FCC PART 15, SUBPART C
AND PART 22 TEST REPORT

for

FLEET MANAGEMENT SYSTEM

Model: FMS3500

Prepared for

AXIOM NAVIGATION, INC.
800 SOUTH HARBOR BOULEVARD
ANAHEIM, CALIFORNIA 92805

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DATE: JUNE 18, 2001

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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 or any other agency of the U.S. Government.

Device Tested:	Fleet Management System Model: FMS3500 S/N: N/A
Product Description:	See Expository Statement.
Modifications:	The EUT was not modified during the testing.
Manufacturer:	Axiom Navigation, Inc. 800 South Harbor Boulevard Anaheim, California 92805
Test Dates:	May 21, 25 and 31, 2001
File # For Canada:	IC2154-D
Test Specifications:	EMI requirements CFR Title 47, Part 15 Subpart C, Sections 15.205, 15.209, and 15.249; CFR Title 47 Part 22 Section 22.917 (e);
Test Procedure:	ANSI C63.4: 1992
Test Deviations:	The test procedure was not deviated from during the testing.

SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 450 kHz - 30 MHz	This test was not performed because the EUT operates on 12 Vdc only and will not be plugged into the AC public mains.
2	Radiated RF Emissions on the Digital Portion and Transmitter, 10 kHz - 9300 MHz	Complies with the limits of CFR Title 47, Part 15 Subpart C, sections 15.205, 15.209, and 15.249
3	Radiated Spurious Emissions on the Cellular Phone Module	Complies with the limits of CFR Title 47, Part 22 Section 22.917 (e)

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the Fleet Management System Model: FMS3500. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 1992. 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 specification limits defined by CFR Title 47, Part 15, Subpart C, sections 15.205, 15.209, and 15.249; and CFR Title 47, Part 22, Section 22.917 (e).

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

Axiom Navigation, Inc.

W.A. Duke, Jr. "Buc"	Field and Test Support Manager
Jeff Burd	FMS Project Manger

Compatible Electronics Inc.

Kyle Fujimoto	Test Engineer
Scott McCutchan	Lab Manager

2.4 Date Test Sample was Received

The test sample was received on May 21, 2001.

2.5 Disposition of the Test Sample

The test sample was returned to Axiom Navigation, Inc. on May 31, 2001.

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
Tx	Transmitter
Rx	Receiver

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 1992	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz.
CFR Title 47, Part 22	FCC Rules – Public Mobile Services

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration - EMI

Specifics of the EUT and Peripherals Tested

The EUT can be used with two different 900 MHz antennas and four different cellular modem module antennas.

900 MHz antennas that can be used with the EUT
1. Axiom Navigation, Inc. (M/N: FMA02A-5A15) Dual Band Antenna (note this antenna is used with cellular modem module antennas #1 through #3 listed below)
2. Antenax (M/N: QW900) ¼ wave antenna (note this antenna can only be used with the Allis Magnetic Mount antenna)

Cellular modem module antennas that can be used with the EUT
1. Maxrad (M/N: BMMG835), magnetic mount ¼, wave, 0 dBi
2. Maxrad (M/N: BMMG8353), magnetic mount, ½ wave, 5 dBi
3. Antenna Specialists (M/N: APD827.1M), window mount antenna, 2 dBi
4. Allis (M/N: GPS-GC), magnetic mount, 3 dBi

The EUT was tested in two configurations for the 900 MHz and Digital Portion testing.

Configuration #1 (used with the #1 900 MHz antenna): The Fleet Management System Model: FMS3500 (EUT) was connected to a DC Power Supply, 900 MHz antenna, and cellular modem module antenna via its Power and I/O; 900 MHz and GPS ports; and cell ports, respectively. The EUT was continuously transmitting and receiving. The low, middle, and high channels were checked.

Configuration #2 (used with the #2 900 MHz antenna): The Fleet Management System Model: FMS3500 (EUT) was connected to a DC Power Supply, 900 MHz antenna, and cellular modem module antenna via its Power and I/O; 900 MHz, and GPS and cell ports, respectively. The EUT was continuously transmitting and receiving. The low, middle, and high channels were checked.

The EUT was also tested using two different cellular modem modules, the CMM 8600 and CMM 8700. Both cellular modem module's are from Standard Communications Corporation. The cellular modem modules are have exactly the same power output and functionality, the only difference is that the CMM 8700 has a lower receiver current than the CMM 8600.

The cellular modem modules have already been approved by the FCC as a module. The CMM 8600 has an FCC-ID of **APV0896** and the CMM 8700 has an FCC-ID of **APV09001.**

Description of Test Configuration – EMI (continued)

The EUT was tested in the following configuration for testing the radiated spurious emissions from the Cellular Modem Module:

The Fleet Management System Model: FMS3500 (EUT) was connected to a DC Power Supply and 900 MHz antenna via its Power and I/O; and 900 MHz and GPS ports, respectively. The cell port was terminated with a 50-ohm terminator. The Cellular Modem Module was set at the middle of the frequency band and set at maximum output power. The EUT was continuously transmitting the cellular modem module carrier.

Note: the data port is for diagnostic purposes only and will not be connected during normal operation.

The antenna connectors are regular SMA connectors. The EUT will be professionally installed by qualified personnel only.

The final radiated data was taken for both 900 MHz antennas for the intentional radiator portion. For the unintentional radiator portion, the emissions were determined to be the highest when the 900 MHz antenna #1 was used. The radiated spurious emissions for the cellular modem module were taken for both the CMM 8600 and CMM 8700 as described above. Please see Appendix D for the data sheets.

4.1.1 Cable Construction and Termination

Cable 1

This is a 1 meter braid shielded cable connecting the EUT's cell port to the 50 ohm terminator. It has an SMA connector at the both ends. An SMA to BNC adapter was also on the 50 ohm terminator end. The shield of the cable was grounded to the chassis via the connectors.

Cable 2 **(Used only with the 900 MHz antenna #1)** This is a 5 meter braid shielded cable connecting the EUT's 900 MHz and GPS ports to the 900 MHz antenna #1. It has 2 SMA connectors at the EUT end and is hard wired into the 900 MHz antenna #1. The cable was bundled to a length of 1 meter. The shield of the cable was grounded to the chassis via the connectors.

Cable 3 This is a 2 meter unshielded cable connecting the EUT's Power and I/O port to the DC power supply. It has a 20 pin Molex connector at the EUT end and 2 banana plug connectors at the power supply end. The cable was bundled to a length of 1 meter.

Cable 4 **(Used only with the 900 MHz antenna #2)** This is a 5 meter braid shielded cable connecting the EUT's 900 MHz port to the 900 MHz antenna #2. It has an SMA connector at the EUT end and is hard wired into the 900 MHz antenna #2. The cable was bundled to a length of 1 meter. The shield of the cable was grounded to the chassis via the connector.

Cable 5 **(Used only with the 900 MHz antenna #2)** This is a 4 meter braid shielded cable connecting the EUT's GPS and cell ports to the GPS/Cellular antenna. It has two SMA connectors at the EUT end and is hard wired into the GPS/Cellular antenna. The cable was bundled to a length of 1 meter. The shield of the cable was grounded to the chassis via the connectors.

