

Digital Control, Inc.

RoHS transmitter

Models:
F5Dp 19/12
F5Dp 12/1.3
F5DLp 19/12

Report No. DIGC0117

Report Prepared By



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

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EMC Test Report



22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test

Last Date of Test: December 14, 2010

Digital Control, Inc.

Model: RoHS transmitter

Emissions			
Test Description	Specification	Test Method	Pass/Fail
Field Strength of Fundamental	FCC 15.209:2010	ANSI C63.10:2009	Pass
Field Strength of Spurious Emissions	FCC 15.209:2010	ANSI C63.10:2009	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-1).

Approved By:

Tim O'Shea, Operations 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 National Voluntary Laboratory Accreditation Program (NVLAP) for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. NVLAP is administered by the National Institute of Standards and Technology (NIST), an agency of the U.S. Commerce Department. 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.

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.

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).



Accreditations and Authorizations

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).

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, Brooklyn Park: US0175)*

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



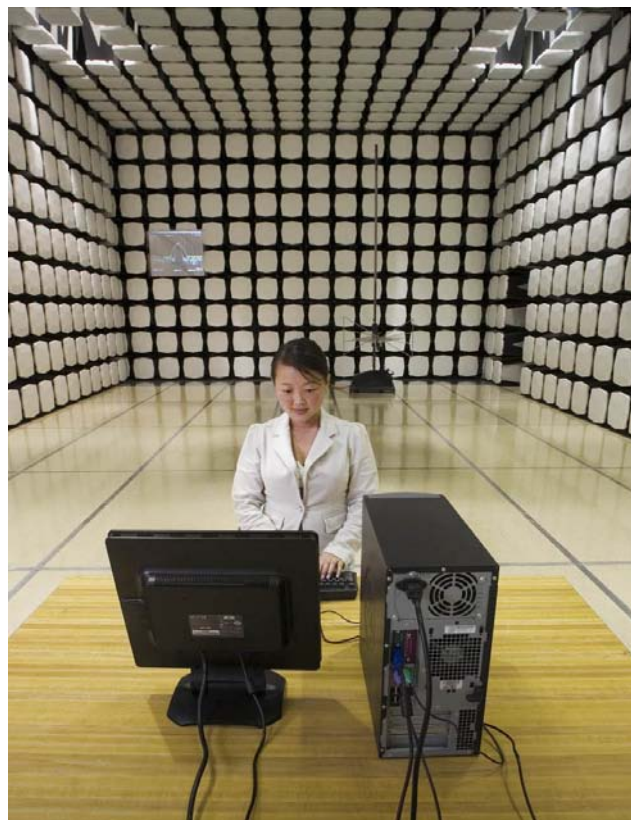
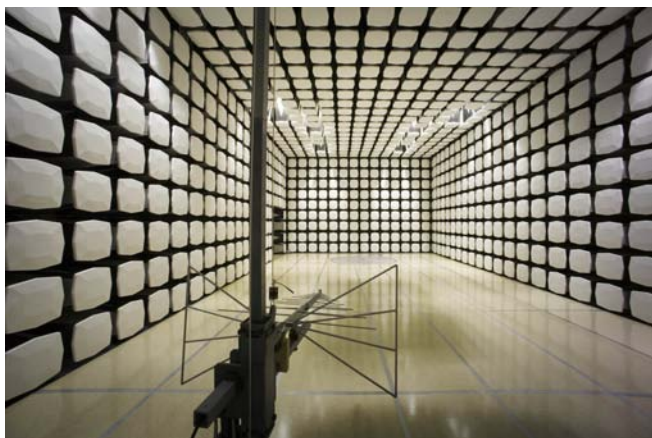
Oregon
Labs EV01-EV12
22975 NW Evergreen Pkwy
Suite 400
Hillsboro, OR 97124
(503) 844-4066

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:	Amanda Hamm
Model:	RoHS transmitter
First Date of Test:	November 12, 2010
Last Date of Test:	December 14, 2010
Receipt Date of Samples:	November 2, 2010
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):

1.33kHz, 8.4kHz, 18.5kHz, or 19.2kHz switchable frequency transmitter. There are two sizes of transmitters 15 inch and 19 inch.

The DigiTrak® F5Dp 19/12 and F5Dp 12/1.3 transmitters are electrically and mechanically identical to each other. The devices differ only in labeling and frequency of operation (F5Dp 19/12 operates at either 19 kHz or 12 kHz, the F5Dp 12/1 .3 operates at either 12 kHz or 12 kHz and 1.3 kHz simultaneously).

The F5DLp 19/12 differs from the F5Dp models in the length of antenna, thus the output power and power consumption (battery life) are also different. The F5DLp 19/12 is 19" (48.26 cm) long and with a specified transmitting range of 85 ft (25.9 m) where the F5Dp 19/12 and F5Dp 12/1.3 are 15" (38.1 cm) long with a specified transmitting range of 65 ft (19.8 m). The F5Dp 19/12 and F5DLp 19/12 models are identical in frequency and modulation as well as the method, equipment, and materials used in the manufacture.

Testing Objective:

To demonstrate compliance to FCC 15.209 requirements.

CONFIGURATION 1 DIGC0117

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
EUT	Digital Control, Inc.	Switchable Frequency RoHS 15 inch	0046-000324

CONFIGURATION 2 DIGC0117

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
EUT	Digital Control, Inc.	Switchable Frequency RoHS 19 inch	0046-000325

Equipment modifications					
Item	Date	Test	Modification	Note	Disposition of EUT
1	11/12/2010	Field Strength of Fundamental	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	12/14/2010	Field Strength of Spurious Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

EMC**Field Strength of Fundamental**

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. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Tx @ 11.976 kHz

Tx @ 19.22 kHz

POWER SETTINGS INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

DIGC0117 - 1

DIGC0117 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency

9 kHz

Stop Frequency

25 kHz

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
Antenna, Loop	EMCO	6502	AZC	8/3/2009	24 mo
EV11 Cables	N/A	3m Test Distance Cables	EVM	8/26/2010	13 mo
Spectrum Analyzer	Agilent	E4443A	AFB	2/1/2010	12 mo

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 IF bandwidths and detectors specified. No video filter was used, except in the case of the FCC Average Measurements above 1GHz. In that case, a peak detector with a 10Hz video bandwidth was used.

MEASUREMENT UNCERTAINTY

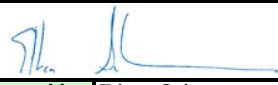
A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was transmitting while set at the channel available. While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.10:2009). An active loop antenna was used for this test in order to provide sufficient measurement sensitivity.

