




FCC PART 15.107, 109  
**EMI MEASUREMENT AND TEST REPORT**  
For

**Banda Star Industrial Limited**

Unit A,9/F.,Phase1.Leader Industrial Centre.188-202 Texaco Road, Tsuen Wan, N.T., Hongkong

**FCC ID: XAU19331**

Jul. 15, 2009

<b>This Report Concerns:</b> Original Report	<b>Equipment Type :</b> Wireless Door Chime
<b>Test Engineer:</b> Eric Li 	
<b>Report No.:</b> F09041208A	
<b>Receive EUT Date/Test Date:</b> Jul.1,2009/ Jul.1-15,2009	
<b>Reviewed By:</b> Christina 	
<b>Prepared By:</b>	 <b>Shenzhen BST Technology Co.,Ltd.</b> 3F,Weames Technology Building, No. 10 Kefa Road,Science Park, Nanshan District,Shenzhen,Guangdong,China Tel: 0755-26747751 ~ 3 Fax: 0755-26747751 ~ 3 ext.826

**Note:** The test report is specially limited to the above company and this particular sample only. It may not be duplicated without prior written consent of Shenzhen BST Technology Co.,Ltd. This report must not be used by the client to claim product certification,approval,or endorsement by NVLAP, NIST or any agency of the US Government.

## TABLE OF CONTENTS

<b>1.</b>	<b>GENERAL INFORMATION .....</b>	<b>3</b>
1.1.	Report information .....	3
1.2.	Measurement Uncertainty .....	3
<b>2.</b>	<b>PRODUCT DESCRIPTION .....</b>	<b>4</b>
2.1.	EUT Description .....	4
2.2.	Block Diagram of EUT Configuration.....	4
2.3.	Support Equipment List .....	4
2.4.	Test Conditions .....	4
<b>3.</b>	<b>FCC ID LABEL.....</b>	<b>5</b>
<b>4.</b>	<b>TEST RESULTS SUMMARY .....</b>	<b>6</b>
	Modifications .....	6
<b>5.</b>	<b>TEST EQUIPMENT USED .....</b>	<b>7</b>
<b>6.</b>	<b>CONDUCTED POWER LINE TEST .....</b>	<b>8</b>
6.1.	Test Equipment .....	8
6.2.	Test Procedure .....	8
6.3.	Test Setup.....	8
6.4.	Configuring of the EUT .....	8
6.5.	EUT Operating Condition.....	10
6.6.	Conducted Power line Emission Limits.....	10
6.7.	Conducted Power Line Test Result.....	10
<b>7.</b>	<b>RADIATION EMISSIONS .....</b>	<b>11</b>
7.1.	Test Equipment .....	11
7.2.	Test Procedure .....	11
7.3.	Radiated Test Setup .....	11
7.4.	Radiated Emission Limit.....	11
7.5.	EUT Operating Condition.....	12
7.6.	Radiated Emission Limit.....	12
7.7.	Radiated Emission Test Result .....	12

## **1. GENERAL INFORMATION**

### **1.1. Report information**

1.1.1. This report is not a certificate of quality; it only applies to the sample of the specific product/equipment given at the time of its testing. The results are not used to indicate or imply that they are application to the similar items. In addition, such results must not be used to indicate or imply that BST approves recommends or endorses the manufacture, supplier or use of such product/equipment, or that BST in any way guarantees the later performance of the product/equipment.

1.1.2. The sample/s mentioned in this report is/are supplied by Applicant, BST therefore assumes no responsibility for the accuracy of information on the brand name, model number, origin of manufacture or any information supplied.

Additional copies of the report are available to the Applicant at an additional fee. No third part can obtain a copy of this report through BST, unless the applicant has authorized BST in writing to do so.

Test Facility -

The test site used to collect the radiated data is located on the address of Solid Industrial Co., Ltd. (FCC Registered Test Site Number: 759397) on 333 Bulong Highway Buji, Longgang Shenzhen, Guangdong, China

The Test Site is constructed and calibrated to meet the FCC requirements.

### **1.2. Measurement Uncertainty**

Available upon request.

## 2. PRODUCT DESCRIPTION

### 2.1. EUT Description

Description : Wireless Door Chime

Applicant : Banda Star Industrial Limited  
Unit A, 9/F., Phase1.Leader Industrial Centre.188-202  
Texaco Road, Tsuen Wan, N.T., Hongkong

Model Number : 19330, 19331, 19332, 19333, 19334, 19335, 19336,  
19337

#### **Additonal Information**

Frequency : -

Power Supply : DC 6V ( Supplied by battery )

Maximum : N/A

Range

Transmitter : -

Antenna

Current N/A

Consumption

### 2.2. Block Diagram of EUT Configuration



### 2.3. Support Equipment List

1.	--	----
2.	--	-----
3.	--	-----

### 2.4. Test Conditions

Temperature: 23~25

Relative Humidity: 55~63 %

### 3. FCC ID LABEL

**FCC ID: XAU19331**

**Label Location on EUT**

**EUT Bottom View/ FCC ID Label Location**



#### 4. TEST RESULTS SUMMARY

##### FCC 15 Subpart B

Test Standards	Test Items	Test Results
FCC Part 15, Paragraph 15.107	Conducted Test	N/A
FCC Part 15, Paragraph 15.109	Radiated Test	Pass

Remark: “N/A” means “Not applicable.”

