



element

Emerson Automation Solutions / Rosemount Inc.

Model 708

FCC 15.247:2021

2.4 GHz DTS Radio

Report: EMPM0107.1, Issue Date: May 19, 2021



NVLAP LAB CODE: 200881-0



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CERTIFICATE OF TEST

Last Date of Test: February 19, 2021
Emerson Automation Solutions / Rosemount Inc.
EUT: Model 708

Radio Equipment Testing

Standards

Specification	Method
FCC 15.247:2021	ANSI C63.10:2013, KDB 558074

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	No	N/A	Not required for a battery powered EUT.
6.5, 6.6, 11.12.1, 11.13.2	Spurious Radiated Emissions	Yes	Pass	
11.6	Duty Cycle	Yes	N/A	
11.8.2	Occupied Bandwidth	Yes	Pass	
11.9.1.1	Output Power	Yes	Pass	
11.9.1.1	Equivalent Isotropic Radiated 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:

Eric Brandon, Department 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. As indicated in the Statement of Work sent with the quotation, Element's standard process is to always use the latest published version of the test methods even when earlier versions are cited in the test specification. Issuance of a purchase order was de facto acceptance of this approach. Otherwise, the client would have advised Element in writing of the specific version of the test methods they wanted applied to the subject testing.

REVISION HISTORY



Revision Number	Description	Date (yyyy-mm-dd)	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 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) and as a CAB for the acceptance of test data.

European Union

European Commission – Recognized as an EU Notified Body validated for the EMCD and RED Directives.

United Kingdom

BEIS – Recognized by the UK as an Approved Body under the UK Radio Equipment and UK EMC Regulations.

Australia/New Zealand

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

Korea

MSIT / 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:
<https://www.nwemc.com/emc-testing-accreditations>

FACILITIES



California Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Minnesota Labs MN01-11 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Oregon Labs EV01-12 6775 NE Evergreen Pkwy #400 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: 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	2834D-1	2834G-1	2834F-1
BSMI				
SL2-IN-E-1154R	SL2-IN-E-1152R	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI				
A-0029	A-0109	A-0108	A-0201	A-0110
Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA				
US0158	US0175	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.

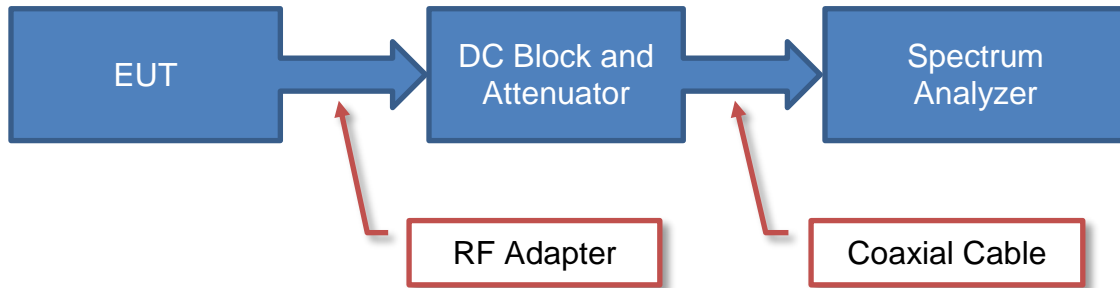
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found in the table below. A lab specific value may also be found in the applicable test description section. 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	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	1.2 dB	-1.2 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)	2.6 dB	-2.6 dB

Test Setup Block Diagrams

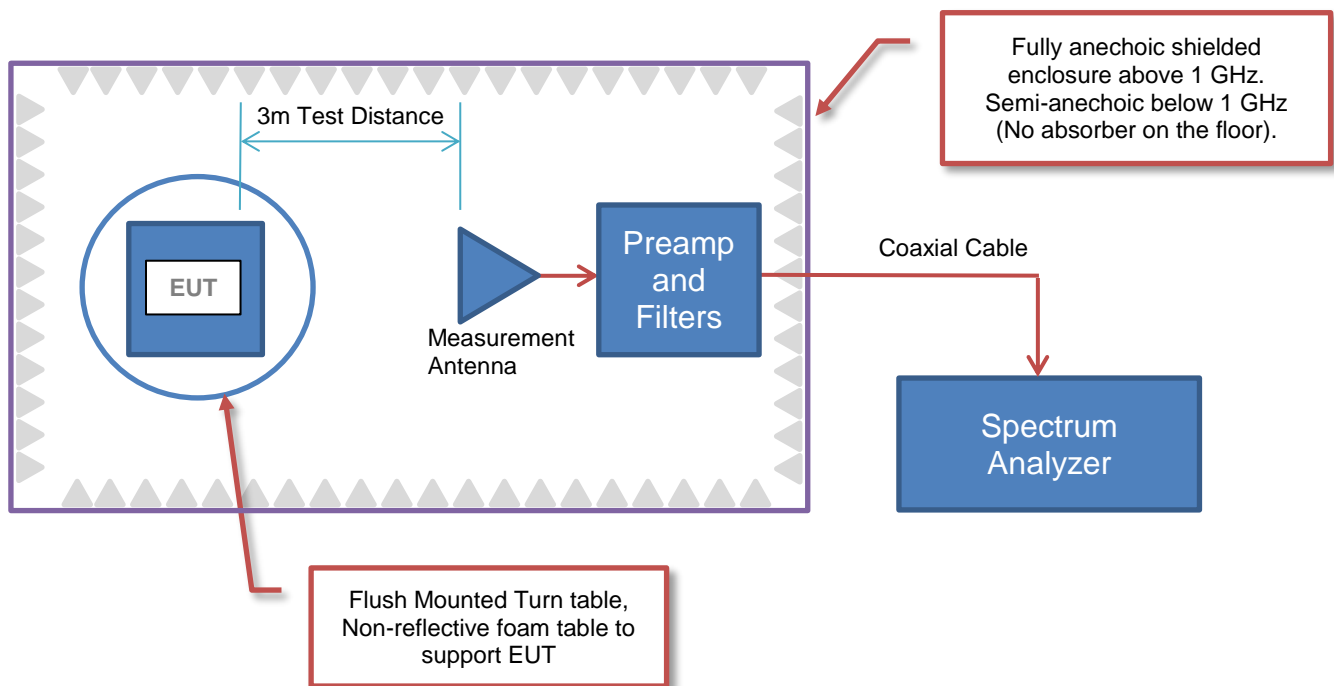
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



Spurious Radiated Emissions



PRODUCT DESCRIPTION



Client and Equipment Under Test (EUT) Information

Company Name:	Emerson Automation Solutions / Rosemount Inc.
Address:	6021 Innovation Boulevard
City, State, Zip:	Shakopee, MN 55379
Test Requested By:	Elizabeth Reiersen
EUT:	Model 708
First Date of Test:	February 12, 2021
Last Date of Test:	February 19, 2021
Receipt Date of Samples:	February 12, 2021
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
Wireless Acoustic Transmitter
Testing Objective:
To demonstrate compliance of the 2.4 GHz DTS radio to FCC 15.247 requirements.

CONFIGURATIONS



Configuration EMPM0107- 1

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Wireless Acoustic Transmitter	Rosemount, Inc.	708	0001

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Laptop	Dell	Latitude 7480	11901127142
HART Modem	Viator	HM-MT-USB-010031	40000089106033

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
WirelessHART Leads (x2)	No	2.0m	No	HART Modem	Wireless Acoustic Transmitter
USB Cable (HART Modem)	Yes	0.3m	No	Laptop	HART Modem

Configuration EMPM0107- 5

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Wireless Acoustic Transmitter	Rosemount, Inc.	708	0003

MODIFICATIONS



Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2021-02-12	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.
2	2021-02-12	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.
3	2021-02-12	Equivalent Isotropic Radiated 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.
4	2021-02-12	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.
5	2021-02-12	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.
6	2021-02-12	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.
7	2021-02-19	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

POWER SETTINGS AND ANTENNAS



The power settings, antenna gain value(s) and cable loss (if applicable) used for the testing contained in this report were provided by the customer and will affect the validity of the results. Element assumes no responsibility for the accuracy of this information.

ANTENNA GAIN (dBi)

Type	Provided by:	Frequency Range (MHz)	Gain (dBi)
Inverted F PCB Patch Antenna	Emerson	2400-2483.5	2

The EUT was tested using the power settings provided by the manufacturer:

SETTINGS FOR ALL TESTS IN THIS REPORT

Modulation Types	Position	Power Setting
OQPSK	Low Channel (2405 MHz)	+8 dBm
	Mid Channel (2440 MHz)	+8 dBm
	High Channel (2475 MHz)	+8 dBm

SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2021.01.22.0

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 WirelessHART - low channel (2405 MHz) and high channel (2475 MHz) modulated
Transmitting WirelessHART - low channel (2405 MHz), mid channel (2440 MHz), and high channel (2475 MHz) modulated

POWER SETTINGS INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

EMPM0107 - 5

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	26500 MHz
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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.	Cal. Due
Filter - Low Pass	Micro-Tronics	LPM50004	HGG	2020-09-14	2021-09-14
Filter - High Pass	Micro-Tronics	HPM50111	HFM	2020-09-14	2021-09-14
Attenuator	Coaxicom	3910-20	AXY	2020-09-14	2021-09-14
Amplifier - Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	2020-09-11	2021-09-11
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNP	2020-09-11	2021-09-11
Antenna - Standard Gain	ETS Lindgren	3160-09	AHG	NCR	NCR
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVW	2021-01-15	2022-01-15
Antenna - Standard Gain	ETS-Lindgren	3160-08	AJP	NCR	NCR
Cable	Element	Standard Gain Cable	MNW	2021-02-01	2022-02-01
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVC	2021-02-01	2022-02-01
Antenna - Standard Gain	ETS-Lindgren	3160-07	AJJ	NCR	NCR
Cable	Element	Double Ridge Guide Horn Cables	MNV	2021-02-01	2022-02-01
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVT	2021-01-15	2022-01-15
Antenna - Double Ridge	ETS Lindgren	3115	AIB	2020-09-03	2022-09-03
Cable	Element	Biconilog Cable	MNX	2021-02-01	2022-02-01
Amplifier - Pre-Amplifier	Miteq	AM-1064-9079 and SA18E-10	AOO	2021-02-01	2022-02-01
Antenna - Biconilog	Ametek	CBL 6141B	AYS	2019-03-19	2021-03-19
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFN	2021-01-06	2022-01-06

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

The highest gain 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 notch filter) were used for this test in order to provide sufficient measurement sensitivity.

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 within 2 MHz of the allowable band may have been taken using the integration method from ANSI C63.10 clause 11.13.3. This procedure uses the channel power feature of the spectrum analyzer to integrate the power of the emission within a 1 MHz bandwidth.

Where the radio test software does not provide for a duty cycle at continuous transmit conditions (> 98%) and the RMS (power average) measurements were made across the on and off times of the EUT transmissions, a duty cycle correction is added to the measurements using the formula of $10 \cdot \log(1/dc)$.

