



Boston Scientific Corporation

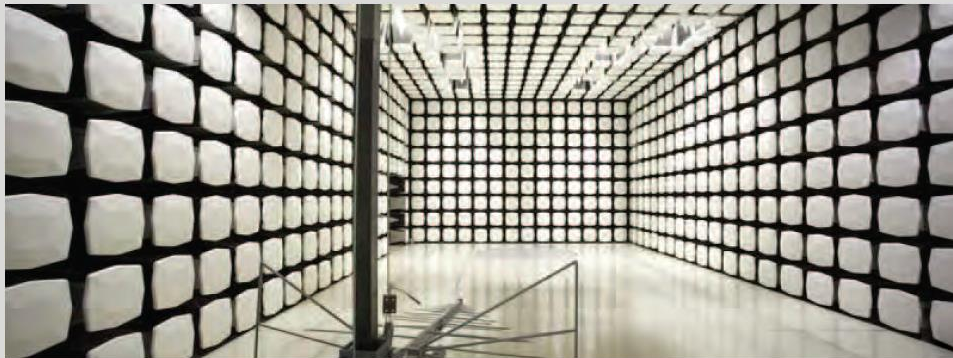
Emblem 3200 Programmer

LP0002:2018

Brand Name: Boston Scientific

**Equipment Name: Subcutaneous Implantable Cardiac Defibrillator
Programmer**

Report # BSTN0636.1 Rev. 3



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

**Boston Scientific Corporation
Model: Emblem 3200 Programmer**

Radio Equipment Testing

Standards

Specification	Method
LP0002:2018	LP0002:2018

Results

Method Clause	Test Description	Applied	Results	Comments
4.11.5	Emission Bandwidth	Yes	Pass	
4.11.6	Equivalent Isotropic Radiated Power (EIRP)	Yes	Pass	
4.11.7	Unwanted Spurious Emissions Transmitter (Band Edge)	Yes	Pass	
4.11.7	Unwanted Spurious Emissions Receiver	Yes	Pass	
4.11.7	Unwanted Spurious Emissions Transmitter	Yes	Pass	
4.11.8	Frequency Stability	Yes	Pass	
4.11.11	AC Power Line Emissions	Yes	Pass	

Deviations From Test Standards

None

On July 1, 2016, Northwest EMC was purchased by Element Materials Technology. All laboratory accreditations, designations, and recognitions were transferred from Northwest EMC to Element Materials Technology. No changes were made to the facilities, equipment, procedures, or personnel. This test report contains test data produced by Northwest EMC prior to the purchase on July 1, 2016, and by Element Materials Technology after that date. All the test data in this test report is accredited and maintains the same recognition as described herein.

Approved By:



Matt Nuernberg, Operations Manager

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

REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		
01	Updated to LP0002:2016	7/6/2017	Various
02	Updated EUT name	12/21/2017	Cover, 2, 7, 12, 16, 19, 22, 26, 30, 37, 39
03	Updated to LP0002:2018	11/28/2018	Cover, 2, 12, 16, 19, 22, 26, 30, 37, 39

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 listed below. 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 16-4-1 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)	0.12	-0.01
Amplitude Accuracy (dB)	0.49	-0.49
Conducted Power (dB)	0.41	-0.41
Radiated Power via Substitution (dB)	0.69	-0.68
Temperature (degrees C)	0.81	-0.81
Humidity (% RH)	2.89	-2.89
Field Strength (dB)	3.80	-3.80
AC Powerline Conducted Emissions (dB)	2.94	-2.94

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 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

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

Vietnam

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

SCOPE

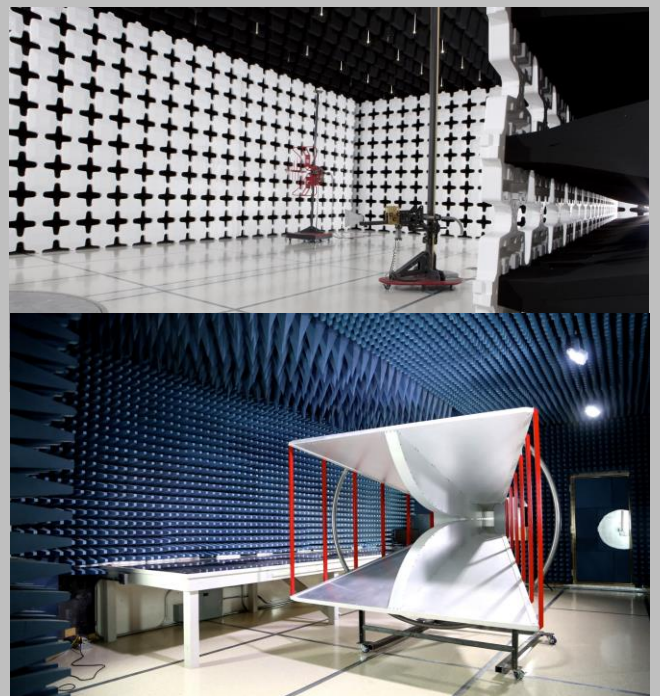
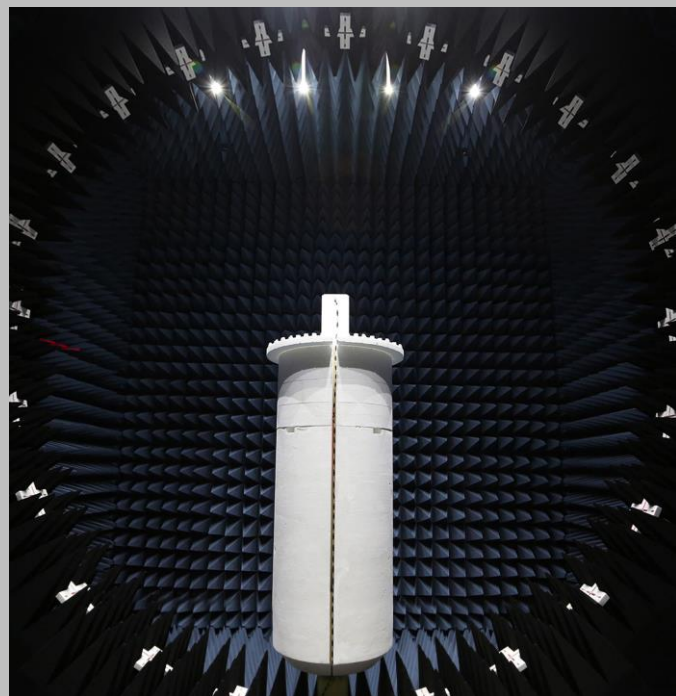
For details on the Scopes of our Accreditations, please visit:

<http://www.nwemc.com/accreditations/>
<http://gsi.nist.gov/global/docs/cabs/designations.html>

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) 554-8214	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
Recognized Phase I CAB for ACMA, BSMI, IDA, KCC/RRR, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157



PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Boston Scientific Corporation
Address:	4100 Hamline Avenue North
City, State, Zip:	St. Paul, MN 55112
Test Requested By:	Benjamin Stein
Model:	Emblem 3200 Programmer
First Date of Test:	May 07, 2014
Last Date of Test:	May 12, 2014
Receipt Date of Samples:	May 07, 2014
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT:

A computing and radio platform which provides qualified field personnel, designated distributors, clinicians, and physicians with the capability to communicate with and program an S-ICD active medical implant. The radio platform provides bidirectional, very low power communications in the 402-405 MHz band as specified by the Medical Implant Communication Service (MICS) specifications.

Testing Objective:

To demonstrate compliance to LP0002 requirements.

Antenna Requirement

Eligibility Criteria:

According to section 2.2 of LP0002 standard, low power radio frequency transmitter or transceiver (receiver) shall utilize a permanently, half-permanently attached antenna or uses a unique coupling at the antenna and at the any cable connector between the transmitter and the antenna. The antenna shall be omni-directional type.

Results Verdict:

The EUT is using custom monopole antenna (Brand Name: Samsung, model: SCH-I705 or Samsung GT-P3100 with maximum antenna gain of -5.0 dBi. It complies with the requirements.

EUT Photo



CONFIGURATIONS

Configuration BSTN0474- 1

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Programmer	Boston Scientific Corporation	3200	3200-A103233
Antenna	Boston Scientific Corporation	3203	None

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
DC Adapter	Boston Scientific Corporation	MWA020005A	000027

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Coax	Yes	3.0m	No	Programmer	Antenna
DC Power	No	1.8m	No	Programmer	DC Adapter
AC Power	No	2.4m	No	DC Adapter	AC Mains
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Configuration BSTN0474- 2

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Antenna	Boston Scientific Corporation	3203	None
Programmer	Boston Scientific Corporation	3200	3200-B103274

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
DC Adapter	Boston Scientific Corporation	MWA020005A	000027

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Coax	Yes	3.0m	No	Programmer	Antenna
DC Power	No	1.8m	No	Programmer	DC Adapter
AC Power	No	2.4m	No	DC Adapter	AC Mains
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATIONS

Configuration BSTN0474- 3

EUT					
Description	Manufacturer		Model/Part Number		Serial Number
Programmer	Boston Scientific Corporation		3200		3200-A103233

Peripherals in test setup boundary					
Description	Manufacturer		Model/Part Number		Serial Number
DC Adapter	Boston Scientific Corporation		MWA020005A		000027

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
DC Power	No	1.8m	No	Programmer	DC Adapter
AC Power	No	2.4m	No	DC Adapter	AC Mains
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATIONS



Configuration BSTN0908- 1

Software/Firmware Running during test	
Description	Version
Android PRB/Telemetry Tester	1.03

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Emblem - 3200 Programmer	Boston Scientific Corporation	3200	3200-A105629
S-ICD System Wand	Boston Scientific Corporation	3203	None

Peripherals in test setup boundary			
Description	Manufacturer	Model/Part Number	Serial Number
AC Adapter	ELPAC POWER SYSTEMS	MWA020005A	000320

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
AC Power	No	1.8 m	No	AC Mains	AC Adapter
DC Power	No	1.8 m	No	AC Adapter	Emblem - 3200 Programmer
S-ICD System Wand Cable	No	3.0 m	No	Emblem - 3200 Programmer	S-ICD System Wand

MODIFICATIONS

Equipment Modifications

Item	Test	Modification	Note	Disposition of EUT
1	Receiver Spurious 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.
2	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.
3	Equivalent Isotropic 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.
4	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.
5	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	Unwanted Spurious Emissions Transmitter (Band Edge)	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	Frequency Stability	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	AC Power Line Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

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 CW at 403.5 MHz

POWER SETTINGS INVESTIGATED

AC Power

CONFIGURATIONS INVESTIGATED

BSTN0474 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency 402 MHz

Stop Frequency 405 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
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36 mo
Antenna, Dipole	EMCO	3121C-DB4	ADI	12/21/2012	36 mo
Power Sensor	Agilent	N8481A	SQL	8/27/2012	24 mo
Power Meter	Agilent	N1913A	SQL	8/27/2012	24 mo
Antenna, Bilog	Teseq	CBL 6141B	AYD	12/17/2013	12 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

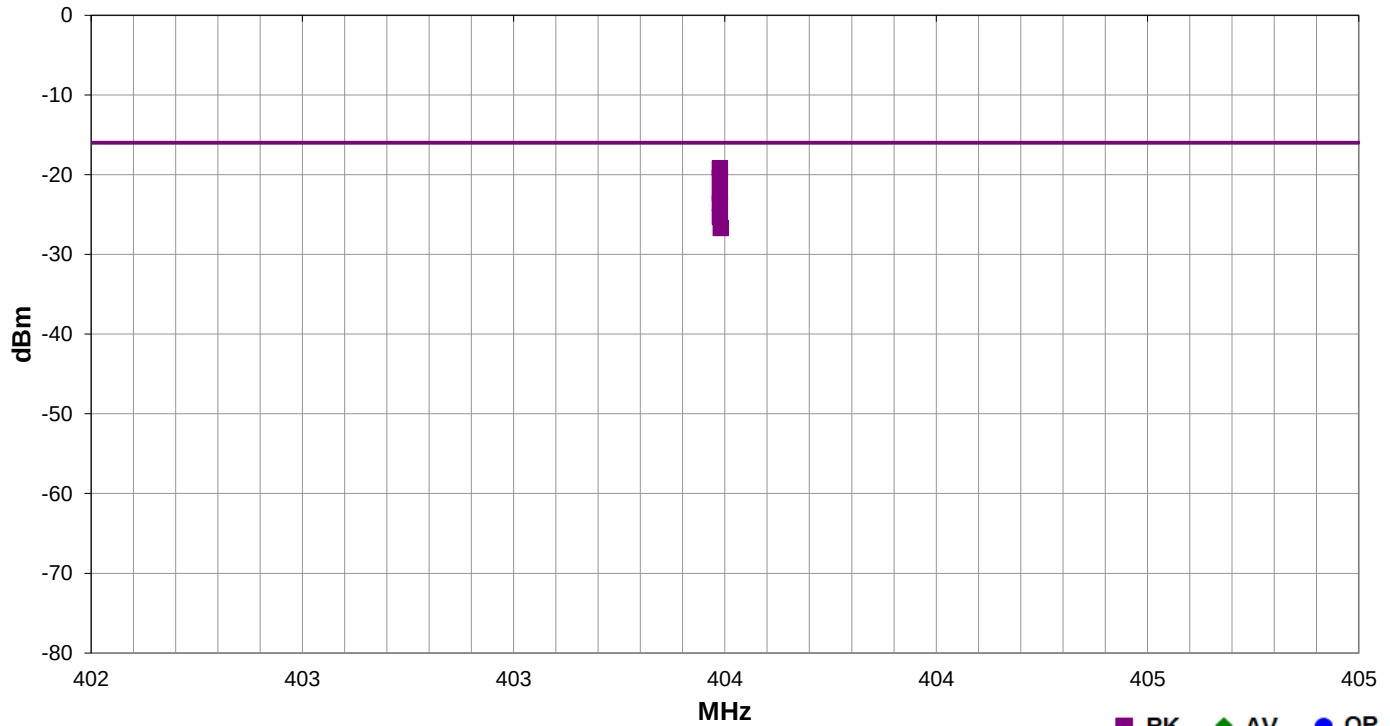
TEST DESCRIPTION

The EUT was operated in three orthogonal axis in transmit mode. The EUT was transmitting with a CW signal. While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarization. The amplitude and frequency of the highest emissions were noted. The EUT was then replaced with a ½ wave dipole that was successively tuned to each of the highest emissions. A signal generator was connected to the dipole antenna and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded, and by factoring in the cable loss to the dipole antenna and its gain (dBi); the effective radiated power for the fundamental emission was determined.

