

Advanced
Compliance Laboratory

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ELECTROMAGNETIC EMISSION COMPLIANCE REPORT

of

PET BOUNDARY
MODEL: PB01-TX
FCC ID: OK7PB01

July 23, 2004

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: Report prepared by: Report number:	DAKA DEVELOPMENT LTD. Advanced Compliance Lab 0048-040723-01-TX



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: PET BOUNDARY

Model: PB01-TX

Applicant: QIAOHUA (HONK KONG) HOLDING LTD.

Test Type: FCC Part 15C CERTIFICATION

Result: PASS

Tested by: ADVANCED COMPLIANCE LAB

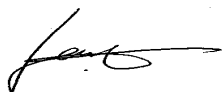
Test Date: July 23, 2004

Report Number: 0048-040723-01-TX

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: July 23, 2004

1.2 Equipment Modifications

N/A

1.3 Product Information

System Configuration

ITEM	DESCRIPTION	FCC ID	CABLE
Product	TRANSMITTER:PB01-TX	OK7PB01(1)	
Housing	PLASTIC		
Power Supply	3V DC BATTERY		
Clock/OSC Freq.	315 MHz		
Device Type	Periodic Operation 15.231(e)		
Receiver	PB01-RX	OK7PB01R	

(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

Manufacture	Model	Serial No.	Description	Last Cal dd/mm/y	Cal Due dd/mm/y
Hewlett-Packard	HP8546A	3625A00341	EMI Receiver	23/10/03	23/10/04
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	25/08/03	25/08/04
Fischer Custom	LISN-2	900-4-0009	Line Impedance Stabilization Networks	11/08/03	11/08/04
EMCO	6502	2665	10KHz-30MHz Active Loop Antenna	27/02/04	27/02/05
EMCO	3115	4945	Double Ridge Guide Horn Antenna	15/09/03	15/09/04

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

FCC ID: OK7PB01

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Figure 2.1 FCC ID



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.

After the switch is turned on, this transmitter will continuously transmit signal with a duration of 204 ms and silent interval of 10.1s.

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

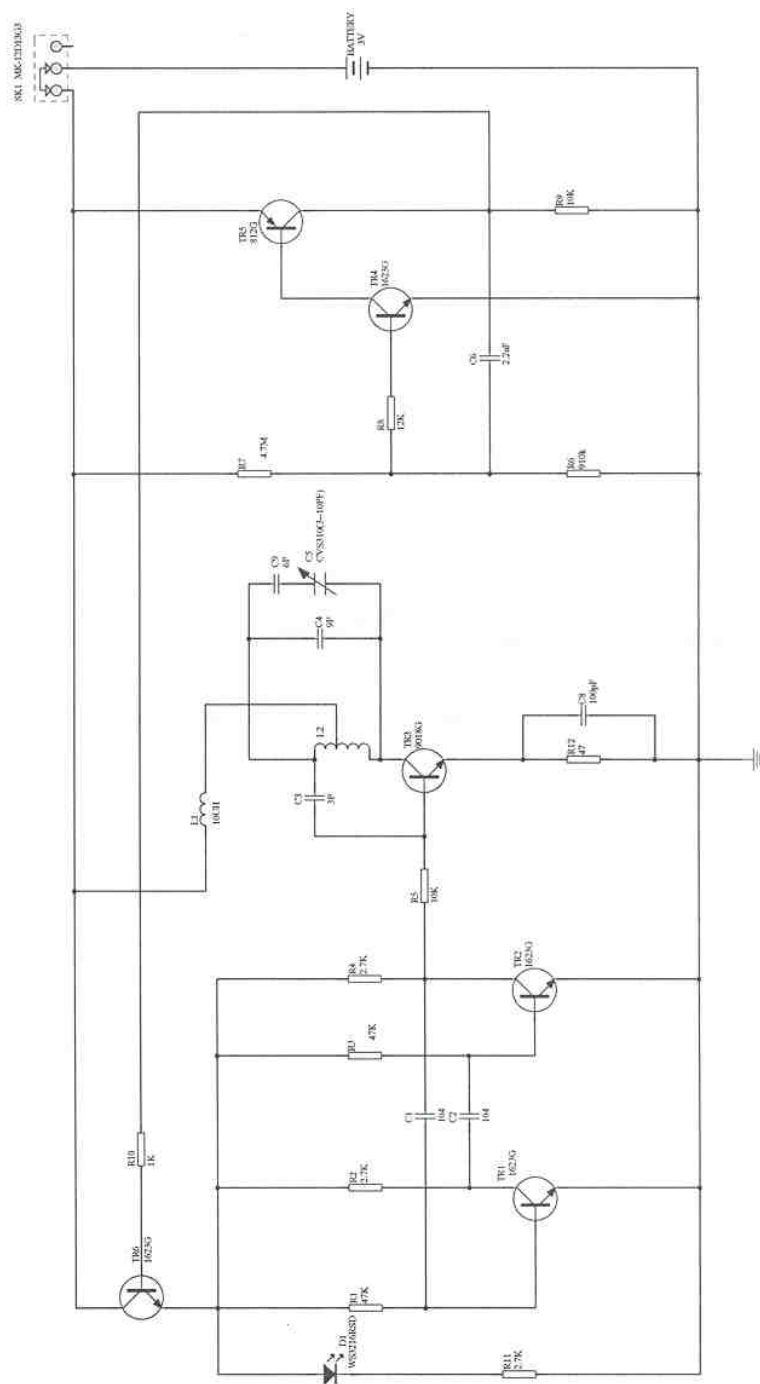


Figure 4.1 System Schematics

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 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)

