

EMC TEST REPORT

For

Shenzhen fuyaduo electronics manufactory

Wireless doorbell

Model No. : 5301,YF-0155,YF-0156,YF-0157,YF-0255A,YF-0255B,YF-0256,
YF-0257,YF-0355,YF-0455,8818

Trade Name : GEEAIR

Prepared for : Shenzhen fuyaduo electronics manufactory
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Report No. : ECT2015E08034-Y1

Date of Test : Aug .21-28 .2015

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TEST REPORT DECLARATION

Applicant : Shenzhen fuyaduo electronics manufactory
Manufacturer : Shenzhen fuyaduo electronics manufactory
EUT Description : Wireless doorbell

(A) Model No. : 5301, YF-0155, YF-0156, YF-0157, YF-0255A, YF-0255B, YF-0256,
YF-0257, YF-0355, YF-0455, 8818

(B) Serial No. : N/A

(C) Power Supply : DC 4.5V

Test Procedure Used:

EMI: EN 61000-6-3: 2007+A1:2011

EMS: EN 61000-6-1: 2007 (EN61000-4-2: 2009,
EN61000-4-3: 2006+A1:2008+A2:2010)

The device described above has been tested by **Shenzhen ECT Testing Technology Co., Ltd.** to determine the maximum emission levels emanating from the device, the severe levels that the device can endure and EUT'S performance criterion. The test results are contained in this test report. **Shenzhen ECT Testing Technology Co., Ltd.** is assumed of full responsibility for the accuracy and completeness of these tests. Also, this report shows that the EUT is technically compliant with the EN61000-6-3 and EN61000-6-1 requirements.

This report applies to above tested sample only and shall not be reproduced in part without written approval of **Shenzhen ECT Testing Technology Co., Ltd.**

Date of Test:

Aug .21-28 .2015

Prepared by:

Nancy Xu

Project Engineer (Nancy Xu)

Reviewed by:

Ken Liu

Project Manager (Ken Liu)

Approved by:

Kelly Jiang

Technical Director (Kelly Jiang)

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Description : Wireless doorbell

Model Number : 5301,YF-0155,YF-0156,YF-0157,YF-0255A,YF-0255B,
YF-0256,YF-0257,YF-0355,YF-0455,8818

Applicant : Shenzhen fuyaduo electronics manufactory
Address : room 201, 2F, E building, village south industrial,
shuidoulaowei village, longhua new district ,Shenzhen

Manufacturer : Shenzhen fuyaduo electronics manufactory
Address : room 201, 2F, E building, village south industrial,
shuidoulaowei village, longhua new district ,Shenzhen

Date of Test : Aug .21-28 .2015

1.2. Test Summary

Test Items		Status
Power line conducted emission test	EN 61000-6-3: 2007+A1:2011	N/A
Radiated emission test	EN 61000-6-3: 2007+A1:2011	Complied
Harmonic Current Emission test	EN 61000-3-2:2014	N/A
Voltage fluctuations & flicker test	EN 61000-3-3:2013	N/A
Electrostatic discharge Test	EN 61000-4-2: 2009	Complied
RF Field strength susceptibility Test	EN 61000-4-3: 2006+A1:2008+A2:2010	Complied
Electrical fast transient/Burst Test	EN 61000-4-4: 2012	N/A
Surge Test	EN 61000-4-5: 2006	N/A
Injected currents susceptibility test	EN 61000-4-6: 2014	N/A
Magnetic field immunity test	EN 61000-4-8: 2010	N/A
Voltage dips and interruptions test	EN 61000-4-11: 2004	N/A

1.3. Test Facility

Test Firm : Shenzhen ECT Testing Technology Co., Ltd.

