

NORTHWEST EMC

Honeywell, Automation and Control Solutions

ERM5220R01

FCC 15.247:2015

FCC 15.207:2015

902 – 928 MHz transceiver

Report # HNYW0135.1



NVLAP Lab Code: 201049-0

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. This Report may only be duplicated in its entirety

CERTIFICATE OF TEST

Last Date of Test: November 20, 2015
Honeywell, Automation and Control Solutions
Model: ERM5220R01

Radio Equipment Testing

Standards

Specification	Method
FCC 15.247:2015	ANSI C63.10:2013
FCC 15.207:2015	ANSI C63.10:2013

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	Yes	Pass	
6.5, 6.6, 11.12.1, 11.13.2	Spurious Radiated Emissions	Yes	Pass	
7.5	Duty Cycle	Yes	N/A	Characterization of radio operation
7.8.2	Carrier Frequency Separation	Yes	Pass	
7.8.3	Number of Hopping Frequencies	Yes	Pass	
7.8.4	Dwell Time	Yes	Pass	
7.8.5	Output Power	Yes	Pass	
7.8.6	Band Edge Compliance	Yes	Pass	
7.8.6	Band Edge Compliance - Hopping Mode	Yes	Pass	
7.8.7	Occupied Bandwidth	Yes	Pass	
7.8.8	Spurious Conducted Emissions	Yes	Pass	

Deviations From Test Standards

None

Approved By:



Jeremiah Darden, 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

Revision Number		Description	Date	Page Number
00		None		

ACCREDITATIONS AND AUTHORIZATIONS

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

Measurement Uncertainty

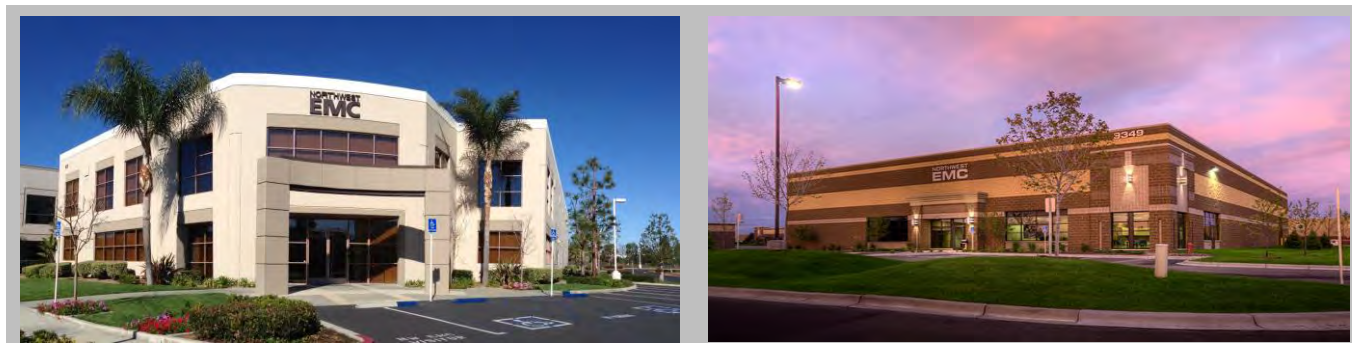
When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement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

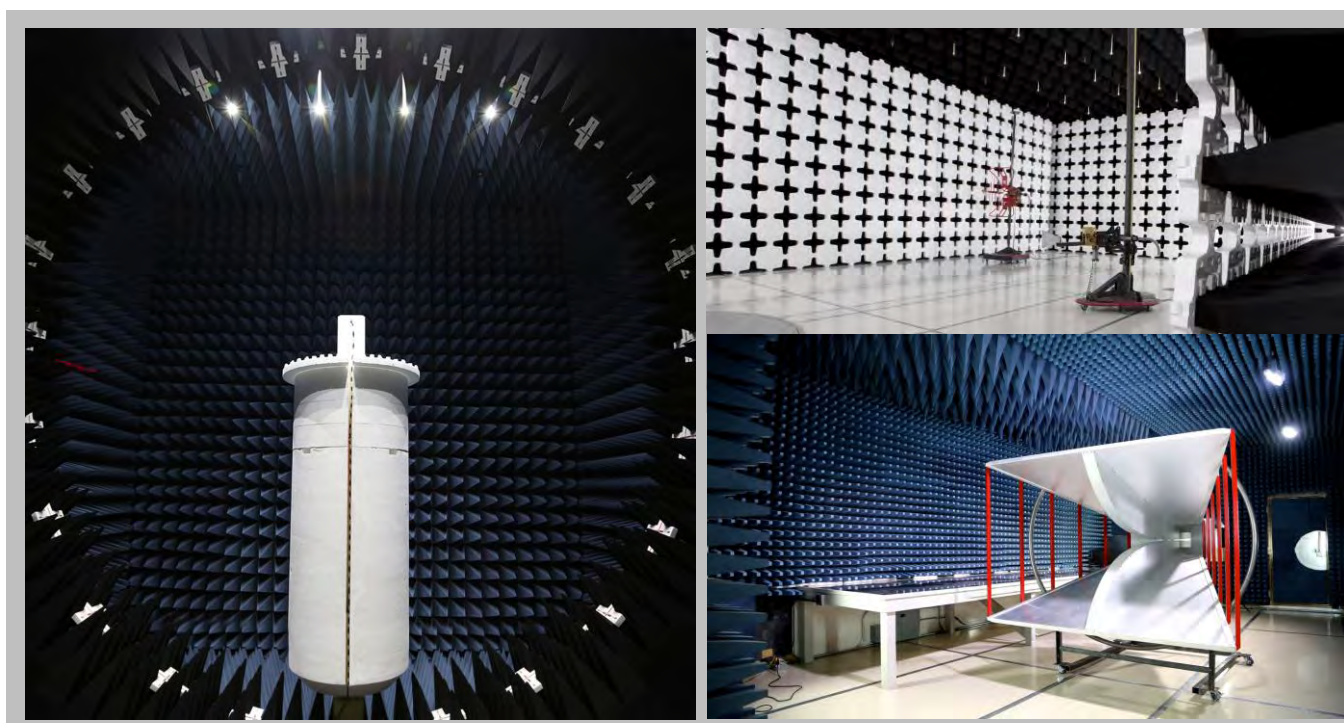
The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

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)	4.9 dB	-4.9 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

FACILITIES



California Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	Minnesota Labs MN01-08, MN10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	New York Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Oregon Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	Texas Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Washington Labs NC01-05 19201 120 th 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/RRR, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157



PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Honeywell, Automation and Control Solutions
Address:	1985 Douglas Drive North
City, State, Zip:	Golden Valley, MN 55422-3992
Test Requested By:	Dave Mulhouse
Model:	ERM5220R01
First Date of Test:	November 16, 2015
Last Date of Test:	November 20, 2015
Receipt Date of Samples:	November 16, 2015
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
Thermostat with two antennas and a 902 – 928 MHz frequency hopping transceiver operating at <1Watt with 50 hopping frequencies
Testing Objective:
Seeking to demonstrate compliance under FCC 15.247:2015 for operation in the 902 - 928 MHz Band

CONFIGURATIONS

Configuration HNYW0135- 1

EUT					
Description	Manufacturer		Model/Part Number	Serial Number	
Thermostat	Honeywell, Automation and Control Solutions		ERM5220R01	06555010000040	
Peripherals in test setup boundary					
Description	Manufacturer	Model/Part Number		Serial Number	
Transformer	Philmore	TR241		None	
Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	None	1.5m	None	AC Mains	Transformer
AC Power	None	0.1m	None	Transformer	Thermostat

Configuration HNYW0135- 2

EUT					
Description	Manufacturer		Model/Part Number	Serial Number	
Thermostat	Honeywell, Automation and Control Solutions		ERM5220R01	06555010000021	
Peripherals in test setup boundary					
Description	Manufacturer	Model/Part Number		Serial Number	
Transformer	Philmore	TR241		None	
Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	None	1.5m	None	AC Mains	Transformer
AC Power	None	0.1m	None	Transformer	Thermostat

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	11/16/2015	Powerline Conducted 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.
2	11/17/2015	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	11/20/2015	Band Edge Compliance	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.
4	11/20/2015	Band Edge Compliance Hopping Mode	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.
5	11/20/2015	Carrier Frequency Separation	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.
6	11/20/2015	Dwell Time	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.
7	11/20/2015	Number of Hopping Channels	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.
8	11/20/2015	Occupied Bandwidth	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.
9	11/20/2015	Output Power	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.
10	11/20/2015	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

DUTY CYCLE

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.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	1/28/2015	12
Attenuator	Fairview Microwave	SA4018-20	TYE	11/3/2015	12
Block - DC	Fairview Microwave	SD3379	AMT	11/3/2015	12
Generator - Signal	Agilent	N5173B	TIW	7/15/2014	36
Cable 25MHz-40GHz	Fairview Microwave	SCK0963-60	TXF	11/3/2015	12

TEST DESCRIPTION

The Duty Cycle (x) were measured for each of the EUT operating modes. The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used

The duty cycle was calculated by dividing the transmission pulse duration (T) by the total period of a single on and total off time.

The EUT operates at 100% Duty Cycle.

OCCUPIED BANDWIDTH

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.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	1/28/2015	12
Generator - Signal	Agilent	N5173B	TIW	7/15/2014	36
Cable 25MHz-40GHz	Fairview Microwave	SCK0963-60	TXF	11/3/2015	12
Attenuator	Fairview Microwave	SA4018-20	TYE	11/3/2015	12
Block - DC	Fairview Microwave	SD3379	AMT	11/3/2015	12

TEST DESCRIPTION

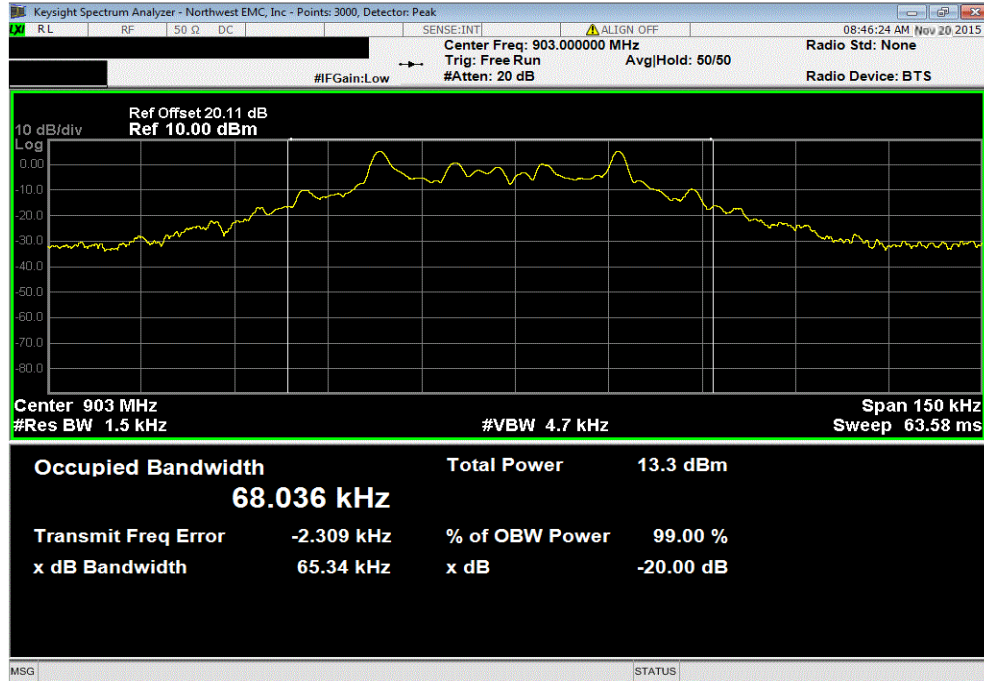
The 20 dB occupied bandwidth was measured with the EUT set to low, medium and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet in a no-hop mode.

OCCUPIED BANDWIDTH

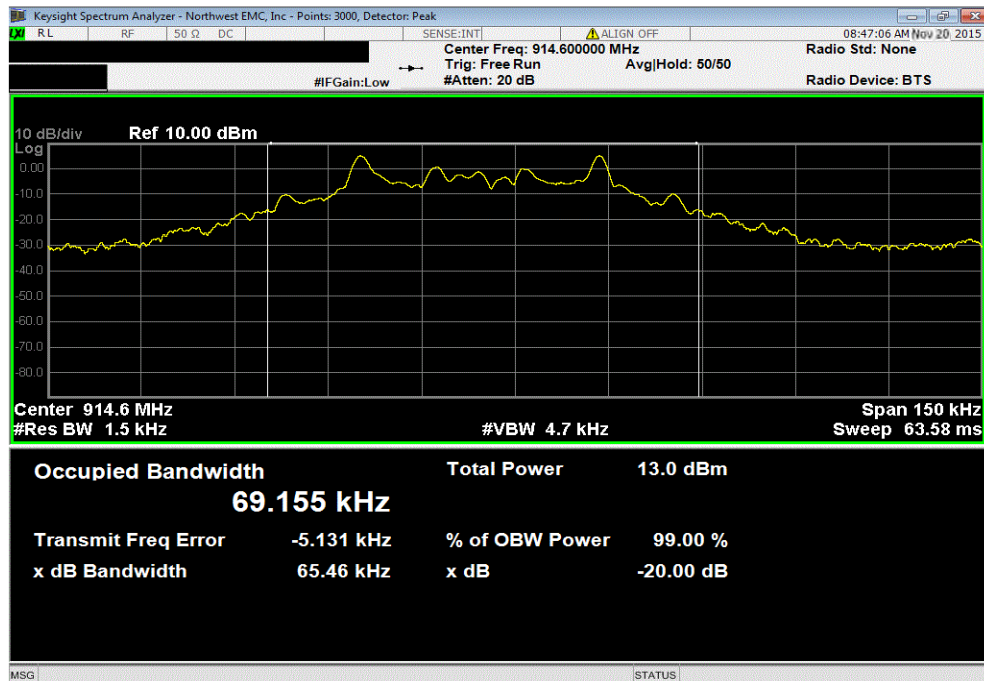
EUT: ERM5220R01		Work Order: HNYW0135	
Serial Number: 06555010000040		Date: 11/20/15	
Customer: Honeywell, Automation and Control Solutions		Temperature: 23°C	
Attendees: None		Humidity: 40%	
Project: None		Barometric Pres.: 30.07	
Tested by: Frank Sun	Power: 24VAC	Job Site: TX02	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2015		ANSI C63.10:2013	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature 	
		Value	Limit (<) Result
Antenna A			
	Low Channel, 903.0 MHz	65.345 kHz	250 kHz Pass
	Mid Channel, 914.6 MHz	65.46 kHz	250 kHz Pass
	High Channel, 926.4 MHz	65.502 kHz	250 kHz Pass
Antenna B			
	Low Channel, 903.0 MHz	65.338 kHz	250 kHz Pass
	Mid Channel, 914.6 MHz	65.268 kHz	250 kHz Pass
	High Channel, 926.4 MHz	65.476 kHz	250 kHz Pass

OCCUPIED BANDWIDTH

Antenna A, Low Channel, 903.0 MHz						
				Value	Limit (<)	Result
				65.345 kHz	250 kHz	Pass

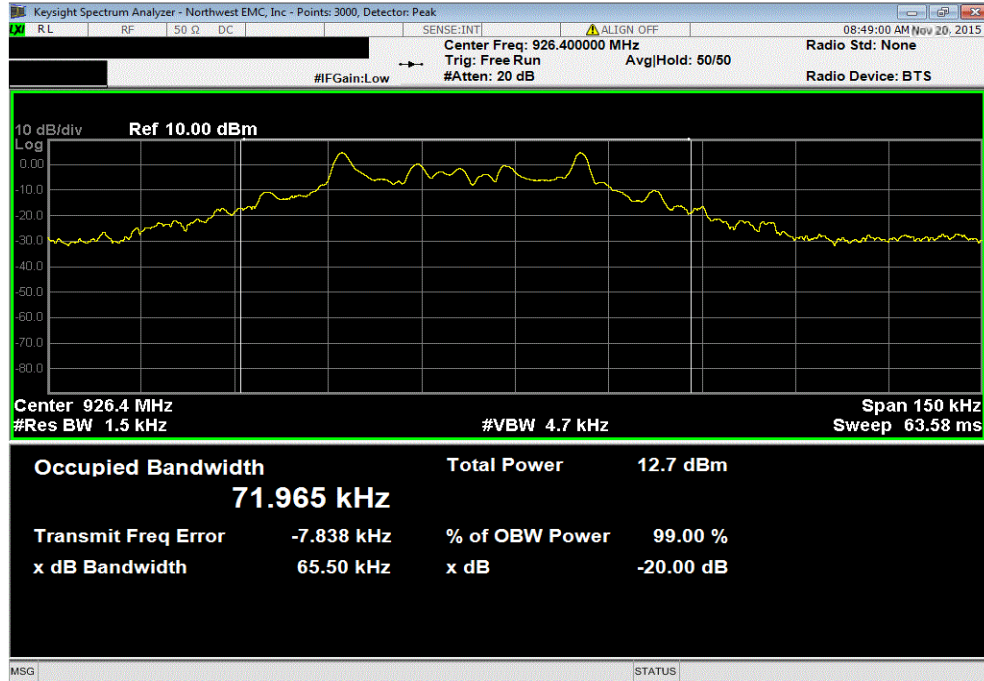


Antenna A, Mid Channel, 914.6 MHz						
				Value	Limit (<)	Result
				65.46 kHz	250 kHz	Pass

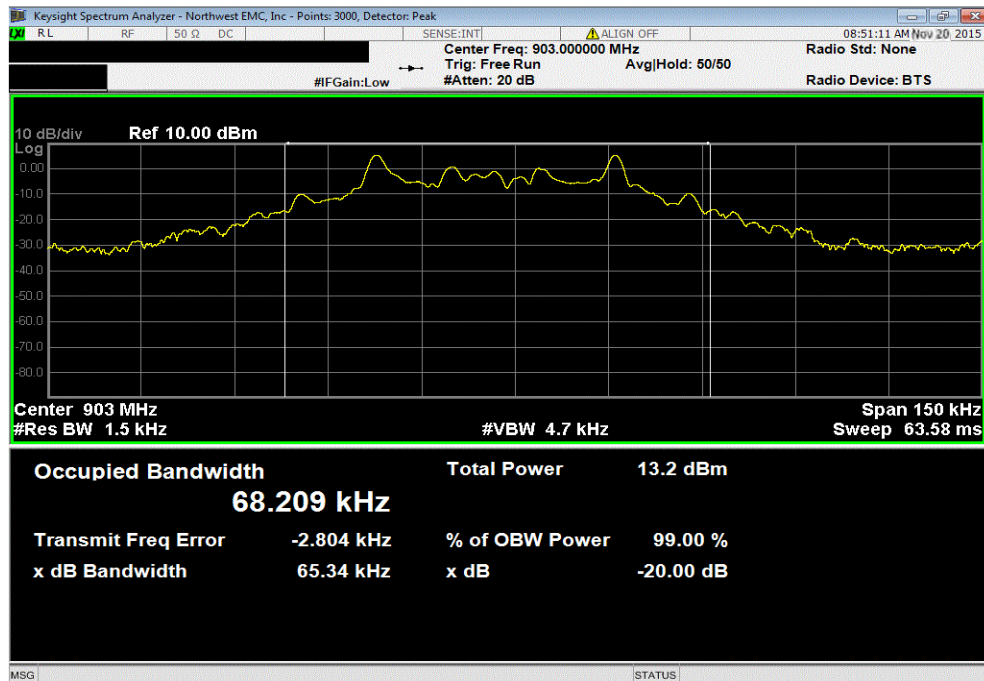


OCCUPIED BANDWIDTH

Antenna A, High Channel, 926.4 MHz						
				Value	Limit (<)	Result
				65.502 kHz	250 kHz	Pass

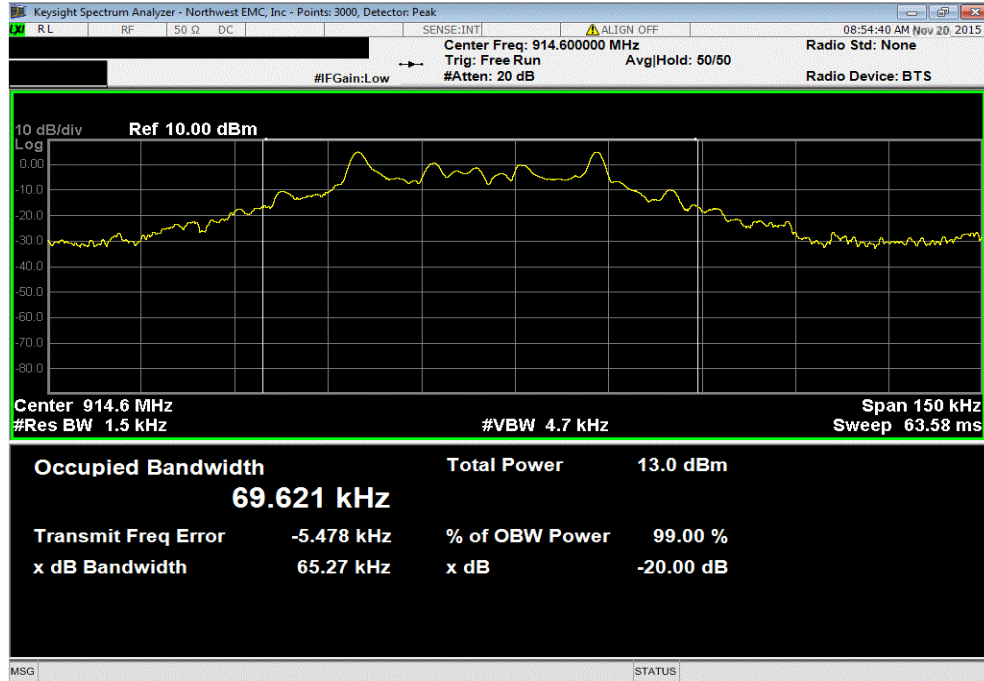


Antenna B, Low Channel, 903.0 MHz						
				Value	Limit (<)	Result
				65.338 kHz	250 kHz	Pass

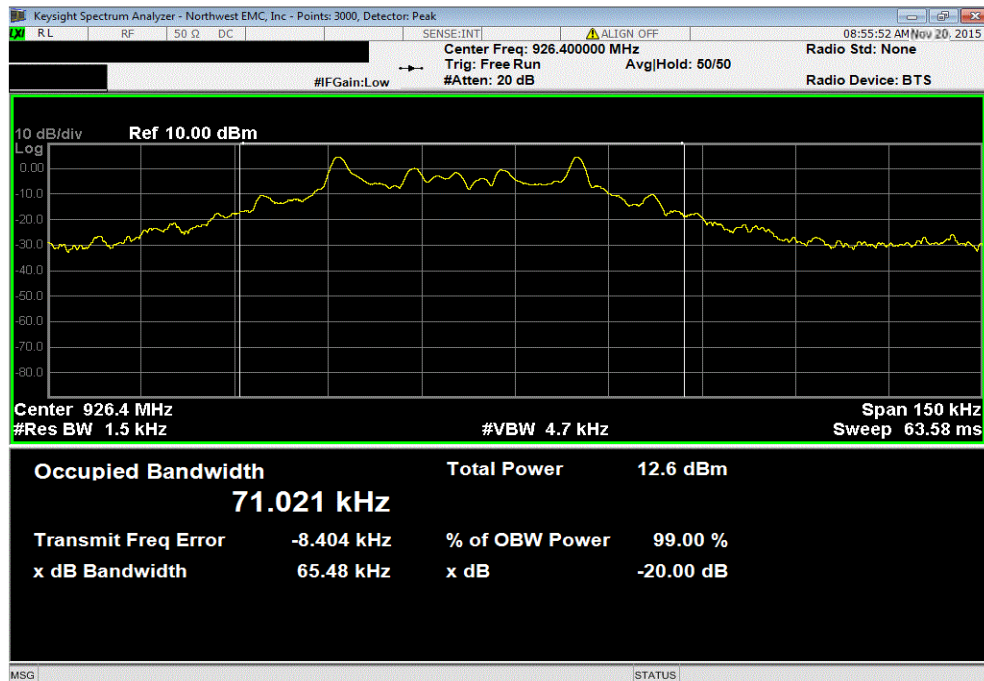


OCCUPIED BANDWIDTH

Antenna B, Mid Channel, 914.6 MHz						
				Value	Limit (<)	Result
				65.268 kHz	250 kHz	Pass



Antenna B, High Channel, 926.4 MHz						
				Value	Limit (<)	Result
				65.476 kHz	250 kHz	Pass



OUTPUT POWER

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.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Cable 25MHz-40GHz	Fairview Microwave	SCK0963-60	TXF	11/3/2015	12
Attenuator	Fairview Microwave	SA4018-20	TYE	11/3/2015	12
Block - DC	Fairview Microwave	SD3379	AMT	11/3/2015	12
Generator - Signal	Agilent	N5173B	TIW	7/15/2014	36
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	1/28/2015	12

TEST DESCRIPTION

The peak output power was measured with the EUT set to low, medium and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was transmitting in a no hop mode at the data rate(s) listed in the datasheet.

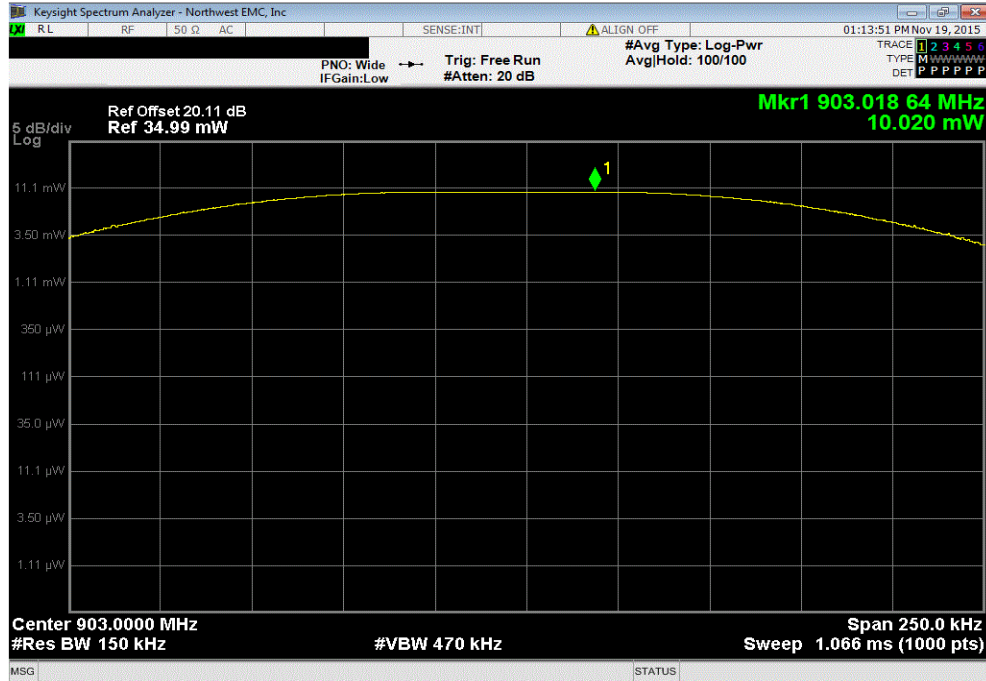
De Facto EIRP Limit: Per 47 CFR 15.247 (b)(1-3), the EUT meets the de facto EIRP limit of +36 dBm.

