

## EMI TEST REPORT

On Model Name: IP Camera

Model Number: GXV3615WPI\_HD

Brand Name: Grandstream

Prepared for Grandstream Networks, Inc.

FCC ID Number: YZZGXV3615WPI-HD

According to FCC 47 CFR Part 15, Subpart B

Test Report #: SHE-1404-11142 -FCC

Tested by: Daomen Galanz  
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 May 7<sup>th</sup>, 2014  
Swall Zhang 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***

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<b><i>GOVERNMENT DISCLAIMER NOTICE</i></b> .....	<b>2</b>
<b><i>REPRODUCTION CLAUSE</i></b> .....	<b>2</b>
<b><i>OPINIONS AND INTERPRETATIONS</i></b> .....	<b>2</b>
<b><i>STATEMENT OF MEASUREMENT UNCERTAINTY</i></b> .....	<b>2</b>
<b><i>ADMINISTRATIVE DATA</i></b> .....	<b>3</b>
<b><i>EUT DESCRIPTION</i></b> .....	<b>4</b>
<b><i>TEST SUMMARY</i></b> .....	<b>5</b>
<b><i>TEST MODE JUSTIFICATION</i></b> .....	<b>6</b>
<b><i>EUT EXERCISE SOFTWARE</i></b> .....	<b>6</b>
<b><i>EQUIPMENT MODIFICATION</i></b> .....	<b>6</b>
<b><i>EUT SAMPLE PHOTOS</i></b> .....	<b>7</b>
<b><i>TEST SYSTEM DETAILS</i></b> .....	<b>14</b>
<b><i>ATTACHMENT 1 - CONDUCTED EMISSION TEST RESULTS</i></b> .....	<b>17</b>
<b><i>ATTACHMENT 2 - RADIATED EMISSION MEASUREMENT</i></b> .....	<b>23</b>

## List Attached Files

<i>Exhibit Type</i>	<i>File Description</i>	<i>File Name</i>
<i>Test Report</i>	<i>Test Report</i>	<i>YZZGXV3615WPI-HD _Test report.pdf</i>
<i>Operation Description</i>	<i>Technical Description</i>	<i>YZZGXV3615WPI-HD_operation description.pdf</i>
<i>External Photos</i>	<i>External Photos</i>	<i>YZZGXV3615WPI-HD_External Photos</i>
<i>Internal Photos</i>	<i>Internal Photos</i>	<i>YZZGXV3615WPI-HD_Internal Photos</i>
<i>Block Diagram</i>	<i>Block Diagram</i>	<i>YZZGXV3615WPI-HD_Block Diagram.pdf</i>
<i>Schematics</i>	<i>Circuit Diagram</i>	<i>YZZGXV3615WPI-HD _Schematics.pdf</i>
<i>ID Label/Location</i>	<i>Label and Location</i>	<i>YZZGXV3615WPI-HD_Label &amp; Location.pdf</i>
<i>User Manual</i>	<i>User Manual</i>	<i>YZZGXV3615WPI-HD _User Manual.pdf</i>
<i>Test set-up photos</i>	<i>Test set-up photos</i>	<i>YZZGXV3615WPI-HD _Test Set-up Photos</i>

### **Government Disclaimer Notice**

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*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* : *GXV3615WPI\_HD*

*Model Tested* : *GXV3615WPI\_HD*

*Receipt Date* : *April 15<sup>th</sup>, 2014*

*Date Tested* : *April 17<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 GXV3615WPI\_HD (referred to as the EUT in this report) is an IP Camera.

Technical specifications of the EUT are as follows:

<b>Parameter</b>		<b>Range</b>
<i>Basic parameters</i>	<i>Rated voltage</i>	12VDC
	<i>Rated Current</i>	0.5A
<i>I/O Ports</i>	<i>Power Jack</i>	12V/0.5A Power Jack used to connect the power adapter. The camera should adopt BY type other than UPS. The usage of other adapters may lead to an insensitive touch screen.
	<i>Network&amp;PC Port</i>	10/100Mbps Ethernet port connect to PC or LAN .
<i>Power Adapter#1</i>	<i>Input</i>	100-240VAC 50/60Hz
	<i>Output</i>	12VDC, 0.5A
	<i>Model</i>	WCF1200050A1BA
	<i>Brand name</i>	Mass Power
<i>Power Adapter#2</i>	<i>Input</i>	100-240VAC 50/60Hz 0.2A
	<i>Output</i>	12VDC, 0.5A
	<i>Model</i>	UE06L8-120050SPAU
	<i>Brand name</i>	UE

### **NOTE:**

1. The EUT includes two power adapters which have been tested and recorded in this report.
2. For more detailed informations or features please refer to user's manual of EUT.

## **Test Summary**

*The Electromagnetic Compatibility requirements on model GXV3615WPI\_HD 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 -2009</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 -2009</i>	<i>Radiated Emission</i>	<i>Passed</i>	<i>Enclosure</i>	<i>Attachment 2</i>



### ***Test Mode Justification***

*The system was tested in as normal use(IP Camera& PoE mode) status.*

### ***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). Test personnel.*

**EUT Sample Photos**

**EUT Model:GXV361 5WPI\_HD**



**EUT-Front View**



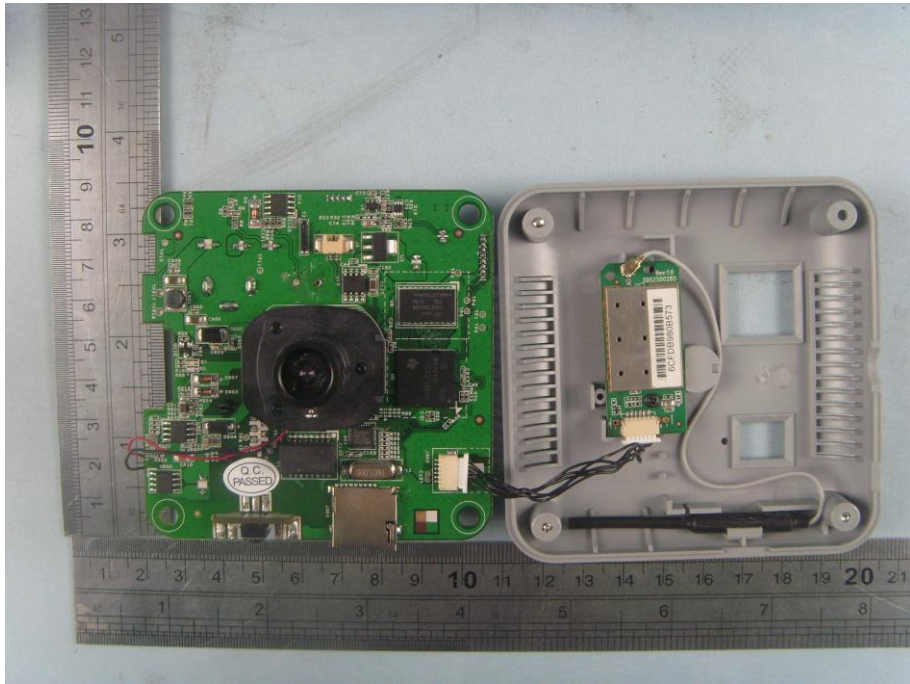
**EUT-Rear View**



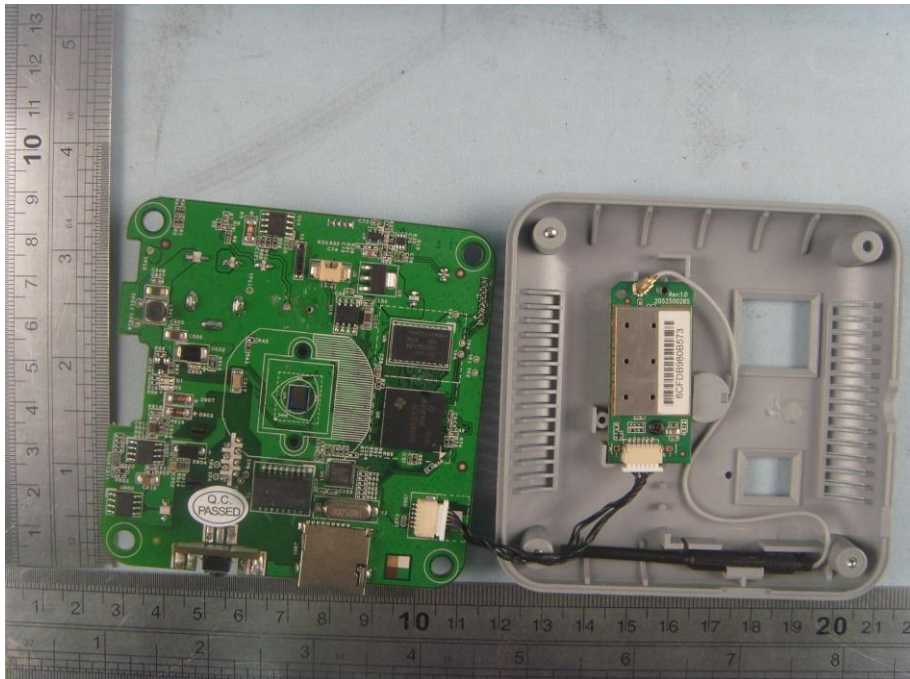
***Power Adapter(Mass power)-Top View***