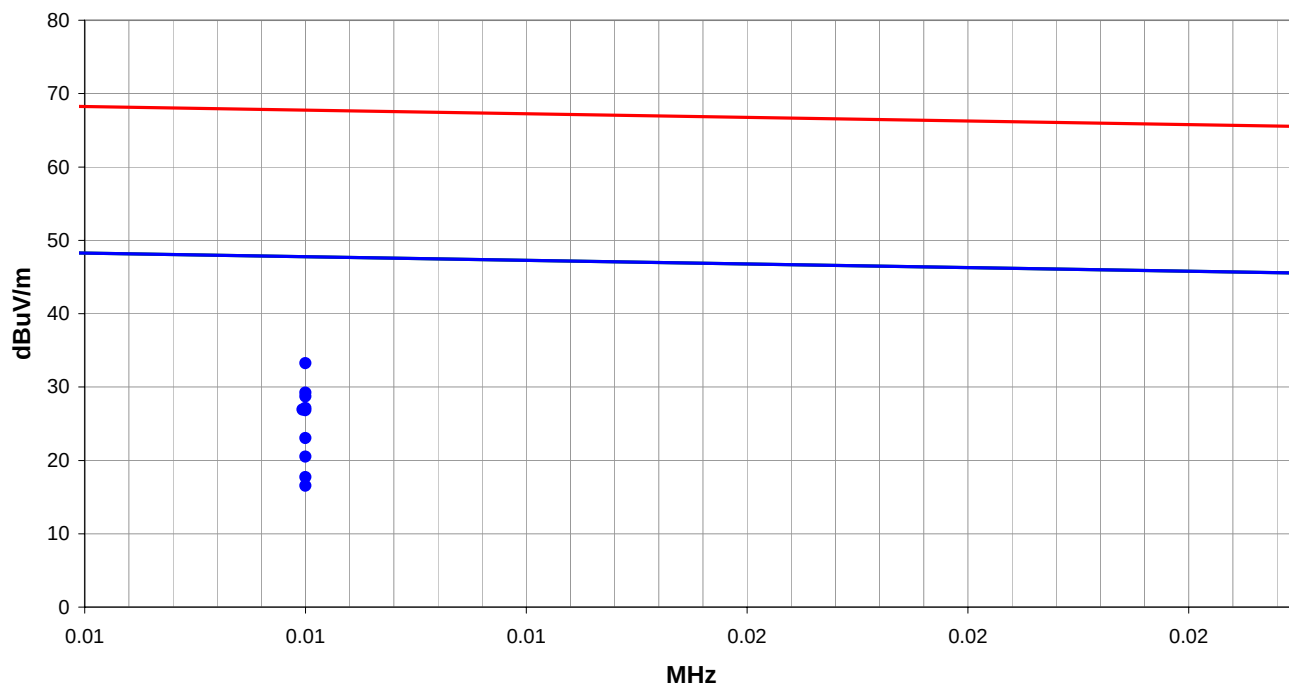
EMC

Field Strength of Fundamental

Work Order:	DIGC0117	Date:	11/12/10	
Project:	None	Temperature:	20.1	
Job Site:	EV11	Humidity:	40.3	
Serial Number:	0046-000324	Barometric Pres.:	1038	
EUT:	RoHS transmitter			
Configuration:	1-15"			
Customer:	Digital Control, Inc.			
Attendees:	none			
EUT Power:	Battery			
Operating Mode:	Tx@ 11.976 kHz			
Deviations:	None			
Comments:	None			

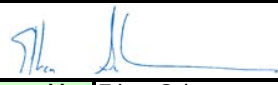
Test Specifications FCC 15.209:2010	Test Method ANSI C63.10:2009
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Run #	1	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
0.012	88.8	18.1	1.9	359.0	3.0	0.0	Vert	PK	-80.0	26.9	66.0	-39.1
0.012	90.6	18.1	1.9	303.0	3.0	0.0	Horz	AV	-80.0	28.7	46.0	-17.3
0.012	88.7	18.1	2.0	306.0	3.0	0.0	Vert	AV	-80.0	26.8	46.0	-19.2
0.012	84.9	18.1	1.9	9.0	3.0	0.0	Horz	AV	-80.0	23.0	46.0	-23.0
0.012	79.6	18.1	1.9	359.0	3.0	0.0	Vert	AV	-80.0	17.7	46.0	-28.3
0.012	78.4	18.1	2.4	351.0	3.0	0.0	Horz	AV	-80.0	16.5	46.0	-29.5
0.012	95.1	18.1	1.9	303.0	3.0	0.0	Horz	PK	-80.0	33.2	66.0	-32.8
0.012	91.1	18.1	2.0	306.0	3.0	0.0	Vert	PK	-80.0	29.2	66.0	-36.8
0.012	89.0	18.1	1.9	9.0	3.0	0.0	Horz	PK	-80.0	27.1	66.0	-38.9
0.012	82.4	18.1	2.4	351.0	3.0	0.0	Horz	PK	-80.0	20.5	66.0	-45.5
0.012	52.5	18.1	2.0	351.0	3.0	0.0	Horz	AV	-80.0	-9.4	46.0	-55.4
0.012	60.2	18.1	2.0	351.0	3.0	0.0	Horz	PK	-80.0	-1.7	66.0	-67.7

EMC**Field Strength of Fundamental**

Work Order:	DIGC0117	Date:	11/12/10	
Project:	None	Temperature:	20.1	
Job Site:	EV11	Humidity:	40.3	
Serial Number:	0046-000324	Barometric Pres.:	1038	
EUT:	RoHS transmitter			
Configuration:	1-15"			
Customer:	Digital Control, Inc.			
Attendees:	none			
EUT Power:	Battery			
Operating Mode:	Tx@ 19.22 kHz			
Deviations:	None			
Comments:	None			

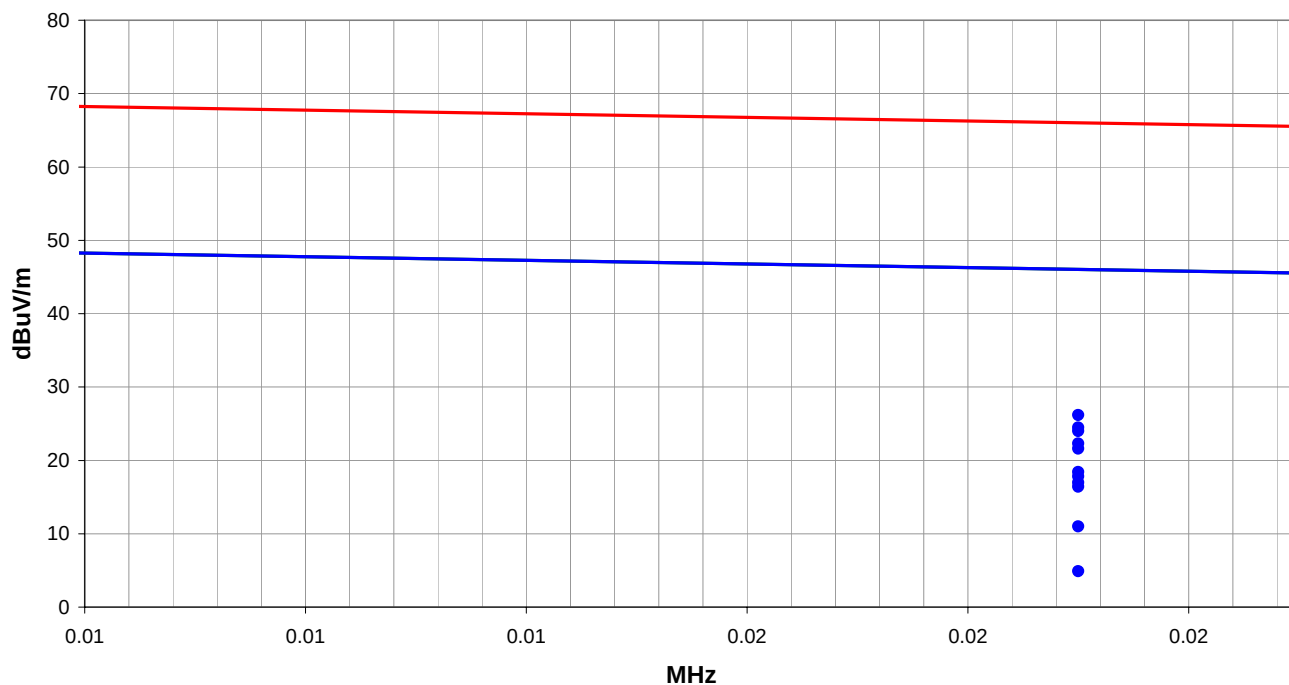
Tested by: Ethan Schoonover**Test Specifications**

