

NORTHWEST EMC

Boston Scientific Corporation

Emblem A219 S-ICD & Emblem A209 S-ICD

LP0002:2016

Brand Name: Boston Scientific

Equipment Name: Subcutaneous Implantable Cardiac Defibrillator

Report # BSTN0636 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

Last Date of Test: August 01, 2014
Boston Scientific Corporation
Model: Emblem A219 S-ICD & Emblem A209 S-ICD

Radio Equipment Testing

Standards

Specification	Method
LP0002:2016	LP0002:2016

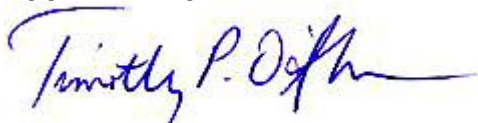
Results

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 Tolerance	Yes	Pass	

Deviations From Test Standards

None

Approved By:



Tim O'Shea,, 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, 11, 12, 13, 17, 22, 27, 28, 29, 33, 34, 35, 39
03	Updated testing objective	8/10/2018	7

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>

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.

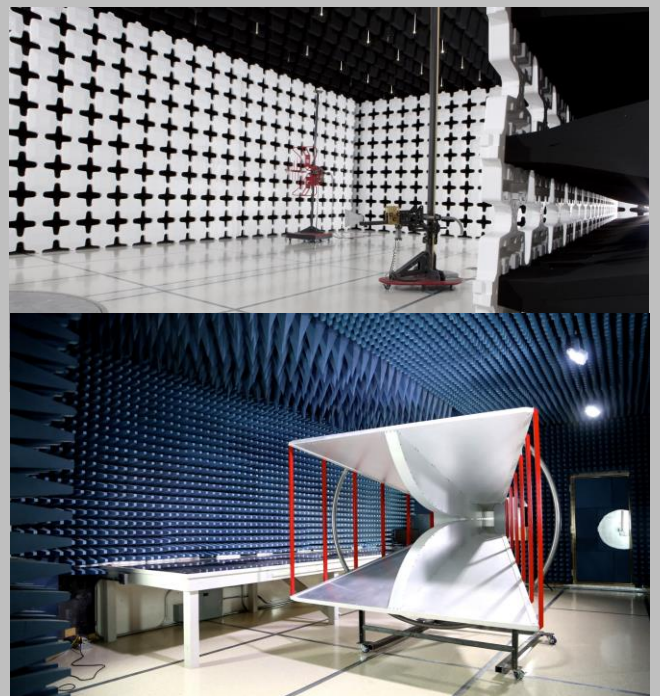
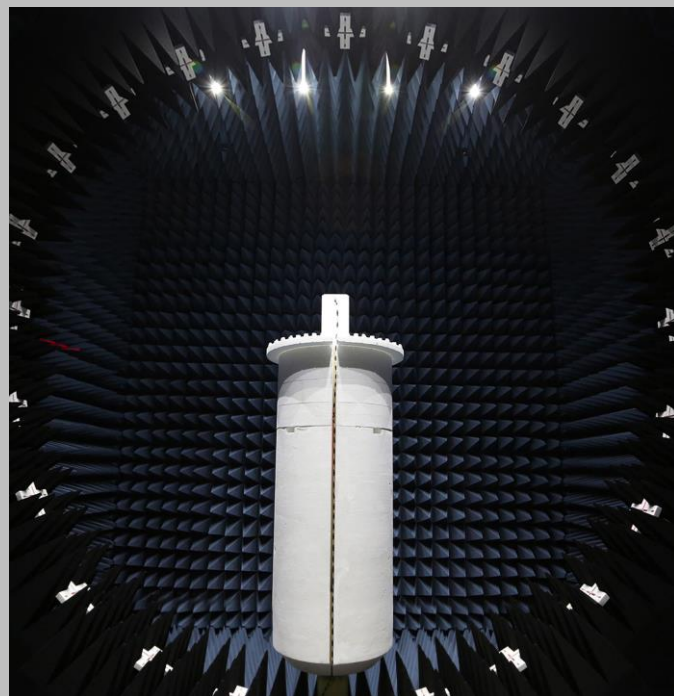
The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

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

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 A219 S-ICD & Emblem A209 S-ICD
First Date of Test:	July 28, 2014
Last Date of Test:	August 01, 2014
Receipt Date of Samples:	July 28, 2014
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
Models Emblem A219 S-ICD & Emblem A209 S-ICD is Subcutaneous Implantable Cardiac Defibrillators with a MICS radio module.

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 any cable connector between the transmitter and the antenna. The antenna shall be omni-directional type.

Results Verdict:

This EUT is using custom monopole (internal/integrated) antenna (Brand Name: Boston Scientific, model: custom with maximum antenna gain of -28 dBi. It complies with the requirements.

Client Justification:
The differences in the model A219 affect only firmware/software to enable Magnetic Resonance Imaging (MRI) safety and programming of the device based on its MRI compatible functionality. Specifically, the firmware/software in the A219 device shortens the time in between scheduled RF telemetry re-synch/re-calibration procedures. Our labeling calls for a patient in MRI Protection Mode to be continuously monitored, so the time was shortened to align with this medical need. However, this modification does not constitute a change to the design or performance of the MICS (402-405 MHz) telemetry radio, which is electrically and mechanically identical in design and performance, when compared to model A209.

PRODUCT DESCRIPTION

EUT Photo



CONFIGURATIONS

Configuration BSTN0488- 1

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Emblem S-ICD	Boston Scientific Corporation	A209	100140

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Implant Lead	No	45cm	No	Emblem S-ICD	Tissue Simulant
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Configuration BSTN0488- 3

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Emblem S-ICD	Boston Scientific Corporation	A209	100192

Cables					
Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Implant Lead	No	45cm	No	Emblem S-ICD	Tissue Simulant
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Configuration BSTN0488- 4

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Hybrid	Boston Scientific Corporation	None	70100064

Configuration BSTN0488- 5

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Hybrid	Boston Scientific Corporation	None	70100059

Configuration BSTN0488- 6

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
Hybrid	Boston Scientific Corporation	None	70100066

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	7/28/2014	Unwanted Spurious Emissions Transmitter	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	7/28/2014	Effective Radiated 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.
3	7/29/2014	Unwanted Spurious Emissions Receiver	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	8/01/2014	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	8/01/2014	Emissions 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.
6	8/01/2014	Frequency Tolerance	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 MICS CW: Low Channel = 402.81 MHz, High Channel = 403.51 MHz

POWER SETTINGS INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

BSTN0488 - 1

BSTN0488 - 2

BSTN0488 - 3

FREQUENCY RANGE INVESTIGATED

Start Frequency	25 MHz	Stop Frequency	4000 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
Power Sensor	Agilent	N8481A	SQN	8/27/2012	24 mo
Power Meter	Agilent	N1913A	SQL	8/27/2012	24 mo
MXG Vector Signal Generator	Agilent	N5182A	TIF	NCR	0 mo
RF Ecal Module	Agilent	85092C	NAMA	12/19/2013	36 mo
Network Analyzer	Agilent	E5071C	NAM	11/28/2013	36 mo
Dielectric Probe Kit	Agilent	85070E	IPP	NCR	0 mo
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
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
Comb Generator Emitter	ARC Technical Resources, Inc.	CGE01KIT01	TUB	NCR	0 mo
Comb Generator Radiated	KJR Enterprises	Harmonics	TCT	NCR	0 mo
Humidity Temperature Meter	Omega Engineering, Inc.	HH31	DUB	10/25/2011	36 mo

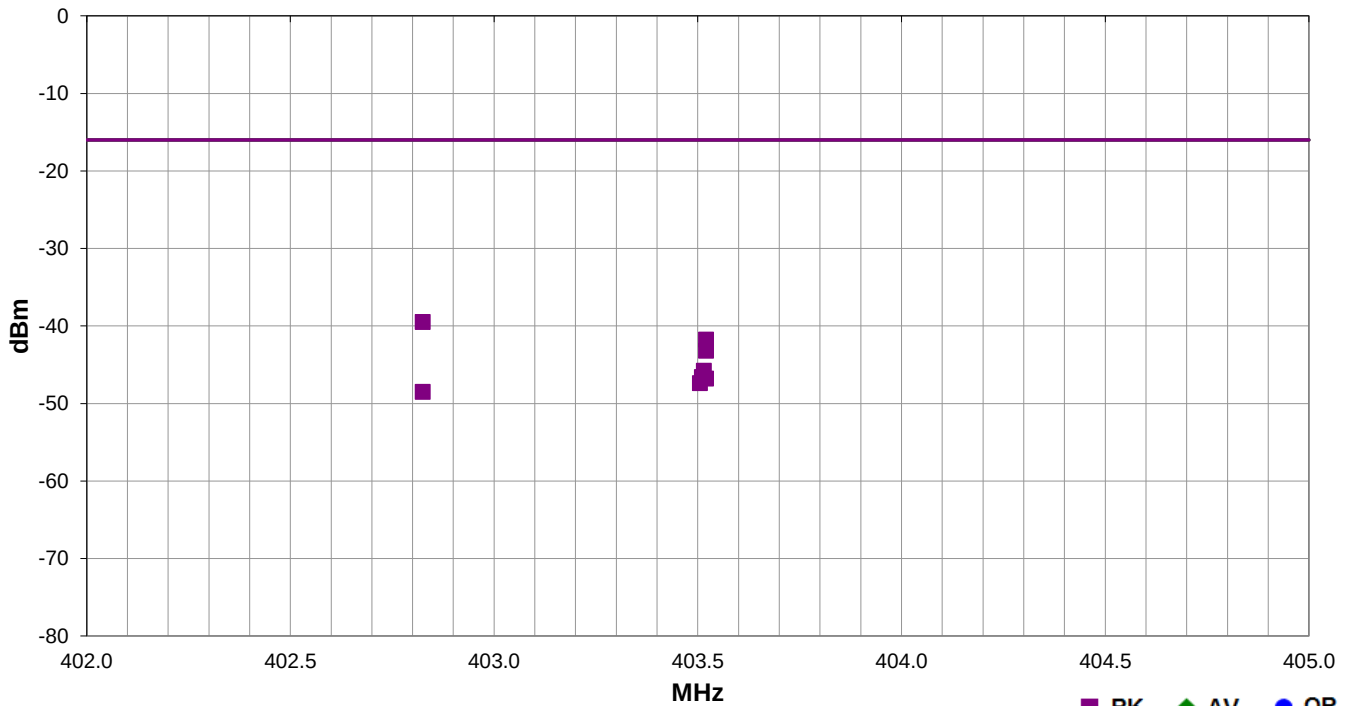
TEST DESCRIPTION

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:	BSTN0488	Date:	07/28/14	
Project:	None	Temperature:	23.3 °C	
Job Site:	MN05	Humidity:	46.6% RH	
Serial Number:	100140	Barometric Pres.:	1022.1 mbar	
EUT:		Emblem A219 S-ICD & Emblem A209 S-ICD		
Configuration:	1			
Customer:	Boston Scientific Corporation			
Attendees:	Dan Landherr			
EUT Power:	Battery			
Operating Mode:	Transmitting MICS CW: Low Channel = 402.81 MHz, High Channel = 403.51 MHz			
Deviations:	None			
Comments:	None			

Test Specifications	Test Method
LP0002:2016	LP0002:2016

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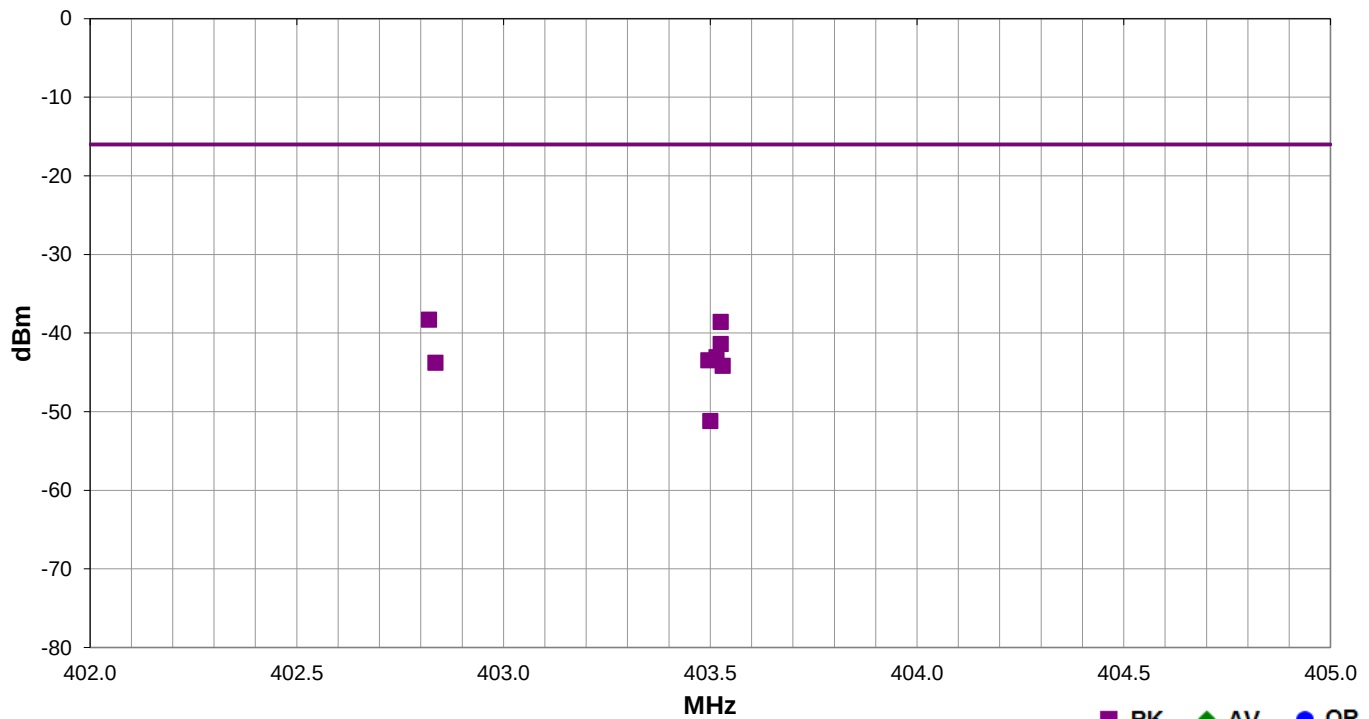


Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
402.825	1.1	319.0	Horz	PK	1.13E-07	-39.5	-16.0	-23.5	EUT Horizontal, Low Ch
403.520	1.2	328.0	Horz	PK	6.65E-08	-41.8	-16.0	-25.8	EUT Horizontal, High Ch
403.520	1.6	357.0	Vert	PK	4.80E-08	-43.2	-16.0	-27.2	EUT Vertical, High Ch
403.515	1.5	28.0	Vert	PK	2.65E-08	-45.8	-16.0	-29.8	EUT On Side, High Ch
403.510	1.0	230.0	Vert	PK	2.19E-08	-46.6	-16.0	-30.6	EUT Horizontal, High Ch
403.520	1.2	316.0	Horz	PK	2.10E-08	-46.8	-16.0	-30.8	EUT On Side, High Ch
403.505	1.0	78.0	Horz	PK	1.83E-08	-47.4	-16.0	-31.4	EUT Vertical, High Ch
402.825	1.6	41.0	Vert	PK	1.42E-08	-48.5	-16.0	-32.5	EUT Horizontal, Low Ch

Work Order:	BSTN0488	Date:	07/28/14		
Project:	None	Temperature:	23.3 °C		
Job Site:	MN05	Humidity:	46.6% RH		
Serial Number:	100182	Barometric Pres.:	1022.1 mbar	Tested by:	Johnathan Lee
EUT:	Emblem A219 S-ICD & Emblem A209 S-ICD				
Configuration:	2				
Customer:	Boston Scientific Corporation				
Attendees:	Dan Landherr				
EUT Power:	Battery				
Operating Mode:	Transmitting MICS CW: Low Channel = 402.81 MHz, High Channel = 403.51 MHz				
Deviations:	None				
Comments:	None				

Test Specifications	Test Method
LP0002:2016	LP0002:2016

Run #	2	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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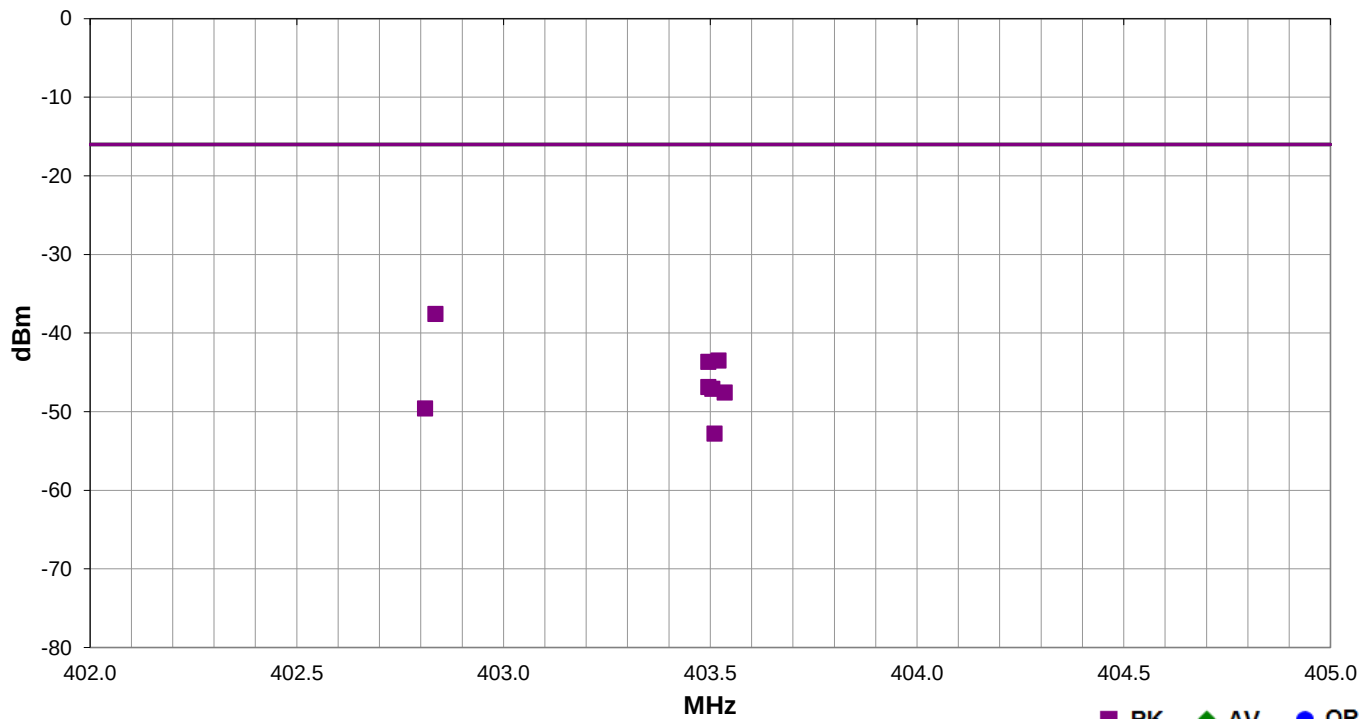


