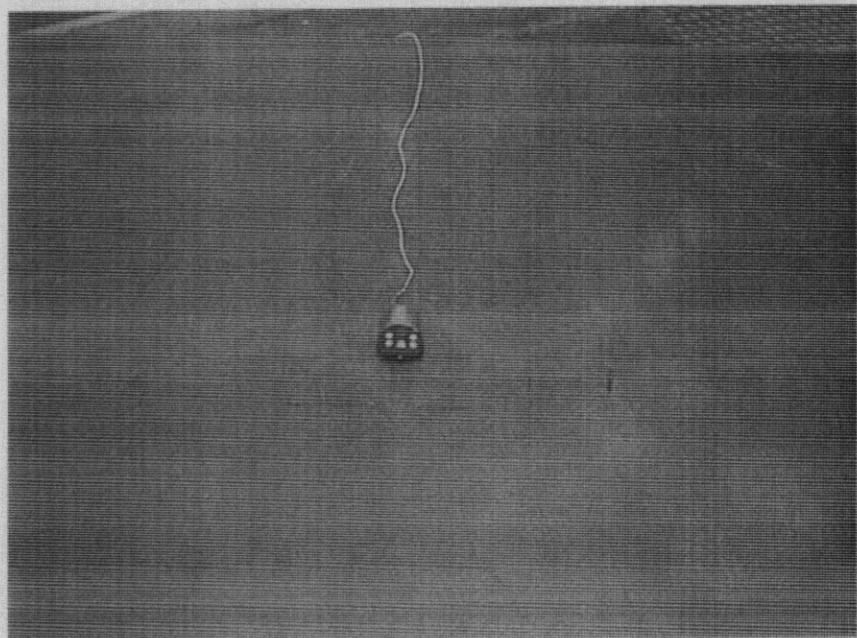


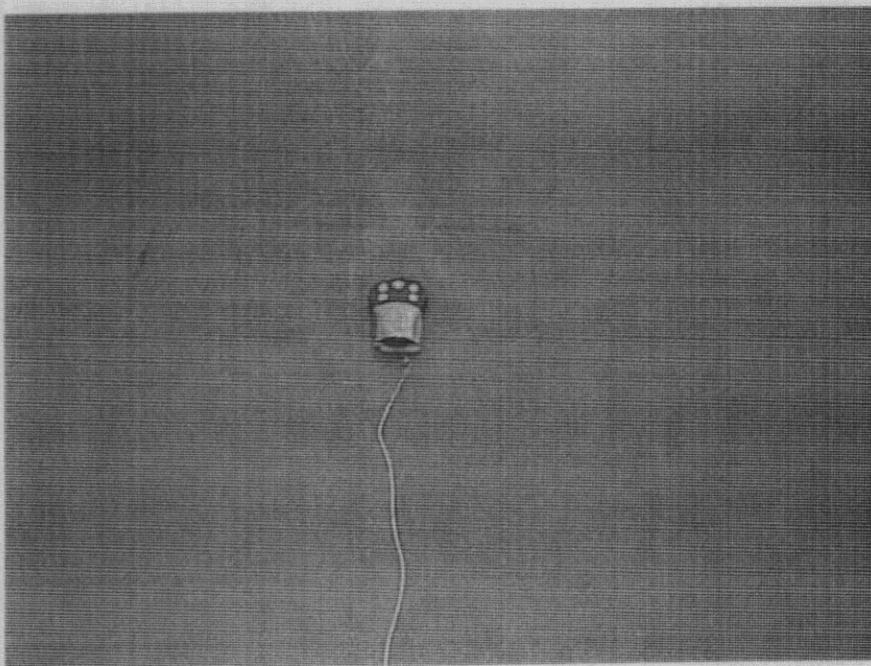


Instrument Specialties Co., Inc.
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Document Number: 92294
Section 8



FCC Part 15.209 Radiated Emissions



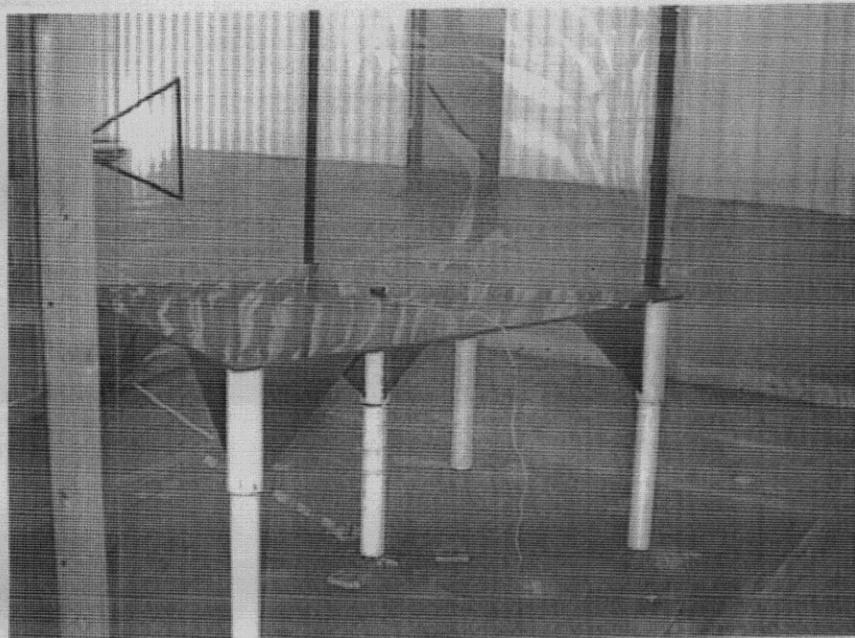
FCC Part 15.231 Radiated Emissions

12A - 13

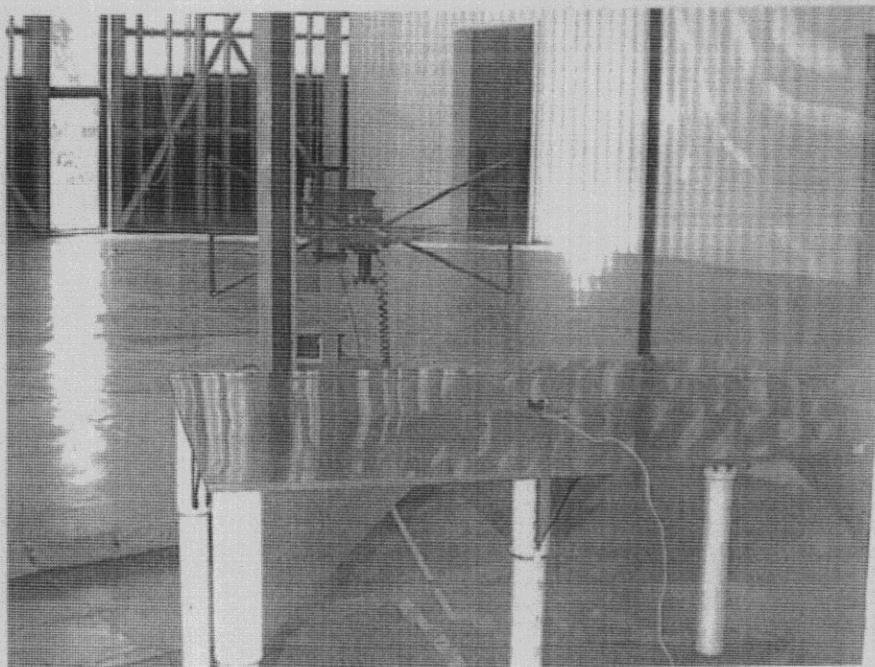


Instrument Specialties Co., Inc.
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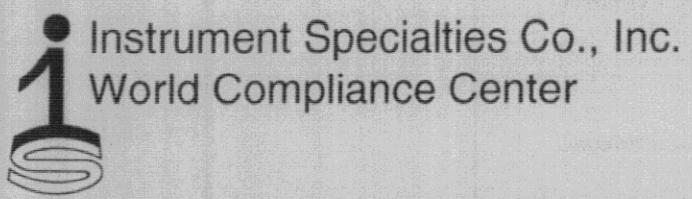
Document Number: 92294
Section 8