Address : Room 1106,Era Innovation Certer, Xixiang gushu second road,Baoan district,Shenzhen city, China

Tel : (86) 755-23062275

Fax : (86) 755-26609102

1.4. Uncertainty

Radiated Emission Uncertainty = $\pm 4.26\text{dB}$

1.5. Description of Test System

PC	DELL	E6420
Monitor	DELL	OG335H
Keyboard	DELL	SK-8115

2. TEST INSTRUMENT USED

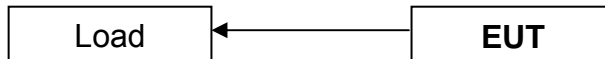
No.	Equipment	Manufacturer	Model No.	S/N	Cal. Date	Next Cal. Date
1	ESD TESTER	HAEFELY	PESD1610	H401552	2014.11.15	2015.11.15
2	MAGNETIC FIELD TESTER	HAEFELY	MAG100	150577	2014.11.15	2015.11.15
3	5kVA AC POWER SOURCE	CALIFORNIA INSTRUMENTS	5001ix-400	55692	2014.11.15	2015.11.15
4	HARMONICS/FLICKER TEST ANALYZER	CALIFORNIA INSTRUMENTS	PACS-1	72254	2014.11.15	2015.11.15
5	50Ω COAXIAL SWITCH	ANRITSU	MP59B	6200283933	2014.11.15	2015.11.15
6	CONICAL HOUSING	ATC	N/A	N/A	N/A	N/A
7	VOLTAGE PROBE	SCHWARZBECK	TK9416	N/A	2014.11.15	2015.11.15
8	RF CURRENT PROBE	ROHDE& SCHWARZ	EZ-17	100048	2014.11.15	2015.11.15
9	BILOG ANTENNA	SCHWARZBECK	VULB9163	194	2014.11.15	2015.11.15
10	SPECTRUM ANALYZER	ANRITSU	MS2651B	N/A	2014.11.15	2015.11.15
11	PRE-AMPLIFIER	AGILENT	8447D	294A10619	2014.11.15	2015.11.15
12	RF COAXIAL CABLE(844 CHAMBER)	SCHWARZBECK	N-5m	NO.1	2014.11.15	2015.11.15
13	THERMO-HYGROMETER	OREGON SCIENTIFIC	JB913R	GZ-WS004	2014.11.15	2015.11.15
14	1# SHIELDING ROOM	CHANGZHOU ZHONGYU	843	N/A	N/A	N/A
15	2# SHIELDING ROOM	CHANGZHOU ZHONGYU	843	N/A	N/A	N/A
16	3m Semi-ANECHOIC CHAMBER	CHANGZHOU ZHONGYU	844	N/A	N/A	N/A
17	ANTENNA/TURNTABLE CONTROLLER	INNCO	CO2000	CO2000/077/7301203/L	N/A	N/A
18	101 LCR METER	YANGZHI	YD2810B	20101170	2014.11.15	2015.11.15
19	RF COAXIAL CABLE(844 CHAMBER)	NTGS8017	N-1m	NO.6	2014.11.15	2015.11.15
20	RF COAXIAL CABLE(844 CHAMBER)	NTGS8017	N-1m	NO.7	2014.11.15	2015.11.15
21	AUDIO GENERATOR	GW	GAG-809	EG835424	N/A	N/A
22	THERMO-HYGROMETER	OREGON SCIENTIFIC	JB913R	GZ-WS002	2014.11.15	2015.11.15

