

Advanced  
Compliance Laboratory

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## ELECTROMAGNETIC EMISSION COMPLIANCE REPORT

of

ELECTRONIC YARD FENCE SENSOR

MODEL: YC1L-YC12

FCC ID: OK7YC1L-YC12

July 25, 2003

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

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:	Daka DEVELOPMENT LTD.
Report prepared by:	Advanced Compliance Lab
Report number:	0048-030622-01



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: ELECTRONIC YARD FENCE SENSOR

Model: YC1L-YC12

Applicant: DAKA DEVELOPMENT LTD.

Test Type: FCC Part 15C CERTIFICATION

Result: PASS

Tested by: ADVANCED COMPLIANCE LAB

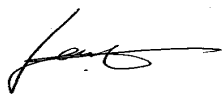
Test Date: July 18, 2003

Report Number: 0048-030622-01

The above equipment was tested by Advanced Technologies 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: July 25, 2003

## **1.2 Equipment Modifications**

N/A

### 1.3 Product Information

#### System Configuration

ITEM	DESCRIPTION	FCC ID	CABLE
Product	ELECTRONIC YARD FENCE SENSOR	OK7YC1L-YC12(1)	
Housing	PLASTICS		
Power Supply	6V DC (Battery or AC/DC adaptor)		
Clock/OSC Freq.	914MHz		
Device Type	Continue Operation		

(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	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	03/07/03	03/07/04
Fischer Custom	LISN-2	900-4-0009	Line Impedance Stabilization Networks	03/07/03	03/07/04
EMCO	3115	4945	Double Ridge Guide Horn Antenna	2/07/03	2/07/04

