Starkey Laboratories, Inc.

Multi-Function Accessory

FCC 15.247:2018

Bluetooth (FHSS) Radio

Report # STAK0117

NVLAP LAB CODE: 200881-0

CERTIFICATE OF TEST

Last Date of Test: June 26, 2018
Starkey Laboratories, Inc.
Model: Multi-Function Accessory

Radio Equipment Testing

Standards

Specification	Method
FCC 15.207:2018	ANSI C63.10:2013
FCC 15.247:2018	

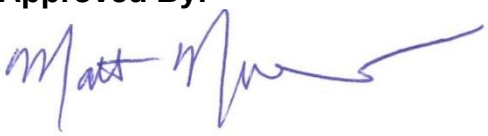
Results

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:



Matt Nuernberg, Operations Manager

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

REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		

ACCREDITATIONS AND AUTHORIZATIONS

United States

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

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

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

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

European Union

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

Australia/New Zealand

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

Korea

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

Japan

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

Taiwan

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

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

Singapore

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

Israel

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

Hong Kong

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

Vietnam

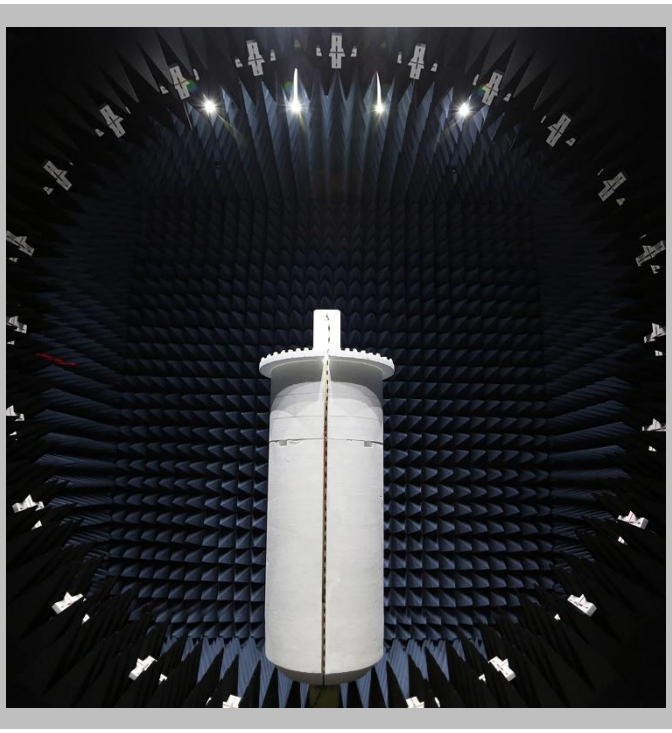
MIC – Recognized by MIC as a CAB for the acceptance of test data.

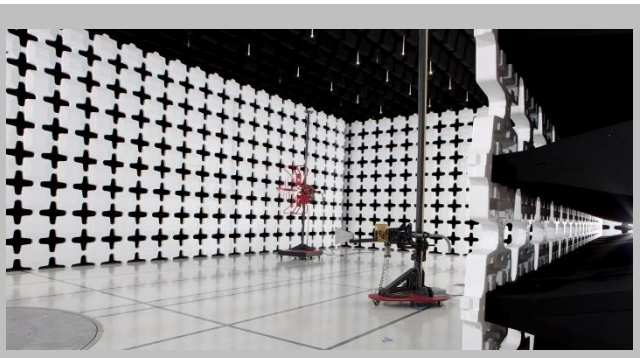
SCOPE

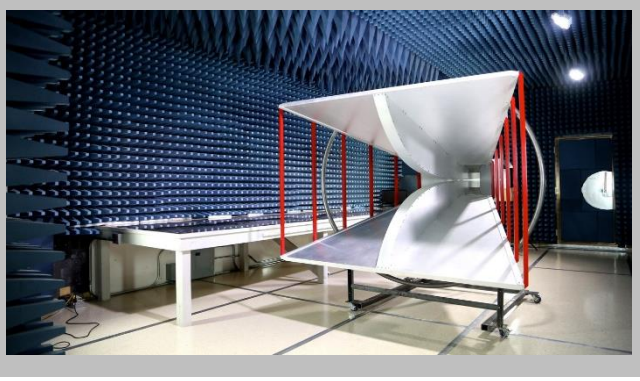
For details on the Scopes of our Accreditations, please visit:
http://portlandcustomer.element.com/ts/scope/scope.htm
http://gsi.nist.gov/global/docs/cabs/designations.html

FACILITIES

California	Minnesota	New York	Oregon	Texas	Washington
Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-10 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 6775 NE Evergreen Pkwy #400 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, 2834E-3	N/A	2834D-1, 2834D-*2*	2834G-1	2834F-1
BSMI					
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI					
A-0029	A-0109	N/A	A-0108	A-0201	A-0110
Recognized Phase I CAB for ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157







MEASUREMENT UNCERTAINTY

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.

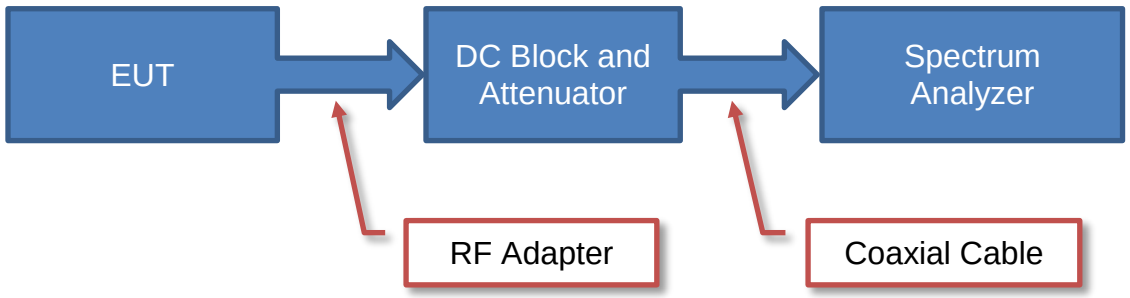
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable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

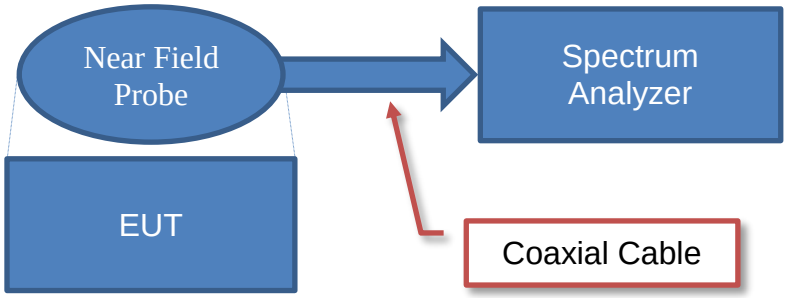
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%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

Test Setup Block Diagrams

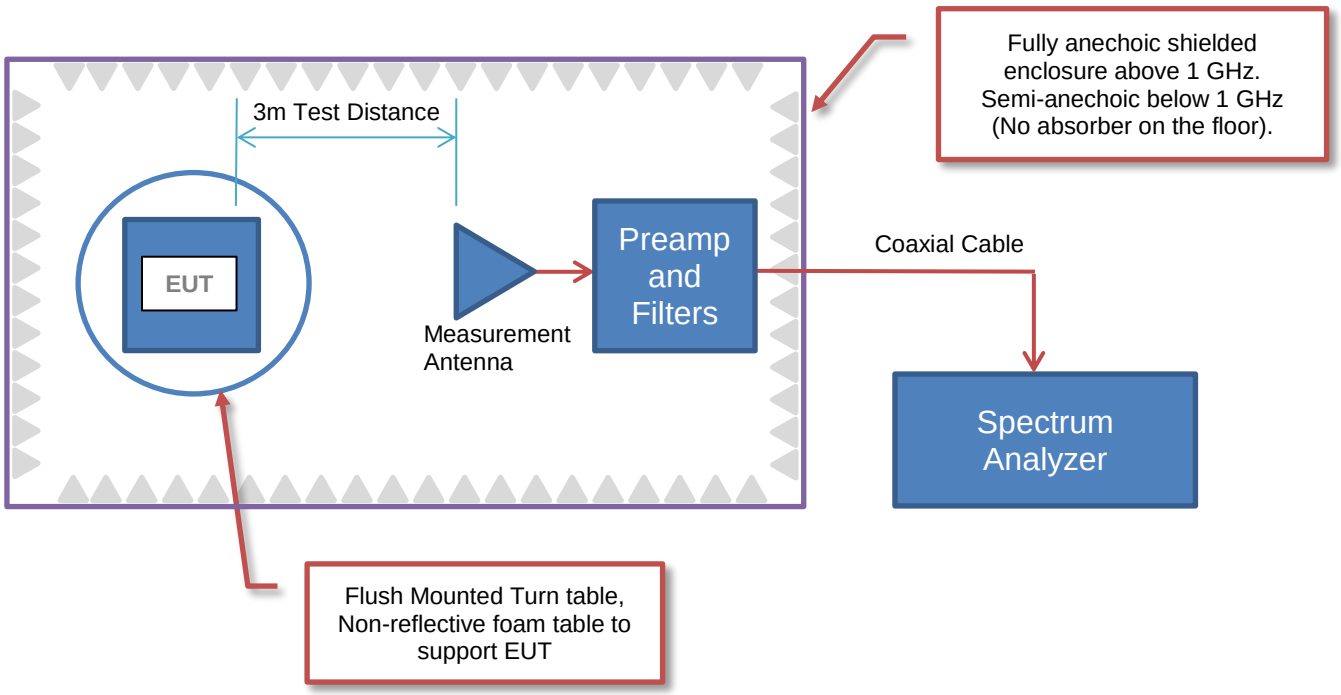
Antenna Port Conducted Measurements



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:	Multi-Function Accessory
First Date of Test:	June 20, 2018
Last Date of Test:	June 26, 2018
Receipt Date of Samples:	June 18, 2018
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
Remote Microphone Device

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

CONFIGURATIONS

Configuration STAK0117- 3

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Multi-function Accessory	Starkey Laboratories, Inc.	900	182010051A

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC Adapter (Multi-function Accessory)	PHIHONG	PSA05F-050Q	PD22021832A2

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB Power Cable	No	1.5 m	No	Multi-function Accessory	AC Adapter (Multi-function Accessory)

Configuration STAK0117- 6

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Multi-function Accessory	Starkey Laboratories, Inc.	900	182010051A

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop	Acer	Aspire one 53h-2997	LUSAL0B137014F42B1601
Laptop AC adapter	Safety Mark	N17908	AP0400100201108409P101

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB Power Cable	No	1.5 m	No	Multi-function Accessory	AC Adapter (Multi-function Accessory)
AC Cable (Laptop)	No	1.5 m	No	Laptop	AC mains
Ethernet Cable	No	1 m	No	Laptop	Unterminated
VGA Cable	No	1 m	Yes	Laptop	Unterminated
USB x2	No	1 m	No	Laptop	Unterminated
Headphone Cable	No	1 m	No	Laptop	Unterminated

CONFIGURATIONS

Configuration STAK0117- 7

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Multi-function Accessory	Starkey Laboratories, Inc.	900	182010051A

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
USB to Serial Controller	CSR	CN510020V5A	361820
Power Supply (Laptop)	Lenovo	ADLX90NCT2A	11S45N0311Z1ZLZ633M0T4
Laptop (Lenovo)	Lenovo	ThinkPad T430	11306

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Serial Cable	No	0.2m	No	USB to Serial Controller	Multi-Function Accessory
USB Cable (USB to Serial Controller)	No	1.8m	Yes	USB to Serial Controller	Laptop
AC Cable (Laptop)	No	1.0m	No	AC Mains	AC Adapter (Lenovo Laptop)
DC Cable (Laptop)	No	1.8m	Yes	AC Adapter (Lenovo Laptop)	Laptop (Lenovo)

