

**Interactive Technologies, Inc.
Aritech/ITI Wireless Motion Detector
B4Z-779A-PIR
Certification**

Interactive Technologies Inc

**Aritech/ITI Wireless Motion Detector
B4Z-779A-PIR**

4/14/2000

**Interactive Technologies, Inc.
2266 North Second Street
North Saint Paul, MN 55109
(651) 777-2690**

| | | |
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1. Introduction

This device is a wireless passive infrared motion detector and transmitter for use in a wireless security system. The unit is self-contained and powered by one 3.0 Volt Lithium battery. The transmitter's frequency is crystal controlled and is not adjustable by the user. The device measures approximately 5" by 2.75" by 2". The unit weighs approximately 8 ounces with the battery.

We are requesting Certification under FCC Rules, Part 15, Subpart C, Paragraph 15.231.

Please send comments/suggestions on the report format to jbergman@securitypro.com.

2. Statement of Compliance

§2.907 Certification

This is an application for certification

§2.911 Application

- a) This is an application and has been filed electronically with form 731.
- b) All information required has been supplied.
- c) The applicant has signed the application (electronically).
- d) The technical data has been signed.
(See Radiated Emissions)
- e) Applicant signature block on electronic form 731 completed by officer of the company or authorized company personnel.
- f) The appropriate fee has been paid electronically with VISA on 4/14/00.

§2.915 Grant

This application demonstrates that all applicable technical standards have been met and a grant of this application will serve the public interest.

§2.925 Label

Each piece of equipment for which authorization will be granted will be uniquely identified with "FCC ID: B4Z-779A-PIR." The required statement will appear with the FCC ID on the product and, although not required, in the installation instructions. See Exhibit A, PDF file *id_label.pdf*

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§2.947 Measurement Procedure

- a) The measurement procedure follows ANSI C63.4 procedure.
Procedural notes are contained in the laboratory report.
- d) A list of test equipment used is contained in the laboratory report.

§2.948 Description of Measurement Facilities

Measurements were performed at TUV Testing Services Open Test Site. The FCC keeps a full description of the measurement facilities on file. TUV's acceptance and approval is dated as December 5, 1993 in a letter received from the FCC.

The address of the test facility is:

TUV Product Service
19035 Wild Mountain Road
Taylors Falls, MN 55084-1758

Phone: 651-638-0297
Contact: Joel Schneider
Test Engineer in Charge

See Exhibit F, PDF file *test_pho.pdf* for sketch of measurement setup

§2.1033 Application for Certification

- a) Form 731 has been electronically filed on 4/14/00. Items that did not apply were left blank.
- b) This technical report contains the following information where applicable.
 - 1) Full name and mailing address of manufacturer and applicant for certification:
Interactive Technologies Inc
2266 North Second Street
North Saint Paul, MN 55109
 - 2) FCC Identifier:
B4Z-779A-PIR
 - 3) Copy of installation instructions:
See Exhibit G, PDF file: *user_man.pdf*
 - 4) Brief Description of circuit functions and device operation:
See Exhibit I, PDF file *op_desc.pdf*
See Exhibit D, PDF file *schemat.pdf* for schematics (page 1) and parts placement (page 2) diagrams.
 - 5) Block Diagram
See Exhibit C, PDF file *block.pdf*.

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- 6) Report of the measurements of radiation and conducted emissions:
This document.
- 7) Photographs
External:
See Exhibit B, PDF file *extern.pdf*
Internal:
See Exhibit H, PDF file *intern.pdf*
- 8) Peripheral or Accessory devices:
This is not applicable since this device is stand-alone product.
- 9) Transition Rules
This application is not pursuant to the transition rules of §15.37
- 10) Emergency Broadcast decoding:
This is not applicable to device in this application.
- 11) Application for direct sequence spread spectrum devices...
This is not applicable to device in this application.
- 12) Application for scanning receivers...
This is not applicable to device in this application.
- c) Composite Systems
This is not applicable to device in this application.

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3. Lab Measurements Discussion / Test Notes

3.1 Test Notes

3.1.1 Transmissions shall cease within 5 seconds of activation [**§15.231(a)(2)**]

In the event of a smoke alarm, 8 packets are sent in the transmission. The packet duration is, at most, 30 mS, see **Duty Cycle Correction Factor** [§15.231(b)(2) and §15.35(c)]. The time between packets random between 100 mS and 450 mS so the length of the longest transmission is:

$$8*30\text{mS} + 7*450\text{mS} = 3.39 \text{ seconds.}$$

So long as the fire alarm condition is present, the device will re-transmit every minute as allowed in §15.231(a)(4).

The following plot shows an 8-packet transmission that concludes in less than 5 seconds.

PIR 779

(h) 07:57:25 FEB 18, 2000

RL 0.00 dBm

MKR #1 SWT 1.875 sec

ATTEN 10 dB

-5.02 dBm

10 00 dB/10

MARKER

1.875 sec

-5.02 dBm

1

CENTER 319.500 000 MHz

SPAN 0 Hz

*RB 300 kHz

*VB 300 kHz

*ST 5.000 sec

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3.1.2 Supervisory Calculation [§15.231(a)(3)]

As permitted, this device will transmit three packets for supervision purposes. The inter-packet delay is a random time between 100 mS and 450 mS. The packet itself may be as long as 30 ms depending on the data sent. The longest time to conclude a supervisory transmission is then:

$$3 * 30 \text{ mS} + 2 * 450 \text{ mS} = 990 \text{ mS}$$

3.1.3 Duty Cycle Correction Factor [§15.231(b)(2) and §15.35(c)]

The transmitter employs amplitude modulation and transmits 64 bits. Each bit, except for one, has an “ON” time of 122 μ S. One bit has an on time of 366 μ S. The total on time of a single packet is:

$$64 * 122 \mu\text{S} + 366 \mu\text{S} = 8.174 \text{ mS}.$$

Only one packet is sent in any given 100 mS window for a duty cycle correction factor of:

$$20 * \text{LOG}(8.174/100) = -21.75 \text{ dB}$$

The maximum allowed correction factor is 20 dB.

