



INSIDE TECHNOLOGIES TEST REPORT

FOR THE

CONTACTLESS COUPLER, M210-2G

FCC PART 15 SUBPART C SECTIONS 15.207, 15.209 & 15.225

COMPLIANCE

DATE OF ISSUE: JUNE 20, 2003

PREPARED FOR:

Inside Technologies
MS: Bat 11A, Parc Club du Golf
ZAC de la Pichaury
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Date of test: June 16-18, 2003

W.O. No.: 80687

Report No.: FC03-038

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TABLE OF CONTENTS

Administrative Information	4
Summary of Results.....	5
Conditions for Compliance.....	5
Approvals.....	5
FCC 15.31(e) Voltage Variation	6
FCC 15.31(m) Number of Channels.....	6
FCC 15.33(a) Frequency Ranges Tested.....	6
FCC 15.35 Analyzer Bandwidth Settings.....	6
FCC 15.203 Antenna Requirements.....	6
FCC 15.205 Restricted Bands	6
Mode of Operation.....	7
EUT Operating Frequency.....	7
Temperature and Humidity During Testing	7
Equipment Under Test (EUT) Description.....	7
Equipment Under Test.....	7
Peripheral Devices	7
Report of Measurements.....	8
Table 1: FCC 15.207 - Six Highest Conducted Emission Levels	8
Table 2: FCC 15.209 - Six Highest Radiated Emission Levels.....	9
Table 3: FCC 15.225(a) - Fundamental Emission Levels	10
Table 4: FCC 15.225(b) - Six Highest Radiated Emission Levels.....	11
FCC 15.255(b)/ 15.215 - Bandedge Compliance	12
FCC 15.255(b)/ 15.215 - Bandedge Compliance	13
FCC 15.225(c) – Frequency Tolerance, Voltage and Temperature	14
RSS 210 6.2.2(e) – 99 % Bandwidth.....	15
RSS 210 6.2.2(e) – Emissions Mask	16
EUT Setup	17
Correction Factors	17
Table A: Sample Calculations	17
Test Instrumentation and Analyzer Settings.....	18
Spectrum Analyzer Detector Functions.....	18
Peak	18
Quasi-Peak.....	18
Average.....	18
EUT Testing	19
Mains Conducted Emissions	19
Radiated Emissions	19
Appendix A: Test Setup Photographs	20
Photograph Showing Mains Conducted Emissions.....	21
Photograph Showing Mains Conducted Emissions.....	22
Photograph Showing Radiated Emissions.....	23

Photograph Showing Radiated Emissions	24
Photograph Showing Radiated Emissions	25
Photograph Showing Radiated Emissions	26
Photograph Showing Radiated Emissions	27
Photograph Showing Temperature Testing	28
Appendix B: Test Equipment List	29
Appendix C: Measurement Data Sheets	30

ADMINISTRATIVE INFORMATION

DATE OF TEST: June 16-18, 2003

DATE OF RECEIPT: June 16, 2003

PURPOSE OF TEST: To demonstrate the compliance of the Contactless Coupler, M210-2G with the requirements for FCC Part 15 Subpart C Sections 15.207, 15.209 & 15.225 devices.

TEST METHOD: ANSI C63.4 (1992)

MANUFACTURER: Inside Technologies
MS: Bat 11A, Parc Club du Golf
ZAC de la Pichaury
13856 Aix En Provence, France

REPRESENTATIVE: Adel Hamza

TEST LOCATION: CKC Laboratories, Inc.
110 Olinda Place
Brea, CA 92621

SUMMARY OF RESULTS

As received, the Inside Technologies Contactless Coupler, M210-2G was found to be fully compliant with the following standards and specifications:


FCC PART 15.225	Canada RSS 210	Notes
15.203	5.5	Antenna
15.207	6.6	AC Mains Conducted Emissions
15.209	6.2.1	General Field Strength Requirements (RSS 210 Table 3)
15.225	6.2.2(e)	Frequency Range: 13.553 – 13.567 MHz
15.225(a)	6.2.2(e)	Fundamental Field Strength
15.225(b)	6.2.2(e)	Field Strength of Spurious & Bandedge
15.225(c)	6.2.2(e)	Frequency and Input Voltage Stability Test
NA	6.2.2(e)	Emissions Mask & 99% Bandwidth
ANSI C63.4 (1992)	RSS 212	Test method
	IC 3172-A	Industry of Canada Site File Number

CONDITIONS FOR COMPLIANCE

No modifications to the EUT were necessary to comply.

APPROVALS

QUALITY ASSURANCE:



Steve Behm, Director of Engineering Services
and Quality Assurance



Joyce Walker, Quality Assurance Administrative
Manager



Septimiu Apahidean, Lab Manager

TEST PERSONNEL:



Eddie Wong, EMC Engineer

FCC 15.31(e) Voltage Variations

For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between **85%** and **115%** of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

Setup: The EUT was placed on the turntable and connected to the COM port of a support laptop via a RS232 cable. The EUT was in constant transmit mode sending data to the remote laptop. Transmit frequency was 13.56 MHz.

Result:

Supply voltage	Power level
7.65 VDC (85%)	58.3 dBuV
9.00 VDC (100%)	58.1 dBuV
10.35 VDC (115%)	58.2 dBuV

FCC 15.31(m) Number of Channels

This device operates on a single channel.

FCC 15.33(a) Frequency Ranges Tested

15.207 Conducted: 150 kHz – 30 MHz

15.209 Radiated: 9 kHz – 1000 MHz

FCC SECTION 15.35: ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	9 kHz	150 kHz	200 Hz
RADIATED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz

FCC 15.203 Antenna Requirements

The antenna is an integral part of the EUT and is non-removable; therefore the EUT complies with Section 15.203 of the FCC rules.

FCC 15.205 Restricted Bands

The fundamental operating frequency lies outside the restricted bands and therefore complies with the requirements of Section 15.205 of the FCC rules. Any spurious emission coming from the EUT was investigated to determine if any portion lies inside the restricted band. If any portion of a spurious emissions signal was found to be within a restricted band, investigation was performed to ensure compliance with Section 15.209.

FCC 15.215 Additional Provisions to the General Radiated Emission Limitations

See Section 15.225(b).

Mode of Operation

The EUT was configured by the manufacturer to operate in a continuous transmit mode for testing purposes.

EUT Operating Frequency

The EUT was operating at 13.56 MHz.

Temperature and Humidity During Testing

The temperature during testing was within +15°C and + 35°C. The relative humidity was between 20% and 75%. See test conditions for individual tests for more specific measurements.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The serial radio frequency smartcard reader tested by CKC Laboratories was representative of a production unit.

EQUIPMENT UNDER TEST

Contactless Coupler

Manuf: Inside Technologies
Model: M210-2G
Serial: NA
FCC ID: Q45M210 (pending)

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

Power Supply

Manuf: Sprint
Model: ASC-20
Serial: NA
FCC ID: NA

Power Supply

Manuf: Topward
Model: 6E06D
Serial: 988614NA
FCC ID: NA

REPORT OF MEASUREMENTS

The following tables report the worst case emissions levels recorded during the tests performed on the EUT. All readings taken were peak readings unless otherwise stated. The data sheets from which the emissions tables were compiled are contained in Appendix C.

Table 1: FCC 15.207 - Six Highest Conducted Emission Levels									
FREQUENCY MHz	METER READING dBμV	CORRECTION FACTORS				CORRECTED READING dBμV	SPEC LIMIT dBμV	MARGIN dB	NOTES
		Lisn dB							
0.150000	47.2	0.0				47.2	56.0	-8.8	B
0.150000	46.5	0.0				46.5	56.0	-9.5	W
0.645950	26.8	0.0				26.8	46.0	-19.2	W
0.881253	31.4	0.0				31.4	46.0	-14.6	B
13.571430	29.7	0.0				29.7	50.0	-20.3	B
22.129980	30.7	0.0				30.7	50.0	-19.3	W

Test Method: ANSI C63.4 (1992)
Spec Limit : FCC Part 15 Subpart C Section 15.207

NOTES: B = Black Lead
W = White Lead

COMMENTS: The EUT was placed on the turntable and connected to the COM port of a support laptop via a RS232 cable. The EUT was in constant transmit mode sending data to the remote laptop. TX Freq = 13.56 MHz. Frequency range of measurement = 150 kHz- 30 MHz. 150 kHz - 30 MHz; RBW = 9 kHz, VBW = 9 kHz. 9V DC, 21°C, 67 % relative humidity. Note: EUT's loop antenna is replaced with a 90-ohm dummy load. Laptop running on battery power.

Table 2: FCC 15.209 - Six Highest Radiated Emission Levels

FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
298.362	42.4	22.8	-28.3	3.4		40.3	46.0	-5.7	H
325.461	46.7	21.1	-28.3	3.6		43.1	46.0	-2.9	HQ
325.470	44.9	21.1	-28.3	3.6		41.3	46.0	-4.7	VQ
352.589	48.7	19.4	-28.3	3.7		43.5	46.0	-2.5	HQ
922.179	36.9	24.2	-27.4	6.4		40.1	46.0	-5.9	HQ
949.326	36.7	24.4	-27.5	6.5		40.1	46.0	-5.9	HQ

Test Method: ANSI C63.4 (1992)
Spec Limit : FCC Part 15 Subpart C Section 15.209
Test Distance: 3 Meters

NOTES: H = Horizontal Polarization
V = Vertical Polarization
Q = Quasi Peak Reading

COMMENTS: The EUT was placed on the turntable and connected to the COM port of a support laptop via a RS232 cable. The EUT was in constant transmit mode sending data to the remote laptop. TX Freq = 13.56 MHz. Frequency range of measurement = 9 kHz - 1000 MHz. 9 kHz - 150 kHz; RBW = 200 Hz, VBW = 200 Hz; 150 kHz - 30 MHz; RBW = 9 kHz, VBW = 9 kHz; 30 MHz - 1000 MHz; RBW = 120 kHz, VBW = 120 kHz. 9V DC (110VAC, 60 Hz), 21°C, 67 % relative humidity.

Table 3: FCC 15.225(a) - Fundamental Emission Levels

FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
13.560	39.9	10.2		0.8		50.9	80.0	-29.1	P
13.561	47.1	10.2		0.8		58.1	80.0	-21.9	N

Test Method: ANSI C63.4 (1992)
Spec Limit : FCC Part 15 Subpart C Section 15.225(a)
Test Distance: 3 Meters

NOTES: N = Normal
P= Perpendicular

COMMENTS: The EUT was placed on the turntable and connected to the COM port of a support laptop via a RS232 cable. The EUT was in constant transmit mode sending data to the remote laptop. RBW = VBW = 9kHz. 9V DC (110VAC, 60 Hz), 21°C, 67 % relative humidity.