No.	Equipment 29	Manufacturer	Model No.	S/N	Cal. Date	Next Cal. Date
23	EMC PRO SYSTEM (IMMUNITY TESTER)	THERMO	PRO-BASE	0403271	2014.11.15	2015.11.15
24	CAPACITIVE CLAMP (EFT)	THERMO	PRO-CCL	0403272	2014.11.15	2015.11.15
25	COUPLER DECOUPLER FOR TELECOM LINES	THERMO	CM-TEL-CD	0403273	2014.11.15	2015.11.15
26	L.I.S.N.	ROHDE& SCHWARZ	ESH3-Z5	100305	2014.11.15	2015.11.15
27	EMI TEST RECEIVER	ROHDE& SCHWARZ	ESPI-3	100396/003	2014.11.15	2015.11.15
28	SIGNAL GENERATOR	ROHDE& SCHWARZ	SML01	101161	2014.11.15	2015.11.15
29	EMI TEST RECEIVER	ROHDE& SCHWARZ	ESPI-3	101526/003	2014.11.15	2015.11.15
30	SPECTRUM ANALYZER	AGILENT	E7405A	MY45115511	2014.11.15	2015.11.15
31	L.I.S.N.	SCHWARZBECK	NSLK8126	8126431	2014.11.15	2015.11.15
32	PULSE LIMITER (FOR ESPI3)	ROHDE& SCHWARZ	ESH3-Z2	100815	2014.11.15	2015.11.15
33	PRE-AMPLIFIER	ROHDE& SCHWARZ	CBLU1183540-01	3791	2014.11.15	2015.11.15
34	50Ω COAXIAL SWITCH	ANRITSU	MP59B	6200506474	2014.11.15	2015.11.15
35	BILOG ANTENNA	SCHWARZBECK	VULB9163	9163-323	2014.11.15	2015.11.15
36	HORN ANTENNA	SCHWARZBECK	BBHA9120D	9120D-655	2014.11.15	2015.11.15
37	HORN ANTENNA	SCHWARZBECK	BBHA9170	9170-359	N/A	N/A
38	LOOP ANTENNA	SCHWARZBECK	FMZB1516	1516131	2014.11.15	2015.11.15
39	ULTRA COMPACT SIMULATOR	EM TEST	UCS 500 N5	V0928104968	2014.11.15	2015.11.15
40	CAPACITIVE CLAMP	EM TEST	HFK	0509-34	2014.11.15	2015.11.15
41	Transformer	EM TEST	V4780S2	0109-44	N/A	N/A
42	Conducted Immunity Test System	FRANKONIA	CIT-10	126B1121	2014.11.15	2015.11.15
43	CDN	FRANKONIA	CDN-M2/3	A3027020	2014.11.15	2015.11.15
44	EM Injection Clamp	FCC	F-203I-23mm	091824	2014.11.15	2015.11.15
45	LISN	AFJ	LS16C	16010946249	2014.11.15	2015.11.15
46	CLICK METER	AFJ	CL55C	55040947164	2014.11.15	2015.11.15

