Starkey Laboratories, Inc.

SurfLink Mini Mobile Adapter

FCC 15.207:2017

FCC 15.247:2017

Bluetooth Radio

Report # STAK0080

NVLAP Lab Code: 200881-0

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CERTIFICATE OF TEST

2017-1-25

Last Date of Test: February 7, 2017
Starkey Laboratories, Inc.
Model: SurfLink Mini Mobile Adapter

Radio Equipment Testing

Standards

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

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	Pass	
7.8.2	Carrier Frequency Separation	Yes	Pass	
7.8.3	Number of Hopping Frequencies	Yes	Pass	
7.8.4	Dwell Time	Yes	Pass	
7.8.5	Output Power	Yes	Pass	
7.8.6	Band Edge Compliance	Yes	Pass	
7.8.6	Band Edge Compliance - Hopping Mode	Yes	Pass	
7.8.7	Occupied Bandwidth	Yes	Pass	
7.8.8	Spurious Conducted Emissions	Yes	Pass	

Deviations From Test Standards

None

Approved By:

Dean Ghizzone, General Manager

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information.

REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		

ACCREDITATIONS AND AUTHORIZATIONS

2017.1.25

United States

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

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

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

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

European Union

European Commission – Validated by the European Commission as a Notified Body under the R&TTE Directive.

Australia/New Zealand

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

Korea

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

Japan

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

Taiwan

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

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

Singapore

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

Israel

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

Hong Kong

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

Vietnam

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

SCOPE

For details on the Scopes of our Accreditations, please visit:
http://portlandcustomer.element.com/ts/scope/scope.htm
http://gsi.nist.gov/global/docs/cabs/designations.html

MEASUREMENT UNCERTAINTY

TMU.2015.07.10

Measurement Uncertainty

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

A measurement uncertainty estimation has been performed for each test per our internal quality document 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.

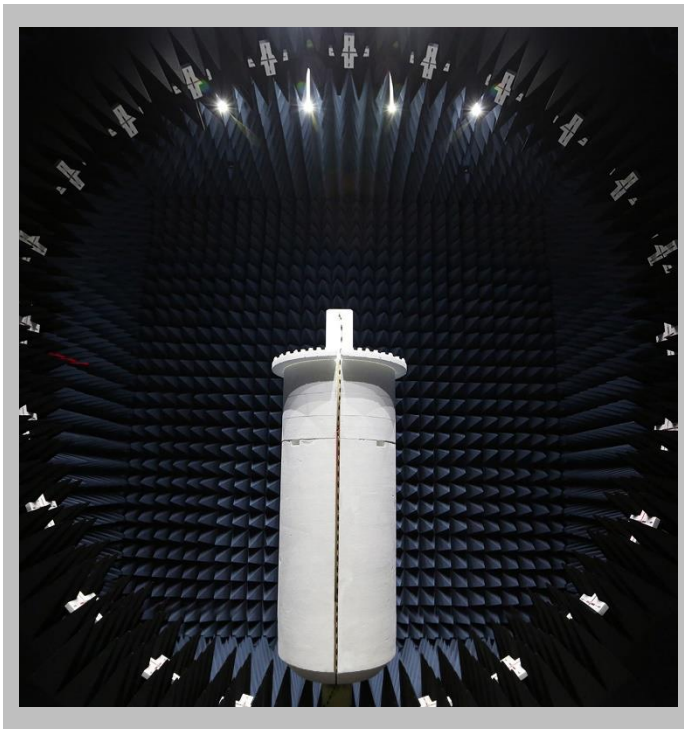
The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

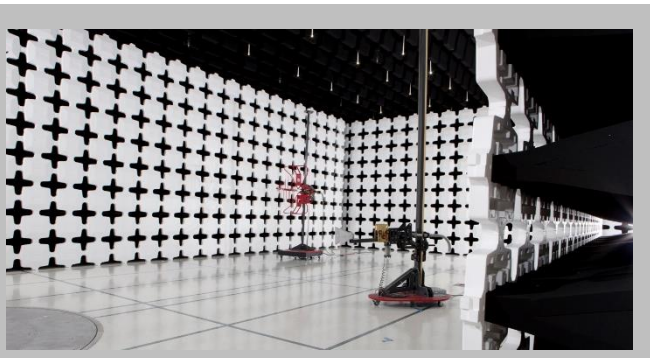
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%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

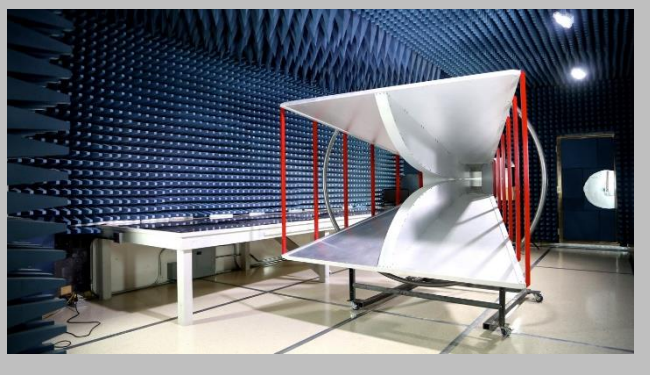
FACILITIES

2017.1.25

California	Minnesota	New York	Oregon	Texas	Washington
Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-08, MN10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Labs NC01-05 19201 120th Ave NE Bothell, WA 98011 (425)984-6600
NVLAP					
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
Innovation, Science and Economic Development Canada					
2834B-1, 2834B-3	2834E-1	N/A	2834D-1, 2834D-*2*	2834G-1	2834F-1
VCCI					
A-0029	A-0109	N/A	A-0108	A-0201	A-0110
Recognized Phase I CAB for ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157

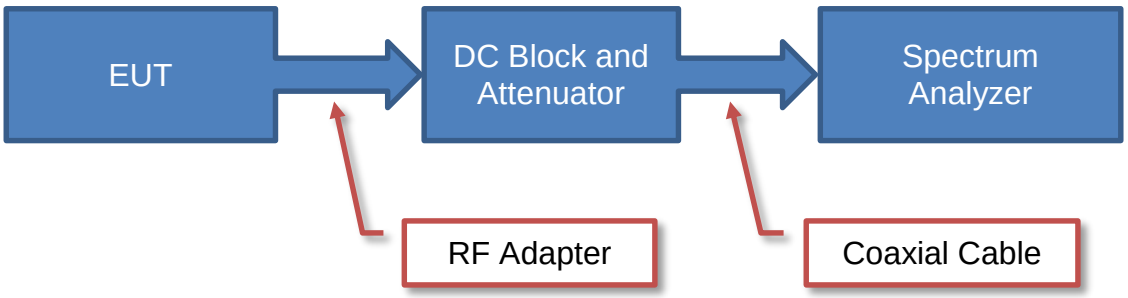




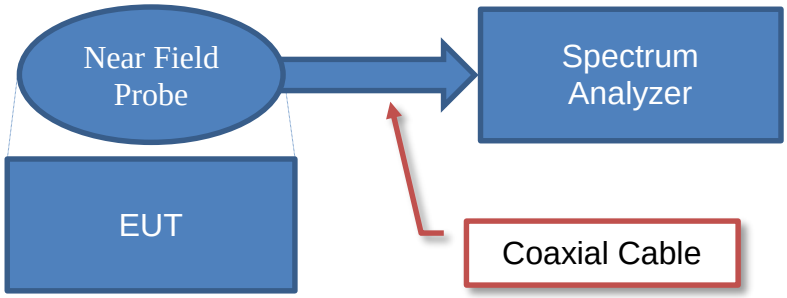


Test Setup Block Diagrams

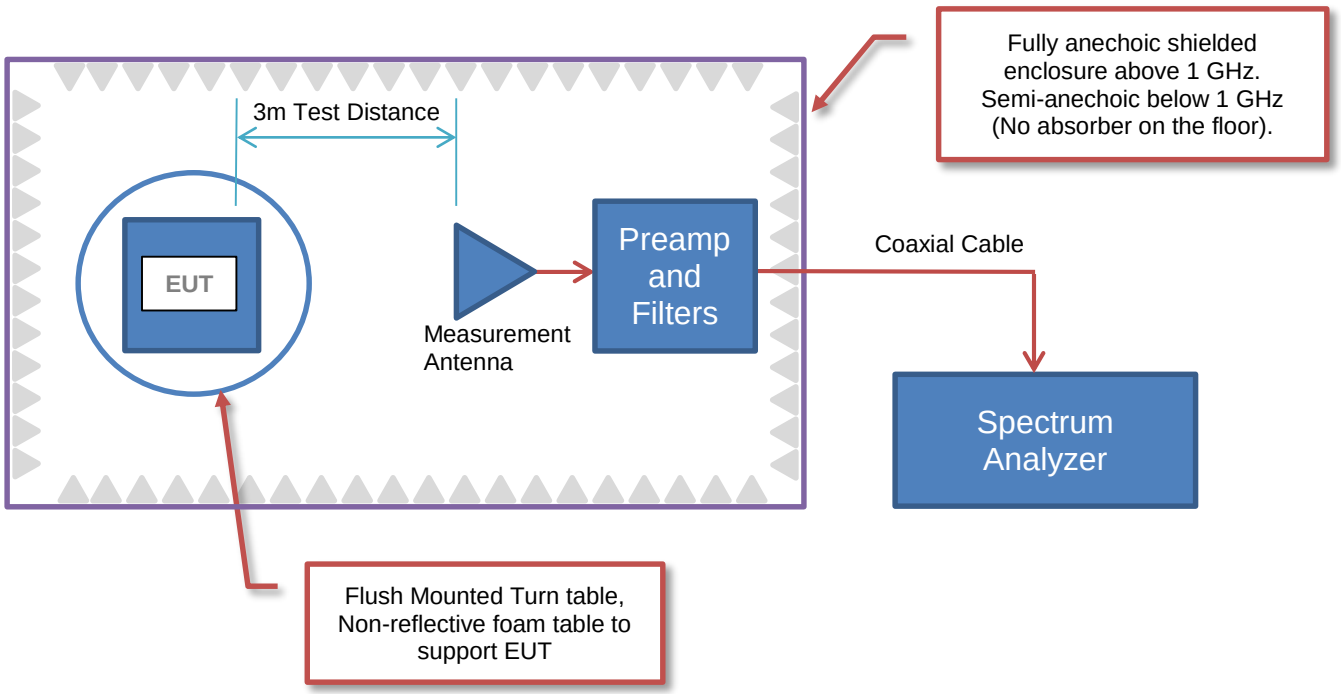
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



Spurious Radiated Emissions



PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Starkey Laboratories, Inc.
Address:	6600 Washington Ave. SO.
City, State, Zip:	Eden Prairie, MN 55344
Test Requested By:	Bill Mitchell
Model:	SurfLink Mini Mobile Adapter
First Date of Test:	January 23, 2017
Last Date of Test:	February 7, 2017
Receipt Date of Samples:	January 23, 2017
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
SurfLink Mini Mobile Adapter attaches to SurfLink Remote Microphone to comprise the SurfLink Mini Mobile system, which is designed to stream audio from a Bluetooth device to 900MHz wireless hearing instruments.

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

CONFIGURATIONS

Configuration STAK0080- 1

Software/Firmware Running during test	
Description	**Version**
BlueTest3	2.5.8.667

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
SurfLink Mini Mobile Adapter	Starkey Laboratories	500	00017006902

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Communication Microphone	Starkey Laboratories	400	160493708
AC Adapter (SurfLink)	Phihon	PSA05F-050Q	DC10003938A2

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB Cable (AC Adapter)	No	0.8m	Yes	AC Adapter (SurfLink)	SurfLink Mini Mobile Adapter

CONFIGURATIONS

Configuration STAK0080- 2

Software/Firmware Running during test	
Description	**Version**
BlueTest3	2.5.8.667

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
SurfLink Mini Mobile Adapter	Starkey Laboratories	500	00017006902

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Communication Microphone	Starkey Laboratories	400	160493708
Laptop	Lenovo	T430	11306
AC Adapter (Laptop)	Lenovo	ADLX90NCT2A	11S45N0311Z1ZLZ633M0T4 Rev C

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
DC Cable (Laptop)	No	1.4m	Yes	AC Adapter (Laptop)	Laptop
AC Cable (Laptop)	No	0.8m	No	AC Mains	AC Adapter (Laptop)
USB Cable (Laptop)	No	0.8m	Yes	Laptop	SurfLink Mini Mobile Adapter

Configuration STAK0080- 4

Software/Firmware Running during test	
Description	**Version**
BlueTest3	2.5.8.667

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
SurfLink Mini Mobile Adapter	Starkey Laboratories	500	00017006905

CONFIGURATIONS

Configuration STAK0080- 5

Software/Firmware Running during test	
Description	**Version**
BlueTest3	2.5.8.667

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
SurfLink Mini Mobile Adapter	Starkey Laboratories	500	00017006902

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Communication Microphone	Starkey Laboratories	400	160493708
AC Adapter (SurfLink)	Phihon	PSA05F-050Q	DC10003938A2

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB Cable (AC Adapter)	No	0.8m	Yes	AC Adapter (SurfLink)	SurfLink Mini Mobile Adapter

MODIFICATIONS

2017-1-25

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	1/23/2017	Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	2/3/2017	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	2/7/2017	Duty Cycle	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
4	2/7/2017	Carrier Frequency Separation	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
5	2/7/2017	Number of Hopping Frequencies	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
6	2/7/2017	Dwell Time	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
7	2/7/2017	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
8	2/7/2017	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
9	2/7/2017	Band Edge Compliance – Hopping Mode	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
10	2/7/2017	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
11	2/7/2017	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

POWERLINE CONDUCTED EMISSIONS

WTD.2016.12.19

TEST DESCRIPTION

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Receiver	Rohde & Schwarz	ESR7	ARI	6/14/2016	6/14/2017
LISN	Solar Electronics	9252-50-R-24-BNC	LIY	3/21/2016	3/21/2017
Cable - Conducted Cable Assembly	Element	MNC, HGN, TYK	MNCA	1/29/2016	1/29/2017

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

STAK0080-1
STAK0080-2

MODES INVESTIGATED

Tx Modulated on Mid Channel 20 (2442MHz).

POWERLINE CONDUCTED EMISSIONS

WTD.2016.12.19

EUT:	SurfLink Mini Mobile Adapter	Work Order:	STAK0080
Serial Number:	00017006902	Date:	01/23/2017
Customer:	Starkey Laboratories, Inc.	Temperature:	23.1°C
Attendees:	Charlie Esch	Relative Humidity:	28%
Customer Project:	None	Bar. Pressure:	1012 mb
Tested By:	Dustin Sparks, Kyle McMullan	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	STAK0080-1

TEST SPECIFICATIONS

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

TEST PARAMETERS

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

COMMENTS

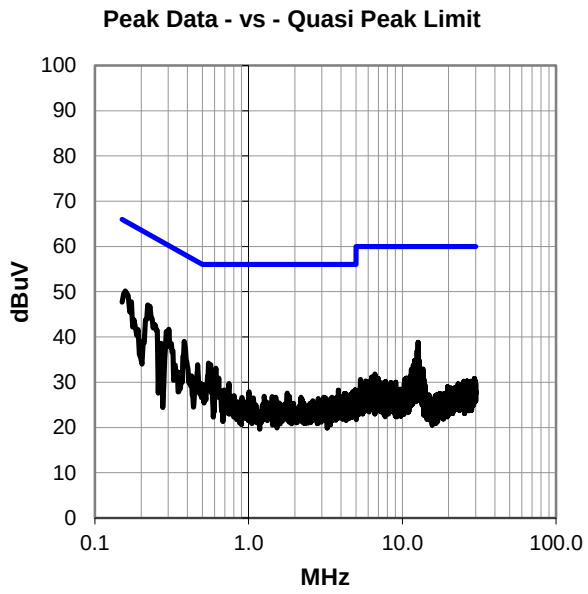
Companion Microphone powered on.

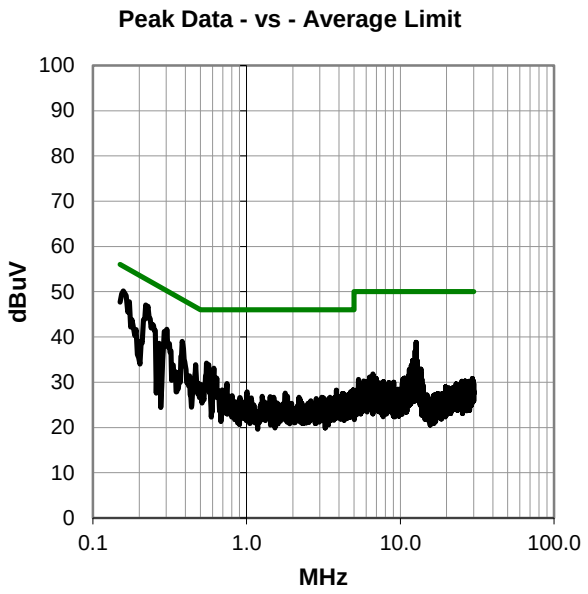
EUT OPERATING MODES

Tx Modulated on Mid Channel 20 (2442MHz).

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

WTD.2016.12.19

RESULTS - Run #4

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.157	29.8	20.4	50.2	65.6	-15.4
0.221	26.8	20.3	47.1	62.8	-15.7
0.303	21.5	20.2	41.7	60.2	-18.5
0.381	18.8	20.2	39.0	58.3	-19.3
12.656	17.9	20.9	38.8	60.0	-21.2
0.549	14.1	20.1	34.2	56.0	-21.8
0.564	13.8	20.1	33.9	56.0	-22.1
0.269	18.4	20.2	38.6	61.1	-22.5
0.467	13.8	20.1	33.9	56.6	-22.7
0.613	13.0	20.1	33.1	56.0	-22.9
12.473	16.1	20.8	36.9	60.0	-23.1
12.667	14.4	20.9	35.3	60.0	-24.7
0.639	10.8	20.1	30.9	56.0	-25.1
12.036	14.0	20.8	34.8	60.0	-25.2
12.831	13.9	20.9	34.8	60.0	-25.2
12.596	13.8	20.9	34.7	60.0	-25.3
12.275	13.8	20.8	34.6	60.0	-25.4
12.753	13.6	20.9	34.5	60.0	-25.5
12.712	13.5	20.9	34.4	60.0	-25.6
0.329	13.6	20.2	33.8	59.5	-25.7
12.409	13.4	20.8	34.2	60.0	-25.8
12.014	13.3	20.8	34.1	60.0	-25.9
12.544	13.2	20.9	34.1	60.0	-25.9
12.693	13.2	20.9	34.1	60.0	-25.9
12.771	13.1	20.9	34.0	60.0	-26.0
12.021	13.0	20.8	33.8	60.0	-26.2

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.157	29.8	20.4	50.2	55.6	-5.4
0.221	26.8	20.3	47.1	52.8	-5.7
0.303	21.5	20.2	41.7	50.2	-8.5
0.381	18.8	20.2	39.0	48.3	-9.3
12.656	17.9	20.9	38.8	50.0	-11.2
0.549	14.1	20.1	34.2	46.0	-11.8
0.564	13.8	20.1	33.9	46.0	-12.1
0.269	18.4	20.2	38.6	51.1	-12.5
0.467	13.8	20.1	33.9	46.6	-12.7
0.613	13.0	20.1	33.1	46.0	-12.9
12.473	16.1	20.8	36.9	50.0	-13.1
12.667	14.4	20.9	35.3	50.0	-14.7
0.639	10.8	20.1	30.9	46.0	-15.1
12.036	14.0	20.8	34.8	50.0	-15.2
12.831	13.9	20.9	34.8	50.0	-15.2
12.596	13.8	20.9	34.7	50.0	-15.3
12.275	13.8	20.8	34.6	50.0	-15.4
12.753	13.6	20.9	34.5	50.0	-15.5
12.712	13.5	20.9	34.4	50.0	-15.6
0.329	13.6	20.2	33.8	49.5	-15.7
12.409	13.4	20.8	34.2	50.0	-15.8
12.014	13.3	20.8	34.1	50.0	-15.9
12.544	13.2	20.9	34.1	50.0	-15.9
12.693	13.2	20.9	34.1	50.0	-15.9
12.771	13.1	20.9	34.0	50.0	-16.0
12.021	13.0	20.8	33.8	50.0	-16.2

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

WTD.2016.12.19

EUT:	SurfLink Mini Mobile Adapter	Work Order:	STAK0080
Serial Number:	00017006902	Date:	01/23/2017
Customer:	Starkey Laboratories, Inc.	Temperature:	23.1°C
Attendees:	Charlie Esch	Relative Humidity:	28%
Customer Project:	None	Bar. Pressure:	1012 mb
Tested By:	Dustin Sparks, Kyle McMullan	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	STAK0080-1

TEST SPECIFICATIONS

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

TEST PARAMETERS

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

COMMENTS

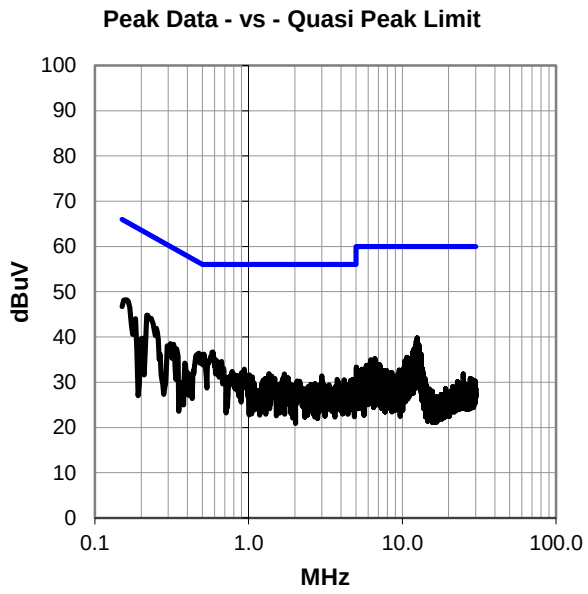
Companion Microphone powered on.

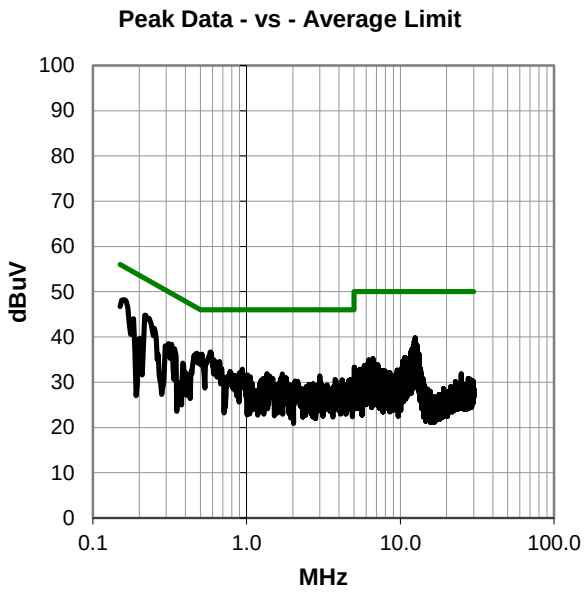
EUT OPERATING MODES

Tx Modulated on Mid Channel 20 (2442MHz).

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

WTD.2016.12.19

RESULTS - Run #5

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.157	27.8	20.4	48.2	65.6	-17.4
0.217	24.5	20.3	44.8	62.9	-18.1
0.583	16.6	20.1	36.7	56.0	-19.3
0.475	16.3	20.1	36.4	56.4	-20.0
12.488	19.0	20.8	39.8	60.0	-20.2
0.184	23.6	20.4	44.0	64.3	-20.3
12.327	18.2	20.8	39.0	60.0	-21.0
0.613	14.8	20.1	34.9	56.0	-21.1
0.325	18.2	20.2	38.4	59.6	-21.2
0.669	14.5	20.1	34.6	56.0	-21.4
12.421	17.8	20.8	38.6	60.0	-21.4
0.310	18.3	20.2	38.5	60.0	-21.5
12.361	17.6	20.8	38.4	60.0	-21.6
12.790	17.4	20.9	38.3	60.0	-21.7
12.305	17.4	20.8	38.2	60.0	-21.8
0.340	17.2	20.2	37.4	59.2	-21.8
12.574	17.2	20.9	38.1	60.0	-21.9
12.383	17.2	20.8	38.0	60.0	-22.0
12.458	17.1	20.8	37.9	60.0	-22.1
12.525	16.9	20.9	37.8	60.0	-22.2
12.753	16.7	20.9	37.6	60.0	-22.4
11.947	16.6	20.8	37.4	60.0	-22.6
11.988	16.6	20.8	37.4	60.0	-22.6
12.894	16.5	20.9	37.4	60.0	-22.6
12.413	16.5	20.8	37.3	60.0	-22.7
12.197	16.4	20.8	37.2	60.0	-22.8

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.157	27.8	20.4	48.2	55.6	-7.4
0.217	24.5	20.3	44.8	52.9	-8.1
0.583	16.6	20.1	36.7	46.0	-9.3
0.475	16.3	20.1	36.4	46.4	-10.0
12.488	19.0	20.8	39.8	50.0	-10.2
0.184	23.6	20.4	44.0	54.3	-10.3
12.327	18.2	20.8	39.0	50.0	-11.0
0.613	14.8	20.1	34.9	46.0	-11.1
0.325	18.2	20.2	38.4	49.6	-11.2
0.669	14.5	20.1	34.6	46.0	-11.4
12.421	17.8	20.8	38.6	50.0	-11.4
0.310	18.3	20.2	38.5	50.0	-11.5
12.361	17.6	20.8	38.4	50.0	-11.6
12.790	17.4	20.9	38.3	50.0	-11.7
12.305	17.4	20.8	38.2	50.0	-11.8
0.340	17.2	20.2	37.4	49.2	-11.8
12.574	17.2	20.9	38.1	50.0	-11.9
12.383	17.2	20.8	38.0	50.0	-12.0
12.458	17.1	20.8	37.9	50.0	-12.1
12.525	16.9	20.9	37.8	50.0	-12.2
12.753	16.7	20.9	37.6	50.0	-12.4
11.947	16.6	20.8	37.4	50.0	-12.6
11.988	16.6	20.8	37.4	50.0	-12.6
12.894	16.5	20.9	37.4	50.0	-12.6
12.413	16.5	20.8	37.3	50.0	-12.7
12.197	16.4	20.8	37.2	50.0	-12.8

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

WTD.2016.12.19

EUT:	SurfLink Mini Mobile Adapter	Work Order:	STAK0080
Serial Number:	00017006902	Date:	01/23/2017
Customer:	Starkey Laboratories, Inc.	Temperature:	23.1°C
Attendees:	Charlie Esch	Relative Humidity:	28%
Customer Project:	None	Bar. Pressure:	1012 mb
Tested By:	Dustin Sparks, Kyle McMullan	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	STAK0080-2

TEST SPECIFICATIONS

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

TEST PARAMETERS

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

COMMENTS

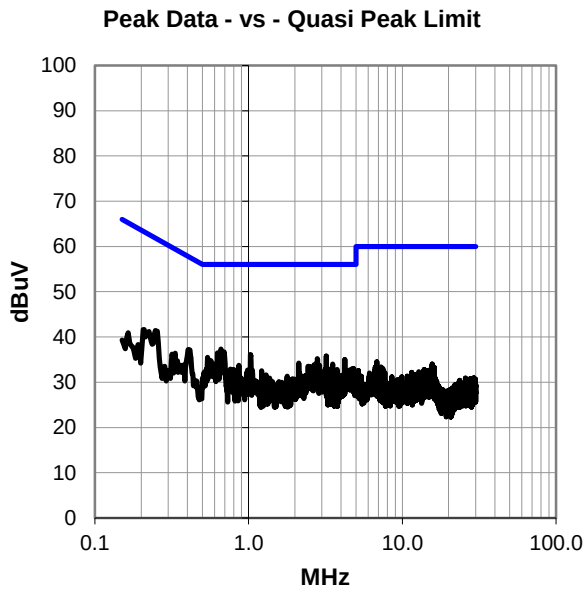
Companion Microphone powered on.

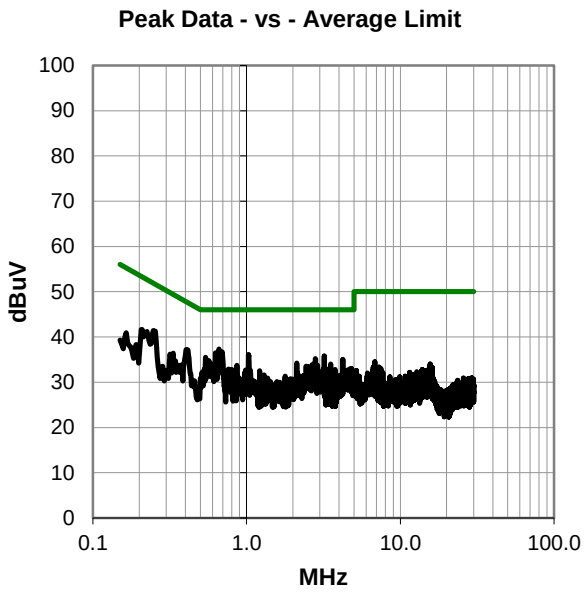
EUT OPERATING MODES

Tx Modulated on Mid Channel 20 (2442MHz).

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

WTD.2016.12.19

RESULTS - Run #7

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.661	17.2	20.1	37.3	56.0	-18.7
0.695	16.6	20.1	36.7	56.0	-19.3
0.628	16.4	20.1	36.5	56.0	-19.5
1.027	16.0	20.1	36.1	56.0	-19.9
3.198	15.6	20.2	35.8	56.0	-20.2
0.542	15.4	20.1	35.5	56.0	-20.5
0.404	17.0	20.2	37.2	57.8	-20.6
2.803	15.0	20.2	35.2	56.0	-20.8
4.231	14.7	20.3	35.0	56.0	-21.0
0.568	14.7	20.1	34.8	56.0	-21.2
2.776	14.1	20.2	34.3	56.0	-21.7
0.206	21.3	20.3	41.6	63.4	-21.8
2.120	14.0	20.2	34.2	56.0	-21.8
3.519	13.7	20.3	34.0	56.0	-22.0
2.672	13.7	20.2	33.9	56.0	-22.1
2.758	13.6	20.2	33.8	56.0	-22.2
0.866	13.6	20.1	33.7	56.0	-22.3
2.888	13.5	20.2	33.7	56.0	-22.3
2.441	13.3	20.2	33.5	56.0	-22.5
2.519	13.2	20.2	33.4	56.0	-22.6
0.333	16.2	20.2	36.4	59.4	-23.0
4.735	12.7	20.3	33.0	56.0	-23.0
4.806	12.6	20.4	33.0	56.0	-23.0
0.758	12.8	20.1	32.9	56.0	-23.1
2.855	12.7	20.2	32.9	56.0	-23.1
3.366	12.7	20.2	32.9	56.0	-23.1

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.661	17.2	20.1	37.3	46.0	-8.7
0.695	16.6	20.1	36.7	46.0	-9.3
0.628	16.4	20.1	36.5	46.0	-9.5
1.027	16.0	20.1	36.1	46.0	-9.9
3.198	15.6	20.2	35.8	46.0	-10.2
0.542	15.4	20.1	35.5	46.0	-10.5
0.404	17.0	20.2	37.2	47.8	-10.6
2.803	15.0	20.2	35.2	46.0	-10.8
4.231	14.7	20.3	35.0	46.0	-11.0
0.568	14.7	20.1	34.8	46.0	-11.2
2.776	14.1	20.2	34.3	46.0	-11.7
0.206	21.3	20.3	41.6	53.4	-11.8
2.120	14.0	20.2	34.2	46.0	-11.8
3.519	13.7	20.3	34.0	46.0	-12.0
2.672	13.7	20.2	33.9	46.0	-12.1
2.758	13.6	20.2	33.8	46.0	-12.2
0.866	13.6	20.1	33.7	46.0	-12.3
2.888	13.5	20.2	33.7	46.0	-12.3
2.441	13.3	20.2	33.5	46.0	-12.5
2.519	13.2	20.2	33.4	46.0	-12.6
0.333	16.2	20.2	36.4	49.4	-13.0
4.735	12.7	20.3	33.0	46.0	-13.0
4.806	12.6	20.4	33.0	46.0	-13.0
0.758	12.8	20.1	32.9	46.0	-13.1
2.855	12.7	20.2	32.9	46.0	-13.1
3.366	12.7	20.2	32.9	46.0	-13.1

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

WTD.2016.12.19

EUT:	SurfLink Mini Mobile Adapter	Work Order:	STAK0080
Serial Number:	00017006902	Date:	01/23/2017
Customer:	Starkey Laboratories, Inc.	Temperature:	23.1°C
Attendees:	Charlie Esch	Relative Humidity:	28%
Customer Project:	None	Bar. Pressure:	1012 mb
Tested By:	Dustin Sparks, Kyle McMullan	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	STAK0080-2

TEST SPECIFICATIONS

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

TEST PARAMETERS

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

COMMENTS

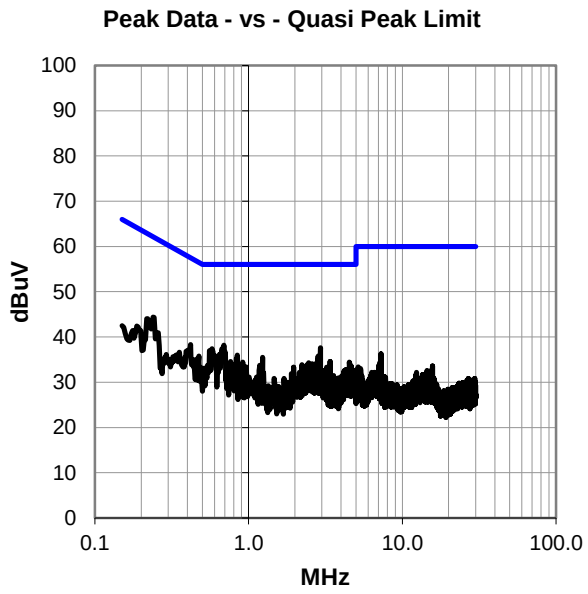
Companion Microphone powered on.

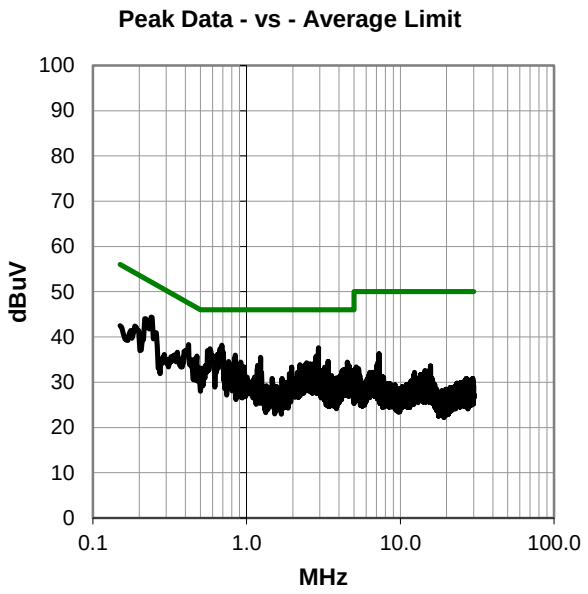
EUT OPERATING MODES

Tx Modulated on Mid Channel 20 (2442MHz).

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

WTD.2016.12.19

RESULTS - Run #8

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.240	24.2	20.2	44.4	62.1	-17.7
0.691	18.1	20.1	38.2	56.0	-17.8
2.933	17.4	20.2	37.6	56.0	-18.4
0.579	17.3	20.1	37.4	56.0	-18.6
0.557	16.9	20.1	37.0	56.0	-19.0
0.419	18.2	20.1	38.3	57.5	-19.2
0.844	15.9	20.1	36.0	56.0	-20.0
2.836	15.6	20.2	35.8	56.0	-20.2
1.236	15.4	20.1	35.5	56.0	-20.5
0.475	15.7	20.1	35.8	56.4	-20.6
0.833	15.1	20.1	35.2	56.0	-20.8
2.814	14.6	20.2	34.8	56.0	-21.2
2.918	14.6	20.2	34.8	56.0	-21.2
0.762	14.5	20.1	34.6	56.0	-21.4
3.388	14.4	20.2	34.6	56.0	-21.4
0.915	14.3	20.1	34.4	56.0	-21.6
2.888	14.2	20.2	34.4	56.0	-21.6
4.530	14.1	20.3	34.4	56.0	-21.6
2.456	14.1	20.2	34.3	56.0	-21.7
2.765	14.0	20.2	34.2	56.0	-21.8
0.187	22.0	20.4	42.4	64.2	-21.8
2.590	13.9	20.2	34.1	56.0	-21.9
0.810	13.8	20.1	33.9	56.0	-22.1
2.221	13.7	20.2	33.9	56.0	-22.1
2.396	13.7	20.2	33.9	56.0	-22.1
0.355	16.4	20.2	36.6	58.8	-22.2

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.240	24.2	20.2	44.4	52.1	-7.7
0.691	18.1	20.1	38.2	46.0	-7.8
2.933	17.4	20.2	37.6	46.0	-8.4
0.579	17.3	20.1	37.4	46.0	-8.6
0.557	16.9	20.1	37.0	46.0	-9.0
0.419	18.2	20.1	38.3	47.5	-9.2
0.844	15.9	20.1	36.0	46.0	-10.0
2.836	15.6	20.2	35.8	46.0	-10.2
1.236	15.4	20.1	35.5	46.0	-10.5
0.475	15.7	20.1	35.8	46.4	-10.6
0.833	15.1	20.1	35.2	46.0	-10.8
2.814	14.6	20.2	34.8	46.0	-11.2
2.918	14.6	20.2	34.8	46.0	-11.2
0.762	14.5	20.1	34.6	46.0	-11.4
3.388	14.4	20.2	34.6	46.0	-11.4
0.915	14.3	20.1	34.4	46.0	-11.6
2.888	14.2	20.2	34.4	46.0	-11.6
4.530	14.1	20.3	34.4	46.0	-11.6
2.456	14.1	20.2	34.3	46.0	-11.7
2.765	14.0	20.2	34.2	46.0	-11.8
0.187	22.0	20.4	42.4	54.2	-11.8
2.590	13.9	20.2	34.1	46.0	-11.9
0.810	13.8	20.1	33.9	46.0	-12.1
2.221	13.7	20.2	33.9	46.0	-12.1
2.396	13.7	20.2	33.9	46.0	-12.1
0.355	16.4	20.2	36.6	48.8	-12.2

CONCLUSION

Pass

Tested By

SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2017.01.26

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 Bluetooth EDR on Low (2402MHz), Mid (2441MHz), or High Ch (2480MHz) in DH5, 2DH5, and 3DH5.