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	6/20/2018	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	6/25/2018	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.
3	6/26/2018	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	6/26/2018	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	6/26/2018	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	6/26/2018	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	6/26/2018	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	6/26/2018	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	6/26/2018	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	6/26/2018	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	6/26/2018	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

element
WTD.2017.11.22.1

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
Analyzer - Spectrum Analyzer	Agilent	E4443A	AAS	2/27/2018	2/27/2019
Cable - Conducted Cable Assembly	Northwest EMC	MNC	MNCC	1/24/2018	1/24/2019
LISN	Solar Electronics	9252-50-R-24-BNC	LIY	3/15/2018	3/15/2019
Filter - High Pass	TTE	H97-100K-50-720B	HGN	NCR	NCR

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

STAK0117-3
STAK0117-6

MODES INVESTIGATED

Tx mode, Ch. 20 2442 MHz, DM5
Tx mode, Ch. 20 2442 MHz, DM5

POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

EUT:	Multi-Function Accessory	Work Order:	STAK0117
Serial Number:	182010051A	Date:	06/25/2018
Customer:	Starkey Laboratories, Inc.	Temperature:	21.6°C
Attendees:	Charlie Esch	Relative Humidity:	56.2%
Customer Project:	None	Bar. Pressure:	1022 mb
Tested By:	Chris Patterson	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	STAK0117-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2018	ANSI C63.10:2013

TEST PARAMETERS

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

COMMENTS

None

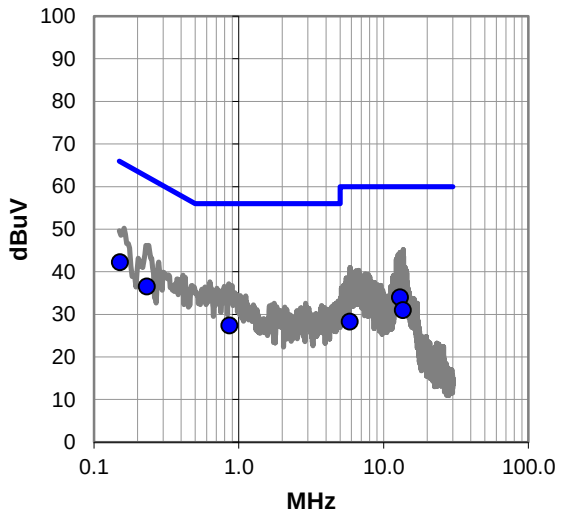
EUT OPERATING MODES

Tx mode, Ch. 20 2442 MHz, DM5

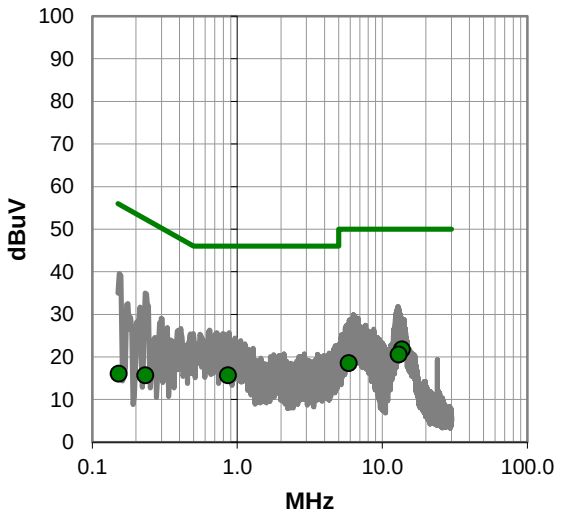
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

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WTD.2017.11.22.1

RESULTS - Run #3

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.152	42.0	0.3	42.3	65.9	-23.6
0.232	36.3	0.3	36.6	62.4	-25.8
12.978	32.8	1.2	34.0	60.0	-26.0
0.861	27.2	0.2	27.4	56.0	-28.6
13.610	29.7	1.3	31.0	60.0	-29.0
5.851	27.7	0.6	28.3	60.0	-31.7

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
13.610	20.5	1.3	21.8	50.0	-28.2
12.978	19.4	1.2	20.6	50.0	-29.4
0.861	15.5	0.2	15.7	46.0	-30.3
5.851	18.0	0.6	18.6	50.0	-31.4
0.232	15.4	0.3	15.7	52.4	-36.7
0.152	15.8	0.3	16.1	55.9	-39.8

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

EUT:	Multi-Function Accessory	Work Order:	STAK0117
Serial Number:	182010051A	Date:	06/25/2018
Customer:	Starkey Laboratories, Inc.	Temperature:	21.6°C
Attendees:	Charlie Esch	Relative Humidity:	56.2%
Customer Project:	None	Bar. Pressure:	1022 mb
Tested By:	Chris Patterson	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	STAK0117-3

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2018	ANSI C63.10:2013

TEST PARAMETERS

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

COMMENTS

None

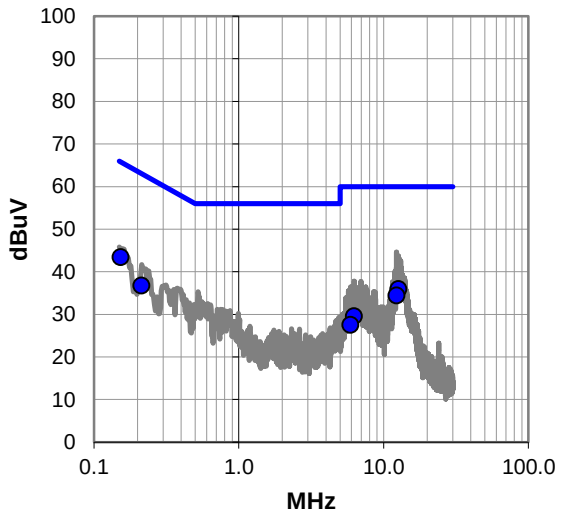
EUT OPERATING MODES

Tx mode, Ch. 20 2442 MHz, DM 5

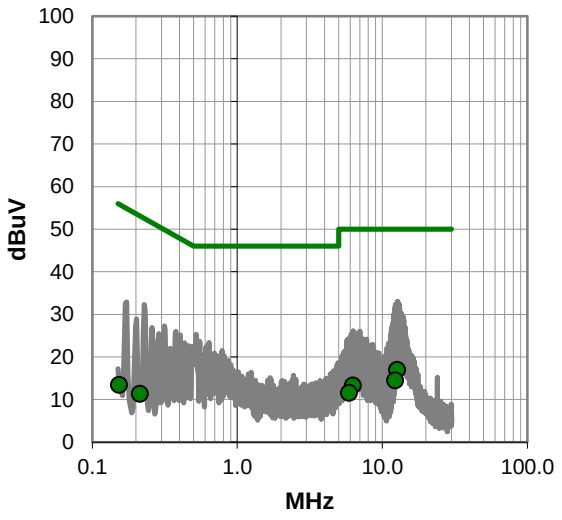
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

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WTD.2017.11.22.1

RESULTS - Run #4

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.153	43.2	0.3	43.5	65.9	-22.4
12.630	34.8	1.2	36.0	60.0	-24.0
12.267	33.3	1.2	34.5	60.0	-25.5
0.213	36.5	0.3	36.8	63.1	-26.3
6.251	29.0	0.6	29.6	60.0	-30.4
5.900	27.0	0.6	27.6	60.0	-32.4

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
12.630	15.8	1.2	17.0	50.0	-33.0
12.267	13.3	1.2	14.5	50.0	-35.5
6.251	12.7	0.6	13.3	50.0	-36.7
5.900	11.0	0.6	11.6	50.0	-38.4
0.213	11.1	0.3	11.4	53.1	-41.7
0.153	13.2	0.3	13.5	55.9	-42.4

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

EUT:	Multi-Function Accessory	Work Order:	STAK0117
Serial Number:	182010051A	Date:	06/25/2018
Customer:	Starkey Laboratories, Inc.	Temperature:	21.5°C
Attendees:	Charlie Esch	Relative Humidity:	56.7%
Customer Project:	None	Bar. Pressure:	1022 mb
Tested By:	Chris Patterson	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	STAK0117-6

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2018	ANSI C63.10:2013

TEST PARAMETERS

Run #:	17	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

None

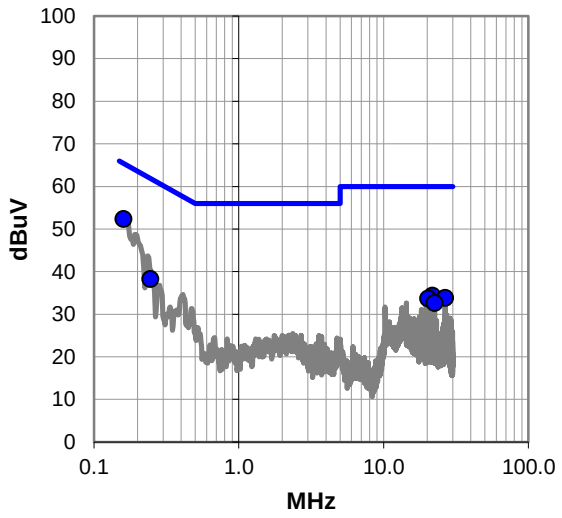
EUT OPERATING MODES

Tx mode, Ch. 20 2442 MHz, DM5

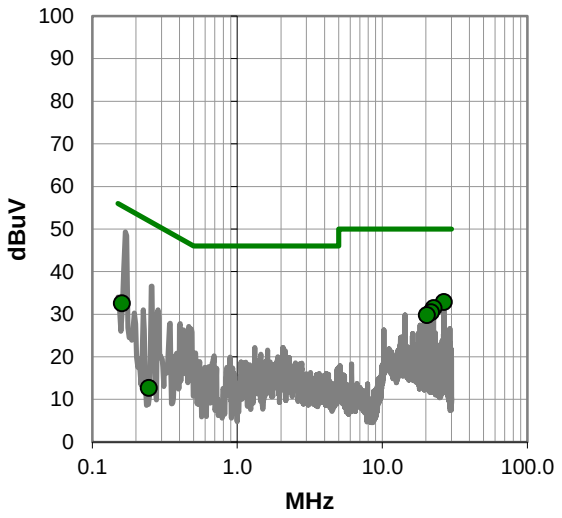
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

RESULTS - Run #17

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.160	52.1	0.3	52.4	65.5	-13.1
0.245	38.0	0.3	38.3	61.9	-23.6
21.664	32.1	2.3	34.4	60.0	-25.6
26.623	30.9	3.0	33.9	60.0	-26.1
20.259	31.5	2.2	33.7	60.0	-26.3
22.527	30.3	2.4	32.7	60.0	-27.3

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
26.623	29.9	3.0	32.9	50.0	-17.1
22.527	29.1	2.4	31.5	50.0	-18.5
21.664	28.2	2.3	30.5	50.0	-19.5
20.259	27.6	2.2	29.8	50.0	-20.2
0.160	32.3	0.3	32.6	55.5	-22.9
0.245	12.4	0.3	12.7	51.9	-39.2

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

EUT:	Multi-Function Accessory	Work Order:	STAK0117
Serial Number:	182010051A	Date:	06/25/2018
Customer:	Starkey Laboratories, Inc.	Temperature:	21.5°C
Attendees:	Charlie Esch	Relative Humidity:	56.7%
Customer Project:	None	Bar. Pressure:	1022 mb
Tested By:	Chris Patterson	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	STAK0117-6

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2018	ANSI C63.10:2013

TEST PARAMETERS

Run #:	18	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

None

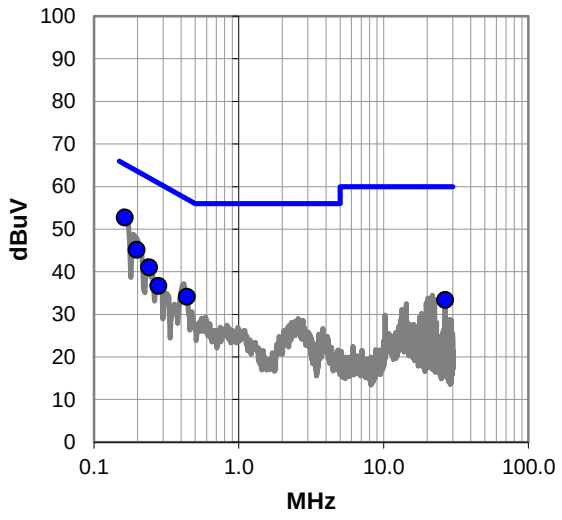
EUT OPERATING MODES

Tx mode, Ch. 20 2442 MHz, DM5

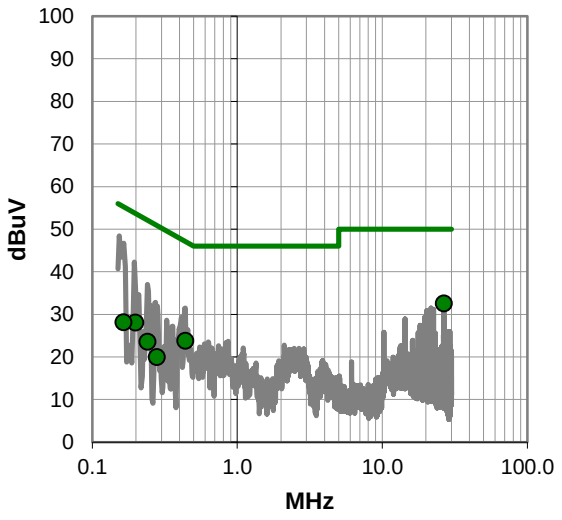
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