3. RADIATED EMISSION TEST

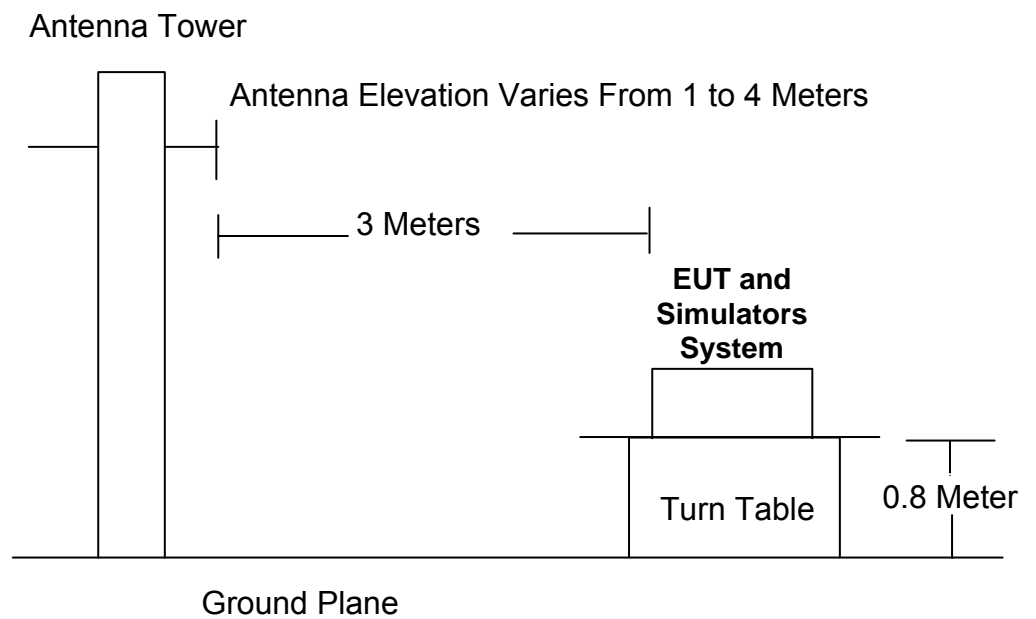
3.1. Block Diagram of Test Setup

3.1.1. Block Diagram of EUT Test Setup



(EUT: Wireless doorbell)

3.1.2. Anechoic Chamber Setup Diagram



(EUT: Wireless doorbell)

3.2. Test Standard

EN 61000-6-3: 2007+A1:2011

3.3. Radiated Emission Limit

Frequency MHz	Distance (Meter/s)	Field Strengths Limits dB(μ V)/m
30 ~ 230	3	40.0
230 ~ 1000	3	47.0

- Remark:
- (1) Emission level (dB (μ V)/m) = 20 log Emission level (μ V/m)
 - (2) The smaller limit shall apply at the cross point between two frequency bands.
 - (3) Distance refers to the distance in meters between the measuring instrument, antenna and the closed point of any part of the device or system.

3.4. EUT Configuration on Test

The EN 61000-6-3 regulations test method must be used to find the maximum emission during radiated emission test.

3.4.1. Wireless doorbell (EUT)

- (A) Model No. : 5301
- (B) Serial No. : N/A
- (C) Manufacturer : Shenzhen fuyaduo electronics manufactory

3.5. Operating Condition of EUT

- 3.5.1. Setup the EUT and simulators as shown in Section 3.1.
- 3.5.2. Turn on the power of all equipments.
- 3.5.3. Let the EUT work in test mode and test it.

3.6. Test Procedure

The EUT and its simulators are placed on a turned table that is 0.8 meter above the ground. The turned table can rotate 360 degrees to determine the position of the maximum emission level. The EUT is set 3 meters away from the receiving antenna that is mounted on the antenna tower. The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level. Broadband antenna (calibrated biconical and log periodical antenna) is used as receiving antenna. Both horizontal and vertical polarization of the antenna is set on test. In order to find the maximum emission levels, the interface cable must be manipulated according to EN61000-6-3 on radiated emission test.

The bandwidth setting on the field strength meter (R & S Test Receiver ESCI) is set at 120 KHz.

The frequency range from 30 MHz to 1000 MHz is investigated. The test data are listed in the Section 3.7 and the scanning waveform are attached within APPENDIX I.

3.7. Radiated Emission Test Result

PASS.

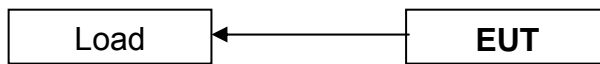
The frequency spectrum from 30 MHz to 1000 MHz is investigated.

Detailed information, please see the APPENDIX (I) file.

4. ELECTROSTATIC DISCHARGE TEST

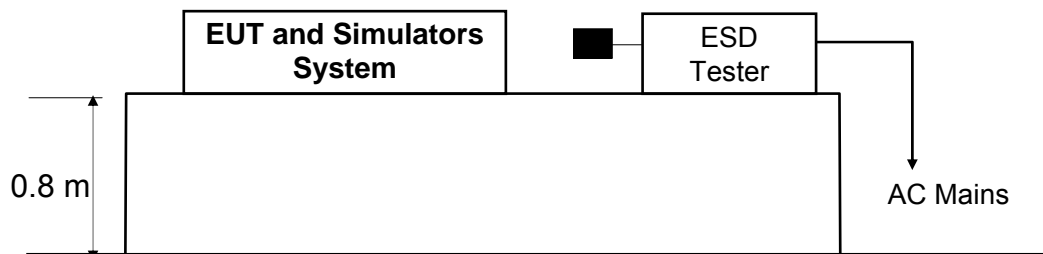
4.1. Block Diagram of Test Setup

4.1.1. Block Diagram of EUT Test Setup



(EUT: Wireless doorbell)

