

Advanced  
Compliance Laboratory

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## ELECTROMAGNETIC EMISSION COMPLIANCE REPORT

of

WIRELESS DOOR BELL TRANSMITTER

MODEL: SC321T

FCC ID: QZHSCILSC321T

*November 11, 2004*

This report concerns (check one): Original grant ☒ Class II change ☐  
Equipment type: Low Power Intentional Radiator

Deferred grant requested per 47 CF 0.457(d)(1)(ii)? yes ☐ no ☒  
If yes, defer until: \_\_\_\_\_ (date)  
Company agrees to notify the Commission by \_\_\_\_\_ (date)  
of the intended date of announcement of the product so that the grant can be  
issued on that date.

Transition Rules Request per 15.37? yes ☐ no ☒  
If no, assumed Part 15, Subpart B for unintentional radiators - the new 47 CFR  
[10-1-90 Edition] provision.

Report prepared for: Styling City Industries Ltd.  
Report prepared by: Advanced Compliance Lab  
Report number: 0048-041108-01



The test result in this report IS supported and covered by the NVLAP accreditation

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# 1. GENERAL INFORMATION

## 1.1 Verification of Compliance

EUT: WIRELESS DOOR BELL TRANSMITTER

Model: SC321T

Applicant: Styling City Industries Ltd.  
Unit 418, International Plaza, 20 Sheung Yuet Road  
Lowloon Bay, Kowloon, Hong Kong

Test Type: FCC Part 15C CERTIFICATION

Result: PASS

Tested by: ADVANCED COMPLIANCE LABORATORY

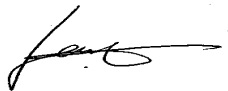
Test Date: November 11, 2004

Report Number: 0048-041108-01

The above equipment was tested by Compliance Laboratory, Advanced Technologies, Inc. for compliance with the requirement set forth in the FCC rules and regulations Part 15 subpart C. This said equipment in the configuration described in the report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

The estimated uncertainty of the test result is given as following. The method of uncertainty calculation is provided in Advanced Compliance Lab. Doc. No. 0048-01-01.

|                                 | Prob. Dist. | Uncertainty(dB) | Uncertainty(dB) | Uncertainty(dB) |
|---------------------------------|-------------|-----------------|-----------------|-----------------|
|                                 |             | 30-1000MHz      | 1-6.5GHz        | Conducted       |
| Combined Std. Uncertainty $u_c$ | norm.       | $\pm 2.36$      | $\pm 2.99$      | $\pm 1.83$      |



Wei Li  
Lab Manager  
Advanced Compliance Lab

Date: November 11, 2004

## **1.2 Equipment Modifications**

N/A

### 1.3 Product Information

#### System Configuration

| ITEM            | DESCRIPTION                               | FCC ID        | CABLE |
|-----------------|-------------------------------------------|---------------|-------|
| Product         | WIRELESS DOOR BELL TRANSMITTER SC321T     | QZHSCILSC321T |       |
| Housing         | PLASTICS                                  |               |       |
| Power Supply    | 3V DC Battery                             |               |       |
| Operation Freq. | 434 MHz                                   |               |       |
| Device Type     | Low Power Periodical Intentional Radiator |               |       |

(1) EUT submitted for grant.

### 1.4 Test Methodology

Radiated tests were performed according to the procedures in ANSI C63.4-2001 at an antenna to EUT distance of 3 meters.

### 1.5 Test Facility

The open area test site and conducted measurement facility used to collect the radiated and conducted data are located at Hillsborough, New Jersey. This site has been accepted by FCC to perform measurements under Part 15 or 18 in a letter dated May 19, 1997 (Refer to: 31040/PRV 1300F2). The NVLAP Lab code for accreditation of FCC EMC Test Method is: 200101-0.

