



Rosemount, Inc.

RM5800

FCC 15.247:2017

FCC 15.207:2017

2400 - 2483.5 MHz DTS Transceiver

Report # EMPM0028 Rev. 1



NVLAP Lab Code: 200881-0



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CERTIFICATE OF TEST

Last Date of Test: November 7, 2017

Rosemount, Inc.

Model: RM5800

Radio Equipment Testing

Standards

Specification	Method
FCC 15.207:2017	ANSI C63.10:2013
FCC 15.247:2017	ANSI C63.10:2013, KDB 558074

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	AC Powerline Conducted Emissions	Yes	Pass	
6.5, 6.6, 11.12.1, 11.13.2	Spurious Radiated Emissions	Yes	Pass	
7.8.2	Carrier Frequency Separation	No	N/A	Not required for DTS devices.
7.8.3	Number of Hopping Frequencies	No	N/A	Not required for DTS devices.
7.8.4	Dwell Time	No	N/A	Not required for DTS devices.
7.8.6	Band Edge Compliance - Hopping Mode	No	N/A	Not required for DTS devices.
11.6	Duty Cycle	Yes	Pass	
11.8.2	Occupied Bandwidth	Yes	Pass	
11.9.1.1	Output Power	Yes	Pass	
11.10.2	Power Spectral Density	Yes	Pass	
11.11	Band Edge Compliance	Yes	Pass	
11.11	Spurious Conducted Emissions	Yes	Pass	

Deviations From Test Standards

None

Approved By:

Matt Nuernberg, 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		
01	Added AC Powerline Conducted Emissions to CoT. Updated last date of test to November 7, 2017. Added FCC 15.207:2017 to the CoT.	11/8/2017	2
	Updated last date of test to November 7, 2017.	11/8/2017	8
	Added configuration EMPM0028-12	11/8/2017	12
	Added AC Powerline Conducted Emissions on 11/7/2017 to modifications.	11/8/2017	13
	Added AC Powerline Conducted Emissions data.	11/8/2017	14-18

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 Element to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

ISED - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with ISED.

European Union

European Commission – Within Element, we have a EU Notified Body validated for the EMCD and RED Directives.

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://portlandcustomer.element.com/ts/scope/scope.htm>

<http://gsi.nist.gov/global/docs/cabs/designations.html>

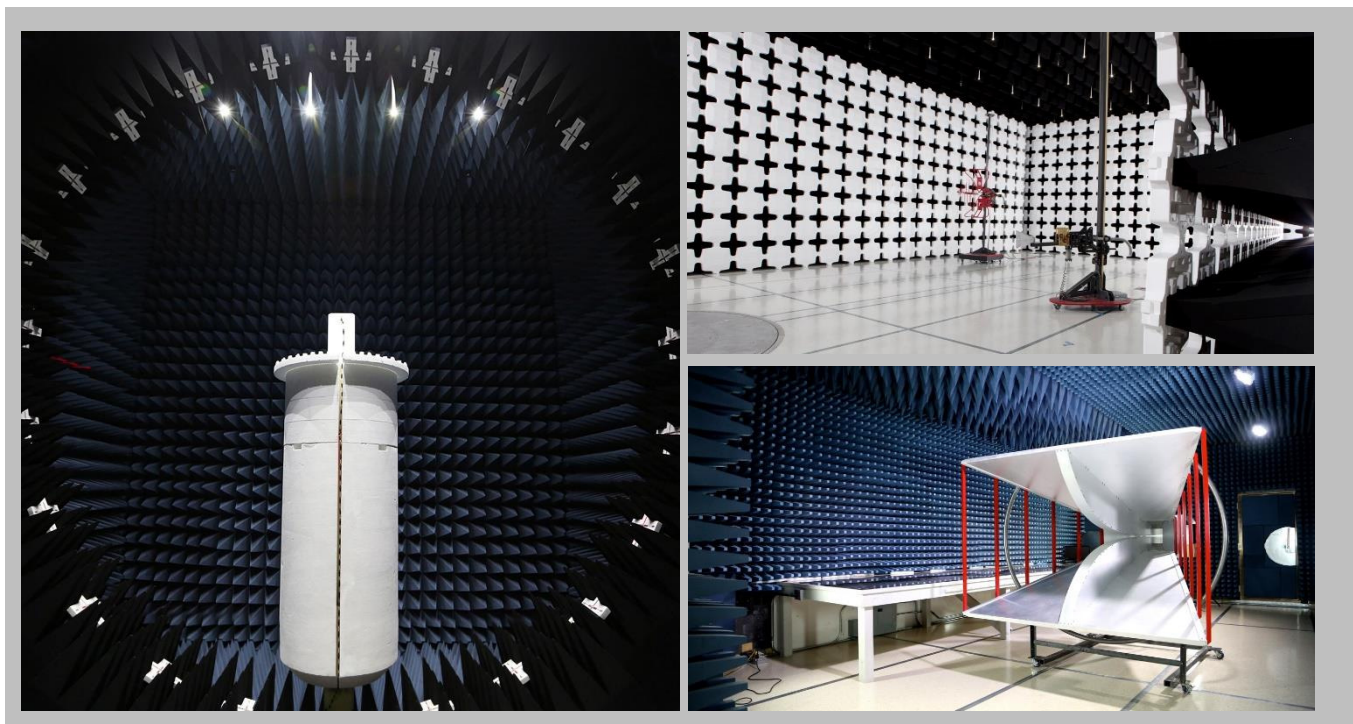
FACILITIES



2017.7.25



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 98011 (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
Innovation, Science and Economic Development Canada					
2834B-1, 2834B-3	2834E-1, 2834E-3	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



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.

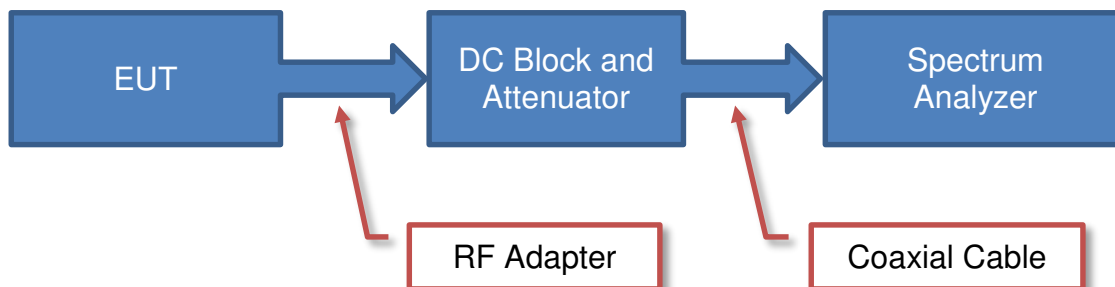
A measurement uncertainty estimation has been performed for each test per our internal quality document WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) for each test is on each data sheet. Our measurement 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.

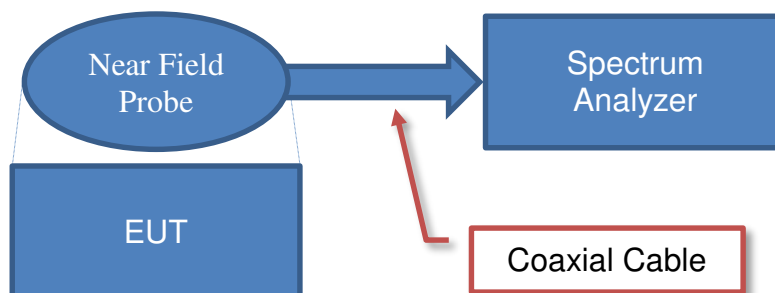
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%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

Test Setup Block Diagrams

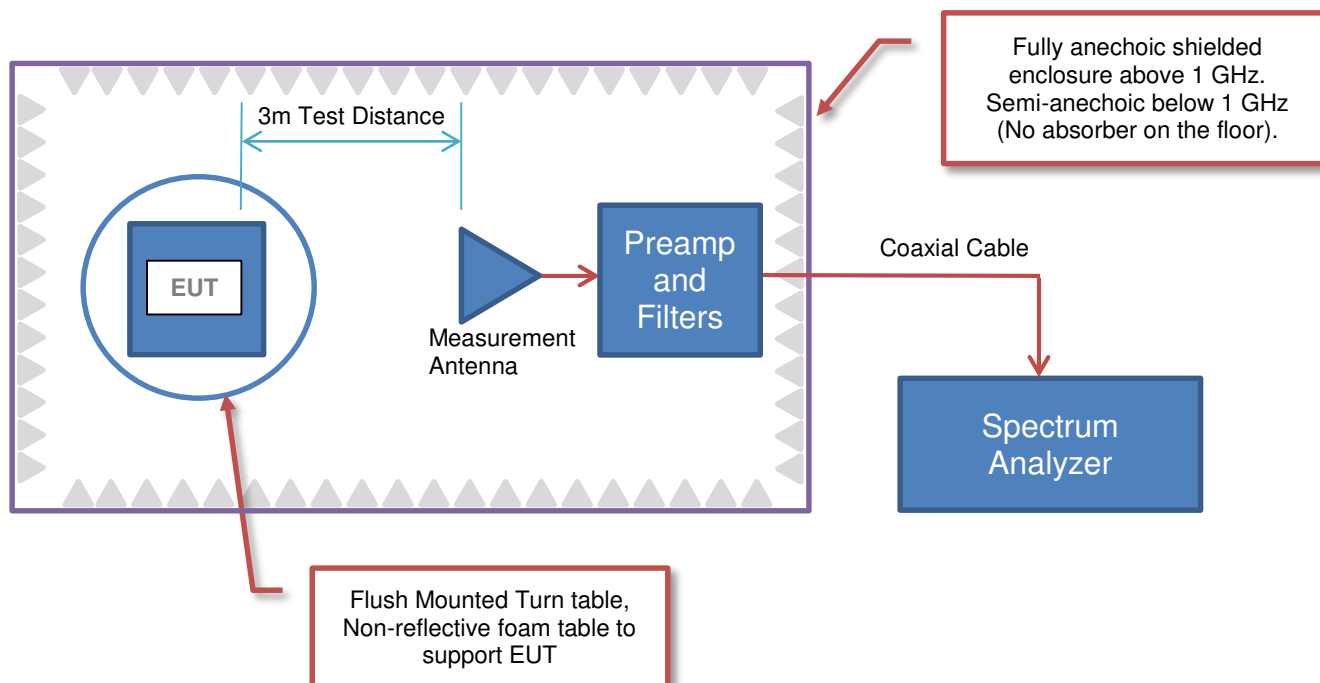
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



Spurious Radiated Emissions





PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Rosemount, Inc.
Address:	8200 Market Blvd. MS SC3L
City, State, Zip:	Chanhassen, MN 55317
Test Requested By:	Merritt Pulkrabek
Model:	RM5800
First Date of Test:	August 14, 2017
Last Date of Test:	November 7, 2017
Receipt Date of Samples:	August 14, 2017
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:

2.4 GHz DTS radio module transceiver utilizing several external antenna options as shown below and on the Configurations pages:

- 8 dBi Omni, PCTEL DC22628
- 17 dBi Sector, L-com HG2417P-120
- 12 dBi Yagi, L-com HG2412SY-NF
- 24 dBi Parabolic, L-com HG2424EG

Testing Objective:

To demonstrate compliance of the DTS radio under FCC 15. 247:2017 for operation in the 2400 – 2483.5 MHz band.

CONFIGURATIONS



Configuration EMPM0028- 1

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
RM5800	Rosemount, Inc.	RM5800	D1
Fiberglass Omni Antenna	PCTEL	DC 22628	MFB24008DC

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
9VDC Battery	Energizer	6LR61-6AM6	None

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Signal Cable	No	.3m	No	RM5800	Antenna
Alligator Cables (x2)	No	1m	No	RM5800	9VDC Battery

Configuration EMPM0028- 2

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
RM5800	Rosemount, Inc.	RM5800	D1
Yagi Antenna	L-com	HG2412SY-NF	None

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
9VDC Battery	Energizer	6LR61-6AM6	None

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Signal Cable	No	.3m	No	RM5800	Antenna
Alligator Cables (x2)	No	1m	No	RM5800	9VDC Battery

CONFIGURATIONS



Configuration EMPM0028- 3

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
RM5800	Rosemount, Inc.	RM5800	D1
Sector Antenna	L-com	HG2417P-120	None

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
9VDC Battery	Energizer	6LR61-6AM6	None

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Alligator Cables (x2)	No	1m	No	RM5800	9VDC Battery

Configuration EMPM0028- 4

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
RM5800	Rosemount, Inc.	RM5800	D1
Parabolic Antenna	L-com	HG2424EG	None

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
9VDC Battery	Energizer	6LR61-6AM6	None

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Alligator Cables (x2)	No	1m	No	RM5800	9VDC Battery

CONFIGURATIONS



Configuration EMPM0028- 5

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
RM5800	Rosemount, Inc.	RM5800	D2

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
9VDC Battery	Energizer	6LR61-6AM6	None
Laptop	Lenovo	ThinkPad T510	431436U
Power Supply (Laptop)	Lenovo	92P1160	11S92P1160Z1ZBGH9338XW
HART Interface	MACTek	Viator	350097

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Cable (Laptop)	No	1.0m	No	AC Mains	Power Supply (Laptop)
DC Cable (Laptop)	No	1.8m	Yes	Power Supply (Laptop)	Laptop
USB Cable	No	.25cm	No	Laptop	HART Interface
Serial Cable	No	2.0m	No	HART Interface	RM5800
DC Leads	No	0.5m	No	9V Battery	RM5800

CONFIGURATIONS



Configuration EMPM0028- 12

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
RM5800	Rosemount, Inc.	RM5800	D2

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Parabolic Antenna	L-com	HG2424EG	None
DC Power Supply	Agilent	U8002A	MY50490005

Remote Equipment Outside of Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Lenovo	ThinkPad T510	431436U
Power Supply (Laptop)	Lenovo	92P1160	11S92P1160Z1ZBGH9338XW
HART Interface	MACTek	Viator	350097

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Signal Cable	No	.3m	No	RM5800	Antenna
AC Cable (Laptop)	No	1.0m	No	AC Mains	Power Supply (Laptop)
DC Cable (Laptop)	No	1.8m	Yes	Power Supply (Laptop)	Laptop
USB Cable	No	.25cm	No	Laptop	HART Interface
Serial Cable	No	2.0m	No	HART Interface	RM5800
AC Power Cable (DC Power Supply)	No	1.8m	No	AC Mains	DC Power Supply
DC Leads	No	1.0m	No	DC Power Supply	RM5800

MODIFICATIONS



Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	8/14/2017	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	8/15/2017	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	8/15/2017	Duty Cycle	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
4	8/15/2017	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
5	8/15/2017	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
6	8/15/2017	Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
7	8/15/2017	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
8	11/7/2017	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



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. Per the standard, an insulating material was also added to ground plane between the EUT's power and remote I/O cables. 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 50ohm measuring port is terminated by a 50ohm EMI meter or a 50ohm resistive load. All 50ohm measuring ports of the LISN are terminated by 50ohm. 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
Receiver	Rohde & Schwarz	ESR7	ARI	6/4/2017	6/4/2018
LISN	Solar Electronics	9252-50-R-24-BNC	LIY	3/20/2017	3/20/2018
Cable - Conducted Cable Assembly	Element	MNC, HGN, TYK	MNCA	1/27/2017	1/27/2018

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

EMPM0028-12

MODES INVESTIGATED

Continuous transmit, modulated, mid Ch. 2440MHz

AC POWERLINE CONDUCTED EMISSIONS



EUT:	RM5800	Work Order:	EMPM0028
Serial Number:	D2	Date:	11/07/2017
Customer:	Rosemount, Inc.	Temperature:	22.2°C
Attendees:	None	Relative Humidity:	22.5%
Customer Project:	None	Bar. Pressure:	1033 mb
Tested By:	Cole Ghizzone	Job Site:	MN03
Power:	9VDC via 120VAC/60Hz	Configuration:	EMPM0028-12

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2017	ANSI C63.10:2013

TEST PARAMETERS

Run #:	1	Line:	High Line	Add. Ext. Attenuation (dB):	0
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COMMENTS

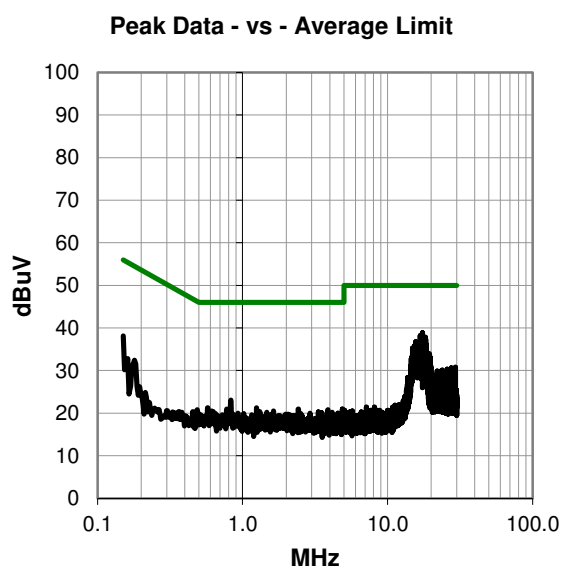
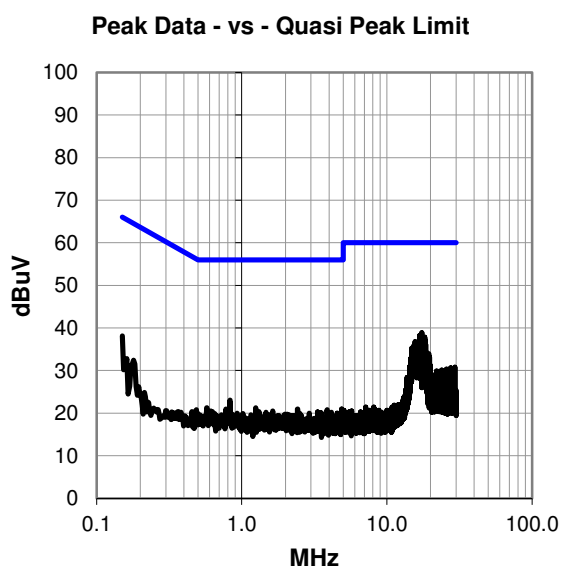
Using the highest gain antenna (Parabolic)

