

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

for

eForce® iCLASS

KEYCARD ENTRY SYSTEM

Model: 3090C

Prepared for

ADAMS RITE MANUFACTURING CO.
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Prepared by: _____

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DATE: APRIL 28, 2010

	REPORT BODY	APPENDICES					TOTAL
		A	B	C	D	E	
PAGES	18	2	2	2	13	11	48

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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: **eForce® iCLASS Keycard Entry System**
Model: 3090C
S/N: N/A

Product Description: The product is a 13.56 MHz RFID System used for keyless doorway entry.

Modifications: The EUT was modified during the testing. Please see list of modifications in Appendix B.

Manufacturer: Adams Rite Manufacturing Co.
260 Santa Fe Street
Santa Ana, California 91767

Test Dates: The tests were performed on November 11, 18 and 23, 2009.

Test Specifications: EMI requirements
CFR Title 47, Part 15, Subpart B, sections 15.31, 15.107, and 15.109; and Subpart C, sections 15.205, 15.207, 15.209, and 15.225

Test Procedure: ANSI C63.4: 2003 and ANSI C63.10: 2009

Test Deviations: The test procedure was not deviated from during the testing.

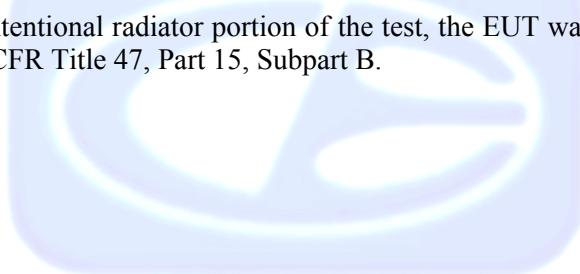
SUMMARY OF TEST RESULTS

TEST	DESCRIPTION	RESULTS
1	Conducted RF Emissions, 150 kHz – 30 MHz	Complies with the Class B limits of CFR Title 47, Part 15 Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, section 15.207
2	Radiated RF Emissions, 10 kHz – 1 GHz	Complies with the Class B limits of CFR Title 47, Part 15 Subpart B, sections 15.31(e), 15.107 and 15.109; and the limits of CFR Title 47, Part 15, Subpart C, section 15.209 and 15.225(a) through (d).
3	Frequency Tolerance, Temperature and Voltage Variation	Complies with the relevant requirements of FCC Title 47, Part 15, Subpart C, section 15.225(e)

1. PURPOSE

This document is a qualification test report based on the Electromagnetic Interference (EMI) tests performed on the eForce® iCLASS Keycard Entry System, Model: 3090C. The EMI measurements were performed according to the measurement procedure described in ANSI C63.4: 2003. 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, 15.207, 15.209, and 15.225.

Note: For the unintentional radiator portion of the test, the EUT was within the **Class B** specification limits defined by CFR Title 47, Part 15, Subpart B.



2. ADMINISTRATIVE DATA

2.1 Location of Testing

The EMI tests described herein were performed at the test facility of Compatible Electronics, 19121 El Toro Road, Silverado, CA 92676.

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

Adams Rite Manufacturing Co.

Brian Whipple Test Engineer

Compatible Electronics Inc.

Kyle Fujimoto	Test Engineer
Scott McCutchan	Lab Manager
Josh Hansen	Lab Manager
Jeff Klinger	Director of Engineering

2.4 Date Test Sample was Received

The test sample was received on November 11, 2010.

2.5 Disposition of the Test Sample

The test sample was returned to Adams Rite on February 1, 2010.

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
N/A	Not Applicable

3. APPLICABLE DOCUMENTS

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

SPEC	TITLE
FCC Title 47, Part 15 Subpart B	FCC Rules - Radio frequency devices (including digital devices) – Unintentional Radiators
FCC Title 47, Part 15 Subpart C	FCC Rules - Radio frequency devices (including digital devices) – Intentional Radiators
ANSI C63.4 2003	Methods of measurement of radio-noise emissions from low-voltage electrical and electronic equipment in the range of 9 kHz to 40 GHz
ANSI C63.10 2009	American National Standard for Unlicensed Wireless Devices

4. DESCRIPTION OF TEST CONFIGURATION

4.1 Description of Test Configuration - EMI

The eForce® iCLASS Keycard Entry System, Model: 3090C (EUT) consists of a main PCB assembly and an antenna board, which were installed in a typical arrangement inside a metal door lever assembly, which was held in position (non-conductively) to a metal table-top vice. The EUT was connected to a bench-top DC power supply via the red and black wires of its input cable. The yellow, gray and purple wires of its input cable were left unterminated, simulating connection to a normally-open contact. The white and green wires of its input cable were connected to the negative terminal on the power supply, each through an individual 470 kΩ resistor. The EUT was continuously transmitting and receiving throughout the testing.

For conducted emissions testing, the bench-top power supply was replaced with an off-the-shelf AC to DC power adapter, typically of what could be used in an actual installation. The EUT is not marketed with a power source.

It was determined that the emissions were at their highest level when the EUT was operating in the above configuration. The final emissions data was taken in this mode of operation and cable placements were maximized. Photographs of the test setup are in Appendix D of this report.