RESULTS - Run #18

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.164	52.5	0.3	52.8	65.3	-12.5
0.197	44.9	0.3	45.2	63.7	-18.5
0.240	40.8	0.3	41.1	62.1	-21.0
0.438	34.0	0.2	34.2	57.1	-22.9
0.278	36.5	0.2	36.7	60.9	-24.2
26.623	30.4	3.0	33.4	60.0	-26.6

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
26.623	29.6	3.0	32.6	50.0	-17.4
0.438	23.6	0.2	23.8	47.1	-23.3
0.197	27.8	0.3	28.1	53.7	-25.6
0.164	27.9	0.3	28.2	55.3	-27.1
0.240	23.3	0.3	23.6	52.1	-28.5
0.278	19.8	0.2	20.0	50.9	-30.9

CONCLUSION

Pass

Tested By

SPURIOUS RADIATED EMISSIONS

PSA-ESCI 2018.05.04

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

MODES OF OPERATION

Tx on low ch 0, mid ch 39, or high ch 79 at 2402, 2440, or 2480 MHz on the CSR Radio on DM5, 2DH5, or 3DH5.

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

STAK0117 - 3

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
Attenuator	Fairview Microwave	SA18E-20	TWZ	20-Sep-2017	12 mo
Cable	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	12-Jul-2017	12 mo
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	21-Nov-2017	12 mo
Cable	ESM Cable Corp.	Bilog Cables	MNH	9-Nov-2017	12 mo
Filter - High Pass	Micro-Tronics	HPM50111	LFN	20-Sep-2017	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFK	20-Sep-2017	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYD	25-Jan-2018	24 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AXP	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVO	9-Nov-2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	13-Feb-2018	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AIQ	NCR	0 mo
Antenna - Double Ridge	ETS Lindgren	3115	AIB	25-Aug-2016	24 mo
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFD	2-Aug-2017	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVT	13-Feb-2018	12 mo
Amplifier - Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	12-Sep-2017	12 mo
Cable	ESM Cable Corp	TTBJ141 KMKM-72	MNP	12-Sep-2017	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-09	AHG	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVW	13-Feb-2018	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.

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

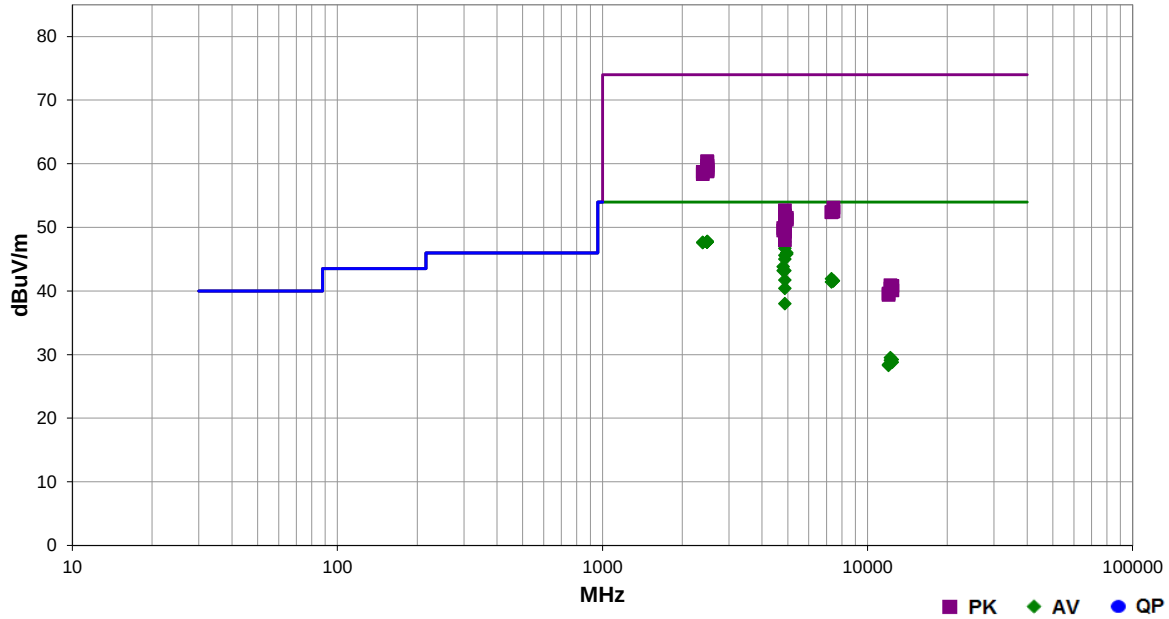
SPURIOUS RADIATED EMISSIONS

EmiR5 2018.05.07 PSA-ESCI 2018.05.04

Work Order:	STAK0117	**Date:**	20-Jun-2018		
Project:	None	**Temperature:**	21.8 °C		
Job Site:	MN05	**Humidity:**	54.5% RH		
Serial Number:	182010051A	**Barometric Pres.:**	1015 mbar	**Tested by:**	Kyle McMullan
EUT:	Multi-Function Accessory				
Configuration:	3				
Customer:	Starkey Laboratories, Inc.				
Attendees:	Charlie Esch				
EUT Power:	110VAC/60Hz				
Operating Mode:	Tx on low ch 0, mid ch 39, or high ch 79 at 2402, 2440, or 2480 MHz on the CSR Radio on DM5, 2DH5, or 3DH5.				
Deviations:	None				
Comments:	None				

Test Specifications	**Test Method**
FCC 15.247:2018	ANSI C63.10:2013

Run #	89	**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 (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2484.310	32.3	-4.5	1.0	289.9	0.0	20.0	Horz	AV	0.0	47.8	54.0	-6.2	EUT Horz, High Ch, DM5
2483.843	32.2	-4.5	1.0	171.0	0.0	20.0	Vert	AV	0.0	47.7	54.0	-6.3	EUT Horz, High Ch, DM5
2483.590	32.2	-4.5	1.0	82.0	0.0	20.0	Horz	AV	0.0	47.7	54.0	-6.3	EUT On Side, High Ch, DM5
2483.627	32.2	-4.5	3.4	297.0	0.0	20.0	Vert	AV	0.0	47.7	54.0	-6.3	EUT On Side, High Ch, DM5
2483.537	32.2	-4.5	1.0	65.1	0.0	20.0	Horz	AV	0.0	47.7	54.0	-6.3	EUT Vert, High Ch, DM5
2484.367	32.2	-4.5	1.0	169.0	0.0	20.0	Vert	AV	0.0	47.7	54.0	-6.3	EUT Vert, High Ch, DM5
2485.337	32.2	-4.5	1.2	26.1	0.0	20.0	Horz	AV	0.0	47.7	54.0	-6.3	EUT Horz, High Ch, 2DH5
2483.540	32.2	-4.5	3.3	0.0	0.0	20.0	Vert	AV	0.0	47.7	54.0	-6.3	EUT Horz, High Ch, 2DH5
2484.933	32.2	-4.5	1.0	188.1	0.0	20.0	Horz	AV	0.0	47.7	54.0	-6.3	EUT Horz, High Ch, 3DH5
2483.980	32.2	-4.5	1.0	226.0	0.0	20.0	Vert	AV	0.0	47.7	54.0	-6.3	EUT Horz, High Ch, 3DH5
4880.033	42.0	5.3	1.0	268.9	0.4	0.0	Horz	AV	0.0	47.7	54.0	-6.3	EUT Horz, Mid Ch, DM5
2389.973	32.0	-4.4	1.0	306.0	0.0	20.0	Horz	AV	0.0	47.6	54.0	-6.4	EUT Horz, Low Ch, DM5
2388.160	32.0	-4.4	1.0	1.1	0.0	20.0	Vert	AV	0.0	47.6	54.0	-6.4	EUT Horz, Low Ch, DM5
4880.067	41.0	5.3	1.0	111.0	0.4	0.0	Vert	AV	0.0	46.7	54.0	-7.3	EUT Horz, Mid Ch, DM5
4959.992	39.9	5.7	1.0	278.0	0.4	0.0	Horz	AV	0.0	46.0	54.0	-8.0	EUT Horz, High Ch, DM5
4960.042	39.7	5.7	1.0	142.1	0.4	0.0	Vert	AV	0.0	45.8	54.0	-8.2	EUT Horz, High Ch, DM5
4880.017	39.9	5.3	1.0	278.0	0.4	0.0	Vert	AV	0.0	45.6	54.0	-8.4	EUT On side, Mid Ch, DM5
4880.008	39.3	5.3	1.0	315.9	0.4	0.0	Horz	AV	0.0	45.0	54.0	-9.0	EUT On side, Mid Ch, DM5
4804.000	38.4	5.0	1.0	264.9	0.4	0.0	Horz	AV	0.0	43.8	54.0	-10.2	EUT Vert, Low Ch, DM5
4880.000	37.5	5.3	1.0	282.0	0.4	0.0	Vert	AV	0.0	43.2	54.0	-10.8	EUT Vert, Mid Ch, DM5

