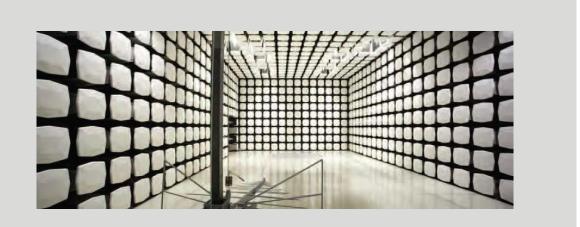


Masimo Corporation

FCC 15.247:2019 Bluetooth Radio

Report # MASI0553.2 Rev. 1







This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government. This Report shall not be reproduced, except in full without written approval of the laboratory.

CERTIFICATE OF TEST



Last Date of Test: September 30, 2019 Masimo Corporation Model: MWMII

Radio Equipment Testing

Standards

Specification	Method
FCC 15.207:2019	ANSI C63.10:2013
FCC 15.247:2019	ANSI 663.10.2013

Results

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

Deviations From Test Standards

None

Approved By:

Victor Ratinoff, 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. 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		
01	Removed 26-40GHz equipment from data	2019-11-29	18-23
01	Added DCCF to Spurious AVG emissions data	2019-11-29	18-23

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 – 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

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

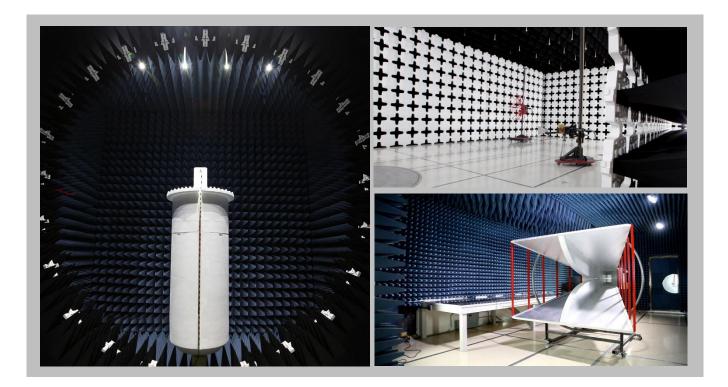
For details on the Scopes of our Accreditations, please visit: https://www.nwemc.com/emc-testing-accreditations

FACILITIES





California Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Minnesota Labs MN01-10 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.

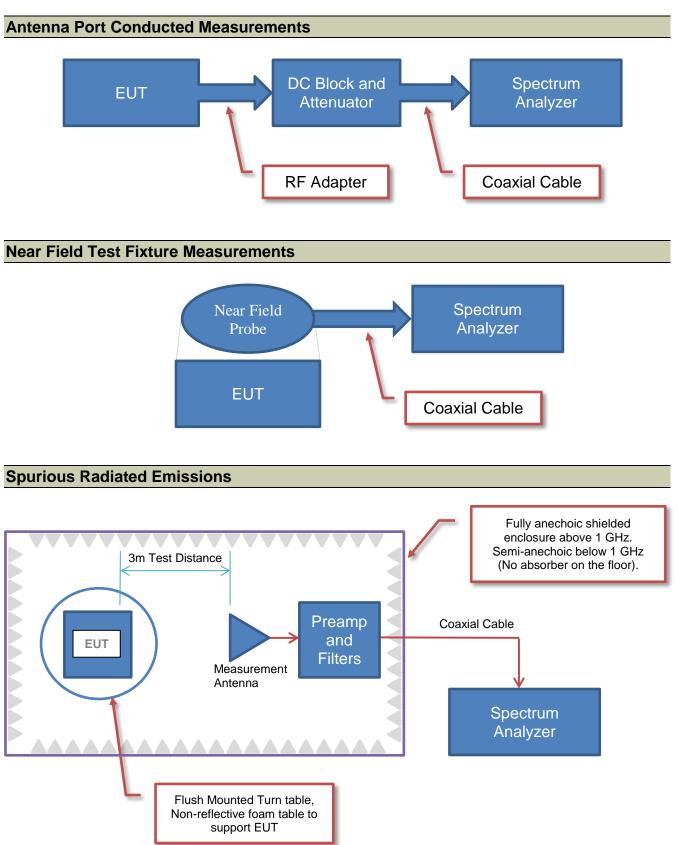
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable test description page. 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)	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)	5.1 dB	-5.1 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

Test Setup Block Diagrams





PRODUCT DESCRIPTION



Client and Equipment Under Test (EUT) Information

Company Name:	Masimo Corporation
Address:	52 Discovery
City, State, Zip:	Irvine, CA 92618
Test Requested By:	Anami Joshi
Model:	MWMII
First Date of Test:	July 3, 2019
Last Date of Test:	September 30, 2019
Receipt Date of Samples:	July 1, 2019
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:

The MWMII module (P/N 26269) uses an AzureWave AW-CM256SM radio chipset, which incorporates the Broadcom BCM43455 single chip.

Testing Objective:

To demonstrate compliance of the Bluetooth radio to FCC 15.247 requirements.

CONFIGURATIONS



Configuration MASI0553-1

Software/Firmware Running during test		
Description	Version	
Firmware	7.45.100.7-mfgtest	

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Masimo Wireless Module II	Masimo	MWMII (P/N: 26269)	ENG-1
Antenna (2.4GHz-5.35GHz)	Ethertronics	1000672	N/A

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Carrier Board	Masimo	26634 Rev.B	1847700024
Hawk Radio Board Debug Tool	Masimo	82403	None

Configuration MASI0553-2

Software/Firmware Running during test		
Description	Version	
Firmware	7.45.100.7-mfgtest	

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Masimo Wireless Module II	Masimo	MWMII (P/N: 26269)	ENG-1

Peripherals in test setup boundary				
Description	Manufacturer	Model/Part Number	Serial Number	
Carrier Board	Masimo	26634 Rev.B	1847700024	
Host Laptop	Hewlett-Packard	ProBook	CND638CWSR	
Laptop Power Supply	Hewlett-Packard	PPP009H	WBGSU0BL91FXO9	
Dual Output DC Power Supply	Agilent	E3648A	MY51120045	
Hawk Radio Board Debug Tool	Masimo	82403	None	

Cables						
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2	
U.FL Cable	Yes	0.1m	No	SMA Cable	Wireless Module	
AC Cable	No	1.8m	No	AC Mains	DC Power Supply	
USB Cable	Yes	3.0m	No	Host Laptop	USB Hub	
AC Cable	No	1.2m	No	AC Mains	Laptop Power Supply	
DC Cable	Yes	1.4m	Yes	Laptop Power Supply	Host Laptop	
USB Cable	Yes	2.6m	No	Host Laptop	Hawk Radio Board Debug Tool	
DC Cable	Yes	1.6m	No	iMx-53 Programmer	AC Adapter (AC Mains)	

CONFIGURATIONS



Configuration MASI0553-7

Software/Firmware Running during test				
Description Version				
Firmware	7.45.100.7-mfgtest			

EUT						
Description	Manufacturer	Model/Part Number	Serial Number			
Masimo Wireless Module II	Masimo	MWMII (P/N: 26269)	ENG-1			
Antenna (2.4GHz-5.35GHz)	Ethertronics	1000672	N/A			

Peripherals in test setup boundary					
Description	Manufacturer	Model/Part Number	Serial Number		
Carrier Board	Masimo	26634 Rev.B	1847700024		
Hawk Radio Board Debug Tool	Masimo	82403	None		

Cables							
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2		
DC Cable	Yes	1.0m	No	LISN (DC Source)	Hawk Radio Board Debug Tool		

MODIFICATIONS



Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
		Carrier	Tested as	No EMI suppression	EUT remained at
1	2019-07-03	Frequency	delivered to	devices were added or	Element following
		Separation	Test Station.	modified during this test.	the test.
		Number of	Tested as	No EMI suppression	EUT remained at
2	2019-07-03	Hopping	delivered to	devices were added or	Element following
		Frequencies	Test Station.	modified during this test.	the test.
			Tested as	No EMI suppression	EUT remained at
3	2019-07-03	Dwell Time	delivered to	devices were added or	Element following
			Test Station.	modified during this test.	the test.
		Powerline	Tested as	No EMI suppression	EUT remained at
4	2019-07-08	Conducted	delivered to	devices were added or	Element following
		Emissions	Test Station.	modified during this test.	the test.
			Tested as	No EMI suppression	EUT remained at
5	2019-09-23	Duty Cycle	delivered to	devices were added or	Element following
			Test Station.	modified during this test.	the test.
		Equivalent	Tested as	No EMI suppression	EUT remained at
6	2019-09-23	Isotropic	delivered to	devices were added or	Element following
		Radiated Power	Test Station.	modified during this test.	the test.
		Band Edge	Tested as	No EMI suppression	EUT remained at
7	2019-09-23	Compliance	delivered to	devices were added or	Element following
		-	Test Station.	modified during this test.	the test.
		Band Edge	Tested as	No EMI suppression	EUT remained at
8	2019-09-23	Compliance -	delivered to	devices were added or	Element following
		Hopping Mode	Test Station.	modified during this test.	the test.
		Spurious	Tested as	No EMI suppression	EUT remained at
9	2019-09-23	Conducted	delivered to	devices were added or	Element following
		Emissions	Test Station.	modified during this test.	the test.
		Spurious	Tested as	No EMI suppression	EUT remained at
10	2019-09-26	Radiated	delivered to	devices were added or	Element following
		Emissions	Test Station.	modified during this test.	the test.
			Tested as	No EMI suppression	EUT remained at
11	2019-09-30	Output Power	delivered to	devices were added or	Element following
			Test Station.	modified during this test.	the test.
		Occupied	Tested as	No EMI suppression	Scheduled testing
12	2019-09-30	Channel	delivered to	devices were added or	was completed.
		Bandwidth	Test Station.	modified during this test.	was completed.

POWER SETTINGS



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

SETTINGS FOR ALL TESTS IN THIS REPORT

Modulation Types	Туре	Channel	Position	Frequency (MHz)	Power Setting
DH5, 2DH5, 3DH5 FHSS		0	Low Channel	2402	Max
	FHSS	39	Mid Channel	2441	Max
		79	High Channel	2480	Max

*Client states power is set to the default setting.



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 500hm measuring port is terminated by a 500hm EMI meter or a 500hm resistive load. All 500hm measuring ports of the LISN are terminated by 500hm. 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
LISN	Solar Electronics	9252-50-24-BNC	LIA	2019-01-08	2020-01-08
LISN	Solar Electronics	9252-50-24-BNC	LIB	2019-01-08	2020-01-08
Cable - Conducted Cable Assembly	Northwest EMC	OCP, HFP, AWC	OCPA	2018-10-05	2019-10-05
Power Supply	Pacific Power	AFX 12KVA	SMT	NCR	NCR
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	2019-07-02	2020-07-02

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

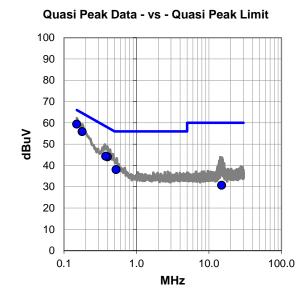
MASI0553-7

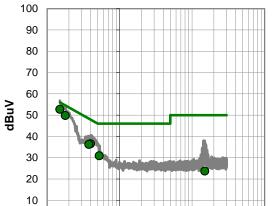
MODES INVESTIGATED

Transmitting Bluetooth Classic Mid Ch 39 (2441 MHz), DH5



EUT:	MWMII				Work Order:	MASI0553	
Serial Number:	ENG-1				Date:	2019-07-08	
Customer:	Masimo Cor	poration			Temperature:	21.3°C	
Attendees:	Anami Joshi	i, Nghi Ngu	iyen		Relative Humidity:	50%	
Customer Project:	None				Bar. Pressure:	1019 mb	
Tested By:	Nolan De Ra	amos			Job Site:	OC06	
Power:	3.6 VDC				Configuration:	MASI0553-7	
TEST SPECIFI	CATIONS						
Specification:				Method:			
FCC 15.207:2019				ANSI C63	ANSI C63.10:2013		
TEST PARAM	ETERS						
Run #: 5		Line:	High Line		Add. Ext. Attenuation (dB	3): 0	
COMMENTS							
None							
EUT OPERATI							
Transmitting Bluete	oth Classic Mi	id Ch 39 (2	2441 MHz), DH5				
DEVIATIONO P			ARII				
DEVIATIONS F	ROM IESI	STAND					





1.0

MHz

10.0

100.0

0

0.1

Average Data - vs - Average Limit



RESULTS - Run #5

Quasi Peak Data - vs - Quasi Peak Limit							
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)		
0.150	39.1	20.3	59.4	66.0	-6.6		
0.178	35.7	20.2	55.9	64.6	-8.7		
0.399	24.0	20.0	44.0	57.9	-13.9		
0.376	24.3	20.0	44.3	58.4	-14.1		
0.525	18.0	20.0	38.0	56.0	-18.0		
14.946	9.8	20.9	30.7	60.0	-29.3		

Average Data - vs - Average Limit						
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)	
0.150	32.4	20.3	52.7	56.0	-3.3	
0.178	29.6	20.2	49.8	54.6	-4.8	
0.399	16.5	20.0	36.5	47.9	-11.4	
0.376	16.2	20.0	36.2	48.4	-12.2	
0.525	10.9	20.0	30.9	46.0	-15.1	
14.946	2.8	20.9	23.7	50.0	-26.3	

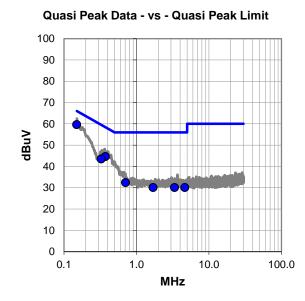
CONCLUSION

Pass

Tested By



EUT:	MWMII				Work Order:	MASI0553			
Serial Number:	ENG-1				Date:	2019-07-08			
Customer:	Masimo Cor	poration			Temperature:	21.3°C			
Attendees:	Anami Joshi	, Nghi Ngu	iyen		Relative Humidity:	50%			
Customer Project:	None			Bar. Pressure:	1019 mb				
Tested By:	Nolan De Ra	amos		Job Site:	OC06				
Power:	3.6 VDC			Configuration:	MASI0553-7				
TEST SPECIFI	CATIONS								
Specification:					Method:				
FCC 15.207:2019				ANSI C63	ANSI C63.10:2013				
TEST PARAME	ETERS								
Run #: 6		Line:	Neutral		Add. Ext. Attenuation (dB): 0				
COMMENTS									
None									
EUT OPERATI									
	oth Classic Mi	d Ch 39 (2	2441 MHz), DH5						
Transmitting Blueto									
Transmitting Blueto		STAND	ARD						



100 90 80 70 60 dBuV 50 40 30 20 10 0 0.1 1.0 10.0 100.0 MHz

Average Data - vs - Average Limit



RESULTS - Run #6

Q	Quasi Peak Data - vs - Quasi Peak Limit												
Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)								
0.150	39.3	20.3	59.6	66.0	-6.4								
0.372	24.5	20.1	44.6	58.4	-13.8								
0.327	23.4	20.1	43.5	59.5	-16.0								
0.708	12.4	20.0	32.4	56.0	-23.6								
3.356	9.8	20.3	30.1	56.0	-25.9								
1.701	10.0	20.1	30.1	56.0	-25.9								
4.651	9.8	20.3	30.1	56.0	-25.9								

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.150	32.4	20.3	52.7	56.0	-3.3
0.372	16.1	20.1	36.2	48.4	-12.2
0.327	14.3	20.1	34.4	49.5	-15.1
0.708	5.6	20.0	25.6	46.0	-20.4
1.701	3.1	20.1	23.2	46.0	-22.8
3.356	2.9	20.3	23.2	46.0	-22.8
4.651	2.9	20.3	23.2	46.0	-22.8

CONCLUSION

Pass

Tested By

SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2019.05.10

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 BT BR EDR: Low Ch 2402 MHz, Mid Ch 2441 MHz, High Ch 2480 MHz
Transmitting BT BR EDR: Low Ch 2402 MHz, High Ch 2480 MHz

POWER SETTINGS INVESTIGATED

3.6 VDC

CONFIGURATIONS INVESTIGATED

MASI0553 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency 30 MHz

Stop Frequency 26500 MHz

SAMPLE CALCULATIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFJ	18-Dec-2018	12 mo
Antenna - Double Ridge	EMCO	3115	AHB	28-Mar-2018	24 mo
Antenna - Standard Gain	ETS Lindgren	3160-09	AHN	NCR	0 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AHR	NCR	0 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AHT	NCR	0 mo
Antenna - Standard Gain	ETS Lindgren	3160-10	AIX	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOE	10-Jan-2019	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AOF	10-Jan-2019	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AOI	19-Dec-2018	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-4D-010120-30-10P-1	AOP	10-Jan-2019	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1402	AOZ	2-Jul-2019	12 mo
Antenna - Biconilog	Teseq	CBL 6141A	AYE	7-Nov-2017	24 mo
Filter - High Pass	Micro-Tronics	HPM50111	HHX	2-Jul-2019	12 mo
Cable	ESM Cable Corp.	TTBJ141-KMKM-72	OC1	19-Dec-2018	12 mo
Cable	Northwest EMC	10kHz-1GHz RE Cables	OCH	9-Sep-2019	12 mo
Cable	Northwest EMC	1-8GHz RE Cables	OCJ	10-Jan-2019	12 mo
Cable	Northwest EMC	18-26GHz RE Cables	OCK	19-Dec-2018	12 mo
Cable	Northwest EMC	8-18GHz RE Cables	000	10-Jan-2019	12 mo
Attenuator	Fairview Microwave	SA18H-20	TKQ	2-Jul-2019	12 mo

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 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.

