

APPLICATION FOR CERTIFICATION  
On Behalf of  
Darjung Industries Co., Ltd.  
Wireless Door Bell Receiver  
(Superheterodyne Receiver)

Model No. : RH-2000R-XXX

FCC ID : QJWRH2000R

Prepared for : Darjung Industries Co., Ltd.  
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## TABLE OF CONTENTS

<u>Description</u>	<u>Page</u>
TEST REPORT CERTIFICATION .....	3
<b>1. GENERAL INFORMATION .....</b>	<b>4</b>
1.1. Description of Device (EUT) .....	4
1.2. Description of Test Facility .....	5
1.3. Measurement Uncertainty .....	5
<b>2. POWERLINE CONDUCTED TEST .....</b>	<b>6</b>
<b>3. RADIATED EMISSION TEST .....</b>	<b>7</b>
3.1. Test Equipment .....	7
3.2. Block Diagram of Test Setup .....	7
3.3. Radiation Limit (§15.109, Class B) .....	8
3.4. UT's Configuration during Compliance Measurement .....	8
3.5. Operating Condition of EUT .....	8
3.6. Test Procedure .....	9
3.7. Radiated Emission Measurement Results .....	10
<b>4. DEVIATION TO TEST SPECIFICATIONS .....</b>	<b>12</b>
<b>5. PHOTOGRAPHS .....</b>	<b>13</b>
5.1. Photos of Radiated Measurement at Semi-Anechoic Chamber (30~1000MHz) .....	13
5.2. Photos of Radiated Measurement at Semi-Anechoic Chamber (1~3GHz) .....	15

# TEST REPORT CERTIFICATION

Applicant : Darjung Industries Co., Ltd.  
 Manufacturer : Zhuhai Comfort Electronic Inc.  
 EUT Description : Wireless Door Bell Receiver (Superheterodyne Receiver)  
 FCC ID : QJWRH2000R  
 (A) MODEL NO. : RH-2000R-XXX  
 (B) SERIAL NO. : N/A  
 (C) POWER SUPPLY : 4.5V DC

Measurement Procedure Used:

FCC RULES AND REGULATIONS PART 15 SUBPART B, MAY 2002  
AND ANSI C63.4-1992

The device described above was tested by TAIWAN TOKIN EMC ENG. CORP. to determine the maximum emission levels emanating from the device. The maximum emission levels were compared to the FCC Part 15 subpart B limits both radiated and conducted emissions.

The measurement results are contained in this test report and TAIWAN TOKIN EMC ENG. CORP. is assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliant with the FCC official limits.

This report applies to above tested sample only. This report shall not be reproduced in part without written approval of Taiwan Tokin EMC Eng. corp.

Date of Test : Jul. 26, 2002

Prepared by : Cherry Wang Aug. 16 2002  
(Cherry Wang/Assistant Manager)

Test Engineer : Allen Wang Aug. 16 2002  
(Allen Wang/Deputy Manager)

Approve & Authorized Signer : Leon Liu Aug 16 2002  
(Leon Liu/Manager)

## 1. GENERAL INFORMATION

### 1.1. Description of Device (EUT)

Description : Wireless Door Bell Receiver  
 (Superheterodyne Receiver)  
 Model Number : RH-2000R-XXX  
 The “XXX” are number 0 ~ 9 or Blank for  
 different styles of the appearance.  
 FCC ID : QJWRH2000R  
 Applicant : Darjung Industries Co., Ltd.  
 No. 15, Hau-Chou-Tzu Rd., Tamsui Chen,  
 251 Taipei Hsien, Taiwan.  
 Manufacturer : Zuhai Comfort Electronic Inc.  
 Hong Gi Industrial Area, Zuhai City,  
 GuangDong, China  
 Receiving Frequency : 312MHz  
 Date of Receipt of Sample : Jul. 23, 2002  
 Date of Test : Jul. 26, 2002

Wireless Door Bell Remote Control/Transmitter  
 Model Number : CL-2050T-XXX  
 Serial Number : N/A  
 FCC ID : QJWCL2050T  
 Manufacturer : Zuhai Comfort Electronic Inc.  
 Fundamental Frequency : 312MHz

## 1.2. Description of Test Facility

Semi-Anechoic Chamber : May 16, 2000 Re-file on  
 Description Federal Communication Commission  
 Registration Number: 90993

Name of Firm : Taiwan Tokin EMC Eng. Corp.

Site Location #1 : No. 53-11, Tin-Fu Tsun, Lin-Kou,  
 Taipei Hsien, Taiwan, R.O.C.

Site Location #2 : No. 67-4, Tin-Fu Tsun, Lin-Kou,  
 Taipei Hsien, Taiwan, R.O.C.