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

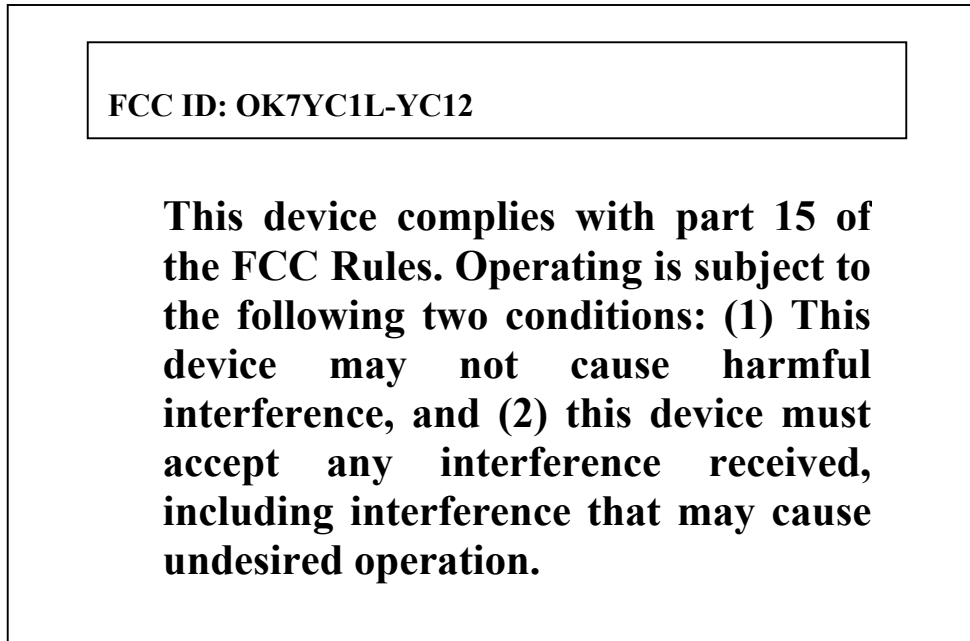


Figure 2.1 FCC ID Label

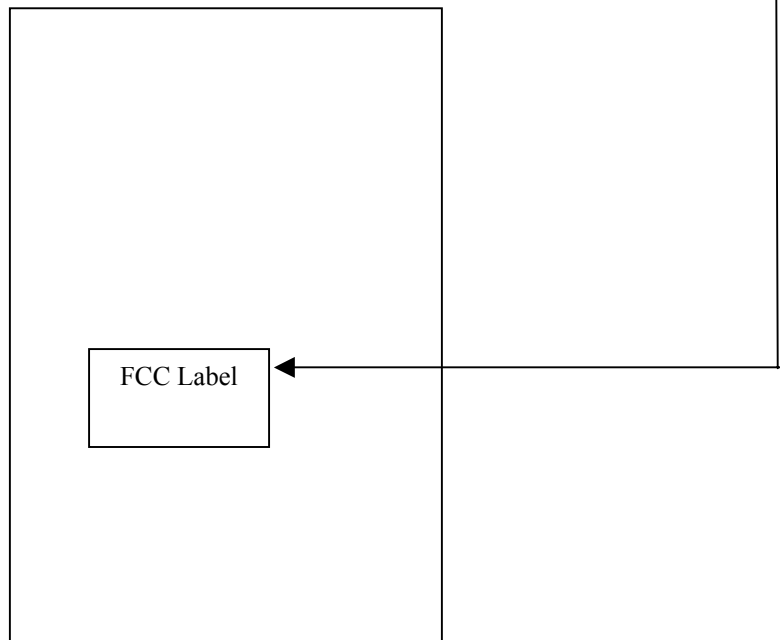


Figure 2.2 Location of the Label on EUT Back



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

#### **3.1 Justification**

The system was configured for testing in a typical fashion (as a customer would normally use it). It's normally installed vertically and its antenna was permanently attached to the EUT. This transmitter will continuously send out the signal.

#### **3.2 Special Accessories**

N/A

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

Figure 3.1 to Figure 3.4 illustrate this system, which is tested standing alone.



**Figure 3.1 Radiated Front**



**Figure 3.2 Radiated Rear**



**Figure 3.3 Conducted Front**



**Figure 3.4 Conducted Rear/Side**

#### **4. SYSTEM SCHEMATICS**

**See attachment: schematic.jpg**

**Figure 4.1 System Schematics**

## **5. CONDUCTED EMISSION DATA**

### **5.1 Test Methods and Conditions**

The EUT exercise program was loaded during the conducted emission test. EMI Receiver was scanned from 450KHz to 30MHz with maximum hold mode for maximum emission. The IF Bandwidth is 9KHz. Recorded data was sent to the plotter to generate output in linear format. At the input of the spectrum analyzer, a HP transient limiter is inserted for protective purpose. This limiter has a 10 dB attenuation in the range of 450KHz to 30MHz. That factor was automatically compensated by the receiver, so the readings are the corrected readings. The reference of the plot is the FCC Class B limit 250  $\mu$ V in Figure 5.1 through Figure 5.2.

Emissions that have peak values close to the specification limit (if any) are also measured in the quasi-peak mode to determine compliance.

