NORTHWEST EMC

Boston Scientific Corporation

Model 3300

Listen Before Talk (LBT) per:

EN 301 839 V2.1.1:2016

FCC 95I:2016

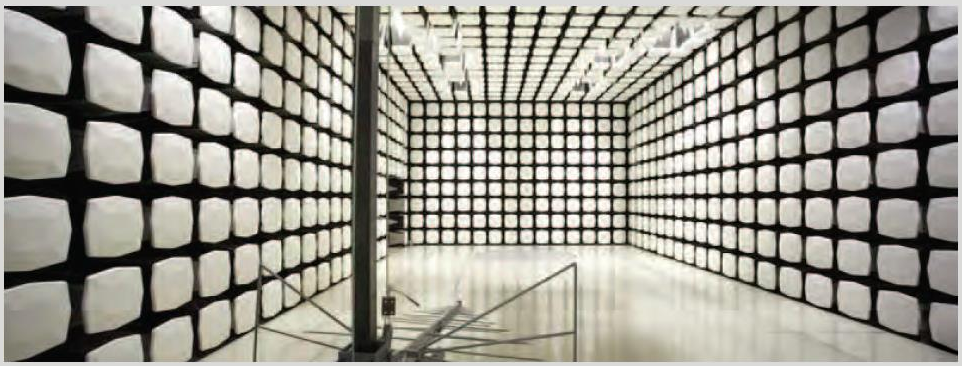
RSS-243:2010

Korea Radio Law

Japan Specified low-power radio equipment Item 8 of Article 2-1

MICS Radio

Report # BSTN0663.22 Rev. 1



NVLAP TESTING

NVLAP Lab Code: 200881-0

CERTIFICATE OF TEST

NORTHWEST EMC
2014-12-10

Last Date of Test: August 25, 2016
Boston Scientific Corporation
Model: 3300

Radio Equipment Testing

Standards

Specification	Method
EN 301 839 V2.1.1:2016	EN 301 839 V2.1.1:2016
FCC 95I:2016	
RSS-243:2010	
Korean Radio Law	KN 301 839 V2.1.1:2016
Japan Specified low-power radio equipment Item 8 of Article 2-1	EN 301 839-1 V1.3.1:2009

Results (10 Channel)

Method Clause	Test Description	Applied	Results	Comments
5.3.7.1.3	LBT Threshold Power Level	Yes	Pass	
5.3.7.1.4	Monitoring System Bandwidth	Yes	Pass	
5.3.7.1.5	Monitoring System Scan Cycle Time	Yes	Pass	
5.3.7.1.5	Minimum Channel Monitoring Period	Yes	Pass	
5.3.7.1.6	Channel Access Based on Ambient Levels	Yes	Pass	
5.3.7.1.7	Discontinuation of a MICS Session	Yes	Pass	
5.3.7.1.8	Use of Pre-Scanned Alternative Channels	Yes	Pass	
5.3.8	Receiver Blocking	Yes	Pass	

Results (2 Channel)

Method Clause	Test Description	Applied	Results	Comments
5.3.7.1.3	LBT Threshold Power Level	Yes	Pass	
5.3.7.1.4	Monitoring System Bandwidth	Yes	Pass	
5.3.7.1.5	Monitoring System Scan Cycle Time	Yes	Pass	
5.3.7.1.5	Minimum Channel Monitoring Period	Yes	Pass	
5.3.7.1.6	Channel Access Based on Ambient Levels	Yes	Pass	
5.3.7.1.7	Discontinuation of a MICS Session	Yes	Pass	
5.3.7.1.8	Use of Pre-Scanned Alternative Channels	Yes	N/A	Not required. The EUT does not use Pre-Scanned Alternate Channels.
5.3.8	Receiver Blocking	Yes	Pass	

Deviations from Test Standards

None

Approved By:

Dean Ghizzone, General 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

NORTHWEST EMC
REV 2014.10.14

Revision Number	Description	Date	Page Number
00	None		
01	Corrected the EN 301 839 Specification on the data sheets	4/26/2017	15, 21, 27, 33, 39, 48, 57, 65, 73, 78, 83, 88, 93, 98

ACCREDITATIONS AND AUTHORIZATIONS

NORTHWEST EMC
REV 2016.7.25

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

ISED - Recognized by Innovation, Science and Economic Development Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with ISED.

European Union

European Commission – Validated by the European Commission 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

TMU.2015.07.10

Measurement Uncertainty

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

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

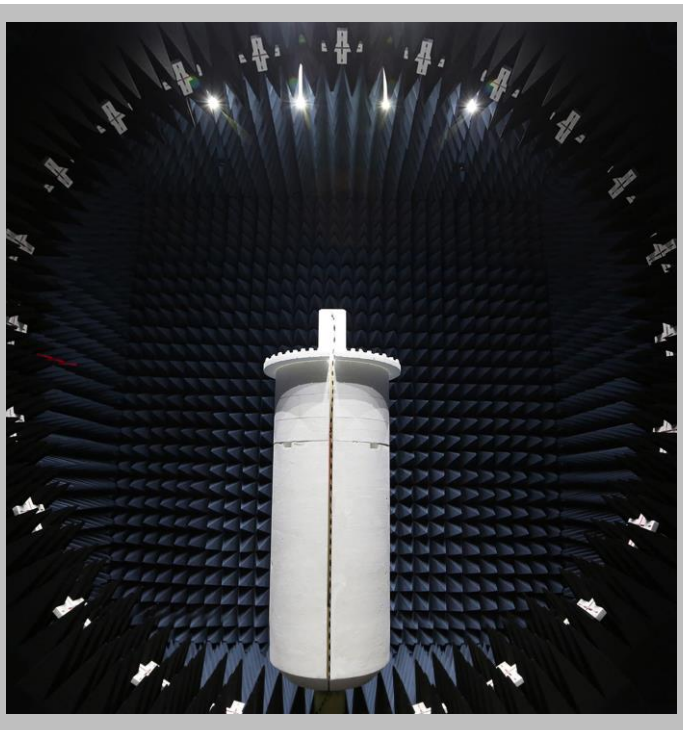
The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

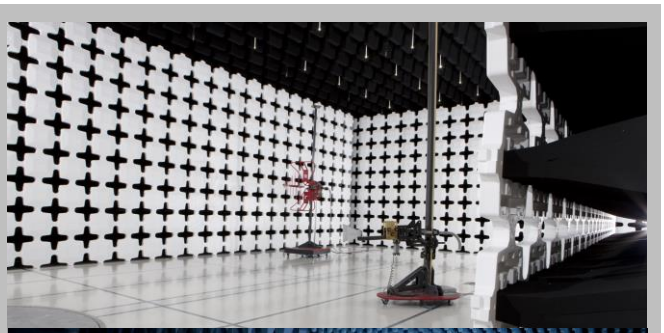
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.2 dB	-5.2 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

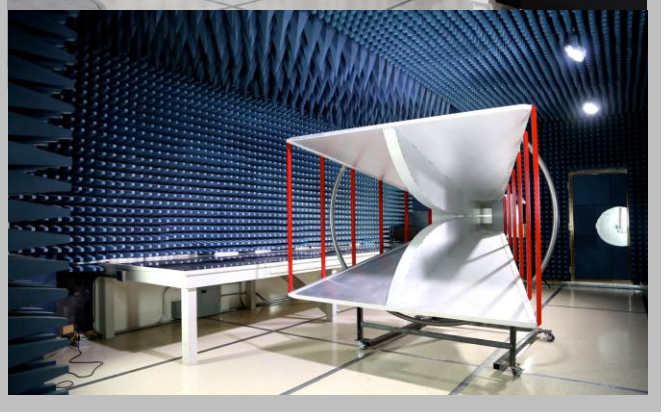
FACILITIES

REV 2016.7.25

California	Minnesota	New York	Oregon	Texas	Washington
Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-08, MN10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Labs NC01-05 19201 120th Ave NE Bothell, WA 98011 (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
Innovation, Science and Economic Development 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/RRA, 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 55112-5798
Test Requested By:	Pete Musto
Model:	Model 3300
First Date of Test:	August 8, 2016
Last Date of Test:	August 25, 2016
Receipt Date of Samples:	July 14, 2016
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
The Boston Scientific Model 3300 Latitude Programmer (PRM) is a device that is used to interrogate and program Boston Scientific PGs and defibrillators. PG specific software applications are loaded into the PRM and communicate with the implanted device. The telemetry communications allow the physician the ability to program the PG or query the PG for historical data or operating parameters. The PRM allows other external instruments or equipment to be connected, including printers, network connections, external display monitors, USB data storage devices, and cellular adapters. The PRM also provides a Pacing Systems Analyzer for implant lead evaluation and diagnostics.

Testing Objective:
To demonstrate compliance of the MICS radio to Article 3.2 of the R&TTE Directive, FCC Authorization to FCC 95I, CB authorization to RSS-243, authorization to Korean Radio Law and Japan Specified low-power radio equipment Item 8 of Article 2-1.

CONFIGURATIONS

NORTHWEST EMC 2014-12-10

Configuration BSTN0663- 7

Software/Firmware Running during test	
Description	**Version**
PRM Application - 3869	0.03.13

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Latitude Vision Programmer	Boston Scientific Corporation	3300	058

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC/DC Adapter	GlobTek, Inc	GTM41133-9016-1.0-T3A	None
USB Memory Feature Key	Boston Scientific Corporation	None	043
USB Memory MTI	Kingston	DTSE9 G2	None
Keyboard	Lenovo	KU-0989	1S54Y94890909725E
Implant	Boston Scientific Corporation	Ingenio 2 U226-100-0	299107

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Cable	Yes	2.5m	No	AC/DC Adapter	AC Mains
DC Cable	No	2m	Yes	AC/DC Adapter	Programmer
USB Cable (Keyboard)	Yes	1.8m	No	Keyboard	Programmer

CONFIGURATIONS

NORTHWEST EMC 2014-12-10

Configuration BSTN0663- 8

Software/Firmware Running during test	
Description	**Version**
MTI	2.0-7

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Latitude Vision Programmer	Boston Scientific Corporation	3300	058

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC/DC Adapter	GlobTek, Inc	GTM41133-9016-1.0-T3A	None
USB Memory Feature Key	Boston Scientific Corporation	None	043
USB Memory MTI	Kingston	DTSE9 G2	None
Keyboard	Lenovo	KU-0989	1S54Y94890909725E
Implant	Boston Scientific Corporation	Ingenio 2 U226-100-0	299107

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Cable	Yes	2.5m	No	AC/DC Adapter	AC Mains
DC Cable	No	2m	Yes	AC/DC Adapter	Programmer
USB Cable (Keyboard)	Yes	1.8m	No	Keyboard	Programmer

CONFIGURATIONS

NORTHWEST EMC 2014-12-10

Configuration BSTN0663- 10

Software/Firmware Running during test	
Description	**Version**
MTI	2.0-7

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Latitude Vision Programmer	Boston Scientific Corporation	3300	058

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC/DC Adapter	GlobTek, Inc	GTM41133-9016-1.0-T3A	None
USB Memory Feature Key	Boston Scientific Corporation	None	043
USB Memory MTI	Kingston	DTSE9 G2	None
Keyboard	Lenovo	KU-0989	1S54Y94890909725E
Implant	Boston Scientific Corporation	Emblem A209	100588

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Cable	Yes	2.5m	No	AC/DC Adapter	AC Mains
DC Cable	No	2m	Yes	AC/DC Adapter	Programmer
USB Cable (Keyboard)	Yes	1.8m	No	Keyboard	Programmer

CONFIGURATIONS

NORTHWEST EMC 2014-12-10

Configuration BSTN0663- 11

Software/Firmware Running during test	
Description	**Version**
PRM Application - 3869	0.04.02

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Latitude Vision Programmer	Boston Scientific Corporation	3300	058

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC/DC Adapter	GlobTek, Inc	GTM41133-9016-1.0-T3A	None
USB Memory Feature Key	Boston Scientific Corporation	None	043
USB Memory MTI	Kingston	DTSE9 G2	None
Keyboard	Lenovo	KU-0989	1S54Y94890909725E
Implant	Boston Scientific Corporation	Ingenio 2 U226-100-0	299107

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Cable	Yes	2.5m	No	AC/DC Adapter	AC Mains
DC Cable	No	2m	Yes	AC/DC Adapter	Programmer
USB Cable (Keyboard)	Yes	1.8m	No	Keyboard	Programmer

CONFIGURATIONS

NORTHWEST EMC 2014-12-10

Configuration BSTN0663- 12

Software/Firmware Running during test	
Description	**Version**
MTI	2.0-11

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Latitude Vision Programmer	Boston Scientific Corporation	3300	058

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
AC/DC Adapter	GlobTek, Inc	GTM41133-9016-1.0-T3A	None
USB Memory Feature Key	Boston Scientific Corporation	None	043
USB Memory MTI	Kingston	DTSE9 G2	None
Keyboard	Lenovo	KU-0989	1S54Y94890909725E
Implant	Boston Scientific Corporation	Emblem A209	100588

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
AC Cable	Yes	2.5m	No	AC/DC Adapter	AC Mains
DC Cable	No	2m	Yes	AC/DC Adapter	Programmer
USB Cable (Keyboard)	Yes	1.8m	No	Keyboard	Programmer

MODIFICATIONS

NORTHWEST EMC
2014-12-10

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	8/8/2016	Use of a Pre-Scanned Alternative Channel	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	8/16/2016	LBT Threshold Power Level	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	8/16/2016	Monitoring System 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.
4	8/16/2016	Monitoring System Scan Cycle Time	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	8/16/2016	Channel Access Based on Ambient Levels	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	8/16/2016	Discontinuation of a MICS Session	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	8/16/2016	Receiver Blocking	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	8/25/2016	Minimum Channel Monitoring Period	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

LBT THRESHOLD POWER LEVEL, 10 CHANNEL

XMit 2016.05.06

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Probe - Near Field Set	ETS Lindgren	7405	IPO	NCR	NCR
Directional Coupler	Fairview Microwave	SMC4039-10	RGS	NCR	NCR
Power Divider/Combiner	Fairview Microwave Inc (SM electronics)	MP8451-2	IAD	NCR	NCR
Power Divider/Combiner	Fairview Microwave Inc (SM electronics)	MP8451-2	IAC	NCR	NCR
Generator - Signal	Agilent	N5182A	TIF	8/12/2014	8/12/2017
Generator - Signal	Agilent	E4422B	TGQ	3/17/2015	3/17/2018
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	9/18/2016
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	9/18/2016
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

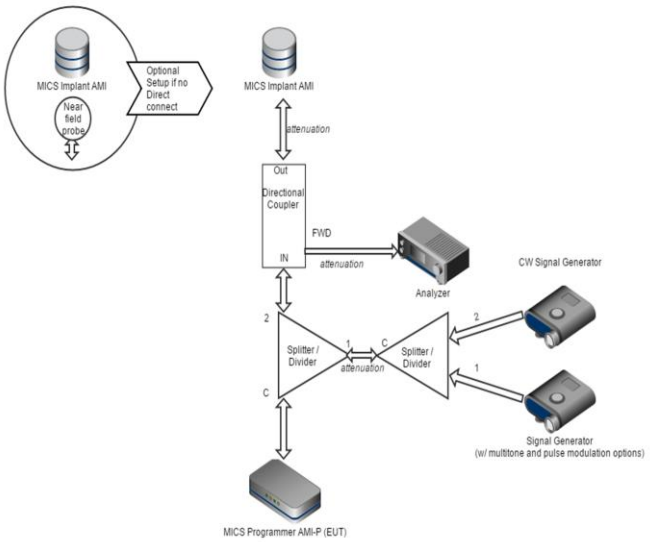
TEST DESCRIPTION

A near-field probe was placed near the transmitter. A low-loss coaxial cable was used to connect the near-field probe to the spectrum analyzer. The EUT was configured according to the following block diagram:

The signal generator was set to multitone operation to cause equal interferance across the entire band. The amplitude of the multitone signals (out of operation region) were set to the LBT threshold of 10*LOG(Bandwidth) - 150 + Antenna Gain + 3 dB.

The spectrum analyzer was set to measure the transmit band of 402-405 MHz. The multitone signal of the intended frequency (Fc) was set to the LBT threshold - 6 dB, and raised by 1 dB increments until the EUT choose a different channel to start a session. Screen captures were provided to show the EUT behavior at the different LBT threshold levels.

The signal generator amplitude at Fc was then measured and recorded with the spectrum analyzer.



LBT THRESHOLD POWER LEVEL, 10 CHANNEL

NORTHWEST EMC

XMit 2016.05.06

EUT:	Model 3300			**Work Order:**	BSTN0663
Serial Number:	058			**Date:**	08/08/16
Customer:	Boston Scientific Corporation			**Temperature:**	23.2 °C
Attendees:	Pete Musto			**Humidity:**	53.6% RH
Project:	Laramie Vision			**Barometric Pres.:**	1019 mbar
Tested by:	Dustin Sparks	**Power:**	220VAC/60Hz	**Job Site:**	MN02

TEST SPECIFICATIONS	Test Method
EN 301 839 V2.1.1:2016	EN 301 839 V2.1.1:2016

COMMENTS

EUT emissions bandwidth is 300000 Hz, 2.7 dBi antenna gain. Antenna port B, PRM Application 3869 v. 0.03.13

DEVIATIONS FROM TEST STANDARD

None

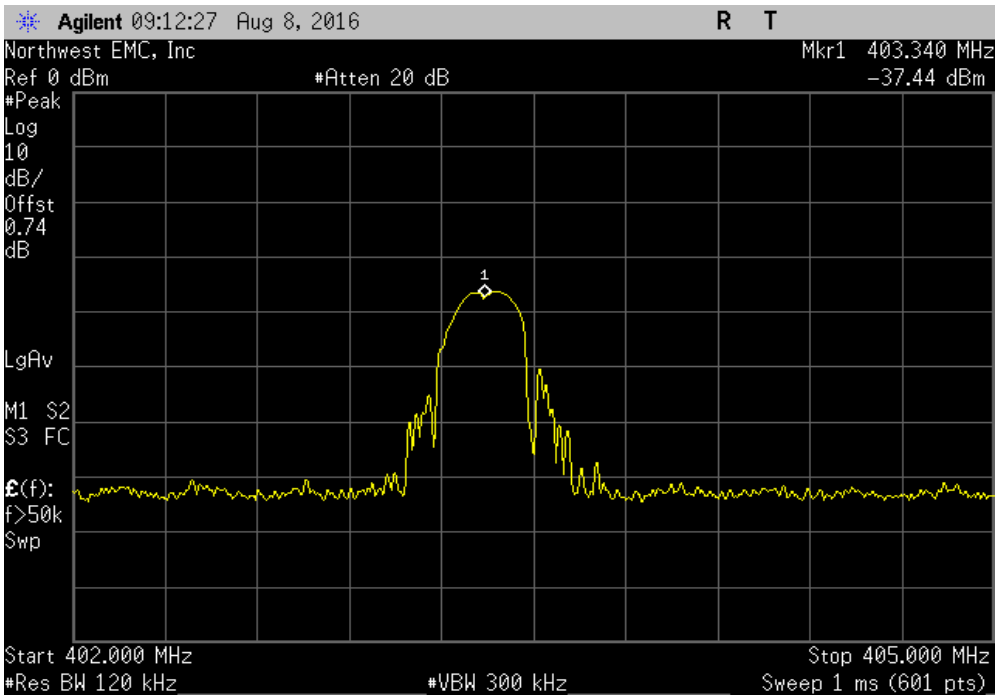
Configuration #	7	Signature Dustin Sparks

	Value (dBm)	Limit (dBm)	Result
LBT Threshold - 6dB	N/A	N/A	N/A
LBT Threshold + 2dB	N/A	N/A	N/A
LBT Threshold + 3dB	-93.5	<= 92.5	Pass

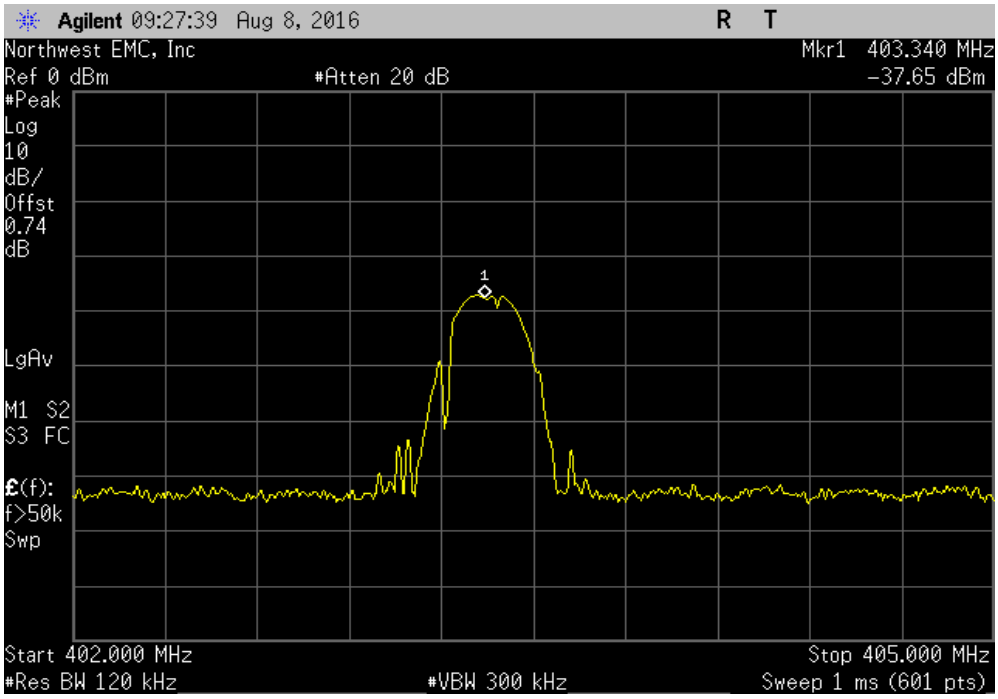
LBT THRESHOLD POWER LEVEL, 10 CHANNEL

XMit 2016.05.06

LBT Threshold - 6dB							
					Value (dBm)	Limit (dBm)	Result
					N/A	N/A	N/A



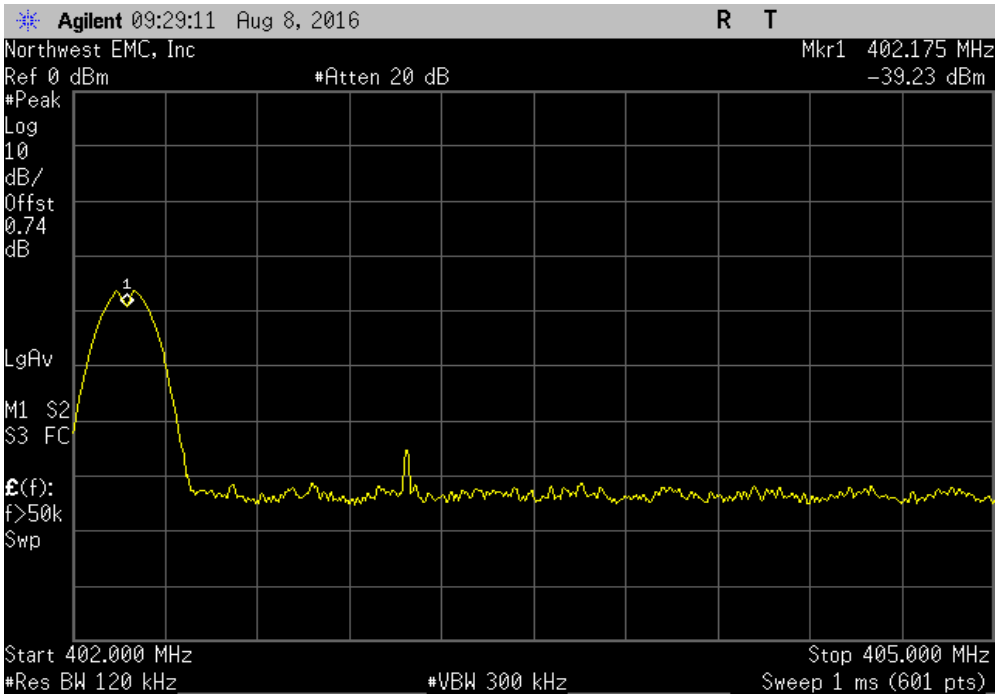
LBT Threshold + 2dB							
					Value (dBm)	Limit (dBm)	Result
					N/A	N/A	N/A



LBT THRESHOLD POWER LEVEL, 10 CHANNEL

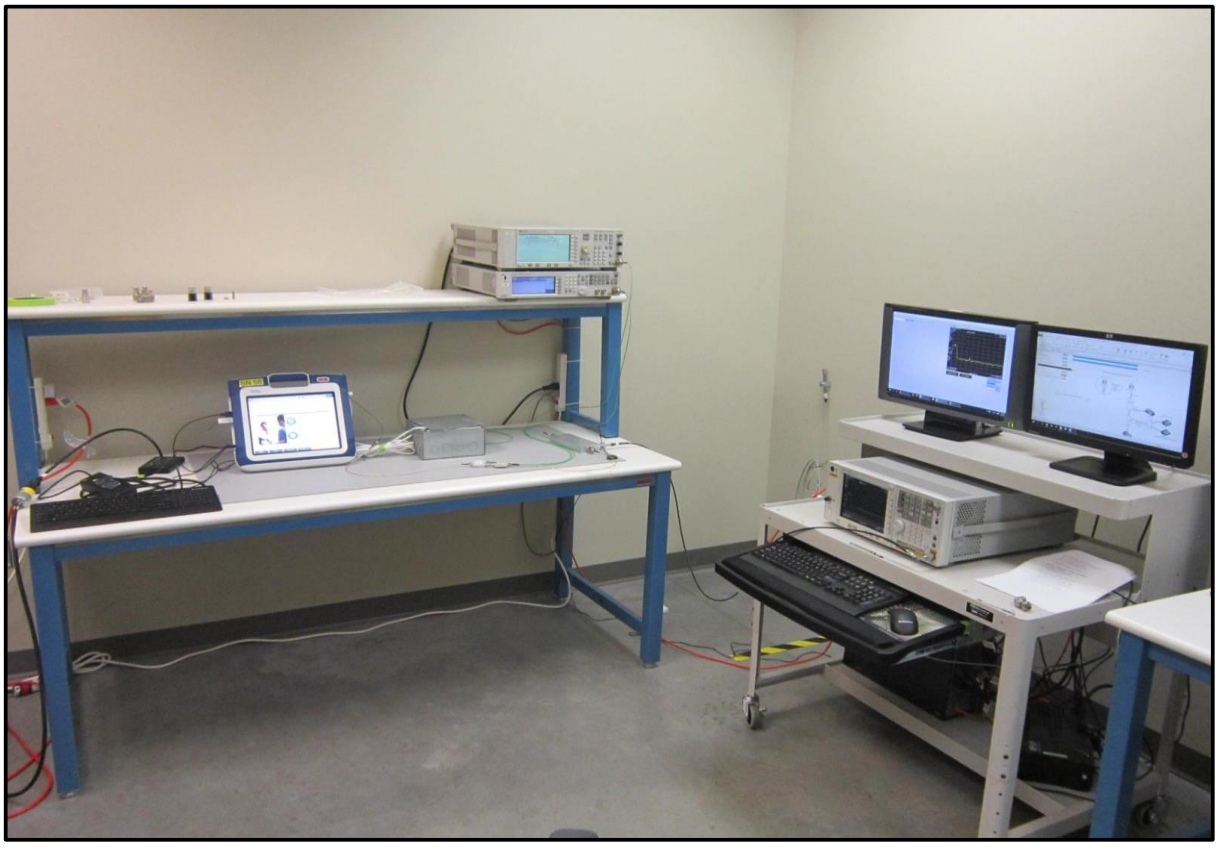
XMit 2016.05.06

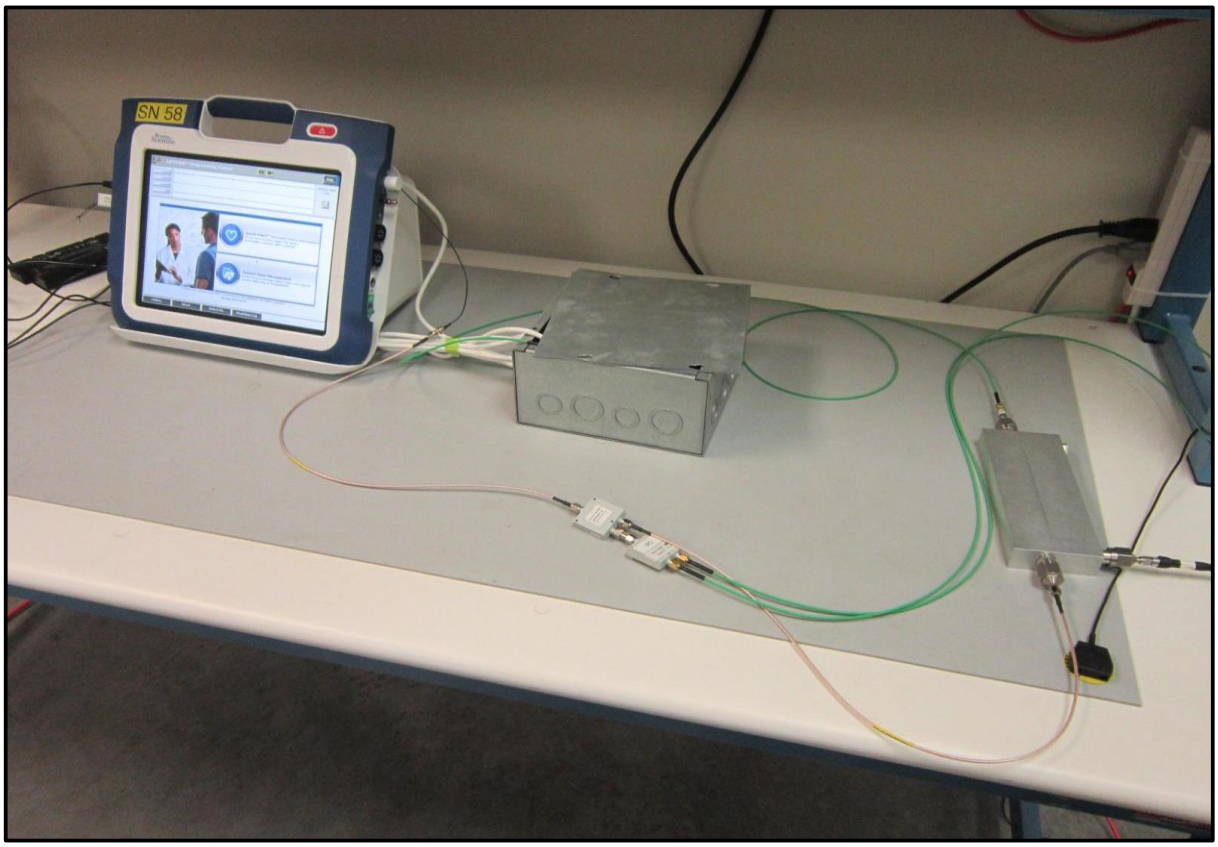
LBT Threshold + 3dB						
				Value (dBm)	Limit (dBm)	Result
				-93.5	<= 92.5	Pass



