

## EMI TEST REPORT

On Model Name: IP Camera

Model Number: GXV3610\_HD v2, GXV3610\_FHD v2

Brand Name: Grandstream

Prepared for Grandstream Networks, Inc.

FCC ID Number: YZZGXV3610-FHDV2

According to FCC 47 CFR Part 15, Subpart B

*Test Report #: SHE-1411-11257-FCC*

Tested by: Daomen ECMG  
Daomen /Engineer Company Name

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

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

Test Report Released by: Swall Zhang November 6<sup>th</sup>, 2014  
Swall Zhang Date

## ***Test Location***

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

<i>Test Site Location</i>	<i>: Galanz</i>
	<i>: 25 South Ronggui Rd., Shunde, Foshan, Guangdong, China</i>
<i>Tel</i>	<i>: (86)-757-23612785</i>
<i>Fax</i>	<i>: (86)-757-23612537</i>

## ***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.*

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### List Attached Files

<b>Exhibit Type</b>	<b>File Description</b>	<b>File Name</b>
<i>Test Report</i>	<i>Test Report</i>	YZZGXV3610-FHDV2 _Test report.pdf
<i>Operation Description</i>	<i>Technical Description</i>	YZZGXV3610-FHDV2 _operation description.pdf
<i>External Photos</i>	<i>External Photos</i>	YZZGXV3610-FHDV2 _External Photos
<i>Internal Photos</i>	<i>Internal Photos</i>	YZZGXV3610-FHDV2 _Internal Photos
<i>Block Diagram</i>	<i>Block Diagram</i>	YZZGXV3610-FHDV2 _Block Diagram.pdf
<i>Schematics</i>	<i>Circuit Diagram</i>	YZZGXV3610-FHDV2 _Schematics.pdf
<i>ID Label/Location</i>	<i>Label and Location</i>	YZZGXV3610-FHDV2 _Label & Location.pdf
<i>User Manual</i>	<i>User Manual</i>	YZZGXV3610-FHDV2 _User Manual.pdf
<i>Test setup photos</i>	<i>Test set-up photos</i>	YZZGXV3610-FHDV2 _Test Set-up Photos

### **Government Disclaimer Notice**

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### **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 Camera

*Model Numbers* : GXV3610\_HD v2, GXV3610\_FHD v2

*Model Tested* : GXV3610\_FHD v2

*Receipt Date* : November 3<sup>rd</sup>, 2014

*Date Tested* : November 4<sup>th</sup>, 2014

*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 GXV3610\_FHD v2 (referred to as the EUT in this report) is an IP Camera.*

*The EUT is an IP Camera and technical specifications of EUT are as belows:*

<b>Parameter</b>		<b>Range</b>
<i>Basic parameters</i>	<i>Rated voltage</i>	<i>12V</i>
	<i>Rated Current</i>	<i>1A</i>
<i>I/O Ports</i>	<i>Network Port</i>	<i>RJ-45 ports for PC &amp; router connection</i>
	<i>Power Jack</i>	<i>12V DC power port; UL Certified</i>
	<i>Output Audio</i>	<i>Connected to Audio device</i>
<i>Power over Ethernet (PoE)</i>	<i>IEEE 802.3af, Class 0</i>	
<i>Power Adapter #1</i>	<i>Input</i>	<i>100-240VAC 50/60Hz 0.3A</i>
	<i>Output</i>	<i>12VDC, 1.0A</i>
	<i>Model</i>	<i>SEF1200100A1BB</i>
	<i>Brand name</i>	<i>Mass</i>
<i>Power Adapter #2</i>	<i>Input</i>	<i>100-240VAC 50/60Hz 0.3A</i>
	<i>Output</i>	<i>12VDC, 1.0A</i>
	<i>Model</i>	<i>WEF1200100A1BA</i>
	<i>Brand name</i>	<i>Mass</i>

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

### ***EUT Model Derived***

*Model GXB3610\_FHD v2 is identical to GXB3610\_HD v2 except for differences as belows:*

*GXB3610\_HD v2 is High Definition digital which uses the DSP of DM365-300 and the Sensor of AR0130. GXB3610\_FHD v2 is Full High Definition digital which uses the DSP of DM368-400 and the Sensor of AR0331.*

*The worst-case model GXB3610\_FHD v2 was selected for the final testing.*

## Test Summary

*The Electromagnetic Compatibility requirements on model GXB3610\_FHD v2 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.*

<b>Emission Tests</b>				
<b>Specifications</b>	<b>Description</b>	<b>Test Results</b>	<b>Test Point</b>	<b>Remark</b>
<i>FCC Part 15.107 ANSI C63.4 -2003</i>	<i>Conducted Emission</i>	<i>Passed</i>	<i>AC Input Port</i>	<i>Attachment 1</i>
<i>FCC Part 15.109 ANSI C63.4 -2003</i>	<i>Radiated Emission</i>	<i>Passed</i>	<i>Enclosure</i>	<i>Attachment 2</i>

## ***EUT Operation Mode***

*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:*

<i>Pre-Test Mode</i>	
<i>EMI Test Mode</i>	<i>Mode 1: Communication with PC +Power Adapter #1 (Model: SEF1200100A1BB)</i>
	<i>Mode 2: Communication with PC +Power Adapter #2 (Model: WEF1200100A1BA)</i>
	<i>Mode 3: PoE mode</i>
<i>Final Test Mode</i>	
<i>EMI Test Mode</i>	<i>Mode 1: Communication with PC +Power Adapter #1 (Model: SEF1200100A1BB)</i>
	<i>Mode 2: Communication with PC +Power Adapter #2 (Model: WEF1200100A1BA)</i>
	<i>Mode 3: PoE mode</i>
<i>EMS Test Mode</i>	<i>Not Applicable</i>

