

NORTHWEST EMC

Boston Scientific Corporation

Jaguar, Model 6290

FCC 15.207:2015

FCC 95I:2015

Report # BSTN0527



NVLAP Lab Code: 200881-0

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America. This Report may only be duplicated in its entirety

CERTIFICATE OF TEST



Last Date of Test: January 16, 2015
Boston Scientific Corporation
Jaguar, Model 6290

Radio Equipment Testing

Standards

Specification	Method
FCC 95l:2015	ANSI/TIA/EIA-603-C-2004
FCC 15.207:2015	ANSI C63.10:2009

Results

Method Clause	Test Description	Applied	Results	Comments
FCC 95.627(a)	Frequency Monitoring	No	N/A	Boston Scientific will handle testing for this requirement and maintaining a report.
FCC 95.633(e)(3)	Emission Bandwidth	Yes	Pass	
FCC 95.635(d)(4-5)	Emission Mask	Yes	Pass	
FCC 2.2.1	Output Power	Yes	Pass	
FCC 2.2.2	Frequency Stability	Yes	Pass	
FCC 2.2.12	Spurious Radiated Emissions	Yes	Pass	
FCC 2.2.13	Spurious Conducted Emissions	Yes	Pass	
FCC 2.2.17	Radiated Power (EIRP)	Yes	Pass	
ANSI C63.10 - 6.2	Powerline Conducted Emissions	Yes	Pass	

Deviations From Test Standards

None

Approved By:

Dean Ghizzone, President

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.

REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		

ACCREDITATIONS AND AUTHORIZATIONS

United States

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

A2LA - Accredited by A2LA to ISO / IEC Guide 65 as a product certifier. This allows Northwest EMC to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

IC - Recognized by Industry Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with IC.

European Union

European Commission – Validated by the European Commission as a Conformity Assessment Body (CAB) under the EMC directive and as a Notified Body under the R&TTE Directive.

Australia/New Zealand

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

Korea

MSIP / 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

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

Vietnam

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

SCOPE

For details on the Scopes of our Accreditations, please visit:

<http://www.nwemc.com/accreditations/>

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 WP 342. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) for each test is on each data sheet. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable), and are available upon request.

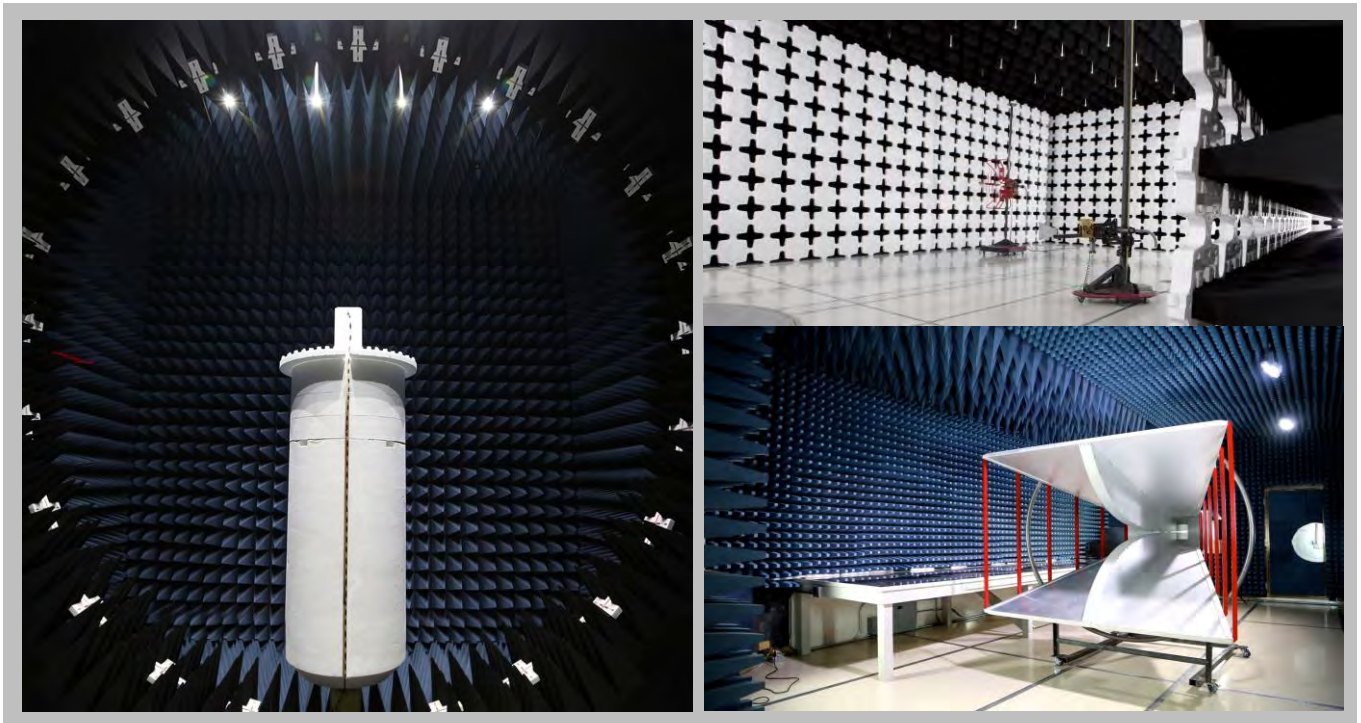
The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	4.7 dB	-4.7 dB
AC Powerline Conducted Emissions (dB)	2.9 dB	-2.9 dB

FACILITIES



California Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	Minnesota Labs MN01-08, MN10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	New York Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 685-0796	Oregon Labs EV01-12 22975 NW Evergreen Pkwy 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 9801 (425)984-6600
NVLAP					
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
Industry Canada					
2834B-1, 2834B-3	2834E-1	N/A	2834D-1, 2834D-2	2834G-1	2834F-1
BSMI					
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI					
A-0029	A-0109	N/A	A-0108	A-0201	A-0110



PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Boston Scientific Corporation
Address:	4100 Hamline Ave North
City, State, Zip:	St. Paul, MN 55112
Test Requested By:	Pete Musto
Model:	Jaguar, Model 6290
First Date of Test:	January 14, 2015
Last Date of Test:	January 16, 2015
Receipt Date of Samples:	January 14, 2015
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
In-home monitor that communicates with an implant through MedRadio band communication.
Testing Objective:
Seeking FCC authorization for the transmitter to FCC Part 95I.

CONFIGURATIONS

Configuration BSTN0527- 1

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Communicator	Boston Scientific Corporation	6290	601
DC Brick	GlobTek	GTM41061-1512-7.0	None

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
USB Cellular Adapter	Boston Scientific Corporation	6295	5
USB Bluetooth Adapter	Delta Mobile Systems	DM210	2E6B

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Power	No	1.80m	Yes	DC Brick	Communicator
RJ11 (x2)	No	1.80m	No	Communicator	Unterminated
USB	Yes	0.20m	Yes	Communicator	USB Cellular Modem

Configuration BSTN0527- 2

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Communicator	Boston Scientific Corporation	6290	601
DC Brick	GlobTek	GTM41061-1512-7.0	None

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
USB Cellular Adapter	Boston Scientific Corporation	6295	5
USB Bluetooth Adapter	Delta Mobile Systems	DM210	2E6B

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Power	No	1.80m	Yes	DC Brick	Communicator
RJ11 (x2)	No	1.80m	No	Communicator	Unterminated
USB	Yes	0.20m	Yes	Communicator	USB Cellular Modem
AC Power	No	1.80m	No	DC Brick	AC Mains

CONFIGURATIONS

Configuration BSTN0527- 3

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Communicator	Boston Scientific Corporation	6290	601
DC Brick	GlobTek	GTM41061-1512-7.0	None

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
USB Cellular Adapter	Boston Scientific Corporation	6295	5
USB Bluetooth Adapter	Delta Mobile Systems	DM210	2E6B
Laptop	Gateway	ZE7	LUWZMOD00120219DD97614
AC Adapter	Leader Electronics	IU40-11190-011S	AP04007002150069F8PP03

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Power	No	1.80m	Yes	DC Brick	Communicator
RJ11 (x2)	No	1.80m	No	Communicator	Unterminated
USB	Yes	0.20m	Yes	Communicator	USB Cellular Modem
USB to Ribbon	No	1.90m	No	Laptop	Communicator
DC Power	No	2.50m	Yes	Laptop	AC Adapter

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	1/14/2015	Emission Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	1/14/2015	Radiated Power (EIRP)	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	1/15/2015	Emission Mask	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	1/15/2015	Spurious Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
5	1/15/2015	Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
6	1/15/2015	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
7	1/15/2015	Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
8	1/16/2015	Frequency Stability	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

EMISSIONS 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.	Interval (mo)
MN08 Direct Connect Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	10/2/2014	12
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/3/2014	12
40 GHz DC Block	Fairview Microwave	SD3379	AMI	10/2/2014	12
MXG Vector Signal Generator	Agilent	N5182A	TIF	8/12/2014	36
Spectrum Analyzer	Agilent	E4443A	AAS	3/27/2014	12

TEST DESCRIPTION

Per 47 CFR 95.633(e)(3), the emission bandwidth was determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 20 dB down relative to the maximum level of the modulated carrier. A spectrum analyzer using a peak detector with no video filtering was used with a resolution bandwidth equal to approximately 1.0 percent of the emission bandwidth of the EUT.

