



www.ecmg-global.net

EMI TEST REPORT

On Model Name: IP Phone

Model Number: GXP1630

Brand Name: Grandstream

Prepared for Grandstream Networks, Inc.

FCC ID Number: YZZGXP1630

According to FCC 47 CFR Part 15, Subpart B

Test Report #: SHE-1506-11328-FCC

Prepared by: Nancy *Nancy Han* /Assistant *ECMG*
Company Name

Reviewed by: Jawen Yin *Jawen Yin* / Senior Engineer *ECMG*
Company Name

QC Manager: Swall Zhang *Swall Zhang* /QC Manager *ECMG*
Company Name

Test Report Released by: Swall Zhang *Swall Zhang* July 8th, 2015 *July 8th, 2015*
Date

Test Location

Tests performed in a Certified ANSI Semi-Anechoic Chamber and Shielded Room.

Test Site Location : Galanz

*25 South Ronggui
Rd., Shunde,
Foshan, Guangdong, China*

Tel : (86)-757-23612785

Fax : (86)-757-23612537

Test Facility

The test facility was recognized, certified, or accredited by the following organizations:

- *CNAL - LAB Code: L2244*

Galanz EMC Laboratory has been assessed and in compliance with CNAL/AC01:2002 accreditation criteria for testing laboratories (identical to ISO/IEC 17025:2005 General Requirements) for the Competence of Testing Laboratories.

- *FCC - Registration No.: 580210*

Galanz EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC was maintained in our files.

- *IC - Registration No.: 8801A*

The Laboratory is registered to perform emission tests with Industry Canada (IC), and the registration number is 8801A.

Table of Contents

GOVERNMENT DISCLAIMER NOTICE	2
REPRODUCTION CLAUSE	2
OPINIONS AND INTERPRETATIONS	2
STATEMENT OF MEASUREMENT UNCERTAINTY	2
ADMINISTRATIVE DATA	3
EUT DESCRIPTION	4
FREQUENCY RANGE OF RADIATED MEASUREMENTS	5
TEST SUMMARY	6
TEST MODE JUSTIFICATION	7
EUT EXERCISE SOFTWARE	7
EQUIPMENT MODIFICATION	7
EUT SAMPLE PHOTOS	8
TEST SYSTEM DETAILS	17
CONFIGURATION OF TESTED SYSTEM	18
ATTACHMENT 1 - CONDUCTED EMISSION TEST RESULTS	19
ATTACHMENT 2 - RADIATED EMISSION MEASUREMENT	26

List Attached Files

Exhibit Type	File Description	File Name
<i>Test Report</i>	<i>Test Report</i>	YZZGXP1630 _Test Report.pdf
<i>Operation Description</i>	<i>Technical Description</i>	YZZGXP1630 _Operation description.pdf
<i>External Photos</i>	<i>External Photos</i>	YZZGXP1630 _External Photos
<i>Internal Photos</i>	<i>Internal Photos</i>	YZZGXP1630 _Internal Photos
<i>Block Diagram</i>	<i>Block Diagram</i>	YZZGXP1630 _Block Diagram.pdf
<i>Schematics</i>	<i>Circuit Diagram</i>	YZZGXP1630 _Schematics.pdf
<i>ID Label/Location</i>	<i>Label and Location</i>	YZZGXP1630 _Label & Location.pdf
<i>User Manual</i>	<i>User Manual</i>	YZZGXP1630 _User Manual.pdf
<i>Test setup photos</i>	<i>Test set-up photos</i>	YZZGXP1630 _Test Set-up Photos

Government Disclaimer Notice

When government drawing, specification, or other data are used for any purpose other than in connection with a definitely related government procurement operation, the United States Government thereby incurs no responsibility nor any obligation whatsoever; and the fact that the Government may have formulated, furnished, or in any way supplied the said drawing, specifications, or other data, is not to be regarded by implication or otherwise in any manner licensing the holder or any other person or corporation, or conveying any rights or permission to manufacture, use, or sell patented invention that may in any way be related thereto. This report must not be used to claim product endorsement by NVLAP or any agency of the U.S. Government.

Reproduction Clause

Any reproduction of this document must be done in full. No single part of this document may be reproduced without permission from ECMG Electronic Technical Testing Corp (Shenzhen).

Opinions and Interpretations

This test report relates to the abovementioned equipment under test (EUT). Without the permission of ECMG Electronic Technical Testing Corp (Shenzhen) Test Lab this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark on this or similar products. The manufacturer has sole responsibility of continued compliance of the device.

Statement of Measurement Uncertainty

The data and results referenced in the document are true and accurate. The reader is cautioned that there may be errors within the calibration limits of the equipment and facilities that can account for a nominal measurement error. Furthermore, component and process variability of devices similar to that tested may result in additional deviation.

Administrative Data

Test Sample : IP Phone

Model Numbers : GXP1630

Model Tested : GXP1630

Date of Receipt : Jun.8th , 2015

Date Tested : Jun.11th , 2015

Applicant : Grandstream Networks, Inc.

Address : 5F, Bldg #1, No.2 Kefa Rd., Science & Technology Park, Shenzhen, China

Telephone : (86)-755-26014600

Fax : (86)-755-26014601

Manufacturer : Grandstream Networks, Inc.

Address : 5F, Bldg #1, No.2 Kefa Rd., Science & Technology Park, Shenzhen, China

Telephone : (86)-755-26014600

Fax : (86)-755-26014601

Factory : Grandstream Networks, Inc.

Address : 5F, Bldg #1, No.2 Kefa Rd., Science & Technology Park, Shenzhen, China

Telephone : (86)-755-26014600

Fax : (86)-755-26014601

EUT Description

Grandstream Networks, Inc. Model Tested GXP1630 (referred to as the EUT in this report) is an IP Phone. Technical specifications are as belows:

Parameter		Ranges
Basic parameters	Rated voltage	5.0V
	Rated Current	0.6A
I/O Ports	Network Interfaces	Dual switched auto-sensing 10/100/1000 Mbps Ethernet ports, integrated PoE
	PC port	10/100M Ethernet to connect PC on GXP1610/GXP1620/GXP1625, auto-sensing 10/100/1000M Ethernet to connect PC on GXP1628 and GXP1630
	Power Jack	5V/600mA power port to connect to power adaptor
	Headset Jack	RJ9 headset jack (allowing EHS with Plantronics headsets)
	Handset port	To connect handset RJ9
Power Adapter #1	Input	AC 100-240 V 50/60 Hz 0.15A max
	Output	DC 5V, 0.6A
	Model	PCF-0500060AV
	Brand name	Mass power
Power Adapter #2	Input	100-240VAC 50/60Hz 0.2A
	Output	5VDC, 0.6A
	Model	AMS20-0500600FU2
	Brand name	AMIGO
Power Adapter #3	Input	100-240VAC 50/60Hz 0.2A
	Output	5VDC, 0.6A
	Model	R60UC0500060A
	Brand name	Sunlight

Note :For other informations &features please refer to user's manual of EUT.

Frequency Range Of Radiated Measurements

(b) For unintentional radiators:

(1) Except as otherwise indicated in paragraphs (b)(2) or (b)(3) of this section, for an unintentional radiator, including a digital device, the spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

<i>Highest frequency generated or used in the device or on which the device operates or tunes (MHz)</i>	<i>Upper frequency of measurement range (MHz)</i>
<i>Below 1.705</i>	<i>30.</i>
<i>1.705-108</i>	<i>1000.</i>
<i>108-500</i>	<i>2000.</i>
<i>500-1000</i>	<i>5000.</i>
<i>Above 1000</i>	<i>5th harmonic of the highest frequency or 40 GHz, whichever is lower.</i>

Note: Since the highest frequency operated of the EUT is 266MHz, so upper frequency of radiated emission test is up to 2GHz as per §15.33(b)(1).

Test Summary

The Electromagnetic Compatibility requirements on model GXP1630 for this test are stated below. All results listed in this report relate exclusively to this above-mentioned model as the Equipment under Test. This report confers no approval or endorsement upon any other component, host or subsystem used in the test set-up.

Emission Tests				
Specifications	Description	Test Results	Test Point	Remark
FCC Part 15.107 ANSI C63.4 -2014	Conducted Emission	Passed	AC Input Port	Attachment 1
FCC Part 15.109 ANSI C63.4 -2014	Radiated Emission	Passed	Enclosure	Attachment 2

Test Mode Justification

Pre-Scan has been conducted to determine the worst-case from all possible combination between available operation mode .Following mode(s) was (were) selected for the final test as listed below:

Pre-Test Mode	
<i>EMI Test Mode</i>	Mode 1: Communication with PC& IP Phone + Mass Power
	Mode 2: Communication with PC& IP Phone + AMIGO Power
	Mode 3: Communication with PC& IP Phone + Sunlight Power
	Mode 4:PoE Mode
Final Test Mode	
<i>EMI Test Mode</i>	Mode 1: Communication with PC& IP Phone + Mass Power
	Mode 2: Communication with PC& IP Phone + AMIGO Power
	Mode 3: Communication with PC& IP Phone + Sunlight Power
	Mode 4:PoE Mode

EUT Exercise Software

No test software support this test.

Equipment Modification

Any modifications installed previous to testing by Grandstream Networks, Inc. will be incorporated in each production model sold or leased in United States.

There were no modifications installed by ECMG Electronic Technical Testing Corp (Shenzhen).

