STSLAB-EMC Test Report

FCC Part 15B TEST REPORT
FCC ID: 2ADBRE1200

Product：	**Feature phone**
Trade Name：	**KALIHO. K-CEL. K-TEN**
Model Number：	**E1200**
Serial Model：	**P1000, K109**
Report No.：	**STS1409062E01**

Prepared for

Shenzhen Kaliho Technology Development Limited

19F. Block A, Stars plaza, HuaQiang North Road, FuTian District, Shenzhen, China

Prepared by

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TEST RESULT CERTIFICATION

Applicant's name ..... :	Shenzhen Kaliho Technology Development Limited
Address ..... :	19F. Block A, Stars plaza, HuaQiang North Road, FuTian District, Shenzhen,China
Manufacture's Name..... :	Shenzhen Kaliho Technology Development Limited
Address ..... :	Floor 4, Flat F, XingHui Technology industrial park, Huaning West Rd., Dalang Street, Longhua, Baoan district, Shenzhen, China

Product description

Product name ..... :	Feature phone
Brand name..... :	KALIHO. K-CEL. K-TEN
Model and/or type reference...:	E1200, P1000, K109
Serial Model..... :	N/A
Ratings ..... :	DC 5V/0.50A
Standards ..... :	FCC 47 CFR Part 15 Subpart B
Test procedure……. :	ANSI C63.4-2009

This device described above has been tested by STS, 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.

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Date of Test.....

Date (s) of performance of tests ..	Sep. 30, 2014 ~ Oct. 12, 2014
Date of Issue.....	Oct. 13, 2014
Test Result.....	**Pass**

Testing Engineer : (Tony Liu)

Technical Manager : (Vita Li)

Authorized Signatory : (Bovey Yang)

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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

Shenzhen STS Test Services Co., Ltd.
Add. : 1/F, Building 2, Zhuoke Science Park, Chongqing Road, Fuyong, Baoan District, Shenzhen, China
FCC Registration No.: 842334

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	Feature phone
Trade Name	KALIHO. K-CEL. K-TEN
Model Name	E1200
Serial Model	P1000, K109
Model Difference	Only difference in model name
Channel List	Please refer to the Note 2.
Adapter	Input:AC 180-240V,50/60Hz,0.15A Output:DC 5V,500mA
Battery	Rated Voltage: 3.7V Charge Limit: 4.2V capacity :1000mAh
Hardware version number	w2_jlk_v1.4.3
Software versioning number	W2_JLK_V1.5.0
Connecting I/O Port(s)	Please refer to the User's Manual
CPU processor speed	1.2GHz

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
Mode 3	MP3/MP4 Mode
Mode 4	Idle Mode

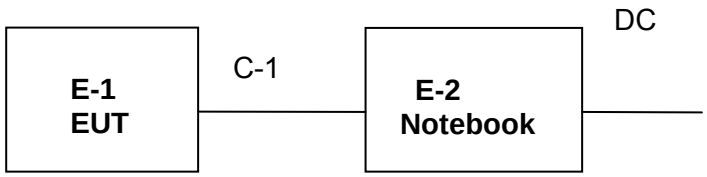
For Conducted Emission	
Final Test Mode	Description
Mode1	USB Model

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	Feature phone	KALIHO. K-CEL. K-TEN	E1200	N/A	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 Data	Calibrated Due
1	Spectrum Analyzer	Agilent	E4407B	160400005	Jul. 05. 2014	Jul. 06. 2015
2	Test Receiver	R&S	ESPI	101318	Jul. 05. 2014	Jul. 06. 2015
3	Bilog Antenna	TESEQ	CBL6111D	31216	Nov. 22. 2013	Nov. 23. 2014
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264416	Jul. 05. 2014	Jul. 06. 2015
5	Spectrum Analyzer	ADVANTEST	R3132	150900201	Jul. 05. 2014	Jul. 06. 2015
6	Horn Antenna	EM	EM-AH-10180	2011071402	Nov. 22. 2013	Nov. 23. 2014
7	Horn Ant	Schwarzbeck	BBHA 9170	9170-181	Jul. 05. 2014	Jul. 06. 2015
8	Amplifier	EM	EM-30180	060538	Jul. 05. 2014	Jul. 06. 2015
9	Loop Antenna	ARA	PLA-1030/B	1029	Jul. 05. 2014	Jul. 06. 2015
10	Power Meter	R&S	NRVS	100696	Jul. 05. 2014	Jul. 06. 2015
11	Power Sensor (Peak)	R&S	NRV-Z31	0396.0101.19	Jul. 05. 2014	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. 05. 2014	Jul. 06. 2015
2	LISN	R&S	ENV216	101313	Jul. 05. 2014	Jul. 06. 2015
3	LISN	EMCO	3816/2	00042990	Jul. 05. 2014	Jul. 06. 2015
4	50Ω Coaxial Switch	Anritsu	MP59B	6200264417	Jul. 05. 2014	Jul. 06. 2015
5	Passive Voltage Probe	R&S	ESH2-Z3	100196	Jul. 05. 2014	Jul. 06. 2015
6	Absorbing clamp	R&S	MOS-21	100423	Jul. 05. 2014	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

