NORTHWEST EMC

Cardiocom

CD315

FCC 15.249:2015

Report # CCOM0018.1

NVLAP Lab Code: 200881-0

CERTIFICATE OF TEST

NORTHWEST EMC
2014-12-10

Last Date of Test: September 17, 2015
Cardiocom
Model: CD315

Radio Equipment Testing

Standards

Specification	Method
FCC 15.249:2015	ANSI C63.10:2013

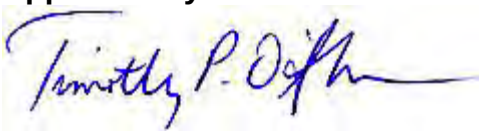
Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	Yes	Pass	
6.5, 6.6	Field Strength of Harmonics and Spurious Radiated Emissions	Yes	Pass	
6.6	Field Strength of Fundamental	Yes	Pass	

Deviations From Test Standards

None

Approved By:



Tim O'Shea, Operations Manager

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. 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. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information.

REVISION HISTORY

NORTHWEST EMC
REV 2014.10.14

Revision Number	Description	Date	Page Number
00	None		

ACCREDITATIONS AND AUTHORIZATIONS

REV 2015.2.19

United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Accredited by A2LA to ISO / IEC 17065 as a product certifier. This allows Northwest EMC to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

IC - Recognized by Industry Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with IC.

European Union

European Commission – Validated by the European Commission as a Conformity Assessment Body (CAB) under the EMC directive and as a Notified Body under the R&TTE Directive.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

MSIP / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Israel

MOC – Recognized by MOC as a CAB for the acceptance of test data.

Hong Kong

OFCA – Recognized by OFCA as a CAB for the acceptance of test data.

Vietnam

MIC – Recognized by MIC as a CAB for the acceptance of test data.

SCOPE

For details on the Scopes of our Accreditations, please visit:
http://www.nwemc.com/accreditations/
http://gsi.nist.gov/global/docs/cabs/designations.html

MEASUREMENT UNCERTAINTY

TMU.2015.07.10

Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

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 (K=2) for each test is on each data sheet. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable), and are available upon request.

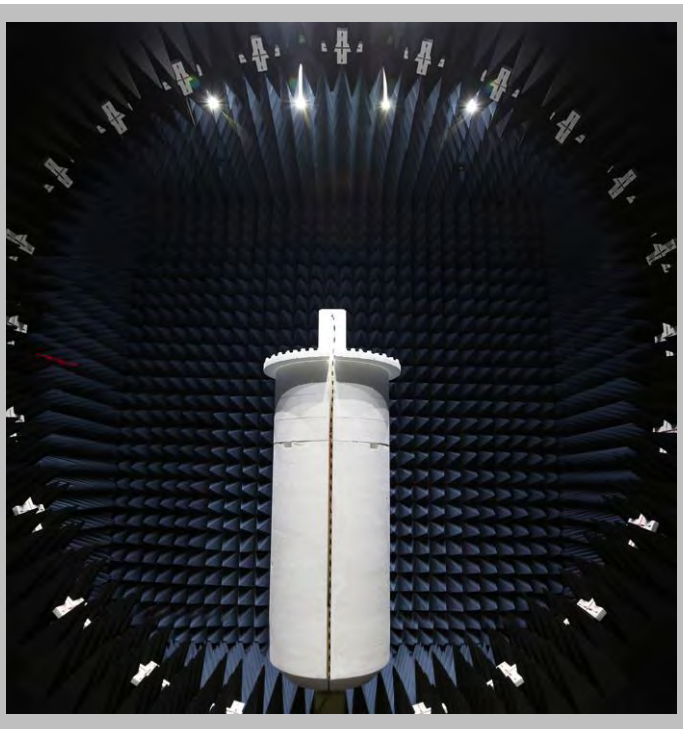
The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

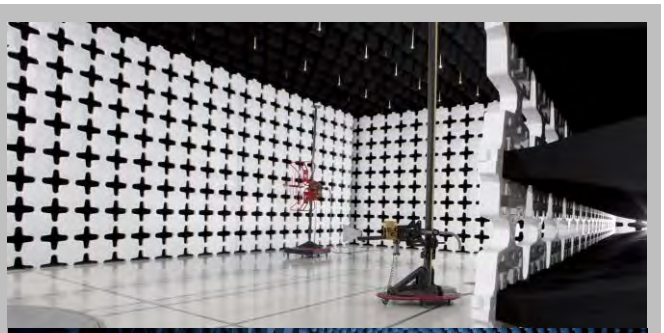
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.2 dB	-5.2 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

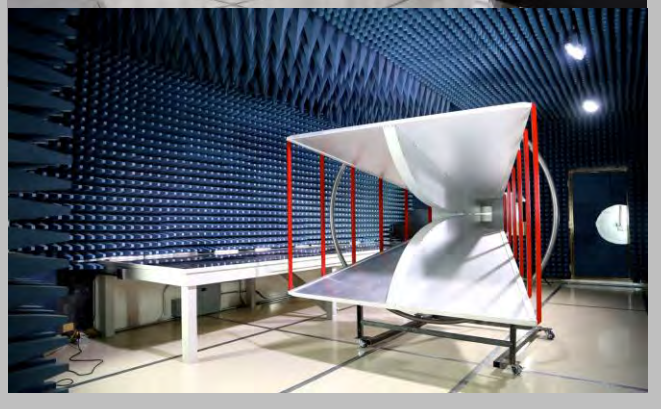
FACILITIES

NORTHWEST EMC
REV 2015.2.19

California	Minnesota	New York	Oregon	Texas	Washington
Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-08, MN10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Labs NC01-05 19201 120th Ave NE Bothell, WA 9801 (425)984-6600
NVLAP					
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
Industry Canada					
2834B-1, 2834B-3	2834E-1	N/A	2834D-1, 2834D-*2*	2834G-1	2834F-1
BSMI					
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI					
A-0029	A-0109	N/A	A-0108	A-0201	A-0110
Recognized Phase I CAB for ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157







PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Cardiocom
Address:	7980 Century Blvd
City, State, Zip:	Chanhassen, MN 55317
Test Requested By:	Viet Vuong
Model:	CD315
First Date of Test:	September 14, 2015
Last Date of Test:	September 17, 2015
Receipt Date of Samples:	September 14, 2015
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
The CD315 Commander Flex is the host/hub that collects bio-metric data and sends them to a centralized server.

Testing Objective:
Seeking to demonstrate compliance under FCC 15.249:2015 for operation in the 2400 - 2483.5 MHz Band.