	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	402.820	1.6	321.0	Vert	PK	1.48E-07	-38.3	-16.0	-22.3	EUT On Side, Low Ch
	403.525	1.6	319.0	Vert	PK	1.38E-07	-38.6	-16.0	-22.6	EUT On Side, High Ch
	403.525	1.6	326.0	Vert	PK	7.26E-08	-41.4	-16.0	-25.4	EUT Vertical, High Ch
	403.515	1.1	246.0	Horz	PK	4.93E-08	-43.1	-16.0	-27.1	EUT Vertical, High Ch
	403.495	1.2	104.0	Horz	PK	4.50E-08	-43.5	-16.0	-27.5	EUT Horizontal, High Ch
	402.835	1.9	211.0	Horz	PK	4.20E-08	-43.8	-16.0	-27.8	EUT On Side, Low Ch
	403.530	2.0	220.0	Horz	PK	3.83E-08	-44.2	-16.0	-28.2	EUT On Side, High Ch
	403.500	1.0	93.0	Vert	PK	7.60E-09	-51.2	-16.0	-35.2	EUT Horizontal, High Ch

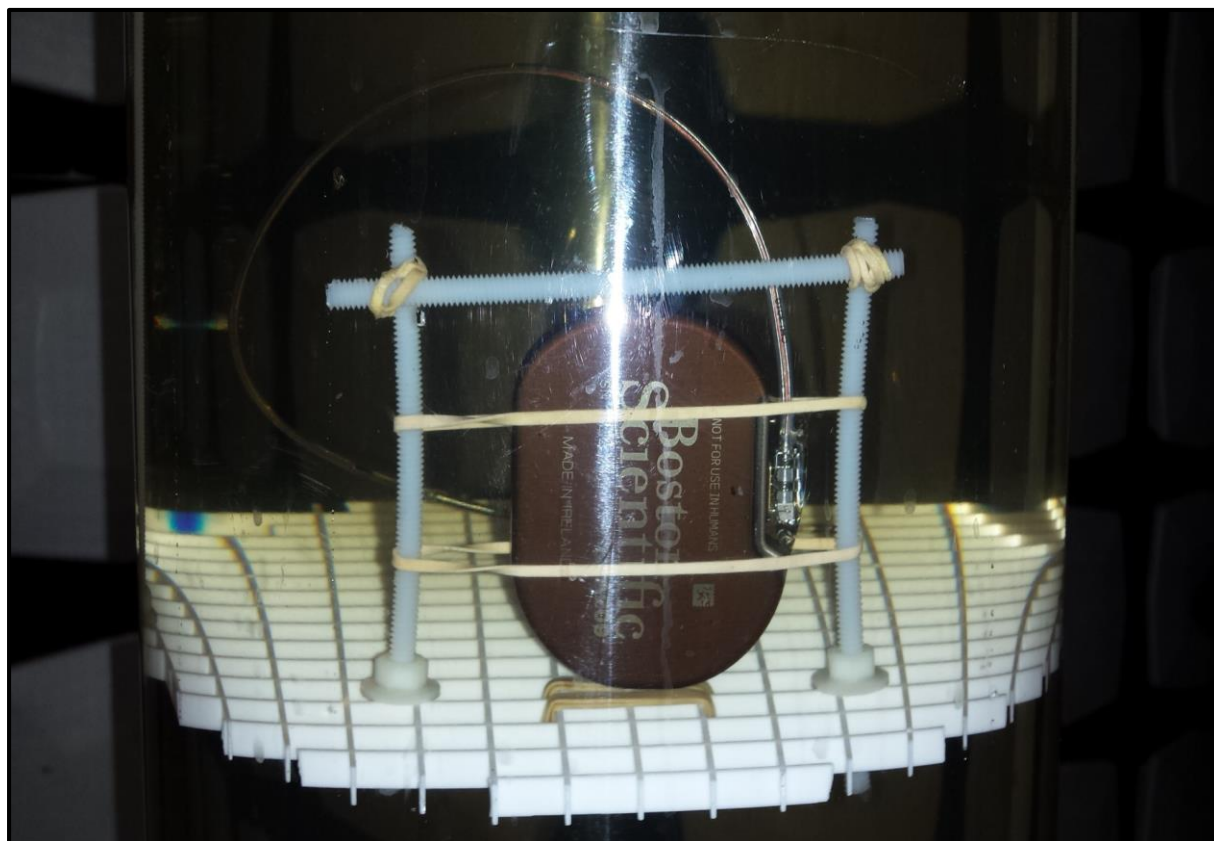
Work Order:	BSTN0488	Date:	07/28/14		
Project:	None	Temperature:	23.3 °C		
Job Site:	MN05	Humidity:	46.6% RH		
Serial Number:	100192	Barometric Pres.:	1022.1 mbar	Tested by:	Johnathan Lee
EUT:	Emblem A219 S-ICD & Emblem A209 S-ICD				
Configuration:	3				
Customer:	Boston Scientific Corporation				
Attendees:	Dan Landherr				
EUT Power:	Battery				
Operating Mode:	Transmitting MICS CW: Low Channel = 402.81 MHz, High Channel = 403.51 MHz				
Deviations:	None				
Comments:	None				

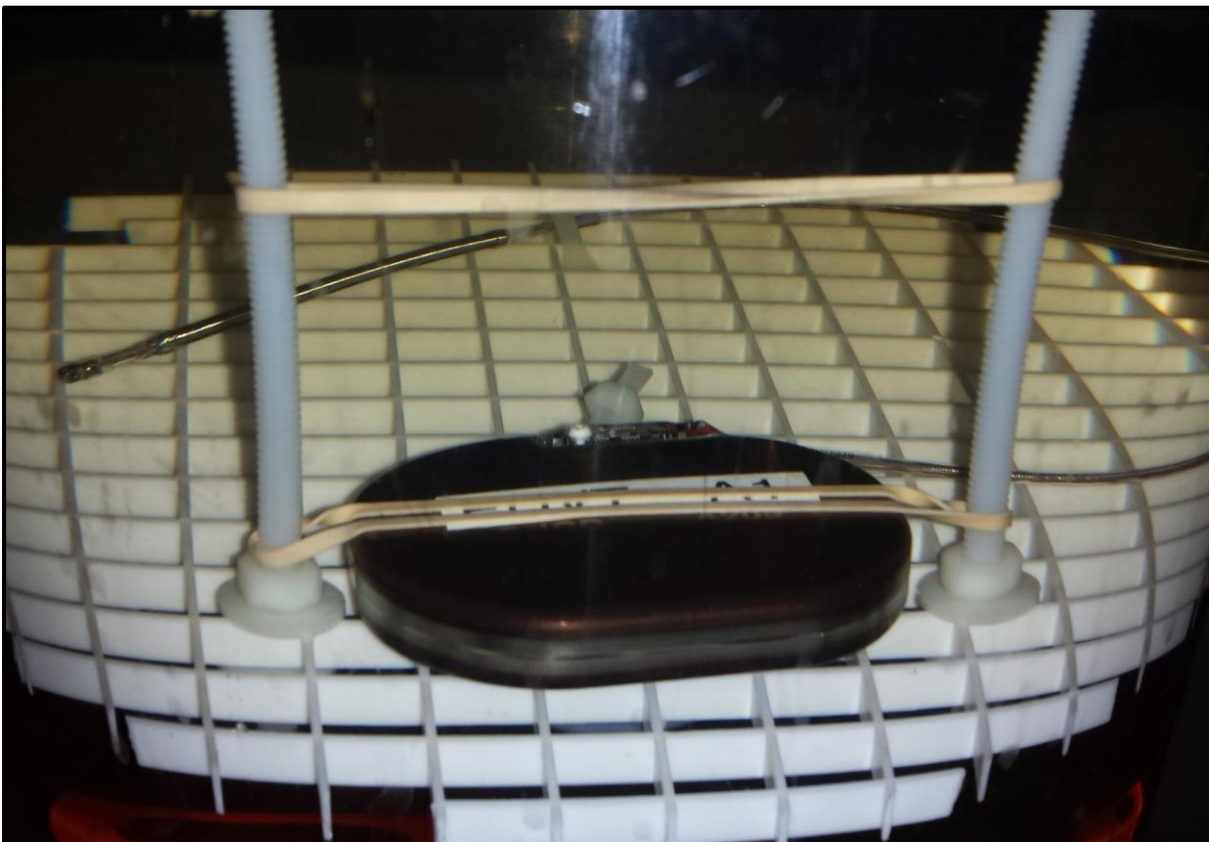
Test Specifications	Test Method
LP0002:2016	LP0002:2016

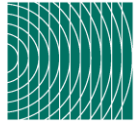
Run #	3	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	402.835	1.2	291.0	Horz	PK	1.75E-07	-37.6	-16.0	-21.6	EUT Horizontal, Low Ch
	403.520	1.6	333.0	Vert	PK	4.48E-08	-43.5	-16.0	-27.5	EUT Vertical, High Ch
	403.495	1.2	203.0	Horz	PK	4.30E-08	-43.7	-16.0	-27.7	EUT Horizontal, High Ch
	403.495	1.9	79.0	Horz	PK	2.06E-08	-46.9	-16.0	-30.9	EUT Vertical, High Ch
	403.505	1.0	109.0	Vert	PK	1.95E-08	-47.1	-16.0	-31.1	EUT On Side, High Ch
	403.535	1.0	62.0	Horz	PK	1.75E-08	-47.6	-16.0	-31.6	EUT On Side, High Ch
	402.810	2.7	101.0	Vert	PK	1.10E-08	-49.6	-16.0	-33.6	EUT Horizontal, Low Ch
	403.510	1.0	122.0	Vert	PK	5.26E-09	-52.8	-16.0	-36.8	EUT Horizontal, High Ch







UNWANTED SPURIOUS EMISSIONS TRANSMITTER (BAND EDGE)

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.)
DC Power Supply	EZ Digital Co	GP-4303D	TPY	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
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	E4440A	AAX	4/28/2014	12

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.

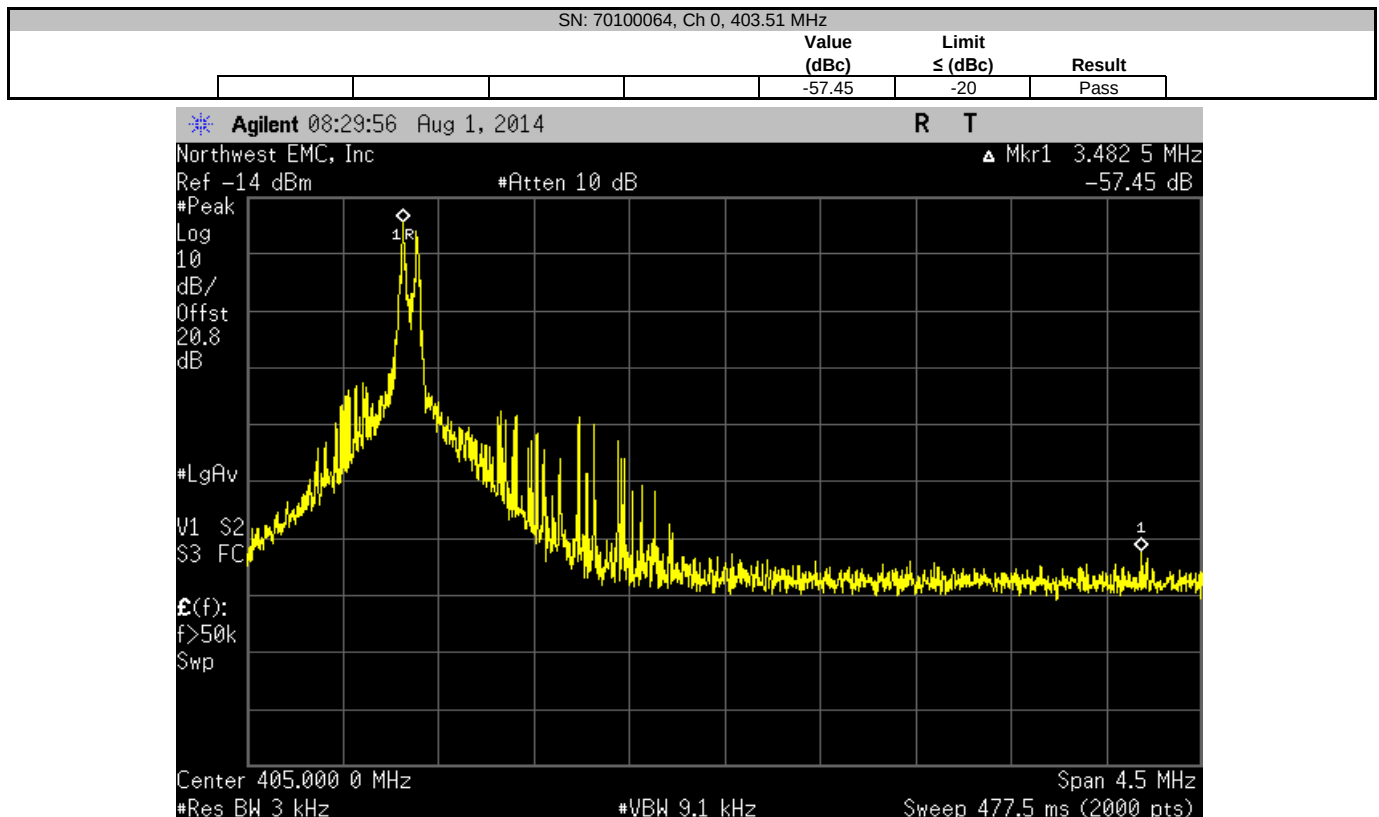
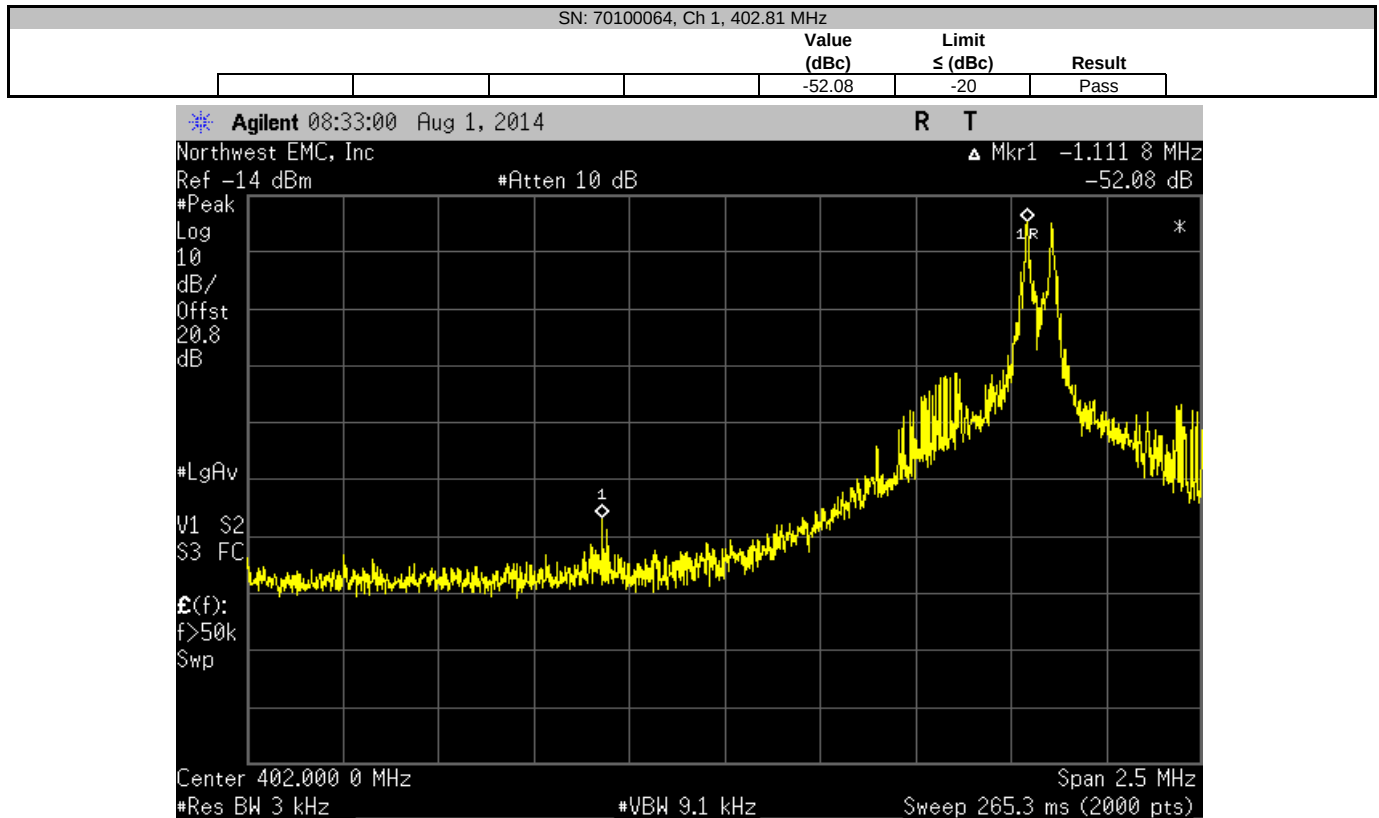
A spectrum analyzer was used to measure the emission mask. A spectrum analyzer using a peak detector with no video filtering was used with a resolution bandwidth equal to approximately 1.0 percent of the emission bandwidth of the EUT. However, various plots were made using different frequency spans and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

