

Boston Scientific Neuromodulation

RC5

FCC 15.247:2019

Bluetooth LE Radio

Report # BOSN0134.3



NVLAP LAB CODE: 200676-0



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Last Date of Test: October 21, 2019 Boston Scientific Neuromodulation EUT: RC5

Radio Equipment Testing

Standards	
Specification	Method
FCC 15.247:2019	ANSI C63.10:2013, KDB 558074

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	No	N/A	Not required for a battery powered EUT.
6.5, 6.6, 11.12.1, 11.13.2	Spurious Radiated Emissions	Yes	Pass	
11.6	Duty Cycle	Yes	N/A	
11.8.2	Occupied Bandwidth	Yes	Pass	
11.9.1.1	Output Power	Yes	Pass	
11.9.1.1	Equivalent Isotropic Radiated 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:

Victor Ratinoff, Operations Manager

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

REVISION HISTORY



Revision Number	Description	Date (yyyy-mm-dd)	Page Number
00	None		

ACCREDITATIONS AND AUTHORIZATIONS



United States

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

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

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

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

European Union

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

Australia/New Zealand

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

Korea

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

Japan

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

Taiwan

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

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

Singapore

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

Israel

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

Hong Kong

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

Vietnam

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

SCOPE

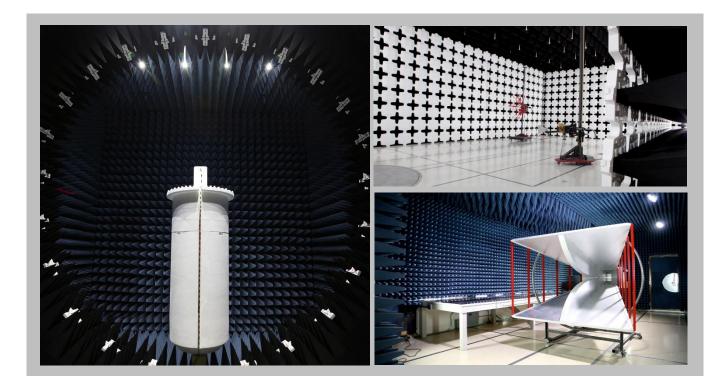
For details on the Scopes of our Accreditations, please visit: https://www.nwemc.com/emc-testing-accreditations

FACILITIES





California Labs OC01-17 41 Tesla Irvine, CA 92618 (949) 861-8918	Minnesota Labs MN01-10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Oregon Labs EV01-12 6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	Texas Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Washington Labs NC01-05 19201 120 th Ave NE Bothell, WA 98011 (425)984-6600
		NVLAP		
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
	Innovation, Sci	ence and Economic Develop	ment 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
Re	cognized Phase I CAB for IS	ED, ACMA, BSMI, IDA, KCC/	RRA, MIC, MOC, NCC, OF	-CA
US0158	US0175	US0017	US0191	US0157



MEASUREMENT UNCERTAINTY



Measurement Uncertainty

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

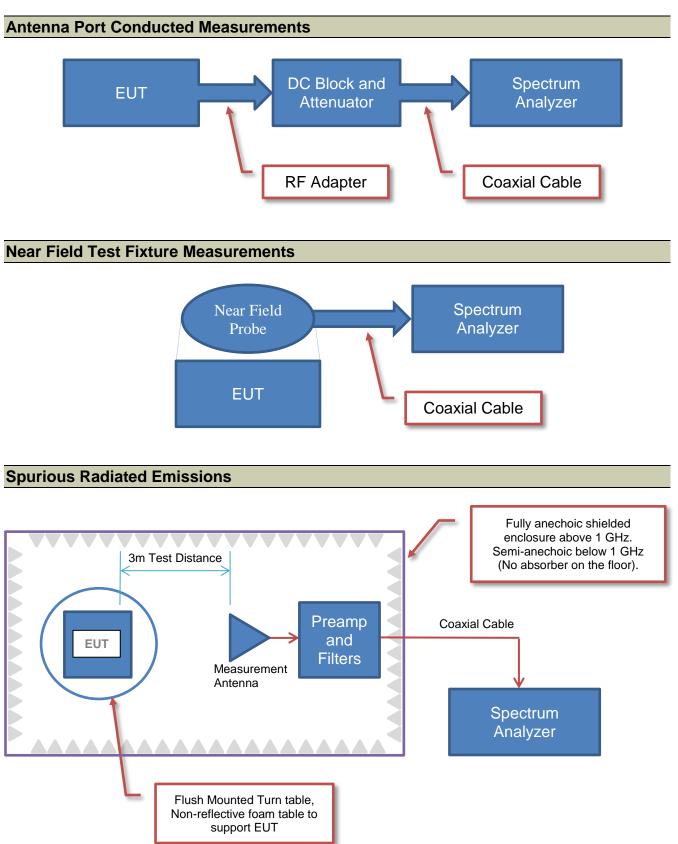
A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable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

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

Test	+ MU	- MU
Frequency Accuracy	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	1.2 dB	-1.2 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.1 dB	-5.1 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

Test Setup Block Diagrams





PRODUCT DESCRIPTION



Client and Equipment Under Test (EUT) Information

Company Name:	Boston Scientific Neuromodulation
Address:	25155 Rye Canyon Loop
City, State, Zip:	Santa Clarita, CA 91355
Test Requested By:	Habet Ter-Petrosyan
EUT:	RC5
First Date of Test:	October 14, 2019
Last Date of Test:	October 21, 2019
Receipt Date of Samples:	October 14, 2019
Equipment Design Stage:	Production
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:

Remote Control (RC) is used by the patients to control the stimulation settings of their implants through RF communication.

Testing Objective:

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





Configuration BOSN0134-1

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Remote Control (RC5)	Boston Scientific Neuromodulation	7095920-009 Rev: B	401490

Configuration BOSN0134-5

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Remote Control (RC5)	Boston Scientific Neuromodulation	7095920-009 Rev: B	401485

MODIFICATIONS



Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
		Spurious	Tested as	No EMI suppression	EUT remained at
1	2019-10-14	Radiated	delivered to	devices were added or	Element following
		Emissions	Test Station.	modified during this test.	the test.
		Equivalent	Tested as	No EMI suppression	EUT remained at
2	2019-10-18	Isotropic	delivered to	devices were added or	Element following
		Radiated Power	Test Station.	modified during this test.	the test.
		Band Edge	Tested as	No EMI suppression	EUT remained at
3	2019-10-18	Compliance	delivered to	devices were added or	Element following
		Compliance	Test Station.	modified during this test.	the test.
		Occupied	Tested as	No EMI suppression	EUT remained at
4	2019-10-21	Bandwidth	delivered to	devices were added or	Element following
		Danuwidth	Test Station.	modified during this test.	the test.
			Tested as	No EMI suppression	EUT remained at
5	2019-10-21	Output Power	delivered to	devices were added or	Element following
			Test Station.	modified during this test.	the test.
		Power Spectral	Tested as	No EMI suppression	EUT remained at
6	2019-10-21	Density	delivered to	devices were added or	Element following
		-	Test Station.	modified during this test.	the test.
		Spurious	Tested as	No EMI suppression	Scheduled testing
7	2019-10-21	Conducted	delivered to	devices were added or	was completed.
		Emissions	Test Station.	modified during this test.	nuo oompiotou.

