FCC TEST REPORT

Report No: STS1705233E02

Issued for

Grandstream Networks, Inc.

126 Brookline Ave, 3rd Floor Boston, MA 02215, USA

Product Name:	IP phone
Brand Name:	Grandstream
Test Model Name:	GXP1760W
Series Model:	N/A
FCC ID:	YZZ
Test Standard:	FCC Part 15B

BZT Testing Technology Co., Ltd

Add. : Buliding 17, Xinghua Road Xingwei industrial Park Fuyong,
Baoan District, Shenzhen, Guangdong, China
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TEST RESULT CERTIFICATION

Applicant's name .....: Grandstream Networks, Inc.

Address.....: 126 Brookline Ave, 3rd Floor Boston, MA 02215, USA

Manufacture's Name .....: Grandstream Networks, Inc.

Address.....: 126 Brookline Ave, 3rd Floor Boston, MA 02215, USA

Product description

Product name.....: IP phone

Model and/or type reference ..: GXP1760W

Standards .....: FCC Part 15B

Test procedure ..... ANSI C63.4-2014

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.

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Date of Test.....

Date of performance of tests..... 25 May. 2017 ~ 02 June. 2017

Date of Issue..... 05 June. 2017

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

Testing Engineer : 

(Kyle Rao)

Technical Manager : 

(Chopin Xiao)

Authorized Signatory : 

(Vita Li)

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Revision History

Rev.	Issue Date	Report NO.	Effect Page	Contents
00	05 June. 2017	STS1705233E02	ALL	Initial Issue
Note: **Format version** of the report -V01				

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 FACTORY

BZT Testing Technology Co., Ltd.
Add. : Buliding 17, Xinghua Road Xingwei industrial Park Fuyong,
Baoan District, Shenzhen, Guangdong, 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 (9KHz-150KHz)	±2.88dB
2	Conducted Emission (150KHz-30MHz)	±2.67dB
3	RF power,conducted	±0.70dB
4	Spurious emissions,conducted	±1.19dB
5	All emissions,radiated(<1G) 30MHz-200MHz	±2.83dB
6	All emissions,radiated(<1G) 200MHz-1000MHz	±2.94dB
7	All emissions,radiated(>1G)	±3.03dB
8	Temperature	±0.5°C
9	Humidity	±2%

2. GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

Equipment	IP phone
Trade Name	Grandstream
Model Name	GXP1760W
Series Model	N/A
Model Difference	N/A
Adapter	Power supply and ADP(rating): Model 1: NBS12E050200VU; Model 2: F12US0500200A Input: AC100-240V,50/60Hz,0.3A Output: DC 5V, 2A
Hardware version number	GXP1760_KP_V1.3A
Software version number	0.5.4.27

Note: 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.

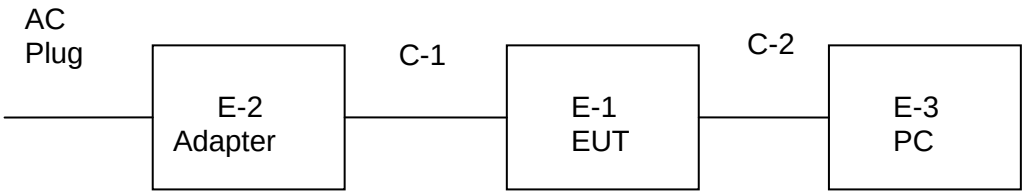
Pretest Mode	Description
Mode 1	IP Phone+Adapter 1(F12DE0500200A)
Mode 2	IP Phone+Adapter 2(NBS12E050200VE)
Mode 3(For Radiated)	IP Phone+POE

For Conducted Test	
Final Test Mode	Description
Mode 1	IP Phone+Adapter 1(F12DE0500200A)

For Radiated Test	
Final Test Mode	Description
Mode 1	IP Phone+Adapter 1(F12DE0500200A)

NOTE: 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

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.	Note
E-1	IP phone	Grandstream	GXP1760W	EUT
E-2	Adapter	N/A	F12DE0500200A or NBS12E050200VE	EUT
E-3	PC	HP	500-320cx	N/A

Item	Shielded Type	Ferrite Core	Length	Note
C-1	unshielded	NO	85	N/A
C-2	unshielded	NO	80	N/A

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

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.

