EMI TEST REPORT

On Model Name: Analog Telephone Adapter

Model Number: HT702, HT704

Brand Name: Grandstream

Prepared for Grandstream Networks, INC
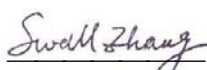
FCC ID Number: YZZHT70X

According to FCC 47 CFR Part 15, Subpart B

Test Report #:	SHE-1112-10757-FCC
Prepared by:	Sewen Guo
Reviewed by:	Jawen Yin
QC Manager:	Swall Zhang

Test Report Released by: *Swall Zhang*   February 6, 2012
                         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.

Table of Contents

List Attached Files

Exhibit Type	File Description	File Name
Test Report	Test Report	YZZHT70X _Test report.pdf
Operation Description	Technical Description	YZZHT70X_operation description.pdf
External Photos	External Photos	YZZHT70X_External Photos
Internal Photos	Internal Photos	YZZHT70X_Internal Photos
Block Diagram	Block Diagram	YZZHT70X_Block Diagram.pdf
Schematics	Circuit Diagram	YZZHT70X _Schematics.pdf
ID Label/Location	Label and Location	YZZHT70X _Label & Location.pdf
User Manual	User Manual	YZZHT70X _User Manual.pdf
Test setup photos	Test setup photos	YZZHT70X _Test Setup Photos

Administrative Data

Test Sample   : Analog Telephone Adapter

Model Numbers   : HT702, HT704

Model Tested   : HT702, HT704

Receipt Date   : December 19, 2011

Date Tested   : December 20, 2011 to December 29, 2011

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 number HT702, HT704 (referred to as the EUT in this report) is an Analog Telephone Adapter.

The EUT is an Analog Telephone Adapter whose main technical specifications are as belows:

For model:HT702

Parameter		Range
Basic parameters	Rated voltage	12VDC
	Rated Current	0.5A
I/O Ports	Power Cable	Power adapter connection
	INTERNET Port (RJ-45)	Connect to the internal LAN network or router.
	RESET	Factory Reset button. Press for 7 seconds to reset factory default settings.
	PHONE (RJ-11)	FXS port to be connected to analog phones / fax machines.
Adapter #1	Input	100-240VAC 50/60Hz 0.18A
	Output	12VDC,500mA,
	Model	SDF1200050A1BB
	Brand name	Mass

For model:HT704

Parameter		Range
Basic parameters	Rated voltage	12VDC
	Rated Current	1A
I/O Ports	Power Cable	Power adapter connection
	INTERNET Port (RJ-45)	Connect to the internal LAN network or router.
	RESET	Factory Reset button. Press for 7 seconds to reset factory default settings.
	PHONE (RJ-11)	FXS port to be connected to analog phones / fax machines.
Adapter #2	Input	100-240VAC 50/60Hz 0.3A
	Output	12VDC,1.0A,
	Model	SEF1200100A1BB
	Brand name	Mass

NOTE: For more detailed informations or features please refer to user's manual of EUT.

EUT Model derived

Models of HT702/HT704 are the same product except for the numbers of PHONE port and Adapter,anything eles are the same.

HT704 has four PHONE ports.

HT704 has two PHONE ports

Note: Adapter#1(model: SDF1200050A1BB) was used for model HT702, Adapter#2(model: SEF1200100A1BB) was used for model HT702,so model of HT702& Adaptor#1 and HT704&Adaptor#2 were selected for the final testing.

Test Summary

The Electromagnetic Compatibility requirements on model HT702, HT704 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 -2003	*Conducted Emission*	*Passed*	*AC Input Port*	*Attachment 1*
FCC Part 15.109 ANSI C63.4 -2003	*Radiated Emission*	*Passed*	*Enclosure*	*Attachment 2*

Test Mode Justification

Pre-scan has been conducted to determine the worst-case modes from all possible combinations between available operational modes.The following modes were chosen for final test as described below:

IP Call mode:
Connected an IP phone to INTERNET port by an RJ-45 signal line and connected an analog phone to PHONE port by an RJ-11 signl line.then established a call communication between them and measured it.

Connected to PC mode:
Connected an notebook PC to INTERNET port of the EUT by an RJ-45 signal line and ping 192.168.0.162 –t to EUT and measured it.

EUT Exercise Software

No test sofware 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.

Test System Details

EUT	
Model Number:	HT702/HT704
Model Tested:	HT702/HT704
Description:	Analog Telephone Adapter
Input:	AC 120V/60Hz
Manufacturer:	Grandstream Networks, INC

Support Equipment			
Description	**Model Number**	**Serial Number**	**Manufacturer**
Notebook PC	NC4000	CNU4122BCL	HP
Adapter Of Notebook PC	PPP009H	239427-003	HP
Mouse	MO32B0	23-033131	HP
Keyboard	SK-1788	N/A	LENOVO
Monitor	177V+	N/A	AOC
IP Phone	GXP2100	N/A	Grandstream Networks, INC
Analog Phone	2957E	N/A	Daerxun Technology Co., Ltd

Cable Description					
Description	*From*	*To*	*Length (Meters)*	*Shielded (Y/N)*	*Ferrite (Y/N)*
Adaptor Cord Of Notebook	*AC Adaptor*	*Notebook PC*	*1.6*	*N*	*Y*
	AC Plug	*AC Adaptor*	*1.2*	*N*	*Y*
Mouse cord	*Mouse*	*Plug*	*1.2*	*N*	*Y*
Keyboard cord	*keyboard*	*Plug*	*1.2*	*N*	*Y*
RJ-45 Cord	*EUT*	*Notebook PC*	*1.5*	*N*	*N*
Adapter #1 Cord	*EUT*	*Plug*	*2.4*	*N*	*Y*
Adapter #2 Cord	*EUT*	*Plug*	*2.4*	*N*	*N*
Note:The "EUT" means "Analog Telephone Adapter".					

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.

For model:HT702

EUT- Top View

EUT- Bottom View

EUT- I/O Ports View

AC/DC Adapter View

RJ-45 Cable View
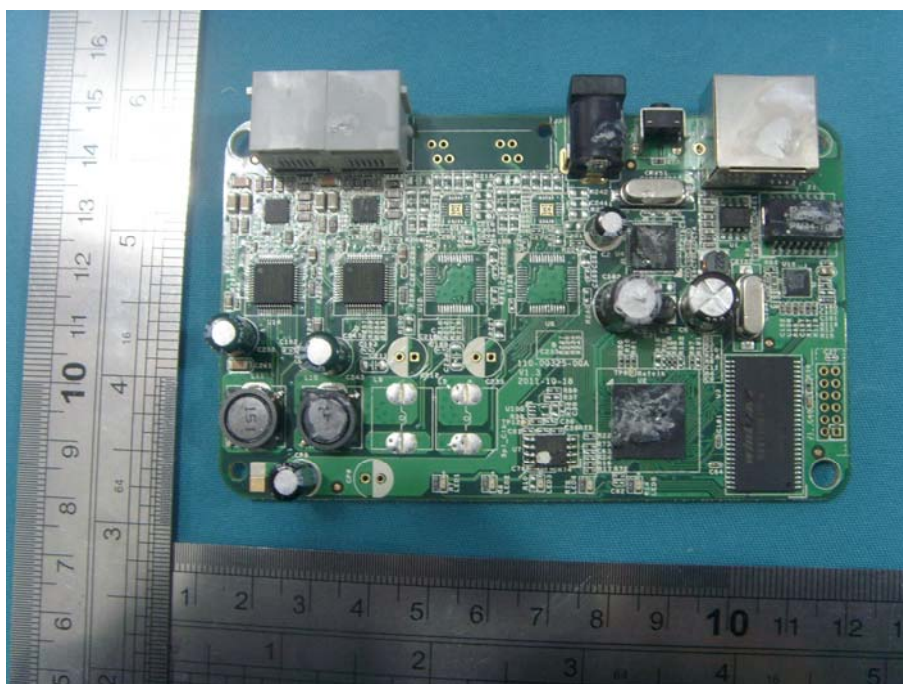
EUT-Uncovered View
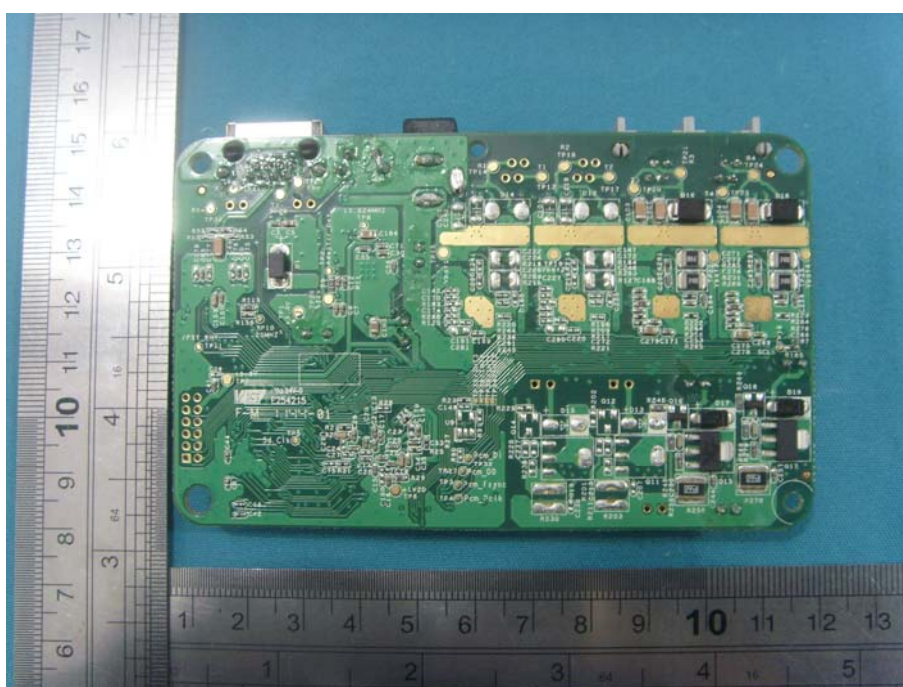
Mainboard- Top View