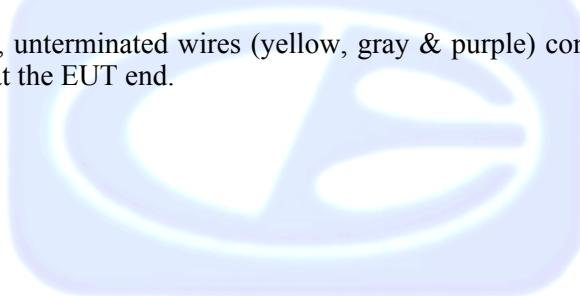


4.1.1 **Cable Construction and Termination**

Cables 1-2 These are 1 meter wires (red & black) connecting the EUT to the power source. They have a 12-pin connector at the EUT end, and are hard-wired to the power source.

Cable 3-4 These are 1 meter wires (white & green) connecting the EUT to the the negative terminal on the power source, each through a separate 470 kΩ resistor. They have a 12-pin connector at the EUT end, and are hard-wired to the resistors, which were hard-wired to the power source.

Cables 5-7 These are 1 meter, unterminated wires (yellow, gray & purple) connected to the EUT. They have a 12-pin connector at the EUT end.



5. LISTS OF EUT, ACCESSORIES AND TEST EQUIPMENT

5.1 EUT and Accessory List

EQUIPMENT	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	FCC ID
eForce® iCLASS KEYCARD ENTRY SYSTEM (EUT)	ADAMS RITE MANUFACTURING CO.	3090C	N/A	YBE3090C
BENCH-TOP DC POWER SUPPLY (radiated emissions only)	BK PRECISION	1670	281-00414	N/A
AC to DC POWER ADAPTER (conducted emissions only)	I.T.E.	W012-2120-100-1A	N/A	N/A



5.2 EMI Test Equipment

EQUIPMENT TYPE	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	CALIBRATION DATE	CALIBRATION DUE DATE
GENERAL TEST EQUIPMENT USED FOR ALL RF EMISSIONS TESTS					
Computer	Hewlett Packard	4530	US91925900	N.C.R.	N/A
Spectrum Analyzer – Main Section	Hewlett Packard	8566B	2747A04875	5-8-2009	5-8-2010
Spectrum Analyzer – Display Section	Hewlett Packard	85662A	2848A18214	5-8-2009	5-8-2010
Quasi-Peak Adapter	Hewlett Packard	85650A	2811A01081	5-8-2009	5-8-2010
Monitor	Envision	EFT720	I9CG48A767451	N.C.R.	N/A
RF RADIATED EMISSIONS TEST EQUIPMENT					
Biconical Antenna	Com Power	AB-900	15228	1-20-2009	1-20-2010
Log Periodic Antenna	Com Power	AL-100	16016	1-21-2009	1-21-2010
Preamplifier	Com-Power	PA-103A	161206	11-28-2008	11-28-2009
Loop Antenna	Com-Power	AL-130	17085	8-12-2008	8-12-2010
Antenna Mast	Com Power	AM-100	N/A	N/A	N/A
RF CONDUCTED EMISSIONS TEST EQUIPMENT					
Emissions Program	Compatible Electronics	SR21	N/A	N/A	N/A
LISN	Com Power	LI-215	12081	7-9-2009	7-9-2010
LISN	Com Power	LI-215	12072	7-9-2009	7-9-2010
TEMPERATURE TESTING TEST EQUIPMENT					
Multimeter	Fluke	87	956410240	5-28-2009	5-28-2010
Temperature Chamber	Despatch Industries, Inc.	16212A	149857	6-13-2008	6-13-2010
EMI Receiver	Rohde & Schwarz	ESIB40	100194	9-17-2008	9-17-2010
Variable AC Transformer	AE	8D-IP	1192/13680	N/A	N/A
Near Field Probe	Com-Power	PS-400	1152	N/A	N/A

6. TEST SITE DESCRIPTION

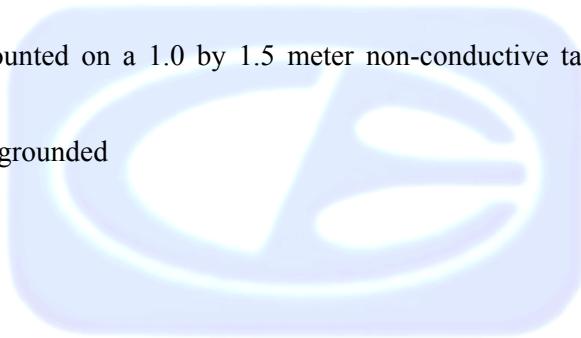
6.1 Test Facility Description

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. CHARACTERISTICS OF THE TRANSMITTER

7.1 Operating Frequency

The EUT operates at 13.56162325 MHz.

7.2 Channel Number and Frequencies

The EUT is a single-channel transmitter.



8. TEST PROCEDURES

The following sections describe the test methods and the specifications for the tests. Test results are also included in this section. Data sheets and/or plots for all tests are located in Appendix E.

8.1 RF Emissions

8.1.1 Conducted Emissions Test

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

Please see section 6.2 of this report for mounting, bonding and grounding of the EUT. The EUT was powered through the LISN, which was bonded to the ground plane. The LISN power was filtered and the filter was bonded to the ground plane. The EUT was set up with the minimum distances from any conductive surfaces as specified in ANSI C63.4: 2003. The excess power cord was wrapped in a figure eight pattern to form a bundle not exceeding 0.4 meters in length.