FCC 15.209:2010

Test Method

ANSI C63.10:2009

Run #	1	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
0.019	87.6	14.7	1.9	362.0	3.0	0.0	Horz	AV	-80.0	22.3	42.0	-19.7
0.019	83.1	14.7	1.9	304.0	3.0	0.0	Vert	AV	-80.0	17.8	42.0	-24.2
0.019	82.3	14.7	2.5	343.0	3.0	0.0	Horz	AV	-80.0	17.0	42.0	-25.0
0.019	81.7	14.7	1.8	301.0	3.0	0.0	Horz	AV	-80.0	16.4	42.0	-25.6
0.019	76.3	14.7	1.9	10.0	3.0	0.0	Vert	AV	-80.0	11.0	42.0	-31.0
0.019	91.5	14.7	1.9	304.0	3.0	0.0	Vert	PK	-80.0	26.2	62.0	-35.8
0.019	89.8	14.7	1.8	301.0	3.0	0.0	Horz	PK	-80.0	24.5	62.0	-37.5
0.019	89.3	14.7	1.4	362.0	3.0	0.0	Horz	PK	-80.0	24.0	62.0	-38.0
0.019	86.9	14.7	1.9	10.0	3.0	0.0	Vert	PK	-80.0	21.6	62.0	-40.4
0.019	63.8	14.7	1.9	40.0	3.0	0.0	Horz	AV	-80.0	-1.5	42.0	-43.5
0.019	83.7	14.7	2.5	343.0	3.0	0.0	Horz	PK	-80.0	18.4	62.0	-43.6
0.019	70.2	14.7	1.9	40.0	3.0	0.0	Horz	PK	-80.0	4.9	62.0	-57.1

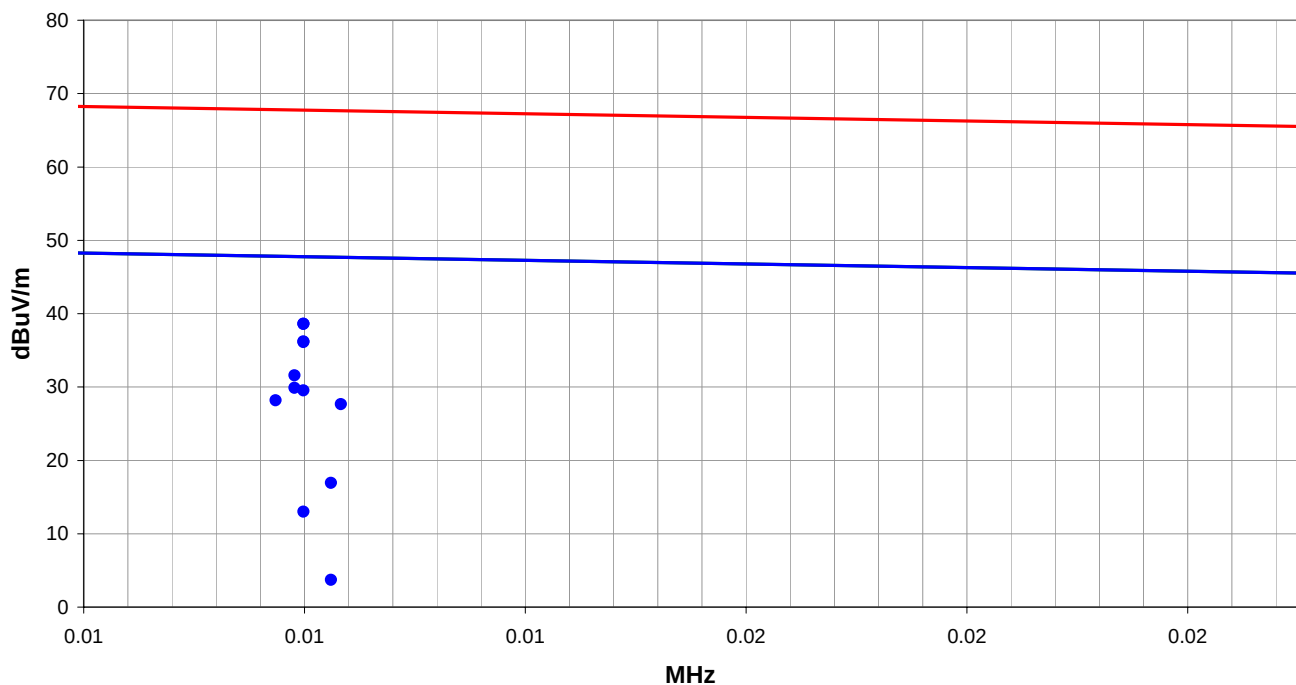
EMC

Field Strength of Fundamental

Work Order:	DIGC0117	Date:	11/12/10	
Project:	None	Temperature:	20.1	
Job Site:	EV11	Humidity:	40.3	
Serial Number:	0046-000325	Barometric Pres.:	1038	
EUT:		RoHS transmitter		
Configuration:		2-19"		
Customer:		Digital Control, Inc.		
Attendees:		none		
EUT Power:		Battery		
Operating Mode:		Tx@ 11.976 kHz		
Deviations:		None		
Comments:		None		

Test Specifications	Test Method
FCC 15.209:2010	ANSI C63.10:2009

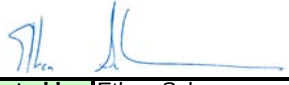
Run #	2	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
0.012	93.4	18.2	1.9	297.0	3.0	0.0	Horz	AV	-80.0	31.6	46.1	-14.5
0.012	91.5	18.4	1.9	19.0	3.0	0.0	Horz	AV	-80.0	29.9	46.4	-16.5
0.012	89.9	18.3	1.9	356.0	3.0	0.0	Vert	AV	-80.0	28.2	46.2	-18.0
0.012	89.7	18.0	2.0	302.0	3.0	0.0	Vert	AV	-80.0	27.7	45.8	-18.1
0.012	100.5	18.1	1.9	19.0	3.0	0.0	Horz	PK	-80.0	38.6	66.0	-27.4
0.012	100.5	18.1	1.9	297.0	3.0	0.0	Horz	PK	-80.0	38.6	66.0	-27.4
0.012	78.9	18.0	2.5	22.0	3.0	0.0	Horz	AV	-80.0	16.9	45.8	-28.9
0.012	98.1	18.1	2.0	302.0	3.0	0.0	Vert	PK	-80.0	36.2	66.0	-29.8
0.012	98.0	18.1	1.9	356.0	3.0	0.0	Vert	PK	-80.0	36.1	66.0	-29.9
0.012	91.4	18.1	2.5	22.0	3.0	0.0	Horz	PK	-80.0	29.5	66.0	-36.5
0.012	65.7	18.0	1.9	237.0	3.0	0.0	Horz	AV	-80.0	3.7	45.8	-42.1
0.012	74.9	18.1	1.9	237.0	3.0	0.0	Horz	PK	-80.0	13.0	66.0	-53.0