***Power Adapter(UE)-Top View***

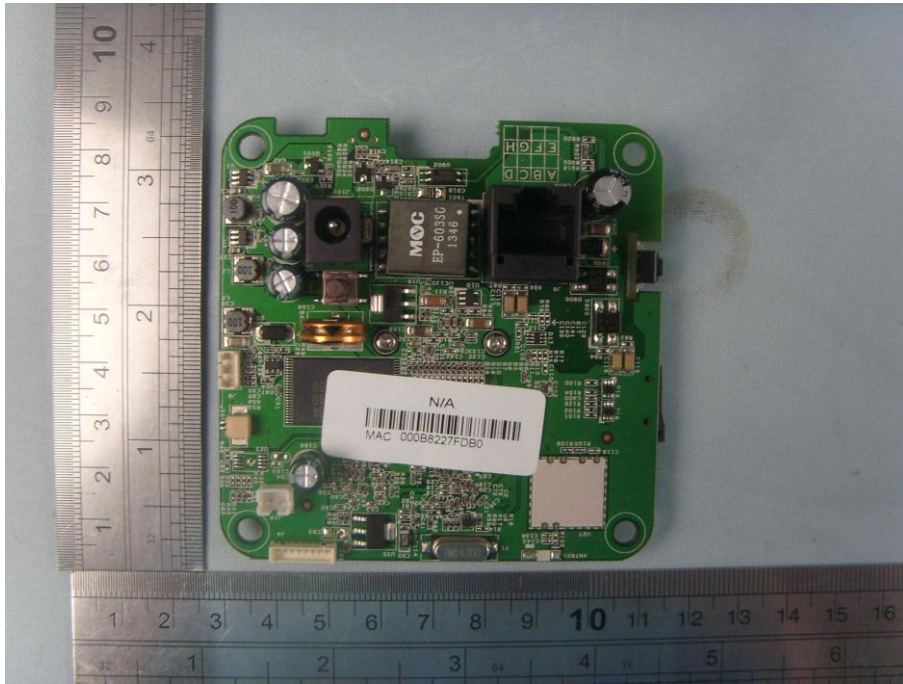


***EUT-Uncovered View #1***

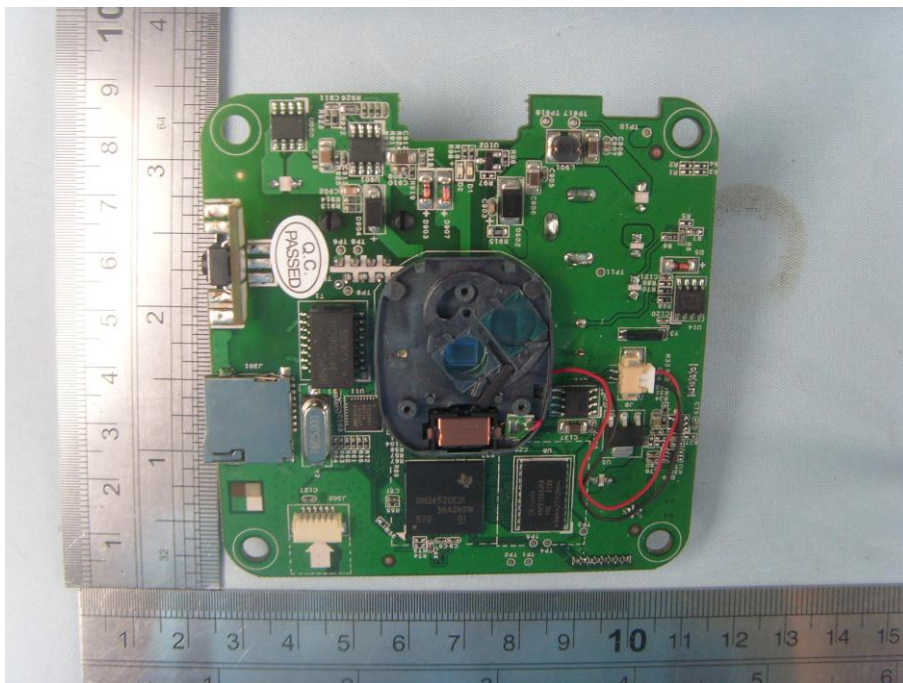


***EUT-Uncovered View #2***

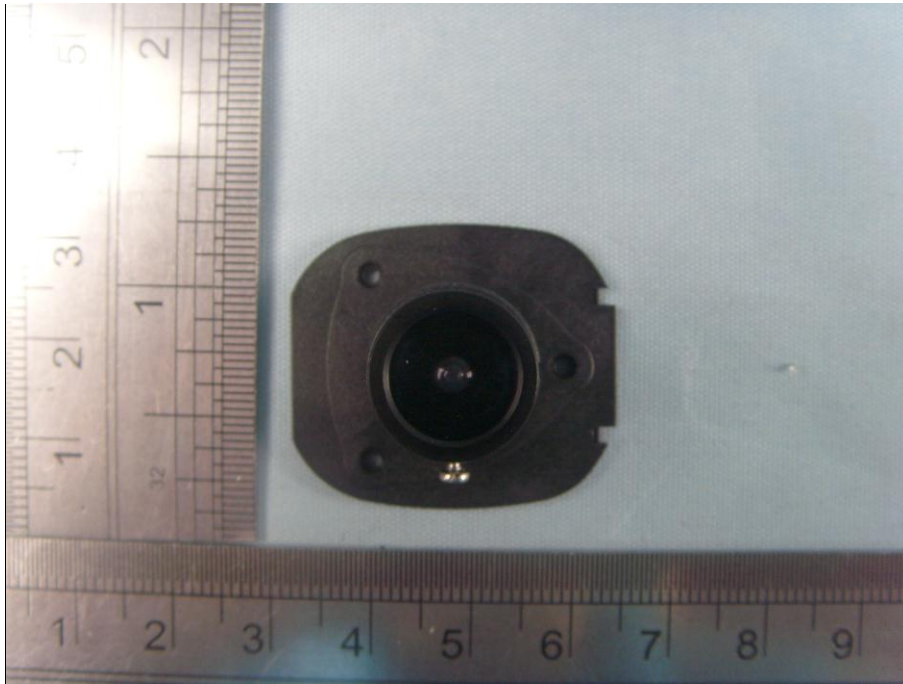




**Main board- Top View**



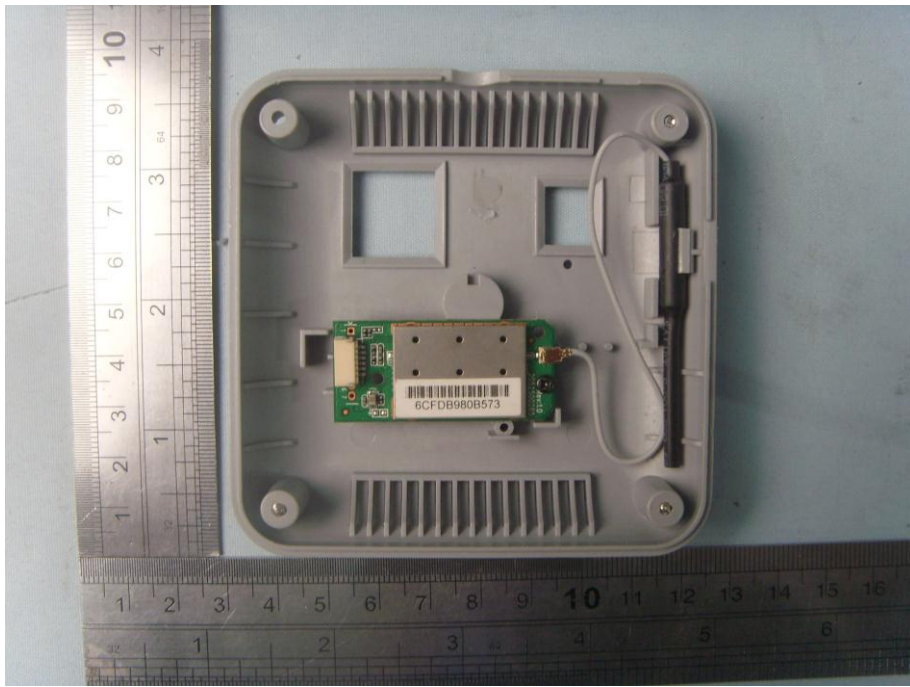
**Main board- Bottom View**



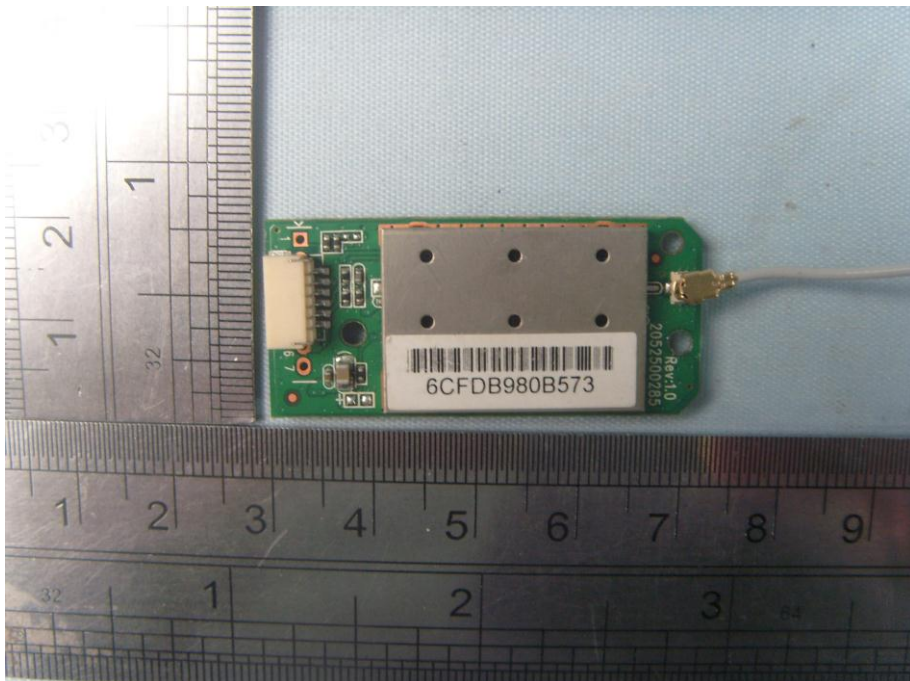
***Lens -Top View***



***Lens-Bottom View***

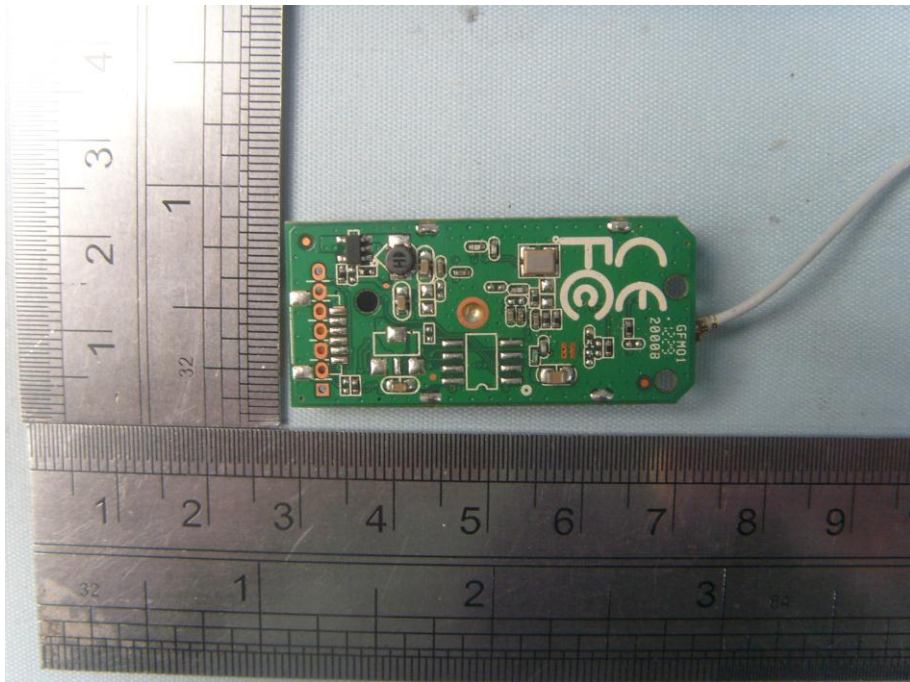


**Wi-Fi Module&Antenna Location View**

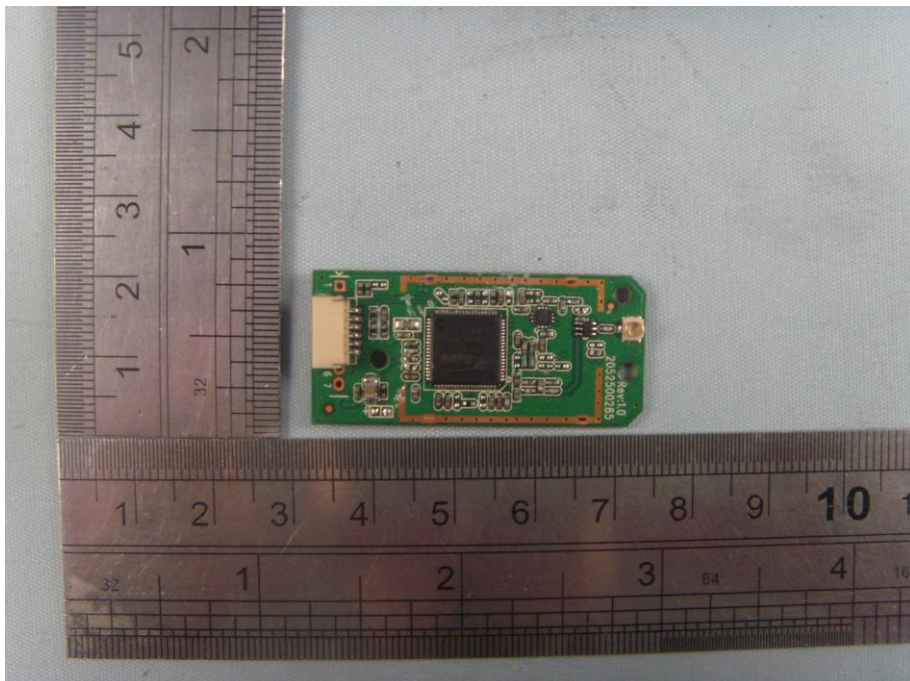


**Wi-Fi module-Top View**





**Wi-Fi module-Bottom View**



**Wi-Fi module-Removed Shield Cover View**



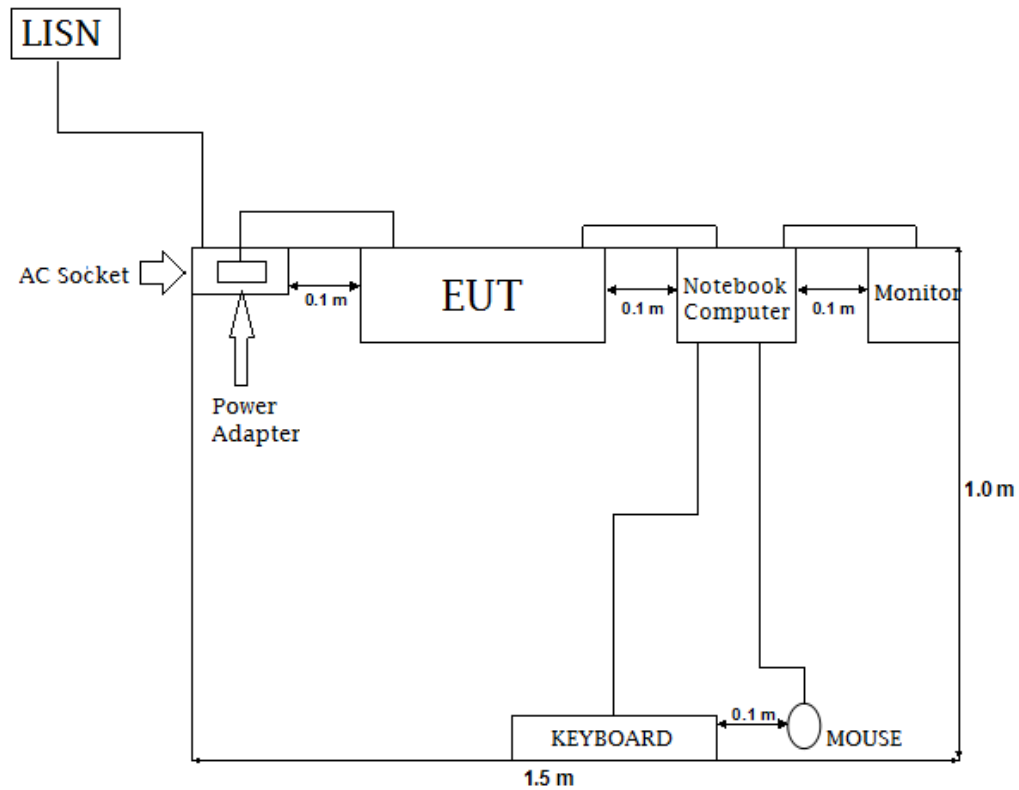
## Test System Details

<i>EUT</i>			
<b>Model Number:</b>	<i>GXV3615WPI_HD</i>		
<b>Model Tested:</b>	<i>GXV3615WPI_HD</i>		
<b>Description:</b>	<i>IP Camera</i>		
<b>Input:</b>	<i>AC 120V/60Hz</i>		
<b>Manufacturer:</b>	<i>Grandstream Networks, Inc.</i>		
<i>Support Equipment</i>			
<i>Description</i>	<i>Model Number</i>	<i>Serial Number</i>	<i>Manufacturer</i>
<i>Notebook computer</i>	<i>ThinkPad Edge E40</i>	<i>TYPE0578-MDC</i>	<i>Lenovo</i>