LBT THRESHOLD POWER LEVEL, 10 CHANNEL

XMit 2016.05.06

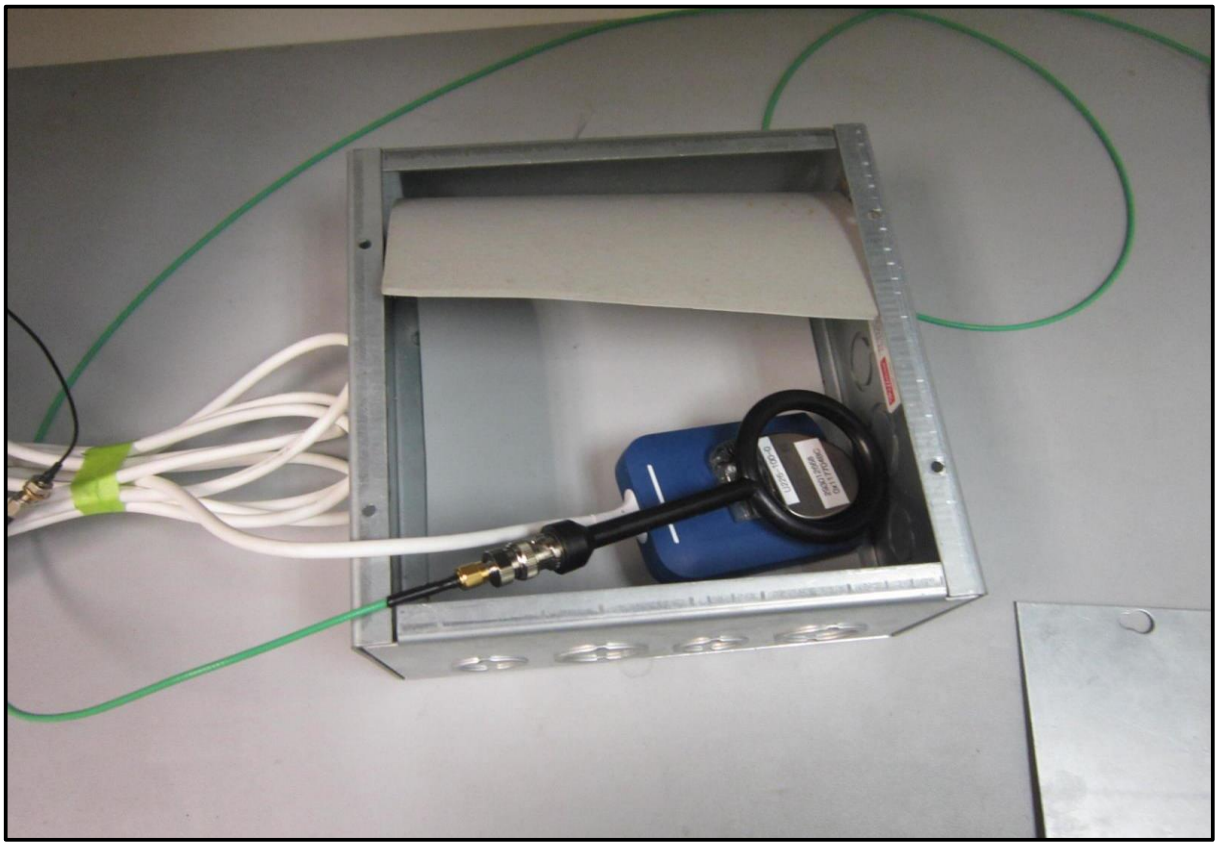


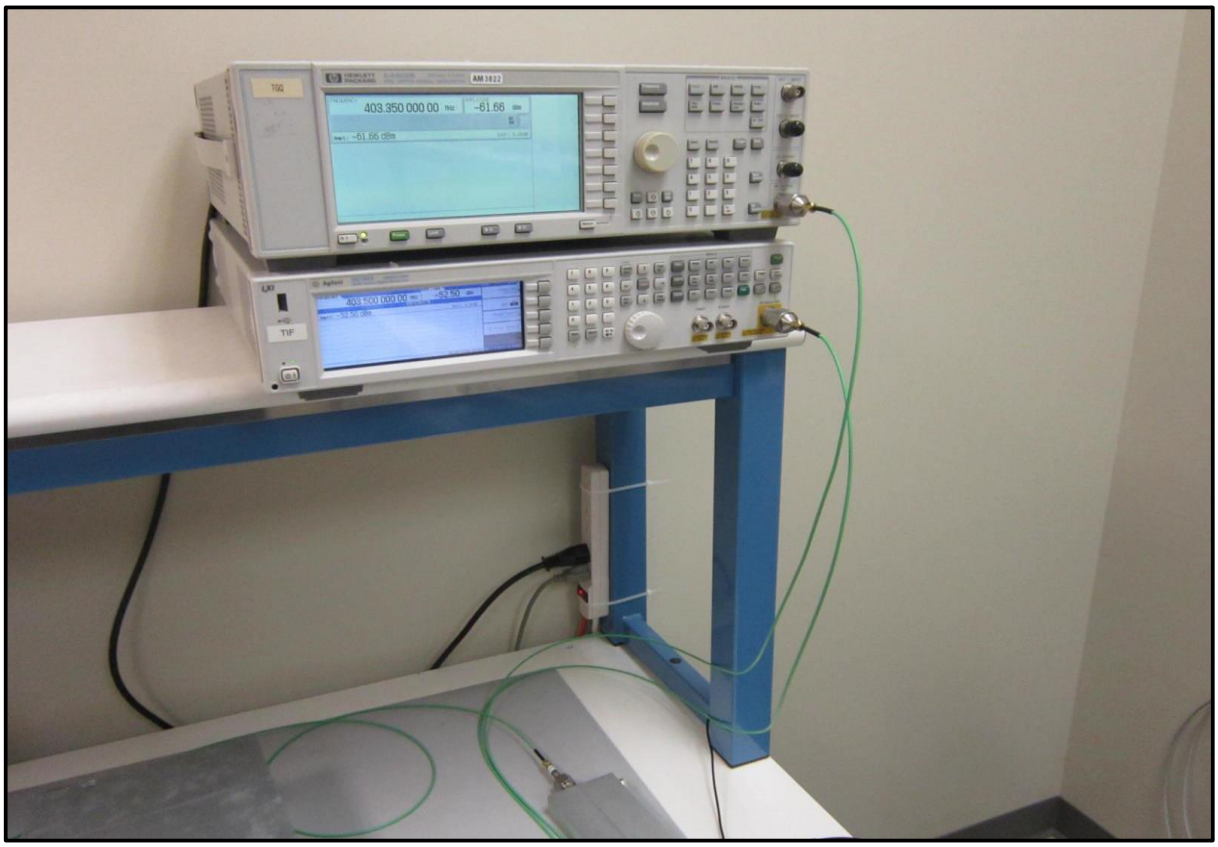


LBT THRESHOLD POWER LEVEL, 10 CHANNEL

NORTHWEST EMC

XMit 2016.05.06





LBT THRESHOLD POWER LEVEL, 2 CHANNEL

XMit 2016.05.06

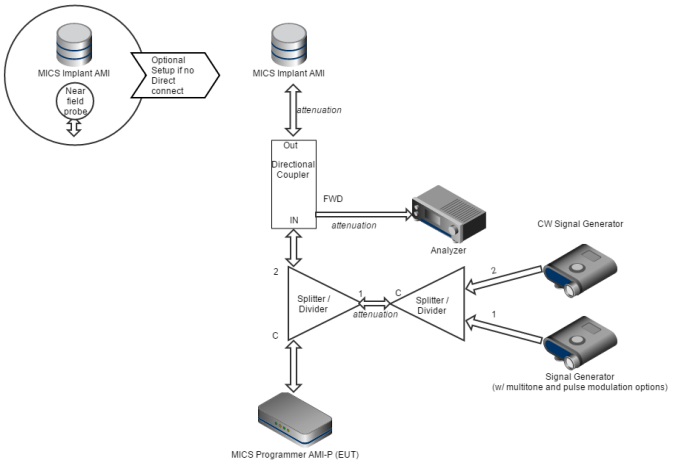
Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Probe - Near Field Set	ETS Lindgren	7405	IPO	NCR	NCR
Power Divider/Combiner	Fairview Microwave Inc (SM electronics)	MP8451-2	IAD	NCR	NCR
Power Divider/Combiner	Fairview Microwave Inc (SM electronics)	MP8451-2	IAC	NCR	NCR
Directional Coupler	Fairview Microwave	SMC4039-10	RGS	NCR	NCR
Generator - Signal	Agilent	N5182A	TIF	8/12/2014	8/12/2017
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	10/17/2017
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	9/18/2016
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	2/26/2017
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	9/18/2016
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was configured according to the following block diagram:



The signal generator was set to multitone operation to cause equal interferance across the entire band. The amplitude of the multitone signals (out of operation region) were set to the LBT threshold of 10*LOG(Bandwidth) - 150 + Antenna Gain + 3 dB.

The spectrum analyzer was set to measure the transmit band of 402-405 MHz. The multitone signal of the intended frequency (Fc) was set to the LBT threshold - 6 dB, and raised by 1 dB increments until the EUT choose a different channel to start a session. Screen captures were provided to show the EUT behavior at the different LBT threshold levels.

The signal generator amplitude at Fc was then measured and recorded with the spectrum analyzer.

LBT THRESHOLD POWER LEVEL, 2 CHANNEL

NORTHWEST EMC

XMit 2016.05.06

EUT:	Model 3300			**Work Order:**	BSTN0663
Serial Number:	058			**Date:**	08/16/16
Customer:	Boston Scientific Corporation			**Temperature:**	23.6 °C
Attendees:	Pete Musto			**Humidity:**	59.1% RH
Project:	Laramie Vision			**Barometric Pres.:**	1019 mbar
Tested by:	Dustin Sparks	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
EN 301 839 V2.1.1:2016	EN 301 839 V2.1.1:2016

COMMENTS

EUT bandwidth is 300000 Hz with an antenna gain of -5 dBi.

DEVIATIONS FROM TEST STANDARD

None

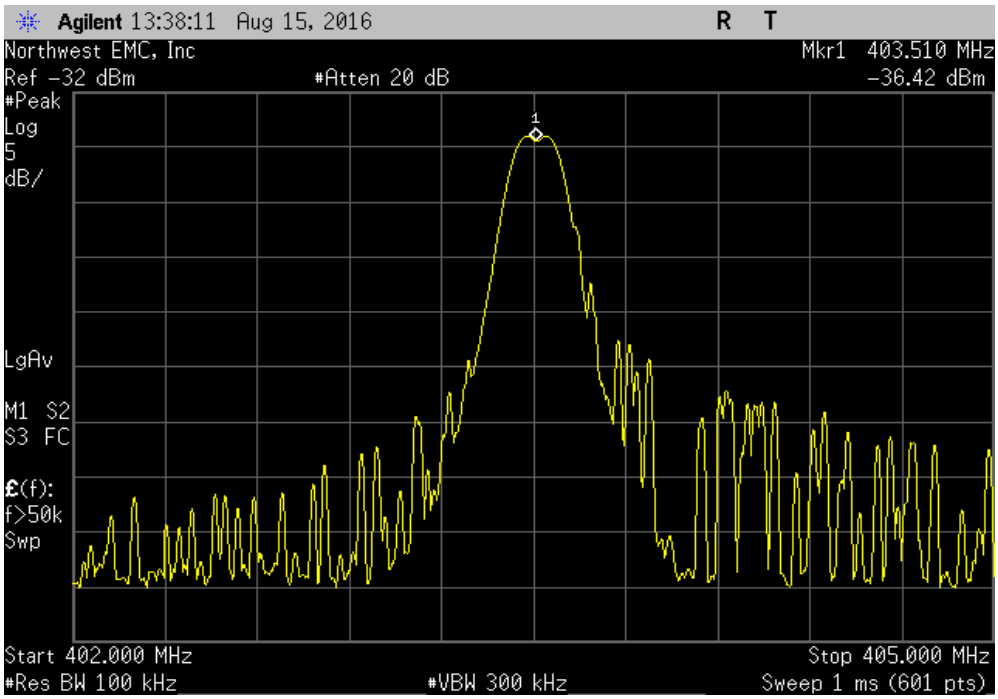
Configuration #	10	Signature

	Value (dBm)	Limit (dBm)	Result
LBT Threshold -6dB	N/A	N/A	N/A
LBT Threshold +2dB	N/A	N/A	N/A
LBT Threshold +3dB	-101.2	<= -100.2	Pass

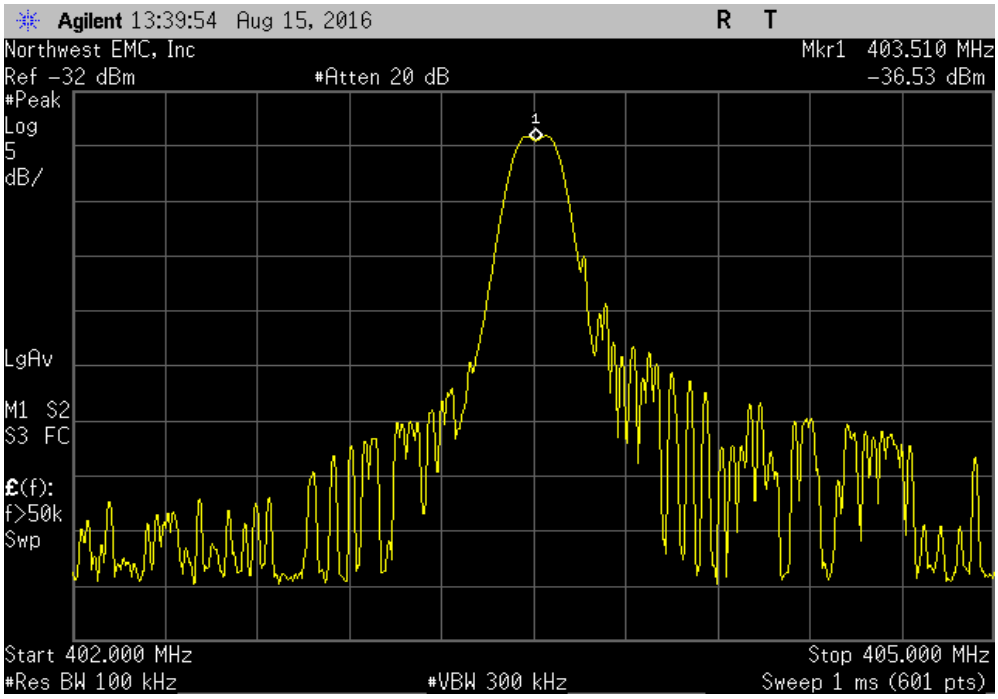
LBT THRESHOLD POWER LEVEL, 2 CHANNEL

XMit 2016.05.06

LBT Threshold -6dB						
				Value (dBm)	Limit (dBm)	Result
				N/A	N/A	N/A



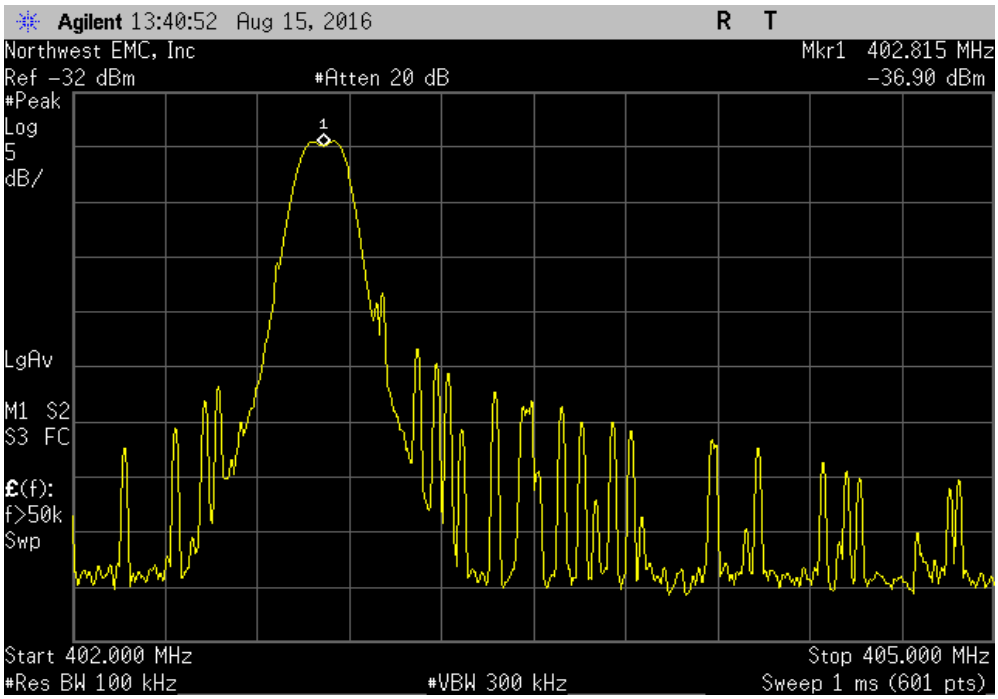
LBT Threshold +2dB						
				Value (dBm)	Limit (dBm)	Result
				N/A	N/A	N/A



LBT THRESHOLD POWER LEVEL, 2 CHANNEL

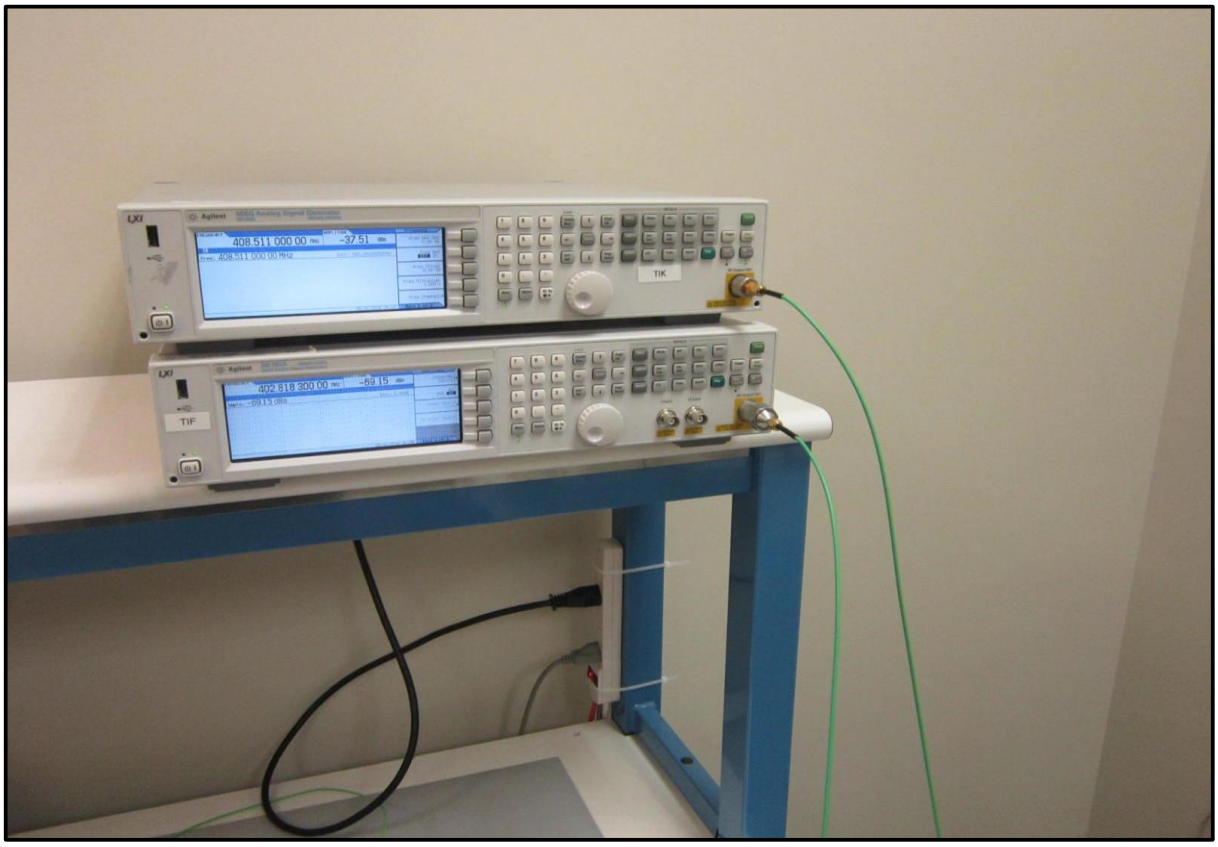
XMit 2016.05.06

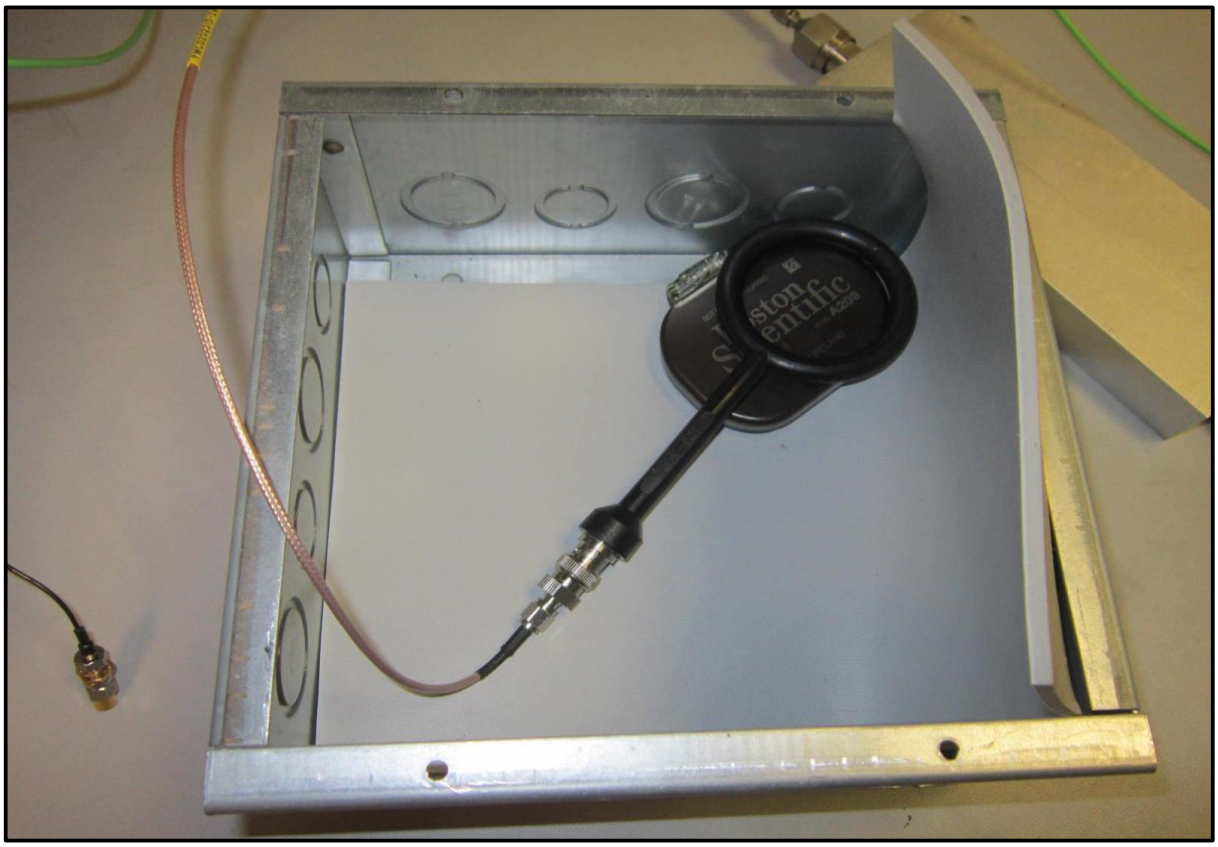
LBT Threshold +3dB						
				Value (dBm)	Limit (dBm)	Result
				-101.2	<= -100.2	Pass



LBT THRESHOLD POWER LEVEL, 2 CHANNEL

XMit 2016.05.06

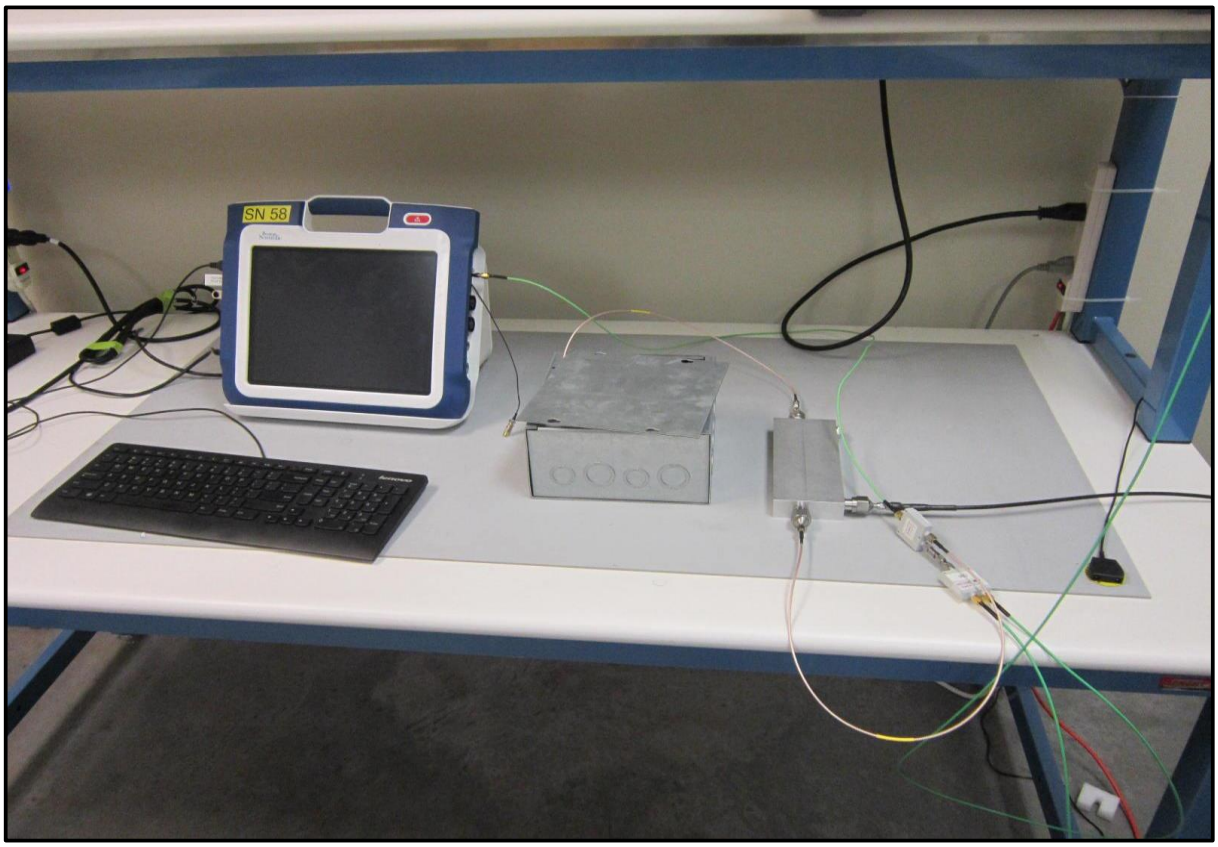




LBT THRESHOLD POWER LEVEL, 2 CHANNEL

NORTHWEST EMC

XMit 2016.05.06



MONITORING SYSTEM BANDWIDTH, 10 CHANNEL

XMit 2016.05.06

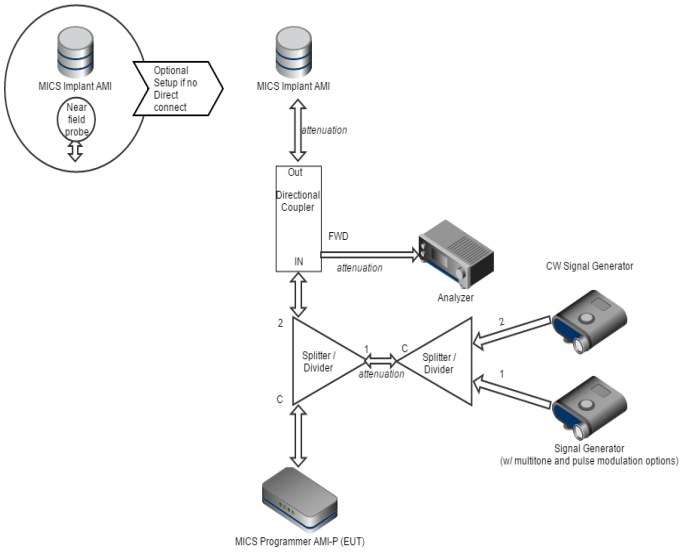
Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Probe - Near Field Set	ETS Lindgren	7405	IPO	NCR	NCR
Directional Coupler	Fairview Microwave	SMC4039-10	RGS	NCR	NCR
Power Divider/Combiner	Fairview Microwave Inc (SM electronics)	MP8451-2	IAD	NCR	NCR
Power Divider/Combiner	Fairview Microwave Inc (SM electronics)	MP8451-2	IAC	NCR	NCR
ESD Gun	Teseq	NSG 437	IGQ	6/3/2016	12/3/2016
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	9/18/2016
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	9/18/2016
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

TEST DESCRIPTION

A near-field probe was placed near the transmitter. A low-loss coaxial cable was used to connect the near-field probe to the spectrum analyzer. The EUT was configured according to the following block diagram:



The signal generator was set to multitone operation to cause equal interferance across the entire band. The amplitude of the multitone signals (out of operation region) were set to the LBT threshold of 10*LOG(Bandwidth) - 150 + Antenna Gain + 3 dB.

The spectrum analyzer was set to measure the transmit band of 402-405 MHz. The multitone signal of the intended frequency (Fc) was set to a level above the LBT threshold, and lowered by 1 dB increments until the EUT chooses the intended frequency (Fc) to start a session on.

The blocking frequency at Fc was then lowered to Fc - Bandwidth / 2. The amplitude was then raised until the EUT chooses a channel other than Fc. This was repeated with the blocking frequency raised to Fc + Bandwidth / 2.