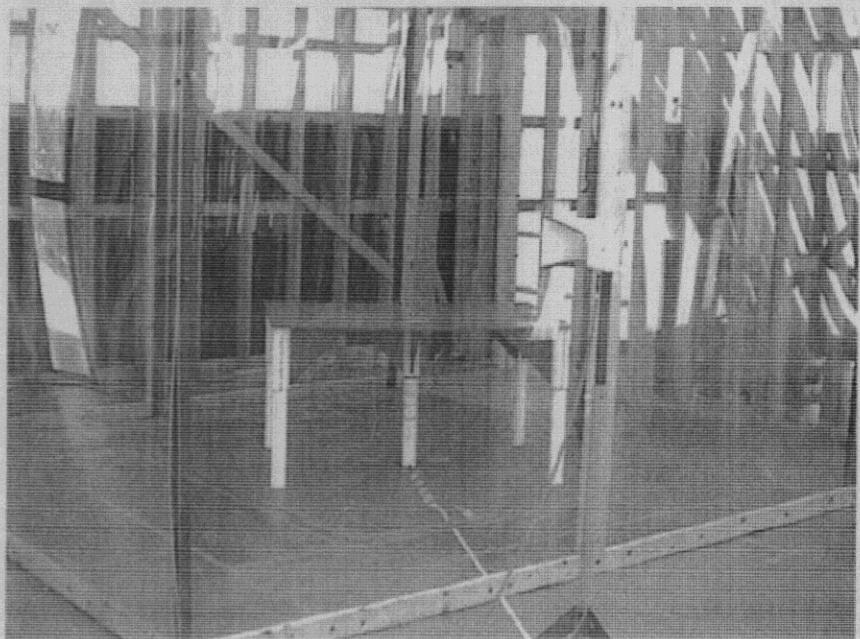
FCC Radiated Emissions- EUT with artificial hand



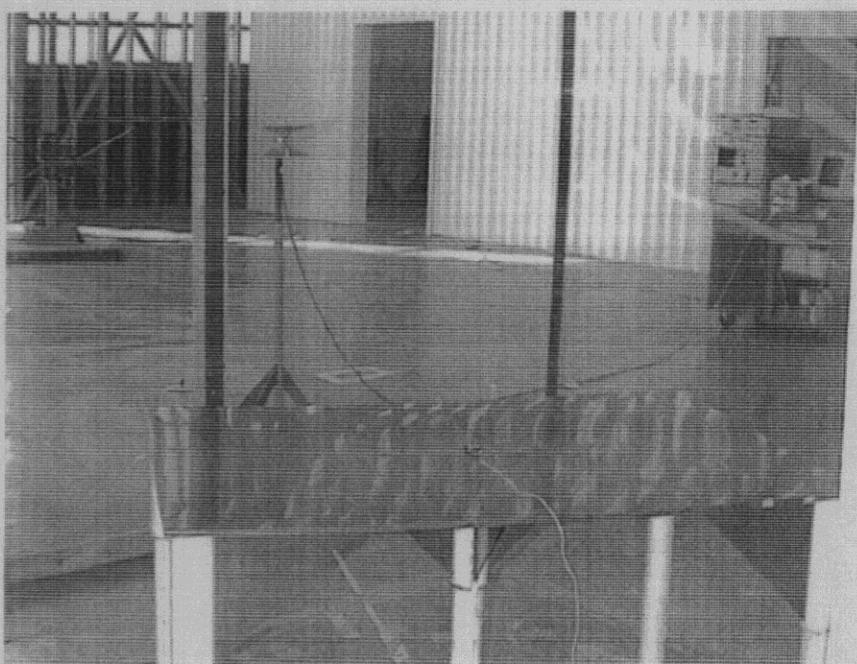
FCC Radiated Emissions- EUT with artificial hand



Document Number: 92294
Section 8



FCC Part 15.231 Radiated Emissions



FCC Part 15.231 Radiated Emissions

12C-13

**INSTRUMENT SPECIALTIES CO., INC. – WORLD COMPLIANCE CENTER
EMC MEASUREMENT/TECHNICAL REPORT**

FCC PART 15 Certification Submittal and Grant of Equipment Authorization Submittal For: Bulldog Security FCC ID Number: J3S399T2005	<i>Document No.</i>	<i>Revision</i>	<i>Issue Date</i>
	92294-FCC	0	3 May 1999

EXHIBIT C – Product Technical Information

This exhibit contains the following items:

User's Manual
Operating Instructions

**INSTRUMENT SPECIALTIES CO., INC. – WORLD COMPLIANCE CENTER
EMC MEASUREMENT/TECHNICAL REPORT**

**FCC PART 15 Certification Submittal and
Grant of Equipment Authorization Submittal**
For: Bulldog Security
FCC ID Number: J3S399T2005

<i>Document No.</i>	<i>Revision</i>	<i>Issue Date</i>
92294-FCC	0	3 May 1999

User's Manual

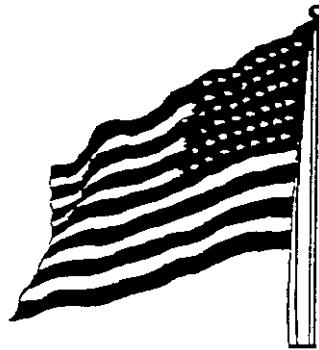


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REMOTE TRANSMITTERS ARE \$29.00 PLUS \$5.00
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VISA, MASTER CARD, OR DISCOVER CARD NUMBER
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350 Cadiz Avenue
Wintersville, Ohio 43952

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BULLDOG

CREATING A HIGHER STANDARD

CAUTION: YOU MUST SET SHOCK SENSOR

CONGRATULATIONS; You have purchased the most advanced vehicle alarm ever made. Your alarm is a technological breakthrough using state of the art technology and components. It is completely controlled by computer and there are absolutely no moving parts.

FEATURES

*1 Piece self-contained
Only 1 wire*

2 Four button remotes

Extra loud siren speaker

Battery back-up (optional)

Current sensing

*State of the art electronic
dual stage shock sensor*

Talking alarm

Instant panic mode

Car finder

Automatic alarm reset

Scan deterrent

Limited lifetime guarantee

MODEL 2001

BENEFITS

Fast and easy to install, usually 5 to 10 minutes with no experience. Fits virtually any vehicle.

Remotely activates alarm in chirp or voice mode. Activates car finder and instant panic.

Extremely loud siren and voice deters thief from further tampering.

Alarm will continue to sound even with vehicle battery disconnected.

Alarm will sound with changes in current. (example; Dome light or battery disconnected.)

Not sensitive to temperature or age; extremely sensitive to shock or glass breakage. Example, a light tap and the alarm will say "You are too close to the vehicle, please move away", a harder shock and the alarm will say "I was tampered with" and the siren will sound.

Demands authority and attention compared to non-talking alarms.

Should you feel threatened you can remotely activate, with a press of the remote button, a woman's voice shouting "Please Help Me", and siren sounding.

Helps you locate your vehicle.

After 35 seconds the alarm will stop and rearm itself.

Protects your car from scanning devices often used by thieves to disarm systems.

Guarantees life-long protection.

INSTALLATION INSTRUCTIONS

F

STEP #1

Locate a solid, well grounded metal surface under the hood or behind the grill. Any metal fender, firewall, or metal plate behind the grill will do. Caution, do not mount close to exhaust or other high temperature areas. Make sure the alarm as well as the metal it's mounted to is solid.

See Figure #1

STEP #2

Use three self-tapping screws (included) to secure alarm. Screw it into a well grounded solid metal surface. Caution you must use all 3 screws.

See Figure #2

STEP #3

Connect the power wire (red) to any constant +12 volt supply. (Example: Battery) If installation is correct, alarm will say "Thank You".

See Figure #3

STEP #4

Congratulations, you did it! Now you must set the shock sensor. Please refer to your operating instructions (#4).

STEP #5 (Optional)

For even greater protection, you may now install a 9 volt alkaline battery. This would allow your alarm to operate in the event of a dead or disconnected battery.

STEP #6

For maximum range, keep the Yellow antenna wire straight and as far away from metal as possible.

STEP #7

If for any reason you disconnect the power, you must disconnect the 9 volt battery. When reinstalling, the red wire must be connected before the optional 9V battery.