## ***EUT Exercise Software***

*The device is not programmable and does not use software.*

## ***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

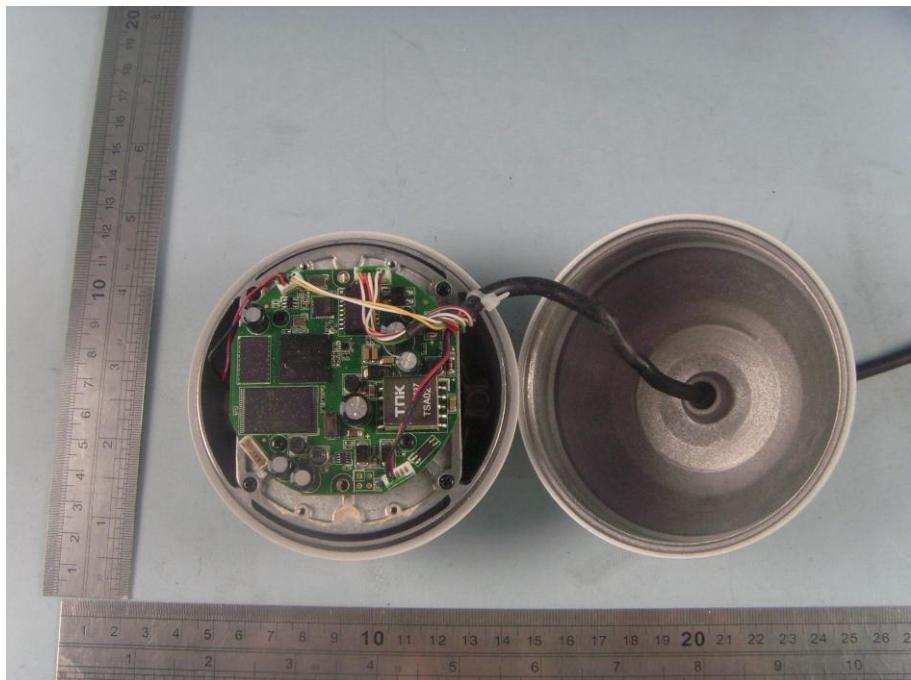
### EUT Model: GXV3610\_FHD v2



EUT- Front View



EUT- Rear View



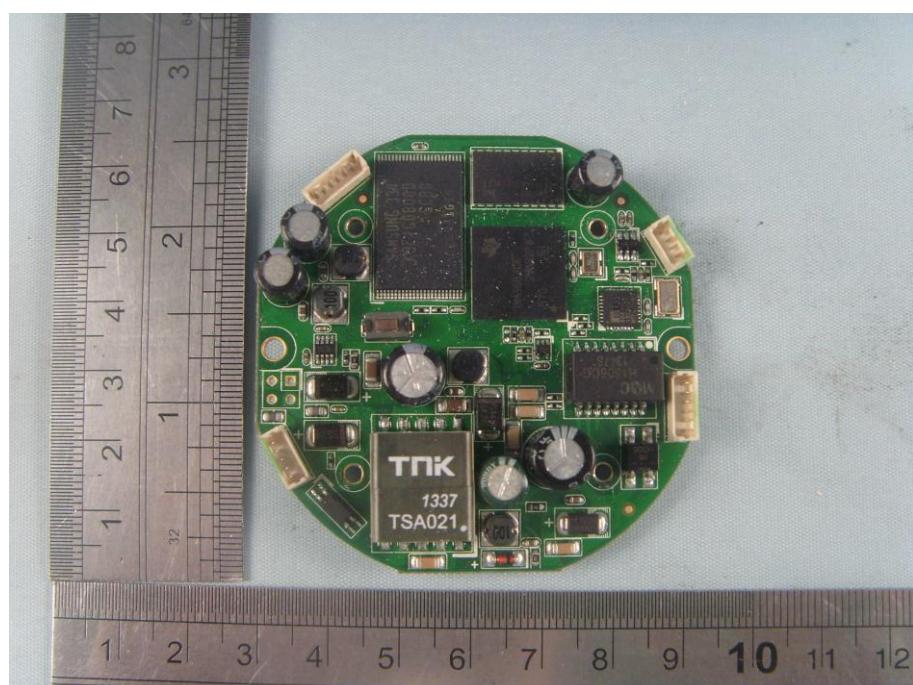
**EUT-Uncovered View**



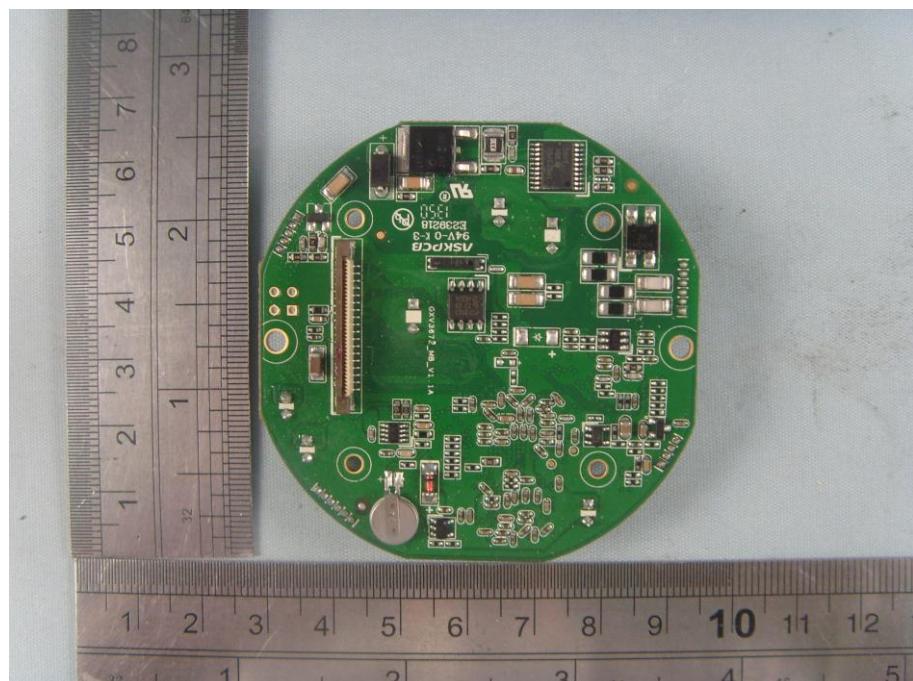
**Lens Front View**



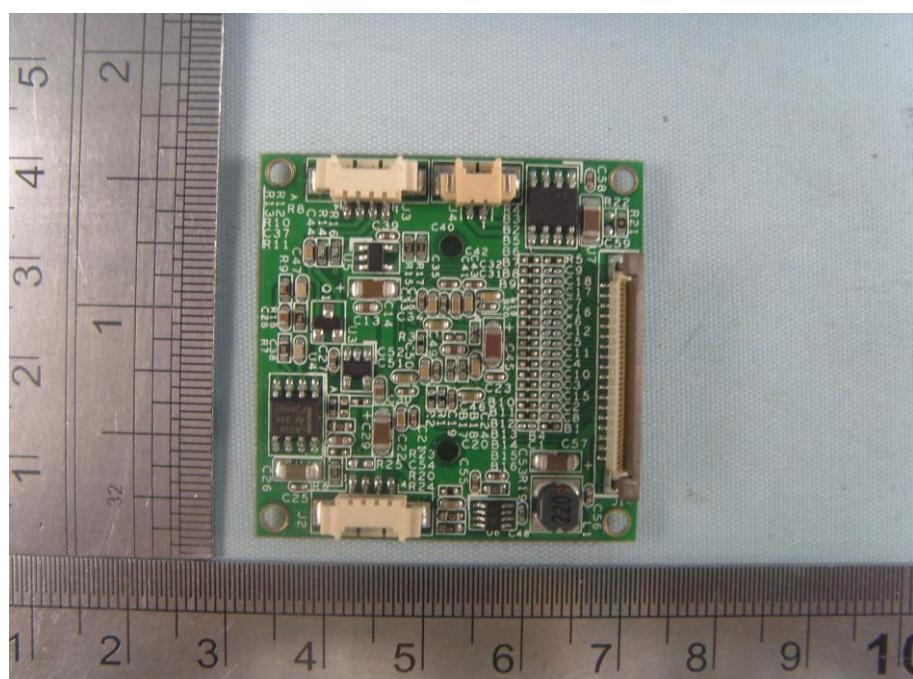
***Lens Rear View***



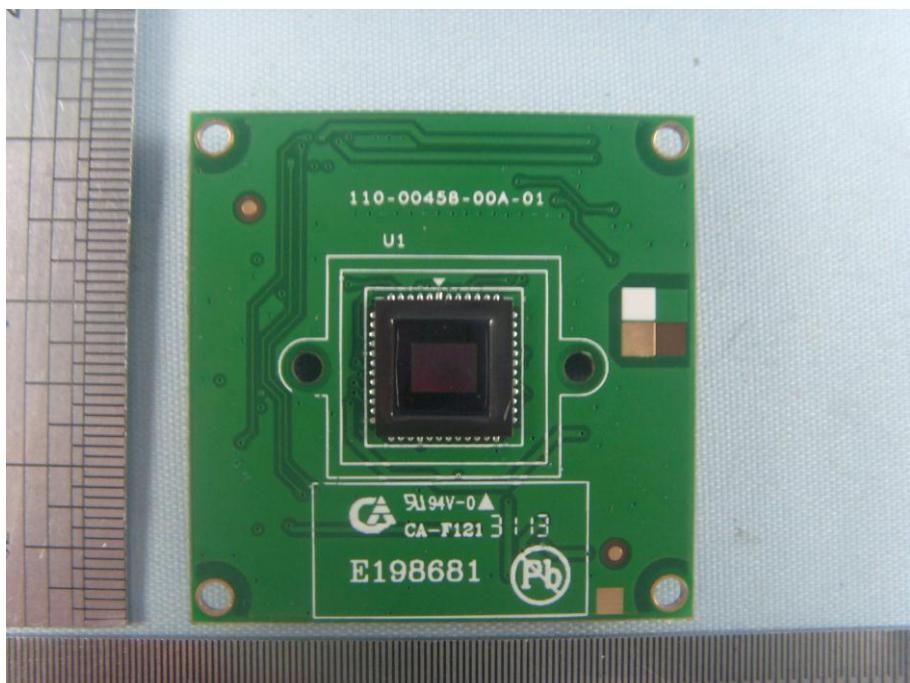
***Mainboard- Top View***



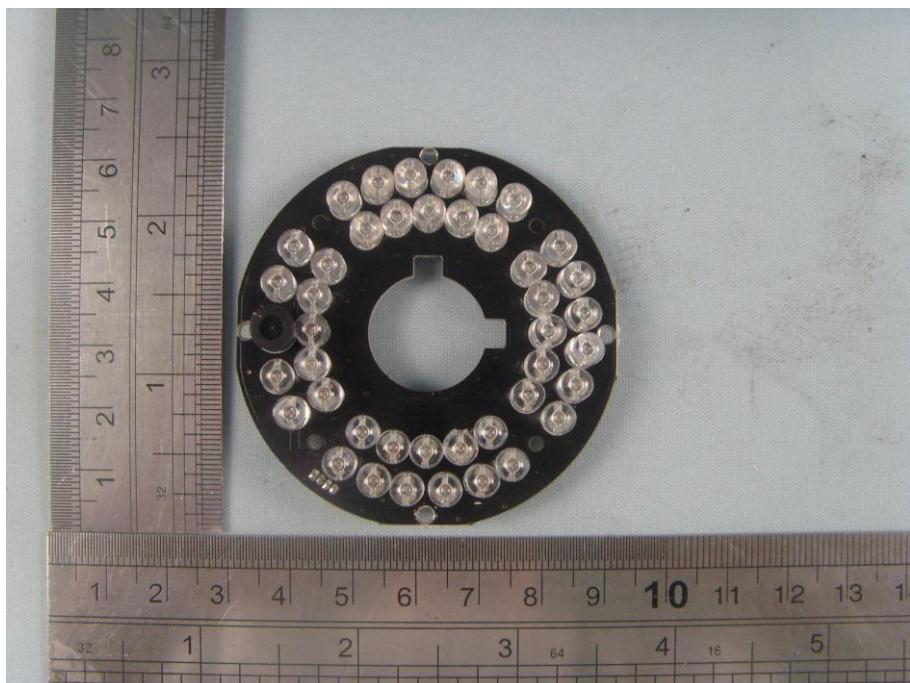
## **Mainboard- Bottom View**



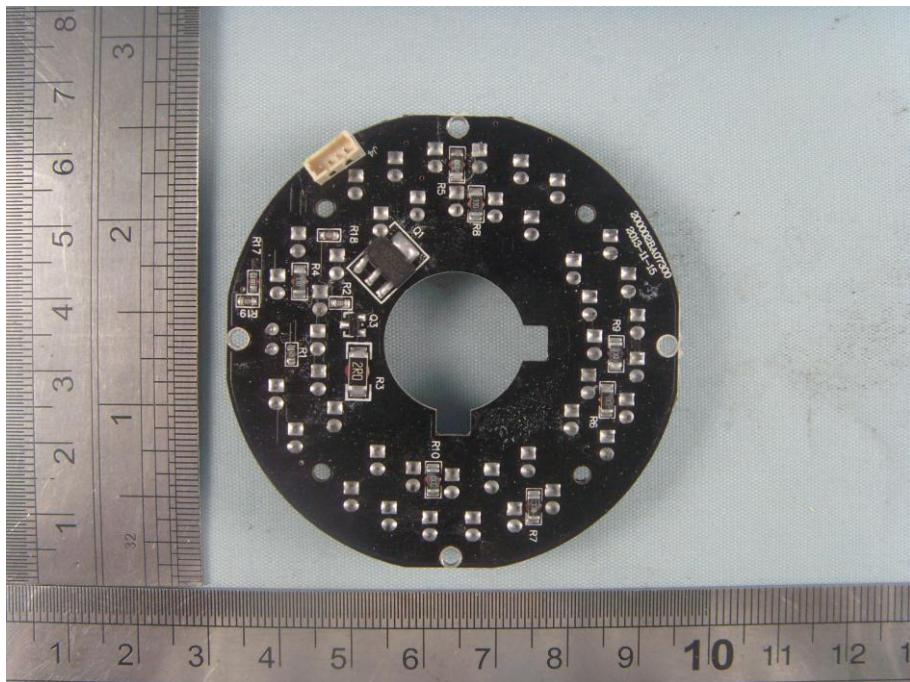
## *Sensor board - Top View*



***Sensor board - bottom View***



***IR LED board - Top View***



**IR LED board- Bottom View**



**Power Adapter View #1( Mass Power :SEF1200100A1BB)**



**Power Adapter View #2 (Mass Power: WEF1200100A1BA)**

## Test System Details

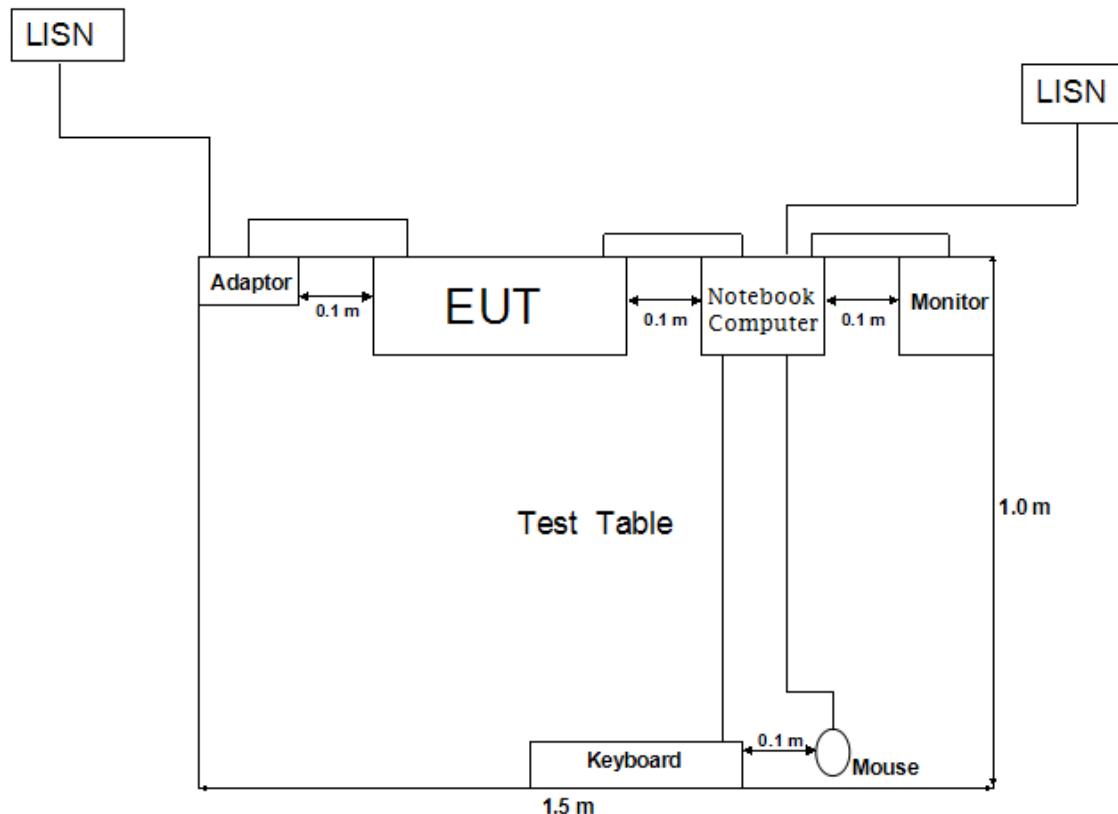
<b>EUT</b>			
<b>Model Number:</b> GJV3610_HD v2, GJV3610_FHD v2			
<b>Model Tested:</b> GJV3610_FHD v2			
<b>Description:</b> IP Camera			
<b>Input:</b> AC 120V/60Hz			