SPURIOUS RADIATED EMISSIONS



Work Order:				Date:		o-2019		11			
Project:				perature:	22.5			U.L.	KE	Sit	
Job Site:				Humidity:		% RH		22			
Serial Number:		-1	Baromet	ric Pres.:	Pres.: 1017 mbar			Tested by: Mark Baytan			
	MWMII										
Configuration:	1										
	Masimo Corp										
	Anami Joshi										
EUT Power:											
Operating Mode:	Transmitting	BT BR EI	DR: Low Ch	2402 MHz,	High Ch 2	2480 MHz					
Deviations:	None Band Edge. DCCF of 1.6 dB added to AVG values. [DCCF = 10*log(duty cycle .77)]										
Comments:		DCCF of '	1.6 dB adde	d to AVG va	alues. [DC	CF = 10*lo	og(duty cycle	e .77)]			
t Specifications						Test Met	hod	[
C 15.247:2019						ANSI C63					
Run # 30	Test Dista	ance (m)	3	Antenna	Height(s)		1 to 4(m)		Result	ts F	Pass
80											
80											
80											
70											
70 60											
70											
70 60											
70 60											
70 60 50											
70 60 50 40											
70 60 50											
70 60 50 40											
70 60 50 40 30											
70 60 50 40											
70 60 50 40 30											
70 60 50 40 30											
70 60 50 40 30 20											
70 60 50 40 30 20 10											
70 60 50 40 30 20				2425		2445		246			

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
2483.877	32.6	-4.1	1.5	120.0	1.6	20.0	Horz	AV	0.0	50.1	54.0	-3.9	High Ch, DH5, EUT Horz
2389.777	32.9	-4.4	2.5	188.0	1.6	20.0	Horz	AV	0.0	50.1	54.0	-3.9	Low Ch, DH5, EUT on Side
2388.000	32.9	-4.4	1.5	248.0	1.6	20.0	Vert	AV	0.0	50.1	54.0	-3.9	Low Ch, DH5, EUT on Side
2388.357	32.9	-4.4	1.5	342.0	1.6	20.0	Horz	AV	0.0	50.1	54.0	-3.9	Low Ch, DH5, EUT Vert
2484.413	32.5	-4.1	1.5	238.0	1.6	20.0	Horz	AV	0.0	50.0	54.0	-4.0	High Ch, DH5, EUT Vert
2483.607	32.5	-4.1	1.5	235.0	1.6	20.0	Horz	AV	0.0	50.0	54.0	-4.0	High Ch, 2DH5, EUT Horz
2389.973	32.8	-4.4	1.5	293.0	1.6	20.0	Horz	AV	0.0	50.0	54.0	-4.0	Low Ch, DH5, EUT Horz
2389.540	32.8	-4.4	1.5	197.0	1.6	20.0	Vert	AV	0.0	50.0	54.0	-4.0	Low Ch, DH5, EUT Horz
2388.550	32.8	-4.4	3.7	281.0	1.6	20.0	Vert	AV	0.0	50.0	54.0	-4.0	Low Ch, DH5, EUT Vert
2484.593	32.4	-4.1	2.4	0.0	1.6	20.0	Vert	AV	0.0	49.9	54.0	-4.1	High Ch, DH5, EUT Horz
2485.397	32.4	-4.1	1.5	67.0	1.6	20.0	Vert	AV	0.0	49.9	54.0	-4.1	High Ch, DH5, EUT Vert
2485.390	32.4	-4.1	1.5	261.0	1.6	20.0	Horz	AV	0.0	49.9	54.0	-4.1	High Ch, DH5, EUT on Side
2485.357	32.4	-4.1	1.5	270.0	1.6	20.0	Vert	AV	0.0	49.9	54.0	-4.1	High Ch, DH5, EUT on Side
2484.000	32.4	-4.1	1.2	237.0	1.6	20.0	Horz	AV	0.0	49.9	54.0	-4.1	High Ch, 3DH5, EUT Horz
2484.773	32.4	-4.1	1.5	231.0	1.6	20.0	Vert	AV	0.0	49.9	54.0	-4.1	High Ch, 3DH5, EUT Horz
2485.270	32.4	-4.1	1.5	182.0	1.6	20.0	Vert	AV	0.0	49.9	54.0	-4.1	High Ch, 2DH5, EUT Horz
2484.607	44.2	-4.1	1.5	238.0	0.0	20.0	Horz	PK	0.0	60.1	74.0	-13.9	High Ch, DH5, EUT Vert
2485.047	44.0	-4.1	1.2	237.0	0.0	20.0	Horz	PK	0.0	59.9	74.0	-14.1	High Ch, 3DH5, EUT Horz
2388.877	44.2	-4.4	1.5	293.0	0.0	20.0	Horz	PK	0.0	59.8	74.0	-14.2	Low Ch, DH5, EUT Horz
2389.020	44.1	-4.4	1.5	342.0	0.0	20.0	Horz	PK	0.0	59.7	74.0	-14.3	Low Ch, DH5, EUT Vert
2389.890	44.0	-4.4	1.5	197.0	0.0	20.0	Vert	PK	0.0	59.6	74.0	-14.4	Low Ch, DH5, EUT Horz
2389.013	44.0	-4.4	3.7	281.0	0.0	20.0	Vert	PK	0.0	59.6	74.0	-14.4	Low Ch, DH5, EUT Vert

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
2483.593	43.6	-4.1	1.5	67.0	0.0	20.0	Vert	PK	0.0	59.5	74.0	-14.5	High Ch, DH5, EUT Vert
2483.757	43.6	-4.1	1.5	231.0	0.0	20.0	Vert	PK	0.0	59.5	74.0	-14.5	High Ch, 3DH5, EUT Horz
2485.110	43.4	-4.1	2.4	0.0	0.0	20.0	Vert	PK	0.0	59.3	74.0	-14.7	High Ch, DH5, EUT Horz
2484.483	43.4	-4.1	1.5	270.0	0.0	20.0	Vert	PK	0.0	59.3	74.0	-14.7	High Ch, DH5, EUT on Side
2485.457	43.4	-4.1	1.5	235.0	0.0	20.0	Horz	PK	0.0	59.3	74.0	-14.7	High Ch, 2DH5, EUT Horz
2389.390	43.7	-4.4	2.5	188.0	0.0	20.0	Horz	PK	0.0	59.3	74.0	-14.7	Low Ch, DH5, EUT on Side
2388.257	43.7	-4.4	1.5	248.0	0.0	20.0	Vert	PK	0.0	59.3	74.0	-14.7	Low Ch, DH5, EUT on Side
2483.513	43.3	-4.1	1.5	120.0	0.0	20.0	Horz	PK	0.0	59.2	74.0	-14.8	High Ch, DH5, EUT Horz
2485.320	43.3	-4.1	1.5	182.0	0.0	20.0	Vert	PK	0.0	59.2	74.0	-14.8	High Ch, 2DH5, EUT Horz
2483.637	43.2	-4.1	1.5	261.0	0.0	20.0	Horz	PK	0.0	59.1	74.0	-14.9	High Ch, DH5, EUT on Side

SPURIOUS RADIATED EMISSIONS



Work Order:	MASI0553	Date:	26-Sep-2019	11		
Project:	None	Temperature:	22.5 °C	M	K B	1
Job Site:	OC07	Humidity:	54.4% RH		-	/
Serial Number:	ENG-1	Barometric Pres.:	1017 mbar	Tested by	: Mark Baytan	
	MWMII					
Configuration:						
Customer:	Masimo Corporation					
	Anami Joshi					
EUT Power:	3.6 VDC					
Operating Mode:	Transmitting BT BR	EDR: Low Ch 2402 MHz, I	Mid Ch 2441 MHz, H	High Ch 2480 MHz		
Deviations:	None					
Comments:	DCCF of 1.6 dB add	ed to AVG values. [DCCF	= 10*log(duty cycle	.77)]		
st Specifications			Test Meth	od		
C 15.247:2019			ANSI C63			
Run # 31	Test Distance (m) 3 Antenna H	leight(s)	1 to 4(m)	Results	Pass
	Test Distance (m) 3 Antenna H	leight(s)	1 to 4(m)	Results	Pass
Run # 31	Test Distance (m) 3 Antenna H	leight(s)	1 to 4(m)	Results	Pass
	Test Distance (m) 3 Antenna H	leight(s)	1 to 4(m)	Results	Pass
80 -	Test Distance (m) 3 Antenna H	leight(s)	1 to 4(m)	Results	Pass
80	Test Distance (m) 3 Antenna H	leight(s)	1 to 4(m)	Results	Pass
80	Test Distance (m) 3 Antenna H	leight(s)	1 to 4(m)	Results	Pass
80	Test Distance (m) 3 Antenna H	leight(s)		Results	Pass
80	Test Distance (m) 3 Antenna H	leight(s)		Results	Pass
80 70 60 50 40 30	Test Distance (m) 3 Antenna H	leight(s)		Results Image: Image	Pass
80 70 60 50 40	Test Distance (m) 3 Antenna H	leight(s)			Pass
80 70 60 50 40 30	Test Distance (m) 3 Antenna H	leight(s)			Pass
80			leight(s)			Pass

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
7440.158	29.3	12.1	1.2	284.0	1.6	0.0	Horz	AV	0.0	43.0	54.0	-11.0	High Ch, DH5, EUT on Side
7440.275	28.6	12.1	2.5	354.0	1.6	0.0	Horz	AV	0.0	42.3	54.0	-11.7	High Ch, DH5, EUT Horz
7439.900	28.6	12.1	1.5	175.0	1.6	0.0	Vert	AV	0.0	42.3	54.0	-11.7	High Ch, DH5, EUT on Side
7440.050	28.6	12.1	1.5	263.0	1.6	0.0	Horz	AV	0.0	42.3	54.0	-11.7	High Ch, DH5, EUT Vert
7440.442	28.6	12.1	1.5	281.0	1.6	0.0	Vert	AV	0.0	42.3	54.0	-11.7	High Ch, DH5, EUT Vert
7440.350	28.6	12.1	1.5	106.0	1.6	0.0	Vert	AV	0.0	42.3	54.0	-11.7	High Ch, 2DH5, EUT on Side
7439.900	28.5	12.1	2.1	189.0	1.6	0.0	Vert	AV	0.0	42.2	54.0	-11.8	High Ch, DH5, EUT Horz
7442.250	28.5	12.1	1.5	204.0	1.6	0.0	Horz	AV	0.0	42.2	54.0	-11.8	High Ch, 2DH5, EUT on Side
7442.175	28.5	12.1	1.5	149.0	1.6	0.0	Horz	AV	0.0	42.2	54.0	-11.8	High Ch, 3DH5, EUT on Side
7442.217	28.5	12.1	1.5	162.0	1.6	0.0	Vert	AV	0.0	42.2	54.0	-11.8	High Ch, 3DH5, EUT on Side
7322.400	28.8	11.1	1.5	251.0	1.6	0.0	Horz	AV	0.0	41.5	54.0	-12.5	Mid Ch, DH5, EUT on Side
7322.492	28.8	11.1	1.5	328.0	1.6	0.0	Vert	AV	0.0	41.5	54.0	-12.5	Mid Ch, DH5, EUT on Side
12010.790	42.3	-5.7	1.2	153.0	1.6	0.0	Horz	AV	0.0	38.2	54.0	-15.8	Low Ch, DH5, EUT on Side
4804.083	30.6	3.7	1.5	225.0	1.6	0.0	Vert	AV	0.0	35.9	54.0	-18.1	Low Ch, DH5, EUT on Side
4882.042	29.2	4.0	3.7	320.0	1.6	0.0	Vert	AV	0.0	34.8	54.0	-19.2	Mid Ch, DH5, EUT on Side
7439.083	42.4	12.1	1.5	204.0	0.0	0.0	Horz	PK	0.0	54.5	74.0	-19.5	High Ch, 2DH5, EUT on Side
7440.908	42.3	12.1	1.2	284.0	0.0	0.0	Horz	PK	0.0	54.4	74.0	-19.6	High Ch, DH5, EUT on Side
7441.233	42.3	12.1	1.5	162.0	0.0	0.0	Vert	PK	0.0	54.4	74.0	-19.6	High Ch, 3DH5, EUT on Side
7439.342	42.2	12.1	1.5	263.0	0.0	0.0	Horz	PK	0.0	54.3	74.0	-19.7	High Ch, DH5, EUT Vert
7439.292	42.2	12.1	1.5	281.0	0.0	0.0	Vert	PK	0.0	54.3	74.0	-19.7	High Ch, DH5, EUT Vert
7438.175	42.1	12.1	1.5	106.0	0.0	0.0	Vert	PK	0.0	54.2	74.0	-19.8	High Ch, 2DH5, EUT on Side
4881.975	28.6	4.0	3.7	94.0	1.6	0.0	Horz	AV	0.0	34.2	54.0	-19.8	Mid Ch, DH5, 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
7437.592	42.0	12.1	2.5	354.0	0.0	0.0	Horz	PK	0.0	54.1	74.0	-19.9	High Ch, DH5, EUT Horz
7439.800	42.0	12.1	2.1	189.0	0.0	0.0	Vert	PK	0.0	54.1	74.0	-19.9	High Ch, DH5, EUT Horz
7437.517	41.9	12.1	1.5	175.0	0.0	0.0	Vert	PK	0.0	54.0	74.0	-20.0	High Ch, DH5, EUT on Side
4804.100	28.5	3.7	3.7	231.0	1.6	0.0	Horz	AV	0.0	33.8	54.0	-20.2	Low Ch, DH5, EUT on Side
7441.475	41.6	12.1	1.5	149.0	0.0	0.0	Horz	PK	0.0	53.7	74.0	-20.3	High Ch, 3DH5, EUT on Side
4960.158	28.0	4.1	1.7	0.0	1.6	0.0	Vert	AV	0.0	33.7	54.0	-20.3	High Ch, DH5, EUT on Side
7318.025	42.5	11.0	1.5	251.0	0.0	0.0	Horz	PK	0.0	53.5	74.0	-20.5	Mid Ch, DH5, EUT on Side
4960.342	27.8	4.1	1.5	129.0	1.6	0.0	Horz	AV	0.0	33.5	54.0	-20.5	High Ch, DH5, EUT on Side
12010.910	37.0	-5.7	2.1	173.0	1.6	0.0	Vert	AV	0.0	32.9	54.0	-21.1	Low Ch, DH5, EUT on Side
7320.683	41.9	11.0	1.5	328.0	0.0	0.0	Vert	PK	0.0	52.9	74.0	-21.1	Mid Ch, DH5, EUT on Side
12399.530	27.7	-1.3	2.1	341.0	1.6	0.0	Horz	AV	0.0	28.0	54.0	-26.0	High Ch, DH5, EUT on Side
4804.483	43.6	3.7	1.5	225.0	0.0	0.0	Vert	PK	0.0	47.3	74.0	-26.7	Low Ch, DH5, EUT on Side
4959.400	42.4	4.1	1.5	129.0	0.0	0.0	Horz	PK	0.0	46.5	74.0	-27.5	High Ch, DH5, EUT on Side
12397.590	26.0	-1.3	1.5	177.0	1.6	0.0	Vert	AV	0.0	26.3	54.0	-27.7	High Ch, DH5, EUT on Side
4959.025	41.6	4.1	1.7	0.0	0.0	0.0	Vert	PK	0.0	45.7	74.0	-28.3	High Ch, DH5, EUT on Side
4880.100	41.7	3.9	3.7	94.0	0.0	0.0	Horz	PK	0.0	45.6	74.0	-28.4	Mid Ch, DH5, EUT on Side
4879.758	41.7	3.9	3.7	320.0	0.0	0.0	Vert	PK	0.0	45.6	74.0	-28.4	Mid Ch, DH5, EUT on Side
4804.508	41.8	3.7	3.7	231.0	0.0	0.0	Horz	PK	0.0	45.5	74.0	-28.5	Low Ch, DH5, EUT on Side
12010.890	50.1	-5.7	1.2	153.0	0.0	0.0	Horz	PK	0.0	44.4	74.0	-29.6	Low Ch, DH5, EUT on Side
12199.770	26.2	-3.5	2.5	192.0	1.6	0.0	Horz	AV	0.0	24.3	54.0	-29.7	Mid Ch, DH5, EUT on Side
12200.440	26.1	-3.5	1.5	360.0	1.6	0.0	Vert	AV	0.0	24.2	54.0	-29.8	Mid Ch, DH5, EUT on Side
12011.150	46.1	-5.7	2.1	173.0	0.0	0.0	Vert	PK	0.0	40.4	74.0	-33.6	Low Ch, DH5, EUT on Side
12399.670	41.1	-1.3	2.1	341.0	0.0	0.0	Horz	PK	0.0	39.8	74.0	-34.2	High Ch, DH5, EUT on Side
12397.510	40.1	-1.3	1.5	177.0	0.0	0.0	Vert	PK	0.0	38.8	74.0	-35.2	High Ch, DH5, EUT on Side
12200.680	39.7	-3.5	2.5	192.0	0.0	0.0	Horz	PK	0.0	36.2	74.0	-37.8	Mid Ch, DH5, EUT on Side
12199.980	39.3	-3.5	1.5	360.0	0.0	0.0	Vert	PK	0.0	35.8	74.0	-38.2	Mid Ch, DH5, EUT on Side



XMit 2019.09.05

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
Power Supply - DC	Agilent	E3648A	TPE	NCR	NCR
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Block - DC	Fairview Microwave	SD3379	AMV	3-Jan-19	3-Jan-20
Attenuator	Fairview Microwave	SA18H-20	TKR	20-Dec-18	20-Dec-19
Generator - Signal	Agilent	E8257D	TGU	15-Feb-18	15-Feb-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	2-Jul-19	2-Jul-20

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.



XMit 2019.09 EUT: MWMII Serial Number: ENG-1 Customer: Masimo Corporation Work Order: MASI0553 Date: 23-Sep-19 Temperature: 22.2 °C Humidity: 47.5% RH Barometric Pres.: 1013 mbar Attendees: Anami Joshi Project: None Tested by: Mark Baytan TEST SPECIFICATIONS Power: 3.6 VDC Test Method Job Site: OC13 FCC 15.247:2019 ANSI C63.10:2013 COMMENTS Reference Level Offset: DC Block + 20 dB Attenuator + RF Test Cable + Patch Cable = 23.2 dB DEVIATIONS FROM TEST STANDARD None NAE Configuration # 2 >++ Signature Number of Pulses Limit (%) Value (%) Pulse Width Period Results GFSK, DH5 Low Channel, 2402 MHz Low Channel, 2402 MHz 3.75 ms N/A 3.75 ms N/A N/A N/A N/A 2.889 ms 1 77 N/A N/A 77.1 N/A 77 N/A N/A N/A N/A 5 1 2.89 ms Mid Channel, 2441 MHz Mid Channel, 2441 MHz N/A N/A N/A 5 High Channel, 2480 MHz High Channel, 2480 MHz 2.889 ms 3.75 ms 1 N/A N/A N/A N/A N/A N/A 5 pi/4-DQPSK, 2DH5 Low Channel, 2402 MHz 2.892 ms 3.75 ms 77.1 N/A N/A 1 Low Channel, 2402 MHz Mid Channel, 2441 MHz N/A 3.75 ms N/A 77.1 N/A N/A N/A N/A N/A 5 1 2.892 ms N/A 3.75 ms N/A N/A Mid Channel, 2441 MHz N/A 5 N/A N/A High Channel, 2480 MHz 2.892 ms 77.1 N/A 1 High Channel, 2480 MHz N/A N/A 5 N/A N/A N/A 8DPSK, 3DH5 Low Channel, 2402 MHz Low Channel, 2402 MHz 77.2 N/A N/A N/A 2.894 ms 3.75 ms 1 N/A N/A N/A N/A 5 Mid Channel, 2441 MHz Mid Channel, 2441 MHz 2.893 ms 3.75 ms N/A 77.2 N/A N/A N/A N/A N/A 1 N/A 5 High Channel, 2480 MHz High Channel, 2480 MHz 77.2 N/A N/A N/A N/A N/A 2.894 ms 3.75 ms 1 N/A N/A 5