OUTPUT POWER

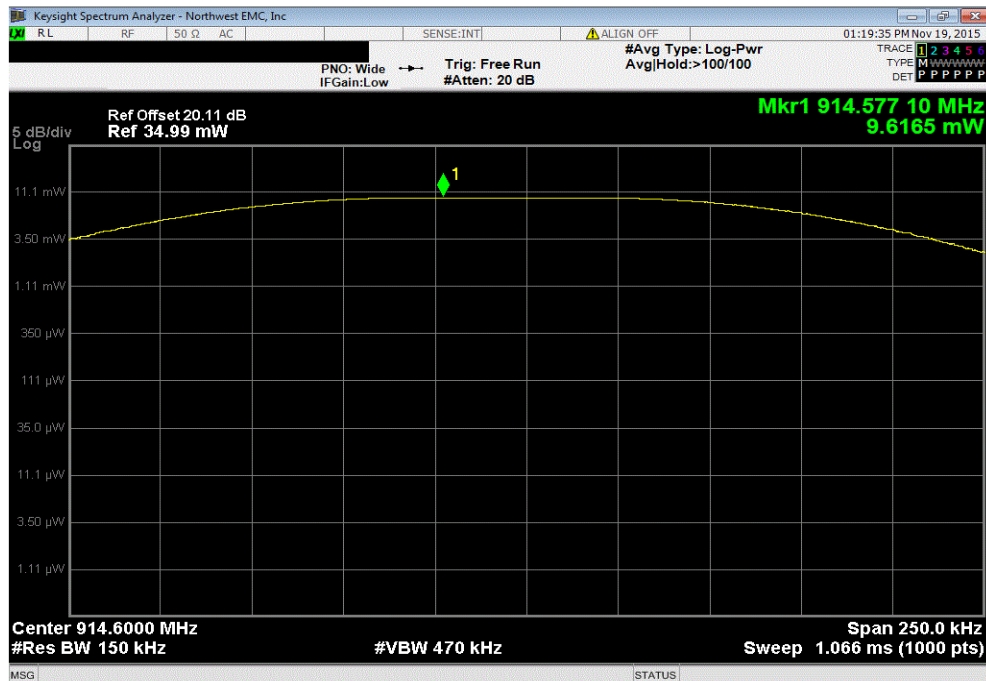
EUT: ERM5220R01		Work Order: HNYW0135	
Serial Number: 06555010000040		Date: 11/20/15	
Customer: Honeywell, Automation and Control Solutions		Temperature: 23°C	
Attendees: None		Humidity: 40%	
Project: None		Barometric Pres.: 30.07	
Tested by: Frank Sun	Power: 24VAC	Job Site: TX02	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2015		ANSI C63.10:2013	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature 	
		Value	Limit (<) Result
Antenna A			
	Low Channel, 903.0 MHz	10.02 mW	1 W Pass
	Mid Channel, 914.6 MHz	9.617 mW	1 W Pass
	High Channel, 926.4 MHz	8.938 mW	1 W Pass
Antenna B			
	Low Channel, 903.0 MHz	9.991 mW	1 W Pass
	Mid Channel, 914.6 MHz	9.838 mW	1 W Pass
	High Channel, 926.4 MHz	9.16 mW	1 W Pass

OUTPUT POWER

Antenna A, Low Channel, 903.0 MHz						
				Value	Limit (<)	Result
				10.02 mW	1 W	Pass

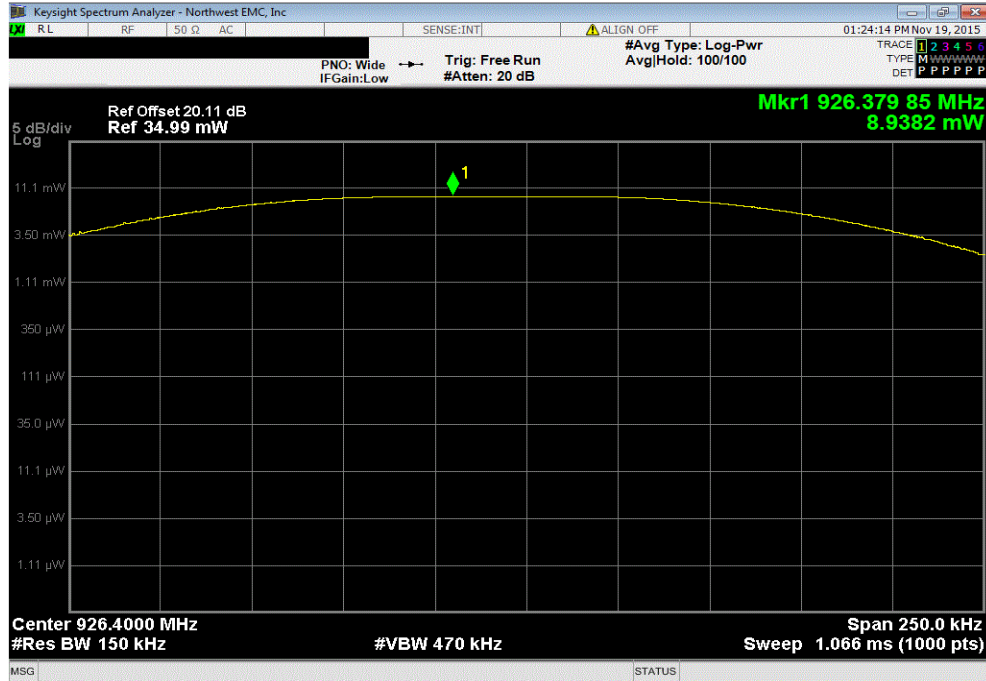


Antenna A, Mid Channel, 914.6 MHz						
				Value	Limit (<)	Result
				9.617 mW	1 W	Pass

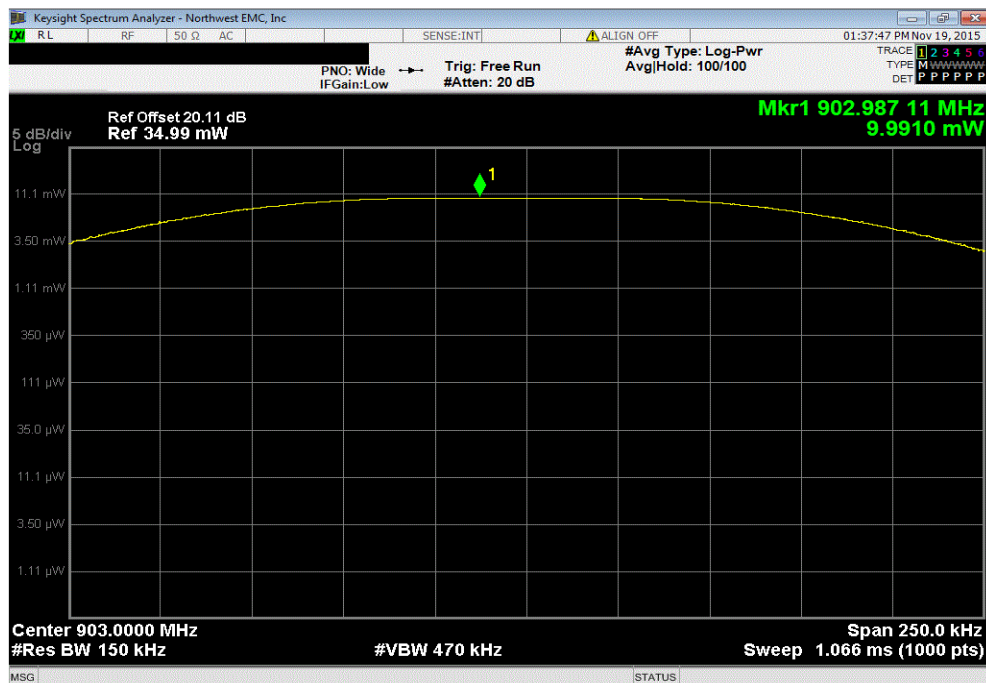


OUTPUT POWER

Antenna A, High Channel, 926.4 MHz						
				Value	Limit (<)	Result
				8.938 mW	1 W	Pass

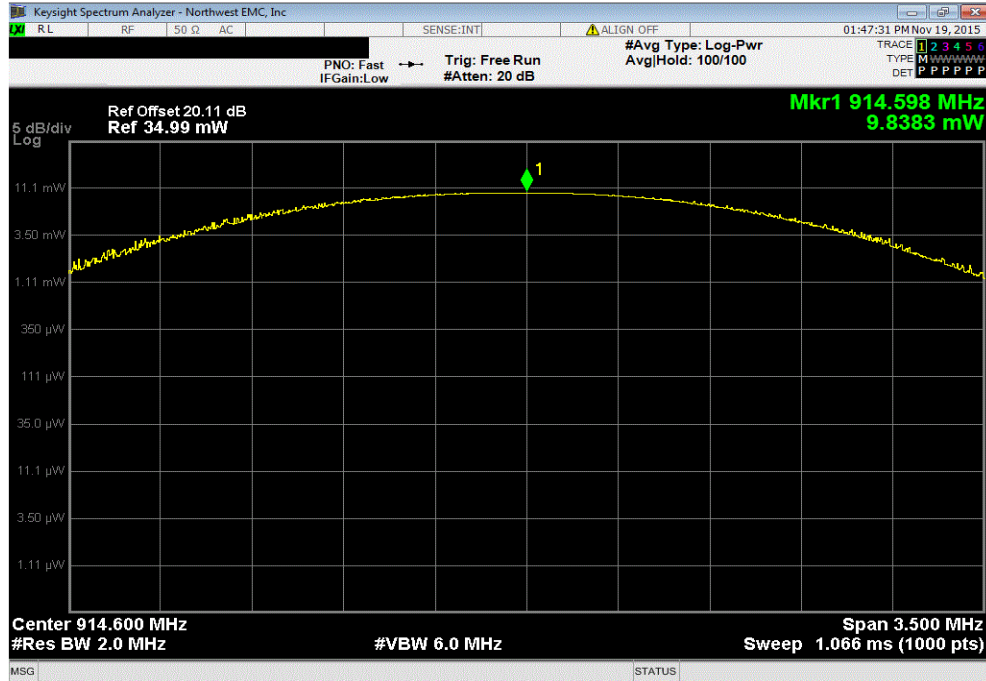


Antenna B, Low Channel, 903.0 MHz						
				Value	Limit (<)	Result
				9.991 mW	1 W	Pass

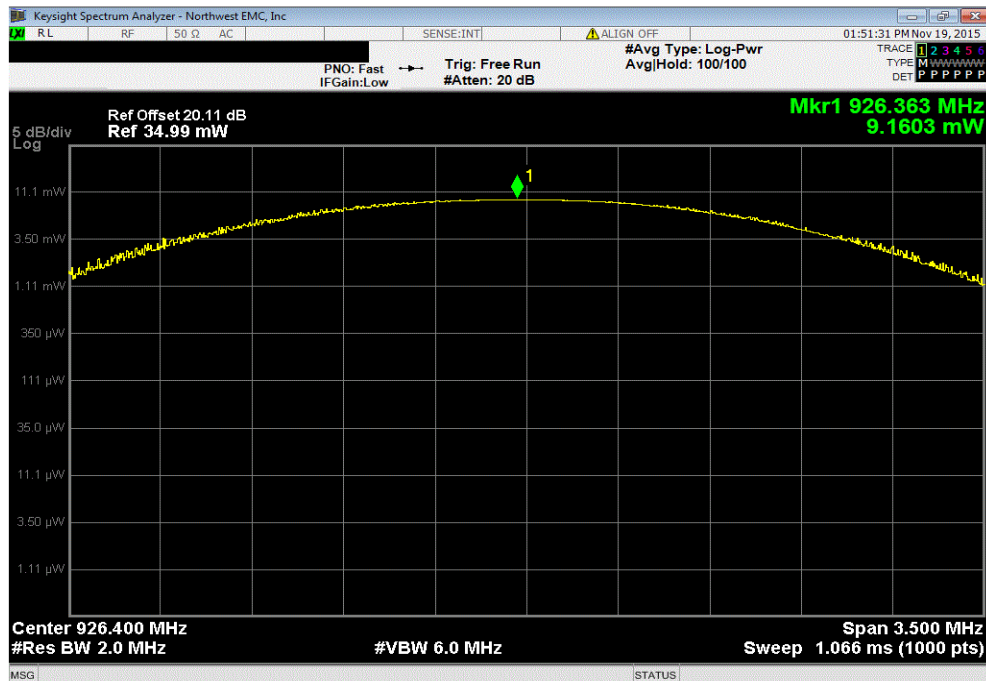


OUTPUT POWER

Antenna B, Mid Channel, 914.6 MHz						
				Value	Limit (<)	Result
				9.838 mW	1 W	Pass



Antenna B, High Channel, 926.4 MHz						
				Value	Limit (<)	Result
				9.16 mW	1 W	Pass



SPURIOUS CONDUCTED 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.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	1/28/2015	12
Attenuator	Fairview Microwave	SA4018-20	TYE	11/3/2015	12
Block - DC	Fairview Microwave	SD3379	AMT	11/3/2015	12
Generator - Signal	Agilent	N5173B	TIW	7/15/2014	36
Cable 25MHz-40GHz	Fairview Microwave	SCK0963-60	TXF	11/3/2015	12

TEST DESCRIPTION

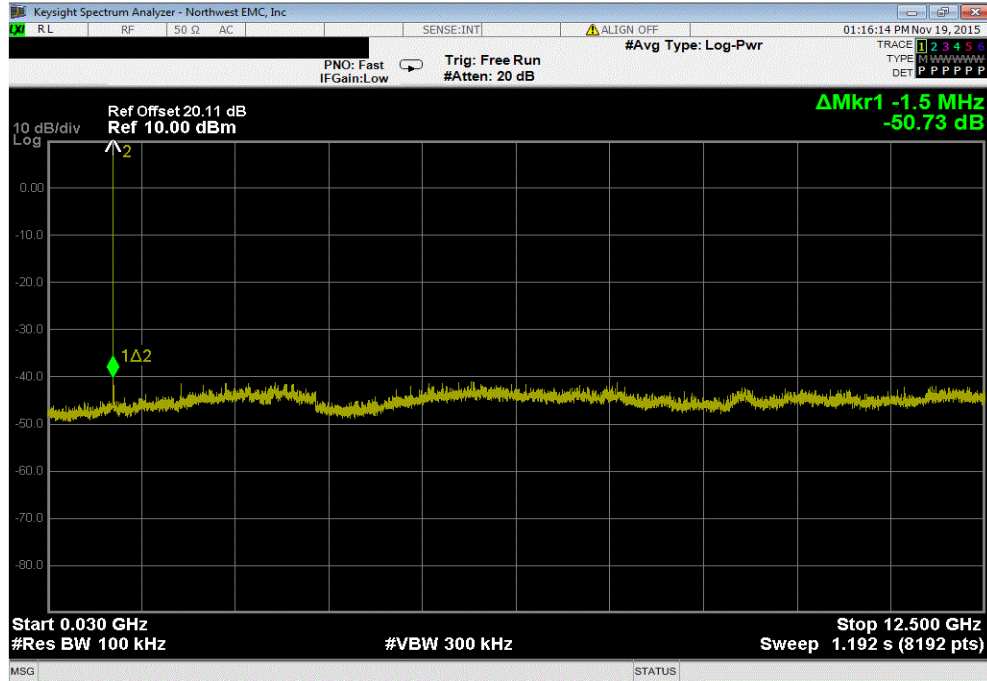
The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet in a no-hop mode. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

SPURIOUS CONDUCTED EMISSIONS

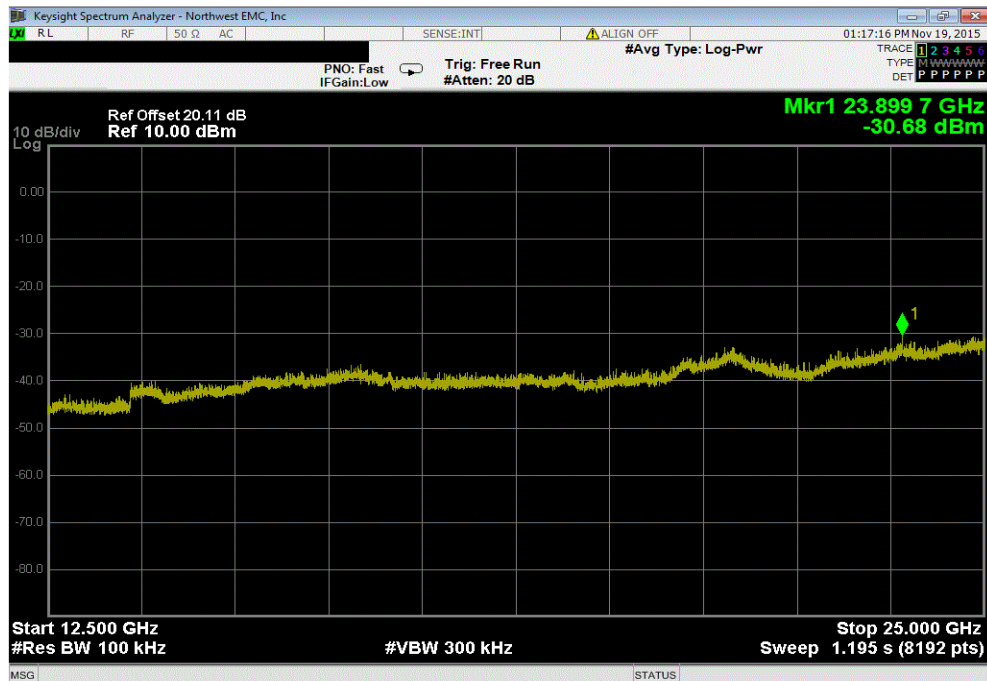
EUT: ERM5220R01		Work Order: HNYW0135	
Serial Number: 06555010000040		Date: 11/20/15	
Customer: Honeywell, Automation and Control Solutions		Temperature: 23°C	
Attendees: None		Humidity: 40%	
Project: None		Barometric Pres.: 30.07	
Tested by: Frank Sun		Power: 24VAC	
Job Site: TX02			
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2015		ANSI C63.10:2013	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature 	
		Frequency Range	Max Value (dBc)
			Limit ≤ (dBc)
			Result
Antenna A			
	Low Channel, 903.0 MHz	30 MHz - 12.5 GHz	-50.73
	Low Channel, 903.0 MHz	12.5 GHz - 25 GHz	-40.83
	Mid Channel, 914.6 MHz	30 MHz - 12.5 GHz	-50.1
	Mid Channel, 914.6 MHz	12.5 GHz - 25 GHz	-39.98
	High Channel, 926.4 MHz	30 MHz - 12.5 GHz	-50.33
	High Channel, 926.4 MHz	12.5 GHz - 25 GHz	-40.05
Antenna B			
	Low Channel, 903.0 MHz	30 MHz - 12.5 GHz	-50.4
	Low Channel, 903.0 MHz	12.5 GHz - 25 GHz	-39.39
	Mid Channel, 914.6 MHz	30 MHz - 12.5 GHz	-51.17
	Mid Channel, 914.6 MHz	12.5 GHz - 25 GHz	-39.41
	High Channel, 926.4 MHz	30 MHz - 12.5 GHz	-50.29
	High Channel, 926.4 MHz	12.5 GHz - 25 GHz	-40.16

SPURIOUS CONDUCTED EMISSIONS

Antenna A, Low Channel, 903.0 MHz				
Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result	
30 MHz - 12.5 GHz	-50.73	-20	Pass	

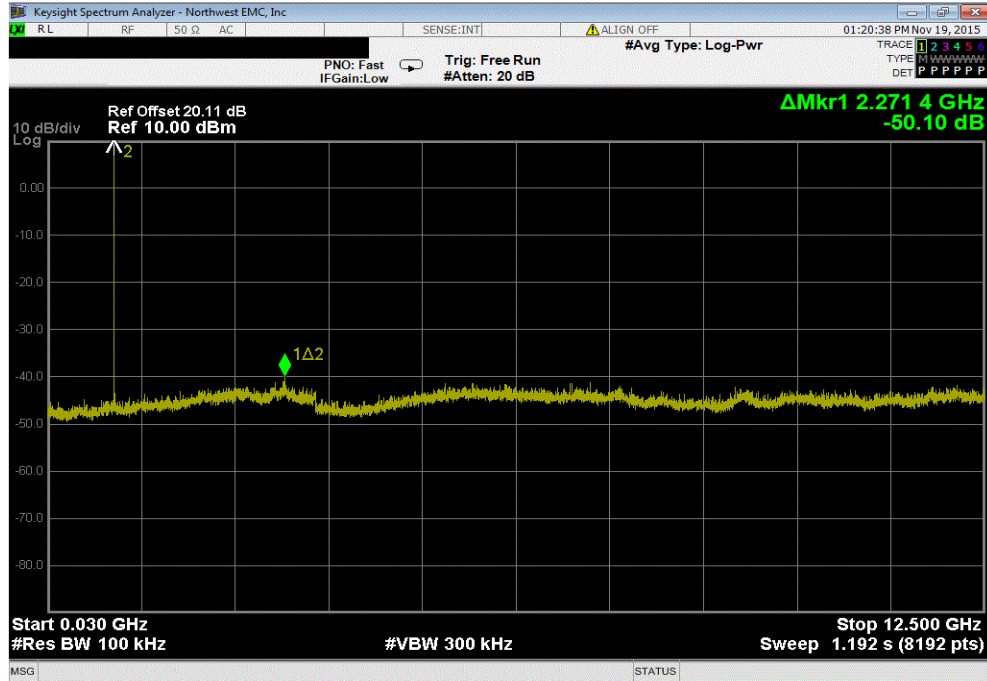


Antenna A, Low Channel, 903.0 MHz				
Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result	
12.5 GHz - 25 GHz	-40.83	-20	Pass	

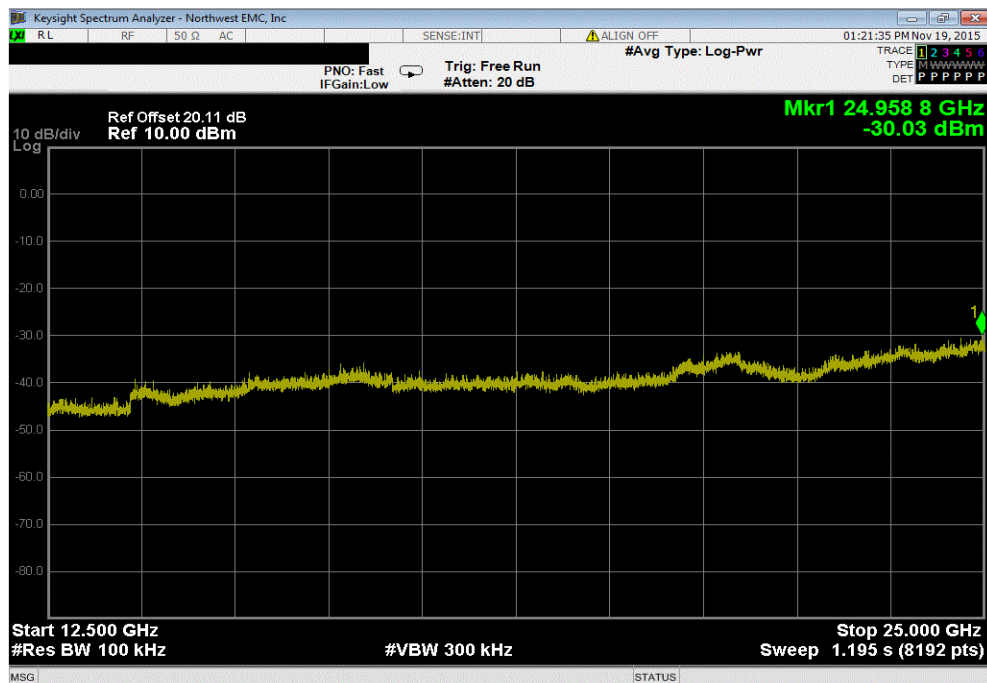


SPURIOUS CONDUCTED EMISSIONS

Antenna A, Mid Channel, 914.6 MHz				
Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result	
30 MHz - 12.5 GHz	-50.1	-20	Pass	

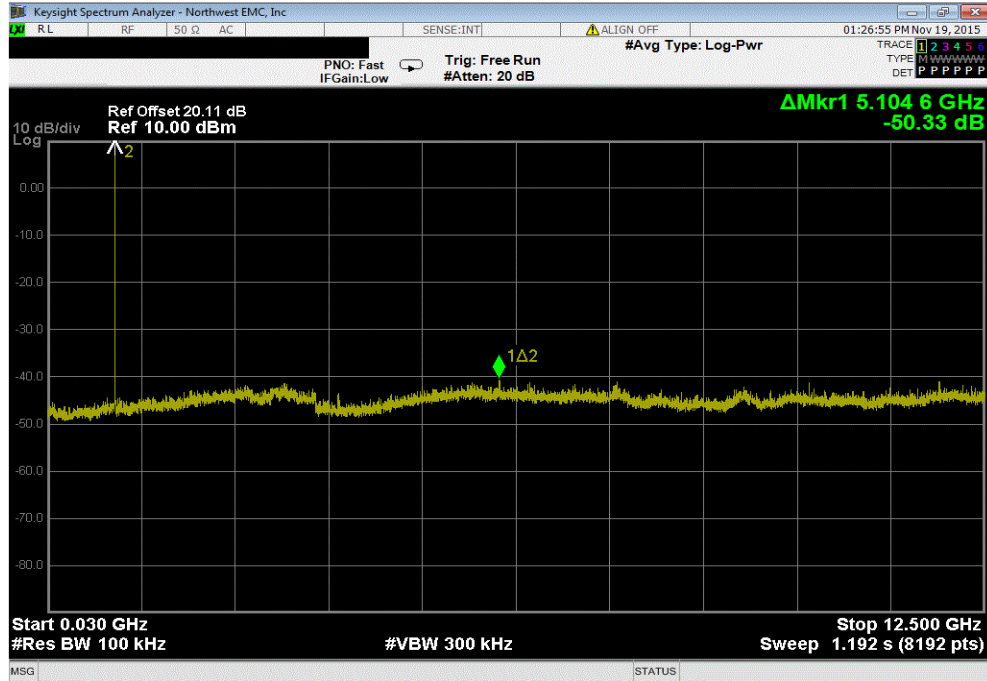


Antenna A, Mid Channel, 914.6 MHz				
Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result	
12.5 GHz - 25 GHz	-39.98	-20	Pass	