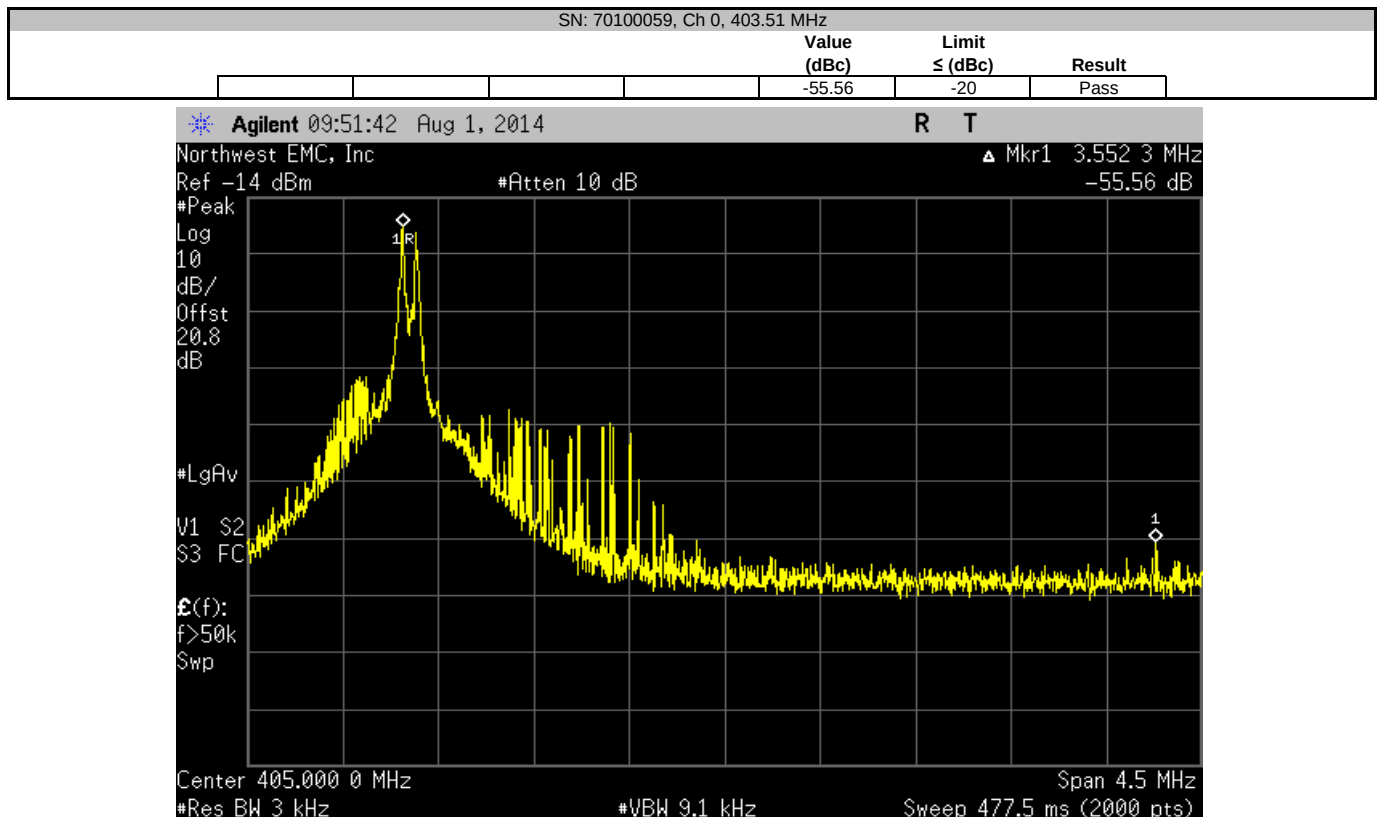
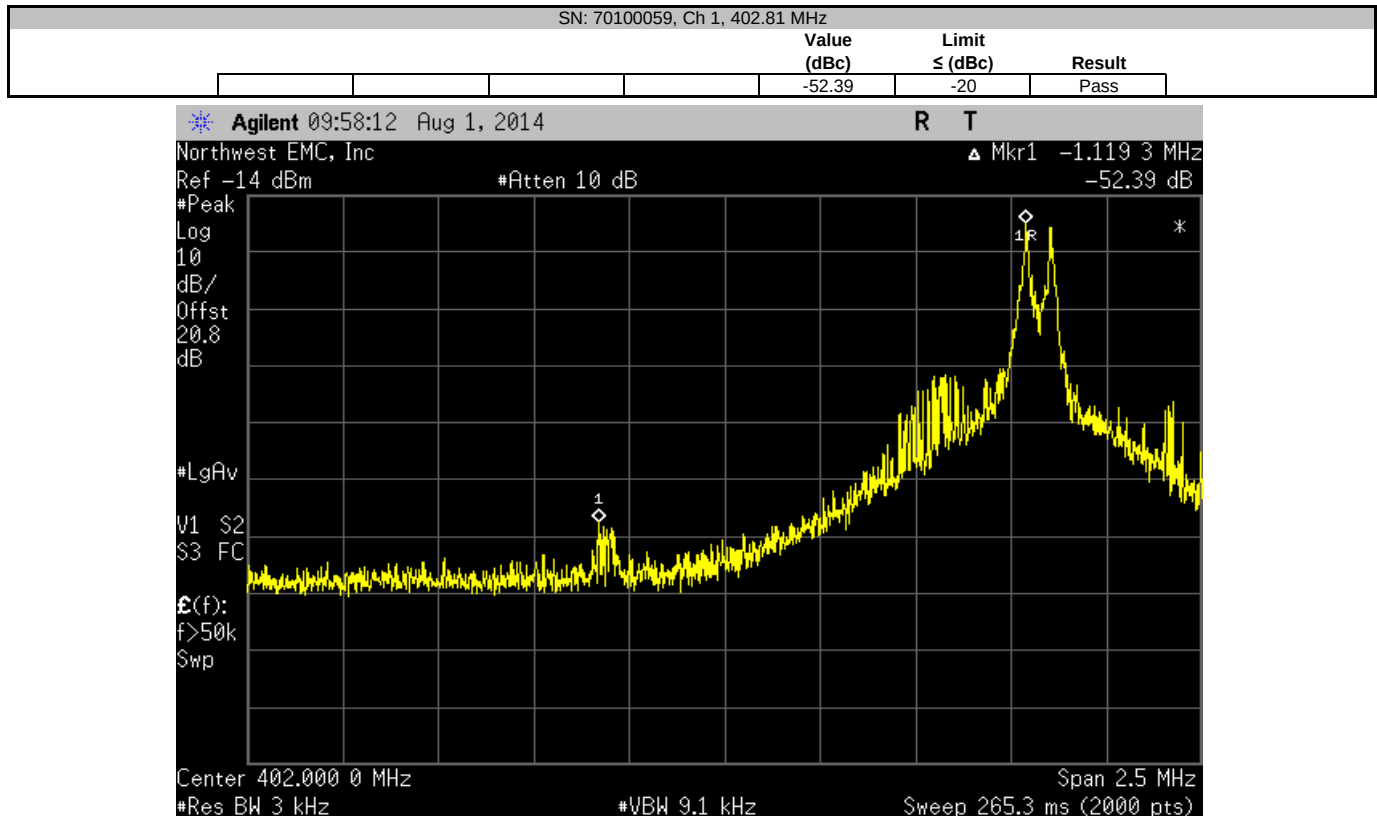


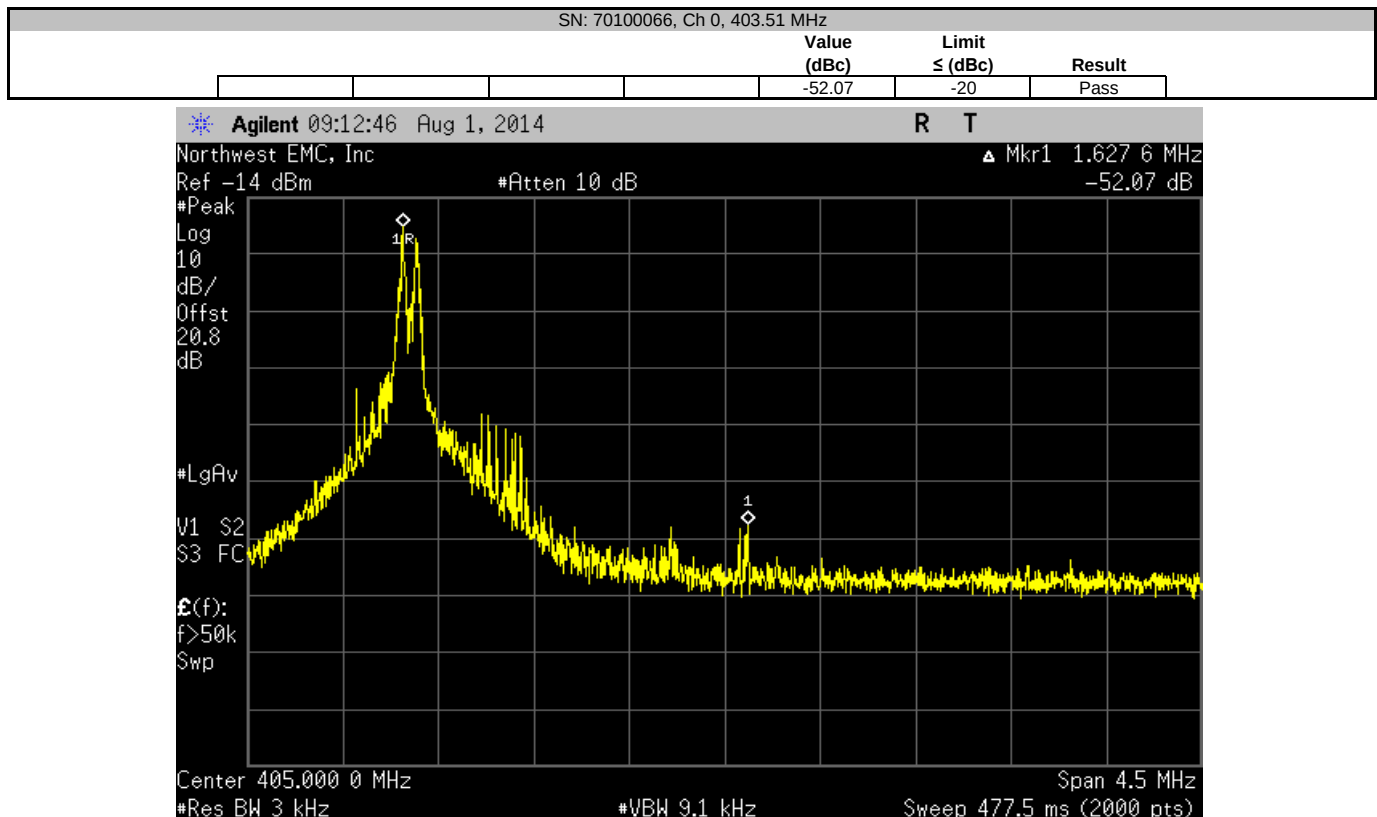
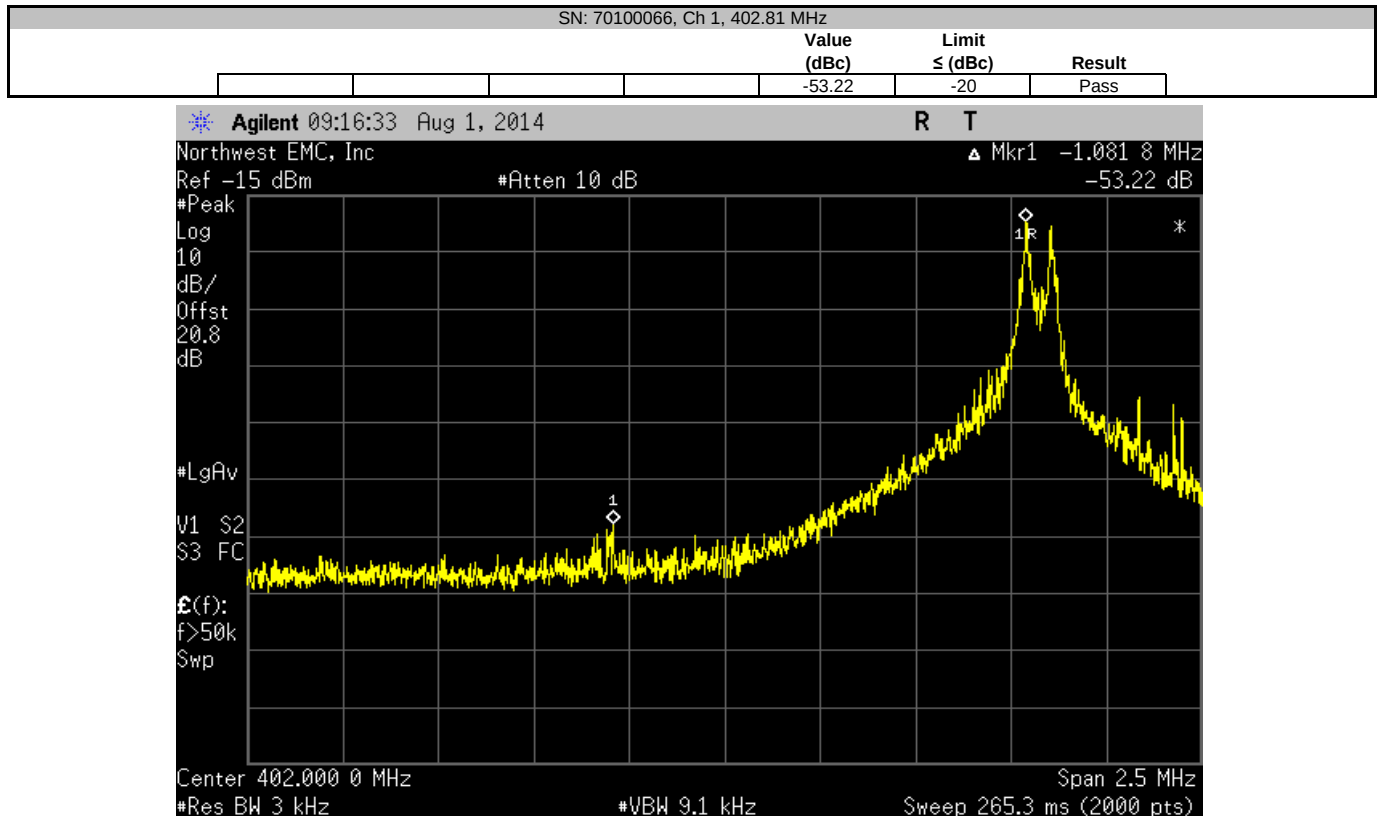
UNWANTED SPURIOUS EMISSIONS TRANSMITTER (BAND EDGE)

XMit 2014.02.07
NweTx 2014.07.18.2

EUT: Emblem A219 S-ICD & Emblem A209 S-ICD		Work Order: BSTN0488	
Serial Number: See Below		Date: 08/01/14	
Customer: Boston Scientific Corporation		Temperature: 23.6°C	
Attendees: Daniel Landherr		Humidity: 52%	
Project: None		Barometric Pres.: 1020.6	
Tested by: Trevor Buls		Power: Battery	
		Job Site: MN08	
TEST SPECIFICATIONS		Test Method	
LP0002:2016		LP0002:2016	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	4,5,6	Signature <i>Trevor Buls</i>	
		Value (dBc)	Limit ≤ (dBc) Result
SN: 70100064			
Ch 1, 402.81 MHz		-52.08	-20 Pass
Ch 0, 403.51 MHz		-57.45	-20 Pass
SN: 70100059			
Ch 1, 402.81 MHz		-52.39	-20 Pass
Ch 0, 403.51 MHz		-55.56	-20 Pass
SN: 70100066			
Ch 1, 402.81 MHz		-53.22	-20 Pass
Ch 0, 403.51 MHz		-52.07	-20 Pass







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.)
DC Power Supply	EZ Digital Co	GP-4303D	TPY	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
Signal Generator MXG	Agilent	N5183A	TIK	6/7/2012	36
Spectrum Analyzer	Agilent	E4440A	AAX	4/28/2014	12

TEST DESCRIPTION

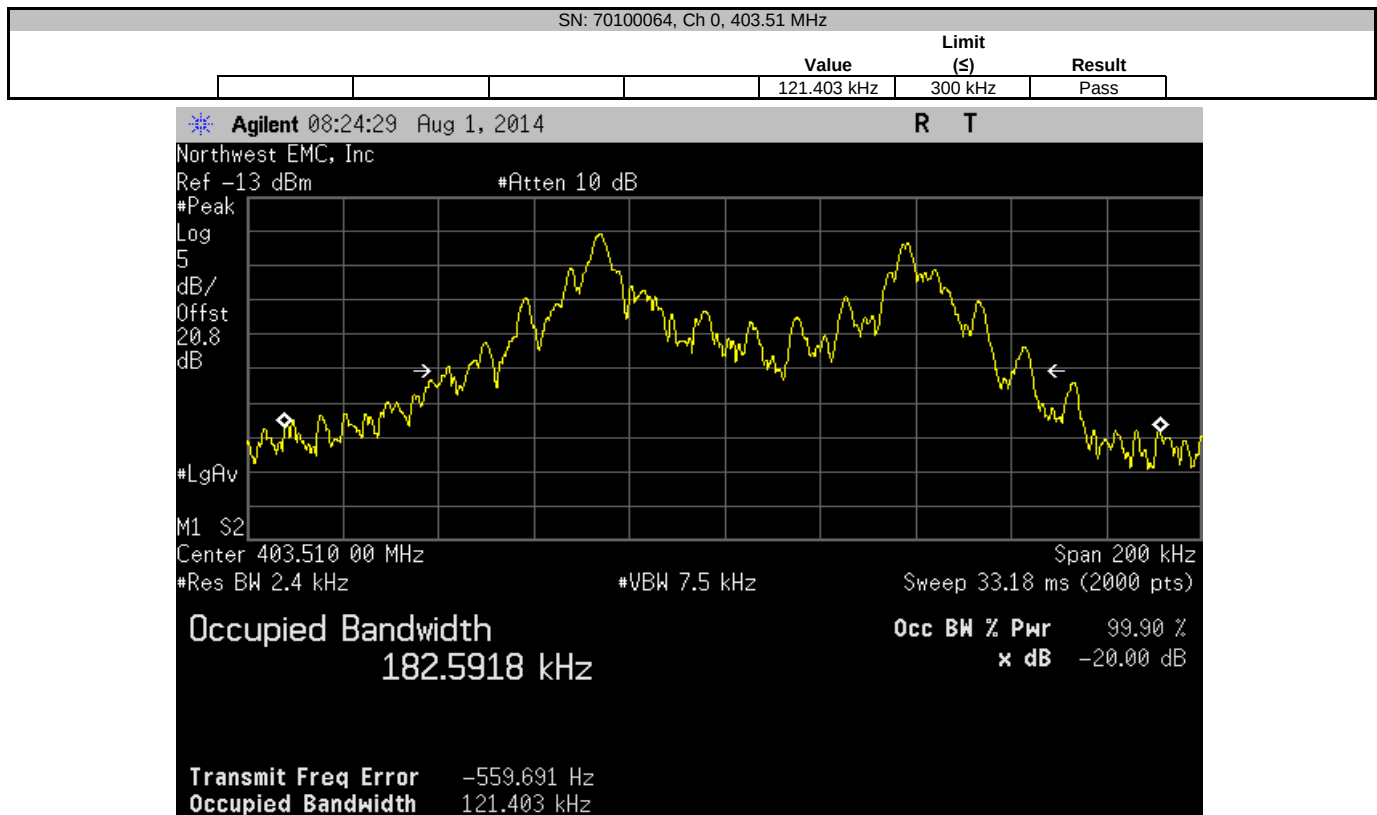
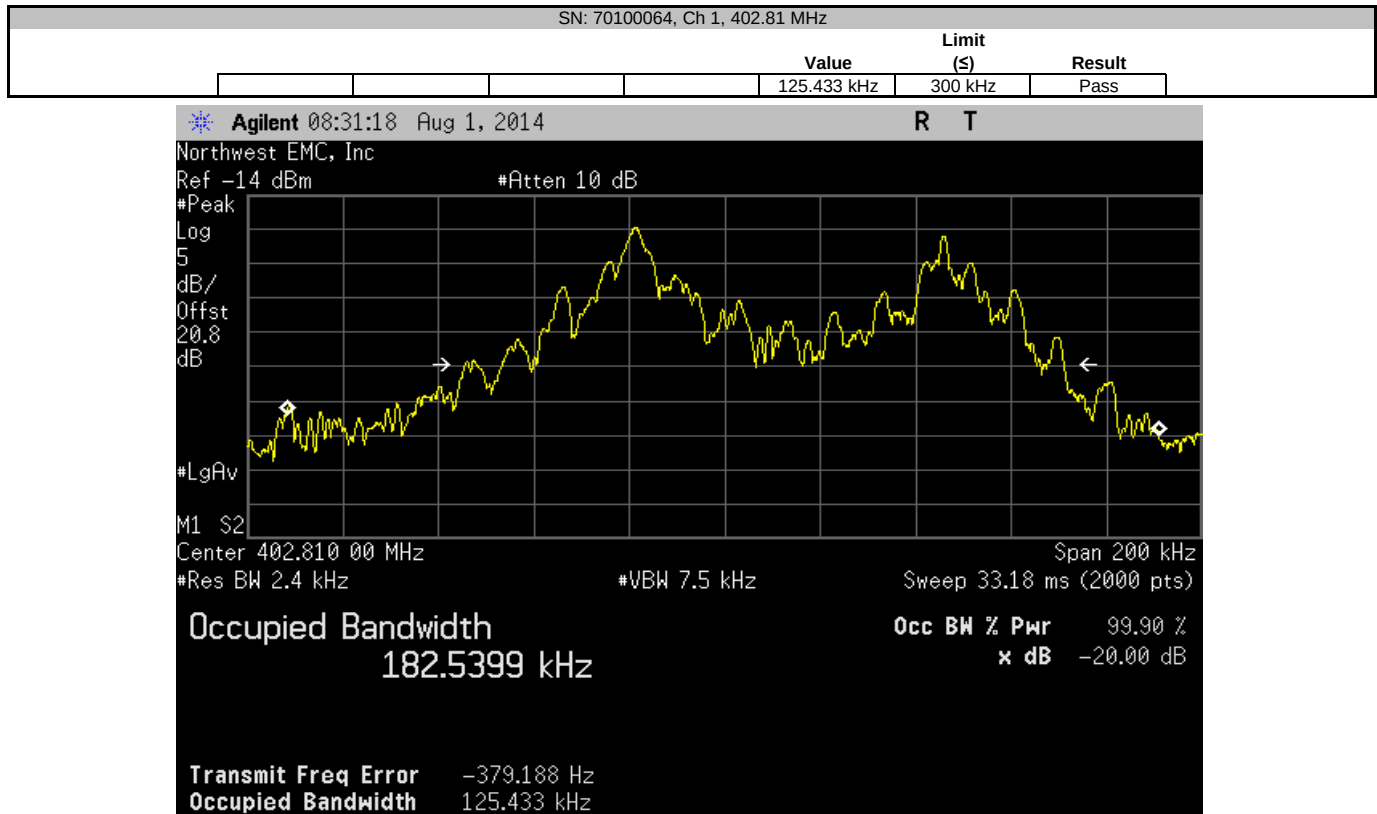
The emission bandwidth was determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 20 dB down relative to the maximum level of the modulated carrier. A spectrum analyzer using a peak detector with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