The signal generator amplitude at Fc was measured at

MONITORING SYSTEM BANDWIDTH, 10 CHANNEL

NORTHWEST EMC

XMit 2016.05.06

EUT:	Model 3300			**Work Order:**	BSTN0663
Serial Number:	58			**Date:**	08/08/16
Customer:	Boston Scientific Corporation			**Temperature:**	23.2 °C
Attendees:	Pete Musto			**Humidity:**	53.7% RH
Project:	Laramie Vision			**Barometric Pres.:**	1019 mbar
Tested by:	Dustin Sparks	**Power:**	220VAC/60Hz	**Job Site:**	MN02

TEST SPECIFICATIONS	Test Method
EN 301 839 V2.1.1:2016	EN 301 839 V2.1.1:2016

COMMENTS

EUT emissions bandwidth is 300000 Hz, 2.7 dBi antenna gain. Antenna port B, PRM Application 3869 v. 0.03.13

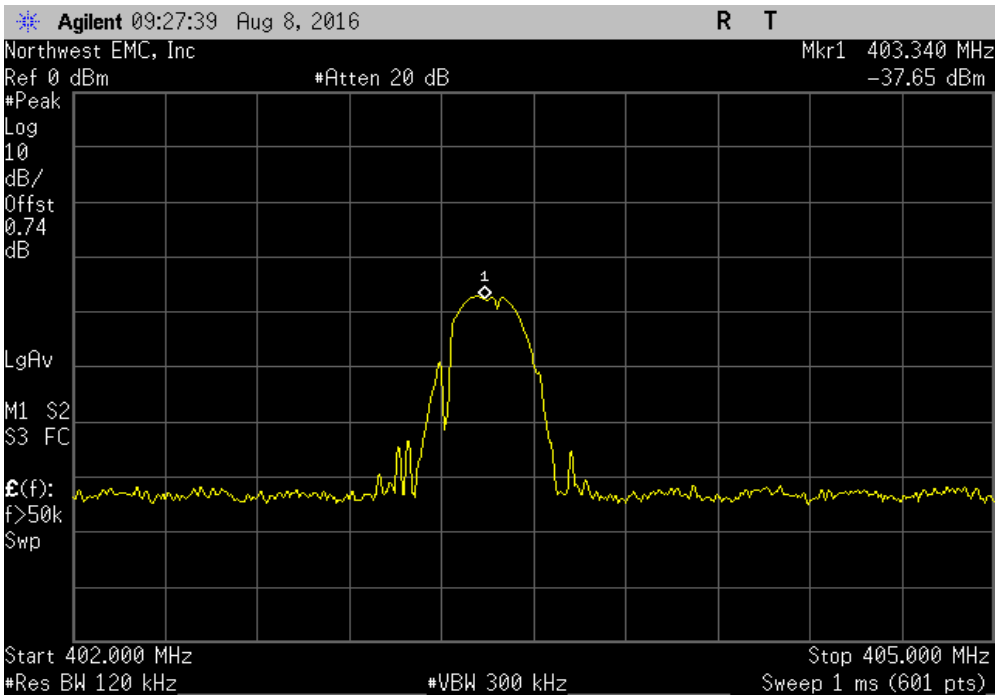
DEVIATIONS FROM TEST STANDARD

None

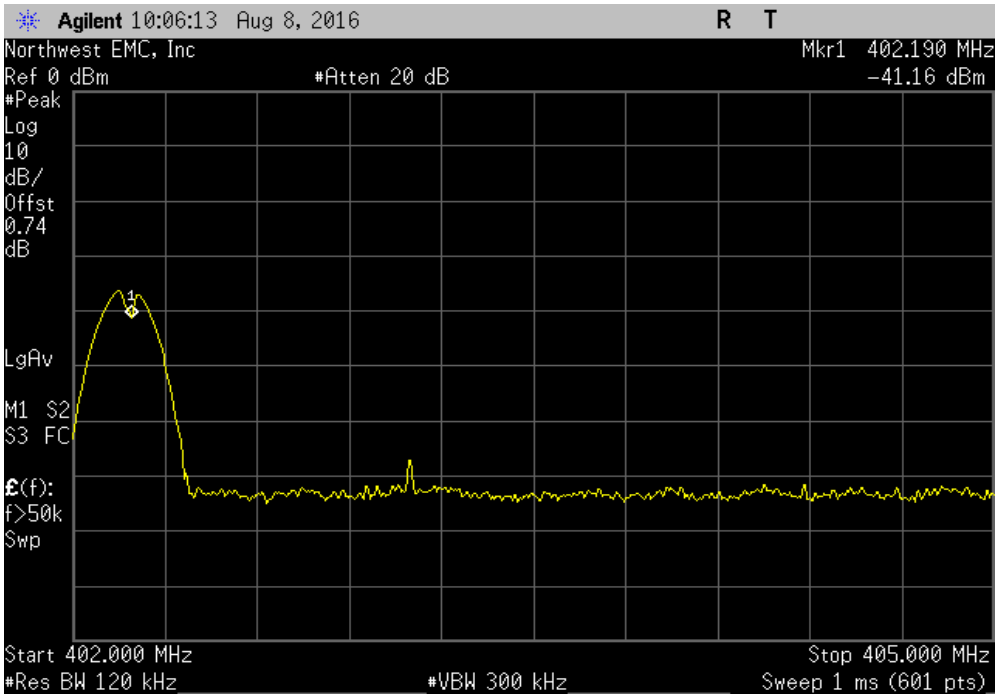
Configuration #	7	Signature Dustin Sparks

	Measured Value (dBm)	Value (dB)	Limit < (dB)	Result
(Pa) = Fc	-90.53	N/A	N/A	N/A
(Pb) = Fc - Emissions BW/2	-86.53	-4	20	Pass
(Pc) = Fc + Emissions BW/2	-87.53	-3	20	Pass

(Pa) = Fc						
			Measured Value (dBm)	Value (dB)	Limit < (dB)	Result
			-90.53	N/A	N/A	N/A



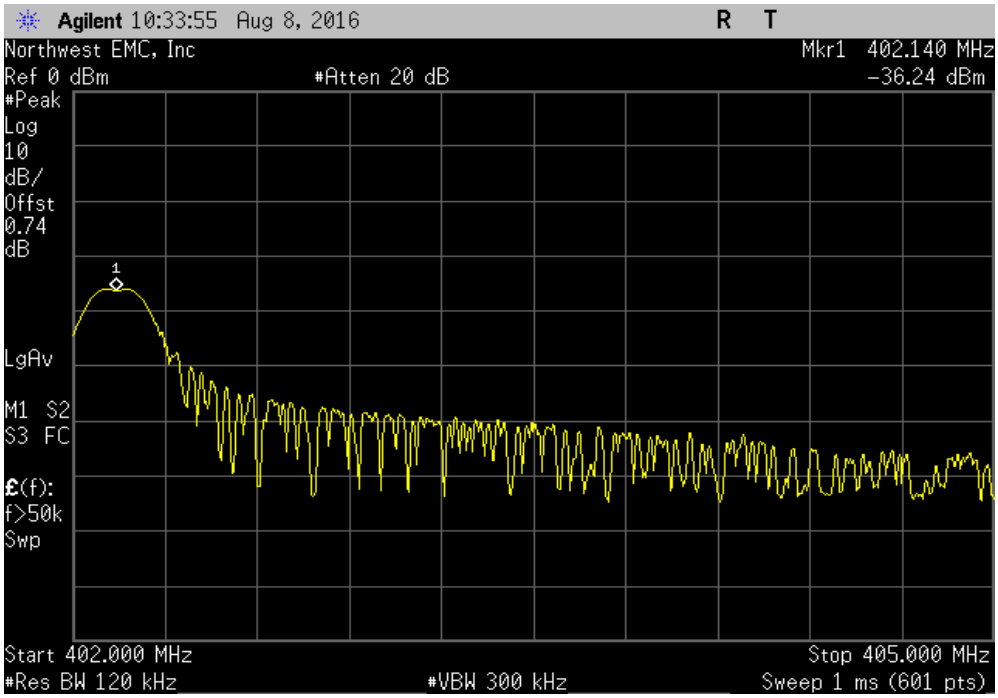
(Pb) = Fc - Emissions BW/2						
			Measured Value (dBm)	Value (dB)	Limit < (dB)	Result
			-86.53	-4	20	Pass



MONITORING SYSTEM BANDWIDTH, 10 CHANNEL

XMit 2016.05.06

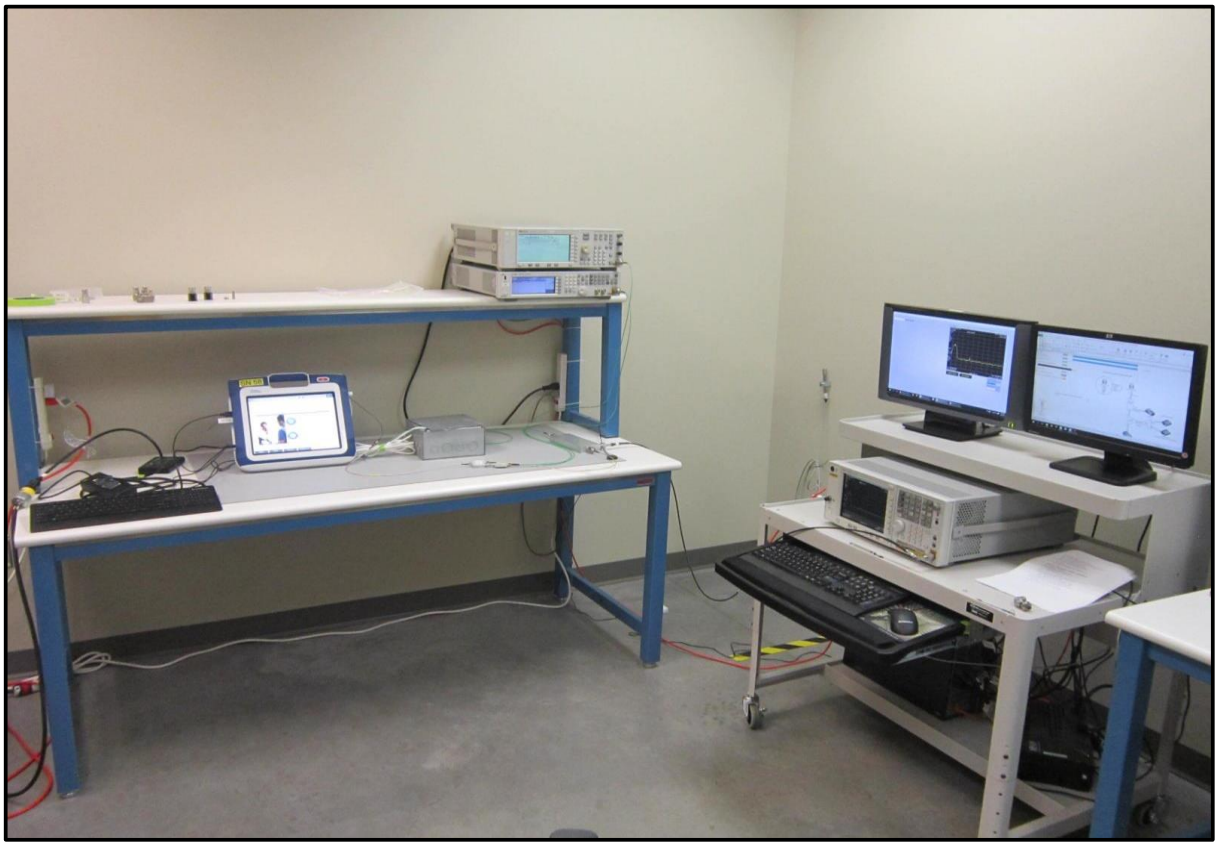
(Pc) = Fc + Emissions BW/2						
			Measured Value (dBm)	Value (dB)	Limit < (dB)	Result
			-87.53	-3	20	Pass

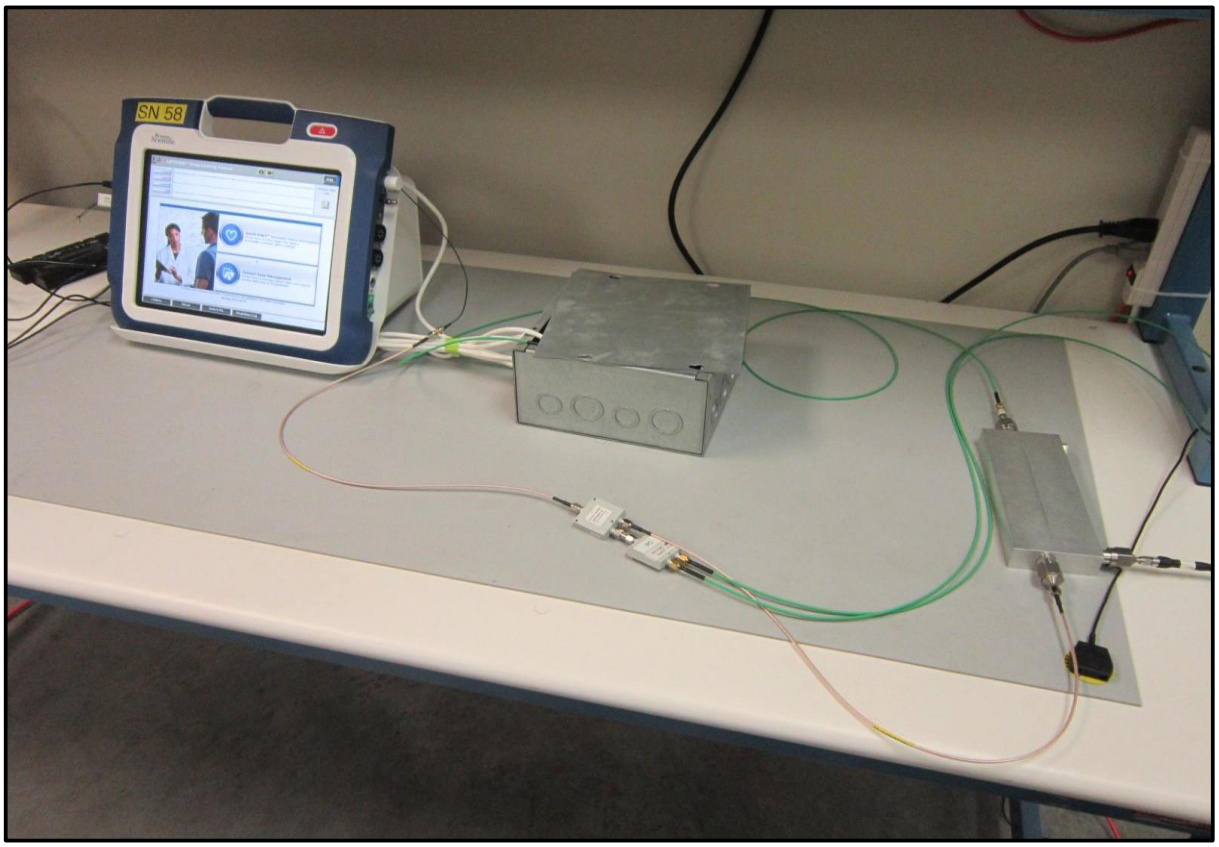


MONITORING SYSTEM BANDWIDTH, 10 CHANNEL

NORTHWEST EMC

XMit 2016.05.06

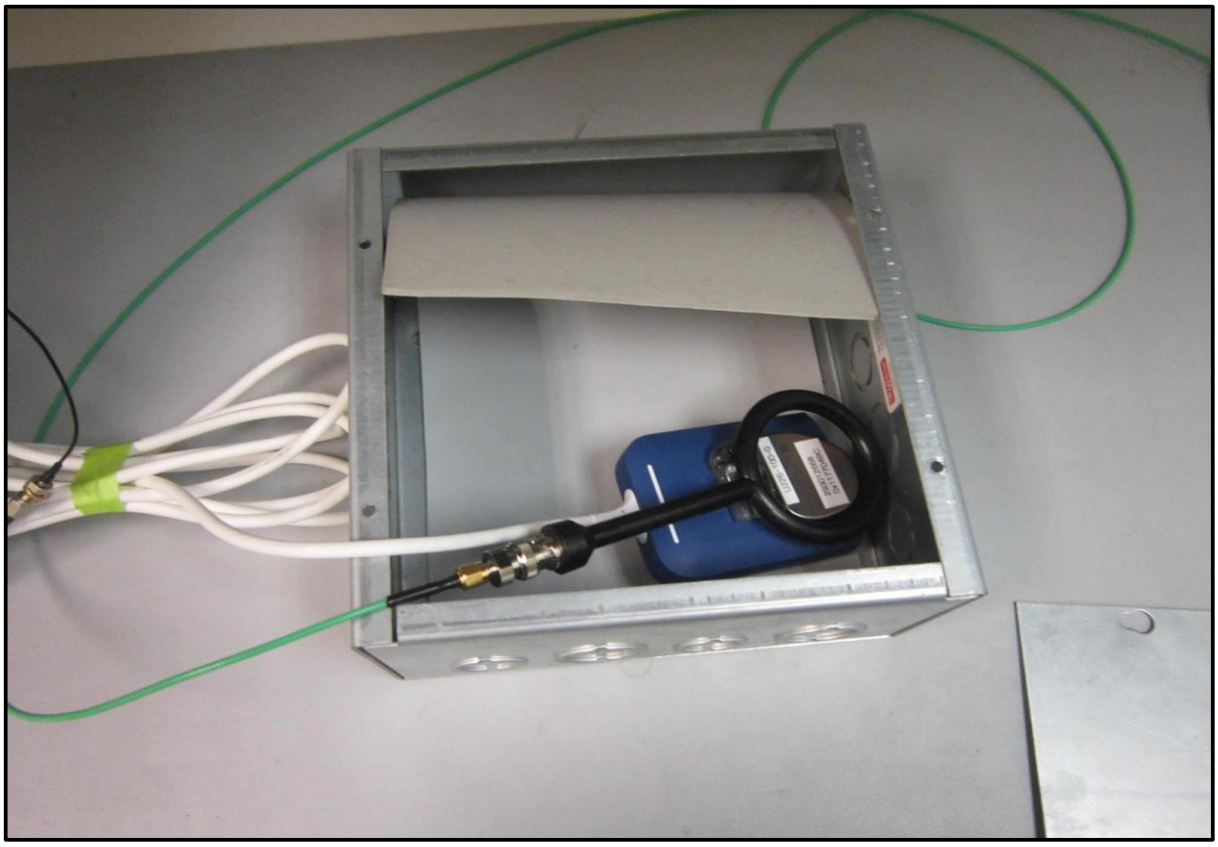


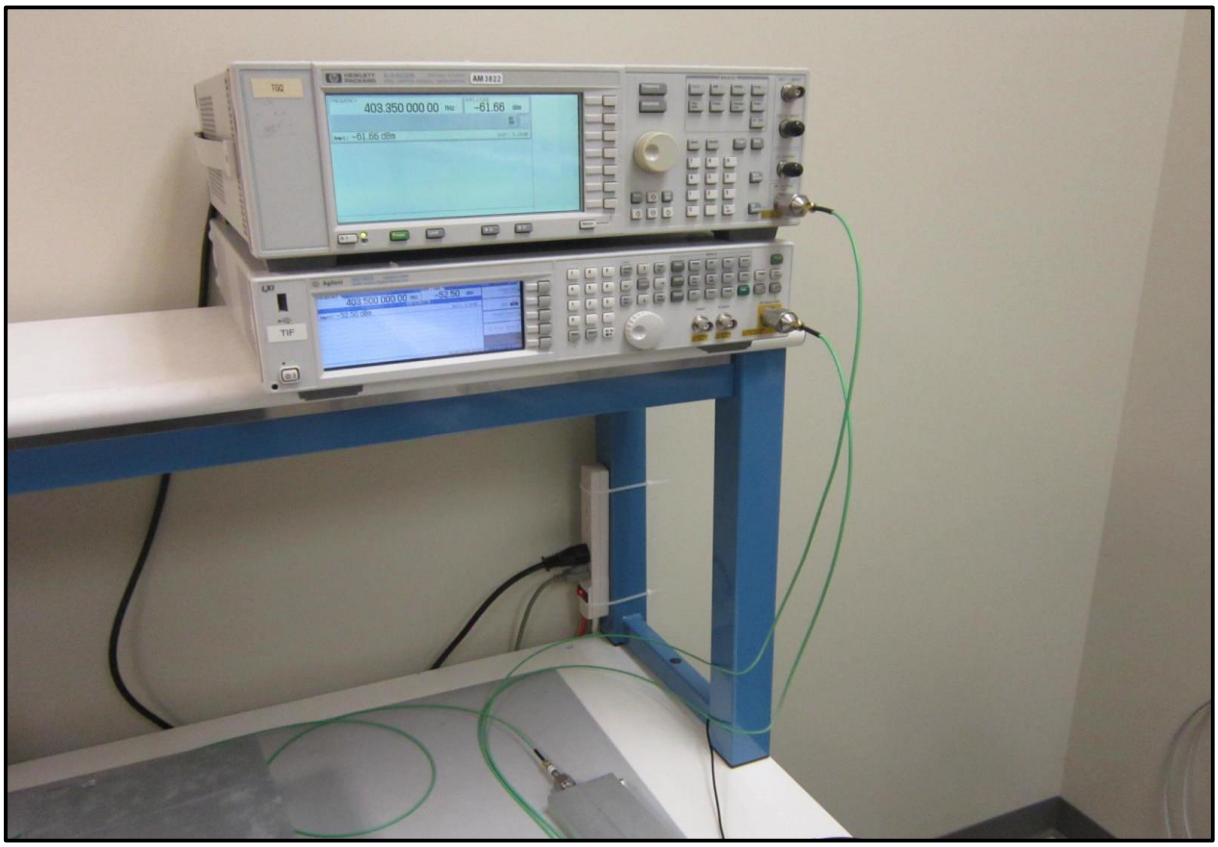


MONITORING SYSTEM BANDWIDTH, 10 CHANNEL

NORTHWEST EMC

XMit 2016.05.06





MONITORING SYSTEM BANDWIDTH, 2 CHANNEL

XMit 2016.05.06

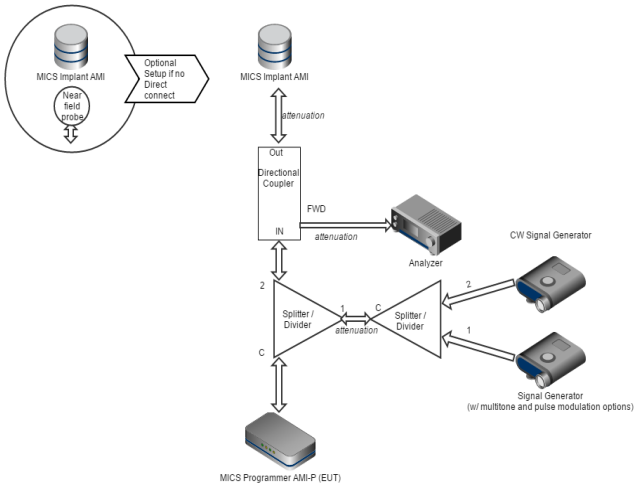
Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Probe - Near Field Set	ETS Lindgren	7405	IPO	NCR	NCR
Directional Coupler	Fairview Microwave	SMC4039-10	RGS	NCR	NCR
Power Divider/Combiner	Fairview Microwave Inc (SM electronics)	MP8451-2	IAD	NCR	NCR
Power Divider/Combiner	Fairview Microwave Inc (SM electronics)	MP8451-2	IAC	NCR	NCR
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	10/17/2017
Generator - Signal	Agilent	N5182A	TIF	8/12/2014	8/12/2017
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	9/18/2016
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	2/26/2017
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	9/18/2016
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was configured according to the following block diagram:



The signal generator was set to multitone operation to cause equal interferance across the entire band. The amplitude of the multitone signals (out of operation region) were set to the LBT threshold of 10*LOG(Bandwidth) - 150 + Antenna Gain + 3 dB.

The spectrum analyzer was set to measure the transmit band of 402-405 MHz. The multitone signal of the intended frequency (Fc) was set to a level above the LBT threshold, and lowered by 1 dB increments until the EUT chooses the intended frequency (Fc) to start a session on.

The blocking frequency at Fc was then lowered to Fc - Bandwidth / 2. The amplitude was then raised until the EUT chooses a channel other than Fc. This was repeated with the blocking frequency raised to Fc + Bandwidth / 2.

The signal generator amplitude at Fc was measured at each point.

MONITORING SYSTEM BANDWIDTH, 2 CHANNEL

NORTHWEST EMC

XMit 2016.05.06

EUT:	Model 3300			**Work Order:**	BSTN0663
Serial Number:	058			**Date:**	08/16/16
Customer:	Boston Scientific Corporation			**Temperature:**	23.6 °C
Attendees:	Pete Musto			**Humidity:**	59.8% RH
Project:	Laramie Vision			**Barometric Pres.:**	1019 mbar
Tested by:	Dustin Sparks	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
EN 301 839 V2.1.1:2016	EN 301 839 V2.1.1:2016

COMMENTS

EUT bandwidth is 300000 Hz with an antenna gain of -5 dBi.

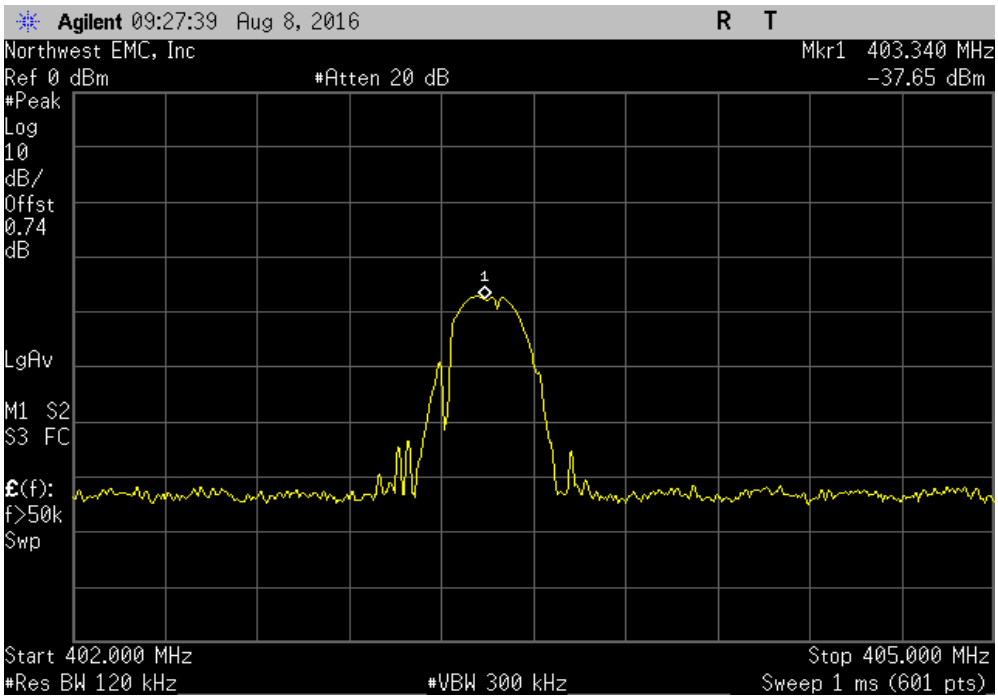
DEVIATIONS FROM TEST STANDARD

None

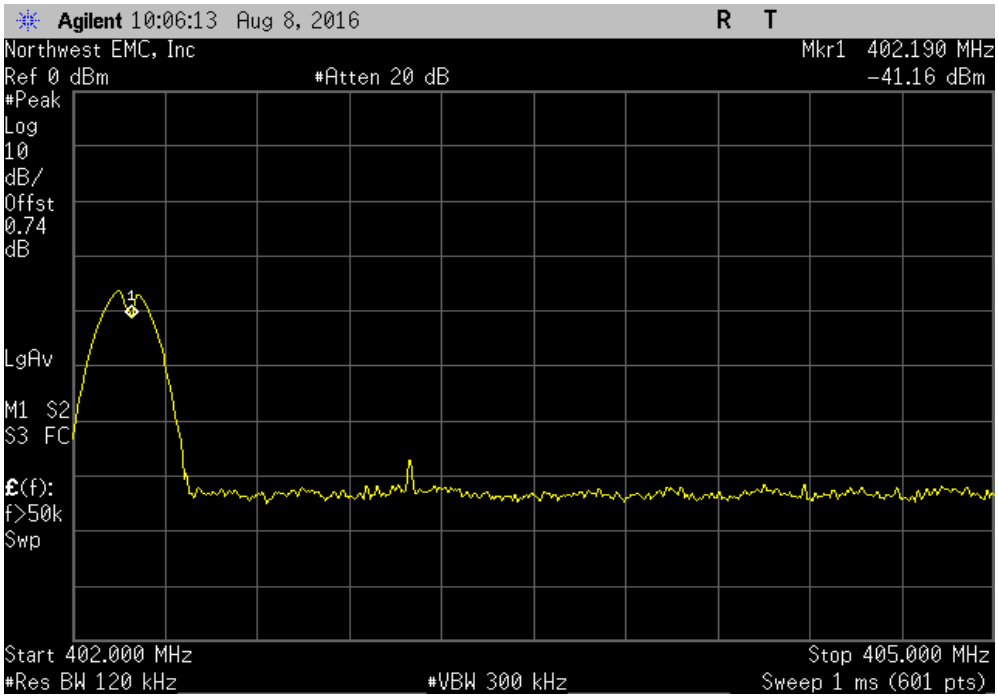
Configuration #	10	Signature

	Measured Value (dBm)	Value (dB)	Limit (dB)	Result
(Pa) = Fc	-70.15	N/A	N/A	N/A
(Pb) = Fc - Emissions BW/2	-57.15	13	<= 20	Pass
(Pc) = Fc + Emissions BW/2	-56.15	14	<= 20	Pass

(Pa) = Fc						
		Measured Value (dBm)		Value (dB)	Limit (dB)	Result
		-70.15		N/A	N/A	N/A



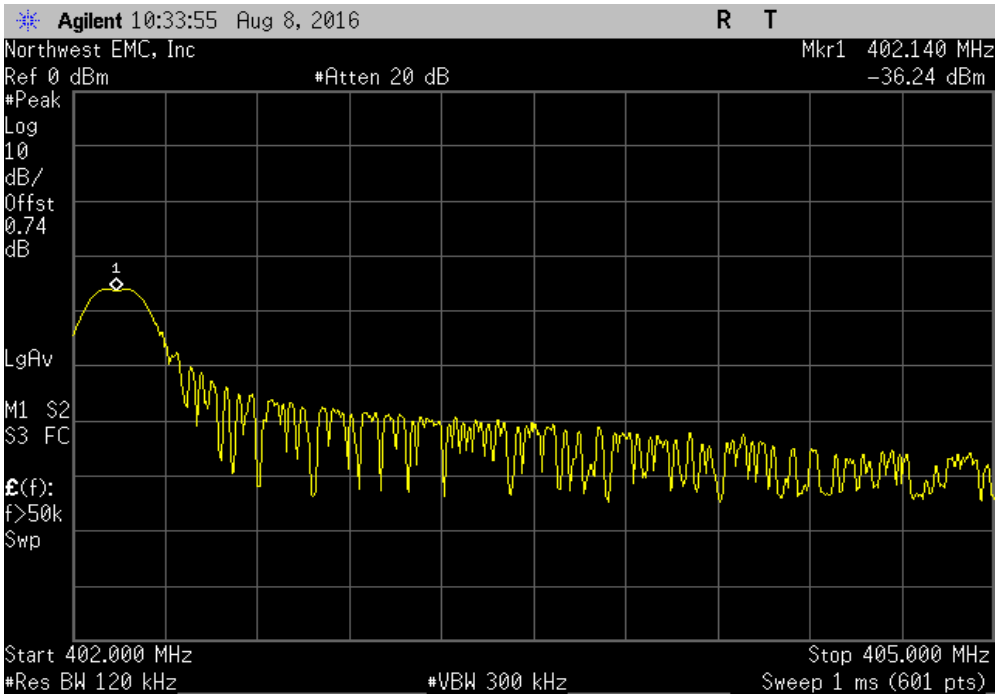
(Pb) = Fc - Emissions BW/2						
		Measured Value (dBm)		Value (dB)	Limit (dB)	Result
		-57.15		13	<= 20	Pass



