

## CERTIFICATION APPLICATION

### **I. INTRODUCTION**

This measurement report is submitted in support of an Application for Certification in accordance with Part 2, Subpart J and Part 15, Subpart C (effective 6/23/89) of the Federal Communications Commission's Rules and Regulations.

The equipment under test (EUT) is a low power SECURITY ALARM RF transmitter. This transmitter operates at a fixed frequency of 304 MHz +/- 250 kHz and is powered by one 9 Volt battery. It is identified as either Model *Smoke Detector Transmitter* or Model SMK95 Transmitter (FCC ID:DCP7FGAERSK95). Operation under the transition provisions of Paragraph 15.37 is not requested for this device. The measurements contained in this application demonstrate compliance with the limitations in effect since 6/23/89.

### **II. INFORMATION REQUIRED FOR CERTIFICATION**

#### Paragraph(s)

2.1033(a) This application for certification is filed on FCC Form 731 with all questions answered. An application fee of \$940.00 was payed.

2.1033(b)(1) The full name and mailing address of the manufacturer of the device and applicant for certification is:

Alarm Electronics Manufacturing Company, Inc.  
44 All Healing Springs Rd.  
Taylorsville, NC 28681

- (2) The FCC Identifier of the device is 7FGAERSK95.
- (3) A copy of the installation and operating instructions to be furnished to the user is included in the exhibits section of this application.

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- (4) The transmitter is a SECURITY ALARM unit and is powered by one 9 Volt transistor battery.  
It is designed to operate in the frequency of 304 MHz MHz +/- 250 kHz.  
Complete circuit schematics are provided in the exhibits section of this application.
- (5) A block diagram of the device is included in the appropriate exhibits section of this application.
- (6) A report of measurements is included in this report.
- (7) Photographs of this device showing the label placement, chassis assembly, and circuit layout are included in the exhibits section of this application. A digitized sample of the label is included.
- (8) This equipment is a stand-alone unit. No peripherals or accessories are involved.
- (9) Certification under the transition provisions of Paragraph 15.37 is not being requested for this device.
- (10) N/A.

### **III. GENERAL TEST CONDITIONS AND PROCEDURES**

Measurement procedures were used as outlined in ANSI C63.4-92, as specified in Part 15.31, except as noted herein. The open field tests were performed on a three-meter range maintained by Carl T. Jones Corporation at the Springfield facility. Complete description and measurement data for the site have been placed on file with the Commission, Registration # 90490. Carl T. Jones Corporation is listed by the FCC as a facility available to do measurement work for others on a contract basis. Prior to open-field testing, the equipment was placed in a shielded enclosure and scanned at a close distance to determine its emission characteristics.

### **IV. RADIATED EMISSION MEASUREMENTS**

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The transmitter was assembled on a rotatable wooden test stand approximately 0.8 meters in height. The transmitter's antenna was fully extended. The emission spectrum was examined up to 1000 MHz using a Hewlett-Packard 8568B spectrum analyzer and Compliance Design "Roberts" tuned dipole antennas.

At each emission frequency, the EUT was rotated 360 degrees, and the antenna was raised and lowered from one to four meters to determine the maximum emission levels. Measurements were taken using both horizontal and vertical antenna polarizations. The spectrum analyzer's 6 dB bandwidth was set to 100 kHz. The analyzer was operated in the peak detection mode for measurements of emissions less than 1000 MHz. No post-detector video filters were used. The highest emission amplitudes relative to the appropriate limit were measured and have been recorded in Table 1. All emissions not reported were more than 20 dB below the specified limit.

The actual field intensity in decibels above one microvolt per meter (dB $\mu$ V/m) is determined by algebraically adding the measured level in dB $\mu$ V, the antenna factor (dB), and the cable loss (dB) at the appropriate frequency.

$$FI_a \text{ (dB}\mu\text{V/m)} = FI_m \text{ (dB}\mu\text{V)} + AF \text{ (dB)} + CL \text{ (dB)}$$

FI<sub>a</sub> = Actual Field Intensity

FI<sub>m</sub> = Measured Field Intensity

AF = Antenna Factor

CL = Cable Loss

**As a sample calculation**, assume a particular device emits a signal with a frequency of 49.86 MHz. The maximized received signal level measured as 69.4 dB $\mu$ V. The total attenuation factor (antenna factor plus cable loss) for 49.86 MHz is 4.8 dB. The actual radiated field is calculated as follows:

$$69.4 \text{ dB}\mu\text{V} + 4.8 \text{ dB} = 74.2 \text{ dB}\mu\text{V/m or } 5,128.6 \mu\text{V/m (peak)}$$

The field strength of the fundamental did not exceed the authorized field strengths (average) at 3

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meters, as specified in Paragraph 15.231(b).

All other emissions were found to be in compliance with the restrictions of Paragraph 15.231(b) of the Commission's Rules. Because the emissions were below the limits using peak detection, average detection and duty cycle correction factors were not calculated.

## **V. OCCUPIED BANDWIDTH MEASUREMENTS**

In order to demonstrate compliance with the occupied bandwidth restrictions of Paragraph 15.231(c), the occupied bandwidth of the EUT was measured. Paragraph 15.231(b) specifies that the occupied bandwidth cannot exceed 0.25% of the center frequency as measured 20 dB down from the modulated carrier. The allowed occupied bandwidth for this device is 760 kHz. One spectral plot is included with a resolution bandwidth (RBW) adjusted to 10 kHz, as per the recommendation of Mr. Greg Czumak. This plot demonstrate compliance with the requirements of Paragraph 15.231(c).

## **VI. POWER LINE CONDUCTED EMISSIONS MEASUREMENTS**

Measurements of the power line conducted emissions were not performed since the EUT has no means for connection to the public power utility grid.

## **VII. Periodic Operation in the band above 70 MHz (15.231)**

The equipment under test is a SMOKE DETECTION detector. The device triggers the carrier on when it detects smoke in the area its placed. The carrier is then automatically deactivated after 2 seconds. A complete operating description is included in the product description section of this application

