Starkey Laboratories, Inc.

Multi-Function Accessory

FCC 15.247:2018

Bluetooth LE (DTS) Radio

Report # STAK0117.1

NVLAP LAB CODE: 200881-0

CERTIFICATE OF TEST

Last Date of Test: June 25, 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	ANSI C63.10:2013, KDB 558074

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	Yes	Pass	
6.5, 6.6, 11.12.1, 11.13.2	Spurious Radiated Emissions	Yes	Pass	
11.6	Duty Cycle	Yes	Pass	
11.8.2	Occupied Bandwidth	Yes	Pass	
11.9.1.1	Output Power	Yes	Pass	
11.10.2	Power Spectral Density	Yes	Pass	
11.11	Band Edge Compliance	Yes	Pass	
11.11	Spurious Conducted Emissions	Yes	Pass	

Deviations From Test Standards

None

Approved By:

Matt Nuernberg, Operations Manager

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

REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		

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

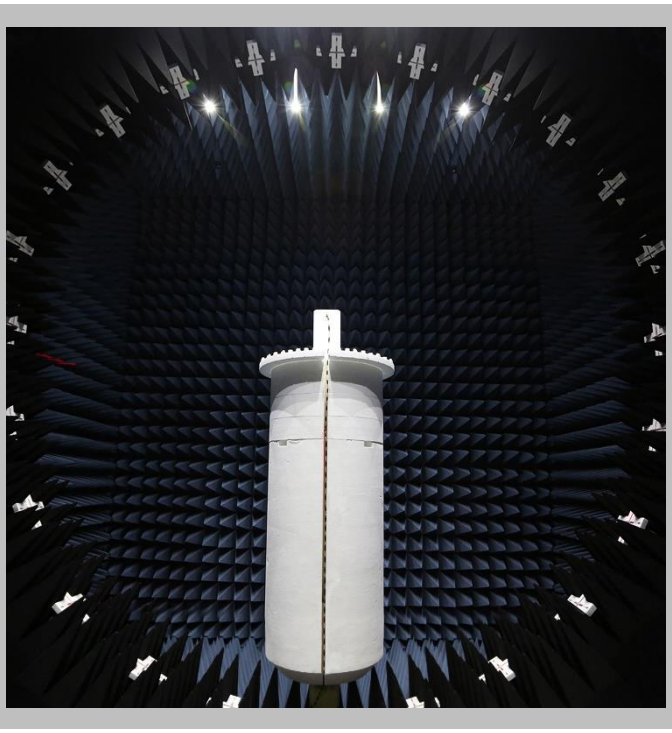
MIC – Recognized by MIC as a CAB for the acceptance of test data.

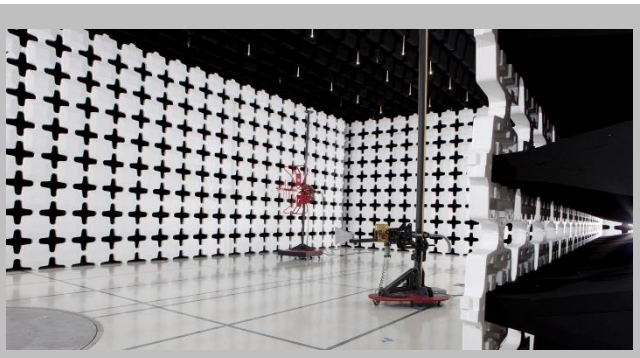
SCOPE

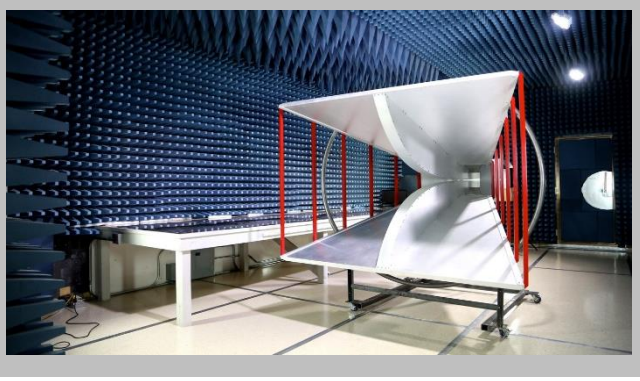
For details on the Scopes of our Accreditations, please visit:
http://portlandcustomer.element.com/ts/scope/scope.htm
http://gsi.nist.gov/global/docs/cabs/designations.html

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.

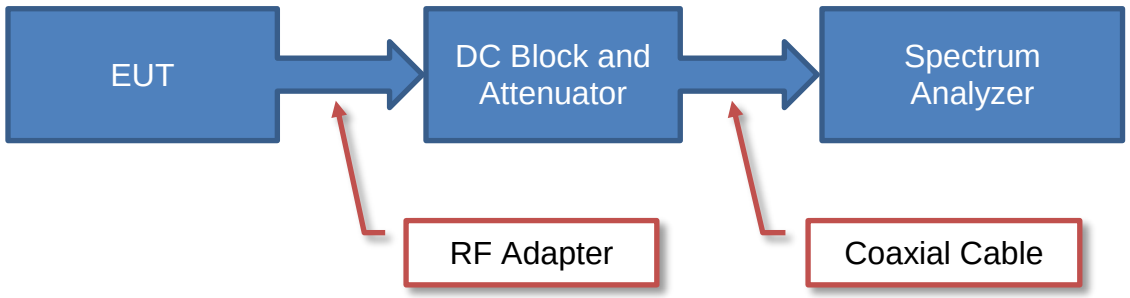
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable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

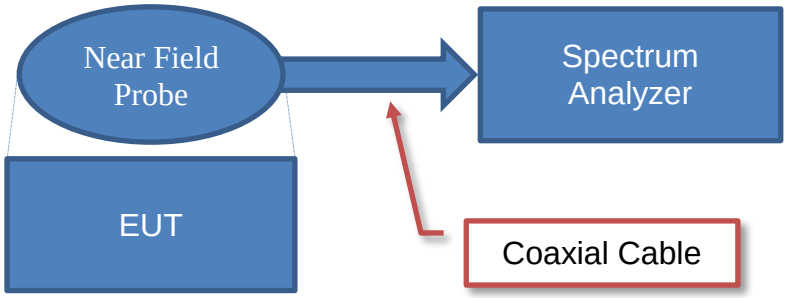
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%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

Test Setup Block Diagrams

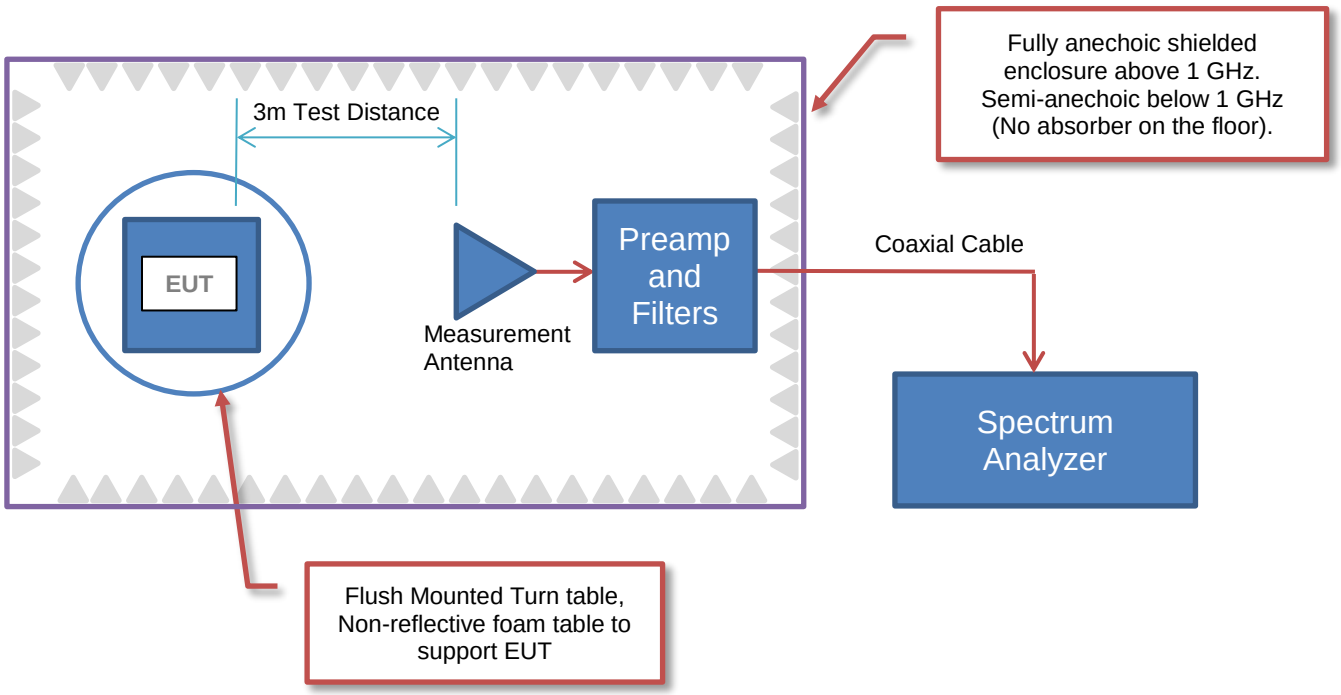
Antenna Port Conducted Measurements



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 18, 2018
Last Date of Test:	June 25, 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 low energy radio to FCC 15.247 requirements.

CONFIGURATIONS

Configuration STAK0117- 1

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Multi-function Accessory	Starkey Laboratories, Inc.	900	182010052A

Configuration STAK0117- 2

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Multi-function Accessory	Starkey Laboratories, Inc.	900	182010052A

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- 4

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Multi-function Accessory	Starkey Laboratories, Inc.	900	182010052A

CONFIGURATIONS

Configuration STAK0117- 5

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Multi-function Accessory	Starkey Laboratories, Inc.	900	182010052A

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

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	6/18/2018	Spurious Radiated Emissions	Modified from delivered configuration.	Per client request, cut channel 39 at 2 Mb due to failing band edge. Modification authorized by Charlie Esch	EUT remained at Element following the test.
2	6/22/2018	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.
3	6/22/2018	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.
4	6/22/2018	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.
5	6/22/2018	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.
6	6/22/2018	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
7	6/22/2018	Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
8	6/25/2018	Powerline 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

STAK0117-2
STAK0117-5

MODES INVESTIGATED

Tx mode, Ch. 20 2442 MHz, 1 MB
Tx mode, Ch. 20 2442 MHz, 2 MB

POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

EUT:	Multi-Function Accessory	Work Order:	STAK0117
Serial Number:	182010052A	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:	STAK0117-2

TEST SPECIFICATIONS

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

TEST PARAMETERS

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

COMMENTS

Pairing

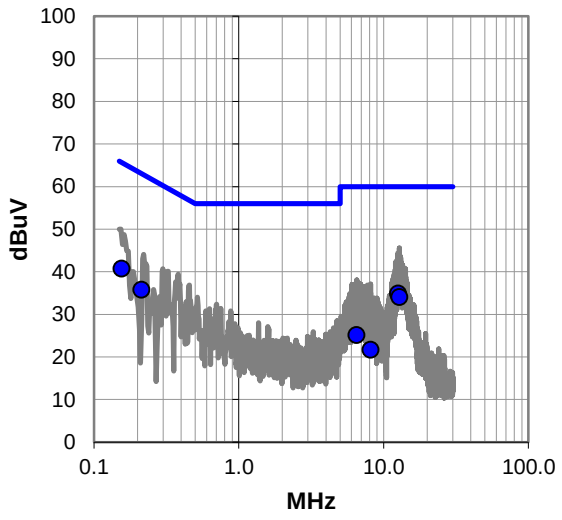
EUT OPERATING MODES

Tx mode, Ch. 20 2442 MHz, 1 MB

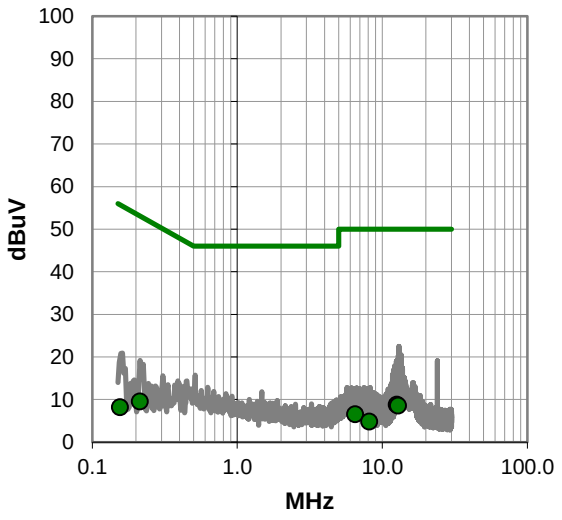
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

RESULTS - Run #5

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.155	40.5	0.3	40.8	65.7	-24.9
12.556	33.7	1.2	34.9	60.0	-25.1
12.835	32.9	1.2	34.1	60.0	-25.9
0.212	35.5	0.3	35.8	63.1	-27.3
6.500	24.6	0.6	25.2	60.0	-34.8
8.110	20.9	0.8	21.7	60.0	-38.3

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
12.556	7.6	1.2	8.8	50.0	-41.2
12.835	7.4	1.2	8.6	50.0	-41.4
6.500	6.0	0.6	6.6	50.0	-43.4
0.212	9.3	0.3	9.6	53.1	-43.5
8.110	4.1	0.8	4.9	50.0	-45.1
0.155	7.9	0.3	8.2	55.7	-47.5

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

EUT:	Multi-Function Accessory	Work Order:	STAK0117
Serial Number:	182010052A	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:	STAK0117-2

TEST SPECIFICATIONS

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

TEST PARAMETERS

Run #:	6	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

Pairing

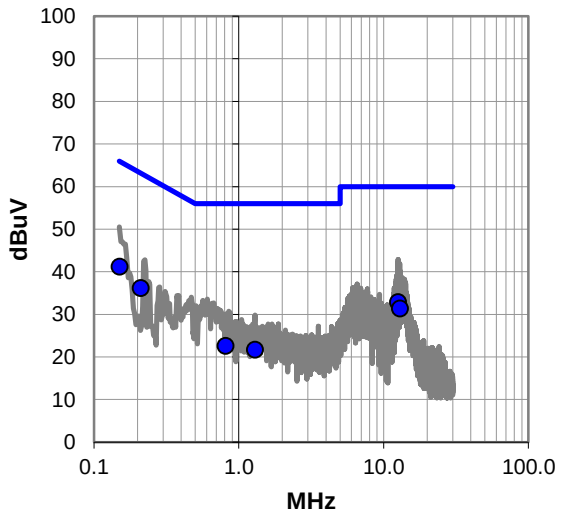
EUT OPERATING MODES

Tx mode, Ch. 20 2442 MHz, 1 MB

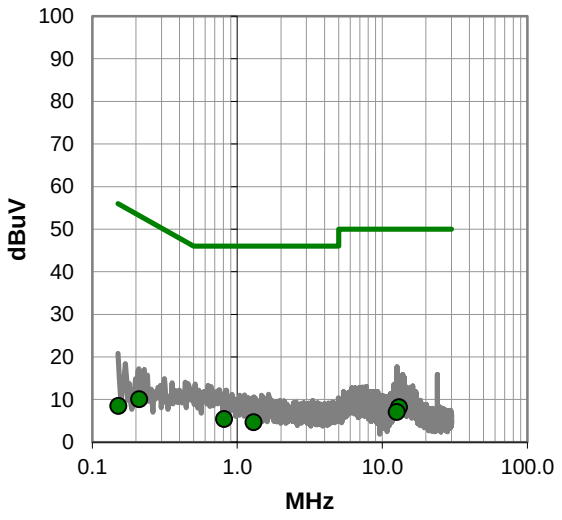
DEVIATIONS FROM TEST STANDARD

None

Quasi Peak Data - vs - Quasi Peak Limit



Average Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

RESULTS - Run #6

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.151	40.9	0.3	41.2	66.0	-24.8
0.210	35.9	0.3	36.2	63.2	-27.0
12.591	31.7	1.2	32.9	60.0	-27.1
13.005	30.2	1.2	31.4	60.0	-28.6
0.809	22.4	0.2	22.6	56.0	-33.4
1.293	21.4	0.3	21.7	56.0	-34.3

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.809	5.3	0.2	5.5	46.0	-40.5
1.293	4.4	0.3	4.7	46.0	-41.3
13.005	7.0	1.2	8.2	50.0	-41.8
12.591	5.9	1.2	7.1	50.0	-42.9
0.210	9.8	0.3	10.1	53.2	-43.1
0.151	8.2	0.3	8.5	56.0	-47.5

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

EUT:	Multi-Function Accessory	Work Order:	STAK0117
Serial Number:	182010052A	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:	STAK0117-2

TEST SPECIFICATIONS

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

TEST PARAMETERS

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

COMMENTS

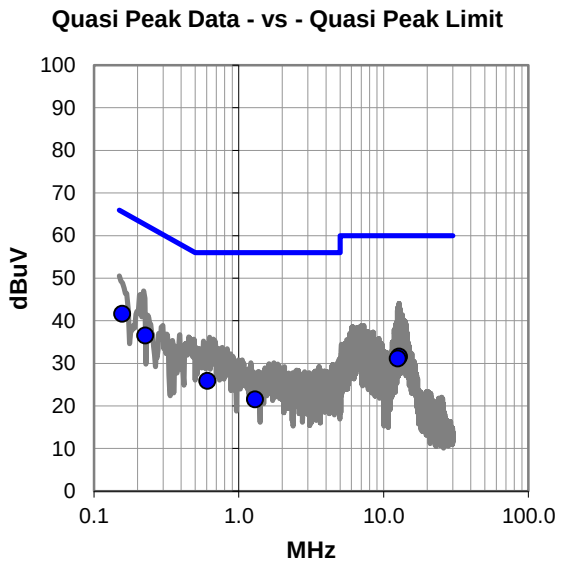
Streaming

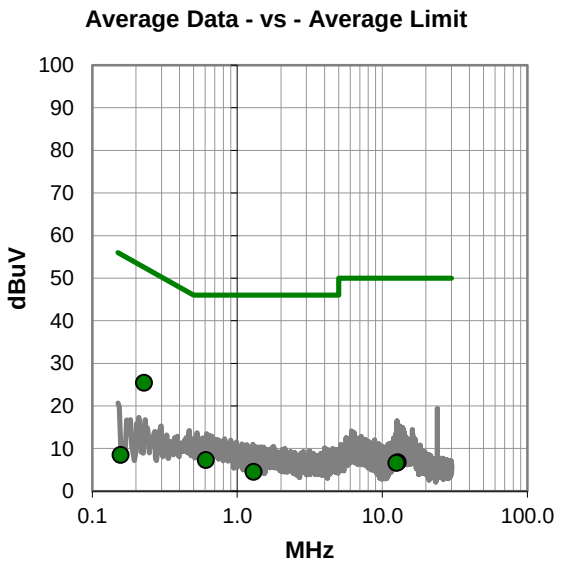
EUT OPERATING MODES

Tx mode, Ch. 20 2442 MHz, 2 MB

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

RESULTS - Run #7

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.157	41.4	0.3	41.7	65.6	-23.9
0.226	36.3	0.3	36.6	62.6	-26.0
12.792	30.4	1.2	31.6	60.0	-28.4
12.510	30.0	1.2	31.2	60.0	-28.8
0.606	25.7	0.2	25.9	56.0	-30.1
1.292	21.3	0.3	21.6	56.0	-34.4

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.226	25.2	0.3	25.5	52.6	-27.1
0.606	7.1	0.2	7.3	46.0	-38.7
1.292	4.3	0.3	4.6	46.0	-41.4
12.792	5.6	1.2	6.8	50.0	-43.2
12.510	5.5	1.2	6.7	50.0	-43.3
0.157	8.2	0.3	8.5	55.6	-47.1

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

EUT:	Multi-Function Accessory	Work Order:	STAK0117
Serial Number:	182010052A	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:	STAK0117-2

TEST SPECIFICATIONS

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

TEST PARAMETERS

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

COMMENTS

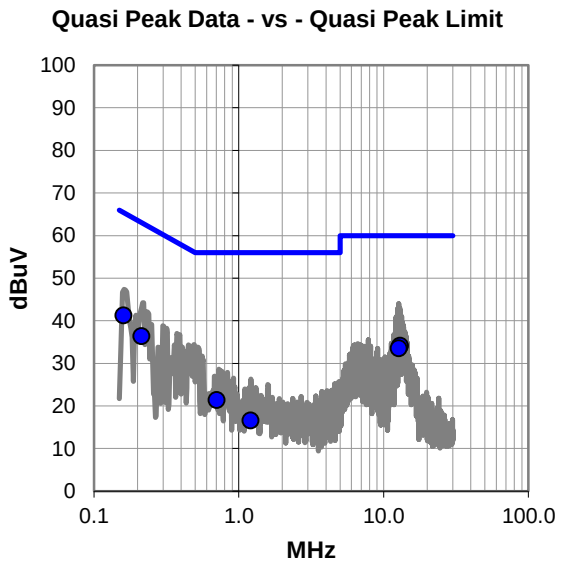
Streaming

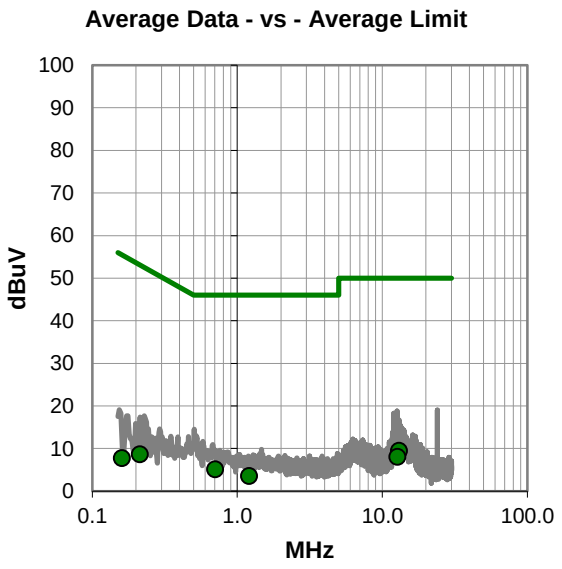
EUT OPERATING MODES

Tx mode, Ch. 20 2442 MHz, 2 MB

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

RESULTS - Run #8

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.160	41.0	0.3	41.3	65.5	-24.2
13.000	33.0	1.2	34.2	60.0	-25.8
12.697	32.4	1.2	33.6	60.0	-26.4
0.213	36.1	0.3	36.4	63.1	-26.7
0.702	21.2	0.2	21.4	56.0	-34.6
1.205	16.3	0.3	16.6	56.0	-39.4

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
13.000	8.3	1.2	9.5	50.0	-40.5
0.702	5.0	0.2	5.2	46.0	-40.8
12.697	6.9	1.2	8.1	50.0	-41.9
1.205	3.3	0.3	3.6	46.0	-42.4
0.213	8.4	0.3	8.7	53.1	-44.4
0.160	7.5	0.3	7.8	55.5	-47.7

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

EUT:	Multi-Function Accessory	Work Order:	STAK0117
Serial Number:	182010052A	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:	STAK0117-5

