

Digital Control, Inc.

F5 UHF Transmitter (F5R)

Report No. DIGC0098

Report Prepared By



www.nwemc.com
1-888-EMI-CERT

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EMC Test Report

Certificate of Test
Last Date of Test: May 1, 2010
Digital Control, Inc.
Model: F5 UHF Transmitter (F5R)

Emissions			
Test Description	Specification	Test Method	Pass/Fail
Effective Radiated Power (ERP)	FCC 90.217:2010	ANSI/TIA/EIA-603-C-2004	Pass
Spurious Radiated Emissions	FCC 90.217:2010	ANSI/TIA/EIA-603-C-2004	Pass

Modifications made to the product

See the Modifications section of this report

Test Facility

The measurement facility used to collect the data is located at:

Northwest EMC, Inc.
22975 NW Evergreen Parkway, Suite 400
Hillsboro, OR 97124

Phone: (503) 844-4066 Fax: 844-3826

This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada (Site filing #2834D-2).

Approved By:



Don Fecteau, IS Manager



NVLAP Lab Code: 200630-0

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America.

Product compliance is the responsibility of the client, therefore the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. This Report may only be duplicated in its entirety. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test.

Revision Number	Description	Date	Page Number
00	None		

Barometric Pressure

The recorded barometric pressure has been normalized to sea level.



Accreditations and Authorizations

FCC

Accredited by NVLAP for performance of FCC radio, digital, and ISM device testing. Our Open Area Test Sites, certification chambers, and conducted measurement facilities have been fully described in reports filed with the FCC and accepted by the FCC in letters maintained in our files. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by the FCC as a Telecommunications Certification Body (TCB). This allows Northwest EMC to certify transmitters to FCC specifications in accordance with 47 CFR 2.960 and 2.962.



NVLAP

Northwest EMC, Inc. is accredited under the United States Department of Commerce, National Institute of Standards and Technology, and National Voluntary Laboratory Accreditation Program for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. The NVLAP accreditation encompasses Electromagnetic Compatibility Testing in accordance with the European Union EMC Directive 2004/108/EC, and ANSI C63.4. Additionally, Northwest EMC is accredited by NVLAP to perform radio testing in accordance with the European Union R&TTE Directive 1999/5/EEC, the requirements of FCC, and the RSS radio standards for Industry Canada.



NVLAP LAB CODE 200629-0
NVLAP LAB CODE 200630-0
NVLAP LAB CODE 200676-0
NVLAP LAB CODE 200761-0
NVLAP LAB CODE 200881-0

Industry Canada

Accredited by NVLAP for performance of Industry Canada RSS and ICES testing. Our Open Area Test Sites and certification chambers comply with RSS-Gen, Issue 2 and have been filed with Industry Canada and accepted. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by NIST and recognized by Industry Canada as a Certification Body (CB) per the APEC Mutual Recognition Arrangement (MRA). This allows Northwest EMC to certify transmitters to Industry Canada technical requirements. (Site Filing Numbers - Hillsboro: 2834D-1, 2834D-2, Sultan: 2834C-1, Irvine: 2834B-1, 2834B-2, Brooklyn Park: 2834E-1)



CAB

Designated by NIST and validated by the European Commission as a Conformity Assessment Body (CAB) to conduct tests and approve products to the EMC directive and transmitters to the R&TTE directive, as described in the U.S. - EU Mutual Recognition Agreement.



NEMKO

Assessed and accredited by NEMKO (Norwegian testing and certification body) for European emissions and immunity testing. As a result of NEMKO's laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification (Authorization No. ELA 119).





Accreditations and Authorizations

Australia/New Zealand

The National Association of Testing Authorities (NATA), Australia has been appointed by the ACA as an accreditation body to accredit test laboratories and competent bodies for EMC standards. Accredited test reports or assessments by competent bodies must carry the NATA logo. Test reports made by an overseas laboratory that has been accredited for the relevant standards by an overseas accreditation body that has a Mutual Recognition Agreement (MRA) with NATA are also accepted as technical grounds for product conformity. The report should be endorsed with the respective logo of the accreditation body (NVLAP).



VCCI

Accepted as an Associate Member to the VCCI, Acceptance No. 564. Conducted and radiated measurement facilities have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. (Registration Numbers. - Hillsboro: C-1071, R-1025, G-84, C-2687, T-1658, and R-2318, Irvine: R-1943, G-85, C-2766, and T-1659, Sultan: R-871, G-83, C-1784, and T-1511, Brooklyn Park: R-3125, G-86, G-141, C-3464, and T-1634).



BSMI

Northwest EMC has been designated by NIST and validated by C-Taipei (BSMI) as a CAB to conduct tests as described in the APEC Mutual Recognition Agreement (US0017). License No. SL2-IN-E-1017.