EUT Sample Photos

EUT Model: GXP1630



EUT- Front View



EUT- Rear View



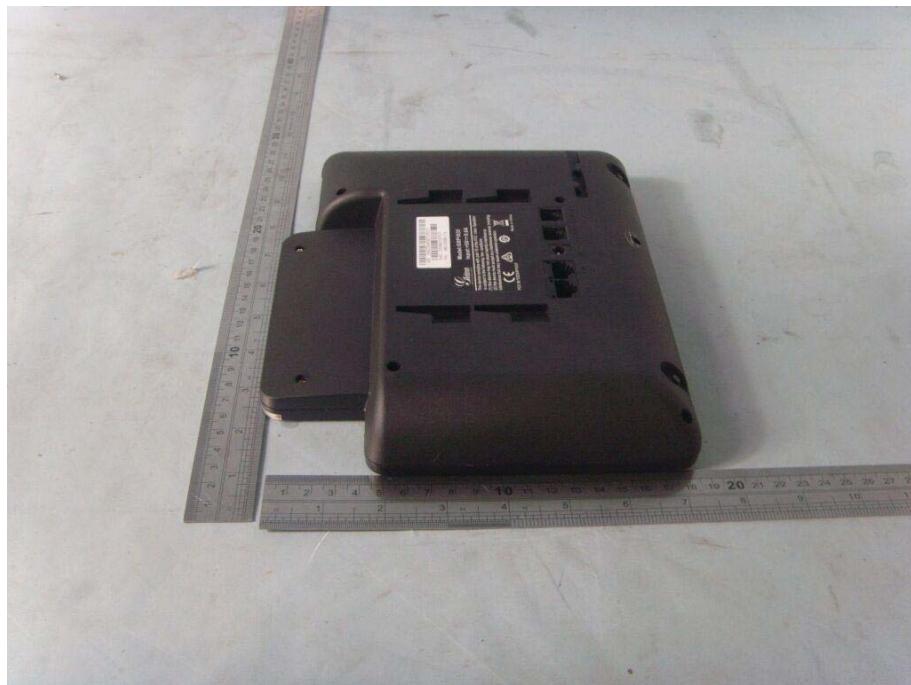
EUT- Top View



EUT- Bottom View



EUT- Left Side View



EUT- Right Side View



Support View



Handset View



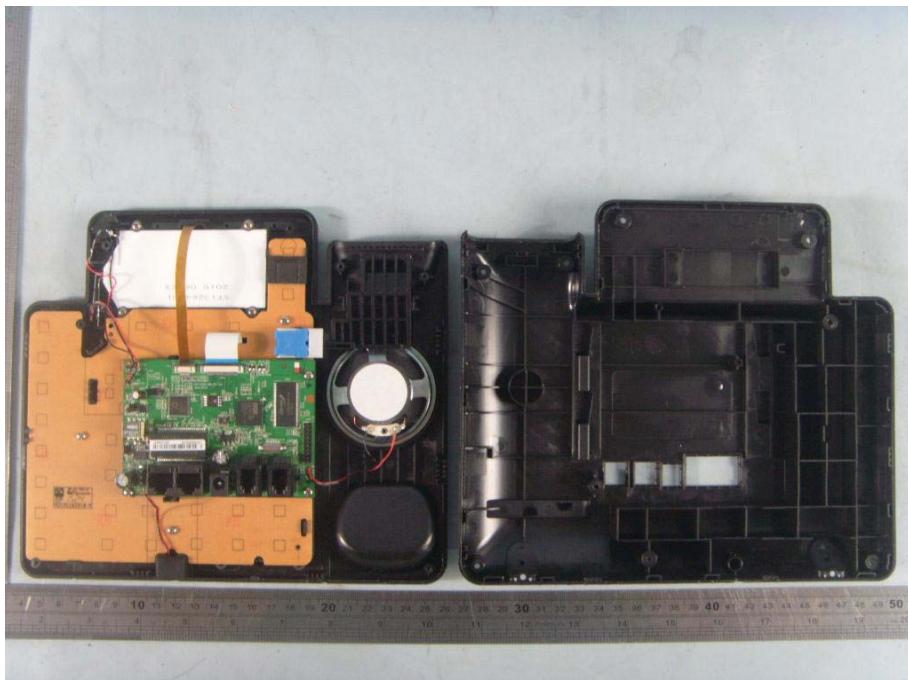
Power Adapter #1 View(Manufacturer: Mass power)



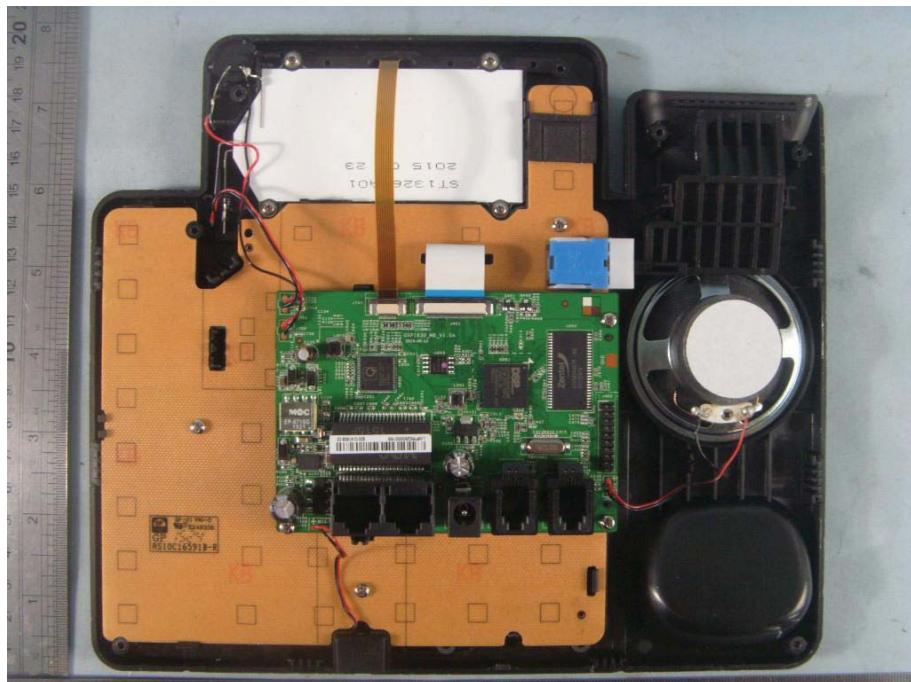
Power Adapter #2 View(Manufacturer: AMIGO)



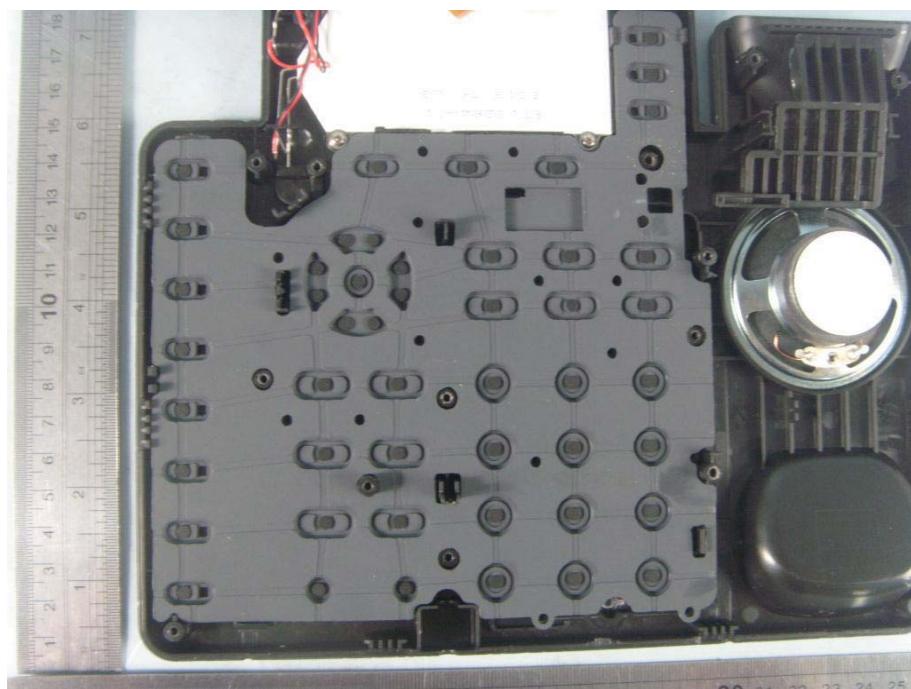
Power Adapter #3 View (Manufacturer: Sunlight)