Table 4: FCC 15.225(b) - Six Highest Radiated Emission Levels

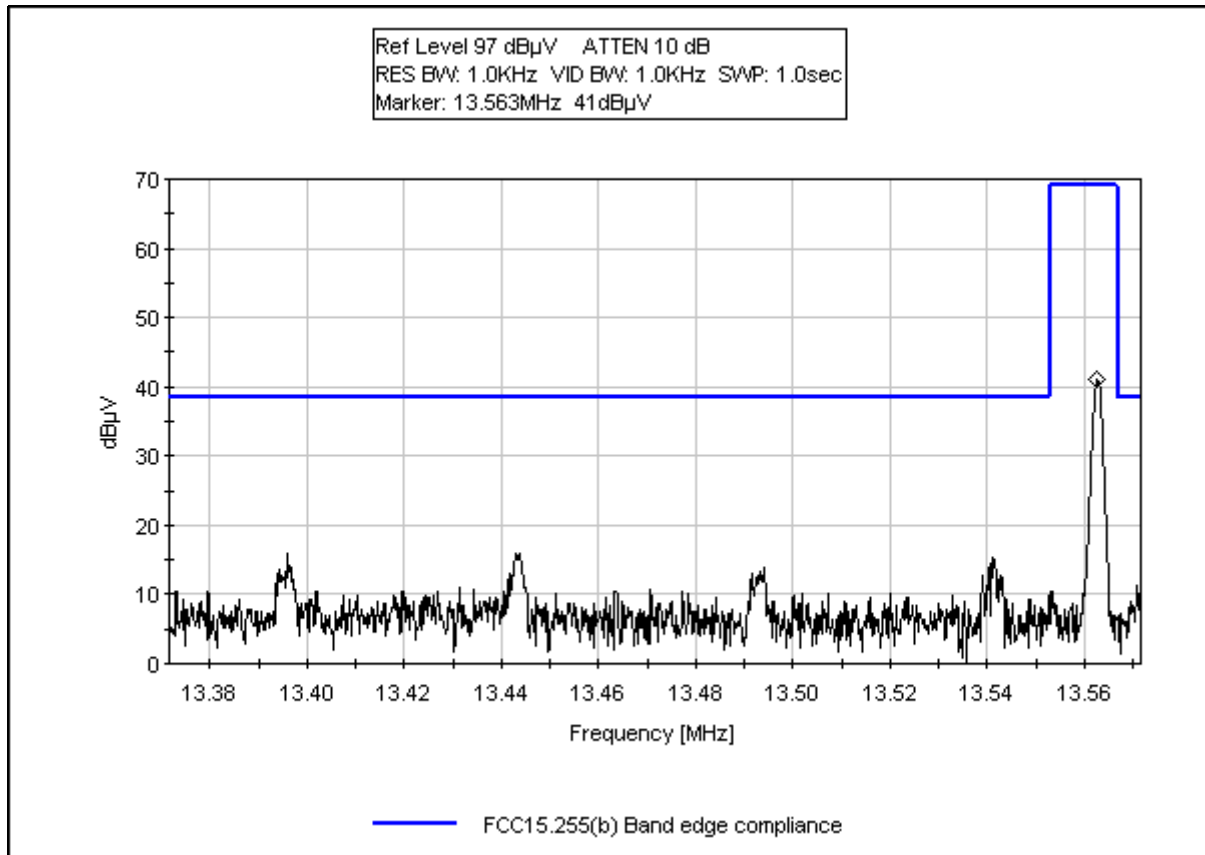
FREQUENCY MHz	METER READING dB μ V	CORRECTION FACTORS				CORRECTED READING dB μ V/m	SPEC LIMIT dB μ V/m	MARGIN dB	NOTES
		Ant dB	Amp dB	Cable dB	Dist dB				
298.362	42.4	22.8	-28.3	3.4		40.3	46.0	-5.7	H
325.461	46.7	21.1	-28.3	3.6		43.1	46.0	-2.9	HQ
325.470	44.9	21.1	-28.3	3.6		41.3	46.0	-4.7	VQ
352.589	48.7	19.4	-28.3	3.7		43.5	46.0	-2.5	HQ
922.179	36.9	24.2	-27.4	6.4		40.1	46.0	-5.9	HQ
949.326	36.7	24.4	-27.5	6.5		40.1	46.0	-5.9	HQ

Test Method: ANSI C63.4 (1992)
Spec Limit : FCC Part 15 Subpart C Sections 15.225(b)
Test Distance: 3 Meters

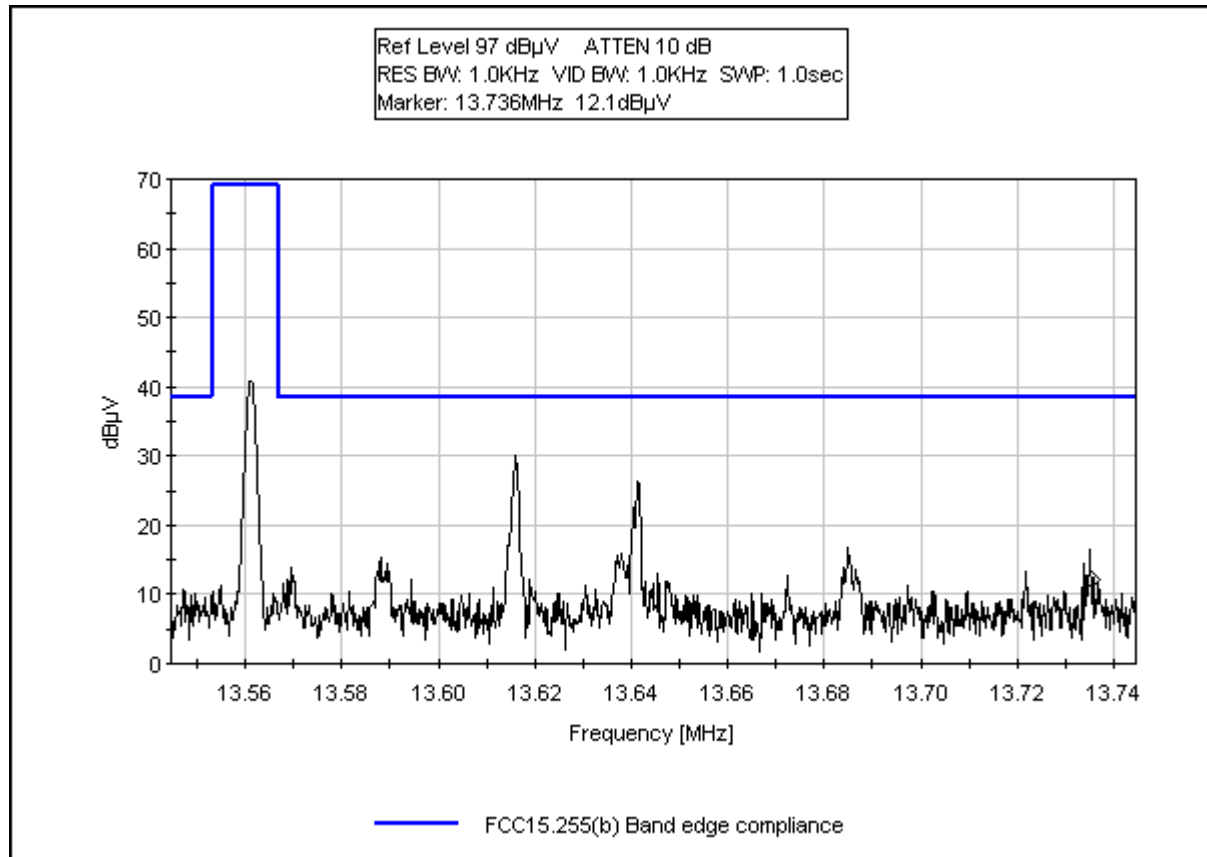
NOTES: H = Horizontal Polarization
Q = Quasi Peak Reading

COMMENTS: The EUT is placed on the turntable and connected to the COM port of a support laptop via a RS232 cable. The EUT was in constant transmit mode sending data to the remote laptop. TX Freq = 13.56 MHz. Frequency range of measurement = 9 kHz - 1000 MHz. 9 kHz - 150 kHz; RBW = 200 Hz, VBW = 200 Hz; 150 kHz - 30 MHz; RBW = 9 kHz, VBW = 9 kHz; 30 MHz - 1000 MHz; RBW = 120 kHz, VBW = 120 kHz. 9V DC (110VAC, 60 Hz), 21°C, 67 % relative humidity.