<b>Manufacturer:</b> Grandstream Networks, Inc.			
<b>Support Equipment</b>			
<b>Description</b>	<b>Model Number</b>	<b>Serial Number</b>	<b>Manufacturer</b>
Notebook COMPUTER	ThinkPad X121e	---	Lenovo
Mouse	MO32B0	23-033131	IBM
Keyboard	SK-1788	---	LENOVO
Monitor	TFT1780PS	---	AOC

<b>Cable Description</b>					
<b>Description</b>	<b>From</b>	<b>To</b>	<b>Length (Meters)</b>	<b>Shielded (Y/N)</b>	<b>Ferrite (Y/N)</b>
<i>Adaptor Cord Of Notebook COMPUTER</i>	<i>AC Adaptor</i>	<i>Notebook COMPUTER</i>	<i>1.6</i>	<i>N</i>	<i>Y</i>
	<i>AC Plug</i>	<i>AC Adaptor</i>	<i>1.2</i>	<i>N</i>	<i>Y</i>
<i>Power cord of monitor</i>	<i>Monitor</i>	<i>Plug</i>	<i>1.2</i>	<i>N</i>	<i>Y</i>
<i>Mouse cord</i>	<i>Mouse</i>	<i>Notebook COMPUTER</i>	<i>1.2</i>	<i>N</i>	<i>Y</i>
<i>Keyboard cord</i>	<i>keyboard</i>	<i>Notebook COMPUTER</i>	<i>1.2</i>	<i>N</i>	<i>Y</i>
<i>VGA cord</i>	<i>Notebook COMPUTER</i>	<i>Monitor</i>	<i>1.2</i>	<i>Y</i>	<i>Y</i>
<i>RJ-45 Cord</i>	<i>EUT</i>	<i>Notebook COMPUTER</i>	<i>2.0</i>	<i>N</i>	<i>N</i>
<i>Power Adaptor cord of EUT</i>	<i>EUT</i>	<i>Plug</i>	<i>1.8</i>	<i>N</i>	<i>N</i>
<i>Note: The "EUT" means "IP Camera".</i>					

