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Compliance Laboratory

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ELECTROMAGNETIC EMISSION COMPLIANCE REPORT

of

WIRELESS DOORBELL TRANSMITTER
MODEL: SC313T
FCC ID: QZHSCILSC313T

March 27, 2003

This report concerns (check one): Original grant ☒ Class II change ☐ Equipment type: <u>TRANSMITTER</u>	
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:	0048-030318-03



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

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1. GENERAL INFORMATION

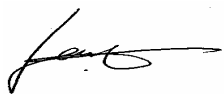
1.1 Verification of Compliance

EUT: WIRELESS DOORBELL TRANSMITTER
 Model: SC313T
 Applicant: STYLING CITY INDUSTRIES LTD.
 Test Type: FCC Part 15C CERTIFICATION
 Result: PASS
 Tested by: ADVANCED COMPLIANCE LAB
 Test Date: March 27, 2003
 Report Number: 0048-030318-03

The above equipment was tested by Advanced Compliance Lab. Compliance Laboratory 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.	± 2.36	± 2.99	± 1.83



Wei Li
 Lab Manager
 Advanced Compliance Lab

Date: March 27, 2003

1.2 Equipment Modifications

N/A

1.3 Product Information

System Configuration

ITEM	DESCRIPTION	FCC ID	CABLE
Product	TRANSMITTER:SC313T	QZHSILSC313T(1)	
Housing	PLASTIC		
Power Supply	12V DC BATTERY		
Clock/OSC Freq.	434 MHz		
Device Type	Periodic Operation 15.231		
Receiver	SC315R/318R	DoC: SC315R/318R	

(1) EUT submitted for grant.

1.4 Test Methodology

Radiated tests were performed according to the procedures in ANSI C63.4-1992 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 Somerset, 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 dd/mm/y	Cal Due dd/mm/y
Hewlett-Packard	HP8546A	3625A00341	EMI Receiver	23/10/02	23/10/03
EMCO	3115	4945	Double Ridge Guide Horn Antenna	28/06/02	28/06/03
EMCO	3104C	9307-4396	20-300MHz Biconical Antenna	19/09/02	19/09/03
EMCO	3146	9008-2860	200-1000MHz Log-Periodic Antenna	27/09/02	27/09/03
Fischer Custom	LISN-2	900-4-0008	Line Impedance Stabilization Networks	03/07/02	03/07/03
Fischer Custom	LISN-2	900-4-0009	Line Impedance Stabilization Networks	03/07/02	03/07/03

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

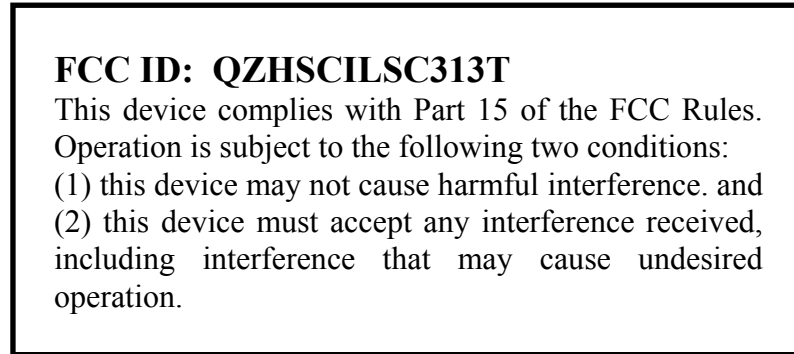


Figure 2.1 FCC ID Label

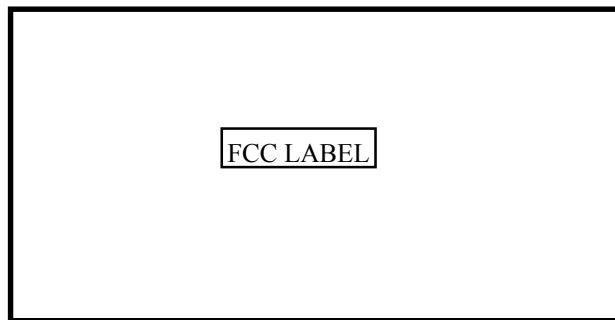


Figure 2.2 Location of Label on Back of the EUT

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 (Made on the PCB). One LED is located on the front appearance.

This manually operated transmitter will continuously transmit signal during a time period of 2 seconds after the button is pressed. And it will deactivate after this 2s period till the button is pressed again.

3.2 Special Accessories

N/A

3.3 Configuration of Tested System

Figure 3.1 and Figure 3.3 illustrate this system, which is tested standing along.



Figure 3.1 Radiated Test Setup, Position 1-X



Figure 3.2 Radiated Test Setup, Position 2 -Y



Figure 3.3 Radiated Test Setup, Position 3-Z

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 μ V/m

RA: Amplitude of EMI Receiver before correction in dB μ 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)

The pulse train timing plots are showed in the attachment.

The pulse train timing plots as follows:

Each cycle is 22ms. For the duration 0.1s, count 5 pulse trains,

Coeff. = $20 \log((5 \times 12)(6 \times 0.33 + 7 \times 0.67)/100) = -10.2\text{dB}$

The maximum average field strength should be 0.31 of the peak field strength measured for 100ms duration. So we use peak value minus 10.2dB as calculated maximum average field strength.

5.2 Test Methods and Conditions

The EUT exercise program was loaded during the radiated emission test. The initial step in collecting radiated data is a EMI Receiver scan of the measurement range 30MHz - 5GHz using peak detector. IF bandwidth is 120kHz and video bandwidth is 300kHz for measuring 30MHz-1GHz. Both bandwidth are 1MHz for above 1GHz measurement.