TEST SPECIFICATIONS

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

TEST PARAMETERS

Run #:	13	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

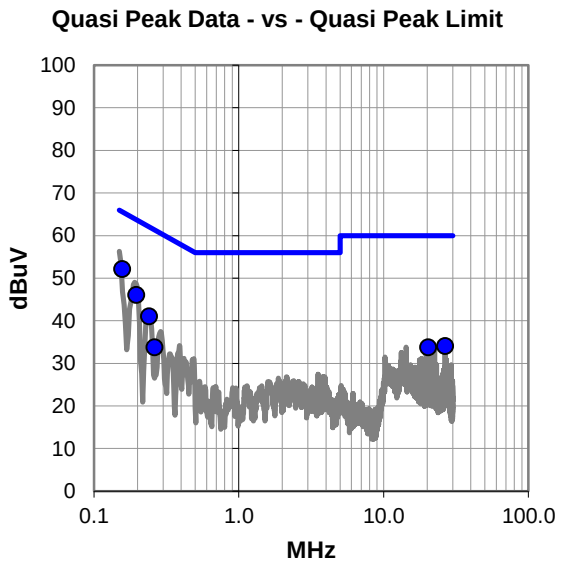
Pairing

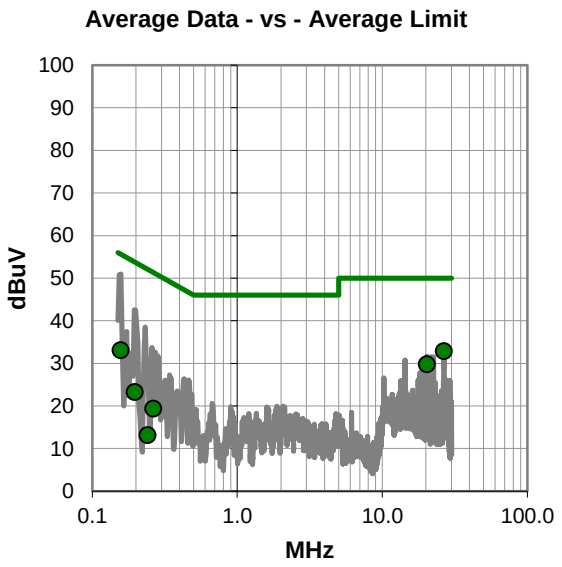
EUT OPERATING MODES

Tx mode, Ch. 20 2442 MHz, 1 MB

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

RESULTS - Run #13

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.157	51.9	0.3	52.2	65.6	-13.4
0.196	45.8	0.3	46.1	63.8	-17.7
0.240	40.8	0.3	41.1	62.1	-21.0
26.623	31.1	3.0	34.1	60.0	-25.9
20.259	31.6	2.2	33.8	60.0	-26.2
0.262	33.6	0.2	33.8	61.4	-27.6

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
20.259	27.6	2.2	29.8	50.0	-20.2
0.157	32.8	0.3	33.1	55.6	-22.5
0.196	23.0	0.3	23.3	53.8	-30.5
0.262	19.2	0.2	19.4	51.4	-32.0
0.240	12.9	0.3	13.2	52.1	-38.9

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

EUT:	Multi-Function Accessory	Work Order:	STAK0117
Serial Number:	182010052A	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:	STAK0117-5

TEST SPECIFICATIONS

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

TEST PARAMETERS

Run #:	14	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

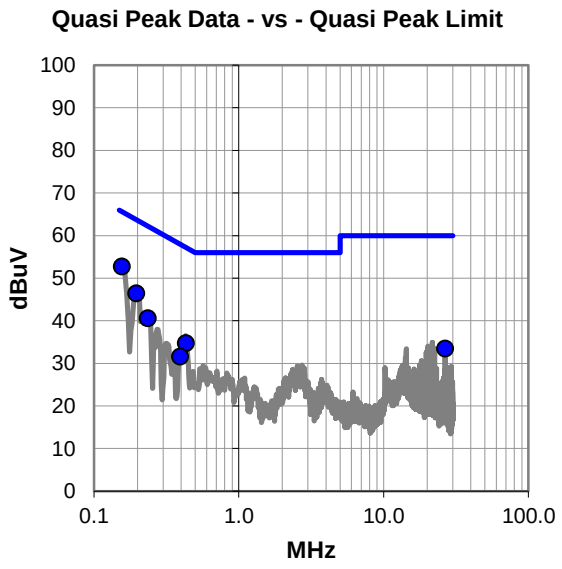
Pairing

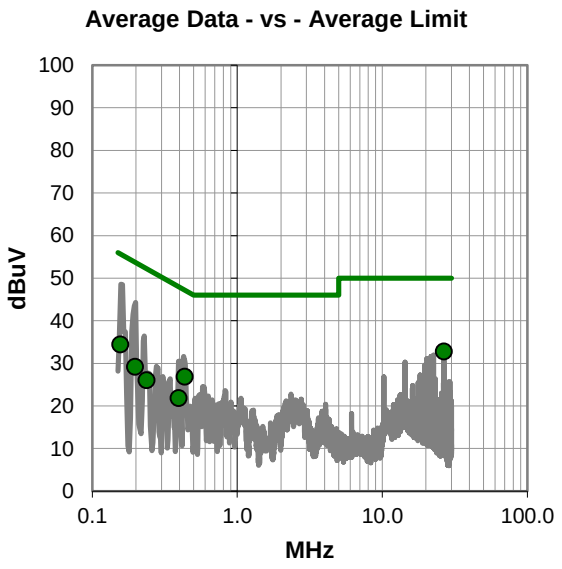
EUT OPERATING MODES

Tx mode, Ch. 20 2442 MHz, 1 MB

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

RESULTS - Run #14

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.156	52.5	0.3	52.8	65.7	-12.9
0.196	46.2	0.3	46.5	63.8	-17.3
0.236	40.3	0.3	40.6	62.2	-21.6
0.432	34.6	0.2	34.8	57.2	-22.4
0.393	31.4	0.2	31.6	58.0	-26.4
26.623	30.5	3.0	33.5	60.0	-26.5

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
26.623	29.8	3.0	32.8	50.0	-17.2
0.432	26.7	0.2	26.9	47.2	-20.3
0.156	34.2	0.3	34.5	55.7	-21.2
0.196	28.9	0.3	29.2	53.8	-24.6
0.393	21.7	0.2	21.9	48.0	-26.1
0.236	25.8	0.3	26.1	52.2	-26.1

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

EUT:	Multi-Function Accessory	Work Order:	STAK0117
Serial Number:	182010052A	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:	STAK0117-5

TEST SPECIFICATIONS

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

TEST PARAMETERS

Run #:	15	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

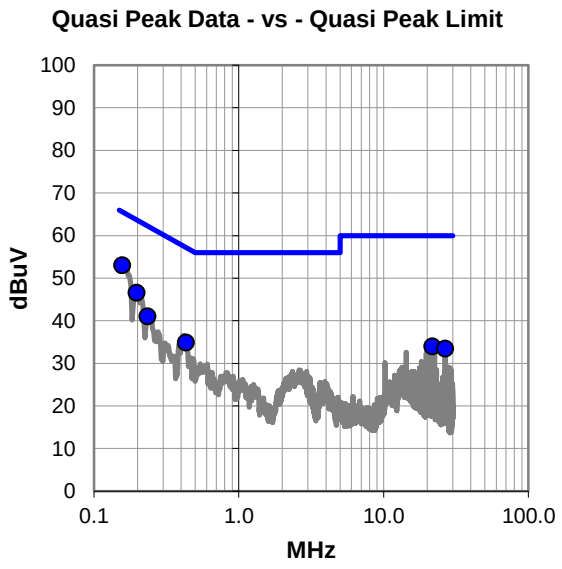
Streaming

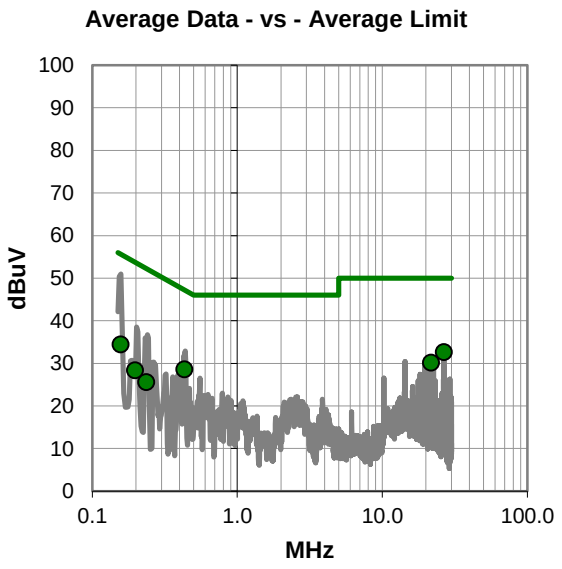
EUT OPERATING MODES

Tx mode, Ch. 20 2442 MHz, 2 MB

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

RESULTS - Run #15

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.157	52.8	0.3	53.1	65.6	-12.5
0.197	46.3	0.3	46.6	63.7	-17.1
0.235	40.8	0.3	41.1	62.3	-21.2
0.430	34.7	0.2	34.9	57.2	-22.3
21.664	31.7	2.3	34.0	60.0	-26.0
26.623	30.5	3.0	33.5	60.0	-26.5

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
26.623	29.7	3.0	32.7	50.0	-17.3
0.430	28.4	0.2	28.6	47.2	-18.6
21.664	27.9	2.3	30.2	50.0	-19.8
0.157	34.2	0.3	34.5	55.6	-21.1
0.197	28.1	0.3	28.4	53.7	-25.3
0.235	25.3	0.3	25.6	52.3	-26.7

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

EUT:	Multi-Function Accessory	Work Order:	STAK0117
Serial Number:	182010052A	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:	STAK0117-5

TEST SPECIFICATIONS

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

TEST PARAMETERS

Run #:	16	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

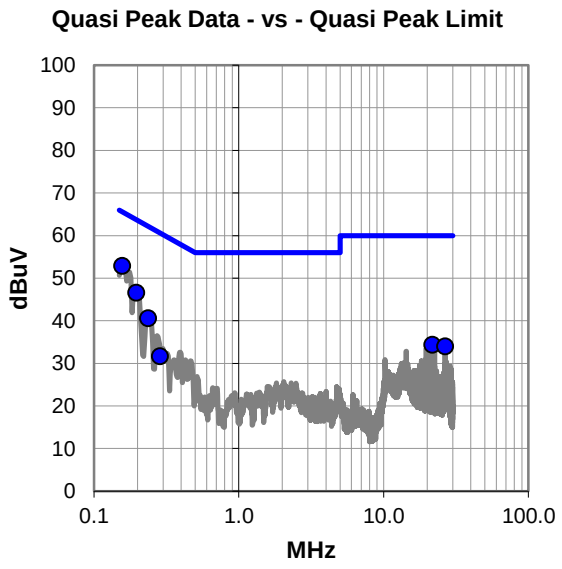
Streaming

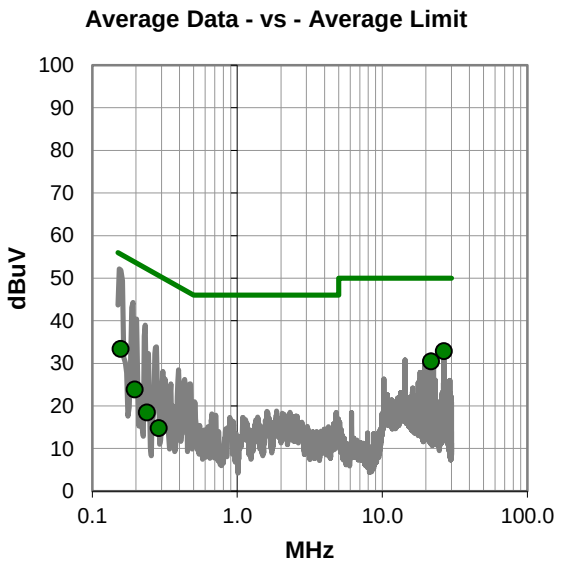
EUT OPERATING MODES

Tx mode, Ch. 20 2442 MHz, 2 MB

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

element
WTD.2017.11.22.1

RESULTS - Run #16

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.156	52.6	0.3	52.9	65.7	-12.8
0.196	46.3	0.3	46.6	63.8	-17.2
0.237	40.3	0.3	40.6	62.2	-21.6
21.664	32.1	2.3	34.4	60.0	-25.6
26.623	31.0	3.0	34.0	60.0	-26.0
0.286	31.5	0.2	31.7	60.6	-28.9

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
21.664	28.2	2.3	30.5	50.0	-19.5
0.156	33.1	0.3	33.4	55.7	-22.3
0.196	23.6	0.3	23.9	53.8	-29.9
0.237	18.2	0.3	18.5	52.2	-33.7
0.286	14.6	0.2	14.8	50.6	-35.8

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 Ch. 0, 2402 MHz; Ch. 20, 2442 MHz; Ch. 37, 2477 MHz (2 Mb only); Ch. 39, 2480 MHz (1 Mb only), and 1 Mb, and 2 Mb data rate. Channel 37 will be the highest channel available for 2 Mb data rate per client request.

Tx on Ch. 39 at 2480 MHz on the RSL Radio

POWER SETTINGS INVESTIGATED

110VAC/60Hz

Battery

CONFIGURATIONS INVESTIGATED

STAK0117 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	26000 MHz

SAMPLE CALCULATIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
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.	)uble Ridge Guide Horn Cabl	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.

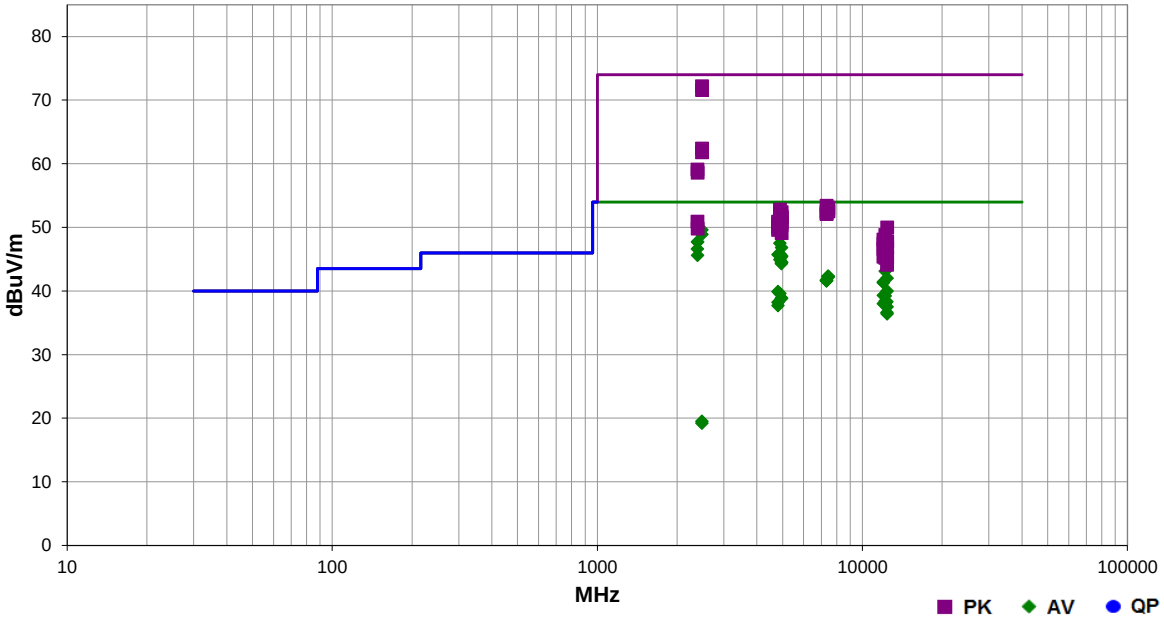
SPURIOUS RADIATED EMISSIONS

EmiR5 2018.05.07 PSA-ESCI 2018.05.04

Work Order:	STAK0117	**Date:**	18-Jun-2018		
Project:	None	**Temperature:**	21.6 °C		
Job Site:	MN05	**Humidity:**	63.7% RH		
Serial Number:	182010052A	**Barometric Pres.:**	1017 mbar	**Tested by:**	Chris Patterson
EUT:	Multi-Function Accessory				
Configuration:	1				
Customer:	Starkey Laboratories, Inc.				
Attendees:	Charlie Esch				
EUT Power:	Battery				
Operating Mode:	Tx on Ch. 0, 2402 MHz; Ch. 20, 2442 MHz; Ch. 37, 2477 MHz (2 Mb only); Ch. 39, 2480 MHz (1 Mb only), and 1 Mb, and 2 Mb data rate. Channel 37 will be the highest channel available for 2 Mb data rate per client request.				
Deviations:	None				
Comments:	None				

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

Run #	18	**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
2483.533	56.4	-4.2	1.0	189.0		20.0	Vert	PK	0.0	72.2	74.0	-1.8	EUT Vert, Ch. 39, 1 Mb
2483.540	55.8	-4.2	1.0	282.9		20.0	Horz	PK	0.0	71.6	74.0	-2.4	EUT Horz, Ch. 39, 1 Mb
2483.600	33.8	-4.2	1.0	77.1		20.0	Horz	AV	0.0	49.6	54.0	-4.4	EUT Horz, Ch. 37, 2 Mb
2483.707	33.1	-4.2	1.0	29.1		20.0	Vert	AV	0.0	48.9	54.0	-5.1	EUT Vert, Ch. 37, 2 Mb
2389.380	32.1	-4.4	1.0	106.1		20.0	Vert	AV	0.0	47.7	54.0	-6.3	EUT Vert, Ch. 0, 2 Mb
2389.853	32.1	-4.4	1.0	91.1		20.0	Horz	AV	0.0	47.7	54.0	-6.3	EUT Horz, Ch. 0, 2 Mb
4883.800	42.1	5.4	2.3	300.0		0.0	Horz	AV	0.0	47.5	54.0	-6.5	EUT Horz, Ch. 20, 1 Mb
4959.875	41.1	5.7	2.1	133.0		0.0	Horz	AV	0.0	46.8	54.0	-7.2	EUT Horz, Ch. 39, 1 Mb
2388.050	30.6	-4.0	1.0	286.9		20.0	Horz	AV	0.0	46.6	54.0	-7.4	EUT Horz, Ch. 0, 1 Mb
4883.950	40.4	5.4	1.0	108.0		0.0	Vert	AV	0.0	45.8	54.0	-8.2	EUT Vert, Ch. 20, 1 Mb
4803.858	40.7	5.0	2.1	318.0		0.0	Horz	AV	0.0	45.7	54.0	-8.3	EUT Horz, Ch. 0, 1 Mb
2389.250	29.6	-4.0	1.0	169.0		20.0	Vert	AV	0.0	45.6	54.0	-8.4	EUT Vert, Ch. 0, 1 Mb
4959.833	39.8	5.7	1.0	60.0		0.0	Vert	AV	0.0	45.5	54.0	-8.5	EUT Vert, Ch. 39, 1 Mb
4959.925	39.7	5.7	1.3	0.0		0.0	Horz	AV	0.0	45.4	54.0	-8.6	EUT On Side, Ch. 39
4883.208	39.5	5.4	1.0	129.0		0.0	Vert	AV	0.0	44.9	54.0	-9.1	EUT Vert, Ch. 20, 2 Mb
4959.858	38.8	5.7	1.4	206.1		0.0	Horz	AV	0.0	44.5	54.0	-9.5	EUT Vert, Ch. 39, 1 Mb
4960.017	38.8	5.7	1.0	145.1		0.0	Vert	AV	0.0	44.5	54.0	-9.5	EUT On Side, Ch. 39, 1 Mb
4951.550	38.7	5.6	2.7	113.1		0.0	Horz	AV	0.0	44.3	54.0	-9.7	EUT Horz, Ch. 37, 2 Mb
12208.850	44.2	-1.1	1.8	121.0		0.0	Vert	AV	0.0	43.1	54.0	-10.9	EUT Hoz, Ch. 20, 1 Mb
2483.907	46.6	-4.2	1.0	77.1		20.0	Horz	PK	0.0	62.4	74.0	-11.6	EUT Horz, Ch. 37, 2 Mb

