1250 Peterson Dr., Wheeling, IL 60090

Company: Aircell LLC
Model Tested: AACU
Report Number: 14639

FCC Rules and Regulations / Intentional Radiators

Air-Ground Radiotelephone Service
Commercial Aviation Air-Ground Systems

Part 22, Subpart G, Sections 22.857 - 22.867

THE FOLLOWING **MEETS** THE ABOVE TEST SPECIFICATION

Formal Name:	Airborne Air-to-ground Communications Unit
Kind of Equipment:	Avionics LRU (line replaceable unit)
Frequency Range:	894.75 MHz
Test Configuration:	The AACU interfaces with components within the Aircell broadband system through non-standard cables. (Tested at 115 vac, 400 Hz)
Model Number(s):	AACU
Model(s) Tested:	AACU
Serial Number(s):	1295510
Emission Designator:	F9W
Date of Tests:	August 19, 20, 21, September 8 and October 20, 2008
Test Conducted For:	Aircell LLC 1250 N. Arlington Heights Road Itasca, Illinois 60143

NOTICE: "This report must not be used by the client to claim product endorsement by NVLAP or any agency of the U.S. Government". Please see the "Additional Description of Equipment Under Test" page listed inside of this report.

1250 Peterson Dr., Wheeling, IL 60090

SIGNATURE PAGE

Report By:

Arnom C. Rowe
Test Engineer
EMC-001375-NE

Reviewed By:

William Stumpf
OATS Manager

Approved By:

Brian Mattson
General Manager

1250 Peterson Dr., Wheeling, IL 60090

TABLE OF CONTENTS

1250 Peterson Dr., Wheeling, IL 60090

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 100276-0

D.L.S. Electronic Systems, Inc.

Wheeling, IL

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated 18 June 2005).

2007-10-01 through 2008-09-30

Effective dates

DEPARTMENT OF COMMERCE * UNITED STATES OF AMERICA *

For the National Institute of Standards and Technology

NVLAP-01C (REV 2006-09-13)

1250 Peterson Dr., Wheeling, IL 60090

1.0 SUMMARY OF TEST REPORT

It was found that the Airborne Air-to-ground Communications Unit, Model Number(s) AACU, **meets** the radio interference radiated emission requirements of the FCC "Rules and Regulations", Part 22, Subpart G, Sections 22.857 - 22.867, for commercial aviation air-ground systems.

2.0 INTRODUCTION

On August 19, 20, 21, September 8 and October 20, 2008, a series of radio frequency interference measurements was performed on Airborne Air-to-ground Communications Unit, Model Number(s) AACU, Serial Number: 1295510. The tests were performed according to the procedures of the FCC as stated in Part 2 - Frequency Allocations and Radio Treaty Matters: General Rules and Regulations, Subpart J, Equipment Authorization Procedures of the Code of Federal Regulations 47. Tests were performed by personnel of D.L.S. Electronic Systems, Inc. who are responsible to Donald L. Sweeney, Senior EMC Engineer.

D.L.S. Electronic Systems, Inc. is a full service EMC/Safety Testing Laboratory accredited to ISO Guide 17025. NVLAP Certificate and Scope can be viewed at http://www.dlsemc.com/certificate. Our facilities are registered with the FCC, Industry Canada, and VCCI. All immunity tests were performed by personnel of D.L.S. Electronic Systems, Inc. at the following location(s):

Main Test Facility:
D.L.S. Electronic Systems, Inc.
1250 Peterson Drive
Wheeling, Illinois 60090

O.A.T.S. Test Facility:
D.L.S. Electronic Systems, Inc.
166 S. Carter Street
Genoa City, Wisconsin 53128

3.0 OBJECT

The purpose of this series of tests was to determine if the test sample could meet the radio frequency interference requirements of the FCC "Rules and Regulations", Part 22, Subpart G, Sections 22.857 - 22.867, for commercial aviation air-ground systems.

1250 Peterson Dr., Wheeling, IL 60090

4.0 TEST SET-UP

All tests were performed at D.L.S. Electronic Systems, Inc. and set up according to the FCC and TIA-603C regulations. All radiated emissions tests were performed with the test item placed on a 80 cm high rotating non-conductive table, located in the test room. Equipment normally operated on the floor was placed on a metal covered turntable, which is flush with the surrounding conducting ground plane. The ground plane has an electrical isolation layer over its surface approximately 7 mm thick. The EUT is separated from the turntable ground plane by a non-conductive layer. The equipment under test was set up according to TIA Standard, TIA-603-C:2004, Section 2.2.12.

5.0 TEST EQUIPMENT (Bandwidths and Detector Function)

All preliminary data below 1000 MHz was automatically plotted using the ESI 26/ESI 40 Fixed Tuned Receiver. The data was taken using Peak, Quasi-Peak or the Average Detector Functions as required. This information was then used to determine the frequencies of maximum emissions. Above 1000 MHz, final data was taken using the Average Detector.

Below 1000 MHz, final data was taken using the ESI 26/ESI 40 fixed tuned receiver. These plots were made using the Peak or Quasi-Peak Detector functions, with manual measurements performed on the questionable frequencies using the Quasi-Peak or the Average Detector Function of the Analyzer or ESI 26/ESI 40 Receiver as required. Above 1000 MHz, final data was taken using the Average Detector on the ESI 26/ESI 40 Fixed Tuned Receiver.

The bandwidths shown below are specified by ANSI C63.4-2003.

Frequency Range	Bandwidth (-6 dB)
10 to 150 kHz	200 Hz
150 kHz to 30 MHz	9 kHz
30 MHz to 1 GHz	120 kHz
Above 1 GHz	1 MHz

A list of the equipment used can be found in Table 1. All primary equipment was calibrated against known reference standards with a verified traceable path to NIST.

6.0 AMBIENT MEASUREMENTS

For emissions measurements, broadband antennas and an EMI Test Receiver with a panoramic spectrum display are used. First the frequency range is scanned and displayed on the test receiver display. Next the scanned frequency range is divided into smaller ranges, and then it is manually tuned through to determine the emissions from the EUT. A headset or loudspeaker is connected to the test receiver's AM/FM demodulated output as an aid in detecting ambient signals and finding frequencies of significant emission from the EUT. If there is any doubt as to the source of the emission, it is further investigated by rotating the EUT, or by disconnecting the power from the EUT.

The EUT is set up in its typical configuration and operated in its various modes. For tabletop systems, cables are manipulated within the range of likely configurations. For floor-standing equipment, the cables or are located in the same manner as the user would install them and no further manipulation is made. If the manner of cable installation is not known, or if it changes with each installation, cables or wires for floor-standing equipment shall be manipulated to the extent possible to produce the maximum level of emissions. For each mode of operation, the frequency spectrum is monitored. Variations in antenna height, antenna polarization, EUT azimuth, and cable or wire placement (each variable within bounds specified elsewhere) are explored to produce the emission that has the highest amplitude relative to the limit.

7.0 AC POWER LINE CONDUCTED EMISSION MEASUREMENTS – Part 15.207

The AC Power Line tests are not required for this test because the power is devrived from the aircraft.

1250 Peterson Dr., Wheeling, IL 60090

8.0 DESCRIPTION OF TEST SAMPLE:

8.1 Description:

The primary purpose of the AACU is to house the RF modem providing the air to ground communication link. The RF modem utilizes EVDO Rev A technology. The AACU also houses a GPS module and a terrestrial embedded modem (FCC ID# N7N-MC5725) for maintenance purposes while the aircraft is on the ground.

The EVDO connection was established with the use of an Anritsu MT8820B Radio Communication Analyzer. The MT8820B was configured to send "all up" power control bits so the modem was transmitting at its maximum power. The MT8820B was configured to utilize the reverse enhanced test application protocal (RETAP), which forced the modem to transmit modulated packets. Each of the modulation schemes bandwidths were measured and the worst case was then use for band edge, harmonic tests, and ERP measurements. One RF port to the AACU was conneceted to the Anritsu with a directional coupler in-line. The coupled port was then connected to the spectrum analyzer called out in the report for measurement purposes. The remaining ports all have similar circuitry - components and RF power loss - to the port being tested.

Since the device is an avionics box, it has gone through DO-160E testing for FAA Supplemental Type Change approval under 14 CFR 21 Subpart E.

8.2 PHYSICAL DIMENSIONS OF EQUIPMENT UNDER TEST

Length: 12.43" x Width: 4.88" x Height: 7.64"

8.3 LINE FILTER USED:

N/A

8.4 INTERNAL CLOCK FREQUENCIES:

Switching Power Supply Frequencies:

N/A

Clock Frequencies:

520, 133, 48, 25, 19.2, & 13 MHz

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

8.0 DESCRIPTION OF TEST SAMPLE: (CON'T)

8.5 DESCRIPTION OF ALL CIRCUIT BOARDS:

1. Aircard	PN: 10-H0829 Rev F
2. Backplane	PN: P1-00313 Rev B2
3. Aux Card	PN: 5140211 Rev F
4. RF Switch	PN: 5005597 Rev C
5. Power Supply	PN: 5005832 Rev A

9.0 ADDITIONAL DESCRIPTION OF TEST SAMPLE:
(See also Paragraph 8.0)

1: There were no additional descriptions noted at the time of test.

NOTE:

Continuous Transmit at maximum output power.

Continuous Receive.

The unit was connected to an Anritsu call box during all testing. This was necessary to keep the unit in the correct modes for testing.

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

10.0 PHOTO INFORMATION AND TEST SET-UP

Item 0 Airborne Air-to-ground Communications Unit
Model Number: AACU, Serial Number: 1295510

Item 1 Arinc connector for ACPU

Item 2 Non-shielded Power wires. 1.5m

Item 3 Shielded Quadrax Cables with Metal Shells. 1.5m

Item 4 Non-shielded Discrete cable with Metal Shells. 1.5m

Item 5 Shielded 4 RF cables (one is 50 ft. to remote call box for transmitter test; two to antenna for receiver test) with Metal Shells. .8m

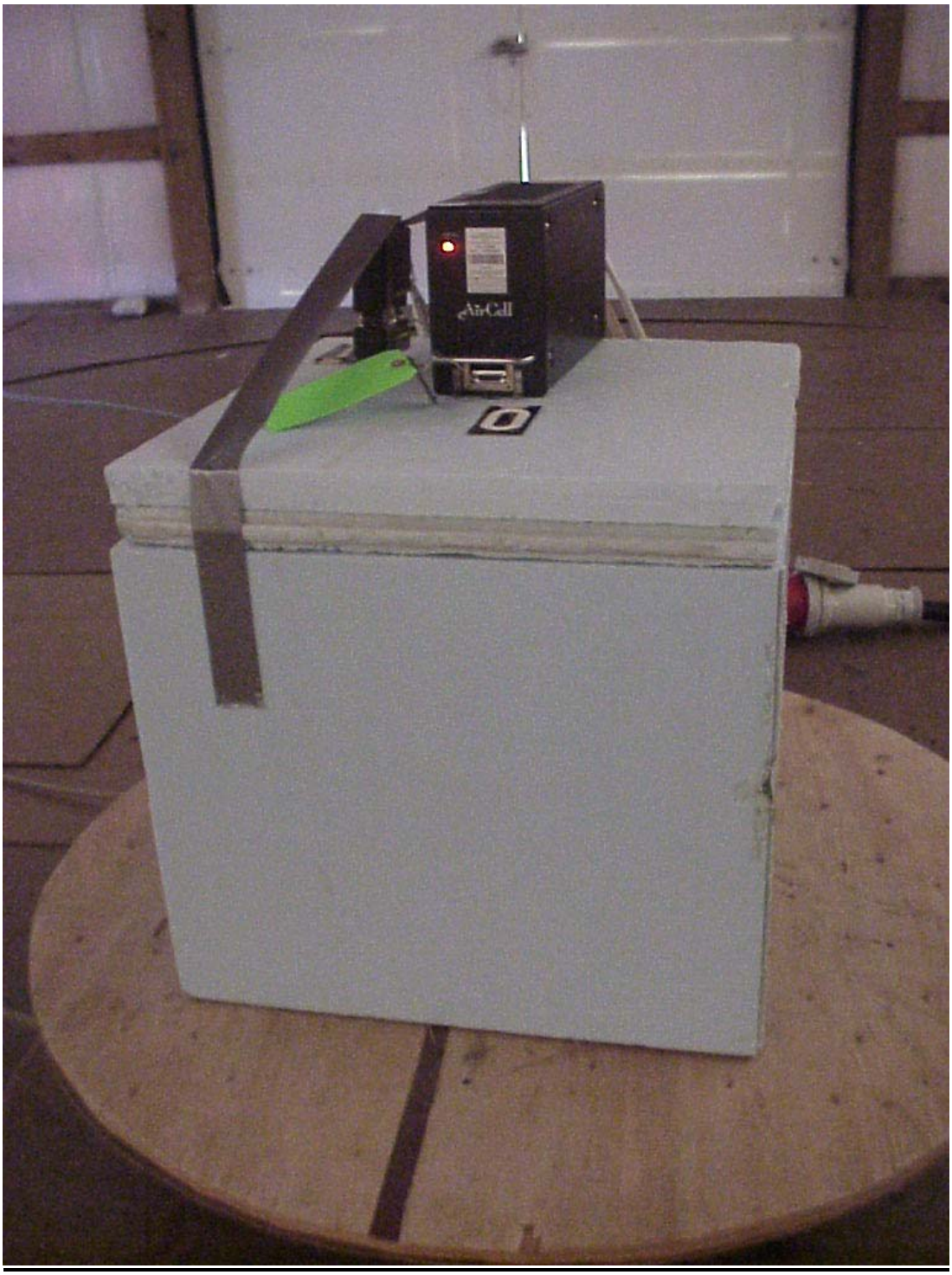
Item 6 Shielded Terrestrial modem cable with Metal Shells. .8m

Item 7 Shielded GPS cable with Metal Shells. .8m

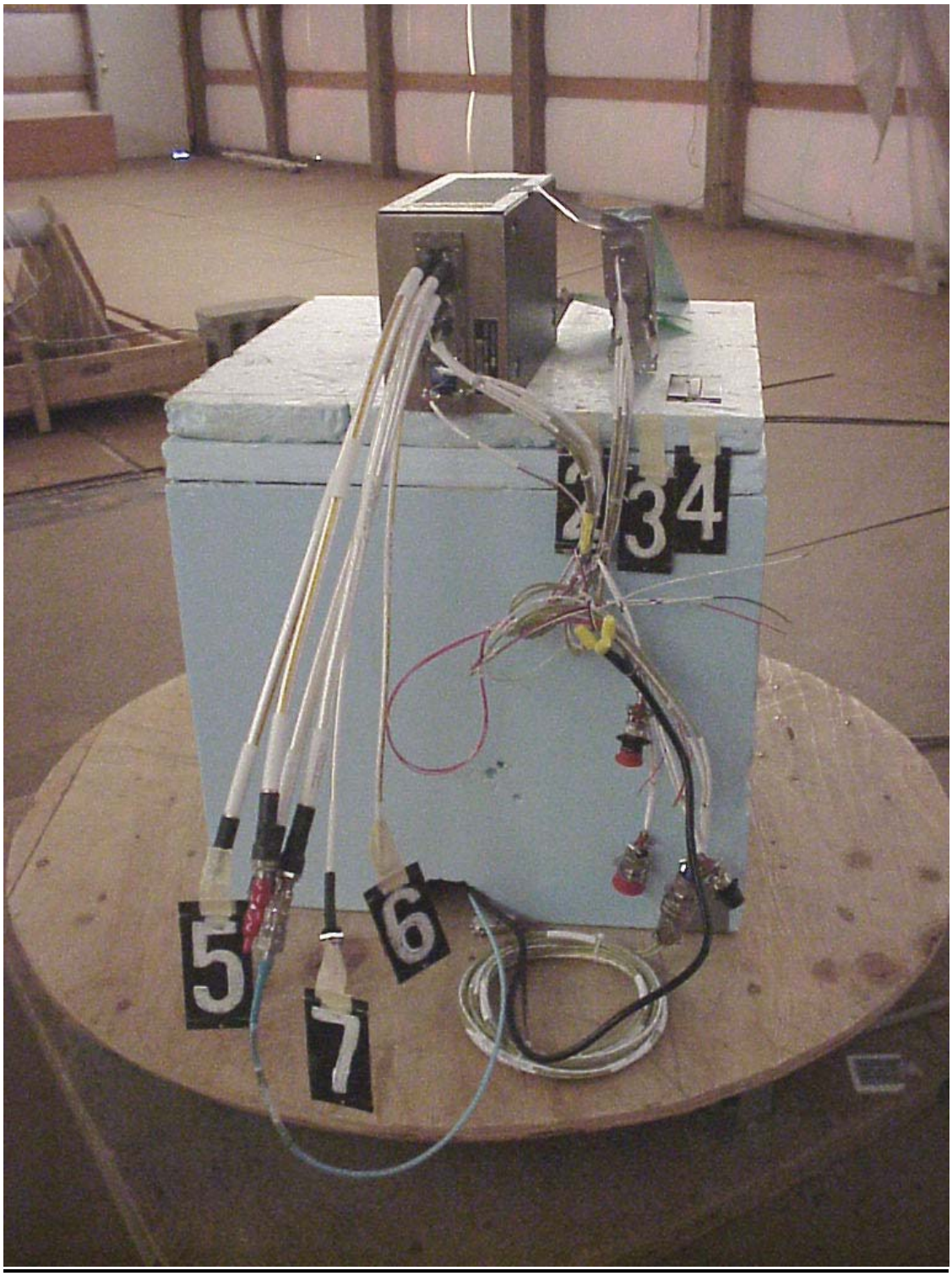
Item 8 Comant Industries Antenna
Model Number: CI 5500 Rev B, Serial Number: 247009

