FCC PART 15, SUBPART B and C
TEST REPORT

for

SHOP FLOOR SIGNAL STATION

MODEL: IA101

Prepared for
INDUSTRIAL ANDONS LLC.
3860 SE 52ND AVENUE
OCALA, FL 34480

Prepared by: _____

MICHAEL CHRISTENSEN

Approved by: _____

KYLE FUJIMOTO

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DATE: OCTOBER 14, 2003

	REPORT BODY	APPENDICES					TOTAL
		A	***B***	***C***	***D***	***E***	
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GENERAL REPORT SUMMARY

This electromagnetic emission test report is generated by Compatible Electronics Inc., which is an independent testing and consulting firm. The test report is based on testing performed by Compatible Electronics personnel according to the measurement procedures described in the test specifications given below and in the "Test Procedures" section of this report.

The measurement data and conclusions appearing herein relate only to the sample tested and this report may not be reproduced without the written permission of Compatible Electronics, unless done so in full.

This report must not be used to claim product endorsement by NVLAP, NIST or any other agency of the U.S. Government.

Device Tested:	Shop Floor Signal Station Model: IA101 S/N: N/A
Product Description:	See Expository Statement
Modifications:	The EUT was modified in order to meet the specifications. Please see the list located in Appendix B.
Manufacturer:	Industrial Andons LLC. 3860 SE 52nd Avenue Ocala, FL 34480
Test Dates:	September 18, 19 and 29, 2003
Test Specifications:	EMI requirements CFR Title 47, Part 15 Subpart B; and Subpart C, Sections 15.205, 15.207, 15.209 and 15.231
Test Procedure:	ANSI C63.4: 2001
Test Deviations:	The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz - 30 MHz	Complies with the **Class A** limits of CFR Title 47, Part 15, Subpart B; and Subpart C, section 15.207.
2	Radiated RF Emissions, 10 kHz - 4180 MHz	Complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.209, and 15.231.

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Shop Floor Signal Station Model: IA101. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 2001. The tests were performed in order to determine whether the electromagnetic emissions from the equipment under test, referred to as EUT hereafter, are within the **Class A** (Conducted Emissions) and **Class B** (Radiated Emissions) specification limits defined by CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.207, 15.209, and 15.231.

2. ADMINISTRATIVE DATA

2.1 Location of Testing

The EMI tests described herein were performed at the test facility of Compatible Electronics, 114 Olinda Drive, Brea, California 92823.

2.2 Traceability Statement

The calibration certificates of all test equipment used during the test are on file at the location of the test. The calibration is traceable to the National Institute of Standards and Technology (NIST).

2.3 Cognizant Personnel

Industrial Andons LLC.

Robert Wilson	Owner

Compatible Electronics, Inc.

Kyle Fujimoto	Test Engineer
Kirit Ramani	Test Engineer
Michael Christensen	Sr. Test Engineer

2.4 Date Test Sample was Received

The test sample was received on September 15, 2003.

2.5 Disposition of the Test Sample

The sample was returned to Industrial Andons LLC. On October 6, 2003.

2.6 Abbreviations and Acronyms

The following abbreviations and acronyms may be used in this document.

RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
P/N	Part Number
S/N	Serial Number
HP	Hewlett Packard
ITE	Information Technology Equipment
CML	Corrected Meter Limit
LISN	Line Impedance Stabilization Network

3. APPLICABLE DOCUMENTS

The following documents are referenced or used in the preparation of this EMI Test Report.

SPEC	TITLE
CFR Title 47, Part 15	FCC Rules – Radio frequency devices (including digital devices)
ANSI C63.4 2001	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description Of Test Configuration - EMI

Setup and operation of the equipment under test.

Specifics of the EUT and Peripherals Tested

The Shop Floor Signal Station Model: IA101 (EUT) was connected to two switch boxes via its data ports. The EUT was continuously transmitting. The EUT has an external antenna with a reverse SMA connector. During normal operation, the EUT will turn off within 5 seconds of releasing the button.

During the conducted emissions test, the EUT was placed into a transmit only mode to verify that it did not add to the emissions of the digital portion. The emissions that were found were determined to be from the power supply and not the transmitter.

It was determined that the emissions were at their highest level when the EUT was operating in the above configuration. The cables were moved to maximize the emissions. The final conducted as well as radiated data was taken in this mode of operation. All initial investigations were performed with the spectrum analyzer in manual mode scanning the frequency range continuously. The cables were bundled and routed as shown in the photographs in Appendix D.

4.1.1 Cable Construction and Termination

Cables 1 & 2

These are 10 foot unshielded cables connecting the EUT control box to the EUT switch boxes. They are hard wired at each end. The cables were bundled to a length of 1 meter.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIALNUMBER	FCC ID
SHOP FLOOR SIGNAL STATION (EUT)	INDUSTRIAL ANDONS LLC.	IA101	N/A	RHX-IA101
SWITCH BOX #1	INDUSTRIAL ANDONS LLC.	N/A	N/A	N/A
SWITCH BOX #2	INDUSTRIAL ANDONS LLC.	N/A	N/A	N/A

5.2 EMI Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
Radiate Emissions Data Capture Program	Compatible Electronics	2.0	N/A	N/A	N/A
Emissions Program	Compatible Electronics	2.3 (SR19)	N/A	N/A	N/A
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	3638A08784	June 20, 2003	1 Year
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	3701A22279	June 20, 2003	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650A	2430A00424	June 20, 2003	1 Year
Preamplifier	Com Power	PA-103	1582	March 6, 2003	1 Year
Biconical Antenna	Com Power	AB-900	15226	April 21, 2003	1 Year
Log Periodic Antenna	Com Power	AL-100	16202	February 3, 2003	1 Year
RF Attenuator	Weinschel Corp.	2	BJ6394	August 7, 2003	1 Year
LISN	Com Power	LI-215	12090	November 20, 2002	1 Year
LISN	Com Power	LI-215	12076	November 20, 2002	1 Year
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A
Turntable	Com Power	TT-100	N/A	N/A	N/A
Computer	Hewlett Packard	4530	US91912319	N/A	N/A
Monitor	Hewlett Packard	D5258A	TW74500641	N/A	N/A
Loop Antenna	Com-Power	AL-130	17070	July 8, 2003	1 Year
Horn Antenna	Com-Power	AH-118	10073	January 21, 2002	2 Year
Microwave Preamplifier	Com-Power	PA-122	25195	August 19, 2003	1 Year

6. TEST SITE DESCRIPTION

6.1 Test Facility Description

Please refer to section 2.1 and 7.1 of this report for EMI test location.

6.2 EUT Mounting, Bonding and Grounding

The EUT was mounted on a 1.0 by 1.5 meter non-conductive table 0.8 meters above the ground plane.

The EUT was grounded only via the safety ground in its power cord.

7. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section.

7.1 RF Emissions

7.1.1 Conducted Emissions Test

The spectrum analyzer was used as a measuring meter. The data was collected with the spectrum analyzer in the peak detect mode with the "Max Hold" feature activated. The quasi-peak was used only where indicated in the data sheets. A 10 dB attenuation pad was used for the protection of the spectrum analyzer input stage, and the offset was adjusted accordingly to read the actual data measured. The LISN output was measured using the spectrum analyzer. The output of the second LISN was terminated by a 50 ohm termination. The effective measurement bandwidth used for this test was 9 kHz.

Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI C63.4: 2001. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

The conducted emissions from the EUT were maximized for operating mode as well as cable placement. The final data was collected under program control by the Compatible Electronics conducted emissions software in several overlapping sweeps by running the spectrum analyzer at a minimum scan rate of 10 seconds per octave. The final qualification data is located in Appendix E.