CONFIGURATIONS

NORTHWEST EMC 2014-12-10

Configuration CCOM0018- 1

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Measurement Console	Cardiocom, LLC	CD315	1000211248

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Scale	Cardiocom, LLC	SC250	2S002272
Mouse	Logitech, Inc./Dell	0X7636	HCJ60704513
AC Adapter	Shenzhen Fujia Appliance Co. Ltd.	FJ-SW0701100U	PS331000-008
Pulse Oximeter	Cardiocom, LLC	PO100	1P104033
Finger Sensor	Cardiocom, LLC	None	None
Serial Cradle	nSpire Health, Inc.	662114	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Scale Cable	No	1.8m	No	Scale	Measurement Console
Cable E (3.5mm jack)	No	0.95m	No	Measurement Console	Unterminated
Phone Cable	No	3.3m	No	Measurement Console	Unterminated
USB Cable (Mouse)	No	1.9m	No	Measurement Console	Mouse
DC Power Cable	No	4.8m	Yes	Measurement Console	AC Adapter
Pulse Oximeter Cable 1	No	0.2m	No	Pulse Oximeter	Measurement Console
Pulse Oximeter Cable 2	No	0.9m	No	Pulse Oximeter	Finger Sensor
Cable A (Serial Adapter)	No	0.2m	No	Measurement Console	Serial Cradle Cable
Serial Cradle Cable	No	1.5m	No	Cable A	Serial Cradle
Cable C (3.5mm jack)	No	0.9m	No	Measurement Console	Unterminated
Cable B (Serial Adapter)	No	3.0m	No	Measurement Console	Unterminated

MODIFICATIONS

NORTHWEST EMC
2014-12-10

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	9/14/2015	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	9/14/2015	Field Strength of Harmonics and Spurious Radiated Emissions	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.
3	9/17/2015	AC Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.05.26
PSA-ESCI 2015.03.03, EmiR5 2015.05.29

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50 Ω measuring port is terminated by a 50 Ω EMI meter or a 50 Ω resistive load. All 50 Ω measuring ports of the LISN are terminated by 50Ω.
The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Attenuator	Fairview Microwave	SA01B-20	AQP	NCR	NCR
Filter - High Pass	TTE	H97-100K-50-720B	HGN	NCR	NCR
Cable - Conducted Cable Assembly	Northwest EMC	None	MNC	NCR	NCR
LISN	Solar Electronics	9252-50-R-24-BNC	LIY	3/23/2015	3/23/2016
Receiver	Rohde & Schwarz	ESR7	ARI	5/21/2015	5/21/2016

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

CCOM0018-1

MODES INVESTIGATED

Continuous transmit, high channel 2478.5 MHz. Modulation type MSK.
Continuous transmit, low channel 2473.5 MHz. Modulation type MSK.
Continuous transmit, mid channel 2475.5 MHz. Modulation type MSK.

AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.05.26
PSA-ESCI 2015.03.03, EmiR5 2015.05.29

EUT:	CD315	Work Order:	CCOM0018
Serial Number:	1000211248	Date:	09/17/2015
Customer:	Cardiocom	Temperature:	23°C
Attendees:	Viet Vuong	Relative Humidity:	65.7%
Customer Project:	None	Bar. Pressure:	976.8 mb
Tested By:	Jared Ison	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	CCOM0018-1

TEST SPECIFICATIONS

Specification: Equipment Class B	Method:
FCC 15.207:2015	ANSI C63.4:2013

TEST PARAMETERS

Run #:	3	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

None

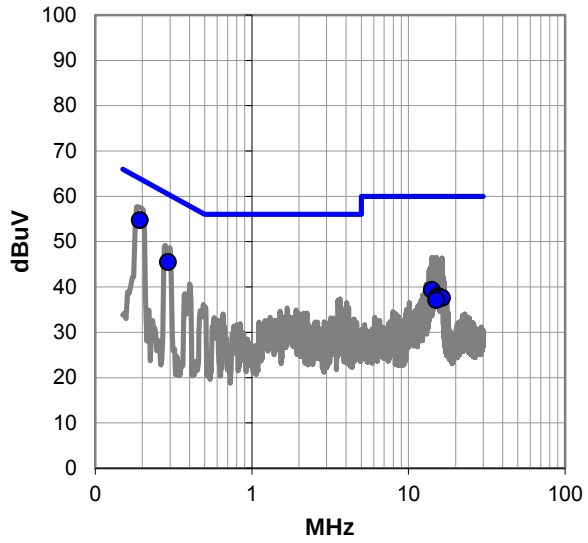
EUT OPERATING MODES

Continuous transmit, low channel 2473.5 MHz. Modulation type MSK.

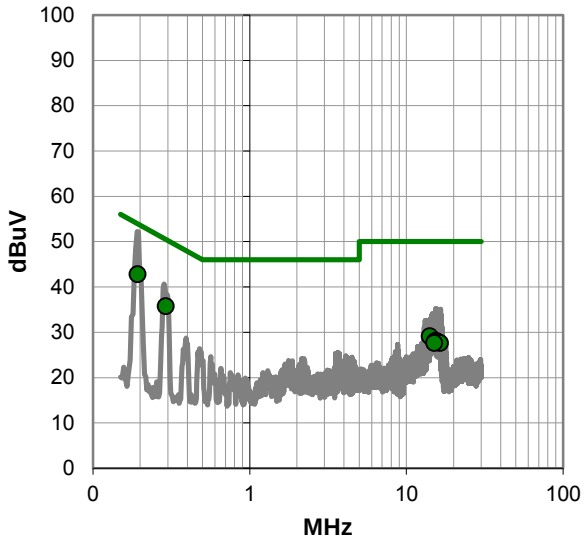
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.05.26
PSA-ESCI 2015.03.03, EmiR5 2015.05.29

RESULTS - Run #3

Quasi Peak Data - vs - Quasi Peak Limit

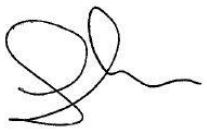
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.193	34.4	20.3	54.7	63.9	-9.2
0.292	25.2	20.3	45.5	60.5	-15.0
14.150	18.3	21.0	39.3	60.0	-20.7
15.415	16.9	21.1	38.0	60.0	-22.0
15.257	16.6	21.1	37.7	60.0	-22.3
16.384	16.3	21.2	37.5	60.0	-22.5
15.072	16.0	21.1	37.1	60.0	-22.9

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.193	22.5	20.3	42.8	53.9	-11.1
0.292	15.5	20.3	35.8	50.5	-14.7
14.150	8.1	21.0	29.1	50.0	-20.9
15.415	7.0	21.1	28.1	50.0	-21.9
15.257	6.9	21.1	28.0	50.0	-22.0
16.384	6.4	21.2	27.6	50.0	-22.4
15.072	6.5	21.1	27.6	50.0	-22.4

CONCLUSION

Pass



Tested By

AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.05.26
PSA-ESCI 2015.03.03, EmiR5 2015.05.29

EUT:	CD315	Work Order:	CCOM0018
Serial Number:	1000211248	Date:	09/17/2015
Customer:	Cardiocom	Temperature:	23°C
Attendees:	Viet Vuong	Relative Humidity:	65.7%
Customer Project:	None	Bar. Pressure:	976.8 mb
Tested By:	Jared Ison	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	CCOM0018-1

TEST SPECIFICATIONS

Specification: Equipment Class B	Method:
FCC 15.207:2015	ANSI C63.4:2013

TEST PARAMETERS

Run #:	4	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

None

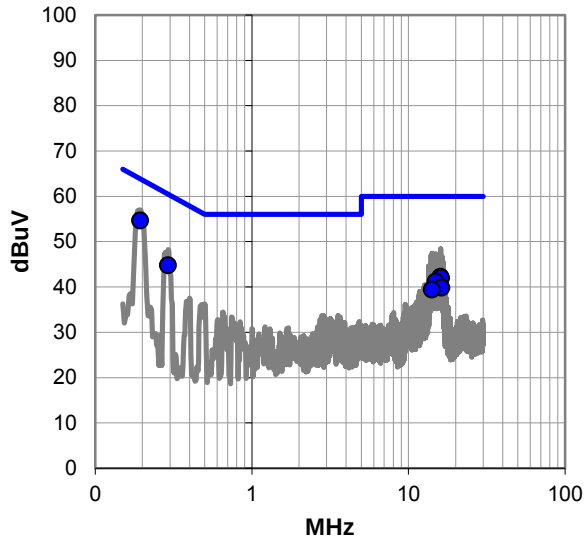
EUT OPERATING MODES

Continuous transmit, low channel 2473.5 MHz. Modulation type MSK.