4.1.2.ESD Test Setup



Remark: ■ is Discharge Electrode

(EUT: Wireless doorbell)

4.2. Test Standard

EN 61000-6-1:2007 (EN61000-4-2: 2009)

4.3. Severity Levels and Performance Criterion

Severity Level 3 for Air Discharge at 8KV

Severity Level 2 for Contact Discharge at 4KV

Severity Level:

Level	Test Voltage Contact Discharge (KV)	Test Voltage Air Discharge (KV)
1.	2	2
2.	4	4
3.	6	8
4.	8	15
X.	Special	Special

Performance criterion: **B**

4.4. EUT Configuration on Test

The configuration of EUT is listed in Section 3.4.

4.5. Operating Condition of EUT

4.5.1. Setup the EUT as shown in Section 4.1.

4.5.2. Turning on the power of all equipments .

4.5.3. Let the EUT work in test mode and test it.

4.6. Test Procedure

4.6.1. Air Discharge:

This test is done on a non-conductive surface. The round discharge tip of the discharge electrode shall be approached as fast as possible to touch the EUT. After each discharge, the discharge electrode shall be removed from the EUT. The generator is then re-triggered for a new single discharge and repeated 10 times for each pre-selected test point. This procedure shall be repeated until all the air discharge completed.

4.6.2. Contact Discharge:

All the procedure shall be same as Section 4.6.1 except that the tip of the discharge electrode shall touch the EUT before the discharge switch is operated.

Indirect discharge for horizontal coupling plane

At least 20 single discharges shall be applied to the horizontal coupling plane, at points on each side of the EUT. The discharge electrode position is vertically at a distance of 0.1m from the EUT and with the discharge electrode touching the coupling plane.

Indirect discharge for vertical coupling plane

At least 20 single discharges shall be applied to the center of one vertical edge of the coupling plane. The coupling plane, of dimensions 0.5m X 0.5m, is placed parallel to, and positioned at a distance of 0.1m from the EUT. Discharges shall be applied to the coupling plane, with this plane in sufficient different positions that the four faces of the EUT are completely illuminated.

4.7. Test Results

PASS.

Detailed information, Please refer to the following page.

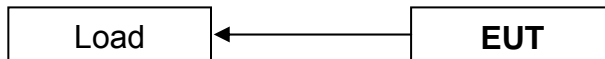
Electrostatic Discharge Test Results

EUT	: Wireless doorbell	Temperature	: 23°C
M/N	: 5301	Humidity	: 56%
Power Supply	: DC 4.5V	Test Mode	: On
<p>Air Discharge: ±8KV For each point positive 10 times and negative 10 times discharge. Contact Discharge: ±4KV</p>			
Location	Kind A-Air Discharge C-Contact Discharge	Result	
Slot	A	PASS	
HCP	C	PASS	
VCP	C	PASS	
<p>Remark: Discharge should be considered on Contact and Air and Horizontal Coupling Plane (HCP) and Vertical Coupling Plane (VCP).</p>		<p>Test Equipment: See Clause 2.</p>	