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Duty Cycle Correction Factor (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4804.033	37.8	5.0	1.0	119.1	0.4	0.0	Vert	AV	0.0	43.2	54.0	-10.8	EUT Vert, Low Ch, DM5
7319.967	31.3	10.6	1.0	321.0	0.0	0.0	Vert	AV	0.0	41.9	54.0	-12.1	EUT Horz, Mid Ch, DM5
4879.983	36.0	5.3	1.0	278.0	0.4	0.0	Horz	AV	0.0	41.7	54.0	-12.3	EUT Horz, Mid Ch, 3DH5
7439.717	30.9	10.7	1.0	308.9	0.0	0.0	Horz	AV	0.0	41.6	54.0	-12.4	EUT Horz, High Ch, DM5
7440.292	30.9	10.7	1.0	278.0	0.0	0.0	Vert	AV	0.0	41.6	54.0	-12.4	EUT Horz, High Ch, DM5
7319.758	30.8	10.6	1.0	137.1	0.0	0.0	Horz	AV	0.0	41.4	54.0	-12.6	EUT Horz, Mid Ch, DM5
2483.797	44.9	-4.5	1.0	82.0		20.0	Horz	PK	0.0	60.4	74.0	-13.6	EUT On Side, High Ch, DM5
4880.050	34.7	5.3	1.0	289.0	0.4	0.0	Horz	AV	0.0	40.4	54.0	-13.6	EUT Horz, Mid Ch, 2DH5
2484.917	44.8	-4.5	1.0	226.0		20.0	Vert	PK	0.0	60.3	74.0	-13.7	EUT Horz, High Ch, 3DH5
2485.163	44.2	-4.5	3.3	0.0		20.0	Vert	PK	0.0	59.7	74.0	-14.3	EUT Horz, High Ch, 2DH5
2484.447	44.2	-4.5	1.0	188.1		20.0	Horz	PK	0.0	59.7	74.0	-14.3	EUT Horz, High Ch, 3DH5
2484.547	43.9	-4.5	1.0	289.9		20.0	Horz	PK	0.0	59.4	74.0	-14.6	EUT Horz, High Ch, DM5
2484.307	43.7	-4.5	1.0	65.1		20.0	Horz	PK	0.0	59.2	74.0	-14.8	EUT Vert, High Ch, DM5
2484.900	43.6	-4.5	1.2	26.1		20.0	Horz	PK	0.0	59.1	74.0	-14.9	EUT Horz, High Ch, 2DH5
2484.367	43.4	-4.5	1.0	171.0		20.0	Vert	PK	0.0	58.9	74.0	-15.1	EUT Horz, High Ch, DM5
2485.490	43.4	-4.5	3.4	297.0		20.0	Vert	PK	0.0	58.9	74.0	-15.1	EUT On Side, High Ch, DM5
2484.337	43.3	-4.5	1.0	169.0		20.0	Vert	PK	0.0	58.8	74.0	-15.2	EUT Vert, High Ch, DM5
2388.210	43.1	-4.4	1.0	1.1		20.0	Vert	PK	0.0	58.7	74.0	-15.3	EUT Horz, Low Ch, DM5
2389.257	42.8	-4.4	1.0	306.0		20.0	Horz	PK	0.0	58.4	74.0	-15.6	EUT Horz, Low Ch, DM5
4879.967	32.3	5.3	1.0	343.9	0.4	0.0	Horz	AV	0.0	38.0	54.0	-16.0	EUT Vert, Mid Ch, DM5
7440.108	42.4	10.7	1.0	308.9		0.0	Horz	PK	0.0	53.1	74.0	-20.9	EUT Horz, High Ch, DM5
4879.767	47.4	5.3	1.0	268.9		0.0	Horz	PK	0.0	52.7	74.0	-21.3	EUT Horz, Mid Ch, DM5
7439.408	41.8	10.7	1.0	278.0		0.0	Vert	PK	0.0	52.5	74.0	-21.5	EUT Horz, High Ch, DM5
7317.742	41.8	10.6	1.0	137.1		0.0	Horz	PK	0.0	52.4	74.0	-21.6	EUT Horz, Mid Ch, DM5
7319.975	41.8	10.6	1.0	321.0		0.0	Vert	PK	0.0	52.4	74.0	-21.6	EUT Horz, Mid Ch, DM5
4879.825	46.6	5.3	1.0	111.0		0.0	Vert	PK	0.0	51.9	74.0	-22.1	EUT Horz, Mid Ch, DM5
4879.750	46.2	5.3	1.0	315.9		0.0	Horz	PK	0.0	51.5	74.0	-22.5	EUT On side, Mid Ch, DM5
4880.058	46.2	5.3	1.0	278.0		0.0	Vert	PK	0.0	51.5	74.0	-22.5	EUT On side, Mid Ch, DM5
4959.725	45.8	5.7	1.0	278.0		0.0	Horz	PK	0.0	51.5	74.0	-22.5	EUT Horz, High Ch, DM5
4959.733	45.5	5.7	1.0	142.1		0.0	Vert	PK	0.0	51.2	74.0	-22.8	EUT Horz, High Ch, DM5
4879.508	44.6	5.3	1.0	282.0		0.0	Vert	PK	0.0	49.9	74.0	-24.1	EUT Vert, Mid Ch, DM5
4804.158	44.9	5.0	1.0	264.9		0.0	Horz	PK	0.0	49.9	74.0	-24.1	EUT Vert, Low Ch, DM5
4879.817	44.3	5.3	1.0	278.0		0.0	Horz	PK	0.0	49.6	74.0	-24.4	EUT Horz, Mid Ch, 3DH5
4803.975	44.5	5.0	1.0	119.1		0.0	Vert	PK	0.0	49.5	74.0	-24.5	EUT Vert, Low Ch, DM5
12199.510	30.6	-1.1	1.0	332.0	0.0	0.0	Vert	AV	0.0	29.5	54.0	-24.5	EUT Horz, Mid Ch, DM5
4880.400	43.9	5.4	1.0	289.0		0.0	Horz	PK	0.0	49.3	74.0	-24.7	EUT Horz, Mid Ch, 2DH5
12398.030	29.6	-0.4	1.0	191.1	0.0	0.0	Vert	AV	0.0	29.2	54.0	-24.8	EUT Horz, High Ch, DM5
12199.080	30.2	-1.1	1.0	243.9	0.0	0.0	Horz	AV	0.0	29.1	54.0	-24.9	EUT Horz, Mid Ch, DM5
12398.180	29.2	-0.4	1.0	209.1	0.0	0.0	Horz	AV	0.0	28.8	54.0	-25.2	EUT Horz, High Ch, DM5
12012.420	29.8	-1.4	1.0	22.1	0.0	0.0	Vert	AV	0.0	28.4	54.0	-25.6	EUT Horz, Low Ch, DM5
12011.780	29.7	-1.4	1.9	54.0	0.0	0.0	Horz	AV	0.0	28.3	54.0	-25.7	EUT Horz, Low Ch, DM5
4878.242	42.7	5.3	1.0	343.9		0.0	Horz	PK	0.0	48.0	74.0	-26.0	EUT Vert, Mid Ch, DM5
12198.420	42.0	-1.1	1.0	332.0		0.0	Vert	PK	0.0	40.9	74.0	-33.1	EUT Horz, Mid Ch, DM5
12398.050	41.2	-0.4	1.0	191.1		0.0	Vert	PK	0.0	40.8	74.0	-33.2	EUT Horz, High Ch, DM5
12201.580	41.5	-1.1	1.0	243.9		0.0	Horz	PK	0.0	40.4	74.0	-33.6	EUT Horz, Mid Ch, DM5
12398.970	40.5	-0.4	1.0	209.1		0.0	Horz	PK	0.0	40.1	74.0	-33.9	EUT Horz, High Ch, DM5
12008.200	41.0	-1.4	1.0	22.1		0.0	Vert	PK	0.0	39.6	74.0	-34.4	EUT Horz, Low Ch, DM5
12008.520	40.8	-1.4	1.9	54.0		0.0	Horz	PK	0.0	39.4	74.0	-34.6	EUT Horz, Low Ch, DM5

DUTY CYCLE

XMit 2017.12.13

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	E4422B	TGQ	15-Mar-18	15-Mar-21
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	15-Mar-18	15-Mar-19
Attenuator	S.M. Electronics	SA26B-20	RFW	13-Feb-18	13-Feb-19
Block - DC	Fairview Microwave	SD3379	AMI	12-Sep-17	12-Sep-18
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFN	27-Apr-18	27-Apr-19

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 2017.12.14 XMit 2017.12.13

EUT:	**Multi-Function Accessory**			**Work Order:**	**STAK0117**
Serial Number:	**182010051A**			**Date:**	**26-Jun-18**
Customer:	**Starkey Laboratories, Inc.**			**Temperature:**	**22.1 °C**
Attendees:	**Charlie Esch**			**Humidity:**	**57.6% RH**
Project:	**None**			**Barometric Pres.:**	**1012 mbar**
Tested by:	**Dustin Sparks**	**Power:**	**Battery**	**Job Site:**	**MN08**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

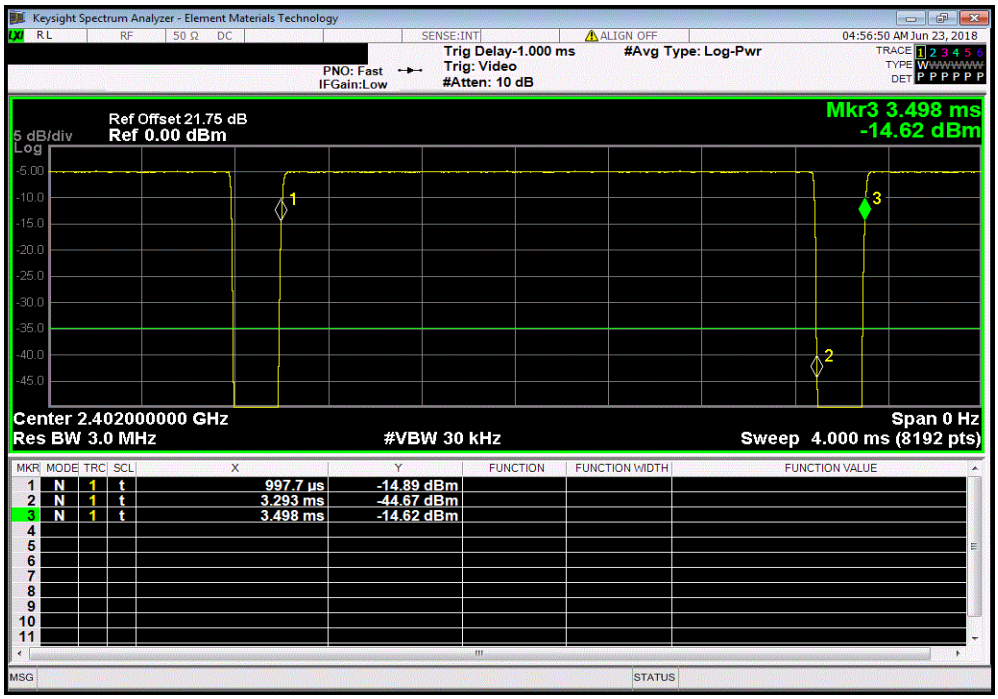
Configuration #	**7**	*Signature* Dustin Sparks

		Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
DM5, GFSK							
	Low Channel	2.296 ms	2.5 ms	1	91.8	N/A	N/A
	Low Channel	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel	2.294 ms	2.5 ms	1	91.7	N/A	N/A
	Mid Channel	N/A	N/A	5	N/A	N/A	N/A
	High Channel	2.295 ms	2.5 ms	1	91.8	N/A	N/A
	High Channel	N/A	N/A	5	N/A	N/A	N/A
2DH5, pi/4-DQPSK							
	Low Channel	1.044 ms	1.251 ms	1	83.5	N/A	N/A
	Low Channel	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel	1.045 ms	1.249 ms	1	83.6	N/A	N/A
	Mid Channel	N/A	N/A	5	N/A	N/A	N/A
	High Channel	1.044 ms	1.251 ms	1	83.4	N/A	N/A
	High Channel	N/A	N/A	5	N/A	N/A	N/A
3DH5, 8-DPSK							
	Low Channel	2.304 ms	2.5 ms	1	92.1	N/A	N/A
	Low Channel	N/A	N/A	5	N/A	N/A	N/A
	Mid Channel	2.303 ms	2.5 ms	1	92.1	N/A	N/A
	Mid Channel	N/A	N/A	5	N/A	N/A	N/A
	High Channel	2.303 ms	2.5 ms	1	92.1	N/A	N/A
	High Channel	N/A	N/A	5	N/A	N/A	N/A

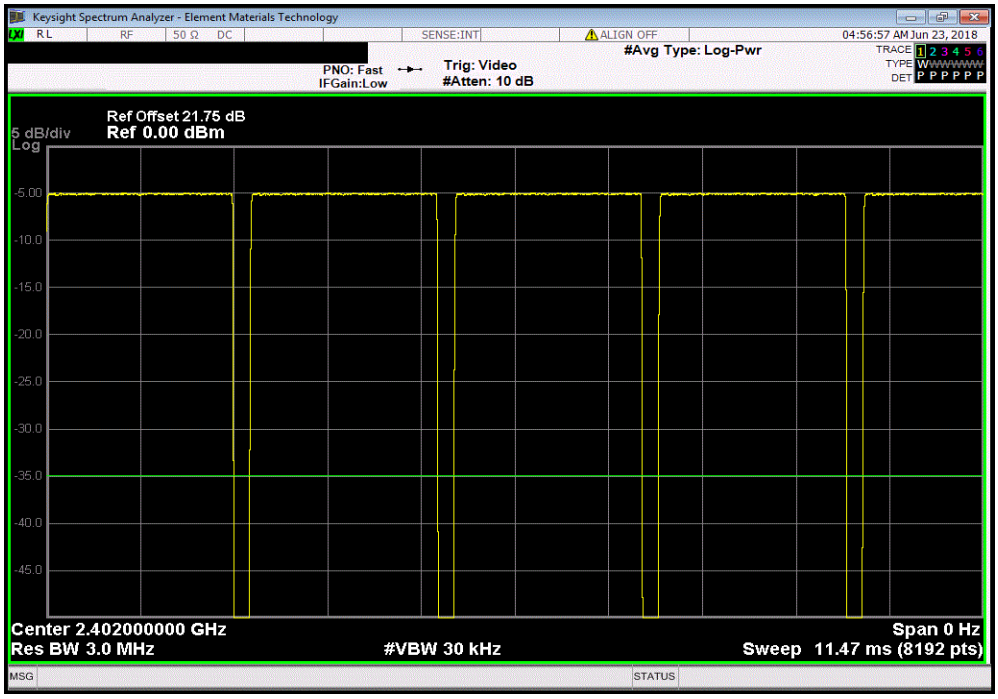
DUTY CYCLE

TbtTx 2017.12.14 XMit 2017.12.13

DM5, GFSK, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.296 ms	2.5 ms	1	91.8	N/A	N/A



