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803.01, 803.02, 803.05, 803.06
EMC

ASYST TECHNOLOGIES TEST REPORT

FOR THE

8 ANTENNA INDUSTRIAL RADIO, ATR9800

FCC PART 15 SUBPART C SECTION 15.209

COMPLIANCE

DATE OF ISSUE: DECEMBER 15, 2005

PREPARED FOR:

Asyst Technologies
48633 Warm Springs Blvd.
Fremont, CA 94539

P.O. No.: 337116
W.O. No.: 84302

PREPARED BY:

Mary Ellen Clayton
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Date of test: October 17 - December 9, 2005

Report No.: FC05-075

TABLE OF CONTENTS

ADMINISTRATIVE INFORMATION

DATE OF TEST:	October 17 - December 9, 2005
DATE OF RECEIPT:	October 17, 2005
MANUFACTURER:	Asyst Technologies 48633 Warm Springs Blvd. Fremont, CA 94539
REPRESENTATIVE:	Bhavin Shah
TEST LOCATION:	CKC Laboratories, Inc. 1120 Fulton Place Fremont, CA 94539
TEST METHOD:	ANSI C63.4 (2003)
PURPOSE OF TEST:	To demonstrate the compliance of the 8 Antenna Industrial Radio, ATR9800 with the requirements for FCC Part 15 Subpart C Section 15.209 devices.

CONDITIONS FOR COMPLIANCE

No modifications to the EUT were necessary to comply. Conducted emissions not required for this device.

APPROVALS

Steve Behm, Director of Engineering Services

QUALITY ASSURANCE:	**TEST PERSONNEL:**
Joyce Walker, Quality Assurance Administrative Manager	Stephen J. Goulet, EMC Technician

FCC 15.31(e) Voltage Variations
Voltages were varied from 85 -115% of normal and no notable variations in RF output were observed.

FCC 15.31(m) Number Of Channels
This device operates on a single channel.

FCC 15.33(a) Frequency Ranges Tested
15.209 Radiated Emissions: 9 kHz – 1000 MHz

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

EUT Operating Frequency
The EUT was operating at 134 kHz.

Temperature And Humidity During Testing
The temperature during testing was within +15°C and + 35°C.
The relative humidity was between 20% and 75%.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The customer declares the EUT tested by CKC Laboratories was representative of a production unit.

EQUIPMENT UNDER TEST

8 Antenna Industrial Radio

Manuf: Asyst Technologies
Model: ATR9800
Serial: A1
FCC ID: pending

PERIPHERAL DEVICES

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

Ethernet Hub

Manuf: Air Link
Model: asw105/A2
Serial: 035A2A40573

EUT Power Supply

Manuf: Ault Inc.
Model: PW102
Serial: 3443A

Laptop PC

Manuf: Dell
Model: PPI
Serial: 48DK0

AC Adapter for Laptop PC

Manuf: Dell
Model: AA20031
Serial: 12761-04R-1374

Serial Port Multiplexer

Manuf: Asyst Technologies
Model: HS-60
Serial: LM1

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 15.209 Six Highest Radiated Emission Levels: 9 kHz - 30 MHz

FREQUENCY MHz	METER READING dBµV	CORRECTION FACTORS Cable dB	Ant dB	Corr dB	dB	CORRECTED READING dBµV/m	SPEC LIMIT dBµV/m	MARGIN dB	NOTES
0.134	76.1	0.1	9.6	-80.0		5.8	25.0	-19.2	V
0.536	32.7	0.1	9.5	-40.0		2.3	33.0	-30.7	V
0.669	38.4	0.2	9.7	-40.0		8.3	31.1	-22.8	V
0.808	33.0	0.2	9.9	-40.0		3.1	29.4	-26.3	V
0.938	32.5	0.2	10.0	-40.0		2.7	28.1	-25.4	V
13.621	32.6	0.3	8.9	-40.0		1.8	29.5	-27.7	V

Test Method: ANSI C63.4 (2003)
Spec Limit: FCC Part 15 Subpart C Section 15.209
Test Distance: 3 Meters

NOTES: V = Vertical Polarization

COMMENTS: The ATR9800 8 Antenna Industrial Radio: the host Dell PC is running Secsim Pro software and sending Read ID Commands over the ethernet connection. Only antenna #1 is active during communications. The remaining seven antennas are connected but not energized. This is a maximized emissions measurement taken outdoors over the ground.