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
7438.475	31.4	10.9	1.0	339.0		0.0	Vert	AV	0.0	42.3	54.0	-11.7	EUT Vert, Ch. 39, 1 Mb
7429.400	31.4	10.9	2.9	81.0		0.0	Vert	AV	0.0	42.3	54.0	-11.7	EUT Vert, Ch. 37, 2 Mb
7438.233	31.3	10.9	1.0	208.0		0.0	Horz	AV	0.0	42.2	54.0	-11.8	EUT Horz, Ch. 39, 1 Mb
7432.475	31.3	10.9	1.0	205.0		0.0	Horz	AV	0.0	42.2	54.0	-11.8	EUT Horz, Ch. 37, 2 Mb
12400.950	37.1	4.9	1.8	120.1		0.0	Vert	AV	0.0	42.0	54.0	-12.0	EUT Vert, Ch. 39, 1 Mb
2483.540	46.0	-4.2	1.0	49.0		20.0	Vert	PK	0.0	61.8	74.0	-12.2	EUT Vert, Ch. 37, 2 Mb
7327.300	31.2	10.5	2.7	80.1		0.0	Vert	AV	0.0	41.7	54.0	-12.3	EUT Vert, Ch. 20, 2 Mb
7324.058	31.1	10.6	1.0	322.0		0.0	Horz	AV	0.0	41.7	54.0	-12.3	EUT Horz, Ch. 20, 2 Mb
7327.192	31.0	10.6	3.5	268.0		0.0	Horz	AV	0.0	41.6	54.0	-12.4	EUT Horz, Ch. 20, 1 Mb
7327.317	31.0	10.6	3.0	235.0		0.0	Vert	AV	0.0	41.6	54.0	-12.4	EUT Vert, Ch. 20, 1 Mb
12008.740	42.8	-1.4	1.8	140.0		0.0	Vert	AV	0.0	41.4	54.0	-12.6	EUT Vert, Ch. 0, 1 Mb
12008.690	42.7	-1.4	1.8	32.0		0.0	Horz	AV	0.0	41.3	54.0	-12.7	EUT Horz, Ch. 0, 1 Mb
12398.850	40.4	-0.4	2.0	312.9		0.0	Vert	AV	0.0	40.0	54.0	-14.0	EUT Vert, Ch. 39, 1 Mb
4803.883	34.9	5.0	1.0	21.0		0.0	Vert	AV	0.0	39.9	54.0	-14.1	EUT Vert, Ch. 0, 1 Mb
4883.075	34.2	5.4	2.4	300.0		0.0	Horz	AV	0.0	39.6	54.0	-14.4	EUT Horz, Ch. 20, 2 Mb
12007.560	40.7	-1.4	1.9	196.1		0.0	Horz	AV	0.0	39.3	54.0	-14.7	EUT Horz, Ch. 0, 2 Mb
12208.840	40.3	-1.1	1.8	24.0		0.0	Horz	AV	0.0	39.2	54.0	-14.8	EUT Vert, Ch. 20, 1 Mb
2386.780	43.5	-4.4	1.0	91.1		20.0	Horz	PK	0.0	59.1	74.0	-14.9	EUT Horz, Ch. 0, 2 Mb
4959.792	33.2	5.7	1.0	304.9		0.0	Vert	AV	0.0	38.9	54.0	-15.1	EUT Horz, Ch. 39, 1 Mb
4951.600	33.2	5.6	1.0	292.0		0.0	Vert	AV	0.0	38.8	54.0	-15.2	EUT Vert, Ch. 37, 2 Mb
2389.047	43.0	-4.4	1.0	106.1		20.0	Vert	PK	0.0	58.6	74.0	-15.4	EUT Vert, Ch. 0, 2 Mb
12207.520	39.5	-1.1	1.0	117.0		0.0	Vert	AV	0.0	38.4	54.0	-15.6	EUT Vert, Ch. 20, 2 Mb
12382.530	38.8	-0.5	2.5	310.0		0.0	Vert	AV	0.0	38.3	54.0	-15.7	EUT Vert, Ch. 37, 2 Mb
4803.075	33.2	5.0	1.0	263.0		0.0	Vert	AV	0.0	38.2	54.0	-15.8	EUT Vert, Ch. 0, 2 Mb
12207.530	39.1	-1.1	1.9	9.0		0.0	Horz	AV	0.0	38.0	54.0	-16.0	EUT Horz, Ch. 20, 2 Mb
12007.530	39.4	-1.4	1.0	115.0		0.0	Vert	AV	0.0	38.0	54.0	-16.0	EUT Vert, Ch. 0, 2 Mb
4803.100	32.7	5.0	2.1	121.0		0.0	Horz	AV	0.0	37.7	54.0	-16.3	EUT Horz, Ch. 0, 2 Mb
12398.800	37.9	-0.4	1.8	290.9		0.0	Horz	AV	0.0	37.5	54.0	-16.5	EUT Horz, Ch. 39, 1 Mb
12382.500	37.1	-0.5	1.8	194.0		0.0	Horz	AV	0.0	36.6	54.0	-17.4	EUT Horz, Ch. 37, 2 Mb
12401.080	31.5	4.9	1.7	290.9		0.0	Horz	AV	0.0	36.4	54.0	-17.6	EUT Horz, Ch. 39, 1 Mb
7323.758	42.8	10.6	3.0	235.0		0.0	Vert	PK	0.0	53.4	74.0	-20.6	EUT Vert, Ch. 20, 1 Mb
7429.183	42.2	10.9	2.9	81.0		0.0	Vert	PK	0.0	53.1	74.0	-20.9	EUT Vert, Ch. 37, 2 Mb
7429.583	42.1	10.9	1.0	205.0		0.0	Horz	PK	0.0	53.0	74.0	-21.0	EUT Horz, Ch. 37, 2 Mb
4883.400	47.4	5.4	2.3	300.0		0.0	Horz	PK	0.0	52.8	74.0	-21.2	EUT Horz, Ch. 20, 1 Mb
7441.025	41.7	10.9	1.0	208.0		0.0	Horz	PK	0.0	52.6	74.0	-21.4	EUT Horz, Ch. 39, 1 Mb
7437.750	41.6	10.9	1.0	339.0		0.0	Vert	PK	0.0	52.5	74.0	-21.5	EUT Vert, Ch. 39, 1 Mb
7326.675	41.9	10.6	1.0	322.0		0.0	Horz	PK	0.0	52.5	74.0	-21.5	EUT Horz, Ch. 20, 2 Mb
4960.417	46.7	5.7	2.1	133.0		0.0	Horz	PK	0.0	52.4	74.0	-21.6	EUT Horz, Ch. 39, 1 Mb
7325.708	41.7	10.5	2.7	80.1		0.0	Vert	PK	0.0	52.2	74.0	-21.8	EUT Vert, Ch. 20, 2 Mb
7326.642	41.5	10.6	3.5	268.0		0.0	Horz	PK	0.0	52.1	74.0	-21.9	EUT Horz, Ch. 20, 1 Mb
4882.858	46.4	5.4	2.4	300.0		0.0	Horz	PK	0.0	51.8	74.0	-22.2	EUT Horz, Ch. 20, 2 Mb
4884.233	46.3	5.4	1.0	108.0		0.0	Vert	PK	0.0	51.7	74.0	-22.3	EUT Vert, Ch. 20, 1 Mb
4953.025	46.1	5.6	2.7	113.1		0.0	Horz	PK	0.0	51.7	74.0	-22.3	EUT Horz, Ch. 37, 2 Mb
4885.325	46.3	5.4	1.0	129.0		0.0	Vert	PK	0.0	51.7	74.0	-22.3	EUT Vert, Ch. 20, 2 Mb
4959.500	45.9	5.7	1.0	60.0		0.0	Vert	PK	0.0	51.6	74.0	-22.4	EUT Vert, Ch. 39, 1 Mb
4959.508	45.8	5.7	1.3	0.0		0.0	Horz	PK	0.0	51.5	74.0	-22.5	EUT On Side, Ch. 39, 1 Mb
4960.267	45.2	5.7	1.0	145.1		0.0	Vert	PK	0.0	50.9	74.0	-23.1	EUT On Side, Ch. 39, 1 Mb
4804.833	45.9	5.0	2.1	318.0		0.0	Horz	PK	0.0	50.9	74.0	-23.1	EUT Horz, Ch. 0, 1 Mb
2388.050	34.9	-4.0	1.0	286.9		20.0	Horz	PK	0.0	50.9	74.0	-23.1	EUT Horz, Ch. 0, 1 Mb
4959.408	45.0	5.7	1.4	206.1		0.0	Horz	PK	0.0	50.7	74.0	-23.3	EUT Vert, Ch. 39, 1 Mb
4805.142	45.6	5.0	1.0	263.0		0.0	Vert	PK	0.0	50.6	74.0	-23.4	EUT Vert, Ch. 0, 2 Mb
4952.842	44.7	5.6	1.0	292.0		0.0	Vert	PK	0.0	50.3	74.0	-23.7	EUT Vert, Ch. 37, 2 Mb
4804.508	45.0	5.0	1.0	21.0		0.0	Vert	PK	0.0	50.0	74.0	-24.0	EUT Vert, Ch. 0, 1 Mb
12401.110	45.1	4.9	1.8	120.1		0.0	Vert	PK	0.0	50.0	74.0	-24.0	EUT Vert, Ch. 39, 1 Mb
2389.250	33.8	-4.0	1.0	169.0		20.0	Vert	PK	0.0	49.8	74.0	-24.2	EUT Vert, Ch. 0, 1 Mb
4804.975	44.6	5.0	2.1	121.0		0.0	Horz	PK	0.0	49.6	74.0	-24.4	EUT Horz, Ch. 0, 2 Mb
4959.975	43.4	5.7	1.0	304.9		0.0	Vert	PK	0.0	49.1	74.0	-24.9	EUT Horz, Ch. 39, 1 Mb
12211.300	49.9	-1.1	1.8	121.0		0.0	Vert	PK	0.0	48.8	74.0	-25.2	EUT Hoz, Ch. 20, 1 Mb
12008.780	49.5	-1.4	1.8	140.0		0.0	Vert	PK	0.0	48.1	74.0	-25.9	EUT Vert, Ch. 0, 1 Mb
12401.490	42.9	4.9	1.7	290.9		0.0	Horz	PK	0.0	47.8	74.0	-26.2	EUT Horz, Ch. 39, 1 Mb
12008.610	48.8	-1.4	1.8	32.0		0.0	Horz	PK	0.0	47.4	74.0	-26.6	EUT Horz, Ch. 0, 1 Mb
12398.780	47.3	-0.4	2.0	312.9		0.0	Vert	PK	0.0	46.9	74.0	-27.1	EUT Vert, Ch. 39, 1 Mb
12009.830	48.0	-1.4	1.9	196.1		0.0	Horz	PK	0.0	46.6	74.0	-27.4	EUT Horz, Ch. 0, 2 Mb
12208.470	47.0	-1.1	1.8	24.0		0.0	Horz	PK	0.0	45.9	74.0	-28.1	EUT Vert, Ch. 20, 1 Mb
12382.700	46.3	-0.4	2.5	310.0		0.0	Vert	PK	0.0	45.9	74.0	-28.1	EUT Vert, Ch. 37, 2 Mb
12207.580	46.6	-1.1	1.9	9.0		0.0	Horz	PK	0.0	45.5	74.0	-28.5	EUT Horz, Ch. 20, 2 Mb
12007.510	46.8	-1.4	1.0	115.0		0.0	Vert	PK	0.0	45.4	74.0	-28.6	EUT Vert, Ch. 0, 2 Mb
12398.890	45.6	-0.4	1.8	290.9		0.0	Horz	PK	0.0	45.2	74.0	-28.8	EUT Horz, Ch. 39, 1 Mb
12207.570	46.3	-1.1	1.0	117.0		0.0	Vert	PK	0.0	45.2	74.0	-28.8	EUT Vert, Ch. 20, 2 Mb
12382.540	44.6	-0.5	1.8	194.0		0.0	Horz	PK	0.0	44.1	74.0	-29.9	EUT Horz, Ch. 37, 2 Mb
2483.507	39.2	-4.2	1.0	282.9	-35.5	20.0	Horz	AV	0.0	19.5	54.0	-34.5	EUT Horz, Ch. 39, 1 Mb
2483.500	38.9	-4.2	1.0	189.0	-35.5	20.0	Vert	AV	0.0	19.2	54.0	-34.8	EUT Vert, Ch. 39, 1 Mb

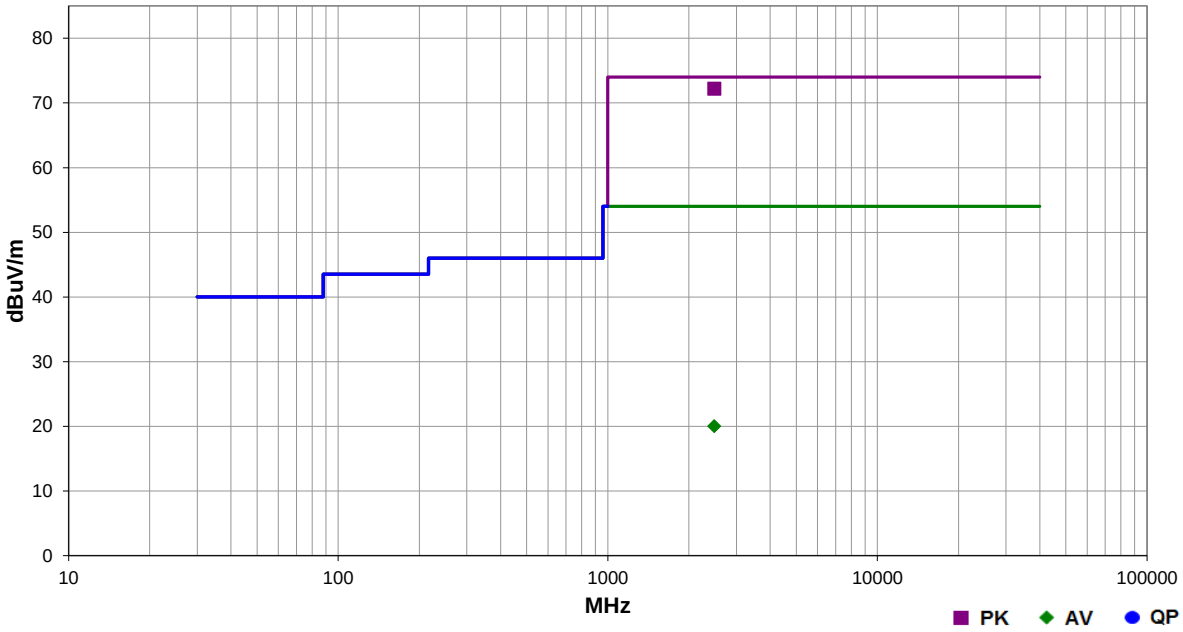
SPURIOUS RADIATED EMISSIONS

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:**	55.1% RH		
Serial Number:	182010052A	**Barometric Pres.:**	1016 mbar	**Tested by:**	Chris Patterson, Kyle McMullan
EUT:	Multi-Function Accessory				
Configuration:	2				
Customer:	Starkey Laboratories, Inc.				
Attendees:	Charlie Esch				
EUT Power:	110VAC/60Hz				
Operating Mode:	Tx on Ch. 39 at 2480 MHz on the RSL Radio				
Deviations:	None				
Comments:	AC Powered spot check of highest emission. Output power of radio lowered from max power to 1 dB below max power.				

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

Run #	74	**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
2483.523	56.7	-4.5	1.0	344.9		20.0	Vert	PK	0.0	72.2	74.0	-1.8	EUT Vert, Ch. 39, 1 Mb
2483.520	40.0	-4.5	1.0	344.9	-35.5	20.0	Vert	AV	0.0	20.0	54.0	-34.0	EUT Vert, Ch. 39, 1 Mb

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:	**182010052A**			**Date:**	**22-Jun-18**
Customer:	**Starkey Laboratories, Inc.**			**Temperature:**	**22.1 °C**
Attendees:	**Charlie Esch**			**Humidity:**	**53.9% RH**
Project:	**None**			**Barometric Pres.:**	**1015 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

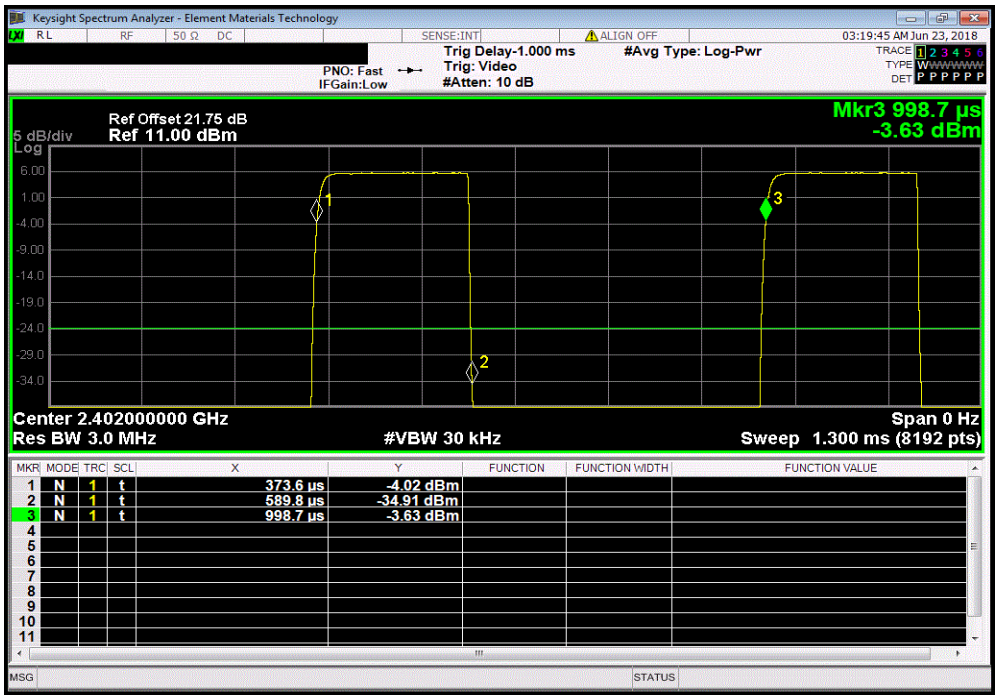
Configuration #	**4**	*Signature* Dustin Sparks

	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
BLE/GFSK, 1 Mbps						
BLE/GFSK Low Channel, 2402 MHz	216.2 us	625.1 us	1	34.6	N/A	N/A
BLE/GFSK Low Channel, 2402 MHz	N/A	N/A	5	N/A	N/A	N/A
BLE/GFSK Mid Channel, 2442 MHz	215.9 us	624.9 us	1	34.5	N/A	N/A
BLE/GFSK Mid Channel, 2442 MHz	N/A	N/A	5	N/A	N/A	N/A
BLE/GFSK High Channel, 2480 MHz	216.8 us	624.9 us	1	34.7	N/A	N/A
BLE/GFSK High Channel, 2480 MHz	N/A	N/A	5	N/A	N/A	N/A
BLE/GFSK, 2 Mbps						
BLE/GFSK Low Channel, 2402 MHz	112 us	625.2 us	1	17.9	N/A	N/A
BLE/GFSK Low Channel, 2402 MHz	N/A	N/A	5	N/A	N/A	N/A
BLE/GFSK Mid Channel, 2442 MHz	112.2 us	625.2 us	1	17.9	N/A	N/A
BLE/GFSK Mid Channel, 2442 MHz	N/A	N/A	5	N/A	N/A	N/A
BLE/GFSK High Channel, 2480 MHz	112.5 us	625 us	1	18	N/A	N/A
BLE/GFSK High Channel, 2480 MHz	N/A	N/A	5	N/A	N/A	N/A

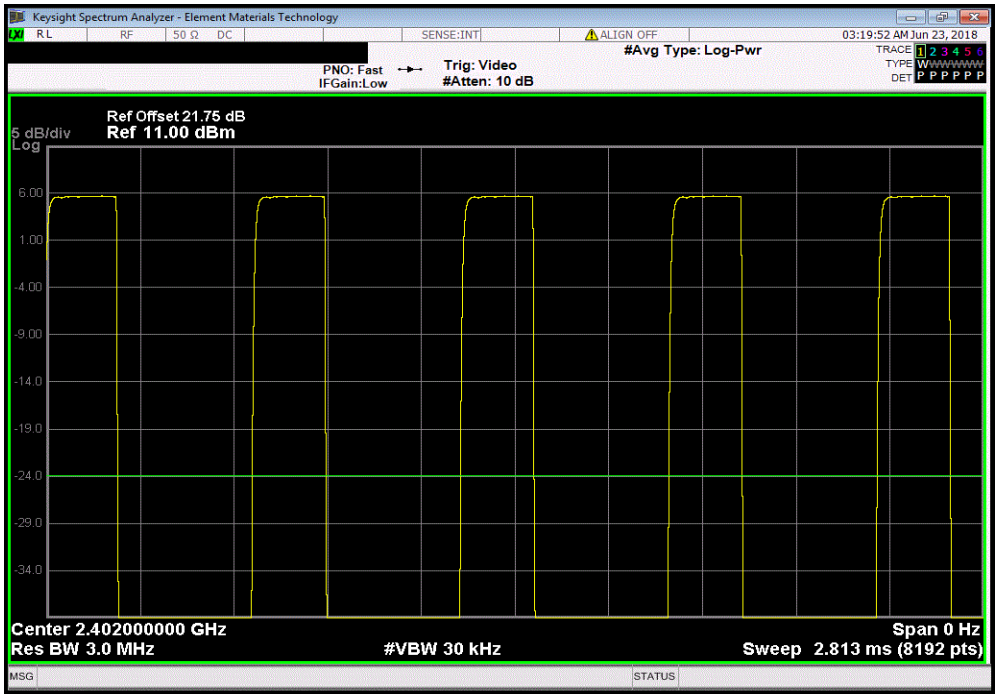
DUTY CYCLE

TbtTx 2017.12.14 XMit 2017.12.13

BLE/GFSK, 1 Mbps, BLE/GFSK Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	216.2 us	625.1 us	1	34.6	N/A	N/A



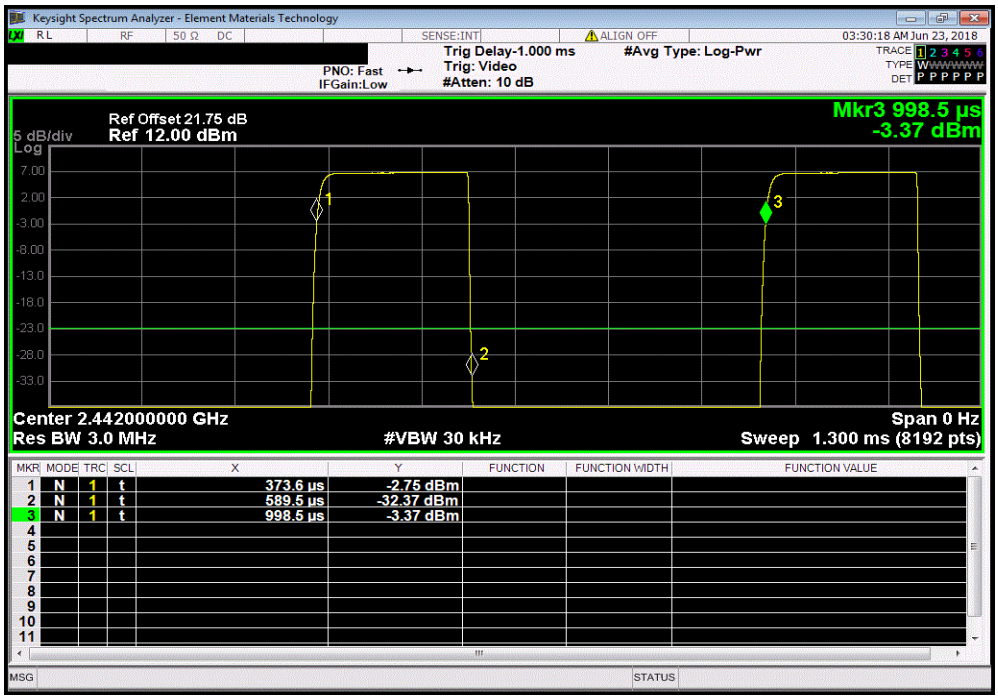
BLE/GFSK, 1 Mbps, BLE/GFSK Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



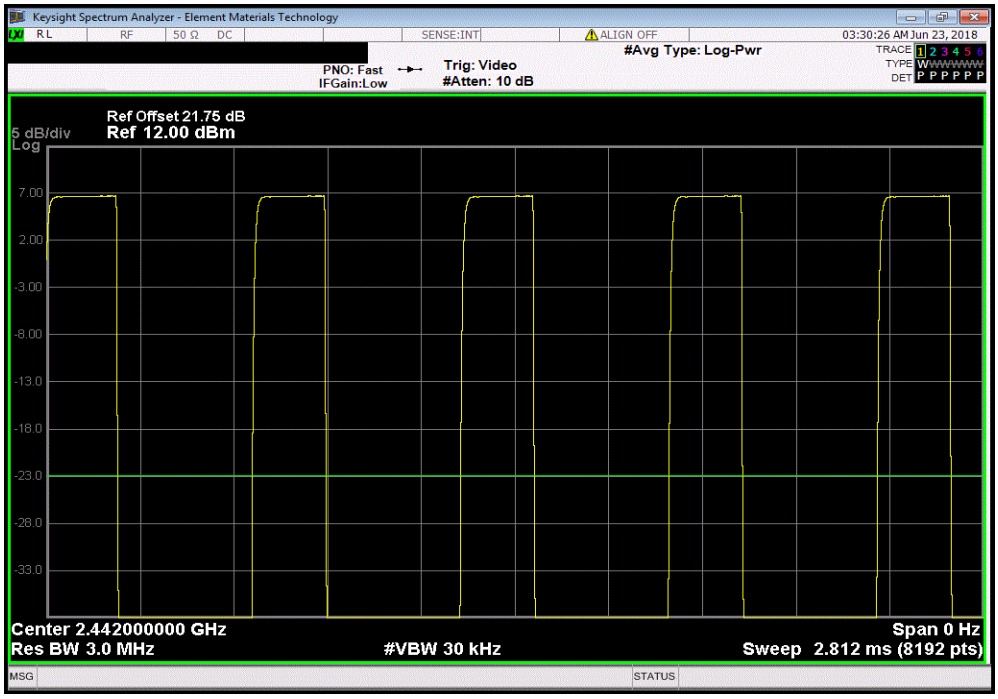
DUTY CYCLE

TbtTx 2017.12.14 XMit 2017.12.13

BLE/GFSK, 1 Mbps, BLE/GFSK Mid Channel, 2442 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	215.9 us	624.9 us	1	34.5	N/A	N/A