Mainboard- Bottom View

For model:HT704

EUT- Top View

EUT- Bottom View

EUT- I/O Ports View

AC/DC Adapter View
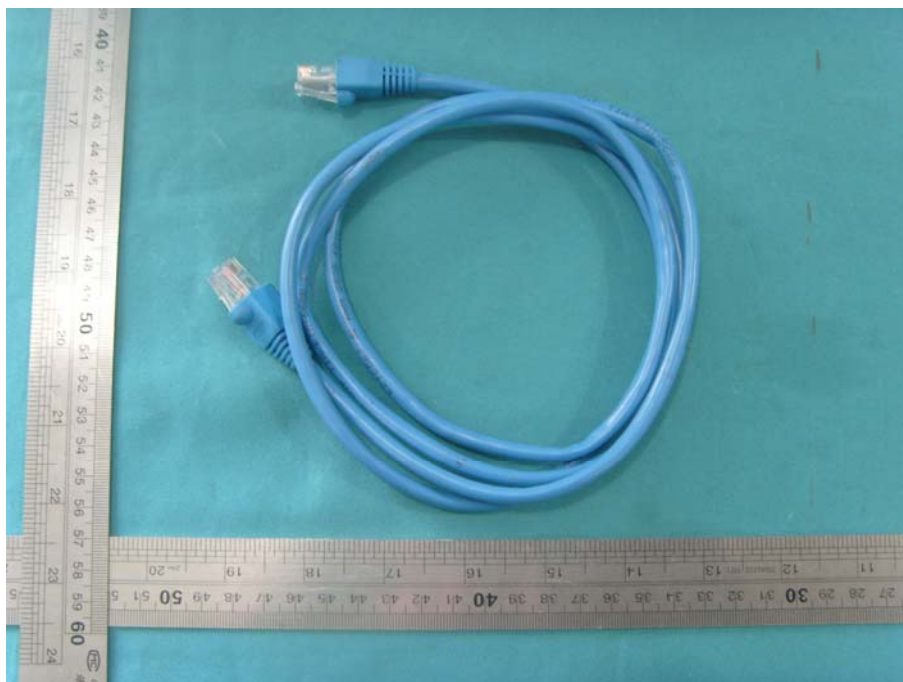
RJ-45 Cable View
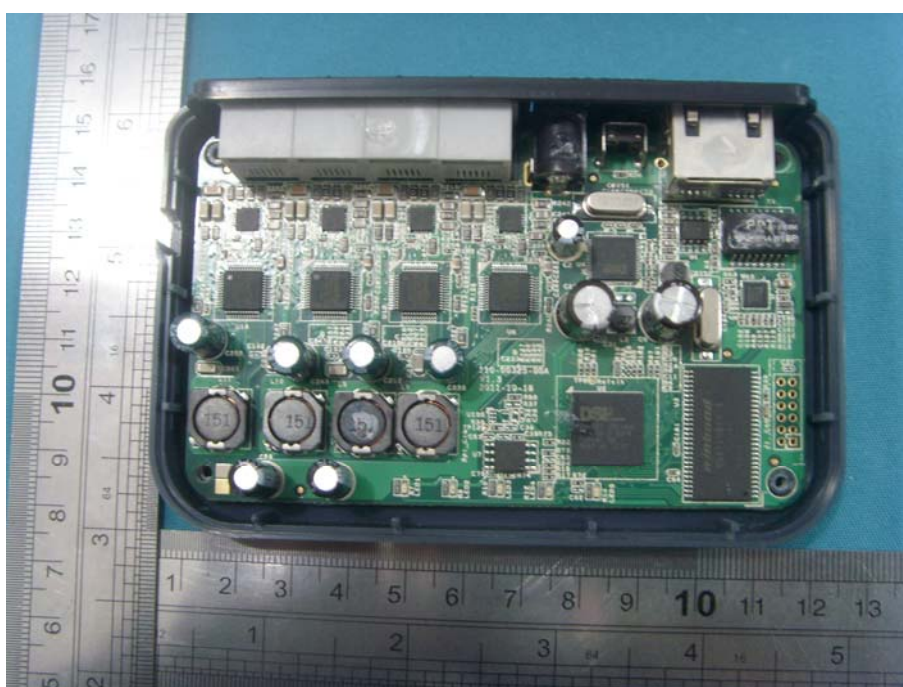
EUT-Uncovered View
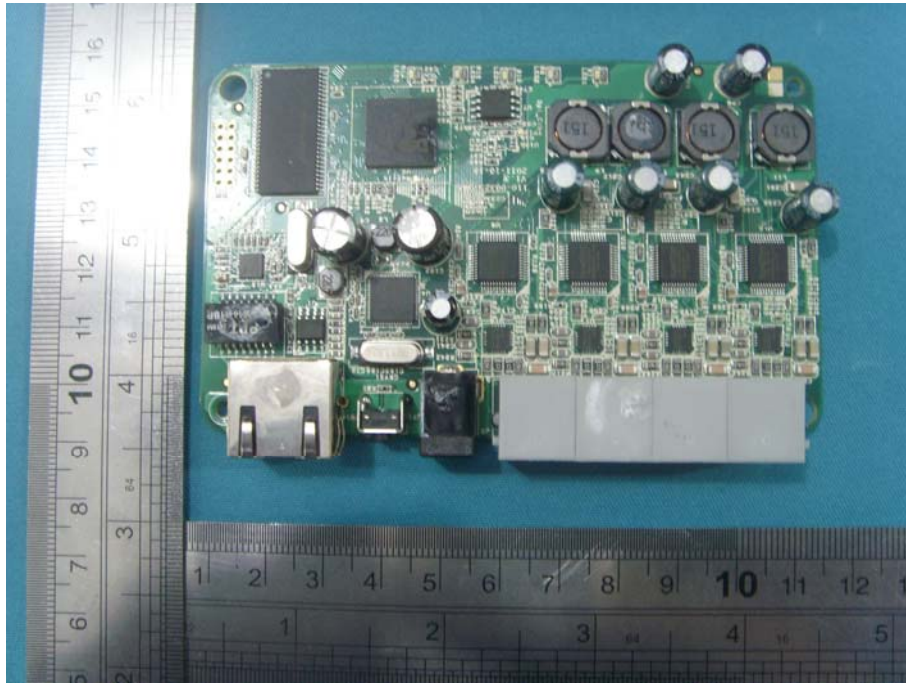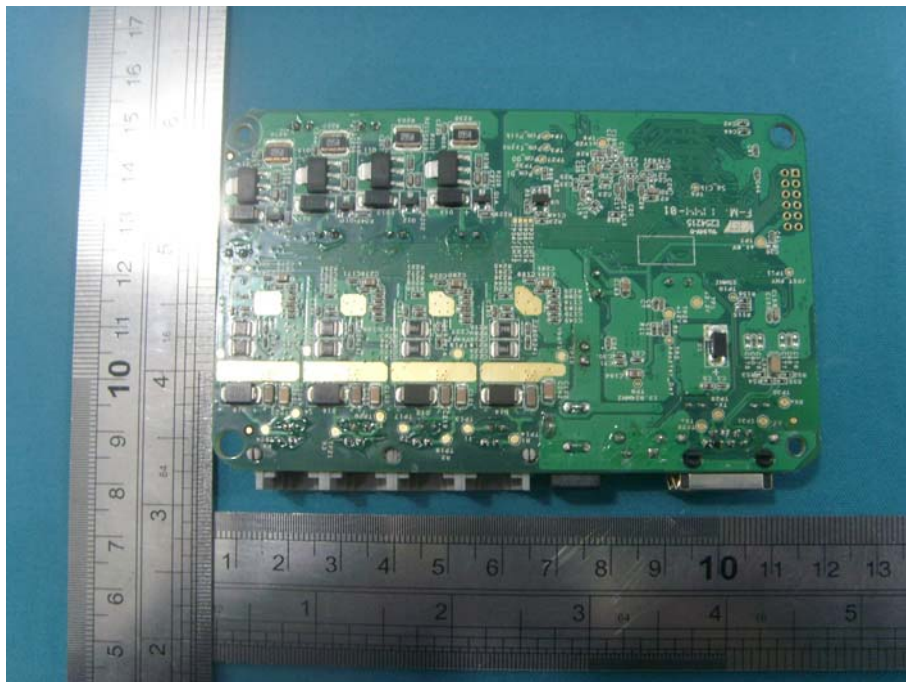
Mainboard- Top View

Mainboard- Bottom View

Configuration of Tested System

Connected to PC mode:

IP Call Mode:
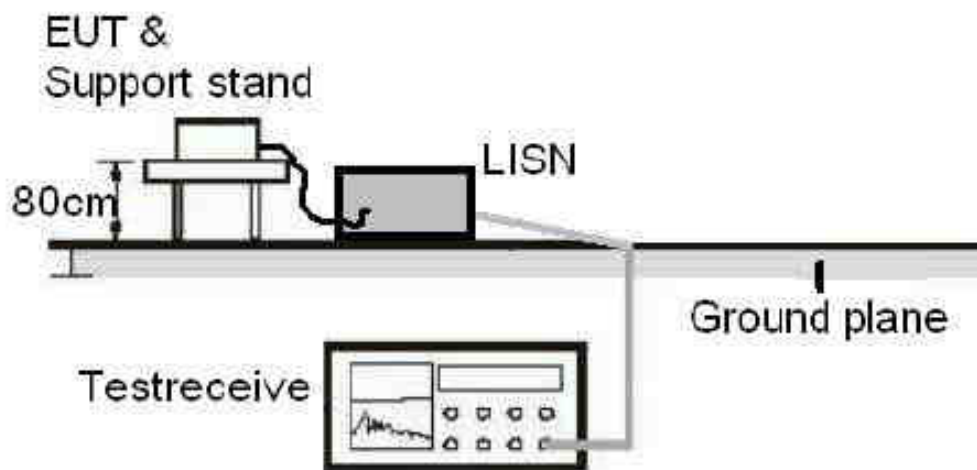
Conducted Emission Test Set-up Photograph
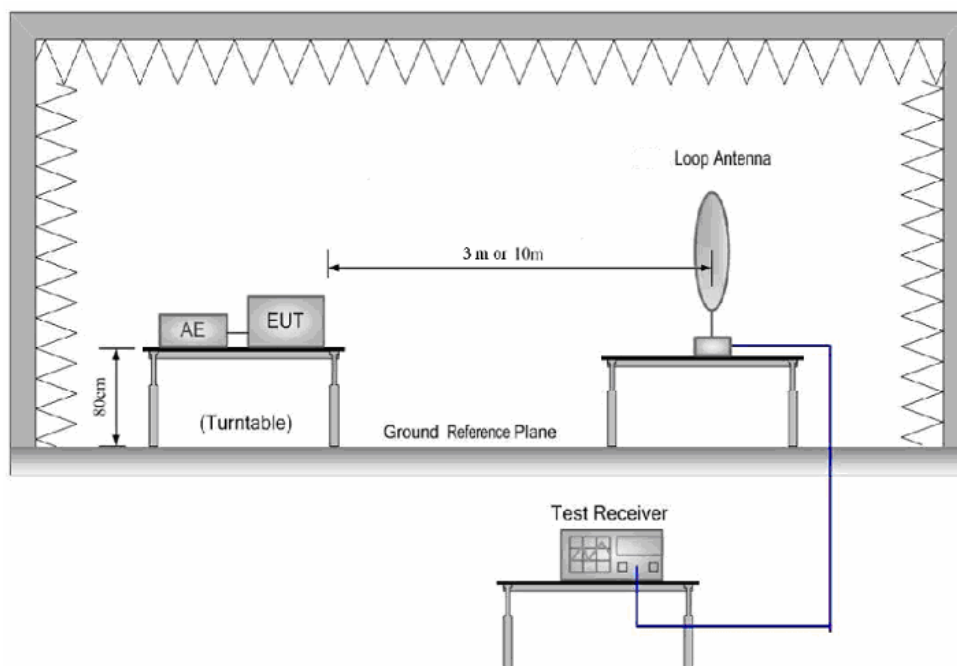
Radiated Emission Test Set-up Photograph(9KHz to 30MHz)