FCC 15.255(b)/15.215 - BANDEDGE COMPLIANCE



FCC 15.255(b)/15.215 - BANDEDGE COMPLIANCE



FCC 15.225(c) – FREQUENCY TOLERANCE, VOLTAGE AND TEMPERATURE

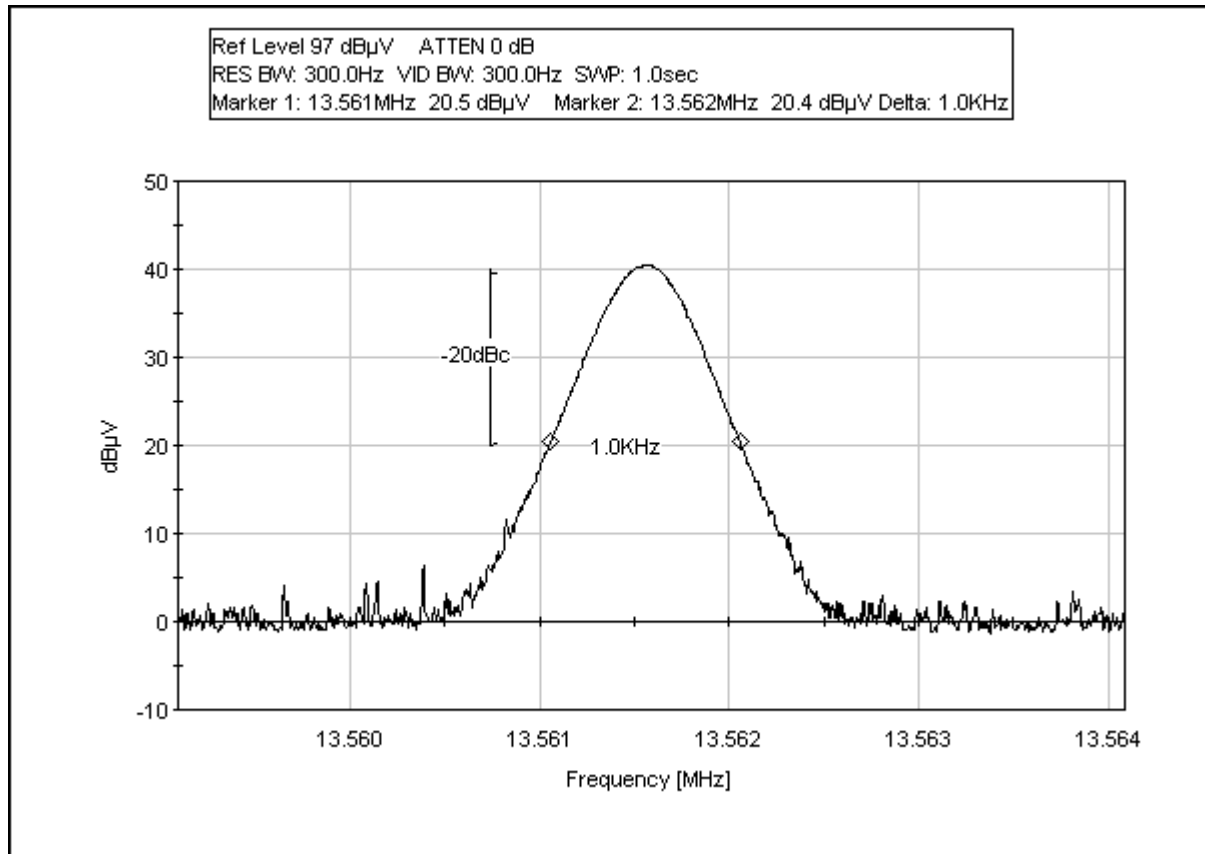
Temperature Variations

Channel Frequency:		Channel 1 (MHz)	Dev. (MHz)
Temp (C) Voltage		13.56156	
-20	9.0	13.561440	0.000120000
-10	9.0	13.561540	0.000020000
0	9.0	13.561510	0.000050000
10	9.0	13.561550	0.000010000
20	9.0	13.561560	0.000000000
30	9.0	13.561540	0.000020000
40	9.0	13.561620	-0.000060000
50	9.0	13.561590	-0.000030000

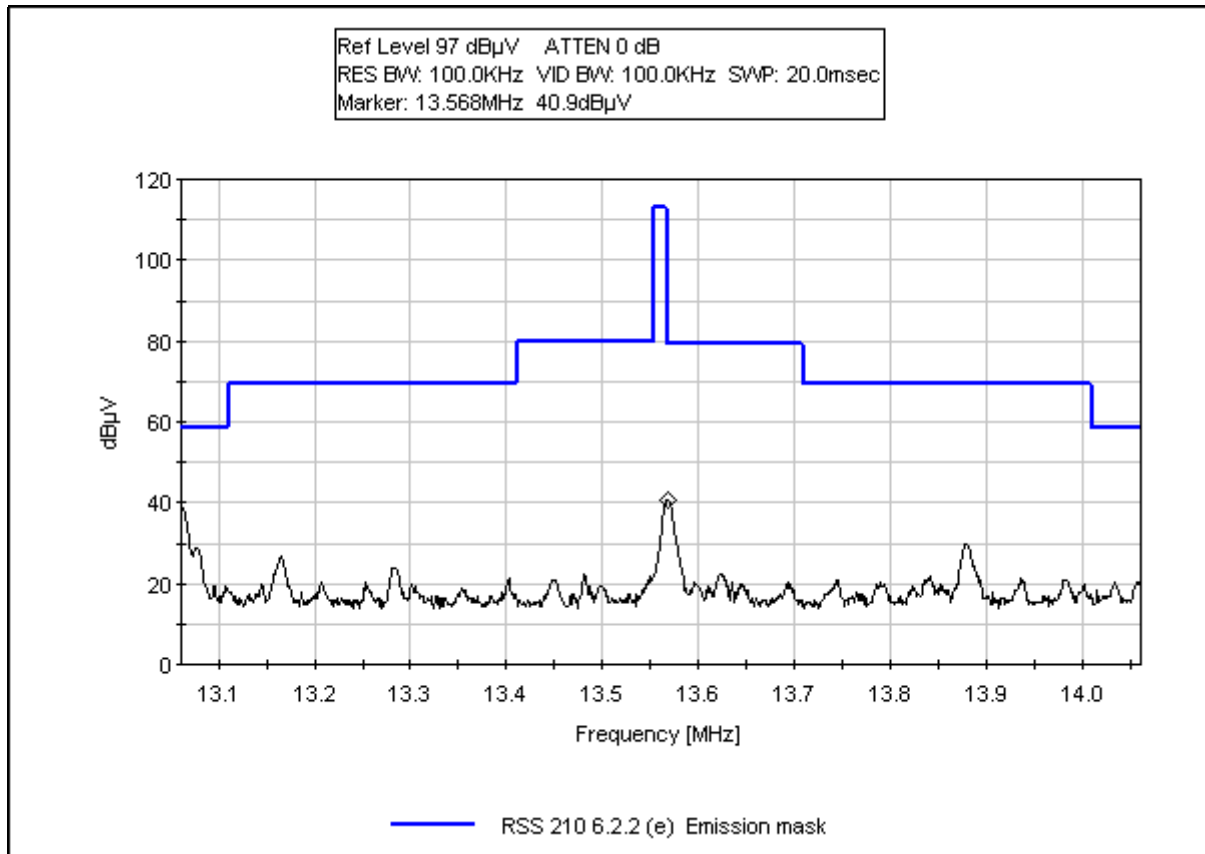
Voltage Variations ($\pm 15\%$)

20	7.7	13.56156	0.00000000
20	9.0	13.56156	0.00000000
20	10.4	13.56156	0.00000000

RSS 210 6.2.2(e) – 99 % BANDWIDTH



RSS 210 6.2.2(e) – EMISSIONS MASK



EUT SETUP

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the photographs in Appendix A. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables. The corrected data was then compared to the applicable emission limits to determine compliance.

The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available I/O ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. I/O cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The radiated and conducted emissions data of the EUT was taken with the HP Spectrum Analyzer. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in Table A.

Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dB μ V/m, the spectrum analyzer reading in dB μ V was corrected by using the following formula in Table A. This reading was then compared to the applicable specification limit to determine compliance.

TABLE A: SAMPLE CALCULATIONS		
	Meter reading	(dB μ V)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dB μ V/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed in Appendix B were used to collect both the radiated and conducted emissions data. For radiated measurements from 9 kHz to 30 MHz, the magnetic loop antenna was used. For radiated measurements below 300 MHz, the biconical antenna was used. For frequencies from 300 to 1000 MHz, the log periodic antenna was used. For frequencies from 30 to 1000 MHz, the biconilog antenna was used. Conducted emissions tests required the use of the FCC type LISNs.

The HP spectrum analyzer was used for all measurements. Table B shows the analyzer bandwidth settings that were used in designated frequency bands. For conducted emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used. A 10 dB external attenuator was also used during conducted tests, with internal offset correction in the analyzer. During radiated testing, the measurements were made with 0 dB of attenuation, a reference level of 97 dB μ V, and a vertical scale of 10 dB per division.

SPECTRUM ANALYZER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the Tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the six highest readings, this is indicated as a "Q" or an "A" in the appropriate table. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the Spectrum Analyzer or test engineer recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the analyzer called "peak hold," the analyzer had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the analyzer made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the HP Quasi-Peak Adapter for the HP Spectrum Analyzer. The detailed procedure for making quasi peak measurements contained in the HP Quasi-Peak Adapter manual were followed.

Average

For certain frequencies, average measurements may be made using the spectrum analyzer. To make these measurements, the test engineer reduces the video bandwidth on the analyzer until the modulation of the signal is filtered out. At this point the analyzer is set into the linear mode and the scan time is reduced.

EUT TESTING

Mains Conducted Emissions

During conducted emissions testing, the EUT was located on a wooden table measuring approximately 80 cm high, 1 meter deep, and 1.5 meters in length. One wall of the room where the EUT was located has a minimum 2 meter by 2 meter conductive plane. The EUT was mounted on the wooden table 40 cm away from the conductive plane, and 80 cm from any other conductive surface.

The vertical metal plane used for conducted emissions was grounded to the earth. Power to the EUT was provided through a LISN. The LISN was grounded to the ground plane. All other objects were kept a minimum of 80 cm away from the EUT during the conducted test.

The LISNs used were 50 μ H/+50 ohms. Above 150 kHz, a 0.15 μ F series capacitor was added in-line prior to connecting the analyzer to restore the proper impedance for the range. A 30 to 50 second sweep time was used for automated measurements in the frequency bands of 150 kHz to 500 kHz, and 500 kHz to 30 MHz. All readings within 20 dB of the limit were recorded, and those within 6 dB of the limit were examined with additional measurements using a slower sweep time.

Radiated Emissions

The EUT was mounted on a nonconductive, rotating table 80 cm above the conductive grid. The nonconductive table dimensions were 1 meter by 1.5 meters.

During the preliminary radiated scan, the EUT was powered up and operating in its defined FCC test mode. For radiated measurements from 9 kHz to 30 MHz, the magnetic loop antenna was used. The frequency range of 30 MHz to 88 MHz was scanned with the biconical antenna located about 1.5 meter above the ground plane in the vertical configuration. During this scan, the turntable was rotated and all peaks at or near the limit were recorded. The frequency range of 100 to 300 MHz was then scanned in the same manner using the biconical antenna and the peaks recorded. Lastly, a scan of the FM band from 88 to 110 MHz was made, using a reduced resolution bandwidth and frequency span. The biconical antenna was changed to the horizontal polarity and the above steps were repeated. After changing to the log periodic antenna in the horizontal configuration, the frequency range of 300 to 1000 MHz was scanned. The log periodic antenna was changed to the vertical polarity and the frequency range of 300 to 1000 MHz was again scanned. Care was taken to ensure that no frequencies were missed within the FM and TV bands. An analysis was performed to determine if the signals that were at or near the limit were caused by an ambient transmission. If unable to determine by analysis, the equipment was powered down to make the final determination if the EUT was the source of the emission.

A thorough scan of all frequencies was made manually using a small frequency span, rotating the turntable as needed. The test engineer maximized the readings with respect to the table rotation, antenna height, and configuration of EUT. Maximizing of the EUT was achieved by monitoring the spectrum analyzer on a closed circuit television monitor.