1250 Peterson Dr., Wheeling, IL 60090

11.0 RADIATED PHOTOS TAKEN DURING TESTING



11.0 RADIATED PHOTOS TAKEN DURING TESTING (CON'T)



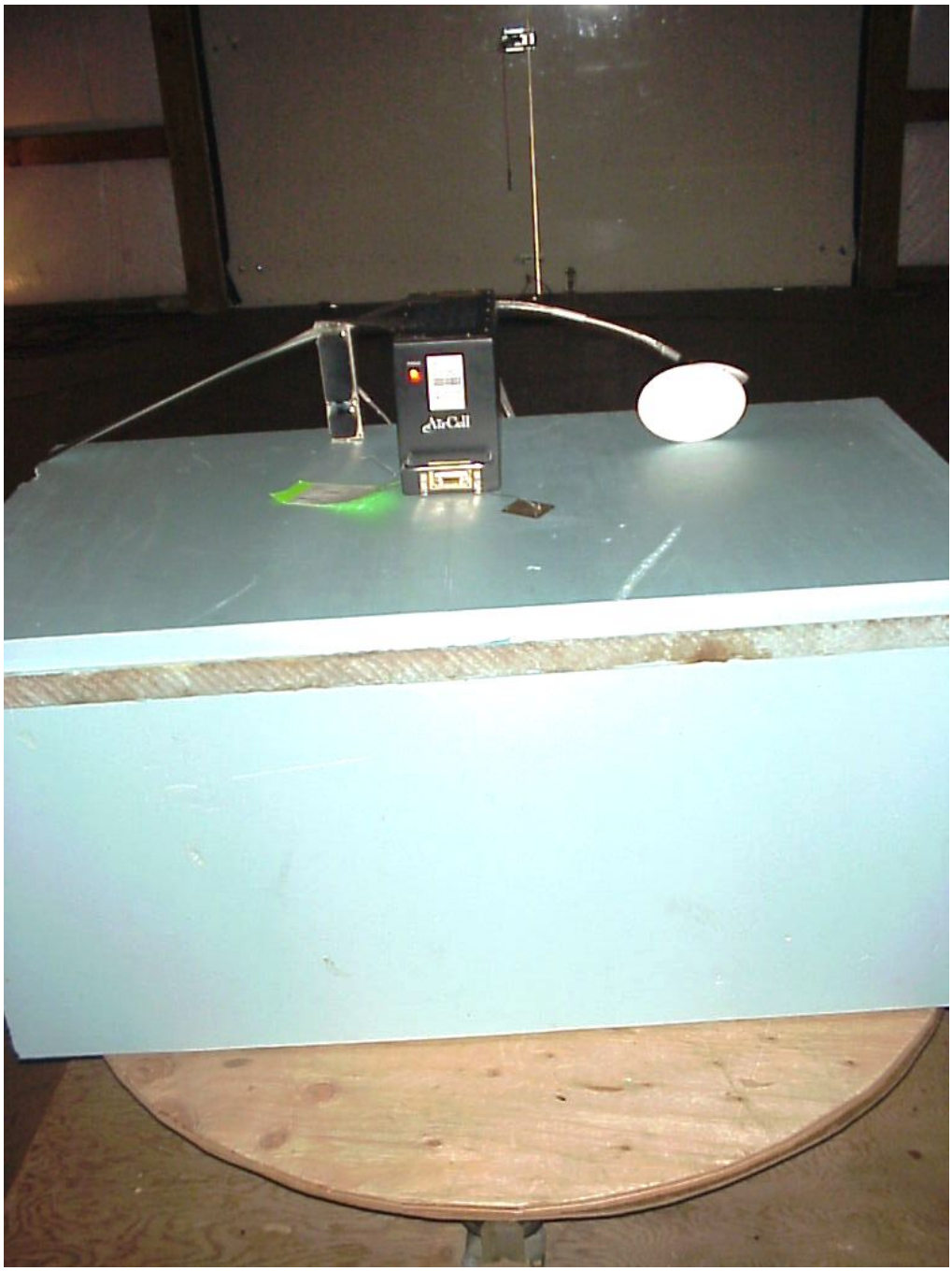
1250 Peterson Dr., Wheeling, IL 60090

11.0 RADIATED PHOTOS TAKEN DURING TESTING (CON'T)

FRONT WITH ANTENNA VERTICAL FCC PART 22.867

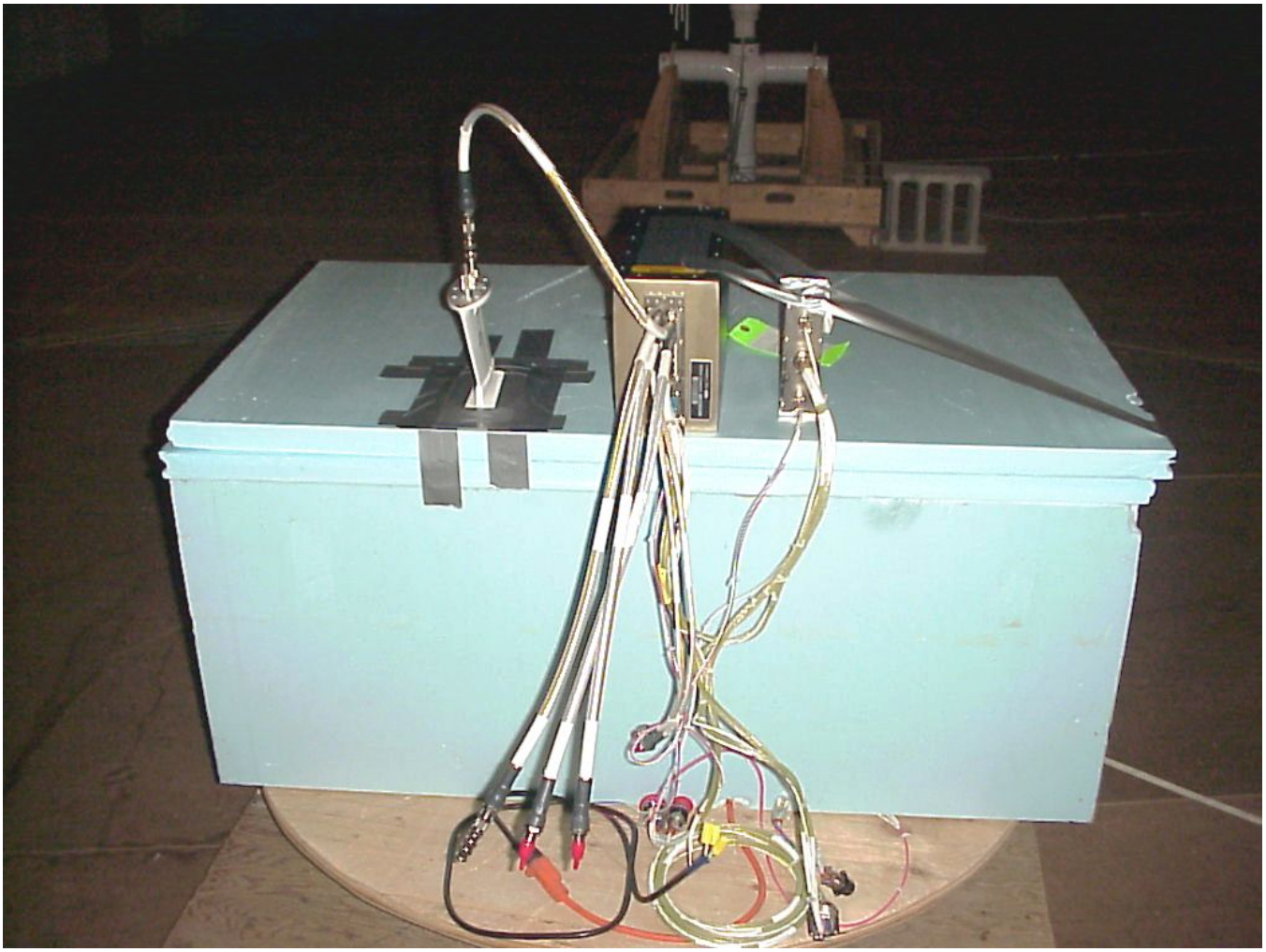
1250 Peterson Dr., Wheeling, IL 60090

11.0 RADIATED PHOTOS TAKEN DURING TESTING (CON'T)



FRONT WITH ANTENNA HORIZONTAL FCC PART 22.867

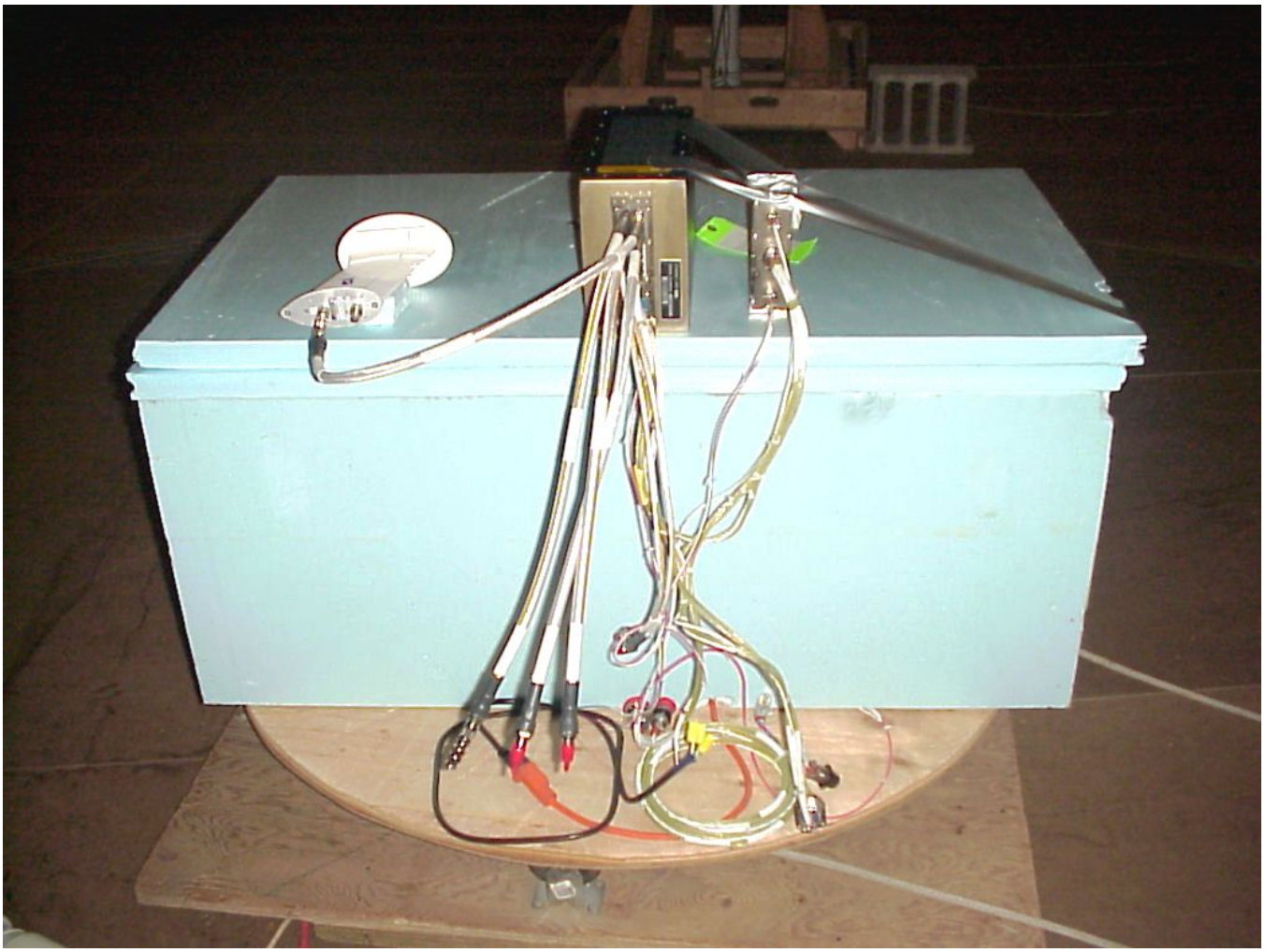
11.0 RADIATED PHOTOS TAKEN DURING TESTING (CON'T)



BACK WITH ANTENNA VERTICAL FCC PART 22.867

1250 Peterson Dr., Wheeling, IL 60090

11.0 RADIATED PHOTOS TAKEN DURING TESTING (CON'T)



BACK WITH ANTENNA HORIZONTAL FCC PART 22.867

12.0 RESULTS OF TESTS

The radio interference emission charts can be seen on the pages at the end of this report. Data sheets indicating the test measurements taken during testing can also be found at the end of this report.

13.0 CONCLUSION

It was found that the Airborne Air-to-ground Communications Unit, Model Number(s) AACU **meets** the radio interference radiated emission requirements of the FCC "Rules and Regulations", Part 22, Subpart G, Sections 22.857 - 22.867, for commercial aviation air-ground systems.

TABLE 1 – EQUIPMENT LIST

Test Equipment	Manufacturer	Model Number	Serial Number	Frequency Range	Cal Due Dates
RF Tuned Receiver	Rohde & Schwarz	ESI 40	837808/005	20 Hz-40 GHz	7/10/2009
RF Preamp	Ciao	CA118-4010	N/A	1 GHz-18 GHz	1/13/2009
RF Preamp	Rohde & Schwarz	TS-PR10	032001/004	9 kHz – 1 GHz	1/9/2009
Log Periodic Antenna	EMCO	3146	1205	200 MHz-1 GHz	4/11/2010
Horn Antenna	EMCO	3115	9502-4451	1 GHz-18 GHz	5/6/2009
Horn Antenna	EMCO	3115	6204	1 GHz-18 GHz	5/18/2009
Signal Generator	Rohde & Schwarz	SMR40	100092	1 GHz-40 GHz	9/27/2008
Radio Communication Analyzer	Anritsu	MT8820	Aircell ID: T00012	30 MHz-2.7 GHz	12/10/2008
High Pass Filter	Q Microwave	100460	1	N/A	5/8/2009
Directional Coupler	Narda	3151-30	N/A	800 MHz-1 GHz	8/19/2009
Directional Coupler	Pasternack	PE2210-20	N/A	1 GHz-10 GHz	8/19/2009

All primary equipment is calibrated against known reference standards with a verified traceable path to NIST.

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

SUBPART G

AIR-GROUND RADIOTELEPHONE SERVICE

ELECTRONIC SYSTEMS, INC.
1250 Peterson Dr., Wheeling, IL 60090

APPENDIX A

TEST PROCEDURE

ELECTRIC FIELD RADIATED EMISSIONS TEST

1.0 TEST SET-UP

All radiated emission tests were performed at D.L.S. Electronic Systems, Inc. The radiated tests were made with the test item placed on a non-conductive turntable located in the Test Room with the receive antenna placed three or one meter from the device under test. The tests were set up according to FCC "Rules and Regulations", Part 22, Subpart G, Section 22.867, for commercial aviation air-ground systems.

2.0 DC VOLTAGES AND CURRENTS APPLIED INTO FINAL RADIO FREQUENCY AMPLIFYING DEVICE FOR NORMAL OPERATION OVER THE POWER RANGE

28 Vdc, 1 Amp

3.0 RF-POWER OUTPUT – PART 22.867 & PART 2.1046

As stated in , the RF output power should not exceed 12 watt(s). The RF output of the Airborne Air-to-ground Communications Unit was connected to a Spectrum Analyzer or a Power Meter through suitable attenuation. All cables, connectors, and attenuators were calibrated prior to testing. The RF output power was measured using the following test method:

Actual Measurements Taken:

39.83 dBm Measured output of the transmitter

39.83 dBm equals 9.62 watt(s)

LIMIT:

Manufacturer's rated output peak power = 10 watts peak

MARGIN:

12- 9.62 = 2.38 watt(s)

1250 Peterson Dr., Wheeling, IL 60090

GRAPH(S) TAKEN OF THE RF POWER

OUTPUT MEASUREMENT

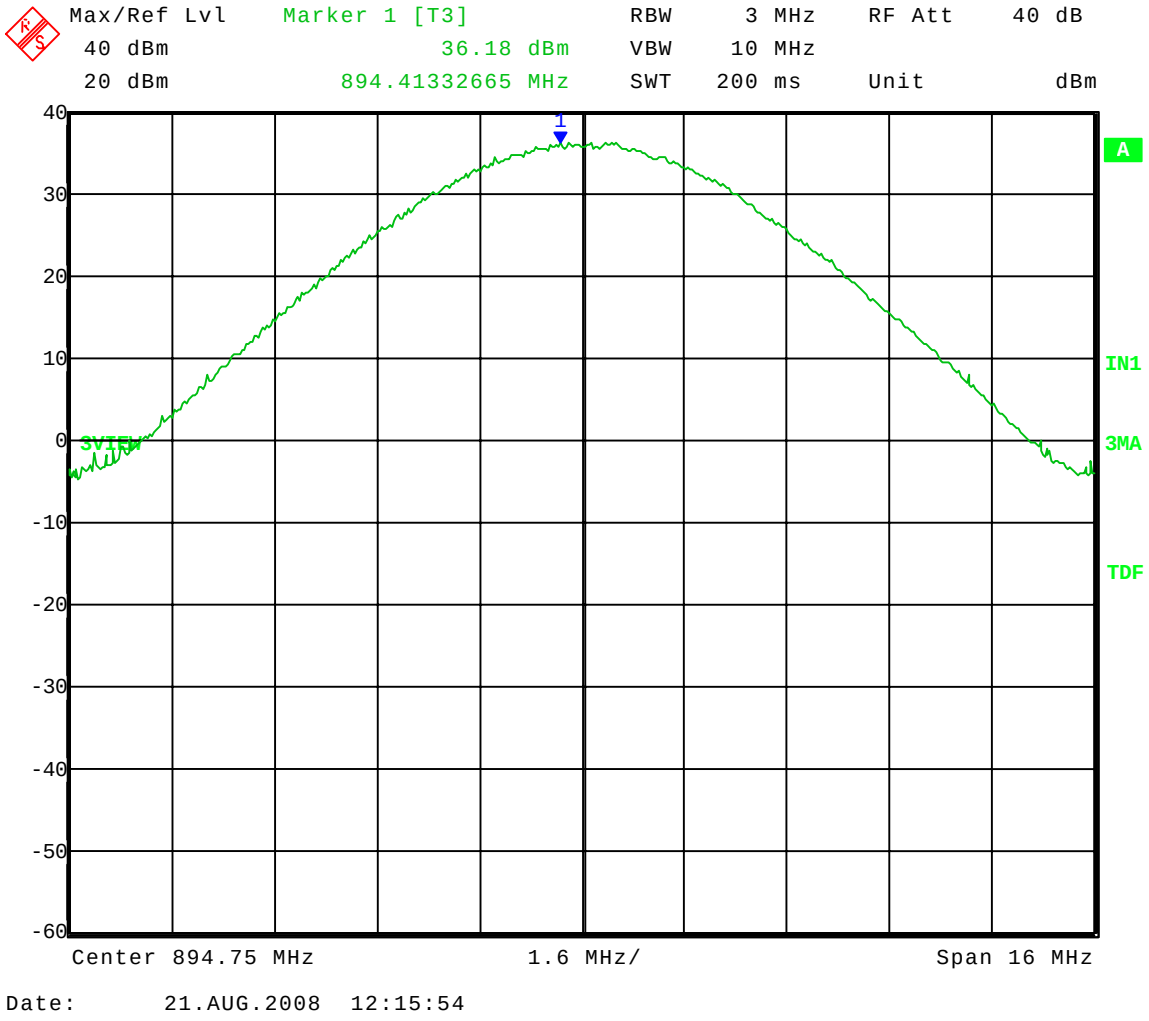
PART 2.1046

EIA /TIA-603-C:2004

1250 Peterson Dr., Wheeling, IL 60090

Test Date: 08-21-2008
Company: Aircell
EUT: AACU
Test: Peak Power Output and Effective Radiated Power - Conducted
Rule part: FCC Part 22.867; FCC Part 2.1046
Operator: Craig B
Comment: Channel: 894.750 MHz
Limit: ERP must not exceed 12 Watts (40.79 dBm)

Peak Output Power = 36.18 dBm
ERP = 36.18 dBm + 5.8 dBi antenna gain -2.15 dB (1/2 wave dipole) = 39.83 dBm = 9.62 Watts

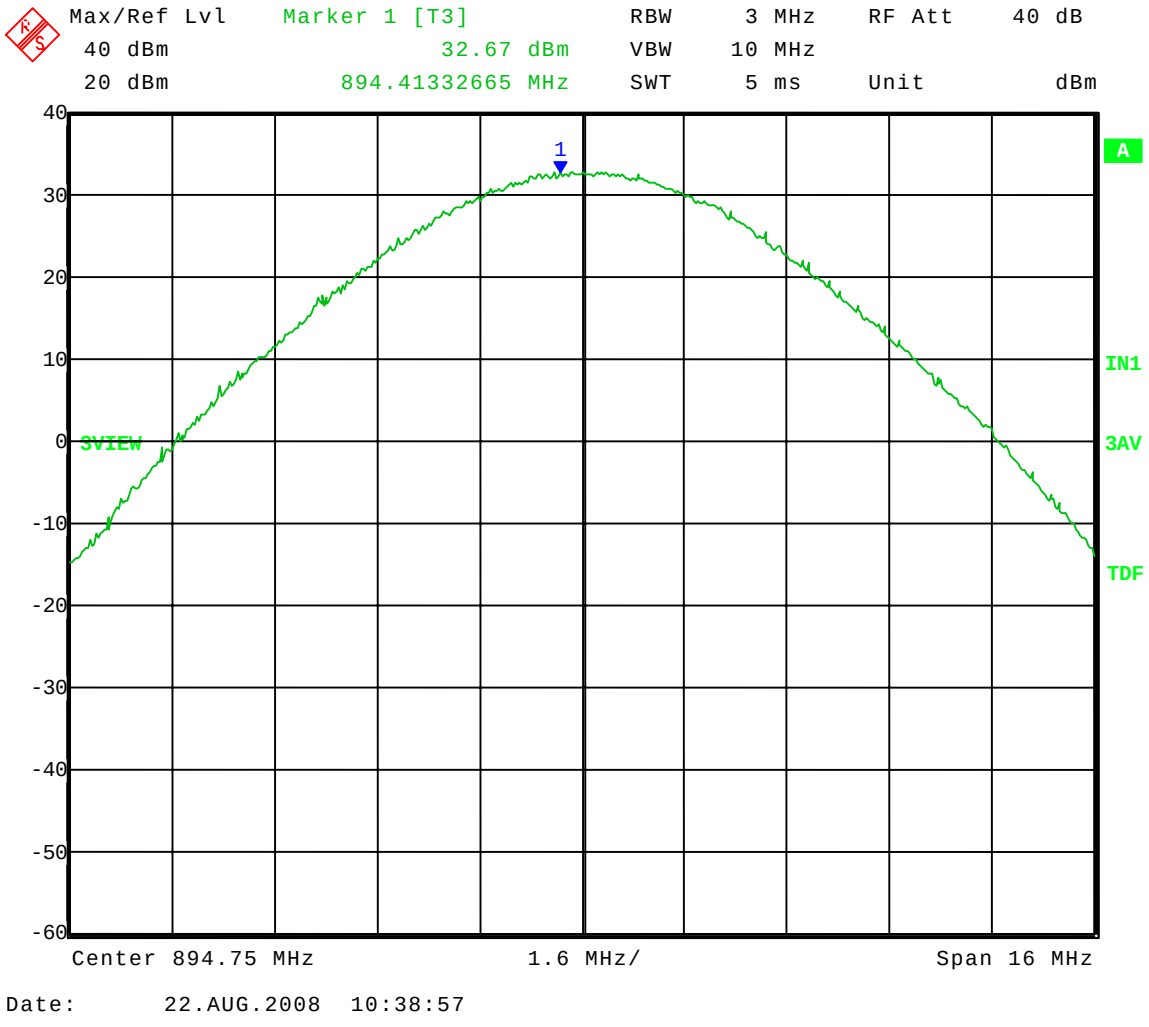


1250 Peterson Dr., Wheeling, IL 60090

Test Date: 08-21-2008
Company: Aircell
EUT: AACU
Test: Peak Power Output - Conducted
Rule part: FCC Part 22.867; FCC Part 2.1046
Operator: Craig B
Comment: Channel: 894.750 MHz
Limit: ERP must not exceed 12 Watts (40.79 dBm)

AVERAGE Output Power = 32.67 dBm
ERP = 32.67 dBm + 5.8 dBi antenna gain -2.15 dB (1/2 wave dipole) = 36.32 dBm = 4.29 Watts

AVERAGE DETECTOR:



1250 Peterson Dr., Wheeling, IL 60090

3.0 OCCUPIED BANDWIDTH – PART 21049

The occupied bandwidth is that between the lower and upper limits of the signal where the mean power is 99.0% of the total mean power and measured under the following conditions:

For Commercial Aviation Air-Ground Systems operating in the bands other than those allocated, the occupied bandwidth shall not be greater than that necessary for satisfactory transmission and emissions appearing on any discrete frequency outside the authorize band shall be attenuated 43+10 $\log^{10}$ (mean output power, in watts) dB below the mean output power of the transmitting unit (device under test).

