

EMI Test Report

On Model Name: IP Multimedia Phone

Model Number: GXV3175

Prepared for Grandstream Networks, (China)

FCC ID Number: YZZGXV317X

According to FCC Part 15 (2009), Subpart B

Test Report #: Prepared by: Reviewed by: QC Manager: SHE-1011-10532-FCC ID-15B May Wang Jawen Yin Swall Zhang

Test Report Released by: Swall Zhan Swall Zhang December 2, 2010 Date

Test Location

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

Test Site Location	: Guangdong Galanz Enterprise Co. Ltd
	25 South Ronggui Rd., Shunde, Foshan, Guangdong, China
Tel	: 86-757-23612785
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Test Facility

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

• CNAL - LAB Code: L2244

Guangdong Galanz Enterprise Co. Ltd., 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

Guangdong Galanz Enterprise Co. Ltd., 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

Exhibit Type	File Description	File Name
Test Report	Test Report	YZZGXV317X_Test report.pdf
Operation Description	Technical Description	YZZGXV317X_operation description.pdf
External Photos	External Photos	YZZGXV317X_External Photos
Internal Photos	Internal Photos	YZZGXV317X_Internal Photos
Block Diagram	Block Diagram	YZZGXV317X_Block Diagram.pdf
Schematics	Circuit Diagram	YZZGXV317X_Schematics.pdf
ID Label/Location	Label and Location	YZZGXV317X _Label & Location.pdf
User Manual	User Manual	YZZGXV317X _User Manual.pdf
Test setup photos	Test setup photos	YZZGXV317X _Test Setup Photos

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Opinions and Interpretations

This test report relates to the abovementioned equipment under test (EUT).Without the permission of EMC Compliance Management Group 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 Multimedia Phone
Model Numbers	: GXV3175
Model Tested	: GXV3175
Date Tested	: November 22, 2010
Applicant	: Grandstream Networks, (China)
	: 5F, Bldg #1, No.2 Kefa Rd., Science & Technology Park, Shenzhen, China
Telephone	: +86-755-26014600
Fax	: +86-755-26014601
Manufacturer	: Grandstream Networks, (China)
	: 5F, Bldg #1, No.2 Kefa Rd., Science & Technology Park, Shenzhen, China
Telephone	: +86-755-26014600
Fax	: +86-755-26014601

EUT Description

Grandstream Networks, (China) Model number GXV3175 (referred to as the EUT in this report) is a IP Multimedia Phone.

The EUT is an IP multimedia phone built-in IEEE 802.11b/g/n adapter which operates in 2.4GHz ISM band and technical specifications of EUT as below:

Parameter		Range				
Basic	Rated voltage	DC12V				
parameters	Rated Current	1.5A				
	<i>Operating band</i>	2400-2483.5MHz				
		Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)	
		001	2412	007	2442	
	Working	002	2417	008	2447	
	Frequency of Each Channel	003	2422	009	2452	
		004	2427	010	2457	
		005	2432	011	2462	
802.11b/a/n		006	2437			
<i>Adapter Parameters</i>	Frequency of Number Modulation Type	IEEE 802.11b/g: 11 channels; 802.11n HT 20MHz: 11channels; 802.11n HT 40MHz: 7 channels. IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20: OFDM				
	Data Rate	IEEE 802.11b: 1 IEEE 802.11g: 6 IEEE 802.11n H IEEE 802.11n H	IEEE 802.11n H420: OFDM IEEE 802.11b: 1/2/5.5/11Mbps; IEEE 802.11g: 6/9/12/18/24/36/48/54Mbps; IEEE 802.11n HT20: 65/58.5/52/39/26/19.5/13/6.5Mbps; IEEE 802.11n HT40:135/121.5/108/81/54/40.5/21/13.5Mbps			

ir	1						
		Mode	Frequency Range (MHz)	Output Power (dBm)	Output Power (mW)		
	Turu un it	IEEE 802.11b	2412-2462	16±15%	22.91- 69.18		
	Tranmit Power	IEEE 802.11g	2412-2462	12±15%	10.47- 23.99		
		802.11n HT 20MHz	2412-2462	12±15%	10.47- 23.99		
		802.11n HT 40MHz	2422-2452	12±15%	10.47- 23.99		
	Antenna Spec.	1. Antenna type: EMB Antenna 2. Gain: 2dBi 3. Impedance: 500hm					
	Internet Port x 2	Port One connected to PC,other connected to internet.					
I/O Port	USB port x2	Connected to USB device(for example with USB interface storage device,mouse,keyboard etc.)					
,, , , , , , , , , , , , , , , , , , , ,	Earphone port	Connected to earphone					
	Video port	Connected to other video display device					
	Input	AC 100-240V,50/60Hz,0.55A					
AC/DC Adapter info.	Output	12VDC,1.5A					
	Model	N/A					

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

Test Summary

The Electromagnetic Compatibility requirements on model GXV3175 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 mode from all possible combinations between available mode.

