

January 5, 2001

Federal Communications Commission
Equipment Approval Services
PO Box 358315
Pittsburgh, PA 15251-5315

Dear Sir/Madam:

Enclosed you will find an application for Certification of a Wireless Security System 318MHz RF Transmitter, Model 018-1, Serial No. n/a, FCC ID: PFO018-1. Certification is requested to the requirements of Part 15, Subpart C of the Commission's rules. This application is being filed by Retlif Testing Laboratories on behalf of Trine Access Technology. The applicable Certification Filing Fee and 731 Form have been submitted.

I trust that you will find the enclosed application to be complete; however, should you have any questions or require any additional information, please feel free to contact us.

Very truly yours,

RETLIF TESTING LABORATORIES

Scott Wentworth
Manager

Enc. (as stated)

APPLICANT Trine Access Technology 1440 Ferris Place Bronx, NY 10461-3699	MANUFACTURER SAME
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TEST SPECIFICATION: FCC Rules and Regulations Part 15, Subpart C, Para. 15.231

TEST PROCEDURE: ANSI C63.4:1992

TEST SAMPLE DESCRIPTION

BRANDNAME: Trine Access Technology MODEL: 018-1

TYPE: Wireless Security System 318MHz RF Transmitter

POWER REQUIREMENTS: 12VDC Battery

FREQUENCY OF OPERATION: 318MHz

FCC ID: PFO018-1

APPLICABLE RULE SECTION: Part 15, Subpart C, Section 15.201 General Requirements and 15.231 Alternative Requirements

TESTS PERFORMED

Radiated Emissions, Scan to 10th Harmonic

Occupied Bandwidth, 0.25% of Fundamental Frequency

Duty Cycle Determination

TEST SAMPLE OPERATION

The EUT is battery operated and was tested with newly installed batteries. For testing purposes only, the EUT was configured to operate continuously, which required peak detector readings combined with the duty cycle factor to produce the required average reading. Normal operation of the EUT complies with the parameters required in Part 15, Subpart C, Section 15.231.

TEST SAMPLE / TEST PROGRAM

- C The transmitter is manually operated.
- C The transmitter does not perform periodic transmissions at regularly predetermined intervals.
- C The device can be employed for RC purposes involving security.
- C The fundamental field strength at 318MHz did not exceed 6167 μ V/M (Average) at a test distance of 3 meters. In addition, the requirements of section 15.35 for averaging pulsed emissions and for limiting peak emissions were met.
- C The field strength of harmonic and spurious emissions did not exceed 616.7 μ V/M as applicable. Except the restricted bands 501 μ V/M.
- C The device operates at a frequency range of 318MHz. The bandwidth of emissions did not exceed 0.25% of the operating frequency and was determined as follows:
- | | | |
|---------------------------|---|---|
| Fundamental Frequency | = | 318MHz |
| 0.25% of Center Frequency | = | .795MHz |
| .795 divided by 2 | = | .3975MHz |
| Bandwidth Range | = | Fundamental Frequency + and - 0.3975MHz |
| 318MHz - .3975MHz | = | 317.6025MHz |
| 318MHz + .3975MHz | = | 318.3975MHz |
| Bandwidth Range | = | 317.6025MHz - 318.3975MHz |
- C Radiated Emissions from the EUT were measured in all three axis. Worst case emissions were found with the EUT in the vertical upright position with the measurement antenna polarized horizontally.

TEST SAMPLE / TEST PROGRAM (continued)

DETERMINATION OF FIELD STRENGTH LIMITS

The field strength limits shown below were calculated as instructed in Section 15.231.

Fundamental Frequency: 318MHz

Where F is the frequency in MHz, the formula for calculating the maximum permitted fundamental field strength for the band 260-470MHz, $\mu\text{V/m}$ at 3 meters is as follows:

$$\begin{aligned} 41.6667(F) - 7083.3333 &= \text{Field Strength Limit } (\mu\text{V/m}) \\ 41.6667 \times 318 &= 13250 \\ 13250 - 7083.3333 &= 6166.66 \\ \text{Field Strength Limit} &= 6167 \mu\text{V/m} \end{aligned}$$

The maximum permitted unwanted emission level is 20dB below the maximum permitted fundamental level.

DETERMINATION OF DUTY CYCLE

The transmitter controls were adjusted to maximize the transmitted duty cycle. The analyzer was set for a frequency span of 0Hz. The sweep time was then adjusted in order to display one full pulse train. The transmitter on time was then summed and compared to the time for one full cycle in order to obtain the duty cycle.

$$\begin{aligned} \text{Transmitter On Time} &= 39.1 \text{ milliseconds (maximum)} \\ \text{Transmitter Cycle Time} &= 66.75 \text{ milliseconds} \\ \text{Transmitter Duty Cycle} &= 58.58 \% \\ \text{On Time divided by Cycle Time} &= \text{Duty Cycle Factor} \\ 39.1 \text{ divided by } 66.75 &= 0.585 \\ 0.585 \text{ converted to dB (LOG}_{10} .585)20 &= -4.65\text{dB} \\ \text{Duty Cycle Factor} &= \textbf{-4.65dB} \end{aligned}$$

Duty Cycle Factor Determination Plots are included with this application as a separate attachment.

TEST SAMPLE / TEST PROGRAM (continued)

SPECTRUM ANALYZER

Due to the nature of the emissions being measured, care was taken to ensure that the resolution bandwidth of the spectrum analyzer was adequate to provide accurate measurements.

EQUIPMENT LIST

Radiated Emissions

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
3258	Double Ridge Guide	EMCO	1 - 18 GHz	3115	4/6/00	4/6/01
4202	Biconilog	EMCO	26 MHz - 2 GHz	3142	7/10/00	7/10/01
4895	Spectrum Analyzer	Hewlett Packard	9kHz - 22GHz	8593EM	2/17/00	2/17/01

EQUIPMENT LIST

Occupied Bandwidth

EN	Type	Manufacturer	Description	Model No.	Cal Date	Due Date
4202	Biconilog	EMCO	26 MHz - 2 GHz	3142	07/10/2000	07/10/2001
4895	Spectrum Analyzer	Hewlett Packard	9kHz - 22GHz	8593EM	02/17/2000	02/17/2001