GOST

Northwest EMC, Inc. has been assessed and accredited by the Russian Certification bodies Certinform VNIIINMASH, CERTINFO, SAMTES, and Federal CHEC, to perform EMC and Hygienic testing for Information Technology Products. As a result of their laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification



KCC

Northwest EMC, Inc is a CAB designated by MRA partners and recognized by Korea. (Assigned Lab Numbers: Hillsboro: US0017, Irvine: US0158, Sultan: US0157)



VIETNAM

Vietnam MIC has approved Northwest EMC as an accredited test lab. Per Decision No. 194/QD-QLCL (dated December 15, 2009), Northwest EMC test reports can be used for Vietnam approval submissions.



SCOPE

For details on the Scopes of our Accreditations, please visit:

<http://www.nwemc.com/accreditations/>



Northwest EMC Locations



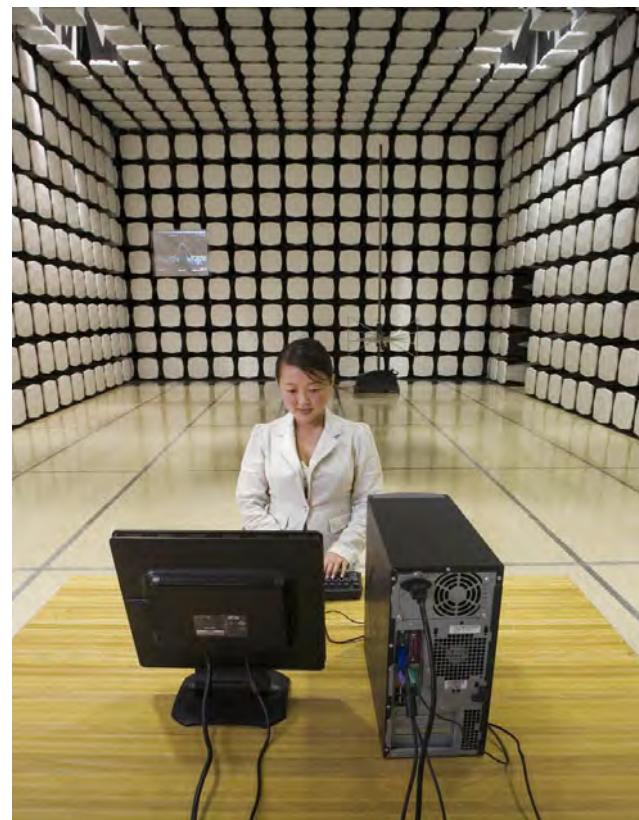
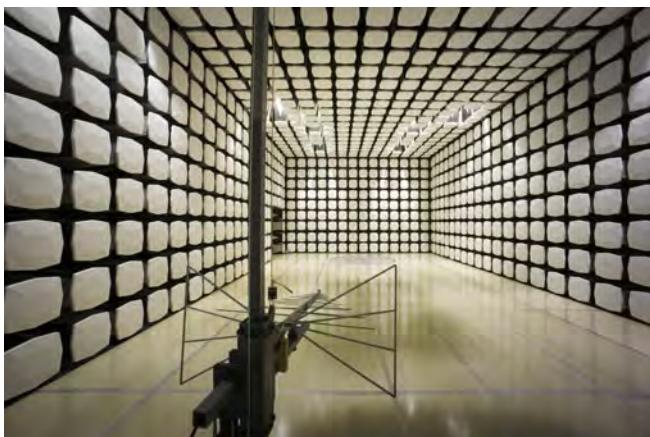
Oregon
Labs EV01-EV12
22975 NW Evergreen Pkwy
Suite 400
Hillsboro, OR 97124
(503) 844-4066

California
Labs OC01-OC13
41 Tesla
Irvine, CA 92618
(949) 861-8918

Minnesota
Labs MN01-MN08
9349 W Broadway Ave.
Brooklyn Park,
MN 55445
(763) 425-2281

Washington
Labs SU01-SU07
14128 339th Ave. SE
Sultan, WA 98294
(360) 793-8675

New York
Labs WA01-WA04
4939 Jordan Rd.
Elbridge, NY 13060
(315) 685-0796



Party Requesting the Test

Company Name:	Digital Control, Inc.
Address:	19625 62nd Avenue South, Suite B103
City, State, Zip:	Kent, WA 98032
Test Requested By:	Steve Anderson
Model:	F5 UHF Transmitter (F5R)
First Date of Test:	April 26, 2010
Last Date of Test:	May 1, 2010
Receipt Date of Samples:	April 26, 2010
Equipment Design Stage:	Preproduction
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test**Functional Description of the EUT (Equipment Under Test):**

FM at 9600 bps Manchester (nominal 4800 Hz 50% duty cycle). That represents a 4800 bps NRZ data channel throughout.

Testing Objective:

FCC Part 90.217 certification of UHF transmitter contained in a handheld locating device that receives a kHz signal and transmits in the UHF band to a remote display device.

