



*FCC PART 15, SUBPART B and C
TEST REPORT*

for
MINI-TRACKER PLUS II READER
MODEL: 1034 RFID READER

Prepared for

AVID IDENTIFICATION SYSTEMS, INC.
3185 HAMNER AVENUE
NORCO, CALIFORNIA 92860

Prepared by: *James Ross*

JAMES ROSS

Approved by: *Kyle Fujimoto*

KYLE FUJIMOTO

COMPATIBLE ELECTRONICS INC.
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DATE: DECEMBER 10, 2007

REPORT BODY	APPENDICES					TOTAL
	A	B	C	D	E	
PAGES	13	2	2	11	4	34

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2	Plot Map and Layout of 10 Meter Radiated Test Site

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: Mini-TracKer Plus II Reader
 Model: 1034 RFID Reader
 S/N: N/A

Product Description: See Expository Statement.

Modifications: The EUT was not modified in order to meet the specifications.

Manufacturer: AVID Identification Systems, Inc.
 3185 Hamner Avenue
 Norco, California 92860

Test Dates: November 28 and 29, 2007

Test Specifications: EMI requirements
 CFR Title 47, Part 15 Subpart B; and Subpart C, Sections 15.205 and 15.209

Test Procedure: ANSI C63.4

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	This test was not performed, as the EUT is a battery-operated device that does not connect to the AC public mains.
2	Radiated RF Emissions, 9 kHz - 1000 MHz	Complies with the Class B limits of CFR Title 47, Part 15, Subpart B; and Subpart C Sections 15.205 and 15.209 . <small>Highest Reading in Relation to Spec Limit: 41.75 dBμV @ 192.071 MHz (*U_c = 2.02 dB)</small>

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Mini-TracKer Plus II Reader, Model: 1034 RFID Reader. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4. 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 B** specification limits defined by CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205 and 15.209.



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

AVID Identification Systems, Inc.

Michael F. Cruz Director of Engineering

Compatible Electronics, Inc.

James Ross Test Engineer
Kyle Fujimoto Test Engineer

2.4 Date Test Sample was Received

The test sample was received prior to the initial FCC-B test date of November 28, 2007.

2.5 Disposition of the Test Sample

The test sample has not been returned to Avid ID Systems, Inc. as of the date of this report.

2.6 Abbreviations and Acronyms

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

FCC	Federal Communications Commission
RF	Radio Frequency
EMI	Electromagnetic Interference
EUT	Equipment Under Test
S/N	Serial Number
ITE	Information Technology Equipment
CML	Corrected Meter Limit
LISN	Line Impedance Stabilization Network
NVLAP	National Voluntary Laboratory Accreditation Program
CFR	Code of Federal Regulations
N/A	Not Applicable
PC	Personal Computer
Co.	Company
Inc.	Incorporated
Tx	Transmit or Transmitter
LLC	Limited Liability Company
DoC	Declaration of Conformity
HP	Hewlett Packard
ID	Identification

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 2003	American National Standard for Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration - EMI

Setup and operation of the equipment under test.

Specifics of the EUT:

The Mini-TracKer Plus II Reader, Model: 1034 RFID Reader (EUT) is a battery-operated only device and is a stand-alone unit. The EUT contained a PCB (internally) mounted coiled antenna. The EUT was placed on the center of the non-conductive tests table during radiated emissions tests. The EUT was tested in three orthogonal axis. During the tests, the EUT was set to continuously transmit.

Note: Since the unit is a battery-operated only device, no conducted emissions tests were performed.

It was determined that the emissions were at their highest level when the EUT was operating in the above configuration with the EUT placed in the Y Axis. The final 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.

4.1.1 Cable Construction and Termination

The EUT contained no cables.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT**5.1 EUT and Accessory List**

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
MINI-TRACKER PLUS II READER (EUT)	AVID ID SYSTEMS, INC.	1034 RFID READER	N/A	IOL-125-AV1034



5.2 EMI Test Equipment

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CAL. CYCLE
Radiate Emissions Data Capture Program	Compatible Electronics	2.0	N/A	N/A	N/A
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	3638A08768	August 14, 2007	1 Year
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	3701A22262	August 14, 2007	1 Year
Quasi-Peak Adapter	Hewlett Packard	85650A	2811A01363	August 14, 2007	1 Year
Preamplifier	Com Power	PA-102	1017	January 16, 2007	1 Year
Biconical Antenna	Com Power	AB-900	15227	March 8, 2007	1 Year
Log Periodic Antenna	Com Power	AL-100	16060	July 9, 2007	1 Year
Loop Antenna	Com Power	AL-130	17089	September 24, 2007	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

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 not grounded.

