Exhibit J – Technical Report

FCC ID: OT8RFMT

Measurement/Technical Report

MTH Electric Trains

Base RF Module

FCC ID: OT8RFMT

March 6, 2001

This report concerns (check one):	Original Grant__X	*Class II Change*____
Equipment Type: Remote Control Data Transceiver		Rule Part: 47 CFR 15.249

Deferred grant requested per 47 CFR 0.457 (d)(1)(ii)? Yes_____ No __X

If yes, defer until: _____N/A_____ date

MTH Electric Trains agrees to notify the Commission by: _____N/A_____ date

of the intended date of announcement of the product so that the grant can be issued on that date.

Report prepared by:

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Report No. SEIT0047.1

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1.0 General Information

1.1 Product Description

Manufactured By ..... MTH Electric Trains

Address ..... 3820 M-139, St. Joseph, MI 49085-9605

Test Requested By: ..... Eduard Vaynberg

Model ..... Base RF Module

FCC ID OT8RFMT

Serial Number(s) ..... None

Date of Test ..... February 28 – March 2, 2001

Job Number SEIT0047.1

Prepared By:

Vicki Albertson

Vicki Albertson, Technical Report and Documentation Manager

Technical Review By:

Dean Ghizzone, President

Approved By:

Don Facteau, IS Manager

1.1 Product Description con't

Frequency Range (center frequency of the lowest channel to the center frequency of the highest channel):
905.8 MHz

How the transmitter is used:
The EUT is a low power, short range device used for remote control of devices such as toys.

Available Ports
TXD
RXD
Power
Control Lines

Available Antennas
The EUT can be configured with only one antenna that is permanently installed at the factory. There is no provision for the user to change the antenna.

Other FCC Equipment Authorizations
The receiver portion of this transceiver, as specified in 47 CFR 15.101 is being covered under a DoC. That DoC and report is available upon request.

1.2 Related Submittals/Grants

The EUT operates in conjunction with a Hand Held RF Module. The complete system requires both units to operate. The Hand Held RF Module may be referenced as FCC ID: OT8RFMR

1.3 Tested System Details

EUT and Peripherals

Item	FCC ID	Description and Serial No.
EUT	OT8RFMT	Base RF Module.
Power Supply	N/A	CUI Stack, Model DPD090020, 9 VDC.
Test Fixture	N/A	Seitz & Associates.

Cables

Cable Type	Shield	Length (meters)	Ferrite	Connection Point 1	Connection Point 2
AC Power	No	1.5	No	Test Fixture	AC Mains
Flat Cable	No	0.1	No	EUT	Test Fixture

1.4 Test Methodology

Radiated testing was performed according to the procedures in ANSI C63.4 (1992) and DA 00-705. Radiated testing was performed at an antenna to EUT distance of 3 meters, from 30 MHz to 10 GHz.

1.5 Test Facility

The semi-anechoic chamber and conducted measurement facility used to collect the radiated and conducted data is located at

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The semi-anechoic chamber, and conducted measurement facility is located in Hillsboro, OR, at the address shown above. This site has been fully described in a report filed with the FCC (Federal Communications Commission), and accepted by the FCC in a letter maintained in our files.

Northwest EMC, Inc. is recognized under the United States Department of Commerce, National Institute of Standards and Technology, National Voluntary Laboratory Accreditation Program (NVLAP) for satisfactory compliance with criteria established in Title 15, Part 285 Code of Federal Regulations. These criteria encompass the requirements of ISO/IEC Guide 25 and the relevant requirements of ISO 9002 (ANSI/ASQC Q92-1987) as suppliers of calibration or test results. NVLAP Lab Code: 200059-0.

3.0 System Test Configuration

3.1 Justification

3.1.1 Operating Modes

All operating modes of the EUT were investigated. During radiated emissions testing, the EUT was set up and configured to continuously transmit and receive. There are no provisions for frequency selection, therefore it was tested as its' predetermined frequency of operation. Testing was performed in both the transmit and receive modes as well as battery and AC power inputs. As specified in 15.31 (e), the EUT was tested using a new battery. DC voltage supplied to the EUT is maintained using an on-board regulator, therefore voltage vs. output tests were not required.

3.1.2 Test Configuration

As specified in DA 00-705 the EUT was tested in a stand-alone configuration, it was not tested inside of another device. This method was used to demonstrate that the EUT is capable of complying with the Part 15 emission limits regardless of the device into which it is eventually installed.

3.2 EUT Exercise Software

None.

