



Applicant: 荷商波士頓科技有限公司台灣分公司

Manufacturer: Boston Scientific Neuromodulation Corporation

Brand: Boston Scientific

Primary Model: DB-1432

Series Model: DB-1416

LP0002:2020

Bluetooth LE

Report: BOSN0155 Rev 1, Issue Date: February 3, 2022



NVLAP LAB CODE: 200676-0



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CERTIFICATE OF TEST

Last Date of Test: June 21, 2021
Boston Scientific Neuromodulation Corporation
EUT: DB-1432

Radio Equipment Testing

Standards

Specification	Method
LP0002:2020	LP0002:2020

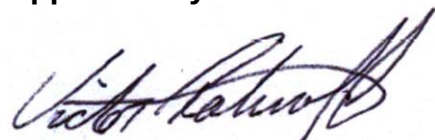
Results

Method Clause	Specification Clause	Test Description	Applied	Results	Comments
Appendix I, II.(II)	3.3	Powerline Conducted Emissions	No	N/A	Not required for a battery powered EUT.
N/A	4.10.1.2 (C)	Duty Cycle	Yes	N/A	
Appendix II, I	4.10.1.6 (2)(A)	Occupied Bandwidth	Yes	Pass	
Appendix II, II	4.10.1.2 (C)	Output Power	Yes	Pass	
Appendix II, II	4.10.1.3 (3)	Equivalent Isotropic Radiated Power	Yes	Pass	
Appendix II, IIV	4.10.1.6 (2)(B)	Power Spectral Density	Yes	Pass	
Appendix II, III, 1	4.10.1.5	Band Edge Compliance	Yes	Pass	
Appendix II, III, 1	4.10.1.5	Spurious Conducted Emissions	Yes	Pass	
Appendix II, III, 2 / Appendix I, II.(IV)	3.5, 3.6, 4.10.1.5	Spurious Radiated Emissions	Yes	Pass	

Deviations From Test Standards

None

Approved By:



Victor Ratnoff, Operations Manager

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information. As indicated in the Statement of Work sent with the quotation, Element's standard process is to always use the latest published version of the test methods even when earlier versions are cited in the test specification. Issuance of a purchase order was de facto acceptance of this approach. Otherwise, the client would have advised Element in writing of the specific version of the test methods they wanted applied to the subject testing.

REVISION HISTORY



Revision Number	Description	Date (yyyy-mm-dd)	Page Number
01	Changed company name to Boston Scientific Neuromodulation Corporation	2022-02-01	Various
01	Added 荷商波士頓科技有限公司台灣分公司 as the Applicant Name	2022-02-01	1

ACCREDITATIONS AND AUTHORIZATIONS



United States

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

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

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

ISED - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB) and as a CAB for the acceptance of test data.

European Union

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

United Kingdom

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

Australia/New Zealand

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

Korea

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

Japan

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

Taiwan

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

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

Singapore

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

Israel

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

Hong Kong

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

Vietnam

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

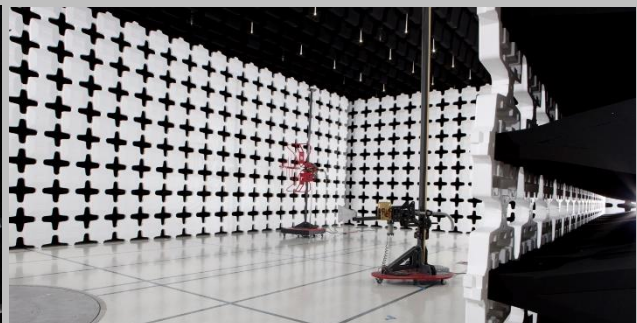
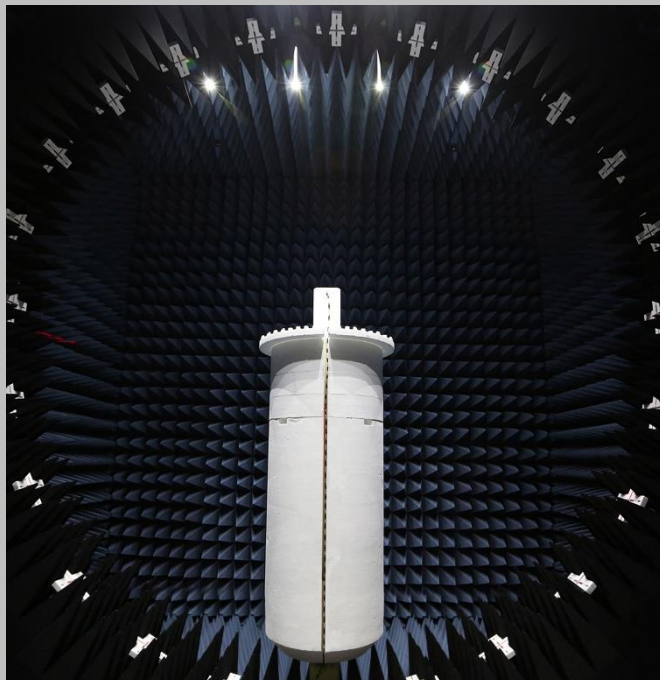
SCOPE

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

FACILITIES



California Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Minnesota Labs MN01-11 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Oregon Labs EV01-12 6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	Texas Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Washington Labs NC01-05 19201 120 th Ave NE Bothell, WA 98011 (425)984-6600
NVLAP				
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
Innovation, Science and Economic Development Canada				
2834B-1, 2834B-3	2834E-1, 2834E-3	2834D-1	2834G-1	2834F-1
BSMI				
SL2-IN-E-1154R	SL2-IN-E-1152R	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI				
A-0029	A-0109	A-0108	A-0201	A-0110
Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA				
US0158	US0175	US0017	US0191	US0157



MEASUREMENT UNCERTAINTY



Measurement Uncertainty

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

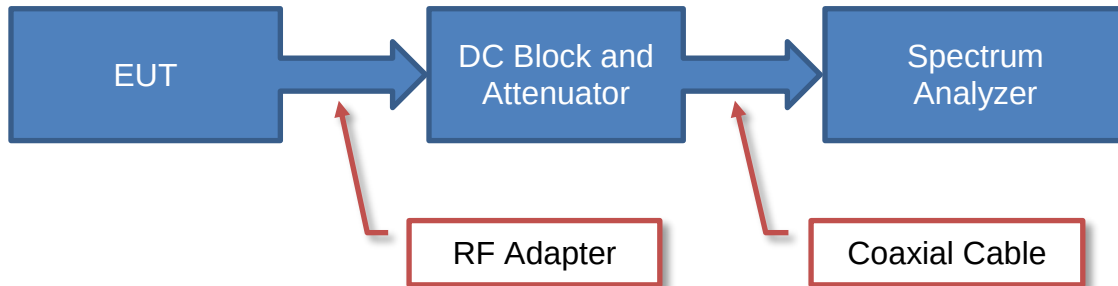
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found in the table below. A lab specific value may also be found in the applicable test description section. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable), and are available upon request.

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

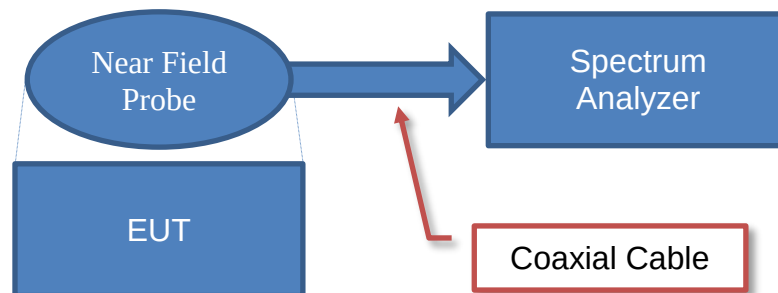
Test	+ MU	- MU
Frequency Accuracy	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	1.2 dB	-1.2 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.2 dB	-5.2 dB
AC Powerline Conducted Emissions (dB)	2.6 dB	-2.6 dB

TEST SETUP BLOCK DIAGRAMS

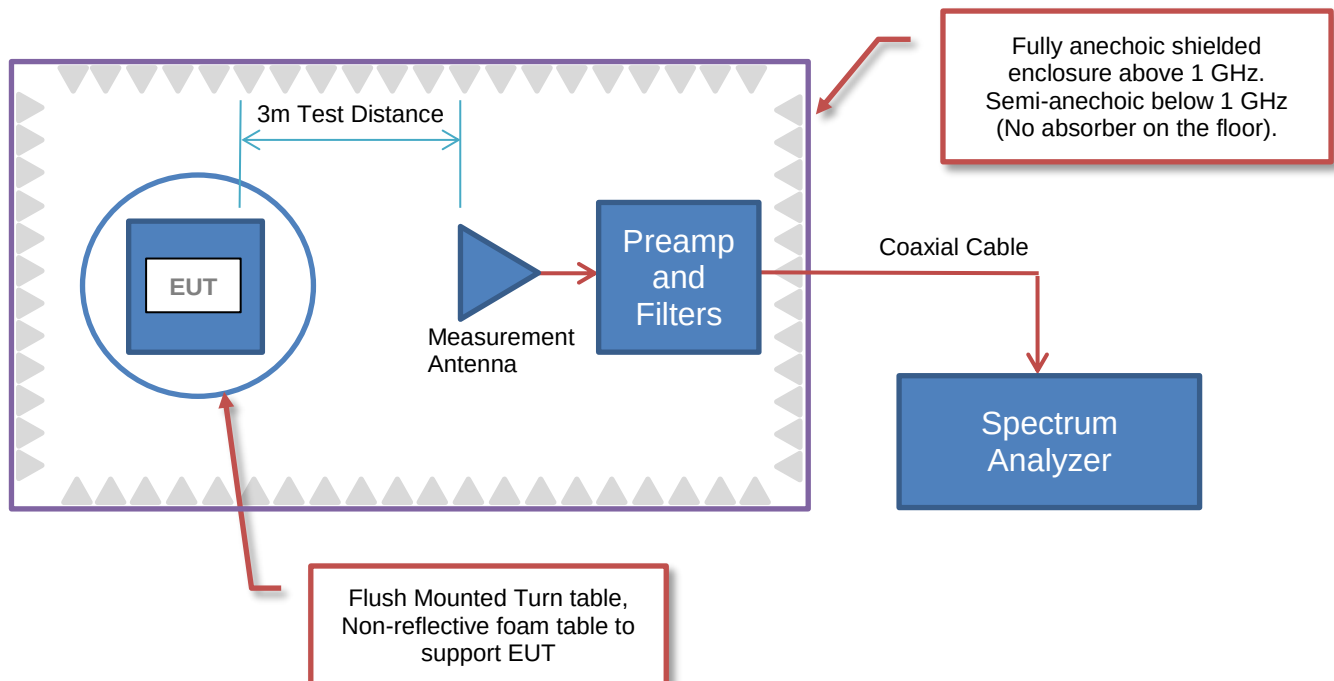
Antenna Port Conducted Measurements



Near Field Test Fixture Measurements



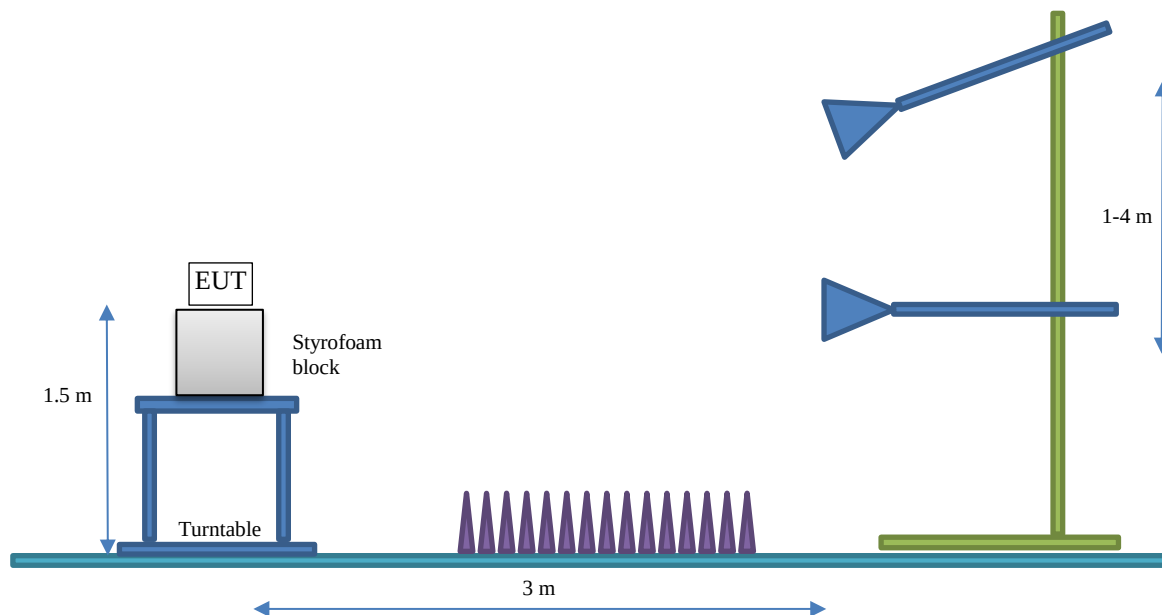
Spurious Radiated Emissions



TEST SETUP BLOCK DIAGRAMS

Bore Sighting (>1GHz)

The diameter of the illumination area is the dimension of the line tangent to the EUT formed by 3 dB beamwidth of the measurement antenna at the measurement distance. At a 3 meter test distance, the diameter of the illumination area was 3.8 meters at 1 GHz and greater than 2.1 meters up to 6 GHz. Above 1 GHz, when required by the measurement standard, the antenna is pointed for both azimuth and elevation to maintain the receive antenna within the cone of radiation from the EUT. The specified measurement detectors were used for comparison of the emissions to the peak and average specification limits.



PRODUCT DESCRIPTION



Client and Equipment Under Test (EUT) Information

Company Name:	Boston Scientific Neuromodulation
Address:	25155 Rye Canyon Loop
City, State, Zip:	Valencia, CA 91355
Test Requested By:	Brian Wang
Brand:	Boston Scientific
Primary Model:	DB-1432
Series Model:	DB-1416
First Date of Test:	June 18, 2021
Last Date of Test:	June 21, 2021
Receipt Date of Samples:	June 18, 2021
Equipment Design Stage:	Production
Equipment Condition:	No damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:

Bluetooth radio with 1 antenna

Client Provided Information:

Blink 32-IPG is the internal project name and it refers to Product Name Vercise Genus P32 IPG. The Model Name is DB-1432.

Testing Objective:

To demonstrate compliance of the Bluetooth radio to LP0002 requirements.

Model Equivalency:

Testing performed on Model DB-1432 is representative of Model DB-1416. The only differences between the two models are the number of contacts and the header size, everything else is the same.

CONFIGURATIONS



Configuration BOSN0155- 5

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Vercise Genus P32 IPG	Boston Scientific Neuromodulation Corporation	DB-1432	76749284
Power Source	7.5Ah Primary Cell, 3V		
Antenna Details	Boston Scientific Proprietary Modified Inverted F Antenna, Model 91108337 Rev. C; Gain: 0.17 dBi		

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
RC5 (Support)	Boston Scientific Neuromodulation Corporation	7095920-007	343672

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Cables	No	0.8m	No	EUT	DC Power Supply
AC Cable	No	1.8m	No	AC Mains	DC Power Supply
USB Cable	Yes	1.8m	Yes	AC Mains	RC5

Configuration BOSN0155- 7

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Vercise Genus P32 IPG	Boston Scientific Neuromodulation Corporation	DB-1432	101041
Power Source	7.5Ah Primary Cell, 3V		
Antenna Details	Boston Scientific Proprietary Modified Inverted F Antenna, Model 91108337 Rev. C; Gain: 0.17 dBi		

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Lead Extensions	Boston Scientific Neuromodulation Corporation	DB-3216-95	3219381
Lead Extensions	Boston Scientific Neuromodulation Corporation	DB-3216-95	3219465
Stimulation Leads	Boston Scientific Neuromodulation Corporation	DB2203-45	3219340
Stimulation Leads	Boston Scientific Neuromodulation Corporation	DB2203-45	3219342

MODIFICATIONS



Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2021-06-18	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
2	2021-06-18	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	2021-06-18	Equivalent Isotropic Radiated Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
4	2021-06-18	Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
5	2021-06-18	Band Edge Compliance	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
6	2021-06-18	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
7	2021-06-21	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

POWER SETTINGS AND ANTENNA GAIN



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

SETTINGS FOR ALL TESTS IN THIS REPORT

Type	Frequency (MHz)	Power Setting
Other Wideband (DTS)	2402	5 dBm
	2440	5 dBm
	2480	5 dBm

ANTENNA GAIN (dBi)

Type	Provided by:	Frequency (MHz)	Gain (dBi)
Inverted-F Monopole	Manufacturer	2402	0.17
		2440	0.17
		2480	0.17

DUTY CYCLE



XMR 2020.12.30.0

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Meter - Multimeter	Fluke	179	MBB	2021-03-05	2024-03-05
Power Supply - DC	Agilent	E3648A	TPE	NCR	NCR
Cable	Micro-Coax	UFD150A-1-0720-200200	OCA	2021-04-27	2022-04-27
Attenuator	Fairview Microwave	SA18H-20	TKR	2020-12-18	2021-12-18
Block - DC	Aeroflex	INMET 8535	AMO	2021-02-22	2022-02-22
Generator - Signal	Agilent	E8257D	TGU	2020-11-03	2023-11-03
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	2020-07-09	2021-07-09

TEST DESCRIPTION

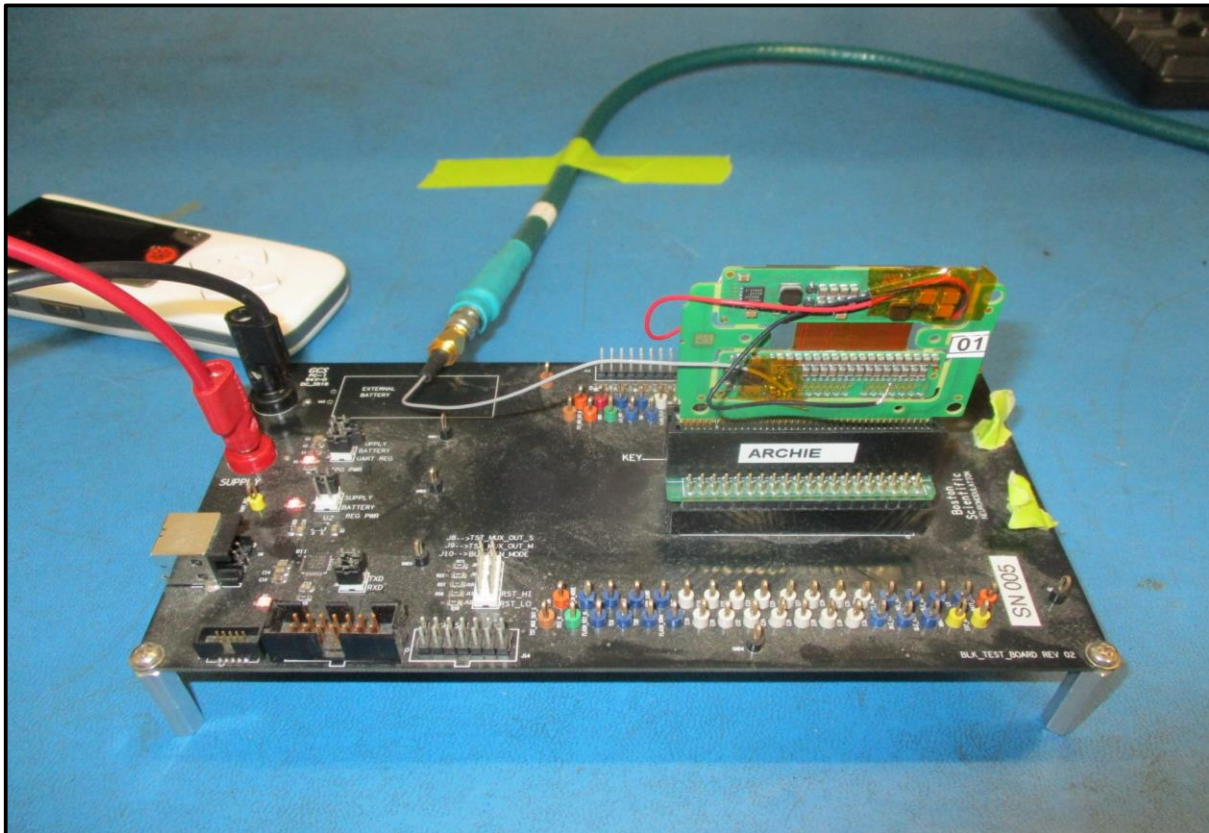
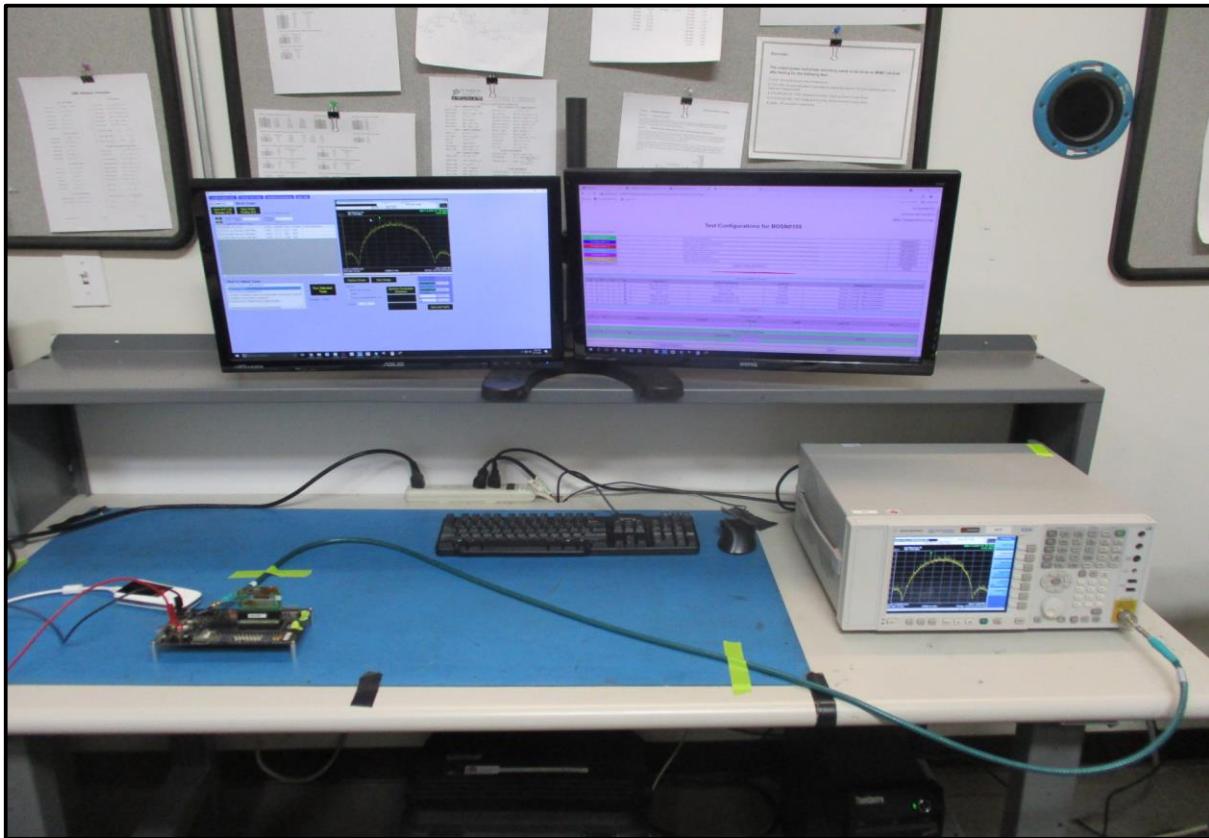
The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was measured for each of the EUT operating modes.