SPURIOUS RADIATED EMISSIONS



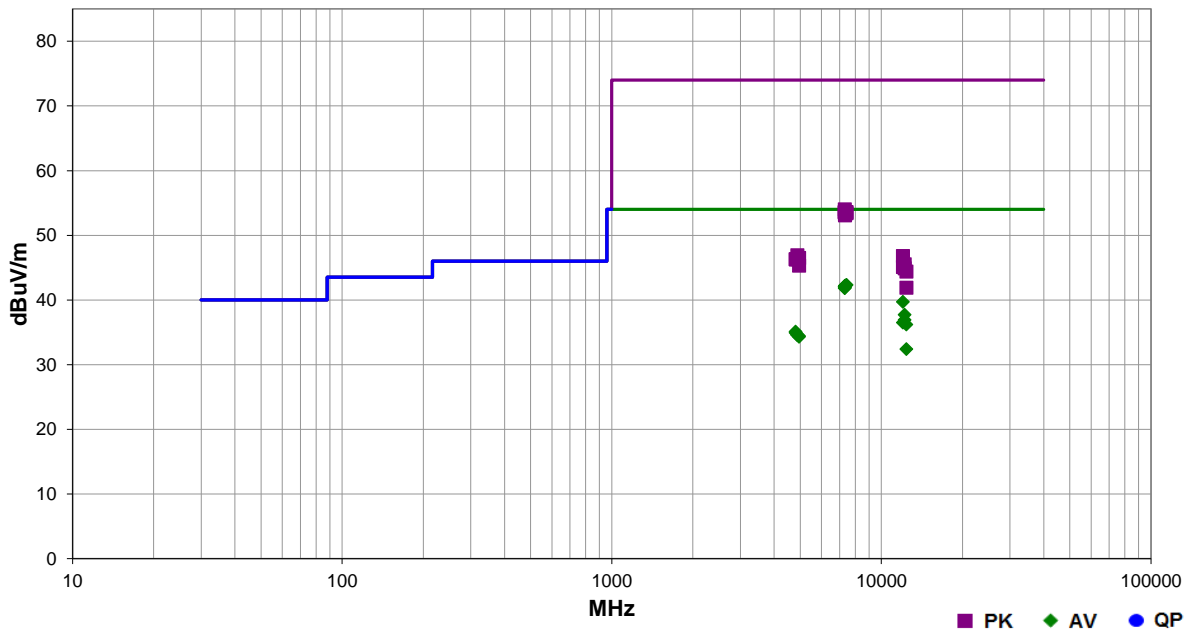
EmiR5 2021.01.08.0 PSA-ESCI 2021.01.22.0

Dustin Sparks

Work Order:	EMPM0107	Date:	2021-02-19
Project:	None	Temperature:	22.1 °C
Job Site:	MN09	Humidity:	17.2% RH
Serial Number:	0003	Barometric Pres.:	1027 mbar
EUT:	Model 708		
Configuration:	5		
Customer:	Emerson Automation Solutions / Rosemount Inc.		
Attendees:	Shawn Simons		
EUT Power:	Battery		
Operating Mode:	Transmitting WirelessHART - low channel (2405 MHz), mid channel (2440 MHz), and high channel (2475 MHz) modulated		
Deviations:	None		
Comments:	None		

Test Specifications	Test Method
FCC 15.247:2021	ANSI C63.10:2013

Run #	32	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
7424.017	28.6	13.7	1.5	226.0	3.0	0.0	Horz	AV	0.0	42.3	54.0	-11.7	High ch, EUT on side
7423.767	28.6	13.7	1.5	183.0	3.0	0.0	Vert	AV	0.0	42.3	54.0	-11.7	High ch, EUT on side
7321.642	29.1	13.1	2.7	159.0	3.0	0.0	Vert	AV	0.0	42.2	54.0	-11.8	Mid ch, EUT on side
7318.717	29.0	13.1	1.5	230.0	3.0	0.0	Vert	AV	0.0	42.1	54.0	-11.9	Mid ch, EUT vertical
7317.908	28.9	13.1	1.5	99.0	3.0	0.0	Horz	AV	0.0	42.0	54.0	-12.0	Mid ch, EUT horizontal
7318.417	28.9	13.1	1.5	84.0	3.0	0.0	Horz	AV	0.0	42.0	54.0	-12.0	Mid ch, EUT on side
7321.100	28.8	13.1	1.5	22.0	3.0	0.0	Horz	AV	0.0	41.9	54.0	-12.1	Mid ch, EUT vertical
7318.558	28.7	13.1	3.7	360.0	3.0	0.0	Vert	AV	0.0	41.8	54.0	-12.2	Mid ch, EUT horizontal
12027.500	41.2	-1.5	1.0	134.0	3.0	0.0	Vert	AV	0.0	39.7	54.0	-14.3	Low ch, EUT on side
12202.480	38.2	-0.5	4.0	238.0	3.0	0.0	Horz	AV	0.0	37.7	54.0	-16.3	Mid ch, EUT on side
12197.680	37.5	-0.6	2.9	101.0	3.0	0.0	Vert	AV	0.0	36.9	54.0	-17.1	Mid ch, EUT on side
12022.700	38.0	-1.5	4.0	260.0	3.0	0.0	Horz	AV	0.0	36.5	54.0	-17.5	Low ch, EUT on side
12377.490	36.8	-0.6	1.0	134.0	3.0	0.0	Vert	AV	0.0	36.2	54.0	-17.8	High ch, EUT on side
4810.858	30.3	4.8	1.5	280.0	3.0	0.0	Horz	AV	0.0	35.1	54.0	-18.9	Low ch, EUT on side
4810.725	30.1	4.8	1.5	183.0	3.0	0.0	Vert	AV	0.0	34.9	54.0	-19.1	Low ch, EUT on side
4878.675	29.8	4.8	1.5	19.0	3.0	0.0	Horz	AV	0.0	34.6	54.0	-19.4	Mid ch, EUT on side
4878.700	29.8	4.8	1.5	266.0	3.0	0.0	Vert	AV	0.0	34.6	54.0	-19.4	Mid ch, EUT on side
4950.542	29.7	4.7	1.5	39.0	3.0	0.0	Horz	AV	0.0	34.4	54.0	-19.6	High ch, EUT on side

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
4949.575	29.6	4.7	1.5	73.0	3.0	0.0	Vert	AV	0.0	34.3	54.0	-19.7	High ch, EUT on side
7317.575	40.9	13.1	1.5	230.0	3.0	0.0	Vert	PK	0.0	54.0	74.0	-20.0	Mid ch, EUT vertical
7317.717	40.5	13.1	1.5	99.0	3.0	0.0	Horz	PK	0.0	53.6	74.0	-20.4	Mid ch, EUT horizontal
7317.842	40.5	13.1	1.5	84.0	3.0	0.0	Horz	PK	0.0	53.6	74.0	-20.4	Mid ch, EUT on side
7425.008	39.9	13.7	1.5	183.0	3.0	0.0	Vert	PK	0.0	53.6	74.0	-20.4	High ch, EUT on side
7319.017	40.4	13.1	2.7	159.0	3.0	0.0	Vert	PK	0.0	53.5	74.0	-20.5	Mid ch, EUT on side
7426.025	39.7	13.7	1.5	226.0	3.0	0.0	Horz	PK	0.0	53.4	74.0	-20.6	High ch, EUT on side
7321.725	40.1	13.1	1.5	22.0	3.0	0.0	Horz	PK	0.0	53.2	74.0	-20.8	Mid ch, EUT vertical
7321.708	40.0	13.1	3.7	360.0	3.0	0.0	Vert	PK	0.0	53.1	74.0	-20.9	Mid ch, EUT horizontal
12372.570	33.1	-0.7	1.5	205.0	3.0	0.0	Horz	AV	0.0	32.4	54.0	-21.6	High ch, EUT on side
4878.250	42.1	4.8	1.5	266.0	3.0	0.0	Vert	PK	0.0	46.9	74.0	-27.1	Mid ch, EUT on side
12022.600	48.3	-1.5	1.0	134.0	3.0	0.0	Vert	PK	0.0	46.8	74.0	-27.2	Low ch, EUT on side
4948.958	41.8	4.7	1.5	39.0	3.0	0.0	Horz	PK	0.0	46.5	74.0	-27.5	High ch, EUT on side
4879.367	41.5	4.8	1.5	19.0	3.0	0.0	Horz	PK	0.0	46.3	74.0	-27.7	Mid ch, EUT on side
4811.950	41.5	4.8	1.5	280.0	3.0	0.0	Horz	PK	0.0	46.3	74.0	-27.7	Low ch, EUT on side
4810.242	41.5	4.8	1.5	183.0	3.0	0.0	Vert	PK	0.0	46.3	74.0	-27.7	Low ch, EUT on side
12197.780	46.1	-0.6	4.0	238.0	3.0	0.0	Horz	PK	0.0	45.5	74.0	-28.5	Mid ch, EUT on side
4949.550	40.6	4.7	1.5	73.0	3.0	0.0	Vert	PK	0.0	45.3	74.0	-28.7	High ch, EUT on side
12022.670	46.6	-1.5	4.0	260.0	3.0	0.0	Horz	PK	0.0	45.1	74.0	-28.9	Low ch, EUT on side
12197.810	45.5	-0.6	2.9	101.0	3.0	0.0	Vert	PK	0.0	44.9	74.0	-29.1	Mid ch, EUT on side
12377.350	45.0	-0.6	1.0	134.0	3.0	0.0	Vert	PK	0.0	44.4	74.0	-29.6	High ch, EUT on side
12373.200	42.6	-0.7	1.5	205.0	3.0	0.0	Horz	PK	0.0	41.9	74.0	-32.1	High ch, EUT on side