SPURIOUS RADIATED EMISSIONS



PSA-ESCI 2019.05.10

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

MODES OF OPERATION

Transmitting on Low Ch 37 - 2402 MHz & High Ch 39 - 2480 MHz	
Transmitting on Low Ch 37 - 2402 MHz, Mid Ch 18 - 2442 MHz, & High Ch 39 - 2480 MHz	

POWER SETTINGS INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

BOSN0134 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency 30 MHz

Stop Frequency 26500 MHz

SAMPLE CALCULATIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Filter - Low Pass	Micro-Tronics	LPM50003	HGO	23-Jan-2019	12 mo
Attenuator	S.M. Electronics	SA6-20	REO	23-Jan-2019	12 mo
Amplifier - RF	Amplifier Research	500W1000A	TRQ	NCR	0 mo
Cable	Northwest EMC	8-18GHz RE Cables	000	10-Jan-2019	12 mo
Cable	Northwest EMC	18-26GHz RE Cables	OCK	19-Dec-2018	12 mo
Cable	Northwest EMC	1-8GHz RE Cables	OCJ	10-Jan-2019	12 mo
Cable	Northwest EMC	10kHz-1GHz RE Cables	OCH	9-Sep-2019	12 mo
Filter - High Pass	Micro-Tronics	HPM50111	HHX	2-Jul-2019	12 mo
Antenna - Biconilog	Teseq	CBL 6141A	AYE	7-Nov-2017	24 mo
Amplifier - Pre-Amplifier	Miteq	AM-1402	AOZ	2-Jul-2019	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-4D-010120-30-10P-1	AOP	10-Jan-2019	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AOI	19-Dec-2018	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AOF	10-Jan-2019	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOE	10-Jan-2019	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-08	AHT	NCR	0 mo
Antenna - Standard Gain	ETS Lindgren	3160-07	AHR	NCR	0 mo
Antenna - Standard Gain	ETS Lindgren	3160-09	AHN	NCR	0 mo
Antenna - Double Ridge	EMCO	3115	AHB	28-Mar-2018	24 mo
Analyzer - Spectrum Analyzer	Agilent	N9010A	AFJ	18-Dec-2018	12 mo

TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT was tested. The EUT was configured for the required transmit frequencies and the modes as showed in the data sheets.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. These "pre-scans" are not included in the report. Final measurements on individual emissions were then made and included in this test report.

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

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

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

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

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

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

SPURIOUS RADIATED EMISSIONS



Work							
	Order:	BOSN0134	Date:	14-Oct-2019	P	1/1	2
	oject:	None	Temperature:	20.2 °C	fe	N.C.	her
	o Site:	OC10	Humidity:	49.4% RH	U		
Serial Nu		401490	Barometric Pres.:	1016 mbar	Tested	by: Johnny Cande	las
	EUT:	RC5					
Configur	ation:	1					
		Boston Scientific Neu	romodulation				
		Habet Ter-Petrosyan					
EUT P	ower:	Battery					
Operating I	Mode:	Transmitting on Low	Ch 37 - 2402 MHz, Mid (Ch 18 - 2442 MHz,	& High Ch 39 - 2480) MHz	
Devia	tions:	None					
Comm	nents:	maximum data transf	that the maximum possil er of 240 kbps (raw PHY e Duty Cycle Correction	data including rad	dio overhead) on a ph	ysical radio signal c	
st Specifica	tions	[Test M	ethod		
C 15.247:20	19				63.10:2013		
Dun #	16	Test Distance (m)	3 Antenna		1 to 4(m)	Results	Pass
Run #	16	Test Distance (m)	3 Antenna				
						Results	F 855
80 70 60 50 40 30							
70 60 50							
70 60 50 40							
70 60 50 40 30 20 10							
70 60 50 40 30 20							

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
4884.050	47.1	13.3	1.0	132.0	-12.4	0.0	Horz	AV	0.0	48.0	54.0	-6.0	EUT Vert, Mid Ch
4883.983	46.1	13.3	1.5	122.0	-12.4	0.0	Vert	AV	0.0	47.0	54.0	-7.0	EUT on Side, Mid Ch
4883.958	45.8	13.3	3.7	51.0	-12.4	0.0	Vert	AV	0.0	46.7	54.0	-7.3	EUT Horiz, Mid Ch
4959.900	45.4	13.5	1.1	128.0	-12.4	0.0	Vert	AV	0.0	46.5	54.0	-7.5	EUT on Side, High Ch
4959.983	44.1	13.5	1.5	139.0	-12.4	0.0	Horz	AV	0.0	45.2	54.0	-8.8	EUT Vert, High Ch
4884.492	50.9	13.3	1.0	132.0	0.0	0.0	Horz	PK	0.0	64.2	74.0	-9.8	EUT Vert, Mid Ch
4804.058	43.7	12.7	1.0	117.0	-12.4	0.0	Horz	AV	0.0	44.0	54.0	-10.0	EUT Vert, Low Ch
4804.100	43.6	12.7	1.1	185.0	-12.4	0.0	Vert	AV	0.0	43.9	54.0	-10.1	EUT on Side, Low Ch
4883.475	50.1	13.3	1.5	122.0	0.0	0.0	Vert	PK	0.0	63.4	74.0	-10.6	EUT on Side, Mid Ch
4884.458	49.9	13.3	3.7	51.0	0.0	0.0	Vert	PK	0.0	63.2	74.0	-10.8	EUT Horiz, Mid Ch
4960.575	49.6	13.5	1.1	128.0	0.0	0.0	Vert	PK	0.0	63.1	74.0	-10.9	EUT on Side, High Ch
4960.283	48.7	13.5	1.5	139.0	0.0	0.0	Horz	PK	0.0	62.2	74.0	-11.8	EUT Vert, High Ch
4884.050	40.4	13.3	1.5	82.0	-12.4	0.0	Horz	AV	0.0	41.3	54.0	-12.7	EUT Horiz, Mid Ch
4804.483	48.1	12.7	1.0	117.0	0.0	0.0	Horz	PK	0.0	60.8	74.0	-13.2	EUT Vert, Low Ch
4803.508	48.1	12.7	1.1	185.0	0.0	0.0	Vert	PK	0.0	60.8	74.0	-13.2	EUT on Side, Low Ch
4883.967	39.8	13.3	1.0	61.0	-12.4	0.0	Vert	AV	0.0	40.7	54.0	-13.3	EUT Vert, Mid Ch
4883.933	38.3	13.3	1.0	233.0	-12.4	0.0	Horz	AV	0.0	39.2	54.0	-14.8	EUT on Side, Mid Ch
4883.317	45.9	13.3	1.5	82.0	0.0	0.0	Horz	PK	0.0	59.2	74.0	-14.8	EUT Horiz, Mid Ch