EMISSIONS BANDWIDTH

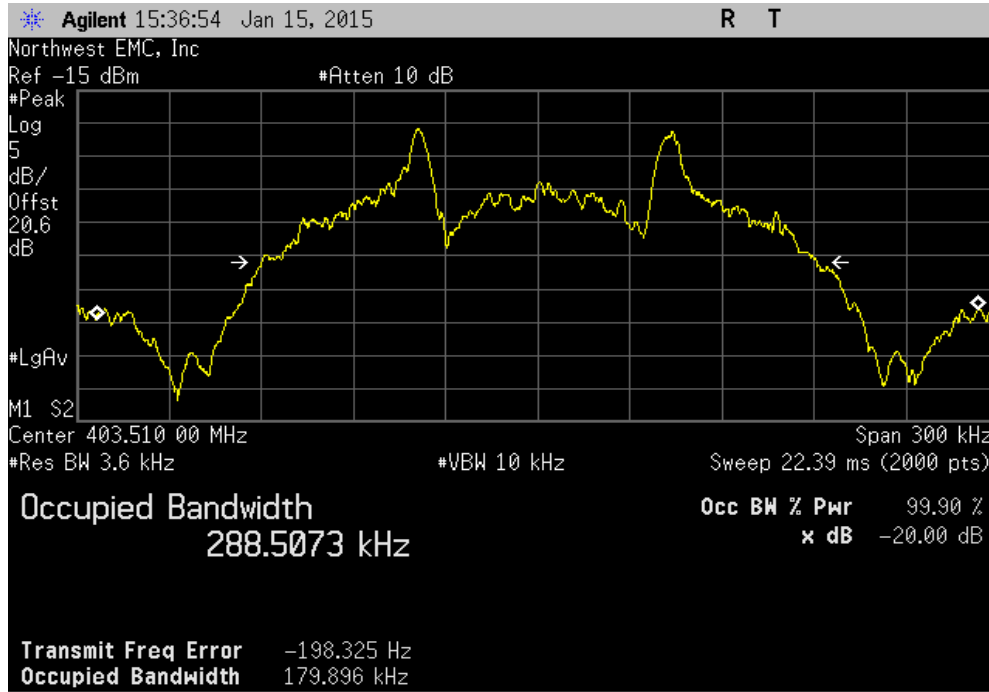


XMR 2014.07.23

EUT: Jaguar, Model 6290		Work Order: BSTN0527	
Serial Number: 601		Date: 01/15/15	
Customer: Boston Scientific Corporation		Temperature: 23.3°C	
Attendees: None		Humidity: 18%	
Project: None		Barometric Pres.: 1017.2	
Tested by: Trevor Buls	Power: 110VAC/60Hz	Job Site: MN08	
TEST SPECIFICATIONS			
FCC 951:2015		Test Method: ANSI/TIA/EIA-603-C-2004	
COMMENTS			
Transmitting a modulated carrier at 76.8 kbps.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	3	Signature	<i>Trevor Buls</i>
		Value	Limit (S) Result
Mid Channel, 403.51 MHz		179.896 kHz	300 kHz Pass

EMISSIONS BANDWIDTH

Mid Channel, 403.51 MHz			Value	Limit (S)	Result
			179.896 kHz	300 kHz	Pass



EMISSIONS MASK

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.	Interval (mo)
MN08 Direct Connect Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	10/2/2014	12
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/3/2014	12
40 GHz DC Block	Fairview Microwave	SD3379	AMI	10/2/2014	12
MXG Vector Signal Generator	Agilent	N5182A	TIF	8/12/2014	36
Spectrum Analyzer	Agilent	E4443A	AAS	3/27/2014	12

TEST DESCRIPTION

Per 47 CFR 95.635(d)(4) the emission mask was measured. Emissions more than 150 kHz away from the center frequency must be attenuated below the transmitter output power by at least 20 dB. This was evaluated by the Occupied Bandwidth measurement according to 47 CFR 95.633(e)(1). In addition, emissions 250 kHz or less above and below the MedRadio band (402-405 MHz) must be attenuated below the maximum permitted output power by at least 20 dB.

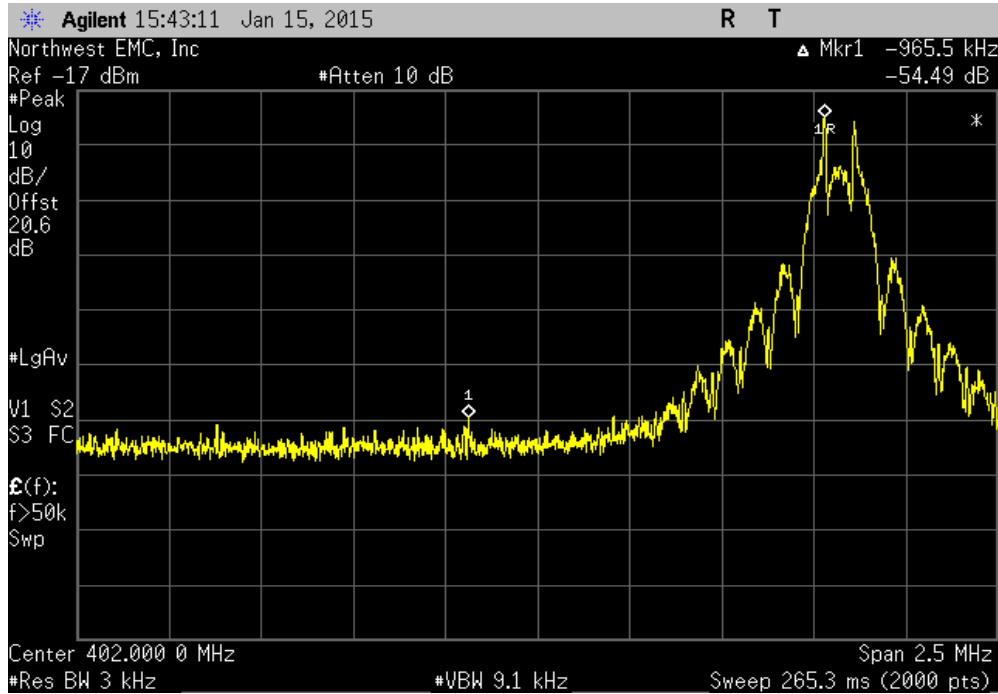
A spectrum analyzer was used to measure the emission mask. A spectrum analyzer using a peak detector with no video filtering was used with a resolution bandwidth equal to approximately 1.0 percent of the emission bandwidth of the EUT. However, various plots were made using different frequency spans and resolution bandwidths in an attempt to not only satisfy the measurement criteria, but to also show that all emissions outside of the occupied band are greatly attenuated.

EMISSIONS MASK

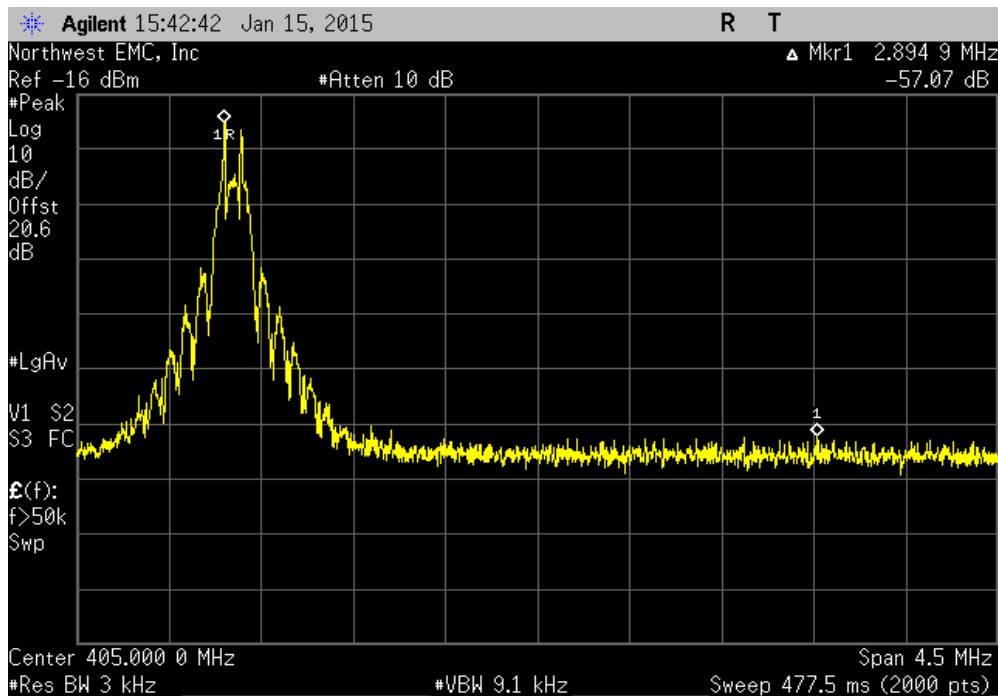
EUT: Jaguar, Model 6290		Work Order: BSTN0527	
Serial Number: 601		Date: 01/15/15	
Customer: Boston Scientific Corporation		Temperature: 23.3°C	
Attendees: None		Humidity: 18%	
Project: None		Barometric Pres.: 1017.2	
Tested by: Trevor Buls	Power: 110VAC/60Hz	Job Site: MN08	
TEST SPECIFICATIONS			
FCC 95i:2015		Test Method: ANSI/TIA/EIA-603-C-2004	
COMMENTS			
Highest channel is also the closest to the middle of the band. Transmitting a modulated carrier at 76.8 kbps.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	3	Signature <i>Trevor Buls</i>	
		Value (dBc)	Limit ≤ (dBc) Result
Low Channel, 402.81 MHz		-54.49	-20 Pass
High Channel, 403.51 MHz		-57.07	-20 Pass

EMISSIONS MASK

Low Channel, 402.81 MHz				Value	Limit	Result
				(dBc)	≤ (dBc)	
				-54.49	-20	Pass



High Channel, 403.51 MHz				Value	Limit	Result
				(dBc)	≤ (dBc)	
				-57.07	-20	Pass



OUTPUT POWER

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.	Interval (mo)
MN08 Direct Connect Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	10/2/2014	12
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/3/2014	12
40 GHz DC Block	Fairview Microwave	SD3379	AMI	10/2/2014	12
MXG Vector Signal Generator	Agilent	N5182A	TIF	8/12/2014	36
Spectrum Analyzer	Agilent	E4443A	AAS	3/27/2014	12

TEST DESCRIPTION

Per FCC Part 2.1046, RSS-GEN, the output power shall be measured at the RF terminal. The peak output power was measured with the EUT configured in the modes listed in the datasheet. The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was transmitting at its maximum data rate. FCC Part 95 and RSS-243 have no conducted output power limit. It is a requirement to characterize this information and that data is contained within this datasheet.