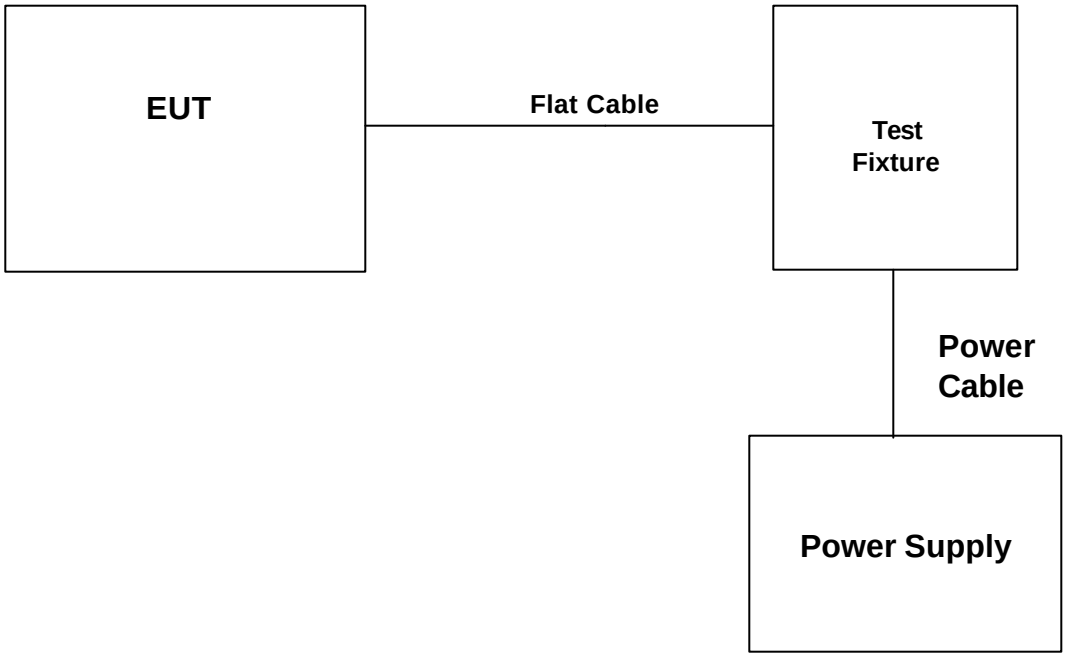
3.3 Special Accessories

A test fixture was used to simulate a typical end user of the device. It provided DC power and all control leads.

3.4 Equipment Modifications

Resister R4 was changed to 15 kOhm.

Figure 3.1: Configuration of Tested System



4.0 Antenna Requirement

Per 47 CFR 15.203, the EUT use a single antenna that is designed to ensure that no antennas other than the one supplied by the manufacturer will be used with the device.

The EUT can be configured with only one antenna that is permanently installed at the factory. There is no provision for the user to change the antenna.

4.1 Antenna Information

Per 47 CFR 15.204 (c), a description of the antenna tested with the EUT is provided. The antenna is a permanently attached quarter wave wire antenna.

Photographs of the antenna are in exhibit "B", file name "External Photos.pdf"

4.2 RF Exposure Compliance Requirements

The EUT meets the requirement that it be operated in a manner that ensures the public is not exposed to radio frequency energy levels in excess of the Commission's guidelines (ref. 47 CFR 1.1307, 1.1310, 2.1091, and 2.1093. Also OET Bulletin 65, Supplement C).

The EUT could be used as a RF device to remotely activate toys or other types of devices and can therefore be considered a mobile transmitter per 47 CFR 2.1091.

The following is an excerpt from FCC Public Notice DA000912:

> "It is important to note that the Commission's RF exposure rules apply to all facilities, operations and devices regulated by the Commission. While a given facility, operation or device might be categorically excluded from routine evaluation for RF exposure by Section 1.1307(b)(1) of our rules, it must still comply with the FCC's exposure guidelines."

The EUT is excluded from routine evaluation for RF exposure due to its use (mobile), transmit frequency, and output power (see 47 CFR 2.1091(c)). However, it must still meet the exposure guidelines shown in 47 CFR 1.1310.

MPE Estimates

Table 1 in 47 CFR 1.1310 defines the maximum permissible exposure (MPE) for the general population as f/1500 mW/cm^2 (where f = frequency in MHz). For a transmit frequency of 905.8 MHz, this equals 0.6000 mW/cm^2. The distance from the EUT's transmitting antenna where the exposure level reaches the maximum permitted level is calculated using the general equation:

$$S = (PG)/4\pi R^2$$

Where: S = power density (0.6000 mW/cm^2, maximum permitted level)
P = power input to the antenna (0.750 mW, see calculation below*)
G = linear power gain relative to an isotropic radiator (assume 0dBi = numeric gain of 1)
R = distance to the center of the radiation of the antenna

Solving for R, the 0.6000 mW/cm^2 limit is reached 0.32 cm or closer to the transmitting antenna. Therefore, no warning labels, no RF exposure warnings in the manual, or other protection measures will be used with the EUT.