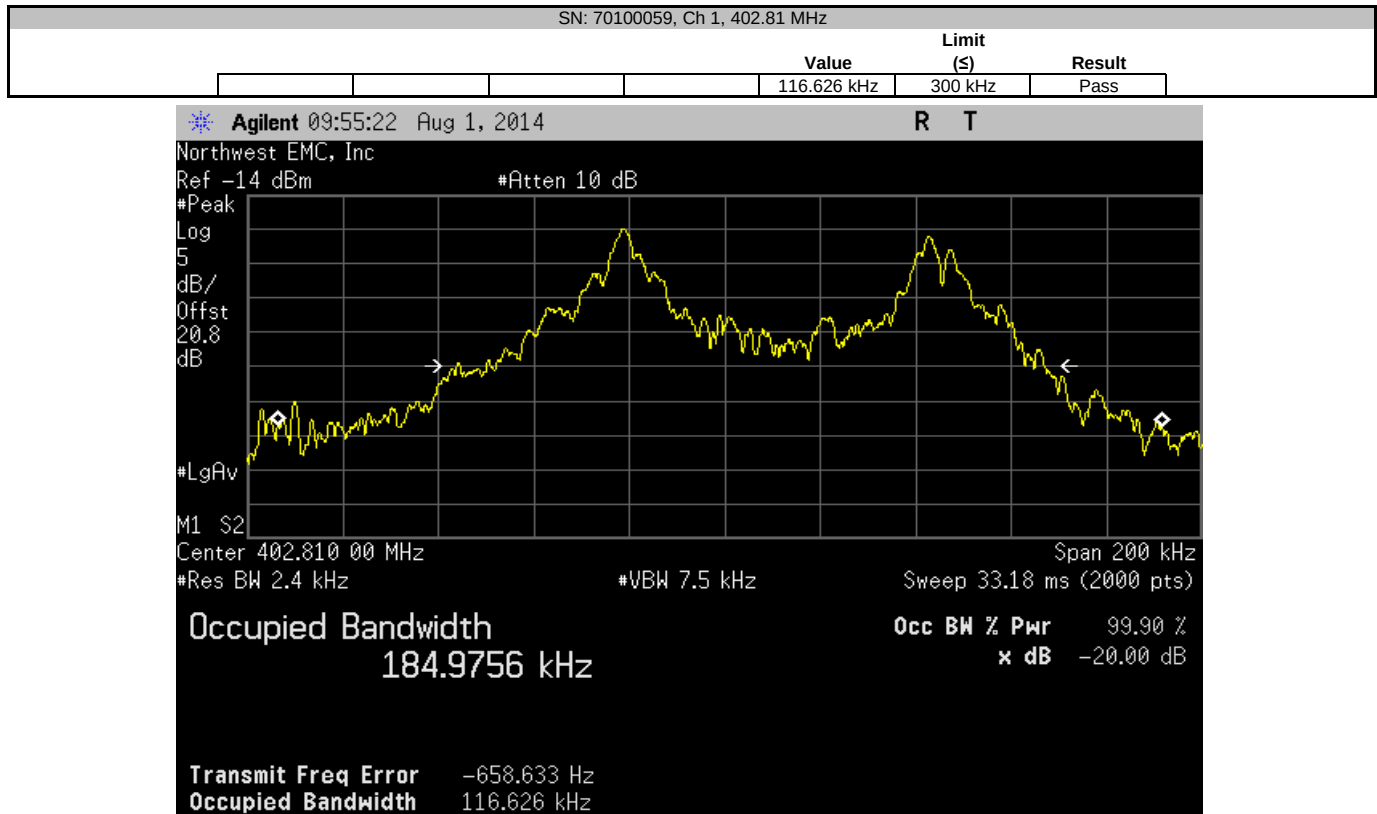


EMISSIONS BANDWIDTH

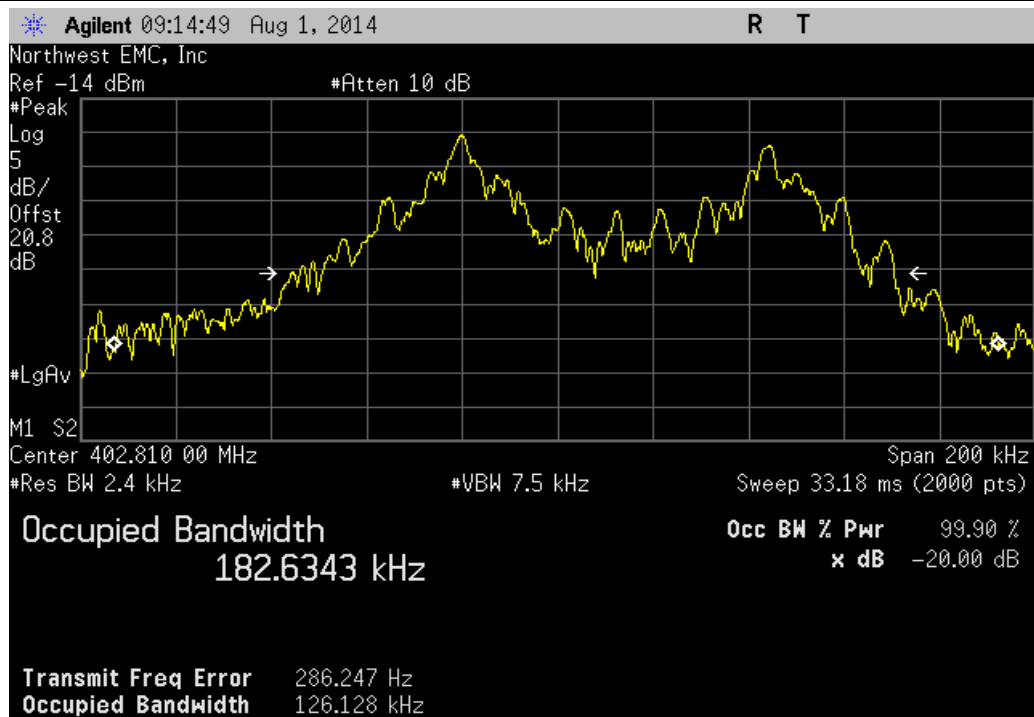
XMit 2014.02.07
NweTx 2014.07.18.2

EUT: Emblem A219 S-ICD & Emblem A209 S-ICD		Work Order: BSTN0488	
Serial Number: See Below		Date: 08/01/14	
Customer: Boston Scientific Corporation		Temperature: 23.6°C	
Attendees: Daniel Landherr		Humidity: 52%	
Project: None		Barometric Pres.: 1020.6	
Tested by: Trevor Buls		Power: Battery	
		Job Site: MN08	
TEST SPECIFICATIONS		Test Method	
LP0002:2016		LP0002:2016	
COMMENTS			
None			
DEVIATIONS FROM TEST STANDARD			
None			
Configuration #	4,5,6	Signature <i>Trevor Buls</i>	
		Value	Limit (S) Result
SN: 70100064		Ch 1, 402.81 MHz	125.433 kHz 300 kHz Pass
		Ch 0, 403.51 MHz	121.403 kHz 300 kHz Pass
SN: 70100059		Ch 1, 402.81 MHz	116.626 kHz 300 kHz Pass
		Ch 0, 403.51 MHz	121.2 kHz 300 kHz Pass
SN: 70100066		Ch 1, 402.81 MHz	126.128 kHz 300 kHz Pass
		Ch 0, 403.51 MHz	122.198 kHz 300 kHz Pass

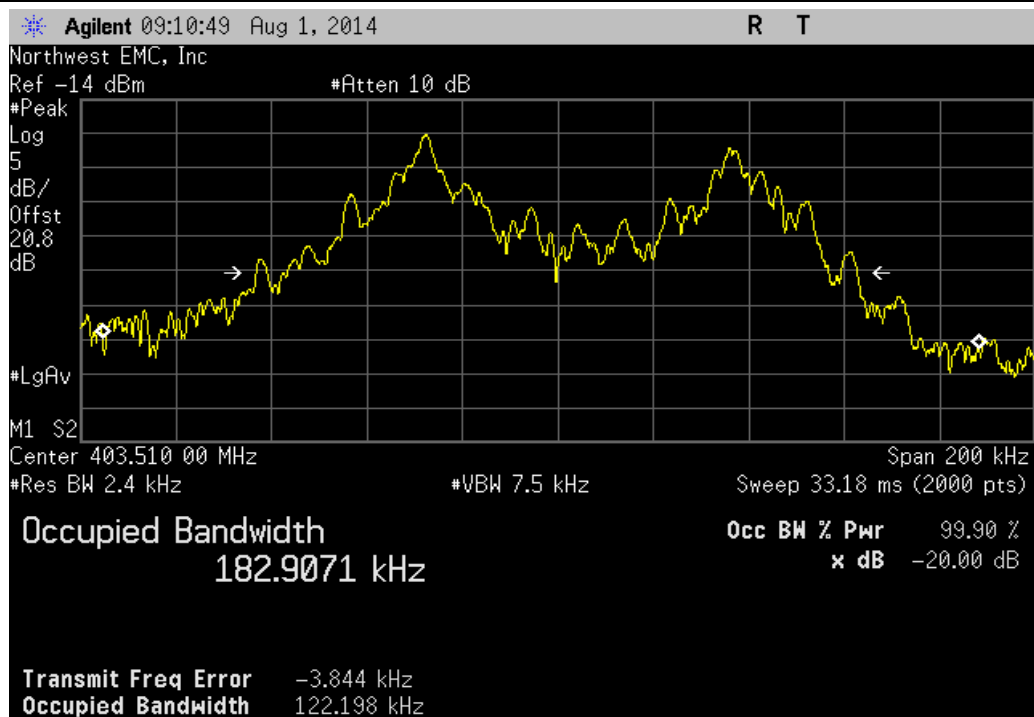




SN: 70100066, Ch 1, 402.81 MHz					Limit	Result
					(S)	
				Value		
				126.128 kHz	300 kHz	Pass



SN: 70100066, Ch 0, 403.51 MHz					Limit	Result
					(S)	
				Value		
				122.198 kHz	300 kHz	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

Receiving MICS: Low Channel = 402.81 MHz, High Channel = 403.51 MHz

POWER SETTINGS INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

BSTN0488 - 1

BSTN0488 - 2

BSTN0488 - 3

FREQUENCY RANGE INVESTIGATED

Start Frequency	25 MHz	Stop Frequency	4 GHz
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SAMPLE CALCULATIONS

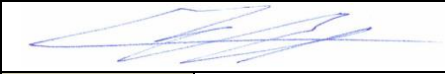
Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
RF Ecal Module	Agilent	85092C	NAMA	12/19/2013	36 mo
Network Analyzer	Agilent	E5071C	NAM	11/28/2013	36 mo
Dielectric Probe Kit	Agilent	85070E	IPP	NCR	0 mo
Power Sensor	Agilent	N8481A	SQN	8/27/2012	24 mo
Power Meter	Agilent	N1913A	SQL	8/27/2012	24 mo
Antenna, Dipole	EMCO	3121C-DB4	ADI	12/21/2012	36 mo
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
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
Comb Generator Emitter	ARC Technical Resources, Inc.	CGE01KIT01	TUB	NCR	0 mo
Comb Generator Radiated	KJR Enterprises	Harmonics	TCT	NCR	0 mo
Humidity Temperature Meter	Omega Engineering, Inc.	HH31	DUB	10/25/2011	36 mo

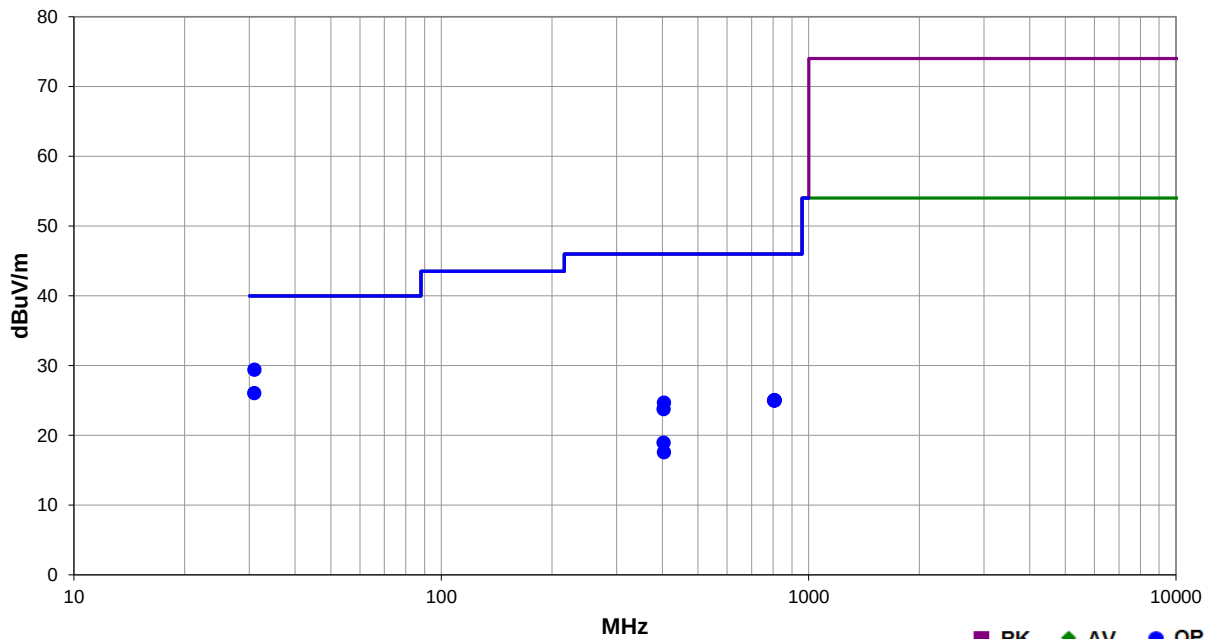
TEST DESCRIPTION

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). A preamp was used for this test in order to provide sufficient measurement sensitivity.

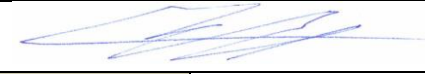
Work Order:	BSTN0488	Date:	07/28/14	
Project:	None	Temperature:	23.2 °C	
Job Site:	MN05	Humidity:	48.6% RH	
Serial Number:	100192	Barometric Pres.:	1021.7 mbar	
EUT:	Emblem A219 S-ICD & Emblem A209 S-ICD			Tested by: Johnathan Lee
Configuration:	3			
Customer:	Boston Scientific Corporation			
Attendees:	None			
EUT Power:	Battery			
Operating Mode:	Receiving MICS: Low Channel = 402.81 MHz, High Channel = 403.51 MHz			
Deviations:	None			
Comments:	None			

Test Specifications	Test Method
LP0002:2016	LP0002:2016

Run #	7	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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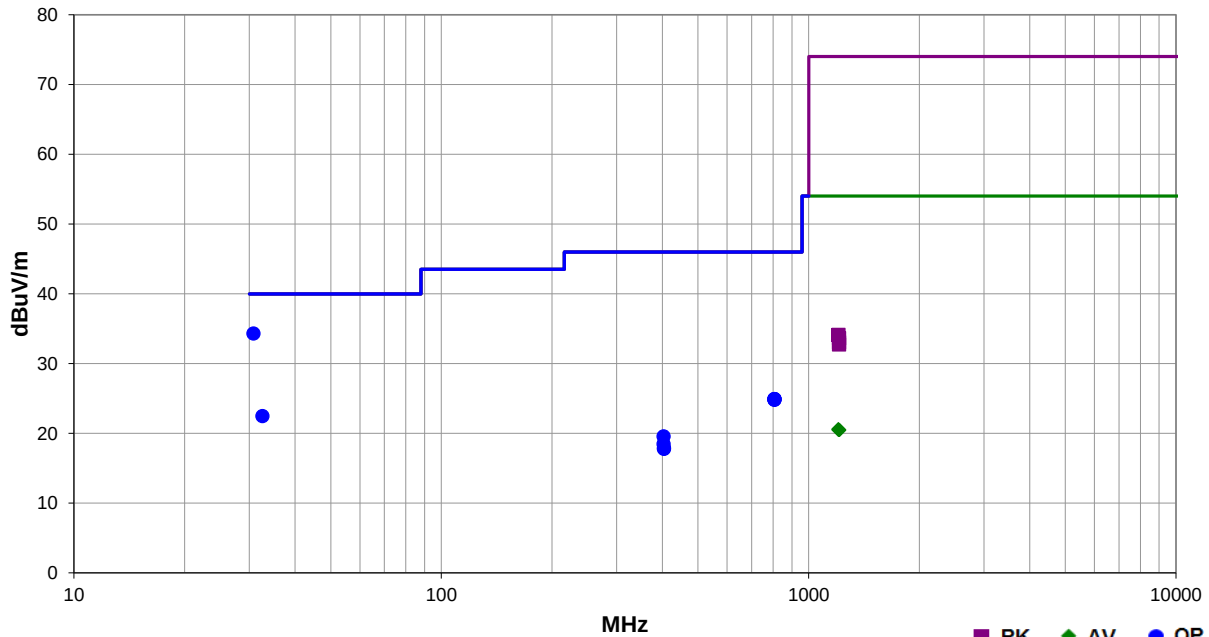


Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
30.982	24.8	4.6	2.7	322.0	3.0	0.0	Vert	QP	0.0	29.4	40.0	-10.6
30.934	21.4	4.7	3.7	121.0	3.0	0.0	Vert	QP	0.0	26.1	40.0	-13.9
808.503	16.6	8.4	1.0	269.0	3.0	0.0	Horz	QP	0.0	25.0	46.0	-21.0
807.278	16.6	8.4	1.0	47.0	3.0	0.0	Horz	QP	0.0	25.0	46.0	-21.0
806.508	16.6	8.4	1.0	148.0	3.0	0.0	Vert	QP	0.0	25.0	46.0	-21.0
804.760	16.6	8.4	1.0	24.0	3.0	0.0	Vert	QP	0.0	25.0	46.0	-21.0
403.673	23.9	0.8	1.2	279.0	3.0	0.0	Horz	QP	0.0	24.7	46.0	-21.3
402.680	23.0	0.8	2.3	329.0	3.0	0.0	Horz	QP	0.0	23.8	46.0	-22.2
402.682	18.2	0.8	1.0	115.0	3.0	0.0	Vert	QP	0.0	19.0	46.0	-27.0
403.678	16.8	0.8	2.0	273.0	3.0	0.0	Vert	QP	0.0	17.6	46.0	-28.4