CONFIGURATION 1 DIGC0098

Software/Firmware Running during test	
Description	Version
F5 SW	0.0.1671
Tele SW	16

EUT				
Description	Manufacturer	Model/Part Number	Serial Number	
UHF Transmitter	Digital Control, Inc.	F5 DigiTrak Handheld Receiver	300004354	
F2 Telemetry Antenna	Digital Control, Inc.	420-5102-00 Rev P1	None	
Battery	Digital Control, Inc.	FBP	6 of 15	

Equipment modifications					
Item	Date	Test	Modification	Note	Disposition of EUT
1	4/26/2010	Effective Radiated Power (ERP)	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	5/1/2010	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

Transmitting with modulation

POWER SETTINGS INVESTIGATED

Channel 1, 464.5 MHz

Channel 4, 469.55 MHz

POWER SETTINGS INVESTIGATED

Battery

FREQUENCY RANGE INVESTIGATED

Start Frequency 464 MHz Stop Frequency 470 MHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
EV01 Cables	N/A	Bilog Cables	EVA	7/10/2009	13
Spectrum Analyzer	Agilent	E4446A	AAQ	1/6/2010	13
Antenna, Biconilog	EMCO	3141	AXE	1/14/2010	13
Power Meter	Gigatronics	8651A	SPM	1/7/2010	13
Power Sensor	Gigatronics	80701A	SPL	1/7/2010	13
Antenna, Dipole (ADAA included)	Roberts	Roberts	ADA	NCR	0
Signal Generator	Agilent	E8257D	TGX	12/10/2008	24

MEASUREMENT BANDWIDTHS

	Frequency Range	Peak Data	Quasi-Peak Data	Average Data
	(MHz)	(kHz)	(kHz)	(kHz)
	0.01 - 0.15	1.0	0.2	0.2
	0.15 - 30.0	10.0	9.0	9.0
	30.0 - 1000	100.0	120.0	120.0
	Above 1000	1000.0	N/A	1000.0

Measurements were made using the bandwidths and detectors specified. No video filter was used.

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. The measurement uncertainty estimation is available upon request.

TEST DESCRIPTION

The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarization and manipulating the EUT antenna in 3 orthogonal planes.

The antennas to be used with the EUT were tested. The EUT was transmitting while set at the lowest channel, and the highest channel available. The amplitude and frequency were noted. The EUT was then replaced with a 1/2 wave dipole that was successively tuned to the highest emission. A signal generator was connected to the dipole antenna and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the gain (dBi) of the dipole antenna the effective radiated power for each emission was determined.

Effective Radiated Power (ERP)										PSA 2008.07.21	EMI 2008.1.9
EUT: F5 UHF Transmitter					Work Order: DIGC0098						
Serial Number: 300004354					Date: 04/26/10						
Customer: Digital Control, Inc.					Temperature: 22						
Attendees: none					Humidity: 37%						
Project: None					Barometric Pres.: 29.79 in						
Tested by: Rod Peloquin					Power: Battery						
TEST SPECIFICATIONS					Test Method						
FCC 90.217:2010					ANSI /TIA/EIA-603-C:2004						
TEST PARAMETERS											
Antenna Height(s) (m) 1 - 4					Test Distance (m) 3						
COMMENTS											
None											
EUT OPERATING MODES											
Transmitting with 19.2 kHz modulation											
DEVIATIONS FROM TEST STANDARD											
No deviations.											
Run #	1				Signature						
Configuration #	1										
Results	Pass										
Freq (MHz)	Azimuth (degrees)	Height (meters)	Polarity	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments		
464.496	314.0	1.1	V-Bilog	PK	7.13E-02	18.5	20.8	-2.3	Low Channel, EUT typical orientation		
469.547	308.0	1.2	V-Bilog	PK	7.13E-02	18.5	20.8	-2.3	High Channel, EUT typical orientation		
469.546	6.0	1.9	H-Bilog	PK	6.07E-02	17.8	20.8	-3.0	High Channel, EUT on side		
464.501	359.0	2.0	H-Bilog	PK	5.93E-02	17.7	20.8	-3.1	Low Channel, EUT on side		
464.502	256.0	2.1	H-Bilog	PK	5.29E-02	17.2	20.8	-3.6	Low Channel, EUT on end		
469.548	258.0	1.9	H-Bilog	PK	4.60E-02	16.6	20.8	-4.2	High Channel, EUT on end		
464.497	335.0	1.2	V-Bilog	PK	1.92E-02	12.8	20.8	-8.0	Low Channel, EUT on end		
464.496	195.0	1.6	V-Bilog	PK	2.84E-03	4.5	20.8	-16.3	Low Channel, EUT on side		
464.497	146.0	2.3	H-Bilog	PK	1.56E-03	1.9	20.8	-18.9	Low Channel, EUT typical orientation		