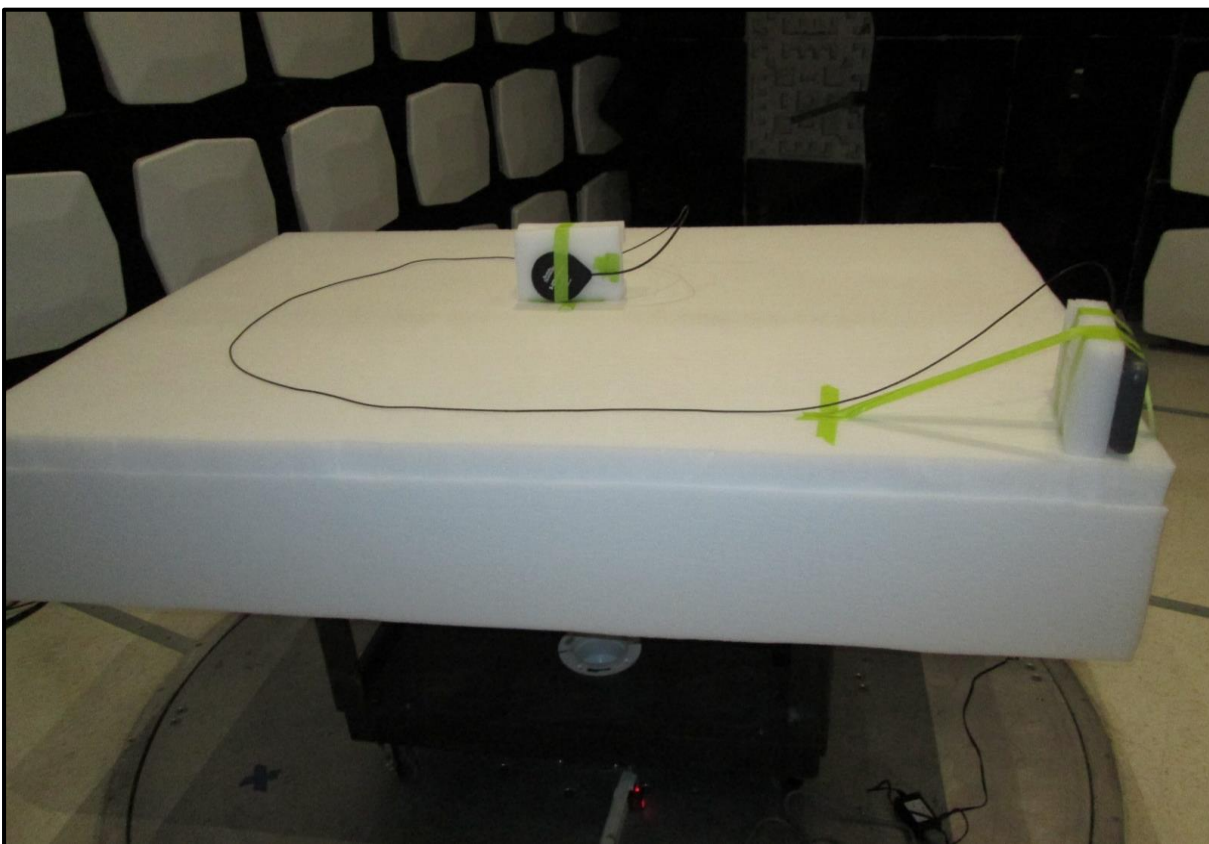
Work Order:	BSTN0474			<i>Trevor Buls</i>	
Project:	None	Temperature:	23.1 °C		
Job Site:	MN05	Humidity:	33.9% RH		
Serial Number:	3200-B103274	Barometric Pres.:	1011.8 mbar		
				Tested by:	Trevor Buls
EUT:	Emblem 3200 Programmer				
Configuration:	2				
Customer:	Boston Scientific Corporation				
Attendees:	Pete Musto				
EUT Power:	AC Power				
Operating Mode:	Transmitting CW at 403.5 MHz				
Deviations:	None				
Comments:	None				

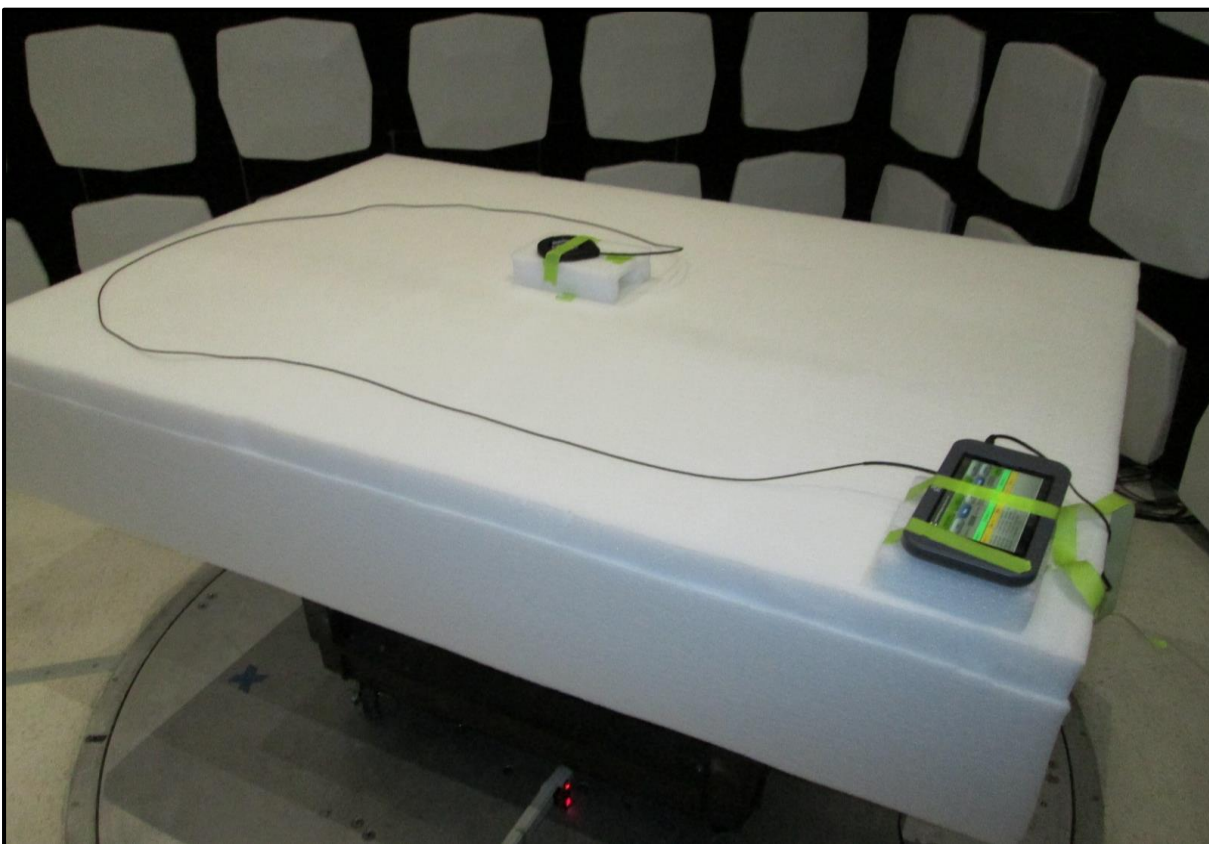
Test Specifications	Test Method
LP0002:2018	LP0002:2018

Run #	3	Test Distance (m)	3	Antenna Height(s)	1-4m	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
	403.488	1.8	170.0	Horz	PK	1.1995E-05	-19.2	-16.0	-3.2	EUT Horizontal
	403.488	1.8	124.0	Horz	PK	9.0991E-06	-20.4	-16.0	-4.4	EUT on Side
	403.488	1.0	245.0	Vert	PK	5.8749E-06	-22.3	-16.0	-6.3	EUT on Side
	403.488	1.0	136.0	Vert	PK	4.3551E-06	-23.6	-16.0	-7.6	EUT Vertical
	403.488	2.0	90.0	Vert	PK	2.9444E-06	-25.3	-16.0	-9.3	EUT Horizontal
	403.490	1.2	215.0	Horz	PK	2.133E-06	-26.7	-16.0	-10.7	EUT Vertical





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.)
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/3/2014	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	9/26/2013	12
Spectrum Analyzer	Agilent	N9010A	AFI	1/27/2013	24

TEST DESCRIPTION

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 Emissions Bandwidth measurement. In addition, emissions 250 kHz or less above and below the MICS band (402-405 MHz) must be attenuated below the maximum permitted output power by at least 20 dB.

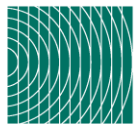
A spectrum analyzer was used to measure the emission mask. A spectrum analyzer using a peak detector with no video filtering was used with a resolution bandwidth equal to approximately 1.0 percent of the emission bandwidth of the EUT. However, various plots were made using different frequency spans and 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.



UNWANTED SPURIOUS EMISSIONS TRANSMITTER (BAND EDGE)

XMR 2014.02.07
PsaTx 2014.04.01

EUT: Emblem 3200 Programmer		Work Order: BSTN0474	
Serial Number: 3200-A103233		Temperature: 22.8°C	
Customer: Boston Scientific Corporation		Humidity: 46%	
Attendees: None		Barometric Pres.: 1003	
Project: None		Job Site: MN05	
Tested by: Trevor Buls		Power: 110VAC/60Hz	
TEST SPECIFICATIONS		Test Method	
LP0002:2018		LP0002:2018	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	3	Signature <i>Trevor Buls</i>	
		Value	Limit
402.8 MHz		-56.22 dBc	≤ -20 dBc
403.5 MHz		-53.1 dBc	≤ -20 dBc
			Result
			Pass
			Pass



EMISSION 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.)
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/3/2014	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	9/26/2013	12
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	N9010A	AFI	1/27/2013	24

TEST DESCRIPTION

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.

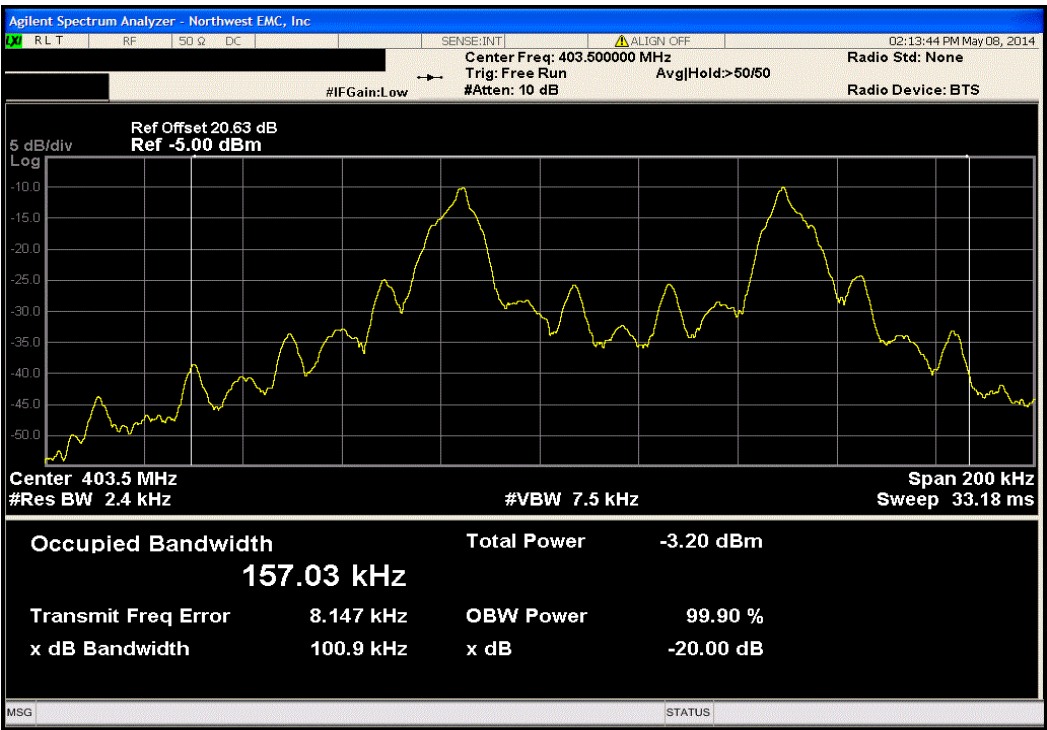


EMISSION BANDWIDTH

XMR 2014.02.07
PsaTx 2014.04.01

EUT: Emblem 3200 Programmer		Work Order: BSTN0474	
Serial Number: 3200-A103233		Temperature: 23.4°C	
Customer: Boston Scientific Corporation		Humidity: 43%	
Attendees: None		Barometric Pres.: 1005.3	
Project: None		Job Site: MN05	
Tested by: Trevor Buls		Power: 110VAC/60Hz	
TEST SPECIFICATIONS		Test Method	
LP0002:2018		LP0002:2018	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	3	Signature <i>Trevor Buls</i>	
		Value	Limit
403.5 MHz		100.898 kHz	≤ 300 kHz
			Result
			Pass

403.5 MHz						
				Value	Limit	Result
				100.898 kHz	≤ 300 kHz	Pass



UNWANTED SPURIOUS EMISSIONS RECEIVER



PSA-ESCI 2018.07.27

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

Rx MICS signal at 403.51 MHz

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

BSTN0908 - 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
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVT	8-Feb-2018	12 mo
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	24-Sep-2018	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AJA	27-Jun-2018	24 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVO	2-Nov-2018	12 mo
Cable	ESM Cable Corp.	Bilog Cables	MNH	2-Nov-2018	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYD	25-Jan-2018	24 mo
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFN	27-Apr-2018	12 mo

MEASUREMENT BANDWIDTHS

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

TEST DESCRIPTION

The highest gain of each type of antenna to be used with the EUT was tested. The EUT was configured for receive mode. 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 LP0002). A preamp was used for this test in order to provide sufficient measurement sensitivity.