Radiation Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
EMI Test Receiver	R&S	ESCI	101427	2016.10.23	2017.10.22
Bilog Antenna	TESEQ	CBL6111D	34678	2016.10.23	2017.10.22
Horn Antenna	SCHWARZBECK	BBHA 9120D(1201)	9120D-1343	2014.11.24	2017.11.23
Power Amplifier	Agilent	8449B	60538	2015.03.05	2018.03.04
Spectrum Analyzer	Agilent	E4407B	MY50140340	2016.10.23	2017.10.22

Conduction Test equipment

Kind of Equipment	Manufacturer	Type No.	Serial No.	Last Calibration	Calibrated Until
EMI Test Receiver	R&S	ESPI	102086	2016.10.23	2017.10.22
LISN	R&S	ENV216	101242	2016.10.23	2017.10.22
LISN	EMCO	3810/2NM	000-23625	2016.10.23	2017.10.22

3. EMC EMISSION TEST

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 POWER LINE CONDUCTED EMISSION LIMITS

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

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.

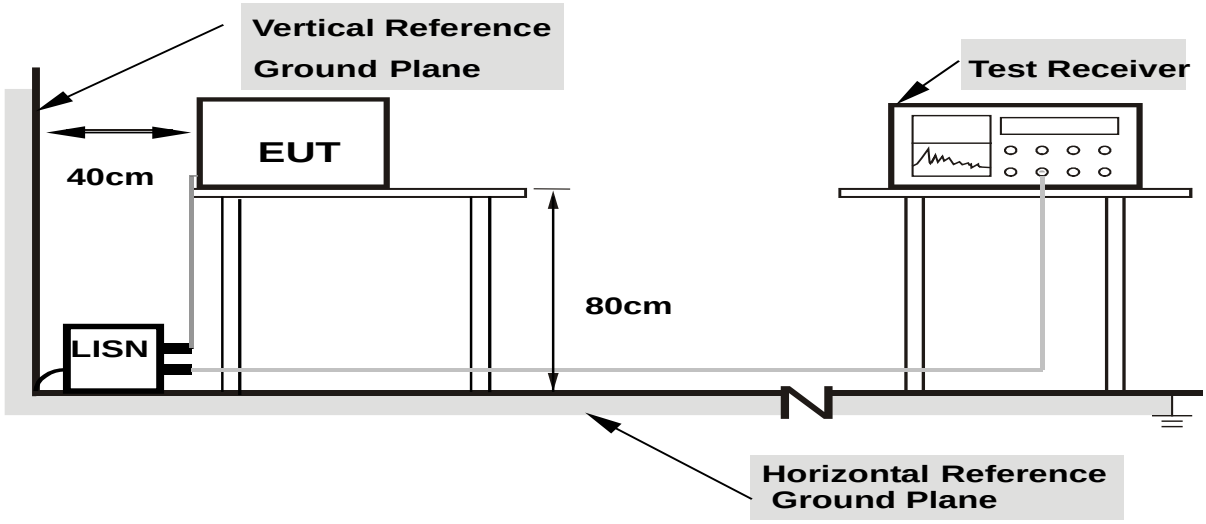
d. LISN at least 80 cm from nearest part of EUT chassis.