The following plots show:

1. Single packet in 100 mS window.
2. Expanded view of a packet with a duration of 17.26 mS

PIR779

(HP) 07:35:45 FEB 18, 2000

RL 0.00 dBm

MKR #1 SWT 4.250 msec

ATTEN 10 dB

-43.17 dBm

10.00 dBm

MARKER

4.250 msec

-43.17 dBm

1

CENTER 319.508 000 MHz

SPAN 0 Hz

*RB 300 kHz

*VB 300 kHz

*ST 100.0 msec

PIR 779

 07:46:18 FEB 18, 2000

RL 0.00 dBm

MKR #1 Δ SWT 17.26 msec

ATTEN 10 dB

39.25 dB

10.00 dB/DIV

MARKER Δ

17.26 msec

39.25 dB

1

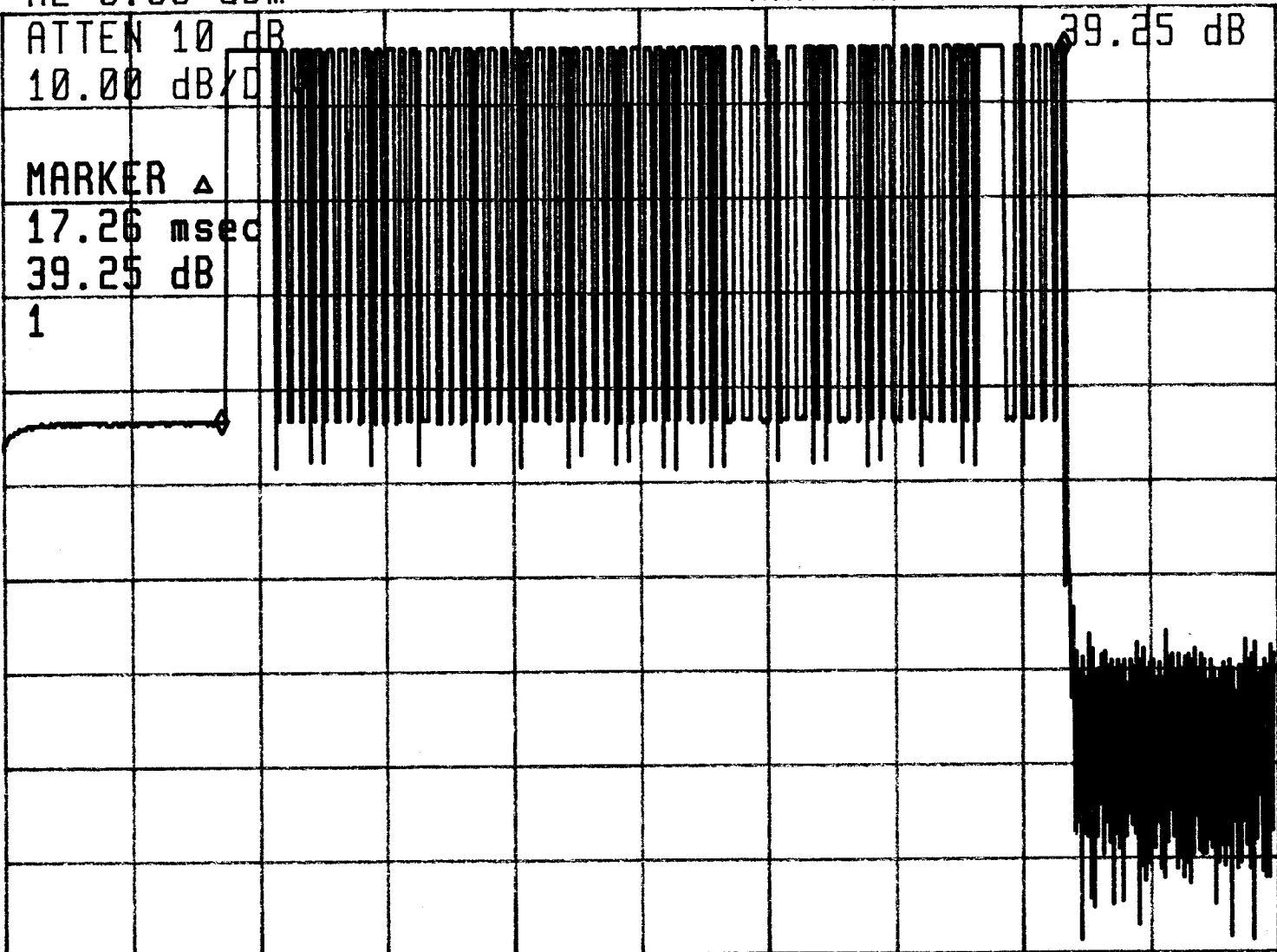
CENTER 319.508 000 MHz

SPAN 0 Hz

*RB 300 kHz

*VB 300 kHz

*ST 26.00 msec



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3.1.4 Bandwidth Measurement [§15.231(c)]

Bandwidth Measurements were made in peak mode, using a Hewlett Packard Spectrum Analyzer, model number 70000.

The spectrum analyzer 20 dB skirt bandwidth is 3.4 KHz.

The allowed 20 dB bandwidth is 0.25% of center frequency.

Estimated signal bandwidth = Measured signal bandwidth - analyzer bandwidth.

| Center Frequency MHz | Measured 20 dB Bandwidth in KHz | Estimated 20 dB signal Bandwidth in KHz | FCC allowed 20 dB Bandwidth in KHz |
|-------------------------|---------------------------------------|---|--|
| 319.5 | 41.5 | 38.1 | 799 |

The following three plots show:

1. Bandwidth of carrier without modulation
2. Bandwidth of signal with modulation, 200 KHz span
3. Bandwidth of signal with modulation, 200 MHz span