Test Results:

The EUT complies with the **Class A** limits of CFR Title 47, Part 15, Subpart B and CFR Title 47, Part 15, Subpart C, Section 15.207 for conducted emissions.

7.1.2 Radiated Emissions (Spurious and Harmonics) Test

The spectrum analyzer was used as a measuring meter along with the quasi-peak adapter. Amplifiers were used to increase the sensitivity of the instrument. The Com Power Preamplifier Model: PA-103 was used for frequencies from 30 MHz to 1 GHz, and the Com-Power Microwave Preamplifier Model: PA-122 was used for frequencies above 1 GHz. The spectrum analyzer was used in the peak detect mode with the "Max Hold" feature activated. In this mode, the spectrum analyzer records the highest measured reading over all the sweeps.

The measurement bandwidths and transducers used for the radiated emissions test were:

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
9 kHz to 150 kHz	200 Hz	Active Loop Antenna
150 kHz to 30 MHz	9 kHz	Active Loop Antenna
30 MHz to 300 MHz	120 kHz	Biconical Antenna
300 MHz to 1 GHz	120 kHz	Log Periodic Antenna
1 GHz to 4.18 GHz	1 MHz	Horn Antenna

The open field test site of Compatible Electronics, Inc. was used for radiated emission testing. This test site is set up according to ANSI C63.4: 2001. Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The turntable supporting the EUT is remote controlled using a motor. The turntable permits EUT rotation of 360 degrees in order to maximize emissions. Also, the antenna mast allows height variation of the antenna from 1 meter to 4 meters. Data was collected in the worst case (highest emission) configuration of the EUT. At each reading, the EUT was rotated 360 degrees and the antenna height was varied from 1 to 4 meters (for E field radiated field strength). The gunsight method was used when measuring with the horn antenna in order to ensure accurate results. The loop antenna was also rotated in the horizontal and vertical axis in order to ensure accurate results.

The presence of ambient signals was verified by turning the EUT off. In case an ambient signal was detected, the measurement bandwidth was reduced temporarily and verification was made that an additional adjacent peak did not exist. This ensures that the ambient signal does not hide any emissions from the EUT. The EUT was tested at a 3 meter test distance to obtain final test data. The final qualification data sheets are located in Appendix E.

7.2 Bandwidth of the Fundamental

The -20 dB bandwidth was checked to see that it was within 0.25% of the fundamental frequency for the EUT. Photographs of the –20 dB bandwidth are located in Appendix E.

8. CONCLUSIONS

The Shop Floor Signal Station Model: IA101 meets all of the **Class A** (Conducted Emissions) and **Class B** (Radiated Emissions) specification limits defined in CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205, 15.207, 15.209, and 15.231.

APPENDIX A

LABORATORY RECOGNITIONS

LABORATORY RECOGNITIONS

Compatible Electronics has the following agency accreditations:

National Voluntary Laboratory Accreditation Program - Lab Code: 200528-0

Voluntary Control Council for Interference - Registration Numbers: R-983, C-1026, R-984 and C-1027

Bureau of Standards and Metrology Inspection - Reference Number: SL2-IN-E-1031

Conformity Assessment Body for the EMC Directive Under the US/EU MRA Appointed by NIST

Compatible Electronics is recognized or on file with the following agencies:

Federal Communications Commission

Industry Canada

Radio-Frequency Technologies (Competent Body)

APPENDIX B

MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC 15.231 or FCC Class A specifications.

All the rework described below was implemented during the test in a method that could be reproduced in all the units by the manufacturer.

1) Added .001 uF capacitor to YC2 on power supply.

APPENDIX C

ADDITIONAL MODELS COVERED UNDER THIS REPORT

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

Shop Floor Signal Station
Model: IA101
S/N: N/A

There were no additional models covered under this report.

APPENDIX D

DIAGRAMS, CHARTS, AND PHOTOS

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

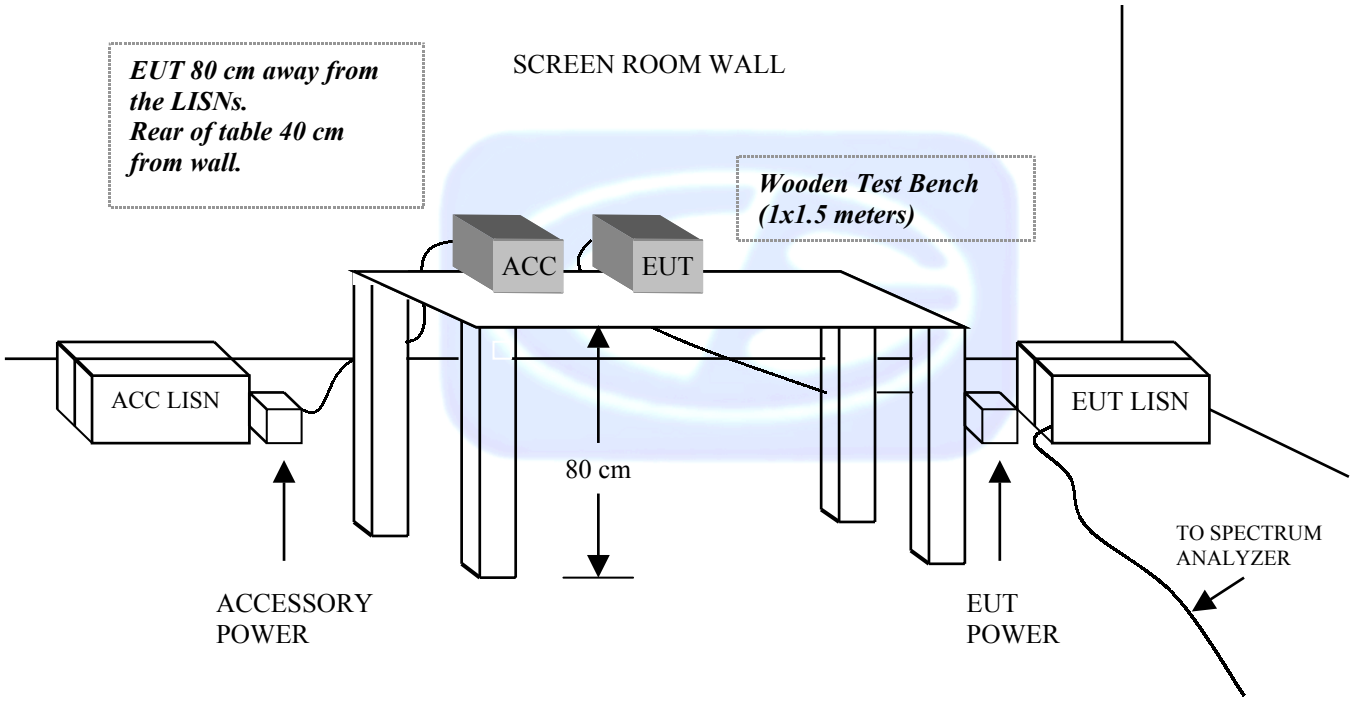
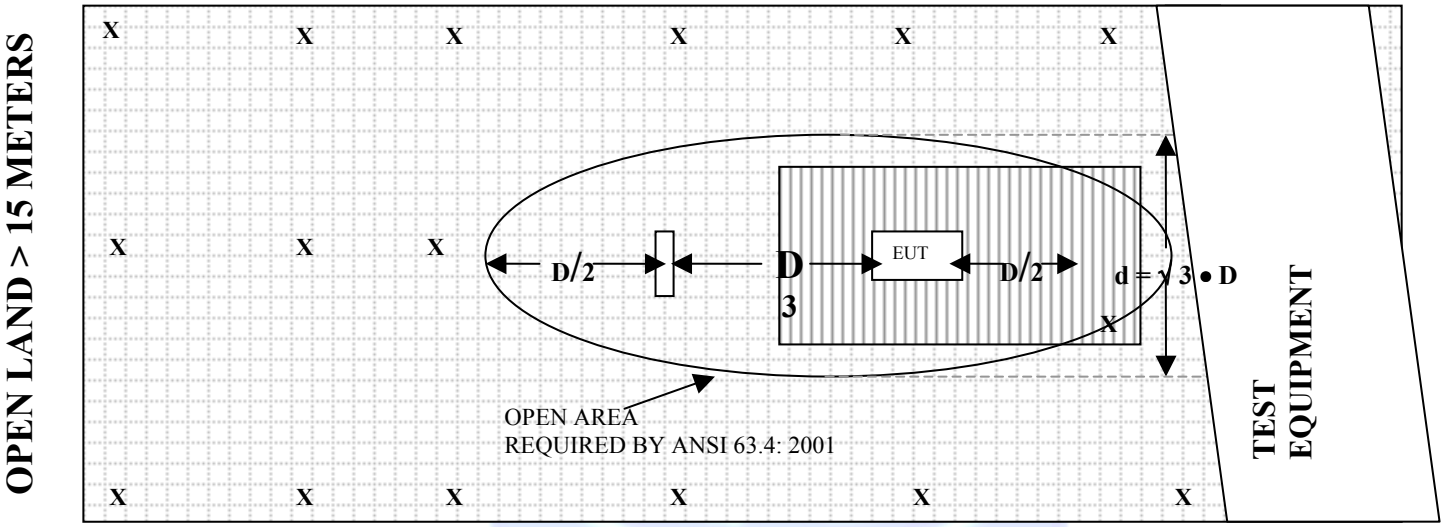