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

Test Results:

Complies with the **Class B** limits of CFR Title 47, Part 15 Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, section 15.207.

8.1.2

Radiated Emissions (Spurious and Harmonics) Test

The spectrum analyzer was used as a measuring meter along with the quasi-peak adapter. Amplifiers were used to increase the sensitivity of the instrument. The Com Power Preamplifier Model: PA-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.

The quasi-peak adapter was used only for those readings which are marked accordingly on the data sheets.

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

FREQUENCY RANGE	EFFECTIVE MEASUREMENT BANDWIDTH	TRANSDUCER
10 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: 2003. 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 by the Radiated Emission Manual Test software. 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.

Test Results:

The EUT complies with the **Class B** limits of CFR Title 47, Part 15, Subpart B; and the limits of CFR Title 47, Part 15, Subpart C, Sections 15.209 and 15.225(a) through (d) for radiated emissions. The EUT also complies with the voltage variation requirements contained in section 15.31(e); the amplitude does not change when the voltage is varied.

8.2

Frequency Tolerance of Carrier Signal

The EUT was placed in temperature chamber and set to -20 degrees C. The EUT was exposed to this temperature for a period of 10 minutes. The temperature was subsequently increased at 10 degree increments up to +50 degrees with a 30 minute acclimation period between each temperature. At each temperature, the EUT was checked with an EMI Receiver to determine whether the carrier signal was within 0.01% of the fundamental frequency at startup, 2 minutes, 5 minutes and 10 minutes after removal from the temperature chamber. The frequency tolerance of the carrier signal was also checked at 85% and 115% of the rated supply voltage at 20 degrees C. A data sheet of the Frequency Tolerance testing is located in Appendix E.

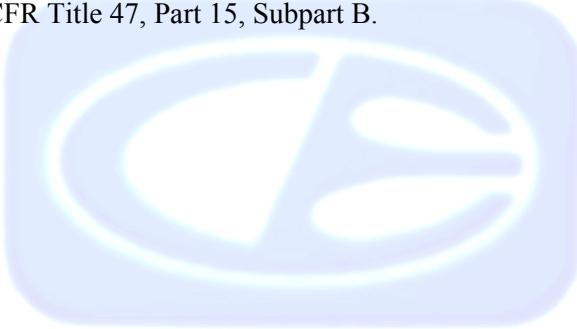
Test Results:

The EUT complies with the frequency tolerance requirements of CFR Title 47, Part 15, Subpart C, Section 15.225(e).

9. CONCLUSIONS

With the EUT configured and operating as described in this report, the eForce® iCLASS Keycard Entry System Model: 3090C meets all of the specification limits defined in FCC Title 47, Part 15, Subpart C, sections 15.205, 15.207, 15.209, and 15.247.

Note: For the unintentional radiator portion of the test, the EUT was within the **Class B** specification limits defined by CFR Title 47, Part 15, Subpart B.



APPENDIX A

LABORATORY RECOGNITIONS

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
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(818) 597-0600

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LABORATORY ACCREDITATIONS AND RECOGNITIONS



For US, Canada, Australia/New Zealand, Taiwan and the European Union, Compatible Electronics is currently accredited by NVLAP to ISO/IEC 17025 an ISO 9002 equivalent. Please follow the link to the NIST site for each of our facilities NVLAP certificate and scope of accreditation.

NVLAP listing links

Agoura Division - <http://ts.nist.gov/Standards/scopes/2000630.htm>

Brea Division - <http://ts.nist.gov/Standards/scopes/2005280.htm>

Silverado/Lake Forest Division - <http://ts.nist.gov/Standards/scopes/2005270.htm>

**ANSI listing**[CETCB](#)

<https://www.ansica.org/wwwversion2/outside/ALLdirectoryDetails.asp?menuID=1&prgID=3&orgID=123&status=4>



Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for EMC under the US/EU Mutual Recognition Agreement (MRA).



Compatible Electronics has been nominated as a Conformity Assessment Body (CAB) for Taiwan/BSMI under the US/APEC (Asia-Pacific Economic Cooperation) Mutual Recognition Agreement (MRA).

We are also certified/listed for IT products by the following country/agency:

**VCCI Listing, from VCCI site**

[Enter "Compatible" in search form](#) http://www.vcci.or.jp/vcci_e/activity/registration/setsubi.html

**FCC Listing, from FCC OET site**

[FCC test lab search](#) <https://fjallfoss.fcc.gov/oetcf/eas/reports/TestFirmSearch.cfm>



Compatible Electronics IC listing can be found at:

<http://www.ic.gc.ca/eic/site/ic1.nsf/eng/home>

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APPENDIX B

MODIFICATIONS TO THE EUT

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MODIFICATIONS TO THE EUT

The modifications listed below were made to the EUT to pass FCC Subpart B and FCC 15.247 specifications.

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

- 1) Added a non-split ferrite core (Steward P/N: 28B0375-100) to the antenna cable. All wires passed through with one turn.
- 2) Added a non-split ferrite core (Steward P/N: 28B0562-100) to the power cable. All wires passed through with one turn.



APPENDIX C

ADDITIONAL MODELS COVERED UNDER THIS REPORT

Brea Division
114 Olinda Drive
Brea, CA 92823
(714) 579-0500

Agoura Division
2337 Troutdale Drive
Agoura, CA 91301
(818) 597-0600

Silverado Division
19121 El Toro Road
Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

ADDITIONAL MODELS COVERED UNDER THIS REPORT

USED FOR THE PRIMARY TEST

eForce® iCLASS Keycard Entry System
Model: 3090C
S/N: N/A

There were no additional models covered under this report.