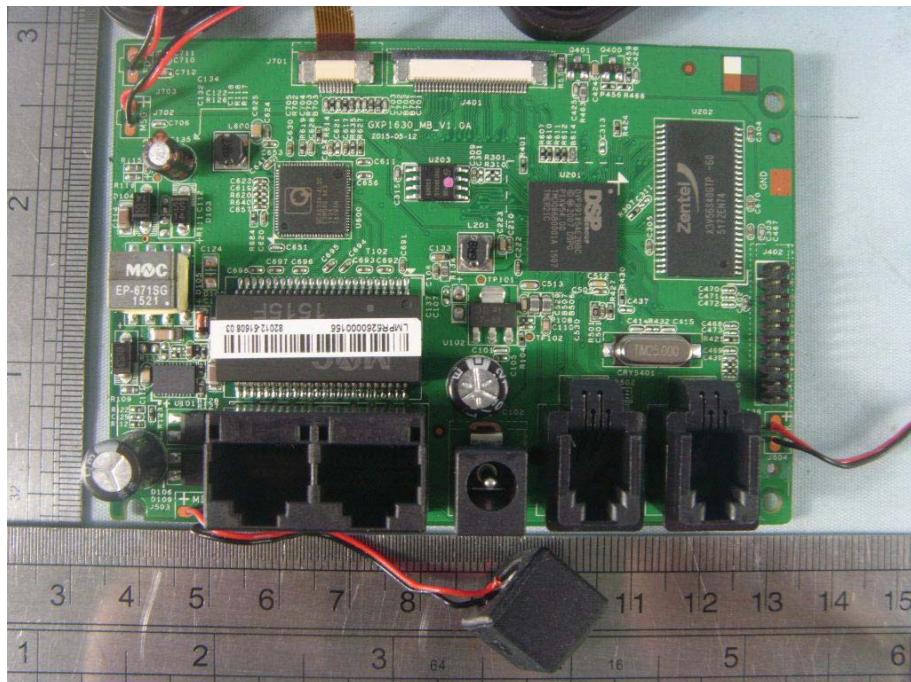
EUT-Uncovered View #1



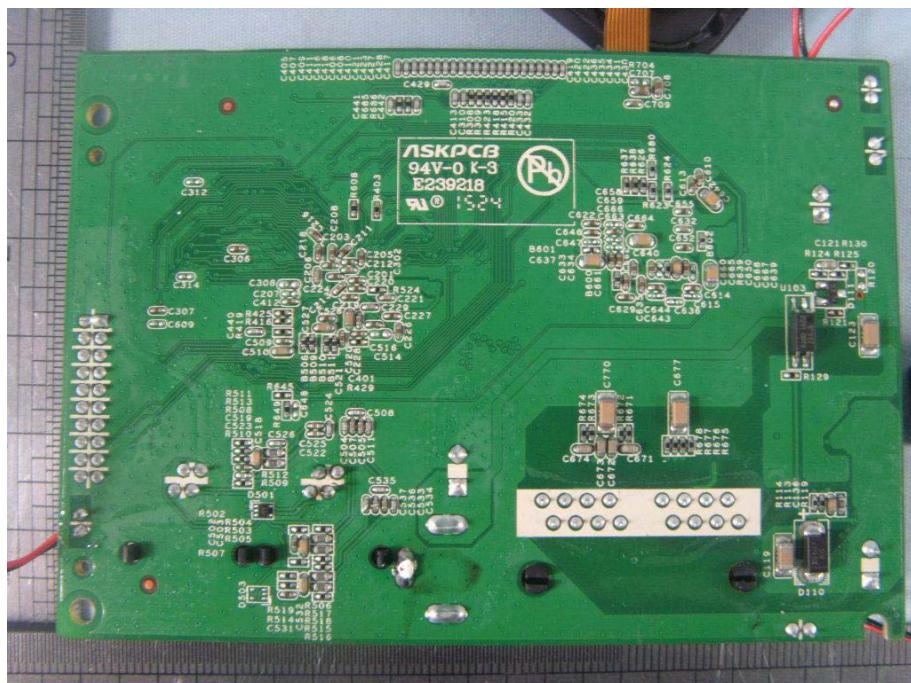
EUT-Uncovered View #2



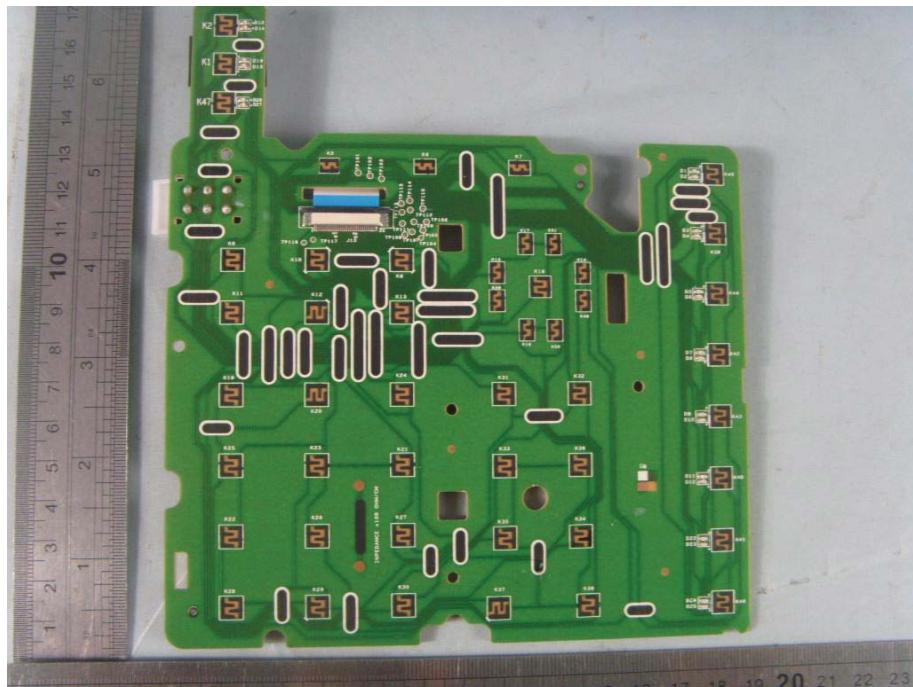
EUT-Uncovered View #3



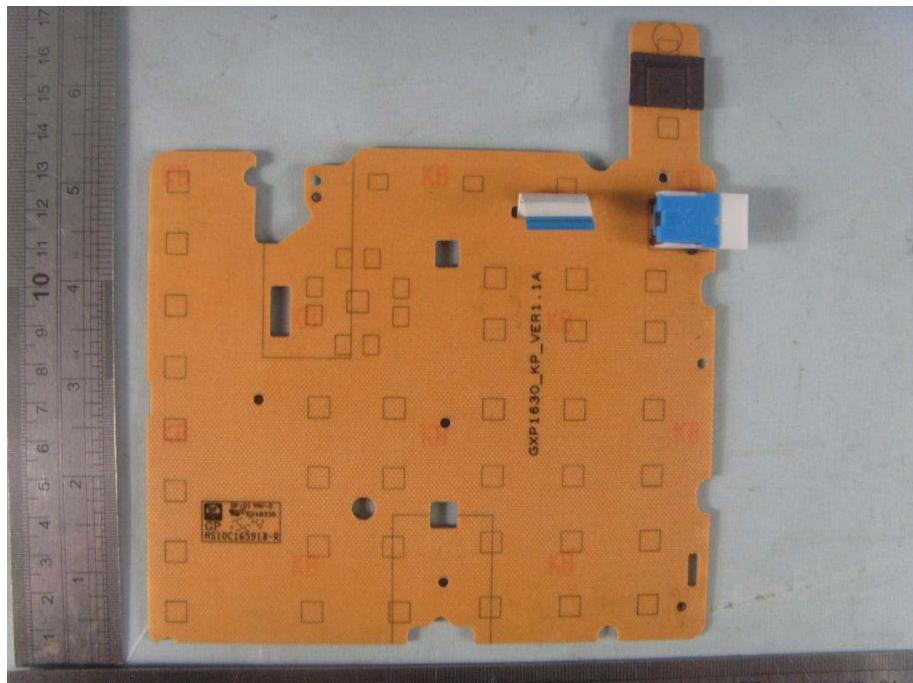
Mother board- Top View



Mother board- Bottom View



Key-board-Top view



Key-board-Bottom view

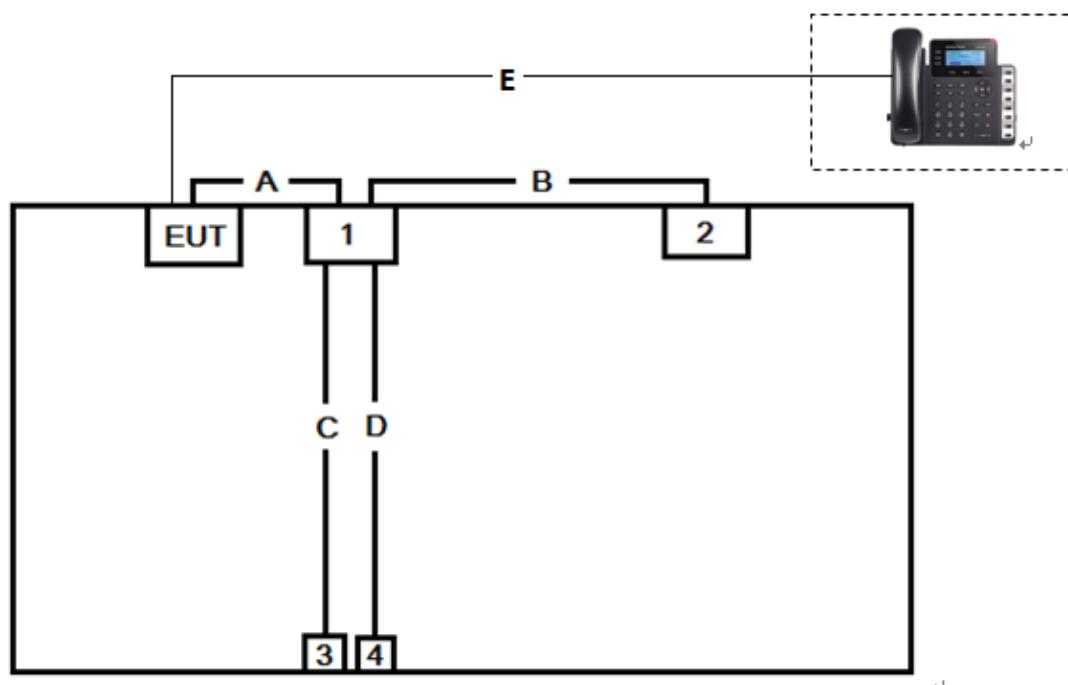
Test System Details

EUT				
Model Number:		GXP1630		
Model Tested:		GXP1630		
Description:		IP Phone		
Input:		AC 120V/60Hz		
Manufacturer:		Grandstream Networks, Inc.		
Support Equipment (FCC DOC approved)				
Product		Manufacturer	Model	Power cord
1	Notebook Computer	Gateway	NV57H03c-2412G64Mnc2s	Non-Shielding, 1.8m
2	Monitor	AOC	TFT1780PS	Non-Shielding, 1.5m
3	Keyboard	Lenovo	E430c	Non-Shielding, 1.2m
4	Mouse	DELL	MS111-T	Non-Shielding, 1.2m