There is no compliance requirement to be met by this test, so therefore no Pass / Fail criteria.

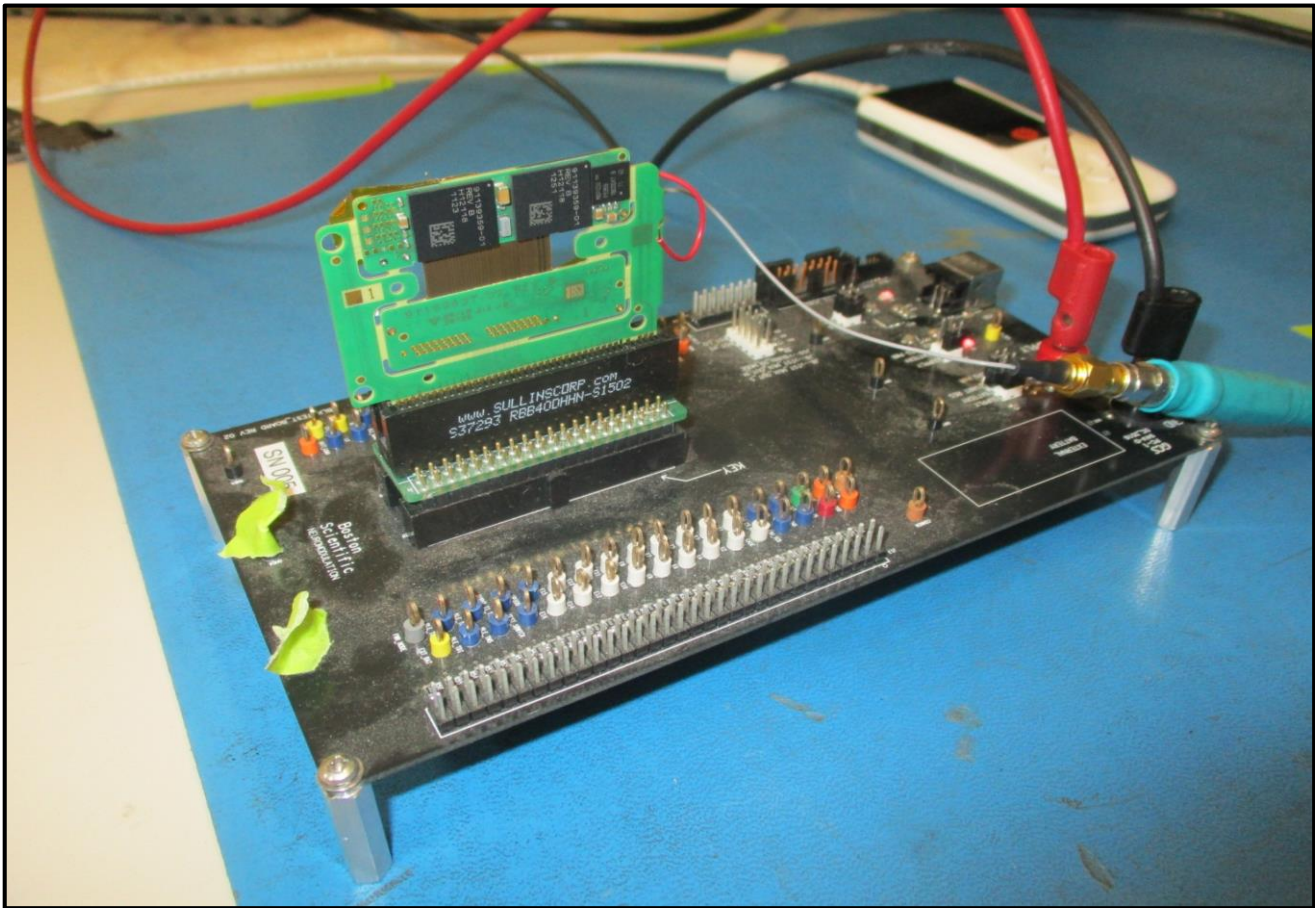
The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum.

The test software provided for operation in a fixed, single channel mode allows the EUT to operate continuously at 100% Duty Cycle.

DUTY CYCLE



DUTY CYCLE



OCCUPIED BANDWIDTH

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Meter - Multimeter	Fluke	179	MBB	2021-03-05	2024-03-05
Power Supply - DC	Agilent	E3648A	TPE	NCR	NCR
Cable	Micro-Coax	UFD150A-1-0720-200200	OCA	2021-04-27	2022-04-27
Block - DC	Aeroflex	INMET 8535	AMO	2021-02-22	2022-02-22
Attenuator	Fairview Microwave	SA18H-20	TKR	2020-12-18	2021-12-18
Generator - Signal	Agilent	E8257D	TGU	2020-11-03	2023-11-03
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	2020-07-09	2021-07-09

TEST DESCRIPTION

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



TbTb 2021.03.19.1 XMR 2020.12.30.0

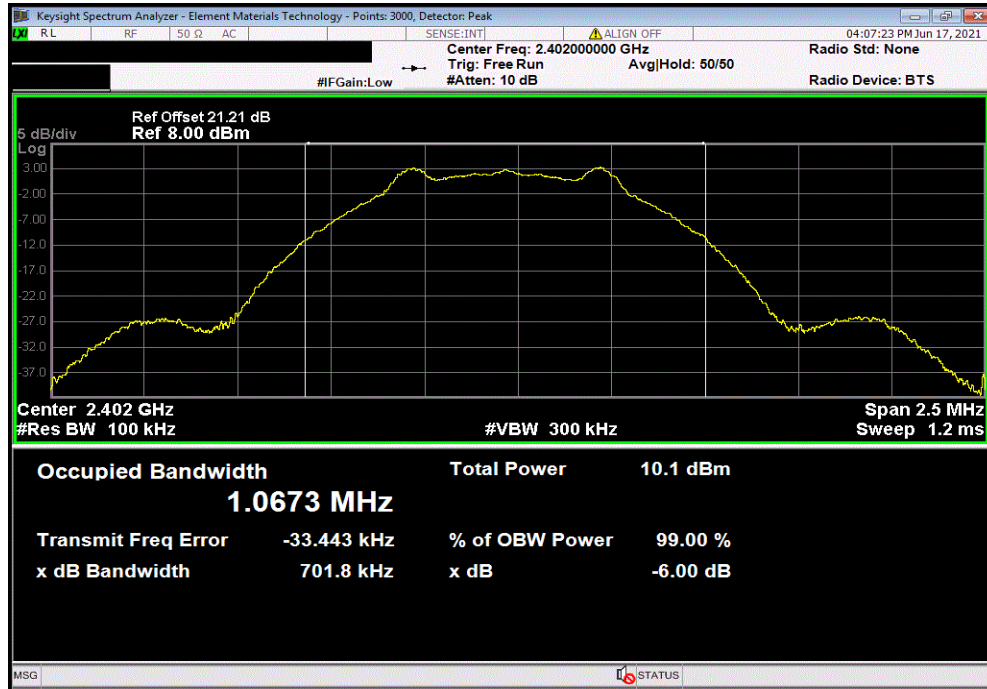
EUT: Blink-32 IPG		Work Order: BOSN0155	
Serial Number: 76749284		Date: 18-Jun-21	
Customer: Boston Scientific Neuromodulation		Temperature: 22.3 °C	
Attendees: Habet Ter-Petrosyan		Humidity: 52.1% RH	
Project: None		Barometric Pres.: 1013.21 mbar	
Tested by: Nolan De Ramos		Power: 2.8VDC	
TEST SPECIFICATIONS		Job Site: OC13	
LP0002:2020		Test Method	
LP0002:2020		LP0002:2020	
COMMENTS			
DC block + 20 dB attenuator + test cable = 21.21 dB Reference Level Offset			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	5	Signature 	
		Value	Limit (±)
BLE/GFSK Low Channel, 2402 MHz		701.847 kHz	500 kHz
BLE/GFSK Mid Channel, 2440 MHz		712.131 kHz	500 kHz
BLE/GFSK High Channel, 2480 MHz		726.823 kHz	500 kHz
			Result
			Pass
			Pass
			Pass

OCCUPIED BANDWIDTH

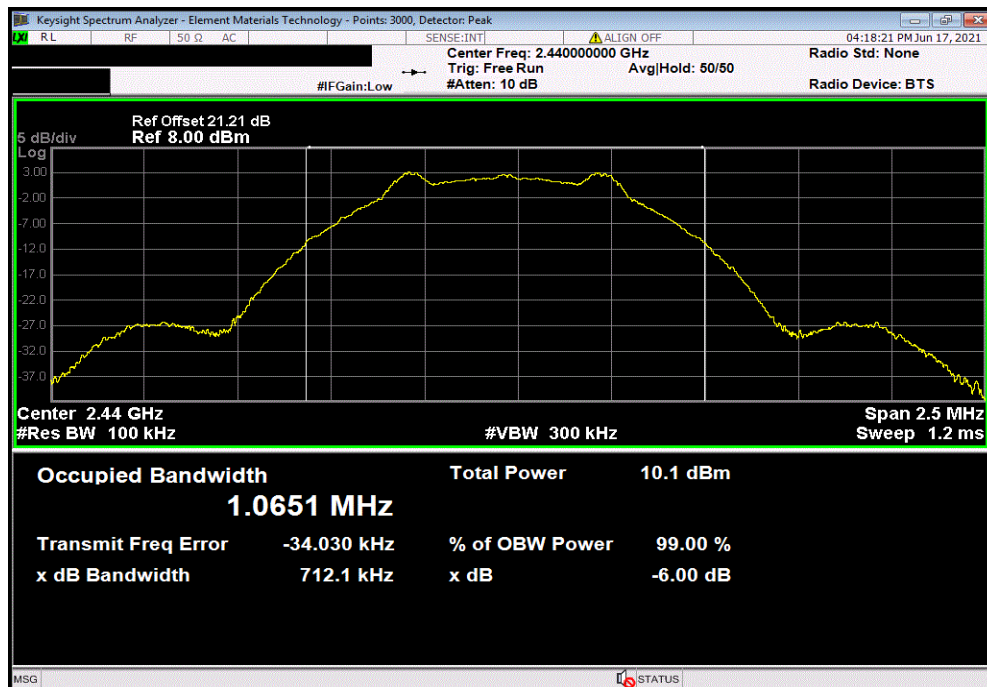


TbTx 2021.03.19.1 XMt 2020.12.30.0

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



BLE/GFSK Mid Channel, 2440 MHz						
Value				Limit (≥)	Result	
			712.131 kHz	500 kHz	Pass	

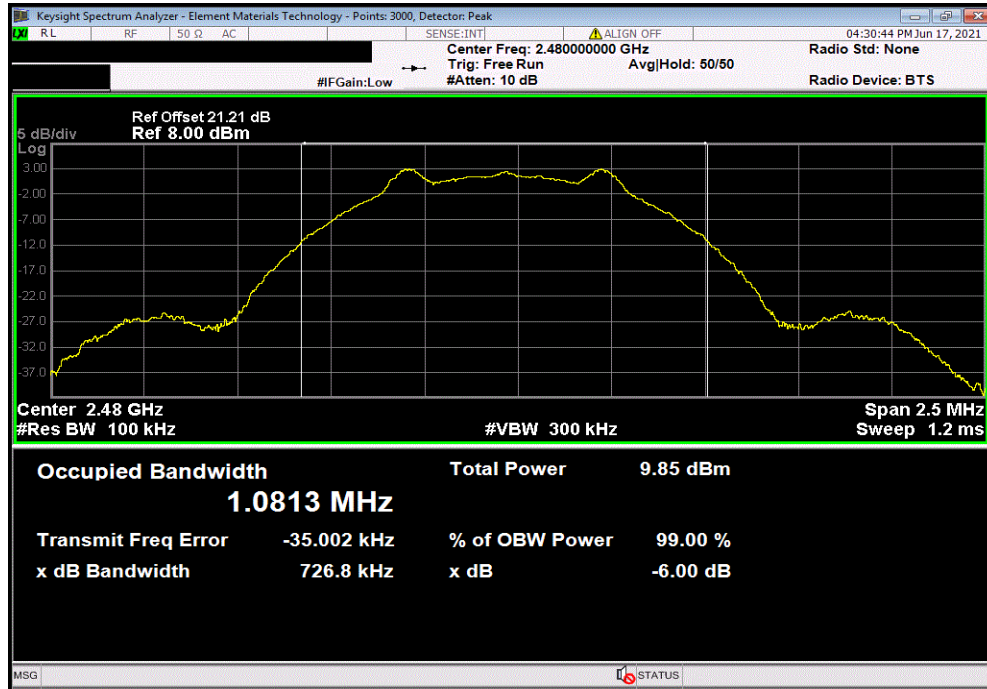


OCCUPIED BANDWIDTH

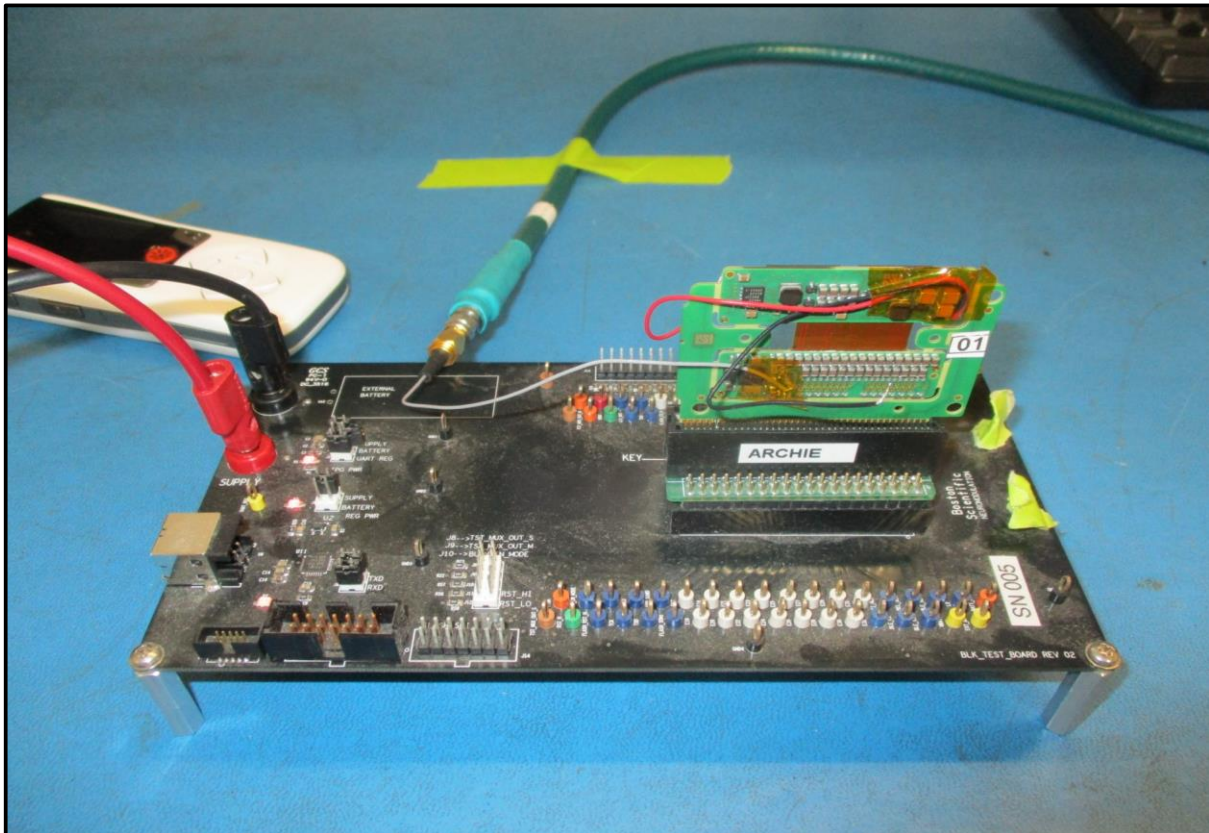
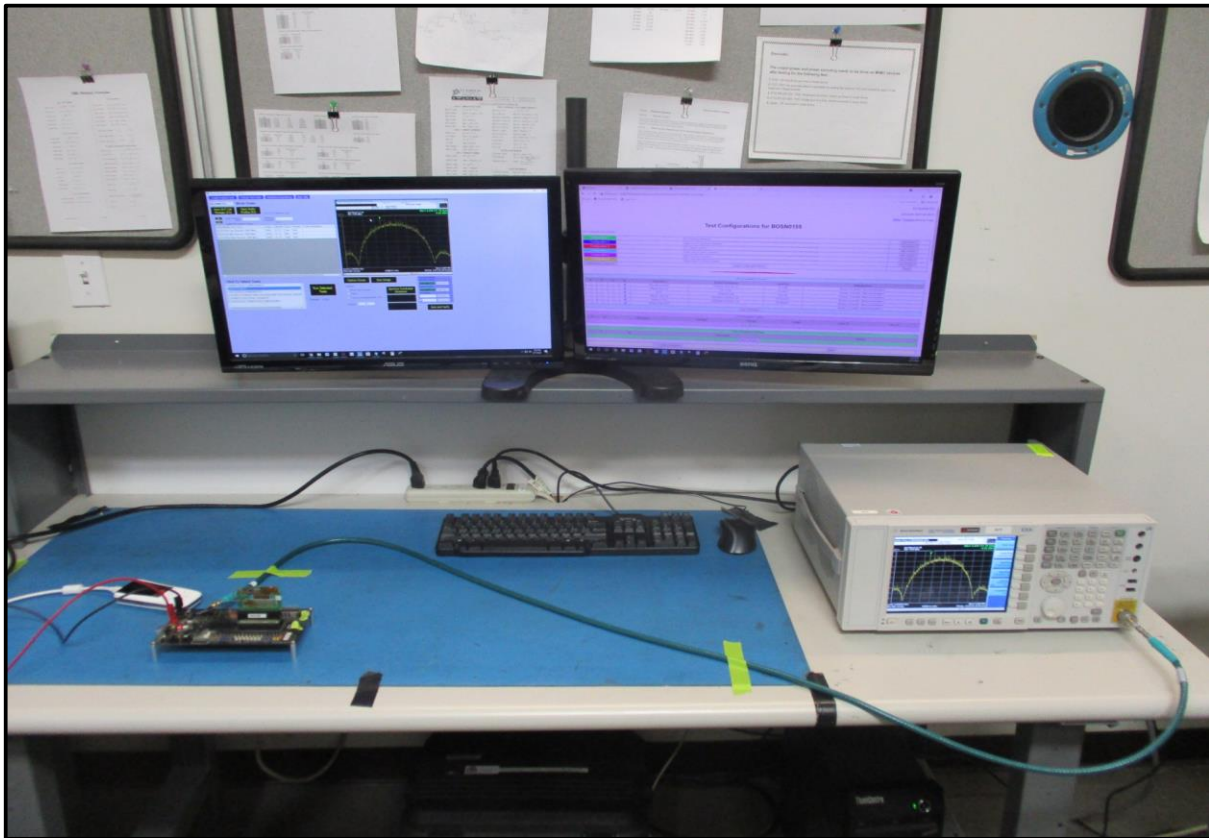


TbTx 2021.03.19.1 XMt 2020.12.30.0

BLE/GFSK High Channel, 2480 MHz						
Value				Limit	Result	
			726.823 kHz	500 kHz	Pass	



OCCUPIED BANDWIDTH



OUTPUT POWER



XMH 2020.12.30.0

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TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Meter - Multimeter	Fluke	179	MBB	2021-03-05	2024-03-05
Power Supply - DC	Agilent	E3648A	TPE	NCR	NCR
Cable	Micro-Coax	UFD150A-1-0720-200200	OCA	2021-04-27	2022-04-27
Block - DC	Aeroflex	INMET 8535	AMO	2021-02-22	2022-02-22
Attenuator	Fairview Microwave	SA18H-20	TKR	2020-12-18	2021-12-18
Generator - Signal	Agilent	E8257D	TGU	2020-11-03	2023-11-03
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	2020-07-09	2021-07-09