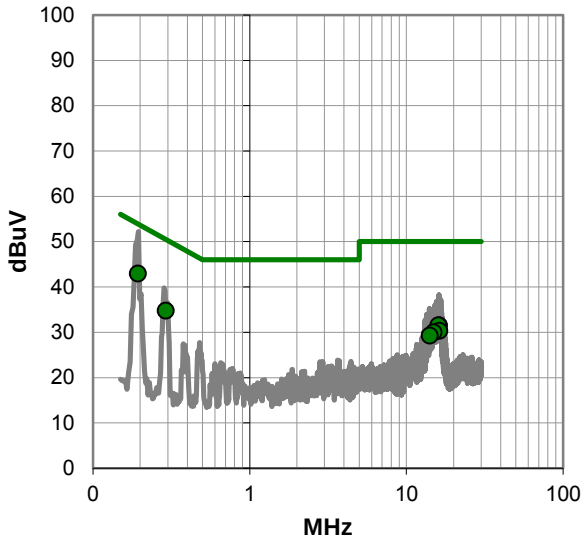
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.05.26
PSA-ESCI 2015.03.03, EmiR5 2015.05.29

RESULTS - Run #4

Quasi Peak Data - vs - Quasi Peak Limit

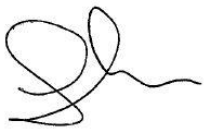
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.193	34.3	20.3	54.6	63.9	-9.3
0.291	24.5	20.3	44.8	60.5	-15.7
16.060	21.0	21.2	42.2	60.0	-17.8
16.152	20.7	21.2	41.9	60.0	-18.1
14.932	20.1	21.1	41.2	60.0	-18.8
16.281	18.6	21.2	39.8	60.0	-20.2
14.134	18.4	21.0	39.4	60.0	-20.6

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.193	22.6	20.3	42.9	53.9	-11.0
0.291	14.5	20.3	34.8	50.5	-15.7
16.152	10.3	21.2	31.5	50.0	-18.5
16.060	10.3	21.2	31.5	50.0	-18.5
16.281	9.1	21.2	30.3	50.0	-19.7
14.932	8.9	21.1	30.0	50.0	-20.0
14.134	8.2	21.0	29.2	50.0	-20.8

CONCLUSION

Pass



Tested By

AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.05.26
PSA-ESCI 2015.03.03, EmiR5 2015.05.29

EUT:	CD315	Work Order:	CCOM0018
Serial Number:	1000211248	Date:	09/17/2015
Customer:	Cardiocom	Temperature:	23°C
Attendees:	Viet Vuong	Relative Humidity:	65.7%
Customer Project:	None	Bar. Pressure:	976.8 mb
Tested By:	Jared Ison	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	CCOM0018-1

TEST SPECIFICATIONS

Specification: Equipment Class B	Method:
FCC 15.207:2015	ANSI C63.4:2013

TEST PARAMETERS

Run #:	5	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

None

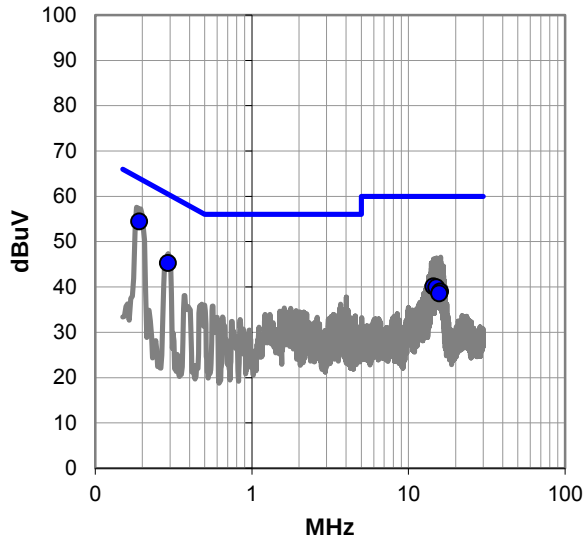
EUT OPERATING MODES

Continuous transmit, mid channel 2475.5 MHz. Modulation type MSK.

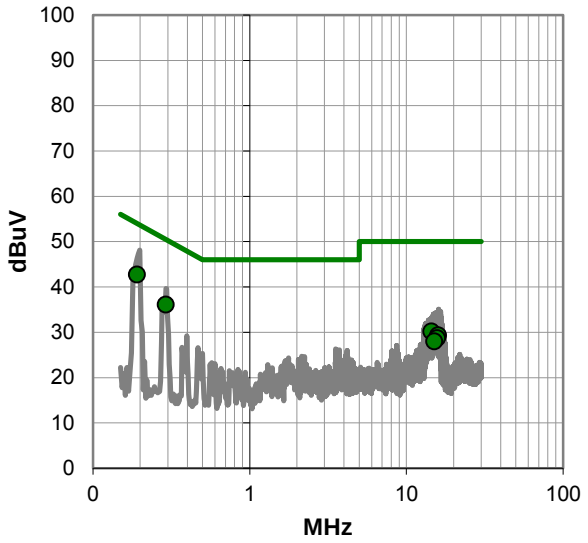
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.05.26
PSA-ESCI 2015.03.03, EmiR5 2015.05.29

RESULTS - Run #5

Quasi Peak Data - vs - Quasi Peak Limit

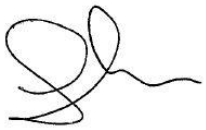
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.191	34.1	20.3	54.4	64.0	-9.5
0.291	25.0	20.3	45.3	60.5	-15.2
14.467	19.1	21.0	40.1	60.0	-19.9
15.114	18.8	21.1	39.9	60.0	-20.1
15.953	17.8	21.2	39.0	60.0	-21.0
15.729	17.4	21.2	38.6	60.0	-21.4

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.191	22.4	20.3	42.7	54.0	-11.2
0.291	15.8	20.3	36.1	50.5	-14.4
14.467	9.1	21.0	30.1	50.0	-19.9
15.953	8.1	21.2	29.3	50.0	-20.7
15.729	7.5	21.2	28.7	50.0	-21.3
15.114	6.9	21.1	28.0	50.0	-22.0

CONCLUSION

Pass



Tested By

AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.05.26
PSA-ESCI 2015.03.03, EmiR5 2015.05.29