APPENDIX A

TEST SETUP PHOTOGRAPHS

PHOTOGRAPH SHOWING MAINS CONDUCTED EMISSIONS



Mains Conducted Emissions - Front View

PHOTOGRAPH SHOWING MAINS CONDUCTED EMISSIONS



Mains Conducted Emissions - Side View

PHOTOGRAPH SHOWING RADIATED EMISSIONS



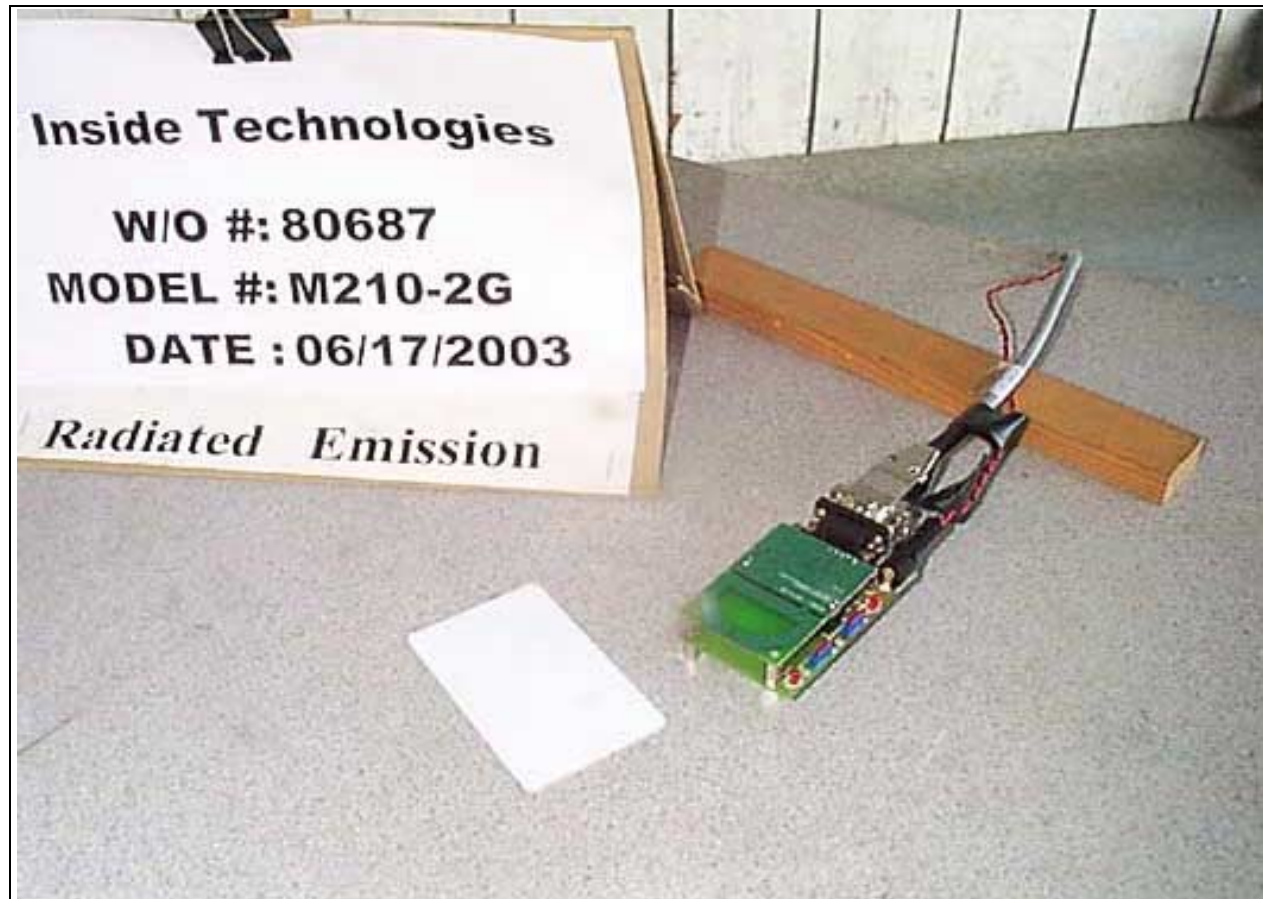
Radiated Emissions - Front View

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Front View

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions – Close-up View

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Showing Loop Antenna

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Showing Log Antenna

PHOTOGRAPH SHOWING TEMPERATURE TESTING



Temperature Testing - Front View With Door Closed

APPENDIX B

TEST EQUIPMENT LIST

Radiated Emissions

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Used for all emissions:						
Spectrum Analyzer	02472	HP	8568B	3001A18430	031103	031104
QP Adapter	01437	HP	85650A	3303A01884	092702	092703
FCC 15.215 (Bandedge), 9 kHz – 30 MHz FCC15.255 (a), (b), RS210 6.2.2 (e) RSS210 Emission Mask, 99% BW:						
Loop Antenna	00314	EMCO	6502	2014	72302	72303
30 MHz- 1000 MHz FCC15.255(b), RS210 6.2.2.(e)						
Bicon Antenna	306	AH	SAS200/540	220	092302	092303
Log Periodic Antenna	300	AH	SAS 00/516	331	092302	092303
Pre-amp	00309	HP	8447D	1937A02548	082302	082303
Antenna cable	NA	NA	RG214	Cable#15	123002	123003
Pre-amp to SA cable	NA	Harbour	RG223/U	Cable#10	070802	070803
Signal Generator	02227	Marconi	2024	112282/515	080602	080603
FCC 15.225(c) Temp Testing						
Temp chamber		Thermaltron	NA	NA	080702	080703
Data Acquisition		Agilent	3497A	US370318912	040203	040204

Conducted Emissions

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02472	HP	8568B	3001A18430	031103	031104
QP Adapter	01437	HP	85650A	3303A01884	092702	092703
LISN	00847	EMCO	3816/2NM	1104	010403	010404

APPENDIX C:
MEASUREMENT DATA SHEETS

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112
 Customer: **Inside Technologies**
 Specification: **FCC 15.207 Class B COND [AVE]**
 Work Order #: **80687**
 Test Type: **Conducted Emissions**
 Equipment: **Contactless Coupler**
 Manufacturer: Inside Technologies
 Model: M210-2G
 S/N: NA

Date: 6/17/03
 Time: 9:58:13 AM
 Sequence#: 5
 Tested By: Eddie Wong
 110V 60Hz

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Contactless Coupler*	Inside Technologies	M210-2G	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Sprint	ASC-20	NA

Test Conditions / Notes:

COMMENTS: The EUT was placed on the turntable and connected to the COM port of a support laptop via a RS232 cable. The EUT was in constant transmit mode sending data to the remote laptop. TX Freq = 13.56 MHz. Frequency range of measurement = 150 kHz- 30 MHz. 150 kHz - 30 MHz; RBW = 9 kHz, VBW = 9 kHz. 9V DC, 21°C, 67 % relative humidity. Note: EUT's loop antenna is replaced with a 90-ohm dummy load. Laptop running on battery power.

Transducer Legend:

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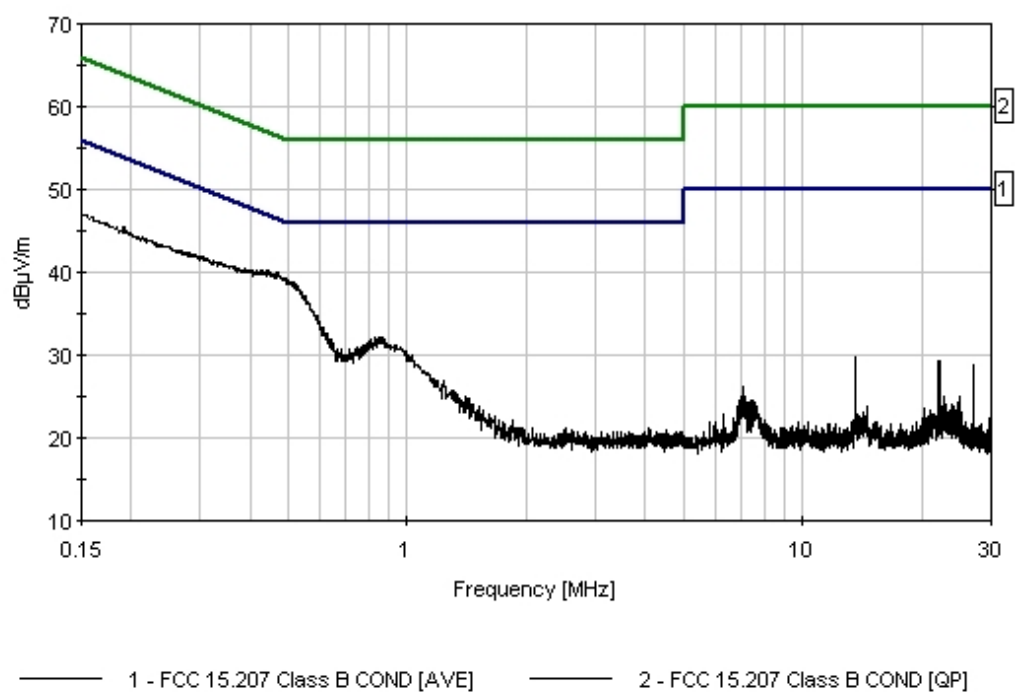
Measurement Data: Reading listed by margin.

Test Lead: Black

#	Freq MHz	Rdng dB μ V	dB	dB	dB	dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	150.000k	47.2					+0.0	47.2	56.0	-8.8	Black
2	881.253k	31.4					+0.0	31.4	46.0	-14.6	Black
3	13.571M	29.7					+0.0	29.7	50.0	-20.3	Black
4	22.130M	29.2					+0.0	29.2	50.0	-20.8	Black
5	27.129M	28.9					+0.0	28.9	50.0	-21.1	Black
6	7.040M	26.1					+0.0	26.1	50.0	-23.9	Black
7	22.797M	25.0					+0.0	25.0	50.0	-25.0	Black
8	25.005M	24.9					+0.0	24.9	50.0	-25.1	Black
9	7.445M	24.5					+0.0	24.5	50.0	-25.5	Black
10	7.301M	24.4					+0.0	24.4	50.0	-25.6	Black
11	22.986M	24.1					+0.0	24.1	50.0	-25.9	Black

12	14.508M	23.7	+0.0	23.7	50.0	-26.3	Black
13	20.373M	23.5	+0.0	23.5	50.0	-26.5	Black
14	6.319M	22.9	+0.0	22.9	50.0	-27.1	Black
15	20.761M	22.6	+0.0	22.6	50.0	-27.4	Black

CKC Laboratories, Inc. Date: 6/17/03 Time: 9:58:13 AM Inside Technologies WVO#: 80687
FCC 15.207 Class B COND [AVE] Test Lead: Black 110V 60Hz Sequence#: 5



Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112
 Customer: **Inside Technologies**
 Specification: **FCC 15.207 Class B COND [AVE]**
 Work Order #: **80687**
 Test Type: **Conducted Emissions**
 Equipment: **Contactless Coupler**
 Manufacturer: Inside Technologies
 Model: M210-2G
 S/N: NA

Date: 6/17/03
 Time: 10:02:58 AM
 Sequence#: 6
 Tested By: Eddie Wong
 110V 60Hz

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Contactless Coupler*	Inside Technologies	M210-2G	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Sprint	ASC-20	NA

Test Conditions / Notes:

COMMENTS: The EUT was placed on the turntable and connected to the COM port of a support laptop via a RS232 cable. The EUT was in constant transmit mode sending data to the remote laptop. TX Freq = 13.56 MHz. Frequency range of measurement = 150 kHz- 30 MHz. 150 kHz - 30 MHz; RBW = 9 kHz, VBW = 9 kHz. 9V DC, 21°C, 67 % relative humidity. Note: EUT's loop antenna is replaced with a 90-ohm dummy load. Laptop running on battery power.

