NATIONAL CERTIFICATION LABORATORY
8370 Court Avenue, Suite B-1
Ellicott City MD 21043
(410) 461-5548

FCC REPORT OF RADIO INTERFERENCE

for

Enrange
#5 Four Coins Drive
Canonsburg, PA 15317

FCC ID: OUV900L8RX

January 13, 2000

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1.0 Introduction

This report has been prepared on behalf of Enrange to support the attached Application for Certification of a Part 15 Unintentional Radiator. The Equipment Under Test was the Enrange ***LAG360RX Radio Receiver***.

Radio-Noise Emissions tests were performed according to **ANSI C63.4-1992** ***"Methods of Measurement of RFI from Low-Voltage Electronic Equipment in the Range of 9 KHz - 40 GHz"***. The measuring equipment conforms to ANSI C63.2 Specifications for Electromagnetic Noise and Field Strength Instrumentation.

Testing was performed at National Certification Laboratory in Ellicott City, MD. Site description and site attenuation data have been placed on file with the FCC's Sampling and Measurements Branch. FCC acceptance was granted on May 26, 1993.

1.1 Summary

The Enrange ***LAG360RX Radio Receiver*** complies with the Part 15 Radio Limits for an Unintentional Radiator.

2.0 Description of Equipment Under Test (EUT)

The EUT Features:

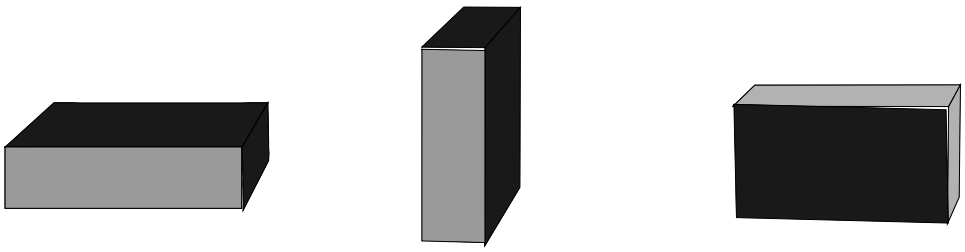
FEATURES	FREQUENCY
LED Indicators	903.3-921.3 MHz
Superheterodyne Design	
PCM Decoding	
Batttery Powered Only	
Solenoid Switching Function For Hydraulic Equipment	
External Whip Antenna	

3.0 Test Configuration

The EUT was setup on the test table in a manner which follows the general guidelines of ANSI C63.4, Section 6 "**General Operating Conditions and Configurations**".

An RF signal generator was used to cohere the spectral components of the emissions, as prescribed in ANSI C63.4, Section 12.1.1.1. An output level of -20 dBm at 903 MHz (CW) was fed into a 10 inch whip antenna in order to create a field level sufficient to accomplish this.

The EUT was configured in 3 orthogonal positions to determine the maximum RF level at each emission frequency. The data tables give the EUT postion designation that produces worst-case field strength, in an X, Y, Z system. This is described below:



X **Y** **Z**

4.0 Conducted Emissions Scheme

The EUT is powered by battery only.

5.0 Radiated Emissions Scheme

The EUT was initially scanned in the frequency range 30 to 5000 MHz indoors, at a distance of 1 meter to determine its emissions profile. The EUT was then placed on an 80 cm high 1 X 1.5 meter non-conductive motorized turntable for radiated testing on the 3-meter open area test site. The emissions from the EUT are measured continuously at every azimuth by rotating the turntable. Waveguide horn and log periodic broadband antennas are mounted on an antenna mast to determine the height of maximum emissions. The height of the antenna is varied between 1 and 4 meters. Cables are varied in position to produce maximum emissions. Both the horizontal and vertical field components are measured.

The output from the antenna is connected to the input of the spectrum analyzer. The detector function is set to QUASI-PEAK or AVG as required. The resolution bandwidth of the spectrum analyzer system is set at 120 kHz, for measurements in the range 30 MHz – 960 MHz, and 1 MHz for measurements in the range of 960 MHz – 5 GHz, with all post-detector filtering no less than 10 times the resolution bandwidth. All emissions within 20 dB of the limit are recorded in the data tables.

To convert the spectrum analyzer reading into a quantified E-field level to allow comparison with the FCC limits, it is necessary to account for various calibration factors. These factors include cable loss (CL) and antenna factors (AF). The AF/CL in dB/m is algebraically added to the Spectrum Analyzer Voltage in $db_{\mu}V$ to obtain the Radiated Electric Field in $dB_{\mu}V/m$. This level is then compared with the FCC limit.

Example:

Spectrum Analyzer Volt: VdBuV

Composite Factor: AF/CLdB/m

Electric Field: $EdB_{\mu}V/m = VdB_{\mu}V + AF/CLdB/m$

Linear Conversion: $EuV/m = Antilog\ (EdB_{\mu}V/m/20)$

FCC RADIATED EMISSIONS DATA

CLIENT: ENRANGE

EUT: LAG360RX

TUNING FREQ.: 921.3.00 MHZ

3-METER TEST

FREQ	POL		SPEC A	AF/CL	AMP	E-FIELD	E-FIELD	LIMIT	MRGN
			(QP)					(QP)	
MHz	ANT	EUT	dBuV	dB/m	GAIN	dBuV/m	uV/m	uV/m	dB
74.63	H	X	55.0	7.0	-30	32.0	39.8	100.0	-8.0
125.46	H	X	53.0	15.0	-30	38.0	79.4	150.0	-5.5
224.89	H	X	48.0	20.0	-30	38.0	79.4	200.0	-8.0
414.12	H	Z	43.0	19.0	-30	32.0	39.8	200.0	-14.0
503.26	V	X	44.0	20.0	-30	34.0	50.1	200.0	-12.0
545.65	V	Y	42.0	21.0	-30	33.0	44.7	200.0	-13.0

TEST ENGINEER

_____DATE_____

STEVE DAYHOFF

Table 1

Support Equipment

MANUFACTURER	FCC ID #	SERIAL #
N/A	N/A	None

Table 2

Measurement Equipment Used

The following equipment is used to perform measurements:

EQUIPMENT	SERIAL NUMBER
Wavetek 2410A 1100 MHz Signal Generator	1362016
HP Model 8449B Preamplifier	12A533-A
EMCO Model 3146 Log Periodic Antenna	1222
Solar 8012-50-R-24-BNC LISN	924867
Advantest Model R4131D Spectrum Analyzer	54378A
EMCO Model 3115 Ridge Horn Antenna	1238
4 Meter Antenna Mast	None
Motorized Turntable	None
RG-233U 50 ohm coax Cable	None