FIGURE 2: PLOT MAP AND LAYOUT OF RADIATED SITE

OPEN LAND > 15 METERS



OPEN LAND > 15 METERS

X	= GROUND RODS		= GROUND SCREEN
D	= TEST DISTANCE (meters)		= WOOD COVER

COM-POWER AB-900

BICONICAL ANTENNA

S/N: 15226

CALIBRATION DATE: APRIL 21, 2003

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	11.20	120	13.80
35	10.40	125	12.50
40	10.20	140	12.50
45	11.00	150	10.90
50	11.30	160	11.50
60	9.60	175	14.90
70	7.40	180	15.50
80	6.10	200	16.90
90	7.70	250	15.50
100	10.50	300	23.80

COM-POWER AL-100

LOG PERIODIC ANTENNA

S/N: 16202

CALIBRATION DATE: FEBRUARY 3, 2003

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	12.70	700	20.60
400	15.40	800	21.80
500	16.50	900	21.00
600	17.20	1000	21.50

COM-POWER PA-103

PREAMPLIFIER

S/N: 1582

CALIBRATION DATE: MARCH 6, 2003

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	33.6	300	33.3
40	33.6	350	33.3
50	33.6	400	33.1
60	33.6	450	33.0
70	33.5	500	32.9
80	33.5	550	33.0
90	33.5	600	32.8
100	33.6	650	32.6
125	33.6	700	32.7
150	33.4	750	32.4
175	33.5	800	32.4
200	33.4	850	32.7
225	33.3	900	31.9
250	33.2	950	31.8
275	33.3	1000	32.5

COM-POWER PA-122

MICROWAVE PREAMPLIFIER

S/N: 25195

CALIBRATION DATE: AUGUST 19, 2003

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	30.8	6.0	33.3
1.1	30.9	6.5	32.7
1.2	30.9	7.0	31.8
1.3	30.4	7.5	31.6
1.4	30.7	8.0	30.3
1.5	31.0	8.5	29.0
1.6	31.2	9.0	29.0
1.7	30.3	9.5	29.5
1.8	28.9	10.0	30.9
1.9	31.2	11.0	30.2
2.0	30.9	12.0	28.7
2.5	30.4	13.0	30.3
3.0	31.7	14.0	28.7
3.5	32.6	15.0	29.5
4.0	32.6	16.0	31.1
4.5	32.2	17.0	30.1
5.0	31.1	18.0	28.6
5.5	30.6		

COM-POWER AH-118

HORN ANTENNA

S/N: 10073

CALIBRATION DATE: JANUARY 21, 2002

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	26.6	10.0	41.8
1.5	29.2	10.5	40.4
2.0	32.4	11.0	37.5
2.5	32.3	11.5	42.2
3.0	31.4	12.0	40.4
3.5	31.8	12.5	43.6
4.0	31.1	13.0	44.2
4.5	32.0	13.5	41.8
5.0	33.9	14.0	43.3
5.5	32.0	14.5	47.0
6.0	37.8	15.0	49.4
6.5	36.8	15.5	49.9
7.0	42.4	16.0	49.9
7.5	39.5	16.5	48.2
8.0	41.3	17.0	44.0
8.5	40.3	17.5	44.8
9.0	39.5	18.0	44.7
9.5	41.4		