EUT OPERATING MODES

Continuous transmit, modulated, mid Ch. 2440MHz

DEVIATIONS FROM TEST STANDARD

None



AC POWERLINE CONDUCTED EMISSIONS



RESULTS - Run #1

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
17.424	17.5	21.4	38.9	60.0	-21.1
16.774	16.8	21.4	38.2	60.0	-21.8
18.192	16.3	21.5	37.8	60.0	-22.2
17.364	16.3	21.4	37.7	60.0	-22.3
18.364	15.9	21.5	37.4	60.0	-22.6
17.278	15.5	21.4	36.9	60.0	-23.1
15.610	15.6	21.2	36.8	60.0	-23.2
15.946	15.4	21.2	36.6	60.0	-23.4
18.345	14.6	21.5	36.1	60.0	-23.9
18.505	14.6	21.5	36.1	60.0	-23.9
16.200	14.7	21.3	36.0	60.0	-24.0
15.349	14.6	21.2	35.8	60.0	-24.2
18.416	14.3	21.5	35.8	60.0	-24.2
16.942	14.3	21.4	35.7	60.0	-24.3
17.539	14.3	21.4	35.7	60.0	-24.3
16.517	14.1	21.4	35.5	60.0	-24.5
17.483	14.1	21.4	35.5	60.0	-24.5
16.032	14.2	21.2	35.4	60.0	-24.6
14.883	14.1	21.2	35.3	60.0	-24.7
18.136	13.8	21.5	35.3	60.0	-24.7
18.315	13.8	21.5	35.3	60.0	-24.7
16.606	13.8	21.4	35.2	60.0	-24.8
17.849	13.7	21.5	35.2	60.0	-24.8
15.775	13.9	21.2	35.1	60.0	-24.9
17.927	13.6	21.5	35.1	60.0	-24.9
17.506	13.5	21.4	34.9	60.0	-25.1

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
17.424	17.5	21.4	38.9	50.0	-11.1
16.774	16.8	21.4	38.2	50.0	-11.8
18.192	16.3	21.5	37.8	50.0	-12.2
17.364	16.3	21.4	37.7	50.0	-12.3
18.364	15.9	21.5	37.4	50.0	-12.6
17.278	15.5	21.4	36.9	50.0	-13.1
15.610	15.6	21.2	36.8	50.0	-13.2
15.946	15.4	21.2	36.6	50.0	-13.4
18.345	14.6	21.5	36.1	50.0	-13.9
18.505	14.6	21.5	36.1	50.0	-13.9
16.200	14.7	21.3	36.0	50.0	-14.0
15.349	14.6	21.2	35.8	50.0	-14.2
18.416	14.3	21.5	35.8	50.0	-14.2
16.942	14.3	21.4	35.7	50.0	-14.3
17.539	14.3	21.4	35.7	50.0	-14.3
16.517	14.1	21.4	35.5	50.0	-14.5
17.483	14.1	21.4	35.5	50.0	-14.5
16.032	14.2	21.2	35.4	50.0	-14.6
14.883	14.1	21.2	35.3	50.0	-14.7
18.136	13.8	21.5	35.3	50.0	-14.7
18.315	13.8	21.5	35.3	50.0	-14.7
16.606	13.8	21.4	35.2	50.0	-14.8
17.849	13.7	21.5	35.2	50.0	-14.8
15.775	13.9	21.2	35.1	50.0	-14.9
17.927	13.6	21.5	35.1	50.0	-14.9
17.506	13.5	21.4	34.9	50.0	-15.1

CONCLUSION

Pass

Tested By

AC POWERLINE CONDUCTED EMISSIONS



EUT:	RM5800	Work Order:	EMPM0028
Serial Number:	D2	Date:	11/07/2017
Customer:	Rosemount, Inc.	Temperature:	22.2°C
Attendees:	None	Relative Humidity:	22.5%
Customer Project:	None	Bar. Pressure:	1033 mb
Tested By:	Cole Ghizzone	Job Site:	MN03
Power:	9VDC	Configuration:	EMPM0028-12

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2017	ANSI C63.10:2013

TEST PARAMETERS

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

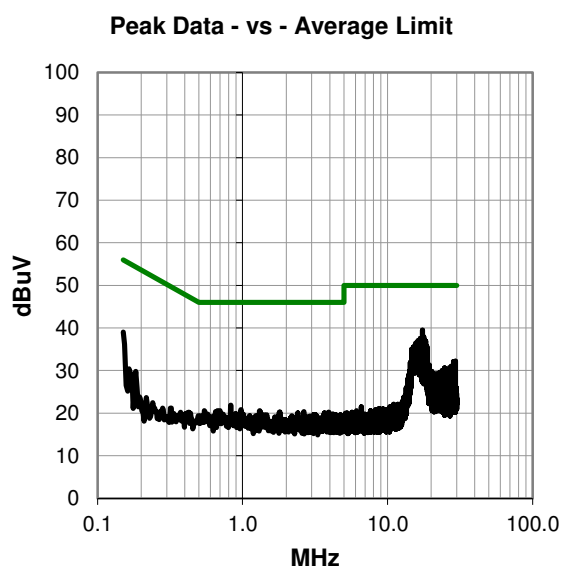
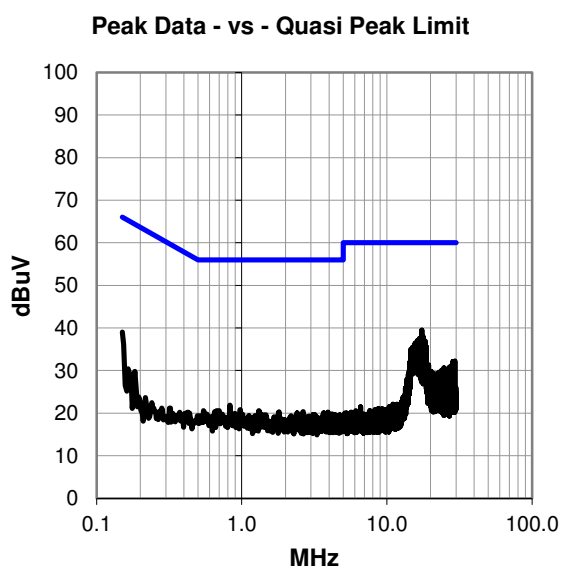
Using the highest gain antenna (Parabolic)

EUT OPERATING MODES

Continuous transmit, modulated, mid Ch. 2440MHz

DEVIATIONS FROM TEST STANDARD

None



AC POWERLINE CONDUCTED EMISSIONS



RESULTS - Run #2

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
17.420	18.1	21.4	39.5	60.0	-20.5
17.513	16.8	21.4	38.2	60.0	-21.8
17.737	16.4	21.5	37.9	60.0	-22.1
17.356	16.3	21.4	37.7	60.0	-22.3
16.800	16.1	21.4	37.5	60.0	-22.5
17.756	15.6	21.5	37.1	60.0	-22.9
16.222	15.6	21.4	37.0	60.0	-23.0
18.285	15.4	21.5	36.9	60.0	-23.1
16.819	15.4	21.4	36.8	60.0	-23.2
17.405	15.3	21.4	36.7	60.0	-23.3
15.607	15.3	21.2	36.5	60.0	-23.5
15.491	14.8	21.2	36.0	60.0	-24.0
17.446	14.6	21.4	36.0	60.0	-24.0
15.763	14.7	21.2	35.9	60.0	-24.1
16.211	14.6	21.3	35.9	60.0	-24.1
18.356	14.4	21.5	35.9	60.0	-24.1
18.405	14.4	21.5	35.9	60.0	-24.1
15.636	14.5	21.2	35.7	60.0	-24.3
18.237	14.2	21.5	35.7	60.0	-24.3
15.316	14.4	21.2	35.6	60.0	-24.4
15.995	14.4	21.2	35.6	60.0	-24.4
18.699	14.1	21.5	35.6	60.0	-24.4
15.207	14.3	21.2	35.5	60.0	-24.5
15.569	14.3	21.2	35.5	60.0	-24.5
17.901	14.0	21.5	35.5	60.0	-24.5
15.010	14.2	21.2	35.4	60.0	-24.6

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
17.420	18.1	21.4	39.5	50.0	-10.5
17.513	16.8	21.4	38.2	50.0	-11.8
17.737	16.4	21.5	37.9	50.0	-12.1
17.356	16.3	21.4	37.7	50.0	-12.3
16.800	16.1	21.4	37.5	50.0	-12.5
17.756	15.6	21.5	37.1	50.0	-12.9
16.222	15.6	21.4	37.0	50.0	-13.0
18.285	15.4	21.5	36.9	50.0	-13.1
16.819	15.4	21.4	36.8	50.0	-13.2
17.405	15.3	21.4	36.7	50.0	-13.3
15.607	15.3	21.2	36.5	50.0	-13.5
15.491	14.8	21.2	36.0	50.0	-14.0
17.446	14.6	21.4	36.0	50.0	-14.0
15.763	14.7	21.2	35.9	50.0	-14.1
16.211	14.6	21.3	35.9	50.0	-14.1
18.356	14.4	21.5	35.9	50.0	-14.1
18.405	14.4	21.5	35.9	50.0	-14.1
15.636	14.5	21.2	35.7	50.0	-14.3
18.237	14.2	21.5	35.7	50.0	-14.3
15.316	14.4	21.2	35.6	50.0	-14.4
15.995	14.4	21.2	35.6	50.0	-14.4
18.699	14.1	21.5	35.6	50.0	-14.4
15.207	14.3	21.2	35.5	50.0	-14.5
15.569	14.3	21.2	35.5	50.0	-14.5
17.901	14.0	21.5	35.5	50.0	-14.5
15.010	14.2	21.2	35.4	50.0	-14.6

CONCLUSION

Pass

Tested By

SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2017.06.01

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

MODES OF OPERATION

Tx Modulated on Low (2405MHz) Mid, (2440MHz), or High (2475MHz) Channels

POWER SETTINGS INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

EMPM0028 - 1

EMPM0028 - 2

EMPM0028 - 3

EMPM0028 - 4

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	26 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
Antenna - Standard Gain	ETS Lindgren	3160-08	AIQ	NCR	0 mo
Antenna - Double Ridge	ETS Lindgren	3115	AJA	6/23/2016	24 mo
Amplifier - Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	9/15/2016	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVO	12/1/2016	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVT	2/14/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	2/14/2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVW	2/14/2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AXP	NCR	0 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYD	1/6/2016	24 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFK	9/22/2016	12 mo
Filter - High Pass	Micro-Tronics	HPM50111	LFN	9/23/2016	12 mo
Cable	ESM Cable Corp.	Bilog Cables	MNH	12/1/2016	12 mo
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	12/1/2016	12 mo
Cable	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	7/12/2017	12 mo
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNP	NCR	0 mo
Filter - Band Reject	Wainwright Instruments GmbH	WTRCT10-2400-2700-20-30-40EEK	CUO	2/24/2017	12 mo
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFI	1/6/2017	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

SPURIOUS RADIATED EMISSIONS



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TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These “pre-scans” are not included in the report. Final measurements on individual emissions were then made and included in this test report.

The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and tunable notch filter) were used for this test in order to provide sufficient measurement sensitivity. A calibration factor for the filter cutoff of the tunable notch filter was applied to measurements near the fundamental (2.6dB and 0.9dB).

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

Measurements at the edges of the allowable band may be presented in an alternative method as provided for in the ANSI C63.10 Marker-Delta method. This method involves performing an in-band fundamental measurement followed by a screen capture of the fundamental and out-of-band emission using reduced measurement instrumentation bandwidths. The amplitude delta measured on this screen capture is applied to the fundamental emission value to show the out-of-band emission level as applied to the limit.

As provided the EUT operated at a 78.4% duty cycle. A duty cycle correction factor (DCCF) has been applied to correct this to a 100% duty cycle. The formula used for this is $DCCF = 10 \cdot \log(100/78.4)$. In the field, the EUT is limited to a 10% max duty cycle. Per client request, a DCCF reflecting a 20% max duty cycle is applied. The formula for this is $DCCF = 20 \cdot \log(20/100)$. Overall, the $DCCF = 10 \cdot \log(100/78.4) + 20 \cdot \log(20/100) = -12.9\text{dB}$.

SPURIOUS RADIATED EMISSIONS



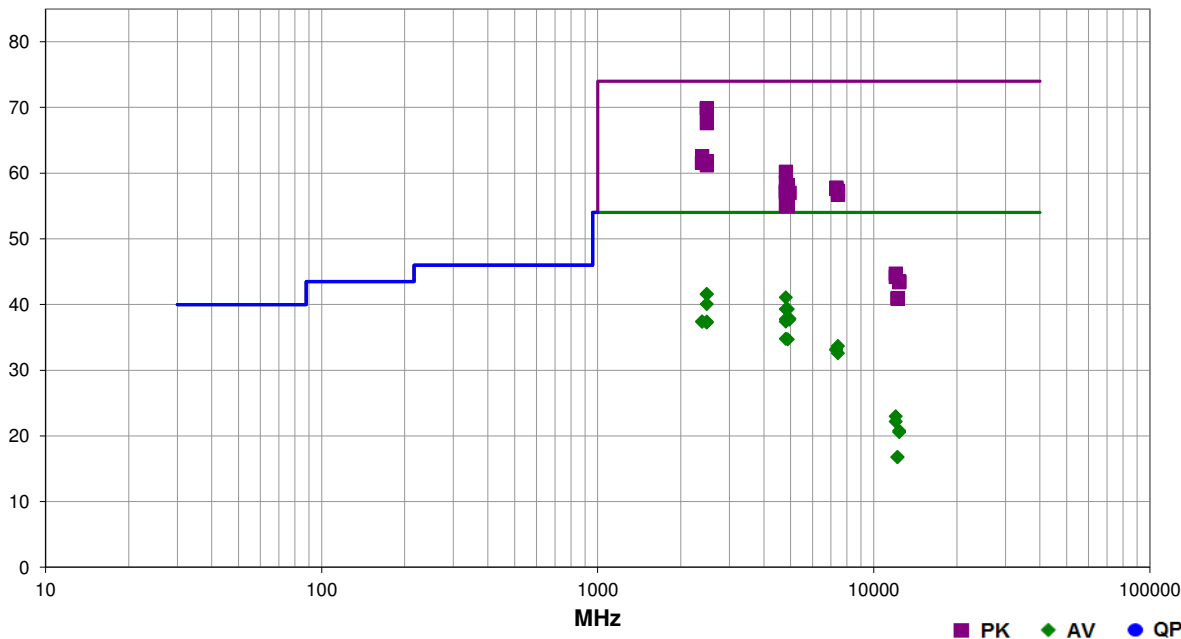
EmiRS 2017.07.11

PSA-ESCI 2017.06.01

Work Order:	EMPM0028	Date:	08/14/17	
Project:	None	Temperature:	22.2 °C	
Job Site:	MN05	Humidity:	53.5% RH	
Serial Number:	D1	Barometric Pres.:	1018 mbar	
EUT:	RM5800			
Configuration:	1			
Customer:	Rosemount, Inc.			
Attendees:	Merritt Pulkrabek			
EUT Power:	Battery			
Operating Mode:	Tx Modulated on Low (2405MHz) Mid, (2440MHz), or High (2475MHz) Ch.			
Deviations:	None			
Comments:	8dBi Omni Antenna used.			