UNWANTED SPURIOUS EMISSIONS RECEIVER



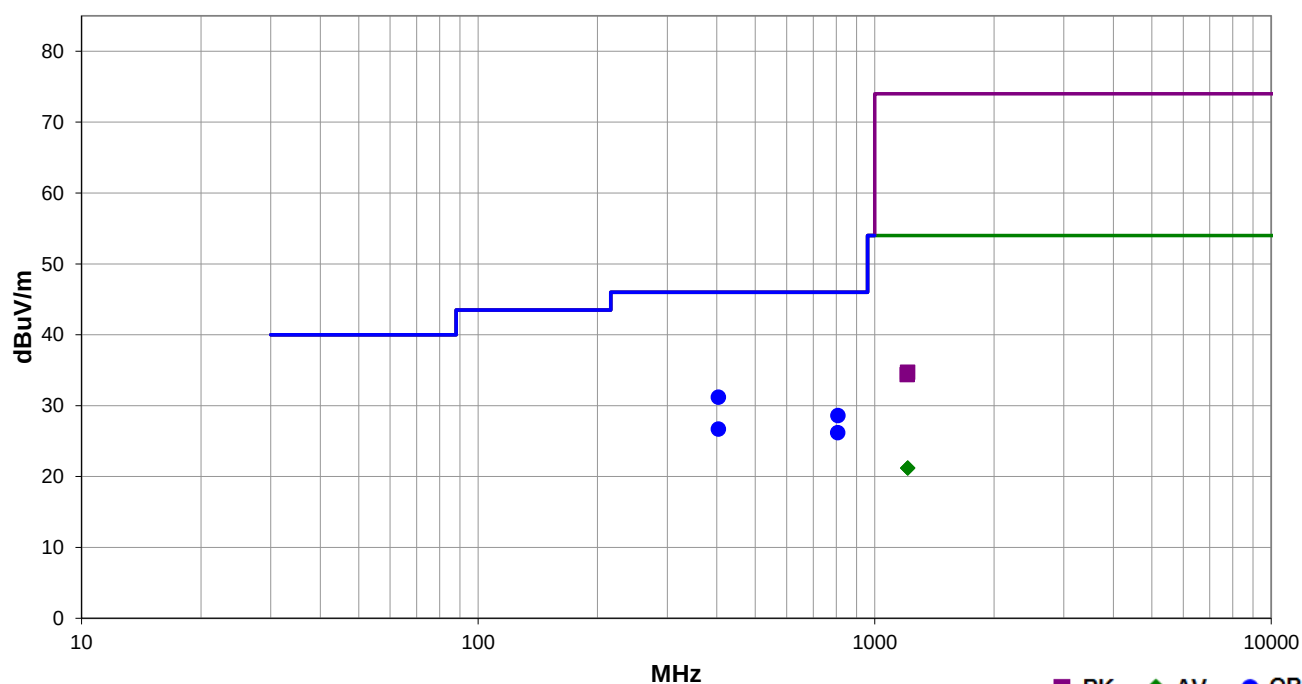
EmiR5 2018.09.26

PSA-ESCI 2018.07.27

Work Order:	BSTN0908			
Project:	None	Temperature:	22.7 °C	
Job Site:	MN05	Humidity:	19.5% RH	
Serial Number:	3200-A105629	Barometric Pres.:	1013 mbar	
	Tested by:	Kyle McMullan		
EUT:	Emblem - 3200 Programmer			
Configuration:	1			
Customer:	Boston Scientific Corporation			
Attendees:	Dattatray Naikwade			
EUT Power:	110VAC/60Hz			
Operating Mode:	Rx MICS signal at 403.51 MHz			
Deviations:	None			
Comments:	None			

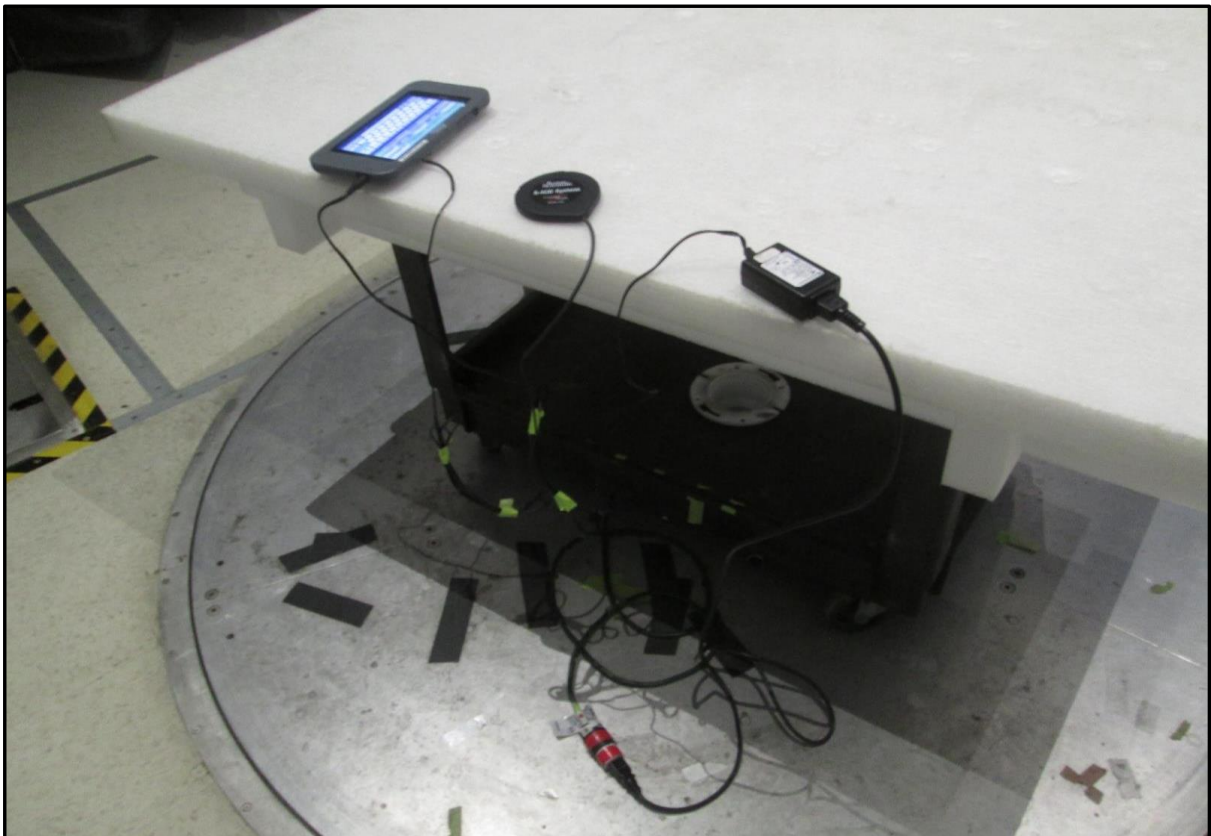
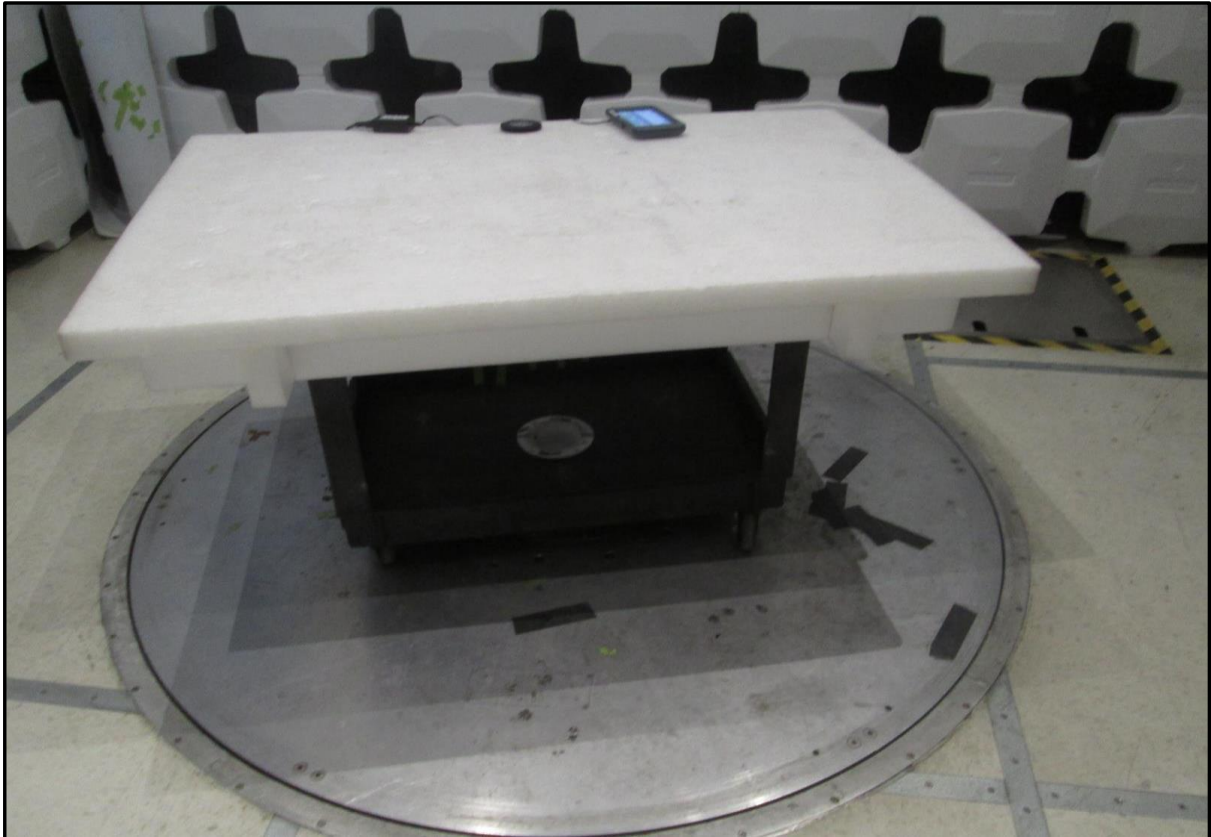
Test Specifications	Class B	Test Method
LP0002:2-18		LP0002:2-18

Run #	7	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)
403.705	29.4	1.8	1.0	94.0	3.0	0.0	Horz	QP	0.0	31.2	46.0	-14.8
807.508	19.0	9.6	1.1	70.9	3.0	0.0	Horz	QP	0.0	28.6	46.0	-17.4
403.498	24.9	1.8	1.0	110.9	3.0	0.0	Vert	QP	0.0	26.7	46.0	-19.3
807.133	16.6	9.6	1.0	360.0	3.0	0.0	Vert	QP	0.0	26.2	46.0	-19.8
1211.688	28.6	-7.4	1.0	95.9	3.0	0.0	Horz	AV	0.0	21.2	54.0	-32.8
1212.538	28.5	-7.3	1.0	4.0	3.0	0.0	Vert	AV	0.0	21.2	54.0	-32.8
1210.880	42.1	-7.4	1.0	4.0	3.0	0.0	Vert	PK	0.0	34.7	74.0	-39.3
1208.313	41.8	-7.4	1.0	95.9	3.0	0.0	Horz	PK	0.0	34.4	74.0	-39.6

UNWANTED SPURIOUS EMISSIONS RECEIVER



UNWANTED SPURIOUS EMISSIONS RECEIVER



PSA-ESCI 2018.07.27



UNWANTED SPURIOUS EMISSIONS TRANSMITTER



PSA-ESCI 2018.07.27

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

MODES OF OPERATION

Tx MICS signal at 403.51 MHz with 100% duty cycle

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

BSTN0908 - 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
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	AVO	2-Nov-2018	12 mo
Cable	ESM Cable Corp.	Bilog Cables	MNH	2-Nov-2018	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYD	25-Jan-2018	24 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVT	8-Feb-2018	12 mo
Cable	ESM Cable Corp.	Double Ridge Guide Horn Cables	MNI	24-Sep-2018	12 mo
Antenna - Double Ridge	ETS Lindgren	3115	AJA	27-Jun-2018	24 mo
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFN	27-Apr-2018	12 mo

MEASUREMENT BANDWIDTHS

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

TEST DESCRIPTION

The highest gain of each type of antenna to be used with the EUT was tested. 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 LP0002). A preamp was used for this test in order to provide sufficient measurement sensitivity.

