Advanced
Compliance Laboratory

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ELECTROMAGNETIC EMISSION COMPLIANCE REPORT

of

Wireless Thermometer With Clock
MODEL: WS

FCC ID: OWFWS

March 8, 2006

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

Deferred grant requested per 47 CF 0.457(d)(1)(ii)? yes _____ no __x___
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 __x___
If no, assumed Part 15, Subpart B for unintentional radiators - the new 47 CFR [10-1-90 Edition] provision.

Report prepared for:	KNOW-HOW DEVELOPMENT LIMITED
Report prepared by:	Advanced Compliance Lab
Report number:	0048-060228-01

NVLAP®

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 Thermometer with Clock (TX)
Model:	WS
Applicant:	KNOW-HOW DEVELOPMENT LIMITED
Test Type:	FCC Part 15C CERTIFICATION
Result:	PASS
Tested by:	ADVANCED COMPLIANCE LAB
Test Date:	March 7, 2005
Report Number:	0048-060228-01

The above equipment was tested by Advanced 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 8, 2006

1.2 Equipment Modifications

N/A

1.3 Product Information

System Configuration

ITEM	DESCRIPTION	FCC ID	CABLE
Product	Wireless Thermometer with Clock (TX)	OWFWS	
Housing	PLASTICS		
Power Supply	BATTERY 3VDC		
Clock/OSC Freq.	433.9 MHz		
Device Type	Periodic Operation		

(1) EUT submitted for grant.

1.4 Test Methodology

Radiated tests were performed according to the procedures in ANSI C63.4-2003 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 dd/mm/yy	Cal Due dd/mm/yy
Hewlett-Packard	HP8546A	3448A00290	EMI Receiver	12/01/06	12/01/07
Agilent	E4440A	US40420700	PSA Spectrum Analyzer	11/07/05	11/07/06
EMCO	3104C	9307-4396	20-300MHz Biconical Antenna	12/02/06	12/02/07
EMCO	3146	9008-2860	200-1000MHz Log-Periodic Antenna	09/02/06	09/02/07
EMCO	6502	2665	10KHz-30MHz Active Loop Antenna	27/02/06	27/02/07
EMCO	3115	4945	Double Ridge Guide Horn Antenna	18/08/05	18/08/06
Fischer Custom	LISN-2	900-4-0008	Line Impedance Stabilization Networks	15/09/05	15/09/06
Fischer Custom	LISN-2	900-4-0009	Line Impedance Stabilization Networks	23/08/05	23/08/06

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: OWFWS
This device complies with part 15 of the FCC Rules. Operating 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.

Fig 2.1 FCC Label
(statement may be shown in user manual)

Fig 2.2 Location of the Label

3. SYSTEM TEST CONFIGURATION

3.1 Justification

The system was configured for testing in a typical fashion (as a customer would normally use it).

The unit should be mounted in a vertical orientation. And its antenna was permanently attached to the PCB inside the case. Fresh batteries are used during the test in order to generate maximum emission from EUT.

This transmitter was set to self-testing mode in order to collect the data. (Standard Tx pattern: transmission duration 0.722s, silence period: 57s).

3.2 Special Accessories

N/A

3.3 Configuration of Tested System

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

Figure 3.1 Radiated Test Setup, Front

4. SYSTEM SCHEMATICS

See attachment.

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 dBμV/m
RA: Amplitude of EMI Receiver before correction in dBμV
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 Operational Description File.

Coeff. =(30x1.6-0.4)/100= 47.6%

The maximum average field strength should be 0.476 of the peak field strength measured. So we use peak value minus 6.5dB as calculated maximum average field strength.

5.2 Test Methods and Conditions

The initial step in collecting radiated data is an 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 bandwidths 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 between the peak reading and the limit. Explanation of the correction and calculation are given in section 5.1.

Test Personnel:

Tester Signature 

Typed/Printed Name: Edward Lee Date: March 8, 2006

Radiated Test Data

Frequency (MHz)	Polarity [H or V], Position (X,Y,Z)	Height (m)	Azimuth (Degree)	Peak Reading (dBμV/m)	Average Reading (dBμV/m)	FCC 3m Limit (dBμV/m)	Difference from limit (dB)
433.9	H	1.4	170	73.8		92.8*	-19
433.9	H	1.4	170		67.3	72.8	-5.5
867.8	H	1.4	180	56.2		72.8*	-16.6
867.8	H	1.4	180		49.7	52.8	-3.1
1301.7	H	1.3	170	49.1		54	-4.9
1735.6	H	1.3	170	46.0		54	-8
433.9	V	1.2	150	76.4		92.8*	-16.4
433.9	V	1.2	150		69.9	72.8	-2.9
867.8	V	1.2	160	58.0		72.8*	-14.5
867.8	V	1.2	160		51.5	52.8	-1.3
1301.7	V	1.2	170	51.5		54	-2.5
1735.6	V	1.2	170	46.8		54	-7.2

(1) Restricted band.
(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).
* peak reading limit =average reading limit +20dB

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(433.9x0.25%). Bandwidth is determined at the points 20dB down from the modulated carrier. Figure 5.1 shows the occupied bandwidth plot.