Test Specifications	Test Method
FCC 15.247:2017	ANSI C63.10:2013

Run #	95	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)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2484.420	52.4	-2.5	1.0	278.0	0.0	20.0	Horz	PK	0.0	69.9	74.0	-4.1	High Ch, EUT Horz
2484.433	52.2	-2.5	1.0	271.9	0.0	20.0	Horz	PK	0.0	69.7	74.0	-4.3	High Ch, EUT On Side
2483.663	50.1	-2.5	2.1	283.9	0.0	20.0	Vert	PK	0.0	67.6	74.0	-6.4	High Ch, EUT Vert
2389.947	44.9	-2.3	1.9	8.1	0.0	20.0	Vert	PK	0.0	62.6	74.0	-11.4	Low Ch, EUT Vert
2483.573	44.3	-2.5	1.0	347.0	0.0	20.0	Horz	PK	0.0	61.8	74.0	-12.2	High Ch, EUT Vert
2484.223	44.1	-2.5	1.0	160.1	0.0	20.0	Vert	PK	0.0	61.6	74.0	-12.4	High Ch, EUT Horz
2387.167	43.9	-2.3	1.0	47.1	0.0	20.0	Horz	PK	0.0	61.6	74.0	-12.4	Low Ch, EUT On Side
2483.580	37.0	-2.5	1.0	271.9	-12.9	20.0	Horz	AV	0.0	41.6	54.0	-12.4	High Ch, EUT On Side
2483.527	37.0	-2.5	1.0	278.0	-12.9	20.0	Horz	AV	0.0	41.6	54.0	-12.4	High Ch, EUT Horz
2483.530	43.7	-2.5	1.0	288.0	0.0	20.0	Vert	PK	0.0	61.2	74.0	-12.8	High Ch, EUT On Side
4809.125	47.4	6.6	1.9	257.9	-12.9	0.0	Horz	AV	0.0	41.1	54.0	-12.9	Low Ch, EUT Horz
4809.150	53.6	6.6	1.9	257.9	0.0	0.0	Horz	PK	0.0	60.2	74.0	-13.8	Low Ch, EUT Horz
2483.510	35.5	-2.5	2.1	283.9	-12.9	20.0	Vert	AV	0.0	40.1	54.0	-13.9	High Ch, EUT Vert
4809.108	45.6	6.6	2.5	271.9	-12.9	0.0	Vert	AV	0.0	39.3	54.0	-14.7	Low Ch, EUT Horz
4880.892	45.5	6.7	1.3	250.0	-12.9	0.0	Horz	AV	0.0	39.3	54.0	-14.7	Mid Ch, EUT Horz
4808.925	52.0	6.6	2.5	271.9	0.0	0.0	Vert	PK	0.0	58.6	74.0	-15.4	Low Ch, EUT Horz
4878.875	51.5	6.7	1.3	250.0	0.0	0.0	Horz	PK	0.0	58.2	74.0	-15.8	Mid Ch, EUT Horz

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4950.967	44.0	6.8	1.0	250.0	-12.9	0.0	Horz	AV	0.0	37.9	54.0	-16.1	High Ch, EUT Horz
7322.075	42.8	15.0	1.0	90.0	0.0	0.0	Horz	PK	0.0	57.8	74.0	-16.2	Mid Ch, EUT Horz
4810.975	44.1	6.6	1.0	97.0	-12.9	0.0	Vert	AV	0.0	37.8	54.0	-16.2	Low Ch, EUT On Side
4810.967	44.0	6.6	2.1	264.0	-12.9	0.0	Horz	AV	0.0	37.7	54.0	-16.3	Low Ch, EUT On Side
4950.983	43.8	6.8	1.6	271.0	-12.9	0.0	Vert	AV	0.0	37.7	54.0	-16.3	High Ch, EUT Horz
7322.000	42.6	15.0	1.0	179.0	0.0	0.0	Vert	PK	0.0	57.6	74.0	-16.4	Mid Ch, EUT Horz
2485.447	32.8	-2.5	1.0	347.0	-12.9	20.0	Horz	AV	0.0	37.4	54.0	-16.6	High Ch, EUT Vert
2389.592	32.6	-2.3	1.0	47.1	-12.9	20.0	Horz	AV	0.0	37.4	54.0	-16.6	Low Ch, EUT On Side
2389.857	32.6	-2.3	1.9	8.1	-12.9	20.0	Vert	AV	0.0	37.4	54.0	-16.6	Low Ch, EUT Vert
4809.067	43.7	6.6	1.0	0.0	-12.9	0.0	Vert	AV	0.0	37.4	54.0	-16.6	Low Ch, EUT Vert
4808.858	50.7	6.6	1.0	97.0	0.0	0.0	Vert	PK	0.0	57.3	74.0	-16.7	Low Ch, EUT On Side
7426.333	42.4	14.9	1.0	250.0	0.0	0.0	Horz	PK	0.0	57.3	74.0	-16.7	High Ch, EUT Horz
2484.640	32.7	-2.5	1.0	288.0	-12.9	20.0	Vert	AV	0.0	37.3	54.0	-16.7	High Ch, EUT On Side
2483.970	32.7	-2.5	1.0	160.1	-12.9	20.0	Vert	AV	0.0	37.3	54.0	-16.7	High Ch, EUT Horz
4809.108	50.5	6.6	1.0	0.0	0.0	0.0	Vert	PK	0.0	57.1	74.0	-16.9	Low Ch, EUT Vert
4808.858	50.4	6.6	2.1	264.0	0.0	0.0	Horz	PK	0.0	57.0	74.0	-17.0	Low Ch, EUT On Side
4950.933	50.2	6.8	1.0	250.0	0.0	0.0	Horz	PK	0.0	57.0	74.0	-17.0	High Ch, EUT Horz
4951.092	50.2	6.8	1.6	271.0	0.0	0.0	Vert	PK	0.0	57.0	74.0	-17.0	High Ch, EUT Horz
7427.375	41.8	14.9	2.2	108.0	0.0	0.0	Vert	PK	0.0	56.7	74.0	-17.3	High Ch, EUT Horz
4809.042	48.4	6.6	1.0	158.0	0.0	0.0	Horz	PK	0.0	55.0	74.0	-19.0	Low Ch, EUT Vert
4881.100	48.3	6.7	1.0	275.0	0.0	0.0	Vert	PK	0.0	55.0	74.0	-19.0	Mid Ch, EUT Horz
4809.042	41.1	6.6	1.0	158.0	-12.9	0.0	Horz	AV	0.0	34.8	54.0	-19.2	Low Ch, EUT Vert
4880.975	40.9	6.7	1.0	275.0	-12.9	0.0	Vert	AV	0.0	34.7	54.0	-19.3	Mid Ch, EUT Horz
7426.533	31.7	14.9	1.0	250.0	-12.9	0.0	Horz	AV	0.0	33.7	54.0	-20.3	High Ch, EUT Horz
7318.883	31.0	15.1	1.0	90.0	-12.9	0.0	Horz	AV	0.0	33.2	54.0	-20.8	Mid Ch, EUT Horz
7317.700	30.9	15.1	1.0	179.0	-12.9	0.0	Vert	AV	0.0	33.1	54.0	-20.9	Mid Ch, EUT Horz
7425.325	30.6	14.9	2.2	108.0	-12.9	0.0	Vert	AV	0.0	32.6	54.0	-21.4	High Ch, EUT Horz
12027.080	45.6	-0.9	2.0	63.0	0.0	0.0	Horz	PK	0.0	44.7	74.0	-29.3	Low Ch, EUT Horz
12022.570	45.1	-0.9	1.0	85.0	0.0	0.0	Vert	PK	0.0	44.2	74.0	-29.8	Low Ch, EUT Horz
12372.680	43.4	0.1	1.0	239.0	0.0	0.0	Vert	PK	0.0	43.5	74.0	-30.5	High Ch, EUT Horz
12377.030	43.3	0.1	1.7	236.9	0.0	0.0	Horz	PK	0.0	43.4	74.0	-30.6	High Ch, EUT Horz
12027.430	36.8	-0.9	2.0	63.0	-12.9	0.0	Horz	AV	0.0	23.0	54.0	-31.0	Low Ch, EUT Horz
12027.490	36.0	-0.9	1.0	85.0	-12.9	0.0	Vert	AV	0.0	22.2	54.0	-31.8	Low Ch, EUT Horz
12200.050	41.4	-0.4	1.0	74.0	0.0	0.0	Vert	PK	0.0	41.0	74.0	-33.0	Mid Ch, EUT Horz
12198.430	41.3	-0.4	2.4	351.0	0.0	0.0	Horz	PK	0.0	40.9	74.0	-33.1	Mid Ch, EUT Horz
12377.440	33.6	0.1	1.0	239.0	-12.9	0.0	Vert	AV	0.0	20.8	54.0	-33.2	High Ch, EUT Horz
12377.480	33.4	0.1	1.7	236.9	-12.9	0.0	Horz	AV	0.0	20.6	54.0	-33.4	High Ch, EUT Horz
12198.050	30.1	-0.4	2.4	351.0	-12.9	0.0	Horz	AV	0.0	16.8	54.0	-37.2	Mid Ch, EUT Horz
12197.730	30.1	-0.4	1.0	74.0	-12.9	0.0	Vert	AV	0.0	16.8	54.0	-37.2	Mid Ch, EUT Horz

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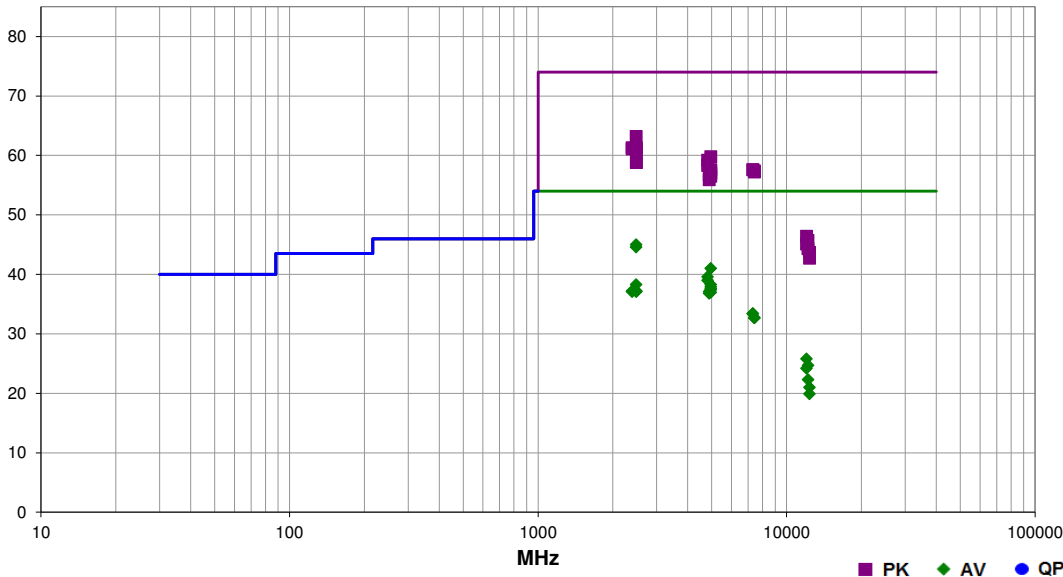
EmiR5 2017.07.11

PSA-ESCI 2017.06.01

Work Order:	EMPM0028	Date:	08/14/17	
Project:	None	Temperature:	22.2 °C	
Job Site:	MN05	Humidity:	53.5% RH	
Serial Number:	D1	Barometric Pres.:	1018 mbar	
EUT:	RM5800			
Configuration:	2			
Customer:	Rosemount, Inc.			
Attendees:	Merritt Pulkrabek			
EUT Power:	Battery			
Operating Mode:	Tx Modulated on Low (2405MHz) Mid, (2440MHz), or High (2475MHz) Ch.			
Deviations:	None			
Comments:	12dBi Yagi Antenna used, 40 deg beam angle.			

Test Specifications	Test Method
FCC 15.247:2017	ANSI C63.10:2013

Run #	73	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Calculated Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Marker Delta Comments
2483.503	40.4	-2.5	1.0	282.9	-12.9	20.0	Horz	AV	0.0	45.0	54.0	-9.0	High Ch, EUT Horz
2483.503	40.0	-2.5	1.3	281.0	-12.9	20.0	Vert	AV	0.0	44.6	54.0	-9.4	High Ch, EUT On Side
2483.637	45.7	-2.5	1.1	286.9	0.0	20.0	Vert	PK	0.0	63.2	74.0	-10.8	High Ch, EUT Horz
2483.850	43.8	-2.5	1.0	0.0	0.0	20.0	Horz	PK	0.0	61.3	74.0	-12.7	High Ch, EUT Vert
2389.400	43.6	-2.3	1.0	65.1	0.0	20.0	Vert	PK	0.0	61.3	74.0	-12.7	Low Ch, EUT On Side
2484.300	43.6	-2.5	1.1	153.0	0.0	20.0	Horz	PK	0.0	61.1	74.0	-12.9	High Ch, EUT On Side
2389.323	43.4	-2.3	1.0	137.1	0.0	20.0	Horz	PK	0.0	61.1	74.0	-12.9	Low Ch, EUT Horz
4951.025	47.1	6.8	1.2	325.9	-12.9	0.0	Horz	AV	0.0	41.0	54.0	-13.0	High Ch, EUT Horz
2485.033	43.4	-2.5	3.1	39.0	0.0	20.0	Vert	PK	0.0	60.9	74.0	-13.1	High Ch, EUT Vert
4951.242	53.0	6.8	1.2	325.9	0.0	0.0	Horz	PK	0.0	59.8	74.0	-14.2	High Ch, EUT Horz
4809.150	45.9	6.6	1.0	303.0	-12.9	0.0	Vert	AV	0.0	39.6	54.0	-14.4	Low Ch, EUT On Side
4808.908	52.6	6.6	1.0	303.0	0.0	0.0	Vert	PK	0.0	59.2	74.0	-14.8	Low Ch, EUT On Side
4809.067	45.3	6.6	1.0	26.1	-12.9	0.0	Horz	AV	0.0	39.0	54.0	-15.0	Low Ch, EUT Horz
2483.745	41.3	-2.5	1.3	281.0	0.0	20.0	Vert	PK	0.0	58.8	74.0	-15.2	High Ch, EUT On Side: Fund 92.8dBuV + - 51.5dBc = 41.3dBuV (calc. amp.)
2483.885	41.3	-2.5	1.0	112.1	0.0	20.0	Horz	PK	0.0	58.8	74.0	-15.2	High Ch, EUT Horz: Fund 92.9dBuV + - 51.6dBc = 41.3dBuV (calc. amp.)
4808.958	51.7	6.6	1.0	26.1	0.0	0.0	Horz	PK	0.0	58.3	74.0	-15.7	Low Ch, EUT Horz
2483.550	33.7	-2.5	1.1	286.9	-12.9	20.0	Vert	AV	0.0	38.3	54.0	-15.7	High Ch, EUT Horz
4950.933	44.4	6.8	1.0	289.9	-12.9	0.0	Vert	AV	0.0	38.3	54.0	-15.7	High Ch, EUT On Side
4950.942	44.0	6.8	1.0	249.0	-12.9	0.0	Horz	AV	0.0	37.9	54.0	-16.1	High Ch, EUT On Side
4951.042	50.8	6.8	1.0	289.9	0.0	0.0	Vert	PK	0.0	57.6	74.0	-16.4	High Ch, EUT On Side
7319.958	42.5	15.1	2.3	307.0	0.0	0.0	Vert	PK	0.0	57.6	74.0	-16.4	Mid Ch, EUT On Side
7319.425	42.5	15.1	1.0	282.0	0.0	0.0	Horz	PK	0.0	57.6	74.0	-16.4	Mid Ch, EUT Horz
4950.942	43.7	6.8	1.0	115.0	-12.9	0.0	Horz	AV	0.0	37.6	54.0	-16.4	High Ch, EUT Vert
4949.050	50.6	6.9	1.0	249.0	0.0	0.0	Horz	PK	0.0	57.5	74.0	-16.5	High Ch, EUT On Side
7426.775	42.5	14.9	2.4	128.0	0.0	0.0	Horz	PK	0.0	57.4	74.0	-16.6	High Ch, EUT Horz

Freq (MHz)	Calculated Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Marker Delta Comments
4950.917	43.5	6.8	1.0	297.9	-12.9	0.0	Vert	AV	0.0	37.4	54.0	-16.6	High Ch, EUT Horz
7424.017	42.3	14.9	1.0	136.0	0.0	0.0	Vert	PK	0.0	57.2	74.0	-16.8	High Ch, EUT On Side
2483.880	32.6	-2.5	1.0	0.0	-12.9	20.0	Horz	AV	0.0	37.2	54.0	-16.8	High Ch, EUT Vert
2483.530	32.6	-2.5	3.1	39.0	-12.9	20.0	Vert	AV	0.0	37.2	54.0	-16.8	High Ch, EUT Vert
2389.507	32.4	-2.3	1.0	137.1	-12.9	20.0	Horz	AV	0.0	37.2	54.0	-16.8	Low Ch, EUT Horz
4949.192	50.2	6.9	1.0	115.0	0.0	0.0	Horz	PK	0.0	57.1	74.0	-16.9	High Ch, EUT Vert
2484.107	32.5	-2.5	1.1	153.0	-12.9	20.0	Horz	AV	0.0	37.1	54.0	-16.9	High Ch, EUT On Side
2389.967	32.3	-2.3	1.0	65.1	-12.9	20.0	Vert	AV	0.0	37.1	54.0	-16.9	Low Ch, EUT On Side
4880.967	43.3	6.7	1.4	275.0	-12.9	0.0	Vert	AV	0.0	37.1	54.0	-16.9	Mid Ch, EUT On Side
4951.242	50.2	6.8	1.0	297.9	0.0	0.0	Vert	PK	0.0	57.0	74.0	-17.0	High Ch, EUT Horz
4950.983	43.1	6.8	1.0	147.0	-12.9	0.0	Vert	AV	0.0	37.0	54.0	-17.0	High Ch, EUT Vert
4880.983	43.0	6.7	1.0	310.0	-12.9	0.0	Horz	AV	0.0	36.8	54.0	-17.2	Mid Ch, EUT Horz
4878.892	50.0	6.7	1.0	310.0	0.0	0.0	Horz	PK	0.0	56.7	74.0	-17.3	Mid Ch, EUT Horz
4950.767	49.7	6.8	1.0	147.0	0.0	0.0	Vert	PK	0.0	56.5	74.0	-17.5	High Ch, EUT Vert
4880.933	49.2	6.7	1.4	275.0	0.0	0.0	Vert	PK	0.0	55.9	74.0	-18.1	Mid Ch, EUT On Side
7318.325	31.2	15.1	2.3	307.0	-12.9	0.0	Vert	AV	0.0	33.4	54.0	-20.6	Mid Ch, EUT On Side
7321.342	31.2	15.1	1.0	282.0	-12.9	0.0	Horz	AV	0.0	33.4	54.0	-20.6	Mid Ch, EUT Horz
7427.425	30.7	14.9	2.4	128.0	-12.9	0.0	Horz	AV	0.0	32.7	54.0	-21.3	High Ch, EUT Horz
7426.892	30.7	14.9	1.0	136.0	-12.9	0.0	Vert	AV	0.0	32.7	54.0	-21.3	High Ch, EUT On Side
12022.910	47.3	-0.9	1.0	311.0	0.0	0.0	Horz	PK	0.0	46.4	74.0	-27.6	Low Ch, EUT Horz
12027.480	39.6	-0.9	1.0	311.0	-12.9	0.0	Horz	AV	0.0	25.8	54.0	-28.2	Low Ch, EUT Horz
12197.570	46.1	-0.4	1.0	312.9	0.0	0.0	Horz	PK	0.0	45.7	74.0	-28.3	Mid Ch, EUT Horz
12027.430	46.0	-0.9	1.0	250.0	0.0	0.0	Vert	PK	0.0	45.1	74.0	-28.9	Low Ch, EUT On Side
12202.470	38.0	-0.4	1.0	312.9	-12.9	0.0	Horz	AV	0.0	24.7	54.0	-29.3	Mid Ch, EUT Horz
12197.750	44.7	-0.4	1.1	253.9	0.0	0.0	Vert	PK	0.0	44.3	74.0	-29.7	Mid Ch, EUT On Side
12027.460	38.0	-0.9	1.0	250.0	-12.9	0.0	Vert	AV	0.0	24.2	54.0	-29.8	Low Ch, EUT On Side
12372.580	43.6	0.1	1.0	250.0	0.0	0.0	Vert	PK	0.0	43.7	74.0	-30.3	High Ch, EUT On Side
12377.110	42.6	0.1	1.9	258.9	0.0	0.0	Horz	PK	0.0	42.7	74.0	-31.3	High Ch, EUT Horz
12202.500	35.6	-0.4	1.1	253.9	-12.9	0.0	Vert	AV	0.0	22.3	54.0	-31.7	Mid Ch, EUT On Side
12377.430	33.8	0.1	1.0	250.0	-12.9	0.0	Vert	AV	0.0	21.0	54.0	-33.0	High Ch, EUT On Side
12377.360	32.7	0.1	1.9	258.9	-12.9	0.0	Horz	AV	0.0	19.9	54.0	-34.1	High Ch, EUT Horz