5. RF FIELD STRENGTH SUSCEPTIBILITY TEST

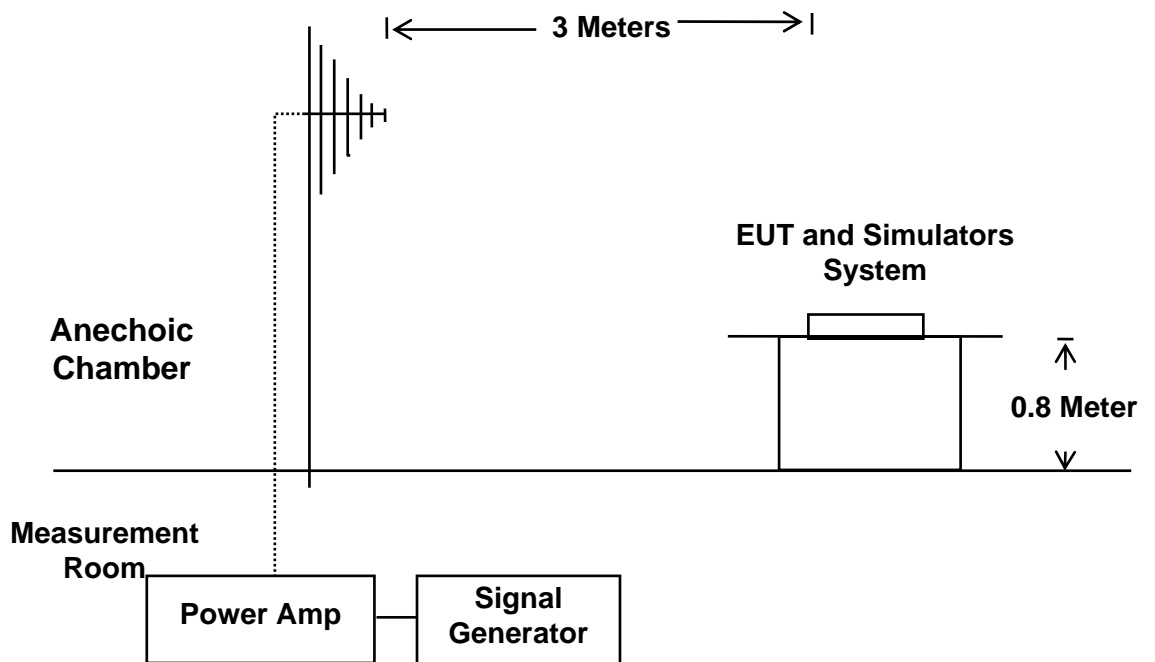
5.1. Block Diagram of Test Setup

5.1.1. Block Diagram of EUT Test Setup



(EUT: Wireless doorbell)

5.1.2.R/S Test Setup



(EUT: Wireless doorbell)

5.2. Test Standard

EN 61000-6-1:2007 (EN61000-4-3: 2006+A1:2008+A2:2010)

5.3. Severity Levels and Performance Criterion

Severity Level 2 at 3V / m, Severity Level:

Level	Field Strength V/m
1.	1
2.	3
3.	10
X.	Special

Performance criterion: **A**

5.4. EUT Configuration on Test

The configuration of EUT is listed in Section 3.4.

5.5. Operating Condition of EUT

- 5.5.1. Setup the EUT as shown in Section 5.1.
- 5.5.2. Turn on the power of all equipments.
- 5.5.3. Let the EUT work in test mode and test it.

5.6. Test Procedure

5.6.1. The EUT and its simulators are placed on a table that is 0.8 meter above the ground. The EUT is set 3 meters away from the transmitting antenna that is mounted on an antenna tower. Both horizontal and vertical polarizations of the antenna are set on test. Each of the four sides of EUT must be faced this transmitting antenna and measured individually. In order to judge the EUT performance, a CCD camera is used to monitor the EUT.

5.6.2. All the scanning conditions are as follows:

Condition of Test	Remarks
1. Fielded Strength	3 V/m (Severity Level 2)
2. Radiated Signal	Modulated
3. Scanning Frequency	80 - 1000 MHz
4. Sweeping time of radiated	0.0015 decade/s
5. Dwell Time	1 Sec.