Per LP0002, field strength measurements were performed and compared to the specified limits.

UNWANTED SPURIOUS EMISSIONS TRANSMITTER



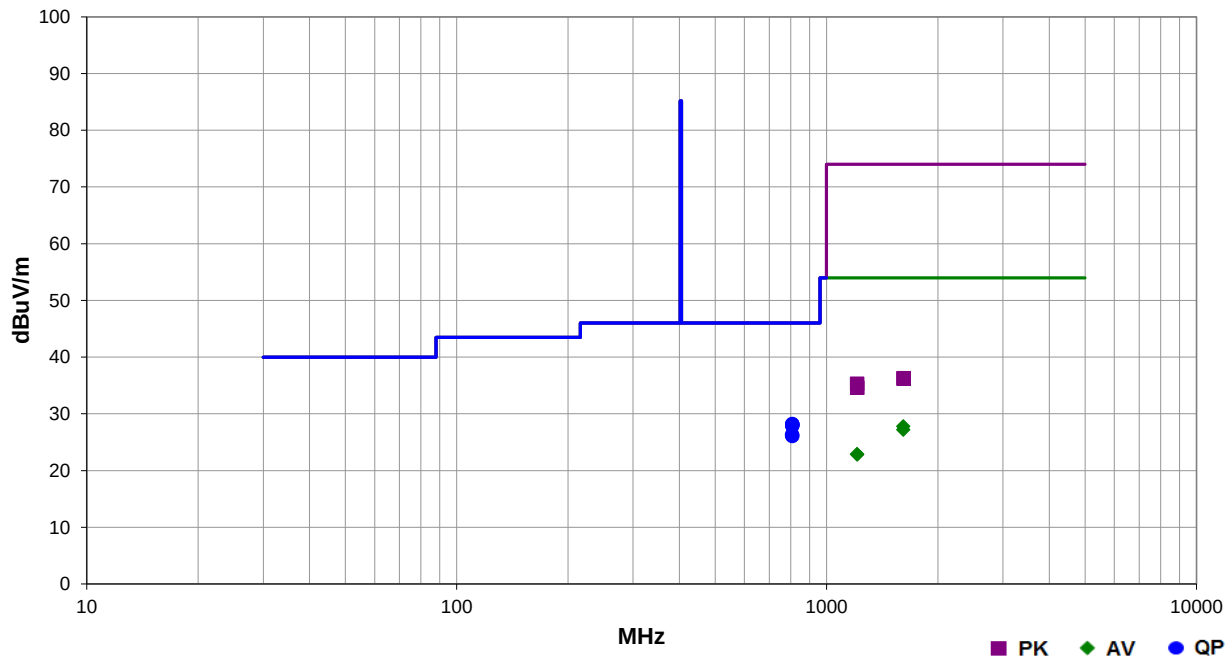
EmR5 2018.09.26

PSA-ESCI 2018.07.27

Work Order:	BSTN0908				
Project:	None	Temperature:	22.7 °C		
Job Site:	MN05	Humidity:	19.5% RH		
Serial Number:	3200-A105629	Barometric Pres.:	1013 mbar	Tested by:	Kyle McMullan
EUT:	Emblem - 3200 Programmer				
Configuration:	1				
Customer:	Boston Scientific Corporation				
Attendees:	Dattatray Naikwade				
EUT Power:	110VAC/60Hz				
Operating Mode:	Tx MICS signal at 403.51 MHz with 100% duty cycle				
Deviations:	None				
Comments:	None				

Test Specifications	Test Method
LP0002:2018	LP0002:2018

Run #	5	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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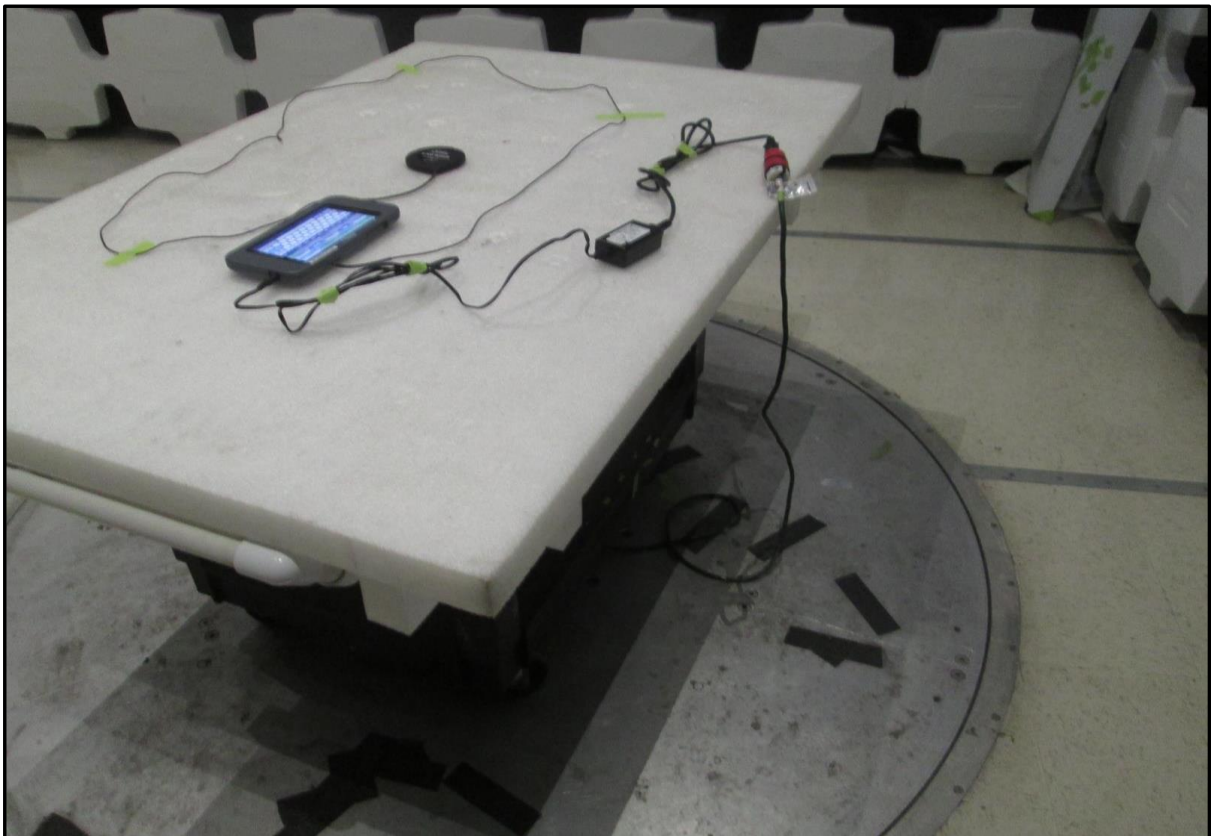
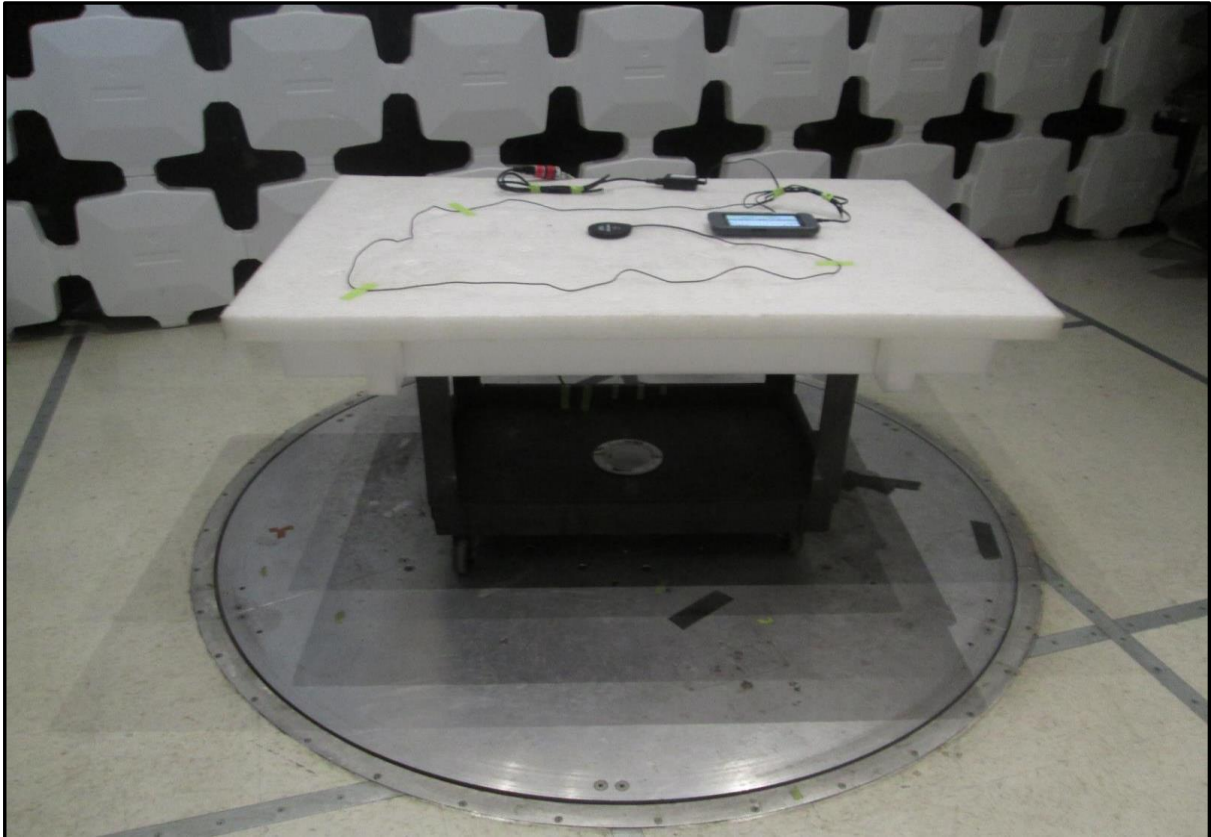


Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
807.455	18.6	9.6	1.0	355.9	3.0	0.0	Horz	QP	0.0	28.2	46.0	-17.8	EUT Vert
807.473	18.5	9.6	1.0	261.9	3.0	0.0	Horz	QP	0.0	28.1	46.0	-17.9	EUT Horz
807.418	18.5	9.6	1.5	253.9	3.0	0.0	Vert	QP	0.0	28.1	46.0	-17.9	EUT On Side
807.452	18.3	9.6	1.0	196.0	3.0	0.0	Horz	QP	0.0	27.9	46.0	-18.1	EUT On Side
807.217	16.7	9.6	2.3	91.0	3.0	0.0	Vert	QP	0.0	26.3	46.0	-19.7	EUT Vert
807.372	16.5	9.6	2.6	271.9	3.0	0.0	Vert	QP	0.0	26.1	46.0	-19.9	EUT Horz
1613.923	33.9	-6.1	1.0	220.0	3.0	0.0	Vert	AV	0.0	27.8	54.0	-26.2	EUT On Side
1613.957	33.3	-6.1	1.0	139.9	3.0	0.0	Horz	AV	0.0	27.2	54.0	-26.8	EUT Vert
1209.572	30.3	-7.4	1.0	281.0	3.0	0.0	Vert	AV	0.0	22.9	54.0	-31.1	EUT On Side
1210.555	30.2	-7.4	1.0	150.9	3.0	0.0	Horz	AV	0.0	22.8	54.0	-31.2	EUT Vert
1614.315	42.4	-6.1	1.0	220.0	3.0	0.0	Vert	PK	0.0	36.3	74.0	-37.7	EUT On Side
1614.173	42.3	-6.1	1.0	139.9	3.0	0.0	Horz	PK	0.0	36.2	74.0	-37.8	EUT Vert
1209.313	42.7	-7.4	1.0	281.0	3.0	0.0	Vert	PK	0.0	35.3	74.0	-38.7	EUT On Side
1210.655	42.0	-7.4	1.0	150.9	3.0	0.0	Horz	PK	0.0	34.6	74.0	-39.4	EUT Vert