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

STAK0080 - 5

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	25 GHz

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
Cable	Element	18-26GHz Standard Gain Horn Cable	MNP	9/15/2016	12 mo
Amplifier - Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	9/15/2016	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-09	AHG	NCR	0 mo
Attenuator	Fairview Microwave	SA18E-20	TWZ	9/23/2016	12 mo
Cable	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	7/29/2016	12 mo
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	12/1/2016	12 mo
Cable	ESM Cable Corp.	Bilog Cables	MNH	12/1/2016	12 mo
Filter - High Pass	Micro-Tronics	HPM50111	LFN	9/23/2016	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFK	9/22/2016	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYD	1/6/2016	24 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AXP	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVW	3/1/2016	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	3/1/2016	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVT	3/1/2016	12 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVO	12/1/2016	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AJA	6/23/2016	24 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AIQ	NCR	0 mo
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFI	1/6/2017	12 mo

MEASUREMENT BANDWIDTHS

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

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.

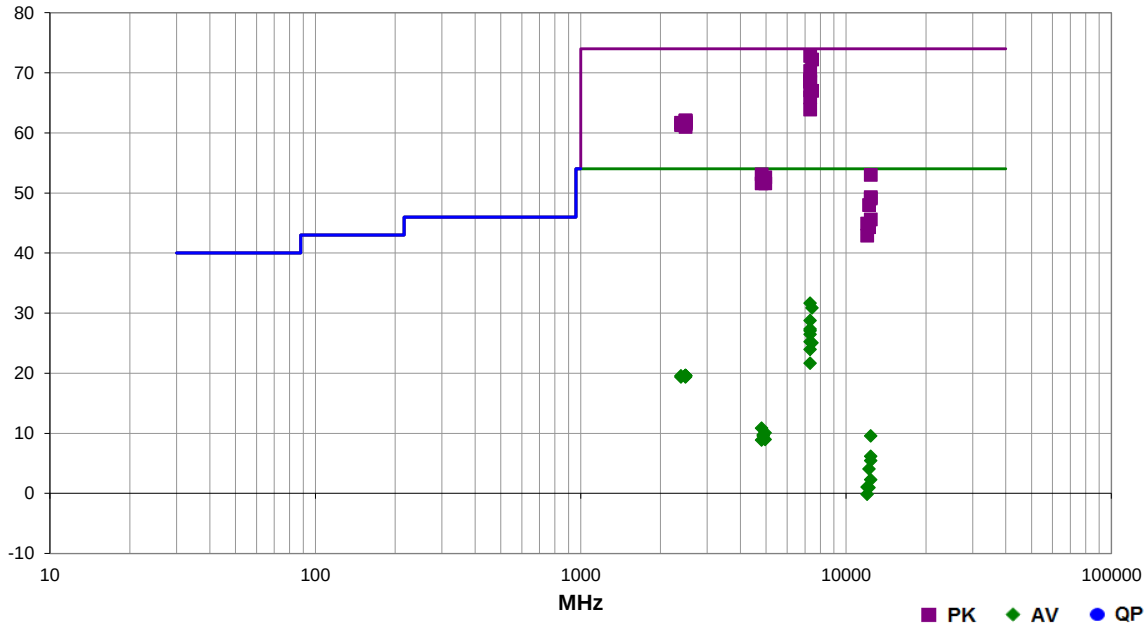
SPURIOUS RADIATED EMISSIONS

EmiR5 2017.01.25 PSA-ESCI 2017.01.26

Work Order:	STAK0080	**Date:**	02/03/17	Trevor Buls	
Project:	None	**Temperature:**	23.4 °C		
Job Site:	MN05	**Humidity:**	14.1% RH		
Serial Number:	00017006902	**Barometric Pres.:**	1034 mbar	**Tested by:**	Kyle McMullan, Chris Patterson, Trevor Buls
EUT:	SurfLink Mini Mobile Adapter				
Configuration:	5				
Customer:	Starkey Laboratories, Inc.				
Attendees:	Charlie Esch				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting Bluetooth EDR on Low (2402MHz), Mid (2441MHz), or High Ch (2480MHz) in DH5, 2DH5, and 3DH5.				
Deviations:	None				
Comments:	Duty cycle correction factor of -30.75 dB applied to average data.				

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

Run #	35	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	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
7322.692	57.6	15.2	2.5	354.9	0.0	0.0	Horz	PK	0.0	72.8	74.0	-1.2	EUT On Side, Mid Ch, DH5
7439.575	56.9	15.3	2.6	354.0	0.0	0.0	Horz	PK	0.0	72.2	74.0	-1.8	EUT On Side, High Ch, DH5
7322.692	55.1	15.2	2.0	200.0	0.0	0.0	Horz	PK	0.0	70.3	74.0	-3.7	EUT Horz, Mid Ch, DH5
7322.692	53.7	15.2	1.0	214.1	0.0	0.0	Horz	PK	0.0	68.9	74.0	-5.1	EUT Vert, Mid Ch, DH5
7322.508	53.4	15.2	1.0	58.1	0.0	0.0	Vert	PK	0.0	68.6	74.0	-5.4	EUT Vert, Mid Ch, DH5
7323.500	53.3	15.2	1.0	121.0	0.0	0.0	Vert	PK	0.0	68.5	74.0	-5.5	EUT On Side, Mid Ch, DH5
7322.608	51.9	15.2	1.1	100.0	0.0	0.0	Vert	PK	0.0	67.1	74.0	-6.9	EUT Horz, Mid Ch, DH5
7440.533	51.7	15.3	1.0	311.9	0.0	0.0	Vert	PK	0.0	67.0	74.0	-7.0	EUT On Side, High Ch, DH5
7322.575	50.7	15.2	2.8	353.0	0.0	0.0	Horz	PK	0.0	65.9	74.0	-8.1	EUT On Side, Mid Ch, 3-DH5
7323.567	48.7	15.2	1.0	357.0	0.0	0.0	Horz	PK	0.0	63.9	74.0	-10.1	EUT On Side, Mid Ch, 2-DH5
2483.887	44.7	-2.6	1.0	250.0	0.0	20.0	Horz	PK	0.0	62.1	74.0	-11.9	EUT Horz, High Ch, DH5
2484.243	44.6	-2.6	1.0	113.1	0.0	20.0	Vert	PK	0.0	62.0	74.0	-12.0	EUT Horz, High Ch, DH5
2484.550	44.6	-2.6	1.0	75.0	0.0	20.0	Horz	PK	0.0	62.0	74.0	-12.0	EUT Vert, High Ch, 3-DH5
2389.692	44.1	-2.4	1.0	143.0	0.0	20.0	Horz	PK	0.0	61.7	74.0	-12.3	EUT Vert, Low Ch, DH5
2483.717	44.3	-2.6	1.0	109.1	0.0	20.0	Horz	PK	0.0	61.7	74.0	-12.3	EUT On Side, High Ch, DH5
2484.460	44.3	-2.6	1.0	299.0	0.0	20.0	Horz	PK	0.0	61.7	74.0	-12.3	EUT Vert, High Ch, DH5
2484.570	44.2	-2.6	1.2	150.0	0.0	20.0	Horz	PK	0.0	61.6	74.0	-12.4	EUT Vert, High Ch, 2-DH5
2484.027	44.0	-2.6	1.0	87.1	0.0	20.0	Vert	PK	0.0	61.4	74.0	-12.6	EUT Vert, High Ch, DH5
2389.927	43.7	-2.4	1.0	207.0	0.0	20.0	Vert	PK	0.0	61.3	74.0	-12.7	EUT Horz, Low Ch, DH5
2483.960	43.6	-2.6	1.0	157.0	0.0	20.0	Vert	PK	0.0	61.0	74.0	-13.0	EUT On Side, High Ch, DH5

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
4804.500	46.4	6.7	1.0	72.0	0.0	0.0	Horz	PK	0.0	53.1	74.0	-20.9	EUT On Side, Low Ch, DH5
12401.040	46.8	6.2	2.5	153.0	0.0	0.0	Horz	PK	0.0	53.0	74.0	-21.0	EUT On Side, High Ch, DH5
4959.900	45.9	6.7	2.3	44.1	0.0	0.0	Horz	PK	0.0	52.6	74.0	-21.4	EUT On Side, High Ch, DH5
4882.300	45.1	6.7	1.0	117.0	0.0	0.0	Vert	PK	0.0	51.8	74.0	-22.2	EUT On Side, Mid Ch, DH5
4881.633	45.0	6.7	1.0	87.1	0.0	0.0	Horz	PK	0.0	51.7	74.0	-22.3	EUT On Side, Mid Ch, DH5
7323.067	47.2	15.2	2.5	354.9	-30.8	0.0	Horz	AV	0.0	31.7	54.0	-22.4	EUT On Side, Mid Ch, DH5
4804.100	44.9	6.7	1.0	160.1	0.0	0.0	Vert	PK	0.0	51.6	74.0	-22.4	EUT On Side, Low Ch, DH5
4960.108	44.9	6.7	1.0	159.1	0.0	0.0	Vert	PK	0.0	51.6	74.0	-22.4	EUT On Side, High Ch, DH5
7440.200	46.3	15.3	2.6	354.0	-30.8	0.0	Horz	AV	0.0	30.9	54.0	-23.2	EUT On Side, High Ch, DH5
12399.160	48.6	0.7	2.3	127.1	0.0	0.0	Horz	PK	0.0	49.3	74.0	-24.7	EUT On Side, High Ch, DH5
12400.660	42.9	6.2	1.0	79.0	0.0	0.0	Vert	PK	0.0	49.1	74.0	-24.9	EUT On Side, High Ch, DH5
7323.183	44.3	15.2	2.0	200.0	-30.8	0.0	Horz	AV	0.0	28.8	54.0	-25.3	EUT Horz, Mid Ch, DH5
12204.330	48.5	-0.5	1.0	119.1	0.0	0.0	Horz	PK	0.0	48.0	74.0	-26.0	EUT On Side, Mid Ch, DH5
7323.092	42.9	15.2	1.0	214.1	-30.8	0.0	Horz	AV	0.0	27.4	54.0	-26.7	EUT Vert, Mid Ch, DH5
7323.108	42.6	15.2	1.0	121.0	-30.8	0.0	Vert	AV	0.0	27.1	54.0	-27.0	EUT On Side, Mid Ch, DH5
7323.250	42.0	15.2	1.0	58.1	-30.8	0.0	Vert	AV	0.0	26.5	54.0	-27.6	EUT Vert, Mid Ch, DH5
12399.680	44.9	0.7	1.0	98.1	0.0	0.0	Vert	PK	0.0	45.6	74.0	-28.4	EUT On Side, High Ch, DH5
7323.150	40.8	15.2	1.1	100.0	-30.8	0.0	Vert	AV	0.0	25.3	54.0	-28.8	EUT Horz, Mid Ch, DH5
7440.000	40.5	15.3	1.0	311.9	-30.8	0.0	Vert	AV	0.0	25.1	54.0	-29.0	EUT On Side, High Ch, DH5
12010.940	46.0	-1.1	2.6	115.0	0.0	0.0	Horz	PK	0.0	44.9	74.0	-29.1	EUT On Side, Low Ch, DH5
12204.130	44.8	-0.5	1.0	351.9	0.0	0.0	Vert	PK	0.0	44.3	74.0	-29.7	EUT On Side, Mid Ch, DH5
7323.125	39.5	15.2	2.8	353.0	-30.8	0.0	Horz	AV	0.0	24.0	54.0	-30.1	EUT On Side, Mid Ch, 3-DH5
12011.030	44.0	-1.1	1.0	119.1	0.0	0.0	Vert	PK	0.0	42.9	74.0	-31.1	EUT On Side, Low Ch, DH5
7323.392	37.2	15.2	1.0	357.0	-30.8	0.0	Horz	AV	0.0	21.7	54.0	-32.4	EUT On Side, Mid Ch, 2-DH5
2484.267	33.0	-2.6	1.0	299.0	-30.8	20.0	Horz	AV	0.0	19.7	54.0	-34.4	EUT Vert, High Ch, DH5
2483.667	32.9	-2.6	1.0	109.1	-30.8	20.0	Horz	AV	0.0	19.6	54.0	-34.5	EUT Horz, High Ch, DH5
2484.080	32.9	-2.6	1.0	113.1	-30.8	20.0	Vert	AV	0.0	19.6	54.0	-34.5	EUT Horz, High Ch, DH5
2484.590	32.9	-2.6	1.0	250.0	-30.8	20.0	Horz	AV	0.0	19.6	54.0	-34.5	EUT On Side, High Ch, DH5
2484.277	32.9	-2.6	1.0	157.0	-30.8	20.0	Vert	AV	0.0	19.6	54.0	-34.5	EUT On Side, High Ch, DH5
2484.160	32.9	-2.6	1.0	87.1	-30.8	20.0	Vert	AV	0.0	19.6	54.0	-34.5	EUT Vert, High Ch, DH5
2389.777	32.7	-2.4	1.0	207.0	-30.8	20.0	Vert	AV	0.0	19.6	54.0	-34.5	EUT Horz, Low Ch, DH5
2484.780	32.9	-2.6	1.0	75.0	-30.8	20.0	Horz	AV	0.0	19.6	54.0	-34.5	EUT Vert, High Ch, 3-DH5
2389.707	32.5	-2.4	1.0	143.0	-30.8	20.0	Horz	AV	0.0	19.4	54.0	-34.7	EUT Vert, Low Ch, DH5
2484.077	32.7	-2.6	1.2	150.0	-30.8	20.0	Horz	AV	0.0	19.4	54.0	-34.7	EUT Vert, High Ch, 2-DH5
4804.033	34.9	6.7	1.0	72.0	-30.8	0.0	Horz	AV	0.0	10.9	54.0	-43.2	EUT On Side, Low Ch, DH5
4960.117	34.1	6.7	2.3	44.1	-30.8	0.0	Horz	AV	0.0	10.1	54.0	-44.0	EUT On Side, High Ch, DH5
4881.908	33.8	6.7	1.0	87.1	-30.8	0.0	Horz	AV	0.0	9.8	54.0	-44.3	EUT On Side, Mid Ch, DH5
4882.108	33.6	6.7	1.0	117.0	-30.8	0.0	Vert	AV	0.0	9.6	54.0	-44.5	EUT On Side, Mid Ch, DH5
12400.850	34.1	6.2	2.5	153.0	-30.8	0.0	Horz	AV	0.0	9.6	54.0	-44.5	EUT On Side, High Ch, DH5
4960.075	33.0	6.7	1.0	159.1	-30.8	0.0	Vert	AV	0.0	9.0	54.0	-45.1	EUT On Side, High Ch, DH5
4804.108	32.9	6.7	1.0	160.1	-30.8	0.0	Vert	AV	0.0	8.9	54.0	-45.2	EUT On Side, Low Ch, DH5
12400.830	30.7	6.2	1.0	79.0	-30.8	0.0	Vert	AV	0.0	6.2	54.0	-47.9	EUT On Side, High Ch, DH5
12399.470	35.5	0.7	2.3	127.1	-30.8	0.0	Horz	AV	0.0	5.5	54.0	-48.6	EUT On Side, High Ch, DH5
12205.780	35.3	-0.5	1.0	119.1	-30.8	0.0	Horz	AV	0.0	4.1	54.0	-50.0	EUT On Side, Mid Ch, DH5
12399.470	32.3	0.7	1.0	98.1	-30.8	0.0	Vert	AV	0.0	2.3	54.0	-51.8	EUT On Side, High Ch, DH5
12010.830	32.9	-1.1	2.6	115.0	-30.8	0.0	Horz	AV	0.0	1.1	54.0	-53.0	EUT On Side, Low Ch, DH5
12205.820	32.2	-0.5	1.0	351.9	-30.8	0.0	Vert	AV	0.0	0.9	54.0	-53.1	EUT On Side, Mid Ch, DH5
12010.900	31.7	-1.1	1.0	119.1	-30.8	0.0	Vert	AV	0.0	-0.1	54.0	-54.2	EUT On Side, Low Ch, DH5

DUTY CYCLE

XMit 2017.01.26

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	N5182A	TIF	8/12/2014	8/12/2017
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/15/2016	9/15/2017
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	2/26/2017
Block - DC	Fairview Microwave	SD3379	AMI	9/15/2016	9/15/2017
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

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.

DUTY CYCLE

TbtTx 2017.01.27 XMit 2017.01.26

EUT:	**SurfLink Mini Mobile Adapter**			**Work Order:**	**STAK0080**
Serial Number:	**00017006905**			**Date:**	**02/07/17**
Customer:	**Starkey Laboratories, Inc.**			**Temperature:**	**23 °C**
Attendees:	**Charlie Esch**			**Humidity:**	**20.5% RH**
Project:	**None**			**Barometric Pres.:**	**1004 mbar**
Tested by:	**Dustin Sparks**	**Power:**	**Battery**	**Job Site:**	**MN08**
TEST SPECIFICATIONS		**Test Method**			
FCC 15.247:2017		ANSI C63.10:2013			

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

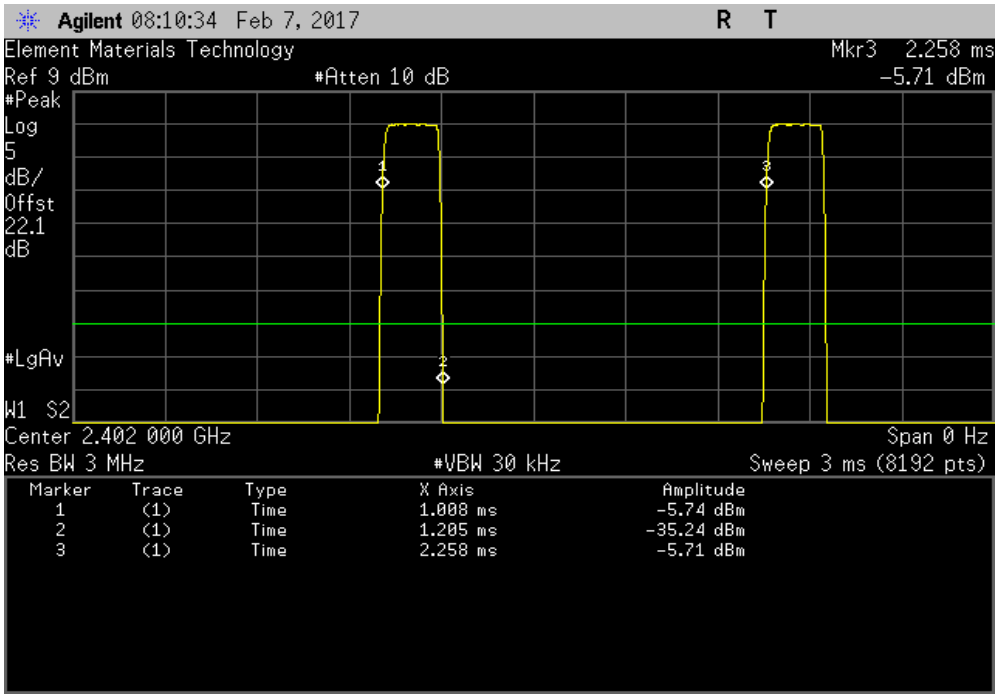
Configuration #	**4**	*Signature* Dustin Sparks

		Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
DH5, GFSK							
	Low Channel	196.3 us	1.25 ms	1	15.7	N/A	N/A
	Low Channel	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel	197 us	1.25 ms	1	15.8	N/A	N/A
	Mid Channel	N/A	N/A	5	N/A	N/A	N/A
	High Channel	197 us	1.25 ms	1	15.8	N/A	N/A
	High Channel	N/A	N/A	5	N/A	N/A	N/A
2DH5, pi/4-DQPSK							
	Low Channel	201.4 us	1.25 ms	1	16.1	N/A	N/A
	Low Channel	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel	201.4 us	1.25 ms	1	16.1	N/A	N/A
	Mid Channel	N/A	N/A	5	N/A	N/A	N/A
	High Channel	201.4 us	1.25 ms	1	16.1	N/A	N/A
	High Channel	N/A	N/A	5	N/A	N/A	N/A
3DH5, 8-DPSK							
	Low Channel	194.8 us	1.25 ms	1	15.6	N/A	N/A
	Low Channel	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel	195.6 us	1.25 ms	1	15.6	N/A	N/A
	Mid Channel	N/A	N/A	5	N/A	N/A	N/A
	High Channel	194.8 us	1.25 ms	1	15.6	N/A	N/A
	High Channel	N/A	N/A	5	N/A	N/A	N/A

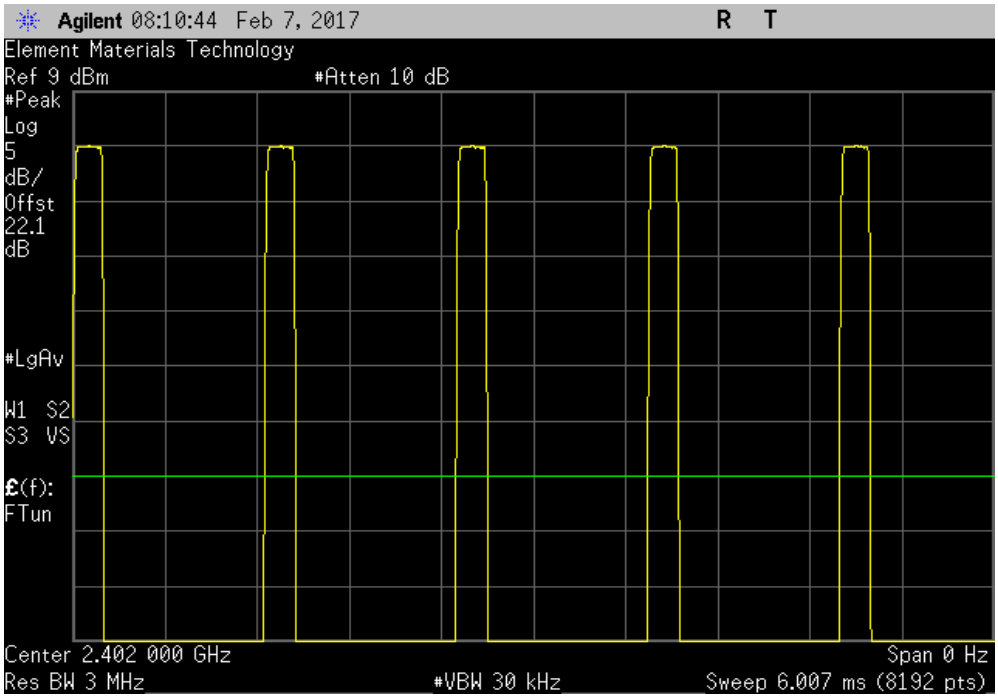
DUTY CYCLE

TbtTx 2017.01.27 XMit 2017.01.26

DH5, GFSK, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	196.3 us	1.25 ms	1	15.7	N/A	N/A



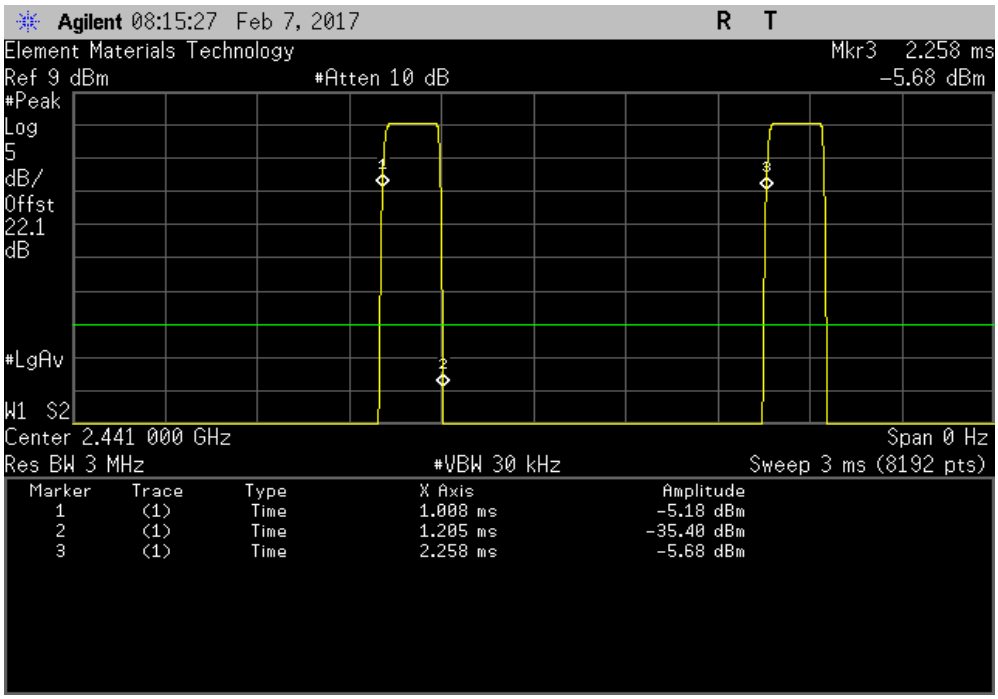
DH5, GFSK, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



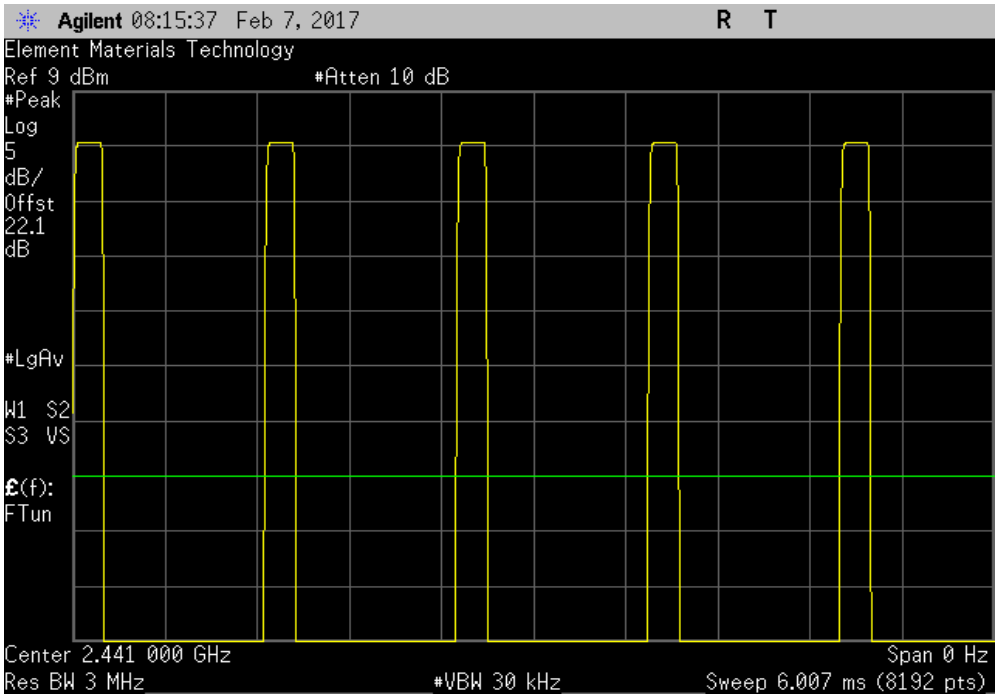
DUTY CYCLE

TbtTx 2017.01.27 XMit 2017.01.26

DH5, GFSK, Mid Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	197 us	1.25 ms	1	15.8	N/A	N/A



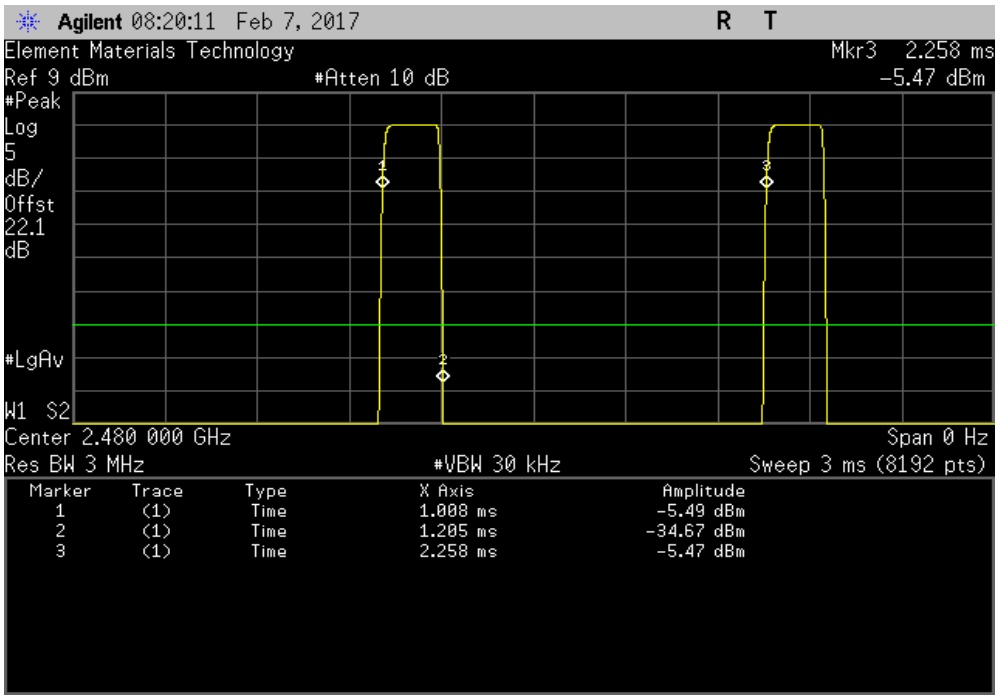
DH5, GFSK, Mid Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



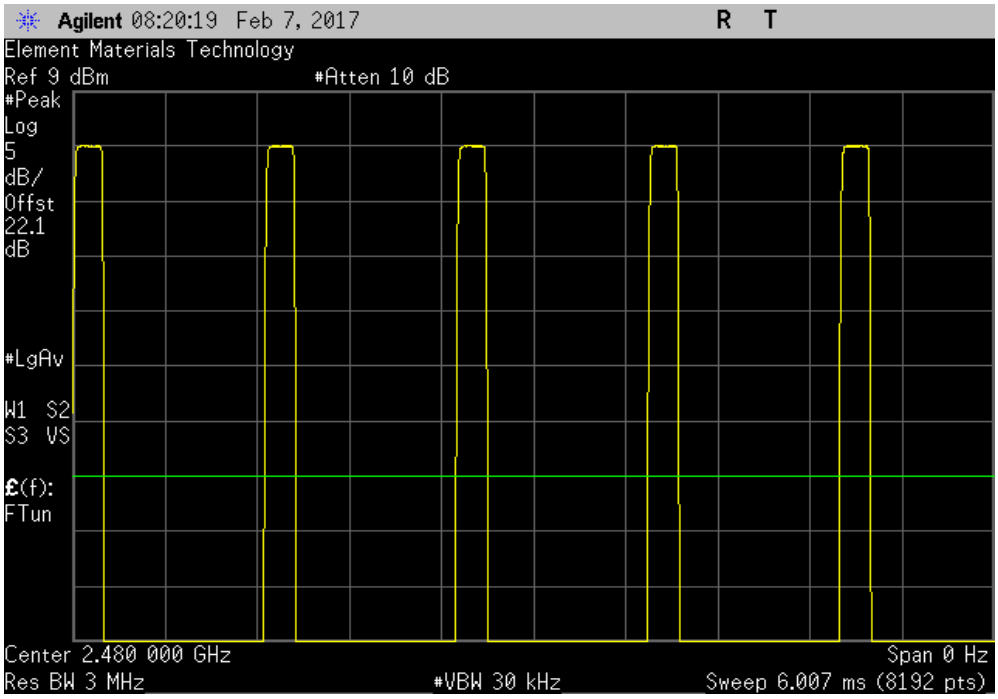
DUTY CYCLE

TbtTx 2017.01.27 XMit 2017.01.26

DH5, GFSK, High Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	197 us	1.25 ms	1	15.8	N/A	N/A



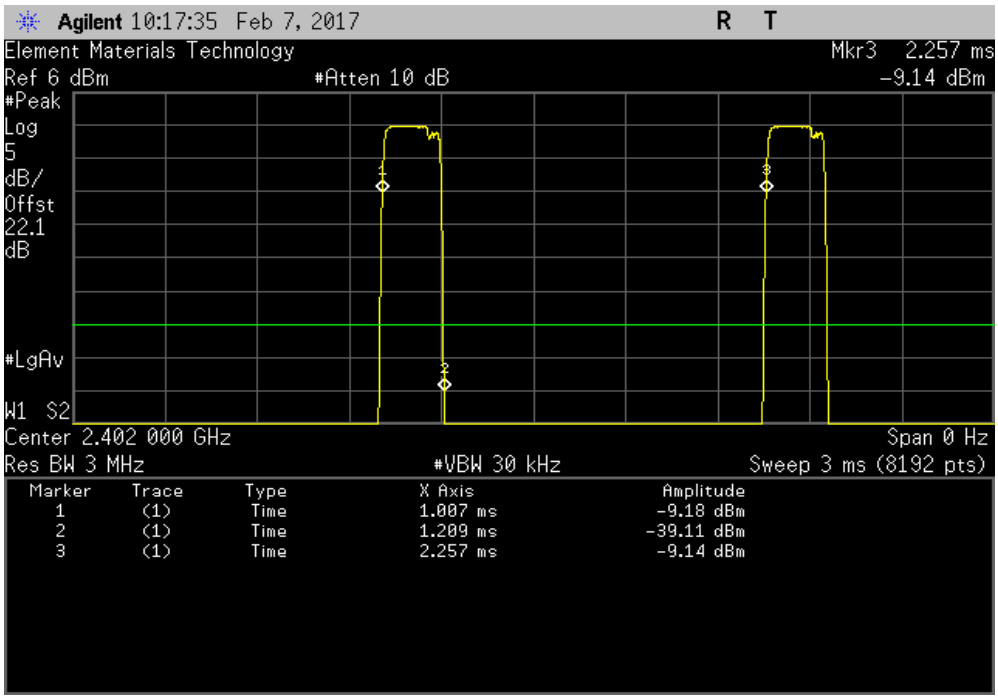
DH5, GFSK, High Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



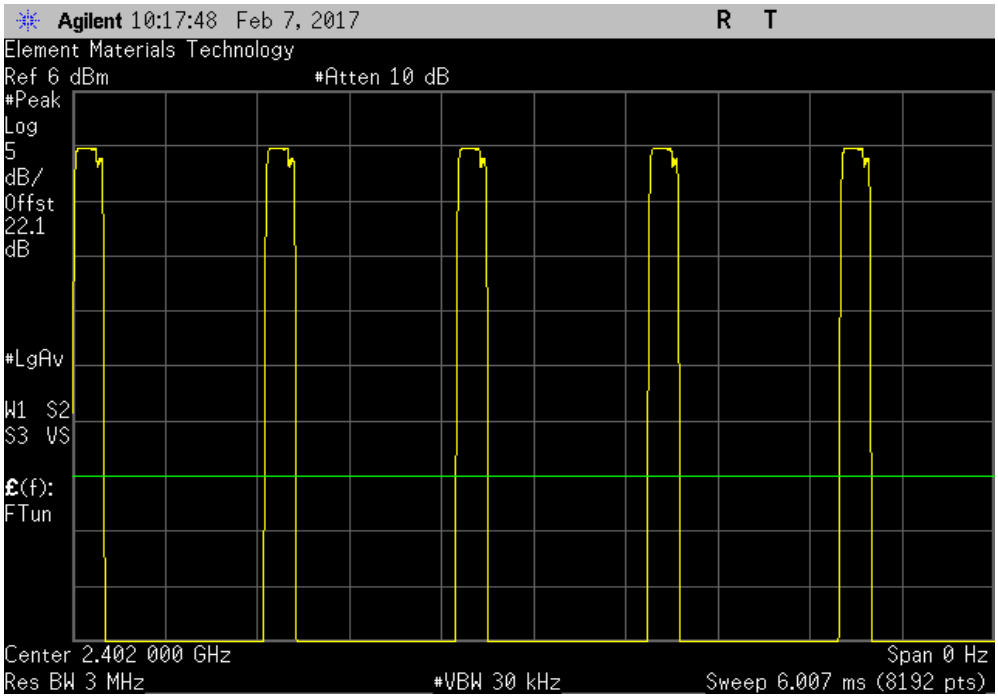
DUTY CYCLE

TbtTx 2017.01.27 XMit 2017.01.26

2DH5, pi/4-DQPSK, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	201.4 us	1.25 ms	1	16.1	N/A	N/A