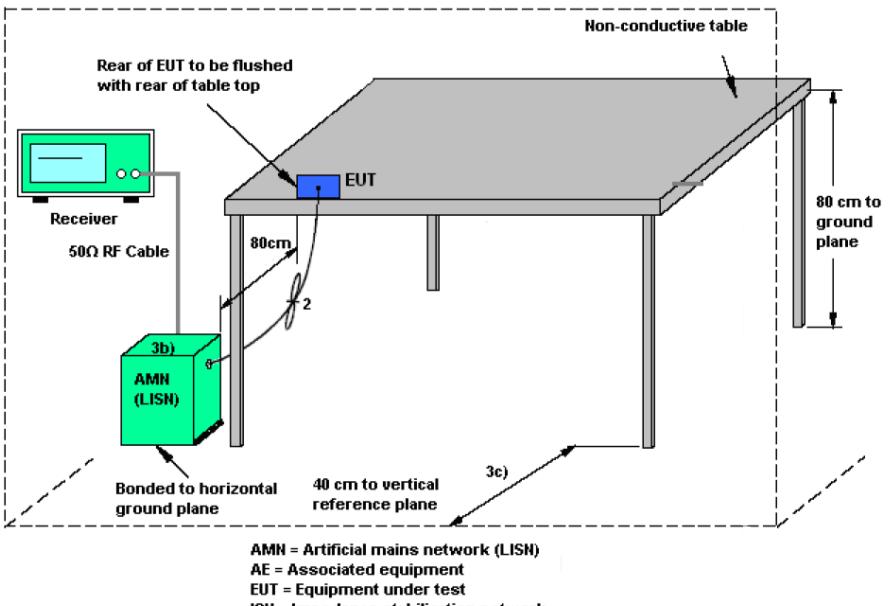
**NOTE:**

*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.*

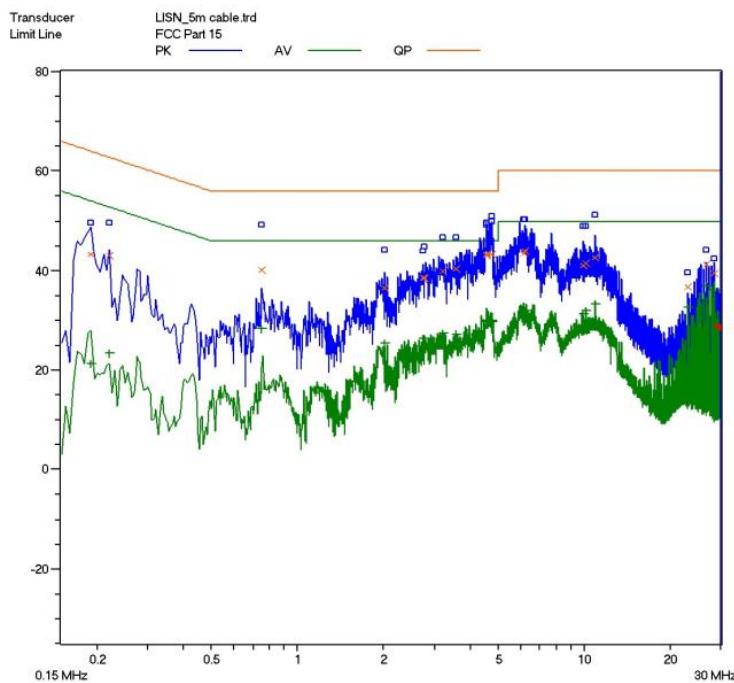
## Configuration of Tested System



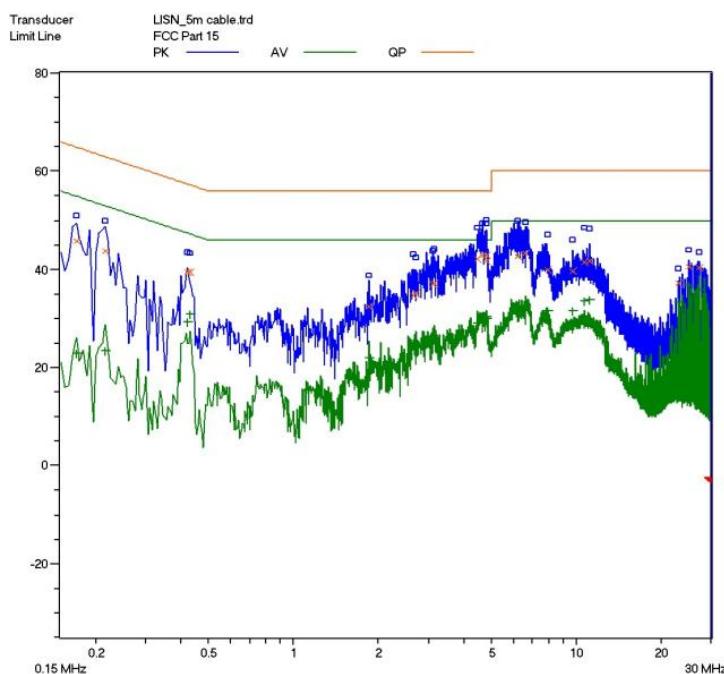
## ATTACHMENT 1 - CONDUCTED EMISSION TEST RESULTS

<b>CLIENT:</b>	Grandstream Networks, Inc.	<b>TEST STANDERD:</b>	Section 15.107
<b>MODEL NUMBERS:</b>	GXV3610_HD v2, GXV3610_FHD v2	<b>PRODUCT:</b>	IP Camera
<b>MODEL TESTED:</b>	GXV3610_FHD v2	<b>EUT DESIGNATION:</b>	Home or Office
<b>TEMPERATURE:</b>	22°C	<b>HUMIDITY:</b>	48%
<b>ATM PRESSURE:</b>	103kPa	<b>GROUNDING:</b>	None
<b>TESTED BY:</b>	Daomen	<b>DATE OF TEST:</b>	November 4 <sup>th</sup> , 2014
<b>TEST REFERENCE:</b>	ANSI C63.4- 2003		
<b>TEST PROCEDURE:</b>	The EUT was set up according to the guidelines of ANSI C63.4: 2003 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.		
<b>TEST MODE:</b>	Mode 1,Mode 2		
<b>TEST SET UP:</b>	 <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>3b) AMN (LISH)</p> <p>Receiver</p> <p>50Ω RF Cable</p> <p>Bonded to horizontal ground plane</p> <p>40 cm to vertical reference plane</p> <p>3c)</p> <p>AMN = Artificial mains network (LISH) AE = Associated equipment EUT = Equipment under test ISH = Impedance stabilization network</p>		
<b>TESTED RANGE:</b>	150kHz to 30MHz		
<b>TEST VOLTAGE:</b>	AC 120V/60Hz		
<b>RESULTS:</b>	The EUT meets the requirements of test reference for Conducted Emissions. The test results relate only to the equipment under test provided by client.		
<b>CHANGES OR MODIFICATIONS:</b>	There were no modifications installed by ECMG Electronic Technical Testing Corp(Shenzhen) test personnel.		
<b>M. UNCERTAINTY:</b>	Freq. $\pm 2 \times 10^{-7}$ x Center Freq., Amp $\pm 2.6$ dB		

### Mode 1:

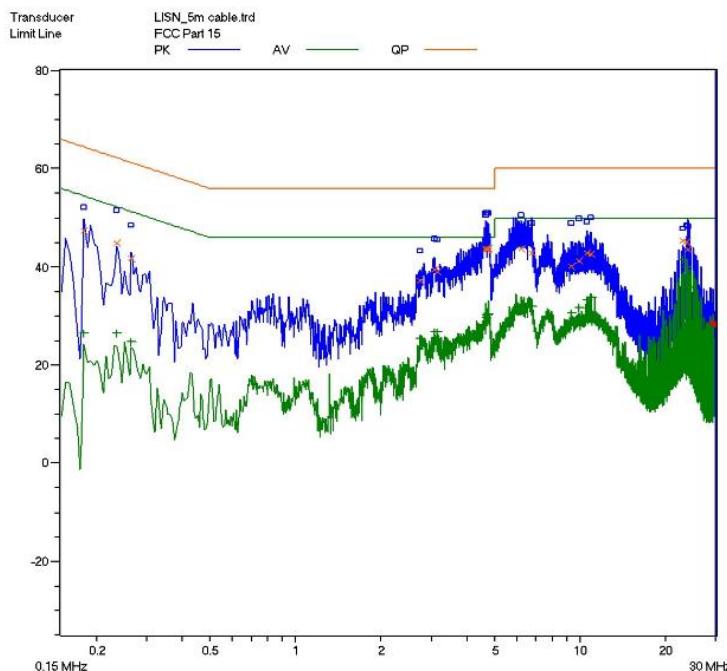


**Line L Conducted Emission Graph**

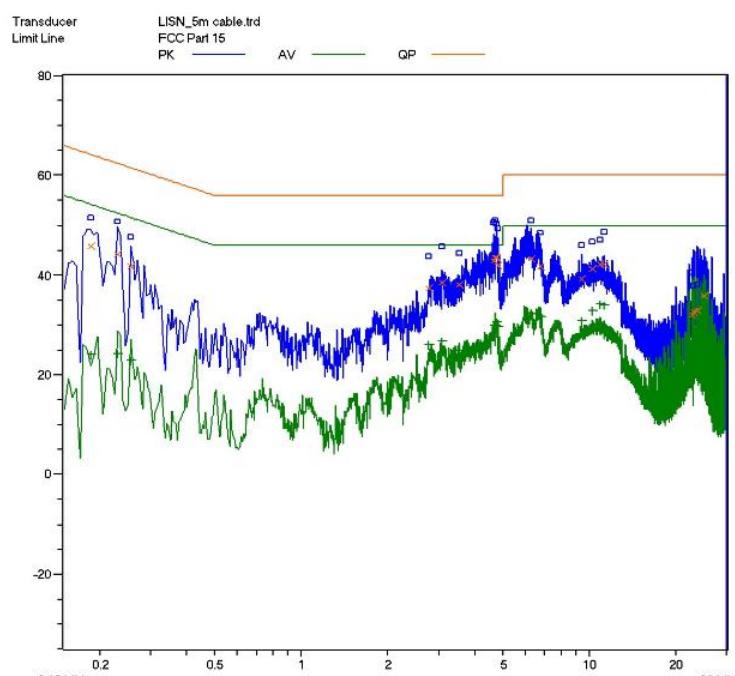


**Line N Conducted Emission Graph**

## Mode 2:



**Line L Conducted Emission Graph**



**Line N Conducted Emission Graph**

**Test Data:**

**Mode 1:**

Lines (L/N)	Frequency (MHz)	Corrected QP Level (dBuV)	Limits QP (dBuV)	Margin QP (dB)	Frequency (MHz)	Corrected AV Level (dBuV)	Limits AV (dBuV)	Margin QP (dB)
L	4.755	43.4	56	-12.6	4.755	30.0	46	-16.0
L	6.150	43.5	60	-16.5	6.150	31.8	50	-18.2
L	6.240	44.0	60	-16.0	6.240	31.9	50	-18.1
N	0.170	45.9	65	-19.1	0.170	22.9	55	-32.1
N	0.215	43.9	63	-19.1	0.215	23.4	53	-29.6
N	0.420	39.5	57.4	-17.9	0.420	29.3	47.4	-18.1

*Note :*

- 1) All readings are using a bandwidth of 9 kHz, with a 500 ms sweep time. A video filter was not use.
- 2) "QP" means "Quasi-Peak" values, "AV" means "Average" values.
- 3) The other reading are too low against official limits that are not be recorded.