PIR 719

14:02:01 FEB 17, 2000

RL 0.00 dBm

MKR #3 Δ FRQ 1.5 kHz

ATTEN 10 dB

-21.82 dB

10.00 dB/DIV

MKR AMPLITUDE right

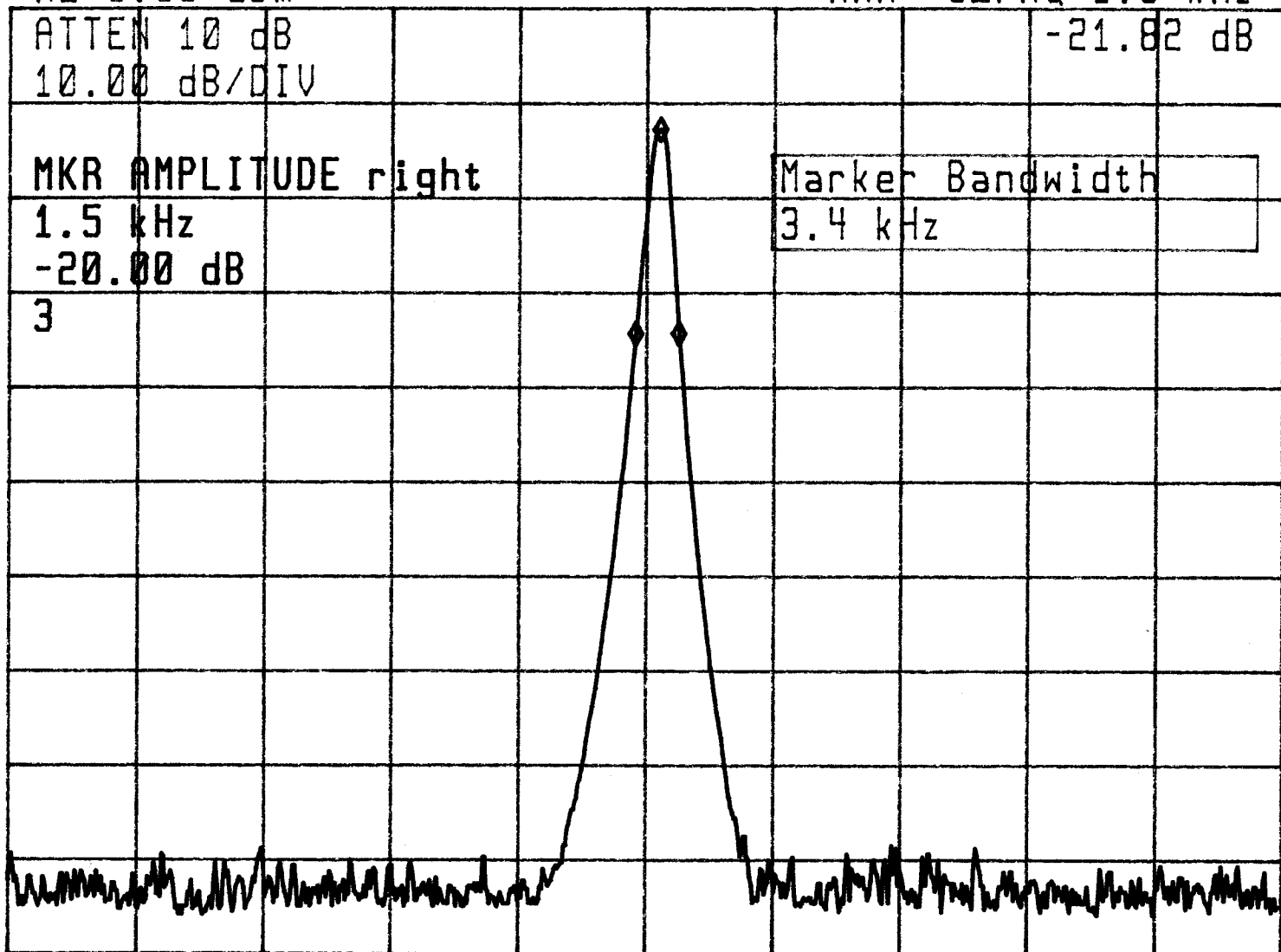
1.5 kHz

-20.00 dB

3

Marker Bandwidth

3.4 kHz



CENTER 319.510 3 MHz

SPAN 100.0 kHz

RB 1.00 kHz

VB 1.00 kHz

ST 305.0 msec

PIR 779

 07:12:24 FEB 18, 2000

RL 0.00 dBm

MKR #1 Δ FRQ 41.5 kHz

ATTEN 10 dB

0.57 dB

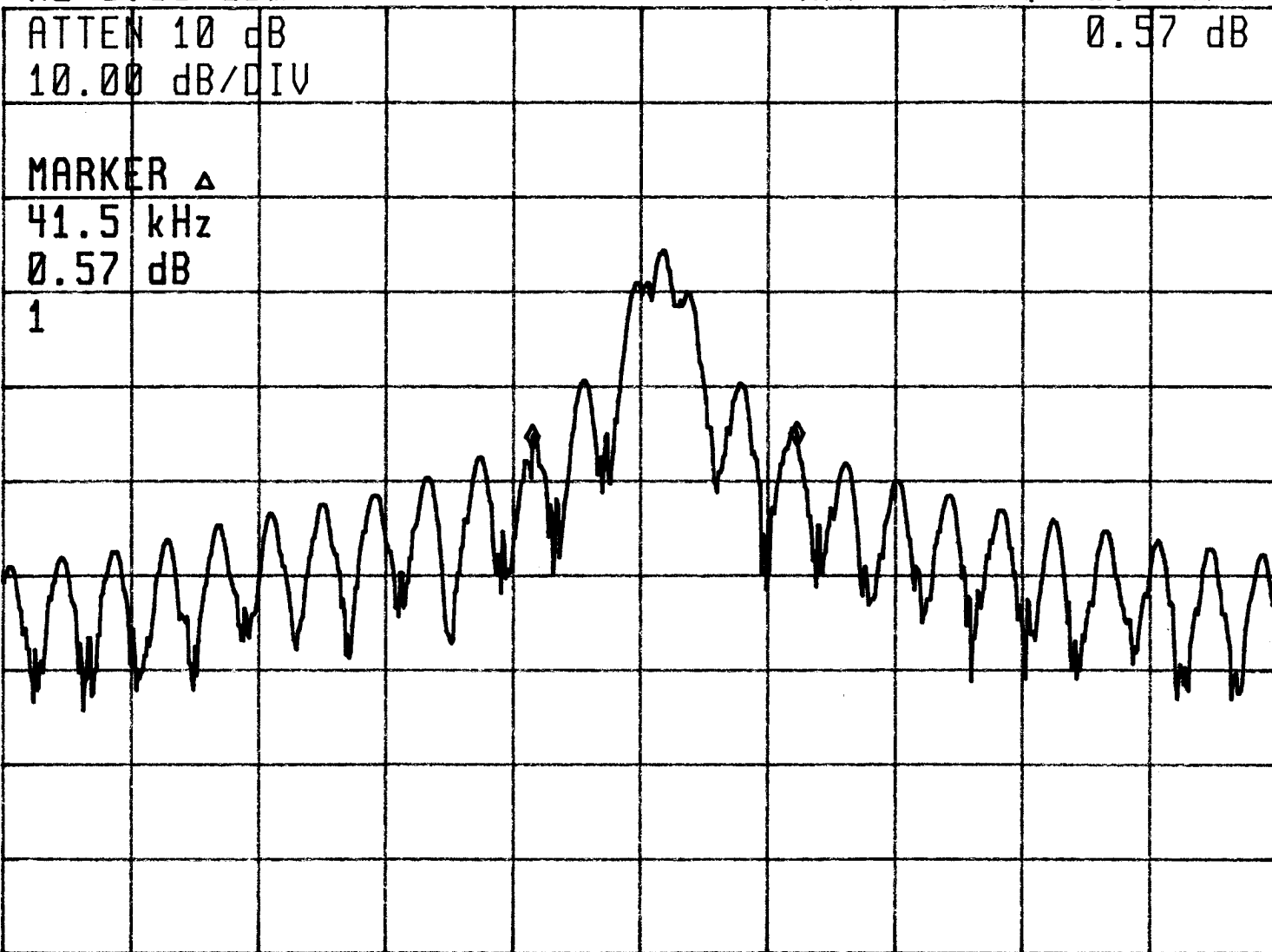
10.00 dB/DIV

MARKER Δ

41.5 kHz

0.57 dB

1



CENTER 319.508 0 MHz

SPAN 200.0 kHz

RB 2.15 kHz

VB 3.00 kHz

ST 141.9 msec

PR 77

07:30:22 FEB 18, 2000

RL 0.00 dBm

MKR #1 FRQ 320.0 MHz

ATTEN 10 dB

-3.09 dBm

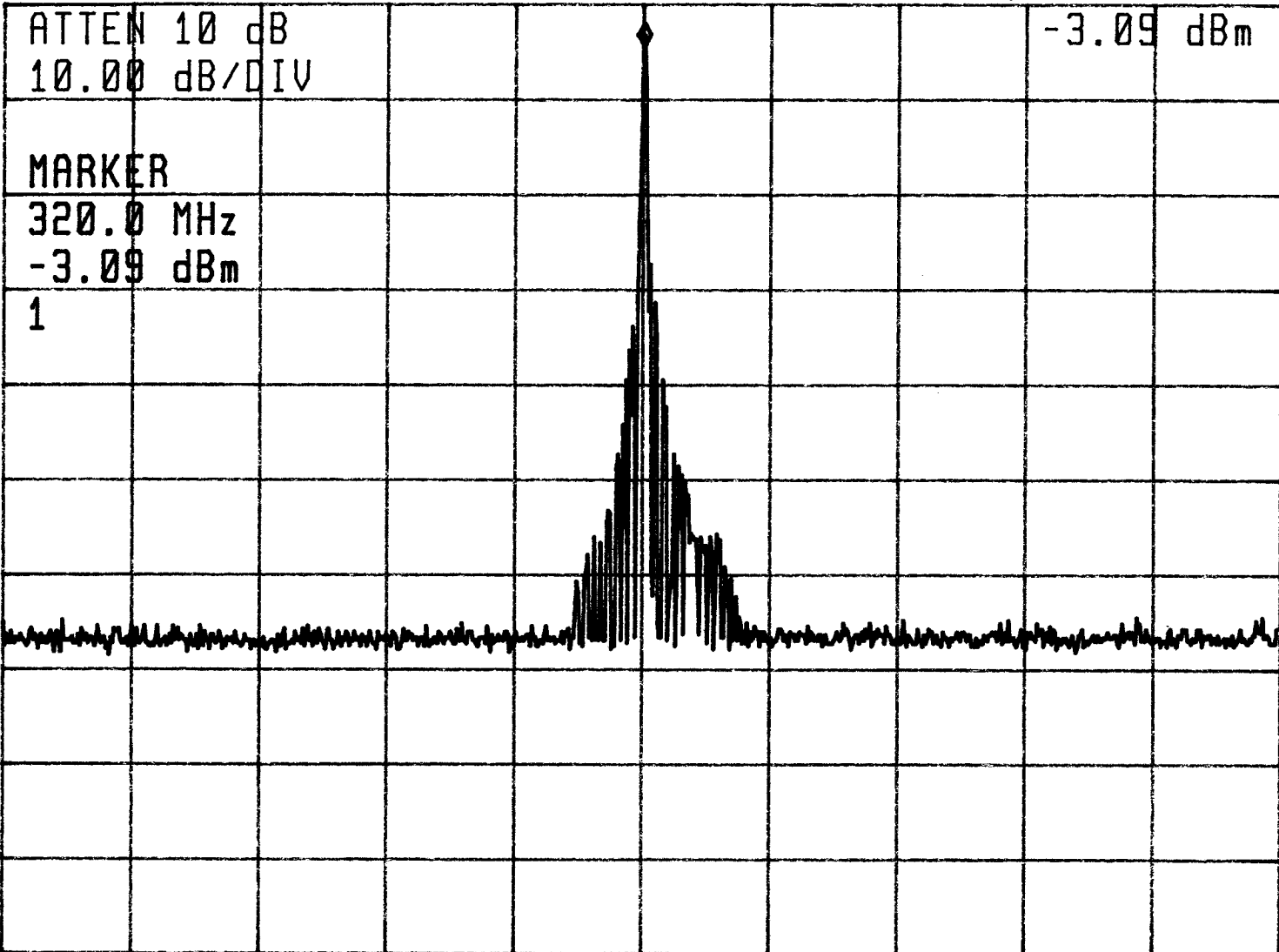
10.00 dB/DIV

MARKER

320.0 MHz

-3.09 dBm

1



CENTER 319.5 MHz

SPAN 200.0 MHz

RB 300 kHz

VB 300 kHz

ST 10.00 msec

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3.1.5 Emissions Measurements

3.1.5.1 Radiated Emissions Summary

The Aritech/ITI wireless Motion Detector passes FCC Rules Part 15, Subpart C, Paragraph 15.231. The highest fundamental radiated emission was 3.4 dB below the FCC limit at 319.5 MHz. The highest spurious emission measurement was 20.9 dB below the FCC limit at 213.0 MHz. The highest forbidden band emission was 21.0 dB below the FCC limit at 1384.54 MHz.

3.1.5.2 FCC Emissions Calculation

3.1.5.2.1 Terms

| Term | Abbreviation | Units | Description |
