ADVANCED
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ELECTROMAGNETIC EMISSION COMPLIANCE REPORT

of

RF DESKTOP IN/OUTDOOR THERMOMETER
MODEL: 0615TX
FCC ID: L5C0615TX

NOVEMBER 17, 2000

This report concerns (check one): Original grant __x__ Class II change _____
Equipment type: Low Power Intentional Radiator

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:	ANSEN ELECTRONICS COMPANY
Report prepared by:	Advanced Compliance Lab
Report number:	0048-2K1107-02

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:	RF DESKTOP IN/OUTDOOR THERMOMETER
Model:	0615TX
Alternate Brand Name and Mode:	*Royal Consumer Business Products WS22*
Applicant:	ANSEN ELECTRONICS COMPANY
Test Type:	FCC Part 15C CERTIFICATION
Result:	PASS
Tested by:	ADVANCED COMPLIANCE LABORATORY
Test Date:	NOVEMBER 15, 2000
Report Number:	0048-2K1107-02

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: November 17 , 2000

1.2 Equipment Modifications

N/A

1.3 Product Information

System Configuration

ITEM	DESCRIPTION	FCC ID	CABLE
Product	RF DESKTOP IN/OUTDOOR THERMOMETER 0615TX (1)	L5C0615TX	
Housing	PLASTICS		
Power Supply	9V DC		
Clock/OSC Freq.	433.9 MHz		
Receiver	0615RX (FCC Part15 Class B DOC)		

(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 50 Randolph Road, 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/yy	Cal Due dd/mm/yy
Hewlett-Packard	HP8546A	3625A00341	EMI Receiver	15/12/99	15/12/00
Fischer Custom	LISN-2	900-4-008	Line Impedance Stabilization Networks	20/05/00	20/05/01
Fischer Custom	LISN-2	900-4-009	Line Impedance Stabilization Networks	26/04/00	26/04/01
EMCO	3115	4945	Double Ridge Guide Horn Antenna	05/12/99	05/12/00
EMCO	3104C	4396	30-200MHz Biconical Antenna	02/05/00	02/05/01
EMCO	3146	3350	200-1000MHz Log-Periodic Antenna	02/05/00	02/05/01

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

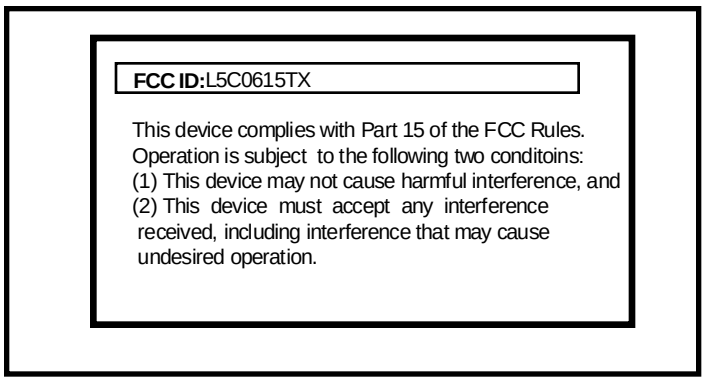

Figure 2.1 FCC ID Label

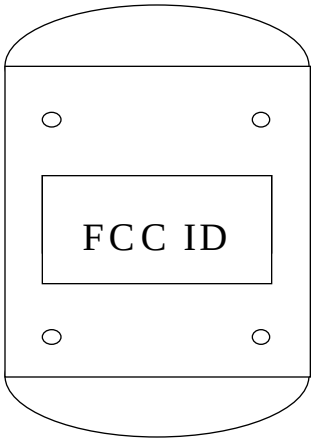

Figure 2.2 Location of label on the Rear of EUT

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 built on board permanently. Fresh batteries are used during the test in order to generate maximum emission from EUT.

The minimum interval between each transmission is no less than 10 seconds. Each transmission is less than 1 second per CFR47:15.231(e) requirement.

Testing was performed in "ON" mode. It is the worst case.