1250 Peterson Dr., Wheeling, IL 60090

GRAPH(S) TAKEN SHOWING THE

99% OCCUPIED BANDWIDTH

PART 2.1049

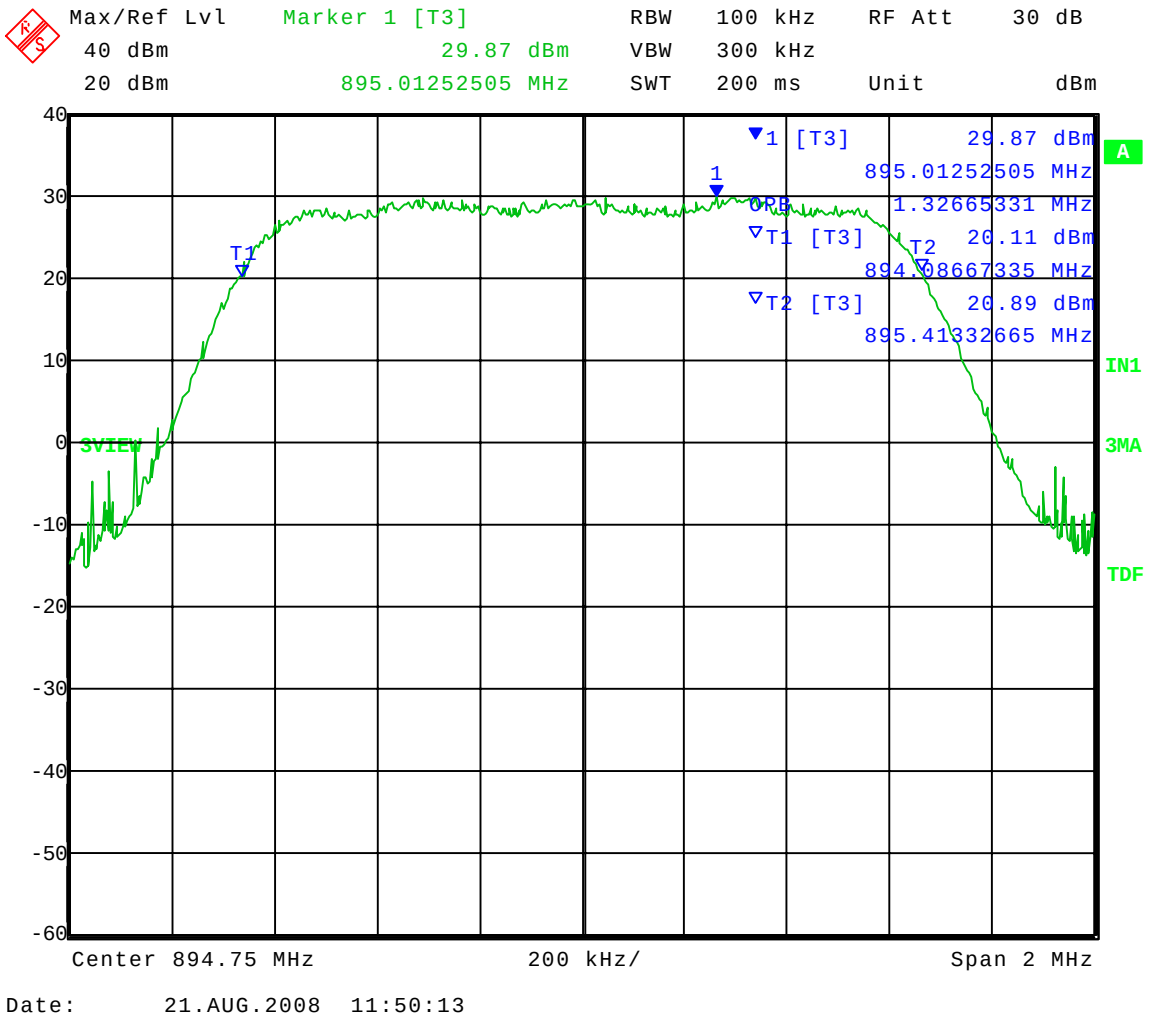
1250 Peterson Dr., Wheeling, IL 60090

Company: Aircell LLC
Model Tested: AACU
Report Number: 14639

Test Date: 08-21-2008
Company: Aircell
EUT: AACU
Test: Occupied Bandwidth; 99% Power Bandwidth
Rule part: FCC Part 22.861; FCC Part 2.1049
Operator: Craig B

Frequency: 894.750 MHz
Modulation: 8-PSK

99% power bandwidth = 1.33 MHz



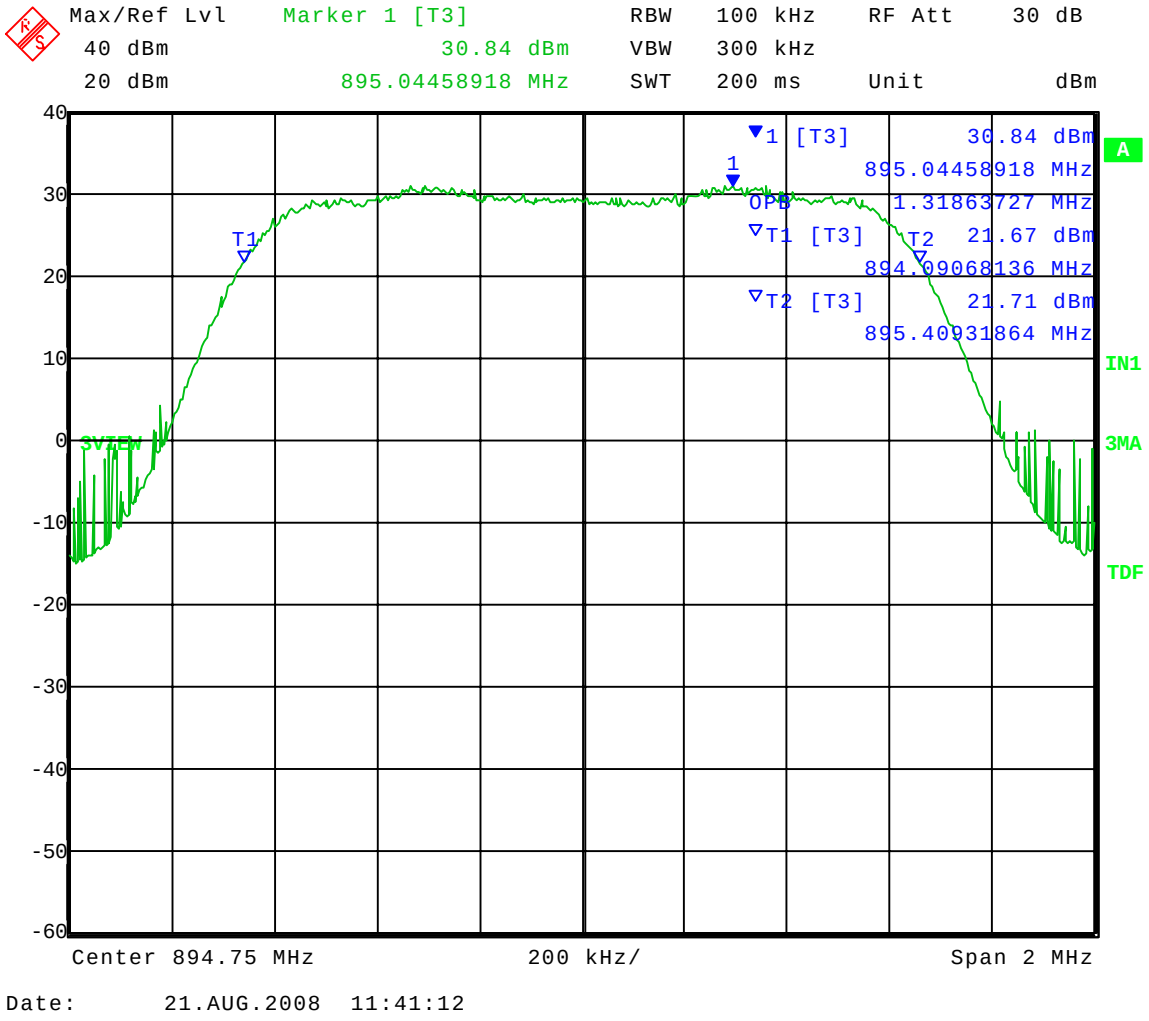
1250 Peterson Dr., Wheeling, IL 60090

Company: Aircell LLC
Model Tested: AACU
Report Number: 14639

Test Date: 08-21-2008
Company: Aircell
EUT: AACU
Test: Occupied Bandwidth; 99% Power Bandwidth
Rule part: FCC Part 22.861; FCC Part 2.1049
Operator: Craig B

Frequency: 894.750 MHz
Modulation: BPSK

99% power bandwidth = 1.32 MHz



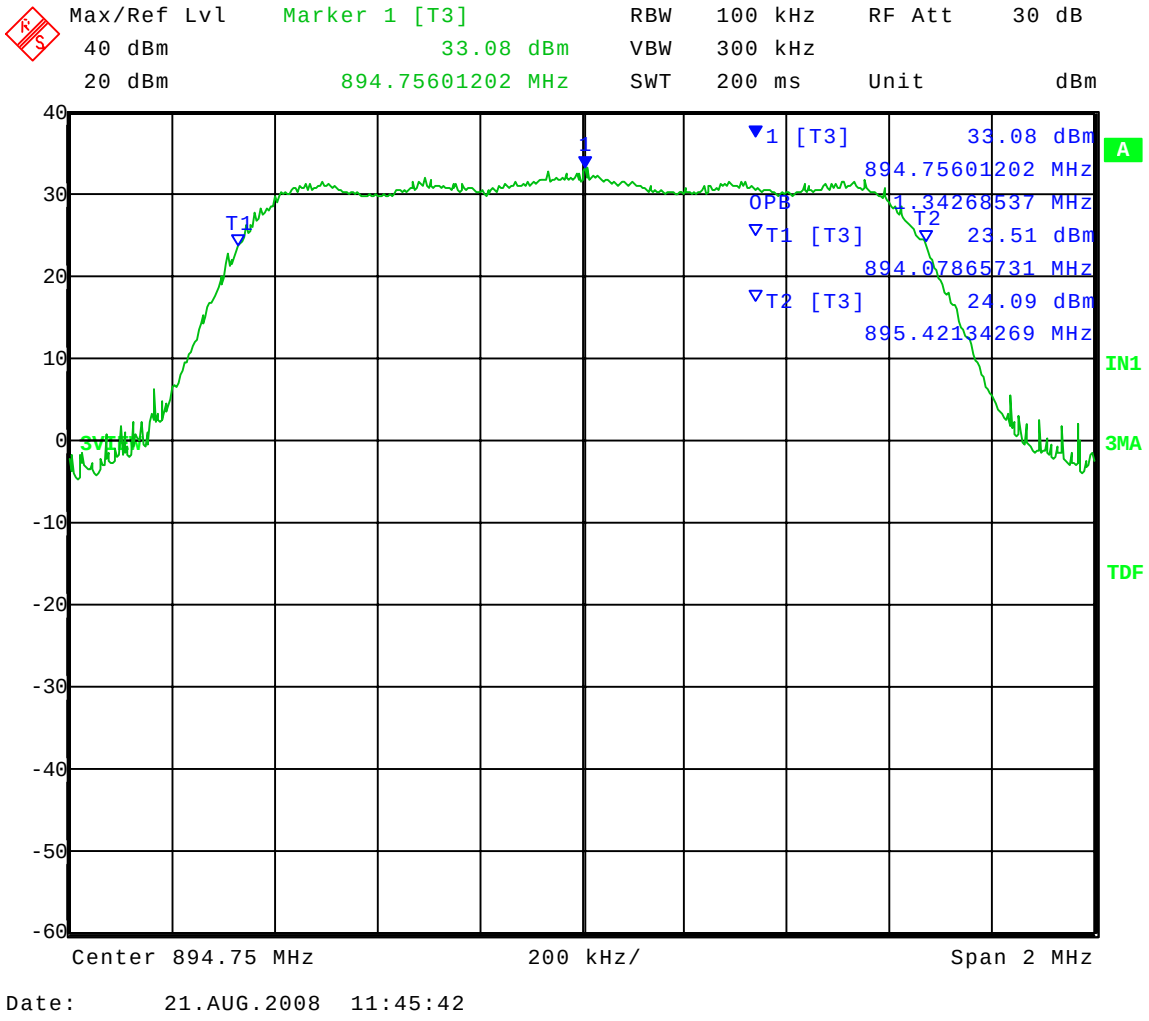
1250 Peterson Dr., Wheeling, IL 60090

Company: Aircell LLC
Model Tested: AACU
Report Number: 14639

Test Date: 08-21-2008
Company: Aircell
EUT: AACU
Test: Occupied Bandwidth; 99% Power Bandwidth
Rule part: FCC Part 22.861; FCC Part 2.1049
Operator: Craig B

Frequency: 894.750 MHz
Modulation: QPSK

99% power bandwidth = 1.34 MHz



1250 Peterson Dr., Wheeling, IL 60090

GRAPH(S) TAKEN SHOWING THE

26 dB EMISSION BANDWIDTH

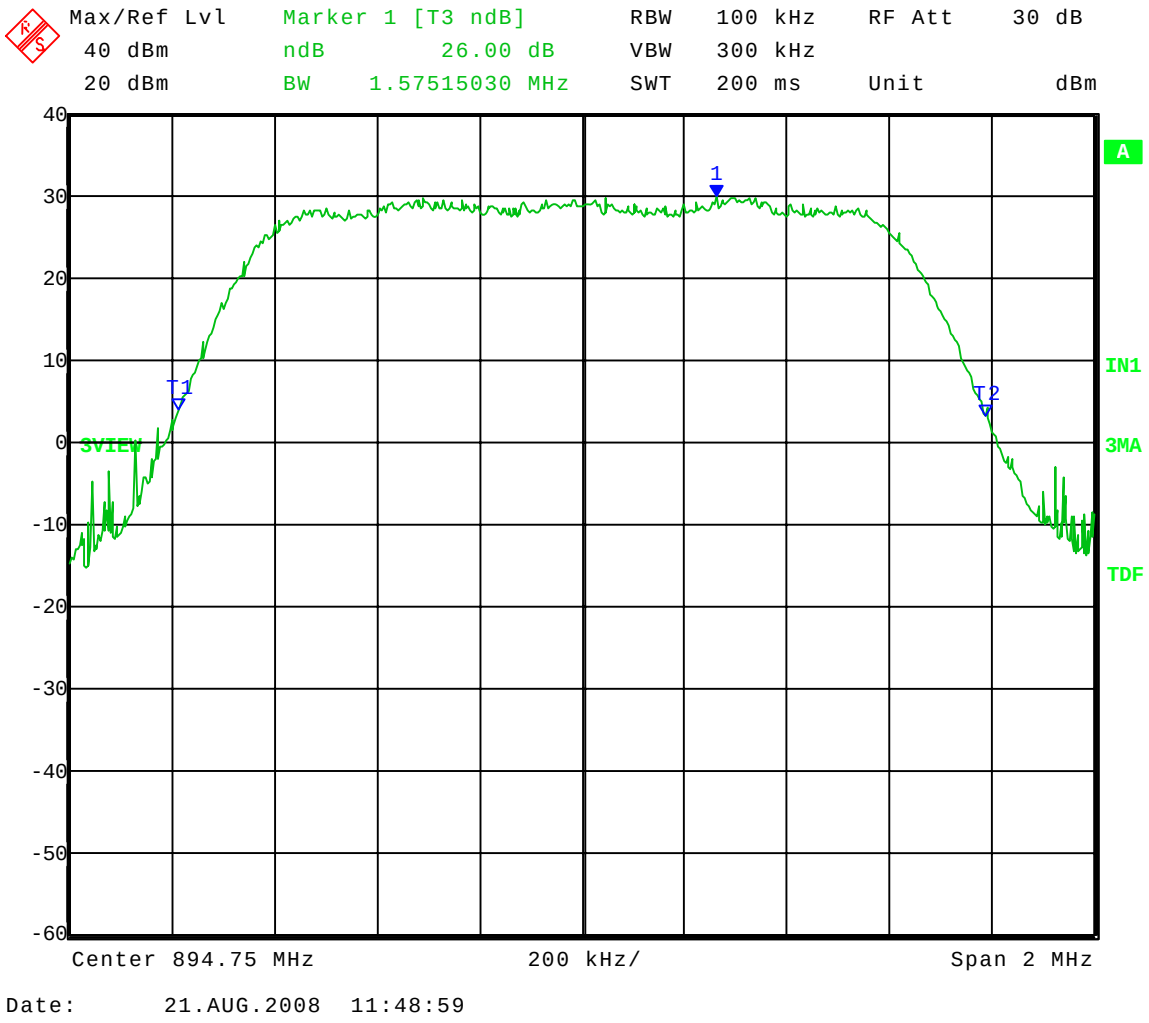
Part 22.861(b)

1250 Peterson Dr., Wheeling, IL 60090

Test Date: 08-21-2008
Company: Aircell
EUT: AACU
Test: Emission Bandwidth; 26 dB Bandwidth
Rule part: FCC Part 22.861; FCC Part 2.1049
Operator: Craig B

Frequency: 894.750 MHz
Modulation: 8-PSK

26 dB bandwidth = 1.58 MHz

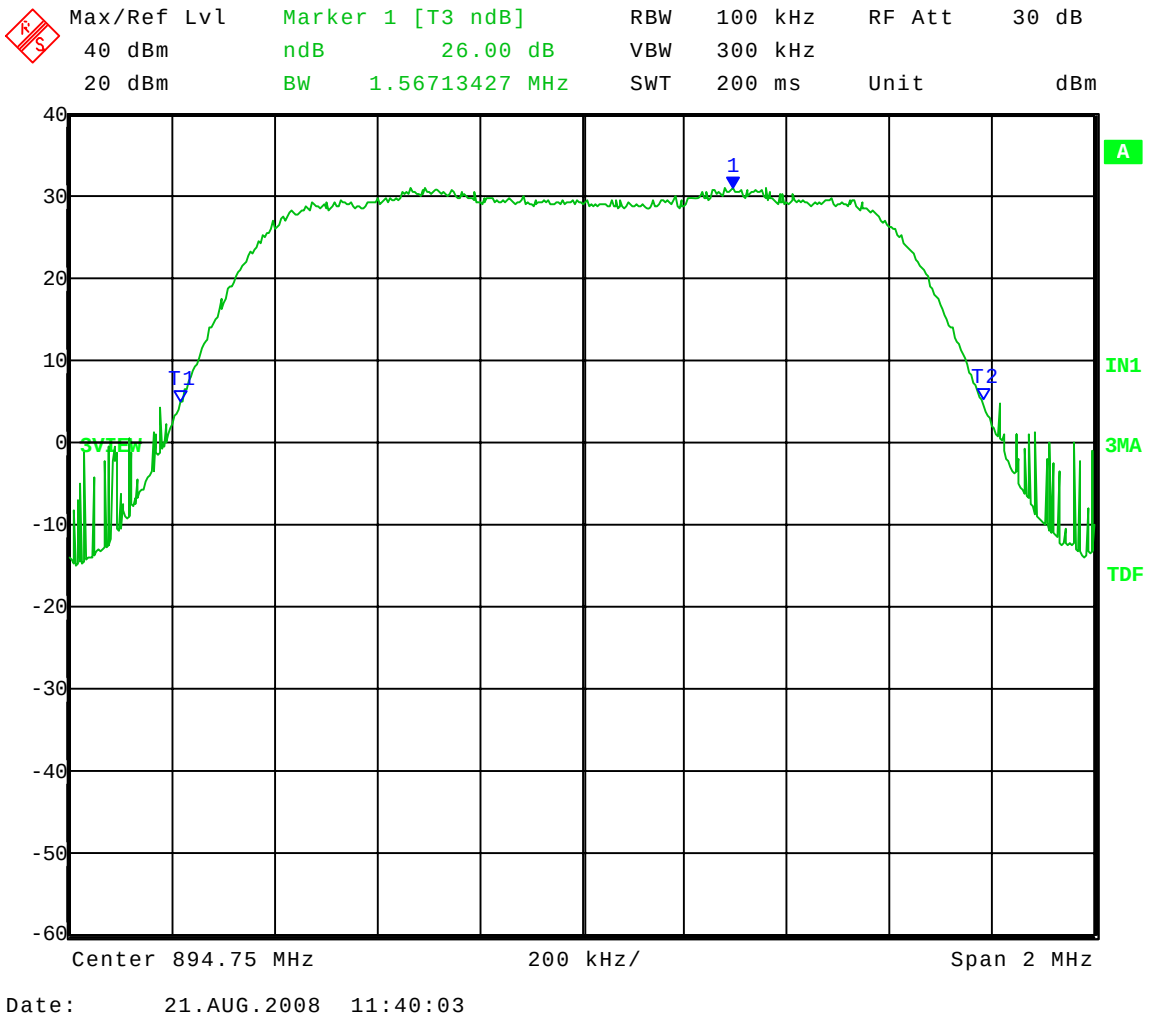


1250 Peterson Dr., Wheeling, IL 60090

Test Date: 08-21-2008
Company: Aircell
EUT: AACU
Test: Emission Bandwidth; 26 dB Bandwidth
Rule part: FCC Part 22.861; FCC Part 2.1049
Operator: Craig B

Frequency: 894.750 MHz
Modulation: BPSK

26 dB bandwidth = 1.57 MHz



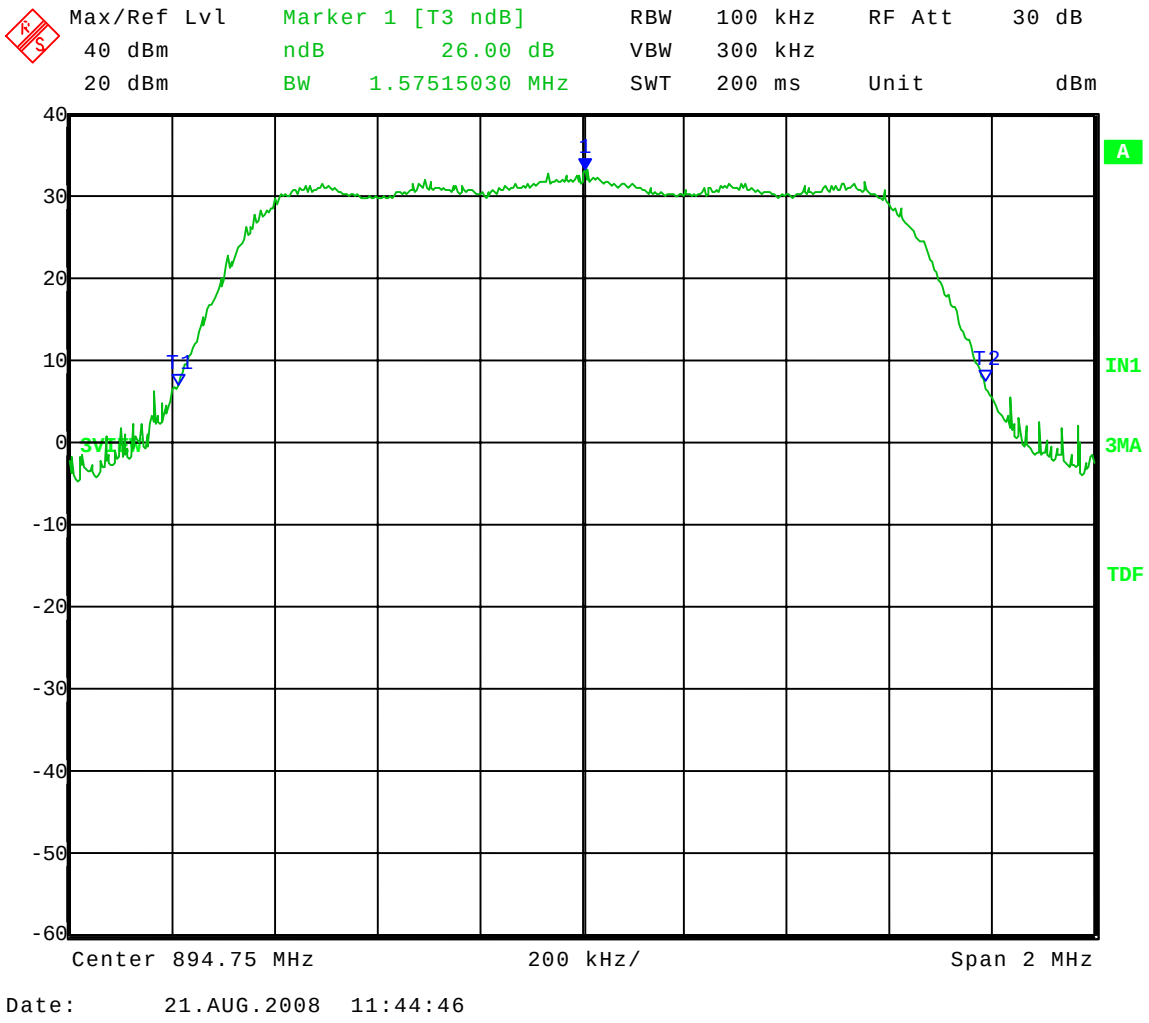
1250 Peterson Dr., Wheeling, IL 60090

Company: Aircell LLC
Model Tested: AACU
Report Number: 14639

Test Date: 08-21-2008
Company: Aircell
EUT: AACU
Test: Emission Bandwidth; 26 dB Bandwidth
Rule part: FCC Part 22.861; FCC Part 2.1049
Operator: Craig B

Frequency: 894.750 MHz
Modulation: QPSK

26 dB bandwidth = 1.58 MHz



1250 Peterson Dr., Wheeling, IL 60090

5.0 SPURIOUS EMISSIONS AT ANTENNA TERMINALS – PART 2.1051

Spurious conducted emissions were measured at the antenna terminals using an artificial load. Plots were made showing the amplitude of each harmonic emission with the equipment operated as specified in 2.1049. Measurements were made up to the 10^{th} harmonic of the fundamental.

The allowed emissions for transmitters operating in the 849 MHz – 851 MHz and 894 MHz – 896 MHz frequency bands for Airborne Air-to-ground Communications Unit equipment are found under Part 22, Section 22.861(a). This paragraph states that the power of any emissions outside the authorized operating frequency bands must be attenuated below the transmitting power (P) by a factor of at least 43+10log(P) dB.