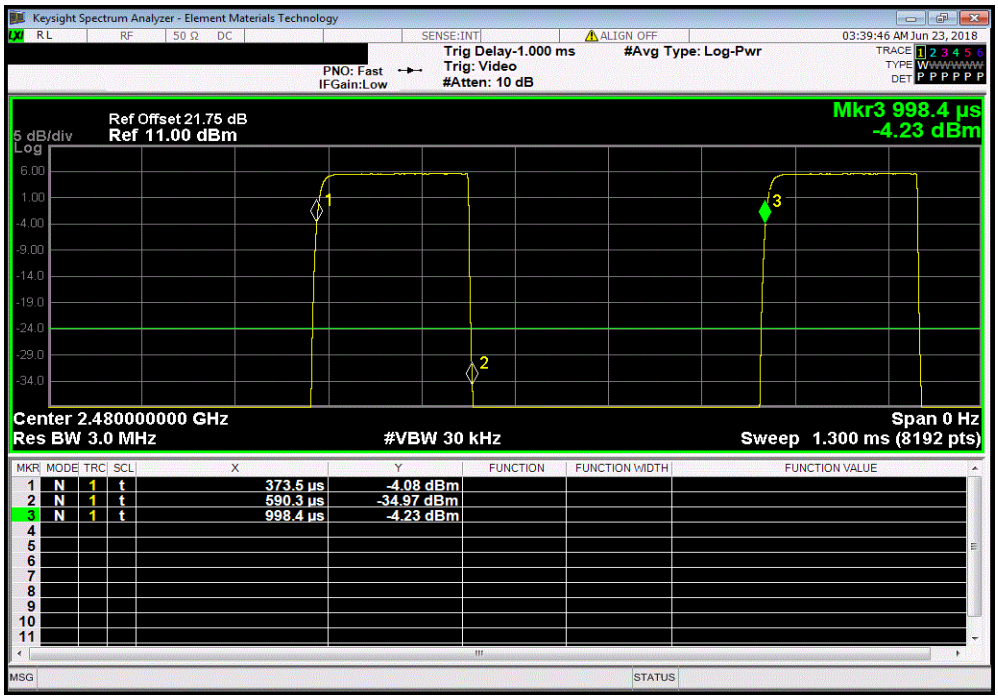


BLE/GFSK, 1 Mbps, BLE/GFSK Mid Channel, 2442 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

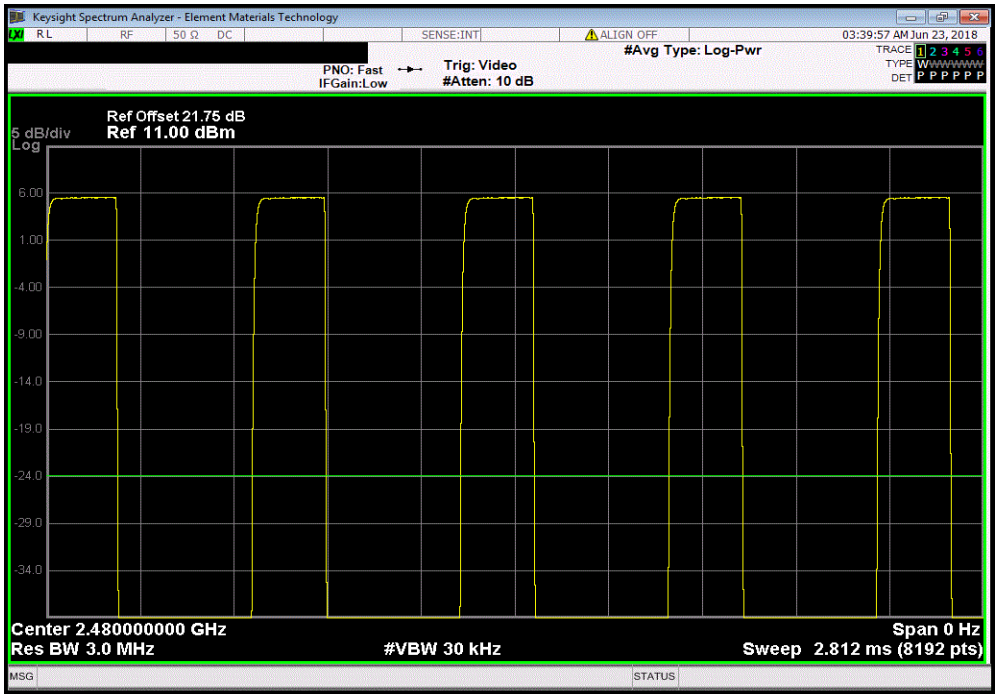


DUTY CYCLE

BLE/GFSK, 1 Mbps, BLE/GFSK High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	216.8 us	624.9 us	1	34.7	N/A	N/A



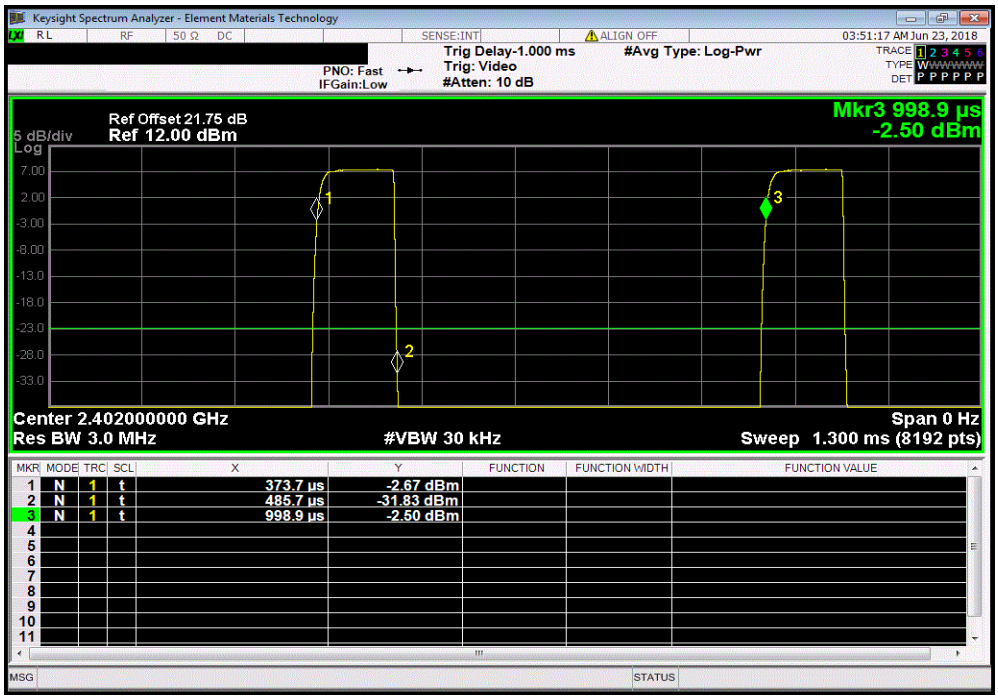
BLE/GFSK, 1 Mbps, BLE/GFSK High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



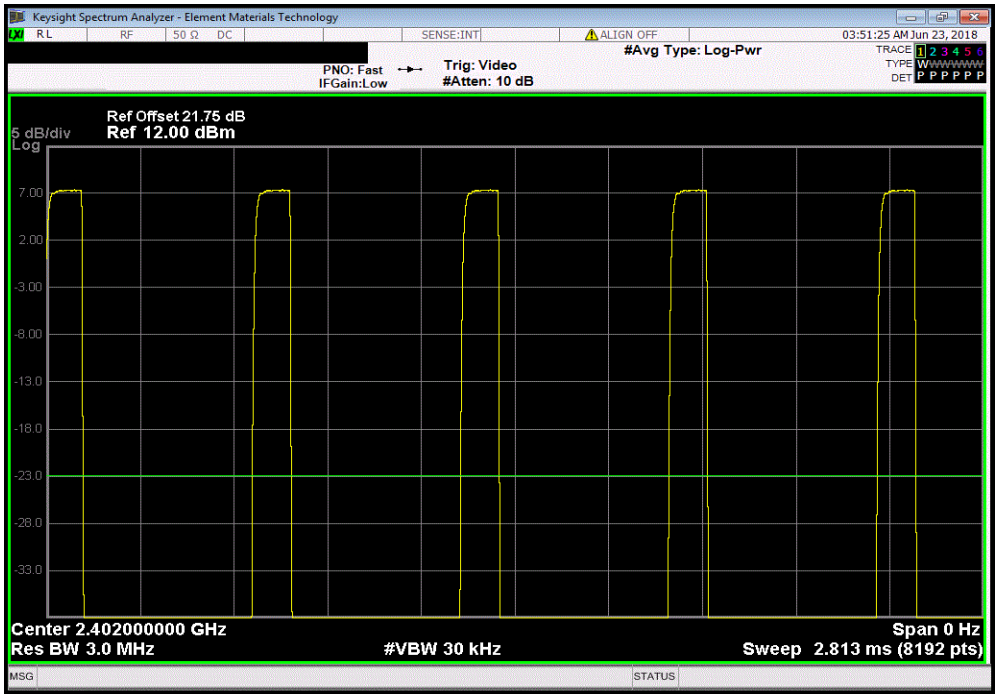
DUTY CYCLE

TbtTx 2017.12.14 XMit 2017.12.13

BLE/GFSK, 2 Mbps, BLE/GFSK Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	112 us	625.2 us	1	17.9	N/A	N/A



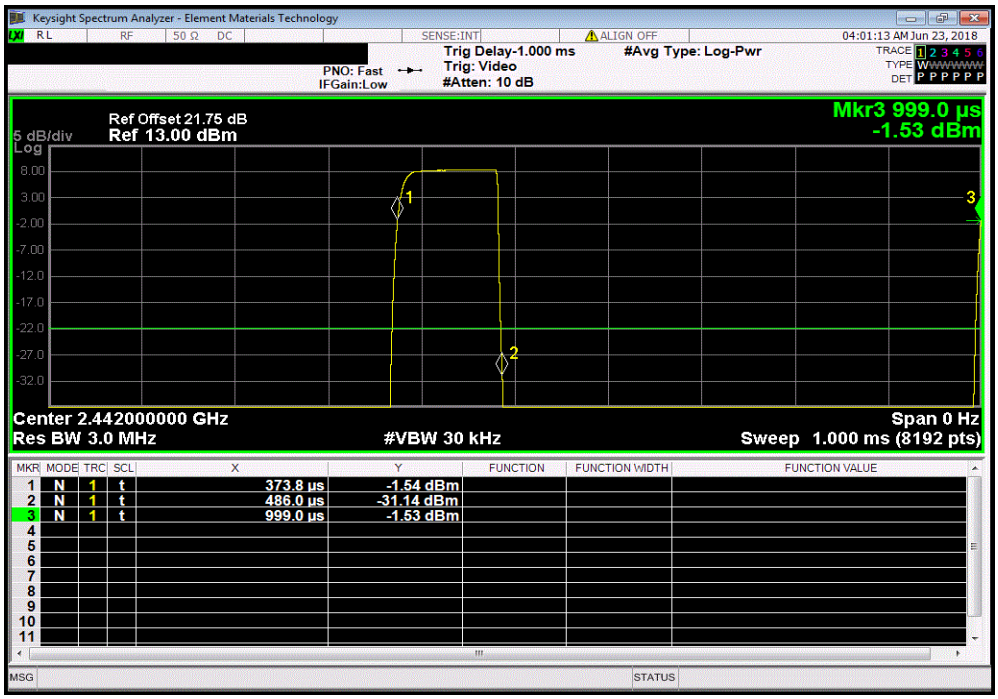
BLE/GFSK, 2 Mbps, BLE/GFSK Low Channel, 2402 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



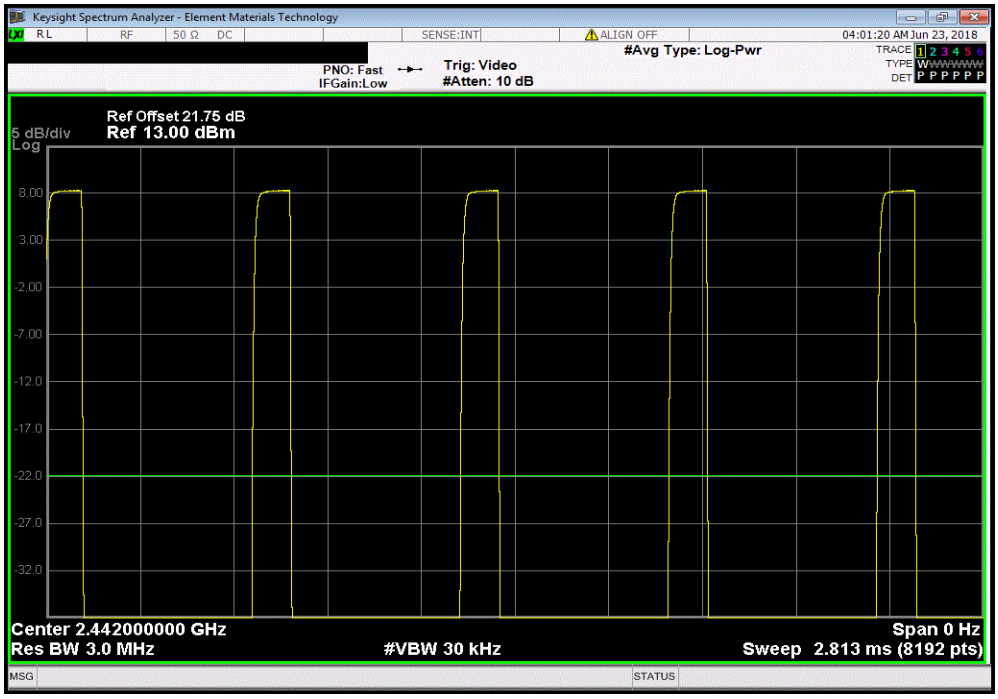
DUTY CYCLE

TbtTx 2017.12.14 XMit 2017.12.13

BLE/GFSK, 2 Mbps, BLE/GFSK Mid Channel, 2442 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	112.2 us	625.2 us	1	17.9	N/A	N/A



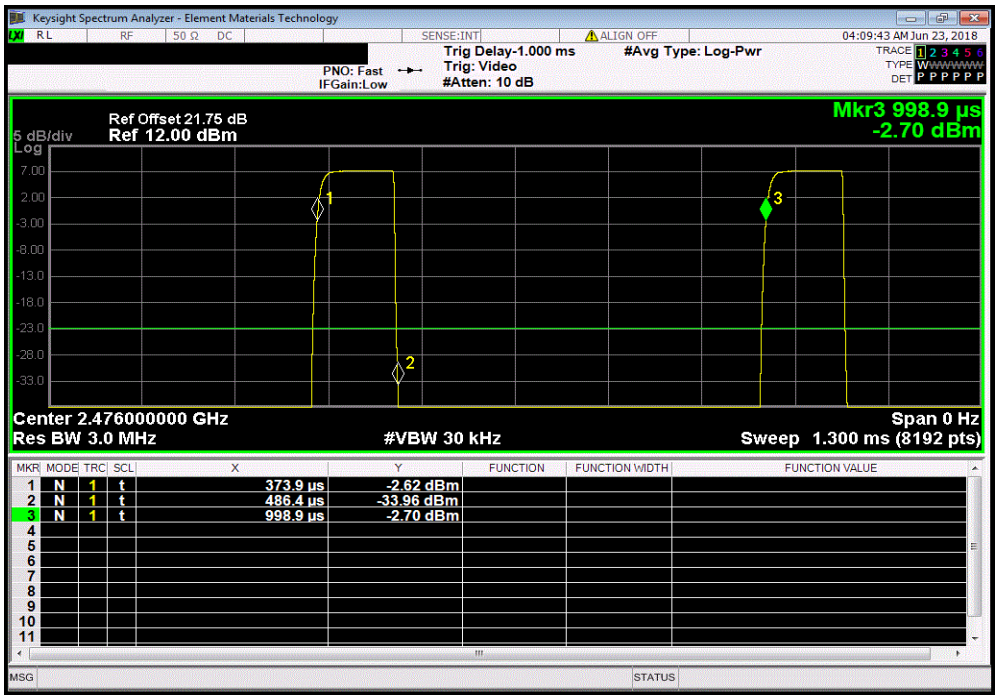
BLE/GFSK, 2 Mbps, BLE/GFSK Mid Channel, 2442 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



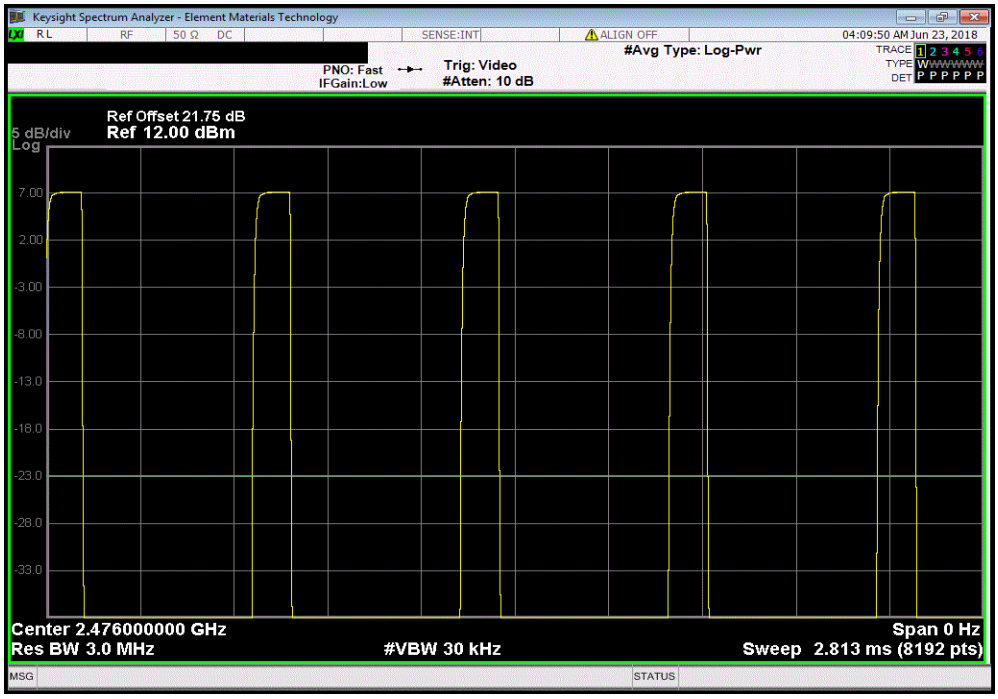
DUTY CYCLE

TbtTx 2017.12.14 XMit 2017.12.13

BLE/GFSK, 2 Mbps, BLE/GFSK High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	112.5 us	625 us	1	18	N/A	N/A



BLE/GFSK, 2 Mbps, BLE/GFSK High Channel, 2480 MHz						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



OCCUPIED BANDWIDTH

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 EUT was set to the channels and modes listed in the datasheet.

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

OCCUPIED BANDWIDTH

TbtTx 2017.12.14 XMit 2017.12.13

EUT:	**Multi-Function Accessory**			**Work Order:**	**STAK0117**
Serial Number:	**182010052A**			**Date:**	**22-Jun-18**
Customer:	**Starkey Laboratories, Inc.**			**Temperature:**	**22.1 °C**
Attendees:	**Charlie Esch**			**Humidity:**	**53.9% RH**
Project:	**None**			**Barometric Pres.:**	**1015 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

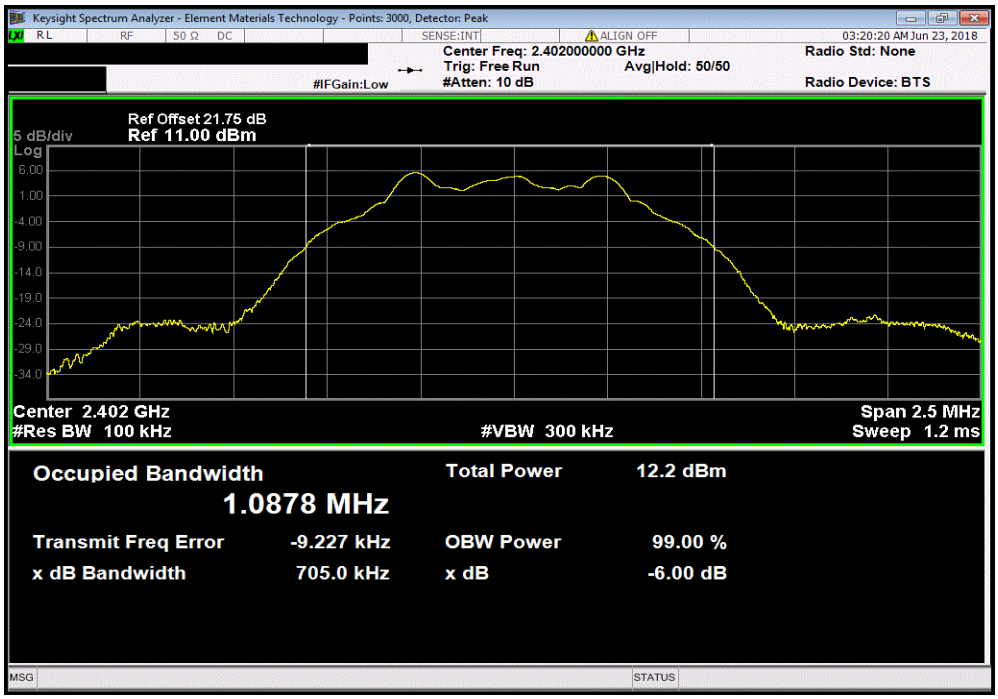
Configuration #	**4**	*Signature* Dustin Sparks

	Value	**Limit (≥)**	**Result**
BLE/GFSK, 1 Mbps			
BLE/GFSK Low Channel, 2402 MHz	705.017 kHz	500 kHz	Pass
BLE/GFSK Mid Channel, 2442 MHz	669.049 kHz	500 kHz	Pass
BLE/GFSK High Channel, 2480 MHz	682.649 kHz	500 kHz	Pass
BLE/GFSK, 2 Mbps			
BLE/GFSK Low Channel, 2402 MHz	1.224 MHz	500 kHz	Pass
BLE/GFSK Mid Channel, 2442 MHz	1.218 MHz	500 kHz	Pass
BLE/GFSK High Channel, 2480 MHz	1.222 MHz	500 kHz	Pass

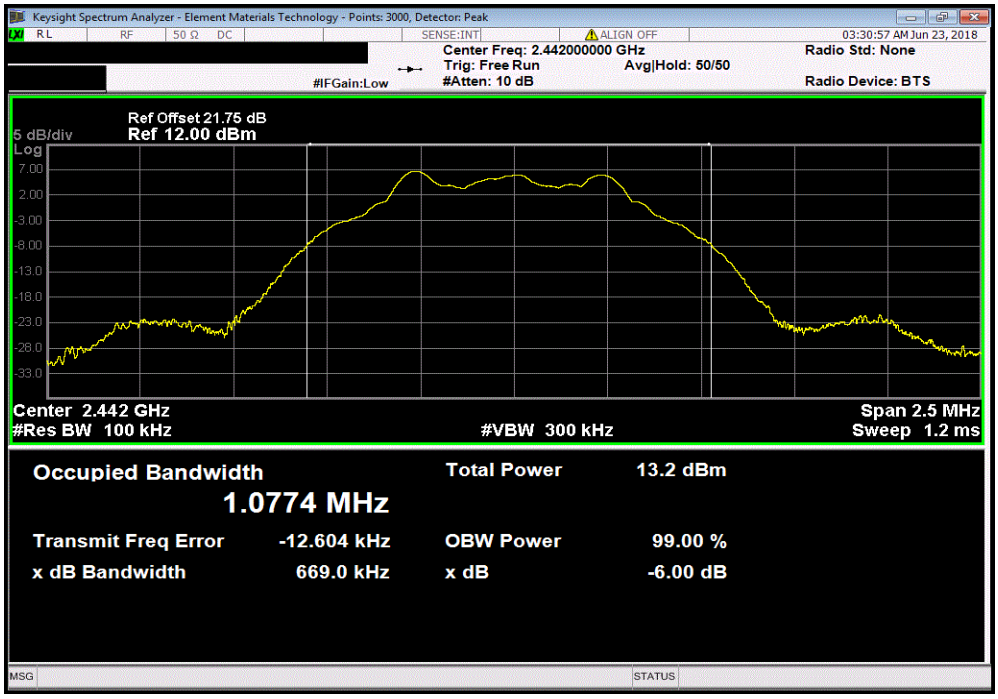
OCCUPIED BANDWIDTH

TbtTx 2017.12.14 XMit 2017.12.13

BLE/GFSK, 1 Mbps, BLE/GFSK Low Channel, 2402 MHz						
				Value	Limit (≥)	Result
				705.017 kHz	500 kHz	Pass