### 1.6 Test Equipment

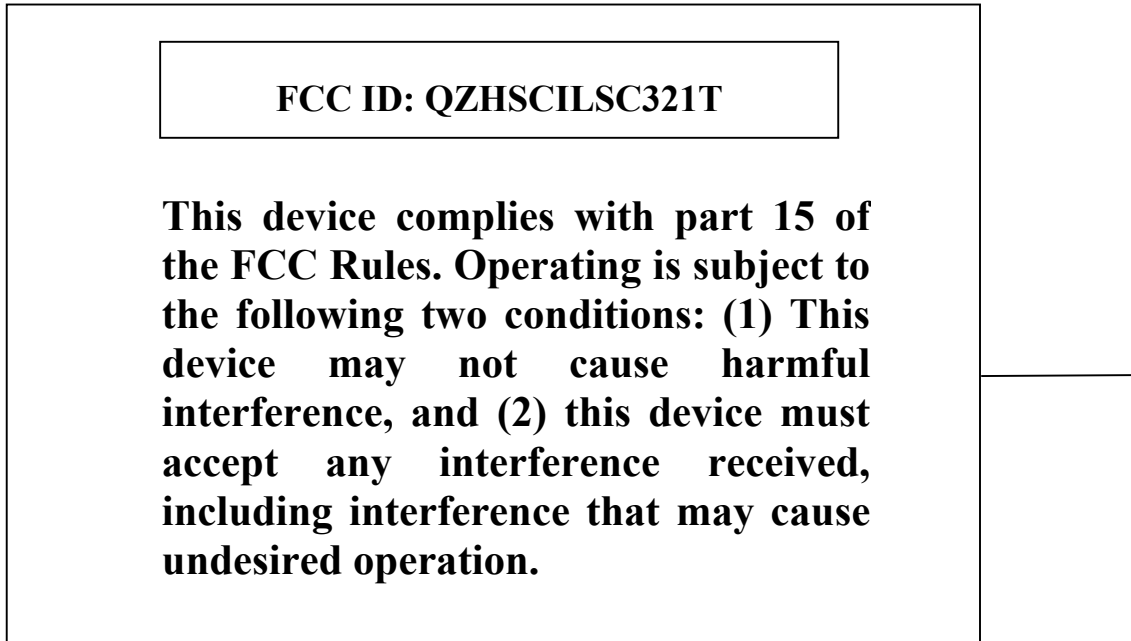
| Manufacture     | Model   | Serial No. | Description                           | Last Cal<br>dd/mm/y<br>y | Cal Due<br>dd/mm/y<br>y |
|-----------------|---------|------------|---------------------------------------|--------------------------|-------------------------|
| Hewlett-Packard | HP8546A | 3625A00341 | EMI Receiver                          | 12/01/04                 | 12/01/05                |
| EMCO            | 3104C   | 9307-4396  | 20-300MHz Biconical Antenna           | 12/02/04                 | 12/02/05                |
| EMCO            | 3146    | 9008-2860  | 200-1000MHz Log-Periodic Antenna      | 09/02/04                 | 09/02/05                |
| Fischer Custom  | LISN-2  | 900-4-0008 | Line Impedance Stabilization Networks | 03/07/04                 | 03/07/05                |
| Fischer Custom  | LISN-2  | 900-4-0009 | Line Impedance Stabilization Networks | 03/07/04                 | 03/07/05                |
| EMCO            | 6502    | 2665       | 10KHz-30MHz Active Loop Antenna       | 27/02/04                 | 27/02/05                |
| EMCO            | 3115    | 4945       | Double Ridge Guide Horn Antenna       | 15/09/04                 | 15/09/05                |

All Test Equipment Used are Calibrated Traceable to NIST Standards.

### **1.7 Statement for the Document Use**

This report shall not be reproduced except in full, without the written approval of the laboratory. And this report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government.

## 2. PRODUCT LABELING



**Figure 2.1 FCC ID Label**



**Figure 2.2 FCC ID Label Location**

### **3. SYSTEM TEST CONFIGURATION**

#### **3.1 Justification**

The system was configured for testing in a typical fashion (as a customer would normally use it). And its antenna was permanently attached to the EUT.

#### **3.2 Special Accessories**

N/A

#### **3.3 Configuration of Tested System**

Figure 3.1 to Figure 3.3 illustrate this system, which was tested standing along.