Figure 1 : Frequencies measured below 1 GHz configuration
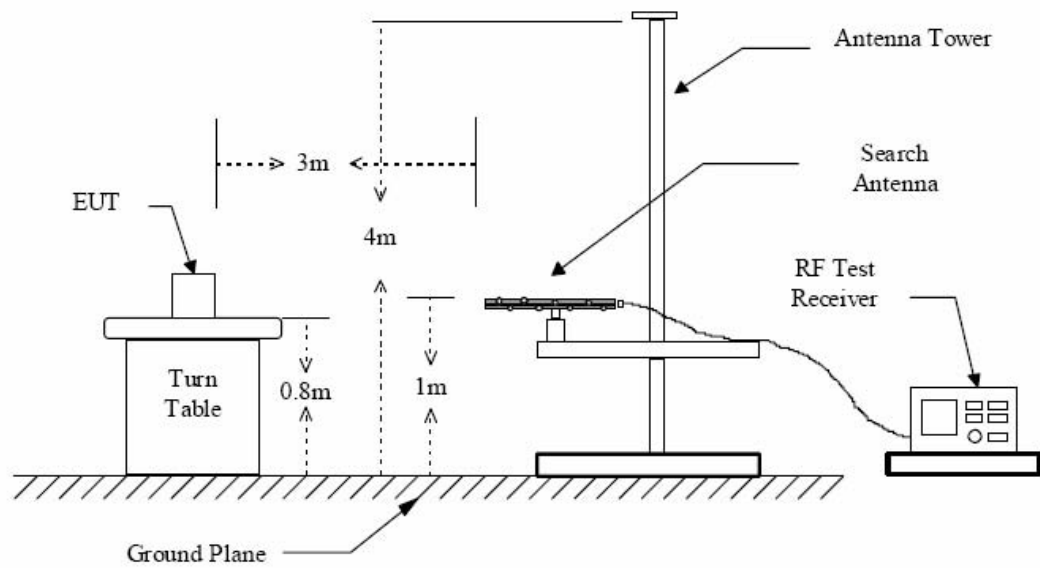
Figure 2 : Frequencies measured above 1 GHz configuration
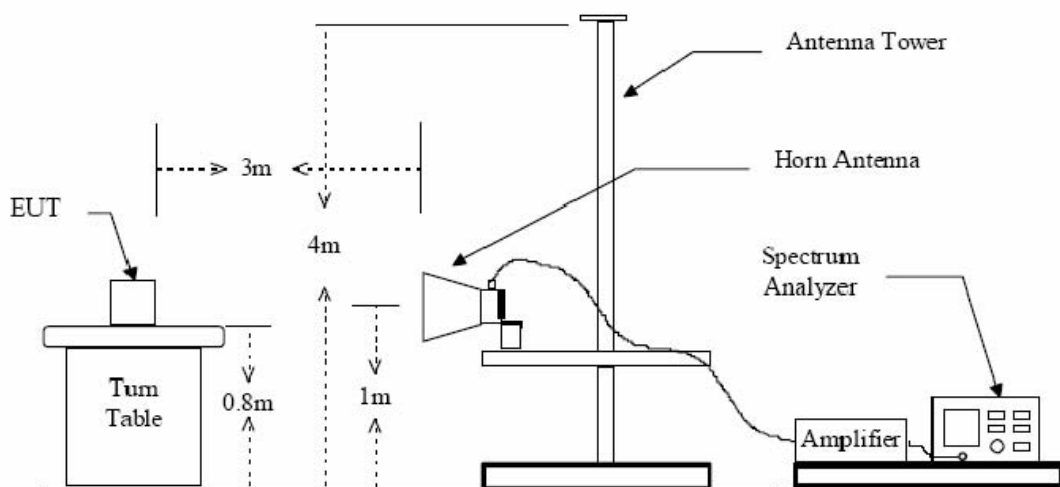
ATTACHMENT 1 - CONDUCTED EMISSION TEST RESULTS

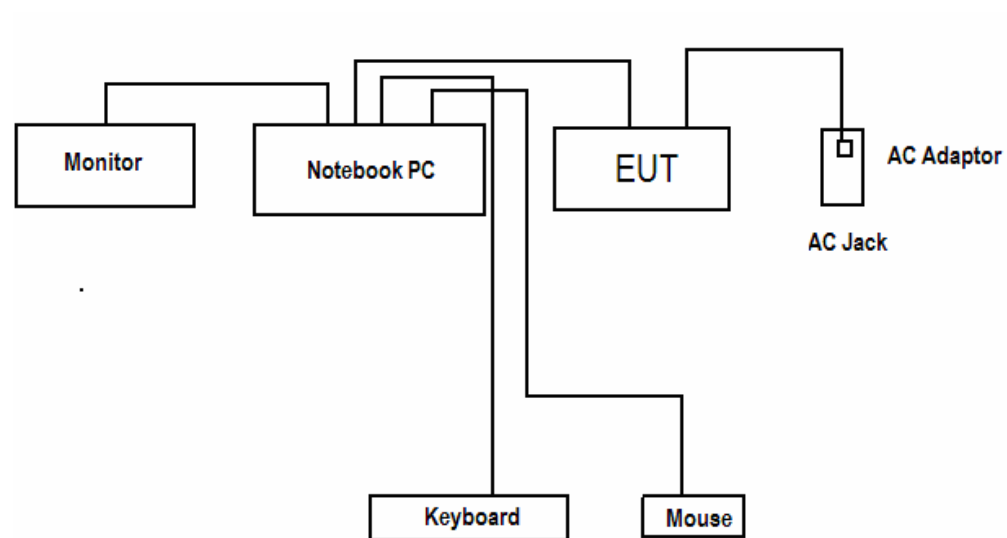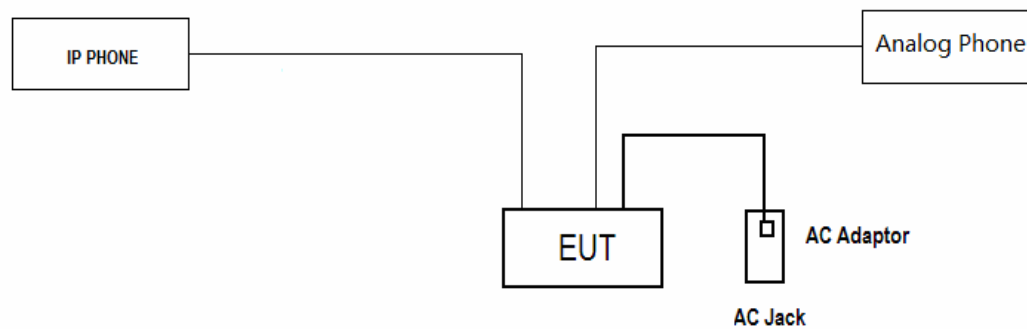|			
CLIENT:	Grandstream Networks, INC	**TEST STANDERD:**	FCC Part 15, Subpart B, Section 15.107
MODEL NUMBERS:	HT702, HT704	**PRODUCT:**	Analog Telephone Adapter
MODEL TESTED:	HT702, HT704	**EUT DESIGNATION:**	Commercial and Residential use
TEMPERATURE:	22°C	**HUMIDITY:**	51%
ATM PRESSURE:	102.5kPa	**GROUNDING:**	None
TESTED BY:	Sewen Guo	**DATE OF TEST:**	December 27, 2011
TEST REFERENCE:	ANSI C63.4- 2003		
TEST PROCEDURE:	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.		
DESCRIPTION OF TEST MODE	Refer to test mode justification.		
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. $\pm$ 2x10-7 x Center Freq., Amp $\pm$ 2.6 dB		

IP Call mode:
For model:HT702

Line L Conducted Emission Graph

Line N Conducted Emission Graph

IP Call mode:
For model:HT704
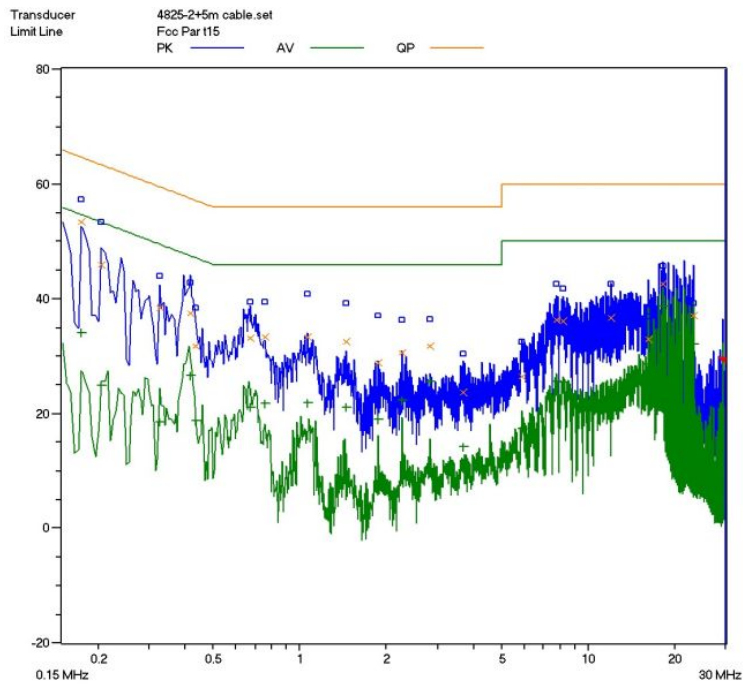
Line L Conducted Emission Graph
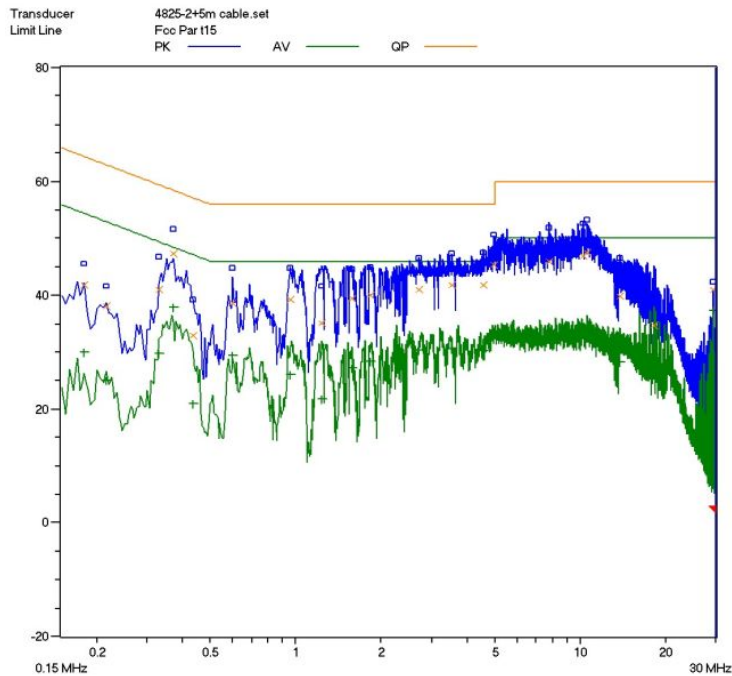
Line N Conducted Emission Graph

