



Boston Scientific Neuromodulation

Charger-3

FCC Part 15

Inductive Radio

Report: BOSN0207.1 Rev. 2, Issue Date: December 9, 2024



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CERTIFICATE OF TEST

Last Date of Test: June 7, 2024
Boston Scientific Neuromodulation
EUT: Charger-3

Radio Equipment Testing

Standards

Specification	Method
FCC 15.207:2024	ANSI C63.10:2013
FCC 15.209:2024	

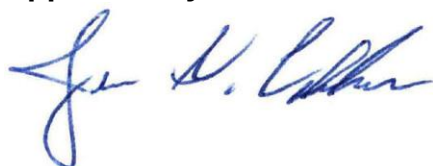
Results

Test Description	Result	Specification Section(s)	Method Section(s)	Comments
Powerline Conducted Emissions	Pass	15.207	6.2	
Field Strength of Fundamental	Pass	15.209	6.4	
Spurious Radiated Emissions	Pass	15.209	6.4, 6.5	

Deviations From Test Standards

None

Approved By:



Johnny Candelas, Operations Manager
 Signed for and on behalf of Element

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	Units changed to dBuV/m	2024-12-03	24, 25
	Added power settings table	2024-12-03	12
02	Fixed distance correction factor	2024-12-09	24, 25

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 - Each laboratory is accredited by A2LA to ISO / IEC 17025, and as a product certifier to ISO / IEC 17065 which allows Element to certify transmitters to FCC and IC specifications.

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:

[California](#)

[Minnesota](#)

[Oregon](#)

[Texas](#)

[Washington](#)

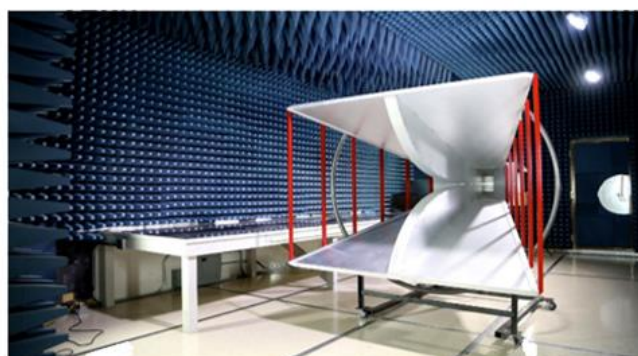
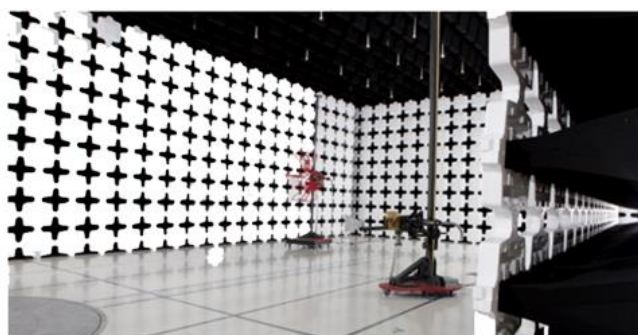
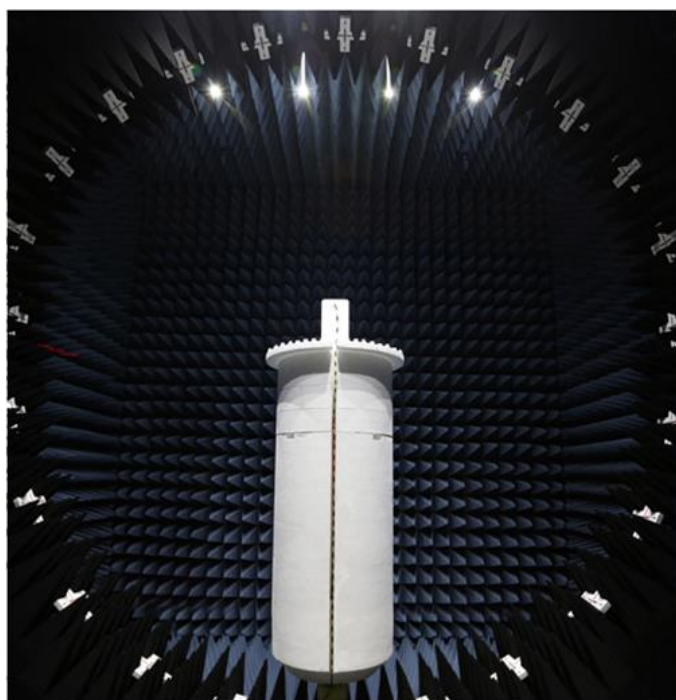
FACILITIES

Testing was performed at the following location(s)

	Location	Labs ⁽¹⁾	Address	A2LA ⁽²⁾	ISED ⁽³⁾	BSMI ⁽⁴⁾	VCCI ⁽⁵⁾	CAB ⁽⁶⁾	FDA ⁽⁷⁾
☒	California	OC01-17	41 Tesla Irvine, CA 92618 (949) 861-8918	3310.04	2834B	SL2-IN-E-1154R	A-0029	US0158	TL-55
☐	Minnesota	MN01-11	9349 W Broadway Ave. Brooklyn Park, MN 55445 (612) 638-5136	3310.05	2834E	SL2-IN-E-1152R	A-0109	US0175	TL-57
☐	Oregon	EV01-12	6775 NE Evergreen Pkwy #400 Hillsboro, OR 97124 (503) 844-4066	3310.02	2834D	SL2-IN-E-1017	A-0108	US0017	TL-56
☐	Texas	TX01-09	3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	3310.03	2834G	SL2-IN-E-1158R	A-0201	US0191	TL-54
☐	Washington	NC01-05	19201 120th Ave NE Bothell, WA 98011 (425) 984-6600	3310.06	2834F	SL2-IN-E-1153R	A-0110	US0157	TL-67
☐	Offsite	N/A	See Product Description	N/A	N/A	N/A	N/A	N/A	N/A

See data sheets for specific labs

- (1) The lab designations denote individual rooms within each location. (OC01, OC02, OC03, etc.)
- (2) A2LA Certificate No.
- (3) ISED Company No.
- (4) BSMI No.
- (5) VCCI Site Filing No.
- (6) CAB Identifier. Recognized Phase I CAB for ISED, ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA
- (7) FDA ASCA No.



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.

Various Measurements

Test	All Labs (+/-)
Frequency Accuracy (%)	0.0007
Amplitude Accuracy (dB)	1.2
Conducted Power (dB)	1.2
Radiated Power via Substitution (dB)	0.7
Temperature (degrees C)	0.7
Humidity (% RH)	2.5
Voltage (AC) (%)	1
Voltage (DC) (%)	0.7

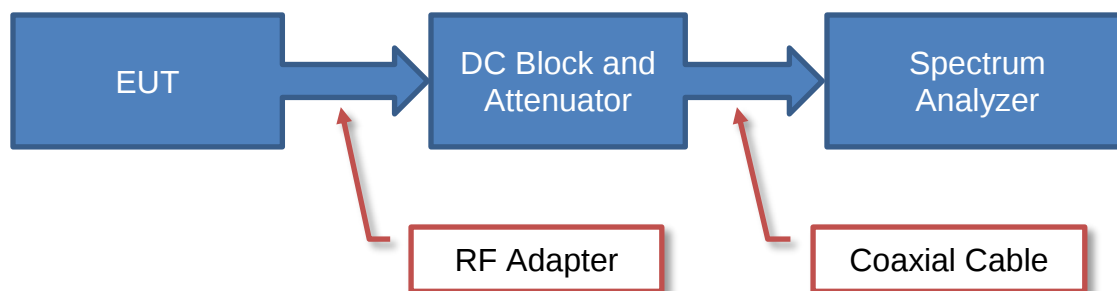
TEST SETUP BLOCK DIAGRAMS

Measurement Bandwidths

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

Unless otherwise stated, measurements were made using the bandwidths and detectors specified. No video filter was used.