MONITORING SYSTEM BANDWIDTH, 2 CHANNEL

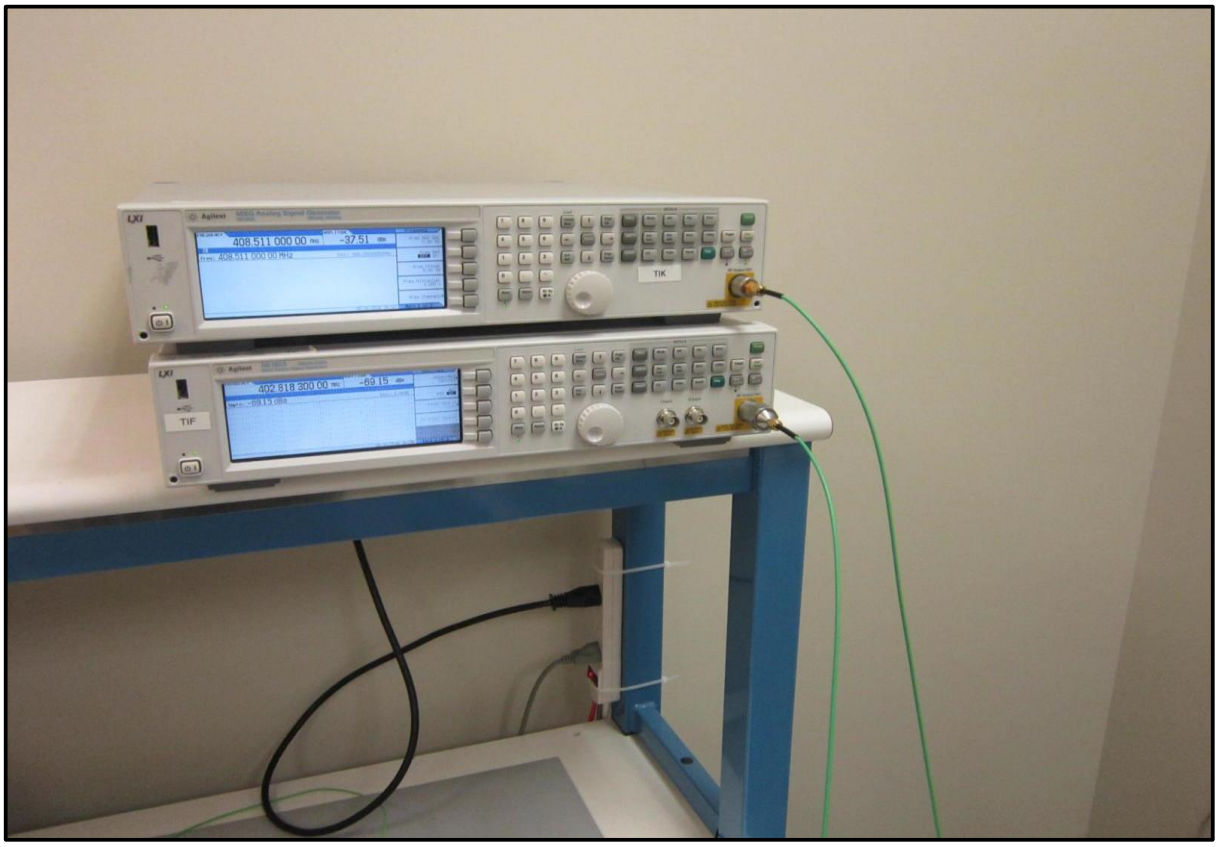
XMit 2016.05.06

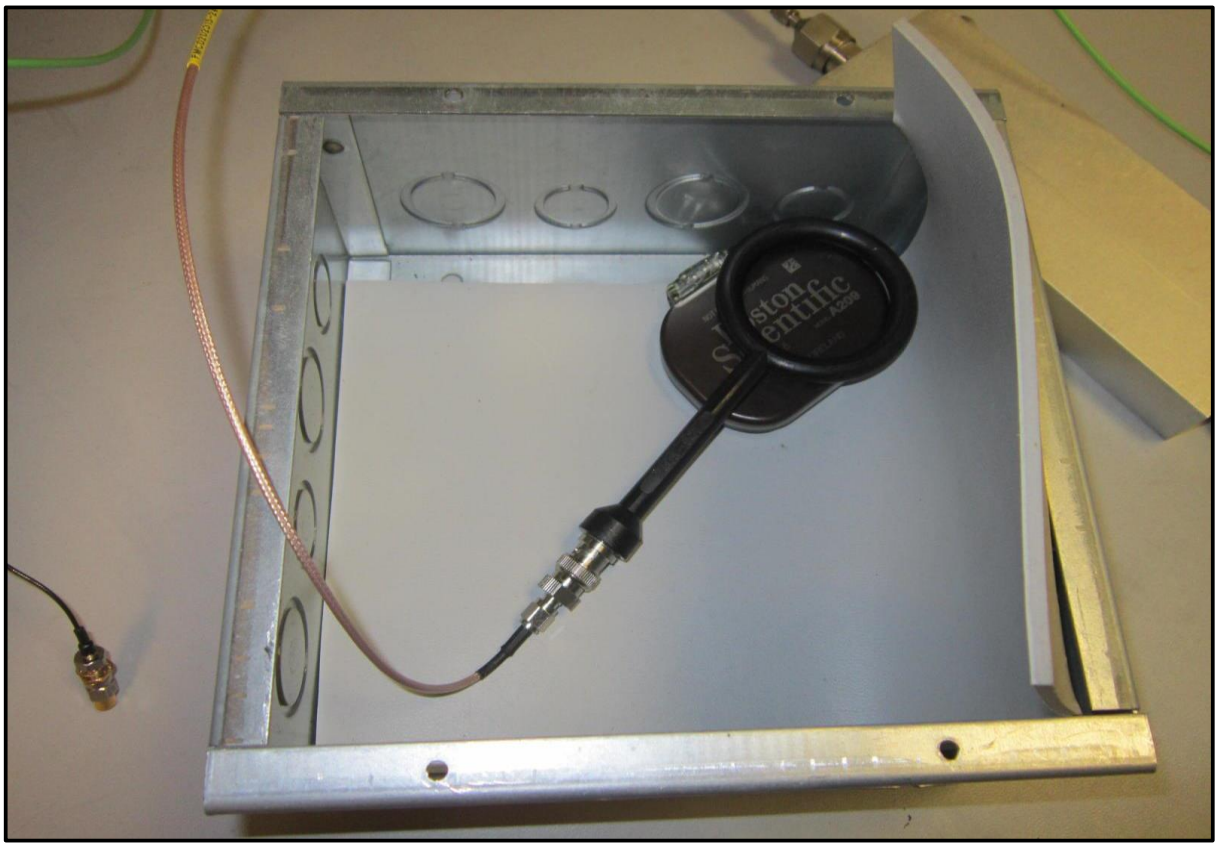
(Pc) = Fc + Emissions BW/2						
		Measured Value (dBm)		Value (dB)	Limit (dB)	Result
		-56.15		14	<= 20	Pass



MONITORING SYSTEM BANDWIDTH, 2 CHANNEL

XMit 2016.05.06

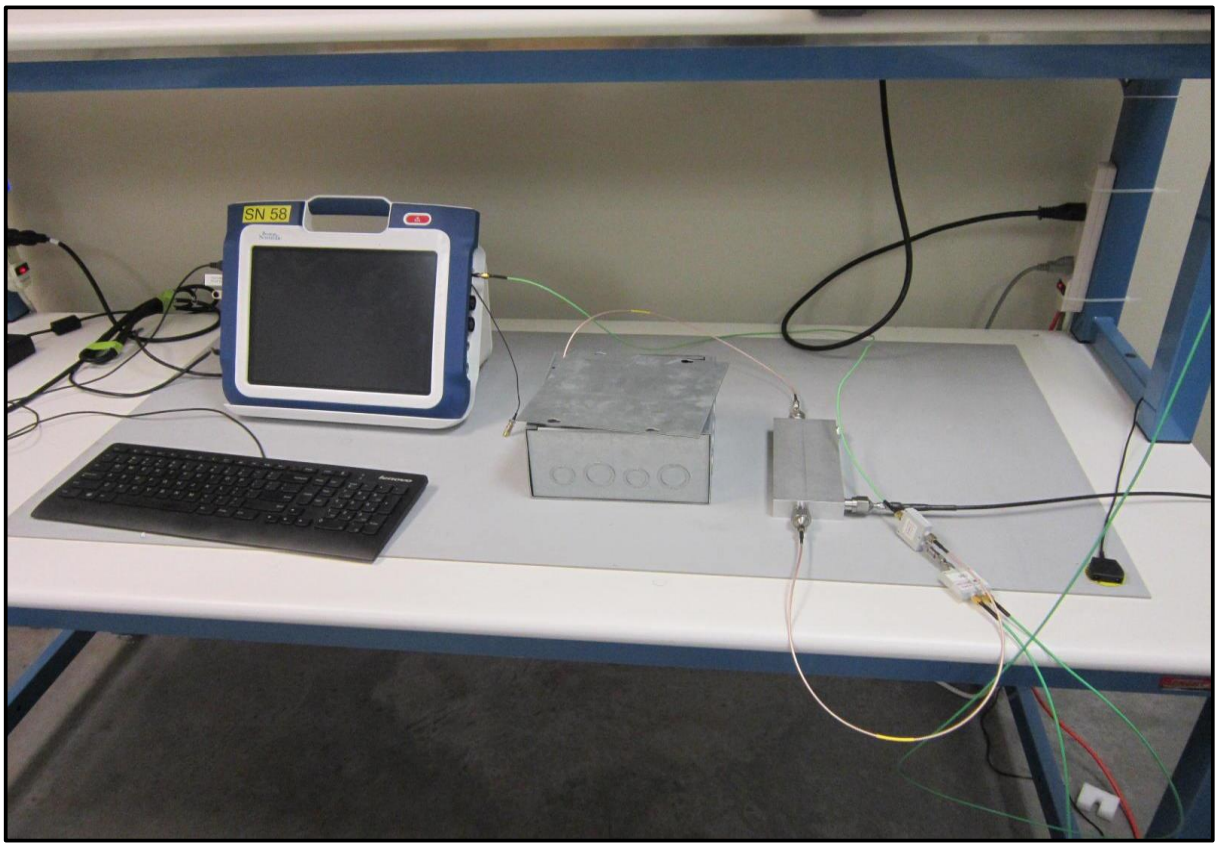




MONITORING SYSTEM BANDWIDTH, 2 CHANNEL

NORTHWEST EMC

XMit 2016.05.06



MONITORING SYSTEM SCAN CYCLE TIME, 10 CHANNEL

XMit 2016.05.06

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

TEST EQUIPMENT

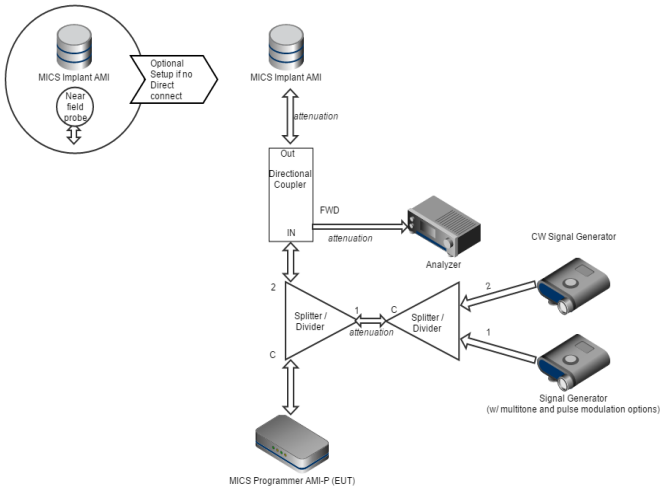
Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Directional Coupler	Fairview Microwave	SMC4039-10	RGS	NCR	NCR
Probe - Near Field Set	ETS Lindgren	7405	IPO	NCR	NCR
Power Divider/Combiner	Fairview Microwave Inc (SM electronics)	MP8451-2	IAD	NCR	NCR
Power Divider/Combiner	Fairview Microwave Inc (SM electronics)	MP8451-2	IAC	NCR	NCR
Generator - Signal	Agilent	E4422B	TGQ	3/17/2015	3/17/2018
Generator - Signal	Agilent	N5182A	TIF	8/12/2014	8/12/2017
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	9/18/2016
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	9/18/2016
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

TEST DESCRIPTION

A near-field probe was placed near the transmitter. A low-loss coaxial cable was used to connect the near-field probe to the spectrum analyzer. The EUT was configured according to the following block diagram:

The signal generator was set to multitone operation to cause equal interferance across the entire band. The spectrum analyzer was set to zero span with a sweep time equal to 10 seconds.

The CW signal on the intended frequency (Fc) was removed. At the same time, the EUT was set to seek a session with the implantable device. The delay between Fc becoming available and the EUT establishing a session was measured.



MONITORING SYSTEM SCAN CYCLE TIME, 10 CHANNEL

NORTHWEST EMC

XMit 2016.05.06

EUT:	Model 3300			**Work Order:**	BSTN0663
Serial Number:	058			**Date:**	08/08/16
Customer:	Boston Scientific Corporation			**Temperature:**	23.3 °C
Attendees:	Pete Musto			**Humidity:**	54.3% RH
Project:	Laramie Vision			**Barometric Pres.:**	1018 mbar
Tested by:	Dustin Sparks	**Power:**	220VAC/60Hz	**Job Site:**	MN02

TEST SPECIFICATIONS	Test Method
EN 301 839 V2.1.1:2016	EN 301 839 V2.1.1:2016

COMMENTS

EUT emissions bandwidth is 300000 Hz, 2.7 dBi antenna gain. Antenna port B, MTI v. 2.0-7

DEVIATIONS FROM TEST STANDARD

None

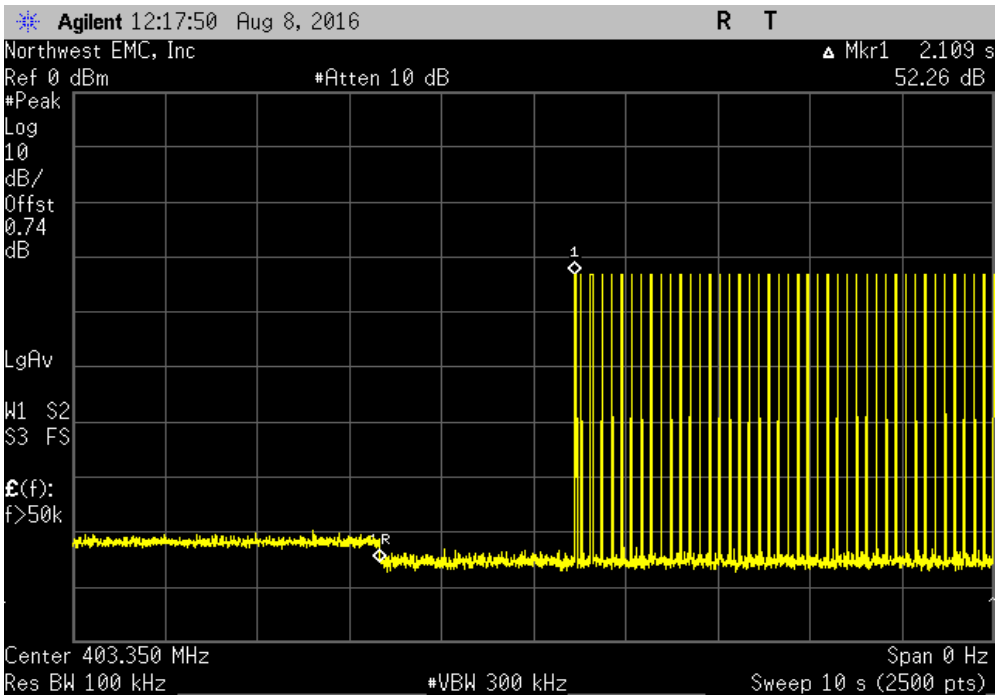
Configuration #	8	Signature

	Value (s)	Limit (s)	Result
Sample 1	2.109	<= 5	Pass
Sample 2	2.181	<= 5	Pass
Sample 3	2.509	<= 5	Pass
Sample 4	2.441	<= 5	Pass
Sample 5	2.401	<= 5	Pass
Sample 6	2.249	<= 5	Pass
Sample 7	2.381	<= 5	Pass
Sample 8	2.145	<= 5	Pass
Sample 9	2.365	<= 5	Pass
Sample 10	2.349	<= 5	Pass