Connected to PC mode:
For model:HT702
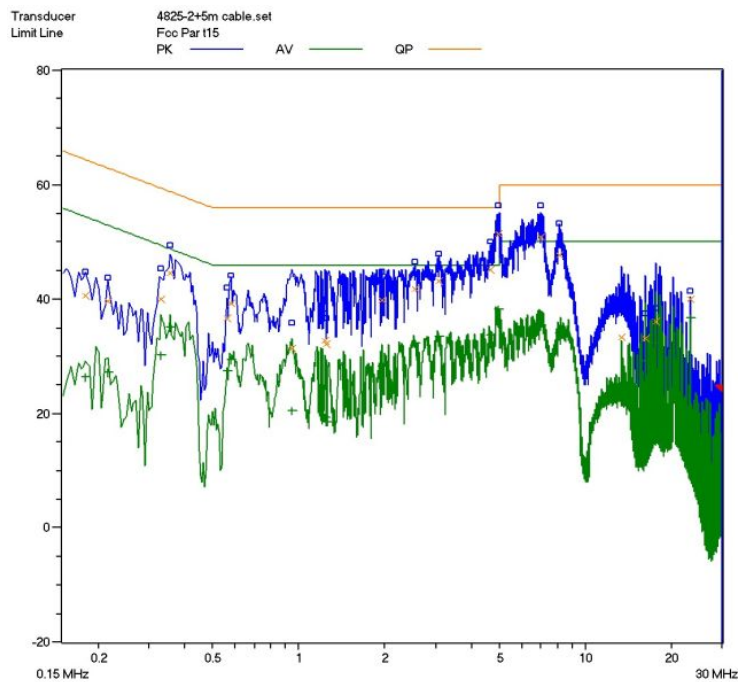
Line L Conducted Emission Graph
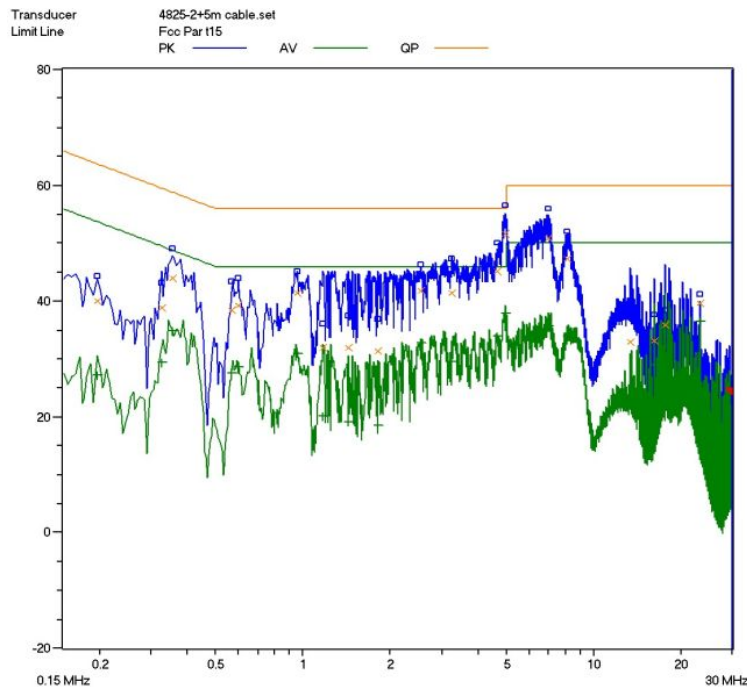
Line N Conducted Emission Graph

For model:HT704
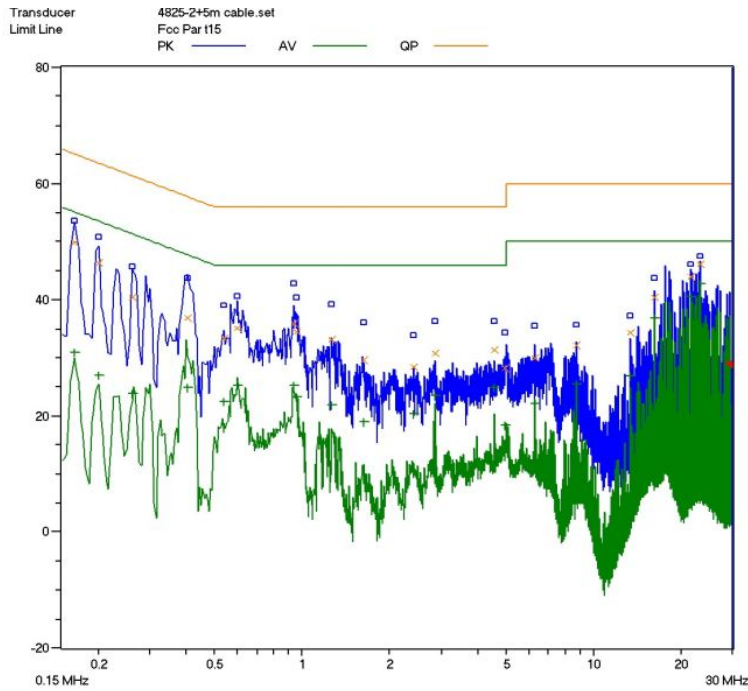
Line L Conducted Emission Graph
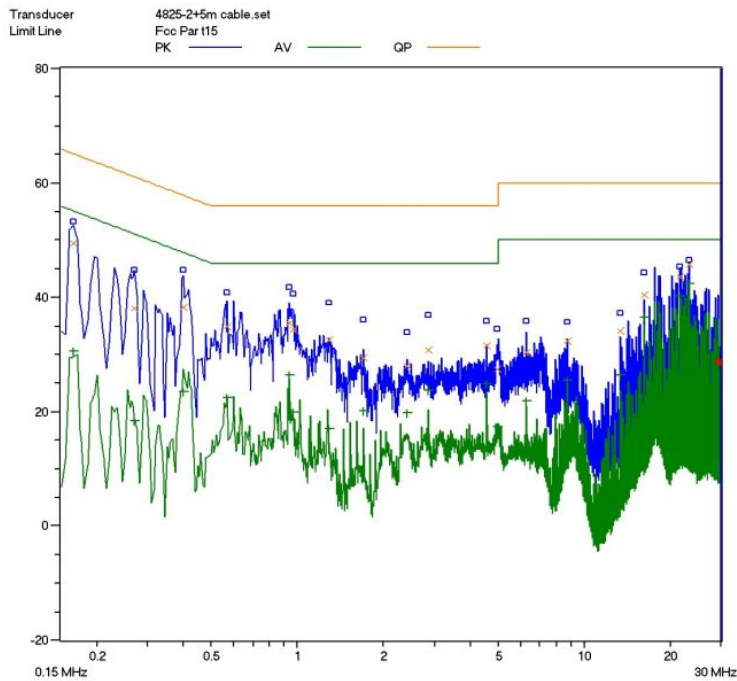
Line N Conducted Emission Graph

Test Data:

IP call mode:

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)
For model:HT702								
L	3.240	41.6	56	-14.4	3.240	32.7	46	-13.3
L	4.565	41.9	56	-14.1	4.565	30.2	46	-15.8
L	4.880	44.2	56	-11.8	4.880	32.9	46	-13.1
N	3.545	41.8	56	-14.2	3.545	30.6	46	-15.4
N	4.585	41.8	56	-14.2	4.585	30.2	46	-15.8
N	4.990	45.4	56	-10.6	4.990	33.7	46	-12.3

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

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)
For model:HT704								
L	0.175	53.5	64.6	-11.1	0.175	34.1	54.6	-20.5
L	0.205	45.9	63.3	-17.4	0.205	24.9	53.3	-28.4
L	0.325	38.5	59.5	-21	0.325	18.5	49.5	-31
N	0.255	41.6	61.5	-19.9	0.255	19.9	51.5	-31.6
N	16.230	39.1	60	-20.9	16.230	30.2	50	-19.8
N	21.665	37.7	60	-22.3	21.665	28.8	50	-21.2

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

Connected to PC mode:

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)
For model:HT702								
L	3.075	43.3	56	-12.7	3.075	33.5	46	-12.5
L	4.680	45.2	56	-10.8	4.680	33.7	46	-12.3
L	4.955	51.5	56	-4.5	4.955	38.3	46	-7.7
N	4.675	45.2	56	-10.8	4.675	33.9	46	-12.1
N	4.975	51.7	56	-4.3	4.975	38.0	46	-8
N	6.970	50.9	60	-9.1	6.970	35.8	50	-14.2

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

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)
For model:HT704								
L	0.165	49.8	65.1	-15.3	0.165	31.1	55.1	-24.0
L	0.200	46.4	63.5	-17.1	0.200	27.1	53.5	-26.4
L	0.260	40.5	61.4	-20.9	0.260	23.9	51.4	-27.5
N	0.270	38.0	61.1	-23.1	0.270	18.4	51.1	-32.7
N	0.400	38.2	57.8	-19.6	0.400	23.4	47.8	-24.4
N	0.565	34.8	56.0	-21.2	0.565	22.4	46.0	-23.6

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

Test Equipment List:

Test Equipment	Model No.	Manufacturer	Serial No.	Last Cal.	Cal. Interval
Receiver	SMR4503	SCHAFFNER	11725	2011.07.08	2012.07.08
Line impedance stabilization network	4825/2	ETS	1161	2011.07.08	2012.07.08
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.					