EMC

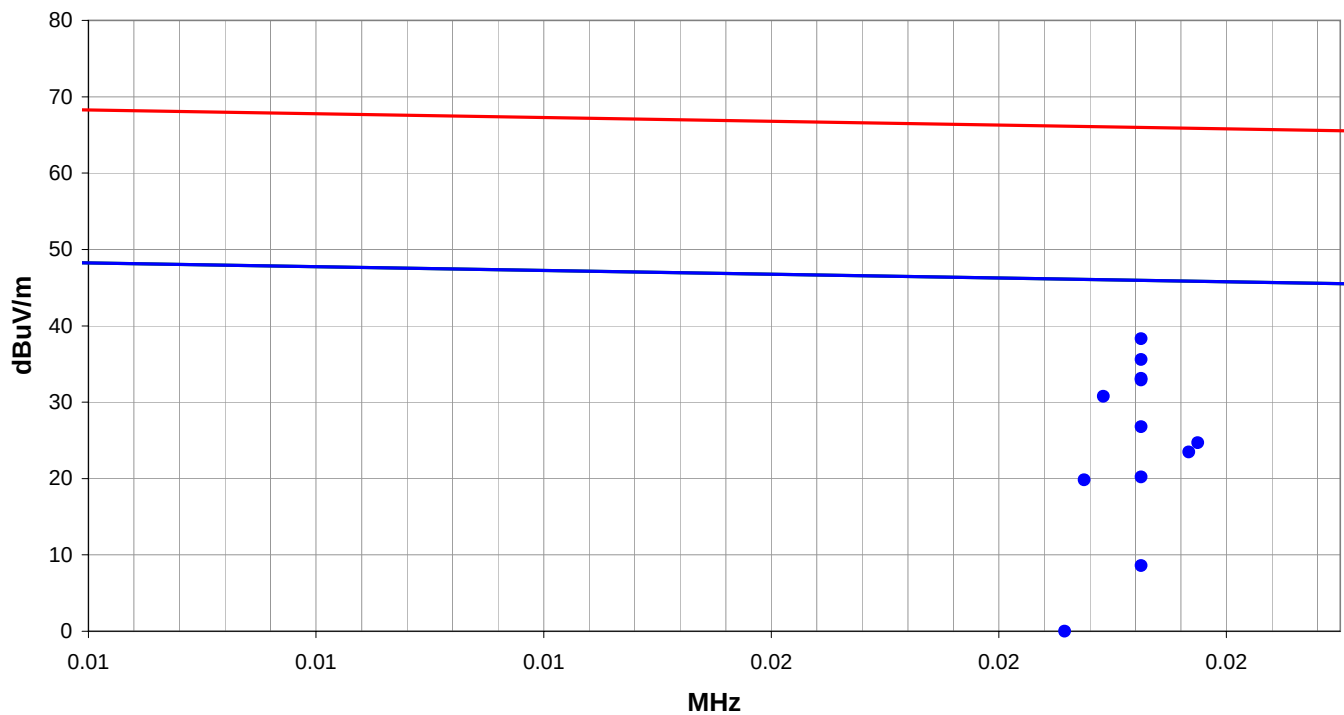
Field Strength of Fundamental

Work Order:	DIGC0117	Date:	11/12/10	
Project:	None	Temperature:	20.1	
Job Site:	EV11	Humidity:	40.3	
Serial Number:	0046-000325	Barometric Pres.:	1038	Tested by: Ethan Schoonover
EUT:	RoHS transmitter			
Configuration:	2-19"			
Customer:	Digital Control, Inc.			
Attendees:	none			
EUT Power:	Battery			
Operating Mode:	Tx@ 19.22 kHz			
Deviations:	None			
Comments:	None			

Test Specifications
FCC 15.209:2010

Test Method
ANSI C63.10:2009

Run #	2	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
0.019	96.0	14.7	1.9	307.0	3.0	0.0	Horz	AV	-80.0	30.7	42.0	-11.3
0.020	90.4	14.3	1.9	22.0	3.0	0.0	Horz	AV	-80.0	24.7	41.7	-17.0
0.020	89.1	14.3	1.9	105.0	3.0	0.0	Vert	AV	-80.0	23.4	41.7	-18.3
0.019	85.6	14.6	1.9	350.0	3.0	0.0	Vert	AV	-80.0	20.2	41.9	-21.7
0.019	85.0	14.8	2.5	349.0	3.0	0.0	Horz	AV	-80.0	19.8	42.1	-22.3
0.019	103.7	14.6	1.9	307.0	3.0	0.0	Horz	PK	-80.0	38.3	61.9	-23.6

EMC**Field Strength of Spurious Emissions**

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. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Tx @ 19.2
Tx @ 11.976

POWER SETTINGS INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

DIGC0117 - 1
DIGC0117 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	10 kHz	Stop Frequency	30 MHz
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CLOCKS AND OSCILLATORS

None Provided

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
Antenna, Loop	EMCO	6502	AOA	7/1/2009	24 mo
Pre-Amplifier	Miteq	AM-1616-1000	AVM	7/14/2010	13 mo
Spectrum Analyzer	Agilent	E4443A	AFB	2/1/2010	12 mo

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 IF bandwidths and detectors specified. No video filter was used, except in the case of the FCC Average Measurements above 1GHz. In that case, a peak detector with a 10Hz video bandwidth was used.

MEASUREMENT UNCERTAINTY

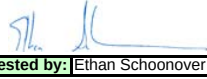
A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was transmitting while set at the channel available. While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height and orientation in 3 orthogonal plane, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.4:2003). An active loop antenna was used for this test in order to provide sufficient measurement sensitivity.

EMC

Field Strength of Spurious Emissions

Work Order:	DIGC0117	Date:	11/15/10	
Project:	None	Temperature:	20.1	
Job Site:	EV11	Humidity:	40.3	
Serial Number:	0046-000324	Barometric Pres.:	1038	
Tested by: Ethan Schoonover				

EUT: RoHS transmitter

Configuration: 1 - 15 Standalone

Customer: Digital Control, Inc.