Work Order:	BSTN0488	Date:	07/29/14	
Project:	None	Temperature:	23.2 °C	
Job Site:	MN05	Humidity:	51.3% RH	
Serial Number:	100182	Barometric Pres.:	1019.5 mbar	
EUT:	Emblem A219 S-ICD & Emblem A209 S-ICD			
Configuration:	2			
Customer:	Boston Scientific Corporation			
Attendees:	None			
EUT Power:	Battery			
Operating Mode:	Receiving MICS: Low Channel = 402.81 MHz, High Channel = 403.51 MHz			
Deviations:	None			
Comments:	None			

Test Specifications	Test Method
LP0002:2016	LP0002:2016

Run #	11	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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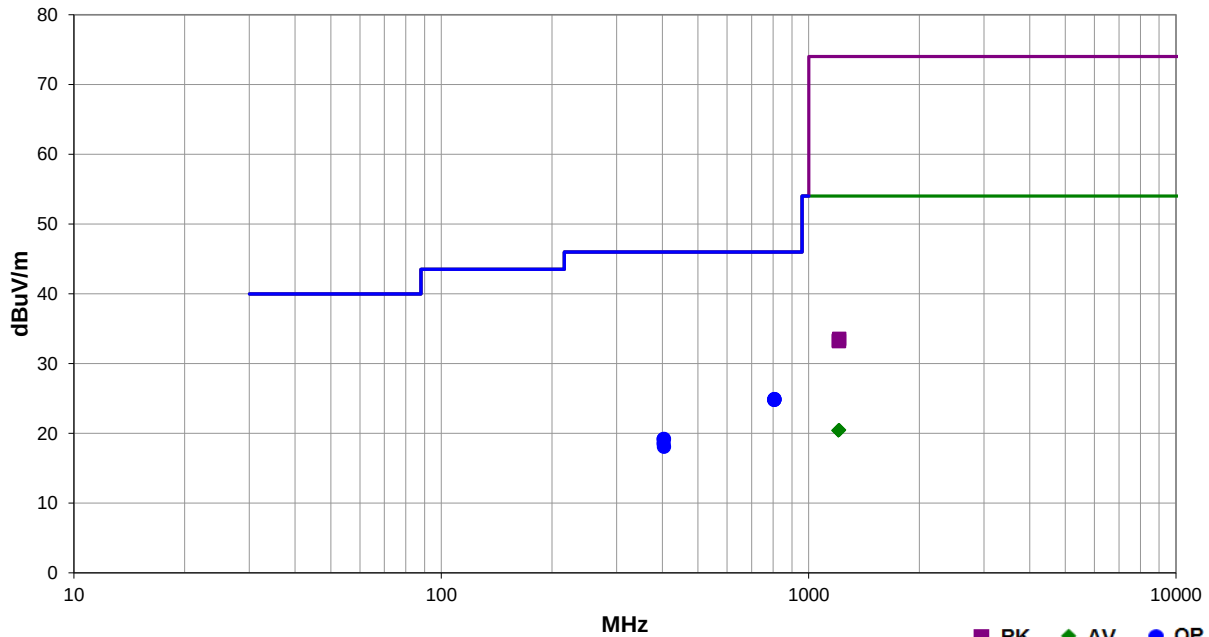


Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
30.782	29.6	4.7	1.0	38.0	3.0	0.0	Vert	QP	0.0	34.3	40.0	-5.7
32.569	18.6	3.9	1.0	271.0	3.0	0.0	Vert	QP	0.0	22.5	40.0	-17.5
402.678	18.8	0.8	1.0	255.0	3.0	0.0	Horz	QP	0.0	19.6	46.0	-26.4
402.683	17.7	0.8	1.0	317.0	3.0	0.0	Vert	QP	0.0	18.5	46.0	-27.5
403.673	17.0	0.8	1.4	113.0	3.0	0.0	Vert	QP	0.0	17.8	46.0	-28.2
403.683	17.1	0.8	1.0	48.0	3.0	0.0	Horz	QP	0.0	17.9	46.0	-28.1
806.668	16.5	8.4	1.0	65.0	3.0	0.0	Vert	QP	0.0	24.9	46.0	-21.1
806.680	16.5	8.4	1.0	133.0	3.0	0.0	Horz	QP	0.0	24.9	46.0	-21.1
806.835	16.4	8.4	1.0	107.0	3.0	0.0	Horz	QP	0.0	24.8	46.0	-21.2
806.947	16.5	8.4	1.0	329.0	3.0	0.0	Vert	QP	0.0	24.9	46.0	-21.1
1205.938	27.1	-6.5	3.0	96.0	3.0	0.0	Horz	AV	0.0	20.6	54.0	-33.4
1206.088	40.6	-6.5	3.0	96.0	3.0	0.0	Horz	PK	0.0	34.1	54.0	-19.9
1206.288	27.0	-6.5	1.0	242.0	3.0	0.0	Vert	AV	0.0	20.5	54.0	-33.5
1210.247	39.5	-6.5	1.0	151.0	3.0	0.0	Horz	PK	0.0	33.0	54.0	-21.0
1210.430	39.2	-6.5	1.0	50.0	3.0	0.0	Vert	PK	0.0	32.7	54.0	-21.3
1210.480	40.1	-6.5	1.0	242.0	3.0	0.0	Vert	PK	0.0	33.6	54.0	-20.4
1211.855	26.9	-6.4	1.0	151.0	3.0	0.0	Horz	AV	0.0	20.5	54.0	-33.5
1212.838	26.9	-6.4	1.0	50.0	3.0	0.0	Vert	AV	0.0	20.5	54.0	-33.5

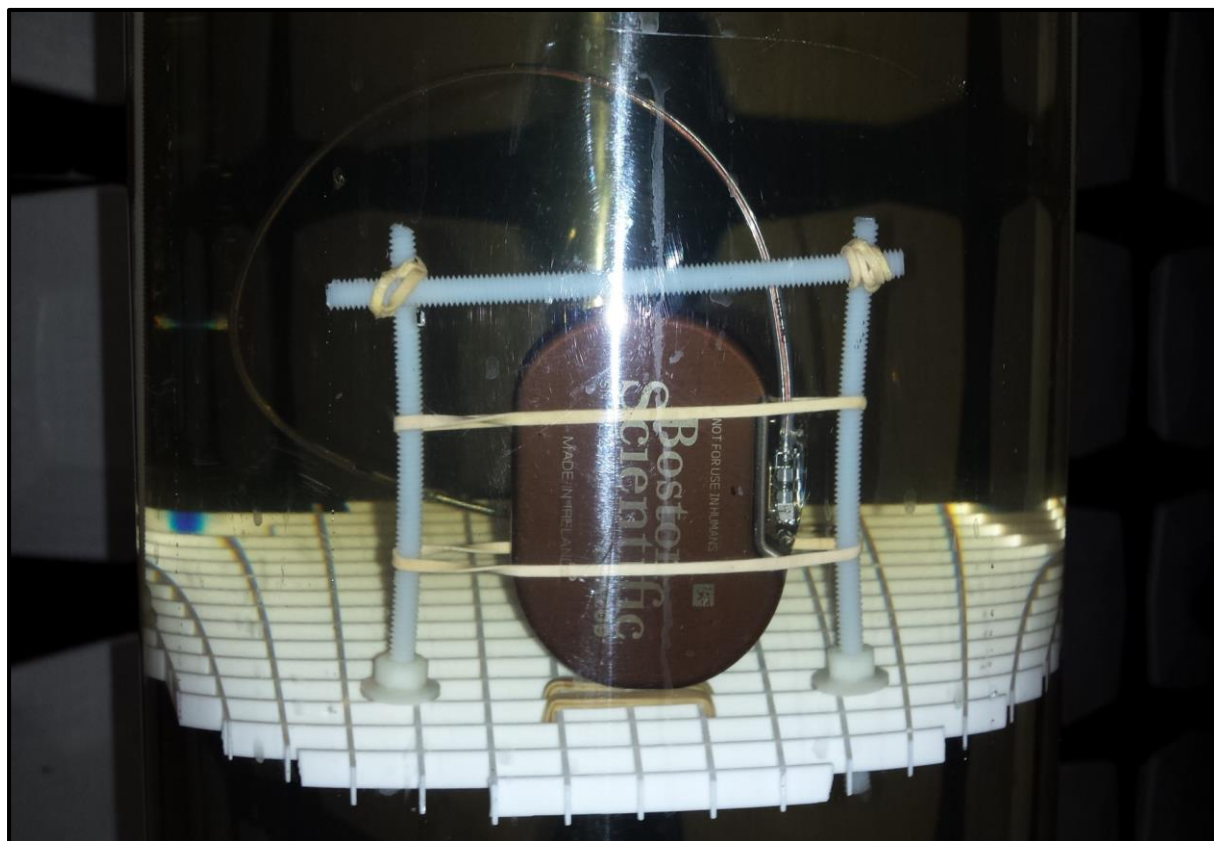
Work Order:	BSTN0488	Date:	07/29/14	
Project:	None	Temperature:	23.2 °C	
Job Site:	MN05	Humidity:	51.3% RH	
Serial Number:	100140	Barometric Pres.:	1019.5 mbar	
EUT: Emblem A219 S-ICD & Emblem A209 S-ICD				Tested by: Johnathan Lee
Configuration:	1			
Customer:	Boston Scientific Corporation			
Attendees:	None			
EUT Power:	Battery			
Operating Mode:	Receiving MICS: 403.51 MHz			
Deviations:	None			
Comments:	None			

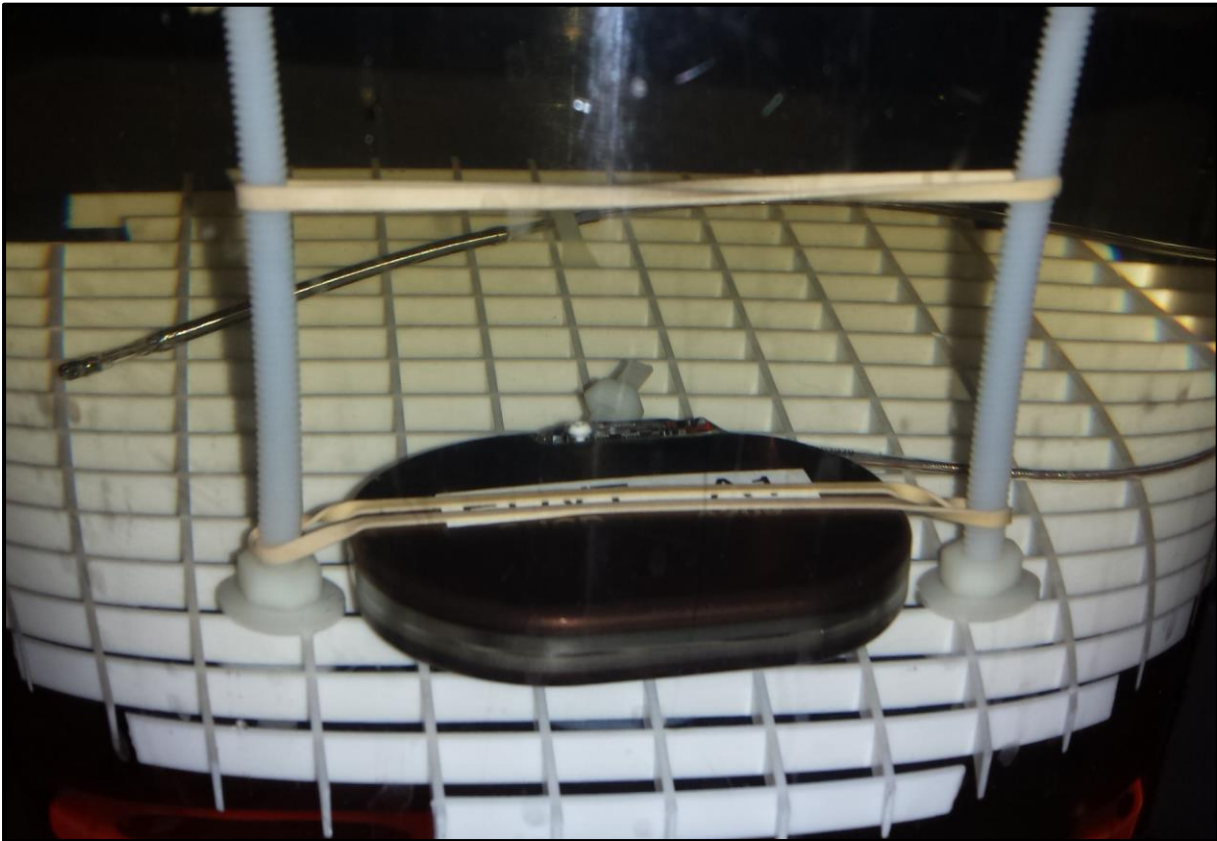
Test Specifications	Test Method
LP0002:2016	LP0002:2016

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)
402.682	18.4	0.8	3.7	315.0	3.0	0.0	Horz	QP	0.0	19.2	46.0	-26.8
402.682	17.8	0.8	1.0	23.0	3.0	0.0	Vert	QP	0.0	18.6	46.0	-27.4
403.675	17.3	0.8	1.0	43.0	3.0	0.0	Vert	QP	0.0	18.1	46.0	-27.9
403.677	18.4	0.8	1.0	235.0	3.0	0.0	Horz	QP	0.0	19.2	46.0	-26.8
805.772	16.4	8.4	1.0	254.0	3.0	0.0	Vert	QP	0.0	24.8	46.0	-21.2
806.050	16.4	8.4	1.0	80.0	3.0	0.0	Horz	QP	0.0	24.8	46.0	-21.2
806.683	16.5	8.4	1.0	88.0	3.0	0.0	Horz	QP	0.0	24.9	46.0	-21.1
807.282	16.5	8.4	1.0	312.0	3.0	0.0	Vert	QP	0.0	24.9	46.0	-21.1
1205.988	26.9	-6.5	1.0	272.0	3.0	0.0	Horz	AV	0.0	20.4	54.0	-33.6
1205.988	26.9	-6.5	1.0	293.0	3.0	0.0	Vert	AV	0.0	20.4	54.0	-33.6
1208.447	39.8	-6.5	1.0	293.0	3.0	0.0	Vert	PK	0.0	33.3	54.0	-20.7
1209.080	39.7	-6.5	1.0	6.0	3.0	0.0	Vert	PK	0.0	33.2	54.0	-20.8
1210.297	39.7	-6.5	1.0	272.0	3.0	0.0	Horz	PK	0.0	33.2	54.0	-20.8
1210.838	40.0	-6.5	2.0	83.0	3.0	0.0	Horz	PK	0.0	33.5	54.0	-20.5
1212.038	26.9	-6.4	2.0	83.0	3.0	0.0	Horz	AV	0.0	20.5	54.0	-33.5
1212.055	26.9	-6.4	1.0	6.0	3.0	0.0	Vert	AV	0.0	20.5	54.0	-33.5





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 MICS Modulated: Low Channel = 402.81 MHz, High Channel = 403.51 MHz

POWER SETTINGS INVESTIGATED

Battery

CONFIGURATIONS INVESTIGATED

BSTN0488 - 1

BSTN0488 - 2

BSTN0488 - 3

FREQUENCY RANGE INVESTIGATED

Start Frequency	25 MHz	Stop Frequency	4 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
RF Ecal Module	Agilent	85092C	NAMA	12/19/2013	36 mo
Network Analyzer	Agilent	E5071C	NAM	11/28/2013	36 mo
Dielectric Probe Kit	Agilent	85070E	IPP	NCR	0 mo
Power Sensor	Agilent	N8481A	SQN	8/27/2012	24 mo
Power Meter	Agilent	N1913A	SQL	8/27/2012	24 mo
Antenna, Dipole	EMCO	3121C-DB4	ADI	12/21/2012	36 mo
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
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
Comb Generator Emitter	ARC Technical Resources, Inc.	CGE01KIT01	TUB	NCR	0 mo
Comb Generator Radiated	KJR Enterprises	Harmonics	TCT	NCR	0 mo
Humidity Temperature Meter	Omega Engineering, Inc.	HH31	DUB	10/25/2011	36 mo

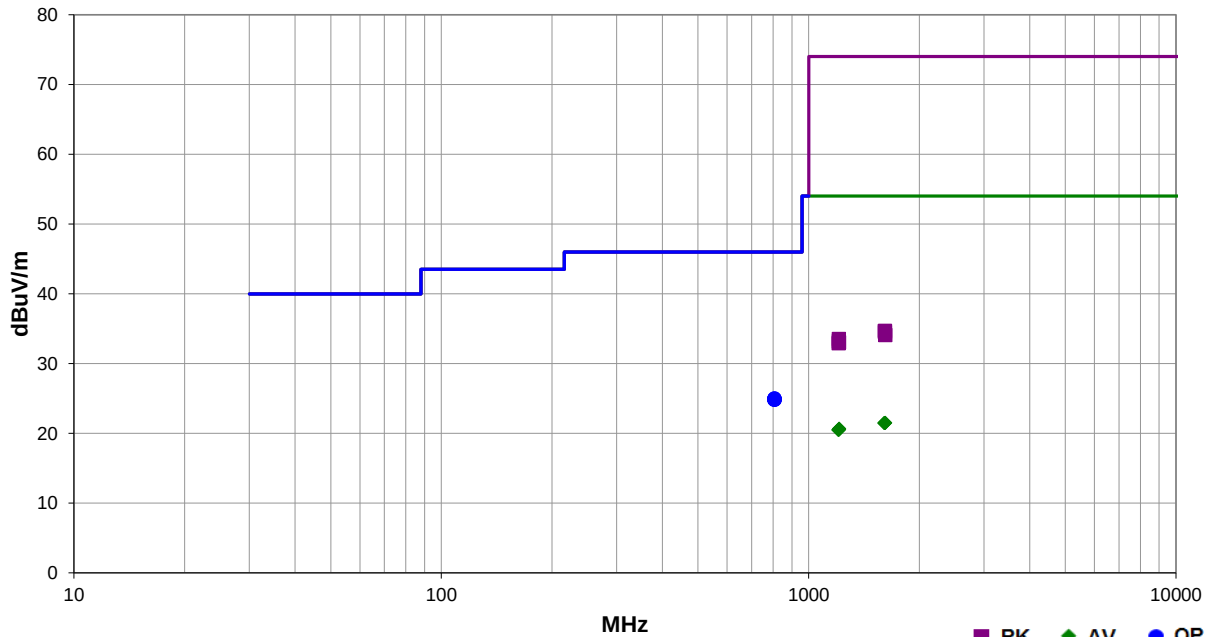
TEST DESCRIPTION

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). A preamp was used for this test in order to provide sufficient measurement sensitivity.