COM-POWER AL-130

LOOP ANTENNA

S/N: 17070

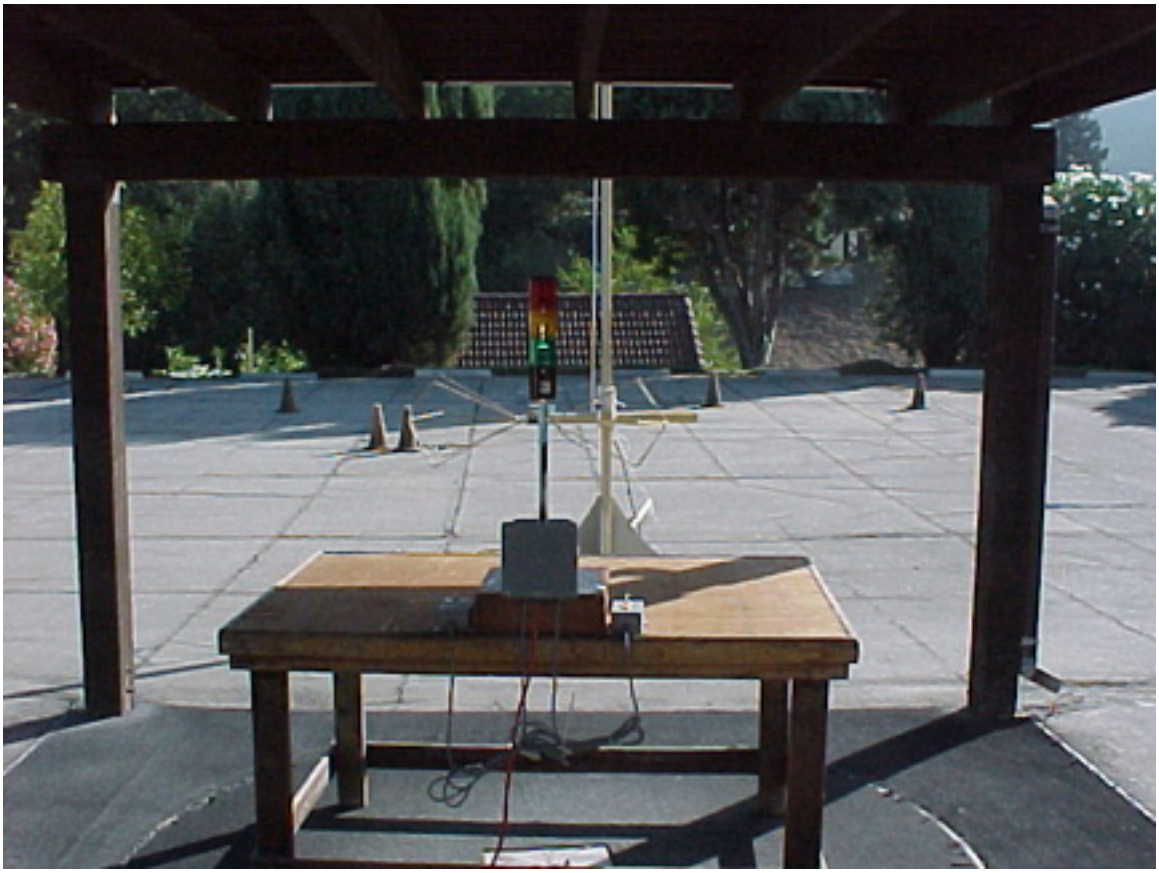
CALIBRATION DATE: JULY 8, 2003

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-40.0	11.5
0.01	-40.1	11.4
0.02	-41.3	10.2
0.05	-41.7	9.8
0.07	-41.3	10.2
0.1	-41.5	10.0
0.2	-43.8	7.7
0.3	-41.4	10.1
0.5	-41.3	10.2
0.7	-41.2	10.3
1	-40.8	10.7
2	-40.3	11.2
3	-40.6	10.9
4	-40.7	10.8
5	-40.1	11.4
10	-40.5	11.0
15	-41.3	10.2
20	-41.1	10.4
25	-41.7	9.8
30	-43.1	8.4

FRONT VIEW

INDUSTRIAL ANDONS LLC.
SHOP FLOOR SIGNAL STATION
MODEL: IA101
FCC SUBPART B AND C - RADIATED EMISSIONS – 09-18-03 and 09-19-03

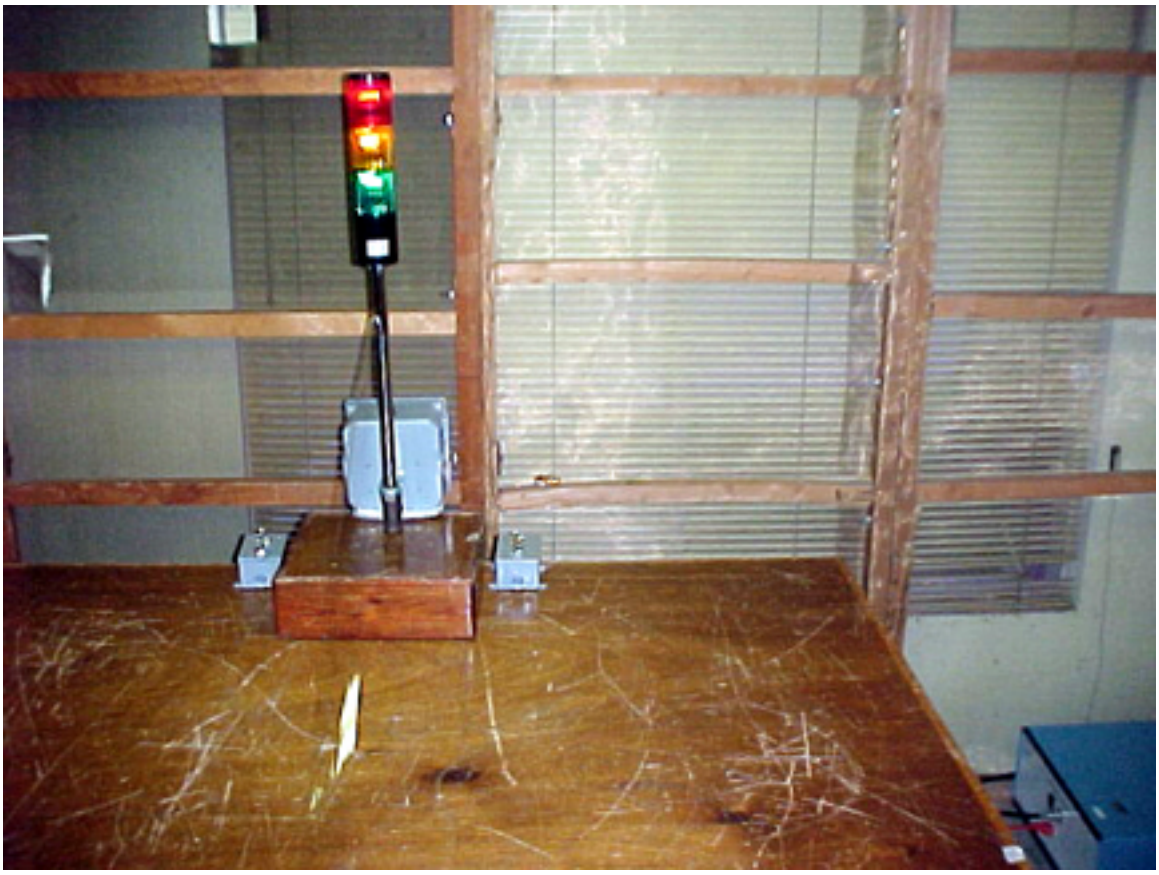
PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



REAR VIEW

INDUSTRIAL ANDONS LLC.
SHOP FLOOR SIGNAL STATION
MODEL: IA101
FCC SUBPART B AND C - RADIATED EMISSIONS – 09-18-03 and 09-19-03

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



FRONT VIEW

INDUSTRIAL ANDONS LLC.
SHOP FLOOR SIGNAL STATION
MODEL: IA101
FCC SUBPART B AND C - CONDUCTED EMISSIONS – 09-29-03

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

INDUSTRIAL ANDONS LLC.
SHOP FLOOR SIGNAL STATION
MODEL: IA101
FCC SUBPART B AND C - CONDUCTED EMISSIONS – 09-29-03

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

APPENDIX E

DATA SHEETS

RADIATED AND CONDUCTED EMISSIONS

DATA SHEETS

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	**INDUSTRIAL ANDONS**	**DATE**	**9/18/03**
EUT	**SHOP FLOOR SIGNAL STATION**	**DUTY CYCLE**	**40 %**
MODEL	**IA101**	**PEAK TO AVG**	**-7.95880017 dB**
S/N	**N/A**	**TEST DIST.**	**3 Meters**
TEST ENGINEER	**KIRIT RAMANI**	**LAB**	**A**

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi-Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
418.0000	68.3	60.3 A	H	1.0	180	Y		15.6	3.6	0.0	0.0	0.0	**79.5**	**-0.8**	**80.3**	
418.0000	65.8	57.8 A	V	2.0	180	Y		15.6	3.6	0.0	0.0	0.0	**77.0**	**-3.3**	**80.3**	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	**INDUSTRIAL ANDONS**	**DATE**	**9/18/03**
EUT	**SHOP FLOOR SIGNAL STATION**	**DUTY CYCLE**	**40 %**
MODEL	**IA101**	**PEAK TO AVG**	**-7.95880017 dB**
S/N	**N/A**	**TEST DIST.**	**3 Meters**
TEST ENGINEER	**KIRIT RAMANI**	**LAB**	**A**