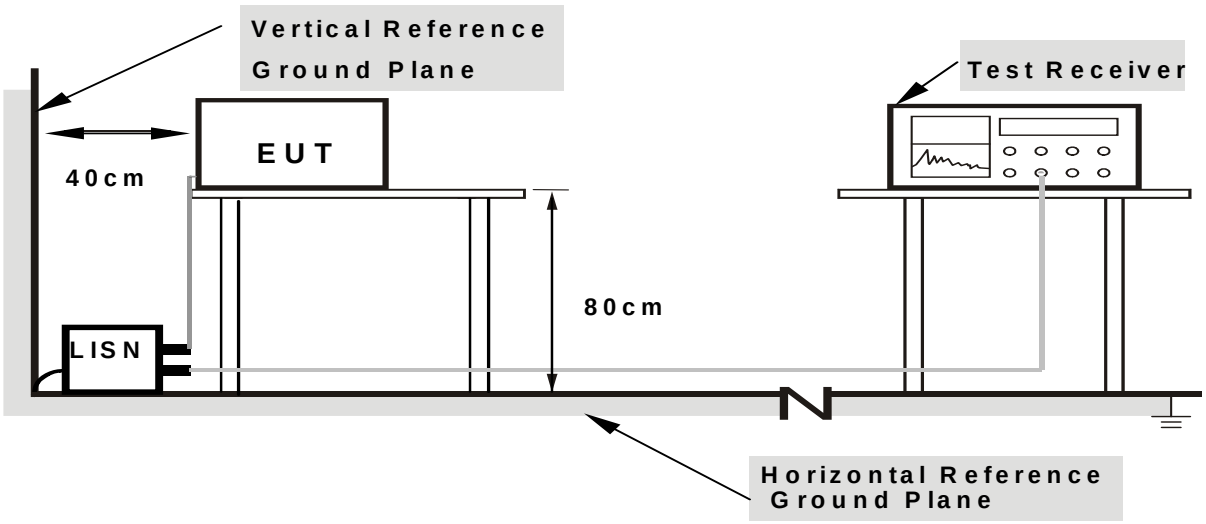
3.1.2 TEST PROCEDURE

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

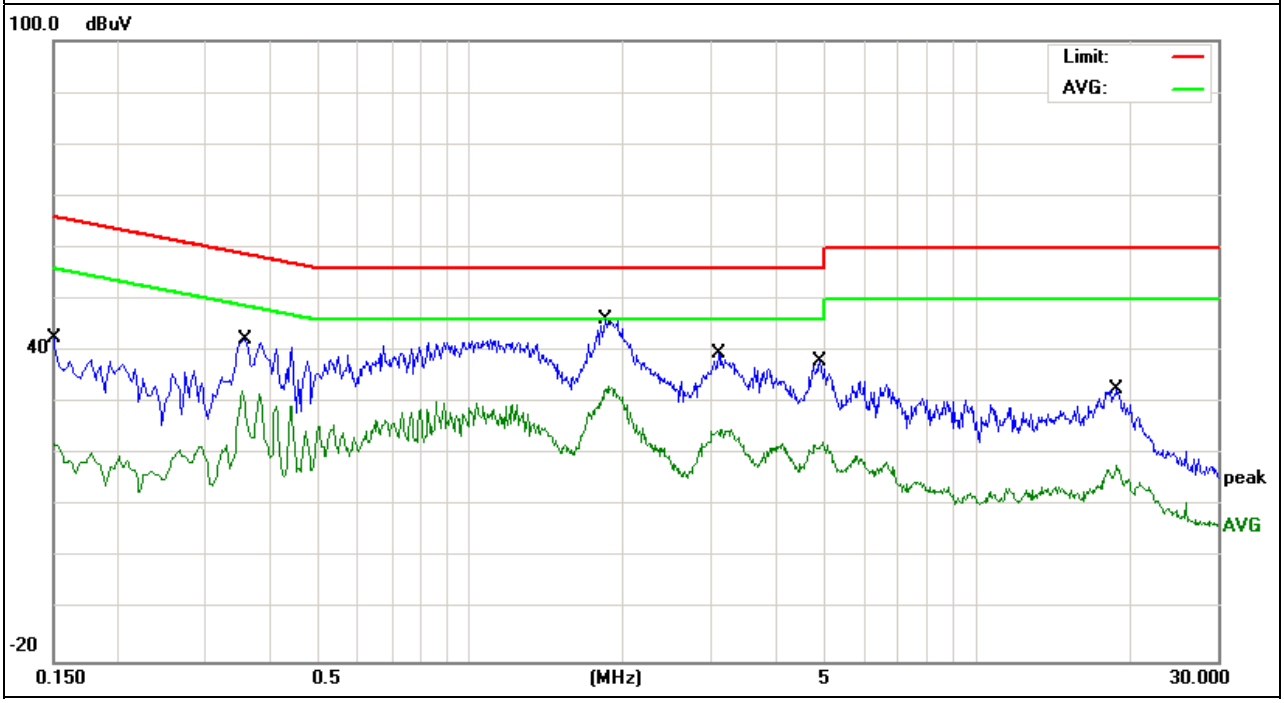
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