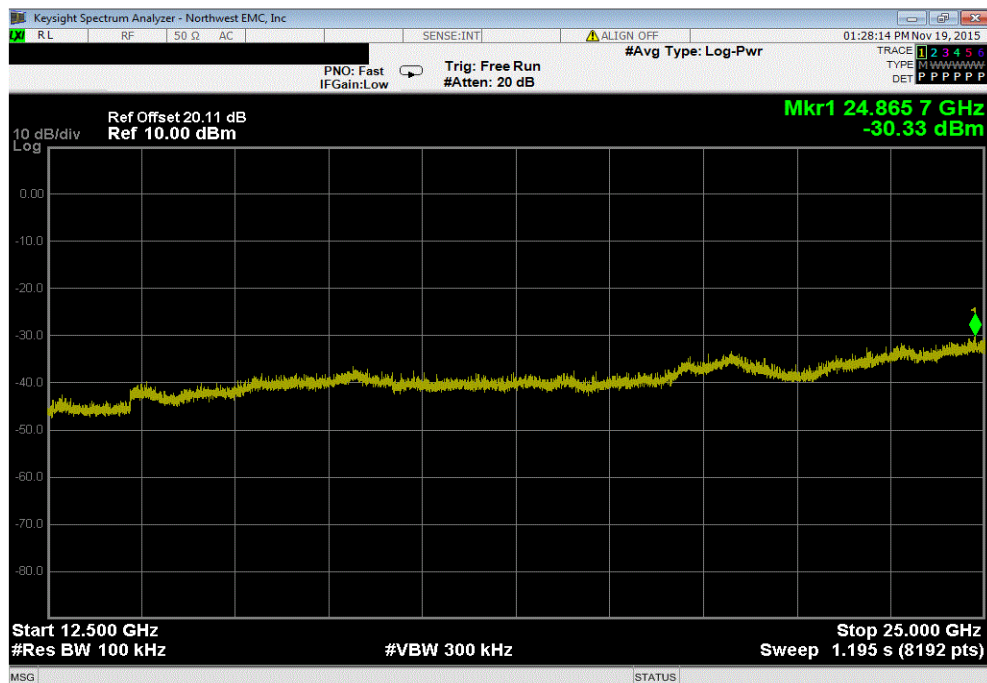


SPURIOUS CONDUCTED EMISSIONS

Antenna A, High Channel, 926.4 MHz				
Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result	
30 MHz - 12.5 GHz	-50.33	-20	Pass	

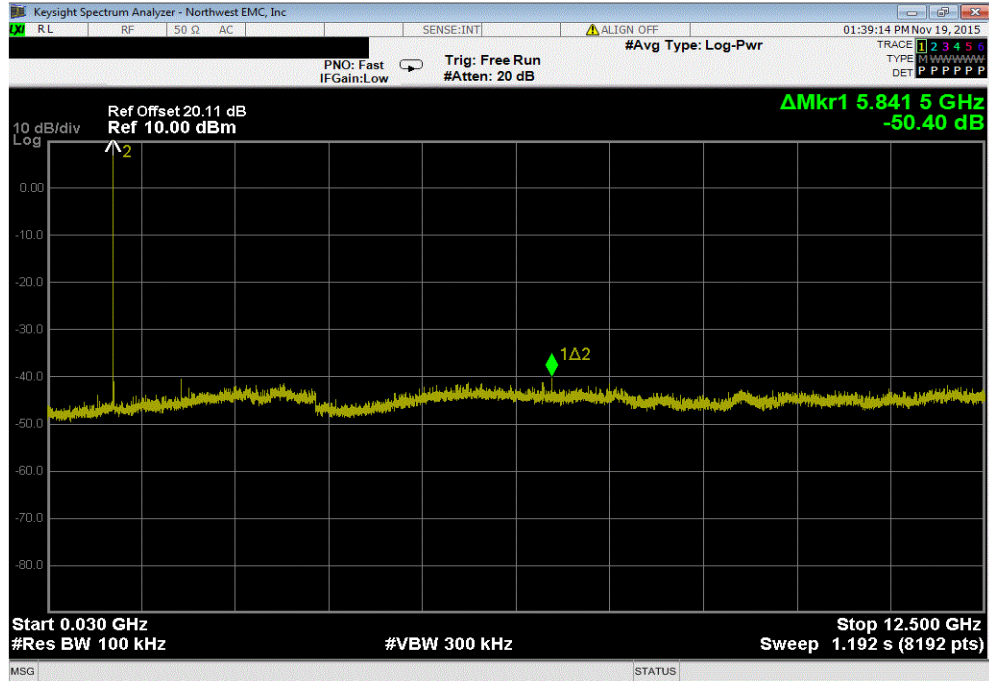


Antenna A, High Channel, 926.4 MHz				
Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result	
12.5 GHz - 25 GHz	-40.05	-20	Pass	

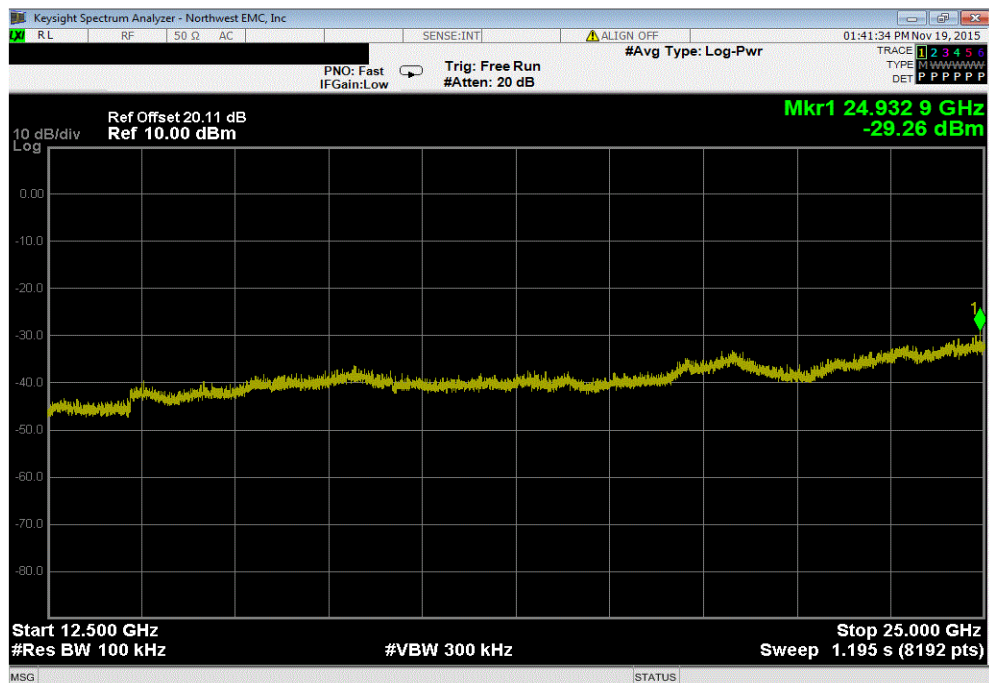


SPURIOUS CONDUCTED EMISSIONS

Antenna B, Low Channel, 903.0 MHz				
Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result	
30 MHz - 12.5 GHz	-50.4	-20	Pass	

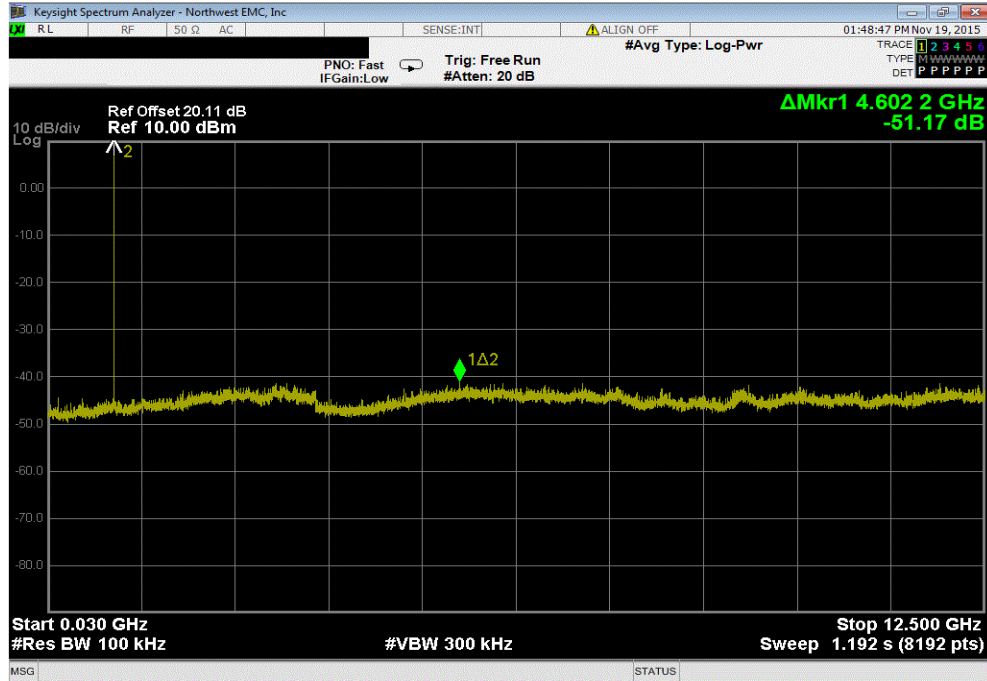


Antenna B, Low Channel, 903.0 MHz				
Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result	
12.5 GHz - 25 GHz	-39.39	-20	Pass	

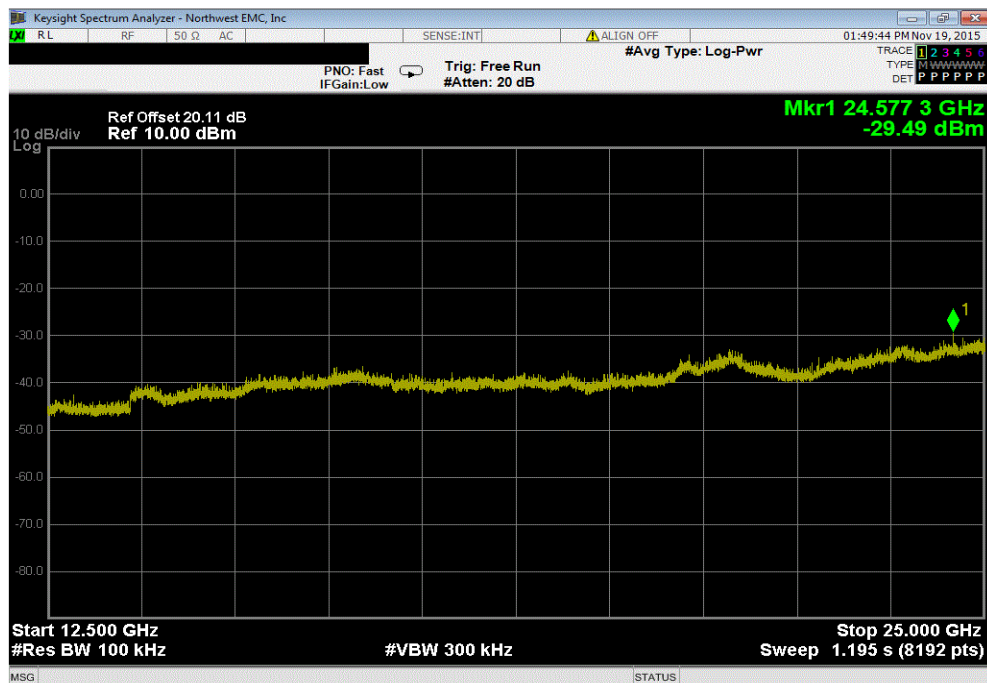


SPURIOUS CONDUCTED EMISSIONS

Antenna B, Mid Channel, 914.6 MHz				
Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result	
30 MHz - 12.5 GHz	-51.17	-20	Pass	

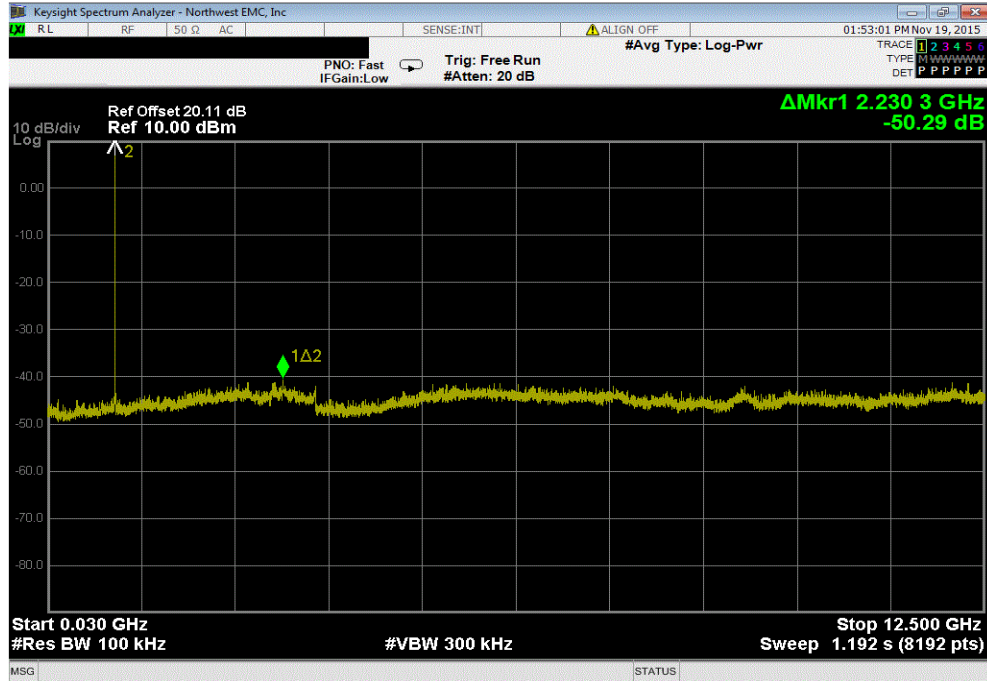


Antenna B, Mid Channel, 914.6 MHz				
Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result	
12.5 GHz - 25 GHz	-39.41	-20	Pass	

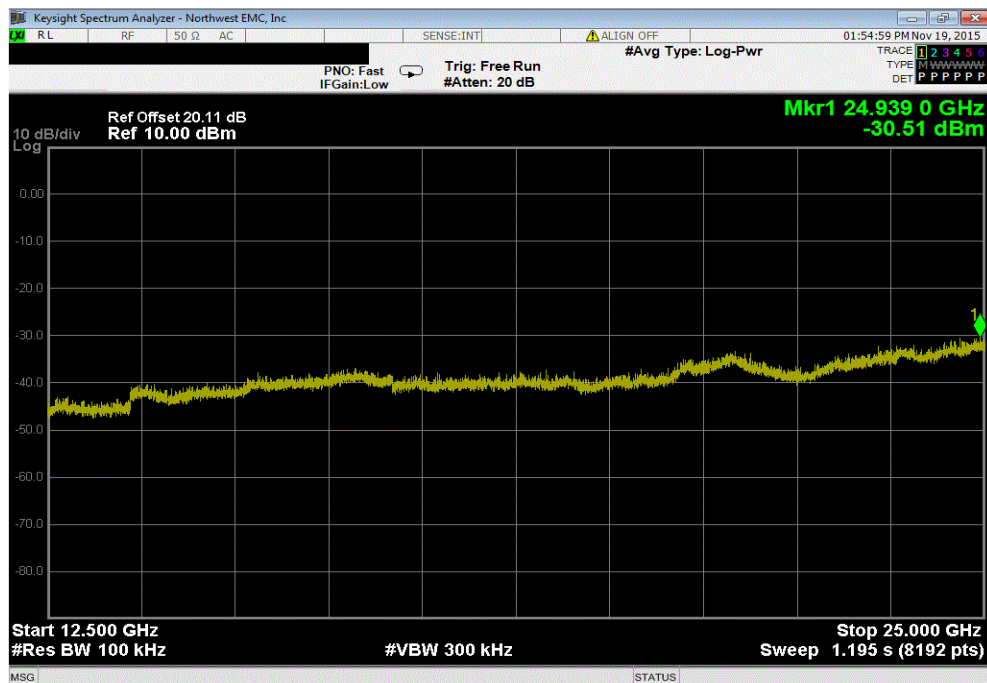


SPURIOUS CONDUCTED EMISSIONS

Antenna B, High Channel, 926.4 MHz				
Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result	
30 MHz - 12.5 GHz	-50.29	-20	Pass	



Antenna B, High Channel, 926.4 MHz				
Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result	
12.5 GHz - 25 GHz	-40.16	-20	Pass	



BAND EDGE COMPLIANCE

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.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Block - DC	Fairview Microwave	SD3379	AMT	11/3/2015	12
Attenuator	Fairview Microwave	SA4018-20	TYE	11/3/2015	12
Generator - Signal	Agilent	N5173B	TIW	7/15/2014	36
Cable 25MHz-40GHz	Fairview Microwave	SCK0963-60	TXF	11/3/2015	12
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	1/28/2015	12

TEST DESCRIPTION

The spurious RF conducted emissions at the edges of the authorized band were measured with the EUT set to low and high transmit frequencies. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet in a no hop mode. The channels closest to the band edges were selected.

The spectrum was scanned below the lower band edge and above the higher band edge.

BAND EDGE COMPLIANCE

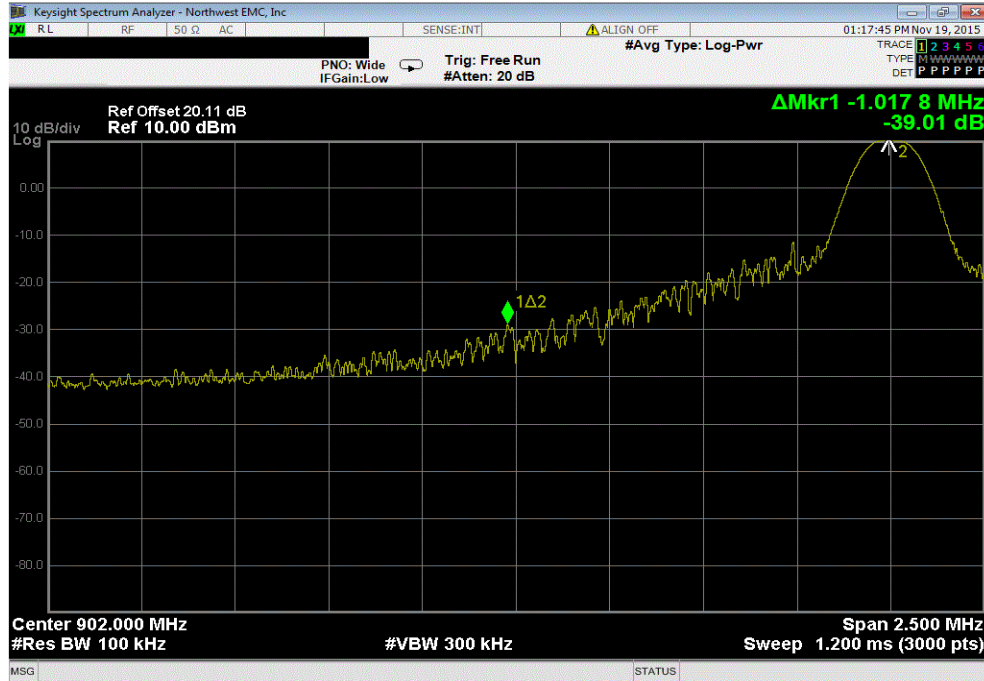


XMR 2015.01.14

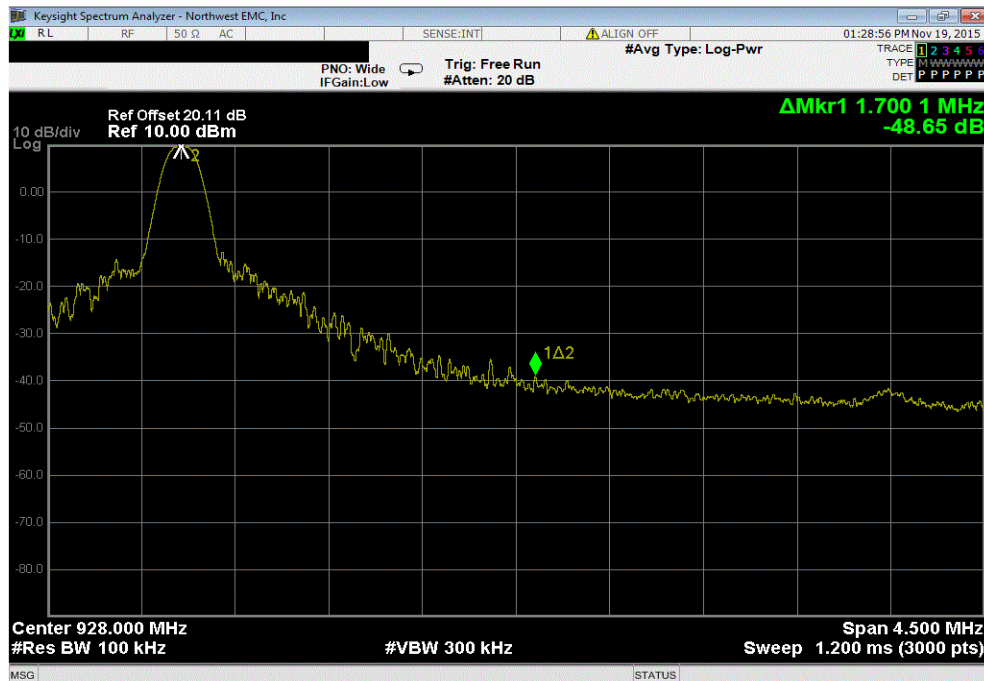
EUT: ERM5220R01		Work Order: HNYW0135	
Serial Number: 06555010000040		Date: 11/20/15	
Customer: Honeywell, Automation and Control Solutions		Temperature: 23°C	
Attendees: None		Humidity: 40%	
Project: None		Barometric Pres.: 30.07	
Tested by: Frank Sun	Power: 24VAC	Job Site: TX02	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2015		ANSI C63.10:2013	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature 	
		Value (dBc)	Limit ≤ (dBc) Result
Antenna A			
	Low Channel, 903.0 MHz	-39.02	-20 Pass
	High Channel, 926.4 MHz	-48.65	-20 Pass
Antenna B			
	Low Channel, 903.0 MHz	-40.11	-20 Pass
	High Channel, 926.4 MHz	-47.23	-20 Pass

BAND EDGE COMPLIANCE

Antenna A, Low Channel, 903.0 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-39.02	-20	Pass

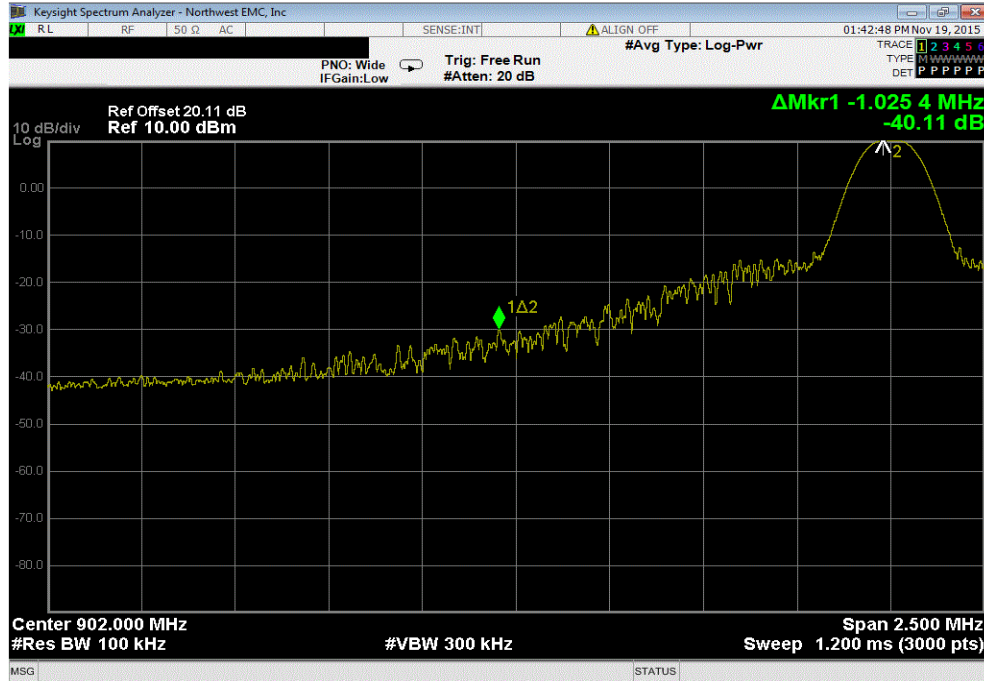


Antenna A, High Channel, 926.4 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-48.65	-20	Pass

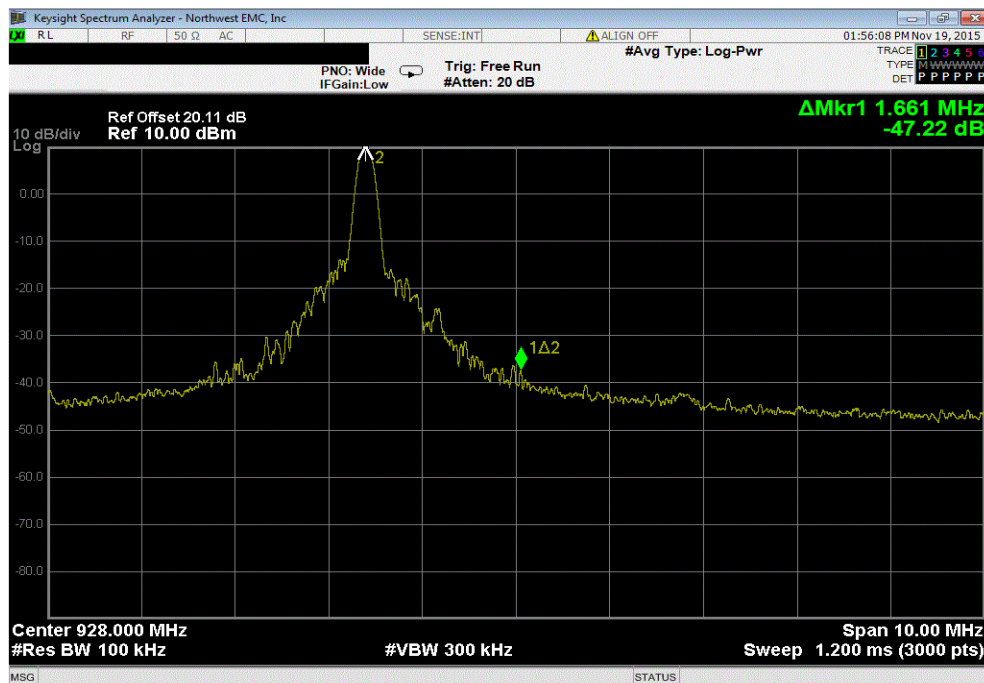


BAND EDGE COMPLIANCE

Antenna B, Low Channel, 903.0 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-40.11	-20	Pass



Antenna B, High Channel, 926.4 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-47.23	-20	Pass



BAND EDGE COMPLIANCE -HOPPING MODE

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.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Generator - Signal	Agilent	N5173B	TIW	7/15/2014	36
Cable 25MHz-40GHz	Fairview Microwave	SCK0963-60	TXF	11/3/2015	12
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	1/28/2015	12
Attenuator	Fairview Microwave	SA4018-20	TYE	11/3/2015	12
Block - DC	Fairview Microwave	SD3379	AMT	11/3/2015	12

TEST DESCRIPTION

The spurious RF conducted emissions at the edges of the authorized band were measured with the EUT set to its normal pseudo-random hopping sequence. The measurement was made using a direct connection between the RF output of the EUT and the spectrum analyzer. The EUT was transmitting at the data rate(s) listed in the datasheet.

