



1250 Peterson Dr., Wheeling, IL 60090

Company: Intermatic Incorporated
Model Tested: HA01
Report Number: 12960

FCC Rules and Regulations / Intentional Radiators

Operational in the 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz Bands

Part 15, Subpart C, Section 15.249

THE FOLLOWING "MEETS" THE ABOVE TEST SPECIFICATION

Formal Name: In-Wall Duplex Receptacle
Kind of Equipment: RF Controlled Duplex Receptacle
Test Configuration: Direct wired to 125VAC main Hot & Neutral wires.
(Tested at 120 vac, 60 Hz)
Model Number(s): HA01
Model(s) Tested: HA01
Serial Number(s): NA
Date of Tests: February 16 & 19, 2007
Test Conducted For: Intermatic Incorporated
7777 Winn Road
Spring Grove, Illinois 60081

NOTICE: "This report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government". Please see the "Additional Description of Equipment Under Test" page listed inside of this report.

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Model Tested: HA01
Report Number: 12960

SIGNATURE PAGE

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Intermatic Incorporated



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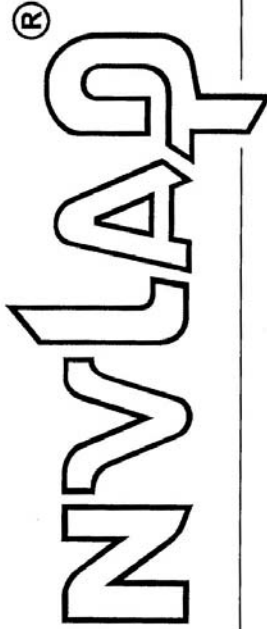
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National Institute of Standards and Technology



Certificate of Accreditation to ISO/IEC 17025:1999

NVLAP LAB CODE: 100276-0

D.L.S. Electronic Systems, Inc.
Wheeling, IL

is recognized by the National Voluntary Laboratory Accreditation Program for conformance with criteria set forth in
NIST Handbook 150:2001 and all requirements of ISO/IEC 17025:1999.
Accreditation is granted for specific services, listed on the Scope of Accreditation, for:

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS



2006-10-01 through 2007-09-30

Effective dates

Sally S. Buser
For the National Institute of Standards and Technology

NVLAP-01C (REV. 2005-05-19)



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Company: Intermatic Incorporated
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1.0 SUMMARY OF TEST REPORT

It was found that the In-Wall Duplex Receptacle, Model Number(s) HA01, "**meets**" the radio interference conducted and radiated emission requirements of the FCC "Rules and Regulations", Part 15, Subpart C, Section 15.249 for operational in the 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz Bands.

2.0 INTRODUCTION

On February 16 & 19, 2007, a series of radio frequency interference measurements was performed on In-Wall Duplex Receptacle, Model Number(s) HA01, Serial Number: NA. The tests were performed according to the procedures of the FCC as stated in the "Methods of Measurement of Radio-Noise Emissions for Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz" found in the American National Standards Institute, ANSI C63.4-2003. Tests were performed by personnel of D.L.S. Electronic Systems, Inc. who are responsible to Donald L. Sweeney, Senior EMC Engineer.

D.L.S. Electronic Systems, Inc. is a full service EMC/Safety Testing Laboratory accredited to ISO 17025. NVLAP Certificate and Scope can be viewed at <http://www.dlsemc.com/certificate>. Our facilities are registered with the FCC, Industry Canada, and VCCI.

3.0 OBJECT

The purpose of this series of tests was to determine if the test sample could meet the radio frequency interference emission requirements of the FCC "Rules and Regulations", Part 15, Subpart C, Sections 15.35(b), 15.37(d), 15.209 & 15.249 for Intentional Radiators operating in the Bands 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24-24.25 GHz.



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4.0 TEST SET-UP

All emission tests were performed at D.L.S. Electronic Systems, Inc. and set up according to the American National Standards Institute, ANSI C63.4-2003, Section 8, (Figures 11a and 11b). The conducted tests were performed with the test item placed on a non-conductive table (table top equipment), located in the test room. Equipment normally operated on the floor was tested by placing it on the metal ground plane. The ground plane has an electrical isolation layer over its surface approximately 7mm thick. The power line supplied was connected to a dual line impedance stabilization network electrically bonded to the ground plane, located on the floor. The networks were constructed per the requirements of the American National Standards Institute, ANSI C63.4-2003, Section 4, (Figure 2).

All radiated emissions tests were performed with the test item placed on a 80 cm high rotating non-conductive table, located in the test room. Equipment normally operated on the floor was placed on a metal covered turntable which is flush with the surrounding conducting ground plane. The ground plane has an electrical isolation layer over its surface approximately 7 mm thick. The EUT is separated from the turntable ground plane by a non-conductive layer. The equipment under test was set up according to ANSI C63.4-2003, Sections 6 and 8.



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5.0 TEST EQUIPMENT (Bandwidths and Detector Function)

All preliminary data below 1000 MHz was automatically plotted using the HP Spectrum Analyzer or ESI 26/40 Fixed Tuned Receiver. The data was taken using Peak, Quasi-Peak or the Average Detector Functions as required. This information was then used to determine the frequencies of maximum emissions. Above 1000 MHz, final data was taken using the Average Detector.

Below 1000 MHz, final data was taken using the HP Spectrum Analyzer and/or ESI 26/40 Fixed Tuned Receiver. These plots were made using the Peak or Quasi-Peak Detector functions, with manual measurements performed on the questionable frequencies using the Quasi-Peak or the Average Detector Function of the Analyzer or ESI 26/40 Fixed Tuned Receiver as required. Above 1000 MHz, final data was taken using the Average Detector on the Spectrum Analyzer.

The bandwidths shown below are specified by ANSI C63.4-2003, Section 4.2.

Frequency Range	Bandwidth (-6 dB)
10 to 150 kHz	200 Hz
150 kHz to 30 MHz	9 kHz
30 MHz to 1 GHz	120 kHz
Above 1 GHz	1 MHz

A list of the equipment used can be found in Table 1. All primary equipment was calibrated against known reference standards with a verified traceable path to NIST.



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6.0 AMBIENT MEASUREMENTS

For emissions measurements, broadband antennas and an EMI Test Receiver with a panoramic spectrum display are used. First the frequency range is scanned and displayed on the test receiver display. Next the scanned frequency range is divided into smaller ranges, and then it is manually tuned through to determine the emissions from the EUT. A headset or loudspeaker is connected to the test receiver's AM/FM demodulated output as an aid in detecting ambient signals and finding frequencies of significant emission from the EUT. If there is any doubt as to the source of the emission, it is further investigated by rotating the EUT, or by disconnecting the power from the EUT.

The EUT is set up in its typical configuration and operated in its various modes. For tabletop systems, cables are manipulated within the range of likely configurations. For floor-standing equipment, the cables are located in the same manner as the user would install them and no further manipulation is made. If the manner of cable installation is not known, or if it changes with each installation, cables or wires for floor-standing equipment shall be manipulated to the extent possible to produce the maximum level of emissions. For each mode of operation, the frequency spectrum is monitored. Variations in antenna height, antenna polarization, EUT azimuth, and cable or wire placement (each variable within bounds specified elsewhere) are explored to produce the emissions that have the highest amplitude relative to the limit. These methods are performed to the specifications in MP-5 or ANSI C63.4-2003, as appropriate.



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7.0 DESCRIPTION OF TEST SAMPLE: (See also Paragraph 8.0)

7.1 Description:

The HA01 is an electronically-controlled duplex-receptacle-style module intended to be used to control the ON and OFF switching of a receptacle outlet. One outlet provides switched operation by means of a local control pushbutton, or by means of a wireless RF controller sold separately. This product is rated for indoor use.

7.2 PHYSICAL DIMENSIONS OF EQUIPMENT UNDER TEST

Length: 42.41mm x Width: 43.942mm Height: 104.902mm

7.3 LINE FILTER USED:

NA

7.4 INTERNAL CLOCK FREQUENCIES:

Switching Power Supply Frequencies:

NA

Clock Frequencies:

7.376974 MHz

7.5 DESCRIPTION OF ALL CIRCUIT BOARDS:

- | | |
|-----------------------------|----------------------------|
| 1. Pushbutton interface PCB | PN: 900-221137-120100 v1.7 |
| 2. Main Power Board PCB | PN: 900-221157-101100 v2.2 |
| 3. Relay mounting PCB | PN: 000-221147-111100 v1.7 |
| 4. RF module 4-Layer PCB | PN: 280100380 RX1 |



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8.0 ADDITIONAL DESCRIPTION OF TEST SAMPLE:

(See also Paragraph 7.0)

1: There were no additional descriptions noted at the time of test.

I certify that the above, as described in paragraph 7.0, describes the equipment tested and will be manufactured as stated.

By: _____
Signature

Title

For: _____
Company

Date



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9.0 PHOTO INFORMATION AND TEST SET-UP

Item 0 In-Wall Duplex Receptacle

Model Number: HA01 Serial Number: NA

Item 1 Non-shielded AC Power Line Cord. 2.5m

Item 2 Non-shielded AC Output Cable. 2m

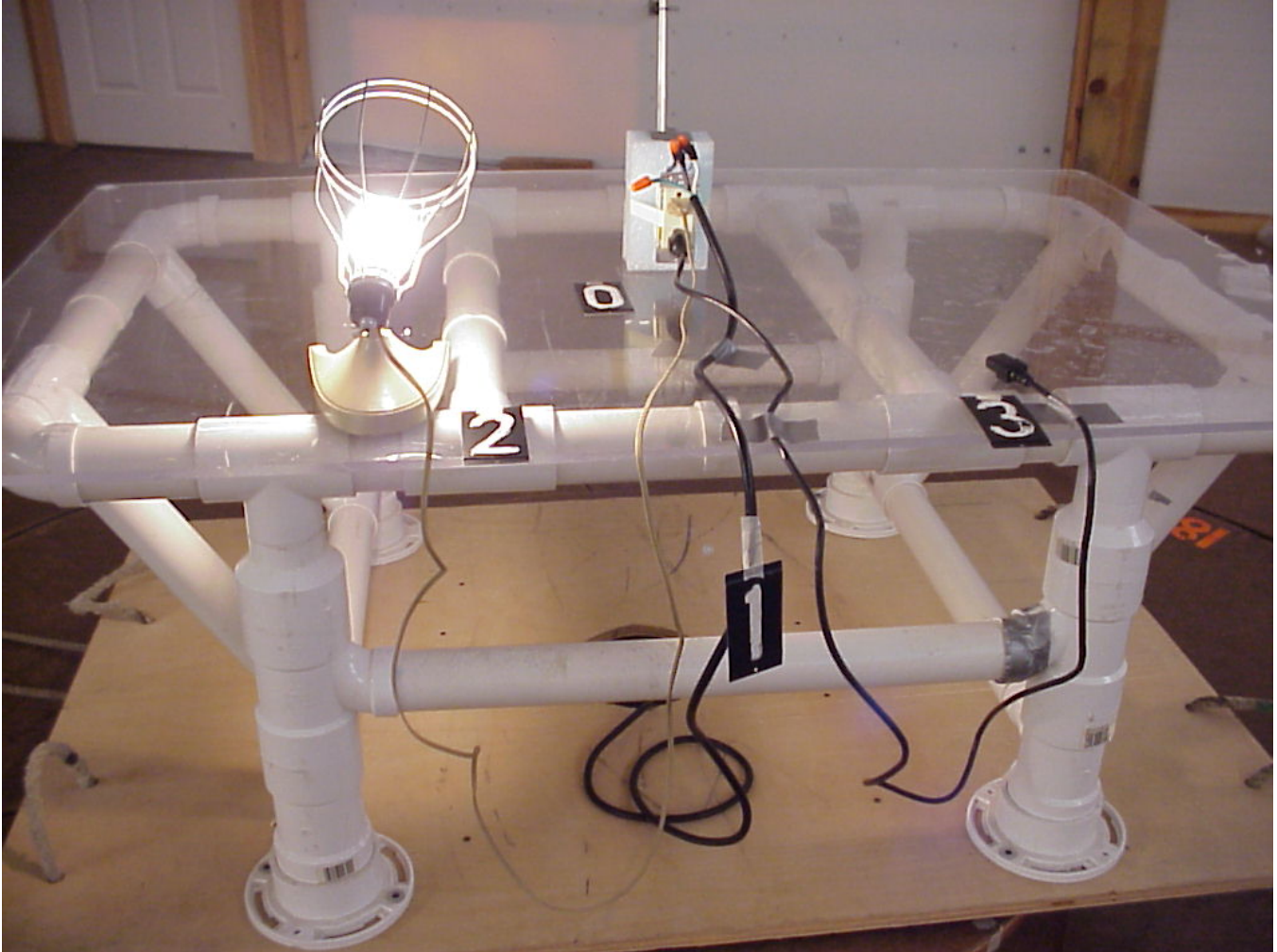
Item 3 Non-shielded AC Output Cable. 1.8m