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 Radiated Emissions (Spurious, Fundamental, and Harmonics) Test

The spectrum analyzer was used as a measuring meter along with the quasi-peak adapter. A preamplifier was used to increase the sensitivity of the instrument. 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

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. 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 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 the final test data for the spurious emissions. The EUT was tested at a 10 meter test distance to obtain the final test data for the fundamental and the harmonic emissions. The final qualification data sheets are located in Appendix E.

8. CONCLUSIONS

The Mini-TracKer Plus II Reader, Model: 1034 RFID Reader (EUT), as tested, meets all of the **Class B** specification limits defined in CFR Title 47, Part 15, Subpart B; and Subpart C, sections 15.205 and 15.209.



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 15.209 or FCC Class B 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.

No modifications were made to the EUT during testing.



APPENDIX C

***ADDITIONAL MODELS COVERED
UNDER THIS REPORT***

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

Mini-TracKer Plus II Reader
Model: 1034 RFID Reader
S/N: N/A

There were no additional models covered under this report.

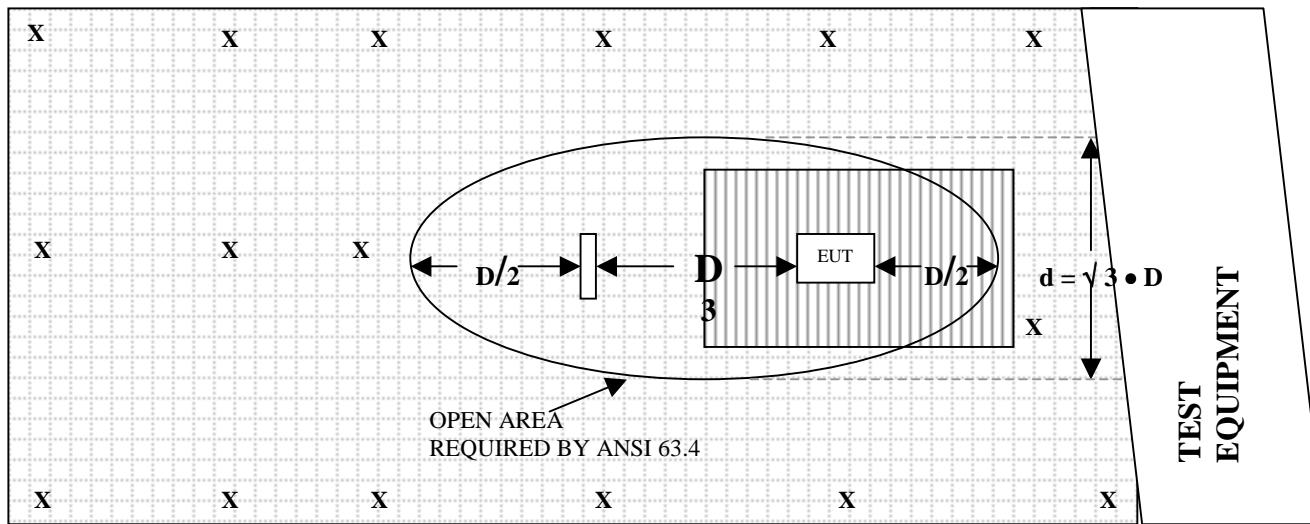


APPENDIX D

DIAGRAMS, CHARTS, AND PHOTOS

***FIGURE 1: PLOT MAP AND LAYOUT OF
3 METER RADIATED SITE***

OPEN LAND > 15 METERS

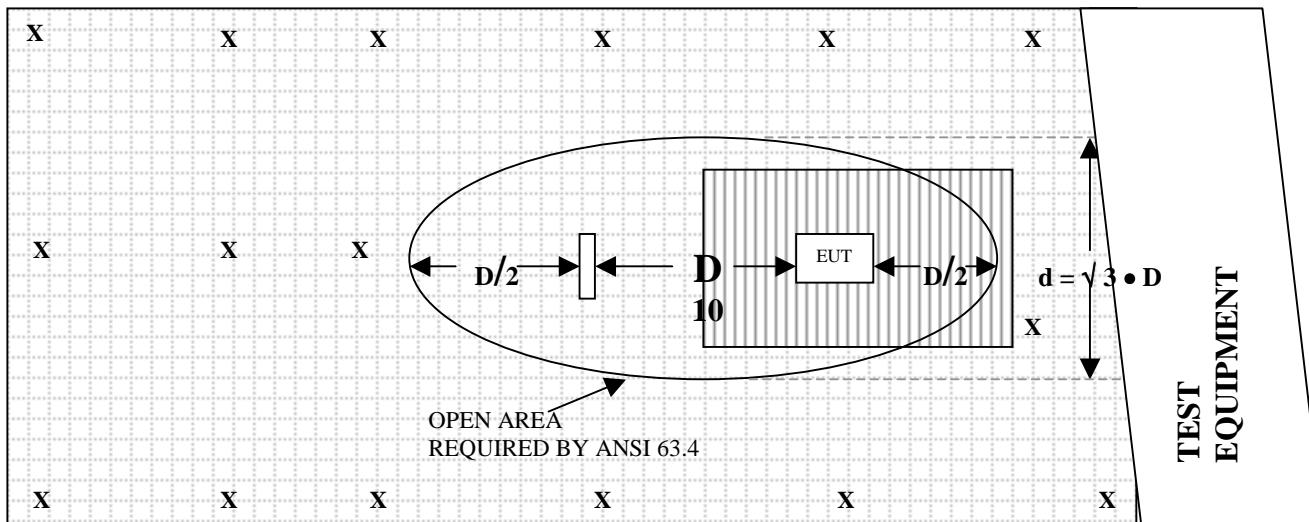