Brea Division
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APPENDIX D

DIAGRAMS, CHARTS, AND PHOTOS

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Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

FIGURE 1: CONDUCTED EMISSIONS TEST SETUP

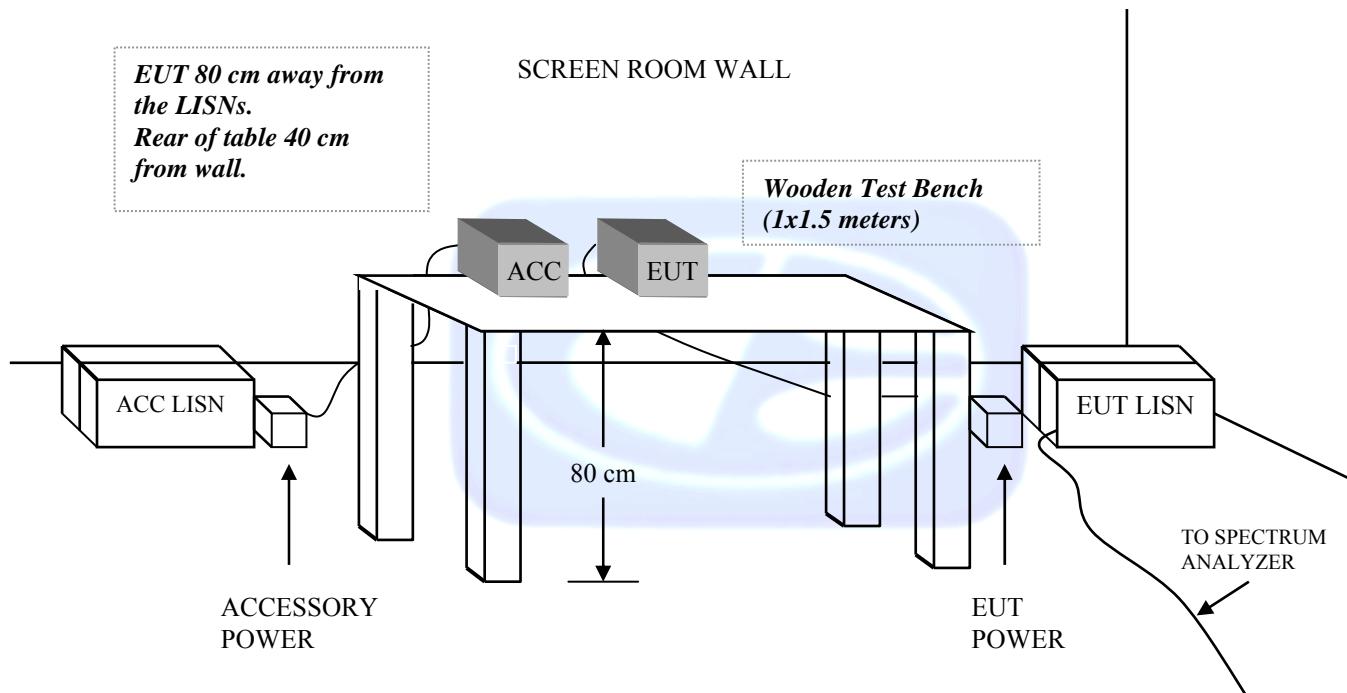
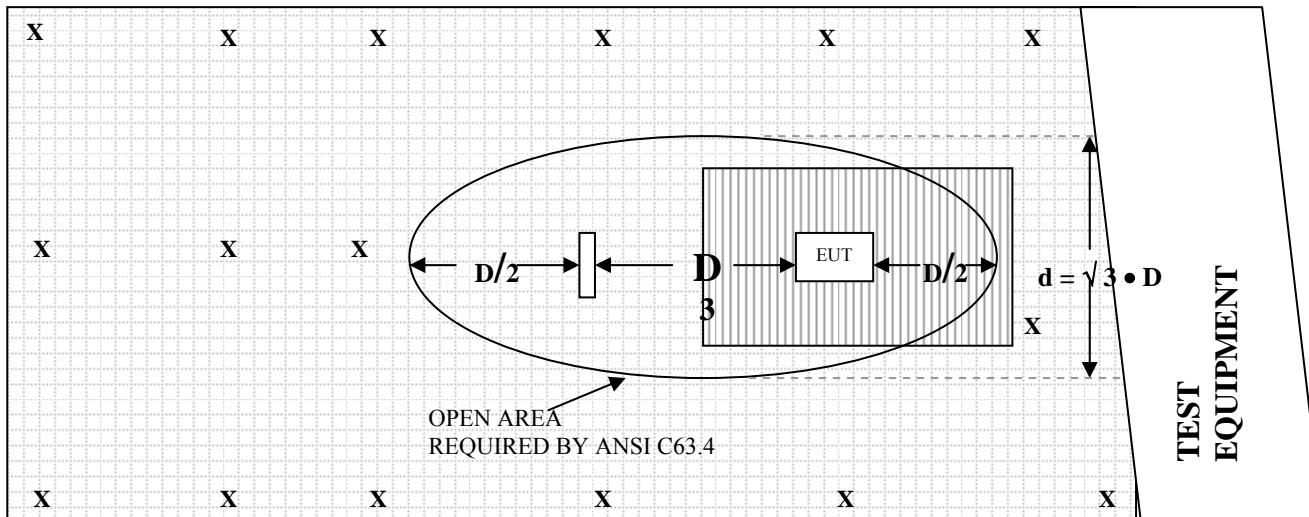