##### Modifications

No modification was made.

## 5. TEST EQUIPMENT USED

Equipment/Facilities	Manufacturer	Model #	Serial no.	Date of Cal.	Cal. Interval
Cable	Resenberger	N/A	NO.1	Mar 10 , 2009	1 Year
Cable	SCHWARZBECK	N/A	NO.2	Mar 10 , 2009	1 Year
Cable	SCHWARZBECK	N/A	NO.3	Mar 10 , 2009	1 Year
LISN	Rohde & Schwarz	ESH3-Z5	100305	Mar 10 , 2009	1 Year
50 Coaxial Switch	ANRITSU CORP	MP59B	6200283933	Mar 10, 2009	1 Year
EMI Test Receiver	Rohde & Schwarz	ESP13	100180	Oct.18,2008	1 Year
Spectrum Analyzer	Rohde & Schwarz	FSP40	100273	Sep.10,2008	1 Year
3m Semi-Anechoic Chamber	Albatross Projects	9mx6mx6m	N/A	Feb.20,2009	1 Year
Signal Generator	FLUKE	PM5418 + Y/C	LO747012	Feb.20,2009	1 Year
Signal Generator	FLUKE	PM5418TX	LO738007	Feb.20,2009	1 Year
Loop Antenna	SCHWARZBECK	FMZB1516	113	Jan.30,2009	1 Year
Trilog-Super Broadband Antenna	SCHWARZBECK	VULB9161	9161-4079	Sep.22,2008	1 Year
Broad-Band Horn Antenna	SCHWARZBECK	BBHA9120D	9120D-564	Sep.22,2008	1 Year
Ultra Broadband Antenna	Rohde & Schwarz	HL-562	100110	June.15,2008	1 Year
AMN	Rohde & Schwarz	ESH3-Z5	100196	Oct.11,2008	1 Year
AMN	Rohde & Schwarz	ESH3-Z5	100197	Oct.11,2008	1 Year
Pulse Limiter	Rohde & Schwarz	ESH3-Z2	N/A	N/A	N/A
Power Meter	Rohde & Schwarz	NRVD	100041	Feb.20,2009	1 Year
EMI Test Receiver	Rohde & Schwarz	ESCS30	100003	Feb.20,2009	1 Year
Coaxial Cable with N-connectors	SCHWARZBECK	AK9515H	95549	Sep.22,2008	1 Year
Radio Communication Test Set	Rohde & Schwarz	CMS 54	846621/024	Feb.20,2009	1 Year
Modulation Analyzer	Hewlett-Packard	8901B	2303A00362	Feb.20,2009	1 Year
Absorbing clamp	Rohde & Schwarz	MDS-21	N/A	Oct.29,2008	1 Year

## 6. CONDUCTED POWER LINE TEST

### 6.1. Test Equipment

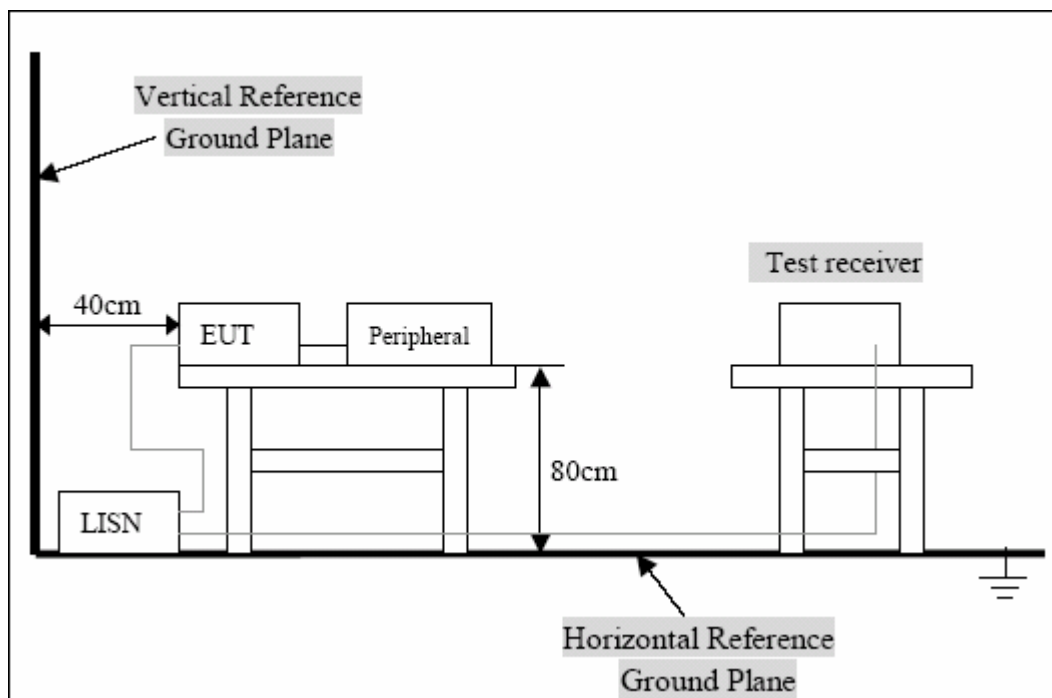
Please refer to section 4 this report.