3.1.6 TEST RESULTS

EUT：	Feature phone	Model Name. ：	E1200
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	L
Test Voltage ：	DC 5V from Adapter with AC 120V/60Hz	Test Mode：	1

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
0.15	32.64	9.66	42.3	65.99	-23.69	QP
0.15	12.23	9.66	21.89	55.99	-34.1	AVG
0.343	32.45	9.63	42.08	58.77	-16.69	QP
0.343	23.65	9.63	33.28	48.77	-15.49	AVG
1.865	36.44	9.76	46.2	56	-9.8	QP
1.865	23.24	9.76	33	46	-13	AVG
3.112	29.32	9.87	39.19	56	-16.81	QP
3.112	15.65	9.87	25.52	46	-20.48	AVG
4.9088	28.76	9.43	38.19	56	-17.81	QP
4.9088	12.34	9.43	21.77	46	-24.23	AVG
18.9465	22.23	10.15	32.38	60	-27.62	QP
18.9465	7.64	10.15	17.79	50	-32.21	AVG

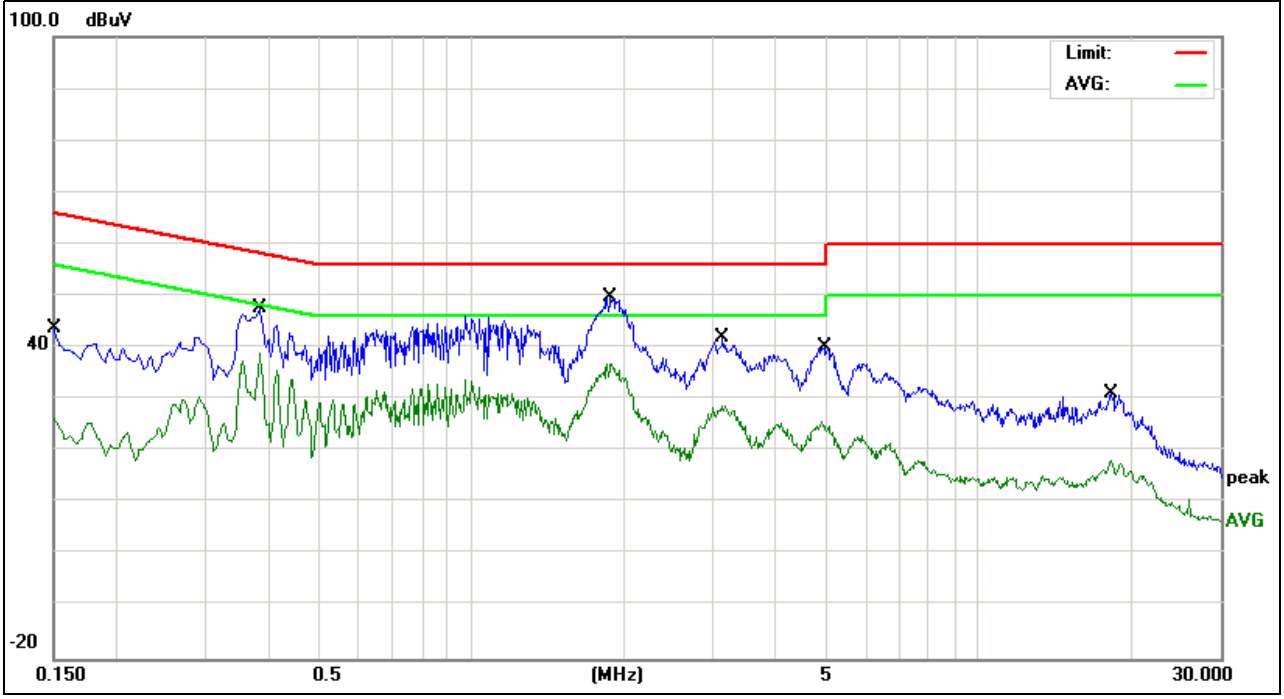
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	Feature phone	Model Name. ：	E1200
Temperature：	26 ℃	Relative Humidity：	54%
Pressure：	1010hPa	Phase：	N
Test Voltage ：	DC 5V from Adapter AC 120V/60Hz	Test Mode：	Link Mode