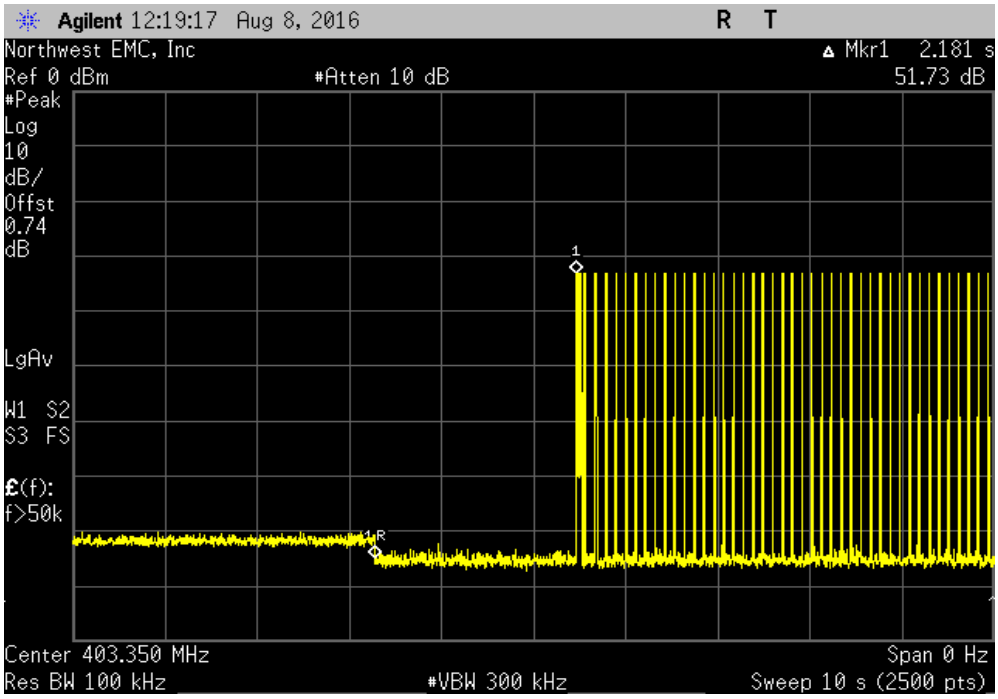
MONITORING SYSTEM SCAN CYCLE TIME, 10 CHANNEL

XMit 2016.05.06

Sample 1						
				Value (s)	Limit (s)	Result
				2.109	<= 5	Pass

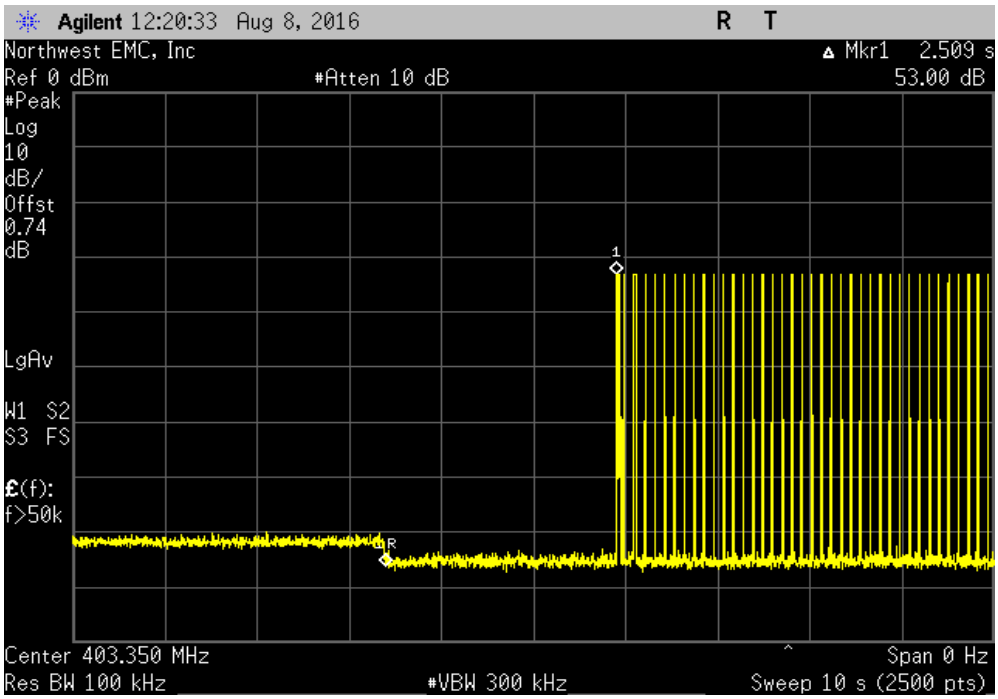


Sample 2						
				Value (s)	Limit (s)	Result
				2.181	<= 5	Pass



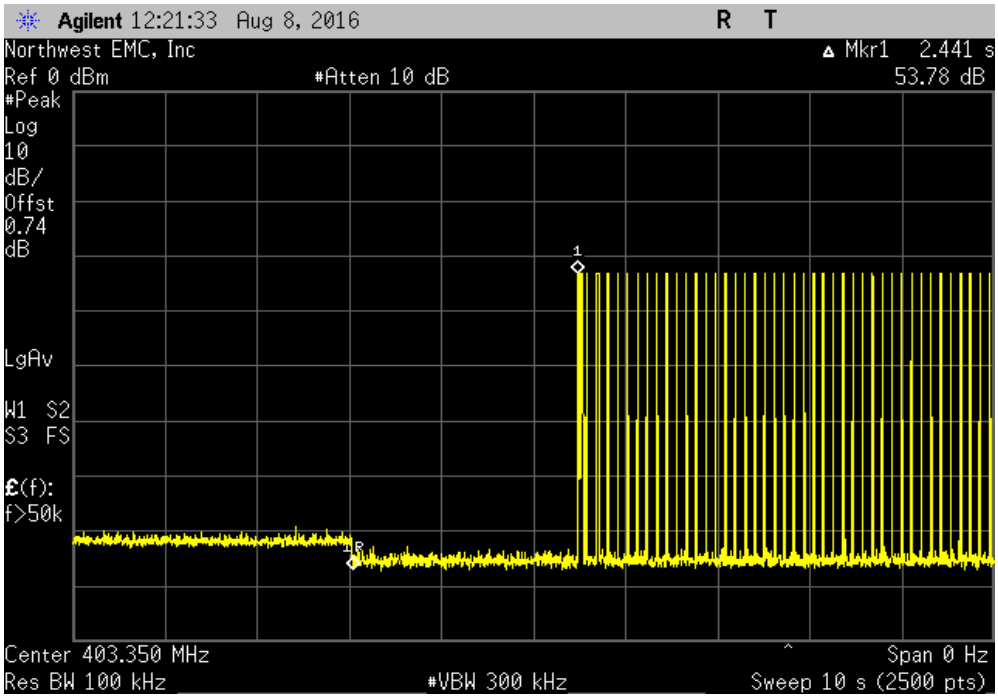
Sample 3

Value (s)	Limit (s)	Result
2.509	<= 5	Pass



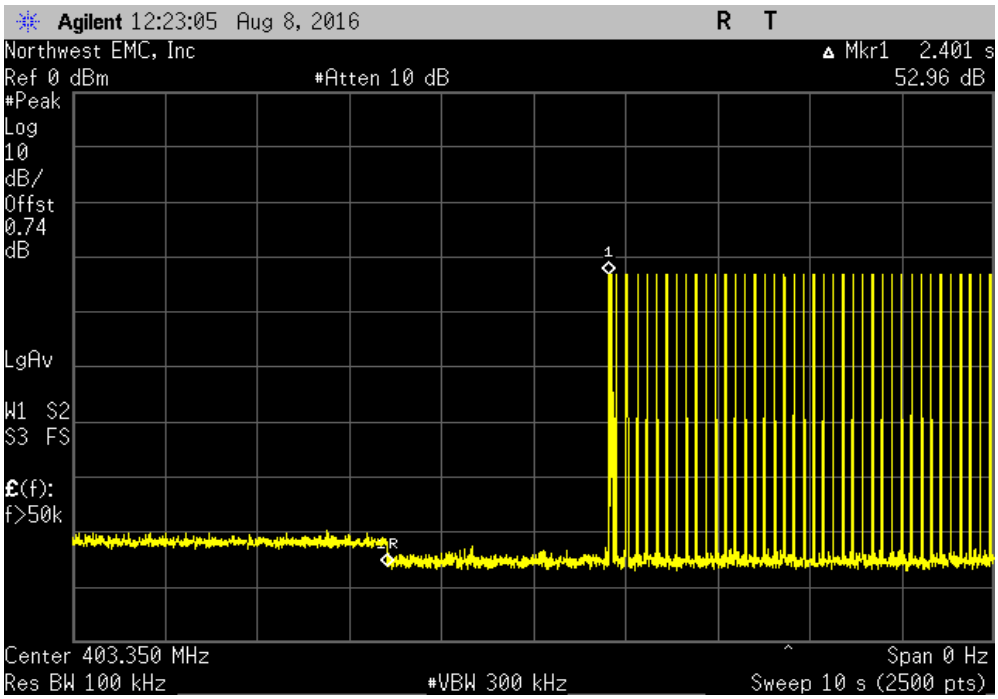
Sample 4

Value (s)	Limit (s)	Result
2.441	<= 5	Pass



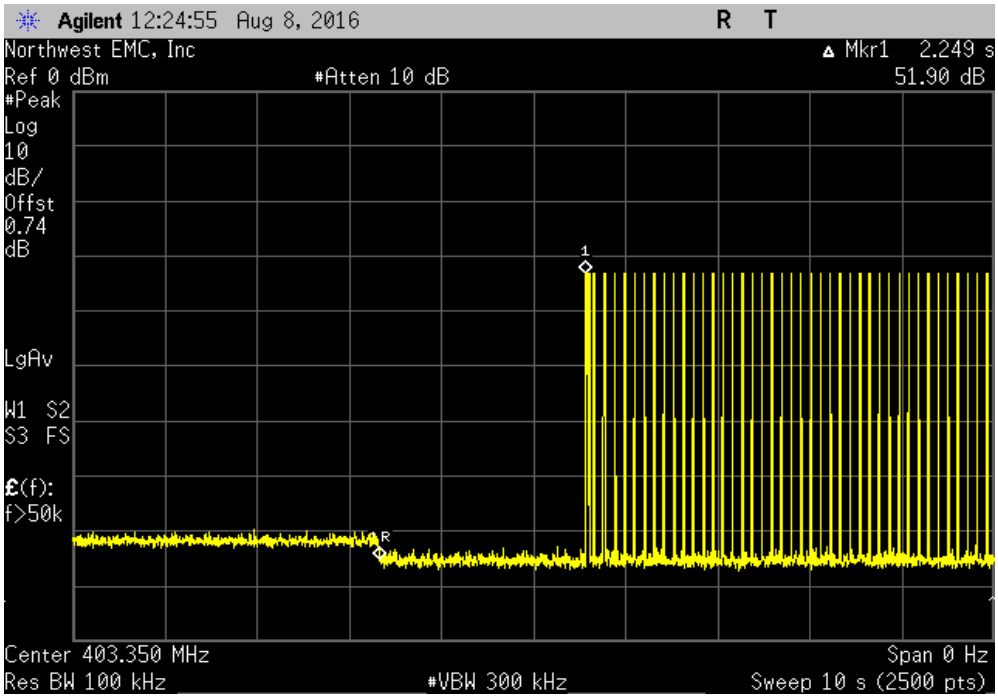
Sample 5

				Value (s)	Limit (s)	Result
				2.401	<= 5	Pass



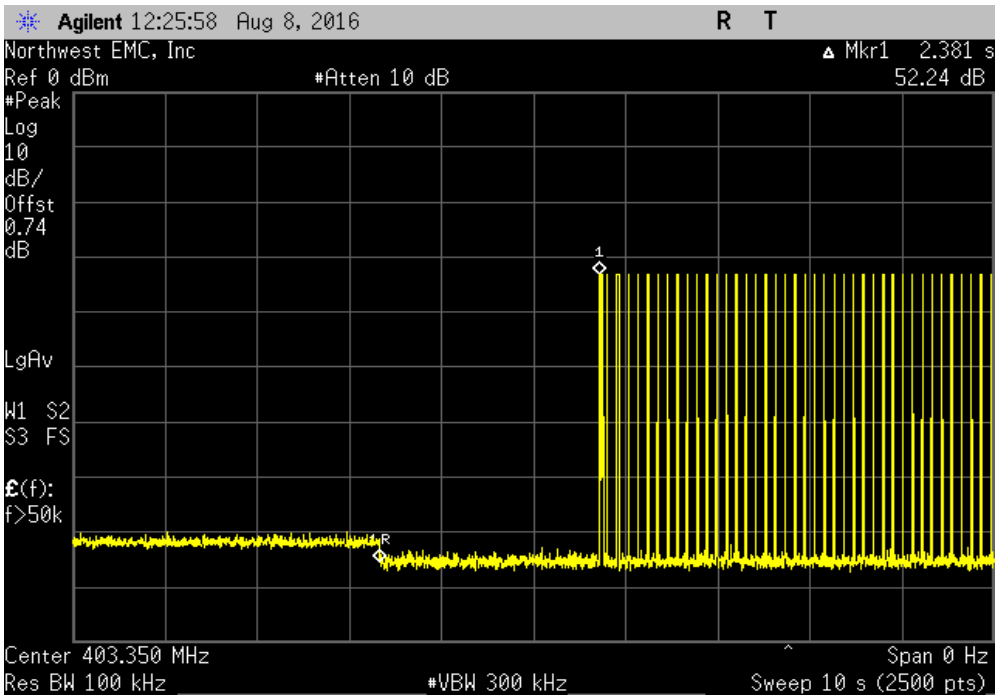
Sample 6

				Value (s)	Limit (s)	Result
				2.249	<= 5	Pass



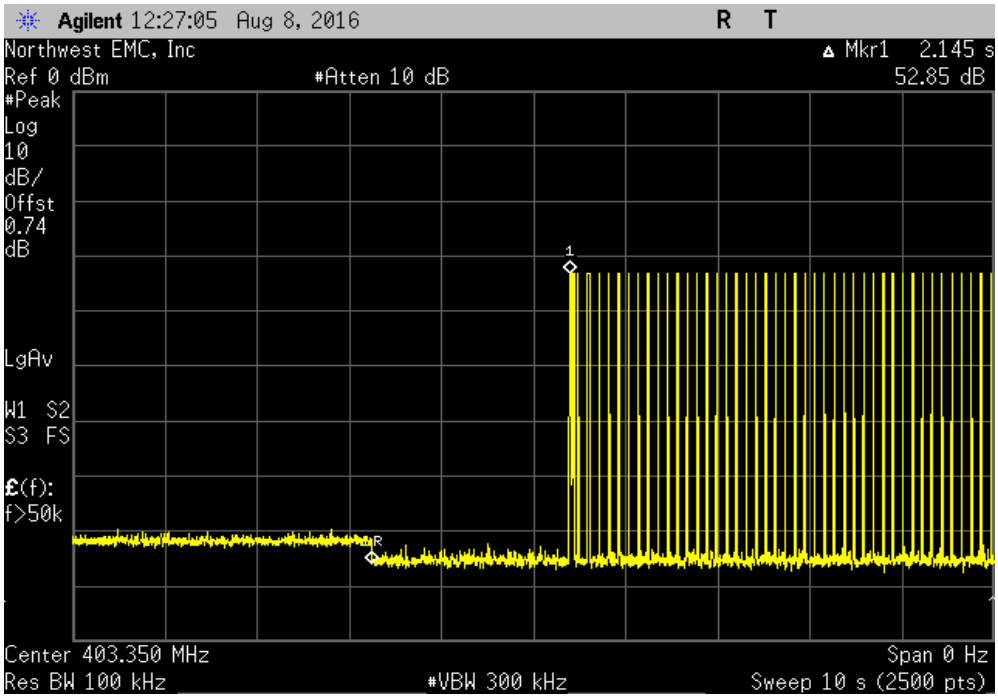
Sample 7

				Value (s)	Limit (s)	Result
				2.381	<= 5	Pass



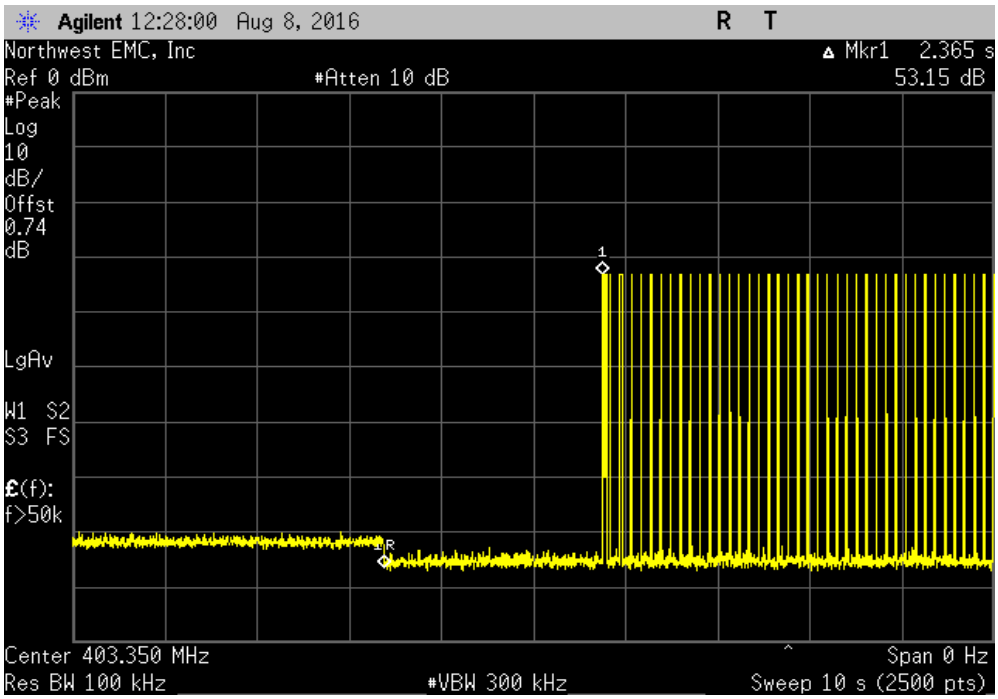
Sample 8

				Value (s)	Limit (s)	Result
				2.145	<= 5	Pass



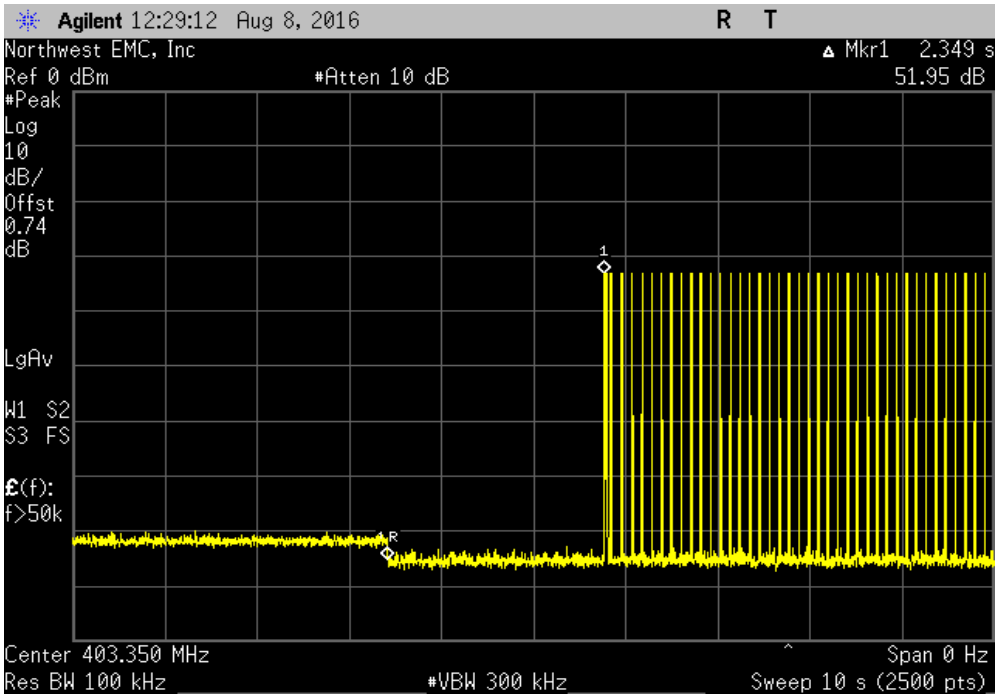
Sample 9

				Value (s)	Limit (s)	Result
				2.365	<= 5	Pass



Sample 10

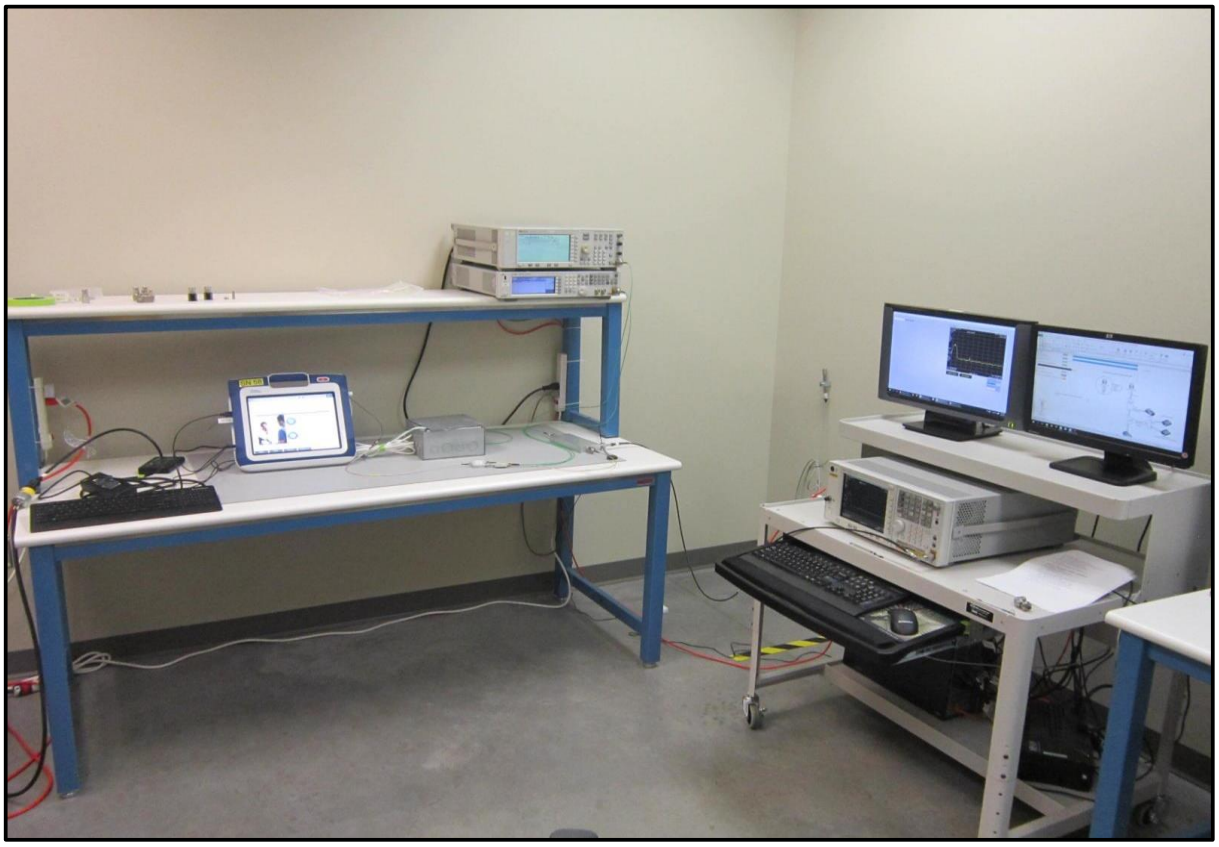
				Value (s)	Limit (s)	Result
				2.349	<= 5	Pass

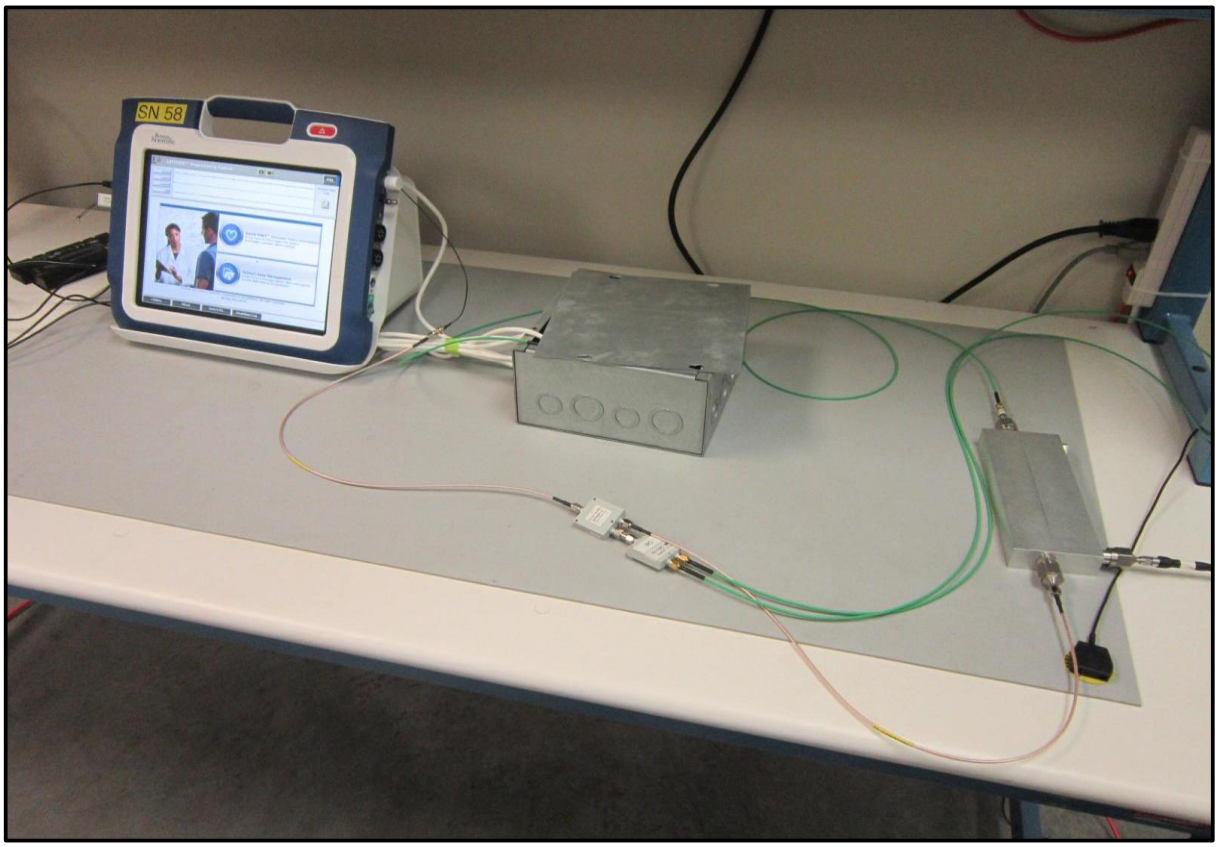


MONITORING SYSTEM SCAN CYCLE TIME, 10 CHANNEL

NORTHWEST EMC

XMit 2016.05.06

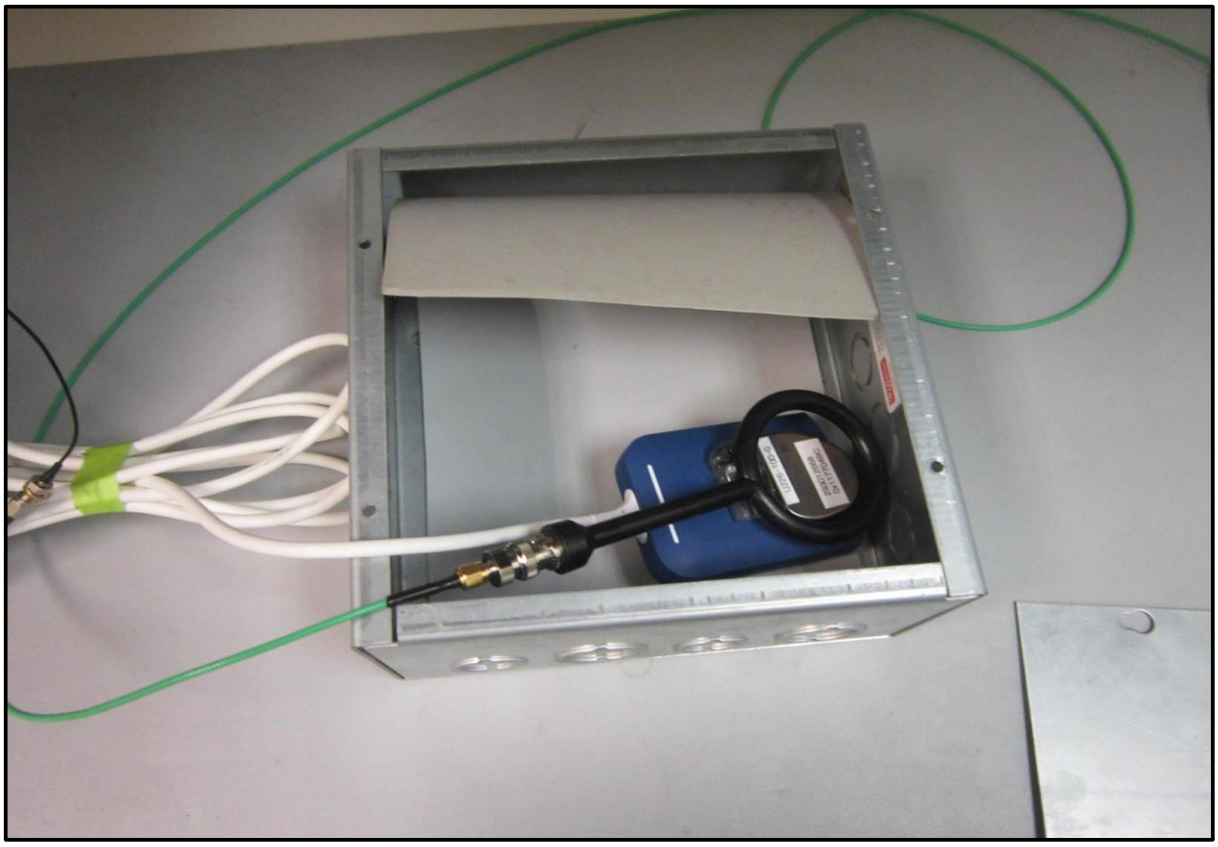


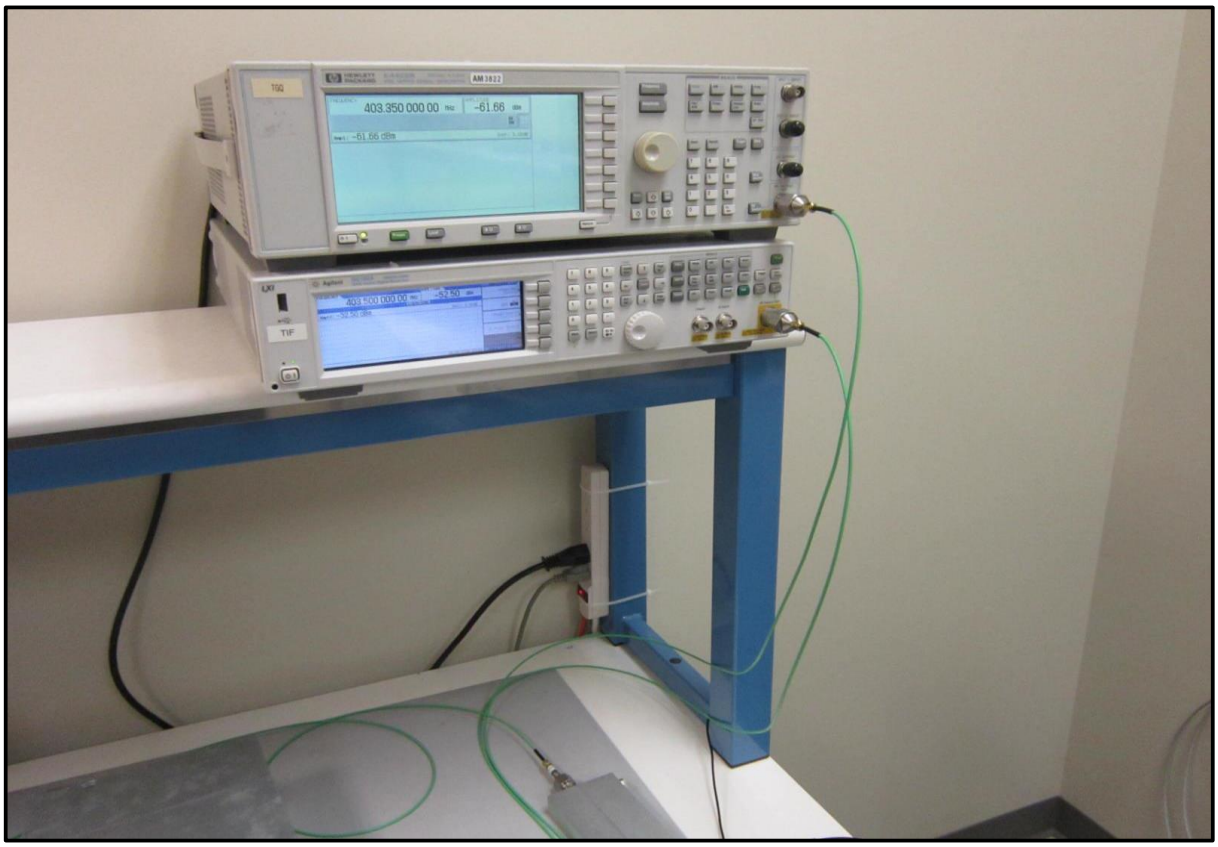


MONITORING SYSTEM SCAN CYCLE TIME, 10 CHANNEL

NORTHWEST EMC

XMit 2016.05.06





MONITORING SYSTEM SCAN CYCLE TIME, 2 CHANNEL

XMit 2016.05.06

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

TEST EQUIPMENT

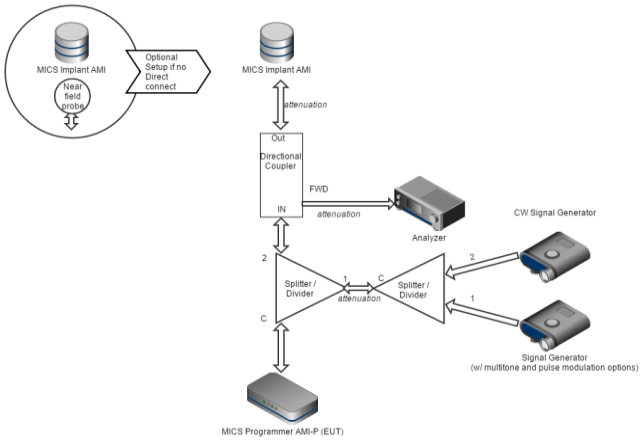
Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Probe - Near Field Set	ETS Lindgren	7405	IPO	NCR	NCR
Directional Coupler	Fairview Microwave	SMC4039-10	RGS	NCR	NCR
Power Divider/Combiner	Fairview Microwave Inc (SM electronics)	MP8451-2	IAD	NCR	NCR
Power Divider/Combiner	Fairview Microwave Inc (SM electronics)	MP8451-2	IAC	NCR	NCR
Generator - Signal	Agilent	N5183A	TIK	10/17/2014	10/17/2017
Generator - Signal	Agilent	N5182A	TIF	8/12/2014	8/12/2017
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	9/18/2016
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	2/26/2017
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	9/18/2016
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was configured according to the following block diagram:

The signal generator was set to multitone operation to cause equal interferance across the entire band. The spectrum analyzer was set to zero span with a sweep time equal to 10 seconds.

The CW signal on the intended frequency (Fc) was removed. At the same time, the EUT was set to seek a session with the implantable device. The delay between Fc becoming available and the EUT establishing a session was measured.



MONITORING SYSTEM SCAN CYCLE TIME, 2 CHANNEL

NORTHWEST EMC

XMit 2016.05.06

EUT:	Model 3300			**Work Order:**	BSTN0663
Serial Number:	058			**Date:**	08/16/16
Customer:	Boston Scientific Corporation			**Temperature:**	23.6 °C
Attendees:	Pete Musto			**Humidity:**	59.7% RH
Project:	Laramie Vision			**Barometric Pres.:**	1019 mbar
Tested by:	Dustin Sparks	**Power:**	110VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
EN 301 839 V2.1.1:2016	EN 301 839 V2.1.1:2016

COMMENTS

EUT bandwidth is 300000 Hz with an antenna gain of -5 dBi. Communications session was initiated at ~2 seconds into each 10 second single sweep.

DEVIATIONS FROM TEST STANDARD

None

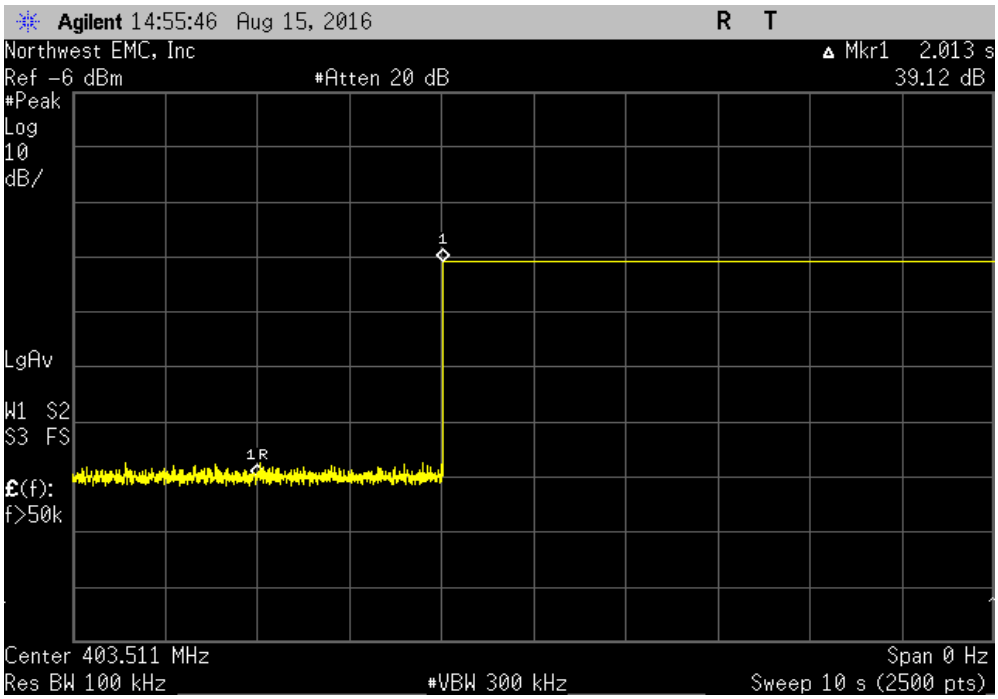
Configuration #	10	Signature

	Value (seconds)	Limit (seconds)	Result
Sample 1	2.013	<= 5	Pass
Sample 2	1.565	<= 5	Pass
Sample 3	1.397	<= 5	Pass
Sample 4	1.969	<= 5	Pass
Sample 5	1.857	<= 5	Pass
Sample 6	1.144	<= 5	Pass
Sample 7	1.809	<= 5	Pass
Sample 8	1.649	<= 5	Pass
Sample 9	1.989	<= 5	Pass
Sample 10	1.733	<= 5	Pass

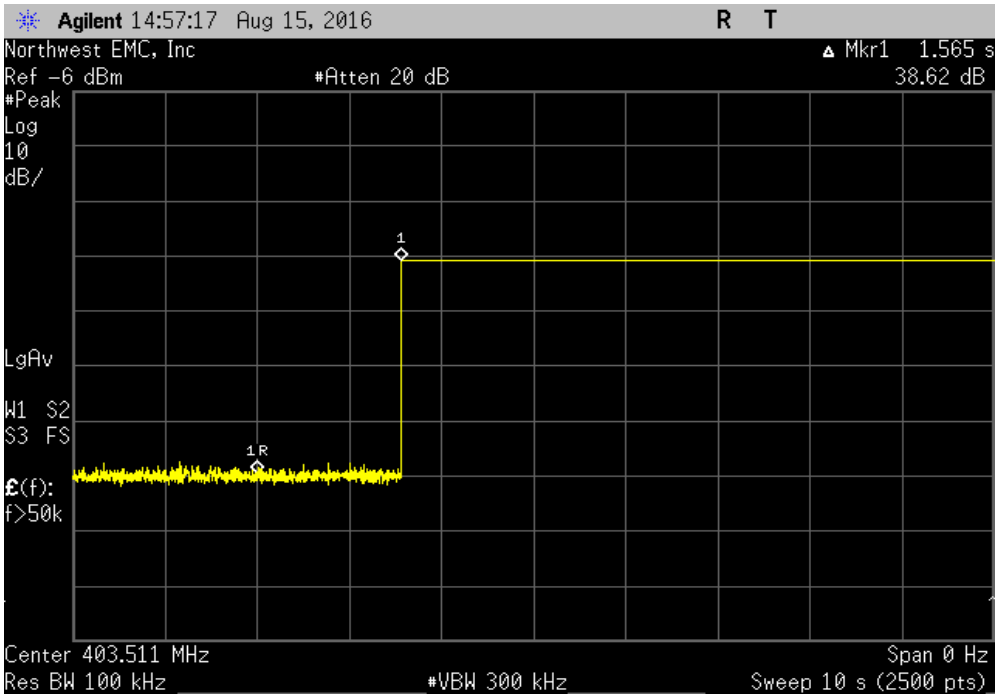
MONITORING SYSTEM SCAN CYCLE TIME, 2 CHANNEL

XMit 2016.05.06

Sample 1						
				Value (seconds)	Limit (seconds)	Result
				2.013	<= 5	Pass



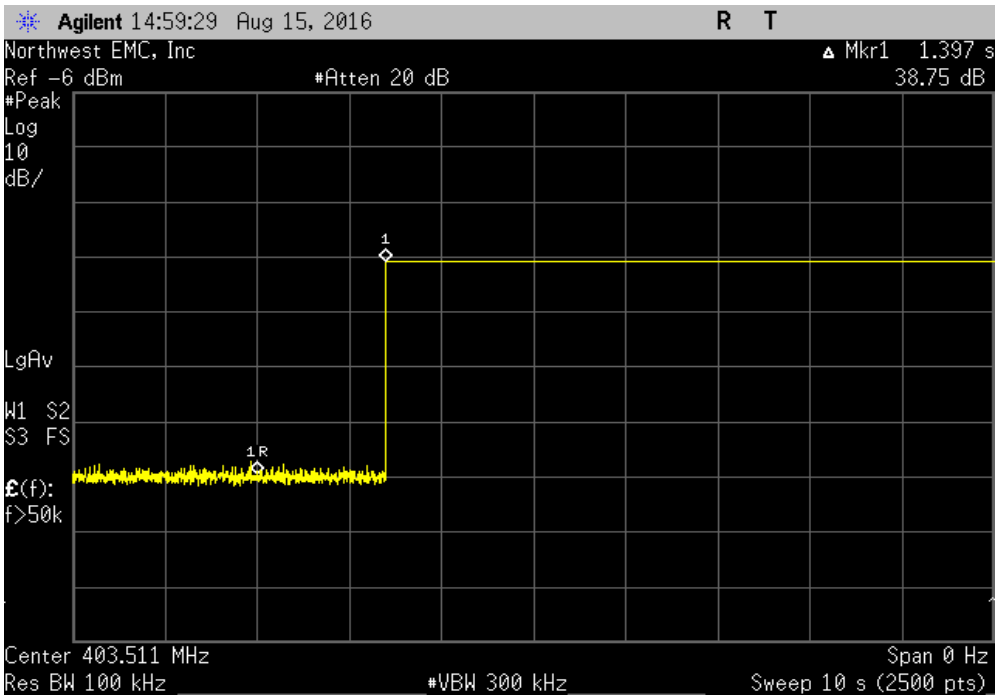
Sample 2						
				Value (seconds)	Limit (seconds)	Result
				1.565	<= 5	Pass