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

MODES OF OPERATION

Transmitting with modulation, high channel
Transmitting with modulation, low channel

POWER SETTINGS INVESTIGATED

Battery

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	4700 MHz
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SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4440A	AFD	6/1/2009	24
High Pass Filter	Micro-Tronics	50108	HGF	1/18/2010	13
Antenna, Biconilog	EMCO	3141	AXG	2/15/2010	13
EV12 Cables	N/A	Bilog Cables	EVS	6/25/2009	13
Pre-Amplifier	Miteq	AM-1616-1000	AVM	6/25/2009	13
Antenna, Horn	ETS	3115	AIB	8/25/2008	24
EV12 Cables	N/A	Double Ridge Horn Cables	EVT	10/23/2009	13
Pre-Amplifier	Miteq	AMF-3D00100800-32-13P	AVF	6/25/2009	13
Power Meter	Gigatronics	8651A	SPM	1/7/2010	13
Power Sensor	Gigatronics	80701A	SPL	1/7/2010	13
Antenna, Dipole (part of ADA)	ETS	3121C-DB4	ADAA	3/6/2009	24
Antenna, Horn	EMCO	3115	AHJ	12/18/2009	24
Signal Generator	Agilent	E8257D	TX	12/10/2008	24

MEASUREMENT BANDWIDTHS

	Frequency Range	Peak Data	Quasi-Peak Data	Average Data
	(MHz)	(kHz)	(kHz)	(kHz)
0.01 - 0.15	1.0	0.2	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0	1000.0

Measurements were made using the bandwidths and detectors specified. No video filter was used.

MEASUREMENT UNCERTAINTY

A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. The measurement uncertainty estimation is available upon request.

TEST DESCRIPTION

The Field Strength of Spurious Radiation was measured in the far-field at an FCC Listed OATS up to 10 GHz. Spectrum analyzer, signal generator, and linearly polarized antennas were used to measure radiated harmonics and spurious emissions. The orientation of the EUT and measurement antenna were manipulated to maximize the level of emissions. The EUT was configured to transmit at the highest output power.

For licensed transmitters, the FCC references TIA/EIA-603 as the measurement procedure standard. TIA/EIA-603 Section 2.2.12 describes a method for measuring radiated spurious emissions that utilizes an antenna substitution method:

At an approved test site, the transmitter is placed on a remotely controlled turntable, and the measurement antenna is placed 3 meters from the transmitter. The turntable azimuth is varied to maximize the level of spurious emissions. The height of the measurement antenna is also varied from 1 to 4 meters. The amplitude and frequency of the highest emissions are noted. The transmitter is then replaced with a 1/2 wave dipole that is successively tuned to each of the highest spurious emissions. A signal generator is connected to the dipole (horn antenna for frequencies above 1 GHz), and its output is adjusted to match the level previously noted for each frequency. The output of the signal generator is recorded, and by factoring in the cable loss to the dipole antenna and its gain; the power (dBm) into an ideal 1/2 wave dipole antenna is determined for each radiated spurious emission.

For the purposes of preliminary measurements, the field strength of the spurious emissions can be measured and compared with a 3 meter limit. The 3 meter limit was calculated to be 87.4 dBuV/m at 3 meters. The final measurements must be made utilizing the substitution method described above and applied against the ERP limit of -10 dBm determined from the maximum allowable power of 120 mW and a -30 dBc emission mask for 12.5 kHz channel bandwidth devices.

NORTHWEST **SPURIOUS RADIATED EMISSIONS** PSA 2008.07.21
EMC EMI 2008.1.9

EUT: F5 UHF Transmitter	Work Order: DIGC0098
Serial Number: 300004354	Date: 05/01/10
Customer: Digital Control, Inc.	Temperature: 22
Attendees: None	Humidity: 37%
Project: None	Barometric Pres.: 29.78 in
Tested by: Rod Peloquin	Job Site: EV01

TEST SPECIFICATIONS Test Method

FCC 90.217:2010	ANSI/TIA/EIA-603-C-2004
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TEST PARAMETERS

Antenna Height(s) (m)	1 - 4	Test Distance (m)	3
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COMMENTS