**Figure 3.1 Radiated Test Setup-Position X**

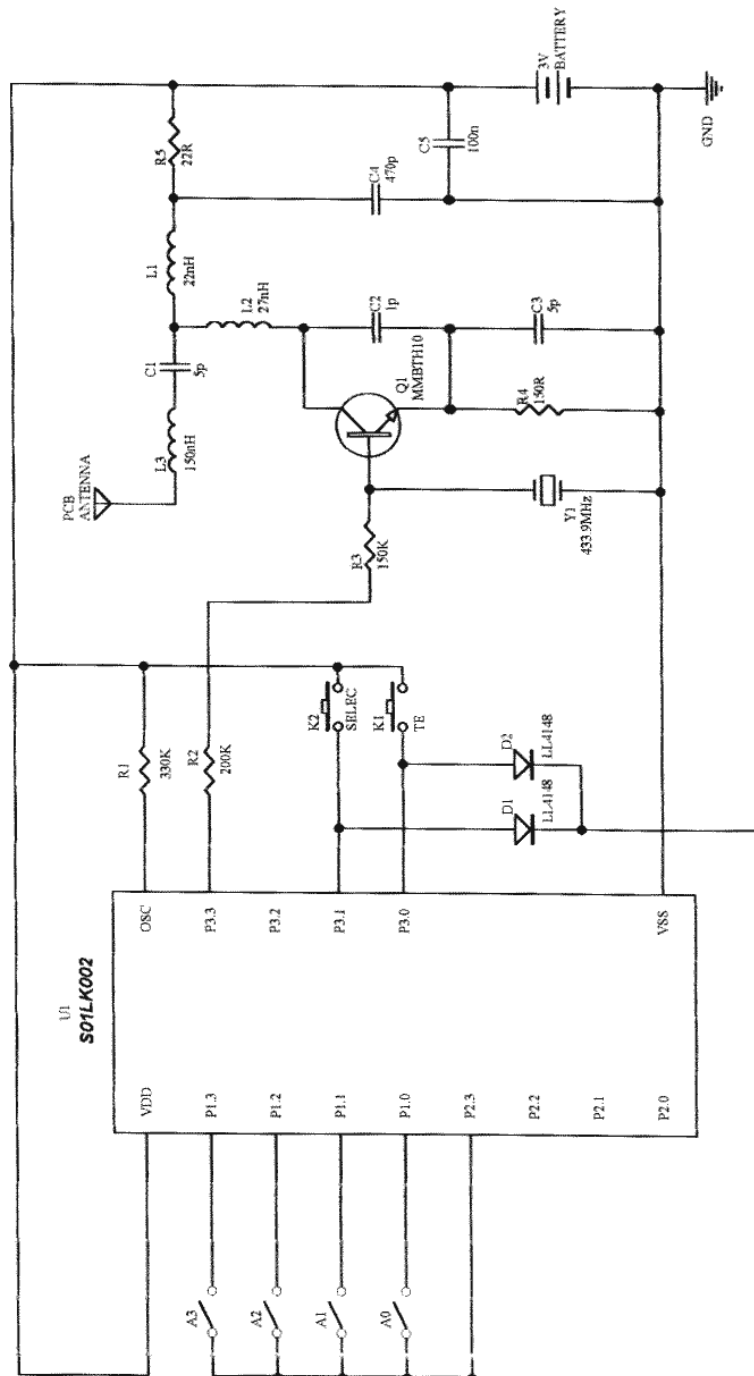


**Figure 3.2 Radiated Test Setup-Position Y**



**Figure 3.3 Radiated Test Setup-Position Z**

## 4. SYSTEM SCHEMATICS



**Figure 4.1 System Schematics**

## 5. RADIATED EMISSION DATA

### 5.1 Field Strength Calculation

The corrected field strength is automatically calculated by EMI Receiver using following:

$$FS = RA + AF + CF + AG$$

where FS: Corrected Field Strength in dB $\mu$ V/m

RA: Amplitude of EMI Receiver before correction in dB $\mu$ V

AF: Antenna Factor in dB/m

CF: Cable Attenuation Factor in dB

AG: Built-in Preamplifier Gain in dB (Stored in receiver as part of the calibration data)

### 5.2 Test Methods and Conditions

The initial step in collecting radiated data is a EMI Receiver scan of the measurement range below 30MHz using peak detector and 9KHz IF bandwidth / 30KHz video bandwidth. For the range 30MHz - 1GHz, 120KHz IF bandwidth / 120KHz video bandwidth are used. Both bandwidths are 1MHz for above 1GHz measurement. Up to 10<sup>th</sup> harmonics were investigated.