5.7. Test Results

PASS.

Detailed information, Please refer to the following page.

RF Field Strength Susceptibility Test Results

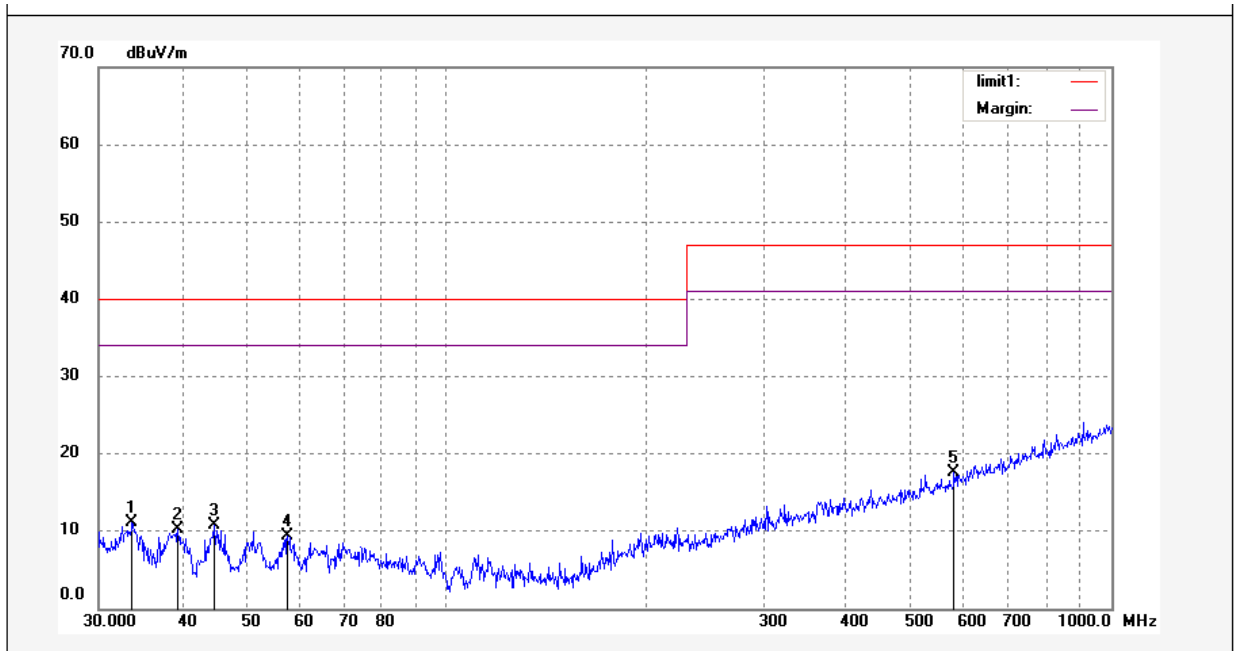
EUT	: Wireless doorbell	Temperature	: 23°C
M/N	: 5301	Humidity	: 56%
Power Supply	: DC 4.5V	Test Mode	: On
Modulation: <input checked="" type="checkbox"/> AM <input type="checkbox"/> Pulse <input type="checkbox"/> None 1 KHz 80%			
Frequency Range: 80MHz to 1000 MHz			
Steps	#	/	%
	Horizontal		Vertical
Front	Pass		Pass
Right	Pass		Pass
Rear	Pass		Pass
Left	Pass		Pass
Test Equipment: See Clause 2.			
Note:			