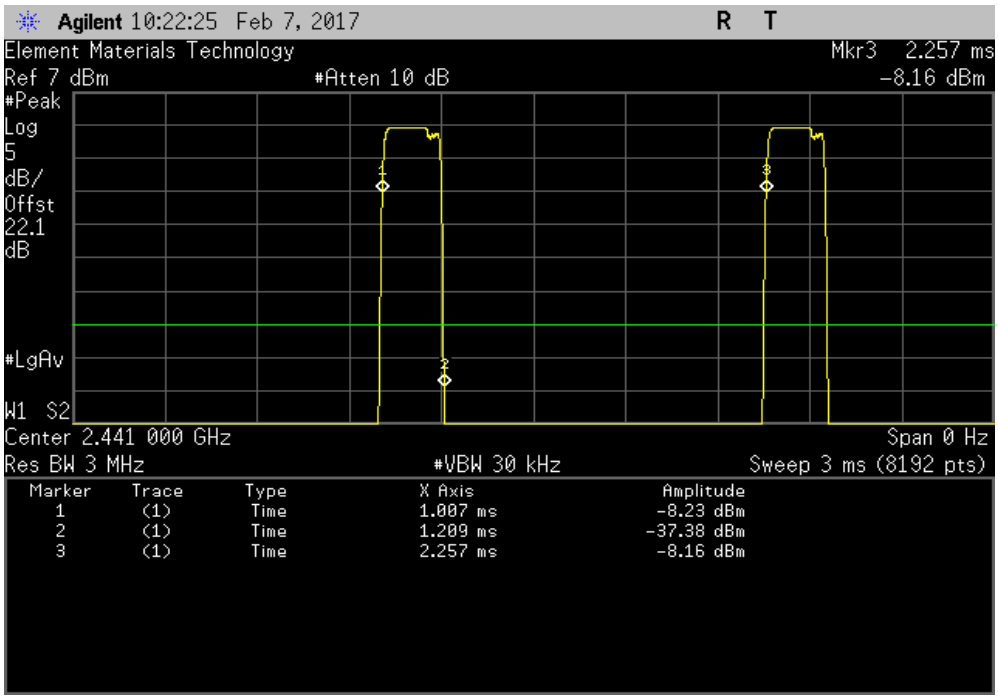


2DH5, pi/4-DQPSK, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

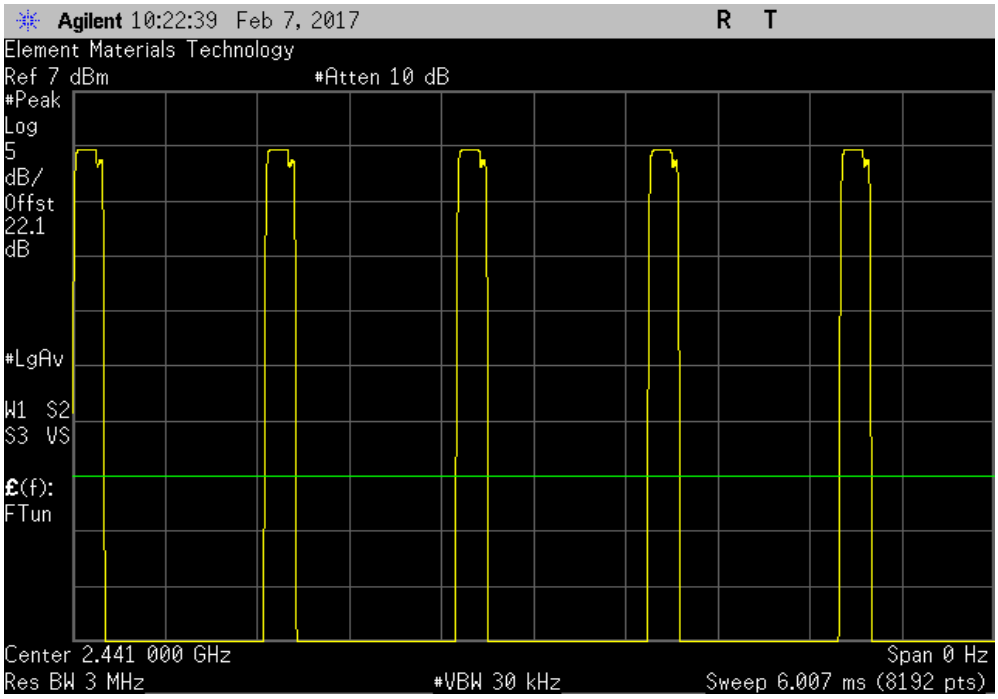


DUTY CYCLE

2DH5, pi/4-DQPSK, Mid Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	201.4 us	1.25 ms	1	16.1	N/A	N/A



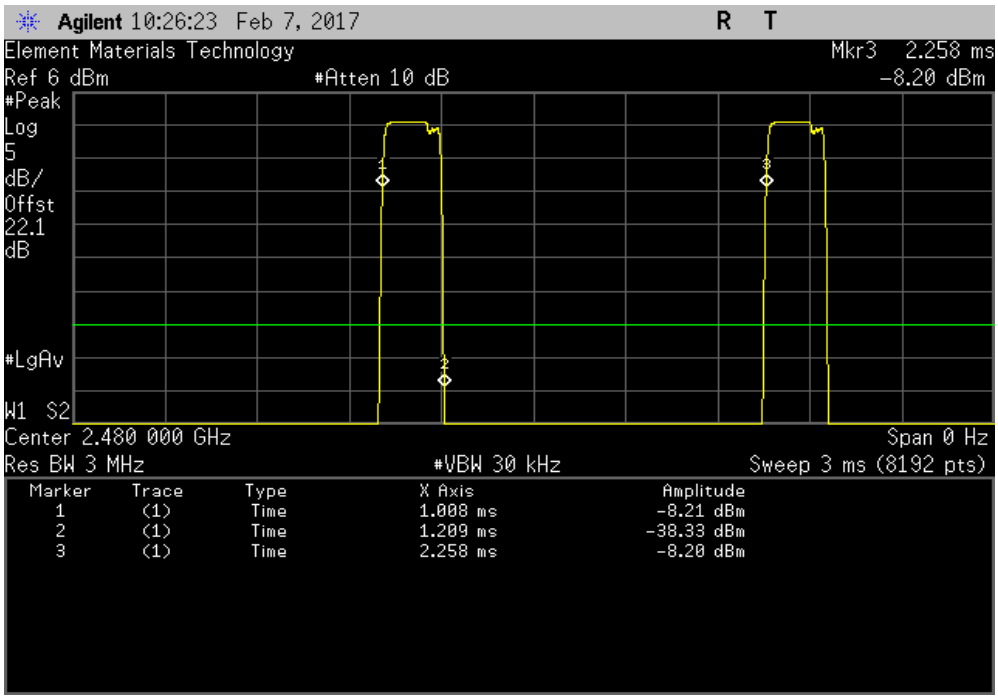
2DH5, pi/4-DQPSK, Mid Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



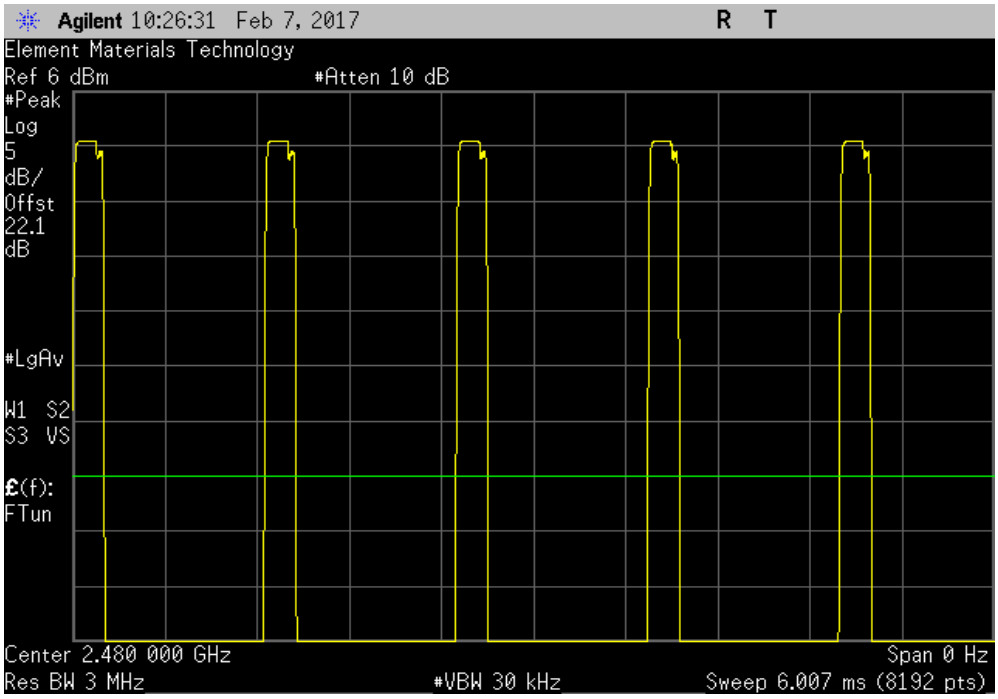
DUTY CYCLE

TbtTx 2017.01.27 XMit 2017.01.26

2DH5, pi/4-DQPSK, High Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	201.4 us	1.25 ms	1	16.1	N/A	N/A



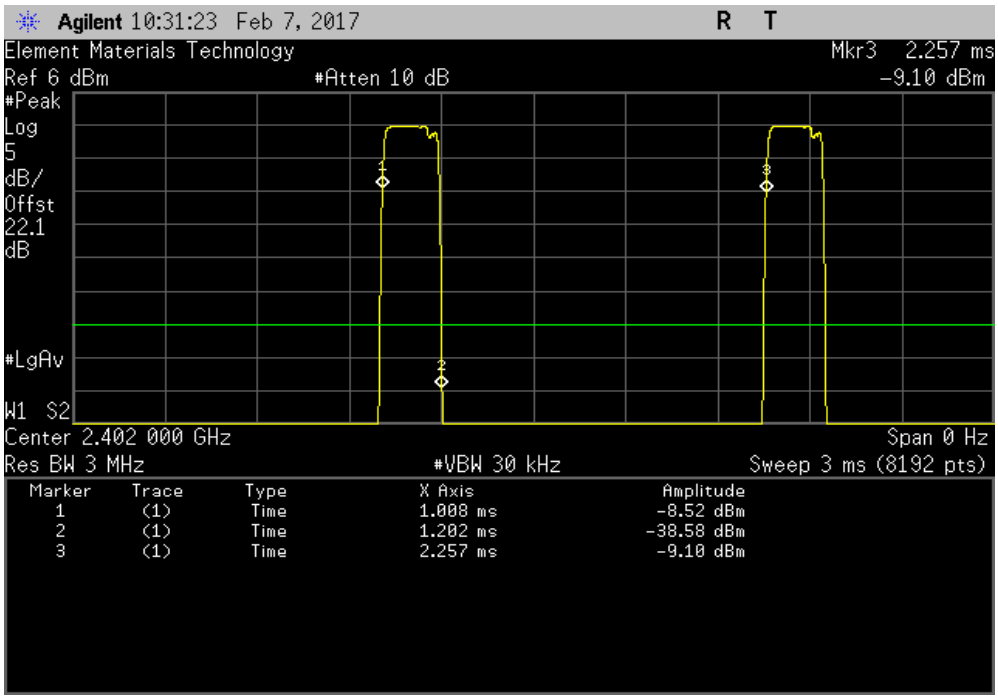
2DH5, pi/4-DQPSK, High Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



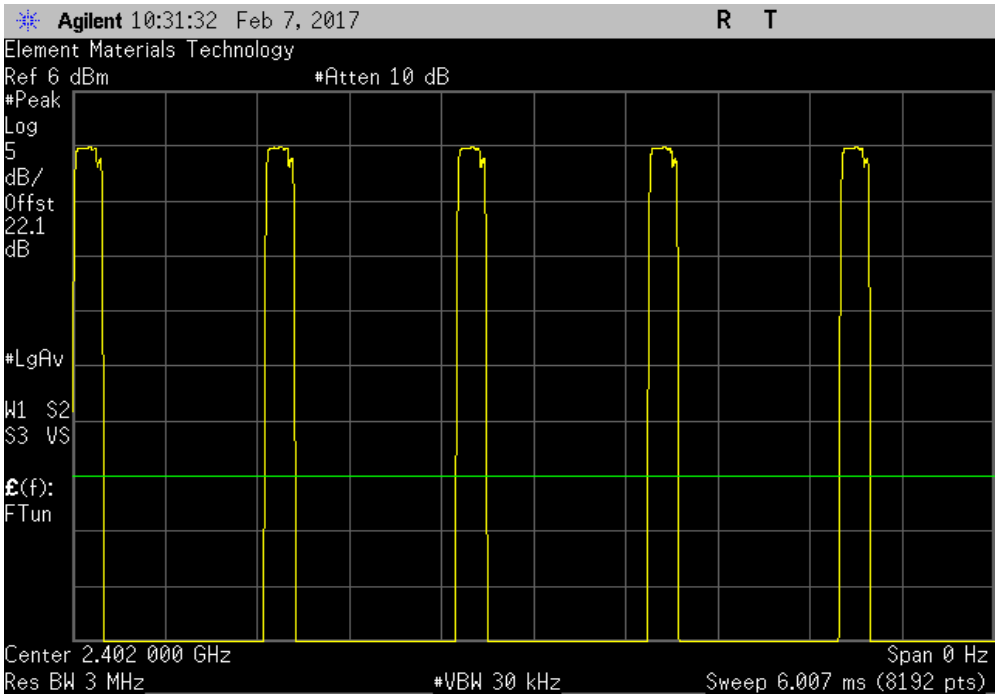
DUTY CYCLE

TbtTx 2017.01.27 XMit 2017.01.26

3DH5, 8-DPSK, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	194.8 us	1.25 ms	1	15.6	N/A	N/A



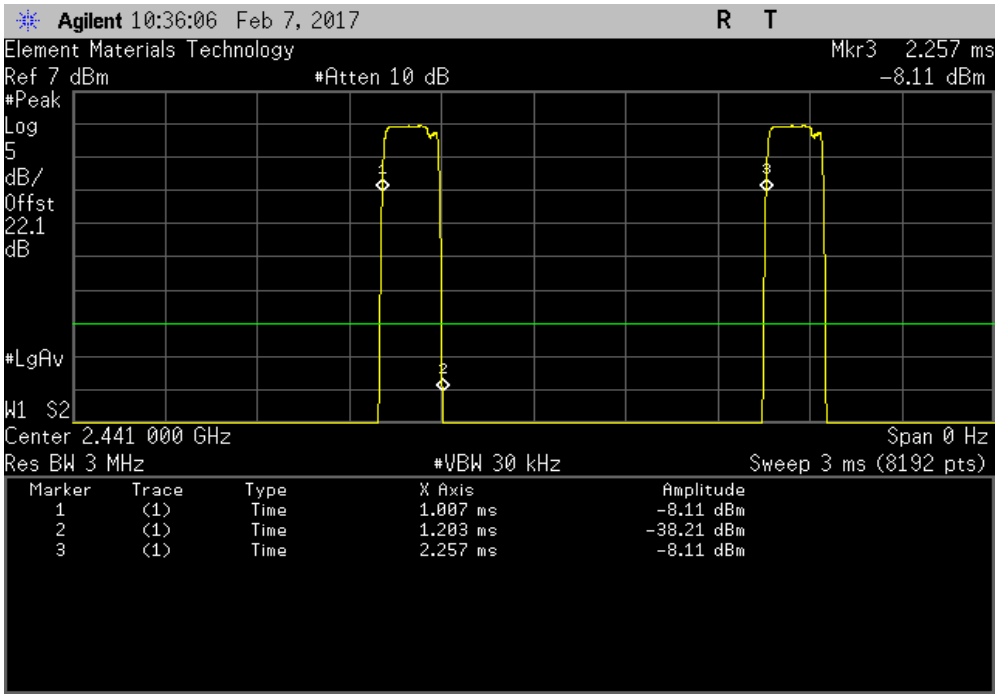
3DH5, 8-DPSK, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



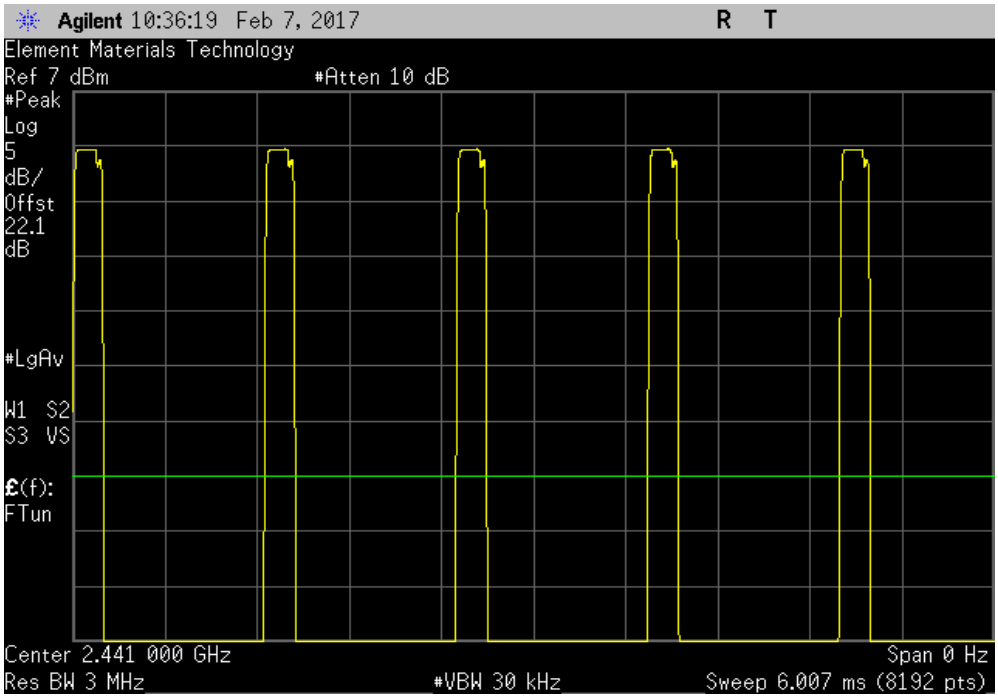
DUTY CYCLE

TbtTx 2017.01.27 XMit 2017.01.26

3DH5, 8-DPSK, Mid Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	195.6 us	1.25 ms	1	15.6	N/A	N/A



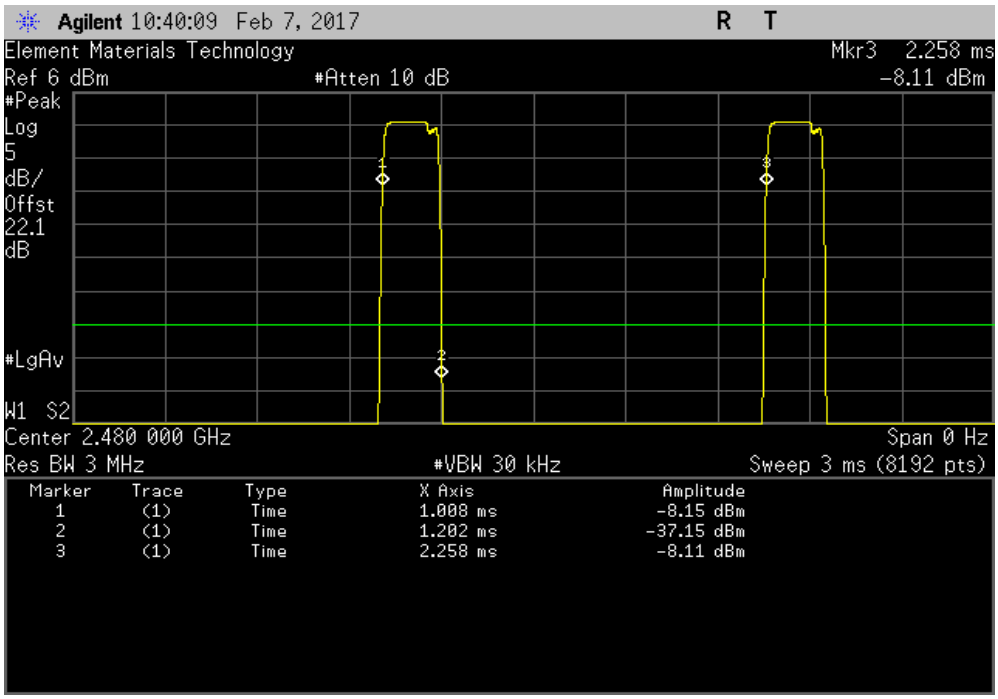
3DH5, 8-DPSK, Mid Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



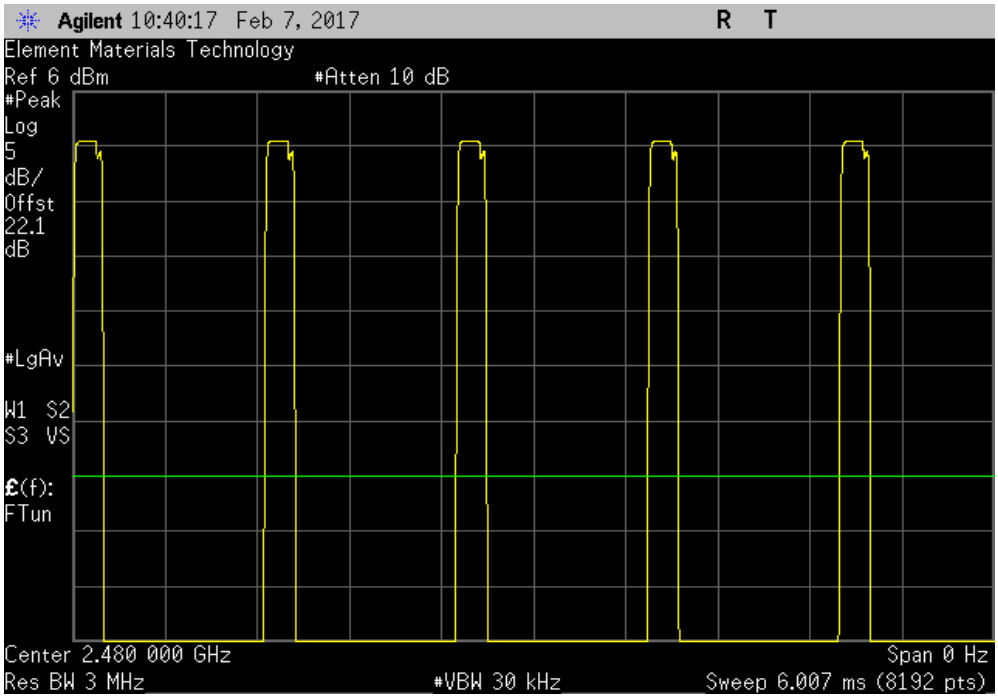
DUTY CYCLE

TbtTx 2017.01.27 XMit 2017.01.26

3DH5, 8-DPSK, High Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	194.8 us	1.25 ms	1	15.6	N/A	N/A



3DH5, 8-DPSK, High Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE CORRECTION FACTOR (HOPPING)

XMit 2017.01.26

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	N5183A	TIK	10/17/2014	10/17/2017
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/15/2016	9/15/2017
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	2/26/2017
Block - DC	Fairview Microwave	SD3379	AMI	9/15/2016	9/15/2017
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

TEST DESCRIPTION

The measurement was made in a radiated configuration of the fundamental with the carrier fully maximized for its highest radiated power. 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.

The duty cycle correction factor was calculated using the formula DCCF = 20*log(total on time/100ms).

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.

DUTY CYCLE CORRECTION FACTOR (HOPPING)

XMit 2017.01.26

EUT:	SurfLink Mini Mobile Adapter			**Work Order:**	STAK0080
Serial Number:	00017006905			**Date:**	02/09/17
Customer:	Starkey Laboratories, Inc.			**Temperature:**	22.9 °C
Attendees:	Charlie Esch			**Humidity:**	20.3% RH
Project:	None			**Barometric Pres.:**	1004 mbar
Tested by:	Dustin Sparks	**Power:**	Battery	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
FCC 15.247:2017	ANSI C63.10:2013

COMMENTS

This data is used to support the DCCF used in Spurious Radiated Emissions

DEVIATIONS FROM TEST STANDARD

None

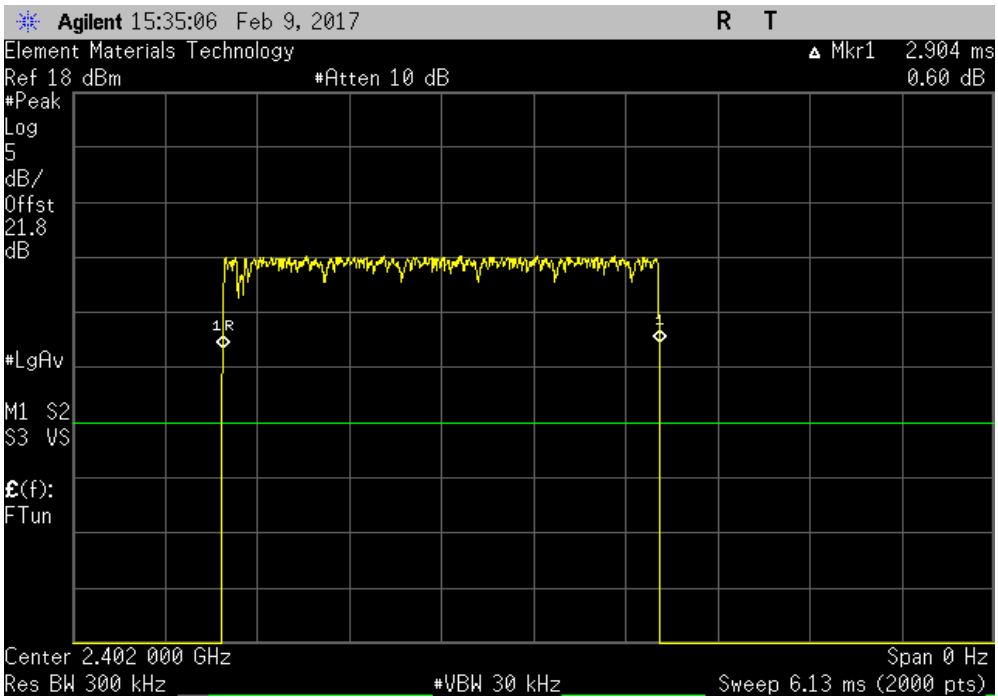
Configuration #	5	Signature

	Number of Pulses	Pulse Length (ms)	Total On Time (ms)	Duty Cycle (%)	DCCF (dB)	Result
DH5						
Pulse Length	N/A	2.904	N/A	N/A	N/A	N/A
Pulses in 100 ms	1	N/A	100 ms	0.02904	-30.75	N/A

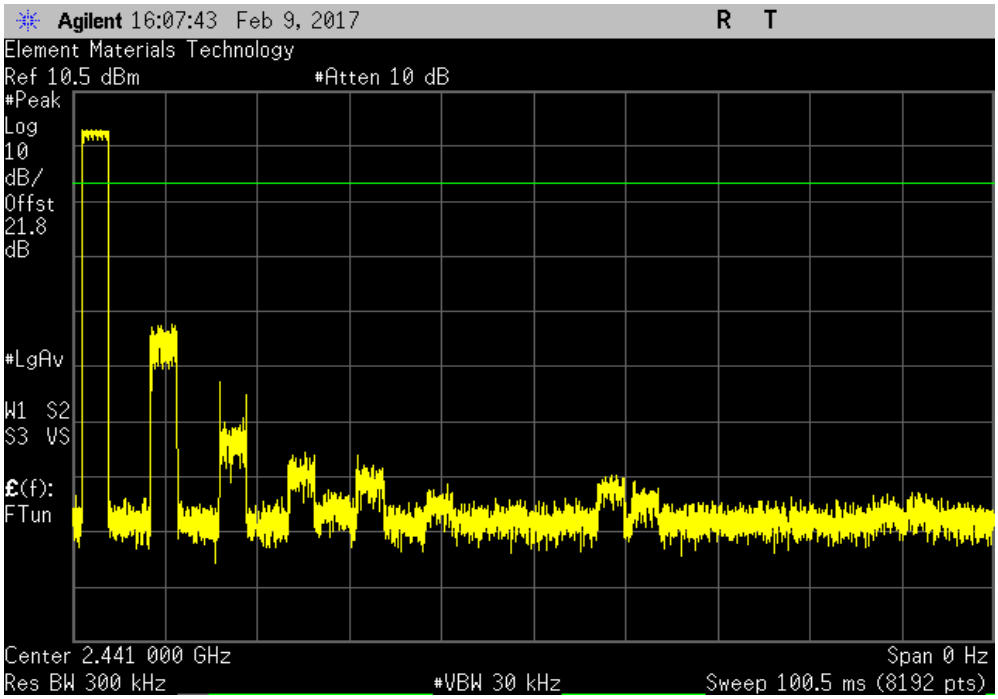
DUTY CYCLE CORRECTION FACTOR (HOPPING)

XMit 2017.01.26

Pulse Length						
	Number of Pulses	Pulse Length (ms)	Total On Time (ms)	Duty Cycle (%)	DCCF (dB)	Result
	N/A	2.904	N/A	N/A	N/A	N/A



Pulses in 100ms						
	Number of Pulses	Pulse Length (ms)	Total On Time (ms)	Duty Cycle (%)	DCCF (dB)	Result
	1	N/A	100 ms	2.90%	-30.75	N/A



CARRIER FREQUENCY SEPARATION

XMit 2017.01.26

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TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	N5182A	TIF	8/12/2014	8/12/2017
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/15/2016	9/15/2017
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	2/26/2017
Block - DC	Fairview Microwave	SD3379	AMI	9/15/2016	9/15/2017
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

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 2017.01.27 XMit 2017.01.26

EUT:	SurfLink Mini Mobile Adapter			**Work Order:**	STAK0080
Serial Number:	00017006905			**Date:**	02/07/17
Customer:	Starkey Laboratories, Inc.			**Temperature:**	23.2 °C
Attendees:	Charlie Esch			**Humidity:**	20.7% RH
Project:	None			**Barometric Pres.:**	1004 mbar
Tested by:	Dustin Sparks	**Power:**	Battery	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
FCC 15.247:2017	ANSI C63.10:2013

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

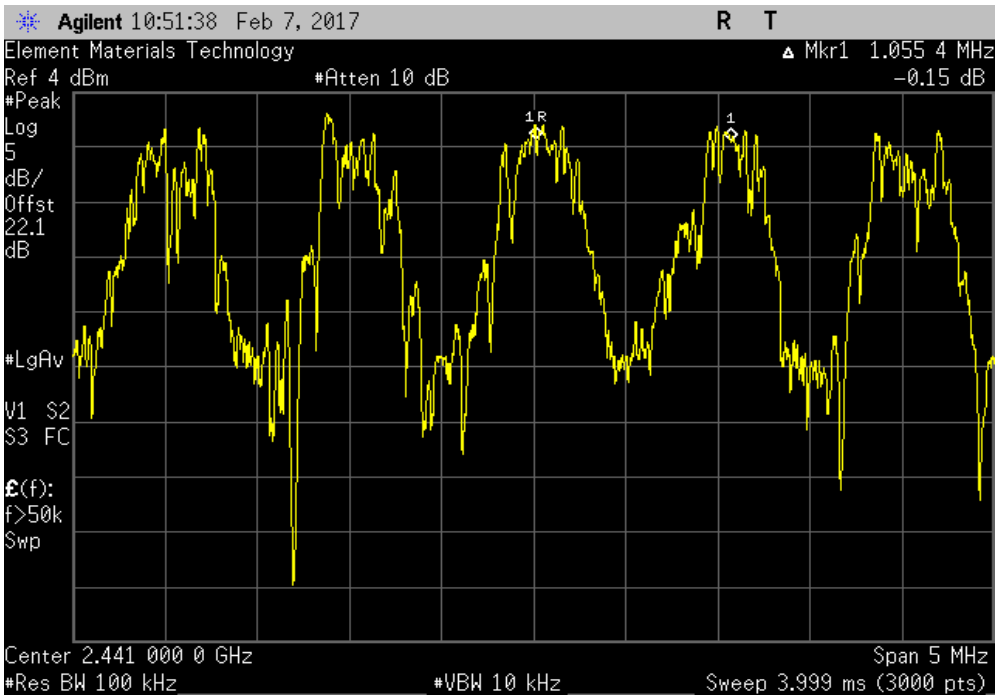
None

Configuration #	4	Signature

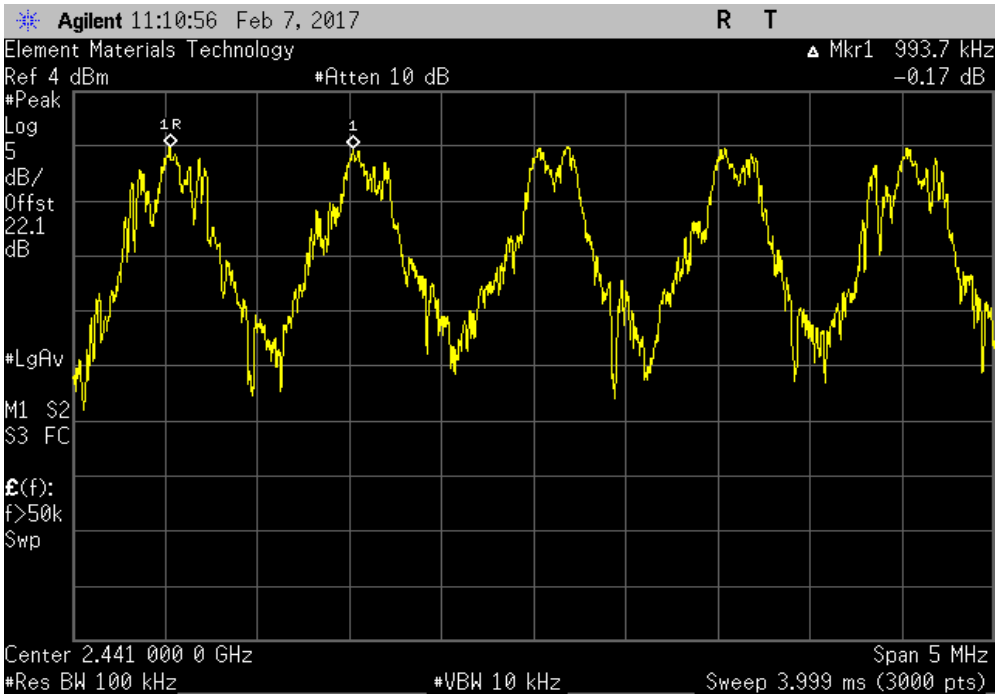
		Value	Limit (≥)	Results
Hopping Mode				
	DH5, GFSK			
	Mid Channel, 2441 MHz	1.1 MHz	1 MHz	Pass
	2DH5, pi/4-DQPSK			
	Mid Channel, 2441 MHz	1.0 MHz	1 MHz	Pass
	3DH5, 8-DPSK			
	Mid Channel, 2441 MHz	1.0 MHz	1 MHz	Pass

CARRIER FREQUENCY SEPARATION

Hopping Mode, DH5, GFSK, Mid Channel, 2441 MHz						
				Value	Limit (≥)	Results
				1.1 MHz	1 MHz	Pass

