MEASUREMENT/TECHNICAL REPORT

Company Name: Trine Products Company

Model: 33-4R

FCC ID: HA833-4R

Date: May 10, 1998

This report concerns (check one): Original grant _X_

Class II change ____

Equipment type: Super-regenerative Receiver

Deferred grant requested per 47 CFR 0.457(d)(1)(ii)? yes ___ No _X_

If yes, defer until: _____ date

_N.A._ 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:

United States Technologies, Inc.
3505 Francis Circle
Alpharetta, GA 30004

Phone Number: (770) 740-0717
Fax Number: (770) 740-1508

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1.3 Tested System Details

The FCC ID(s) for all equipment, plus descriptions of all cables used in the tested system are listed below:

PERIPHERAL MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID:	CABLES P/D
Door Chime Trine Products Company (EUT)	33-4R	Sample B	H8A33-4R (Pending)	Direct Plug-In

1.4 Test Methodology

The EUT was configured as shown in the following block diagrams and photographs. The sample was tested per ANSI C63.4, Methods of Measurement from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz (1992). Conducted and radiated emissions data were taken with the Test Receiver or Spectrum Analyzer's resolution bandwidth adjusted to 9 kHz and 120 kHz, respectively. All measurements are peak unless stated otherwise. The video filter on the spectrum analyzer was OFF throughout the evaluation process. Interconnecting cables were manipulated as necessary to maximize emissions. Appendix A describes other instruments and accessories used to evaluate this product.

The EUT is a super-regenerative receiver. A signal generator was used to radiate an unmodulated CW Signal at the EUT's operating frequency to "cohere" the individual components of the characteristics broad band emissions as specified in ANSI C63.4-1992. The level of the signal generator was varied from -80 dBm to 0 dBm in order to maximize the individual components.

Both conducted and radiated testing were performed according to the procedures in 47 CFR Part 15. Radiated testing was performed at an antenna to EUT distance of 3 meters from 30 MHz to 2 GHz.

1.5 Test Facility

Testing was performed at US Tech's measurement facility at 3505 Francis Circle, Alpharetta, GA. This site has been fully described and submitted to the FCC, and accepted in their letter marked 31040/SIT.

3 SYSTEM TEST CONFIGURATION

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3.1 Justification

The EUT was configured for testing in a typical fashion. The emissions were measured while the unit was waiting for data and while the unit was receiving an unmodulated CW signal at its operating frequency. The unit was tested at a receive frequency of 314.00 MHz.

3.2 EUT Exercise Software

Not applicable

3.3 Special Accessories

Not required

FCC ID: H8A33-4R

3.4 Equipment Modifications

The following modifications were made by US Tech, to bring the EUT into compliance with FCC Part 15, Class B Requirements:

1. **Changed C8 from .1uf to 100pF**
2. **Added a 6.8Ω resistor between C8 and Q1 base**
3. **Added a 8.2pF capacitor between Q1 emitter and collector**
4. **Added a choke coil between L4 and ground**
5. **Added a 10pF capacitor between L8 and L4**
6. **Added a 330pF/2Kv capacitor between C8 ground and R30, D4 anode**

The modifications above will be implemented in all production models of this equipment.

Applicant: Trine Products Company *Dated:* 6/22/98

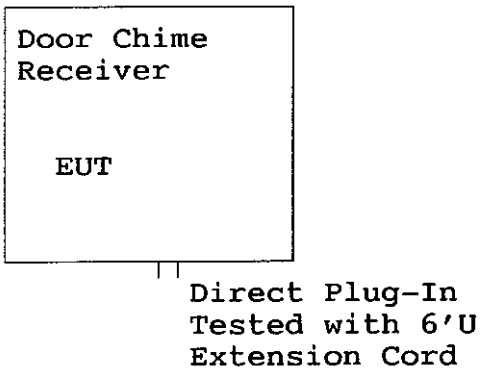
Signed: [signature] *Title:* Design Development Mgr

6-25-98

TOTAL P.03

3.5 Configuration Of Tested System

Figure 3.1 Configuration of Tested System



6 CONDUCTED EMISSION DATA

6 CONDUCTED EMISSIONS DATA

The initial step in collecting conducted data is a spectrum analyzer peak scan of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Test Date: March 11, 1998
UST Project: 97-424
Customer: Trine Products Company
Model: 33-4R

Frequency (MHz)	Test Data (dBm)		Results (uV)		FCC Limit (uV)
	Phase	Neutral	Phase	Neutral	
5.9	-64.0	-64.0	141.3	141.3	250
6.0	-71.0	-70.0	63.1	70.8	250
9.9	-76.0	-80.0	35.5	22.4	250
15.1	-78.0	-74.0	28.2	44.7	250
15.3	-77.0	-74.0	31.6	44.7	250
15.4	-74.0	-72.0	44.7	56.2	250

Results Reviewed By: _____ **Name:** Erik Collins

7 RADIATED EMISSION DATA

7 Radiated Emission Data

7.1 The following data lists the significant emission frequencies, measured levels, correction factor (includes cable and antenna corrections), the corrected reading, plus the limit. All emissions within 12 dB of the margin are reported.

Test Date: **March 11, 1998**
UST Project: **97-424**
Customer: **Trine Products Company**
Model: **33-4R**

Frequency (MHz)	Polarity (V/H)	Receiver Reading (dBm) @ 3m	Correction Factor (dB)	3 Meter Corrected Reading (uV/m)	3 Meter Limit (uV/m)
308.0	H	-81.0*	18.2	161.4	200
309.0	H	-80.5*	18.2	171.6	200
310.0	H	-81.0*	18.2	162.6	200
311.0	H	-81.0*	18.3	163.2	200
312.0	H	-81.0*	18.3	163.8	200
329.0	H	-83.0*	18.8	138.2	200
330.0	H	-83.0*	18.8	138.2	200

* = Quasi Peak

Note: All other emissions are greater than 5 dB below the FCC Limit

Tested By: _____ **Name:** Erik Collins

7 Radiated Emission Data

7.1 The following data lists the significant emission frequencies, measured levels, correction factor (includes cable and antenna corrections), the corrected reading, plus the limit. All emissions within 12 dB of the margin are reported.

Test Date: March 11, 1998
UST Project: 97-424
Customer: Trine Products Company
Model: 33-4R

1-2 GHz

Frequency (MHz)	Polarity (V/H)	Receiver Reading (dBm) @ 3m	Correction Factor (dB)	3 Meter Corrected Reading (uV/m)	3 Meter Limit (uV/m)
NO EMISSIONS FOUND WITHIN 10 dB OF THE FCC LIMITS					

Results Reviewed By:  **Name:** Erik Collins

7.2 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

FS = RA + CF - AG

where FS = Field Strength

RA = Receiver Amplitude

AF = Antenna Factor

CF = Cable Factor

AG = Amplifier Gain

Assume a receiver reading of -81.0 dBm is obtained. The Antenna Factor and Cable Factor of 18.2 dB is added. The value is mathematically converted to its corresponding level in uV/m.

Level in uV/m = Common Antilogarithm (-81.0 + 18.2 + 107/20) = 161.4