### 5.3 Test Data

The following data lists the significant emission frequencies, polarity and position, peak reading of the EMI Receiver, the FCC limit, and the difference between the peak reading and the limit. Explanation of the correction and calculation are given in section 5.1.

Test Personnel:



Typed/Printed Name: Edward Lee

Date: November 11, 2004

**Radiated Test Data**

| <b>Radiated Test Data</b> |                                              |               |                     |                                   |                                   |                                  |
|---------------------------|----------------------------------------------|---------------|---------------------|-----------------------------------|-----------------------------------|----------------------------------|
| Frequency<br>(MHz)        | Polarity<br>[H or V],<br>Position<br>[X,Y,Z] | Height<br>(m) | Azimuth<br>(Degree) | Peak<br>Reading<br>(dB $\mu$ V/m) | FCC<br>3m Limit<br>(dB $\mu$ V/m) | Difference<br>from limit<br>(dB) |
| 434                       | H-X <sup>(1)</sup>                           | 1.3           | 10                  | 74.6                              | 80.8 <sup>(3)</sup>               | -6.2                             |
| 868                       | H-X                                          | 1.3           | 45                  | 47.9                              | 60.8 <sup>(4)</sup>               | -12.9                            |
| 1302                      | H-X                                          | 1.3           | 10                  | 43.2                              | 54.0 <sup>(2)</sup>               | -10.8                            |
| 434                       | H-Y                                          | 1.2           | 10                  | 77.0                              | 80.8                              | -3.8                             |
| 868                       | H-Y                                          | 1.2           | 0                   | 52.7                              | 60.8                              | -8.1                             |
| 1302                      | H-Y                                          | 1.2           | 0                   | 48.2                              | 54.0                              | -5.8                             |
| 1736                      | H-Y                                          | 1.2           | 350                 | 41.8                              | 60.8                              | -19.0                            |
| 434                       | H-Z                                          | 1.3           | 10                  | 77.5                              | 80.8                              | -3.3                             |
| 868                       | H-Z                                          | 1.3           | 340                 | 52.1                              | 60.8                              | -8.7                             |
| 1302                      | H-Z                                          | 1.3           | 40                  | 45.5                              | 54.0                              | -8.5                             |
| 1736                      | H-Z                                          | 1.3           | 340                 | 41.9                              | 60.8                              | -18.9                            |
| 434                       | V-X                                          | 1.1           | 10                  | 78.8                              | 80.8                              | -2.0                             |
| 868                       | V-X                                          | 1.1           | 10                  | 57.9                              | 60.8                              | -2.9                             |
| 1302                      | V-X                                          | 1.1           | 10                  | 48.4                              | 54.0                              | -5.6                             |
| 1736                      | V-X                                          | 1.1           | 0                   | 42.3                              | 60.8                              | -18.5                            |
| 434                       | V-Y                                          | 1.2           | 300                 | 71.3                              | 80.8                              | -9.5                             |
| 868                       | V-Y                                          | 1.2           | 350                 | 54.1                              | 60.8                              | -6.7                             |
| 1302                      | V-Y                                          | 1.2           | 45                  | 45.9                              | 54.0                              | -8.1                             |
| 1736                      | V-Y                                          | 1.2           | 45                  | 44.5                              | 60.8                              | -16.3                            |
| 434                       | V-Z                                          | 1.2           | 270                 | 70.3                              | 80.8                              | -10.5                            |
| 868                       | V-Z                                          | 1.2           | 280                 | 51.2                              | 60.8                              | -9.5                             |
| 1302                      | V-Z                                          | 1.2           | 300                 | 43.7                              | 54.0                              | -10.3                            |

(1) See Figure 3.1, 3.2 and 3.3 for definition of position X, Y, Z.