TEST DESCRIPTION

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

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

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

OUTPUT POWER



TSTx 2021.03.19.1 XMR 2020.12.30.0

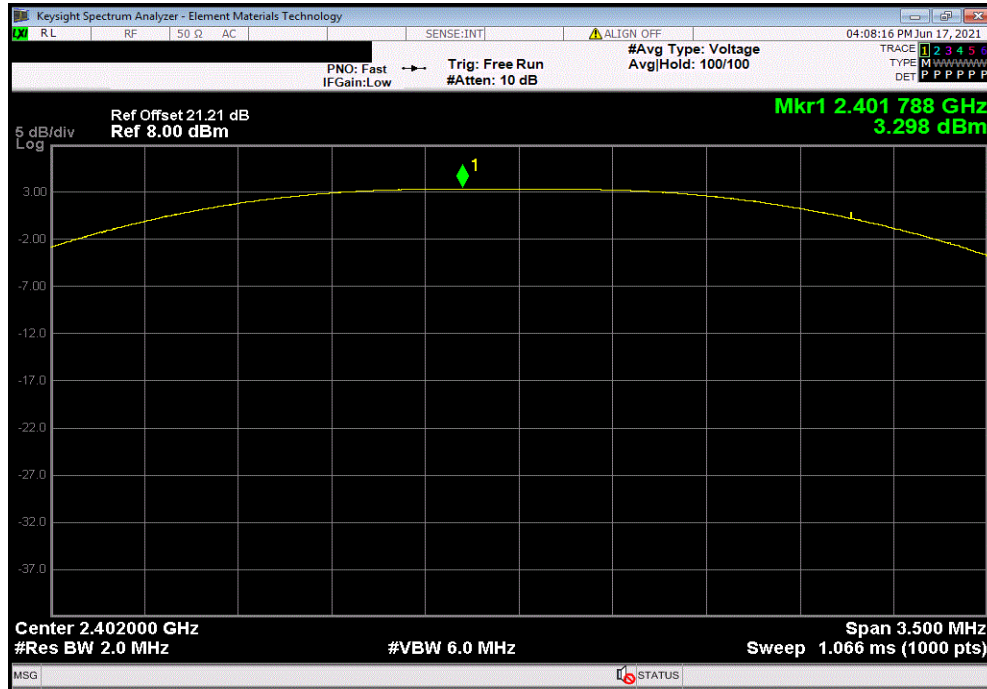
EUT: Blink-32 IPG		Work Order: BOSN0155	
Serial Number: 76749284		Date: 18-Jun-21	
Customer: Boston Scientific Neuromodulation		Temperature: 22.3 °C	
Attendees: Habet Ter-Petrosyan		Humidity: 52.1% RH	
Project: None		Barometric Pres.: 1013.21 mbar	
Tested by: Nolan De Ramos		Power: 3VDC	
Job Site: OC13			
TEST SPECIFICATIONS			
LP0002:2020		Test Method	
LP0002:2020		LP0002:2020	
COMMENTS			
DC block + 20 dB attenuator + test cable = 21.21 dB Reference Level Offset			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	5	Signature 	
		Out Pwr (dBm)	Limit (dBm)
BLE/GFSK Low Channel, 2402 MHz		3.298	30
BLE/GFSK Mid Channel, 2440 MHz		3.26	30
BLE/GFSK High Channel, 2480 MHz		3.012	30
			Result
			Pass
			Pass
			Pass

OUTPUT POWER

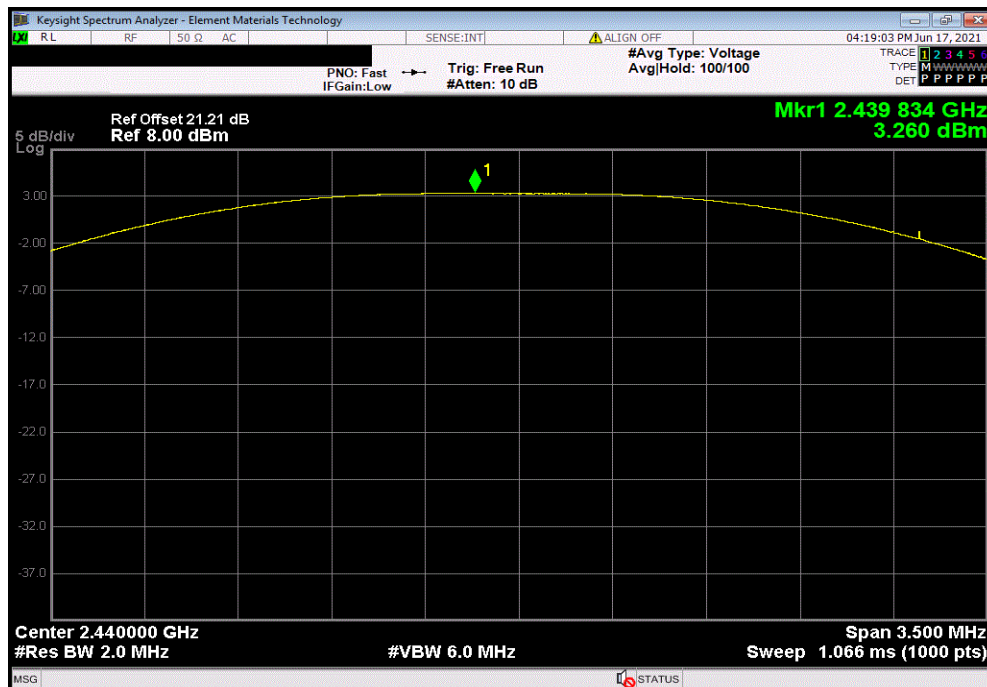


TbTx 2021.03.19.1 XMt 2020.12.30.0

BLE/GFSK Low Channel, 2402 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				3.298	30	Pass



BLE/GFSK Mid Channel, 2440 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				3.26	30	Pass

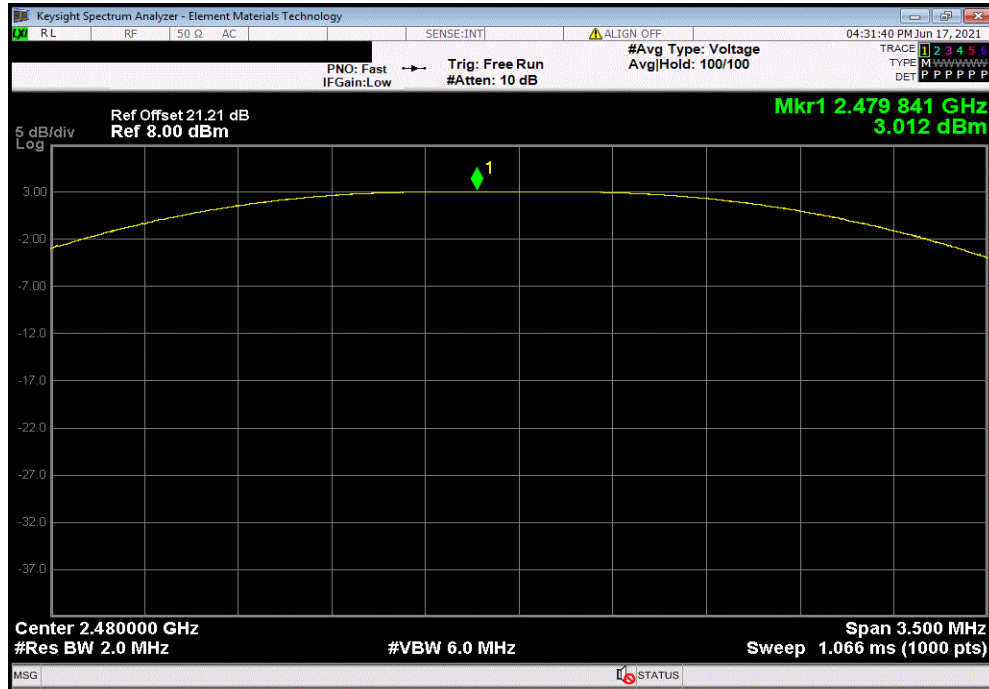


OUTPUT POWER

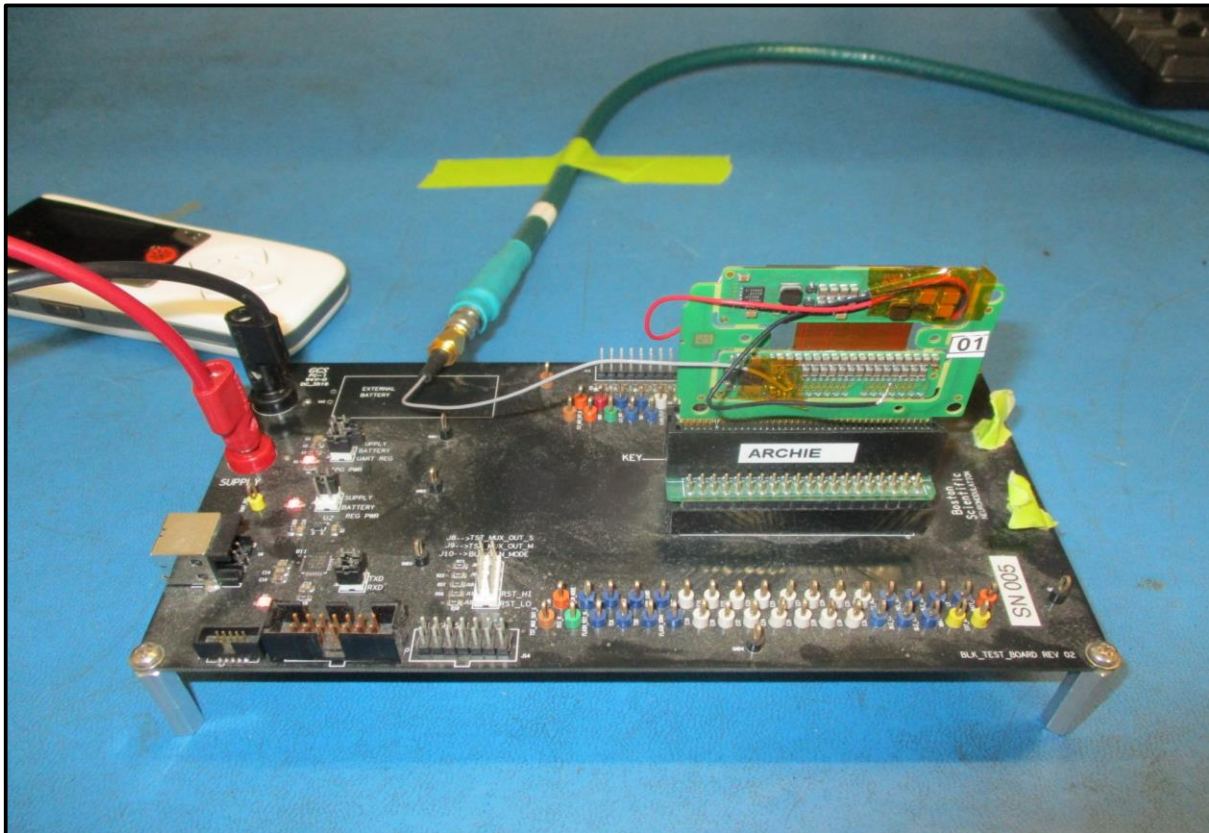
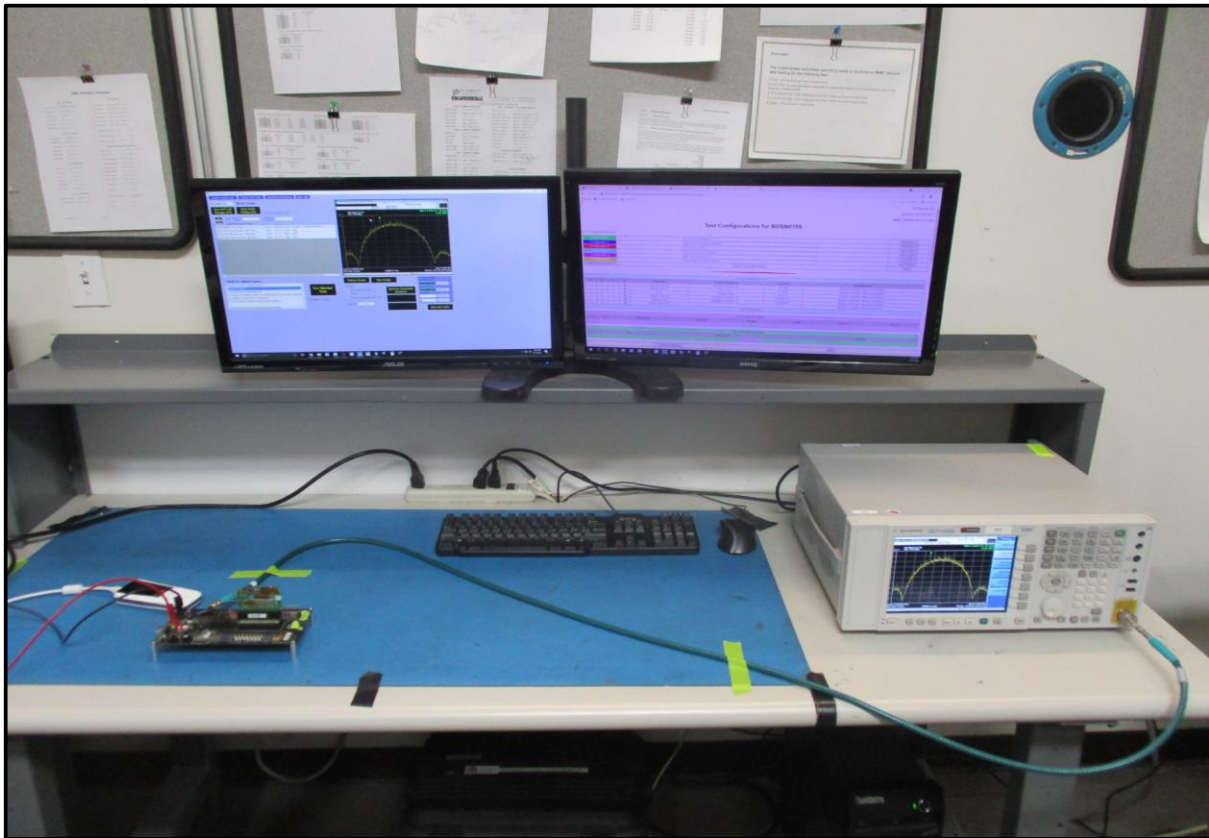


TbTx 2021.03.19.1 XMt 2020.12.30.0

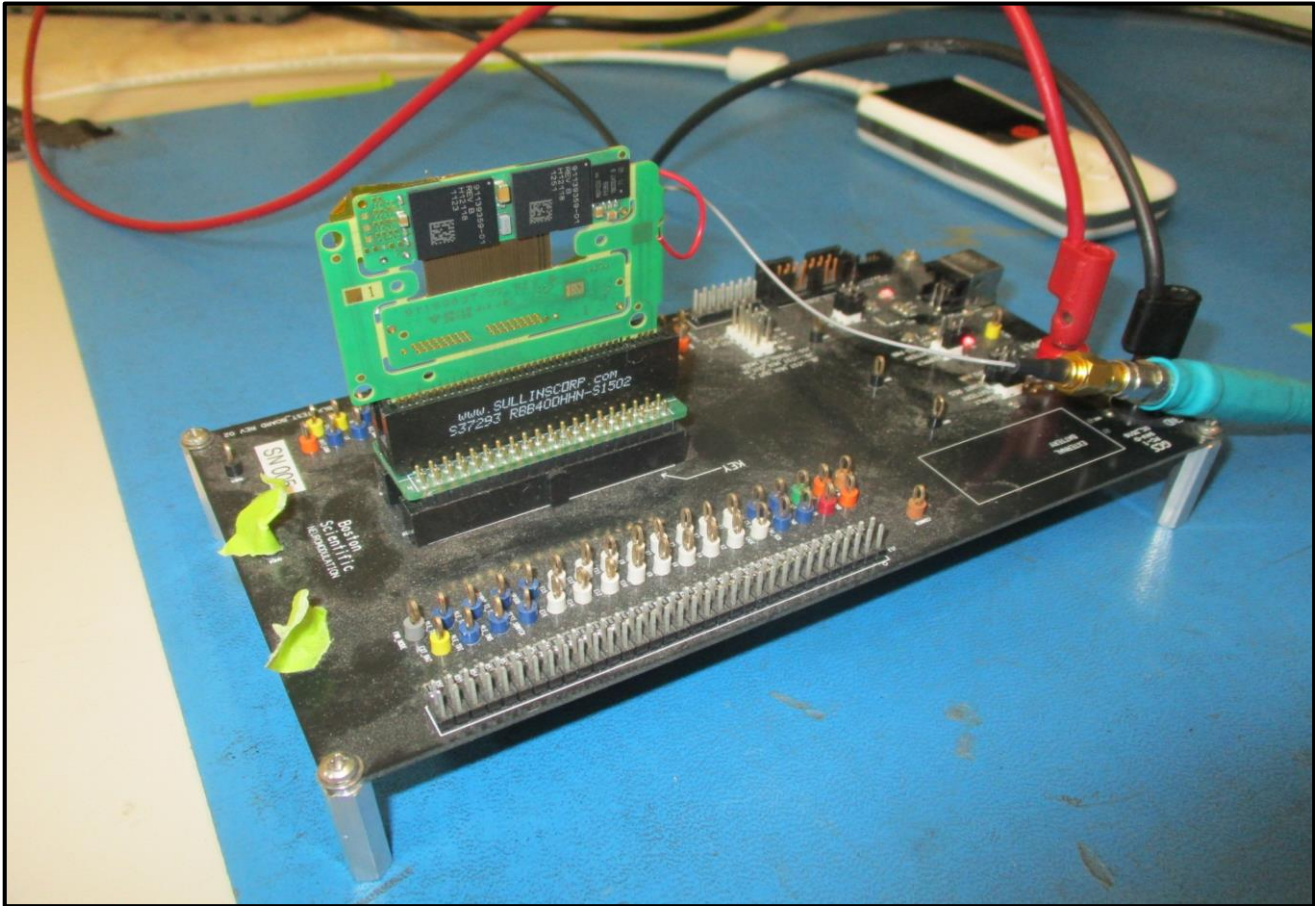
BLE/GFSK High Channel, 2480 MHz						
				Out Pwr (dBm)	Limit (dBm)	Result
				3.012	30	Pass



OUTPUT POWER



OUTPUT POWER



EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



XMit 2020.12.30.0

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Cable	Micro-Coax	UFD150A-1-0720-200200	OCA	2021-04-27	2022-04-27
Block - DC	Aeroflex	INMET 8535	AMO	2021-02-22	2022-02-22
Attenuator	Fairview Microwave	SA18H-20	TKR	2020-12-18	2021-12-18
Generator - Signal	Agilent	E8257D	TGU	2020-11-03	2023-11-03
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	2020-07-09	2021-07-09

TEST DESCRIPTION

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.

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

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



TSTx 2021.03.19.1 XMR 2020.12.30.0

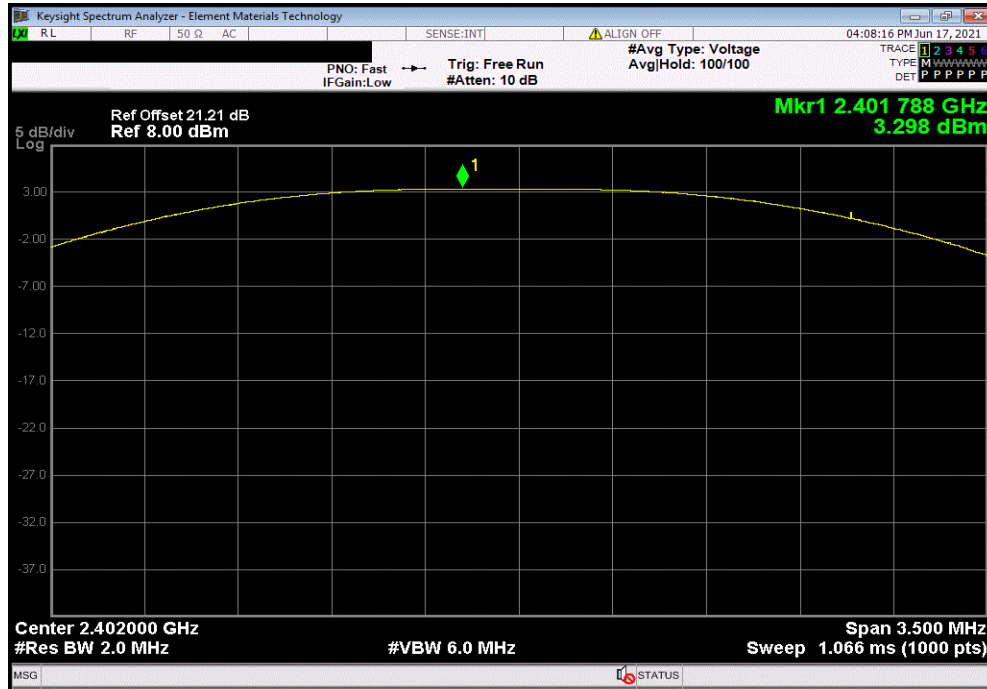
EUT: Blink-32 IPG		Work Order: BOSN0155	
Serial Number: 76749284		Date: 18-Jun-21	
Customer: Boston Scientific Neuromodulation		Temperature: 22.3 °C	
Attendees: Habet Ter-Petrosyan		Humidity: 52.1% RH	
Project: None		Barometric Pres.: 1013.21 mbar	
Tested by: Nolan De Ramos	Power: 2.8VDC	Job Site: OC13	
TEST SPECIFICATIONS			
LP0002:2020		Test Method	
LP0002:2020		LP0002:2020	
COMMENTS			
DC block + 20 dB attenuator + test cable = 21.21 dB Reference Level Offset			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	5	Signature 	
		Out Pwr (dBm)	Antenna Gain (dBi)
BLE/GFSK Low Channel, 2402 MHz		3.298	0.17
BLE/GFSK Mid Channel, 2440 MHz		3.26	0.17
BLE/GFSK High Channel, 2480 MHz		3.012	0.17
		EIRP (dBm)	EIRP Limit (dBm)
		3.468	36
		3.43	36
		3.182	36
			Result
			Pass
			Pass
			Pass

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

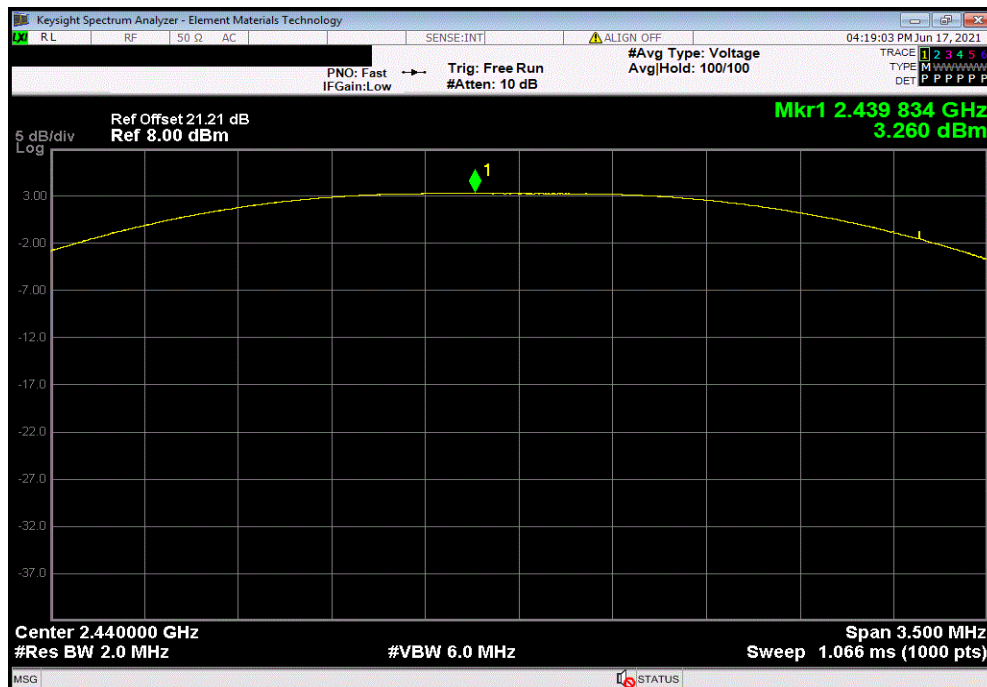


TbTx 2021.03.19.1 XMt 2020.12.30.0

BLE/GFSK Low Channel, 2402 MHz						
Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result		
3.298	0.17	3.468	36	Pass		