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10.0 RADIATED PHOTOS TAKEN DURING TESTING



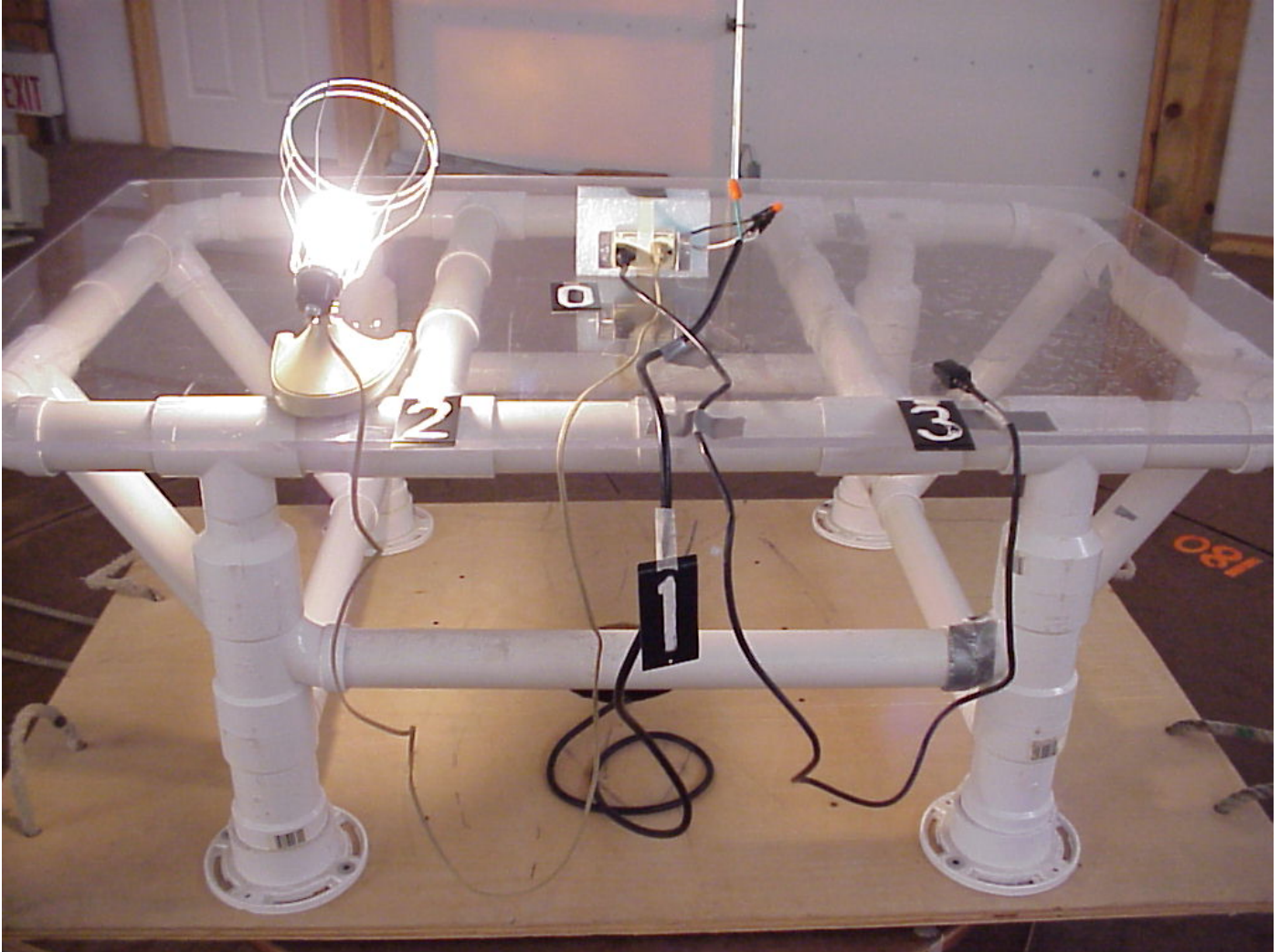
RADIATED UPSIDE DOWN



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10.0 RADIATED PHOTOS TAKEN DURING TESTING (CON'T)



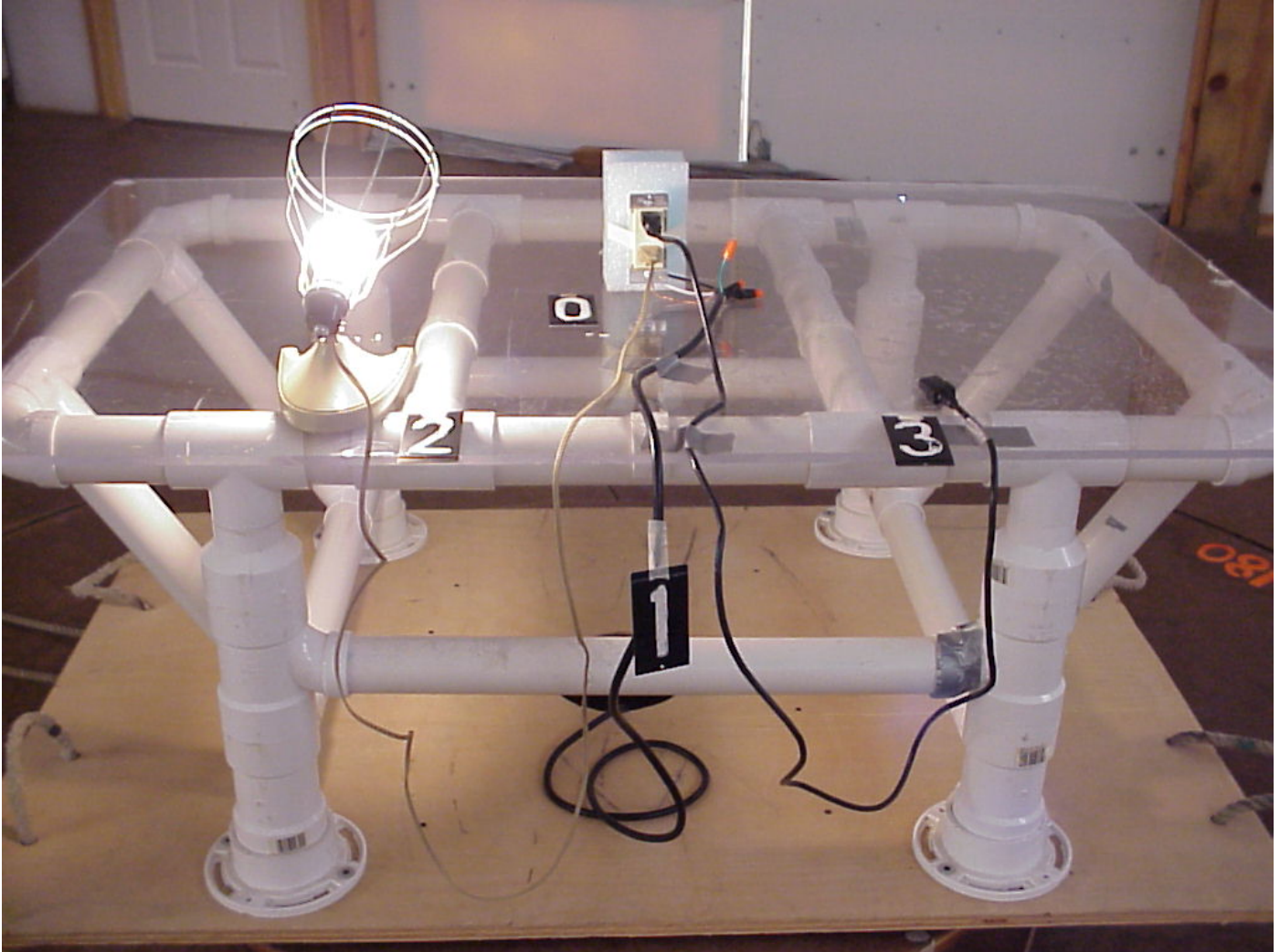
RADIATED "X"



Company: Intermatic Incorporated
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10.0 RADIATED PHOTOS TAKEN DURING TESTING (CON'T)