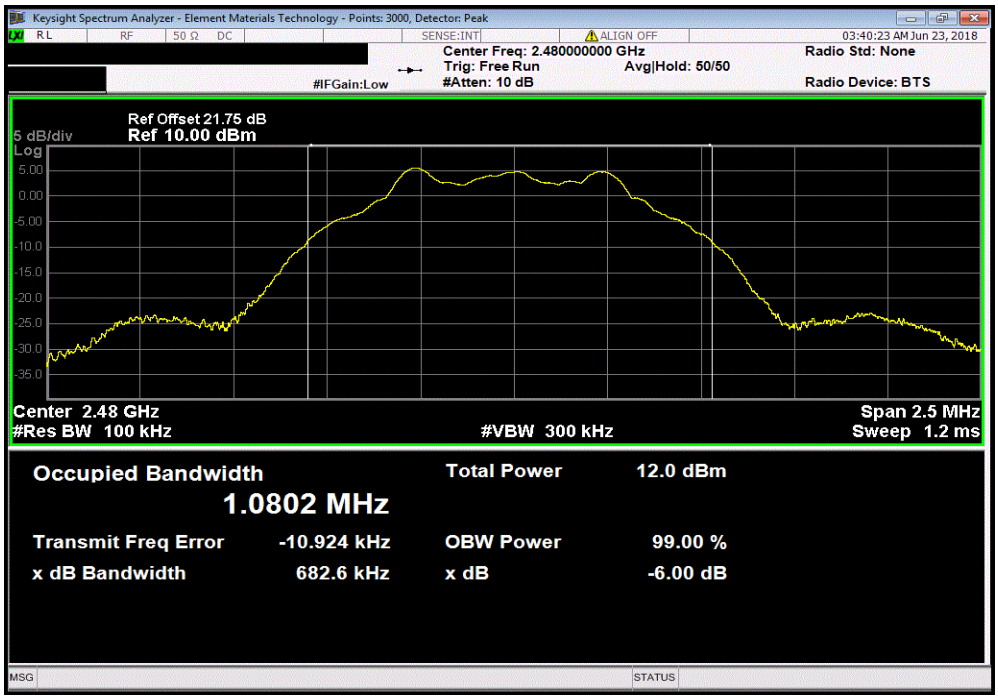
BLE/GFSK, 1 Mbps, BLE/GFSK Mid Channel, 2442 MHz						
				Value	Limit (≥)	Result
				669.049 kHz	500 kHz	Pass



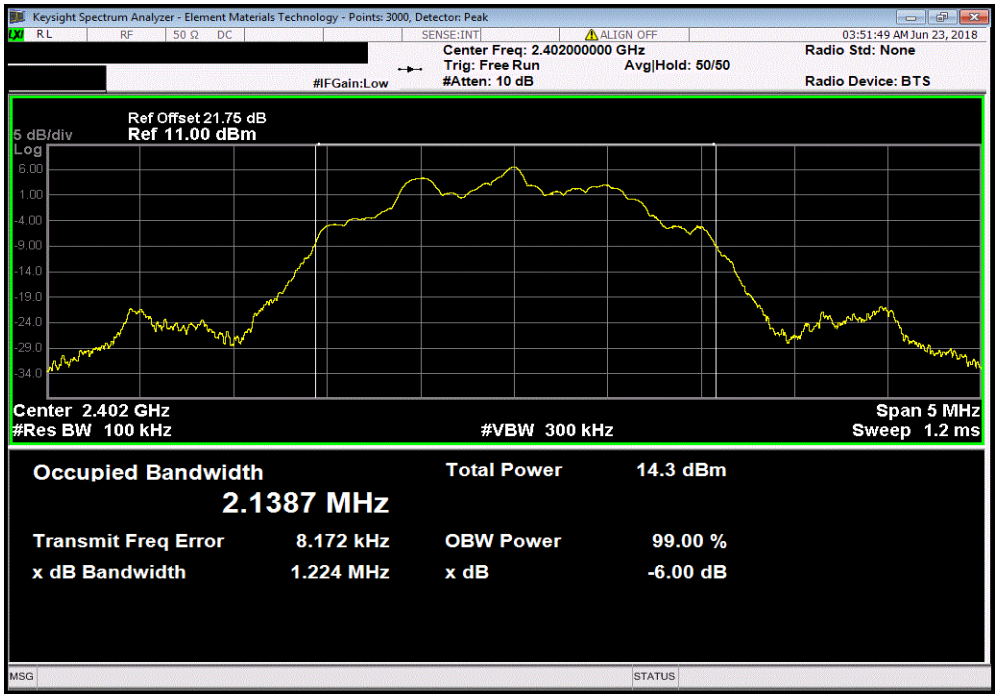
OCCUPIED BANDWIDTH

TbtTx 2017.12.14 XMit 2017.12.13

BLE/GFSK, 1 Mbps, BLE/GFSK High Channel, 2480 MHz						
				Value	Limit (≥)	Result
				682.649 kHz	500 kHz	Pass



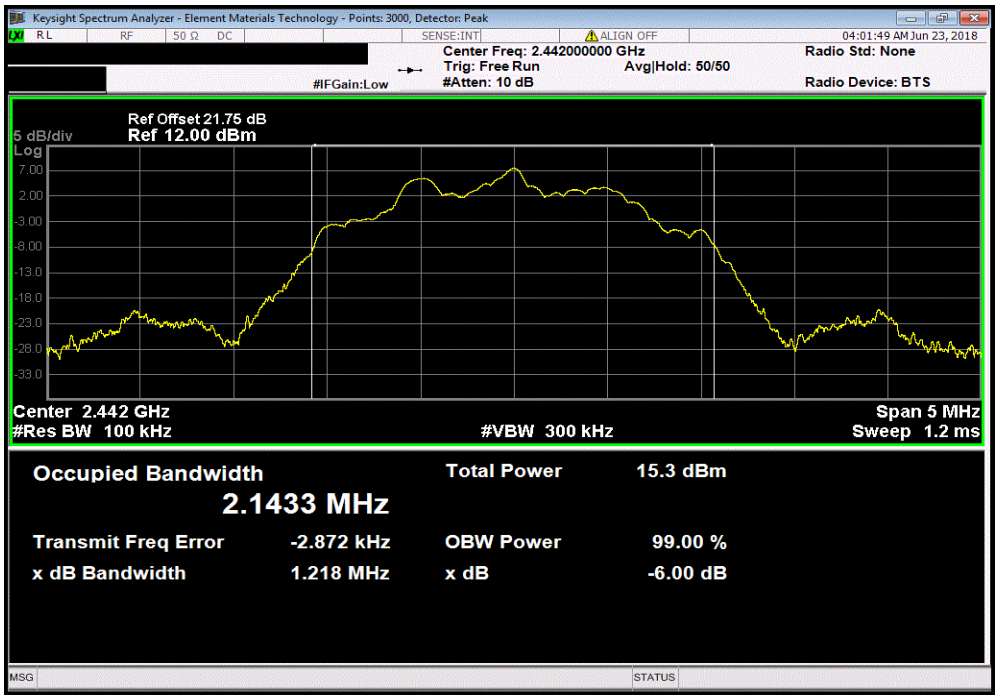
BLE/GFSK, 2 Mbps, BLE/GFSK Low Channel, 2402 MHz						
				Value	Limit (≥)	Result
				1.224 MHz	500 kHz	Pass



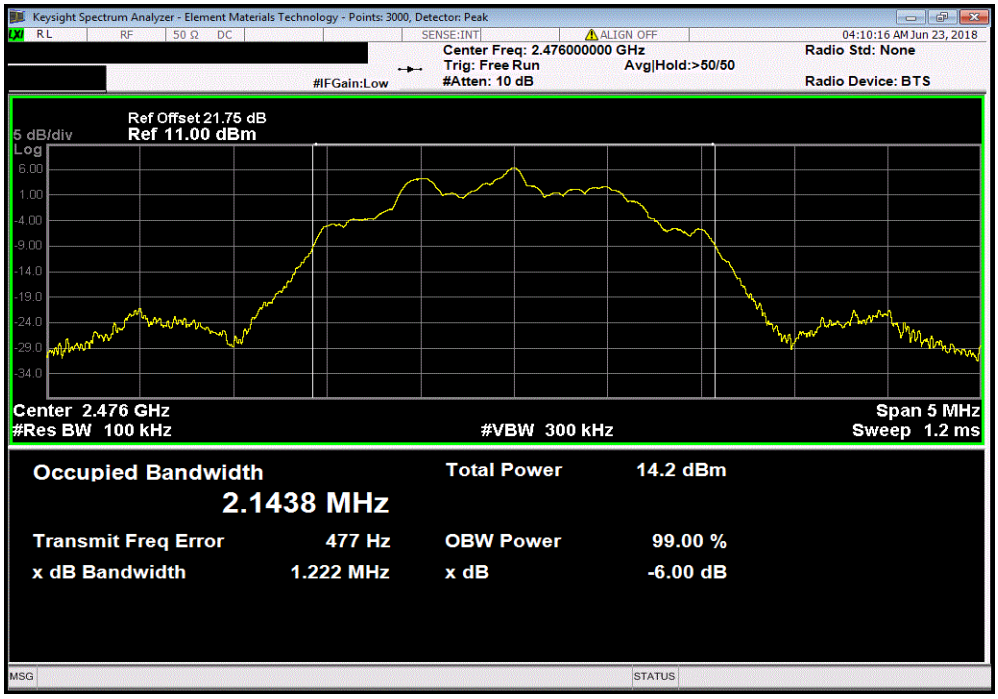
OCCUPIED BANDWIDTH

TbtTx 2017.12.14 XMit 2017.12.13

BLE/GFSK, 2 Mbps, BLE/GFSK Mid Channel, 2442 MHz						
				Value	Limit (≥)	Result
				1.218 MHz	500 kHz	Pass



BLE/GFSK, 2 Mbps, BLE/GFSK High Channel, 2480 MHz						
				Value	Limit (≥)	Result
				1.222 MHz	500 kHz	Pass



OUTPUT POWER

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 transmit frequency was set to the required channels in each band. The transmit power was set to its default maximum.

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

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

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

OUTPUT POWER

TbtTx 2017.12.14 XMit 2017.12.13

EUT:	**Multi-Function Accessory**			**Work Order:**	**STAK0117**
Serial Number:	**182010052A**			**Date:**	**22-Jun-18**
Customer:	**Starkey Laboratories, Inc.**			**Temperature:**	**22.1 °C**
Attendees:	**Charlie Esch**			**Humidity:**	**53.9% RH**
Project:	**None**			**Barometric Pres.:**	**1015 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

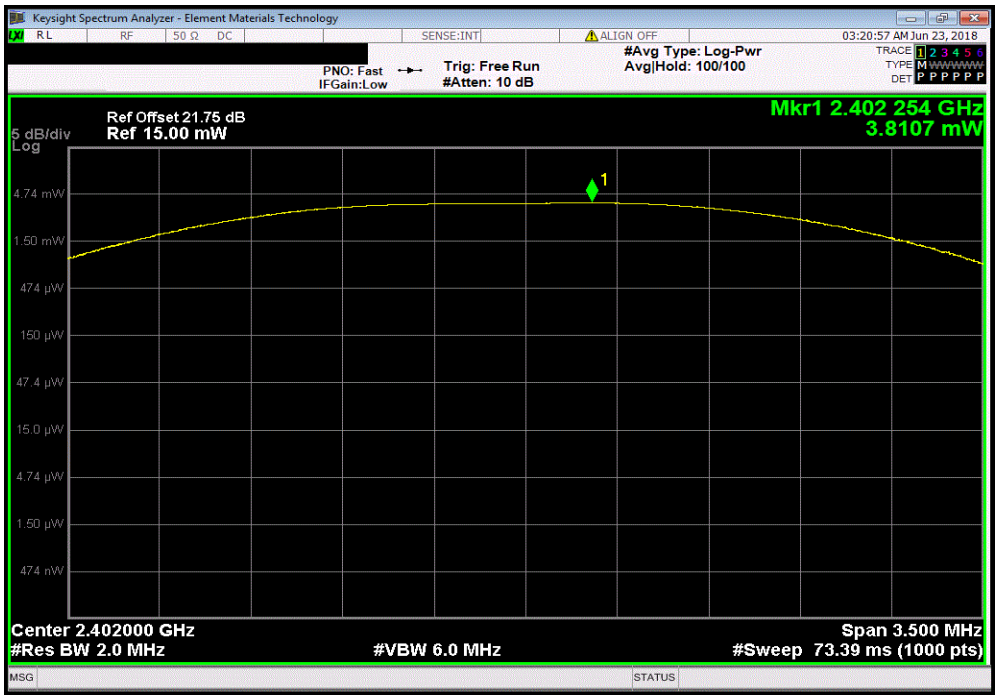
Configuration #	**4**	*Signature* Dustin Sparks

		Value	**Limit (<)**	**Result**
BLE/GFSK, 1 Mbps				
	BLE/GFSK Low Channel, 2402 MHz	3.811 mW	1 W	Pass
	BLE/GFSK Mid Channel, 2442 MHz	4.797 mW	1 W	Pass
	BLE/GFSK High Channel, 2480 MHz	3.651 mW	1 W	Pass
BLE/GFSK, 2 Mbps				
	BLE/GFSK Low Channel, 2402 MHz	5.927 mW	1 W	Pass
	BLE/GFSK Mid Channel, 2442 MHz	7.344 mW	1 W	Pass
	BLE/GFSK High Channel, 2480 MHz	5.66 mW	1 W	Pass

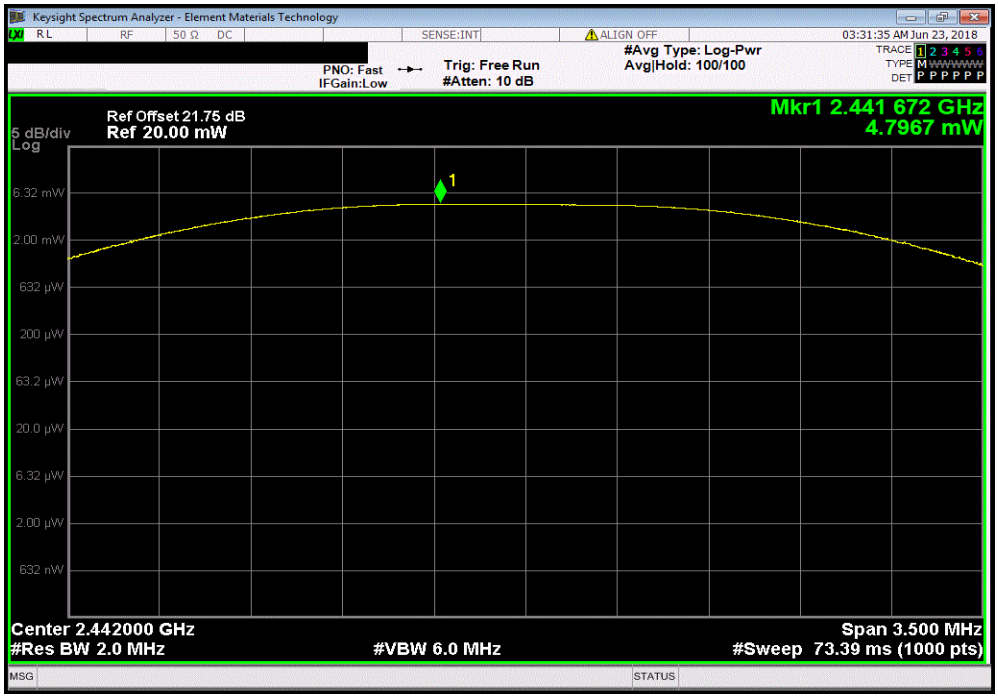
OUTPUT POWER

TbtTx 2017.12.14 XMit 2017.12.13

BLE/GFSK, 1 Mbps, BLE/GFSK Low Channel, 2402 MHz						
				Value	Limit (<)	Result
				3.811 mW	1 W	Pass



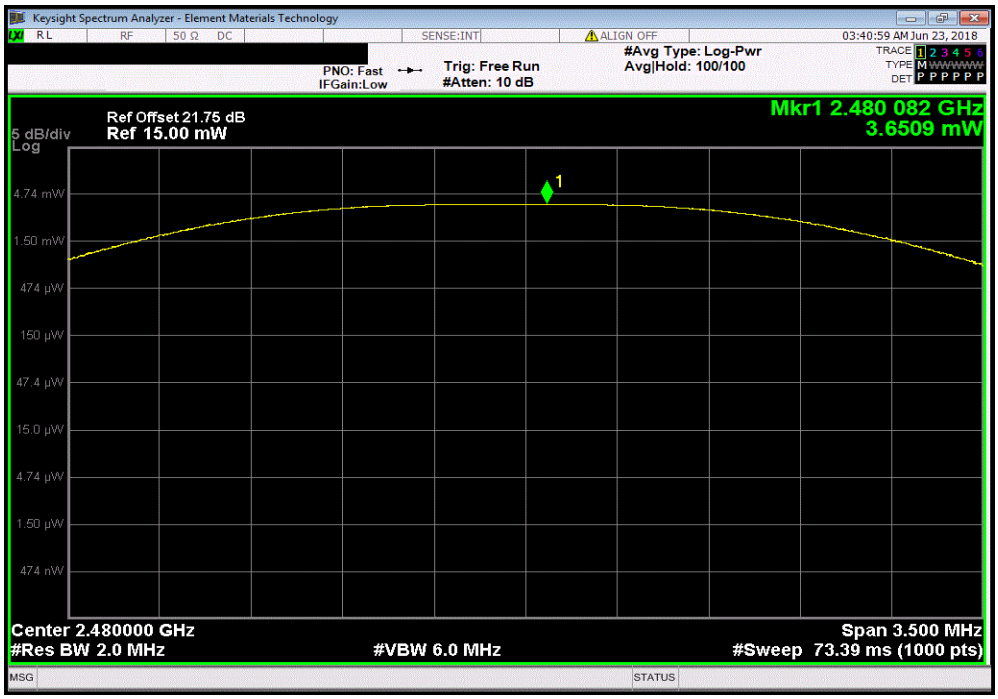
BLE/GFSK, 1 Mbps, BLE/GFSK Mid Channel, 2442 MHz						
				Value	Limit (<)	Result
				4.797 mW	1 W	Pass



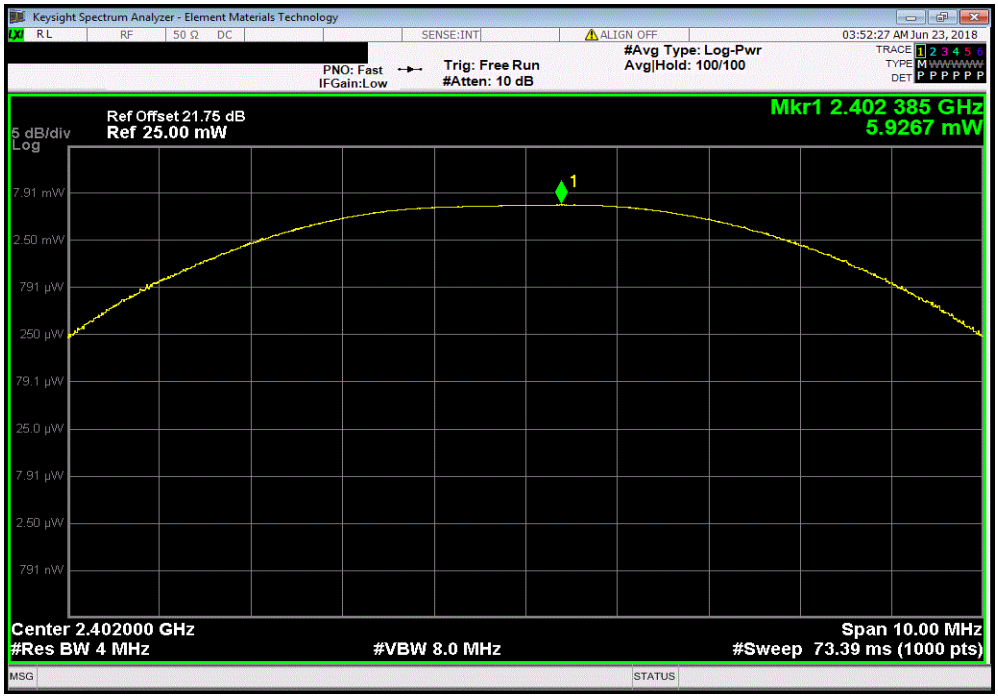
OUTPUT POWER

TbtTx 2017.12.14 XMit 2017.12.13

BLE/GFSK, 1 Mbps, BLE/GFSK High Channel, 2480 MHz						
				Value	Limit (<)	Result
				3.651 mW	1 W	Pass



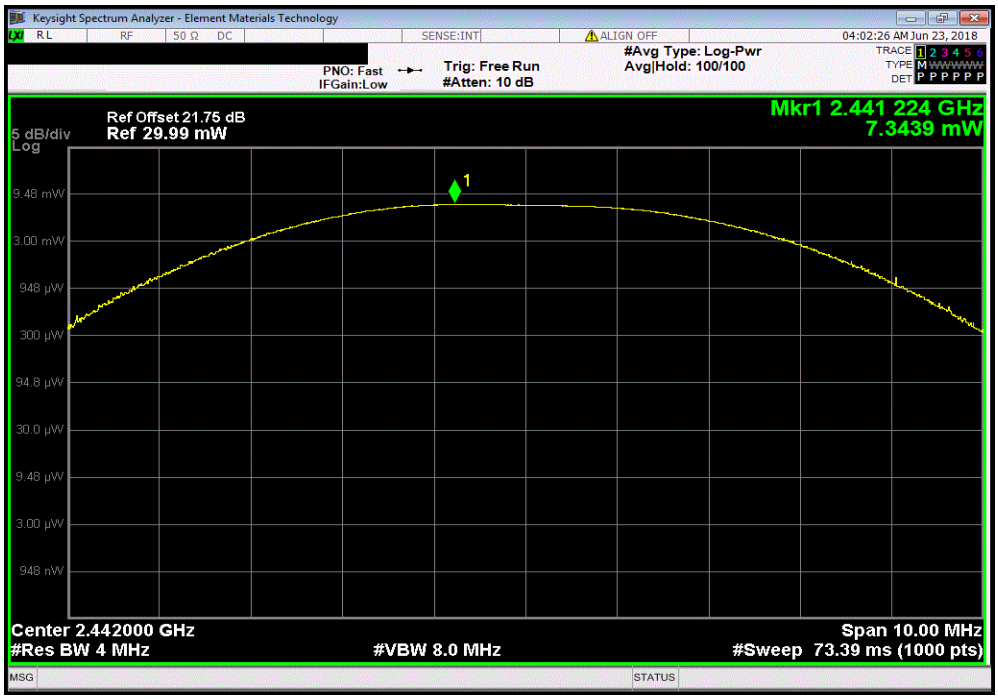
BLE/GFSK, 2 Mbps, BLE/GFSK Low Channel, 2402 MHz						
				Value	Limit (<)	Result
				5.927 mW	1 W	Pass



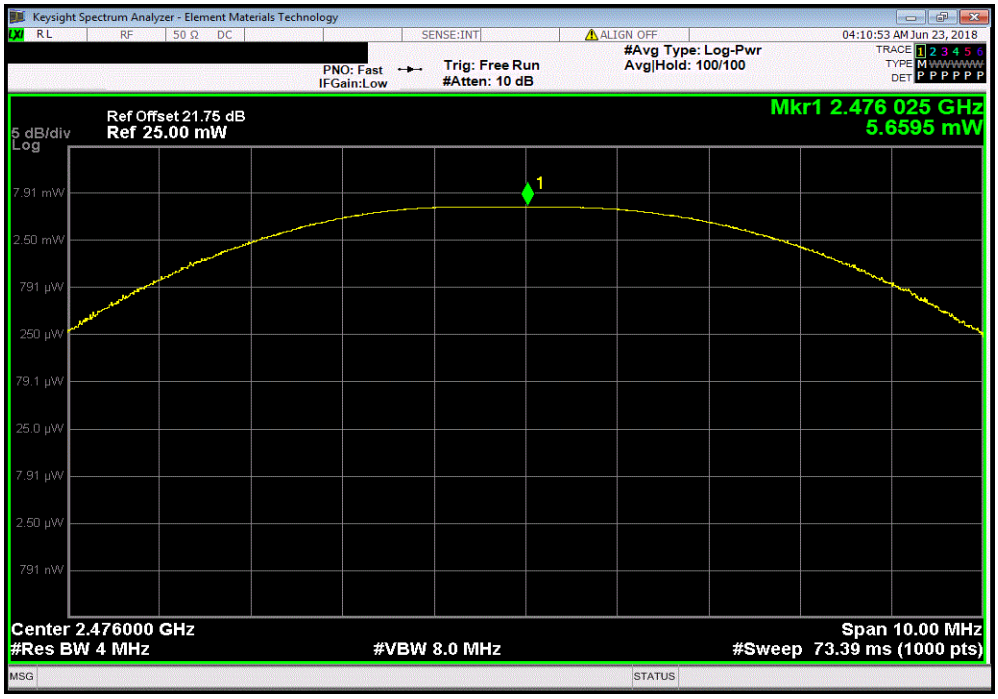
OUTPUT POWER

TbtTx 2017.12.14 XMit 2017.12.13

BLE/GFSK, 2 Mbps, BLE/GFSK Mid Channel, 2442 MHz						
				Value	Limit (<)	Result
				7.344 mW	1 W	Pass



BLE/GFSK, 2 Mbps, BLE/GFSK High Channel, 2480 MHz						
				Value	Limit (<)	Result
				5.66 mW	1 W	Pass



POWER SPECTRAL DENSITY

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 maximum power spectral density measurements was measured using the channels and modes as called out on the following data sheets.