BLE/GFSK Mid Channel, 2440 MHz						
Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result		
3.26	0.17	3.43	36	Pass		

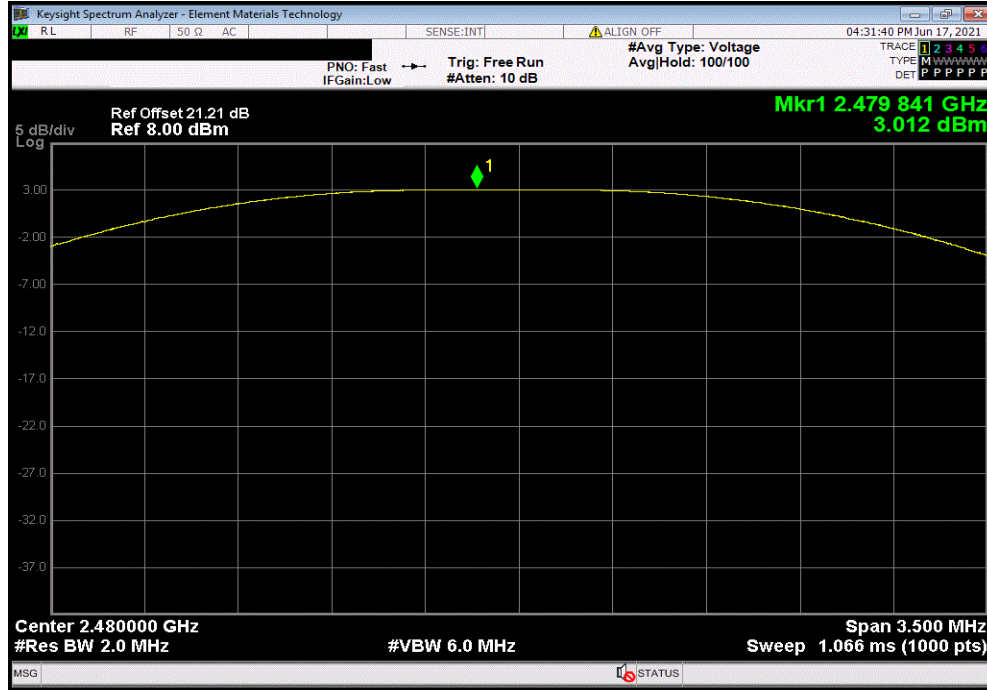


EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)

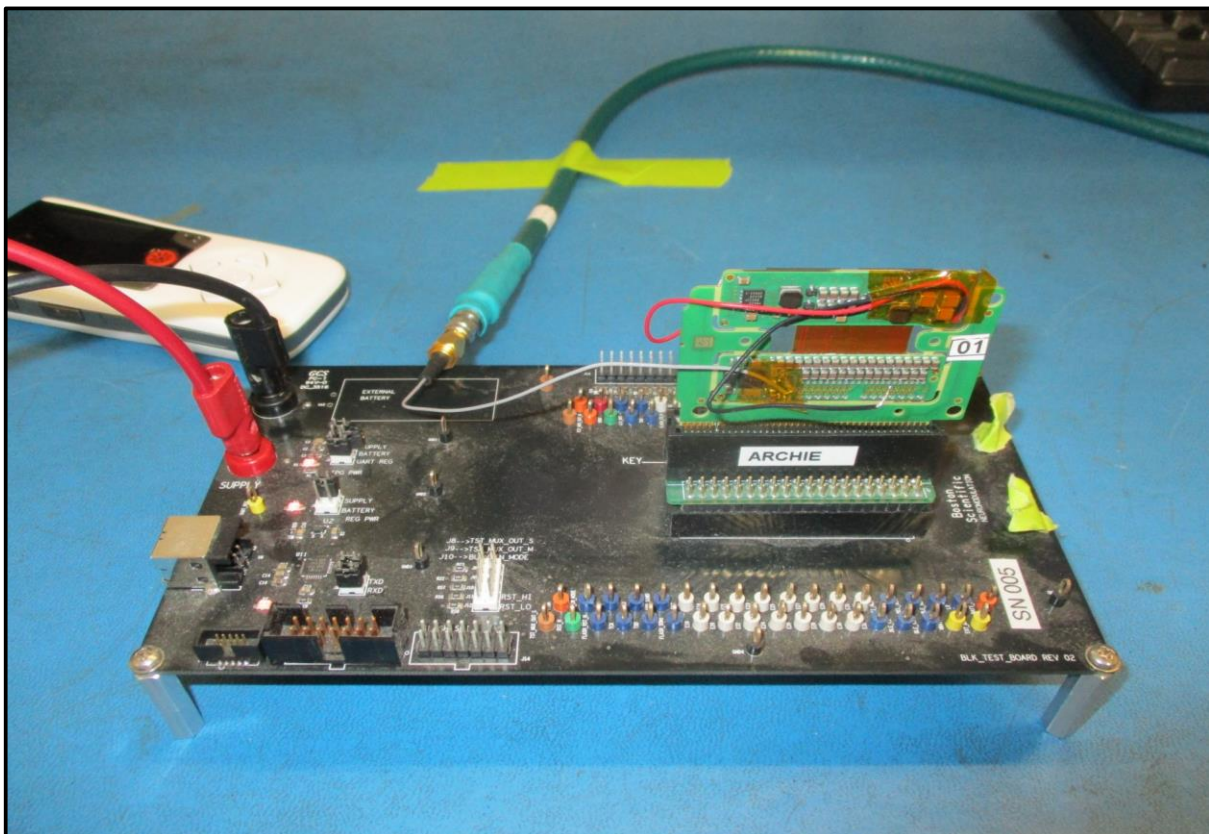
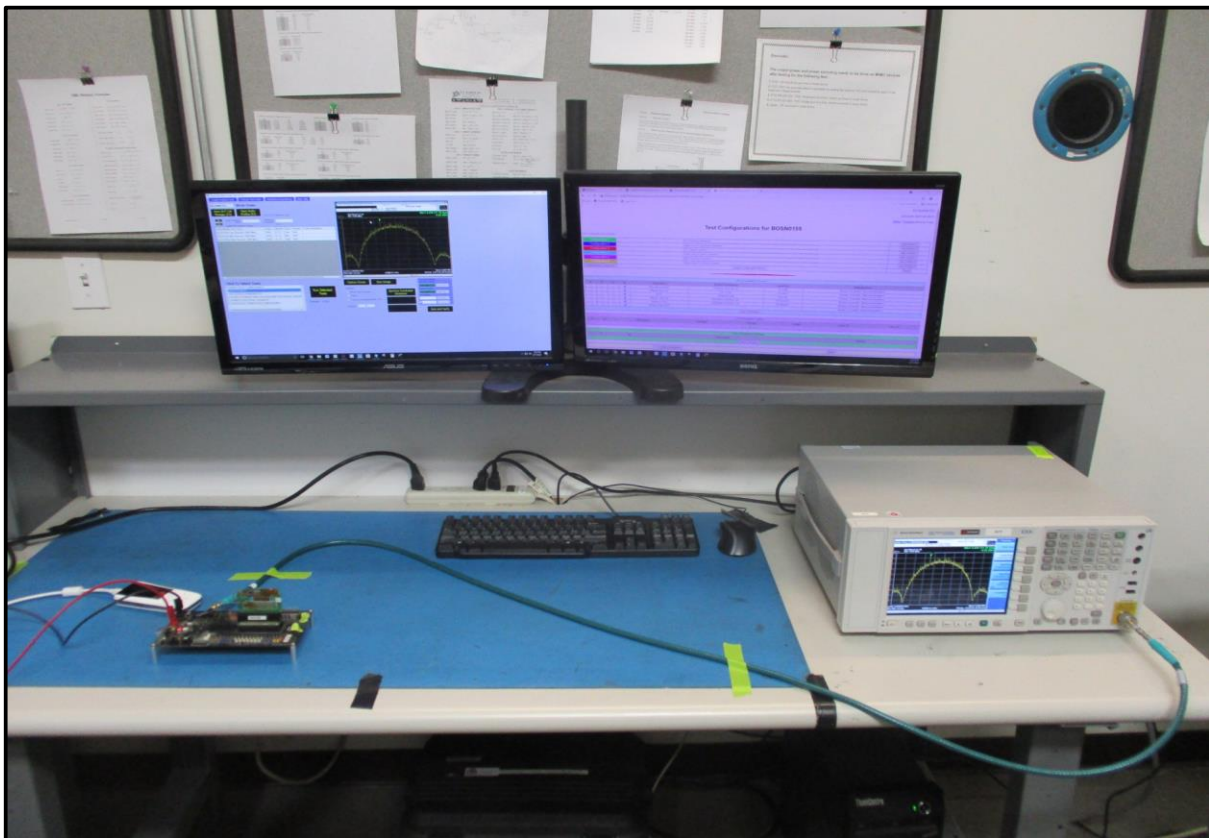


TbTx 2021.03.19.1 XMt 2020.12.30.0

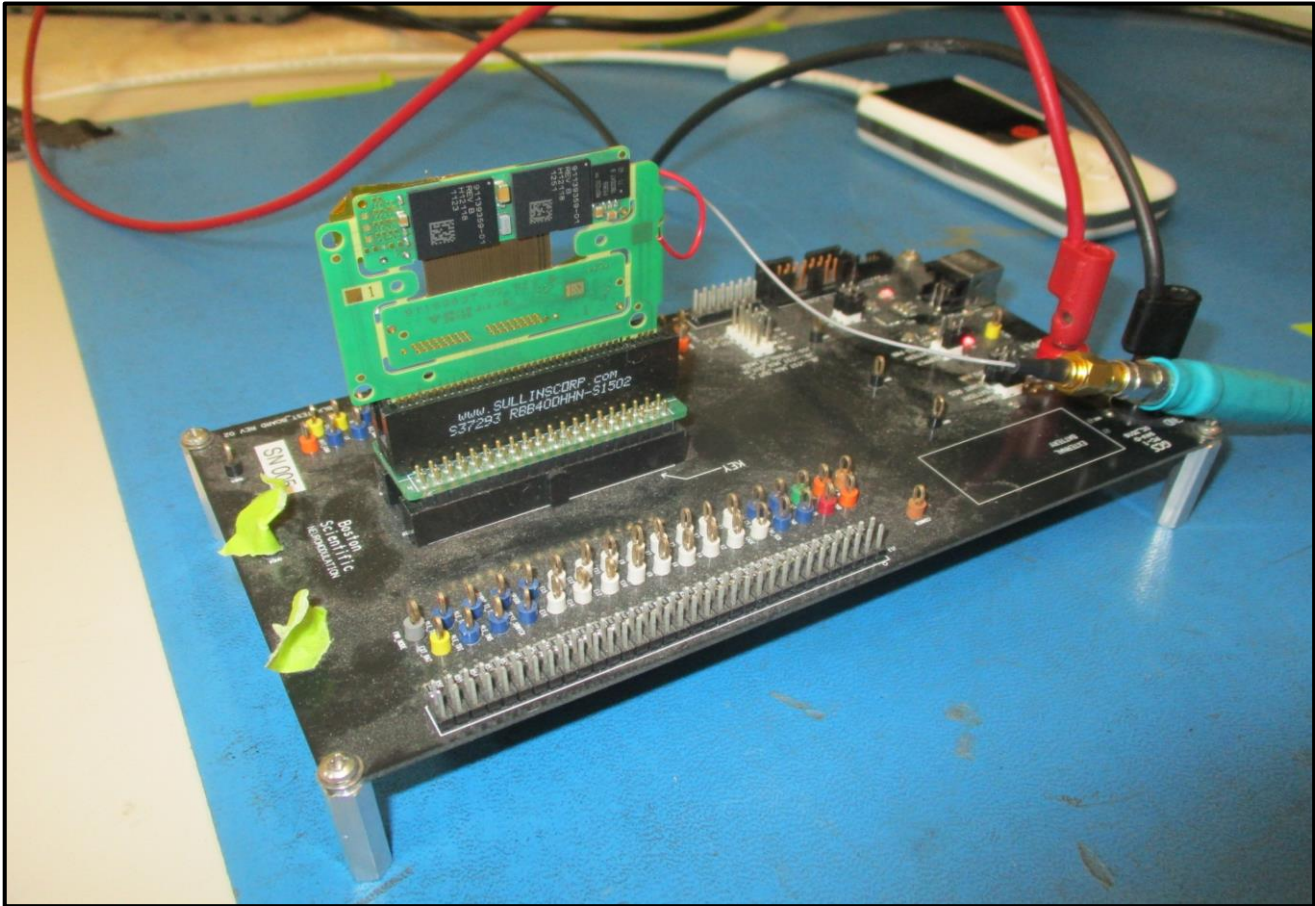
BLE/GFSK High Channel, 2480 MHz					
Out Pwr (dBm)	Antenna Gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)	Result	
3.012	0.17	3.182	36	Pass	



EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



POWER SPECTRAL DENSITY



XMit 2020.12.30.0

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Meter - Multimeter	Fluke	179	MBB	2021-03-05	2024-03-05
Power Supply - DC	Agilent	E3648A	TPE	NCR	NCR
Cable	Micro-Coax	UFD150A-1-0720-200200	OCA	2021-04-27	2022-04-27
Block - DC	Aeroflex	INMET 8535	AMO	2021-02-22	2022-02-22
Attenuator	Fairview Microwave	SA18H-20	TKR	2020-12-18	2021-12-18
Generator - Signal	Agilent	E8257D	TGU	2020-11-03	2023-11-03
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	2020-07-09	2021-07-09

TEST DESCRIPTION

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



TSMTx 2021.03.19.1 XMR 2020.12.30.0

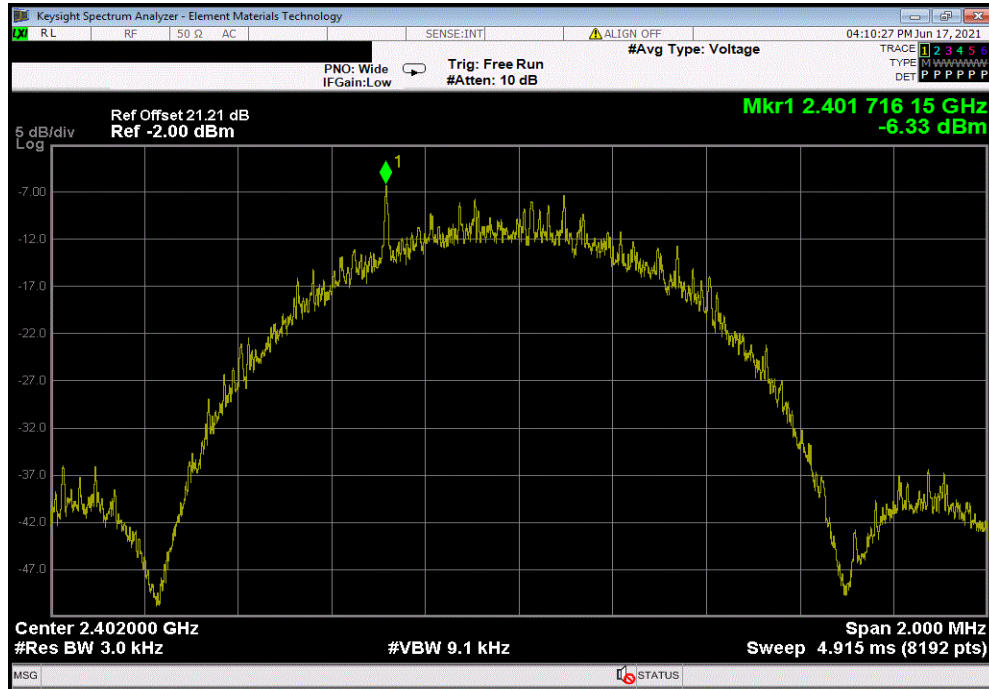
EUT: Blink-32 IPG		Work Order: BOSN0155	
Serial Number: 76749284		Date: 18-Jun-21	
Customer: Boston Scientific Neuromodulation		Temperature: 22.3 °C	
Attendees: Habet Ter-Petrosyan		Humidity: 52.1% RH	
Project: None		Barometric Pres.: 1013.21 mbar	
Tested by: Nolan De Ramos		Power: 2.8VDC	
Job Site: OC13			
TEST SPECIFICATIONS			
LP0002:2020		Test Method	
LP0002:2020		LP0002:2020	
COMMENTS			
DC block + 20 dB attenuator + test cable = 21.21 dB Reference Level Offset			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	5	Signature 	
		Value dBm/3kHz	Limit < dBm/3kHz
BLE/GFSK Low Channel, 2402 MHz		-6.33	8
BLE/GFSK Mid Channel, 2440 MHz		-6.34	8
BLE/GFSK High Channel, 2480 MHz		-6.5	8
			Results
			Pass
			Pass
			Pass

POWER SPECTRAL DENSITY

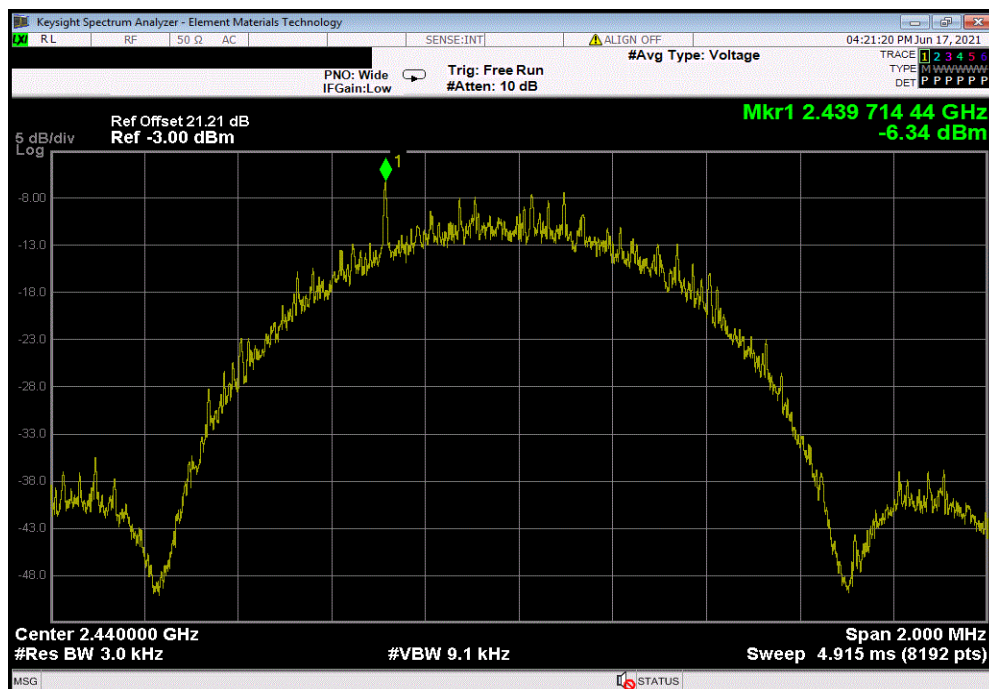


TbTx 2021.03.19.1 XM8 2020.12.30.0

BLE/GFSK Low Channel, 2402 MHz						
	Value	Limit				
	dBm/3kHz	< dBm/3kHz	Results			
	-6.33	8	Pass			



BLE/GFSK Mid Channel, 2440 MHz						
	Value	Limit				
	dBm/3kHz	< dBm/3kHz	Results			
	-6.34	8	Pass			