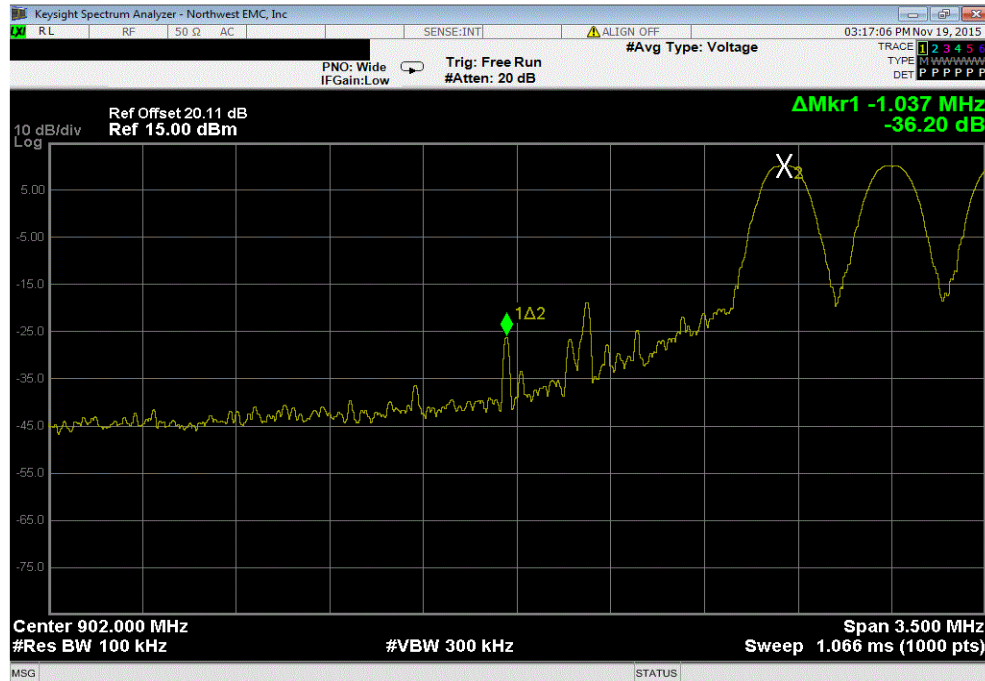
The spectrum was scanned below the lower band edge and above the higher band edge.

BAND EDGE COMPLIANCE -HOPPING MODE

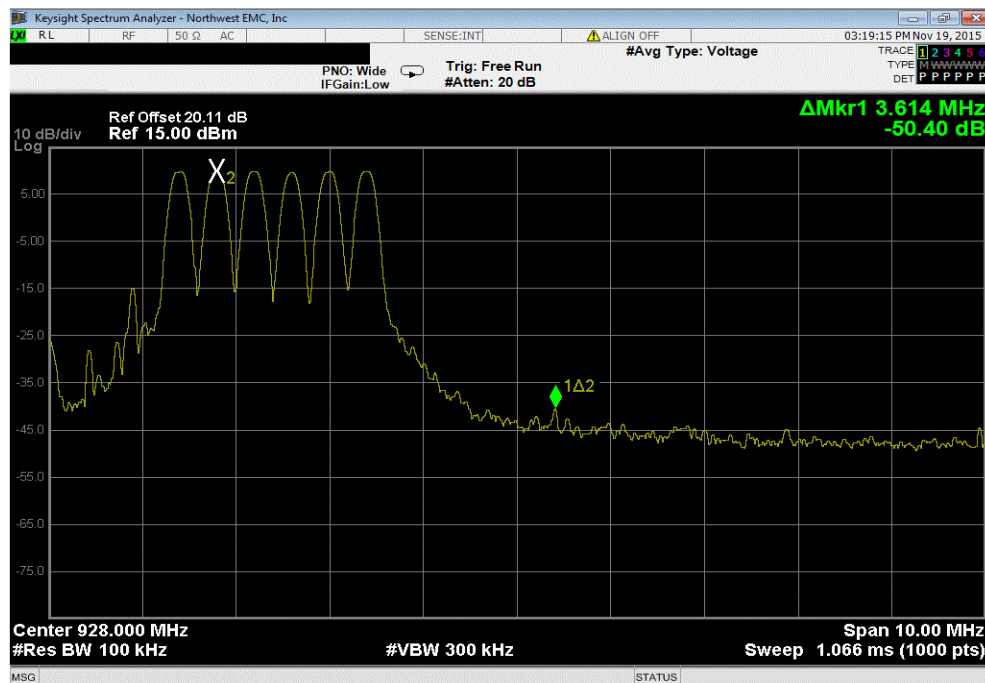
EUT: ERM5220R01		Work Order: HNYW0135	
Serial Number: 06555010000040		Date: 11/20/15	
Customer: Honeywell, Automation and Control Solutions		Temperature: 23°C	
Attendees: None		Humidity: 40%	
Project: None		Barometric Pres.: 30.07	
Tested by: Frank Sun	Power: 24VAC	Job Site: TX02	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2015		ANSI C63.10:2013	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature 	
		Value (dBc)	Limit ≤ (dBc) Result
Antenna A			
	Low Channel, 903 MHz	-36.2	-20 Pass
	High Channel, 926.4 MHz	-50.4	-20 Pass
Antenna B			
	Low Channel, 903 MHz	-43.03	-20 Pass
	High Channel, 926.4 MHz	-47.97	-20 Pass

BAND EDGE COMPLIANCE -HOPPING MODE

Antenna A, Low Channel, 903 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-36.2	-20	Pass

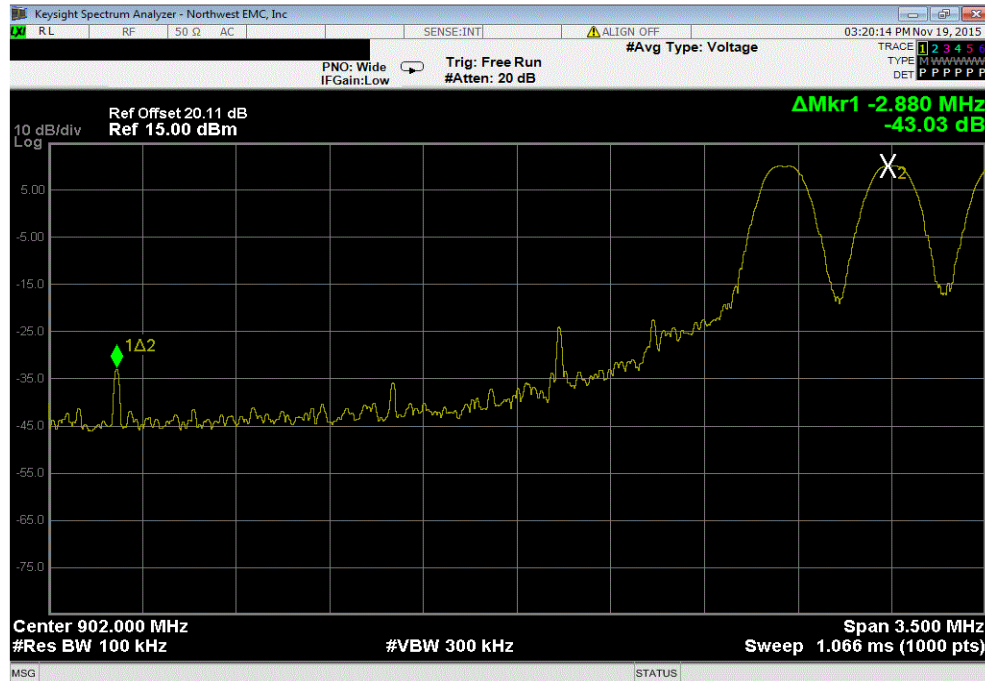


Antenna A, High Channel, 926.4 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-50.4	-20	Pass

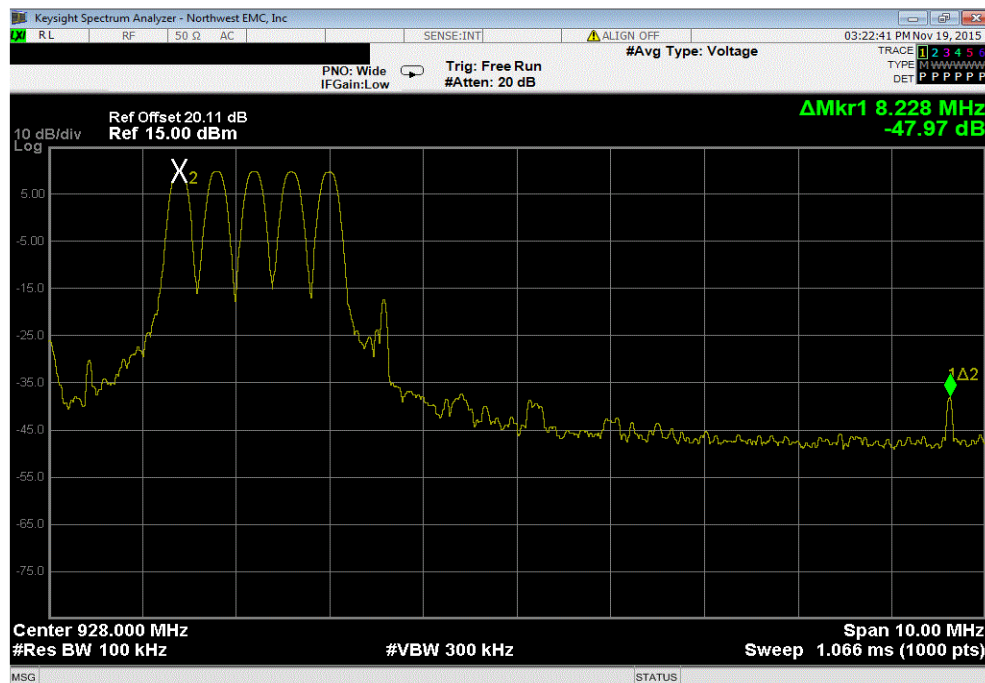


BAND EDGE COMPLIANCE -HOPPING MODE

Antenna B, Low Channel, 903 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-43.03	-20	Pass



Antenna B, High Channel, 926.4 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-47.97	-20	Pass



CHANNEL SPACING

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.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Generator - Signal	Agilent	N5173B	TIW	7/15/2014	36
Cable 25MHz-40GHz	Fairview Microwave	SCK0963-60	TXF	11/3/2015	12
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	1/28/2015	12
Attenuator	Fairview Microwave	SA4018-20	TYE	11/3/2015	12
Block - DC	Fairview Microwave	SD3379	AMT	11/3/2015	12

TEST DESCRIPTION

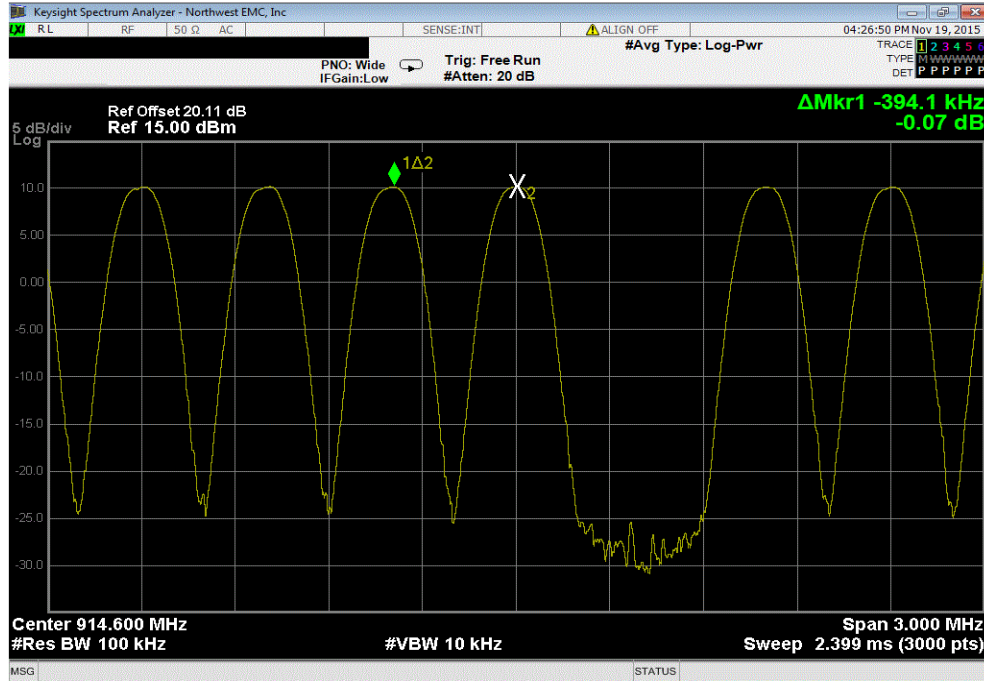
The channel carrier frequencies in the 902-928 MHz band must be separated by 25 kHz or the 20dB bandwidth of the hopping channel, whichever is greater. The EUT was operated in pseudorandom hopping mode. The spectrum was scanned across two adjacent peaks. The separation between the peaks of these channels was measured.

CHANNEL SPACING

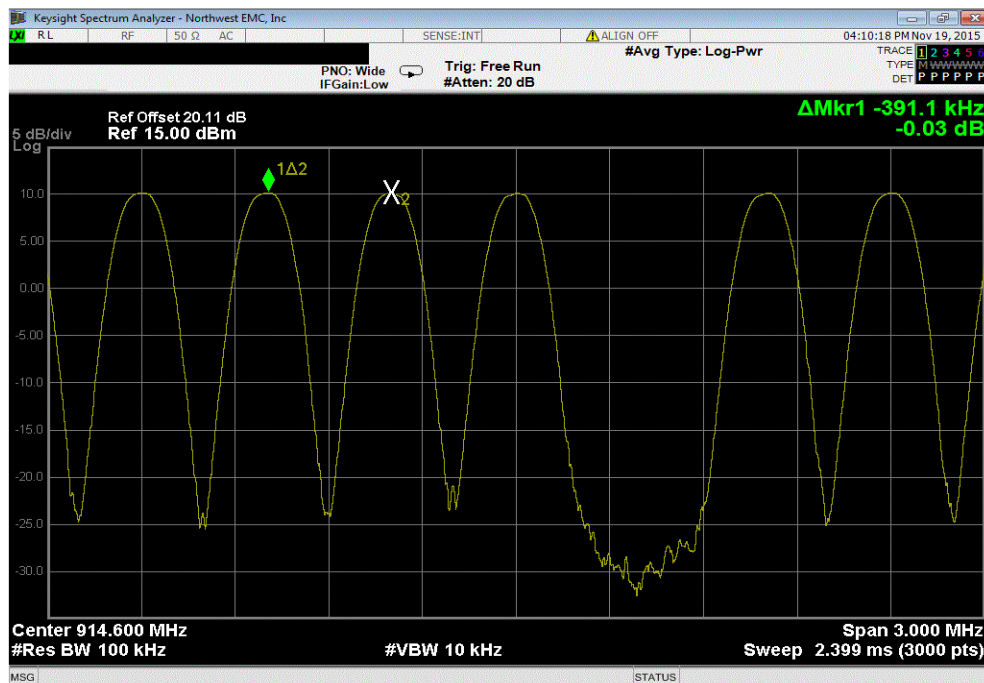
EUT: ERM5220R01		Work Order: HNYW0135	
Serial Number: 06555010000040		Date: 11/20/15	
Customer: Honeywell, Automation and Control Solutions		Temperature: 23°C	
Attendees: None		Humidity: 40%	
Project: None		Barometric Pres.: 30.07	
Tested by: Frank Sun	Power: 24VAC	Job Site: TX02	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2015		ANSI C63.10:2013	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature 	
		Value	Limit (>) Results
Antenna A	Mid Channel, 914.6 MHz	0.4 MHz	65.46 kHz Pass
Antenna B	Mid Channel, 914.6 MHz	0.4 MHz	65.268 kHz Pass

CHANNEL SPACING

Antenna A, Mid Channel, 914.6 MHz						
				Value	Limit (>)	Results
				0.4 MHz	65.46 kHz	Pass



Antenna B, Mid Channel, 914.6 MHz						
				Value	Limit (>)	Results
				0.4 MHz	65.268 kHz	Pass



NUMBER OF HOPPING FREQUENCIES

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.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	1/28/2015	12
Generator - Signal	Agilent	N5173B	TIW	7/15/2014	36
Cable 25MHz-40GHz	Fairview Microwave	SCK0963-60	TXF	11/3/2015	12
Attenuator	Fairview Microwave	SA4018-20	TYE	11/3/2015	12
Block - DC	Fairview Microwave	SD3379	AMT	11/3/2015	12

TEST DESCRIPTION

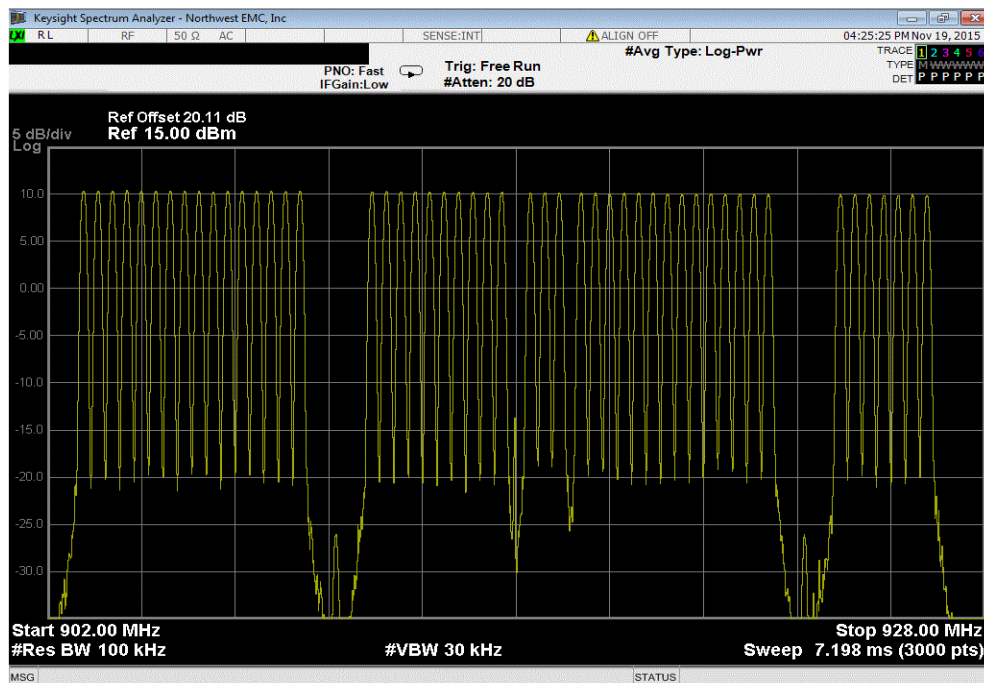
The number of hopping frequencies was measured across the authorized band. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The hopping function of the EUT was enabled.

NUMBER OF HOPPING FREQUENCIES

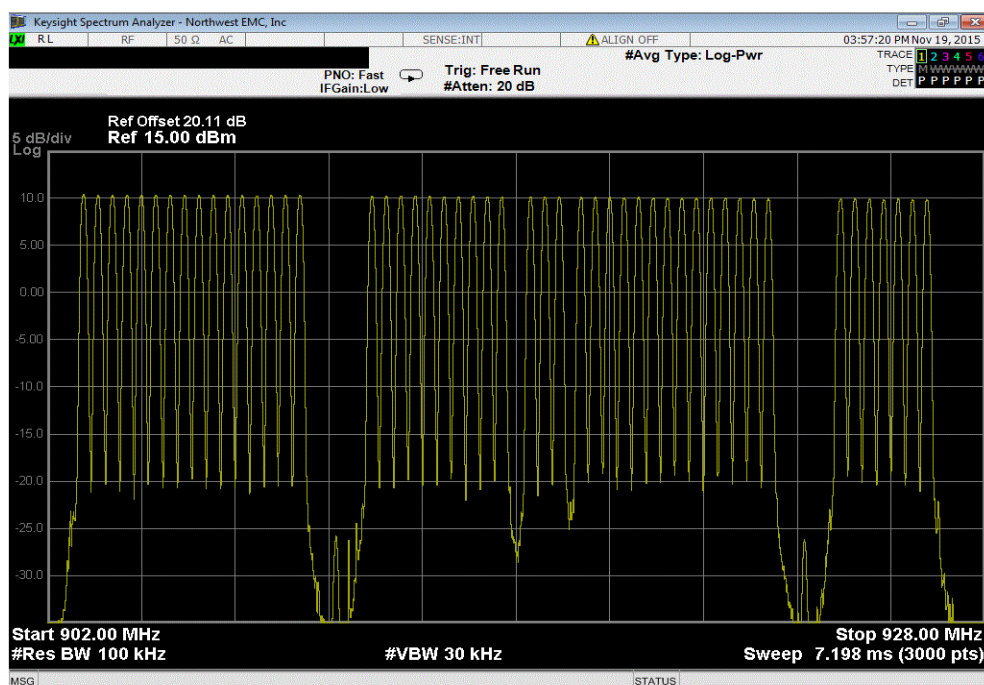
EUT: ERM5220R01		Work Order: HNYW0135	
Serial Number: 06555010000040		Date: 11/20/15	
Customer: Honeywell, Automation and Control Solutions		Temperature: 23°C	
Attendees: None		Humidity: 40%	
Project: None		Barometric Pres.: 30.07	
Tested by: Frank Sun	Power: 24VAC	Job Site: TX02	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2015		ANSI C63.10:2013	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature 	
		Number of Channels	Limit Results
Antenna A	Mid Channel, 914.6 MHz	50	50 Pass
Antenna B	Mid Channel, 914.6 MHz	50	50 Pass

NUMBER OF HOPPING FREQUENCIES

Antenna A, Mid Channel, 914.6 MHz						
				Number of Channels	Limit	Results
				50	50	Pass



Antenna B, Mid Channel, 914.6 MHz						
				Number of Channels	Limit	Results
				50	50	Pass



DWELL TIME

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.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Generator - Signal	Agilent	N5173B	TIW	7/15/2014	36
Cable 25MHz-40GHz	Fairview Microwave	SCK0963-60	TXF	11/3/2015	12
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	1/28/2015	12
Attenuator	Fairview Microwave	SA4018-20	TYE	11/3/2015	12
Block - DC	Fairview Microwave	SD3379	AMT	11/3/2015	12

TEST DESCRIPTION

The average dwell time per hopping channel was measured at one hopping channel in the middle of the authorized band. The measurements were made using a direct connection between the RF output of the EUT and the spectrum analyzer. The hopping function of the EUT was enabled.

The dwell time limit is based on the Number of Hopping Channels * 400 mS. This would be 50 Channels * 400mS = 20 Sec.

