

Advanced  
Compliance Laboratory

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## ELECTROMAGNETIC EMISSION COMPLIANCE REPORT

of

B/O DOORCHIME TRANSMITTER  
MODEL: QH-919  
(QH-918/917/916/915/913/912/727)  
FCC ID: RRVQH-919

*March 14, 2005*

This report concerns (check one): Original grant  Class II change   
Equipment type: TRANSMITTER

Deferred grant requested per 47 CFR 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: QIAOHUA (HONK KONG) HOLDING LTD.  
Report prepared by: Advanced Compliance Lab  
Report number: 0048-050311-01



**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: B/O DOORCHIME TRANSMITTER  
 Model: QH-919-TX  
 Applicant: QIAOHUA (HONK KONG) HOLDING LTD.  
 Test Type: FCC Part 15C CERTIFICATION  
 Result: PASS  
 Tested by: ADVANCED COMPLIANCE LAB  
 Test Date: March 14, 2005  
 Report Number: 0048-050314-01

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.	$\pm 2.36$	$\pm 2.99$	$\pm 1.83$

  
 Wei Li  
 Lab Manager  
 Advanced Compliance Lab

Date: March 14, 2005

## **1.2 Equipment Modifications**

N/A

### 1.3 Product Information

#### System Configuration

ITEM	DESCRIPTION	FCC ID	CABLE
Product	TRANSMITTER:QH-919	RRVQH-919(1)	
Housing	PLASTIC		
Power Supply	12V DC BATTERY		
Clock/OSC Freq.	315 MHz		
Device Type	Periodic Operation 15.231		
Receiver	QH-919-RX		

(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 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

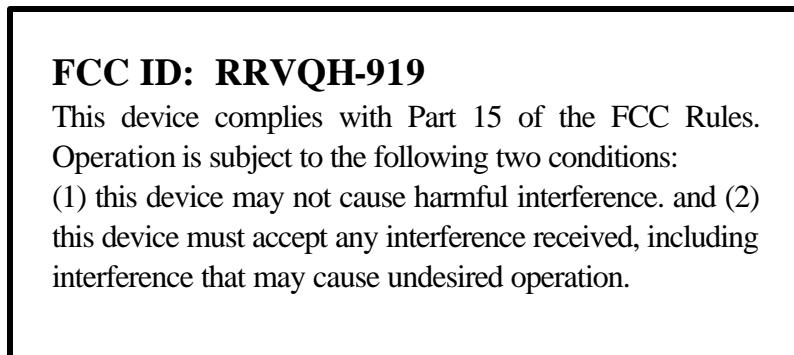
Manufacturer	Model	Serial No.	Description	Last Cal dd/mm/yy	Cal Due dd/mm/yy
Hewlett-Packard	HP8546A	3448A00290	EMI Receiver	12/01/05	12/01/06
EMCO	3104C	9307-4396	20-300MHz Biconical Antenna	12/02/05	12/02/06
EMCO	3146	9008-2860	200-1000MHz Log-Periodic Antenna	09/02/05	09/02/06
Fischer Custom	LISN-2	900-4-0008	Line Impedance Stabilization Networks	23/08/04	23/08/05
Fischer Custom	LISN-2	900-4-0009	Line Impedance Stabilization Networks	23/08/04	23/08/05
EMCO	6502	2665	10KHz-30MHz Active Loop Antenna	27/02/05	27/02/06
EMCO	3115	4945	Double Ridge Guide Horn Antenna	11/08/04	11/08/05

All Test Equipment Used are Calibrated Traceable to NIST Standards

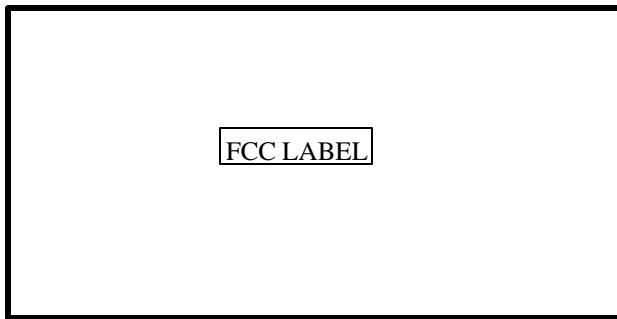
### **1.7 Statement for the Document Use**

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 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).

Models QH-918/917/916/915/913/912/727 are electronically identical as QH-919.

This manually operated transmitter will deactivate after any control switch was released.