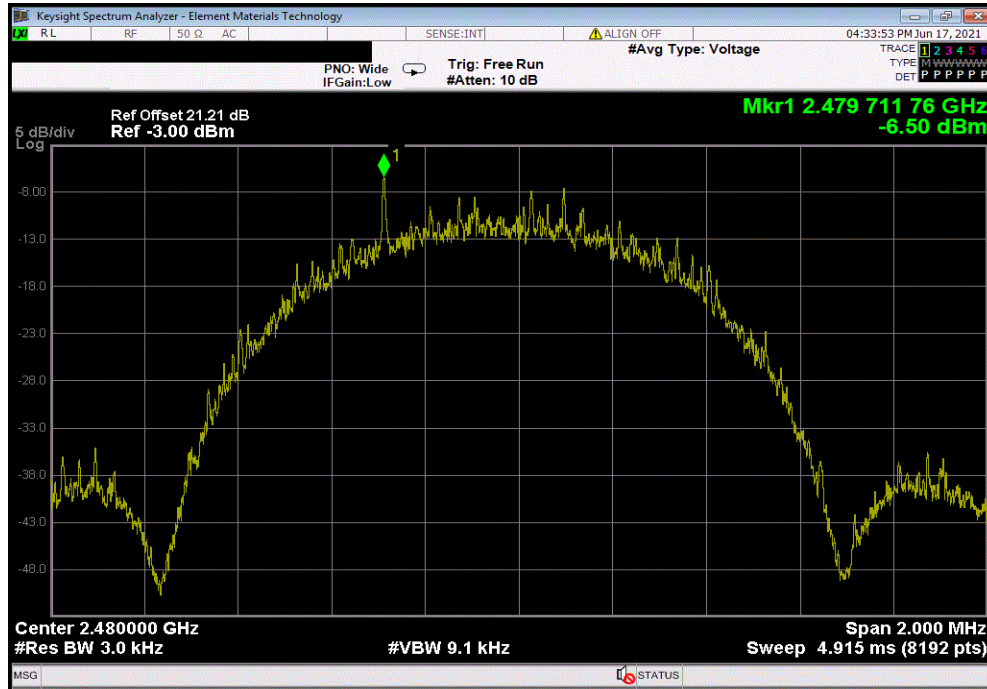


POWER SPECTRAL DENSITY

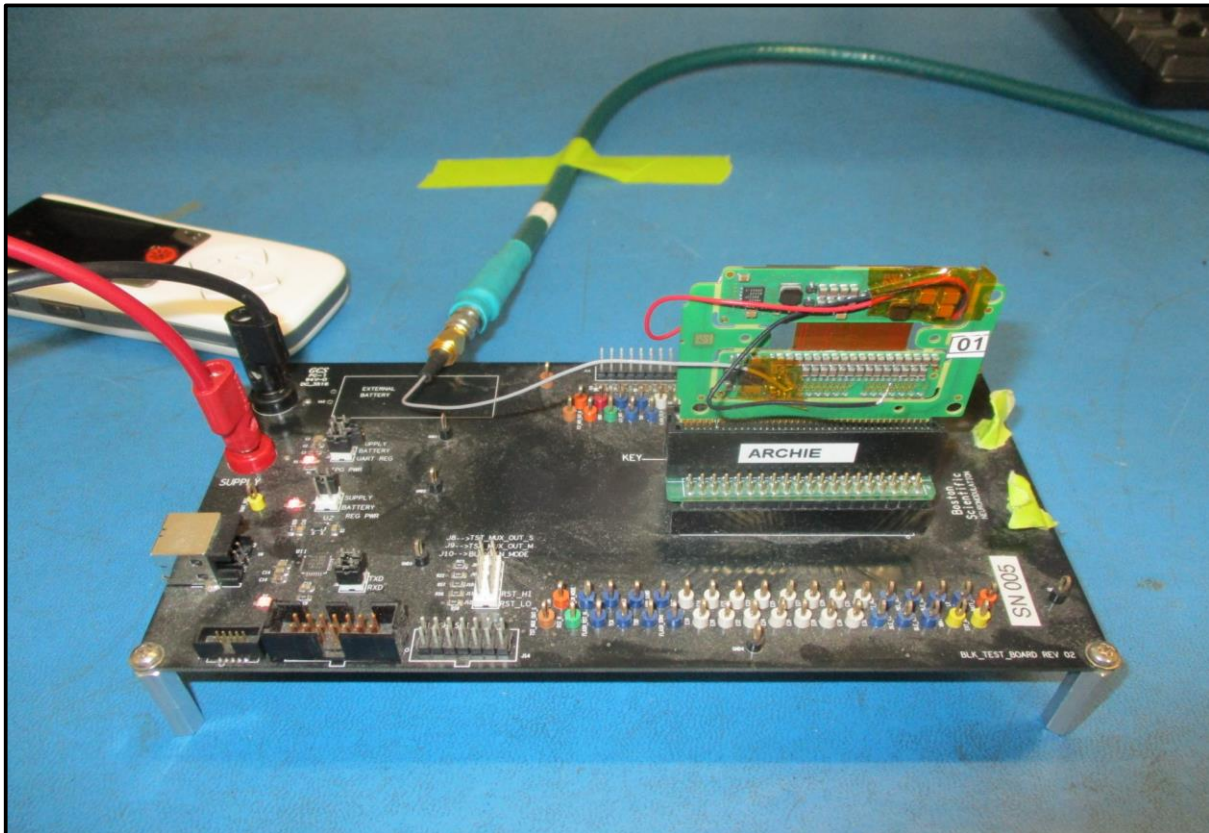
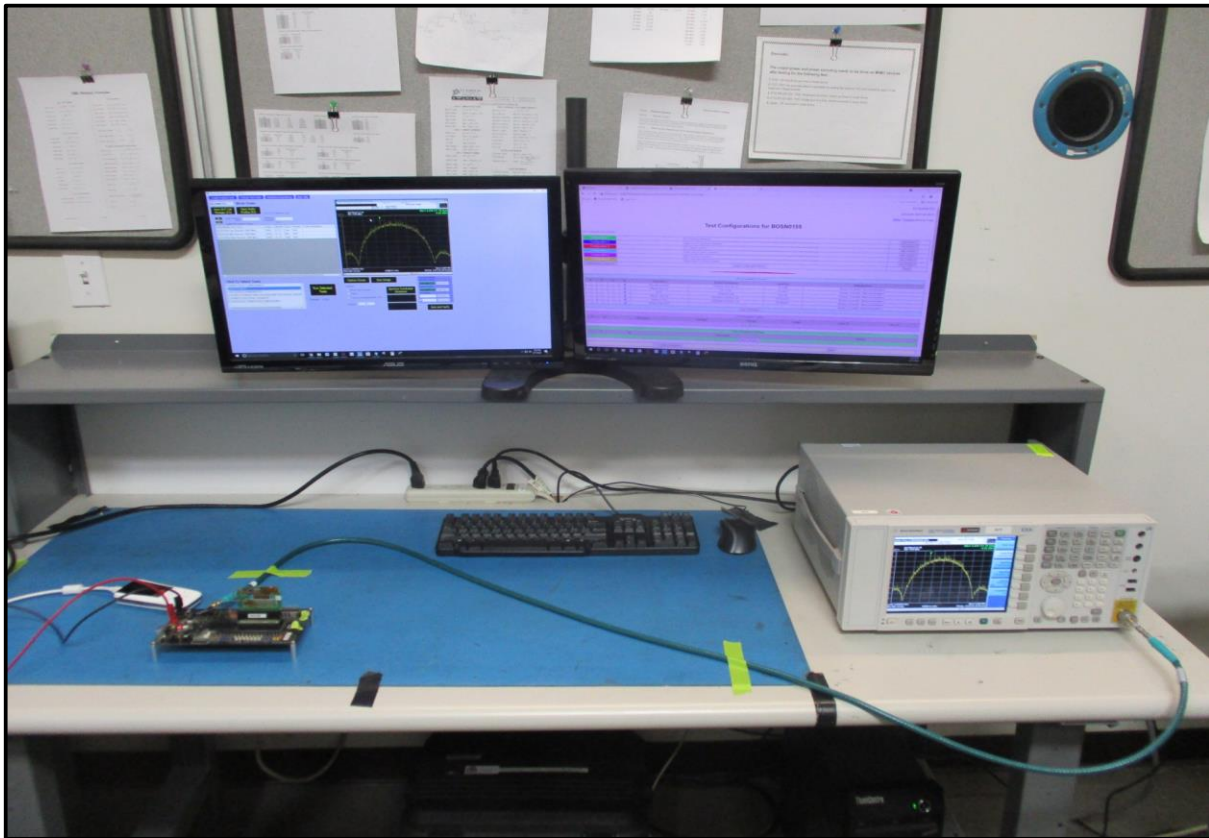


TbTx 2021.03.19.1 XMt 2020.12.30.0

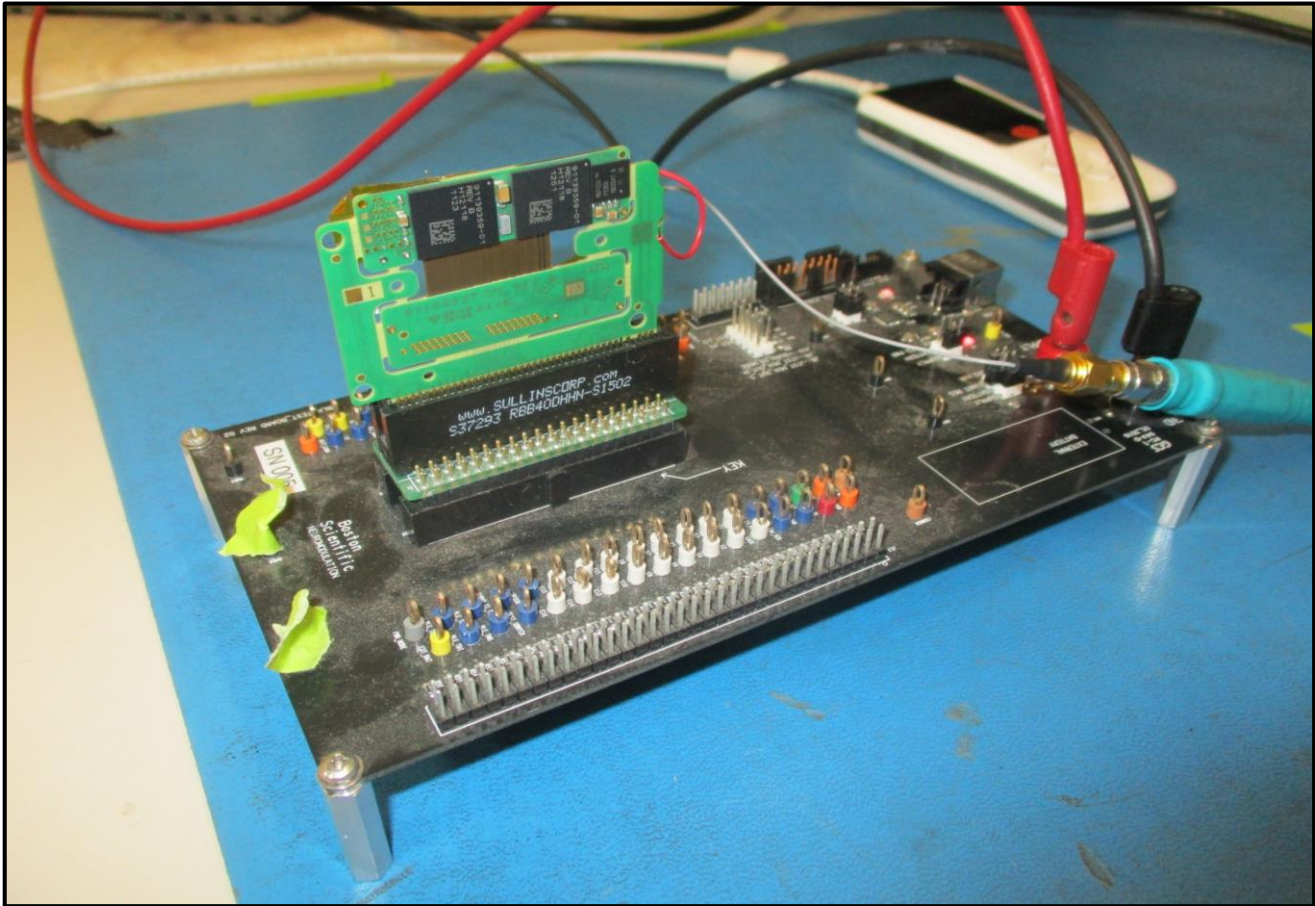
BLE/GFSK High Channel, 2480 MHz						
				Value	Limit	Results
				dBm/3kHz	< dBm/3kHz	
				-6.5	8	Pass



POWER SPECTRAL DENSITY



POWER SPECTRAL DENSITY



BAND EDGE COMPLIANCE



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
Meter - Multimeter	Fluke	179	MBB	2021-03-05	2024-03-05
Power Supply - DC	Agilent	E3648A	TPE	NCR	NCR
Cable	Micro-Coax	UFD150A-1-0720-200200	OCA	2021-04-27	2022-04-27
Attenuator	Fairview Microwave	SA18H-20	TKR	2020-12-18	2021-12-18
Block - DC	Aeroflex	INMET 8535	AMO	2021-02-22	2022-02-22
Generator - Signal	Agilent	E8257D	TGU	2020-11-03	2023-11-03
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	2020-07-09	2021-07-09

TEST DESCRIPTION

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



TSTx 2021.03.19.1 XMR 2020.12.30.0

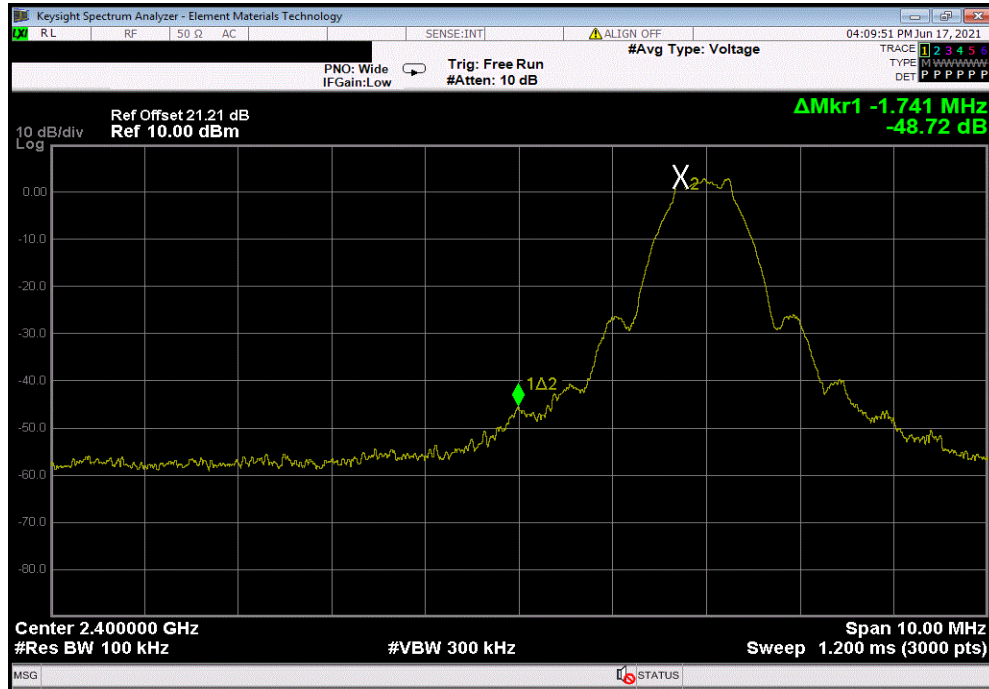
EUT: Blink-32 IPG		Work Order: BOSN0155	
Serial Number: 76749284		Date: 18-Jun-21	
Customer: Boston Scientific Neuromodulation		Temperature: 22.3 °C	
Attendees: Habet Ter-Petrosyan		Humidity: 52.1% RH	
Project: None		Barometric Pres.: 1013.21 mbar	
Tested by: Nolan De Ramos		Power: 2.8VDC	
Job Site: OC13			
TEST SPECIFICATIONS			
LP0002:2020		Test Method	
LP0002:2020		LP0002:2020	
COMMENTS			
DC block + 20 dB attenuator + test cable = 21.21 dB Reference Level Offset			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	5	Signature 	
		Value (dBc)	Limit ≤ (dBc) Result
BLE/GFSK Low Channel, 2402 MHz		-48.72	-20 Pass
BLE/GFSK High Channel, 2480 MHz		-57.44	-20 Pass

BAND EDGE COMPLIANCE

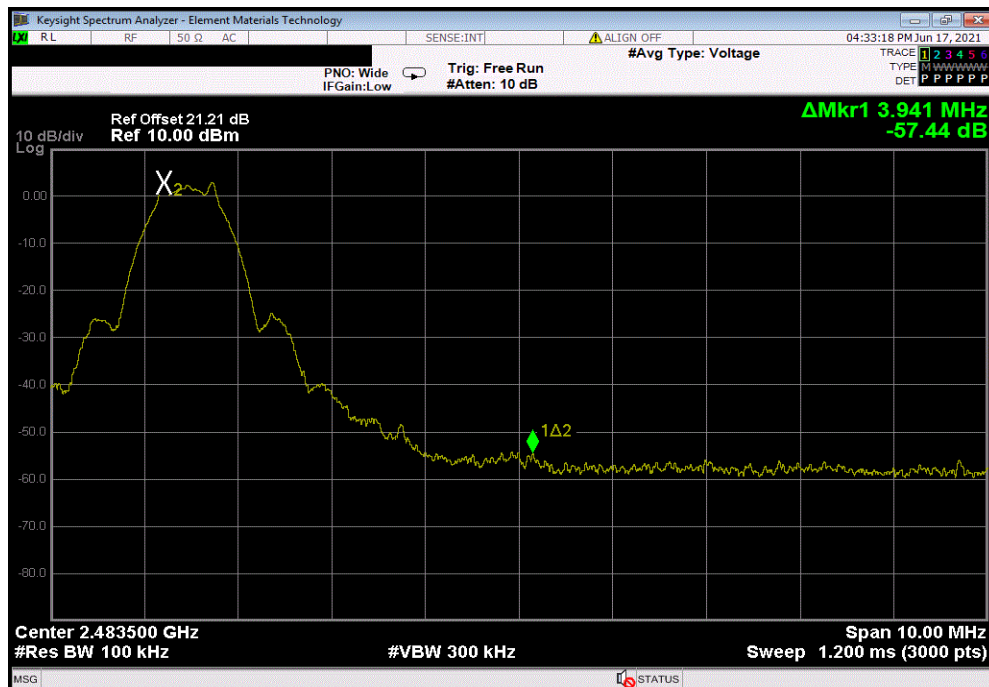


TbTx 2021.03.19.1 XMt 2020.12.30.0

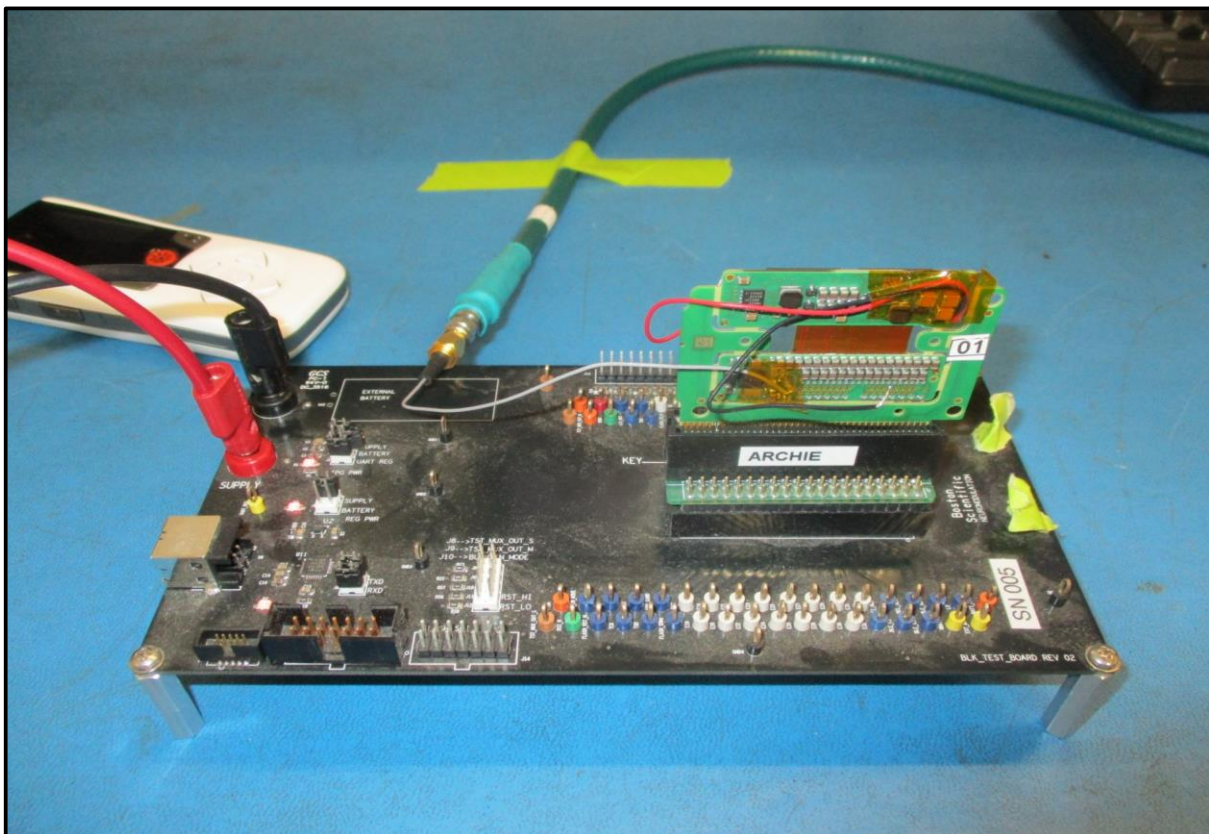
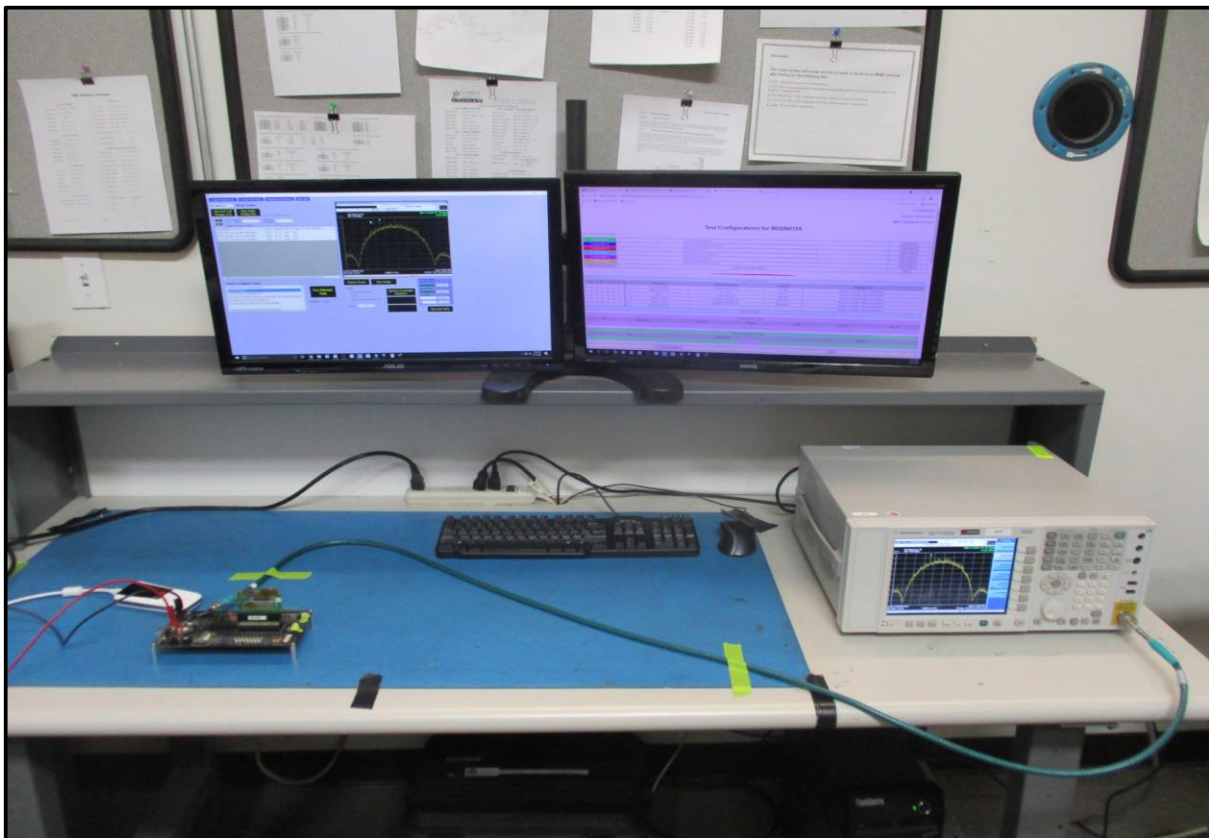
BLE/GFSK Low Channel, 2402 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-48.72	-20	Pass