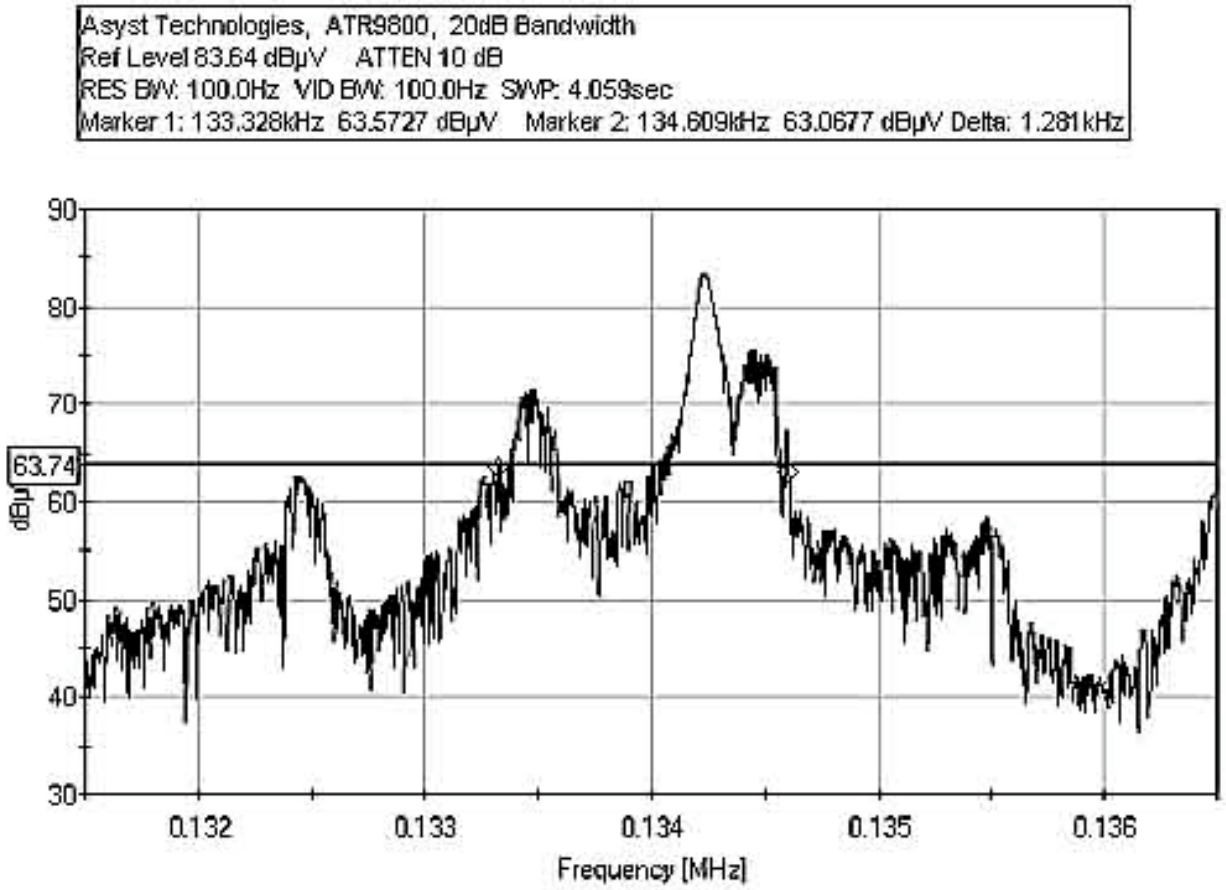
Table 2: FCC 15.209 Six Highest Radiated Emission Levels: 30-1000 MHz									
	METER	CORRECTION FACTORS				CORRECTED	SPEC		
FREQUENCY MHz	READING dBµV	Ant dB	Amp dB	Cable dB	Dist dB	READING dBµV/m	LIMIT dBµV/m	MARGIN dB	NOTES
47.391	51.9	9.9	-26.1	0.8		36.5	40.0	-3.5	VQ
47.392	50.3	9.9	-26.1	0.8		34.9	40.0	-5.1	VQ
47.674	50.5	9.8	-26.0	0.7		35.0	40.0	-5.0	VQ
124.015	53.9	11.2	-25.8	1.1		40.4	43.5	-3.1	HQ
125.005	54.4	11.2	-25.7	1.1		41.0	43.5	-2.5	HQ
168.000	53.1	9.5	-25.6	1.2		38.2	43.5	-5.3	V