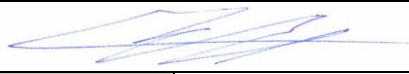
Work Order:	BSTN0488	Date:	07/28/14	
Project:	None	Temperature:	23.2 °C	
Job Site:	MN05	Humidity:	48.6% RH	
Serial Number:	100192	Barometric Pres.:	1021.7 mbar	
EUT:	Emblem A219 S-ICD & Emblem A209 S-ICD			
Configuration:	3			
Customer:	Boston Scientific Corporation			
Attendees:	None			
EUT Power:	Battery			
Operating Mode:	Transmitting MICS Modulated			
Deviations:	None			
Comments:	None			

Test Specifications	Test Method
LP0002:2016	LP0002:2016

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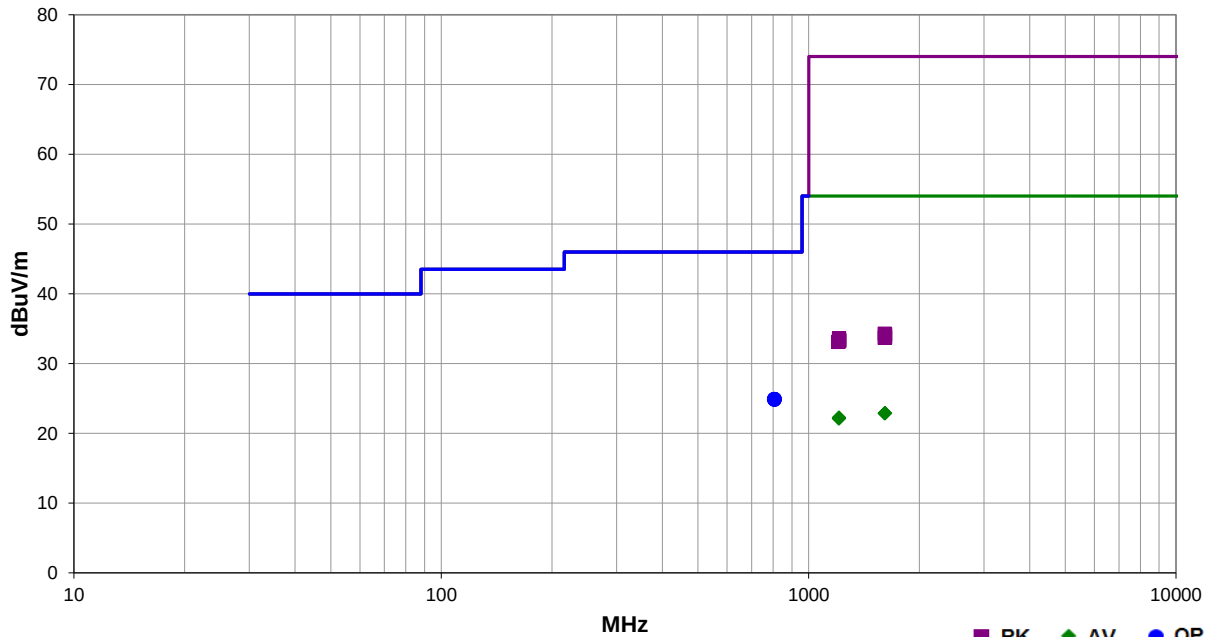


Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
806.985	16.6	8.4	1.1	345.0	3.0	0.0	Vert	QP	0.0	25.0	46.0	-21.0
807.818	16.5	8.4	1.0	7.0	3.0	0.0	Horz	QP	0.0	24.9	46.0	-21.1
807.155	16.5	8.4	1.1	117.0	3.0	0.0	Horz	QP	0.0	24.9	46.0	-21.1
806.873	16.5	8.4	1.0	290.0	3.0	0.0	Vert	QP	0.0	24.9	46.0	-21.1
806.382	16.5	8.4	1.0	17.0	3.0	0.0	Vert	QP	0.0	24.9	46.0	-21.1
805.975	16.5	8.4	1.0	196.0	3.0	0.0	Horz	QP	0.0	24.9	46.0	-21.1
808.753	16.4	8.4	1.0	167.0	3.0	0.0	Vert	QP	0.0	24.8	46.0	-21.2
805.752	16.4	8.4	3.7	176.0	3.0	0.0	Horz	QP	0.0	24.8	46.0	-21.2
1613.573	40.1	-5.4	1.0	356.0	3.0	0.0	Vert	PK	0.0	34.7	54.0	-19.3
1612.473	40.1	-5.4	1.0	67.0	3.0	0.0	Horz	PK	0.0	34.7	54.0	-19.3
1613.290	39.9	-5.4	1.0	346.0	3.0	0.0	Horz	PK	0.0	34.5	54.0	-19.5
1616.157	39.5	-5.4	1.0	249.0	3.0	0.0	Vert	PK	0.0	34.1	54.0	-19.9
1208.947	40.0	-6.5	1.0	76.0	3.0	0.0	Vert	PK	0.0	33.5	54.0	-20.5
1208.347	39.7	-6.5	1.0	63.0	3.0	0.0	Horz	PK	0.0	33.2	54.0	-20.8
1210.188	39.5	-6.5	1.8	239.0	3.0	0.0	Horz	PK	0.0	33.0	54.0	-21.0
1207.680	39.4	-6.5	1.0	89.0	3.0	0.0	Vert	PK	0.0	32.9	54.0	-21.1
1616.515	26.9	-5.4	1.0	249.0	3.0	0.0	Vert	AV	0.0	21.5	54.0	-32.5
1612.998	26.9	-5.4	1.0	67.0	3.0	0.0	Horz	AV	0.0	21.5	54.0	-32.5
1609.998	26.9	-5.4	1.0	346.0	3.0	0.0	Horz	AV	0.0	21.5	54.0	-32.5
1609.532	26.9	-5.4	1.0	356.0	3.0	0.0	Vert	AV	0.0	21.5	54.0	-32.5

Work Order:	BSTN0488	Date:	07/29/14	
Project:	None	Temperature:	23.2 °C	
Job Site:	MN05	Humidity:	51.3% RH	
Serial Number:	100182	Barometric Pres.:	1019.5 mbar	
EUT:	Emblem A219 S-ICD & Emblem A209 S-ICD			
Configuration:	2			
Customer:	Boston Scientific Corporation			
Attendees:	None			
EUT Power:	Battery			
Operating Mode:	Transmitting MICS			
Deviations:	None			
Comments:	None			

Test Specifications	Test Method
LP0002:2016	LP0002:2016

Run #	8	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass
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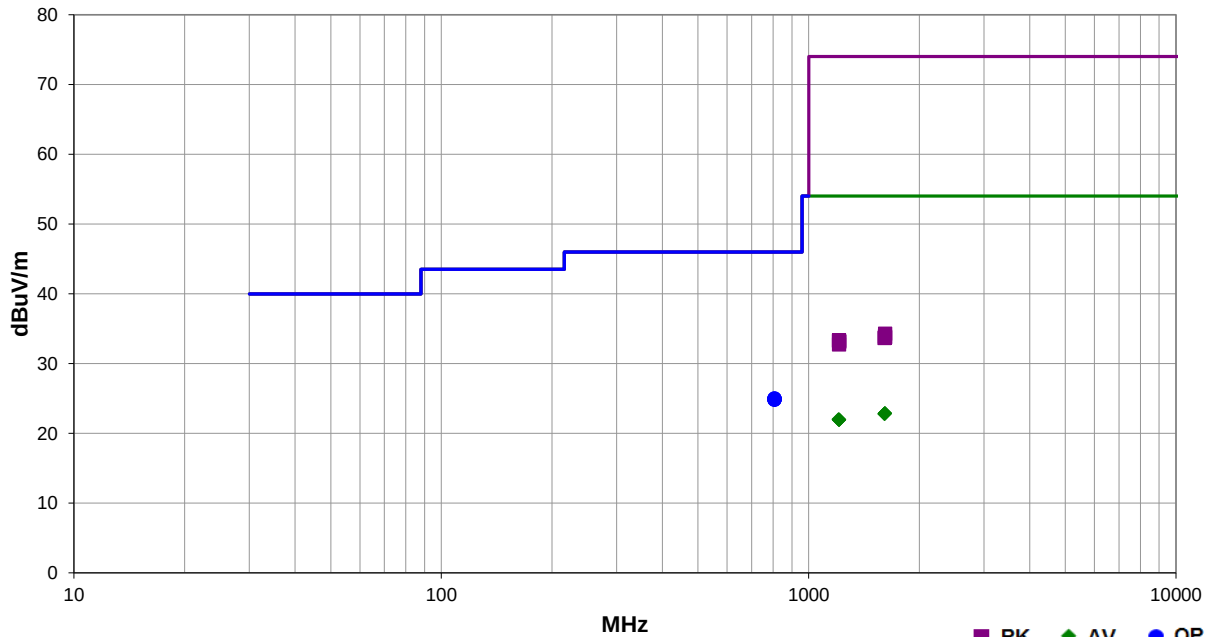


Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)
808.040	16.5	8.4	1.0	316.0	3.0	0.0	Vert	QP	0.0	24.9	46.0	-21.1
807.642	16.5	8.4	1.0	278.0	3.0	0.0	Vert	QP	0.0	24.9	46.0	-21.1
807.062	16.5	8.4	3.2	106.0	3.0	0.0	Vert	QP	0.0	24.9	46.0	-21.1
806.942	16.5	8.4	1.0	128.0	3.0	0.0	Horz	QP	0.0	24.9	46.0	-21.1
806.512	16.5	8.4	1.0	3.0	3.0	0.0	Horz	QP	0.0	24.9	46.0	-21.1
806.442	16.5	8.4	1.0	16.0	3.0	0.0	Horz	QP	0.0	24.9	46.0	-21.1
805.225	16.5	8.4	1.0	25.0	3.0	0.0	Horz	QP	0.0	24.9	46.0	-21.1
806.935	16.4	8.4	1.3	229.0	3.0	0.0	Vert	QP	0.0	24.8	46.0	-21.2
1610.907	39.7	-5.4	1.0	138.0	3.0	0.0	Vert	PK	0.0	34.3	54.0	-19.7
1614.665	39.6	-5.4	1.0	170.0	3.0	0.0	Horz	PK	0.0	34.2	54.0	-19.8
1614.690	39.2	-5.4	2.8	268.0	3.0	0.0	Vert	PK	0.0	33.8	54.0	-20.2
1610.873	39.1	-5.4	1.0	360.0	3.0	0.0	Horz	PK	0.0	33.7	54.0	-20.3
1209.347	40.1	-6.5	2.4	132.0	3.0	0.0	Horz	PK	0.0	33.6	54.0	-20.4
1212.005	39.8	-6.4	1.7	248.0	3.0	0.0	Vert	PK	0.0	33.4	54.0	-20.6
1210.755	39.7	-6.5	3.2	159.0	3.0	0.0	Horz	PK	0.0	33.2	54.0	-20.8
1206.272	39.6	-6.5	2.1	11.0	3.0	0.0	Vert	PK	0.0	33.1	54.0	-20.9
1615.648	28.3	-5.4	1.0	170.0	3.0	0.0	Horz	AV	0.0	22.9	54.0	-31.1
1614.257	28.3	-5.4	2.8	268.0	3.0	0.0	Vert	AV	0.0	22.9	54.0	-31.1
1613.198	28.3	-5.4	1.0	360.0	3.0	0.0	Horz	AV	0.0	22.9	54.0	-31.1
1612.073	28.3	-5.4	1.0	138.0	3.0	0.0	Vert	AV	0.0	22.9	54.0	-31.1

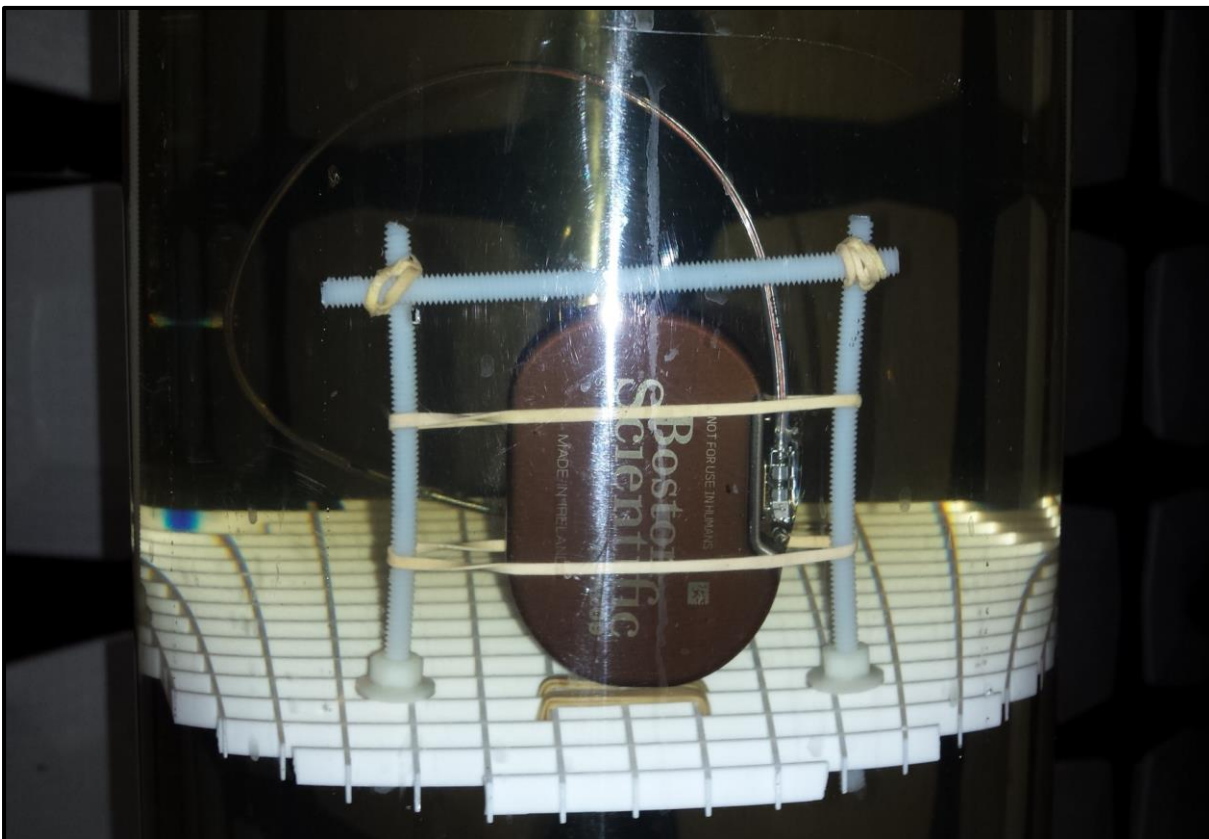
Work Order:	BSTN0488	Date:	07/29/14	
Project:	None	Temperature:	23.2 °C	
Job Site:	MN05	Humidity:	51.3% RH	
Serial Number:	100140	Barometric Pres.:	1019.5 mbar	
EUT:	Emblem A219 S-ICD & Emblem A209 S-ICD			
Configuration:	1			
Customer:	Boston Scientific Corporation			
Attendees:	None			
EUT Power:	Battery			
Operating Mode:	Transmitting MICS			
Deviations:	None			
Comments:	None			

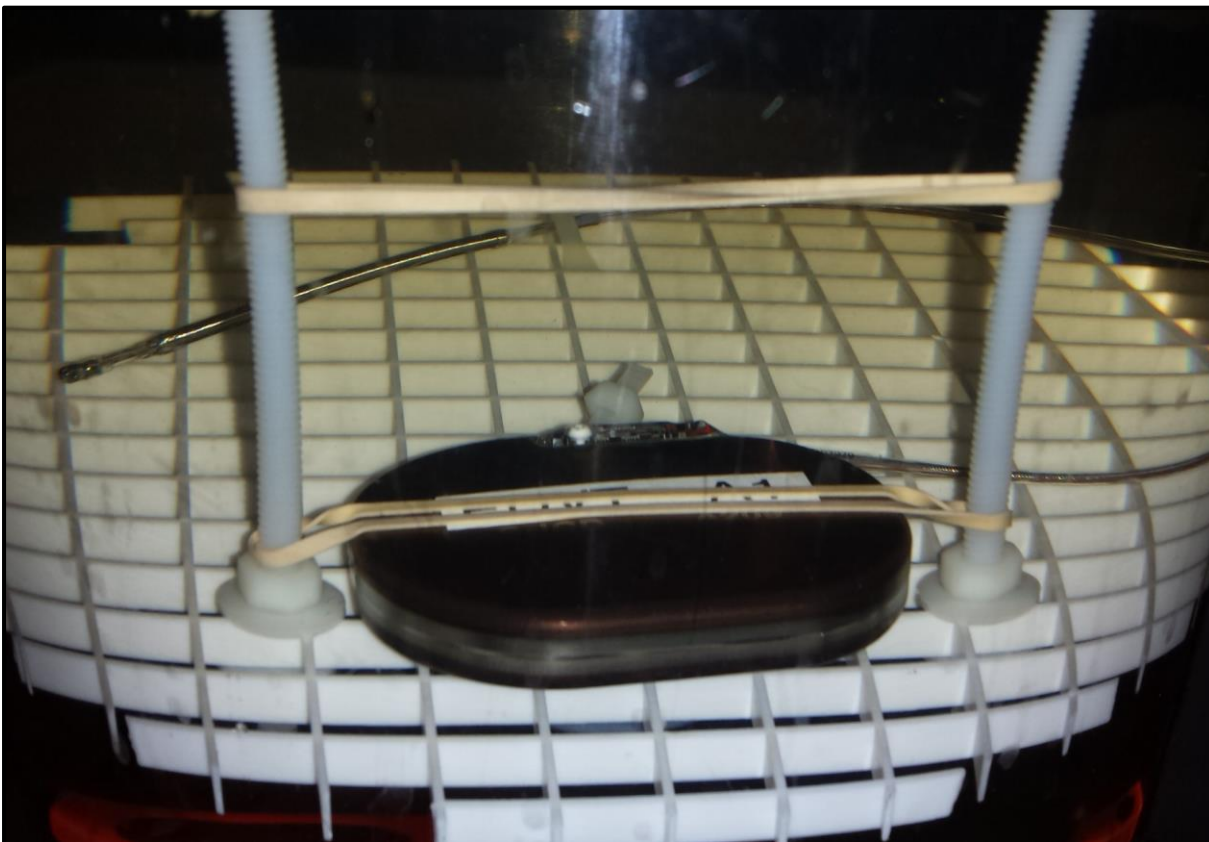
Test Specifications	Test Method
LP0002:2016	LP0002:2016

Run #	15	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)
806.795	16.6	8.4	1.0	19.0	3.0	0.0	Vert	QP	0.0	25.0	46.0	-21.0
808.100	16.5	8.4	3.2	0.0	3.0	0.0	Horz	QP	0.0	24.9	46.0	-21.1
807.985	16.5	8.4	1.0	255.0	3.0	0.0	Horz	QP	0.0	24.9	46.0	-21.1
807.870	16.5	8.4	1.0	288.0	3.0	0.0	Vert	QP	0.0	24.9	46.0	-21.1
807.243	16.5	8.4	1.0	240.0	3.0	0.0	Vert	QP	0.0	24.9	46.0	-21.1
807.133	16.5	8.4	2.9	91.0	3.0	0.0	Vert	QP	0.0	24.9	46.0	-21.1
805.663	16.5	8.4	1.0	113.0	3.0	0.0	Horz	QP	0.0	24.9	46.0	-21.1
807.097	16.4	8.4	1.0	270.0	3.0	0.0	Horz	QP	0.0	24.8	46.0	-21.2
1615.365	39.7	-5.4	1.0	34.0	3.0	0.0	Vert	PK	0.0	34.3	54.0	-19.7
1612.540	39.3	-5.4	1.0	275.0	3.0	0.0	Vert	PK	0.0	33.9	54.0	-20.1
1614.457	39.2	-5.4	1.9	239.0	3.0	0.0	Horz	PK	0.0	33.8	54.0	-20.2
1610.140	39.1	-5.4	1.3	34.0	3.0	0.0	Horz	PK	0.0	33.7	54.0	-20.3
1210.655	39.8	-6.5	1.0	360.0	3.0	0.0	Horz	PK	0.0	33.3	54.0	-20.7
1209.463	39.7	-6.5	1.0	127.0	3.0	0.0	Vert	PK	0.0	33.2	54.0	-20.8
1211.305	39.6	-6.5	1.3	282.0	3.0	0.0	Horz	PK	0.0	33.1	54.0	-20.9
1210.280	39.2	-6.5	1.0	72.0	3.0	0.0	Vert	PK	0.0	32.7	54.0	-21.3
1614.132	28.3	-5.4	1.0	34.0	3.0	0.0	Vert	AV	0.0	22.9	54.0	-31.1
1612.207	28.3	-5.4	1.9	239.0	3.0	0.0	Horz	AV	0.0	22.9	54.0	-31.1
1610.190	28.2	-5.4	1.0	275.0	3.0	0.0	Vert	AV	0.0	22.8	54.0	-31.2
1609.398	28.2	-5.4	1.3	34.0	3.0	0.0	Horz	AV	0.0	22.8	54.0	-31.2





FREQUENCY TOLERANCE

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.)
Humidity Temperature Chamber	Cincinnati Sub Zero (CSZ)	ZPH-32-3.5-SCT/AC	TBF	NCR	0
Humidity Temperature Meter	Omega Engineering, Inc.	HH31	DUB	10/25/2011	36
DC Power Supply	EZ Digital Co	GP-4303D	TPY	NCR	0
Multimeter	Fluke	117	MNN	1/20/2014	36
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	E4440A	AAX	4/28/2014	12

TEST DESCRIPTION

Variation of Supply Voltage

The primary supply voltage was varied over the range specified by the client as the maximum full charge voltage, and the battery endpoint voltage.