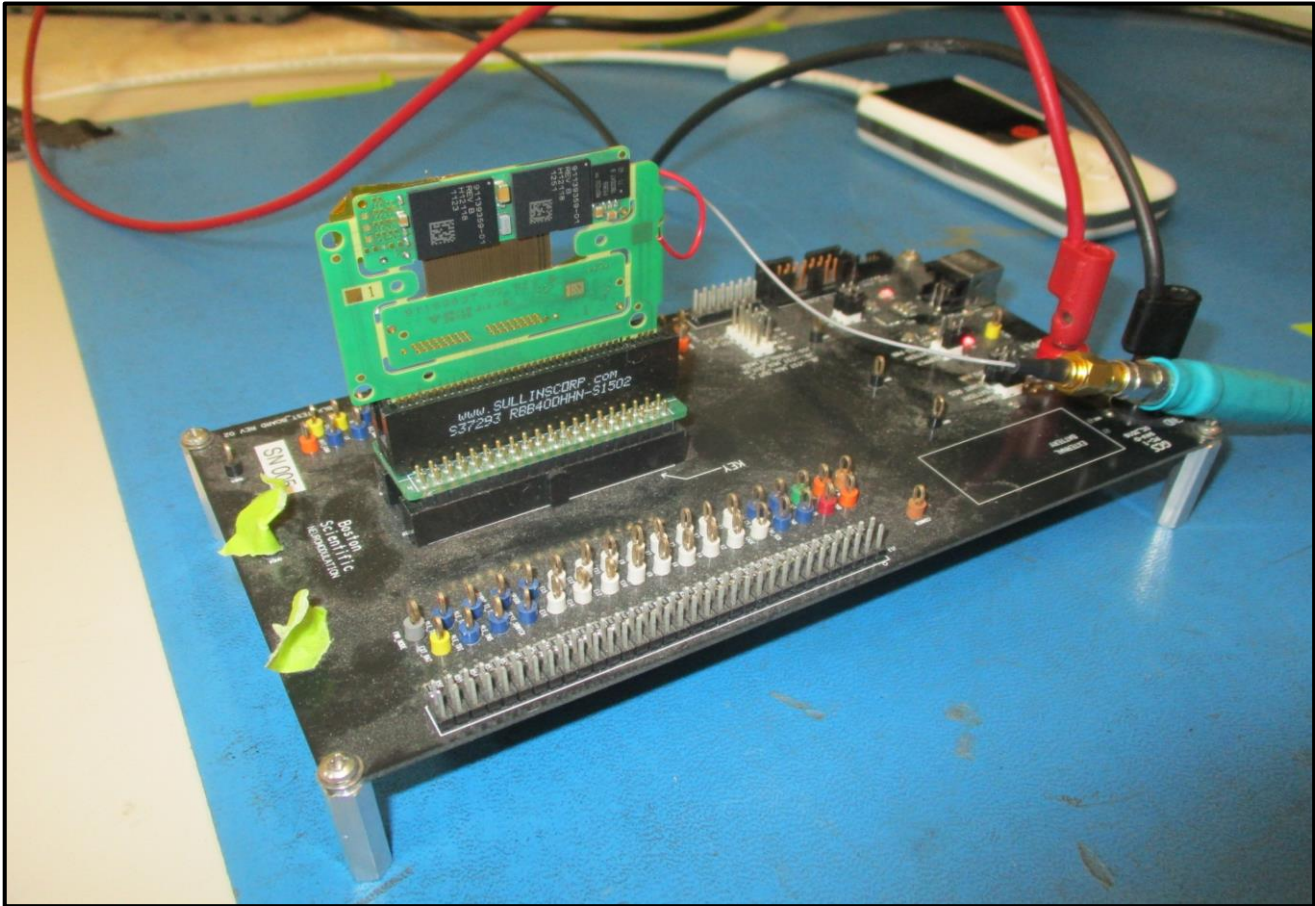
BLE/GFSK High Channel, 2480 MHz						
				Value (dBc)	Limit ≤ (dBc)	Result
				-57.44	-20	Pass



BAND EDGE COMPLIANCE



BAND EDGE COMPLIANCE



SPURIOUS CONDUCTED EMISSIONS



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
Meter - Multimeter	Fluke	179	MBB	2021-03-05	2024-03-05
Power Supply - DC	Agilent	E3648A	TPE	NCR	NCR
Cable	Micro-Coax	UFD150A-1-0720-200200	OCA	2021-04-27	2022-04-27
Attenuator	Fairview Microwave	SA18H-20	TKR	2020-12-18	2021-12-18
Block - DC	Aeroflex	INMET 8535	AMO	2021-02-22	2022-02-22
Generator - Signal	Agilent	E8257D	TGU	2020-11-03	2023-11-03
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFP	2020-07-09	2021-07-09

TEST DESCRIPTION

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 fundamental was measured with a 100 kHz resolution bandwidth and the highest value was recorded. The rest of the spectrum was then measured with a 100 kHz resolution bandwidth and the highest value was found. The difference between the value found on the fundamental and the rest of the spectrum was compared against the limit to determine compliance.

SPURIOUS CONDUCTED EMISSIONS



TSTx 2021.03.19.1 XMR 2020.12.30.0

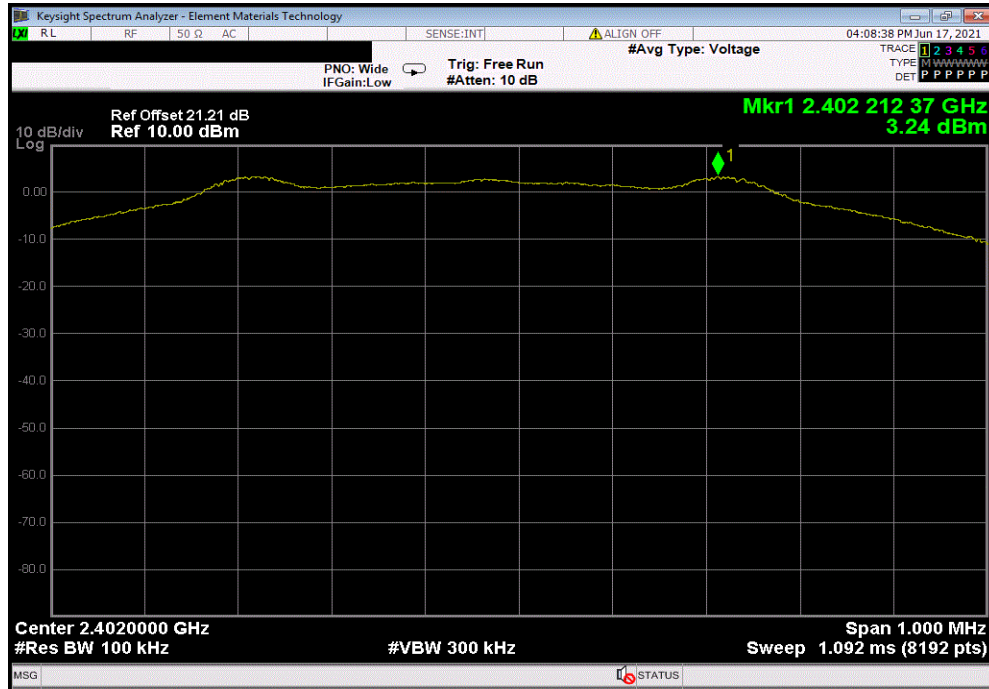
EUT: Blink-32 IPG		Work Order: BOSN0155			
Serial Number: 76749284		Date: 18-Jun-21			
Customer: Boston Scientific Neuromodulation		Temperature: 22.3 °C			
Attendees: Habet Ter-Petrosyan		Humidity: 52.1% RH			
Project: None		Barometric Pres.: 1013.21 mbar			
Tested by: Nolan De Ramos		Power: 2.8VDC			
Job Site: OC13		Test Method			
TEST SPECIFICATIONS		LP0002:2020			
LP0002:2020		LP0002:2020			
COMMENTS					
DC block + 20 dB attenuator + test cable = 21.21 dB Reference Level Offset					
DEVIATIONS FROM TEST STANDARD					
None					
Configuration #	5	Signature 			
	Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result
BLE/GFSK Low Channel, 2402 MHz	Fundamental	2402.21	N/A	N/A	N/A
BLE/GFSK Low Channel, 2402 MHz	30 MHz - 12.5 GHz	4802.73	-46.79	-20	Pass
BLE/GFSK Low Channel, 2402 MHz	12.5 GHz - 25 GHz	24971	-41.71	-20	Pass
BLE/GFSK Mid Channel, 2440 MHz	Fundamental	2440.22	N/A	N/A	N/A
BLE/GFSK Mid Channel, 2440 MHz	30 MHz - 12.5 GHz	4878.85	-47.4	-20	Pass
BLE/GFSK Mid Channel, 2440 MHz	12.5 GHz - 25 GHz	24960.32	-41.02	-20	Pass
BLE/GFSK High Channel, 2480 MHz	Fundamental	2479.7	N/A	N/A	N/A
BLE/GFSK High Channel, 2480 MHz	30 MHz - 12.5 GHz	4961.06	-46.42	-20	Pass
BLE/GFSK High Channel, 2480 MHz	12.5 GHz - 25 GHz	24952.69	-41.25	-20	Pass

SPURIOUS CONDUCTED EMISSIONS

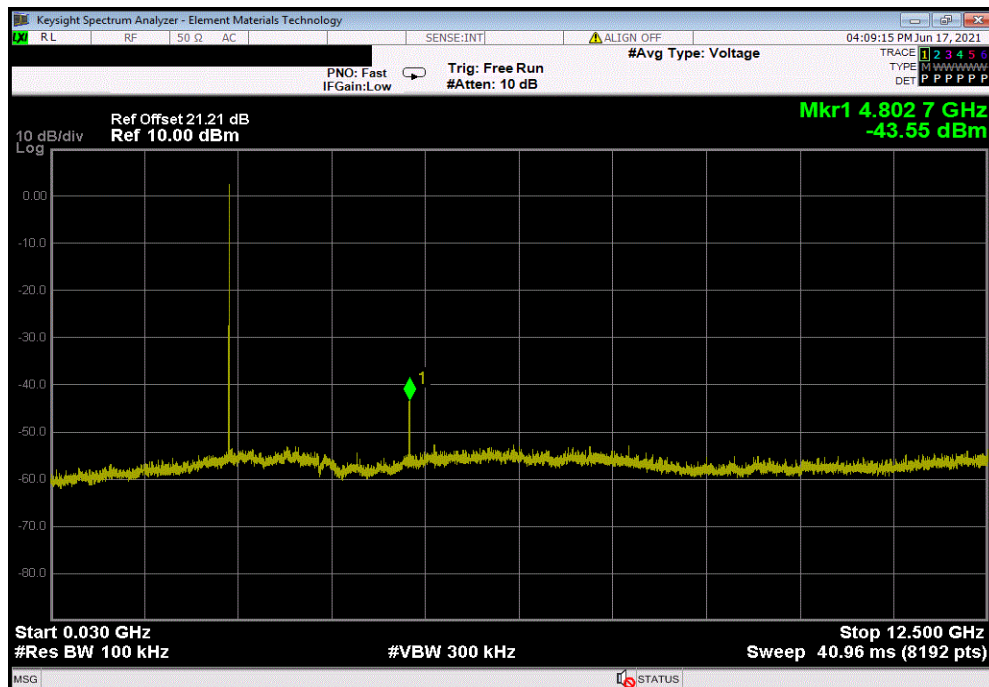


TbTx 2021.03.19.1 XMt 2020.12.30.0

BLE/GFSK Low Channel, 2402 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
Fundamental	2402.21	N/A	N/A	N/A	



BLE/GFSK Low Channel, 2402 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
30 MHz - 12.5 GHz	4802.73	-46.79	-20	Pass	

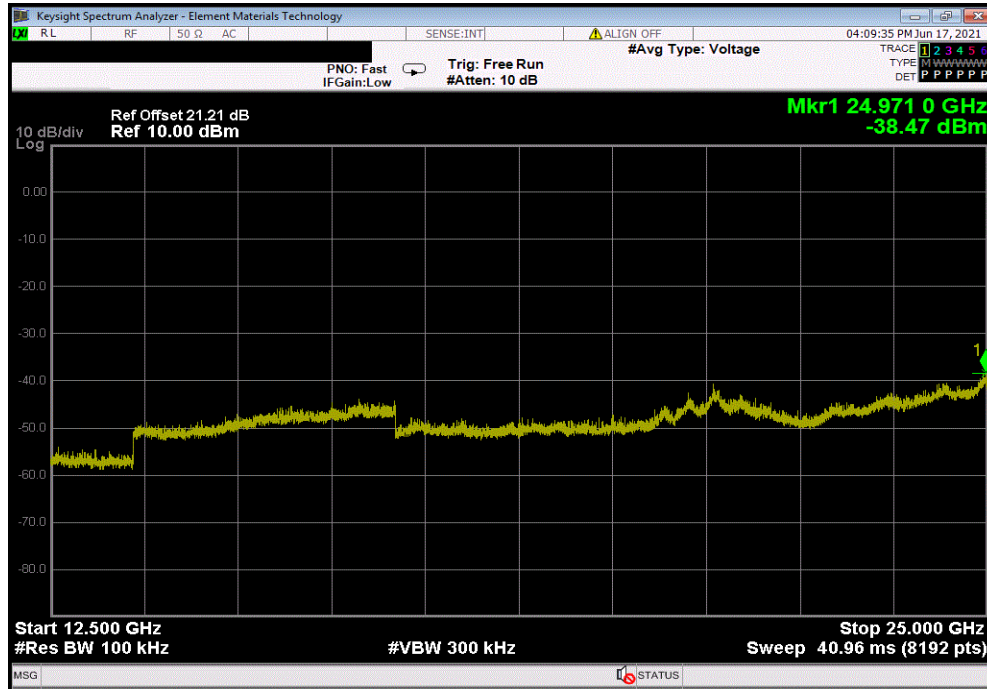


SPURIOUS CONDUCTED EMISSIONS

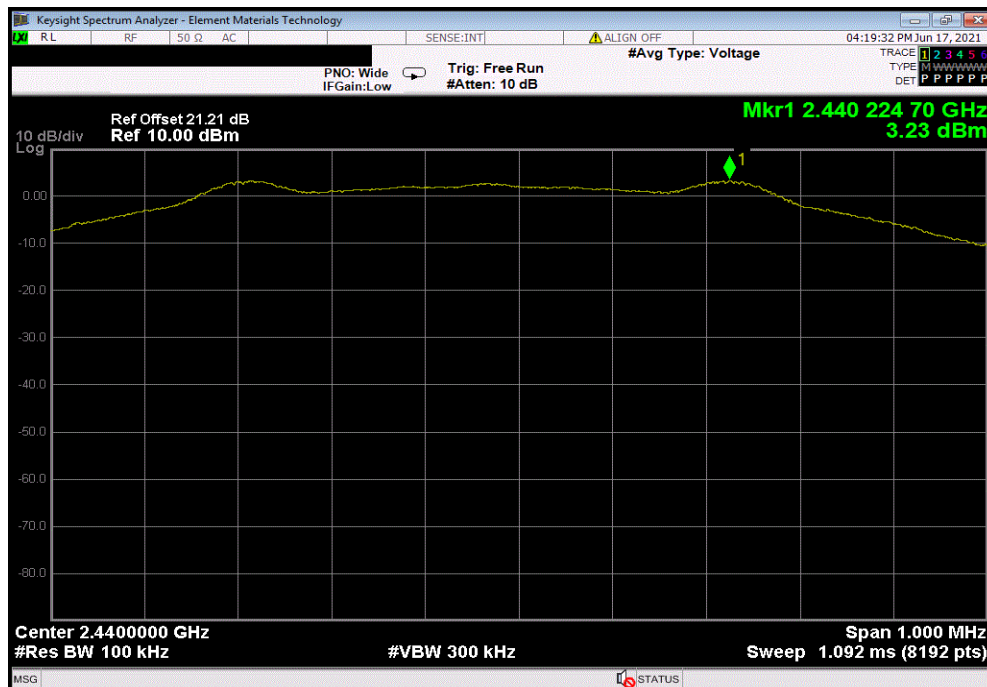


TbTtx 2021.03.19.1 XMt 2020.12.30.0

BLE/GFSK Low Channel, 2402 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
12.5 GHz - 25 GHz	24971	-41.71	-20	Pass	



BLE/GFSK Mid Channel, 2440 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
Fundamental	2440.22	N/A	N/A	N/A	

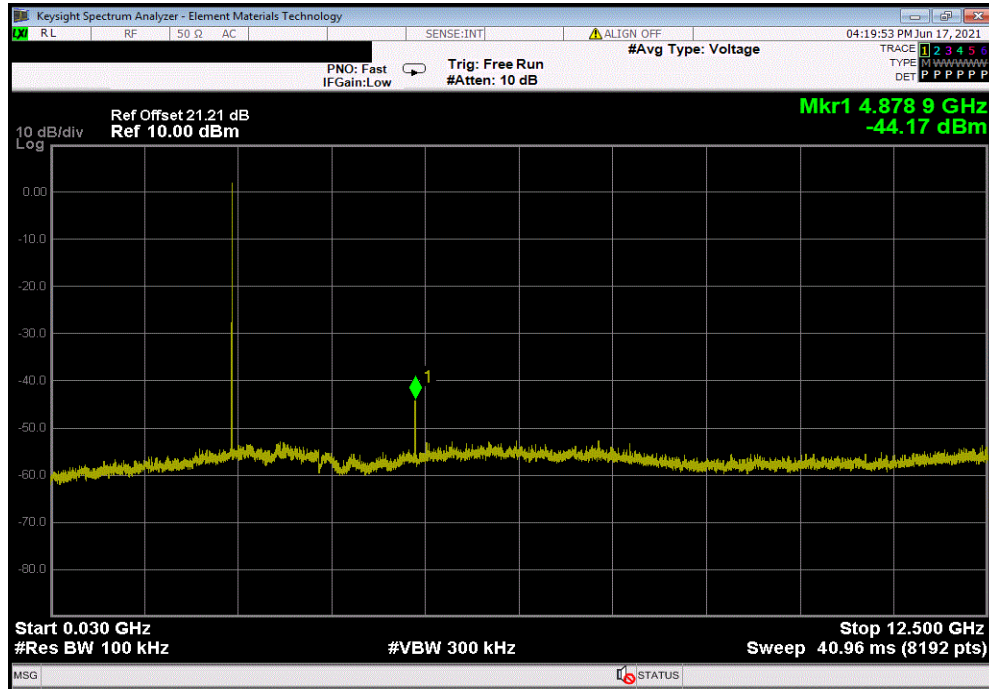


SPURIOUS CONDUCTED EMISSIONS

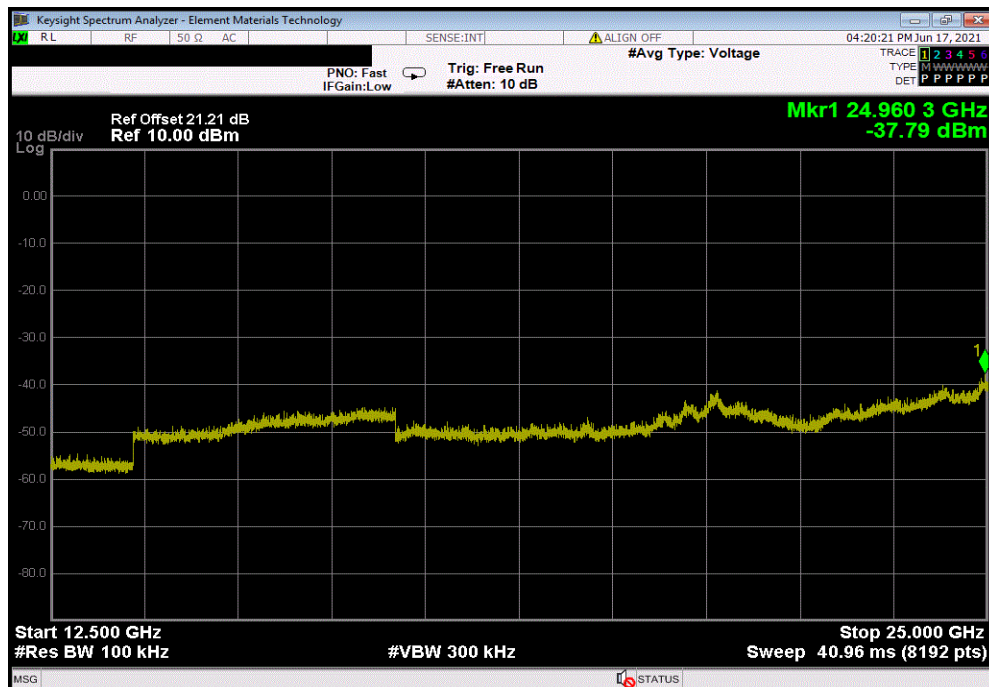


TbTx 2021.03.19.1 XMt 2020.12.30.0

BLE/GFSK Mid Channel, 2440 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
30 MHz - 12.5 GHz	4878.85	-47.4	-20	Pass	



BLE/GFSK Mid Channel, 2440 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
12.5 GHz - 25 GHz	24960.32	-41.02	-20	Pass	