NOTE:

The Airborne Air-to-ground Communications Unit uses a Dual Polarized Antenna**.** See the following pages for the data and graphs of the actual measurements made:

1250 Peterson Dr., Wheeling, IL 60090

Company: Aircell LLC
Model Tested: AACU
Report Number: 14639

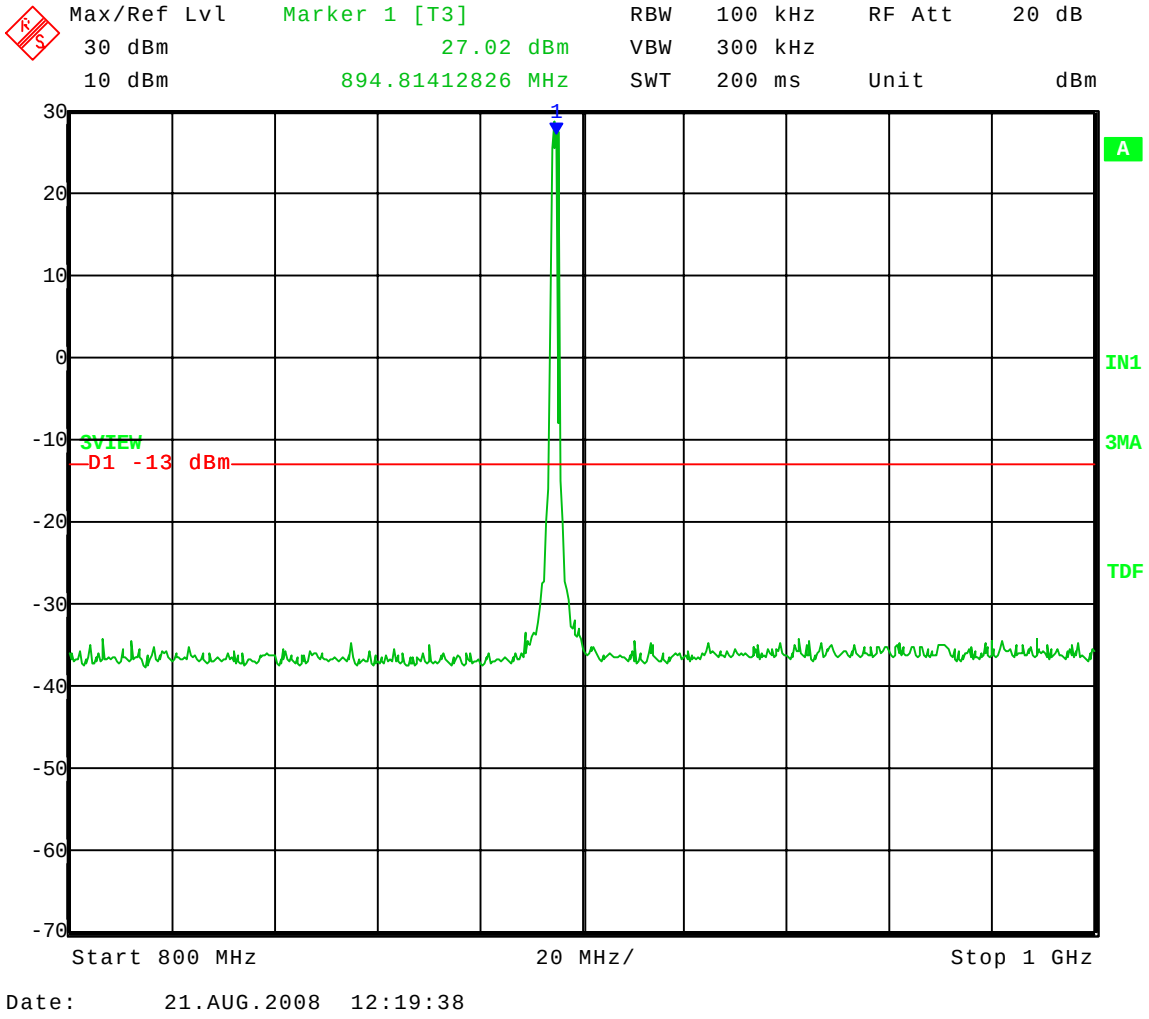
CONDUCTED EMISSION DATA TAKEN FOR SPURIOUS EMISSION MEASUREMENTS MADE AT THE ANTENNA TERMINALS

PART 22.861 & PART 2.1051

LIMIT –13 dBm

1250 Peterson Dr., Wheeling, IL 60090

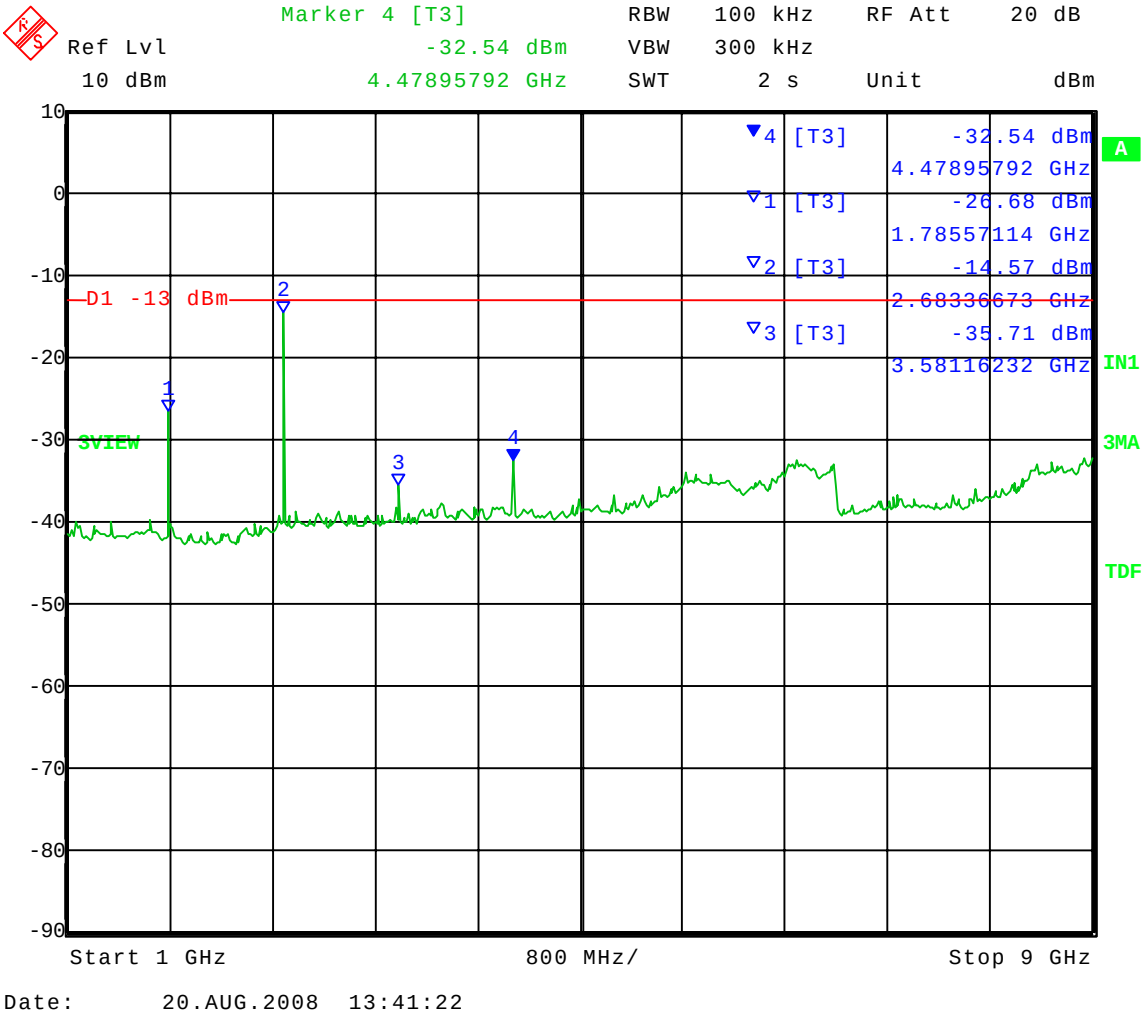
Test Date: 08-21-2008
Company: Aircell
EUT: AACU
Test: Spurious Emissions - Conducted
Rule part: FCC Part 22.861; FCC Part 2.1051
Operator: Craig B
Comment: Channel: 894.750 MHz
Frequency Range: 800 to 1000 MHz
Limit = -13 dBm



1250 Peterson Dr., Wheeling, IL 60090

Company: Aircell LLC
Model Tested: AACU
Report Number: 14639

Test Date: 08-20-2008
Company: Aircell
EUT: AACU
Test: Spurious Emissions - Conducted
Rule part: FCC Part 22.861; FCC Part 2.1051
Operator: Craig B
Comment: Channel: 894.750 MHz
Frequency Range: 1 to 10 GHz
Limit = -13 dBm



1250 Peterson Dr., Wheeling, IL 60090

6.0 FIELD STRENGTH OF SPURIOUS EMISSION MEASUREMENTS – PART 2.1053

Radiated measurements were performed scanning the frequency range from 200 MHz to at least the 10th harmonic of the fundamental frequency. For the Airborne Air-to-ground Communications Unit, the highest fundamental frequency is 894.75 so the scans were made up to 10000 MHz, to cover the tenth harmonic.

All signals in the frequency range of 800 MHz to 1000 MHz were measured with a Log Periodic Antenna. From 1000 MHz to 10000 MHz, a Double Ridge Horn Antenna was used. The cables and equipment were placed and moved within the range of positions likely to find their maximum emissions. Tests were made in both the horizontal and vertical planes of polarization.

The allowed emissions for transmitters operating in the 849 MHz – 851 MHz and 894 MHz – 896 MHz frequency bands for Airborne Air-to-ground Communications Unit equipment are found under Part 22, Section 22.861(a). This paragraph states that the power of any emissions outside the authorized operating frequency bands must be attenuated below the transmitting power (P) by a factor of at least 43+10log(P) dB. See the following pages for the data and graphs of the actual measurements made.

1250 Peterson Dr., Wheeling, IL 60090

Company: Aircell LLC
Model Tested: AACU
Report Number: 14639

RADIATED EMISSION DATA TAKEN FOR

E.R.P SPURIOUS EMISSION MEASUREMENTS

PART 2.1053

1250 Peterson Dr., Wheeling, IL 60090

DLS Electronic Systems, Inc.

Company: Aircell
Operator: Craig B
Date of test: 08-19-2008
Temperature: 70 deg. F.
Humidity: 23% R.H.

Radiated Spurious Emissions (e.r.p. substitution method) FCC Part 22; FCC Part 2.1053								
Model: **AACU** Transmit Frequency: **894.750 MHz**								
Frequency GHz	Field Strength Level dBuV/m	Factor to Convert to dBm	Power ERP dBm	Limit dBm	Margin dB	Receive Antenna Polarization	EUT Antenna Orientation	Receive Antenna Height (m)
1.78950	51.2	98.7	-47.5	-13	34.5	Horizontal	225	1.0
2.68425	53.4	100.1	-46.7	-13	33.7	Horizontal	150	1.1
3.57900	55.4	100.2	-44.8	-13	31.8	Horizontal	225	1.1
1.78950	59.4	99.0	-39.6	-13	26.6	Vertical	90	1.0
2.68425	57.9	99.7	-41.8	-13	28.8	Vertical	30	1.6
3.57900	50.2	99.9	-49.7	-13	36.7	Vertical	225	1.0

Note: All other spurious emissions are more than 20 dB below limit.

1250 Peterson Dr., Wheeling, IL 60090

RADIATED EMISSION DATA TAKEN FOR

E.R.P SPURIOUS EMISSION MEASUREMENTS

ERP Power Output Data Per FCC Part. 22.867 &

TIA 603c

1250 Peterson Dr., Wheeling, IL 60090

DLS Electronic Systems, Inc.

Company: Aircell
Operator: Craig B
Date of test: 10-20-2008
Temperature: 70 deg. F
Humidity: 44% R.H.

ERP - Substitution Method

Model: **AACU**								
Channel: **894.75 MHz, Antenna port J1, Antenna vertical**								
Frequency and Polarization (MHz)	Max. Field Strength of EUT @ 3 meters (dBuV/m)	Output of Signal Generator when field strength equals that of EUT (dBm)	Correction factor for cable between Signal Gen. and subst. antenna (dB)	Gain of subst. antenna (dBi)	Strength of emission [ERP] (dBm)	Limit (dBm)	Margin (dB)	Strength of emission [ERP] (W)
894.75 vertical	138.25	50.4	11.12	2.15	39.3	40.8	1.5	8.5
894.75 horizontal	134.73	45.1	11.12	2.15	34.0	40.8	6.8	2.5

EIRP = Signal generator output - cable loss + antenna gain

$ERP_{(\text{ref. to } \frac{1}{2}\lambda \text{ dipole})}$ = Signal generator output - cable loss + antenna gain - 2.15

1250 Peterson Dr., Wheeling, IL 60090

DLS Electronic Systems, Inc.

Company: Aircell
Operator: Craig B
Date of test: 10-20-2008
Temperature: 70 deg. F
Humidity: 44% R.H.

ERP - Substitution Method

Model: **AACU**								
Channel: **894.75 MHz, Antenna port J1, Antenna horizontal**								
Frequency and Polarization (MHz)	Max. Field Strength of EUT @ 3 meters (dBuV/m)	Output of Signal Generator when field strength equals that of EUT (dBm)	Correction factor for cable between Signal Gen. and subst. antenna (dB)	Gain of subst. antenna (dBi)	Strength of emission [ERP] (dBm)	Limit (dBm)	Margin (dB)	Strength of emission [ERP] (W)
894.75 vertical	132.73	45.0	11.12	2.15	33.9	40.8	6.9	2.4
894.75 horizontal	139.91	50.4	11.12	2.15	39.3	40.8	1.5	8.5

EIRP = Signal generator output - cable loss + antenna gain

$ERP_{(\text{ref. to } \frac{1}{2}\lambda \text{ dipole})}$ = Signal generator output - cable loss + antenna gain - 2.15

1250 Peterson Dr., Wheeling, IL 60090

DLS Electronic Systems, Inc.

Company: Aircell
Operator: Craig B
Date of test: 10-20-2008
Temperature: 70 deg. F
Humidity: 44% R.H.

ERP - Substitution Method

Model: **AACU**								
Channel: **894.75 MHz, Antenna port J2, Antenna vertical**								
Frequency and Polarization (MHz)	Max. Field Strength of EUT @ 3 meters (dBuV/m)	Output of Signal Generator when field strength equals that of EUT (dBm)	Correction factor for cable between Signal Gen. and subst. antenna (dB)	Gain of subst. antenna (dBi)	Strength of emission [ERP] (dBm)	Limit (dBm)	Margin (dB)	Strength of emission [ERP] (W)
894.75 vertical	129.26	41.5	11.12	2.15	30.4	40.8	10.4	1.1
894.75 horizontal	139.83	50.2	11.12	2.15	39.1	40.8	1.7	8.1

EIRP = Signal generator output - cable loss + antenna gain

$ERP_{(\text{ref. to } \frac{1}{2}\lambda \text{ dipole})}$ = Signal generator output - cable loss + antenna gain - 2.15

1250 Peterson Dr., Wheeling, IL 60090

DLS Electronic Systems, Inc.

Company: Aircell
Operator: Craig B
Date of test: 10-20-2008
Temperature: 70 deg. F
Humidity: 44% R.H.

ERP - Substitution Method

Model: **AACU**								
Channel: **894.75 MHz, Antenna port J2, Antenna horizontal**								
Frequency and Polarization (MHz)	Max. Field Strength of EUT @ 3 meters (dBuV/m)	Output of Signal Generator when field strength equals that of EUT (dBm)	Correction factor for cable between Signal Gen. and subst. antenna (dB)	Gain of subst. antenna (dBi)	Strength of emission [ERP] (dBm)	Limit (dBm)	Margin (dB)	Strength of emission [ERP] (W)
894.75 vertical	133.58	45.8	11.12	2.15	34.7	40.8	6.1	2.9
894.75 horizontal	130.11	40.4	11.12	2.15	29.3	40.8	11.5	0.8

EIRP = Signal generator output - cable loss + antenna gain

$ERP_{(\text{ref. to } \frac{1}{2}\lambda \text{ dipole})}$ = Signal generator output - cable loss + antenna gain - 2.15

1250 Peterson Dr., Wheeling, IL 60090

7.0 FREQUENCY STABILITY (TEMPERATURE)– PART 2.1055(a1)

The frequency stability was measured from -30° to +50° centigrade at intervals of 10° centigrade throughout the range. Prior to each frequency measurement, the equipment was left alone for a sufficient period of time (approximately 30 minutes or more) to allow the components of the Wireless Boundary Microphone oscillator circuitry to stabilize.

See the following page for the data taken during testing.

8.0 FREQUENCY STABILITY (VOLTAGE VARIATION)– PART 2.1055(d2)

The frequency stability of Airborne Air-to-ground Communications Unit was measured by reducing the primary supply voltage to the battery end point specified by the manufacturer**.**

See the following page for the data taken during testing.

1250 Peterson Dr., Wheeling, IL 60090

DATA TAKEN FOR FREQUENCY

STABILITY WHEN VARYING THE TEMPERATURE

AND

PRIMARY SUPPLY VOLTAGE VARIATION

PART 22 AND

PART 2.1055a(1) & PART 2.1055d(d2)

1250 Peterson Dr., Wheeling, IL 60090

Company: Aircell LLC
Model Tested: AACU
Report Number: 14639

DLS Electronic Systems, Inc.

Company: Aircell
Operator: Craig B
Date of test: 08-21-2008
Test: Frequency Stability FCC Part 2.1055
Model: AACU
Limit = 4.4 ppm (3.9 kHz)

Nominal Frequency (MHz)	Measured Frequency									
	+50 deg. C	Error (kHz)	+40 deg. C	Error (kHz)	+30 deg. C	Error (kHz)	+20 deg. C	Error (kHz)	+10 deg. C	Error (kHz)
894.750	894.750000	**0.000**	894.750000	**0.000**	894.750000	**0.000**	894.750000	**0.000**	894.750002	**0.002**

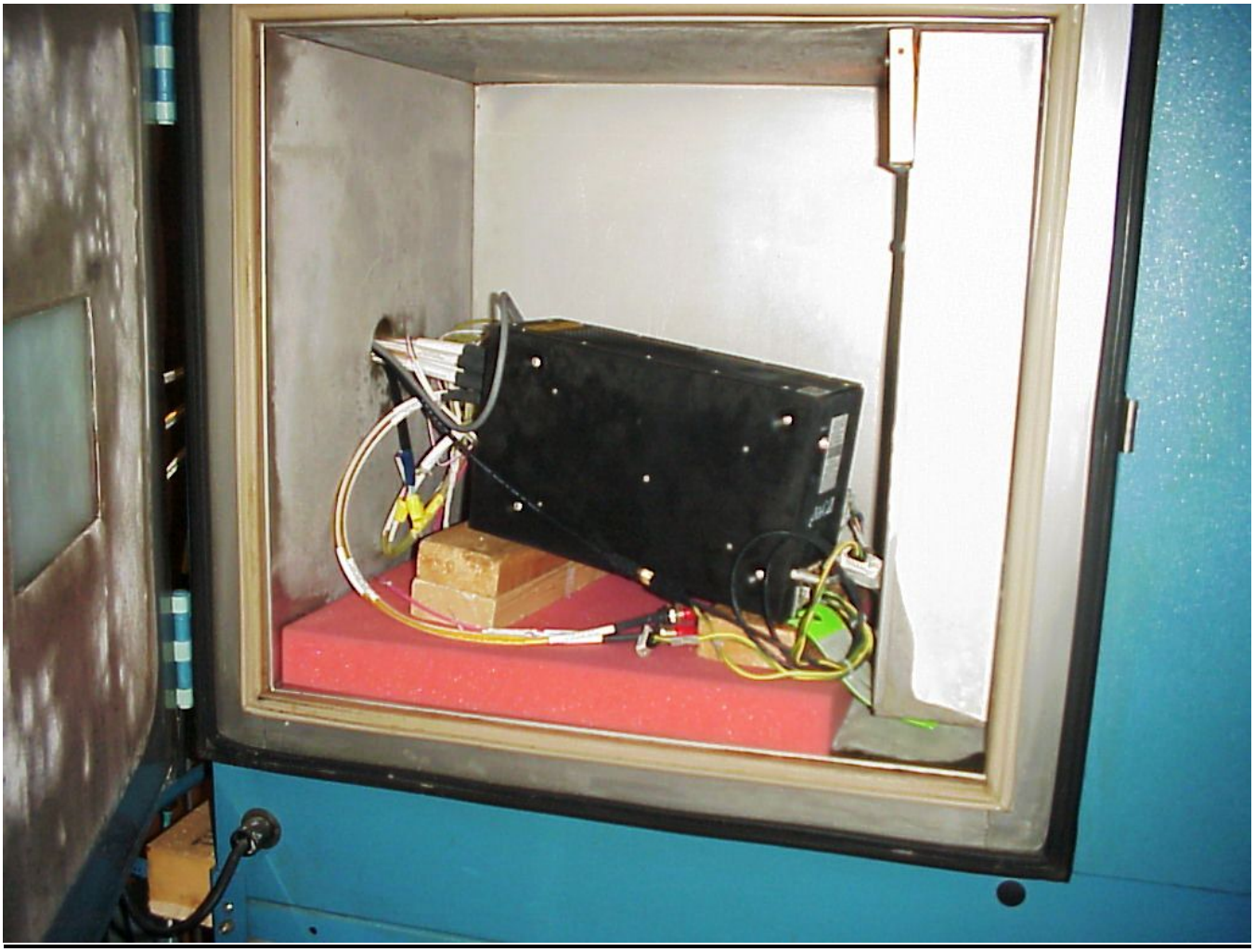
Nominal Frequency (MHz)	Measured Frequency									
	0 deg. C	Error (kHz)	-10 deg. C	Error (kHz)	-20 deg. C	Error (kHz)	-30 deg. C	Error (kHz)		
894.750	894.750023	**0.023**	894.750090	**0.090**	894.749987	**-0.013**	NA*			

Nominal Frequency (MHz)	Measured Frequency									
	97 Volts	Error (kHz)	115 Volts	Error (kHz)	133 Volts	Error (kHz)				
894.750	894.750000	**0.000**	894.750000	**0.000**	894.750000	**0.000**				

