, Shenzhen P.R. China.
FCC Registration No.: 701733

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement **y** ± **U**，where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**，providing a level of confidence of approximately **95** %。

No.	Item	Uncertainty
1	Conducted Emission Test	±1.38dB
2	RF power,conducted	±0.16dB
3	Spurious emissions,conducted	±0.21dB
4	All emissions,radiated(<1G)	±4.68dB
5	All emissions,radiated(>1G)	±4.89dB
6	Temperature	±0.5°C
7	Humidity	±2%

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	WCDMA Smart Phone
Trade Name	Cellacom
Model Name	T707
Serial Model	T707x(x=a-z)
Model Difference	All the model are the same, only different in model name and color.
Channel List	Please refer to the Note 2.
Adapter	Input:AC 100-240V,50/60Hz,0.15A Output:DC 5V,1000mA
Battery	Rated Voltage: 3.7V Charge Limit: 4.2V capacity :1800mAh
Hardware version number	N/A
Software versioning number	N/A
Connecting I/O Port(s)	Please refer to the User's Manual

Note:

1. For a more detailed features description, please refer to the manufacturer’s specifications or the User's Manual.

2.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	USB Model
Mode 2	GSM/WCDMA Mode
Mode 3	MP3/MP4 Mode
Mode 4	Idle Mode

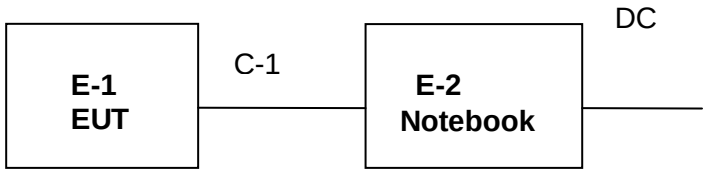
For Conducted Emission	
Final Test Mode	Description
Mode1	USB Model

For Radiated Emission	
Final Test Mode	Description
Mode 1	USB Model

Note:

(1) Due to the different configuration and test, in this list only some worse mode. The worst test data of the worse modeis reported by this report.

2.3 BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



2.4 DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	WCDMA Smart Phone	Cellacom	T707	T707x(x=a-z)	EUT
E-2	Notebook	Lenovo	B460	WB03928113	

Item	Shielded Type	Ferrite Core	Length	Note
C-1	NO	NO	0.5m	
C-2	NO	NO	1.2m	

Note:

(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.
(3) “YES” is means “shielded” “with core”; “NO” is means “unshielded” “without core”.

2.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated Due
1	Spectrum Analyzer	Agilent	E4407B	160400005	Jul. 06. 2015
2	Test Receiver	R&S	ESPI	101318	Jul. 06. 2015
3	Bilog Antenna	TESEQ	CBL6111D	31216	Nov.23. 2014
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	Jul. 06. 2015
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	Jul. 06. 2015
6	Horn Antenna	EM	EM-AH-10180	2011071402	Nov.23. 2014
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	Jul. 06. 2015
8	Amplifier	EM	EM-30180	060538	Jul. 06. 2015
9	Loop Antenna	ARA	PLA-1030/B	1029	Jul. 06. 2015
10	Power Meter	R&S	NRVS	100696	Jul. 06. 2015
11	Power Sensor (Peak)	R&S	NRV-Z31	0396.0101.19	Jul. 06. 2015

Conduction Test equipment

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Test Receiver	R&S	ESCI	101160	Jul. 06. 2015
2	LISN	R&S	ENV216	101313	Jul. 06. 2015
3	LISN	EMCO	3816/2	00042990	Jul. 06. 2015
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	Jul. 06. 2015
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	Jul. 06. 2015
6	Absorbing clamp	R&S	MOS-21	100423	Jul. 06. 2015

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Class A (dBuV)		Class B (dBuV)		Standard
	Quasi-peak	Average	Quasi-peak	Average	
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	CISPR
0.50 -5.0	73.00	60.00	56.00	46.00	CISPR
5.0 -30.0	73.00	60.00	60.00	50.00	CISPR

0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	73.00	60.00	56.00	46.00	FCC
5.0 -30.0	73.00	60.00	60.00	50.00	FCC