UNWANTED SPURIOUS EMISSIONS TRANSMITTER



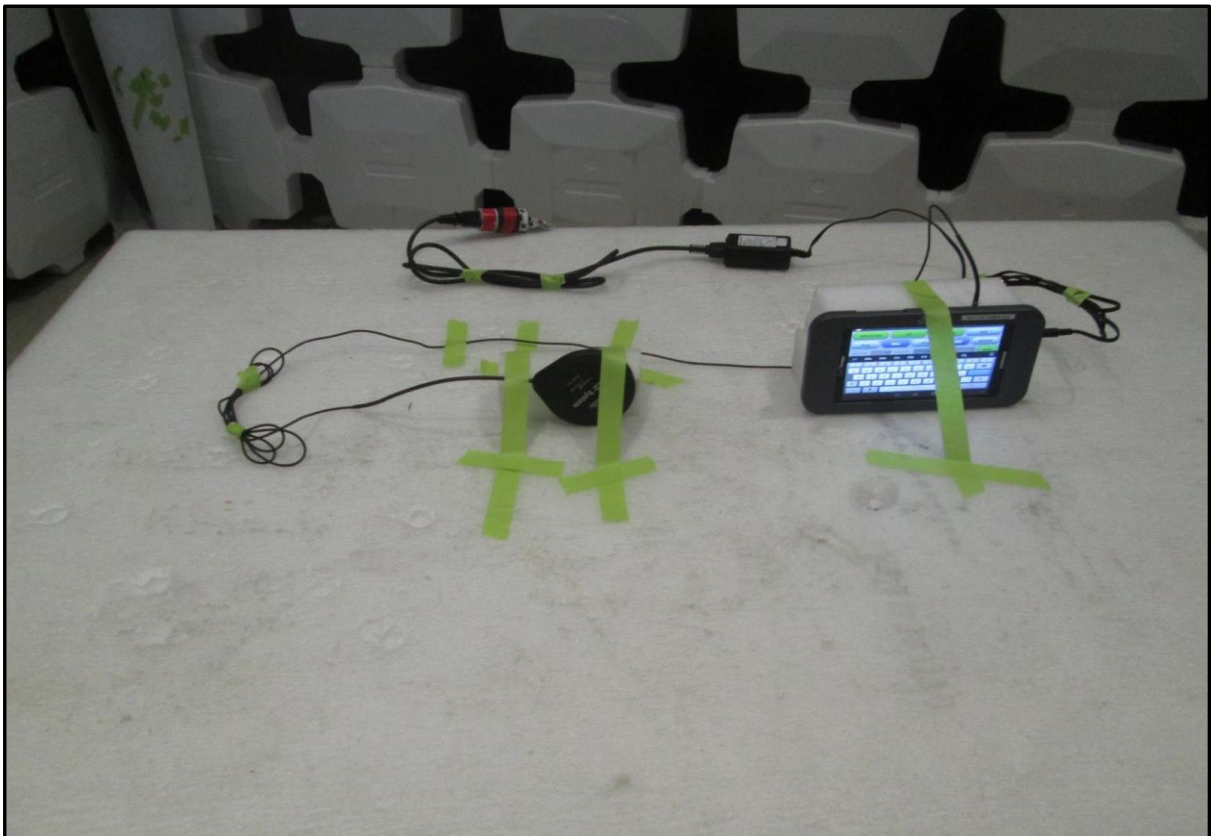
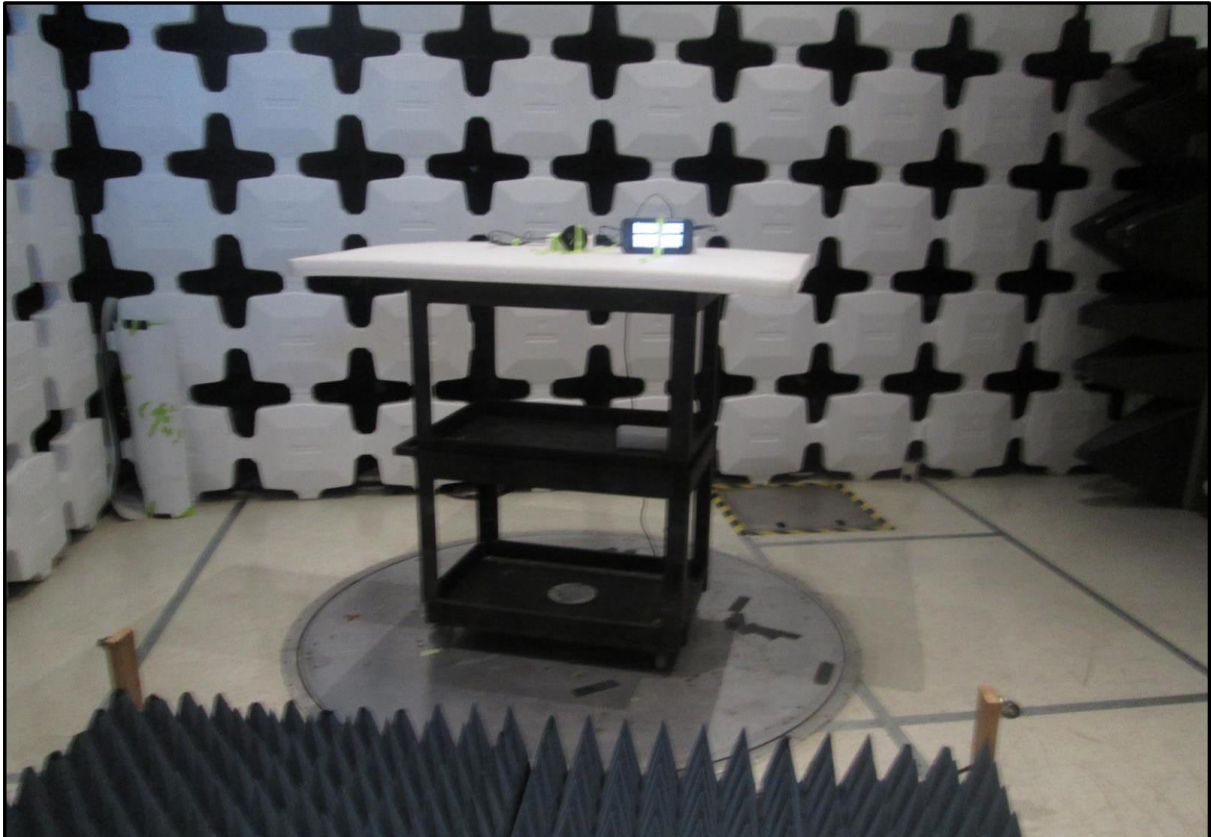
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UNWANTED SPURIOUS EMISSIONS TRANSMITTER



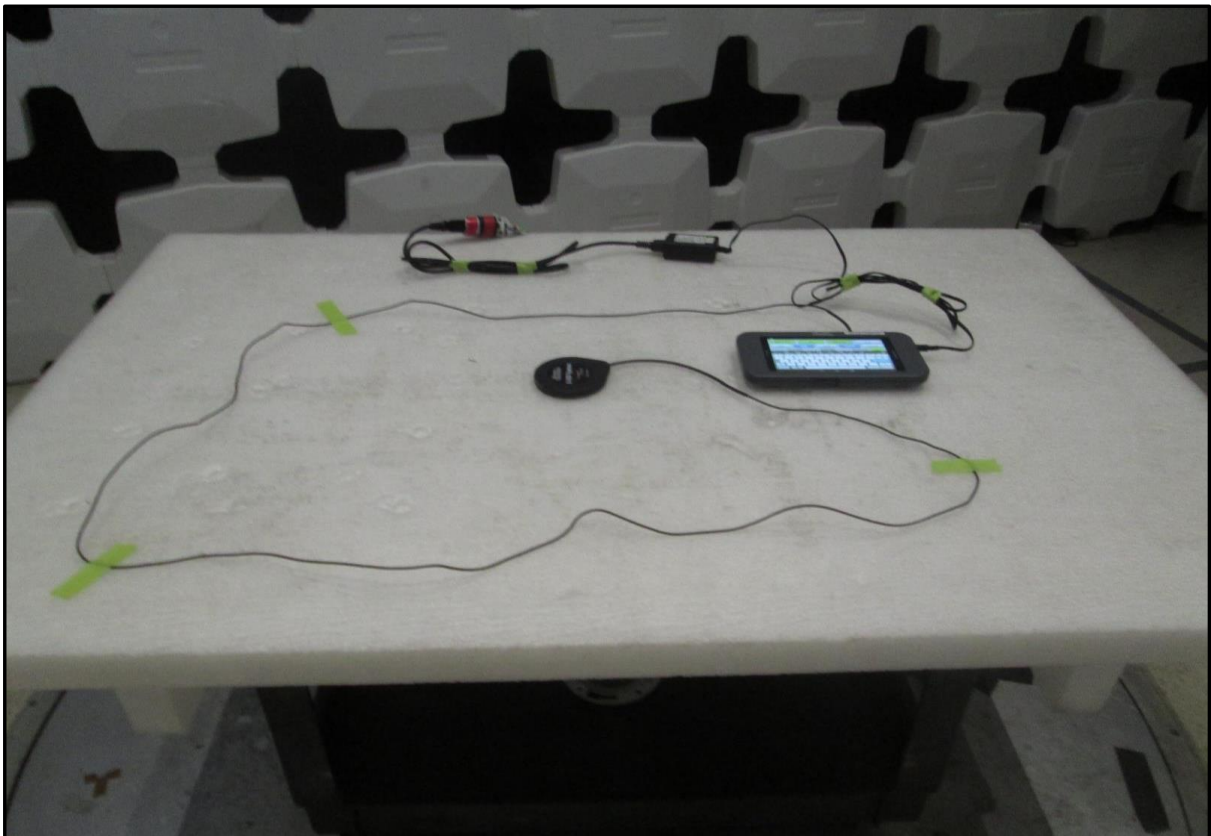
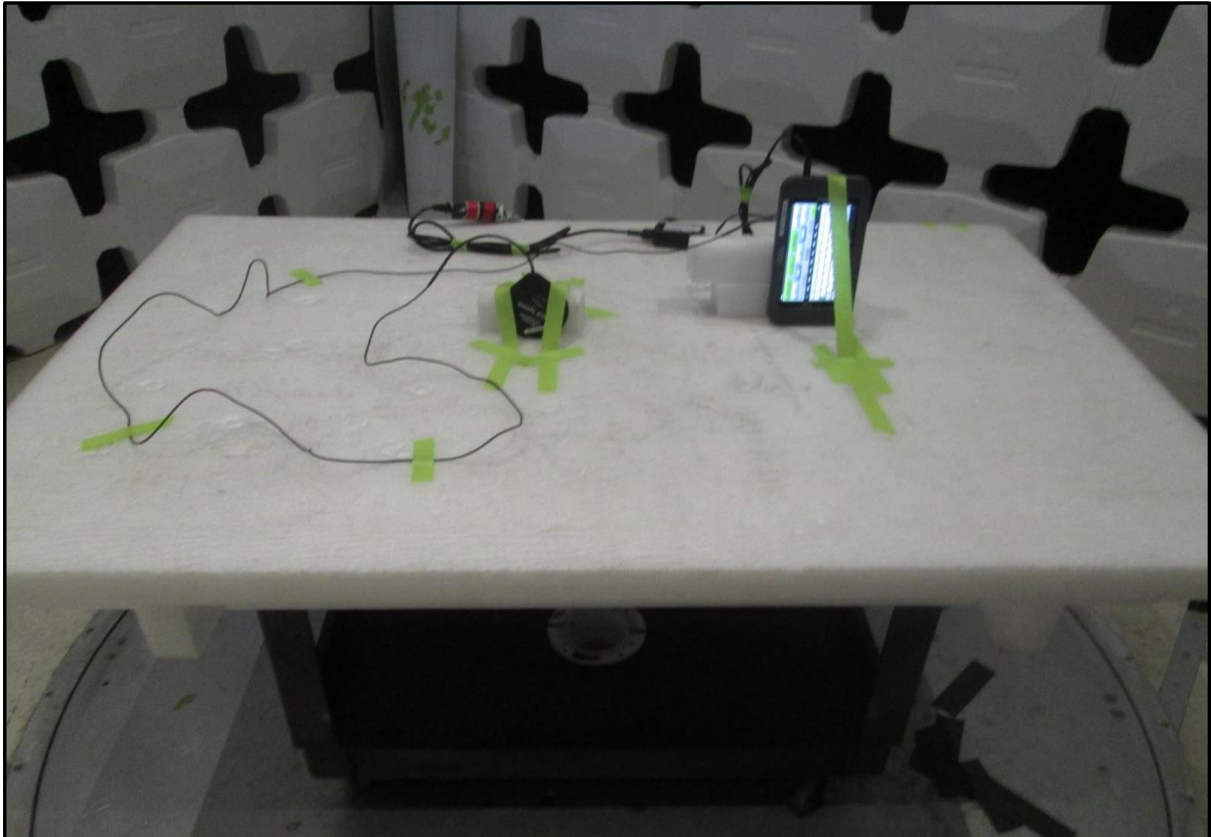
PSA-ESCI 2018.07.27



UNWANTED SPURIOUS EMISSIONS TRANSMITTER



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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.)
Variable Transformer	Powerstat	246	XFR	NCR	0
Multimeter	Fluke	117	MNN	1/20/2014	36
Humidity Temperature Meter	Omega Engineering, Inc.	HH31	DUB	10/25/2011	36
Temp./Humidity Chamber	Cincinnati Sub Zero (CSZ)	ZPH-32-3.5-SCT/AC	TBF	NCR	0
Attenuator - 20db, 'SMA'	SM Electronics	SA26B-20	RFW	4/3/2014	12
40 GHz DC block	Fairview Microwave	SD3379	AMI	9/26/2013	12
Spectrum Analyzer	Agilent	N9010A	AFI	1/27/2013	24