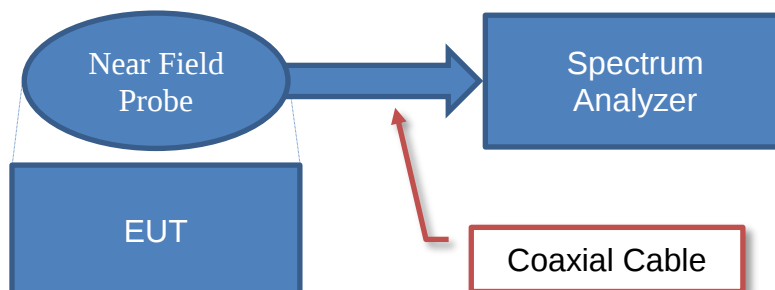
Antenna Port Conducted Measurements



Sample Calculation (logarithmic units)

Measured Value		Measured Level		Reference Level Offset
71.2	=	42.6	+	28.6

Near Field Test Fixture Measurements

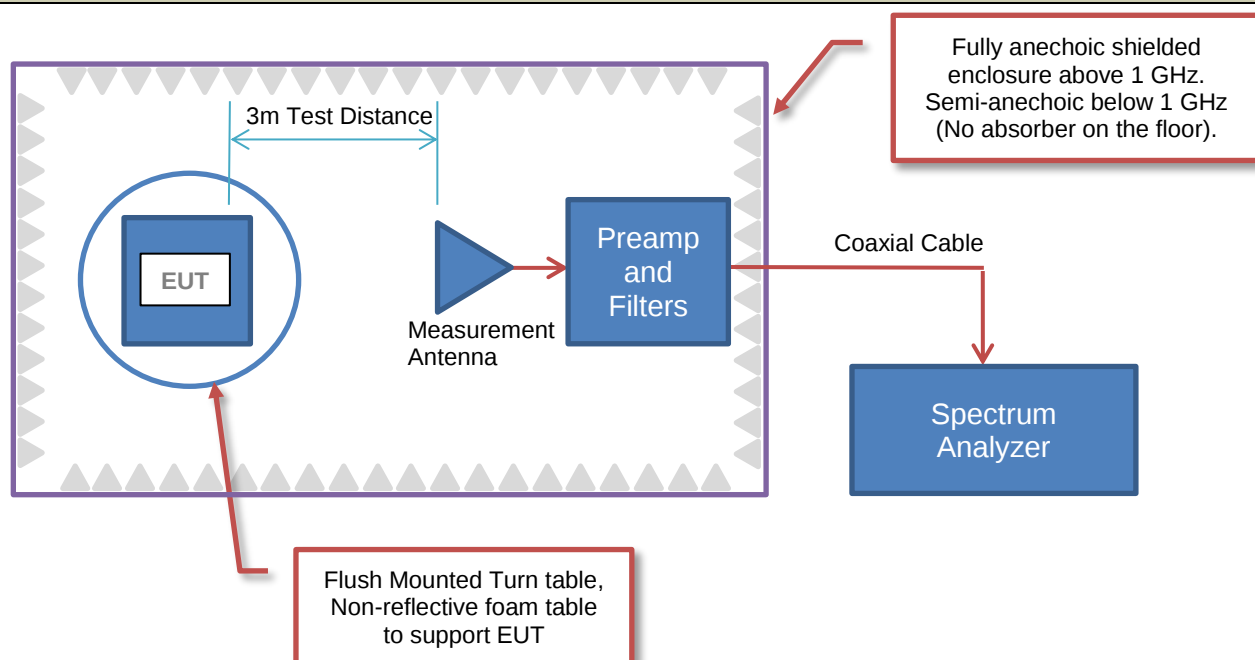


Sample Calculation (logarithmic units)

Measured Value		Measured Level		Reference Level Offset
71.2	=	42.6	+	28.6

TEST SETUP BLOCK DIAGRAMS

Emissions Measurements



Sample Calculation (logarithmic units)

Radiated Emissions:

Measured Level (Amplitude)	Factor			Distance Adjustment Factor	External Attenuation	Field Strength
	Antenna Factor	Cable Factor	Amplifier Gain			
42.6	28.6	3.1	40.8	0.0	0.0	33.5

Conducted Emissions:

Measured Level (Amplitude)	Factor		External Attenuation	Adjusted Level
	Transducer Factor	Cable Factor		
26.7	0.3	0.1	20.0	47.1

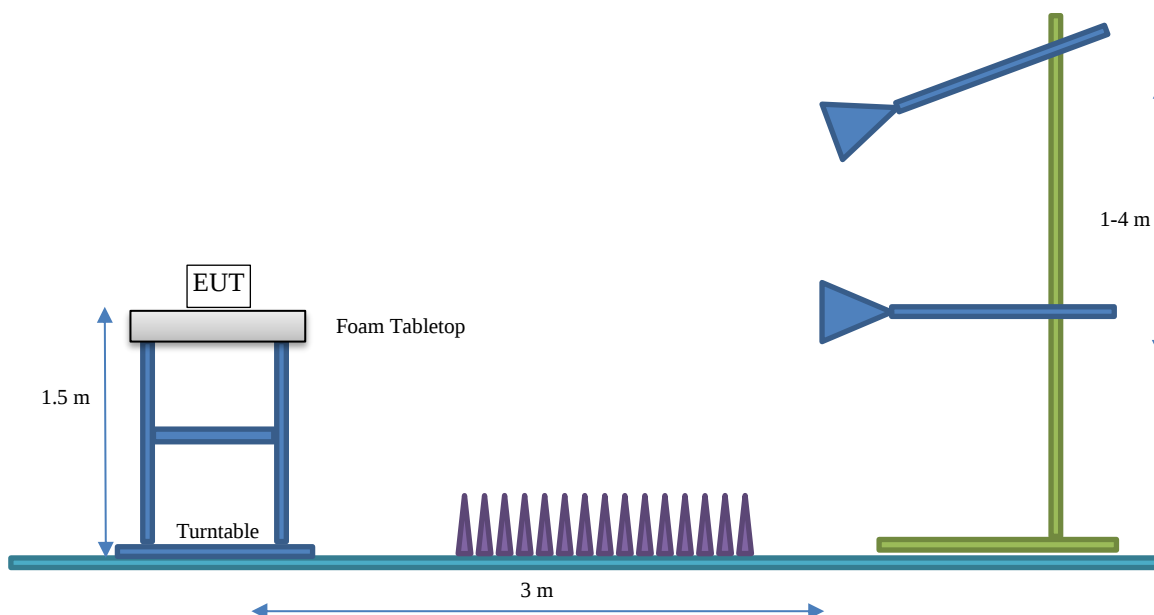
Radiated Power (ERP/EIRP) – Substitution Method:

Measured Level into Substitution Antenna (Amplitude dBm)	Substitution Antenna Factor (dBi)	EIRP to ERP (if applicable)	Measured power (dBm ERP/EIRP)
10.0	6.0	2.15	13.9/16.0

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 91311
Test Requested By:	Jack Zhu
EUT:	Charger-3
First Date of Test:	June 4, 2024
Last Date of Test:	June 7, 2024
Receipt Date of Samples:	June 4, 2024
Equipment Design Stage:	Prototype
Equipment Condition:	No Damage
Purchase Authorization:	Verified

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
Spinal Cord Stimulator (SCS) is an implantable medical device system used as an aid in the management of chronic intractable pain. The system delivers minute pulses of electricity directly to nerves, known as Spinal Cord Stimulation
Testing Objective:
To demonstrate compliance of the inductive portion of the device to FCC Part 15.207/15.209 specifications.

POWER SETTINGS AND ANTENNAS



The power settings, antenna gain value(s) and cable loss (if applicable) used for the testing contained in this report were provided by the customer and will affect the validity of the results. Element assumes no responsibility for the accuracy of this information. The power settings below reflect the maximum power that the EUT is allowed to transmit at during normal operation.

ANTENNA INFORMATION

Type	Coil Shape	Dimensions (in.)	# of Turns/Loops	Gauge of Wire:
Loop Single	Circular	OD 3.1496	27 turns	18 AWG

*Information provided by BSC.