SPURIOUS RADIATED EMISSIONS



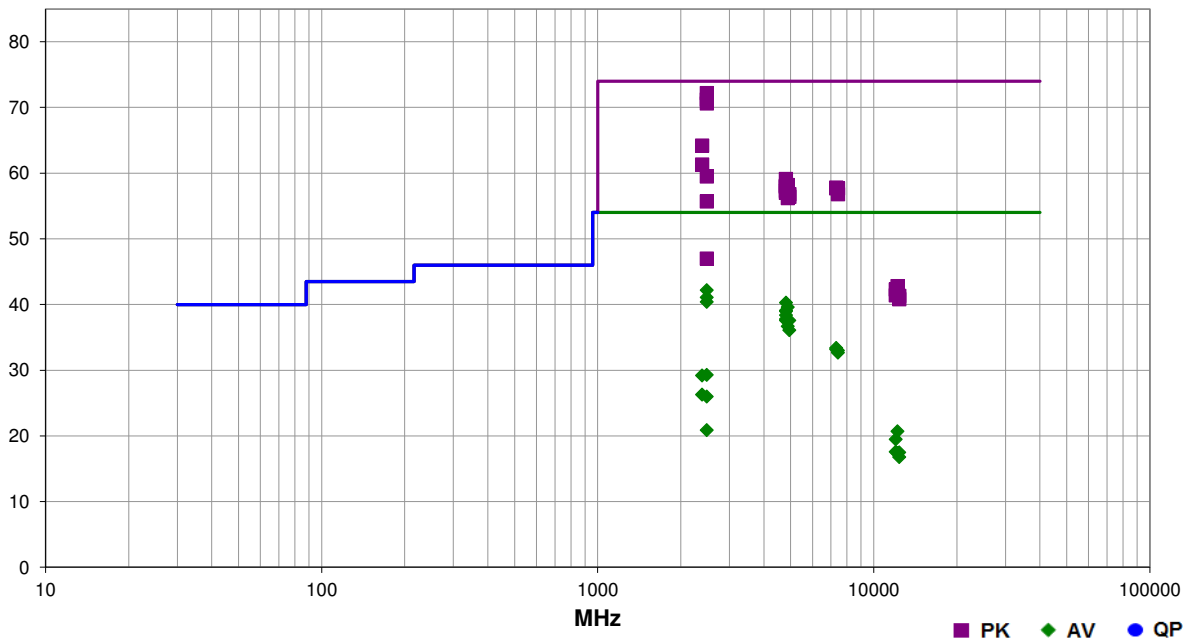
EmiRS 2017.07.11

PSA-ESCI 2017.06.01

Work Order:	EMPM0028	Date:	08/14/17	
Project:	None	Temperature:	22.2 °C	
Job Site:	MN05	Humidity:	53.5% RH	
Serial Number:	D1	Barometric Pres.:	1018 mbar	
EUT:		RM5800		
Configuration:	3			
Customer:	Rosemount, Inc.			
Attendees:	Merritt Pulkrabek			
EUT Power:	Battery			
Operating Mode:	Tx Modulated on Low (2405MHz) Mid, (2440MHz), or High (2475MHz) Ch.			
Deviations:	None			
Comments:	17dBi Sector Antenna, 120 deg beam angle.			

Test Specifications	Test Method
FCC 15.247:2017	ANSI C63.10:2013

Run #	57	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)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2483.727	72.1	-2.5	2.3	1.1	0.0	2.6	Horz	PK	0.0	72.2	74.0	-1.8	High Ch, EUT On Side
2483.507	71.1	-2.5	2.3	96.0	0.0	2.6	Vert	PK	0.0	71.2	74.0	-2.8	High Ch, EUT Vert
2483.790	70.5	-2.5	3.8	9.0	0.0	2.6	Horz	PK	0.0	70.6	74.0	-3.4	High Ch, EUT Horz
2389.603	65.6	-2.3	1.0	95.1	0.0	0.9	Horz	PK	0.0	64.2	74.0	-9.8	Low Ch, EUT On Side
2483.520	55.0	-2.5	2.3	1.1	-12.9	2.6	Horz	AV	0.0	42.2	54.0	-11.8	High Ch, EUT On Side
2389.937	62.7	-2.3	2.1	109.1	0.0	0.9	Vert	PK	0.0	61.3	74.0	-12.7	Low Ch, EUT Vert
2483.513	53.9	-2.5	3.8	9.0	-12.9	2.6	Horz	AV	0.0	41.1	54.0	-12.9	High Ch, EUT Horz
2483.503	53.2	-2.5	2.3	96.0	-12.9	2.6	Vert	AV	0.0	40.4	54.0	-13.6	High Ch, EUT Vert
4810.933	46.6	6.6	2.1	103.0	-12.9	0.0	Horz	AV	0.0	40.3	54.0	-13.7	Low Ch, EUT Horz
4880.975	45.8	6.7	2.0	92.0	-12.9	0.0	Horz	AV	0.0	39.6	54.0	-14.4	Mid Ch, EUT Horz
2483.557	59.4	-2.5	2.2	274.0	0.0	2.6	Vert	PK	0.0	59.5	74.0	-14.5	High Ch, EUT Horz
4808.867	52.5	6.6	2.1	103.0	0.0	0.0	Horz	PK	0.0	59.1	74.0	-14.9	Low Ch, EUT Horz
4810.967	45.4	6.6	2.9	52.1	-12.9	0.0	Vert	AV	0.0	39.1	54.0	-14.9	Low Ch, EUT On Side
4810.917	45.3	6.6	1.0	114.0	-12.9	0.0	Horz	AV	0.0	39.0	54.0	-15.0	Low Ch, EUT On Side
4810.925	44.7	6.6	3.2	187.0	-12.9	0.0	Horz	AV	0.0	38.4	54.0	-15.6	Low Ch, EUT Vert
4879.075	51.5	6.7	2.0	92.0	0.0	0.0	Horz	PK	0.0	58.2	74.0	-15.8	Mid Ch, EUT Horz
4809.133	51.5	6.6	1.0	114.0	0.0	0.0	Horz	PK	0.0	58.1	74.0	-15.9	Low Ch, EUT On Side

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4808.983	51.4	6.6	3.2	187.0	0.0	0.0	Horz	PK	0.0	58.0	74.0	-16.0	Low Ch, EUT Vert
4808.842	51.3	6.6	2.9	52.1	0.0	0.0	Vert	PK	0.0	57.9	74.0	-16.1	Low Ch, EUT On Side
7318.058	42.7	15.1	1.0	94.1	0.0	0.0	Horz	PK	0.0	57.8	74.0	-16.2	Mid Ch, EUT Horz
4810.975	44.1	6.6	1.0	122.0	-12.9	0.0	Vert	AV	0.0	37.8	54.0	-16.2	Low Ch, EUT Vert
7317.983	42.6	15.1	3.2	182.0	0.0	0.0	Vert	PK	0.0	57.7	74.0	-16.3	Mid Ch, EUT On Side
7423.575	42.8	14.9	1.0	148.1	0.0	0.0	Vert	PK	0.0	57.7	74.0	-16.3	High Ch, EUT On Side
4810.983	43.9	6.6	1.1	142.1	-12.9	0.0	Vert	AV	0.0	37.6	54.0	-16.4	Low Ch, EUT Horz
4950.992	43.7	6.8	1.3	89.0	-12.9	0.0	Horz	AV	0.0	37.6	54.0	-16.4	High Ch, EUT Horz
4808.833	50.7	6.6	1.0	122.0	0.0	0.0	Vert	PK	0.0	57.3	74.0	-16.7	Low Ch, EUT Vert
4809.133	50.4	6.6	1.1	142.1	0.0	0.0	Vert	PK	0.0	57.0	74.0	-17.0	Low Ch, EUT Horz
4950.967	50.0	6.8	1.3	89.0	0.0	0.0	Horz	PK	0.0	56.8	74.0	-17.2	High Ch, EUT Horz
7425.158	41.9	14.9	1.0	300.0	0.0	0.0	Horz	PK	0.0	56.8	74.0	-17.2	High Ch, EUT Horz
4880.992	42.9	6.7	1.0	45.0	-12.9	0.0	Vert	AV	0.0	36.7	54.0	-17.3	Mid Ch, EUT On Side
4951.208	49.6	6.8	1.0	126.0	0.0	0.0	Vert	PK	0.0	56.4	74.0	-17.6	High Ch, EUT On Side
4881.033	49.5	6.7	1.0	45.0	0.0	0.0	Vert	PK	0.0	56.2	74.0	-17.8	Mid Ch, EUT On Side
4950.942	42.2	6.8	1.0	126.0	-12.9	0.0	Vert	AV	0.0	36.1	54.0	-17.9	High Ch, EUT On Side
2483.517	55.6	-2.5	1.0	261.9	0.0	2.6	Vert	PK	0.0	55.7	74.0	-18.3	High Ch, EUT On Side
7317.917	31.2	15.1	3.2	182.0	-12.9	0.0	Vert	AV	0.0	33.4	54.0	-20.6	Mid Ch, EUT On Side
7318.350	31.0	15.1	1.0	94.1	-12.9	0.0	Horz	AV	0.0	33.2	54.0	-20.8	Mid Ch, EUT Horz
7426.633	31.0	14.9	1.0	148.1	-12.9	0.0	Vert	AV	0.0	33.0	54.0	-21.0	High Ch, EUT On Side
7425.542	30.7	14.9	1.0	300.0	-12.9	0.0	Horz	AV	0.0	32.7	54.0	-21.3	High Ch, EUT Horz
2483.513	42.1	-2.5	2.2	274.0	-12.9	2.6	Vert	AV	0.0	29.3	54.0	-24.7	High Ch, EUT Horz
2389.987	43.5	-2.3	1.0	95.1	-12.9	0.9	Horz	AV	0.0	29.2	54.0	-24.8	Low Ch, EUT On Side
2484.120	46.9	-2.5	1.0	343.0	0.0	2.6	Horz	PK	0.0	47.0	74.0	-27.0	High Ch, EUT Vert
2389.990	40.6	-2.3	2.1	109.1	-12.9	0.9	Vert	AV	0.0	26.3	54.0	-27.7	Low Ch, EUT Vert
2483.503	38.8	-2.5	1.0	261.9	-12.9	2.6	Vert	AV	0.0	26.0	54.0	-28.0	High Ch, EUT On Side
12197.630	43.2	-0.4	3.0	89.0	0.0	0.0	Horz	PK	0.0	42.8	74.0	-31.2	Mid Ch, EUT Horz
12022.610	43.2	-0.9	1.0	90.0	0.0	0.0	Vert	PK	0.0	42.3	74.0	-31.7	Low Ch, EUT On Side
12197.830	42.0	-0.4	1.0	122.0	0.0	0.0	Vert	PK	0.0	41.6	74.0	-32.4	Mid Ch, EUT On Side
12022.950	42.3	-0.9	1.0	142.1	0.0	0.0	Horz	PK	0.0	41.4	74.0	-32.6	Low Ch, EUT Horz
12377.040	41.2	0.1	1.0	77.1	0.0	0.0	Horz	PK	0.0	41.3	74.0	-32.7	High Ch, EUT Horz
2483.550	33.7	-2.5	1.0	343.0	-12.9	2.6	Horz	AV	0.0	20.9	54.0	-33.1	High Ch, EUT Vert
12374.830	40.7	0.1	1.0	226.0	0.0	0.0	Vert	PK	0.0	40.8	74.0	-33.2	High Ch, EUT On Side
12202.460	34.0	-0.4	3.0	89.0	-12.9	0.0	Horz	AV	0.0	20.7	54.0	-33.3	Mid Ch, EUT Horz
12027.350	33.3	-0.9	1.0	90.0	-12.9	0.0	Vert	AV	0.0	19.5	54.0	-34.5	Low Ch, EUT On Side
12027.480	31.4	-0.9	1.0	142.1	-12.9	0.0	Horz	AV	0.0	17.6	54.0	-36.4	Low Ch, EUT Horz
12372.630	30.3	0.1	1.0	77.1	-12.9	0.0	Horz	AV	0.0	17.5	54.0	-36.5	High Ch, EUT Horz
12197.500	30.7	-0.4	1.0	122.0	-12.9	0.0	Vert	AV	0.0	17.4	54.0	-36.6	Mid Ch, EUT On Side
12376.910	29.6	0.1	1.0	226.0	-12.9	0.0	Vert	AV	0.0	16.8	54.0	-37.2	High Ch, EUT On Side

SPURIOUS RADIATED EMISSIONS



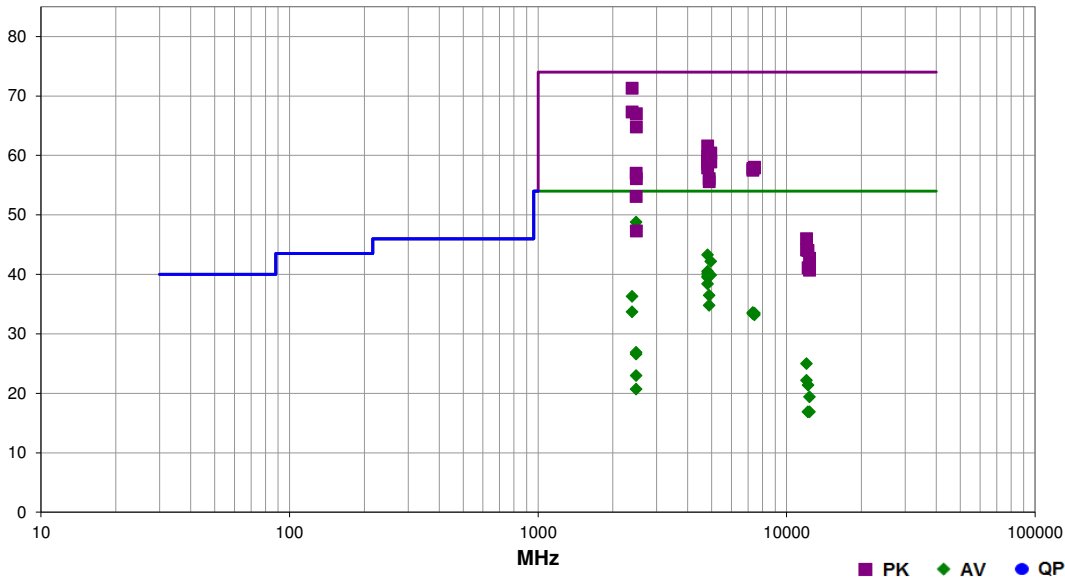
EmiR5 2017.07.11

PSA-ESCI 2017.06.01

Work Order:	EMPM0028	Date:	08/14/17	
Project:	None	Temperature:	22.9 °C	
Job Site:	MN05	Humidity:	56.5% RH	
Serial Number:	D1	Barometric Pres.:	1012 mbar	
EUT:	RM5800			
Configuration:	4			
Customer:	Rosemount, Inc.			
Attendees:	Merritt Pulkrabek			
EUT Power:	Battery			
Operating Mode:	Tx Modulated on Low (2405MHz) Mid, (2440MHz), or High (2475MHz) Ch.			
Deviations:	None			
Comments:	24dBi Parabolic Antenna, 8 deg beam angle.			