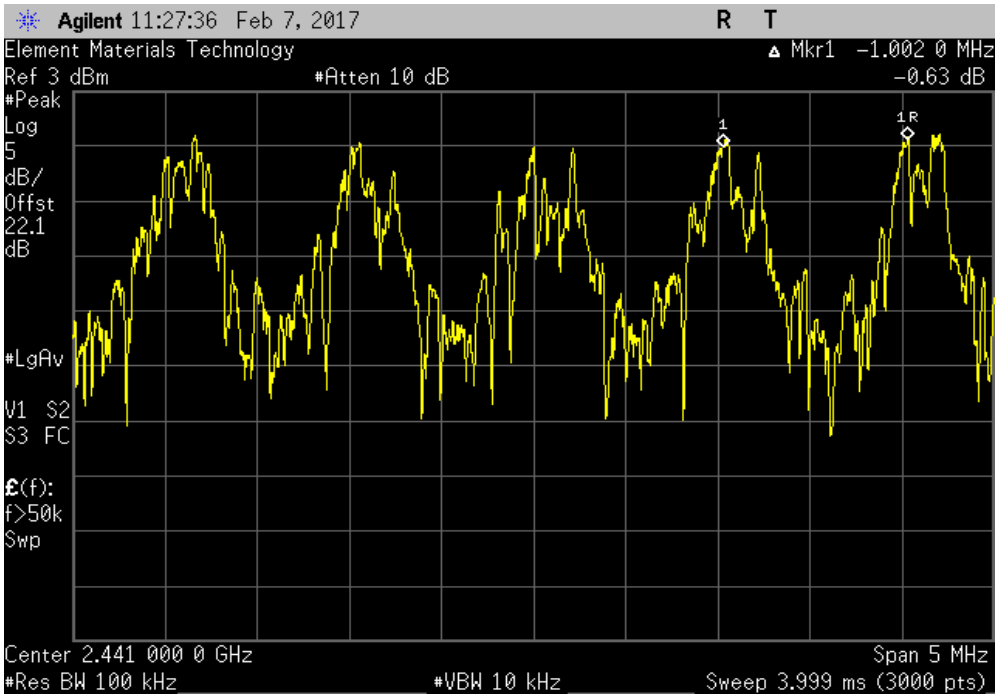


Hopping Mode, 2DH5, pi/4-DQPSK, Mid Channel, 2441 MHz						
				Value	Limit (≥)	Results
				1.0 MHz	1 MHz	Pass



CARRIER FREQUENCY SEPARATION

Hopping Mode, 3DH5, 8-DPSK, Mid Channel, 2441 MHz						
				Value	Limit (≥)	Results
				1.0 MHz	1 MHz	Pass



NUMBER OF HOPPING FREQUENCIES

XMit 2017.01.26

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	N5182A	TIF	8/12/2014	8/12/2017
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/15/2016	9/15/2017
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	2/26/2017
Block - DC	Fairview Microwave	SD3379	AMI	9/15/2016	9/15/2017
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

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

TbtTx 2017.01.27 XMit 2017.01.26

EUT:	**SurfLink Mini Mobile Adapter**			**Work Order:**	**STAK0080**
Serial Number:	**00017006905**			**Date:**	**02/07/17**
Customer:	**Starkey Laboratories, Inc.**			**Temperature:**	**23.1 °C**
Attendees:	**Charlie Esch**			**Humidity:**	**20.4% RH**
Project:	**None**			**Barometric Pres.:**	**1004 mbar**
Tested by:	**Dustin Sparks**	**Power:**	**Battery**	**Job Site:**	**MN08**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2017	ANSI C63.10:2013

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

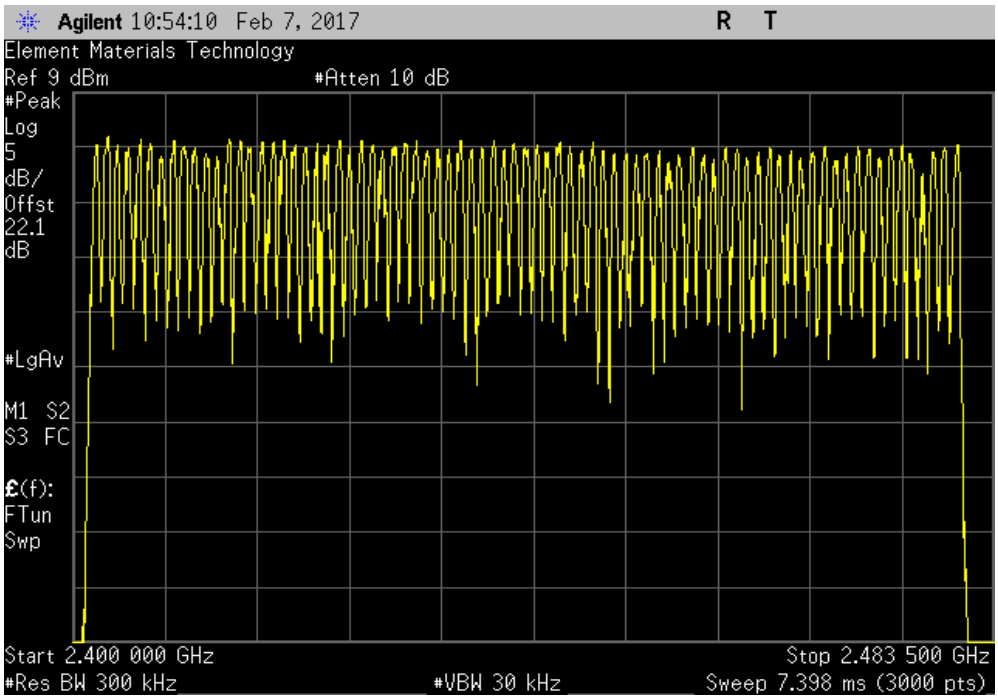
None

Configuration #	**4**	*Signature* Dustin Sparks

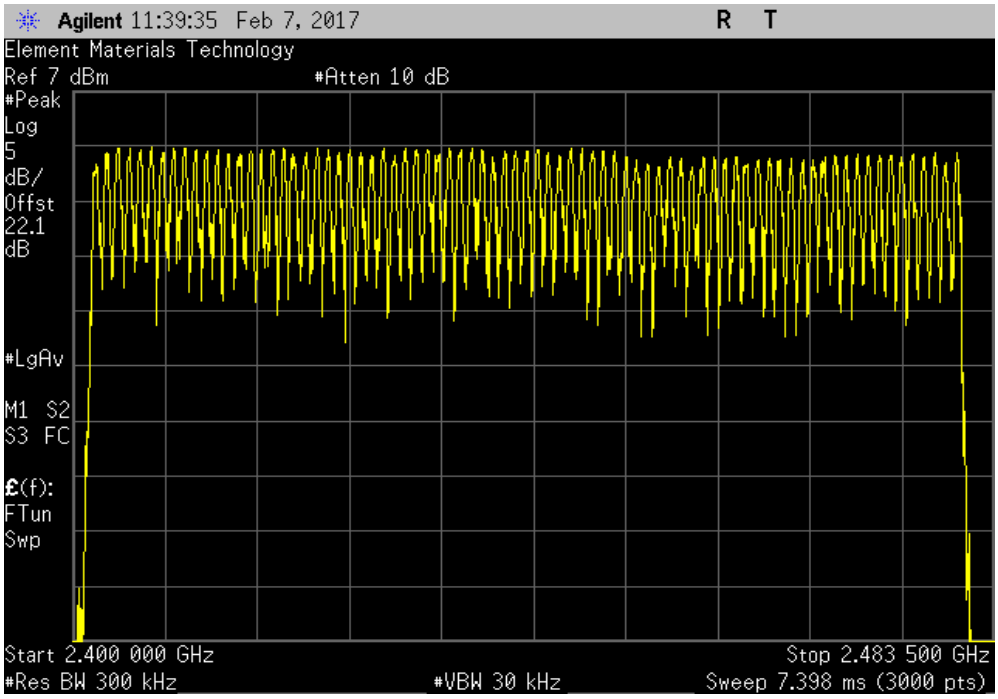
		Number of Channels	**Limit**	**Results**
Hopping Mode				
	DH5, GFSK			
	Mid Channel, 2441 MHz	79	15	Pass
	2DH5, pi/4-DQPSK			
	Mid Channel, 2441 MHz	79	15	Pass
	3DH5, 8-DPSK			
	Mid Channel, 2441 MHz	79	15	Pass

NUMBER OF HOPPING FREQUENCIES

Hopping Mode, DH5, GFSK, Mid Channel, 2441 MHz						
				Number of Channels	Limit	Results
				79	15	Pass



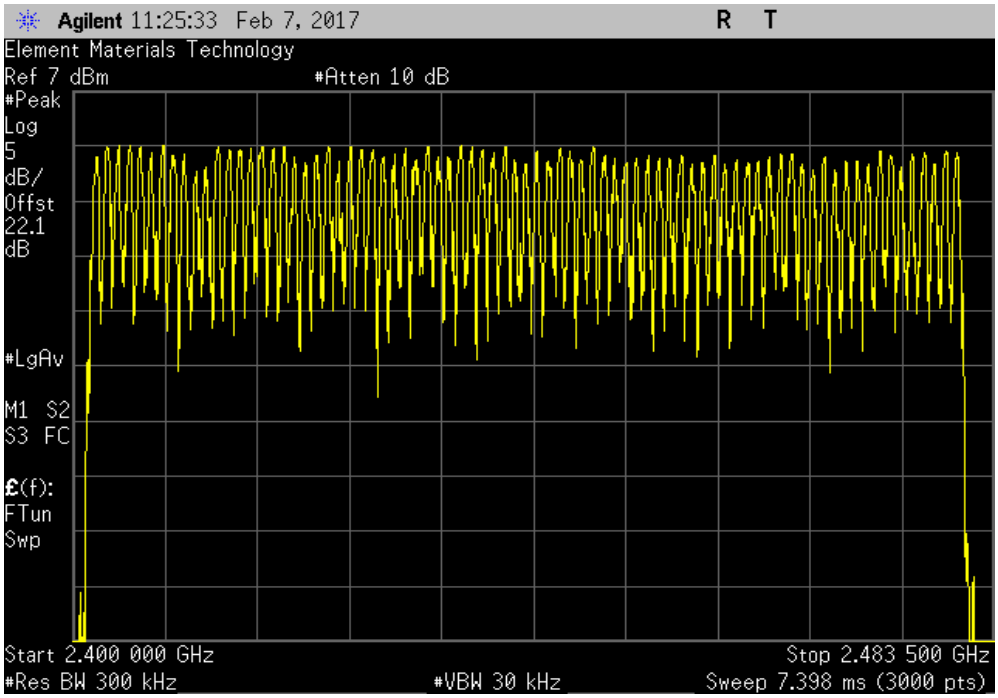
Hopping Mode, 2DH5, pi/4-DQPSK, Mid Channel, 2441 MHz						
				Number of Channels	Limit	Results
				79	15	Pass



NUMBER OF HOPPING FREQUENCIES

TbtTx 2017.01.27 XMit 2017.01.26

Hopping Mode, 3DH5, 8-DPSK, Mid Channel, 2441 MHz						
				Number of Channels	Limit	Results
				79	15	Pass



DWELL TIME

XMit 2017.01.26

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	N5183A	TIK	10/17/2014	10/17/2017
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/15/2016	9/15/2017
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	2/26/2017
Block - DC	Fairview Microwave	SD3379	AMI	9/15/2016	9/15/2017
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

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.

DWELL TIME

TbtTx 2017.01.27 XMit 2017.01.26

EUT:	**SurfLink Mini Moblie Adapter**			**Work Order:**	**STAK0080**
Serial Number:	**00017006905**			**Date:**	**02/09/17**
Customer:	**Starkey Laboratories, Inc.**			**Temperature:**	**23.1 °C**
Attendees:	**Charlie Esch**			**Humidity:**	**16.6% RH**
Project:	**None**			**Barometric Pres.:**	**1025 mbar**
Tested by:	**Dustin Sparks**	**Power:**	**Battery**	**Job Site:**	**MN08**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2017	ANSI C63.10:2013

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

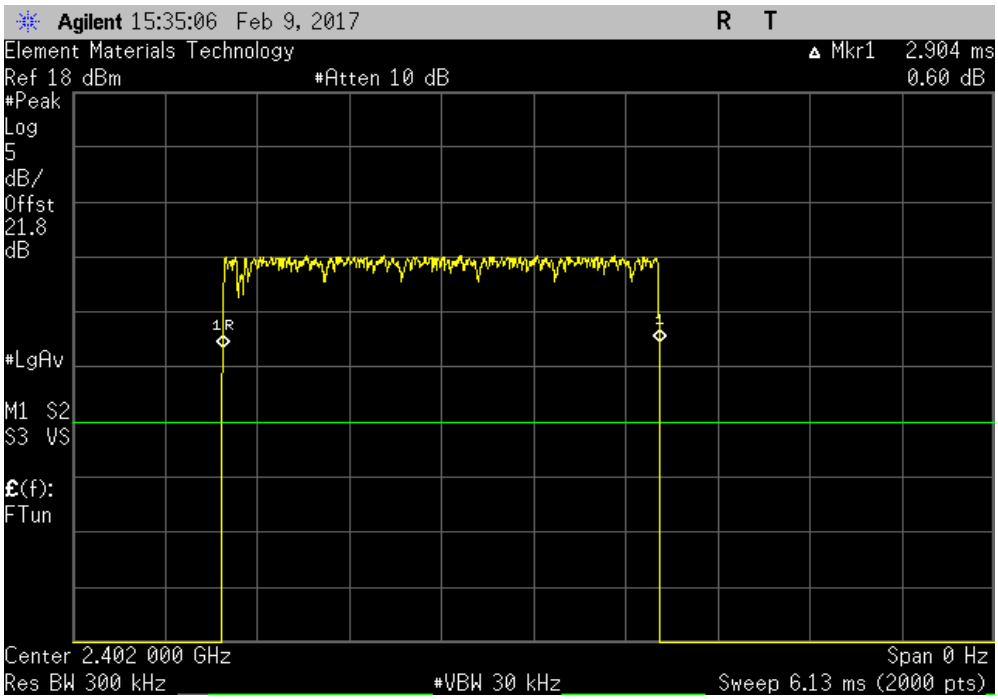
Configuration #	**4**	*Signature* Dustin Sparks

	Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
Hopping Mode							
DH5, GFSK							
Low Channel, 2402 MHz	2.904	N/A	N/A	N/A	N/A	N/A	N/A
Low Channel, 2402 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
Low Channel, 2402 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
Low Channel, 2402 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
Low Channel, 2402 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
Low Channel, 2402 MHz	2.904	N/A	22	5	319.44	400	Pass
High Channel, 2480 MHz	2.904	N/A	N/A	N/A	N/A	N/A	N/A
High Channel, 2480 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
High Channel, 2480 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
High Channel, 2480 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
High Channel, 2480 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
High Channel, 2480 MHz	2.904	N/A	22	5	319.44	400	Pass
2DH5, pi/4-DQPSK							
Low Channel, 2402 MHz	2.913	N/A	N/A	N/A	N/A	N/A	N/A
Low Channel, 2402 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
Low Channel, 2402 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
Low Channel, 2402 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
Low Channel, 2402 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
Low Channel, 2402 MHz	2.913	N/A	22	5	320.43	400	Pass
High Channel, 2480 MHz	2.913	N/A	N/A	N/A	N/A	N/A	N/A
High Channel, 2480 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
High Channel, 2480 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
High Channel, 2480 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
High Channel, 2480 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
High Channel, 2480 MHz	2.913	N/A	22	5	320.43	400	Pass
3DH5, 8-DPSK							
Low Channel, 2402 MHz	2.916	N/A	N/A	N/A	N/A	N/A	N/A
Low Channel, 2402 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
Low Channel, 2402 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
Low Channel, 2402 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
Low Channel, 2402 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
Low Channel, 2402 MHz	2.916	N/A	22	5	320.76	400	Pass
High Channel, 2480 MHz	2.916	N/A	N/A	N/A	N/A	N/A	N/A
High Channel, 2480 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
High Channel, 2480 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
High Channel, 2480 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
High Channel, 2480 MHz	N/A	22	N/A	N/A	N/A	N/A	N/A
High Channel, 2480 MHz	2.916	N/A	22	5	320.76	400	Pass

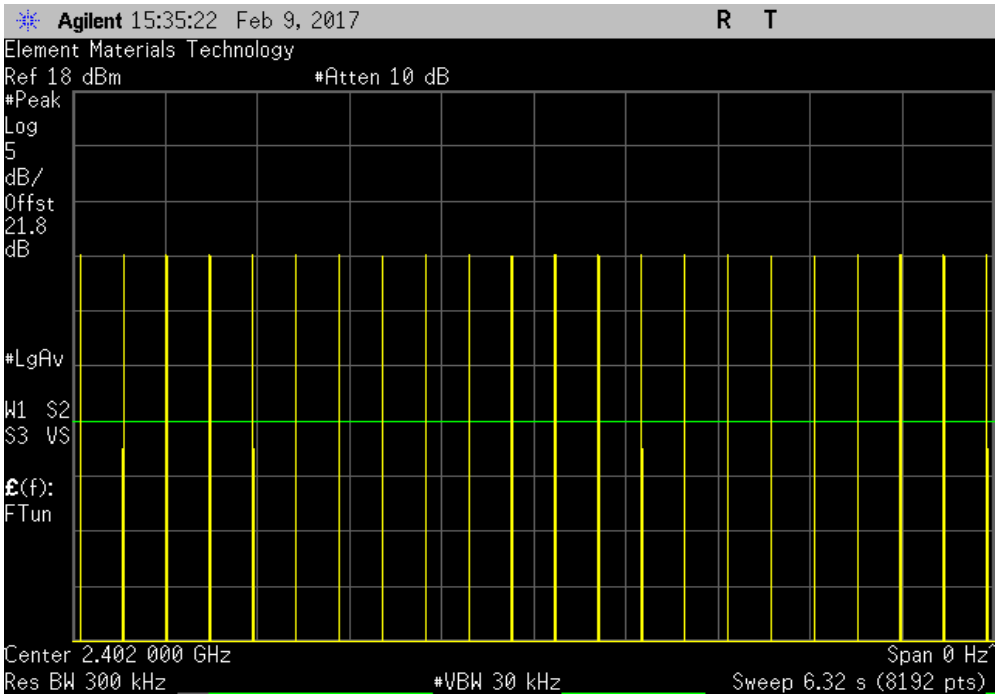
DWELL TIME

TbtTx 2017.01.27 XMit 2017.01.26

Hopping Mode, DH5, GFSK, Low Channel, 2402 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
2.904	N/A	N/A	N/A	N/A	N/A	N/A



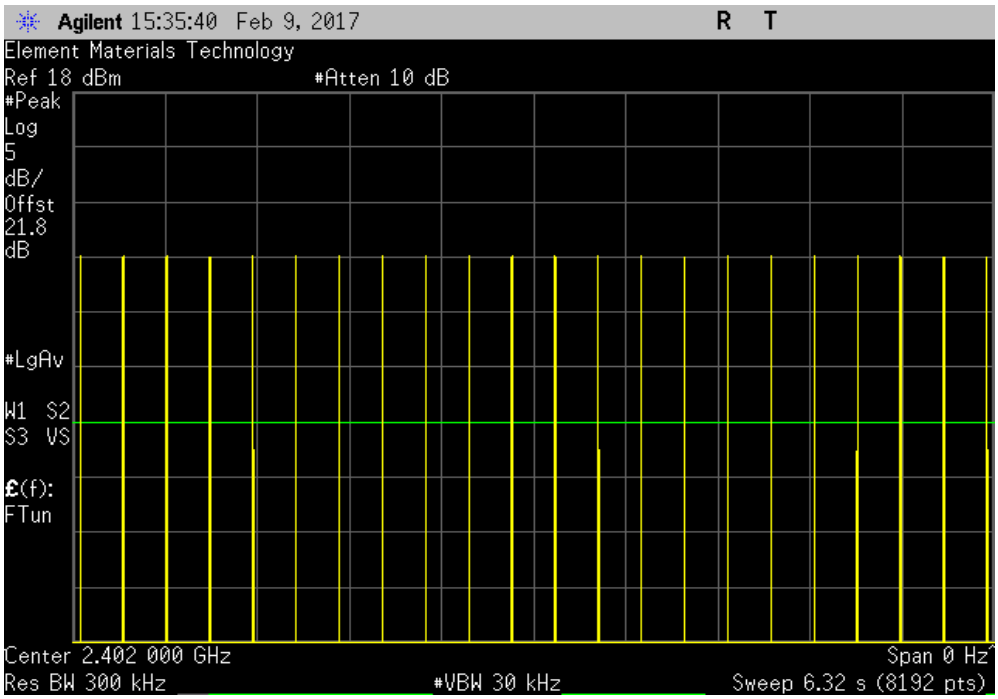
Hopping Mode, DH5, GFSK, Low Channel, 2402 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



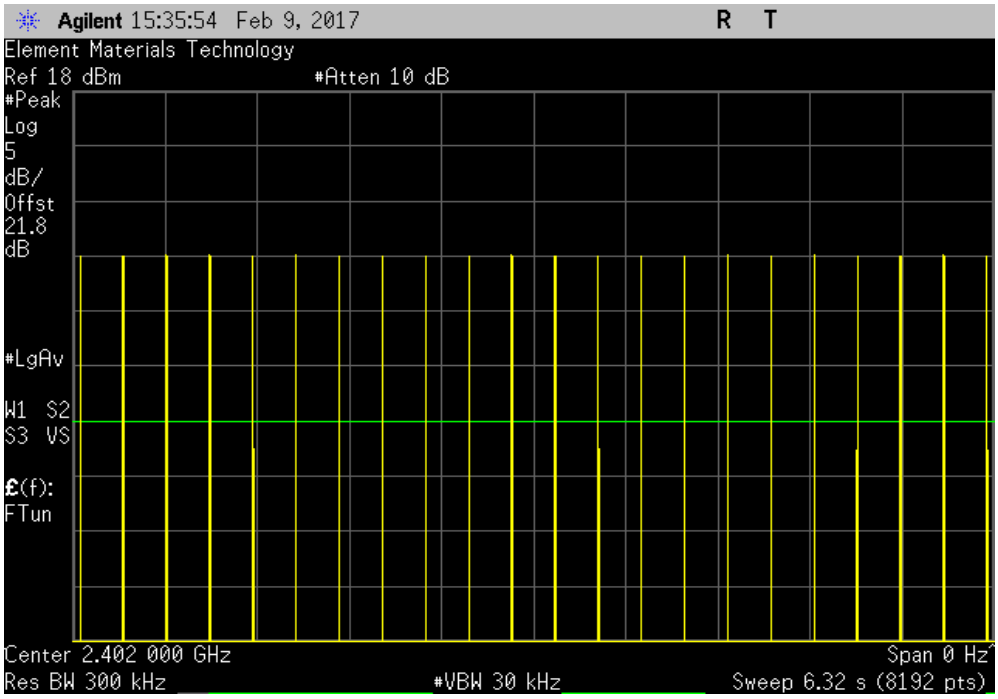
DWELL TIME

TbtTx 2017.01.27 XMit 2017.01.26

Hopping Mode, DH5, GFSK, Low Channel, 2402 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



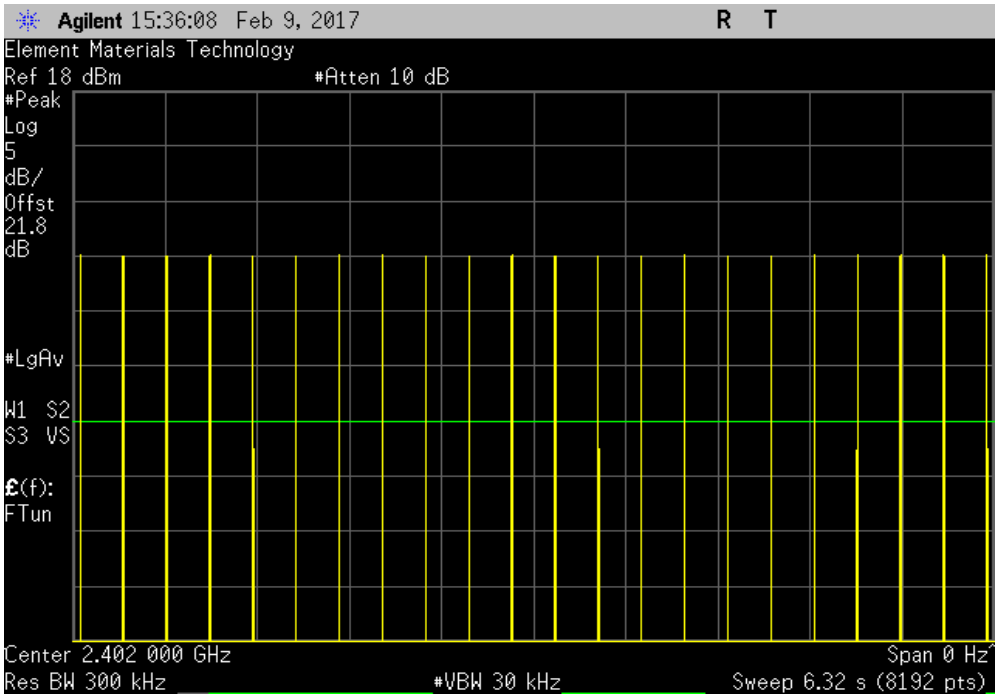
Hopping Mode, DH5, GFSK, Low Channel, 2402 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



DWELL TIME

TbtTx 2017.01.27 XMit 2017.01.26

Hopping Mode, DH5, GFSK, Low Channel, 2402 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



Hopping Mode, DH5, GFSK, Low Channel, 2402 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
2.904	N/A	22	5	319.44	400	Pass

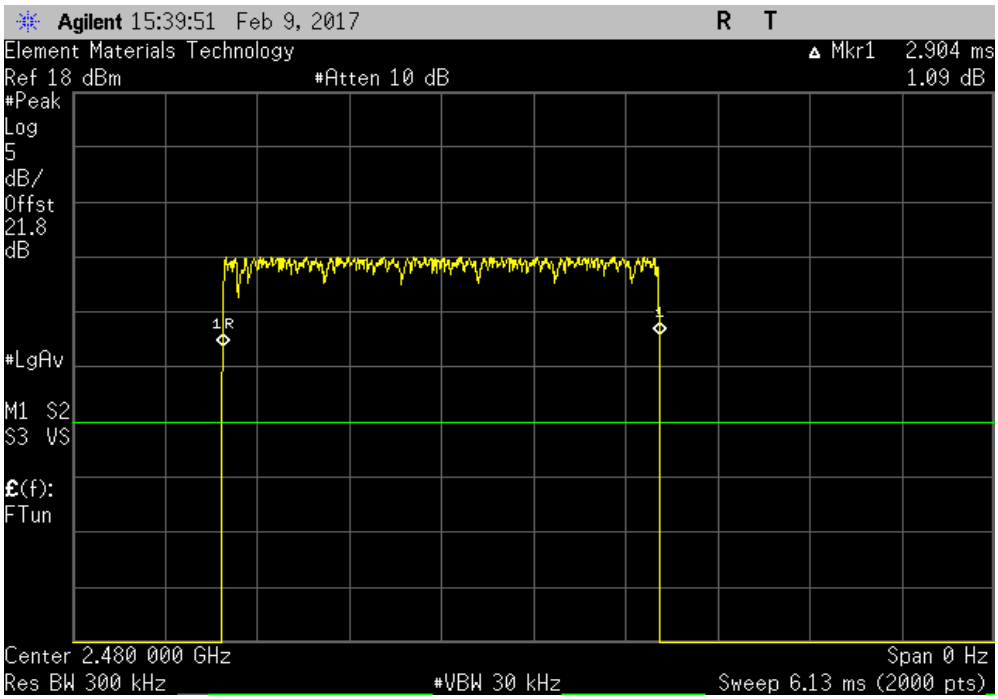
Calculation Only

No Screen Capture Required

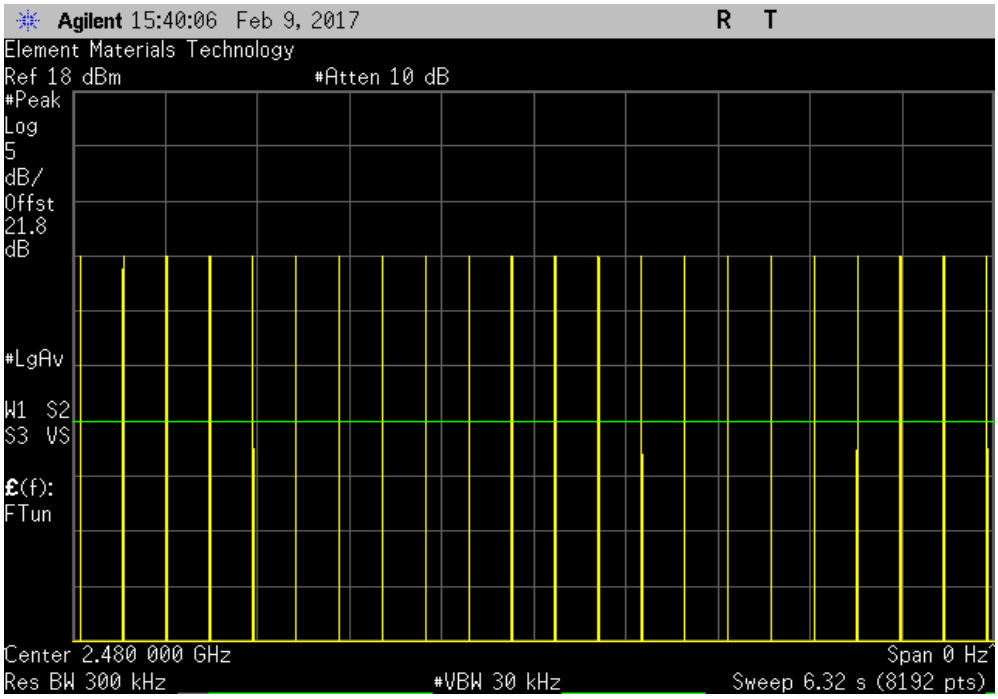
DWELL TIME

TbtTx 2017.01.27 XMit 2017.01.26

Hopping Mode, DH5, GFSK, High Channel, 2480 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
2.904	N/A	N/A	N/A	N/A	N/A	N/A



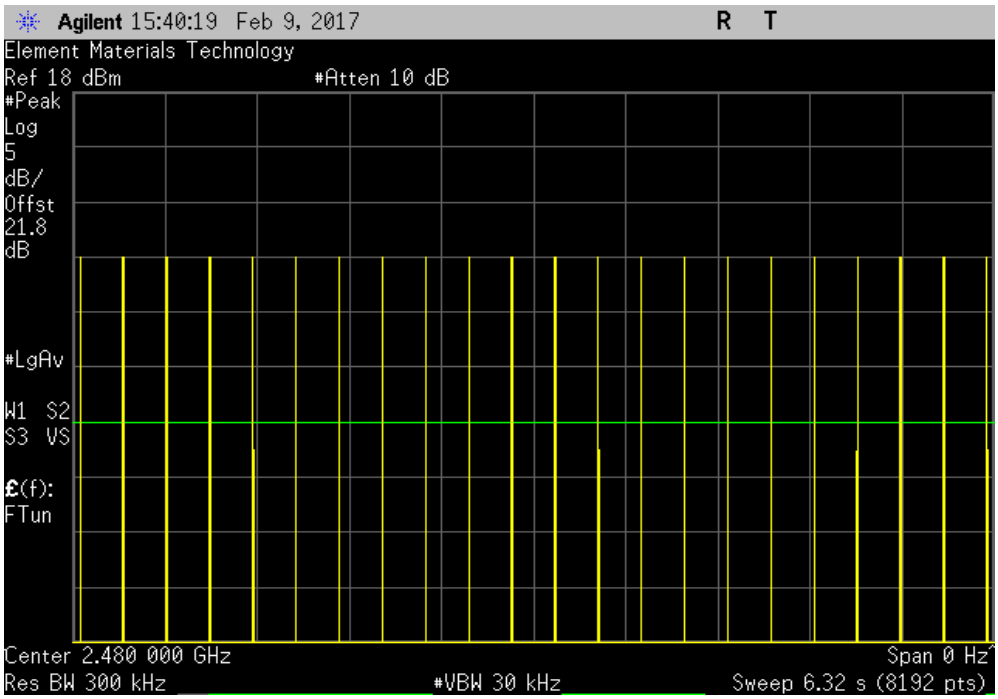
Hopping Mode, DH5, GFSK, High Channel, 2480 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



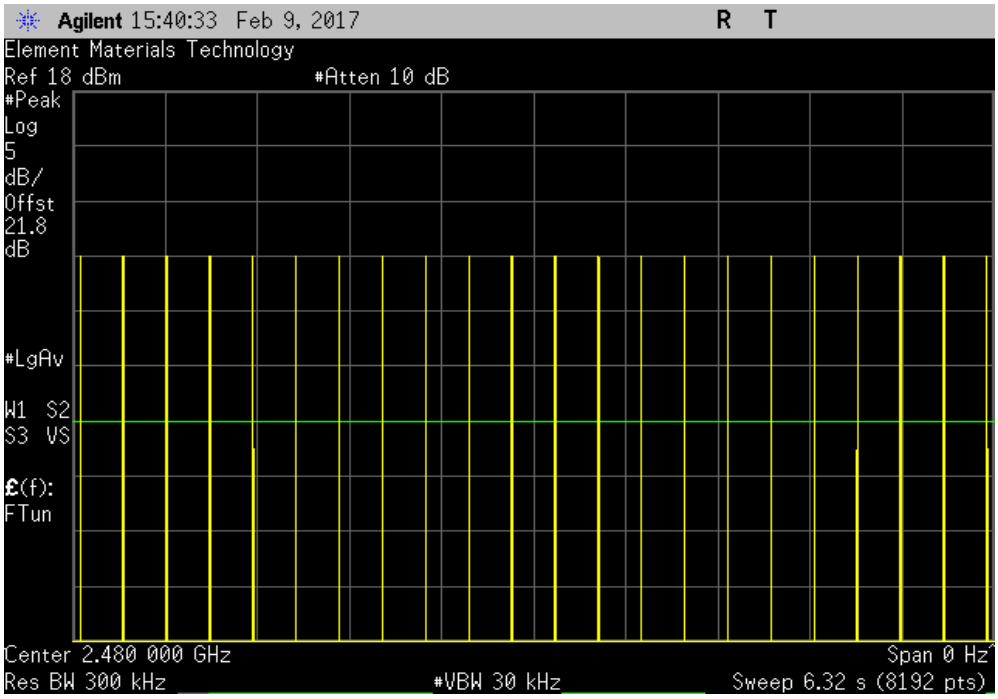
DWELL TIME

TbtTx 2017.01.27 XMit 2017.01.26

Hopping Mode, DH5, GFSK, High Channel, 2480 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



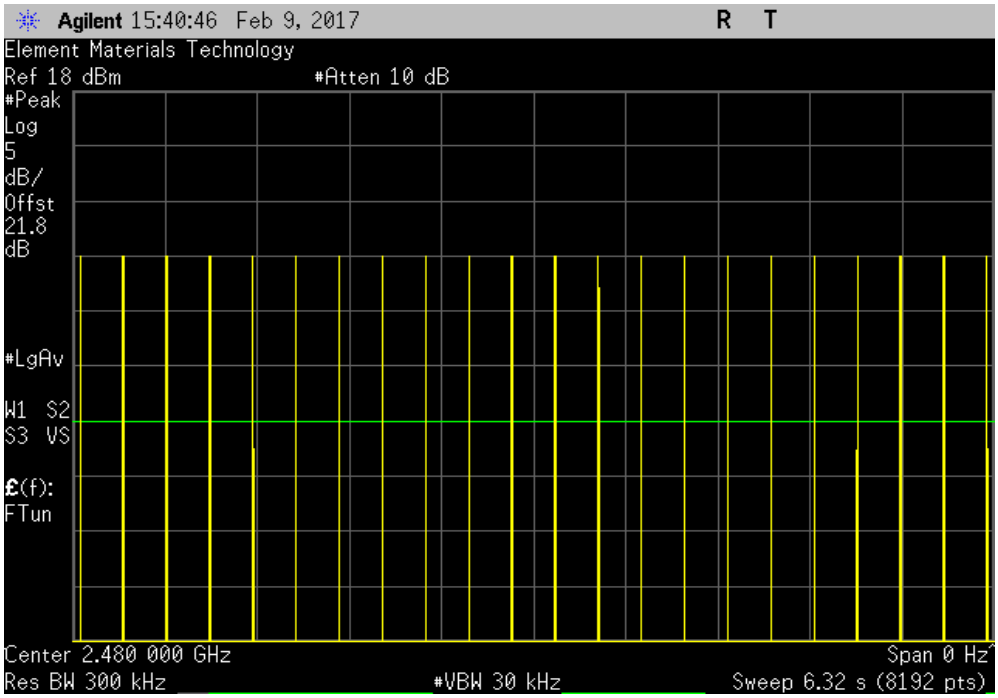
Hopping Mode, DH5, GFSK, High Channel, 2480 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



DWELL TIME

TbtTx 2017.01.27 XMit 2017.01.26

Hopping Mode, DH5, GFSK, High Channel, 2480 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



Hopping Mode, DH5, GFSK, High Channel, 2480 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
2.904	N/A	22	5	319.44	400	Pass