NVLAP Lab Code : 200077-0

## 1.3. Measurement Uncertainty

Test Item	Frequency Range	Uncertainty (dB)
Conduction Test	150KHz~30MHz	±2.66dB
Radiation Test (Distance: 3m)	30MHz~300MHz 300MHz~1000MHz	+4.26dB / -4.22dB +5.28dB / -4.0dB

Remark : Uncertainty =  $K\mu c(y)$

## 2. POWERLINE CONDUCTED TEST

【The EUT only employ battery power for operation, no conductive emissions limits are required according to FCC Part 15 Section §15.107】

### 3. RADIATED EMISSION TEST

#### 3.1. Test Equipment

The following test equipment are used during the radiated emission tests :

##### 3.1.1. For 30MHz~1000MHz Frequency (at Semi-Anechoic Chamber)

Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	HP	8593EM	3826A00248	Sep. 04, 01'	1 Year
2.	Test Receiver	Rohde&Schwarz	ESVP	879691/036	Jun.09, 02'	1 Year
3.	Pre-Amplifier	HP	8447D	2944A06305	Mar.05, 02'	1 Year
4.	Broadband Antenna	Schwarzbeck	BBA 9106	A3L	Jan. 08, 02'	1 Year
5.	Broadband Antenna	Schwarzbeck	UHALP9108-A	0139	Jan. 08, 02'	1 Year

##### 3.1.2. For 1GHz~3GHz frequency (at Semi-Anechoic Chamber)

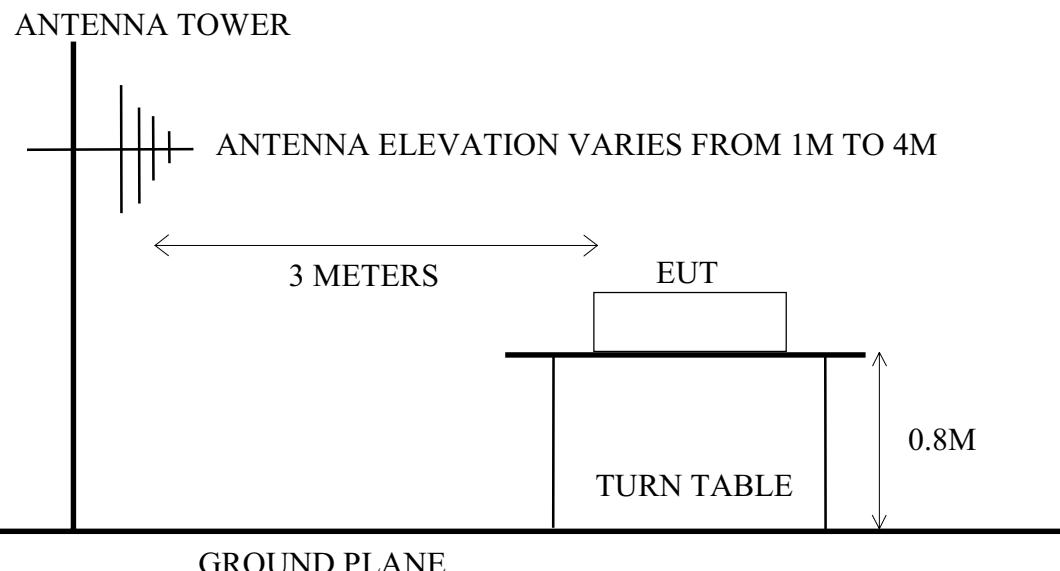
Item	Type	Manufacturer	Model No.	Serial No.	Last Cal.	Cal. Interval
1.	Spectrum Analyzer	HP	8593EM	3826A00248	Sep.04, 01'	1 Year
2.	Amplifier	HP	8449B	3008A00529	Jan.05, 02'	1 Year
3.	Horn Antenna	EMCO	3115	9112-3775	Apr.16, 02'	1 Year

#### 3.2. Block Diagram of Test Setup

##### 3.2.1. Block Diagram of connection between EUT and simulators



##### 3.2.2. Open Field Test Site (3M) Setup Diagram



### 3.3. Radiation Limit (§15.109, Class B)

All emanations from a class B computing devices or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified below:

FREQUENCY MHz	DISTANCE (METERS)	FIELD STRENGTHS LIMITS	
		µV/m	dBµV/m
30 ~ 88	3	100	40.0
88 ~ 216	3	150	43.5
216 ~ 960	3	200	46.0
Above 960	3	500	54.0
Over 1GHz (*4)	3	---	74.0 (Peak)

Remark : (1) Emission level (dBµV/m) = 20 log Emission level (µV/m)  
 (2) The tighter limit applies at the edge 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.  
 (4) The over 1GHz limit, FCC limit is used based on CFR 47 Part 15.35 (b) and Part 15.109 (g).

### 3.4. EUT's Configuration during Compliance Measurement

The following equipment were installed on radiated measurement to meet the commission requirement and operating in a manner which tended to maximize its emission characteristics in a normal application.

#### 3.4.1. Wireless Door Bell Receiver (EUT)

Model Number	:	RH-2000R-XXX
Serial Number	:	N/A
FCC ID	:	QJWRH2000R
Manufacturer	:	Zhuhai Comfort Electronic Inc.