* Unit will not power up at temperatures below -20 deg. C

1250 Peterson Dr., Wheeling, IL 60090

8.0 FREQUENCY STABILITY PHOTOS TAKEN DURING TESTING



1250 Peterson Dr., Wheeling, IL 60090

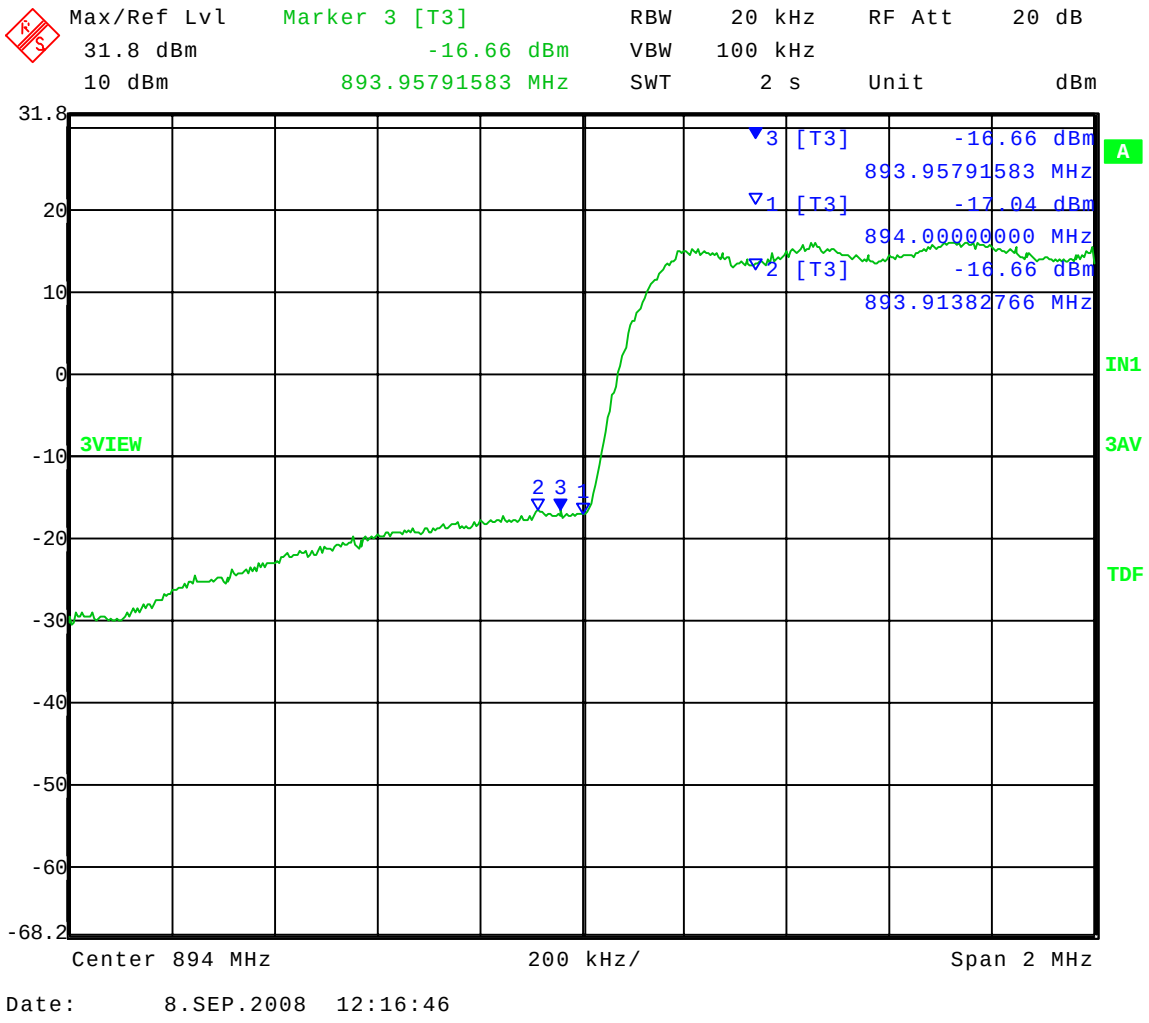
FREQUENCY STABILITY BANDEDGE COMPLIANCE

PART 22.863 and PART 2.213

LOWER BAND-EDGE

1250 Peterson Dr., Wheeling, IL 60090

Test Date: 09-08-2008
Company: Aircell
EUT: AACU
Test: Band-Edge Compliance - Conducted
Rule part: FCC Part 22.863; FCC Part 2.1051
Test method: TIA-603-C-2004 section 2.2.13
Operator: Craig B
Comment: Channel: 894.750 MHz
Modulation: QPSK
Operating conditions: **97 V 30° C**
Band-Edge Frequency = 894 MHz
Detector: Average
Reference level set to Average detector output power level.
Limit: Spurious attenuation ≥ 43 + 10 Log_{10} (P) dB
43 + 10 Log_{10} (1.53) dB = 44.85 dB
Spurious atten. (dB) = 10 Log_{10} (Tx pwr in Watts / 0.001) – spur. emission level (dBm).
Spurious attenuation = 10 Log_{10} (1.53 / 0.001) – -16.66 = 48.51 dB
Margin = 3.66 dB



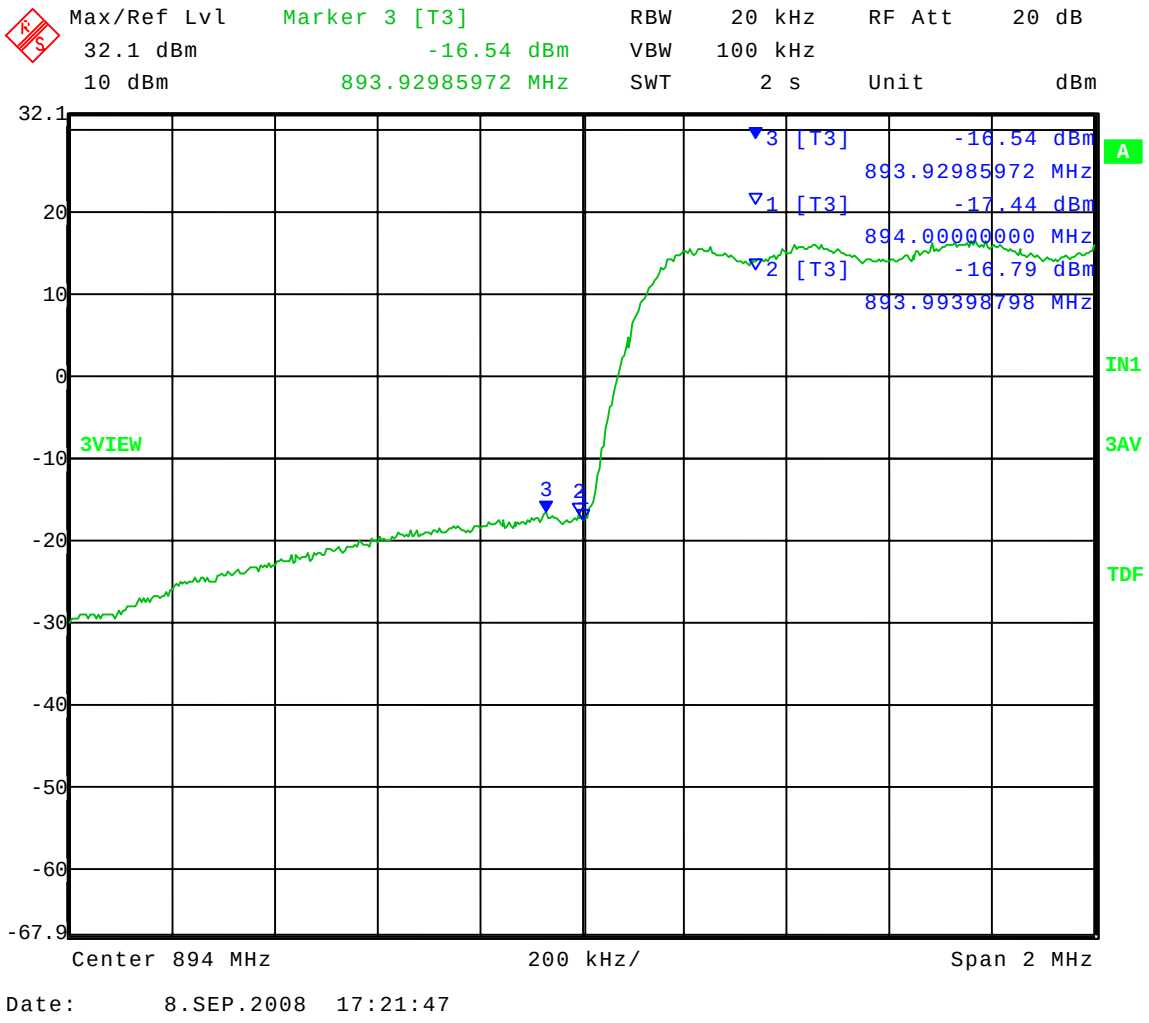
1250 Peterson Dr., Wheeling, IL 60090

Test Date: 09-08-2008
Company: Aircell
EUT: AACU
Test: Band-Edge Compliance - Conducted
Rule part: FCC Part 22.863; FCC Part 2.1051
Test method: TIA-603-C-2004 section 2.2.13
Operator: Craig B
Comment: Channel: 894.750 MHz
Modulation: QPSK
Operating conditions: **115 V -30° C**
Band-Edge Frequency = 894 MHz
Detector: Average
Reference level set to Average detector output power level.
Limit: Spurious attenuation $\geq$ 43 + 10 Log_{10} (P) dB
43 + 10 Log_{10} (xxx) dB = xxx dB
Spurious atten. (dB) = 10 Log_{10} (Tx pwr in Watts / 0.001) – spur. emission level (dBm).
Spurious attenuation = 10 Log_{10} (xxx / 0.001) – xxx = xxx dB
Margin = xxx dB

The AACU does not power up at temperatures below -20° C.

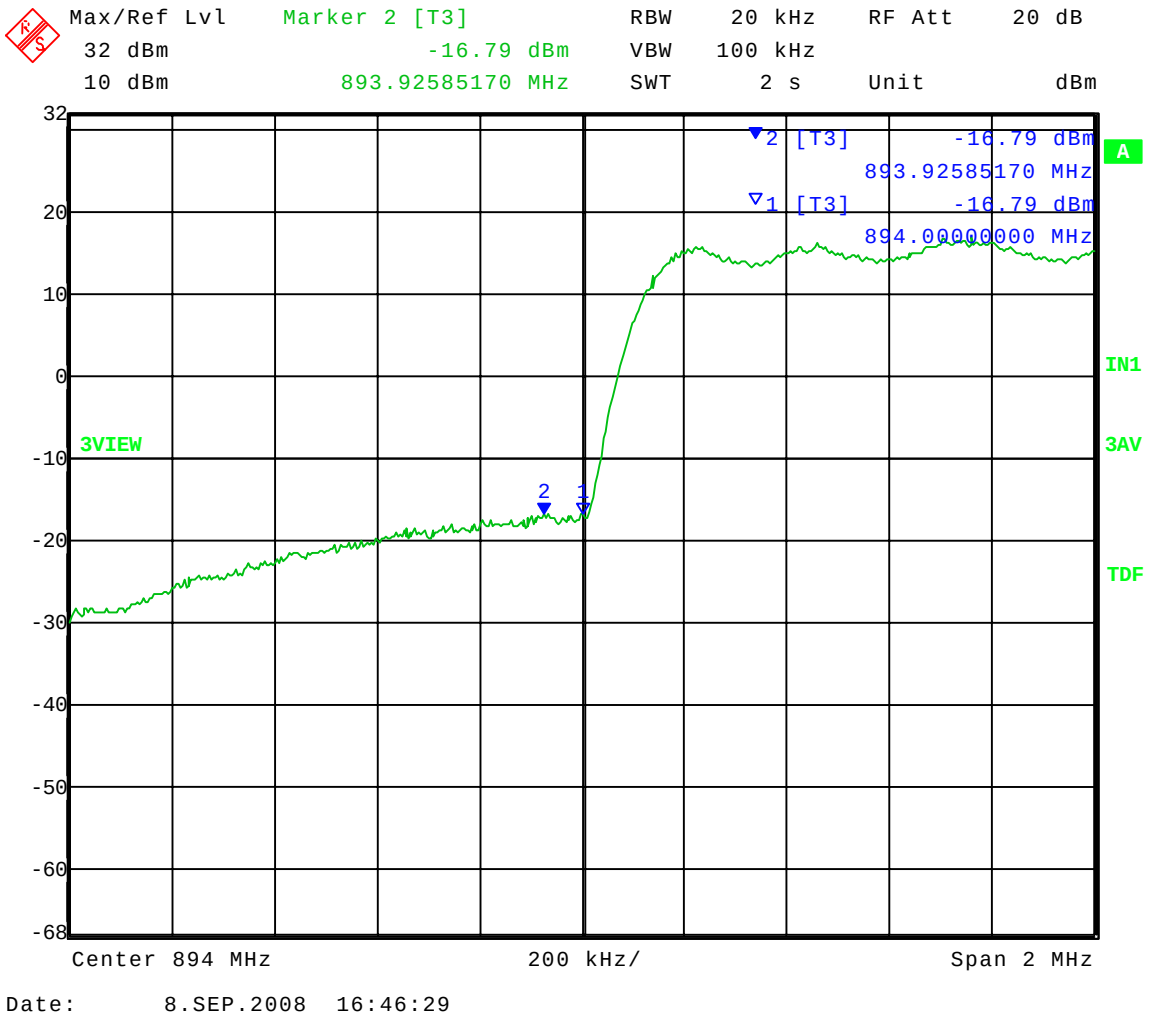
1250 Peterson Dr., Wheeling, IL 60090

Test Date: 09-08-2008
Company: Aircell
EUT: AACU
Test: Band-Edge Compliance - Conducted
Rule part: FCC Part 22.863; FCC Part 2.1051
Test method: TIA-603-C-2004 section 2.2.13
Operator: Craig B
Comment: Channel: 894.750 MHz
Modulation: QPSK
Operating conditions: **115 V -20° C**
Band-Edge Frequency = 894 MHz
Detector: Average
Reference level set to Average detector output power level.
Limit: Spurious attenuation ≥ 43 + 10 Log_{10} (P) dB
43 + 10 Log_{10} (1.65) dB = 45.17 dB
Spurious atten. (dB) = 10 Log_{10} (Tx pwr in Watts / 0.001) – spur. emission level (dBm).
Spurious attenuation = 10 Log_{10} (1.65 / 0.001) – -16.54 = 48.71 dB
Margin = 3.54 dB



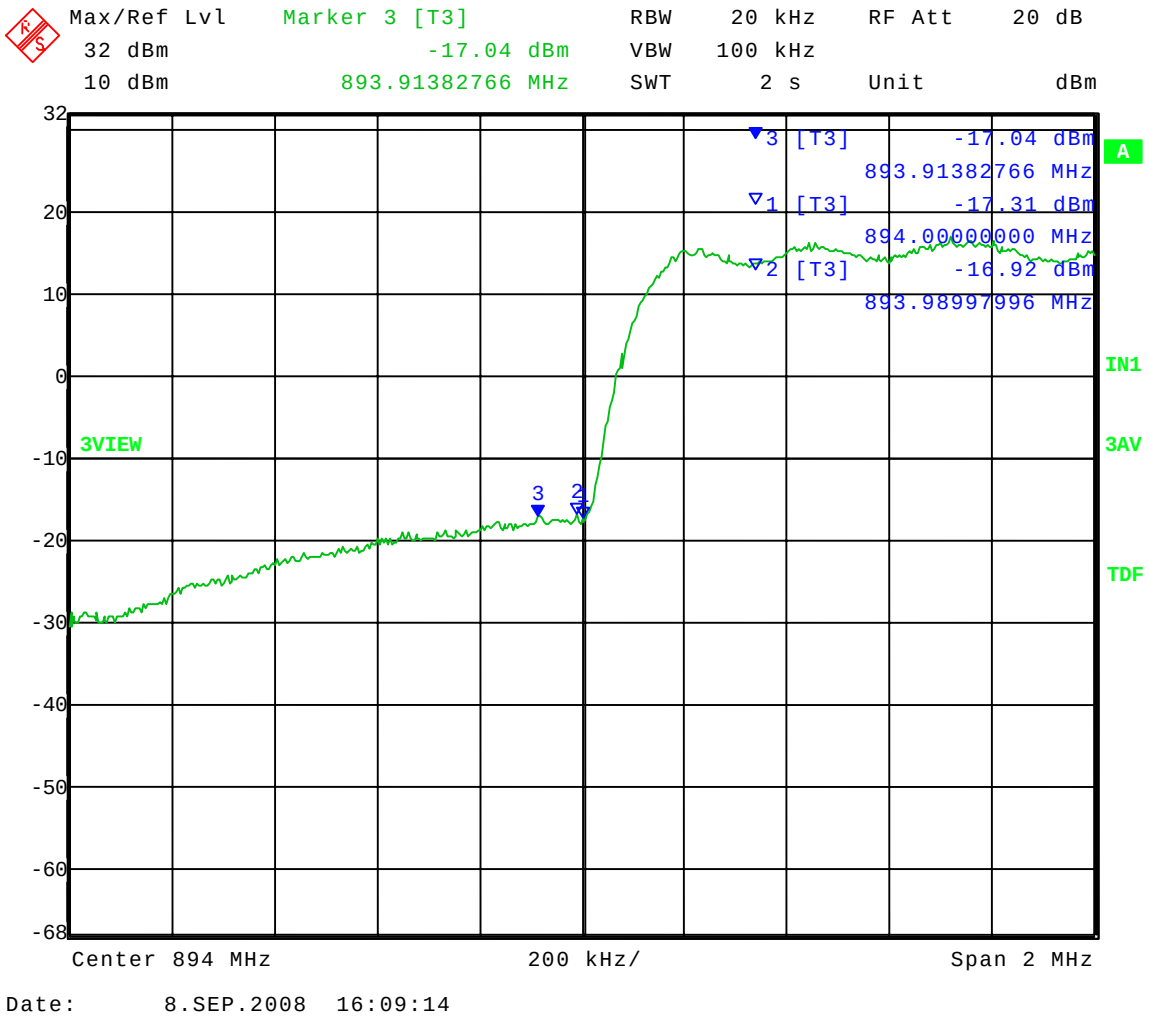
1250 Peterson Dr., Wheeling, IL 60090

Test Date: 09-08-2008
Company: Aircell
EUT: AACU
Test: Band-Edge Compliance - Conducted
Rule part: FCC Part 22.863; FCC Part 2.1051
Test method: TIA-603-C-2004 section 2.2.13
Operator: Craig B
Comment: Channel: 894.750 MHz
Modulation: QPSK
Operating conditions: **115 V -10° C**
Band-Edge Frequency = 894 MHz
Detector: Average
Reference level set to Average detector output power level.
Limit: Spurious attenuation ≥ 43 + 10 Log_{10} (P) dB
43 + 10 Log_{10} (1.61) dB = 45.07 dB
Spurious atten. (dB) = 10 Log_{10} (Tx pwr in Watts / 0.001) – spur. emission level (dBm).
Spurious attenuation = 10 Log_{10} (1.61 / 0.001) – -16.79 = 48.86 dB
Margin = 3.79 dB



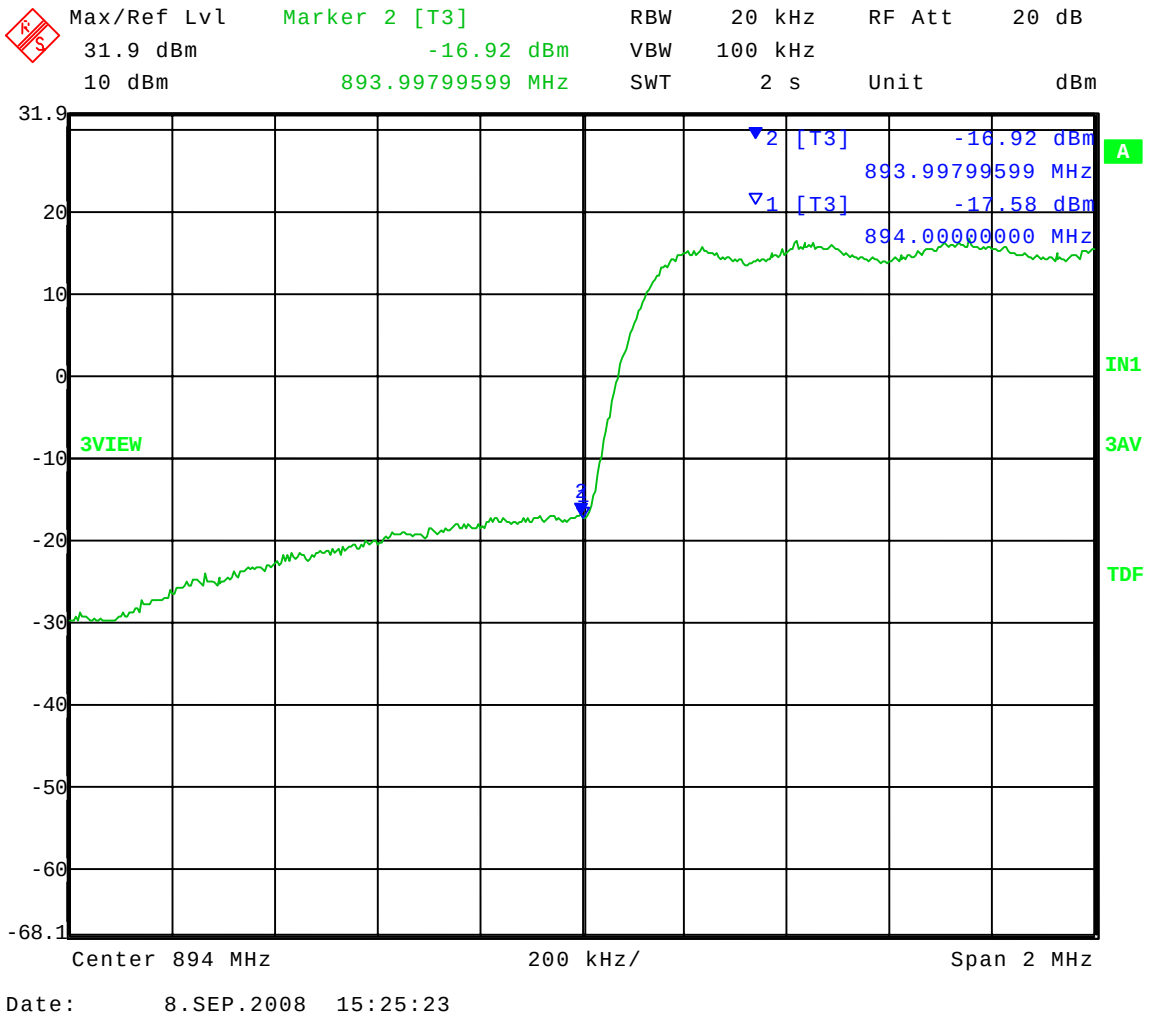
1250 Peterson Dr., Wheeling, IL 60090

Test Date: 09-08-2008
Company: Aircell
EUT: AACU
Test: Band-Edge Compliance - Conducted
Rule part: FCC Part 22.863; FCC Part 2.1051
Test method: TIA-603-C-2004 section 2.2.13
Operator: Craig B
Comment: Channel: 894.750 MHz
Modulation: QPSK
Operating conditions: **115 V 0° C**
Band-Edge Frequency = 894 MHz
Detector: Average
Reference level set to Average detector output power level.
Limit: Spurious attenuation ≥ 43 + 10 Log_{10} (P) dB
43 + 10 Log_{10} (1.60) dB = 45.04 dB
Spurious atten. (dB) = 10 Log_{10} (Tx pwr in Watts / 0.001) – spur. emission level (dBm).
Spurious attenuation = 10 Log_{10} (1.60 / 0.001) – -16.92 = 48.96 dB
Margin = 3.92 dB