Test Specifications	Test Method
FCC 15.247:2017	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)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2389.980	72.7	-2.3	2.3	196.1	0.0	0.9	Horz	PK	0.0	71.3	74.0	-2.7	Low Ch, EUT On Side
2483.500	61.6	-2.5	1.9	4.1	-12.9	2.6	Horz	AV	0.0	48.8	54.0	-5.2	High Ch, EUT On Side
2483.517	60.8	-2.5	2.2	10.0	-12.9	2.6	Vert	AV	0.0	48.0	54.0	-6.0	High Ch, EUT Horz
2389.977	68.7	-2.3	2.0	179.0	0.0	0.9	Vert	PK	0.0	67.3	74.0	-6.7	Low Ch, EUT Horz
2483.885	29.5	37.5	2.0	4.1	0.0	0.0	Horz	PK	0.0	67.0	74.0	-7.0	High Ch, EUT On Side: Fund 80.8dBuV + - 51.3dBc = 29.5dBuV (calc. amp.)
2484.060	27.3	37.5	2.1	6.0	0.0	0.0	Vert	PK	0.0	64.8	74.0	-9.2	High Ch, EUT Horz: Fund 78.4dBuV + - 51.1dBc = 27.3dBuV (calc. amp.)
4809.075	49.6	6.6	1.0	82.0	-12.9	0.0	Horz	AV	0.0	43.3	54.0	-10.7	Low Ch, EUT On Side
4951.000	48.3	6.8	2.7	131.1	-12.9	0.0	Horz	AV	0.0	42.2	54.0	-11.8	High Ch, EUT On Side
4808.858	55.0	6.6	1.0	82.0	0.0	0.0	Horz	PK	0.0	61.6	74.0	-12.4	Low Ch, EUT On Side
4810.942	46.8	6.6	1.0	165.0	-12.9	0.0	Vert	AV	0.0	40.5	54.0	-13.5	Low Ch, EUT Vert
4951.042	53.6	6.8	2.7	131.1	0.0	0.0	Horz	PK	0.0	60.4	74.0	-13.6	High Ch, EUT On Side
4810.992	46.5	6.6	1.1	340.9	-12.9	0.0	Vert	AV	0.0	40.2	54.0	-13.8	Low Ch, EUT Horz
4950.983	46.0	6.8	1.0	217.1	-12.9	0.0	Vert	AV	0.0	39.9	54.0	-14.1	High Ch, EUT Vert
4808.950	53.2	6.6	1.0	165.0	0.0	0.0	Vert	PK	0.0	59.8	74.0	-14.2	Low Ch, EUT Vert
4809.075	46.0	6.6	1.1	36.0	-12.9	0.0	Horz	AV	0.0	39.7	54.0	-14.3	Low Ch, EUT Horz
4810.892	45.8	6.6	1.0	82.0	-12.9	0.0	Horz	AV	0.0	39.5	54.0	-14.5	Low Ch, EUT Vert
4808.658	52.8	6.6	1.1	340.9	0.0	0.0	Vert	PK	0.0	59.4	74.0	-14.6	Low Ch, EUT Horz
4809.058	52.3	6.6	1.1	36.0	0.0	0.0	Horz	PK	0.0	58.9	74.0	-15.1	Low Ch, EUT Horz
4951.017	52.1	6.8	1.0	217.1	0.0	0.0	Vert	PK	0.0	58.9	74.0	-15.1	High Ch, EUT Vert
4808.842	52.0	6.6	1.0	82.0	0.0	0.0	Horz	PK	0.0	58.6	74.0	-15.4	Low Ch, EUT Vert
4810.950	44.7	6.6	1.0	84.1	-12.9	0.0	Vert	AV	0.0	38.4	54.0	-15.6	Low Ch, EUT On Side
7424.292	43.1	14.9	3.9	52.1	0.0	0.0	Vert	PK	0.0	58.0	74.0	-16.0	High Ch, EUT Vert
4809.025	51.3	6.6	1.0	84.1	0.0	0.0	Vert	PK	0.0	57.9	74.0	-16.1	Low Ch, EUT On Side
7425.633	43.0	14.9	1.8	217.1	0.0	0.0	Horz	PK	0.0	57.9	74.0	-16.1	High Ch, EUT On Side
7318.708	42.7	15.1	2.7	306.0	0.0	0.0	Horz	PK	0.0	57.8	74.0	-16.2	Mid Ch, EUT On Side

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (dB)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
7320.317	42.4	15.1	1.0	76.1	0.0	0.0	Vert	PK	0.0	57.5	74.0	-16.5	Mid Ch, EUT Vert
2483.563	56.9	-2.5	1.0	65.1	0.0	2.6	Vert	PK	0.0	57.0	74.0	-17.0	High Ch, EUT Vert
4880.917	42.7	6.7	1.0	348.9	-12.9	0.0	Horz	AV	0.0	36.5	54.0	-17.5	Mid Ch, EUT On Side
2389.867	50.6	-2.3	2.3	196.1	-12.9	0.9	Horz	AV	0.0	36.3	54.0	-17.7	Low Ch, EUT On Side
4881.075	49.4	6.7	1.0	348.9	0.0	0.0	Horz	PK	0.0	56.1	74.0	-17.9	Mid Ch, EUT On Side
2484.023	56.0	-2.5	1.0	0.0	0.0	2.6	Horz	PK	0.0	56.1	74.0	-17.9	High Ch, EUT Vert
4878.833	48.9	6.7	1.1	264.0	0.0	0.0	Vert	PK	0.0	55.6	74.0	-18.4	Mid Ch, EUT Vert
4881.050	41.0	6.7	1.1	264.0	-12.9	0.0	Vert	AV	0.0	34.8	54.0	-19.2	Mid Ch, EUT Vert
2389.937	48.0	-2.3	2.0	179.0	-12.9	0.9	Vert	AV	0.0	33.7	54.0	-20.3	Low Ch, EUT Horz
7318.275	31.4	15.1	1.0	76.1	-12.9	0.0	Vert	AV	0.0	33.6	54.0	-20.4	Mid Ch, EUT Vert
7426.708	31.5	14.9	1.8	217.1	-12.9	0.0	Horz	AV	0.0	33.5	54.0	-20.5	High Ch, EUT On Side
7318.450	31.2	15.1	2.7	306.0	-12.9	0.0	Horz	AV	0.0	33.4	54.0	-20.6	Mid Ch, EUT On Side
7426.675	31.2	14.9	3.9	52.1	-12.9	0.0	Vert	AV	0.0	33.2	54.0	-20.8	High Ch, EUT Vert
2483.563	53.0	-2.5	1.6	25.0	0.0	2.6	Horz	PK	0.0	53.1	74.0	-20.9	High Ch, EUT Horz
2484.537	47.2	-2.5	1.0	70.1	0.0	2.6	Vert	PK	0.0	47.3	74.0	-26.7	High Ch, EUT On Side
2483.513	39.7	-2.5	1.0	65.1	-12.9	2.6	Vert	AV	0.0	26.9	54.0	-27.1	High Ch, EUT Vert
2483.507	39.4	-2.5	1.0	0.0	-12.9	2.6	Horz	AV	0.0	26.6	54.0	-27.4	High Ch, EUT Vert
12027.240	46.9	-0.9	1.0	76.1	0.0	0.0	Vert	PK	0.0	46.0	74.0	-28.0	Low Ch, EUT Vert
12027.450	38.8	-0.9	1.0	76.1	-12.9	0.0	Vert	AV	0.0	25.0	54.0	-29.0	Low Ch, EUT Vert
12027.480	45.0	-0.9	2.3	354.0	0.0	0.0	Horz	PK	0.0	44.1	74.0	-29.9	Low Ch, EUT On Side
12197.500	44.4	-0.4	1.8	42.0	0.0	0.0	Horz	PK	0.0	44.0	74.0	-30.0	Mid Ch, EUT On Side
2483.510	35.8	-2.5	1.6	25.0	-12.9	2.6	Horz	AV	0.0	23.0	54.0	-31.0	High Ch, EUT Horz
12377.320	42.6	0.1	1.4	140.0	0.0	0.0	Horz	PK	0.0	42.7	74.0	-31.3	High Ch, EUT On Side
12027.480	36.0	-0.9	2.3	354.0	-12.9	0.0	Horz	AV	0.0	22.2	54.0	-31.8	Low Ch, EUT On Side
12202.470	34.7	-0.4	1.8	42.0	-12.9	0.0	Horz	AV	0.0	21.4	54.0	-32.6	Mid Ch, EUT On Side
12200.440	41.5	-0.4	1.0	282.9	0.0	0.0	Vert	PK	0.0	41.1	74.0	-32.9	Mid Ch, EUT Vert
12373.430	40.6	0.1	1.0	170.1	0.0	0.0	Vert	PK	0.0	40.7	74.0	-33.3	High Ch, EUT Vert
2483.517	33.5	-2.5	1.0	70.1	-12.9	2.6	Vert	AV	0.0	20.7	54.0	-33.3	High Ch, EUT On Side
12377.500	32.2	0.1	1.4	140.0	-12.9	0.0	Horz	AV	0.0	19.4	54.0	-34.6	High Ch, EUT On Side
12197.980	30.2	-0.4	1.0	282.9	-12.9	0.0	Vert	AV	0.0	16.9	54.0	-37.1	Mid Ch, EUT Vert
12372.800	29.7	0.1	1.0	170.1	-12.9	0.0	Vert	AV	0.0	16.9	54.0	-37.1	High Ch, EUT Vert

SPURIOUS RADIATED EMISSIONS



Yagi Antenna, High Ch, EUT On Side

PSA-ESCI 2017.06.01



Yagi Antenna, High Ch, EUT Horz

SPURIOUS RADIATED EMISSIONS



Parabolic Antenna, High Ch, EUT On Side

PSA-ESCI 2017.06.01



Parabolic Antenna, High Ch, EUT Horz

DUTY CYCLE



XMIT 2017.02.08

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.	Cal. Due
Generator - Signal	Agilent	E4422B	TGQ	3/17/2015	3/17/2018
Cable	ESM Cable Corp	TTBJ141 KMKM-72	MNP	NCR	NCR
Attenuator	S.M. Electronics	SA26B-20	RFW	2/14/2017	2/14/2018
Block - DC	Fairview Microwave	SD3379	AMI	9/15/2016	9/15/2017
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/16/2017	3/16/2018

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was measured for each of the EUT operating modes.

There is no compliance requirement to be met by this test, so therefore no Pass / Fail criteria.

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.

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

If the transmit duty cycle < 98 percent, burst gating may have been used during some of the other tests in this report to only take the measurement during the burst duration.