EUT:	CD315	Work Order:	CCOM0018
Serial Number:	1000211248	Date:	09/17/2015
Customer:	Cardiocom	Temperature:	23°C
Attendees:	Viet Vuong	Relative Humidity:	65.7%
Customer Project:	None	Bar. Pressure:	976.8 mb
Tested By:	Jared Ison	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	CCOM0018-1

TEST SPECIFICATIONS

Specification: Equipment Class B	Method:
FCC 15.207:2015	ANSI C63.4:2013

TEST PARAMETERS

Run #:	6	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

None

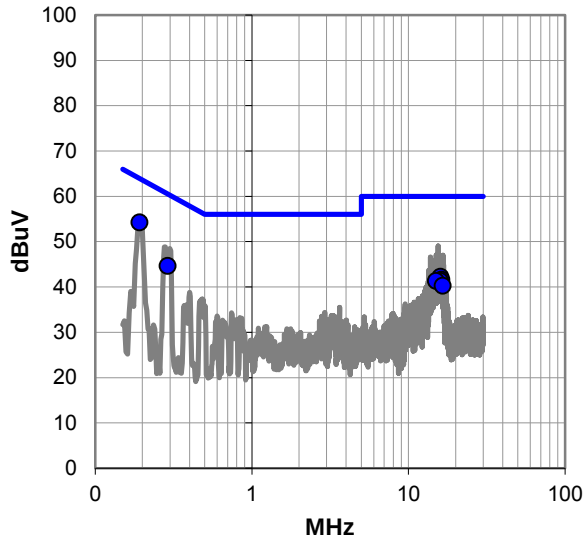
EUT OPERATING MODES

Continuous transmit, mid channel 2475.5 MHz. Modulation type MSK.

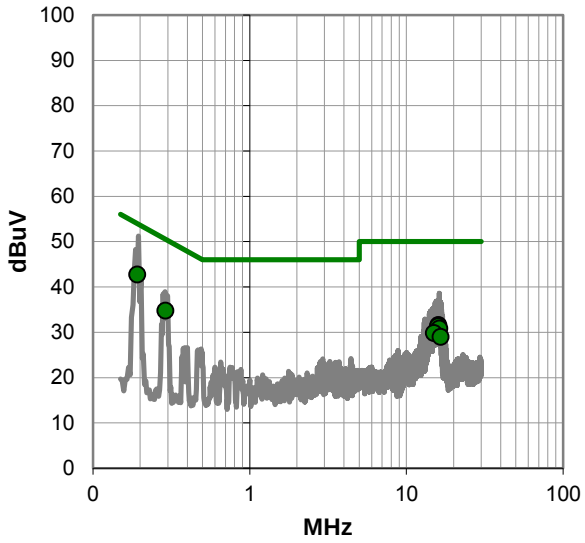
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.05.26
PSA-ESCI 2015.03.03, EmiR5 2015.05.29

RESULTS - Run #6

Quasi Peak Data - vs - Quasi Peak Limit

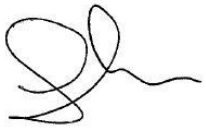
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.192	33.9	20.3	54.2	64.0	-9.7
0.291	24.4	20.3	44.7	60.5	-15.8
16.052	21.0	21.2	42.2	60.0	-17.8
16.239	20.4	21.2	41.6	60.0	-18.4
15.949	20.1	21.2	41.3	60.0	-18.7
15.015	20.2	21.1	41.3	60.0	-18.7
16.597	19.0	21.3	40.3	60.0	-19.7

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.192	22.4	20.3	42.7	54.0	-11.2
0.291	14.5	20.3	34.8	50.5	-15.7
16.052	10.4	21.2	31.6	50.0	-18.4
15.949	10.1	21.2	31.3	50.0	-18.7
16.239	9.6	21.2	30.8	50.0	-19.2
15.015	8.7	21.1	29.8	50.0	-20.2
16.597	7.7	21.3	29.0	50.0	-21.0

CONCLUSION

Pass



Tested By

AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.05.26
PSA-ESCI 2015.03.03, EmiR5 2015.05.29

EUT:	CD315	Work Order:	CCOM0018
Serial Number:	1000211248	Date:	09/17/2015
Customer:	Cardiocom	Temperature:	23°C
Attendees:	Viet Vuong	Relative Humidity:	65.7%
Customer Project:	None	Bar. Pressure:	976.8 mb
Tested By:	Jared Ison	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	CCOM0018-1

TEST SPECIFICATIONS

Specification: Equipment Class B	Method:
FCC 15.207:2015	ANSI C63.4:2013

TEST PARAMETERS

Run #:	7	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

None

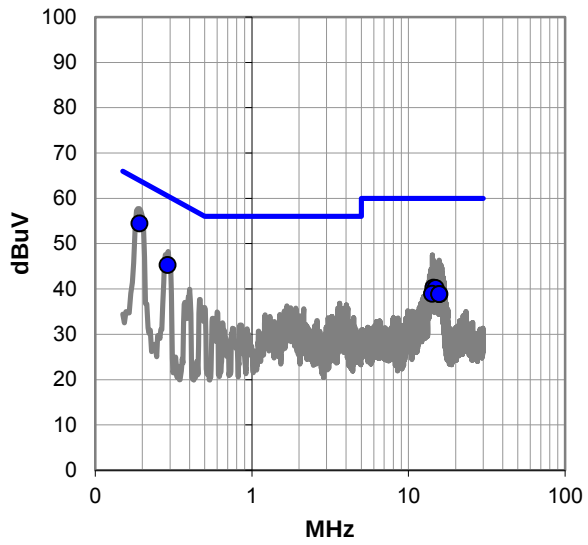
EUT OPERATING MODES

Continuous transmit, high channel 2478.5 MHz. Modulation type MSK.

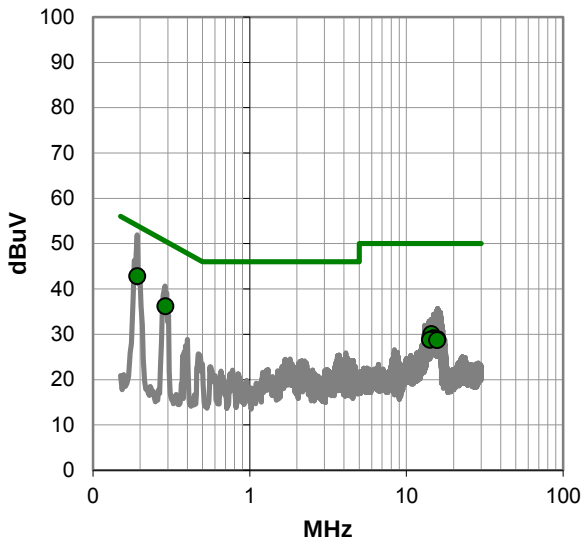
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.05.26
PSA-ESCI 2015.03.03, EmiR5 2015.05.29

RESULTS - Run #7

Quasi Peak Data - vs - Quasi Peak Limit

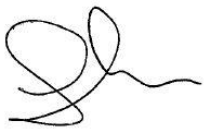
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.192	34.1	20.3	54.4	64.0	-9.5
0.290	25.0	20.3	45.3	60.5	-15.3
14.452	19.2	21.0	40.2	60.0	-19.8
14.920	19.1	21.1	40.2	60.0	-19.8
14.206	17.9	21.0	38.9	60.0	-21.1
15.818	17.7	21.2	38.9	60.0	-21.1
15.729	17.7	21.2	38.9	60.0	-21.1