|-----------------------|--------------|------------|--|
| Analyzer Reading | AR | dB μ V | The power reading read directly from the analyzer without any correction for cabling or receive antenna. |
| Duty Cycle Correction | DC | dB | Correction for averaging measurement, see Duty Cycle Correction Factor [§15.231(b)(2) and §15.35(c)] |
| Antenna Factor | AF | dB | Calibration factor for measurement antenna which converts from dB μ V measured with antenna to the field strength received by the antenna in dB μ V/M. |
| Cable Loss | CL | dB | Amount of power lost in cable (and connectors, if any) between antenna and analyzer |
| Pre-Amp | PA | dB | Gain in pre-amp |

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3.1.5.2.2 Example Calculation

AR = 99.3 dBμV

AF = 13.9 dB

CL = 3.8 dB

DC = 20 dB

PA=26.2 dB

The field strength for comparison to FCC limits is found to be:

$$AR + AF + CL - DC - PA = 99.3 + 13.9 + 3.8 - 20 - 26.2 = 70.8 \text{ dB}\mu\text{V/M}$$

Alternatively, the AR + AF + CL - PA is compared to the FCC limit + DC. This number is often written to the right of measurement data on the test results. For example, the FCC limit for ITI transmitters at 319.5 MHz is approximately 95.8 dBμV/M. The limit from §15.231(b) with linear interpolation yields a limit, without consideration for duty cycle, of approximately 75.8 dBμV/M.