Cable Description		
Cable Type		Cable Description
A	LAN Cable #1	Non-Shielding/No ferrite core, 1.5m
B	VGA Cable	Non-Shielding/one ferrite core, 1.5m
C	USB Cable	Non-Shielding/No ferrite core, 1.2m
D	USB Cable	Non-Shielding/No ferrite core, 1.2m
E	LAN Cable #2	Non-Shielding/No ferrite core, 3.5m

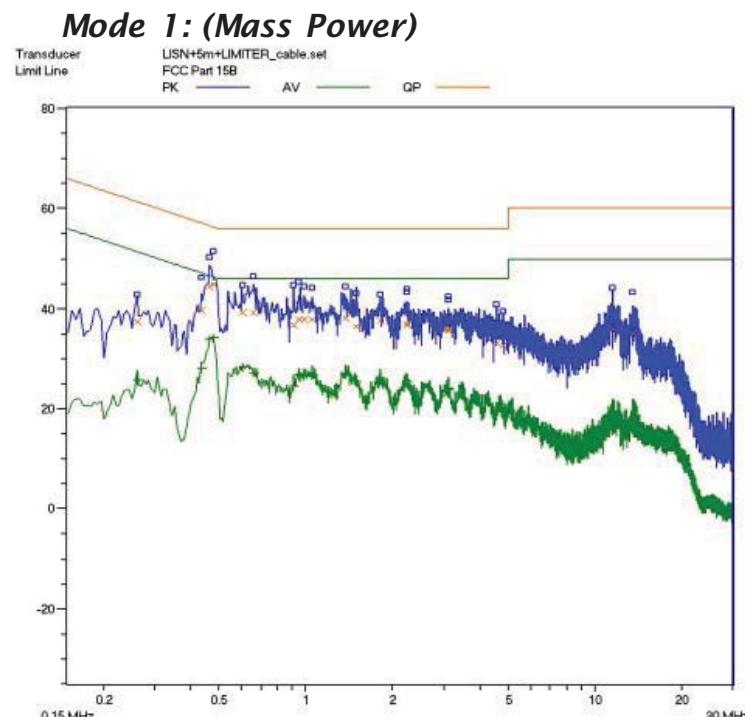
Note: The EUT has been tested as an independent unit together with other necessary accessories or support units. The above support units or accessories were used to form a representative test configuration during the test tests.

Configuration of Tested System

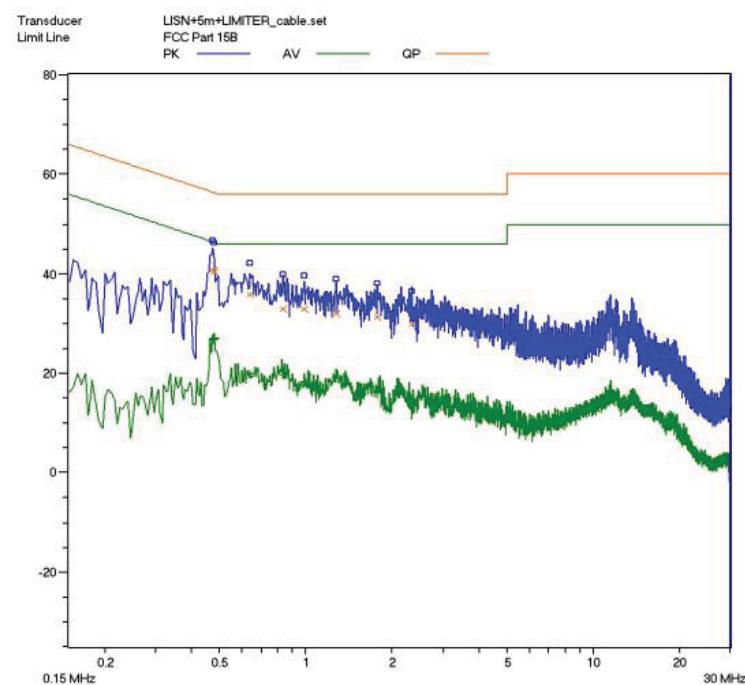


ATTACHMENT 1 - CONDUCTED EMISSION TEST RESULTS

CLIENT:	Grandstream Networks, Inc.	TEST STANDERD:	Section 15.107
MODEL NUMBERS:	GXP1630	PRODUCT:	IP Phone
MODEL TESTED:	GXP1630	EUT DESIGNATION:	Home or Office
TEMPERATURE:	22°C	HUMIDITY:	48%
ATM PRESSURE:	103kPa	GROUNDING:	None
TESTED BY:	Alex Yu	DATE OF TEST:	June 11 th , 2015
TEST REFERENCE:	ANSI C63.4- 2014		
TEST PROCEDURE:	The EUT was setup according to the guidelines of ANSI C63.4: 2014 for conducted emissions. The measurement was using a AMN on each line and an EMI receiver peak scan was made at the frequency measurement range. The six highest significant peaks were then marked, and these signals were then quasi-peaked and averaged. The frequency range investigated was from 150KHz to 30MHz.		
TEST MODE:	Mode 1,Mode 2,Mode 3		
TEST SET UP:	<p>Non-conductive table</p> <p>Rear of EUT to be flushed with rear of table top</p> <p>EUT</p> <p>80cm</p> <p>80 cm to ground plane</p> <p>40 cm to vertical reference plane</p> <p>3b)</p> <p>3c)</p> <p>AMN = Artificial mains network (LISN) AE = Associated equipment EUT = Equipment under test ISN = Impedance stabilization network</p>		
TESTED RANGE:	150kHz to 30MHz		
TEST VOLTAGE:	AC 120V/60Hz		
RESULTS:	The EUT meets the requirements of test reference for Conducted Emissions. The test results relate only to the equipment under test provided by client.		
CHANGES OR MODIFICATIONS:	There were no modifications installed by ECMG Electronic Technical Testing Corp(Shenzhen) test personnel.		
M. UNCERTAINTY:	Freq. $\pm 2 \times 10^{-7}$ x Center Freq., Amp ± 2.6 dB		

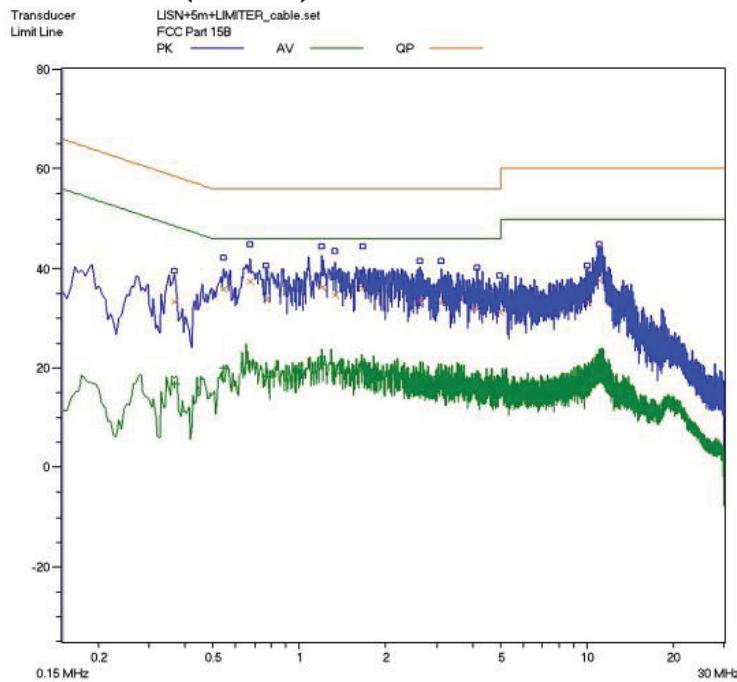


Line L Conducted Emission Graph

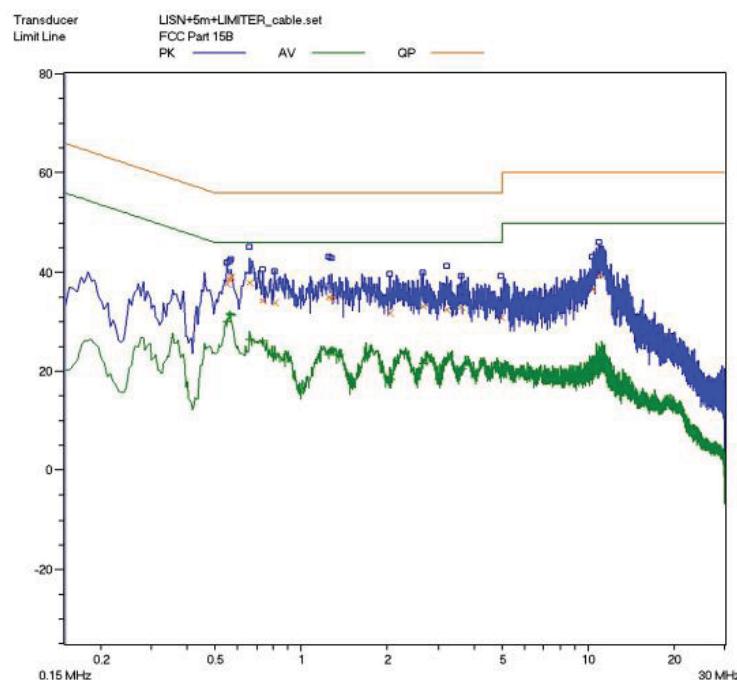


Line N Conducted Emission Graph

Mode 2:(AMIGO)

