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TEST RESULTS REPORT
FOR
R&K IGHTING
P.O. BOX 6098
TOLEDO, OHIO 43614
U.S.A.

Device Tested: RF Remote Control Transmitter, AutoMicro Model TX-4312R
Report 1143
Report date: February 2, 2000
Test date: January 18, 2000

The above referenced device was tested according to the document ANSI C63.4-1992 as required by the Federal Communications Commission, CFR 47, Part 15, Subpart C for intentional radiators.

The R&K remote control transmitter was tested for the emission requirements of FCC Part 15, subpart C for periodically operated radiators (section 15.231): The battery operated unit passed the requirements for an intentional radiator in the 216-960 MHz band.

Sheldon Gruber, Executive Vice-president

1. INTRODUCTION

Compliance Labs, Inc. (CLI) has facilities which conform to the requirements of EN 45001: 1989, General criteria for the operation of testing laboratories. This laboratory is certified by the United Kingdom Company TRL EMC, LTD, a competent body, to comply with the EMC/EMI testing procedures established by the European Union. CLI's facilities include a three-meter semi-anechoic chamber, an open area test site (OATS) with both a three and ten-meter capability. The OATS normalized site attenuation satisfies CISPR 16 requirements and is listed with Industry Canada for emissions testing as File IC 3007 and has been filed with the Federal Communications Commission's laboratory in Columbia, Maryland. The equipment is in compliance with EN 61000-4-4 for fast transient immunity testing, EN 61000-4-2 for electrostatic discharge testing and EN 61000-4-3 for radiated, radio-frequency, electromagnetic immunity testing to 10 V/m E-fields and surge immunity according to EN 61000-4-5. The receiver used for emission testing is in conformance with CISPR 16. Calibration for all equipment is current. Supporting data for the equipment used for these tests is provided.

1.1 DEVICE DESCRIPTION

The device tested for R&K Lighting is a small battery-operated transmitter used to activate relays. The intended use is on large transportation vehicles such as semi-trailers. The transmitter uses pulse-width modulation (PWM). Data sheets for the encoder (HCS301) are attached as an appendix.

2. RADIATED EMISSION

2.1 Fundamental Emission

2.1.1 Field Level

The EUT was tested for radiated emission with the EMCO 3143 antenna placed at the three-meter position. The average emission limit for a digital device is shown in fig.1. Note that this data is taken with peak detection. The quasi-peak or average field is required to be lower than the limit line shown in fig.1. Since the modulation duty cycle of the EUT is less than 50% the average power falls 6dB below the peak shown in fig.1. The fundamental, therefore, satisfies the FCC requirements.

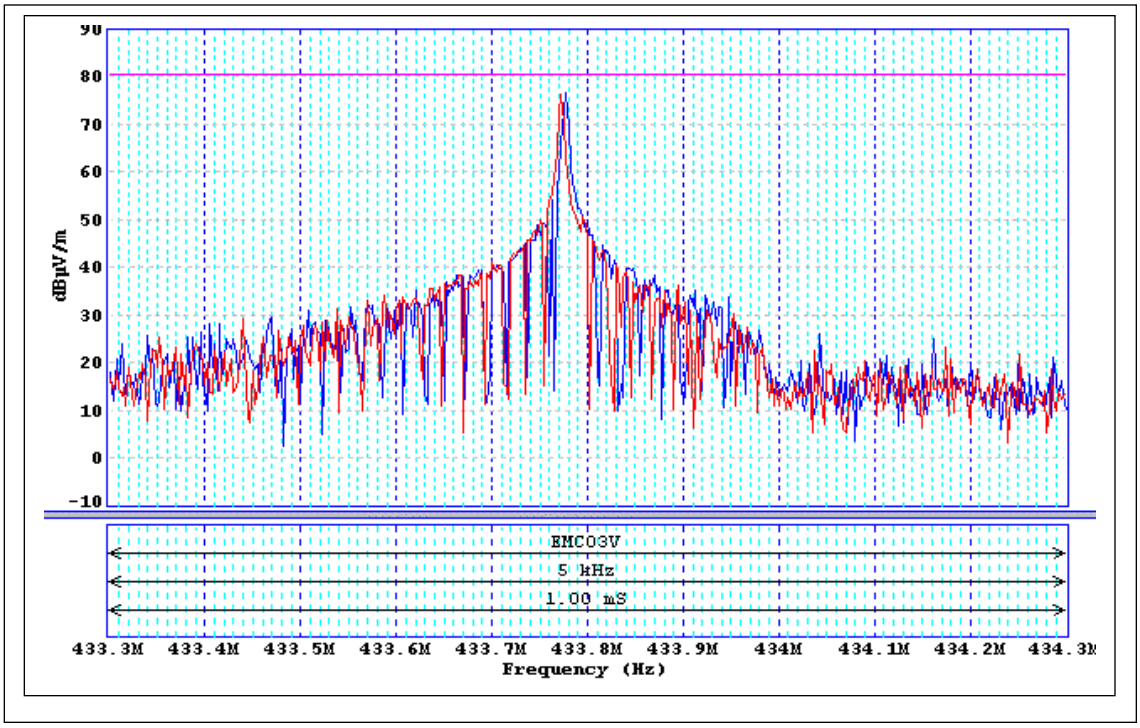

Fig.1. Emission spectra of the EUT. Blue and Red data were taken using different buttons. The field was measured with an EMCO 3143 broadband antenna located 3-m from the EUT. Note that this data is taken with peak detection. The quasi-peak field is required to be lower than the limit line shown (section 15.231)

2.1.2 Bandwidth

The 3dB bandwidth was measured to be less than 100 kHz. The 0.25% maximum bandwidth requirement (~ 1MHz) is easily met by this EUT.

2.2 Harmonic Content

The harmonic emission of the EUT was examined and is summarized in the table shown below.

HARMONIC NUMBER	Field (dBµV/m)
2	27.9
3	49.0
All higher	negligible

3. EQUIPMENT USED IN TESTS

CAL CYCLE	EQUIPMENT	MANUFACTURER	MODEL	S/N	CAL DUE
1 year	CISPR Rcvr	Dynamic Sciences	DSI 2020	604	7/2000
1 year	Antenna	EMCO	3143	1249	8/2000
1 year	OATS	N/A	N/A	N/A	8/2000