Variation of Ambient Temperature

Using a temperature chamber, the transmit frequency was recorded at the temperature range of: +25°, 35°C and +45°C.

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 was connected from the EUT to the spectrum analyzer outside of the chamber.

$$\text{ppm} = (\text{Measured Frequency} / \text{Measured Nominal Frequency} - 1) * 1,000,000$$

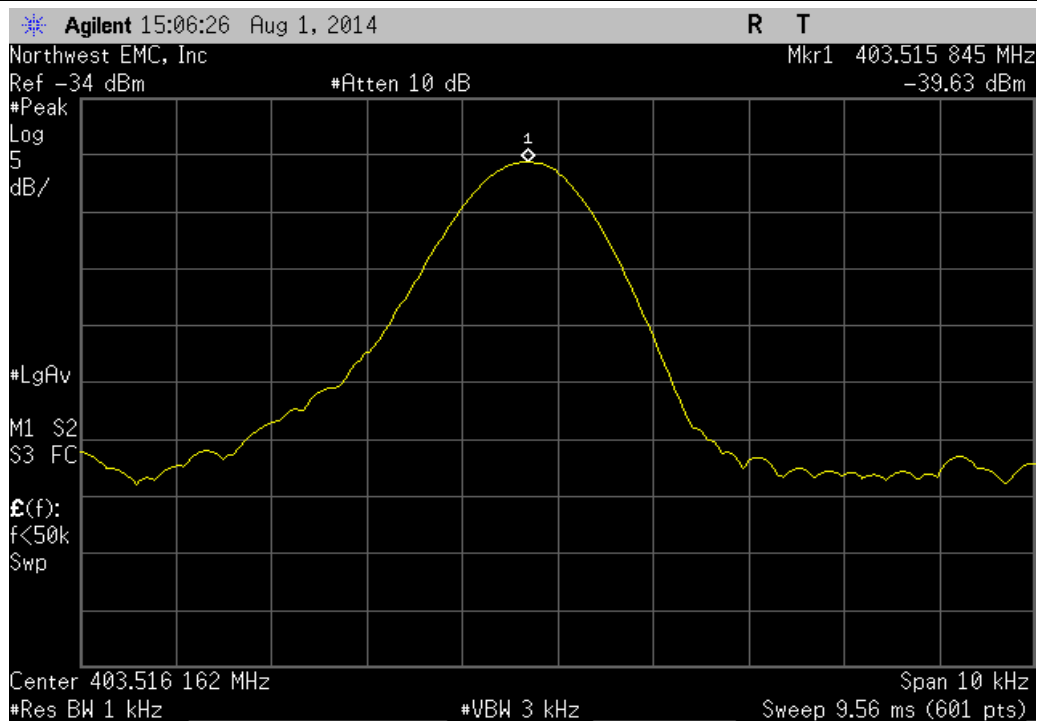


FREQUENCY TOLERANCE

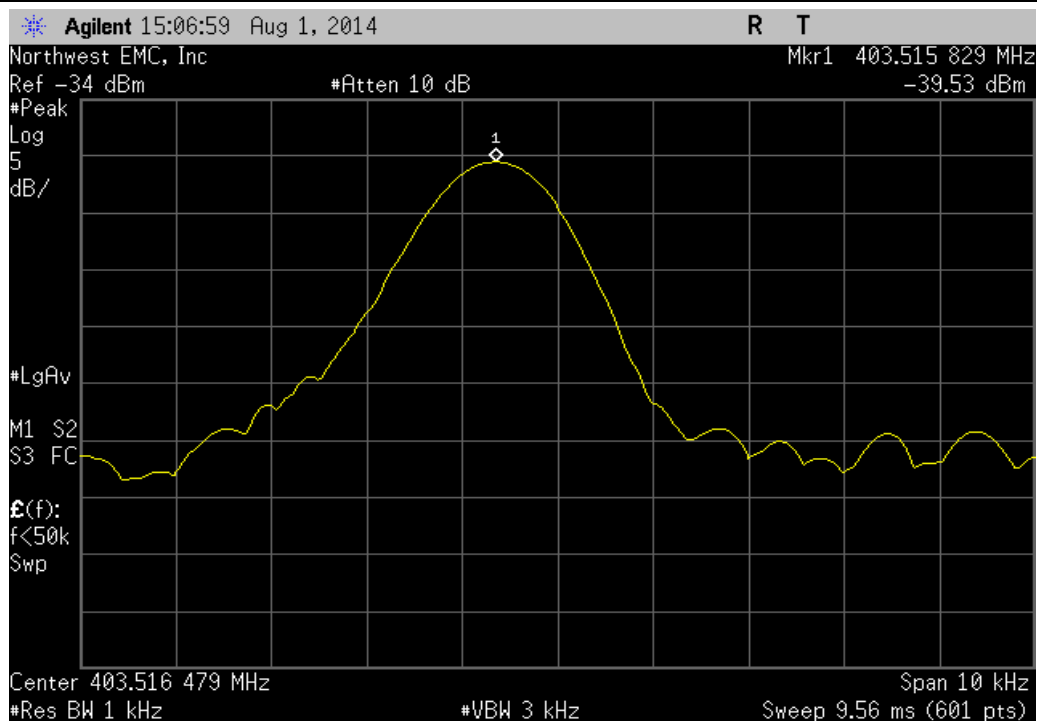
XMIT 2014.02.07
NweTx 2014.07.18.2

EUT: Emblem A219 S-ICD & Emblem A209 S-ICD		Work Order: BSTN0488				
Serial Number: See Below		Date: 08/01/14				
Customer: Boston Scientific Corporation		Temperature: 23.6°C				
Attendees: Daniel Landherr		Humidity: 52%				
Project: None		Barometric Pres.: 1020.6				
Tested by: Trevor Buls		Power: Battery				
		Job Site: MN08				
TEST SPECIFICATIONS		Test Method				
LP0002:2016		LP0002:2016				
COMMENTS						
Testing performed on one channel per the standard.						
DEVIATIONS FROM TEST STANDARD						
None						
Configuration #	4,5,6	Signature <i>Trevor Buls</i>				
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
SN: 70100064						
	Extreme Voltage +9.3VDC	403.515845	403.51	14.5	100	Pass
	Extreme Voltage +8.6VDC	403.515829	403.51	14.5	100	Pass
	Extreme Temperature +45°C	403.512141	403.51	5.3	100	Pass
	Extreme Temperature +35°C	403.513845	403.51	9.5	100	Pass
	Extreme Temperature +25°C	403.515796	403.51	14.4	100	Pass
SN: 70100059						
	Extreme Voltage +9.3VDC	403.513478	403.51	8.6	100	Pass
	Extreme Voltage +8.6VDC	403.513495	403.51	8.7	100	Pass
	Extreme Temperature +45°C	403.509919	403.51	0.2	100	Pass
	Extreme Temperature +35°C	403.512225	403.51	5.5	100	Pass
	Extreme Temperature +25°C	403.513477	403.51	8.6	100	Pass
SN: 70100066						
	Extreme Voltage +9.3VDC	403.514311	403.51	10.7	100	Pass
	Extreme Voltage +8.6VDC	403.514377	403.51	10.9	100	Pass
	Extreme Temperature +45°C	403.51129	403.51	3.2	100	Pass
	Extreme Temperature +35°C	403.512743	403.51	6.8	100	Pass
	Extreme Temperature +25°C	403.514412	403.51	10.9	100	Pass

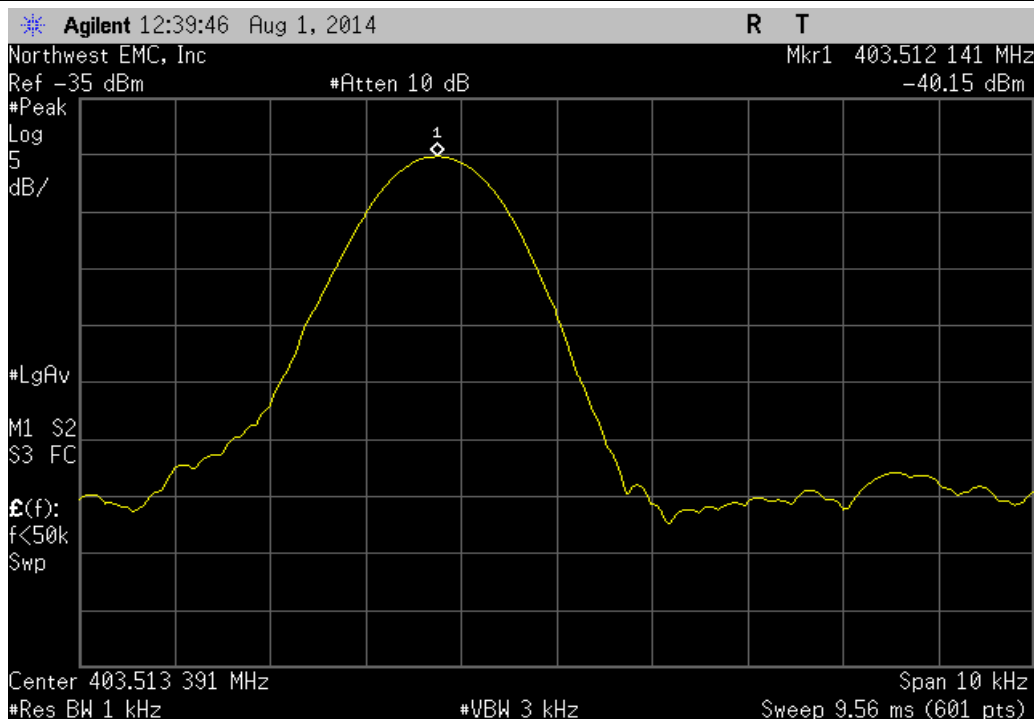
SN: 70100064, Extreme Voltage +9.3VDC						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.515845	403.51	14.5	100	Pass	



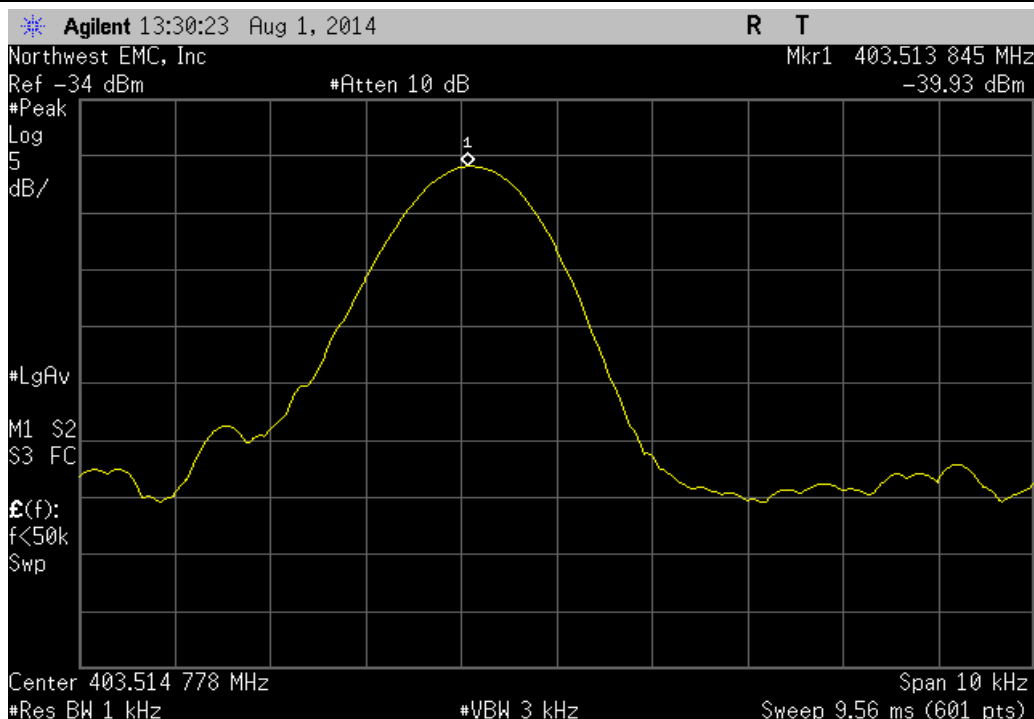
SN: 70100064, Extreme Voltage +8.6VDC						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.515829	403.51	14.5	100	Pass	



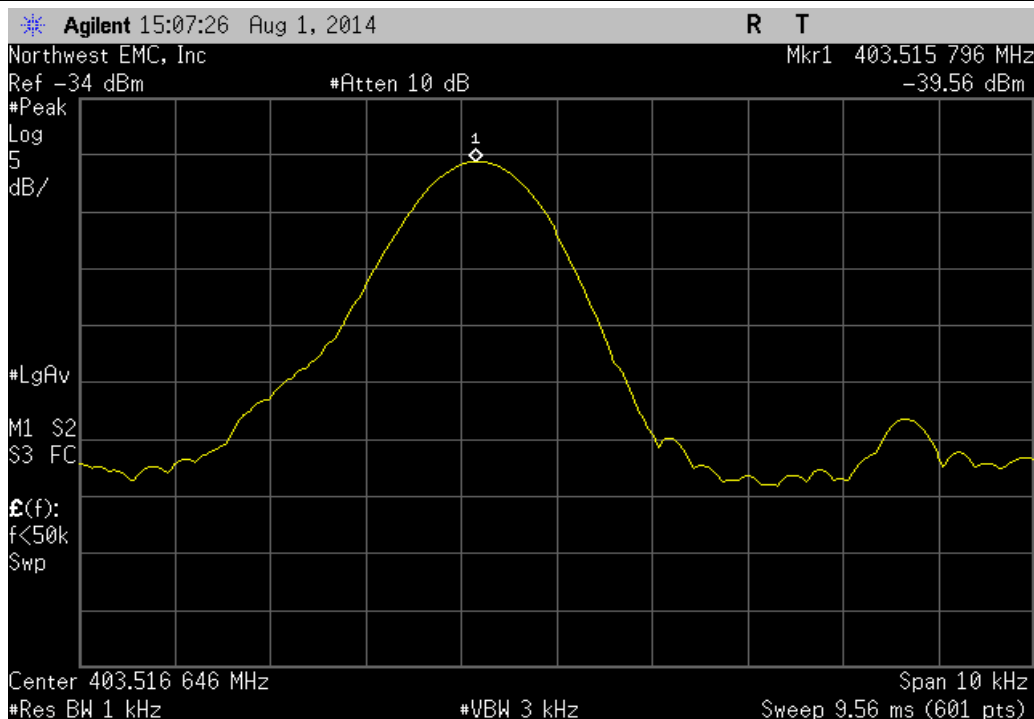
SN: 70100064, Extreme Temperature +45°C						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.512141	403.51	5.3	100	Pass	



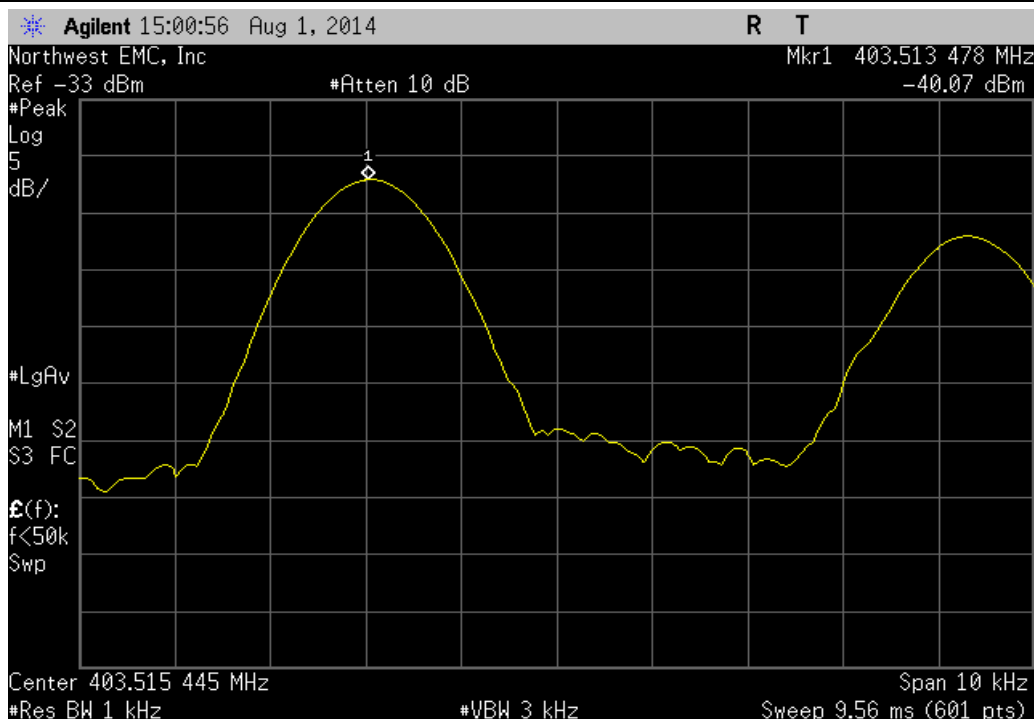
SN: 70100064, Extreme Temperature +35°C						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.513845	403.51	9.5	100	Pass	