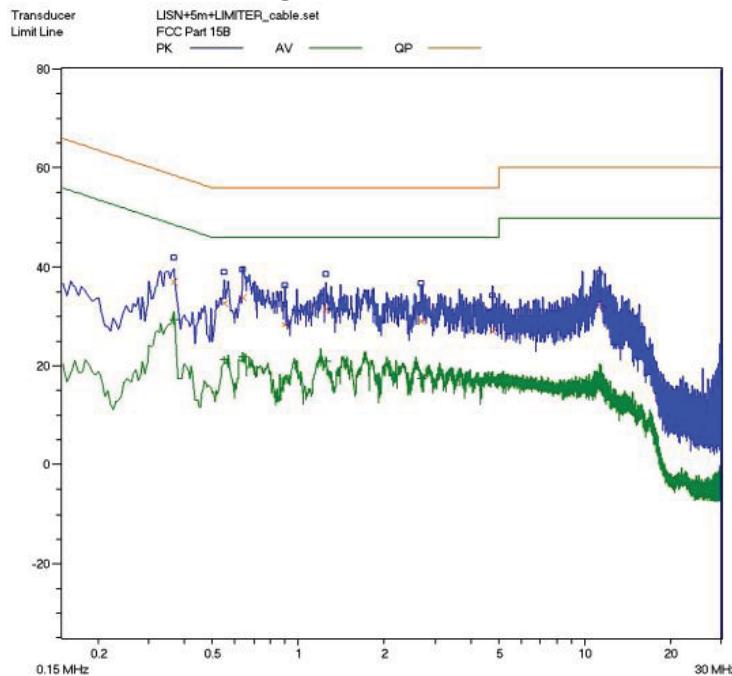


Line L Conducted Emission Graph

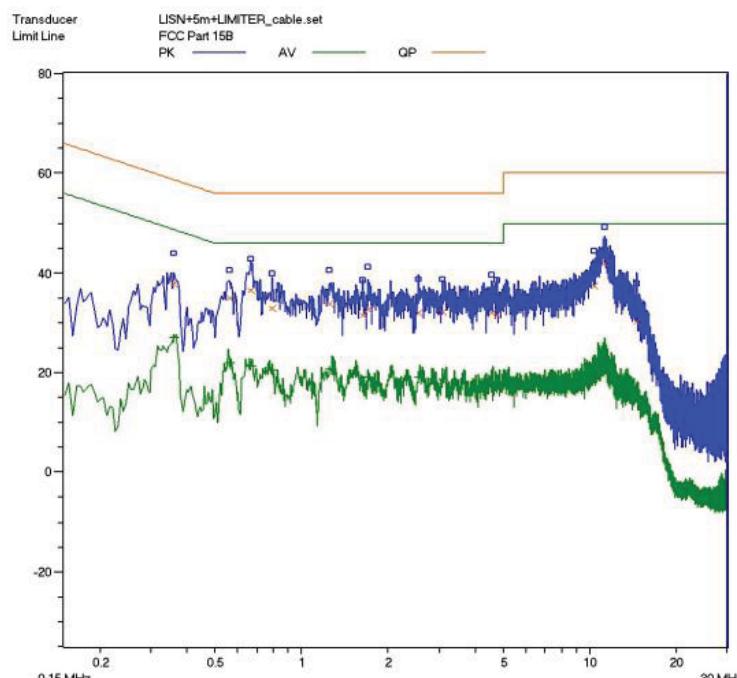


Line N Conducted Emission Graph

Mode 3:(Sunlight)



Line L Conducted Emission Graph



Line N Conducted Emission Graph

Test Data:**Mode 1:**

Lines	Frequency (MHz)	Corrected QP Level (dBuV)	Limits QP (dBuV)	Margin QP (dB)	Frequency (MHz)	Corrected AVE Level (dBuV)	Limits AVE (dBuV)	Margin AVE (dB)
L	0.465	44.5	56.6	-12.1	0.465	33.8	46.4	-12.6
L	0.480	44.8	56.3	-11.5	0.480	34.2	46.3	-12.1
L	0.605	39.3	56	-16.7	0.605	28.4	46	-17.6
N	0.475	40.8	56.4	-15.6	0.475	26.9	46.4	-19.5
N	0.480	40.4	56.3	-15.9	0.480	27.0	46.3	-19.3
N	0.640	35.9	56.0	-10.1	0.640	20.1	46	-25.9

Note:

- 1) All readings are using a bandwidth of 9 kHz
- 2) Other emission levels are too low against official limit that are not reported.

Mode 2:

Lines	Frequency (MHz)	Corrected QP Level (dBuV)	Limits QP (dBuV)	Margin QP (dB)	Frequency (MHz)	Corrected AVE Level (dBuV)	Limits AVE (dBuV)	Margin AVE (dB)
L	0.435	41.6	57.2	-15.6	0.435	29.1	47.2	-18.1
L	0.465	44.6	56.6	-12.0	0.465	32.4	46.6	-14.2
L	0.470	44.3	56.5	-12.2	0.470	42.0	46.5	-4.5
N	0.430	41.9	57.3	-15.4	0.430	29.6	47.3	-17.7
N	0.475	42.4	56.4	-14.0	0.475	30.4	46.4	-16.0
N	0.925	39.6	56.0	-16.4	0.925	27.7	46.0	-18.3

Note:

- 1) All readings are using a bandwidth of 9 kHz
- 2) Other emission levels are too low against official limit that are not reported.

Mode 3:

Lines	Frequency (MHz)	Corrected QP Level (dBuV)	Limits QP (dBuV)	Margin QP (dB)	Frequency (MHz)	Corrected AVE Level (dBuV)	Limits AVE (dBuV)	Margin AVE (dB)
L	0.675	37.5	56	-18.5	0.6750	21.0	46	-19.0
L	1.200	36.3	56	-19.7	1.2000	20.7	46	-25.3
L	1.660	36.0	56	-20.0	1.6600	20.6	46	-25.4
N	0.550	37.7	56	-18.3	0.550	29.9	46	-16.1
N	0.560	38.5	56	-17.5	0.560	31.5	46	-14.5
N	0.565	39.1	56	-16.9	0.565	31.4	46	-14.6

Note:

- 1) All readings are using a bandwidth of 9 kHz
- 2) Other emission levels are too low against official limit that are not reported.

Test Equipment List:

Test Equipment	Model No.	Manufacturer	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	SMR4503	SCHAFFNER	11725	2014.07.08	2015.07.08
Line impedance stabilization network	ESH2-Z5	R&S	/	2014.07.08	2015.07.08

Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.

TESTED BY:

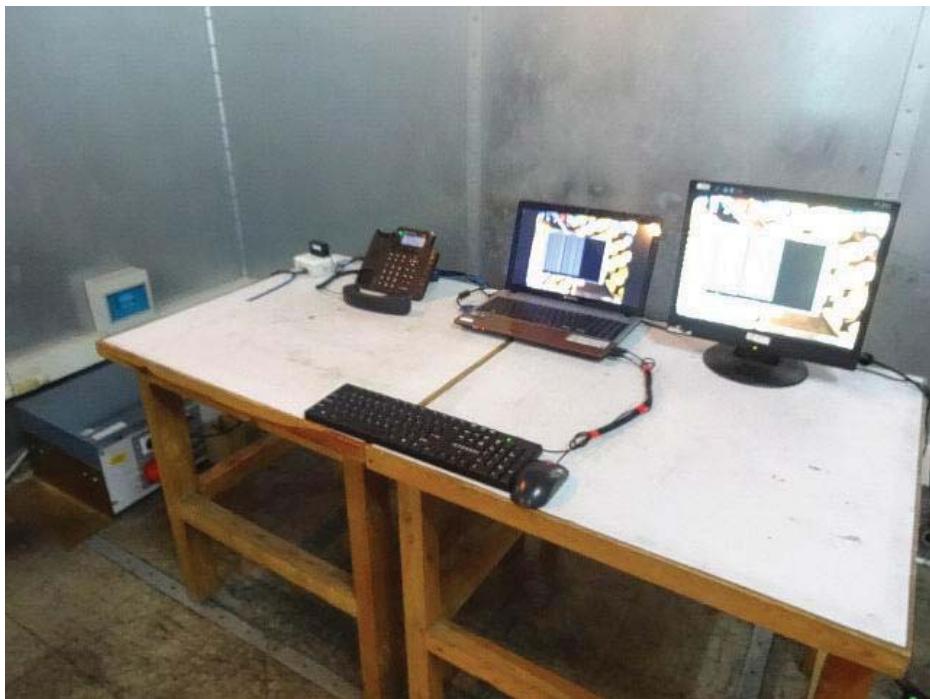


ENGINEER

REVIEWED BY:



SENIOR ENGINEER



Conducted Emission Test Set-up -Front view



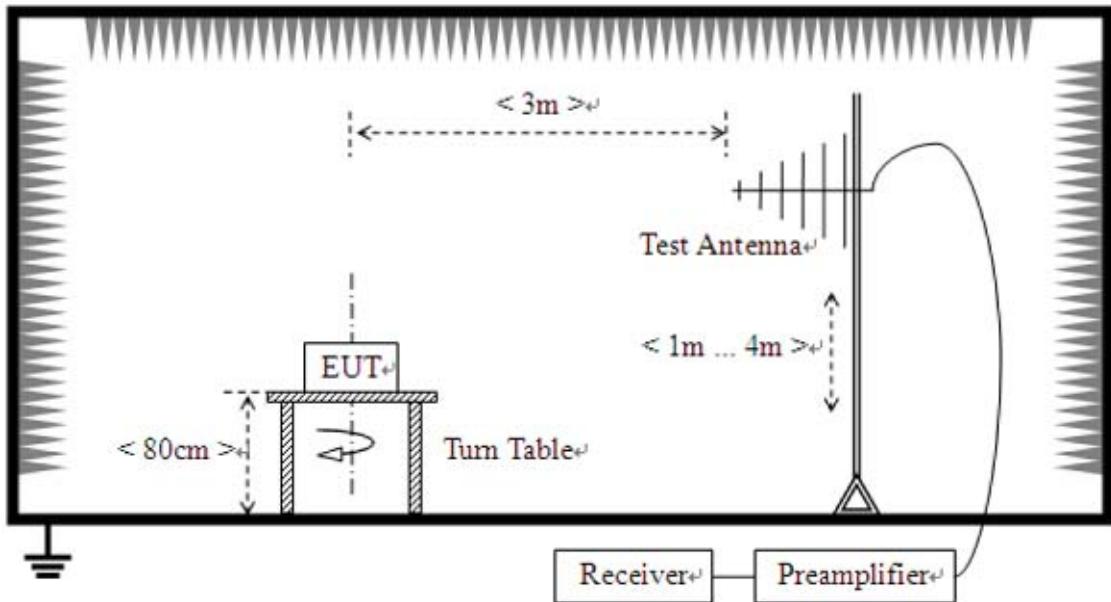
Conducted Emission Test Set-up -Rear view