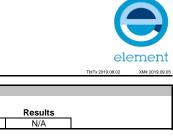
Ref Offset 23.2 dB Sto Ω Attent to dB Mkr3 4.74 C00 Ref Offset 23.2 dB Mkr3 4.74 -99.19 C00 Ref Offset 23.2 dB		(%) N/A	Value (%) 77	Number of Pulses	Period 3.75 ms		
Pulse Width Period Pulses (%) (%) Results 2.889 ms 3.75 ms 1 77 N/A N/A Image: Sense in the	N/A 09:16:10 AHSep 24,20 TRACE 2 3 4 TYPE WANNA DET P P P P Mkr3 4.744 m	(%) N/A	(%) 77	Pulses 1	3.75 ms		
2.889 ms 3.75 ms 1 77 N/A N/A Image: Ref Offset232 dB 5 dB/dv Ref Offset232 dB 7.00 SENSE:INT IFGain:Low ALIGN OFF 09:16:10 AMSet 09:16:10 AMSet #Atten: 10 dB Ref Offset232 dB 5 dB/dv Ref Offset232 dB 7.00 Mkr3 4.74 4 State Image: Ref Offset232 dB 7.00 Image: Ref Offset232 dB 7.00 <t< th=""><th>N/A 09:16:10 AHSep 24,20 TRACE 2 3 4 TYPE WANNA DET P P P P Mkr3 4.744 m</th><th>N/Á</th><th>77</th><th>1</th><th>3.75 ms</th><th></th><th></th></t<>	N/A 09:16:10 AHSep 24,20 TRACE 2 3 4 TYPE WANNA DET P P P P Mkr3 4.744 m	N/Á	77	1	3.75 ms		
Keysight Spectrum Analyzer - Bement Materials Technology Color Align OFF O91610 MSF W RL RF 50 R. AC Trig Delay-1.000 ms #Avg Type: Log-Pwr Trice W PN0: Fest	09:16:10 AM Sep 24, 20 TRACE 12 34 S TYPE WARD OF P P P P DET P P P P		ALIGN OFF	ENSE:INT			
RL RF SO R AC SENSELINT ALIGN OFF 09:16:10 AMSE PNO: Fast	09:16:10 AM Sep 24, 20: TRACE 1 23 4 5 TYPE DET P P P P F Mkr3 4.744 m	e: Log-Pwr	ALIGN OFF S #Avg Type	ENSE:INT			•
PNO: Fast Trig Delay-1.000 ms #Avg Type: Log-Pwr Trace point Ref Offset 23.2 dB Mkr3 4.74 -9.19 G dB/div Ref 12.00 dBm -9.19 7.00 -9.19 -9.19 7.00 -9.19 -9.19 7.00 -9.19 -9.19 7.00 -9.19 -9.19 7.00 -9.19 -9.19 7.00 -9.19 -9.19 7.00 -9.19 -9.19 7.00 -9.19 -9.19 9.00 -9.19 -9.19 9.00 -9.19 -9.19 9.01 -9.19 -9.19 9.01 -9.19 -9.19 9.01 -9.10 -9.10 9.01 -9.10 -9.10 9.01 -9.10 -9.10 9.01 -9.10 -9.10 9.01 -9.10 -9.10 9.01 -9.10 -9.10 9.01 -10.37 dBm -9.19 dBm 9.10	TRACE 2 3 4 5 TYPE WWWW DET P P P P P Mkr3 4.744 m	e: Log-Pwr	ALIGN OFF #Avg Type	ENSE:INT	nnology	nalyzer - Element Materials Techn	Keysight Spectrum Anal
Ref Offset 23.2 dB Mkr3 4.74 0 -9.19 7.01 -9.19 7.020 -9.19 7.03 -9.19 7.03 -9.19 7.03 -9.19 7.04 -9.19 7.05 -9.19	Mkr3 4.744 m	E. LOG-F WI	s #Avg iype	Trig Dolay 1 000	S	50 Ω AC	RL RF
Ref Offset 23.2 dB Mkr3 4.74 0 -9.19 7.01 -9.19 7.020 -9.19 7.03 -9.19 7.03 -9.19 7.03 -9.19 7.04 -9.19 7.05 -9.19	Mkr3 4.744 m			Trig: Video	PNO: Fast 🔸		
GB/div Ref 12.00 dBm -9.19 70 1 22 300 1 22 300 1 22 300 1 22 300 1 22 300 1 22 300 1 22 300 1 22 300 1 22 300 1 22 300 1 22 300 1 1 180 230 230 330 230 230 330 24 24 330 24 24 330 24 24 330 24 25 330 24 24 330 24 24 330 24 25 24 24 25 330 24 25 34 24 24 35 24 24 36 25 25 37 36 36 38 36 36 38 36 36 39 36 36 39 36 36 <td>Mkr3 4.744 m -9.19 dBr</td> <td></td> <td></td> <td>#Atten: 10 dB</td> <td>IFGain:Low</td> <td></td> <td></td>	Mkr3 4.744 m -9.19 dBr			#Atten: 10 dB	IFGain:Low		
Log 7.00 1 2 2.00 1 2 2 3.00 1 2 2 3.00 1 2 2 3.00 1 2 2 3.00 1 2 2 3.00 1 2 2 3.00 1 2 2 3.00 1 2 1 3.00 1 2 1 3.00 1 1 2 3.00 1 1 1 3.00 1 1 1 3.00 1 1 1 3.00 1 1 1 3.00 1 1 1 3.00 1 1 1 3.00 1 1 1 1 3.00 1 1 1 1 3.00 1 1 1 1 3.00 1 1 1 1 3.00 1 1 1	-9. 19 UBI					Offset 23.2 dB	RefOf
7.00		1	1		1	12.00 dBm	dB/div Ref 1
300 1 22 310 1 22 310 1 22 310 1 1 230 1 1 230 1 1 231 1 1 230 1 1 231 1 1 230 1 1 230 1 1 230 1 1 230 1 1 230 1 1 230 1 1 300 1 1 300 1 1 300 1 1 300 1 1 300 1 1 300 1 1 300 1 1 300 1 1 300 1 1 300 1 1 300 1 1						/	
8.00 1 2 130 1 2 130 230 230 230 230 230 230 230 230 230 230 230 230 230 230 230 230 230 230 230 230 230 230 230 230 230 230 230 230 230 230 230 230 230 200 200 230 200 200 200 200 200 200 200 200 200 200 2000 200 2000 200 200 1 1 200 1 1 200 1 1 200 1 1 200 1 1 200 1 1 20							2.00
8.00	3						3.00
180 230 230 230 330 230 330 230 330 240 330 250 330 250 330 250 330 250 330 250 330 250 300 250 100 1 1 1 <td< td=""><td>↓, ~ , ~ , ~ , ~ , ~ , ~ , ~ , ~ , ~ , ~</td><td><mark>0</mark>2</td><td></td><td></td><td></td><td>↓</td><td>3.00</td></td<>	↓ , ~ , ~ , ~ , ~ , ~ , ~ , ~ , ~ , ~ , ~	<mark>0</mark> 2				↓	3.00
330 330 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>13.0</td>							13.0
With Model TRCI Scl. X Y Function Function width Function value 1 N 1 t 393 8 µs -10.37 dBm 5.000 ms (810 stress) 2 N 1 t 3.883 ms -11.03 dBm 5.000 ms (810 stress) 3 N 1 t 3.883 ms -11.03 dBm 5.000 ms (810 stress) 3 N 1 t 3.883 ms -11.03 dBm 5.000 ms (810 stress) 3 N 1 t 3.883 ms -11.03 dBm 5.000 ms (810 stress) 3 N 1 t 3.883 ms -11.03 dBm 5.000 ms (810 stress) 4 6 6 6 6 6 6 7 8 9 9 9 9 9 9 10 1 1 1 1 1 1 1 10 1 1 1 1 1 1 1 10 1 1 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>18.0</td>							18.0
330 Span Center 2.402000000 GHz Span Res BW 3.0 MHz #VBW 30 kHz Sweep 5.000 ms (819) MKR MODE TRC SCL X Y Function Function value 1 1 993 8 µs -10.37 dBm 1 1 Function value 2 N 1 t 3.883 ms -11.03 dBm 1 3 N 1 t 4.744 ms -9.19 dBm 1 4 5 5 5 5 5 5 9 10 1 1 1 1 1 1 4 5 5 5 5 5 5 5 6 7 7 7 7 7 7 7 8 9 1 1 1 1 1 1 1 1 1 4 5 5 5 5 5 5 5 5 5 5							23.0
Center 2.402000000 GHz Res BW 3.0 MHz #VBW 30 kHz Span Sweep 5.000 ms (819) MKR_MODE_TRC_SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE 1 t 993.8 µs -10.37 dBm - - - 2 N 1 t 993.8 µs -10.37 dBm - - 3 N 1 t 3.883 ms -11.03 dBm - - 4 - - - - - - - 8 -							28.0
Res BW 3.0 MHz #VBW 30 kHz Sweep 5.000 ms (819 MKR MODE TRCI SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE 1 N 1 t 993.8 µs -10.37 dBm FUNCTION FUNCTION WIDTH FUNCTION VALUE 2 N 1 t 3.883 ms -11.03 dBm FUNCTION VALUE 3 N 1 t 4.744 ms -9.19 dBm FUNCTION VALUE 6 - - - - - - 8 - - - - - - - 11 - - - - - - -							33.0
Res BW 3.0 MHz #VBW 30 kHz Sweep 5.000 ms (819 MKR MODE TRCI SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE 1 N 1 t 993.8 µs -10.37 dBm FUNCTION FUNCTION WIDTH FUNCTION VALUE 2 N 1 t 3.883 ms -11.03 dBm FUNCTION VALUE 3 N 1 t 4.744 ms -9.19 dBm FUNCTION VALUE 6 - - - - - - 8 - - - - - - - 11 - - - - - - -							
MKR MODE TRC SCL X Y FUNCTION FUNCTION (viDTH) FUNCTION VALUE 1 N 1 t 993,8 µs -10.37 dBm -10.37	Span 0 H p 5.000 ms (8192 pts	Sweep		V 30 kHz	#VBV		
3 N 1 t 4.744 ms -9.19 dBm 4 5	UNCTION VALUE	FUNC	FUNCTION WIDTH		Ý	X	IKR MODE TRC SCL
3 N 1 t 4.744 ms -9.19 dBm 4 5 5 5 5 6 7 5 5 7 7 5 5 9 9 5 5 10 1 5 5 11 1 1 1				iBm IBm	8 µs -10.37 (993.8 3.883 n	1 N 1 t
5				lBm	4 ms -9.19	4.744 n	3 N 1 t
7 8 9 10 11 *							5
9 10 11 * [7
MSG	•						
			STATUS				G
GFSK, DH5, Low Channel, 2402 MHz			2402 MH7	H5 Low Channel	GESK D		
Number of Value Limit		Limit					
Pulse Width Period Pulses (%) (%) Results							
N/A N/A 5 N/A N/A N/A	N/A	N/A	N/A	5	N/A	N/A	
00 RL RF 50 Ω AC SENSE:INT ALIGN OFF 09:16:18 AM Sec	09:16:18 AM Sep 24, 20		ALIGN OFF	ENSE:INT			
#Avg Type: Log-Pwr TRACE	TRACE 2 3 4 5 TYPE WWWW DET PPPP	: Log-Pwr	#Avg Type				
IFGainLow #Atten: 10 dB DET	DET PPPF			#Atten: 10 dB	IFGain:Low		
Ref Offset 23.2 dB						Offset 23.2 dB	Ref Off
Ref Offset 23.2 dB 5 dB/div Ref 12.00 dBm Log						12.00 dBm	dB/div Ref 1
							7.00
2.00							
							2.00
							2.00
-3.00							

MSG							To STATU	JS				
Cen Res	ter 2.40200 BW 3.0 MH	00000 G Iz	Hz	#VE	3W 30) kHz			Sweep	o 10	6.93 m	Span 0 Hz s (8192 pts)
-33.0												
-28.0												
-23.0												TRIG LVL
-18.0												
-13.0												
-3.00												
-3.00												



		GFSK, D	H5, Mid Channel,			
			Number of	Value	Limit	
	Pulse Width	Period	Pulses	(%)	(%)	Results
	2.89 ms	3.75 ms	1	77.1	N/A	N/A
					and the state of the	
Keysight Spectrum Analyzer	- Element Materials Techno 50 Ω AC		ENSE:INT	ALIGN OFF		09:17:19 AM Sep 24, 2019
		DNO E C	Trig Delay-1.000 m Trig: Video	s #Avg Type	: Log-Pwr	TRACE 1 2 3 4 5 TYPE WWWWW DET P P P P P
		PNO: Fast ↔→ IFGain:Low	#Atten: 10 dB			DETPPPP
Ref Offse	t 23.2 dB					Mkr3 4.744 ms
5 dB/div Ref 12.	00 dBm					-9.97 dBm
7.00						
2.00						
-3.00	1					
-8.00	∳'				2	
-13.0						
-18.0						
-23.0						
-28.0						
-33.0	<mark>/</mark>					
Center 2.44100000						Span 0 Hz
Res BW 3.0 MHz		#VBV	№ 30 kHz		Sweep 5.	000 ms (8192 pts)
MKR MODE TRC SCL	x	Y		FUNCTION WIDTH	FUNCTION	ON VALUE
1 N 1 t 2 N 1 t	994.4 µ 3.884 m 4.744 m	s -9.30 s -10.56 (dBm dBm			
2 N 1 t 3 N 1 t	4.744 m	s -9.97	dBm			
4						
4						E
5 6 7						E
5 6 7 8 9						E
5 5 6 6 7 7 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9						
5 6 7 8 9 10 11 4			m			
5 6 7 8 9 10			m	K STATUS		
5 6 7 8 9 10 11 4		GESK D	m DH5. Mid Channel			
5 6 7 8 9 10 11 4		GFSK, D	" DH5, Mid Channel, Number of		Limit	
5 6 7 8 9 10 11 4	Pulse Width	Period	Number of Pulses	2441 MHz Value (%)	(%)	Results
5 6 7 8 9 10 11 4	Pulse Width		Number of	2441 MHz Value		
5 6 7 8 9 9 10 11 11 4 5 6 7 8 9 9 9 10 10 10 10 10 10 10 10 10 10 10 10 10	N/A	Period N/A	Number of Pulses	2441 MHz Value (%)	(%)	Results N/A
5 6 7 8 9 9 10 11 4 4 5 8 9 9 10 10 10 11 11 10 10 10 10 10 10 10 10	N/A	Period N/A	Number of Pulses	2441 MHz Value (%) N/A	(%) N/A	Results N/A
5 6 7 8 9 9 10 11 4 4 5 8 9 9 10 10 10 11 11 10 10 10 10 10 10 10 10	N/A - Element Materials Techno	Period N/A	Number of Pulses 5	2441 MHz Value (%) N/A	(%) N/A	Results N/A
5 6 7 8 9 9 10 11 4 4 5 8 9 9 10 10 10 11 11 10 10 10 10 10 10 10 10	N/A - Element Materials Techno 50 Ω AC	Period N/A	Number of Pulses 5	2441 MHz Value (%) N/A	(%) N/A	Results N/A
5 6 7 8 9 9 10 10 10 10 10 10 10 10 10 10 10 10 10	N/A - Element Materials Techno 50 Ω AC	Period N/A	Number of Pulses 5 sense:int Trig: Video	2441 MHz Value (%) N/A	(%) N/A	Results N/A
5 6 7 8 9 9 10 10 10 10 10 10 10 10 10 10 10 10 10	N/A - Element Materials Techno 50 Ω AC	Period N/A	Number of Pulses 5 sense:int Trig: Video	2441 MHz Value (%) N/A	(%) N/A	Results N/A
5 6 7 8 9 10 10 4 11 4 4 5 7 8 9 9 10 10 10 11 4 5 5 6 7 8 9 9 10 10 10 10 10 10 10 10 10 10	N/A - Element Materials Techno 50 Ω AC	Period N/A	Number of Pulses 5 sense:int Trig: Video	2441 MHz Value (%) N/A	(%) N/A	Results N/A
5 6 7 8 9 9 10 10 10 10 10 10 10 10 10 10 10 10 10	N/A - Element Materials Techno 50 Ω AC	Period N/A	Number of Pulses 5 sense:int Trig: Video	2441 MHz Value (%) N/A	(%) N/A	Results N/A
5 6 7 8 9 9 9 10 10 10 10 10 10 10 10 10 10 10 10 10	N/A - Element Materials Techno 50 Ω AC	Period N/A	Number of Pulses 5 sense:int Trig: Video	2441 MHz Value (%) N/A	(%) N/A	Results N/A
5 6 7 8 9 9 9 10 10 10 10 10 10 10 10 10 10 10 10 10	N/A - Element Materials Techno 50 Ω AC	Period N/A	Number of Pulses 5 sense:int Trig: Video	2441 MHz Value (%) N/A	(%) N/A	Results N/A
5 6 7 8 9 10 10 10 10 10 10 10 10 10 10 10 10 10	N/A - Element Materials Techno 50 Ω AC	Period N/A	Number of Pulses 5 sense:int Trig: Video	2441 MHz Value (%) N/A	(%) N/A	Results N/A

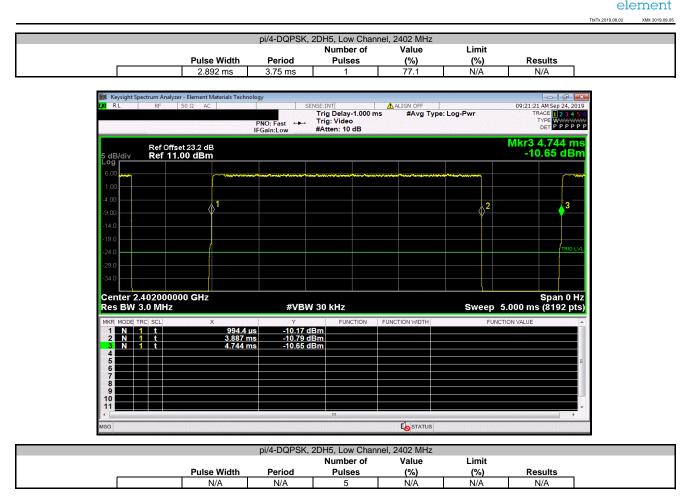
Res BW 3.0 MHz	#VBW 30 kHz	Sweep 16.9	o ms (8192 pts
Center 2.441000000 GHz	#\/B\M 20 kUz	Swoon 16 d	Span 0 H; 3 ms (8192 pts
-33.0			
-28.0			
-23.0) IRIGLY
			TRIG LV
-18.0			
-13.0			
-8.00			
-3.00			
-3.00			



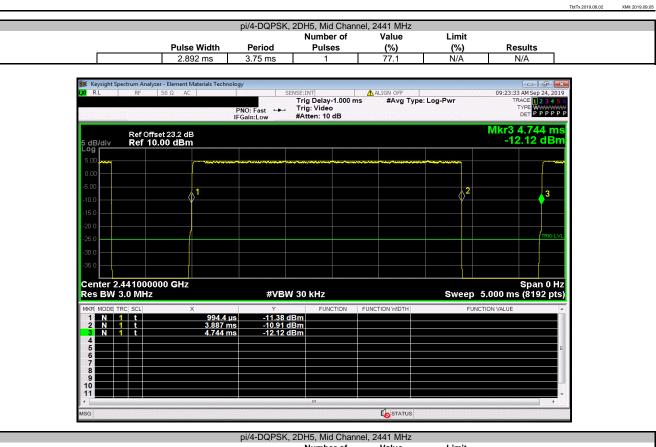
			5, High Channel, Number of	Value	Limit		
	Pulse Width	Period	Pulses	(%)	(%)	Results	
	2.889 ms	3.75 ms	1	77	N/Á	N/A	
· ·					•		
Keysight Spectrum Analyzer	- Element Materials Techno	alogy					×
	50 Ω AC		NSE:INT	ALIGN OFF		09:18:23 AM Sep 24, 20	19
			Trig Delay-1.000 m	s #Avg Type	: Log-Pwr	TRACE 1 2 3 4 TYPE WWWW	5 6
		PNO: Fast ++-	Trig: Video #Atten: 10 dB			DET PPPP	PP
						Mkr3 4.745 m	
Ref Offse 5 dB/div Ref 11.0	t 23.2 dB					-11.19 dB	
5 dB/div Ref 11.0	JU UDIII						
6.00					<u> </u>		
1.00							
-4.00							
-9.00	4 ¹				2	3	
	Y				Y		
-14.0							
-19.0							
-24.0							VL
-29.0							_
-34.0							
Center 2.4800000	0 GHz	40 / 514	20 1/11-		0	Span 0 H	
Res BW 3.0 MHz			30 kHz		•	.000 ms (8192 pt	s,
MKR MODE TRC SCL	X	Y 40.04 45	FUNCTION	FUNCTION WIDTH	FUNCTION	ON VALUE	<u>_</u>
1 N 1 t 2 N 1 t	995.0 µ 3.884 m	ıs -10.57 de	3m				
3 N 1 t	4.745 m	ns -11.19 de	3m				
4 5							E
6							
8							
9 10							
11							.
•			m			•	
MSG				I STATUS			