The EUT was tested using the power settings provided by the manufacturer which were based upon:

- ☒ Test software settings Software / firmware used for testing: 9028485-100
☐ Rated power settings

SETTINGS FOR ALL TESTS IN THIS REPORT

Modulation Types	Radio	Charging Frequency (kHz)	Power Setting
Single Data Rate / LSK	Inductive	79 and 85	2.7W +/-10%.

CONFIGURATIONS



Configuration BOSN0207-1

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Charger-3	Boston Scientific Neuromodulation	SC-5314	102902

Peripherals in Test Setup Boundary			
Description	Manufacturer	Model/Part Number	Serial Number
Power Adapter	GlobTek, Inc.	SC-6319	23290003

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Charger Cable	Yes	38cm	No	Charger-3	Charger-3 (Coil)
DC Cable	No	2.0m	No	Charger-3	Power Adapter
AC Cable	No	1.8m	No	AC Mains	Power Adapter

Configuration BOSN0207-2

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Charger-3	Boston Scientific Neuromodulation	SC-5314	102902
IPG	Boston Scientific Neuromodulation	SC-1232	531921

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Charger Cable	Yes	38cm	No	Charger-3	Charger-3 (Coil)

MODIFICATIONS



Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	2024-06-04	Field Strength of Fundamental	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	2024-06-04	Spurious Radiated Emissions	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Element following the test.
3	2024-06-07	Powerline Conducted Emissions	Tested as delivered to test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

POWERLINE CONDUCTED EMISSIONS

TEST DESCRIPTION

The EUT will be powered either directly or indirectly from the AC power line. Therefore, conducted emissions measurements were made on the AC input of the EUT, or on the AC input of the device used to power the EUT.

The EUT was transmitting at its maximum data rate. For each mode, the spectrum was scanned from 150 kHz to 30 MHz. The test setup and procedures were in accordance with ANSI C63.10.

In the event that the operating frequency of 13.56 MHz is causing the product to fail the FCC 15.207 limits, the following guidance can be used:

FCC KDB 174176 D01 AC Conducted FAQ v01r01, June 3, 2015 Section Q5:

For a device with a permanent or detachable antenna operating at or below 30 MHz, the FCC will accept measurements performed with a suitable dummy load in lieu of the antenna under the following conditions:

- (1) perform the AC power-line conducted tests with the antenna connected to determine compliance with Section 15.207 limits outside the transmitter's fundamental emission band;
- (2) retest with a dummy load in lieu of the antenna to determine compliance with Section 15.207 limits within the transmitter's fundamental emission band. For a detachable antenna, remove the antenna and connect a suitable dummy load to the antenna connector. For a permanent antenna, remove the antenna and terminate the RF output with a dummy load or network which simulates the antenna in the fundamental frequency band.

All measurements must be performed as specified in clause 6.2 of ANSI C63.10-2013.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Receiver	Gauss Instruments	TDEMI 30M	ARO	2024-05-07	2025-05-07
LISN	Solar Electronics	9252-50-24-BNC	LIA	2023-09-12	2024-09-12
Cable - Conducted Cable Assembly	Northwest EMC	OCP, HFP, AWC	OCPA	2024-03-06	2025-03-06
Power Supply	Pacific Power	3120AFX-2L	SMT	NCR	NCR

CONFIGURATIONS INVESTIGATED

BOSN0207-1

MODES INVESTIGATED

Charging the Charger (@110VAC/60Hz)

POWERLINE CONDUCTED EMISSIONS

EUT:	Charger-3	Work Order:	BOSN0207
Serial Number:	102902	Date:	2024-06-07
Customer:	Boston Scientific Neuromodulation	Temperature:	22.1°C
Attendees:	Alexey Grinfeld	Relative Humidity:	52.1%
Customer Project:	None	Bar. Pressure (PMSL):	1013 mb
Tested By:	Mark Baytan	Job Site:	OC06
Power:	110VAC/60Hz	Configuration:	BOSN0207-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2024	ANSI C63.10:2013

TEST PARAMETERS

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

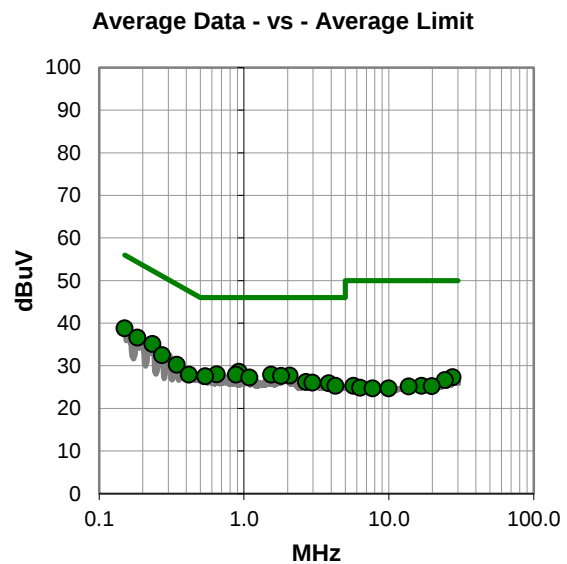
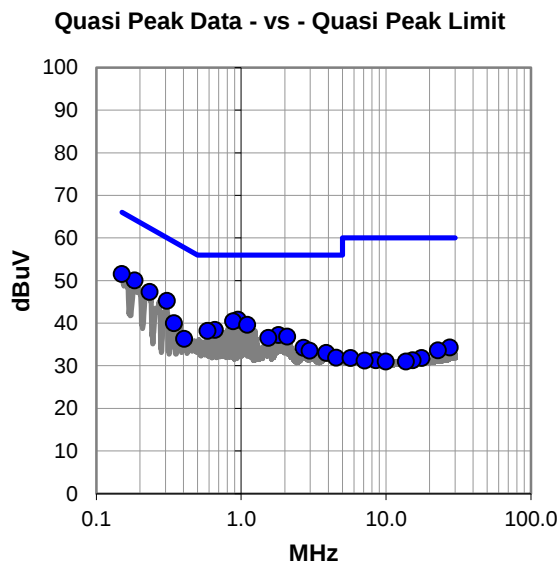
None

EUT OPERATING MODES

Charging the Charger (@110VAC/60Hz)

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #3

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.184	29.9	20.1	50.0	64.3	-14.3
0.150	31.3	20.2	51.5	66.0	-14.5
0.307	25.2	20.0	45.2	60.0	-14.8
0.234	27.3	20.0	47.3	62.3	-15.0
0.953	20.8	20.0	40.8	56.0	-15.2
0.879	20.4	20.0	40.4	56.0	-15.6
1.099	19.6	20.0	39.6	56.0	-16.4
0.660	18.4	20.0	38.4	56.0	-17.6
0.586	18.3	19.9	38.2	56.0	-17.8
1.813	17.1	20.1	37.2	56.0	-18.8
0.344	20.0	20.0	40.0	59.1	-19.1
2.083	16.7	20.1	36.8	56.0	-19.2
1.538	16.4	20.1	36.5	56.0	-19.5
0.403	16.4	19.9	36.3	57.8	-21.5
2.701	14.0	20.2	34.2	56.0	-21.8
2.971	13.3	20.2	33.5	56.0	-22.5
3.864	12.7	20.3	33.0	56.0	-23.0
4.532	11.6	20.3	31.9	56.0	-24.1
27.537	12.0	22.3	34.3	60.0	-25.7
22.883	11.9	21.7	33.6	60.0	-26.4
5.709	11.4	20.4	31.8	60.0	-28.2
17.628	10.5	21.3	31.8	60.0	-28.2
8.537	10.7	20.6	31.3	60.0	-28.7
15.280	10.2	21.1	31.3	60.0	-28.7
7.114	10.6	20.6	31.2	60.0	-28.8