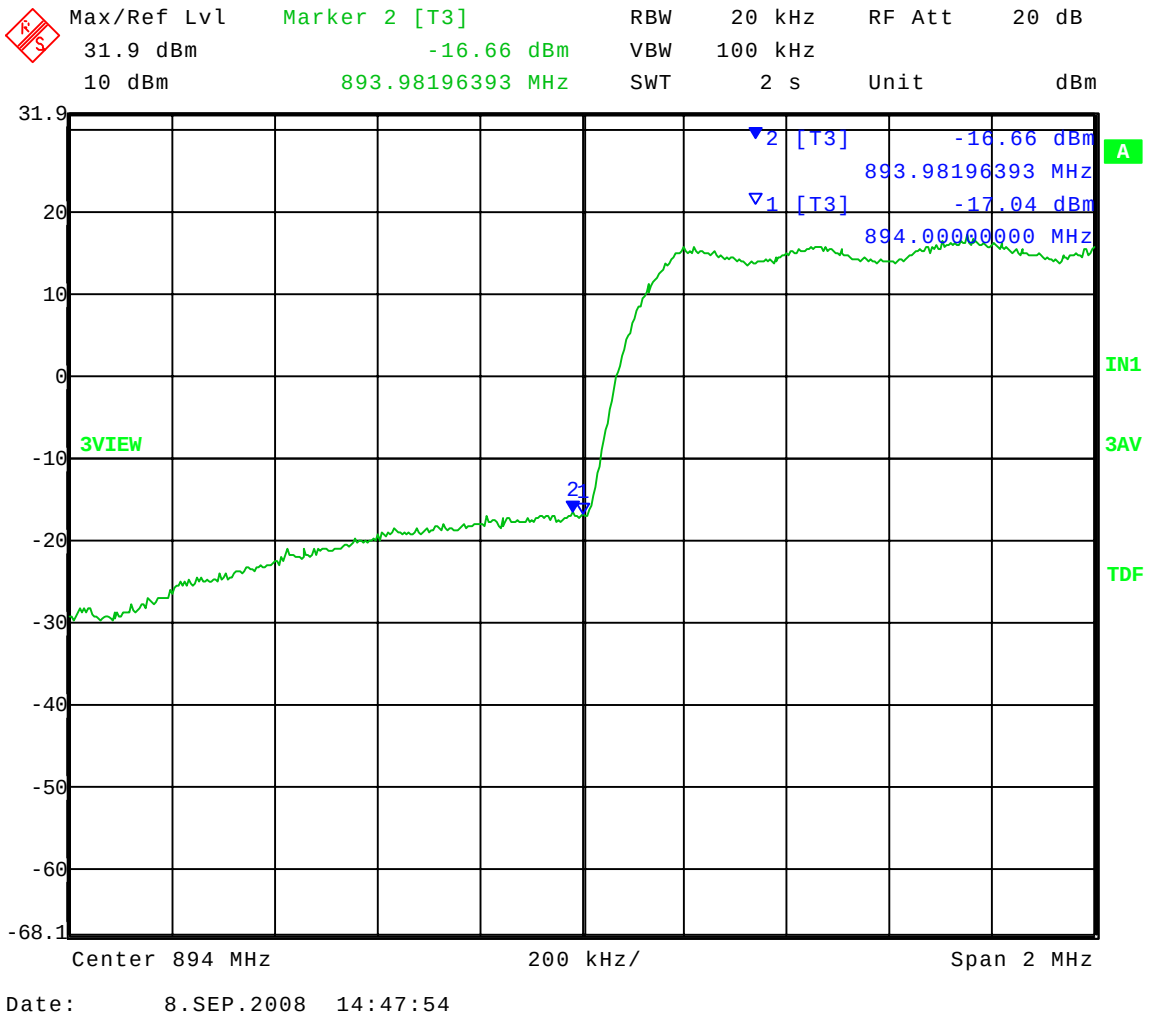
1250 Peterson Dr., Wheeling, IL 60090

Test Date: 09-08-2008
Company: Aircell
EUT: AACU
Test: Band-Edge Compliance - Conducted
Rule part: FCC Part 22.863; FCC Part 2.1051
Test method: TIA-603-C-2004 section 2.2.13
Operator: Craig B
Comment: Channel: 894.750 MHz
Modulation: QPSK
Operating conditions: **115 V 10° C**
Band-Edge Frequency = 894 MHz
Detector: Average
Reference level set to Average detector output power level.
Limit: Spurious attenuation ≥ 43 + 10 Log_{10} (P) dB
43 + 10 Log_{10} (1.58) dB = 44.99 dB
Spurious atten. (dB) = 10 Log_{10} (Tx pwr in Watts / 0.001) – spur. emission level (dBm).
Spurious attenuation = 10 Log_{10} (1.58 / 0.001) – -16.92 = 48.90 dB
Margin = 3.91 dB



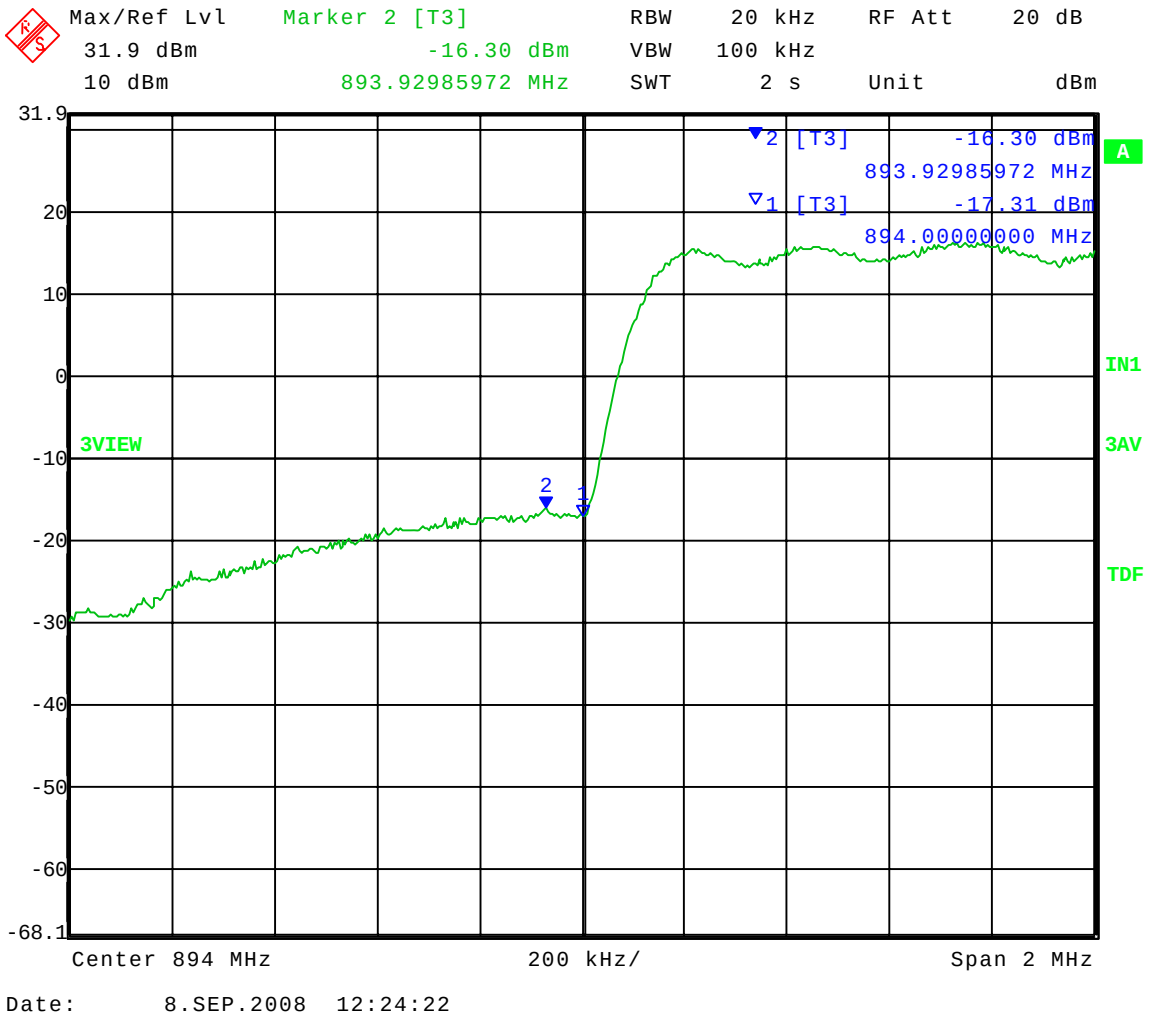
1250 Peterson Dr., Wheeling, IL 60090

Test Date: 09-08-2008
Company: Aircell
EUT: AACU
Test: Band-Edge Compliance - Conducted
Rule part: FCC Part 22.863; FCC Part 2.1051
Test method: TIA-603-C-2004 section 2.2.13
Operator: Craig B
Comment: Channel: 894.750 MHz
Modulation: QPSK
Operating conditions: **115 V 20° C**
Band-Edge Frequency = 894 MHz
Detector: Average
Reference level set to Average detector output power level.
Limit: Spurious attenuation ≥ 43 + 10 Log_{10} (P) dB
43 + 10 Log_{10} (1.57) dB = 44.96 dB
Spurious atten. (dB) = 10 Log_{10} (Tx pwr in Watts / 0.001) – spur. emission level (dBm).
Spurious attenuation = 10 Log_{10} (1.57 / 0.001) – -16.66 = 48.62 dB
Margin = 3.66 dB



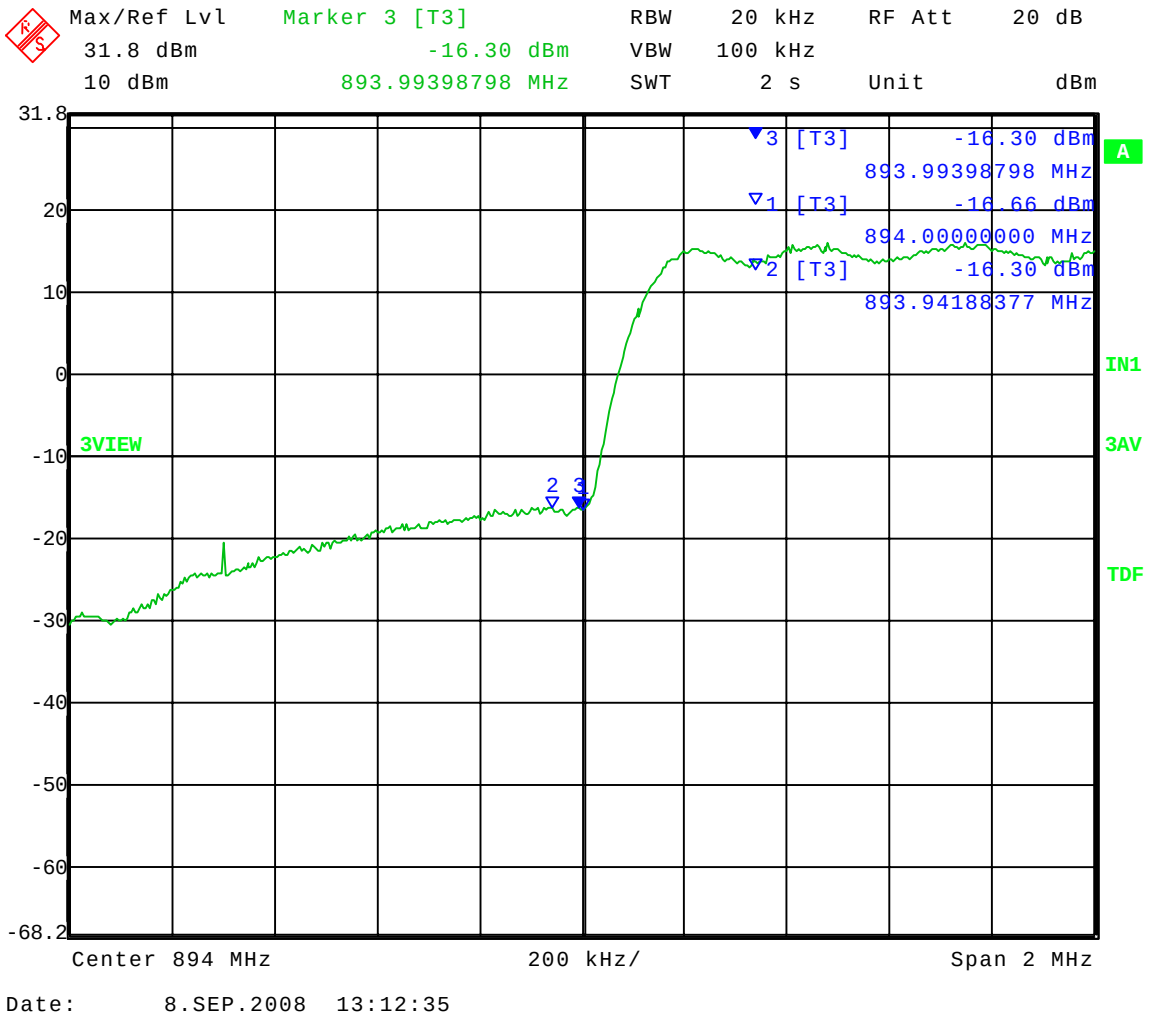
1250 Peterson Dr., Wheeling, IL 60090

Test Date: 09-08-2008
Company: Aircell
EUT: AACU
Test: Band-Edge Compliance - Conducted
Rule part: FCC Part 22.863; FCC Part 2.1051
Test method: TIA-603-C-2004 section 2.2.13
Operator: Craig B
Comment: Channel: 894.750 MHz
Modulation: QPSK
Operating conditions: **115 V 30° C**
Band-Edge Frequency = 894 MHz
Detector: Average
Reference level set to Average detector output power level.
Limit: Spurious attenuation ≥ 43 + 10 Log_{10} (P) dB
43 + 10 Log_{10} (1.55) dB = 44.90 dB
Spurious atten. (dB) = 10 Log_{10} (Tx pwr in Watts / 0.001) – spur. emission level (dBm).
Spurious attenuation = 10 Log_{10} (1.55 / 0.001) – -16.30 = 48.20 dB
Margin = 3.30 dB



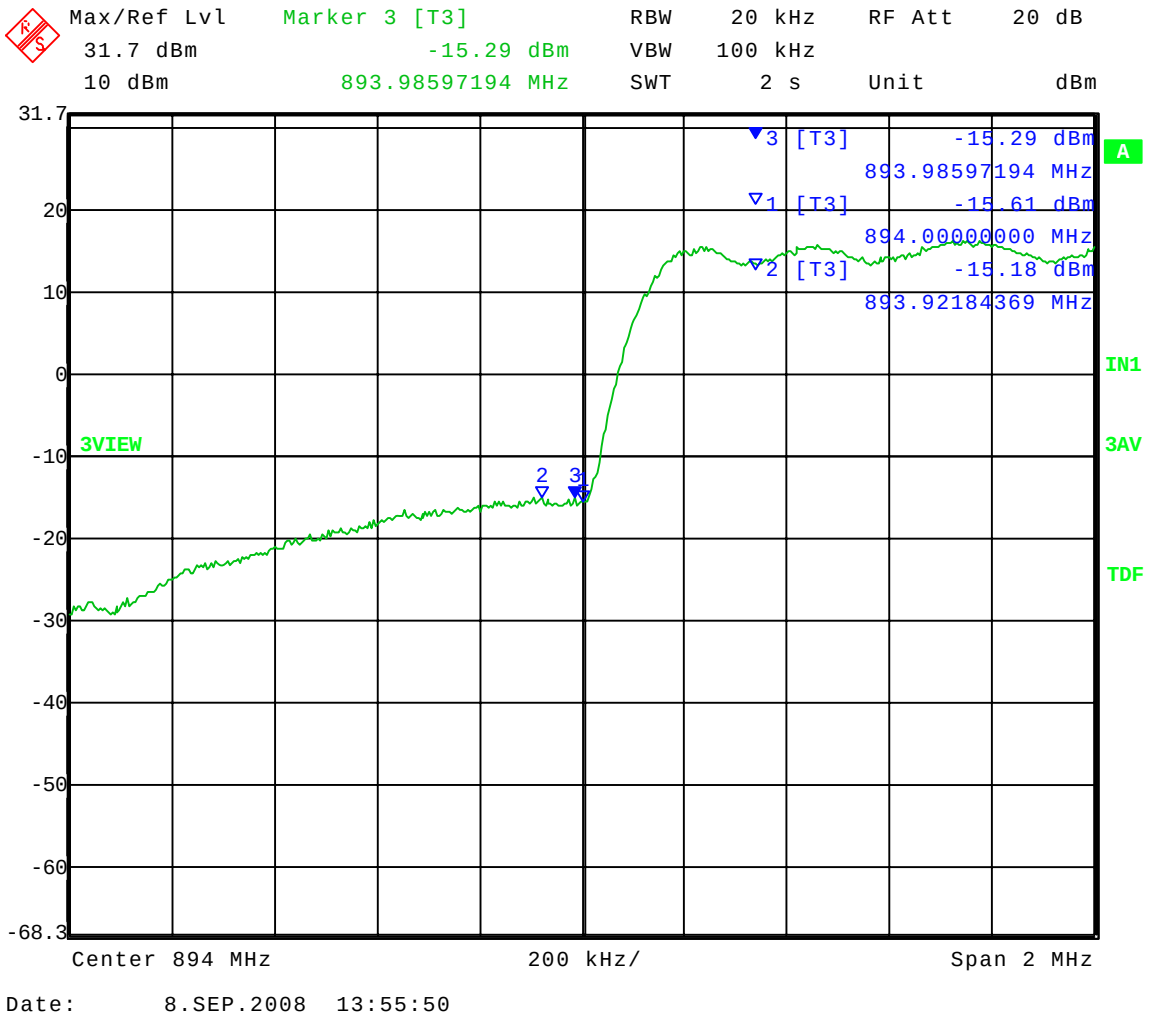
1250 Peterson Dr., Wheeling, IL 60090

Test Date: 09-08-2008
Company: Aircell
EUT: AACU
Test: Band-Edge Compliance - Conducted
Rule part: FCC Part 22.863; FCC Part 2.1051
Test method: TIA-603-C-2004 section 2.2.13
Operator: Craig B
Comment: Channel: 894.750 MHz
Modulation: QPSK
Operating conditions: **115 V 40° C**
Band-Edge Frequency = 894 MHz
Detector: Average
Reference level set to Average detector output power level.
Limit: Spurious attenuation ≥ 43 + 10 Log_{10} (P) dB
43 + 10 Log_{10} (1.51) dB = 44.79 dB
Spurious atten. (dB) = 10 Log_{10} (Tx pwr in Watts / 0.001) – spur. emission level (dBm).
Spurious attenuation = 10 Log_{10} (1.51/ 0.001) – -16.30 = 48.09 dB
Margin = 3.30 dB



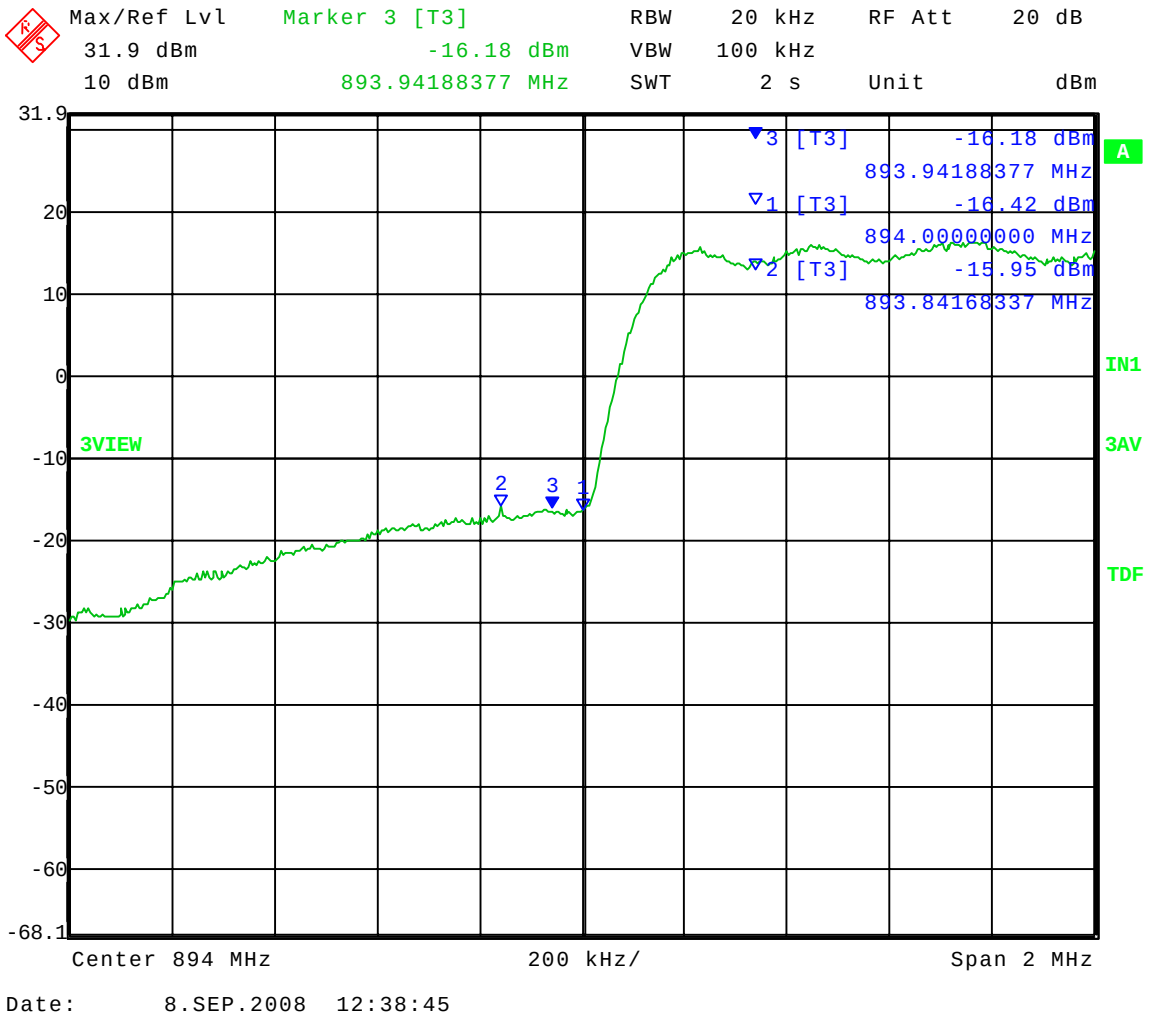
1250 Peterson Dr., Wheeling, IL 60090

Test Date: 09-08-2008
Company: Aircell
EUT: AACU
Test: Band-Edge Compliance - Conducted
Rule part: FCC Part 22.863; FCC Part 2.1051
Test method: TIA-603-C-2004 section 2.2.13
Operator: Craig B
Comment: Channel: 894.750 MHz
Modulation: QPSK
Operating conditions: **115 V 50° C**
Band-Edge Frequency = 894 MHz
Detector: Average
Reference level set to Average detector output power level.
Limit: Spurious attenuation ≥ 43 + 10 Log_{10} (P) dB
43 + 10 Log_{10} (1.50) dB = 44.76 dB
Spurious atten. (dB) = 10 Log_{10} (Tx pwr in Watts / 0.001) – spur. emission level (dBm).
Spurious attenuation = 10 Log_{10} (1.50 / 0.001) – -15.18 = 46.94 dB
Margin = 2.18 dB