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
0.15	34.24	9.66	43.9	65.99	-22.09	QP
0.15	16.35	9.66	26.01	55.99	-29.98	AVG
0.397	38.32	9.58	47.9	58.23	-10.33	QP
0.397	29.45	9.58	39.03	48.23	-9.2	AVG
1.893	40.67	9.76	50.43	56	-5.57	QP
1.893	27.67	9.76	37.43	46	-8.57	AVG
3.34	32.87	9.87	42.74	56	-13.26	QP
3.34	19.56	9.87	29.43	46	-16.57	AVG
4.9725	30.78	9.98	40.76	56	-15.24	QP
4.9725	16.54	9.98	26.52	46	-19.48	AVG
18.3024	21.09	10.09	31.18	60	-28.82	QP
18.3024	8.55	10.09	18.64	50	-31.36	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	10th carrier harmonic
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 1 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 1 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:

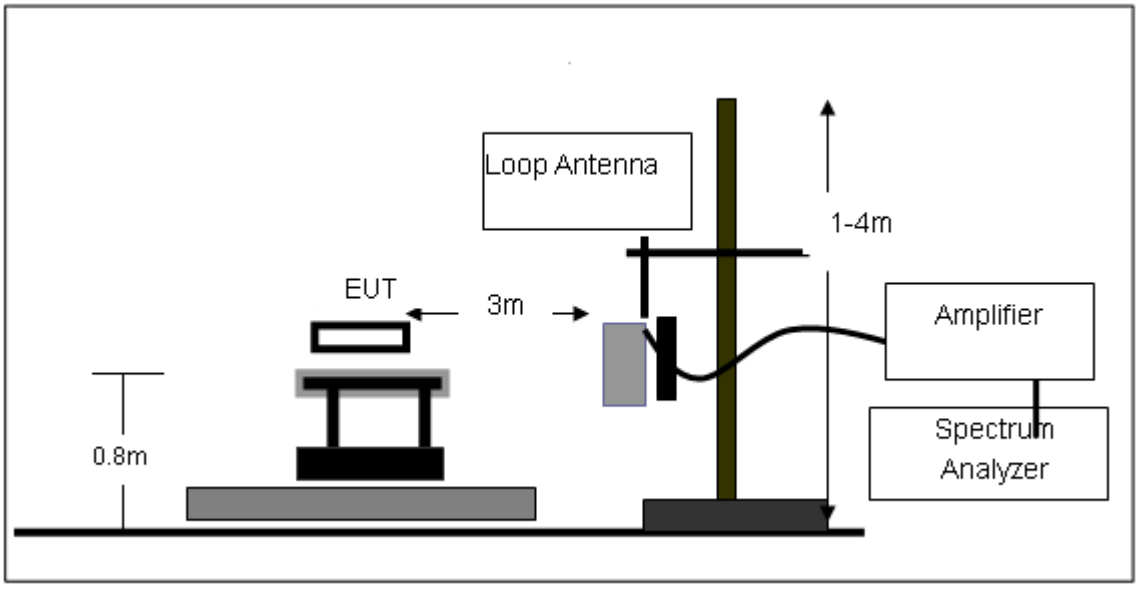
Both horizontal and vertical antenna polarities were tested
and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 DEVIATION FROM TEST STANDARD