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.234	15.1	20.0	35.1	52.3	-17.2
0.150	18.6	20.2	38.8	56.0	-17.2
0.921	8.6	20.0	28.6	46.0	-17.4
0.184	16.5	20.1	36.6	54.3	-17.7
0.650	8.0	20.0	28.0	46.0	-18.0
0.879	7.9	20.0	27.9	46.0	-18.1
1.538	7.8	20.1	27.9	46.0	-18.1
2.074	7.6	20.1	27.7	46.0	-18.3
1.804	7.5	20.1	27.6	46.0	-18.4
0.541	7.6	19.9	27.5	46.0	-18.5
0.272	12.5	20.0	32.5	51.1	-18.6
1.090	7.2	20.0	27.2	46.0	-18.8
0.344	10.2	20.0	30.2	49.1	-18.9
0.417	8.0	19.9	27.9	47.5	-19.6
2.687	6.0	20.2	26.2	46.0	-19.8
2.971	5.8	20.2	26.0	46.0	-20.0
3.859	5.6	20.3	25.9	46.0	-20.1
4.276	5.0	20.3	25.3	46.0	-20.7
27.532	5.0	22.3	27.3	50.0	-22.7
24.412	4.7	21.9	26.6	50.0	-23.4
5.709	4.9	20.4	25.3	50.0	-24.7
16.826	4.0	21.3	25.3	50.0	-24.7
19.834	3.8	21.4	25.2	50.0	-24.8
13.763	4.1	21.0	25.1	50.0	-24.9
6.349	4.3	20.5	24.8	50.0	-25.2

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Charger-3	Work Order:	BOSN0207
Serial Number:	102902	Date:	2024-06-07
Customer:	Boston Scientific Neuromodulation	Temperature:	22.1°C
Attendees:	Alexey Grinfeld	Relative Humidity:	52.1%
Customer Project:	None	Bar. Pressure (PMSL):	1013 mb
Tested By:	Mark Baytan	Job Site:	OC06
Power:	110VAC/60Hz	Configuration:	BOSN0207-1

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2024	ANSI C63.10:2013

TEST PARAMETERS

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

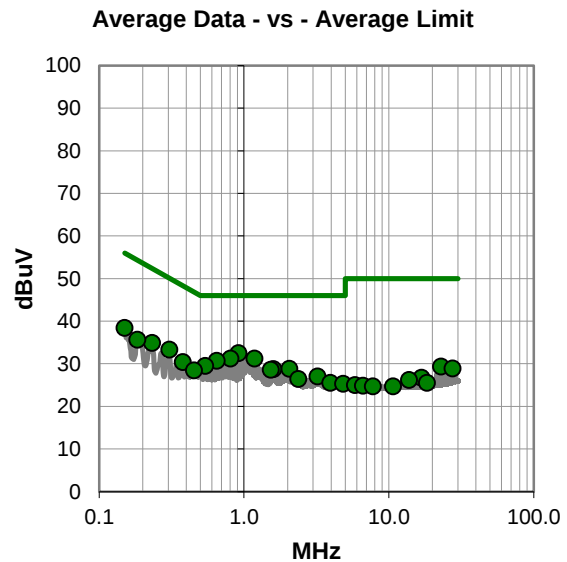
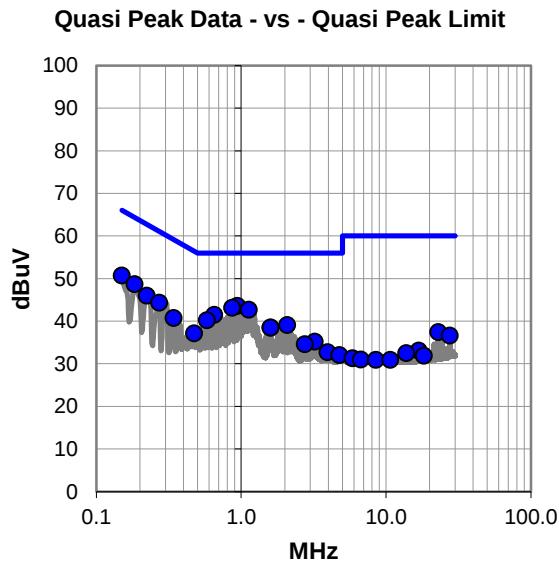
None

EUT OPERATING MODES

Charging the Charger (@110VAC/60Hz)

DEVIATIONS FROM TEST STANDARD

None



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #4

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.942	23.6	20.0	43.6	56.0	-12.4
0.869	23.1	20.0	43.1	56.0	-12.9
1.130	22.7	20.0	42.7	56.0	-13.3
0.654	21.5	20.0	41.5	56.0	-14.5
0.150	30.5	20.2	50.7	66.0	-15.3
0.184	28.6	20.1	48.7	64.3	-15.6
0.579	20.3	19.9	40.2	56.0	-15.8
0.223	26.0	20.0	46.0	62.7	-16.7
0.272	24.3	20.0	44.3	61.1	-16.8
2.077	19.0	20.1	39.1	56.0	-16.9
1.595	18.4	20.1	38.5	56.0	-17.5
1.596	18.4	20.1	38.5	56.0	-17.5
0.342	20.7	20.0	40.7	59.1	-18.4
0.473	17.2	19.9	37.1	56.5	-19.4
3.217	15.0	20.2	35.2	56.0	-20.8
2.750	14.4	20.2	34.6	56.0	-21.4
22.967	15.7	21.7	37.4	60.0	-22.6
3.945	12.4	20.3	32.7	56.0	-23.3
27.553	14.3	22.3	36.6	60.0	-23.4
4.778	11.7	20.3	32.0	56.0	-24.0
16.842	11.8	21.3	33.1	60.0	-26.9
13.780	11.5	21.0	32.5	60.0	-27.5
18.313	10.6	21.3	31.9	60.0	-28.1
5.861	10.8	20.5	31.3	60.0	-28.7
6.691	10.5	20.5	31.0	60.0	-29.0

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.919	12.5	20.0	32.5	46.0	-13.5
0.809	11.2	20.0	31.2	46.0	-14.8
1.184	11.2	20.0	31.2	46.0	-14.8
0.649	10.7	20.0	30.7	46.0	-15.3
0.539	9.6	19.9	29.5	46.0	-16.5
0.306	13.3	20.0	33.3	50.1	-16.8
2.063	8.7	20.1	28.8	46.0	-17.2
1.596	8.6	20.1	28.7	46.0	-17.3
1.532	8.5	20.1	28.6	46.0	-17.4
0.232	14.9	20.0	34.9	52.4	-17.5
0.150	18.2	20.2	38.4	56.0	-17.6
0.379	10.5	19.9	30.4	48.3	-17.9
0.452	8.5	19.9	28.4	46.8	-18.4
0.184	15.5	20.1	35.6	54.3	-18.7
3.217	6.8	20.2	27.0	46.0	-19.0
2.375	6.2	20.2	26.4	46.0	-19.6
3.945	5.2	20.3	25.5	46.0	-20.5
4.842	4.9	20.4	25.3	46.0	-20.7
22.967	7.6	21.7	29.3	50.0	-20.7
27.553	6.6	22.3	28.9	50.0	-21.1
16.842	5.4	21.3	26.7	50.0	-23.3
13.780	5.2	21.0	26.2	50.0	-23.8
18.371	4.1	21.4	25.5	50.0	-24.5
5.844	4.5	20.5	25.0	50.0	-25.0
6.655	4.3	20.5	24.8	50.0	-25.2

CONCLUSION

Pass

Tested By

FIELD STRENGTH OF FUNDAMENTAL

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was continuously transmitting while set to the channel specified.

The fundamental carrier of the EUT was maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis, and adjusting the measurement antenna polarization (per ANSI C63.10). A calibrated active loop antenna was used for this test in order to provide sufficient measurement sensitivity. The reference point of the loop antenna was maintained at 1m above the ground plane during the testing.

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 = CISPR Average Detector

As outlined in 15.209(e), 15.31(f)(2), and RSS-GEN, 6.5, measurements may be performed at a distance closer than what is specified with the limit. The limit at the specified distance is shown on the data sheet. Measurements are made at a closer distance and the data is adjusted using a distance correction factor of 40dB/decade for comparison to the limit.