OUTPUT POWER

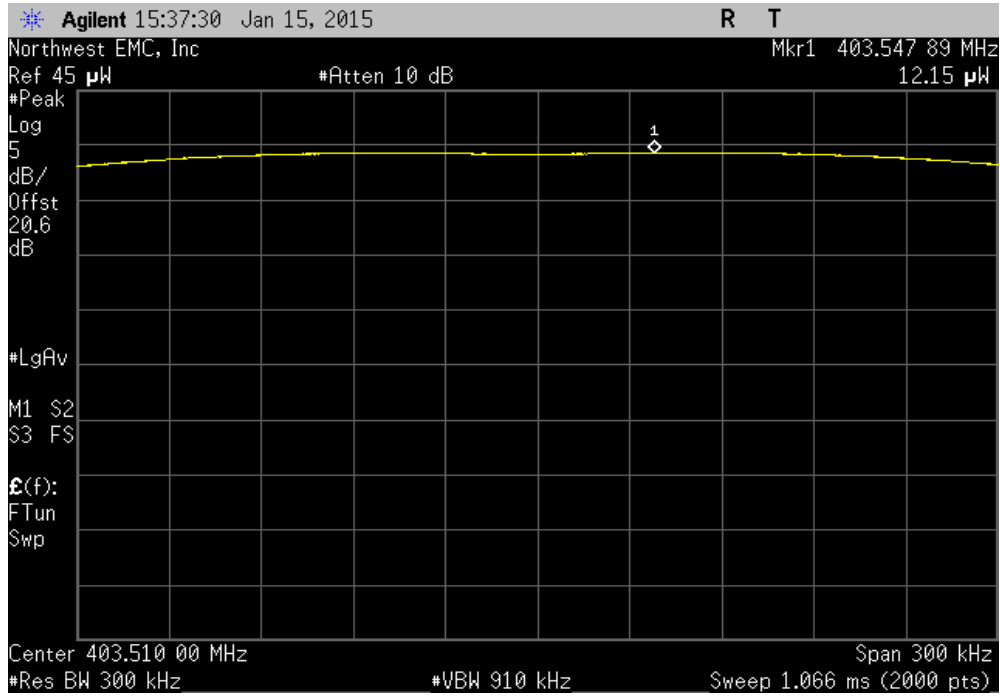
EUT: Jaguar, Model 6290		Work Order: BSTN0527
Serial Number: 601		Date: 01/15/15
Customer: Boston Scientific Corporation		Temperature: 23.3°C
Attendees: None		Humidity: 18%
Project: None		Barometric Pres.: 1017.2
Tested by: Trevor Buls	Power: 110VAC/60Hz	Job Site: MN08
TEST SPECIFICATIONS		
FCC 951:2015		Test Method: ANSI/TIA/EIA-603-C-2004
COMMENTS		
Transmitting a modulated carrier at 76.8 kbps.		
DEVIATIONS FROM TEST STANDARD		
None		
Configuration #	3	Signature <i>Trevor Buls</i>

Mid Channel, 403.51 MHz

Value	Limit	Result
12.151 uW	N/A	N/A

OUTPUT POWER

Mid Channel, 403.51 MHz			
	Value	Limit	Result
	12.151 uW	N/A	N/A



FREQUENCY STABILITY

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.	Interval (mo)
Thermometer	Omega Engineering, Inc.	HH311	DUB	11/3/2014	36
Humidity Temperature Chamber	Cincinnati Sub Zero (CSZ)	ZPH-32-3.5-SCT/AC	TBF	NCR	0
Multimeter	Fluke	117	MNN	1/20/2014	36
Variable Transformer	Powerstat	246	XFR	NCR	0
MN08 Direct Connect Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	10/2/2014	12
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/3/2014	12
40 GHz DC Block	Fairview Microwave	SD3379	AMI	10/2/2014	12
MXG Vector Signal Generator	Agilent	N5182A	TIF	8/12/2014	36
Spectrum Analyzer	Agilent	E4443A	AAS	3/27/2014	12

TEST DESCRIPTION

Variation of Supply Voltage

The primary supply voltage was varied from 85% to 115% of the nominal voltage. A variable transformer was used to vary the supply voltage.

Variation of Ambient Temperature

Using a temperature chamber, the transmit frequency was recorded at the extremes of the specified temperature range (+55°C to +0°C at 10°C increments).

The Frequency Stability was measured using a direct connection to a spectrum analyzer. The spectrum analyzer is configured with a precision frequency reference that exceeds the stability requirement of the transmitter. The EUT was placed inside a temperature / humidity chamber. A low-loss coaxial cable connected the EUT to the spectrum analyzer outside of the chamber.

FREQUENCY STABILITY

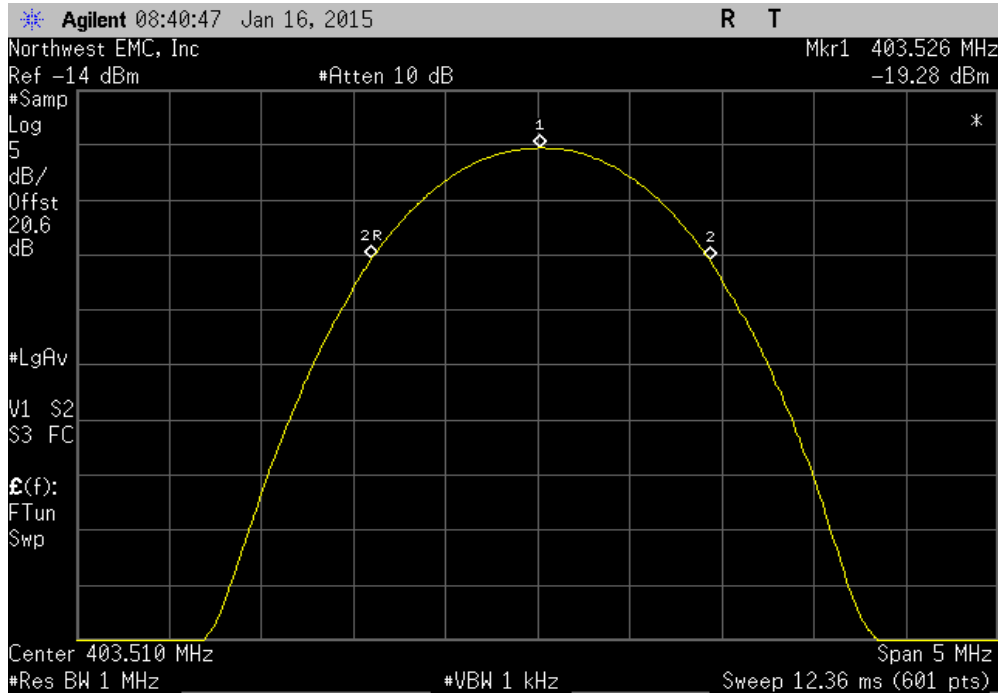


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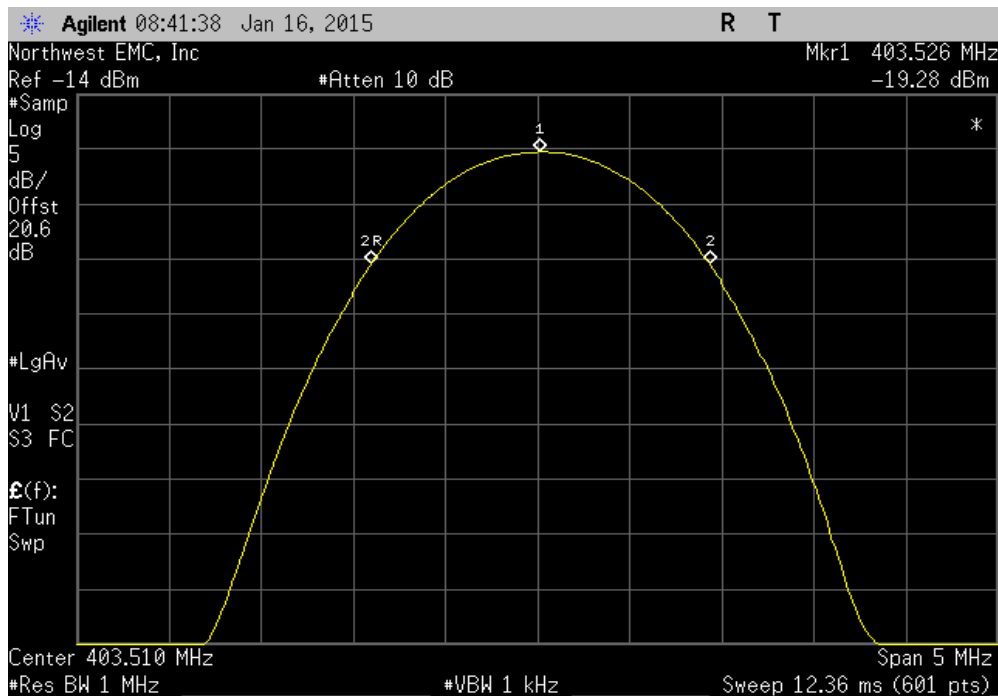
EUT: Jaguar, Model 6290		Work Order: BSTN0527				
Serial Number: 601		Date: 01/16/15				
Customer: Boston Scientific Corporation		Temperature: 22.9°C				
Attendees: None		Humidity: 19%				
Project: None		Barometric Pres.: 1020.3				
Tested by: Trevor Buls	Power: 110VAC/60Hz	Job Site: MN08				
TEST SPECIFICATIONS						
FCC 95I:2015		Test Method: ANSI/TIA/EIA-603-C-2004				
COMMENTS						
Transmitting a modulated carrier at 76.8 kbps.						
DEVIATIONS FROM TEST STANDARD						
None						
Configuration #	3	Signature <i>Trevor Buls</i>				
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
Normal Voltage	Mid Channel, 403.51 MHz	403.526	403.51	39.7	100	Pass
Extreme Voltage +15%	Mid Channel, 403.51 MHz	403.526	403.51	39.7	100	Pass
Extreme Voltage -15%	Mid Channel, 403.51 MHz	403.526	403.51	39.7	100	Pass
Extreme Temperature +55°C	Mid Channel, 403.51 MHz	403.526	403.51	39.7	100	Pass
Extreme Temperature +50°C	Mid Channel, 403.51 MHz	403.526	403.51	39.7	100	Pass
Extreme Temperature +40°C	Mid Channel, 403.51 MHz	403.526	403.51	39.7	100	Pass
Extreme Temperature +30°C	Mid Channel, 403.51 MHz	403.526	403.51	39.7	100	Pass
Extreme Temperature +20°C	Mid Channel, 403.51 MHz	403.522	403.51	29.7	100	Pass
Extreme Temperature +10°C	Mid Channel, 403.51 MHz	403.526	403.51	39.7	100	Pass
Extreme Temperature 0°C	Mid Channel, 403.51 MHz	403.526	403.51	39.7	100	Pass