SPURIOUS RADIATED EMISSIONS

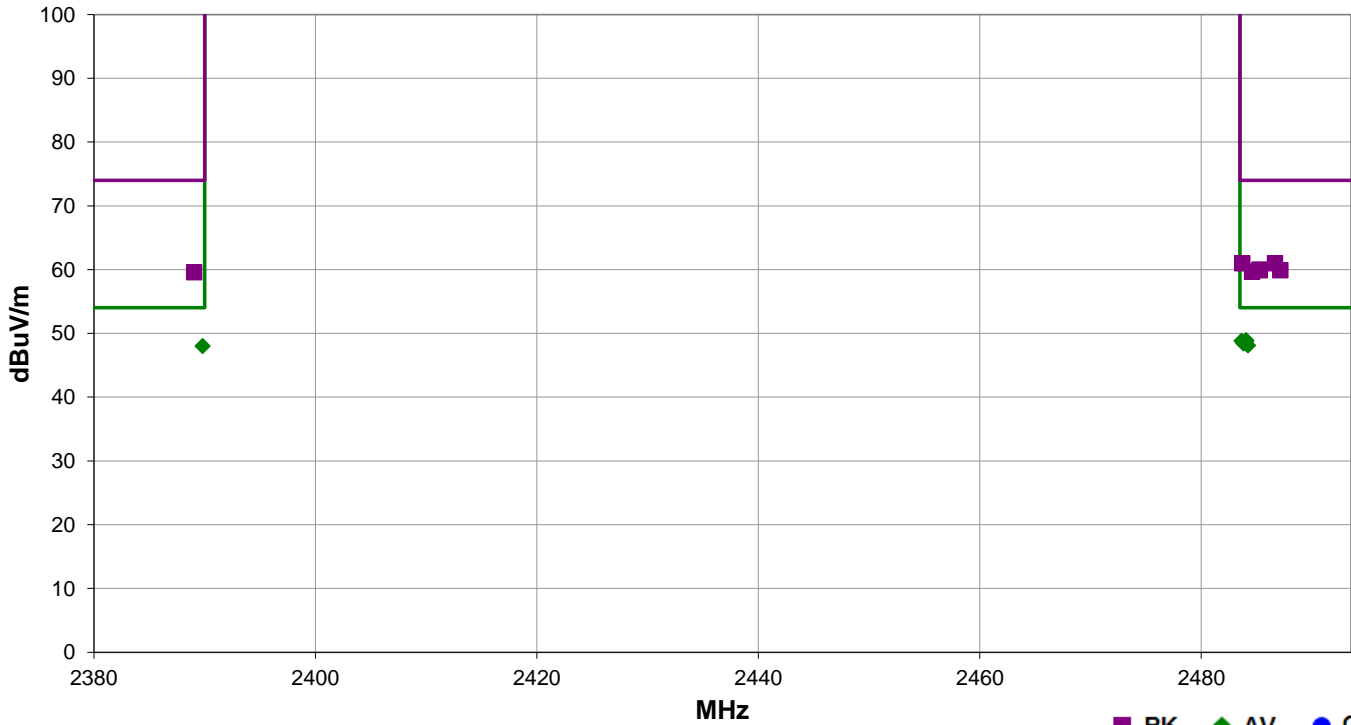


EmiR5 2021.01.08.0 PSA-ESCI 2021.01.22.0

Work Order:	EMPM0107	Date:	2021-02-19	<i>Dustin Sparks</i>
Project:	None	Temperature:	22.1 °C	
Job Site:	MN09	Humidity:	17.2% RH	
Serial Number:	0003	Barometric Pres.:	1027 mbar	
Tested by:	Dustin Sparks			
EUT:	Model 708			
Configuration:	5			
Customer:	Emerson Automation Solutions / Rosemount Inc.			
Attendees:	Shawn Simons			
EUT Power:	Battery			
Operating Mode:	Transmitting WirelessHART - low channel (2405 MHz) and high channel (2475 MHz) modulated			
Deviations:	None			
Comments:	None			

Test Specifications	Test Method
FCC 15.247:2021	ANSI C63.10:2013

Run #	36	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)
2484.042	32.1	-3.2	1.5	183.0	3.0	20.0	Vert	AV	0.0	48.9	54.0	-5.1
2484.075	32.0	-3.2	1.5	47.0	3.0	20.0	Horz	AV	0.0	48.8	54.0	-5.2
2483.633	32.0	-3.2	1.5	289.0	3.0	20.0	Horz	AV	0.0	48.8	54.0	-5.2
2483.858	31.8	-3.2	1.5	320.0	3.0	20.0	Vert	AV	0.0	48.6	54.0	-5.4
2483.825	31.6	-3.2	1.5	15.0	3.0	20.0	Horz	AV	0.0	48.4	54.0	-5.6

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)
2484.233	31.3	-3.2	1.5	131.0	3.0	20.0	Vert	AV	0.0	48.1	54.0	-5.9
2389.833	31.5	-3.5	2.01	102.0	3.0	20.0	Vert	AV	0.0	48.0	54.0	-6.0
2486.650	44.2	-3.2	1.5	47.0	3.0	20.0	Horz	PK	0.0	61.0	74.0	-13.0
2483.708	44.2	-3.2	1.5	183.0	3.0	20.0	Vert	PK	0.0	61.0	74.0	-13.0
2485.258	43.2	-3.2	1.5	15.0	3.0	20.0	Horz	PK	0.0	60.0	74.0	-14.0
2485.275	43.1	-3.2	1.5	289.0	3.0	20.0	Horz	PK	0.0	59.9	74.0	-14.1
2487.133	43.1	-3.2	1.5	131.0	3.0	20.0	Vert	PK	0.0	59.9	74.0	-14.1
2484.583	42.9	-3.2	1.5	320.0	3.0	20.0	Vert	PK	0.0	59.7	74.0	-14.3
2389.058	43.1	-3.5	2.01	102.0	3.0	20.0	Vert	PK	0.0	59.6	74.0	-14.4

DUTY CYCLE



TEST DESCRIPTION

The measurement was made using a direction connection between the RF output of the EUT and a spectrum analyzer.

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.

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

For testing the EUT was set to a mode that 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.	Cal. Due
Generator - Signal	Agilent	E4422B	TGQ	2018-03-15	2021-03-15
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2020-09-14	2021-09-14
Attenuator	Fairview Microwave	SA18S5W-20	RFX	2020-06-03	2021-06-03
Block - DC	Fairview Microwave	SD3379	AMZ	2020-11-04	2021-11-04
Analyzer - Spectrum Analyzer	Keysight	N9010A (EXA)	AFQ	2020-12-27	2021-12-27

TEST DESCRIPTION

The measurement was made using a direction 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 2019.08.30.0 XMi 2020.12.30.0

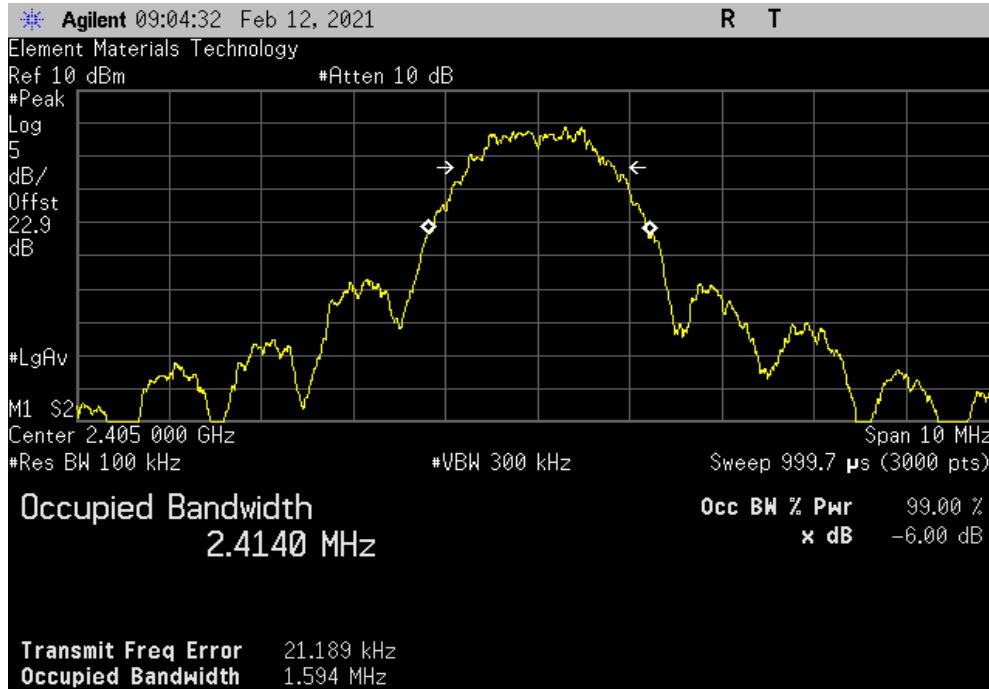
EUT: Model 708		Work Order: EMPM0107	
Serial Number: 0001		Date: 12-Feb-21	
Customer: Emerson Automation Solutions / Rosemount Inc.		Temperature: 22.2 °C	
Attendees: Elizabeth Reiersen, Shawn Simons		Humidity: 12.8% RH	
Project: None		Barometric Pres.: 1037 mbar	
Tested by: Dustin Sparks		Power: Battery	
Job Site: MN08			
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2021		ANSI C63.10:2013	
COMMENTS			
Reference level offset includes 20 dB attenuator, DC block, measurement cable, and 1.5 dB for the customer's SMA cable and adapter.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Dustin Sparks</i>	
		Value	Limit (>)
WirelessHART			Result
Low Channel, 2405 MHz		1.594 MHz	500 kHz Pass
Mid Channel, 2440 MHz		1.606 MHz	500 kHz Pass
High Channel, 2475 MHz		1.623 MHz	500 kHz Pass

OCCUPIED BANDWIDTH

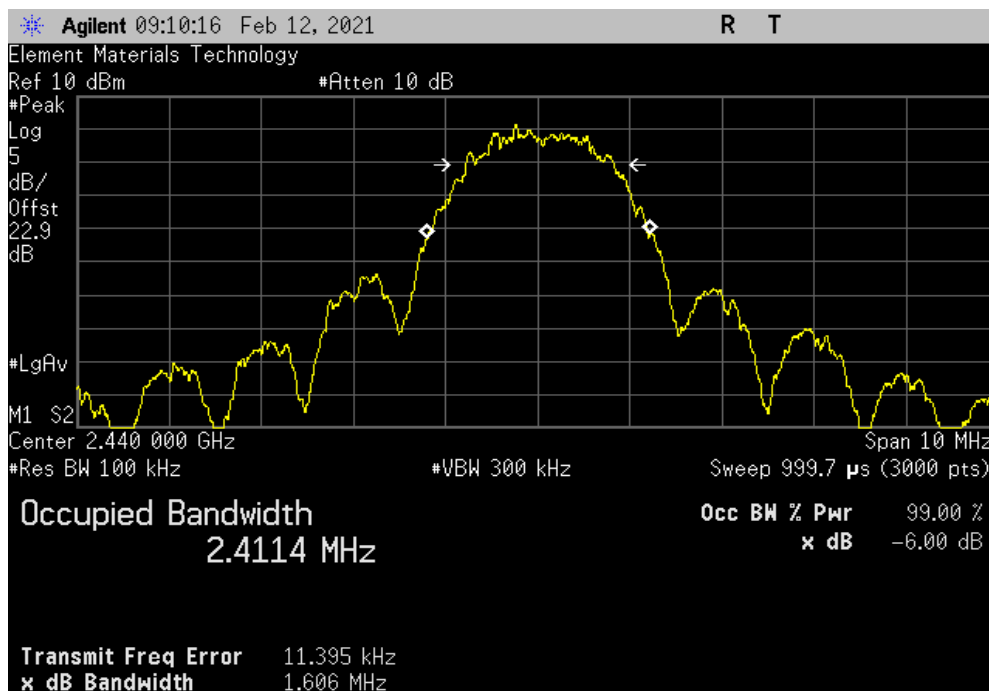


TbTx 2019.08.30.0 XMI 2020.12.30.0

WirelessHART, Low Channel, 2405 MHz						
				Value	Limit (>)	Result
				1.594 MHz	500 kHz	Pass



WirelessHART, Mid Channel, 2440 MHz						
				Value	Limit (>)	Result
				1.606 MHz	500 kHz	Pass