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.192	22.5	20.3	42.8	54.0	-11.1
0.290	15.9	20.3	36.2	50.5	-14.4
14.452	9.0	21.0	30.0	50.0	-20.0
14.920	8.0	21.1	29.1	50.0	-20.9
15.818	7.7	21.2	28.9	50.0	-21.1
14.206	7.7	21.0	28.7	50.0	-21.3
15.729	7.5	21.2	28.7	50.0	-21.3

CONCLUSION

Pass



Tested By

AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2015.05.26
PSA-ESCI 2015.03.03, EmiR5 2015.05.29

EUT:	CD315	Work Order:	CCOM0018
Serial Number:	1000211248	Date:	09/17/2015
Customer:	Cardiocom	Temperature:	23°C
Attendees:	Viet Vuong	Relative Humidity:	65.7%
Customer Project:	None	Bar. Pressure:	976.8 mb
Tested By:	Jared Ison	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	CCOM0018-1

TEST SPECIFICATIONS

Specification: Equipment Class B	Method:
FCC 15.207:2015	ANSI C63.4:2013

TEST PARAMETERS

Run #:	8	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

None

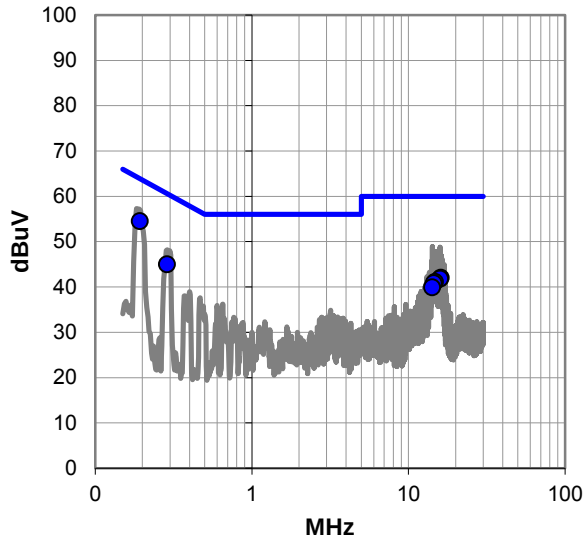
EUT OPERATING MODES

Continuous transmit, high channel 2478.5 MHz. Modulation type MSK.

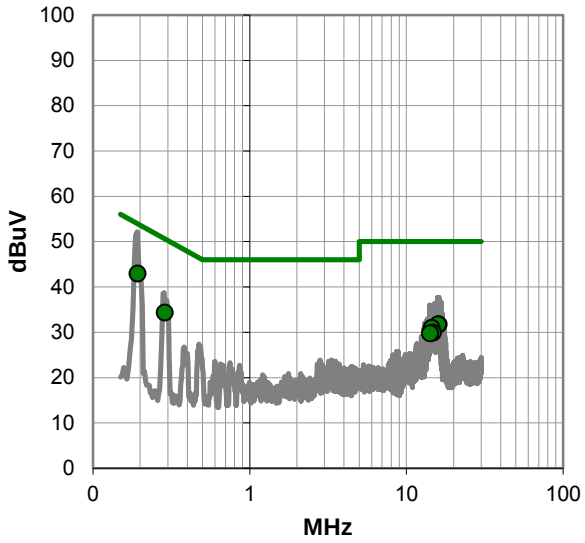
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



AC POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2015.05.26
PSA-ESCI 2015.03.03, EmiR5 2015.05.29

RESULTS - Run #8

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.193	34.2	20.3	54.5	63.9	-9.4
0.288	24.7	20.3	45.0	60.6	-15.6
16.133	20.8	21.2	42.0	60.0	-18.0
15.939	20.6	21.2	41.8	60.0	-18.2
14.818	20.0	21.1	41.1	60.0	-18.9
14.512	19.8	21.0	40.8	60.0	-19.2
14.208	18.9	21.0	39.9	60.0	-20.1

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.193	22.6	20.3	42.9	53.9	-11.0
0.288	14.1	20.3	34.4	50.6	-16.2
16.133	10.5	21.2	31.7	50.0	-18.3
15.939	10.5	21.2	31.7	50.0	-18.3
14.512	9.9	21.0	30.9	50.0	-19.1
14.818	8.8	21.1	29.9	50.0	-20.1
14.208	8.7	21.0	29.7	50.0	-20.3

CONCLUSION

Pass

Tested By

FIELD STRENGTH OF HARMONICS AND SPURIOUS RADIATED 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

Transmitting MSK low channel (2473.5 MHz), mid channel (2475.5 MHz), and high channel (2478.5 MHz)

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

CCOM0018 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	26500 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
Filter - Low Pass	Micro-Tronics	LPM50004	HGK	3/2/2015	12 mo
Filter - High Pass	Micro-Tronics	HPM50111	HGQ	3/2/2015	12 mo
Attenuator	S.M. Electronics	SA6-20	REO	3/2/2015	12 mo
Amplifier - Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	10/3/2014	12 mo
Cable	Northwest EMC	18-26GHz Standard Gain Horn Cable	MNP	10/3/2014	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-09	AHG	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVW	3/2/2015	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AIQ	NCR	0 mo
Cable	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	5/5/2015	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	3/2/2015	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AXP	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVX	3/2/2015	12 mo
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	5/5/2015	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AJA	6/3/2014	24 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	PAD	3/2/2015	12 mo
Cable	ESM Cable Corp.	Bilog Cables	MNH	3/30/2015	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYD	12/17/2013	24 mo
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFI	1/27/2015	12 mo

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

TEST DESCRIPTION

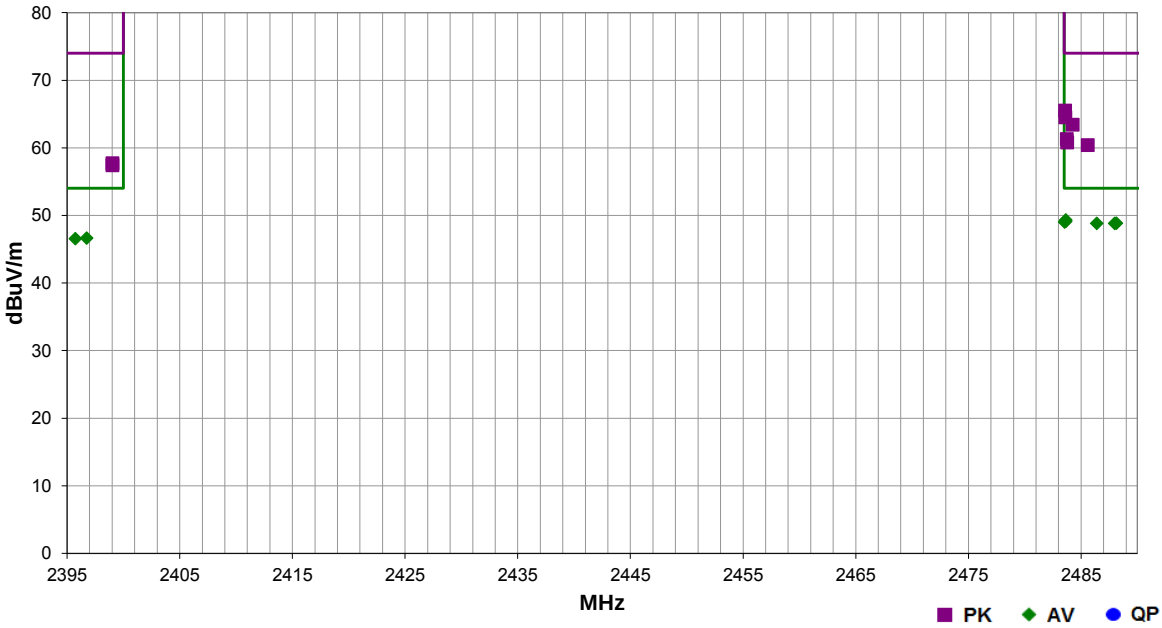
The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for low, mid, and high band transmit frequencies. For each configuration, the spectrum was scanned throughout the specified range. In addition, measurements were made in the restricted bands to verify compliance. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization. A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