The limits in CFR 47, Part 15C 15.209(a) are identical to those in RSS-Gen section 8.9 Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377 Ohms. For example, an E-Field measurement in dBuV/m can be converted to dBuA/m via the following formula: dBuV/m - 51.5 dB = dBuA/m. E-Field measurements have the same margin in dB to the corresponding RSS-Gen Table 6 limit as it has to 15.209(a) limits

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Receiver	Rohde & Schwarz	ESCI	ARG	2023-08-31	2024-08-31
Cable	Northwest EMC	3kHz - 1GHz RE Cables	OCB	2024-05-15	2025-05-15
Antenna - Loop	EMCO	6502	AZB	2023-09-06	2025-09-06

FREQUENCY RANGE INVESTIGATED

9 kHz TO 490 kHz

POWER INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

BOSN0207-2

MODES INVESTIGATED

Fast Charging the IPG via WPT

FIELD STRENGTH OF FUNDAMENTAL

EUT:	Charger-3	Work Order:	BOSN0207
Serial Number:	102902	Date:	2024-06-04
Customer:	Boston Scientific Neuromodulation	Temperature:	21.6°C
Attendees:	Alexey Grinfeld	Relative Humidity:	0.541%
Customer Project:	None	Bar. Pressure (PMSL):	1011 mb
Tested By:	Mark Baytan	Job Site:	OC08
Power:	Battery	Configuration:	BOSN0207-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.209:2024	ANSI C63.10:2013

TEST PARAMETERS

Run #:	3	Test Distance (m):	10	Ant. Height(s) (m):	1(m)
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COMMENTS

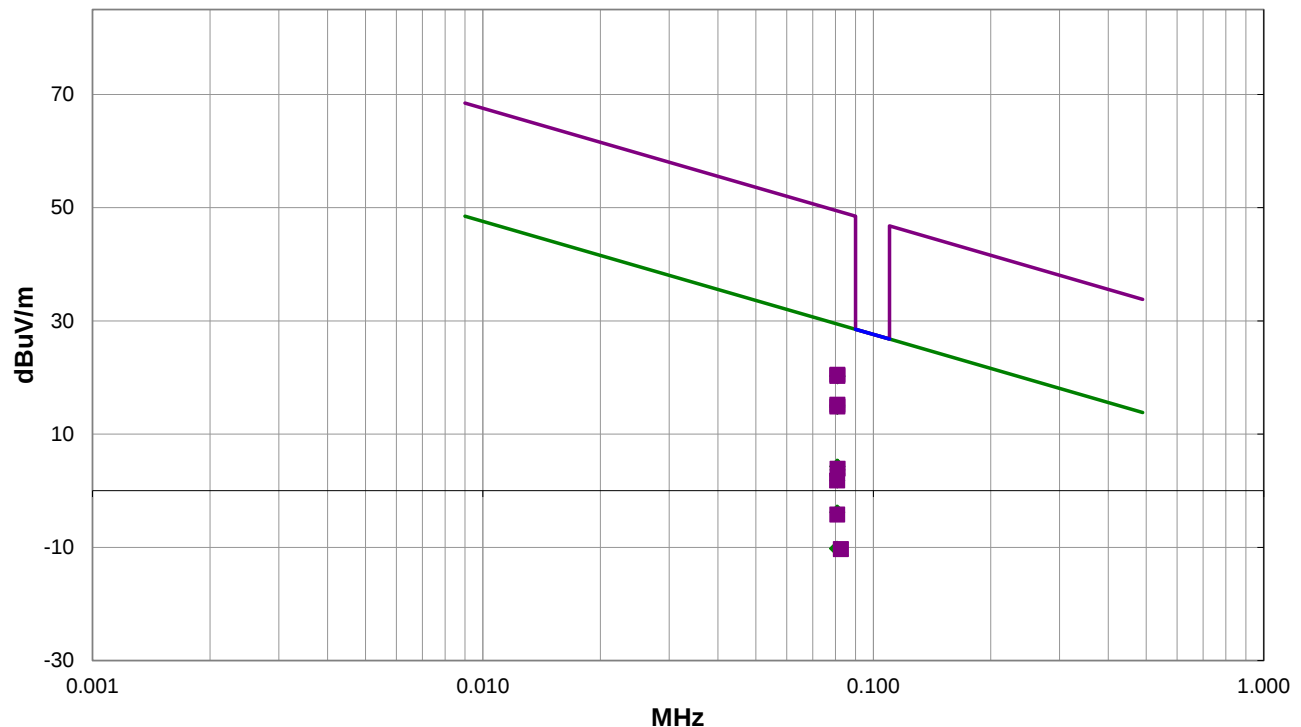
None

EUT OPERATING MODES

Fast Charging the IPG via WPT

DEVIATIONS FROM TEST STANDARD

None



Run #: 3

■ PK ◆ AV ● QP

FIELD STRENGTH OF FUNDAMENTAL

RESULTS - Run #3

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
0.081	69.0	10.4	1.0	102.0	10.0	0.0	Perp to EUT	AV	-59.1	20.3	29.4	-9.1	EUT Side
0.081	68.9	10.4	1.0	284.0	10.0	0.0	Perp to EUT	AV	-59.1	20.2	29.4	-9.2	EUT Vert
0.081	63.8	10.4	1.0	178.0	10.0	0.0	Para to EUT	AV	-59.1	15.1	29.4	-14.3	EUT Side
0.081	63.5	10.4	1.0	194.0	10.0	0.0	Para to EUT	AV	-59.1	14.8	29.4	-14.6	EUT Vert
0.081	53.0	10.4	1.0	192.0	10.0	0.0	Para to GND	AV	-59.1	4.3	29.4	-25.1	EUT Side
0.081	52.4	10.4	1.0	211.0	10.0	0.0	Para to GND	AV	-59.1	3.7	29.4	-25.7	EUT Vert
0.081	50.5	10.4	1.0	99.0	10.0	0.0	Para to EUT	AV	-59.1	1.8	29.4	-27.6	EUT Horz
0.081	69.2	10.4	1.0	102.0	10.0	0.0	Perp to EUT	PK	-59.1	20.5	49.4	-28.9	EUT Side
0.081	69.0	10.4	1.0	284.0	10.0	0.0	Perp to EUT	PK	-59.1	20.3	49.4	-29.1	EUT Vert
0.081	44.9	10.4	1.0	163.0	10.0	0.0	Para to GND	AV	-59.1	-3.8	29.4	-33.2	EUT Horz
0.081	63.9	10.4	1.0	178.0	10.0	0.0	Para to EUT	PK	-59.1	15.2	49.4	-34.2	EUT Side
0.081	63.6	10.4	1.0	194.0	10.0	0.0	Para to EUT	PK	-59.1	14.9	49.4	-34.5	EUT Vert
0.081	38.5	10.4	1.0	7.0	10.0	0.0	Perp to EUT	AV	-59.1	-10.2	29.4	-39.6	EUT Horz
0.081	53.0	10.4	1.0	192.0	10.0	0.0	Para to GND	PK	-59.1	4.3	49.4	-45.1	EUT Side
0.081	52.6	10.4	1.0	211.0	10.0	0.0	Para to GND	PK	-59.1	3.9	49.4	-45.5	EUT Vert
0.081	50.5	10.4	1.0	99.0	10.0	0.0	Para to EUT	PK	-59.1	1.8	49.4	-47.6	EUT Horz
0.081	44.5	10.4	1.0	163.0	10.0	0.0	Para to GND	PK	-59.1	-4.2	49.4	-53.6	EUT Horz
0.083	38.4	10.4	1.0	7.0	10.0	0.0	Perp to EUT	PK	-59.1	-10.3	49.2	-59.5	EUT Horz

CONCLUSION

Pass



Tested By

SPURIOUS RADIATED EMISSIONS

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was continuously transmitting while set to the channel specified.

For each configuration, the spectrum was scanned throughout the specified range as part of the exploratory investigation of the emissions. A reference preview scan (pre-scan) is 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, and adjusting the measurement antenna height (where applicable) and polarization (per ANSI C63.10). A calibrated active loop antenna was used for this test in order to provide sufficient measurement sensitivity. The reference point of the loop antenna was maintained at 1m above the ground plane during the testing.