FIGURE 2: PLOT MAP AND LAYOUT OF RADIATED SITE – 3 METERS

OPEN LAND > 15 METERS



OPEN LAND > 15 METERS

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

COM-POWER AL-130
ACTIVE LOOP ANTENNA (E-FIELD)
S/N: 17085
CALIBRATION DATE: AUGUST 12, 2008

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
0.009	8.5	0.8	9.97
0.01	9.57	0.9	10.04
0.02	10.21	1.0	10.21
0.03	10.77	2.0	10.53
0.4	10.47	3.0	10.4
0.05	9.13	4.0	10.14
0.06	9.9	5.0	10.57
0.07	9.54	6.0	10.83
0.08	9.4	7.0	10.43
0.09	9.67	8.0	10.6
0.1	9.67	9.0	11.4
0.2	7.04	10.0	10.34
0.3	9.77	15.0	3.53
0.4	9.7	20.0	10.73
0.5	9.7	25.0	7.13
0.6	10.17	30.0	8.4
0.7	10.14		

COM-POWER AB-900
LAB J - BICONICAL ANTENNA
S/N: 15228
CALIBRATION DATE: JANUARY 20, 2009

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30.0	12.0	125.0	13.2
35.0	10.9	150.0	12.3
40.0	12.3	175.0	15.1
45.0	11.7	200.0	17.6
50.0	11.5	225.0	16.6
60.0	10.3	250.0	15.8
70.0	7.9	275.0	18.2
80.0	6.6	300.0	20.3
90.0	8.9		
100.0	10.7		

COM-POWER AL-100**LAB J - LOG PERIODIC ANTENNA****S/N: 16016****CALIBRATION DATE: JANUARY 21, 2009**

FREQUENCY (MHz)	FACTOR (dB)
300	13.1
400	15.0
500	17.2
600	18.9
700	19.9
800	23.2
900	22.4
1000	23.3

COM-POWER PA-103

LAB J - PREAMPLIFIER

S/N: 161206

CALIBRATION DATE: NOVEMBER 28, 2008

FREQUENCY (MHz)	FACTOR (dB)	FREQUENCY (MHz)	FACTOR (dB)
30	31.50	300	31.50
40	31.50	350	31.30
50	31.50	400	31.40
60	31.60	450	31.30
70	31.50	500	30.60
80	31.60	550	31.00
90	31.60	600	30.30
100	31.50	650	29.90
125	31.70	700	29.10
150	31.60	750	30.00
175	31.60	800	32.50
200	31.50	850	31.50
225	31.40	900	31.40
250	31.50	950	31.90
275	31.50	1000	31.20

**FRONT VIEW**

ADAMS RITE MANUFACTURING CO.
eForce® iCLASS KEYCARD ENTRY SYSTEM
MODEL: 3090C
FCC SUBPART B AND C – RADIATED EMISSIONS (9 kHz to 30 MHz)

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

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Silverado, CA 92676
(949) 589-0700

Lake Forest Division
20621 Pascal Way
Lake Forest, CA 92630
(949) 587-0400

**FRONT VIEW**

ADAMS RITE MANUFACTURING CO.
eForce® iCLASS KEYCARD ENTRY SYSTEM
MODEL: 3090C
FCC SUBPART B AND C – RADIATED EMISSIONS (30 MHz to 1 GHz)

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

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Agoura Division
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(818) 597-0600

Silverado Division
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**REAR VIEW**

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**FRONT VIEW**

ADAMS RITE MANUFACTURING CO.
eForce® iCLASS KEYCARD ENTRY SYSTEM
MODEL: 3090C
FCC SUBPART B AND C – CONDUCTED EMISSIONS

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**REAR VIEW**

ADAMS RITE MANUFACTURING CO.
eForce® iCLASS KEYCARD ENTRY SYSTEM
MODEL: 3090C
FCC SUBPART B AND C – CONDUCTED EMISSIONS

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

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ADAMS RITE MANUFACTURING CO.
eForce® iCLASS KEYCARD ENTRY SYSTEM
MODEL: 3090C
FCC SUBPART C – FREQUENCY STABILITY (TEMPERATURE & VOLTAGE)

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

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APPENDIX E

DATA SHEETS

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RADIATED EMISIONS

DATA SHEETS

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(949) 587-0400

RADIATED EMISSIONS TEST DATA

Test Location :	Compatible Electronics	Page :	1/1
Customer :	Brian Whipple	Date :	11/11/2009
Manufacturer :	Adams Rite Manufacturing Co.	Time :	5:18:42 PM
EUT name :	eForce iCLASS Keycard Entry System	Lab :	J
Model :	3090C	Test Distance :	3 Meters
Serial # :	N/A		
Specification :	FCC Part 15, Section 15.205, 15.209, 15.225		

Qualification Data; Frequency Range: 9 kHz to 30 MHz
 Tested by: Scott McCutchan
 Tempurate: 18 degrees C, 40% Humidity, 102.0 kPA