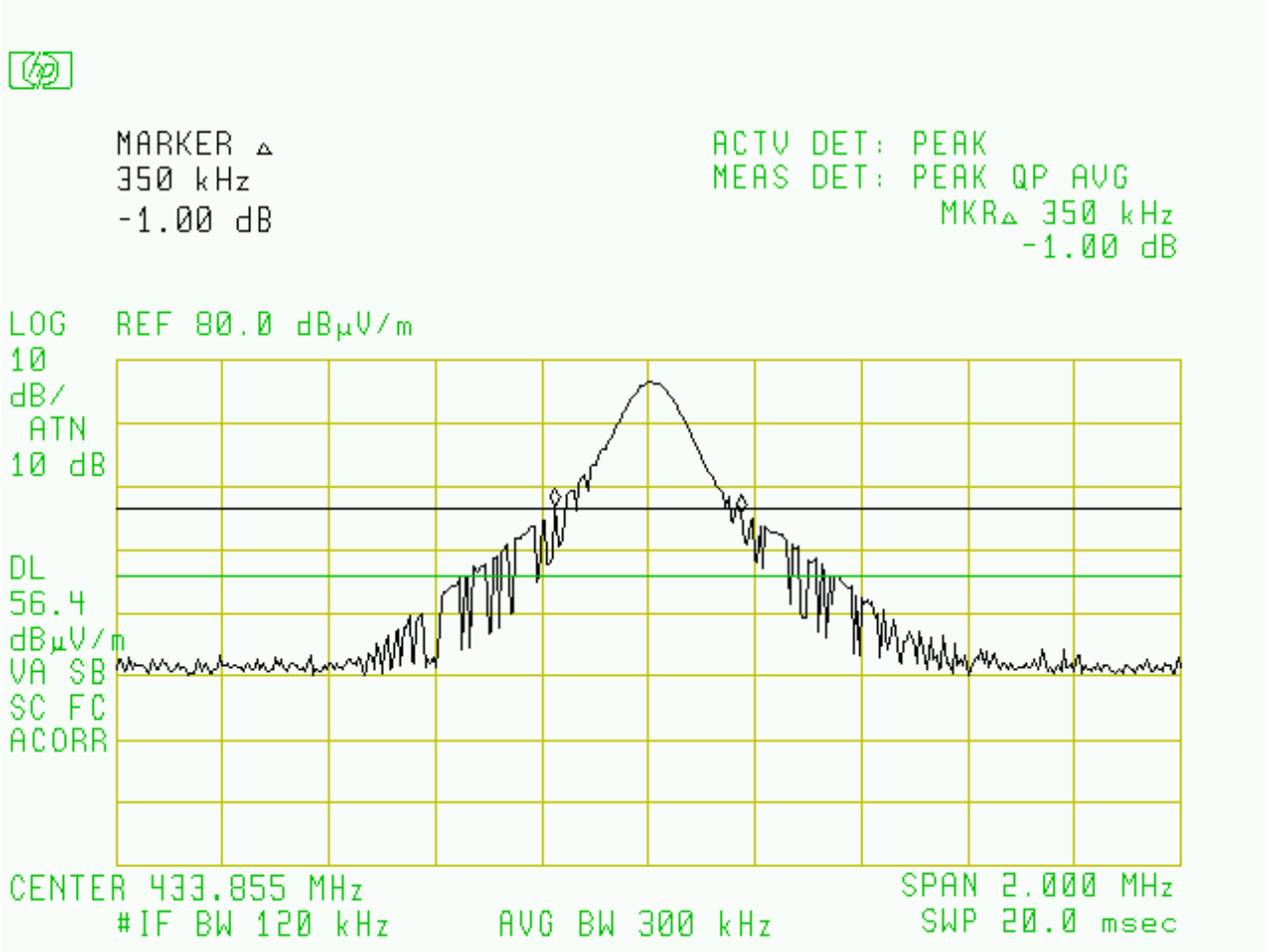

Figure 5.1 Occupied Bandwidth

6. PHOTOS OF TESTED EUT