

Test Report

Device Under Test Alarm Transmitter
FCC ID: QU2-1420-001
Model 1420-001
Test Date: 14-Jan-2002

Manufacturer: Digitech International, Inc.
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CD&T

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A. DEVICE UNDER TEST

The product submitted for test is a security alarm transmitter designed primarily for outdoor applications. The product operates under the provisions of Part 15.249 of the FCC rules.

The transmit frequency is 916.500 MHz. nominal. The modulation mode is on/off keying using a proprietary protocol at 2.4K bits/second. The device is powered by an internal "AA" size, 3.6 volt lithium battery. The transmit circuitry is regulated at 2.7 volts. There is no provision to connect an external power source.

The transmit circuitry consists of an RF Monolithics TX6000L hybrid circuit, a two element inductive output matching network and a custom manufactured helical antenna. The antenna is soldered directly to the printed circuit board. There is no provision to connect an external antenna.

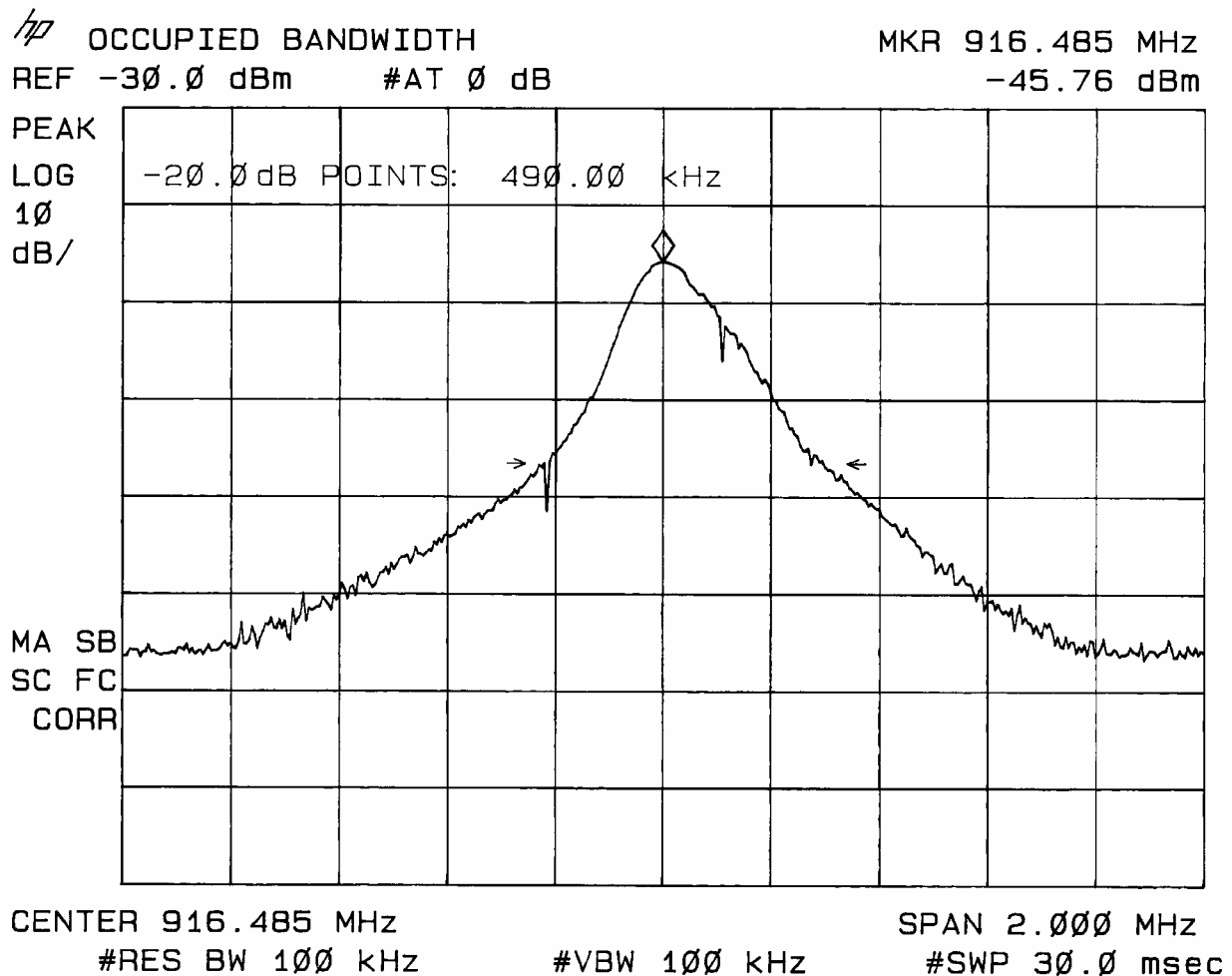
B. MEASUREMENT PROCEDURE: RADIATED EMISSIONS

Testing of this device was conducted at the Carl T. Jones Laboratory test facility located in Springfield, Virginia. Transmitter field strength measurements were conducted according to the procedures set forth in ANSI C63.4 (1992).

The test sample was fitted with a fresh battery and periodically checked during the test to insure that the battery voltage, under load, remained at 95% of nominal or greater. The test sample was placed on a rotating turntable 0.8 meters high, centered 3 meters distant from the measurement antenna. The device was placed at the center of the turntable and tested in the two positions shown in the test setup photographs.

For transmitted radiated emission measurements, the sample was programmed to continuously transmit a typical data pattern. This mode was also used to capture the occupied bandwidth plot shown below.

Plot 1



The field strength measurements were taken using an HP8596E spectrum analyzer, an EMCO 3121C dipole set, and an EMCO 3115 double ridge guide horn. The test sample was set to transmit a repeating code pattern and the field was scanned from 30MHz. to 10GHz. All emissions within 20 dB. of the limits were noted.

At each detected emission frequency, the device was measured by rotating the turntable and adjusting the antenna height over a range of 1 to 4 meters to obtain the maximum output level. This procedure was performed with both horizontal and vertical antenna polarizations for both of the setup positions shown in the test setup photos. The peak reading for each frequency is recorded in the fourth column in Table 1 below.

Table 1

RADIATED EMISSIONS DATA							
CLIENT: DIGITECH				FCC ID:			
ANTENNA: DIPOLES/DRG HORN				EUT: ALARM TRANSMITTER			
PART 15.249				TEST DATE: 04-DEC-01			
Frequency In MHz.	Ant. Polar. H/V	Ant. Factor dB	Peak reading dBm	Duty Cycle -dB	Peak Power uV/m@3m	Corrected Power uV/m@3m	FCC Limit uV/m@3m
916.486	H	30.8	-46.12		38371		50000
1832.972	V	30.2	-89.73		236		500
2749.458	H	33.4	-93.44		223		500
3665.944	V	35.7	-96.31		209		500
4582.430	V	36.6	-100.07		150		500
5498.916	V	38.6	-103.01		135		500
6415.402	H	39.1	-111.94		51		500
7331.888	V	40.8	-116.80		35		500

Measurements for weak emissions were taken by reducing the distance from the measurement antenna to 1 meter and factoring -9.54dB into the calculation. This method was used for the 7th and 8th harmonics.

C. OCCUPIED BANDWIDTH AND DUTY CYCLE

The occupied bandwidth measurement was made using an HP8594E spectrum analyzer and plotted with an HP7475A pen plotter. The duty cycle average for this device results in a correction factor (per 15.35) of approximately -9.0 dB, but since the peak readings for all detected harmonics were below the limits, a duty cycle correction factor was not applied to the calculations.