ATTACHMENT 2 - RADIATED EMISSION MEASUREMENT

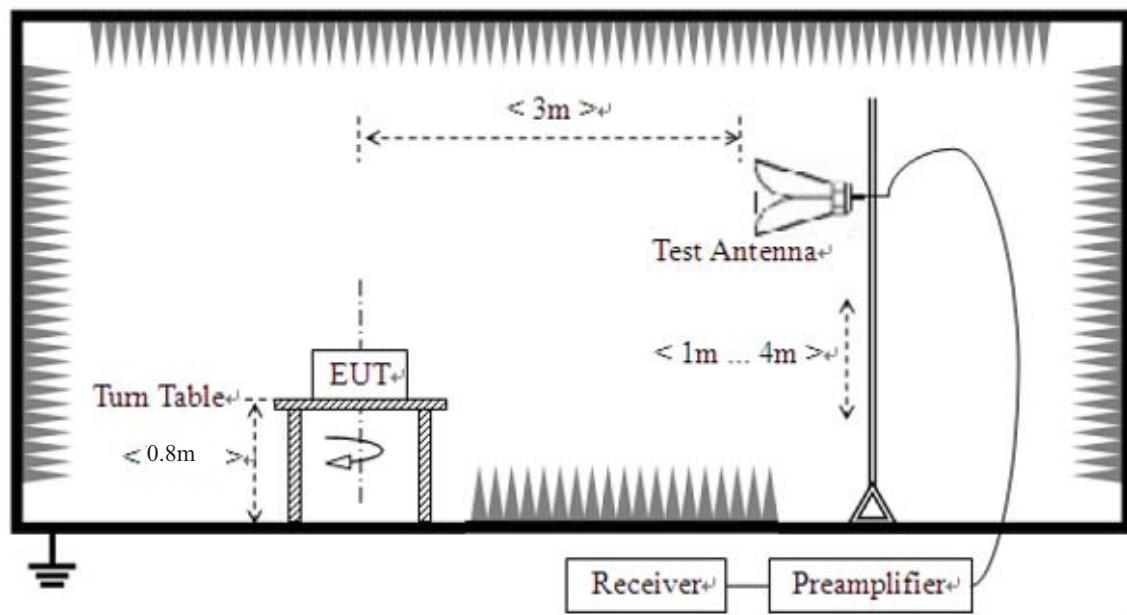
CLIENT:	Grandstream Networks, Inc.	TEST STANDERD:	Section 15.109
MODEL NUMBERS:	GXP1630	PRODUCT:	IP Phone
EUT MODEL:	GXP1630	EUT DESIGNATION:	Home or Office
TEMPERATURE:	22°C	HUMIDITY:	47%RH
ATM PRESSURE:	103.0kPa	GROUNDING:	None
TESTED BY:	Alex Yu	DATE OF TEST:	June 11 th , 2015
TEST REFERENCE:	ANSI C63.4: 2014		
TEST PROCEDURE:	<p>The EUT was setup according to the guidelines of ANSI C63.4: 2014 for radiated emissions. An EMI receiver peak scan was made at the frequency measurement range (pre-scan) in an Anechoic chamber. signal discrimination was then performed and the significant peaks marked. these peaks were then quasi-peaked in the frequency range of 30 MHz to 1GHz and average and peak in the frequency range of 1GHz to 2GHz at an anechoic chamber.</p> <p>The following data lists the significant emission frequencies, measured levels, correction factors (including cable and antenna correction factors), and the corrected readings against the limits. Explanation of the Correction Factor are given as follows:</p> <p>FS= RA + AF + CF - AG</p> <p>Where: FS = Field Strength</p> <p>RA = Receiver Amplitude</p> <p>AF = Antenna Factor</p> <p>CF = Cable Attenuation Factor</p> <p>AG = Amplifier Gain</p>		
TEST MODE:	Mode 1,Mode 2,Mode 3,Mode 4		
TESTED RANGE:	30 to 6000MHz		
TEST VOLTAGE:	AC 120V/60Hz		
RESULTS:	The EUT meet the requirements of test reference for radiated emissions. The test results relate only to the equipment under test provided by client.		
CHANGES OR MODIFICATIONS:	There were no modifications installed by ECMG Electronic Technical Testing Corp (Shenzhen). Test personnel.		
M. UNCERTAINTY:	Freq. $\pm 2 \times 10^{-7} \times$ Center Freq., Amp ± 3.6 dB		

Continue on to next page...

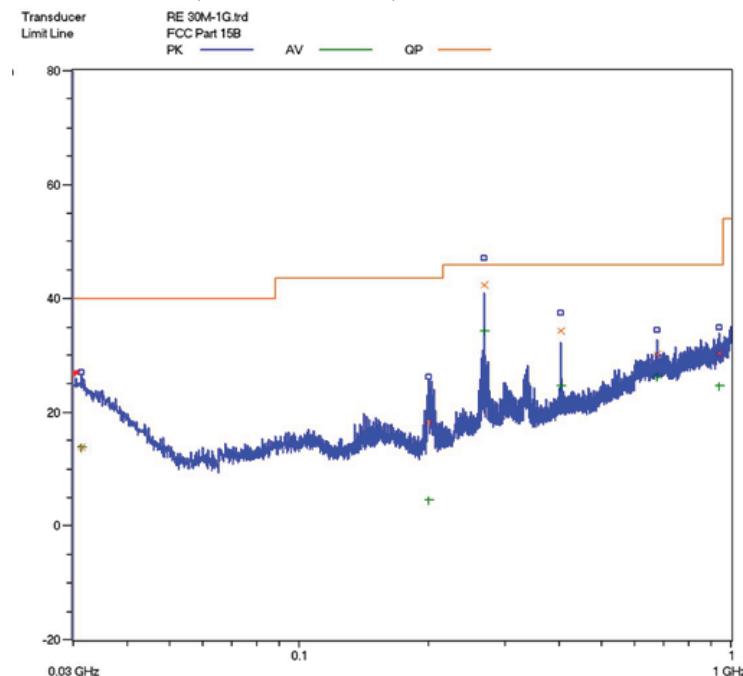
Frequency measured at 30MHz to 1000MHz:



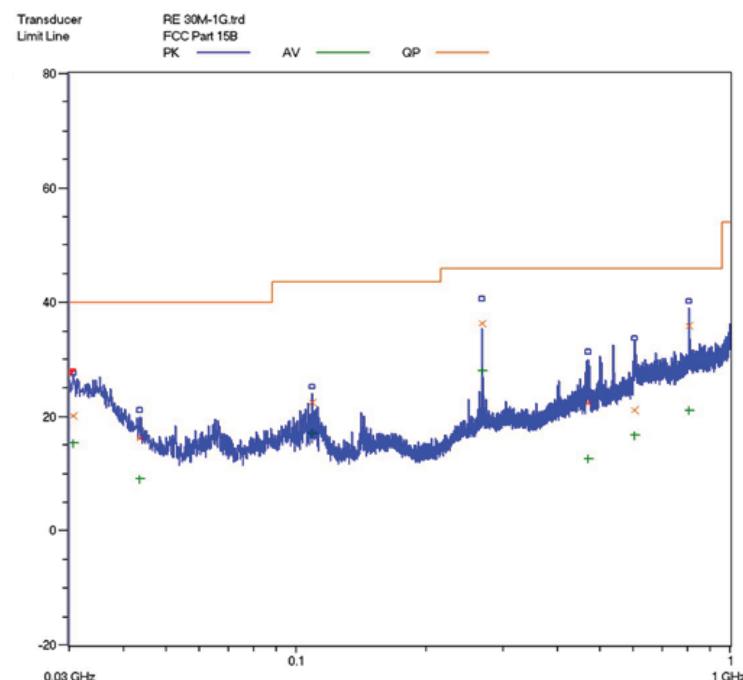
Frequency measured at Above 1GHz:



Mode 1:(Mass Power)