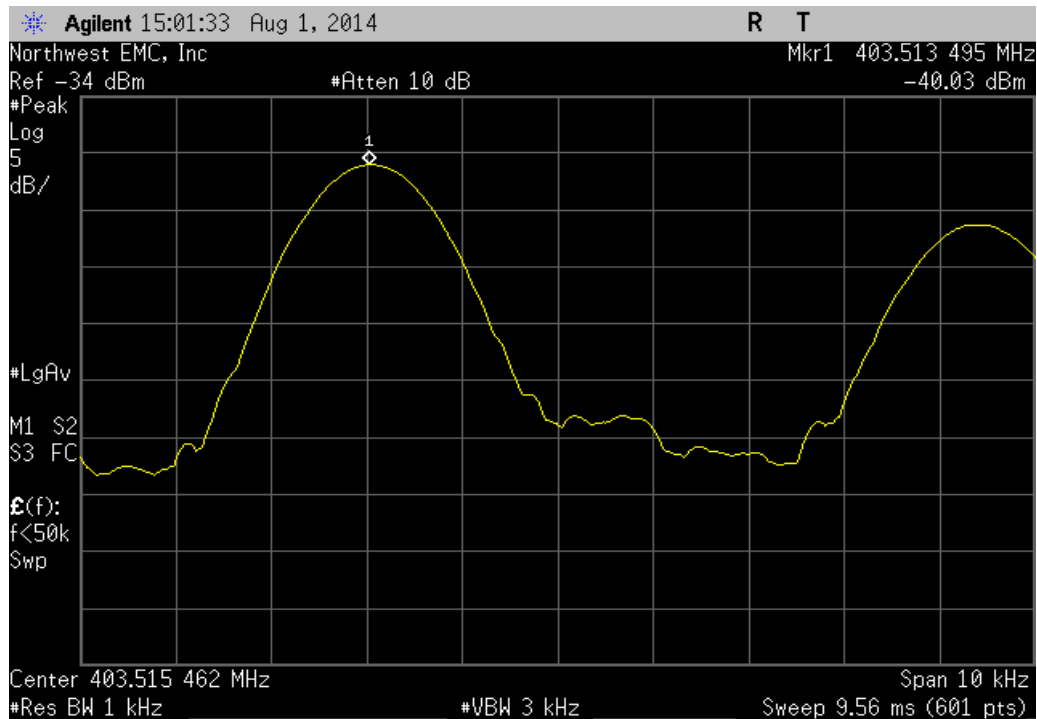
SN: 70100064, Extreme Temperature +25°C						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.515796	403.51	14.4	100	Pass	



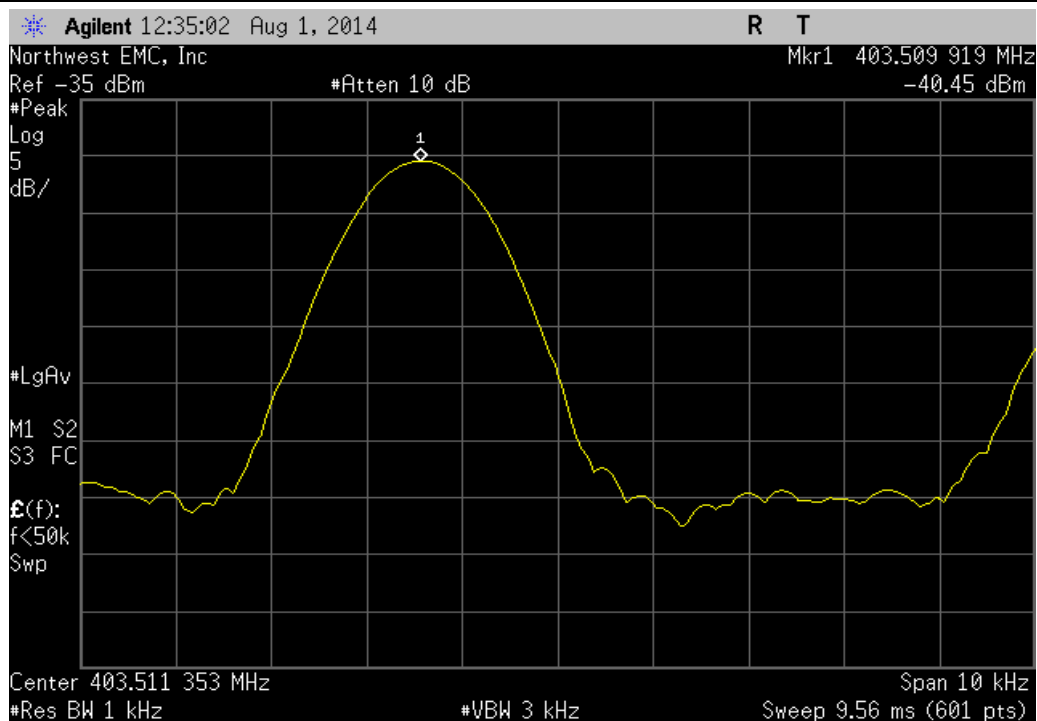
SN: 70100059, Extreme Voltage +9.3VDC						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.513478	403.51	8.6	100	Pass	



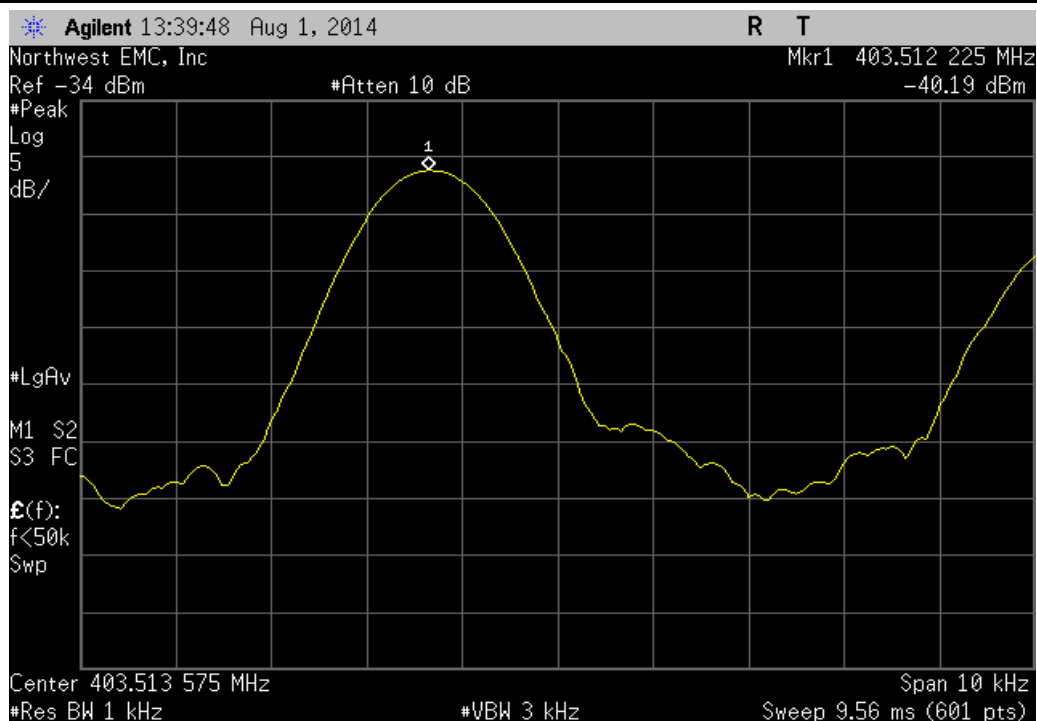
SN: 70100059, Extreme Voltage +8.6VDC						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.513495	403.51	8.7	100	Pass	



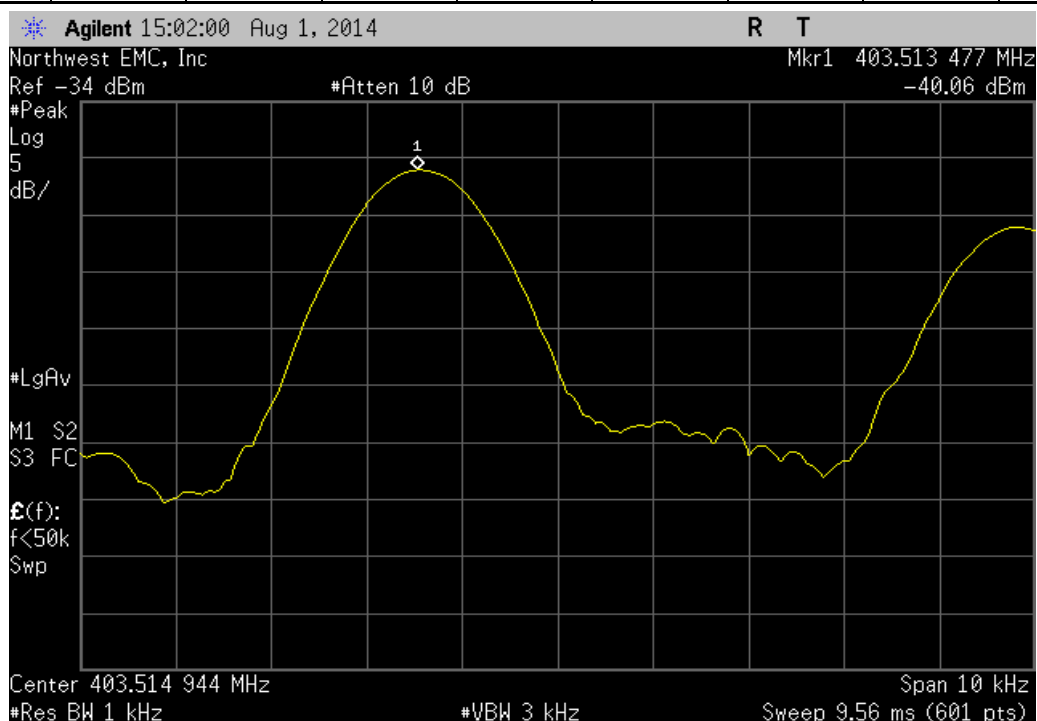
SN: 70100059, Extreme Temperature +45°C						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.509919	403.51	0.2	100	Pass	



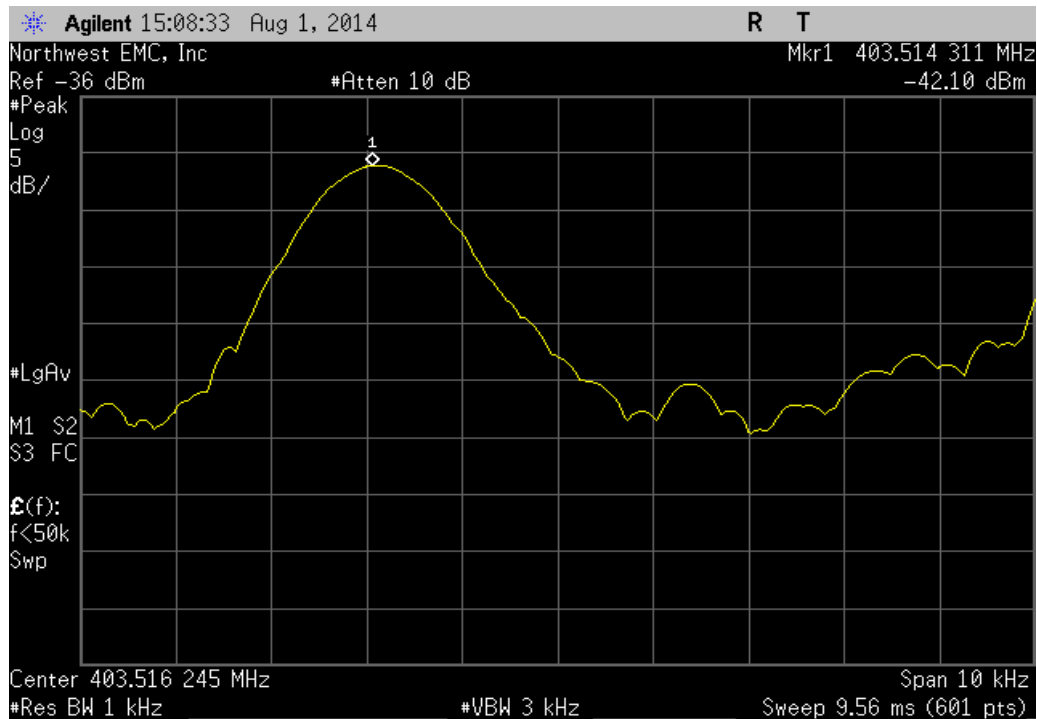
SN: 70100059, Extreme Temperature +35°C						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.512225	403.51	5.5	100	Pass	



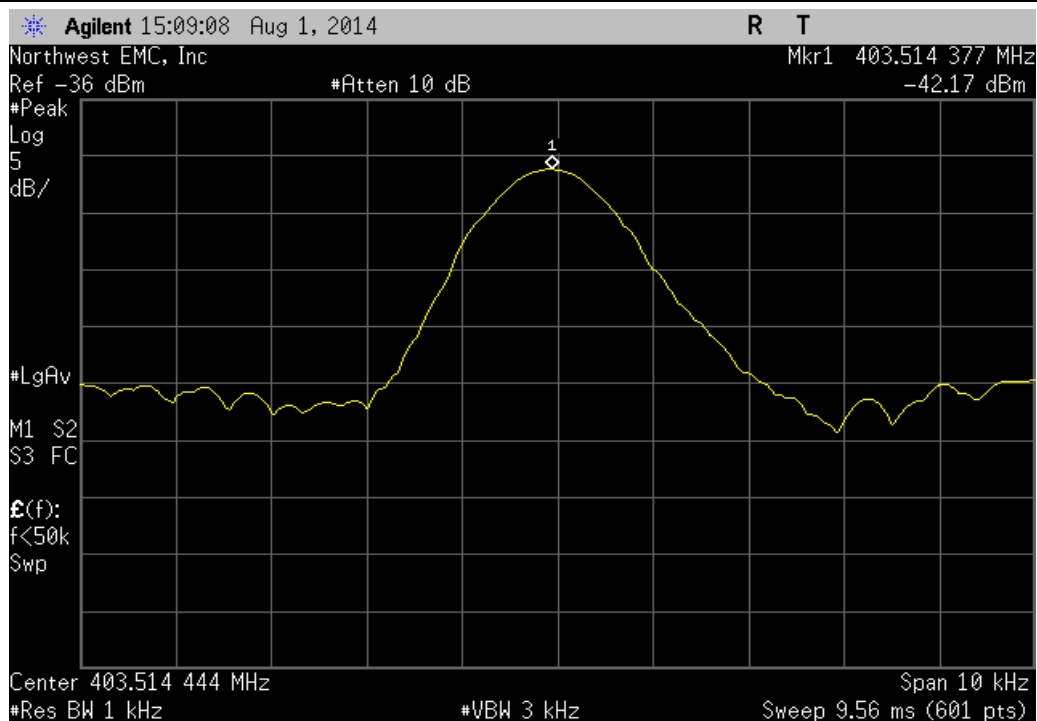
SN: 70100059, Extreme Temperature +25°C						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.513477	403.51	8.6	100	Pass	



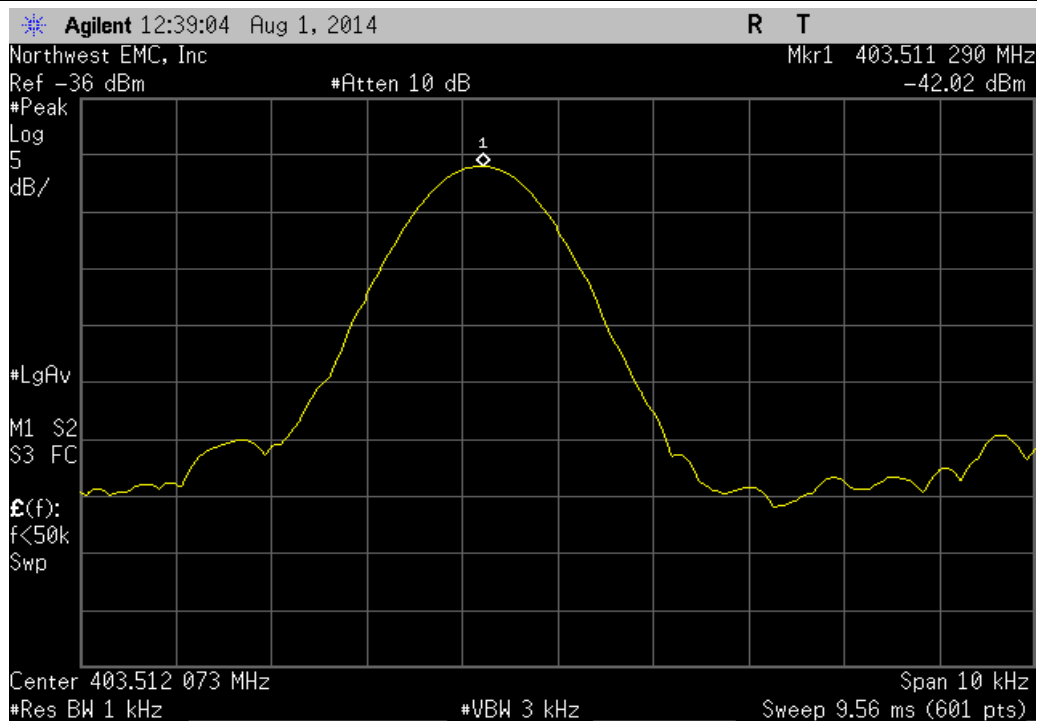
SN: 70100066, Extreme Voltage +9.3VDC						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.514311	403.51	10.7	100	Pass	



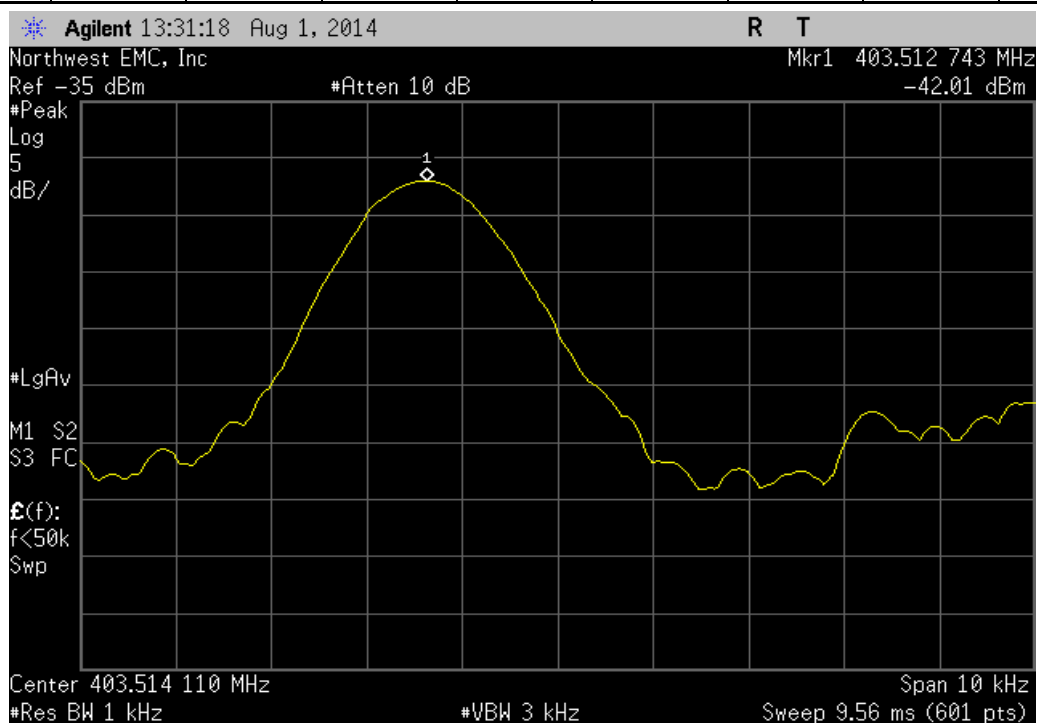
SN: 70100066, Extreme Voltage +8.6VDC						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.514377	403.51	10.9	100	Pass	



SN: 70100066, Extreme Temperature +45°C						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.51129	403.51	3.2	100	Pass	



SN: 70100066, Extreme Temperature +35°C						
	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results	
	403.512743	403.51	6.8	100	Pass	



SN: 70100066, Extreme Temperature +25°C						
Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results		
403.514412	403.51	10.9	100	Pass		