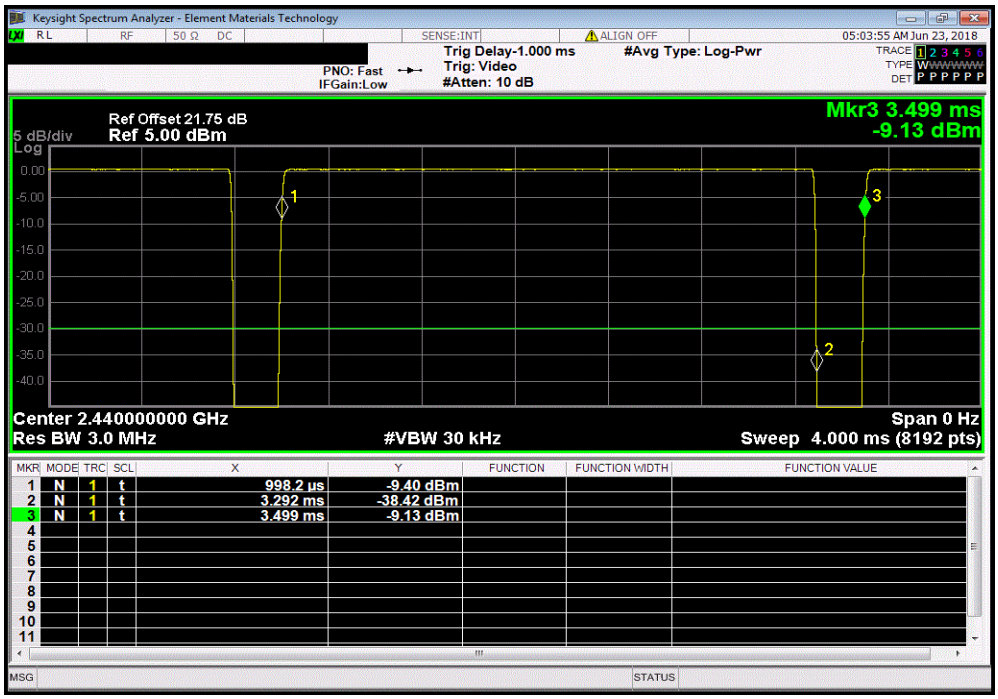
DM5, GFSK, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



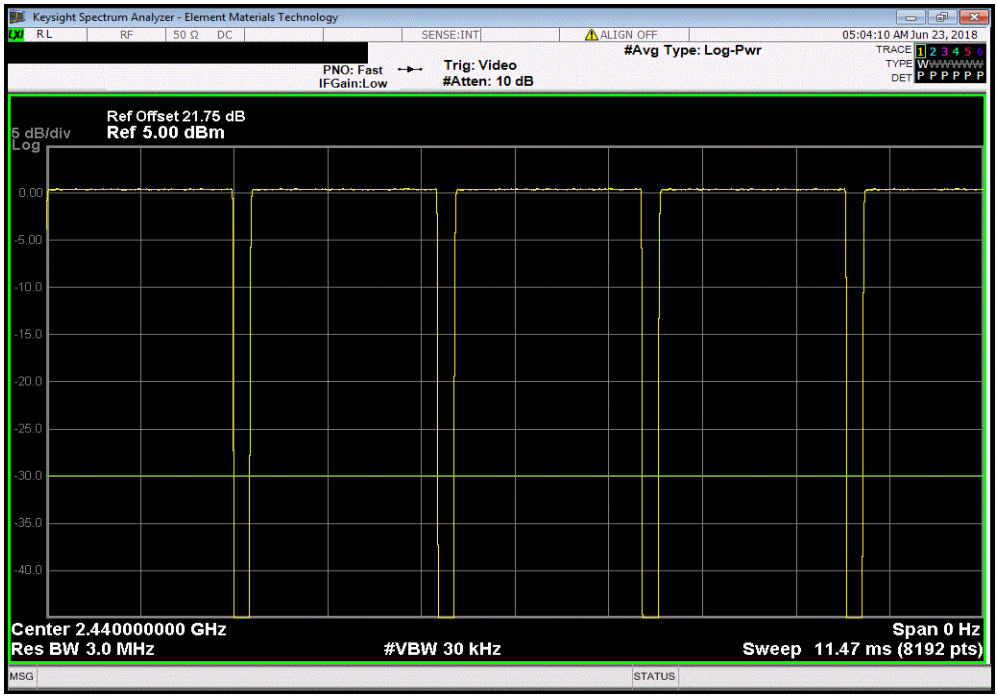
DUTY CYCLE

TbtTx 2017.12.14 XMit 2017.12.13

DM5, GFSK, Mid Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.294 ms	2.5 ms	1	91.7	N/A	N/A



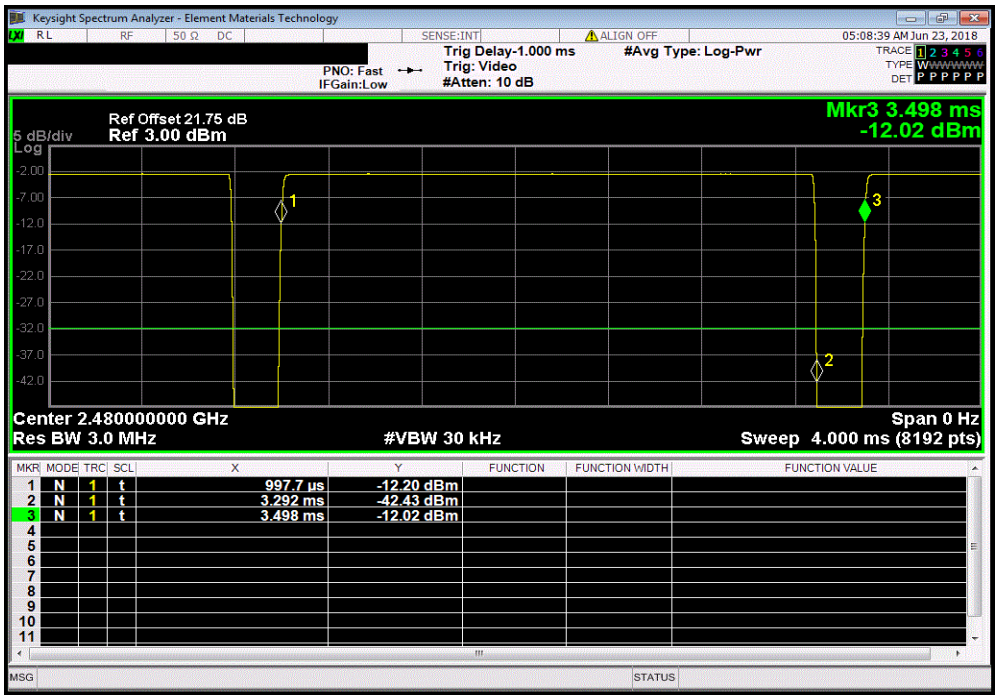
DM5, GFSK, Mid Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



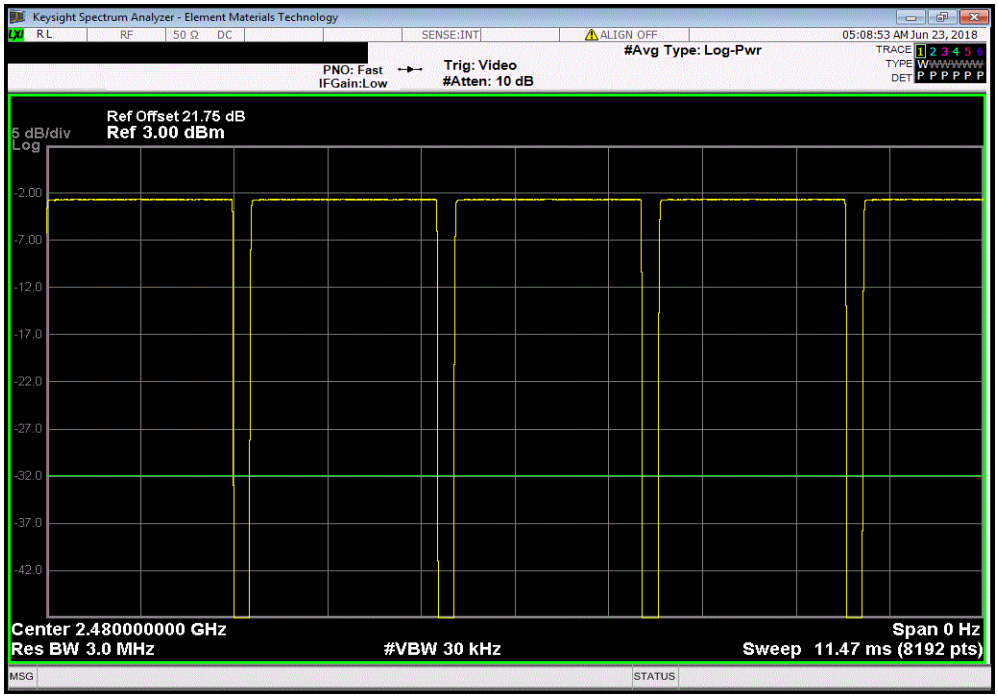
DUTY CYCLE

TbtTx 2017.12.14 XMit 2017.12.13

DM5, GFSK, High Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.295 ms	2.5 ms	1	91.8	N/A	N/A



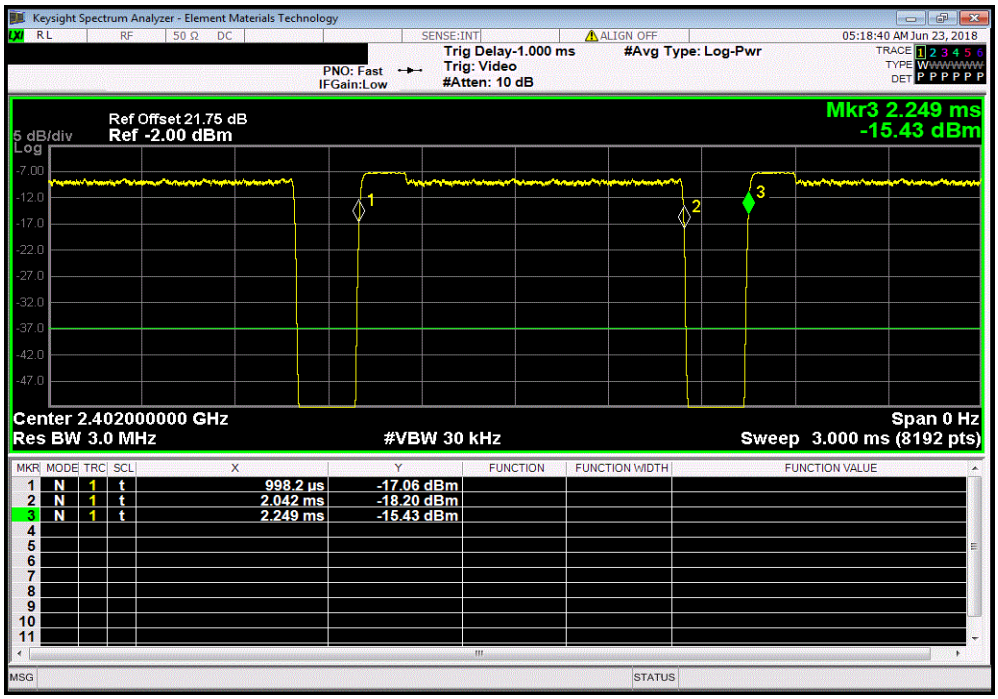
DM5, GFSK, High Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