TEST DESCRIPTION

Variation of Supply Voltage

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

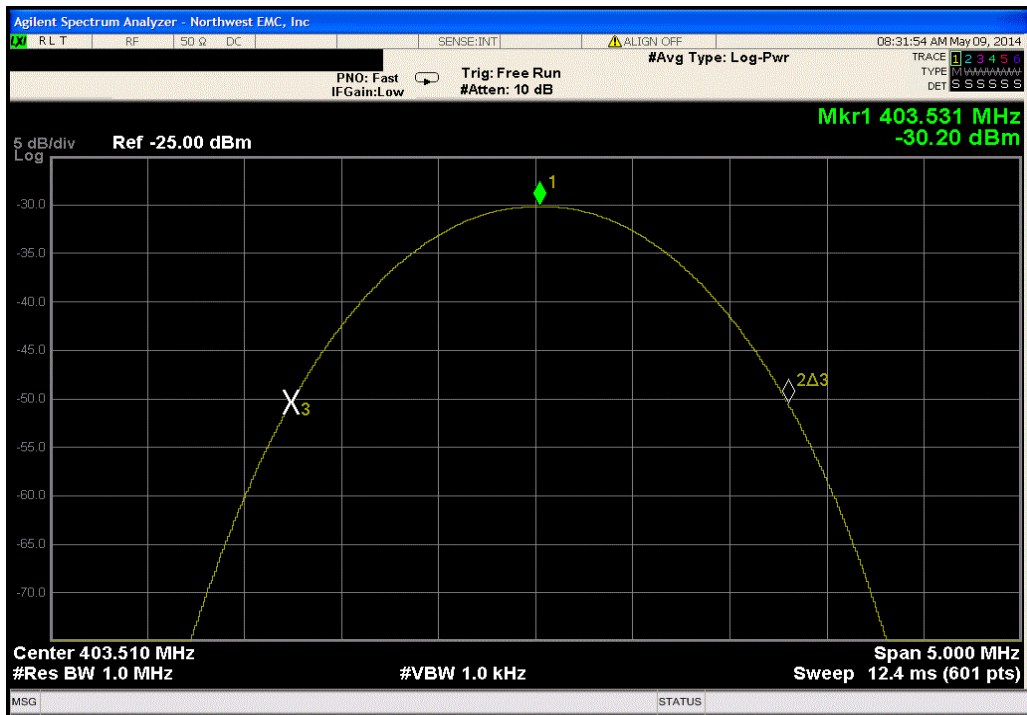
Variation of Ambient Temperature

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

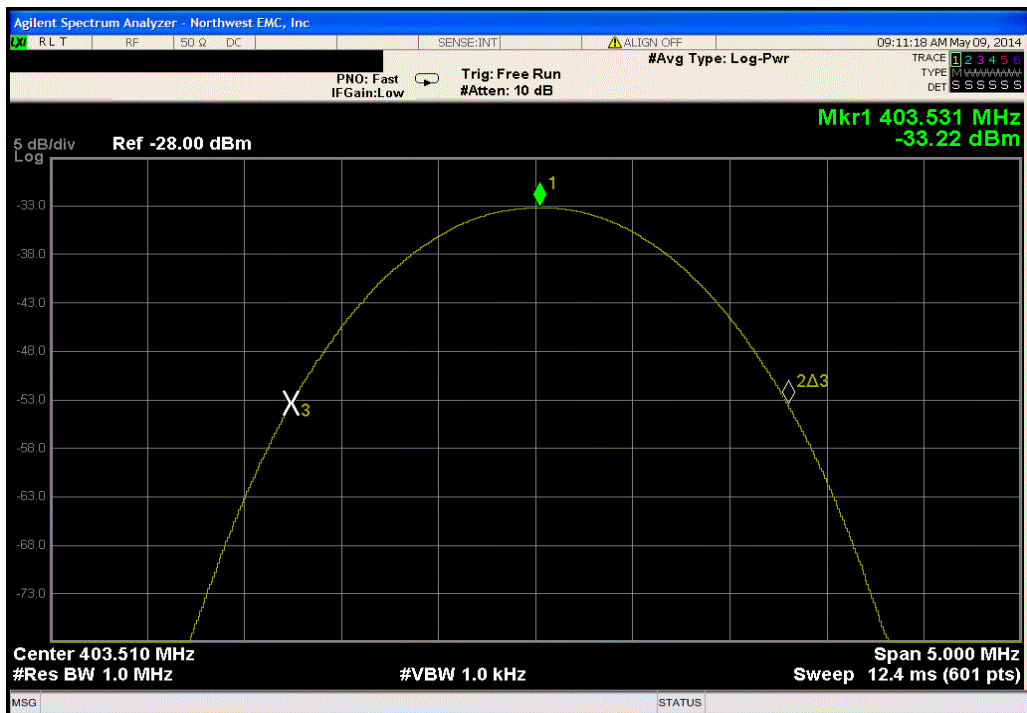
The Frequency Stability was measured using a direct connection to a spectrum analyzer. The spectrum analyzer is configured with a precision frequency reference that exceeds the stability requirement of the transmitter. The EUT was placed inside a temperature / humidity chamber.

EUT: Emblem 3200 Programmer		Work Order: BSTN0474	
Serial Number: 3200-A103233		Temperature: 22.8°C	
Customer: Boston Scientific Corporation		Humidity: 46%	
Attendees: None		Barometric Pres.: 1003	
Project: None		Job Site: MN05	
Tested by: Trevor Buls		Power: 110VAC/60Hz	
TEST SPECIFICATIONS		Test Method	
LP0002:2018		LP0002:2018	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	3	Signature <i>Trevor Buls</i>	
		Measured Value (MHz)	Assigned Value (MHz)
		Error (ppm)	Limit (ppm)
			Result
Normal Voltage			
	403.5 MHz	403.5308333	403.51
		51.6	100
			Pass
Extreme Voltage +15%			
	403.5 MHz	403.5308333	403.51
		51.6	100
			Pass
Extreme Voltage -15%			
	403.5 MHz	403.5308333	403.51
		51.6	100
			Pass
Extreme Temperature +55°C			
	403.5 MHz	403.5308333	403.51
		51.6	100
			Pass
Extreme Temperature +50°C			
	403.5 MHz	403.5308333	403.51
		51.6	100
			Pass
Extreme Temperature +40°C			
	403.5 MHz	403.5308333	403.51
		51.6	100
			Pass
Extreme Temperature +30°C			
	403.5 MHz	403.5308333	403.51
		51.6	100
			Pass
Extreme Temperature +20°C			
	403.5 MHz	403.5308333	403.51
		51.6	100
			Pass
Extreme Temperature +10°C			
	403.5 MHz	403.5308333	403.51
		51.6	100
			Pass
Extreme Temperature 0°C			
	403.5 MHz	403.5308333	403.51
		51.6	100
			Pass

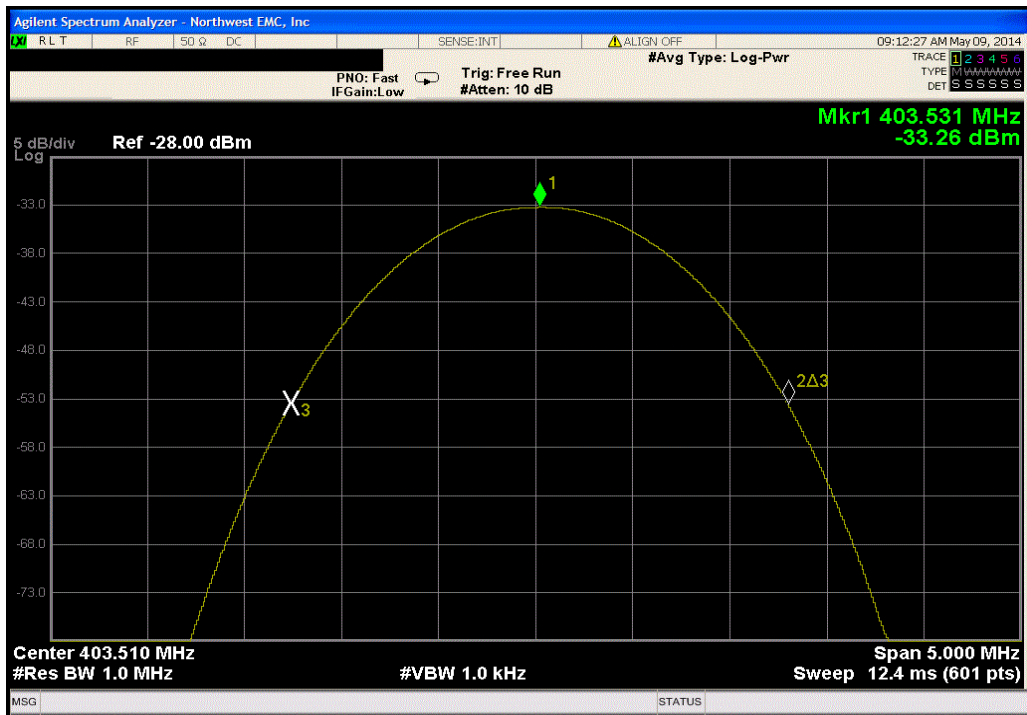
Normal Voltage, 403.5 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.5308333	403.51	51.6	100	Pass



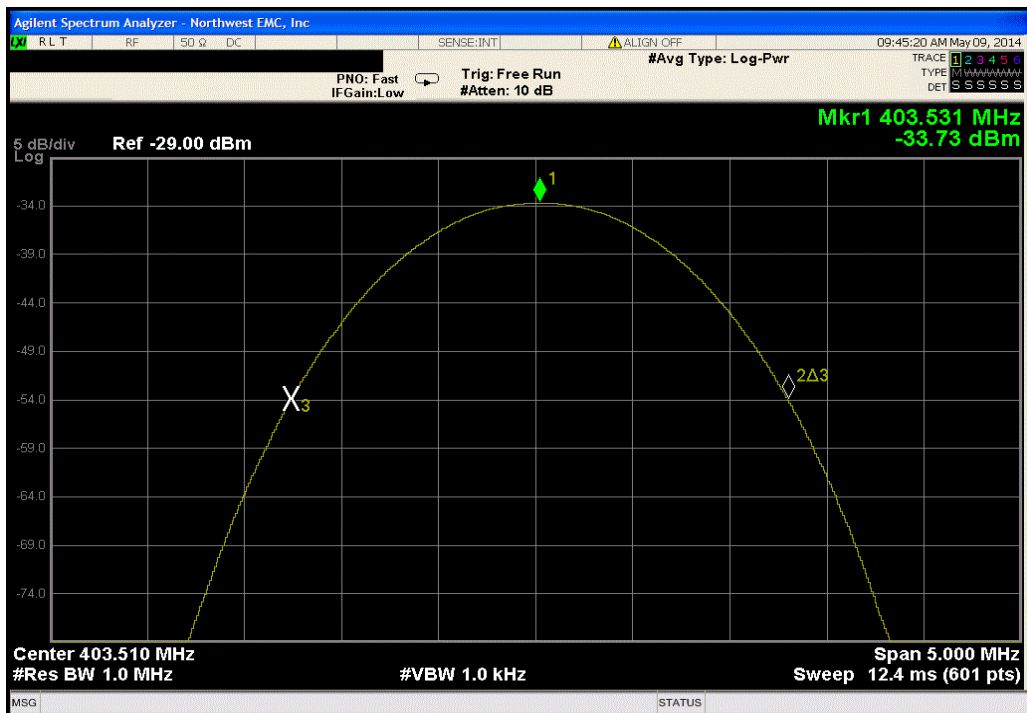
Extreme Voltage +15%, 403.5 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.5308333	403.51	51.6	100	Pass



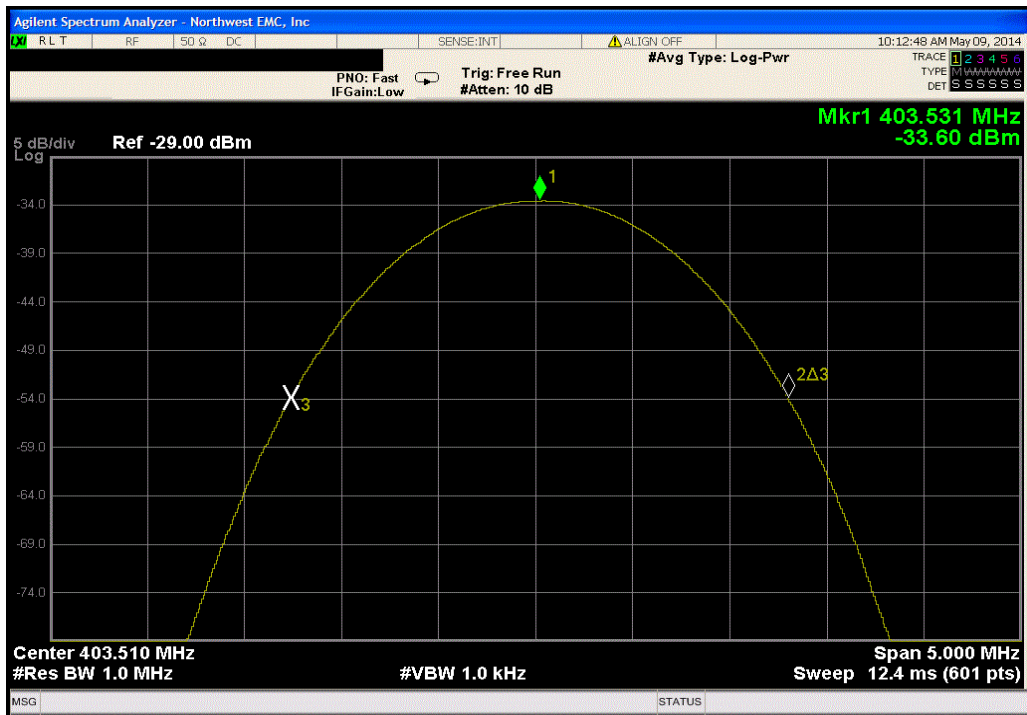
Extreme Voltage -15%, 403.5 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.5308333	403.51	51.6	100	Pass