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
7326.625	40.7	18.4	3.3	193.0	0.0	0.0	Horz	PK	0.0	59.1	74.0	-14.9	EUT Vert, Mid Ch
7325.650	40.6	18.4	1.1	207.0	0.0	0.0	Vert	PK	0.0	59.0	74.0	-15.0	EUT Vert, Mid Ch
7439.767	40.3	18.5	1.1	205.0	0.0	0.0	Horz	PK	0.0	58.8	74.0	-15.2	EUT Vert, High Ch
4884.217	45.4	13.3	1.0	61.0	0.0	0.0	Vert	PK	0.0	58.7	74.0	-15.3	EUT Vert, Mid Ch
4883.158	44.8	13.3	1.0	233.0	0.0	0.0	Horz	PK	0.0	58.1	74.0	-15.9	EUT on Side, Mid Ch
7439.600	38.5	18.5	1.5	161.0	0.0	0.0	Vert	PK	0.0	57.0	74.0	-17.0	EUT on Side, High Ch
7325.242	30.8	18.4	1.1	207.0	-12.4	0.0	Vert	AV	0.0	36.8	54.0	-17.2	EUT Vert, Mid Ch
7325.367	30.5	18.4	3.3	193.0	-12.4	0.0	Horz	AV	0.0	36.5	54.0	-17.5	EUT Vert, Mid Ch
7439.292	30.3	18.5	1.1	205.0	-12.4	0.0	Horz	AV	0.0	36.4	54.0	-17.6	EUT Vert, High Ch
7440.542	28.0	18.5	1.5	161.0	-12.4	0.0	Vert	AV	0.0	34.1	54.0	-19.9	EUT on Side, High Ch
19216.430	50.5	-4.6	1.5	232.0	0.0	0.0	Horz	PK	0.0	45.9	74.0	-28.1	EUT Vert, Low Ch
19216.570	50.0	-4.6	1.5	354.0	0.0	0.0	Vert	PK	0.0	45.4	74.0	-28.6	EUT on Side, Low Ch
19215.070	39.2	-4.6	1.5	232.0	-12.4	0.0	Horz	AV	0.0	22.2	54.0	-31.8	EUT Vert, Low Ch
19215.880	39.1	-4.6	1.5	354.0	-12.4	0.0	Vert	AV	0.0	22.1	54.0	-31.9	EUT on Side, Low Ch
12398.480	44.0	-2.7	1.7	169.0	0.0	0.0	Vert	PK	0.0	41.3	74.0	-32.7	EUT on Side, High Ch
12009.780	44.5	-3.7	1.5	34.0	0.0	0.0	Horz	PK	0.0	40.8	74.0	-33.2	EUT Vert, Low Ch
12399.950	43.4	-2.7	3.0	207.0	0.0	0.0	Horz	PK	0.0	40.7	74.0	-33.3	EUT Vert, High Ch
12208.510	43.1	-2.5	2.0	348.0	0.0	0.0	Vert	PK	0.0	40.6	74.0	-33.4	EUT on Side, Mid Ch
12210.380	42.9	-2.5	1.5	78.0	0.0	0.0	Horz	PK	0.0	40.4	74.0	-33.6	EUT Vert, Mid Ch
12009.090	44.1	-3.7	3.4	28.0	0.0	0.0	Vert	PK	0.0	40.4	74.0	-33.6	EUT on Side, Low Ch
12399.800	32.7	-2.7	3.0	207.0	-12.4	0.0	Horz	AV	0.0	17.6	54.0	-36.4	EUT Vert, High Ch
12398.750	32.6	-2.7	1.7	169.0	-12.4	0.0	Vert	AV	0.0	17.5	54.0	-36.5	EUT on Side, High Ch
12008.690	33.3	-3.7	1.5	34.0	-12.4	0.0	Horz	AV	0.0	17.2	54.0	-36.8	EUT Vert, Low Ch
12008.080	33.3	-3.7	3.4	28.0	-12.4	0.0	Vert	AV	0.0	17.2	54.0	-36.8	EUT on Side, Low Ch
12208.620	32.0	-2.5	1.5	78.0	-12.4	0.0	Horz	AV	0.0	17.1	54.0	-36.9	EUT Vert, Mid Ch
12208.590	32.0	-2.5	2.0	348.0	-12.4	0.0	Vert	AV	0.0	17.1	54.0	-36.9	EUT on Side, Mid Ch

SPURIOUS RADIATED EMISSIONS



Wor									1 1
	k Order:	BOSN0134		Date:	14-Oct-2		P	1/1	2
	Project:	None	Ter	mperature:	20.2 °		the	. L.	aller
	Job Site:	OC10		Humidity:	49.4%		U		
Serial I	Number:	401490	Barome	etric Pres.:	1016 m	bar	Tested	by: Johnny Cand	elas
	EUT:								
	juration:								
		Boston Scientific N		on					
Att	tendees:	Habet Ter-Petrosya	an						
EUT	Power:	Battery							
Operatin	g Mode:	Transmitting on Lo	w Ch 37 - 240	2 MHz & High	Ch 39 - 24	80 MHz			
Dev	viations:	None							
Cor	nmonts:	Band Edge Floor Noise therefo		addad					
CO	innents.	FIOOI NOISE METER		added					
st Specifi	cations				T	est Method			
C 15.247:					A	VSI C63.10:	2013		
Run #	21	Test Distance (n) 3	Antenna H	leight(s)	11	o 4(m)	Results	Pass
	21	Test Distance (n) 3	Antenna H	leight(s)	11	to 4(m)	Results	Pass
Run #	21	Test Distance (n) 3	Antenna H	leight(s)	11	to 4(m)	Results	Pass
	21	Test Distance (n) 3	Antenna H	leight(s)	11	to 4(m)	Results	Pass
80	21	Test Distance (n) 3	Antenna H	leight(s)	11	to 4(m)	Results	Pass
80		Test Distance (n) 3	Antenna H	leight(s)		<u>o 4(m)</u>	Results	Pass
80 - 70 - 60 - 50 -		Test Distance (n) 3	Antenna H	leight(s)			Results	Pass
80 - 70 - 60 - 50 -		Test Distance (n) 3	Antenna H	leight(s)		o 4(m)	Results Image: state	Pass
80 - 70 - 60 -		Test Distance (n) 3	Antenna H	leight(s)			Results Image: state	Pass
80 - 70 - 60 - 50 -		Test Distance (n) 3	Antenna H	leight(s)			Results Image: state	Pass
80 70 60 50 40		Test Distance (n) 3	Antenna H	leight(s)			Results Image: Image	Pass
80		Test Distance (n) 3	Antenna H	leight(s)			Results	Pass
80		Test Distance (n) 3	Antenna H	leight(s)			Results	Pass
80 70 60 50 50 30 20 10 0									Pass
80		Test Distance (n) 3					Results	Pass