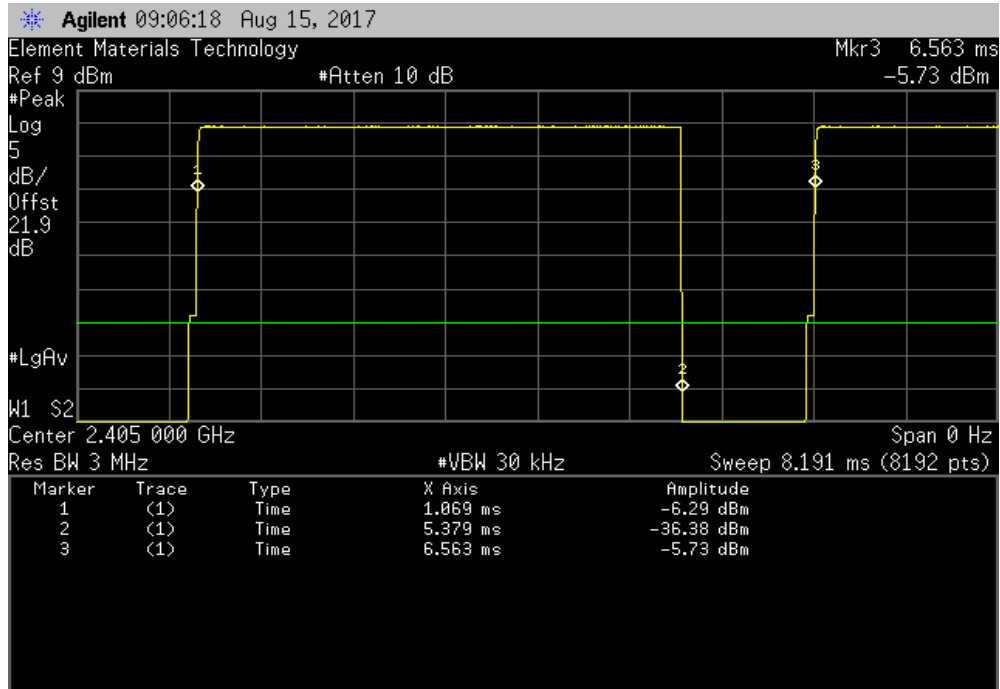
TbtTx 2017.07.11 XMit 2017.02.08

DUTY CYCLE

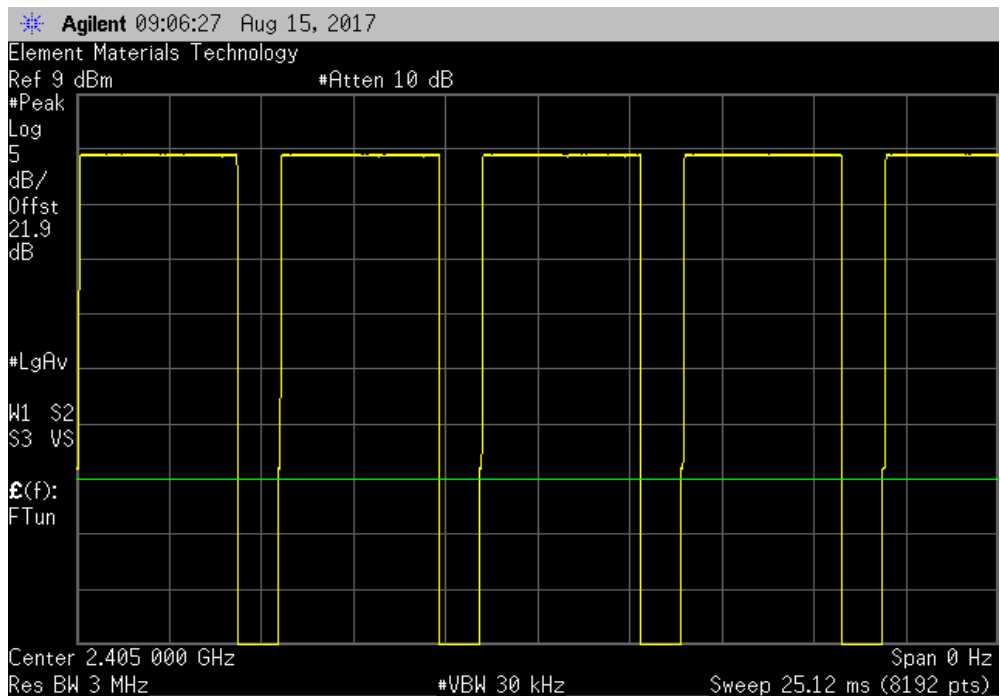


TbTx 2017.07.11 XMI 2017.02.08

2.4 GHz DSSS Low Channel, 2405 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	4.31 ms	5.494 ms	1	78.4	N/A	N/A



2.4 GHz DSSS Low Channel, 2405 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

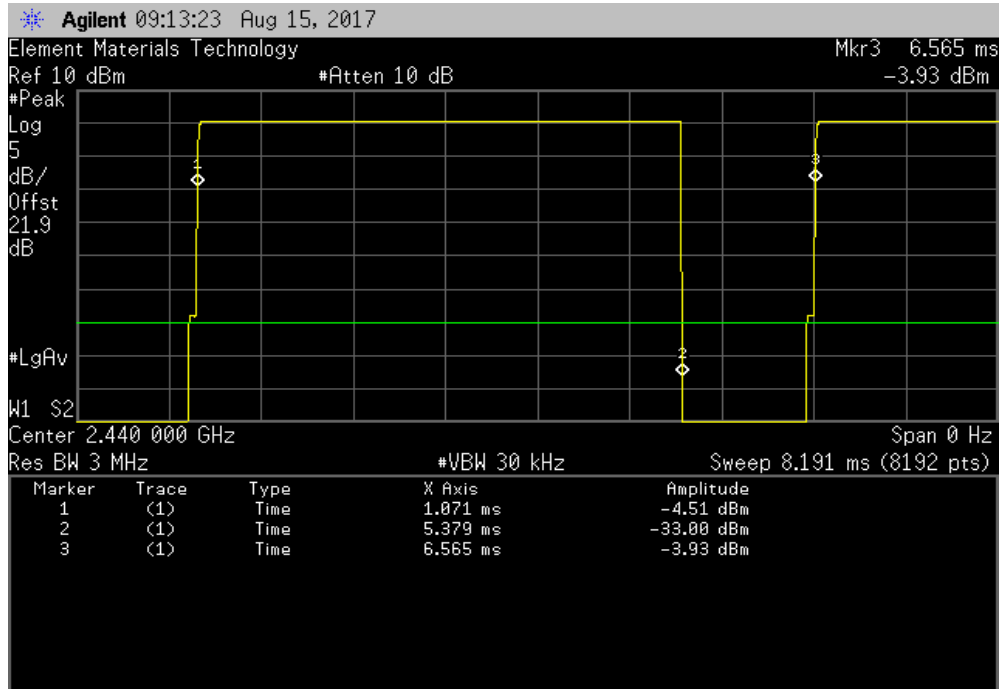


DUTY CYCLE

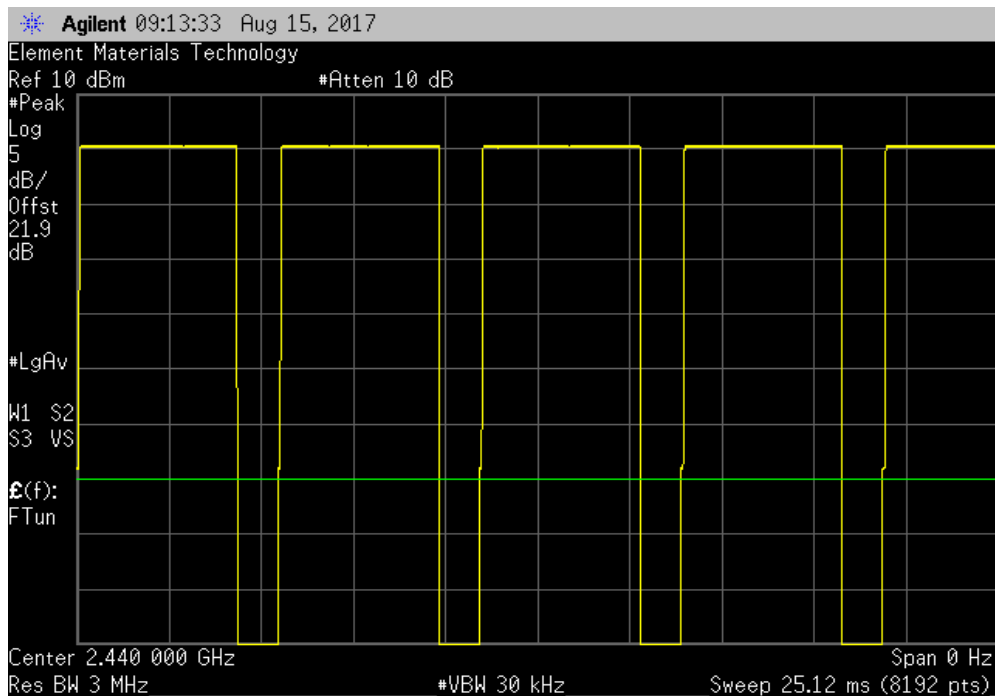


TbTx 2017.07.11 XMt 2017.02.08

2.4 GHz DSSS Mid Channel, 2440 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	4.308 ms	5.494 ms	1	78.4	N/A	N/A



2.4 GHz DSSS Mid Channel, 2440 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

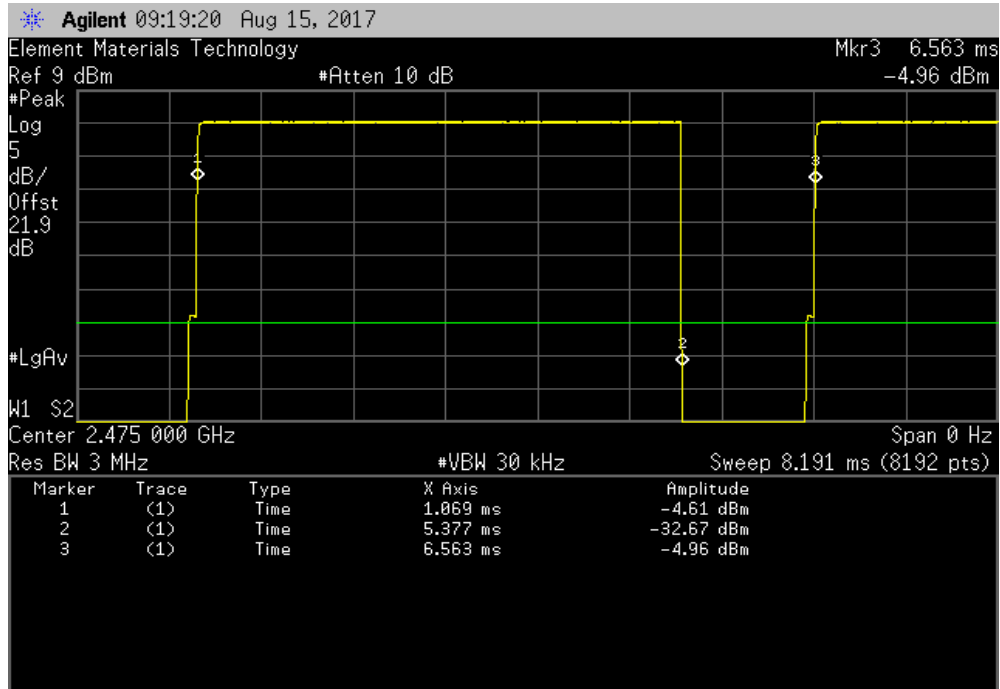


DUTY CYCLE

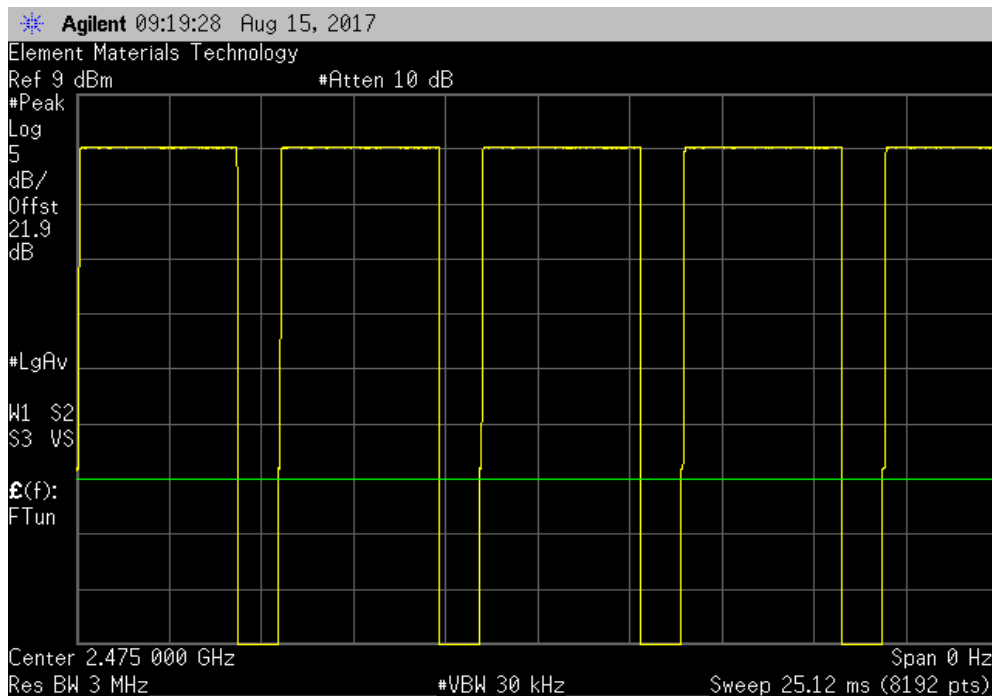


TbTx 2017.07.11 XMI 2017.02.08

2.4 GHz DSSS High Channel, 2475 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	4.308 ms	5.494 ms	1	78.4	N/A	N/A



2.4 GHz DSSS High Channel, 2475 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



OUTPUT POWER



XMIT 2017.02.08

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.	Cal. Due
Generator - Signal	Agilent	E4422B	TGQ	3/17/2015	3/17/2018
Cable	ESM Cable Corp	TTBJ141 KMKM-72	MNP	NCR	NCR
Attenuator	S.M. Electronics	SA26B-20	RFW	2/14/2017	2/14/2018
Block - DC	Fairview Microwave	SD3379	AMI	9/15/2016	9/15/2017
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/16/2017	3/16/2018

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum.

Prior to measuring peak transmit power the DTS bandwidth (B) was measured.

The method found in ANSI C63.10:2013 Section 11.9.1.1 was used because the RBW on the analyzer was greater than the DTS Bandwidth of the radio.

De Facto EIRP Limit: The EUT meets the de facto EIRP limit of +36 dBm.

OUTPUT POWER



TstTx 2017.07.11 XMt 2017.02.08

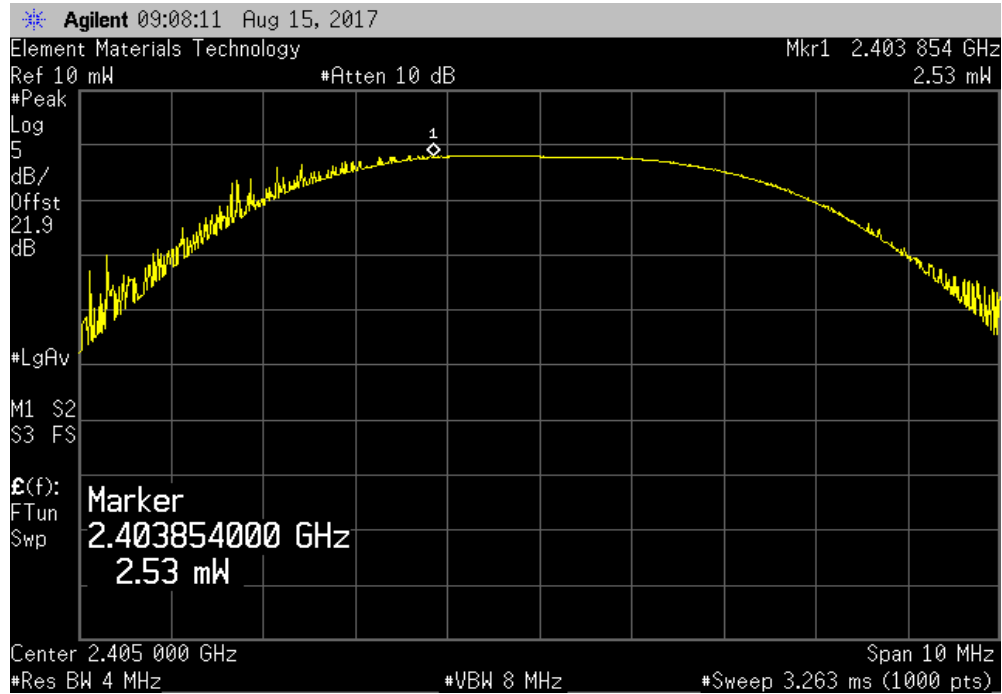
EUT: RM5800		Work Order: EMPM0028	
Serial Number: D2		Date: 08/15/17	
Customer: Rosemount, Inc.		Temperature: 22.4 °C	
Attendees: Merritt Pulkrabek		Humidity: 54.8% RH	
Project: None		Barometric Pres.: 1018 mbar	
Tested by: Dustin Sparks	Power: Battery	Job Site: MN08	
TEST SPECIFICATIONS			
FCC 15.247:2017		Test Method	
		ANSI C63.10:2013	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	5	Signature <i>Dustin Sparks</i>	
		Value	Limit (<) Result
2.4 GHz DSSS Low Channel, 2405 MHz		2.529 mW	1 W Pass
2.4 GHz DSSS Mid Channel, 2440 MHz		4.001 mW	1 W Pass
2.4 GHz DSSS High Channel, 2475 MHz		3.267 mW	1 W Pass

OUTPUT POWER

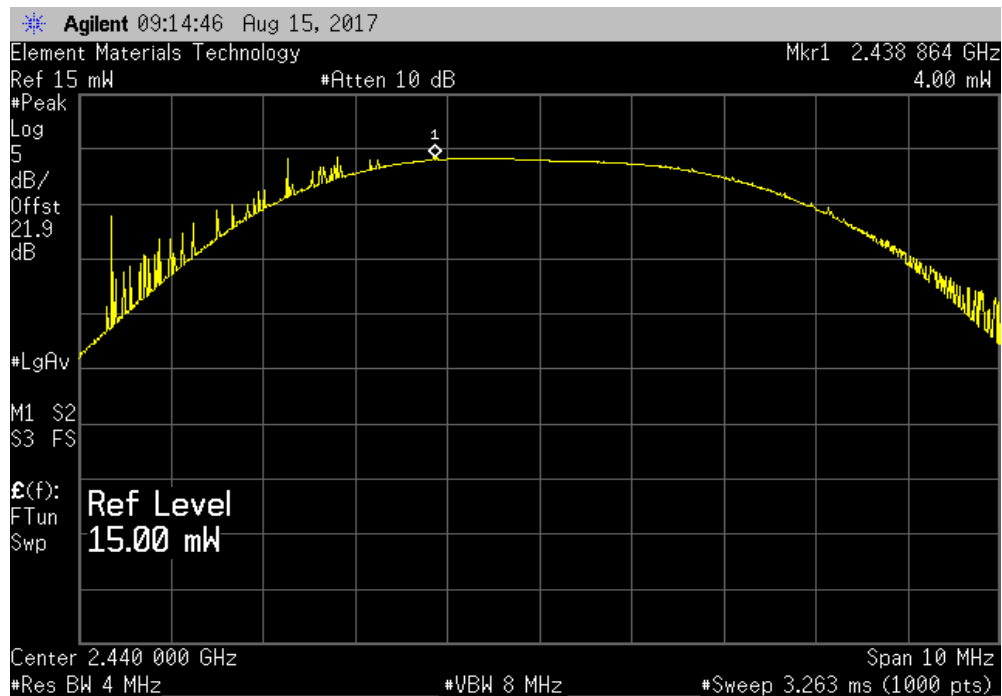


TbTx 2017.07.11 XMI 2017.02.08

2.4 GHz DSSS Low Channel, 2405 MHz						
				Value	Limit (<)	Result
				2.529 mW	1 W	Pass



2.4 GHz DSSS Mid Channel, 2440 MHz						
				Value	Limit (<)	Result
				4.001 mW	1 W	Pass

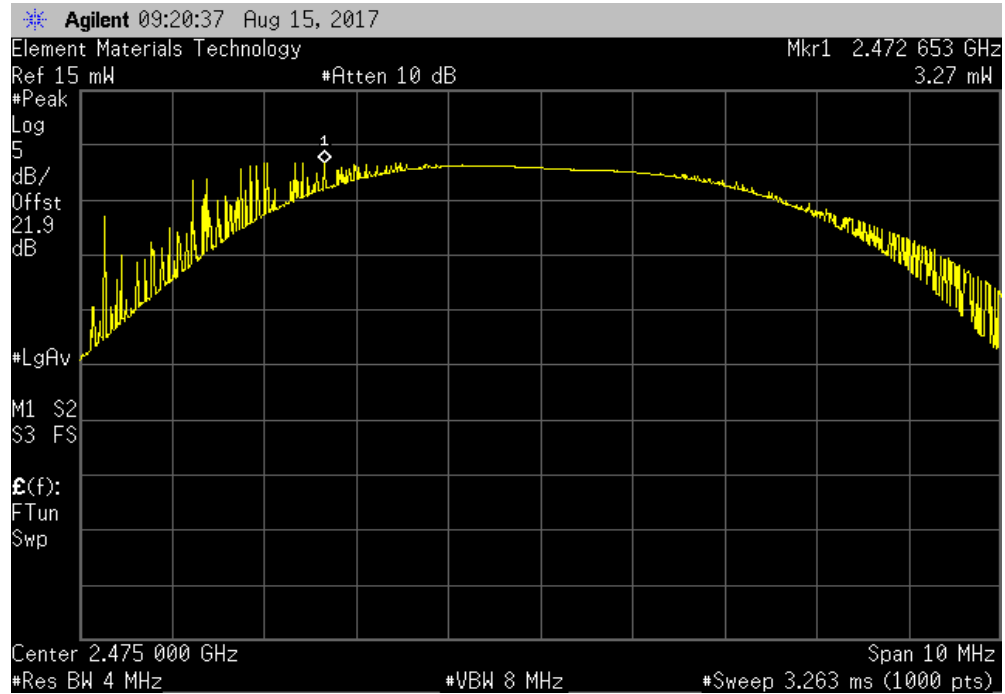


OUTPUT POWER



TbTx 2017.07.11 XMI 2017.02.08

2.4 GHz DSSS High Channel, 2475 MHz						
				Value	Limit (<)	Result
				3.267 mW	1 W	Pass



BAND EDGE COMPLIANCE



XMit 2017.02.08

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.	Cal. Due
Generator - Signal	Agilent	E4422B	TGQ	3/17/2015	3/17/2018
Cable	ESM Cable Corp	TTBJ141 KMKM-72	MNP	NCR	NCR
Attenuator	S.M. Electronics	SA26B-20	RFW	2/14/2017	2/14/2018
Block - DC	Fairview Microwave	SD3379	AMI	9/15/2016	9/15/2017
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/16/2017	3/16/2018

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. 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



TbTx 2017.07.11 XMt 2017.02.08

EUT: RM5800		Work Order: EMPM0028	
Serial Number: D2		Date: 08/15/17	
Customer: Rosemount, Inc.		Temperature: 22.5 °C	
Attendees: Merritt Pulkrabek		Humidity: 55.4% RH	
Project: None		Barometric Pres.: 1018 mbar	
Tested by: Dustin Sparks		Power: Battery	
		Job Site: MN08	
TEST SPECIFICATIONS			
FCC 15.247:2017		Test Method	
		ANSI C63.10:2013	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	5	Signature <i>Dustin Sparks</i>	
		Value (dBc)	Limit ≤ (dBc)
2.4 GHz DSSS Low Channel, 2405 MHz		-41.21	-20
2.4 GHz DSSS High Channel, 2475 MHz		-51.94	-20
			Result
			Pass
			Pass

BAND EDGE COMPLIANCE

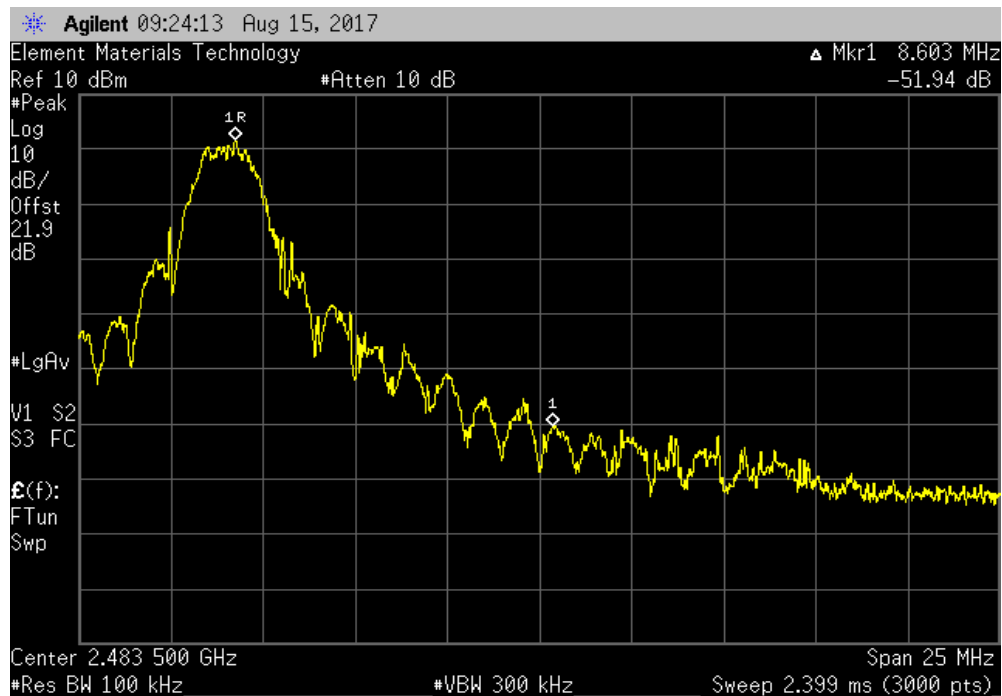


TbTx 2017.07.11 XMI 2017.02.08

2.4 GHz DSSS Low Channel, 2405 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-41.21	-20	Pass



2.4 GHz DSSS High Channel, 2475 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-51.94	-20	Pass



OCCUPIED BANDWIDTH



XMI 2017.02.08

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.	Cal. Due
Generator - Signal	Agilent	E4422B	TGQ	3/17/2015	3/17/2018
Cable	ESM Cable Corp	TTBJ141 KMKM-72	MNP	NCR	NCR
Attenuator	S.M. Electronics	SA26B-20	RFW	2/14/2017	2/14/2018
Block - DC	Fairview Microwave	SD3379	AMI	9/15/2016	9/15/2017
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/16/2017	3/16/2018

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was set to the channels and modes listed in the datasheet.

The 6dB occupied bandwidth was measured using 100 kHz resolution bandwidth and 300 kHz video bandwidth. The 99.0% occupied bandwidth was also measured at the same time which can be needed during Output Power depending on the applicable method.