Number of Value Limit							
	Pulse Width	Period	Pulses	(%)	(%)	Results	
N/A N/A 5 N/A N/A N/A N/A						N/A	

Keysight Spectrum Analyzer - Element Materials T RL RF 50 Ω AC		ENSE:INT	ALIGN OFF			👝 🕞 💽
KE NF DUS2 AC			#ALIGN OFF	Type: Log-Pwr		CE 1 2 3 4 5
	PNO: Fast ↔→ IFGain:Low	Trig: Video #Atten: 10 dB		.) por = - 8 · · · ·	TY	
Ref Offset 23.2 dB dB/div Ref 11.00 dBm						
bg						
.00				[
.00						
.00						
.00						
4.0						
9.0						
1.0						TRIG L
9.0						
4.0						
enter 2.480000000 GHz es BW 3.0 MHz	#\/B\	N 30 kHz		Swee	s p 16.93 ms	Span 0 H (8192 pt
	#901	W 50 KHZ	I STATL		o reaso ms	o raz pis



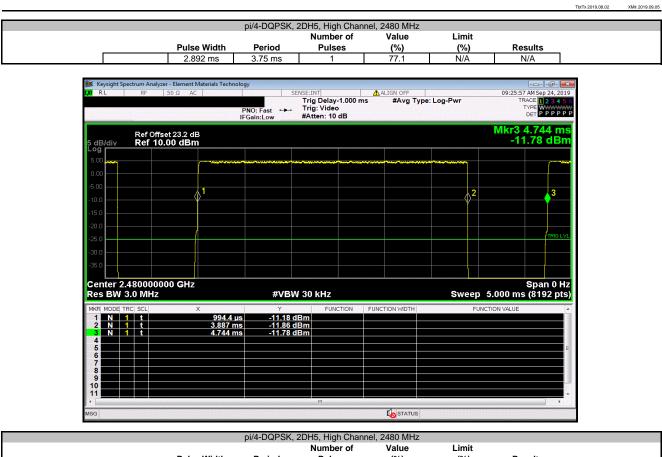
RL	Spectrum Analyzer - Element RF 50 Ω AC			SE:INT	IGN OFF		00	21:30 AM Sep 24, 2019
		PI		Trig: Video #Atten: 10		Type: Log-Pwr		TRACE 1 2 3 4 5 TYPE WWWWW DET P P P P P
dB/div ^{og} r	Ref Offset 23.2 dl Ref 11.00 dBn	3						
5.00 - 1.00 - 1.00	and and an international and international and	Contract Contract Married	halapatier falspatier fan gene	-	٦			-
.00								
.00								
.00								
4.0 9.0								
1.0								TRIG LY
9.0								
4.0								
enter 2	2.402000000 GHz 3.0 MHz		#\/B\M	30 kHz			(aap. 16.0)	Span 0 H 3 ms (8192 pt
	3.0 IVIN12		#VDW	JU KHZ	 STATU	SW	reep-10.9.	ms (on 92 pts



	Number of Value Limit								
	Pulse Width	Period	Pulses	(%)	(%)	Results			
	N/A	N/A	5	N/A	N/A	N/A			

RL RF 50 Ω AC		SENSE:INT	ALIGN OFF	09:23:41 AM Sep 24, 201
	PNO: Fast 🔸 IFGain:Low		#Avg Type: Log-Pwr	TRACE 1 2 3 4 5 TYPE WWWWW DET PPPP
Ref Offset 23.2 dB B/div Ref 10.00 dBm				
	n hailinne heilin de bereinde banet. As hereitete bane	a palan in the factor of a part of a sector		
0				
0				
0				
0				
0				TRIGL
0				
o				
nter 2.441000000 GHz s BW 3.0 MHz	#VB	W 30 kHz	Swee	Span 0 H ep 16.93 ms (8192 pt

element



		Number of Value Limit								
	Pulse Width	Period	Pulses	(%)	(%)	Results				
	N/A	N/A	5	N/A	N/A	N/A				

RL RF 50 Ω AC Ref Offset 23.2 dB B/div Ref 10.00 dBm	PNO: Fast IFGain:Low	Trig: Video #Atten: 10 dB	ALIGN OFF #Avg Type: L		09:26:03 AM Sep 24, 201 TRACE 1 2 3 4 5 TYPE WWWWW DET P P P P P
Ref Offset 23.2 dB B/div Ref 10.00 dBm					
	A Januari Jacilia A Januari A Januari	- Sector A Sector Astronomy Astron	unterstation constantion	an hainn an tartain an tartain an tartain an tartain	("Alternative States
0					
0					
0					
0					
0					TRIG L
0					
0					
nter 2.480000000 GHz s BW 3.0 MHz	#VBW	/ 30 kHz		Sweep 16.	Span 0 H 93 ms (8192 pt

element



RL RF 50 Ω AC		SENSE:INT	A.	IGN OFF		09:	29:13 AM Sep 24, 201
	PNO: Fast ++ IFGain:Low	Trig: Video #Atten: 10		#Avg Typ	e: Log-Pwr		TRACE 1 2 3 4 5 TYPE WWWW DET P P P P P
Ref Offset 23.2 dB dB/div Ref 11.00 dBm							
				.	an a		
.00							
.00							
4.0							
9.0							TRIGL
l.0 .0							
i.0							
enter 2.402000000 GHz es BW 3.0 MHz	#VB	W 30 kHz			Swee	p 16.93	Span 0 F ms (8192 pt
es BW 3.0 MHz	#vB	W 3U KHZ		STATUS	swee	p 16.93	ms (8192 pi



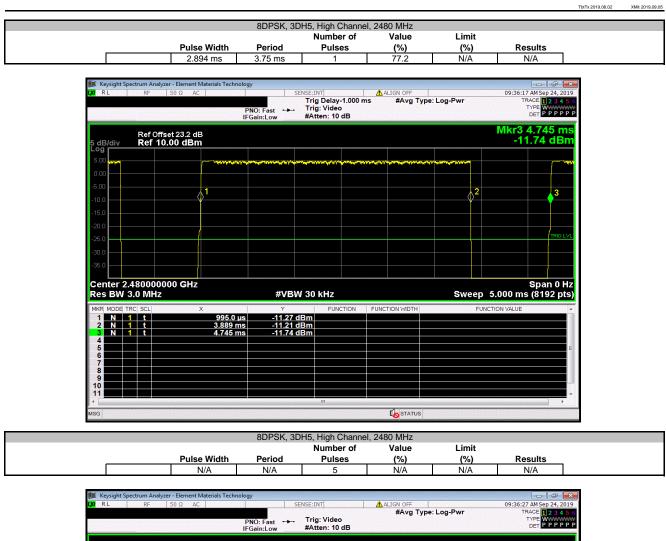


		8DPSK, 3D	H5, Mid Channel,			
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.893 ms	3.75 ms	1	77.2	N/A	N/A
	zer - Element Materials Techno 50 Ω AC		NSE:INT	ALIGN OFF		09:35:06 AM Sep 24, 2019
		PNO: Fast ↔	Trig Delay-1.000 ms Trig: Video	#Avg Type:	: Log-Pwr	TRACE 1 2 3 4 5 6 TYPE WWWWW DET P P P P P P
		IFGain:Low	#Atten: 10 dB			
Ref Offs 5 dB/div Ref 10	set 23.2 dB).00 dBm					Mkr3 4.744 ms -11.39 dBm
5.00	- warmanaphar					
0.00						
-5.00	1				²	3
-10.0	Ť Ť				Y	
-20.0						
-25.0						TRIG LVL
-30.0						
-35.0						
Center 2.4410000 Res BW 3.0 MHz	000 GHz	#VBW	30 kHz		Sweep 5	Span 0 Hz 000 ms (8192 pts)
MKR MODE TRC SCL	x	Y		FUNCTION WIDTH		ON VALUE
				onononini		
1 N 1 t 2 N 1 t	994 4 11	-10.96 dE	3m			
3 N 1 t 4		ıs -10.96 dE ıs -11.16 dE ıs -11.39 dE	3m			
3 N 1 t	994 4 11	is -10.96 dE is -11.16 dE is -11.39 dE	3m			E
3 N 1 t 4	994 4 11	is -10.96 dE is -11.16 dE is -11.39 dE	3m			E.
3 N 1 t 4 - - - 5 - - - 6 - - - 7 - - - 8 - - -	994 4 11	is -10.96 dE is -11.16 dE is -11.39 dE	3m			F
3 N 1 t 4 - - - 5 - - - 6 - - - 7 - - - 8 - - - 9 - - - 10 - - -	994 4 11	IS -10.96 dE IS -11.16 dE IS -11.39 dE	3m			
3 N 1 t 4 - - - 5 - - - 6 - - - 7 - - - 8 - - - 10 - - - 11 - - -	994 4 11	-11.16 dE is -11.39 dE	3m 3m 3m 	STATUS		E
3 N 1 t 4 - - - 5 - - - 6 - - - 7 - - - 8 - - - 10 - - - 11 - - -	994 4 11	-11.16 dE is -11.39 dE	3m	STATUS	Limit	
3 N 1 t 4 - - - 5 - - - 6 - - - 7 - - - 8 - - - 10 - - - 11 - - -	994.4 u 3.888 m 4.744 m	s -11.16 dE s -11.39 dE 8DPSK, 3D Period	m m m m m m m m m m m m m m m m m m m	2441 MHz Value (%)	(%)	Results
3 N 1 t 4 - - - 5 - - - 6 - - - 7 - - - 8 - - - 10 - - - 11 - - -	994.4 µ 3.888 m 4.744 m	s -11.16 dE s -11.39 dE 8DPSK, 3D	Bm Bm Bm I I I I I I I I I I I I I I I I	Costatus 2441 MHz Value		Results N/A
3 N 1 t 4 5 6 7 8 9 9 10 11 MSG MSG	994.4 µ 3.888 m 4.744 m Pulse Width N/A	s -11,16 dE s -11,39 dE 8DPSK, 3D Period N/A	Im Im Im Im Im Im Im Im Im Im Im Im Im I	Z441 MHz Value (%) N/A	(%)	N/A
3 N 1 t 4 5 6 7 8 9 9 10 11 MSG MSG	994.4 µ 3.888 m 4.744 m Pulse Width N/A	s -11.16 dE s -11.39 dE 8DPSK, 3D Period N/A	The second secon	2441 MHz Value (%)	(%) N/A	N/A
3 N 1 t 4 5 6 7 8 9 9 10 11 MSG MSG	994.4 μ 3.888 m 4.744 m Pulse Width N/A Ser - Element Materials Techno 50 Ω AC	s11.16 dE s11.39 dE 8DPSK, 3D Period N/A N/A	Im I	2441 MHz Value (%) N/A	(%) N/A	N/A
3 N 1 t 4 5 6 7 6 7 7 7 9 9 10 10 9 10 10 10 10 10 10 10 11 10 10 10 4 10 10 10 MSG 11 10 10 MSG 10 10 10 MSG 10 10 10 MSG 10 10 10 MSG 10 10 10 </td <td>994.4 μ 3.888 m 4.744 m 4.744 m Value Value N/A × × × × 3.888 m 4.744 m × 994.4 μ 3.888 m 4.744 m × Pulse Width N/A × × × × × × × × × 99.4 μ ×</td> <td>IS11.16 dE IS11.39 dE BDPSK, 3D Period N/A N/A N/A N/A N/A</td> <td>Im Im I</td> <td>2441 MHz Value (%) N/A</td> <td>(%) N/A</td> <td>N/A</td>	994.4 μ 3.888 m 4.744 m 4.744 m Value Value N/A × × × × 3.888 m 4.744 m × 994.4 μ 3.888 m 4.744 m × Pulse Width N/A × × × × × × × × × 99.4 μ ×	IS11.16 dE IS11.39 dE BDPSK, 3D Period N/A N/A N/A N/A N/A	Im I	2441 MHz Value (%) N/A	(%) N/A	N/A
3 N 1 t 4 5 6 7 7 8 9 10 10 10 10 10 10 10 10 10 10	994.4 μ 3.888 m 4.744 m Pulse Width N/A Ser - Element Materials Techno 50 Ω AC	IS11.16 dE IS11.39 dE BDPSK, 3D Period N/A N/A N/A N/A N/A	Im I	2441 MHz Value (%) N/A	(%) N/A	N/A
3 N 1 t 4 5 6 7 6 7 7 7 7 8 9 9 9 10 10 10 1 1 1 1 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11	994.4 μ 3.888 m 4.744 m 4.744 m 4.744 m 4.744 m 4.744 m 50 Ω 4.0 m 50 Ω AC 50 Ω AC 50 Ω AC	s11.16 dE s11.39 dE 8DPSK, 3D Period N/A N/A N/A PNO: Fast ↔ IFGain:Low	Im I	€ ALIGN OFF #Avg Type:	(%) N/A	N/A 09:35:13 AM Sep 24, 2019 TRace () 23 4 5 6 TYPE WWWWWW DET PP PP P
3 N 1 t 4 5 6 7 6 7 7 7 8 9 9 9 10 1 1 1 4 7 7 1 1 9 9 10 1 1 1 4 10 1 1 1 1 1 4 10 1 <td>994.4 μ 3.888 m 4.744 m 4.744 m 4.744 m 4.744 m 4.744 m 50 Ω 4.0 m 50 Ω AC 50 Ω AC 50 Ω AC</td> <td>IS11.16 dE IS11.39 dE BDPSK, 3D Period N/A N/A N/A N/A N/A</td> <td>Im Im I</td> <td>€ ALIGN OFF #Avg Type:</td> <td>(%) N/A</td> <td>N/A</td>	994.4 μ 3.888 m 4.744 m 4.744 m 4.744 m 4.744 m 4.744 m 50 Ω 4.0 m 50 Ω AC 50 Ω AC 50 Ω AC	IS11.16 dE IS11.39 dE BDPSK, 3D Period N/A N/A N/A N/A N/A	Im I	€ ALIGN OFF #Avg Type:	(%) N/A	N/A
3 N 1 t 4 5 6 7 6 7 7 7 7 8 9 9 9 10 10 10 1 1 1 1 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11 10 11	994.4 μ 3.888 m 4.744 m 4.744 m 4.744 m 4.744 m 4.744 m 50 Ω 4.0 m 50 Ω AC 50 Ω AC 50 Ω AC	s11.16 dE s11.39 dE 8DPSK, 3D Period N/A N/A N/A PNO: Fast ↔ IFGain:Low	Im I	€ ALIGN OFF #Avg Type:	(%) N/A	N/A 09:35:13 AM Sep 24, 2019 TRace () 23 4 5 6 TYPE WWWWWW DET PP PP P
3 N 1 t 4 5 6 7 6 7 7 7 8 9 9 9 10 1 1 1 4 7 7 1 1 9 9 10 1 1 1 4 10 1 1 1 1 1 4 10 1 <td>994.4 μ 3.888 m 4.744 m 4.744 m 4.744 m 4.744 m 4.744 m 50 Ω 4.0 m 50 Ω AC 50 Ω AC 50 Ω AC</td> <td>s11.16 dE s11.39 dE 8DPSK, 3D Period N/A N/A N/A PNO: Fast ↔ IFGain:Low</td> <td>Im Im I</td> <td>€ ALIGN OFF #Avg Type:</td> <td>(%) N/A</td> <td>N/A 09:35:13 AM Sep 24, 2019 TRace [] 2:3 4 5 6 TYPE WWWWW Det</td>	994.4 μ 3.888 m 4.744 m 4.744 m 4.744 m 4.744 m 4.744 m 50 Ω 4.0 m 50 Ω AC 50 Ω AC 50 Ω AC	s11.16 dE s11.39 dE 8DPSK, 3D Period N/A N/A N/A PNO: Fast ↔ IFGain:Low	Im I	€ ALIGN OFF #Avg Type:	(%) N/A	N/A 09:35:13 AM Sep 24, 2019 TRace [] 2:3 4 5 6 TYPE WWWWW Det
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3 N 1 t 4 5 6 7 6 7 7 7 8 7 7 7 9 9 7 7 9 10 7 7 9 10 7 7 9 10 7 7 9 10 7 7 9 10 1 1 9 10 1 1 9 10 1 1 11 1 1 1 4 1 1 1 5 0 1 1 5 0 1 1 0 1 1 1	994.4 μ 3.888 m 4.744 m 4.744 m 4.744 m 4.744 m 4.744 m 50 Ω 4.0 m 50 Ω AC 50 Ω AC 50 Ω AC	s11.16 dE s11.39 dE 8DPSK, 3D Period N/A N/A N/A PNO: Fast ↔ IFGain:Low	Im I	€ ALIGN OFF #Avg Type:	(%) N/A	N/A 09:35:13 AM Sep 24, 2019 TRace [] 2:3 4 5 6 TYPE WWWWW Det
3 N 1 t 4 5 6 7 6 7 7 7 7 10 7 7 7 7 10 7 7 7 7 7 10 7 7 7 7 7 7 10 7 7 7 7 7 7 7 10 7 7 7 7 7 7 7 7 10 7 7 7 7 7 7 7 7 11 7<	994.4 μ 3.888 m 4.744 m 4.744 m 4.744 m 4.744 m 4.744 m 50 Ω 4.0 m 50 Ω AC 50 Ω AC 50 Ω AC	s11.16 dE s11.39 dE 8DPSK, 3D Period N/A N/A N/A PNO: Fast →→ IFGain:Low	Im I	€ ALIGN OFF #Avg Type:	(%) N/A	N/A 09:35:13 AM Sep 24, 2019 TRace [] 2:3 4 5 6 TYPE WWWWW Det
3 N 1 t 4 5 6 7 6 7 7 7 9 10 7 7 9 10 7 7 10 1 1 1 4 5 10 10 10 1 1 10 11 1 1 10 4 5 5 MSG 10 5 0 1 Ref Offs 10 5 0 1 1 10 -6 1 1 1 1 1	994.4 μ 3.888 m 4.744 m 4.744 m 4.744 m 4.744 m 4.744 m 50 Ω 4.0 m 50 Ω AC 50 Ω AC 50 Ω AC	s11.16 dE s11.39 dE 8DPSK, 3D Period N/A N/A N/A PNO: Fast →→ IFGain:Low	Im I	€ ALIGN OFF #Avg Type:	(%) N/A	N/A 09:35:13 AM Sep 24, 2019 TRace [] 2:3 4 5 6 TYPE WWWWW Det
3 N 1 t 4 5 6 1 6 1 1 1 7 1 1 1 8 1 1 1 9 1 1 1 10 1 1 1 11 1 1 1 4 1 1 1 10 1 1 1 11 1 1 1 11 1 1 1 4 1 1 1 11 1 1 1 11 1 1 1 11 1 1 1 11 1 1 1 12 1 1 1 13 1 1 1 14 1 1 1 15 1 1 1 -20 1 1 1	994.4 μ 3.888 m 4.744 m 4.744 m 4.744 m 4.744 m 4.744 m 50 Ω 4.0 m 50 Ω AC 50 Ω AC 50 Ω AC	s11.16 dE s11.39 dE 8DPSK, 3D Period N/A N/A N/A PNO: Fast →→ IFGain:Low	Im I	€ ALIGN OFF #Avg Type:	(%) N/A	
3 N 1 t 4 5 6 7 6 7 7 7 8 7 7 7 9 10 7 7 9 10 7 7 9 10 10 10 9 10 10 10 11 10 10 10 4 . . . MSG . . . 5 0.0/dt/dt/dt/dt/dt/dt/dt/dt/dt/dt/dt/dt/dt/	994.4 μ 3.888 m 4.744 m 4.744 m 4.744 m 4.744 m 4.744 m 50 Ω 4.0 m 50 Ω AC 50 Ω AC 50 Ω AC	s11.16 dE s11.39 dE 8DPSK, 3D Period N/A N/A N/A PNO: Fast →→ IFGain:Low	Im I	€ ALIGN OFF #Avg Type:	(%) N/A	N/A 09:35:13 AM Sep 24, 2019 TRace [] 2:3 4 5 6 TYPE WWWWW Det
3 N 1 t 4 5 6 1 6 1 1 1 7 1 1 1 8 1 1 1 9 1 1 1 10 1 1 1 11 1 1 1 4 1 1 1 10 1 1 1 11 1 1 1 11 1 1 1 4 1 1 1 11 1 1 1 11 1 1 1 11 1 1 1 11 1 1 1 12 1 1 1 13 1 1 1 14 1 1 1 15 1 1 1 -20 1 1 1	994.4 μ 3.888 m 4.744 m 4.744 m 4.744 m 4.744 m 4.744 m 50 Ω 4.0 m 50 Ω AC 50 Ω AC 50 Ω AC	s11.16 dE s11.39 dE 8DPSK, 3D Period N/A N/A N/A PNO: Fast →→ IFGain:Low	Im I	€ ALIGN OFF #Avg Type:	(%) N/A	
3 N 1 t 4 - - - 5 - - - 7 - - - 8 - - - 9 - - - 9 - - - 9 - - - 9 - - - 9 - - - 3G - - - 3G - - - 8 - - - 9 - - - 10 - - - 5.00 - - - 5.00 - - - - 10.0 - - - - 10.0 - - - - 10.0 - - - - 10.0 -	994.4 μ 3.888 m 4.744 m 4.744 m 4.744 m 4.744 m 4.744 m 50 Ω 4.0 m 50 Ω AC 50 Ω AC 50 Ω AC	s11.16 dE s11.39 dE 8DPSK, 3D Period N/A N/A N/A PNO: Fast →→ IFGain:Low	Im I	€ ALIGN OFF #Avg Type:	(%) N/A	