Cable 6 **(Used only with the 900 MHz antenna #1)** This is a 2 meter braid shielded cable connecting the EUT's cell port to the magnetic mount ½ wave antenna. It has an SMA connector at the EUT end and is hard wired into the magnetic mount ½ wave antenna. The cable was bundled to a length of 1 meter. The shield of the cable was grounded to the chassis via the connector.

5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
FLEET MANAGEMENT SYSTEM (EUT)	AXIOM NAVIGATION, INC.	FMS3500	N/A	**PMHFMS3500**
DC POWER SUPPLY	IPC	RPS-712	N/A	**N/A**
MAGNETIC MOUNT ½ WAVE ANTENNA (used to terminate the EUT when the 900 MHz antenna #1 was used)	MAXRAD	BMMG8353	N/A	**N/A**
MAGNETIC MOUNT GPS/CELLULAR ANTENNA (used to terminate the EUT when the 900 MHz antenna #2 was used)	ALLIS	GPS-GC	N/A	**N/A**
50 OHM TERMINATOR	N/A	N/A	N/A	**N/A**
900 MHz ANTENNA #1	AXIOM NAVIGATION, INC.	FMA02A-5A15	N/A	**N/A**
900 MHz ANTENNA #2	ANTENAX	QW900	N/A	**N/A**

5.2 EMI Test Equipment

EQUIPMENT TYPE	MANU-FACTURER	MODEL NUMBER	SERIAL NUMBER	CAL. DATE	CAL. DUE DATE
Spectrum Analyzer	Hewlett Packard	8566B	3701A22262	June 24, 2000	June 24, 2001
Preamplifier	Com Power	PA-102	1017	Jan. 5, 2001	Jan. 5, 2002
Quasi-Peak Adapter	Hewlett Packard	85650A	2811A01363	June 24, 2000	June 24, 2001
Biconical Antenna	Com Power	AB-100	1548	Oct. 16, 2000	Oct. 16, 2001
Log Periodic Antenna	Com Power	AL-100	16101	Oct. 16, 2000	Oct. 16, 2001
Turntable	Com Power	TT-100	N/A	N/A	N/A
Computer	Hewlett Packard	HP98561A	2522A05178	N/A	N/A
Printer	Hewlett Packard	2225A	2925S33268	N/A	N/A
Plotter	Hewlett Packard	7440A	8726K38417	N/A	N/A
Microwave Preamplifier	Com-Power	PA-122	25195	Jan. 9, 2001	Jan. 9, 2002
Horn Antenna	Antenna Research	DRG-118/A	1053	Jan. 15, 2001	Jan. 15, 2002
Loop Antenna	Com-Power	AL-130	25309	May 25, 2000	May 25, 2001

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 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-102 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.

For the peak readings below 1000 MHz that were over the spec limit or within 3 dB of the spec limit, the quasi-peak adapter was used.

For the peak readings above 1000 MHz that were over the spec limit or within 3 dB of the spec limit, the readings were averaged manually by narrowing the video filter down to 10 Hz and slowing the sweep time to keep the amplitude reading calibrated.

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 9.3 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: 1992. 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.

Radiated Emissions (Spurious and Harmonics) Test (con't)

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 D.

7.2 Band Edge Plots of the Low and High Channels

Spectral plots of both the low and high channels were taken of the EUT to show that the emissions at the band edges (902 and 928 MHz) were attenuated by at least 50 dB below the level of the fundamental or to the general radiated emissions limits in FCC Title 47, Subpart C, section 15.209, whichever is the lesser attenuation. A preamplifier was used to boost the signal level at the band edges for easier comparison to the spec limit. The spectral plots are located in Appendix D.

8. CONCLUSIONS

The Fleet Management System Model: FMS3500 meets all of the specification limits defined in CFR Title 47, Part 15, Subpart C, sections 15.205, 15.209, and 15.249; and CFR Title 47, Part 22, Section 22.917 (e).

APPENDIX A

MODIFICATIONS TO THE EUT

MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC 15.249 or FCC 22.917 (e) 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 the testing.

APPENDIX B

ADDITIONAL MODELS COVERED UNDER THIS REPORT

ADDITIONAL MODELS COVERED UNDER THIS REPORT

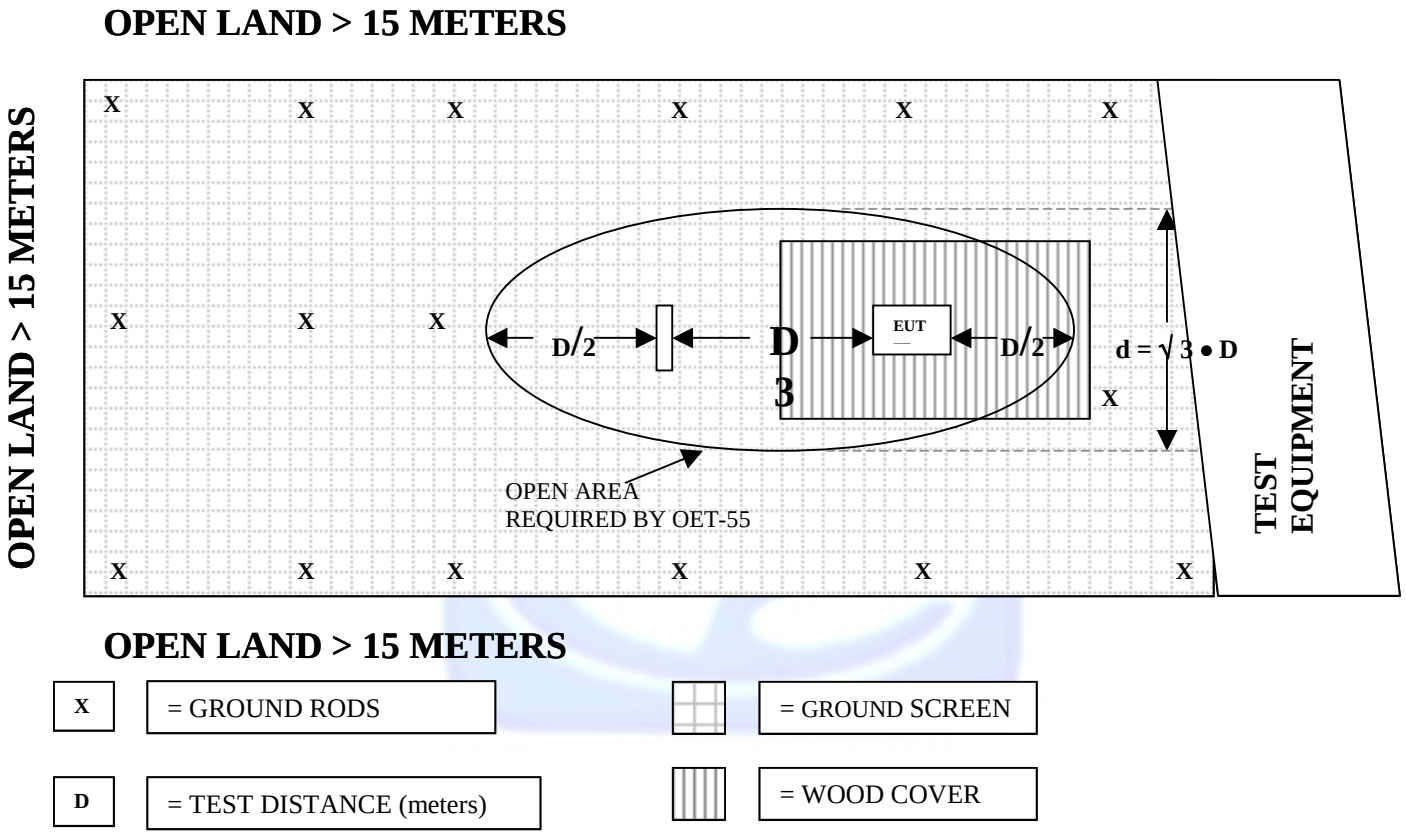
USED FOR THE PRIMARY TEST	Fleet Management System Model: FMS3500 S/N: N/A

No additional models were covered under this report.