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi-Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
836.0000	48.6	40.6 A	H	1.0	0	Y		21.5	4.9	32.6	0.0	0.0	**34.5**	**-25.8**	**60.3**	
836.0000	53.6	45.6 A	V	1.5	180	Y		21.5	4.9	32.6	0.0	0.0	**39.5**	**-20.8**	**60.3**	

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	**INDUSTRIAL ANDONS**	**DATE**	**9/18/03**
EUT	**SHOP FLOOR SIGNAL STATION**	**DUTY CYCLE**	**40 %**
MODEL	**IA101**	**PEAK TO AVG**	**-7.95880017 dB**
S/N	**N/A**	**TEST DIST.**	**3 Meters**
TEST ENGINEER	**KIRIT RAMANI**	**LAB**	**A**

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi-Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
1254.0000		A	H			Y		27.9	3.0	30.6	0.0				**60.3**	**NO EMISSION FOUND**
1254.0000		A	V			Y		27.9	3.0	30.6	0.0				**60.3**	**NO EMISSION FOUND**

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	**INDUSTRIAL ANDONS**	**DATE**	**9/18/03**
EUT	**SHOP FLOOR SIGNAL STATION**	**DUTY CYCLE**	**40 %**
MODEL	**IA101**	**PEAK TO AVG**	**-7.95880017 dB**
S/N	**N/A**	**TEST DIST.**	**3 Meters**
TEST ENGINEER	**KIRIT RAMANI**	**LAB**	**A**

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi-Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
1672.0000	41.9	33.9 A	H			Y		30.3	5.4	30.6	0.0	0.0	**39.1**	**-14.9**	**54.0**	
1672.0000		A	V			Y		30.3	5.4	30.6	0.0				**54.0**	**NO EMISSION FOUND**

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	**INDUSTRIAL ANDONS**	**DATE**	**9/18/03**
EUT	**SHOP FLOOR SIGNAL STATION**	**DUTY CYCLE**	**40 %**
MODEL	**IA101**	**PEAK TO AVG**	**-7.95880017 dB**
S/N	**N/A**	**TEST DIST.**	**3 Meters**
TEST ENGINEER	**KIRIT RAMANI**	**LAB**	**A**

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi-Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
2090.0000		A	H			Y		32.4	4.2	30.8	0.0				**60.3**	**NO EMISSION FOUND**
2090.0000		A	V			Y		32.4	4.2	30.8	0.0				**60.3**	**NO EMISSION FOUND**

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	**INDUSTRIAL ANDONS**	**DATE**	**9/18/03**
EUT	**SHOP FLOOR SIGNAL STATION**	**DUTY CYCLE**	**40 %**
MODEL	**IA101**	**PEAK TO AVG**	**-7.95880017 dB**
S/N	**N/A**	**TEST DIST.**	**3 Meters**
TEST ENGINEER	**KIRIT RAMANI**	**LAB**	**A**

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi-Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
2508.0000		A	H			Y		32.3	4.7	30.4	0.0				**60.3**	**NO EMISSION FOUND**
2508.0000		A	V			Y		32.3	4.7	30.4	0.0				**60.3**	**NO EMISSION FOUND**

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	**INDUSTRIAL ANDONS**	**DATE**	**9/18/03**
EUT	**SHOP FLOOR SIGNAL STATION**	**DUTY CYCLE**	**40 %**
MODEL	**IA101**	**PEAK TO AVG**	**-7.95880017 dB**
S/N	**N/A**	**TEST DIST.**	**3 Meters**
TEST ENGINEER	**KIRIT RAMANI**	**LAB**	**A**

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi-Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
2926.0000		A	H			Y		31.5	5.5	31.5	0.0				**60.3**	**NO EMISSION FOUND**
2926.0000		A	V			Y		31.5	5.5	31.5	0.0				**60.3**	**NO EMISSION FOUND**

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	**INDUSTRIAL ANDONS**	**DATE**	**9/18/03**
EUT	**SHOP FLOOR SIGNAL STATION**	**DUTY CYCLE**	**40 %**
MODEL	**IA101**	**PEAK TO AVG**	**-7.95880017 dB**
S/N	**N/A**	**TEST DIST.**	**3 Meters**
TEST ENGINEER	**KIRIT RAMANI**	**LAB**	**A**

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi-Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
3344.0000		A	H			Y		31.7	6.2	32.3	0.0				**60.3**	**NO EMISSION FOUND**
3344.0000		A	V			Y		31.7	6.2	32.3	0.0				**60.3**	**NO EMISSION FOUND**

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	**INDUSTRIAL ANDONS**	**DATE**	**9/18/03**
EUT	**SHOP FLOOR SIGNAL STATION**	**DUTY CYCLE**	**40 %**
MODEL	**IA101**	**PEAK TO AVG**	**-7.95880017 dB**
S/N	**N/A**	**TEST DIST.**	**3 Meters**
TEST ENGINEER	**KIRIT RAMANI**	**LAB**	**A**

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi-Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
3762.0000		A	H			Y		31.4	6.9	32.6	0.0				**54.0**	**NO EMISSION FOUND**
3762.0000		A	V			Y		31.4	6.9	32.6	0.0				**54.0**	**NO EMISSION FOUND**

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.231)

COMPANY	**INDUSTRIAL ANDONS**	**DATE**	**9/18/03**
EUT	**SHOP FLOOR SIGNAL STATION**	**DUTY CYCLE**	**40 %**
MODEL	**IA101**	**PEAK TO AVG**	**-7.95880017 dB**
S/N	**N/A**	**TEST DIST.**	**3 Meters**
TEST ENGINEER	**KIRIT RAMANI**	**LAB**	**A**

Frequency MHz	Peak Reading (dBuV)	Average (A) or Quasi-Peak (QP)	Antenna Polar. (V or H)	Antenna Height (meters)	EUT Azimuth (degrees)	EUT Axis (X,Y,Z)	EUT Tx Channel	Antenna Factor (dB)	Cable Loss (dB)	Amplifier Gain (dB)	Distance Factor (dB)	Mixer Factor (dB)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
4180.0000		A	H			Y		31.4	6.3	32.5	0.0				**54.0**	**NO EMISSION FOUND**
4180.0000		A	V			Y		31.4	6.3	32.5	0.0				**54.0**	**NO EMISSION FOUND**