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

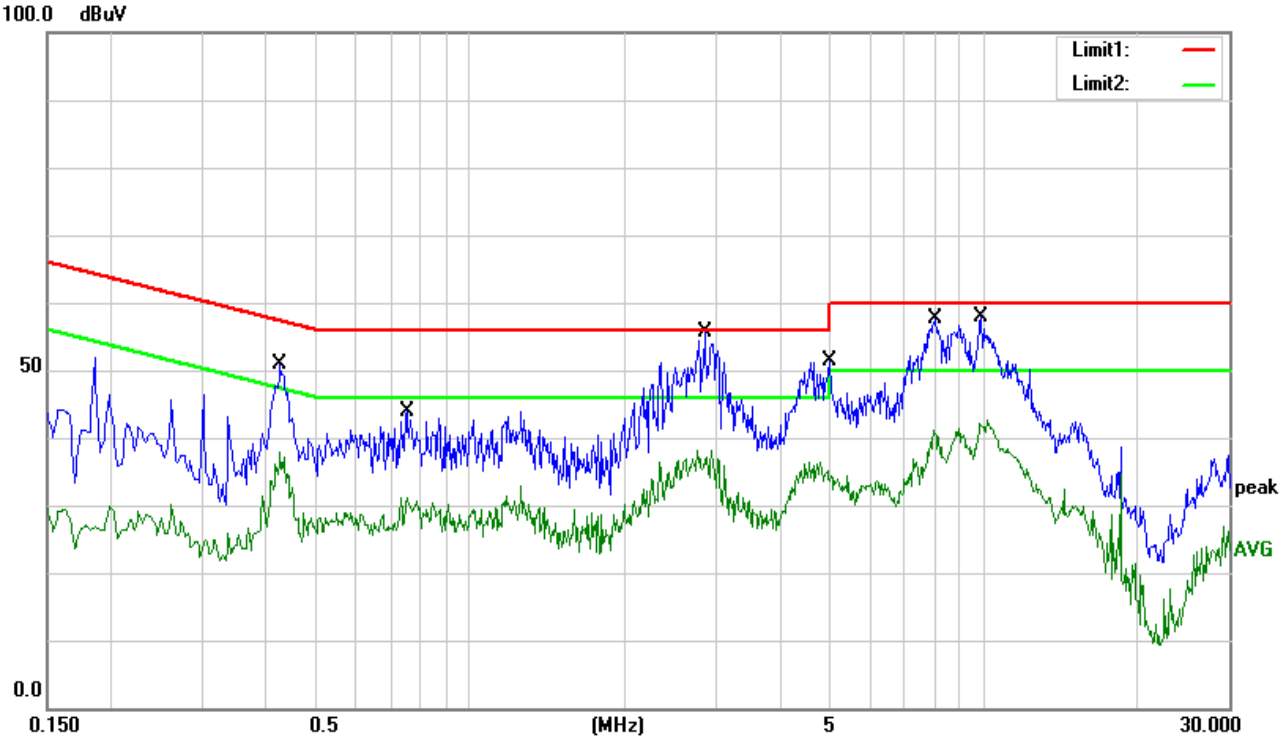
The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

3.1.6 TEST RESULTS

Temperature:	23.1℃	Relative Humidity:	60%
Pressure:	1010hPa	Phase:	L
Test Voltage:	AC 120V/60Hz	Test Mode:	Mode 1

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.4260	41.77	9.21	50.98	57.33	-6.35	QP
2	0.4260	26.47	9.21	35.68	47.33	-11.65	AVG
3	0.7540	34.73	9.24	43.97	56.00	-12.03	QP
4	0.7540	20.63	9.24	29.87	46.00	-16.13	AVG
5	2.8828	36.18	9.26	45.44	56.00	-10.56	QP
6	2.8828	26.82	9.26	36.08	46.00	-9.92	AVG
7	5.0140	42.07	9.27	51.34	60.00	-8.66	QP
8	5.0140	23.18	9.27	32.45	50.00	-17.55	AVG
9	8.0728	43.46	9.33	52.79	60.00	-7.21	QP
10	8.0728	29.73	9.33	39.06	50.00	-10.94	AVG
11	9.8946	43.23	9.40	52.63	60.00	-7.37	QP
12	9.8946	32.21	9.40	41.61	50.00	-8.39	AVG