FIELD STRENGTH OF HARMONICS AND SPURIOUS RADIATED EMISSIONS

Work Order:	CCOM0018	**Date:**	09/14/15		
Project:	None	**Temperature:**	22.9 °C		
Job Site:	MN05	**Humidity:**	55.9% RH		
Serial Number:	1000211248	**Barometric Pres.:**	978 mbar	**Tested by:**	Dustin Sparks
EUT:	CD315				
Configuration:	1				
Customer:	Cardiocom				
Attendees:	Viet Vuong				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting MSK low channel (2473.5 MHz), mid channel (2475.5 MHz), and high channel (2478.5 MHz)				
Deviations:	None				
Comments:	None				

Test Specifications	**Test Method**
FCC 15.249:2015	ANSI C63.10:2013

Run #	2	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



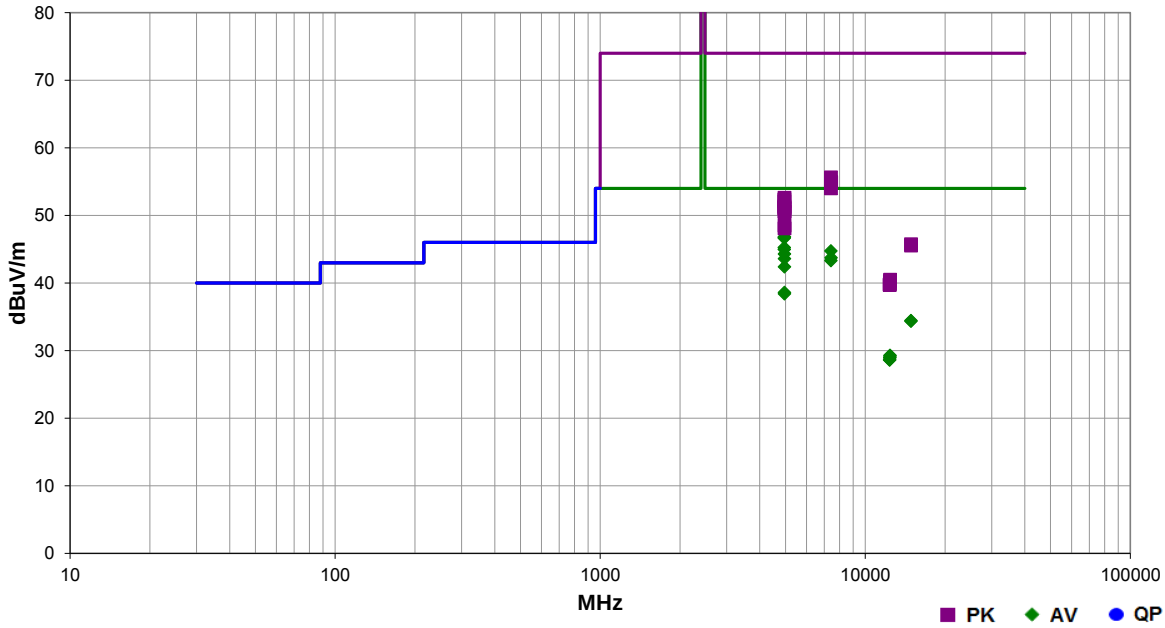
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2483.658	31.2	-1.9	1.0	297.9	3.0	20.0	Vert	AV	0.0	49.3	54.0	-4.7	High channel, EUT horz
2483.658	31.0	-1.9	1.0	191.1	3.0	20.0	Vert	AV	0.0	49.1	54.0	-4.9	High channel, EUT vert
2483.542	30.9	-1.9	1.0	139.0	3.0	20.0	Horz	AV	0.0	49.0	54.0	-5.0	High channel, EUT horz
2488.150	30.7	-1.9	2.5	124.1	3.0	20.0	Horz	AV	0.0	48.8	54.0	-5.2	High channel, EUT vert
2487.992	30.7	-1.9	1.0	189.0	3.0	20.0	Horz	AV	0.0	48.8	54.0	-5.2	High channel, EUT on side
2486.400	30.7	-1.9	1.0	62.1	3.0	20.0	Vert	AV	0.0	48.8	54.0	-5.2	High channel, EUT on side
2396.750	28.9	-2.3	1.0	23.1	3.0	20.0	Horz	AV	0.0	46.6	54.0	-7.4	Low channel, EUT on side
2395.733	28.8	-2.3	1.0	258.9	3.0	20.0	Vert	AV	0.0	46.5	54.0	-7.5	Low channel, EUT horz
2483.583	47.4	-1.9	1.0	297.9	3.0	20.0	Vert	PK	0.0	65.5	74.0	-8.5	High channel, EUT horz
2483.600	46.4	-1.9	1.0	191.1	3.0	20.0	Vert	PK	0.0	64.5	74.0	-9.5	High channel, EUT vert
2484.250	45.3	-1.9	1.0	139.0	3.0	20.0	Horz	PK	0.0	63.4	74.0	-10.6	High channel, EUT horz
2483.742	43.2	-1.9	1.0	62.1	3.0	20.0	Vert	PK	0.0	61.3	74.0	-12.7	High channel, EUT on side
2483.775	42.7	-1.9	1.0	189.0	3.0	20.0	Horz	PK	0.0	60.8	74.0	-13.2	High channel, EUT on side
2485.600	42.3	-1.9	2.5	124.1	3.0	20.0	Horz	PK	0.0	60.4	74.0	-13.6	High channel, EUT vert
2399.025	40.0	-2.3	1.0	23.1	3.0	20.0	Horz	PK	0.0	57.7	74.0	-16.3	Low channel, EUT on side
2399.017	39.7	-2.3	1.0	258.9	3.0	20.0	Vert	PK	0.0	57.4	74.0	-16.6	Low channel, EUT horz