### 6.2. Test Procedure

The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm/50uh coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uh coupling impedance with 50ohm termination.

Both sides of A.C. Line are checked for maximum conducted interference. In order to find the maximum emission, the relative positions of equipment and all of the interface cables must be changed according to ASIN C63.4:2003 on conducted measurement. Conducted emissions were measured over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9KHz.

### 6.3. Test Setup



For the actual test configuration, Please refer to the related items-Photos of testing

### 6.4. Configuring of the EUT

The EUT was configured according to ASIN C63.4:4-2003. Enable the signal transmitted from the external antenna from EUT to receiver. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

Note:

Below 1GHZ, the channel low, middle, high were pre-tested, The channel low, worst case one, was chosen for conducted and radiated emission test.

Above 1GHZ, the channel low, middle, high were tested individually.



## A.EUT

Device	Manufacturer	Model #	FCC ID
WIRELESS DOOR CHIME	BANDA STAR INDUSTRIAL LIMITED	19330, 19331, 19332, 19333, 19334, 19335, 19336, 19337	XAU19331

## B.Internal Devices

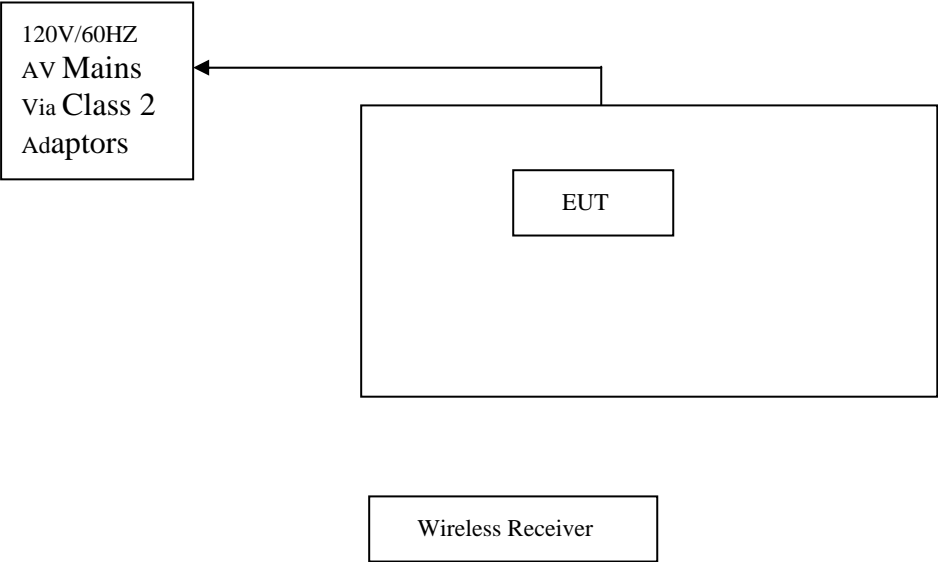
Device	Manufacturer	Model #	FCC ID
N/A			

## C.Peripherals

Device	Manufacturer	Model # Serial #	FCC ID/Doc	Cable
N/A				

6.5. EUT Operating Condition

Operating condition is according to ANSI C63.4-2003.  
Setup the EUT and simulators as shown on follow.  
Enable RF signal and confirm EUT active.  
Modulate output capacity of EUT up to specification.