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

POWER SPECTRAL DENSITY

TbtTx 2017.12.14 XMit 2017.12.13

EUT:	**Multi-Function Accessory**			**Work Order:**	**STAK0117**
Serial Number:	**182010052A**			**Date:**	**22-Jun-18**
Customer:	**Starkey Laboratories, Inc.**			**Temperature:**	**22.2 °C**
Attendees:	**Charlie Esch**			**Humidity:**	**54% RH**
Project:	**None**			**Barometric Pres.:**	**1015 mbar**
Tested by:	**Dustin Sparks**	**Power:**	**Battery**	**Job Site:**	**MN08**
TEST SPECIFICATIONS			**Test Method**		
FCC 15.247:2018			ANSI C63.10:2013		

COMMENTS

None

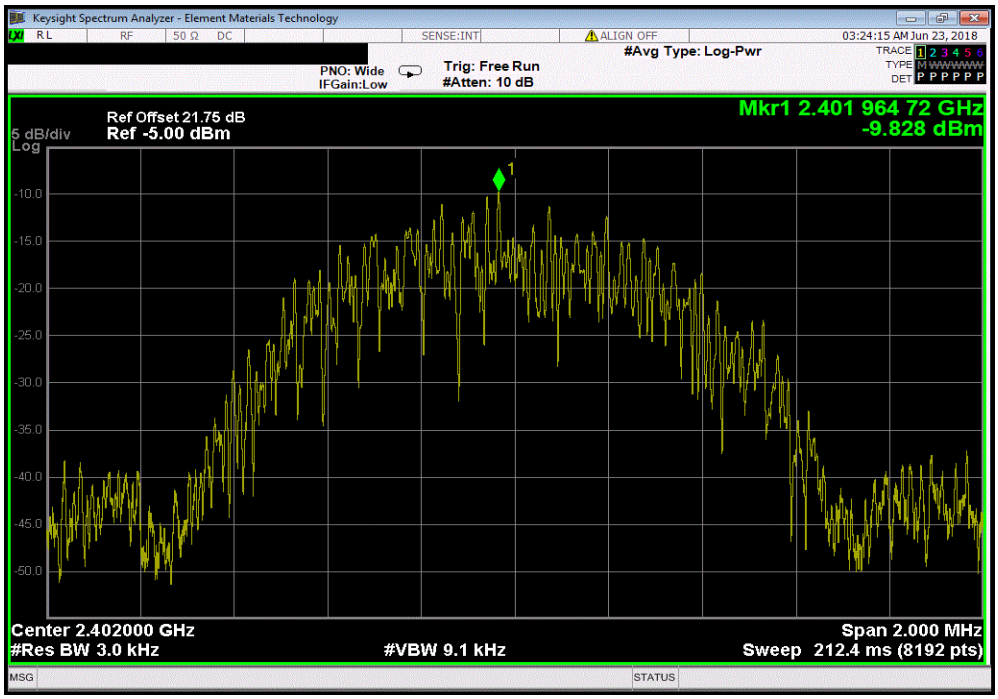
DEVIATIONS FROM TEST STANDARD

None

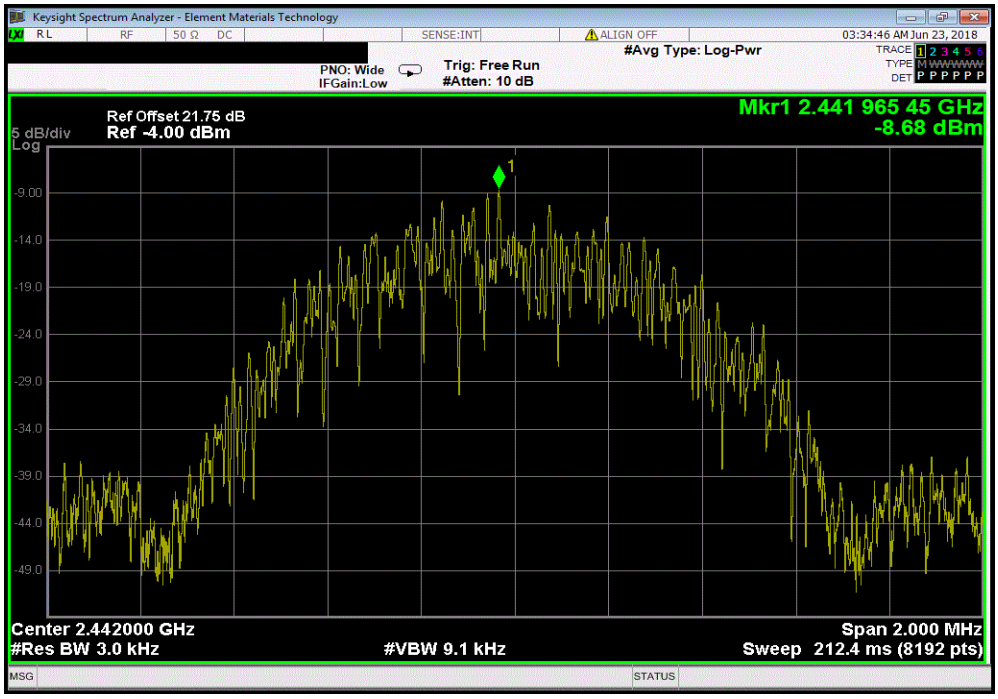
Configuration #	**4**	*Signature* Dustin Sparks

	Value dBm/3kHz	Limit < dBm/3kHz	Results
BLE/GFSK, 1 Mbps			
BLE/GFSK Low Channel, 2402 MHz	-9.828	8	Pass
BLE/GFSK Mid Channel, 2442 MHz	-8.684	8	Pass
BLE/GFSK High Channel, 2480 MHz	-9.88	8	Pass
BLE/GFSK, 2 Mbps			
BLE/GFSK Low Channel, 2402 MHz	-11.91	8	Pass
BLE/GFSK Mid Channel, 2442 MHz	-10.994	8	Pass
BLE/GFSK High Channel, 2480 MHz	-12.12	8	Pass

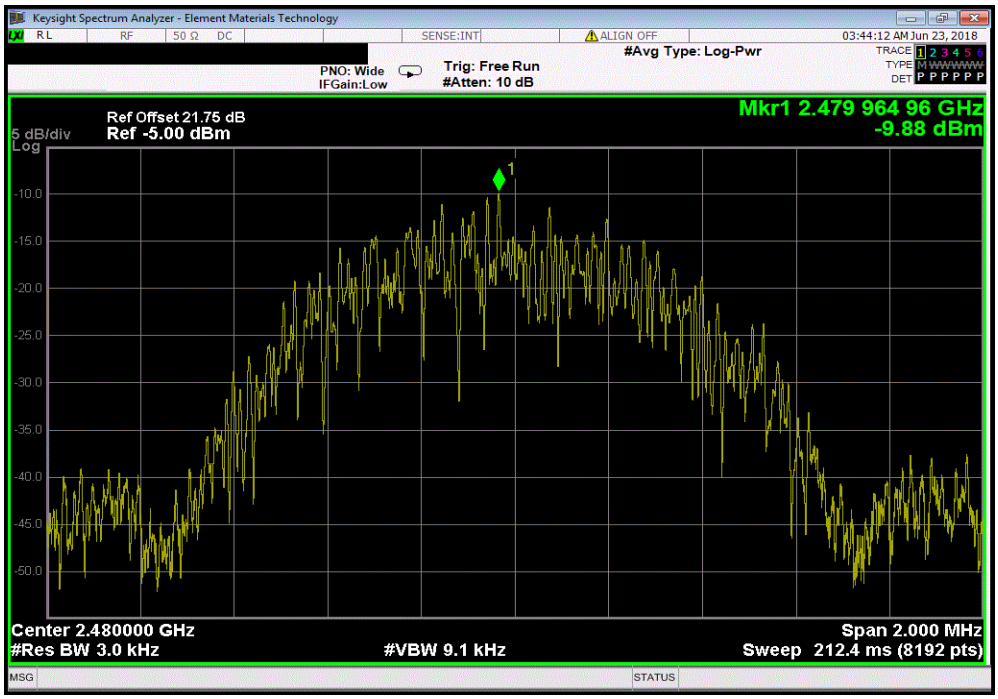
BLE/GFSK, 1 Mbps, BLE/GFSK Low Channel, 2402 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-9.828	8	Pass



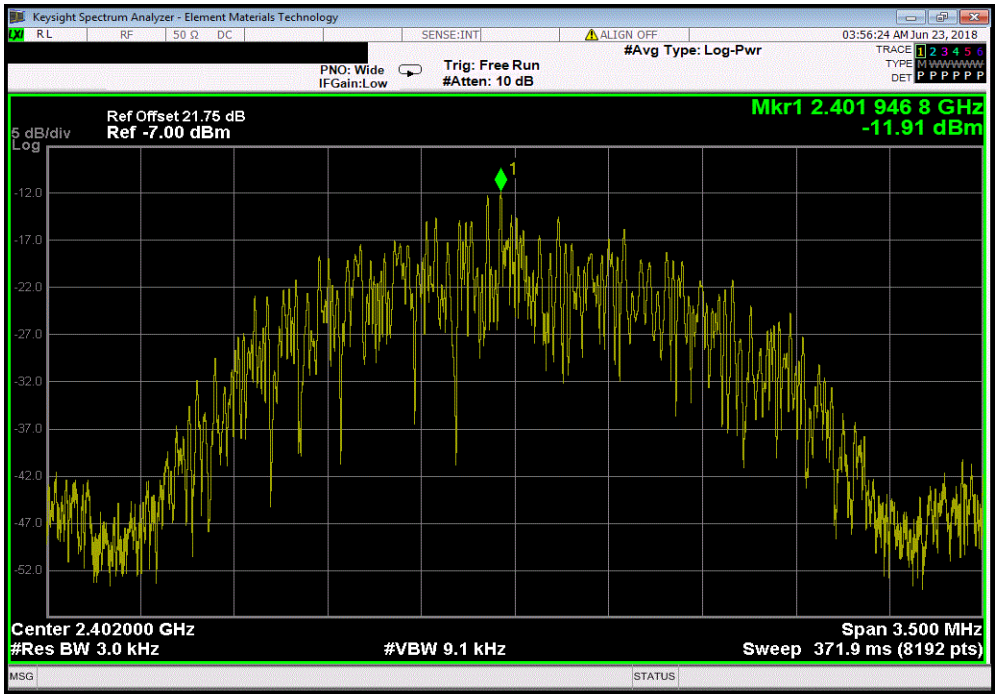
BLE/GFSK, 1 Mbps, BLE/GFSK Mid Channel, 2442 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-8.684	8	Pass



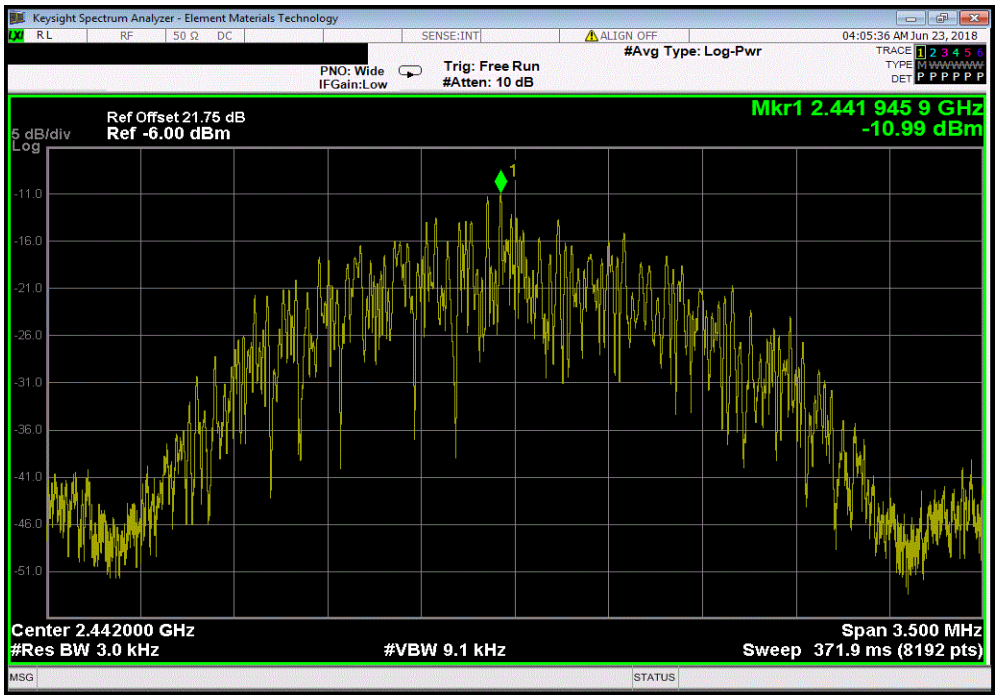
BLE/GFSK, 1 Mbps, BLE/GFSK High Channel, 2480 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-9.88	8	Pass



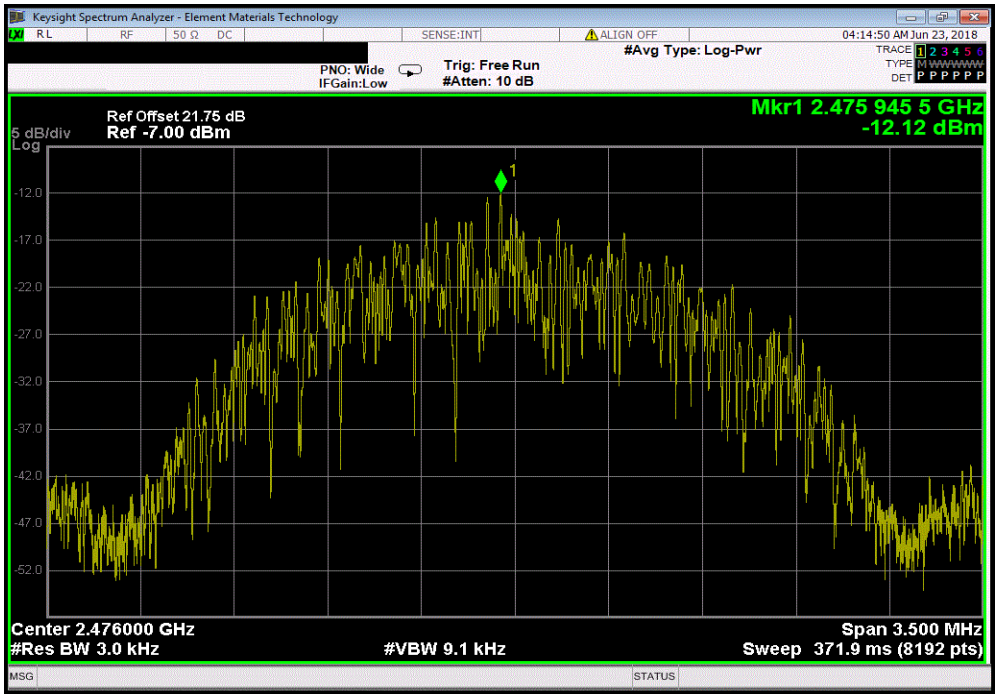
BLE/GFSK, 2 Mbps, BLE/GFSK Low Channel, 2402 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-11.91	8	Pass



BLE/GFSK, 2 Mbps, BLE/GFSK Mid Channel, 2442 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-10.994	8	Pass



BLE/GFSK, 2 Mbps, BLE/GFSK High Channel, 2480 MHz						
				Value dBm/3kHz	Limit < dBm/3kHz	Results
				-12.12	8	Pass



BAND EDGE COMPLIANCE

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 spurious RF conducted emissions at the edges of the authorized bands were measured with the EUT set to low and high transmit frequencies in each available band. The channels closest to the band edges were selected. The EUT was transmitting at the data rate(s) listed in the datasheet.

The spectrum was scanned below the lower band edge and above the higher band edge.

BAND EDGE COMPLIANCE

TbtTx 2017.12.14 XMit 2017.12.13

EUT:	**Multi-Function Accessory**			**Work Order:**	**STAK0117**
Serial Number:	**182010052A**			**Date:**	**22-Jun-18**
Customer:	**Starkey Laboratories, Inc.**			**Temperature:**	**22.1 °C**
Attendees:	**Charlie Esch**			**Humidity:**	**54% RH**
Project:	**None**			**Barometric Pres.:**	**1015 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

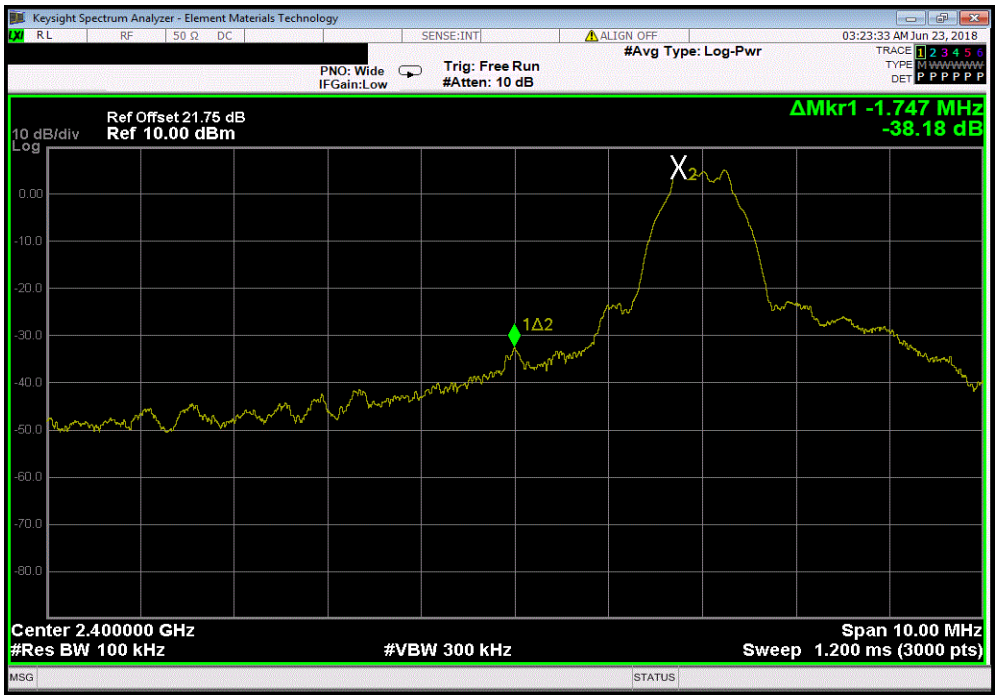
Configuration #	**4**	*Signature* Dustin Sparks

		Value (dBc)	**Limit ≤ (dBc)**	**Result**
BLE/GFSK, 1 Mbps				
	BLE/GFSK Low Channel, 2402 MHz	-38.18	-20	Pass
	BLE/GFSK High Channel, 2480 MHz	-45.05	-20	Pass
BLE/GFSK, 2 Mbps				
	BLE/GFSK Low Channel, 2402 MHz	-27.3	-20	Pass
	BLE/GFSK High Channel, 2480 MHz	-48.85	-20	Pass

BAND EDGE COMPLIANCE

TbtTx 2017.12.14 XMit 2017.12.13

BLE/GFSK, 1 Mbps, BLE/GFSK Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-38.18	-20	Pass