To convert to μV/M the following equation is used:

$$\mu\text{V/M} = \text{INVLOG}(\text{dB}\mu\text{V/M} / 20)$$

For the above example, 70.8 dBμV/M is 3,467.369μV/M

3.1.5.3 Radiated Emissions

The highest fundamental emission along with the three highest spurious and restricted band emissions are listed below as per ANSI C63.4 paragraph 10.1.8.2. Emissions from 0.009 MHz to the tenth harmonic were measured as per FCC Rules Part 15, Subpart C, Paragraph 15.33(a). Emission limits were derived from §15.231(b).

| Frequency | Analyzer Reading | Duty Cycle Correction | Cable Loss | Antenna Factor | Pre-Amp | Field Strength | Field Strength | FCC Limit |
|-----------|------------------|-----------------------|------------|----------------|---------|----------------|----------------|-----------|
| MHz | dBuV | dB | dB | dB | dB | dBuV/M | uV/M | uV/M |
| 319.5 | 76.90 | 20 | 1.6 | 13.9 | 0 | 72.40 | 4,169 | 6,229 |
| 213 | 69.00 | 20 | 1.3 | 10.9 | 26.2 | 35.00 | 56 | 623 |
| 1278 | 51.20 | 20 | 3.6 | 24.8 | 25.3 | 34.30 | 52 | 623 |
| 1384 | 48.50 | 20 | 3.8 | 26.2 | 25.4 | 33.10 | 45 | 500 |

3.1.5.4 Forbidden Bands

Noise floor of spectrum analyzer with antenna factors and duty cycle correction converted to μV/M at approximately one meter.

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All measurements were taken with an HP 8566B Spectrum Analyzer. The bandwidth was 100 KHz for measurements below 1000 MHz. The bandwidth was 1 MHz for measurements above 1000 MHz. The video filter was off.

The noise floor measurements are summarized in the table below. See also the test data included in this report.

| Frequency Range | | | | | | | | | |
|-----------------|------------|---------------------|-----------------|----------------|----------------|----------------|----------------|------------------|--|
| Low Limit | High Limit | Noise Floor Reading | Duty Cycle Corr | Field Strength | Field Strength | FCC Limit @ 3M | FCC Limit @ 1M | | |
| MHz | MHz | dBuV | dB | dBuV/M | uV/M | uV/M | uV/M | | |
| 0.09000 | 0.11000 | N/A | 20 | N/A | N/A | 2400/F | | | |
| 0.49500 | 0.50500 | N/A | 20 | N/A | N/A | 2400/F | | | |
| 2.13750 | 2.19050 | N/A | 20 | N/A | N/A | 30 | 90 | | |
| 4.12500 | 4.12800 | N/A | 20 | N/A | N/A | 30 | 90 | | |
| 4.17725 | 4.17775 | N/A | 20 | N/A | N/A | 30 | 90 | | |
| 4.20725 | 4.20775 | N/A | 20 | N/A | N/A | 30 | 90 | | |
| 6.21500 | 6.21800 | N/A | 20 | N/A | N/A | 30 | 90 | | |
| 6.26775 | 6.26825 | N/A | 20 | N/A | N/A | 30 | 90 | | |
| 6.31175 | 6.31225 | N/A | 20 | N/A | N/A | 30 | 90 | | |
| 8.29100 | 8.29400 | N/A | 20 | N/A | N/A | 30 | 90 | | |
| 8.36200 | 8.36600 | N/A | 20 | N/A | N/A | 30 | 90 | | |
| 8.37625 | 8.38675 | N/A | 20 | N/A | N/A | 30 | 90 | | |
| 8.41425 | 8.41475 | N/A | 20 | N/A | N/A | 30 | 90 | | |
| 12.29000 | 12.29300 | N/A | 20 | N/A | N/A | 30 | 90 | | |
| 12.51975 | 12.52025 | N/A | 20 | N/A | N/A | 30 | 90 | | |
| 12.57675 | 12.57725 | N/A | 20 | N/A | N/A | 30 | 90 | | |
| 13.36000 | 13.41000 | N/A | 20 | N/A | N/A | 30 | 90 | | |
| 16.42000 | 16.42300 | N/A | 20 | N/A | N/A | 30 | 90 | | |
| 16.69475 | 16.69525 | N/A | 20 | N/A | N/A | 30 | 90 | | |
| 16.80425 | 16.80475 | N/A | 20 | N/A | N/A | 30 | 90 | | |
| 25.50000 | 25.67000 | N/A | 20 | N/A | N/A | 30 | 90 | | |
| 37.50000 | 38.25000 | 23.00 | 20 | 3.0 | 1.4 | 100 | 300 | | |
| 73.00000 | 74.60000 | 17.20 | 20 | -2.8 | 0.7 | 100 | 300 | | |
| 74.80000 | 75.20000 | 19.00 | 20 | -1.0 | 0.9 | 100 | 300 | | |
| 108.00000 | 121.94000 | 14.50 | 20 | -5.5 | 0.5 | 150 | 450 | | |
| 123.00000 | 138.00000 | 14.50 | 20 | -5.5 | 0.5 | 150 | 450 | | |
| 149.90000 | 150.05000 | 14.50 | 20 | -5.5 | 0.5 | 150 | 450 | | |
| 156.52475 | 156.52525 | 14.50 | 20 | -5.5 | 0.5 | 150 | 450 | | |
| 156.70000 | 156.90000 | 14.50 | 20 | -5.5 | 0.5 | 150 | 450 | | |
| 162.01250 | 167.17000 | 14.50 | 20 | -5.5 | 0.5 | 150 | 450 | | |
| 167.72000 | 173.20000 | 14.50 | 20 | -5.5 | 0.5 | 150 | 450 | | |
| 240.0 | 285.0 | 21.80 | 20 | 1.8 | 1.2 | 200 | 600 | | |
| 322.0 | 335.4 | 21.80 | 20 | 1.8 | 1.2 | 200 | 600 | | |
| 399.9 | 410.0 | 21.80 | 20 | 1.8 | 1.2 | 200 | 600 | | |
| 608.0 | 614.0 | 21.80 | 20 | 1.8 | 1.2 | 200 | 600 | | |
| 960.0 | 1240.0 | 21.80 | 20 | 1.8 | 1.2 | 500 | 1500 | 1065, 1171 | |
| 1300.0 | 1427.0 | 36.80 | 20 | 16.8 | 6.9 | 500 | 1500 | 1384 | |
| 1435.0 | 1626.5 | 38.00 | 20 | 18.0 | 7.9 | 500 | 1500 | 1491,1597 | |
| 1645.5 | 1646.5 | 40.90 | 20 | 20.9 | 11.1 | 500 | 1500 | | |
| 1660.0 | 1710.0 | 40.90 | 20 | 20.9 | 11.1 | 500 | 1500 | 1704 | |
| 1718.8 | 1722.2 | 43.70 | 20 | 23.7 | 15.3 | 500 | 1500 | | |
| 2200.0 | 2300.0 | 41.60 | 20 | 21.6 | 12.0 | 500 | 1500 | 2236 | |
| 2310.0 | 2390.0 | 41.60 | 20 | 21.6 | 12.0 | 500 | 1500 | 2343 | |
| 2483.5 | 2500.0 | 41.60 | 20 | 21.6 | 12.0 | 500 | 1500 | | |
| 2655.0 | 2900.0 | 41.60 | 20 | 21.6 | 12.0 | 500 | 1500 | 2662, 2769, 2875 | |
| 3260.0 | 3267.0 | 41.60 | 20 | 21.6 | 12.0 | 500 | 1500 | | |
| 3332.0 | 3339.0 | 41.60 | 20 | 21.6 | 12.0 | 500 | 1500 | | |
| 3345.8 | 3358.0 | 41.60 | 20 | 21.6 | 12.0 | 500 | 1500 | | |
| 3600.0 | 4400.0 | 41.60 | 20 | 21.6 | 12.0 | 500 | 1500 | | |