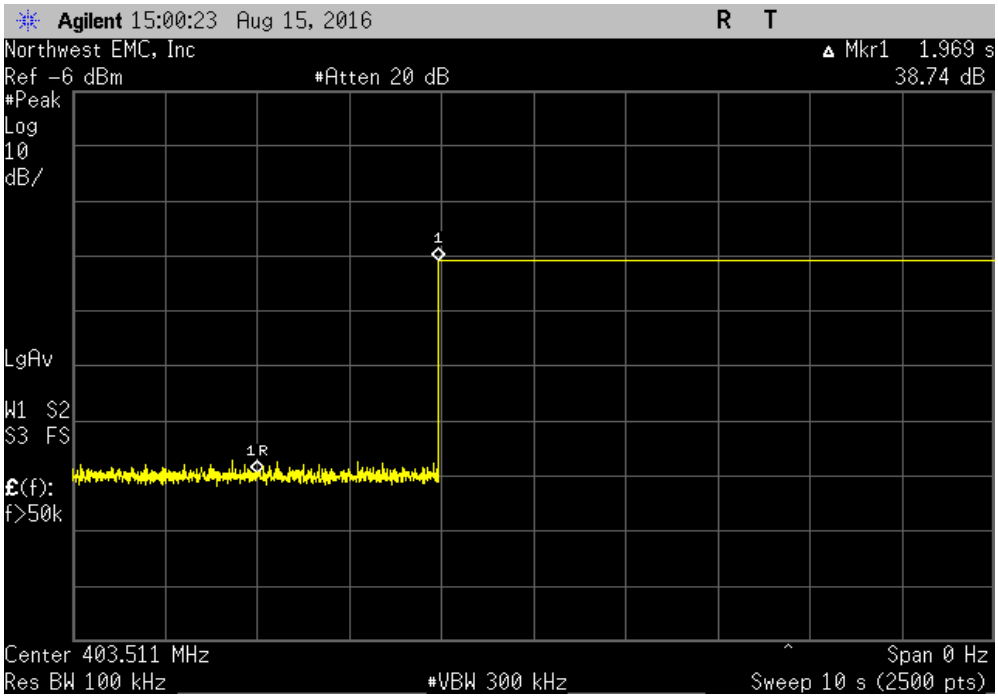
MONITORING SYSTEM SCAN CYCLE TIME, 2 CHANNEL

XMit 2016.05.06

Sample 3						
				Value (seconds)	Limit (seconds)	Result
				1.397	<= 5	Pass



Sample 4						
				Value (seconds)	Limit (seconds)	Result
				1.969	<= 5	Pass

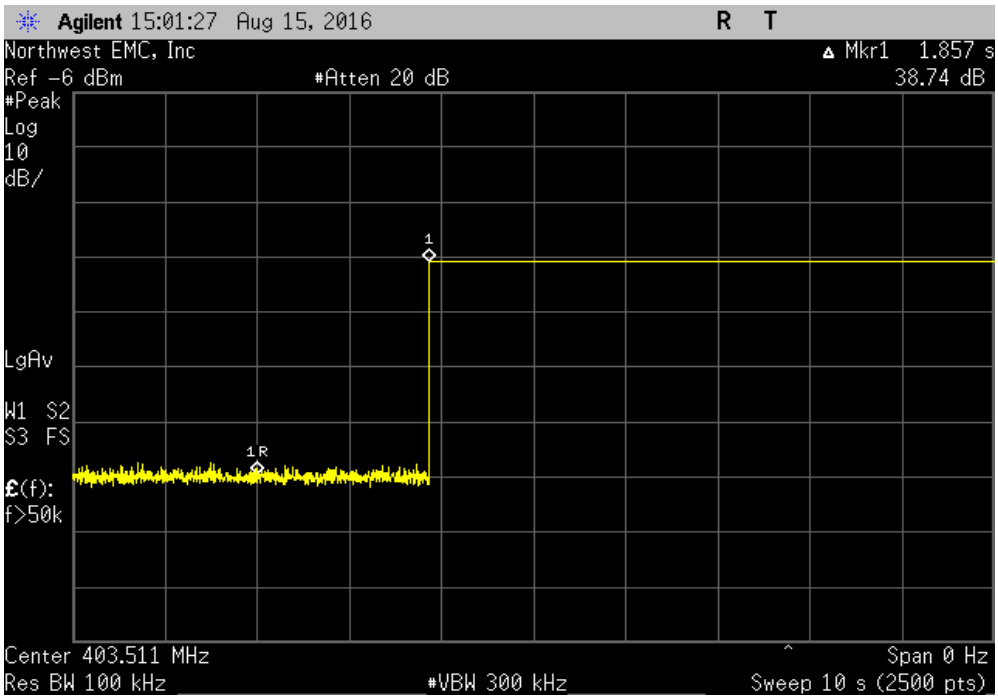


MONITORING SYSTEM SCAN CYCLE TIME, 2 CHANNEL

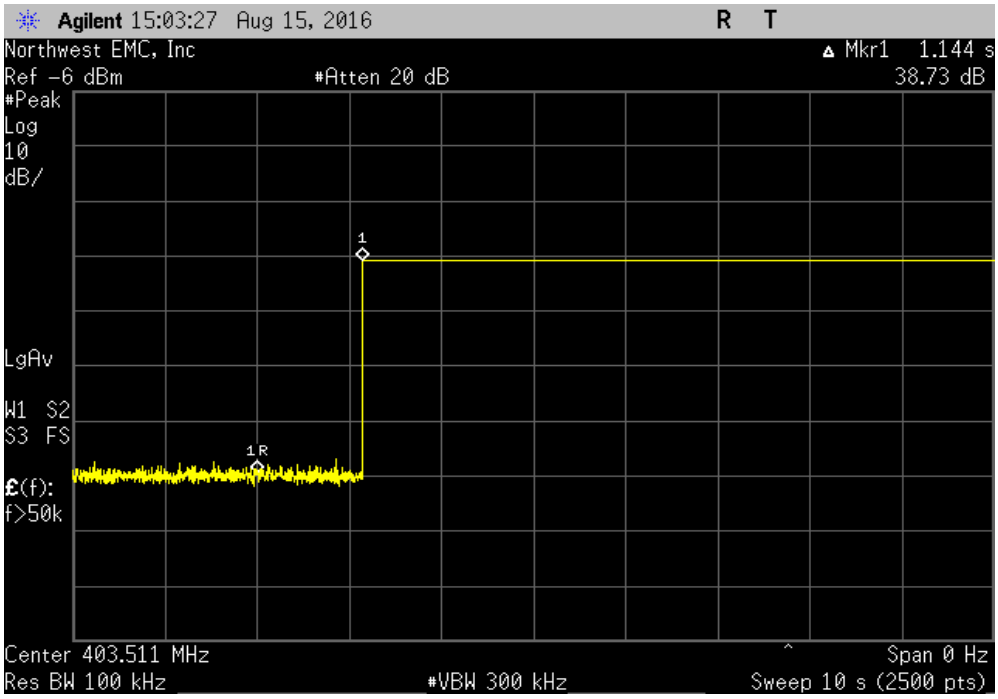
NORTHWEST EMC

XMit 2016.05.06

Sample 5						
				Value (seconds)	Limit (seconds)	Result
				1.857	<= 5	Pass



Sample 6						
				Value (seconds)	Limit (seconds)	Result
				1.144	<= 5	Pass

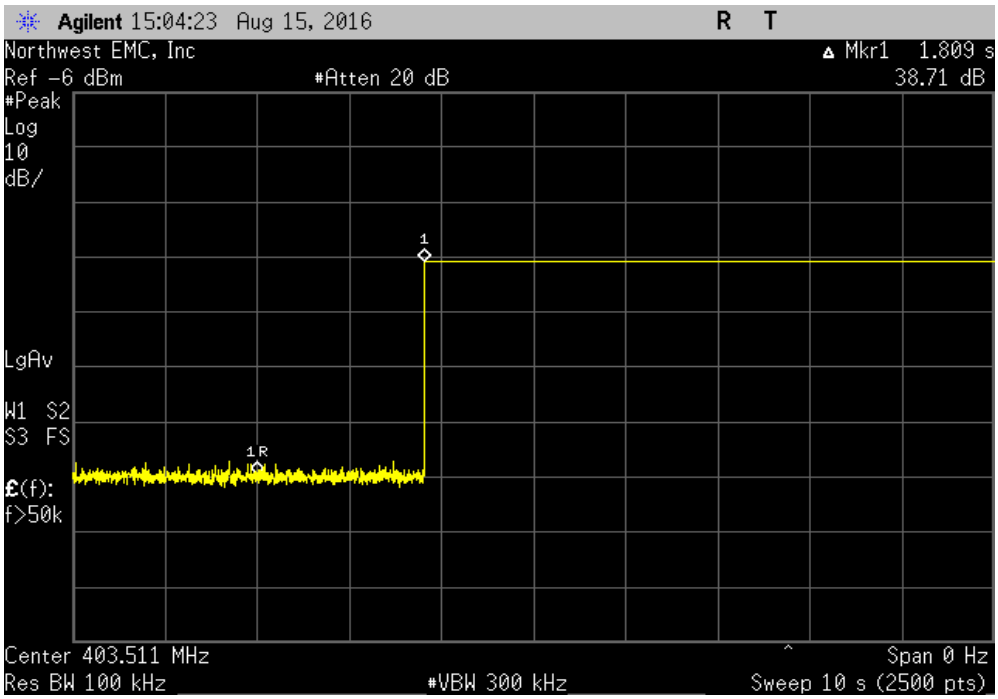


MONITORING SYSTEM SCAN CYCLE TIME, 2 CHANNEL

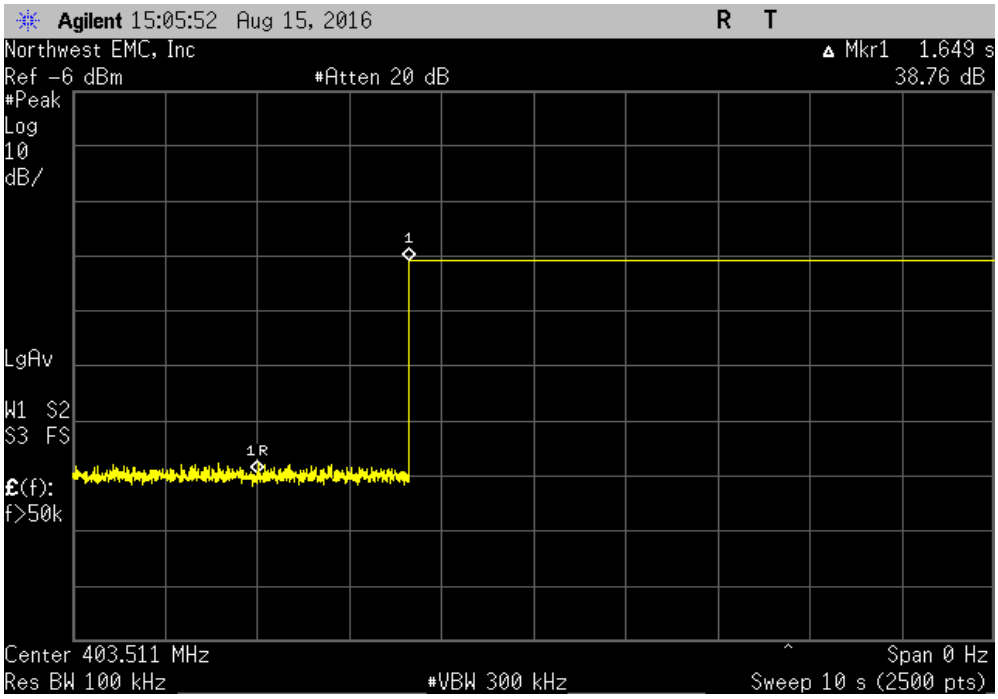
NORTHWEST EMC

XMit 2016.05.06

Sample 7						
				Value (seconds)	Limit (seconds)	Result
				1.809	<= 5	Pass



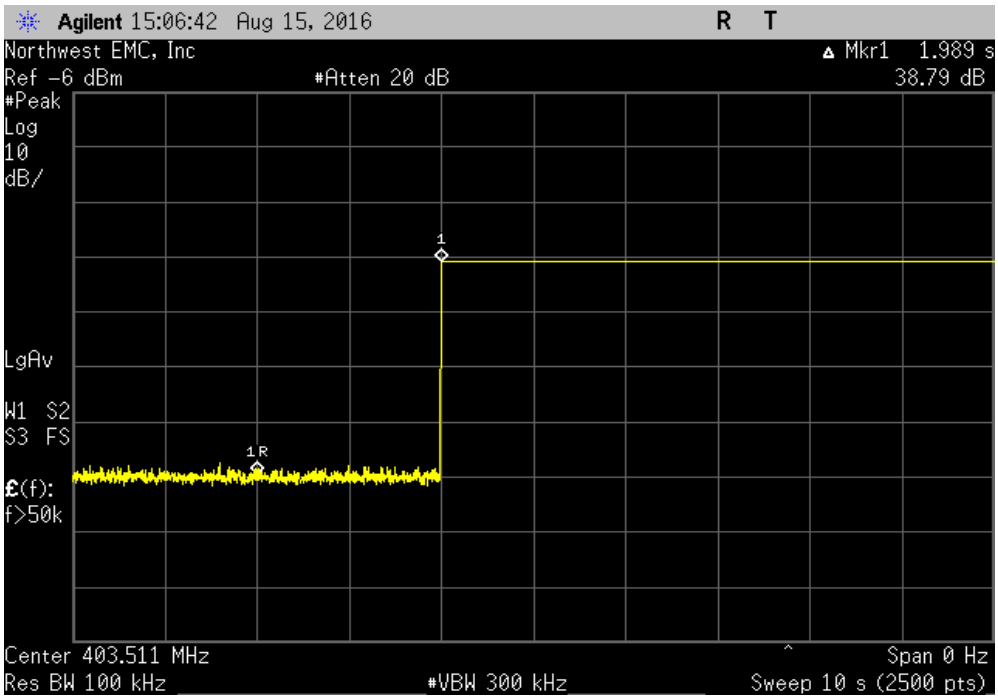
Sample 8						
				Value (seconds)	Limit (seconds)	Result
				1.649	<= 5	Pass



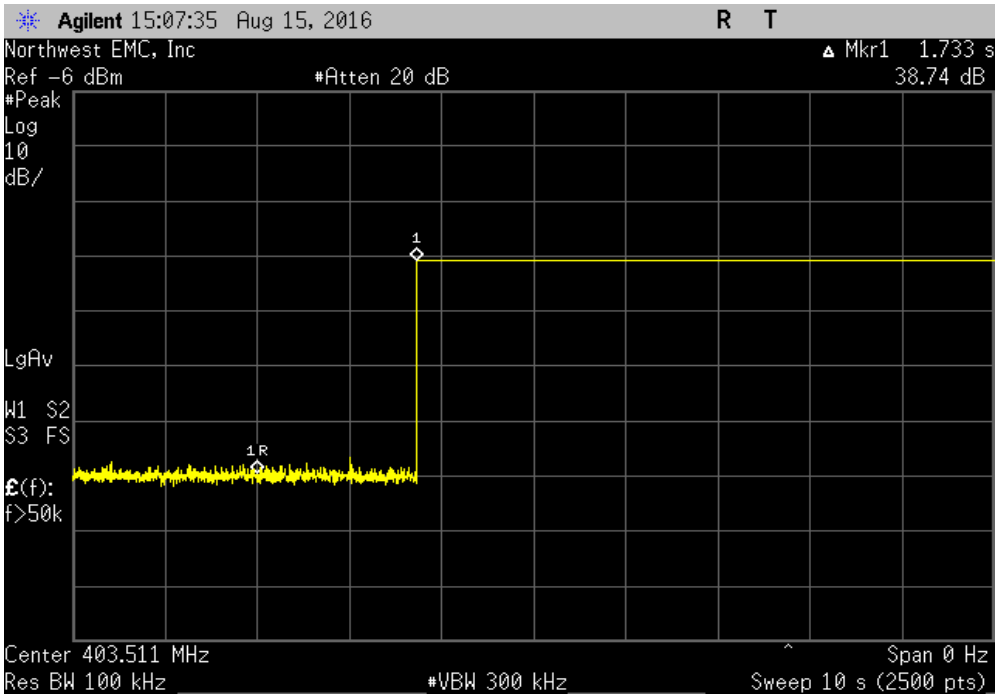
MONITORING SYSTEM SCAN CYCLE TIME, 2 CHANNEL

XMit 2016.05.06

Sample 9						
				Value (seconds)	Limit (seconds)	Result
				1.989	<= 5	Pass

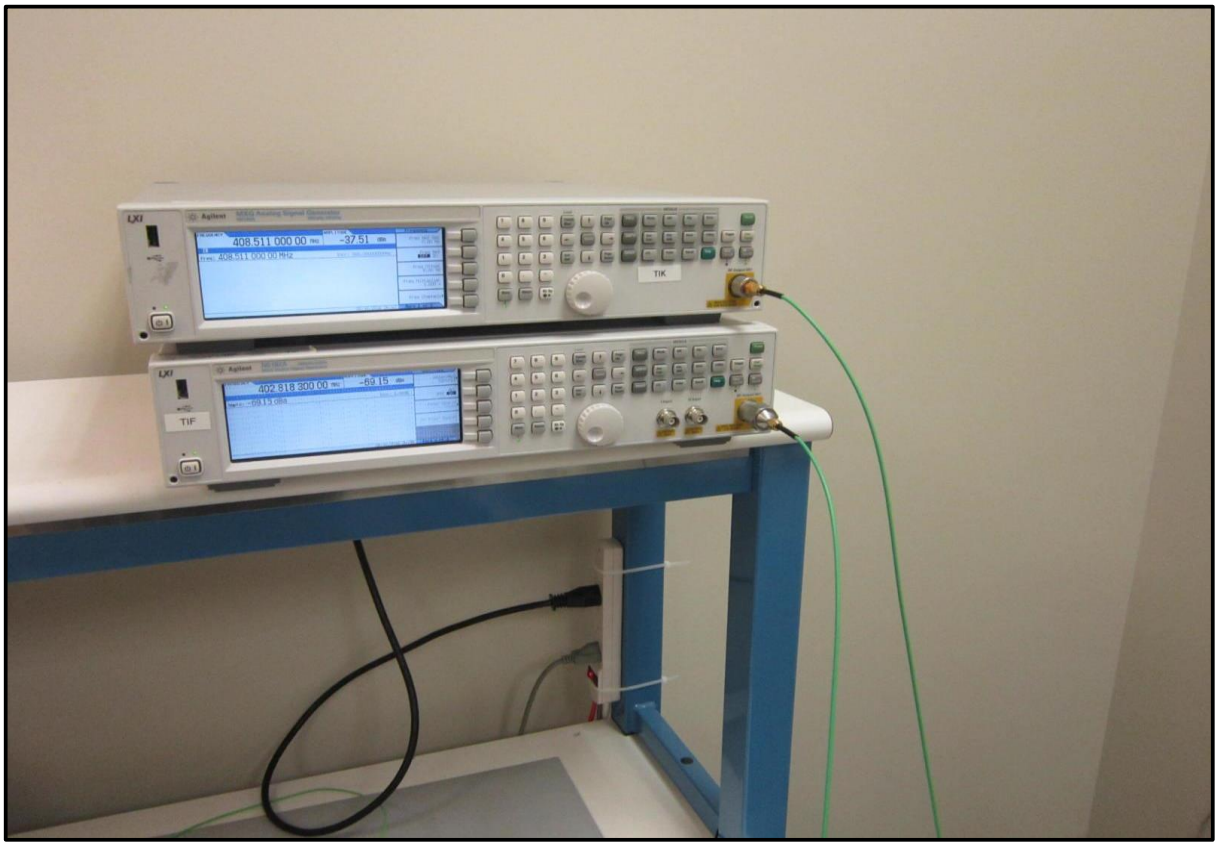


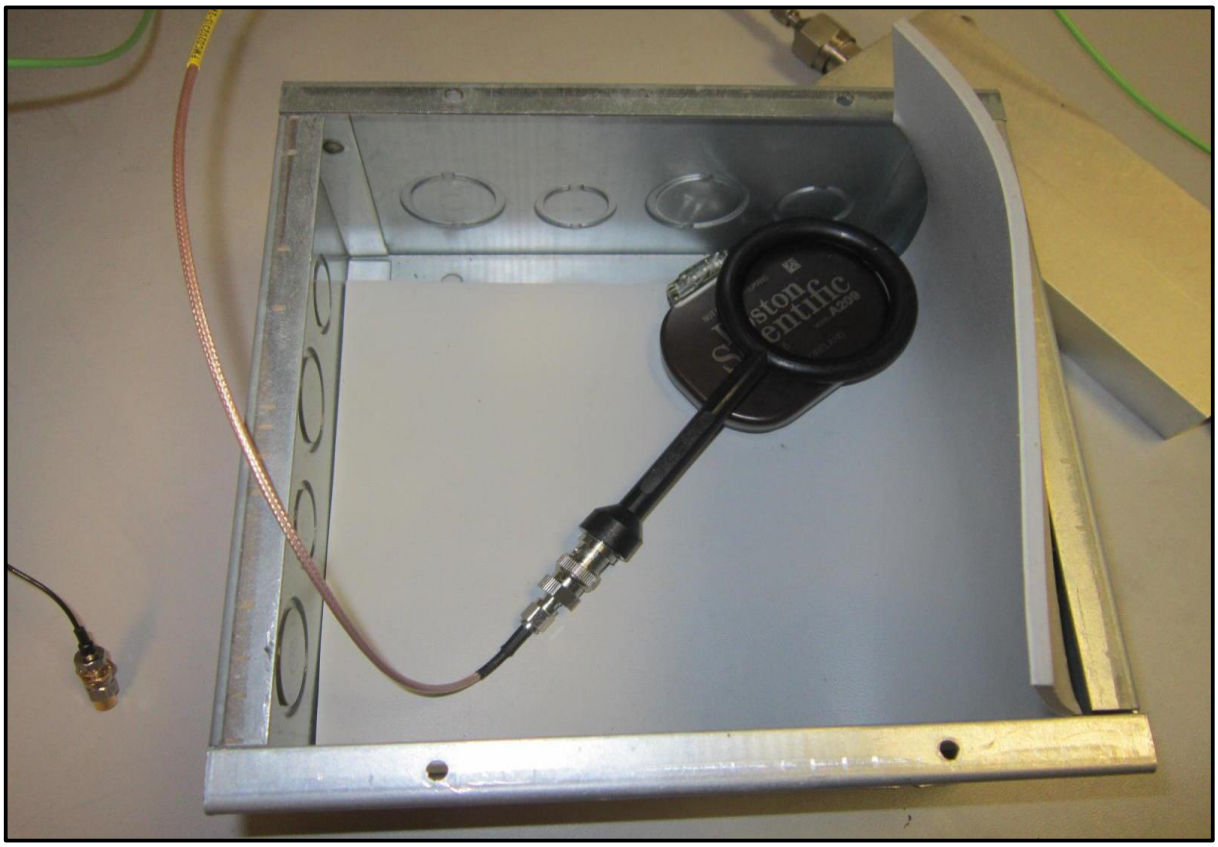
Sample 10						
				Value (seconds)	Limit (seconds)	Result
				1.733	<= 5	Pass



MONITORING SYSTEM SCAN CYCLE TIME, 2 CHANNEL

XMit 2016.05.06

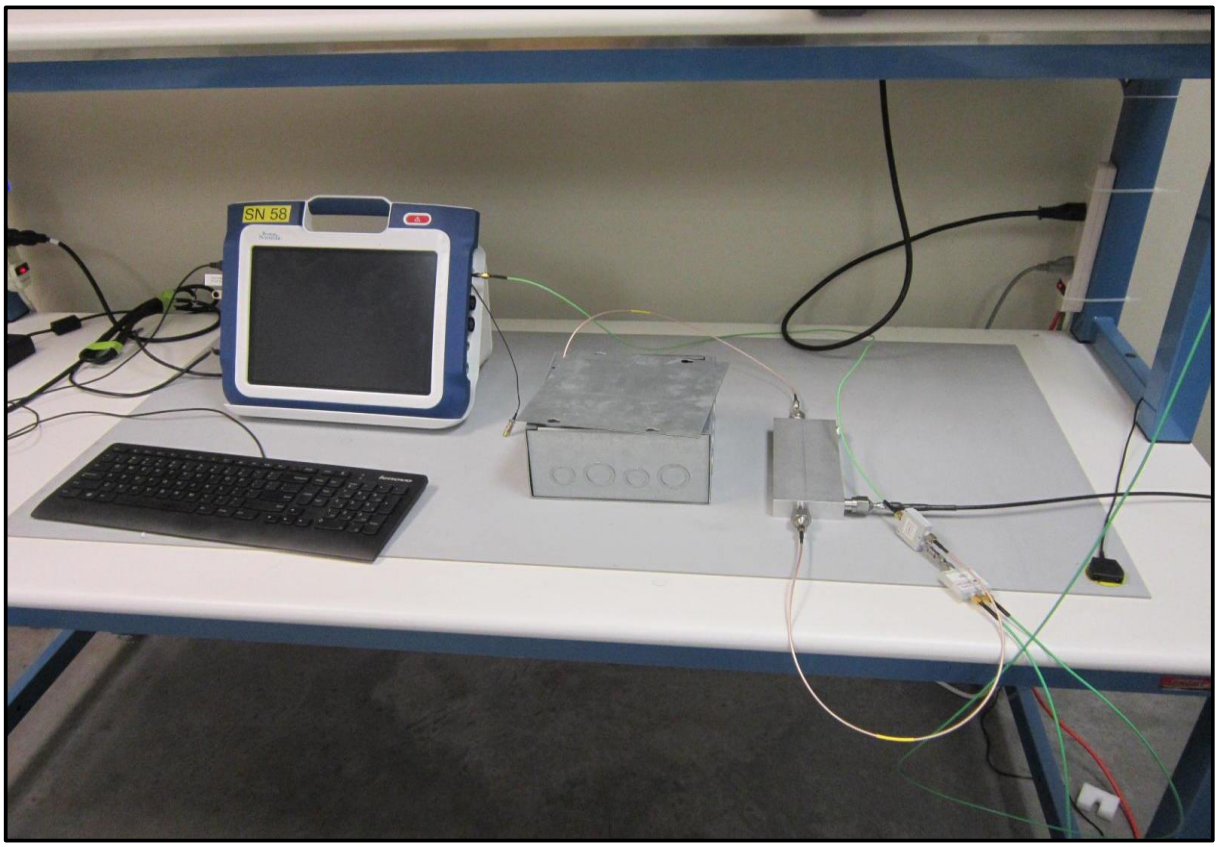




MONITORING SYSTEM SCAN CYCLE TIME, 2 CHANNEL

NORTHWEST EMC

XMit 2016.05.06



MINIMUM CHANNEL MONITORING PERIOD, 10 CHANNEL

XMit 2016.05.06

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

TEST EQUIPMENT

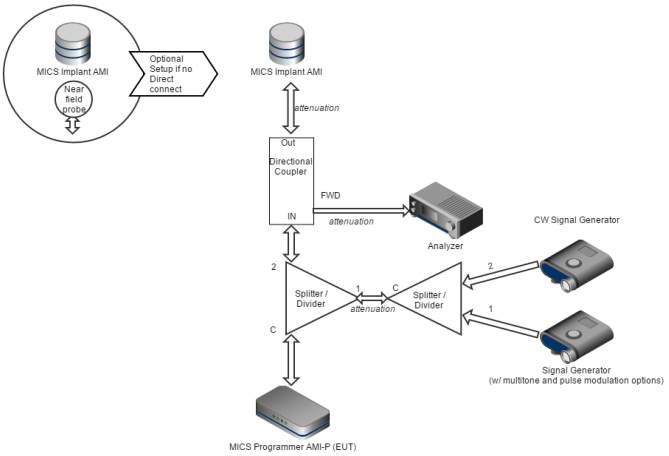
Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	9/18/2016
Probe - Near Field Set	ETS Lindgren	7405	IPO	NCR	NCR
Generator - Signal	Agilent	N5182A	TIF	8/12/2014	8/12/2017
Generator - Signal	Agilent	E4422B	TGQ	3/17/2015	3/17/2018
Power Divider/Combiner	Fairview Microwave Inc (SM electronics)	MP8451-2	IAD	NCR	NCR
Power Divider/Combiner	Fairview Microwave Inc (SM electronics)	MP8451-2	IAC	NCR	NCR
Directional Coupler	Fairview Microwave	SMC4039-10	RGS	NCR	NCR
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	2/26/2017
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was configured according to the following block diagram:

The signal generator was set to multitone operation to cause equal interferance across the entire band, except one channel (Fc) was left available. The multitone operation (out of operation region) was also set to Pulse modulation with a Period of 10 mS, and a Pulse Width of 0.1 mS. The spectrum analyzer was set to measure the transmit band of 402-405 MHz.

The EUT was set to seek a session with the implantable device. The EUT was verified to connect on the available channel with multiple screen captures.



MINIMUM CHANNEL MONITORING PERIOD, 10 CHANNEL

NORTHWEST EMC

XMit 2016.05.06

EUT:	Model 3300			**Work Order:**	BSTN0663
Serial Number:	058			**Date:**	08/25/16
Customer:	Boston Scientific Corporation			**Temperature:**	22.1 °C
Attendees:	Pete Musto			**Humidity:**	51.8% RH
Project:	Laramie Vision			**Barometric Pres.:**	1020 mbar
Tested by:	Trevor Buls	**Power:**	220VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
EN 301 839 V2.1.1:2016	EN 301 839 V2.1.1:2016

COMMENTS

EUT bandwidth is 300000 Hz with an antenna gain of 2.7 dBi.