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 if needed, 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: July 23, 2004

Radiated Test Data

Frequency (MHz)	Polarity [H or V], Position (X,Y,Z)	Height (m)	Azimuth (Degree)	Quasi- Peak Reading (dB μ V/m)	Calculated Average Reading (dB μ V/m)	FCC (2,3) 3m Limit (dB μ V/m)	Difference from limit (dB)
315	H,X(1)	1.4	20	64.3*		66.6	-2.3
630	H,X	1.4	20	42.0		46.6	-4.6
945	H,X	1.3	30	40.1		46.6	-6.5
1260	H,X	1.3	30	42.4		54.0	-11.6
315	V,X	1.2	10	60.6*		66.6	-6
630	V,X	1.2	10	41.2		46.6	-5.4
945	V,X	1.2	10	39.8		46.6	-6.8
315	H,Y	1.5	350	61.0*		66.6	-5.6
630	H,Y	1.4	350	40.5		46.6	-6.1
945	H,Y	1.4	350	41.7		46.6	-4.9
1260	H,Y	1.3	0	42.9		54.0	-11.1
315	V,Y	1.2	20	59.5*		66.6	-7.1
945	V,Y	1.2	20	39.6		46.6	-7
315	H,Z	1.4	0	64.0*		66.6	-2.6
630	H,Z	1.4	0	43.5		46.6	-3.1
945	H,Z	1.4	0	44.6		46.6	-2
1260	H,Z	1.3	0	42.7		54.0	-11.3
315	V,Z	1.2	20	62.5*		66.6	-4.1
630	V,Z	1.2	20	41.2		46.6	-5.4
945	V,Z	1.2	20	42.6		46.6	-4
1260	V,Z	1.2	10	43.3		54.0	-10.7

- (1) See Figure 3.1, 3.2 and 3.3 for definition of position X-1, Y-2, Z-3.
(2) Fundamental limit is 1500-5000 microvolts/meter linear interpolations per 15.231(e) .
(3) Spurious limit is 150-500 microvolts/meter linear interpolations per 15.231(e).
(4) No need to show the calculated average reading if the peak reading is under the limit.
(5) * -----Peak Reading

5.4 Occupied Bandwidth

The bandwidth of the emission shall be no wider than 0.25% of the center frequency, in this case, 787.5KHz(315Mx0.25%). Bandwidth is determined at the points 20dB down from the modulated carrier. Figure 5.1 shows the occupied bandwidth plot.