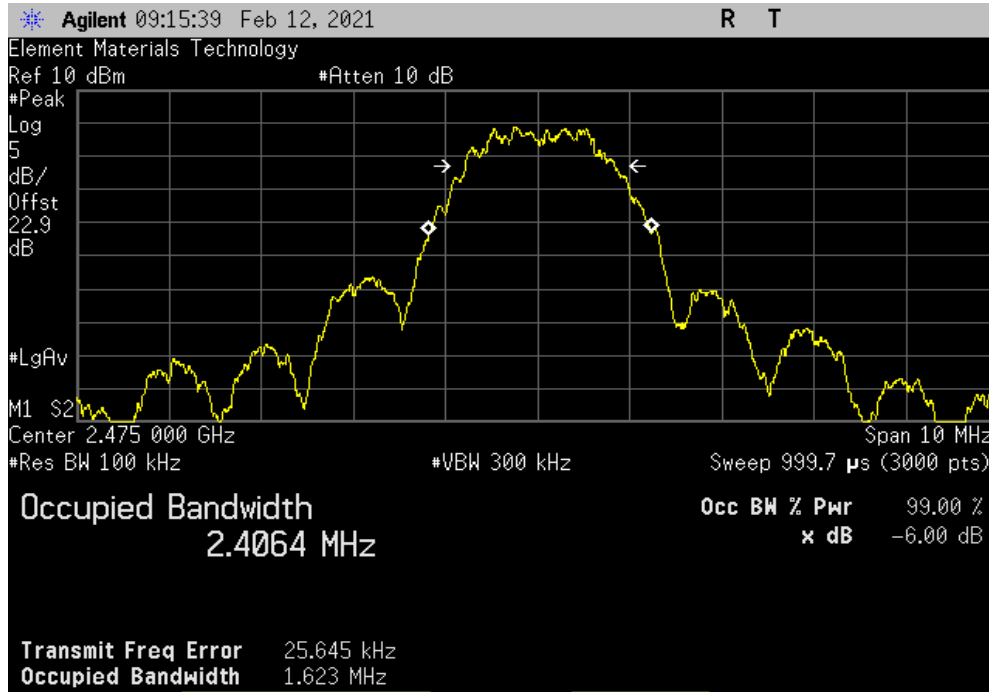


OCCUPIED BANDWIDTH



TbTx 2019.08.30.0 XMI 2020.12.30.0

WirelessHART, High Channel, 2475 MHz			Value	Limit	Result
			(>)		
			1.623 MHz	500 kHz	Pass



OUTPUT POWER



XMI 2020.12.30.0

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	2018-03-15	2021-03-15
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2020-09-14	2021-09-14
Attenuator	Fairview Microwave	SA18S5W-20	RFX	2020-06-03	2021-06-03
Block - DC	Fairview Microwave	SD3379	AMZ	2020-11-04	2021-11-04
Analyzer - Spectrum Analyzer	Keysight	N9010A (EXA)	AFQ	2020-12-27	2021-12-27

TEST DESCRIPTION

The measurement was made using a direction 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.

OUTPUT POWER



TotTx 2019.08.30.0 XMit 2020.12.30.0

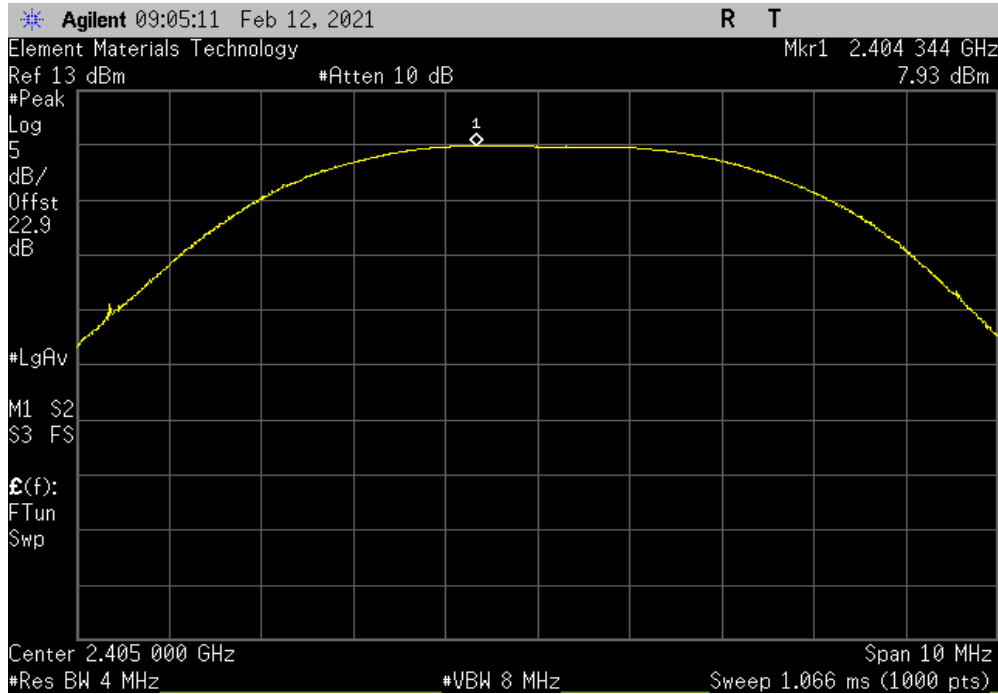
EUT:	Model 708	Work Order:	EMPM0107
Serial Number:	0001	Date:	12-Feb-21
Customer:	Emerson Automation Solutions / Rosemount Inc.	Temperature:	22.2 °C
Attendees:	Elizabeth Reiersen, Shawn Simons	Humidity:	13% RH
Project:	None	Barometric Pres.:	1037 mbar
Tested by:	Dustin Sparks	Power:	Battery
		Job Site:	MN08
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2021		ANSI C63.10:2013	
COMMENTS			
Reference level offset includes 20 dB attenuator, DC block, measurement cable, and 1.5 dB for the customer's SMA cable and adapter.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature	<i>Dustin Sparks</i>
		Out Pwr (dBm)	Limit (dBm) Result
WirelessHART	Low Channel, 2405 MHz	7.931	30 Pass
	Mid Channel, 2440 MHz	8.922	30 Pass
	High Channel, 2475 MHz	8.103	30 Pass

OUTPUT POWER

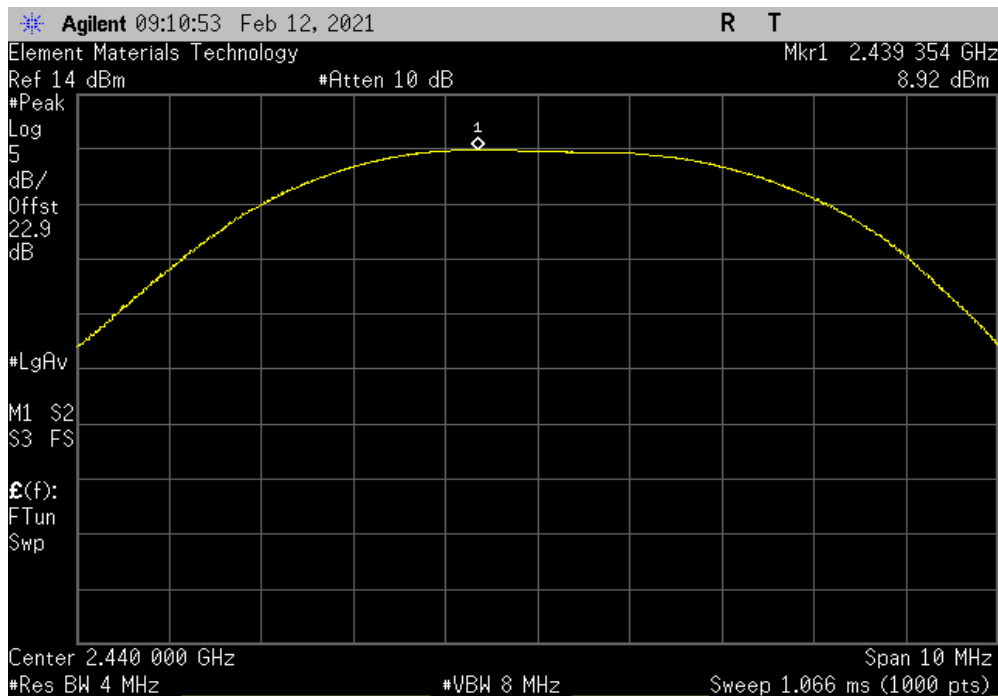


TbTx 2019.08.30.0 XMI 2020.12.30.0

WirelessHART, Low Channel, 2405 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				7.931	30	Pass



WirelessHART, Mid Channel, 2440 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				8.922	30	Pass

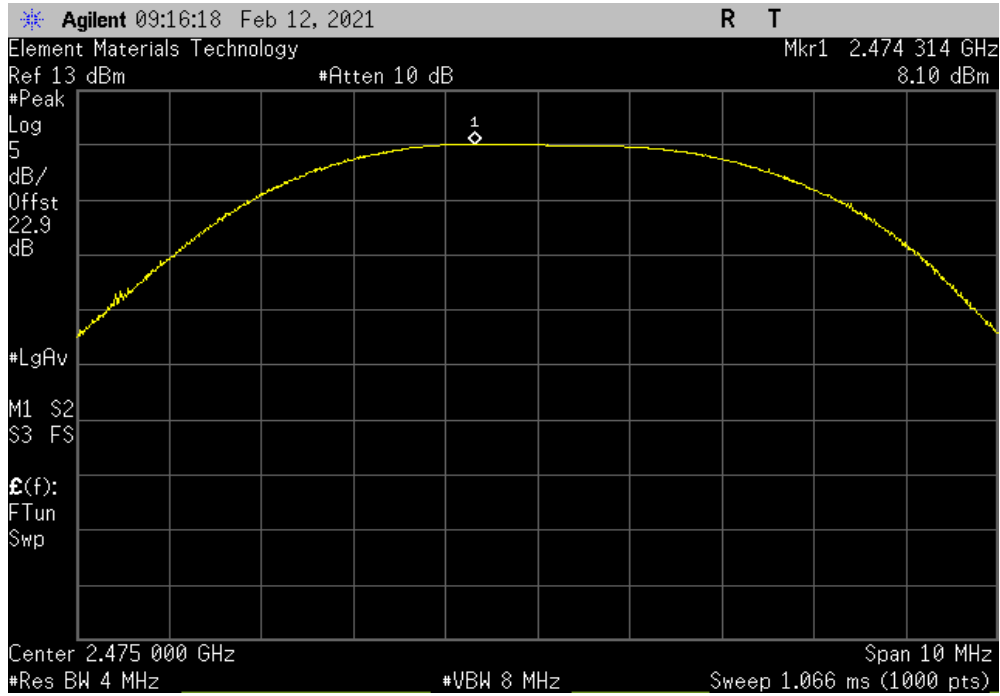


OUTPUT POWER



TbTx 2019.08.30.0 XMI 2020.12.30.0

WirelessHART, High Channel, 2475 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				8.103	30	Pass



EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



XMIT 2020.12.30.0

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	2018-03-15	2021-03-15
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2020-09-14	2021-09-14
Attenuator	Fairview Microwave	SA18S5W-20	RFX	2020-06-03	2021-06-03
Block - DC	Fairview Microwave	SD3379	AMZ	2020-11-04	2021-11-04
Analyzer - Spectrum Analyzer	Keysight	N9010A (EXA)	AFQ	2020-12-27	2021-12-27

TEST DESCRIPTION

The measurement was made using a direction 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.

The antenna gain of the EUT in dBi was added to the measured output power values to calculate the EIRP.