OPEN LAND > 15 METERS

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

**FIGURE 2: PLOT MAP AND LAYOUT OF
10 METER RADIATED SITE**

OPEN LAND > 15 METERS



OPEN LAND > 15 METERS

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

COM-POWER AB-900**BICONICAL ANTENNA****S/N: 15227****CALIBRATION DATE: MARCH 8, 2007**

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	12.6	100	12.3
35	10.0	120	14.7
40	9.5	140	13.0
45	9.2	160	13.7
50	9.4	180	16.4
60	7.4	200	17.2
70	6.5	250	14.6
80	7.0	275	19.0
90	8.0	300	22.3

COM-POWER AL-100**LOG PERIODIC ANTENNA****S/N: 16060****CALIBRATION DATE: JULY 9, 2007**

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	13.5	700	20.5
400	15.8	800	21.6
500	17.0	900	21.3
600	19.2	1000	22.2

COM-POWER AL-130**LOOP ANTENNA****S/N: 17089****CALIBRATION DATE: SEPTEMBER 24, 2007**

FREQUENCY (MHz)	MAGNETIC (dB/m)	ELECTRIC (dB/m)
0.009	-41.27	10.23
0.01	-41.96	9.54
0.02	-41.73	9.77
0.05	-42.0	9.5
0.07	-41.5	10.0
0.1	-41.43	10.07
0.2	-43.9	7.9
0.3	-41.43	10.07
0.5	-41.40	10.1
0.7	-41.13	10.37
1	-40.83	10.67
2	-40.30	11.20
3	-40.60	10.90
4	-41.00	10.50
5	-40.20	11.30
10	-40.40	11.10
15	-41.67	9.83
20	-41.10	10.40
25	-42.80	8.70
30	-42.80	8.70

COM-POWER PA-102**PREAMPLIFIER****S/N: 1017****CALIBRATION DATE: JANUARY 16, 2007**

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	38.4	300	38.2
40	38.3	350	38.2
50	38.2	400	38.1
60	38.3	450	37.8
70	38.4	500	37.8
80	38.6	550	38.1
90	38.3	600	37.8
100	38.4	650	37.8
125	38.3	700	37.6
150	38.2	750	37.9
175	38.4	800	37.6
200	38.4	850	37.2
225	38.4	900	37.4
250	38.3	950	37.0
275	38.3	1000	37.2