SIGNED BY: _____

ENGINEER

REVIEWED BY: _____

SENIOR ENGINEER

For model:HT702

Connected to PC:Conducted Emission Test Set-up

IP Call:Conducted Emission Test Set-up

For model:HT704
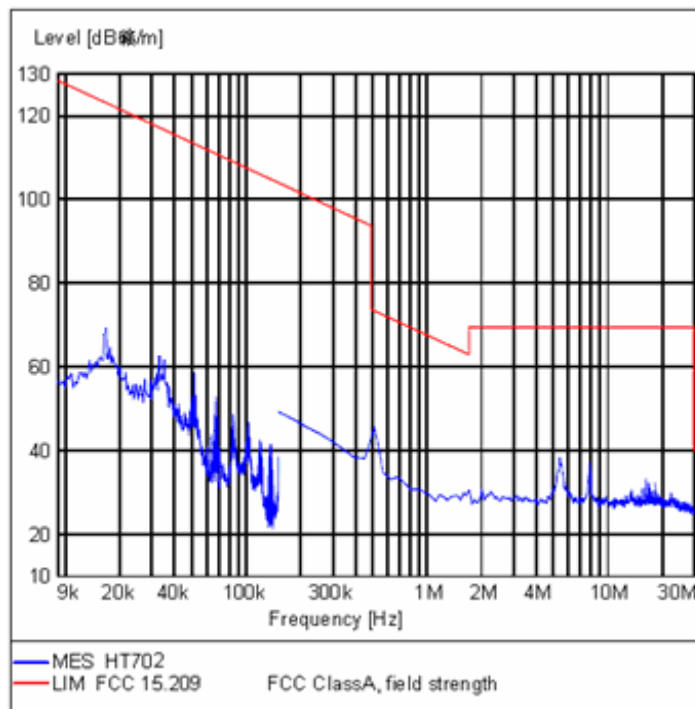

Connected to PC:Conducted Emission Test Set-up

IP Call:Connected Emission Test Set-up
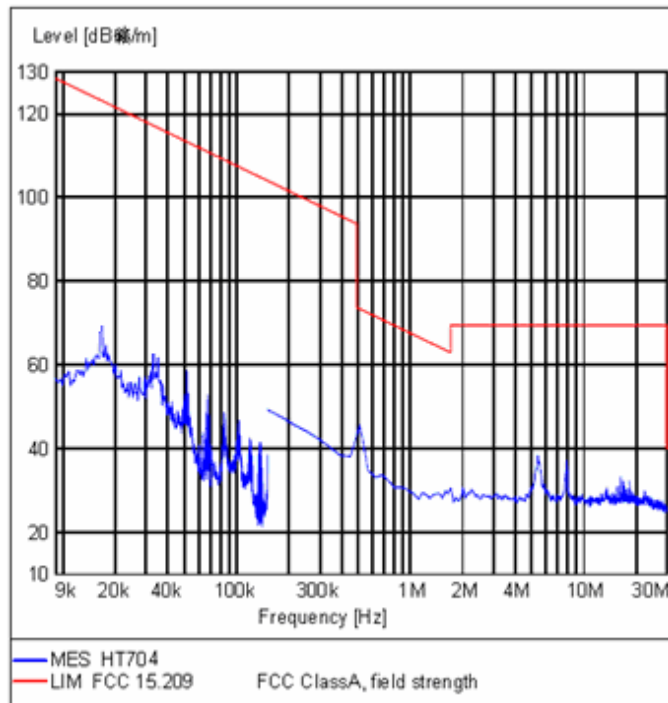
ATTACHMENT 2 – RADIATED EMISSION MEASUREMENT

CLIENT:	Grandstream Networks, INC	**TEST STANDERD:**	FCC Part 15,Subpart B, Section 15.109
MODEL NUMBERS:	HT702, HT704	**PRODUCT:**	Analog Telephone Adapter
EUT MODEL:	HT702, HT704	**EUT DESIGNATION:**	Commercial and Residential use
TEMPERATURE:	23°C	**HUMIDITY:**	49%RH
ATM PRESSURE:	103.0kPa	**GROUNDING:**	None
TESTED BY:	Sewen Guo	**DATE OF TEST:**	December 27, 2011
TEST REFERENCE:	ANSI C63.4: 2003		
TEST PROCEDURE:	The EUT was set up according to the guidelines of ANSI C63.4: 2003 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 3GHz at an anechoic chamber. 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: $FS= RA + AF + CF - AG$ Where: FS = Field Strength RA = Receiver Amplitude AF = Antenna Factor CF = Cable Attenuation Factor AG = Amplifier Gain		
TEST MODE	IP Call Mode and conneced to PC mode		
TESTED RANGE:	**For 9KHz to 30MHz:** Pre-scan has been conducted to determine the worst-case modes from all possible combinations between available operational modes.IP Call modes was chosen for final test. **For 30MHz to 2,000MHz:** Pre-scan has been conducted to determine the worst-case modes from all possible combinations between available operational modes. IP Call Mode and connected to PC mode were selected for the final testing.		
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).		
M. UNCERTAINTY:	Freq. ± 2x10-7 x Center Freq., Amp ± 2.6 dB		

IP Call Mode:
For model: HT702

Radiated Filed Strength Emission Test Plot(9KHz-30MHz)

For model:HT704

Radiated Filed Strength Emission Test Plot(9KHz-30MHz)

IP Call mode:
For model:HT702

Horizontal:Radiated Emission Test Plot

Vertical:Radiated Emission Test Plot
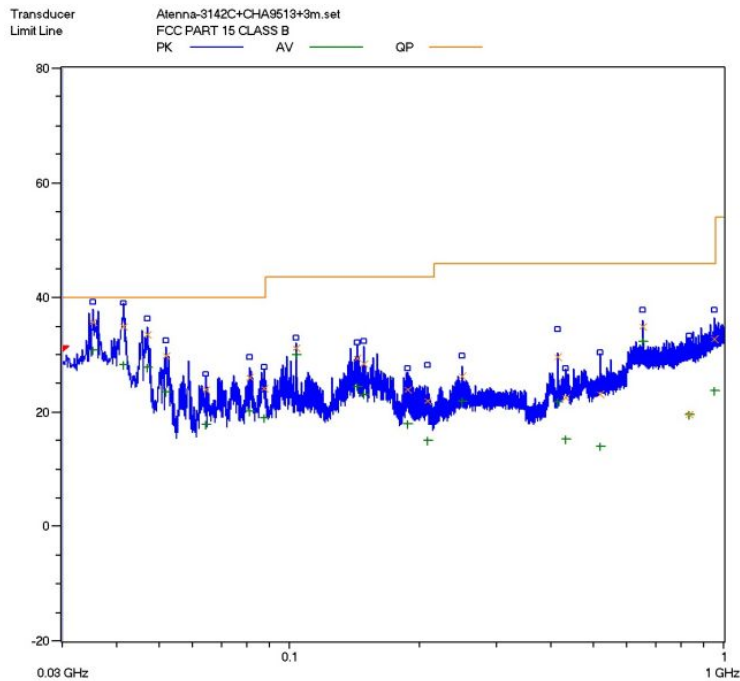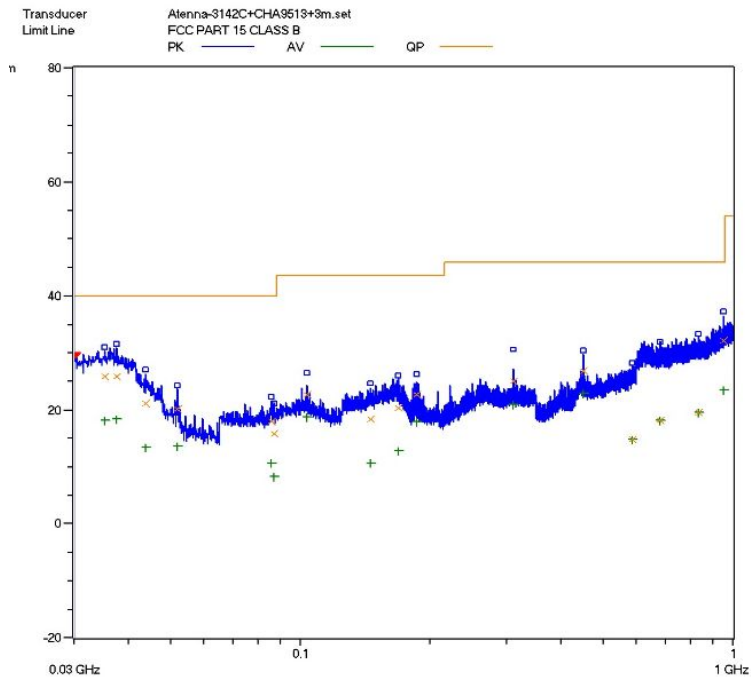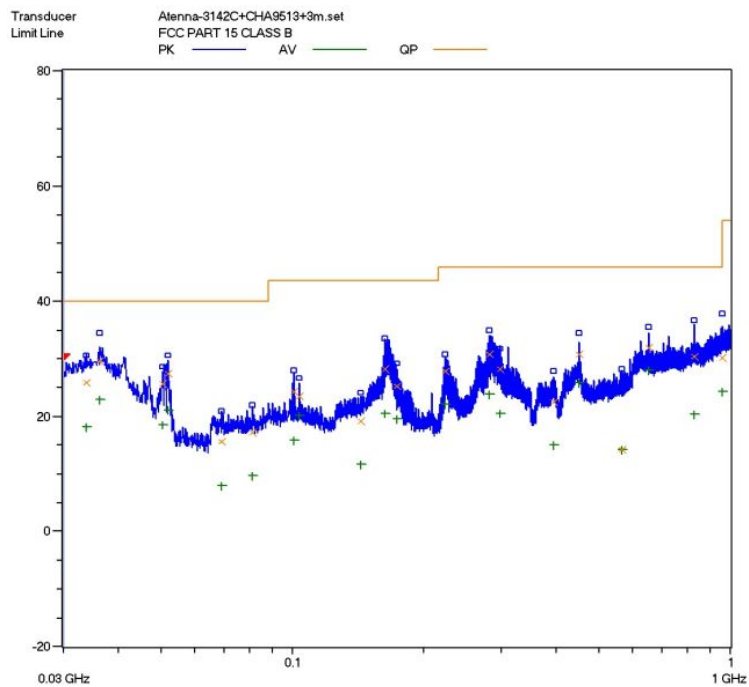
For model:HT704

Horizontal:Radiated Emission Test Plot
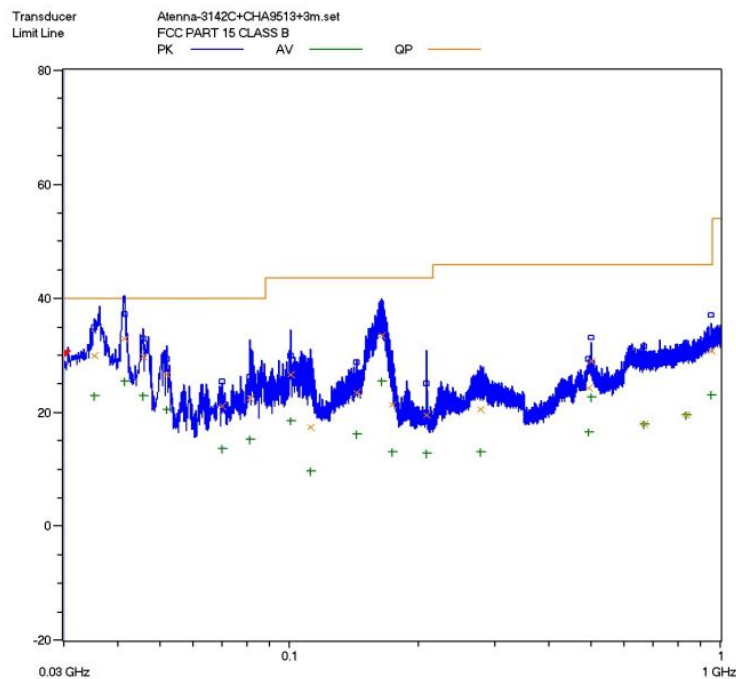
Vertical:Radiated Emission Test Plot