FREQUENCY STABILITY

Normal Voltage, Mid Channel, 403.51 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.526	403.51	39.7	100	Pass	

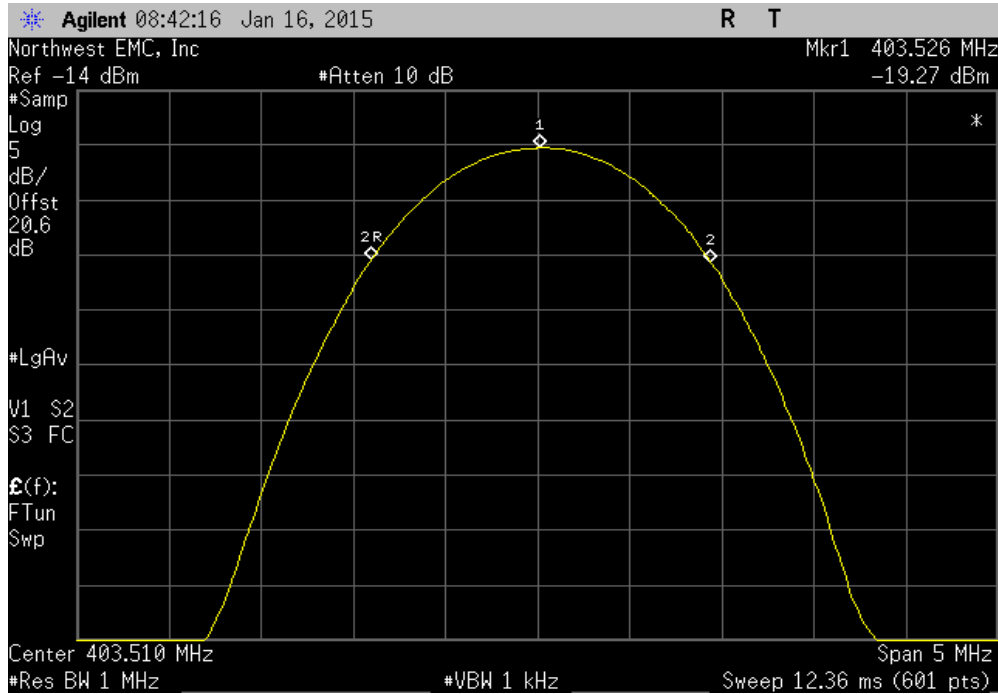


Extreme Voltage +15%, Mid Channel, 403.51 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.526	403.51	39.7	100	Pass	

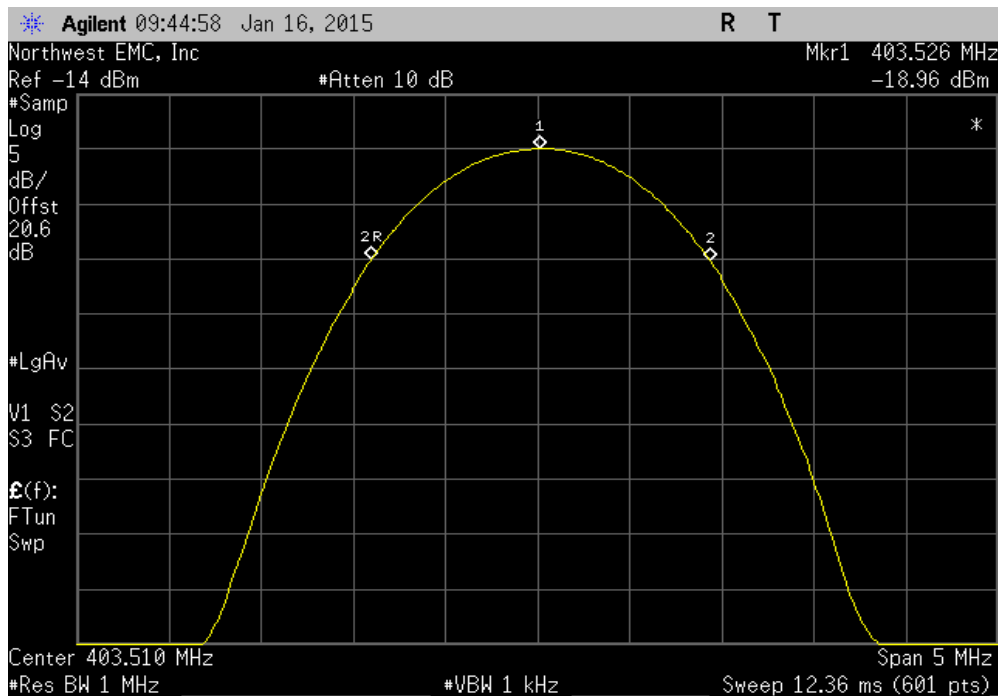


FREQUENCY STABILITY

Extreme Voltage -15%, Mid Channel, 403.51 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.526	403.51	39.7	100	Pass	

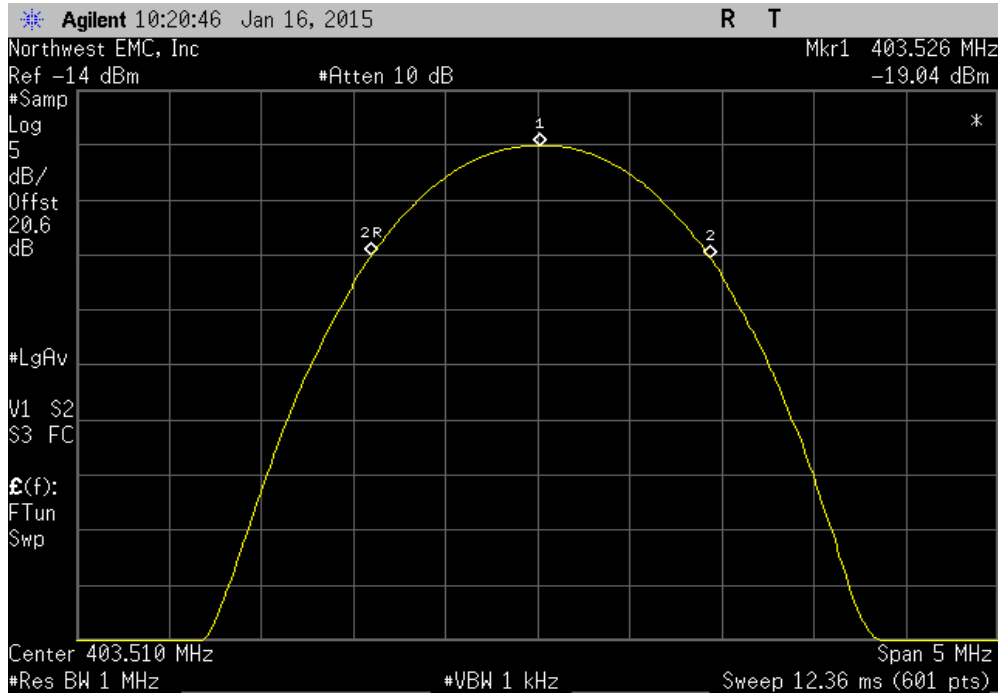


Extreme Temperature +55°C, Mid Channel, 403.51 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.526	403.51	39.7	100	Pass	

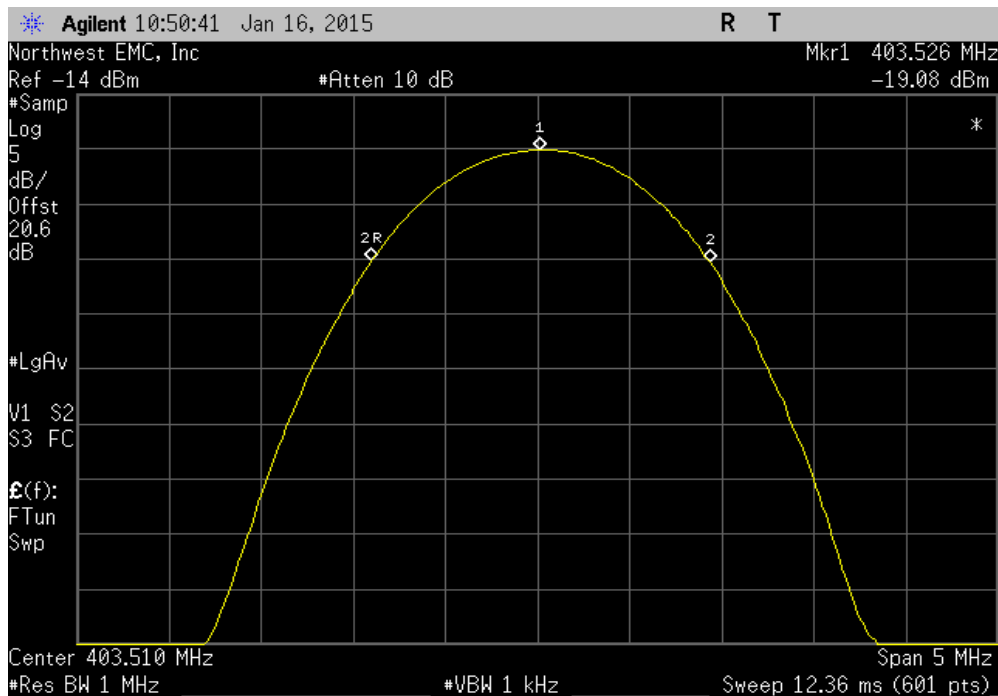


FREQUENCY STABILITY

Extreme Temperature +50°C, Mid Channel, 403.51 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.526	403.51	39.7	100	Pass	