Freq (MHz)	Amplitude (dBuV)	Factor (dB)	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
2484.483	27.9	3.4	1.5	286.0	3.0	20.0	Vert	AV	0.0	51.3	54.0	-2.7	EUT on Side, High Ch
2483.743	27.9	3.4	1.5	196.0	3.0	20.0	Horz	AV	0.0	51.3	54.0	-2.7	EUT on Side, High Ch
2483.663	27.9	3.4	1.5	190.0	3.0	20.0	Horz	AV	0.0	51.3	54.0	-2.7	EUT Vert, High Ch
2483.707	27.8	3.4	1.5	354.0	3.0	20.0	Vert	AV	0.0	51.2	54.0	-2.8	EUT Vert, High Ch
2485.283	27.8	3.4	3.81	243.0	3.0	20.0	Horz	AV	0.0	51.2	54.0	-2.8	EUT Horiz, High Ch
2484.343	27.7	3.4	1.5	161.0	3.0	20.0	Vert	AV	0.0	51.1	54.0	-2.9	EUT Horiz, High Ch
2389.390	27.8	3.2	1.5	198.0	3.0	20.0	Horz	AV	0.0	51.0	54.0	-3.0	EUT on Side, Low Ch
2389.427	27.8	3.2	1.5	81.0	3.0	20.0	Vert	AV	0.0	51.0	54.0	-3.0	EUT on Side, Low Ch
2484.213	39.4	3.4	1.5	161.0	3.0	20.0	Vert	PK	0.0	62.8	74.0	-11.2	EUT Horiz, High Ch
2484.607	39.1	3.4	1.5	196.0	3.0	20.0	Horz	PK	0.0	62.5	74.0	-11.5	EUT on Side, High Ch
2484.003	39.0	3.4	1.5	190.0	3.0	20.0	Horz	PK	0.0	62.4	74.0	-11.6	EUT Vert, High Ch
2485.377	39.0	3.4	1.5	354.0	3.0	20.0	Vert	PK	0.0	62.4	74.0	-11.6	EUT Vert, High Ch
2388.110	39.1	3.2	1.5	198.0	3.0	20.0	Horz	PK	0.0	62.3	74.0	-11.7	EUT on Side, Low Ch
2485.067	38.7	3.4	1.5	286.0	3.0	20.0	Vert	PK	0.0	62.1	74.0	-11.9	EUT on Side, High Ch
2389.843	38.9	3.2	1.5	81.0	3.0	20.0	Vert	PK	0.0	62.1	74.0	-11.9	EUT on Side, Low Ch
2484.387	38.6	3.4	3.81	243.0	3.0	20.0	Horz	PK	0.0	62.0	74.0	-12.0	EUT Horiz, High Ch

DUTY CYCLE



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.



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

TEST EQUIPMENT

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

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.



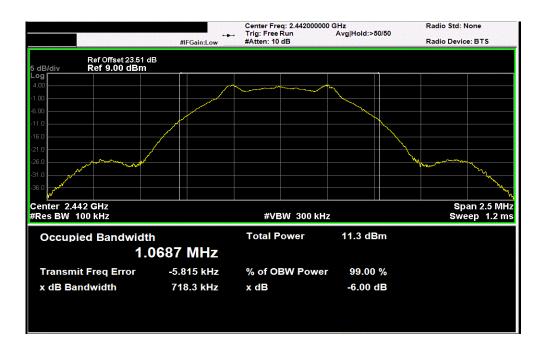
						TbtTx 2019.08.30.0	XMit 2019.09
EUT: RC	C5				Work Order	: BOSN0134	
Serial Number: 40	1485				Date	: 21-Oct-19	
Customer: Bo	oston Scientific Neuromodu	ulation			Temperature	: 20.9 °C	
Attendees: Ha	abet				Humidity	: 48.7% RH	
Project: No	one				Barometric Pres.	: 1018 mbar	
Tested by: Sa	alvador Solorzano		Power:	Battery	Job Site	: OC13	
TEST SPECIFICATION	IS			Test Method			
FCC 15.247:2019				ANSI C63.10:2013			
COMMENTS				-			
		s patch cable = 23.51 dB Offset					
DEVIATIONS FROM TH	ESI SIANDARD						
None							
Configuration #	5	Signature	ell E	5°			
						Limit	
					Value	(≥)	Result
BLE/GFSK Low Channe	el, 2402 MHz				710.238 kHz	500 kHz	Pass
BLE/GFSK Mid Channe	el, 2442 MHz				718.317 kHz	500 kHz	Pass
BLE/GFSK High Chann	el, 2480 MHz				715.373 kHz	500 kHz	Pass
0							



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



	BLE/GFS	SK Mid Channel, 2	442 MHz			
				Limit		
			Value	(≥)	Result	
			718.317 kHz	500 kHz	Pass	





	BLE/GFS	K High Channel, 2	2480 MHz			
				Limit		
			Value	(≥)	Result	
			715.373 kHz	500 kHz	Pass	





XMit 2019.09.05

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

TEST EQUIPMENT

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

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.



EUT: RC5 Work Order: B0 Serial Number: 401485 Date: 21-0 Customer: Boston Scientific Neuromodulation Temperature: 21 ° Attendees: Habet Humidity: 49.1 Project: None Barometric Pres.: 1011 Tested by: Salvador Solorzano Power: Battery Job Site: Oc TEST SPECIFICATIONS Test Method C 15.247:2013 ANSI C63.10:2013	-Oct-19 °C 0.1% RH 018 mbar	XMit 2019
Serial Number: 401485 Date: 21-6 Customer: Boston Scientific Neuromodulation Temperature: 21 * Attendes: Habet Humidity: 49.1 Project: None Barometric Pres:: 101 Tested by: Salvador Solorzano Power: Battery Job Site: OCT TEST SPECIFICATIONS Test Method Test Method Date: Date:	-Oct-19 °C 0.1% RH 018 mbar	
Customer: Boston Scientific Neuromodulation Temperature: 21 ° Attendees: Habet Humidity: 49.1 Project: None Barometric Pres.: 1011 Tested by: Salvador Solorzano Power: Battery Job Site: OC1 EST SPECIFICATIONS Test Method Test Method Test Method	°C 0.1% RH 018 mbar	
Attendees: Habet Humidity: 49.1 Project: None Barometric Pres.: 101 Tested by: Salvador Solorzano Power: Battery Job Site: OCT EST SPECIFICATIONS Test Method Test Method Test Method	0.1% RH 018 mbar	
Project: None Barometric Pres.: 101: Tested by: Salvador Solorzano Power: Battery Job Site: OC1 EST SPECIFICATIONS Test Method T	18 mbar	
Tested by: Salvador Solorzano Power: Battery Job Site: OC1 EST SPECIFICATIONS Test Method Test Meth		
EST SPECIFICATIONS Test Method	C13	
ANSI C63.10:2013		
COMMENTS		
DEVIATIONS FROM TEST STANDARD		
lone		
Configuration # 5 Signature		
Out Pwr (dBm)	Limit (dBm)	Result
LE/GFSK Low Channel, 2402 MHz 4.696	30	Pass
Lion on Lew on here, 242 miz 4,350	30	Pass
LE/GFSK High Channel, 2480 MHz 4.26	30	Pass