* CORRECTED READING = METER READING + ANTENNA FACTOR + CABLE LOSS - AMPLIFIER GAIN

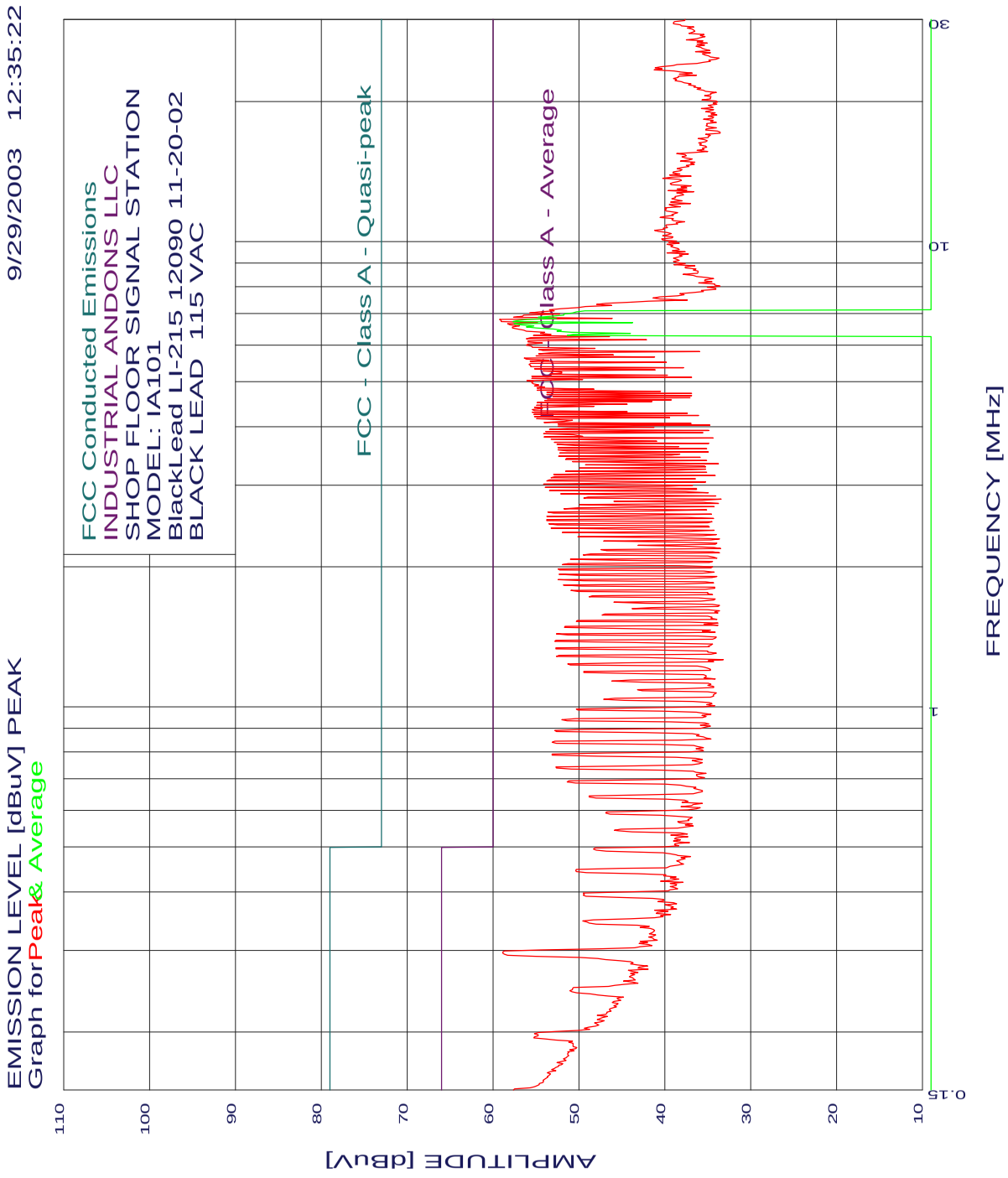
** DELTA = SPEC LIMIT - CORRECTED READING

Test Location : Compatible Electronics Page : 1/1
Customer : Industrial Andons LLC. Date : 9/19/2003
Manufacturer : Industrial Andons LLC. Time : 8:56:32
Eut name : Shop Floor Signal Station Lab : A
Model : IA101 Test Distance : 3.0
Serial # : N/A
Specification : FCC Class B
Distance correction factor (20 * log(test/spec) : 0.00
Test Mode : Tested By Kirit Ramani - Spurious 30 MHz to 4.18 GHz

Pol	Freq	Rdng	Cable loss	Ant factor	Amp gain	Cor'd rdg = R	Limit = L	Delta R-L
	MHz	dBuV	dB	dB	dB	dBuV	dBuV/m	dB
1V	31.486	57.00	0.93	10.95	33.60	35.28	40.00	-4.72
2V	34.786	52.10	1.00	10.43	33.60	29.93	40.00	-10.07
3V	37.904	57.20	1.06	10.28	33.60	34.94	40.00	-5.06
4V	38.942	54.40	1.08	10.24	33.60	32.12	40.00	-7.88
5V	60.701	55.30	1.31	9.43	33.59	32.45	40.00	-7.55
6V	61.420	54.90	1.32	9.27	33.58	31.90	40.00	-8.10
7V	110.101	45.70	1.69	12.24	33.60	26.03	43.50	-17.47
8V	113.996	44.10	1.72	12.87	33.60	25.09	43.50	-18.41

Company Name	Industrial Andons	DATE:	9/19/03
EUT:	Transmitter	EUT S/N:	N/A
EUT MODEL:	101	LOCATION:	Lab A
SPECIFICATION:	FCC PART 15.209	CLASS:	B

Frequency	Peak Reading	Avg or Q.P.	Azimuth	Antenna Height	Antenna Factor	Cable Loss	Amplifier Gain	Corrected Reading	Delta	Spec Limit	Comment
MHz	dBμV	dBμV	degrees	meter	dB	dB	dB	dBμV	dB	dBμV	
1.882	40.50		180	1	11.1	0.3		51.9	-17.6	69.5	Spec limit at 30 meters, tested at 3 m
1.98	39.50		180	1	11.2	0.3		51.0	-18.5	69.5	Spec limit at 30 meters, tested at 3 m
2.57	36.90		180	1	11.0	0.3		48.2	-21.3	69.5	Spec limit at 30 meters, tested at 3 m
4.66	35.50		180	1	11.2	0.3		47.0	-22.5	69.5	Spec limit at 30 meters, tested at 3 m
5.105	33.70		180	1	11.4	0.3		45.4	-24.1	69.5	Spec limit at 30 meters, tested at 3 m
7.833	29.80		180	1	11.1	0.3		41.2	-28.3	69.5	Spec limit at 30 meters, tested at 3 m
14.61	30.50		180	1	10.3	0.6		41.3	-28.2	69.5	Spec limit at 30 meters, tested at 3 m


9/29/2003 12:35:22
EMISSION LEVEL [dBuV] PEAK
Graph forPeak& Average
FCC Conducted Emissions
INDUSTRIAL ANDONS LLC
SHOP FLOOR SIGNAL STATION
MODEL: IA101
BlackLead LI-215 12090 11-20-02
BLACK LEAD 115 VAC
FCC - Class A - Quasi-peak
FCC - Class A - Average
AMPLITUDE [dBuV]
110
100
90
80
70
60
50
40
30
20
10
FREQUENCY [MHz]
30
10
1
0.15

9/29/2003 12:35:22

INDUSTRIAL ANDONS LLC
SHOP FLOOR SIGNAL STATION
MODEL: IA101
BLACK LEAD 115 VAC
TEST ENGINEER : MICHAEL CHRISTENSEN

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30 highest peaks above -50.00 dB of FCC - Class A - Average limit line
Peak criteria : 3.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	6.809	59.21	60.00	-0.79*
2	6.664	58.31	60.00	-1.69*
3	6.882	57.61	60.00	-2.39*
4	5.626	56.37	60.00	-3.63
5	6.186	56.09	60.00	-3.91
6	5.996	56.09	60.00	-3.91
7	5.031	56.06	60.00	-3.94
8	5.449	55.77	60.00	-4.23
9	7.027	55.72	60.00	-4.28
10	5.142	55.46	60.00	-4.54
11	5.086	55.46	60.00	-4.54
12	4.361	55.43	60.00	-4.57
13	4.294	55.43	60.00	-4.57
14	4.249	55.23	60.00	-4.77
15	5.335	55.16	60.00	-4.84
16	4.204	55.13	60.00	-4.87
17	5.686	54.98	60.00	-5.02
18	4.456	54.94	60.00	-5.06
19	4.159	54.93	60.00	-5.07
20	4.799	54.85	60.00	-5.15
21	4.504	54.84	60.00	-5.16
22	5.869	54.68	60.00	-5.32
23	5.745	54.68	60.00	-5.32
24	5.280	54.16	60.00	-5.84
25	3.862	54.12	60.00	-5.88
26	3.011	54.11	60.00	-5.89
27	4.092	54.03	60.00	-5.97
28	3.800	54.02	60.00	-5.98
29	4.552	53.94	60.00	-6.06
30	2.963	53.91	60.00	-6.09