APPENDIX C

DIAGRAMS, CHARTS AND PHOTOS

FIGURE 1: PLOT MAP AND LAYOUT OF RADIATED SITE



FRONT VIEW

AXIOM NAVIGATION, INC.
FLEET MANAGEMENT SYSTEM WITH 900 MHz ANTENNA #1
MODEL: FMS3500
FCC SUBPART C - RADIATED EMISSIONS – 5-21-01 AND 5-25-01

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

AXIOM NAVIGATION, INC.
FLEET MANAGEMENT SYSTEM WITH ANTENNA #1
MODEL: FMS3500
FCC SUBPART C - RADIATED EMISSIONS – 5-21-01 AND 5-25-01

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

FRONT VIEW

AXIOM NAVIGATION, INC.
FLEET MANAGEMENT SYSTEM WITH 900 MHz ANTENNA #2
MODEL: FMS3500
FCC SUBPART C - RADIATED EMISSIONS – 5-21-01 AND 5-25-01

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

REAR VIEW

AXIOM NAVIGATION, INC.
FLEET MANAGEMENT SYSTEM WITH ANTENNA #2
MODEL: FMS3500
FCC SUBPART C - RADIATED EMISSIONS – 5-21-01 AND 5-25-01

PHOTOGRAPH SHOWING THE EUT CONFIGURATION FOR MAXIMUM EMISSIONS

COM-POWER AB-100

BICONICAL ANTENNA

S/N: 01548

CALIBRATION DATE: OCTOBER 16, 2000

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	14.01	120	10.33
35	13.63	125	11.61
40	13.26	140	12.70
45	11.62	150	12.95
50	11.03	160	13.58
60	8.52	175	14.82
70	8.94	180	14.84
80	8.17	200	14.80
90	8.08	250	16.42
100	8.64	300	20.26

COM-POWER AL-100

LOG PERIODIC ANTENNA

S/N: 16101

CALIBRATION DATE: OCTOBER 16, 2000

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
300	12.96	700	19.24
400	16.92	800	21.37
500	16.73	900	22.13
600	16.32	1000	22.19

COM-POWER PA-102

PREAMPLIFIER

S/N: 1017

CALIBRATION DATE: JANUARY 5, 2001

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	39.0	300	38.9
40	39.2	350	38.9
50	39.2	400	38.6
60	39.2	450	38.5
70	38.8	500	38.7
80	38.6	550	38.4
90	38.5	600	38.8
100	38.7	650	38.5
125	39.2	700	38.6
150	38.8	750	38.1
175	38.8	800	37.9
200	39.0	850	38.0
225	38.8	900	37.8
250	38.8	950	36.9
275	39.0	1000	38.2

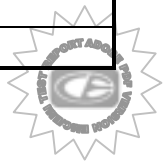
COM-POWER PA-122

MICROWAVE PREAMPLIFIER

S/N: 25195

CALIBRATION DATE: JANUARY 9, 2001

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	33.1	9.5	30.7
1.1	33.0	10.0	31.6
1.2	33.2	11.0	30.6
1.3	33.0	12.0	28.5
1.4	32.4	13.0	31.5
1.5	32.3	14.0	33.2
1.6	32.1	15.0	31.5
1.7	32.0	16.0	30.2
1.8	31.8	17.0	31.6
1.9	32.2	18.0	31.7
2.0	32.6		
2.5	31.9		
3.0	31.7		
3.5	31.7		
4.0	32.3		
4.5	31.5		
5.0	32.3		
5.5	34.2		
6.0	30.9		
6.5	32.0		
7.0	32.1		
7.5	33.0		
8.0	31.9		
8.5	31.9		
9.0	31.3		



ANTENNA RESEARCH DRG-118/A

HORN ANTENNA

S/N: 1053

CALIBRATION DATE: JANUARY 15, 2001

FREQUENCY (GHz)	FACTOR (dB)	FREQUENCY (GHz)	FACTOR (dB)
1.0	25.4	9.5	39.6
1.5	26.7	10.0	39.7
2.0	29.6	10.5	40.8
2.5	30.7	11.0	40.4
3.0	31.2	11.5	42.2
3.5	32.3	12.0	43.0
4.0	33.2	12.5	42.6
4.5	33.2	13.0	41.3
5.0	34.8	13.5	40.3
5.5	35.4	14.0	40.9
6.0	36.6	14.5	44.0
6.5	36.6	15.0	43.3
7.0	38.7	15.5	42.7
7.5	38.6	16.0	42.6
8.0	37.9	16.5	42.8
8.5	37.9	17.0	43.5
9.0	39.9	17.5	44.6
		18.0	42.2

Com-Power Corporation

(949) 587-9800

Antenna Calibration

Antenna Type:	Loop Antenna
Model:	AL-130
Serial Number:	25309
Calibration Date:	05/25/00

Frequency MHz	Magnetic (dB/m)	Electric dB/m
0.009	-41.0	10.5
0.01	-41.0	10.5
0.02	-41.9	9.6
0.05	-41.9	9.6
0.075	-41.8	9.7
0.1	-42.2	9.3
0.15	-42.2	9.3
0.25	-40.7	10.8
0.5	-42.1	9.4
0.75	-40.9	10.6
1	-41.3	10.2
2	-40.8	10.7
3	-41.1	10.4
4	-41.2	10.3
5	-40.7	10.8
10	-40.6	10.9
15	-42.0	9.5
20	-42.0	9.5
25	-42.9	8.6
30	-42.3	9.2

Trans. Antenna Height	2 meter
Receiving Antenna Height	2 meter

APPENDIX D

DATA SHEETS

RADIATED EMISSIONS

FOR THE 900 MHz ANTENNA #1

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

COMPANY	**AXIOM NAVIGATION, INC.**	**DATE**	**5/25/01**
EUT	**FLEET MANAGEMENT SYSTEM**	**DUTY CYCLE**	**N/A**
MODEL	**FMS3500**	**PEAK TO AVG**	**N/A**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**KYLE FUJIMOTO**	**LAB**	**D**

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)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
903.3000	57.9	57.8 A	H	1.5	90	Y	LOW	22.1	5.0	0.0	**85.0**	**-9.0**	**94.0**	
903.3000	65.2	65.1 A	V	1.5	0	Y	LOW	22.1	5.0	0.0	**92.3**	**-1.7**	**94.0**	
912.3000	58.0	57.9 A	H	1.5	90	Y	MID	22.1	5.1	0.0	**85.1**	**-8.9**	**94.0**	
912.3000	65.5	65.4 A	V	1.5	180	Y	MID	22.1	5.1	0.0	**92.6**	**-1.4**	**94.0**	
921.3000	58.6	58.5 A	H	1.5	90	Y	HIGH	22.1	5.1	0.0	**85.8**	**-8.2**	**94.0**	
921.3000	64.2	64.1 A	V	1.5	90	Y	HIGH	22.1	5.1	0.0	**91.4**	**-2.6**	**94.0**	