FRONT VIEW

AVID IDENTIFICATION SYSTEMS, INC.
MINI-TRACKER PLUS II READER
MODEL: 1034 RFID READER
FCC SUBPART C – RADIATED EMISSIONS – 11-28-07

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



REAR VIEW

AVID IDENTIFICATION SYSTEMS, INC.
MINI-TRACKER PLUS II READER
MODEL: 1034 RFID READER
FCC SUBPART C – RADIATED EMISSIONS – 11-28-07

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS



FRONT VIEW

AVID IDENTIFICATION SYSTEMS, INC.
MINI-TRACKER PLUS II READER
MODEL: 1034 RFID READER
FCC SUBPART B – RADIATED EMISSIONS – 11-29-07

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**



REAR VIEW

AVID IDENTIFICATION SYSTEMS, INC.
MINI-TRACKER PLUS II READER
MODEL: 1034 RFID READER
FCC SUBPART B – RADIATED EMISSIONS – 11-29-07

**PHOTOGRAPH SHOWING THE EUT CONFIGURATION
FOR MAXIMUM EMISSIONS**

APPENDIX E

DATA SHEETS

Test Location : Compatible Electronics **Page** : 1/2
Customer : Avid ID Systems, Inc. **Date** : 11/28/2007
Manufacturer : Avid ID Systems, Inc. **Time** : 14:04:50
Eut name : MiniTracKer Plus II Reader **Lab** : D
Model : 1034 RFID Reader **Test Distance** : 3
Serial # : N/A
Specification : FCC Class B
Distance correction factor (20 * log(test/spec)) : 0.00
Test Mode : **Test Type:** Spurious Emissions
Test Range: 9 kHz to 1 GHz Vertical and Horizontal)
Tx Frequency: 125 kHz - **Digital Clock:** 12 MHz
Tested Engineer: James Ross

Pol	Freq MHz	Rdng dBuV	Cable loss dB	Ant factor dB	Amp gain dB	Cor'd rdg = R dBuV	Limit = L dBuV/m	Delta R-L dB
V	144.075	56.80	2.13	13.15	38.22	33.86	43.50	-9.64
V	156.075	52.00	2.23	13.57	38.25	29.54	43.50	-13.96
V	168.066	56.10	2.27	14.83	38.35	34.85	43.50	-8.65
V	180.066	53.10	2.32	16.40	38.40	33.42	43.50	-10.08
V	204.066	53.90	2.43	16.97	38.40	34.90	43.50	-8.60
V	216.066	57.90	2.53	16.30	38.40	38.33	46.00	-7.67
V	228.066	54.00	2.60	15.67	38.39	33.88	46.00	-12.12
V	240.066	61.90	2.60	15.07	38.34	41.23	46.00	-4.77
V	252.066	50.80	2.63	14.98	38.30	30.11	46.00	-15.89
V	276.066	52.00	2.90	19.15	38.30	35.76	46.00	-10.24
V	288.066	51.30	2.95	20.76	38.25	36.77	46.00	-9.23
V	192.071	61.20	2.37	16.89	38.40	42.06	43.50	-1.44
V	192.071Qp	60.89	2.37	16.89	38.40	41.75	43.50	-1.75
V	300.081	50.10	3.00	13.50	38.20	28.40	46.00	-17.60
V	312.081	49.60	3.08	13.82	38.20	28.29	46.00	-17.71
V	360.081	44.70	3.34	14.96	38.18	24.82	46.00	-21.18
V	384.081	45.50	3.44	15.48	38.13	26.28	46.00	-19.72
V	396.081	45.40	3.49	15.72	38.11	26.50	46.00	-19.50
V	420.081	48.70	3.62	16.06	37.98	30.41	46.00	-15.59
V	432.081	51.90	3.70	16.21	37.90	33.91	46.00	-12.09
V	444.125	52.90	3.77	16.36	37.83	35.20	46.00	-10.80
V	456.074	54.30	3.83	16.51	37.80	36.83	46.00	-9.17
V	468.081	53.60	3.87	16.65	37.80	36.32	46.00	-9.68
V	480.077	54.90	3.92	16.78	37.80	37.80	46.00	-8.20
V	492.083	56.90	3.97	16.91	37.80	39.98	46.00	-6.02
V	504.083	58.60	4.03	17.10	37.83	41.91	46.00	-4.09
V	516.080	58.40	4.13	17.38	37.90	42.02	46.00	-3.98
V	528.080	57.80	4.23	17.66	37.97	41.72	46.00	-4.28
V	540.086	58.50	4.32	17.93	38.04	42.71	46.00	-3.29
V	552.086	57.60	4.42	18.20	38.09	42.13	46.00	-3.87
V	564.086	57.70	4.52	18.46	38.01	42.66	46.00	-3.34
V	576.086	56.20	4.61	18.71	37.94	41.58	46.00	-4.42
V	588.086	54.40	4.71	18.96	37.87	40.20	46.00	-5.80
V	600.093	54.70	4.80	19.20	37.80	40.90	46.00	-5.10
V	612.093	49.90	4.90	19.37	37.80	36.37	46.00	-9.63