<i>Adapter Of Notebook PC</i>	<i>ThinkPad 57Y4614</i>	<i>42T4424</i>	<i>Lenovo</i>
<i>Mouse</i>	<i>MO32B0</i>	<i>23-033131</i>	<i>IBM</i>
<i>Keyboard</i>	<i>SK-1788</i>	<i>---</i>	<i>Lenovo</i>
<i>Monitor</i>	<i>TFT1780PS</i>	<i>B8879HA021638</i>	<i>AOC</i>
<i>PoE Adapter terminal unit</i>	<i>DWL-P200</i>	<i>F370175001634</i>	<i>D-Link</i>

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<b>Cable Description</b>					
<i>Description</i>	<i>From</i>	<i>To</i>	<i>Length (Meters)</i>	<i>Shielded (Y/N)</i>	<i>Ferrite (Y/N)</i>
<i>Power Cord Of Notebook PC</i>	<i>Adapter</i>	<i>Notebook Computer</i>	<i>1.6</i>	<i>N</i>	<i>Y</i>
	<i>Adapter</i>	<i>AC Plug</i>	<i>1.2</i>	<i>N</i>	<i>Y</i>
<i>AC 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>Plug</i>	<i>1.2</i>	<i>N</i>	<i>Y</i>
<i>Keyboard cord</i>	<i>Keyboard</i>	<i>Plug</i>	<i>1.2</i>	<i>N</i>	<i>Y</i>
<i>RJ-45 Cord</i>	<i>EUT</i>	<i>Notebook Computer</i>	<i>1.5</i>	<i>N</i>	<i>N</i>
<i>Power cord of Adapter</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>					

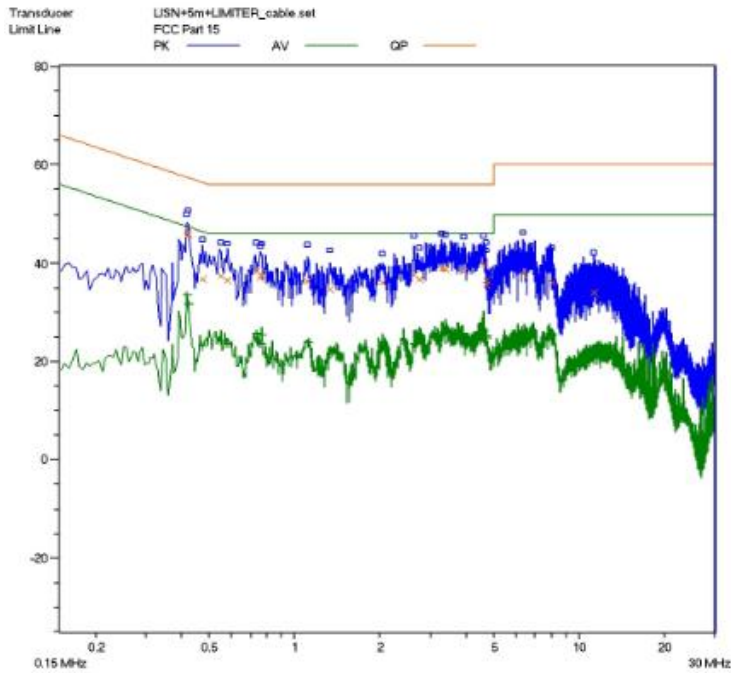
## Configuration of Tested System



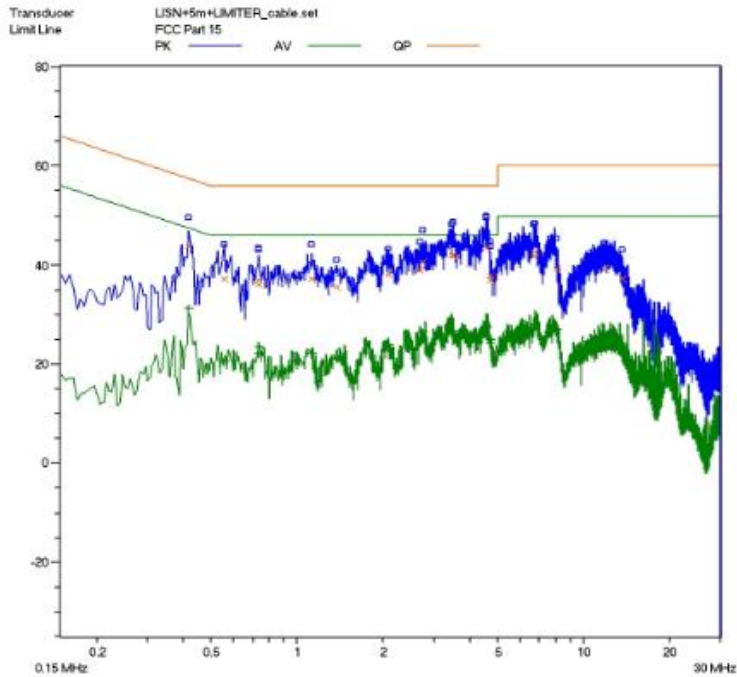