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

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

COMPANY	**AXIOM NAVIGATION, INC.**	**DATE**	**5/25/01**
EUT	**FLEET MANAGEMENT SYSTEM**	**DUTY CYCLE**	**N/A**
MODEL	**FMS3500**	**PEAK TO AVG**	**N/A**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**KYLE FUJIMOTO**	**LAB**	**D**

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)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
1806.6000	43.2	A	H	1.5	180	Y	LOW	28.5	3.4	31.8	**43.3**	**-10.7**	**54.0**	
1806.6000	46.5	A	V	1.5	180	Y	LOW	28.5	3.4	31.8	**46.6**	**-7.4**	**54.0**	
1824.6000	45.1	A	H	1.5	90	Y	MID	28.6	3.4	31.9	**45.2**	**-8.8**	**54.0**	
1824.6000	47.5	A	V	1.5	90	Y	MID	28.6	3.4	31.9	**47.6**	**-6.4**	**54.0**	
1842.6000	47.6	A	H	1.5	0	Y	HIGH	28.7	3.4	32.0	**47.7**	**-6.3**	**54.0**	
1842.6000	48.7	A	V	1.5	90	Y	HIGH	28.7	3.4	32.0	**48.8**	**-5.2**	**54.0**	

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

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

COMPANY	**AXIOM NAVIGATION, INC.**	**DATE**	**5/25/01**
EUT	**FLEET MANAGEMENT SYSTEM**	**DUTY CYCLE**	**N/A**
MODEL	**FMS3500**	**PEAK TO AVG**	**N/A**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**KYLE FUJIMOTO**	**LAB**	**D**

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)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
2709.9000	41.7	A	H	1.5	180	Y	LOW	30.9	4.2	31.8	**45.0**	**-9.0**	**54.0**	
2709.9000	42.1	A	V	1.5	180	Y	LOW	30.9	4.2	31.8	**45.4**	**-8.6**	**54.0**	
2736.9000	43.6	A	H	1.5	180	Y	MID	30.9	4.3	31.8	**47.0**	**-7.0**	**54.0**	
2736.9000	39.7	A	V	1.5	90	Y	MID	30.9	4.3	31.8	**43.1**	**-10.9**	**54.0**	
2763.9000	45.2	A	H	1.5	90	Y	HIGH	31.0	4.4	31.8	**48.7**	**-5.3**	**54.0**	
2763.9000	42.5	A	V	1.0	180	Y	HIGH	31.0	4.4	31.8	**46.0**	**-8.0**	**54.0**	

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

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

COMPANY	**AXIOM NAVIGATION, INC.**	**DATE**	**5/25/01**
EUT	**FLEET MANAGEMENT SYSTEM**	**DUTY CYCLE**	**N/A**
MODEL	**FMS3500**	**PEAK TO AVG**	**N/A**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**KYLE FUJIMOTO**	**LAB**	**D**

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)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
3613.2000	37.8	A	H	1.5	90	Y	LOW	32.5	5.1	31.8	**43.6**	**-10.4**	**54.0**	
3613.2000	38.7	A	V	1.5	90	Y	LOW	32.5	5.1	31.8	**44.5**	**-9.5**	**54.0**	
3649.2000	36.2	A	H	1.5	180	Y	MID	32.6	5.1	31.9	**42.0**	**-12.0**	**54.0**	
3649.2000	37.6	A	V	1.5	90	Y	MID	32.6	5.1	31.9	**43.4**	**-10.6**	**54.0**	
3685.2000	38.7	A	H	1.5	90	Y	HIGH	32.6	5.1	31.9	**44.6**	**-9.4**	**54.0**	
3685.2000	37.6	A	V	1.5	270	Y	HIGH	32.6	5.1	31.9	**43.5**	**-10.5**	**54.0**	

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

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

COMPANY	**AXIOM NAVIGATION, INC.**	**DATE**	**5/25/01**
EUT	**FLEET MANAGEMENT SYSTEM**	**DUTY CYCLE**	**N/A**
MODEL	**FMS3500**	**PEAK TO AVG**	**N/A**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**KYLE FUJIMOTO**	**LAB**	**D**

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)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
4516.5000	41.2	A	H	1.5	180	Y	LOW	33.3	6.2	31.5	**49.2**	**-4.8**	**54.0**	
4516.5000	38.7	A	V	1.5	180	Y	LOW	33.3	6.2	31.5	**46.7**	**-7.3**	**54.0**	
4561.5000	36.7	A	H	1.5	180	Y	MID	33.4	6.1	31.6	**44.6**	**-9.4**	**54.0**	
4561.5000	35.7	A	V	1.5	90	Y	MID	33.4	6.1	31.6	**43.6**	**-10.4**	**54.0**	
4606.5000	35.6	A	H	1.5	180	Y	HIGH	33.5	5.9	31.7	**43.3**	**-10.7**	**54.0**	
4606.5000	36.2	A	V	1.5	180	Y	HIGH	33.5	5.9	31.7	**43.9**	**-10.1**	**54.0**	

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

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

COMPANY	**AXIOM NAVIGATION, INC.**	**DATE**	**5/25/01**
EUT	**FLEET MANAGEMENT SYSTEM**	**DUTY CYCLE**	**N/A**
MODEL	**FMS3500**	**PEAK TO AVG**	**N/A**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**KYLE FUJIMOTO**	**LAB**	**D**

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)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
5419.8000	38.2	A	H	1.5	90	Y	LOW	35.3	6.1	33.9	**45.7**	**-8.3**	**54.0**	
5419.8000	37.6	A	V	1.5	90	Y	LOW	35.3	6.1	33.9	**45.1**	**-8.9**	**54.0**	
5473.8000	38.5	A	H	1.5	90	Y	MID	35.4	6.2	34.1	**45.9**	**-8.1**	**54.0**	
5473.8000	37.5	A	V	1.5	90	Y	MID	35.4	6.2	34.1	**44.9**	**-9.1**	**54.0**	
5527.8000	36.5	A	H	1.0	180	Y	HIGH	35.5	6.3	34.0	**44.2**	**-9.8**	**54.0**	
5527.8000	37.5	A	V	1.5	180	Y	HIGH	35.5	6.3	34.0	**45.2**	**-8.8**	**54.0**	

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

** DELTA = SPEC LIMIT - CORRECTED READING

No Harmonics Nor Emissions Found after the 6th Harmonic

RADIATED EMISSIONS

FOR THE 900 MHz ANTENNA #2

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

COMPANY	**AXIOM NAVIGATION, INC.**	**DATE**	**5/21/01**
EUT	**FLEET MANGEMENT SYSTEM**	**DUTY CYCLE**	**N/A**
MODEL	**FMS3500**	**PEAK TO AVG**	**N/A**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**KYLE FUJIMOTO**	**LAB**	**D**