Test Method: ANSI C63.4 (2003)
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 ATR9800 8 Antenna Industrial Radio: the host Dell PC is running Secsim Pro software and sending Read ID Commands over the ethernet connection. Only antenna #1 is active during communications. The remaining seven antennas are connected but not energized. This is a maximized emissions measurement.

OCCUPIED BANDWIDTH



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 dBµV/m, the spectrum analyzer reading in dBµV 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	(dBµV)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/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 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 dBµV, 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

Radiated Emissions

For radiated measurements from 9 kHz to 30 MHz, the magnetic loop antenna was used. The equipment under test was set up on a non conductive surface 80 cm off the ground. The Magnetic Loop Antenna was located 3 meters away on a tripod one meter off the ground to the center of the loop. This antenna was placed first in the vertical polarization and then in the horizontal polarization and rotated to obtain the worst case emissions emanating from the EUT. The EUT was also rotated to find the worst case emissions.

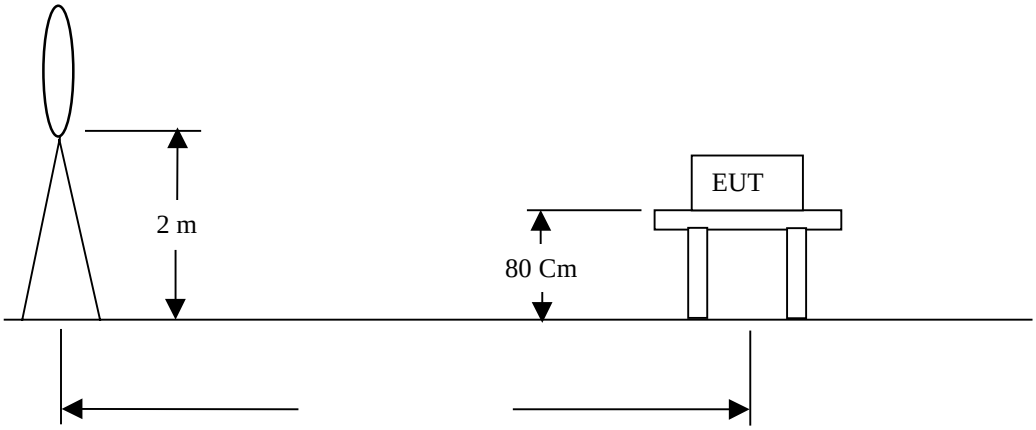
The frequency range of 30 MHz to 1000 MHz was scanned with the biconilog antenna located about 1.5 meter above the ground plane in the vertical polarity. The EUT was mounted on a nonconductive, rotating table 80 cm above the conductive grid. The nonconductive table dimensions were 1 meter by 1.5 meters. During the preliminary radiated scan, the EUT was powered up and operating in its defined FCC test mode. During this scan, the turntable was rotated and all peaks at or near the limit were recorded. A scan of the FM band from 88 to 110 MHz was then made using a reduced resolution bandwidth and frequency span. The biconilog antenna was changed to the horizontal polarity and the above steps were repeated. Care was taken to ensure that no frequencies were missed within the FM and TV bands.