## ATTACHMENT 1 - CONDUCTED EMISSION TEST RESULTS

<b>CLIENT:</b>	Grandstream Networks, Inc.	<b>TEST STANDERD:</b>	FCC Part 15, Subpart B, Section 15.107
<b>MODEL NUMBERS:</b>	GXV3615WPI_HD	<b>PRODUCT:</b>	IP Camera
<b>MODEL TESTED:</b>	GXV3615WPI_HD	<b>EUT DESIGNATION:</b>	Home or Office
<b>TEMPERATURE:</b>	23 °C	<b>HUMIDITY:</b>	51%
<b>ATM PRESSURE:</b>	103kPa	<b>GROUNDING:</b>	None
<b>TESTED BY:</b>	Daomen	<b>DATE OF TEST:</b>	April 17 <sup>th</sup> , 2014
<b>TEST REFERENCE:</b>	ANSI C63.4 -2009		
<b>TEST PROCEDURE:</b>	The EUT was set up according to the guidelines of ANSI C63.4 -2009 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>DESCRIPTION OF TEST MODE</b>	IP Camera		
<b>TEST SET UP</b>	<p>The diagram illustrates the test setup. An EUT (Equipment Under Test) is placed on a support stand at a height of 80cm from the ground plane. The EUT is connected to a LISN (Line Impedance Stabilization Network). The LISN is connected to a Test receiver. The Test receiver is connected to the ground plane. The ground plane is represented by a horizontal line with a vertical tick mark indicating the connection point.</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		