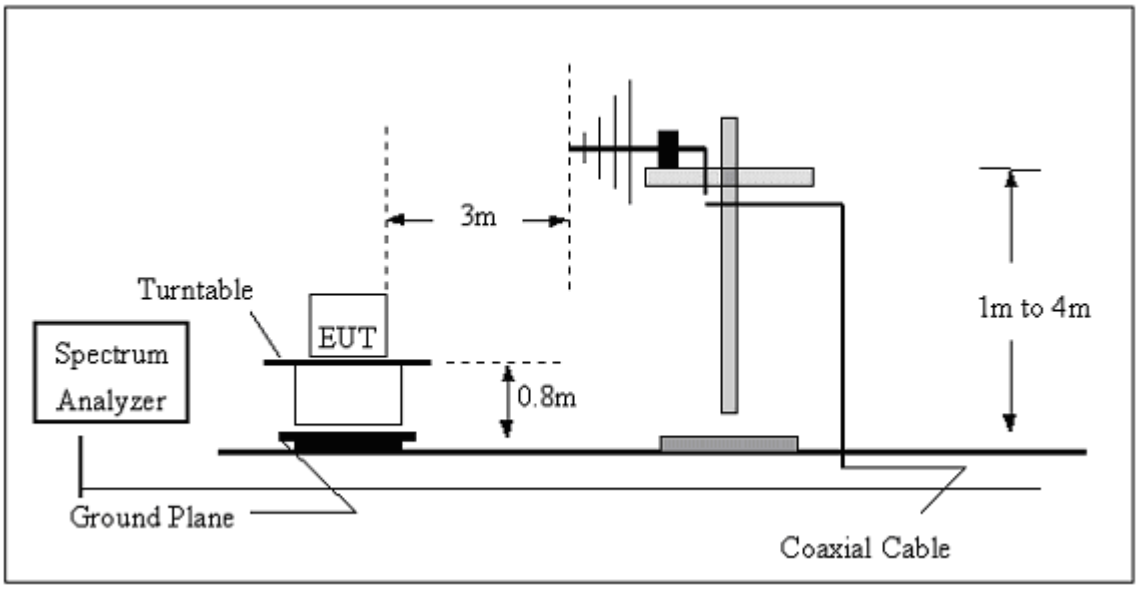
No deviation

3.2.4 TEST SETUP

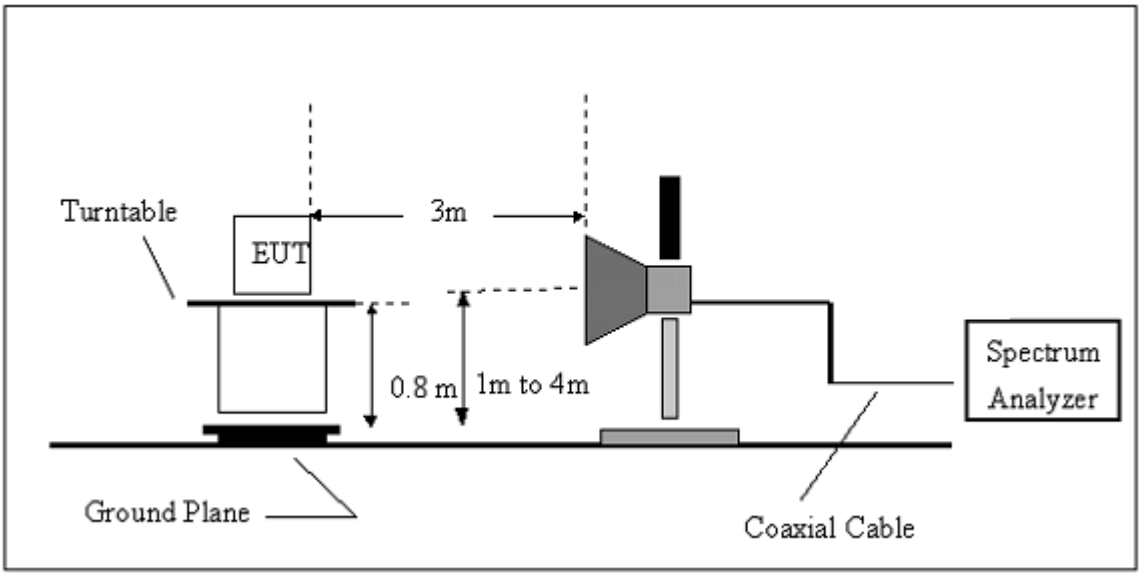
（A）Radiated Emission Test-Up Frequency Below 30MHz



（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：	Feature phone	Model Name. ：	E1200
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