Pol	Freq. MHz	Reading dBuV	Meas. Type	Cable Loss dB	Antenna factor dB	Amplifier gain dB	Corr'd rdg = R dBuV/m	Limit * = L dBuV/m	Delta R-L dB
V	13.558	47.60	Peak	0.00	5.23	0.00	52.83	124.00	-71.17
V	13.552	36.00	Peak	0.00	5.23	0.00	41.23	90.50	-49.27
V	13.567	34.30	Peak	0.00	5.22	0.00	39.52	90.50	-50.98
	13.409	19.60	Peak	0.00	5.41	0.00	25.01	80.50	-55.49
V	13.710	24.80	Peak	0.00	5.04	0.00	29.84	80.50	-50.66
V	13.109	14.40	Peak	0.00	5.79	0.00	20.19	69.54	-49.35
V	14.112	15.00	Peak	0.00	4.55	0.00	19.55	69.54	-49.99
	27.123	14.70	Peak	0.00	7.70	0.00	22.40	69.54	-47.14

NO HARMONICS OR OTHER SPURIOUS EMISSIONS FROM 9 kHz to 30 MHz

* Limits adjusted for 3 meter test distance using an extrapolation factor of 40 dB/decade.

Sample Calculation for 13.56 MHz:	Limit @ 30m = 15,848 uV/m	=	84 dBuV/m
40 * log (Spec Limit Distance [30m] / Test Distance [3m])	=	40 dB distance factor	
Limit @ 3 meters	=	124 dBuV/m	


**COMPATIBLE
ELECTRONICS**

Test Location	:	Compatible Electronics	Page	:	1/1			
Customer	:	Brian Whipple	Date	:	11/11/2009			
Manufacturer	:	Adams Rite	Time	:	10:21:39 AM			
Unit name	:	e-Force iClass	Lab	:	J			
Model	:		Test Distance	:	3.00 Meters			
Serial #	:	None						
Specification	:	FCC Pt. 15 B						
Distance correction factor (20 * log(test/spec))	:	0.00						
Test Mode	:	Qualification Data						
		Frequency Range: 30-1000 MHz						
		18 degrees C, 40% Humidity, 102.0 kPA						
		Tested By: Scott McCutchan						
Pol	Freq	Reading	Cable	Antenna	Amplifier	Corr'd	Limit	Delta
	MHz	dBuV	loss	factor	gain	rdg - R	- L	R-L
			dB	dB	dB	dBuV/m	dBuV/m	dB
V	40.685	57.30	1.58	12.21	31.50	39.59	40.00	-0.41
V	40.685Qp	55.70	1.58	12.21	31.50	37.99	40.00	-2.01
V	54.247	48.30	1.43	10.96	31.54	29.15	40.00	-10.85
V	67.817	49.30	1.68	8.39	31.52	27.85	40.00	-12.15
V	81.367	46.00	1.90	6.93	31.60	23.23	40.00	-16.77
V	108.478	46.60	2.01	11.61	31.57	28.65	43.50	-14.85
V	122.032	39.30	2.17	12.93	31.68	22.72	43.50	-20.78
V	135.606	38.30	2.42	12.80	31.66	21.87	43.50	-21.63
V	162.730	40.90	2.59	13.78	31.60	25.67	43.50	-17.83
V	230.531	39.60	2.89	16.42	31.42	27.48	46.00	-18.52
V	284.787	39.10	3.26	19.04	31.50	29.90	46.00	-16.10
H	40.677	46.70	1.58	12.21	31.50	28.99	40.00	-11.01
H	67.812	50.70	1.68	8.39	31.52	29.25	40.00	-10.75
H	81.354	46.30	1.90	6.93	31.60	23.53	40.00	-16.47
H	311.905	38.80	3.30	13.36	31.45	24.01	46.00	-21.99
H	325.453	37.30	3.41	13.64	31.39	22.95	46.00	-23.05
H	366.135	39.20	3.67	14.42	31.33	25.95	46.00	-20.05
V	311.891	37.40	3.30	13.36	31.45	22.61	46.00	-23.39