Attendees: none

EUT Power: Battery

Operating Mode: Tx @ 11.976

Deviations: None

Comments: None

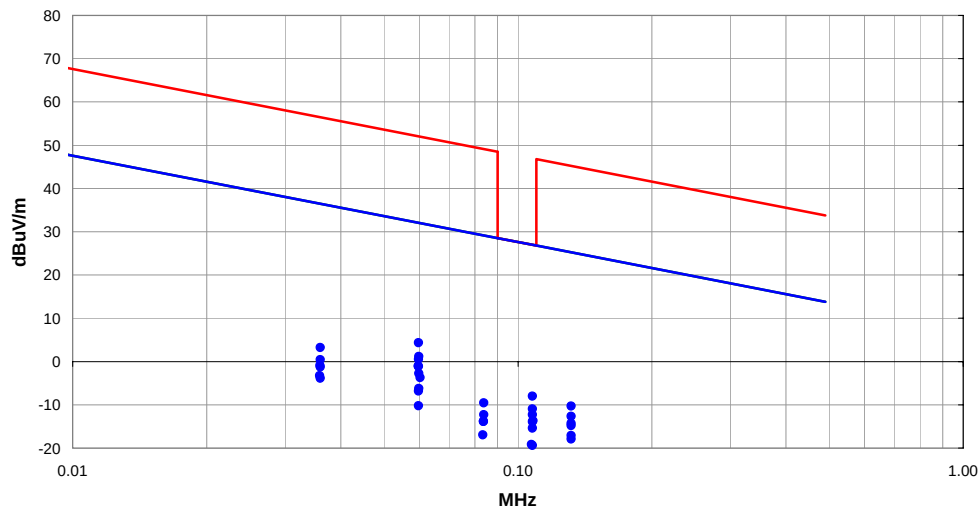
Test Specifications

FCC 15.209:2010

Test Method

ANSI C63.10:2009

Run #	3	Test Distance (m)	3	Antenna Height(s)	1 - 2.5m	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
0.060	67.7	11.3	1.1	292.0	3.0	0.0	Horz	AV	-80.0	-1.0	32.1	-33.1	EUT Horz. Antenna Par to EUT.
0.060	66.0	11.3	1.9	298.0	3.0	0.0	Vert	AV	-80.0	-2.7	32.0	-34.8	EUT Horz. Antenna Perp to EUT, Par to Ground
0.108	61.2	10.8	1.0	101.0	3.0	0.0	Horz	PK	-80.0	-8.0	27.0	-35.0	EUT Horz. Antenna Par to EUT.
0.060	65.0	11.3	1.2	13.0	3.0	0.0	Horz	AV	-80.0	-3.7	32.0	-35.7	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.036	66.0	12.7	1.0	92.0	3.0	0.0	Horz	AV	-80.0	-1.3	36.5	-37.7	EUT Horz. Antenna Par to EUT.
0.108	58.2	10.8	1.1	-4.0	3.0	0.0	Horz	PK	-80.0	-11.0	27.0	-38.0	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.060	62.5	11.3	1.2	328.0	3.0	0.0	Vert	AV	-80.0	-6.2	32.0	-38.3	EUT Vert. Antenna Perp to EUT, Par to Ground
0.108	56.9	10.8	2.2	281.0	3.0	0.0	Vert	PK	-80.0	-12.3	27.0	-39.3	EUT Horz. Antenna Perp to EUT, Par to Ground
0.036	64.0	12.7	1.1	1.0	3.0	0.0	Horz	AV	-80.0	-3.3	36.5	-39.8	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.132	54.4	10.8	1.0	295.0	3.0	0.0	Horz	AV	-80.0	-14.8	25.2	-40.0	EUT Horz. Antenna Par to EUT.
0.036	63.4	12.7	2.0	310.0	3.0	0.0	Vert	AV	-80.0	-3.9	36.5	-40.4	EUT Horz. Antenna Perp to EUT, Par to Ground
0.108	55.5	10.8	1.0	101.0	3.0	0.0	Horz	AV	-80.0	-13.7	26.9	-40.6	EUT Horz. Antenna Par to EUT.
0.108	55.3	10.8	1.4	36.0	3.0	0.0	Vert	PK	-80.0	-13.9	27.0	-40.9	EUT Vert. Antenna Perp to EUT, Par to Ground
0.060	58.5	11.3	2.5	318.0	3.0	0.0	Horz	AV	-80.0	-10.2	32.0	-42.3	EUT Vert. Antenna Par to EUT.
0.132	52.1	10.8	1.0	365.0	3.0	0.0	Horz	AV	-80.0	-17.1	25.2	-42.3	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.108	53.8	10.8	1.1	-4.0	3.0	0.0	Horz	AV	-80.0	-15.4	27.0	-42.4	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.084	55.2	11.0	1.0	293.0	3.0	0.0	Horz	AV	-80.0	-13.8	29.1	-43.0	EUT Horz. Antenna Par to EUT.
0.132	51.3	10.8	2.0	297.0	3.0	0.0	Horz	AV	-80.0	-17.9	25.2	-43.1	EUT Horz. Antenna Perp to EUT, Par to Ground
0.083	52.1	11.0	1.1	-5.0	3.0	0.0	Horz	AV	-80.0	-16.9	29.2	-46.1	EUT Horz. Antenna Perp to EUT, Par to Ground
0.107	50.0	10.8	2.2	281.0	3.0	0.0	Vert	AV	-80.0	-19.2	27.0	-46.2	EUT Horz. Antenna Perp to EUT, Par to Ground
0.108	49.8	10.8	2.3	363.0	3.0	0.0	Horz	PK	-80.0	-19.4	27.0	-46.4	EUT Vert. Antenna Par to EUT.
0.108	48.6	10.8	1.4	36.0	3.0	0.0	Vert	AV	-80.0	-20.6	27.0	-47.6	EUT Vert. Antenna Perp to EUT, Par to Ground
0.060	73.1	11.3	1.1	292.0	3.0	0.0	Horz	PK	-80.0	4.4	52.0	-47.7	EUT Horz. Antenna Par to EUT.
0.084	47.9	11.0	2.3	295.0	3.0	0.0	Vert	AV	-80.0	-21.1	29.1	-50.2	EUT Horz. Antenna Perp to EUT, Par to Ground
0.108	45.6	10.8	2.3	363.0	3.0	0.0	Horz	AV	-80.0	-23.6	27.0	-50.6	EUT Vert. Antenna Par to EUT.
0.060	69.9	11.3	1.2	13.0	3.0	0.0	Horz	PK	-80.0	1.2	52.0	-50.9	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.060	69.2	11.3	1.9	298.0	3.0	0.0	Vert	PK	-80.0	0.5	52.0	-51.6	EUT Horz. Antenna Perp to EUT, Par to Ground
0.060	67.6	11.3	1.2	328.0	3.0	0.0	Vert	PK	-80.0	-1.1	52.0	-53.2	EUT Vert. Antenna Perp to EUT, Par to Ground
0.036	70.5	12.7	1.0	92.0	3.0	0.0	Horz	PK	-80.0	3.2	56.5	-53.3	EUT Horz. Antenna Par to EUT.
0.132	58.9	10.8	1.0	295.0	3.0	0.0	Horz	PK	-80.0	-10.3	45.2	-55.5	EUT Horz. Antenna Par to EUT.
0.036	67.7	12.7	1.1	1.0	3.0	0.0	Horz	PK	-80.0	0.4	56.5	-56.1	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.108	39.2	10.8	2.0	104.0	3.0	0.0	Horz	PK	-80.0	-30.0	26.9	-56.9	EUT Vert. Antenna Perp to EUT, Par to Ground
0.036	66.4	12.7	2.0	310.0	3.0	0.0	Vert	PK	-80.0	-0.9	56.5	-57.4	EUT Horz. Antenna Perp to EUT, Par to Ground
0.132	56.5	10.8	1.0	365.0	3.0	0.0	Horz	PK	-80.0	-12.7	45.2	-57.9	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.084	59.5	11.0	1.0	293.0	3.0	0.0	Horz	PK	-80.0	-9.5	49.1	-58.7	EUT Horz. Antenna Par to EUT.
0.060	61.9	11.3	2.5	318.0	3.0	0.0	Horz	PK	-80.0	-6.8	52.0	-58.9	EUT Vert. Antenna Par to EUT.
0.132	54.9	10.8	2.0	297.0	3.0	0.0	Vert	PK	-80.0	-14.3	45.2	-59.5	EUT Horz. Antenna Perp to EUT, Par to Ground
0.084	56.7	11.0	1.1	-5.0	3.0	0.0	Horz	PK	-80.0	-12.3	49.1	-61.5	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.060	38.5	11.3	2.0	8.0	3.0	0.0	Horz	AV	-80.0	-30.2	32.0	-62.3	EUT Vert. Antenna Perp to EUT, Par to Ground
0.084	55.2	11.0	2.3	295.0	3.0	0.0	Vert	PK	-80.0	-13.8	49.1	-63.0	EUT Horz. Antenna Perp to EUT, Par to Ground
0.103	30.4	10.8	2.0	104.0	3.0	0.0	Horz	AV	-80.0	-38.8	27.3	-66.1	EUT Vert. Antenna Perp to EUT, Perp to Ground
0.060	46.5	11.3	2.0	8.0	3.0	0.0	Horz	PK	-80.0	-22.2	52.0	-74.3	EUT Vert. Antenna Perp to EUT, Perp to Ground

EMC

Field Strength of Spurious Emissions

Work Order: DIGC0117
 Project: None
 Job Site: EV11
 Serial Number: 0046-000324

Date: 11/15/10
 Temperature: 20.1
 Humidity: 40.3
 Barometric Pres.: 1038

Tested by: Ethan Schoonover

EUT: RoHS transmitter

Configuration: 1 - 15 Standalone

Customer: Digital Control, Inc.