OCCUPIED BANDWIDTH



TbTx 2017.07.11 XMt 2017.02.08

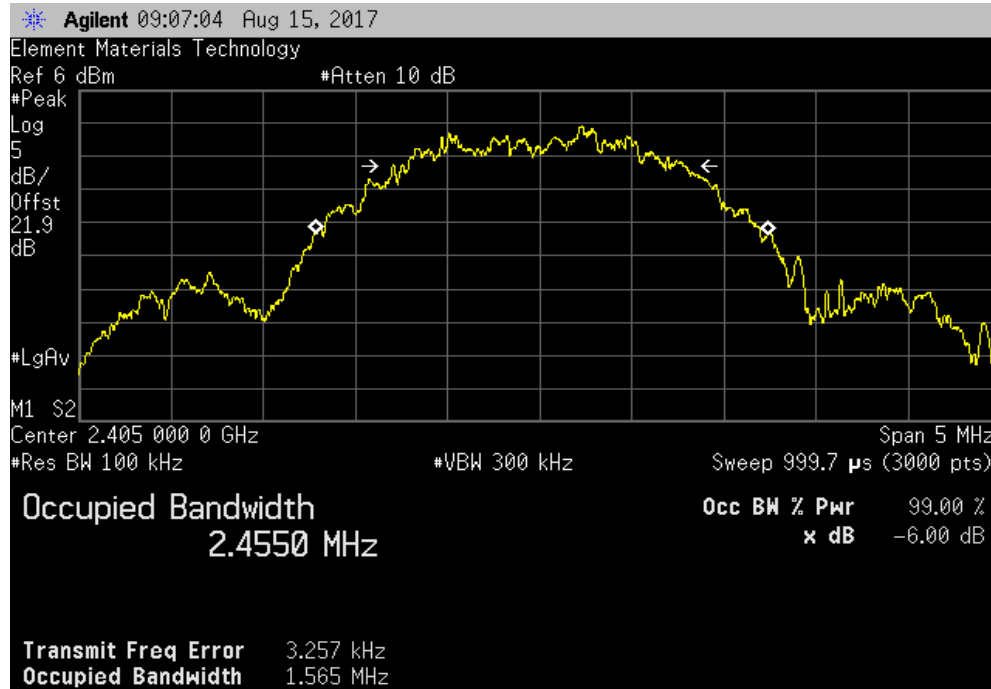
EUT: RM5800		Work Order: EMPM0028	
Serial Number: D2		Date: 08/15/17	
Customer: Rosemount, Inc.		Temperature: 22.5 °C	
Attendees: Merritt Pulkrabek		Humidity: 54.8% RH	
Project: None		Barometric Pres.: 1018 mbar	
Tested by: Dustin Sparks	Power: Battery	Job Site: MN08	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2017		ANSI C63.10:2013	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	5	Signature <i>Dustin Sparks</i>	
		Value	Limit (±) Result
2.4 GHz DSSS Low Channel, 2405 MHz		1.565 MHz	500 kHz Pass
2.4 GHz DSSS Mid Channel, 2440 MHz		1.59 MHz	500 kHz Pass
2.4 GHz DSSS High Channel, 2475 MHz		1.539 MHz	500 kHz Pass

OCCUPIED BANDWIDTH



TbTx 2017.07.11 XMI 2017.02.08

2.4 GHz DSSS Low Channel, 2405 MHz						
				Value	Limit (≥)	Result
				1.565 MHz	500 kHz	Pass



2.4 GHz DSSS Mid Channel, 2440 MHz						
				Value	Limit (≥)	Result
				1.59 MHz	500 kHz	Pass

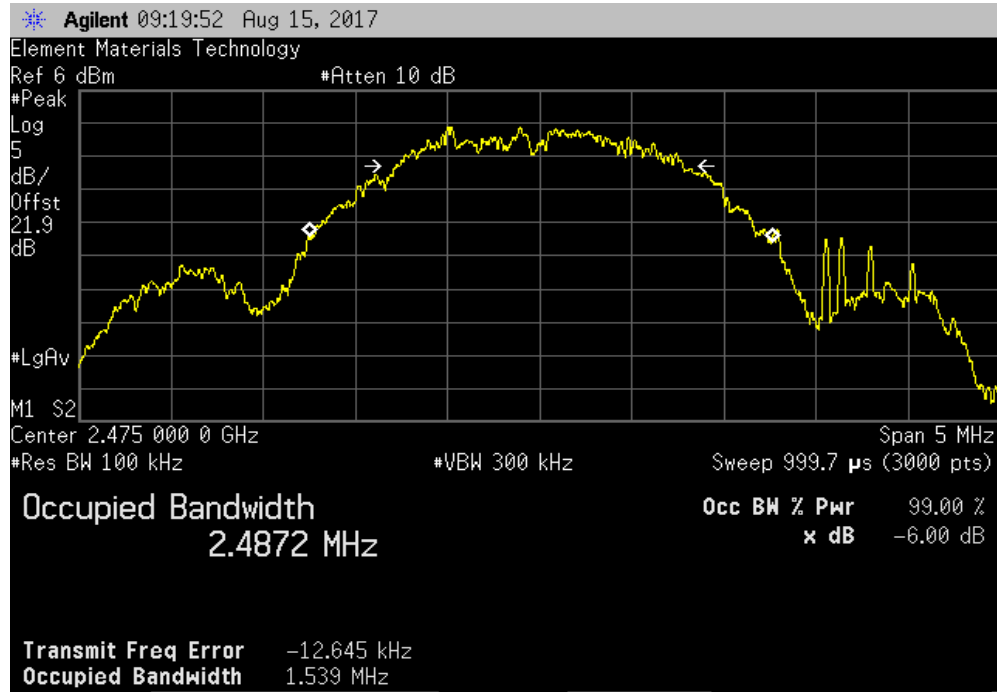


OCCUPIED BANDWIDTH



TbTx 2017.07.11 XMt 2017.02.08

2.4 GHz DSSS High Channel, 2475 MHz						
				Value	Limit	Result
				1.539 MHz	500 kHz	Pass



SPURIOUS CONDUCTED EMISSIONS



XMit 2017.02.08

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.	Cal. Due
Generator - Signal	Agilent	E4422B	TGQ	3/17/2015	3/17/2018
Cable	ESM Cable Corp	TTBJ141 KMKM-72	MNP	NCR	NCR
Attenuator	S.M. Electronics	SA26B-20	RFW	2/14/2017	2/14/2018
Block - DC	Fairview Microwave	SD3379	AMI	9/15/2016	9/15/2017
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/16/2017	3/16/2018

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The EUT was transmitting at the data rate(s) listed in the datasheet. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

SPURIOUS CONDUCTED EMISSIONS



TstTx 2017.07.11 XMt 2017.02.08

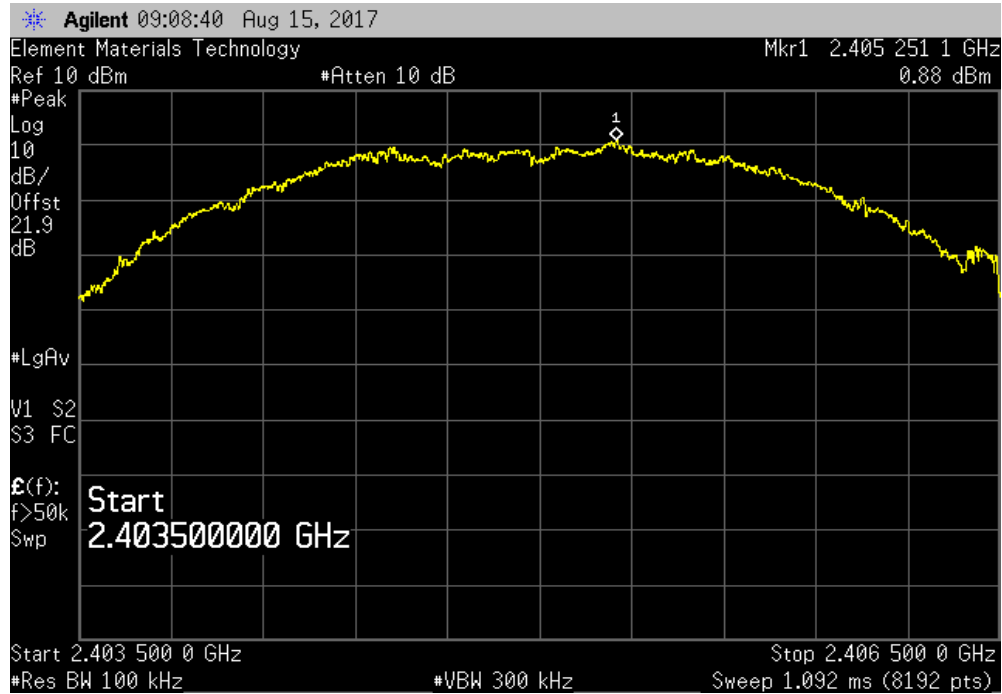
EUT: RM5800		Work Order: EMPM0028	
Serial Number: D2		Date: 08/15/17	
Customer: Rosemount, Inc.		Temperature: 22.4 °C	
Attendees: Merritt Pulkrabek		Humidity: 55% RH	
Project: None		Barometric Pres.: 1018 mbar	
Tested by: Dustin Sparks		Power: Battery	
		Job Site: MN08	
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2017		ANSI C63.10:2013	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	5	Signature <i>Dustin Sparks</i>	
		Frequency Range	Max Value (dBc)
			Limit ≤ (dBc)
			Result
2.4 GHz DSSS Low Channel, 2405 MHz		Fundamental	N/A
2.4 GHz DSSS Low Channel, 2405 MHz		30 MHz - 12.5 GHz	-54.49
2.4 GHz DSSS Low Channel, 2405 MHz		12.5 GHz - 25 GHz	-52.97
2.4 GHz DSSS Mid Channel, 2440 MHz		Fundamental	N/A
2.4 GHz DSSS Mid Channel, 2440 MHz		30 MHz - 12.5 GHz	-58.9
2.4 GHz DSSS Mid Channel, 2440 MHz		12.5 GHz - 25 GHz	-55.09
2.4 GHz DSSS High Channel, 2475 MHz		Fundamental	N/A
2.4 GHz DSSS High Channel, 2475 MHz		30 MHz - 12.5 GHz	-57.56
2.4 GHz DSSS High Channel, 2475 MHz		12.5 GHz - 25 GHz	-53.48

SPURIOUS CONDUCTED EMISSIONS

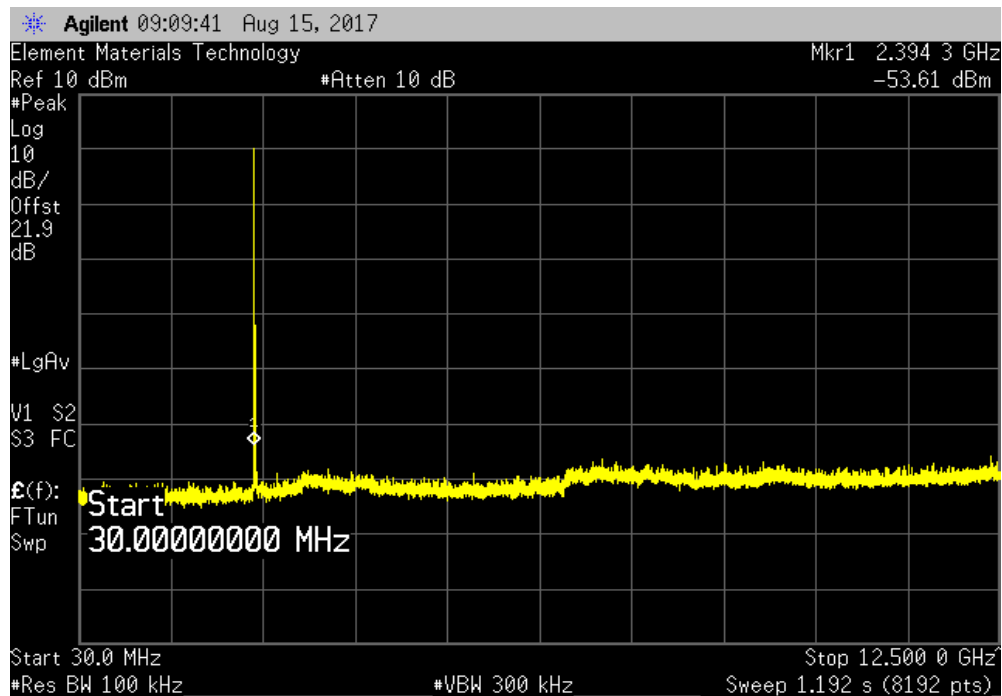


TbTx 2017.07.11 XMI 2017.02.08

2.4 GHz DSSS Low Channel, 2405 MHz						
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result		
Fundamental		N/A	N/A	N/A		



2.4 GHz DSSS Low Channel, 2405 MHz						
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result		
30 MHz - 12.5 GHz		-54.49	-20	Pass		

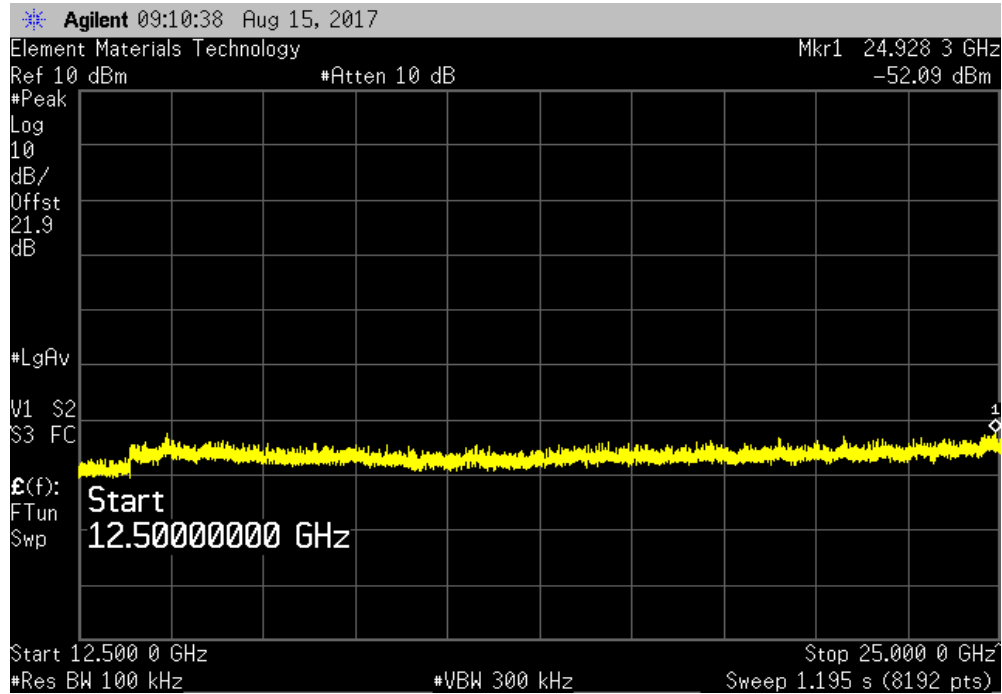


SPURIOUS CONDUCTED EMISSIONS

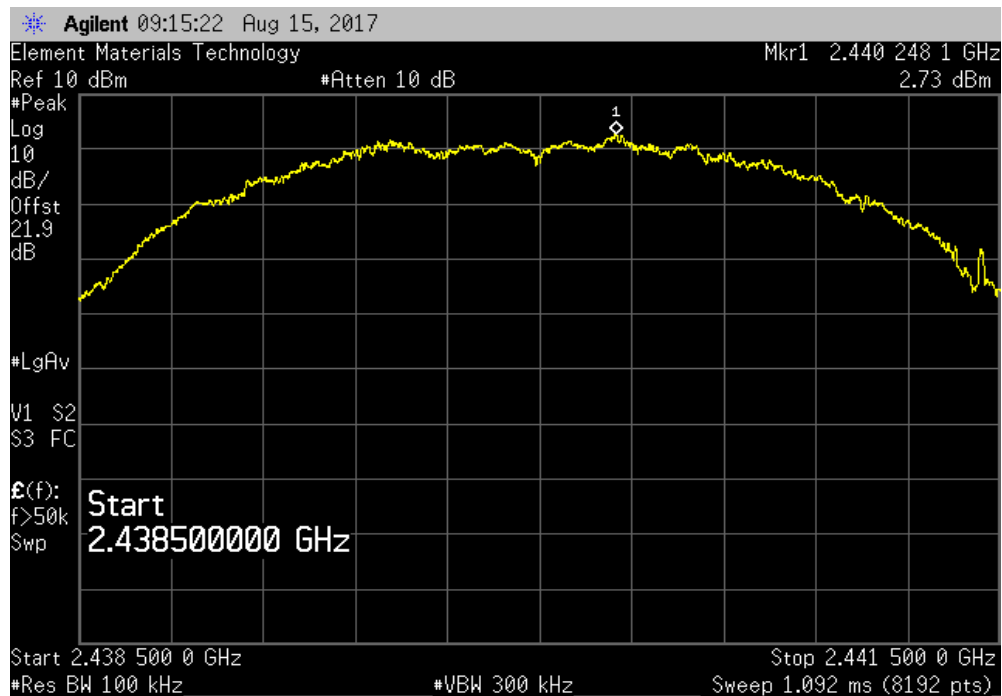


TbTx 2017.07.11 XMt 2017.02.08

2.4 GHz DSSS Low Channel, 2405 MHz				
Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result	
12.5 GHz - 25 GHz	-52.97	-20	Pass	



2.4 GHz DSSS Mid Channel, 2440 MHz				
Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result	
Fundamental	N/A	N/A	N/A	