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, X Axis

Figure 3.2 Radiated Test Setup, Y Axis

Figure 3.3 Radiated Test Setup, Z Axis

4. SYSTEM SCHEMATICS

(Please see attachments: Figure6.9 & Figure 6.10)

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 plot (w/ max. occupied signal energy) is showed in Figure 6.7. The maximum setting for high voltage is
(30x0.64)/100ms =0.192
The maximum average field strength should be 0.192 of the peak field strength measured. So we use peak value minus 14.3dB 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 between the peak reading and the limit. Explanation of the correction and calculation are given in section 5.1.

Test Personnel:

Tester Signature: David Tu Date: 11-15-2000

Typed/Printed Name: David Tu

Radiated Test Data

Frequency (MHz)	Polarity [H, V] Position [X,Y,X](1)	Height (m)	Azimuth (Degree)	Peak Reading (dBµV/m)	Calculated Average Reading (dBµV/m	Class B(1) 3m Limit (dBµV/m)	Difference from limit (dB)
433.9	XH	1.6	235	75.8	61.5	72.8(3)	-11.3
867.9	XH	1.5	235	65.3	51.0	52.8(4)	-1.8
1301.8	XH	2.6	180	52.8	38.5	54.0 (2)	-15.5
1735.7	XH	1.3	180	58.1	43.8	54.0(4)	-10.2
2169.6	XH	1.2	270	58.8	44.5	54.0	-9.5
2603.5	XH	2.4	090	60.5	46.2	54.0	-7.8
433.9	XV	2.0	175	69.7	55.4	72.8	-17.4
867.9	XV	1.7	330	65.4	51.1	52.8	-1.7
1301.8	XV	2.4	270	56.8	42.5	54.0	-11.5
1735.7	XV	2.3	045	62.4	48.1	54.0	-5.9
2169.6	XV	2.4	235	62.7	48.4	54.0	-5.6
2603.5	XV	2.4	000	65.5	51.2	54.0	-2.8
433.9	YH	1.7	225	73.9	59.6	72.8	-13.2
867.9	YH	1.6	265	65.9	51.6	52.8	-1.2
1301.8	YH	2.1	180	52.9	38.6	54.0	-15.4
1735.7	YH	2.1	180	58.5	44.2	54.0	-9.8
2169.6	YH	1.7	180	61.0	46.7	54.0	-7.3
2603.5	YH	1.4	235	66.2	51.9	54.0	-2.1
433.9	YV	1.9	1.9	69.8	55.5	72.8	-17.3
867.9	YV	1.2	1.2	65.7	51.4	52.8	-1.4
1301.8	YV	1.8	1.8	54.4	40.1	54.0	-13.9
1735.7	YV	2.5	2.5	59.1	44.8	54.0	-9.2
2169.6	YV	2.5	2.5	58.7	44.4	54.0	-9.6
2603.5	YV	2.1	2.1	63.3	49.0	54.0	-5.0
433.9	ZH	1.8	180	68.3	54.0	72.8	-18.8
867.9	ZH	1.3	180	65.3	51.0	52.8	-1.8
1301.8	ZH	1.0	260	59.8	45.5	54.0	-8.5
1735.7	ZH	1.5	180	61.3	47.0	54.0	-7.0
2169.6	ZH	2.2	225	59.1	44.8	54.0	-9.2
2603.5	ZH	1.9	300	60.4	46.1	54.0	-7.9
433.9	ZV	1.3	180	82.3	68.0	72.8	-4.8
867.9	ZV	1.2	180	65.4	51.1	52.8	-1.7
1735.7	ZV	2.4	180	58.3	44.0	54.0	-10.0
2169.6	ZV	2.3	180	58.9	44.6	54.0	-9.4
2603.5	ZV	1.9	000	63.9	49.6	54.0	-4.4

(1) See Figure 3.1, 3.2 and 3.3 for definition of position X-1, Y-2, Z-3.
(2) Restricted band.
(3) Fundamental limit is 1500-5000 microvolts/meter linear interpolations (15.231e).
(4) Spurious limit is 150-500 microvolts/meter linear interpolations.(15.231 b &e).

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

6. PHOTOS OF TESTED EUT

The following photos show the inside details of the EUT.

See Attachments: occupied bandwidth, front.jpg, rear.jpg, inside.jpg, compnt.jpg, foil.jpg, pulse train plot, block diagram and schematic(main board and daughter board).