Report No. BOSN0134.2



		BI	E/GFSK Low Cha	nnel, 24	02 MHz			
					Out Pwr	Limit		
					(dBm)	(dBm)	Result	-
					4.696	30	Pass	
Keysight Spectru	m Analyzer - Element Material	s Technology					- d	×
	RF 50 Ω AC	, reclinicity	SENSE:INT		ALIGN OFF		05:40:55 AM Oct 19, 2	019
		PNO: Fas IFGain:Lo	t ⊷⊷ Trig: Free R w #Atten: 10 d		#Avg Type Avg Hold:	:: Log-Pwr 100/100	TRACE 1 2 3 4 TYPE M WWW DET P P P F	PPP
R 5 dB/div P	ef Offset 23.51 dB ef 10.00 dBm					Mkr1	2.401 869 G 4.696 dE	Hz 3m
5 dB/div R								
5.00			∮ 1					
3.00							~	
0.00							mad la second	
-5.00								
-10.0								
10.0								
-15.0								
-20.0								
-25.0								
23.0								
-30.0								
-35.0								
							A	
Center 2.402 #Res BW 2.0			#VBW 6.0 MHz			Sweep 1	Span 3.500 N 1.066 ms (1000 p	ifiz ots)
MSG								
		R	LE/GFSK Mid Char	nel 24	12 MHz			
					Out Pwr	Limit		
					(dBm)	(dBm)	Result	1
					4.436	30	Pass	
🗾 Keysight Spectru	m Analyzer - Element Material	s Technology						X
	RF 50 Ω AC		SENSE:INT		ALIGN OFF #Avg Type	Log-Pwr	05:37:24 AM Oct 19, 2 TRACE 1 2 3 4	019
		PNO: Fas IFGain:Lo		un B	Avg Hold:	100/100	TYPE MWWY DET P P P F	VWW PPP
							2.441 879 G	

		PNO: Fast ↔ IFGain:Low	. Trig: Free Run #Atten: 10 dB	#Avg Type: Log-P\ Avg Hold: 100/100	TYPE M WWWWW DET P P P P P
R 5 dB/div R Log	Ref Offset 23.51 dB Mkr1 2.441 7 Ref 9.00 dBm 4.4				
4.00			↓ ¹		
-1.00					
-6.00					
-11.0					
-16.0					
-21.0					
26.0					
31.0					
-36.0					
Center 2.442 #Res BW 2.0		#VE	W 6.0 MHz		Span 3.500 MH Sweep 1.066 ms (1000 pts
MSG				STATUS	



	BLE/G	FSK High Channel,	2480 MHz		
			Out Pwr (dBm)	Limit (dBm)	Result
			4.226	30	Pass
鱦 Keysight Spectrum Analyzer - Element Materia	als Technology				
LX RL RF 50Ω AC	5,	SENSE:INT	ALIGN OFF		05:45:18 AM Oct 19, 2019
	PNO: Fast ↔ IFGain:Low	⊶ Trig: Free Run #Atten: 10 dB	#Avg Type Avg Hold: ^	Log-Pwr 100/100	TRACE 1 2 3 4 5 6 TYPE M WWWW DET P P P P P P
Ref Offset 23.51 dB 5 dB/div Ref 9.00 dBm				Mkr1	2.479 858 GHz 4.226 dBm
		▲1			
4.00		• • • • • • • • • • • • • • • • • • •			
-1.00					
-6.00					
-11.0					
-16.0					
-21.0					
-26.0					
-31.0					
-36.0					
Center 2.480000 GHz					Enon 2 500 MU-
#Res BW 2.0 MHz	#\/	BW 6.0 MHz		Sween_1	Span 3.500 MHz I.066 ms (1000 pts)
MSG	#9		STATUS	Gweep	nooo ms (rooo pts)

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



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

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)



EUT: R	C5			Work Order:	BOSN0134	
Serial Number: 40	01485			Date:	18-Oct-19	
Customer: Bo	oston Scientific Neuromodulation			Temperature:		
Attendees: Ha	labet			Humidity:	54.2% RH	
Project: No	lone			Barometric Pres.:	1015 mbar	
	alvador Solorzano	Power: Battery		Job Site:	OC13	
EST SPECIFICATION	NS	Test Method				
CC 15.247:2019		ANSI C63.10:2013				
OMMENTS C Block + 20 dB Atte	enuator + Cable + customers patch cable = 23.51 dB Offset					
	-	· · · · · · · · · · · · · · · · · · ·				
C Block + 20 dB Atte	TEST STANDARD					
C Block + 20 dB Atte	TEST STANDARD	la En				
C Block + 20 dB Atte EVIATIONS FROM T one	TEST STANDARD	Out Pi	rr Antenna	EIRP	EIRP Limit	
C Block + 20 dB Atte EVIATIONS FROM T one	TEST STANDARD	<u> </u>		EIRP (dBm)	EIRP Limit (dBm)	Result
C Block + 20 dB Atte EVIATIONS FROM T one onfiguration #	5 Signature	Out Pv	Gain (dBi)			Result Pass
C Block + 20 dB Atte EVIATIONS FROM T one	TEST STANDARD	Out Pv (dBm	Gain (dBi) 0.44	(dBm)	(dBm)	