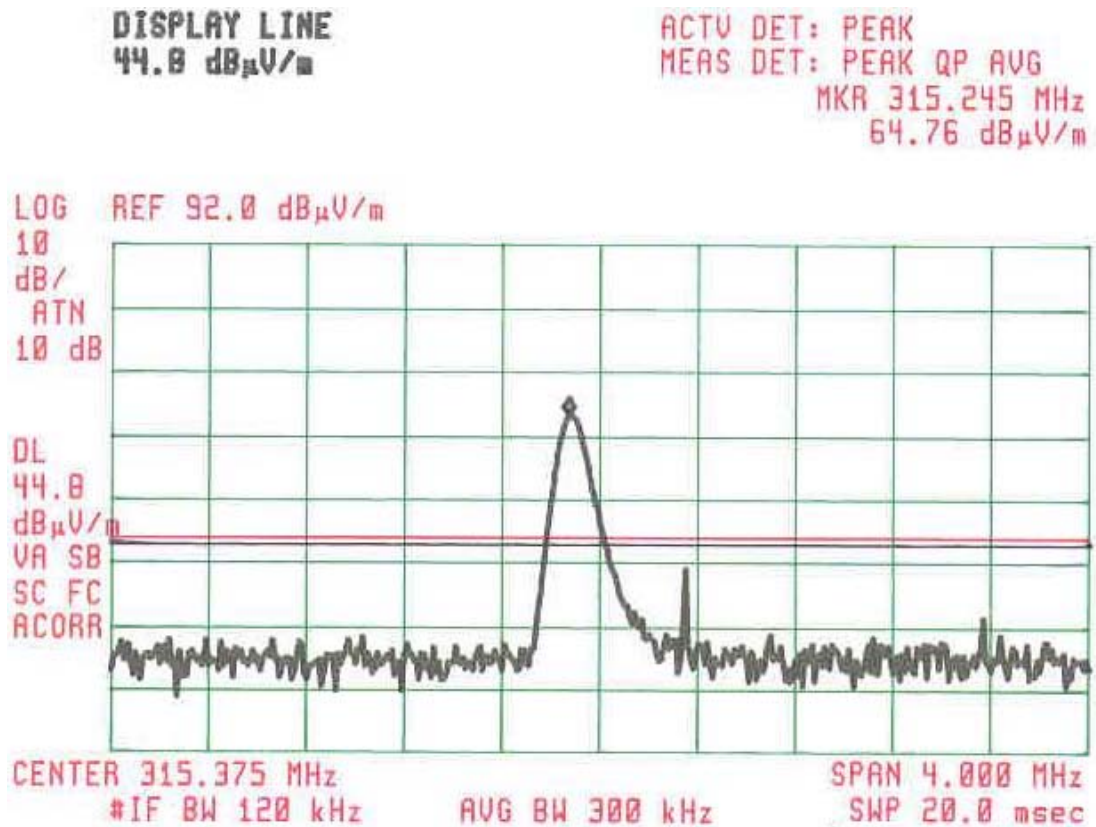


Figure 5.1 Occupied Bandwidth

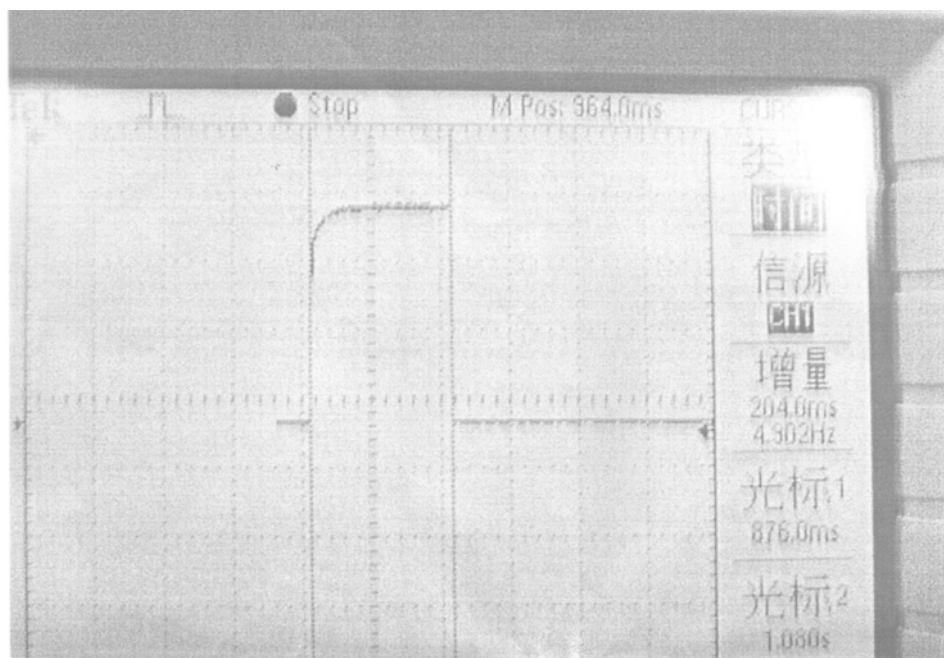


Figure 5.2 Duration of each transmission=204ms

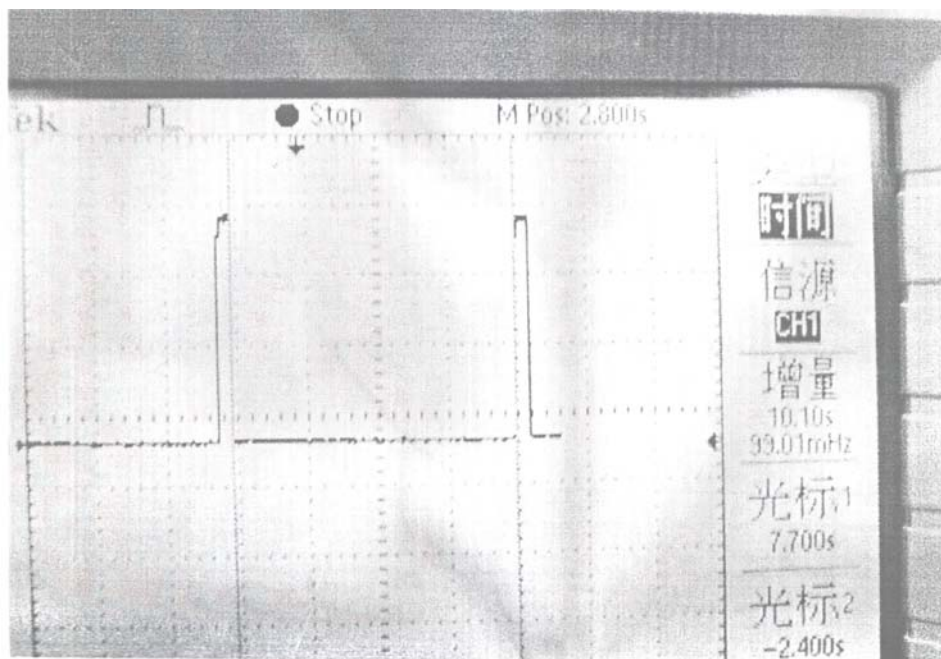


Figure 5.3 Silent period between transmission=10.1s

6. PHOTOS OF TESTED EUT

The following photos show the inside details of the EUT.