Connected to PC mode:
For model:HT702

Horizontal:Radiated Emission Test Plot

Vertical:Radiated Emission Test Plot

For model:HT704

Transducer · Atenna-3142C+CHA9513+3m.set
Limit Line · FCC PART 15 CLASS B
PK ——— AV ——— QP ———

Horizontal:Radiated Emission Test Plot

Transducer · Atenna-3142C+CHA9513+3m.set
Limit Line · FCC PART 15 CLASS B
PK ——— AV ——— QP ———
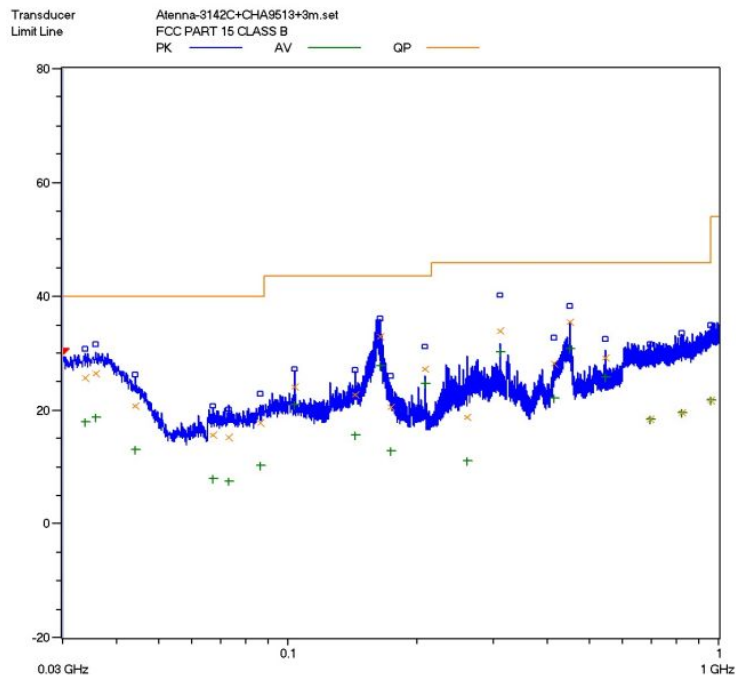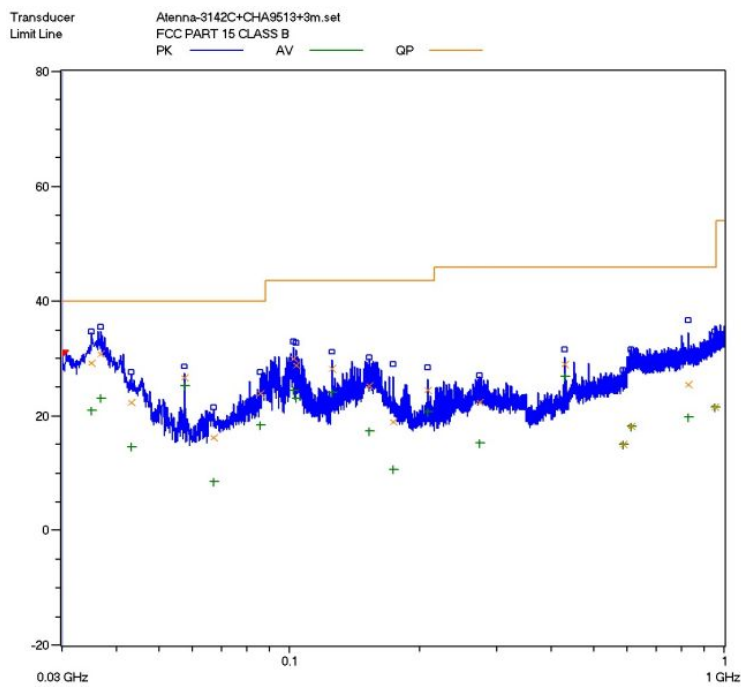
Vertical:Radiated Emission Test Plot

Test Data:

For model:HT702&HT704

For 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:

a) *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.*

b) *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.*

c) *All emission levels in the frequency range of 9KHz to 30MHz are 20dB below the official limits that are not reported.*

Test Data:
For model: HT702:

IP Call Mode/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							
35.200	0.02	18.3	/	7.58	25.9	40	-14.1
37.520	0.02	18.6	/	7.38	26	40	-14.0
185.520	0.1	5.9	/	16.7	22.7	43.5	-20.8
311.040	0.16	13.7	/	11.14	25	46	-21.0
450.000	0.2	16.8	/	9.8	26.8	46	-19.2
954.160	0.44	24	/	7.76	32.2	46	-13.8
Vertical							
35.360	0.02	18.3	/	17.38	35.7	40	-4.3
41.600	0.02	16.5	/	18.38	34.9	40	-5.1
47.040	0.02	10.6	/	22.98	33.6	40	-6.4
51.840	0.02	6.5	/	23.18	29.7	40	-10.3
103.680	0.02	7.8	/	23.38	31.2	43.5	-12.3
650.000	0.36	20	/	14.64	35.0	46	-11.0

Note:
a) 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.
b) 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.
c) The other emission levels are 20dB below the official limits that are not reported.

IP Call Mode/Above 1GHz:

Frequency (MHz)	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								
1.056	1.39	23.9	-33.6	-9.44	49.45	74	-24.55	H
1.192	1.48	24.2	-33.6	-11.69	47.59	74	-26.41	H
1.328	1.57	25.3	-33.6	-13.13	47.34	74	-26.66	H
1.064	1.39	23.9	-33.6	-2.3	56.59	74	-17.41	V
1.192	1.48	24.2	-33.6	-5.32	53.96	74	-20.04	V
1.320	1.57	25.3	-33.6	-7.78	52.69	74	-21.31	V
Average Measurement								
1.056	1.39	23.9	-33.6	-28.66	30.23	54	-23.77	H
1.192	1.48	24.2	-33.6	-30.52	28.76	54	-25.24	H
1.328	1.57	25.3	-33.6	-33.76	26.71	54	-27.29	H
1.064	1.39	23.9	-33.6	-26.23	32.66	54	-21.34	V
1.192	1.48	24.2	-33.6	-27.71	31.57	54	-22.43	V
1.320	1.57	25.3	-33.6	-29.18	31.29	54	-22.71	V

Note:
a) 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.
b) 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.
c) The other emission levels are 20dB below the official limits that are not reported.

For model:HT704:

IP Call Mode/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							
33.840	0.02	17.9	/	7.88	25.8	40	-14.2
36.160	0.02	18.4	/	11.28	29.7	40	-10.3
50.400	0.02	8.2	/	17.38	25.6	40	-14.4
51.840	0.02	7.5	/	19.88	27.4	40	-12.6
282.400	0.15	12.1	/	18.45	30.7	46	-15.3
297.120	0.16	13.2	/	14.84	28.2	46	-17.8
Vertical							
35.360	0.02	18.3	/	11.68	30.0	40	-10.0
41.3600	0.02	15.4	/	17.48	32.9	40	-7.1
45.760	0.02	12.9	/	16.98	29.9	40	-10.1
51.840	0.02	7.5	/	19.08	26.6	40	-13.4
164.240	0.02	10.1	/	23.38	33.5	43.5	-10.0
954.160	0.44	24	/	6.36	30.8	46	-15.2

Note:
a) *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.*
b) *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.*
c) *The other emission levels are 20dB below the official limits that are not reported.*

IP Call Mode/Above 1GHz:

Frequency (MHz)	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								
1.056	1.39	23.9	-33.6	-6.58	52.31	74	-21.69	H
1.192	1.48	24.2	-33.6	-10.9	48.38	74	-25.62	H
1.328	1.57	25.3	-33.6	-10.76	49.71	74	-24.29	H
1.064	1.39	23.9	-33.6	-5.62	53.27	74	-20.73	V
1.192	1.48	24.2	-33.6	-8.12	51.16	74	-22.84	V
1.320	1.57	25.3	-33.6	-10.99	49.48	74	-24.52	V
Average Measurement								
1.056	1.39	23.9	-33.6	-26.25	32.64	54	-21.36	H
1.192	1.48	24.2	-33.6	-30.01	29.27	54	-24.73	H
1.328	1.57	25.3	-33.6	-29	31.47	54	-22.53	H
1.064	1.39	23.9	-33.6	-28.33	30.56	54	-23.44	V
1.192	1.48	24.2	-33.6	-30.51	28.77	54	-25.23	V
1.320	1.57	25.3	-33.6	-28.37	32.10	54	-21.90	V

Note:
a) 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.
b) 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.
c) The other emission levels are 20dB below the official limits that are not reported.

For model:HT702:
Connected to PC Mode/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							
32.640	0.02	17.6	/	8.08	25.7	40	-14.3
36.240	0.02	18.4	/	7.98	26.4	40	-13.6
311.040	0.16	13.5	/	15.84	29.5	46	-16.5
400.000	0.16	14.7	/	13.94	28.8	46	-17.2
450.000	0.2	16.8	/	16.8	33.8	46	-12.2
800.000	0.39	22.2	/	10.11	32.7	46	-13.3
Vertical							
35.600	0.02	18.4	/	12.98	31.4	40	-8.6
40.720	0.02	16.3	/	14.58	30.9	40	-9.1
400.000	0.16	14.7	/	18.94	33.8	46	-12.2
429.600	0.2	15.8	/	15.8	31.8	46	-14.2
650.000	0.36	20	/	11.34	31.7	46	-14.3
954.160	0.44	24	/	7.96	32.4	46	-13.6

Note:
a) 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.
b) 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.
c) The other emission levels are 20dB below the official limits that are not reported.

Connected to PC Mode/Above 1GHz:

Frequency (MHz)	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								
1.056	1.39	23.9	-33.6	-6.17	52.72	74	-21.28	H
1.192	1.48	24.2	-33.6	-5.59	53.69	74	-20.31	H
1.328	1.57	25.3	-33.6	-10.74	49.73	74	-24.27	H
1.064	1.40	24.1	-33.6	-3.83	55.27	74	-18.73	V
1.320	1.53	24.8	-33.6	-7.3	52.63	74	-21.37	V
1.592	1.73	26.3	-33.6	-11.62	50.01	74	-23.99	V
Average Measurement								
1.056	1.39	23.9	-33.6	-23.22	35.67	54	-18.33	H
1.192	1.48	24.2	-33.6	-27.86	31.42	54	-22.58	H
1.328	1.57	25.3	-33.6	-29.6	30.87	54	-23.13	H
1.064	1.40	24.1	-33.6	-25.86	33.62	54	-20.38	V
1.320	1.53	24.8	-33.6	-30.2	29.73	54	-24.27	V
1.592	1.73	26.3	-33.6	-31.62	30.01	54	-23.99	V

Note:
a) 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.
b) 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.
c) The other emission levels are 20dB below the official limits that are not reported.