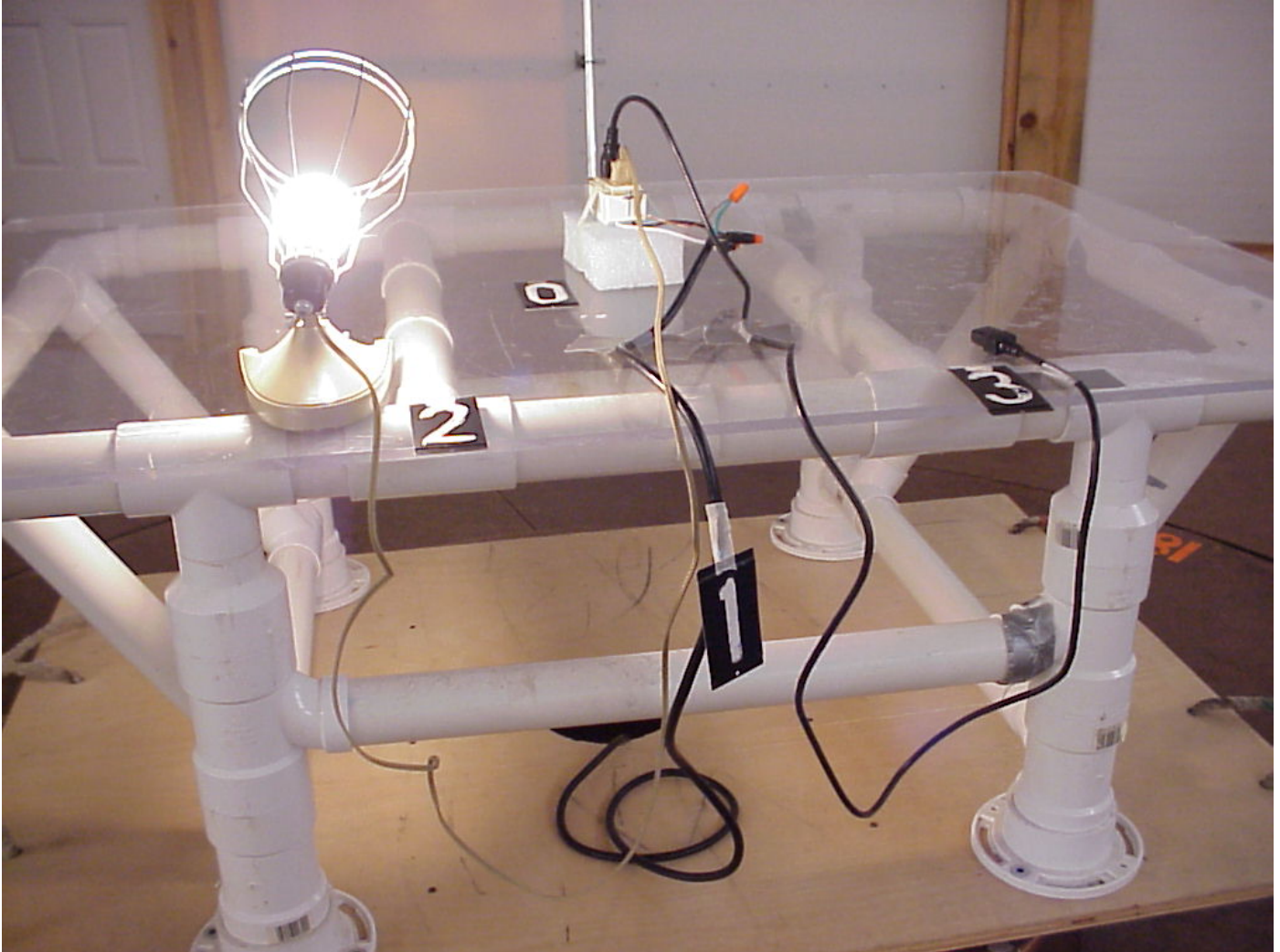
RADIATED “Y”



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10.0 RADIATED PHOTOS TAKEN DURING TESTING (CON'T)



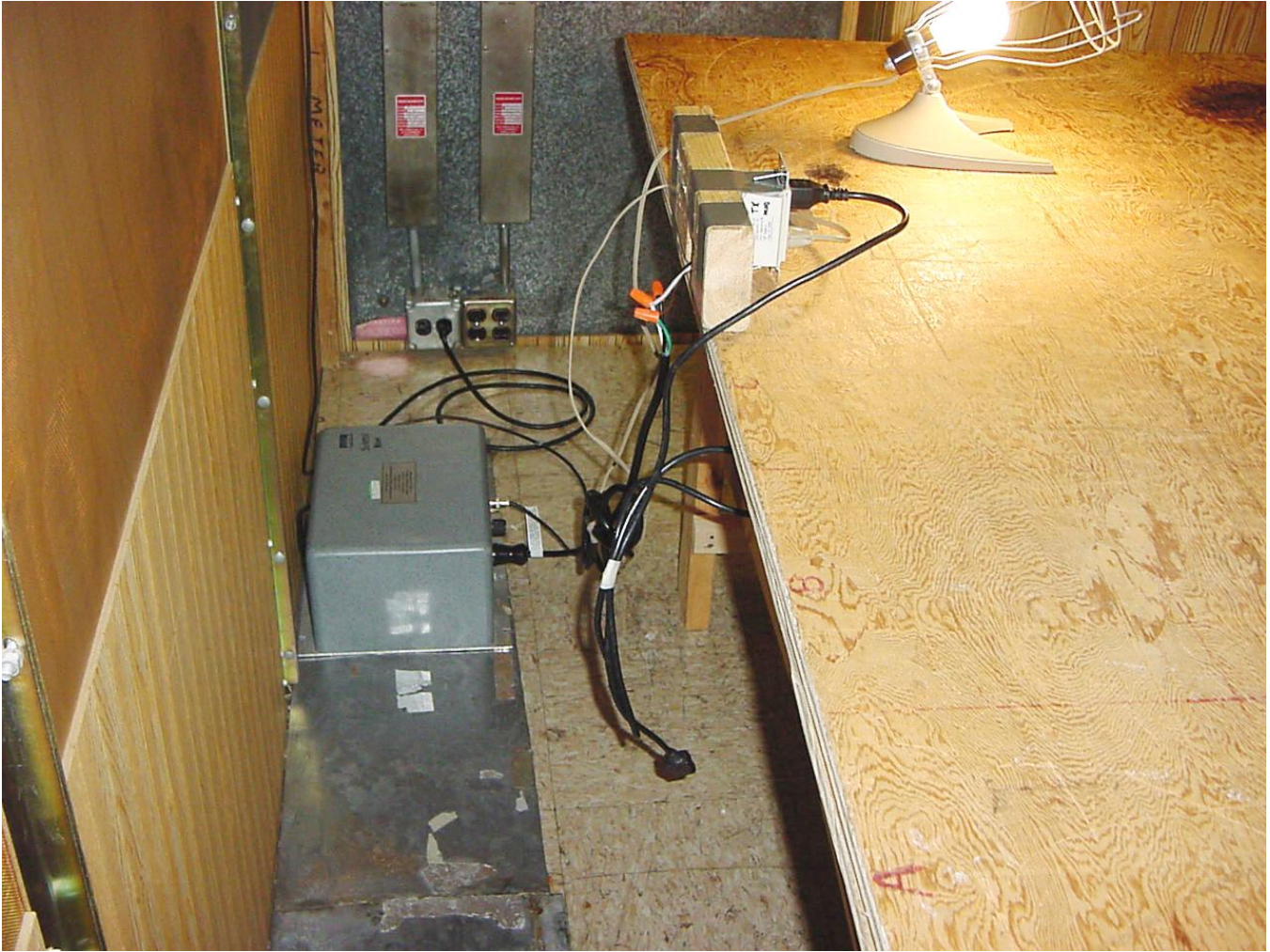
RADIATED “Z”



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10.0 CONDUCTED PHOTOS TAKEN DURING TESTING





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11.0 RESULTS OF TESTS

The radio interference emission charts results can be seen on the pages at the end of this report. Data sheets indicating the test measurements taken during testing can also be found at the end of this report. Points on the emission charts shown with a yellow mark are background frequencies that were verified during testing.

12.0 CONCLUSION

It was found that the In-Wall Duplex Receptacle, Model Number(s) HA01 "meets" the radio interference conducted and radiated emission requirements of the FCC "Rules and Regulations", Part 15, Subpart C, Section 15.249 for operational in the 902-928 MHz, 2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz Bands.



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TABLE 1 – EQUIPMENT LIST

Test Equipment	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Due Dates
Receiver	Rohde & Schwarz	ESI 26	837491/010	20 Hz – 26 GHz	11/07
Receiver	Rohde & Schwarz	ESI 40	837808/006	20 Hz – 40 GHz	12/07
Receiver	Rohde & Schwarz	ESI 40	837808/005	20 Hz – 40 GHz	12/07
Antenna	EMCO	3104C	00054891	20 MHz – 200 MHz	2/07
Antenna	Electrometrics	LPA-25	1114	200 MHz – 1 GHz	3/07
Antenna	EMCO	3104C	00054892	20 MHz – 200 MHz	3/07
Antenna	Electrometrics	3146	1205	200 MHz – 1 GHz	3/07
Antenna	EMCO	3104C	97014785	20 MHz – 200 MHz	2/08
Antenna	EMCO	3146	97024895	200 MHz – 1 GHz	3/07
Antenna	EMCO	3115	2479	1 GHz – 18 GHz	8/07
Antenna	EMCO	3115	99035731	1 GHz – 18 GHz	4/07
Antenna	Rohde & Schwarz	HUF-Z1	829381001	20 MHz – 1 GHz	2/08
Antenna	Rohde & Schwarz	HUF-Z1	829381005	20 MHz – 1 GHz	8/07

All primary equipment is calibrated against known reference standards with a verified traceable path to NIST.



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TABLE 1 – EQUIPMENT LIST

Test Equipment	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Due Dates
LISN	Solar	8012-50-R-24-BNC	8305116	10 MHz – 30 MHz	8/07
LISN	Solar	8012-50-R-24-BNC	814548	10 MHz – 30 MHz	8/07
LISN	Solar	9252-50-R-24-BNC	961019	10 MHz – 30 MHz	12/07
LISN	Solar	9252-50-R-24-BNC	971612	10 MHz – 30 MHz	10/07
LISN	Solar	9252-50-R-24-BNC	92710620	10 MHz – 30 MHz	7/07

All primary equipment is calibrated against known reference standards with a verified traceable path to NIST.



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APPENDIX A

TEST PROCEDURE

Part 15, Subpart C, Section 15.249a-e

OPERATION WITHIN THE BANDS 902-928 MHz,
2400-2483.5 MHz, 5725-5875 MHz, and 24.0-24.25 GHz MHz



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APPENDIX A

1.0 CONDUCTED EMISSION MEASUREMENTS

Conducted emissions were measured over the frequency range from 150 kHz to 30 MHz in accordance with the power line measurements as specified in FCC Part 15, Subpart C, Section 15.207 & ANSI C63.4-2003. Since the device is operated from the public utility lines, the 120 Vac, 60 Hz power leads, high (hot) and low (neutral) sides, were measured by connecting the measuring equipment to the appropriate meter terminal of the LISN. During the test, the cables were placed and items moved (when appropriate) to maximize emissions. All signals were then recorded. The allowed levels for Intentional Radiators which is designed to connected to the public utility (AC) power line shall not exceed 250 uV (47.96 dBuV) from 150 kHz to 30 MHz

NOTE:

All test measurements were made at a screen room temperature of **71°F** at **18%** relative humidity.