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)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
903.3000	61.7	61.6 QP	H	2.0	90	Y	HIGH	22.1	5.0	0.0	**88.8**	**-5.2**	**94.0**	
903.3000	66.7	66.6 QP	V	1.5	90	Y	HIGH	22.1	5.0	0.0	**93.8**	**-0.2**	**94.0**	
912.3000	58.9	58.8 QP	H	1.0	90	Y	HIGH	22.1	5.1	0.0	**86.0**	**-8.0**	**94.0**	
912.3000	66.7	66.6 QP	V	1.5	90	Y	HIGH	22.1	5.1	0.0	**93.8**	**-0.2**	**94.0**	
921.3000	59.4	59.3 QP	H	1.5	180	Y	HIGH	22.1	5.1	0.0	**86.6**	**-7.4**	**94.0**	
921.3000	66.1	66.0 QP	V	1.0	90	Y	HIGH	22.1	5.1	0.0	**93.3**	**-0.7**	**94.0**	

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

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

COMPANY	**AXIOM NAVIGATION, INC.**	**DATE**	**5/21/01**
EUT	**FLEET MANGEMENT SYSTEM**	**DUTY CYCLE**	**N/A**
MODEL	**FMS3500**	**PEAK TO AVG**	**N/A**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**KYLE FUJIMOTO**	**LAB**	**D**

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)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
1806.6000	45.5	A	H	2.0	180	Y	HIGH	28.5	3.4	31.8	**45.6**	**-8.4**	**54.0**	
1806.6000	48.0	A	V	1.5	90	Y	HIGH	28.5	3.4	31.8	**48.1**	**-5.9**	**54.0**	
1824.6000	43.8	A	H	1.5	180	Y	MID	28.6	3.4	31.9	**43.9**	**-10.1**	**54.0**	
1824.6000	46.3	A	V	1.5	90	Y	MID	28.6	3.4	31.9	**46.4**	**-7.6**	**54.0**	
1842.6000	40.3	A	H	1.5	90	Y	HIGH	28.7	3.4	32.0	**40.4**	**-13.6**	**54.0**	
1842.6000	47.1	A	V	1.5	0	Y	HIGH	28.7	3.4	32.0	**47.2**	**-6.8**	**54.0**	

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

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

COMPANY	**AXIOM NAVIGATION, INC.**	**DATE**	**5/21/01**
EUT	**FLEET MANGEMENT SYSTEM**	**DUTY CYCLE**	**N/A**
MODEL	**FMS3500**	**PEAK TO AVG**	**N/A**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**KYLE FUJIMOTO**	**LAB**	**D**

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)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
2709.9000	42.5	A	H	1.5	180	Y	HIGH	30.9	4.2	31.8	**45.8**	**-8.2**	**54.0**	
2709.9000	40.2	A	V	1.5	0	Y	HIGH	30.9	4.2	31.8	**43.5**	**-10.5**	**54.0**	
2736.9000	41.2	A	H	1.5	180	Y	MID	30.9	4.3	31.8	**44.6**	**-9.4**	**54.0**	
2736.9000	39.5	A	V	1.5	180	Y	MID	30.9	4.3	31.8	**42.9**	**-11.1**	**54.0**	
2763.9000	40.3	A	H	1.5	180	Y	HIGH	31.0	4.4	31.8	**43.8**	**-10.2**	**54.0**	
2763.9000	41.8	A	V	1.0	0	Y	HIGH	31.0	4.4	31.8	**45.3**	**-8.7**	**54.0**	

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

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

COMPANY	**AXIOM NAVIGATION, INC.**	**DATE**	**5/21/01**
EUT	**FLEET MANGEMENT SYSTEM**	**DUTY CYCLE**	**N/A**
MODEL	**FMS3500**	**PEAK TO AVG**	**N/A**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**KYLE FUJIMOTO**	**LAB**	**D**

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)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
3613.2000	37.1	A	H	1.5	180	Y	LOW	32.5	5.1	31.8	**42.9**	**-11.1**	**54.0**	
3613.2000	37.8	A	V	1.5	0	Y	LOW	32.5	5.1	31.8	**43.6**	**-10.4**	**54.0**	
3649.2000	38.5	A	H	1.5	180	Y	MID	32.6	5.1	31.9	**44.3**	**-9.7**	**54.0**	
3649.2000	39.3	A	V	1.5	180	Y	MID	32.6	5.1	31.9	**45.1**	**-8.9**	**54.0**	
3685.2000	39.4	A	H	1.5	180	Y	HIGH	32.6	5.1	31.9	**45.3**	**-8.7**	**54.0**	
3685.2000	40.0	A	V	2.0	90	Y	HIGH	32.6	5.1	31.9	**45.9**	**-8.1**	**54.0**	

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

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

COMPANY	**AXIOM NAVIGATION, INC.**	**DATE**	**5/21/01**
EUT	**FLEET MANGEMENT SYSTEM**	**DUTY CYCLE**	**N/A**
MODEL	**FMS3500**	**PEAK TO AVG**	**N/A**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**KYLE FUJIMOTO**	**LAB**	**D**

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)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
4516.5000	38.4	A	H	1.5	90	Y	HIGH	33.3	6.2	31.5	**46.4**	**-7.6**	**54.0**	
4516.5000	37.9	A	V	1.5	90	Y	HIGH	33.3	6.2	31.5	**45.9**	**-8.1**	**54.0**	
4561.5000	38.5	A	H	1.5	90	Y	MID	33.4	6.1	31.6	**46.4**	**-7.6**	**54.0**	
4561.5000	39.3	A	V	1.5	0	Y	MID	33.4	6.1	31.6	**47.2**	**-6.8**	**54.0**	
4606.5000	39.4	A	H	1.5	180	Y	HIGH	33.5	5.9	31.7	**47.1**	**-6.9**	**54.0**	
4606.5000	39.0	A	V	1.5	90	Y	HIGH	33.5	5.9	31.7	**46.7**	**-7.3**	**54.0**	

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

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 15.205 AND 15.249)

COMPANY	**AXIOM NAVIGATION, INC.**	**DATE**	**5/21/01**
EUT	**FLEET MANGEMENT SYSTEM**	**DUTY CYCLE**	**N/A**
MODEL	**FMS3500**	**PEAK TO AVG**	**N/A**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**KYLE FUJIMOTO**	**LAB**	**D**

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)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
5419.8000	37.9	A	H	1.5	90	Y	LOW	35.3	6.1	33.9	**45.4**	**-8.6**	**54.0**	
5419.8000	38.2	A	V	1.5	90	Y	LOW	35.3	6.1	33.9	**45.7**	**-8.3**	**54.0**	
5473.8000	38.5	A	H	1.5	270	Y	HIGH	35.4	6.2	34.1	**45.9**	**-8.1**	**54.0**	
5473.8000	37.0	A	V	1.5	180	Y	HIGH	35.4	6.2	34.1	**44.4**	**-9.6**	**54.0**	
5527.8000	37.4	A	H	1.5	180	Y	HIGH	35.5	6.3	34.0	**45.1**	**-8.9**	**54.0**	
5527.8000	36.8	A	V	1.5	90	Y	HIGH	35.5	6.3	34.0	**44.5**	**-9.5**	**54.0**	

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

** DELTA = SPEC LIMIT - CORRECTED READING

No Harmoincs nor Emissions found beyond the 6th harmonic for the EUT

RADIATED SPURIOUS EMISSIONS

FOR THE CMM 8600 CELLULAR MODEM MODULE

114 OLINDA DRIVE, BREA, CALIFORNIA 92823 PHONE: (714) 579-0500 FAX: (714) 579-1850

RADIATED EMISSIONS (FCC SECTION 22.917 (e))