CONDUCTED EMISISONS



DATA SHEETS

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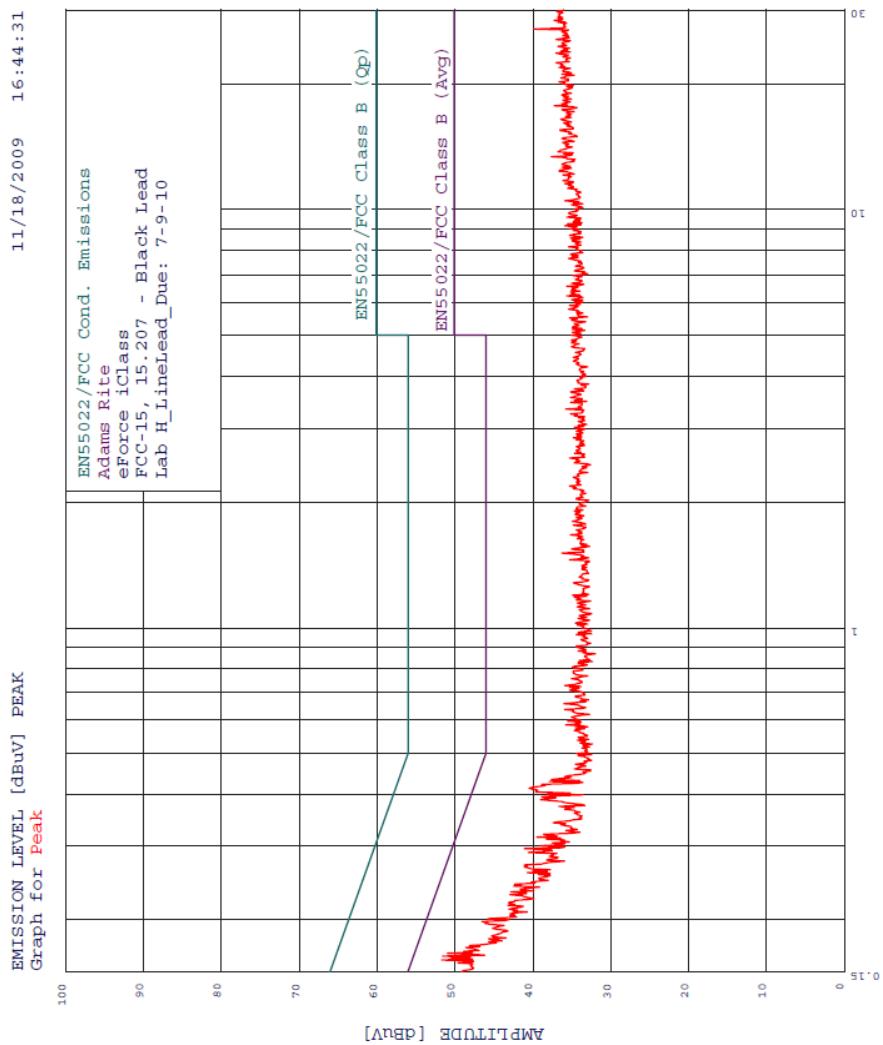
COMPATIBLE ELECTRONICS

Report Number: C91116H1
FCC Part 15 Subpart B and FCC Section 15.225 Test Report
eForce® iCLASS Keycard Entry System
Model: 3090C

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COMPATIBLE ELECTRONICS



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page 1/1


**COMPATIBLE
ELECTRONICS**

 Adams Rite
 eForce iClass
 FCC-15, 15.207 - Black Lead

 TEST ENGINEER : Scott McCutchan

11/18/2009 16:44:31

30 highest peaks above -50.00 dB of EN55022/FCC Class B (Avg) limit line

Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.163	51.51	55.29	-3.78
2	0.160	51.63	55.47	-3.84
3	0.166	50.90	55.16	-4.25
4	0.162	50.42	55.38	-4.96
5	0.157	49.53	55.60	-6.07
6	0.168	48.80	55.07	-6.27
7	0.171	48.59	54.90	-6.31
8	0.173	48.08	54.81	-6.73
9	0.413	40.47	47.59	-7.12
10	0.198	46.50	53.71	-7.22
11	0.201	45.69	53.58	-7.89
12	0.190	45.12	54.01	-8.90
13	0.180	45.56	54.50	-8.94
14	0.393	38.88	47.99	-9.12
15	0.183	45.25	54.37	-9.12
16	0.387	38.98	48.12	-9.14
17	0.296	41.11	50.36	-9.25
18	0.428	37.86	47.28	-9.42
19	0.233	42.76	52.34	-9.58
20	0.229	42.86	52.48	-9.61
21	0.240	42.45	52.08	-9.63
22	0.433	37.56	47.19	-9.63
23	1.512	36.23	46.00	-9.77
24	0.400	38.07	47.86	-9.78
25	0.216	43.17	52.96	-9.79
26	0.290	40.62	50.54	-9.92
27	0.658	36.01	46.00	-9.99
28	0.212	43.08	53.14	-10.06
29	0.728	35.90	46.00	-10.10
30	26.999	39.85	50.00	-10.15



COMPATIBLE ELECTRONICS

Report Number: C91116H1
FCC Part 15 Subpart B and FCC Section 15.225 Test Report
eForce® iCLASS Keycard Entry System
Model: 3090C