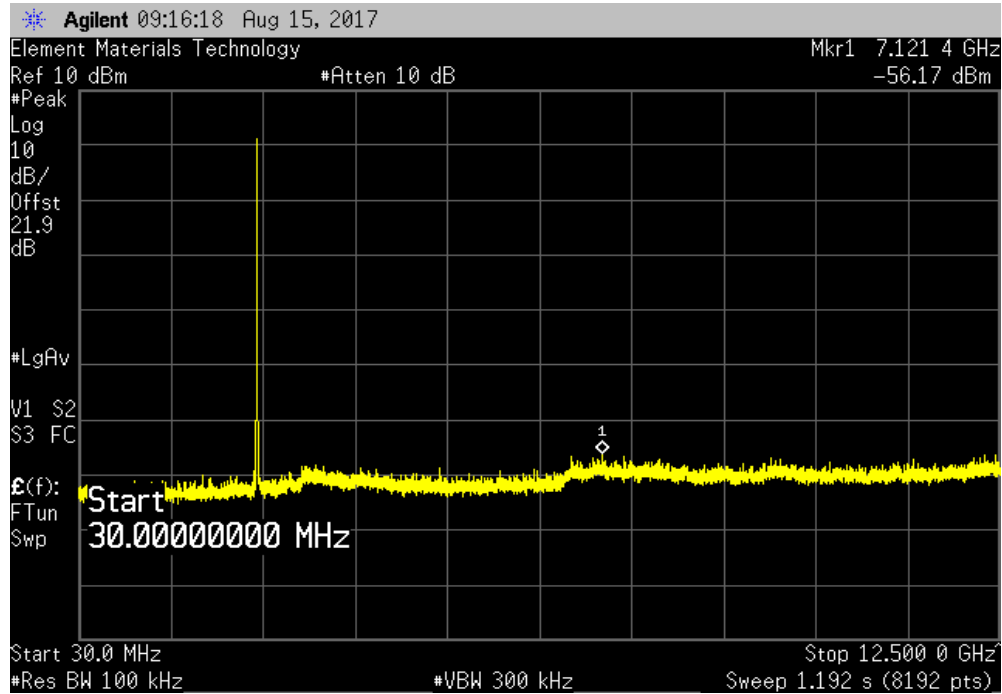


SPURIOUS CONDUCTED EMISSIONS

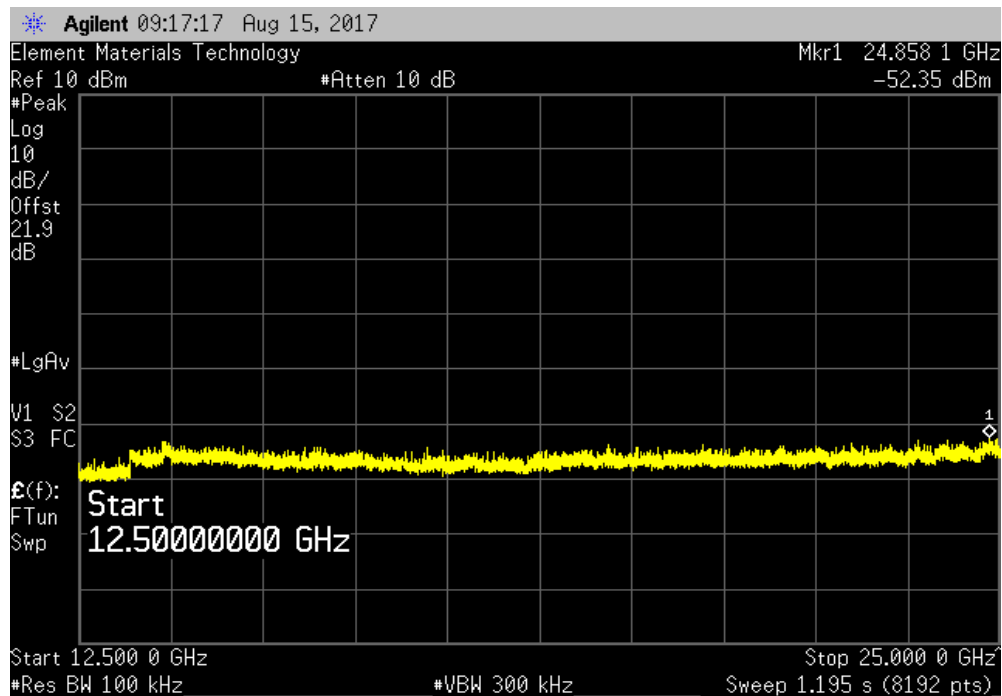


TbTx 2017.07.11 XMI 2017.02.08

2.4 GHz DSSS Mid Channel, 2440 MHz				
Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result	
30 MHz - 12.5 GHz	-58.9	-20	Pass	



2.4 GHz DSSS Mid Channel, 2440 MHz				
Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result	
12.5 GHz - 25 GHz	-55.09	-20	Pass	

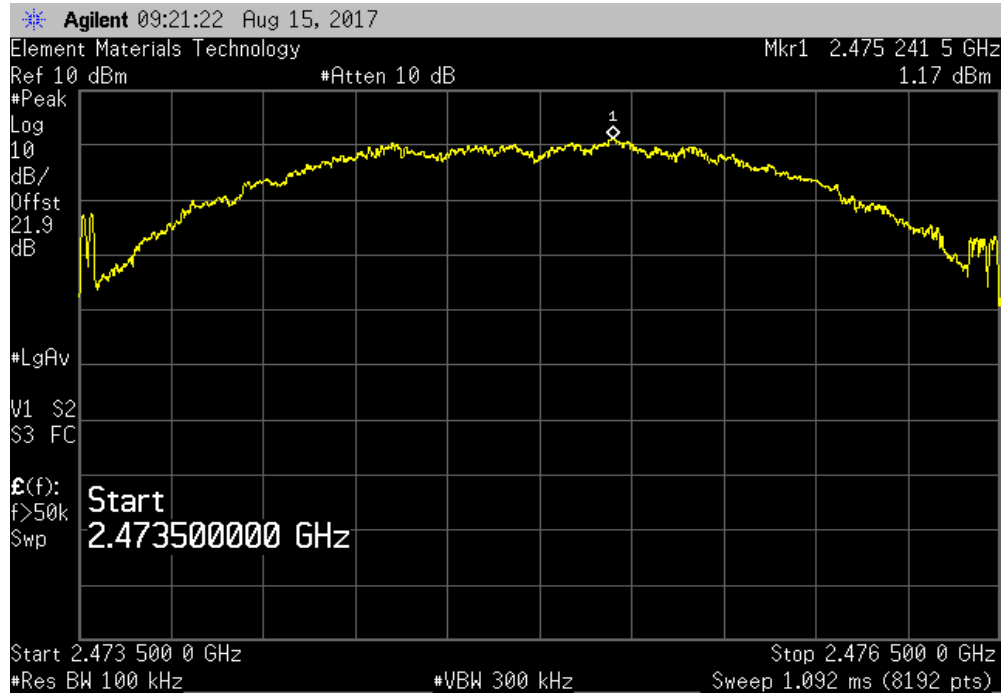


SPURIOUS CONDUCTED EMISSIONS

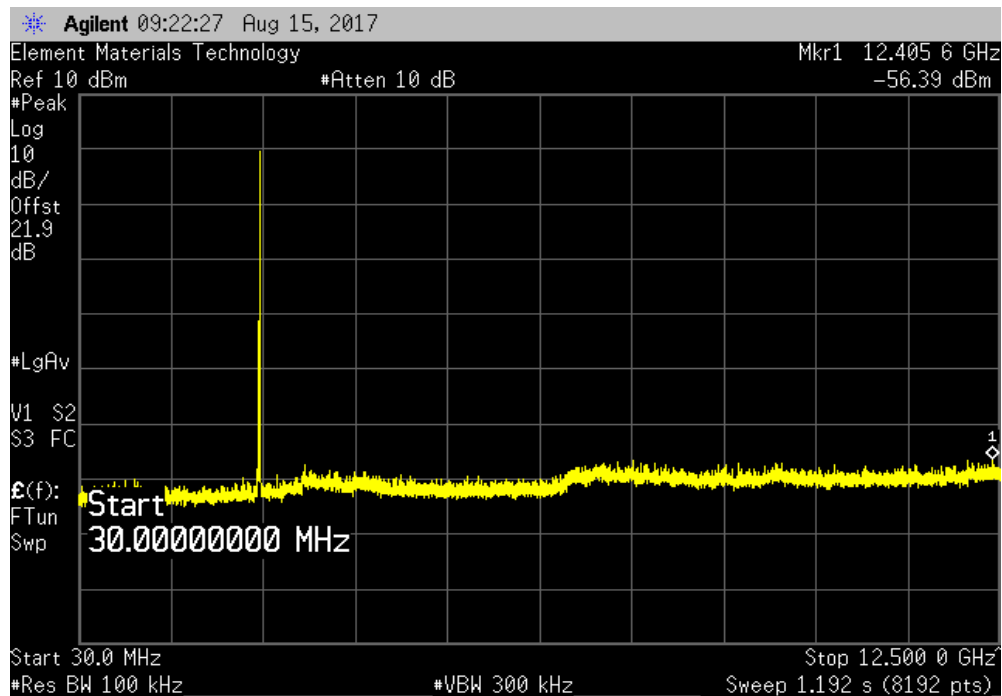


TbTx 2017.07.11 XMI 2017.02.08

2.4 GHz DSSS High Channel, 2475 MHz						
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result		
Fundamental		N/A	N/A	N/A		



2.4 GHz DSSS High Channel, 2475 MHz						
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result		
30 MHz - 12.5 GHz		-57.56	-20	Pass		

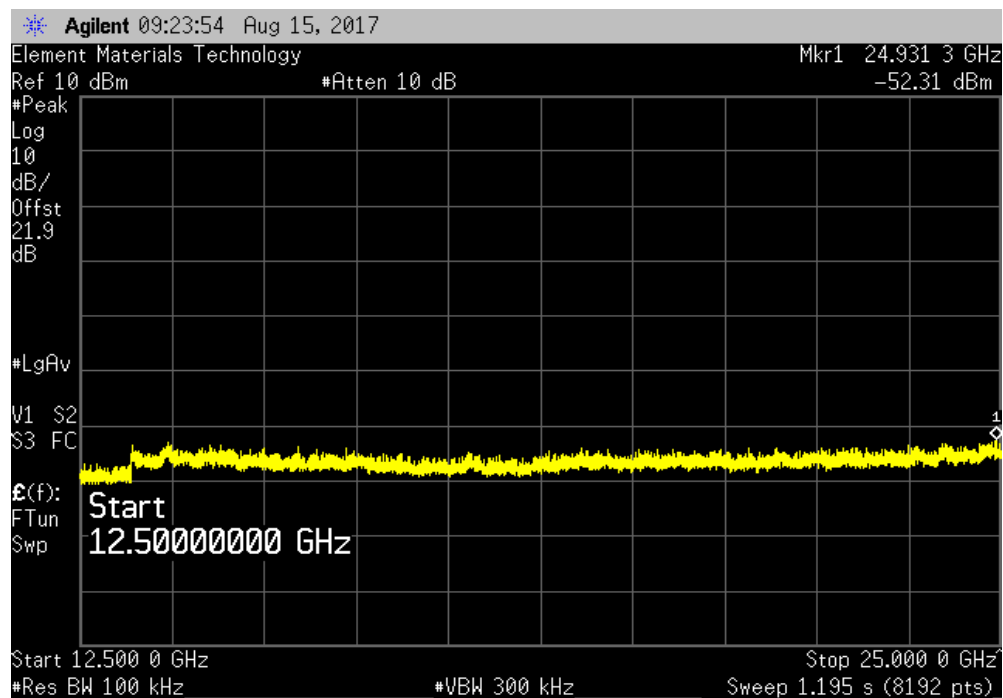


SPURIOUS CONDUCTED EMISSIONS



TbTx 2017.07.11 XMI 2017.02.08

2.4 GHz DSSS High Channel, 2475 MHz				
Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result	
12.5 GHz - 25 GHz	-53.48	-20	Pass	



POWER SPECTRAL DENSITY



XMit 2017.02.08

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.	Cal. Due
Generator - Signal	Agilent	E4422B	TGQ	3/17/2015	3/17/2018
Cable	ESM Cable Corp	TTBJ141 KMKM-72	MNP	NCR	NCR
Attenuator	S.M. Electronics	SA26B-20	RFW	2/14/2017	2/14/2018
Block - DC	Fairview Microwave	SD3379	AMI	9/15/2016	9/15/2017
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/16/2017	3/16/2018

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The maximum power spectral density measurements was measured using the channels and modes as called out on the following data sheets.

Per the procedure outlined in ANSI C63.10 the peak power spectral density was measured in a 3 kHz RBW.

POWER SPECTRAL DENSITY



TstTx 2017.07.11 XMi 2017.02.08

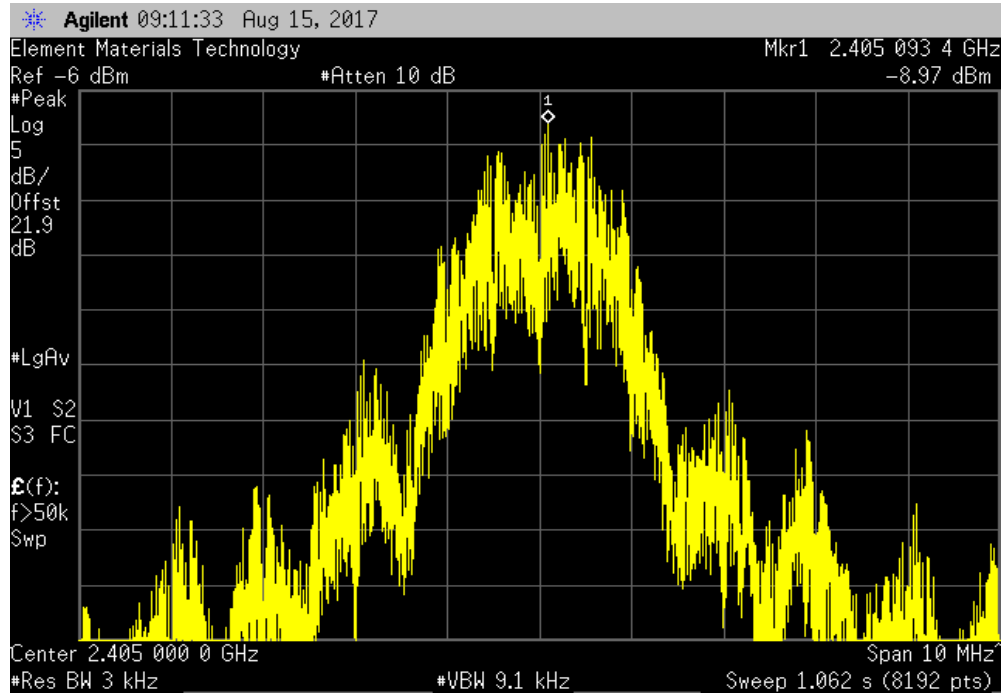
EUT: RM5800		Work Order: EMPM0028	
Serial Number: D2		Date: 08/15/17	
Customer: Rosemount, Inc.		Temperature: 22.4 °C	
Attendees: Merritt Pulkrabek		Humidity: 54.7% RH	
Project: None		Barometric Pres.: 1018 mbar	
Tested by: Dustin Sparks		Power: Battery	
Job Site: MN08			
TEST SPECIFICATIONS			
FCC 15.247:2017		Test Method	
		ANSI C63.10:2013	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	5	Signature <i>Dustin Sparks</i>	
		Value dBm/3kHz	Limit < dBm/3kHz
2.4 GHz DSSS Low Channel, 2405 MHz		-8.973	8
2.4 GHz DSSS Mid Channel, 2440 MHz		-7.025	8
2.4 GHz DSSS High Channel, 2475 MHz		-8.624	8
			Results
			Pass
			Pass
			Pass

POWER SPECTRAL DENSITY

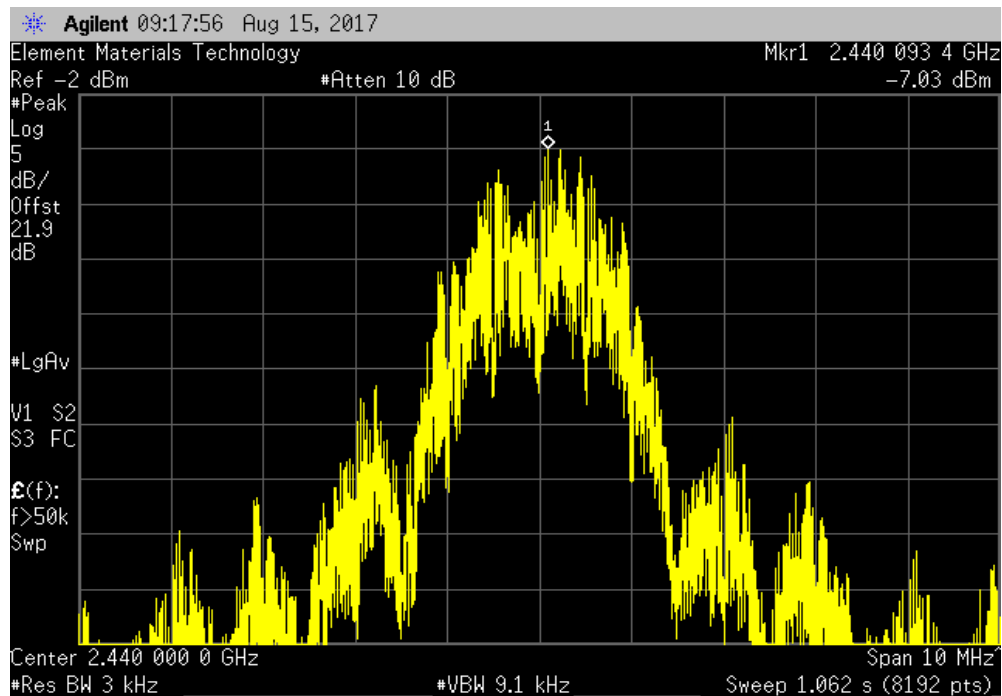


TbTx 2017.07.11 XMI 2017.02.08

2.4 GHz DSSS Low Channel, 2405 MHz						
	Value	Limit				
	dBm/3kHz	< dBm/3kHz	Results			
	-8.973	8	Pass			



2.4 GHz DSSS Mid Channel, 2440 MHz						
	Value	Limit				
	dBm/3kHz	< dBm/3kHz	Results			
	-7.025	8	Pass			



POWER SPECTRAL DENSITY



TbTx 2017.07.11 XMI 2017.02.08

2.4 GHz DSSS High Channel, 2475 MHz						
	Value	Limit				
	dBm/3kHz	< dBm/3kHz	Results			
	-8.624	8	Pass			