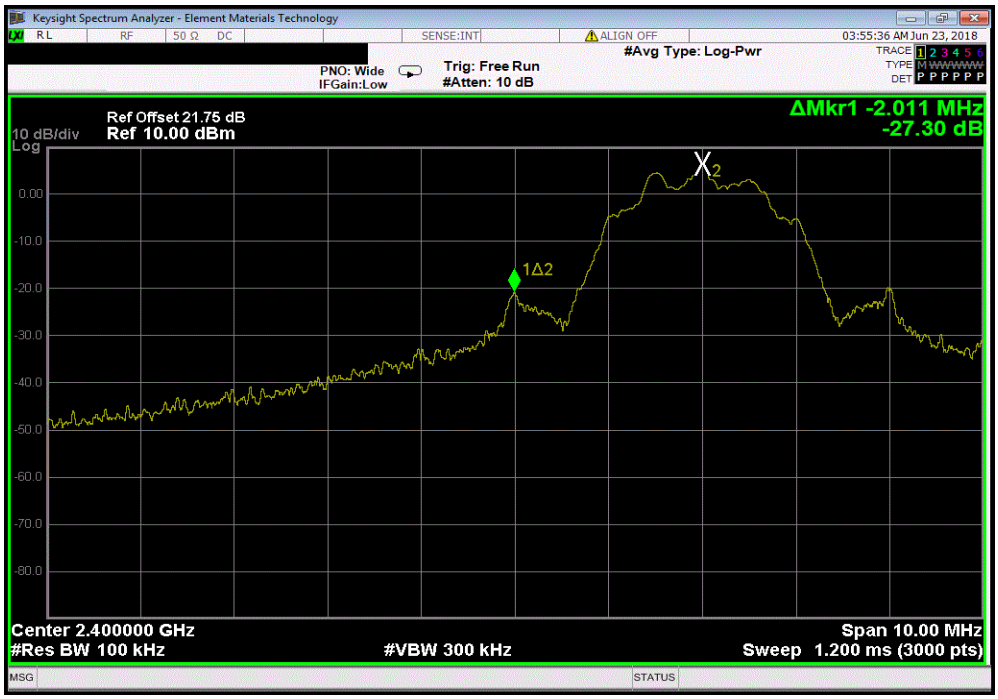


BLE/GFSK, 1 Mbps, BLE/GFSK High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-45.05	-20	Pass

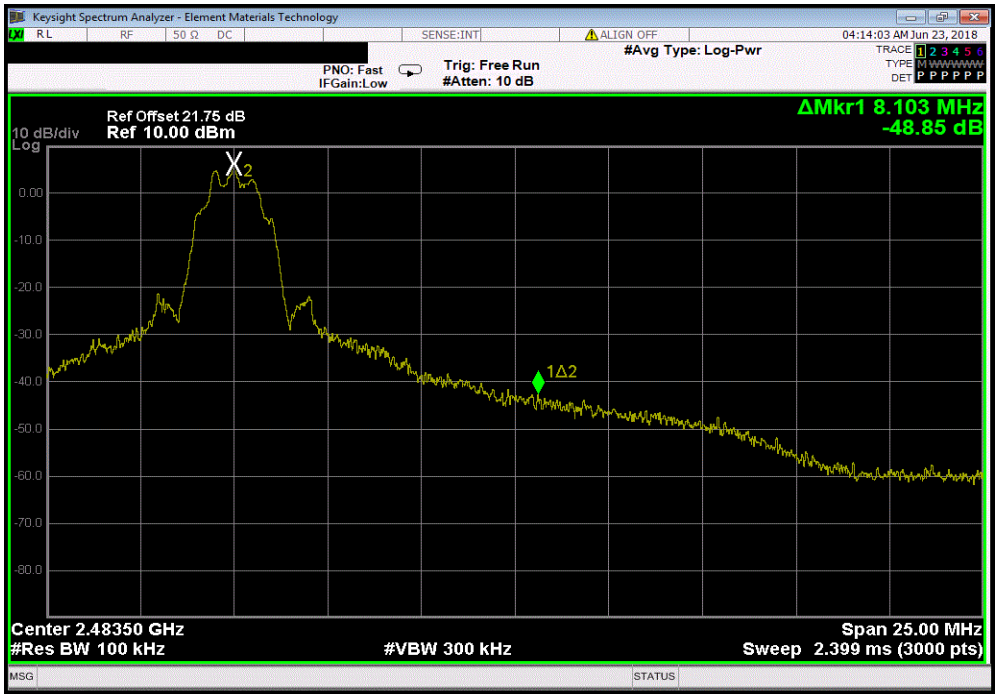
BAND EDGE COMPLIANCE

TbtTx 2017.12.14 XMit 2017.12.13

BLE/GFSK, 2 Mbps, BLE/GFSK Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-27.3	-20	Pass



BLE/GFSK, 2 Mbps, BLE/GFSK High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-48.85	-20	Pass



SPURIOUS CONDUCTED EMISSIONS

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 spurious RF conducted emissions were measured with the EUT set to low, medium and high transmit frequencies. The EUT was transmitting at the data rate(s) listed in the datasheet. For each transmit frequency, the spectrum was scanned throughout the specified frequency range.

SPURIOUS CONDUCTED EMISSIONS

TbtTx 2017.12.14 XMit 2017.12.13

EUT:	**Multi-Function Accessory**			**Work Order:**	**STAK0117**
Serial Number:	**182010052A**			**Date:**	**22-Jun-18**
Customer:	**Starkey Laboratories, Inc.**			**Temperature:**	**22.2 °C**
Attendees:	**Charlie Esch**			**Humidity:**	**54% RH**
Project:	**None**			**Barometric Pres.:**	**1015 mbar**
Tested by:	**Dustin Sparks**	**Power:**	**Battery**	**Job Site:**	**MN08**

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

COMMENTS

None

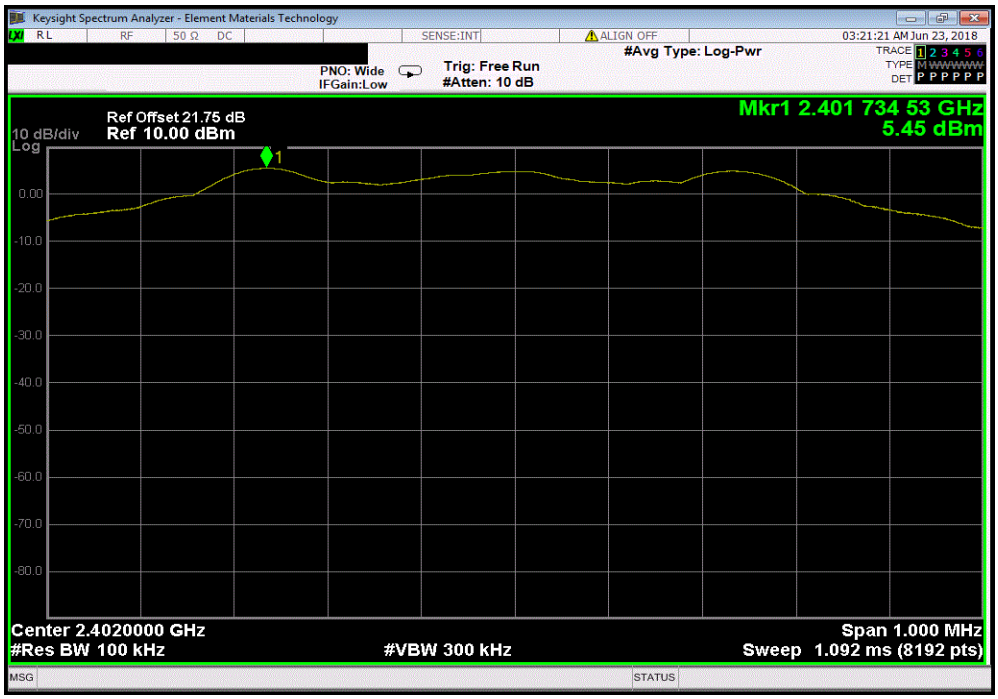
DEVIATIONS FROM TEST STANDARD

None

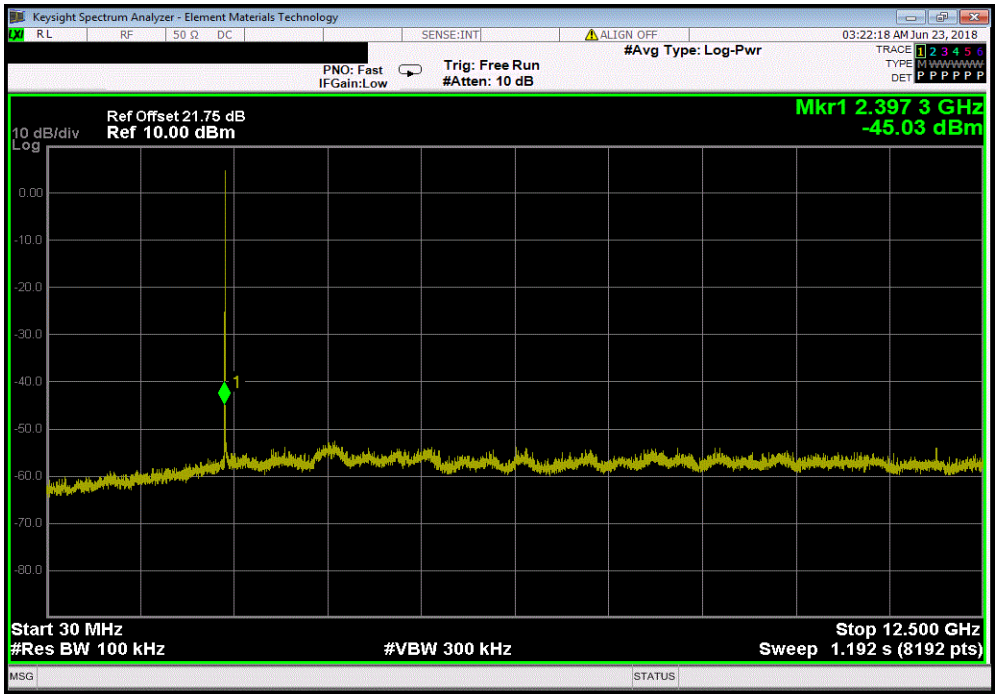
Configuration #	**4**	*Signature* Dustin Sparks

		Frequency Range	**Max Value (dBc)**	**Limit ≤ (dBc)**	**Result**
BLE/GFSK, 1 Mbps					
	BLE/GFSK Low Channel, 2402 MHz	Fundamental	N/A	N/A	N/A
	BLE/GFSK Low Channel, 2402 MHz	30 MHz - 12.5 GHz	-50.48	-20	Pass
	BLE/GFSK Low Channel, 2402 MHz	12.5 GHz - 25 GHz	-56.76	-20	Pass
	BLE/GFSK Mid Channel, 2442 MHz	Fundamental	N/A	N/A	N/A
	BLE/GFSK Mid Channel, 2442 MHz	30 MHz - 12.5 GHz	-59.12	-20	Pass
	BLE/GFSK Mid Channel, 2442 MHz	12.5 GHz - 25 GHz	-57.78	-20	Pass
	BLE/GFSK High Channel, 2480 MHz	Fundamental	N/A	N/A	N/A
	BLE/GFSK High Channel, 2480 MHz	30 MHz - 12.5 GHz	-53.45	-20	Pass
	BLE/GFSK High Channel, 2480 MHz	12.5 GHz - 25 GHz	-56.44	-20	Pass
BLE/GFSK, 2 Mbps					
	BLE/GFSK Low Channel, 2402 MHz	Fundamental	N/A	N/A	N/A
	BLE/GFSK Low Channel, 2402 MHz	30 MHz - 12.5 GHz	-46.68	-20	Pass
	BLE/GFSK Low Channel, 2402 MHz	12.5 GHz - 25 GHz	-57.18	-20	Pass
	BLE/GFSK Mid Channel, 2442 MHz	Fundamental	N/A	N/A	N/A
	BLE/GFSK Mid Channel, 2442 MHz	30 MHz - 12.5 GHz	-58.49	-20	Pass
	BLE/GFSK Mid Channel, 2442 MHz	12.5 GHz - 25 GHz	-58.76	-20	Pass
	BLE/GFSK High Channel, 2480 MHz	Fundamental	N/A	N/A	N/A
	BLE/GFSK High Channel, 2480 MHz	30 MHz - 12.5 GHz	-58.97	-20	Pass
	BLE/GFSK High Channel, 2480 MHz	12.5 GHz - 25 GHz	-56.78	-20	Pass

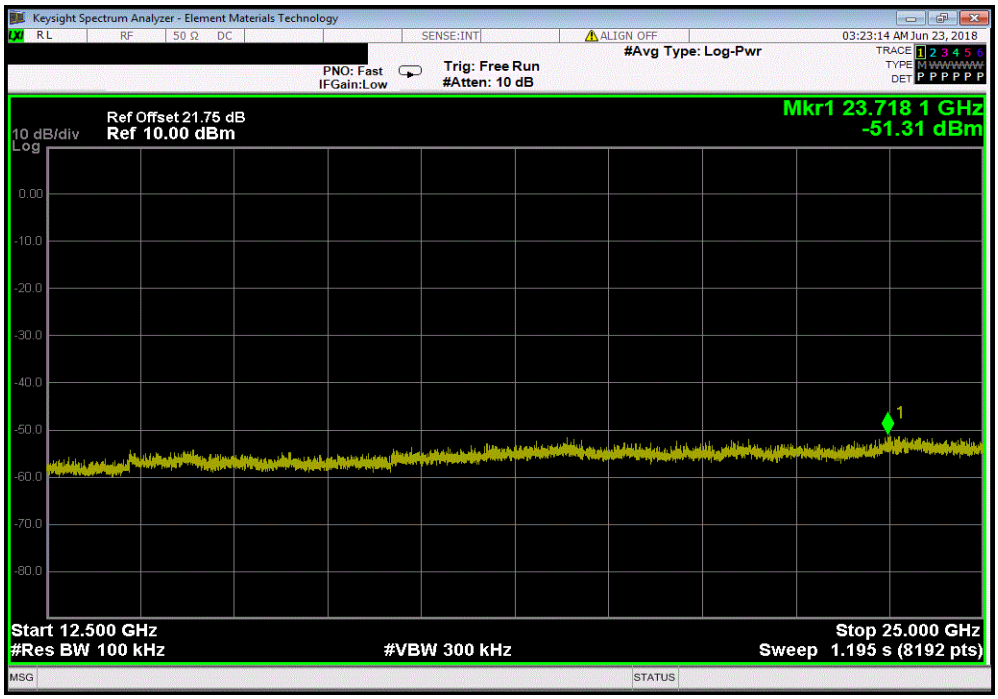
BLE/GFSK, 1 Mbps, BLE/GFSK Low Channel, 2402 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



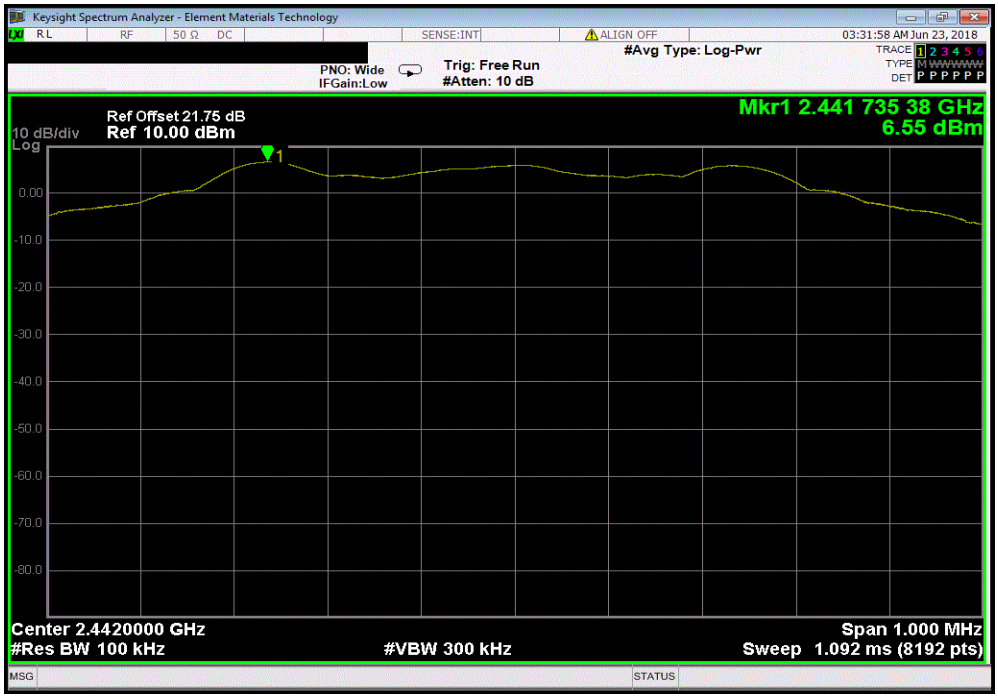
BLE/GFSK, 1 Mbps, BLE/GFSK Low Channel, 2402 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz			-50.48	-20	Pass



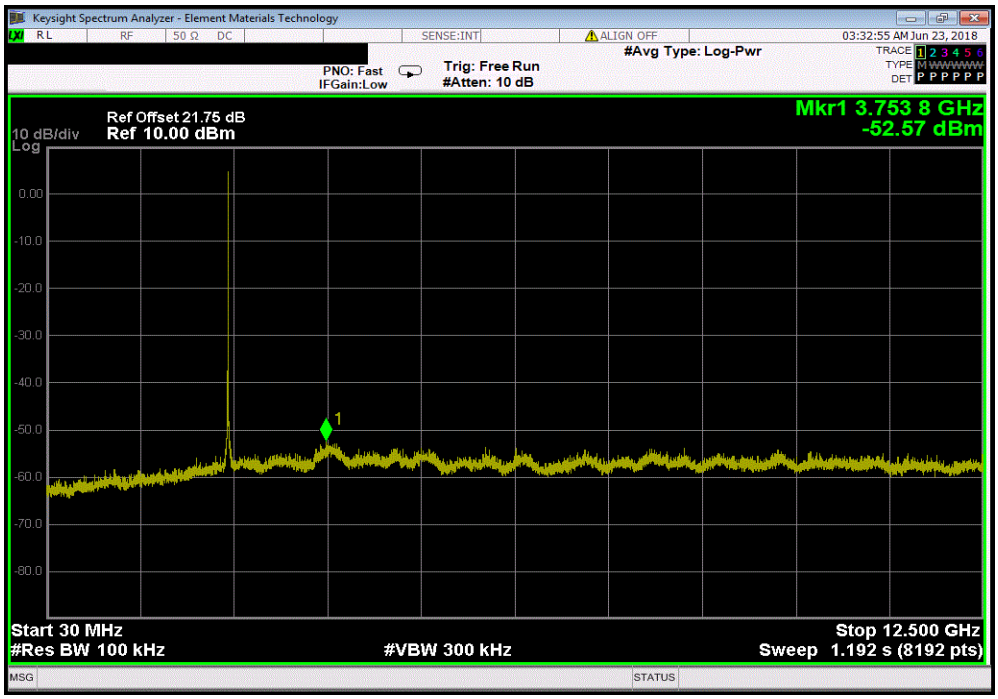
BLE/GFSK, 1 Mbps, BLE/GFSK Low Channel, 2402 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-56.76	-20	Pass



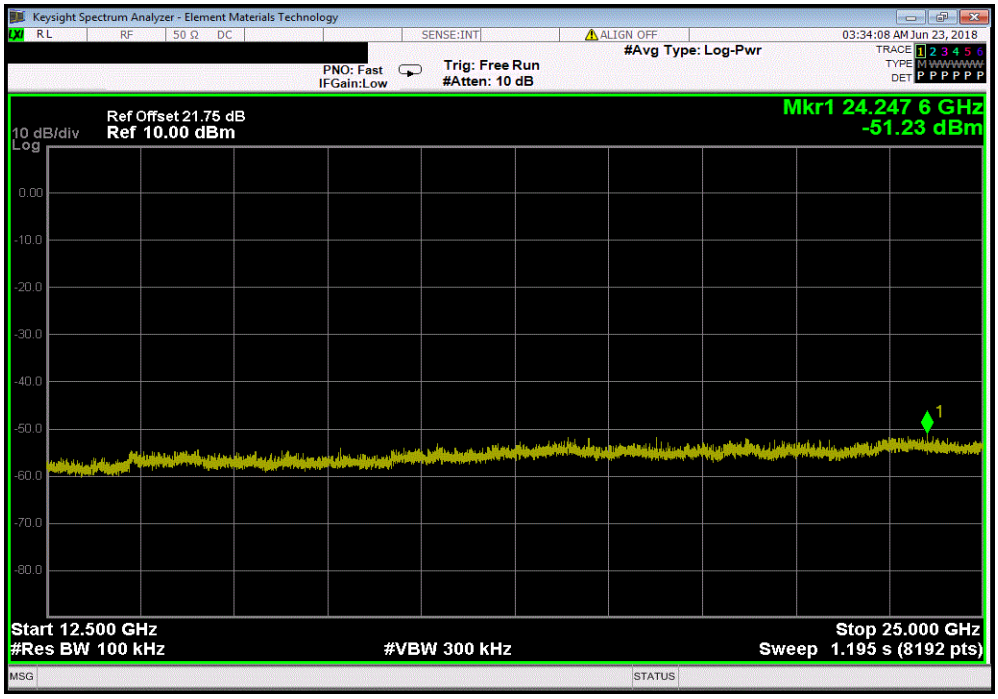
BLE/GFSK, 1 Mbps, BLE/GFSK Mid Channel, 2442 MHz						
Frequency Range				Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



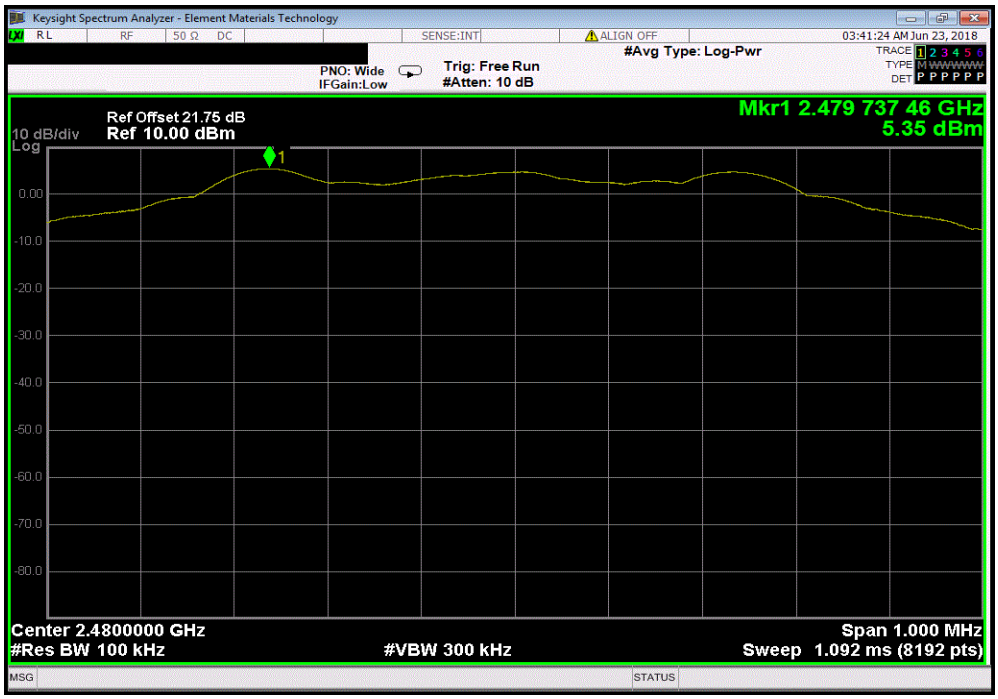
BLE/GFSK, 1 Mbps, BLE/GFSK Mid Channel, 2442 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz		-59.12	-20	Pass