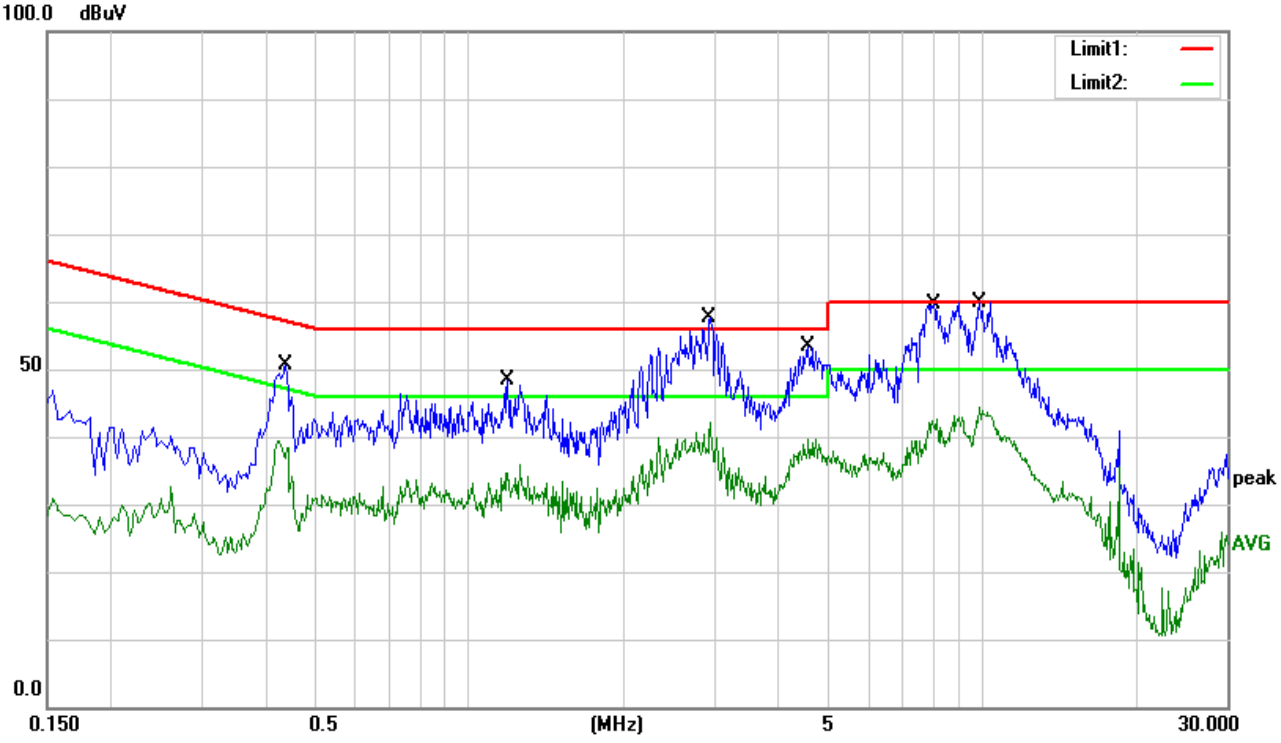
Remark:
1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result =Reading + Factor)–Limit



Temperature:	23.1℃	Relative Humidity:	60%
Pressure:	1010hPa	Phase:	N
Test Voltage:	AC 120V/60Hz	Test Mode:	Mode 1

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Result (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1	0.4380	41.47	9.20	50.67	57.10	-6.43	QP
2	0.4380	29.28	9.20	38.48	47.10	-8.62	AVG
3	1.1860	39.12	9.25	48.37	56.00	-7.63	QP
4	1.1860	24.57	9.25	33.82	46.00	-12.18	AVG
5	2.9525	44.95	9.26	54.21	56.00	-1.79	QP
6	2.9525	31.58	9.26	40.84	46.00	-5.16	AVG
7	4.5660	41.01	9.27	50.28	56.00	-5.72	QP
8	4.5660	27.88	9.27	37.15	46.00	-8.85	AVG
9	8.0801	44.37	9.33	53.70	60.00	-6.30	QP
10	8.0801	30.95	9.33	40.28	50.00	-9.72	AVG
11	9.8901	43.57	9.40	52.97	60.00	-7.03	QP
12	9.8901	33.01	9.40	42.41	50.00	-7.59	AVG

Remark:
1. All readings are Quasi-Peak and Average values.
2. Margin = Result (Result =Reading + Factor)–Limit



3.2 RADIATED EMISSION MEASUREMENT

3.2.1 Radiated Emission Limits

Frequencies (MHz)	Class A (at 10m) dBuV/m	Class B (at 3m) dBuV/m
30~88	39.0	40.0
88~216	43.5	43.5
216~960	46.5	46.0
Above 960	49.5	54.0

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

Note:

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

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

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 0.8 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.

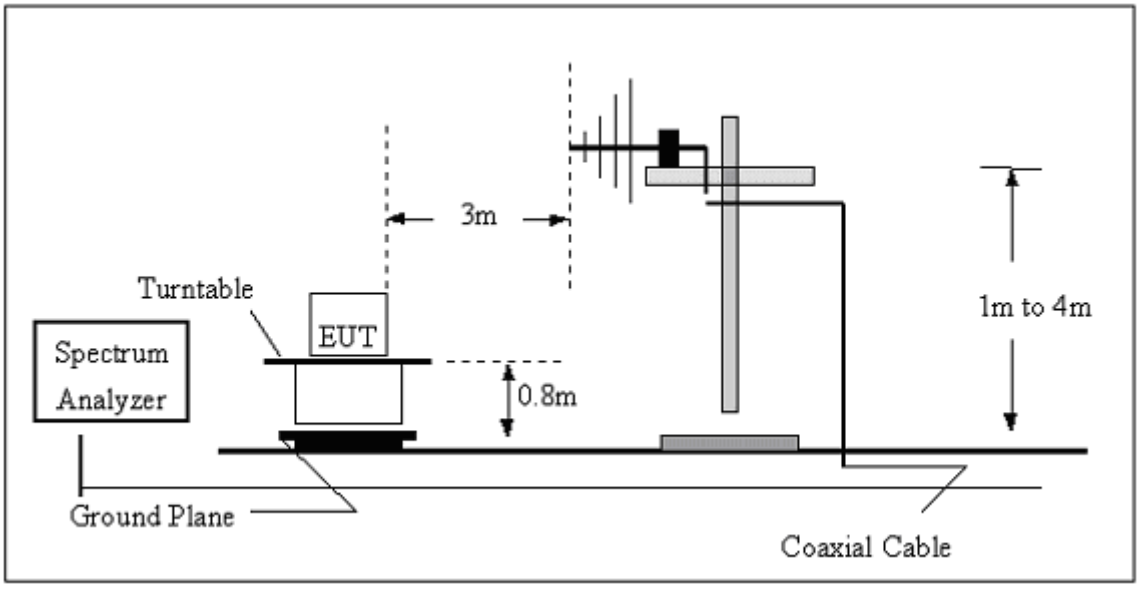
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.