Equivalent Isotropic Radiated Power (EIRP) = Max Measured Power + Antenna gain (dBi)

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



TotTx 2019.08.30.0 XMit 2020.12.30.0

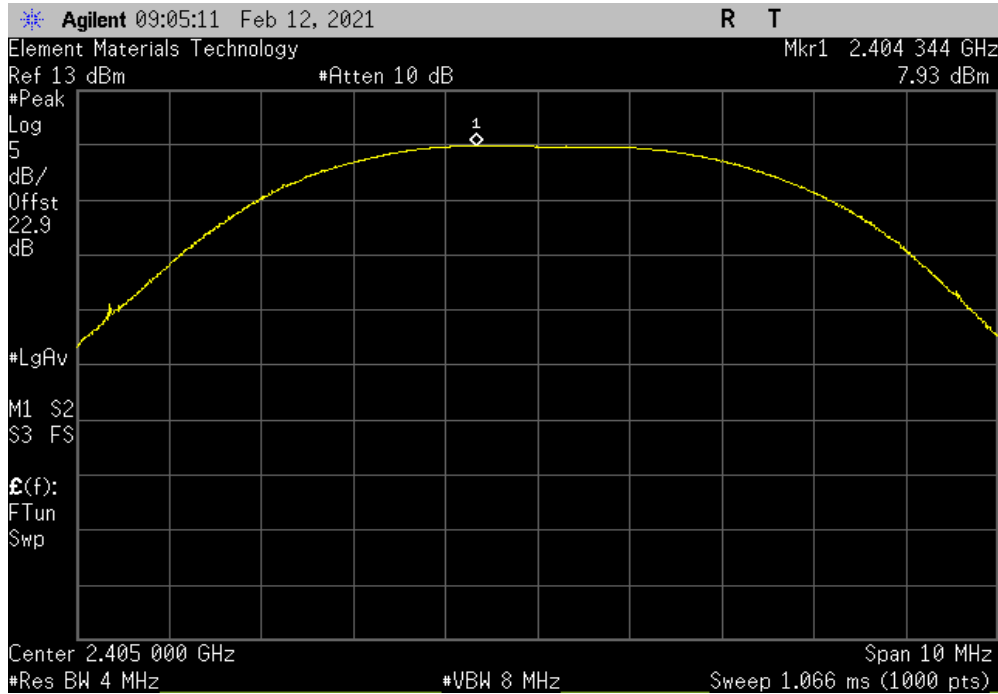
EUT: Model 708		Work Order: EMPM0107				
Serial Number: 0001		Date: 12-Feb-21				
Customer: Emerson Automation Solutions / Rosemount Inc.		Temperature: 22.3 °C				
Attendees: Elizabeth Reiersen, Shawn Simons		Humidity: 12.8% RH				
Project: None		Barometric Pres.: 1037 mbar				
Tested by: Dustin Sparks		Power: Battery		Job Site: MN08		
TEST SPECIFICATIONS			Test Method			
FCC 15.247:2021			ANSI C63.10:2013			
COMMENTS						
Reference level offset includes 20 dB attenuator, DC block, measurement cable, and 1.5 dB for the customer's SMA cable and adapter.						
DEVIATIONS FROM TEST STANDARD						
None						
Configuration #	1	Signature <i>Dustin Sparks</i>				
		Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
WirelessHART						
Low Channel, 2405 MHz		7.931	2	9.931	36	Pass
Mid Channel, 2440 MHz		8.922	2	10.922	36	Pass
High Channel, 2475 MHz		8.103	2	10.103	36	Pass

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

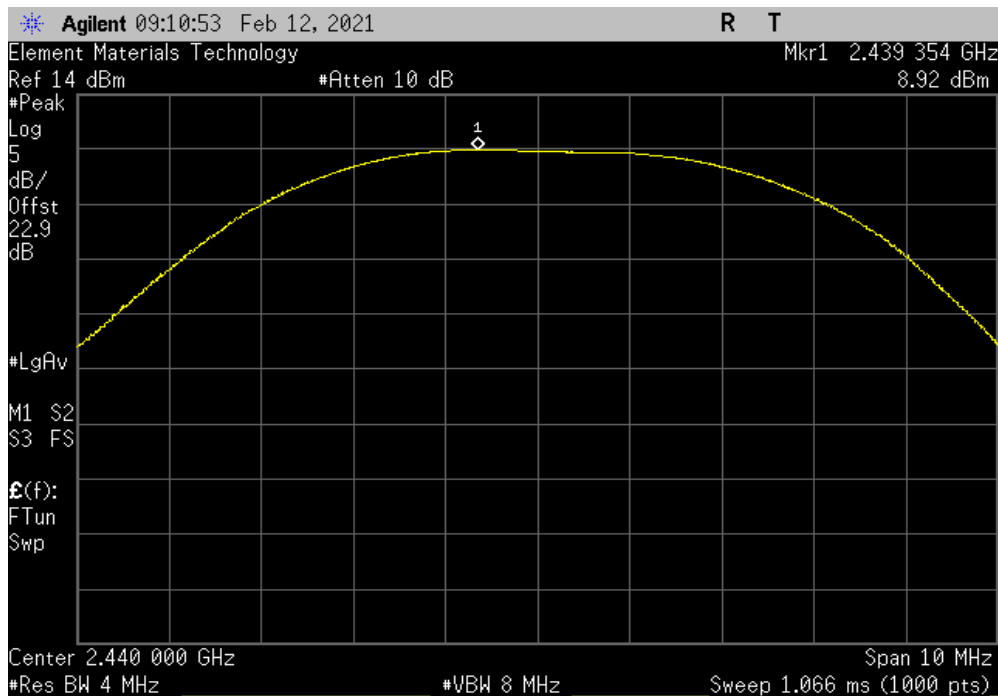


TbTx 2019.08.30.0 XMI 2020.12.30.0

WirelessHART, Low Channel, 2405 MHz						
	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result	
	7.931	2	9.931	36	Pass	



WirelessHART, Mid Channel, 2440 MHz						
	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result	
	8.922	2	10.922	36	Pass	

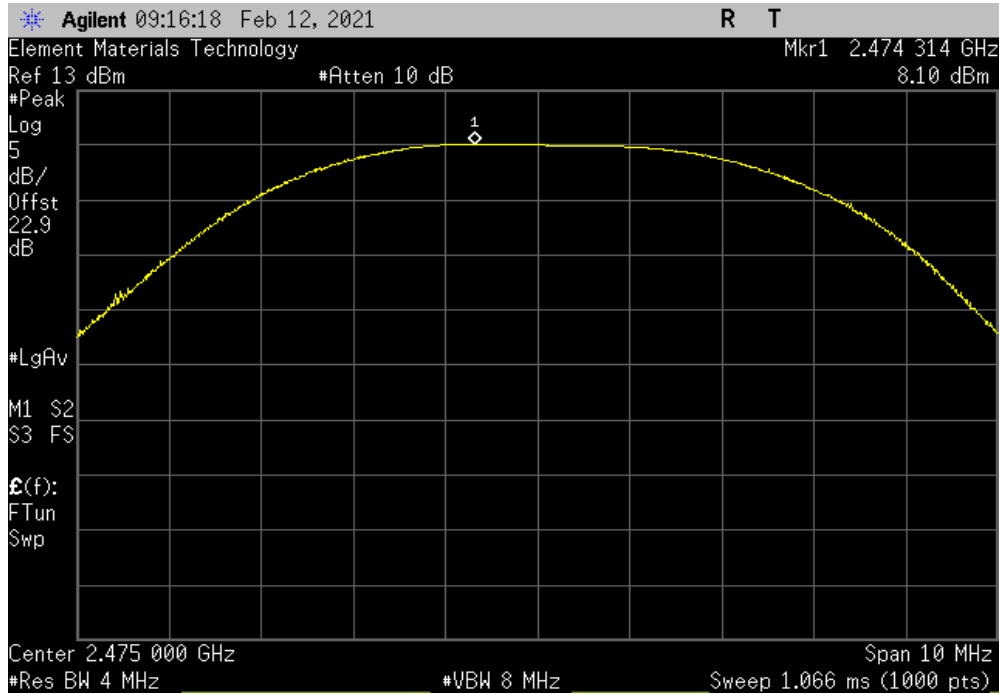


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



TbTx 2019.08.30.0 XMI 2020.12.30.0

WirelessHART, High Channel, 2475 MHz						
Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result		
8.103	2	10.103	36	Pass		



POWER SPECTRAL DENSITY



element

XMIT 2020.12.30.0

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	2018-03-15	2021-03-15
Attenuator	Fairview Microwave	SA18S5W-20	RFX	2020-06-03	2021-06-03
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2020-09-14	2021-09-14
Block - DC	Fairview Microwave	SD3379	AMZ	2020-11-04	2021-11-04
Analyzer - Spectrum Analyzer	Keysight	N9010A (EXA)	AFQ	2020-12-27	2021-12-27

TEST DESCRIPTION

The measurement was made using a direction 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



TbTx 2019.08.30.0 XMi 2020.12.30.0

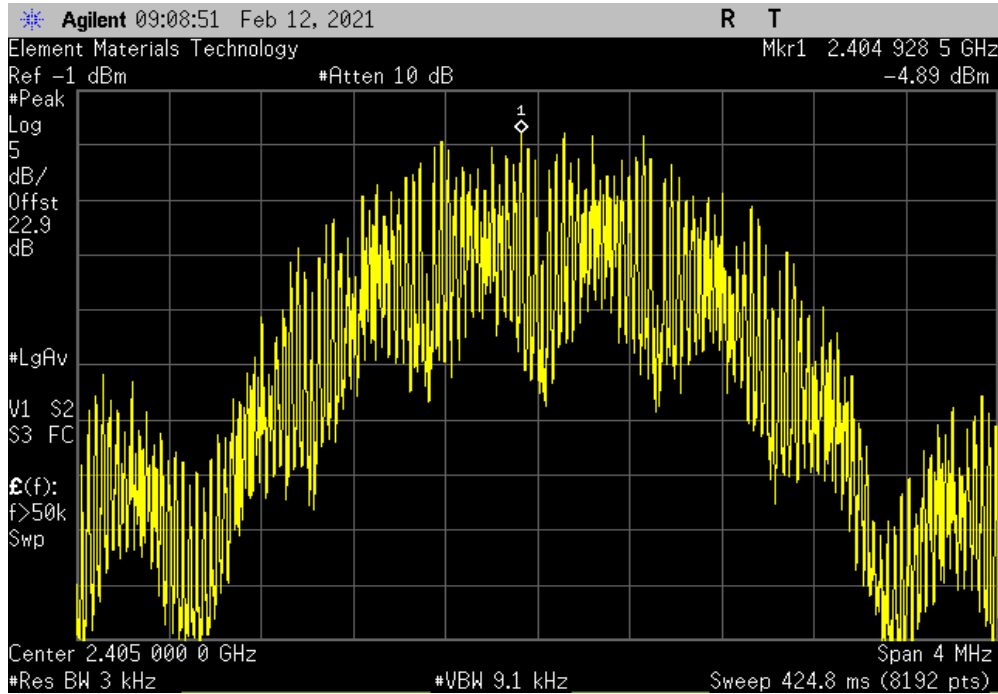
EUT: Model 708		Work Order: EMPM0107	
Serial Number: 0001		Date: 12-Feb-21	
Customer: Emerson Automation Solutions / Rosemount Inc.		Temperature: 22.2 °C	
Attendees: Elizabeth Reiersen, Shawn Simons		Humidity: 13% RH	
Project: None		Barometric Pres.: 1037 mbar	
Tested by: Dustin Sparks		Job Site: MN08	
Power: Battery			
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2021		ANSI C63.10:2013	
COMMENTS			
Reference level offset includes 20 dB attenuator, DC block, measurement cable, and 1.5 dB for the customer's SMA cable and adapter.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Dustin Sparks</i>	
		Value dBm/3kHz	Limit < dBm/3kHz
WirelessHART	Low Channel, 2405 MHz	-4.89	8
	Mid Channel, 2440 MHz	-3.288	8
	High Channel, 2475 MHz	-4.549	8
			Results
			Pass
			Pass
			Pass