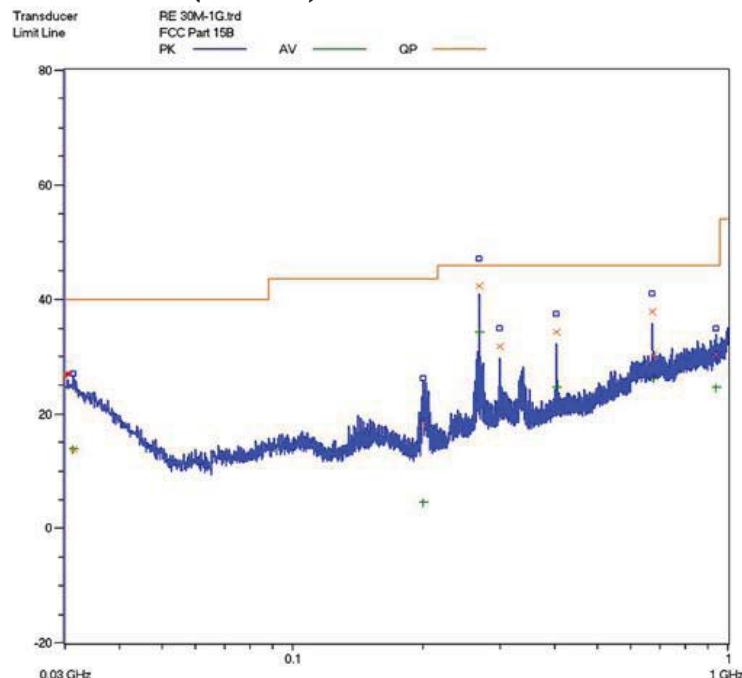


**Horizontal: Radiated Emission Test Plot
(30-1000MHz)**

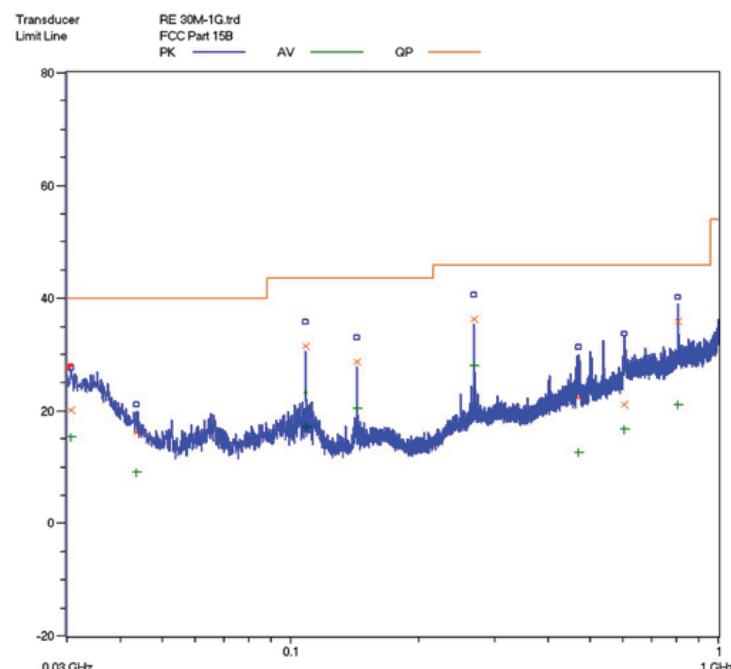


**Vertical: Radiated Emission Test Plot
(30-1000MHz)**

Mode 2:(AMIGO)

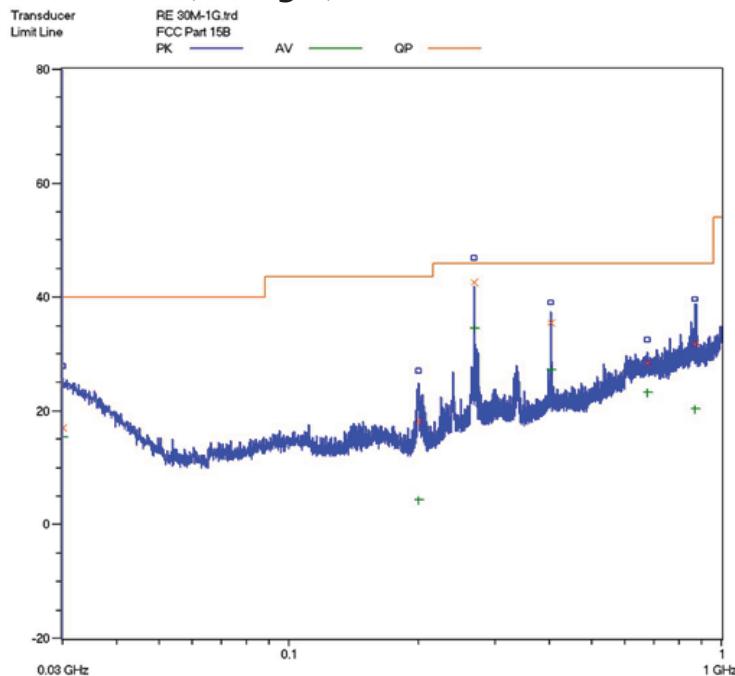


**Horizontal: Radiated Emission Test Plot
-(30-1000MHz)**

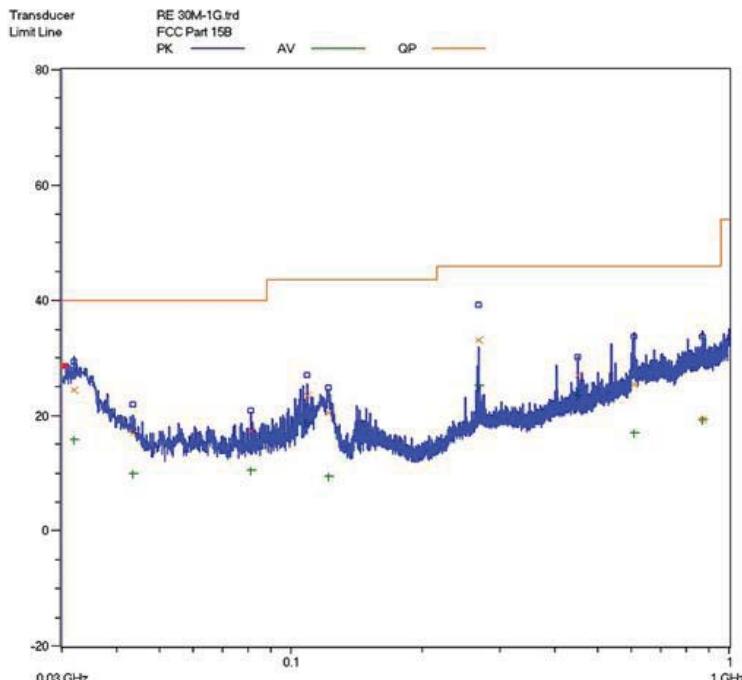


**Vertical: Radiated Emission Test Plot
(30-1000MHz)**

Mode 3:(Sunlight)

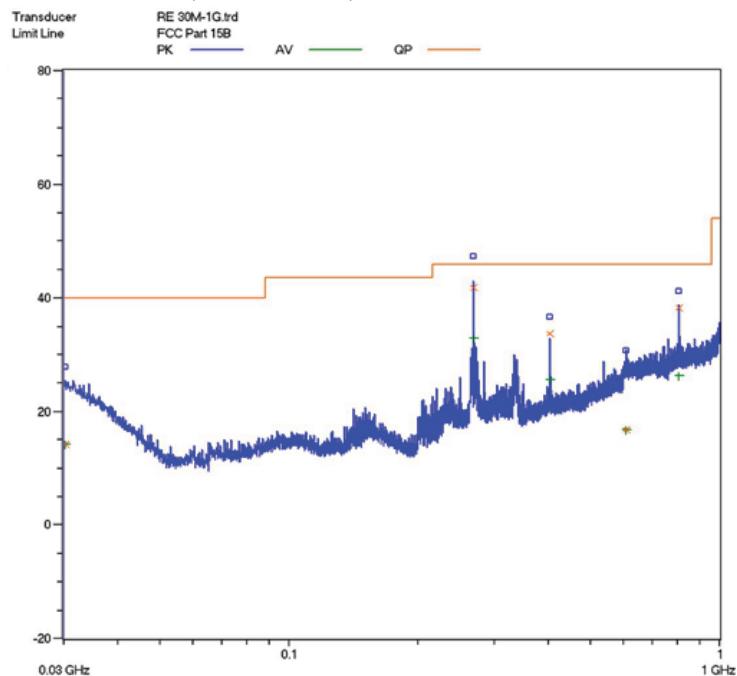


**Horizontal: Radiated Emission Test Plot
(30-1000MHz)**

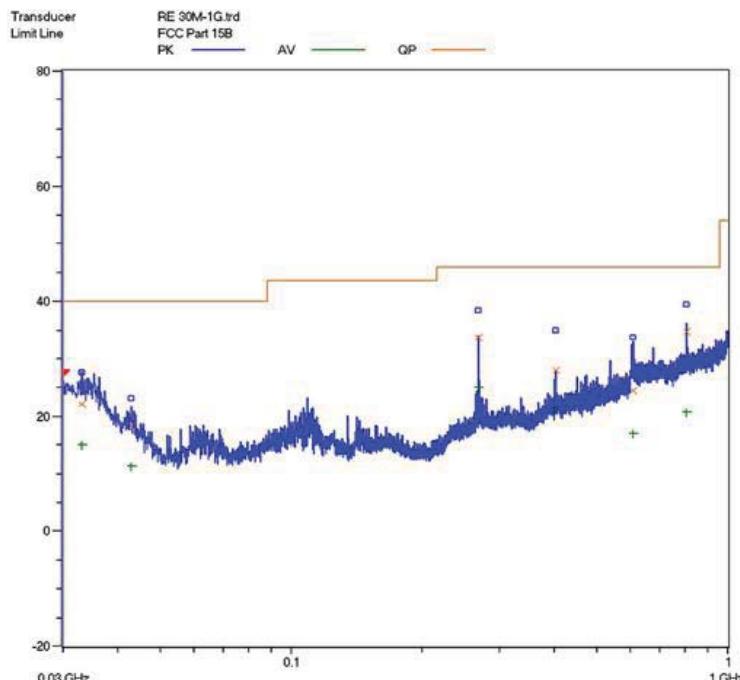


**Vertical: Radiated Emission Test Plot
(30-1000MHz)**

Mode 4:(PoE Mode)



**Horizontal: Radiated Emission Test Plot
(30-1000MHz)**



**Vertical: Radiated Emission Test Plot
(30-1000MHz)**

Test Data:**Mode 1&Below 1GHz:**

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level QP (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Horizontal							
269.696	0.13	13.4	/	27.57	41.1	46	-4.9
405.069	0.16	14.7	/	27.24	42.1	46	-3.9
673.683	0.36	20.1	/	23.54	44.0	46	-2.0
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
Vertical							
268.696	0.13	13.4	/	18.47	32.0	46	-14.0
472.680	0.20	17.2	/	21.60	39.0	46	-7.0
673.683	0.36	20.1	/	22.24	42.7	46	-3.3
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/

Note:

1. All readings are quasi-peak unless stated otherwise, using a QPA bandwidth of 120kHz, with a 60 s sweep time. A video filter was not used.
2. The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows: Emission Level =Reading Level + Antenna Factor + Cable Loss -Preamplifier Factor.
3. The other emission levels are 20dB below the official limits that are not reported.