FIGURE 2

FIGURE 1

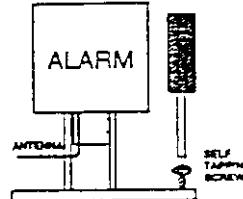
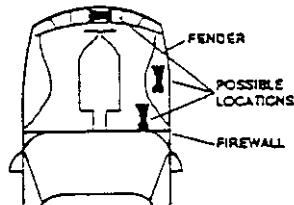
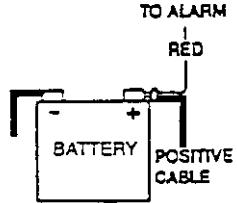


FIGURE 3



OPERATING INSTRUCTIONS

F

CAUTION: YOU MUST SET SHOCK SENSOR

1. Press button #1 (Arm Talk) alarm will set and a man's voice will acknowledge by saying "System Armed".
2. Press button #1 again to disarm. Alarm will disarm and a man's voice will acknowledge by saying "System Disarmed".
 - (a). Exception:
If the vehicle was tampered with while alarm was set, the alarm will have sounded for 35 seconds, shut off and then rearmed itself. When disarmed the alarm will say "System disarmed, I was tampered with". A good time to inspect the vehicle for forced entry marks, paint dings or scratches, and check to be sure a wheel isn't partially removed, etc...
3. Button #2 (Arm Chirp) does the same as button #1, except there is no voice. Example: 1 chirp to arm, 2 chirps to disarm, 3 chirps if violation occurred while the alarm was set.
4. **Setting Shock Sensor:** Disarm system, press button #3 (Finder) for 2 seconds. Alarm will say "Please Adjust Sensor Now". Immediately release the button. Tap your hood or windshield at the sensitivity level you wish. The harder you tap the car, the less sensitive the alarm will be. Alarm will then say "Thank You". Shock sensor is now set at this sensitivity. Any shock at this level or greater will sound the alarm. Set as often as you wish, however the sensitivity level will remain set until the battery is disconnected or you reset it. If you do not tap the car it will automatically go to maximum sensitivity, this is used only if the car is parked inside.
5. Your alarm contains a dual stage shock sensor - Here's how it works. In operating instruction #4, you set the sensitivity to the level that will set the alarm off, however, if your car receives a slight tap of 25% to 99% of original setting, the alarm will respond, "You are too close to the vehicle, please move away." The dual stage only works when arming with button #1. Example: Car door hitting your car. The dual stage will not work in maximum sensitivity.
6. **Special Situations** - Sometimes when you park your car in heavy rain, near a construction zone, near trucks and etc. you may wish to lower the sensitivity of your alarm for this arming only. When arming with button #1; to lower the sensitivity by 50% press button #2 within 2 seconds. To shut the shock sensor off completely, press button #2 twice within 2 seconds. When arming with button #2, simply reverse the procedure. The next time the alarm is set it will go back to the original setting.
7. If the vehicle is violated, a man's voice shouts "I was tampered with" and the siren sounds. After 35 seconds if the violation stops, the alarm will stop and rearm itself.
8. Your alarm will ignore all violations, current and shock, for approximately 45 seconds after you arm it.
9. Press button #3 (Finder) alarm will help you find your car by chirping 8 times. Button #3 only chirps when alarm is armed.
10. Press button #4 (Red) for instant panic alarm. A woman's voice shouts "Please help me" and alarm sounds. Press again to stop or it will stop after 35 seconds.
11. NEED HELP - CALL TOLL FREE 1-800-878-8007.

MODEL 2001

Made in U.S.A.



**INSTRUMENT SPECIALTIES CO., INC. – WORLD COMPLIANCE CENTER
EMC MEASUREMENT/TECHNICAL REPORT**

FCC PART 15 Certification Submittal and
Grant of Equipment Authorization Submittal
For: Bulldog Security
FCC ID Number: J3S399T2005

<i>Document No.</i>	<i>Revision</i>	<i>Issue Date</i>
92294-FCC	0	3 May 1999

Operating Instructions

**INSTRUMENT SPECIALTIES CO., INC. – WORLD COMPLIANCE CENTER
EMC MEASUREMENT/TECHNICAL REPORT**

**FCC PART 15 Certification Submittal and
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92294-FCC	0	3 May 1999

EXHIBIT D – Technical Details

The following sheets are provided in this exhibit:

Block Diagrams & Description

List of Materials

Diagrams of Component Layout

Schematics

Please Note: The manufacturer wishes to keep EXHIBIT D, Technical Details, confidential. Release of this information may be harmful to the manufacturer.

**INSTRUMENT SPECIALTIES CO., INC. – WORLD COMPLIANCE CENTER
EMC MEASUREMENT/TECHNICAL REPORT**

FCC PART 15 Certification Submittal and Grant of Equipment Authorization Submittal For: Bulldog Security FCC ID Number: J3S399T2005	<i>Document No.</i>	<i>Revision</i>	<i>Issue Date</i>
	92294-FCC	0	3 May 1999

EXHIBIT E – Photographs

The following photos are provided in this exhibit:

- Photo # 1 Model T2005 – Rear – Showing FCC ID Label
- Photo # 2 Model T2005 – Front of EUT
- Photo # 3 Non Component Side of PCB
- Photo # 4 Component Side of PCB

Please Note: The manufacturer wishes to keep EXHIBIT D, Technical Details, confidential. Release of this information may be harmful to the manufacturer.

**INSTRUMENT SPECIALTIES CO., INC. – WORLD COMPLIANCE CENTER
EMC MEASUREMENT/TECHNICAL REPORT**

FCC PART 15 Certification Submittal and
Grant of Equipment Authorization Submittal
For: Bulldog Security
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EXHIBIT F – Description of Measurement Facility

FCC Acceptance Letter for Measurement Facility.

FEDERAL COMMUNICATIONS COMMISSION

7435 Oakland Mills Road
Columbia, MD 21046
Telephone: 301-725-1585 (ext-218)
Facsimile: 301-344-2050

August 22, 1997

IN REPLY REFER TO
31040/SIT
1300F2

Instrument Specialties Co., Inc.
Shielding Way
Delaware Water Gap, PA 18327-0136

Attention: J. Fred Gardner

Re: Measurement facility located at above address
(3 and 10 meter site)

Gentlemen:

Your submission of the description of the subject measurement facility has been reviewed and found to be in compliance with the requirements of Section 2.948 of the FCC Rules. The description has, therefore, been placed on file and the name of your organization added to the Commission's list of facilities whose measurement data will be accepted in conjunction with applications for certification or notification under Parts 15 or 18 of the Commission's Rules. Our list will also indicate that the facility complies with the radiated and AC line conducted test site criteria in ANSI C63.4-1992. Please note that this filing must be updated for any changes made to the facility, and at least every three years the data on file must be certified as current.

Per your request, the above mentioned facility has been also added to our list of those who perform these measurement services for the public on a fee basis. This list is published periodically and is also available on the Laboratory's Public Access Link as described in the enclosed Public Notice.

Sincerely,



Thomas W. Phillips
Electronics Engineer
Customer Service Branch

**INSTRUMENT SPECIALTIES CO., INC. – WORLD COMPLIANCE CENTER
EMC MEASUREMENT/TECHNICAL REPORT**

FCC PART 15 Certification Submittal and Grant of Equipment Authorization Submittal For: Bulldog Security FCC ID Number: J3S399T2005	<i>Document No.</i>	<i>Revision</i>	<i>Issue Date</i>
	92294-FCC	0	3 May 1999

EXHIBIT G - Measurement / Technical Report

The following document is located in this exhibit:

Document No.: 92294
Revision: 0
Title: FCC Part 15, Subpart C, Section 15.231, Bulldog Security, Model T2005
Transmitter, FCC ID: J3S399T2005
Issue Date: 3 May 1999

**INSTRUMENT SPECIALTIES CO., INC. – WORLD COMPLIANCE CENTER
EMC MEASUREMENT/TECHNICAL REPORT**

FCC PART 15 Subpart C Section 15.231 MFGR: Bulldog Security EUT: Model T2005 Transmitter FCC ID: J3S399T2005	<i>Document No.</i>	<i>Revision</i>	<i>Issue Date</i>
	92294	0	3 May 1999
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EMC MEASUREMENT/TECHNICAL REPORT

Manufacturer: **Bulldog Security**
Equipment Under Test: **Model T2005 Transmitter**
FCC ID No.: **J3S399T2005**

Test Report No.: **92294**
Purchase Order No.: **15069**

DOCUMENT HISTORY

<i>Revision</i>	<i>Issue Date</i>	<i>Affected Page(s)</i>	<i>Description of Modifications</i>	<i>Revised By</i>	<i>Approved By</i>
0	3 May 1999		Initial release		

INSTRUMENT SPECIALTIES CO., INC. – WORLD COMPLIANCE CENTER
EMC MEASUREMENT/TECHNICAL REPORT

FCC PART 15 Subpart C Section 15.231 MFGR: Bulldog Security EUT: Model T2005 Transmitter FCC ID: J3S399T2005	<i>Document No.</i>	<i>Revision</i>	<i>Issue Date</i>
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EMC MEASUREMENT/TECHNICAL REPORT

Document No.: 92294

From

Instrument Specialties Co., Inc.
World Compliance Center

**Test for
 Bulldog Security
 Model T2005 Transmitter**

Written By

Bridget A. Keesser

Bridget A. Keesser, EMC Sales Representative

4 May 1999

Date

Reviewed By

Grant Metzgar

Grant Metzgar, EMC Technician

4 May, 1999

Date

Authorized By

J. Fred Gardner

J. Fred Gardner, EMC Quality Assurance Manager

4 May 1999

Date

TEST PERSONNEL – Instrument Specialties Co., Inc.