### 3.5. Operating Condition of EUT

- 3.5.1. Setup the EUT and simulator as shown on 3.2.
- 3.5.2. Turned on the power of all equipment.
- 3.5.3. The EUT (Wireless Door Bell Receiver) was received the fundamental frequency with data code from the transmitter activating.
- 3.5.4. Repeated the above procedures 3.5.3.

### 3.6. Test Procedure

The EUT and its simulators were placed on a turn table which was 0.8 meter above the ground. The turn table rotated 360 degrees to determine the position of the maximum emission level. For 30MHz to 3GHz frequency range, EUT was set 3 meters away from the receiving antenna which was mounted on a antenna tower. The antenna moved up and down between 1 to 4 meters for 30MHz to 3GHz frequency range to find out the maximum emission level. Broadband antenna such as calibrated biconical and log- periodical antenna or horn antenna were used as a receiving antenna. Both horizontal and vertical polarization of the antenna were set on measurement. In order to find the maximum emission, all of the interface cables were manipulated according to ANSI C63.4-1992 on radiated measurement.

The bandwidth of test receiver was set at 120KHz and resolution bandwidth of spectrum analyzer was set at 1MHz.

The frequency range from 30MHz to 3GHz was checked. (Measurement was up to 10th harmonic of receiving frequency)

All the test results are listed in section 3.7.

### 3.7. Radiated Emission Measurement Results

**PASSED.** All the test results are listed in the following pages.

The frequency spectrum from 30 MHz to 3GHz is investigated. All the emissions not reported below are too low against the FCC official limits.

Date of Test : Jul. 26, 2002 Temperature : 23°C

EUT : Wireless Door Bell Receiver Humidity : 65%

Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Horizontal dB $\mu$ V	Emission Level Horizontal dB $\mu$ V/m	Limits dB $\mu$ V/m	Margin dB
91.290	15.10	2.00	2.22	19.32	43.50	24.18
118.830	18.80	2.30	0.82	21.92	43.50	21.58
151.230	20.72	2.60	0.83	24.15	43.50	19.35
295.950	26.68	4.00	3.33	34.01	46.00	11.99
<b>*</b> 312.410	<b>14.52</b>	<b>4.00</b>	<b>15.98</b>	<b>34.50</b>	<b>46.00</b>	<b>11.50</b>
343.400	15.46	4.34	1.39	21.19	46.00	24.81
624.100	19.70	6.20	1.82	27.72	46.00	18.28
834.100	22.30	7.10	0.73	30.13	46.00	15.87
946.800	23.20	7.50	1.20	31.90	46.00	14.10

Remark :

1. All reading are Quasi-Peak values.
2. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
3. '\*' The worst emission is detected at 312.410MHz with corrected signal level of 34.50dB $\mu$ V/m (limit is 46.0dB $\mu$ V/m) when the antenna is at horizontal polarization and is at 1m high and the turn table is at 135° .
4. 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.
5. Measurement was up to 3GHz, but above 1GHz the emissions level were too low against the official limit and not report.

Date of Test : Jul. 26, 2002 Temperature : 23°CEUT : Wireless Door Bell Receiver Humidity : 65%

Frequency MHz	Antenna Factor dB/m	Cable Loss dB	Meter Reading Vertical dB $\mu$ V	Emission Level Vertical dB $\mu$ V/m	Limits dB $\mu$ V/m	Margin dB
37.290	20.80	1.20	2.99	24.99	40.00	15.01
45.930	17.25	1.40	4.29	22.94	40.00	17.06
84.000	14.35	1.90	2.24	18.49	40.00	21.51
155.280	21.28	2.63	1.25	25.16	43.50	18.34
* <b>312.410</b>	<b>14.50</b>	<b>4.00</b>	<b>12.74</b>	<b>31.24</b>	<b>46.00</b>	<b>14.76</b>
348.300	15.60	4.31	4.03	23.94	46.00	22.06
365.800	15.50	4.50	4.56	24.56	46.00	21.44
600.300	20.40	6.30	3.77	30.47	46.00	15.53
624.800	19.58	6.20	5.32	31.10	46.00	14.90

Remark :

1. All reading are Quasi-Peak values.
2. Emission Level = Antenna Factor + Cable Loss + Meter Reading.
3. '\*' The worst emission is detected at 312.410MHz with corrected signal level of 31.24dB $\mu$ V/m (limit is 46.0dB $\mu$ V/m) when the antenna is at vertical polarization and is at 1.2m high and the turn table is at 15° .
4. 0° was the table front facing the antenna. Degree is calculated from 0° clockwise facing the antenna.
5. Measurement was up to 3GHz, but above 1GHz the emissions level were too low against the official limit and not report.

#### 4. DEVIATION TO TEST SPECIFICATIONS

【NONE】

## ***EXHIBIT 5***

*User's Manual*

*User's Manual*