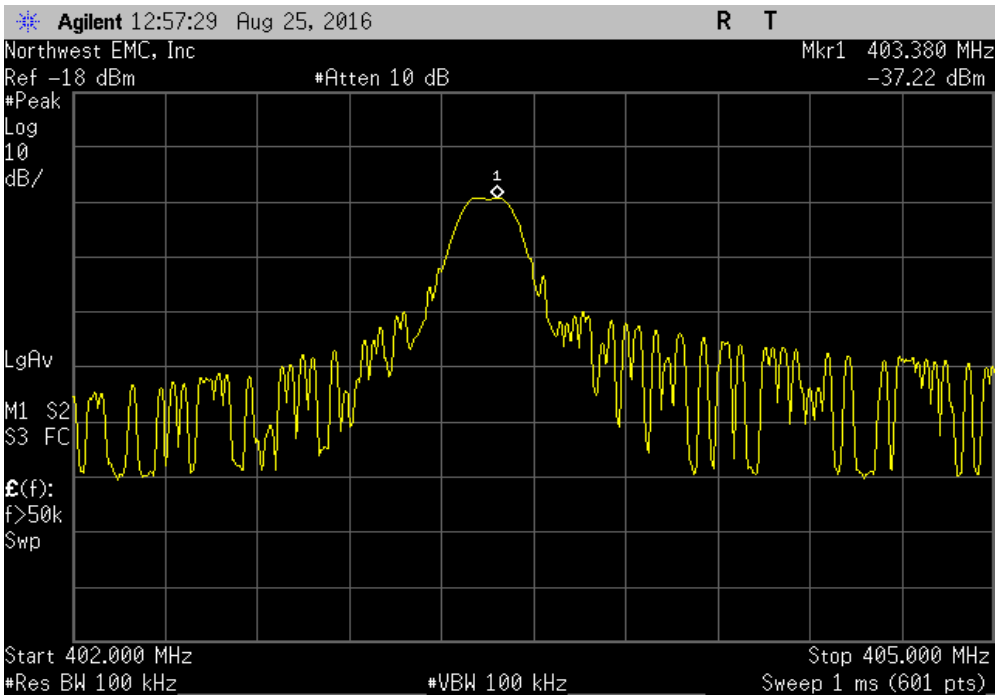
DEVIATIONS FROM TEST STANDARD

None

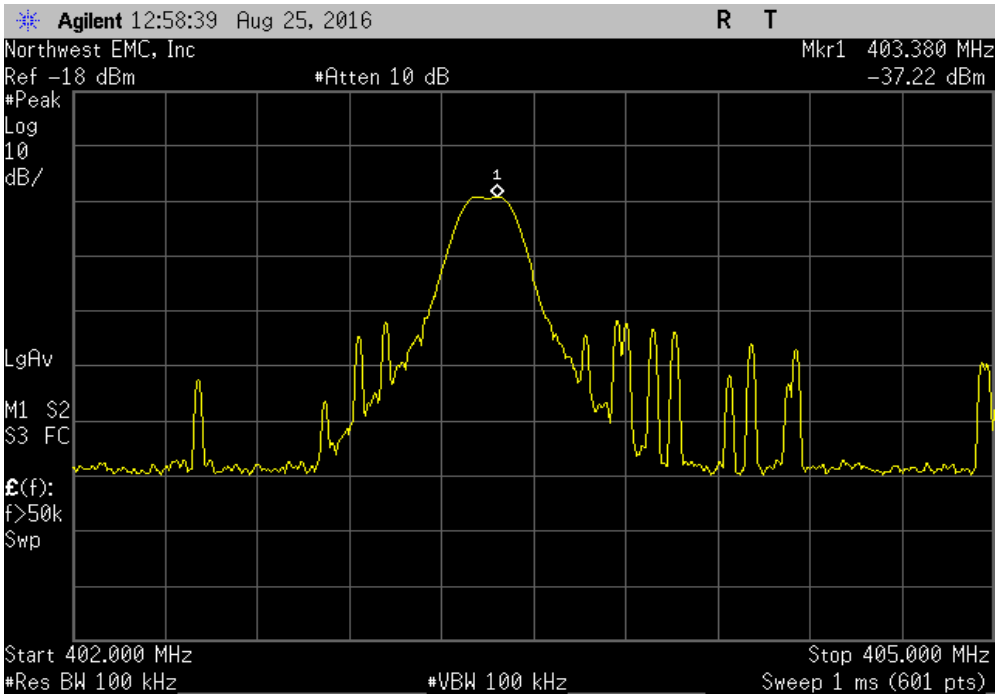
Configuration #	11	Signature	Trevor Buls

	Transmits On Fc	Limit	Result
Sample 1	Yes	Yes	Pass
Sample 2	Yes	Yes	Pass
Sample 3	Yes	Yes	Pass
Sample 4	Yes	Yes	Pass
Sample 5	Yes	Yes	Pass
Sample 6	Yes	Yes	Pass
Sample 7	Yes	Yes	Pass
Sample 8	Yes	Yes	Pass
Sample 9	Yes	Yes	Pass
Sample 10	Yes	Yes	Pass

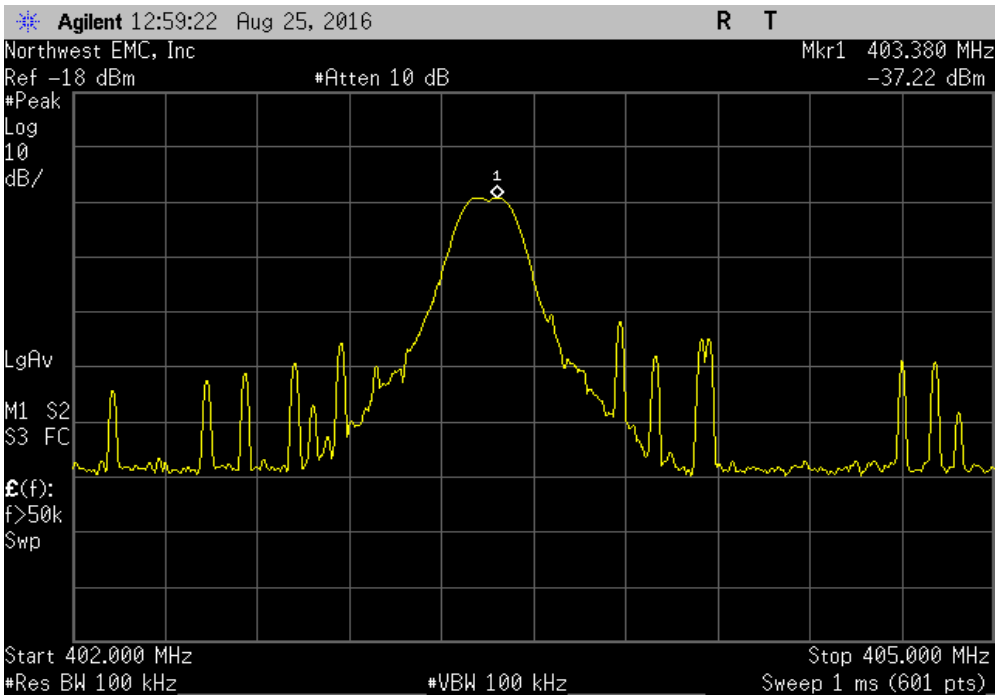
Sample 1						
				Transmits On Fc	Limit	Result
				Yes	Yes	Pass



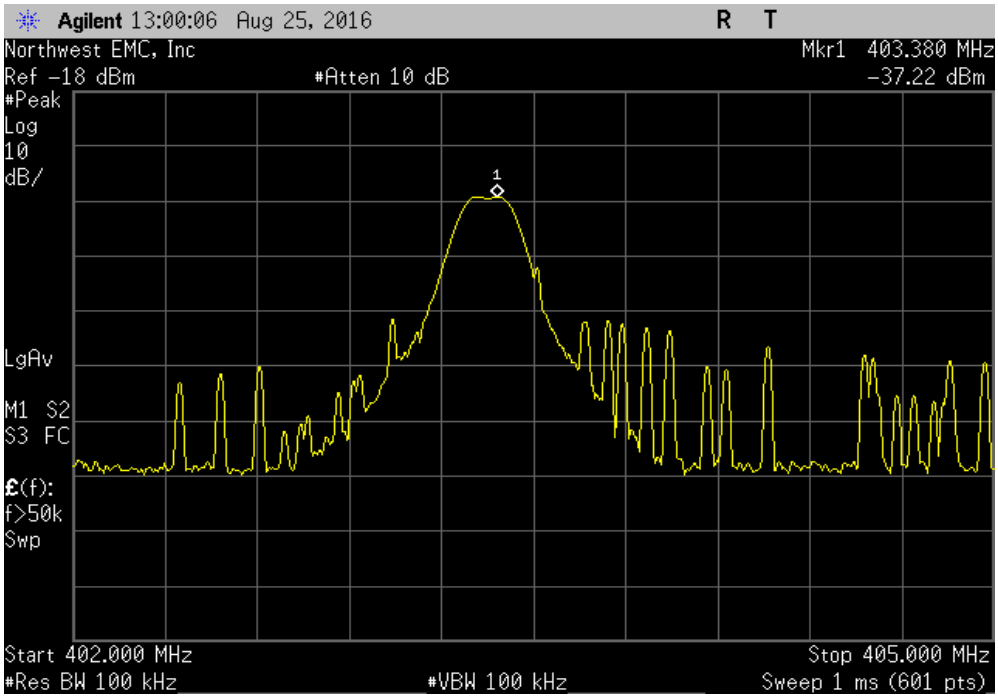
Sample 2						
				Transmits On Fc	Limit	Result
				Yes	Yes	Pass



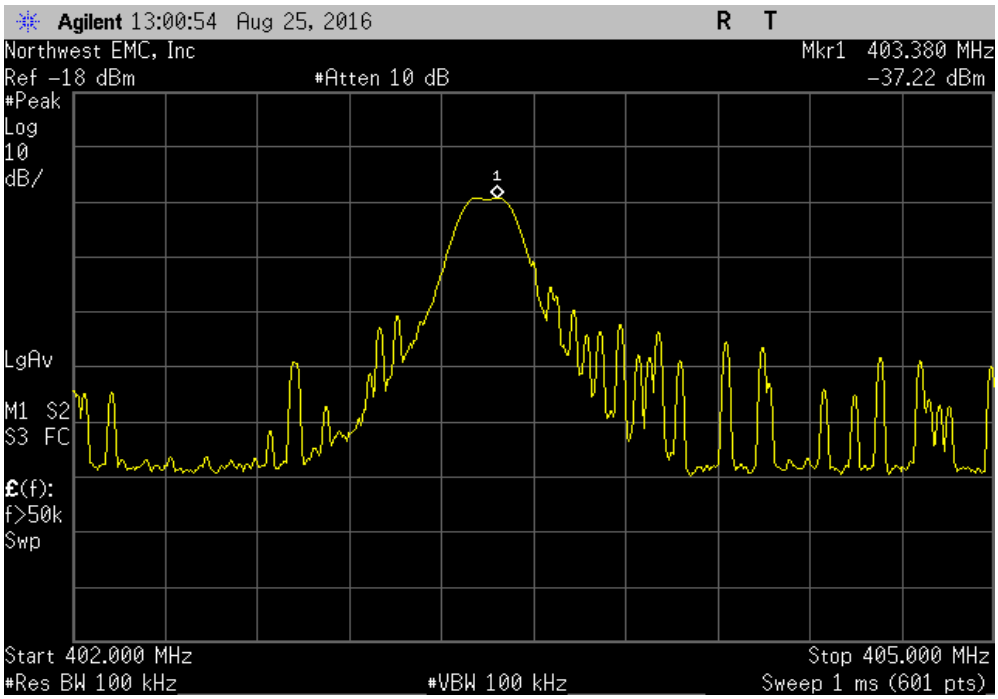
Sample 3						
				Transmits On Fc	Limit	Result
				Yes	Yes	Pass



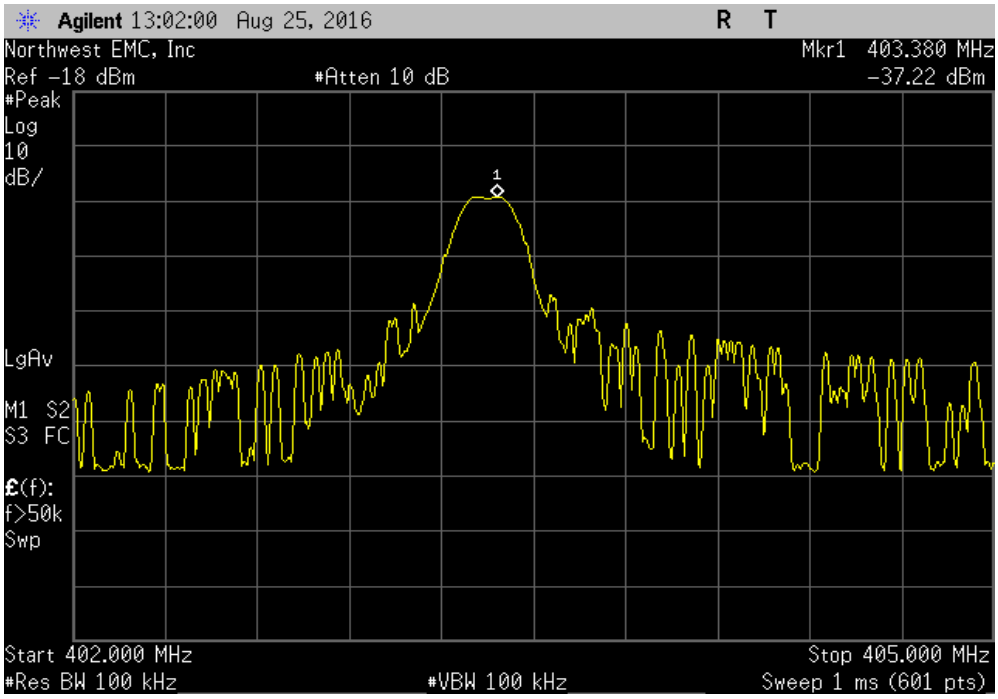
Sample 4						
				Transmits On Fc	Limit	Result
				Yes	Yes	Pass



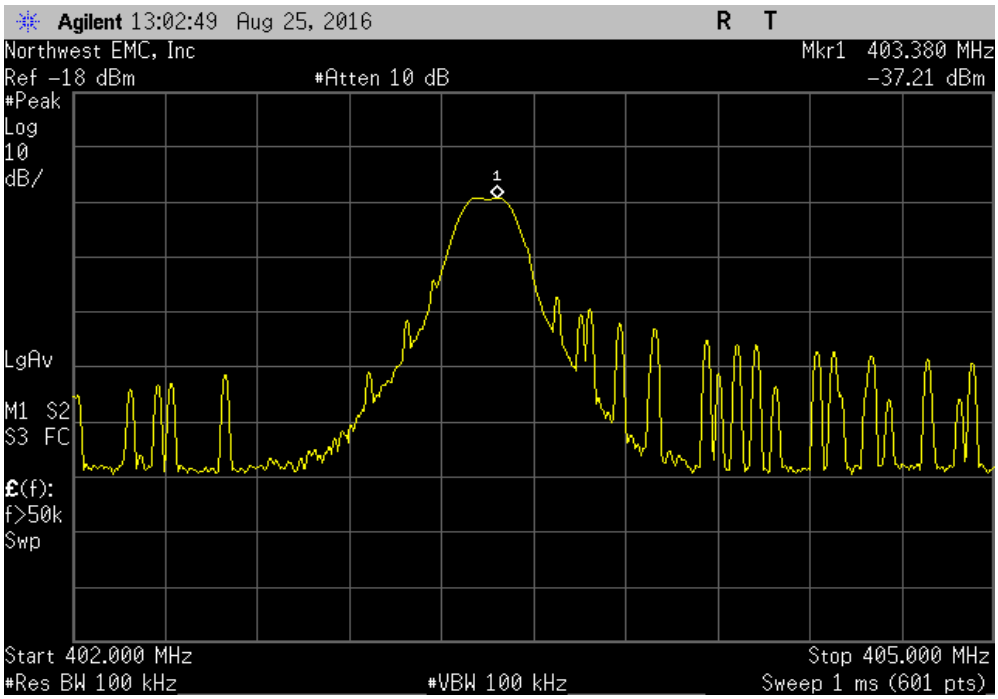
Sample 5						
				Transmits On Fc	Limit	Result
				Yes	Yes	Pass



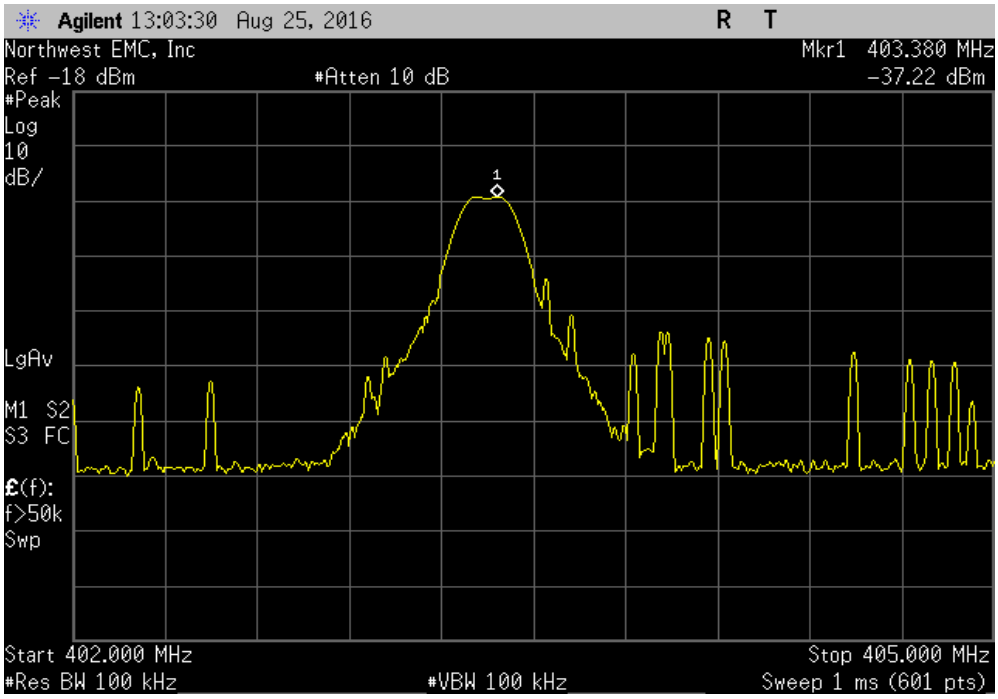
Sample 6						
				Transmits On Fc	Limit	Result
				Yes	Yes	Pass



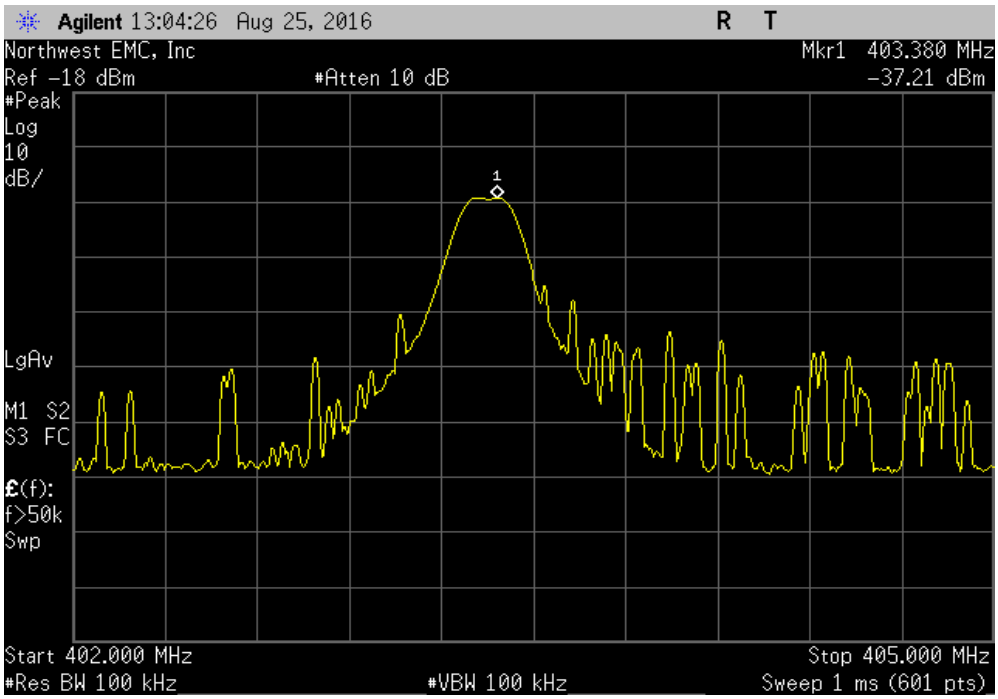
Sample 7						
				Transmits On Fc	Limit	Result
				Yes	Yes	Pass



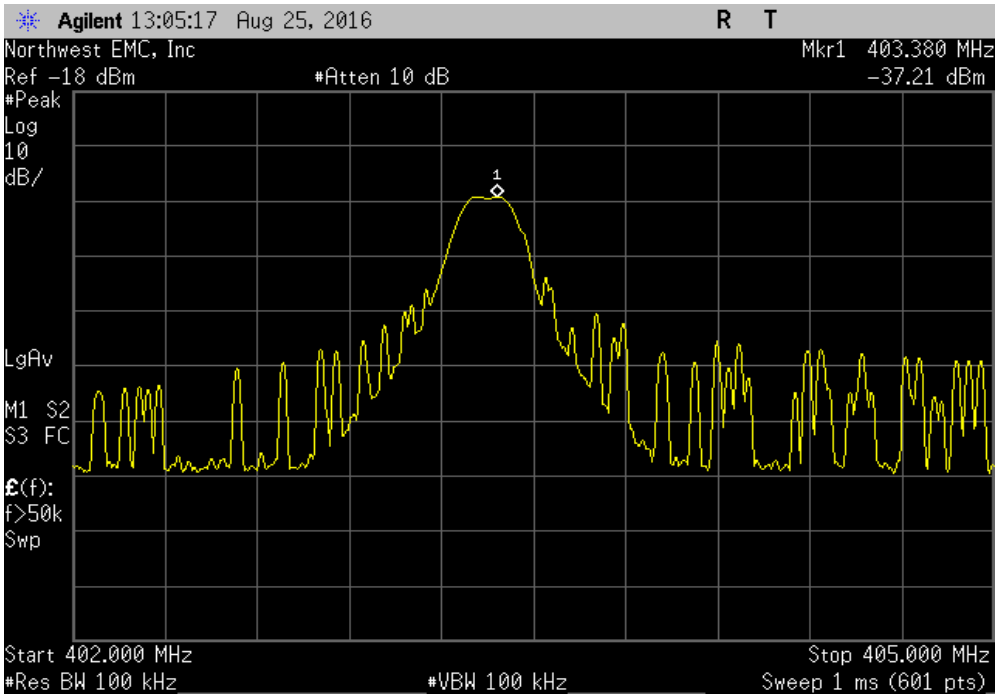
Sample 8						
				Transmits On Fc	Limit	Result
				Yes	Yes	Pass



Sample 9						
				Transmits On Fc	Limit	Result
				Yes	Yes	Pass



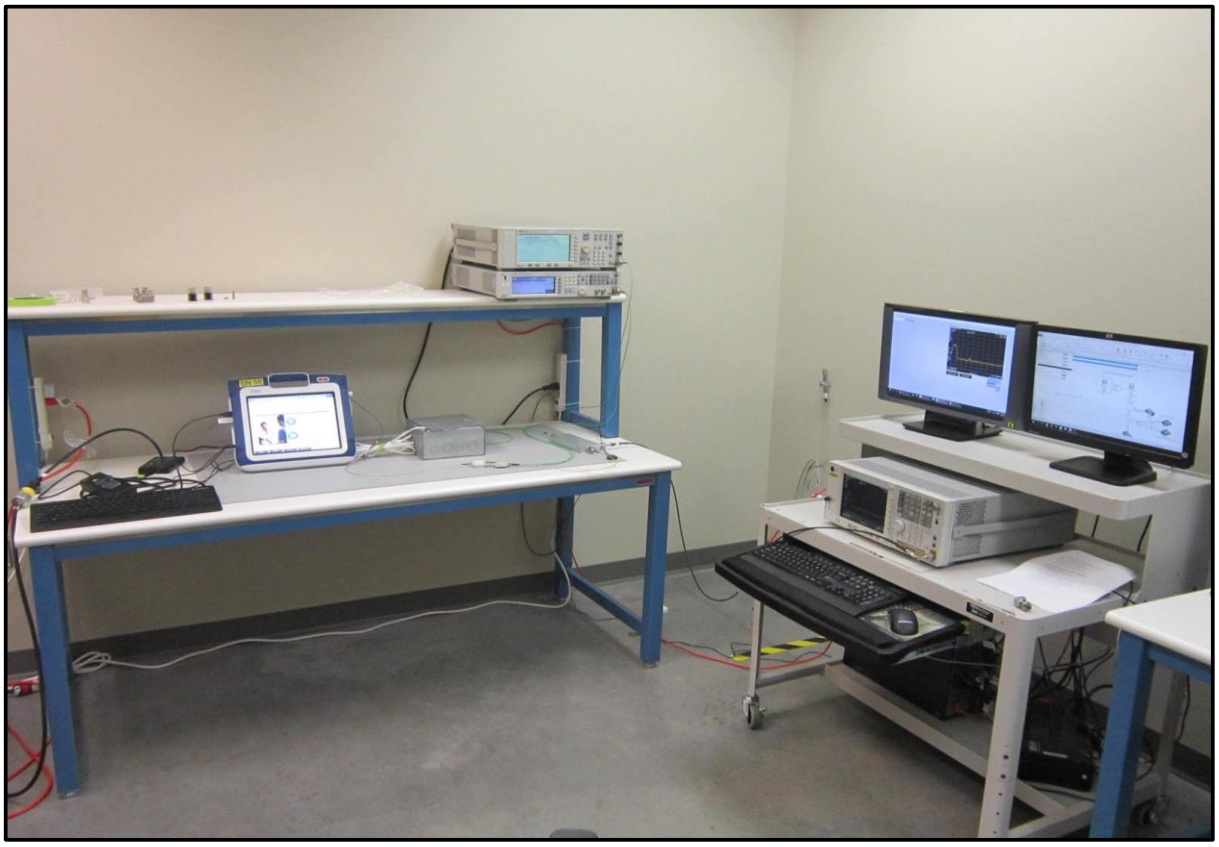
Sample 10						
				Transmits On Fc	Limit	Result
				Yes	Yes	Pass

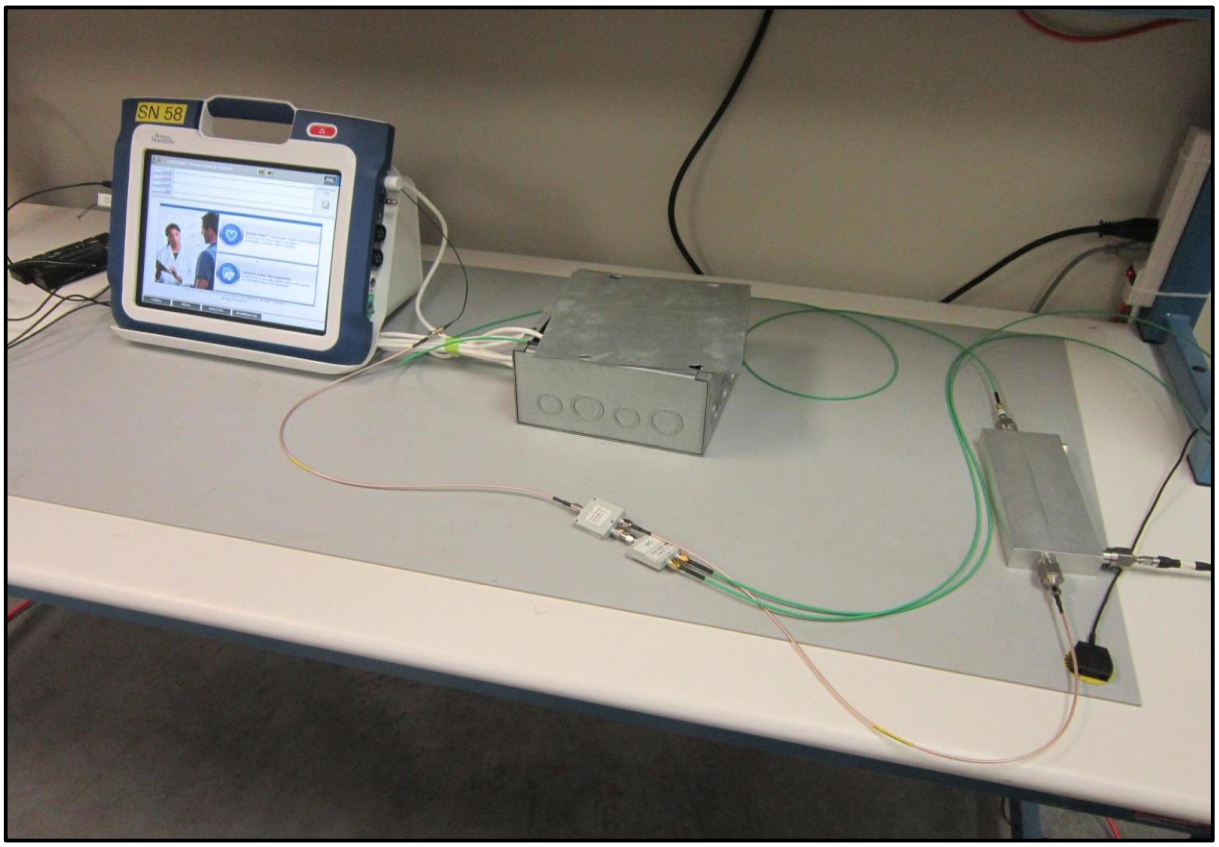


MINIMUM CHANNEL MONITORING PERIOD, 10 CHANNEL

NORTHWEST EMC

XMit 2016.05.06





MINIMUM CHANNEL MONITORING PERIOD, 2 CHANNEL

XMit 2016.05.06

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

TEST EQUIPMENT

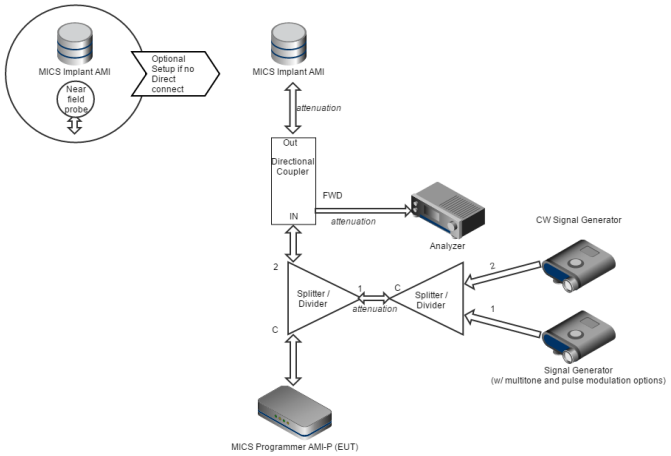
Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	9/18/2016
Probe - Near Field Set	ETS Lindgren	7405	IPO	NCR	NCR
Generator - Signal	Agilent	N5182A	TIF	8/12/2014	8/12/2017
Generator - Signal	Agilent	E4422B	TGQ	3/17/2015	3/17/2018
Power Divider/Combiner	Fairview Microwave Inc (SM electronics)	MP8451-2	IAD	NCR	NCR
Power Divider/Combiner	Fairview Microwave Inc (SM electronics)	MP8451-2	IAC	NCR	NCR
Directional Coupler	Fairview Microwave	SMC4039-10	RGS	NCR	NCR
Attenuator	S.M. Electronics	SA26B-20	RFW	2/26/2016	2/26/2017
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

TEST DESCRIPTION

The measurement was made using a direct connection between the RF output of the EUT and a spectrum analyzer. The EUT was configured according to the following block diagram:

The signal generator was set to multitone operation to cause equal interferance across the entire band, except one channel (Fc) was left available. The multitone operation (out of operation region) was also set to Pulse modulation with a Period of 10 mS, and a Pulse Width of 0.1 mS. The spectrum analyzer was set to measure the transmit band of 402-405 MHz.

The EUT was set to seek a session with the implantable device. The EUT was verified to connect on the available channel with multiple screen captures.



MINIMUM CHANNEL MONITORING PERIOD, 2 CHANNEL

NORTHWEST EMC

XMit 2016.05.06

EUT:	Model 3300			**Work Order:**	BSTN0663
Serial Number:	058			**Date:**	08/25/16
Customer:	Boston Scientific Corporation			**Temperature:**	22.1 °C
Attendees:	Pete Musto			**Humidity:**	51.8% RH
Project:	Laramie Vision			**Barometric Pres.:**	1020 mbar
Tested by:	Trevor Buls	**Power:**	220VAC/60Hz	**Job Site:**	MN08

TEST SPECIFICATIONS	Test Method
EN 301 839 V2.1.1:2016	EN 301 839 V2.1.1:2016

COMMENTS

EUT bandwidth is 300000 Hz with an antenna gain of -5 dBi.