#### **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**

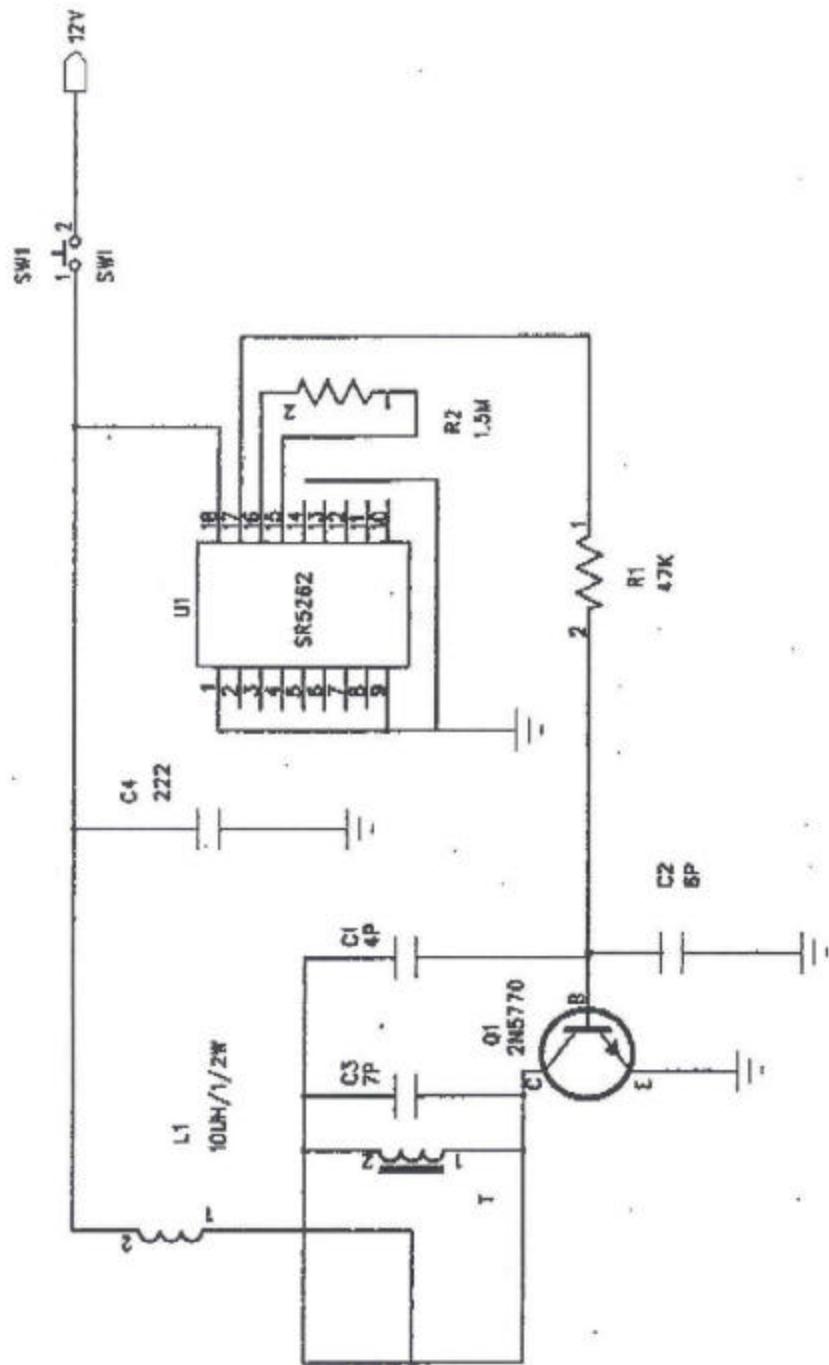


**Figure 3.2 Radiated Test Setup, Position 2 -Y**



**Figure 3.3 Radiated Test Setup, Position 3-Z**

## 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 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. Up to 10th harmonics were investigated.