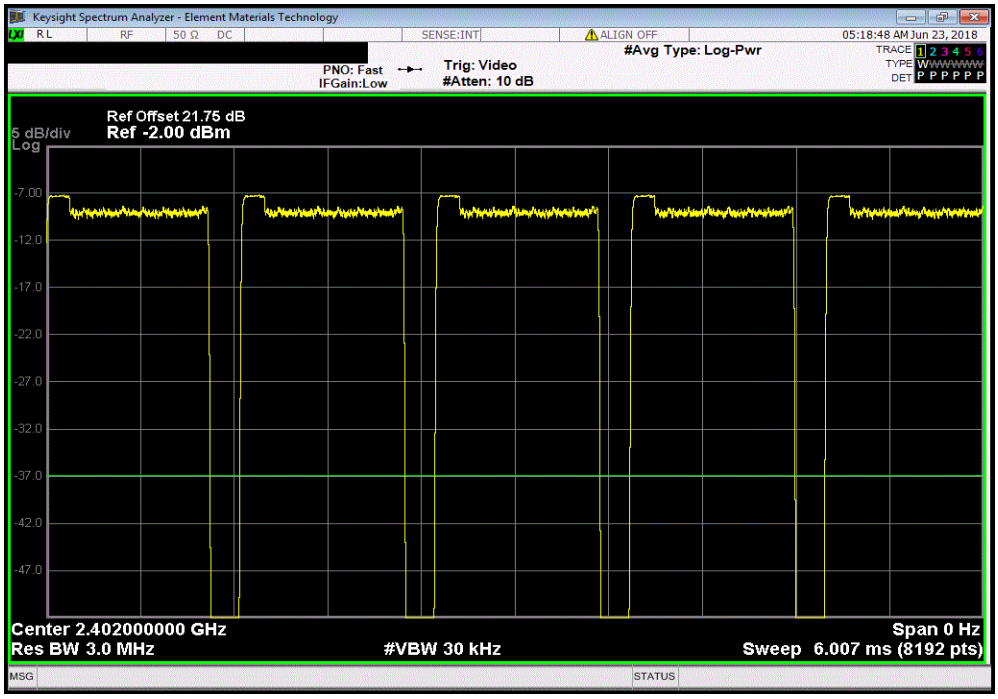
DUTY CYCLE

TbtTx 2017.12.14 XMit 2017.12.13

2DH5, pi/4-DQPSK, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	1.044 ms	1.251 ms	1	83.5	N/A	N/A



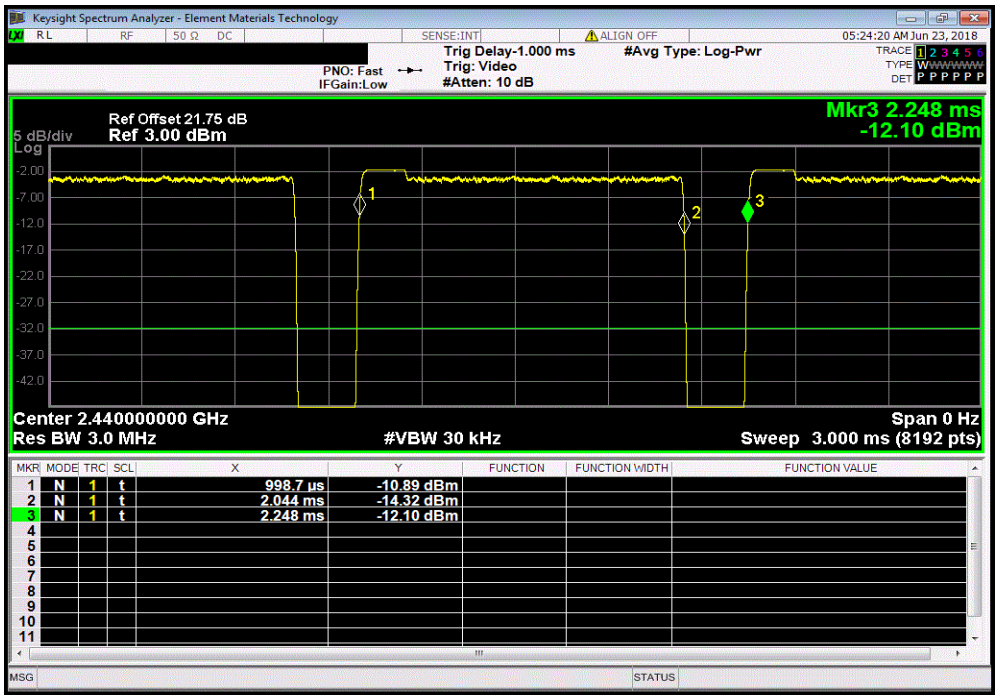
2DH5, pi/4-DQPSK, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



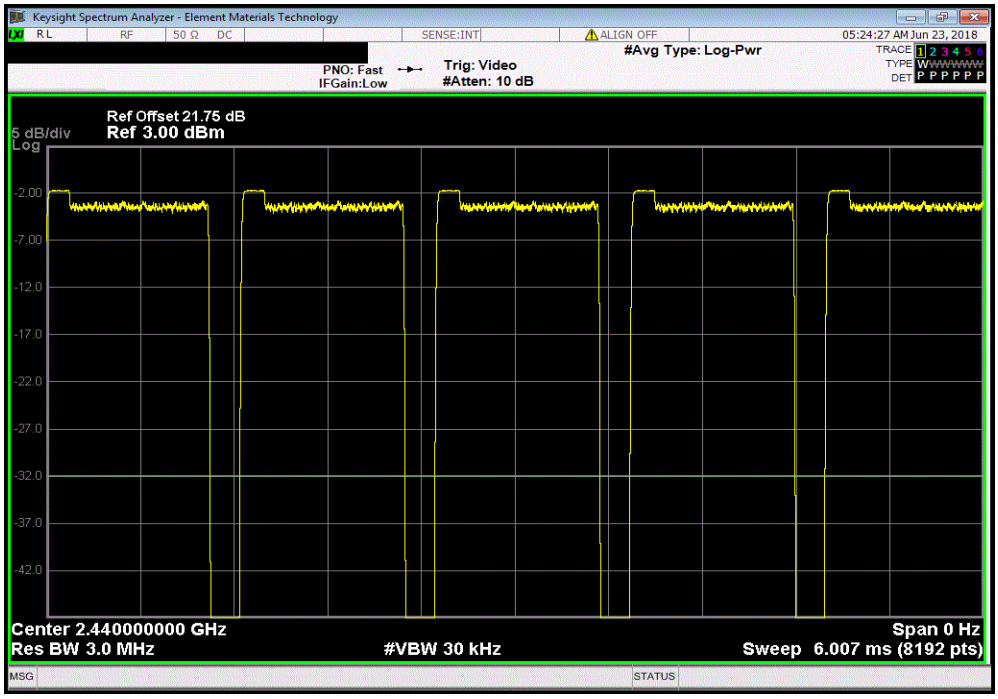
DUTY CYCLE

TbtTx 2017.12.14 XMit 2017.12.13

2DH5, pi/4-DQPSK, Mid Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	1.045 ms	1.249 ms	1	83.6	N/A	N/A



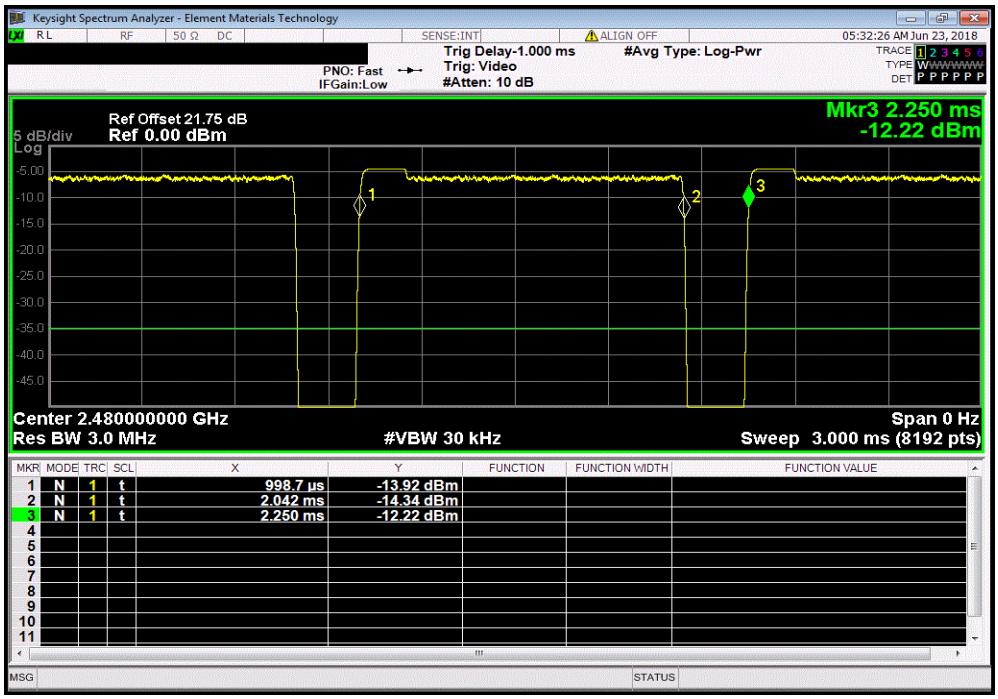
2DH5, pi/4-DQPSK, Mid Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



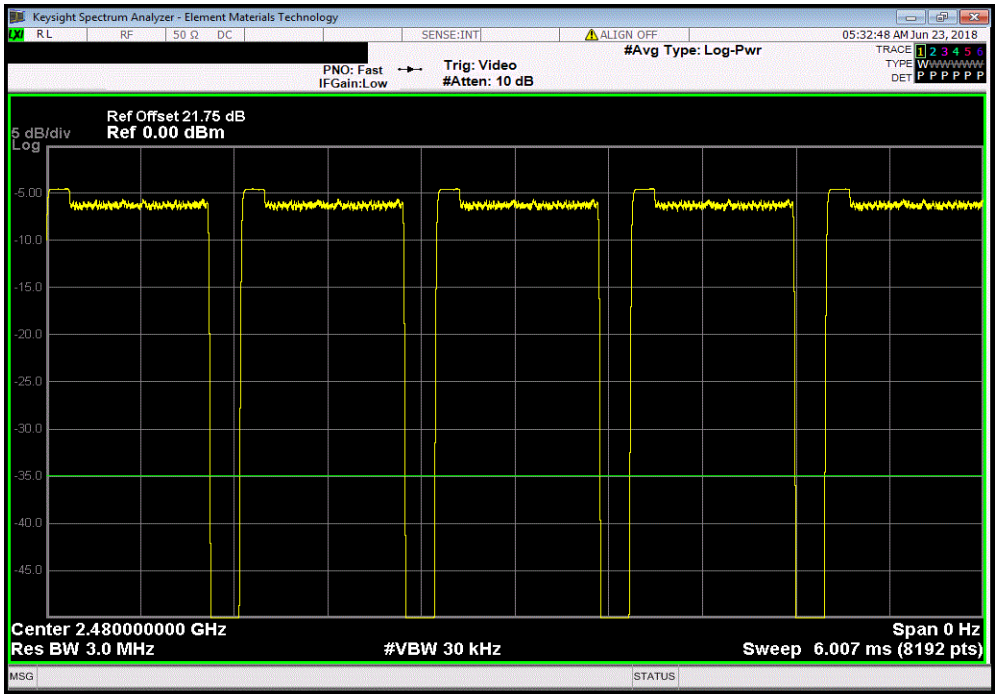
DUTY CYCLE

TbtTx 2017.12.14 XMit 2017.12.13

2DH5, pi/4-DQPSK, High Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	1.044 ms	1.251 ms	1	83.4	N/A	N/A