#VBW 30 kHz

ISTATUS

Center 2.441000000 GHz Res BW 3.0 MHz Span 0 Hz Sweep 16.93 ms (8192 pts)



RL	RF 50 Ω	AC			SENSE			LIGN OFF #Avg	Type:	Log-Pwr		09:36:2	27 AM Sep 24, 2019 RACE 2 3 4 5 TYPE WWWWWW
			l I	PNO: Fast ↔ Gain:Low	Tr #A	ig: Video tten: 10	dB						DET PPPP
	Ref Offset 23	.2 dB											
dB/div	Ref 10.00 c	lBm		1				I					
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610													
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35.0													
enter 2.4	18000000 G	Hz											Span 0 H
les BW 3	.0 MHz			#VI	3W 30) kHz		4		Swee	p 1	6.93 m	s (8192 pts
SG					1.1.1.1.1			STATU	JS				

element

CARRIER FREQUENCY SEPARATION



Alvin 2013.00

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	E8257D	TGU	15-Feb-18	15-Feb-21
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Attenuator	Fairview Microwave	SA18H-20	TKR	20-Dec-18	20-Dec-19
Block - DC	Fairview Microwave	SD3379	AMV	3-Jan-19	3-Jan-20
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	2-Jul-19	2-Jul-20

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The channel carrier frequencies in the 2400-2483.5MHz band must be separated by 25 kHz or the 20dB bandwidth of the hopping channel, whichever is greater. Or, if the output power is less than 125 mW, the channel separation can be 25 kHz or 2/3 of the 20dB bandwidth. The EUT was operated in pseudorandom hopping mode. The spectrum was scanned across two adjacent peaks. The separation between the peaks of these channels was measured.

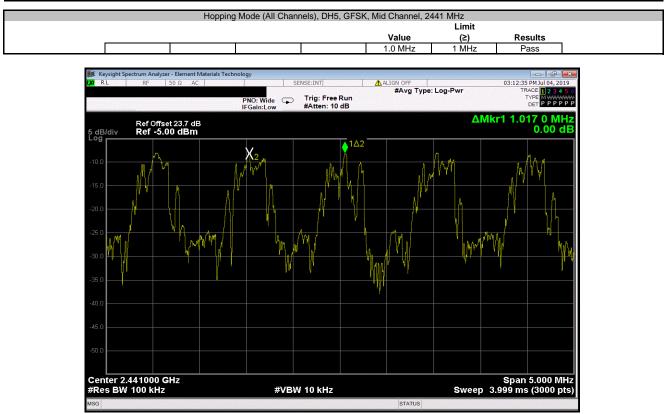
CARRIER FREQUENCY SEPARATION



					TbtTx 2018.09.13	XMit 2019.06.11
EUT:	MWMII			Work Order:	MASI0553	
Serial Number:	ENG-1				: 3-Jul-19	
Customer:	Masimo Corporation			Temperature:	26.4 °C	
Attendees:	Anami Joshi				: 41.6% RH	
Project:				Barometric Pres.:		
	Luis Flores and Mark Ba	iytan	Power: 3.6VDC	Job Site:	OC13	
TEST SPECIFICAT	IONS		Test Method			
FCC 15.247:2019			ANSI C63.10:2013			
COMMENTS						
		enuator + coax cable + client provide	d patch cable = 23.7dB Total Offset			
DEVIATIONS FROM	M TEST STANDARD					
None						
Configuration #	2	Signature	M+ G++-			
					Limit	
				Value	(≥)	Results
Hopping Mode (All (
	DH5, GFSK					
	Mid Channel	, 2441 MHz		1.0 MHz	1 MHz	Pass

CARRIER FREQUENCY SEPARATION





NUMBER OF HOPPING FREQUENCIES



XMit 2019.06.11

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.

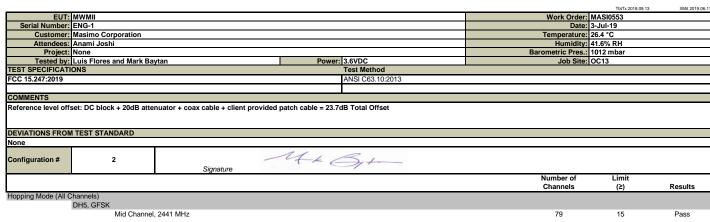
TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	E8257D	TGU	15-Feb-18	15-Feb-21
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Attenuator	Fairview Microwave	SA18H-20	TKR	20-Dec-18	20-Dec-19
Block - DC	Fairview Microwave	SD3379	AMV	3-Jan-19	3-Jan-20
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	2-Jul-19	2-Jul-20

TEST DESCRIPTION

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

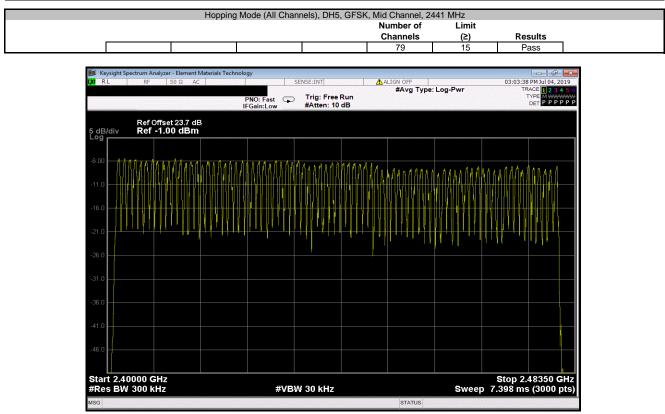
NUMBER OF HOPPING FREQUENCIES





NUMBER OF HOPPING FREQUENCIES







XMit 2019.06.11

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	E8257D	TGU	15-Feb-18	15-Feb-21
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Attenuator	Fairview Microwave	SA18H-20	TKR	20-Dec-18	20-Dec-19
Block - DC	Fairview Microwave	SD3379	AMV	3-Jan-19	3-Jan-20
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFA	12-Feb-19	12-Feb-20

TEST DESCRIPTION

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

The dwell time limit is based on the Number of Hopping Channels * 400 mS. For Bluetooth this would be 79 Channels * 400mS = 31.6 Sec.

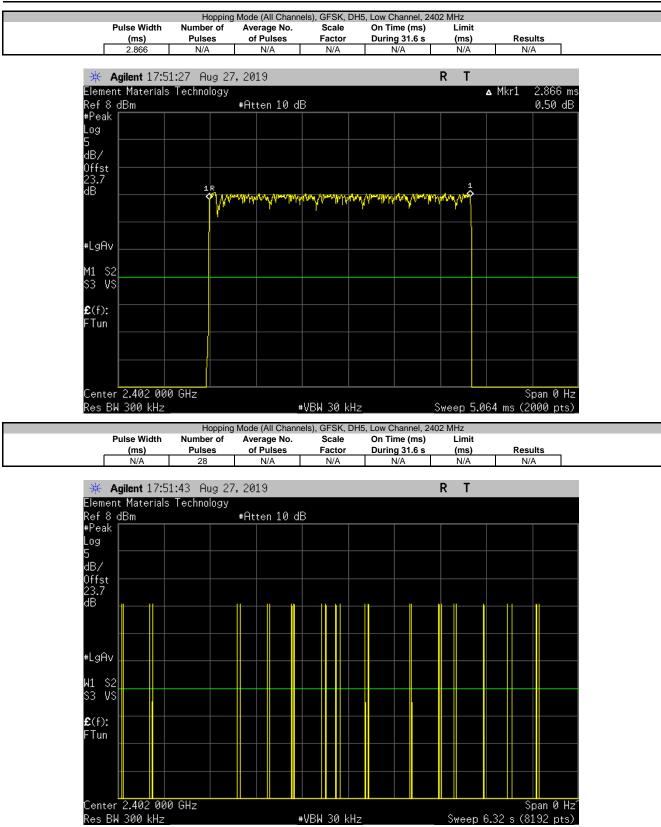
On Time During 31.6 Sec = Pulse Width * Average Number of Pulses * Scale Factor

>Average Number of Pulses is based on 4 samples.

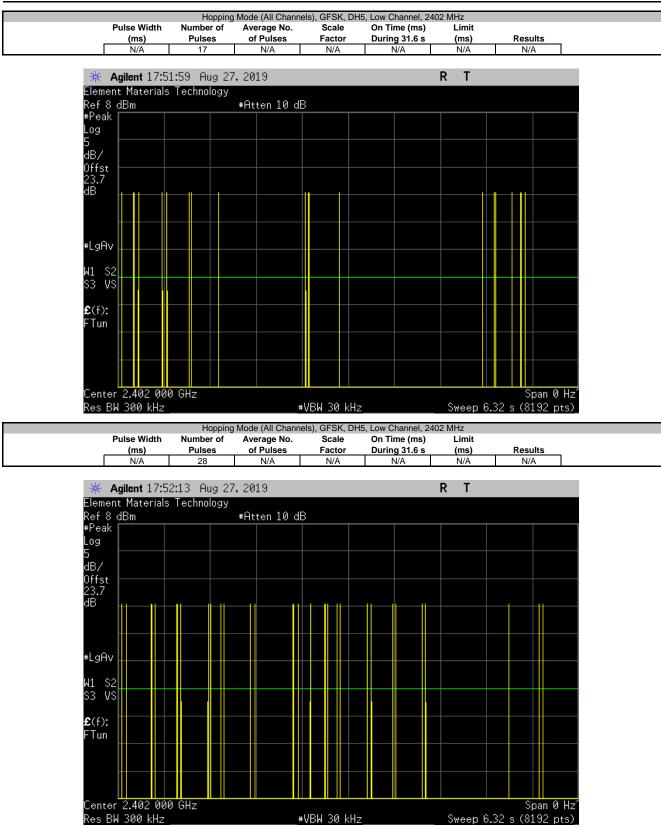


								TbtTx 2019.08.02	XMit 20
EUT:	MWMII						Work Order:	MASI0553	
Serial Number:	ENG-1						Date:	3-Jul-19	
Customer:	Masimo Corporation						Temperature:	26.4 °C	
	Anami Joshi						Humidity:		-
Project:							Barometric Pres.:		
	Luis Flores and Mark Baytan		Bower	3.6VDC			Job Site:		
ST SPECIFICAT			Fower.	Test Method			Job Sile.	0013	
	IONS								
C 15.247:2019				ANSI C63.10:2013					
OMMENTS									
eterence level off	set: DC block + 20dB attenuator +	coax cable + client p	rovided patch cable = 23.70	IB Total Offset					
VIATIONS FROM	M TEST STANDARD								
ne									
onfiguration #	2	Signature	MALE	Sy+					
		Signature	Pulse Width	Number of	Average No.	Scale	On Time (ms)	Limit	
			(ms)	Pulses	of Pulses	Factor	During 31.6 s	(ms)	Result
pping Mode (All C									
	GFSK, DH5	11-		b 1/2	N1/1	N 1/2		N1/4	
	Low Channel, 2402 M		2.866	N/A	N/A	N/A	N/A	N/A	N/A
	Low Channel, 2402 M		N/A	28	N/A	N/A	N/A	N/A	N/A
	Low Channel, 2402 M		N/A	17	N/A	N/A	N/A	N/A	N/A
	Low Channel, 2402 M	Hz	N/A	28	N/A	N/A	N/A	N/A	N/A
	Low Channel, 2402 M	Hz	N/A	16	N/A	N/A	N/A	N/A	N/A
	Low Channel, 2402 M	Hz	2.866	N/A	22.25	5	318.84	400	Pass
	High Channel, 2480 M		2.886	N/A	N/A	N/A	N/A	N/A	N/A
	High Channel, 2480 M		N/A	17	N/A	N/A	N/A	N/A	N/A
	High Channel, 2480 M		N/A	19	N/A	N/A	N/A	N/A	N/A
	High Channel, 2480 M		N/A	16	N/A	N/A	N/A	N/A	N/A
	High Channel, 2480 N		N/A	32	N/A	N/A	N/A	N/A	N/A
	High Channel, 2480 N	IHZ	2.886	N/A	21	5	303.03	400	Pass
	pi/4-DQPSK, 2DH5								
	Low Channel, 2402 M	Hz	2.889	N/A	N/A	N/A	N/A	N/A	N/A
	Low Channel, 2402 M	Hz	N/A	18	N/A	N/A	N/A	N/A	N/A
	Low Channel, 2402 M	Hz	N/A	27	N/A	N/A	N/A	N/A	N/A
	Low Channel, 2402 M	Hz	N/A	27	N/A	N/A	N/A	N/A	N/A
	Low Channel, 2402 M		N/A	24	N/A	N/A	N/A	N/A	N/A
	Low Channel, 2402 M		2.889	N/A	24	5	346.68	400	Pass
	High Channel, 2480 M		2.889	N/A	N/A	N/A	N/A	N/A	N/A
	High Channel, 2480 M		2.003 N/A	19	N/A	N/A	N/A	N/A	N/A
	High Channel, 2480 M		N/A N/A	24	N/A	N/A	N/A N/A	N/A	N/A
	High Channel, 2480 N		N/A	17	N/A	N/A	N/A	N/A	N/A
	High Channel, 2480 M		N/A	20	N/A	N/A	N/A	N/A	N/A
	High Channel, 2480 N 8DPSK, 3DH5	IHZ	2.889	N/A	20	5	288.9	400	Pass
	Low Channel, 2402 M	Hz	2.892	N/A	N/A	N/A	N/A	N/A	N/A
	Low Channel, 2402 M		2.892 N/A	24	N/A	N/A	N/A N/A	N/A	N/A
			N/A N/A	24 22	N/A N/A	N/A N/A	N/A N/A	N/A N/A	N/A N/A
	Low Channel, 2402 M								
	Low Channel, 2402 M		N/A	23	N/A	N/A	N/A	N/A	N/A
	Low Channel, 2402 M		N/A	26	N/A	N/A	N/A	N/A	N/A
	Low Channel, 2402 M	Hz	2.892	N/A	23.75	5	343.43	400	Pass
	High Channel, 2480 M	IHz	2.892	N/A	N/A	N/A	N/A	N/A	N/A
	High Channel, 2480 M		N/A	21	N/A	N/A	N/A	N/A	N/A
	High Channel, 2480 M		N/A	24	N/A	N/A	N/A	N/A	N/A
	High Channel, 2480 N		N/A	20 21	N/A	N/A	N/A	N/A	N/A N/A
	High Channel, 2480 M High Channel, 2480 M		N/A 2.892	21 N/A	N/A 21.5	N/A 5	N/A 310.89	N/A 400	Pass











		Hopping	Mode (All Chann	els), GFSK, DH	5, Low Channel, 24	402 MHz		
	Pulse Width	Number of	Average No.	Scale	On Time (ms)	Limit		
	(ms)	Pulses	of Pulses	Factor	During 31.6 s	(ms)	Results	
	N/A	16	N/A	N/A	N/A	N/A	N/A	
	Agilent 17:5 Tent Materials	2:27 Aug 27 Technology	7 , 2019			RT		
Ref	8 dBm		#Atten 10 d	В				
#Pea	ak							
Log								
5 . ar								
dB/								
0ffs 23.7								
dB	,,							
#Lgf	Av 📗 🗌							
-0.								
W1	S2							
\$3	VS							
£ (f)								
FTu	n 📔 🛛							
	ter 2.402 00	0 GHz					Span 0 Hz^	
Res	BW 300 kHz		+	⊧VBW 30 kHz		Sweep 6.	32 s (8192 pts)_	
					5, Low Channel, 24			
	Pulse Width	Number of	Average No.	Scale	On Time (ms)	Limit	Beculto	
	(ms) 2.866	Pulses N/A	of Pulses 22.25	Factor 5	During 31.6 s 318.84	(ms) 400	Results Pass	