➤ On Time During 20 Sec = Pulse Width * Scale Factor

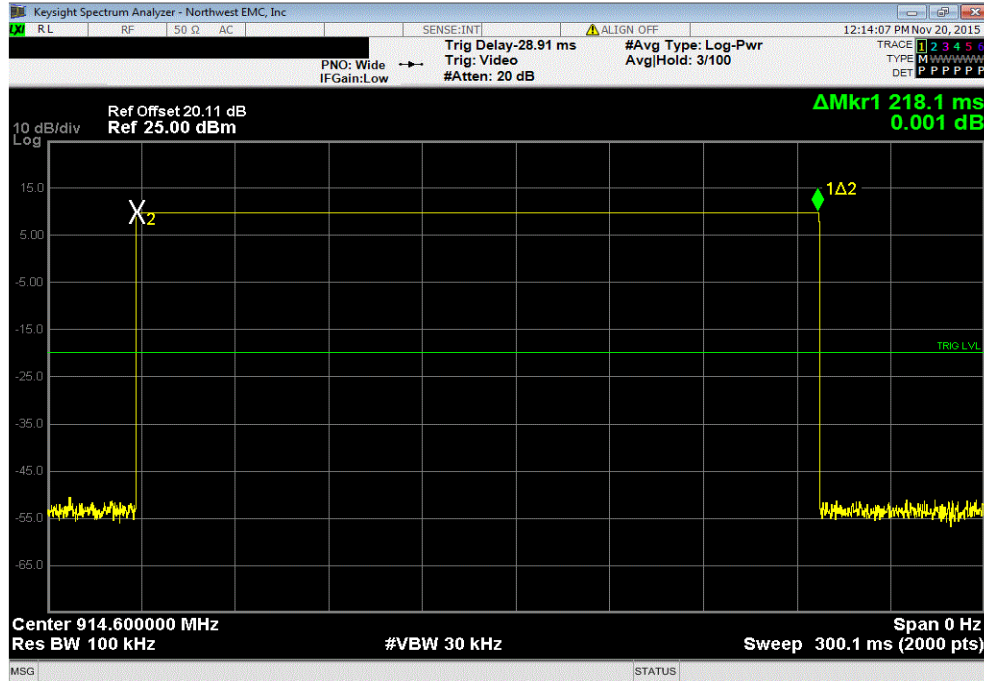
➤ Scale Factor = 20 Sec / Screen Capture Sweep Time = 20 Sec / 20 Sec = 1

DWELL TIME

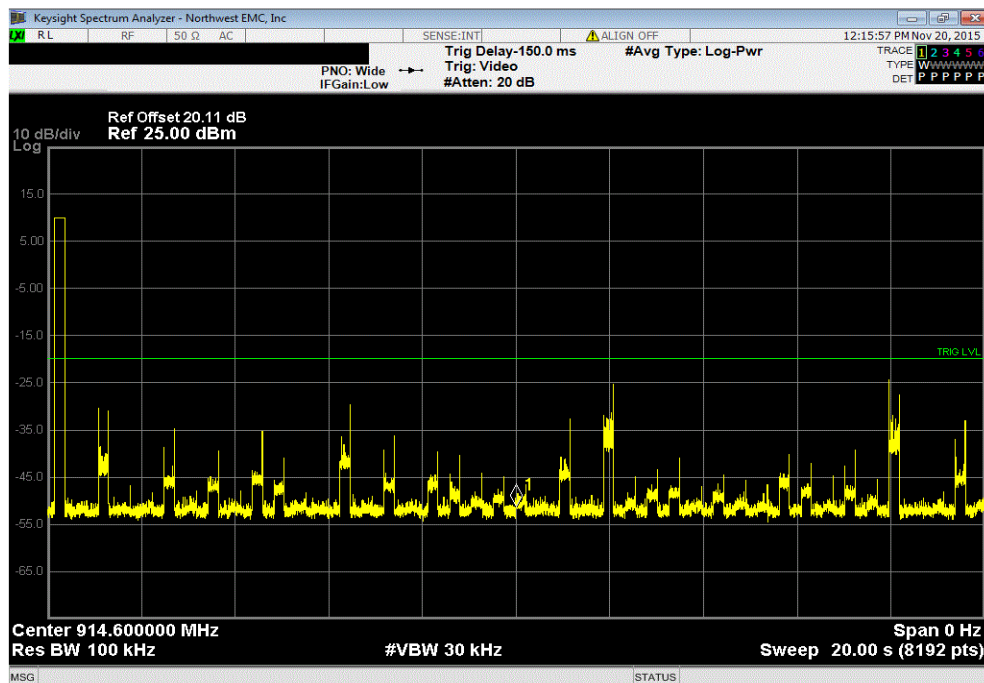
EUT: ERM5220R01		Work Order: HNYW0135	
Serial Number: 06555010000040		Date: 11/20/15	
Customer: Honeywell, Automation and Control Solutions		Temperature: 23°C	
Attendees: None		Humidity: 40%	
Project: None		Barometric Pres.: 30.07	
Tested by: Frank Sun	Power: 24VAC	Job Site: TX02	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2015		ANSI C63.10:2013	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature 	
		Pulse Width (ms)	Number of Pulses
		Average No. of Pulses	Scale Factor
		On Time (ms) During 20 s	Limit (ms)
			Results
Antenna A			
	Mid Channel, 914.6 MHz	218.144	N/A
	Mid Channel, 914.6 MHz	218.144	1
			1
			N/A
			218.144
			400
			N/A
			Pass
Antenna B			
	Mid Channel, 914.6 MHz	218.294	N/A
	Mid Channel, 914.6 MHz	218.294	1
			1
			N/A
			218.294
			400
			N/A
			Pass

DWELL TIME

Antenna A, Mid Channel, 914.6 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 20 s	Limit (ms)	Results
218.144	N/A	N/A	N/A	N/A	N/A	N/A

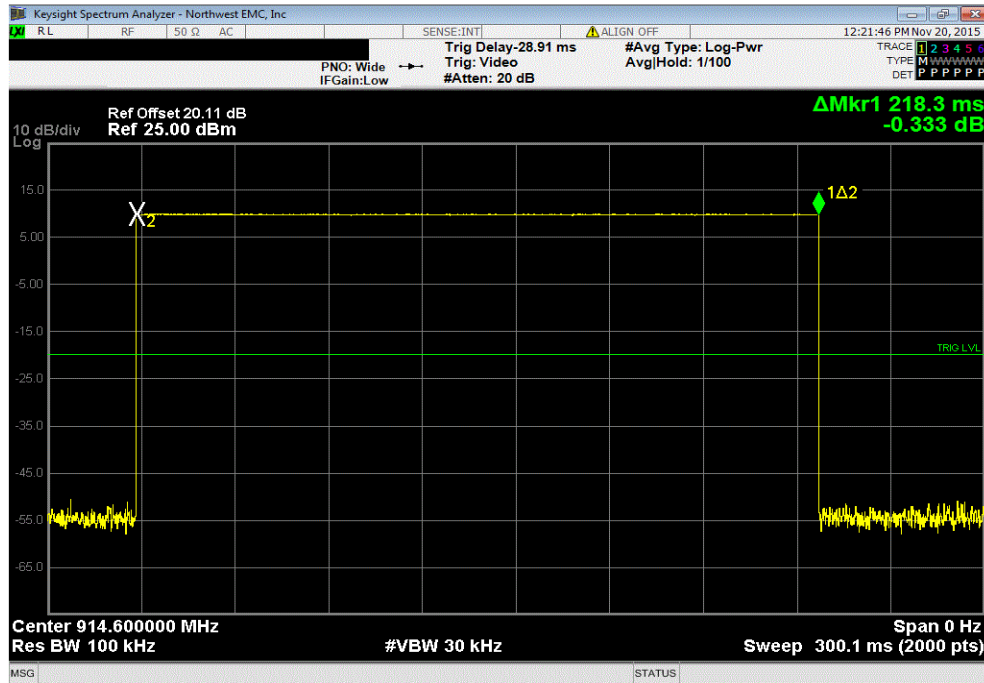


Antenna A, Mid Channel, 914.6 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 20 s	Limit (ms)	Results
218.144	1	1	1	218.144	400	Pass

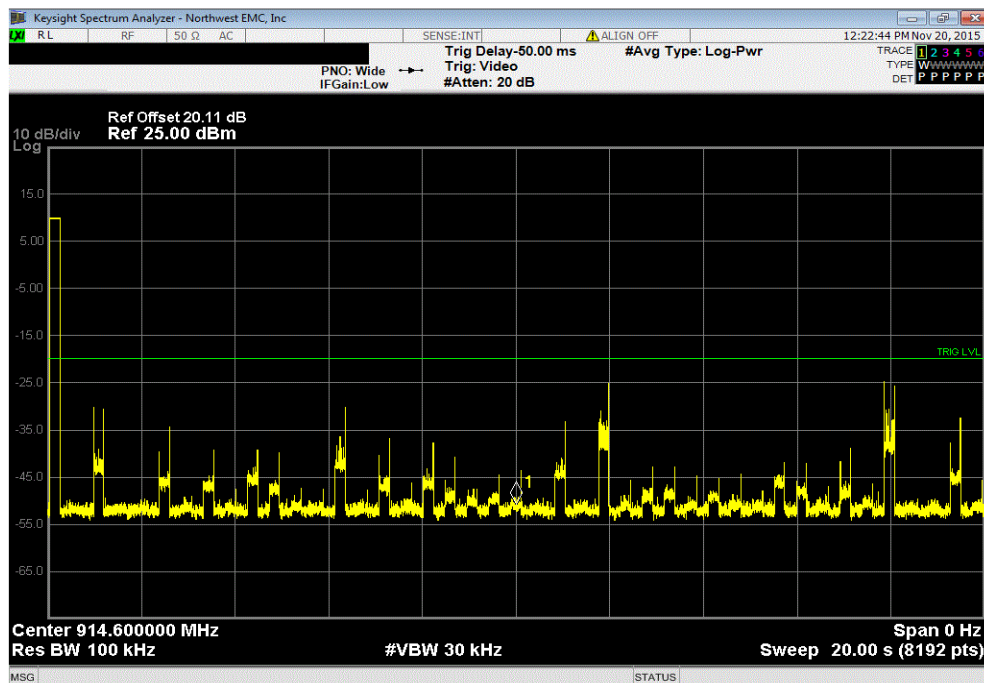


DWELL TIME

Antenna B, Mid Channel, 914.6 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 20 s	Limit (ms)	Results
218.294	N/A	N/A	N/A	N/A	N/A	N/A



Antenna B, Mid Channel, 914.6 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 20 s	Limit (ms)	Results
218.294	1	1	1	218.294	400	Pass



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 Antenna B, Low, Mid, High Channel (903.0, 914.6, 926.4 MHz).

Transmitting Antenna A, Low, Mid, High Channel (903.0, 914.6, 926.4 MHz).

POWER SETTINGS INVESTIGATED

24VAC

CONFIGURATIONS INVESTIGATED

HNYW0135 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	10 GHz
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SAMPLE CALCULATIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	PAK	10/22/2015	12 mo
Cable	Northwest EMC	8-18GHz	TXD	10/21/2015	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AJF	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	PAJ	9/18/2015	12 mo
Cable	Northwest EMC	1-8.2 GHz	TXC	10/21/2015	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AJL	9/15/2014	24 mo
Filter - High Pass	Micro-Tronics	HPM50111	HHX	8/11/2015	12 mo
Attenuator	Fairview Microwave	SA18H-10	TKP	NCR	0 mo
Filter - Low Pass	Micro-Tronics	LPM50003	HHT	8/11/2015	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1551	PAH	9/18/2015	12 mo
Cable	Northwest EMC	RE 9kHz - 1GHz	TXB	9/18/2015	12 mo
Antenna - Biconilog	ETS Lindgren	3143B	AYF	4/7/2014	24 mo
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFM	1/28/2015	12 mo

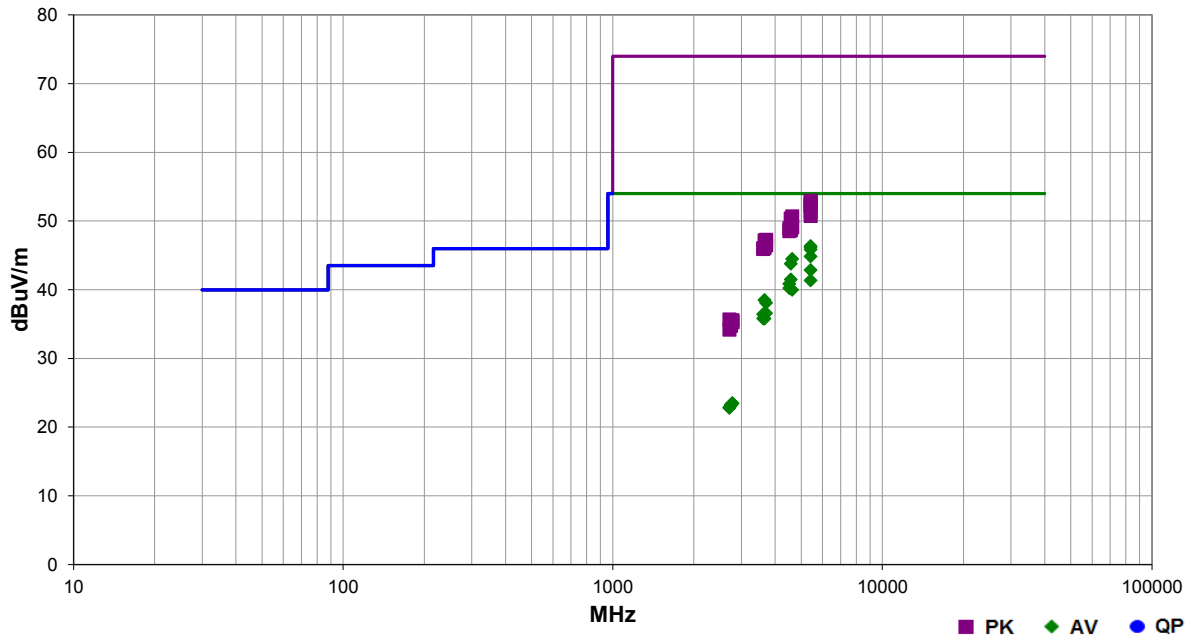
TEST DESCRIPTION

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.

Work Order:	HNW0135	Date:	11/17/15	
Project:	None	Temperature:	24.2 °C	
Job Site:	TX02	Humidity:	45.1% RH	
Serial Number:	06555010000021	Barometric Pres.:	1007 mbar	Tested by: Jonathan Kiefer
EUT:	ERM5220R01			
Configuration:	2			
Customer:	Honeywell, Automation and Control Solutions			
Attendees:	None			
EUT Power:	24VAC			
Operating Mode:	Transmitting Antenna A, Low, Mid, High Channel (903.0, 914.6, 926.4 MHz).			
Deviations:	None			
Comments:	None			

Test Specifications	N/A	Test Method	
FCC 15.247:2015		ANSI C63.10:2013	

Run #	31	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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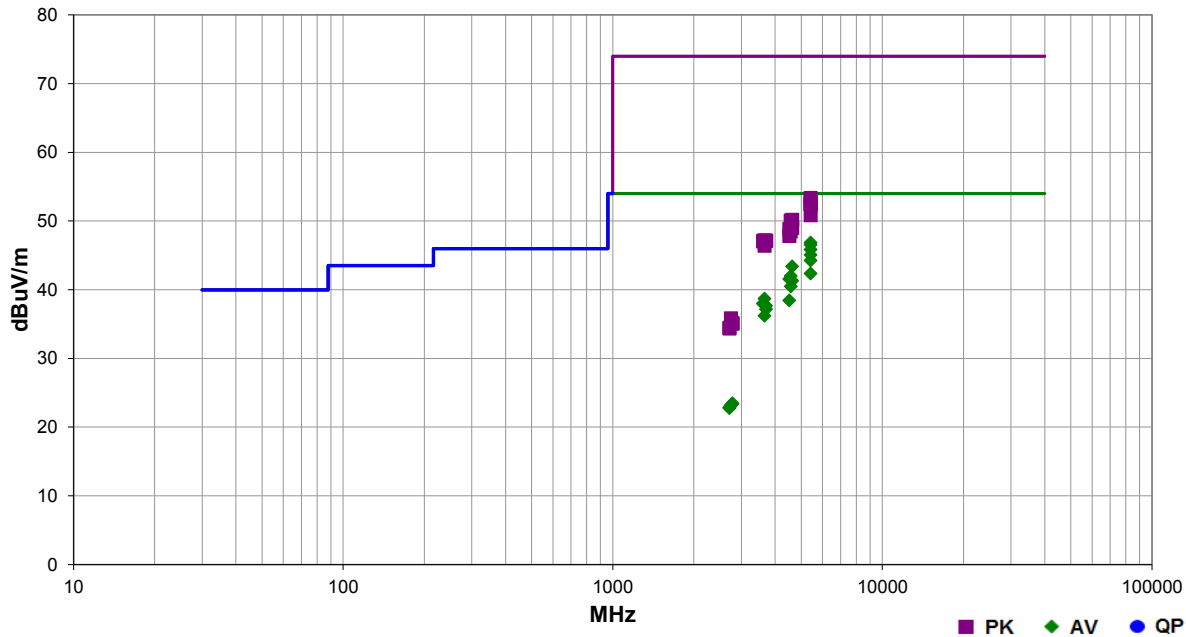
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
5417.983	38.7	7.7	1.7	0.0	3.0	0.0	Horz	AV	0.0	46.4	54.0	-7.6	Low Ch, EUT Vert
5417.958	38.5	7.7	2.0	246.0	3.0	0.0	Horz	AV	0.0	46.2	54.0	-7.8	Low Ch, EUT Horz
5417.983	38.2	7.7	1.1	133.0	3.0	0.0	Vert	AV	0.0	45.9	54.0	-8.1	Low Ch, EUT Horz
5417.933	37.2	7.7	1.3	244.9	3.0	0.0	Vert	AV	0.0	44.9	54.0	-9.1	Low Ch, EUT On Side
4631.925	39.4	5.1	1.6	358.9	3.0	0.0	Horz	AV	0.0	44.5	54.0	-9.5	High Ch, EUT Vert
4572.983	39.0	4.8	1.8	18.0	3.0	0.0	Horz	AV	0.0	43.8	54.0	-10.2	Mid Ch, EUT Vert
5417.942	35.2	7.7	1.3	195.9	3.0	0.0	Horz	AV	0.0	42.9	54.0	-11.1	Low Ch, EUT On Side
4572.958	36.7	4.8	3.5	124.9	3.0	0.0	Vert	AV	0.0	41.5	54.0	-12.5	Mid Ch, EUT Horz
5417.958	33.7	7.7	1.0	213.0	3.0	0.0	Vert	AV	0.0	41.4	54.0	-12.6	Low Ch, EUT Vert
4515.000	36.2	4.6	1.3	99.0	3.0	0.0	Horz	AV	0.0	40.8	54.0	-13.2	Low Ch, EUT Vert
4514.967	35.6	4.6	2.9	123.9	3.0	0.0	Vert	AV	0.0	40.2	54.0	-13.8	Low Ch, EUT Horz
4631.933	34.9	5.1	1.3	115.0	3.0	0.0	Vert	AV	0.0	40.0	54.0	-14.0	High Ch, EUT Horz
3658.358	35.5	3.0	1.3	162.0	3.0	0.0	Vert	AV	0.0	38.5	54.0	-15.5	Mid Ch, EUT Horz
3705.575	34.8	3.3	3.1	322.9	3.0	0.0	Horz	AV	0.0	38.1	54.0	-15.9	High Ch, EUT Vert
3705.558	33.3	3.3	1.3	127.0	3.0	0.0	Vert	AV	0.0	36.6	54.0	-17.4	High Ch, EUT Horz
3611.983	33.7	2.7	1.3	172.9	3.0	0.0	Vert	AV	0.0	36.4	54.0	-17.6	Low Ch, EUT Horz
3611.975	33.1	2.7	1.3	254.0	3.0	0.0	Horz	AV	0.0	35.8	54.0	-18.2	Low Ch, EUT Vert
3658.450	32.8	3.0	1.3	171.9	3.0	0.0	Horz	AV	0.0	35.8	54.0	-18.2	Mid Ch, EUT Vert
5417.742	45.3	7.7	2.0	246.0	3.0	0.0	Horz	PK	0.0	53.0	74.0	-21.0	Low Ch, EUT Horz
5418.008	45.2	7.7	1.7	0.0	3.0	0.0	Horz	PK	0.0	52.9	74.0	-21.1	Low Ch, EUT Vert
5418.225	44.7	7.7	1.1	133.0	3.0	0.0	Vert	PK	0.0	52.4	74.0	-21.6	Low Ch, EUT Horz
5417.542	44.5	7.7	1.3	244.9	3.0	0.0	Vert	PK	0.0	52.2	74.0	-21.8	Low Ch, EUT On Side

5417.683	43.7	7.7	1.3	195.9	3.0	0.0	Horz	PK	0.0	51.4	74.0	-22.6	Low Ch, EUT On Side
5417.758	43.1	7.7	1.0	213.0	3.0	0.0	Vert	PK	0.0	50.8	74.0	-23.2	Low Ch, EUT Vert
4631.933	45.6	5.1	1.6	358.9	3.0	0.0	Horz	PK	0.0	50.7	74.0	-23.3	High Ch, EUT Vert
4572.883	45.6	4.8	1.8	18.0	3.0	0.0	Horz	PK	0.0	50.4	74.0	-23.6	Mid Ch, EUT Vert
4632.208	44.0	5.1	1.3	115.0	3.0	0.0	Vert	PK	0.0	49.1	74.0	-24.9	High Ch, EUT Horz
4514.742	44.3	4.6	1.3	99.0	3.0	0.0	Horz	PK	0.0	48.9	74.0	-25.1	Low Ch, EUT Vert
4573.042	43.9	4.8	3.5	124.9	3.0	0.0	Vert	PK	0.0	48.7	74.0	-25.3	Mid Ch, EUT Horz
4515.075	43.9	4.6	2.9	123.9	3.0	0.0	Vert	PK	0.0	48.5	74.0	-25.5	Low Ch, EUT Horz
3705.400	44.0	3.3	3.1	322.9	3.0	0.0	Horz	PK	0.0	47.3	74.0	-26.7	High Ch, EUT Vert
3657.942	44.2	3.0	1.3	162.0	3.0	0.0	Vert	PK	0.0	47.2	74.0	-26.8	Mid Ch, EUT Horz
3705.200	43.2	3.3	1.3	127.0	3.0	0.0	Vert	PK	0.0	46.5	74.0	-27.5	High Ch, EUT Horz
3658.433	43.1	3.0	1.3	171.9	3.0	0.0	Horz	PK	0.0	46.1	74.0	-27.9	Mid Ch, EUT Vert
3613.217	43.3	2.7	1.3	254.0	3.0	0.0	Horz	PK	0.0	46.0	74.0	-28.0	Low Ch, EUT Vert
3611.450	43.2	2.7	1.3	172.9	3.0	0.0	Vert	PK	0.0	45.9	74.0	-28.1	Low Ch, EUT Horz
2780.708	26.3	-2.8	1.3	246.0	3.0	0.0	Vert	AV	0.0	23.5	54.0	-30.5	High Ch, EUT Horz
2779.200	26.3	-2.9	1.3	193.0	3.0	0.0	Horz	AV	0.0	23.5	54.0	-30.6	High Ch, EUT Vert
2743.492	26.3	-3.0	1.3	244.9	3.0	0.0	Horz	AV	0.0	23.3	54.0	-30.7	Mid Ch, EUT Vert
2741.725	26.2	-3.1	1.3	38.0	3.0	0.0	Vert	AV	0.0	23.1	54.0	-30.9	Mid Ch, EUT Horz
2706.650	26.2	-3.3	1.3	195.0	3.0	0.0	Horz	AV	0.0	22.9	54.0	-31.1	Low Ch, EUT Vert
2709.033	26.1	-3.3	1.3	91.0	3.0	0.0	Vert	AV	0.0	22.8	54.0	-31.2	Low Ch, EUT Horz
2709.017	39.0	-3.3	1.3	195.0	3.0	0.0	Horz	PK	0.0	35.7	74.0	-38.3	Low Ch, EUT Vert
2778.475	38.4	-2.9	1.3	193.0	3.0	0.0	Horz	PK	0.0	35.5	74.0	-38.5	High Ch, EUT Vert
2781.225	38.1	-2.8	1.3	246.0	3.0	0.0	Vert	PK	0.0	35.3	74.0	-38.7	High Ch, EUT Horz
2744.742	38.2	-3.0	1.3	244.9	3.0	0.0	Horz	PK	0.0	35.2	74.0	-38.8	Mid Ch, EUT Vert
2743.308	37.8	-3.1	1.3	38.0	3.0	0.0	Vert	PK	0.0	34.7	74.0	-39.3	Mid Ch, EUT Horz
2708.892	37.5	-3.3	1.3	91.0	3.0	0.0	Vert	PK	0.0	34.2	74.0	-39.8	Low Ch, EUT Horz

Work Order:	HNW0135	Date:	11/17/15		
Project:	None	Temperature:	24.2 °C		
Job Site:	TX02	Humidity:	45.1% RH		
Serial Number:	06555010000021	Barometric Pres.:	1007 mbar	Tested by:	Jonathan Kiefer
EUT:	ERM5220R01				
Configuration:	2				
Customer:	Honeywell, Automation and Control Solutions				
Attendees:	None				
EUT Power:	24VAC				
Operating Mode:	Transmitting Antenna B, Low, Mid, High Channel (903.0, 914.6, 926.4 MHz).				
Deviations:	None				
Comments:	None				

Test Specifications	N/A	Test Method	
FCC 15.247:2015		ANSI C63.10:2013	

Run #	34	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	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
5417.925	39.2	7.7	1.3	343.0	3.0	0.0	Horz	AV	0.0	46.9	54.0	-7.1	Low Ch, EUT Vert
5417.950	38.9	7.7	1.0	117.0	3.0	0.0	Vert	AV	0.0	46.6	54.0	-7.4	Low Ch, EUT Horz
5417.967	38.2	7.7	1.3	252.0	3.0	0.0	Horz	AV	0.0	45.9	54.0	-8.1	Low Ch, EUT Horz
5417.942	37.4	7.7	1.0	151.0	3.0	0.0	Vert	AV	0.0	45.1	54.0	-8.9	Low Ch, EUT On Side
5417.967	36.6	7.7	1.3	243.9	3.0	0.0	Horz	AV	0.0	44.3	54.0	-9.7	Low Ch, EUT On Side
4631.908	38.3	5.1	2.9	336.0	3.0	0.0	Horz	AV	0.0	43.4	54.0	-10.6	High Ch, EUT Vert
5418.017	34.7	7.7	1.3	50.0	3.0	0.0	Vert	AV	0.0	42.4	54.0	-11.6	Low Ch, EUT Vert
4572.950	37.2	4.8	2.8	333.0	3.0	0.0	Horz	AV	0.0	42.0	54.0	-12.0	Mid Ch, EUT Vert
4514.992	36.9	4.6	1.4	78.0	3.0	0.0	Horz	AV	0.0	41.5	54.0	-12.5	Low Ch, EUT Vert
4631.983	36.2	5.1	1.3	122.0	3.0	0.0	Vert	AV	0.0	41.3	54.0	-12.7	High Ch, EUT Horz
4572.933	35.7	4.8	3.6	128.0	3.0	0.0	Vert	AV	0.0	40.5	54.0	-13.5	Mid Ch, EUT Horz
3658.342	35.7	3.0	3.0	352.9	3.0	0.0	Horz	AV	0.0	38.7	54.0	-15.3	Mid Ch, EUT Vert
4514.975	33.8	4.6	1.3	162.0	3.0	0.0	Vert	AV	0.0	38.4	54.0	-15.6	Low Ch, EUT Horz
3611.950	35.3	2.7	1.5	170.0	3.0	0.0	Vert	AV	0.0	38.0	54.0	-16.0	Low Ch, EUT Horz
3611.983	35.2	2.7	1.7	336.0	3.0	0.0	Horz	AV	0.0	37.9	54.0	-16.1	Low Ch, EUT Vert
3705.567	34.4	3.3	1.8	220.9	3.0	0.0	Vert	AV	0.0	37.7	54.0	-16.3	High Ch, EUT Horz
3705.617	33.9	3.3	1.3	93.9	3.0	0.0	Horz	AV	0.0	37.2	54.0	-16.8	High Ch, EUT Vert
3658.250	33.2	3.0	1.3	248.0	3.0	0.0	Vert	AV	0.0	36.2	54.0	-17.8	Mid Ch, EUT Horz
5417.767	45.7	7.7	1.0	117.0	3.0	0.0	Vert	PK	0.0	53.4	74.0	-20.6	Low Ch, EUT Horz
5417.950	45.3	7.7	1.3	343.0	3.0	0.0	Horz	PK	0.0	53.0	74.0	-21.0	Low Ch, EUT Vert
5417.892	44.9	7.7	1.3	252.0	3.0	0.0	Horz	PK	0.0	52.6	74.0	-21.4	Low Ch, EUT Horz
5418.175	44.8	7.7	1.0	151.0	3.0	0.0	Vert	PK	0.0	52.5	74.0	-21.5	Low Ch, EUT On Side