Transducer Legend:

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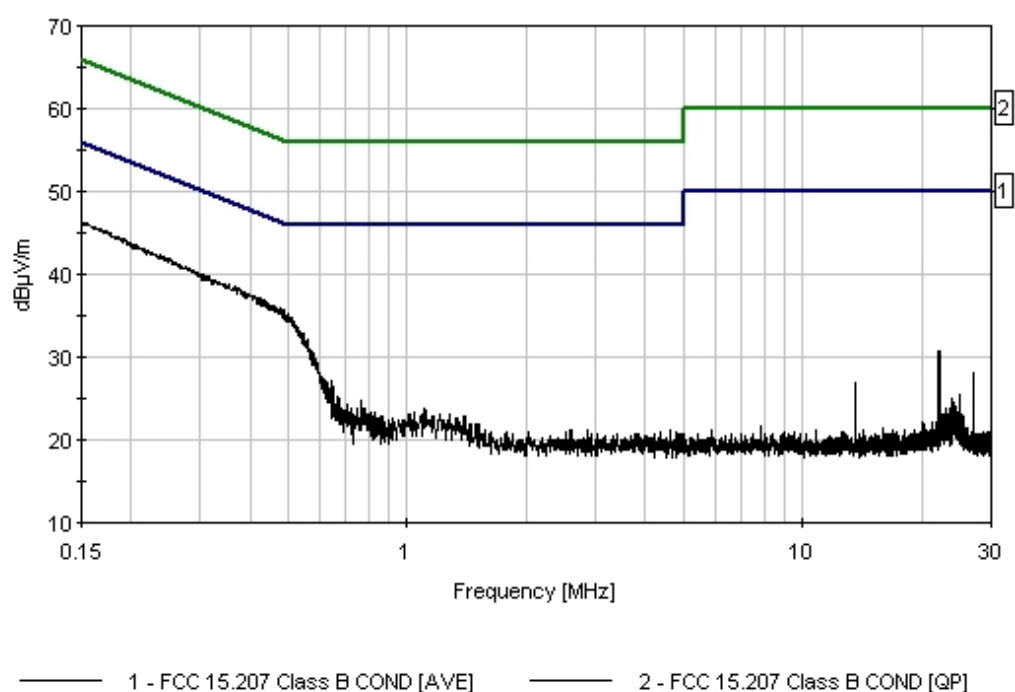
Measurement Data: Reading listed by margin.

Test Lead: White

#	Freq MHz	Rdng dB μ V	dB	dB	dB	dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	150.000k	46.5					+0.0	46.5	56.0	-9.5	White
2	645.950k	26.8					+0.0	26.8	46.0	-19.2	White
3	22.130M	30.7					+0.0	30.7	50.0	-19.3	White
4	765.211k	24.7					+0.0	24.7	46.0	-21.3	White
5	27.129M	28.2					+0.0	28.2	50.0	-21.8	White
6	1.102M	23.8					+0.0	23.8	46.0	-22.2	White
7	865.565k	22.8					+0.0	22.8	46.0	-23.2	White
8	13.571M	26.8					+0.0	26.8	50.0	-23.2	White
9	25.012M	25.4					+0.0	25.4	50.0	-24.6	White
10	23.977M	25.0					+0.0	25.0	50.0	-25.0	White
11	24.121M	24.5					+0.0	24.5	50.0	-25.5	White

12	24.525M	24.1	+0.0	24.1	50.0	-25.9	White
13	22.995M	23.9	+0.0	23.9	50.0	-26.1	White
14	22.265M	23.5	+0.0	23.5	50.0	-26.5	White
15	25.224M	23.2	+0.0	23.2	50.0	-26.8	White

CKC Laboratories, Inc. Date: 6/17/03 Time: 10:02:58 AM Inside Technologies W/O#: 80687
FCC 15.207 Class B COND [AVE] Test Lead: White 110V 60Hz Sequence#: 6



Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112
 Customer: **Inside Technologies**
 Specification: **FCC 15.205/15.209**
 Work Order #: **80687**
 Test Type: **Maximized emission**
 Equipment: **Contactless Coupler**
 Manufacturer: Inside Technologies
 Model: M210-2G
 S/N: NA

Date: 6/17/03
 Time: 08:51:52
 Sequence#: 2
 Tested By: Eddie Wong

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Contactless Coupler*	Inside Technologies	M210-2G	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Topward	6E06D	988614NA

Test Conditions / Notes:

COMMENTS: The EUT was placed on the turntable and connected to the COM port of a support laptop via a RS232 cable. The EUT was in constant transmit mode sending data to the remote laptop. TX Freq = 13.56 MHz. Frequency range of measurement = 9 kHz - 1000 MHz. 9 kHz - 150 kHz; RBW = 200 Hz, VBW = 200 Hz; 150 kHz - 30 MHz; RBW = 9 kHz, VBW = 9 kHz; 30 MHz - 1000 MHz; RBW = 120 kHz, VBW = 120 kHz. 9V DC (110VAC, 60 Hz), 21°C, 67 % relative humidity.

Transducer Legend:

T1=Log antenna, SN331 092303	T2=Bicon SN220 092303
T3=Cable #10 070803	T4=Cable# 15 123003
T5=Preamp 8447D 082303	

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	352.589M	48.7	+19.4 -28.3	+0.0	+0.3	+3.4	+0.0	43.5	46.0	-2.5	Horiz
QP											
^	352.577M	51.5	+19.4 -28.3	+0.0	+0.3	+3.4	+0.0	46.3	46.0	+0.3	Horiz
3	325.461M	46.7	+21.1 -28.3	+0.0	+0.3	+3.3	+0.0	43.1	46.0	-2.9	Horiz
QP											
^	325.482M	47.1	+21.1 -28.3	+0.0	+0.3	+3.3	+0.0	43.5	46.0	-2.5	Horiz
5	325.470M	44.9	+21.1 -28.3	+0.0	+0.3	+3.3	+0.0	41.3	46.0	-4.7	Vert
QP											
^	325.485M	45.1	+21.1 -28.3	+0.0	+0.3	+3.3	+0.0	41.5	46.0	-4.5	Vert
7	298.362M	42.4	+0.0 -28.3	+22.8	+0.3	+3.1	+0.0	40.3	46.0	-5.7	Horiz
8	922.179M	36.9	+24.2 -27.4	+0.0	+0.5	+5.9	+0.0	40.1	46.0	-5.9	Horiz
QP											
^	922.188M	37.7	+24.2 -27.4	+0.0	+0.5	+5.9	+0.0	40.9	46.0	-5.1	Horiz

10	949.326M QP	36.7	+24.4 -27.5	+0.0	+0.5	+6.0	+0.0	40.1	46.0	-5.9	Horiz
^	949.299M	38.1	+24.4 -27.5	+0.0	+0.5	+6.0	+0.0	41.5	46.0	-4.5	Horiz
12	366.156M	45.7	+18.7 -28.3	+0.0	+0.3	+3.5	+0.0	39.9	46.0	-6.1	Horiz
13	895.059M	36.9	+23.9 -27.4	+0.0	+0.5	+5.9	+0.0	39.8	46.0	-6.2	Horiz
14	366.155M QP	44.9	+18.7 -28.3	+0.0	+0.3	+3.5	+0.0	39.1	46.0	-6.9	Vert
^	366.154M	46.9	+18.7 -28.3	+0.0	+0.3	+3.5	+0.0	41.1	46.0	-4.9	Vert
16	339.016M	43.4	+20.2 -28.3	+0.0	+0.3	+3.3	+0.0	38.9	46.0	-7.1	Horiz
17	352.595M	44.0	+19.4 -28.3	+0.0	+0.3	+3.4	+0.0	38.8	46.0	-7.2	Vert
18	827.268M	37.4	+22.7 -27.6	+0.0	+0.5	+5.5	+0.0	38.5	46.0	-7.5	Horiz
19	420.396M	45.2	+17.5 -28.2	+0.0	+0.3	+3.7	+0.0	38.5	46.0	-7.5	Horiz
20	298.348M	40.6	+0.0 -28.3	+22.8	+0.3	+3.1	+0.0	38.5	46.0	-7.5	Vert
21	393.269M QP	45.5	+17.2 -28.2	+0.0	+0.3	+3.6	+0.0	38.4	46.0	-7.6	Horiz
^	393.257M	47.9	+17.2 -28.2	+0.0	+0.3	+3.6	+0.0	40.8	46.0	-5.2	Horiz
23	867.929M	36.1	+23.4 -27.5	+0.0	+0.5	+5.7	+0.0	38.2	46.0	-7.8	Horiz
24	379.709M	44.5	+17.9 -28.2	+0.0	+0.3	+3.5	+0.0	38.0	46.0	-8.0	Horiz
25	854.364M	36.1	+23.2 -27.6	+0.0	+0.5	+5.6	+0.0	37.8	46.0	-8.2	Horiz
26	406.831M	45.0	+17.1 -28.2	+0.0	+0.3	+3.6	+0.0	37.8	46.0	-8.2	Horiz
27	488.193M	41.9	+19.5 -28.1	+0.0	+0.4	+4.0	+0.0	37.7	46.0	-8.3	Horiz
28	515.327M	41.1	+19.9 -28.0	+0.0	+0.4	+4.2	+0.0	37.6	46.0	-8.4	Vert
29	311.917M	40.4	+21.9 -28.3	+0.0	+0.3	+3.2	+0.0	37.5	46.0	-8.5	Horiz
30	556.041M	40.6	+20.0 -27.9	+0.0	+0.4	+4.4	+0.0	37.5	46.0	-8.5	Vert
31	528.894M	40.7	+19.9 -28.0	+0.0	+0.4	+4.3	+0.0	37.3	46.0	-8.7	Vert
32	949.332M	33.7	+24.4 -27.5	+0.0	+0.5	+6.0	+0.0	37.1	46.0	-8.9	Vert
33	895.061M	34.0	+23.9 -27.4	+0.0	+0.5	+5.9	+0.0	36.9	46.0	-9.1	Vert
34	583.129M	39.7	+20.1 -27.8	+0.0	+0.4	+4.5	+0.0	36.9	46.0	-9.1	Vert
35	515.325M	40.3	+19.9 -28.0	+0.0	+0.4	+4.2	+0.0	36.8	46.0	-9.2	Horiz