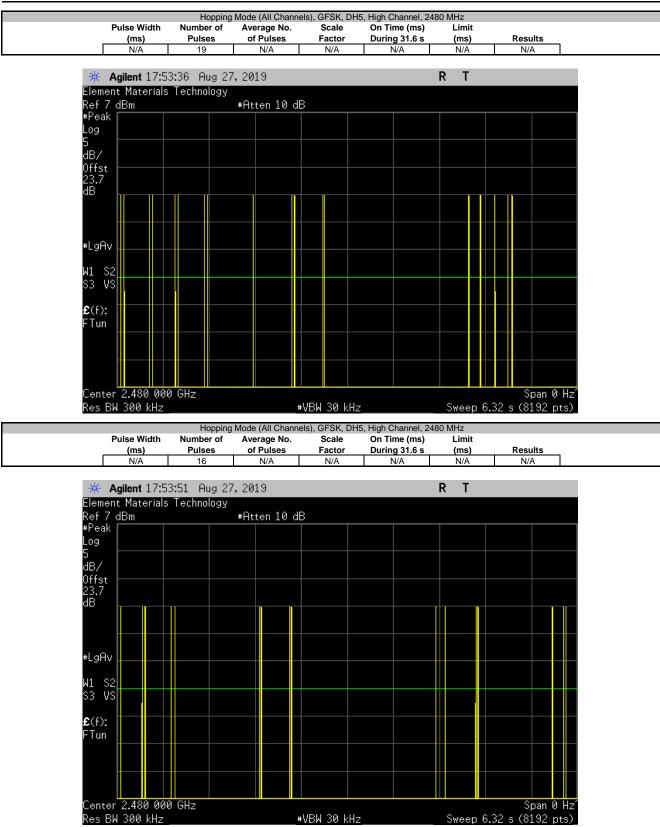
Calculation Only

No Screen Capture Required



Hopping Mode (All Channels), GFSK, DH5, High Channel, 2480 MHz Pulse Width (ms) Number of Pulses Average No. of Pulses Scale Factor On Time (ms) Limit (ms) Results 2.886 N/A N/A N/A N/A N/A N/A N/A # Agilent 17:52:58 Aug 27, 2019 R T Element: Materials Technology
2.886 N/A N/A N/A N/A N/A N/A ★ Agilent 17:52:58 Aug 27, 2019 R T Element Materials Technology ▲ Mkr1 2.886 m Ref 7 dBm *Atten 10 dB 5.11 df Depeak
Agilent 17:52:58 Aug 27, 2019 R T Element Materials Technology
Element Materials Technology Mkr1 2.886 m Mkr1 2.886 m 5.11 df Peak
Ref 7 dBm *Atten 10 dB 5.11 df PPeak .09
PPeak
AB/ Dffst 23.7 JB Image: Constraint of the second
BB/ Dffst 23.7 HB Image: Center 2.480 000 GHz
Diffst 23.7 HB HLgAV A1 S2 S3 VS C(f): Tun Center 2.480 000 GHz Span 0 H
1 1 1
1 1 1
LgAv
LgAv
41 S2 S3 VS E(f): Tun Center 2.480 000 GHz Span 0 H
S3 VS E(f): Tun Center 2.480 000 GHz Span 0 H
E(f): Tun Center 2.480 000 GHz Span 0 H
ETun
Center 2.480 000 GHz Span 0 H
Center 2.480 000 GHz Span 0 H kes BW 300 kHz Sweep 6.13 ms (2000 pts
Center 2.480 000 GHz Span 0 H tes BW 300 kHz Sweep 6.13 ms (2000 pts
Center 2.480 000 GHz Span 0 H Res BW 300 kHz Sweep 6.13 ms (2000 pts
tes BW 300 kHz
Hopping Mode (All Channels), GFSK, DH5, High Channel, 2480 MHz
Pulse Width Number of Average No. Scale On Time (ms) Limit (ms) Pulses of Pulses Factor During 31.6 s (ms) Results
N/A 17 N/A N/A N/A N/A N/A
ዡ Agilent 17:53:17 Aug 27, 2019 R T
Element Materials Technology
Ref 7 dBm #Atten 10 dB
Peak
JB/ Dffst
23.7
ILgAv
11 (2)
41 S2
E(f): Tun
Center 2.480 000 GHz Span 0 H





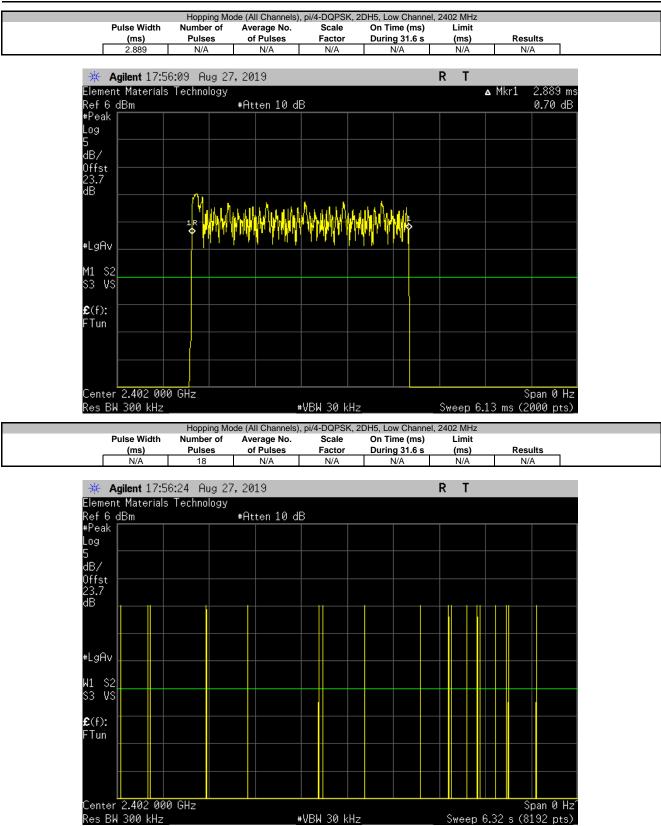


	Hoppin	g Mode (All Channe	els) GESK DH5	, High Channel, 24	180 MHz		
Pulse V		Average No.	Scale	On Time (ms)	Limit		
(ms	s) Pulses	of Pulses	Factor	During 31.6 s	(ms)	Results	
N/A		N/A	N/A	N/A	N/A	N/A	
_	: 17:54:29 Aug 2 :erials Technology				RT		
Ref 7 dBm		#Atten 10 dł	В				
#Peak							
Log 5							
dB/							
Offst 📃					_		
23.7 dB							
dB							
				┨╢╢╢	<mark> </mark>		
#LgAv							
*L9HV							
W1 S2							
W1 S2 S3 VS							
£ (f):							
FTun							
C						Surve Add	
Center 2.48					Sugar C (Span 0 Hz^	
Res BW 300			ŧVBW 30 kHz			32 s (8192 pts)_	
Posta V		g Mode (All Channe					
Pulse V (ms		Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results	
2.88		21	5	303.03	400	Pass	

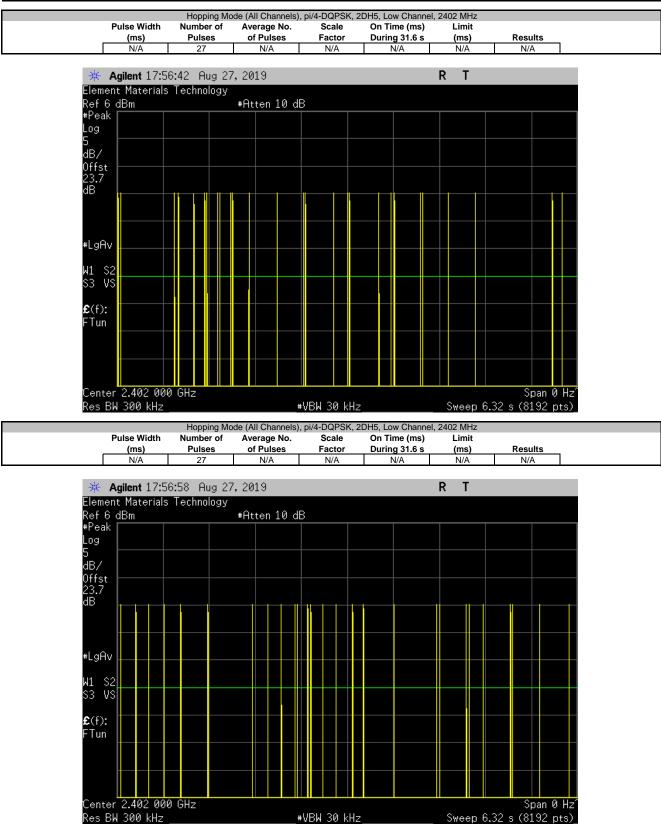
Calculation Only

No Screen Capture Required









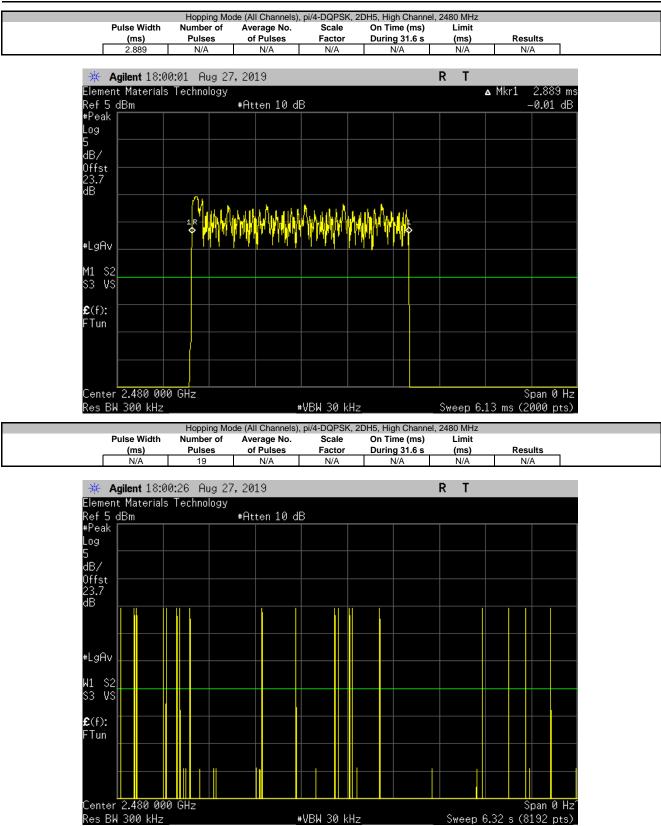


	Hopping N	lode (All Channels)), pi/4-DQPSK, 2	DH5, Low Channe	el, 2402 MHz	
Pulse	Width Number of	Average No.	Scale	On Time (ms)	Limit	
(m		of Pulses	Factor	During 31.6 s	(ms)	Results
N	/A 24	N/A	N/A	N/A	N/A	N/A
	it 17:58:52 Aug 2				RT	
	iterials Technology					
Ref 6 dBm		#Atten 10 d	B			
#Peak						
Log						
5						
dB/						
Offst 23.7						
dB						
#LgAv						
-3						
W1 S2						
S3 VS						
£ (f):						
FTun						
Center 2.4	02 000 GHz					Span 0 Hz
Res BW 30			#VBW 30 kHz		Sweep 6.	32 s (8192 pts)
	Hopping N	lode (All Channels)), pi/4-DQPSK, 2	DH5. Low Channe	el. 2402 MHz	
Pulse		Average No.	Scale	On Time (ms)	Limit	
<u>(m</u>		of Pulses	Factor	During 31.6 s	(ms)	Results
2.8	89 N/A	24	5	346.68	400	Pass

Calculation Only

No Screen Capture Required







								TbtTx 2019
	Pulse Width	Hopping Mo Number of	de (All Channels), j		DH5, High Channel			
	(ms)	Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results	
	N/A	24	N/A	N/A	N/A	N/A	N/A	
	Agilent 18:0		?, 2019			RT		
	ent Materials 5 dBm	lechnology	#Atten 10 dB					
#Pea	ik 🔽 🗌		#IIIII ID UD					
Log								
5 dB/								
0ffst	t							
0ffs: 23.7								
dB								
#LgA	iv							
W1 3	0							
\$3	VS							
£(f) F⊺un								
FTur	' <u> </u>					╫╫╢		
	er 2.480 000 BW 300 kHz	Ø GHZ		/BW 30 kHz		Swaap 6 33	Span 0 H 2 s (8192 pts	Z N
163	DM JOO KIIZ						- 3 (0102 pts	
	Pulse Width	Number of	de (All Channels), Average No.	Scale	DH5, High Channel On Time (ms)	Limit		
r	(ms) N/A	Pulses 17	of Pulses N/A	Factor N/A	During 31.6 s	(ms) N/A	Results N/A	
	IN/A	17	IN/A	N/A	IN/A	IN/A	N/A	
	Agilent 18:0		,2019			RT		
	ent Materials	Technology						
Ket #Pea	5 dBm ik 🔽 🗌		#Atten 10 dB					
Log								
5 dB/								
ab/ Offs:	t							
23.7 dB								
dB								
#LgA	iv							
U 1	\$2							
W1 3 S3	VS							
£ (f) F⊺un								
r tur								

₩VBW 30 kHz

Center 2.480 000 GHz Res BW 300 kHz Span 0 Hz[°] Sweep 6.32 s (8192 pts)

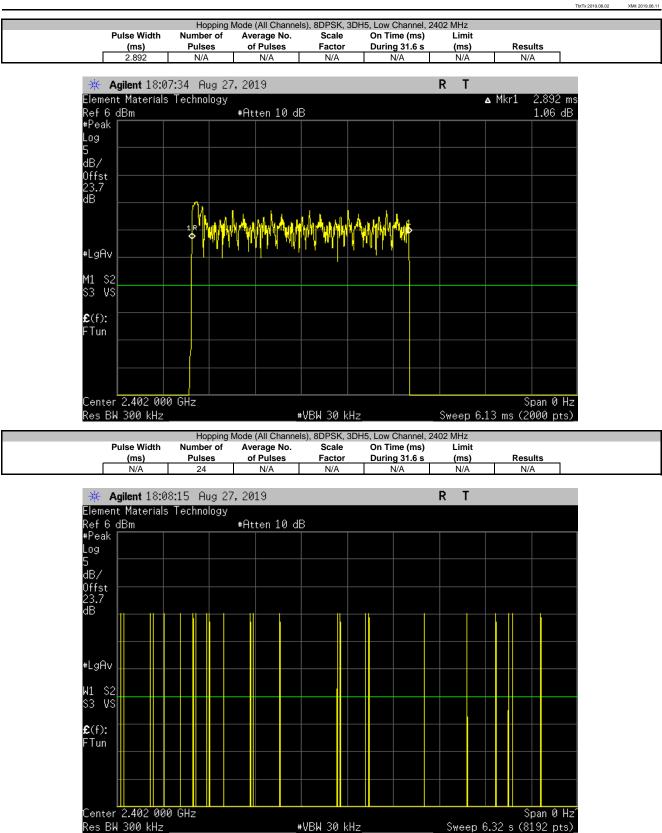


		Hopping Mo	de (All Channels)	ni/1-DOPSK 2	DH5, High Channe	2480 MHz	
	Pulse Width	Number of	Average No.	Scale	On Time (ms)	Limit	
	(ms)	Pulses	of Pulses	Factor	During 31.6 s	(ms)	Results
Г	N/A	20	N/A	N/A	N/A	N/A	N/A
	-	2:31 Aug 27 Technology	7,2019			RT	
Ref 5	5 dBm	10011101093	#Atten 10 d	В			
#Peal	<						
Log							
5							
dB/							
Offst							
23.7 dB							
aD.							
#LgA							
"L911	*						
W1 S	;2						
W1 S S3 V	is i i						
£(f):							
FTun							
	er 2.480 000	0 GHz					Span 0 Hz^
Res E	3W 300 kHz			⊭VBW 30 kHz		Sweep 6.	32 s (8192 pts)_
	-				DH5, High Channe		
	Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms)	Limit (ms)	Results
Г	(ms) 2.889	N/A	20	5	During 31.6 s 288.9	400	Pass

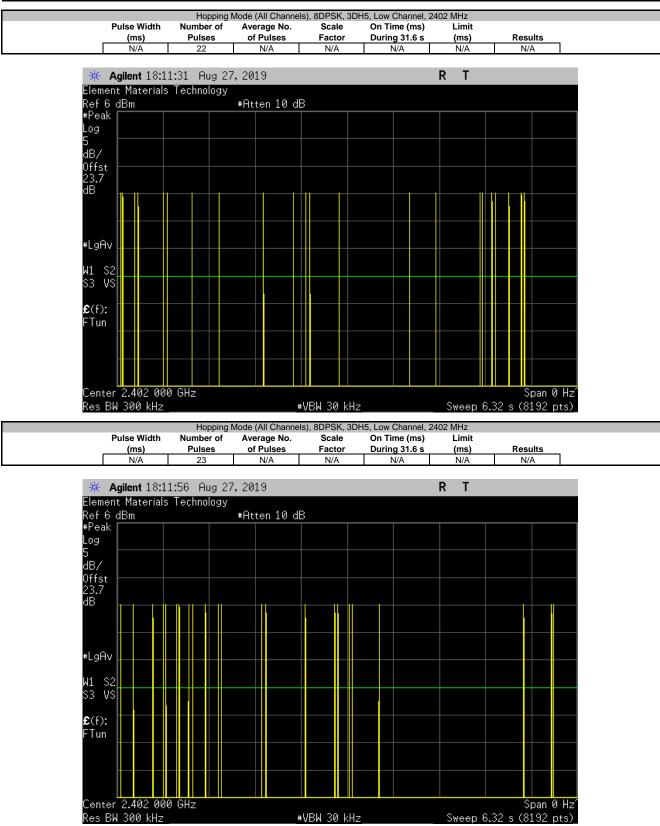
Calculation Only

No Screen Capture Required









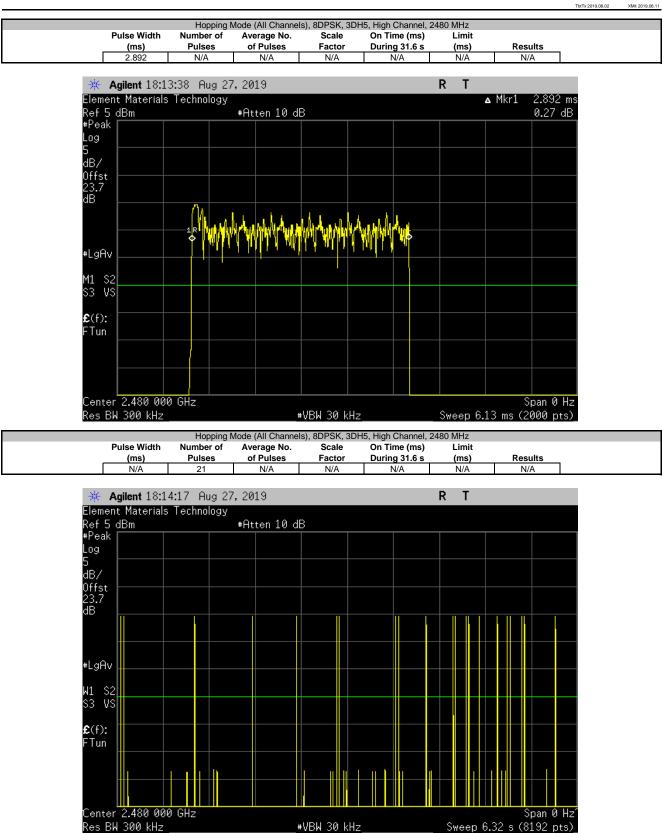


		Hopping	Mode (All Channe	ls) 8DPSK 3DI	H5, Low Channel,	2402 MH7	
	Pulse Width	Number of	Average No.	Scale	On Time (ms)	Limit	
-	(ms)	Pulses	of Pulses	Factor	During 31.6 s	(ms)	Results
	N/A	26	N/A	N/A	N/A	N/A	N/A
	-	2:33 Aug 27	, 2019			RT	
	ent Materials	Technology					
	6 dBm		#Atten 10 d	B			
#Pea	K						
Log							
5							
dB/							
0ffs: 23.7							
23.7 dB							
#LgA							
~E91	·*						
W1 3	S2						
W1 S3	JS I						
£ (f)	:						
FTun							
Cent	er 2.402 00	0 GHz					Span 0 Hz
	BW 300 kHz			⊭VBW 30 kHz		Sween 6	.32 s (8192 pts)
	Pulse Width	Hopping Number of	Mode (All Channe Average No.	els), 8DPSK, 3DI Scale	H5, Low Channel, On Time (ms)	2402 MHz Limit	
	(ms)	Pulses	of Pulses	Factor	During 31.6 s	(ms)	Results
ſ	2.892	N/A	23.75	5	343.43	400	Pass