Grant Metzgar, EMC Technician

18 March 1999

EUT RECEIPT/DISPOSITION INFORMATION

Date of Receipt of Equipment Under Test (EUT)	10 March 1999
Disposition of EUT	Retained by Manufacturer

Test Facility	Instrument Specialties Company Incorporated
Address	Shielding Way
City, State Zip Code	Delaware Water Gap, PA 18327
Phone	(570) 424-8510 ext. 1216
Fax	(570) 421-4227

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INSTRUMENT SPECIALTIES CO., INC. – WORLD COMPLIANCE CENTER
EMC MEASUREMENT/TECHNICAL REPORT

FCC PART 15 Subpart C Section 15.231 MFGR: Bulldog Security EUT: Model T2005 Transmitter FCC ID: J3S399T2005	Document No.	Revision	Issue Date
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INSTRUMENT SPECIALTIES CO., INC. – WORLD COMPLIANCE CENTER
EMC MEASUREMENT/TECHNICAL REPORT

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1 MEASUREMENT/TECHNICAL REPORT SUMMARY

Representative Manufacturer Manufacturer Address City, State Zip Code Phone Fax	Dave Wissel Bulldog Security 288 Canton Road Wintersville, OH 43953 740-264-4710 740-264-7306
Type of Authorization	Certification Part 15, Subpart C - Intentional Radiators
Applicable FCC Rules	<p>PART 15 – RADIO FREQUENCY DEVICES</p> <p>Prepared in accordance with the requirements of FCC Rules and Regulations as listed in 47 CFR Chapter 1 (10-1-97 Edition). The following subparts are applicable to the results in this test report:</p> <p>Part 0, Subpart C Paragraph 0.459 – Requests that materials or information submitted to the Commission be withheld from public inspection</p> <p>Part 2, Subpart J Paragraph 2.1031 - Certification</p> <p>Part 15, Subpart A Paragraph 15.31 – Measurement Standards Paragraph 15.33 – Frequency Range of Radiated Measurements Paragraph 15.35 – Measurement Detector Functions and Bandwidths</p> <p>Part 15, Subpart C – Intentional Radiators Paragraph 15.203 – Antenna Requirement Paragraph 15.205 – Restricted Bands of Operation Paragraph 15.209 – Radiated emission limits, general requirements Paragraph 15.231 – Operation with the bands 40.66 – 40.70 MHz and above 70 MHz</p>
Equipment Under Test	Model T2005 Transmitter
FCC ID	J3S399T2005
Testing Dates	18 March 1999
Summary of Data	The equipment tested is capable of operation in accordance with the requirements of 47 CFR Chapter 1 Part 15.

**INSTRUMENT SPECIALTIES CO., INC. – WORLD COMPLIANCE CENTER
EMC MEASUREMENT/TECHNICAL REPORT**

FCC PART 15 Subpart C Section 15.231 MFGR: Bulldog Security EUT: Model T2005 Transmitter FCC ID: J3S399T2005	Document No.	Revision	Issue Date
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2 GENERAL INFORMATION

2.1 Product Description

Equipment Under Test	Model T2005 Transmitter
Model Number	T2005
Serial Number	None
Description	The EUT is an IC encoder that creates a digital bit stream corresponding to a particular button press. The digital output of the encoder "toggles" the RF oscillator on-and-off. A printed line acts as both the resonant element and antenna for the oscillator used with a vehicle alarm system.
Clock Frequencies	303.83 MHz

Refer to the Product Technical Information included as Attachment C of this submittal for additional details about the EUT.

2.2 Related Submittal(s)/Grant(s)

There are no related submittal grants.

2.3 Table: Tested System Details

<i>Mfgr.</i>	<i>Description</i>	<i>Model No.</i>	<i>Serial No.</i>	<i>FCC ID</i>
Bulldog Security	Encoder, RF Oscillator, Loop Antenna	T2005	None	J3 S399T2005

2.4 Test Methodology

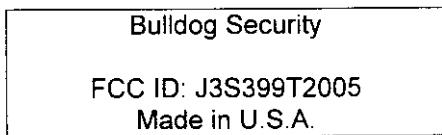
Radiated emissions tests were performed according to the general provisions of ANSI C63.4-1992 (American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz). Radiated emissions tests were performed at an antenna to EUT distance of 3 meters.

2.5 Test Facility

The open area test site and measurement facility used to collect the radiated data is located at the Instrument Specialties Co., Inc. test facility in Delaware Water Gap, PA. This site has been fully described in a report submitted to the FCC, and accepted in a letter dated 22 August 1997 (31040/SIT 1300F2). The lab is accredited by NVLAP (LAB CODE: 200076-0) for FCC Part 15 and CISPR 22 emissions measurements.

3 PRODUCT LABELING

3.1 FCC ID Label



This device complies with PART 15, Paragraph 15.19 rules and regulations. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference including interference that may cause undesired operation.

3.2 Location of Label on EUT

The ID label shall be located on rear of unit. The compliance statement shall be located in the Users Manual. See Attachment B for Diagram of FCC ID Label.

**INSTRUMENT SPECIALTIES CO., INC. – WORLD COMPLIANCE CENTER
EMC MEASUREMENT/TECHNICAL REPORT**

FCC PART 15 Subpart C Section 15.231
MFGR: Bulldog Security
EUT: Model T2005 Transmitter
FCC ID: J3S399T2005

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4 SYSTEM TEST CONFIGURATION

4.1 Justification

The EUT tested was a prototype unit identical in construction to a production unit. The test sample was arranged in a tabletop configuration. The EUT was configured for a constant CW transmission at 303.83 MHz. Modulation characteristic measurements were recorded and plotted for duty cycle correction factors. Resistor R2 can be replaced to vary the output level. The unit was tested with the originally installed 150 ohm resistor.