36	827.264M	35.7	+22.7 -27.6	+0.0	+0.5	+5.5	+0.0	36.8	46.0	-9.2	Vert
37	935.673M	33.4	+24.3 -27.5	+0.0	+0.5	+6.0	+0.0	36.7	46.0	-9.3	Vert
38	813.703M	35.5	+22.5 -27.5	+0.0	+0.5	+5.5	+0.0	36.5	46.0	-9.5	Horiz
39	935.741M	33.1	+24.3 -27.5	+0.0	+0.5	+6.0	+0.0	36.4	46.0	-9.6	Horiz
40	908.617M	33.3	+24.1 -27.4	+0.0	+0.5	+5.9	+0.0	36.4	46.0	-9.6	Horiz
41	244.126M	42.9	+0.0 -28.3	+18.6	+0.3	+2.8	+0.0	36.3	46.0	-9.7	Horiz
42	840.834M	34.8	+23.0 -27.6	+0.0	+0.5	+5.6	+0.0	36.3	46.0	-9.7	Vert
43	339.063M	40.8	+20.2 -28.3	+0.0	+0.3	+3.3	+0.0	36.3	46.0	-9.7	Vert
44	257.691M	41.9	+0.0 -28.3	+19.4	+0.3	+2.9	+0.0	36.2	46.0	-9.8	Horiz
45	447.514M	41.8	+18.4 -28.3	+0.0	+0.4	+3.8	+0.0	36.1	46.0	-9.9	Horiz
46	284.821M	39.3	+0.0 -28.2	+21.7	+0.3	+3.0	+0.0	36.1	46.0	-9.9	Horiz
47	488.211M	40.1	+19.5 -28.1	+0.0	+0.4	+4.0	+0.0	35.9	46.0	-10.1	Vert
48	922.198M	32.6	+24.2 -27.4	+0.0	+0.5	+5.9	+0.0	35.8	46.0	-10.2	Vert
49	271.207M	40.1	+0.0 -28.2	+20.6	+0.3	+3.0	+0.0	35.8	46.0	-10.2	Horiz
50	610.285M	38.0	+20.4 -27.7	+0.0	+0.4	+4.6	+0.0	35.7	46.0	-10.3	Horiz
51	447.542M	41.2	+18.4 -28.3	+0.0	+0.4	+3.8	+0.0	35.5	46.0	-10.5	Vert
52	542.430M	38.5	+20.0 -27.9	+0.0	+0.4	+4.4	+0.0	35.4	46.0	-10.6	Horiz
53	610.255M	37.6	+20.4 -27.7	+0.0	+0.4	+4.6	+0.0	35.3	46.0	-10.7	Vert
54	433.968M	41.5	+18.0 -28.3	+0.0	+0.4	+3.7	+0.0	35.3	46.0	-10.7	Vert
55	542.449M	38.2	+20.0 -27.9	+0.0	+0.4	+4.4	+0.0	35.1	46.0	-10.9	Vert
56	678.485M	35.6	+21.3 -27.4	+0.0	+0.4	+4.9	+0.0	34.8	46.0	-11.2	Horiz
57	800.132M	34.0	+22.2 -27.5	+0.0	+0.5	+5.4	+0.0	34.6	46.0	-11.4	Horiz
58	420.418M	41.3	+17.5 -28.2	+0.0	+0.3	+3.7	+0.0	34.6	46.0	-11.4	Vert
59	976.431M	38.8	+24.5 -27.5	+0.0	+0.5	+6.1	+0.0	42.4	54.0	-11.6	Horiz
60	311.911M	37.2	+21.9 -28.3	+0.0	+0.3	+3.2	+0.0	34.3	46.0	-11.7	Vert
61	474.646M	38.8	+19.1 -28.2	+0.0	+0.4	+4.0	+0.0	34.1	46.0	-11.9	Horiz

62	203.418M	39.3	+0.0 -28.4	+17.8	+0.2	+2.6	+0.0	31.5	43.5	-12.0	Horiz
63	501.772M	37.6	+19.8 -28.1	+0.0	+0.4	+4.1	+0.0	33.8	46.0	-12.2	Vert
64	556.024M	36.6	+20.0 -27.9	+0.0	+0.4	+4.4	+0.0	33.5	46.0	-12.5	Horiz
65	583.150M	36.2	+20.1 -27.8	+0.0	+0.4	+4.5	+0.0	33.4	46.0	-12.6	Horiz
66	393.278M	40.5	+17.2 -28.2	+0.0	+0.3	+3.6	+0.0	33.4	46.0	-12.6	Vert
67	732.300M	33.5	+21.8 -27.5	+0.0	+0.4	+5.1	+0.0	33.3	46.0	-12.7	Vert
68	474.653M	38.0	+19.1 -28.2	+0.0	+0.4	+4.0	+0.0	33.3	46.0	-12.7	Vert
69	623.820M	35.2	+20.6 -27.6	+0.0	+0.4	+4.6	+0.0	33.2	46.0	-12.8	Vert
70	257.690M	38.9	+0.0 -28.3	+19.4	+0.3	+2.9	+0.0	33.2	46.0	-12.8	Vert
71	461.083M	38.3	+18.7 -28.3	+0.0	+0.4	+3.9	+0.0	33.0	46.0	-13.0	Vert
72	379.713M	39.5	+17.9 -28.2	+0.0	+0.3	+3.5	+0.0	33.0	46.0	-13.0	Vert
73	800.109M	32.2	+22.2 -27.5	+0.0	+0.5	+5.4	+0.0	32.8	46.0	-13.2	Vert
74	569.576M	35.6	+20.1 -27.8	+0.0	+0.4	+4.5	+0.0	32.8	46.0	-13.2	Vert
75	908.609M	29.6	+24.1 -27.4	+0.0	+0.5	+5.9	+0.0	32.7	46.0	-13.3	Vert
76	813.679M	31.7	+22.5 -27.5	+0.0	+0.5	+5.5	+0.0	32.7	46.0	-13.3	Vert
77	372.018M	38.6	+18.4 -28.3	+0.0	+0.3	+3.5	+0.0	32.5	46.0	-13.5	Vert
78	284.801M	35.5	+0.0 -28.2	+21.7	+0.3	+3.0	+0.0	32.3	46.0	-13.7	Vert
79	569.574M	34.8	+20.1 -27.8	+0.0	+0.4	+4.5	+0.0	32.0	46.0	-14.0	Horiz
80	406.852M	39.1	+17.1 -28.2	+0.0	+0.3	+3.6	+0.0	31.9	46.0	-14.1	Vert
81	433.967M	38.0	+18.0 -28.3	+0.0	+0.4	+3.7	+0.0	31.8	46.0	-14.2	Horiz
82	528.907M	35.0	+19.9 -28.0	+0.0	+0.4	+4.3	+0.0	31.6	46.0	-14.4	Horiz
83	650.954M	33.0	+20.9 -27.5	+0.0	+0.4	+4.7	+0.0	31.5	46.0	-14.5	Vert
84	176.302M	36.4	+0.0 -28.4	+18.5	+0.2	+2.3	+0.0	29.0	43.5	-14.5	Horiz
85	230.537M	38.5	+0.0 -28.3	+18.3	+0.2	+2.7	+0.0	31.4	46.0	-14.6	Horiz
86	244.093M	37.1	+0.0 -28.3	+18.6	+0.3	+2.8	+0.0	30.5	46.0	-15.5	Vert
87	271.232M	34.7	+0.0 -28.2	+20.6	+0.3	+3.0	+0.0	30.4	46.0	-15.6	Vert

88	718.773M	30.3	+21.7 -27.4	+0.0	+0.4	+5.1	+0.0	30.1	46.0	-15.9	Horiz
89	664.538M	31.3	+21.1 -27.5	+0.0	+0.4	+4.8	+0.0	30.1	46.0	-15.9	Horiz
90	461.091M	35.4	+18.7 -28.3	+0.0	+0.4	+3.9	+0.0	30.1	46.0	-15.9	Horiz
91	840.818M	28.5	+23.0 -27.6	+0.0	+0.5	+5.6	+0.0	30.0	46.0	-16.0	Horiz
92	772.997M	29.7	+22.0 -27.5	+0.0	+0.4	+5.3	+0.0	29.9	46.0	-16.1	Horiz
93	203.419M	35.0	+0.0 -28.4	+17.8	+0.2	+2.6	+0.0	27.2	43.5	-16.3	Vert
94	718.757M	29.7	+21.7 -27.4	+0.0	+0.4	+5.1	+0.0	29.5	46.0	-16.5	Vert
95	135.606M	36.1	+0.0 -28.3	+16.9	+0.2	+2.1	+0.0	27.0	43.5	-16.5	Horiz
96	501.763M	33.2	+19.8 -28.1	+0.0	+0.4	+4.1	+0.0	29.4	46.0	-16.6	Horiz
97	216.969M	36.7	+0.0 -28.3	+18.1	+0.2	+2.7	+0.0	29.4	46.0	-16.6	Horiz
98	976.451M	33.4	+24.5 -27.5	+0.0	+0.5	+6.1	+0.0	37.0	54.0	-17.0	Vert
99	650.774M	30.4	+20.9 -27.5	+0.0	+0.4	+4.7	+0.0	28.9	46.0	-17.1	Horiz
100	189.847M	33.7	+0.0 -28.4	+18.1	+0.2	+2.5	+0.0	26.1	43.5	-17.4	Horiz
101	230.519M	35.4	+0.0 -28.3	+18.3	+0.2	+2.7	+0.0	28.3	46.0	-17.7	Vert
102	406.422M	35.4	+17.1 -28.2	+0.0	+0.3	+3.6	+0.0	28.2	46.0	-17.8	Vert
103	135.614M	34.7	+0.0 -28.3	+16.9	+0.2	+2.1	+0.0	25.6	43.5	-17.9	Vert
104	149.179M	33.7	+0.0 -28.4	+17.8	+0.2	+2.2	+0.0	25.5	43.5	-18.0	Vert
105	216.947M	35.2	+0.0 -28.3	+18.1	+0.2	+2.7	+0.0	27.9	46.0	-18.1	Vert
106	220.387M	34.8	+0.0 -28.3	+18.1	+0.2	+2.7	+0.0	27.5	46.0	-18.5	Horiz
107	189.859M	31.9	+0.0 -28.4	+18.1	+0.2	+2.5	+0.0	24.3	43.5	-19.2	Vert
108	122.054M	34.2	+0.0 -28.3	+16.0	+0.2	+2.0	+0.0	24.1	43.5	-19.4	Vert
109	989.983M	30.5	+24.6 -27.5	+0.0	+0.5	+6.2	+0.0	34.3	54.0	-19.7	Vert
110	867.942M	23.9	+23.4 -27.5	+0.0	+0.5	+5.7	+0.0	26.0	46.0	-20.0	Vert
111	108.491M	35.4	+0.0 -28.4	+13.8	+0.1	+1.9	+0.0	22.8	43.5	-20.7	Horiz
112	962.866M	29.0	+24.4 -27.5	+0.0	+0.5	+6.1	+0.0	32.5	54.0	-21.5	Horiz

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112
 Customer: **Inside Technologies**
 Specification: **FCC 15.255(a) Field Strength of Fundamental**
 Work Order #: **80687** Date: 6/17/03
 Test Type: **Maximized emission** Time: 13:39:55
 Equipment: **Contactless Coupler** Sequence#: 1
 Manufacturer: Inside Technologies Tested By: Eddie Wong
 Model: M210-2G
 S/N: NA

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Topward	6E06D	988614NA

Test Conditions / Notes:

COMMENTS: The EUT was placed on the turntable and connected to the COM port of a support laptop via a RS232 cable. The EUT was in constant transmit mode sending data to the remote laptop. RBW = VBW = 9kHz. 9V DC (110VAC, 60 Hz), 21°C, 67 % relative humidity.