COMPANY	**AXIOM NAVIGATION, INC.**	**DATE**	**5/25/01**
EUT	**FLEET MANAGEMENT SYSTEM WITH CCM 8600 CELLULAR PHONE MODULE**	**DUTY CYCLE**	**N/A**
MODEL	**FMS3500**	**PEAK TO AVG**	**N/A**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**KYLE FUJIMOTO**	**LAB**	**D**

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)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
1670.0000	43.5	43.4 A	H	1.0	180	Y	LOW	27.7	3.3	0.0	**74.4**	**-9.9**	**84.3**	
1670.0000	45.2	45.1 A	V	1.0	180	Y	LOW	27.7	3.3	0.0	**76.1**	**-8.2**	**84.3**	

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

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 22.917 (e))

COMPANY	**AXIOM NAVIGATION, INC.**	**DATE**	**5/25/01**
EUT	**FLEET MANAGEMENT SYSTEM WITH CCM 8600 CELLULAR PHONE MODULE**	**DUTY CYCLE**	**N/A**
MODEL	**FMS3500**	**PEAK TO AVG**	**N/A**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**KYLE FUJIMOTO**	**LAB**	**D**

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)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
2505.0000	40.2	A	H	2.0	180	Y	LOW	30.7	3.5	0.0	**74.4**	**-9.9**	**84.3**	
2505.0000	40.0	A	V	1.0	180	Y	LOW	30.7	3.5	0.0	**74.2**	**-10.1**	**84.3**	

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

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 22.917 (e))

COMPANY	**AXIOM NAVIGATION, INC.**	**DATE**	**5/25/01**
EUT	**FLEET MANAGEMENT SYSTEM WITH CCM 8600 CELLULAR PHONE MODULE**	**DUTY CYCLE**	**N/A**
MODEL	**FMS3500**	**PEAK TO AVG**	**N/A**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**KYLE FUJIMOTO**	**LAB**	**D**

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)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
3340.0000	37.2	A	H	1.5	180	Y	LOW	31.9	4.9	0.0	**74.1**	**-10.2**	**84.3**	
3340.0000	34.5	A	V	1.0	180	Y	LOW	31.9	4.9	0.0	**71.4**	**-12.9**	**84.3**	

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

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 22.917 (e))

COMPANY	**AXIOM NAVIGATION, INC.**	**DATE**	**5/25/01**
EUT	**FLEET MANAGEMENT SYSTEM WITH CCM 8600 CELLULAR PHONE MODULE**	**DUTY CYCLE**	**N/A**
MODEL	**FMS3500**	**PEAK TO AVG**	**N/A**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**KYLE FUJIMOTO**	**LAB**	**D**

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)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
4175.0000	29.6	A	H	1.5	180	Y	LOW	33.2	5.3	0.0	**68.1**	**-16.2**	**84.3**	
4175.0000	32.4	A	V	1.0	180	Y	LOW	33.2	5.3	0.0	**70.9**	**-13.4**	**84.3**	

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

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 22.917 (e))

COMPANY	**AXIOM NAVIGATION, INC.**	**DATE**	**5/25/01**
EUT	**FLEET MANAGEMENT SYSTEM WITH CCM 8600 CELLULAR PHONE MODULE**	**DUTY CYCLE**	**N/A**
MODEL	**FMS3500**	**PEAK TO AVG**	**N/A**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**KYLE FUJIMOTO**	**LAB**	**D**

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)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
5010.0000	33.2	A	H	1.5	90	Y	LOW	34.8	5.8	0.0	**73.8**	**-10.5**	**84.3**	**Note: No Harmonics**
														Found After the 6th
														Harmonic for the
5010.0000	32.1	A	V	1.0	180	Y	LOW	34.8	5.8	0.0	**72.7**	**-11.6**	**84.3**	**8600 Module**

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

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED SPURIOUS EMISSIONS

FOR THE CMM 8700 CELLULAR MODEM MODULE

114 OLINDA DRIVE, BREA, CALIFORNIA 92823 PHONE: (714) 579-0500 FAX: (714) 579-1850

RADIATED EMISSIONS (FCC SECTION 22.917 (e))

COMPANY	**AXIOM NAVIGATION, INC.**	**DATE**	**5/31/01**
EUT	**FLEET MANAGEMENT SYSTEM WITH CCM 8700 CELLULAR PHONE MODULE**	**DUTY CYCLE**	**N/A**
MODEL	**FMS3500**	**PEAK TO AVG**	**N/A**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**KYLE FUJIMOTO**	**LAB**	**D**

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)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
1670.0000	50.2	50.1 A	H	2.0	180	Y	LOW	27.7	3.3	0.0	**81.1**	**-3.2**	**84.3**	
1670.0000	50.0	49.9 A	V	1.0	180	Y	LOW	27.7	3.3	0.0	**80.9**	**-3.4**	**84.3**	

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

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 22.917 (e))

COMPANY	**AXIOM NAVIGATION, INC.**	**DATE**	**5/31/01**
EUT	**FLEET MANAGEMENT SYSTEM WITH CCM 8700 CELLULAR PHONE MODULE**	**DUTY CYCLE**	**N/A**
MODEL	**FMS3500**	**PEAK TO AVG**	**N/A**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**KYLE FUJIMOTO**	**LAB**	**D**

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)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
2505.0000	38.5	A	H	1.5	0	Y	LOW	30.7	3.5	0.0	**72.7**	**-11.6**	**84.3**	
2505.0000	35.0	A	V	1.5	180	Y	LOW	30.7	3.5	0.0	**69.2**	**-15.1**	**84.3**	

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

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 22.917 (e))

COMPANY	**AXIOM NAVIGATION, INC.**	**DATE**	**5/31/01**
EUT	**FLEET MANAGEMENT SYSTEM WITH CCM 8700 CELLULAR PHONE MODULE**	**DUTY CYCLE**	**N/A**
MODEL	**FMS3500**	**PEAK TO AVG**	**N/A**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**KYLE FUJIMOTO**	**LAB**	**D**

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)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
3340.0000	32.6	A	H	1.5	180	Y	LOW	31.9	4.9	0.0	**69.5**	**-14.8**	**84.3**	
3340.0000	36.5	A	V	2.0	180	Y	LOW	31.9	4.9	0.0	**73.4**	**-10.9**	**84.3**	

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

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 22.917 (e))

COMPANY	**AXIOM NAVIGATION, INC.**	**DATE**	**5/31/01**
EUT	**FLEET MANAGEMENT SYSTEM WITH CCM 8700 CELLULAR PHONE MODULE**	**DUTY CYCLE**	**N/A**
MODEL	**FMS3500**	**PEAK TO AVG**	**N/A**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**KYLE FUJIMOTO**	**LAB**	**D**

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)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
4175.0000	31.4	A	H	1.5	180	Y	LOW	33.2	5.3	0.0	**69.9**	**-14.4**	**84.3**	
4175.0000	34.1	A	V	2.0	180	Y	LOW	33.2	5.3	0.0	**72.6**	**-11.7**	**84.3**	

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

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED EMISSIONS (FCC SECTION 22.917 (e))