A thorough scan of all frequencies was made manually using a small frequency span, rotating the turntable and raising and lowering the antenna from one to four meters 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 DIAGRAM AND PHOTOGRAPHS

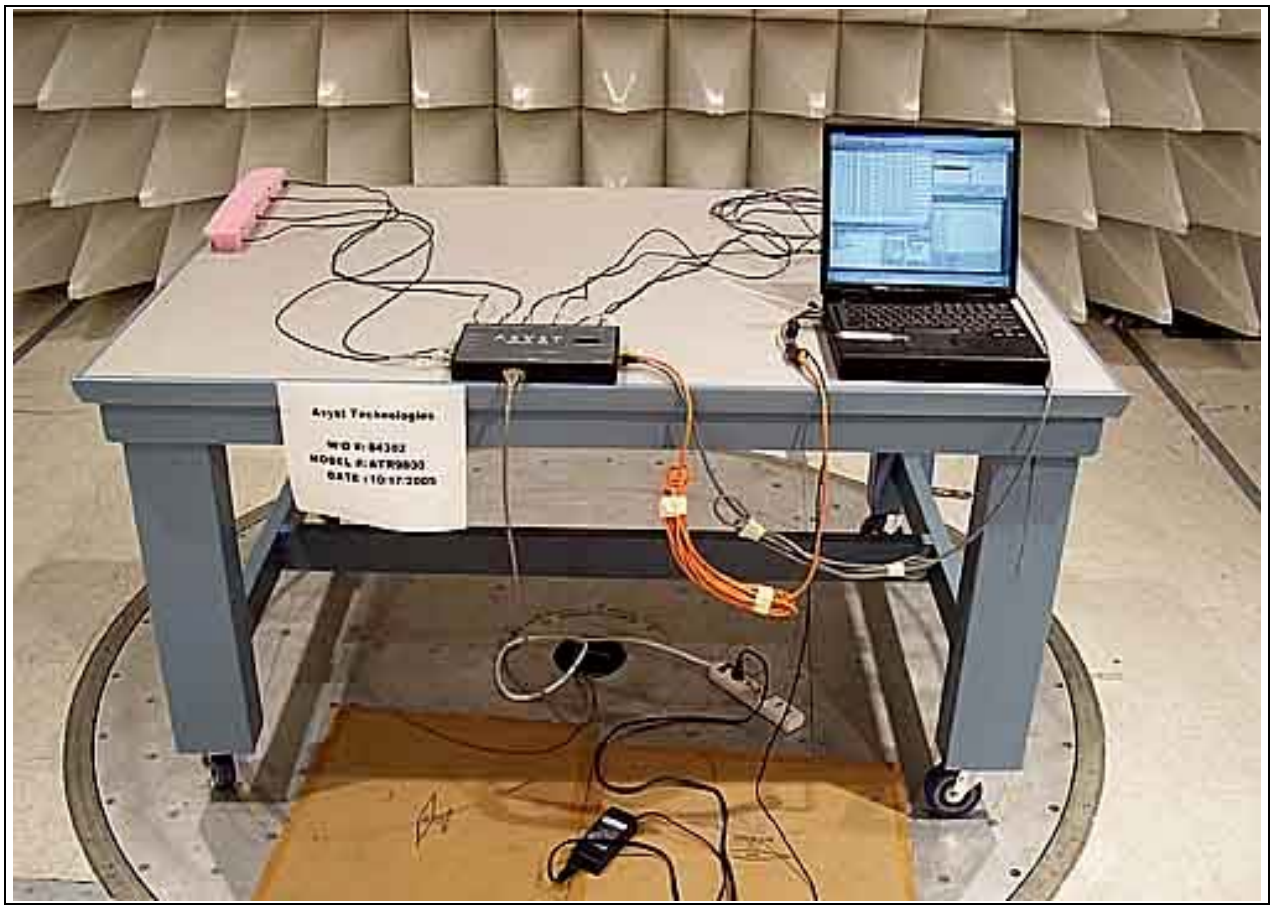
TEST SET UP DIAGRAM FOR OUTDOOR 9 kHz TO 30 MHz TESTING



PHOTOGRAPH SHOWING RADIATED EMISSIONS

Radiated Emissions - Front View

PHOTOGRAPH SHOWING RADIATED EMISSIONS



Radiated Emissions - Back View

APPENDIX B

TEST EQUIPMENT LIST

15.209 9 kHz – 30 MHz

Function	S/N	Calibration Date	Cal Due Date	Asset #
Chase Bilog CBL6111C	2630	01/24/2005	01/24/2007	00852
HP8447F opt H64 preamp	2944A03850	03/05/2005	03/05/2007	00501
E4446A Spectrum Analyzer	US44300408	01/13/2005	01/13/2007	02668
Mag Loop Antenna EMCO	2078	05/13/2005	05/13/2007	00432