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

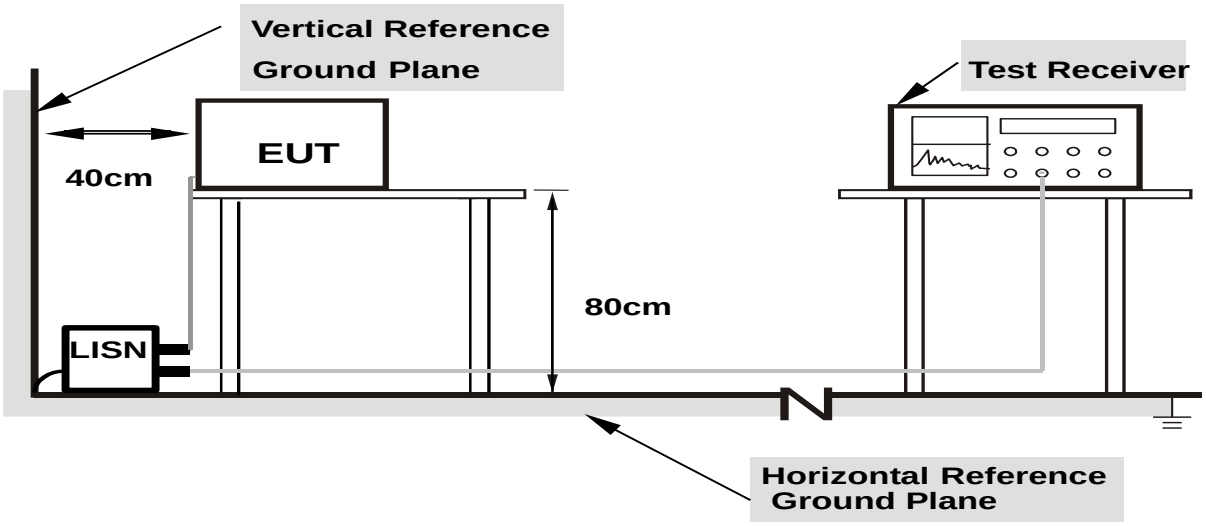
3.1.2 TEST PROCEDURE

a. The EUT was placed 0.4 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3 DEVIATION FROM TEST STANDARD

No deviation

3.1.4 TEST SETUP



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

3.1.5 EUT OPERATING CONDITIONS

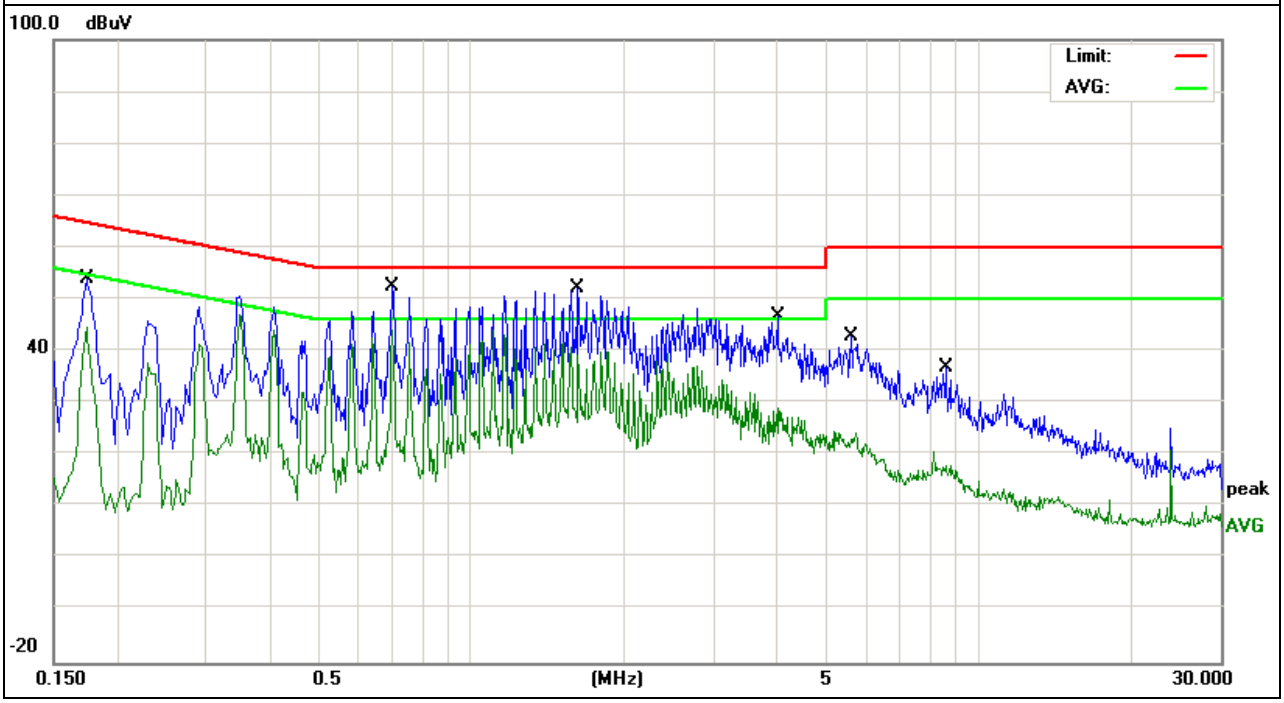
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