5.3 Test Data

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

Test Personnel:

Typed/Printed Name: Edward Lee

Date: March 27, 2003

Radiated Test Data

Frequency (MHz)	Polarity [H or V], Position (X,Y,Z)	Height (m)	Azimuth (Degree)	Peak Reading (dBμV/m)	Calculated Average Reading (dBμV/m)	FCC 3m Limit (dBμV/m)	Difference from limit (dB)
434.0	H,X(1)	1.2	20	76.5	66.3	80.8(3)	-14.5
868.1	H,X	1.2	40	51.2	41	60.8(4)	-19.8
1302.0	H,X	1.1	30	51.7	41.5	54.0(2)	-12.5
1736.2	H,X	1.1	30	48.1	37.9	60.8	-22.9
434.0	V,X	1.1	20	70.1	59.9	80.8	-20.9
868.1	V,X	1.1	30	44.6	34.4	60.8	-26.4
1302.1	V,X	1.2	30	46.1	35.9	54.0	-18.1
434.0	H,Y	1.1	40	74.7	64.5	80.8	-16.3
868.1	H,Y	1.2	50	50.1	39.9	60.8	-20.9
1302.1	H,Y	1.2	60	49.3	39.1	54.0	-14.9
434.0	V,Y	1.2	30	71.5	61.3	80.8	-19.5
868.1	V,Y	1.3	40	48.5	38.3	60.8	-22.5
434.0	H,Z	1.2	70	68.6	58.4	80.8	-22.4
868.1	H,Z	1.2	60	47.1	36.9	60.8	-23.9
1302.1	H,Z	1.1	50	47.0	36.8	54.0	-17.2
434.0	V,Z	1.1	60	84.5	74.3	80.8	-6.5
868.1	V,Z	1.1	50	53.5	43.3	60.8	-17.5
1302.1	V,Z	1.1	60	53.6	43.4	54.0	-10.6
1736.2	V,Z	1.1	50	48.5	38.3	60.8	-22.5

(1) See Figure 3.1, 3.2 and 3.3 for definition of position X-1, Y-2, Z-3.

(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.

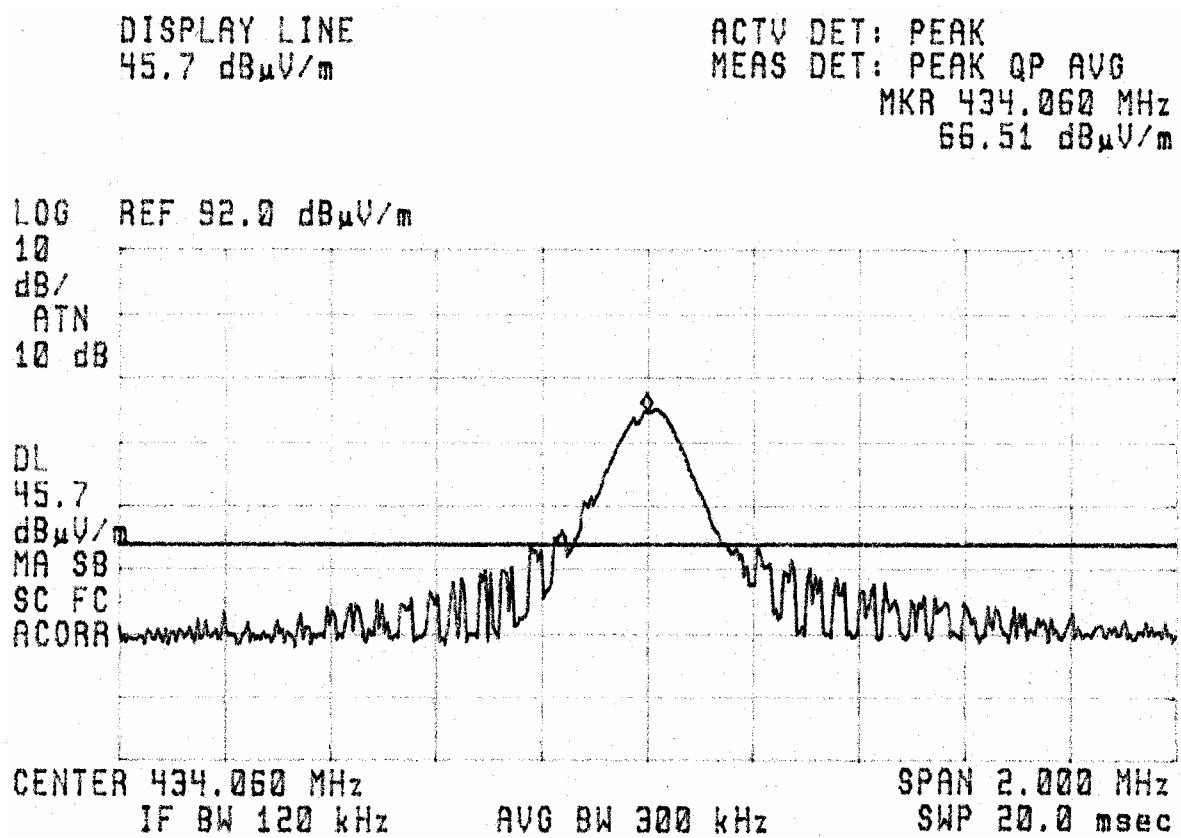


Figure 5.1 Occupied Bandwidth

6. PHOTOS OF TESTED EUT

The following photos show the inside details of the EUT.