15.209 30-1000 MHz

Function	S/N	Calibration Date	Cal Due Date	Asset #
Chase Bilog CBL6111C	2630	01/24/2005	01/24/2007	00852
HP8447F opt H64 preamp	2944A03850	03/05/2005	03/05/2007	00501
QP Adapter HP-85650A	2043A00188	10/23/2004	10/23/2006	01508
S.A., RF Section HP-8568B	2601A02378	06/20/2005	06/20/2007	01377
S.A., Display HP-85662A	2542A10641	06/20/2005	06/20/2007	01377A

APPENDIX C:

MEASUREMENT DATA SHEETS

Test Location: CKC Laboratories, Inc. •1120 Fulton Place • Fremont, CA 94539 • 510-249-1170

Customer: **Asyst Technologies**
Specification: **FCC 15.209**
Work Order #: **84302** Date: 10/21/2005
Test Type: **Magnetic Loop Measurement** Time: 15:20:23
Equipment: **8 Antenna Industrial Radio** Sequence#: 7
Manufacturer: Asyst Technologies Tested By: S. Goulet
Model: ATR9800
S/N: A1

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
8 Antenna Industrial Radio*	Asyst Technologies	ATR9800	A1

Support Devices:

Function	Manufacturer	Model #	S/N
Ethernet Hub	Air Link	asw105/A2	035A2A40573
EUT power supply	Ault Inc.	PW102	3443A
AC Adapter for Laptop PC	Dell	AA20031	12761-04R-1374
Laptop PC	Dell	PPI	48DK0
Serial Port Multiplexer	Asyst	HS-60	LM1

Test Conditions / Notes:

The ATR9800 8 Antenna Industrial Radio: the host Dell PC is running Secsim Pro software and sending Read ID Commands over the ethernet connection. Only antenna #1 is active during communications. The remaining seven antennas are connected but not energized. This is a maximized emissions measurement taken outdoors over the ground.

Transducer Legend:

T1=Cable P05296 25' RG214 N-N	T2=Cable P05300 12' RG214 N-N
T3=Mag Loop A/N 00432, S/N 2078	T4=15.31 3m 40dB/Dec Correction

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

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	134.290k	76.1	+0.0	+0.1	+9.6	-80.0	+0.0	5.8	25.0	-19.2	Vert
2	668.830k	38.4	+0.1	+0.1	+9.7	-40.0	+0.0	8.3	31.1	-22.8	Vert
3	937.590k	32.5	+0.1	+0.1	+10.0	-40.0	+0.0	2.7	28.1	-25.4	Vert
4	808.080k	33.0	+0.1	+0.1	+9.9	-40.0	+0.0	3.1	29.4	-26.3	Vert
5	13.621M	32.6	+0.2	+0.1	+8.9	-40.0	+0.0	1.8	29.5	-27.7	Vert
6	536.000k	32.7	+0.0	+0.1	+9.5	-40.0	+0.0	2.3	33.0	-30.7	Vert
7	15.563M	22.2	+0.2	+0.1	+8.8	-40.0	+0.0	-8.7	29.5 Ambient	-38.2	Horiz