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CONDUCTED DATA AND GRAPH(S)

TAKEN DURING TESTING

PART 15.207

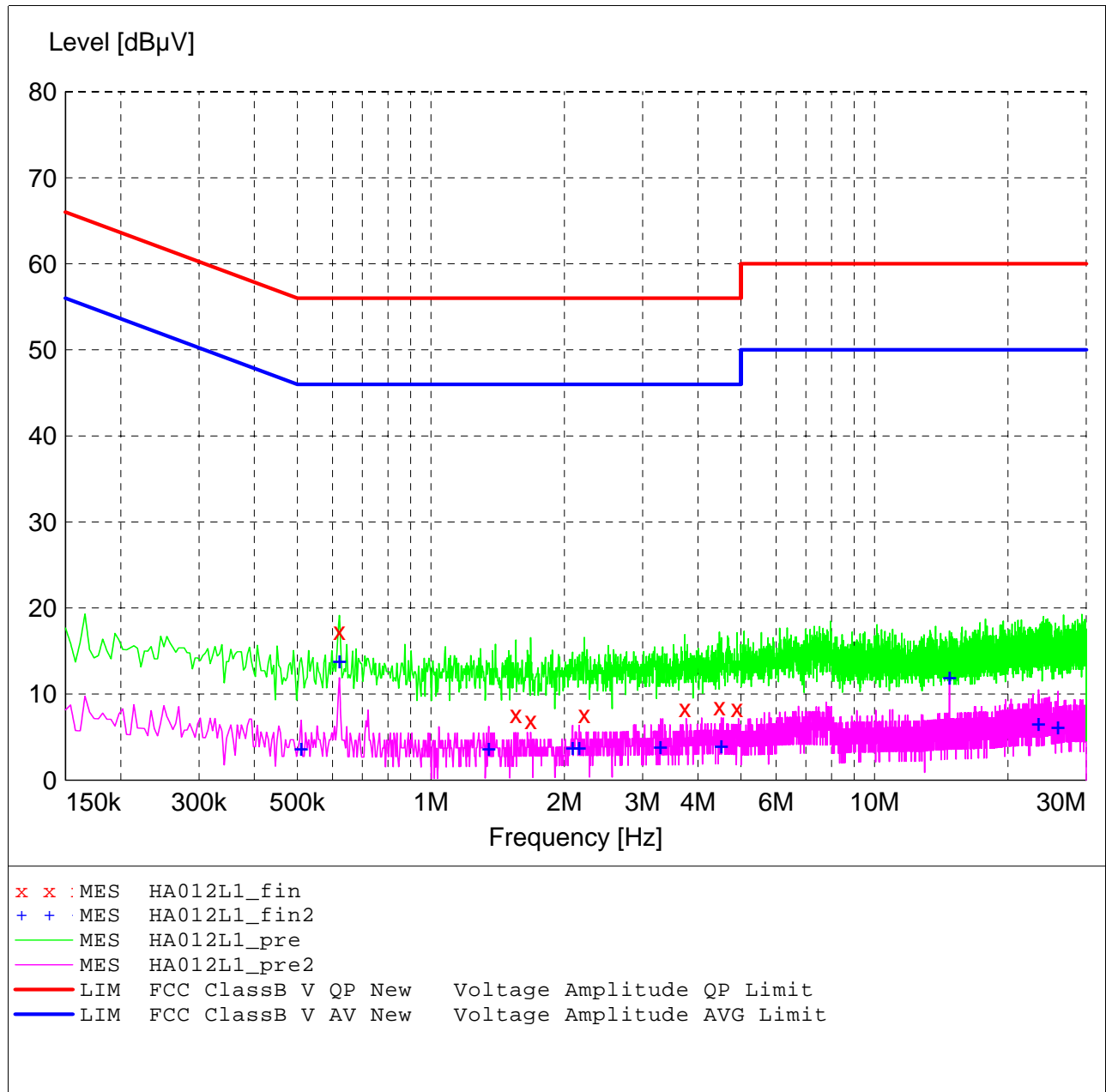
FCC Part 15 Class B

Voltage Mains Test

EUT: HA01
 Manufacturer: Intermatic, Inc.
 Operating Condition: 71 deg. F, 18% R.H.
 Test Site: DLS O.F. Site 1 (Screenroom)
 Operator: Craig Brandt
 Test Specification: 120 V 60 Hz
 Comment: Line 1
 Date: 02-19-2007

SCAN TABLE: "Line Cond Scrn RmFin"

Short Description:		Line Conducted Emissions					Transducer
Start	Stop	Step	Detector	Meas. Time	IF Bandw.		
150.0 kHz	30.0 MHz	4.0 kHz	QuasiPeak	2.0 s	9 kHz	LISN DLS#128	
CISPR AV							



MEASUREMENT RESULT: "HA012L1_fin"

2/19/2007 1:51PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.622000	17.30	10.2	56	38.7	QP	---	---
1.554000	7.60	10.3	56	48.4	QP	---	---
1.678000	7.00	10.3	56	49.0	QP	---	---
2.218000	7.70	10.3	56	48.3	QP	---	---
3.734000	8.40	10.4	56	47.6	QP	---	---
4.470000	8.50	10.5	56	47.5	QP	---	---
4.898000	8.40	10.4	56	47.6	QP	---	---

MEASUREMENT RESULT: "HA012L1_fin2"

2/19/2007 1:51PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.510000	3.80	10.3	46	42.2	CAV	---	---
0.622000	13.90	10.2	46	32.1	CAV	---	---
1.350000	3.80	10.2	46	42.2	CAV	---	---
2.086000	3.90	10.3	46	42.1	CAV	---	---
2.158000	3.90	10.3	46	42.1	CAV	---	---
3.294000	4.00	10.4	46	42.0	CAV	---	---
4.514000	4.10	10.5	46	41.9	CAV	---	---
14.754000	12.00	11.1	50	38.0	CAV	---	---
23.446000	6.70	11.5	50	43.3	CAV	---	---
25.934000	6.30	11.8	50	43.7	CAV	---	---

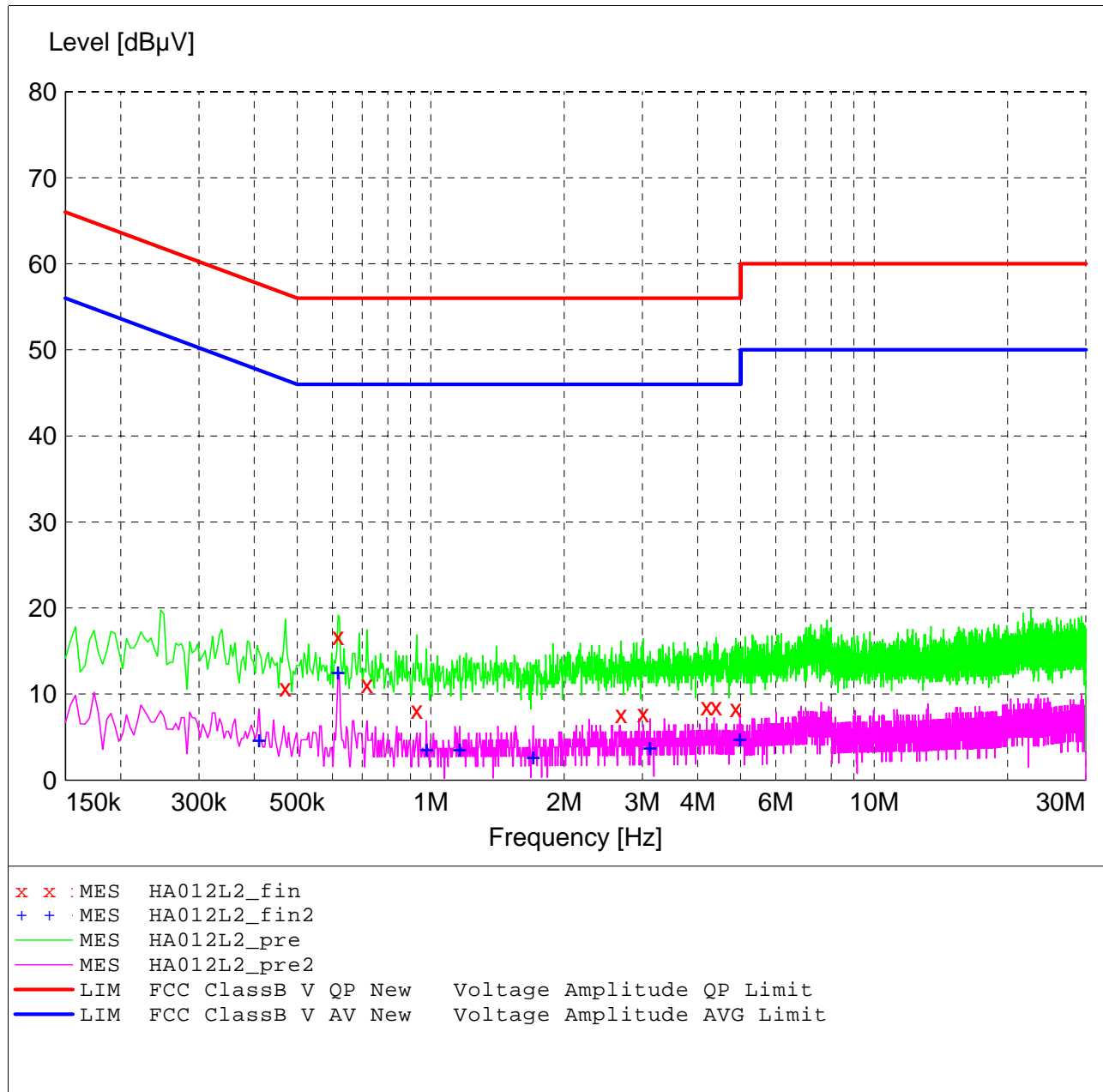
FCC Part 15 Class B

Voltage Mains Test

EUT: HA01
 Manufacturer: Intermatic, Inc.
 Operating Condition: 71 deg. F, 18% R.H.
 Test Site: DLS O.F. Site 1 (Screenroom)
 Operator: Craig Brandt
 Test Specification: 120 V 60 Hz
 Comment: Line 2
 Date: 02-19-2007

SCAN TABLE: "Line Cond Scrn RmFin"

Short Description:			Line Conducted Emissions				Transducer
Start	Stop	Step	Detector	Meas. Time	IF Bandw.		
150.0 kHz	30.0 MHz	4.0 kHz	QuasiPeak	2.0 s	9 kHz	LISN DLS#128	
CISPR AV							



MEASUREMENT RESULT: "HA012L2_fin"

2/19/2007 1:45PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.470000	10.70	10.3	57	45.8	QP	---	---
0.618000	16.70	10.2	56	39.3	QP	---	---
0.718000	11.10	10.2	56	44.9	QP	---	---
0.930000	8.20	10.2	56	47.8	QP	---	---
2.686000	7.70	10.4	56	48.3	QP	---	---
3.014000	7.80	10.4	56	48.2	QP	---	---
4.190000	8.50	10.5	56	47.5	QP	---	---
4.402000	8.50	10.6	56	47.5	QP	---	---
4.874000	8.40	10.5	56	47.6	QP	---	---

MEASUREMENT RESULT: "HA012L2_fin2"

2/19/2007 1:45PM

Frequency MHz	Level dBμV	Transd dB	Limit dBμV	Margin dB	Detector	Line	PE
0.410000	4.80	10.3	48	42.8	CAV	---	---
0.618000	12.60	10.2	46	33.4	CAV	---	---
0.978000	3.70	10.2	46	42.3	CAV	---	---
1.162000	3.70	10.2	46	42.3	CAV	---	---
1.702000	2.80	10.3	46	43.2	CAV	---	---
3.122000	3.90	10.4	46	42.1	CAV	---	---
4.978000	4.90	10.4	46	41.1	CAV	---	---



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APPENDIX A

2.0 BAND EDGE AND RESTRICTED BAND COMPLIANCE

The field strength of any emissions appearing outside the 902 to 928 MHz band shall not exceed the general radiated emissions limits as stated Section 15.209. The fundamental from the In-Wall Duplex Receptacle transmitter shall not be inside the restricted band 960 to 1240 MHz.