5417.792	44.8	7.7	1.3	243.9	3.0	0.0	Horz	PK	0.0	52.5	74.0	-21.5	Low Ch, EUT On Side
5418.125	43.2	7.7	1.3	50.0	3.0	0.0	Vert	PK	0.0	50.9	74.0	-23.1	Low Ch, EUT Vert
4632.142	45.1	5.1	2.9	336.0	3.0	0.0	Horz	PK	0.0	50.2	74.0	-23.8	High Ch, EUT Vert
4572.700	45.3	4.8	2.8	333.0	3.0	0.0	Horz	PK	0.0	50.1	74.0	-23.9	Mid Ch, EUT Vert
4632.275	43.9	5.1	1.3	122.0	3.0	0.0	Vert	PK	0.0	49.0	74.0	-25.0	High Ch, EUT Horz
4514.875	44.2	4.6	1.4	78.0	3.0	0.0	Horz	PK	0.0	48.8	74.0	-25.2	Low Ch, EUT Vert
4572.908	43.7	4.8	3.6	128.0	3.0	0.0	Vert	PK	0.0	48.5	74.0	-25.5	Mid Ch, EUT Horz
4515.083	43.2	4.6	1.3	162.0	3.0	0.0	Vert	PK	0.0	47.8	74.0	-26.2	Low Ch, EUT Horz
3658.533	44.2	3.0	3.0	352.9	3.0	0.0	Horz	PK	0.0	47.2	74.0	-26.8	Mid Ch, EUT Vert
3705.642	43.9	3.3	1.3	93.9	3.0	0.0	Horz	PK	0.0	47.2	74.0	-26.8	High Ch, EUT Vert
3611.983	44.4	2.7	1.7	336.0	3.0	0.0	Horz	PK	0.0	47.1	74.0	-26.9	Low Ch, EUT Vert
3705.875	43.8	3.3	1.8	220.9	3.0	0.0	Vert	PK	0.0	47.1	74.0	-26.9	High Ch, EUT Horz
3611.850	44.3	2.7	1.5	170.0	3.0	0.0	Vert	PK	0.0	47.0	74.0	-27.0	Low Ch, EUT Horz
3658.525	43.4	3.0	1.3	248.0	3.0	0.0	Vert	PK	0.0	46.4	74.0	-27.6	Mid Ch, EUT Horz
2780.492	26.3	-2.8	1.9	21.9	3.0	0.0	Horz	AV	0.0	23.5	54.0	-30.5	High Ch, EUT Vert
2777.067	26.2	-2.9	1.3	156.0	3.0	0.0	Vert	AV	0.0	23.3	54.0	-30.7	High Ch, EUT Horz
2742.575	26.2	-3.1	1.3	86.0	3.0	0.0	Vert	AV	0.0	23.1	54.0	-30.9	Mid Ch, EUT Horz
2742.450	26.2	-3.1	3.8	175.0	3.0	0.0	Horz	AV	0.0	23.1	54.0	-30.9	Mid Ch, EUT Vert
2708.075	26.2	-3.3	1.3	1.0	3.0	0.0	Vert	AV	0.0	22.9	54.0	-31.1	Low Ch, EUT Horz
2707.108	26.1	-3.3	1.3	153.9	3.0	0.0	Horz	AV	0.0	22.8	54.0	-31.2	Low Ch, EUT Vert
2742.433	38.9	-3.1	3.8	175.0	3.0	0.0	Horz	PK	0.0	35.8	74.0	-38.2	Mid Ch, EUT Vert
2745.183	38.2	-3.0	1.3	86.0	3.0	0.0	Vert	PK	0.0	35.2	74.0	-38.8	Mid Ch, EUT Horz
2780.192	38.0	-2.8	1.9	21.9	3.0	0.0	Horz	PK	0.0	35.2	74.0	-38.8	High Ch, EUT Vert
2778.125	37.9	-2.9	1.3	156.0	3.0	0.0	Vert	PK	0.0	35.0	74.0	-39.0	High Ch, EUT Horz
2706.675	37.8	-3.3	1.3	153.9	3.0	0.0	Horz	PK	0.0	34.5	74.0	-39.5	Low Ch, EUT Vert
2706.508	37.7	-3.3	1.3	1.0	3.0	0.0	Vert	PK	0.0	34.4	74.0	-39.6	Low Ch, EUT Horz

POWERLINE CONDUCTED EMISSIONS

TEST DESCRIPTION

The EUT will be powered either directly or indirectly from the AC power line. Therefore, conducted emissions measurements were made on the AC input of the EUT, or on the AC input of the device used to power the EUT. The AC power line conducted emissions were measured with the EUT operating at the lowest, the highest, and a middle channel in the operational band. The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.10.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Receiver	Rohde & Schwarz	ESCI	ARF	6/9/2015	6/9/2016
Cable - Conducted Cable Assembly	Northwest EMC	TXA, HHZ, TQR	TXAA	5/27/2015	5/27/2016
LISN	Solar Electronics	9252-50-R-24-BNC	LJK	9/23/2015	9/23/2016

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

HNYW0135-1

MODES INVESTIGATED

Transmitting Antenna A, Modulated, High Channel
Transmitting Antenna A, Modulated, Low Channel
Transmitting Antenna A, Modulated, Mid Channel
Transmitting Antenna B, Modulated, High Channel
Transmitting Antenna B, Modulated, Low Channel
Transmitting Antenna B, Modulated, Mid Channel

POWERLINE CONDUCTED EMISSIONS

EUT:	ERM5220R01	Work Order:	HNYW0135
Serial Number:	06555010000040	Date:	11/16/2015
Customer:	Honeywell, Automation and Control Solutions	Temperature:	24.1°C
Attendees:	None	Relative Humidity:	39.9%
Customer Project:	None	Bar. Pressure:	1014 mb
Tested By:	Jonathan Kiefer	Job Site:	TX01
Power:	24VAC	Configuration:	HNYW0135-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	2	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

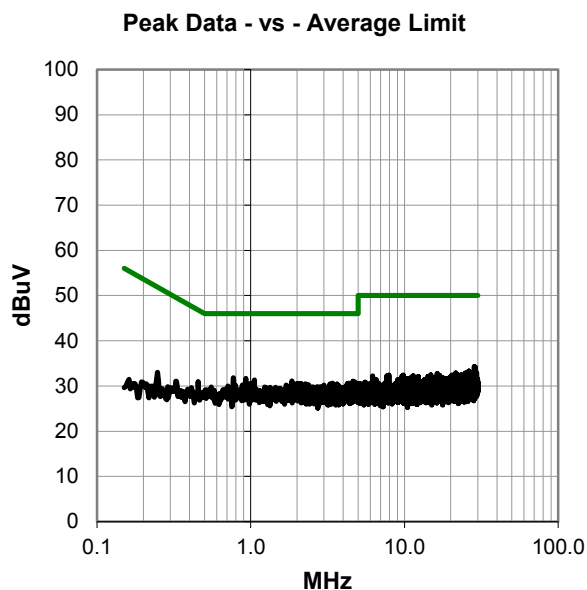
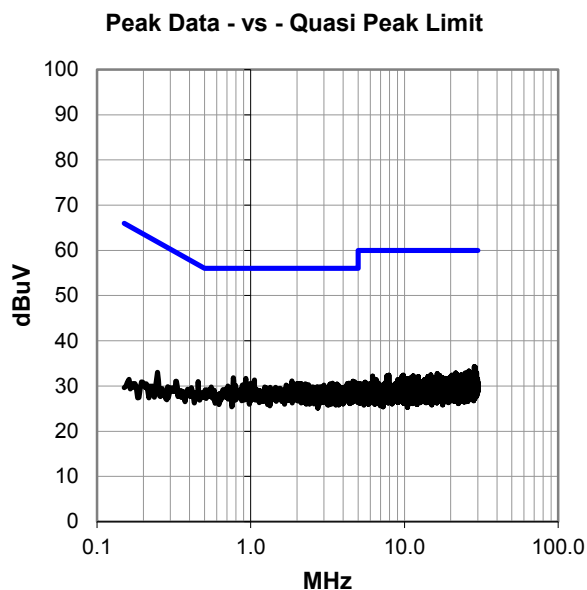
None

EUT OPERATING MODES

Transmitting Antenna A, Modulated, Low Channel

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS



WTD 2015.10.28
PSA-ESCI 2015.07.01, EmR5 2015.11.03

RESULTS - Run #2

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.769	12.0	19.8	31.8	56.0	-24.2
0.930	11.8	19.9	31.7	56.0	-24.3
1.057	11.6	19.8	31.4	56.0	-24.6
1.851	11.3	19.8	31.1	56.0	-24.9
4.634	11.1	19.9	31.0	56.0	-25.0
4.758	11.0	19.9	30.9	56.0	-25.1
4.343	10.7	19.9	30.6	56.0	-25.4
3.414	10.7	19.9	30.6	56.0	-25.4
2.120	10.7	19.9	30.6	56.0	-25.4
2.012	10.7	19.8	30.5	56.0	-25.5
0.993	10.7	19.8	30.5	56.0	-25.5
4.239	10.6	19.9	30.5	56.0	-25.5
4.996	10.5	20.0	30.5	56.0	-25.5
2.038	10.6	19.9	30.5	56.0	-25.5
2.265	10.6	19.9	30.5	56.0	-25.5
3.642	10.5	19.9	30.4	56.0	-25.6
0.911	10.5	19.9	30.4	56.0	-25.6
3.276	10.5	19.9	30.4	56.0	-25.6
1.874	10.5	19.8	30.3	56.0	-25.7
28.459	12.8	21.5	34.3	60.0	-25.7
2.370	10.4	19.9	30.3	56.0	-25.7
0.456	11.2	19.8	31.0	56.8	-25.8
0.881	10.3	19.9	30.2	56.0	-25.8
2.989	10.3	19.9	30.2	56.0	-25.8
1.702	10.4	19.8	30.2	56.0	-25.8
28.851	12.6	21.6	34.2	60.0	-25.8

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.769	12.0	19.8	31.8	46.0	-14.2
0.930	11.8	19.9	31.7	46.0	-14.3
1.057	11.6	19.8	31.4	46.0	-14.6
1.851	11.3	19.8	31.1	46.0	-14.9
4.634	11.1	19.9	31.0	46.0	-15.0
4.758	11.0	19.9	30.9	46.0	-15.1
4.343	10.7	19.9	30.6	46.0	-15.4
3.414	10.7	19.9	30.6	46.0	-15.4
2.120	10.7	19.9	30.6	46.0	-15.4
2.012	10.7	19.8	30.5	46.0	-15.5
0.993	10.7	19.8	30.5	46.0	-15.5
4.239	10.6	19.9	30.5	46.0	-15.5
4.996	10.5	20.0	30.5	46.0	-15.5
2.038	10.6	19.9	30.5	46.0	-15.5
2.265	10.6	19.9	30.5	46.0	-15.5
3.642	10.5	19.9	30.4	46.0	-15.6
0.911	10.5	19.9	30.4	46.0	-15.6
3.276	10.5	19.9	30.4	46.0	-15.6
1.874	10.5	19.8	30.3	46.0	-15.7
28.459	12.8	21.5	34.3	50.0	-15.7
2.370	10.4	19.9	30.3	46.0	-15.7
0.456	11.2	19.8	31.0	46.8	-15.8
0.881	10.3	19.9	30.2	46.0	-15.8
2.989	10.3	19.9	30.2	46.0	-15.8
1.702	10.4	19.8	30.2	46.0	-15.8
28.851	12.6	21.6	34.2	50.0	-15.8

CONCLUSION

Pass

Jonathan Kiefer

Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	ERM5220R01	Work Order:	HNYW0135
Serial Number:	06555010000040	Date:	11/16/2015
Customer:	Honeywell, Automation and Control Solutions	Temperature:	24.1°C
Attendees:	None	Relative Humidity:	39.9%
Customer Project:	None	Bar. Pressure:	1014 mb
Tested By:	Jonathan Kiefer	Job Site:	TX01
Power:	24VAC	Configuration:	HNYW0135-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

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

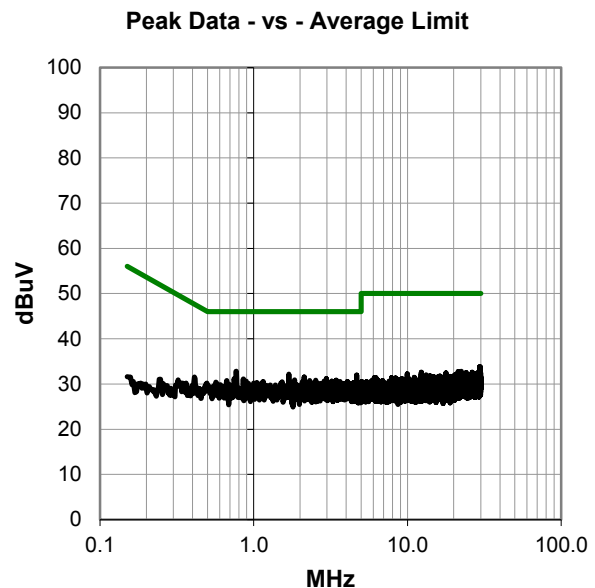
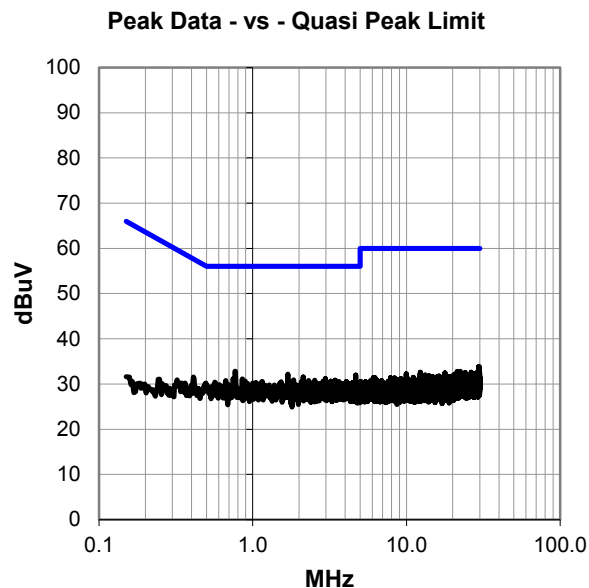
None

EUT OPERATING MODES

Transmitting Antenna A, Modulated, Low Channel

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #3

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.769	13.0	19.8	32.8	56.0	-23.2
1.695	12.4	19.8	32.2	56.0	-23.8
4.683	12.0	19.9	31.9	56.0	-24.1
2.131	11.7	19.9	31.6	56.0	-24.4
2.963	11.3	19.9	31.2	56.0	-24.8
0.747	11.4	19.8	31.2	56.0	-24.8
0.855	11.2	19.9	31.1	56.0	-24.9
1.844	11.1	19.8	30.9	56.0	-25.1
2.534	11.0	19.9	30.9	56.0	-25.2
3.444	10.9	19.9	30.8	56.0	-25.2
0.669	11.0	19.8	30.8	56.0	-25.2
2.314	10.9	19.9	30.8	56.0	-25.2
0.892	10.7	19.9	30.6	56.0	-25.4
3.217	10.7	19.9	30.6	56.0	-25.4
1.154	10.8	19.8	30.6	56.0	-25.4
2.866	10.7	19.9	30.6	56.0	-25.4
4.067	10.6	19.9	30.5	56.0	-25.5
3.649	10.6	19.9	30.5	56.0	-25.5
3.321	10.6	19.9	30.5	56.0	-25.5
1.530	10.7	19.8	30.5	56.0	-25.5
2.116	10.6	19.9	30.5	56.0	-25.5
2.071	10.6	19.9	30.5	56.0	-25.5
1.732	10.6	19.8	30.4	56.0	-25.6
0.568	10.6	19.8	30.4	56.0	-25.6
1.142	10.6	19.8	30.4	56.0	-25.6
1.045	10.6	19.8	30.4	56.0	-25.6

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.769	13.0	19.8	32.8	46.0	-13.2
1.695	12.4	19.8	32.2	46.0	-13.8
4.683	12.0	19.9	31.9	46.0	-14.1
2.131	11.7	19.9	31.6	46.0	-14.4
2.963	11.3	19.9	31.2	46.0	-14.8
0.747	11.4	19.8	31.2	46.0	-14.8
0.855	11.2	19.9	31.1	46.0	-14.9
1.844	11.1	19.8	30.9	46.0	-15.1
2.534	11.0	19.9	30.9	46.0	-15.2
3.444	10.9	19.9	30.8	46.0	-15.2
0.669	11.0	19.8	30.8	46.0	-15.2
2.314	10.9	19.9	30.8	46.0	-15.2
0.892	10.7	19.9	30.6	46.0	-15.4
3.217	10.7	19.9	30.6	46.0	-15.4
1.154	10.8	19.8	30.6	46.0	-15.4
2.866	10.7	19.9	30.6	46.0	-15.4
4.067	10.6	19.9	30.5	46.0	-15.5
3.649	10.6	19.9	30.5	46.0	-15.5
3.321	10.6	19.9	30.5	46.0	-15.5
1.530	10.7	19.8	30.5	46.0	-15.5
2.116	10.6	19.9	30.5	46.0	-15.5
2.071	10.6	19.9	30.5	46.0	-15.5
1.732	10.6	19.8	30.4	46.0	-15.6
0.568	10.6	19.8	30.4	46.0	-15.6
1.142	10.6	19.8	30.4	46.0	-15.6
1.045	10.6	19.8	30.4	46.0	-15.6

CONCLUSION

Pass

Jonathan Kiefer

Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	ERM5220R01	Work Order:	HNYW0135
Serial Number:	06555010000040	Date:	11/16/2015
Customer:	Honeywell, Automation and Control Solutions	Temperature:	24.1°C
Attendees:	None	Relative Humidity:	39.9%
Customer Project:	None	Bar. Pressure:	1014 mb
Tested By:	Jonathan Kiefer	Job Site:	TX01
Power:	24VAC	Configuration:	HNYW0135-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

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

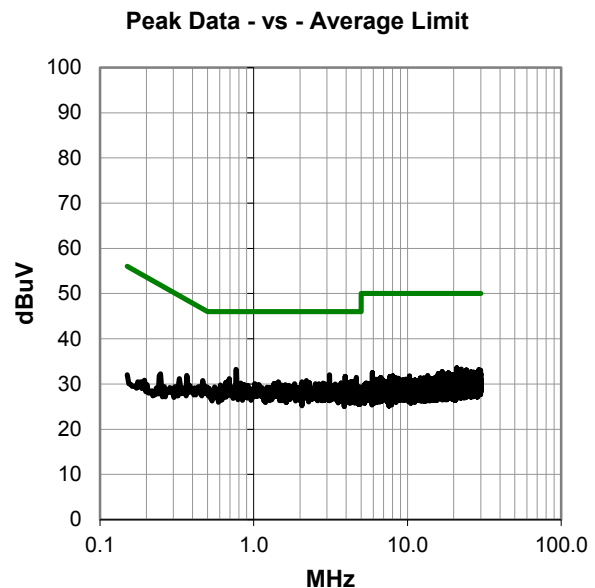
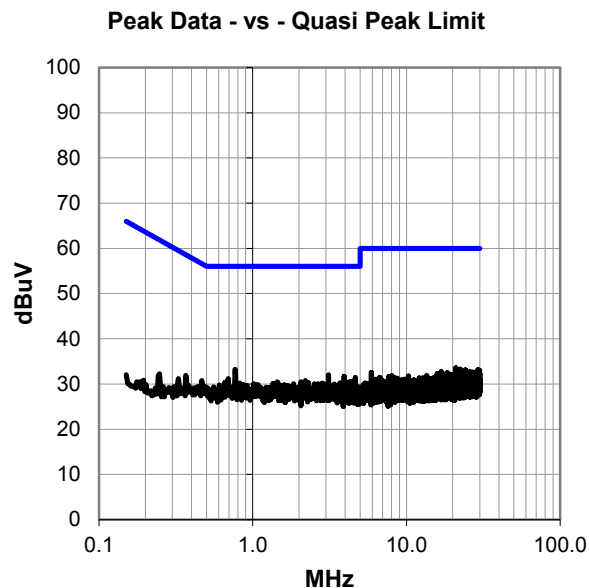
None

EUT OPERATING MODES

Transmitting Antenna A, Modulated, Mid Channel

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS



WTD 2015.10.28
PSA-ESCI 2015.07.01, EmR5 2015.11.03

RESULTS - Run #4

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.766	13.4	19.8	33.2	56.0	-22.8
3.116	12.1	19.9	32.0	56.0	-24.0
3.933	11.7	19.9	31.6	56.0	-24.4
4.646	11.5	19.9	31.4	56.0	-24.6
0.695	11.4	19.8	31.2	56.0	-24.8
2.202	10.9	19.8	30.7	56.0	-25.3
4.541	10.7	19.9	30.6	56.0	-25.4
3.970	10.6	20.0	30.6	56.0	-25.5
4.000	10.6	19.9	30.5	56.0	-25.5
4.310	10.6	19.9	30.5	56.0	-25.5
1.445	10.7	19.8	30.5	56.0	-25.5
2.064	10.6	19.9	30.5	56.0	-25.5
4.455	10.4	19.9	30.3	56.0	-25.7
4.149	10.4	19.9	30.3	56.0	-25.7
0.657	10.5	19.8	30.3	56.0	-25.7
2.299	10.4	19.9	30.3	56.0	-25.7
3.702	10.3	19.9	30.2	56.0	-25.8
2.821	10.4	19.8	30.2	56.0	-25.8
0.467	11.0	19.8	30.8	56.6	-25.8
0.825	10.3	19.9	30.2	56.0	-25.8
2.146	10.3	19.9	30.2	56.0	-25.8
1.016	10.3	19.8	30.1	56.0	-25.9
2.885	10.2	19.9	30.1	56.0	-25.9
2.515	10.2	19.9	30.1	56.0	-26.0
1.844	10.2	19.8	30.0	56.0	-26.0
2.661	10.2	19.8	30.0	56.0	-26.0

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.766	13.4	19.8	33.2	46.0	-12.8
3.116	12.1	19.9	32.0	46.0	-14.0
3.933	11.7	19.9	31.6	46.0	-14.4
4.646	11.5	19.9	31.4	46.0	-14.6
0.695	11.4	19.8	31.2	46.0	-14.8
2.202	10.9	19.8	30.7	46.0	-15.3
4.541	10.7	19.9	30.6	46.0	-15.4
3.970	10.6	20.0	30.6	46.0	-15.5
4.000	10.6	19.9	30.5	46.0	-15.5
4.310	10.6	19.9	30.5	46.0	-15.5
1.445	10.7	19.8	30.5	46.0	-15.5
2.064	10.6	19.9	30.5	46.0	-15.5
4.455	10.4	19.9	30.3	46.0	-15.7
4.149	10.4	19.9	30.3	46.0	-15.7
0.657	10.5	19.8	30.3	46.0	-15.7
2.299	10.4	19.9	30.3	46.0	-15.7
3.702	10.3	19.9	30.2	46.0	-15.8
2.821	10.4	19.8	30.2	46.0	-15.8
0.467	11.0	19.8	30.8	46.6	-15.8
0.825	10.3	19.9	30.2	46.0	-15.8
2.146	10.3	19.9	30.2	46.0	-15.8
1.016	10.3	19.8	30.1	46.0	-15.9
2.885	10.2	19.9	30.1	46.0	-15.9
2.515	10.2	19.9	30.1	46.0	-16.0
1.844	10.2	19.8	30.0	46.0	-16.0
2.661	10.2	19.8	30.0	46.0	-16.0

CONCLUSION

Pass

Jonathan Kiefer

Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	ERM5220R01	Work Order:	HNYW0135
Serial Number:	06555010000040	Date:	11/16/2015
Customer:	Honeywell, Automation and Control Solutions	Temperature:	24.1°C
Attendees:	None	Relative Humidity:	39.9%
Customer Project:	None	Bar. Pressure:	1014 mb
Tested By:	Jonathan Kiefer	Job Site:	TX01
Power:	24VAC	Configuration:	HNYW0135-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

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

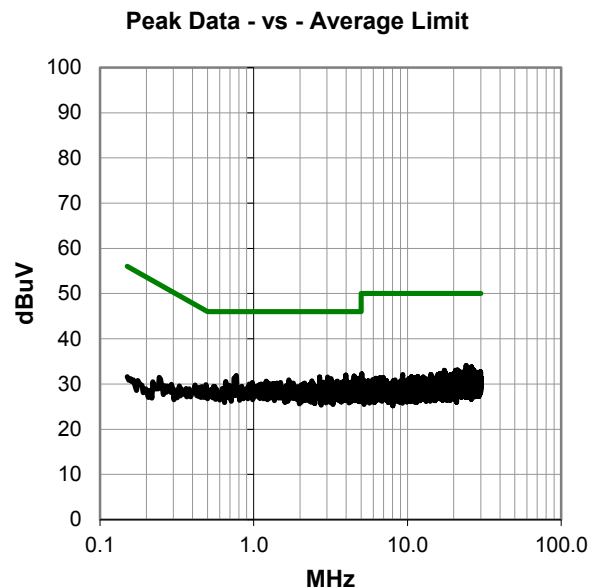
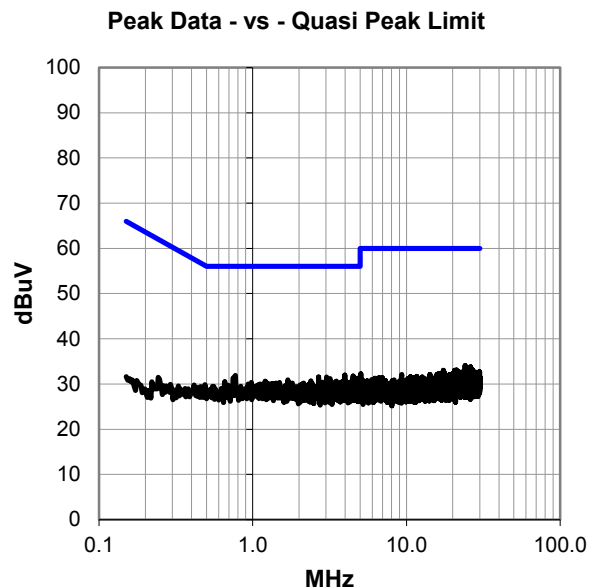
None