1250 Peterson Dr., Wheeling, IL 60090

Test Date: 09-08-2008
Company: Aircell
EUT: AACU
Test: Band-Edge Compliance - Conducted
Rule part: FCC Part 22.863; FCC Part 2.1051
Test method: TIA-603-C-2004 section 2.2.13
Operator: Craig B
Comment: Channel: 894.750 MHz
Modulation: QPSK
Operating conditions: **133 V 30° C**
Band-Edge Frequency = 894 MHz
Detector: Average
Reference level set to Average detector output power level.
Limit: Spurious attenuation ≥ 43 + 10 Log_{10} (P) dB
43 + 10 Log_{10} (1.55) dB = 44.90 dB
Spurious atten. (dB) = 10 Log_{10} (Tx pwr in Watts / 0.001) – spur. emission level (dBm).
Spurious attenuation = 10 Log_{10} (1.55 / 0.001) – -15.95 = 47.85 dB
Margin = 2.95 dB



1250 Peterson Dr., Wheeling, IL 60090

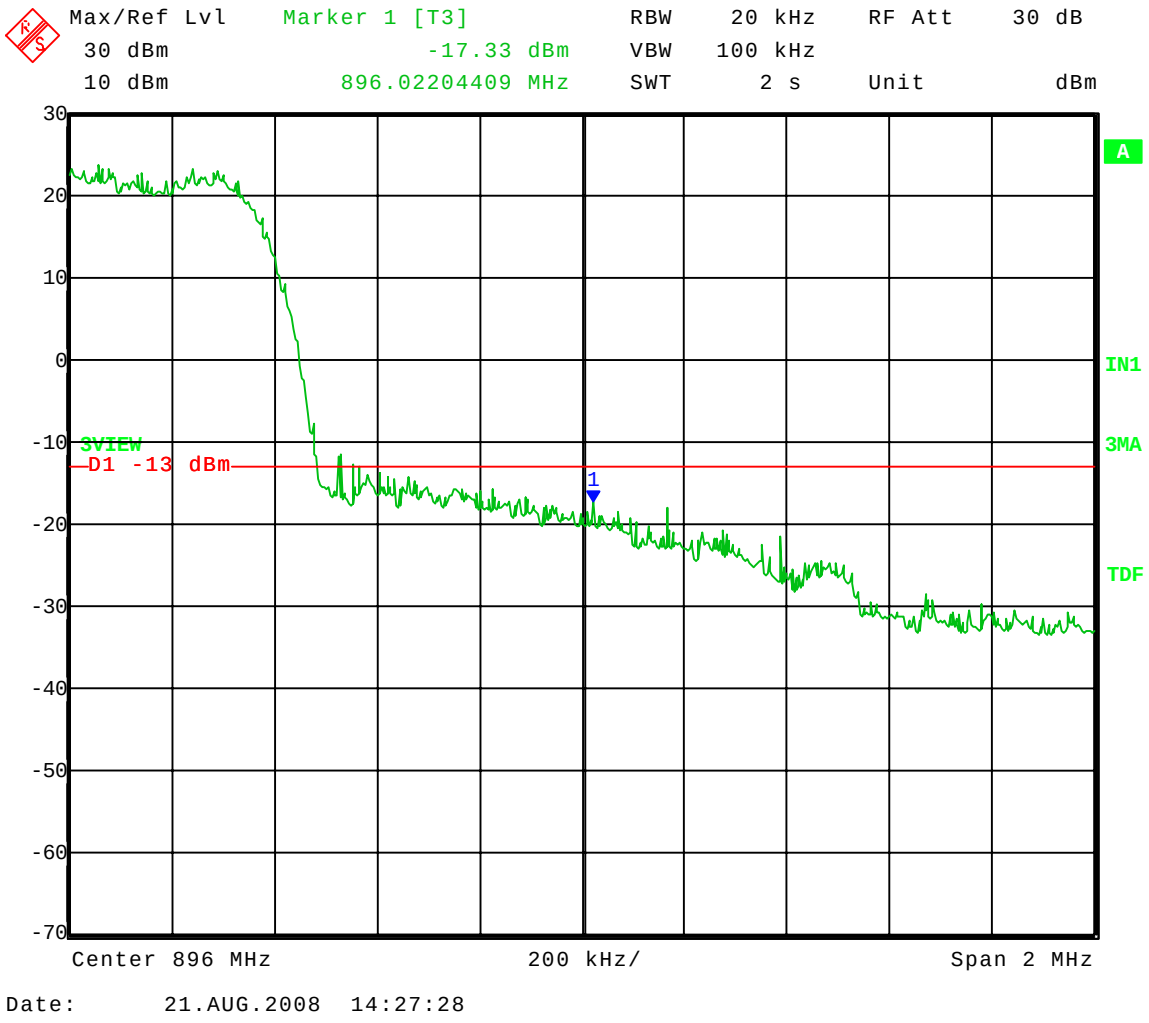
FREQUENCY STABILITY BANDEDGE COMPLIANCE

PART 22.863 and PART 2.213

UPPER BAND-EDGE

1250 Peterson Dr., Wheeling, IL 60090

Test Date: 09-08-2008
Company: Aircell
EUT: AACU
Test: Band-Edge Compliance - Conducted
Rule part: FCC Part 22.863; FCC Part 2.1051
Test method: TIA-603-C-2004 section 2.2.13
Operator: Craig B
Comment: Channel: 894.750 MHz
Modulation: QPSK
Operating conditions: **97 V 30° C**
Band-Edge Frequency = 896 MHz
Detector: Average
Reference level set to Average detector output power level.
Limit: Spurious attenuation ≥ 43 + 10 Log_{10} (P) dB
43 + 10 Log_{10} (1.53) dB = 44.85 dB
Spurious atten. (dB) = 10 Log_{10} (Tx pwr in Watts / 0.001) – spur. emission level (dBm).
Spurious attenuation = 10 Log_{10} (1.53/ 0.001) – -20.92 = 52.77 dB
Margin = 7.92 dB



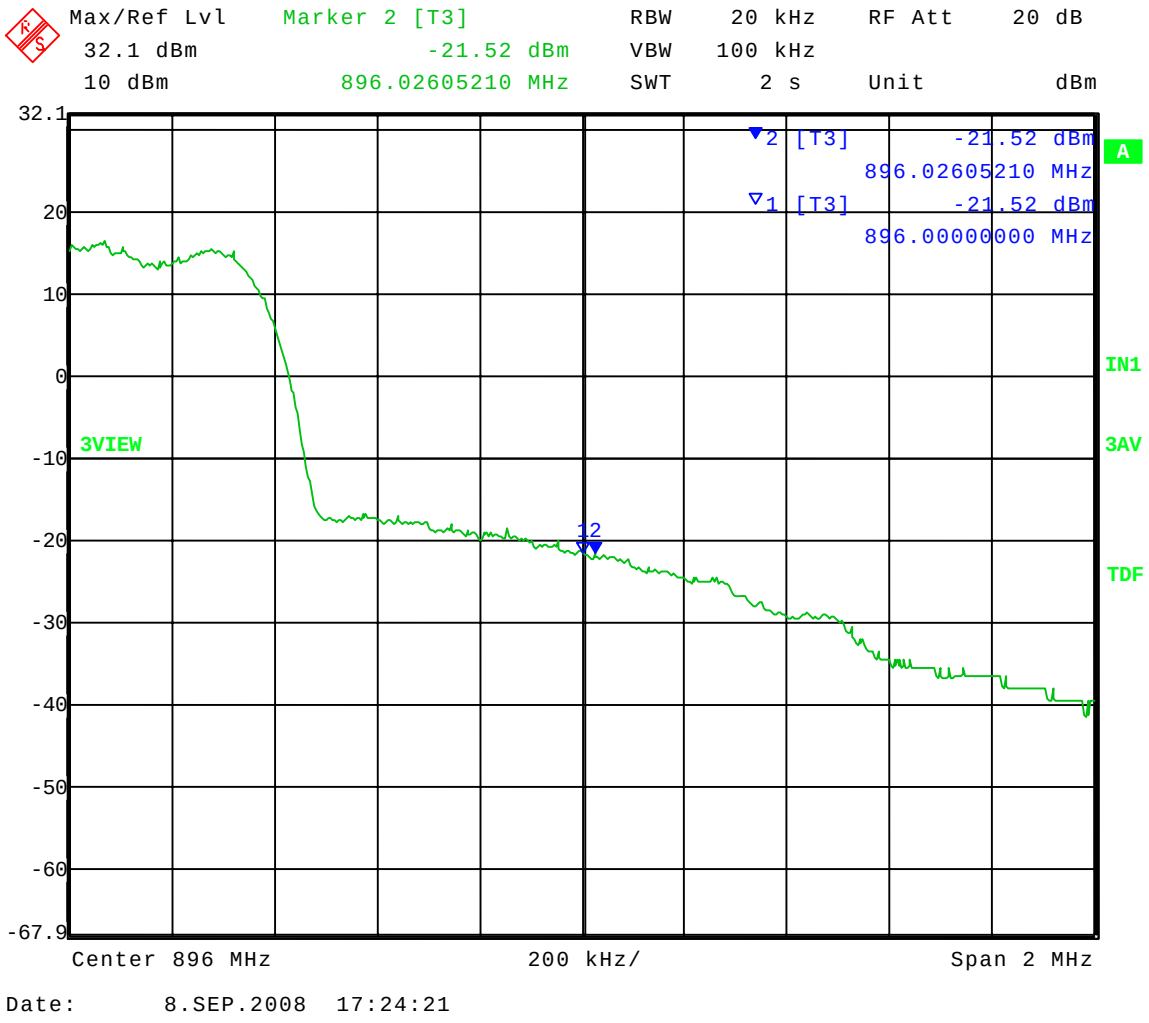
1250 Peterson Dr., Wheeling, IL 60090

Test Date: 09-08-2008
Company: Aircell
EUT: AACU
Test: Band-Edge Compliance - Conducted
Rule part: FCC Part 22.863; FCC Part 2.1051
Test method: TIA-603-C-2004 section 2.2.13
Operator: Craig B
Comment: Channel: 894.750 MHz
Modulation: QPSK
Operating conditions: **115 V -30° C**
Band-Edge Frequency = 896 MHz
Detector: Average
Reference level set to Average detector output power level.
Limit: Spurious attenuation ≥ 43 + 10 Log_{10} (P) dB
43 + 10 Log_{10} (xxx) dB = xxx dB
Spurious atten. (dB) = 10 Log_{10} (Tx pwr in Watts / 0.001) – spur. emission level (dBm).
Spurious attenuation = 10 Log_{10} (xxx / 0.001) – xxx = xxx dB
Margin = xxx dB

The AACU does not power up at temperatures below -20° C.

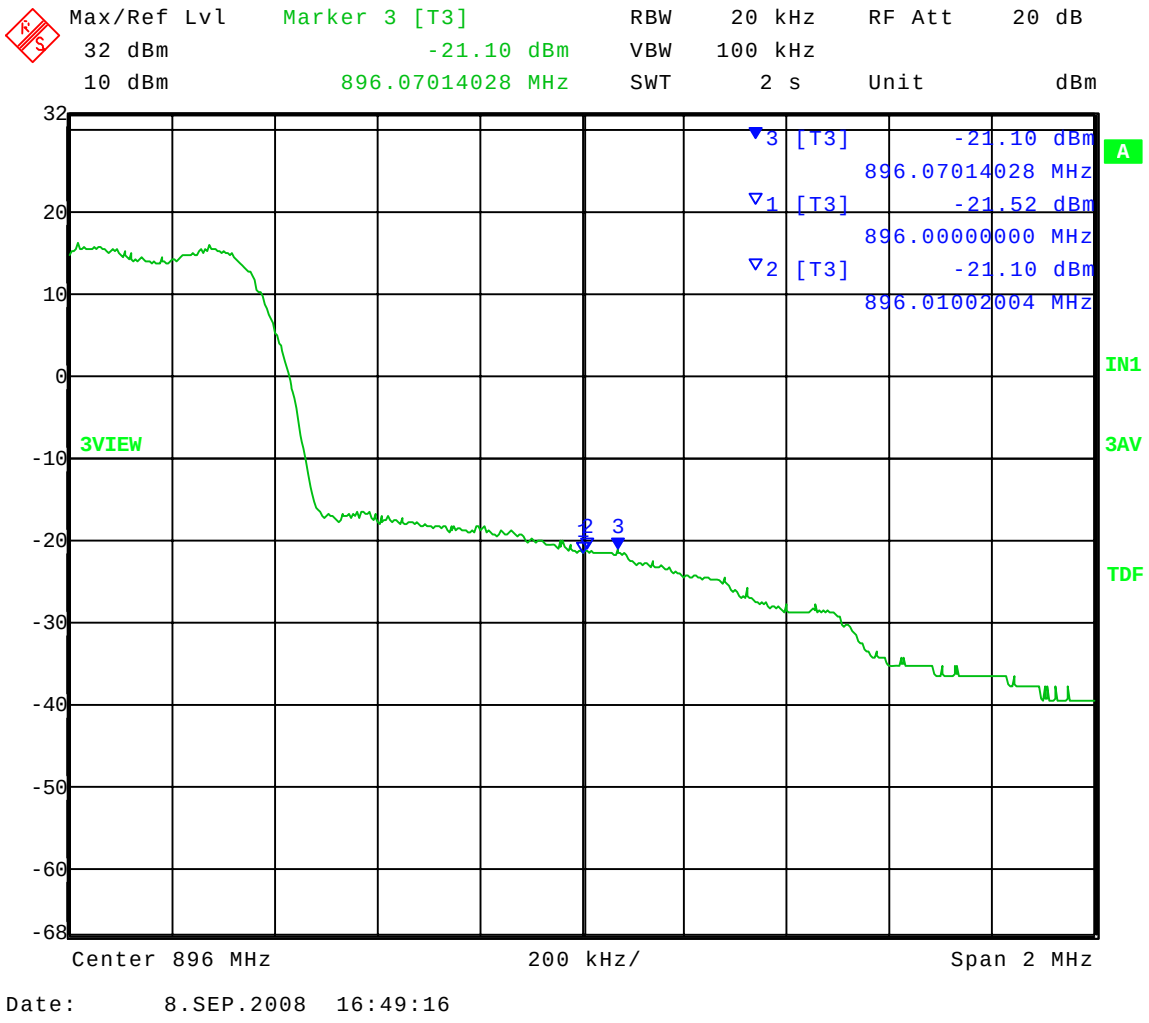
1250 Peterson Dr., Wheeling, IL 60090

Test Date: 09-08-2008
Company: Aircell
EUT: AACU
Test: Band-Edge Compliance - Conducted
Rule part: FCC Part 22.863; FCC Part 2.1051
Test method: TIA-603-C-2004 section 2.2.13
Operator: Craig B
Comment: Channel: 894.750 MHz
Modulation: QPSK
Operating conditions: **115 V -20° C**
Band-Edge Frequency = 896 MHz
Detector: Average
Reference level set to Average detector output power level.
Limit: Spurious attenuation ≥ 43 + 10 Log_{10} (P) dB
43 + 10 Log_{10} (1.65) dB = 45.17 dB
Spurious atten. (dB) = 10 Log_{10} (Tx pwr in Watts / 0.001) – spur. emission level (dBm).
Spurious attenuation = 10 Log_{10} (1.65 / 0.001) – -21.52 = 53.69 dB
Margin = 8.52 dB



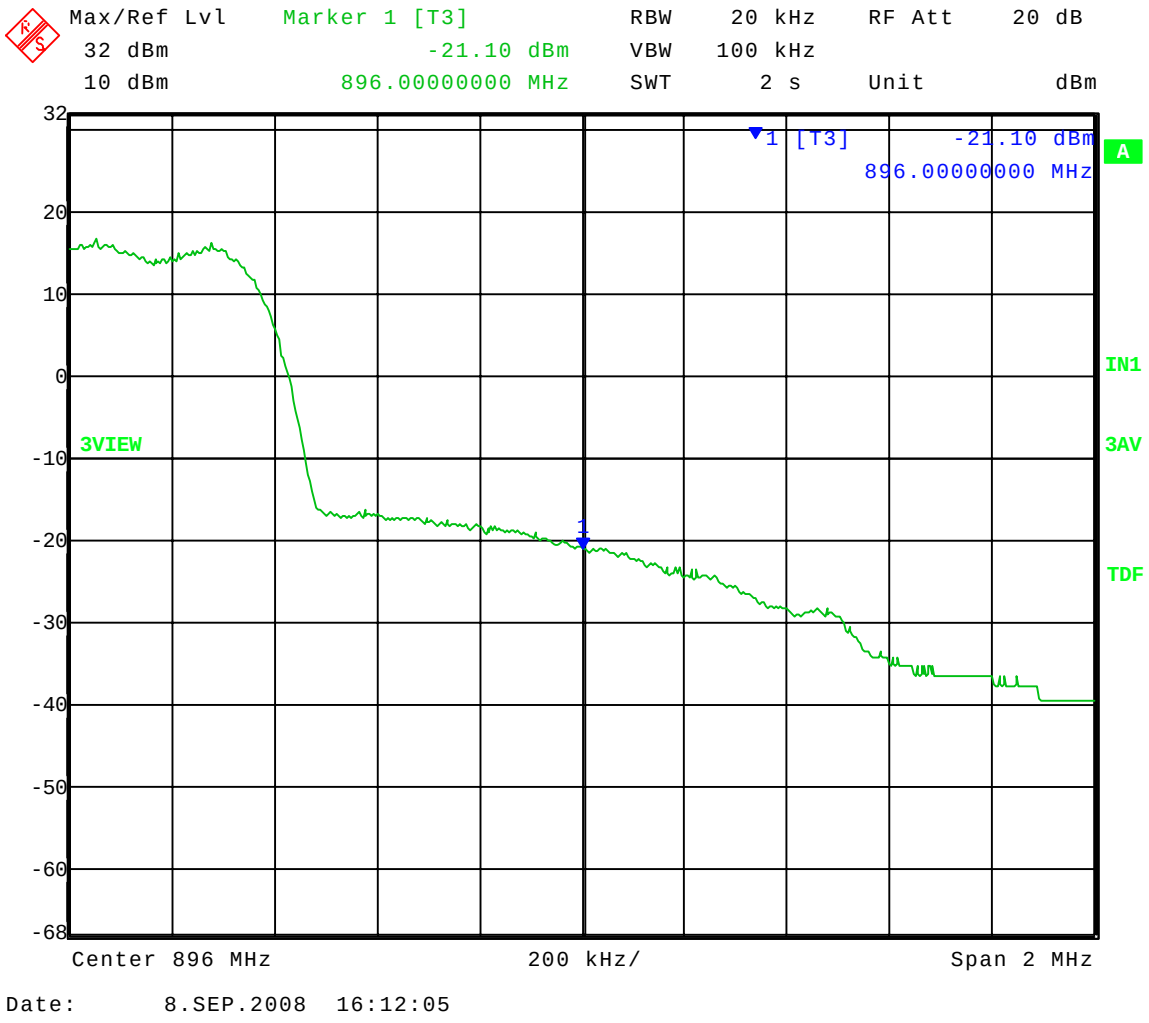
1250 Peterson Dr., Wheeling, IL 60090

Test Date: 09-08-2008
Company: Aircell
EUT: AACU
Test: Band-Edge Compliance - Conducted
Rule part: FCC Part 22.863; FCC Part 2.1051
Test method: TIA-603-C-2004 section 2.2.13
Operator: Craig B
Comment: Channel: 894.750 MHz
Modulation: QPSK
Operating conditions: **115 V -10° C**
Band-Edge Frequency = 896 MHz
Detector: Average
Reference level set to Average detector output power level.
Limit: Spurious attenuation ≥ 43 + 10 Log_{10} (P) dB
43 + 10 Log_{10} (1.61) dB = 45.07 dB
Spurious atten. (dB) = 10 Log_{10} (Tx pwr in Watts / 0.001) – spur. emission level (dBm).
Spurious attenuation = 10 Log_{10} (1.61 / 0.001) – -21.10 = 53.17 dB
Margin = 8.10 dB



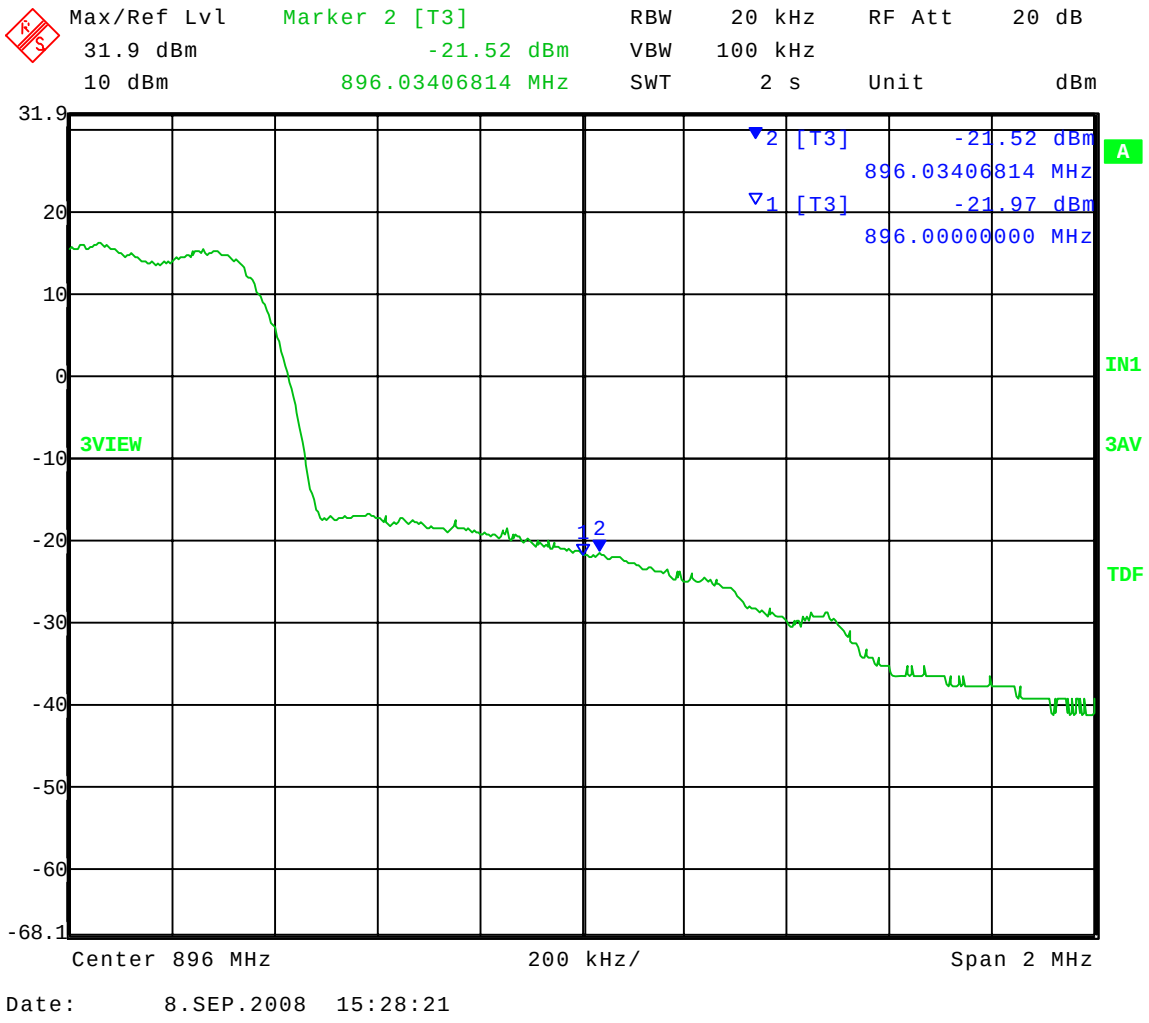
1250 Peterson Dr., Wheeling, IL 60090

Test Date: 09-08-2008
Company: Aircell
EUT: AACU
Test: Band-Edge Compliance - Conducted
Rule part: FCC Part 22.863; FCC Part 2.1051
Test method: TIA-603-C-2004 section 2.2.13
Operator: Craig B
Comment: Channel: 894.750 MHz
Modulation: QPSK
Operating conditions: **115 V 0° C**
Band-Edge Frequency = 896 MHz
Detector: Average
Reference level set to Average detector output power level.
Limit: Spurious attenuation ≥ 43 + 10 Log_{10} (P) dB
43 + 10 Log_{10} (1.60) dB = 45.04 dB
Spurious atten. (dB) = 10 Log_{10} (Tx pwr in Watts / 0.001) – spur. emission level (dBm).
Spurious attenuation = 10 Log_{10} (1.60 / 0.001) – -21.10 = 53.14 dB
Margin = 8.10 dB