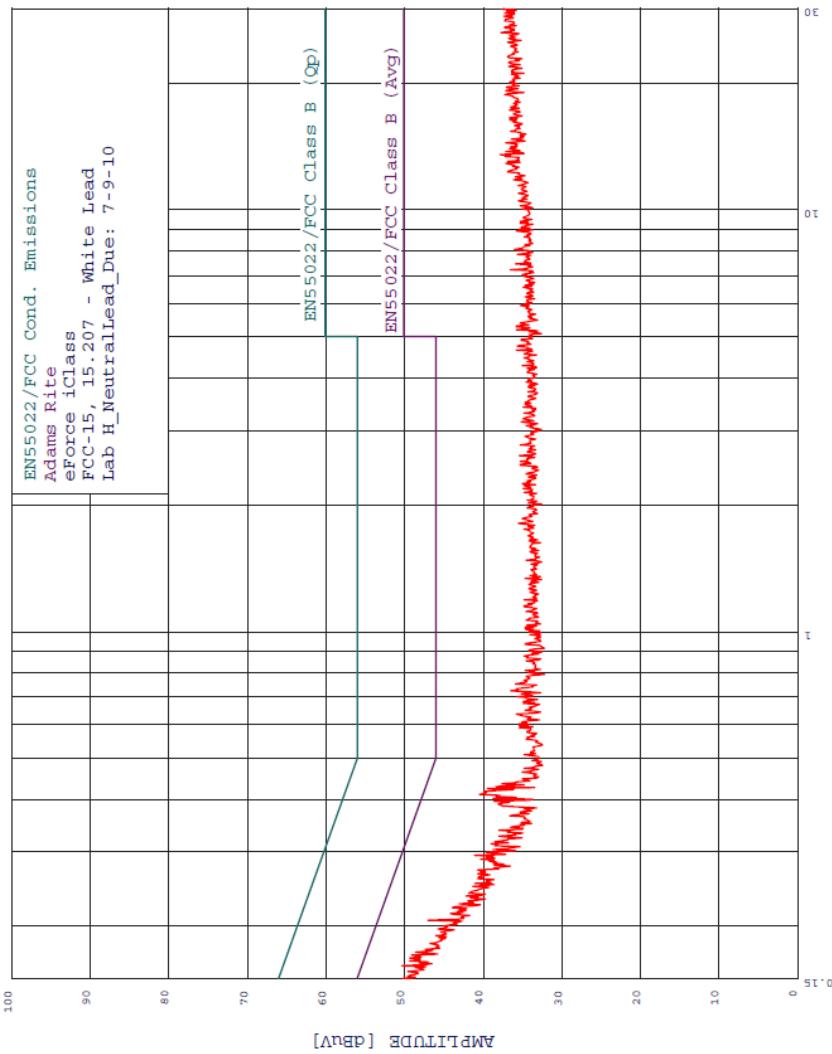
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COMPATIBLE ELECTRONICS

1/18/2009 17:08:58

EMISSION LEVEL [dBuV] PEAK Graph for Peak



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page 1/1


**COMPATIBLE
ELECTRONICS**

11/18/2009 17:08:58

 Adams Rite
 eForce iClass
 FCC-15, 15.207 - White Lead

 TEST ENGINEER : Scott McCutchan

30 highest peaks above -50.00 dB of EN55022/FCC Class B (Avg) limit line				
Peak#	Freq(MHz)	Amp(dBuV)	Limit(dB)	Delta(dB)
1	0.161	50.33	55.43	-5.10
2	0.168	49.31	55.07	-5.76
3	0.170	49.10	54.94	-5.84
4	0.165	49.32	55.20	-5.88
5	0.156	49.54	55.69	-6.14
6	0.173	48.60	54.81	-6.21
7	0.206	46.92	53.35	-6.43
8	0.159	48.54	55.51	-6.98
9	0.411	40.48	47.63	-7.15
10	0.163	48.12	55.29	-7.17
11	0.182	46.77	54.41	-7.64
12	0.424	39.48	47.37	-7.90
13	0.197	45.73	53.75	-8.02
14	0.189	45.95	54.06	-8.11
15	0.221	43.92	52.78	-8.86
16	0.214	44.12	53.05	-8.93
17	0.428	38.27	47.28	-9.01
18	0.402	38.68	47.81	-9.13
19	0.396	38.58	47.95	-9.36
20	0.294	41.02	50.41	-9.39
21	0.724	36.51	46.00	-9.49
22	0.435	37.57	47.15	-9.58
23	0.226	43.02	52.61	-9.59
24	0.389	38.09	48.08	-9.99
25	0.235	42.12	52.25	-10.13
26	0.751	35.80	46.00	-10.20
27	0.288	40.32	50.58	-10.26
28	0.637	35.73	46.00	-10.27
29	4.648	35.71	46.00	-10.29
30	0.239	41.82	52.12	-10.30

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FREQUENCY STABILITY OF THE CARRIER FREQUENCY



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SECTION 15.225[e] TESTING

COMPANY:	ADAMS RITE	DATE:	11-23-09
EUT:	eForce iCLASS	ENGINEER:	KYLE FUJIMOTO
MODEL:	9030C	S/N:	N/A

TEMPERATURE	FREQUENCY (MHz) AT 0 MINUTES	FREQUENCY (MHz) AT 2 MINUTES	FREQUENCY (MHz) AT 5 MINUTES	FREQUENCY (MHz) AT 10 MINUTES	% OF SUPPLY VOLTAGE
-20°C	13.56172345	13.56172345	13.56172345	13.56172345	100
-10°C	13.56172345	13.56172345	13.56172345	13.56210421	100
+0°C	13.56190381	13.56210421	13.56210421	13.56210421	100
+10°C	13.56210421	13.56190381	13.56190381	13.56210421	100
+20°C	13.56162325	13.56162325	13.56162325	13.56162325	85
+20°C	13.56162325	13.56162325	13.56162325	13.56162325	100
+20°C	13.56162325	13.56162325	13.56162325	13.56162325	115
+30°C	13.56162325	13.56162325	13.56152305	13.56152325	100
+40°C	13.56152305	13.56152305	13.56152305	13.56152305	100
+50°C	13.56162305	13.56162305	13.56152305	13.56152305	100

The Frequency Tolerance allowed is 0.01% (± 0.001356162325 MHz) of the frequency measured at +20°C at 100% Supply Voltage.

If the Frequency is between 13.560267087675 MHz and 13.562979412325 MHz, the EUT is considered within the specification limits of 15.225[e].

FCC Nominal Input Voltage = 12 VDC