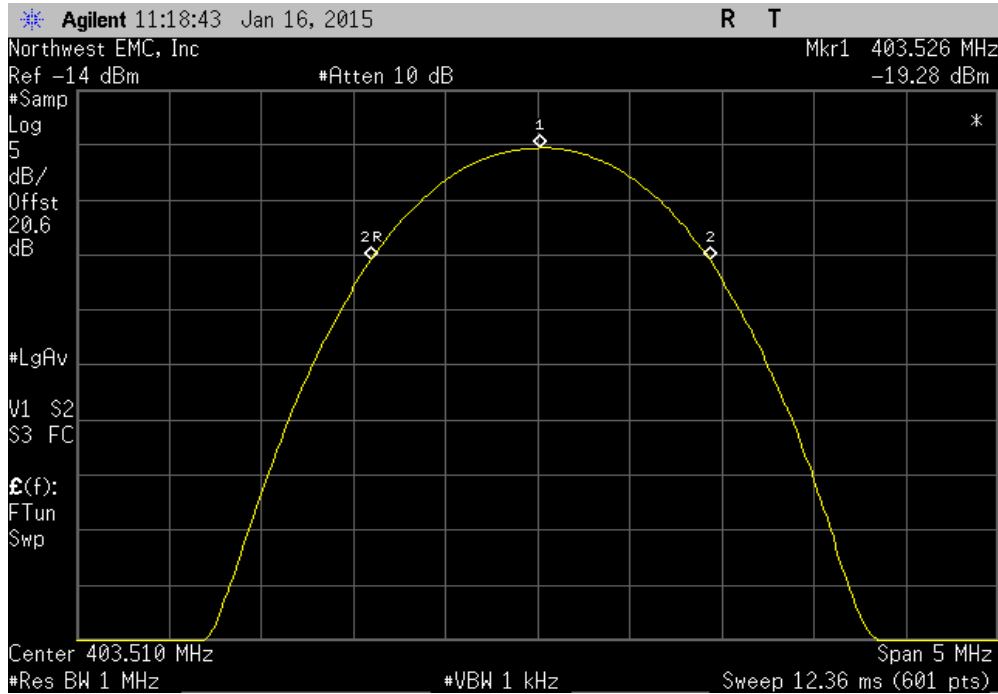


Extreme Temperature +40°C, Mid Channel, 403.51 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.526	403.51	39.7	100	Pass	

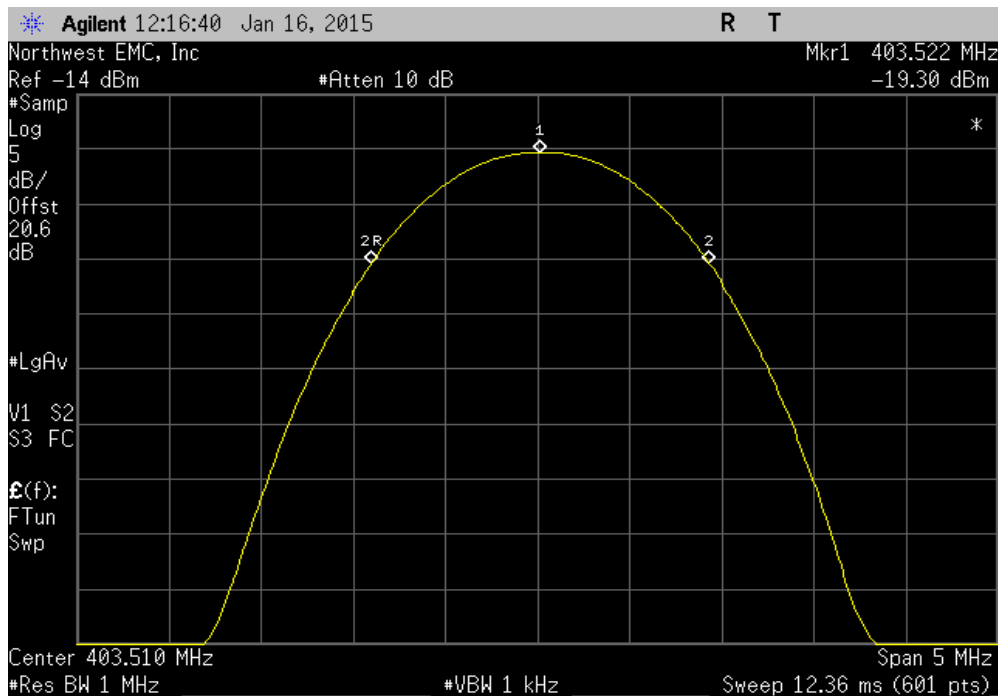


FREQUENCY STABILITY

Extreme Temperature +30°C, Mid Channel, 403.51 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.526	403.51	39.7	100	Pass	

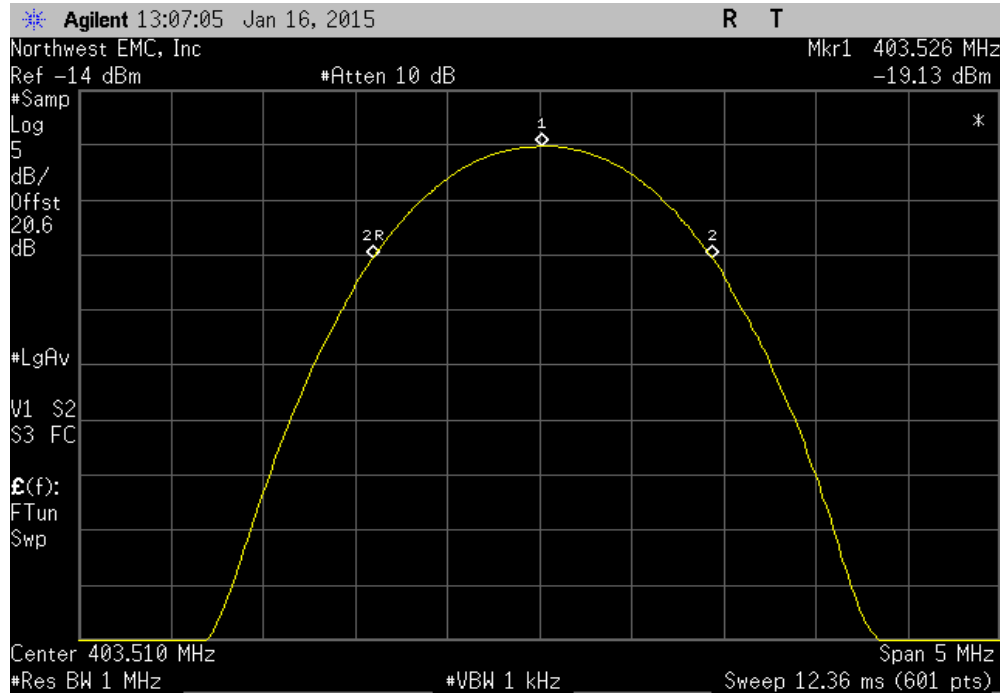


Extreme Temperature +20°C, Mid Channel, 403.51 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.522	403.51	29.7	100	Pass	

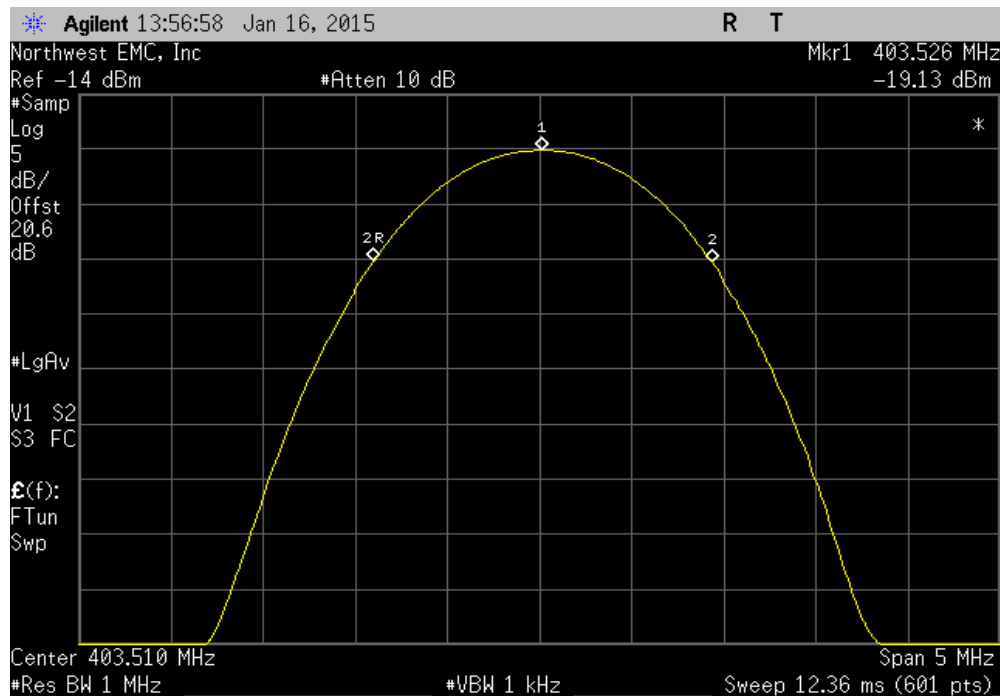


FREQUENCY STABILITY

Extreme Temperature +10°C, Mid Channel, 403.51 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.526	403.51	39.7	100	Pass	