APPENDIX I

Radiated Emission Test Data

Radiated Emission

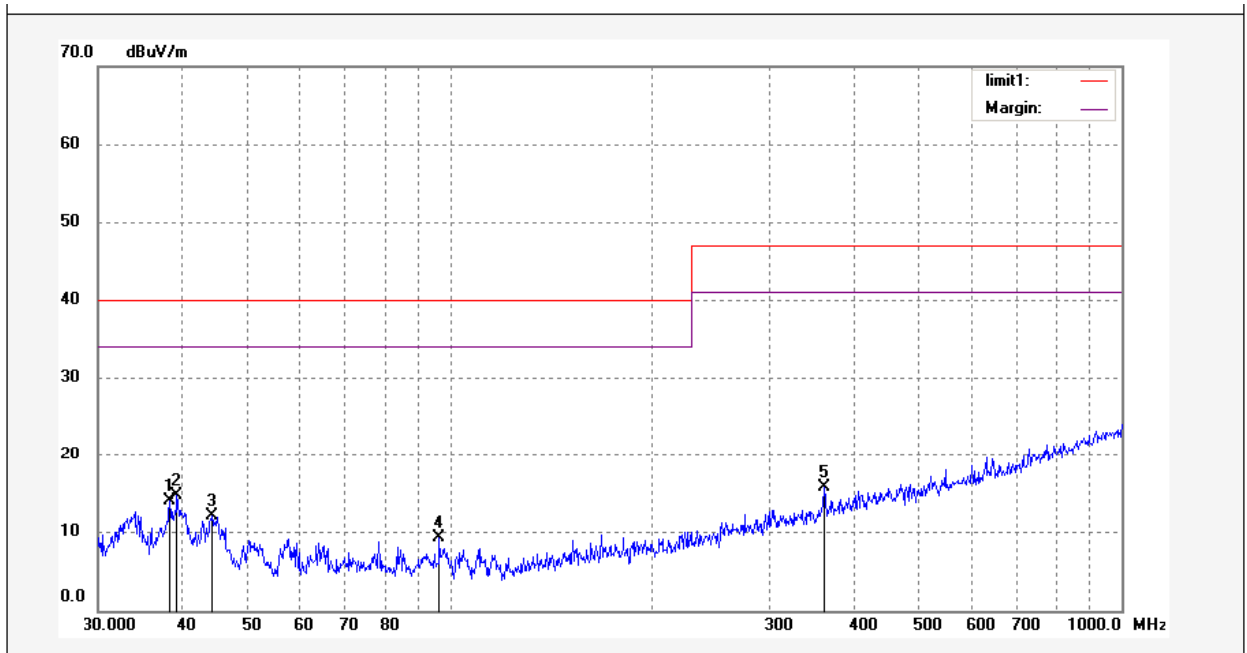
Engineer : Andy	
EUT : Wireless doorbell	Time : 2015/08/21
Limit : EN 61000-6-3	Comment : 23°C/56%
MN: 5301	Note : Hor



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	33.6802	30.21	-19.05	11.16	40.00	-28.84	peak			
2	39.4371	30.23	-20.03	10.20	40.00	-29.80	peak			
3	44.7433	31.10	-20.37	10.73	40.00	-29.27	peak			
4	57.5939	30.41	-21.01	9.40	40.00	-30.60	peak			
5	580.7026	29.73	-12.11	17.62	47.00	-29.38	peak			

Radiated Emission

Engineer : Andy	
EUT : Wireless doorbell	Time : 2015/08/21
Limit : EN 61000-6-3	Comment : 23°C/56%
MN: 5301	Note : Ver



No.	Freq. (MHz)	Reading (dBuV/m)	Factor (dB)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Degree (deg.)	Remark
1	38.3462	30.73	-16.56	14.17	40.00	-25.83	peak			
2	39.2991	31.11	-16.37	14.74	40.00	-25.26	peak			
3	44.2752	30.21	-17.99	12.22	40.00	-27.78	peak			
4	96.4362	31.23	-21.79	9.44	40.00	-30.56	peak			
5	361.7139	31.80	-15.88	15.92	47.00	-31.08	peak			

APPENDIX II

Photographs of the EUT

FIGURE 1



FIGURE 2