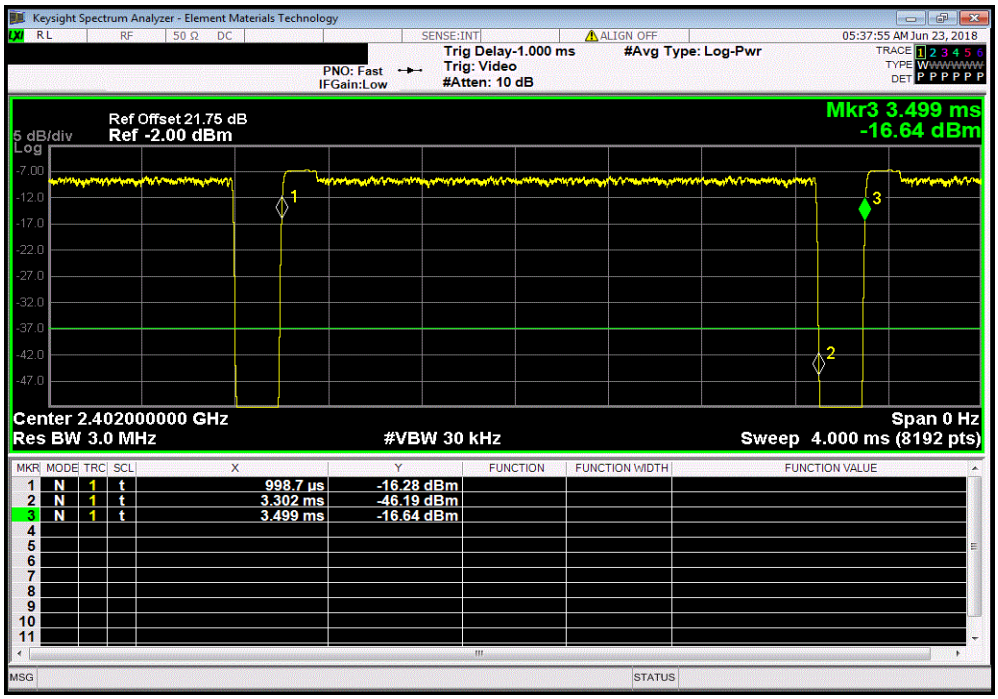
2DH5, pi/4-DQPSK, High Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



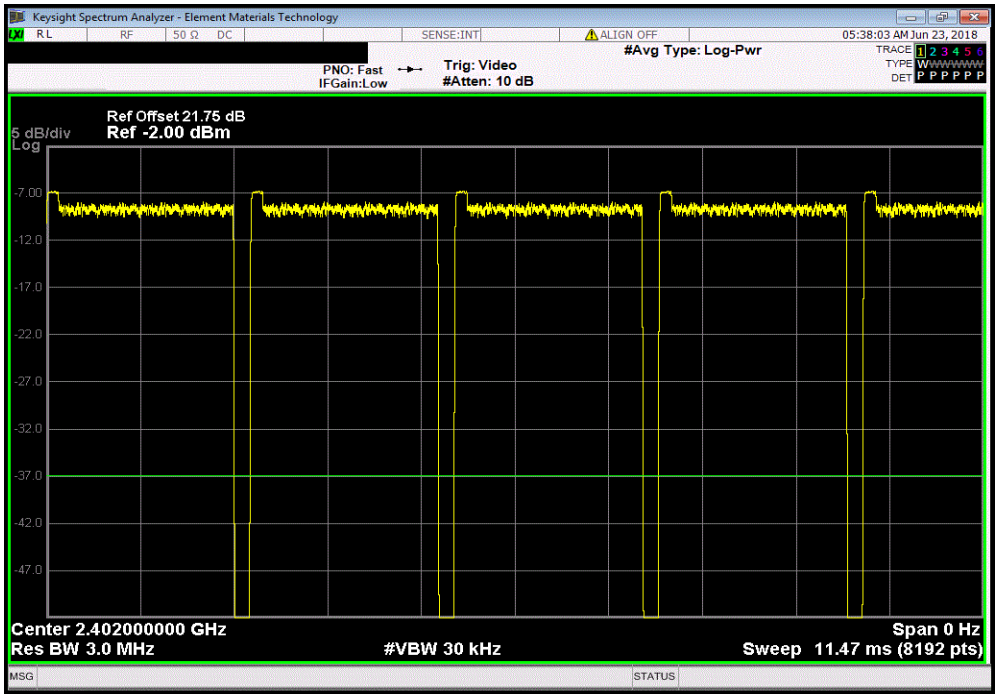
DUTY CYCLE

TbtTx 2017.12.14 XMit 2017.12.13

3DH5, 8-DPSK, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.304 ms	2.5 ms	1	92.1	N/A	N/A

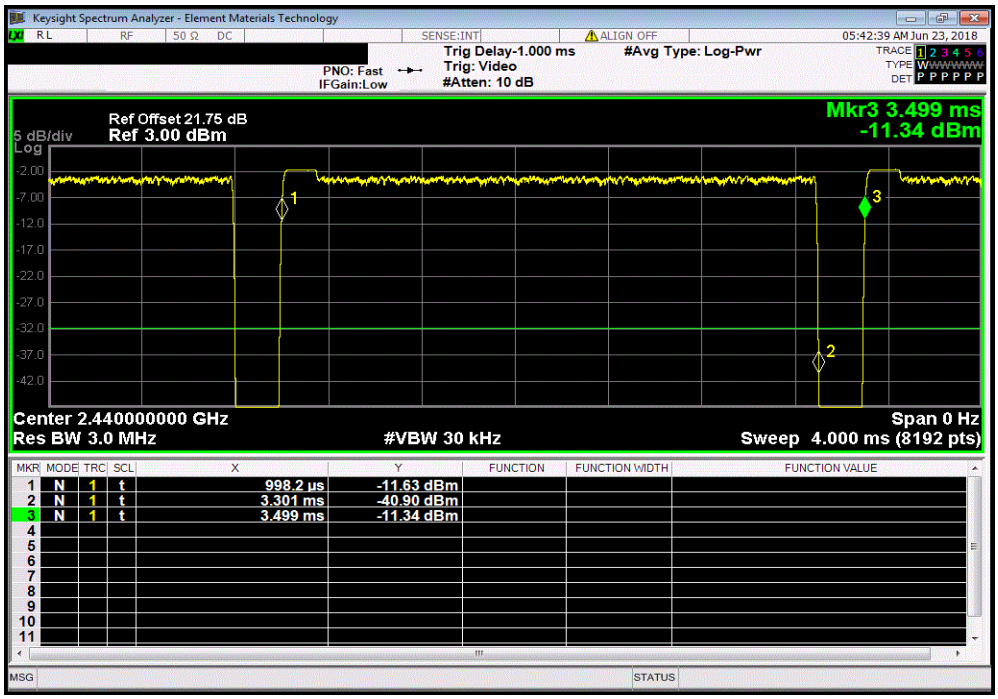


3DH5, 8-DPSK, Low Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

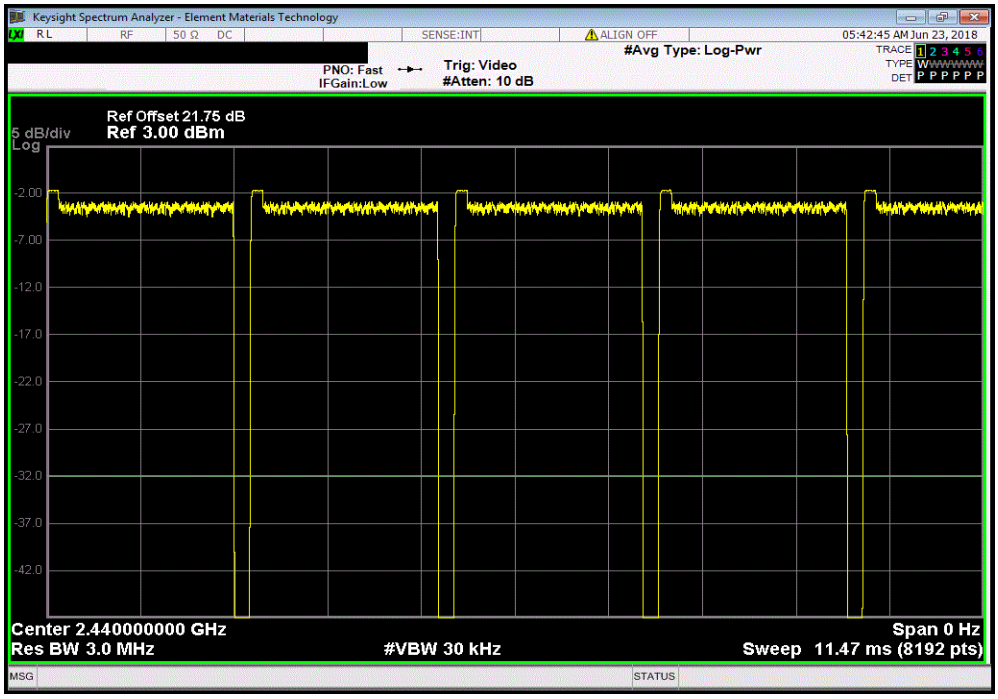


DUTY CYCLE

3DH5, 8-DPSK, Mid Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.303 ms	2.5 ms	1	92.1	N/A	N/A

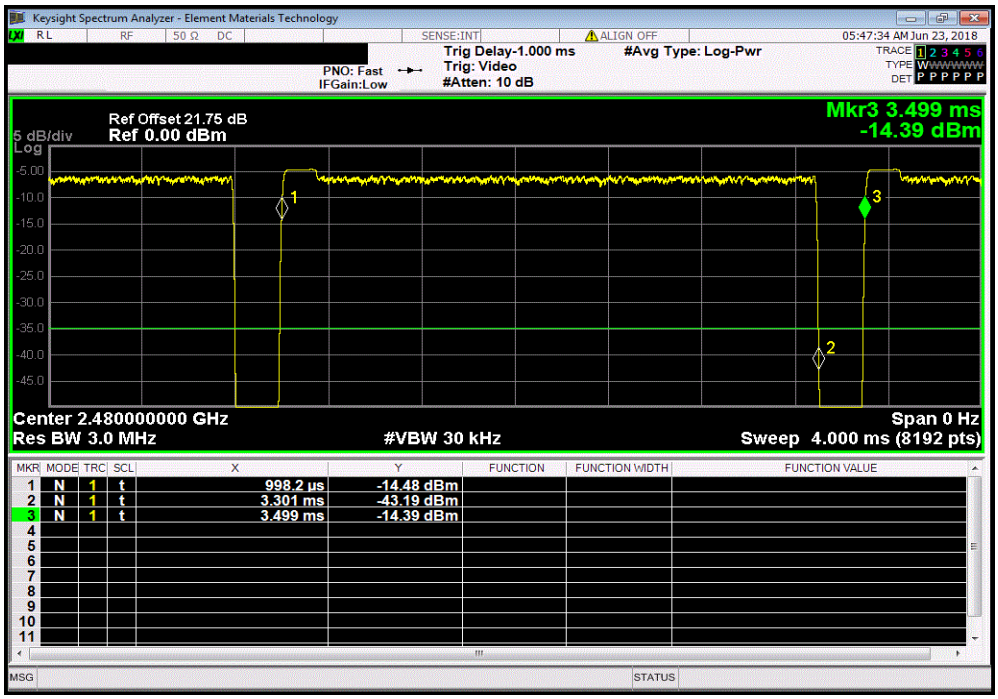


3DH5, 8-DPSK, Mid Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

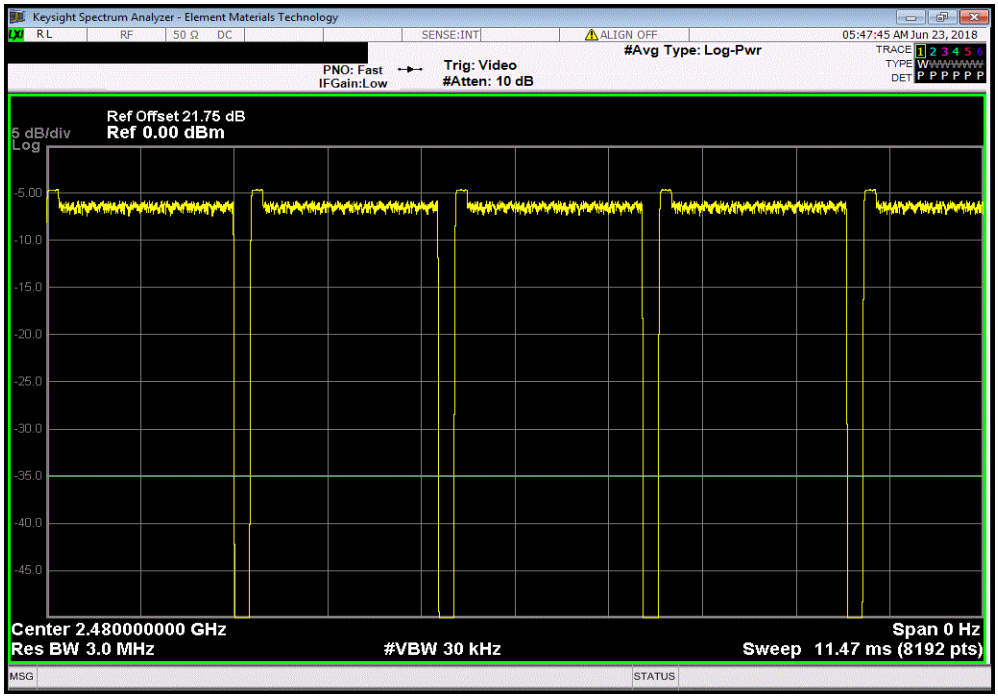


DUTY CYCLE

3DH5, 8-DPSK, High Channel						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.303 ms	2.5 ms	1	92.1	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