As stated in Section 15.205a, the fundamental emission from the In-Wall Duplex Receptacle shall not fall within any of the bands listed below:

Frequency in MHz	Frequency in MHz	Frequency in MHz	Frequency in GHz
.0900 to .1100	162.0125 to 167.17	2310.0 to 2390	9.30 to 9.50
.4900 to .5100	167.7200 to 173.20	2483.5 to 2500	10.60 to 12.70
2.1735 to 2.1905	240.000 to 285.00	2655.0 to 2900	13.25 to 13.40
8.362 to 8.3660	322.200 to 335.40	3260.0 to 3267	14.47 to 14.50
13.36 to 13.410	399.900 to 410.00	3332.0 to 3339	15.35 to 16.20
25.50 to 25.670	608.000 to 614.00	3345.8 to 3358	17.70 to 21.40
37.50 to 38.250	960.000 to 1240.00	3600.0 to 4400	22.01 to 23.13
73.00 to 75.500	1300.000 to 1427.00	4500.0 to 5250	23.60 to 24.00
108.00 to 121.94	1435.000 to 1626.50	5350.0 to 5450	31.20 to 31.80
123.00 to 138.00	1660.000 to 1710.00	7250.0 to 7750	36.43 to 36.50
149.90 to 150.00	1718.800 to 1722.20	8025.0 to 8500	ABOVE 38.60
156.70 to 156.90	2200.000 to 2300.00	9000.0 to 9200	

NOTE:

The noise floor within the Restricted Bands for the EMC Receiver and HP Spectrum Analyzer will typically lay 20 dB below the limit.

See the following page (s) for the graph (s) made showing compliance for Band Edge and Restricted Band: Also see the table of measurements made for the Fundamental and Spurious emissions in paragraph 3 of this section.



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**DATA AND GRAPH(S) TAKEN SHOWING THE
BAND EDGE COMPLIANCE**

PART 15.249



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APPENDIX A

Test Methodology

The EUT was investigated at the low and high channels of operation to determine band-edge compliance. Bandedge compliance was determined using the radiated mark-delta method as outlined in FCC DA 00-705. The radiated field strength of the fundamental emission was first determined and then the mark-delta method was used to determine the field strength of the band-edge emissions.

Lower Band-Edge Marker Delta Method

Frequency (MHz)	Antenna Polarity (H/V)	Fundamental Field Strength (dB μ V/m)	Duty Cycle Correction (dB)	Delta-Marker (dB)	Band-Edge Field Strength (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
908.42 (Peak)	V	93.7	---	59.65	34.05	74	39.95
908.42 (Avg)	V	92.2	---	59.65	32.55	54	21.45

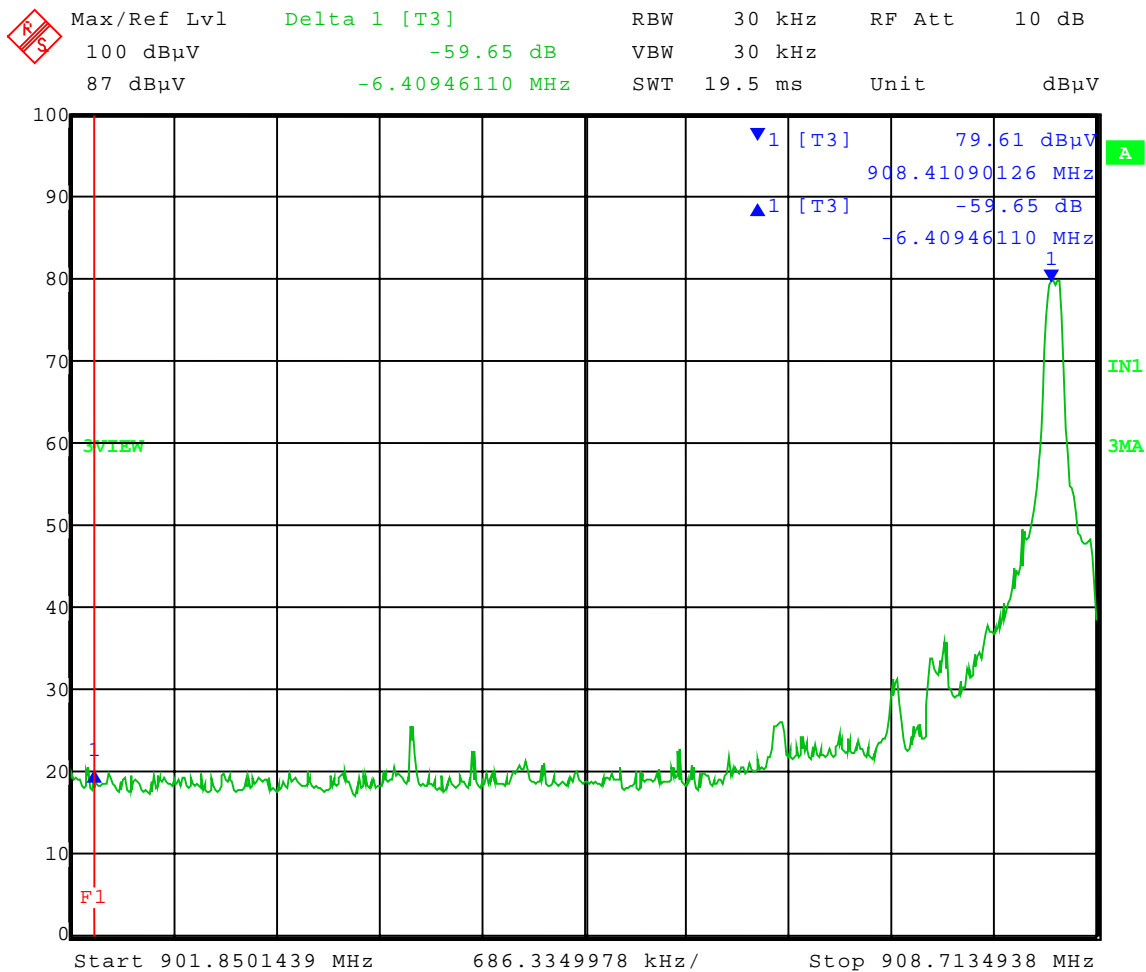


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 Model Tested: HA01
 Report Number: 12960

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 02-16-2007
 Company: Intermatic
 EUT: HA01
 Test: Lower Band-Edge Radiated – Marker Delta Method
 Operator: Craig Brandt
 Comment: Band edge at 902 MHz



Date: 16.FEB.2007 14:57:01



1250 Peterson Dr., Wheeling, IL 60090

Company: Intermatic Incorporated
Model Tested: HA01
Report Number: 12960

APPENDIX A

Test Methodology

The EUT was investigated at the low and high channels of operation to determine band-edge compliance. Bandedge compliance was determined using the radiated mark-delta method as outlined in FCC DA 00-705. The radiated field strength of the fundamental emission was first determined and then the mark-delta method was used to determine the field strength of the band-edge emissions.

Upper Band-Edge Marker Delta Method

Frequency (MHz)	Antenna Polarity (H/V)	Fundamental Field Strength (dB μ V/m)	Duty Cycle Correction (dB)	Delta-Marker (dB)	Band-Edge Field Strength (dB μ V/m)	Limit (dB μ V/m)	Margin (dB)
908.42 (Peak)	V	93.7	---	60.19	33.51	74	40.49
908.42 (Avg)	V	92.2	---	60.19	32.01	54	21.99

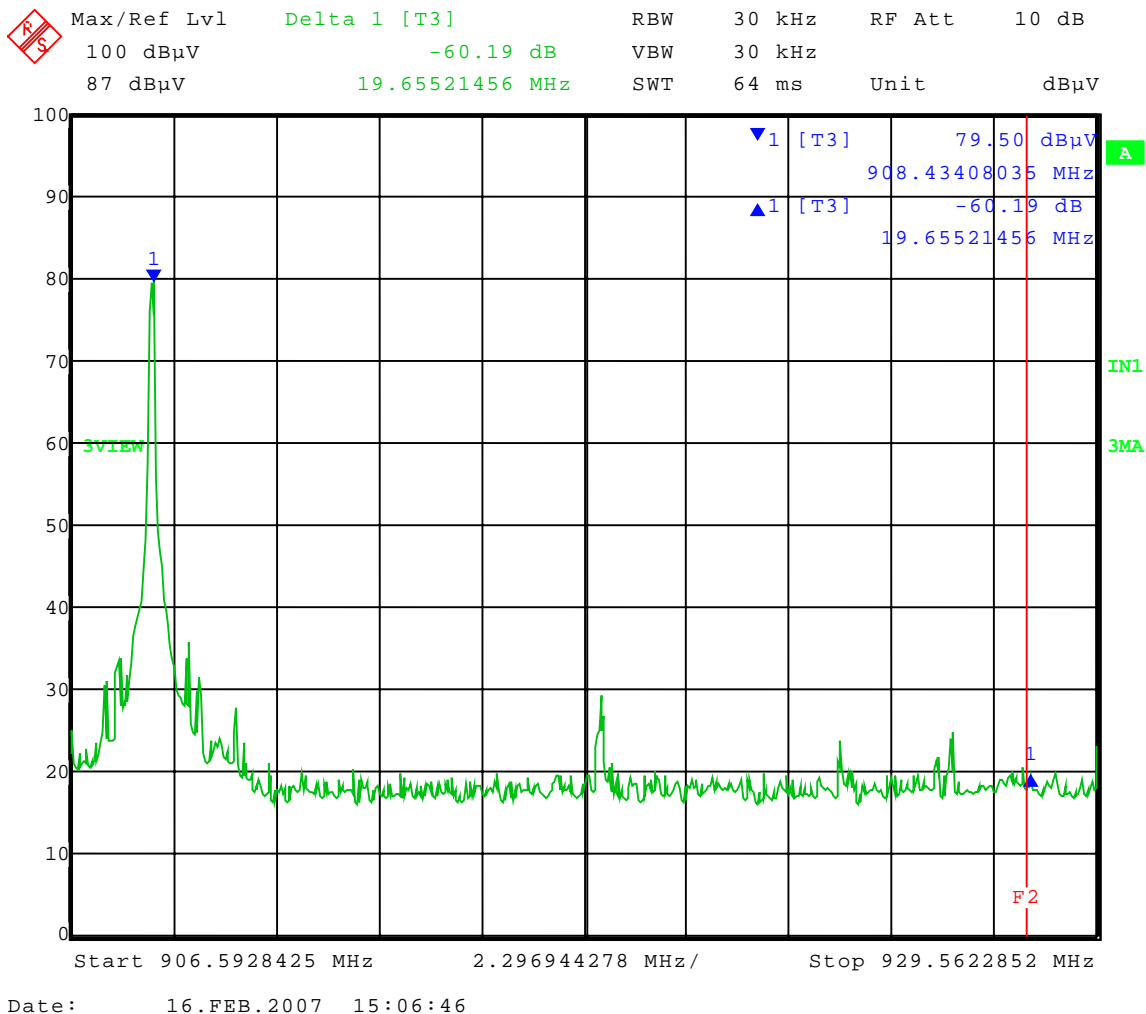


Company: Intermatic Incorporated
 Model Tested: HA01
 Report Number: 12960

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 02-16-2007
 Company: Intermatic
 EUT: HA01
 Test: Upper Band-Edge Radiated – Marker Delta Method
 Operator: Craig Brandt
 Comment: Band edge at 928 MHz