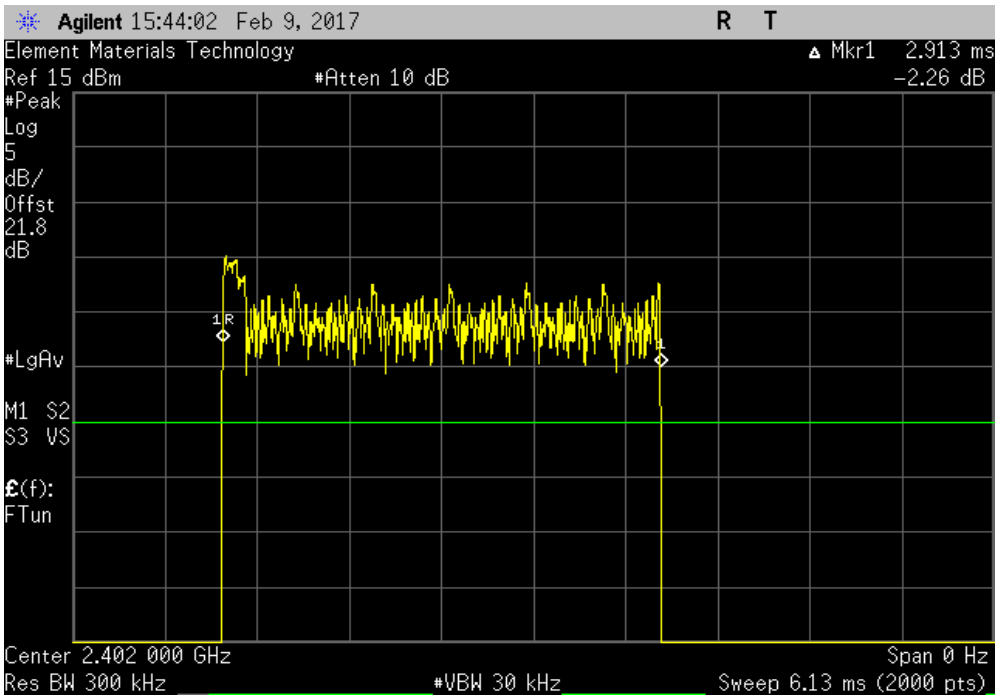
Calculation Only

No Screen Capture Required

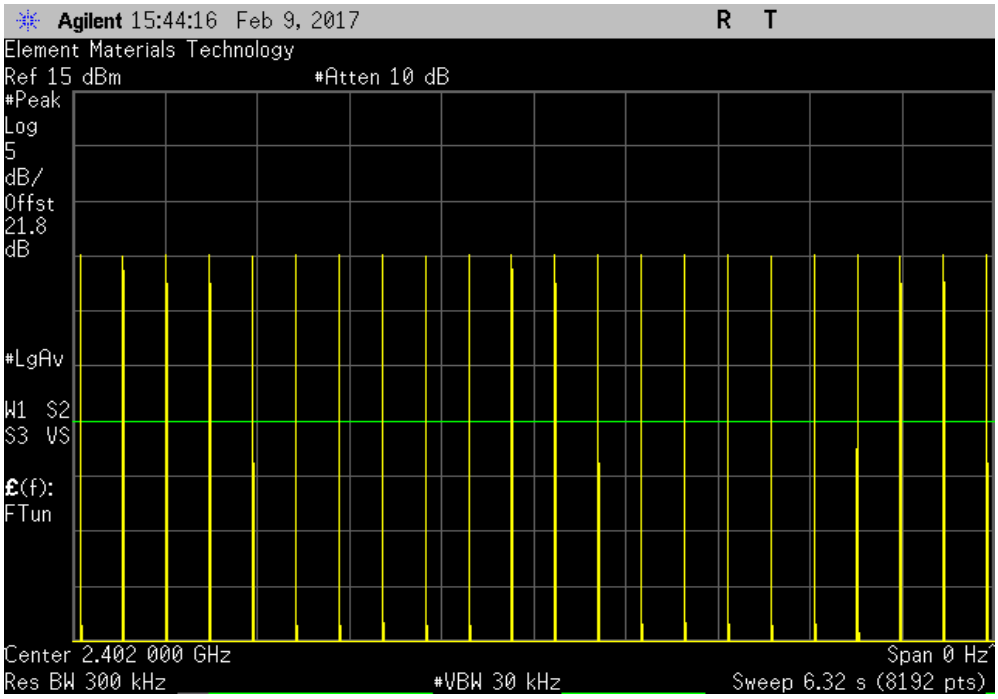
DWELL TIME

TbtTx 2017.01.27 XMit 2017.01.26

Hopping Mode, 2DH5, pi/4-DQPSK, Low Channel, 2402 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
2.913	N/A	N/A	N/A	N/A	N/A	N/A



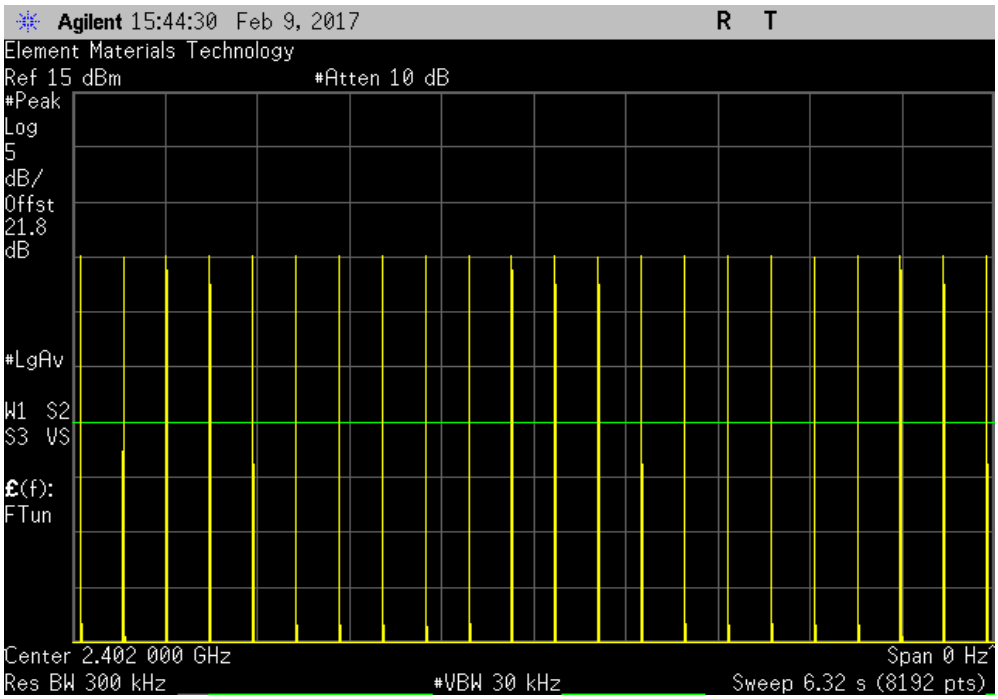
Hopping Mode, 2DH5, pi/4-DQPSK, Low Channel, 2402 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



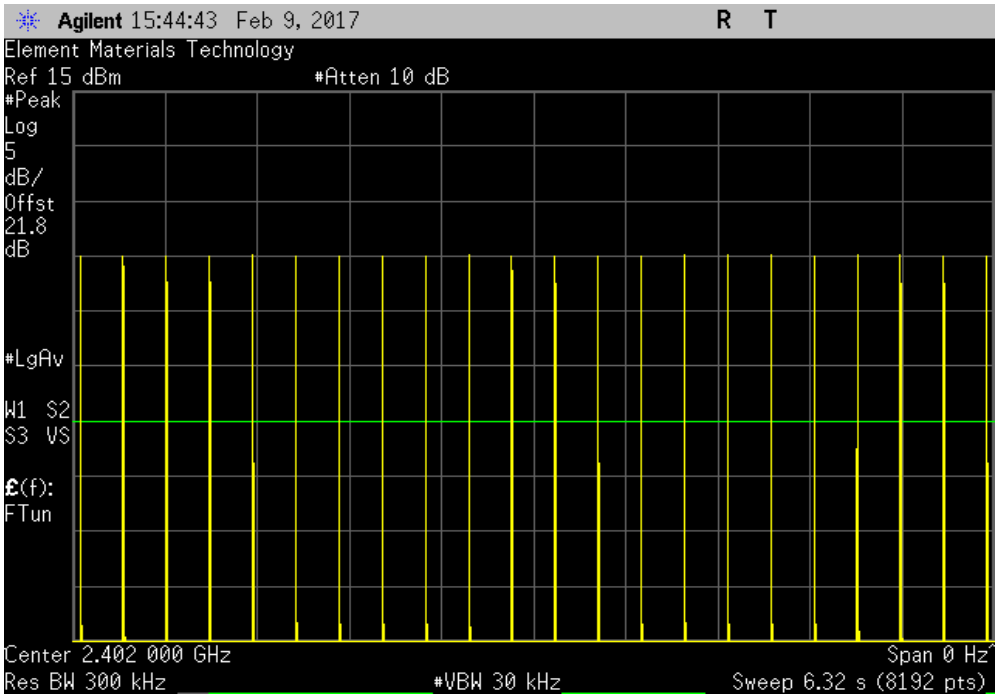
DWELL TIME

TbtTx 2017.01.27 XMit 2017.01.26

Hopping Mode, 2DH5, pi/4-DQPSK, Low Channel, 2402 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



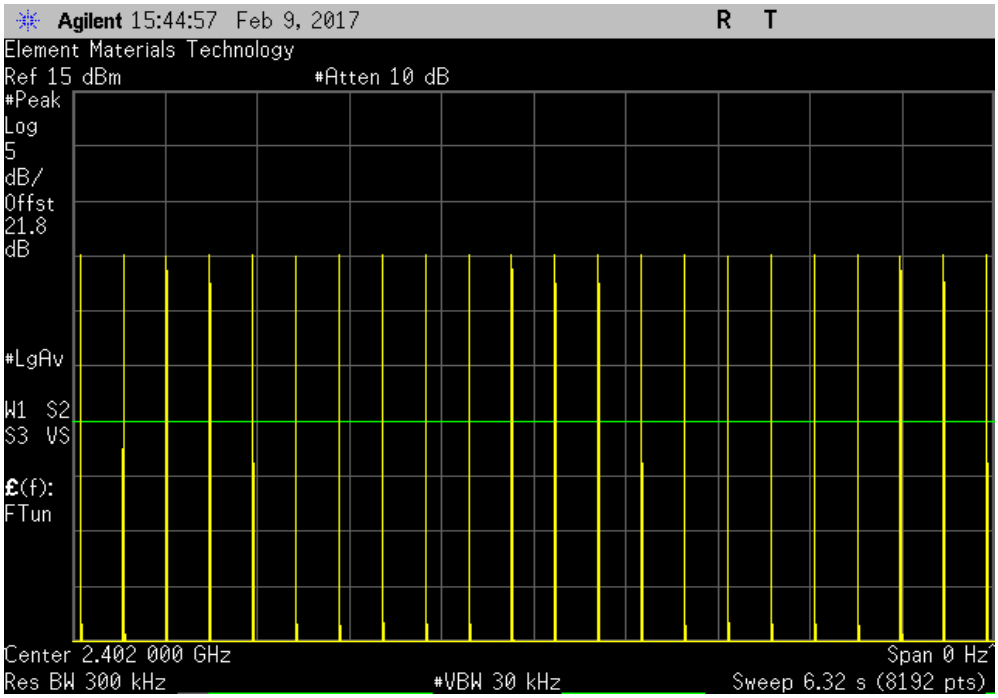
Hopping Mode, 2DH5, pi/4-DQPSK, Low Channel, 2402 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



DWELL TIME

TbtTx 2017.01.27 XMit 2017.01.26

Hopping Mode, 2DH5, pi/4-DQPSK, Low Channel, 2402 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



Hopping Mode, 2DH5, pi/4-DQPSK, Low Channel, 2402 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
2.913	N/A	22	5	320.43	400	Pass

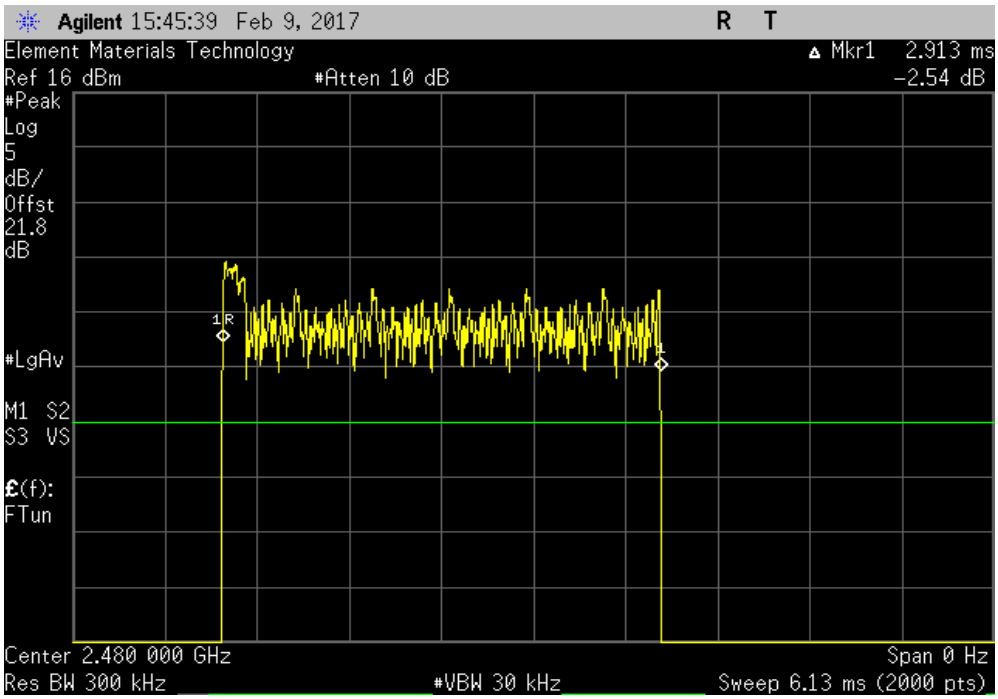
Calculation Only

No Screen Capture Required

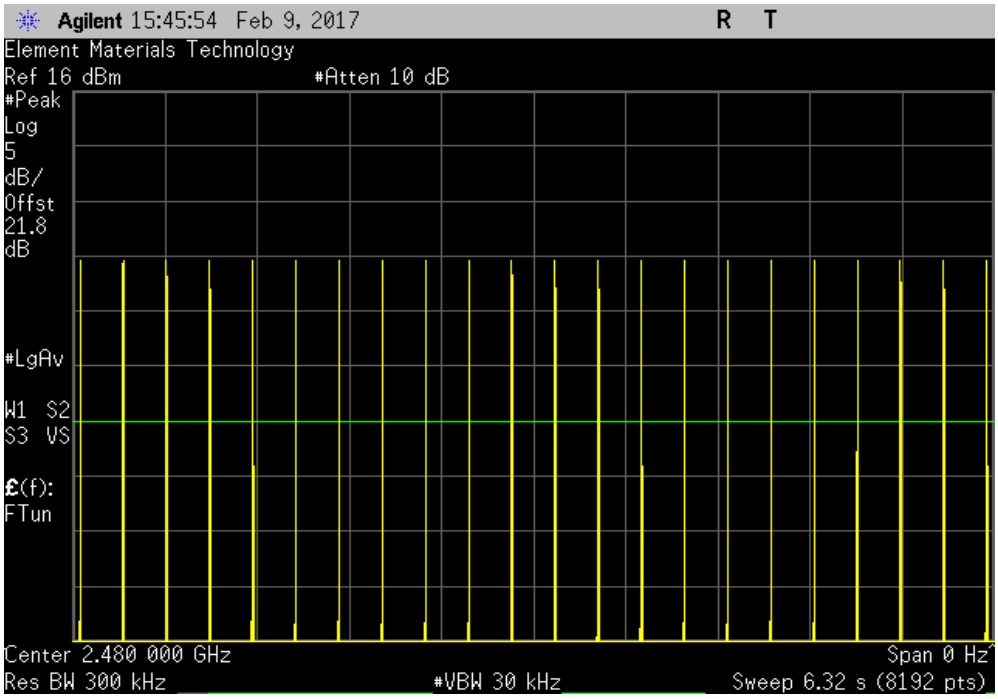
DWELL TIME

TbtTx 2017.01.27 XMit 2017.01.26

Hopping Mode, 2DH5, pi/4-DQPSK, High Channel, 2480 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
2.913	N/A	N/A	N/A	N/A	N/A	N/A

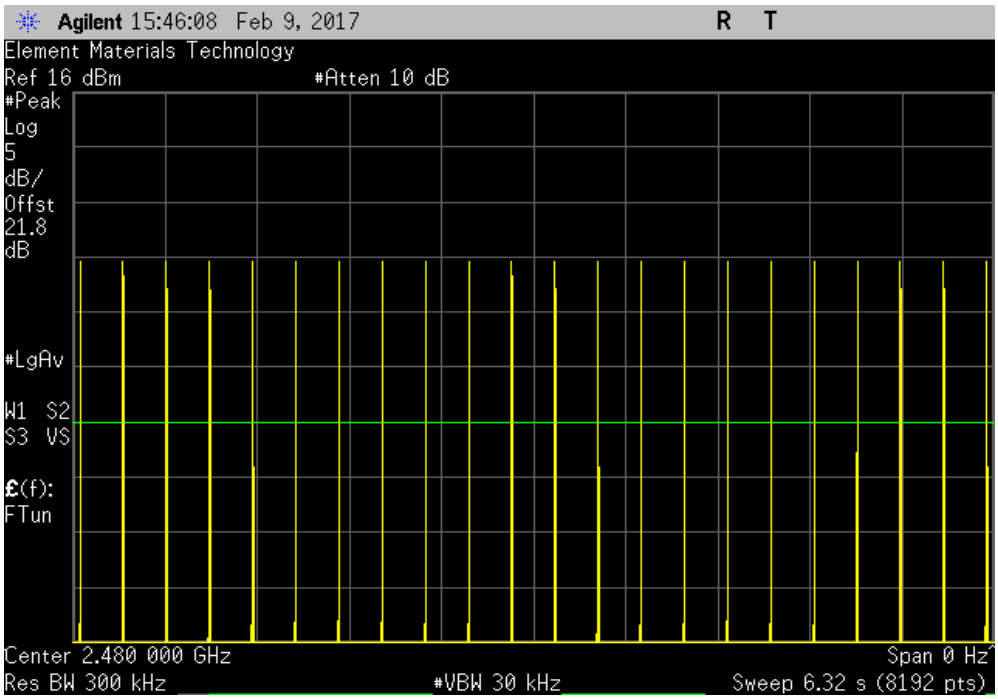


Hopping Mode, 2DH5, pi/4-DQPSK, High Channel, 2480 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A

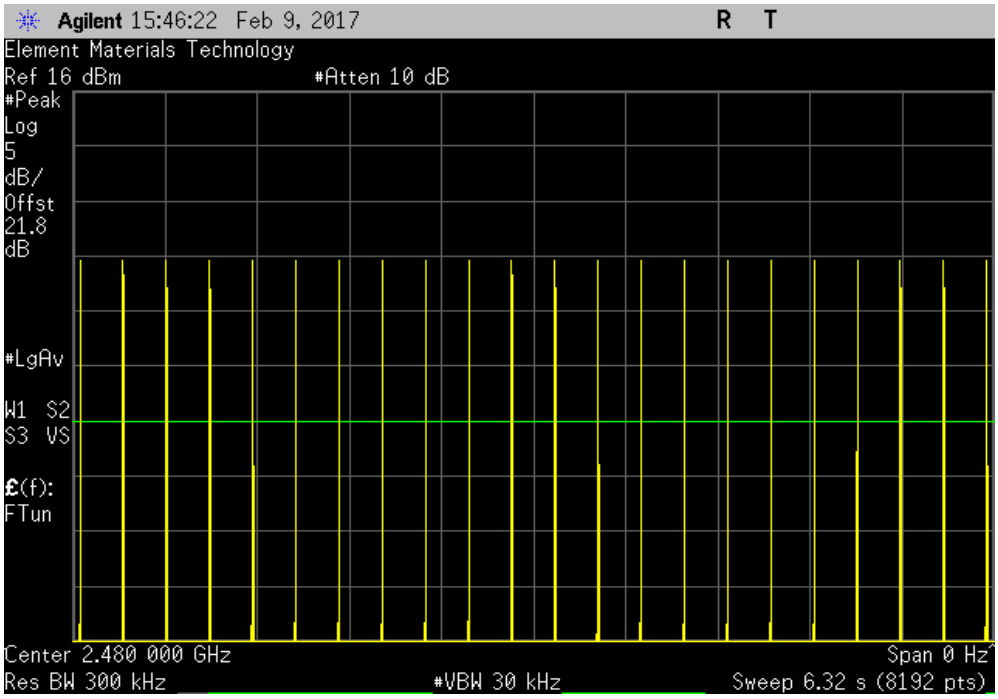


DWELL TIME

Hopping Mode, 2DH5, pi/4-DQPSK, High Channel, 2480 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



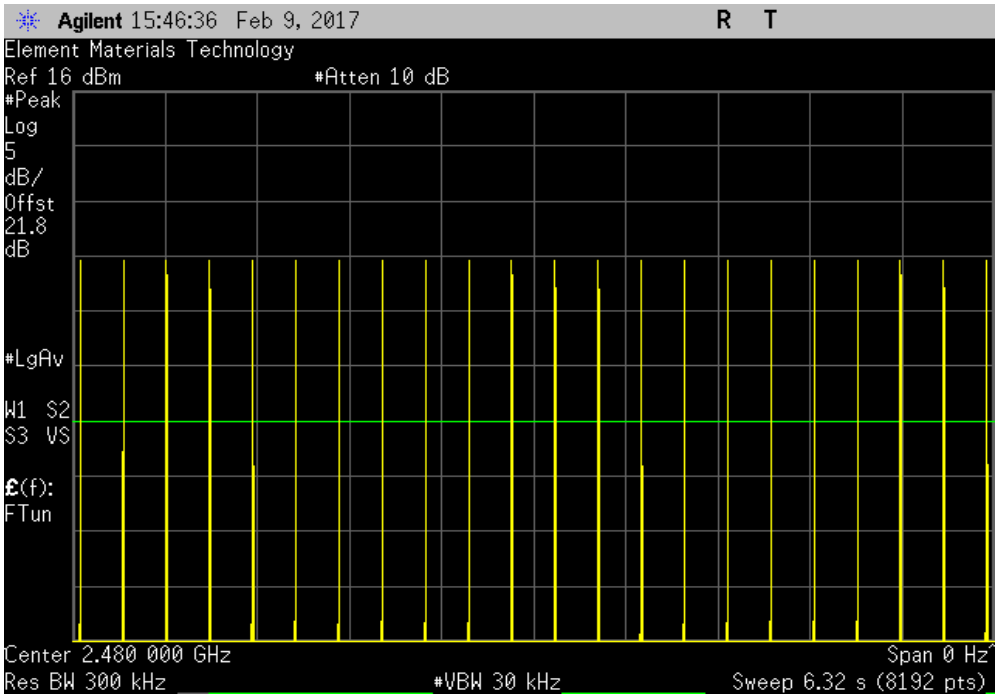
Hopping Mode, 2DH5, pi/4-DQPSK, High Channel, 2480 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



DWELL TIME

TbtTx 2017.01.27 XMit 2017.01.26

Hopping Mode, 2DH5, pi/4-DQPSK, High Channel, 2480 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



Hopping Mode, 2DH5, pi/4-DQPSK, High Channel, 2480 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
2.913	N/A	22	5	320.43	400	Pass

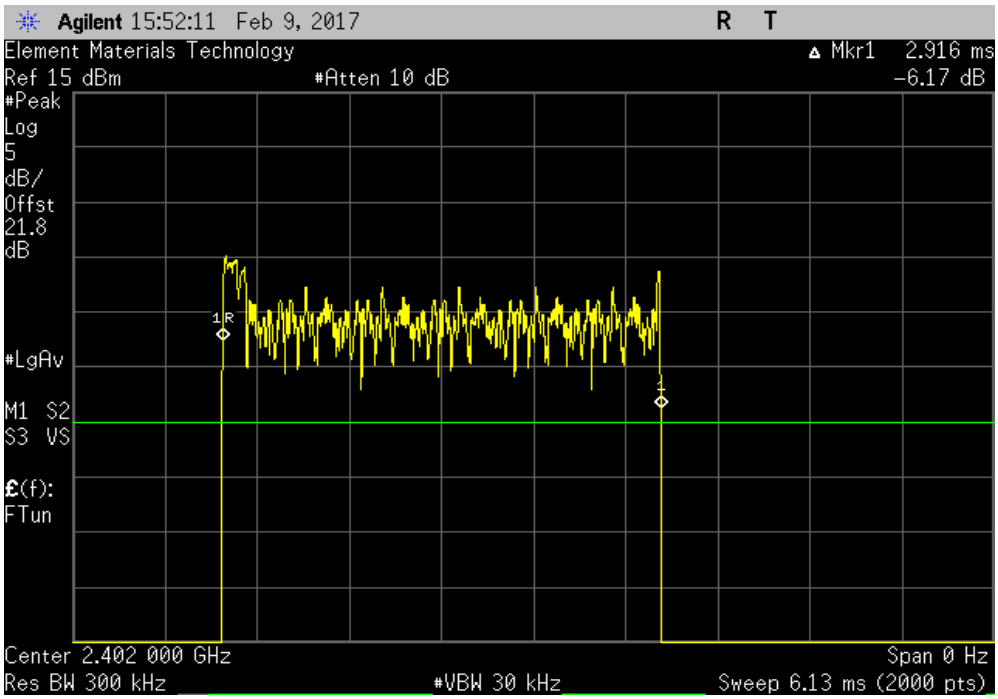
Calculation Only

No Screen Capture Required

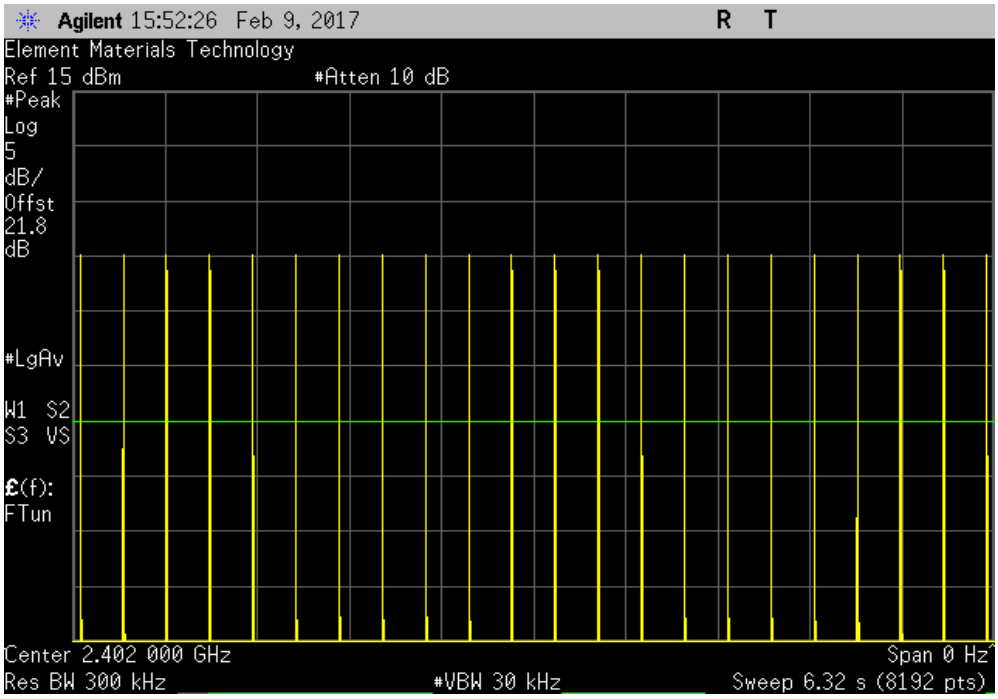
DWELL TIME

TbtTx 2017.01.27 XMit 2017.01.26

Hopping Mode, 3DH5, 8-DPSK, Low Channel, 2402 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
2.916	N/A	N/A	N/A	N/A	N/A	N/A

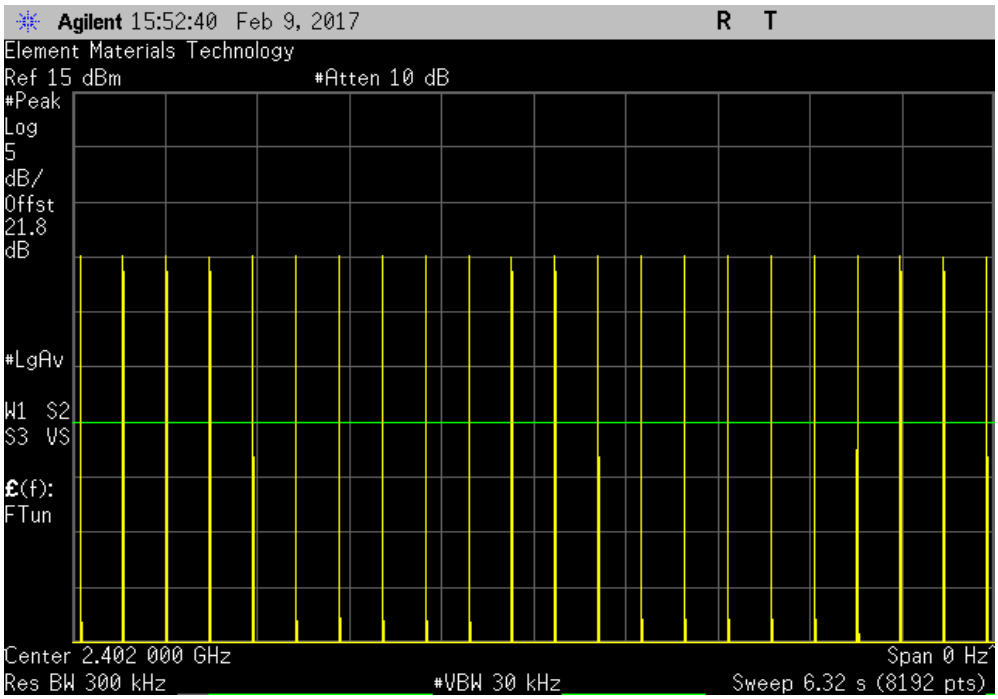


Hopping Mode, 3DH5, 8-DPSK, Low Channel, 2402 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A

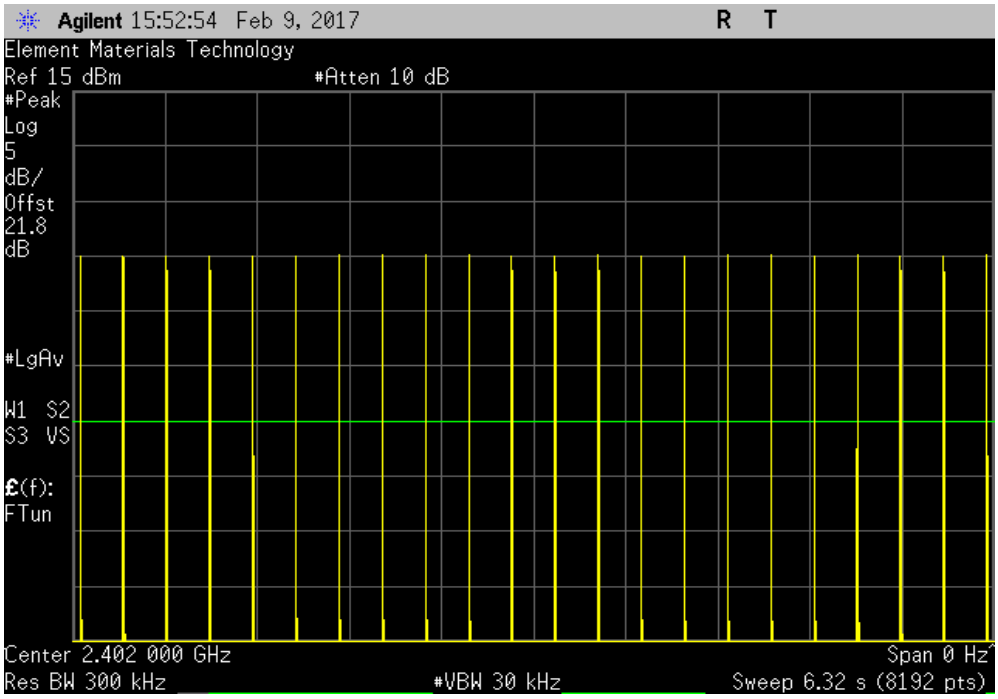


DWELL TIME

Hopping Mode, 3DH5, 8-DPSK, Low Channel, 2402 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



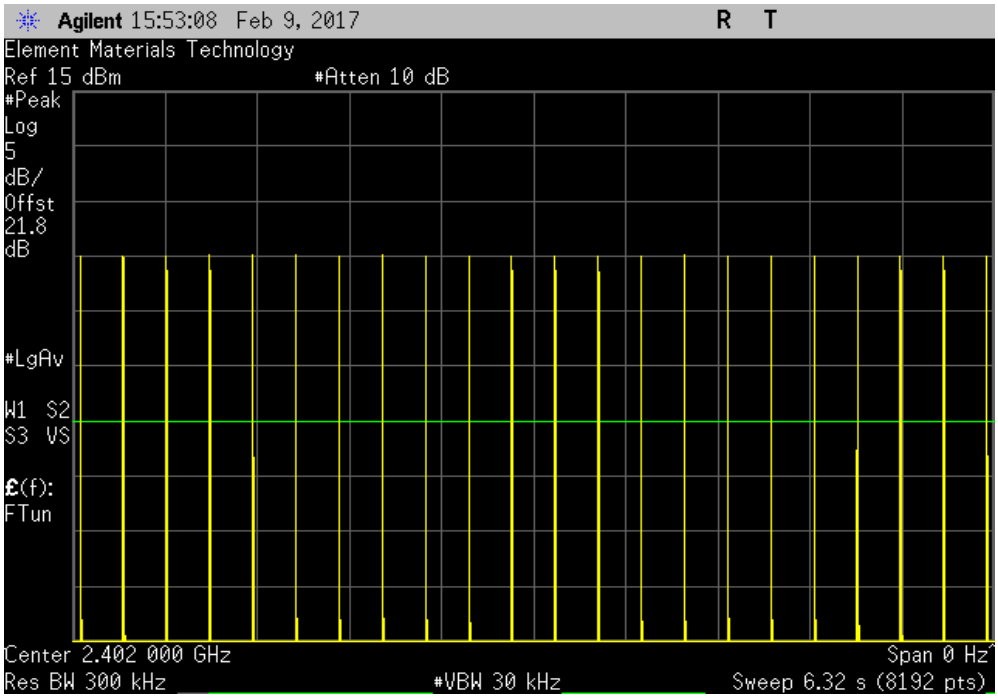
Hopping Mode, 3DH5, 8-DPSK, Low Channel, 2402 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



DWELL TIME

TbtTx 2017.01.27 XMit 2017.01.26

Hopping Mode, 3DH5, 8-DPSK, Low Channel, 2402 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



Hopping Mode, 3DH5, 8-DPSK, Low Channel, 2402 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
2.916	N/A	22	5	320.76	400	Pass