FIELD STRENGTH OF HARMONICS AND SPURIOUS RADIATED EMISSIONS

Work Order:	CCOM0018	**Date:**	09/14/15		
Project:	None	**Temperature:**	22.9 °C		
Job Site:	MN05	**Humidity:**	55.9% RH		
Serial Number:	1000211248	**Barometric Pres.:**	978 mbar	**Tested by:**	Dustin Sparks
EUT:	CD315				
Configuration:	1				
Customer:	Cardiocom				
Attendees:	Viet Vuong				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting MSK low channel (2473.5 MHz), mid channel (2475.5 MHz), and high channel (2478.5 MHz)				
Deviations:	None				
Comments:	None				

Test Specifications	**Test Method**
FCC 15.249:2015	ANSI C63.10:2013

Run #	14	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**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
4957.258	40.0	6.8	2.2	325.9	3.0	0.0	Horz	AV	0.0	46.8	54.0	-7.2	High channel, EUT on side
4951.308	40.0	6.8	1.7	312.9	3.0	0.0	Horz	AV	0.0	46.8	54.0	-7.2	Mid channel, EUT on side
4947.275	39.9	6.7	2.3	319.9	3.0	0.0	Horz	AV	0.0	46.6	54.0	-7.4	Low channel, EUT on side
4947.267	38.5	6.7	1.0	304.9	3.0	0.0	Vert	AV	0.0	45.2	54.0	-8.8	Low channel, EUT horz
4951.250	38.2	6.8	1.0	303.0	3.0	0.0	Vert	AV	0.0	45.0	54.0	-9.0	Mid channel, EUT horz
7426.992	30.1	14.6	2.5	208.0	3.0	0.0	Vert	AV	0.0	44.7	54.0	-9.3	Mid channel, EUT horz
4957.258	37.5	6.8	1.0	307.0	3.0	0.0	Vert	AV	0.0	44.3	54.0	-9.7	High channel, EUT horz
7435.942	29.1	14.6	1.0	301.9	3.0	0.0	Horz	AV	0.0	43.7	54.0	-10.3	High channel, EUT on side
4957.275	36.8	6.8	1.0	332.0	3.0	0.0	Vert	AV	0.0	43.6	54.0	-10.4	High channel, EUT vert
7426.900	28.7	14.6	1.0	89.0	3.0	0.0	Horz	AV	0.0	43.3	54.0	-10.7	Mid channel, EUT on side
4957.250	35.6	6.8	1.0	9.0	3.0	0.0	Horz	AV	0.0	42.4	54.0	-11.6	High channel, EUT horz
4957.300	31.8	6.8	1.0	30.1	3.0	0.0	Horz	AV	0.0	38.6	54.0	-15.4	High channel, EUT vert
4957.258	31.6	6.8	1.0	355.9	3.0	0.0	Vert	AV	0.0	38.4	54.0	-15.6	High channel, EUT on side
7426.717	41.0	14.6	2.5	208.0	3.0	0.0	Vert	PK	0.0	55.6	74.0	-18.4	Mid channel, EUT horz
7435.633	40.3	14.6	1.0	301.9	3.0	0.0	Horz	PK	0.0	54.9	74.0	-19.1	High channel, EUT on side
14872.420	29.6	4.8	3.8	92.0	3.0	0.0	Vert	AV	0.0	34.4	54.0	-19.6	Low channel, EUT horz
14871.430	29.5	4.8	1.0	47.1	3.0	0.0	Horz	AV	0.0	34.3	54.0	-19.7	Low channel, EUT on side
7425.617	39.4	14.6	1.0	89.0	3.0	0.0	Horz	PK	0.0	54.0	74.0	-20.0	Mid channel, EUT on side
4957.442	45.8	6.8	2.2	325.9	3.0	0.0	Horz	PK	0.0	52.6	74.0	-21.4	High channel, EUT on side
4947.267	45.6	6.7	2.3	319.9	3.0	0.0	Horz	PK	0.0	52.3	74.0	-21.7	Low channel, EUT on side
4951.308	45.3	6.8	1.7	312.9	3.0	0.0	Horz	PK	0.0	52.1	74.0	-21.9	Mid channel, EUT on side
4947.508	44.6	6.7	1.0	304.9	3.0	0.0	Vert	PK	0.0	51.3	74.0	-22.7	Low channel, EUT horz
4957.242	44.3	6.8	1.0	307.0	3.0	0.0	Vert	PK	0.0	51.1	74.0	-22.9	High channel, EUT horz
4951.358	44.3	6.8	1.0	303.0	3.0	0.0	Vert	PK	0.0	51.1	74.0	-22.9	Mid channel, EUT horz

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
4957.600	43.8	6.8	1.0	332.0	3.0	0.0	Vert	PK	0.0	50.6	74.0	-23.4	High channel, EUT vert
4957.383	43.7	6.8	1.0	9.0	3.0	0.0	Horz	PK	0.0	50.5	74.0	-23.5	High channel, EUT horz
12394.720	32.0	-2.7	1.6	234.0	3.0	0.0	Horz	AV	0.0	29.3	54.0	-24.7	High channel, EUT on side
12394.150	31.9	-2.7	1.0	173.1	3.0	0.0	Vert	AV	0.0	29.2	54.0	-24.8	High channel, EUT horz
12379.880	31.7	-2.8	1.0	87.1	3.0	0.0	Vert	AV	0.0	28.9	54.0	-25.1	Mid channel, EUT horz
12376.380	31.7	-2.8	1.0	6.0	3.0	0.0	Horz	AV	0.0	28.9	54.0	-25.1	Mid channel, EUT on side
12368.630	31.4	-2.8	1.8	89.0	3.0	0.0	Vert	AV	0.0	28.6	54.0	-25.4	Low channel, EUT horz
12367.720	31.4	-2.8	3.1	72.0	3.0	0.0	Horz	AV	0.0	28.6	54.0	-25.4	Low channel, EUT on side
4956.842	41.7	6.8	1.0	30.1	3.0	0.0	Horz	PK	0.0	48.5	74.0	-25.5	High channel, EUT vert
4957.450	41.3	6.8	1.0	355.9	3.0	0.0	Vert	PK	0.0	48.1	74.0	-25.9	High channel, EUT on side
14870.790	40.9	4.8	3.8	92.0	3.0	0.0	Vert	PK	0.0	45.7	74.0	-28.3	Low channel, EUT horz
14871.440	40.7	4.8	1.0	47.1	3.0	0.0	Horz	PK	0.0	45.5	74.0	-28.5	Low channel, EUT on side
12393.430	43.2	-2.7	1.6	234.0	3.0	0.0	Horz	PK	0.0	40.5	74.0	-33.5	High channel, EUT on side
12394.180	43.0	-2.7	1.0	173.1	3.0	0.0	Vert	PK	0.0	40.3	74.0	-33.7	High channel, EUT horz
12375.580	43.0	-2.8	1.0	87.1	3.0	0.0	Vert	PK	0.0	40.2	74.0	-33.8	Mid channel, EUT horz
12376.470	42.7	-2.8	1.0	6.0	3.0	0.0	Horz	PK	0.0	39.9	74.0	-34.1	Mid channel, EUT on side
12365.720	42.6	-2.8	3.1	72.0	3.0	0.0	Horz	PK	0.0	39.8	74.0	-34.2	Low channel, EUT on side
12368.230	42.5	-2.8	1.8	89.0	3.0	0.0	Vert	PK	0.0	39.7	74.0	-34.3	Low channel, EUT horz