**Mode 2:**

Lines (L/N)	Frequency (MHz)	Corrected QP Level (dBuV)	Limits QP (dBuV)	Margin QP (dB)	Frequency (MHz)	Corrected AV Level (dBuV)	Limits AV (dBuV)	Margin QP (dB)
L	4.660	43.3	56	-12.7	4.660	29.1	46	-17.1
L	4.675	43.1	56	-12.9	4.675	30.0	46	-16.0
L	4.730	43.4	56	-12.6	4.730	30.3	46	-15.7
N	0.185	45.1	64.3	-19.2	0.185	23.7	54.3	-30.6
N	0.230	44.0	62.4	-18.4	0.230	24.1	52.4	-28.3
N	0.255	41.7	61.6	-19.9	0.255	23.0	51.6	-28.6

*Note :*

- 1) All readings are using a bandwidth of 9 kHz, with a 500ms sweep time. A video filter was not use.
- 2) "QP" means "Quasi-Peak" values, "AV" means "Average" values.
- 3) The other reading are too low against official limits that are not be recorded.

**Test Equipment List:**

Test Equipment	Model No.	Manufacturer	Serial No.	Last Cal.	Cal. Interval
EMI Test Receiver	SMR4503	SCHAFFNER	11725	2014.07.08	2015.07.07
Line impedance stabilization network	ESH2-Z5	R&S	0338.5219.53-100396-vj	2014.03.14	2015.03.13
<i>Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.</i>					

TESTED BY: Daomen **ECMG**  
ENGINEER COMPANY NAME

REVIEWED BY: James **ECMG**  
SENIOR ENGINEER COMPANY NAME



***Conducted Emission Test Set-up -Front view***



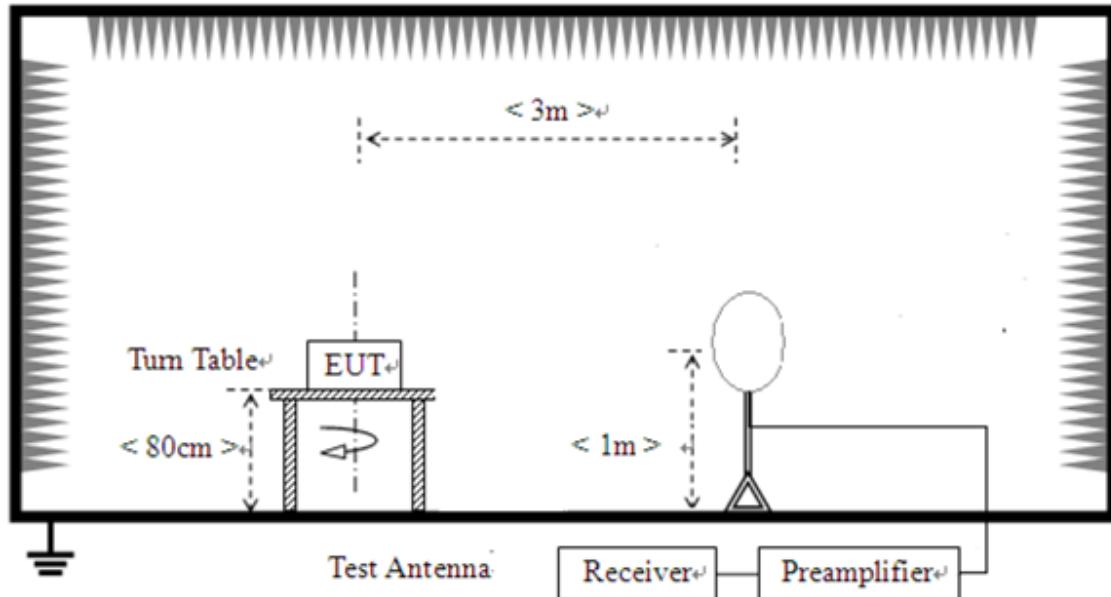
***Conducted Emission Test Set-up -Rear view***

## **ATTACHMENT 2 – RADIATED EMISSION MEASUREMENT**

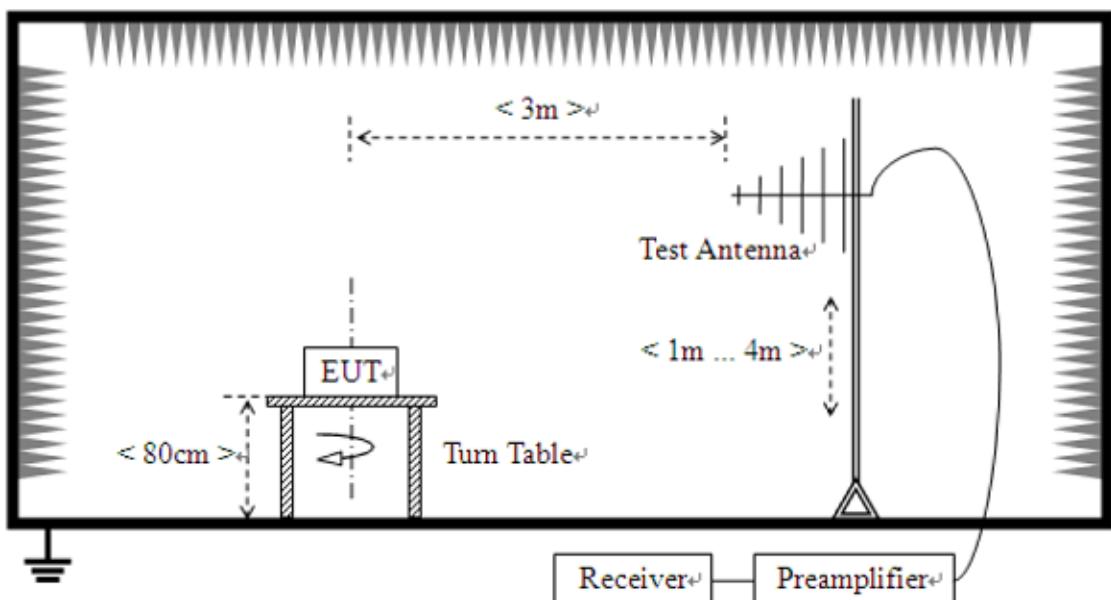
<b>CLIENT:</b>	Grandstream Networks, Inc.	<b>TEST STANDERD:</b>	Section 15.109
<b>MODEL NUMBERS:</b>	GXV3610_HD v2, GXV3610_FHD v2	<b>PRODUCT:</b>	IP Camera
<b>EUT MODEL:</b>	GXV3610_FHD v2	<b>EUT DESIGNATION:</b>	Home or Office
<b>TEMPERATURE:</b>	22 °C	<b>HUMIDITY:</b>	47%RH
<b>ATM PRESSURE:</b>	103.0kPa	<b>GROUNDING:</b>	None
<b>TESTED BY:</b>	Daomen	<b>DATE OF TEST:</b>	November 4 <sup>th</sup> , 2014
<b>TEST REFERENCE:</b>	ANSI C63.4: 2003		
<b>TEST PROCEDURE:</b>	<p>The EUT was set up according to the guidelines of ANSI C63.4: 2003 for radiated emissions.</p> <p>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 5GHz 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>		
<b>TEST MODE</b>	Mode 1, Mode 2, Mode 3		
<b>TESTED RANGE:</b>	As the highest operating frequency of the EUT is 680MHz, so test upper frequency range is up to 5GHz.		
<b>TEST VOLTAGE:</b>	AC 120V/60Hz		
<b>RESULTS:</b>	The EUT meet the requirements of test reference for radiated emissions. The test results relate only to the equipment under test provided by client.		
<b>CHANGES OR MODIFICATIONS:</b>	There were no modifications installed by ECMG Electronic Technical Testing Corp (Shenzhen). Test personnel.		
<b>M. UNCERTAINTY:</b>	Freq. $\pm 2 \times 10^{-7}$ x Center Freq., Amp $\pm 3.6$ dB		

Continue on to next page...

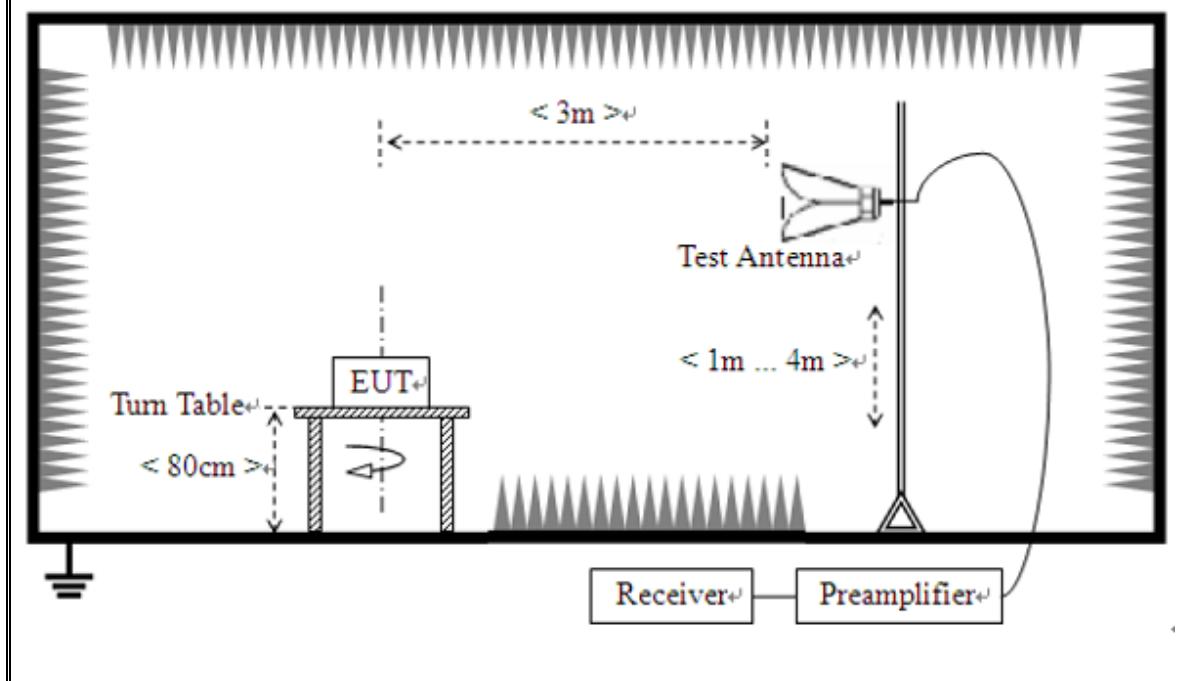
**Frequency measured at 9KHz to 30MHz:**