COMPANY	**AXIOM NAVIGATION, INC.**	**DATE**	**5/31/01**
EUT	**FLEET MANAGEMENT SYSTEM WITH CCM 8700 CELLULAR PHONE MODULE**	**DUTY CYCLE**	**N/A**
MODEL	**FMS3500**	**PEAK TO AVG**	**N/A**
S/N	**N/A**	**TEST DIST.**	**3 METERS**
TEST ENGINEER	**KYLE FUJIMOTO**	**LAB**	**D**

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)	*Corrected Reading (dBuV/m)	Delta ** (dB)	Spec Limit (dBuV/m)	Comments
5010.0000	29.7	A	H	1.5	180	Y	LOW	34.8	5.8	0.0	**70.3**	**-14.0**	**84.3**	**Note: No Harmonics**
														Found After the 6th
														Harmonic for the
5010.0000	29.9	A	V	1.5	90	Y	LOW	34.8	5.8	0.0	**70.5**	**-13.8**	**84.3**	**8700 Module**

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

** DELTA = SPEC LIMIT - CORRECTED READING

RADIATED SPURIOUS EMISSIONS

FOR THE DIGITAL PORTION

Test location: Compatible Electronics
Customer : AXIOM NAVIGATION, INC Date : 5/21/2001
Manufacturer : AXIOM NAVIGATION, INC. Time : 9.44
EUT name : FLEET MANAGEMENT SYSTEM Model: FMS3500
Specification: Fcc_B Test distance: 3.0 mtrs Lab: D
Distance correction factor(20*log(test/spec)) : 0.00
Test Mode :
SPURIOUS EMISSIONS OF THE EUT
VERTICAL POLARIZATION 30 MHz TO 1000 MHz
TEMPERATURE 65 DEGREES F., RELATIVE HUMIDITY 55%
TESTED BY: KYLE FUJIMOTO

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	31.44	50.40	0.91	13.90	39.03	26.19	40.00	-13.81
2V	38.22	49.50	0.98	13.39	39.16	24.71	40.00	-15.29
3V	49.24	57.20	1.09	11.12	39.20	30.21	40.00	-9.79
4V	86.14	51.60	1.36	8.11	38.54	22.54	40.00	-17.46
5V	114.62	47.70	1.62	9.88	38.99	20.20	43.50	-23.30
6V	183.53	39.70	2.07	14.83	38.87	17.73	43.50	-25.77
7V	392.93	42.80	3.26	16.63	38.64	24.05	46.00	-21.95
8V	321.02	48.30	2.88	13.79	38.90	26.07	46.00	-19.93
9V	340.21	47.40	2.96	14.55	38.90	26.01	46.00	-19.99
10V	359.42	39.70	3.06	15.31	38.84	19.22	46.00	-26.78
11V	368.21	44.30	3.11	15.65	38.79	24.27	46.00	-21.73
12V	389.83	42.10	3.24	16.51	38.66	23.19	46.00	-22.81
13V	442.04	46.10	3.22	16.83	38.52	27.63	46.00	-18.37
14V	459.21	49.60	3.26	16.80	38.54	31.12	46.00	-14.88
15V	535.79	44.70	3.79	16.58	38.49	26.58	46.00	-19.42

Test location: Compatible Electronics
Customer : AXIOM NAVIGATION, INC. Date : 5/21/2001
Manufacturer : AXIOM NAVIGATION, INC. Time : 10.25
EUT name : FLEET MANAGEMENT SYSTEM Model: FMS3500
Specification: Fcc_B Test distance: 3.0 mtrs Lab: D
Distance correction factor(20*log(test/spec)) : 0.00
Test Mode :
SPURIOUS EMISSIONS OF THE EUT
HORIZONTAL POLARIZATION 30 MHz TO 1000 MHz
TEMPERATURE 65 DEGREES F., RELATIVE HUMIDITY 55%
TESTED BY: KYLE FUJIMOTO

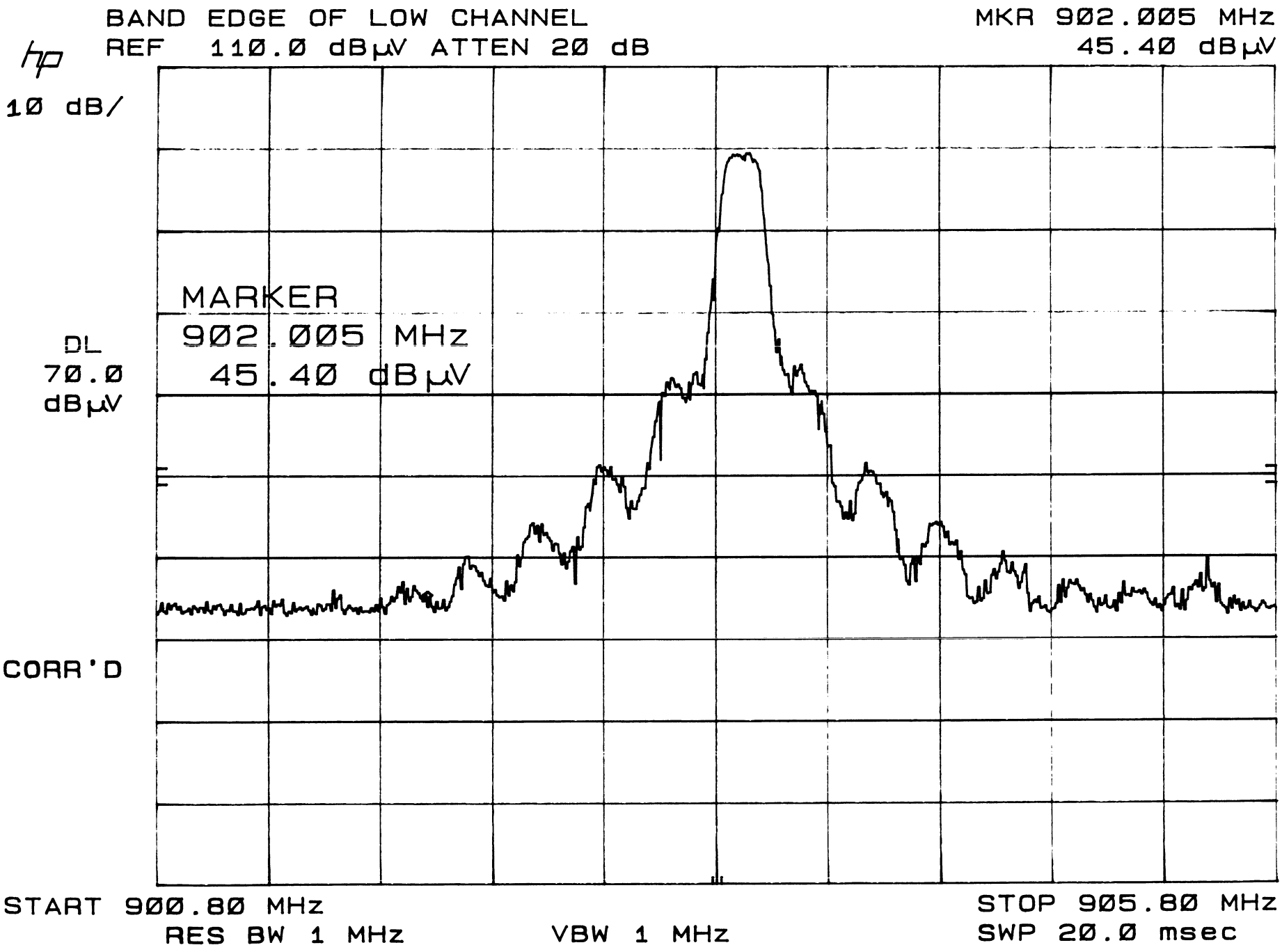
Pol	Freq	Rdng	Cable loss	Ant factor	Amp gain	Cor'd rdg = R	limit = L	Delta R-L
	MHz	dBuV	dB	dB	dB	dBuV	dBuV/m	dB
1H	30.00	52.20	0.90	14.01	39.00	28.11	40.00	-11.89
2H	36.88	47.30	0.97	13.49	39.14	22.62	40.00	-17.38
3H	40.88	43.00	1.01	12.97	39.20	17.78	40.00	-22.22
4H	146.48	37.20	1.96	12.86	38.86	13.16	43.50	-30.34
5H	161.72	44.90	2.00	13.72	38.80	21.82	43.50	-21.68
6H	294.69	49.20	2.80	19.85	38.92	32.93	46.00	-13.07
7H	392.92	52.80	3.26	16.63	38.64	34.05	46.00	-11.95
8H	430.21	40.80	3.24	16.86	38.54	22.36	46.00	-23.64
9H	480.18	38.60	3.38	16.77	38.62	20.13	46.00	-25.87
10H	491.16	59.30	3.45	16.75	38.66	40.83	46.00	-5.17
11H	687.55	44.70	4.35	18.88	38.58	29.35	46.00	-16.65