---

* Please see average plot and peaks data

9/29/2003 12:35:22

INDUSTRIAL ANDONS LLC
SHOP FLOOR SIGNAL STATION
MODEL: IA101
BLACK LEAD 115 VAC
TEST ENGINEER : MICHAEL CHRISTENSEN

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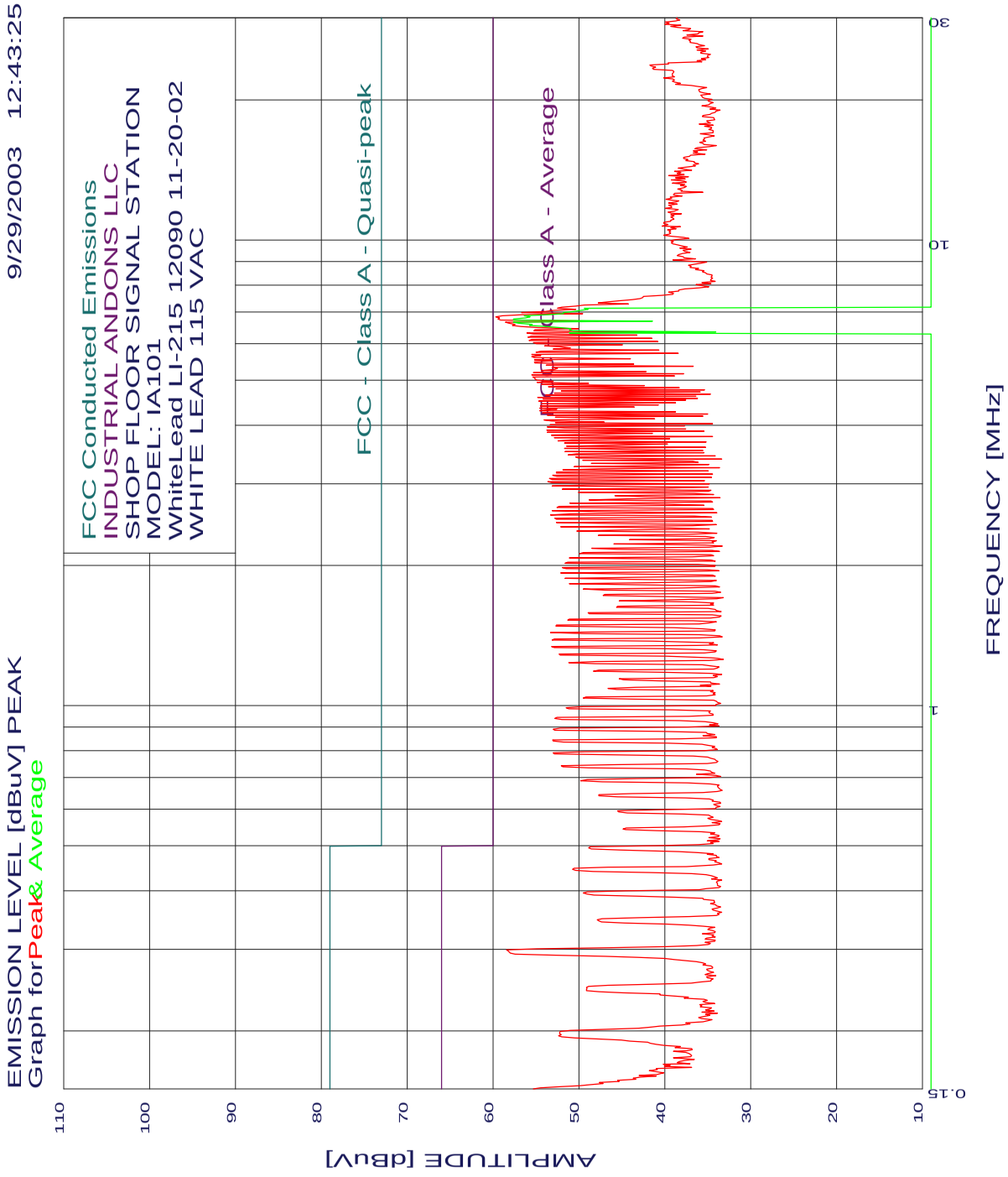
3 highest peaks above -50.00 dB of FCC - Class A - Average limit line
Peak criteria : 3.00 dB, Curve : Average

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	6.736	57.67	60.00	-2.33
2	6.664	57.52	60.00	-2.48
3	6.288	51.32	60.00	-8.68


EMISSION LEVEL [dBuV] PEAK
Graph forPeak& Average
9/29/2003 12:43:25
FCC Conducted Emissions
INDUSTRIAL ANDONS LLC
SHOP FLOOR SIGNAL STATION
MODEL: IA101
WhiteLead LI-215 12090 11-20-02
WHITE LEAD 115 VAC
FCC - Class A - Quasi-peak
FCC - Class A - Average
AMPLITUDE [dBuV]
FREQUENCY [MHz]
110
100
90
80
70
60
50
40
30
20
10
30
10
1
0.15

9/29/2003 12:43:25

INDUSTRIAL ANDONS LLC
SHOP FLOOR SIGNAL STATION
MODEL: IA101
WHITE LEAD 115 VAC
TEST ENGINEER : MICHAEL CHRISTENSEN

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30 highest peaks above -50.00 dB of FCC - Class A - Average limit line
Peak criteria : 3.00 dB, Curve : Peak

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	6.845	59.63	60.00	-0.37*
2	6.664	58.52	60.00	-1.48*
3	6.991	56.63	60.00	-3.37
4	6.322	56.00	60.00	-4.00
5	6.186	55.90	60.00	-4.10
6	6.091	55.80	60.00	-4.20
7	5.686	55.48	60.00	-4.52
8	5.142	55.47	60.00	-4.53
9	5.086	55.36	60.00	-4.64
10	6.028	55.29	60.00	-4.71
11	5.197	55.27	60.00	-4.73
12	6.390	55.21	60.00	-4.79
13	5.538	55.18	60.00	-4.82
14	5.745	54.98	60.00	-5.02
15	4.600	54.75	60.00	-5.25
16	4.504	54.65	60.00	-5.35
17	4.361	54.55	60.00	-5.45
18	4.408	54.45	60.00	-5.55
19	5.252	54.37	60.00	-5.63
20	4.902	54.36	60.00	-5.64
21	4.456	54.35	60.00	-5.65
22	4.249	54.24	60.00	-5.76
23	4.552	54.15	60.00	-5.85
24	4.114	54.04	60.00	-5.96
25	5.933	53.99	60.00	-6.01
26	4.648	53.85	60.00	-6.15
27	5.390	53.77	60.00	-6.23
28	3.903	53.73	60.00	-6.27
29	4.204	53.64	60.00	-6.36
30	3.966	53.64	60.00	-6.36

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* Please see average plot and peaks data