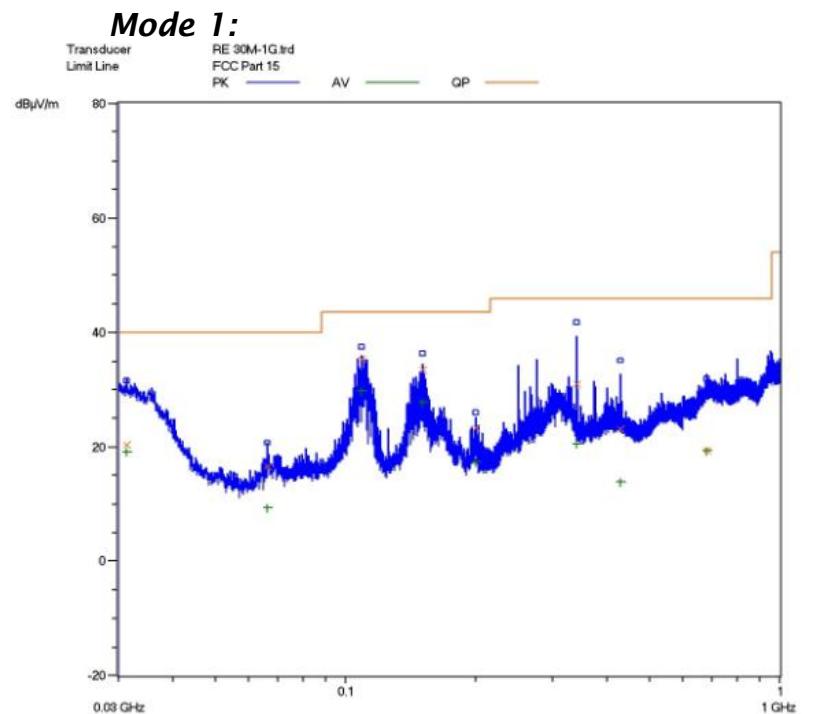


**Frequency measured at 30MHz to 1000MHz:**

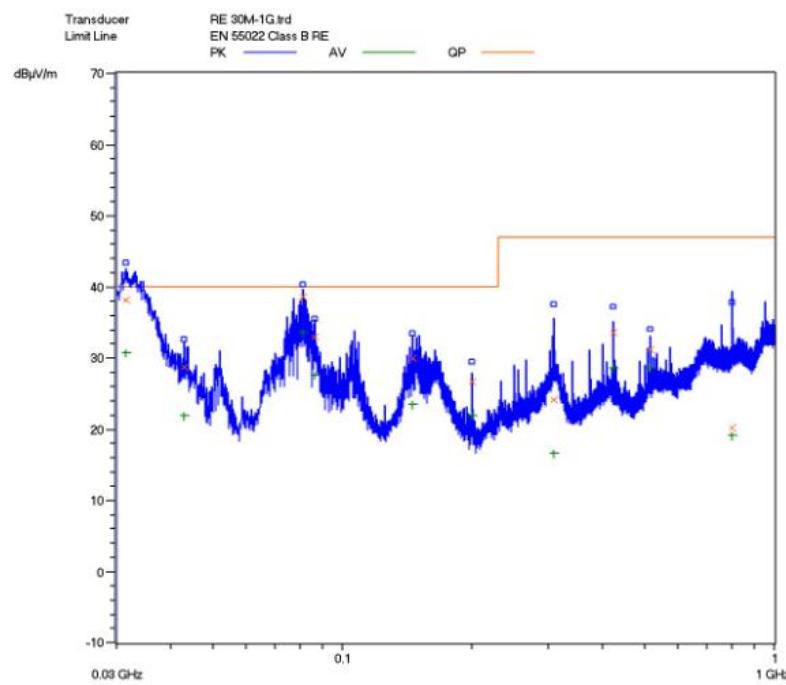


*Frequency measured at Above 1GHz:*



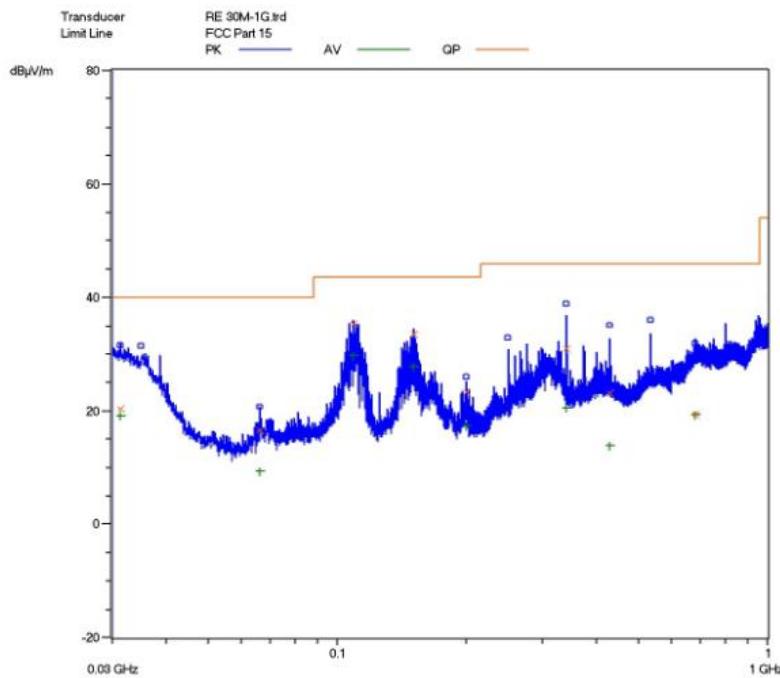


**30-1000MHz: Horizontal:Radiated Emission Test Plot(Peak,Max. hold)**

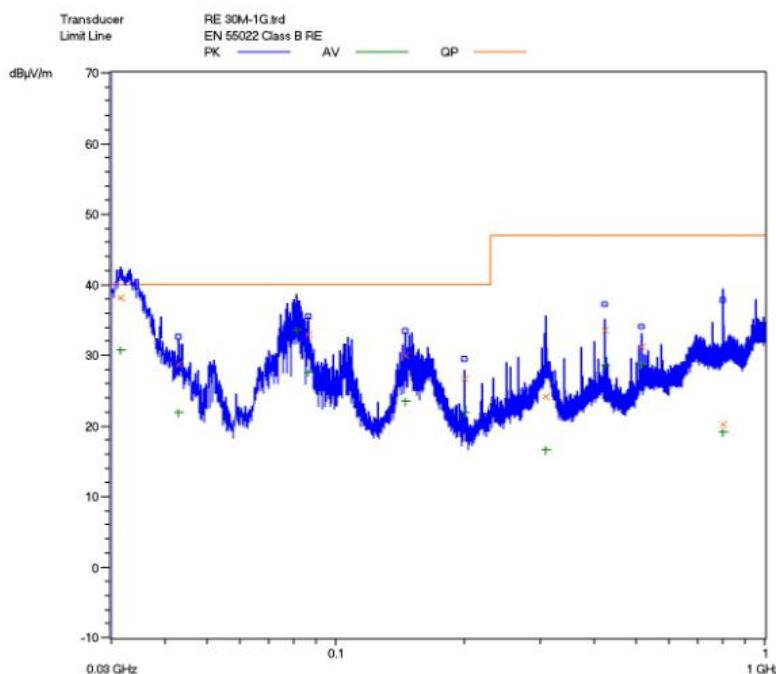


**30-1000MHz: Vertical:Radiated Emission Test Plot (Peak,Max. hold)**

**Mode 2:**

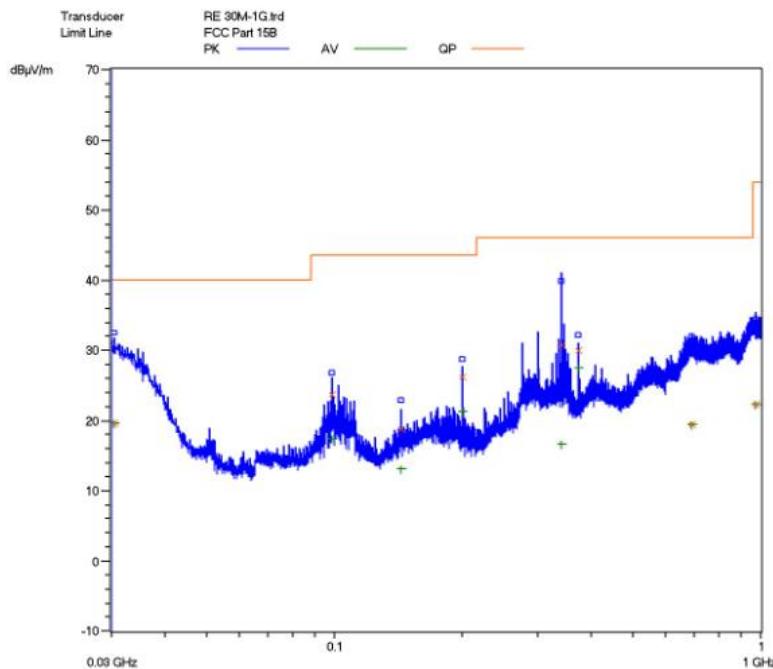


**30-1000MHz: Horizontal:Radiated Emission Test Plot(Peak,Max. hold)**

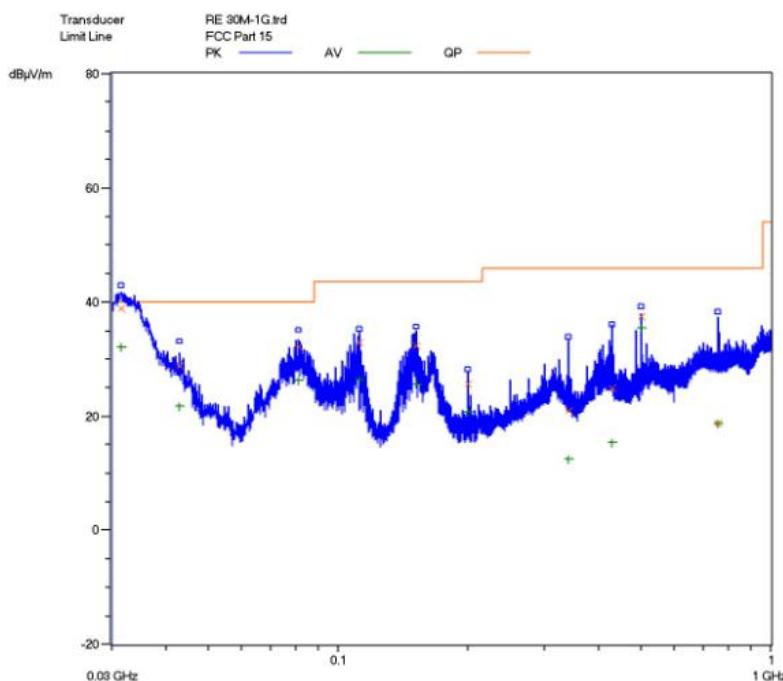


**30-1000MHz: Vertical:Radiated Emission Test Plot (Peak,Max. hold)**

### Mode 3:



**30-1000MHz: Horizontal:Radiated Emission Test Plot(Peak,Max.hold)**



**30-1000MHz: Vertical:Radiated Emission Test Plot (Peak,Max.hold)**

**Test Data:**

Pre-scan has been conducted to determine the worst-case from all possible combinations between available operation mode. The worst-case is mode 1 was selected for the final testing.

**Mode 1:**

Test No. #:	Frequency (MHz)	Factor (dB)	Reading Level QP (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	/	/	/	/	/	/
2	/	/	/	/	/	/
3	/	/	/	/	/	/
4	/	/	/	/	/	/
5	/	/	/	/	/	/
6	/	/	/	/	/	/

**Note:**

1. The field strength is calculated by adding the antenna factor, cable factor. The basic equation with a sample calculation is as follows: Emission Level = Reading Level + Factor.
2. The limits shown are based on quasi-peak detector except for the frequency bands 9-90 kHz, 110-490 kHz. the bandwidth of Test Receiver was set at 200Hz in frequency range of 9KHz to 150KHz, 9kHz in the frequency range of 150KHz to 30MHz.
3. All emission levels in the frequency range of 9KHz to 30MHz are 20dB below the official limits that are not reported.

**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)
<b>Horizontal</b>							
31.260	0.12	23.2	/	-2.92	20.4	40	-19.6
108.780	0.23	7.3	/	27.77	35.3	43.5	-8.2
150.000	0.28	8.9	/	24.42	33.6	43.5	-9.9
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
<b>Vertical</b>							
31.440	0.13	22.1	/	16.67	38.9	40	-1.1
81.1800	0.21	5.7	/	26.29	32.2	40	-7.8
111.600	0.23	7.3	/	25.47	33.0	43.5	-10.5
151.560	0.28	8.9	/	23.12	32.3	43.5	-11.2
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/

**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 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)
<b>Peak Measurement</b>								
1.016	1.40	23.9	-33.6	21.81	47.11	74	-26.89	H
1.190	1.45	24.5	-33.6	23.76	49.71	74	-24.29	H
1.330	1.57	25.1	-33.6	23.53	50.20	74	-23.8	H
1.365	1.58	25.1	-33.6	24.62	51.30	74	-22.7	V
1.450	1.65	25.7	-33.6	22.47	49.82	74	-24.18	V
1.590	1.76	26.7	-33	23.3	51.76	74	-22.24	V
<b>Average Measurement</b>								
1.016	1.40	23.9	-33.6	18.42	43.72	54	-10.28	H