None

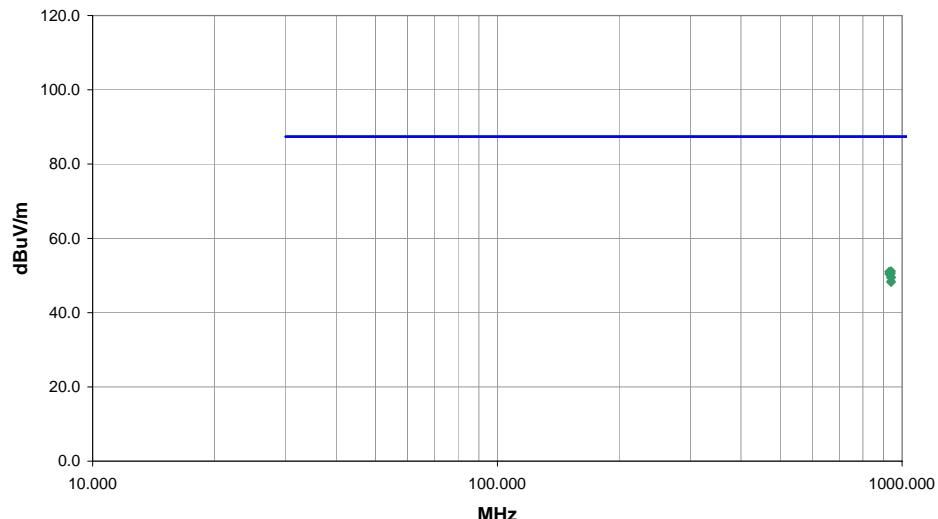
EUT OPERATING MODES

Transmitting with modulation

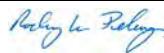
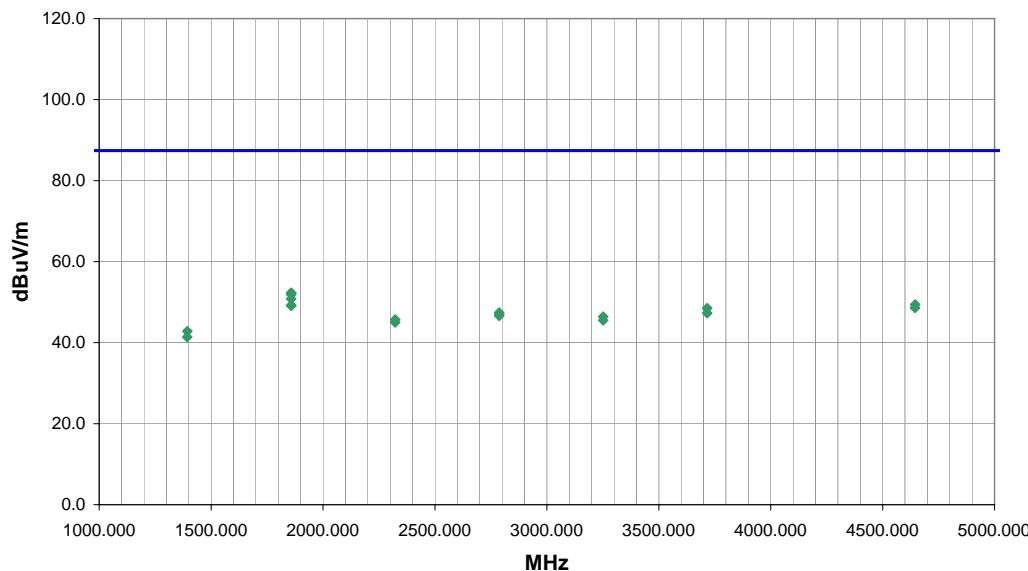
DEVIATIONS FROM TEST STANDARD

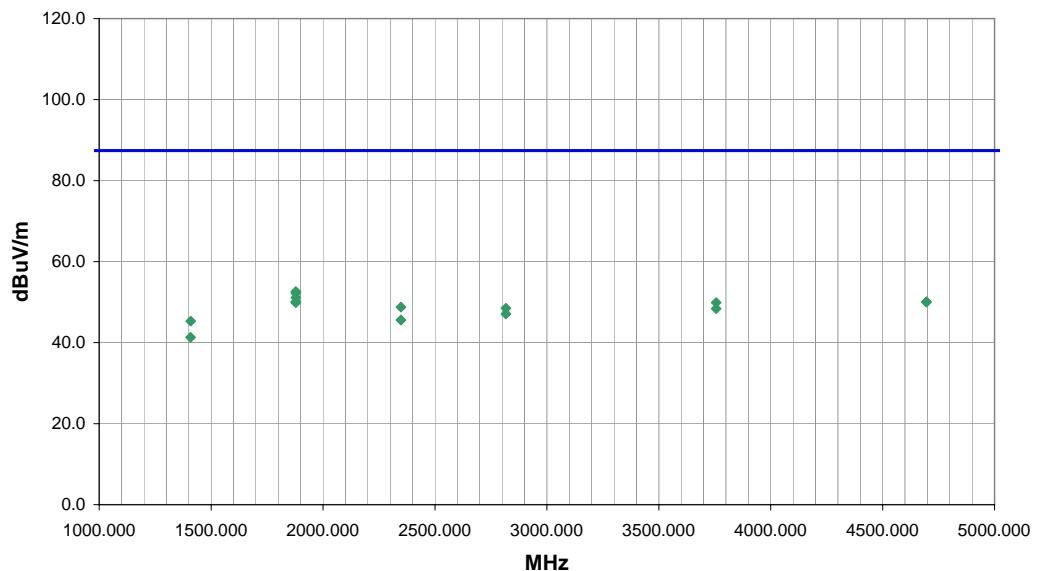
No deviations.