1250 Peterson Dr., Wheeling, IL 60090

Company: Intermatic Incorporated
Model Tested: HA01
Report Number: 12960

APPENDIX A

20 dB BANDWIDTH DATA AND GRAPH(S)

PART 15.249



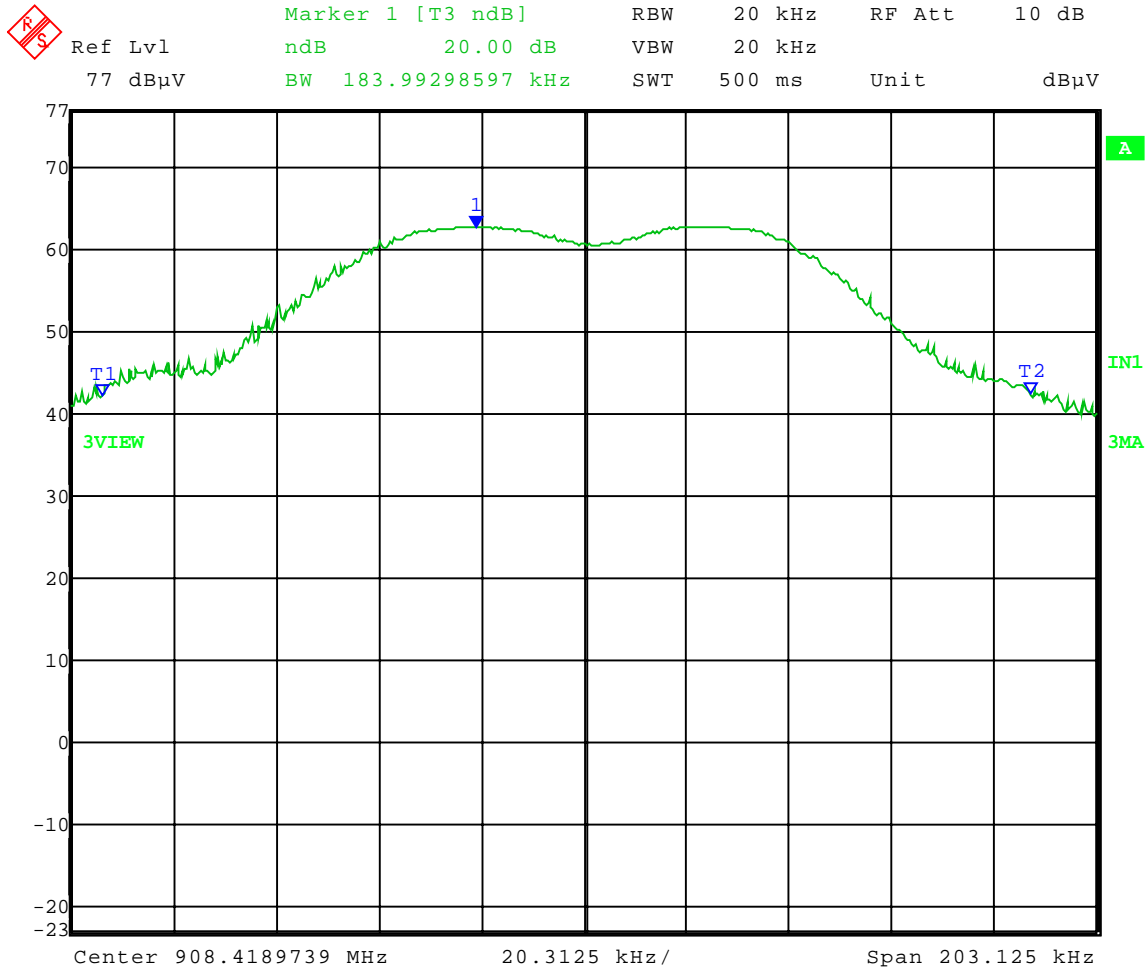
Company: Intermatic Incorporated
Model Tested: HA01
Report Number: 12960

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

Test Date: 02-16-2007
Company: Intermatic, Inc.
EUT: HA01
Test: 20 dB Bandwidth - Radiated
Operator: Craig Brandt
Comment:

20 dB Bandwidth = 183.99 kHz



Date: 16.FEB.2007 14:18:11



1250 Peterson Dr., Wheeling, IL 60090

Company: Intermatic Incorporated
Model Tested: HA01
Report Number: 12960

DATA AND GRAPH(S) TAKEN SHOWING THE
RESTRICTED BAND COMPLIANCE

PART 15.205

FCC Part 15 Class B

Electric Field Strength

EUT: HA01
Manufacturer: Intermatic
Operating Condition: 70 deg. F; 23% R.H.
Test Site: DLS O.F. Site 3
Operator: Craig Brandt
Test Specification: 120 V 60 Hz
Comment: Receive mode
Date: 02-19-2007

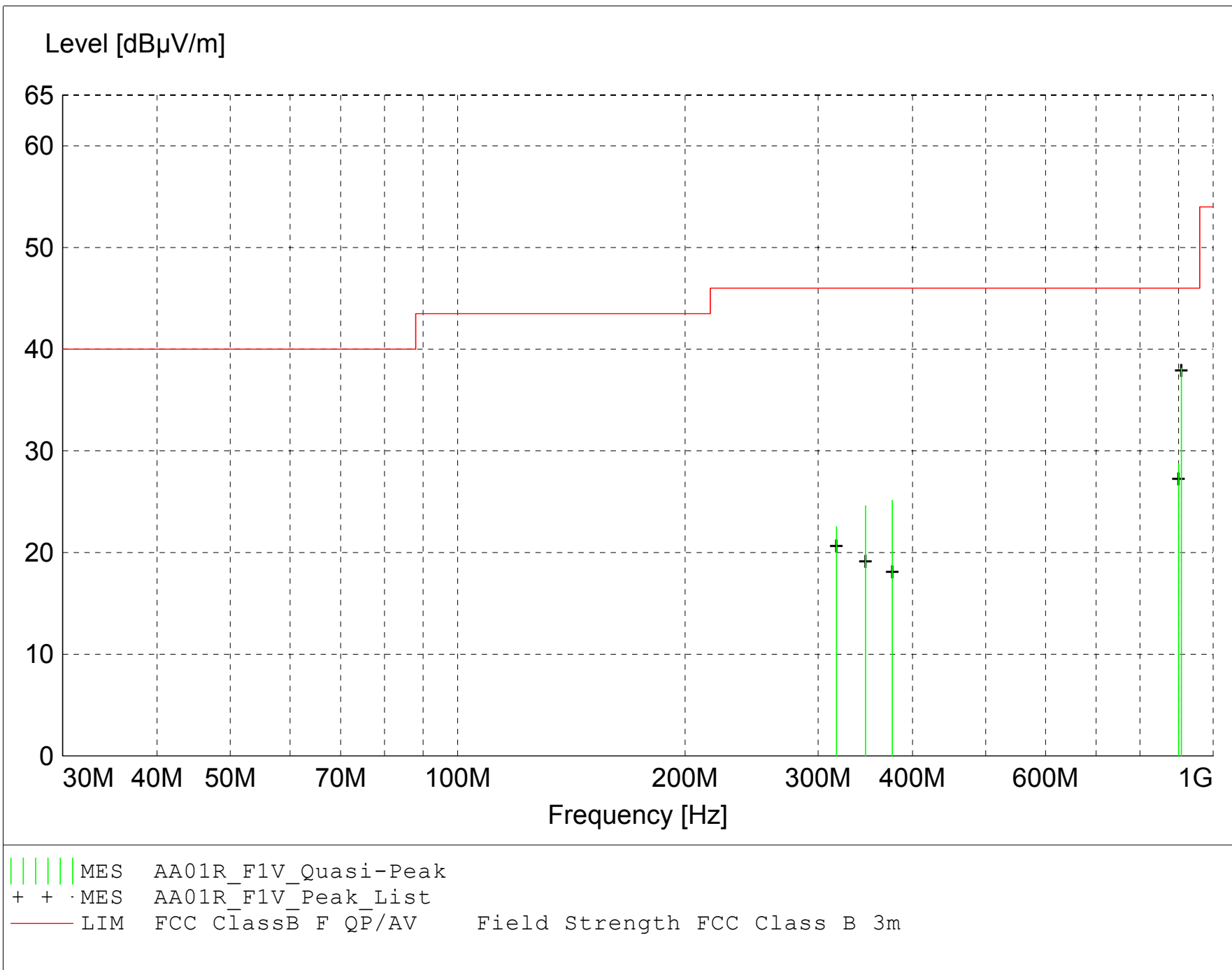
TEXT: "Site 3 MidV 3M"

Short Description: Test Set-up Vert30-1000MHz
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/005

Antennas ---
Biconical -- EMCO 3104C SN: 9701-4785
Log Periodic -- EMCO 3146 SN: 9702-4895

Pre-Amp --- Rohde&Schwarz TS-PR10 SN: 032001/005

TEST SET-UP: EUT Measured at 3 Meters with VERTICAL Antenna Polarization



MEASUREMENT RESULT: "AA01R_F1V_Final"

2/19/2007 10:34AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dB μ V	Factor	Loss	Level	dB μ V/m	dB	Ant.	Angle	Detector	
		dB μ V/m	dB	dB μ V/m	dB μ V/m		m	deg		
907.668000	34.30	22.08	-18.2	38.1	46.0	7.9	1.00	0	QUASI-PEAK	None
899.970000	25.22	21.87	-18.3	28.7	46.0	17.3	1.00	0	QUASI-PEAK	None
376.210000	31.84	14.85	-21.6	25.1	46.0	20.9	1.80	0	QUASI-PEAK	None
346.700000	31.65	14.42	-21.5	24.6	46.0	21.4	2.00	250	QUASI-PEAK	None
317.200000	30.11	14.30	-21.9	22.6	46.0	23.4	1.10	135	QUASI-PEAK	None

FCC Part 15 Class B

Electric Field Strength

EUT: HA01
Manufacturer: Intermatic
Operating Condition: 70 deg. F; 23% R.H.
Test Site: DLS O.F. Site 3
Operator: Craig Brandt
Test Specification: 120 V 60 Hz
Comment: Receive mode
Date: 02-19-2007