1.190	1.45	24.5	-33.6	19.65	45.60	54	-8.4	H
1.330	1.57	25.1	-33.6	13.6	40.27	54	-13.73	H
1.365	1.58	25.1	-33.6	14.95	41.63	54	-12.37	V
1.450	1.65	25.7	-33.6	18.42	45.77	54	-8.23	V
1.590	1.76	26.7	-33	11.66	40.12	54	-13.88	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.

**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)
<b>Horizontal</b>							
31.260	0.12	23.2	/	-1.92	21.4	40	-18.6
108.780	0.23	7.3	/	27.74	35.0	43.5	-8.5
150.000	0.28	8.9	/	24.41	33.5	43.5	-10.0
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
<b>Vertical</b>							
31.440	0.13	22.1	/	15.67	37.9	40	-2.1
81.1800	0.21	5.7	/	26.27	32.0	40	-8.0
111.600	0.23	7.3	/	24.47	34.0	43.5	-9.5
151.560	0.28	8.9	/	23.12	32.3	43.5	-11.2
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/

**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&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)
<b>Peak Measurement</b>								
1.016	1.40	23.9	-33.6	21.81	47.11	74	-26.89	H
1.190	1.45	24.5	-33.6	23.76	49.71	74	-24.29	H
1.330	1.57	25.1	-33.6	23.53	50.20	74	-23.8	H
1.365	1.58	25.1	-33.6	24.62	51.30	74	-22.7	V
1.450	1.65	25.7	-33.6	22.47	49.82	74	-24.18	V
1.590	1.76	26.7	-33	23.3	51.76	74	-22.24	V
<b>Average Measurement</b>								
1.016	1.40	23.9	-33.6	18.42	43.72	54	-10.28	H
1.190	1.45	24.5	-33.6	19.65	45.60	54	-8.4	H
1.330	1.57	25.1	-33.6	13.6	40.27	54	-13.73	H
1.365	1.58	25.1	-33.6	14.95	41.63	54	-12.37	V
1.450	1.65	25.7	-33.6	18.42	45.77	54	-8.23	V
1.590	1.76	26.7	-33	11.66	40.12	54	-13.88	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.

**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)
<b>Horizontal</b>							
30.240	0.12	23.2	/	6.28	29.6	40.0	-10.4
98.480	0.22	7.2	/	16.28	23.7	40.0	-16.3
339.920	0.51	12.4	/	17.89	30.8	46	-15.2
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
<b>Vertical</b>							
34.640	0.02	16.7	/	15.28	32.0	40	-8.0
98.480	0.22	7.2	/	29.28	36.7	40	-3.3
957.120	0.89	23.4	/	13.51	37.8	46	-8.2
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/

**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&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)
<b>Peak Measurement</b>								
1.016	1.40	23.9	-33.6	29.37	54.67	74	-19.33	H
1.190	1.45	24.5	-33.6	26.28	52.23	74	-21.77	H
1.330	1.57	25.1	-33.6	23.03	49.70	74	-24.3	H
1.365	1.58	25.1	-33.6	21.68	48.36	74	-25.64	V
1.450	1.65	25.7	-33.6	22	49.35	74	-24.65	V
1.590	1.76	26.7	-33	24.25	52.71	74	-21.29	V
<b>Average Measurement</b>								
1.016	1.40	23.9	-33.6	21.2	46.50	54	-7.5	H
1.190	1.45	24.5	-33.6	17.26	43.21	54	-10.79	H
1.330	1.57	25.1	-33.6	19	45.67	54	-8.33	H
1.365	1.58	25.1	-33.6	16.09	42.77	54	-11.23	V
1.450	1.65	25.7	-33.6	14.75	42.10	54	-11.9	V
1.590	1.76	26.7	-33	11.9	40.36	54	-13.64	V