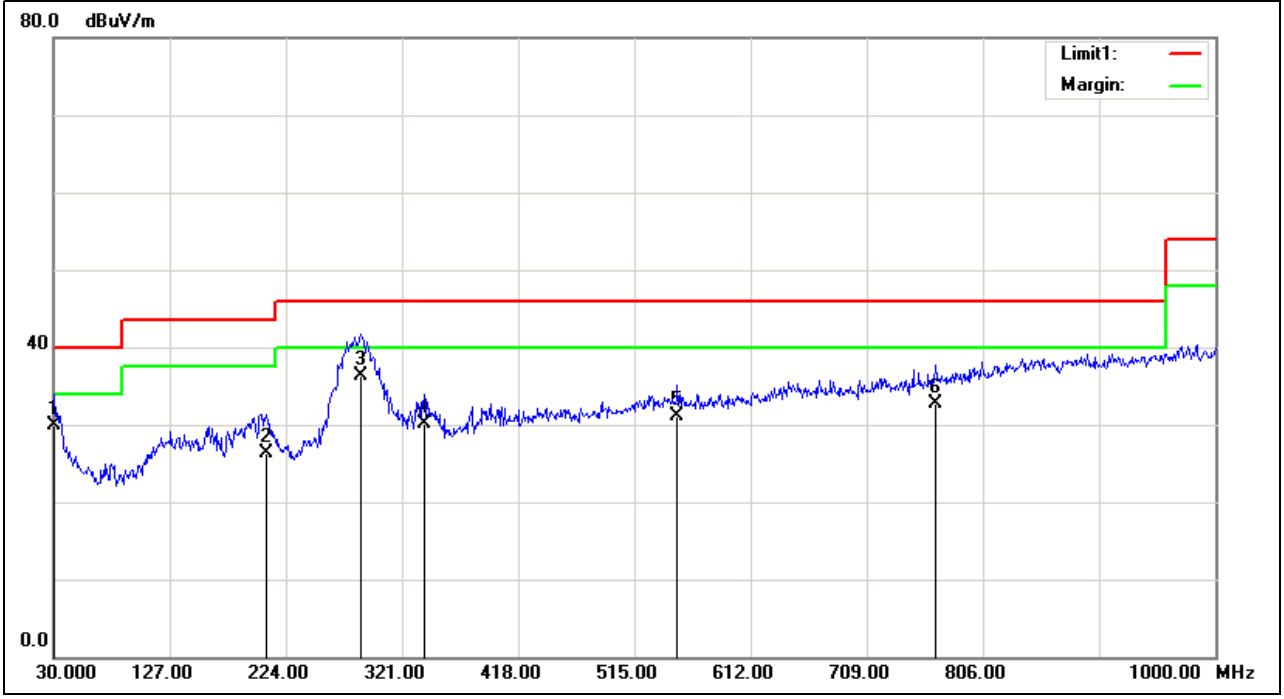
NOTE:
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.
Distance extrapolation factor =40 log (specific distance/test distance)(dB);
Limit line = specific limits(dBuv) + distance extrapolation factor.

3.2.7 TEST RESULTS (BETWEEN 30M – 1000 MHZ)

EUT：	Feature phone	Model Name. ：	E1200
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Polarization：	Horizontal
Test Voltage ：	DC 5V from Adapter 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)	
30.56	8.23	22.12	30.35	40	-9.65	QP
206.33	12.14	13.43	25.57	43.5	-17.93	QP
292.43	20.54	15.76	36.3	46	-9.7	QP
341.56	12.23	15.87	28.1	46	-17.9	QP
551.25	10.54	21.45	31.99	46	-14.01	QP
762.34	9.87	23.65	33.52	46	-12.48	QP