Report No. BOSN0134.2

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



			SK Low Channel, 2			
		Out Pwr	Antenna	EIRP	EIRP Limit	
		(dBm)	Gain (dBi)	(dBm)	(dBm)	Result
		4.696	0.44	5.136	36	Pass
_						
	um Analyzer - Element Materials RF 50 Ω AC		ENSE:INT	ALIGN OFF	1	05:40:55 AM Oct 19, 20
	RF 50 Ω AC	3	ENSE:INT		e: Log-Pwr	TRACE 1 2 3 4
		PNO: Fast ↔→ IFGain:Low	Trig: Free Run #Atten: 10 dB	Avg Hold	: 100/100	TRACE 1 2 3 4 TYPE MWWWM DET PPPP
5 dB/div Log	Ref Offset 23.51 dB Ref 10.00 dBm				Mkr1	2.401 869 GH 4.696 dB
Log			1			
5.00						
0.00						
-5.00						
-3.00						
-10.0						
-15.0						
-20.0						
-25.0						
-30.0						
-35.0						
Center 2.40 #Res BW 2.		#VBV	V 6.0 MHz		Sweep 1.	Span 3.500 Mi 066 ms (1000 pi
MSG				STATUS	•	
			SK Mid Channel, 2	440 MILE		
		BLE/GF Out Pwr	SK Mid Channel, 2 Antenna	442 MHz EIRP	EIRP Limit	
		(dBm)	Gain (dBi)	(dBm)	(dBm)	Result
		4.436	0.44	4.876	36	Pass

Keysight Spectrum Analyzer - Element Materials RL RF 50 Ω AC		A	
κL R- 50 Ω AC	PNO: Fast +++ Trig: Free Run IFGain:Low #Atten: 10 dB	ALIGN OFF #Avg Type: Log-Pwr Avg Hold: 100/100	05:37:24 AM Oct 19, 201 TRACE 1 2 3 4 5 TYPE MWWWW DET P P P P P
Ref Offset 23.51 dB dB/div Ref 9.00 dBm		MI	r1 2.441 879 GH 4.436 dBr
.00	1		
.00			
1.0			
6.0			
1.0			
.0			
.0			
6.0			
enter 2.442000 GHz Res BW 2.0 MHz	#VBW 6.0 MHz	Sweet	Span 3.500 Mł 5 1.066 ms (1000 pt
G		STATUS	h

EQUIVALENT ISOTROPIC RADIATED POWER (EIRP)



	BLE/GF	SK High Channel, 2	2480 MHz		
	Out Pwr	Antenna	EIRP	EIRP Limit	
	(dBm)	Gain (dBi)	(dBm)	(dBm)	Result
	4.226	0.44	4.666	36	Pass
鱦 Keysight Spectrum Analyzer - Element Materi	als Technology				
LXI RL RF 50Ω AC	5	ENSE:INT	ALIGN OFF		05:45:18 AM Oct 19, 2019
	PNO: Fast ↔→ IFGain:Low	Trig: Free Run #Atten: 10 dB	#Avg Typ Avg Hold	e: Log-Pwr : 100/100	TRACE 1 2 3 4 5 6 TYPE M WWWW DET P P P P P P
				Mkr	1 2.479 858 GHz
5 dB/div Ref 9.00 dBm					4.226 dBm
		<u>_</u> 1			
4.00				_	
-1.00					
-6.00					
0.00					
-11.0					
-11.0					
-16.0					
-18.0					
21.0					
-21.0					
-26.0					
-31.0					
-36.0					
Center 2.480000 GHz					Span 3.500 MHz
#Res BW 2.0 MHz	#\/R)	V 6.0 MHz		Sween	1.066 ms (1000 pts)
MSG	" vb.		STATUS	oweep	1000 110 (1000 pts)



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

TEST EQUIPMENT

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

TEST DESCRIPTION

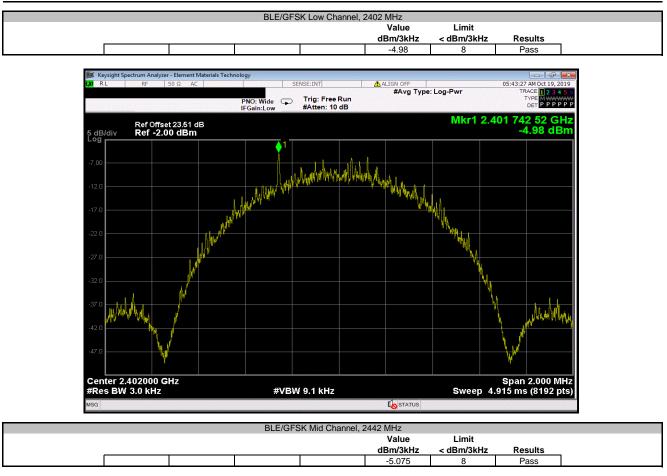
The maximum power spectral density measurements was measured using the channels and modes as called out on the following data sheets.

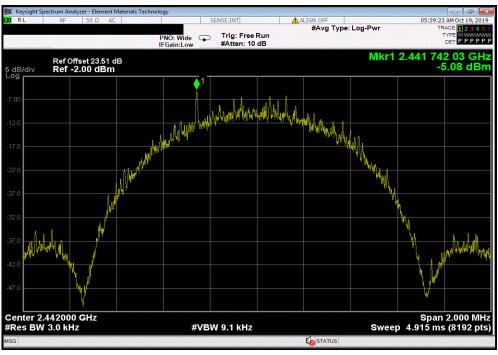
Per the procedure outlined in ANSI C63.10 the peak power spectral density was measured in a 3 kHz RBW.



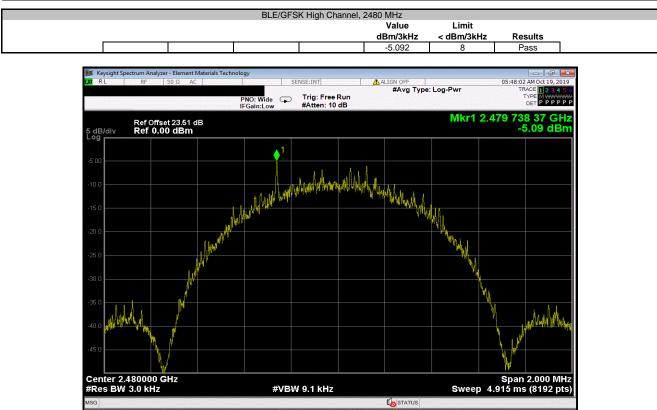
			TbtTx 2019.08.30.0	XMit 2019.0
EUT: RC5		Work Order:		
Serial Number: 401485			21-Oct-19	
Customer: Boston Scientific Neuromodulation		Temperature:		
Attendees: Habet		Humidity:	49.1% RH	
Project: None		Barometric Pres.:		
Tested by: Salvador Solorzano	Power: Battery	Job Site:	OC13	
TEST SPECIFICATIONS	Test Method			
FCC 15.247:2019	ANSI C63.10:2013			
COMMENTS				
DEVIATIONS FROM TEST STANDARD				
lone				
Configuration # 5 Signature	all ger			
		Value dBm/3kHz	Limit < dBm/3kHz	Results
BLE/GFSK Low Channel, 2402 MHz		-4.98	8	Pass
BLE/GFSK Mid Channel, 2442 MHz		-5.075	8	Pass
BLE/GFSK High Channel, 2480 MHz		-5.092	8	Pass











BAND EDGE COMPLIANCE



XMit 2019.09.05

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

TEST EQUIPMENT

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

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.