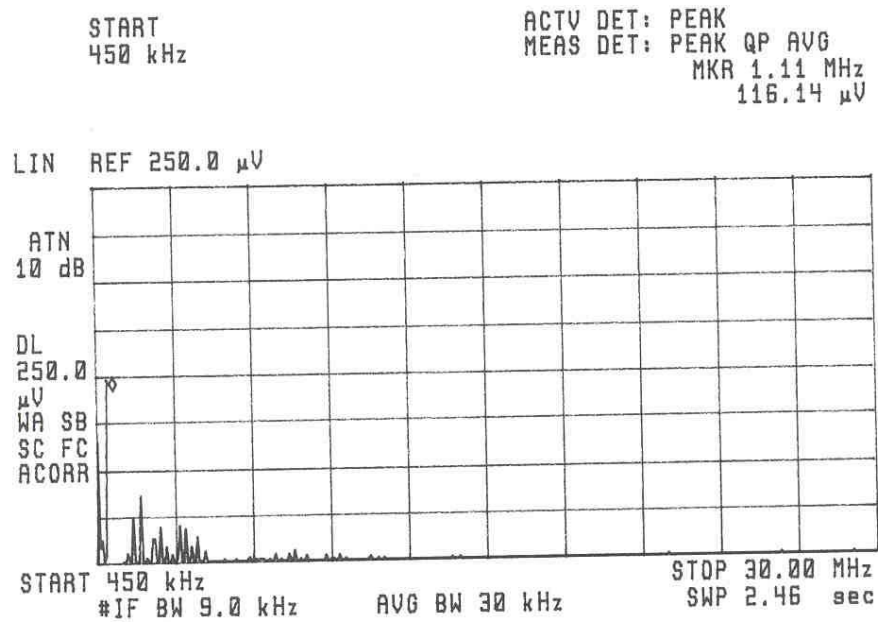
### **5.2 Test Data**

Figure 5.1 through Figure 5.2 show the neutral and line conducted emissions.

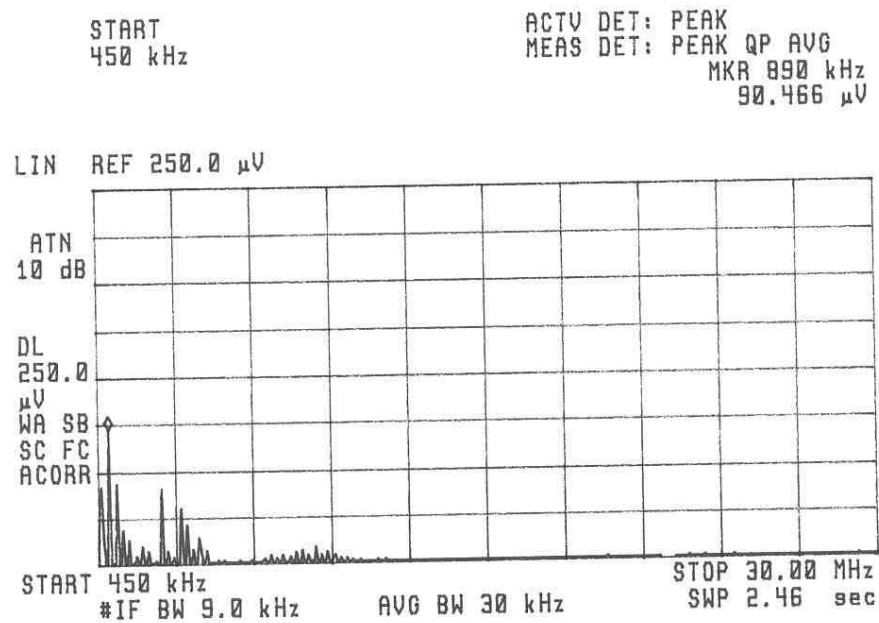
Test Personnel:

Typed/Printed Name: Edward Lee

Date: July 18, 2003



**Figure 5.1 Neutral Conducted Emission**



**Figure 5.2 Line Conducted Emission**

## 6. RADIATED EMISSION DATA

### 6.1 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)

### 6.2 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 – 10 GHz using peak detector. IF bandwidth is 120kHz and video bandwidth is 300kHz for measuring 30MHz-1GHz. Both bandwidth are 1MHz for above 1GHz measurement.

### 6.3 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 between the peak reading and the limit. Explanation of the correction and calculation are given above.