Extreme Temperature 0°C, Mid Channel, 403.51 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.526	403.51	39.7	100	Pass	



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 at 403.51 MHz, 76.8 kbps (high baud rate)

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

BSTN0527 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	5 GHz
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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.	Interval
Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVX	3/14/2014	12 mo
MN05 Cables	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	3/14/2014	12 mo
Antenna, Horn	ETS	3115	AJA	6/3/2014	24 mo
Pre-Amplifier	Miteq	AM-1616-1000	PAD	3/14/2014	12 mo
Antenna, Biconilog	Teseq	CBL 6141B	AYD	12/17/2013	24 mo
MN05 Cables	ESM Cable Corp.	Bilog Cables	MNH	3/14/2014	12 mo
Spectrum Analyzer	Agilent	N9010A	AFI	1/27/2013	24 mo

MEASUREMENT BANDWIDTHS

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

TEST DESCRIPTION

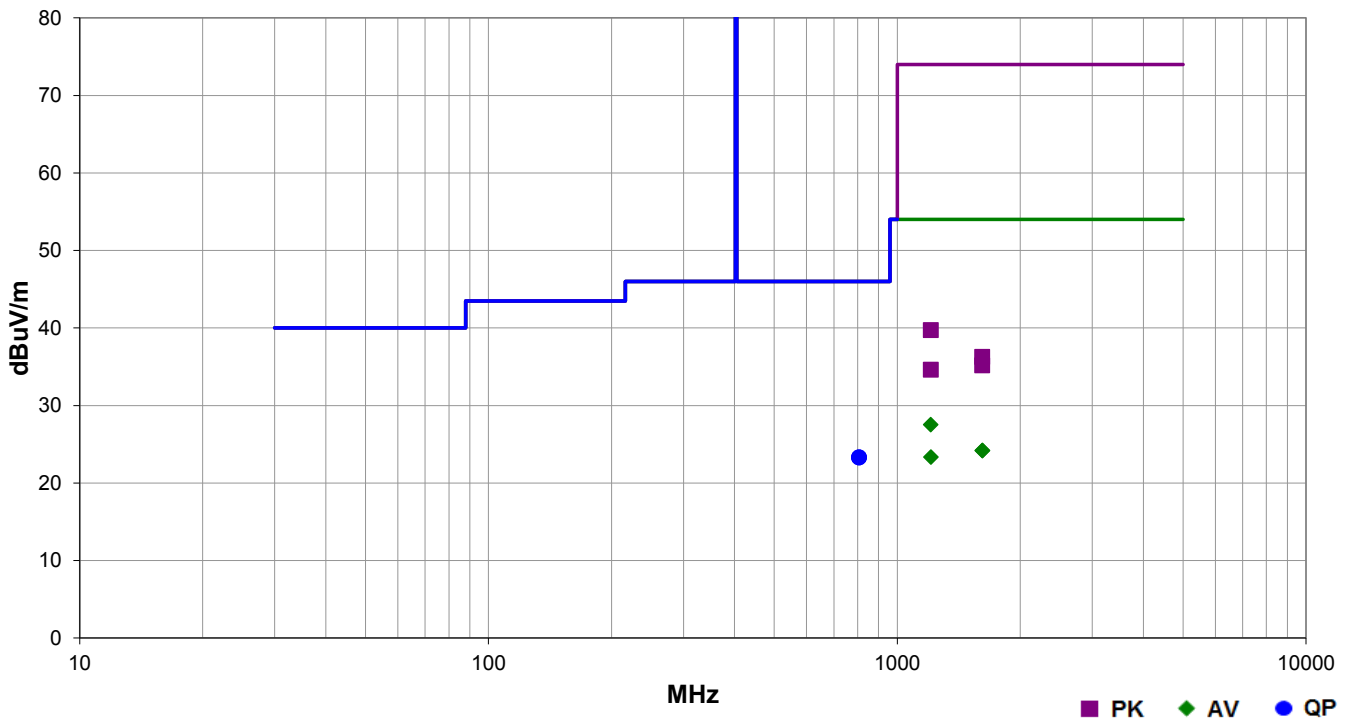
The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured in the modes listed in the datasheet. For each configuration, the spectrum was scanned throughout the specified range. While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and the EUT antenna in three orthogonal axis, and adjusting measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.10:2009). A preamp was used for this test in order to provide sufficient measurement sensitivity.

SPURIOUS RADIATED EMISSIONS

Work Order:	BSTN0527	Date:	01/15/15	<i>Trevor Buls</i>
Project:	None	Temperature:	23.3 °C	
Job Site:	MN05	Humidity:	15.2% RH	
Serial Number:	601	Barometric Pres.:	1015.5 mbar	
Tested by: Trevor Buls				
EUT:	Jaguar, Model 6290			
Configuration:	1			
Customer:	Boston Scientific Corporation			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Transmitting at 403.51 MHz, 76.8 kbps (high baud rate)			
Deviations:	None			
Comments:	EUT was tested in Horizontal position per the manufacturer because the device will always be operated in this position. Transmitting a modulated carrier at 76.8 kbps.			

Test Specifications	Test Method
FCC 95I:2015	ANSI/TIA/EIA-603-C:2004

Run #	13	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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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)
805.702	14.9	8.4	1.0	105.1	3.0	0.0	Horz	QP	0.0	23.3	46.0	-22.7
805.647	14.9	8.4	3.5	46.0	3.0	0.0	Vert	QP	0.0	23.3	46.0	-22.7
1208.130	34.0	-6.5	1.1	153.0	3.0	0.0	Horz	AV	0.0	27.5	54.0	-26.5
1616.173	29.6	-5.4	1.0	201.0	3.0	0.0	Horz	AV	0.0	24.2	54.0	-29.8
1615.290	29.6	-5.4	1.0	200.0	3.0	0.0	Vert	AV	0.0	24.2	54.0	-29.8
1209.663	29.8	-6.5	1.0	131.1	3.0	0.0	Vert	AV	0.0	23.3	54.0	-30.7
1208.130	46.2	-6.5	1.1	153.0	3.0	0.0	Horz	PK	0.0	39.7	74.0	-34.3
1613.707	41.7	-5.4	1.0	201.0	3.0	0.0	Horz	PK	0.0	36.3	74.0	-37.7
1613.582	40.6	-5.4	1.0	200.0	3.0	0.0	Vert	PK	0.0	35.2	74.0	-38.8
1208.547	41.1	-6.5	1.0	131.1	3.0	0.0	Vert	PK	0.0	34.6	74.0	-39.4

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.	Interval (mo)
MN08 Direct Connect Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	10/2/2014	12
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/3/2014	12
40 GHz DC Block	Fairview Microwave	SD3379	AMI	10/2/2014	12
MXG Vector Signal Generator	Agilent	N5182A	TIF	8/12/2014	36
Spectrum Analyzer	Agilent	E4443A	AAS	3/27/2014	12

TEST DESCRIPTION

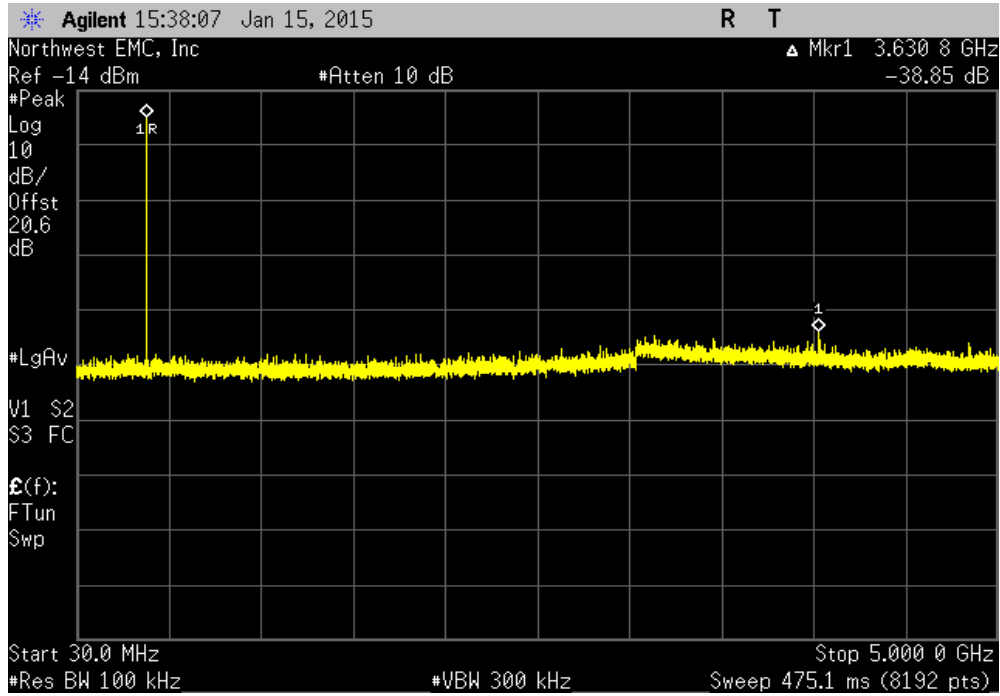
Per FCC Part 2.1052, RSS-GEN, the output power shall be measured at the RF terminal. The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was transmitting at its maximum data rate. FCC Part 95 and RSS-243 have no conducted spurious limit. It is a requirement to characterize this information and that data is contained within this datasheet.