Attendees: none

EUT Power: Battery

Operating Mode: Tx @ 19.2

Deviations: None

Comments: None

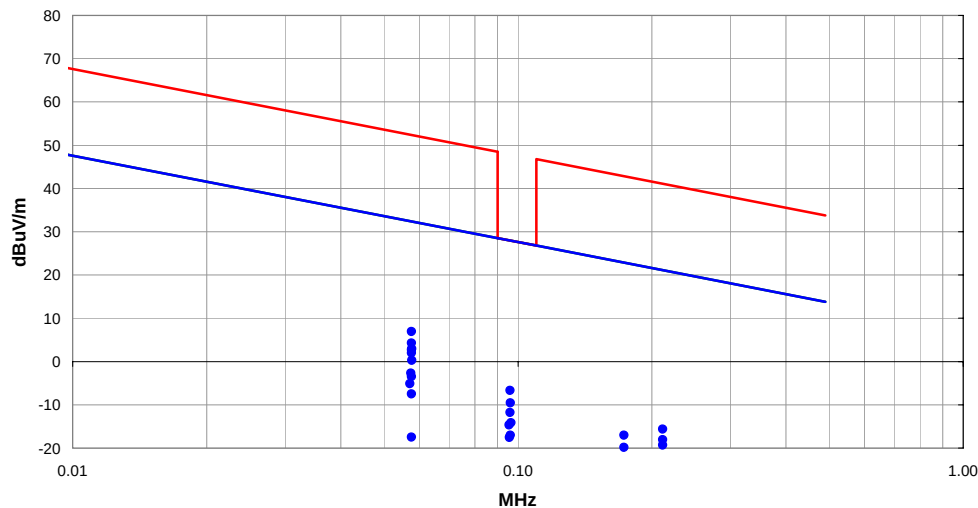
Test Specifications

FCC 15.209:2010

Test Method

ANSI C63.10:2009

Run #	4	Test Distance (m)	3	Antenna Height(s)	1 - 2.5m	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
0.058	71.6	11.3	1.1	83.0	3.0	0.0	Horz	AV	-80.0	2.9	32.4	-29.5	EUT Horz. Antenna Par to EUT.
0.058	69.0	11.3	1.0	16.0	3.0	0.0	Horz	AV	-80.0	0.3	32.3	-32.1	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.096	62.5	10.8	1.1	92.0	3.0	0.0	Horz	PK	-80.0	-6.7	27.9	-34.6	EUT Horz. Antenna Par to EUT.
0.058	66.0	11.3	2.0	89.0	3.0	0.0	Vert	AV	-80.0	-2.7	32.4	-35.1	EUT Horz. Antenna Perp to EUT, Par to Ground
0.096	59.6	10.8	1.1	9.0	3.0	0.0	Horz	PK	-80.0	-9.6	27.9	-37.5	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.057	63.6	11.3	1.2	-4.0	3.0	0.0	Vert	AV	-80.0	-5.1	32.4	-37.5	EUT Vert. Antenna Perp to EUT, Par to Ground
0.096	57.4	10.8	1.1	-5.0	3.0	0.0	Vert	PK	-80.0	-11.8	28.0	-39.7	EUT Vert. Antenna Perp to EUT, Par to Ground
0.058	61.2	11.3	2.5	337.0	3.0	0.0	Horz	AV	-80.0	-7.5	32.4	-39.9	EUT Vert. Antenna Par to EUT.
0.096	55.0	10.8	1.1	9.0	3.0	0.0	Horz	AV	-80.0	-14.2	27.9	-42.1	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.212	47.8	10.7	1.0	18.0	3.0	0.0	Horz	AV	-80.0	-21.5	21.1	-42.6	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.096	54.5	10.8	1.1	92.0	3.0	0.0	Horz	AV	-80.0	-14.7	28.0	-42.6	EUT Horz. Antenna Par to EUT.
0.212	46.6	10.7	1.2	78.0	3.0	0.0	Horz	AV	-80.0	-22.7	21.1	-43.8	EUT Horz. Antenna Par to EUT.
0.212	45.8	10.7	2.1	103.0	3.0	0.0	Vert	AV	-80.0	-23.5	21.1	-44.6	EUT Horz. Antenna Perp to EUT, Par to Ground
0.096	52.1	10.8	2.3	307.0	3.0	0.0	Horz	PK	-80.0	-17.1	27.9	-45.0	EUT Vert. Antenna Par to EUT.
0.173	46.7	10.8	1.0	79.0	3.0	0.0	Horz	AV	-80.0	-22.5	22.9	-45.4	EUT Horz. Antenna Par to EUT.
0.058	75.6	11.3	1.1	83.0	3.0	0.0	Horz	PK	-80.0	6.9	52.4	-45.5	EUT Horz. Antenna Par to EUT.
0.096	51.6	10.8	1.1	-5.0	3.0	0.0	Vert	AV	-80.0	-17.6	28.0	-45.5	EUT Vert. Antenna Perp to EUT, Par to Ground
0.173	45.3	10.8	1.0	31.0	3.0	0.0	Horz	AV	-80.0	-23.9	22.9	-46.8	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.173	44.1	10.8	2.0	94.0	3.0	0.0	Vert	AV	-80.0	-25.1	22.9	-48.0	EUT Horz. Antenna Perp to EUT, Par to Ground
0.058	73.0	11.3	1.0	16.0	3.0	0.0	Horz	PK	-80.0	4.3	52.4	-48.1	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.096	48.6	10.8	2.3	307.0	3.0	0.0	Horz	AV	-80.0	-20.6	27.9	-48.5	EUT Vert. Antenna Par to EUT.
0.058	71.4	11.3	2.0	89.0	3.0	0.0	Vert	PK	-80.0	2.7	52.4	-49.7	EUT Horz. Antenna Perp to EUT, Par to Ground
0.058	70.7	11.3	1.2	-4.0	3.0	0.0	Vert	PK	-80.0	2.0	52.4	-50.4	EUT Vert. Antenna Perp to EUT, Par to Ground
0.212	38.0	10.7	2.4	324.0	3.0	0.0	Horz	AV	-80.0	-31.3	21.1	-52.4	EUT Vert. Antenna Par to EUT.
0.058	47.5	11.3	2.3	20.0	3.0	0.0	Horz	AV	-80.0	-21.2	32.4	-53.6	EUT Vert. Antenna Perp to EUT, Perp to Ground
0.173	36.3	10.8	2.0	267.0	3.0	0.0	Horz	AV	-80.0	-32.9	22.9	-55.8	EUT Vert. Antenna Par to EUT.
0.058	65.2	11.3	2.5	337.0	3.0	0.0	Horz	PK	-80.0	-3.5	52.4	-55.9	EUT Vert. Antenna Par to EUT.
0.092	40.9	10.9	2.0	197.0	3.0	0.0	Horz	PK	-80.0	-28.2	28.3	-56.5	EUT Vert. Antenna Perp to EUT, Perp to Ground
0.212	53.6	10.7	1.2	78.0	3.0	0.0	Horz	PK	-80.0	-15.7	41.1	-56.8	EUT Horz. Antenna Par to EUT.
0.212	51.2	10.7	1.0	18.0	3.0	0.0	Horz	PK	-80.0	-18.1	41.1	-59.2	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.173	52.2	10.8	1.0	79.0	3.0	0.0	Horz	PK	-80.0	-17.0	42.9	-59.9	EUT Horz. Antenna Par to EUT.
0.212	49.9	10.7	2.1	103.0	3.0	0.0	Vert	PK	-80.0	-19.4	41.1	-60.5	EUT Horz. Antenna Perp to EUT, Par to Ground
0.173	49.4	10.8	1.0	31.0	3.0	0.0	Horz	PK	-80.0	-19.8	42.9	-62.7	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.173	48.2	10.8	2.0	94.0	3.0	0.0	Vert	PK	-80.0	-21.0	42.9	-63.9	EUT Horz. Antenna Perp to EUT, Par to Ground
0.135	29.9	10.8	2.2	111.0	3.0	0.0	Vert	AV	-80.0	-39.3	25.0	-64.3	EUT Horz. Antenna Perp to EUT, Par to Ground
0.096	32.1	10.8	2.0	197.0	3.0	0.0	Horz	AV	-80.0	-37.1	28.0	-65.0	EUT Vert. Antenna Perp to EUT, Perp to Ground
0.212	43.5	10.7	2.4	324.0	3.0	0.0	Horz	PK	-80.0	-25.8	41.1	-66.9	EUT Vert. Antenna Par to EUT.
0.058	51.2	11.3	2.3	20.0	3.0	0.0	Horz	PK	-80.0	-17.5	52.4	-69.9	EUT Vert. Antenna Perp to EUT, Perp to Ground
0.173	40.6	10.8	2.0	267.0	3.0	0.0	Horz	PK	-80.0	-28.6	42.8	-71.5	EUT Vert. Antenna Par to EUT.
0.129	38.2	10.8	2.2	111.0	3.0	0.0	Vert	PK	-80.0	-31.0	45.4	-76.4	EUT Horz. Antenna Perp to EUT, Par to Ground

EMC

Field Strength of Spurious Emissions

Work Order: DIGC0117
 Project: None
 Job Site: EV11
 Serial Number: 0046-000325

Date: 11/15/10
 Temperature: 20.1
 Humidity: 40.3
 Barometric Pres.: 1038

Tested by: Ethan Schoonover

EUT: RoHS transmitter

Configuration: 2 - 19 Standalone

Customer: Digital Control, Inc.