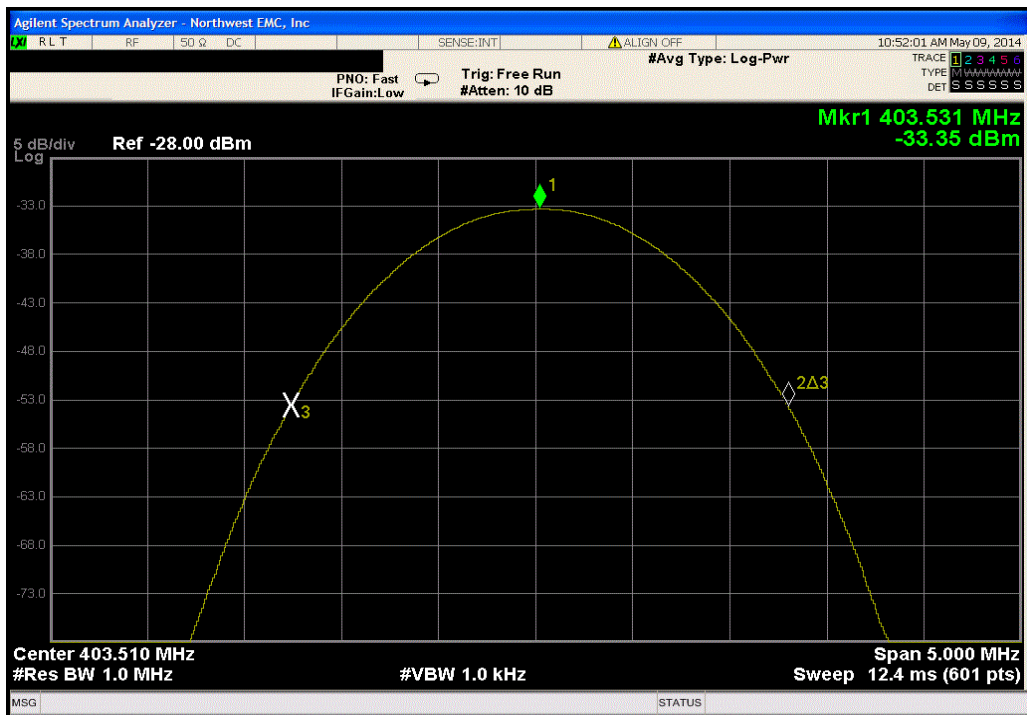
Extreme Temperature +55°C, 403.5 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.5308333	403.51	51.6	100	Pass



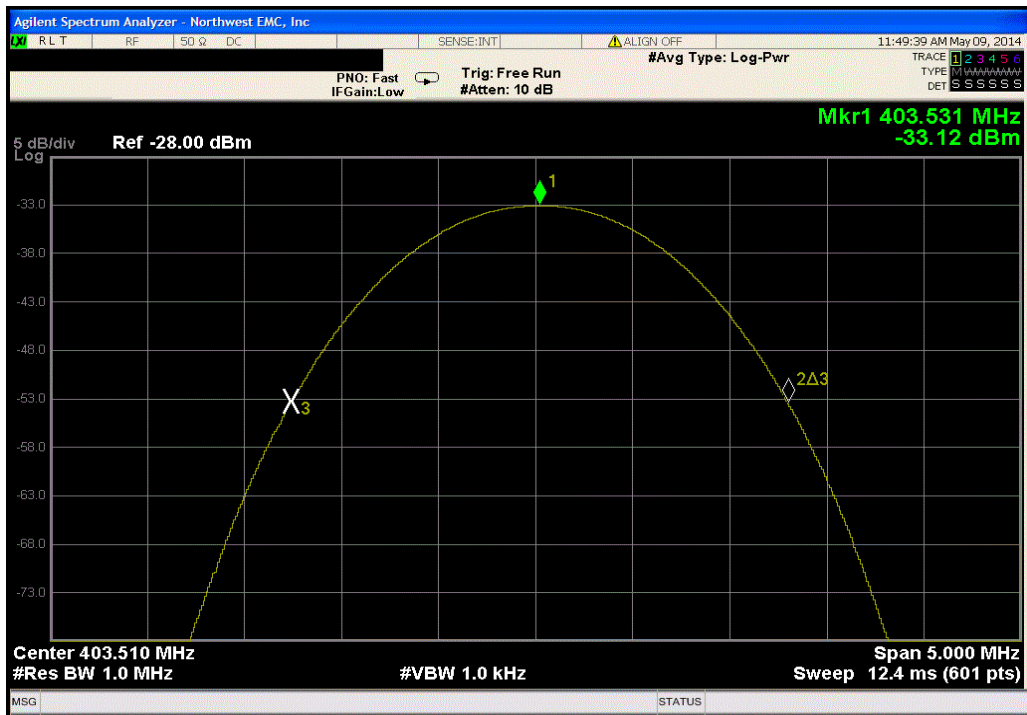
Extreme Temperature +50°C, 403.5 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.5308333	403.51	51.6	100	Pass



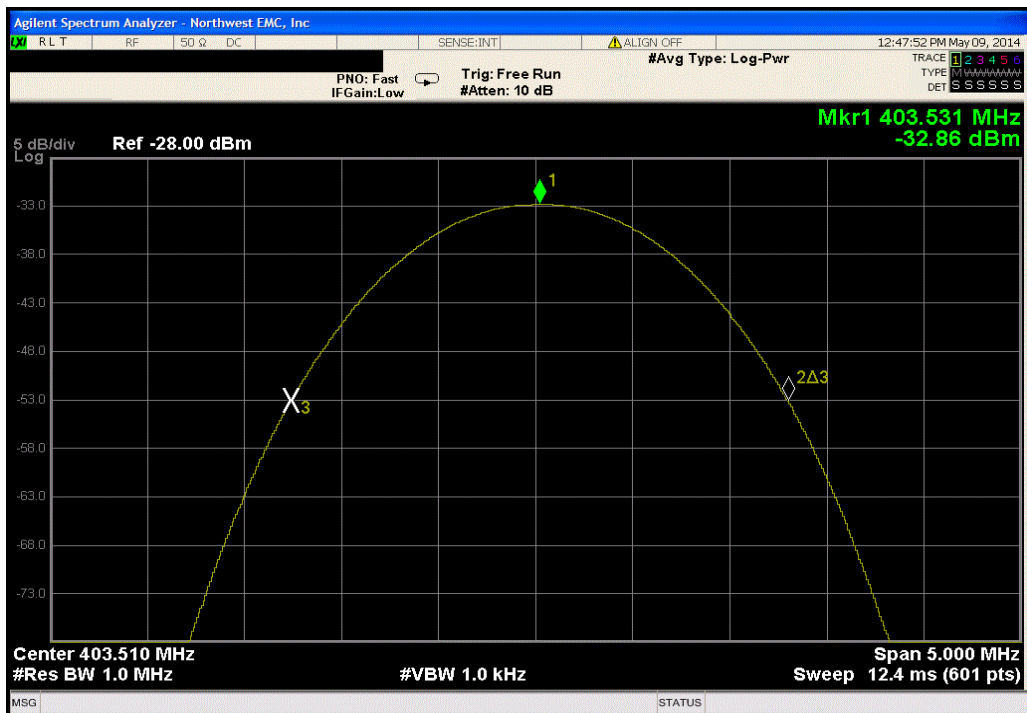
Extreme Temperature +40°C, 403.5 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.5308333	403.51	51.6	100	Pass



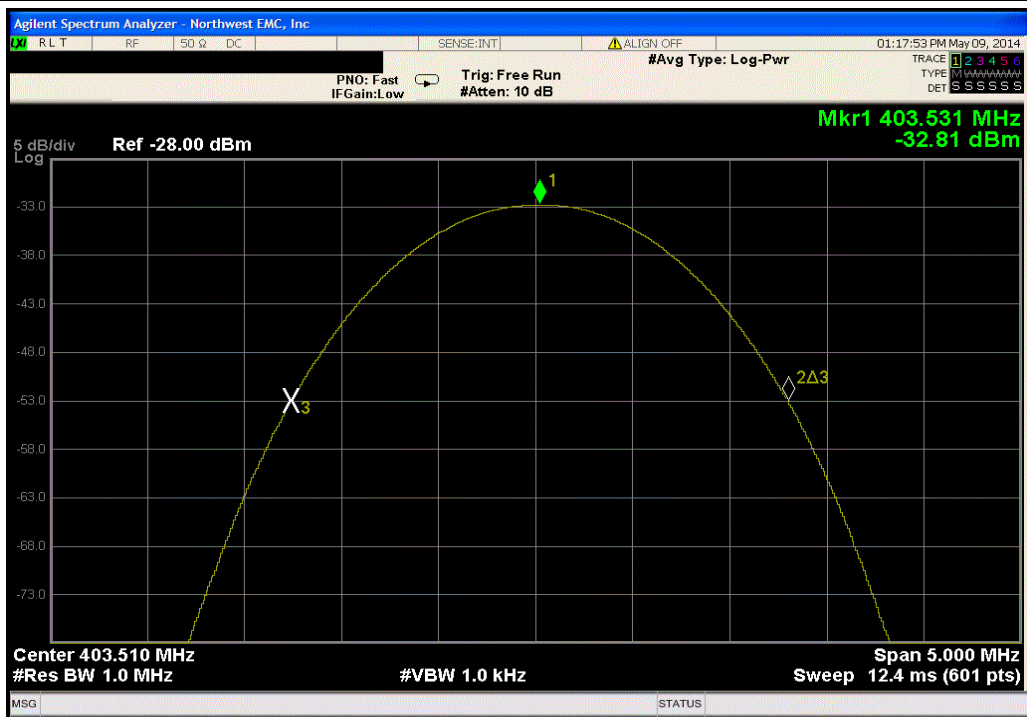
Extreme Temperature +30°C, 403.5 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.5308333	403.51	51.6	100	Pass



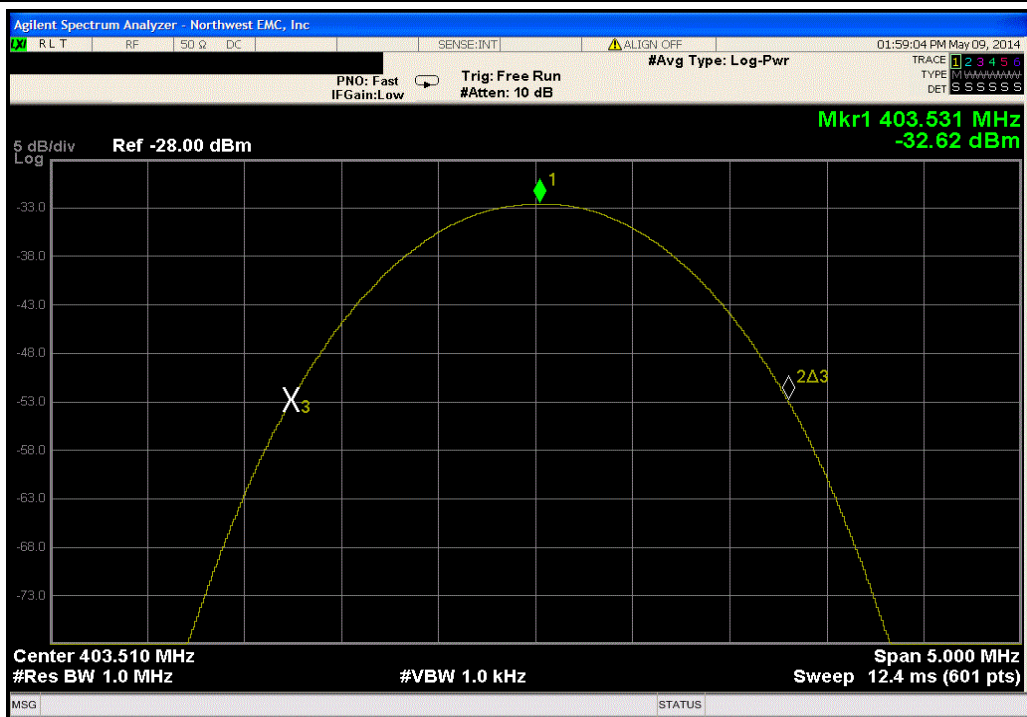
Extreme Temperature +20°C, 403.5 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.5308333	403.51	51.6	100	Pass



Extreme Temperature +10°C, 403.5 MHz						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result	
	403.5308333	403.51	51.6	100	Pass	



Extreme Temperature 0°C, 403.5 MHz					
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Result
	403.5308333	403.51	51.6	100	Pass



AC POWER LINE CONDUCTED EMISSIONS

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50 Ω measuring port is terminated by a 50 Ω EMI meter or a 50 Ω resistive load. All 50 Ω measuring ports of the LISN are terminated by 50 Ω .