POWER SPECTRAL DENSITY

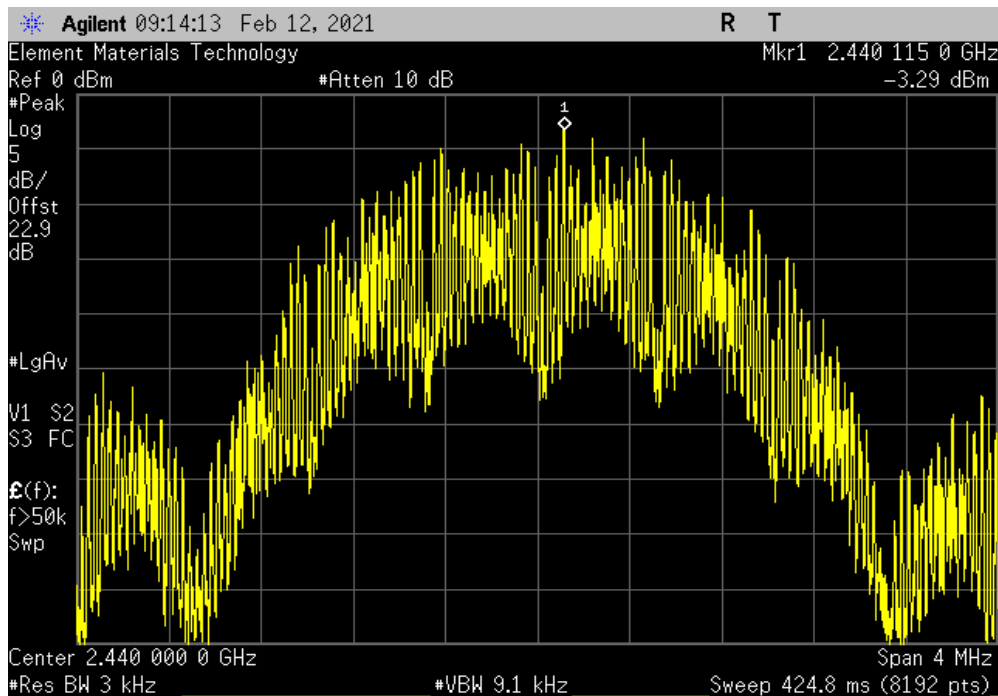


TbTx 2019.08.30.0 XMI 2020.12.30.0

WirelessHART, Low Channel, 2405 MHz			
	Value	Limit	Results
	dBm/3kHz	< dBm/3kHz	
	-4.89	8	Pass



WirelessHART, Mid Channel, 2440 MHz			
	Value	Limit	Results
	dBm/3kHz	< dBm/3kHz	
	-3.288	8	Pass

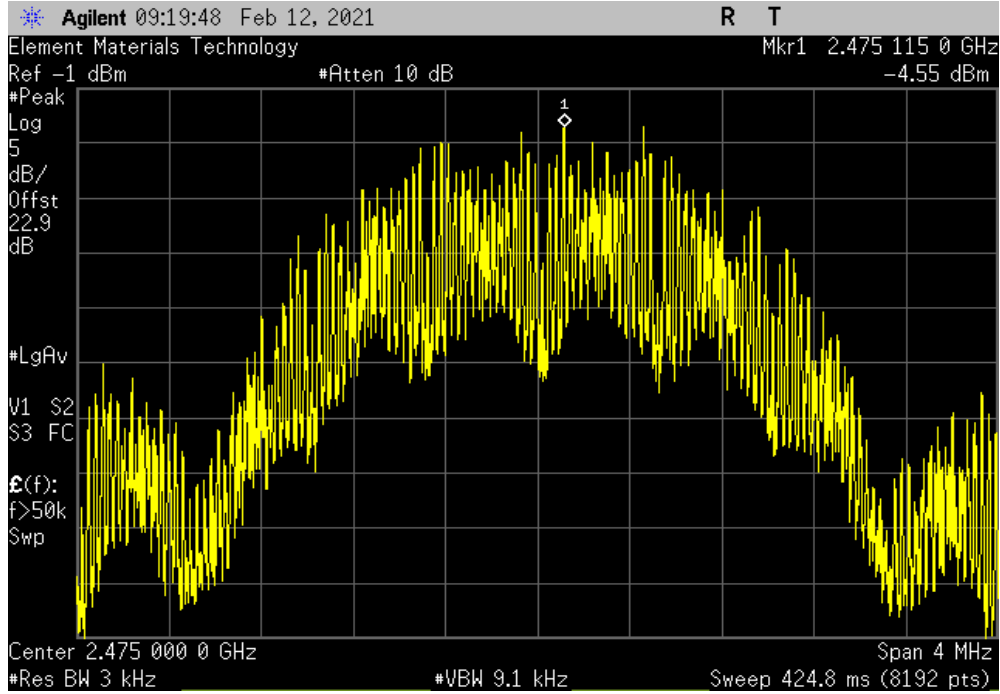


POWER SPECTRAL DENSITY



TbTx 2019.08.30.0 XMI 2020.12.30.0

WirelessHART, High Channel, 2475 MHz			
	Value	Limit	Results
	dBm/3kHz	< dBm/3kHz	
	-4.549	8	Pass



BAND EDGE COMPLIANCE



XMIT 2020.12.30.0

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	2018-03-15	2021-03-15
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2020-09-14	2021-09-14
Attenuator	Fairview Microwave	SA18S5W-20	RFX	2020-06-03	2021-06-03
Block - DC	Fairview Microwave	SD3379	AMZ	2020-11-04	2021-11-04
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFG	2020-07-14	2021-07-14

TEST DESCRIPTION

The measurement was made using a direction 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



TdTx 2019.08.30.0 XMi 2020.12.30.0

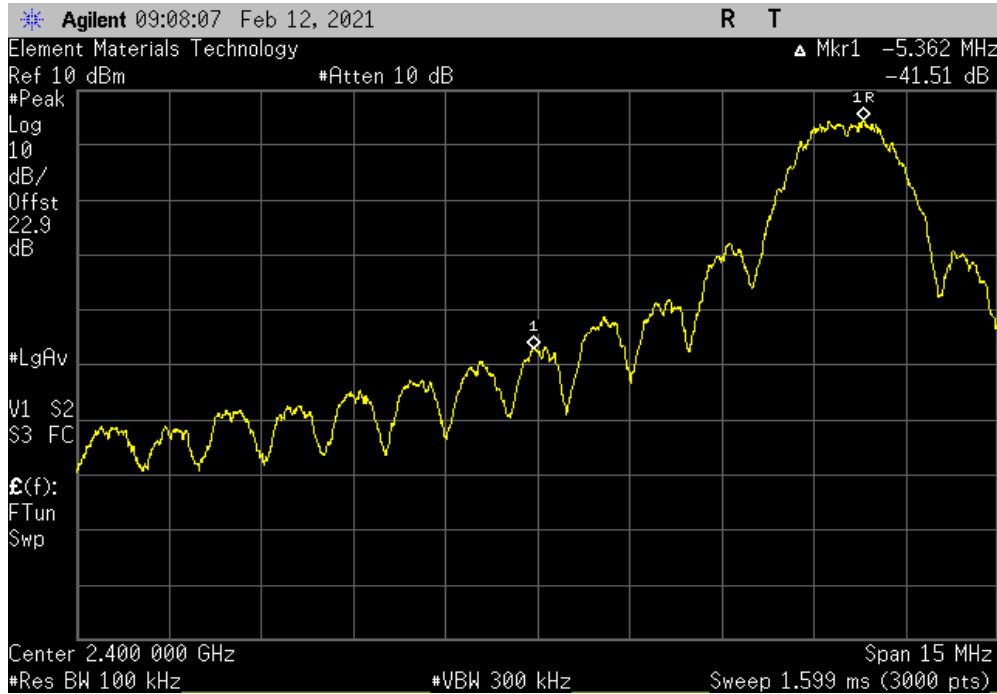
EUT: Model 708		Work Order: EMPM0107	
Serial Number: 0001		Date: 12-Feb-21	
Customer: Emerson Automation Solutions / Rosemount Inc.		Temperature: 22.3 °C	
Attendees: Elizabeth Reiersen, Shawn Simons		Humidity: 12.9% RH	
Project: None		Barometric Pres.: 1037 mbar	
Tested by: Dustin Sparks		Power: Battery	
Job Site: MN08			
TEST SPECIFICATIONS		Test Method	
FCC 15.247:2021		ANSI C63.10:2013	
COMMENTS			
Reference level offset includes 20 dB attenuator, DC block, measurement cable, and 1.5 dB for the customer's SMA cable and adapter.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Dustin Sparks</i>	
		Value (dBc)	Limit ≤ (dBc) Result
WirelessHART			
Low Channel, 2405 MHz		-41.51	-20 Pass
High Channel, 2475 MHz		-51.51	-20 Pass

BAND EDGE COMPLIANCE

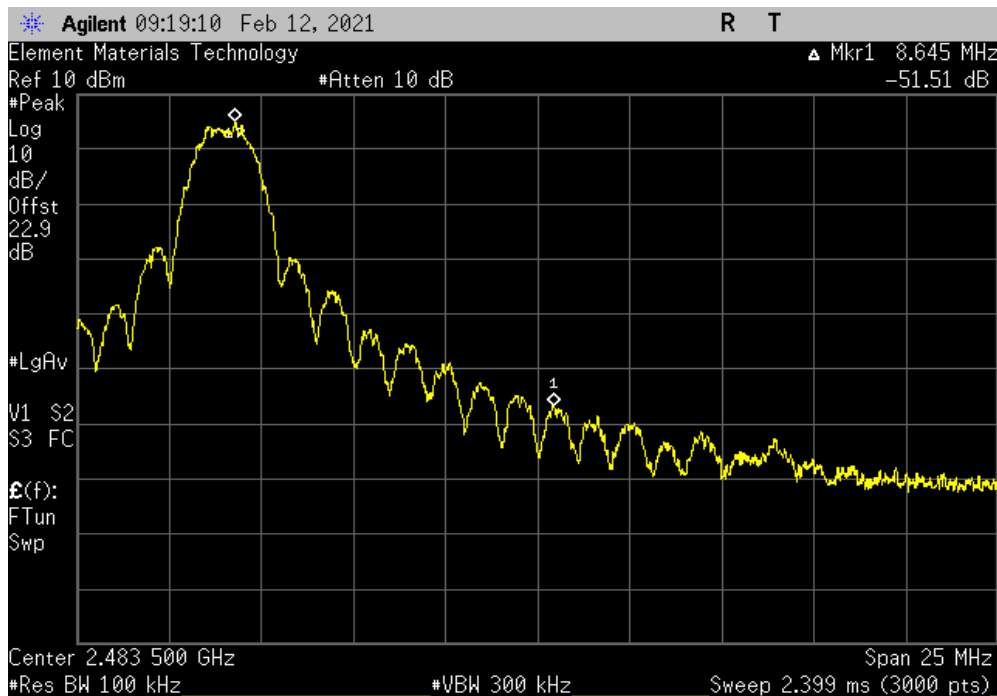


TuTx 2019.08.30.0 XMI 2020.12.30.0

WirelessHART, Low Channel, 2405 MHz			
	Value (dBc)	Limit ≤ (dBc)	Result
	-41.51	-20	Pass