Attendees: none

EUT Power: Battery

Operating Mode: Tx @ 11.976

Deviations: None

Comments: None

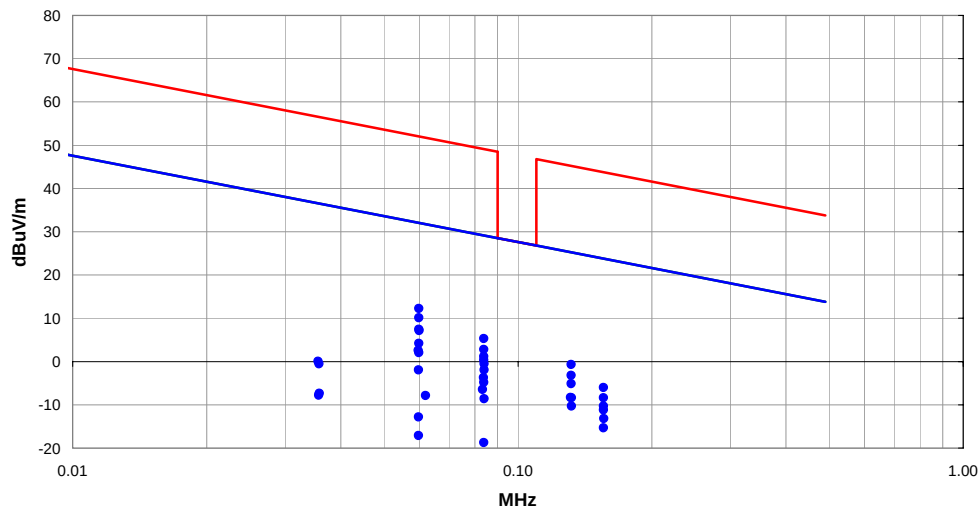
Test Specifications

FCC 15.209:2010

Test Method

ANSI C63.10:2009

Run # 5 Test Distance (m) 3 Antenna Height(s) 1 - 2.5m Results Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
0.060	75.9	11.3	1.1	76.0	3.0	0.0	Horz	AV	-80.0	7.2	32.0	-24.9	EUT Horz. Antenna Par to EUT.
0.060	72.9	11.3	1.0	365.0	3.0	0.0	Horz	AV	-80.0	4.2	32.0	-27.9	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.060	71.3	11.3	1.4	363.0	3.0	0.0	Vert	AV	-80.0	2.6	32.1	-29.5	EUT Vert. Antenna Perp to EUT, Par to Ground
0.084	68.5	11.0	1.1	90.0	3.0	0.0	Horz	AV	-80.0	-0.5	29.1	-29.6	EUT Horz. Antenna Par to EUT.
0.084	67.1	11.0	1.1	5.0	3.0	0.0	Horz	AV	-80.0	-1.9	29.1	-31.0	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.084	65.3	11.0	1.3	352.0	3.0	0.0	Vert	AV	-80.0	-3.7	29.1	-32.9	EUT Vert. Antenna Perp to EUT, Par to Ground
0.131	60.9	10.8	1.0	290.0	3.0	0.0	Horz	AV	-80.0	-8.3	25.3	-33.6	EUT Horz. Antenna Par to EUT.
0.132	60.8	10.8	1.0	5.0	3.0	0.0	Horz	AV	-80.0	-8.4	25.2	-33.6	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.060	66.8	11.3	2.5	353.0	3.0	0.0	Horz	AV	-80.0	-1.9	32.0	-34.0	EUT Vert. Antenna Par to EUT.
0.156	58.0	10.8	1.0	85.0	3.0	0.0	Horz	AV	-80.0	-11.2	23.8	-35.0	EUT Horz. Antenna Par to EUT.
0.132	58.9	10.8	1.7	287.0	3.0	0.0	Vert	AV	-80.0	-10.3	25.2	-35.5	EUT Horz. Antenna Perp to EUT, Par to Ground
0.083	62.6	11.0	2.0	100.0	3.0	0.0	Vert	AV	-80.0	-6.4	29.2	-35.6	EUT Horz. Antenna Perp to EUT, Par to Ground
0.156	56.0	10.8	1.0	365.0	3.0	0.0	Horz	AV	-80.0	-13.2	23.8	-37.0	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.084	60.4	11.0	2.4	338.0	3.0	0.0	Horz	AV	-80.0	-8.6	29.1	-37.7	EUT Vert. Antenna Par to EUT.
0.156	53.9	10.8	1.7	97.0	3.0	0.0	Vert	AV	-80.0	-15.3	23.8	-39.1	EUT Horz. Antenna Perp to EUT, Par to Ground
0.060	81.0	11.3	1.1	76.0	3.0	0.0	Horz	PK	-80.0	12.3	52.0	-39.8	EUT Horz. Antenna Par to EUT.
0.060	78.8	11.3	1.0	365.0	3.0	0.0	Horz	PK	-80.0	10.1	52.0	-42.0	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.084	74.3	11.0	1.1	90.0	3.0	0.0	Horz	PK	-80.0	5.3	49.1	-43.9	EUT Horz. Antenna Par to EUT.
0.036	59.9	12.7	1.5	14.0	3.0	0.0	Horz	AV	-80.0	-7.4	36.5	-43.9	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.036	59.5	12.7	2.4	90.0	3.0	0.0	Vert	AV	-80.0	-7.8	36.5	-44.3	EUT Horz. Antenna Perp to EUT, Par to Ground
0.060	76.2	11.3	1.4	363.0	3.0	0.0	Vert	PK	-80.0	7.5	52.0	-44.6	EUT Vert. Antenna Perp to EUT, Par to Ground
0.132	68.5	10.8	1.0	290.0	3.0	0.0	Horz	PK	-80.0	-0.7	45.2	-45.9	EUT Horz. Antenna Par to EUT.
0.084	71.8	11.0	1.1	5.0	3.0	0.0	Horz	PK	-80.0	2.8	49.1	-46.4	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.084	70.2	11.0	2.0	100.0	3.0	0.0	Vert	PK	-80.0	1.2	49.1	-48.0	EUT Vert. Antenna Perp to EUT, Par to Ground
0.132	66.0	10.8	1.0	5.0	3.0	0.0	Horz	PK	-80.0	-3.2	45.2	-48.4	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.084	69.4	11.0	1.3	352.0	3.0	0.0	Vert	PK	-80.0	0.4	49.1	-48.8	EUT Vert. Antenna Perp to EUT, Par to Ground
0.060	51.6	11.3	2.0	36.0	3.0	0.0	Horz	AV	-80.0	-17.1	32.1	-49.2	EUT Vert. Antenna Perp to EUT, Perp to Ground
0.156	63.2	10.8	1.0	85.0	3.0	0.0	Horz	PK	-80.0	-6.0	43.8	-49.8	EUT Horz. Antenna Par to EUT.
0.060	70.8	11.3	2.5	353.0	3.0	0.0	Horz	PK	-80.0	2.1	52.0	-50.0	EUT Vert. Antenna Par to EUT.
0.132	64.1	10.8	1.7	287.0	3.0	0.0	Vert	PK	-80.0	-5.1	45.2	-50.3	EUT Horz. Antenna Perp to EUT, Par to Ground
0.156	60.8	10.8	1.0	365.0	3.0	0.0	Horz	PK	-80.0	-8.4	43.8	-52.2	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.083	44.6	11.0	2.0	33.0	3.0	0.0	Horz	AV	-80.0	-24.4	29.2	-53.6	EUT Vert. Antenna Perp to EUT, Perp to Ground
0.084	64.2	11.0	2.4	338.0	3.0	0.0	Horz	PK	-80.0	-4.8	49.1	-54.0	EUT Vert. Antenna Par to EUT.
0.156	58.9	10.8	1.7	97.0	3.0	0.0	Vert	PK	-80.0	-10.3	43.8	-54.1	EUT Horz. Antenna Perp to EUT, Par to Ground
0.036	67.3	12.7	1.5	14.0	3.0	0.0	Horz	PK	-80.0	0.0	56.6	-56.5	EUT Horz. Antenna Perp to EUT, Perp to Ground
0.036	66.7	12.7	2.4	90.0	3.0	0.0	Vert	PK	-80.0	-0.6	56.5	-57.1	EUT Horz. Antenna Perp to EUT, Par to Ground
0.072	41.6	11.1	2.0	72.0	3.0	0.0	Vert	AV	-80.0	-27.3	30.5	-57.8	EUT Horz. Antenna Perp to EUT, Par to Ground
0.062	60.9	11.2	2.0	72.0	3.0	0.0	Vert	PK	-80.0	-7.9	51.7	-59.6	EUT Horz. Antenna Perp to EUT, Par to Ground
0.060	55.9	11.3	2.0	36.0	3.0	0.0	Horz	PK	-80.0	-12.8	52.0	-64.9	EUT Vert. Antenna Perp to EUT, Perp to Ground
0.084	50.3	11.0	2.0	33.0	3.0	0.0	Horz	PK	-80.0	-18.7	49.1	-67.9	EUT Vert. Antenna Perp to EUT, Perp to Ground