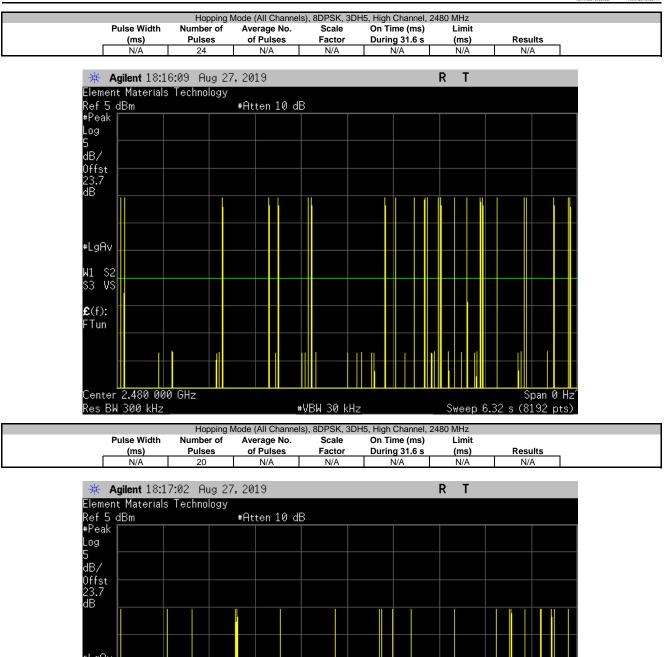
Calculation Only

No Screen Capture Required









#LgAv															
W1 S2															
W1 S2 S3 VS								H							
£ (f):															
FTun															
							11								
Center	2.480 00	0 GH:	Z										S	pan	0 Hz^
	300 kHz			+	⊧VBW 30	0 kH	z			S	weep 6	6.32			



		Hopping	Iode (All Channe	Ie) 80PSK 30H	5, High Channel,	2480 MH7	
	Pulse Width	Number of	Average No.	Scale	On Time (ms)	Limit	
	(ms)	Pulses	of Pulses	Factor	During 31.6 s	(ms)	Results
	N/A	21	N/A	N/A	N/A	N/A	N/A
	•	7:34 Aug 27	,2019			RT	
	ent Materials 5 dBm	Technology	#Atten 10 d	R			
#Peal	k 🗖 🗆 T		-incon 10 d				
Log							
5							
dB/							
Offst	: +						
23.7 dB							
dВ					L		
				┼┼┼┼┼			
#LgA	×						
มา <	52						
W1 S S3 V	is l						
£ (f):							
FTun							
Cente	er 2.480 00	0 GHz					Span 0 Hzî
Res B	3W 300 kHz			₩VBW 30 kHz		Sweep 6.	32 s (8192 pts)_
					5, High Channel,		
	Pulse Width	Number of	Average No.	Scale	On Time (ms)	Limit	Desults
Г	(ms) 2.892	Pulses N/A	of Pulses 21.5	Factor 5	During 31.6 s 310.89	(ms) 400	Results Pass
	2.032		21.0	J	510.03	400	1 000

Calculation Only

No Screen Capture Required



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
Power Supply - DC	Agilent	E3648A	TPE	NCR	NCR
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Block - DC	Fairview Microwave	SD3379	AMV	3-Jan-19	3-Jan-20
Attenuator	Fairview Microwave	SA18H-20	TKR	20-Dec-18	20-Dec-19
Generator - Signal	Agilent	E8257D	TGU	15-Feb-18	15-Feb-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	2-Jul-19	2-Jul-20

TEST DESCRIPTION

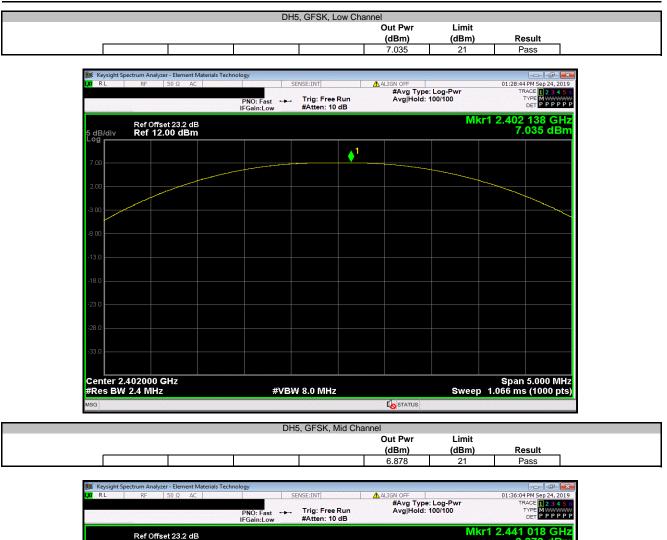
The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The peak output power was measured with the EUT set to low, medium and high transmit frequencies. The EUT was transmitting in a no hop mode at the data rate(s) listed in the datasheet.

The method found in ANSI C63.10:2013 Section 7.8.5 was used for a FHSS radio.



				TbtTx 2019.08.02	XMit 2019
	MWMII		Work Order:		
Serial Number:				30-Sep-19	
	: Masimo Corporation		Temperature:	22.3 °C	
	: Anami Joshi		Humidity:		
Project:			Barometric Pres.:		
	Mark Baytan	Power: 3.6 VDC	Job Site:	OC13	
EST SPECIFICATI	IONS	Test Method			
CC 15.247:2019		ANSI C63.10:2013			
COMMENTS					
eference Level Of	ffset: DC Block + 20 dB Atten	uator + RF Test Cable + Patch Cable = 23.2 dB			
EVIATIONS FROM	M TEST STANDARD				
one					
		11 -			
Configuration #	2	Simature			
		Signature			
			Out Pwr	L free M	
				Limit	
H5. GFSK			(dBm)	(dBm)	Result
/H3, GF3K			(dBm)		Result
JHD, GFSK	Low Channel		(dBm) 7.035		Result Pass
JHD, GFSK	Low Channel Mid Channel			(dBm)	
JH3, GF3K			7.035	(dBm) 21	Pass
2DH5, pi/4-DQPSK	Mid Channel High Channel		7.035 6.878	(dBm) 21 21	Pass Pass
	Mid Channel High Channel		7.035 6.878	(dBm) 21 21	Pass Pass
	Mid Channel High Channel		7.035 6.878 6.524	(dBm) 21 21 21	Pass Pass Pass
	Mid Channel High Channel Low Channel Mid Channel		7.035 6.878 6.524 7.804	(dBm) 21 21 21 21 21	Pass Pass Pass Pass
DH5, pi/4-DQPSK	Mid Channel High Channel Low Channel		7.035 6.878 6.524 7.804 7.067	(dBm) 21 21 21 21 21 21 21	Pass Pass Pass Pass Pass
DH5, pi/4-DQPSK DH5, 8-DPSK	Mid Channel High Channel Low Channel Mid Channel		7.035 6.878 6.524 7.804 7.067	(dBm) 21 21 21 21 21 21 21	Pass Pass Pass Pass Pass
DH5, pi/4-DQPSK	Mid Channel High Channel Low Channel Mid Channel High Channel		7.035 6.878 6.524 7.804 7.067 6.943	(dBm) 21 21 21 21 21 21 21 21	Pass Pass Pass Pass Pass Pass





	PNO: Fast Trig: Fr IFGain:Low #Atten:	ee Run 10 dB	#Avg Type: Log-Pwr Avg Hold: 100/100	TRACE 1 2 3 4 5 (TYPE M WWWWW DET P P P P P
Ref Offset 23.2 dB 5 dB/div Ref 12.00 dBm			N	/lkr1 2.441 018 GHz 6.878 dBm
7.00		1		
2.00				
3.00				
8.00				
13.0				
18.0				
23.0				
28.0				
33.0				
Center 2.441000 GHz Res BW 2.4 MHz	#VBW 8.0 MI	Hz	Swe	Span 5.000 MH ep 1.066 ms (1000 pts
SG			STATUS	



			DH5, GFSK, Hi				
				Out P		Limit	
				(dBn		(dBm)	Result
				6.52	4	21	Pass
	um Analyzer - Element Materials	Technology					
LXI RL	RF 50 Ω AC		SENSE:INT	ALIGN O	⊧ /g Type: L	.og-Pwr	01:41:14 PM Sep 24, 2019 TRACE 1 2 3 4 5
		PNO: Fast + IFGain:Low	Trig: Free F #Atten: 10 d	Run Avç	jHold: 10	0/100	TRACE 1 2 3 4 5 TYPE M WWWW DET P P P P P
R	Ref Offset 23.2 dB					Mkr	1 2.479 992 GH
5 dB/div R	Ref 12.00 dBm						6.524 dBn
				1			
7.00				·			
2.00							
-3.00							
-8.00							
-13.0							
-18.0							
-23.0							
-28.0							
-33.0							
Center 2.480							Span 5.000 MH: 1.066 ms (1000 pts
#Res BW 2.4	4 MHz	#\	/BW 8.0 MHz			Sweep	1.066 ms (1000 pts
MSG				to st	ATUS		
		2DF	15, pi/4-DQPSk	K, Low Channel			
				Out P	wr	Limit	
				(dBn	1)	(dBm)	Result
				7.80			Pass

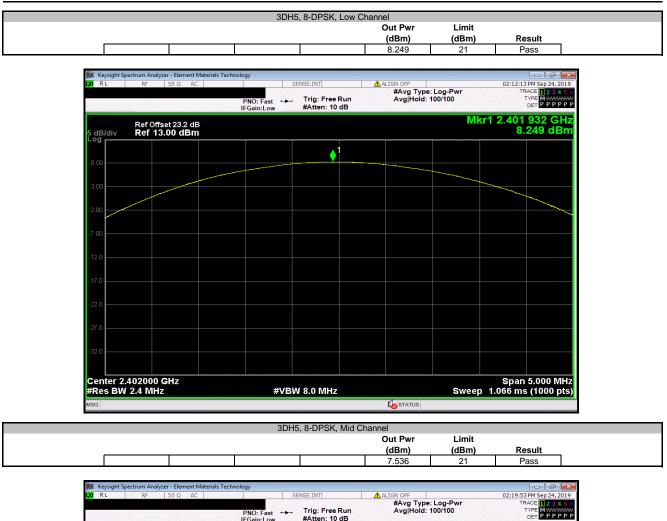
Keysight Spectrum Analyzer - Element Materials K RF 50 Ω AC		SENSE:INT	ALIGN OFF	01:48:25 PM Sep 24, 2019
	PNO: Fast ↔→ IFGain:Low	Trig: Free Run #Atten: 10 dB	#Avg Type: Log-Pwr Avg Hold: 100/100	TRACE 1 2 3 4 5 (TYPE M WWWW DET P P P P P
Ref Offset 23.2 dB dB/div Ref 13.00 dBm			М	kr1 2.402 063 GHz 7.804 dBm
8.00		↓ ¹		
3.00				
2.00				
7.00				
12.0				
17.0				
12.0				
7.0				
32.0				
Center 2.402000 GHz Res BW 2.4 MHz	#VB	N 8.0 MHz	Swee	Span 5.000 MH p 1.066 ms (1000 pts
SG			STATUS	



2DH5, pi/4-DQPSK, Mid Channel Out Pwr (dBm) Limit (dBm) Result 7,067 21 Pass PRO: Exerce Material Technology ALLEN OF 0133-778-52.2019 ALLEN OF 0133-778-52.2019 Ref Orset / 23.2 dB Ref Orset / 23.2 dB Mkr1 2.441 008 GHz 7.067 dBm Ref Orset / 23.2 dB Mkr1 2.441 008 GHz 7.067 dBm Ref Orset / 23.2 dB Mkr1 2.441 008 GHz 7.067 dBm Colspan="2">Span 5.000 MHz Span 5.								TbtTx 2019.08.02
Out Pvr (dBm) Limit (dBm) Result 1 7.067 21 Pass			2DH5,	pi/4-DQPSK, Mid	Channel			
Registive Spectrum Analyzer - Dement Materials Technology Static International Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image: Spectrum Analyzer - Dement Materials Technology Image					Out Pwr			
Registive Number of the sector of the s					(dBm)	(dBm)	Result	
Image: Second condition of the second conditio					7.067	21	Pass	
Image: Second condition of the second conditio								
BArg Type: Log-Pwr Trace Barg Trace Barg Barg Trace Barg Barg Barg Trace Barg Bar	🎉 Keysight Spectrum Analyzer	- Element Materials Technolo	gy					3
Mkr1 2.441 008 GHz 7.067 dBm Mkr1 2.441 008 GHz 7.067 dBm 20 1 1 1 1 20 1 1 1 1 1 20 1 1 1 1 1 1 20 <td>LXIRL RF S</td> <td>50 Ω AC</td> <td>S</td> <td>ENSE:INT</td> <td></td> <td></td> <td>01:53:47 PM Sep 24, 201</td> <td>9</td>	LXIRL RF S	50 Ω AC	S	ENSE:INT			01:53:47 PM Sep 24, 201	9
Mkr1 2.441 008 GHz 7.067 dBm Mkr1 2.441 008 GHz 7.067 dBm 20 1 1 1 1 20 1 1 1 1 1 20 1 1 1 1 1 1 20 <td></td> <td></td> <td></td> <td>Tria: Free Run</td> <td>#Avg Type AvalHold:</td> <td>: Log-Pwr 100/100</td> <td>TYPE MWWWW</td> <td>6 ₩</td>				Tria: Free Run	#Avg Type AvalHold:	: Log-Pwr 100/100	TYPE MWWWW	6 ₩
BL/dlv Ref 12.00 dBm 7.067 dBm 7.06 1 1 1 7.06 1 1 1 7.06 1 1 1 7.06 1 1 1 7.06 1 1 1 7.06 1 1 1 7.06 1 1 1 7.06 1 1 1 7.06 1 1 1 7.06 1 1 1 10 1 1 1 1 11 1 1 1 1 1 120 1 1 1 1 1 120 1 1 1 1 1 130 1 1 1 1 1 1 130 1 1 1 1 1 1 1 130 1 1 1 1 1 1 1 1 1 1 1 1 1 1							DETPPPP	P
6 dB Aldy Ref 12.00 dBm 7.05 / dBm 7.00 1 1 1 7.00 1 1 1 7.00 1 1 1 1 7.00 1 1 1 1 7.00 1 1 1	Ref Offse	23.2 dB				Mkr1	2.441 008 GH	z
7.00 1 7.00 1 <td< td=""><td>5 dB/div Ref 12.0</td><td>0 dBm</td><td></td><td></td><td></td><td></td><td>7.067 dBn</td><td>n</td></td<>	5 dB/div Ref 12.0	0 dBm					7.067 dBn	n
7.00				4				
2.0 3.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4				↓				
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3.00 3.00 4.00 4.00 4.00 4.00 4.00 4.00 4.00 4.00 7.00								
800 130 130 1400 130 <td< td=""><td>2.00</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	2.00							
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-180 -230 -230 -230 -200 -230 -200 -230 -200 -230 -200 <td>-8.00</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	-8.00							
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23.0	-13.0							
23.0								
28.0 33.0 Span 5.000 MHz .33.0	-18.0							
28.0 33.0 Span 5.000 MHz .33.0								
33.0 Center 2.441000 GHz #Res BW 2.4 MHz Span 5.000 MHz Sweep 1.066 ms (1000 pts) MSG 2DH5, pi/4-DQPSK, High Channel Out Pwr Limit (dBm) (dBm) Result 6.943 21 Pass Keysight Spectrum Analyzer - Element Materials Technology W RL RE 0.00 SEINT ALIGN OFF 0.20058PM Sep 24, 2019 Trig: Free Run (FGain:Low Trig: Free Run #Avg Type: Log-Pwr Trig: PP P P	-23.0							
33.0 Center 2.441000 GHz #Res BW 2.4 MHz Span 5.000 MHz Sweep 1.066 ms (1000 pts) MSG 2DH5, pi/4-DQPSK, High Channel Out Pwr Limit (dBm) (dBm) Result 6.943 21 Pass Keysight Spectrum Analyzer - Element Materials Technology W RL RE 0.00 SEINT ALIGN OFF 0.20058PM Sep 24, 2019 Trig: Free Run (FGain:Low Trig: Free Run #Avg Type: Log-Pwr Trig: PP P P								
Center 2.441000 GHz Span 5.000 MHz #Res BW 2.4 MHz \$Sweep 1.066 ms (1000 pts) Msg Cost and the status 2DH5, pi/4-DQPSK, High Channel Out Pwr Limit (dBm) Result 0 6.943 21 Pass Msg Cost and the status Cost and the status Cost and the status Msg Cost and the status Cost and the status Cost and the status Limit Out Pwr Limit Cost and the status Msg Cost and the status Cost and the status Cost and the status Limit Cost and the status Cost and the status Cost and the status Cost and the status RL RF S0 Q AC SENSE:INT ALIGN OFF O2:00:58 PM sep 24, 2019 PNO: Fast + Trig: Free Run #Avg]Hold: 100/100 Tree PP PP PND: Fast + Trig: Free Run Avg]Hold: 100/100 Tree PP PP	-28.0							
Center 2.441000 GHz Span 5.000 MHz #Res BW 2.4 MHz \$Sweep 1.066 ms (1000 pts) Msg Cost and the status 2DH5, pi/4-DQPSK, High Channel Out Pwr Limit (dBm) Result 0 6.943 21 Pass Msg Cost and the status Cost and the status Cost and the status Msg Cost and the status Cost and the status Cost and the status Limit Out Pwr Limit Cost and the status Msg Cost and the status Cost and the status Cost and the status Limit Cost and the status Cost and the status Cost and the status Cost and the status RL RF S0 Q AC SENSE:INT ALIGN OFF O2:00:58 PM sep 24, 2019 PNO: Fast + Trig: Free Run #Avg]Hold: 100/100 Tree PP PP PND: Fast + Trig: Free Run Avg]Hold: 100/100 Tree PP PP								
#Res BW 2.4 MHz #VBW 8.0 MHz Sweep 1.066 ms (1000 pts) MSG Image: Status 2DH5, pi/4-DQPSK, High Channel Qut Pwr Limit (dBm) Result 6.943 21 Pass Image: Status 6.943 21 Image: Status Status 02:00:58 PM Sep 24, 2019 Image: Status Status 1mit Image: Status Status 02:00:58 PM Sep 24, 2019 Image: Status Status Status Image: Status Status 02:00:58 PM Sep 24, 2019 Image: Status Status Status Image: Status Trig: Free Run ALIGN OFF 02:00:58 PM Sep 24, 2019 Image: Status Status Status Status Image: Status Status ALIGN OFF 02:00:58 PM Sep 24, 2019 Image: Status Status Status Status Status Image: Status Status Status Status Status Image: Status Status Status Status Status Image: St	-33.0							
#Res BW 2.4 MHz #VBW 8.0 MHz Sweep 1.066 ms (1000 pts) MSG Image: Status 2DH5, pi/4-DQPSK, High Channel Qut Pwr Limit (dBm) Result 6.943 21 Pass Image: Status 6.943 21 Image: Status Status 02:00:58 PM Sep 24, 2019 Image: Status Status 1mit Image: Status Status 02:00:58 PM Sep 24, 2019 Image: Status Status Status Image: Status Status 02:00:58 PM Sep 24, 2019 Image: Status Status Status Image: Status Trig: Free Run ALIGN OFF 02:00:58 PM Sep 24, 2019 Image: Status Status Status Status Image: Status Status ALIGN OFF 02:00:58 PM Sep 24, 2019 Image: Status Status Status Status Status Image: Status Status Status Status Status Image: Status Status Status Status Status Image: St								
#Res BW 2.4 MHz #VBW 8.0 MHz Sweep 1.066 ms (1000 pts) MSG Image: Status 2DH5, pi/4-DQPSK, High Channel Qut Pwr Limit (dBm) Result 6.943 21 Pass Image: Status 6.943 21 Image: Status Status 02:00:58 PM Sep 24, 2019 Image: Status Status 1mit Image: Status Status 02:00:58 PM Sep 24, 2019 Image: Status Status Status Image: Status Status 02:00:58 PM Sep 24, 2019 Image: Status Status Status Image: Status Trig: Free Run ALIGN OFF 02:00:58 PM Sep 24, 2019 Image: Status Status Status Status Image: Status Status ALIGN OFF 02:00:58 PM Sep 24, 2019 Image: Status Status Status Status Status Image: Status Status Status Status Status Image: Status Status Status Status Status Image: St								
MSG 2DH5, pi/4-DQPSK, High Channel Out Pwr Limit (dBm) Result 6.943 21 Pass		HZ	#\/P\/			Sween 1	Span 5.000 MH	Z N
2DH5, pi/4-DQPSK, High Channel Out Pwr Limit (dBm) (dBm) RL 6.943 21 PRO: Fast Trig: Free Run IF Gain:Low ALIGN OFF 02:00:58 PWr Avg[Hold: 100/100			 v D v	¥ 0.0 IVII 12	T anoma	oweep i	.000 ms (1000 pts	<u>u</u>
Out Pwr Limit (dBm) (dBm) (dBm) RE 6.943 21 Pass Keysight Spectrum Analyzer - Element Materials Technology Image: Constraint of the second	MSG				STATUS			
Out Pwr Limit (dBm) (dBm) (dBm) RE 6.943 21 Pass Keysight Spectrum Analyzer - Element Materials Technology Image: Constraint of the second			2045	ni/A-DOPSK High	Channel			
(dBm) (dBm) Result 6.943 21 Pass Keysight Spectrum Analyzer - Element Materials Technology Comparison Comparison RL RF 50 Ω AC PNO: Fast → Trig: Free Run IFGain:Low Trig: Free Run #Atten: 10 dB #AugHold: 100/100			20113, 1			Limit		
Image: Sector of the secto							Result	
Keysight Spectrum Analyzer - Element Materials Technology								
OX RF 50 Ω AC SENSE:INT ▲ ALIGN OFF 02:00:58 PM Sep 24, 2019 PNO: Fast IFGain:Low SENSE:INT #Avg Type: Log-Pwr TRACE 12:34:356 PNO: Fast IFGain:Low -> Trig: Free Run #Atten: 10 dB Avg Hold: 100/100 TYPE	I				0.010			
OX RF 50 Ω AC SENSE:INT ▲ ALIGN OFF 02:00:58 PM Sep 24, 2019 PNO: Fast IFGain:Low SENSE:INT #Avg Type: Log-Pwr TRACE 12:34:356 PNO: Fast IFGain:Low -> Trig: Free Run #Atten: 10 dB Avg Hold: 100/100 TYPE	Keysight Spectrum Analyzer	- Element Materials Technolo	qy					5
IFGain:Low #Atten: 10 dB DET LEPPEPP				ENSE:INT	ALIGN OFF		02:00:58 PM Sep 24, 201	9
IFGain:Low #Atten: 10 dB DET LEPPEPP				Trig: Free Rup	#Avg Type	: Log-Pwr 100/100	TRACE 1 2 3 4 5 TYPE M HAAMAAA	6 ₩
					Avginola.		DET PPPP	P
						Mkr1	2 480 068 GH	