f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

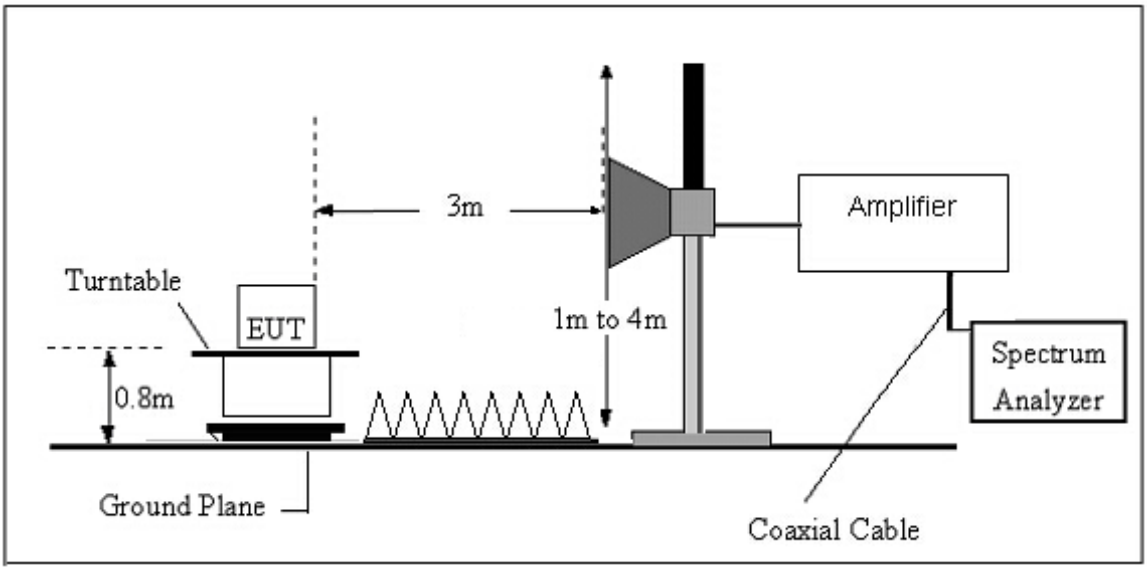
Note: Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3 TEST SETUP

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



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



3.2.4 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.

