ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT
CERTIFICATION TO FCC PART 15 REQUIREMENTS

for

INTENTIONAL RADIATOR

434 MHz TRANSMITTER

MODEL NO: IT9B

FCC ID NO: ELVUT0A

REPORT NO: 00T0029-1

ISSUE DATE: JANUARY 17, 2000

Prepared for

NUTEK CORPORATION
5F, NO. 3, ALLEY 6, LANE 45
PAO-HSING ROAD, HSIN TIEN, TAIPEI
TAIWAN, R. O. C.

Prepared by

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1. VERIFICATION OF COMPLIANCE

COMPANY NAME:	NUTEK CORPORATION 5F, NO. 3, ALLEY 6, LANE 45, PAO-HSING ROAD HSIN TIEN, TAIPEI, TAIWAN R. O. C.
CONTACT PERSON:	RUBY HSIEH
TELEPHONE NO.:	02-2918-9478
EUT DESCRIPTION:	434 MHz TRANSMITTER
MODEL NAME/NUMBER:	IT9B
FCC ID: `	ELVUT0A
DATE TESTED:	JANUARY 17, 2000
REPORT NUMBER:	00T0029-1

TYPE OF EQUIPMENT	SECURITY EQUIPMENT (INTENTIONAL RADIATOR)
EQUIPMENT TYPE	434 MHz TRANSMITTER
MEASUREMENT PROCEDURE	ANSI C63.4 / 1992
LIMIT TYPE	CERTIFICATION
FCC RULE	CFR 47, PART 15

The above equipment was tested by Compliance Engineering Services, Inc. for compliance with the requirements set forth in CFR 47, PART 15. This said equipment in the configuration described in this report shows that maximum emission levels emanating from equipment are within the compliance requirements.

MIKE C.I. KUO / VICE PRESIDENT
COMPLIANCE ENGINEERING SERVICES, INC.

2. Product Description

Fundamental Frequency	**434 MHz**
Power Source	**12V Battery**
Transmitting Time	**Periodic ≤ 5 seconds**
Associated Receiver	**FCC ID: ELVAR8B**

3. Test Facility

The 3/10/30 meter open area test site and conducted measurement facility used to collect the radiated data is located at 561F Monterey Road, Morgan Hill, California, U.S.A. A detailed description of the test facility was submitted to the Commission on May 27,1994.

4. Measurement Standards

The site is constructed and calibrated in conformance with the requirements of ANSI C63.4/1992.

5. Test Methodology

For an intentional radiator, the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 KHz, up to at least the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower. (CFR 47 Section 15.33)

6. Measurement Equipment Used

Manufacturer	Model Number	Description	Cal Due Date
H.P.	8568A	Spectrum Analyzer (100Hz – 1.5GHz)	02/00
H.P.	8566B	Spectrum Analyzer (100Hz – 22GHz)	09/00
EMCO	3146	Antenna (200-1000 MHz)	10/00
H.P.	8447D	Preamplifier (0.1 - 1300 MHz)	09/00
EMCO	3115	Antenna(1 - 18GHZ)	11/00
H.P.	8449B	Preamplifier (1-26.5GHZ)	03/00

7. POWERLINE RFI LIMIT

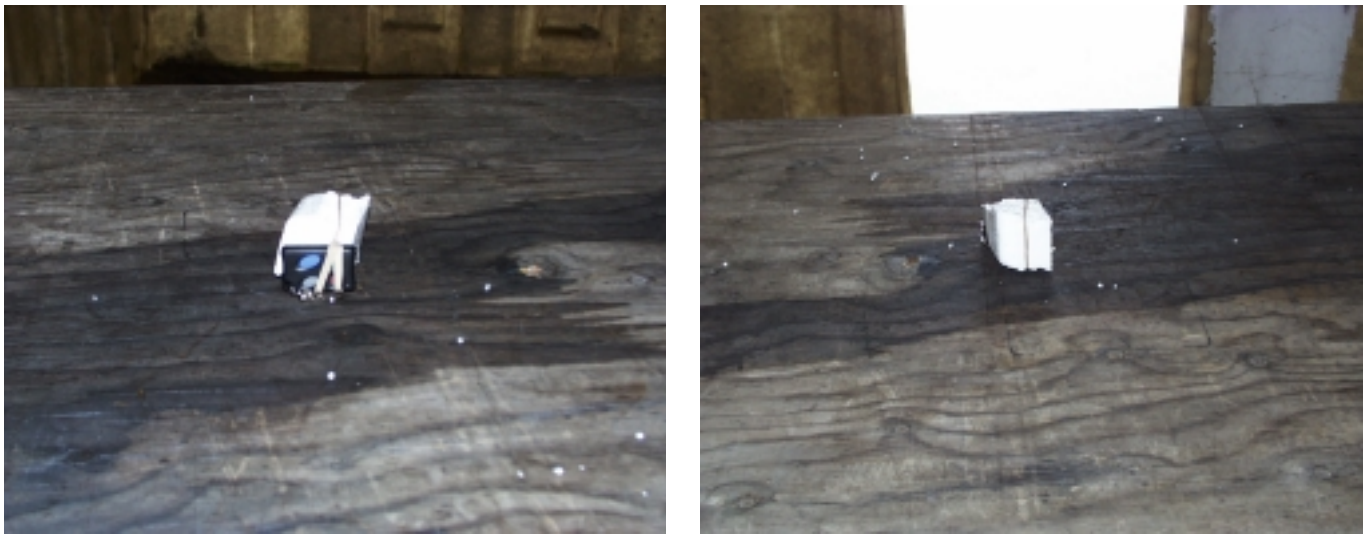
CONNECTED TO AC POWER LINE	SECTION 15.207
CARRIER CURRENT SYSTEM IN THE FREQUENCY RANGE OF 450 kHZ TO 30 MHz	SECTION 15.205 AND SECTION 15.209, 15.221, 15.223, 15.225 OR 15.227, AS APPROPRIATE.
BATTERY POWER	NO REQUIRED.