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

Transmitting 802.11 low channel (2473.5 MHz), mid channel (2475.5 MHz), and high channel (2478.5 MHz)

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

CCOM0018 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	2473.5 MHz	Stop Frequency	2478.5 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
Attenuator	S.M. Electronics	SA6-20	REO	3/2/2015	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVX	3/2/2015	12 mo
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	5/5/2015	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AJA	6/3/2014	24 mo
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFI	1/27/2015	12 mo

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

TEST DESCRIPTION

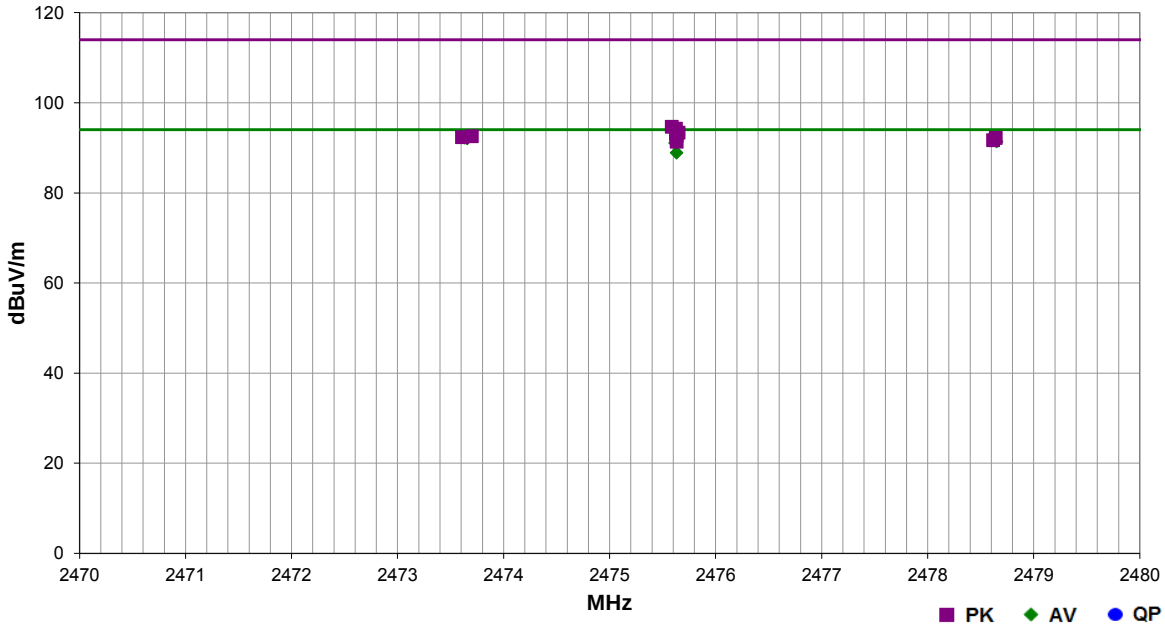
The antennas to be used with the EUT were tested. The EUT was transmitting and while set at the lowest channel, a middle channel, and the highest channel available. While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height and polarization, and manipulating the EUT and EUT antenna in 3 orthogonal planes (per ANSI C63.10:2014).

FIELD STRENGTH OF FUNDAMENTAL

Work Order:	CCOM0018	**Date:**	09/14/15		
Project:	None	**Temperature:**	22.9 °C		
Job Site:	MN05	**Humidity:**	55.9% RH		
Serial Number:	1000211248	**Barometric Pres.:**	978 mbar	**Tested by:**	Dustin Sparks
EUT:	CD315				
Configuration:	1				
Customer:	Cardiocom				
Attendees:	Viet Vuong				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting MSK low channel (2473.5 MHz), mid channel (2475.5 MHz), and high channel (2478.5 MHz)				
Deviations:	None				
Comments:	None				

Test Specifications	**Test Method**
FCC 15.249:2015	ANSI C63.10:2013

Run #	1	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**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
2475.640	75.6	-1.9	1.5	204.0	3.0	20.0	Vert	AV	0.0	93.7	94.0	-0.3	Mid channel, EUT vert
2475.650	75.0	-1.9	2.2	330.9	3.0	20.0	Vert	AV	0.0	93.1	94.0	-0.9	Mid channel, EUT on side
2475.633	74.8	-1.9	1.1	120.1	3.0	20.0	Horz	AV	0.0	92.9	94.0	-1.1	Mid channel, EUT on side
2475.642	74.2	-1.9	2.2	222.0	3.0	20.0	Horz	AV	0.0	92.3	94.0	-1.7	Mid channel, EUT horz
2473.633	74.2	-1.9	1.1	123.1	3.0	20.0	Horz	AV	0.0	92.3	94.0	-1.7	Low channel, EUT on side
2473.658	74.0	-1.9	1.1	340.9	3.0	20.0	Vert	AV	0.0	92.1	94.0	-1.9	Low channel, EUT vert
2478.625	73.8	-1.9	1.0	219.0	3.0	20.0	Horz	AV	0.0	91.9	94.0	-2.1	High channel, EUT horz
2478.650	73.3	-1.9	1.1	311.9	3.0	20.0	Vert	AV	0.0	91.4	94.0	-2.6	High channel, EUT horz
2475.617	73.0	-1.9	1.0	250.9	3.0	20.0	Vert	AV	0.0	91.1	94.0	-2.9	Mid channel, EUT horz
2475.633	70.8	-1.9	1.1	286.0	3.0	20.0	Horz	AV	0.0	88.9	94.0	-5.1	Mid channel, EUT vert
2475.585	76.6	-1.9	1.4	205.0	3.0	20.0	Vert	PK	0.0	94.7	114.0	-19.3	Mid channel, EUT vert
2475.625	76.2	-1.9	1.5	234.0	3.0	20.0	Horz	PK	0.0	94.3	114.0	-19.7	Mid channel, EUT on side
2475.650	75.3	-1.9	2.2	330.9	3.0	20.0	Vert	PK	0.0	93.4	114.0	-20.6	Mid channel, EUT on side
2475.625	75.0	-1.9	1.1	120.1	3.0	20.0	Horz	PK	0.0	93.1	114.0	-20.9	Mid channel, EUT on side
2475.633	74.6	-1.9	2.2	222.0	3.0	20.0	Horz	PK	0.0	92.7	114.0	-21.3	Mid channel, EUT horz
2473.700	74.5	-1.9	1.1	123.1	3.0	20.0	Horz	PK	0.0	92.6	114.0	-21.4	Low channel, EUT on side
2473.608	74.3	-1.9	1.1	340.9	3.0	20.0	Vert	PK	0.0	92.4	114.0	-21.6	Low channel, EUT vert
2478.642	74.1	-1.9	1.0	219.0	3.0	20.0	Horz	PK	0.0	92.2	114.0	-21.8	High channel, EUT horz
2478.617	73.6	-1.9	1.1	311.9	3.0	20.0	Vert	PK	0.0	91.7	114.0	-22.3	High channel, EUT horz
2475.633	73.3	-1.9	1.0	250.9	3.0	20.0	Vert	PK	0.0	91.4	114.0	-22.6	Mid channel, EUT horz