SPURIOUS CONDUCTED EMISSIONS

EUT: Jaguar, Model 6290		Work Order: BSTN0527	
Serial Number: 601		Date: 01/15/15	
Customer: Boston Scientific Corporation		Temperature: 23.3°C	
Attendees: None		Humidity: 18%	
Project: None		Barometric Pres.: 1017.2	
Tested by: Trevor Buls	Power: 110VAC/60Hz	Job Site: MN08	
TEST SPECIFICATIONS			
FCC 951:2015		ANSI/TIA/EIA-603-C-2004	
COMMENTS			
Transmitting a modulated carrier at 76.8 kbps.			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	3	Signature <i>Trevor Buls</i>	
		Frequency Range	Value (dBc) Limit (dBc) Result
Mid Channel, 403.51 MHz		30 MHz - 5 GHz	-38.86 N/A N/A

SPURIOUS CONDUCTED EMISSIONS

Mid Channel, 403.51 MHz				
Frequency Range	Value (dBc)	Limit (dBc)	Result	
30 MHz - 5 GHz	-38.86	N/A	N/A	



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. 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 at 403.51 MHz

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

BSTN0527 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	5000 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.	Interval
Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVX	3/14/2014	12 mo
MN05 Cables	ESM Cable Corp.	Double Ridge Guide Horn Cab	MNI	3/14/2014	12 mo
Antenna, Horn	ETS	3115	AJA	6/3/2014	24 mo
Pre-Amplifier	Miteq	AM-1616-1000	PAD	3/14/2014	12 mo
MN05 Cables	ESM Cable Corp.	Bilog Cables	MNH	3/14/2014	12 mo
Antenna, Biconilog	Teseq	CBL 6141B	AYD	12/17/2013	24 mo
Spectrum Analyzer	Agilent	N9010A	AFI	1/27/2013	24 mo

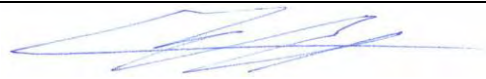
TEST DESCRIPTION

Per 95.627(g)(3), the maximum radiated field strength for a MEDS transmitter is 25uW EIRP. The Field Strength of the Fundamental data was converted to EIRP with the formula based upon the Friis transmission equation with 6 dB removed due to reflections from the ground plane: $EIRP = ((E/2)*d)^2/30$ where E is V/m and d = distance = 3m, and $EIRP = W$.

The Field Strength of the Fundamental was measured in the far-field at an FCC Listed Semi-anechoic Chamber. Spectrum analyzer and linearly polarized antennas were used to measure the radiated field strength of the fundamental.

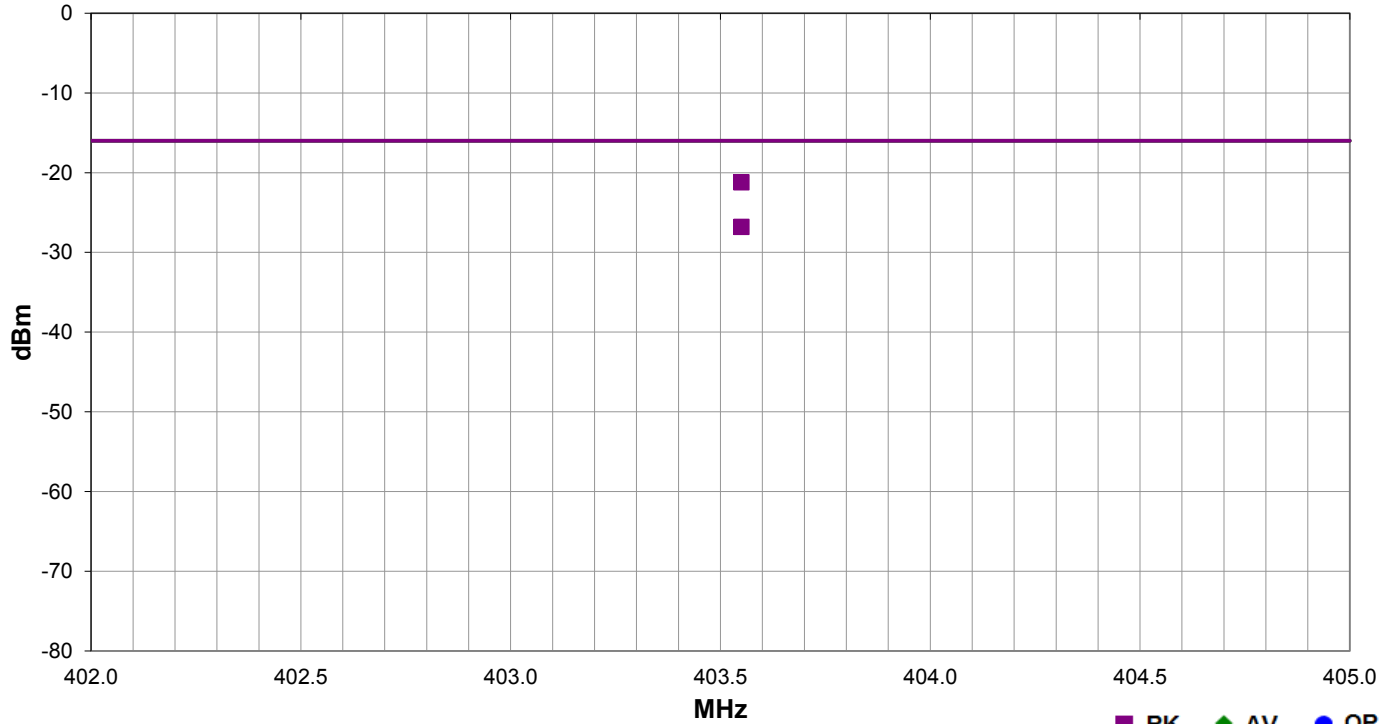
The orientation of the EUT and measurement antenna were manipulated to maximize the level of emissions. The turntable azimuth was varied to maximize the level of radiated emissions. The height of the measurement antenna was also varied from 1 to 4 meters. The amplitude and frequency of the emissions were noted.

RADIATED POWER (EIRP)

Work Order:	BSTN0527	Date:	01/14/15	
Project:	None	Temperature:	22.6 °C	
Job Site:	MN05	Humidity:	11.7% RH	
Serial Number:	601	Barometric Pres.:	1024.5 mbar	
Tested by: Johnathan Lee				
EUT:	Jaguar, Model 6290			
Configuration:	1			
Customer:	Boston Scientific Corporation			
Attendees:	Pete Musto			
EUT Power:	110VAC/60Hz			
Operating Mode:	Transmitting 403.51 MHz			
Deviations:	None			
Comments:	EUT was tested in Horizontal position per the manufacturer because the device will always be operated in this position. Transmitting an unmodulated carrier.			

Test Specifications	Test Method
FCC 95I:2015	ANSI/TIA/EIA-603-C:2004

Run #	1	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
403.550	1.0	358.0	Horz	PK	7.59E-06	-21.2	-16.0	-5.2	EUT Horz, Ch 10, Pwr 50
403.550	1.0	88.1	Vert	PK	2.09E-06	-26.8	-16.0	-10.8	EUT Horz, Ch 10, Pwr 50

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 AC power line conducted emissions were measured with the EUT operating at a middle channel in the operational band. 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 C63.10-2009.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
High Pass Filter	TTE	H97-100K-50-720B	HGN	05/23/2014	12 mo
Attenuator 20dB, BNC	Fairview Microwave	SA01B-20	AQP	07/22/2014	12 mo
MN03 Cables	ESM Cable Corp.	Conducted Cables	MNC	11/20/2014	12 mo
LISN	Solar Electronics	9252-50-R-24-BNC	LIY	05/15/2014	12 mo
Receiver	Rohde & Schwarz	ESR7	ARI	05/06/2014	12 mo

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

BSTN0527-2

MODES INVESTIGATED

Transmitting at 403.51 MHz, 76.8 kbps (high baud rate)

POWERLINE CONDUCTED EMISSIONS

EUT:	Jaguar, Model 6290	Work Order:	BSTN0527
Serial Number:	601	Date:	01/15/2015
Customer:	Boston Scientific Corporation	Temperature:	23.3°C
Attendees:	None	Relative Humidity:	17.8%
Customer Project:	None	Bar. Pressure:	1016.5 mb
Tested By:	Trevor Buls	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	BSTN0527-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2009

TEST PARAMETERS

Run #:	3	Line:	Neutral	Ext. Attenuation (dB):	20
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COMMENTS

Transmitting a modulated carrier at 76.8 kbps.

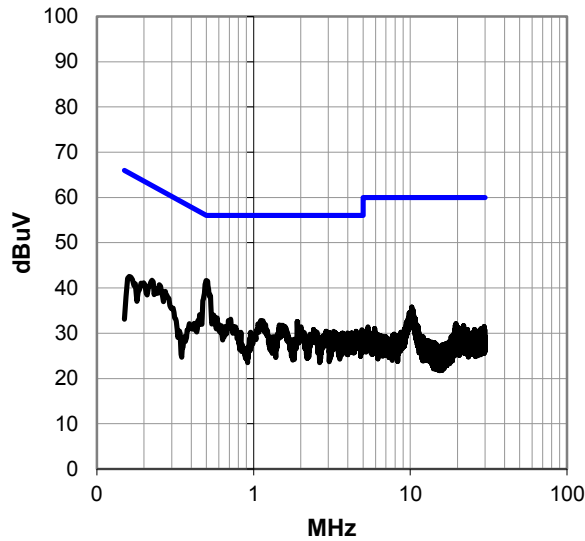
EUT OPERATING MODES

Transmitting at 403.51 MHz, 76.8 kbps (high baud rate)