**Mass power:**

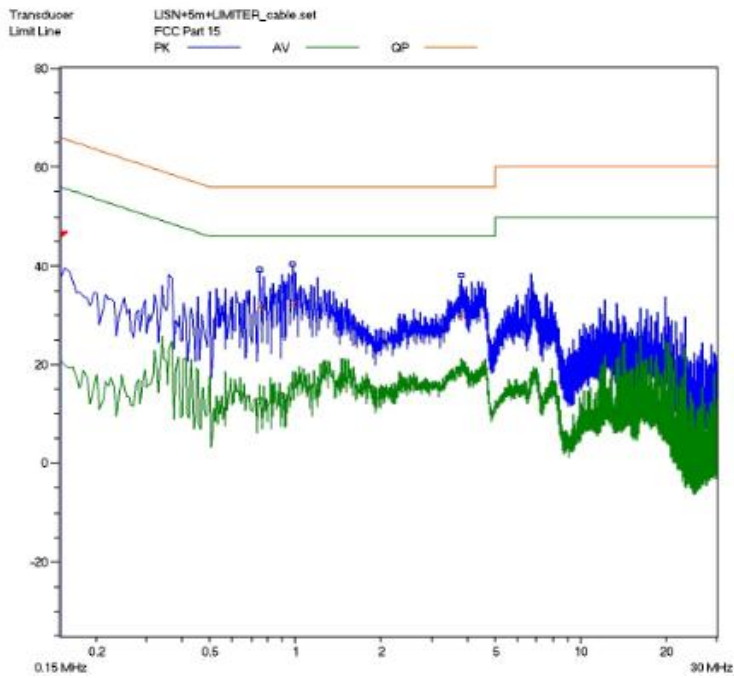


**Line L Conducted Emission Graph**

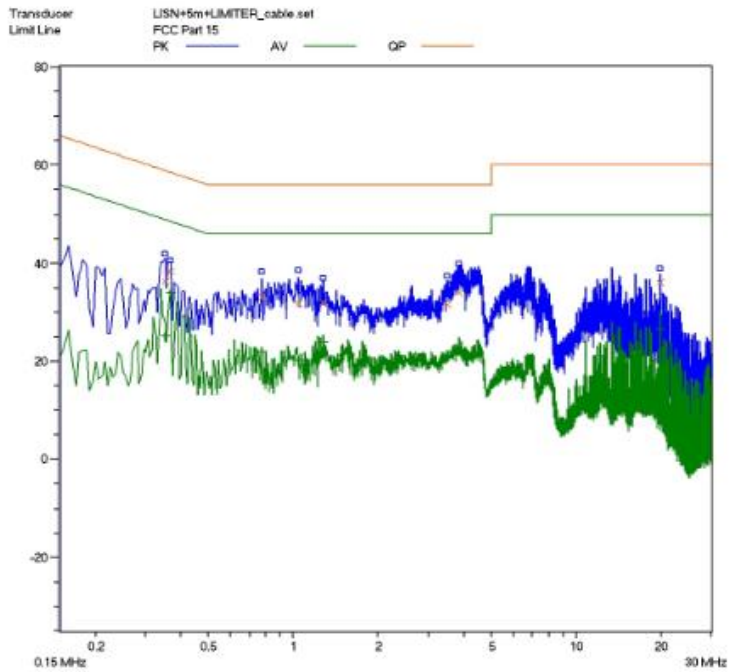


**Line N Conducted Emission Graph**

**UE power:**



**Line L Conducted Emission Graph**



**Line N Conducted Emission Graph**

**Test Data:  
Mass power**

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	0.415	46.2	57.5	-11.3	0.415	33.7	47.5	-11.8
L	0.420	45.9	57.4	-11.5	0.420	31.9	47.4	-15.5
L	4.610	39.7	56	-26.3	4.610	26.3	46	-19.7
N	0.415	43.7	57.5	-13.8	0.415	31.3	47.5	-16.2
N	4.555	43.6	56	-12.4	4.555	27.5	46	-18.5
N	4.575	43.5	56	-13.5	4.575	27.6	46	-18.4

Note:

- 1) All readings are using a bandwidth of 9 kHz, with a 500ms sweep time. A video filter was not used.
- 2) Other emission levels are too low against official limit that are not reported.

**UE power:**

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	0.745	31.7	56	-23.3	0.745	13.0	46	-33.0
L	0.975	32.3	56	-23.7	0.975	16.1	46	-29.1
L	3.810	30.0	56	-26.0	3.810	18.9	46	-27.1
N	0.350	36.3	59	-22.7	0.350	25.1	49	-23.9
N	0.365	38.4	58.6	-20.2	0.365	34.0	48.6	-14.6
N	3.840	34.1	56	-21.9	3.840	22.3	46	-23.7

Note:

- 3) All readings are using a bandwidth of 9 kHz, with a 500ms sweep time. A video filter was not used.
- 4) 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 Receiver	SMR4503	SCHAFFNER	11725	2013.07.08	2014.07.08
Line impedance stabilization network	ESZH-Z2	R&S	---	2013.07.08	2014.07.08

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

TESTED BY: *Daomen* GALANZ  
ENGINEER COMPANY NAME

REVIEWED BY: *Jianxin* ECMG  
SENIOR ENGINEER COMPANY NAME





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



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

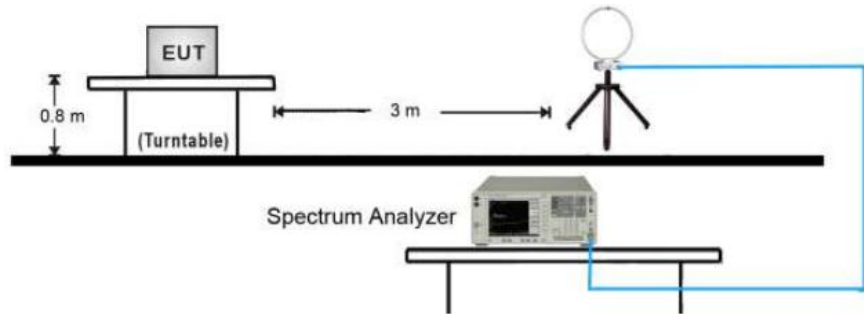
## ATTACHMENT 2 – RADIATED EMISSION MEASUREMENT

<b>CLIENT:</b>	Grandstream Networks, Inc.	<b>TEST STANDERD:</b>	FCC Part 15,Subpart B, Section 15.109
<b>MODEL NUMBERS:</b>	GXV3615WPI_HD	<b>PRODUCT:</b>	IP Camera
<b>EUT MODEL:</b>	GXV3615WPI_HD	<b>EUT DESIGNATION:</b>	Home or Office
<b>TEMPERATURE:</b>	23°C	<b>HUMIDITY:</b>	49%RH
<b>ATM PRESSURE:</b>	103.0kPa	<b>GROUNDING:</b>	None
<b>TESTED BY:</b>	Daomen	<b>DATE OF TEST:</b>	April 17 <sup>th</sup> , 2014
<b>TEST REFERENCE:</b>	ANSI C63.4 -2009		
<b>TEST PROCEDURE:</b>	<p>The EUT was set up according to the guidelines of ANSI C63.4 -2009 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 frequ ency range of 30 MHz to 1GHz and average and peak in the frequency range of 1 GHz to 2GHz at an anechoic chamber.</p> <p>The following data lists the significant emission frequencies, measured levels, corre ction factors (including cable and antenna correction factors), and the corrected rea dings 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>	IP Camera mode,PoE mode		
<b>TESTED RANGE:</b>	9K-30MHz and 30MHz to 5GHz <b>Note:</b> As highest frequency operated of the EUT is 667MHz, so upper frequency of radiated emission test is up to 2GHz by FCC PART 15,subpart B,section 15.33(b).		
<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		