Transducer Legend:

T1=Cable #10 070803	T2=Cable# 15 123003
T3=6502 Active Loop Antenna	

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	13.560M	47.3	+0.1	+0.7	+10.2		+0.0	58.3	80.0 7.65 Vdc	-21.7	Norma
2	13.561M	47.2	+0.1	+0.7	+10.2		+0.0	58.2	80.0 10.35 Vdc	-21.8	Norma
3	13.561M	47.1	+0.1	+0.7	+10.2		+0.0	58.1	80.0 Nominal	-21.9	Norma
4	13.560M	40.0	+0.1	+0.7	+10.2		+0.0	51.0	80.0 7.65 Vdc	-29.0	Perpe
5	13.560M	40.0	+0.1	+0.7	+10.2		+0.0	51.0	80.0 10.35 Vdc	-29.0	Perpe
6	13.560M	39.9	+0.1	+0.7	+10.2		+0.0	50.9	80.0 Nominal	-29.1	Perpe

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112
 Customer: **Inside Technologies**
 Specification: **FCC15.255(b) Field Strength of Spurious**
 Work Order #: **80687**
 Test Type: **Maximized emission**
 Equipment: **Contactless Coupler**
 Manufacturer: Inside Technologies
 Model: M210-2G

Date: 6/17/03
 Time: 08:51:52
 Sequence#: 2
 Tested By: Eddie Wong
 S/N: NA

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Contactless Coupler*	Inside Technologies	M210-2G	NA

Support Devices:

Function	Manufacturer	Model #	S/N
Power Supply	Topward	6E06D	988614NA

Test Conditions / Notes:

COMMENTS: The EUT is placed on the turntable and connected to the COM port of a support laptop via a RS232 cable. The EUT was in constant transmit mode sending data to the remote laptop. TX Freq = 13.56 MHz. Frequency range of measurement = 9 kHz - 1000 MHz. 9 kHz - 150 kHz; RBW = 200 Hz, VBW = 200 Hz; 150 kHz - 30 MHz; RBW = 9 kHz, VBW = 9 kHz; 30 MHz - 1000 MHz; RBW = 120 kHz, VBW = 120 kHz. 9V DC (110VAC, 60 Hz), 21°C, 67 % relative humidity.

Transducer Legend:

T1=Log antenna, SN331 092303	T2=Bicon SN220 092303
T3=Cable #10 070803	T4=Cable# 15 123003
T5=Preamp 8447D 082303	T6=6502 Active Loop Antenna

Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	352.589M	48.7	+19.4	+0.0	+0.3	+3.4	+0.0	43.5	46.0	-2.5	Horiz
	QP		-28.3	+0.0							
^	352.577M	51.5	+19.4	+0.0	+0.3	+3.4	+0.0	46.3	46.0	+0.3	Horiz
			-28.3	+0.0							
3	325.461M	46.7	+21.1	+0.0	+0.3	+3.3	+0.0	43.1	46.0	-2.9	Horiz
	QP		-28.3	+0.0							
^	325.482M	47.1	+21.1	+0.0	+0.3	+3.3	+0.0	43.5	46.0	-2.5	Horiz
			-28.3	+0.0							
5	325.470M	44.9	+21.1	+0.0	+0.3	+3.3	+0.0	41.3	46.0	-4.7	Vert
	QP		-28.3	+0.0							
^	325.485M	45.1	+21.1	+0.0	+0.3	+3.3	+0.0	41.5	46.0	-4.5	Vert
			-28.3	+0.0							
7	298.362M	42.4	+0.0	+22.8	+0.3	+3.1	+0.0	40.3	46.0	-5.7	Horiz
			-28.3	+0.0							
8	949.326M	36.7	+24.4	+0.0	+0.5	+6.0	+0.0	40.1	46.0	-5.9	Horiz
	QP		-27.5	+0.0							
^	949.299M	38.1	+24.4	+0.0	+0.5	+6.0	+0.0	41.5	46.0	-4.5	Horiz
			-27.5	+0.0							
10	922.179M	36.9	+24.2	+0.0	+0.5	+5.9	+0.0	40.1	46.0	-5.9	Horiz
	QP		-27.4	+0.0							

^	922.188M	37.7	+24.2 -27.4	+0.0 +0.0	+0.5	+5.9	+0.0	40.9	46.0	-5.1	Horiz
12	366.156M	45.7	+18.7 -28.3	+0.0 +0.0	+0.3	+3.5	+0.0	39.9	46.0	-6.1	Horiz
13	895.059M	36.9	+23.9 -27.4	+0.0 +0.0	+0.5	+5.9	+0.0	39.8	46.0	-6.2	Horiz
14	366.155M QP	44.9	+18.7 -28.3	+0.0 +0.0	+0.3	+3.5	+0.0	39.1	46.0	-6.9	Vert
^	366.154M	46.9	+18.7 -28.3	+0.0 +0.0	+0.3	+3.5	+0.0	41.1	46.0	-4.9	Vert
16	339.016M	43.4	+20.2 -28.3	+0.0 +0.0	+0.3	+3.3	+0.0	38.9	46.0	-7.1	Horiz
17	352.595M	44.0	+19.4 -28.3	+0.0 +0.0	+0.3	+3.4	+0.0	38.8	46.0	-7.2	Vert
18	827.268M	37.4	+22.7 -27.6	+0.0 +0.0	+0.5	+5.5	+0.0	38.5	46.0	-7.5	Horiz
19	420.396M	45.2	+17.5 -28.2	+0.0 +0.0	+0.3	+3.7	+0.0	38.5	46.0	-7.5	Horiz
20	298.348M	40.6	+0.0 -28.3	+22.8 +0.0	+0.3	+3.1	+0.0	38.5	46.0	-7.5	Vert
21	393.269M QP	45.5	+17.2 -28.2	+0.0 +0.0	+0.3	+3.6	+0.0	38.4	46.0	-7.6	Horiz
^	393.257M	47.9	+17.2 -28.2	+0.0 +0.0	+0.3	+3.6	+0.0	40.8	46.0	-5.2	Horiz
23	867.929M	36.1	+23.4 -27.5	+0.0 +0.0	+0.5	+5.7	+0.0	38.2	46.0	-7.8	Horiz
24	379.709M	44.5	+17.9 -28.2	+0.0 +0.0	+0.3	+3.5	+0.0	38.0	46.0	-8.0	Horiz
25	854.364M	36.1	+23.2 -27.6	+0.0 +0.0	+0.5	+5.6	+0.0	37.8	46.0	-8.2	Horiz
26	406.831M	45.0	+17.1 -28.2	+0.0 +0.0	+0.3	+3.6	+0.0	37.8	46.0	-8.2	Horiz
27	488.193M	41.9	+19.5 -28.1	+0.0 +0.0	+0.4	+4.0	+0.0	37.7	46.0	-8.3	Horiz
28	515.327M	41.1	+19.9 -28.0	+0.0 +0.0	+0.4	+4.2	+0.0	37.6	46.0	-8.4	Vert
29	311.917M	40.4	+21.9 -28.3	+0.0 +0.0	+0.3	+3.2	+0.0	37.5	46.0	-8.5	Horiz
30	556.041M	40.6	+20.0 -27.9	+0.0 +0.0	+0.4	+4.4	+0.0	37.5	46.0	-8.5	Vert
31	528.894M	40.7	+19.9 -28.0	+0.0 +0.0	+0.4	+4.3	+0.0	37.3	46.0	-8.7	Vert
32	949.332M	33.7	+24.4 -27.5	+0.0 +0.0	+0.5	+6.0	+0.0	37.1	46.0	-8.9	Vert
33	895.061M	34.0	+23.9 -27.4	+0.0 +0.0	+0.5	+5.9	+0.0	36.9	46.0	-9.1	Vert
34	583.129M	39.7	+20.1 -27.8	+0.0 +0.0	+0.4	+4.5	+0.0	36.9	46.0	-9.1	Vert
35	515.325M	40.3	+19.9 -28.0	+0.0 +0.0	+0.4	+4.2	+0.0	36.8	46.0	-9.2	Horiz
36	827.264M	35.7	+22.7 -27.6	+0.0 +0.0	+0.5	+5.5	+0.0	36.8	46.0	-9.2	Vert