**Note:**

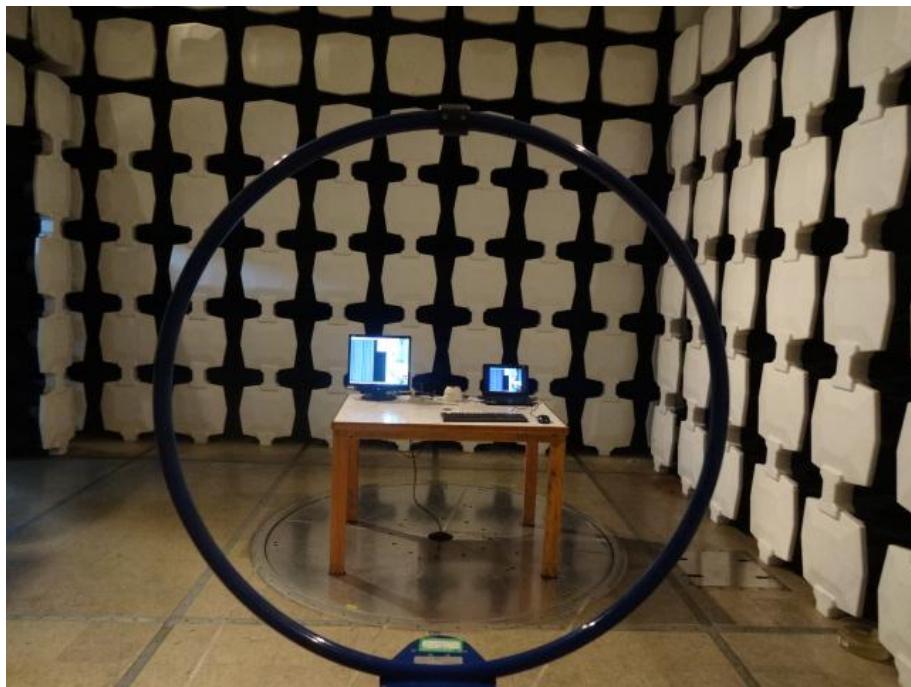
1. The field strength is calculated by adding the Antenna Factor, Cable Factor & Preamplifier. The basic equation with a sample calculation is as follows: Emission Level =Reading Level + Antenna Factor + Cable Loss -Preamplifier Factor.
2. The limits shown are based on Peak value and Average value detector 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:**

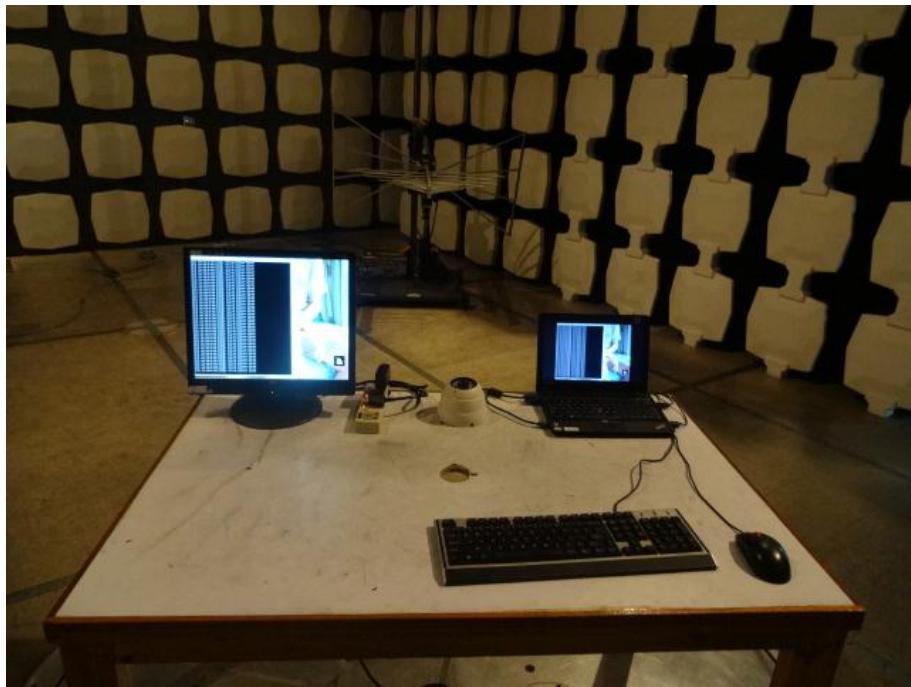
<b>Test Equipment</b>	<b>Model No.</b>	<b>Manufacturer</b>	<b>Serial No.</b>	<b>Last Cal.</b>	<b>Cal. Due</b>
Receiver	SMR4503	SCHAFFNER	11725	2014.07.08	2015.07.07
Double-ridged Wave guide horn	3115	ETS	6587	2014.08.02	2015.08.01
Microwave system amplifier	83017A	Agilent	MY39500438	2014.07.11	2015.07.10
Biconilog Antenna	3142C	ETS	00042672	2014.09.28	2015.09.27
Band-pass Filter	BRM50702	Micro-Tronic	S/N-030	2013.11.30	2014.11.29
Spectrum Analyzer	FSP30	R&S	100755	2013.11.30	2014.11.29
HF Loop Antenna	HLA6120	TESEQ	26348	2013-10-11	2014-10-12
<i>Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.</i>					

TESTED BY: Daomen **ECMG**  
**ENGINEER** **COMPANY NAME**

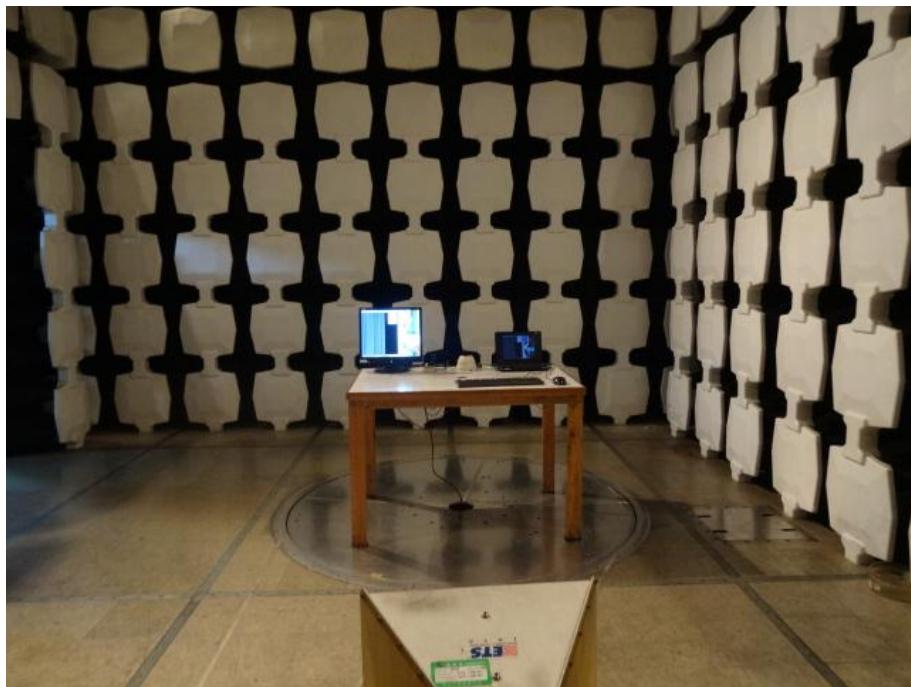
REVIEWED BY: Zamerfia **ECMG**  
**SENIOR ENGINEER** **COMPANY NAME**



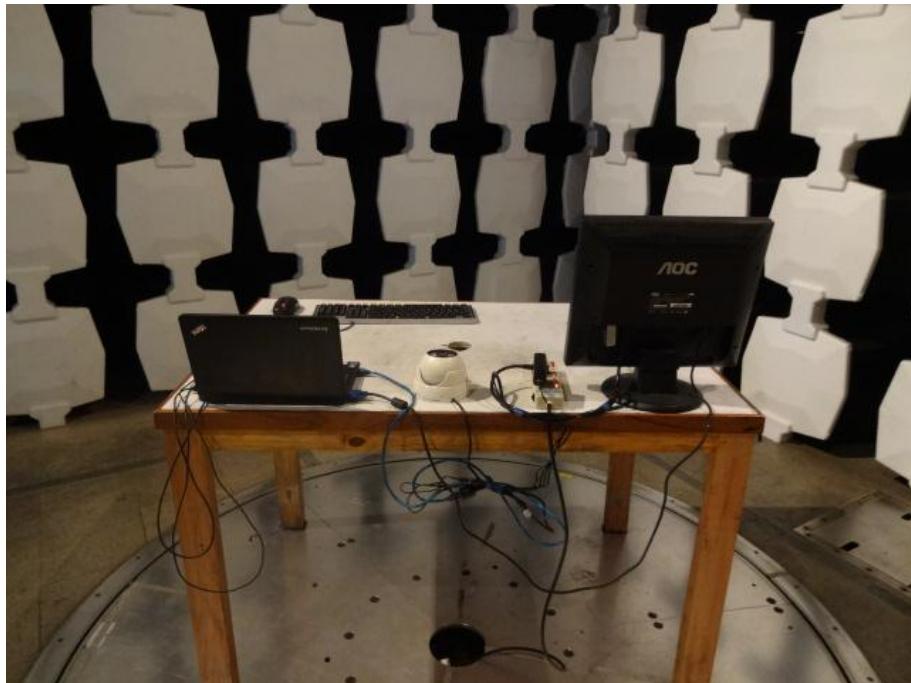
***Radiated Emission Test Set-up(9KHz-30MHz)***



***Radiated Emission Test Set-up(Below 1GHz)***



***Radiated Emission Test Set-up(Above 1GHz)***



***Radiated Emission Test Set-up (Rear View)***

※※※ ***End Of Report*** ※※※