3.1.6 TEST RESULTS

EUT：	WCDMA Smart Phone	Model Name. ：	T707
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	N
Test Voltage ：	DC 5V from Adapter with AC 120V/60Hz	Test Mode：	Mode 1

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
0.174	44.51	9.56	54.07	64.76	-10.69	QP
0.174	35.16	9.56	44.72	54.76	-10.04	AVG
0.698	42.89	9.53	52.42	56	-3.58	QP
0.698	32.47	9.53	42	46	-4	AVG
1.626	42.75	9.54	52.29	56	-3.71	QP
1.626	31.33	9.54	40.87	46	-5.13	AVG
4.014	37.15	9.59	46.74	56	-9.26	QP
4.014	19.39	9.59	28.98	46	-17.02	AVG
5.5939	33.19	9.63	42.82	60	-17.18	QP
5.5939	14.71	9.63	24.34	50	-25.66	AVG
8.6259	27.12	9.7	36.82	60	-23.18	QP
8.6259	10.86	9.7	20.56	50	-29.44	AVG

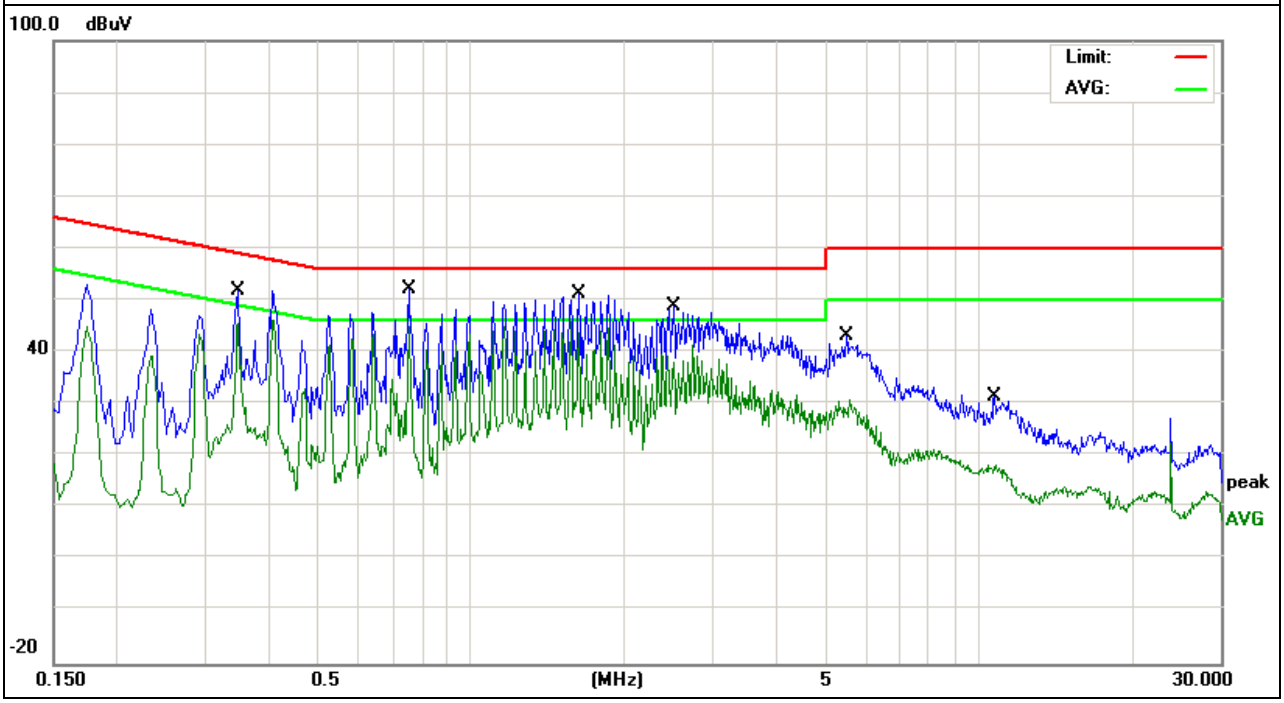
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	WCDMA Smart Phone	Model Name. ：	T707
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	L
Test Voltage ：	DC 5V from Adapter with AC 120V/60Hz	Test Mode：	Mode 1