Run #	3	
Configuration #	1	
Results	Pass	<i>Rod Peloquin</i> Signature



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
939.108	16.9	34.3	261.0	1.0	3.0	0.0	H-Bilog	QP	0.0	51.2	87.4	-36.2	High channel, EUT on end
929.008	16.6	34.4	251.0	1.0	3.0	0.0	H-Bilog	QP	0.0	51.0	87.4	-36.4	Low channel, EUT on end
939.102	16.3	34.3	308.0	1.2	3.0	0.0	V-Bilog	QP	0.0	50.6	87.4	-36.8	high channel, EUT typical orientation
929.005	16.0	34.4	303.0	1.0	3.0	0.0	V-Bilog	QP	0.0	50.4	87.4	-37.0	Low channel, EUT typical orientation
939.099	15.3	34.3	122.0	1.0	3.0	0.0	H-Bilog	QP	0.0	49.6	87.4	-37.8	High channel, EUT on side
939.102	15.1	34.3	112.0	1.0	3.0	0.0	H-Bilog	QP	0.0	49.4	87.4	-38.0	High channel, EUT typical orientation
939.112	14.1	34.3	125.0	1.2	3.0	0.0	V-Bilog	QP	0.0	48.4	87.4	-39.0	High channel, EUT on side
939.074	13.9	34.3	286.0	1.2	3.0	0.0	V-Bilog	QP	0.0	48.2	87.4	-39.2	High channel, EUT on end