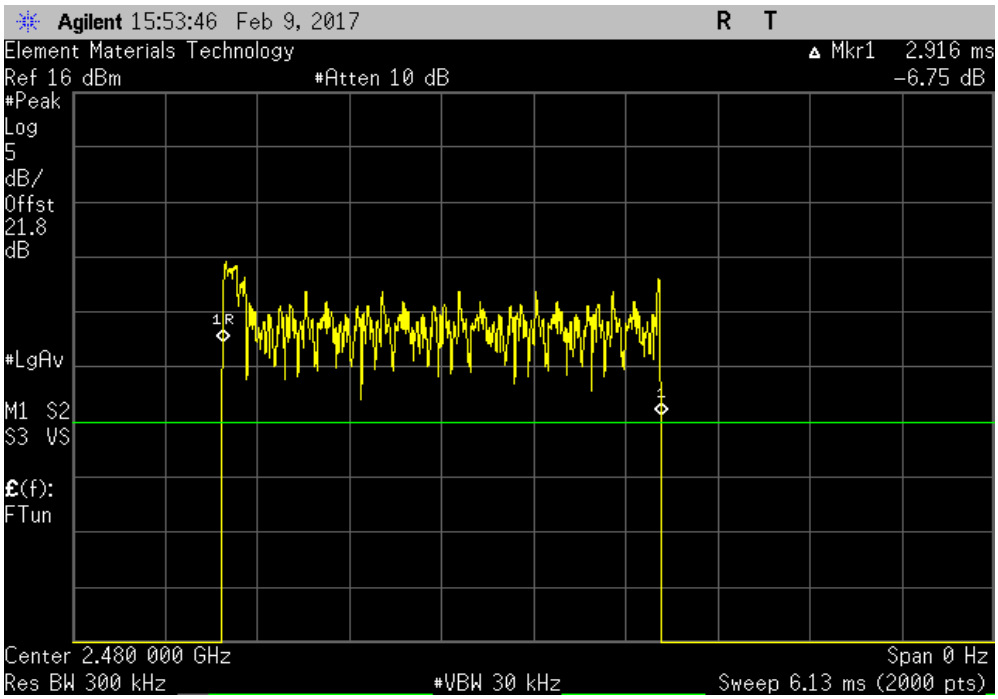
Calculation Only

No Screen Capture Required

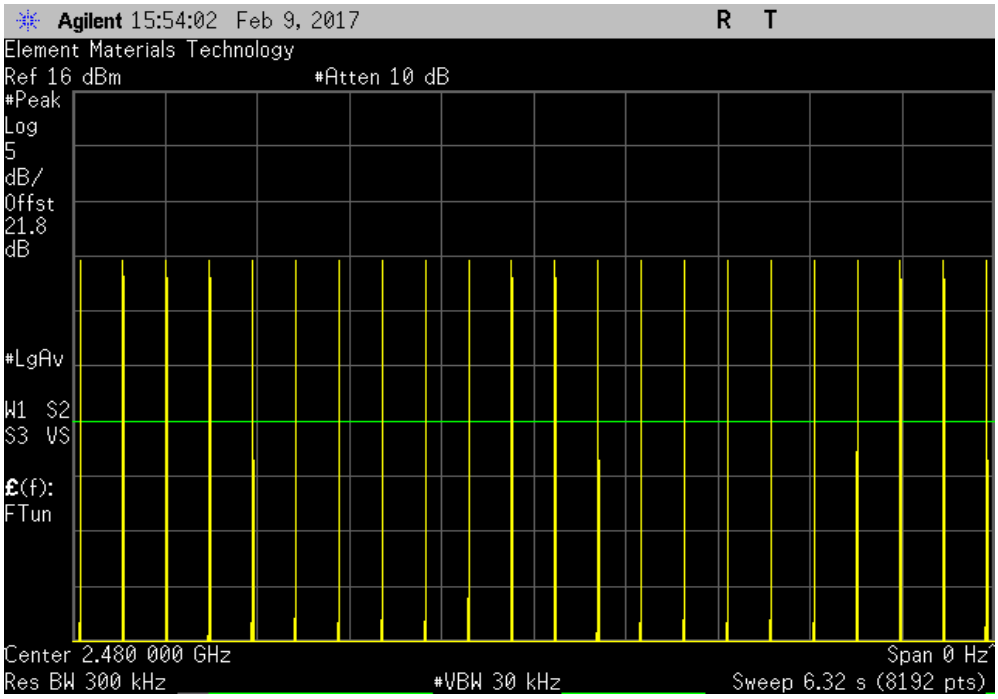
DWELL TIME

TbtTx 2017.01.27 XMit 2017.01.26

Hopping Mode, 3DH5, 8-DPSK, High Channel, 2480 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
2.916	N/A	N/A	N/A	N/A	N/A	N/A

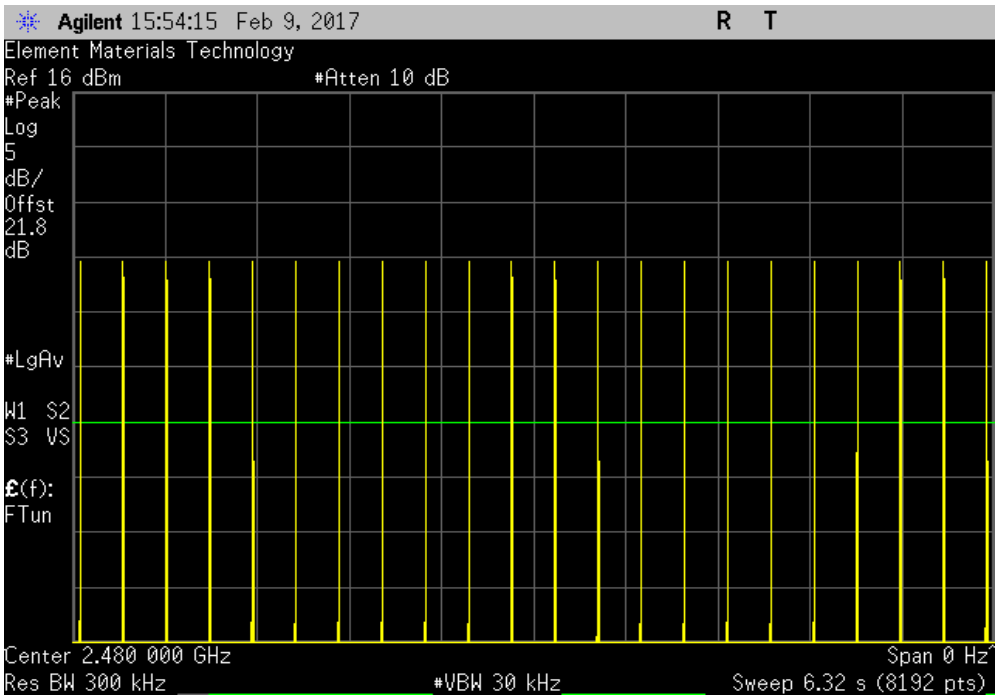


Hopping Mode, 3DH5, 8-DPSK, High Channel, 2480 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A

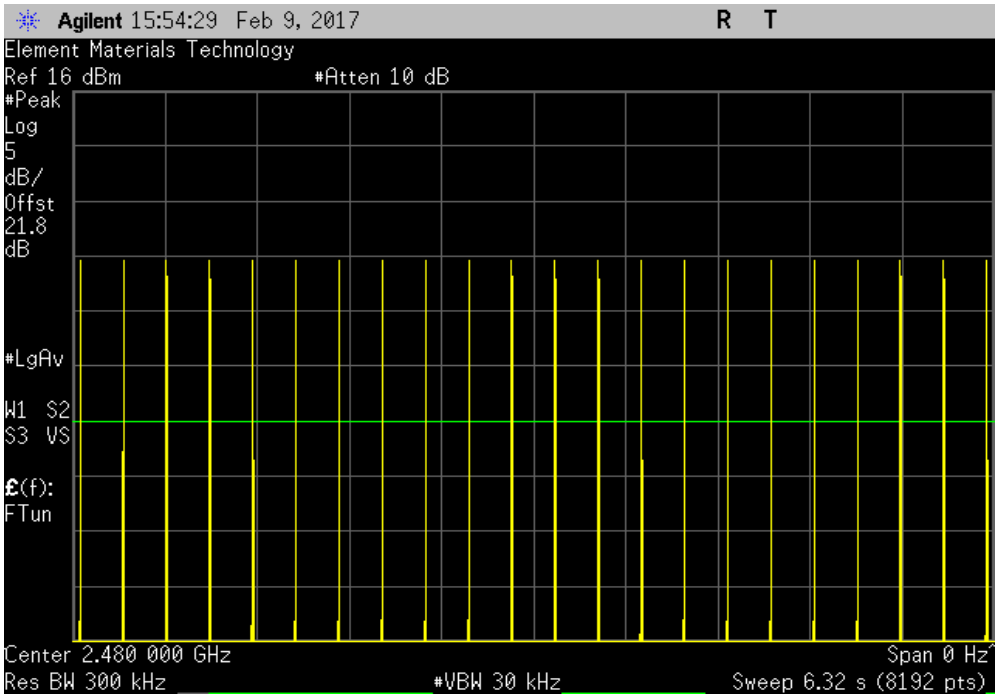


DWELL TIME

Hopping Mode, 3DH5, 8-DPSK, High Channel, 2480 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



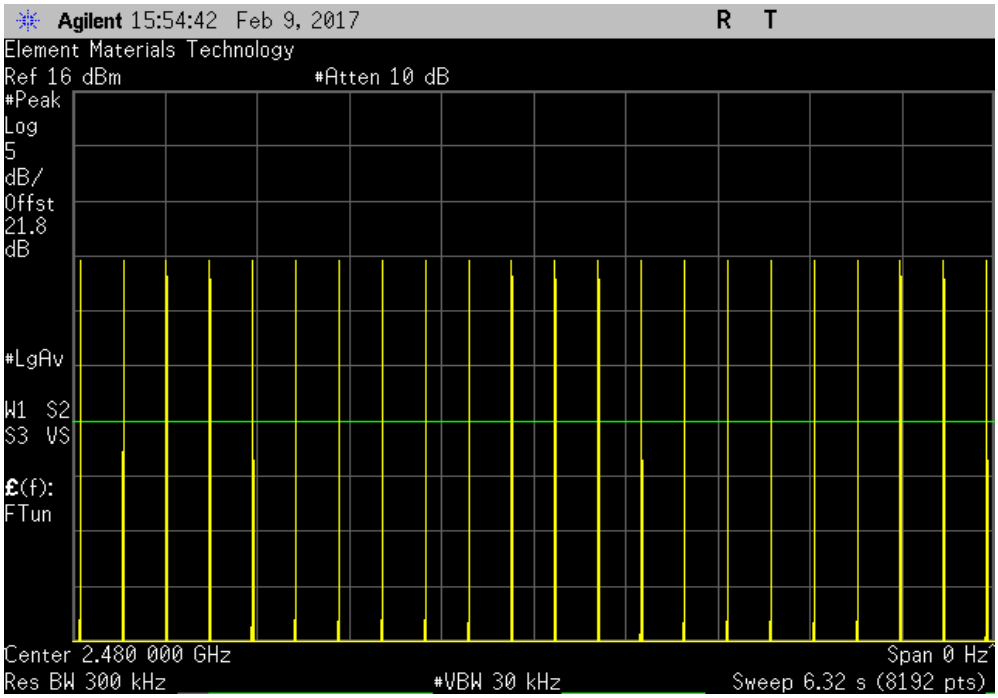
Hopping Mode, 3DH5, 8-DPSK, High Channel, 2480 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



DWELL TIME

TbtTx 2017.01.27 XMit 2017.01.26

Hopping Mode, 3DH5, 8-DPSK, High Channel, 2480 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
N/A	22	N/A	N/A	N/A	N/A	N/A



Hopping Mode, 3DH5, 8-DPSK, High Channel, 2480 MHz						
Pulse Width (ms)	Number of Pulses	Average No. of Pulses	Scale Factor	On Time (ms) During 31.6 s	Limit (ms)	Results
2.916	N/A	22	5	320.76	400	Pass

Calculation Only

No Screen Capture Required

OUTPUT POWER

XMit 2017.01.26

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	N5182A	TIF	8/12/2014	8/12/2017
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/15/2016	9/15/2017
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	2/26/2017
Block - DC	Fairview Microwave	SD3379	AMI	9/15/2016	9/15/2017
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

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.

OUTPUT POWER

TbtTx 2017.01.27 XMit 2017.01.26

EUT:	**SurfLink Mini Mobile Adapter**			**Work Order:**	**STAK0080**
Serial Number:	**00017006905**			**Date:**	**02/07/17**
Customer:	**Starkey Laboratories, Inc.**			**Temperature:**	**22.5 °C**
Attendees:	**Charlie Esch**			**Humidity:**	**21% RH**
Project:	**None**			**Barometric Pres.:**	**1004 mbar**
Tested by:	**Dustin Sparks**	**Power:**	**Battery**	**Job Site:**	**MN08**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2017	ANSI C63.10:2013

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

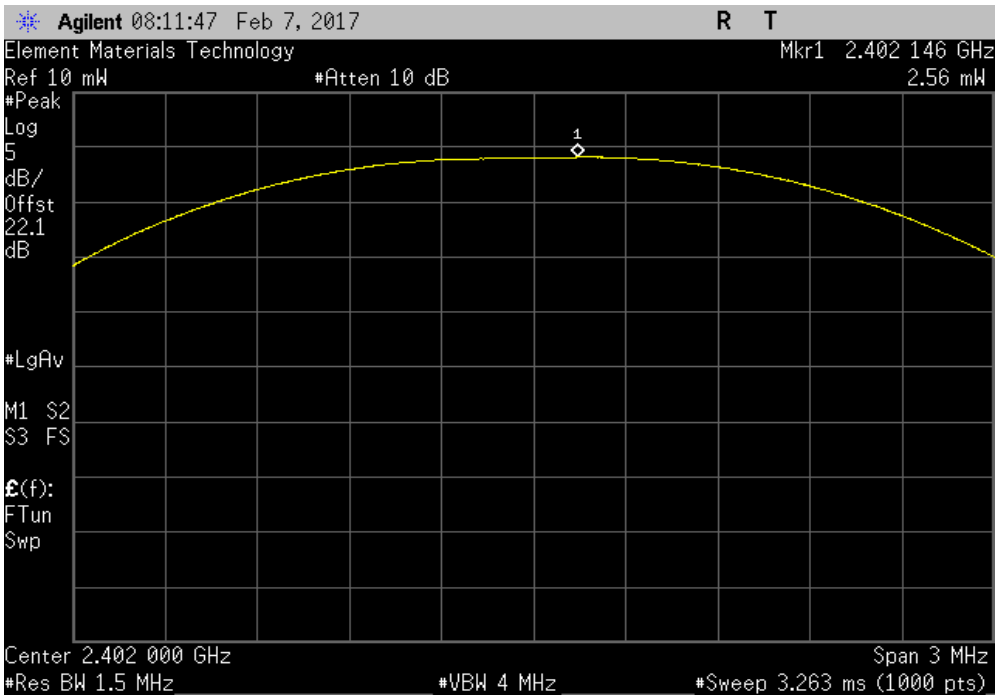
None

Configuration #	**4**	*Signature* Dustin Sparks

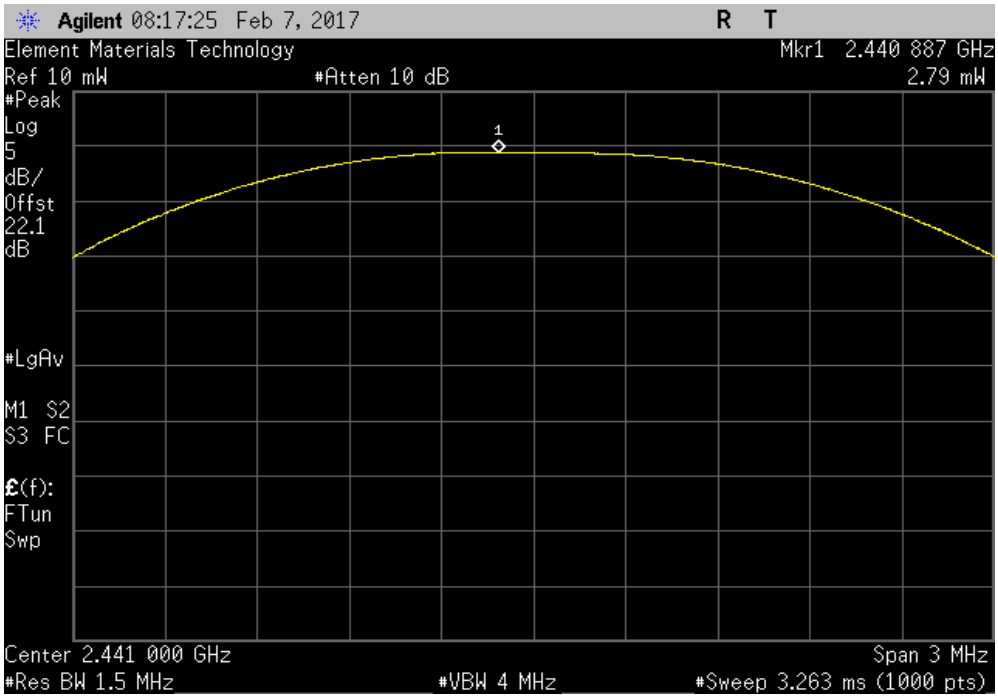
		Value	**Limit (<)**	**Result**
DH5, GFSK				
	Low Channel	2.556 mW	125 mW	Pass
	Mid Channel	2.786 mW	125 mW	Pass
	High Channel	2.552 mW	125 mW	Pass
2DH5, pi/4-DQPSK				
	Low Channel	1.43 mW	125 mW	Pass
	Mid Channel	1.708 mW	125 mW	Pass
	High Channel	1.622 mW	125 mW	Pass
3DH5, 8-DPSK				
	Low Channel	1.467 mW	125 mW	Pass
	Mid Channel	1.736 mW	125 mW	Pass
	High Channel	1.642 mW	125 mW	Pass

OUTPUT POWER

DH5, GFSK, Low Channel						
				Value	Limit (<)	Result
				2.556 mW	125 mW	Pass



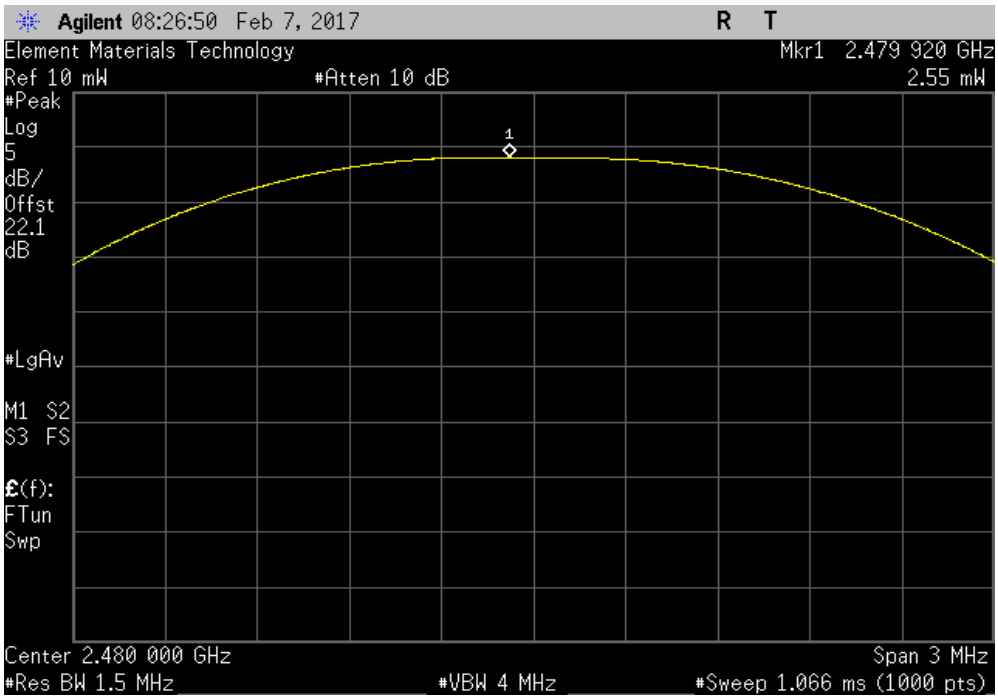
DH5, GFSK, Mid Channel						
				Value	Limit (<)	Result
				2.786 mW	125 mW	Pass



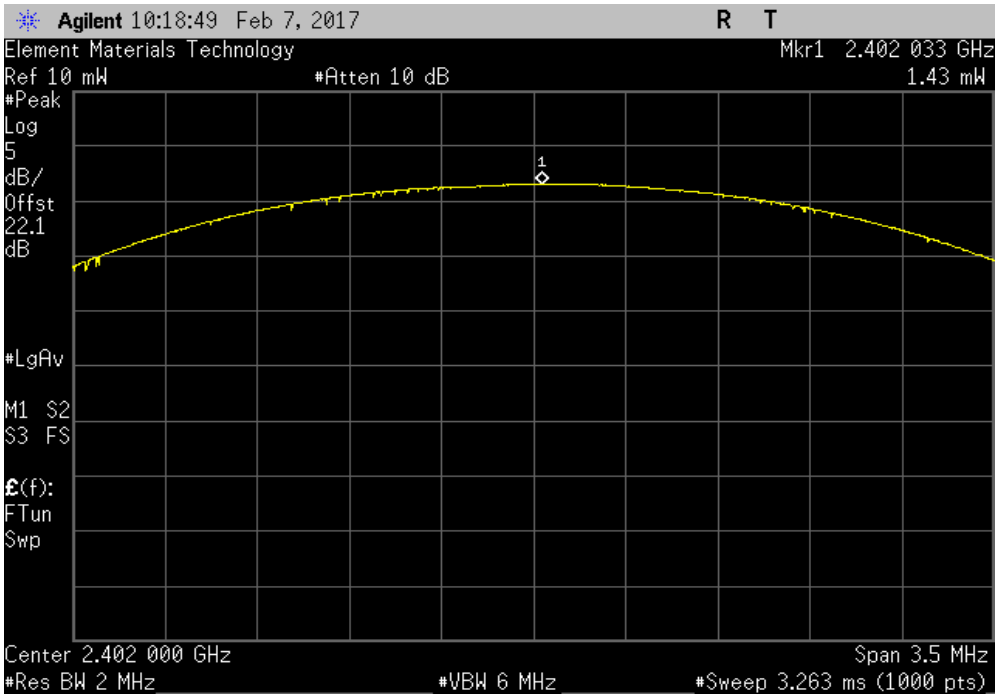
OUTPUT POWER

TbtTx 2017.01.27 XMit 2017.01.26

DH5, GFSK, High Channel						
				Value	Limit (<)	Result
				2.552 mW	125 mW	Pass



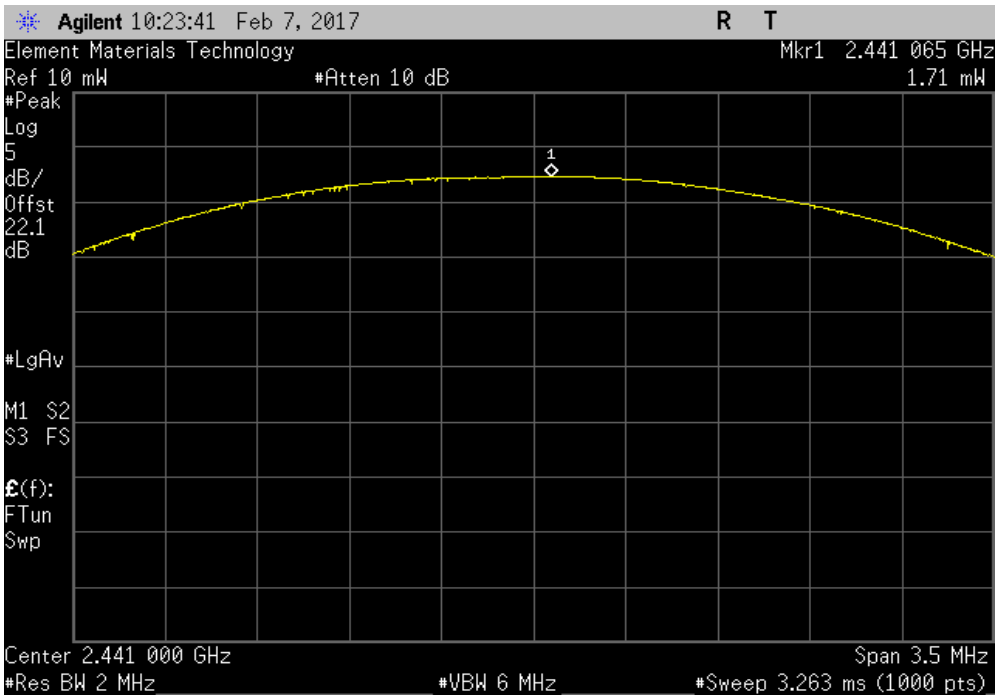
2DH5, pi/4-DQPSK, Low Channel						
				Value	Limit (<)	Result
				1.43 mW	125 mW	Pass



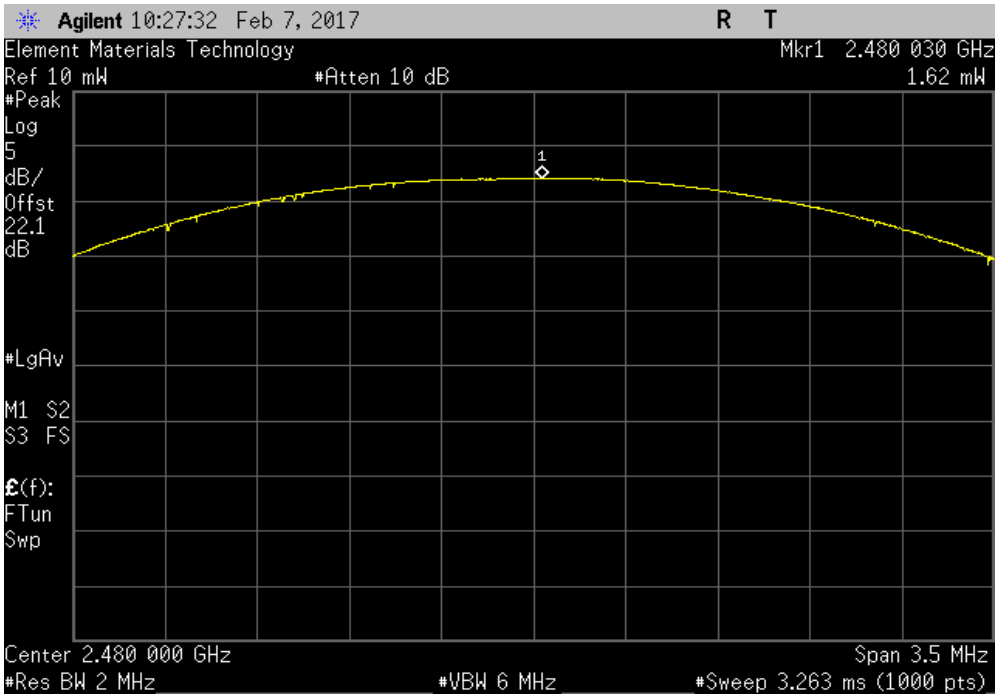
OUTPUT POWER

TbtTx 2017.01.27 XMit 2017.01.26

2DH5, pi/4-DQPSK, Mid Channel						
				Value	Limit (<)	Result
				1.708 mW	125 mW	Pass



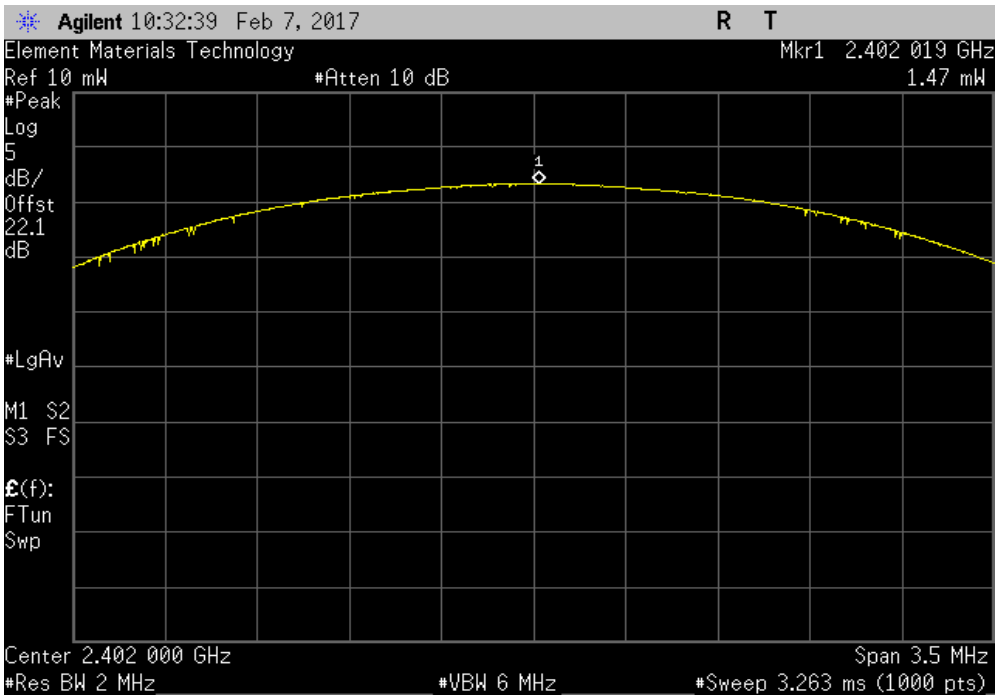
2DH5, pi/4-DQPSK, High Channel						
				Value	Limit (<)	Result
				1.622 mW	125 mW	Pass



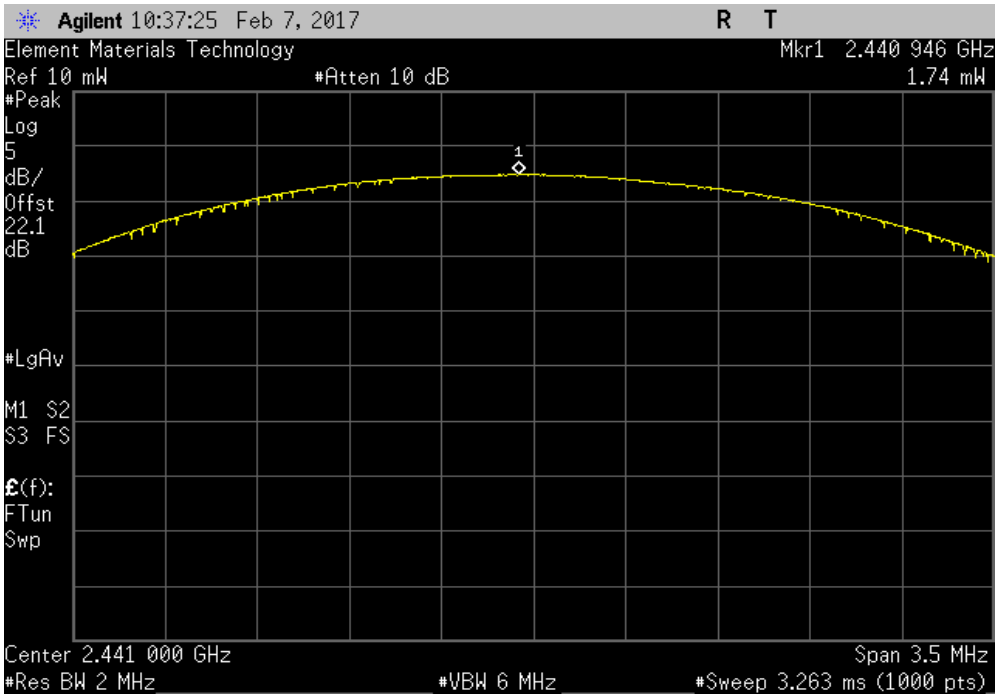
OUTPUT POWER

TbtTx 2017.01.27 XMit 2017.01.26

3DH5, 8-DPSK, Low Channel						
				Value	Limit (<)	Result
				1.467 mW	125 mW	Pass



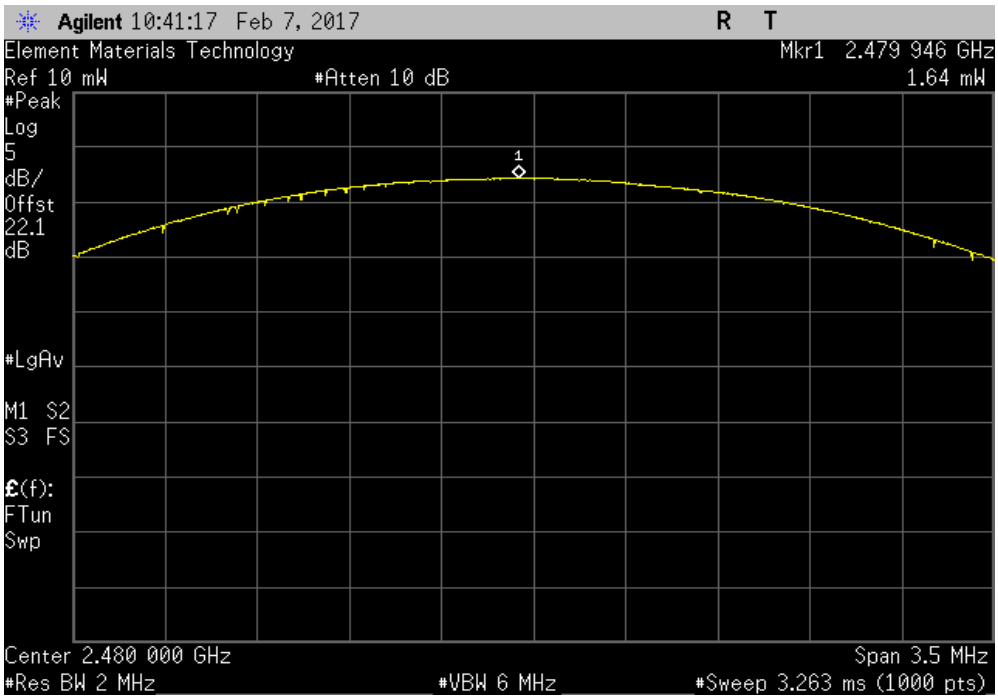
3DH5, 8-DPSK, Mid Channel						
				Value	Limit (<)	Result
				1.736 mW	125 mW	Pass



OUTPUT POWER

TbtTx 2017.01.27 XMit 2017.01.26

3DH5, 8-DPSK, High Channel						
				Value	Limit (<)	Result
				1.642 mW	125 mW	Pass



BAND EDGE COMPLIANCE

XMit 2017.01.26

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	N5182A	TIF	8/12/2014	8/12/2017
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/15/2016	9/15/2017
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	2/26/2017
Block - DC	Fairview Microwave	SD3379	AMI	9/15/2016	9/15/2017
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

TEST DESCRIPTION

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

BAND EDGE COMPLIANCE

TbtTx 2017.01.27 XMit 2017.01.26

EUT:	SurfLink Mini Mobile Adapter			**Work Order:**	STAK0080
Serial Number:	00017006905			**Date:**	02/07/17
Customer:	Starkey Laboratories, Inc.			**Temperature:**	22.4 °C
Attendees:	Charlie Esch			**Humidity:**	21% RH
Project:	None			**Barometric Pres.:**	1004 mbar
Tested by:	Dustin Sparks	**Power:**	Battery	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
FCC 15.247:2017	ANSI C63.10:2013

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

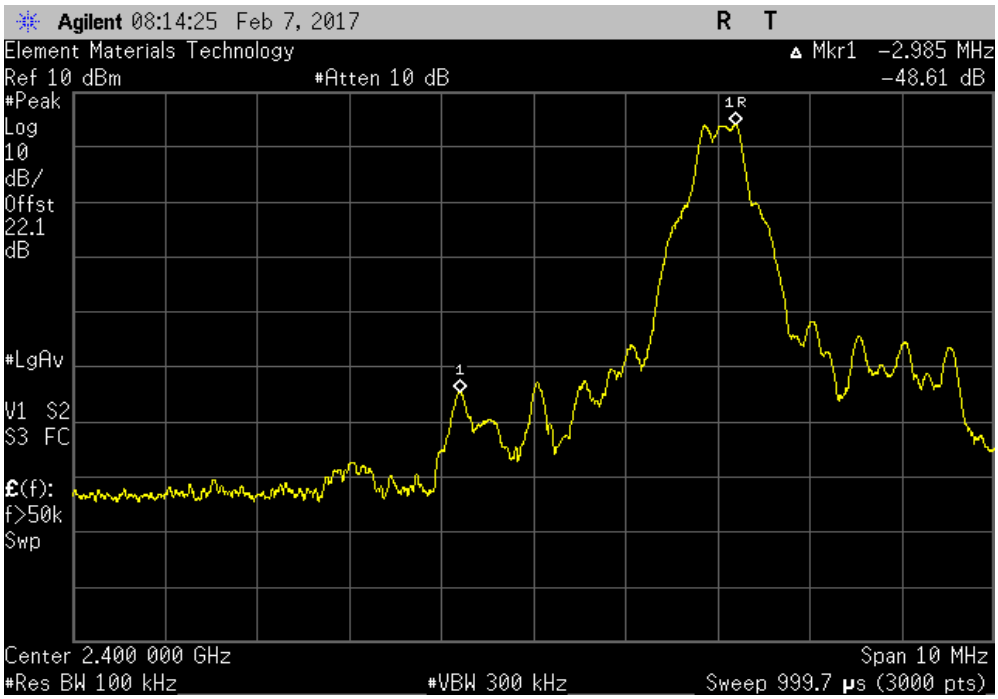
None

Configuration #	4	Signature

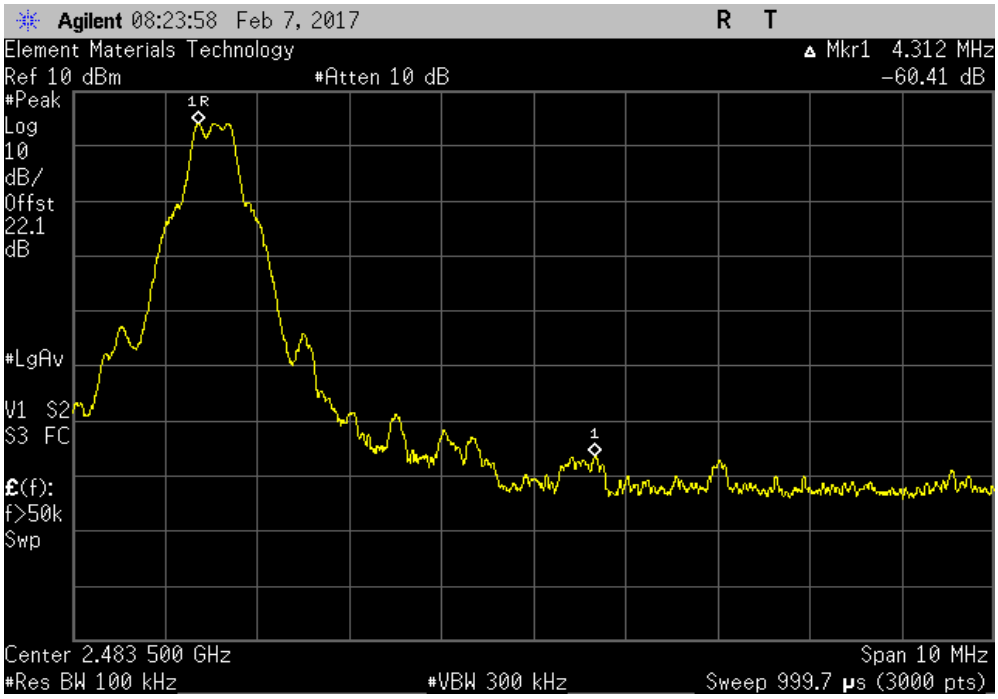
		Value (dBc)	Limit ≤ (dBc)	Result
DH5, GFSK				
	Low Channel	-48.61	-20	Pass
	High Channel	-60.41	-20	Pass
2DH5, pi/4-DQPSK				
	Low Channel	-53.17	-20	Pass
	High Channel	-58.88	-20	Pass
3DH5, 8-DPSK				
	Low Channel	-51.99	-20	Pass
	High Channel	-56.7	-20	Pass