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
0.3464	42.27	9.5	51.77	59.05	-7.28	QP
0.3464	36.14	9.5	45.64	49.05	-3.41	AVG
0.7539	42.63	9.53	52.16	56	-3.84	QP
0.7539	33.45	9.53	42.98	46	-3.02	AVG
1.63	41.71	9.54	51.25	56	-4.75	QP
1.63	34.14	9.54	43.68	46	-2.32	AVG
2.502	39.4	9.56	48.96	56	-7.04	QP
2.502	28.42	9.56	37.98	46	-8.02	AVG
5.4818	33.56	9.62	43.18	60	-16.82	QP
5.4818	21.22	9.62	30.84	50	-19.16	AVG
10.7819	21.79	9.75	31.54	60	-28.46	QP
10.7819	8.43	9.75	18.18	50	-31.82	AVG

Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Class A (dBuV/m) (at 3M)		Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE	PEAK	AVERAGE
Above 1000	80	60	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

FREQUENCY RANGE OF RADIATED MEASUREMENT (For unintentional radiators)

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

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	6000 MHz
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2.2 TEST PROCEDURE

a. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
b. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

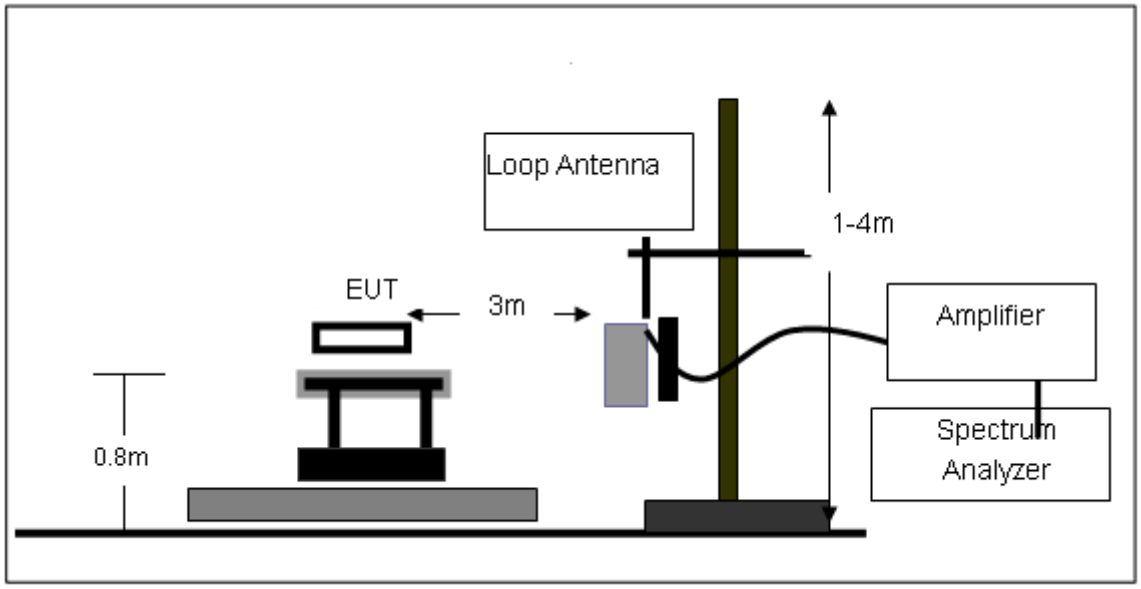
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