SPURIOUS RADIATED EMISSIONS												PSA 2008.07.21	EMI 2008.1.9																																																																																																																																																																																																																																																																																								
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<table border="1"> <thead> <tr> <th>Freq (MHz)</th> <th>Amplitude (dBuV)</th> <th>Factor (dB)</th> <th>Azimuth (degrees)</th> <th>Height (meters)</th> <th>Distance (meters)</th> <th>External Attenuation (dB)</th> <th>Polarity</th> <th>Detector</th> <th>Distance Adjustment (dB)</th> <th>Adjusted dBuV/m</th> <th>Spec. Limit dBuV/m</th> <th>Compared to Spec. (dB)</th> <th>Comments</th> </tr> </thead> <tbody> <tr><td>1857.964</td><td>55.6</td><td>-3.3</td><td>125.0</td><td>1.1</td><td>3.0</td><td>0.0</td><td>H-Horn</td><td>PK</td><td>0.0</td><td>52.3</td><td>87.4</td><td>-35.1</td><td>EUT typical orientation</td></tr> <tr><td>1857.911</td><td>55.5</td><td>-3.3</td><td>149.0</td><td>1.0</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>PK</td><td>0.0</td><td>52.2</td><td>87.4</td><td>-35.2</td><td>EUT on end</td></tr> <tr><td>1857.994</td><td>55.2</td><td>-3.3</td><td>46.0</td><td>1.1</td><td>3.0</td><td>0.0</td><td>H-Horn</td><td>PK</td><td>0.0</td><td>51.9</td><td>87.4</td><td>-35.5</td><td>EUT on side</td></tr> <tr><td>1857.949</td><td>54.1</td><td>-3.3</td><td>252.0</td><td>1.1</td><td>3.0</td><td>0.0</td><td>H-Horn</td><td>PK</td><td>0.0</td><td>50.8</td><td>87.4</td><td>-36.6</td><td>EUT on end</td></tr> <tr><td>4645.115</td><td>40.8</td><td>8.6</td><td>29.0</td><td>1.8</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>PK</td><td>0.0</td><td>49.4</td><td>87.4</td><td>-38.0</td><td>EUT on end</td></tr> <tr><td>1857.951</td><td>52.5</td><td>-3.3</td><td>243.0</td><td>1.0</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>PK</td><td>0.0</td><td>49.2</td><td>87.4</td><td>-38.2</td><td>EUT on side</td></tr> <tr><td>1858.081</td><td>52.4</td><td>-3.3</td><td>351.0</td><td>1.0</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>PK</td><td>0.0</td><td>49.1</td><td>87.4</td><td>-38.3</td><td>EUT typical orientation</td></tr> <tr><td>4645.060</td><td>40.0</td><td>8.6</td><td>109.0</td><td>1.0</td><td>3.0</td><td>0.0</td><td>H-Horn</td><td>PK</td><td>0.0</td><td>48.6</td><td>87.4</td><td>-38.8</td><td>EUT typical orientation</td></tr> <tr><td>3716.125</td><td>43.3</td><td>5.2</td><td>112.0</td><td>1.3</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>PK</td><td>0.0</td><td>48.5</td><td>87.4</td><td>-38.9</td><td>EUT on end</td></tr> <tr><td>2786.960</td><td>46.9</td><td>0.5</td><td>329.0</td><td>1.0</td><td>3.0</td><td>0.0</td><td>H-Horn</td><td>PK</td><td>0.0</td><td>47.4</td><td>87.4</td><td>-40.0</td><td>EUT typical orientation</td></tr> <tr><td>3716.090</td><td>42.1</td><td>5.2</td><td>113.0</td><td>1.3</td><td>3.0</td><td>0.0</td><td>H-Horn</td><td>PK</td><td>0.0</td><td>47.3</td><td>87.4</td><td>-40.1</td><td>EUT typical orientation</td></tr> <tr><td>2787.005</td><td>46.4</td><td>0.5</td><td>290.0</td><td>1.0</td><td>3.0</td><td>0.0</td><td>H-Horn</td><td>PK</td><td>0.0</td><td>46.9</td><td>87.4</td><td>-40.5</td><td>EUT on end</td></tr> <tr><td>2787.010</td><td>46.1</td><td>0.5</td><td>72.0</td><td>1.0</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>PK</td><td>0.0</td><td>46.6</td><td>87.4</td><td>-40.8</td><td>EUT on end</td></tr> <tr><td>3251.590</td><td>43.3</td><td>3.1</td><td>111.0</td><td>1.3</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>PK</td><td>0.0</td><td>46.4</td><td>87.4</td><td>-41.0</td><td>EUT on end</td></tr> <tr><td>2322.510</td><td>47.1</td><td>-1.4</td><td>54.0</td><td>1.3</td><td>3.0</td><td>0.0</td><td>H-Horn</td><td>PK</td><td>0.0</td><td>45.7</td><td>87.4</td><td>-41.7</td><td>EUT typical orientation</td></tr> <tr><td>3251.525</td><td>42.4</td><td>3.1</td><td>38.0</td><td>1.1</td><td>3.0</td><td>0.0</td><td>H-Horn</td><td>PK</td><td>0.0</td><td>45.5</td><td>87.4</td><td>-41.9</td><td>EUT typical orientation</td></tr> <tr><td>2322.555</td><td>46.4</td><td>-1.4</td><td>5.0</td><td>1.0</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>PK</td><td>0.0</td><td>45.0</td><td>87.4</td><td>-42.4</td><td>EUT on end</td></tr> <tr><td>1393.520</td><td>50.0</td><td>-7.2</td><td>96.0</td><td>1.1</td><td>3.0</td><td>0.0</td><td>V-Horn</td><td>PK</td><td>0.0</td><td>42.8</td><td>87.4</td><td>-44.6</td><td>EUT on end</td></tr> <tr><td>1393.465</td><td>48.6</td><td>-7.2</td><td>12.0</td><td>1.0</td><td>3.0</td><td>0.0</td><td>H-Horn</td><td>PK</td><td>0.0</td><td>41.4</td><td>87.4</td><td>-46.0</td><td>EUT typical orientation</td></tr> </tbody> </table>														Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments	1857.964	55.6	-3.3	125.0	1.1	3.0	0.0	H-Horn	PK	0.0	52.3	87.4	-35.1	EUT typical orientation	1857.911	55.5	-3.3	149.0	1.0	3.0	0.0	V-Horn	PK	0.0	52.2	87.4	-35.2	EUT on end	1857.994	55.2	-3.3	46.0	1.1	3.0	0.0	H-Horn	PK	0.0	51.9	87.4	-35.5	EUT on side	1857.949	54.1	-3.3	252.0	1.1	3.0	0.0	H-Horn	PK	0.0	50.8	87.4	-36.6	EUT on end	4645.115	40.8	8.6	29.0	1.8	3.0	0.0	V-Horn	PK	0.0	49.4	87.4	-38.0	EUT on end	1857.951	52.5	-3.3	243.0	1.0	3.0	0.0	V-Horn	PK	0.0	49.2	87.4	-38.2	EUT on side	1858.081	52.4	-3.3	351.0	1.0	3.0	0.0	V-Horn	PK	0.0	49.1	87.4	-38.3	EUT typical orientation	4645.060	40.0	8.6	109.0	1.0	3.0	0.0	H-Horn	PK	0.0	48.6	87.4	-38.8	EUT typical orientation	3716.125	43.3	5.2	112.0	1.3	3.0	0.0	V-Horn	PK	0.0	48.5	87.4	-38.9	EUT on end	2786.960	46.9	0.5	329.0	1.0	3.0	0.0	H-Horn	PK	0.0	47.4	87.4	-40.0	EUT typical orientation	3716.090	42.1	5.2	113.0	1.3	3.0	0.0	H-Horn	PK	0.0	47.3	87.4	-40.1	EUT typical orientation	2787.005	46.4	0.5	290.0	1.0	3.0	0.0	H-Horn	PK	0.0	46.9	87.4	-40.5	EUT on end	2787.010	46.1	0.5	72.0	1.0	3.0	0.0	V-Horn	PK	0.0	46.6	87.4	-40.8	EUT on end	3251.590	43.3	3.1	111.0	1.3	3.0	0.0	V-Horn	PK	0.0	46.4	87.4	-41.0	EUT on end	2322.510	47.1	-1.4	54.0	1.3	3.0	0.0	H-Horn	PK	0.0	45.7	87.4	-41.7	EUT typical orientation	3251.525	42.4	3.1	38.0	1.1	3.0	0.0	H-Horn	PK	0.0	45.5	87.4	-41.9	EUT typical orientation	2322.555	46.4	-1.4	5.0	1.0	3.0	0.0	V-Horn	PK	0.0	45.0	87.4	-42.4	EUT on end	1393.520	50.0	-7.2	96.0	1.1	3.0	0.0	V-Horn	PK	0.0	42.8	87.4	-44.6	EUT on end	1393.465	48.6	-7.2	12.0	1.0	3.0	0.0	H-Horn	PK	0.0	41.4	87.4	-46.0	EUT typical orientation
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments																																																																																																																																																																																																																																																																																								
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2322.510	47.1	-1.4	54.0	1.3	3.0	0.0	H-Horn	PK	0.0	45.7	87.4	-41.7	EUT typical orientation																																																																																																																																																																																																																																																																																								
3251.525	42.4	3.1	38.0	1.1	3.0	0.0	H-Horn	PK	0.0	45.5	87.4	-41.9	EUT typical orientation																																																																																																																																																																																																																																																																																								
2322.555	46.4	-1.4	5.0	1.0	3.0	0.0	V-Horn	PK	0.0	45.0	87.4	-42.4	EUT on end																																																																																																																																																																																																																																																																																								
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SPURIOUS RADIATED EMISSIONS												PSA 2008.07.21	EMI 2008.1.9	
TEST SPECIFICATIONS							Test Method							
FCC 90.217:2010							ANSI/TIA/EIA-603-C-2004							
TEST PARAMETERS														
Antenna Height(s) (m)			1 - 4			Test Distance (m)			3					
COMMENTS														
None														
EUT OPERATING MODES														
Transmitting with modulation, high channel														
DEVIATIONS FROM TEST STANDARD														
No deviations.														
Run #	1													
Configuration #	1													
Results	Pass													
														