### 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 14, 2005

## Radiated Test Data

Frequency (MHz)	Polarity [H or V], Position (X,Y,Z)	Height (m)	Azimuth (Degree)	Peak Reading (dB $\mu$ V/m)	Calculated Average Reading(5) (dB $\mu$ V/m)	FCC (2,3,4) 3m Limit (dB $\mu$ V/m)	Difference from limit (dB)
315	H,X(1)	1.5	10	60.2		75.6	-15.4
630	H,X	1.4	10	39.4		55.6	-16.2
945	H,X	1.3	10	38.0		55.6	-17.6
315	V,X	1.1	0	61.5		75.6	-14.1
630	V,X	1.1	0	40.5		55.6	-15.1
945	V,X	1.2	10	40.1		55.6	-15.5
315	H,Y	1.3	30	62.8		75.6	-12.8
630	H,Y	1.3	30	39.1		55.6	-16.5
1260	H,Y	1.2	20	43.8		54.0	-10.2
315	V,Y	1.1	80	62.5		75.6	-13.1
630	V,Y	1.2	80	40.0		55.6	-15.6
315	H,Z	1.3	20	63.7		75.6	-11.9
630	H,Z	1.3	20	41.2		55.6	-14.4
945	H,Z	1.3	30	37.9		55.6	-17.7
315	V,Z	1.1	0	64.8		75.6	-10.8
630	V,Z	1.1	10	41.0		55.6	-14.6
945	V,Z	1.2	10	38.3		55.6	-17.3
1260	V,Z	1.2	0	44.1		54.0	-9.9

(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) It's not necessary to calculate the average reading when the peaking reading is under the limit.

## 5.4 Occupied Bandwidth

The bandwidth of the emission shall be no wider than 0.25% of the center frequency, in this case, 0.787MHz(315x0.25%). Bandwidth is determined at the points 20dB down from the modulated carrier. Figure 5.1 shows the occupied bandwidth plot.

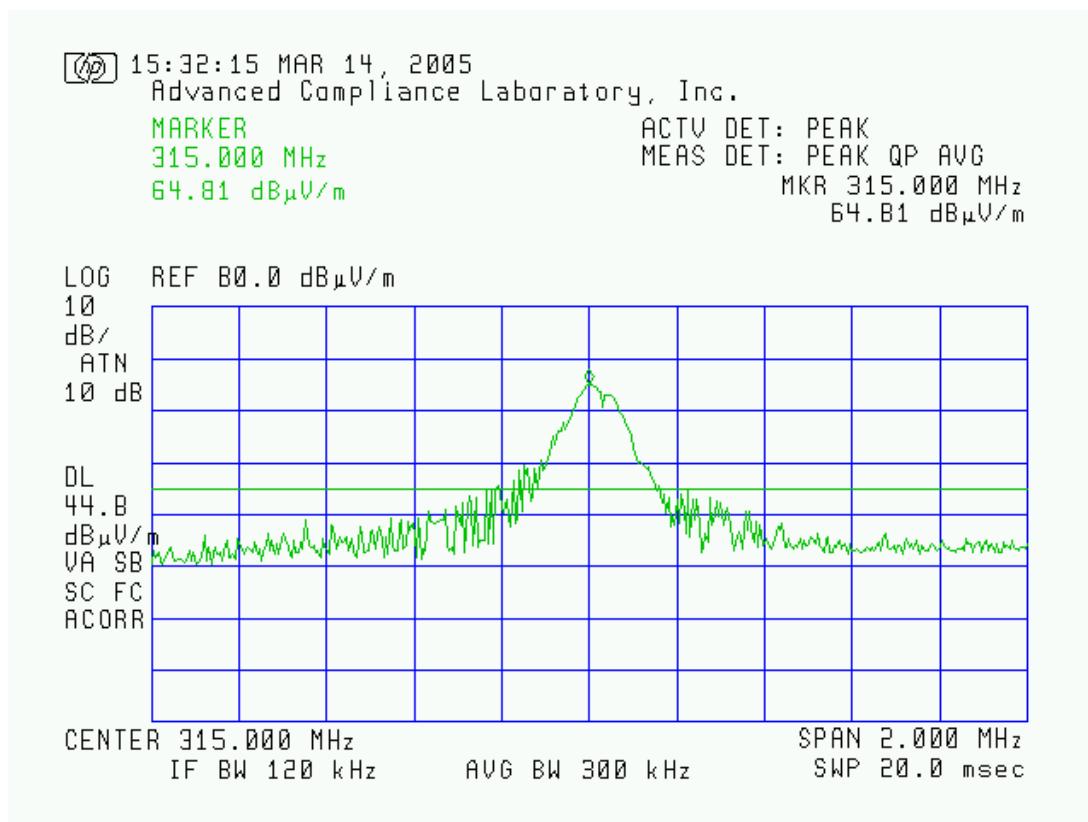


Figure 5.1 Occupied Bandwidth