Following the worst-case mode was selected for final test as listed below.

- 1) Connected EUT to PC by a RJ 45 signal line, also ping "192.168.0.163 t" to EUT.
- 2) Turn off WIFI function of EUT,connected EUT to other IP call and let EUT keep a video call link with other IP call.

The final testing shall be performed at 1) and 2) opetating mode.

EUT exercise Software

No test sofware support this test.

Equipment Modification

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

There were no modifications installed by EMC Compliance Management Group test personnel.

Test System Details

EUT					
Model Number:	GXV3175				
Model Tested:	GXV3175				
Description:	IP Multimedia Phone	IP Multimedia Phone			
Input:	AC 120V/60Hz				
Manufacturer:	Grandstream Networks, (China)				
Support Equipment					
Description	Model Number	Serial Number	Manufacturer		
Notebook	NC4000	CNU4122BCL	HP		
AC/DC Adapter Of Notebook	РРРООЭН	239427-003	HP		

Cable Description							
Description	From	to	Length (Meters)	Shielded (Y/N)	Ferrite (Y/N)		
AC/DC Adapter Cord Of Notebook	Adapter	Notebook	1.6	N	Y		
	Notebook	AC Plug	1.2	N	N		
AC/DC Adapter of EUT EUT Plug 1.6 N N							
Note:The "EUT" means "IP Multimedia Phone".							

Testing System configuration



Block Diagram of Radiated Emission Test



Radiated Emission Test set up photograph

ATTACHMENT 1 – CONDUCTED EMISSION TEST RESULTS

CLIENT:	Grandstream Networks, (China)	TEST STANDERD:	FCC Part 15,Class B			
MODEL NUMBERS:	GXV3175	PRODUCT:	IP Multimedia Phone			
MODEL TESTED:	GXV3175	EUT DESIGNATION:	Commercial and Residential use			
TEMPERATURE:	21°C	HUMIDITY:	56%			
ATM PRESSURE:	101kPa	GROUNDING:	None			
TESTED BY:	May Wang	DATE OF TEST:	November 22, 2010			
TEST REFERENCE:	ANSI C63.4: 2003, CISPR 16-1: 2	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 justfication.					
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 EMC Compliance Management Group test personnel.					
M. UNCERTAINTY:	Freq. ± 2x10-7 x Center Freq., An	Freq. \pm 2x10-7 x Center Freq., Amp \pm 2.6 dB				



Line L Conducted Emission Graph



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Conducted Emission Test Data:

Line	Frequency (MHz)	Corrected QP Level (dBµV)	Limits QP (dBuV)	Margin QP (dB)	Frequency (MHz)	Corrected AVE Level (dBµV)	Limits AVE (dBµV)	Margin AVE (dB)
L	0.1600	47.5	65.4	-17.9	0.1600	34.0	55.4	-21.4
L	0.2000	37.1	63.5	-26.4	0.2000	18.6	53.5	-34.9
L	0.3300	39.7	59.4	-19.7	0.3300	28.7	49.4	-20.7
N	0.1500	45.7	65.9	-20.2	0.1500	23.5	55.9	-32.4
N	0.3650	39.0	58.6	-19.6	0.3650	26.1	48.6	-22.5
N	0.6050	39.0	56.0	-17.0	0.6050	31.1	46.0	-14.9

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.

Test Equipment List:

Test Equipment	Model No.	Manufacturer	Serial No.	Last Cal.	Cal. Interval
Receiver	SMR4503	SCHAFFNER	11725	2010.07.08	2011.07.08
Line impedance stabilization network	4825/2	ETS	1161	2010.07.08	2011.07.08

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

Wan SIGNED BY: ENGINEER

REVIEWED BY: <

SENIOR ENGINEER

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Conducted Emission Test Set-up

ATTACHMENT 2 - RADIATED EMISSION MEASUREMENT

CLIENT:	Grandstream Networks, (China)	TEST STANDERD:	FCC Part 15,Class B				
MODEL NUMBERS:	GXV3175	PRODUCT:	IP Multimedia Phone				
EUT MODEL:	GXV3175	EUT DESIGNATION:	Commercial and Residential use				
TEMPERATURE:	23°C	HUMIDITY:	47%RH				
ATM PRESSURE:	101.0kPa	GROUNDING:	None				
TESTED BY:	May Wang	DATE OF TEST:	November 23, 2010				
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 (prescan) 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 in the frequency range of 1GHz to 9GHz 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: 						
	Where: FS = Field Strength						
	RA = Receiver Amplitude						
	AF = Antenna Factor						
	CF = Cable Attenuation Factor						
	AG = Amplifier Gain						
TEST MODE	Refer to test mode justfication.						
TESTED RANGE:	The EUT highest operated frequency is 810MHz, so test frequency range is 30MHz to 9GHz						
TEST VOLTAGE:	AC 120V/60Hz						

Continue on to next page...