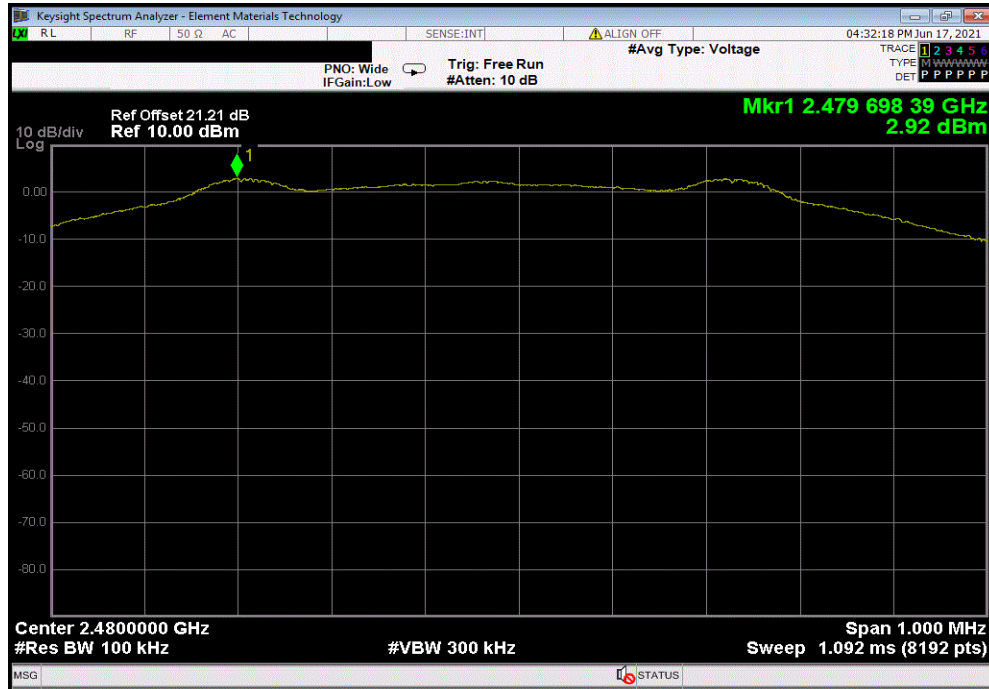


SPURIOUS CONDUCTED EMISSIONS

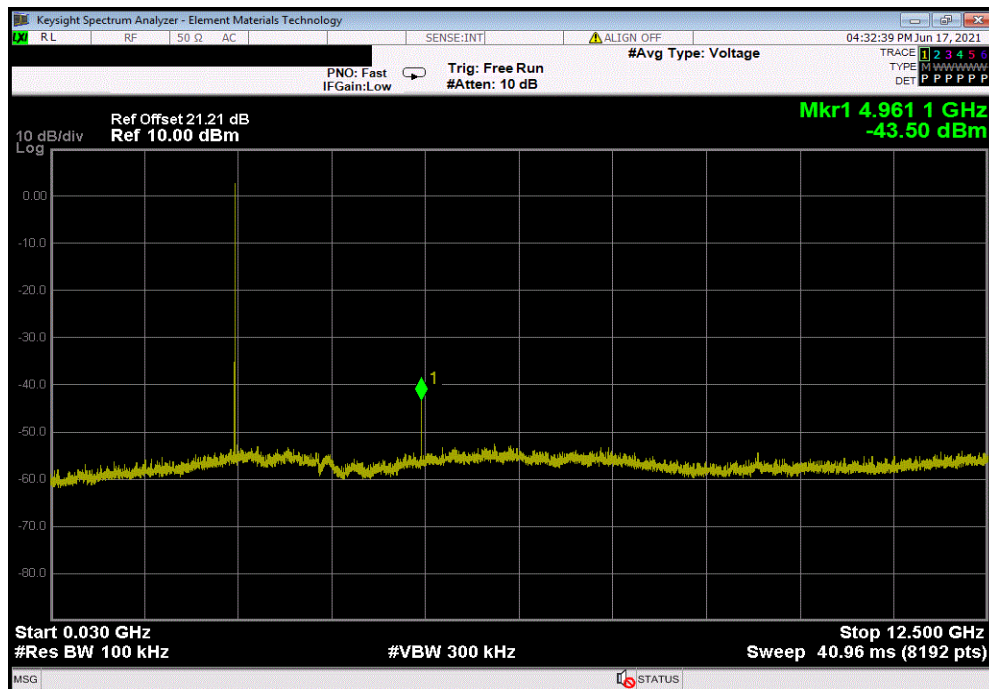


TbTtX 2021.03.19.1 XMt 2020.12.30.0

BLE/GFSK High Channel, 2480 MHz						
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result		
Fundamental	2479.7	N/A	N/A	N/A		



BLE/GFSK High Channel, 2480 MHz						
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result		
30 MHz - 12.5 GHz	4961.06	-46.42	-20	Pass		

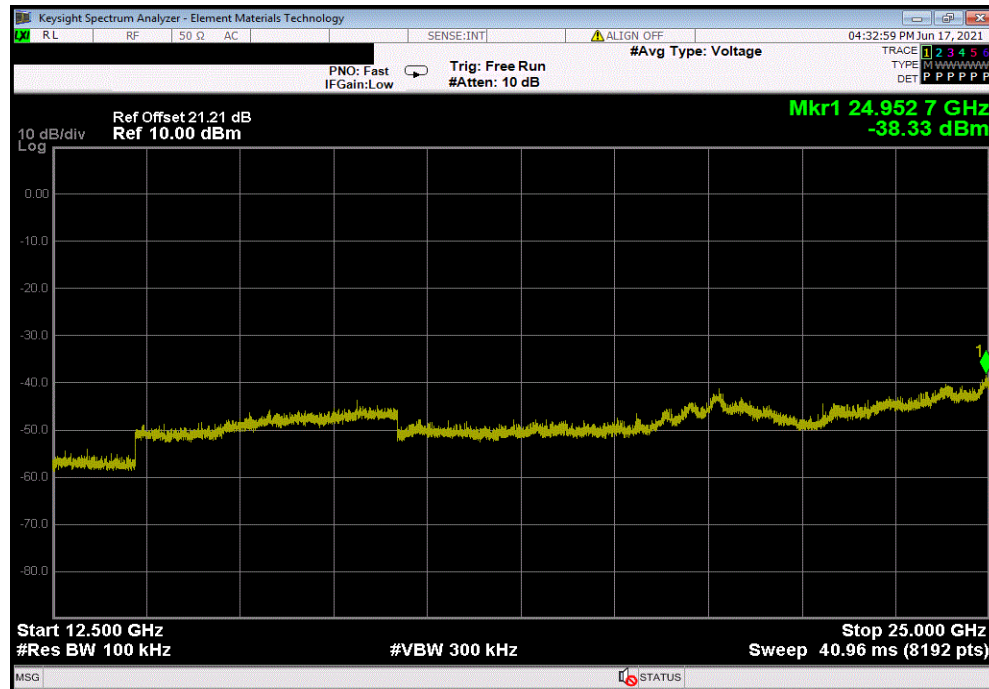


SPURIOUS CONDUCTED EMISSIONS

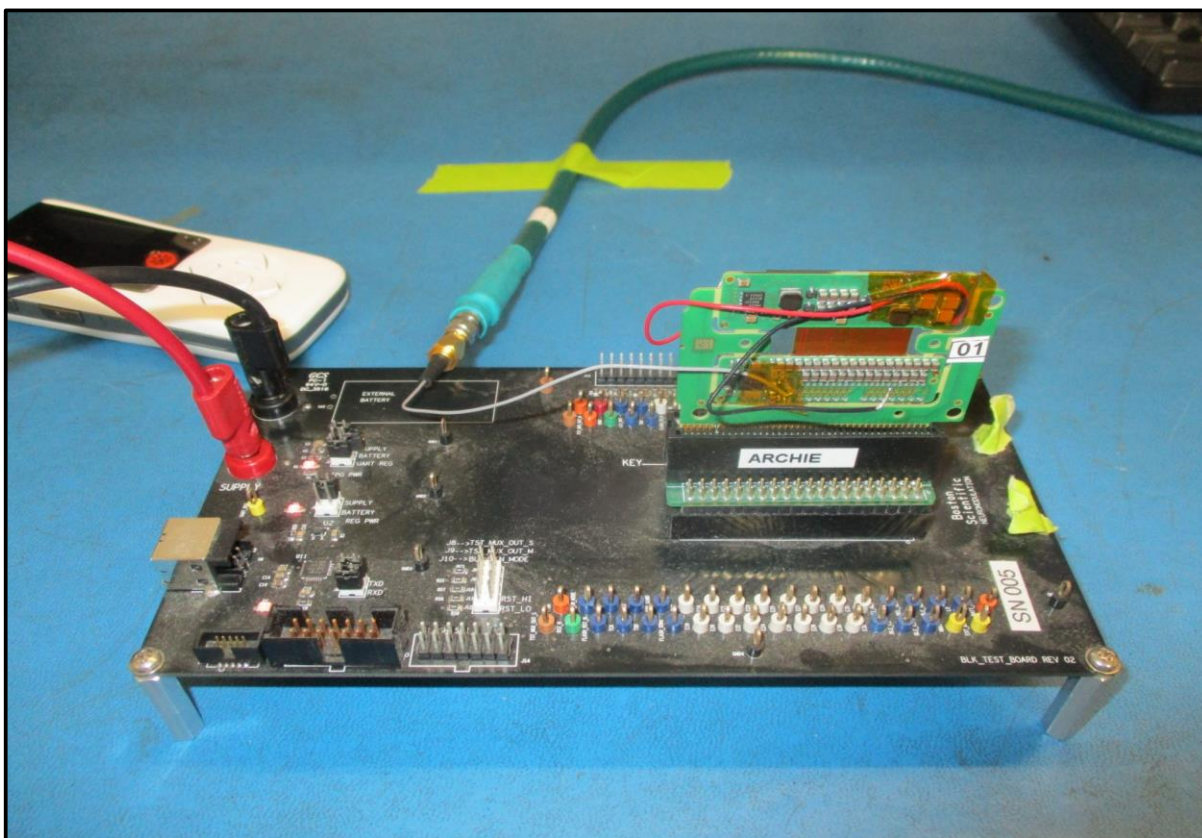
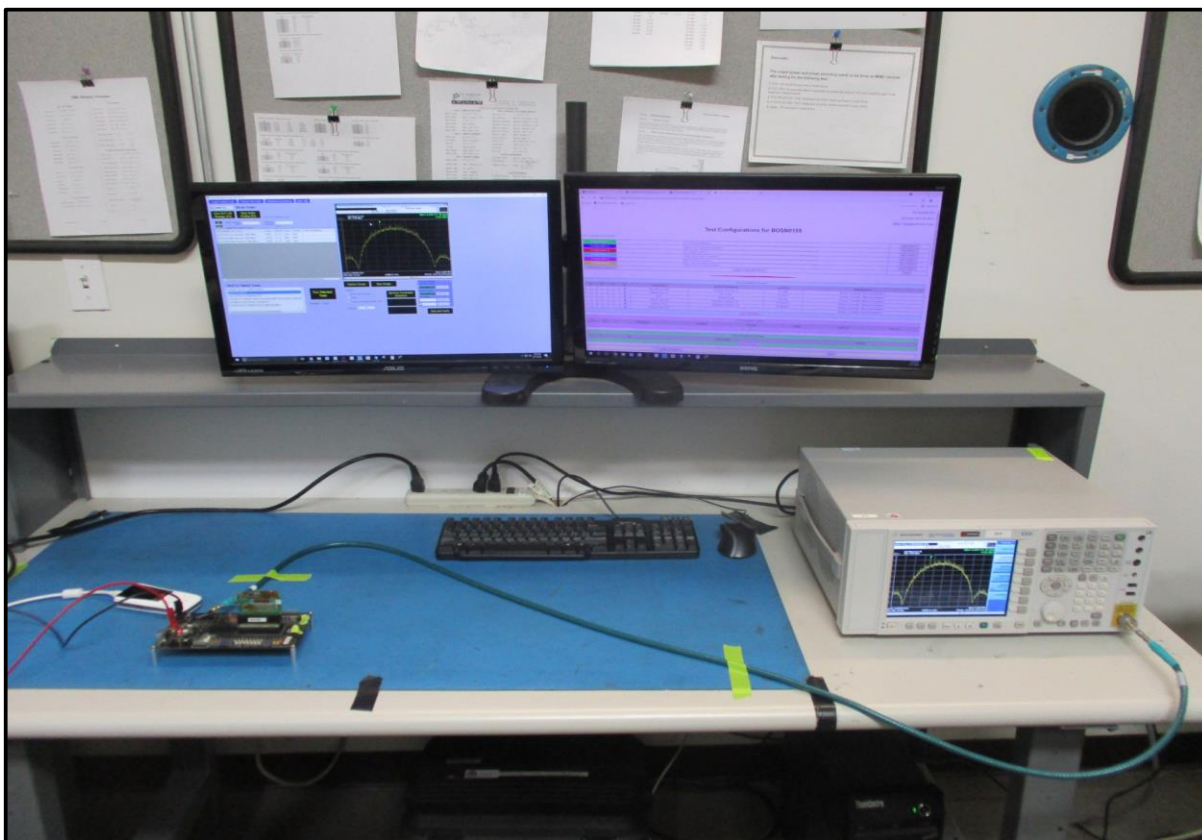


TbTx 2021.03.19.1 XMt 2020.12.30.0

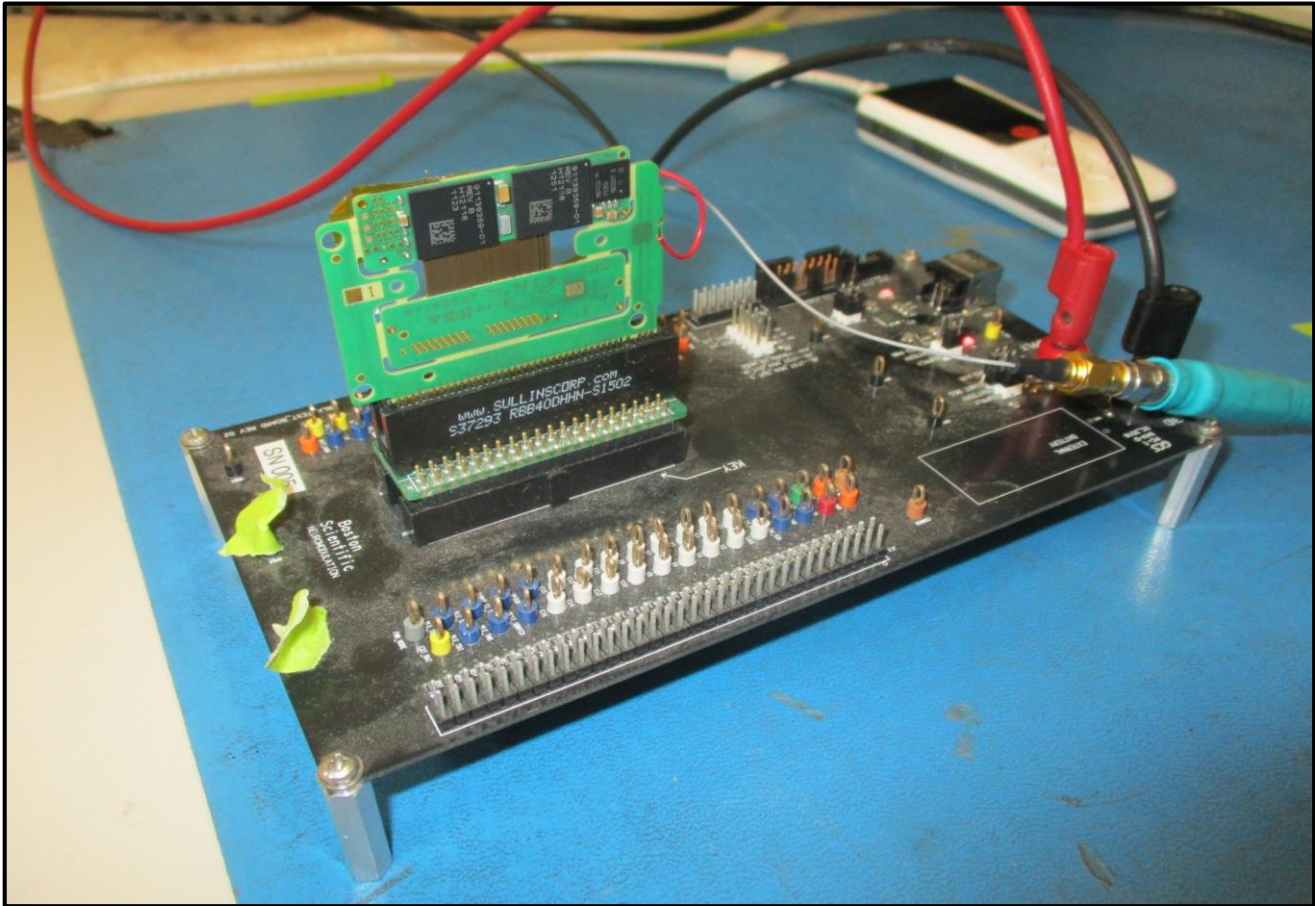
BLE/GFSK High Channel, 2480 MHz					
Frequency Range	Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result	
12.5 GHz - 25 GHz	24952.69	-41.25	-20	Pass	



SPURIOUS CONDUCTED EMISSIONS



SPURIOUS CONDUCTED EMISSIONS



SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2021.03.17.0

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

MODES OF OPERATION

Transmitting Bluetooth Low Energy: Low Channel (37) 2402 MHz, Mid Channel (17) 2440 MHz, High Channel (39) 2480 MHz

Transmitting Bluetooth Low Energy: Low Channel (37) 2402 MHz, High Channel (39) 2480 MHz

POWER SETTINGS INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

BOSN0155 - 7

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	26500 MHz
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SAMPLE CALCULATIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Saline Tank	N/A	N/A	ZZZ	NCR	NCR
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAY	2020-11-17	2021-11-17
Antenna - Double Ridge	EMCO	3115	AHE	2020-07-22	2022-07-22
Amplifier - Pre-Amplifier	Miteq	JSW45-26004000-40-5P	AVQ	2020-12-17	2021-12-17
Antenna - Biconilog	Teseq	CBL 6141A	AYE	2020-05-06	2022-05-06
Amplifier - Pre-Amplifier	Miteq	AM-1402	AOZ	2020-07-01	2021-07-01
Antenna - Double Ridge	EMCO	3115	AHB	2020-04-08	2022-04-08
Cable	Northwest EMC	10kHz-1GHz RE Cables	OCH	2020-07-01	2021-07-01
Amplifier - Pre-Amplifier	Cernex	CBL01084020-xx	PAX	2021-02-23	2022-02-23
Antenna - Standard Gain	ETS Lindgren	3160-07	AHR	NCR	NCR
Cable	Northwest EMC	8-18GHz RE Cables	OCO	2021-05-07	2022-05-07
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOE	2021-02-23	2022-02-23
Antenna - Standard Gain	ETS Lindgren	3160-08	AHT	NCR	NCR
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AOF	2021-02-23	2022-02-23
Antenna - Standard Gain	ETS Lindgren	3160-09	AHN	NCR	NCR
Cable	Northwest EMC	18-26GHz RE Cables	OCK	2020-12-17	2021-12-17
Amplifier - Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AOI	2020-12-17	2021-12-17
Filter - Low Pass	Micro-Tronics	LPM50004	LFT	2021-01-04	2022-01-04
Filter - High Pass	Micro-Tronics	HPM50111	HHX	2020-06-30	2021-06-30
Attenuator	Fairview Microwave	SA18H-20	TKQ	2020-07-01	2021-07-01

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.

SPURIOUS RADIATED EMISSIONS



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The individual emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis if required, and adjusting the measurement antenna height and polarization (per ANSI C63.10). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

Measurements were made with the required detectors and annotated on the data for each individual point using the following annotation:

QP = Quasi-Peak Detector
PK = Peak Detector
AV = RMS Detector

Measurements were made to satisfy the specific requirements of the test specification for out of band emissions as well as the restricted band requirements.

If there are no detectable emissions above the noise floor, the data included may show noise floor measurements for reference only.