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 = CISPR Average Detector

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

As outlined in 15.209(e), 15.31(f)(2), and RSS-GEN, 6.5, measurements may be performed at a distance closer than what is specified with the limit. The limit at the specified distance is shown on the data sheet. Measurements are made at a closer distance and the data is adjusted using a distance correction factor of 40dB/decade for comparison to the limit.

The limits in CFR 47, Part 15C 15.209(a) are identical to those in RSS-Gen section 8.9 Table 6, since the measurements are performed in terms of magnetic field strength and converted to electric field strength levels (as reported in the table) using the free space impedance of 377 Ohms. For example, an E-Field measurement in dBuV/m can be converted to dBuA/m via the following formula: dBuV/m - 51.5 dB = dBuA/m. E-Field measurements have the same margin in dB to the corresponding RSS-Gen Table 6 limit as it has to 15.209(a) limits

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Antenna - Loop	EMCO	6502	AZB	2023-09-06	2025-09-06
Cable	Northwest EMC	3kHz - 1GHz RE Cables	OCB	2024-05-15	2025-05-15
Receiver	Rohde & Schwarz	ESCI	ARG	2023-08-31	2024-08-31
Antenna - Biconilog	EMCO	3142B	AXK	2023-09-25	2025-09-25
Amplifier - Pre-Amplifier	Miteq	AM-1551	AOX	2024-05-14	2025-05-14

FREQUENCY RANGE INVESTIGATED

9 kHz TO 1000 MHz

POWER INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

BOSN0207-2

MODES INVESTIGATED

Fast Charging the IPG via WPT

SPURIOUS RADIATED EMISSIONS

EUT:	Charger-3	Work Order:	BOSN0207
Serial Number:	102902	Date:	2024-06-04
Customer:	Boston Scientific Neuromodulation	Temperature:	21.6°C
Attendees:	Alexey Grinfeld	Relative Humidity:	0.541%
Customer Project:	None	Bar. Pressure (PMSL):	1011 mb
Tested By:	Mark Baytan, Matthew Ng	Job Site:	OC08
Power:	Battery	Configuration:	BOSN0207-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.209:2024	ANSI C63.10:2013

TEST PARAMETERS

Run #:	5	Test Distance (m):	10	Ant. Height(s) (m):	1(m)
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COMMENTS

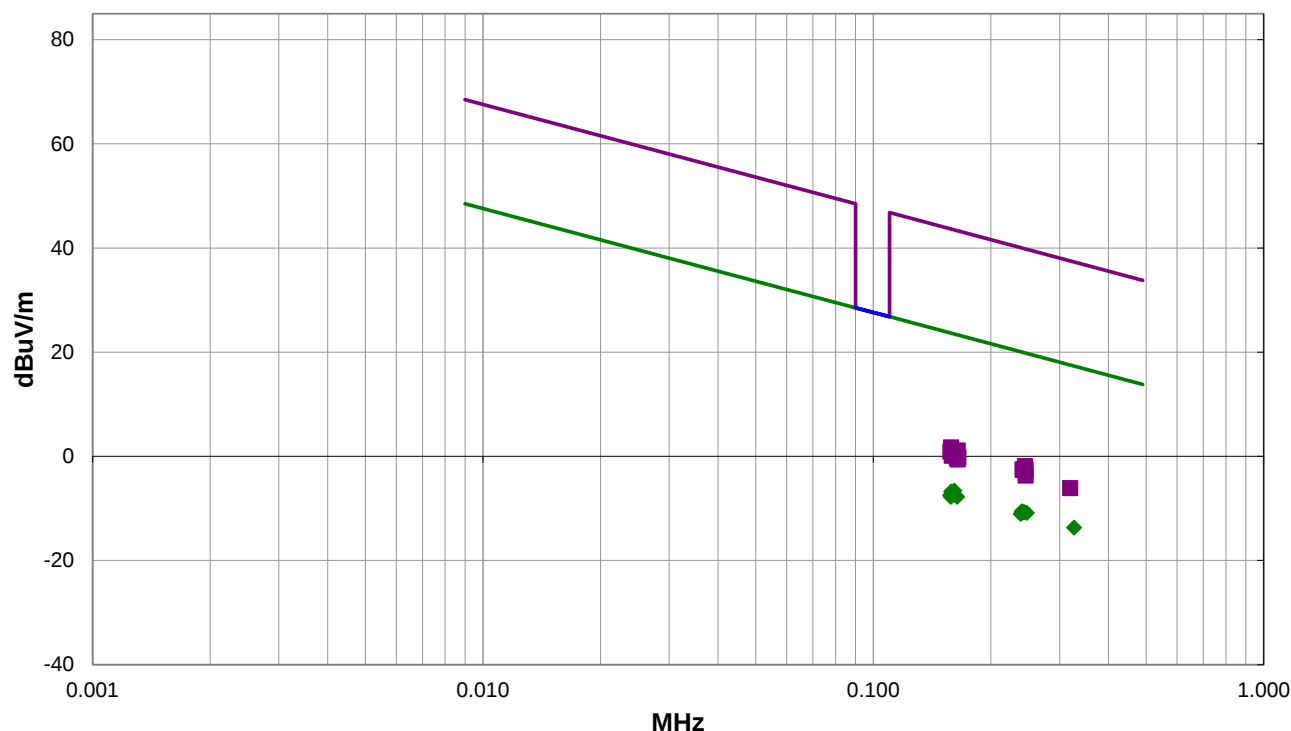
Measurements are floor noise at the harmonic frequencies