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments	
1878.151	55.7	-3.1	125.0	1.4	3.0	0.0	V-Horn	PK	0.0	52.6	87.4	-34.8	EUT on end	
1878.172	55.3	-3.1	245.0	1.4	3.0	0.0	H-Horn	PK	0.0	52.2	87.4	-35.2	EUT on end	
1878.212	54.2	-3.1	36.0	1.8	3.0	0.0	H-Horn	PK	0.0	51.1	87.4	-36.3	EUT on side	
1878.188	53.2	-3.1	326.0	1.0	3.0	0.0	V-Horn	PK	0.0	50.1	87.4	-37.3	EUT typical orientation	
4695.740	41.6	8.5	32.0	1.7	3.0	0.0	V-Horn	PK	0.0	50.1	87.4	-37.3	EUT on end	
4695.747	41.5	8.5	81.0	1.1	3.0	0.0	H-Horn	PK	0.0	50.0	87.4	-37.4	EUT on end	
1878.178	53.1	-3.1	354.0	1.0	3.0	0.0	V-Horn	PK	0.0	50.0	87.4	-37.4	EUT on side	
3756.337	44.5	5.4	125.0	1.0	3.0	0.0	H-Horn	PK	0.0	49.9	87.4	-37.5	EUT on end	
1878.129	53.0	-3.1	289.0	1.0	3.0	0.0	H-Horn	PK	0.0	49.9	87.4	-37.5	EUT typical orientation	
2347.880	50.2	-1.4	123.0	1.1	3.0	0.0	H-Horn	PK	0.0	48.8	87.4	-38.6	EUT on end	
2817.237	47.7	0.8	192.0	1.0	3.0	0.0	H-Horn	PK	0.0	48.5	87.4	-38.9	EUT on end	
3756.373	43.0	5.4	42.0	1.1	3.0	0.0	V-Horn	PK	0.0	48.4	87.4	-39.0	EUT on end	
2817.287	46.3	0.8	61.0	1.1	3.0	0.0	V-Horn	PK	0.0	47.1	87.4	-40.3	EUT on end	
2347.953	47.0	-1.4	345.0	1.0	3.0	0.0	V-Horn	PK	0.0	45.6	87.4	-41.8	EUT on end	
1408.597	52.4	-7.1	100.0	1.0	3.0	0.0	H-Horn	PK	0.0	45.3	87.4	-42.1	EUT on end	
1408.480	48.4	-7.1	285.0	1.2	3.0	0.0	V-Horn	PK	0.0	41.3	87.4	-46.1	EUT on end	