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 EMC Compliance Management Group (China) test personnel.					
M. UNCERTAINTY:	Freq. \pm 2x10-7 x Center Freq., Amp \pm 2.6 dB					



Horizontal Radiated Emission (Below 1GHz)



Horizontal Radiated Emission—AV Detector (Above 1GHz)



Horizontal Radiated Emission—Peak Detector (Above 1GHz)



Vertical Radiated Emission (Below 1GHz)



Vertical Radiated Emission—AV Detector (Above 1GHz)



Vertical Radiated Emission—Peak Detector (Above 1GHz)

Radiated Emission Test Data:

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									
35.7600	0.35	17.9	25.50	17.95	25.2	40.0	-14.8		
36.1600	0.35	18.4	26.80	20.05	28.1	40.0	-11.9		
567.0400	1.61	18.5	25.50	49.89	44.5	46.0	-1.5		
729.0400	2.00	21.1	26.85	20.75	24.5	46.0	-21.5		
756.0800	2.00	21.1	26.85	32.35	36.1	46.0	-9.9		
899.3600	2.00	23.2	26.95	20.15	21.9	46.0	-24.1		
			Ver	rtical					
35.3600	0.35	17.9	25.50	28.15	35.4	40.0	-4.6		
38.9600	0.35	18.4	26.80	28.45	36.5	40.0	-3.5		
567.0400	1.61	18.5	25.50	43.19	37.8	46.0	-8.2		
675.1200	1.84	20.1	30.80	8.94	17.8	46.0	-28.2		
756.1600	2.00	21.1	26.85	24.95	28.7	46.0	-17.3		
846.4800	2.00	23.2	26.95	17.65	19.4	46.0	-26.6		

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									
3112.00	2.57	31.5	32.1	52.25	50.28	74	-23.72	Н	
1592.00	1.71	26.1	33.6	46.93	52.72	74	-21.28	Н	
1320.00	1.39	23.9	33.6	45.37	53.68	74	-20.32	Н	
1032.00	1.39	23.9	33.6	42.31	50.62	74	-23.38	Н	
1200.50	1.39	23.9	33.6	40.19	48.50	74	-25.50	Н	
1600.00	1.71	26.1	33.6	47.21	53.00	74	-21.00	Н	
2648.00	2.3	29.3	33.0	43.05	44.45	74	-29.55	V	
1688.00	1.71	26.1	33.6	49.34	55.13	74	-18.87	V	
1320.00	1.39	23.9	33.6	46.76	55.07	74	-18.93	V	
1224.00	1.39	23.9	33.6	42.61	50.92	74	-23.08	V	
1500.50	1.71	26.1	33.6	45.71	51.50	74	-22.50	V	
1300.50	1.39	23.9	33.6	41.69	50.00	74	-24.00	V	

Note: 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.

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)	
Average Measurement									
3016.00	2.57	31.5	32.1	38.01	36.04	54	-17.96	Н	
1320.00	1.39	23.9	33.6	26.25	34.56	54	-19.44	Н	
1032.00	1.39	23.9	33.6	21.53	29.84	54	-24.16	Н	
1512.00	1.71	26.1	33.6	26.77	32.56	54	-21.44	Н	
1600.00	1.71	26.1	33.6	29.21	35.00	54	-19.00	Н	
1200.00	1.39	23.9	33.6	24.19	32.50	54	-21.50	Н	
2648.00	2.3	29.3	33.0	32.35	33.75	54	-20.25	V	
1608.00	1.71	26.1	33.6	31.61	37.40	54	-16.60	V	
1320.00	1.39	23.9	33.6	26.02	34.33	54	-19.67	V	
1784.00	1.71	26.1	33.6	32.12	37.91	54	-16.09	V	
1550.00	1.71	26.1	33.6	29.71	35.50	54	-18.50	V	
1300.00	1.39	23.9	33.6	24.19	32.50	54	-21.50	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: Final Test Level =Receiver Reading + Antenna Factor + Cable Factor -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		
Receiver	SMR4503	SCHAFFNER	11725	2010.07.08	20110.07.07		
Double-ridged Wave guide horn	3115	ETS	6587	2010.08.02	2011.08.01		
Microwave system amplifier	83017A	Agilent	MY39500438	2010.07.11	2011.07.10		
Biconilog Antenna	3142C	ETS	00042672	2010.09.28	2011.09.27		
Band-pass Filter	BRM50702	Micro-Tronic	S/N-030	2010.11.30	2011.11.29		
Spectrum Analyzer	FSP30	R&S	100755	2010.11.30	2011.11.29		
Note: All testing were performed using internationally recognized standards. All test instruments were calibrated.							

SIGNED BY:

ENGINEER

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REVIEWED BY:

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SENIOR ENGINEER



Radiated Emission Test Set-up(Below 1GHz)



Radiated Emission Test Set-up(Above 1GHz)