KL KF SUSZ AC	PNO: Fast ↔	Trig: Free Run #Atten: 10 dB	#Avg Type: Log-Pwr Avg Hold: 100/100	TRACE 1 2 3 4 5 6 TYPE M WWWW DET P P P P P
Ref Offset 23.2 dB 5 dB/div Ref 12.00 dBm			M	kr1 2.480 068 GHz 6.943 dBm
7.00		♦ ¹		
2.00				
-3.00				
-8.00				
-13.0				
-18.0				
-23.0				
-28.0				
-33.0				
Center 2.480000 GHz #Res BW 2.4 MHz	#VBW	8.0 MHz	Swee	Span 5.000 MHz p 1.066 ms (1000 pts)
MSG			STATUS	





LXI RL RF 50Ω AC	SENSE:INT	ALIGN OFF	02:19:53 PM Sep 24, 2019
	PNO: Fast 🛶 Trig: Free Run IFGain:Low #Atten: 10 dB	#Avg Type: Log-Pwr Avg Hold: 100/100	TRACE 1 2 3 4 5 6 TYPE M WWWWW DET P P P P P P
Ref Offset 23.2 dB 5 dB/div Ref 13.00 dBm		Mkı	1 2.440 932 GHz 7.536 dBm
Log			
8.00			
3.00			
-7.00			
-12.0			
-17.0			
-22.0			
-27.0			
-32.0			
Center 2.441000 GHz	#VPW 0.0 MU-		Span 5.000 MHz 1.066 ms (1000 pts)
#Res BW 2.4 MHz	#VBW 8.0 MHz	Sweep	1.000 ms (1000 pts)



	3DH5, 8-DPSK, F	Out Pwr (dBm)	Limit (dBm)	Result
		7.393	21	Pass
· · · ·			•	
💓 Keysight Spectrum Analyzer - Element Material:	Technology			
UX RL RF 50Ω AC	SENSE:INT	ALIGN OFF		02:23:42 PM Sep 24, 2019
	PNO: Fast 🛶 Trig: Free R	un Avg Hold:		TRACE 1 2 3 4 5 6 TYPE M WWWW DET P P P P P
	PNO: Fast +++ Trig: Free R IFGain:Low #Atten: 10 c	IB	100/100	DET PPPPP
			Mkr	1 2.480 028 GHz
Ref Offset 23.2 dB 5 dB/div Ref 12.00 dBm				7.393 dBm
Log				
		1		
7.00				
2.00				
-3.00				
-8.00				
-13.0				
-18.0				
-23.0				
-28.0				
22.0				
-33.0				
Center 2.480000 GHz				Span 5.000 MHz
#Res BW 2.4 MHz	#VBW 8.0 MHz		Sweep	1.066 ms (1000 pts)



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
Power Supply - DC	Agilent	E3648A	TPE	NCR	NCR
Cable	Fairview Microwave	SCA1814-0101-120	OCZ	NCR	NCR
Block - DC	Fairview Microwave	SD3379	AMV	3-Jan-19	3-Jan-20
Attenuator	Fairview Microwave	SA18H-20	TKR	20-Dec-18	20-Dec-19
Generator - Signal	Agilent	E8257D	TGU	15-Feb-18	15-Feb-21
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	2-Jul-19	2-Jul-20

TEST DESCRIPTION

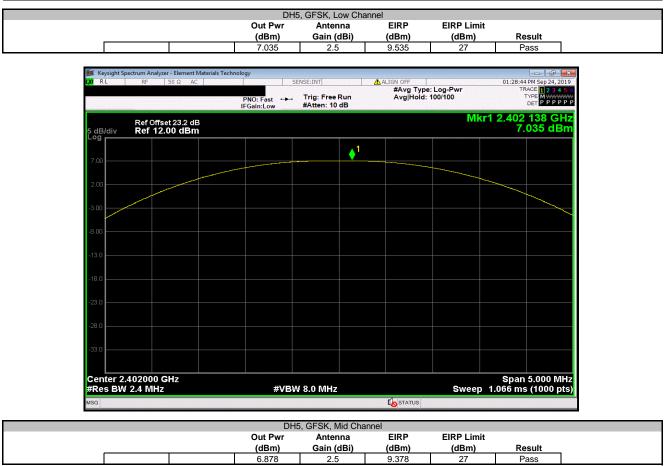
The peak output power was measured with the EUT set to low, medium and high transmit frequencies. The EUT was transmitting in a no hop mode at the data rate(s) listed in the datasheet.

The method found in ANSI C63.10:2013 Section 7.8.5 was used for a FHSS radio.



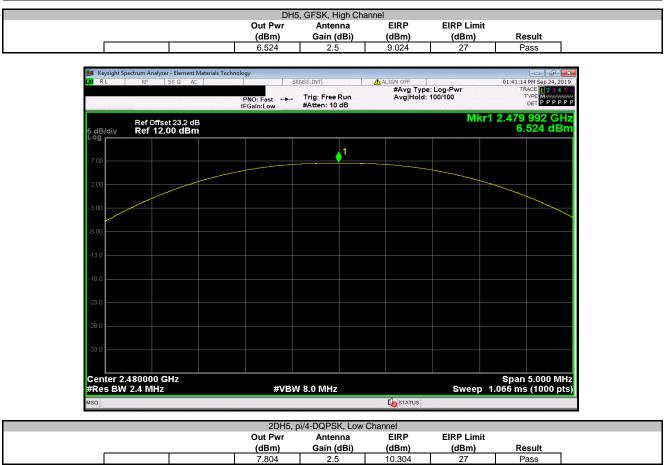
	MWMII		-					Work Order:		
Serial Number:									23-Sep-19	
Customer:	: Masimo Corporation							Temperature:	23.3 °C	
	: Anami Joshi								51.4% RH	
Project:								Barometric Pres.:		
	: Mark Baytan				3.6 VDC			Job Site:	OC13	
EST SPECIFICAT	IONS				Test Method					
CC 15.247:2019					ANSI C63.10:2013					
COMMENTS										
eference Level O	ffset: DC Block + 20dB Atte	enuator + RF Test Cab	le + Patch Cabl	e = 23.2 dB						
	A TEAT ATAMPARA									
EVIATIONS FROM	MIESISIANDARD									
EVIATIONS FROM	M IESI SIANDARD									
	M TEST STANDARD			11						
	2		_	UL+ E	3.t-					
lone		Signature	e	14-KE	Sy+					
lone		Signature	9	14-4 E	3 ₁ +	Out Pwr	Antenna	EIRP	EIRP Limit	
lone		Signature	9	14-4 E	3 ₁ +	Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result
one	2	Signature	e	14-k E	3,+					Result
lone	2 Low Channel	Signature	9	U++ E	3,+	(dBm) 7.035	Gain (dBi) 2.5	(dBm) 9.535		Pass
lone	2 Low Channel Mid Channel	Signature	9	Ú-k E	Sy+	(dBm) 7.035 6.878	Gain (dBi) 2.5 2.5	(dBm) 9.535 9.378	(dBm) 27 27	Pass Pass
tone Configuration # DH5, GFSK	2 Low Channel Mid Channel High Channel	Signature	9	U-k E	3,+	(dBm) 7.035	Gain (dBi) 2.5	(dBm) 9.535	(dBm) 27	Pass
tone Configuration # DH5, GFSK	2 Low Channel Mid Channel High Channel	Signature	9	U-+ E	5,+	(dBm) 7.035 6.878 6.524	Gain (dBi) 2.5 2.5 2.5	(dBm) 9.535 9.378 9.024	(dBm) 27 27 27 27	Pass Pass Pass
tone Configuration # DH5, GFSK	2 Low Channel Mid Channel High Channel Low Channel	Signature	9	14-k E	Sy+	(dBm) 7.035 6.878 6.524 7.804	Gain (dBi) 2.5 2.5 2.5 2.5	(dBm) 9.535 9.378 9.024 10.304	(dBm) 27 27 27 27 27	Pass Pass Pass Pass
tone Configuration # DH5, GFSK	2 Low Channel Mid Channel High Channel Low Channel Mid Channel	Signature	9	U-+ E	5,+	(dBm) 7.035 6.878 6.524 7.804 7.067	Gain (dBi) 2.5 2.5 2.5 2.5 2.5 2.5	(dBm) 9.535 9.378 9.024 10.304 9.567	(dBm) 27 27 27 27	Pass Pass Pass
lone Configuration # DH5, GFSK DH5, pi/4-DQPSK	2 Low Channel Mid Channel High Channel Low Channel	Signature	θ	U-+ E	Sy+	(dBm) 7.035 6.878 6.524 7.804	Gain (dBi) 2.5 2.5 2.5 2.5	(dBm) 9.535 9.378 9.024 10.304	(dBm) 27 27 27 27 27	Pass Pass Pass Pass
lone Configuration # DH5, GFSK DH5, pi/4-DQPSK	2 Low Channel Mid Channel High Channel Low Channel Mid Channel High Channel	Signature	9	14-k E	5,1-	(dBm) 7.035 6.878 6.524 7.804 7.067	Gain (dBi) 2.5 2.5 2.5 2.5 2.5 2.5	(dBm) 9.535 9.378 9.024 10.304 9.567	(dBm) 27 27 27 27 27 27 27	Pass Pass Pass Pass Pass
Ione Configuration # DH5, GFSK DH5, pi/4-DQPSK	2 Low Channel Mid Channel High Channel Low Channel High Channel Low Channel	Signature	9	U-k E	3,+	(dBm) 7.035 6.878 6.524 7.804 7.067 6.943 8.249	Gain (dBi) 2.5 2.5 2.5 2.5 2.5 2.5 2.5 2.5	(dBm) 9.535 9.378 9.024 10.304 9.567 9.443 10.749	(dBm) 27 27 27 27 27 27 27	Pass Pass Pass Pass Pass
lone	2 Low Channel Mid Channel High Channel Low Channel Mid Channel High Channel	Signature	θ	U-+ E	Sy+	(dBm) 7.035 6.878 6.524 7.804 7.804 7.067 6.943	Gain (dBi) 2.5 2.5 2.5 2.5 2.5 2.5 2.5	(dBm) 9.535 9.378 9.024 10.304 9.567 9.443	(dBm) 27 27 27 27 27 27 27 27	Pass Pass Pass Pass Pass Pass





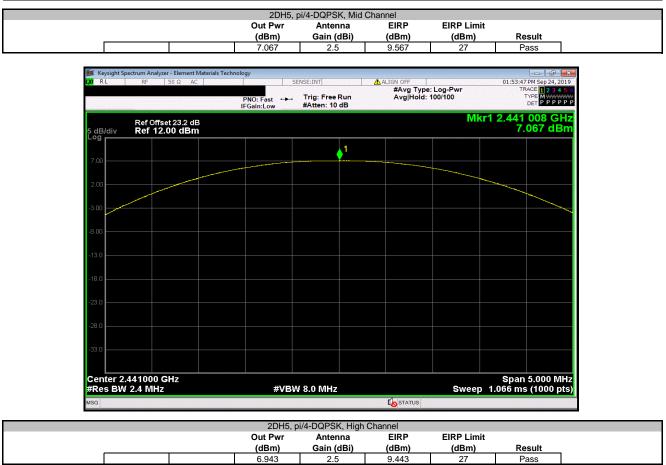
RL RF 50 Ω AC	5	ENSE:INT	ALIGN OFF	01:36:04 PM Sep 24, 201
	PNO: Fast ↔→ IFGain:Low	Trig: Free Run #Atten: 10 dB	#Avg Type: Log-Pwr Avg Hold: 100/100	TRACE 1 2 3 4 5 TYPE MWWW DET P P P P
Ref Offset 23.2 dB dB/div Ref 12.00 dBm				Mkr1 2.441 018 GH 6.878 dBi
00		1		
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.0				
o				
0				
.0				
.0				
enter 2.441000 GHz				Span 5.000 Mi eep 1.066 ms (1000 pi
tes BW 2.4 MHz	#VBV	V 8.0 MHz	SW	eep 1.066 ms (1000 pt





RL RF 50 Ω AC	SENSE:I	T	ALIGN OFF	01:48:25 PM Sep 24, 20
		g: Free Run ten: 10 dB	#Avg Type: Log-Pwr Avg Hold: 100/100	TRACE 1 2 3 4 TYPE M WWW DET P P P P
Ref Offset 23.2 dB B/div Ref 13.00 dBm			MI	r1 2.402 063 GI 7.804 dB
0		↓ ¹		
10				
0				
0				
0				
0				
]				
nter 2.402000 GHz es BW 2.4 MHz	#VBW 8.0	MHz	Sweet	Span 5.000 M p 1.066 ms (1000 p
(es BW 2.4 MHz	#VBW 8.0	WIHZ	Sweet	o 1.066 ms (1000 p





RL RF 50 Ω AC	SENSE:INT	ALIGN OFF	02:00:58 PM Sep 24, 20
	PNO: Fast Trig: Free Ru IFGain:Low #Atten: 10 dE		TRACE 1 2 3 4 TYPE M WWW DET P P P P
Ref Offset 23.2 dB B/div Ref 12.00 dBm		Mł	(r1 2.480 068 GH 6.943 dB
		1	
0			
0			
0			
0			
0			
0			
0			
nter 2.480000 GHz es BW 2.4 MHz	#VBW 8.0 MHz	Sweer	Span 5.000 M 1.066 ms (1000 p





RL	ctrum Analyzer - Element Materials RF 50 Ω AC	57	SENSE:INT	ALIGN OFF	02:19:53 PM Sep 24, 20
		PNO: Fast ↔ IFGain:Low	. Trig: Free Run #Atten: 10 dB	#Avg Type: Log-Pwr Avg Hold: 100/100	TRACE 1 2 3 4 TYPE M WWW DET P P P P
B/div	Ref Offset 23.2 dB Ref 13.00 dBm			M	kr1 2.440 932 GH 7.536 dB
			1		
10					
0					
0					
o					
0					
0					
o					
	41000 GHz 2.4 MHz	#\/	W 8.0 MHz	Swoo	Span 5.000 M p 1.066 ms (1000 p
	2.41 1012	#VE	W 0.0 WITZ	STATUS	p 1.000 his (1000 pi

2.5

10.036

27

Pass

7.536



		, 8-DPSK, High C			
	Out Pwr	Antenna	EIRP	EIRP Limit	
·	(dBm)	Gain (dBi)	(dBm)	(dBm)	Result
	7.393	2.5	9.893	27	Pass
💓 Keysight Spectrum Analyzer - Element Materia					
KI RF 50 Ω AC	S	INSE:INT	ALIGN OFF	e: Log-Pwr	02:23:42 PM Sep 24, 2019
	PNO: Fast +++	Trig: Free Run	Avg Hold:		TRACE 1 2 3 4 5 6 TYPE M WWWW DET P P P P P P
	IFGain:Low	#Atten: 10 dB			DET PPPPP
Ref Offset 23.2 dB				Mkr1	2.480 028 GHz
5 dB/div Ref 12.00 dBm					7.393 dBm
		. 1			
7.00		• `			
7.00					
2.00					
-3.00					
-8.00					
-13.0					
-18.0					
22.0					
-23.0					
-28.0					
-2013					
-33.0					
-33.0					
Center 2.480000 GHz					Span 5.000 MHz
#Res BW 2.4 MHz	#VBV	/ 8.0 MHz		Sweep 1	l.066 ms (1000 pts)
MSG			STATUS		