EUT OPERATING MODES

Fast Charging the IPG via WPT

DEVIATIONS FROM TEST STANDARD

None



Run #: 5

■ PK ◆ AV ● QP

SPURIOUS RADIATED EMISSIONS

RESULTS - Run #5

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
0.161	42.1	10.4	1.0	282.0	10.0	0.0	Perp to EUT	AV	-59.1	-6.6	23.5	-30.1	EUT on Side
0.158	41.9	10.4	1.0	103.0	10.0	0.0	Perp to EUT	AV	-59.1	-6.8	23.6	-30.4	EUT Vert
0.243	38.0	10.4	1.0	359.0	10.0	0.0	Para to EUT	AV	-59.1	-10.7	19.9	-30.6	EUT on Side
0.240	38.1	10.4	1.0	271.0	10.0	0.0	Para to GND	AV	-59.1	-10.6	20.0	-30.6	EUT on Side
0.248	37.8	10.4	1.0	361.0	10.0	0.0	Para to GND	AV	-59.1	-10.9	19.7	-30.6	EUT Vert
0.243	37.9	10.4	1.0	318.0	10.0	0.0	Perp to EUT	AV	-59.1	-10.8	19.9	-30.7	EUT Vert
0.159	41.5	10.4	1.0	362.0	10.0	0.0	Para to GND	AV	-59.1	-7.2	23.6	-30.8	EUT Vert
0.241	37.9	10.4	1.0	87.0	10.0	0.0	Perp to EUT	AV	-59.1	-10.8	20.0	-30.8	EUT on Side
0.161	41.3	10.4	1.0	362.0	10.0	0.0	Para to EUT	AV	-59.1	-7.4	23.5	-30.9	EUT Vert
0.327	35.1	10.3	1.0	181.0	10.0	0.0	Perp to EUT	AV	-59.1	-13.7	17.3	-31.0	EUT on Side
0.164	40.9	10.4	1.0	116.0	10.0	0.0	Para to EUT	AV	-59.1	-7.8	23.3	-31.1	EUT on Side
0.157	41.2	10.4	1.0	9.0	10.0	0.0	Perp to EUT	AV	-59.1	-7.5	23.7	-31.2	EUT Horz
0.159	41.1	10.4	1.0	9.0	10.0	0.0	Para to GND	AV	-59.1	-7.6	23.6	-31.2	EUT on Side
0.239	37.6	10.4	1.0	301.0	10.0	0.0	Para to EUT	AV	-59.1	-11.1	20.1	-31.2	EUT Vert
0.158	41.0	10.4	1.0	362.0	10.0	0.0	Para to GND	AV	-59.1	-7.7	23.6	-31.3	EUT Horz
0.158	40.9	10.4	1.0	230.0	10.0	0.0	Para to GND	AV	-59.1	-7.8	23.7	-31.5	EUT Horz
0.245	46.8	10.4	1.0	301.0	10.0	0.0	Para to EUT	PK	-59.1	-1.9	39.8	-41.7	EUT Vert
0.158	50.4	10.4	1.0	362.0	10.0	0.0	Para to GND	PK	-59.1	1.7	43.6	-41.9	EUT Vert
0.164	49.8	10.4	1.0	9.0	10.0	0.0	Para to GND	PK	-59.1	1.1	43.3	-42.2	EUT on Side
0.245	46.1	10.4	1.0	87.0	10.0	0.0	Perp to EUT	PK	-59.1	-2.6	39.8	-42.4	EUT on Side
0.241	46.2	10.4	1.0	318.0	10.0	0.0	Perp to EUT	PK	-59.1	-2.5	40.0	-42.5	EUT Vert
0.242	46.1	10.4	1.0	271.0	10.0	0.0	Para to GND	PK	-59.1	-2.6	39.9	-42.5	EUT on Side
0.241	46.1	10.4	1.0	361.0	10.0	0.0	Para to GND	PK	-59.1	-2.6	40.0	-42.6	EUT Vert
0.162	49.4	10.4	1.0	362.0	10.0	0.0	Para to EUT	PK	-59.1	0.7	43.4	-42.7	EUT Vert
0.161	49.5	10.4	1.0	282.0	10.0	0.0	Perp to EUT	PK	-59.1	0.8	43.5	-42.7	EUT on Side
0.158	49.6	10.4	1.0	103.0	10.0	0.0	Perp to EUT	PK	-59.1	0.9	43.7	-42.8	EUT Vert
0.159	48.8	10.4	1.0	9.0	10.0	0.0	Perp to EUT	PK	-59.1	0.1	43.6	-43.5	EUT Horz
0.165	48.5	10.4	1.0	116.0	10.0	0.0	Para to EUT	PK	-59.1	-0.2	43.3	-43.5	EUT on Side
0.245	45.0	10.4	1.0	359.0	10.0	0.0	Para to EUT	PK	-59.1	-3.7	39.8	-43.5	EUT on Side
0.164	48.4	10.4	1.0	230.0	10.0	0.0	Para to GND	PK	-59.1	-0.3	43.3	-43.6	EUT Horz
0.319	42.7	10.3	1.0	181.0	10.0	0.0	Perp to EUT	PK	-59.1	-6.1	37.5	-43.6	EUT on Side
0.165	48.1	10.4	1.0	362.0	10.0	0.0	Para to GND	PK	-59.1	-0.6	43.3	-43.9	EUT Horz

CONCLUSION

Pass



Tested By

SPURIOUS RADIATED EMISSIONS

EUT:	Charger-3	Work Order:	BOSN0207
Serial Number:	102902	Date:	2024-06-04
Customer:	Boston Scientific Neuromodulation	Temperature:	21.6°C
Attendees:	Alexey Grinfeld	Relative Humidity:	0.541%
Customer Project:	None	Bar. Pressure (PMSL):	1011 mb
Tested By:	Mark Baytan, Matthew Ng	Job Site:	OC08
Power:	Battery	Configuration:	BOSN0207-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.209:2024	ANSI C63.10:2013

TEST PARAMETERS

Run #:	6	Test Distance (m):	10	Ant. Height(s) (m):	1(m)
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COMMENTS

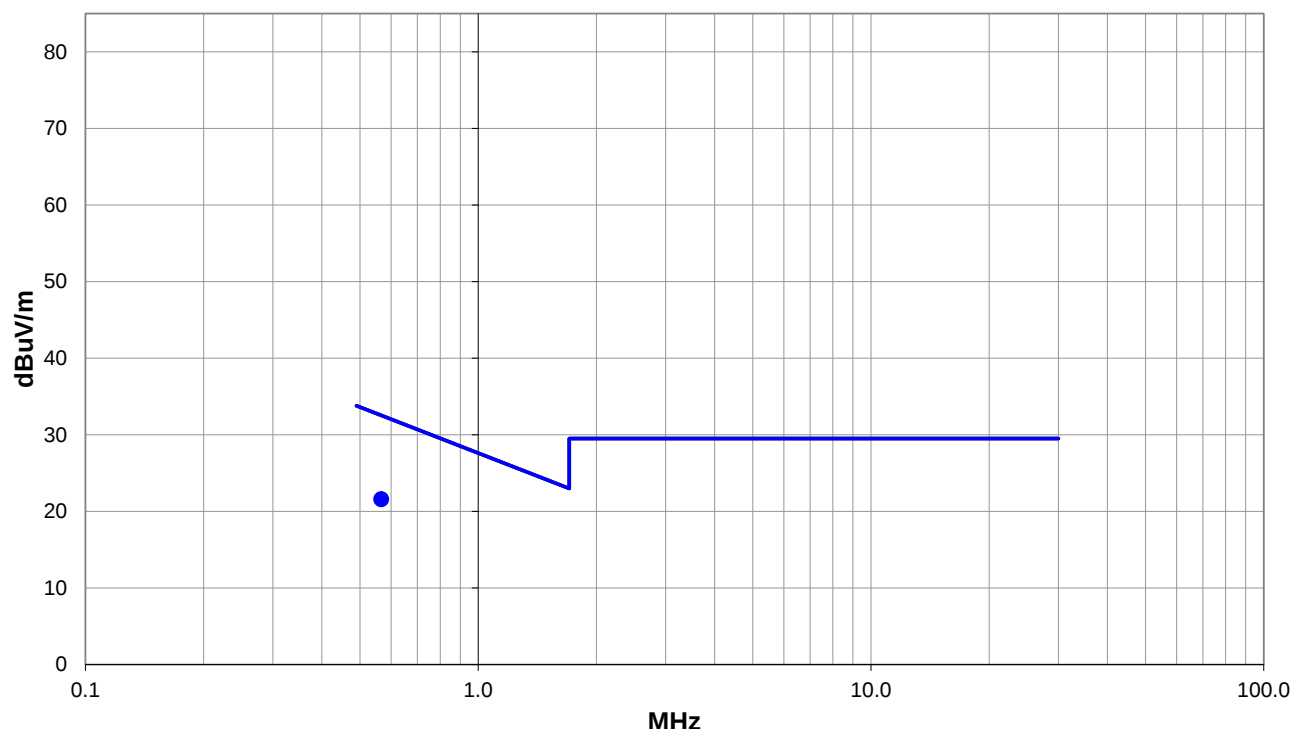
Measurement taken at worse case antenna orientation (Perp to EUT) and EUT position (EUT on side).

EUT OPERATING MODES

Fast Charging the IPG via WPT

DEVIATIONS FROM TEST STANDARD

None



Run #: 6

■ PK ◆ AV ● QP

SPURIOUS RADIATED EMISSIONS

RESULTS - Run #6

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
0.566	30.2	10.5	1.0	302.0	10.0	0.0	Perp to EUT	QP	-19.1	21.6	32.6	-11.0	EUT on Side

CONCLUSION

Pass



Tested By

SPURIOUS RADIATED EMISSIONS

EUT:	Charger-3	Work Order:	BOSN0207
Serial Number:	102902	Date:	2024-06-04
Customer:	Boston Scientific Neuromodulation	Temperature:	21.6°C
Attendees:	Alexey Grinfeld	Relative Humidity:	0.541%
Customer Project:	None	Bar. Pressure (PMSL):	1011 mb
Tested By:	Mark Baytan, Matthew Ng	Job Site:	OC08
Power:	Battery	Configuration:	BOSN0207-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.209:2024	ANSI C63.10:2013

TEST PARAMETERS

Run #:	7	Test Distance (m):	3	Ant. Height(s) (m):	1 to 4(m)
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COMMENTS