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

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

SPURIOUS RADIATED EMISSIONS

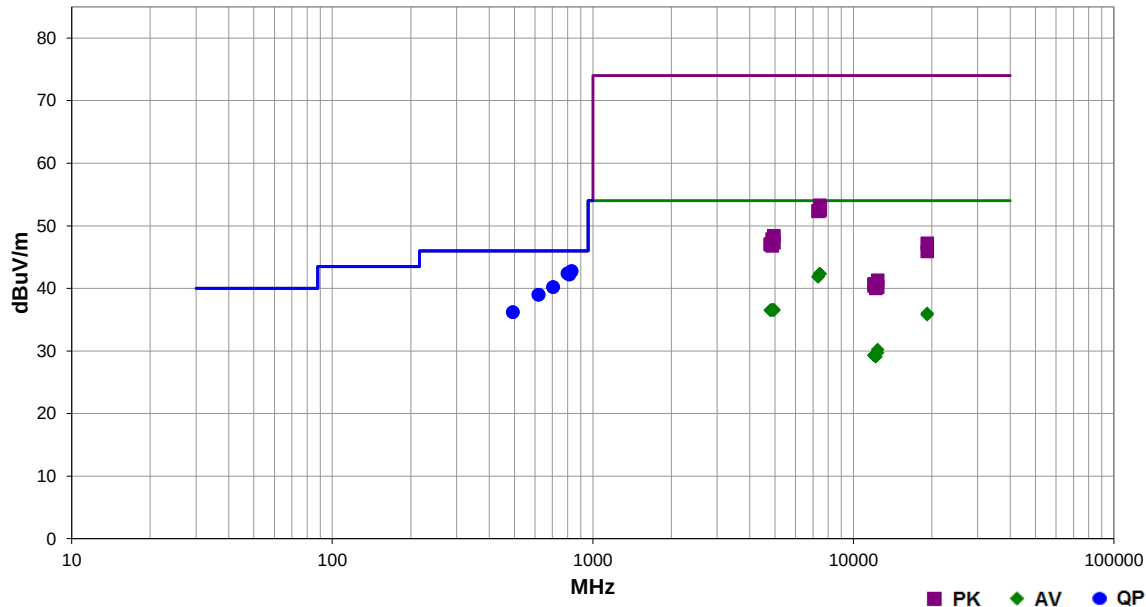


EmiR5 2021.05.14.0 PSA-ESCI 2021.03.17.0

Work Order:	BOSN0155	Date:	2021-06-21		
Project:	None	Temperature:	22.9 °C		
Job Site:	OC10	Humidity:	43.6% RH		
Serial Number:	101041	Barometric Pres.:	1013.21 mbar	Tested by:	Nolan De Ramos
EUT:	Blink-32 IPG				
Configuration:	7				
Customer:	Boston Scientific Neuromodulation				
Attendees:	Habet Ter-Petrosyan				
EUT Power:	Battery				
Operating Mode:	Transmitting Bluetooth Low Energy: Low Channel (37) 2402 MHz, Mid Channel (17) 2440 MHz, High Channel (39) 2480 MHz				
Deviations:	None				
Comments:	None				

Test Specifications	Test Method
LP0002:2020	LP0002:2020

Run #	56	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
828.989	26.6	16.2	1.5	306.0	3.0	0.0	Horz	QP	0.0	42.8	46.0	-3.2	Tx BLE, High Ch, EUT Horz
827.477	26.6	16.1	1.5	87.0	3.0	0.0	Vert	QP	0.0	42.7	46.0	-3.3	Tx BLE, High Ch, EUT Horz
798.318	26.6	15.8	1.5	164.0	3.0	0.0	Horz	QP	0.0	42.4	46.0	-3.6	Tx BLE, Low Ch, EUT Horz
801.559	26.6	15.8	1.5	163.0	3.0	0.0	Vert	QP	0.0	42.4	46.0	-3.6	Tx BLE, Low Ch, EUT Horz
810.962	26.6	15.7	1.5	187.0	3.0	0.0	Vert	QP	0.0	42.3	46.0	-3.7	Tx BLE, Mid Ch, EUT Horz
813.077	26.6	15.6	1.5	59.0	3.0	0.0	Horz	QP	0.0	42.2	46.0	-3.8	Tx BLE, Mid Ch, EUT Horz
703.555	26.6	13.6	1.5	303.0	3.0	0.0	Horz	QP	0.0	40.2	46.0	-5.8	Tx BLE, Mid Ch, EUT Horz
703.417	26.6	13.6	1.5	335.0	3.0	0.0	Vert	QP	0.0	40.2	46.0	-5.8	Tx BLE, Mid Ch, EUT Horz
617.773	26.7	12.3	2.9	200.0	3.0	0.0	Horz	QP	0.0	39.0	46.0	-7.0	Tx BLE, High Ch, EUT Horz
619.891	26.7	12.3	1.5	57.0	3.0	0.0	Vert	QP	0.0	39.0	46.0	-7.0	Tx BLE, High Ch, EUT Horz
493.316	26.8	9.4	1.5	9.0	3.0	0.0	Horz	QP	0.0	36.2	46.0	-9.8	Tx BLE, High Ch, EUT Horz
492.893	26.8	9.4	1.5	111.0	3.0	0.0	Vert	QP	0.0	36.2	46.0	-9.8	Tx BLE, High Ch, EUT Horz
7441.517	35.5	6.8	1.5	360.0	3.0	0.0	Horz	AV	0.0	42.3	54.0	-11.7	Tx BLE, High Ch, EUT Horz
7439.417	35.5	6.8	1.5	63.0	3.0	0.0	Vert	AV	0.0	42.3	54.0	-11.7	Tx BLE, High Ch, EUT Horz
7440.558	35.5	6.8	2.0	215.0	3.0	0.0	Horz	AV	0.0	42.3	54.0	-11.7	Tx BLE, High Ch, EUT On Side
7440.350	35.5	6.8	3.4	145.0	3.0	0.0	Vert	AV	0.0	42.3	54.0	-11.7	Tx BLE, High Ch, EUT On Side
7441.033	35.5	6.8	1.5	320.0	3.0	0.0	Horz	AV	0.0	42.3	54.0	-11.7	Tx BLE, High Ch, EUT Vert
7439.050	35.5	6.8	1.5	121.0	3.0	0.0	Vert	AV	0.0	42.3	54.0	-11.7	Tx BLE, High Ch, EUT Vert
7322.358	35.6	6.3	3.5	134.0	3.0	0.0	Horz	AV	0.0	41.9	54.0	-12.1	Tx BLE, Mid Ch, EUT Horz
7322.433	35.6	6.3	1.5	119.0	3.0	0.0	Vert	AV	0.0	41.8	54.0	-12.2	Tx BLE, Mid Ch, EUT Horz
4961.108	38.9	-2.3	1.5	73.0	3.0	0.0	Vert	AV	0.0	36.6	54.0	-17.4	Tx BLE, High Ch, EUT Horz
4880.650	39.2	-2.6	1.5	134.0	3.0	0.0	Horz	AV	0.0	36.6	54.0	-17.4	Tx BLE, Mid Ch, EUT Horz

Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
4957.917	38.9	-2.4	1.5	232.0	3.0	0.0	Horz	AV	0.0	36.5	54.0	-17.5	Tx BLE, High Ch, EUT Horz
4881.392	39.1	-2.6	1.5	54.0	3.0	0.0	Vert	AV	0.0	36.5	54.0	-17.5	Tx BLE, Mid Ch, EUT Horz
4804.042	39.5	-3.0	1.5	208.0	3.0	0.0	Horz	AV	0.0	36.5	54.0	-17.5	Tx BLE, Low Ch, EUT Horz
4804.075	39.5	-3.0	1.5	286.0	3.0	0.0	Vert	AV	0.0	36.5	54.0	-17.5	Tx BLE, Low Ch, EUT Horz
19214.280	38.1	-2.1	1.2	105.0	3.0	0.0	Horz	AV	0.0	36.0	54.0	-18.0	Tx BLE, Low Ch, EUT Horz
19215.790	37.9	-2.1	1.2	60.0	3.0	0.0	Vert	AV	0.0	35.8	54.0	-18.2	Tx BLE, Low Ch, EUT Horz
7438.500	46.5	6.8	1.5	360.0	3.0	0.0	Horz	PK	0.0	53.3	74.0	-20.7	Tx BLE, High Ch, EUT Horz
7441.108	46.4	6.8	3.4	145.0	3.0	0.0	Vert	PK	0.0	53.2	74.0	-20.8	Tx BLE, High Ch, EUT On Side
7441.717	46.1	6.8	1.5	63.0	3.0	0.0	Vert	PK	0.0	52.9	74.0	-21.1	Tx BLE, High Ch, EUT Horz
7439.342	45.9	6.8	2.0	215.0	3.0	0.0	Horz	PK	0.0	52.7	74.0	-21.3	Tx BLE, High Ch, EUT On Side
7440.733	45.8	6.8	1.5	121.0	3.0	0.0	Vert	PK	0.0	52.6	74.0	-21.4	Tx BLE, High Ch, EUT Vert
7440.125	45.6	6.8	1.5	320.0	3.0	0.0	Horz	PK	0.0	52.4	74.0	-21.6	Tx BLE, High Ch, EUT Vert
7320.942	46.1	6.3	3.5	134.0	3.0	0.0	Horz	PK	0.0	52.4	74.0	-21.6	Tx BLE, Mid Ch, EUT Horz
7321.650	46.0	6.3	1.5	119.0	3.0	0.0	Vert	PK	0.0	52.3	74.0	-21.7	Tx BLE, Mid Ch, EUT Horz
12397.550	32.9	-2.7	3.8	152.0	3.0	0.0	Horz	AV	0.0	30.2	54.0	-23.8	Tx BLE, High Ch, EUT Horz
12397.590	32.4	-2.7	1.5	89.0	3.0	0.0	Vert	AV	0.0	29.7	54.0	-24.3	Tx BLE, High Ch, EUT Horz
12008.290	33.5	-4.2	2.6	243.0	3.0	0.0	Horz	AV	0.0	29.3	54.0	-24.7	Tx BLE, Mid Ch, EUT Horz
12008.080	33.5	-4.2	1.5	87.0	3.0	0.0	Vert	AV	0.0	29.3	54.0	-24.7	Tx BLE, Mid Ch, EUT Horz
12202.100	31.3	-2.2	1.5	257.0	3.0	0.0	Horz	AV	0.0	29.1	54.0	-24.9	Tx BLE, Mid Ch, EUT Horz
12201.970	31.3	-2.2	1.5	86.0	3.0	0.0	Vert	AV	0.0	29.1	54.0	-24.9	Tx BLE, Mid Ch, EUT Horz
4958.933	50.7	-2.3	1.5	232.0	3.0	0.0	Horz	PK	0.0	48.4	74.0	-25.6	Tx BLE, High Ch, EUT Horz
4878.425	50.5	-2.6	1.5	134.0	3.0	0.0	Horz	PK	0.0	47.9	74.0	-26.1	Tx BLE, Mid Ch, EUT Horz
4958.717	49.7	-2.4	1.5	73.0	3.0	0.0	Vert	PK	0.0	47.3	74.0	-26.7	Tx BLE, High Ch, EUT Horz
19213.540	49.3	-2.1	1.2	105.0	3.0	0.0	Horz	PK	0.0	47.2	74.0	-26.8	Tx BLE, Low Ch, EUT Horz
4804.225	50.1	-3.0	1.5	286.0	3.0	0.0	Vert	PK	0.0	47.1	74.0	-26.9	Tx BLE, Low Ch, EUT Horz
4801.717	50.0	-3.0	1.5	208.0	3.0	0.0	Horz	PK	0.0	47.0	74.0	-27.0	Tx BLE, Low Ch, EUT Horz
4878.775	49.4	-2.6	1.5	54.0	3.0	0.0	Vert	PK	0.0	46.8	74.0	-27.2	Tx BLE, Mid Ch, EUT Horz
19217.540	48.0	-2.1	1.2	60.0	3.0	0.0	Vert	PK	0.0	45.9	74.0	-28.1	Tx BLE, Low Ch, EUT Horz
12399.450	43.9	-2.6	3.8	152.0	3.0	0.0	Horz	PK	0.0	41.3	74.0	-32.7	Tx BLE, High Ch, EUT Horz
12008.880	44.9	-4.2	2.6	243.0	3.0	0.0	Horz	PK	0.0	40.7	74.0	-33.3	Tx BLE, Mid Ch, EUT Horz
12008.180	44.6	-4.2	1.5	87.0	3.0	0.0	Vert	PK	0.0	40.4	74.0	-33.6	Tx BLE, Mid Ch, EUT Horz
12399.550	42.8	-2.6	1.5	89.0	3.0	0.0	Vert	PK	0.0	40.2	74.0	-33.8	Tx BLE, High Ch, EUT Horz
12198.350	42.3	-2.2	1.5	86.0	3.0	0.0	Vert	PK	0.0	40.1	74.0	-33.9	Tx BLE, Mid Ch, EUT Horz
12201.800	42.2	-2.2	1.5	257.0	3.0	0.0	Horz	PK	0.0	40.0	74.0	-34.0	Tx BLE, Mid Ch, EUT Horz

SPURIOUS RADIATED EMISSIONS

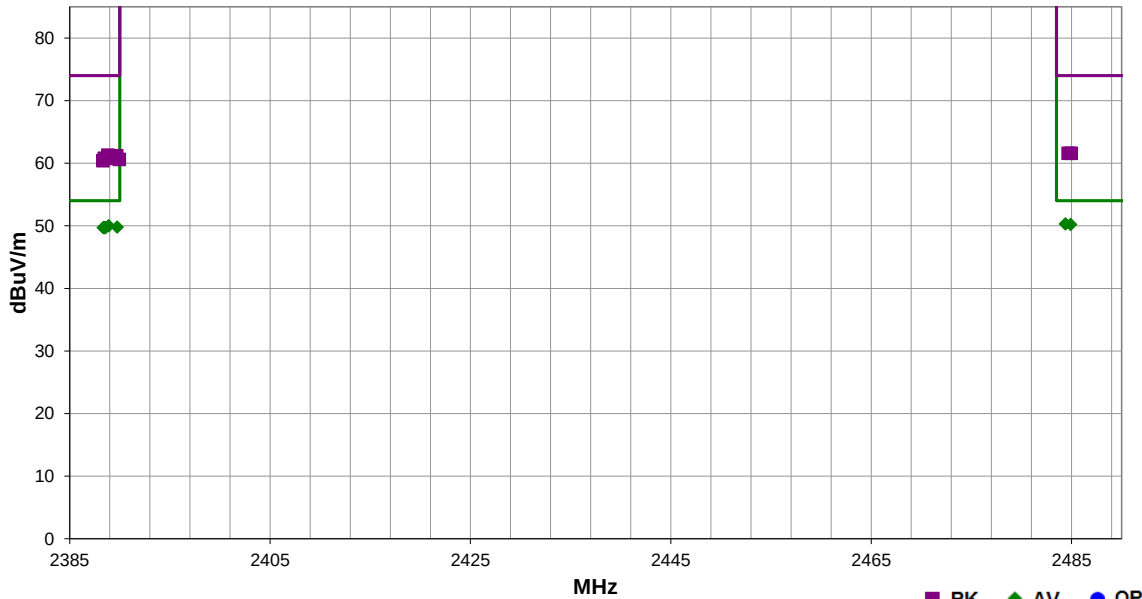


EmiRS 2021.05.14.0 PSA-ESCI 2021.03.17.0

Work Order:	BOSN0155	Date:	2021-06-18		
Project:	None	Temperature:	22.8 °C		
Job Site:	OC10	Humidity:	51% RH		
Serial Number:	101041	Barometric Pres.:	1013.21 mbar	Tested by:	Nolan De Ramos
EUT:	Blink-32 IPG				
Configuration:	7				
Customer:	Boston Scientific Neuromodulation				
Attendees:	Habet Ter-Petrosyan				
EUT Power:	Battery				
Operating Mode:	Transmitting Bluetooth Low Energy: Low Channel (37) 2402 MHz, High Channel (39) 2480 MHz				
Deviations:	None				
Comments:	Band Edge				

Test Specifications	Test Method
LP0002:2020	LP0002:2020

Run #	47	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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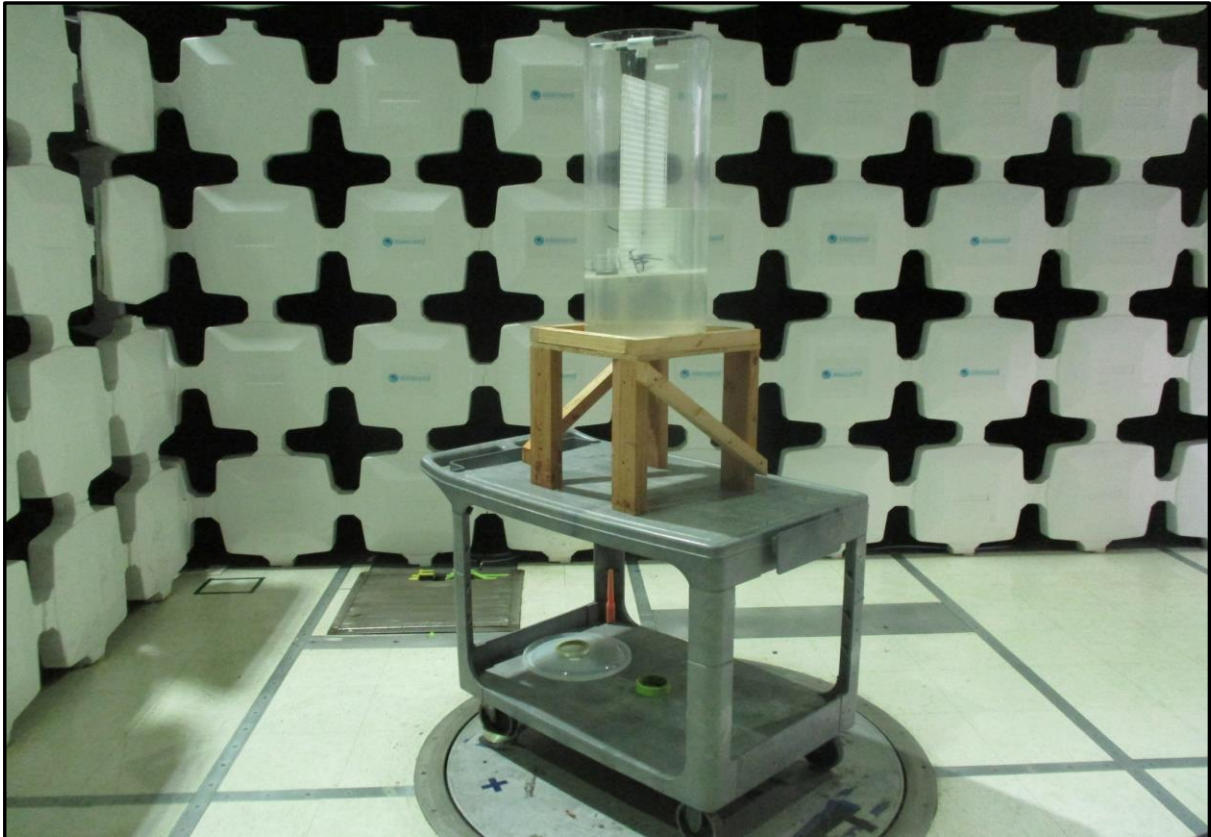


Freq (MHz)	Amplitude (dBuV)	Factor (dB/m)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
2484.387	40.5	-10.2	1.5	336.0	3.0	20.0	Horz	AV	0.0	50.3	54.0	-3.7	Tx BLE, High Ch, EUT Horz
2484.913	40.4	-10.2	1.5	133.0	3.0	20.0	Vert	AV	0.0	50.2	54.0	-3.8	Tx BLE, High Ch, EUT Horz
2388.890	40.4	-10.4	2.7	81.0	3.0	20.0	Horz	AV	0.0	50.0	54.0	-4.0	Tx BLE, Low Ch, EUT Horz
2389.743	40.2	-10.4	1.5	164.0	3.0	20.0	Vert	AV	0.0	49.8	54.0	-4.2	Tx BLE, Low Ch, EUT Horz
2388.357	40.1	-10.4	1.5	232.0	3.0	20.0	Horz	AV	0.0	49.7	54.0	-4.3	Tx BLE, Low Ch, EUT Vert
2388.477	40.1	-10.4	2.9	358.0	3.0	20.0	Vert	AV	0.0	49.7	54.0	-4.3	Tx BLE, Low Ch, EUT Vert
2388.570	40.1	-10.4	1.5	251.0	3.0	20.0	Horz	AV	0.0	49.7	54.0	-4.3	Tx BLE, Low Ch, EUT On Side
2388.447	40.1	-10.4	1.5	257.0	3.0	20.0	Vert	AV	0.0	49.7	54.0	-4.3	Tx BLE, Low Ch, EUT On Side
2484.650	51.8	-10.2	1.5	336.0	3.0	20.0	Horz	PK	0.0	61.6	74.0	-12.4	Tx BLE, High Ch, EUT Horz
2484.963	51.8	-10.2	1.5	133.0	3.0	20.0	Vert	PK	0.0	61.6	74.0	-12.4	Tx BLE, High Ch, EUT Horz
2388.823	51.7	-10.4	2.7	81.0	3.0	20.0	Horz	PK	0.0	61.3	74.0	-12.7	Tx BLE, Low Ch, EUT Horz
2389.687	51.6	-10.4	1.5	257.0	3.0	20.0	Vert	PK	0.0	61.2	74.0	-12.8	Tx BLE, Low Ch, EUT On Side
2389.607	51.2	-10.4	1.5	232.0	3.0	20.0	Horz	PK	0.0	60.8	74.0	-13.2	Tx BLE, Low Ch, EUT Vert
2388.447	51.2	-10.4	1.5	251.0	3.0	20.0	Horz	PK	0.0	60.8	74.0	-13.2	Tx BLE, Low Ch, EUT On Side
2389.957	51.0	-10.4	1.5	164.0	3.0	20.0	Vert	PK	0.0	60.6	74.0	-13.4	Tx BLE, Low Ch, EUT Horz
2388.323	50.8	-10.4	2.9	358.0	3.0	20.0	Vert	PK	0.0	60.4	74.0	-13.6	Tx BLE, Low Ch, EUT Vert

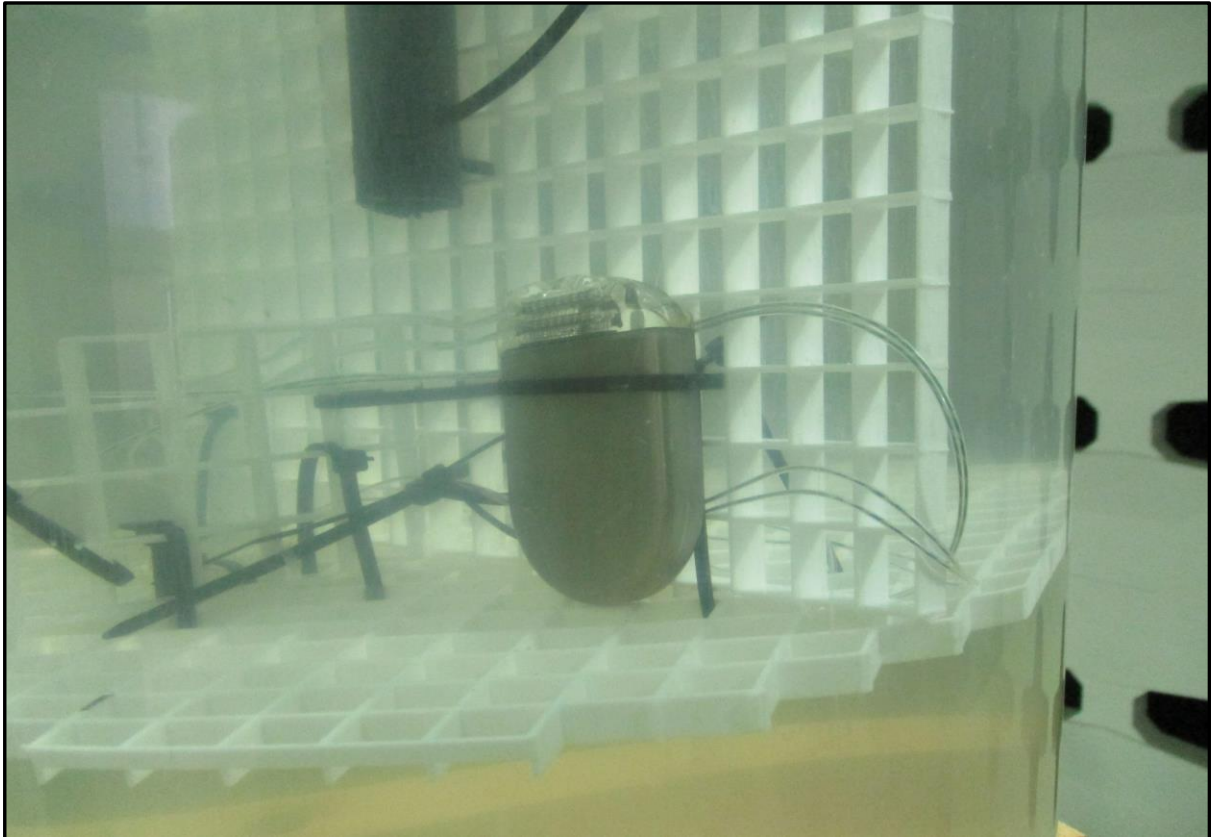
SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2021.03.17.0



SPURIOUS RADIATED EMISSIONS



End of Test Report