EUT OPERATING MODES

Transmitting Antenna A, Modulated, Mid Channel

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS



WTD 2015.10.28
PSA-ESCI 2015.07.01, EmR5 2015.11.03

RESULTS - Run #5

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.974	12.0	19.9	31.9	56.0	-24.1
0.769	12.1	19.8	31.9	56.0	-24.1
4.500	11.8	19.9	31.7	56.0	-24.3
2.679	11.7	19.8	31.5	56.0	-24.5
3.023	11.6	19.9	31.5	56.0	-24.5
0.751	11.5	19.8	31.3	56.0	-24.7
4.806	11.3	19.9	31.2	56.0	-24.8
3.176	11.3	19.9	31.2	56.0	-24.8
1.695	11.1	19.8	30.9	56.0	-25.1
4.922	10.8	19.9	30.7	56.0	-25.3
4.437	10.8	19.9	30.7	56.0	-25.3
2.385	10.8	19.9	30.7	56.0	-25.3
3.862	10.7	19.9	30.6	56.0	-25.4
4.011	10.7	19.9	30.6	56.0	-25.4
3.500	10.7	19.9	30.6	56.0	-25.4
1.206	10.8	19.8	30.6	56.0	-25.4
0.657	10.8	19.8	30.6	56.0	-25.4
3.948	10.5	19.9	30.4	56.0	-25.6
2.844	10.6	19.8	30.4	56.0	-25.6
4.071	10.5	19.9	30.4	56.0	-25.6
4.302	10.5	19.9	30.4	56.0	-25.6
3.448	10.5	19.9	30.4	56.0	-25.6
0.978	10.5	19.9	30.4	56.0	-25.6
3.754	10.4	19.9	30.3	56.0	-25.7
1.497	10.5	19.8	30.3	56.0	-25.7
3.467	10.4	19.9	30.3	56.0	-25.7

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
3.974	12.0	19.9	31.9	46.0	-14.1
0.769	12.1	19.8	31.9	46.0	-14.1
4.500	11.8	19.9	31.7	46.0	-14.3
2.679	11.7	19.8	31.5	46.0	-14.5
3.023	11.6	19.9	31.5	46.0	-14.5
0.751	11.5	19.8	31.3	46.0	-14.7
4.806	11.3	19.9	31.2	46.0	-14.8
3.176	11.3	19.9	31.2	46.0	-14.8
1.695	11.1	19.8	30.9	46.0	-15.1
4.922	10.8	19.9	30.7	46.0	-15.3
4.437	10.8	19.9	30.7	46.0	-15.3
2.385	10.8	19.9	30.7	46.0	-15.3
3.862	10.7	19.9	30.6	46.0	-15.4
4.011	10.7	19.9	30.6	46.0	-15.4
3.500	10.7	19.9	30.6	46.0	-15.4
1.206	10.8	19.8	30.6	46.0	-15.4
0.657	10.8	19.8	30.6	46.0	-15.4
3.948	10.5	19.9	30.4	46.0	-15.6
2.844	10.6	19.8	30.4	46.0	-15.6
4.071	10.5	19.9	30.4	46.0	-15.6
4.302	10.5	19.9	30.4	46.0	-15.6
3.448	10.5	19.9	30.4	46.0	-15.6
0.978	10.5	19.9	30.4	46.0	-15.6
3.754	10.4	19.9	30.3	46.0	-15.7
1.497	10.5	19.8	30.3	46.0	-15.7
3.467	10.4	19.9	30.3	46.0	-15.7

CONCLUSION

Pass

Jonathan Kiefer

Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	ERM5220R01	Work Order:	HNYW0135
Serial Number:	06555010000040	Date:	11/16/2015
Customer:	Honeywell, Automation and Control Solutions	Temperature:	24.1°C
Attendees:	None	Relative Humidity:	39.9%
Customer Project:	None	Bar. Pressure:	1014 mb
Tested By:	Jonathan Kiefer	Job Site:	TX01
Power:	24VAC	Configuration:	HNYW0135-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

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

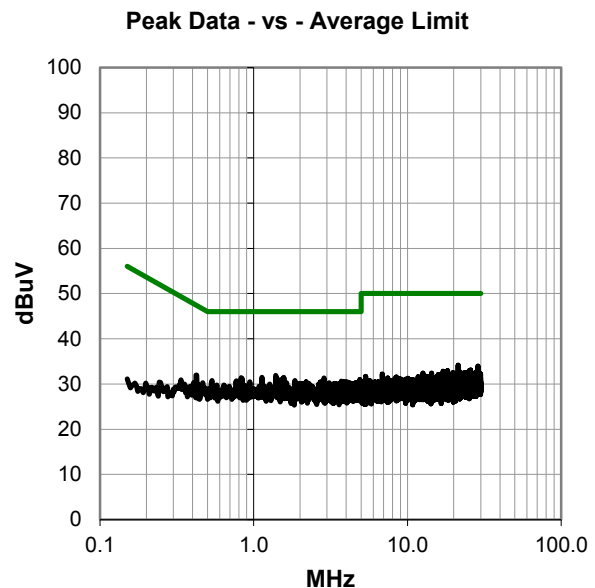
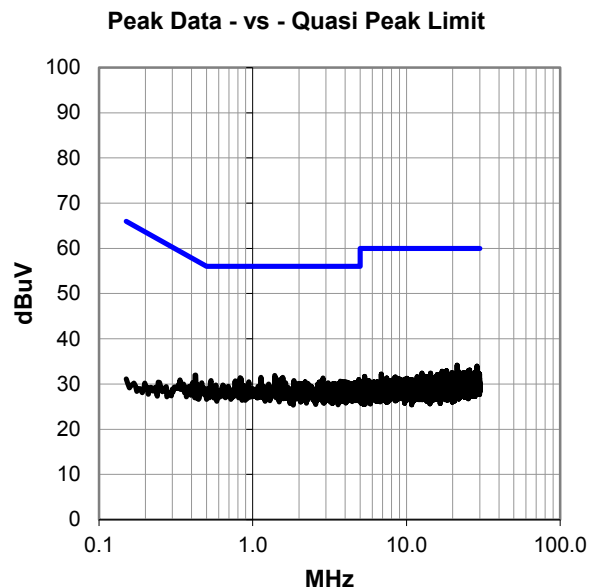
None

EUT OPERATING MODES

Transmitting Antenna A, Modulated, High Channel

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #6

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
1.392	12.1	19.8	31.9	56.0	-24.1
1.131	11.7	19.8	31.5	56.0	-24.5
1.568	11.7	19.8	31.5	56.0	-24.5
0.829	11.5	19.9	31.4	56.0	-24.6
2.862	11.5	19.9	31.4	56.0	-24.6
0.840	11.3	19.9	31.2	56.0	-24.8
1.422	11.4	19.8	31.2	56.0	-24.8
1.530	11.3	19.8	31.1	56.0	-24.9
4.903	11.0	19.9	30.9	56.0	-25.1
0.534	11.0	19.8	30.8	56.0	-25.2
1.851	10.9	19.8	30.7	56.0	-25.3
0.769	10.9	19.8	30.7	56.0	-25.3
3.709	10.7	19.9	30.6	56.0	-25.4
0.422	12.1	19.9	32.0	57.4	-25.4
3.940	10.6	19.9	30.5	56.0	-25.5
3.765	10.6	19.9	30.5	56.0	-25.5
0.941	10.6	19.9	30.5	56.0	-25.5
2.191	10.6	19.8	30.4	56.0	-25.6
4.067	10.5	19.9	30.4	56.0	-25.6
2.750	10.6	19.8	30.4	56.0	-25.6
4.634	10.4	19.9	30.3	56.0	-25.7
4.179	10.4	19.9	30.3	56.0	-25.7
3.090	10.4	19.9	30.3	56.0	-25.7
1.639	10.5	19.8	30.3	56.0	-25.7
2.034	10.3	19.9	30.2	56.0	-25.8
1.978	10.3	19.8	30.1	56.0	-25.9

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
1.392	12.1	19.8	31.9	46.0	-14.1
1.131	11.7	19.8	31.5	46.0	-14.5
1.568	11.7	19.8	31.5	46.0	-14.5
0.829	11.5	19.9	31.4	46.0	-14.6
2.862	11.5	19.9	31.4	46.0	-14.6
0.840	11.3	19.9	31.2	46.0	-14.8
1.422	11.4	19.8	31.2	46.0	-14.8
1.530	11.3	19.8	31.1	46.0	-14.9
4.903	11.0	19.9	30.9	46.0	-15.1
0.534	11.0	19.8	30.8	46.0	-15.2
1.851	10.9	19.8	30.7	46.0	-15.3
0.769	10.9	19.8	30.7	46.0	-15.3
3.709	10.7	19.9	30.6	46.0	-15.4
0.422	12.1	19.9	32.0	47.4	-15.4
3.940	10.6	19.9	30.5	46.0	-15.5
3.765	10.6	19.9	30.5	46.0	-15.5
0.941	10.6	19.9	30.5	46.0	-15.5
2.191	10.6	19.8	30.4	46.0	-15.6
4.067	10.5	19.9	30.4	46.0	-15.6
2.750	10.6	19.8	30.4	46.0	-15.6
4.634	10.4	19.9	30.3	46.0	-15.7
4.179	10.4	19.9	30.3	46.0	-15.7
3.090	10.4	19.9	30.3	46.0	-15.7
1.639	10.5	19.8	30.3	46.0	-15.7
2.034	10.3	19.9	30.2	46.0	-15.8
1.978	10.3	19.8	30.1	46.0	-15.9

CONCLUSION

Pass

Jonathan Kiefer

Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	ERM5220R01	Work Order:	HNYW0135
Serial Number:	06555010000040	Date:	11/16/2015
Customer:	Honeywell, Automation and Control Solutions	Temperature:	24.1°C
Attendees:	None	Relative Humidity:	39.9%
Customer Project:	None	Bar. Pressure:	1014 mb
Tested By:	Jonathan Kiefer	Job Site:	TX01
Power:	24VAC	Configuration:	HNYW0135-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

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

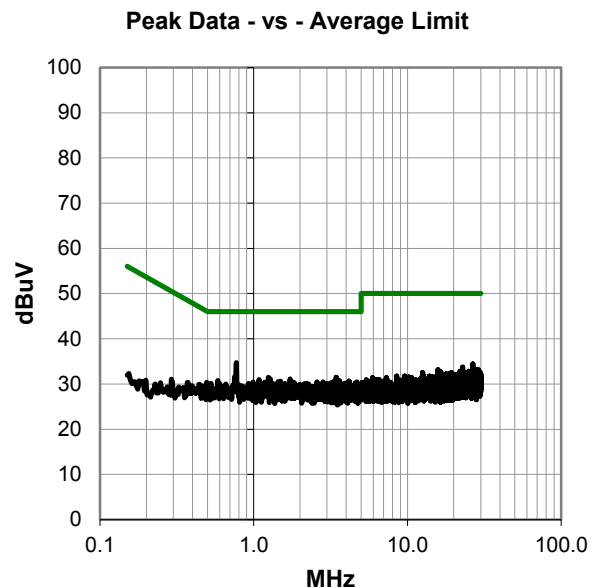
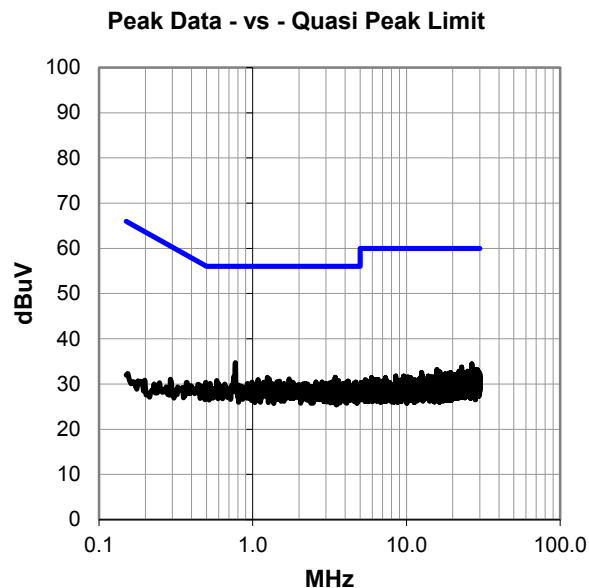
None

EUT OPERATING MODES

Transmitting Antenna A, Modulated, High Channel

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS



WTD 2015.10.28
PSA-ESCI 2015.07.01, EmR5 2015.11.03

RESULTS - Run #7

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.769	14.9	19.8	34.7	56.0	-21.3
0.754	11.8	19.8	31.6	56.0	-24.4
3.441	11.6	19.9	31.5	56.0	-24.5
1.247	11.7	19.8	31.5	56.0	-24.5
1.728	11.3	19.8	31.1	56.0	-24.9
1.284	11.3	19.8	31.1	56.0	-24.9
1.083	11.2	19.8	31.0	56.0	-25.0
0.583	11.0	19.8	30.8	56.0	-25.2
3.612	10.8	19.9	30.7	56.0	-25.3
1.493	10.8	19.8	30.6	56.0	-25.4
4.164	10.7	19.9	30.6	56.0	-25.4
3.530	10.6	19.9	30.5	56.0	-25.5
3.310	10.6	19.9	30.5	56.0	-25.5
1.437	10.7	19.8	30.5	56.0	-25.5
26.657	13.1	21.4	34.5	60.0	-25.5
2.579	10.6	19.8	30.4	56.0	-25.6
0.989	10.6	19.8	30.4	56.0	-25.6
4.679	10.5	19.9	30.4	56.0	-25.6
2.825	10.6	19.8	30.4	56.0	-25.6
1.806	10.6	19.8	30.4	56.0	-25.6
1.191	10.6	19.8	30.4	56.0	-25.6
0.497	10.6	19.8	30.4	56.1	-25.7
1.765	10.5	19.8	30.3	56.0	-25.7
3.164	10.4	19.9	30.3	56.0	-25.7
4.023	10.3	19.9	30.2	56.0	-25.8
1.848	10.4	19.8	30.2	56.0	-25.8

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.769	14.9	19.8	34.7	46.0	-11.3
0.754	11.8	19.8	31.6	46.0	-14.4
3.441	11.6	19.9	31.5	46.0	-14.5
1.247	11.7	19.8	31.5	46.0	-14.5
1.728	11.3	19.8	31.1	46.0	-14.9
1.284	11.3	19.8	31.1	46.0	-14.9
1.083	11.2	19.8	31.0	46.0	-15.0
0.583	11.0	19.8	30.8	46.0	-15.2
3.612	10.8	19.9	30.7	46.0	-15.3
1.493	10.8	19.8	30.6	46.0	-15.4
4.164	10.7	19.9	30.6	46.0	-15.4
3.530	10.6	19.9	30.5	46.0	-15.5
3.310	10.6	19.9	30.5	46.0	-15.5
1.437	10.7	19.8	30.5	46.0	-15.5
26.657	13.1	21.4	34.5	50.0	-15.5
2.579	10.6	19.8	30.4	46.0	-15.6
0.989	10.6	19.8	30.4	46.0	-15.6
4.679	10.5	19.9	30.4	46.0	-15.6
2.825	10.6	19.8	30.4	46.0	-15.6
1.806	10.6	19.8	30.4	46.0	-15.6
1.191	10.6	19.8	30.4	46.0	-15.6
0.497	10.6	19.8	30.4	46.1	-15.7
1.765	10.5	19.8	30.3	46.0	-15.7
3.164	10.4	19.9	30.3	46.0	-15.7
4.023	10.3	19.9	30.2	46.0	-15.8
1.848	10.4	19.8	30.2	46.0	-15.8

CONCLUSION

Pass

Jonathan Kiefer

Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	ERM5220R01	Work Order:	HNYW0135
Serial Number:	06555010000040	Date:	11/16/2015
Customer:	Honeywell, Automation and Control Solutions	Temperature:	24.1°C
Attendees:	None	Relative Humidity:	39.9%
Customer Project:	None	Bar. Pressure:	1014 mb
Tested By:	Jonathan Kiefer	Job Site:	TX01
Power:	24VAC	Configuration:	HNYW0135-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

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

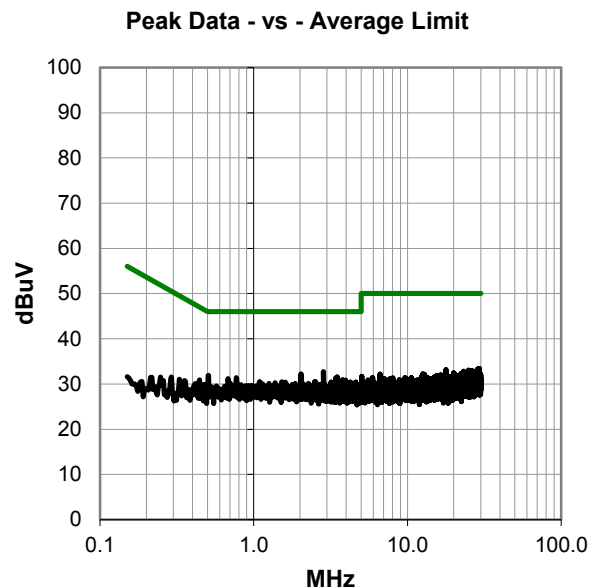
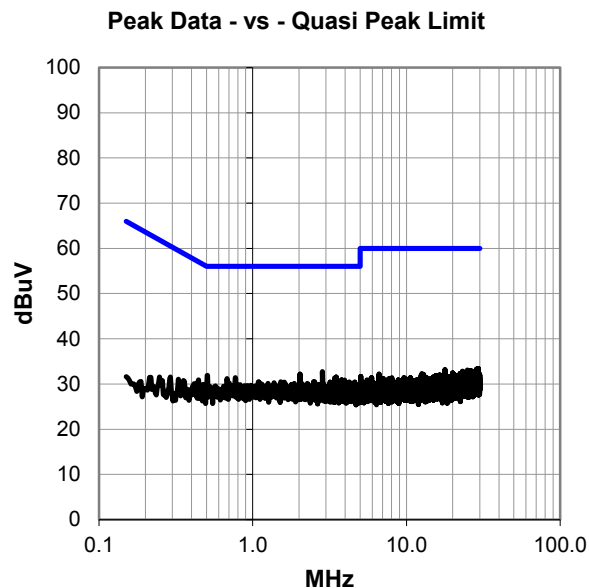
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EUT OPERATING MODES

Transmitting Antenna B, Modulated, Low Channel

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS



WTD 2015.10.28
PSA-ESCI 2015.07.01, EmR5 2015.11.03

RESULTS - Run #8

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.844	12.9	19.8	32.7	56.0	-23.3
2.030	12.3	19.9	32.2	56.0	-23.8
0.504	12.1	19.8	31.9	56.0	-24.1
3.489	11.6	19.9	31.5	56.0	-24.5
0.769	11.6	19.8	31.4	56.0	-24.6
3.414	11.4	19.9	31.3	56.0	-24.7
0.680	11.4	19.8	31.2	56.0	-24.8
3.784	11.0	19.9	30.9	56.0	-25.1
3.948	10.9	19.9	30.8	56.0	-25.2
1.523	10.7	19.8	30.5	56.0	-25.5
1.086	10.7	19.8	30.5	56.0	-25.5
2.493	10.6	19.9	30.5	56.0	-25.6
2.527	10.6	19.9	30.5	56.0	-25.6
4.616	10.5	19.9	30.4	56.0	-25.6
4.243	10.5	19.9	30.4	56.0	-25.6
3.183	10.5	19.9	30.4	56.0	-25.6
1.605	10.6	19.8	30.4	56.0	-25.6
1.374	10.5	19.8	30.3	56.0	-25.7
3.340	10.3	19.9	30.2	56.0	-25.8
2.269	10.3	19.9	30.2	56.0	-25.8
1.859	10.3	19.8	30.1	56.0	-25.9
4.463	10.2	19.9	30.1	56.0	-25.9
4.161	10.2	19.9	30.1	56.0	-25.9
1.254	10.3	19.8	30.1	56.0	-25.9
2.101	10.2	19.9	30.1	56.0	-25.9
1.627	10.2	19.8	30.0	56.0	-26.0

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.844	12.9	19.8	32.7	46.0	-13.3
2.030	12.3	19.9	32.2	46.0	-13.8
0.504	12.1	19.8	31.9	46.0	-14.1
3.489	11.6	19.9	31.5	46.0	-14.5
0.769	11.6	19.8	31.4	46.0	-14.6
3.414	11.4	19.9	31.3	46.0	-14.7
0.680	11.4	19.8	31.2	46.0	-14.8
3.784	11.0	19.9	30.9	46.0	-15.1
3.948	10.9	19.9	30.8	46.0	-15.2
1.523	10.7	19.8	30.5	46.0	-15.5
1.086	10.7	19.8	30.5	46.0	-15.5
2.493	10.6	19.9	30.5	46.0	-15.6
2.527	10.6	19.9	30.5	46.0	-15.6
4.616	10.5	19.9	30.4	46.0	-15.6
4.243	10.5	19.9	30.4	46.0	-15.6
3.183	10.5	19.9	30.4	46.0	-15.6
1.605	10.6	19.8	30.4	46.0	-15.6
1.374	10.5	19.8	30.3	46.0	-15.7
3.340	10.3	19.9	30.2	46.0	-15.8
2.269	10.3	19.9	30.2	46.0	-15.8
1.859	10.3	19.8	30.1	46.0	-15.9
4.463	10.2	19.9	30.1	46.0	-15.9
4.161	10.2	19.9	30.1	46.0	-15.9
1.254	10.3	19.8	30.1	46.0	-15.9
2.101	10.2	19.9	30.1	46.0	-15.9
1.627	10.2	19.8	30.0	46.0	-16.0

CONCLUSION

Pass

Jonathan Kiefer

Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	ERM5220R01	Work Order:	HNYW0135
Serial Number:	06555010000040	Date:	11/16/2015
Customer:	Honeywell, Automation and Control Solutions	Temperature:	24.1°C
Attendees:	None	Relative Humidity:	39.9%
Customer Project:	None	Bar. Pressure:	1014 mb
Tested By:	Jonathan Kiefer	Job Site:	TX01
Power:	24VAC	Configuration:	HNYW0135-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	9	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

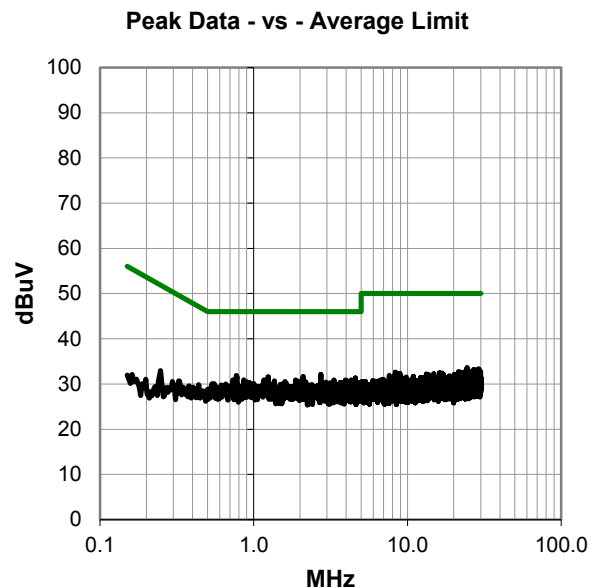
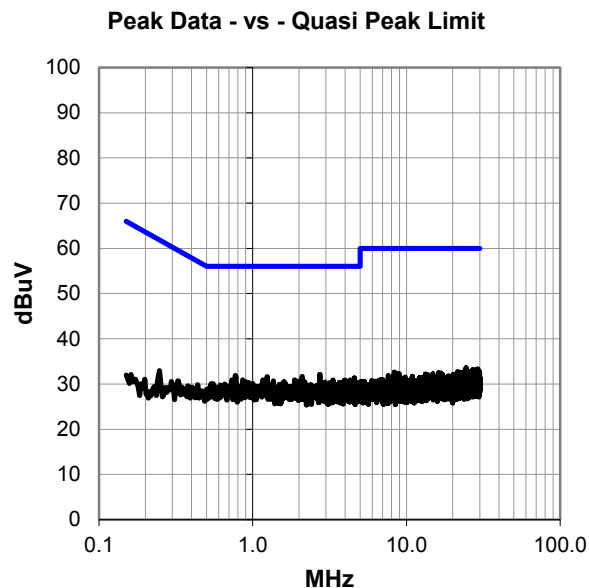
None

EUT OPERATING MODES

Transmitting Antenna B, Modulated, Low Channel

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS



WTD 2015.10.28
PSA-ESCI 2015.07.01, EmR5 2015.11.03

RESULTS - Run #9

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.735	12.3	19.8	32.1	56.0	-23.9
0.769	12.1	19.8	31.9	56.0	-24.1
2.097	11.8	19.9	31.7	56.0	-24.3
1.239	11.8	19.8	31.6	56.0	-24.4
4.590	11.4	19.9	31.3	56.0	-24.7
1.870	11.1	19.8	30.9	56.0	-25.1
4.302	11.0	19.9	30.9	56.0	-25.1
0.863	11.0	19.9	30.9	56.0	-25.1
0.732	11.1	19.8	30.9	56.0	-25.1
1.165	11.1	19.8	30.9	56.0	-25.1
3.952	10.9	19.9	30.8	56.0	-25.2
3.325	10.9	19.9	30.8	56.0	-25.2
4.008	10.8	19.9	30.7	56.0	-25.3
1.363	10.9	19.8	30.7	56.0	-25.3
1.948	10.8	19.8	30.6	56.0	-25.4
1.601	10.8	19.8	30.6	56.0	-25.4
3.918	10.6	19.9	30.5	56.0	-25.5
0.904	10.6	19.9	30.5	56.0	-25.5
2.180	10.6	19.9	30.5	56.0	-25.5
1.907	10.6	19.8	30.4	56.0	-25.6
2.944	10.5	19.9	30.4	56.0	-25.6
4.974	10.4	20.0	30.4	56.0	-25.6
4.772	10.4	19.9	30.3	56.0	-25.7
3.661	10.4	19.9	30.3	56.0	-25.7
3.135	10.4	19.9	30.3	56.0	-25.7
3.269	10.4	19.9	30.3	56.0	-25.7