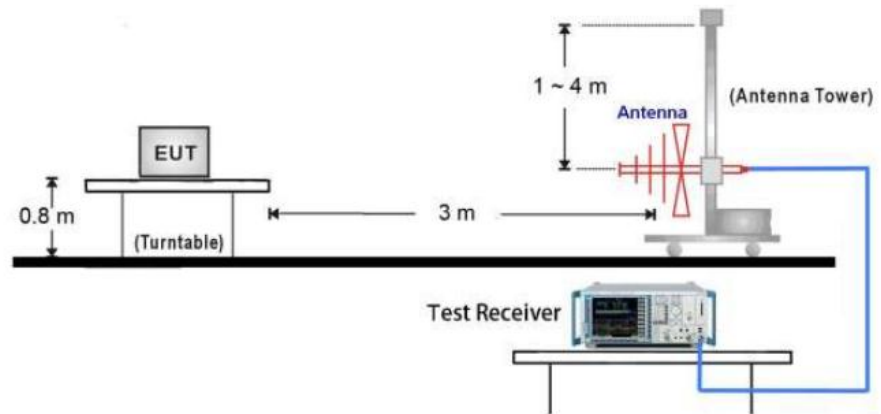
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TEST SET UP:

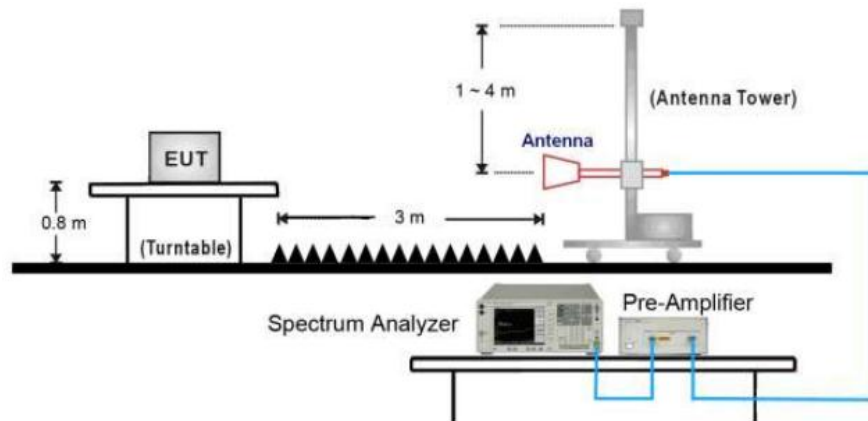
Frequency measured at 9KHz to 30MHz:



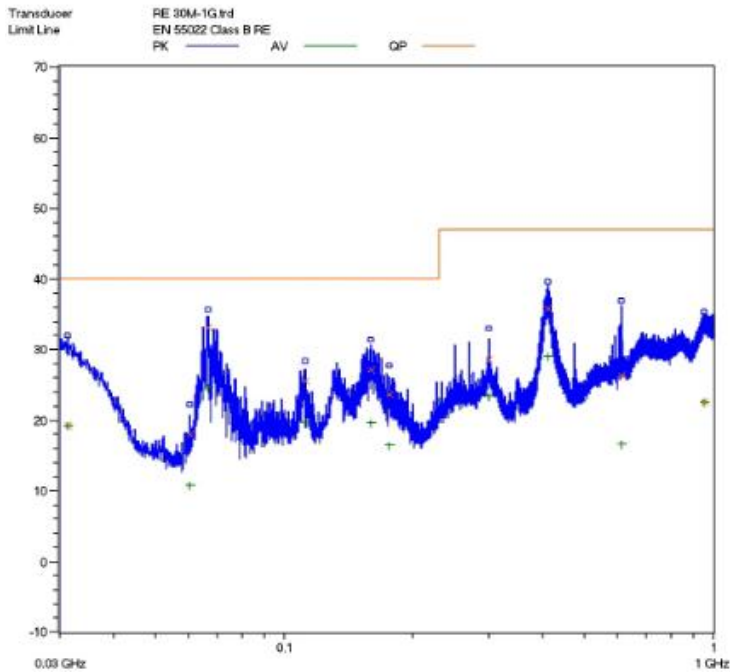
Frequency measured at 30MHz to 1000MHz:



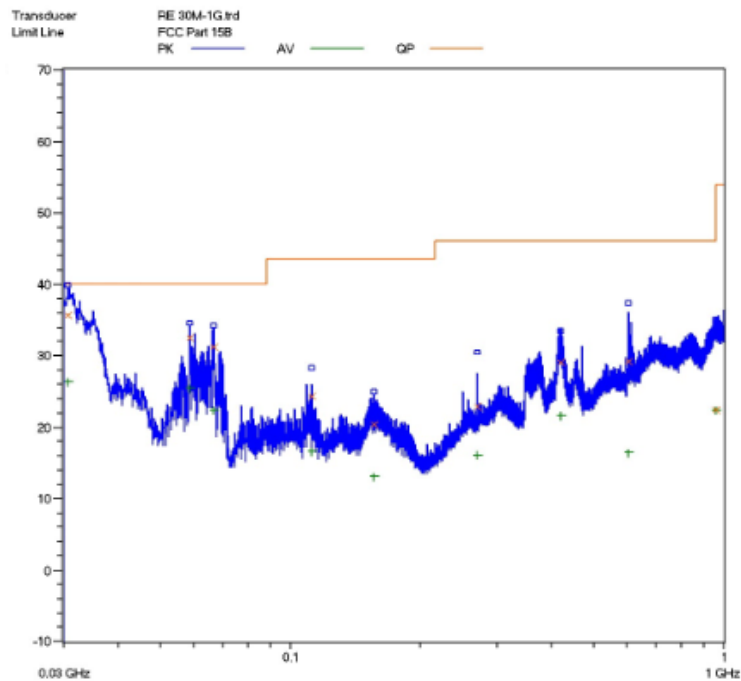
Frequency measured at Above 1GHz:



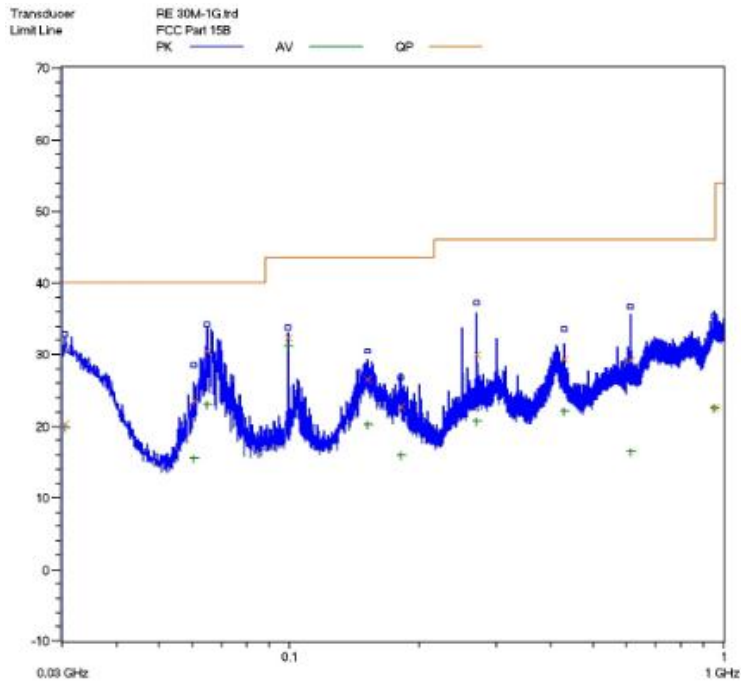
**IP Camera mode:**



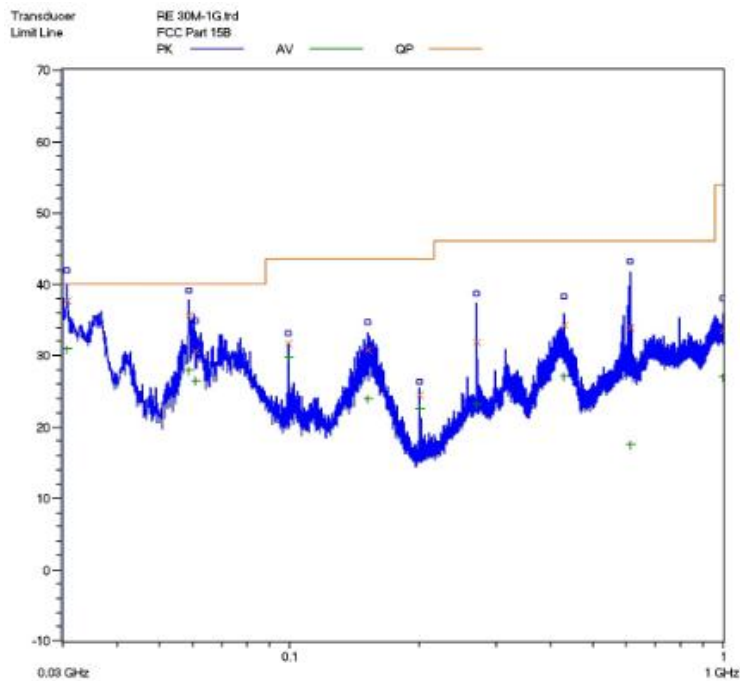
**30MHz-1000MHz-Horizontal: Radiated Emission Test Plot (Mass power)**



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

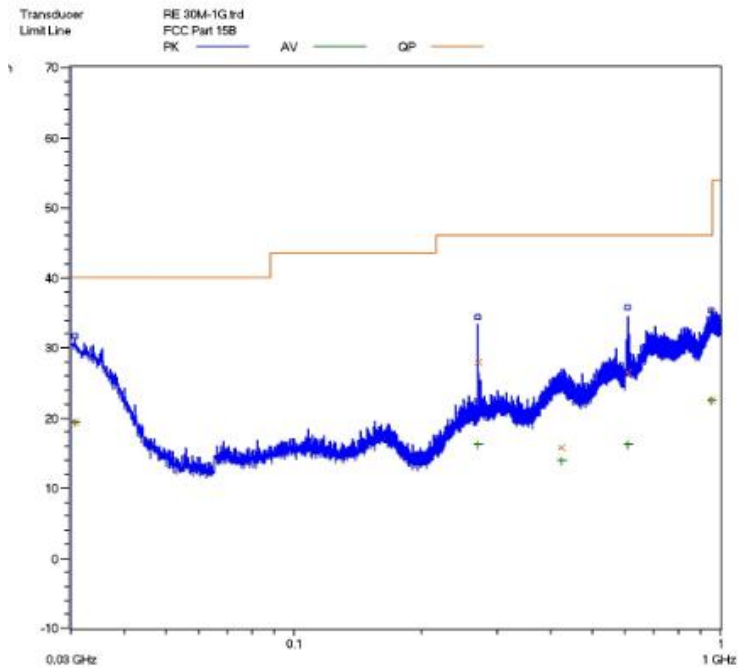


**30MHz-1000MHz-Horizontal: Radiated Emission Test Plot (UE power)**

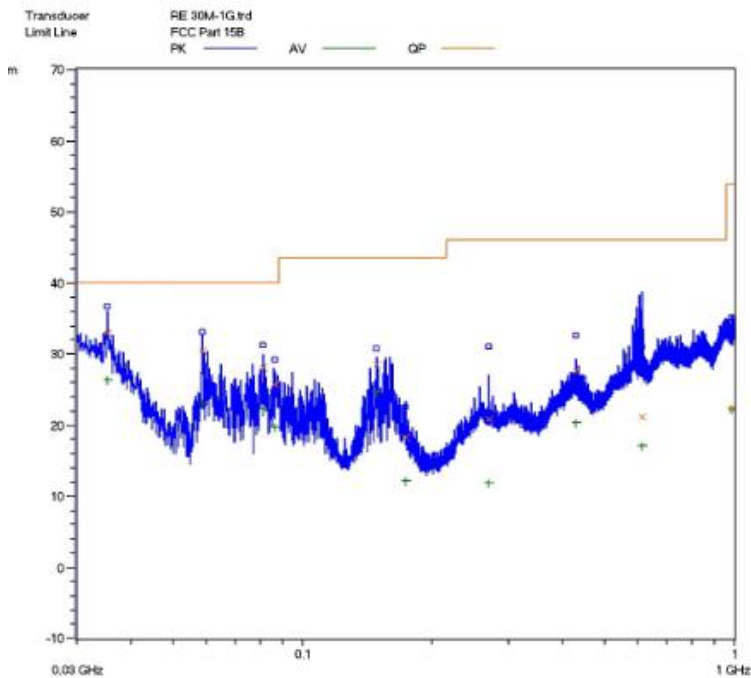


**30MHz-1000MHz-Vertical: Radiated Emission Test Plot (UE power)**

**PoE Mode:**



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



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

**Test Data:**  
**9KHz to 30MHz:**

Test No.:#	Frequency (MHz)	Cable Loss (dB)	Antenna 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:  
 $Emission\ Level = Reading\ Level + Antenna\ Factor + Cable\ Loss.$
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. IP Camera mode@ power adapter #1 was selected for the final testing in frequency range of 9KHz to 30MHz.
4. All emission levels in the frequency range of 9KHz to 30MHz are 20dB below the official limits that are not reported.

**Test Data:**  
**IP Camera/30-1000MHz(Mass power):**

Frequency (MHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamplifier Factor (dB)	Reading Level QP (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)
<b>Horizontal</b>							
66.320	0.19	5.5	/	27.01	32.7	40	-7.3
270.000	0.40	12.5	/	17.00	29.9	46	-12.1
414.080	0.59	16.3	/	18.51	35.4	46	-10.6
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
<b>Vertical</b>							
30.560	0.12	23.2	/	12.38	35.7	40	-10.5
58.720	0.18	5.8	/	26.62	32.6	40	-10.7
66.320	0.19	5.6	/	25.51	31.3	40	-5.6
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/

**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.



**Radiated Emission from 1 to 2GHz:**

Frequency (GHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamplifier Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
<b>Peak Measurement</b>								
1.169	1.12	24.5	-34.45	-11.84	48.23	74	-25.77	H
1.192	1.20	24.7	-34.45	-11.23	49.12	74	-24.88	H
1.627	1.75	26.8	-33.6	-14.51	47.64	74	-26.36	H
1.169	1.12	24.5	-34.45	-10.84	49.23	74	-24.77	V
1.298	1.45	25.2	-33.60	-12.67	47.58	74	-26.42	V
1.638	1.75	26.8	-33.60	-13.24	48.91	74	-25.09	V
<b>Average Measurement</b>								
1.169	1.12	24.5	-34.45	-21.86	38.21	54	-15.79	H
1.192	1.20	24.7	-34.45	-23.57	36.78	54	-17.22	H
1.627	1.75	26.8	-33.6	-22.94	39.21	54	-14.79	H
1.169	1.12	24.5	-34.45	-21.8	38.27	54	-15.73	V
1.298	1.45	25.2	-33.60	-22.96	37.29	54	-16.71	V
1.638	1.75	26.8	-33.60	-24.96	37.19	54	-16.81	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.