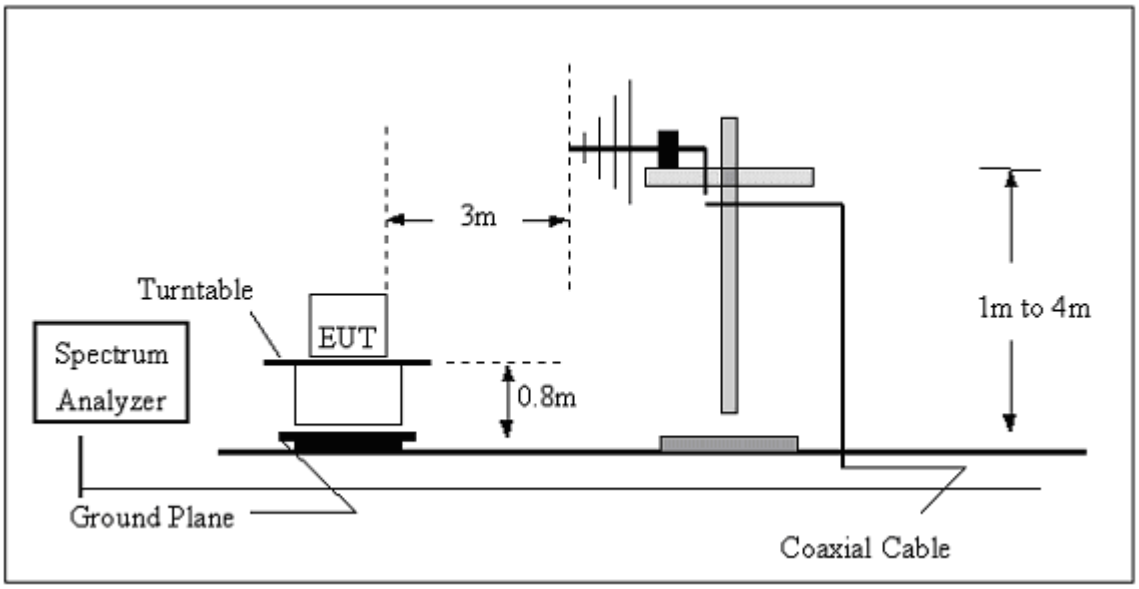
No deviation

3.2.4 TEST SETUP

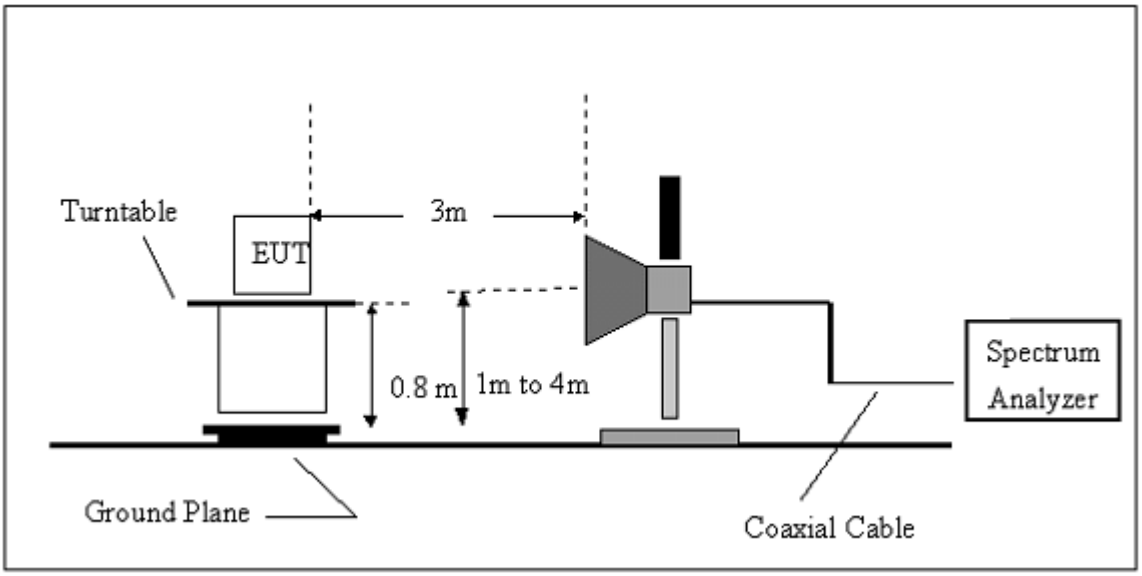
（A）Radiated Emission Test-Up Frequency Below 30MHz