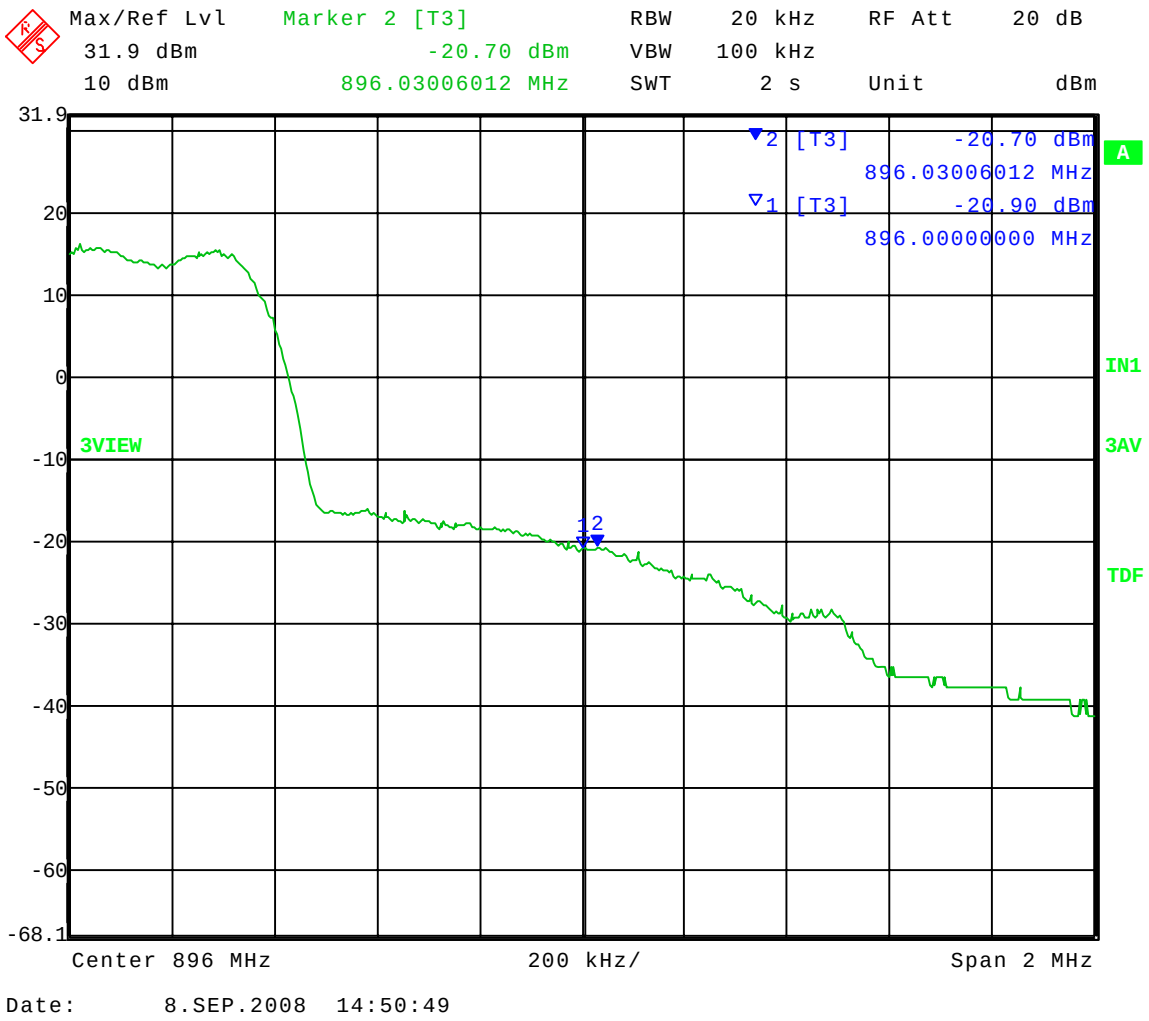
1250 Peterson Dr., Wheeling, IL 60090

Test Date: 09-08-2008
Company: Aircell
EUT: AACU
Test: Band-Edge Compliance - Conducted
Rule part: FCC Part 22.863; FCC Part 2.1051
Test method: TIA-603-C-2004 section 2.2.13
Operator: Craig B
Comment: Channel: 894.750 MHz
Modulation: QPSK
Operating conditions: **115 V 10° C**
Band-Edge Frequency = 896 MHz
Detector: Average
Reference level set to Average detector output power level.
Limit: Spurious attenuation ≥ 43 + 10 Log_{10} (P) dB
43 + 10 Log_{10} (1.58) dB = 44.99 dB
Spurious atten. (dB) = 10 Log_{10} (Tx pwr in Watts / 0.001) – spur. emission level (dBm).
Spurious attenuation = 10 Log_{10} (1.58 / 0.001) – -21.52 = 53.50 dB
Margin = 8.51 dB



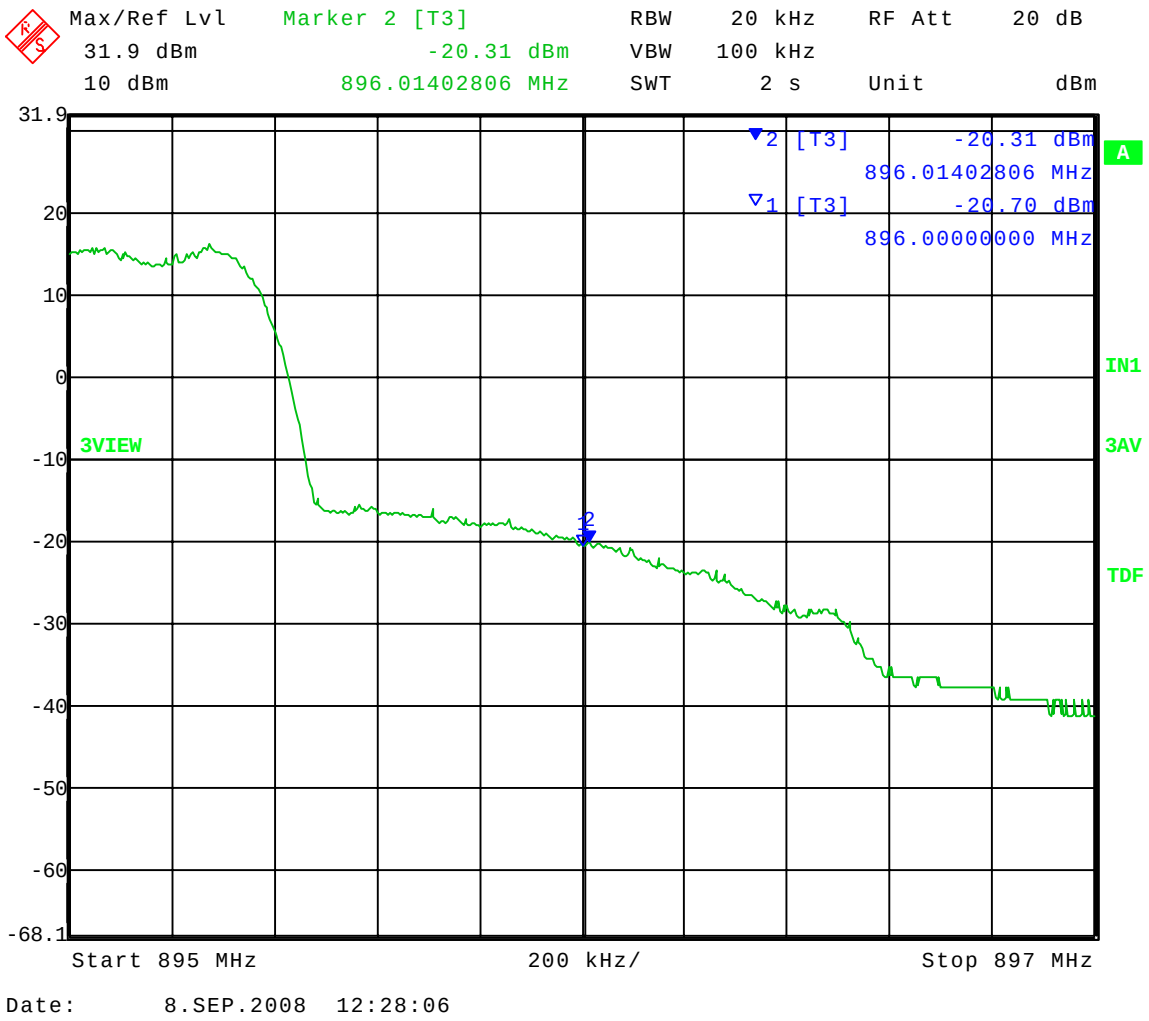
1250 Peterson Dr., Wheeling, IL 60090

Test Date: 09-08-2008
Company: Aircell
EUT: AACU
Test: Band-Edge Compliance - Conducted
Rule part: FCC Part 22.863; FCC Part 2.1051
Test method: TIA-603-C-2004 section 2.2.13
Operator: Craig B
Comment: Channel: 894.750 MHz
Modulation: QPSK
Operating conditions: **115 V 20° C**
Band-Edge Frequency = 896 MHz
Detector: Average
Reference level set to Average detector output power level.
Limit: Spurious attenuation ≥ 43 + 10 Log_{10} (P) dB
43 + 10 Log_{10} (1.57) dB = 44.96 dB
Spurious atten. (dB) = 10 Log_{10} (Tx pwr in Watts / 0.001) – spur. emission level (dBm).
Spurious attenuation = 10 Log_{10} (1.57 / 0.001) – -20.70 = 52.66 dB
Margin = 7.70 dB



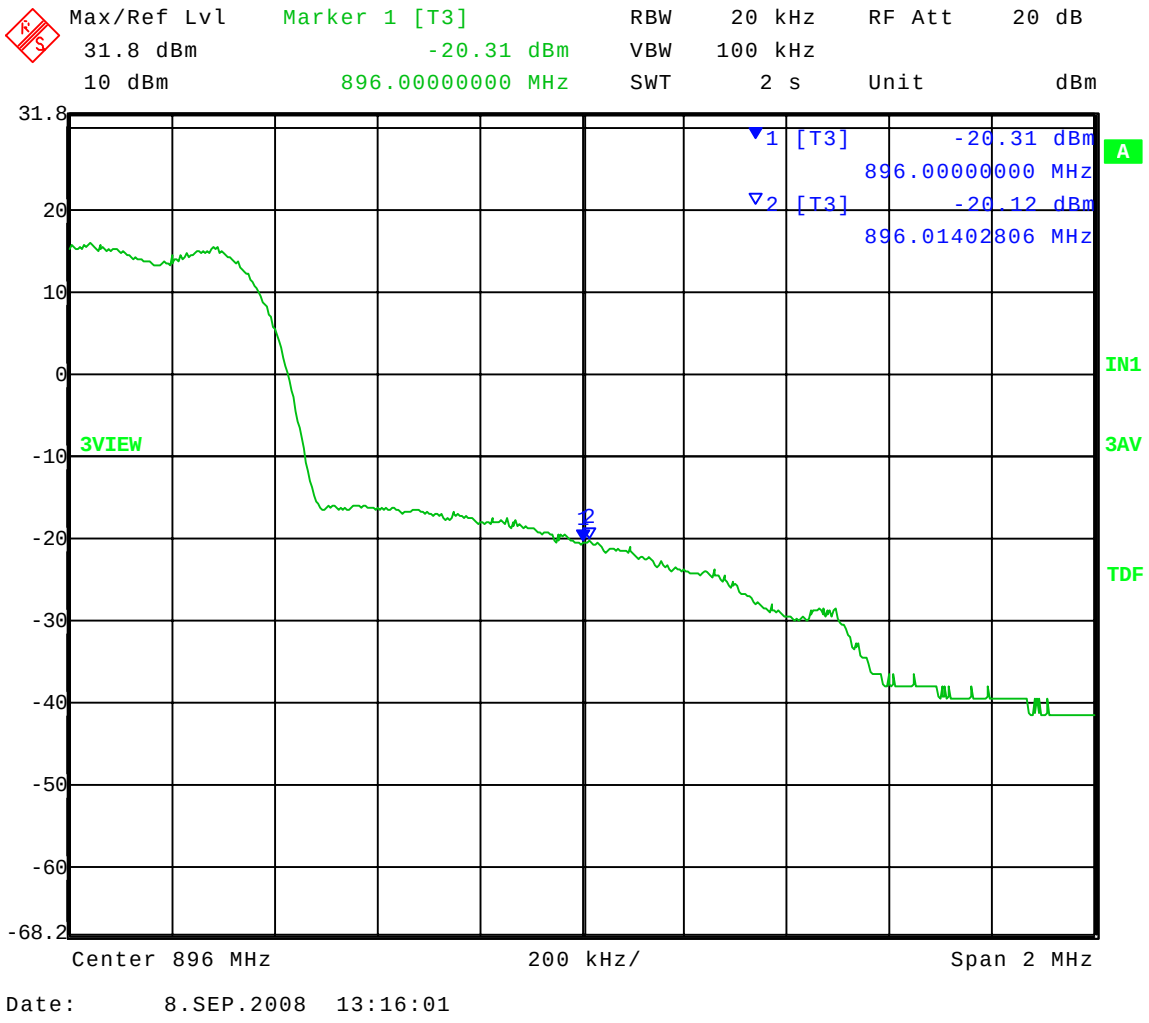
1250 Peterson Dr., Wheeling, IL 60090

Test Date: 09-08-2008
Company: Aircell
EUT: AACU
Test: Band-Edge Compliance - Conducted
Rule part: FCC Part 22.863; FCC Part 2.1051
Test method: TIA-603-C-2004 section 2.2.13
Operator: Craig B
Comment: Channel: 894.750 MHz
Modulation: QPSK
Operating conditions: **115 V 30° C**
Band-Edge Frequency = 896 MHz
Detector: Average
Reference level set to Average detector output power level.
Limit: Spurious attenuation ≥ 43 + 10 Log_{10} (P) dB
43 + 10 Log_{10} (1.55) dB = 44.90 dB
Spurious atten. (dB) = 10 Log_{10} (Tx pwr in Watts / 0.001) – spur. emission level (dBm).
Spurious attenuation = 10 Log_{10} (1.55 / 0.001) – -20.31 = 52.21 dB
Margin = 7.31 dB



1250 Peterson Dr., Wheeling, IL 60090

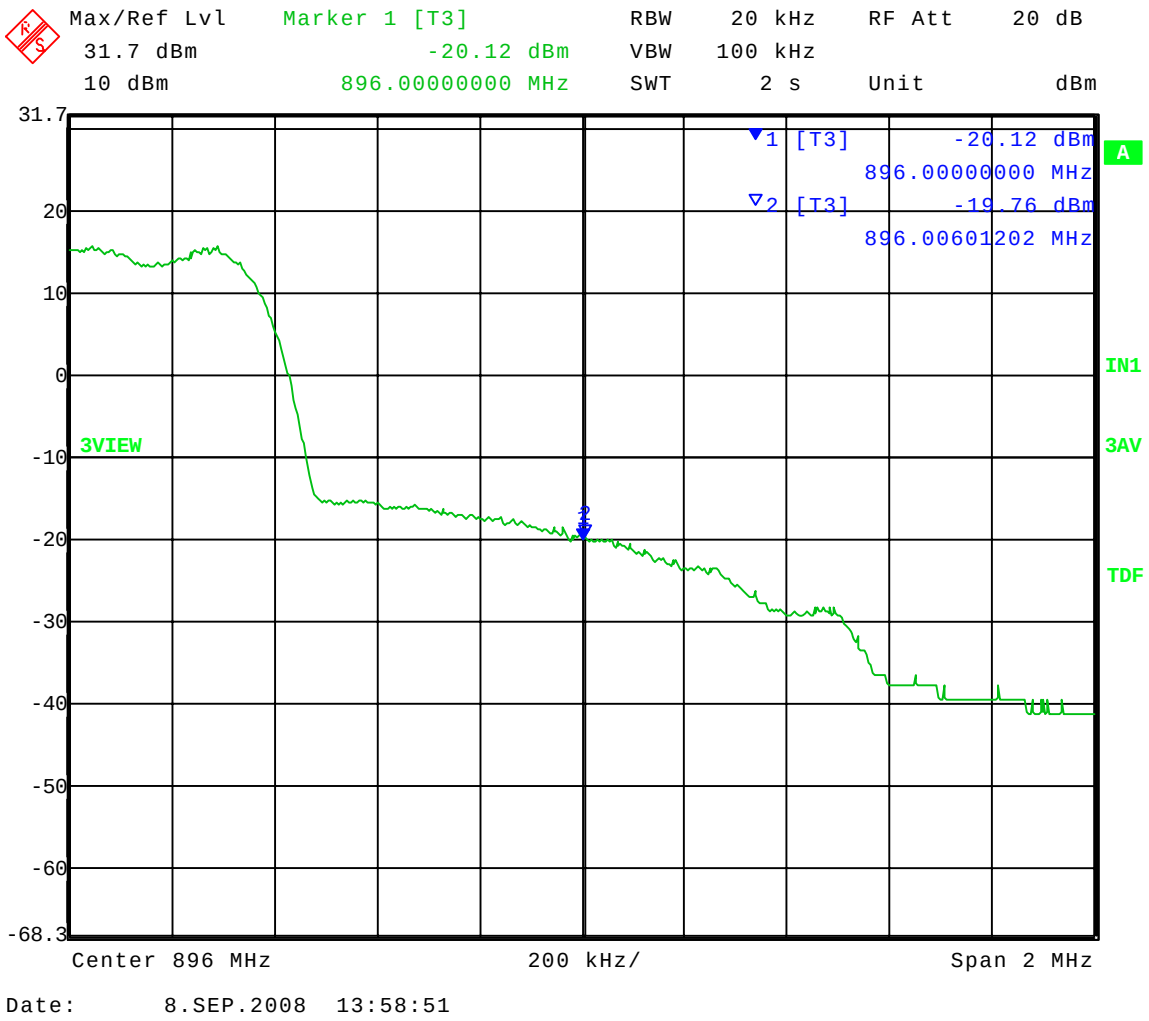
Test Date: 09-08-2008
Company: Aircell
EUT: AACU
Test: Band-Edge Compliance - Conducted
Rule part: FCC Part 22.863; FCC Part 2.1051
Test method: TIA-603-C-2004 section 2.2.13
Operator: Craig B
Comment: Channel: 894.750 MHz
Modulation: QPSK
Operating conditions: **115 V 40° C**
Band-Edge Frequency = 896 MHz
Detector: Average
Reference level set to Average detector output power level.
Limit: Spurious attenuation ≥ 43 + 10 Log_{10} (P) dB
43 + 10 Log_{10} (1.51) dB = 44.79 dB
Spurious atten. (dB) = 10 Log_{10} (Tx pwr in Watts / 0.001) – spur. emission level (dBm).
Spurious attenuation = 10 Log_{10} (1.51 / 0.001) – -20.12 = 51.91 dB
Margin = 7.12 dB



1250 Peterson Dr., Wheeling, IL 60090

Company: Aircell LLC
Model Tested: AACU
Report Number: 14639

Test Date: 09-08-2008
Company: Aircell
EUT: AACU
Test: Band-Edge Compliance - Conducted
Rule part: FCC Part 22.863; FCC Part 2.1051
Test method: TIA-603-C-2004 section 2.2.13
Operator: Craig B
Comment: Channel: 894.750 MHz
Modulation: QPSK
Operating conditions: **115 V 50° C**
Band-Edge Frequency = 896 MHz
Detector: Average
Reference level set to Average detector output power level.
Limit: Spurious attenuation ≥ 43 + 10 Log_{10} (P) dB
43 + 10 Log_{10} (1.50) dB = 44.76 dB
Spurious atten. (dB) = 10 Log_{10} (Tx pwr in Watts / 0.001) – spur. emission level (dBm).
Spurious attenuation = 10 Log_{10} (1.50 / 0.001) – -19.76 = 51.52 dB
Margin = 6.76 dB



Company: Aircell LLC
Model Tested: AACU
Report Number: 14639

1250 Peterson Dr., Wheeling, IL 60090

Test Date: 09-08-2008
Company: Aircell
EUT: AACU
Test: Band-Edge Compliance - Conducted
Rule part: FCC Part 22.863; FCC Part 2.1051
Test method: TIA-603-C-2004 section 2.2.13
Operator: Craig B
Comment: Channel: 894.750 MHz
Modulation: QPSK
Operating conditions: **133 V 30° C**
Band-Edge Frequency = 896 MHz
Detector: Average
Reference level set to Average detector output power level.
Limit: Spurious attenuation ≥ 43 + 10 Log_{10} (P) dB
43 + 10 Log_{10} (1.55) dB = 44.90 dB
Spurious atten. (dB) = 10 Log_{10} (Tx pwr in Watts / 0.001) – spur. emission level (dBm).
Spurious attenuation = 10 Log_{10} (1.55 / 0.001) – -21.10 = 53.00 dB
Margin = 8.10 dB