8	13.629M	21.2	+0.2	+0.1	+8.9	-40.0	+0.0	-9.6	29.5	-39.1	Horiz
9	403.740k	45.9	+0.0	+0.1	+9.4	-80.0	+0.0	-24.6	15.5	-40.1	Vert
10	16.000M	16.5	+0.2	+0.1	+8.8	-40.0	+0.0	-14.4	29.5	-43.9	Vert
11	271.030k	45.5	+0.0	+0.1	+9.0	-80.0	+0.0	-25.4	18.9	-44.3	Vert
12	265.100k	45.0	+0.0	+0.1	+9.0	-80.0	+0.0	-25.9	19.1	-45.0	Vert
13	25.000M	16.0	+0.2	+0.1	+7.6	-40.0	+0.0	-16.1	29.5	-45.6	Vert

Test Location: CKC Laboratories, Inc. •1120 Fulton Place • Fremont, CA 94539 • 510-249-1170

Customer: **Asyst Technologies**
Specification: **FCC 15.209**
Work Order #: **84302** Date: 10/18/2005
Test Type: **Maximized Emissions** Time: 14:52:14
Equipment: **8 Antenna Industrial Radio** Sequence#: 5
Manufacturer: Asyst Technologies Tested By: S. Goulet
Model: ATR9800
S/N:

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
8 Antenna Industrial Radio	Asyst Technologies	ATR9800	A1

Support Devices:

Function	Manufacturer	Model #	S/N
EUT power supply	Ault Inc.	PW102	3443A
AC Adapter for Laptop PC	Dell	AA20031	12761-04R-1374
Laptop PC	Dell	PPI	48DK0

Test Conditions / Notes:

The ATR9800 8 Antenna Industrial Radio: the host Dell PC is running Secsim Pro software and sending Read ID Commands over the ethernet connection. Only antenna #1 is active during communications. The remaining seven antennas are connected but not energized. This is a maximized emissions measurement.

Transducer Legend:

T1=Cable P05296 25' RG214 N-N T2=Cable P05300 12' RG214 N-N
T3=Cable P05299 2' RG214 N-N T4=0852-Bi-Log Antenna
T5=Amp Cal.HP-8447F OPT H64- AN 00501

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

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	125.005M	54.4	+0.6	+0.4	+0.1	+11.2	+0.0	41.0	43.5	-2.5	Horiz
	QP		-25.7				188				260
^	125.013M	56.3	+0.6	+0.4	+0.1	+11.2	+0.0	42.9	43.5	-0.6	Horiz
			-25.7				188				260
3	124.015M	53.9	+0.6	+0.4	+0.1	+11.2	+0.0	40.4	43.5	-3.1	Horiz
	QP		-25.8				269				260
^	124.025M	57.0	+0.6	+0.4	+0.1	+11.2	+0.0	43.5	43.5	+0.0	Horiz
			-25.8				269				260
5	47.391M	51.9	+0.4	+0.3	+0.1	+9.9	+0.0	36.5	40.0	-3.5	Vert
	QP		-26.1				290				226
6	47.674M	50.5	+0.4	+0.2	+0.1	+9.8	+0.0	35.0	40.0	-5.0	Vert
	QP		-26.0				316				145
7	47.392M	50.3	+0.4	+0.3	+0.1	+9.9	+0.0	34.9	40.0	-5.1	Vert
	QP		-26.1				89				198
^	47.384M	62.6	+0.4	+0.3	+0.1	+9.9	+0.0	47.2	40.0	+7.2	Vert
			-26.1				290				226
9	168.000M	53.1	+0.7	+0.4	+0.1	+9.5	+0.0	38.2	43.5	-5.3	Vert
			-25.6				179				180