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



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



3.2.5 EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

3.2.6 TEST RESULTS (BELOW 30 MHZ)

EUT：	WCDMA Smart Phone	Model Name. ：	T707
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Polarization：	---
Test Voltage ：	DC 5V from Adapter AC 120V/60Hz		
Test Mode ：	Mode 1		

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

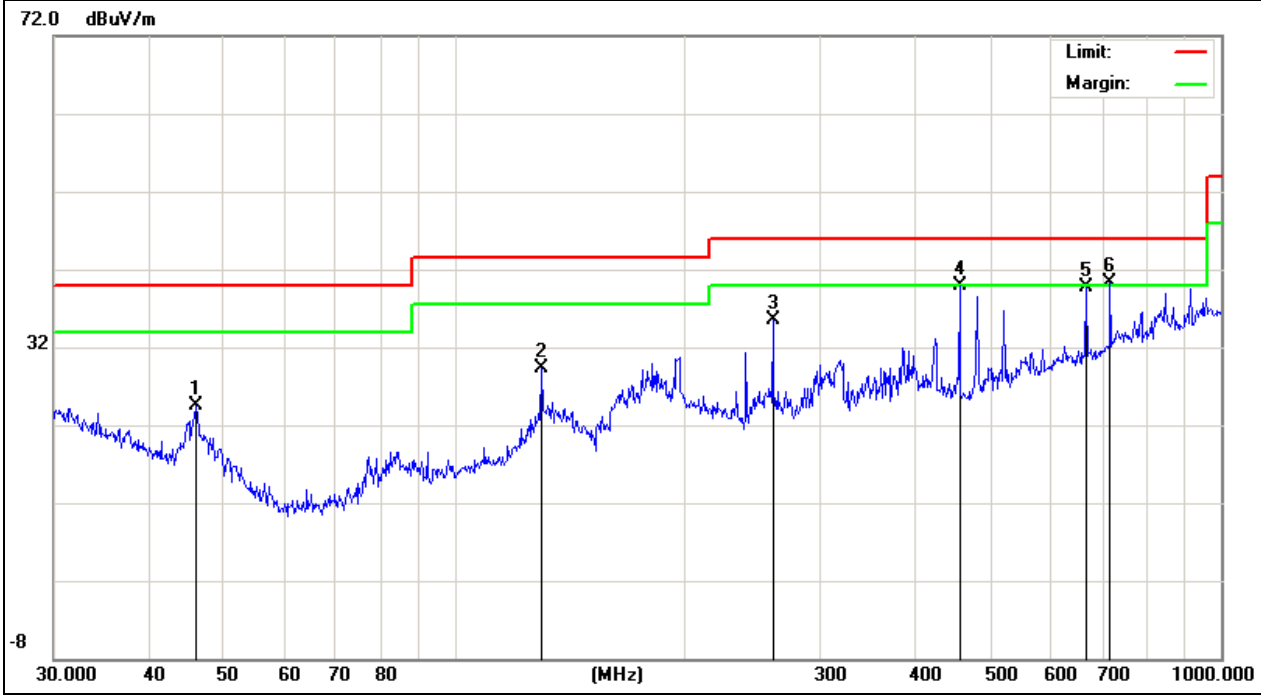
NOTE:
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =40 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor.

3.2.7 TEST RESULTS (BETWEEN 30M – 1000 MHZ)

EUT：	WCDMA Smart Phone	Model Name. ：	T707
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Polarization：	Horizontal
Test Voltage ：	DC 5V from Adapter AC 120V/60Hz		
Test Mode ：	Mode 1		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
46.0162	14.38	10.06	24.44	40	-15.56	Peak
129.9225	17.01	12.2	29.21	43.5	-14.29	Peak
260.1444	20.54	14.93	35.47	46	-10.53	Peak
455.9057	20.45	19.39	39.84	46	-6.16	Peak
665.8034	16.02	23.77	39.79	46	-6.21	Peak
716.682	15.11	25.26	40.37	46	-5.63	Peak

