

Digital Control, Inc.

F5 UHF Transmitter (F5R)

Report No. DIGC0098

Report Prepared By



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

© 2010 Northwest EMC, Inc

EMC Test Report



22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

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).



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 VNIINMASH, 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



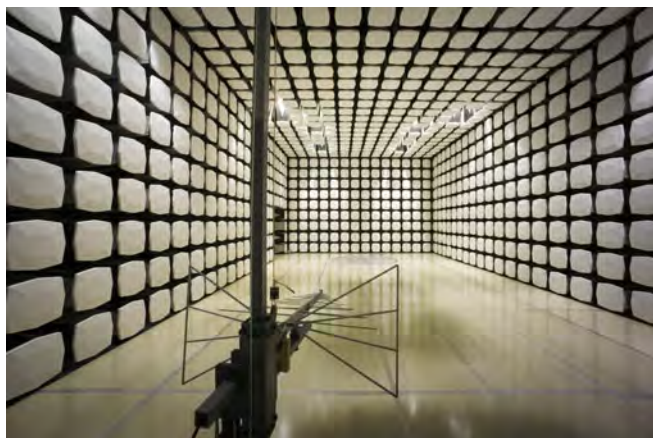
Oregon
Labs EV01-EV12
22975 NW Evergreen Pkwy
Suite 400
Hillsboro, OR 97124
(503) 844-4066

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 (MHz) | Peak Data (kHz) | Quasi-Peak Data (kHz) | Average Data (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 ½ 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.

| | | | | | | | | | | | | | | |
|---------------------------------------|--|--------------------------------|--|--------------------------------|-----------------|-----------|--|----------|----------|-------------|-----------|-------------------|------------------------|---------------------------------------|
| NORTHWEST | | Effective Radiated Power (ERP) | | PSA 2008.07.21 EMI 2008.1.9 | | | | | | | | | | |
| EMC | | | | | | | | | | | | | | |
| 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.: 29.78 in | | | | | | | | | | | | |
| Tested by: Rod Peloquin | | Power: Battery | | Job Site: EV01 | | | | | | | | | | |
| 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 | | | | | | | | | | | | |
| Configuration # | | 1 | | | | | | | | | | | | |
| Results | | Pass | | | | Signature | | | | | | | | |
| | | | | | | | | | | | | | | |
| 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 |
|-----------------|--------|----------------|----------|

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 | 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.