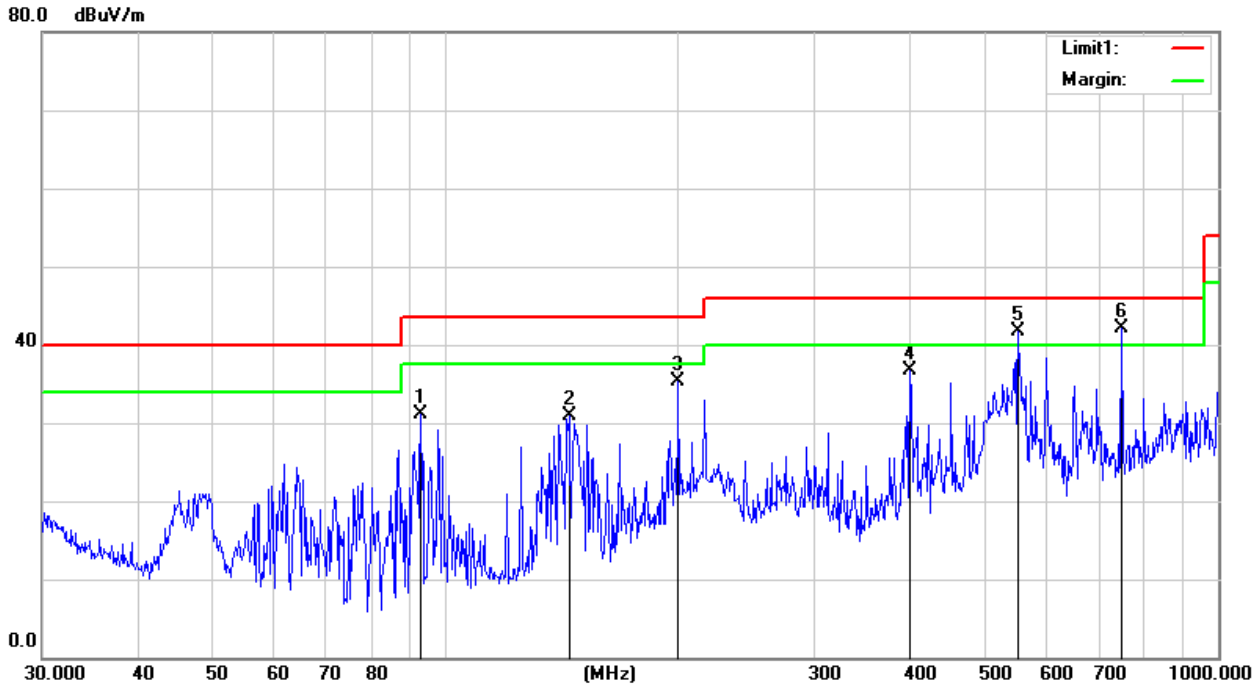
3.2.5 TEST RESULTS

Between 30-1000MHz

Temperature:	26 ℃	Relative Humidity:	60%
Pressure:	1010hPa	Phase:	Horizontal
Test Voltage:	AC 120V/60Hz	Test Mode:	Mode 1

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	92.7871	50.93	-19.92	31.01	43.50	-12.49	QP
2	144.3348	48.68	-17.72	30.96	43.50	-12.54	QP
3	199.9856	55.52	-20.17	35.35	43.50	-8.15	QP
4	399.0302	48.05	-11.28	36.77	46.00	-9.23	QP
5	550.9480	48.48	-6.76	41.72	46.00	-4.28	QP
6	750.1083	45.62	-3.56	42.06	46.00	-3.94	QP

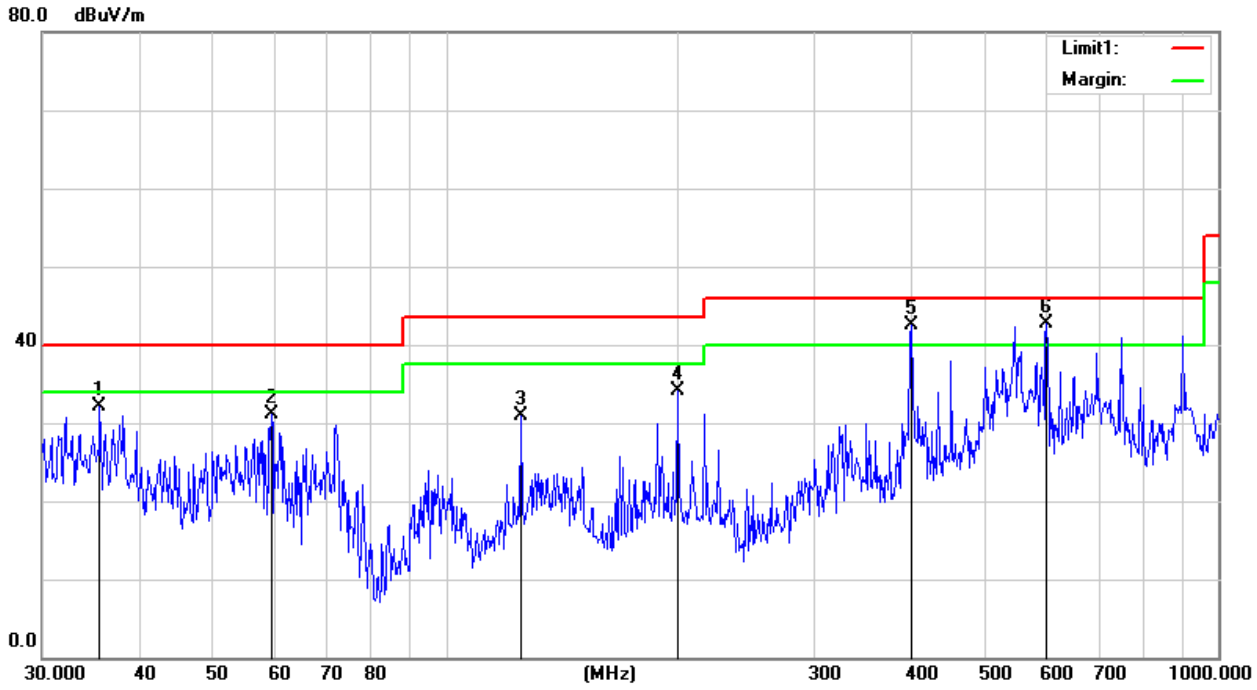
Remark:
1. All readings are Quasi-Peak .
2. Margin = Result (Result =Reading + Factor)–Limit