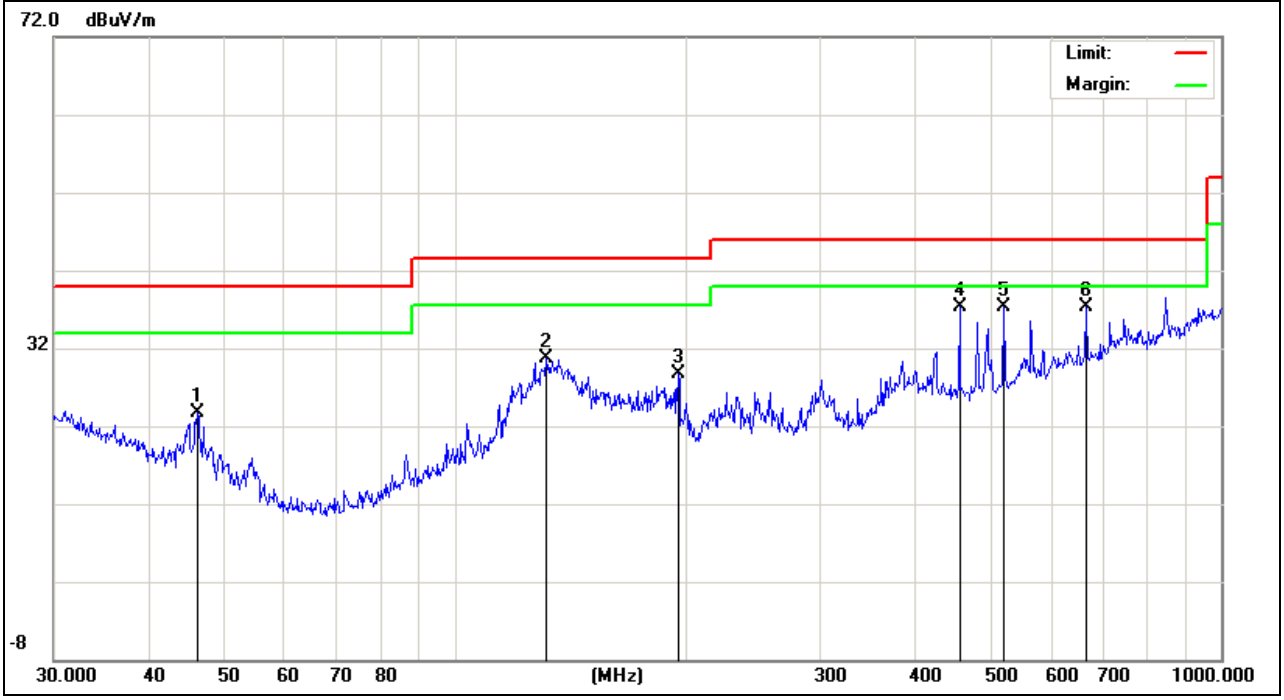
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	WCDMA Smart Phone	Model Name. ：	T707
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Polarization：	Vertical
Test Voltage ：	DC 5V from Adapter AC 120V/60Hz		
Test Mode ：	Mode 1		

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type
46.1779	13.7	9.99	23.69	40	-16.31	Peak
131.7577	18.39	12.22	30.61	43.5	-12.89	Peak
195.822	19.66	8.97	28.63	43.5	-14.87	Peak
455.9058	17.94	19.39	37.33	46	-8.67	Peak
520.8881	16.42	20.86	37.28	46	-8.72	Peak
665.8034	13.54	23.77	37.31	46	-8.69	Peak

Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



The worst test data above 1 GHz was showed as thefollow(Above 1GHz):

EUT：	WCDMA Smart Phone	Model Name. ：	T707
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Polarization：	Vertical and Horizontal
Test Voltage ：	DC 5V from Adapter AC 120V/60Hz		
Test Mode ：	Mode 1		

Freq.	Ant. Pol	Peak	AV	Ant./CL	Actual Fs		Peak	AV	Peak	AV
(MHz)	H/V	Reading	Reading	CF			Limit	Limit	Margin	Margin
		(dBuV)	(dBuV)	(dB)	Peak	AV	(dBuV/m)	(dBuV/m)	(dB)	(dB)
					(dBuV/m)	(dBuV/m)				
1095.34	H	59.91	42.46	5.19	65.10	47.65	74.00	54.00	-8.90	-6.35
2661.65	H	53.23	38.37	9.64	62.87	48.01	74.00	54.00	-11.13	-5.99
N/A										>20
1095.34	V	55.82	38.37	5.19	61.01	43.56	74.00	54.00	-12.99	-10.44
2661.65	V	50.47	33.89	9.64	60.11	43.53	74.00	54.00	-13.89	-10.47
N/A										>20

Notes:

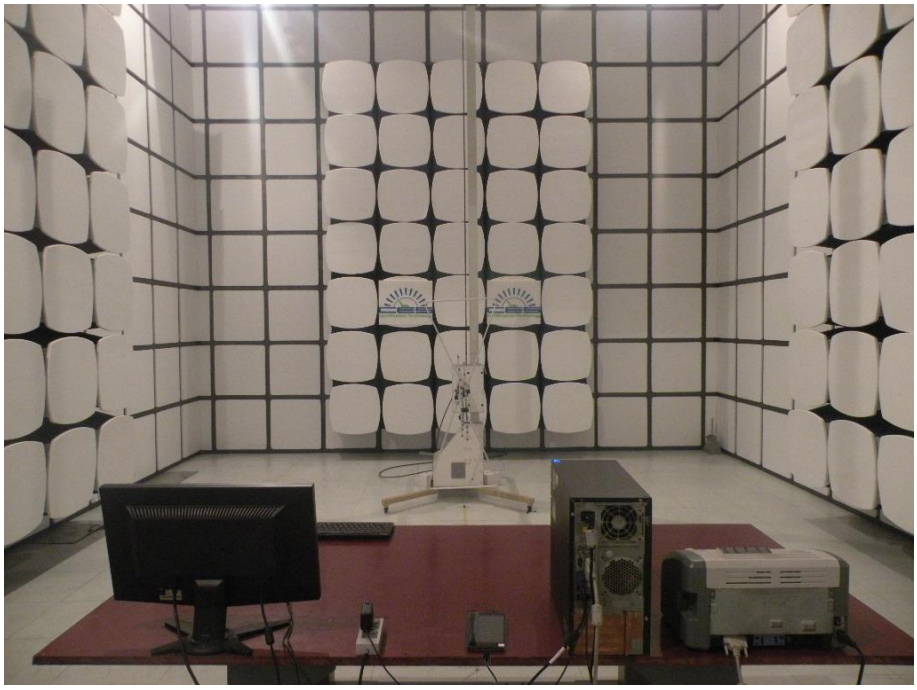
1. Measuring frequencies from 1 GHz to 6 GHz.

2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.

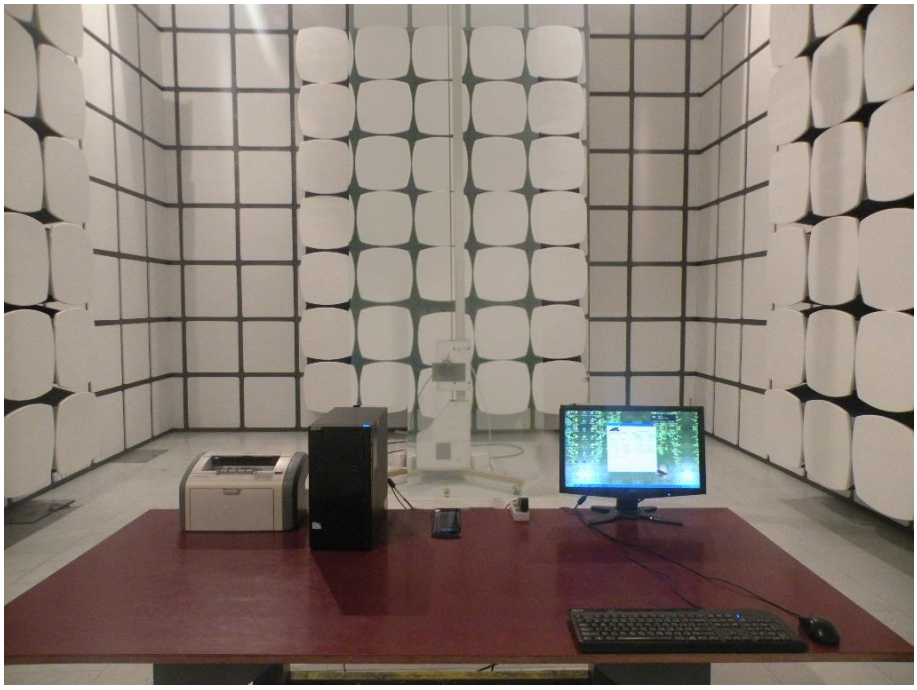
3. The frequency that above 3GHz is mainly from the environment noise.

4. EUT TEST PHOTO

Radiated Measurement Photos
Blow 1GHz



Above 1GHz



Conducted Measurement Photos