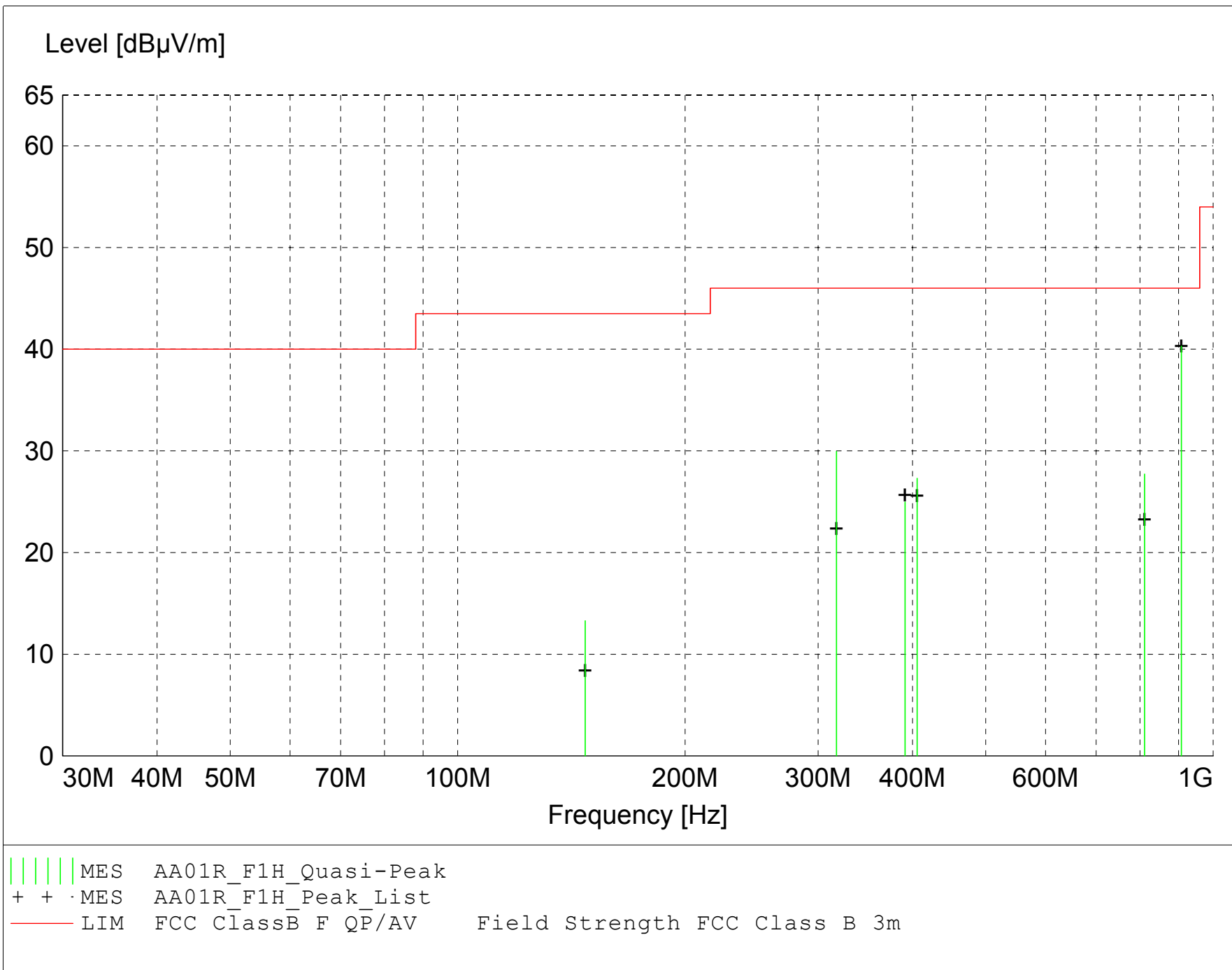
TEXT: "Site 3 MidH 3M"

Short Description: Test Set-up Horz30-1000MHz
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/005

Antennas ---
Biconical -- EMCO 3104C SN: 9701-4785
Log Periodic -- EMCO 3146 SN: 9702-4895

Pre-Amp --- Rohde&Schwarz TS-PR10 SN: 032001/005

TEST SET-UP: EUT Measured at 3 Meters with HORIZONTAL Antenna Polarization



MEASUREMENT RESULT: "AA01R_F1H_Final"

2/19/2007 10:41AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dB μ V	Factor	Loss	Level	dB μ V/m	dB	Ant.	Angle	Detector	
		dB μ V/m	dB	dB μ V/m	dB μ V/m		m	deg		
907.660000	36.46	22.08	-18.2	40.3	46.0	5.7	1.00	225	QUASI-PEAK	None
317.200000	37.51	14.30	-21.9	30.0	46.0	16.0	1.00	45	QUASI-PEAK	None
811.460000	25.97	20.86	-19.1	27.7	46.0	18.3	1.00	225	QUASI-PEAK	None
405.720000	33.07	15.47	-21.2	27.3	46.0	18.7	2.00	45	QUASI-PEAK	None
390.970000	31.24	15.04	-21.3	25.0	46.0	21.0	2.00	45	QUASI-PEAK	None
147.535000	24.61	11.67	-23.0	13.3	43.5	30.2	2.60	80	QUASI-PEAK	None

FCC Part 15 Class B

Electric Field Strength

EUT: HA01
Manufacturer: Intermatic
Operating Condition: 70 deg. F; 23% R.H.
Test Site: DLS O.F. Site 3
Operator: Craig Brandt
Test Specification: 120 V 60 Hz
Comment: Receive mode
Date: 02-19-2007

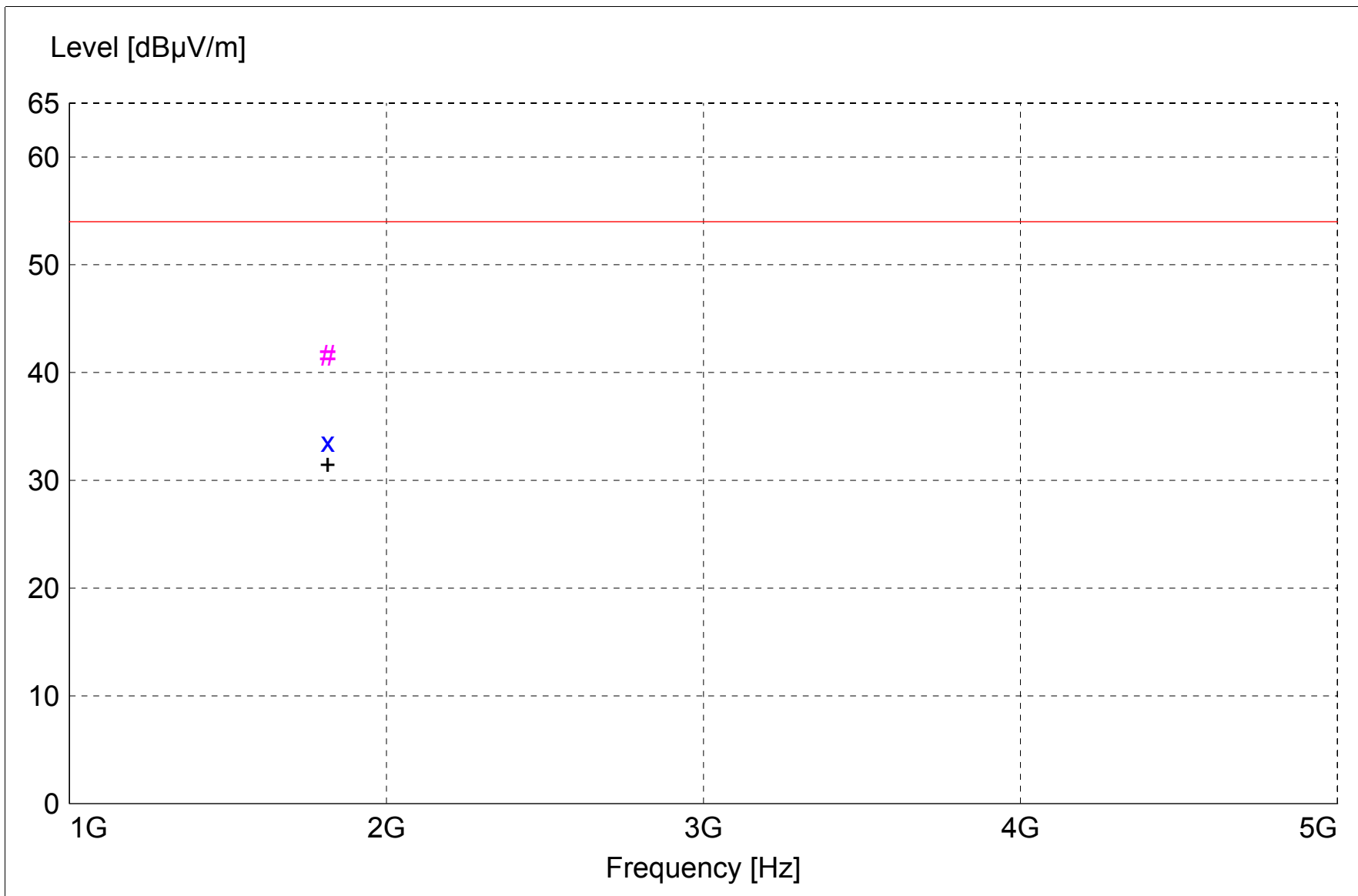
TEXT: "Site 3 5731&106 V3M"

Short Description: Test Set-up Vert1GHz-
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

Horn Antenna --- EMCO 3115 SN: 9903-5731

Pre-Amps ---
1 - 10 GHz -- Miteq AMF-6B-100200-50 SN: 313936
10 - 18 GHz -- Miteq AMF-6D-010100-50 SN: 213976

TEST SET-UP: EUT Measured at 3 Meters with VERTICAL Antenna Polarization



x x :MES AA01R_sv_Average
 # # :MES AA01R_sv_Peak
 + + :MES AA01R_sv_Peak_List
 — LIM FCC ClassB F QP/AV Field Strength FCC Class B 3m

MEASUREMENT RESULT: "AA01R_sv_Final"

2/19/2007 11:21AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dBµV	Factor	Loss	Level			Ant.	Angle	Detector	
		dBµV/m	dB	dBµV/m	dBµV/m	dB	m	deg		
1815.220000	52.15	26.66	-37.2	41.6	54.0	12.4	1.00	80	MAX PEAK	None
1815.220000	44.12	26.66	-37.2	33.5	54.0	20.5	1.00	80	AVERAGE	None

FCC Part 15 Class B

Electric Field Strength

EUT: HA01
Manufacturer: Intermatic
Operating Condition: 70 deg. F; 23% R.H.
Test Site: DLS O.F. Site 3
Operator: Craig Brandt
Test Specification: 120 V 60 Hz
Comment: Receive mode
Date: 02-19-2007