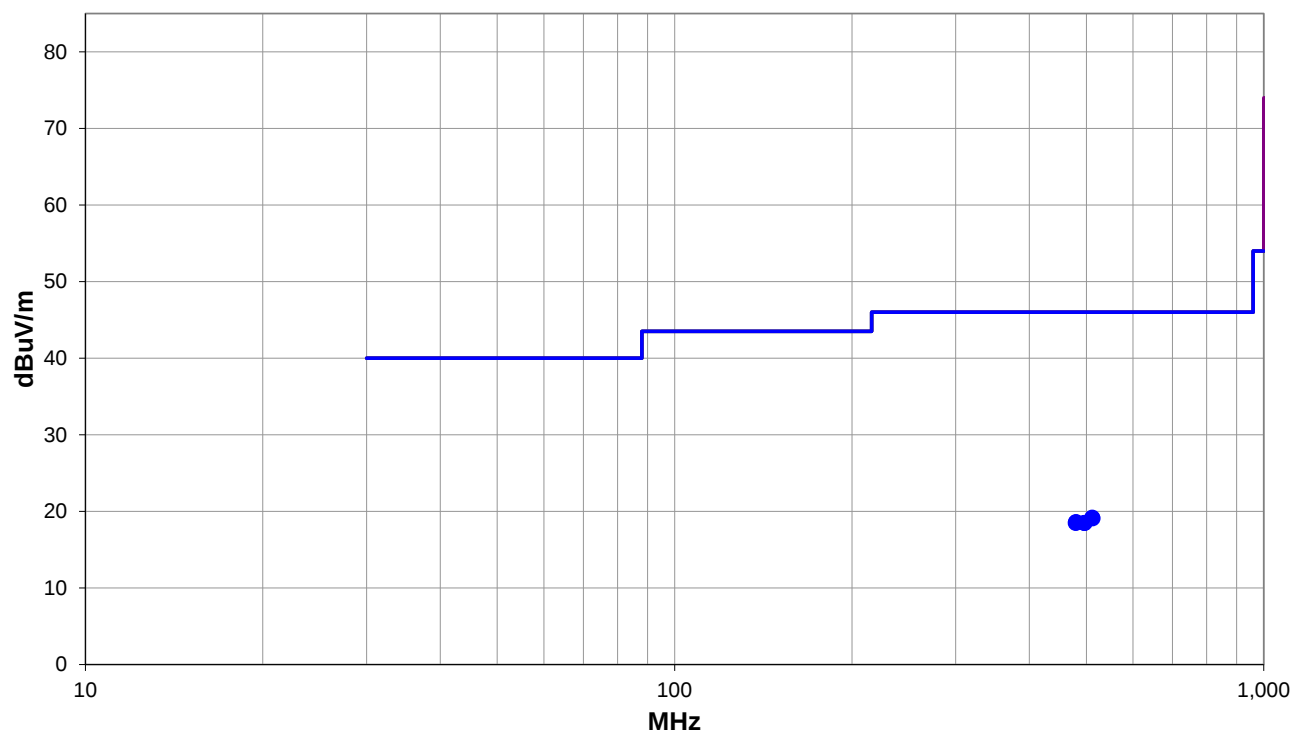
None

EUT OPERATING MODES

Fast Charging the IPG via WPT

DEVIATIONS FROM TEST STANDARD

None



Run #: 7

■ PK ◆ AV ● QP

SPURIOUS RADIATED EMISSIONS

RESULTS - Run #7

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)
511.577	30.2	-11.0	1.0	229.0	3.0	0.0	Vert	QP	0.0	19.2	46.0	-26.8
512.210	30.2	-11.1	1.68	134.0	3.0	0.0	Horz	QP	0.0	19.1	46.0	-26.9
480.214	30.1	-11.5	2.6	223.0	3.0	0.0	Horz	QP	0.0	18.6	46.0	-27.4
496.433	30.2	-11.7	1.0	358.0	3.0	0.0	Vert	QP	0.0	18.5	46.0	-27.5
479.688	30.0	-11.5	1.0	111.0	3.0	0.0	Vert	QP	0.0	18.5	46.0	-27.5
496.038	30.2	-11.7	1.5	178.0	3.0	0.0	Horz	QP	0.0	18.5	46.0	-27.5

CONCLUSION

Pass



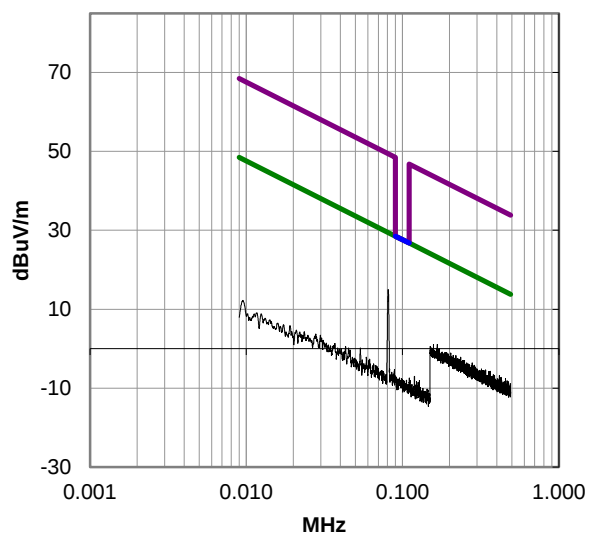
Tested By

SPURIOUS RADIATED EMISSIONS

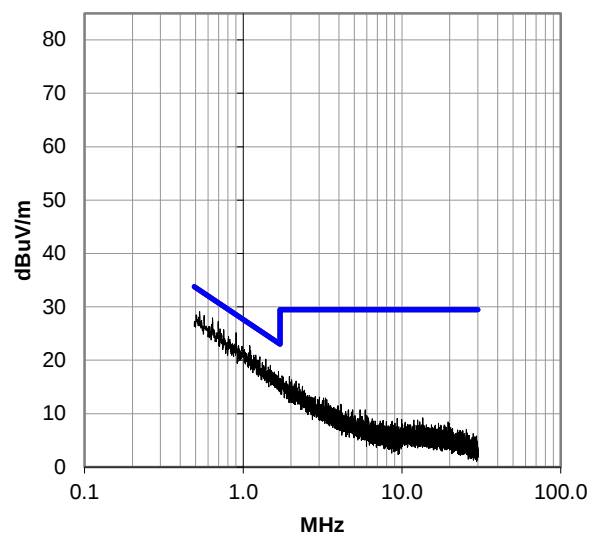
PRESCAN DATA

Radiated spurious emissions from the EUT are initially reviewed with Pre-scans (Preview scans). Pre-scans are performed, with the EUT transmitting on the lowest applicable data rate, for both vertical and horizontal polarizations. The Pre-scan plots below are shown with a peak detector and RBW for the following frequency ranges: 9 kHz RBW (< 30 MHz); 120 kHz RBW (30 - 1000 MHz); 1 MHz RBW (> 1 GHz). In the case where unintentional emissions are observed, an ambient or idle pre-scan with the radio off, will be shown for comparison.

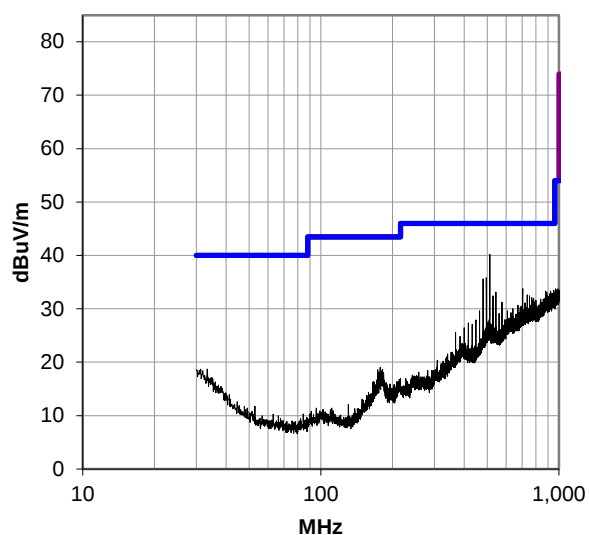
0.009-0.49 MHz, Run 3



0.49-30 MHz, Run 5



30-1000 MHz, Run 7



End of Test Report