WirelessHART, High Channel, 2475 MHz			
	Value (dBc)	Limit ≤ (dBc)	Result
	-51.51	-20	Pass



SPURIOUS CONDUCTED EMISSIONS



element

XMI 2020.12.30.0

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	2018-03-15	2021-03-15
Cable	Micro-Coax	UFD150A-1-0720-200200	MNL	2020-09-14	2021-09-14
Attenuator	S.M. Electronics	SA26B-20	RFW	2021-02-05	2022-02-05
Block - DC	Fairview Microwave	SD3379	AMZ	2020-11-04	2021-11-04
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFG	2020-07-14	2021-07-14

TEST DESCRIPTION

The measurement was made using a direction 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



Tel: 2019.08.30.0 XM: 2020.12.30.0

EUT: Model 708		Work Order: EMPM0107	
Serial Number: 0001		Date: 12-Feb-21	
Customer: Emerson Automation Solutions / Rosemount Inc.		Temperature: 22.2 °C	
Attendees: Elizabeth Reiersen, Shawn Simons		Humidity: 13.1% RH	
Project: None		Barometric Pres.: 1037 mbar	
Tested by: Dustin Sparks		Power: Battery	
Job Site: MN08		Test Method	
TEST SPECIFICATIONS		ANSI C63.10:2013	
FCC 15.247:2021			
COMMENTS			
Reference level offset includes 20 dB attenuator, DC block, measurement cable, and 1.5 dB for the customer's SMA cable and adapter.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	1	Signature <i>Dustin Sparks</i>	

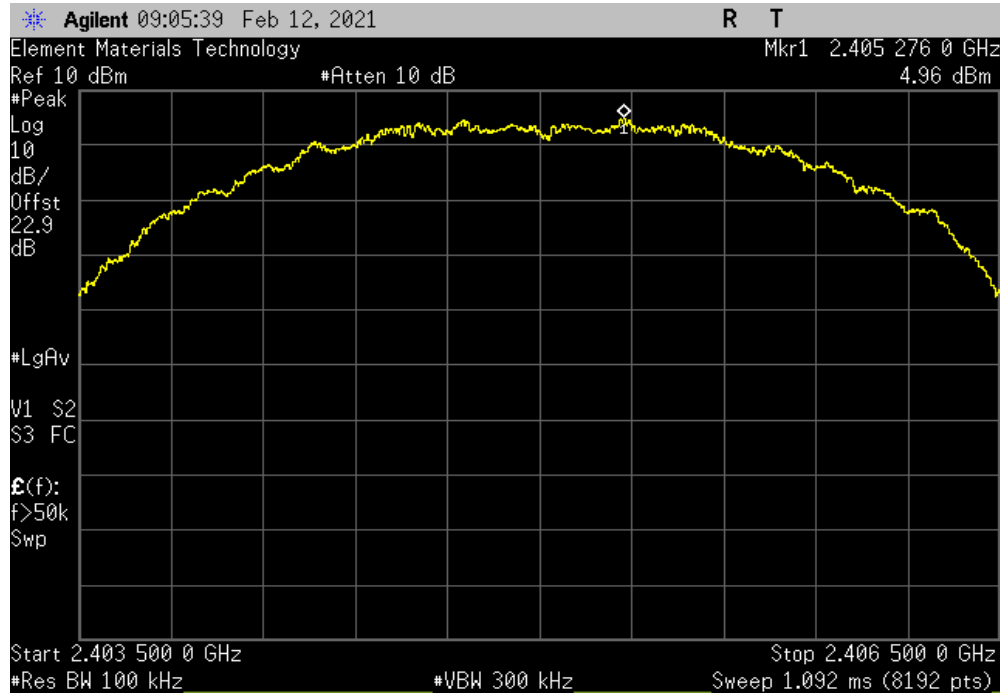
WirelessHART	Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
Low Channel, 2405 MHz	Fundamental	2405.28	N/A	N/A	N/A
Low Channel, 2405 MHz	30 MHz - 12.5 GHz	2394.3	-53.8	-20	Pass
Low Channel, 2405 MHz	12.5 GHz - 25 GHz	24839.8	-53.48	-20	Pass
Mid Channel, 2440 MHz	Fundamental	2440.24	N/A	N/A	N/A
Mid Channel, 2440 MHz	30 MHz - 12.5 GHz	9758.2	-59.52	-20	Pass
Mid Channel, 2440 MHz	12.5 GHz - 25 GHz	24990.8	-53.52	-20	Pass
High Channel, 2475 MHz	Fundamental	2475.29	N/A	N/A	N/A
High Channel, 2475 MHz	30 MHz - 12.5 GHz	6619	-59.06	-20	Pass
High Channel, 2475 MHz	12.5 GHz - 25 GHz	24818.4	-53.68	-20	Pass

SPURIOUS CONDUCTED EMISSIONS

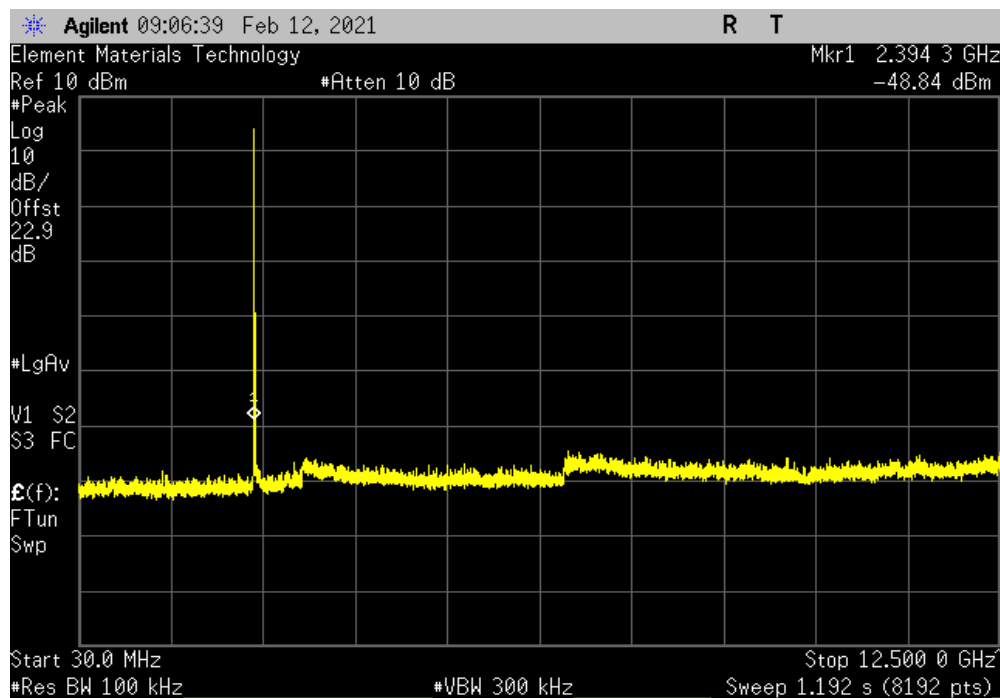


TuTx 2019.08.30.0 XMt 2020.12.30.0

WirelessHART, Low Channel, 2405 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
Fundamental	2405.28	N/A	N/A	N/A	



WirelessHART, Low Channel, 2405 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
30 MHz - 12.5 GHz	2394.3	-53.8	-20	Pass	

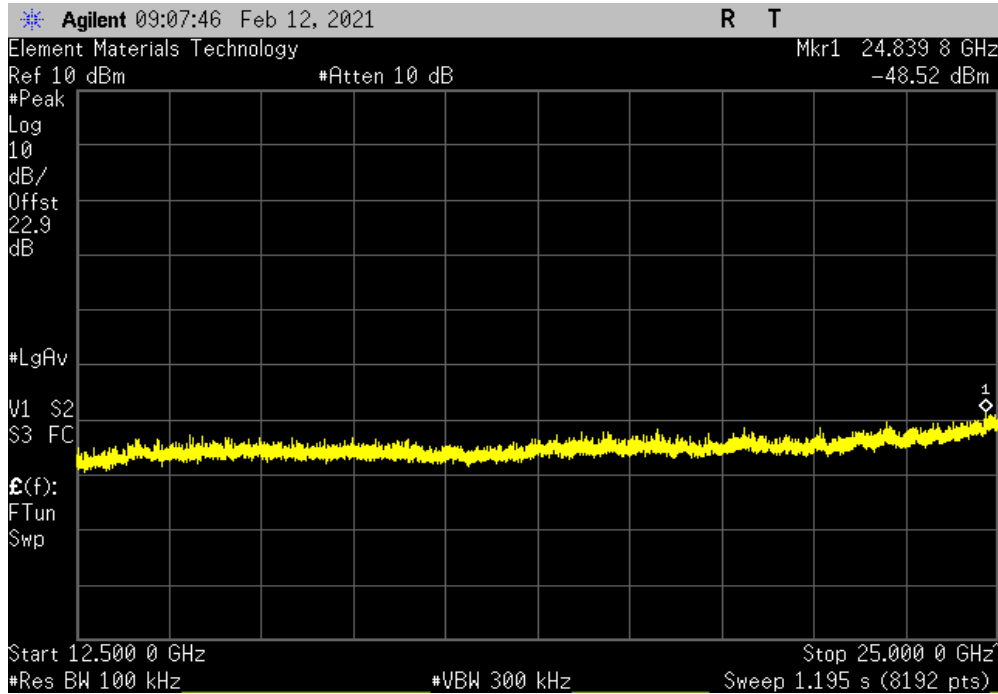


SPURIOUS CONDUCTED EMISSIONS

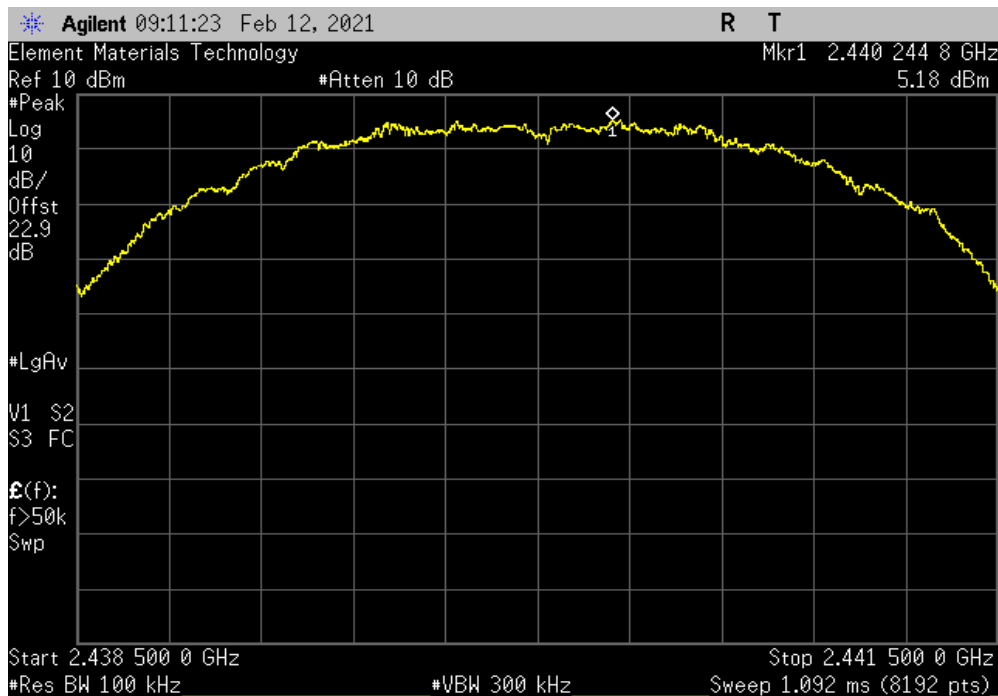


TbTx 2019.08.30.0 XMI 2020.12.30.0

WirelessHART, Low Channel, 2405 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
12.5 GHz - 25 GHz	24839.8	-53.48	-20	Pass	