Test Personnel:

Typed/Printed Name: Edward Lee

Date: July 18, 2003

### 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 (dB $\mu$ V/m)	FCC 3m Limit (dB $\mu$ V/m)	Difference from limit (dB)
913.7	H	1.5	45	79.0		94.0(2)	-15.0
1827.4	H	1.4	35	52.0		54.0	-2.0
2741.1	H	1.3	35	50.0		54.0(1)	-4.0
913.7	V	1.3	25	77.2		94.0	-16.8
1827.4	V	1.2	10	52.6		54.0	-1.4
2741.1	V	1.1	10	48.5		54.0	-5.5

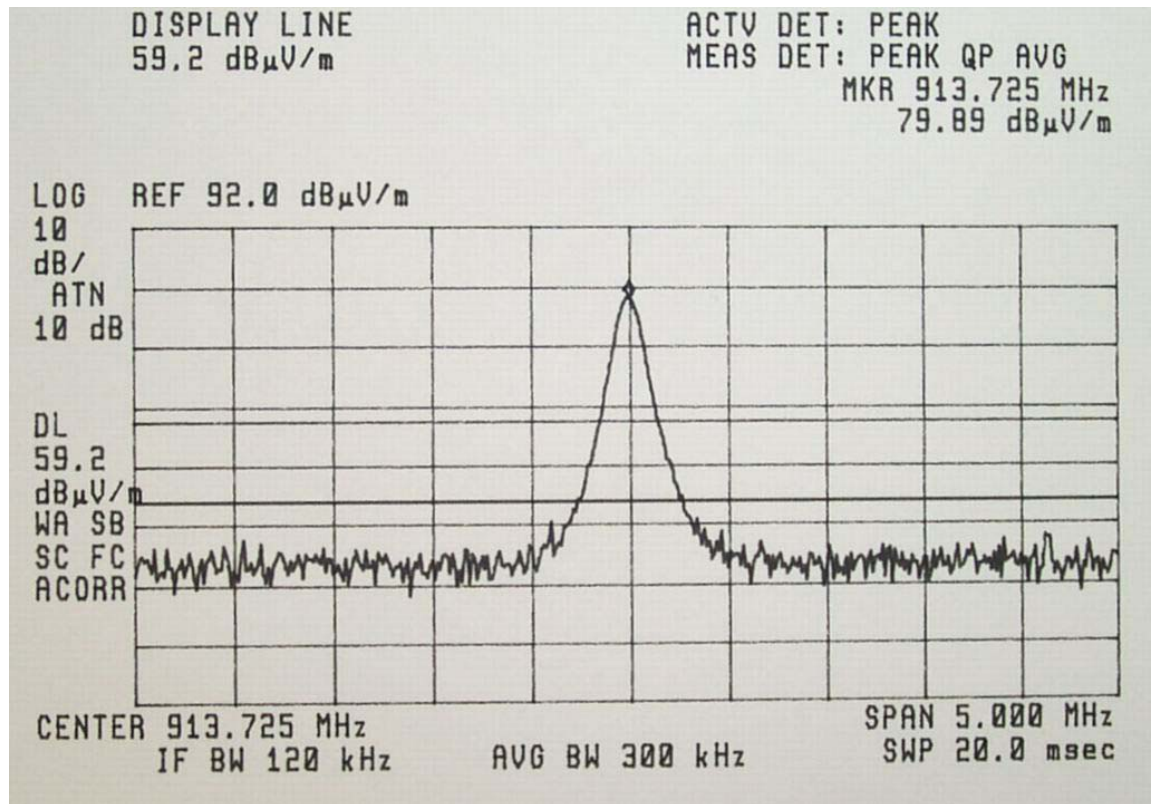
(1) Restricted band.

(2) 15.249 General limit for 902-928MHz operation.

### 6.4 Occupied Bandwidth

Bandwidth is determined at the points 20dB down from the modulated carrier. Figure 6.1 shows the occupied bandwidth plot.





**Figure 6.1 Occupied Bandwidth**

## **7. PHOTOS OF TESTED EUT**

The following photos show the inside details of the EUT.

See Attachments: front.jpg, rear.jpg, inside.jpg, component1.jpg, foil1.jpg, component2.jpg, foil2.jpg, component3.jpg, foil3.jpg