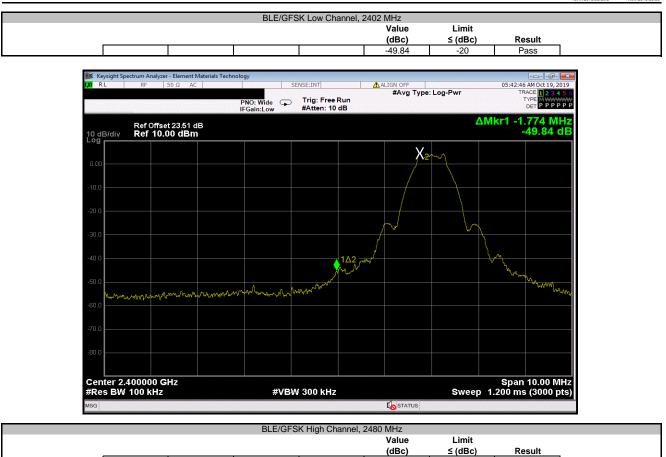
BAND EDGE COMPLIANCE



			TbtTx 2019.08.30.0	XMit 2019.09.0
EUT: RC5		Work Order:	BOSN0134	
Serial Number: 401485		Date:	18-Oct-19	
Customer: Boston Scientific Neuromodulation		Temperature:	21.1 °C	
Attendees: Habet		Humidity:	54.2% RH	
Project: None		Barometric Pres.:	1015 mbar	
Tested by: Salvador Solorzano	Power: Battery	Job Site:	OC13	
TEST SPECIFICATIONS	Test Method			
FCC 15.247:2019	ANSI C63.10:2013			
COMMENTS				
DC Black - 20 dB Attenueter - Cable - sustamers noteb cable - 22 Et	1 dB Offert			
	1 dB Offset			
DC Block + 20 dB Attenuator + Cable + customers patch cable = 23.51	1 dB Offset			
DEVIATIONS FROM TEST STANDARD None	1 dB Offset			
DEVIATIONS FROM TEST STANDARD None Configuration # 5		Value	Limit	
DEVIATIONS FROM TEST STANDARD None Configuration # 5		Value (dBc)	Limit ≤ (dBc)	Result
DEVIATIONS FROM TEST STANDARD None Configuration # 5				Result Pass

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

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The 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.



						TbtTx 2019.08.30.0	XMit 2019.0			
EUT:	RC5				Work Order:	BOSN0134				
Serial Number:	: 401485				Date:	21-Oct-19				
Customer:	Boston Scientific Neuromod	dulation			Temperature: 21.5 °C					
Attendees:	: Habet				Humidity: 49.1% RH					
Project:	None				Barometric Pres.:	1018 mbar				
Tested by:	: Salvador Solorzano		Power: Battery		Job Site:	OC13				
EST SPECIFICATI	TONS		Test Method							
CC 15.247:2019			ANSI C63.10:2013							
COMMENTS										
DEVIATIONS FROM None Configuration #	M TEST STANDARD	Sianature	111 En							
None		Signature	Frequency	Measured	Max Value	Limit				
lone		Signature		Measured Freq (MHz)	Max Value (dBc)	Limit ≤ (dBc)	Result			
lone Configuration #	5	Signature	Frequency				Result N/A			
ione Configuration # BLE/GFSK Low Cha	5 annel, 2402 MHz	Signature	Frequency Range	Freq (MHz)	(dBc)	≤ (dBc)				
Configuration # BLE/GFSK Low Cha BLE/GFSK Low Cha	5 annel, 2402 MHz annel, 2402 MHz	Signature	Frequency Range Fundamental	Freq (MHz) 2402.24	(dBc) N/A -54.11 -39.25	≤ (dBc) N/A -20 -20	N/A Pass Pass			
ione configuration # LE/GFSK Low Cha LE/GFSK Low Cha LE/GFSK Low Cha LE/GFSK Mid Cha	5 annel, 2402 MHz annel, 2402 MHz annel, 2402 MHz annel, 2442 MHz	Signature	Frequency Range Fundamental 30 MHz - 12.5 GHz	Freq (MHz) 2402.24 4802.73	(dBc) N/A -54.11	≤ (dBc) N/A -20	N/A Pass			
Ione Configuration # BLE/GFSK Low Cha BLE/GFSK Low Cha BLE/GFSK Low Cha BLE/GFSK Mid Chai BLE/GFSK Mid Chai	5 annel, 2402 MHz annel, 2402 MHz annel, 2402 MHz annel, 2442 MHz	Signature	Frequency Range Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz	Freq (MHz) 2402.24 4802.73 24952.69 2441.74 4884.94	(dBc) N/A -54.11 -39.25 N/A -53.91	≤ (dBc) N/A -20 -20 N/A -20	N/A Pass Pass			
Ione Configuration # UE/GFSK Low Cha UE/GFSK Low Cha UE/GFSK Mid Cha UE/GFSK Mid Cha UE/GFSK Mid Cha UE/GFSK Mid Cha	5 annel, 2402 MHz annel, 2402 MHz annel, 2402 MHz annel, 2442 MHz annel, 2442 MHz	Signature	Frequency Range Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental	Freq (MHz) 2402.24 4802.73 24952.69 2441.74	(dBc) N/A -54.11 -39.25 N/A -53.91 -40.37	≤ (dBc) N/A -20 -20 N/A	N/A Pass Pass N/A Pass Pass			
Ione Configuration # BLE/GFSK Low Cha BLE/GFSK Low Cha BLE/GFSK Mid Cha BLE/GFSK Mid Cha BLE/GFSK Mid Cha BLE/GFSK Mid Cha BLE/GFSK Mid Cha	5 annel, 2402 MHz annel, 2402 MHz annel, 2442 MHz annel, 2442 MHz annel, 2442 MHz annel, 2442 MHz annel, 2442 MHz	Signature	Frequency Range Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental	Freq (MHz) 2402.24 4802.73 24952.69 2441.74 4884.94 24977.11 2480.25	(dBc) N/A -54.11 -39.25 N/A -53.91	≤ (dBc) N/A -20 -20 N/A -20	N/A Pass Pass N/A Pass			
None	5 annel, 2402 MHz annel, 2402 MHz annel, 2402 MHz annel, 2442 MHz annel, 2442 MHz annel, 2448 MHz annel, 2480 MHz	Signature	Frequency Range Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz Fundamental 30 MHz - 12.5 GHz 12.5 GHz - 25 GHz	Freq (MHz) 2402.24 4802.73 24952.69 2441.74 4884.94 24977.11	(dBc) N/A -54.11 -39.25 N/A -53.91 -40.37	≤ (dBc) N/A -20 -20 N/A -20 -20	N/A Pass Pass N/A Pass Pass			