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.735	12.3	19.8	32.1	46.0	-13.9
0.769	12.1	19.8	31.9	46.0	-14.1
2.097	11.8	19.9	31.7	46.0	-14.3
1.239	11.8	19.8	31.6	46.0	-14.4
4.590	11.4	19.9	31.3	46.0	-14.7
1.870	11.1	19.8	30.9	46.0	-15.1
4.302	11.0	19.9	30.9	46.0	-15.1
0.863	11.0	19.9	30.9	46.0	-15.1
0.732	11.1	19.8	30.9	46.0	-15.1
1.165	11.1	19.8	30.9	46.0	-15.1
3.952	10.9	19.9	30.8	46.0	-15.2
3.325	10.9	19.9	30.8	46.0	-15.2
4.008	10.8	19.9	30.7	46.0	-15.3
1.363	10.9	19.8	30.7	46.0	-15.3
1.948	10.8	19.8	30.6	46.0	-15.4
1.601	10.8	19.8	30.6	46.0	-15.4
3.918	10.6	19.9	30.5	46.0	-15.5
0.904	10.6	19.9	30.5	46.0	-15.5
2.180	10.6	19.9	30.5	46.0	-15.5
1.907	10.6	19.8	30.4	46.0	-15.6
2.944	10.5	19.9	30.4	46.0	-15.6
4.974	10.4	20.0	30.4	46.0	-15.6
4.772	10.4	19.9	30.3	46.0	-15.7
3.661	10.4	19.9	30.3	46.0	-15.7
3.135	10.4	19.9	30.3	46.0	-15.7
3.269	10.4	19.9	30.3	46.0	-15.7

CONCLUSION

Pass

Jonathan Kiefer

Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	ERM5220R01	Work Order:	HNYW0135
Serial Number:	06555010000040	Date:	11/16/2015
Customer:	Honeywell, Automation and Control Solutions	Temperature:	24.1°C
Attendees:	None	Relative Humidity:	39.9%
Customer Project:	None	Bar. Pressure:	1014 mb
Tested By:	Jonathan Kiefer	Job Site:	TX01
Power:	24VAC	Configuration:	HNYW0135-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	10	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

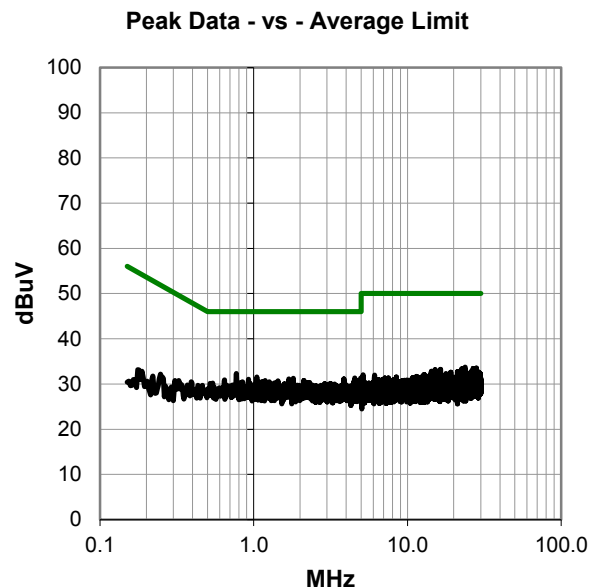
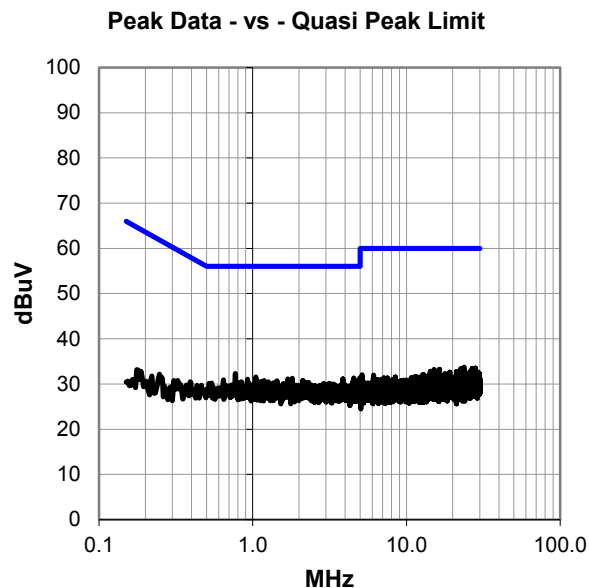
None

EUT OPERATING MODES

Transmitting Antenna B, Modulated, Mid Channel

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS



WTD 2015.10.28
PSA-ESCI 2015.07.01, EmR5 2015.11.03

RESULTS - Run #10

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.769	12.5	19.8	32.3	56.0	-23.7
1.045	11.8	19.8	31.6	56.0	-24.4
4.966	11.4	20.0	31.4	56.0	-24.6
4.552	11.4	19.9	31.3	56.0	-24.7
1.814	11.4	19.8	31.2	56.0	-24.8
3.855	11.2	19.9	31.1	56.0	-24.9
1.695	11.3	19.8	31.1	56.0	-24.9
0.926	11.1	19.9	31.0	56.0	-25.0
0.646	11.1	19.8	30.9	56.0	-25.1
1.187	11.0	19.8	30.8	56.0	-25.2
2.120	10.9	19.9	30.8	56.0	-25.2
1.441	10.9	19.8	30.7	56.0	-25.3
4.679	10.7	19.9	30.6	56.0	-25.4
1.139	10.8	19.8	30.6	56.0	-25.4
4.485	10.6	19.9	30.5	56.0	-25.5
0.844	10.6	19.9	30.5	56.0	-25.5
1.262	10.7	19.8	30.5	56.0	-25.5
4.634	10.5	19.9	30.4	56.0	-25.6
1.086	10.6	19.8	30.4	56.0	-25.6
0.825	10.5	19.9	30.4	56.0	-25.6
2.310	10.5	19.9	30.4	56.0	-25.6
2.243	10.5	19.8	30.3	56.0	-25.7
4.918	10.4	19.9	30.3	56.0	-25.7
1.370	10.5	19.8	30.3	56.0	-25.7
4.735	10.3	19.9	30.2	56.0	-25.8
4.817	10.3	19.9	30.2	56.0	-25.8

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.769	12.5	19.8	32.3	46.0	-13.7
1.045	11.8	19.8	31.6	46.0	-14.4
4.966	11.4	20.0	31.4	46.0	-14.6
4.552	11.4	19.9	31.3	46.0	-14.7
1.814	11.4	19.8	31.2	46.0	-14.8
3.855	11.2	19.9	31.1	46.0	-14.9
1.695	11.3	19.8	31.1	46.0	-14.9
0.926	11.1	19.9	31.0	46.0	-15.0
0.646	11.1	19.8	30.9	46.0	-15.1
1.187	11.0	19.8	30.8	46.0	-15.2
2.120	10.9	19.9	30.8	46.0	-15.2
1.441	10.9	19.8	30.7	46.0	-15.3
4.679	10.7	19.9	30.6	46.0	-15.4
1.139	10.8	19.8	30.6	46.0	-15.4
4.485	10.6	19.9	30.5	46.0	-15.5
0.844	10.6	19.9	30.5	46.0	-15.5
1.262	10.7	19.8	30.5	46.0	-15.5
4.634	10.5	19.9	30.4	46.0	-15.6
1.086	10.6	19.8	30.4	46.0	-15.6
0.825	10.5	19.9	30.4	46.0	-15.6
2.310	10.5	19.9	30.4	46.0	-15.6
2.243	10.5	19.8	30.3	46.0	-15.7
4.918	10.4	19.9	30.3	46.0	-15.7
1.370	10.5	19.8	30.3	46.0	-15.7
4.735	10.3	19.9	30.2	46.0	-15.8
4.817	10.3	19.9	30.2	46.0	-15.8

CONCLUSION

Pass

Jonathan Kiefer

Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	ERM5220R01	Work Order:	HNYW0135
Serial Number:	06555010000040	Date:	11/16/2015
Customer:	Honeywell, Automation and Control Solutions	Temperature:	24.1°C
Attendees:	None	Relative Humidity:	39.9%
Customer Project:	None	Bar. Pressure:	1014 mb
Tested By:	Jonathan Kiefer	Job Site:	TX01
Power:	24VAC	Configuration:	HNYW0135-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	11	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

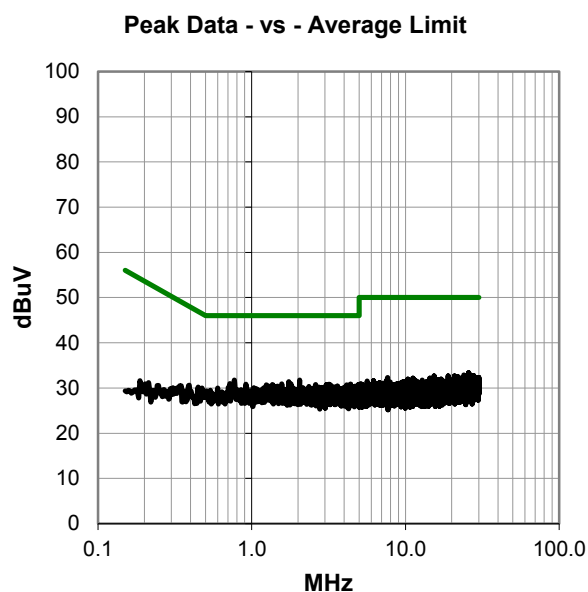
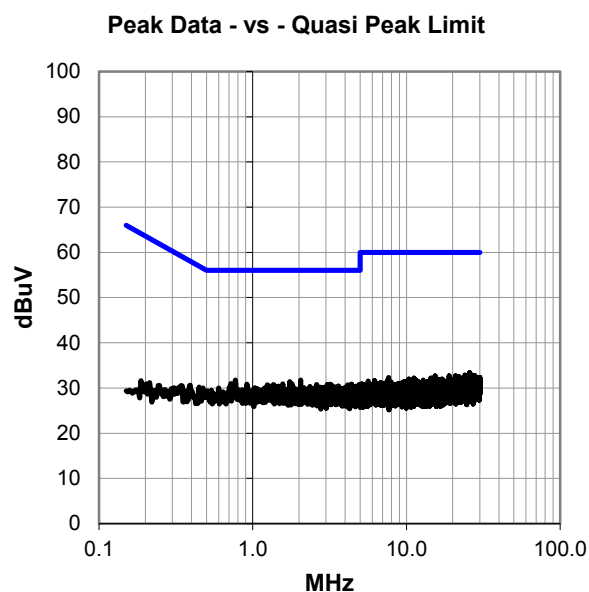
None

EUT OPERATING MODES

Transmitting Antenna B, Modulated, Mid Channel

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS



WTD 2015.10.28
PSA-ESCI 2015.07.01, EmR5 2015.11.03

RESULTS - Run #11

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.045	11.9	19.9	31.8	56.0	-24.2
0.769	11.9	19.8	31.7	56.0	-24.3
1.739	11.6	19.8	31.4	56.0	-24.6
0.721	11.2	19.8	31.0	56.0	-25.0
1.799	11.1	19.8	30.9	56.0	-25.1
1.568	11.1	19.8	30.9	56.0	-25.1
4.399	10.9	19.9	30.8	56.0	-25.2
0.915	10.9	19.9	30.8	56.0	-25.2
3.187	10.9	19.9	30.8	56.0	-25.2
1.366	11.0	19.8	30.8	56.0	-25.2
4.948	10.8	19.9	30.7	56.0	-25.3
2.601	10.9	19.8	30.7	56.0	-25.3
4.157	10.8	19.9	30.7	56.0	-25.3
3.053	10.8	19.9	30.7	56.0	-25.3
1.243	10.9	19.8	30.7	56.0	-25.3
3.254	10.8	19.9	30.7	56.0	-25.3
4.731	10.5	19.9	30.4	56.0	-25.6
4.146	10.5	19.9	30.4	56.0	-25.6
3.612	10.5	19.9	30.4	56.0	-25.6
1.471	10.6	19.8	30.4	56.0	-25.6
1.288	10.6	19.8	30.4	56.0	-25.6
1.400	10.6	19.8	30.4	56.0	-25.6
2.351	10.5	19.9	30.4	56.0	-25.6
4.978	10.4	20.0	30.4	56.0	-25.6
4.429	10.4	19.9	30.3	56.0	-25.7
3.411	10.4	19.9	30.3	56.0	-25.7

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.045	11.9	19.9	31.8	46.0	-14.2
0.769	11.9	19.8	31.7	46.0	-14.3
1.739	11.6	19.8	31.4	46.0	-14.6
0.721	11.2	19.8	31.0	46.0	-15.0
1.799	11.1	19.8	30.9	46.0	-15.1
1.568	11.1	19.8	30.9	46.0	-15.1
4.399	10.9	19.9	30.8	46.0	-15.2
0.915	10.9	19.9	30.8	46.0	-15.2
3.187	10.9	19.9	30.8	46.0	-15.2
1.366	11.0	19.8	30.8	46.0	-15.2
4.948	10.8	19.9	30.7	46.0	-15.3
2.601	10.9	19.8	30.7	46.0	-15.3
4.157	10.8	19.9	30.7	46.0	-15.3
3.053	10.8	19.9	30.7	46.0	-15.3
1.243	10.9	19.8	30.7	46.0	-15.3
3.254	10.8	19.9	30.7	46.0	-15.3
4.731	10.5	19.9	30.4	46.0	-15.6
4.146	10.5	19.9	30.4	46.0	-15.6
3.612	10.5	19.9	30.4	46.0	-15.6
1.471	10.6	19.8	30.4	46.0	-15.6
1.288	10.6	19.8	30.4	46.0	-15.6
1.400	10.6	19.8	30.4	46.0	-15.6
2.351	10.5	19.9	30.4	46.0	-15.6
4.978	10.4	20.0	30.4	46.0	-15.6
4.429	10.4	19.9	30.3	46.0	-15.7
3.411	10.4	19.9	30.3	46.0	-15.7

CONCLUSION

Pass

Jonathan Kiefer

Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	ERM5220R01	Work Order:	HNYW0135
Serial Number:	06555010000040	Date:	11/16/2015
Customer:	Honeywell, Automation and Control Solutions	Temperature:	24.1°C
Attendees:	None	Relative Humidity:	39.9%
Customer Project:	None	Bar. Pressure:	1014 mb
Tested By:	Jonathan Kiefer	Job Site:	TX01
Power:	24VAC	Configuration:	HNYW0135-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	12	Line:	Neutral	Add. Ext. Attenuation (dB):	0
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COMMENTS

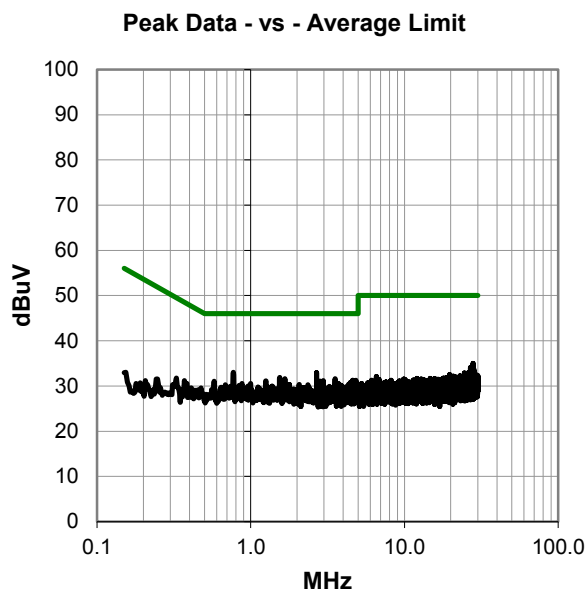
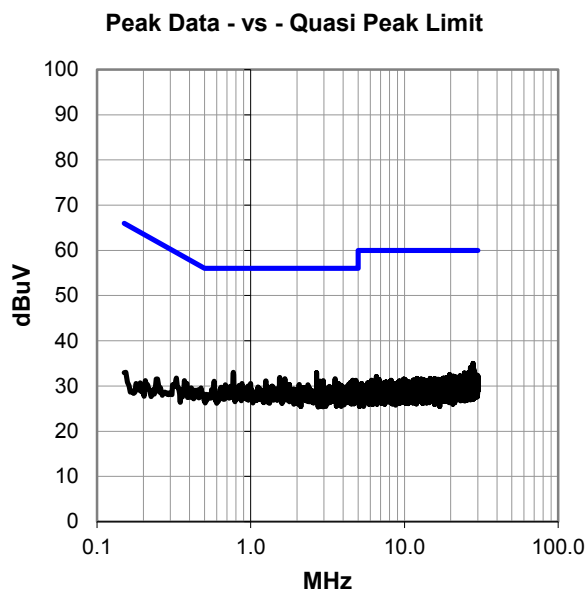
None

EUT OPERATING MODES

Transmitting Antenna B, Modulated, High Channel

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS



WTD 2015.10.28
PSA-ESCI 2015.07.01, EmR5 2015.11.03

RESULTS - Run #12

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.769	13.2	19.8	33.0	56.0	-23.0
2.683	13.1	19.8	32.9	56.0	-23.1
1.542	12.1	19.8	31.9	56.0	-24.1
3.534	11.7	19.9	31.6	56.0	-24.4
1.668	11.8	19.8	31.6	56.0	-24.4
4.605	11.3	19.9	31.2	56.0	-24.8
4.825	11.3	19.9	31.2	56.0	-24.8
2.959	11.3	19.9	31.2	56.0	-24.8
1.251	11.3	19.8	31.1	56.0	-24.9
0.579	11.3	19.8	31.1	56.0	-24.9
2.825	11.2	19.8	31.0	56.0	-25.0
27.989	13.6	21.4	35.0	60.0	-25.0
4.452	10.8	19.9	30.7	56.0	-25.3
4.925	10.6	19.9	30.5	56.0	-25.5
3.709	10.6	19.9	30.5	56.0	-25.5
0.878	10.6	19.9	30.5	56.0	-25.5
0.997	10.7	19.8	30.5	56.0	-25.5
3.776	10.5	19.9	30.4	56.0	-25.6
4.351	10.5	19.9	30.4	56.0	-25.6
2.068	10.5	19.9	30.4	56.0	-25.6
1.784	10.5	19.8	30.3	56.0	-25.7
2.359	10.4	19.9	30.3	56.0	-25.7
3.597	10.3	19.9	30.2	56.0	-25.8
0.840	10.2	19.9	30.1	56.0	-25.9
26.918	12.7	21.4	34.1	60.0	-25.9
3.896	10.1	19.9	30.0	56.0	-26.0

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.769	13.2	19.8	33.0	46.0	-13.0
2.683	13.1	19.8	32.9	46.0	-13.1
1.542	12.1	19.8	31.9	46.0	-14.1
3.534	11.7	19.9	31.6	46.0	-14.4
1.668	11.8	19.8	31.6	46.0	-14.4
4.605	11.3	19.9	31.2	46.0	-14.8
4.825	11.3	19.9	31.2	46.0	-14.8
2.959	11.3	19.9	31.2	46.0	-14.8
1.251	11.3	19.8	31.1	46.0	-14.9
0.579	11.3	19.8	31.1	46.0	-14.9
2.825	11.2	19.8	31.0	46.0	-15.0
27.989	13.6	21.4	35.0	50.0	-15.0
4.452	10.8	19.9	30.7	46.0	-15.3
4.925	10.6	19.9	30.5	46.0	-15.5
3.709	10.6	19.9	30.5	46.0	-15.5
0.878	10.6	19.9	30.5	46.0	-15.5
0.997	10.7	19.8	30.5	46.0	-15.5
3.776	10.5	19.9	30.4	46.0	-15.6
4.351	10.5	19.9	30.4	46.0	-15.6
2.068	10.5	19.9	30.4	46.0	-15.6
1.784	10.5	19.8	30.3	46.0	-15.7
2.359	10.4	19.9	30.3	46.0	-15.7
3.597	10.3	19.9	30.2	46.0	-15.8
0.840	10.2	19.9	30.1	46.0	-15.9
26.918	12.7	21.4	34.1	50.0	-15.9
3.896	10.1	19.9	30.0	46.0	-16.0

CONCLUSION

Pass

Jonathan Kiefer

Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	ERM5220R01	Work Order:	HNYW0135
Serial Number:	06555010000040	Date:	11/16/2015
Customer:	Honeywell, Automation and Control Solutions	Temperature:	24.1°C
Attendees:	None	Relative Humidity:	39.9%
Customer Project:	None	Bar. Pressure:	1014 mb
Tested By:	Jonathan Kiefer	Job Site:	TX01
Power:	24VAC	Configuration:	HNYW0135-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2013

TEST PARAMETERS

Run #:	13	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

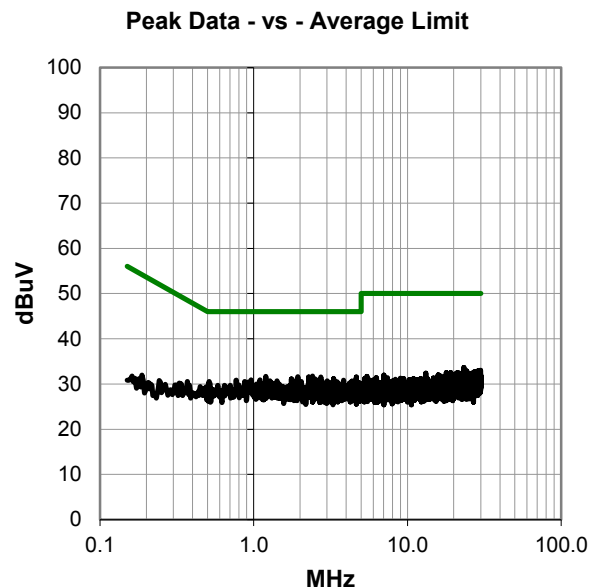
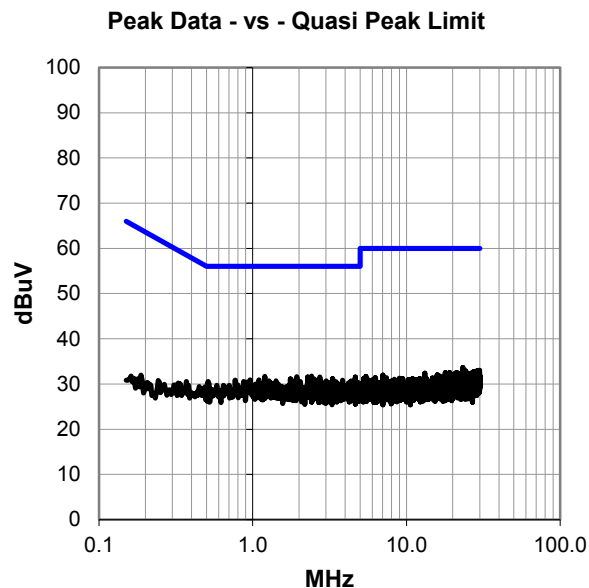
None

EUT OPERATING MODES

Transmitting Antenna B, Modulated, High Channel

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS



WTD 2015.10.28
PSA-ESCI 2015.07.01, EmR5 2015.11.03

RESULTS - Run #13

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.407	11.9	19.9	31.8	56.0	-24.2
1.198	11.9	19.8	31.7	56.0	-24.3
1.937	11.8	19.8	31.6	56.0	-24.4
2.277	11.7	19.9	31.6	56.0	-24.4
4.649	11.6	19.9	31.5	56.0	-24.5
2.728	11.7	19.8	31.5	56.0	-24.5
3.314	11.3	19.9	31.2	56.0	-24.8
2.504	11.3	19.9	31.2	56.0	-24.9
1.758	11.3	19.8	31.1	56.0	-24.9
1.903	11.2	19.8	31.0	56.0	-25.0
4.638	11.1	19.9	31.0	56.0	-25.0
2.687	11.2	19.8	31.0	56.0	-25.0
2.303	11.1	19.9	31.0	56.0	-25.0
0.960	11.0	19.9	30.9	56.0	-25.1
1.098	11.1	19.8	30.9	56.0	-25.1
3.847	10.9	19.9	30.8	56.0	-25.2
0.769	11.0	19.8	30.8	56.0	-25.2
3.004	10.8	19.9	30.7	56.0	-25.3
1.273	10.9	19.8	30.7	56.0	-25.3
1.418	10.9	19.8	30.7	56.0	-25.3
4.351	10.7	19.9	30.6	56.0	-25.4
2.791	10.8	19.8	30.6	56.0	-25.4
0.512	10.8	19.8	30.6	56.0	-25.4
2.038	10.7	19.9	30.6	56.0	-25.4
0.874	10.6	19.9	30.5	56.0	-25.5
3.485	10.6	19.9	30.5	56.0	-25.5

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
2.407	11.9	19.9	31.8	46.0	-14.2
1.198	11.9	19.8	31.7	46.0	-14.3
1.937	11.8	19.8	31.6	46.0	-14.4
2.277	11.7	19.9	31.6	46.0	-14.4
4.649	11.6	19.9	31.5	46.0	-14.5
2.728	11.7	19.8	31.5	46.0	-14.5
3.314	11.3	19.9	31.2	46.0	-14.8
2.504	11.3	19.9	31.2	46.0	-14.9
1.758	11.3	19.8	31.1	46.0	-14.9
1.903	11.2	19.8	31.0	46.0	-15.0
4.638	11.1	19.9	31.0	46.0	-15.0
2.687	11.2	19.8	31.0	46.0	-15.0
2.303	11.1	19.9	31.0	46.0	-15.0
0.960	11.0	19.9	30.9	46.0	-15.1
1.098	11.1	19.8	30.9	46.0	-15.1
3.847	10.9	19.9	30.8	46.0	-15.2
0.769	11.0	19.8	30.8	46.0	-15.2
3.004	10.8	19.9	30.7	46.0	-15.3
1.273	10.9	19.8	30.7	46.0	-15.3
1.418	10.9	19.8	30.7	46.0	-15.3
4.351	10.7	19.9	30.6	46.0	-15.4
2.791	10.8	19.8	30.6	46.0	-15.4
0.512	10.8	19.8	30.6	46.0	-15.4
2.038	10.7	19.9	30.6	46.0	-15.4
0.874	10.6	19.9	30.5	46.0	-15.5
3.485	10.6	19.9	30.5	46.0	-15.5

CONCLUSION

Pass

Jonathan Kiefer

Tested By