Test Location : Compatible Electronics **Page** : 2/2
Customer : Avid ID Systems, Inc. **Date** : 11/28/2007
Manufacturer : Avid ID Systems, Inc. **Time** : 14:04:50
Eut name : MiniTracKer Plus II Reader **Lab** : D
Model : 1034 RFID Reader **Test Distance** : 3
Serial # : N/A
Specification : FCC Class B
Distance correction factor (20 * log(test/spec)) : 0.00
Notes : **Test Type:** Spurious Emissions
Test Range: 9 kHz to 1 GHz Vertical and Horizontal
Tx Frequency: 125 kHz - **Digital Clock:** 12 MHz
Tested Engineer: James Ross

Pol	Freq MHz	Rdng dBuV	Cable loss dB	Ant factor dB	Amp gain dB	Cor'd rdg = R dBuV	Limit = L dBuV/m	Delta R-L dB
V	624.101	48.20	5.00	19.53	37.80	34.93	46.00	-11.07
V	660.101	41.70	5.26	20.01	37.76	29.21	46.00	-16.79
V	720.101	43.80	5.54	20.73	37.72	32.35	46.00	-13.65
V	768.094	44.30	5.60	21.26	37.79	33.38	46.00	-12.62
H	300.076	47.20	3.00	13.50	38.20	25.50	46.00	-20.50
H	336.076	46.20	3.22	14.41	38.20	25.63	46.00	-20.37
H	384.068	46.40	3.44	15.48	38.13	27.18	46.00	-18.82
H	408.079	44.00	3.55	15.91	38.05	25.41	46.00	-20.59
Note: The above readings are all EUT clock (12 MHz) emissions. The below readings are spurious emissions taken between the clocks on 11/29/07								
V	33.134	50.20	1.14	10.92	38.37	23.90	40.00	-16.10
V	37.779	47.90	1.32	9.71	38.32	20.61	40.00	-19.39
V	43.591	46.70	1.36	9.28	38.26	19.08	40.00	-20.92
V	69.191	47.00	1.58	6.57	38.39	16.75	40.00	-23.25
V	239.817	47.90	2.60	15.08	38.34	27.25	46.00	-18.75
V	240.389	49.30	2.60	15.06	38.34	28.62	46.00	-17.38
H	32.264	44.30	1.10	11.37	38.37	18.40	40.00	-21.60
H	239.773	43.00	2.60	15.09	38.34	22.35	46.00	-23.65
H	240.451	42.20	2.60	15.05	38.34	21.52	46.00	-24.48
V	479.768	43.30	3.92	16.78	37.80	26.20	46.00	-19.80
V	480.568	44.10	3.92	16.79	37.80	27.01	46.00	-18.99



Company Name:	Avid ID Systems, Inc.	DATE:	11/28/07
EUT:	MiniTracKer Plus II Reader	EUT S/N:	N/A
EUT MODEL:	1034 RFID Reader	LOCATION:	Lab D
SPECIFICATION:	FCC PART 15.209	TEST ENGINEER:	J. Ross