**IP Camera mode/30MHz-1000MHz(UE power):**

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>							
64.800	0.19	5.5	/	24.81	30.5	40	-7.3
99.360	0.22	7.4	/	24.78	32.4	46	-12.1
270.000	0.40	12.5	/	17.00	29.9	46	-10.6
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
<b>Vertical</b>							
30.640	0.12	23.2	/	14.38	37.7	40	-2.3
58.720	0.18	5.8	/	29.62	35.6	40	-4.4
429.520	0.59	16.0	/	17.71	34.3	46	-11.7
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/

**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.

**Radiated Emission from 1 to 2GHz:**

Frequency (GHz)	Cable Loss (dB)	Antenna Factor (dB)	Preamplifier Factor (dB)	Reading Level (dBuV/m)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Polarization (H/V)
<b>Peak Measurement</b>								
1.169	1.12	24.5	-34.45	-11.84	48.23	74	-25.77	H
1.192	1.20	24.7	-34.45	-11.23	49.12	74	-24.88	H
1.627	1.75	26.8	-33.6	-14.51	47.64	74	-26.36	H
1.169	1.12	24.5	-34.45	-10.84	49.23	74	-24.77	V
1.298	1.45	25.2	-33.60	-12.67	47.58	74	-26.42	V
1.638	1.75	26.8	-33.60	-13.24	48.91	74	-25.09	V
<b>Average Measurement</b>								
1.169	1.12	24.5	-34.45	-21.86	38.21	54	-15.79	H
1.192	1.20	24.7	-34.45	-23.57	36.78	54	-17.22	H
1.627	1.75	26.8	-33.6	-22.94	39.21	54	-14.79	H
1.169	1.12	24.5	-34.45	-21.8	38.27	54	-15.73	V
1.298	1.45	25.2	-33.60	-22.96	37.29	54	-16.71	V
1.638	1.75	26.8	-33.60	-24.96	37.19	54	-16.81	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.

**PoE Mode/30 -1000MHz:**

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>							
30.560	0.12	23.2	/	-3.8	19.5	40	-20.5
270.000	0.40	12.5	/	15	27.9	46	-18.1
606.000	0.69	16.1	/	8.81	25.6	46	-20.4
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
<b>Vertical</b>							
35.360	0.13	15.6	/	17.27	33.0	40	-7.0
58.720	0.18	5.8	/	24.42	30.4	40	-9.6
81.200	0.21	8.6	/	19.29	28.1	40	-11.9
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/
/	/	/	/	/	/	/	/

**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.

**PoE Mode/ Radiated Emission from 1 to 2GHz:**

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>								
1.169	1.12	24.5	-34.45	-11.80	48.27	74	-25.73	H
1.192	1.20	24.7	-34.45	-13.57	46.78	74	-27.22	H
1.627	1.75	26.8	-33.6	-12.94	49.21	74	-24.79	H
1.169	1.12	24.5	-34.45	-13.53	46.54	74	-27.46	V
1.298	1.45	25.2	-33.6	-12.98	47.27	74	-26.73	V
1.638	1.75	26.8	-33.6	-15.26	46.89	74	-27.11	V
<b>Average Measurement</b>								
1.169	1.12	24.5	-34.45	-23.32	36.75	54	-17.25	H
1.192	1.20	24.7	-34.45	-22.14	38.21	54	-15.79	H
1.627	1.75	26.8	-33.6	-22.94	39.21	54	-14.79	H
1.169	1.12	24.5	-34.45	-23.52	36.55	54	-17.45	V
1.298	1.45	25.2	-33.6	-24.74	35.51	54	-18.49	V
1.638	1.75	26.8	-33.6	-25.83	36.32	54	-17.68	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.

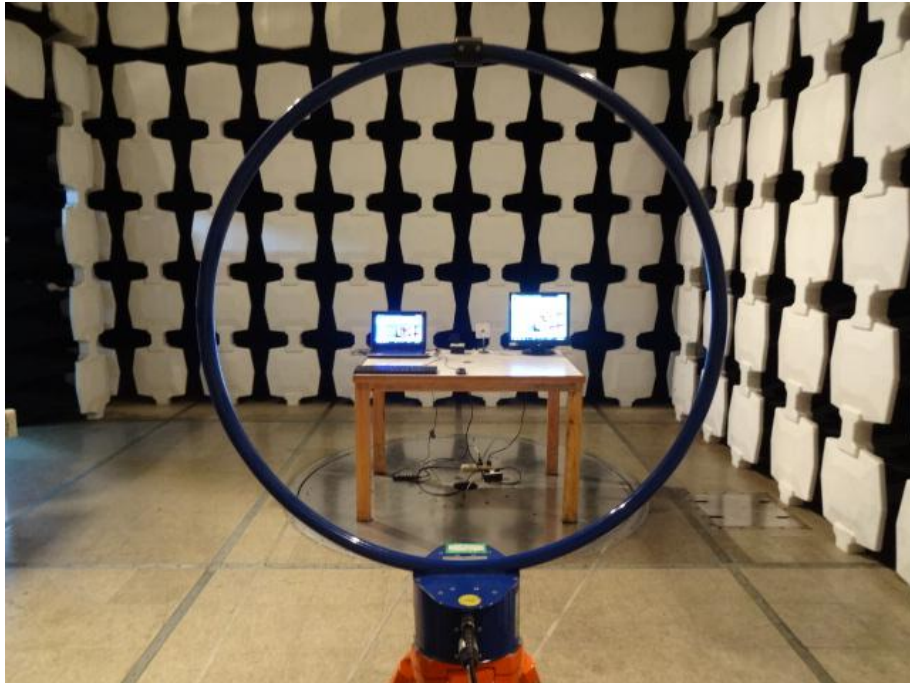
**Test Equipment List:**

Test Equipment	Model No.	Manufacturer	Serial No.	Last Cal.	Cal. Due
EMI Receiver	SMR4503	SCHAFFNER	11725	2013.07.08	2014.07.07
HF Loop Antenna	HLA6120	TESEQ	26348	2013.09.27	2014.09.26
Double-ridged Wave guide horn	3115	ETS	6587	2013.08.02	2014.08.01
Microwave system amplifier	83017A	Agilent	MY39500438	2013.07.11	2014.07.10
Biconilog Antenna	3142C	ETS	00042672	2013.09.28	2014.09.27
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

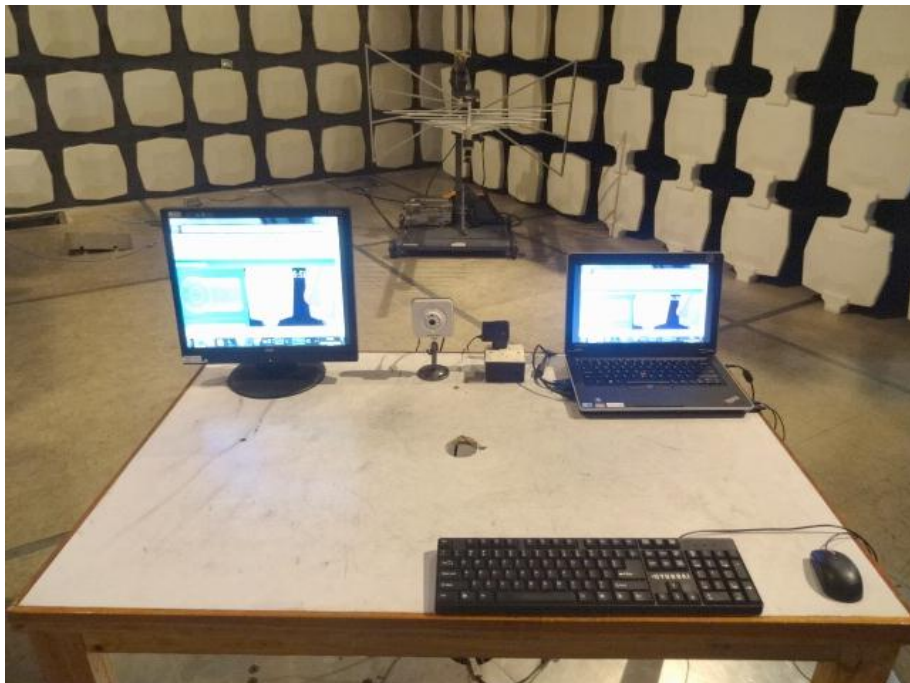
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.

TESTED BY: *Daomen* GALANZ  
ENGINEER COMPANY NAME

REVIEWED BY: *Jamario* ECMG  
SENIOR ENGINEER COMPANY NAME



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



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



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



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

**\*\*\* End Of Report \*\*\***