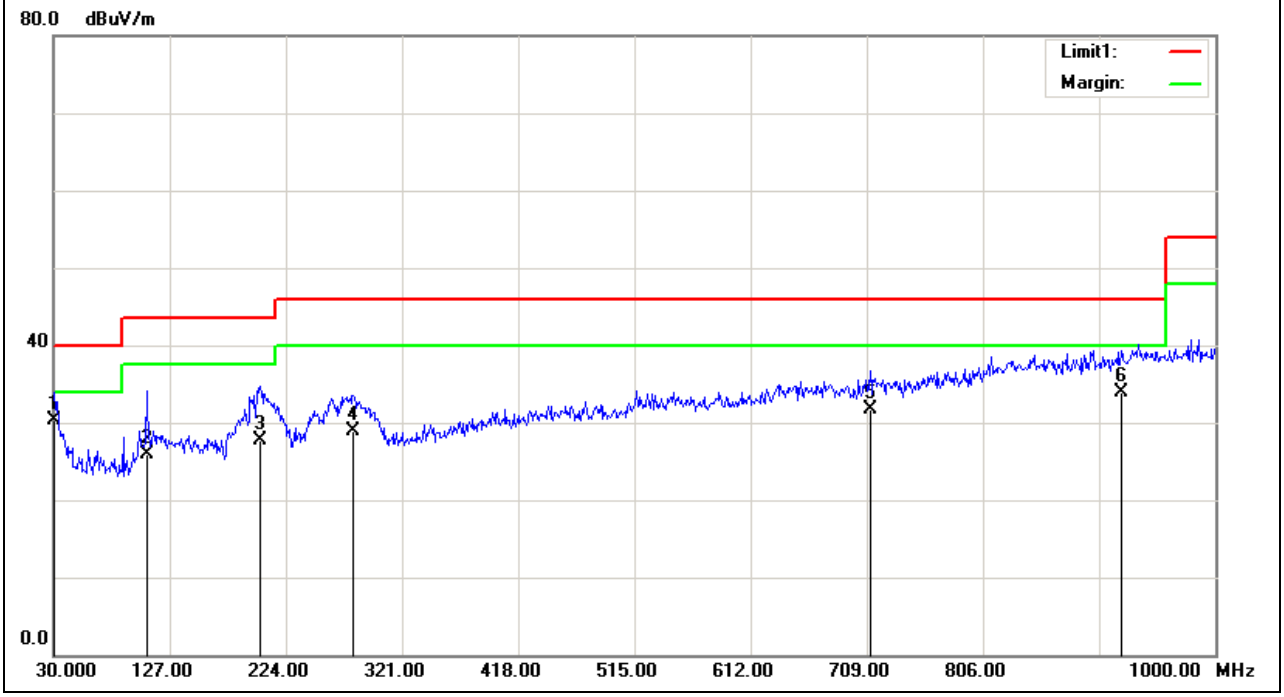
Remark:
1. Factor = Antenna Factor + Cable Loss – Pre-amplifier.



EUT：	Feature phone	Model Name. ：	E1200
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Polarization：	Vertical
Test Voltage ：	AC 120V		
Test Mode ：	TX Mode		

Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
(MHz)	(dBμV)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
31.22	8.45	22.03	30.48	40	-9.52	QP
109.122	13.67	12.67	26.34	43.5	-17.16	QP
204.265	14.76	13.31	28.07	43.5	43.5	QP
281.43	13.65	15.23	28.88	46	-17.12	QP
713.09	9.14	22.55	31.69	46	-14.31	QP
922.23	8.45	25.42	33.87	46	-12.13	QP

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



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

EUT：	Feature phone	Model Name. ：	E1200
Temperature：	20 ℃	Relative Humidity：	48%
Pressure：	1010 hPa	Polarization :	Vertical
Test Voltage ：	DC 5V from Adapter AC 120V/60Hz		
Test Mode ：	Mode 1		

Freq.	Ant. Pol	Peak	AV	Ant./CL	Actual Fs		Peak	AV
(MHz)	H/V	Reading	Reading	CF			Limit	Limit
		(dBuV)	(dBuV)	(dB)	Peak	AV	(dBuV/m)	(dBuV/m)
					(dBuV/m)	(dBuV/m)		
1085.45	V	55.23	37.45	5.23	60.46	42.68	74	54
2673.41	V	50.65	32.43	9.56	83.08	41.99	74	54
N/A								

Notes:

1. Measuring frequencies from 1 GHz to 6GHz.

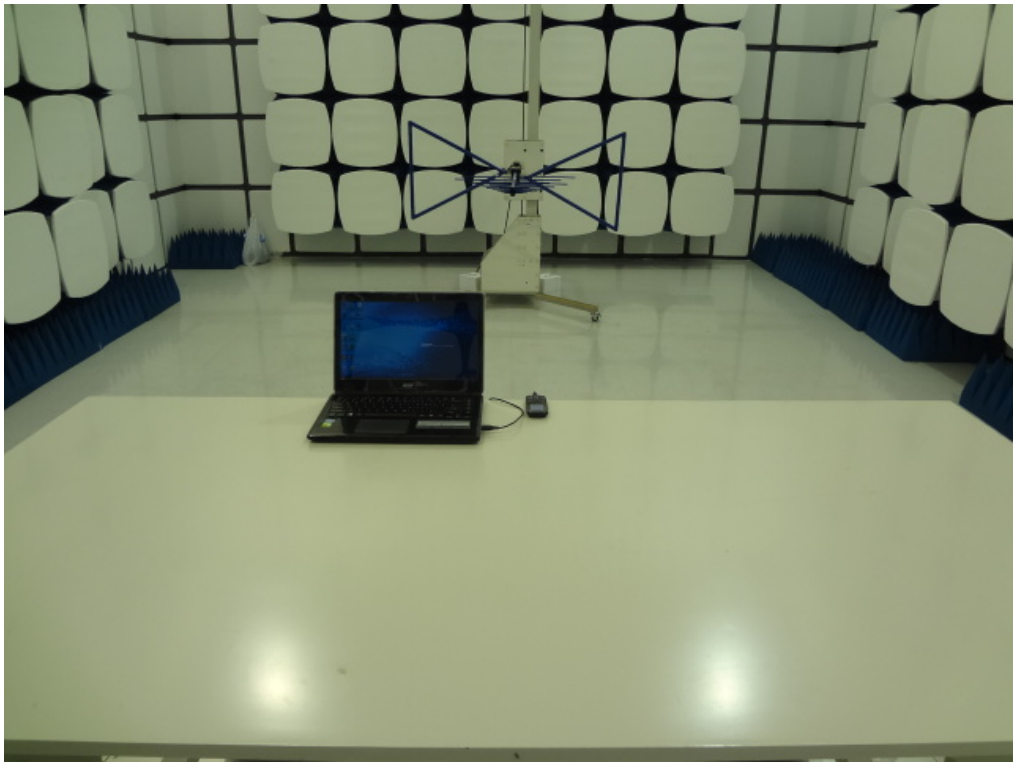
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode and average detector mode of the emission shown in Actual FS column.

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

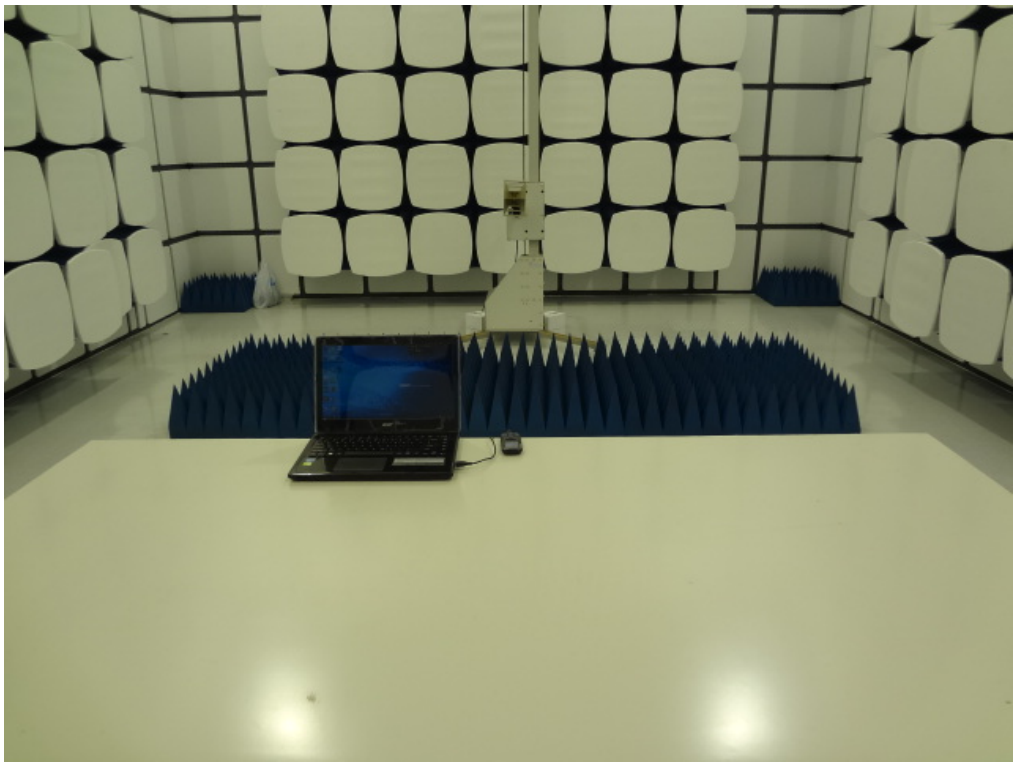
4. EUT TEST PHOTO

Radiated Measurement Photos

Blow 1GHz



Above 1GHz



Conducted Measurement Photos