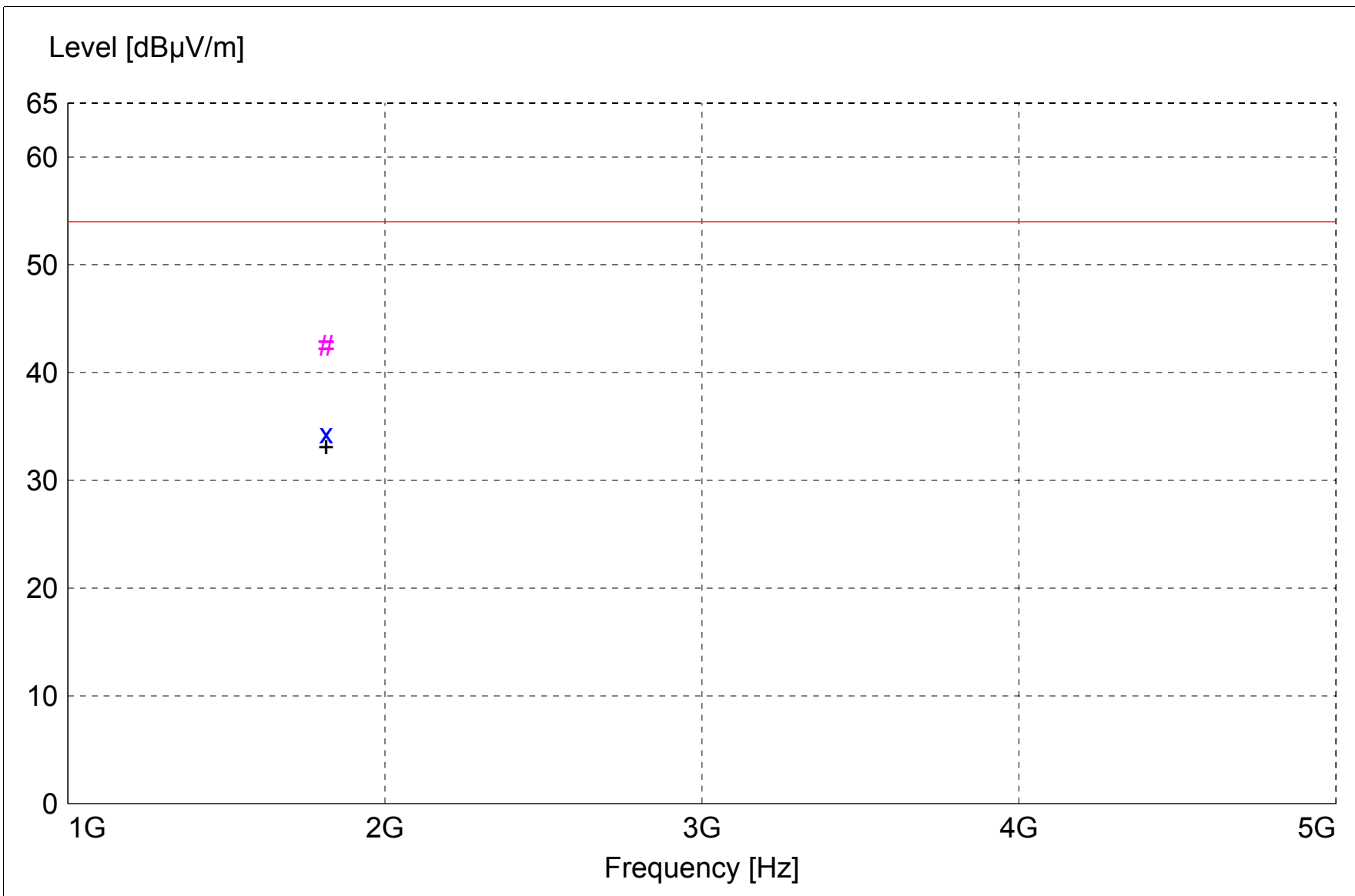
TEXT: "Site 3 5731&106 H3M"

Short Description: Test Set-up Horz1GHz-
TEST EQUIPMENT: Receiver --- Rohde&Schwarz ESI 40 SN: 837808/006

Horn Antenna --- EMCO 3115 SN: 9903-5731

Pre-Amps ---
1 - 10 GHz -- Miteq AMF-6D-010100-50 SN: 213976
10 - 18 GHz -- Miteq AMF-6B-100200-50 SN: 313936

TEST SET-UP: EUT Measured at 3 Meters with HORIZONTAL Antenna Polarization



x x :MES AA01R_sh_Average
 # # :MES AA01R_sh_Peak
 + + :MES AA01R_sh_Peak_List
 — LIM FCC ClassB F QP/AV Field Strength FCC Class B 3m

MEASUREMENT RESULT: "AA01R_sh_Final"

2/19/2007 11:33AM

Frequency	Level	Antenna	System	Total	Limit	Margin	Height	EuT	Final	Comment
MHz	dB μ V	Factor	Loss	Level	dB μ V/m	dB	Ant.	Angle	Detector	
		dB μ V/m	dB	dB μ V/m			m	deg		
1815.320000	53.10	26.66	-37.2	42.5	54.0	11.5	1.10	160	MAX PEAK	None
1815.320000	44.90	26.66	-37.2	34.3	54.0	19.7	1.10	160	AVERAGE	None



Company: Intermatic Incorporated
Model Tested: HA01
Report Number: 12960

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

3.0 FIELD STRENGTH OF SPURIOUS EMISSION MEASUREMENTS (SECTION 15.249a-d)

The radiated measurements made at D.L.S. Electronic Systems, Inc., for the In-Wall Duplex Receptacle, Model Number: HA01, are shown in tabulated and graph form. Preliminary radiation measurements were performed at a 3 meter test distance with the limits adjusted linearly when required. The frequency range from 30 MHz to over 960 MHz, depending upon the fundamental frequency as stated in Part 15.33a, was automatically scanned and plotted at various angles.

Measurements for the In-Wall Duplex Receptacle were made up to 10000 MHz, in accordance with Section 15.33a for Intentional Radiators with a fundamental frequency of 908.42 MHz. For intentional radiators, the frequency range to be investigated is determined by the lowest radio frequency generated by the device without going below 30 MHz, up to at least the tenth harmonic of the highest fundamental frequency or 10 GHz, whichever is lower. At those frequencies where significant signals were detected, measurements were made over the entire frequency range specified in FCC Part 15, Subpart C, Section 15.249 at the open field test site, located at Genoa City, Wisconsin, FCC file number **31040/SIT**. When required, levels were extrapolated from 10 meters to 3 meters using a linear extrapolation.

All signals in the frequency range of 30 MHz to 2000 MHz were measured with a Biconical Antenna or tuned dipoles and from 200 MHz to 1000 MHz, a Log Periodic or Tuned Dipoles were used. From 1000 MHz to 10 GHz Horn Antennas were used. During the test the equipment was rotated and the antenna was raised and lowered from 1 meter to 4 meters to find the maximum level of emissions. In order to find maximum emissions, the cables were moved through all the positions the equipment would be expected to experience in the field. The EUT, peripheral equipment and cables were configured to meet the conditions in ANSI C63.4-2003, Clauses 6 & 8. Tests were made with the receive antenna(s) in both the horizontal and vertical planes of polarization. In each case, the table was rotated to find the maximum emissions.



Company: Intermatic Incorporated
Model Tested: HA01
Report Number: 12960

1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

3.0 FIELD STRENGTH OF SPURIOUS EMISSION MEASUREMENTS (CON'T)

For operation in the bands 902 to 928 MHz, 2400 to 2483.5 MHz, 5725 to 5875 MHz, and 24.0 to 24.25 GHz the field strength of any emissions within this band shall not exceed the field strength levels specified in the following table as stated in FCC, Part 15, Section 15.249(a).

Frequency range in MHz	Field Strength of Fundamental millivolts/meter	Field Strength of Fundamental dBuV/meter	Field Strength of Harmonics microvolts/meter	Field Strength of Harmonics dBuV/meter
902 to 928	50	93.98	500	53.98
2400 to 2483.5	50	93.98	500	53.98
5725 to 5875	50	93.98	500	53.98
24000 to 24250	250	107.96	2500	67.96

Field strength limits are at a distance of 3 meters. The emission limits shown are based on measurement instrumentation employing an average detector.

Emissions radiated outside of the specified frequency bands, except for harmonics are attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Preliminary radiated emission measurements were performed at a 3 meter test distance. The frequency range from 30 MHz to 1000 MHz was automatically scanned and plotted at various angles.

NOTE:

All radiated emissions measurements were made at a test room temperature of **70°F** at **18%** relative humidity.



1250 Peterson Dr., Wheeling, IL 60090

Company: Intermatic Incorporated
Model Tested: HA01
Report Number: 12960

**RADIATED DATA AND GRAPH(S) TAKEN FOR
FUNDAMENTAL, HARMONIC AND SPURIOUS
EMISSION MEASUREMENTS**

PART 15.249



Company: Intermatic Incorporated
 Model Tested: HA01
 Report Number: 12960

1250 Peterson Dr., Wheeling, IL 60090

**Radiated Fundamental and Spurious Emissions – 30 MHz to 10 GHz
 Tested at a 3 Meter Distance**

EUT: Model: HA01
Manufacturer: Intermatic, Inc.
Operating Condition: 70 deg F; 18% R.H.
Test Site: Site 3
Operator: Craig Brandt
Test Specification: FCC Part 15.249
Comment: Continuous transmit – 908.42 MHz
Date: 02/16/2007

Note: All other emissions at least 20 dB under the limit.

Frequency (MHz)	Measurement Detector	Ant. Pol.	Level (dBuV)	Antenna Factor (dB/m)	System Loss (dB)	Total Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Ant. Height (m)	EUT Angle (deg)	Comment
908.42	Quasi-Peak	Vert	64.19	22.07	6.9	93.1	94	0.9	1.00	135	Fundamental
908.42	Quasi-Peak	Horz	64.25	22.07	6.9	93.2	94	0.8	1.00	135	Fundamental
1816.84	Max Peak	Vert	63.45	26.67	-36.4	53.8	74	20.2	1.00	60	Harmonic
1816.84	Max Peak	Horz	64.80	26.67	-36.4	55.1	74	18.9	1.00	250	Harmonic
1816.84	Average	Vert	60.62	26.67	-36.4	50.9	54	3.1	1.00	60	Harmonic
1816.84	Average	Horz	62.90	26.67	-36.4	53.2	54	0.8	1.00	250	Harmonic
2725.26	Max Peak	Vert	56.35	29.27	-35.1	50.5	74	23.5	1.00	180	Harmonic
2725.26	Max Peak	Horz	60.71	29.27	-35.1	54.9	74	19.1	1.20	135	Harmonic
2725.26	Average	Vert	52.85	29.27	-35.1	47.0	54	7.0	1.00	180	Harmonic
2725.26	Average	Horz	58.55	29.27	-35.1	52.7	54	1.3	1.20	135	Harmonic
3633.68	Max Peak	Vert	51.14	31.65	-34.4	48.4	74	25.6	1.30	45	Harmonic
3633.68	Max Peak	Horz	50.61	31.65	-34.4	47.8	74	26.2	2.00	300	Harmonic
3633.68	Average	Vert	42.38	31.65	-34.4	39.6	54	14.4	1.30	45	Harmonic
3633.68	Average	Horz	43.05	31.65	-34.4	40.3	54	13.7	2.00	300	Harmonic
4542.10	Max Peak	Vert	55.29	32.21	-33.8	53.7	74	20.3	1.00	0	Harmonic
4542.10	Max Peak	Horz	55.96	32.21	-33.8	54.4	74	19.6	1.20	200	Harmonic
4542.10	Average	Vert	51.16	32.21	-33.8	49.6	54	4.4	1.00	0	Harmonic
4542.10	Average	Horz	52.13	32.21	-33.8	50.6	54	3.4	1.20	200	Harmonic