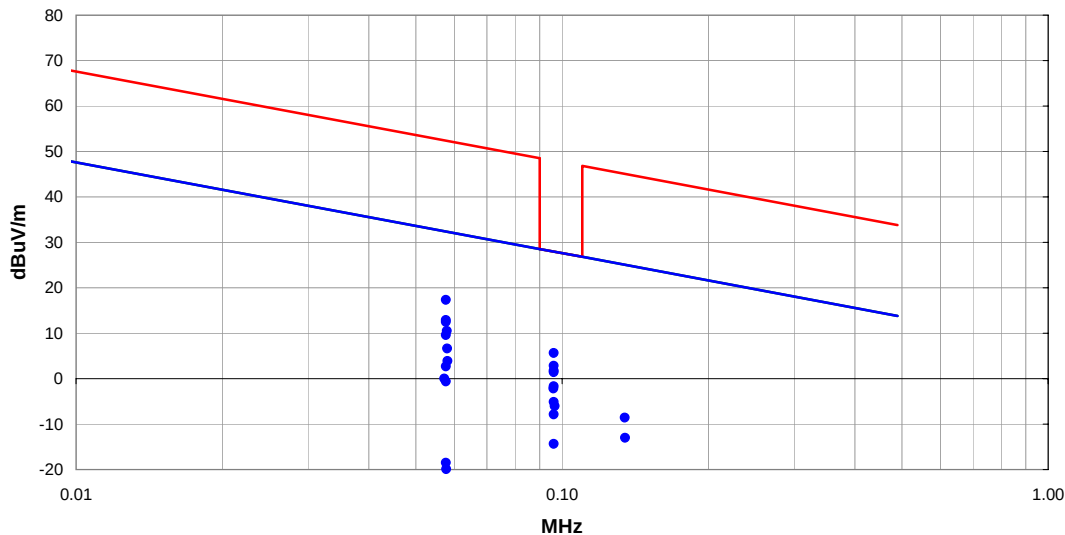
EMC

Field Strength of Spurious Emissions

Work Order:	DIGC0117	Date:	12/14/10	
Project:	None	Temperature:	20.1	
Job Site:	EV11	Humidity:	40.3	Tested by: Ethan Schoonover
Serial Number:	0046-000325	Barometric Pres.:	1038	
EUT: RoHS transmitter				
Configuration: 2 - 19 Standalone				
Customer: Digital Control, Inc.				
Attendees: none				
EUT Power: Battery				
Operating Mode: Tx @ 19.2				
Deviations: None				
Comments: None				

Test Specifications
FCC 15.209:2010Test Method
ANSI C63.10:2009

Run #	7	Test Distance (m)	3	Antenna Height(s)	1 - 2.5m	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
0.058	86.0	11.3	1.0	272.0	3.0	0.0	Horz	QP	-80.0	17.3	32.4	-15.1	EUT Horz, Antenna Par to EUT
0.058	81.6	11.3	1.0	349.0	3.0	0.0	Horz	QP	-80.0	12.9	32.4	-19.5	EUT Horz, Antenna Perp to EUT Perp to Floor
0.058	81.2	11.3	2.0	294.0	3.0	0.0	Vert	QP	-80.0	12.5	32.4	-19.9	EUT Horz, Antenna Perp to EUT Par to Floor
0.058	79.2	11.3	1.0	272.0	3.0	0.0	Horz	AV	-80.0	10.5	32.3	-21.8	EUT Horz, Antenna Par to EUT
0.096	74.8	10.8	1.1	275.0	3.0	0.0	Horz	QP	-80.0	5.6	27.9	-22.3	EUT Horz, Antenna Par to EUT
0.058	78.3	11.3	1.1	303.0	3.0	0.0	Vert	QP	-80.0	9.6	32.4	-22.8	EUT Vert, Antenna Perp to EUT Par to Floor
0.096	72.0	10.8	1.1	275.0	3.0	0.0	Horz	AV	-80.0	2.8	27.9	-25.1	EUT Horz, Antenna Par to EUT
0.058	75.3	11.3	2.0	294.0	3.0	0.0	Vert	AV	-80.0	6.6	32.3	-25.7	EUT Horz, Antenna Perp to EUT Par to Floor
0.096	70.9	10.8	1.0	345.0	3.0	0.0	Horz	QP	-80.0	1.7	27.9	-26.2	EUT Horz, Antenna Perp to EUT Perp to Floor
0.096	70.6	10.8	2.0	285.0	3.0	0.0	Vert	QP	-80.0	1.4	27.9	-26.5	EUT Horz, Antenna Perp to EUT Par to Floor
0.058	72.6	11.3	1.0	349.0	3.0	0.0	Horz	AV	-80.0	3.9	32.3	-28.4	EUT Horz, Antenna Perp to EUT Perp to Floor
0.096	67.5	10.8	1.1	305.0	3.0	0.0	Vert	QP	-80.0	-1.7	27.9	-29.6	EUT Vert, Antenna Par to EUT
0.058	71.4	11.3	2.3	308.0	3.0	0.0	Horz	QP	-80.0	2.7	32.4	-29.7	EUT Vert, Antenna Par to EUT
0.096	67.0	10.8	1.0	345.0	3.0	0.0	Horz	AV	-80.0	-2.2	28.0	-30.1	EUT Horz, Antenna Perp to EUT Perp to Floor
0.057	68.7	11.3	1.1	303.0	3.0	0.0	Vert	AV	-80.0	0.0	32.4	-32.4	EUT Vert, Antenna Perp to EUT Par to Floor
0.058	68.1	11.3	2.3	308.0	3.0	0.0	Horz	AV	-80.0	-0.6	32.4	-33.0	EUT Vert, Antenna Par to EUT
0.096	64.0	10.8	1.1	305.0	3.0	0.0	Vert	AV	-80.0	-5.2	27.9	-33.1	EUT Horz, Antenna Perp to EUT Par to Floor
0.135	60.6	10.8	1.0	351.0	3.0	0.0	Horz	QP	-80.0	-8.6	25.0	-33.6	EUT Horz, Antenna Perp to EUT Perp to Floor
0.097	63.1	10.8	2.0	285.0	3.0	0.0	Vert	AV	-80.0	-6.1	27.9	-34.0	EUT Horz, Antenna Perp to EUT Par to Floor
0.096	61.3	10.8	1.0	300.0	3.0	0.0	Horz	QP	-80.0	-7.9	27.9	-35.8	EUT Vert, Antenna Par to EUT
0.135	56.2	10.8	1.0	351.0	3.0	0.0	Horz	AV	-80.0	-13.0	25.0	-38.0	EUT Vert, Antenna Par to EUT
0.096	54.8	10.8	1.0	300.0	3.0	0.0	Horz	AV	-80.0	-14.4	27.9	-42.3	EUT Vert, Antenna Par to EUT
0.058	50.2	11.3	2.1	354.0	3.0	0.0	Horz	QP	-80.0	-18.5	32.4	-50.9	EUT Vert, Antenna Perp to EUT Perp to Floor
0.058	48.8	11.3	2.1	354.0	3.0	0.0	Horz	AV	-80.0	-19.9	32.4	-52.3	EUT Vert, Antenna Perp to EUT Perp to Floor
0.096	39.2	10.8	2.0	362.0	3.0	0.0	Horz	QP	-80.0	-30.0	27.9	-57.9	EUT Vert, Antenna Perp to EUT Perp to Floor
0.096	36.5	10.8	2.0	362.0	3.0	0.0	Horz	AV	-80.0	-32.7	27.9	-60.6	EUT Vert, Antenna Perp to EUT Perp to Floor