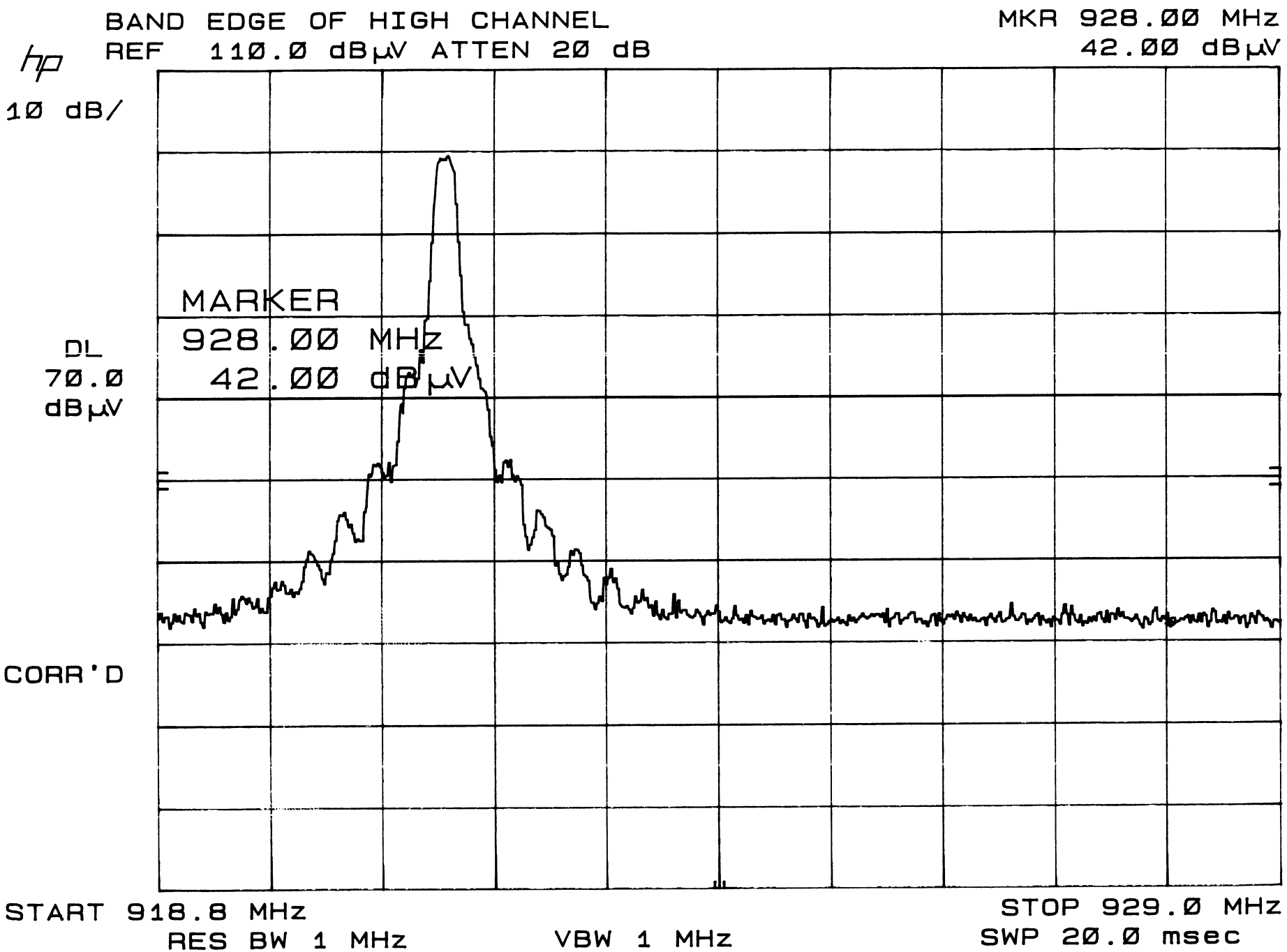
Test location: Compatible Electronics
Customer : AXIOM NAVIGATION, INC Date : 5/21/2001
Manufacturer : AXIOM NAVIGATION, INC. Time : 9.44
EUT name : FLEET MANAGEMENT SYSTEM Model: FMS3500
Specification: Fcc_B Test distance: 3.0 mtrs Lab: D
Distance correction factor(20*log(test/spec)) : 0.00
Test Mode :
SPURIOUS EMISSIONS OF THE EUT
HORIZONTAL AND VERTICAL POLARIZATION 10 kHz TO 30 MHz
TEMPERATURE 65 DEGREES F., RELATIVE HUMIDITY 55%
TESTED BY: KYLE FUJIMOTO

NO EMISSIONS FOUND BETWEEN 10 kHz AND 30 MHz IN EITHER POLARIZATION FOR THE EUT

BAND EDGE

DATA SHEETS


BAND EDGE OF LOW CHANNEL
MKR 902.005 MHz
REF 110.0 dBµV ATTEN 20 dB
45.40 dBµV
10 dB/
MARKER
902.005 MHz
45.40 dBµV
DL
70.0
dBµV
CORR'D
START 900.80 MHz
STOP 905.80 MHz
RES BW 1 MHz
VBW 1 MHz
SWP 20.0 msec


BAND EDGE OF HIGH CHANNEL
MKR 928.00 MHz
REF 110.0 dBµV ATTEN 20 dB
42.00 dBµV
10 dB/
MARKER
928.00 MHz
42.00 dBµV
DL
70.0
dBµV
CORR'D
START 918.8 MHz
STOP 929.0 MHz
RES BW 1 MHz
VBW 1 MHz
SWP 20.0 msec

APPENDIX E

LABORATORY RECOGNITIONS

LABORATORY RECOGNITIONS

Compatible Electronics has the following agency accreditations:

National Voluntary Laboratory Accreditation Program - Lab Code: 200063-0

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

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

Federal Communications Commission

Industry Canada

Radio-Frequency Technologies (Competent Body)

Technology International (Europe) Ltd.