4.2 Special Accessories

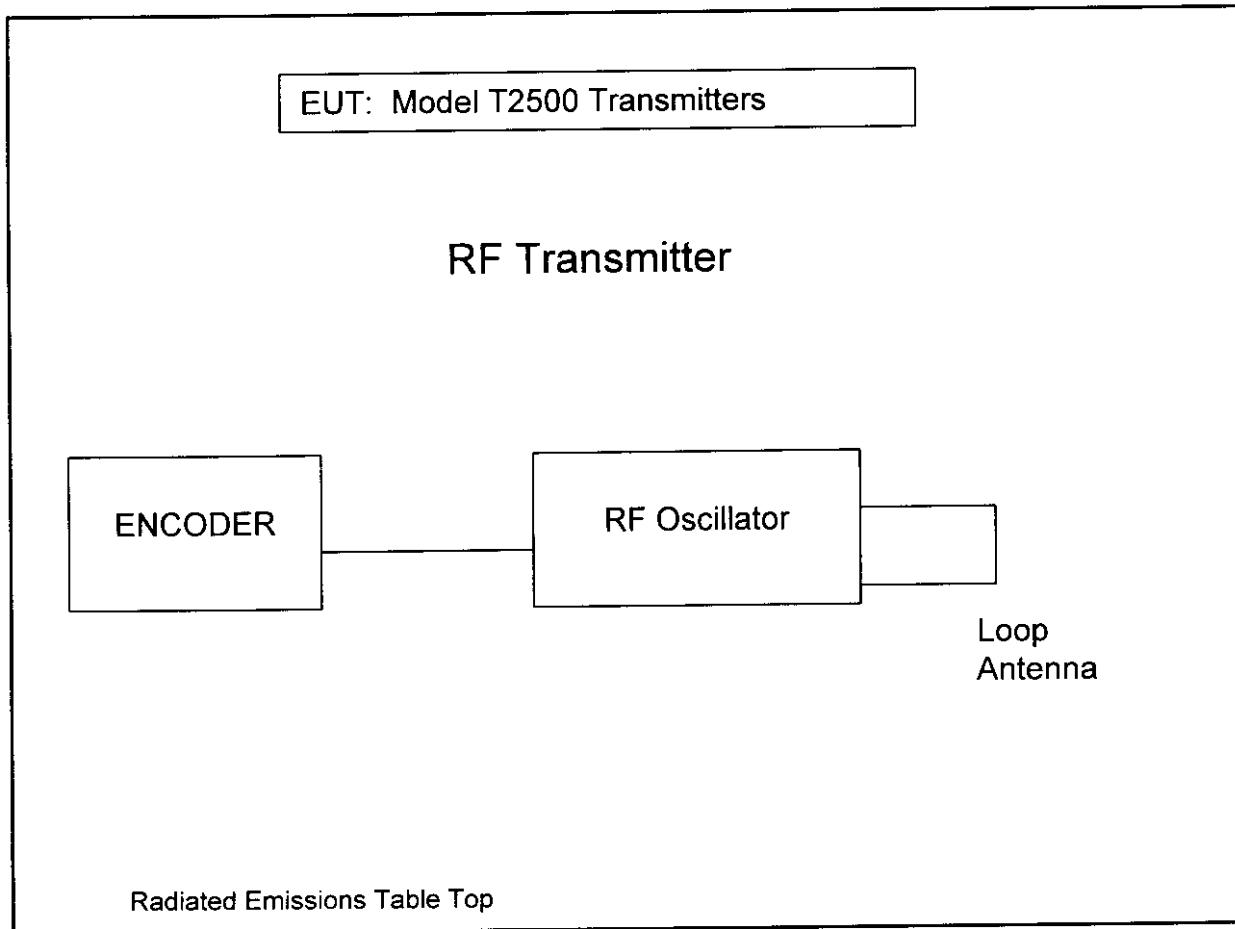
The EUT requires no special accessories to comply with the required specification limits.

4.3 Equipment Modifications

No modifications and/or adjustments were made to the EUT during compliance testing to achieve the required specification limits.

4.4 Configuration of Tested System

4.5 Figure: Configuration of Tested System



**INSTRUMENT SPECIALTIES CO., INC. – WORLD COMPLIANCE CENTER
EMC MEASUREMENT/TECHNICAL REPORT**

FCC PART 15 Subpart C Section 15.231
MFGR: Bulldog Security
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5 BLOCK DIAGRAM(S) OF THE EUT

Refer to Exhibit D - Technical Details, of FCC Submittal Package for the following EUT diagram(s):

1. Block Diagram & Description
2. List of Materials
3. Diagrams of Component Layout
4. Schematics

INSTRUMENT SPECIALTIES CO., INC. – WORLD COMPLIANCE CENTER
EMC MEASUREMENT/TECHNICAL REPORT

FCC PART 15 Subpart C Section 15.231 MFGR: Bulldog Security EUT: Model T2005 Transmitter FCC ID: J3S399T2005	Document No.	Revision	Issue Date
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6 TEST DATA

6.1 Radiated Emissions Data

6.1.1 Table: FCC Part 15, Subpart C, Section 15.231 Radiated Emissions Limits

Fundamental Frequency (MHz)	Field Strength of fundamental dB(μV/m)	Field Strength of Spurious Emissions dB(μV/m)
260 – 470	71.48 – 81.94	51.48 – 61.94
303.83	74.95*	54.95*

* Linear interpolation of field strength requirement.

6.1.2 Table: Section 15.209 Radiated Emissions Limits General Requirements

Fundamental Frequency (MHz)	Field Strength dB(μV/m)
30 – 88	40
88 – 216	43.52
216 – 960	46.02
Above 960	53.97

Note 1: Radiated Emission Limits for the Restricted Bands are the same as Table 6.1.2.

6.1.3 Data Collection Procedure

The following data lists the significant emission frequencies, measured levels, correction factor (includes cable, preamplifier, antenna and duty cycle), the corrected reading, plus the limit. An initial scan of the device was made over the frequency range of 30 MHz to 10 times the fundamental frequency of 303.83 MHz in a shielded enclosure. Supplemental data is included in the Section 9 of this report.

6.1.4 Table: Judgement

EUT	Model T2005 Transmitter
Judgement	Passed by 1.60 dB

6.1.5 Table: Summary of Highest Radiated Emissions Levels

Frequency MHz	Measured Level dB(μV)	Polarity V/H	Antenna Height cm	Antenna Azimuth deg	Correction Factor dB(1/m)	Corrected Reading dB(μV/m)	Limit dB(μV/m)	Margin dB
303.83	99.20	H	100	120	-25.90	73.30	74.90	-1.60
607.66	60.20	H	150	255	-18.30	41.90	54.95	-13.05
911.49	51.80	H	100	150	-15.10	36.70	54.95	-18.25
1215.32	57.40	H	120	120	-16.32	41.08	54.95	-13.88
1519.15	55.30	H	120	120	-14.73	40.57	53.97	-13.40*
1822.98	57.10	H	120	120	-19.65	37.45	54.95	-17.50
2126.81	56.80	H	120	120	-15.26	41.54	54.95	-13.41
2430.64	52.50	H	120	120	-13.93	38.57	54.95	-16.38
2734.47	43.90	H	120	120	-12.18	31.72	53.97	-22.25*
3038.30	20.90	H	120	120	-8.55	12.35	54.95	-42.60

- All measured levels are made using a peak unless stated otherwise, with an IF bandwidth of 120 kHz, up to 1 GHz and a 1 MHz IF bandwidth above 1 GHz. A video filter was not used.

- No emissions were detected below the fundamental frequency.

* Note: Frequencies measured are in their restricted band.

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6.1.6 Correction Factors

Frequency MHz	Antenna Factor +(dB)	Cable Loss	Preamp Gain -(dB)	Duty Cycle Correction -(dB)	Correction Factor dB(1/m)
303.83	13.30	4.00	32.50	10.7	-25.90
607.66	20.20	4.10	31.90	10.7	-18.30
911.49	23.60	4.20	32.20	10.7	-15.10
1215.32	27.62	4.20	37.44	10.7	-16.32
1519.15	28.37	4.30	36.70	10.7	-14.73
1822.98	23.80	4.10	36.85	10.7	-19.65
2126.81	28.37	3.90	36.83	10.7	-15.26
2430.64	29.37	4.10	36.70	10.7	-13.93
2734.47	29.87	5.25	36.60	10.7	-12.18
3038.30	30.70	6.40	34.95	10.7	- 8.55

6.1.7 Field Strength Calculation

The field strength is calculated by adding the antenna factor and cable factor, and subtracting the amplifier gain (if any) and duty cycle correction factor from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG - DC$$

Where:

FS = field strength dB (μ V/m)

RA = receiver amplitude dB (μ V)

AF = antenna factor dB/m

CF = cable attenuation factor dB

AG = amplifier gain dB

DC = duty cycle correction factor

Example: Assume a receiver reading of 99.2 dB (μ V) is obtained. The antenna factor of 13.3 and cable factor of 4 is added. The amplifier gain of 32.5 dB is subtracted, and the duty cycle correction factor of 10.7 is subtracted giving a field strength of 73.3 dB (μ V/m).

$$FS = 99.2 + 13.3 + 4.0 - 32.5 - 10.7 = 73.3 \text{ dB } (\mu\text{V}/\text{m})$$

6.1.8 Measurement Uncertainty

The measurement uncertainty (with a confidence level of 95%) for this test was: 5.59 dB

6.1.9 Duty Cycle Correction Factor

The duty cycle correction factor according to the IC manufacturer is 10.7 dB corresponding to a worst case on time of 29 milliseconds. The measured pulse train has a repetition cycle of 177.0 milliseconds made up of a 47.5 millisecond burst and off time. The burst contains 48 long pulses of 460 microseconds and 18 short pulses of 260 microseconds. The total on time was 26.76 milliseconds. This corresponds to a 11.4 dB correction factor averaged over a 100 millisecond time. It was decided to use the manufacturer claim of 10.7 dB since this was reported as worst case.