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Spectrum Analyzer	Agilent	E4440A	AAX	04/28/2014	24 mo
MN03 Cables	ESM Cable Corp.	Conducted Cables	MNC	12/05/2013	12 mo
LISN	Solar Electronics	9252-50-R-24-BNC	LIY	05/24/2013	12 mo
High Pass Filter	TTE	H97-100K-50-720B	HGN	05/31/2012	24 mo
Attenuator 20dB, BNC	Fairview Microwave	SA01B-20	AQP	08/09/2013	12 mo

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.94 dB	-2.94 dB

CONFIGURATIONS INVESTIGATED

BSTN0474-1

MODES INVESTIGATED

Transmitting modulated at 403.5 MHz

AC POWER LINE CONDUCTED EMISSIONS

EUT:	Emblem 3200 Programmer	Work Order:	BSTN0474
Serial Number:	3200-A103233	Temperature:	23.2°C
Customer:	Boston Scientific Corporation	Relative Humidity:	47.4%
Attendees:	None	Bar. Pressure:	1009.4 mb
Customer Project:	None	Job Site:	MN03
Tested By:	Trevor Buls	Configuration:	BSTN0474-1
Power:	110VAC/60Hz		

TEST SPECIFICATIONS

Specification:	Method:
LP0002:2018	LP0002:2018

TEST PARAMETERS

Run #:	1	Line:	High Line	Ext. Attenuation (dB):	20
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COMMENTS

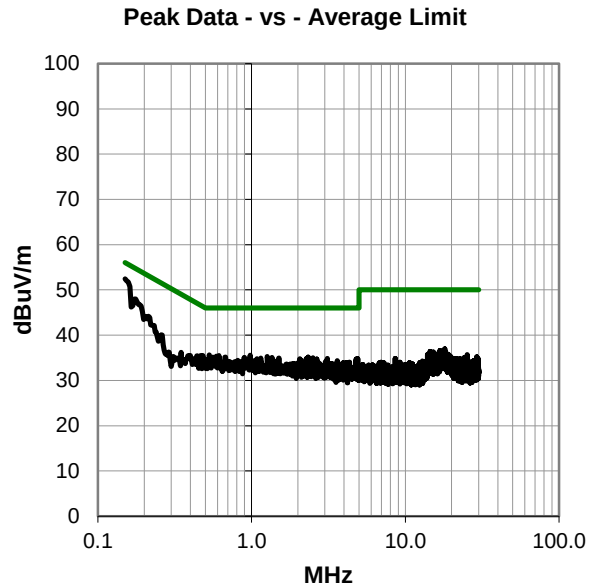
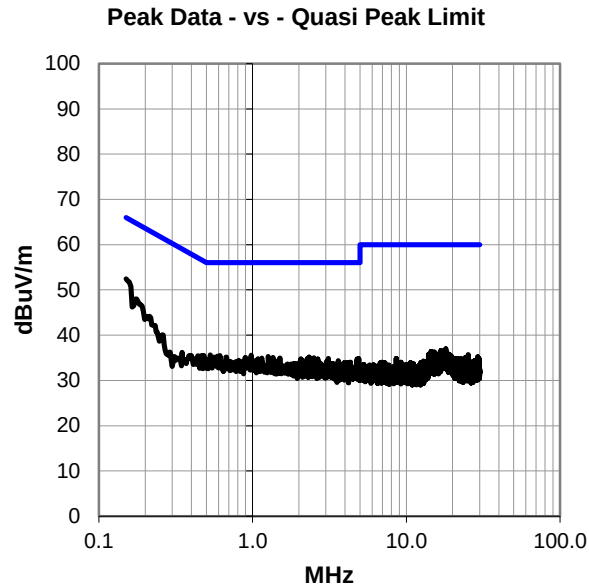
None

EUT OPERATING MODES

Transmitting modulated at 403.5 MHz

DEVIATIONS FROM TEST STANDARD

None



AC POWER LINE CONDUCTED EMISSIONS

RESULTS - Run #1

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Margin (dB)
0.150	32.2	20.2	52.4	66.0	-13.6
0.531	15.4	20.2	35.6	56.0	-20.4
0.978	15.3	20.3	35.6	56.0	-20.4
1.266	15.0	20.3	35.3	56.0	-20.7
0.676	14.9	20.2	35.1	56.0	-20.9
2.333	14.8	20.3	35.1	56.0	-20.9
1.359	14.8	20.3	35.1	56.0	-20.9
2.504	14.7	20.3	35.0	56.0	-21.0
1.146	14.6	20.3	34.9	56.0	-21.1
1.504	14.6	20.3	34.9	56.0	-21.1
3.105	14.5	20.3	34.8	56.0	-21.2
2.265	14.5	20.3	34.8	56.0	-21.2
2.056	14.5	20.3	34.8	56.0	-21.2
4.899	14.4	20.4	34.8	56.0	-21.2
2.653	14.4	20.3	34.7	56.0	-21.3
4.795	14.3	20.4	34.7	56.0	-21.3
3.616	14.0	20.4	34.4	56.0	-21.6
3.019	13.8	20.3	34.1	56.0	-21.9
4.851	13.7	20.4	34.1	56.0	-21.9
4.750	13.6	20.4	34.0	56.0	-22.0
4.325	13.6	20.4	34.0	56.0	-22.0
4.112	13.6	20.4	34.0	56.0	-22.0
3.937	13.5	20.4	33.9	56.0	-22.1
2.765	13.5	20.3	33.8	56.0	-22.2
3.295	13.4	20.3	33.7	56.0	-22.3
3.385	13.3	20.3	33.6	56.0	-22.4

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Margin (dB)
0.150	32.2	20.2	52.4	56.0	-3.6
0.531	15.4	20.2	35.6	46.0	-10.4
0.978	15.3	20.3	35.6	46.0	-10.4
1.266	15.0	20.3	35.3	46.0	-10.7
0.676	14.9	20.2	35.1	46.0	-10.9
2.333	14.8	20.3	35.1	46.0	-10.9
1.359	14.8	20.3	35.1	46.0	-10.9
2.504	14.7	20.3	35.0	46.0	-11.0
1.146	14.6	20.3	34.9	46.0	-11.1
1.504	14.6	20.3	34.9	46.0	-11.1
3.105	14.5	20.3	34.8	46.0	-11.2
2.265	14.5	20.3	34.8	46.0	-11.2
2.056	14.5	20.3	34.8	46.0	-11.2
4.899	14.4	20.4	34.8	46.0	-11.2
2.653	14.4	20.3	34.7	46.0	-11.3
4.795	14.3	20.4	34.7	46.0	-11.3
3.616	14.0	20.4	34.4	46.0	-11.6
3.019	13.8	20.3	34.1	46.0	-11.9
4.851	13.7	20.4	34.1	46.0	-11.9
4.750	13.6	20.4	34.0	46.0	-12.0
4.325	13.6	20.4	34.0	46.0	-12.0
4.112	13.6	20.4	34.0	46.0	-12.0
3.937	13.5	20.4	33.9	46.0	-12.1
2.765	13.5	20.3	33.8	46.0	-12.2
3.295	13.4	20.3	33.7	46.0	-12.3
3.385	13.3	20.3	33.6	46.0	-12.4

CONCLUSION

Pass

Trevor Buls
Tested By

AC POWER LINE CONDUCTED EMISSIONS

EUT:	Emblem 3200 Programmer	Work Order:	BSTN0474
Serial Number:	3200-A103233	Temperature:	23.2°C
Customer:	Boston Scientific Corporation	Relative Humidity:	47.4%
Attendees:	None	Bar. Pressure:	1009.4 mb
Customer Project:	None	Job Site:	MN03
Tested By:	Trevor Buls	Configuration:	BSTN0474-1
Power:	110VAC/60Hz		

TEST SPECIFICATIONS

Specification:	Method:
LP0002:2018	LP0002:2018

TEST PARAMETERS

Run #:	2	Line:	Neutral	Ext. Attenuation (dB):	20
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COMMENTS

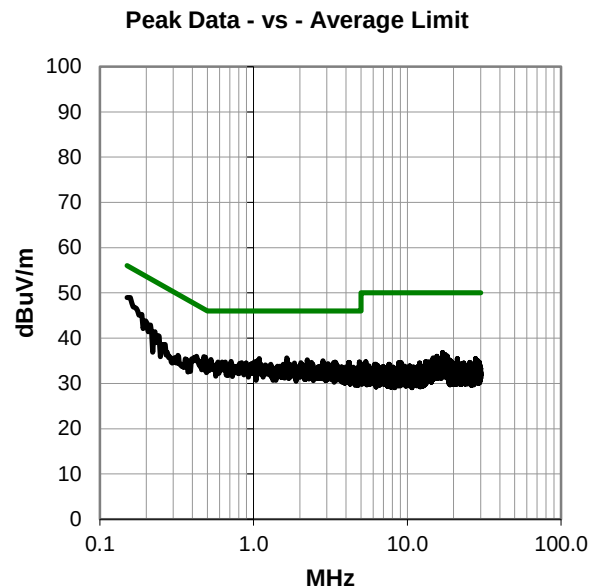
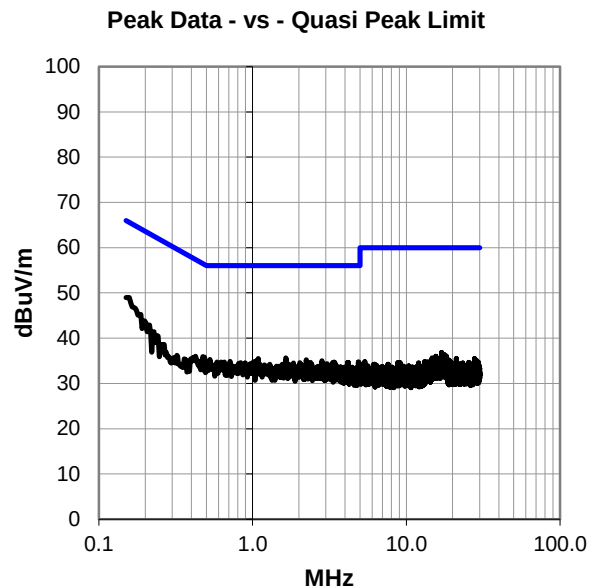
None

EUT OPERATING MODES

Transmitting modulated at 403.5 MHz

DEVIATIONS FROM TEST STANDARD

None



AC POWER LINE CONDUCTED EMISSIONS

RESULTS - Run #2

Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Margin (dB)
0.150	28.8	20.2	49.0	66.0	-17.0
1.646	15.3	20.3	35.6	56.0	-20.4
1.090	15.2	20.3	35.5	56.0	-20.5
2.239	14.9	20.3	35.2	56.0	-20.8
2.832	14.7	20.3	35.0	56.0	-21.0
1.060	14.7	20.3	35.0	56.0	-21.0
0.228	21.2	20.2	41.4	62.5	-21.1
0.713	14.6	20.2	34.8	56.0	-21.2
1.012	14.5	20.3	34.8	56.0	-21.2
3.396	14.4	20.3	34.7	56.0	-21.3
4.888	14.3	20.4	34.7	56.0	-21.3
4.187	14.3	20.4	34.7	56.0	-21.3
0.426	15.8	20.2	36.0	57.3	-21.3
2.381	14.3	20.3	34.6	56.0	-21.4
2.034	14.3	20.3	34.6	56.0	-21.4
4.149	14.2	20.4	34.6	56.0	-21.4
0.836	14.3	20.3	34.6	56.0	-21.4
3.329	14.2	20.3	34.5	56.0	-21.5
1.844	14.2	20.3	34.5	56.0	-21.5
4.937	14.1	20.4	34.5	56.0	-21.5
3.045	14.0	20.3	34.3	56.0	-21.7
2.426	13.9	20.3	34.2	56.0	-21.8
1.560	13.9	20.3	34.2	56.0	-21.8
3.220	13.7	20.3	34.0	56.0	-22.0
3.303	13.6	20.3	33.9	56.0	-22.1
3.511	13.5	20.4	33.9	56.0	-22.1

Peak Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Margin (dB)
0.150	28.8	20.2	49.0	56.0	-7.0
1.646	15.3	20.3	35.6	46.0	-10.4
1.090	15.2	20.3	35.5	46.0	-10.5
2.239	14.9	20.3	35.2	46.0	-10.8
2.832	14.7	20.3	35.0	46.0	-11.0
1.060	14.7	20.3	35.0	46.0	-11.0
0.228	21.2	20.2	41.4	52.5	-11.1
0.713	14.6	20.2	34.8	46.0	-11.2
1.012	14.5	20.3	34.8	46.0	-11.2
3.396	14.4	20.3	34.7	46.0	-11.3
4.888	14.3	20.4	34.7	46.0	-11.3
4.187	14.3	20.4	34.7	46.0	-11.3
0.426	15.8	20.2	36.0	47.3	-11.3
2.381	14.3	20.3	34.6	46.0	-11.4
2.034	14.3	20.3	34.6	46.0	-11.4
4.149	14.2	20.4	34.6	46.0	-11.4
0.836	14.3	20.3	34.6	46.0	-11.4
3.329	14.2	20.3	34.5	46.0	-11.5
1.844	14.2	20.3	34.5	46.0	-11.5
4.937	14.1	20.4	34.5	46.0	-11.5
3.045	14.0	20.3	34.3	46.0	-11.7
2.426	13.9	20.3	34.2	46.0	-11.8
1.560	13.9	20.3	34.2	46.0	-11.8
3.220	13.7	20.3	34.0	46.0	-12.0
3.303	13.6	20.3	33.9	46.0	-12.1
3.511	13.5	20.4	33.9	46.0	-12.1

CONCLUSION

Pass

Trevor Bults
Tested By