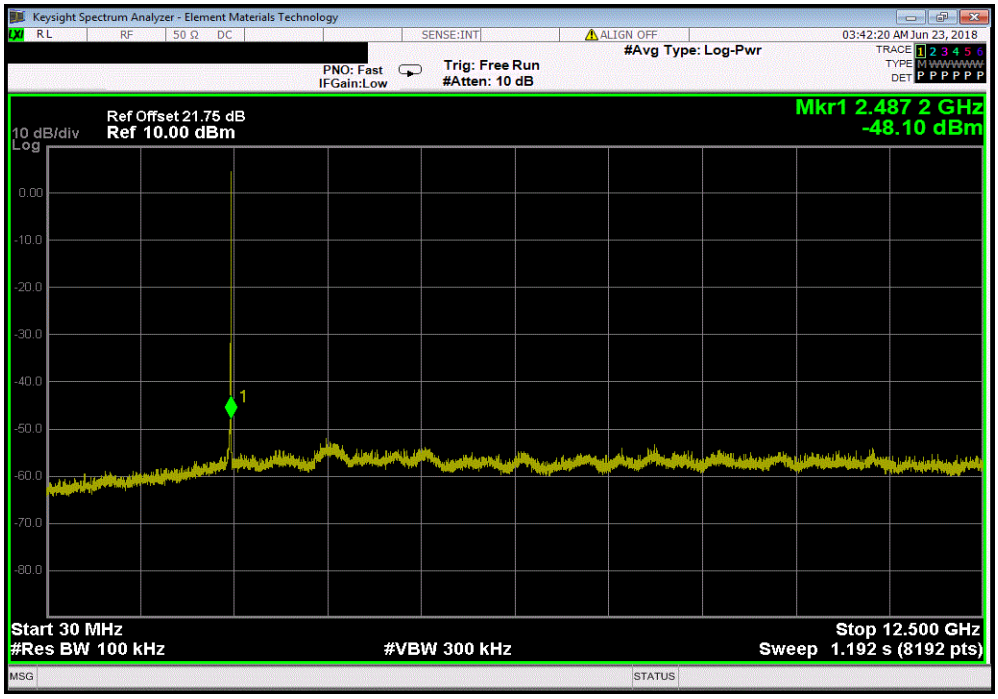
BLE/GFSK, 1 Mbps, BLE/GFSK Mid Channel, 2442 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-57.78	-20	Pass



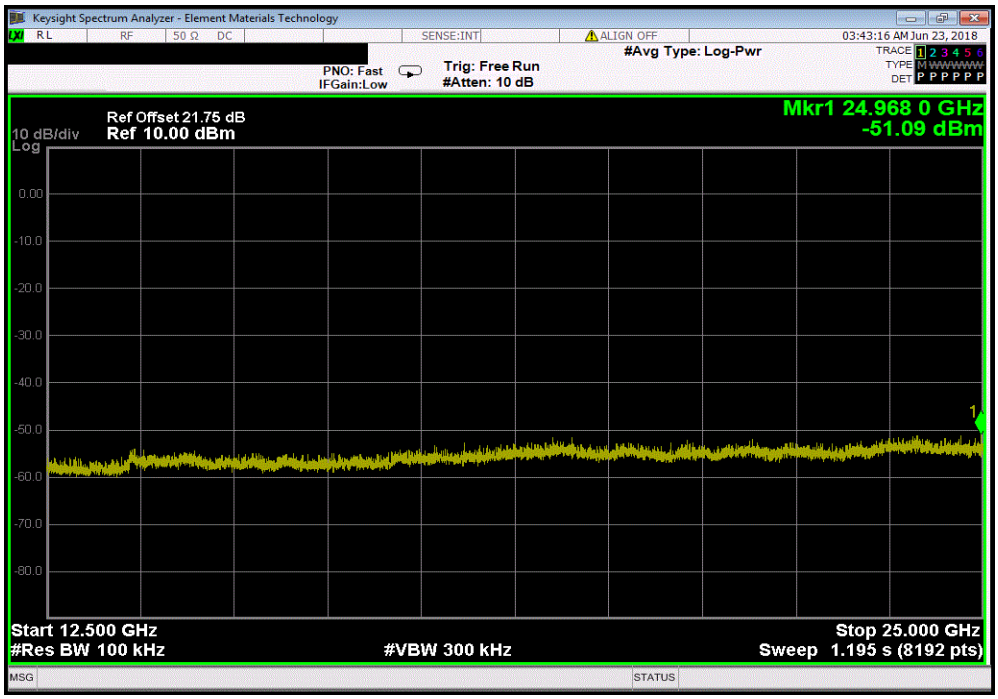
BLE/GFSK, 1 Mbps, BLE/GFSK High Channel, 2480 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



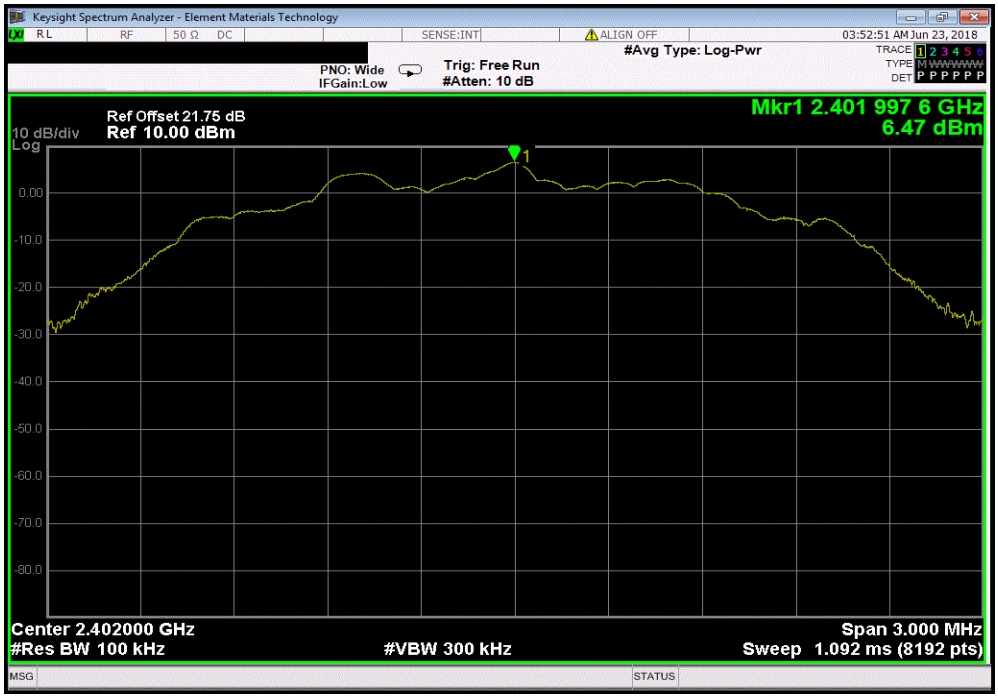
BLE/GFSK, 1 Mbps, BLE/GFSK High Channel, 2480 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz			-53.45	-20	Pass



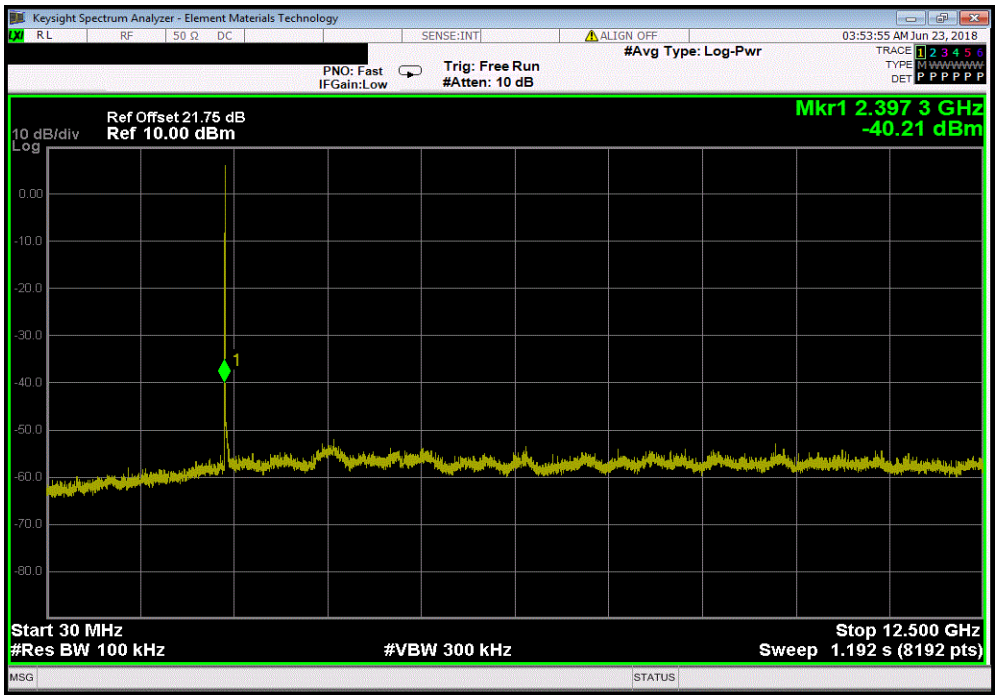
BLE/GFSK, 1 Mbps, BLE/GFSK High Channel, 2480 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-56.44	-20	Pass



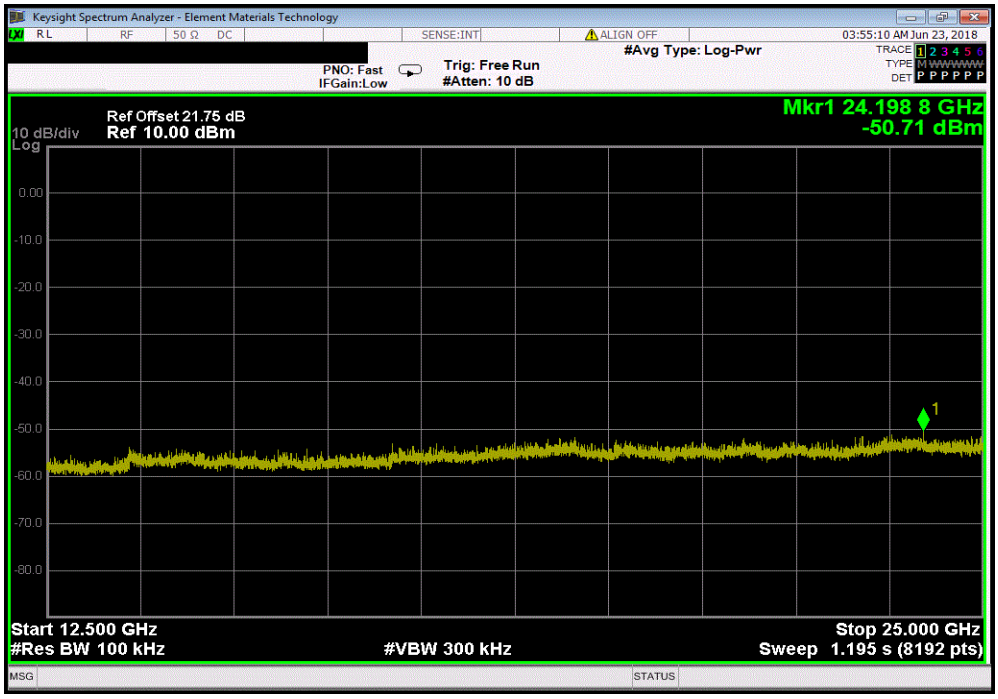
BLE/GFSK, 2 Mbps, BLE/GFSK Low Channel, 2402 MHz						
Frequency Range				Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



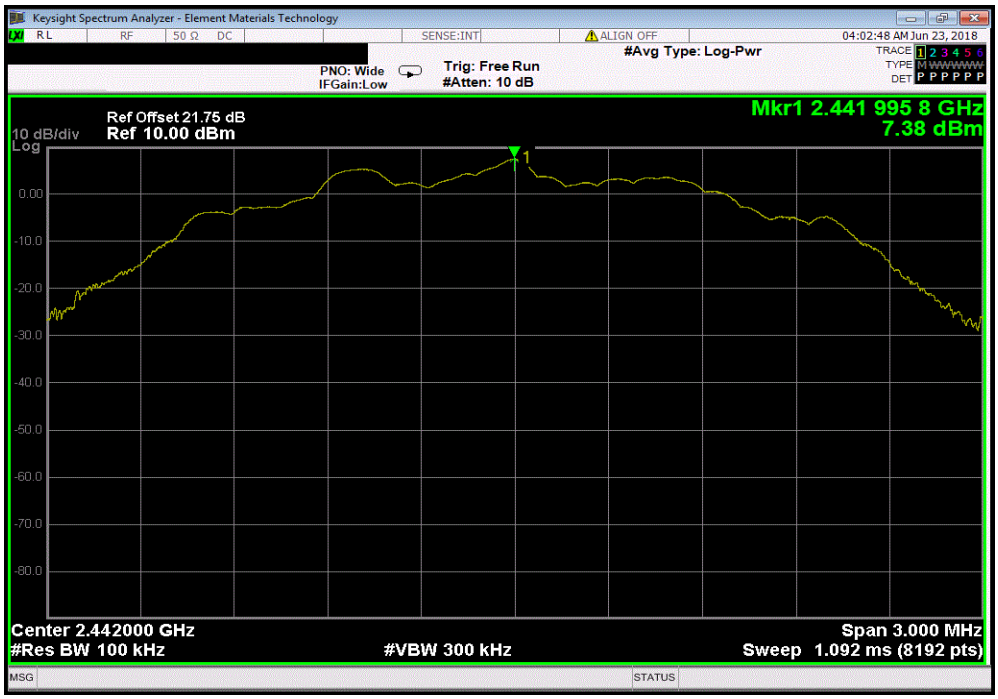
BLE/GFSK, 2 Mbps, BLE/GFSK Low Channel, 2402 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz		-46.68	-20	Pass



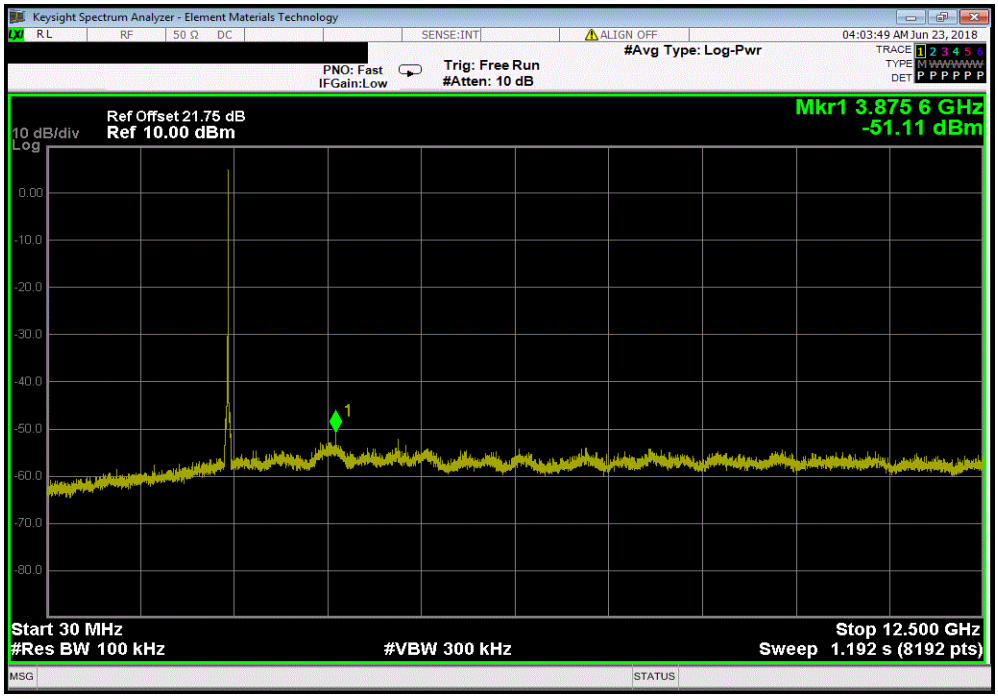
BLE/GFSK, 2 Mbps, BLE/GFSK Low Channel, 2402 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-57.18	-20	Pass



BLE/GFSK, 2 Mbps, BLE/GFSK Mid Channel, 2442 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



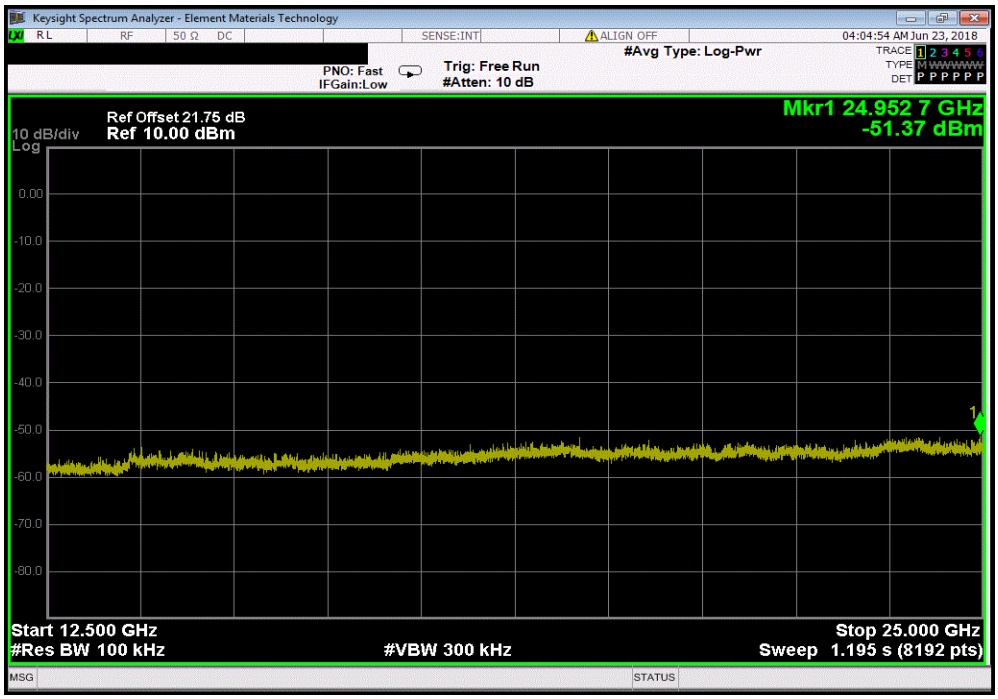
BLE/GFSK, 2 Mbps, BLE/GFSK Mid Channel, 2442 MHz					
Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz			-58.49	-20	Pass



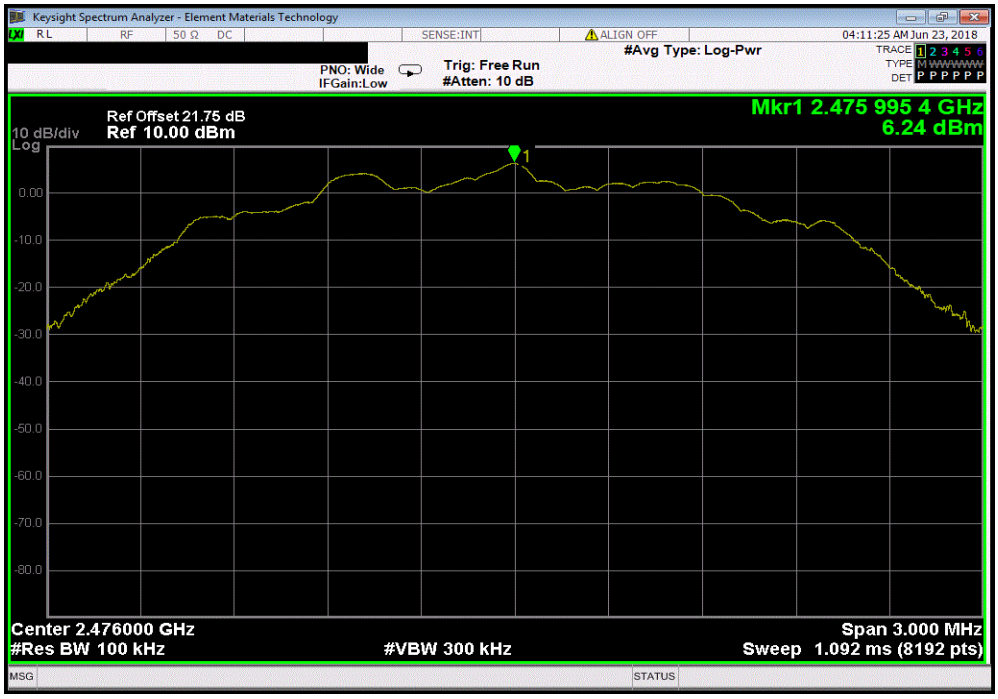
SPURIOUS CONDUCTED EMISSIONS

TbtTx 2017.12.14 XMit 2017.12.13

BLE/GFSK, 2 Mbps, BLE/GFSK Mid Channel, 2442 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-58.76	-20	Pass



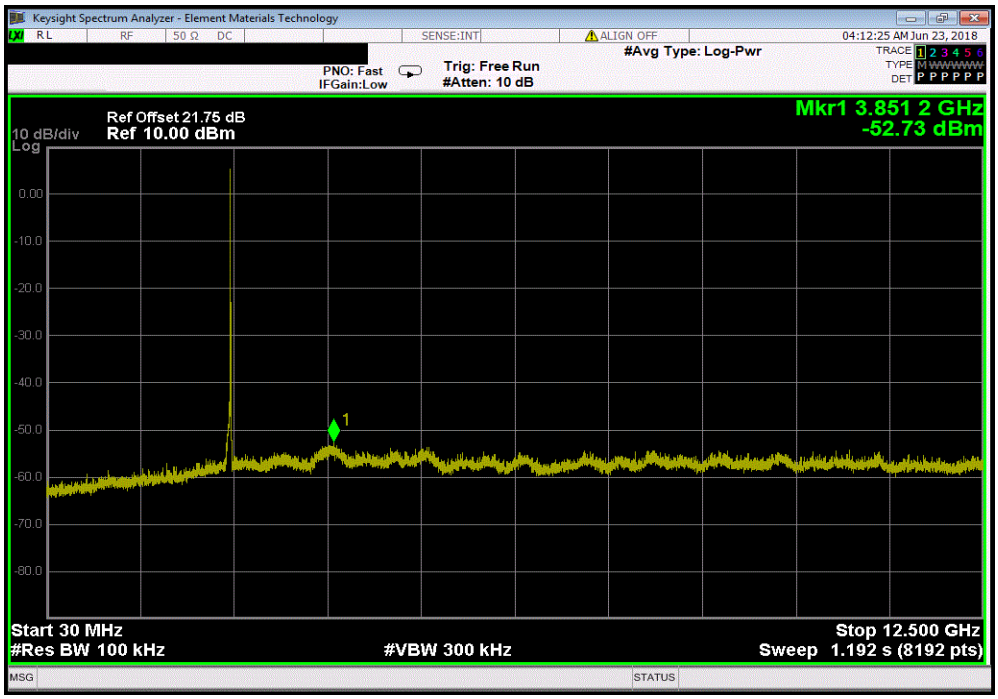
BLE/GFSK, 2 Mbps, BLE/GFSK High Channel, 2480 MHz						
	Frequency Range			Max Value (dBc)	Limit ≤ (dBc)	Result
	Fundamental			N/A	N/A	N/A



SPURIOUS CONDUCTED EMISSIONS

TbtTx 2017.12.14 XMit 2017.12.13

BLE/GFSK, 2 Mbps, BLE/GFSK High Channel, 2480 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
30 MHz - 12.5 GHz		-58.97	-20	Pass



BLE/GFSK, 2 Mbps, BLE/GFSK High Channel, 2480 MHz				
Frequency Range		Max Value (dBc)	Limit ≤ (dBc)	Result
12.5 GHz - 25 GHz		-56.78	-20	Pass