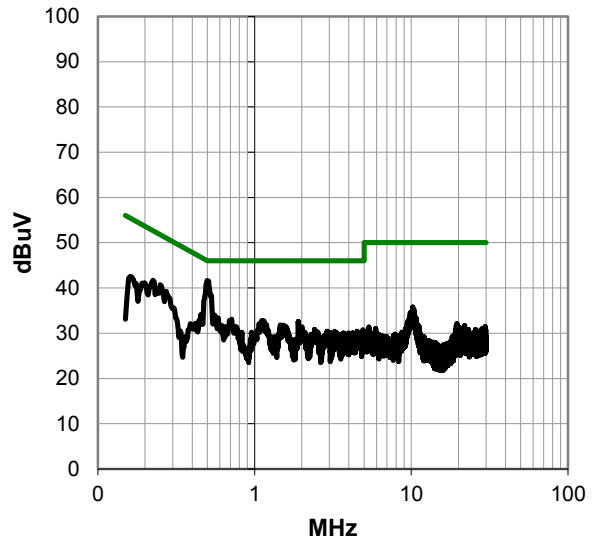
DEVIATIONS FROM TEST STANDARD

None

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS

RESULTS - Run #3

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.501	21.4	20.2	41.6	56.0	-14.4
0.225	21.6	20.1	41.7	62.6	-20.9
0.161	22.3	20.2	42.5	65.4	-22.9
0.713	12.9	20.2	33.1	56.0	-22.9
1.113	12.6	20.2	32.8	56.0	-23.2
1.900	12.3	20.3	32.6	56.0	-23.4
1.463	11.6	20.2	31.8	56.0	-24.2
10.223	15.0	20.8	35.8	60.0	-24.2
2.008	11.1	20.3	31.4	56.0	-24.6
10.432	14.3	20.8	35.1	60.0	-24.9
2.415	10.5	20.3	30.8	56.0	-25.2
4.922	10.3	20.5	30.8	56.0	-25.2
3.247	10.1	20.3	30.4	56.0	-25.6
2.933	10.1	20.3	30.4	56.0	-25.6
4.508	10.0	20.4	30.4	56.0	-25.6
0.829	10.0	20.2	30.2	56.0	-25.8
0.956	10.0	20.2	30.2	56.0	-25.8
3.321	9.8	20.3	30.1	56.0	-25.9
3.056	9.8	20.3	30.1	56.0	-25.9
4.463	9.7	20.4	30.1	56.0	-25.9
4.224	9.7	20.4	30.1	56.0	-25.9
3.967	9.7	20.4	30.1	56.0	-25.9
3.709	9.6	20.4	30.0	56.0	-26.0
4.433	9.5	20.4	29.9	56.0	-26.1
4.302	9.5	20.4	29.9	56.0	-26.1
3.217	9.5	20.3	29.8	56.0	-26.2

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.501	21.4	20.2	41.6	46.0	-4.4
0.225	21.6	20.1	41.7	52.6	-10.9
0.161	22.3	20.2	42.5	55.4	-12.9
0.713	12.9	20.2	33.1	46.0	-12.9
1.113	12.6	20.2	32.8	46.0	-13.2
1.900	12.3	20.3	32.6	46.0	-13.4
1.463	11.6	20.2	31.8	46.0	-14.2
10.223	15.0	20.8	35.8	50.0	-14.2
2.008	11.1	20.3	31.4	46.0	-14.6
10.432	14.3	20.8	35.1	50.0	-14.9
2.415	10.5	20.3	30.8	46.0	-15.2
4.922	10.3	20.5	30.8	46.0	-15.2
3.247	10.1	20.3	30.4	46.0	-15.6
2.933	10.1	20.3	30.4	46.0	-15.6
4.508	10.0	20.4	30.4	46.0	-15.6
0.829	10.0	20.2	30.2	46.0	-15.8
0.956	10.0	20.2	30.2	46.0	-15.8
3.321	9.8	20.3	30.1	46.0	-15.9
3.056	9.8	20.3	30.1	46.0	-15.9
4.463	9.7	20.4	30.1	46.0	-15.9
4.224	9.7	20.4	30.1	46.0	-15.9
3.967	9.7	20.4	30.1	46.0	-15.9
3.709	9.6	20.4	30.0	46.0	-16.0
4.433	9.5	20.4	29.9	46.0	-16.1
4.302	9.5	20.4	29.9	46.0	-16.1
3.217	9.5	20.3	29.8	46.0	-16.2

CONCLUSION

Pass

Trevor Buls
Tested By

POWERLINE CONDUCTED EMISSIONS

EUT:	Jaguar, Model 6290	Work Order:	BSTN0527
Serial Number:	601	Date:	01/15/2015
Customer:	Boston Scientific Corporation	Temperature:	23.3°C
Attendees:	None	Relative Humidity:	17.8%
Customer Project:	None	Bar. Pressure:	1016.5 mb
Tested By:	Trevor Buls	Job Site:	MN03
Power:	110VAC/60Hz	Configuration:	BSTN0527-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2015	ANSI C63.10:2009

TEST PARAMETERS

Run #:	4	Line:	High Line	Ext. Attenuation (dB):	20
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COMMENTS

Transmitting a modulated carrier at 76.8 kbps.

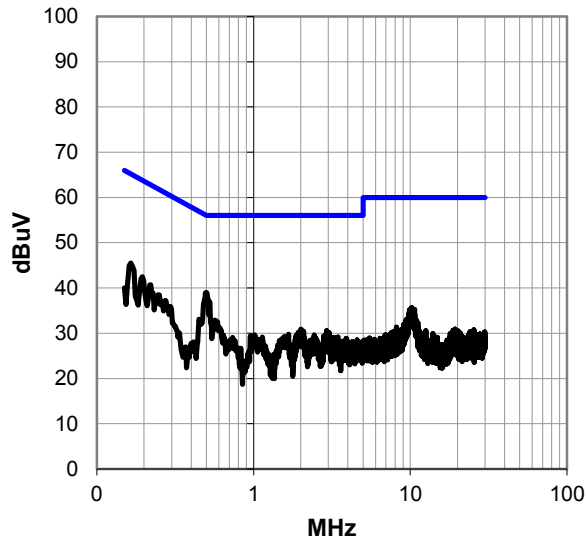
EUT OPERATING MODES

Transmitting at 403.51 MHz, 76.8 kbps (high baud rate)

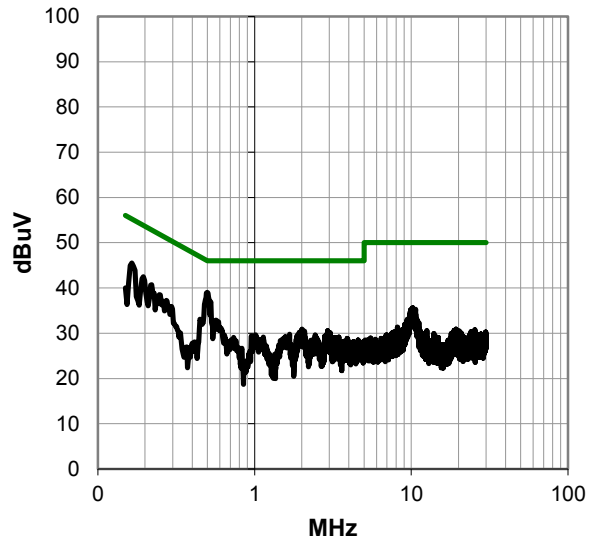
DEVIATIONS FROM TEST STANDARD

None

Peak Data - vs - Quasi Peak Limit



Peak Data - vs - Average Limit



POWERLINE CONDUCTED EMISSIONS



WTD-2014.10.14
PSA-ESCI 2014.11.19.1, EmiRS
2014.11.19.2

RESULTS - Run #4

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.501	18.8	20.2	39.0	56.0	-17.0
0.165	25.3	20.2	45.5	65.2	-19.7
0.195	22.3	20.1	42.4	63.8	-21.4
0.221	20.6	20.1	40.7	62.8	-22.1
0.564	12.7	20.2	32.9	56.0	-23.1
0.247	18.4	20.1	38.5	61.9	-23.3
10.242	14.9	20.8	35.7	60.0	-24.3
10.652	14.5	20.8	35.3	60.0	-24.7
2.008	10.6	20.3	30.9	56.0	-25.1
2.929	10.2	20.3	30.5	56.0	-25.5
2.079	10.2	20.3	30.5	56.0	-25.5
10.693	13.4	20.8	34.2	60.0	-25.8
1.967	9.9	20.3	30.2	56.0	-25.8
3.045	9.8	20.3	30.1	56.0	-25.9
9.764	13.3	20.7	34.0	60.0	-26.0
0.150	19.8	20.2	40.0	66.0	-26.0
1.672	9.5	20.3	29.8	56.0	-26.2
2.441	9.3	20.3	29.6	56.0	-26.4
1.016	9.4	20.2	29.6	56.0	-26.4
1.870	9.3	20.3	29.6	56.0	-26.4
0.956	9.2	20.2	29.4	56.0	-26.6
2.806	9.0	20.3	29.3	56.0	-26.7
3.448	8.8	20.3	29.1	56.0	-26.9
3.105	8.8	20.3	29.1	56.0	-26.9
1.139	8.9	20.2	29.1	56.0	-26.9
0.736	8.9	20.2	29.1	56.0	-26.9

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.501	18.8	20.2	39.0	46.0	-7.0
0.165	25.3	20.2	45.5	55.2	-9.7
0.195	22.3	20.1	42.4	53.8	-11.4
0.221	20.6	20.1	40.7	52.8	-12.1
0.564	12.7	20.2	32.9	46.0	-13.1
0.247	18.4	20.1	38.5	51.9	-13.3
10.242	14.9	20.8	35.7	50.0	-14.3
10.652	14.5	20.8	35.3	50.0	-14.7
2.008	10.6	20.3	30.9	46.0	-15.1
2.929	10.2	20.3	30.5	46.0	-15.5
2.079	10.2	20.3	30.5	46.0	-15.5
10.693	13.4	20.8	34.2	50.0	-15.8
1.967	9.9	20.3	30.2	46.0	-15.8
3.045	9.8	20.3	30.1	46.0	-15.9
9.764	13.3	20.7	34.0	50.0	-16.0
0.150	19.8	20.2	40.0	56.0	-16.0
1.672	9.5	20.3	29.8	46.0	-16.2
2.441	9.3	20.3	29.6	46.0	-16.4
1.016	9.4	20.2	29.6	46.0	-16.4
1.870	9.3	20.3	29.6	46.0	-16.4
0.956	9.2	20.2	29.4	46.0	-16.6
2.806	9.0	20.3	29.3	46.0	-16.7
3.448	8.8	20.3	29.1	46.0	-16.9
3.105	8.8	20.3	29.1	46.0	-16.9
1.139	8.9	20.2	29.1	46.0	-16.9
0.736	8.9	20.2	29.1	46.0	-16.9

CONCLUSION

Pass

Trevor Bult
Tested By