BAND EDGE COMPLIANCE

DH5, GFSK, Low Channel						
				Value (dBc)	Limit ≤ (dBc)	Result
				-48.61	-20	Pass



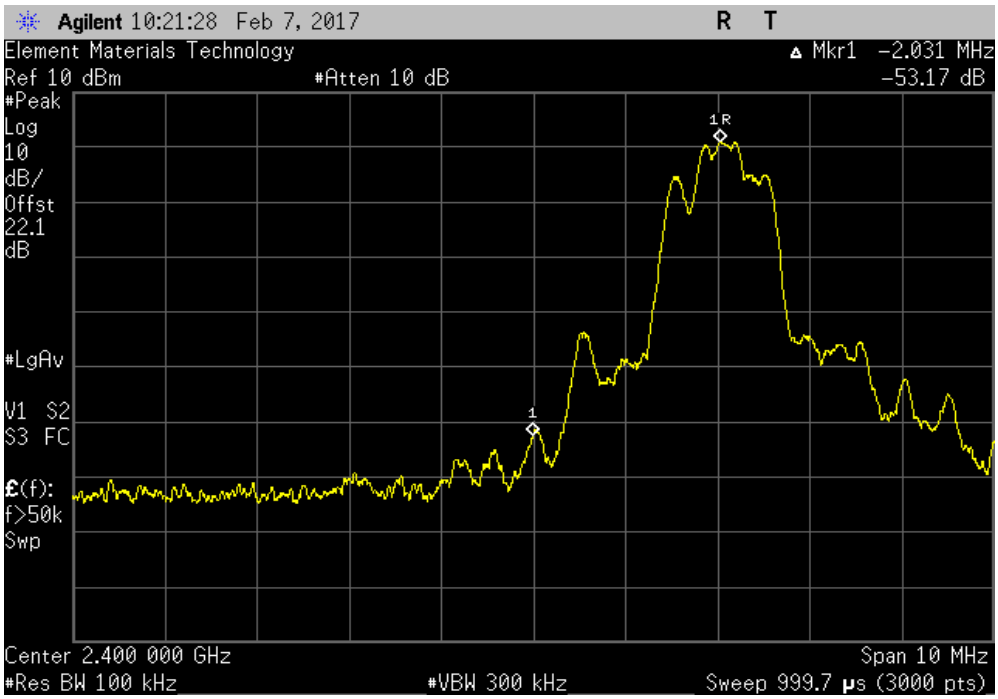
DH5, GFSK, High Channel						
				Value (dBc)	Limit ≤ (dBc)	Result
				-60.41	-20	Pass



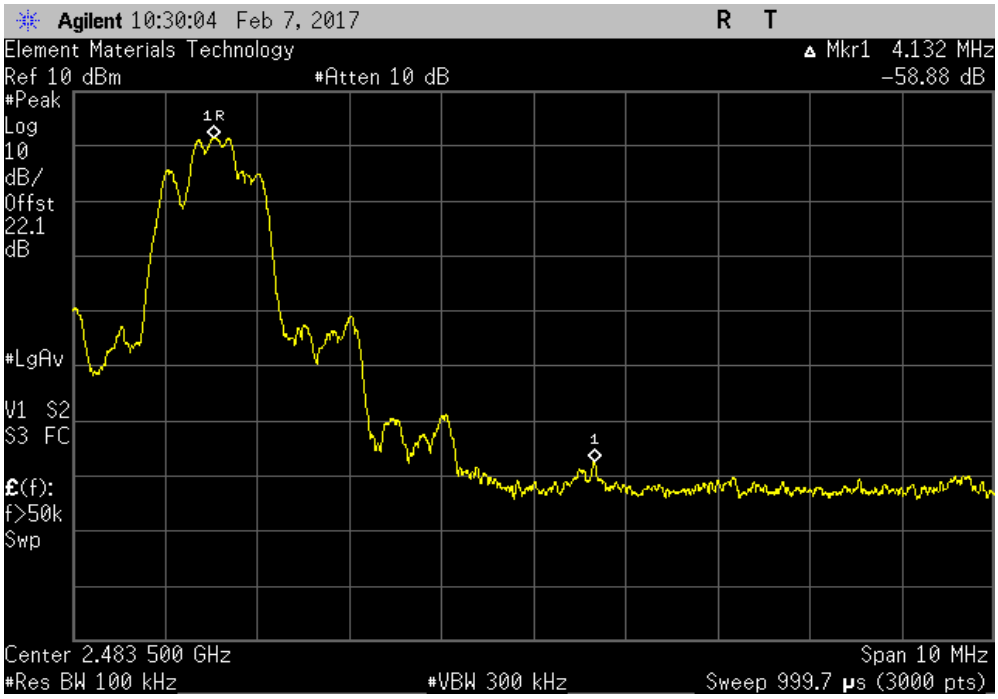
BAND EDGE COMPLIANCE

TbtTx 2017.01.27 XMit 2017.01.26

2DH5, pi/4-DQPSK, Low Channel						
				Value (dBc)	Limit ≤ (dBc)	Result
				-53.17	-20	Pass



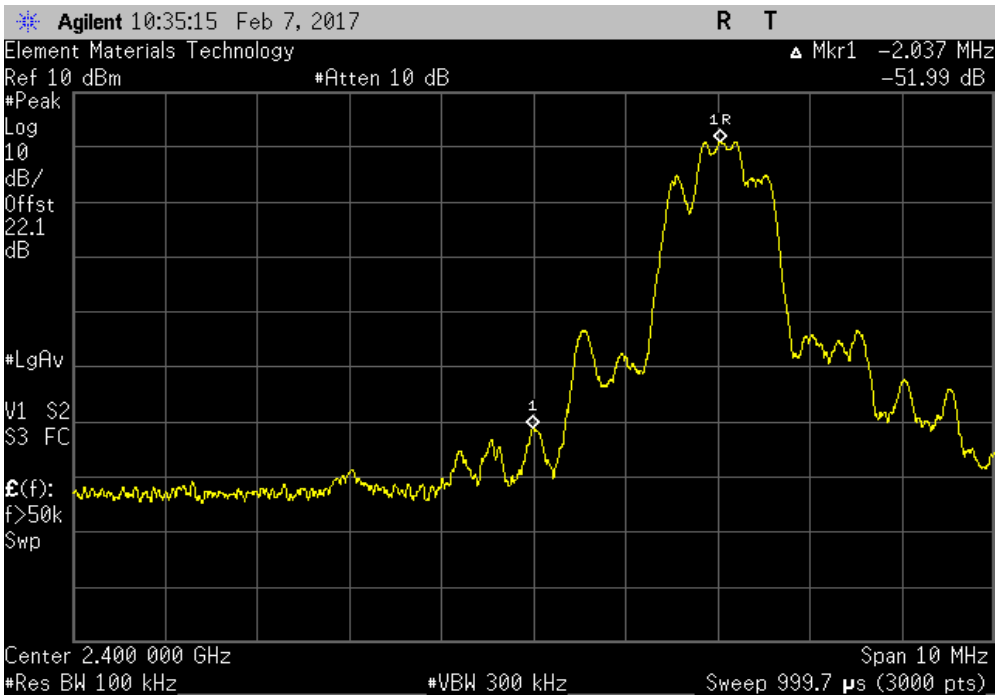
2DH5, pi/4-DQPSK, High Channel						
				Value (dBc)	Limit ≤ (dBc)	Result
				-58.88	-20	Pass



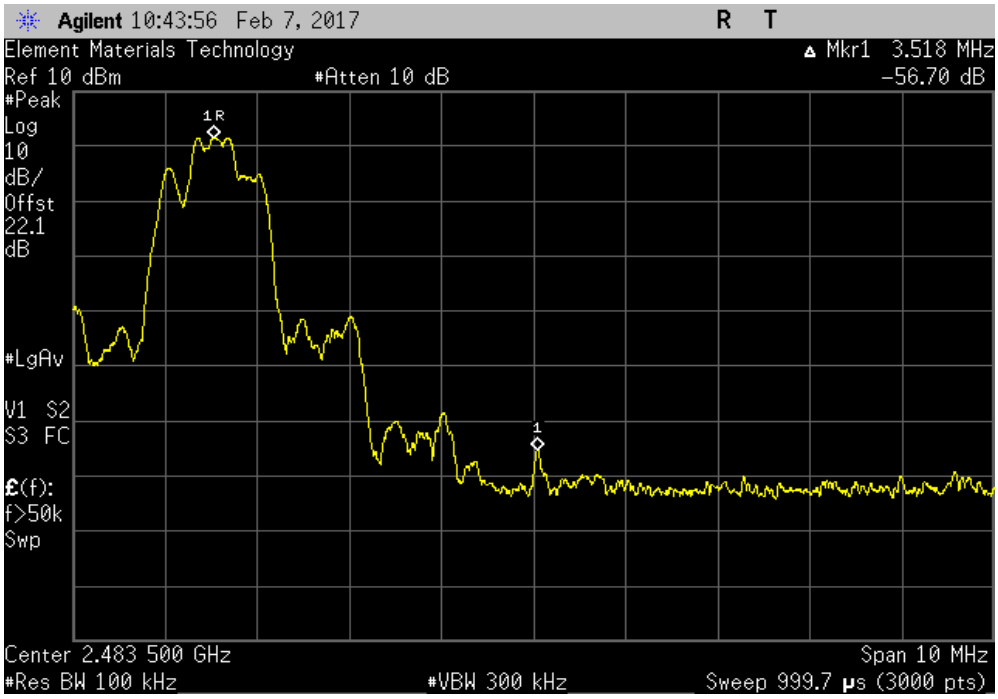
BAND EDGE COMPLIANCE

TbtTx 2017.01.27 XMit 2017.01.26

3DH5, 8-DPSK, Low Channel						
				Value (dBc)	Limit ≤ (dBc)	Result
				-51.99	-20	Pass



3DH5, 8-DPSK, High Channel						
				Value (dBc)	Limit ≤ (dBc)	Result
				-56.7	-20	Pass



BAND EDGE COMPLIANCE -HOPPING MODE

XMit 2017.01.26

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	N5182A	TIF	8/12/2014	8/12/2017
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/15/2016	9/15/2017
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	2/26/2017
Block - DC	Fairview Microwave	SD3379	AMI	9/15/2016	9/15/2017
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

TEST DESCRIPTION

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

BAND EDGE COMPLIANCE -HOPPING MODE

TbtTx 2017.01.27 XMit 2017.01.26

EUT:	**SurfLink Mini Mobile Adapter**			**Work Order:**	**STAK0080**
Serial Number:	**00017006905**			**Date:**	**02/07/17**
Customer:	**Starkey Laboratories, Inc.**			**Temperature:**	**23.2 °C**
Attendees:	**Charlie Esch**			**Humidity:**	**20.7% RH**
Project:	**None**			**Barometric Pres.:**	**1004 mbar**
Tested by:	**Dustin Sparks**	**Power:**	**Battery**	**Job Site:**	**MN08**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2017	ANSI C63.10:2013

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

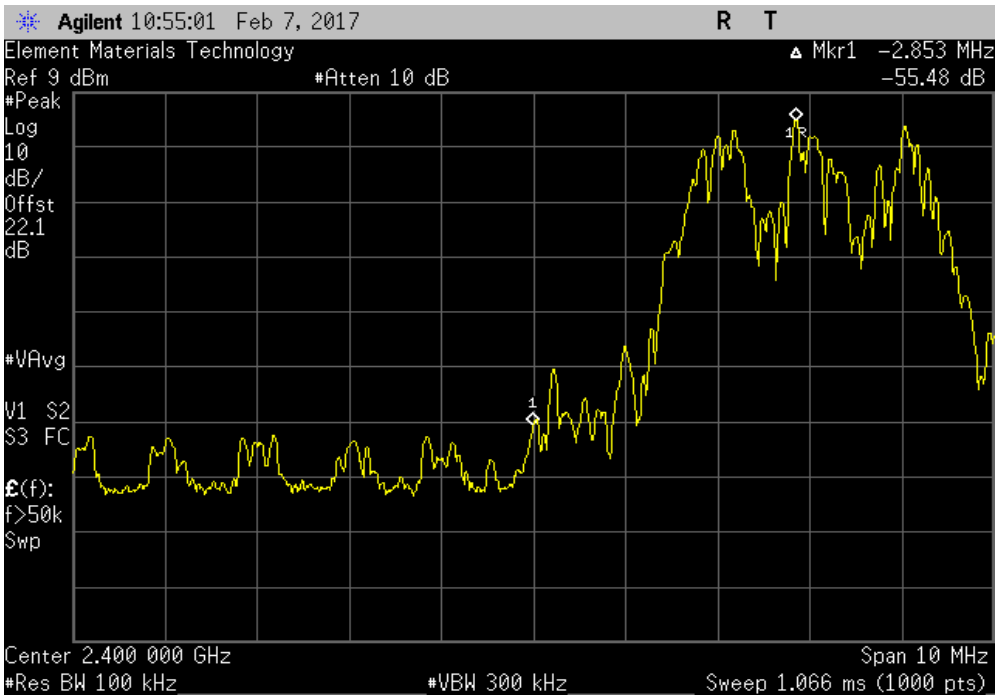
None

Configuration #	**4**	*Signature* Dustin Sparks

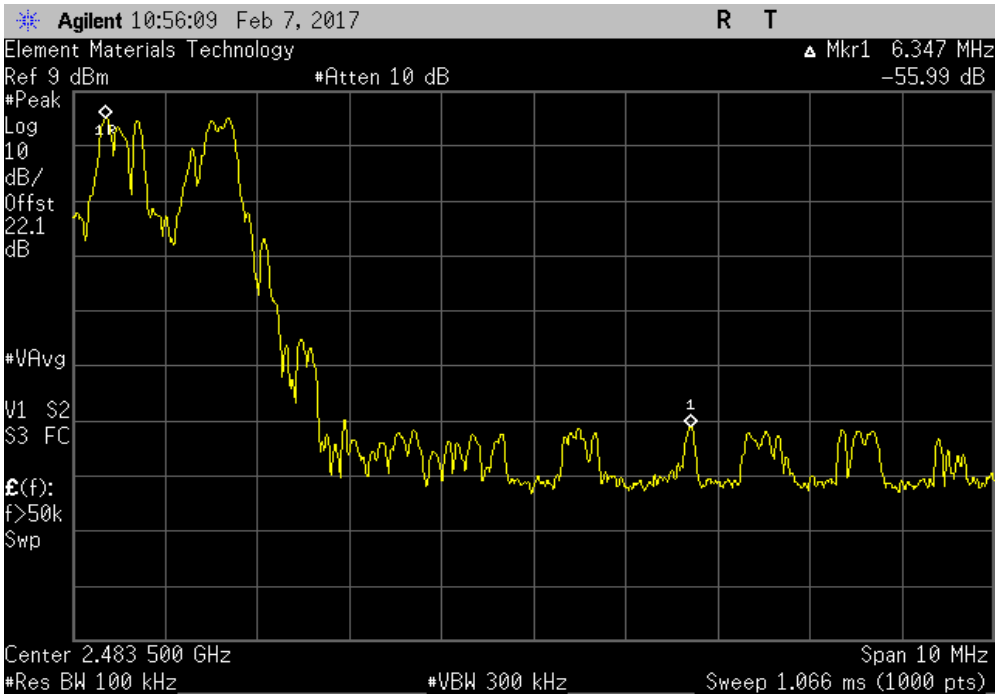
		Value (dBc)	**Limit ≤ (dBc)**	**Result**
Hopping Mode				
	DH5, GFSK			
	Low Channel, 2402 MHz	-55.48	-20	Pass
	High Channel, 2480 MHz	-55.99	-20	Pass
	2DH5, pi/4-DQPSK			
	Low Channel, 2402 MHz	-53.04	-20	Pass
	High Channel, 2480 MHz	-54.91	-20	Pass
	3DH5, 8-DPSK			
	Low Channel, 2402 MHz	-55.2	-20	Pass
	High Channel, 2480 MHz	-54.91	-20	Pass

BAND EDGE COMPLIANCE -HOPPING MODE

Hopping Mode, DH5, GFSK, Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-55.48	-20	Pass

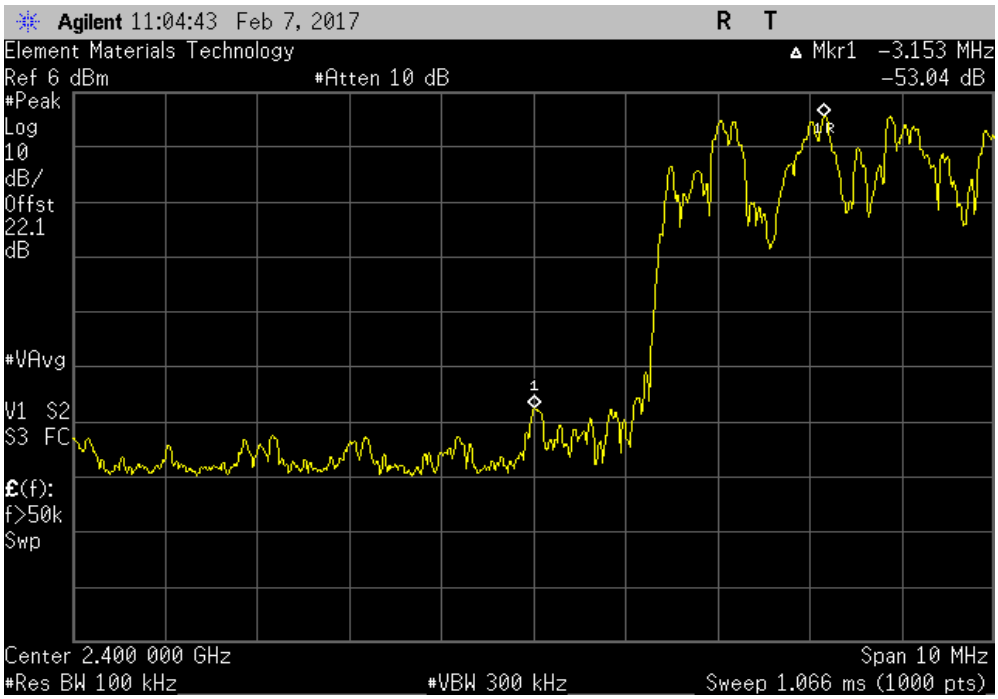


Hopping Mode, DH5, GFSK, High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-55.99	-20	Pass

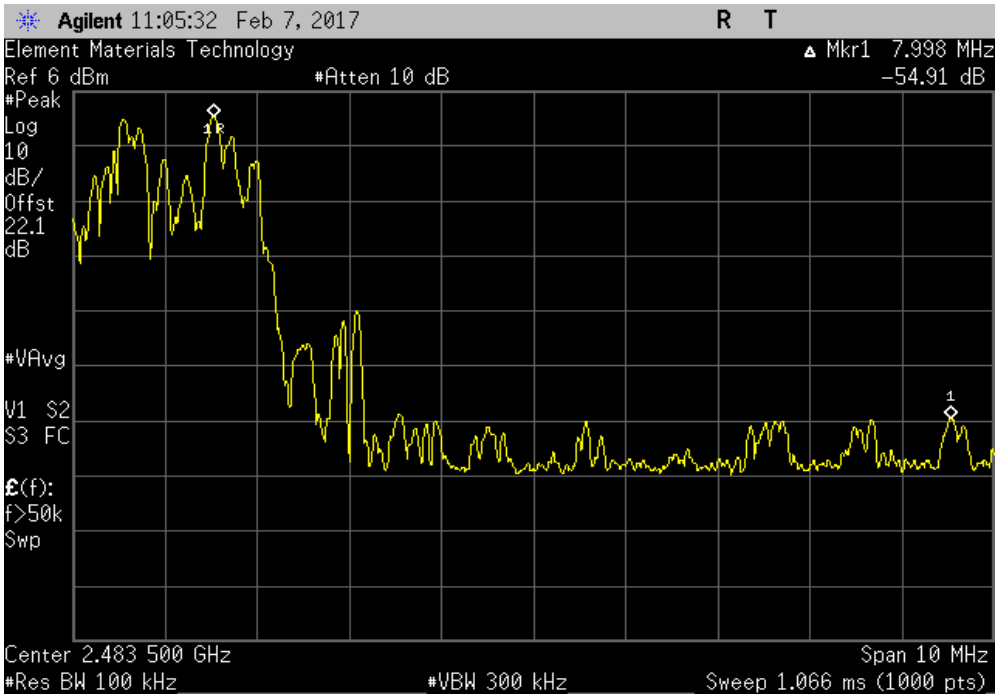


BAND EDGE COMPLIANCE -HOPPING MODE

Hopping Mode, 2DH5, pi/4-DQPSK, Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-53.04	-20	Pass



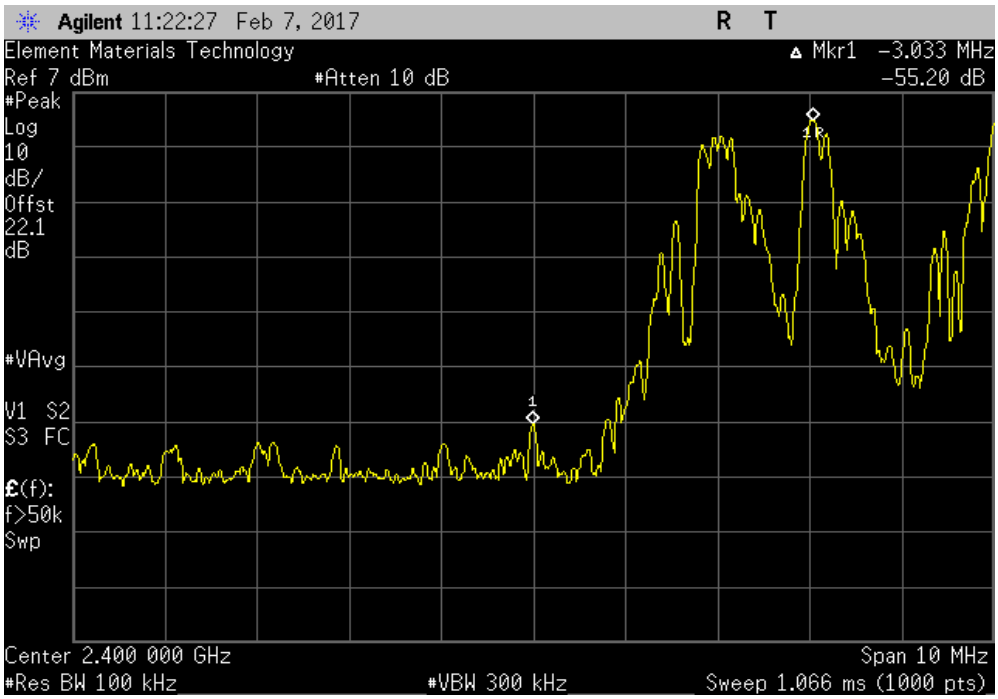
Hopping Mode, 2DH5, pi/4-DQPSK, High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-54.91	-20	Pass



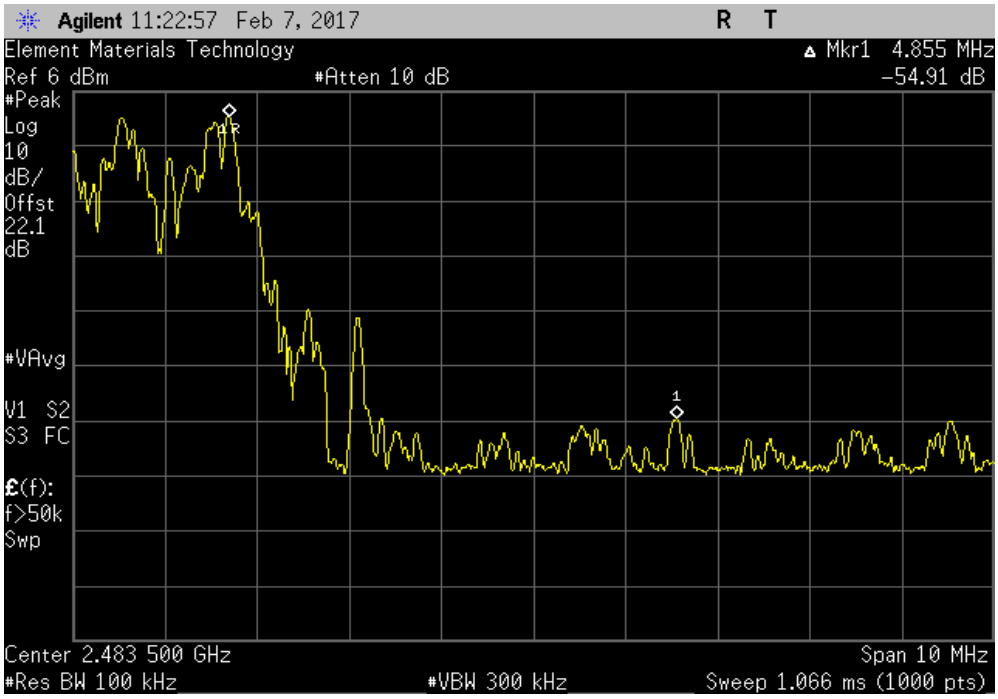
BAND EDGE COMPLIANCE -HOPPING MODE

TbtTx 2017.01.27 XMit 2017.01.26

Hopping Mode, 3DH5, 8-DPSK, Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-55.2	-20	Pass



Hopping Mode, 3DH5, 8-DPSK, High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-54.91	-20	Pass



OCCUPIED BANDWIDTH

XMit 2017.01.26

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	N5182A	TIF	8/12/2014	8/12/2017
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/15/2016	9/15/2017
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	2/26/2017
Block - DC	Fairview Microwave	SD3379	AMI	9/15/2016	9/15/2017
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

TEST DESCRIPTION

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

OCCUPIED BANDWIDTH

TbtTx 2017.01.27 XMit 2017.01.26

EUT:	**SurfLink Mini Mobile Adapter**			**Work Order:**	**STAK0080**
Serial Number:	**00017006905**			**Date:**	**02/07/17**
Customer:	**Starkey Laboratories, Inc.**			**Temperature:**	**22.4 °C**
Attendees:	**Charlie Esch**			**Humidity:**	**20.9% RH**
Project:	**None**			**Barometric Pres.:**	**1004 mbar**
Tested by:	**Dustin Sparks**	**Power:**	**Battery**	**Job Site:**	**MN08**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2017	ANSI C63.10:2013

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

Configuration #	**4**	*Signature* Dustin Sparks

		Value	**Limit (<)**	**Result**
DH5, GFSK				
	Low Channel	840.016 kHz	1.5 MHz	Pass
	Mid Channel	912.389 kHz	1.5 MHz	Pass
	High Channel	921.193 kHz	1.5 MHz	Pass
2DH5, pi/4-DQPSK				
	Low Channel	1.119 MHz	1.5 MHz	Pass
	Mid Channel	1.105 MHz	1.5 MHz	Pass
	High Channel	1.085 MHz	1.5 MHz	Pass
3DH5, 8-DPSK				
	Low Channel	1.1 MHz	1.5 MHz	Pass
	Mid Channel	1.107 MHz	1.5 MHz	Pass
	High Channel	1.1 MHz	1.5 MHz	Pass

OCCUPIED BANDWIDTH

TbtTx 2017.01.27 XMit 2017.01.26

DH5, GFSK, Low Channel						
				Value	Limit (<)	Result
				840.016 kHz	1.5 MHz	Pass

DH5, GFSK, Mid Channel						
				Value	Limit (<)	Result
				912.389 kHz	1.5 MHz	Pass

OCCUPIED BANDWIDTH

TbtTx 2017.01.27 XMit 2017.01.26

DH5, GFSK, High Channel						
				Value	Limit (<)	Result
				921.193 kHz	1.5 MHz	Pass

2DH5, pi/4-DQPSK, Low Channel						
				Value	Limit (<)	Result
				1.119 MHz	1.5 MHz	Pass

OCCUPIED BANDWIDTH

TbtTx 2017.01.27 XMit 2017.01.26

2DH5, pi/4-DQPSK, Mid Channel						
				Value	Limit (<)	Result
				1.105 MHz	1.5 MHz	Pass

2DH5, pi/4-DQPSK, High Channel						
				Value	Limit (<)	Result
				1.085 MHz	1.5 MHz	Pass

OCCUPIED BANDWIDTH

TbtTx 2017.01.27 XMit 2017.01.26

3DH5, 8-DPSK, Low Channel						
				Value	Limit (<)	Result
				1.1 MHz	1.5 MHz	Pass

3DH5, 8-DPSK, Mid Channel						
				Value	Limit (<)	Result
				1.107 MHz	1.5 MHz	Pass

OCCUPIED BANDWIDTH

TbtTx 2017.01.27 XMit 2017.01.26

3DH5, 8-DPSK, High Channel						
				Value	Limit (<)	Result
				1.1 MHz	1.5 MHz	Pass

SPURIOUS CONDUCTED EMISSIONS

XMit 2017.01.26

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	N5182A	TIF	8/12/2014	8/12/2017
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/15/2016	9/15/2017
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	2/26/2017
Block - DC	Fairview Microwave	SD3379	AMI	9/15/2016	9/15/2017
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

TEST DESCRIPTION

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

SPURIOUS CONDUCTED EMISSIONS

TbtTx 2017.01.27 XMit 2017.01.26

EUT:	**SurfLink Mini Moblie Adapter**			**Work Order:**	**STAK0080**
Serial Number:	**00017006905**			**Date:**	**02/07/17**
Customer:	**Starkey Laboratories, Inc.**			**Temperature:**	**22.9 °C**
Attendees:	**Charlie Esch**			**Humidity:**	**20.5% RH**
Project:	**None**			**Barometric Pres.:**	**1004 mbar**
Tested by:	**Dustin Sparks**	**Power:**	**Battery**	**Job Site:**	**MN08**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2017	ANSI C63.10:2013

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

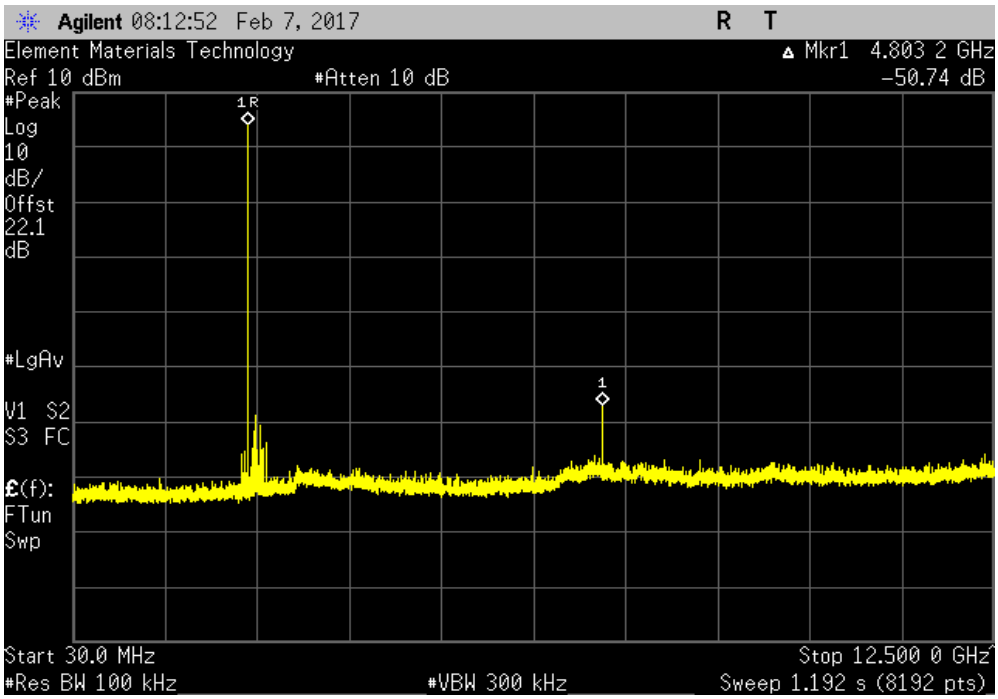
None

Configuration #	**4**	*Signature* Dustin Sparks

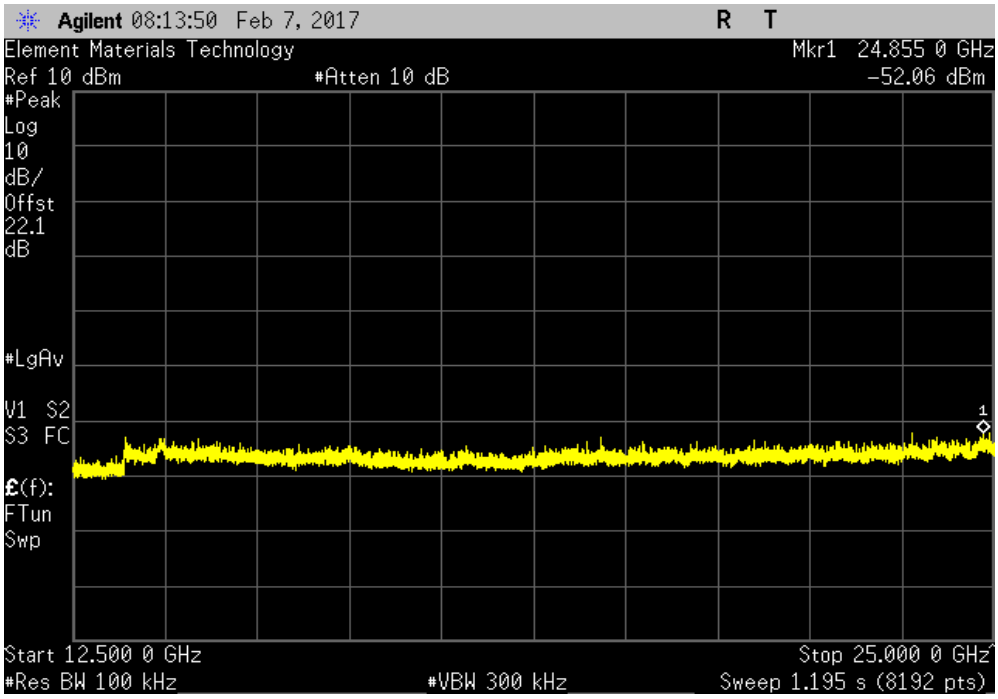
		Frequency Range	Max Value (dBc)	Limit ≤ (dBc)	Result
DH5, GFSK					
	Low Channel	30 MHz - 12.5 GHz	-50.74	-20	Pass
	Low Channel	12.5 GHz - 25 GHz	-55.96	-20	Pass
	Mid Channel	30 MHz - 12.5 GHz	-46.67	-20	Pass
	Mid Channel	12.5 GHz - 25 GHz	-53.99	-20	Pass
	High Channel	30 MHz - 12.5 GHz	-49.79	-20	Pass
	High Channel	12.5 GHz - 25 GHz	-54.97	-20	Pass
2DH5, pi/4-DQPSK					
	Low Channel	30 MHz - 12.5 GHz	-52.01	-20	Pass
	Low Channel	12.5 GHz - 25 GHz	-52.94	-20	Pass
	Mid Channel	30 MHz - 12.5 GHz	-52.6	-20	Pass
	Mid Channel	12.5 GHz - 25 GHz	-53.32	-20	Pass
	High Channel	30 MHz - 12.5 GHz	-51.1	-20	Pass
	High Channel	12.5 GHz - 25 GHz	-51.64	-20	Pass
3DH5, 8-DPSK					
	Low Channel	30 MHz - 12.5 GHz	-52.49	-20	Pass
	Low Channel	12.5 GHz - 25 GHz	-52.7	-20	Pass
	Mid Channel	30 MHz - 12.5 GHz	-52.53	-20	Pass
	Mid Channel	12.5 GHz - 25 GHz	-53.6	-20	Pass
	High Channel	30 MHz - 12.5 GHz	-50.09	-20	Pass
	High Channel	12.5 GHz - 25 GHz	-53.73	-20	Pass