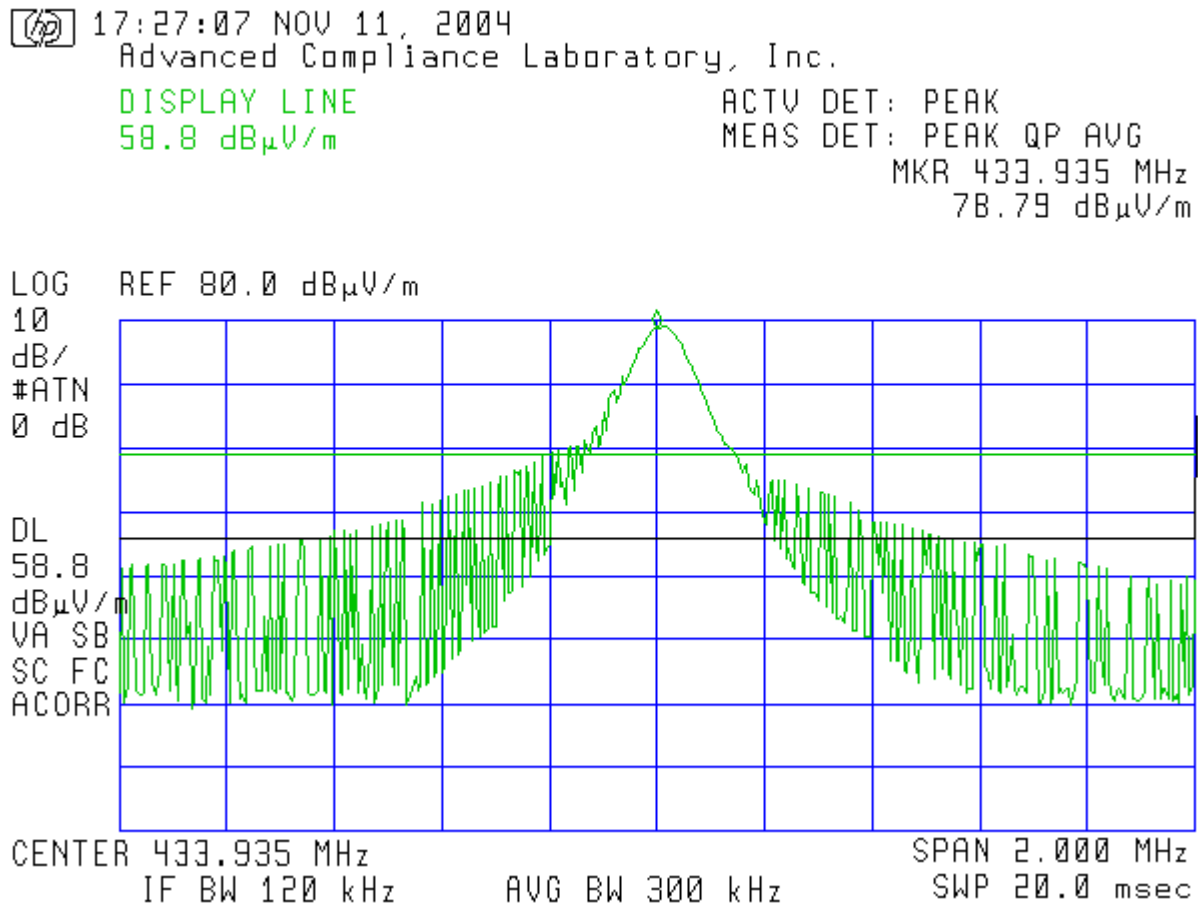
(2) Restricted band per 15.205.

(3) Fundamental limit is 3750-12500 microvolts/meter linear interpolations per 15.231.

(4) Spurious limit is 375-1250 microvolts/meter linear interpolations per 15.231.

## 5.4 Occupied Bandwidth

The bandwidth of the emission shall be no wider than 0.25% of the center frequency, in this case, 1.085MHz(434x0.25%). Bandwidth is determined at the points 20dB down from the modulated carrier. Figure 5.1 shows the occupied bandwidth plot.



**Figure 5.1 Occupied Bandwidth**

## **6. PHOTOS OF TESTED EUT**

The following photos show the inside details of the EUT.