Mode 2&Below 1GHz:

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level QP (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Horizontal							
269.428	0.13	13.4	/	30.47	44.0	46	-2.0
404.667	0.16	14.7	/	26.44	41.3	46	-4.7
675.208	0.36	20.1	/	23.64	44.1	46	-1.9
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
Vertical							
269.428	0.13	13.4	/	30.47	39.0	46	-7.0
404.667	0.16	14.7	/	26.44	41.3	46	-4.7
675.208	0.36	20.1	/	22.14	42.6	46	-3.4
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/

Note:

1. All readings are quasi-peak unless stated otherwise, using a QPA bandwidth of 120kHz, with a 60 s sweep time. A video filter was not used.
2. The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows: Emission Level =Reading Level + Antenna Factor + Cable Loss -Preamplifier Factor.
3. The other emission levels are 20dB below the official limits that are not reported.

Mode 3&Below 1GHz:

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level QP (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Horizontal							
270.305	0.13	13.4	/	27.87	41.4	46	-4.6
404.044	0.16	14.7	/	27.44	42.3	46	-3.7
675.208	0.36	20.1	/	21.64	42.1	46	-3.9
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
Vertical							
270.306	0.13	13.4	/	30.47	39.0	46	-7.0
404.667	0.16	14.7	/	24.04	38.9	46	-7.1
675.208	0.36	20.1	/	22.14	42.6	46	-3.4
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/

Note:

1. All readings are quasi-peak unless stated otherwise, using a QPA bandwidth of 120kHz, with a 60 s sweep time. A video filter was not used.
2. The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows: Emission Level =Reading Level + Antenna Factor + Cable Loss -Preamplifier Factor.
3. The other emission levels are 20dB below the official limits that are not reported.

Mode 4&Below 1GHz:

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level QP (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
Horizontal							
269.696	0.13	13.4	/	28.27	43.6	46	-2.4
405.069	0.16	14.7	/	28.14	43.0	46	-3.0
673.683	0.42	22.1	/	21.48	44.0	46	-2.0
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
Vertical							
32.406	0.02	17.3	/	20.78	38.1	40	-1.9
269.428	0.13	13.4	/	21.17	34.7	46	-11.3
744.866	0.39	21.5	/	22.61	44.5	46	-1.5
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/

Note:

1. All readings are quasi-peak unless stated otherwise, using a QPA bandwidth of 120kHz, with a 60 s sweep time. A video filter was not used.
2. The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows: Emission Level =Reading Level + Antenna Factor + Cable Loss -Preamplifier Factor.
3. The other emission levels are 20dB below the official limits that are not reported.

The mode 1 was worse case for final testing for Above 1GHz measurement.

Mode 1&Above 1GHz:

Frequency (GHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamp Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
Peak Measurement								
/	/	/	/	/	/	/	/	/
3.270	3.89	32.5	32.1	40.12	44.41	74	-29.59	H
4.360	4.30	33.5	32.0	40.35	46.15	74	-27.85	H
/	/	/	/	/	/	/	/	/
3.250	3.89	32.5	32.1	36.61	40.90	74	-33.10	V
4.270	4.30	33.5	32.0	40.35	46.15	74	-27.85	V
Average Measurement								
/	/	/	/	/	/	/	/	/
3.250	3.89	32.5	32.1	27.81	32.10	54	-21.90	H
4.270	4.30	33.5	32.0	24.21	30.01	54	-23.99	H
/	/	/	/	/	/	/	/	/
3.250	3.89	32.5	32.1	32.32	32.72	54	-21.28	V
4.270	4.30	33.5	32.0	24.30	30.10	54	-23.90	V

Note:

1. The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows: Emission Level =Reading Level + Antenna Factor + Cable Loss -Preamplifier Factor.
2. The limits shown are based on Peak value and Average value detector above 1GHz, the bandwidth of Test Receiver was set at 1MHz above 1GHz.
3. The other emission levels are 20dB below the official limits that are not reported.

Test Equipment List:

Test Equipment	Model No.	Manufacturer	Serial No.	Last Cal.	Cal. Due
EMI Test Receiver	SMR4503	SCHAFFNER	11725	2014.07.08	2015.07.08
Double-ridged Wave guide horn	3115	ETS	6587	2014.08.02	2015.08.01
Microwave system amplifier	83017A	Agilent	MY39500438	2014.07.11	2015.07.10
Biconilog Antenna	3142C	ETS	00042672	2014.09.28	2015.09.27
Band-pass Filter	BRM50702	Micro-Tronic	S/N-030	2014.11.30	2015.11.29
Spectrum Analyzer	FSP30	R&S	100755	2014.11.30	2015.11.29
<i>Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.</i>					

TESTED BY:



ENGINEER

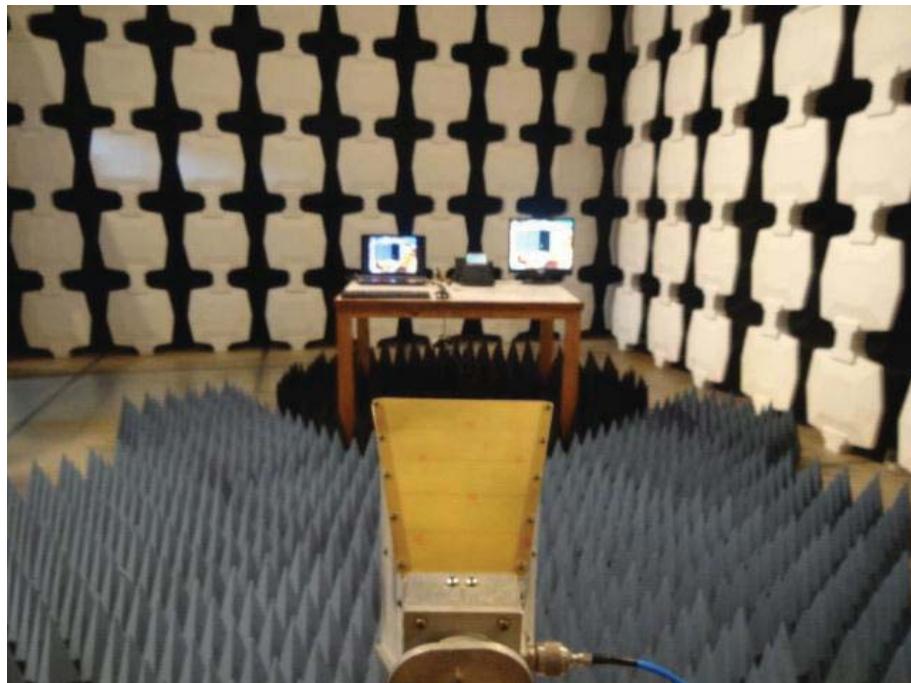
REVIEWED BY:



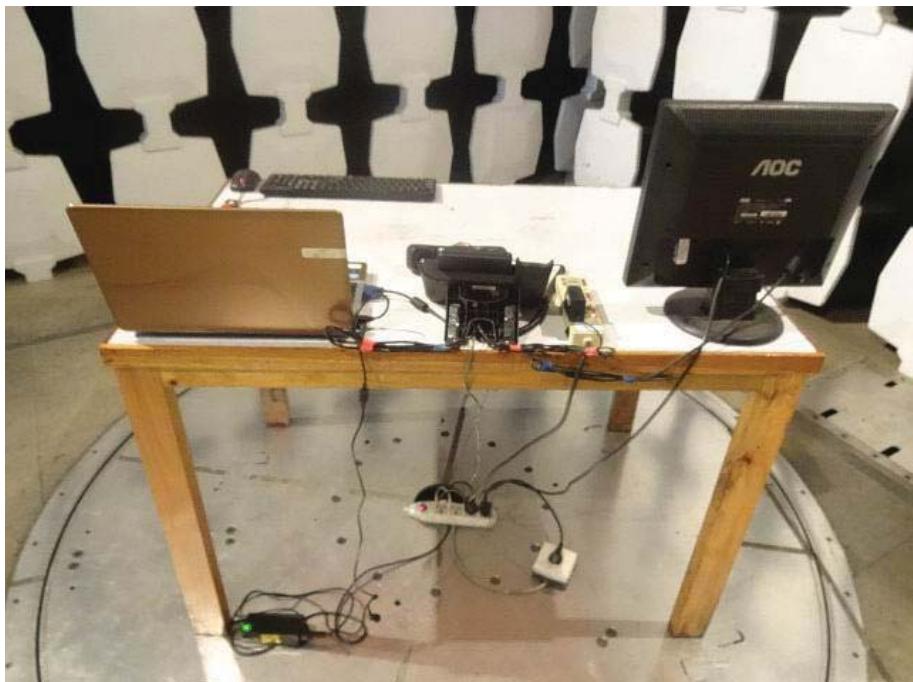
SENIOR ENGINEER



Radiated Emission Test Set-up(30-1000MHz)



Radiated Emission Test Set-up(Above 1GHz)



Radiated Emission Test Set-up (Rear View)

※※※ ***End Of Report*** ※※※