For model:HT704
Connected to PC Mode/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							
33.840	0.02	17.6	/	8.08	25.7	40	-14.3
35.840	0.02	18.4	/	8.08	26.5	40	-13.5
163.680	0.02	10.1	/	22.78	32.9	43.5	-10.6
311.040	0.16	13.5	/	20.34	34.0	46	-12.0
414.720	0.2	15.3	/	12.7	28.2	46	-17.8
450.000	0.2	16.8	/	18.6	35.6	46	-10.4
Vertical							
35.120	0.02	18.2	/	11.08	29.3	40	-10.7
36.880	0.02	18.4	/	12.28	30.7	40	-9.3
101.840	0.02	7.8	/	22.18	30.0	43.5	-13.5
103.360	0.02	7.7	/	21.18	28.9	43.5	-14.6
125.040	0.02	6.9	/	21.28	28.2	43.5	-15.3
429.600	0.2	15.8	/	13	29.0	46	-17.0

Note:
a) 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.
b) 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.
c) The other emission levels are 20dB below the official limits that are not reported.

Connected to PC Mode/Above 1GHz:

Frequency (MHz)	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								
1.056	1.39	23.9	-33.6	-5.22	53.67	74	-20.33	H
1.192	1.48	24.2	-33.6	-6.39	52.89	74	-21.11	H
1.328	1.57	25.3	-33.6	-10.26	50.21	74	-23.79	H
1.064	1.40	24.1	-33.6	-4.83	54.27	74	-19.73	V
1.320	1.53	24.8	-33.6	-7.54	52.39	74	-21.61	V
1.592	1.73	26.3	-33.6	-9.96	51.67	74	-22.33	V
Average Measurement								
1.056	1.39	23.9	-33.6	-23.72	35.17	54	-18.83	H
1.192	1.48	24.2	-33.6	-27.27	32.01	54	-21.99	H
1.328	1.57	25.3	-33.6	-26.87	33.6	54	-20.40	H
1.064	1.40	24.1	-33.6	-30.02	29.08	54	-24.92	V
1.320	1.53	24.8	-33.6	-23.61	36.32	54	-17.68	V
1.592	1.73	26.3	-33.6	-31.62	30.01	54	-23.99	V

Note:
a) 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.
b) 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.
c) 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
Receiver	SMR4503	SCHAFFNER	11725	2011.07.08	2012.07.07
EMI Test Receiver	ESCS30	Rohde & Schwarz	SB3319	2011.02.25	2012.02.24
Triple Loop Antenna	HXYZ9170	Schwarzbeck	SB2662	2011.02.25	2012.02.24
Double-ridged Wave guide horn	3115	ETS	6587	2011.08.02	2012.08.01
Microwave system amplifier	83017A	Agilent	MY39500438	2011.07.11	2012.07.10
Biconilog Antenna	3142C	ETS	00042672	2011.09.28	2012.09.27
Band-pass Filter	BRM50702	Micro-Tronic	S/N-030	2011.11.30	2012.11.29
Spectrum Analyzer	FSP30	R&S	100755	2011.11.30	2012.11.29

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

SIGNED BY: _____
ENGINEER

REVIEWED BY: _____
SENIOR ENGINEER
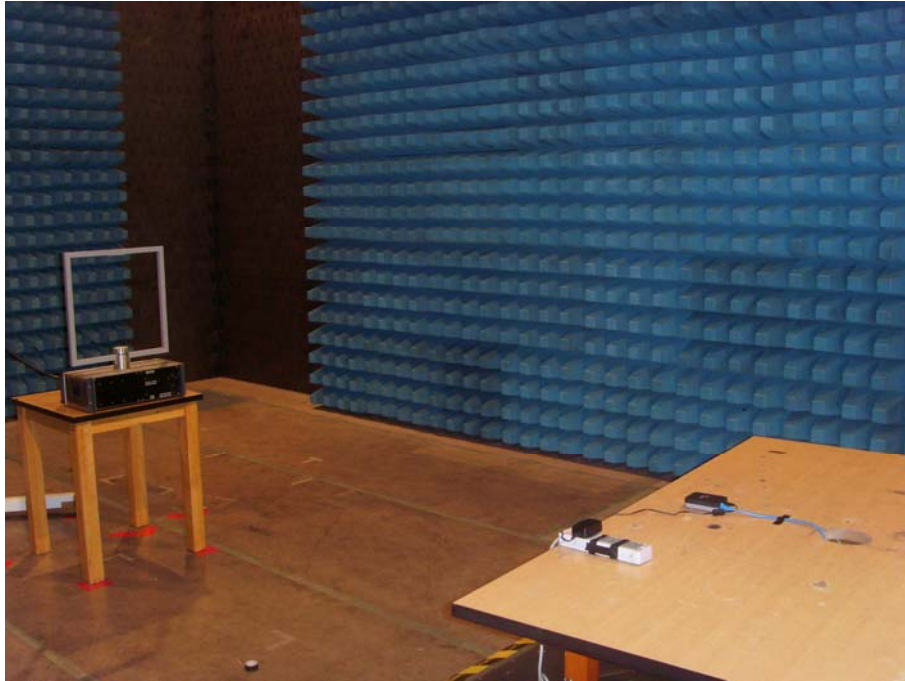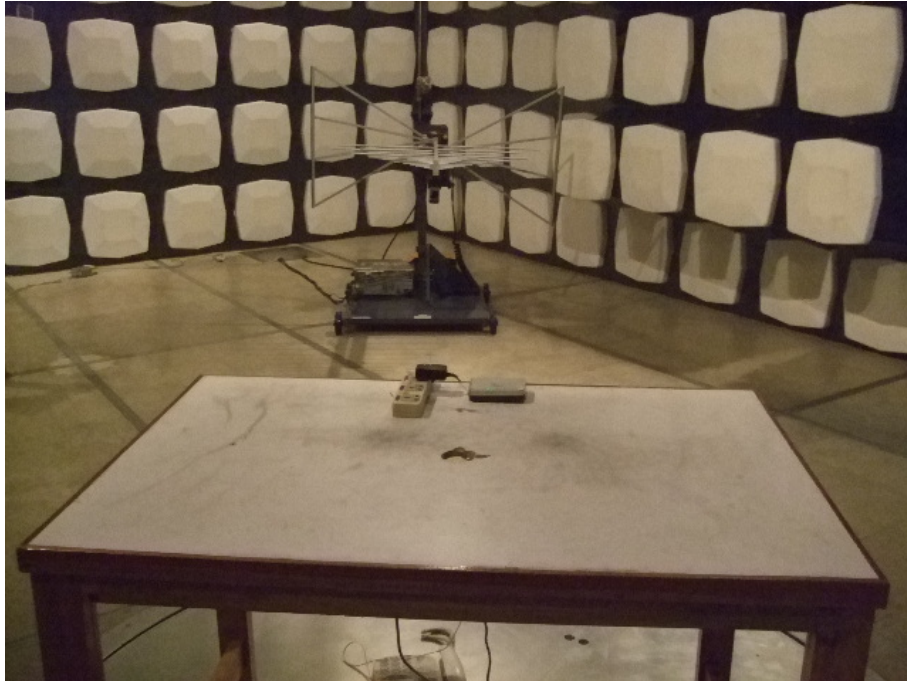
For model:HT702

IP Call: Radiated Emission Test Set-up(9kHz to 30MHz)
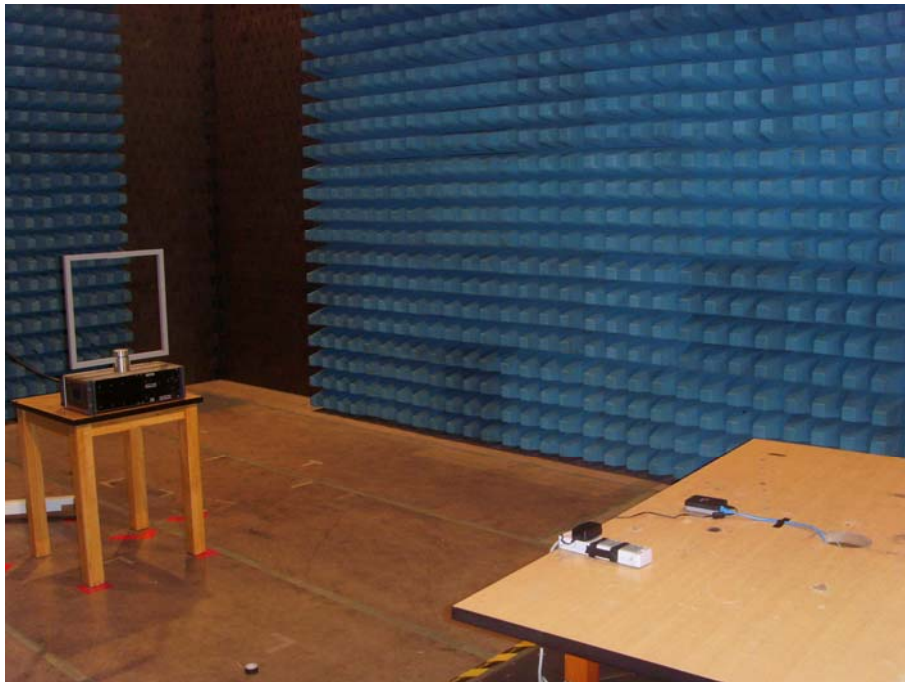
For model:HT704