8. RADIATED EMISSION LIMITS

GENERAL REQUIREMENTS	SECTION 15.209.
RESTRICTED BANDS OF OPERATION	SECTION 15.205
PERIODIC OPERATION IN THE BAND 40.66 -40.70 MHz AND ABOVE 70 MHz.	SECTION 15.231

9. SYSTEM TEST CONFIGURATION

Use a block of foam and combined it with EUT wrapping rubber band around it. This way it can test X.Y, and Z axis. To activate continuous transmission, place a small plastic block between rubber band and EUT push button.



Radiated Open Site Test Set-up

10. Test Procedure
Radiated Emissions, 15.231(4)(b)

Test Set-up for frequency range 30 – 1000 MHz

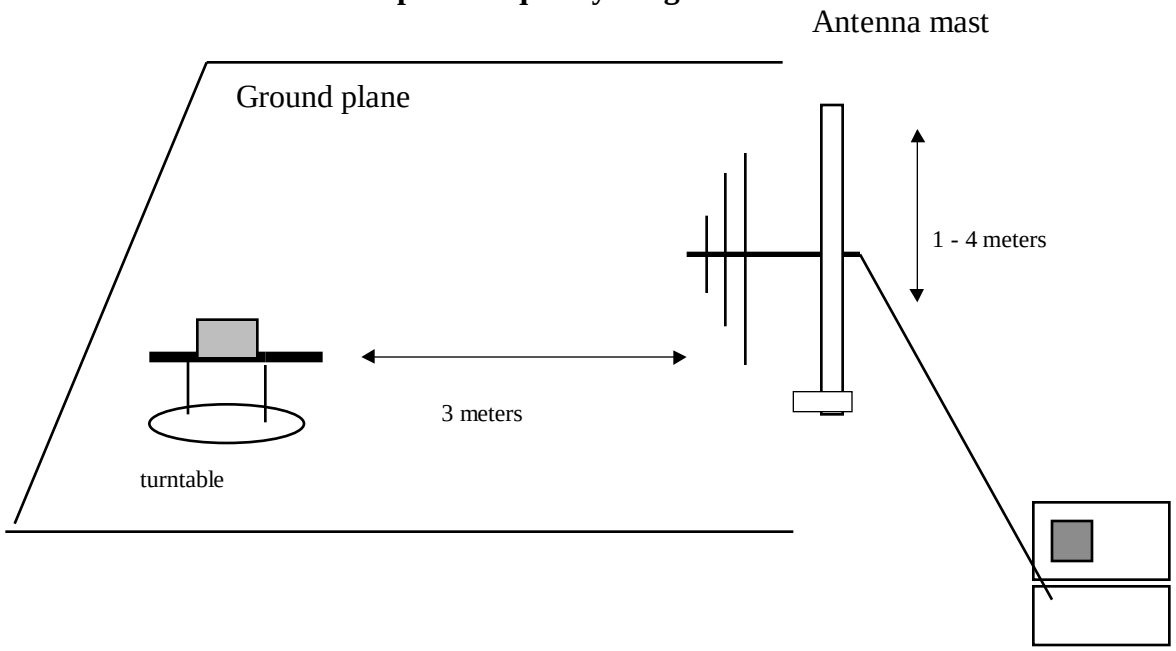


Fig. 1

1. The EUT was placed on a wooden table on the outdoor ground plane. The search antenna was placed 3-meters from the EUT.