37	935.673M	33.4	+24.3 -27.5	+0.0 +0.0	+0.5	+6.0	+0.0	36.7	46.0	-9.3	Vert
38	813.703M	35.5	+22.5 -27.5	+0.0 +0.0	+0.5	+5.5	+0.0	36.5	46.0	-9.5	Horiz
39	935.741M	33.1	+24.3 -27.5	+0.0 +0.0	+0.5	+6.0	+0.0	36.4	46.0	-9.6	Horiz
40	908.617M	33.3	+24.1 -27.4	+0.0 +0.0	+0.5	+5.9	+0.0	36.4	46.0	-9.6	Horiz
41	840.834M	34.8	+23.0 -27.6	+0.0 +0.0	+0.5	+5.6	+0.0	36.3	46.0	-9.7	Vert
42	339.063M	40.8	+20.2 -28.3	+0.0 +0.0	+0.3	+3.3	+0.0	36.3	46.0	-9.7	Vert
43	244.126M	42.9	+0.0 -28.3	+18.6 +0.0	+0.3	+2.8	+0.0	36.3	46.0	-9.7	Horiz
44	257.691M	41.9	+0.0 -28.3	+19.4 +0.0	+0.3	+2.9	+0.0	36.2	46.0	-9.8	Horiz
45	447.514M	41.8	+18.4 -28.3	+0.0 +0.0	+0.4	+3.8	+0.0	36.1	46.0	-9.9	Horiz
46	284.821M	39.3	+0.0 -28.2	+21.7 +0.0	+0.3	+3.0	+0.0	36.1	46.0	-9.9	Horiz
47	488.211M	40.1	+19.5 -28.1	+0.0 +0.0	+0.4	+4.0	+0.0	35.9	46.0	-10.1	Vert
48	922.198M	32.6	+24.2 -27.4	+0.0 +0.0	+0.5	+5.9	+0.0	35.8	46.0	-10.2	Vert
49	271.207M	40.1	+0.0 -28.2	+20.6 +0.0	+0.3	+3.0	+0.0	35.8	46.0	-10.2	Horiz
50	610.285M	38.0	+20.4 -27.7	+0.0 +0.0	+0.4	+4.6	+0.0	35.7	46.0	-10.3	Horiz
51	447.542M	41.2	+18.4 -28.3	+0.0 +0.0	+0.4	+3.8	+0.0	35.5	46.0	-10.5	Vert
52	542.430M	38.5	+20.0 -27.9	+0.0 +0.0	+0.4	+4.4	+0.0	35.4	46.0	-10.6	Horiz
53	610.255M	37.6	+20.4 -27.7	+0.0 +0.0	+0.4	+4.6	+0.0	35.3	46.0	-10.7	Vert
54	433.968M	41.5	+18.0 -28.3	+0.0 +0.0	+0.4	+3.7	+0.0	35.3	46.0	-10.7	Vert
55	542.449M	38.2	+20.0 -27.9	+0.0 +0.0	+0.4	+4.4	+0.0	35.1	46.0	-10.9	Vert
56	678.485M	35.6	+21.3 -27.4	+0.0 +0.0	+0.4	+4.9	+0.0	34.8	46.0	-11.2	Horiz
57	800.132M	34.0	+22.2 -27.5	+0.0 +0.0	+0.5	+5.4	+0.0	34.6	46.0	-11.4	Horiz
58	420.418M	41.3	+17.5 -28.2	+0.0 +0.0	+0.3	+3.7	+0.0	34.6	46.0	-11.4	Vert
59	976.431M	38.8	+24.5 -27.5	+0.0 +0.0	+0.5	+6.1	+0.0	42.4	54.0	-11.6	Horiz
60	311.911M	37.2	+21.9 -28.3	+0.0 +0.0	+0.3	+3.2	+0.0	34.3	46.0	-11.7	Vert
61	474.646M	38.8	+19.1 -28.2	+0.0 +0.0	+0.4	+4.0	+0.0	34.1	46.0	-11.9	Horiz
62	203.418M	39.3	+0.0 -28.4	+17.8 +0.0	+0.2	+2.6	+0.0	31.5	43.5	-12.0	Horiz

63	501.772M	37.6	+19.8 -28.1	+0.0 +0.0	+0.4	+4.1	+0.0	33.8	46.0	-12.2	Vert
64	556.024M	36.6	+20.0 -27.9	+0.0 +0.0	+0.4	+4.4	+0.0	33.5	46.0	-12.5	Horiz
65	583.150M	36.2	+20.1 -27.8	+0.0 +0.0	+0.4	+4.5	+0.0	33.4	46.0	-12.6	Horiz
66	393.278M	40.5	+17.2 -28.2	+0.0 +0.0	+0.3	+3.6	+0.0	33.4	46.0	-12.6	Vert
67	732.300M	33.5	+21.8 -27.5	+0.0 +0.0	+0.4	+5.1	+0.0	33.3	46.0	-12.7	Vert
68	474.653M	38.0	+19.1 -28.2	+0.0 +0.0	+0.4	+4.0	+0.0	33.3	46.0	-12.7	Vert
69	623.820M	35.2	+20.6 -27.6	+0.0 +0.0	+0.4	+4.6	+0.0	33.2	46.0	-12.8	Vert
70	257.690M	38.9	+0.0 -28.3	+19.4 +0.0	+0.3	+2.9	+0.0	33.2	46.0	-12.8	Vert
71	461.083M	38.3	+18.7 -28.3	+0.0 +0.0	+0.4	+3.9	+0.0	33.0	46.0	-13.0	Vert
72	379.713M	39.5	+17.9 -28.2	+0.0 +0.0	+0.3	+3.5	+0.0	33.0	46.0	-13.0	Vert
73	800.109M	32.2	+22.2 -27.5	+0.0 +0.0	+0.5	+5.4	+0.0	32.8	46.0	-13.2	Vert
74	569.576M	35.6	+20.1 -27.8	+0.0 +0.0	+0.4	+4.5	+0.0	32.8	46.0	-13.2	Vert
75	908.609M	29.6	+24.1 -27.4	+0.0 +0.0	+0.5	+5.9	+0.0	32.7	46.0	-13.3	Vert
76	813.679M	31.7	+22.5 -27.5	+0.0 +0.0	+0.5	+5.5	+0.0	32.7	46.0	-13.3	Vert
77	372.018M	38.6	+18.4 -28.3	+0.0 +0.0	+0.3	+3.5	+0.0	32.5	46.0	-13.5	Vert
78	284.801M	35.5	+0.0 -28.2	+21.7 +0.0	+0.3	+3.0	+0.0	32.3	46.0	-13.7	Vert
79	569.574M	34.8	+20.1 -27.8	+0.0 +0.0	+0.4	+4.5	+0.0	32.0	46.0	-14.0	Horiz
80	406.852M	39.1	+17.1 -28.2	+0.0 +0.0	+0.3	+3.6	+0.0	31.9	46.0	-14.1	Vert
81	433.967M	38.0	+18.0 -28.3	+0.0 +0.0	+0.4	+3.7	+0.0	31.8	46.0	-14.2	Horiz
82	528.907M	35.0	+19.9 -28.0	+0.0 +0.0	+0.4	+4.3	+0.0	31.6	46.0	-14.4	Horiz
83	650.954M	33.0	+20.9 -27.5	+0.0 +0.0	+0.4	+4.7	+0.0	31.5	46.0	-14.5	Vert
84	176.302M	36.4	+0.0 -28.4	+18.5 +0.0	+0.2	+2.3	+0.0	29.0	43.5	-14.5	Horiz
85	230.537M	38.5	+0.0 -28.3	+18.3 +0.0	+0.2	+2.7	+0.0	31.4	46.0	-14.6	Horiz
86	244.093M	37.1	+0.0 -28.3	+18.6 +0.0	+0.3	+2.8	+0.0	30.5	46.0	-15.5	Vert
87	271.232M	34.7	+0.0 -28.2	+20.6 +0.0	+0.3	+3.0	+0.0	30.4	46.0	-15.6	Vert
88	718.773M	30.3	+21.7 -27.4	+0.0 +0.0	+0.4	+5.1	+0.0	30.1	46.0	-15.9	Horiz

89	664.538M	31.3	+21.1 -27.5	+0.0 +0.0	+0.4	+4.8	+0.0	30.1	46.0	-15.9	Horiz
90	461.091M	35.4	+18.7 -28.3	+0.0 +0.0	+0.4	+3.9	+0.0	30.1	46.0	-15.9	Horiz
91	840.818M	28.5	+23.0 -27.6	+0.0 +0.0	+0.5	+5.6	+0.0	30.0	46.0	-16.0	Horiz
92	772.997M	29.7	+22.0 -27.5	+0.0 +0.0	+0.4	+5.3	+0.0	29.9	46.0	-16.1	Horiz
93	203.419M	35.0	+0.0 -28.4	+17.8 +0.0	+0.2	+2.6	+0.0	27.2	43.5	-16.3	Vert
94	718.757M	29.7	+21.7 -27.4	+0.0 +0.0	+0.4	+5.1	+0.0	29.5	46.0	-16.5	Vert
95	135.606M	36.1	+0.0 -28.3	+16.9 +0.0	+0.2	+2.1	+0.0	27.0	43.5	-16.5	Horiz
96	501.763M	33.2	+19.8 -28.1	+0.0 +0.0	+0.4	+4.1	+0.0	29.4	46.0	-16.6	Horiz
97	216.969M	36.7	+0.0 -28.3	+18.1 +0.0	+0.2	+2.7	+0.0	29.4	46.0	-16.6	Horiz
98	976.451M	33.4	+24.5 -27.5	+0.0 +0.0	+0.5	+6.1	+0.0	37.0	54.0	-17.0	Vert
99	650.774M	30.4	+20.9 -27.5	+0.0 +0.0	+0.4	+4.7	+0.0	28.9	46.0	-17.1	Horiz
100	189.847M	33.7	+0.0 -28.4	+18.1 +0.0	+0.2	+2.5	+0.0	26.1	43.5	-17.4	Horiz
101	230.519M	35.4	+0.0 -28.3	+18.3 +0.0	+0.2	+2.7	+0.0	28.3	46.0	-17.7	Vert
102	406.422M	35.4	+17.1 -28.2	+0.0 +0.0	+0.3	+3.6	+0.0	28.2	46.0	-17.8	Vert
103	135.614M	34.7	+0.0 -28.3	+16.9 +0.0	+0.2	+2.1	+0.0	25.6	43.5	-17.9	Vert
104	149.179M	33.7	+0.0 -28.4	+17.8 +0.0	+0.2	+2.2	+0.0	25.5	43.5	-18.0	Vert
105	216.947M	35.2	+0.0 -28.3	+18.1 +0.0	+0.2	+2.7	+0.0	27.9	46.0	-18.1	Vert
106	220.387M	34.8	+0.0 -28.3	+18.1 +0.0	+0.2	+2.7	+0.0	27.5	46.0	-18.5	Horiz
107	189.859M	31.9	+0.0 -28.4	+18.1 +0.0	+0.2	+2.5	+0.0	24.3	43.5	-19.2	Vert
108	122.054M	34.2	+0.0 -28.3	+16.0 +0.0	+0.2	+2.0	+0.0	24.1	43.5	-19.4	Vert
109	989.983M	30.5	+24.6 -27.5	+0.0 +0.0	+0.5	+6.2	+0.0	34.3	54.0	-19.7	Vert
110	867.942M	23.9	+23.4 -27.5	+0.0 +0.0	+0.5	+5.7	+0.0	26.0	46.0	-20.0	Vert
111	108.491M	35.4	+0.0 -28.4	+13.8 +0.0	+0.1	+1.9	+0.0	22.8	43.5	-20.7	Horiz
112	27.129M	19.0	+0.0 +0.0	+0.0 +8.8	+0.1	+0.9	+0.0	28.8	49.5	-20.7	None
113	962.866M	29.0	+24.4 -27.5	+0.0 +0.0	+0.5	+6.1	+0.0	32.5	54.0	-21.5	Horiz