	Frequency	DEL/OI C	K Low Channel, 2 Measured	Max Value	Limit	
	Range		Freq (MHz)	(dBc)	≤ (dBc)	Result
	Fundamental		2402.24	N/A	N/A	N/A
Kauriaht Caastaum	Analyzer - Element Materials Technolo					
	= 50 Ω AC		NSE:INT	ALIGN OFF		05:41:35 AM Oct 19, 2019
		PNO: Wide 😱 FGain:Low	Trig: Free Run #Atten: 10 dB	#Avg Type:	Log-Pwr	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET PPPPP
10 dB/div Ref	f Offset 23.51 dB f 10.00 dBm				Mkr1 2.4	402 237 03 GHz 4.63 dBm
Log					<u> </u>	
0.00						man and a second
-10.0						and the second sec
-20.0						
-30.0						
-40.0						
-50.0						
-60.0						
-60.0						
-70.0						
-80.0						
Center 2.4020	000 GHz					Span 1.000 MHz
#Res BW 100		#VBW	/ 300 kHz		Sweep 1	.092 ms (8192 pts)
MSG				STATUS		
		BI E/CES	K Low Channel, 2	2402 MHz		
	Frequency	BLE/GF3	Measured	Max Value	Limit	
	Range		Freq (MHz)	(dBc)	≤ (dBc)	Result
	30 MHz - 12.5 GHz		4802.73	-54.11	-20	Pass

	pectrum Analyzer - Element								
RL	RF 50 Ω A	C	SI	ENSE:INT	AL AL	IGN OFF	Len Dum		AM Oct 19, 201
			:Fast 🖵 in:Low	Trig: Free Ru #Atten: 10 di		#Avg Type:	Log-rwr	1	ACE 1 2 3 4 5 TYPE M WWW DET P P P P P
dB/div	Ref Offset 23.51 Ref 10.00 dBn	dB n						Mkr1 4.8 -49	02 7 GH 9.48 dBr
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	30 GHz / 100 kHz		#VBV	V 300 kHz			Swee	Stop 1 p 40.96 ms	2.500 GH (8192 pt
G						STATUS			

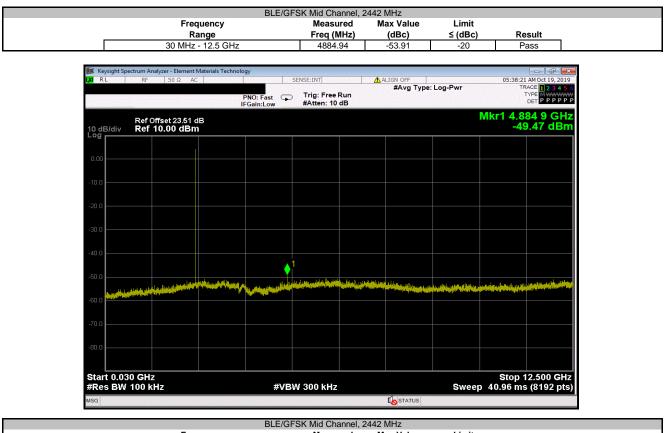




	DLC	GFSK Mid Channel,			
Fre	equency	Measured	Max Value	Limit	
R	Range	Freq (MHz)	(dBc)	≤ (dBc)	Result
Fund	damental	2441.74	N/A	N/A	N/A

RL RF 50 Ω AC		ENSE:INT	ALIGN OFF		05:38:00 AM Oct 19, 201
	PNO: Wide	Trig: Free Run #Atten: 10 dB	#Avg Type:	Log-Pwr	TRACE 1 2 3 4 5 TYPE MWWW DET PPPP
Ref Offset 23.51 dB) dB/div Ref 10.00 dBm				Mkr1 2	.441 744 05 GH 4.44 dBi
	1				
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enter 2.4420000 GHz Res BW 100 kHz	#VBV	V 300 kHz		Sweep	Span 1.000 MI 1.092 ms (8192 pt
3			I STATUS		





Frequency	Measured	Max Value	Limit	
Range	Freq (MHz)	(dBc)	≤ (dBc)	Result
12.5 GHz - 25 GHz	24977.11	-40.37	-20	Pass





		BLE/GFS	K High Channel, 2			
	Frequency		Measured	Max Value	Limit	
	Range		Freq (MHz)	(dBc)	≤ (dBc)	Result
	Fundamental		2480.25	N/A	N/A	N/A
Keysight Spectrum A	nalyzer - Element Materials Technolog	IV				
UM RL RF			NSE:INT	ALIGN OFF		05:45:54 AM Oct 19, 2019
	P IF	NO: Wide 😱 Gain:Low	Trig: Free Run #Atten: 10 dB	#Avg Type:	Log-Pwr	TRACE 1 2 3 4 5 6 TYPE MWWWWW DET PPPPPP
Ref	Offset 23.51 dB				Mkr1 2.4	480 250 09 GHz 4.24 dBm
10 dB/div Ref	10.00 dBm					4.24 0011
0.00						
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-10.0						
20.0						
-20.0						
-30.0						
-30.0						
-40.0						
-50.0						
-60.0						
70.0						
-70.0						
-80.0						
00.0						
Center 2.48000 #Res BW 100 F		#VBW	/ 300 kHz		Sweep 1	Span 1.000 MHz .092 ms (8192 pts)
MSG				STATUS		
		BI F/GES	K High Channel, 2	2480 MHz		
	Frequency	222, 31 0	Measured	Max Value	Limit	
	Range		Freq (MHz)	(dBc)	≤ (dBc)	Result
	30 MHz - 12.5 GHz		4959.54	-53.43	-20	Pass
Keysight Spectrum A	nalyzer - Element Materials Technolog 50 Ω AC		NSE:INT	ALIGN OFF		05:46:17 AM Oct 19, 2019
				#Avg Type:	Log-Paur	TRACE 1 2 3 4 5 6

RL	RF 50 Ω AC			SENSE:INT	<u>A</u> A	LIGN OFF			AM Oct 19, 201
	_	Pi IFC	NO: Fast 🖵 Gain:Low	Trig: Free #Atten: 10	Run dB	#Avg Type:	Log-Pwr		RACE 1 2 3 4 5 TYPE M WWWW DET P P P P P
0 dB/div	Ref Offset 23.51 o Ref 10.00 dBm	iB 1						Mkr1 4.9 -49	59 5 GH 9.19 dBr
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tart 0.03	0 GHz 100 kHz		#VB	W 300 kHz			Swee	Stop ′ p 40.96 ms	12.500 GF
G			<i></i>	A-900 MH2		STATUS	GWee	p-10/80 III	5 (0132 pt