* Note: The power input to the antenna can be derived using the same general equation. Per 15.249, the maximum permitted peak level at the transmit frequency is 50 mV/m (at a 3 meter distance). This is equal to 6.6 E-6 W/m^2. Solving for P, the power input to the antenna is 0.750 mW

4.3 AC Powerline Conducted Emissions

Requirement: Per 47 CFR 15.207, the radio frequency voltage that is conducted back onto the AC power line from the EUT, on any frequency within the 450 kHz to 30 MHz band, shall not exceed 250 microvolts.

Configuration: The AC powerline conducted emissions were measured with the EUT operating in a mode typical of normal operation. The EUT was transmitting and receiving. The spectrum was scanned from 450 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.4-1992.

Result: Per 47 CFR 15.207, the radio frequency voltage that is conducted back onto the AC power line from the EUT, on any frequency within the 450 kHz to 30 MHz band, does not exceed 250 microvolts.

The AC Powerline conducted emissions data may be referenced in Exhibit "K", file name "Test Data.pdf".

4.4 Harmonics and Spurious Radiated Emissions

Requirement: The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the limits, as defined in 47 CFR 15.249. Field strength limits are specified at a distance of 3 meters. Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Sec. 15.209, whichever is the lesser attenuation. As shown in Sec. 15.35(b), for frequencies above 1000 MHz, the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

Configuration: The antenna to be used with the EUT was tested. The spectrum was scanned from 30 MHz to 10 GHz.

While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.4:1992). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

Result: The peak level complies with the limits specified in 47 CFR 15.35 (b). The average level (taken with a 10Hz VBW) complies with the limits specified in 15.209.

The final radiated data may be referenced in Exhibit "K", file name "Test Data.pdf".

4.5 Fundamental Emissions

Requirement: The field strength of emissions from intentional radiators operated within these frequency bands shall comply with the limits, as defined in 47 CFR 15.249. Field strength limits are specified at a distance of 3 meters.

Configuration: The antenna to be used with the EUT was tested

While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.4:1992). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

Result: The peak level complies with the limits specified in 47 CFR 15.249.

The final radiated data may be referenced in Exhibit "K", file name "Test Data.pdf"

4.6 Field Strength Calculations

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured level. The basic equation with a sample calculation is as follows:
FS = RA + AF + CF - AG

where : FS = Field Strength

RA = Measured Level

AF = Antenna Factor

CF = Cable Attenuation Factor

AG = Amplifier Gain

Assume a receiver reading of 52.5 dBuV is obtained. The Antenna Factor of 7.4 and a Cable Factor of 1.1 is added. The Amplifier Gain of 29 dB is subtracted, giving a field strength of 32 dBuV/meter.

FS = 52.5 + 7.4 + 1.1 - 29 = 32 dBuV/meter
Level in uV/m = Common Antilogarithm [(32 dBuV/m)/20] = 39.8 uV/m

4.7 Measurement Bandwidths

Resolution Bandwidth

Peak Data

150 kHz - 30 MHz ..... 10 kHz
30 MHz - 1000 MHz.....100 kHz
1000 MHz - 25000 MHz .....1000 kHz

Quasi-peak Data

150 kHz - 30 MHz ..... 9 kHz
30 MHz - 1000 MHz.....120 kHz

Average Data.

1000 MHz - 25000 MHz .....1000 kHz

Video Bandwidth

The video bandwidth was greater than or equal to the resolution bandwidth for all measurement data except average measurements:

Average Data.

1000 MHz - 5000 MHz ..... 10 Hz

5.0 Measurement Equipment

Instrument	Manufacturer	Model	Serial No	Cal Due
Spectrum Analyzer	Hewlett-Packard	8566B	2747A05213	3/19/2001
Pre-Amplifier	Amplifier Research	LN1000A	25660	12/4/2001
Antenna, Biconilog	EMCO	3141	9906-1146	12/14/2001
Antenna, Horn	EMCO	3115	9804-5441	7/17/2001
Pre-Amplifier 0.5-18 GHz	Miteq	AMF-4D-005180-24-10P	621707	7/7/2001
Spectrum Analyzer	Tektronix	2784	B010105	3/18/2001
Pre-Amplifier 18-26 GHz	Miteq	JSD4-18002600-26-8P	577858	4/10/2001
Antenna, Horn	EMCO	3160-09	9911-1189	01/15/2003
High Pass Filter	Microlab	FXR HD-40N	8402	4/10/2001
Power Meter	Hewlett-Packard	435B	2702A15817	7/10/01
Power Sensor	Hewlett-Packard	8481H	2349A07714	7/10/01