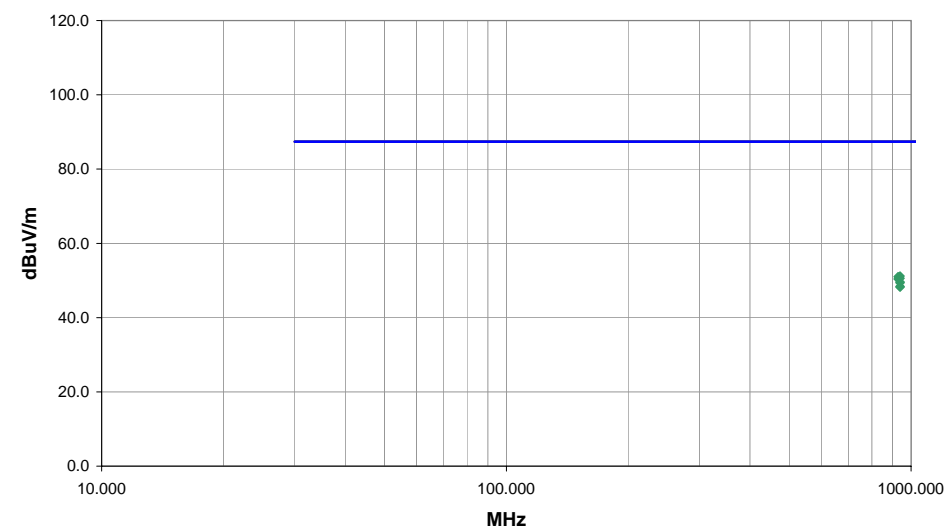
TEST DESCRIPTION

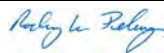
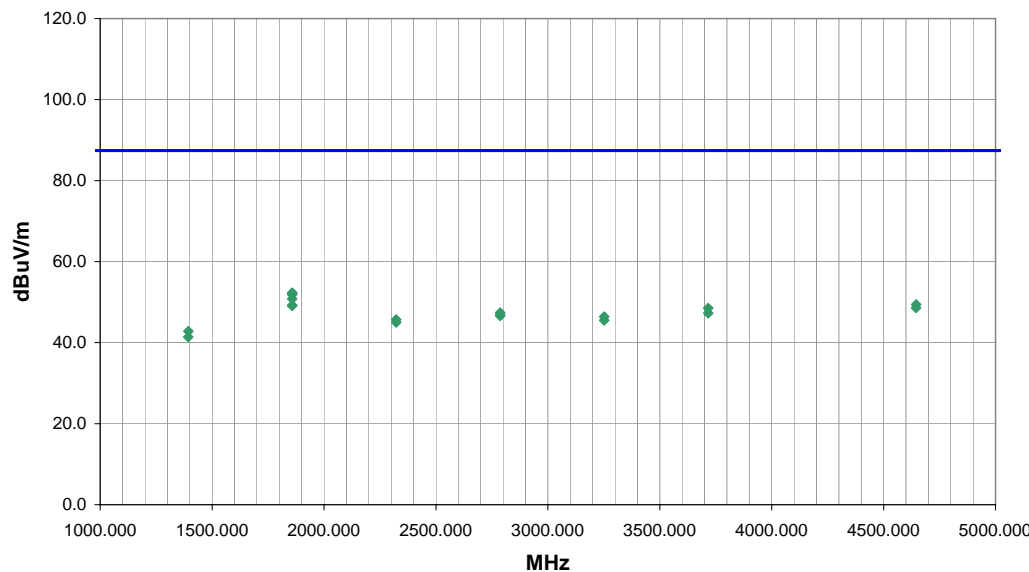
The Field Strength of Spurious Radiation was measured in the far-field at an FCC Listed OATS up to 10 GHz. Spectrum analyzer, signal generator, and linearly polarized antennas were used to measure radiated harmonics and spurious emissions. The orientation of the EUT and measurement antenna were manipulated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

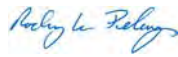
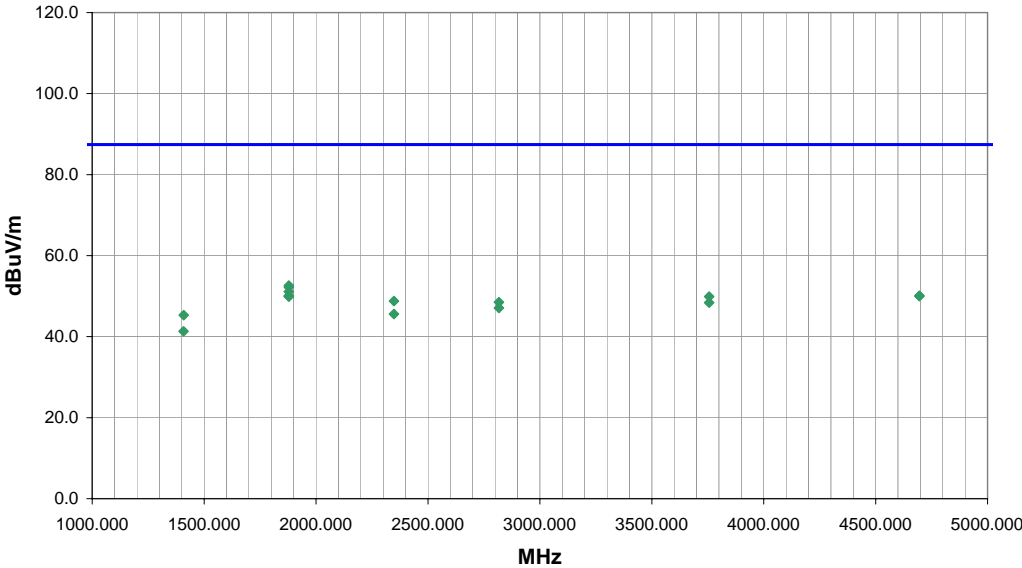
For licensed transmitters, the FCC references TIA/EIA-603 as the measurement procedure standard. TIA/EIA-603 Section 2.2.12 describes a method for measuring radiated spurious emissions that utilizes an antenna substitution method:

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 ½ 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 ½ 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 EMI 2008.1.9 | | | | | | | | | |
|-------------------------------------------------------------------------------------|-------------------------|----------------------------------------|-------------------------------------------------------------------------------------------------|-----------------------------------|--------------------------|----------------------------------|-----------------|-----------------|---------------------------------|------------------------|---------------------------|-------------------------------|---------------------------------------|
| EMC | | EUT: F5 UHF Transmitter | | Work Order: DIGC0098 | | | | | | | | | |
| Serial Number: 300004354 | | Customer: Digital Control, Inc. | | Date: 05/01/10 | | | | | | | | | |
| Attendees: None | | Project: None | | Temperature: 22 | | | | | | | | | |
| Tested by: Rod Peloquin | | Power: Battery | | Humidity: 37% | | | | | | | | | |
| | | | | Barometric Pres.: 29.78 in | | | | | | | | | |
| | | | | Job Site: EV01 | | | | | | | | | |
| 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 | | | | | | | | | | | | | |
| DEVIATIONS FROM TEST STANDARD | | | | | | | | | | | | | |
| No deviations. | | | | | | | | | | | | | |
| Run # | 3 | |  Signature | | | | | | | | | | |
| 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 |
| 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 |

| | | | | | | | | | | | | | |
|-------------------------------------------------------------------------------------|------------------|-------------------------------------------------------------------------------------------------|-------------------|-----------------|-------------------|---------------------------|----------|----------|--------------------------|-----------------|--------------------|------------------------|-------------------------|
| NORTHWEST | | PSA 2008.07.21 | | | | | | | | | | | |
| EMC | | SPURIOUS RADIATED EMISSIONS | | | | | | | | | | | |
| 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 | | Power: Battery | | | | | | | | | | | |
| | | Job Site: EV01 | | | | | | | | | | | |
| 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, low channel | | | | | | | | | | | | | |
| DEVIATIONS FROM TEST STANDARD | | | | | | | | | | | | | |
| No deviations. | | | | | | | | | | | | | |
| Run # | 2 |  Signature | | | | | | | | | | | |
| 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 |
| 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 |

| NORTHWEST | | SPURIOUS RADIATED EMISSIONS | | PSA 2008.07.21 | | | | | | | | | |
|-------------------------------------------------------------------------------------|------------------|-----------------------------|-------------------------------------------------------------------------------------------------|-------------------|-------------------|---------------------------|----------|----------|--------------------------|-----------------|--------------------|------------------------|-------------------------|
| EMC | | | | EMI 2008.1.9 | | | | | | | | | |
| EUT: F5 UHF Transmitter | | | Work Order: DIGC0098 | | | | | | | | | | |
| Serial Number: 300004354 | | | Date: 04/29/10 | | | | | | | | | | |
| Customer: Digital Control, Inc. | | | Temperature: 22 | | | | | | | | | | |
| Attendees: none | | | Humidity: 37% | | | | | | | | | | |
| Project: None | | | Barometric Pres.: 29.78 in | | | | | | | | | | |
| Tested by: Rod Peloquin | | Power: Battery | | Job Site: EV01 | | | | | | | | | |
| 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 | |  Signature | | | | | | | | | | |
| 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 |