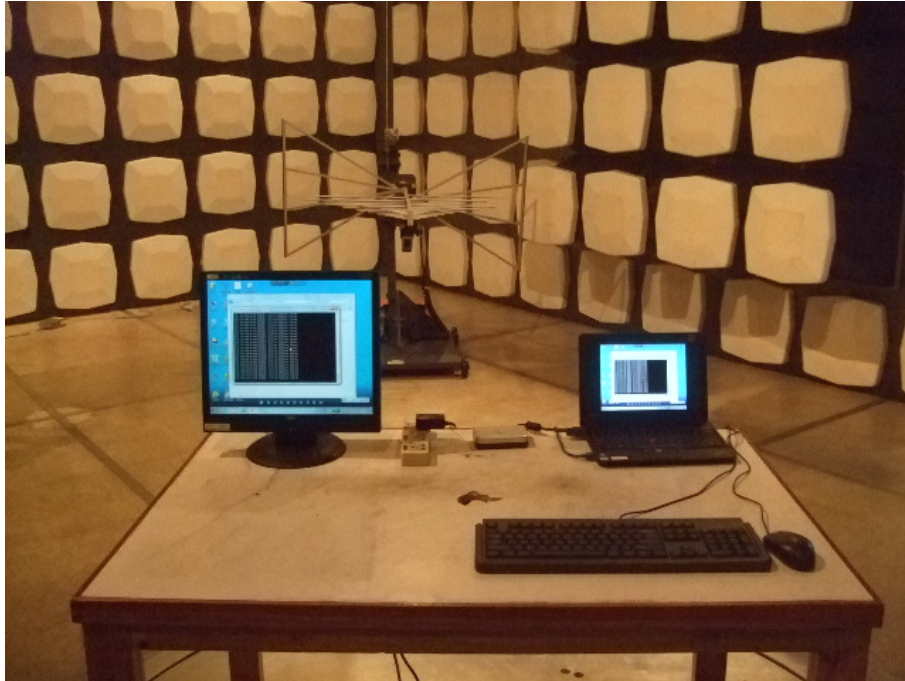*IP Call: Radiated Emission Test Set-up(9kHz to 30MHz)*
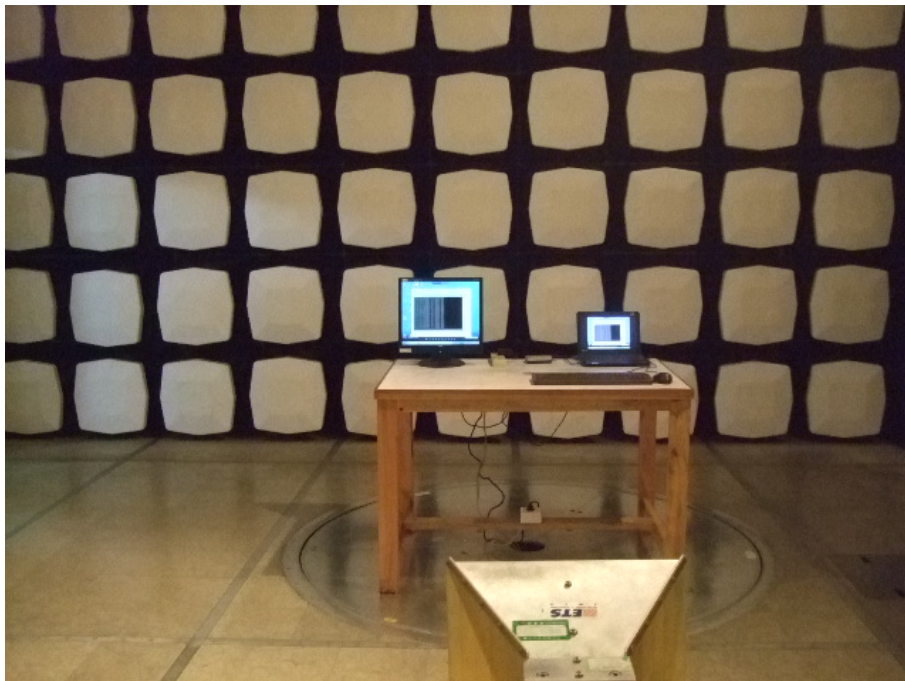
For model:HT702

IP Call:Radiated Emission Test Set-up(Below 1GHz)

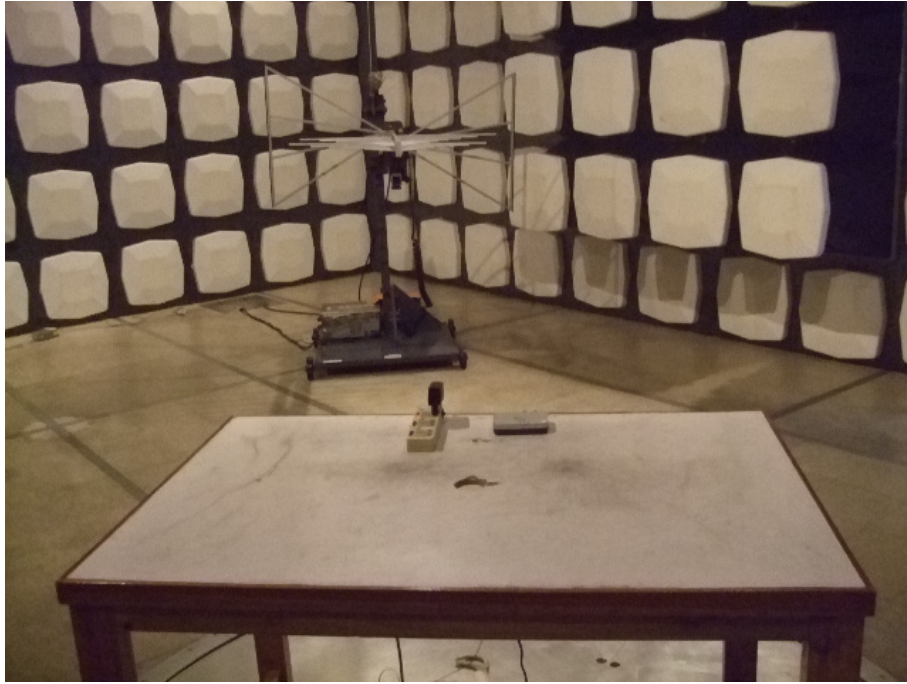*IP Call:Radiated Emission Test Set-up(Above 1GHz)*

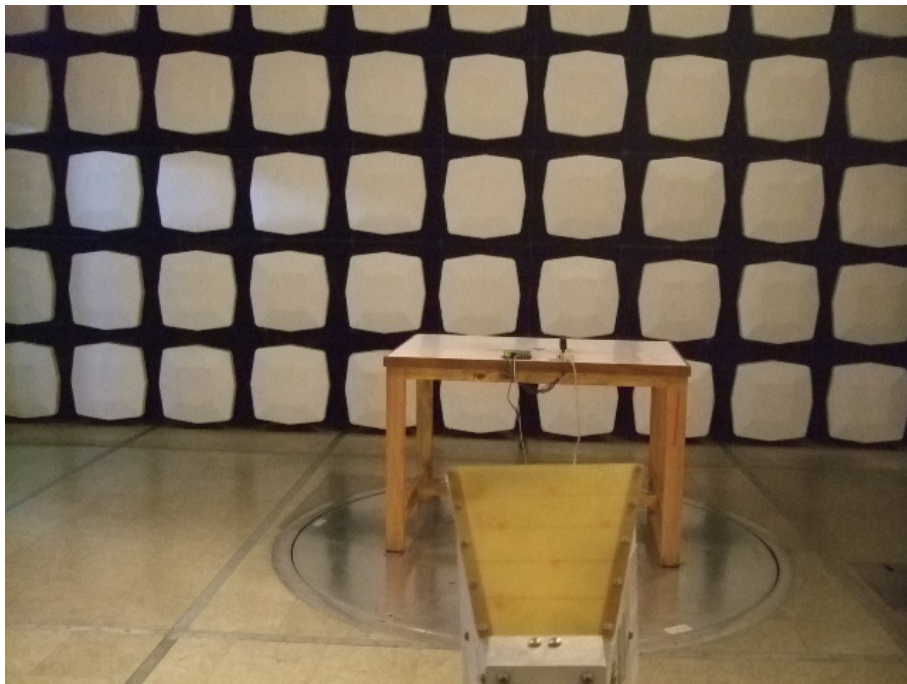*Connected to PC:Radiated Emission Test Set-up (Below 1GHz)*

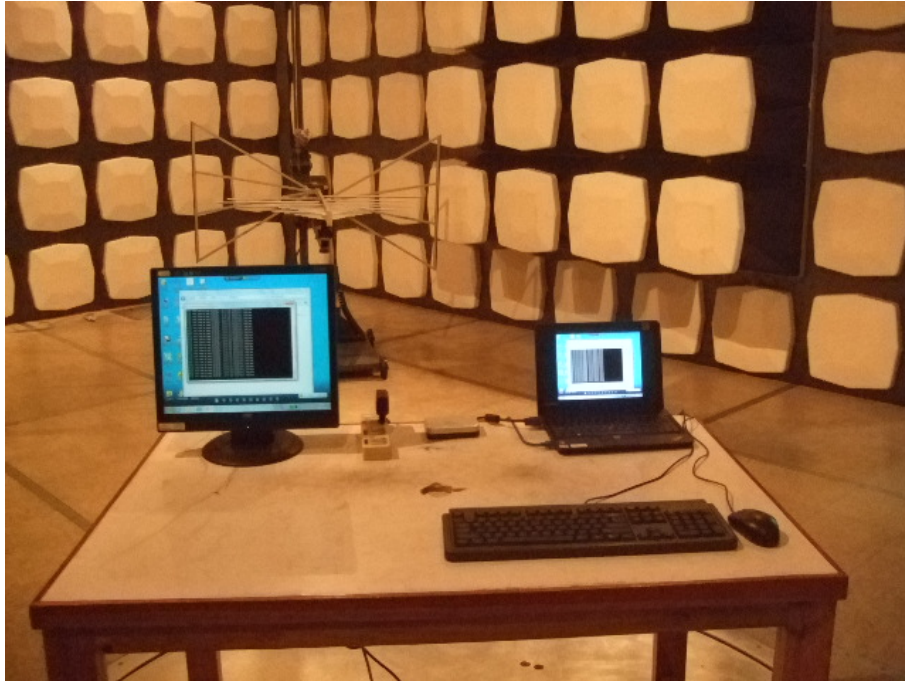*Connected to PC:Radiated Emission Test Set-up (Above 1GHz)*
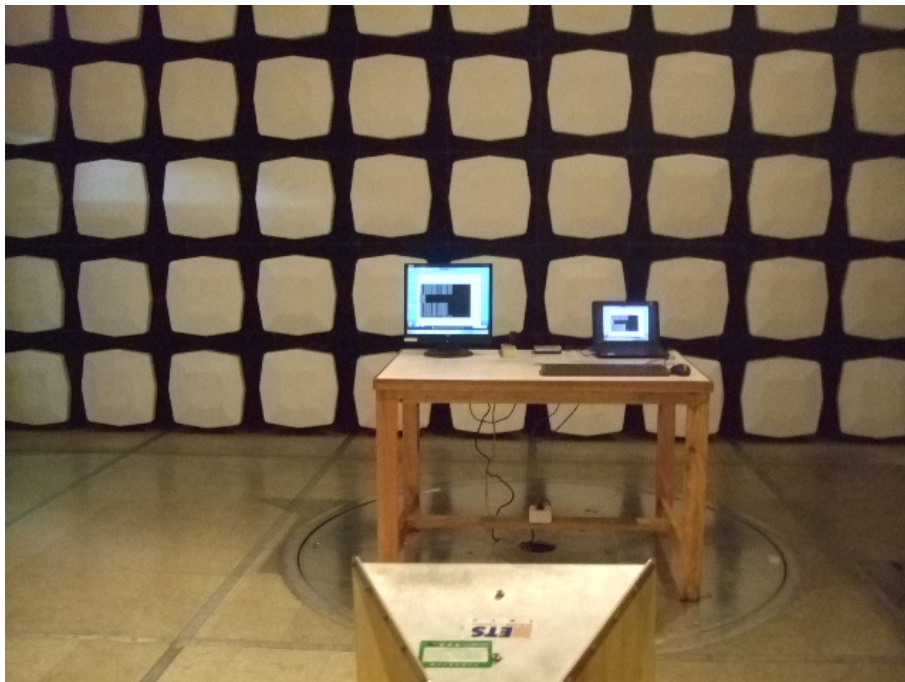
For model:HT704

IP Call:Radiated Emission Test Set-up(Below 1GHz)

IP Call:Radiated Emission Test Set-up(Above 1GHz)

Connected to PC:Radiated Emission Test Set-up (Below 1GHz)

Connected to PC:Radiated Emission Test Set-up (Above 1GHz)