CARRIER FREQUENCY SEPARATION

XMit 2017.12.13

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	E4422B	TGQ	15-Mar-18	15-Mar-21
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	15-Mar-18	15-Mar-19
Attenuator	S.M. Electronics	SA26B-20	RFW	13-Feb-18	13-Feb-19
Block - DC	Fairview Microwave	SD3379	AMI	12-Sep-17	12-Sep-18
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFN	27-Apr-18	27-Apr-19

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 2017.12.14 XMit 2017.12.13

EUT:	**Multi-Function Accessory**			**Work Order:**	**STAK0117**
Serial Number:	**182010051A**			**Date:**	**26-Jun-18**
Customer:	**Starkey Laboratories, Inc.**			**Temperature:**	**22 °C**
Attendees:	**Charlie Esch**			**Humidity:**	**57.5% RH**
Project:	**None**			**Barometric Pres.:**	**1012 mbar**
Tested by:	**Dustin Sparks**	**Power:**	**Battery**	**Job Site:**	**MN08**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

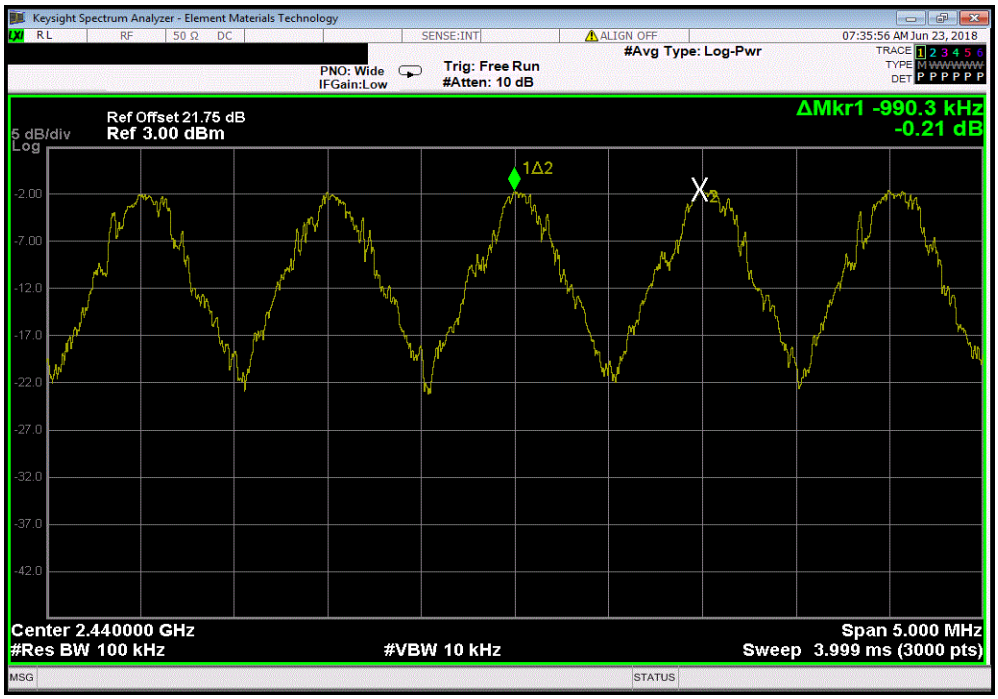
Configuration #	**7**	*Signature* Dustin Sparks

		Value	**Limit (≥)**	**Results**
Hopping Mode				
	DM5, GFSK			
	Mid Channel, 2440 MHz	1.0 MHz	1 MHz	Pass
	2DH5, pi/4-DQPSK			
	Mid Channel, 2440 MHz	1.0 MHz	1 MHz	Pass
	3DH5, 8-DPSK			
	Mid Channel, 2440 MHz	1.1 MHz	1 MHz	Pass

CARRIER FREQUENCY SEPARATION

TbtTx 2017.12.14 XMit 2017.12.13

Hopping Mode, DM5, GFSK, Mid Channel, 2440 MHz						
				Value	Limit (≥)	Results
				1.0 MHz	1 MHz	Pass



Hopping Mode, 2DH5, pi/4-DQPSK, Mid Channel, 2440 MHz						
				Value	Limit (≥)	Results
				1.0 MHz	1 MHz	Pass

CARRIER FREQUENCY SEPARATION

TbtTx 2017.12.14 XMit 2017.12.13

Hopping Mode, 3DH5, 8-DPSK, Mid Channel, 2440 MHz						
				Value	Limit (≥)	Results
				1.1 MHz	1 MHz	Pass

NUMBER OF HOPPING FREQUENCIES

XMit 2017.12.13

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Generator - Signal	Agilent	E4422B	TGQ	15-Mar-18	15-Mar-21
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	15-Mar-18	15-Mar-19
Attenuator	S.M. Electronics	SA26B-20	RFW	13-Feb-18	13-Feb-19
Block - DC	Fairview Microwave	SD3379	AMI	12-Sep-17	12-Sep-18
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFN	27-Apr-18	27-Apr-19

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 2017.12.14 XMit 2017.12.13

EUT:	**Multi-Function Accessory**			**Work Order:**	**STAK0117**
Serial Number:	**182010051A**			**Date:**	**26-Jun-18**
Customer:	**Starkey Laboratories, Inc.**			**Temperature:**	**22.1 °C**
Attendees:	**Charlie Esch**			**Humidity:**	**57.5% RH**
Project:	**None**			**Barometric Pres.:**	**1012 mbar**
Tested by:	**Dustin Sparks**	**Power:**	**Battery**	**Job Site:**	**MN08**

TEST SPECIFICATIONS	**Test Method**
FCC 15.247:2018	ANSI C63.10:2013

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

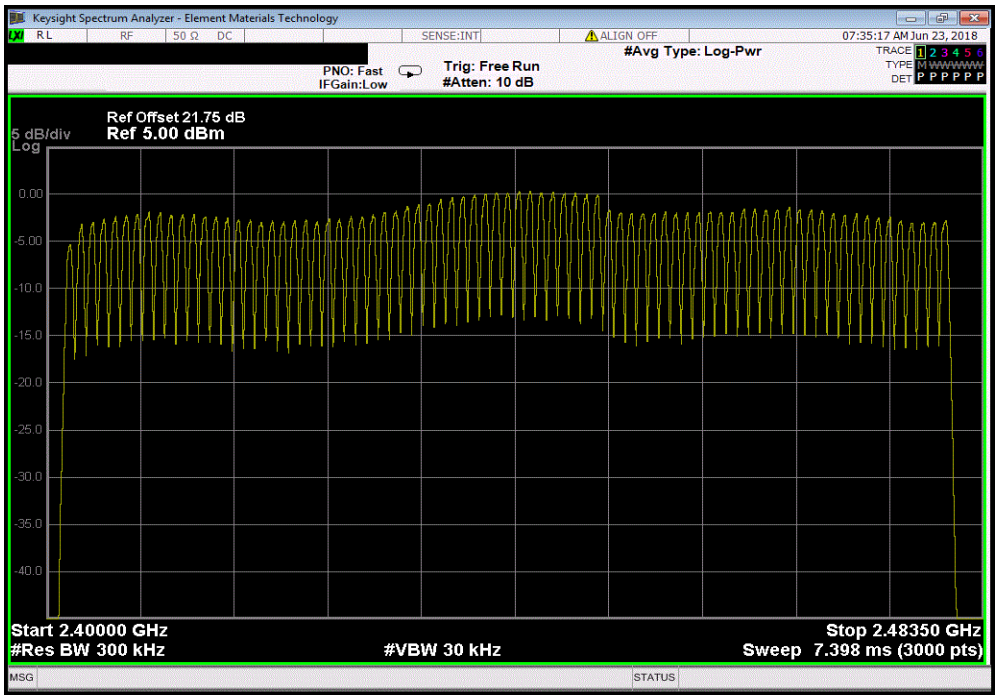
Configuration #	**7**	*Signature* Dustin Sparks

	Number of Channels	**Limit (≥)**	**Results**
Hopping Mode			
DM5, GFSK			
Mid Channel, 2440 MHz	79	15	Pass
2DH5, pi/4-DQPSK			
Mid Channel, 2440 MHz	79	15	Pass
3DH5, 8-DPSK			
Mid Channel, 2440 MHz	79	15	Pass

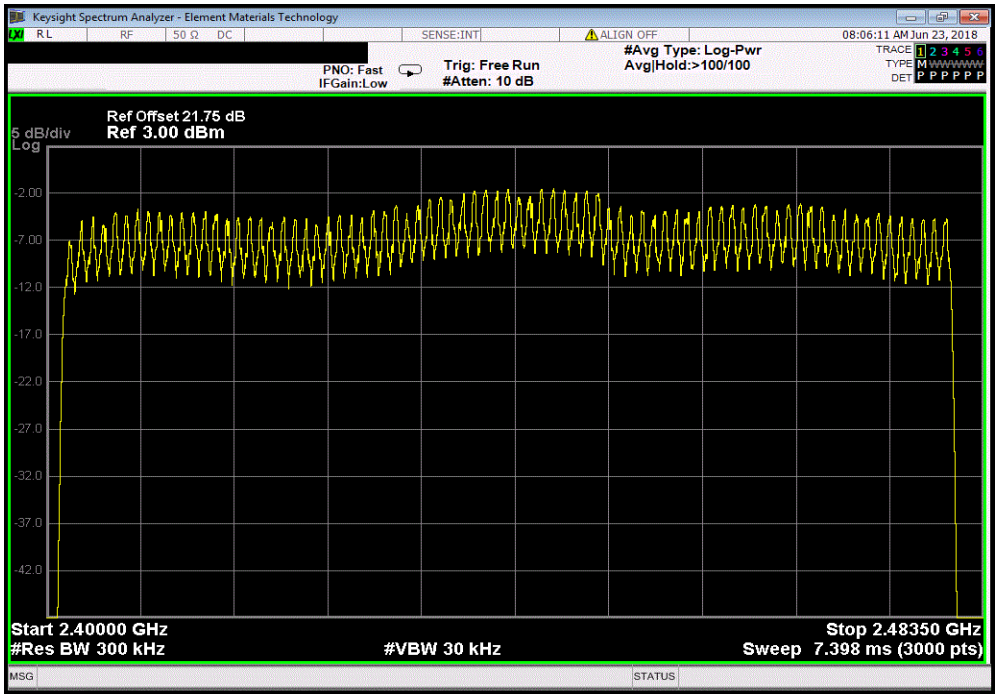
NUMBER OF HOPPING FREQUENCIES

TbtTx 2017.12.14 XMit 2017.12.13

Hopping Mode, DM5, GFSK, Mid Channel, 2440 MHz						
				Number of Channels	Limit (≥)	Results
				79	15	Pass



Hopping Mode, 2DH5, pi/4-DQPSK, Mid Channel, 2440 MHz						
				Number of Channels	Limit (≥)	Results
				79	15	Pass



NUMBER OF HOPPING FREQUENCIES

TbtTx 2017.12.14 XMit 2017.12.13

Hopping Mode, 3DH5, 8-DPSK, Mid Channel, 2440 MHz						
				Number of Channels	Limit (≥)	Results
				79	15	Pass