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The test data follows on the next 4 pages:

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TUV Product Service : Radiated Emissions Test Data

Project Number: W0079 RUN # 01

Test Area: LTS 3m

Test Date: 10-Feb-2000

Manufacturer: ITI

Model #: 55-779

Serial #: XX1-PROTO

Description: Sentrol Wireless PIR

Power:

NOTES:

Test Engineer: TKS

T.K. Swann

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| FREQ (MHz) | LEVEL (dBuV) | CABLE / ANT / PREAMP (dB) | FINAL (dBuV) | POL / HGT / AZ (m) (DEG) | DELTA1 N/A | DELTA2 N/A |
|---------------|-----------------|------------------------------|-----------------|-----------------------------|---------------|---------------|
|---------------|-----------------|------------------------------|-----------------|-----------------------------|---------------|---------------|

All emissions maximized - Polarization and Azimuth can be ignored

With preamp

| | | | | | | |
|--------|---------|-------------------|------|---------------|-----|-----|
| 319.51 | 102.8Pk | 1.6 / 13.9 / 26.2 | 92.1 | H / 1.0 / 0.0 | N/A | N/A |
| 319.51 | 86.0Pk | 1.6 / 13.9 / 26.2 | 75.3 | V / 1.0 / 0.0 | N/A | N/A |

Without preamp

| | | | | | | |
|--------|--------|------------------|------|---------------|-----|-----|
| 319.51 | 59.9Pk | 1.6 / 13.9 / 0.0 | 75.4 | V / 1.0 / 0.0 | N/A | N/A |
| 319.51 | 76.9Pk | 1.6 / 13.9 / 0.0 | 92.4 | H / 1.0 / 0.0 | N/A | N/A |

With preamp

| | | | | | | |
|--------|--------|-------------------|------|---------------|-----|-----|
| 426.02 | 61.8Pk | 1.9 / 16.4 / 26.1 | 54.0 | H / 1.0 / 0.0 | N/A | N/A |
| 426.02 | 47.9Pk | 1.9 / 16.4 / 26.1 | 40.1 | V / 1.0 / 0.0 | N/A | N/A |

| | | | | | | |
|--------|--------|-------------------|------|---------------|-----|-----|
| 532.52 | 35.6Pk | 2.2 / 18.1 / 26.0 | 29.9 | V / 1.0 / 0.0 | N/A | N/A |
| 532.52 | 42.8Pk | 2.2 / 18.1 / 26.0 | 37.0 | H / 1.0 / 0.0 | N/A | N/A |

| | | | | | | |
|--------|--------|-------------------|------|---------------|-----|-----|
| 639.02 | 53.8Pk | 2.4 / 19.5 / 25.9 | 49.8 | H / 1.0 / 0.0 | N/A | N/A |
| 639.02 | 44.0Pk | 2.4 / 19.5 / 25.9 | 40.0 | V / 1.0 / 0.0 | N/A | N/A |

| | | | | | | |
|--------|--------|-------------------|------|---------------|-----|-----|
| 213.01 | 56.4Pk | 1.3 / 10.9 / 26.2 | 42.3 | V / 1.0 / 0.0 | N/A | N/A |
| 213.01 | 69.0Pk | 1.3 / 10.9 / 26.2 | 54.9 | H / 1.0 / 0.0 | N/A | N/A |

| | | | | | | |
|--------|--------|------------------|------|---------------|-----|-----|
| 106.51 | 67.7Pk | 0.9 / 8.7 / 26.1 | 51.1 | H / 1.0 / 0.0 | N/A | N/A |
| 106.51 | 55.7Pk | 0.9 / 8.7 / 26.1 | 39.2 | V / 1.0 / 0.0 | N/A | N/A |

| | | | | | | |
|--------|--------|-------------------|------|---------------|-----|-----|
| 745.52 | 42.5Pk | 2.7 / 21.0 / 25.7 | 40.4 | V / 1.0 / 0.0 | N/A | N/A |
| 745.52 | 52.1Pk | 2.7 / 21.0 / 25.7 | 50.0 | H / 1.0 / 0.0 | N/A | N/A |

| | | | | | | |
|--------|--------|-------------------|------|---------------|-----|-----|
| 852.03 | 51.1Pk | 2.9 / 21.8 / 25.6 | 50.3 | H / 1.0 / 0.0 | N/A | N/A |
| 852.03 | 39.9Pk | 2.9 / 21.8 / 25.6 | 39.0 | V / 1.0 / 0.0 | N/A | N/A |

| | | | | | | |
|--------|--------|-------------------|------|---------------|-----|-----|
| 958.53 | 42.9Pk | 3.1 / 22.0 / 25.5 | 42.4 | V / 1.0 / 0.0 | N/A | N/A |
| 958.53 | 49.9Pk | 3.1 / 22.0 / 25.5 | 49.4 | H / 1.0 / 0.0 | N/A | N/A |

all above readings with 100 kHz RBW

RBW 1 MHz

| | | | | | | |
|---------|--------|-------------------|------|---------------|-----|-----|
| 1065.03 | 45.0Pk | 3.3 / 22.6 / 25.4 | 45.3 | H / 1.0 / 0.0 | N/A | N/A |
| 1065.03 | 37.5Pk | 3.3 / 22.6 / 25.4 | 37.9 | V / 1.0 / 0.0 | N/A | N/A |

| | | | | | | |
|---------|--------|-------------------|------|---------------|-----|-----|
| 1171.54 | 41.2Pk | 3.4 / 23.6 / 25.4 | 42.9 | V / 1.0 / 0.0 | N/A | N/A |
| 1171.54 | 47.2Pk | 3.4 / 23.6 / 25.4 | 48.9 | H / 1.0 / 0.0 | N/A | N/A |