Temperature:	26 ℃	Relative Humidity:	60%
Pressure:	1010hPa	Phase:	Vertical
Test Voltage:	AC 120V/60Hz	Test Mode:	Mode 1

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	35.6240	46.18	-14.07	32.11	40.00	-7.89	QP
2	59.4405	55.32	-24.18	31.14	40.00	-8.86	QP
3	125.0066	48.46	-17.61	30.85	43.50	-12.65	QP
4	199.2855	54.36	-20.17	34.19	43.50	-9.31	QP
5	400.4320	53.78	-11.22	42.56	46.00	-3.44	QP
6	599.3212	49.88	-7.14	42.74	46.00	-3.26	QP

Remark:
1. All readings are Quasi-Peak .
2. Margin = Result (Result =Reading + Factor)–Limit



Above 1GHz

The worst test data above 1 GHz was showed as the follow:

Temperature:	26 ℃	Relative Humidity:	60%
Pressure:	1010hPa	Test Mode:	Mode 1

PK

Freq.	Ant. Pol	Peak	Amplifier	Loss	Antenna Factor	Orrected Factor	Actual Fs	Peak	Peak
(MHz)	H/V	Reading (dBuV)	（dB）	（dB）	（dB/m）	（dB）	Peak (dBuV/m)	Limit (dBuV/m)	margin (dBuV/m)
1403.24	H	67.81	45.1	4.0	25.1	-16.0	51.81	74.00	-22.19
3000.78	H	56.69	44.7	6.7	28.2	-9.8	46.89	74.00	-27.11
4002.42	H	62.43	44.2	7.9	29.7	-6.6	55.83	74.00	-18.17
5506.87	H	52.12	44.2	9.7	32.0	-2.5	49.62	74.00	-24.38
N/A									
1403.24	V	53.94	45.1	4.0	25.1	-16.0	37.94	74.00	-36.06
3000.78	V	54.15	44.7	6.7	28.2	-9.8	44.35	74.00	-29.65
4002.42	V	63.88	44.2	7.9	29.7	-6.6	57.28	74.00	-16.72
5506.87	V	57.65	44.2	9.7	32.0	-2.5	55.15	74.00	-18.85
N/A									

AV

Freq.	Ant. Pol	AV	Amplifier	Loss	Antenna Factor	Orrected Factor		AV	AV
(MHz)	H/V	Reading (dBuV)	（dB）	（dB）	（dB/m）	（dB）	AV (dBuV/m)	Limit (dBuV/m)	margin (dBuV/m)
1403.24	H	49.62	45.1	4.0	25.1	-16.0	33.62	54.00	-20.38
3000.78	H	46.15	44.7	6.7	28.2	-9.8	36.35	54.00	-17.65
4002.42	H	52.05	44.2	7.9	29.7	-6.6	45.45	54.00	-8.55
5506.87	H	50.10	44.2	9.7	32.0	-2.5	47.60	54.00	-6.40
N/A									
1403.24	V	37.68	45.1	4.0	25.1	-16.0	21.68	54.00	-32.32
3000.78	V	41.54	44.7	6.7	28.2	-9.8	31.74	54.00	-22.26
4002.42	V	33.56	44.2	7.9	29.7	-6.6	26.96	54.00	-27.04
5506.87	V	30.25	44.2	9.7	32.0	-2.5	27.75	54.00	-26.25
N/A									

Notes:

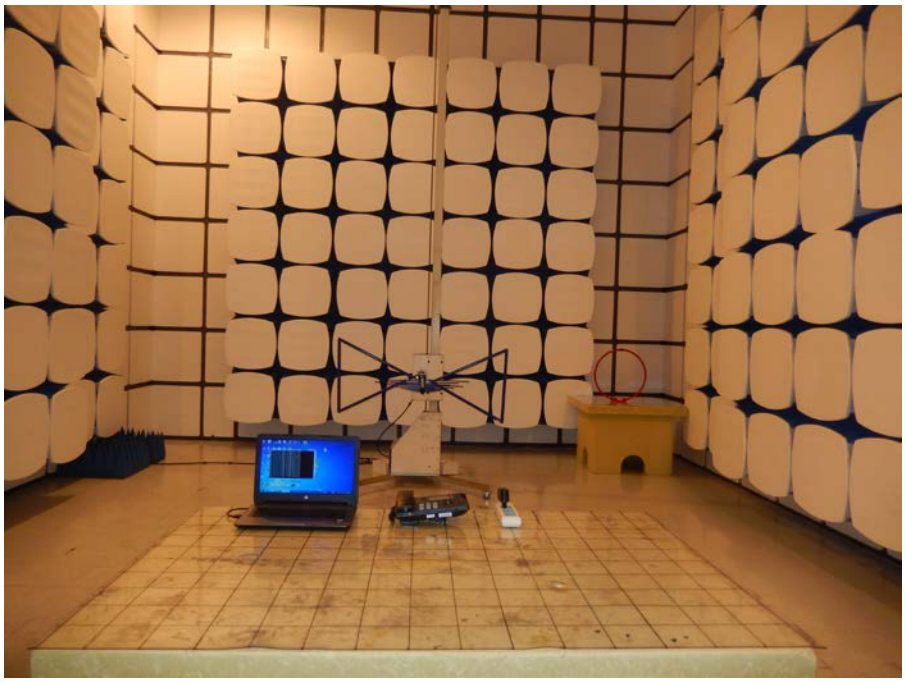
1. Measuring frequencies from 1 GHz to 13GHz.

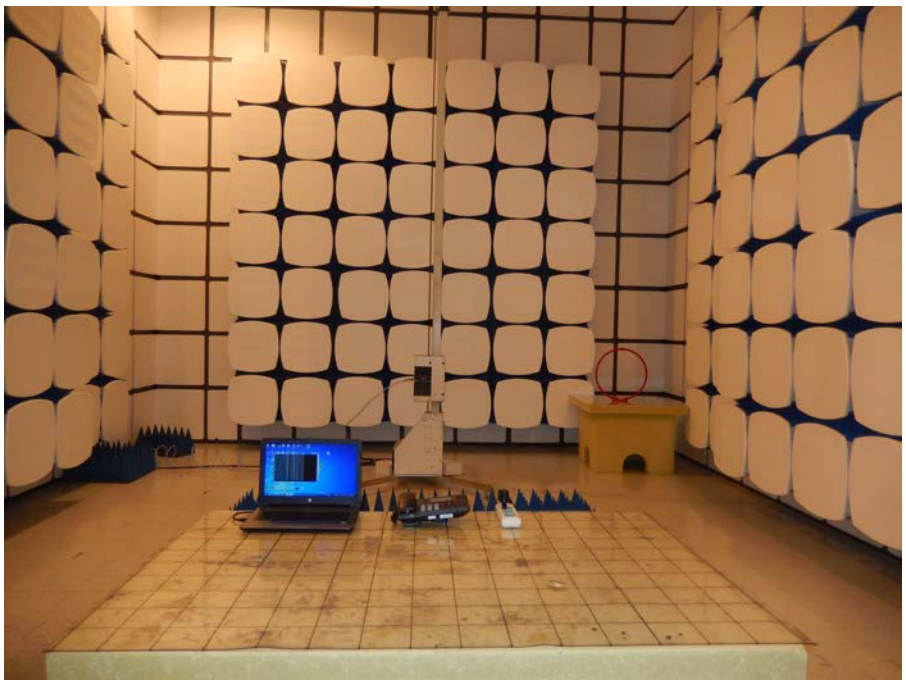
2. Radiated emissions measured in frequency above 1000MHz were made with an instrument using Peak detector mode of the emission shown in Actual FS column.

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

APPENDIX 1-PHOTOS OF TEST SETUP

Radiated Measurement Photos





Conducted Measurement Photos

※※※※※END OF THE REPORT※※※※※