Plots of the duty cycle measurements can be found in Section 9.

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6.2 Section 15.231 Bandwidth Measurements

The requirement for bandwidth is 0.25% of the fundamental measured 20 dB down from the modulated carrier. At 303.83 MHz 0.25% is 7.59 MHz. The actual measurement at 20 dB down was 3.86 MHz which complies with the rules. See Section 9 for bandwidth measurements.

6.3 Section 15.203 Antenna Requirement

Requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. Since there is no external antenna and no user installable antenna the device complies with the rules.

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7 TEST EQUIPMENT

A complete list of test equipment used of reach test can be found in their perspective test procedure. The absolute performance calibration of equipment requiring calibration is performed on an as needed basis in accordance with MIL-STD 45662. The test equipment is capable of making measurements within tolerances of at least +/- 2 dB amplitude and +/- 2% frequency deviation. Equipment certifications showing traceability to NIST (National Institute of Standards and Technology) are maintained on file at Instrument Specialties Corporate offices in Delaware Water Gap, PA. All equipment is checked and verified for proper operation before and after each series of tests.

7.1 Measurement Equipment

Mfgr./Model	Description	Serial	Calibration Due
HP/8572A	(100 Hz – 22 GHz) EMI receiver sys #1	3010A01163	9/30/99
HP/85879A	EMI Radiated Emissions Measurement software	VA 02.01	Calibration Not Required
CHA/CBL6111A	(30 MHz – 1 GHz) bilog	1822	12/28/99
EMCO/3115	Antenna	2845	10/11/99
HP/54502A	400 MHz Bandwidth	2934A00710	1/24/00

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8 TEST MEASUREMENT PHOTOS

8.1.1 Test Photographs

<i>Photo Layout</i>	<i>Test Type</i>	<i>Remarks</i>	<i>Page No.</i>
Top	Radiated Emissions	Model T2005	12A
Bottom	Radiated Emissions	Model T2005	
Top	Radiated Emissions	EUT with artificial hand	12B
Bottom	Radiated Emissions	EUT with artificial hand	
Top	Radiated Emissions	Model T2005	12C
Bottom	Radiated Emissions	Model T2005	

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9 SUPPLEMENTAL TEST DATA

9.1 Table: Index of Test Data Sheets

9.1.1 Test Data Sheets

<i>Test Type</i>	<i>Test Name</i>	<i>Comments</i>	<i>Data Format</i>	<i>Page No.</i>
Radiated Emissions	FCC Part 15 at 3 meters	FCC Part 15 Subpart C, Section 15.231	tabulated	13A
Duty Cycle	Correction factor	Repetition pulse train	plotted	13B
Duty Cycle	Correction factor	47.5 ms burst	plotted	13C
Duty Cycle	Correction factor	Long pulse of 460 μ s	plotted	13D
Duty Cycle	Correction factor	Short pulse of 260 μ s	plotted	13E
Duty Cycle	Correction factor	Off time of 2 ms during burst	plotted	13F
Bandwidth	FCC Part 15	FCC Part 15 Subpart C, Section 15.231	plotted	13G

FCC Part 15 Subpart C Section 15.231
Radiated Emissions @ 3 Meters
Data Sheet

Date : 18-Mar-99

Customer Bulldog Security

Tech : Grant Metzgar

EUT : Model T2005 Transmitter

Frequency (MHz)	Measured Level (dBuV)	Antenna Factor +(dB)	Cable Loss +(dB)	Preamp Gain -(dB)	Corrected Level (dBuV/m)	Spec Limit (dBuV/m)	Polarity (V/H)	Delta to Limit	Restricted Bands
1 303.83	99.2	13.3	4	32.5	73.30	74.9	H	-1.60	No
2 607.66	60.2	20.2	4.1	31.9	41.90	54.95	H	-13.05	No
3 911.49	51.8	23.6	4.2	32.2	36.70	54.95	H	-18.25	No
4 1215.32	57.4	27.62	4.20	37.44	41.08	54.95	H	-13.88	No
5 1519.15	55.3	28.37	4.30	36.70	40.57	53.97	H	-13.40	Yes
6 1822.98	57.1	23.80	4.10	36.85	37.45	54.95	H	-17.50	No
7 2126.81	56.8	28.37	3.90	36.83	41.54	54.95	H	-13.41	No
8 2430.64	52.5	29.37	4.10	36.70	38.57	54.95	H	-16.38	No
9 2734.47	43.9	29.87	5.25	36.60	31.72	53.97	H	-22.25	Yes
10 3038.3	20.9	30.70	6.40	34.95	12.35	54.95	H	-42.60	No

Duty Cycle Correction Factor : 10.7

Equipment used :

Low loss cables , S/n 329 (3M), S/n 338 (3m), S/n 331 (1m)