TUV Product Service : Radiated Emissions Test Data

Project Number: W0079 RUN # 01

Test Area: LTS 3m

Test Date: 10-Feb-2000

Manufacturer: ITI

Model #: 55-779

Serial #: XX1-PROTO

Description: Sentrol Wireless PIR

Power:

NOTES:

Test Engineer: TKS

J.K. Swanson

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| FREQ (MHz) | LEVEL (dBuV) | CABLE / ANT / PREAMP (dB) | FINAL (dBuV) | POL / HGT / AZ (m) (DEG) | DELTA1 N/A | DELTA2 N/A |
|---------------|-----------------|------------------------------|-----------------|-----------------------------|---------------|---------------|
| 1278.04 | 51.2Pk | 3.6 / 24.8 / 25.3 | 54.3 | H / 1.0 / 0.0 | N/A | N/A |
| 1278.04 | 47.1Pk | 3.6 / 24.8 / 25.3 | 50.2 | V / 1.0 / 0.0 | N/A | N/A |
| 1384.54 | 42.4Pk | 3.8 / 26.2 / 25.4 | 46.9 | V / 1.0 / 0.0 | N/A | N/A |
| 1384.54 | 48.5Pk | 3.8 / 26.2 / 25.4 | 53.0 | H / 1.0 / 0.0 | N/A | N/A |
| 1491.04 | 46.4Pk | 3.9 / 27.6 / 25.5 | 52.4 | H / 1.0 / 0.0 | N/A | N/A |
| 1491.04 | 42.0Pk | 3.9 / 27.6 / 25.5 | 48.0 | V / 1.0 / 0.0 | N/A | N/A |
| 1597.55 | 30.4Pk | 4.1 / 27.5 / 25.5 | 36.5 | V / 1.0 / 0.0 | N/A | N/A |
| 1597.55 | 37.1Pk | 4.1 / 27.5 / 25.5 | 43.2 | H / 1.0 / 0.0 | N/A | N/A |
| 1704.05 | 35.1Pk | 4.3 / 27.4 / 25.4 | 41.4 | H / 1.0 / 0.0 | N/A | N/A |
| 1704.05 | 34.6Pk | 4.3 / 27.4 / 25.4 | 40.9 | V / 1.0 / 0.0 | N/A | N/A |
| 1810.55 | 34.0Pk | 4.4 / 27.7 / 25.5 | 40.6 | V / 1.0 / 0.0 | N/A | N/A |
| 1810.55 | 36.5Pk | 4.4 / 27.7 / 25.5 | 43.1 | H / 1.0 / 0.0 | N/A | N/A |
| 1917.05 | 28.2Pk | 4.5 / 28.4 / 25.6 | 35.6 | H / 1.0 / 0.0 | N/A | N/A |
| 1917.05 | 27.6Pk | 4.5 / 28.4 / 25.6 | 34.9 | V / 1.0 / 0.0 | N/A | N/A |
| 2023.56 | 30.1Pk | 4.7 / 29.0 / 25.7 | 38.0 | V / 1.0 / 0.0 | N/A | N/A |
| 2023.56 | 35.6Pk | 4.7 / 29.0 / 25.7 | 43.5 | H / 1.0 / 0.0 | N/A | N/A |
| 2130.06 | 36.8Pk | 4.8 / 29.3 / 25.9 | 45.0 | H / 1.0 / 0.0 | N/A | N/A |
| 2130.06 | 31.1Pk | 4.8 / 29.3 / 25.9 | 39.3 | V / 1.0 / 0.0 | N/A | N/A |
| 2236.56 | 33.5Pk | 5.0 / 29.6 / 26.0 | 42.1 | V / 1.0 / 0.0 | N/A | N/A |
| 2236.56 | 29.5Pk | 5.0 / 29.6 / 26.0 | 38.1 | H / 1.0 / 0.0 | N/A | N/A |
| 2343.07 | 38.3Pk | 5.1 / 29.9 / 26.4 | 46.9 | H / 1.0 / 0.0 | N/A | N/A |
| 2343.07 | 38.4Pk | 5.1 / 29.9 / 26.4 | 47.0 | H / 1.0 / 0.0 | N/A | N/A |
| 2449.59 | 40.9Pk | 5.2 / 30.2 / 26.8 | 49.6 | V / 1.0 / 0.0 | N/A | N/A |
| 2449.59 | 40.1Pk | 5.2 / 30.2 / 26.8 | 48.8 | H / 1.0 / 0.0 | N/A | N/A |
| 2556.09 | 38.0Pk | 5.3 / 30.5 / 26.8 | 47.0 | H / 1.0 / 0.0 | N/A | N/A |
| 2556.09 | 38.7Pk | 5.3 / 30.5 / 26.8 | 47.8 | V / 1.0 / 0.0 | N/A | N/A |
| 2662.59 | 38.6Pk | 5.5 / 30.7 / 26.3 | 48.4 | V / 1.0 / 0.0 | N/A | N/A |
| 2662.59 | 34.7Pk | 5.5 / 30.7 / 26.3 | 44.5 | H / 1.0 / 0.0 | N/A | N/A |
| 2769.09 | 35.0Pk | 5.6 / 30.8 / 26.0 | 45.4 | H / 1.0 / 0.0 | N/A | N/A |
| 2769.09 | 40.4Pk | 5.6 / 30.8 / 26.0 | 50.8 | V / 1.0 / 0.0 | N/A | N/A |
| 2875.60 | 31.4Pk | 5.7 / 31.0 / 25.9 | 42.2 | V / 1.0 / 0.0 | N/A | N/A |
| 2875.60 | 31.6Pk | 5.7 / 31.0 / 25.9 | 42.4 | H / 1.0 / 0.0 | N/A | N/A |

TUV Product Service : Radiated Emissions Test Data

Project Number: W0079 RUN # 01

Test Area: LTS 3m

Test Date: 10-Feb-2000

Manufacturer: ITI

Model #: 55-779

Serial #: XX1-PROTO

Description: Sentrol Wireless PIR

Power:

NOTES:

Test Engineer: TKS

J.K. Swanson

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| FREQ (MHz) | LEVEL (dBuV) | CABLE / ANT / PREAMP (dB) | FINAL (dBuV) | POL / HGT / AZ (m) (DEG) | DELTA1 N/A | DELTA2 N/A |
|---------------|-----------------|------------------------------|-----------------|-----------------------------|---------------|---------------|
| 2982.10 | 31.9Pk | 5.8 / 31.2 / 25.8 | 43.1 | H / 1.0 / 0.0 | N/A | N/A |
| 2982.10 | 29.9Pk | 5.8 / 31.2 / 25.8 | 41.0 | V / 1.0 / 0.0 | N/A | N/A |
| 3088.60 | 29.8Pk | 5.9 / 31.4 / 26.0 | 41.1 | V / 1.0 / 0.0 | N/A | N/A |
| 3088.60 | 29.2Pk | 5.9 / 31.4 / 26.0 | 40.5 | H / 1.0 / 0.0 | N/A | N/A |
| 3195.11 | 27.8Pk | 6.1 / 31.6 / 26.2 | 39.3 | H / 1.0 / 0.0 | N/A | N/A |
| 3195.11 | 30.1Pk | 6.1 / 31.6 / 26.2 | 41.6 | V / 1.0 / 0.0 | N/A | N/A |

end of scan

TUV Product Service : Radiated Emissions Test Data

Project Number: W0079 RUN # 01

Test Area: LTS 3m

Test Date: 10-Feb-2000

Manufacturer: ITI

Model #: 55-779

Serial #: XX1-PROTO

Description: Sentrol Wireless PIR

Power:

NOTES:

Test Engineer: TKS J.K. Swarna

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***** EMISSIONS SUMMARY *****

| FREQ (MHz) | LEVEL (dBuV) | CABLE / ANT / PREAMP (dB) | FINAL (dBuV) | POL / HGT / AZ (m) (DEG) | DELTA1 N/A | DELTA2 N/A |
|---------------|-----------------|------------------------------|-----------------|-----------------------------|---------------|---------------|
| 106.51 | 67.7Pk | 0.9 / 8.7 / 26.1 | 51.1 | H / 1.0 / 0.0 | N/A | N/A |
| 213.01 | 69.0Pk | 1.3 / 10.9 / 26.2 | 54.9 | H / 1.0 / 0.0 | N/A | N/A |
| 319.51 | 76.9Pk | 1.6 / 13.9 / 0.0 | 92.4 | H / 1.0 / 0.0 | N/A | N/A |
| 426.02 | 61.8Pk | 1.9 / 16.4 / 26.1 | 54.0 | H / 1.0 / 0.0 | N/A | N/A |
| 532.52 | 42.8Pk | 2.2 / 18.1 / 26.0 | 37.0 | H / 1.0 / 0.0 | N/A | N/A |
| 639.02 | 53.8Pk | 2.4 / 19.5 / 25.9 | 49.8 | H / 1.0 / 0.0 | N/A | N/A |
| 745.52 | 52.1Pk | 2.7 / 21.0 / 25.7 | 50.0 | H / 1.0 / 0.0 | N/A | N/A |
| 852.03 | 51.1Pk | 2.9 / 21.8 / 25.6 | 50.3 | H / 1.0 / 0.0 | N/A | N/A |
| 958.53 | 49.9Pk | 3.1 / 22.0 / 25.5 | 49.4 | H / 1.0 / 0.0 | N/A | N/A |
| 1065.03 | 45.0Pk | 3.3 / 22.6 / 25.4 | 45.3 | H / 1.0 / 0.0 | N/A | N/A |
| 1171.54 | 47.2Pk | 3.4 / 23.6 / 25.4 | 48.9 | H / 1.0 / 0.0 | N/A | N/A |
| 1278.04 | 51.2Pk | 3.6 / 24.8 / 25.3 | 54.3 | H / 1.0 / 0.0 | N/A | N/A |
| 1384.54 | 48.5Pk | 3.8 / 26.2 / 25.4 | 53.0 | H / 1.0 / 0.0 | N/A | N/A |
| 1491.04 | 46.4Pk | 3.9 / 27.6 / 25.5 | 52.4 | H / 1.0 / 0.0 | N/A | N/A |
| 1597.55 | 37.1Pk | 4.1 / 27.5 / 25.5 | 43.2 | H / 1.0 / 0.0 | N/A | N/A |
| 1704.05 | 35.1Pk | 4.3 / 27.4 / 25.4 | 41.4 | H / 1.0 / 0.0 | N/A | N/A |
| 1810.55 | 36.5Pk | 4.4 / 27.7 / 25.5 | 43.1 | H / 1.0 / 0.0 | N/A | N/A |
| 1917.05 | 28.2Pk | 4.5 / 28.4 / 25.6 | 35.6 | H / 1.0 / 0.0 | N/A | N/A |
| 2023.56 | 35.6Pk | 4.7 / 29.0 / 25.7 | 43.5 | H / 1.0 / 0.0 | N/A | N/A |
| 2130.06 | 36.8Pk | 4.8 / 29.3 / 25.9 | 45.0 | H / 1.0 / 0.0 | N/A | N/A |
| 2236.56 | 33.5Pk | 5.0 / 29.6 / 26.0 | 42.1 | V / 1.0 / 0.0 | N/A | N/A |
| 2343.07 | 38.4Pk | 5.1 / 29.9 / 26.4 | 47.0 | H / 1.0 / 0.0 | N/A | N/A |
| 2449.59 | 40.9Pk | 5.2 / 30.2 / 26.8 | 49.6 | V / 1.0 / 0.0 | N/A | N/A |
| 2556.09 | 38.7Pk | 5.3 / 30.5 / 26.8 | 47.8 | V / 1.0 / 0.0 | N/A | N/A |
| 2662.59 | 38.6Pk | 5.5 / 30.7 / 26.3 | 48.4 | V / 1.0 / 0.0 | N/A | N/A |
| 2769.09 | 40.4Pk | 5.6 / 30.8 / 26.0 | 50.8 | V / 1.0 / 0.0 | N/A | N/A |
| 2875.60 | 31.6Pk | 5.7 / 31.0 / 25.9 | 42.4 | H / 1.0 / 0.0 | N/A | N/A |
| 2982.10 | 31.9Pk | 5.8 / 31.2 / 25.8 | 43.1 | H / 1.0 / 0.0 | N/A | N/A |
| 3088.60 | 29.8Pk | 5.9 / 31.4 / 26.0 | 41.1 | V / 1.0 / 0.0 | N/A | N/A |
| 3195.11 | 30.1Pk | 6.1 / 31.6 / 26.2 | 41.6 | V / 1.0 / 0.0 | N/A | N/A |