2. The turntable was slowly rotated to locate the direction of maximum emission at each emission falling in the restricted bands of 15.205. The EUT was moved throughout the XY, XZ, and YZ planes to maximize emissions received by the search antenna.

3. Once maximum direction was determined, the search antenna was raised and lowered in both vertical and horizontal polarizations. The maximum readings so obtained are recorded in the data listed below.

Test set-up for measurements above 1GHz

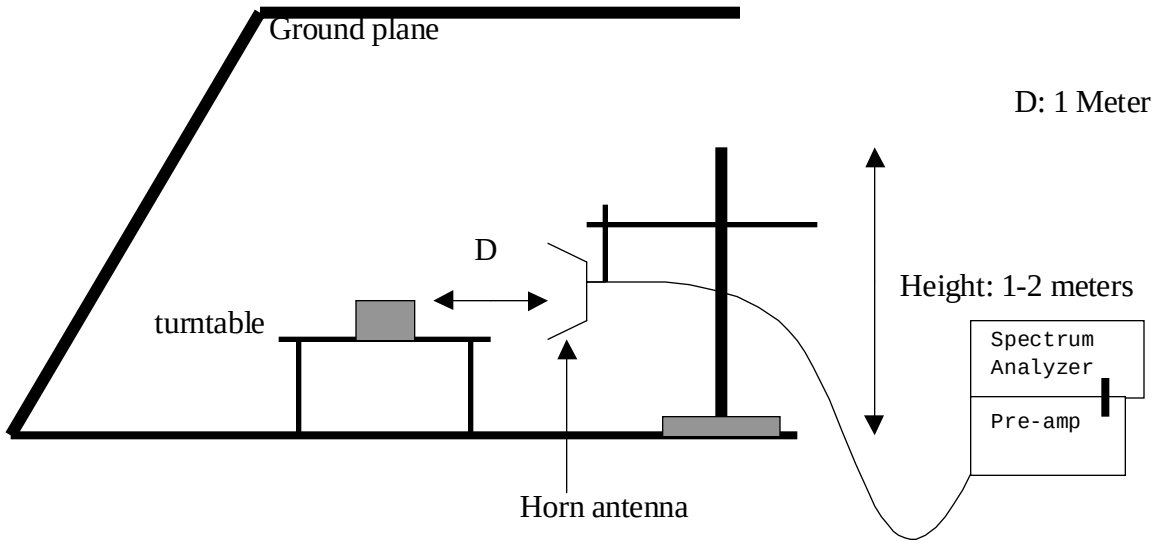


FIG. 2

1. The EUT was placed on a wooden table on the outdoor ground plane. The search antenna was placed 1-meters from the EUT. The EUT antenna was mounted vertically as per normal installation.

2. The turntable was slowly rotated to locate the direction of maximum emission at each emission falling in the restricted bands of 15.205. The EUT was moved throughout the XY, XZ, and YZ planes to maximize emissions received by the search antenna.

3. Once maximum direction was determined, the search antenna was raised and lowered in both vertical and horizontal polarizations. The maximum readings so obtained are recorded in the data listed below.

11. Equipment Modifications

To achieve compliance to FCC Section 15.231 technical limits, the following change(s) were made during compliance testing:

NONE

12. TEST RESULT

Powerline RFI Class B	Eut	Radiated Emission Limits	Eut
SECTION 15.207		SECTION 15.209	x
SECTION 15.205, 15.209, 15.221, 15.223, x 15.225 OR 15.227		SECTION 15.205	
BATTERY POWER	X	SECTION 15.231 (b)	X
		SECTION 15.231 (e)	

12.1 Maximum Modulation Percentage (M%)

CALCULATION:

Average Reading = Peak Reading (dBuV/m)+ 20log (Duty Cycle)

In order to determine possible Maximum Modulation percentage, alternations are made to the EUT. We measured:

WHERE	1 Period	= 116.6 mS > 100mS. Use 100mS for calculation.
	Long pulse	= 700uSecond = 0.7mSecond
	Short pulse	= 200uSecond = 0.2mSecond
	No of Long pulse	= 42
	No of Short pulse	= 37

Duty Cycle = (N1L1+N2L2+…+Nn-1Ln-1+NnLn)/100 or T

Duty Cycle = ((42x0.7)+(37x0.2))/100=0.368=36.8%

For duty cycle refer to plot #1, 2, 3.

12.2 The Emissions Bandwidth

The bandwidth of the emissions were investigated per 15.231(c)

Center Frequency	Measured	Limits
434 MHz	**114.7 kHz (refer to plot #4)**	**434X0.25%=1085 kHz**