9/29/2003 12:43:25

INDUSTRIAL ANDONS LLC
SHOP FLOOR SIGNAL STATION
MODEL: IA101
WHITE LEAD 115 VAC
TEST ENGINEER : MICHAEL CHRISTENSEN

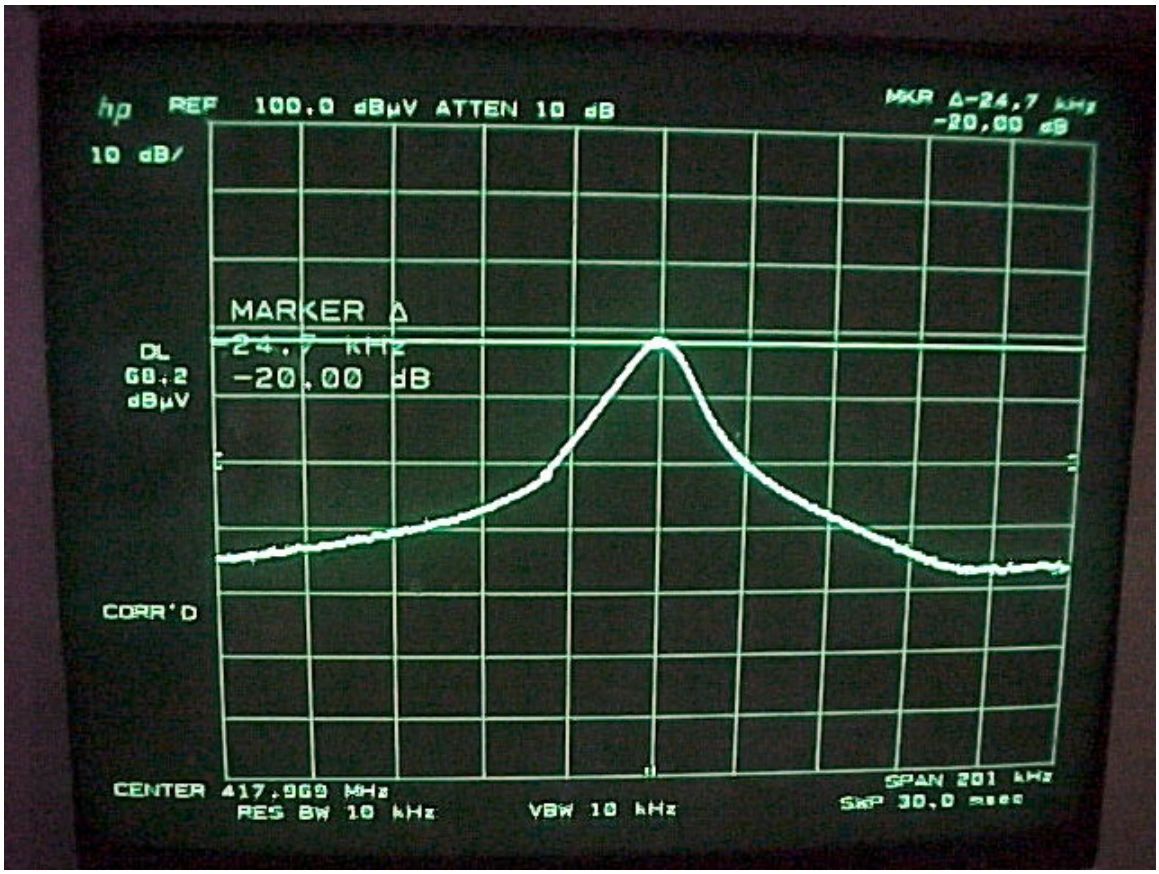
---

3 highest peaks above -50.00 dB of FCC - Class A - Average limit line
Peak criteria : 3.00 dB, Curve : Average

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	6.664	57.62	60.00	-2.38
2	6.773	57.61	60.00	-2.39
3	6.322	51.12	60.00	-8.88

-20 dB BANDWIDTH

PHOTOGRAPHS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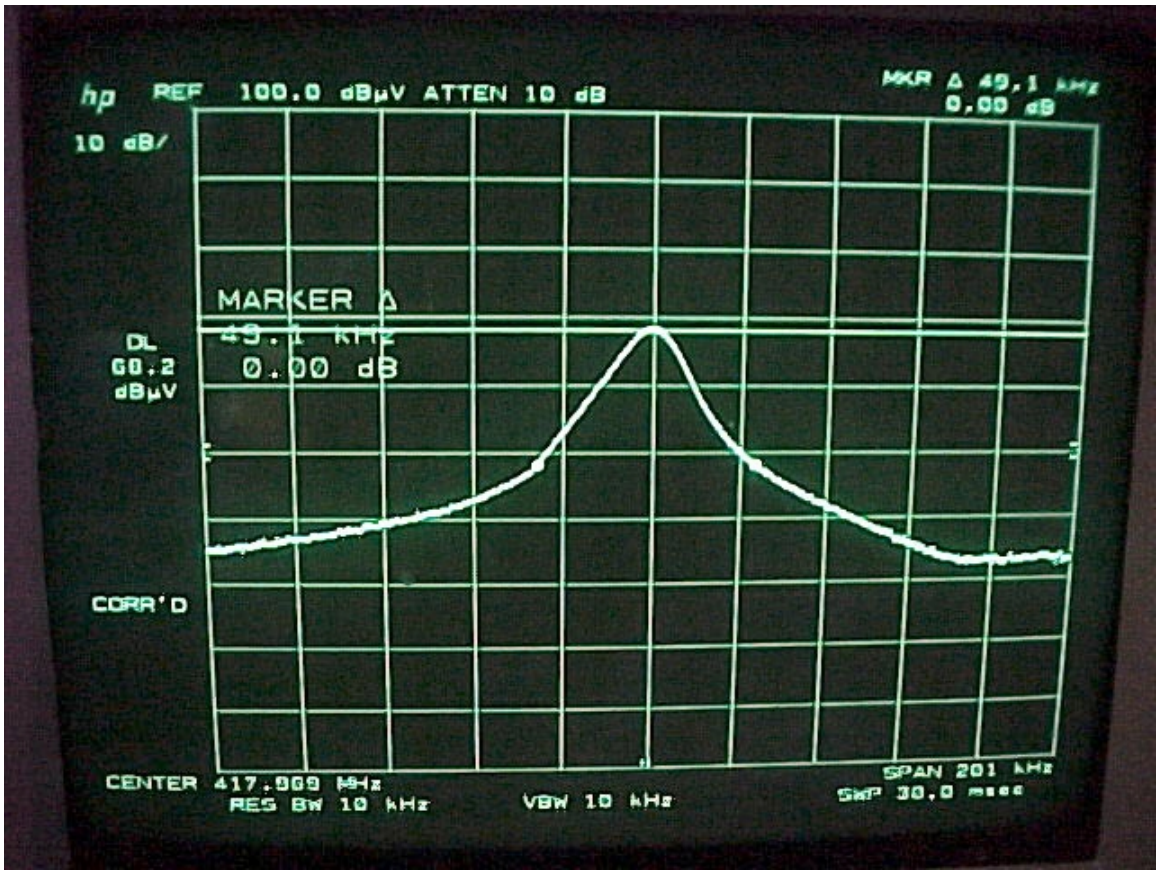
MKR Δ-24.7 kHz
-20.00 dB
10 dB/
MARKER Δ
24.7 kHz
-20.00 dB
DL
60.2
dBµV
CORR'D
CENTER 417.999 MHz
RES BW 10 kHz
VBW 10 kHz
SPAN 201 kHz
SWP 30.0 msec


hp REF 100.0 dBµV ATTEN 10 dB
MKR Δ 49.1 kHz
0.00 dB
10 dB/
MARKER Δ
49.1 kHz
0.00 dB
DL
60.2
dBµV
CORR'D
CENTER 417.909 MHz
RES BW 10 kHz
VBW 10 kHz
SPAN 201 kHz
SWP 30.0 msec