10	200.023M	52.9	+0.8	+0.5	+0.1	+8.6	+0.0	37.3	43.5	-6.2	Horiz
			-25.6				244				248
11	250.014M	51.1	+0.9	+0.5	+0.1	+12.3	+0.0	39.8	46.0	-6.2	Horiz
			-25.1				331				179
12	500.059M	46.5	+1.3	+0.7	+0.2	+17.5	+0.0	39.5	46.0	-6.5	Horiz
	QP		-26.7				306				242
^	499.997M	49.2	+1.3	+0.7	+0.2	+17.5	+0.0	42.2	46.0	-3.8	Horiz
			-26.7				306				242
14	46.856M	48.5	+0.4	+0.3	+0.1	+10.2	+0.0	33.4	40.0	-6.6	Horiz
			-26.1				151				311
15	100.012M	52.0	+0.5	+0.2	+0.0	+9.6	+0.0	36.6	43.5	-6.9	Horiz
	QP		-25.7				234				290
^	100.004M	60.8	+0.5	+0.2	+0.0	+9.6	+0.0	45.4	43.5	+1.9	Horiz
			-25.7				234				290
17	124.038M	49.7	+0.6	+0.4	+0.1	+11.2	+0.0	36.2	43.5	-7.3	Vert
	QP		-25.8				139				99
^	124.034M	52.6	+0.6	+0.4	+0.1	+11.2	+0.0	39.1	43.5	-4.4	Vert
			-25.8				139				99
19	170.332M	51.2	+0.7	+0.4	+0.1	+9.3	+0.0	36.2	43.5	-7.3	Vert
			-25.5				10				140
20	47.385M	48.0	+0.4	+0.3	+0.1	+9.9	+0.0	32.6	40.0	-7.4	Vert
	QP		-26.1				82				117
21	500.010M	45.6	+1.3	+0.7	+0.2	+17.5	+0.0	38.6	46.0	-7.5	Vert
	QP		-26.7				170				280
^	500.012M	49.3	+1.3	+0.7	+0.2	+17.5	+0.0	42.3	46.0	-3.7	Vert
			-26.7				170				280
^	500.013M	47.9	+1.3	+0.7	+0.2	+17.5	+0.0	40.9	46.0	-5.1	Vert
			-26.7				15				100
24	150.008M	49.8	+0.7	+0.4	+0.1	+10.7	+0.0	36.0	43.5	-7.5	Vert
	QP		-25.7				142				99
^	150.008M	51.7	+0.7	+0.4	+0.1	+10.7	+0.0	37.9	43.5	-5.6	Vert
			-25.7				258				132
^	150.013M	46.6	+0.7	+0.4	+0.1	+10.7	+0.0	32.8	43.5	-10.7	Vert
			-25.7				135				100
27	47.397M	47.9	+0.4	+0.3	+0.1	+9.9	+0.0	32.5	40.0	-7.5	Vert
	QP		-26.1				82				117
28	150.000M	49.5	+0.7	+0.4	+0.1	+10.7	+0.0	35.7	43.5	-7.8	Horiz
			-25.7				166				272
29	175.013M	51.0	+0.7	+0.4	+0.1	+9.0	+0.0	35.6	43.5	-7.9	Vert
	QP		-25.6				327				99
^	175.004M	52.2	+0.7	+0.4	+0.1	+9.0	+0.0	36.8	43.5	-6.7	Vert
			-25.6				327				173
31	125.022M	48.8	+0.6	+0.4	+0.1	+11.2	+0.0	35.4	43.5	-8.1	Vert
	QP		-25.7				140				99
^	125.008M	53.8	+0.6	+0.4	+0.1	+11.2	+0.0	40.4	43.5	-3.1	Vert
			-25.7				140				99
^	124.990M	53.0	+0.6	+0.4	+0.1	+11.2	+0.0	39.6	43.5	-3.9	Vert
			-25.7				158				235
^	125.017M	52.1	+0.6	+0.4	+0.1	+11.2	+0.0	38.7	43.5	-4.8	Vert
			-25.7				146				100