WirelessHART, Mid Channel, 2440 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
Fundamental	2440.24	N/A	N/A	N/A	

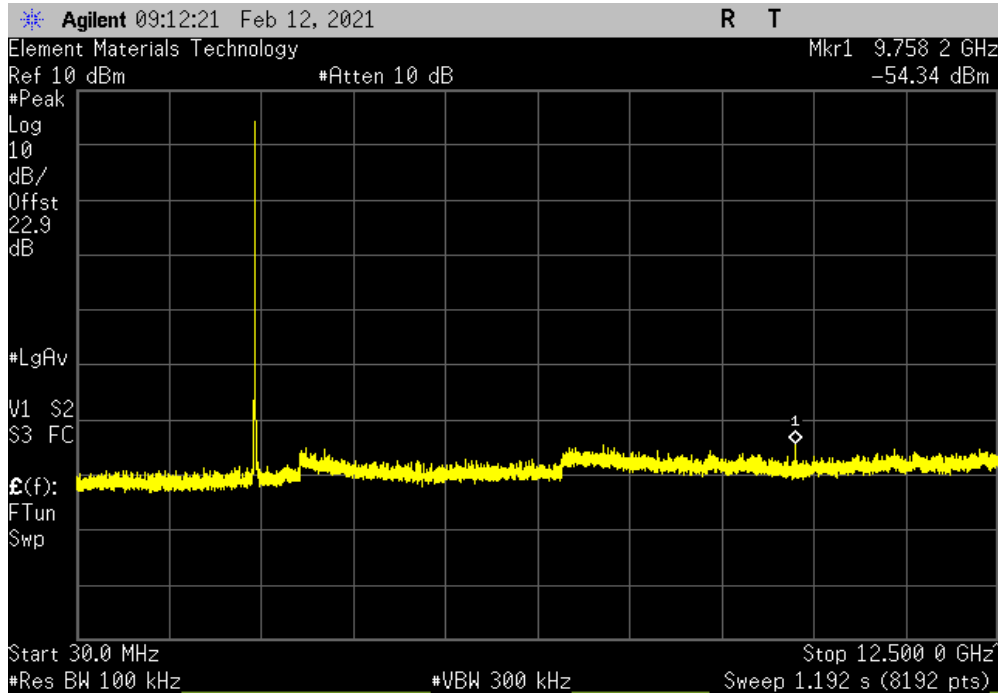


SPURIOUS CONDUCTED EMISSIONS

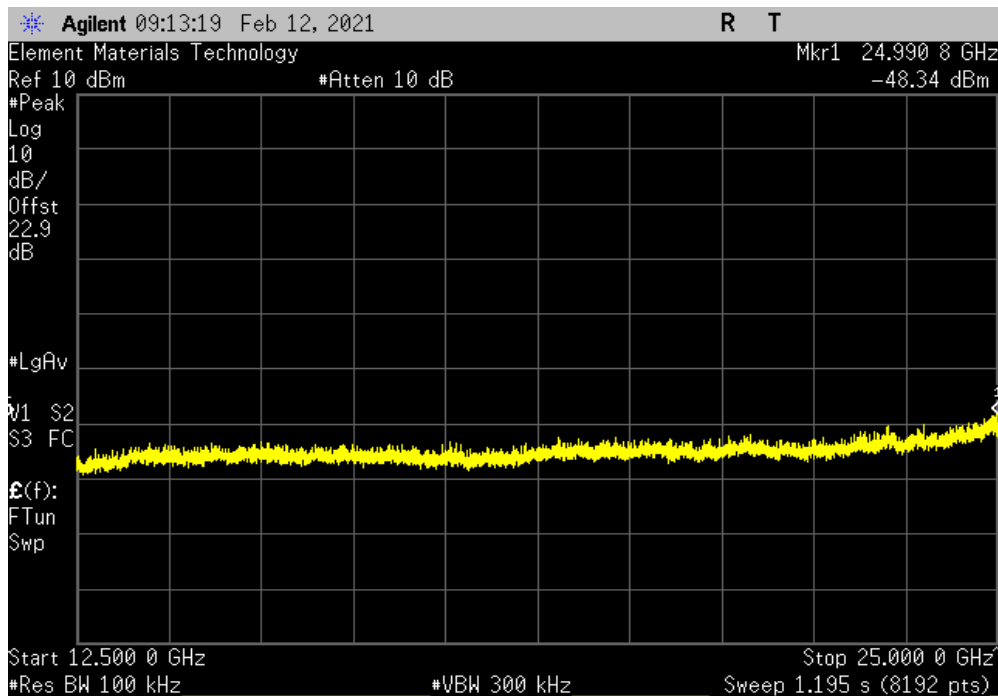


TuTx 2019.08.30.0 XMI 2020.12.30.0

WirelessHART, Mid Channel, 2440 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz	9758.2	-59.52	-20	Pass



WirelessHART, Mid Channel, 2440 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz	24990.8	-53.52	-20	Pass

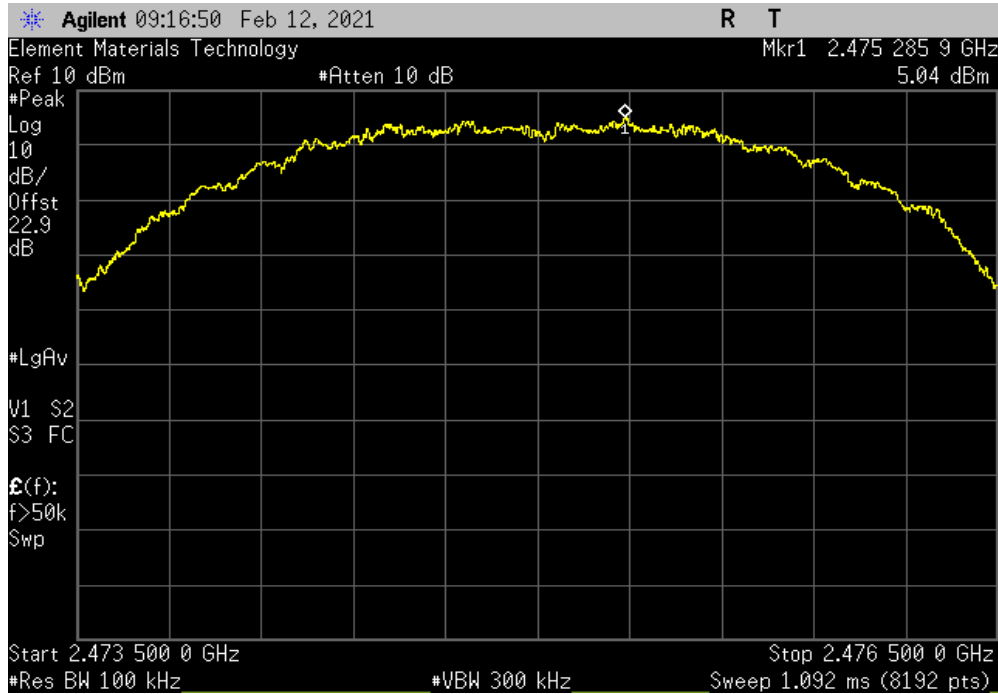


SPURIOUS CONDUCTED EMISSIONS

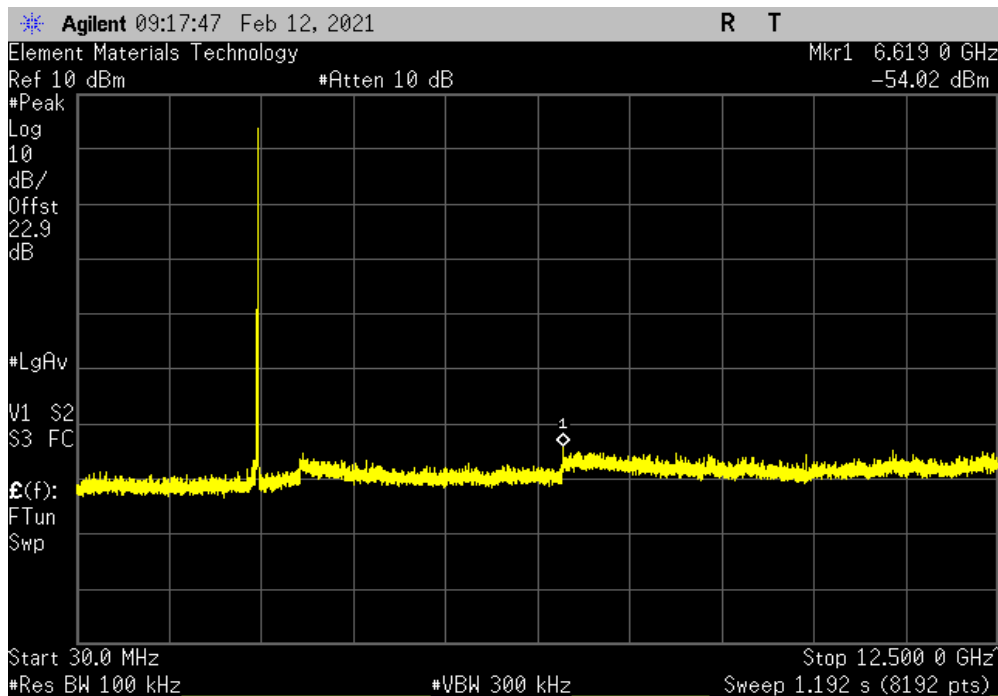


TuTx 2019.08.30.0 XMI 2020.12.30.0

WirelessHART, High Channel, 2475 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
Fundamental	2475.29	N/A	N/A	N/A	



WirelessHART, High Channel, 2475 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
30 MHz - 12.5 GHz	6619	-59.06	-20	Pass	



SPURIOUS CONDUCTED EMISSIONS



TbTx 2019.08.30.0 XMI 2020.12.30.0

WirelessHART, High Channel, 2475 MHz				
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz	24818.4	-53.68	-20	Pass