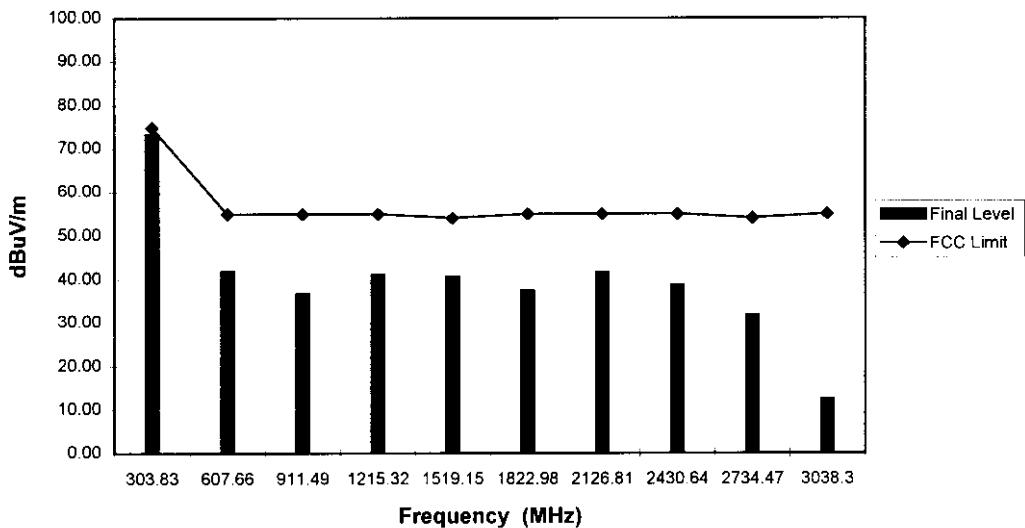
HP8449B Preamp

EMCO 3115 Antenna S/n 2845

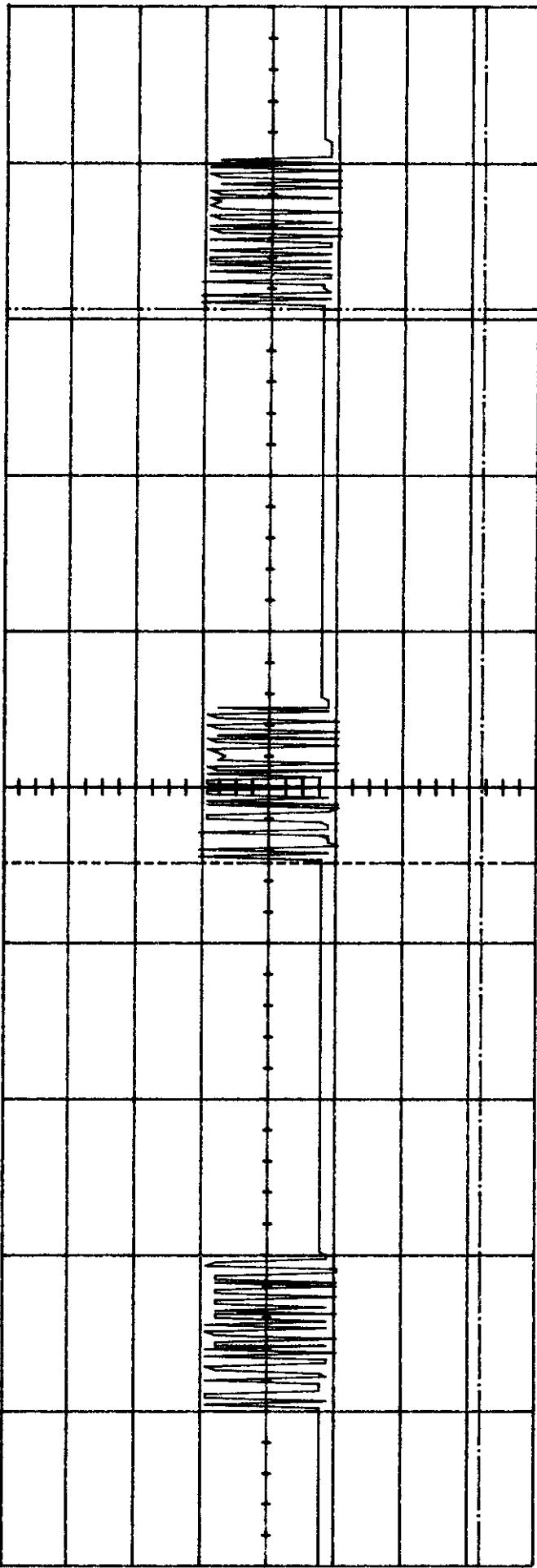
HP8566B Spectrum Analyzer

FCC Part 15.231 Intentional Transmitter

Bull Dog Security Model T2005 Transmitter



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Timebase
 Main 50.0 ms/div -50.0000 ms
Sensitivity
 Channel 1 5.00 V/div 0.00000 V
Trigger mode : Edge
 On Positive Edge Of Chan1
Trigger Level
 Chan1 = 0.00000 V (noise reject OFF)
 Holdoff = 40.000 ns

Delay/Pos
 Left
Reference
 Probe 10.00 : 1

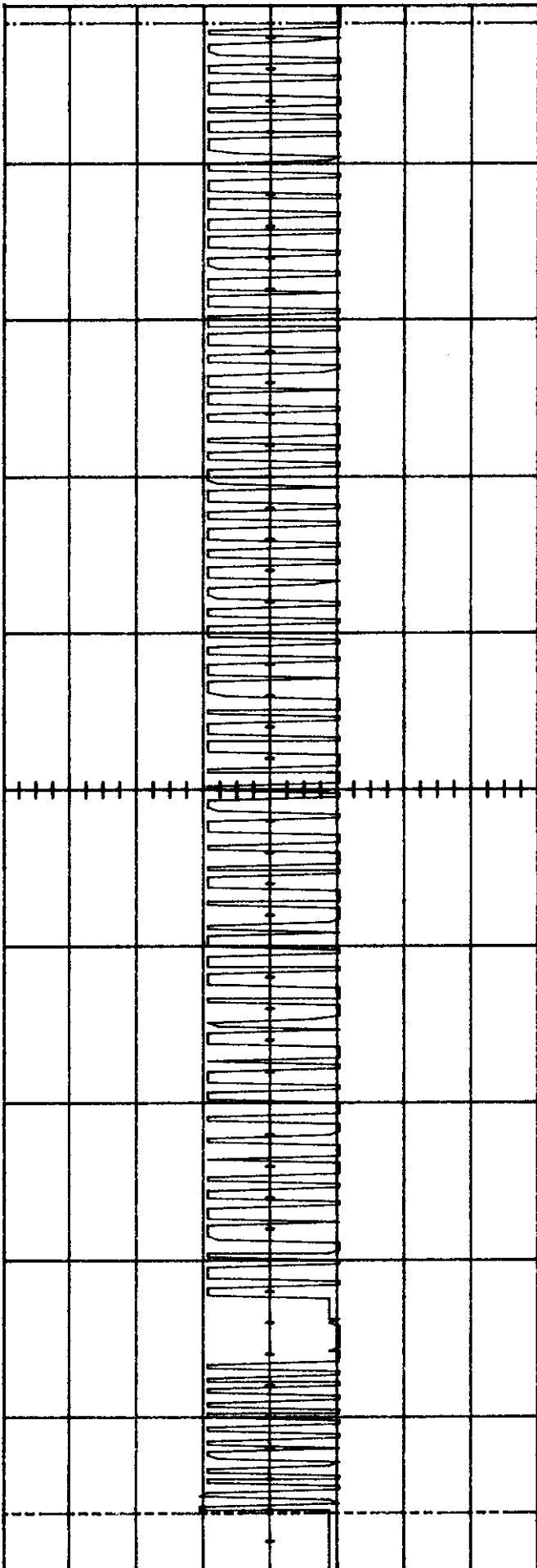
Mode
Attitime (NORMAL)
Coupling
 dc (1M Ohm)

Markers
 vmarker2 (c1) = 1.88438 V
 vmarker1 (c1) = -1.60000 V
 delta v (c1) = 3.58438 V

start = 353.000 ms
delta t = 176.000 ms
 $1/\text{delta t} = 5.64872$ Hz

Measurements
 v rms (c1) = 4.29688 V

Bull Dog Security
 Pulse Train Repetition



13c

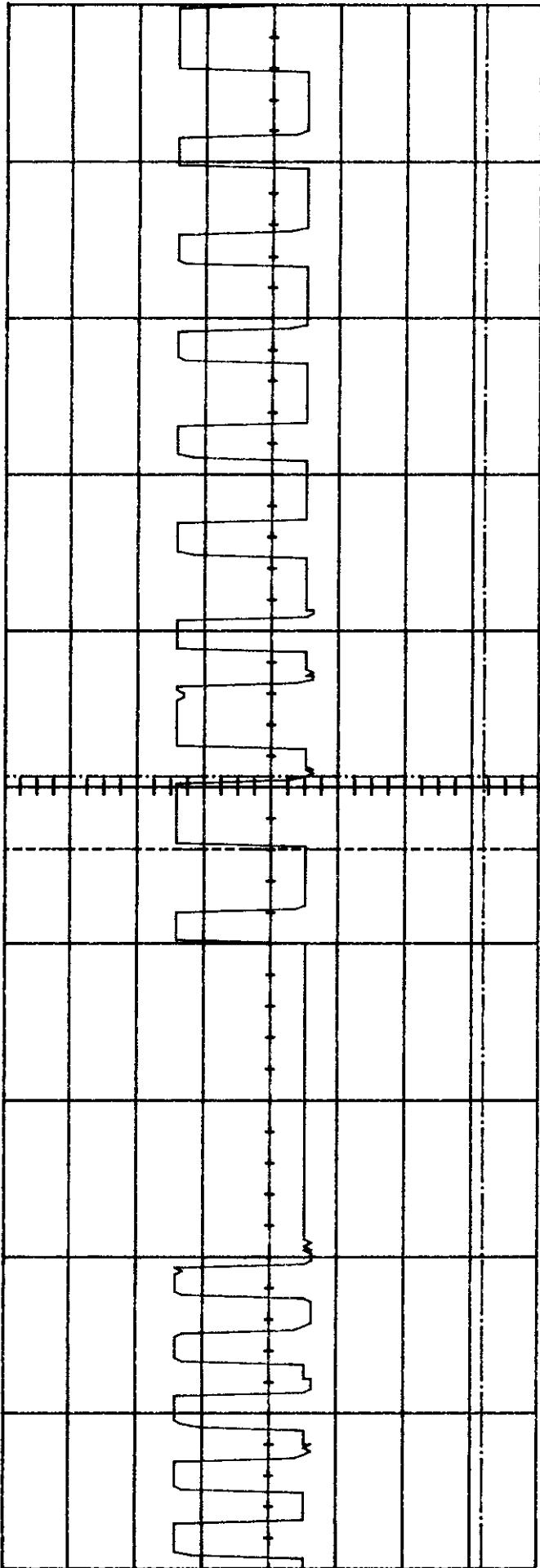
Timebase
Main 5.00 ms/div **Delay/Pos** -2.00000 ms
Sensitivity 5.00 V/div **Reference** Left **Mode** Realtime (NORMAL)
Channel 1 5.00 V/div **Offset** 0.00000 V **Probe** Probe **Coupling** dc (1M ohm)
Trigger mode : Edge
On Positive Edge Of Chan1
Trigger Level
Chan1 = 0.00000 V (noise reject OFF)
Holdoff = 40.000 ns

Markers
Vmarker2 (c1) = 1.98438 V
Vmarker1 (c1) = -3.46875 V
delta V (c1) = 6.45313 V
stop = 47.4000 ms
start = -100.000 us
delta t = 47.5000 ms
1/delta t = 21.0526 Hz