6.6. Conducted Power line Emission Limits

FCC Part 15 Paragraph 15.107 (dBuv)		
Frequency Range (MHZ)	Class A QP/AV	Class B QP/AV
0.15-0.5	79/66	65-56/56-46
0.5-5.0	73/60	56/46
5.0-30	73/60	60/50

**Note:** In the above table, the tighter limit applies at the band edges.

6.7. Conducted Power Line Test Result

N/A

## 7. RADIATION EMISSIONS

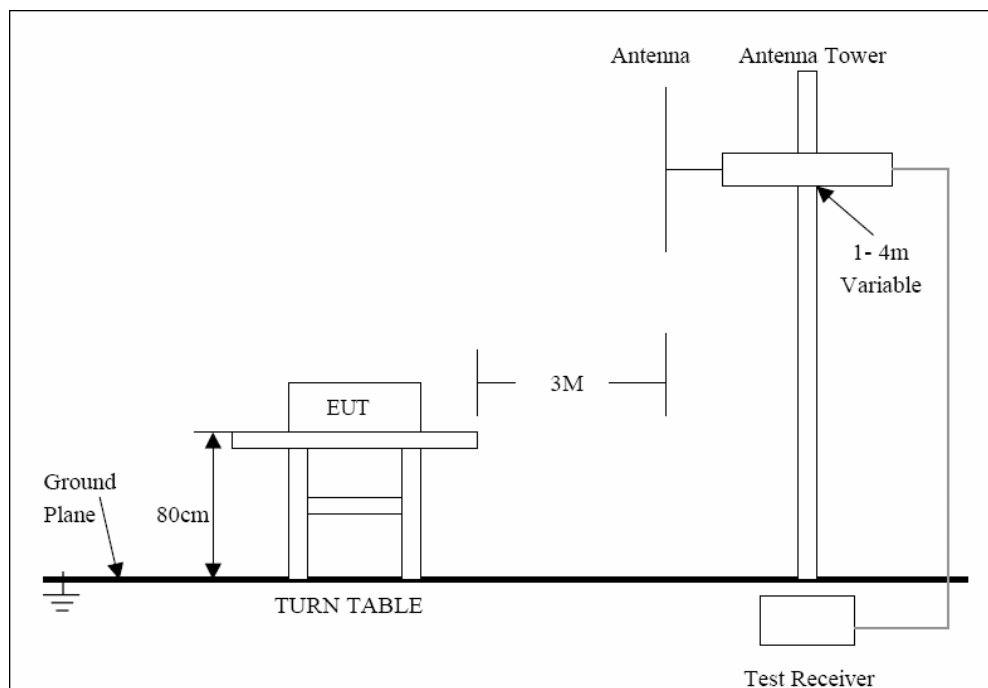
### 7.1. Test Equipment

Please refer to section 4 this report.

### 7.2. Test Procedure

1. The EUT was tested according C63.4-2003. The radiated test was performed at FCC Registration laboratory .
2. The EUT, peripherals were put on the turntable which table size of 1m×1.5m, table high 0.8m. All set up is according to ANSI C63.4-2003.
3. The frequency spectrum from 30MHz to 1 GHz was investigated. All readings from 30MHz to 1 GHz are quasi-peak values with a resolution bandwidth of 120 KHz. All readings are above 1GHz , peak values with a resolution bandwidth of 1 MHz. Measurements were made at 3 meters.
4. The antenna high is varied from 1m to 4m high to find the maximum emission for each frequency.
5. Maximizing procedure was performed on the six(6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 Db of specification limit), and are distinguished with a “QP” in the data table.
6. The antenna polarization: Vertical polarization and Horizontal polarization.

### 7.3. Radiated Test Setup



For the actual test configuration, please refer to the related items-photos of Testing.

### 7.4. Radiated Emission Limit

Same as section 5.4 of this report

### 7.5. EUT Operating Condition

Same as section 5.5 of this report.

### 7.6. Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below :

Limit

Frequency (MHZ)	Distance (m)	Field Strength (dBuV/m)
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
ABOVE 960	3	54.0

Note: (1) RF Voltage (DbUv)=20 log Voltage(Uv)

(2) 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) The emission limit in this paragraph is based on measurement instrumentation employing an average detector. Measurement using instrumentation with a peak detector function, corresponding to 20dB above the maximum permitted average limit.

### 7.7. Radiated Emission Test Result

Product:	Wireless Door Chime	Test mode:	-
Test Item:	Radiated Emission Data	Temperature:	25
Test Voltage:	DC 6V	Humidity:	56%RH
Test Result:	PASS		

Freq. (MHz)	Emission(dBuV/m) Peak Detector	HORIZ/ VERT	Limits(dBuV/m) Peak/ACERAGE	Margin (Db)
101.45	34.45	HORIZ	43.5	9.05
42.34	31.12	VERT	40	8.88
191.56	30.78	HORIZ	43.5	12.72
75.24	29.43	VERT	40	10.57
239.41	32.24	HORIZ	46.0	13.76
722.23	33.02	VERT	46.0	12.98