35	943.721M	37.5	+1.8	+1.0	+0.2	+23.4	+0.0	37.4	46.0	-8.6	Horiz
			-26.5				370				130
36	250.000M	47.9	+0.9	+0.5	+0.1	+12.3	+0.0	36.6	46.0	-9.4	Vert
			-25.1				370				170
37	937.975M	36.6	+1.8	+1.0	+0.2	+23.3	+0.0	36.4	46.0	-9.6	Horiz
			-26.5				370				130
38	46.860M	45.4	+0.4	+0.3	+0.1	+10.2	+0.0	30.3	40.0	-9.7	Vert
	QP		-26.1				159				165
	^ 46.859M	56.4	+0.4	+0.3	+0.1	+10.2	+0.0	41.3	40.0	+1.3	Vert
			-26.1				159				165
40	168.086M	48.7	+0.7	+0.4	+0.1	+9.5	+0.0	33.8	43.5	-9.7	Horiz
	QP		-25.6				184				199
	^ 168.068M	54.9	+0.7	+0.4	+0.1	+9.5	+0.0	40.0	43.5	-3.5	Horiz
			-25.6				184				199
42	159.996M	47.6	+0.7	+0.4	+0.1	+10.2	+0.0	33.2	43.5	-10.3	Vert
			-25.8				370				100
43	250.002M	46.9	+0.9	+0.5	+0.1	+12.3	+0.0	35.6	46.0	-10.4	Vert
			-25.1				336				215
44	46.046M	43.8	+0.4	+0.3	+0.1	+10.7	+0.0	29.1	40.0	-10.9	Vert
	QP		-26.2				82				117
45	155.074M	46.8	+0.7	+0.4	+0.1	+10.4	+0.0	32.6	43.5	-10.9	Horiz
	QP		-25.8				164				272
	^ 155.098M	57.3	+0.7	+0.4	+0.1	+10.4	+0.0	43.1	43.5	-0.4	Horiz
			-25.8				164				272
47	100.004M	47.4	+0.5	+0.2	+0.0	+9.6	+0.0	32.0	43.5	-11.5	Vert
	QP		-25.7				167				99
	^ 100.006M	57.0	+0.5	+0.2	+0.0	+9.6	+0.0	41.6	43.5	-1.9	Vert
			-25.7				167				99
	^ 100.002M	53.2	+0.5	+0.2	+0.0	+9.6	+0.0	37.8	43.5	-5.7	Vert
			-25.7				266				132
50	947.360M	34.3	+1.8	+1.0	+0.2	+23.5	+0.0	34.4	46.0	-11.6	Vert
			-26.4				370				130
51	155.085M	45.7	+0.7	+0.4	+0.1	+10.4	+0.0	31.5	43.5	-12.0	Vert
	QP		-25.8				162				220
	^ 155.102M	56.0	+0.7	+0.4	+0.1	+10.4	+0.0	41.8	43.5	-1.7	Vert
			-25.8				162				244
	^ 155.040M	54.4	+0.7	+0.4	+0.1	+10.4	+0.0	40.2	43.5	-3.3	Vert
			-25.8				179				180
54	949.823M	33.7	+1.8	+1.0	+0.2	+23.6	+0.0	33.9	46.0	-12.1	Vert
			-26.4				370				130
55	47.386M	43.1	+0.4	+0.3	+0.1	+9.9	+0.0	27.7	40.0	-12.3	Horiz
	QP		-26.1				61				272
	^ 47.392M	51.8	+0.4	+0.3	+0.1	+9.9	+0.0	36.4	40.0	-3.6	Horiz
			-26.1				61				272
57	952.719M	33.5	+1.8	+1.0	+0.2	+23.6	+0.0	33.6	46.0	-12.4	Vert
			-26.5				370				130
58	200.015M	46.6	+0.8	+0.5	+0.1	+8.6	+0.0	31.0	43.5	-12.5	Vert
	QP		-25.6				195				100
	^ 200.014M	51.6	+0.8	+0.5	+0.1	+8.6	+0.0	36.0	43.5	-7.5	Vert
			-25.6				195				100

60	946.234M	33.4	+1.8 -26.4	+1.0	+0.2	+23.5	+0.0 370	33.5	46.0	-12.5	Horiz 130
61	125.016M QP	44.1	+0.6 -25.7	+0.4	+0.1	+11.2	+0.0 158	30.7	43.5	-12.9	Vert 235
62	170.182M QP	44.2	+0.7 -25.5	+0.4	+0.1	+9.4	+0.0 10	29.3	43.5	-14.2	Vert 140
63	152.255M QP	41.9	+0.7 -25.7	+0.4	+0.1	+10.6	+0.0 30	28.0	43.5	-15.5	Vert 133
^	152.281M	49.5	+0.7 -25.7	+0.4	+0.1	+10.6	+0.0 30	35.6	43.5	-7.9	Vert 133