Measurements
V rms (c1) = 5.04663 V

Burk Doc Security

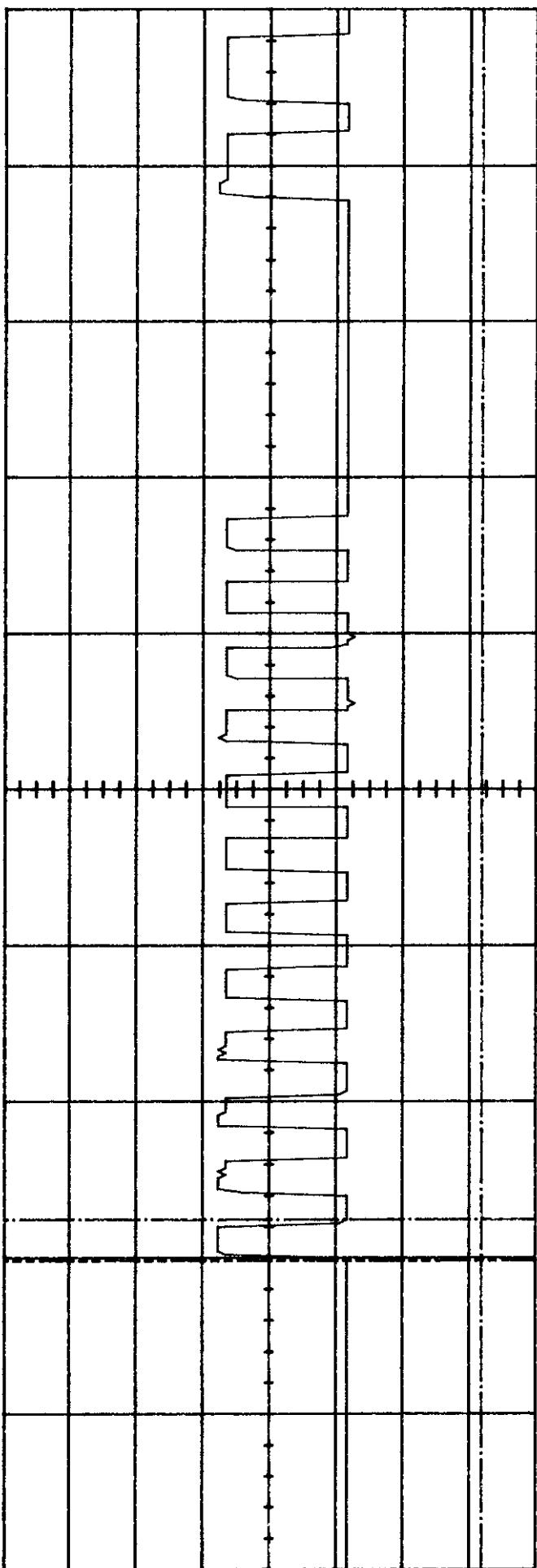
ONE PULSE TRAIN



Timebase 1.00 ms/div **Delay/Pos** 2.80000 ms
Main Left **Reference** Left **Mode** NORMAL
Sensitivity 5.00 V/div **Offset** 0.00000 V **Resistime** (NORMAL)
Channel 1 **Probe** Probe **Coupling** dc (1M ohm)
Marker
 vmarker2 (c1) = 1.88438 V
 vmarker1 (c1) = -1.60000 V
 delta v (c1) = 3.58438 V
stop = 7.88000 ms
start = 7.40000 ms
delta t = 460.001 us
 $1/\text{delta t}$ = 2.17391 kHz
Measurements
 v rms (c1) = 4.78336 V

Trigger mode : Edge
 On Positive Edge Of Chan1
 Trigger Level
 Chan1 = 0.00000 V (noise reject OFF)
 Holdoff = 40.000 ns

BULLDOG SECURITY
 EXPANDED PULSE TRAIN



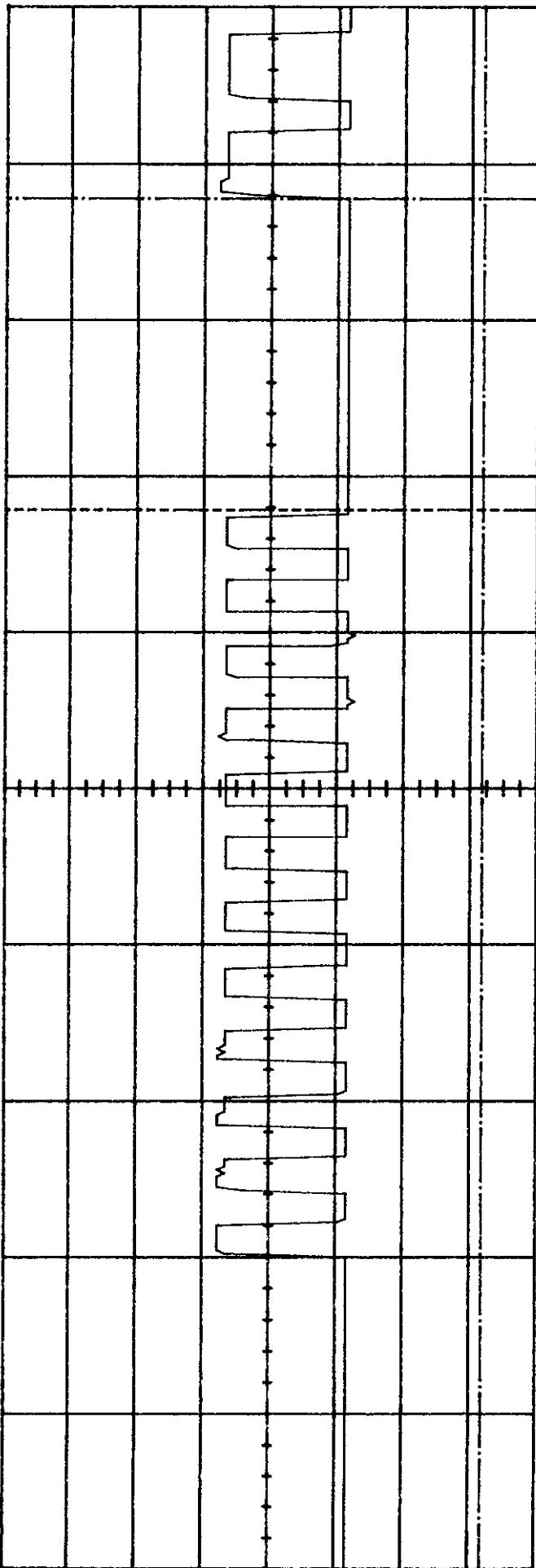
Timebase
 Main 1.00 ms/div
Delay/Pos -2.00000 ms
Reference Left
Sensitivity 5.00 V/div
Channel 1 10.00 : 1
Mode NORMAL
Realttime (NORMAL)
Coupling dc (1M Ohm)

 Trigger mode : Edge
 On Positive Edge Of Chan1
 Trigger Level
 Chan1 = 0.00000 V (noise reject OFF)
 Holdoff = 40.000 ns

Markers
 Vmarker2 (c1) = 1.98438 V
 Vmarker1 (c1) = -1.60000 V
 delta V (c1) = 3.58438 V
 stop = 240.000 us
 start = -20.0000 us
 delta t = 260.000 us
 1/delta t = 3.84615 kHz

Measurements
 V rms (c1) = 4.76493 V

BULLDOG SECURITY



Main
 Timebase 1.00 ms/div
 Delay/Pos -2.00000 ms
 Reference Left
Sensitivity
 Channel 1 5.00 V/div
 Trigger mode : Edge
 On Positive Edge Of Chan1
 Trigger Level
 Chan1 = 0.00000 V (noise reject OFF)
 Holdoff = 40.000 ns

Mode
 Realtime (NORMAL)
Coupling
 Probe 10.00 : 1
 dc (1M Ohm)

Markers
 Vmarker2 (c1) = 1.88438 V
 Vmarker1 (c1) = -1.60000 V
 delta V (c1) = 3.58438 V

stop = 6.78000 ms
start = 4.78000 ms
delta t = 2.00000 ms
i/delta t = 500.000 Hz

Measurements
 V rms (c1) = 4.78493 V

BURDOC SECURITY

MODULATED
BANDWIDTH @ 20 dB Down
303.83 MHz \times 0.25% = 7.59 MHz Accuracy