SPURIOUS CONDUCTED EMISSIONS

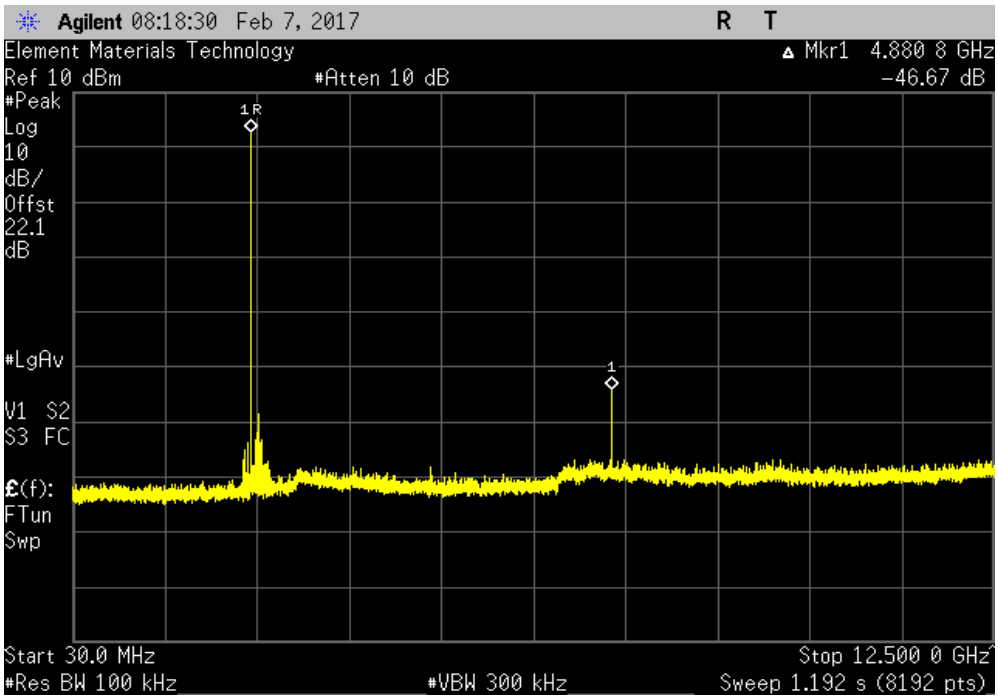
DH5, GFSK, Low Channel				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-50.74	-20	Pass



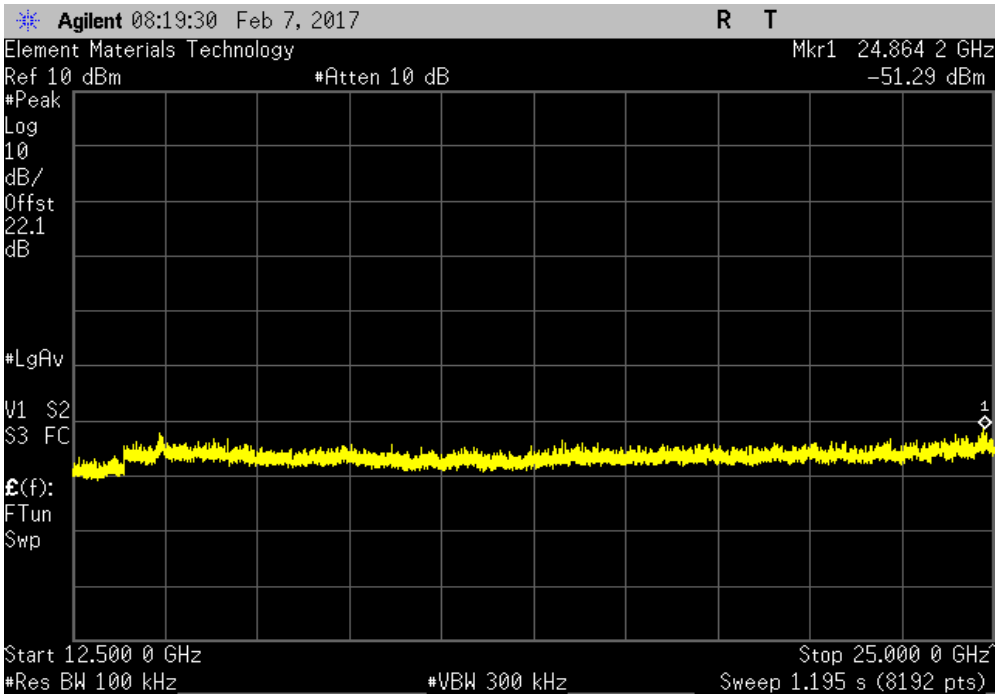
DH5, GFSK, Low Channel				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-55.96	-20	Pass



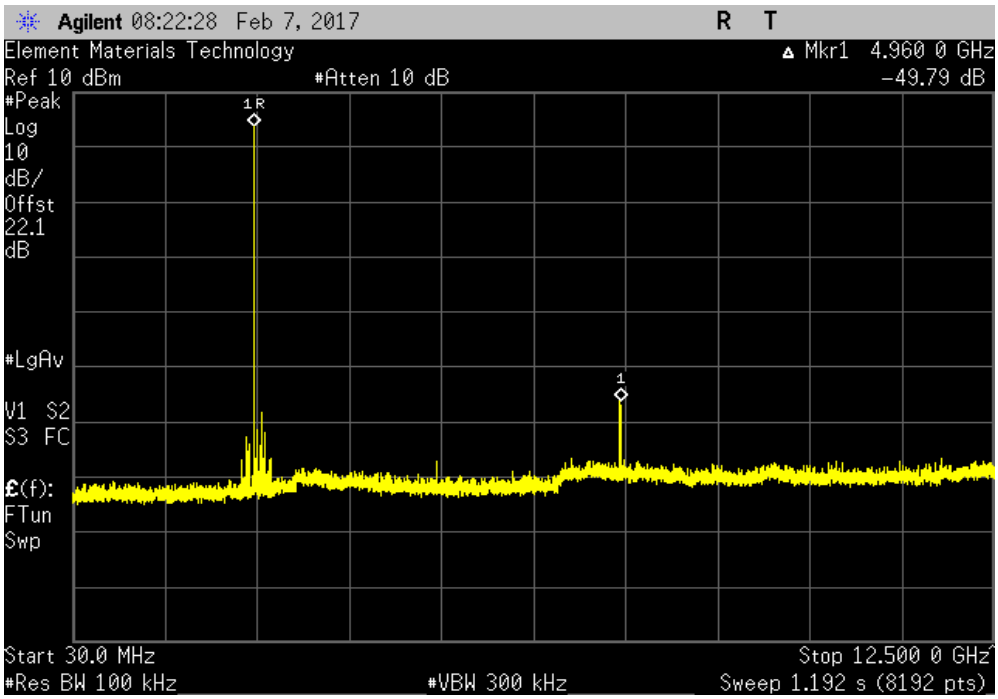
DH5, GFSK, Mid Channel				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-46.67	-20	Pass



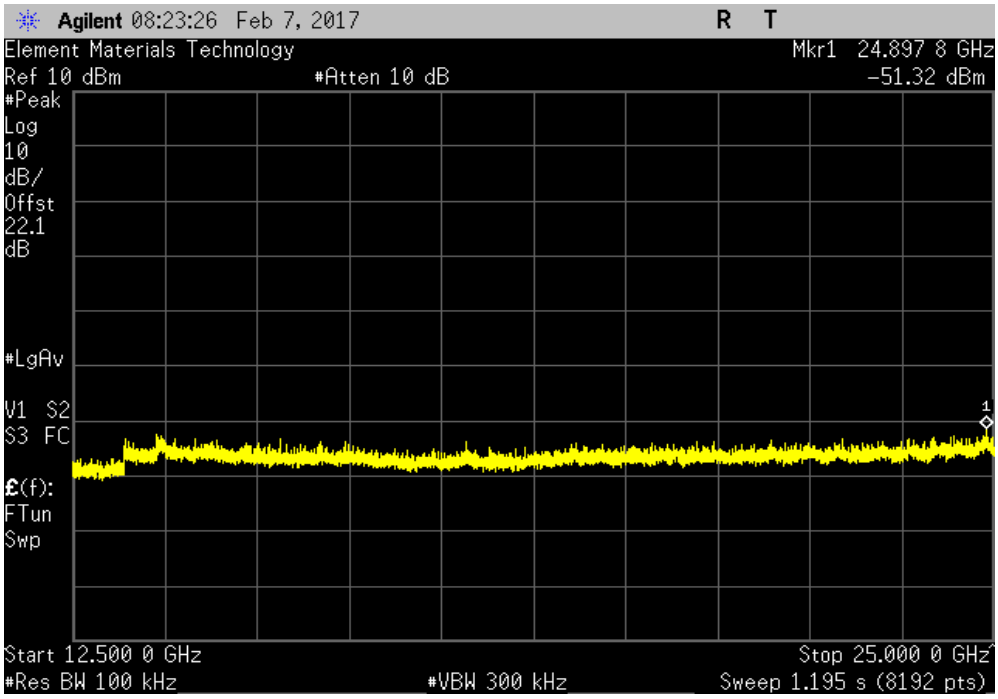
DH5, GFSK, Mid Channel				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-53.99	-20	Pass



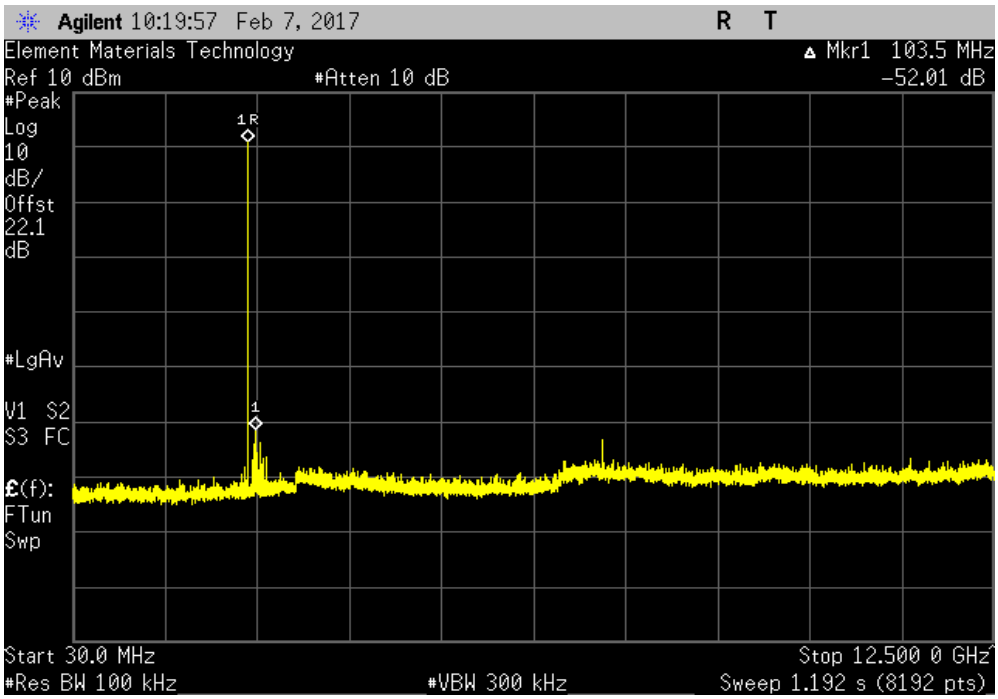
DH5, GFSK, High Channel				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-49.79	-20	Pass



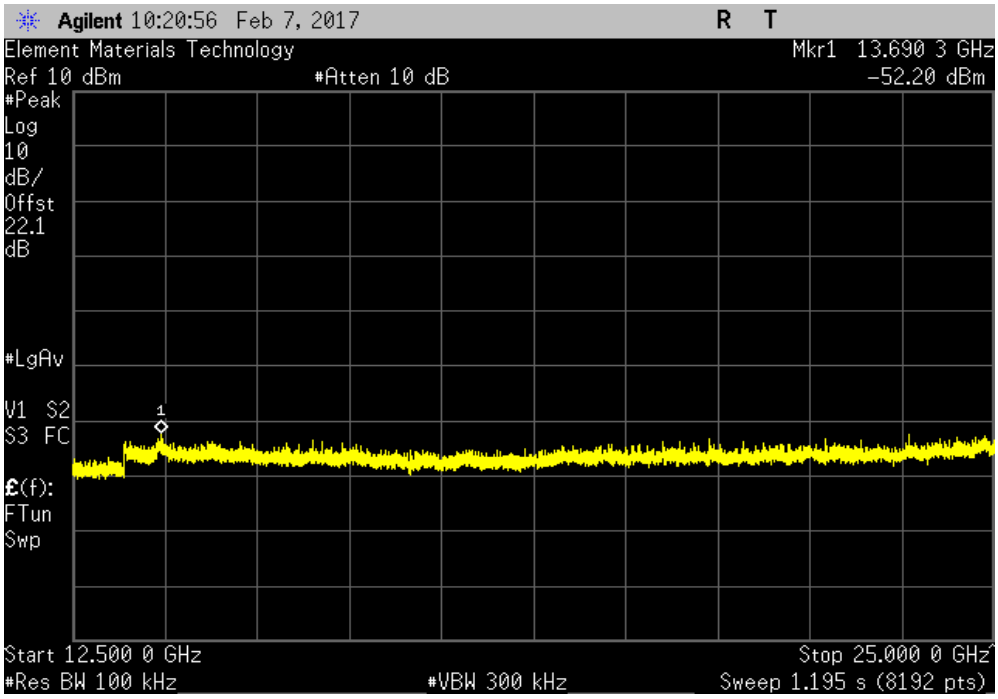
DH5, GFSK, High Channel				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-54.97	-20	Pass



2DH5, pi/4-DQPSK, Low Channel				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-52.01	-20	Pass



2DH5, pi/4-DQPSK, Low Channel				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-52.94	-20	Pass



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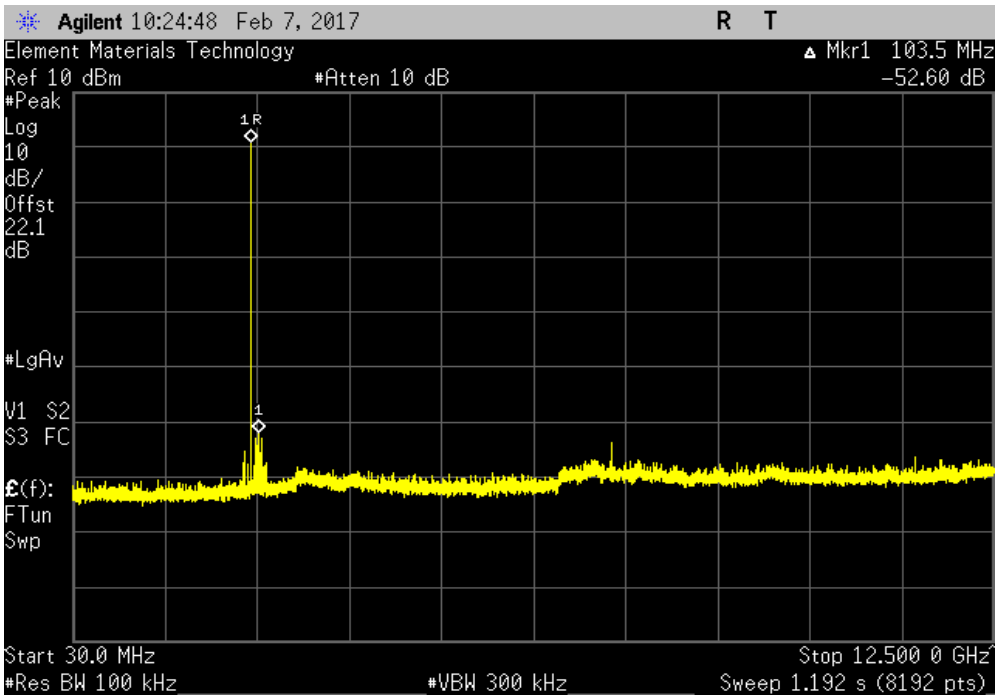
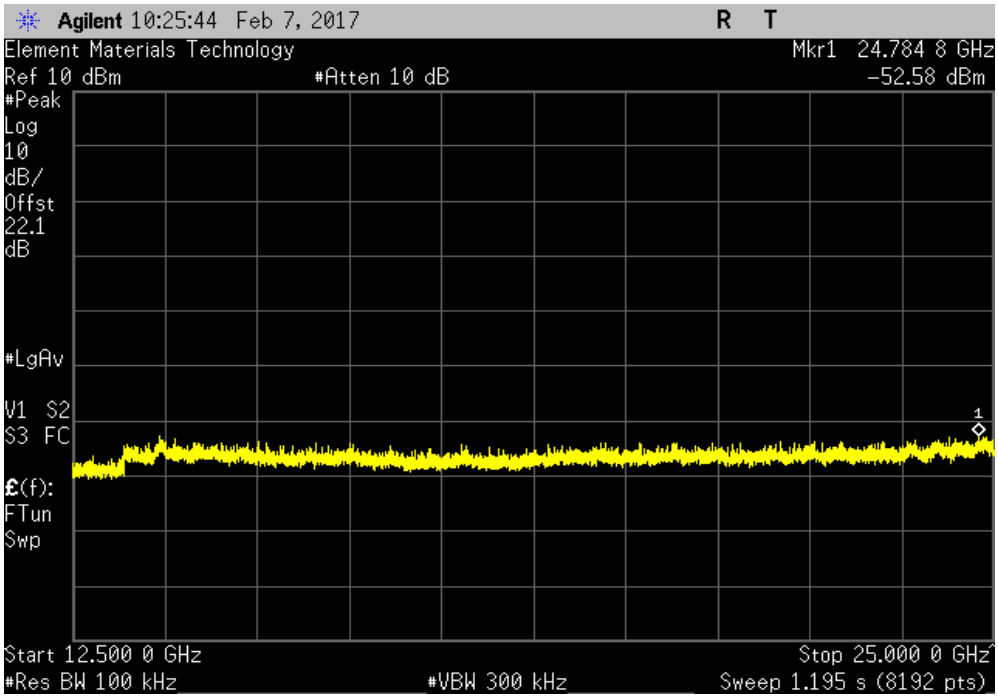
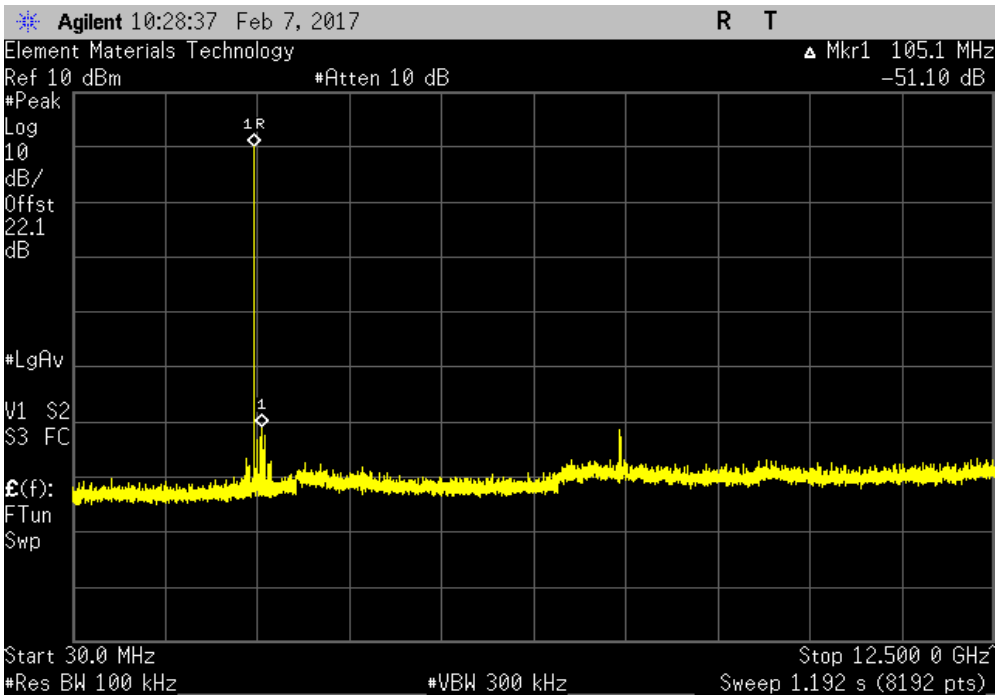
2DH5, pi/4-DQPSK, Mid Channel				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-52.6	-20	Pass



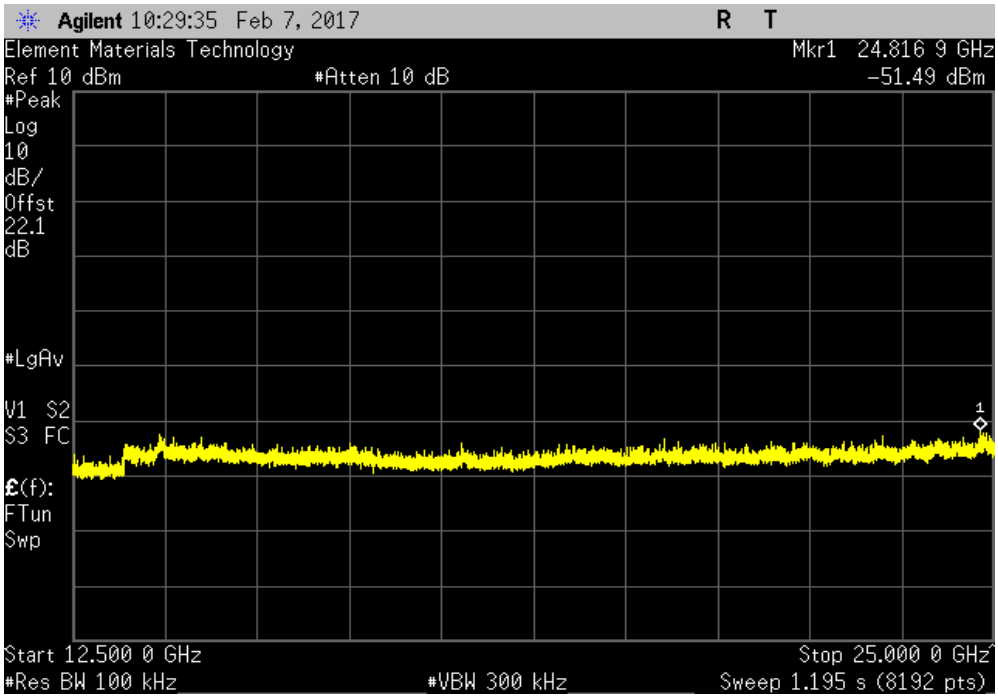
2DH5, pi/4-DQPSK, Mid Channel				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-53.32	-20	Pass



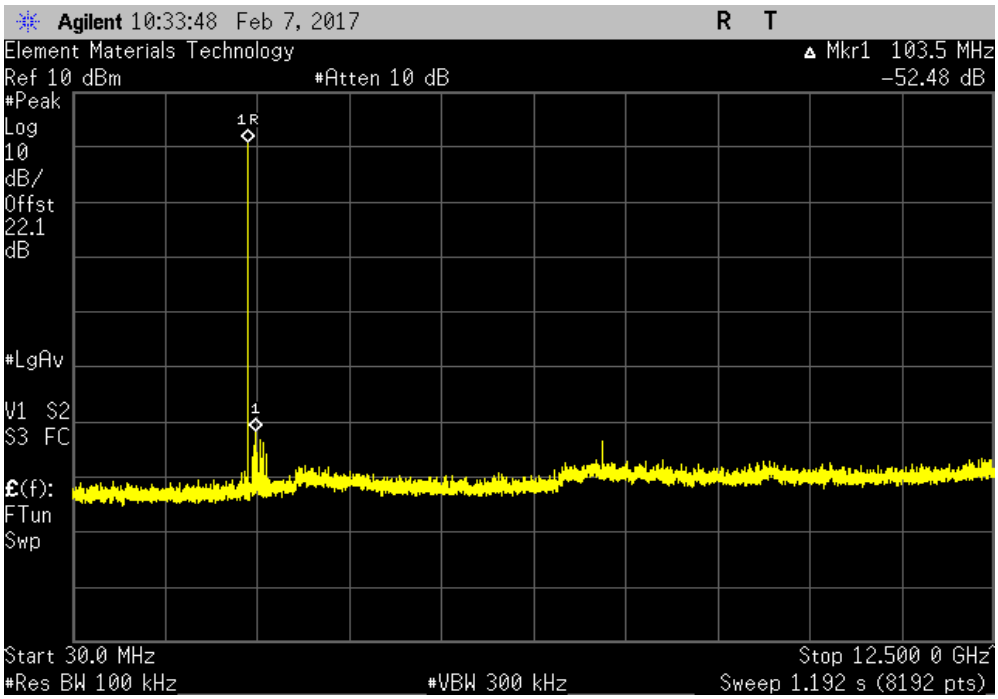
2DH5, pi/4-DQPSK, High Channel				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-51.1	-20	Pass



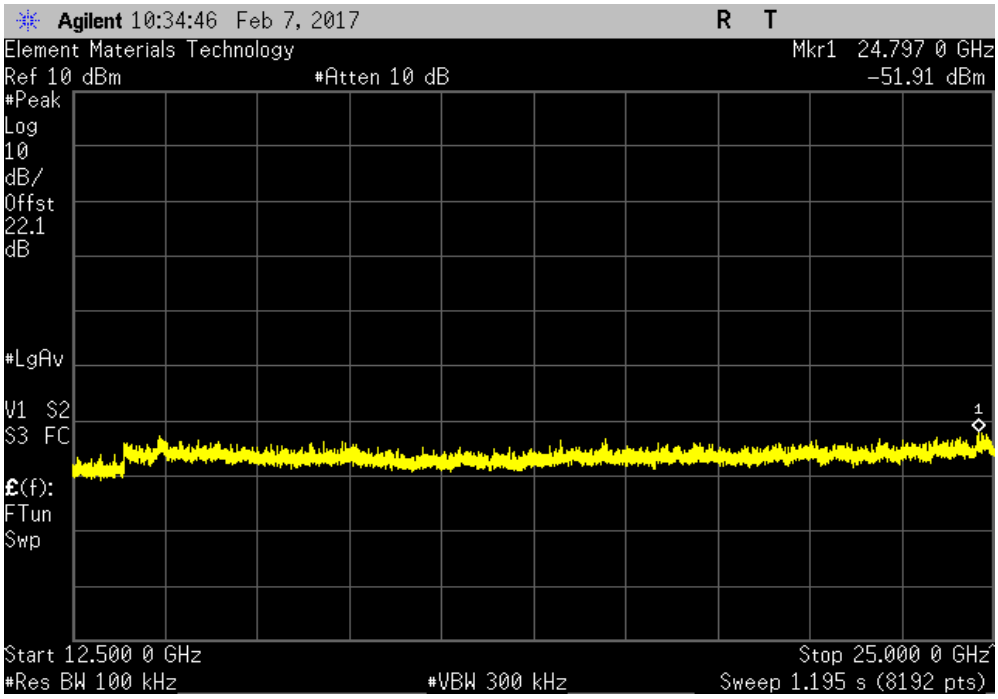
2DH5, pi/4-DQPSK, High Channel				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-51.64	-20	Pass



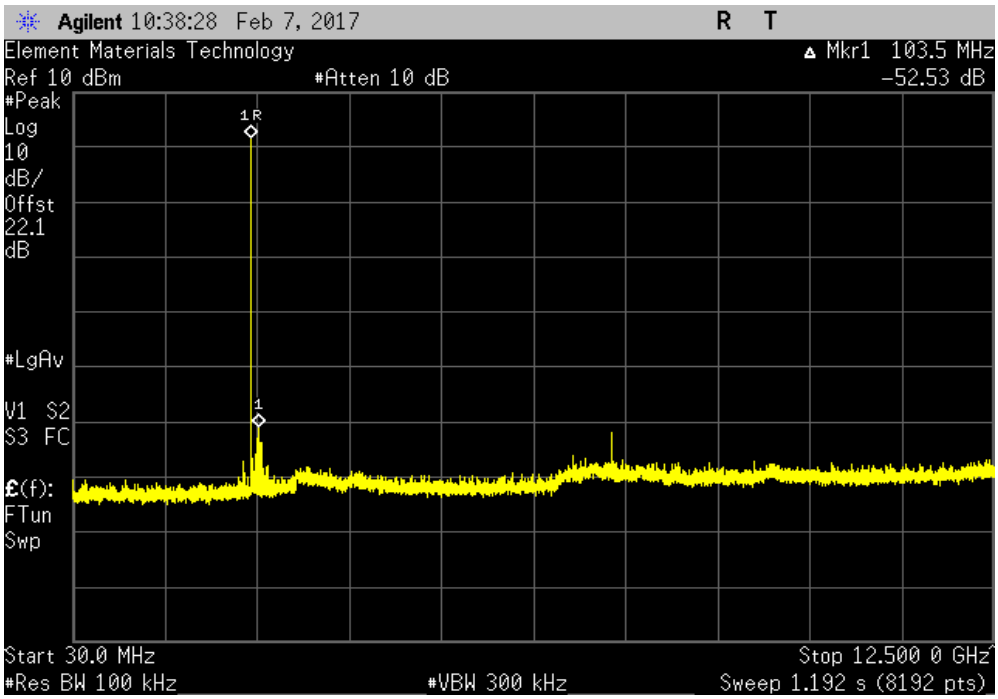
3DH5, 8-DPSK, Low Channel				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-52.49	-20	Pass



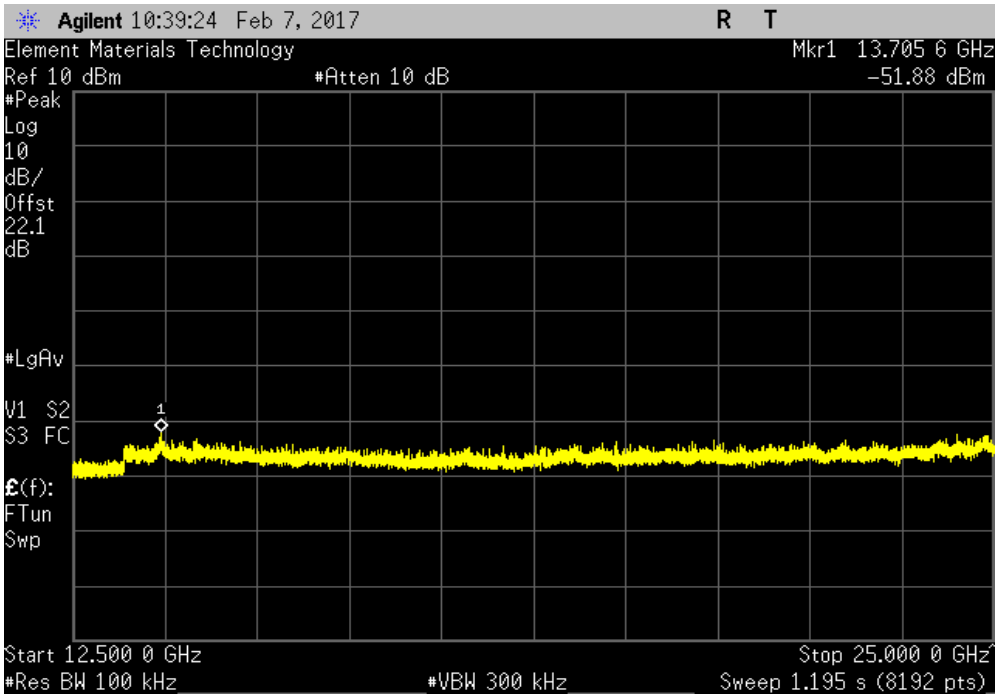
3DH5, 8-DPSK, Low Channel				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-52.7	-20	Pass



3DH5, 8-DPSK, Mid Channel				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-52.53	-20	Pass



3DH5, 8-DPSK, Mid Channel				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-53.6	-20	Pass



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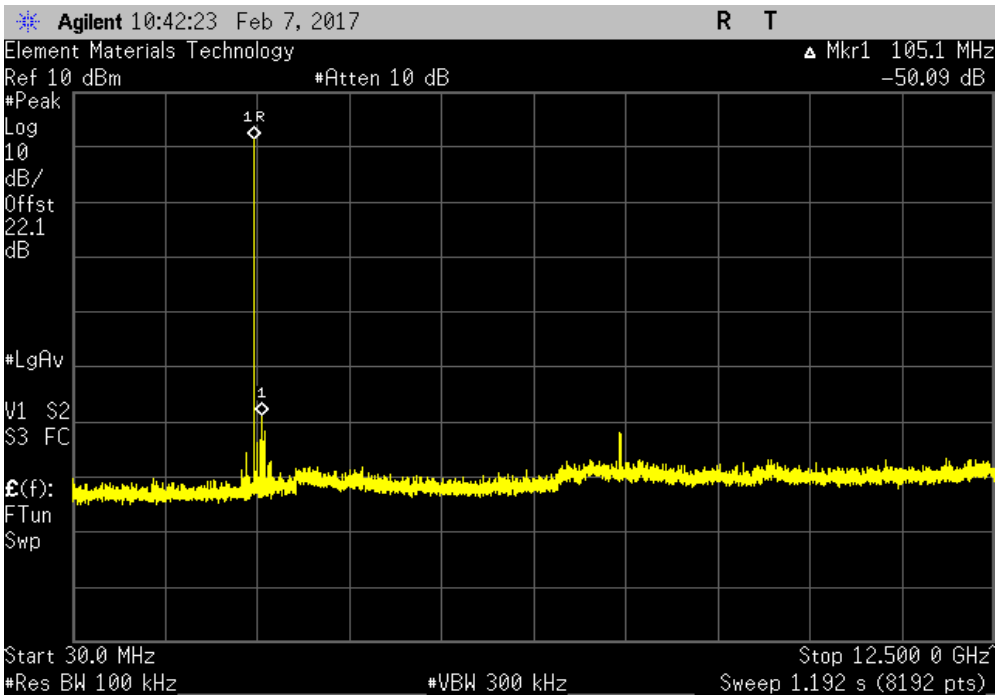
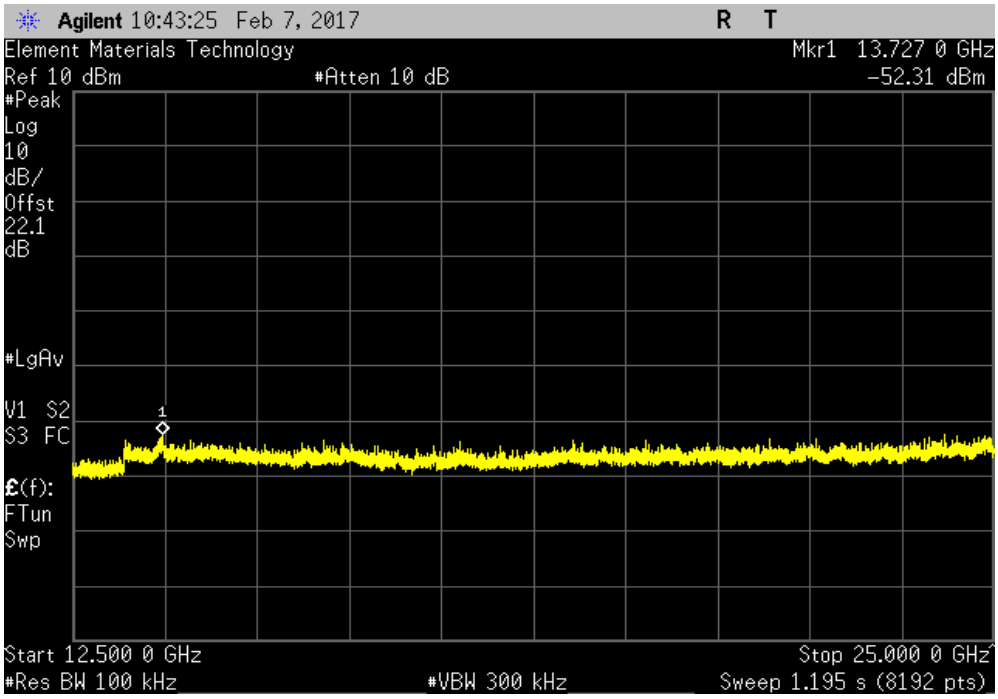
3DH5, 8-DPSK, High Channel				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
30 MHz - 12.5 GHz		-50.09	-20	Pass



3DH5, 8-DPSK, High Channel				
Frequency Range		**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
12.5 GHz - 25 GHz		-53.73	-20	Pass