DEVIATIONS FROM TEST STANDARD

None

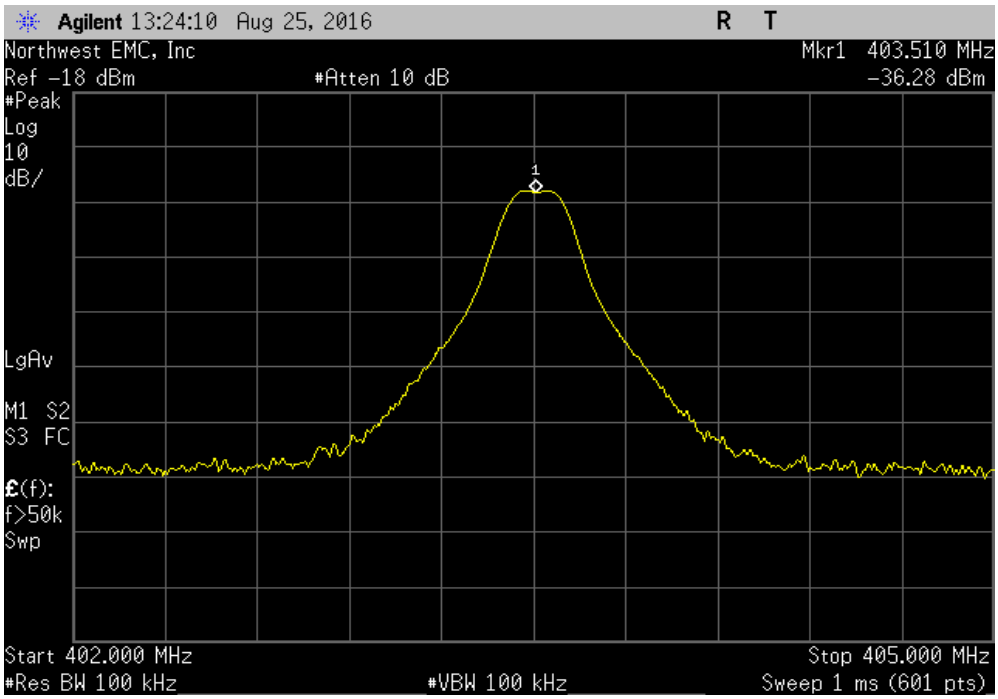
Configuration #	12	Signature	Trevor Buls

	Transmits On Fc	Limit	Result
Sample 1	Yes	Yes	Pass
Sample 2	Yes	Yes	Pass
Sample 3	Yes	Yes	Pass
Sample 4	Yes	Yes	Pass
Sample 5	Yes	Yes	Pass
Sample 6	Yes	Yes	Pass
Sample 7	Yes	Yes	Pass
Sample 8	Yes	Yes	Pass
Sample 9	Yes	Yes	Pass
Sample 10	Yes	Yes	Pass

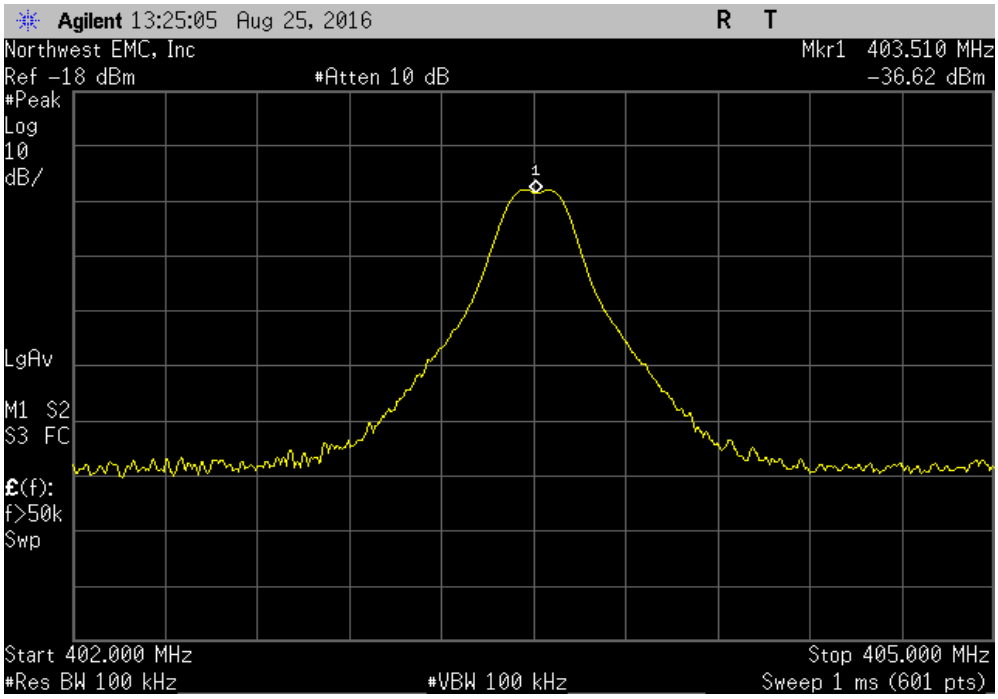
MINIMUM CHANNEL MONITORING PERIOD, 2 CHANNEL

XMit 2016.05.06

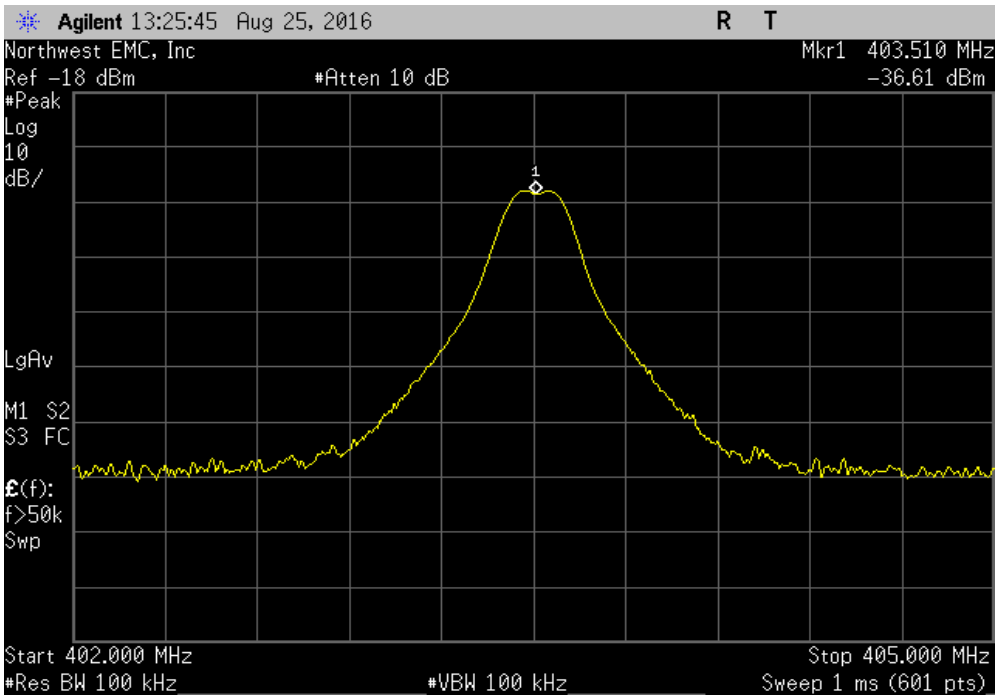
Sample 1						
				Transmits On Fc	Limit	Result
				Yes	Yes	Pass



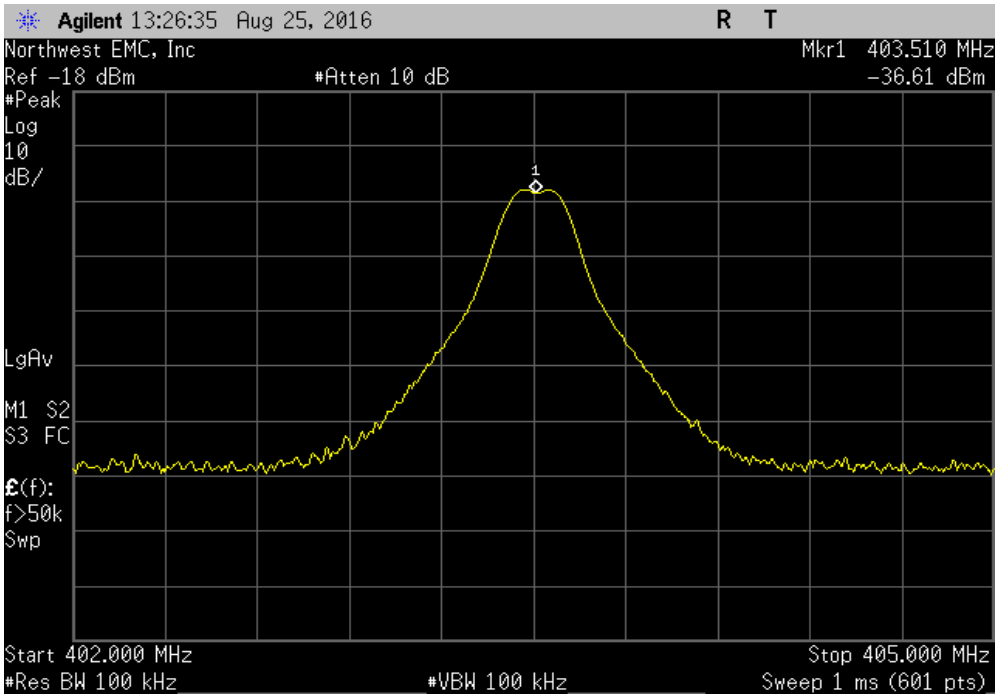
Sample 2						
				Transmits On Fc	Limit	Result
				Yes	Yes	Pass



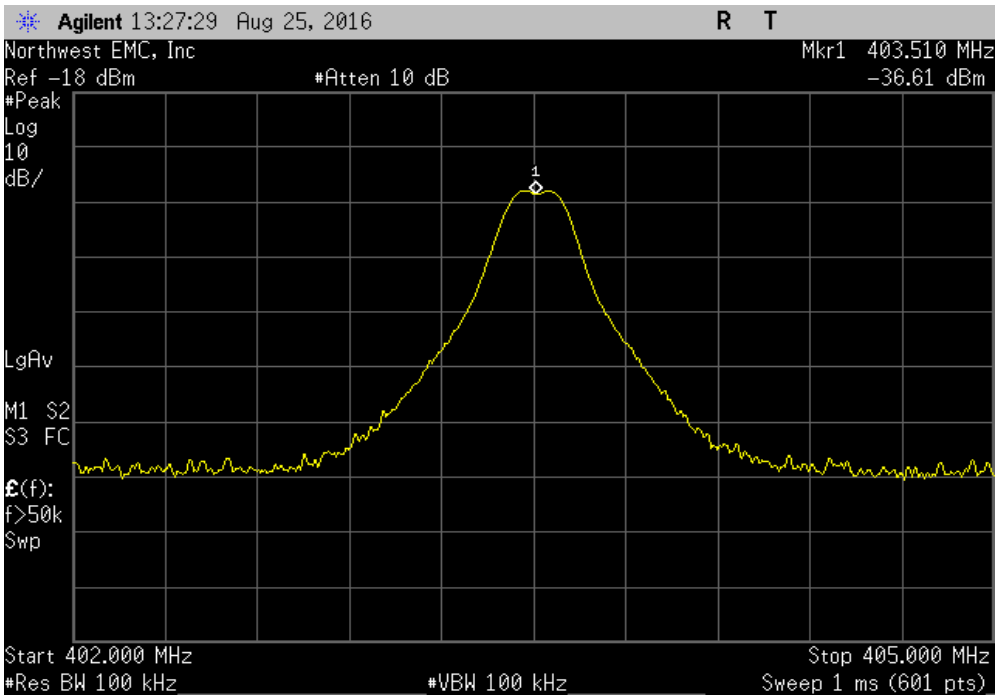
Sample 3						
				Transmits On Fc	Limit	Result
				Yes	Yes	Pass



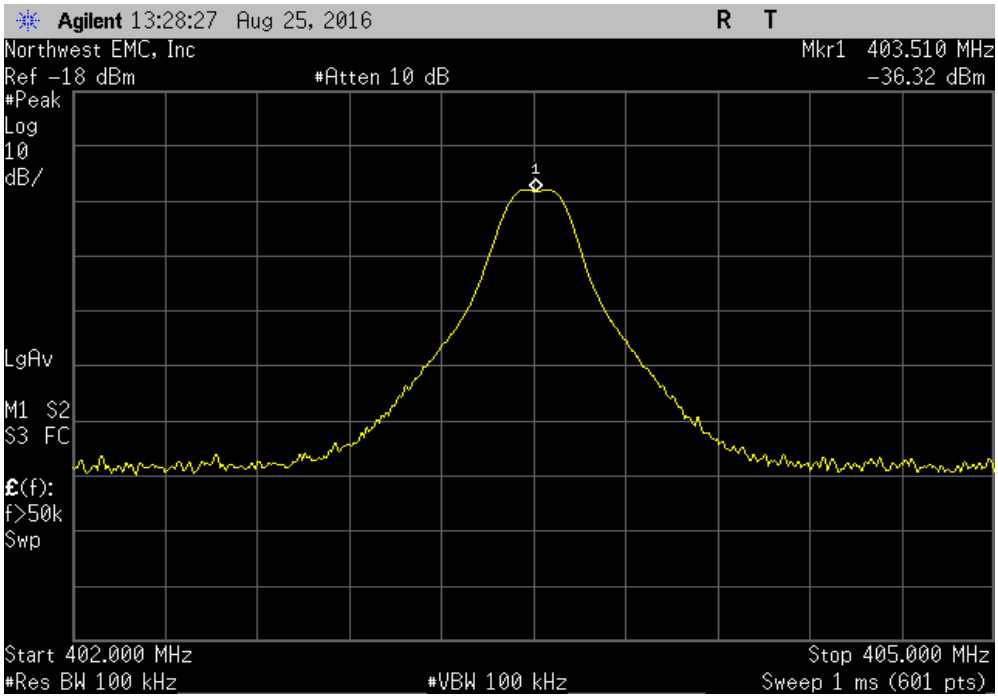
Sample 4						
				Transmits On Fc	Limit	Result
				Yes	Yes	Pass



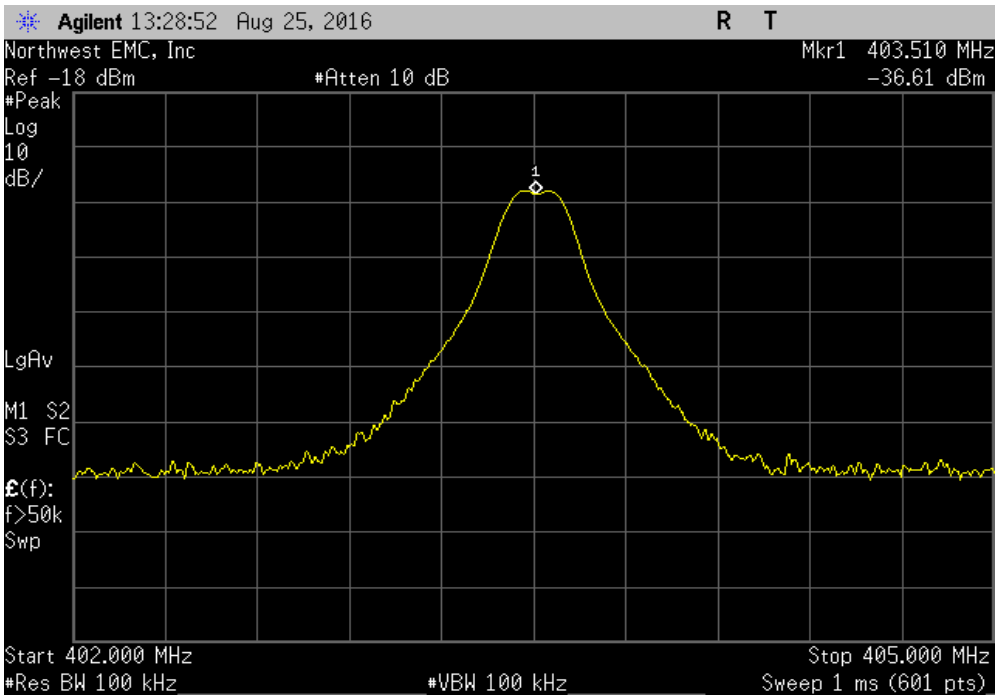
Sample 5						
				Transmits On Fc	Limit	Result
				Yes	Yes	Pass



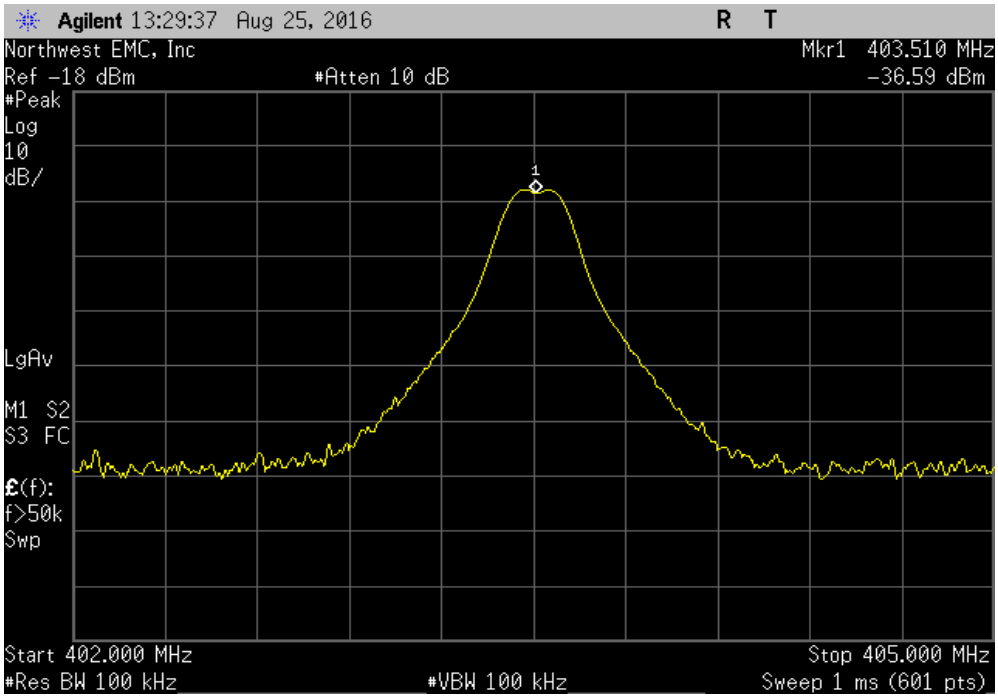
Sample 6						
				Transmits On Fc	Limit	Result
				Yes	Yes	Pass



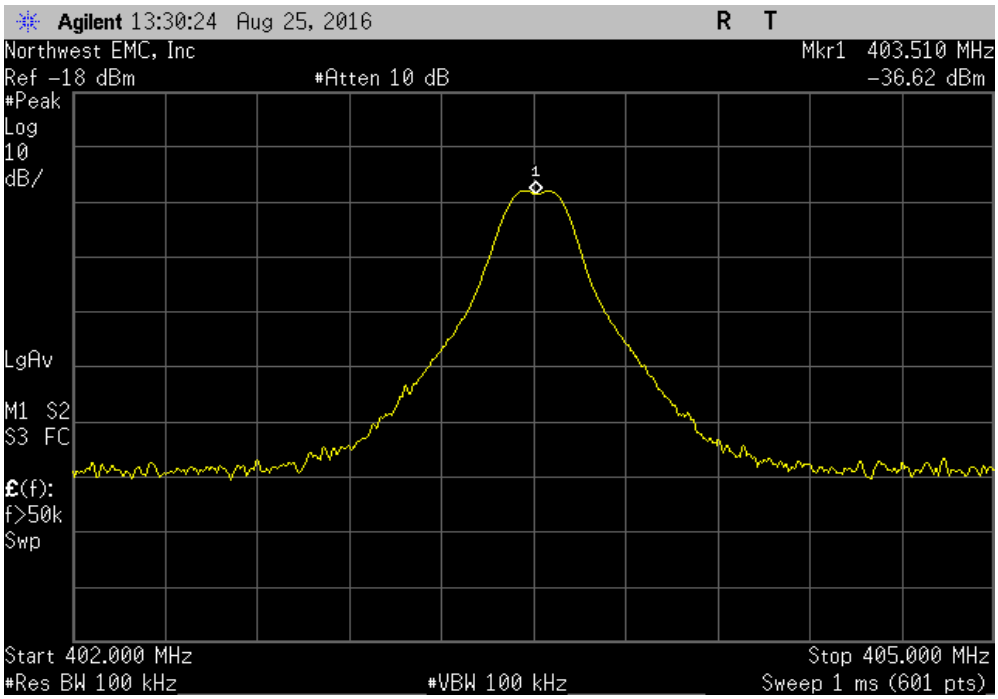
Sample 7						
				Transmits On Fc	Limit	Result
				Yes	Yes	Pass



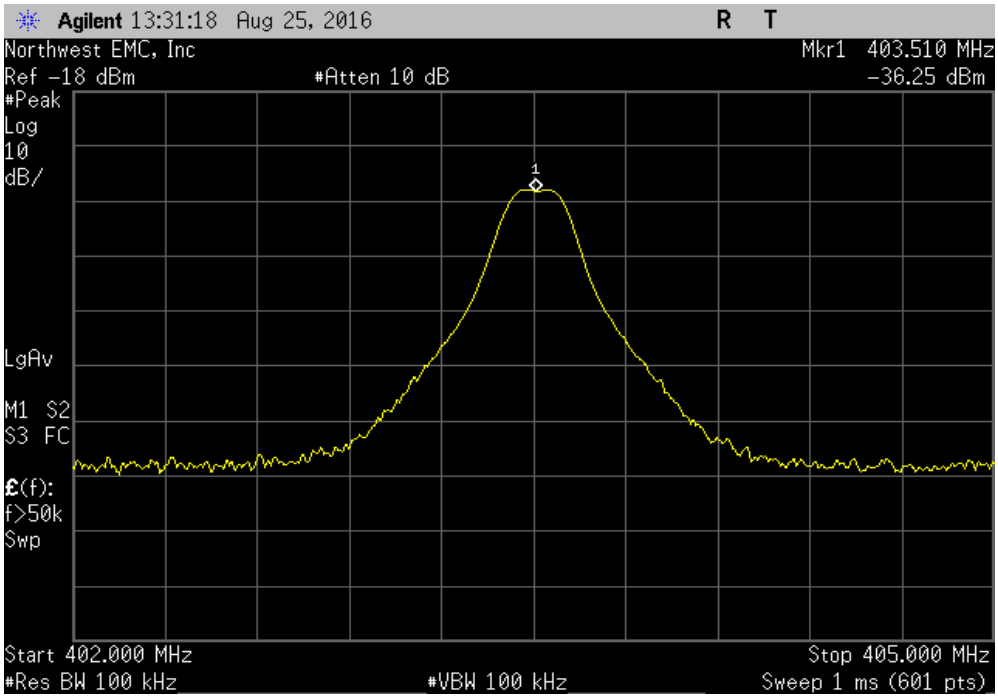
Sample 8						
				Transmits On Fc	Limit	Result
				Yes	Yes	Pass



Sample 9						
				Transmits On Fc	Limit	Result
				Yes	Yes	Pass



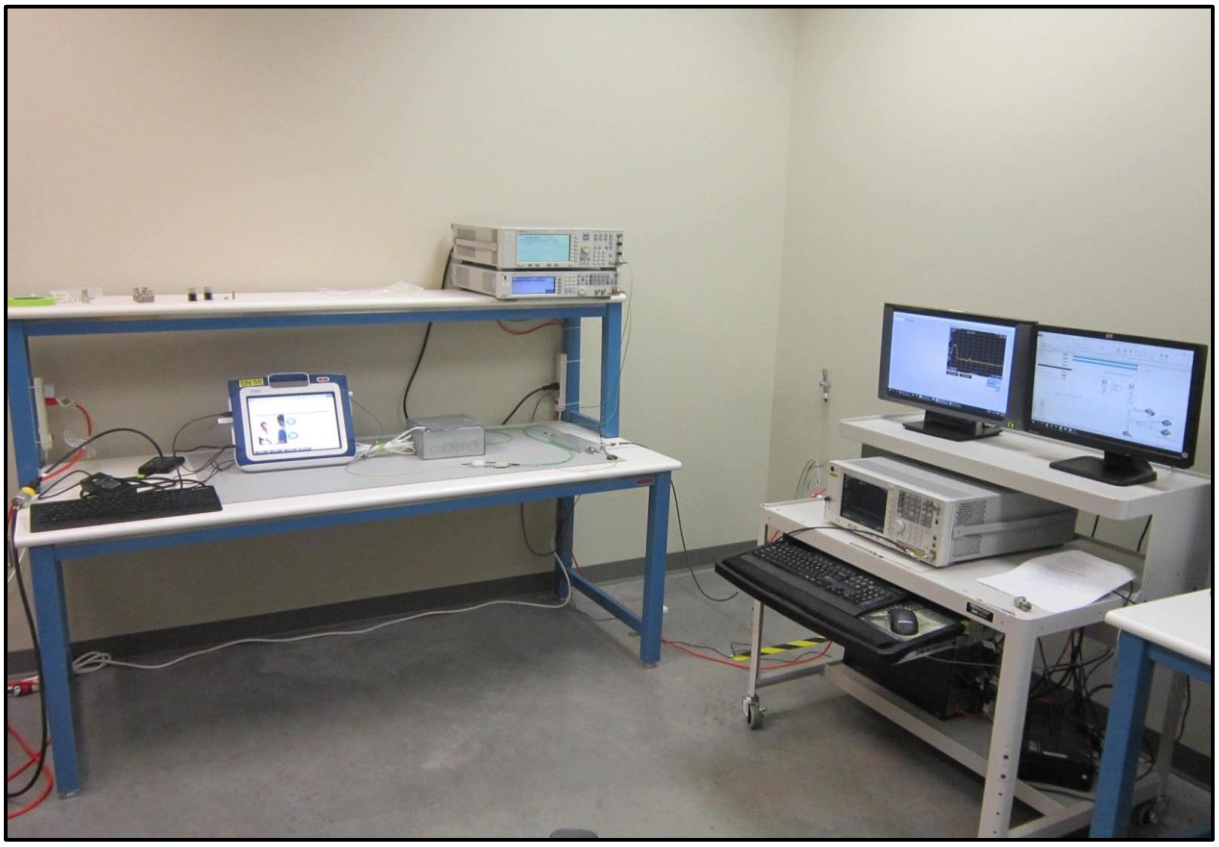
Sample 10						
				Transmits On Fc	Limit	Result
				Yes	Yes	Pass

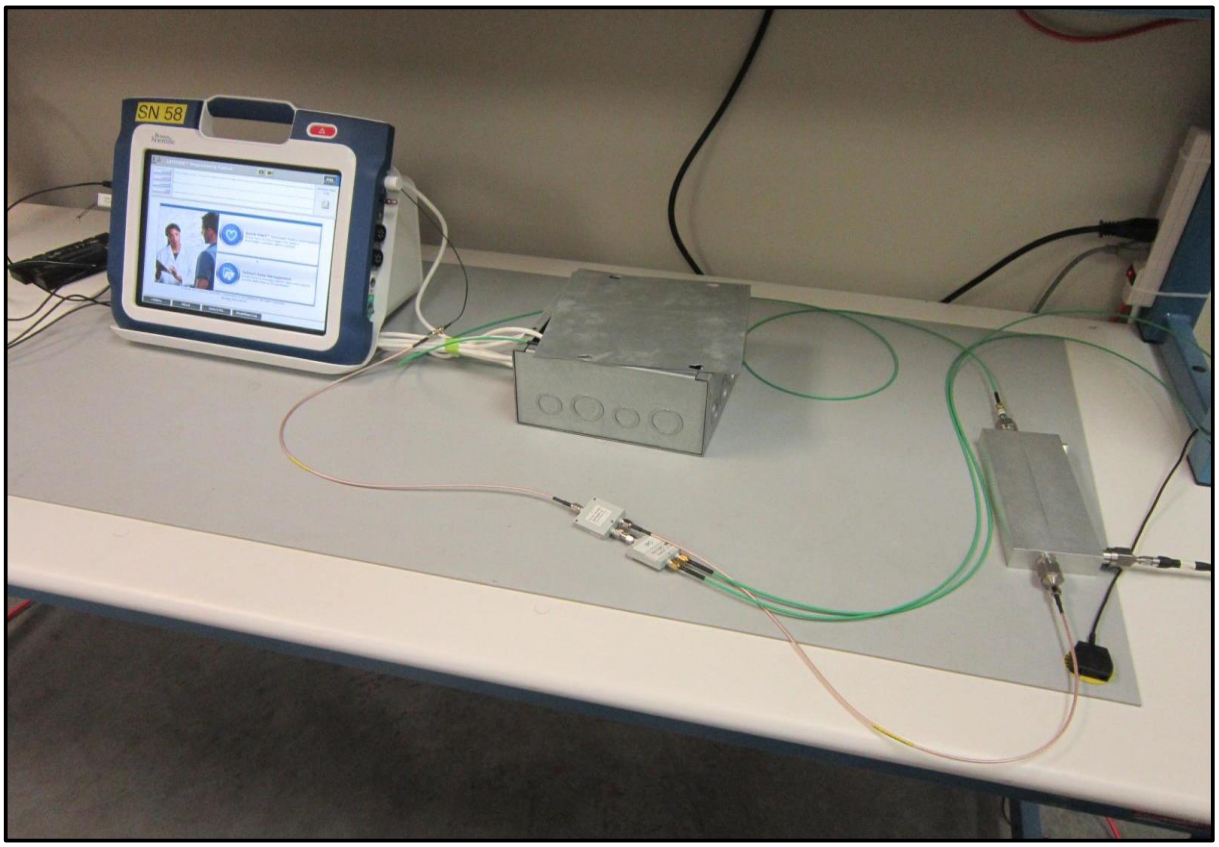


MINIMUM CHANNEL MONITORING PERIOD, 2 CHANNEL

NORTHWEST EMC

XMit 2016.05.06





CHANNEL ACCESS BASED ON AMBIENT LEVELS, 10 CHANNEL

XMit 2016.05.06

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Probe - Near Field Set	ETS Lindgren	7405	IPO	NCR	NCR
Directional Coupler	Fairview Microwave	SMC4039-10	RGS	NCR	NCR
Power Divider/Combiner	Fairview Microwave Inc (SM electronics)	MP8451-2	IAD	NCR	NCR
Power Divider/Combiner	Fairview Microwave Inc (SM electronics)	MP8451-2	IAC	NCR	NCR
Generator - Signal	Agilent	N5182A	TIF	8/12/2014	8/12/2017
Generator - Signal	Agilent	E4422B	TGQ	3/17/2015	3/17/2018
Cable	ESM Cable Corp.	TTBJ141 KMKM-72	MNU	9/18/2015	9/18/2016
Block - DC	Fairview Microwave	SD3379	AMI	9/18/2015	9/18/2016
Analyzer - Spectrum Analyzer	Agilent	E4440A	AAX	3/24/2016	3/24/2017

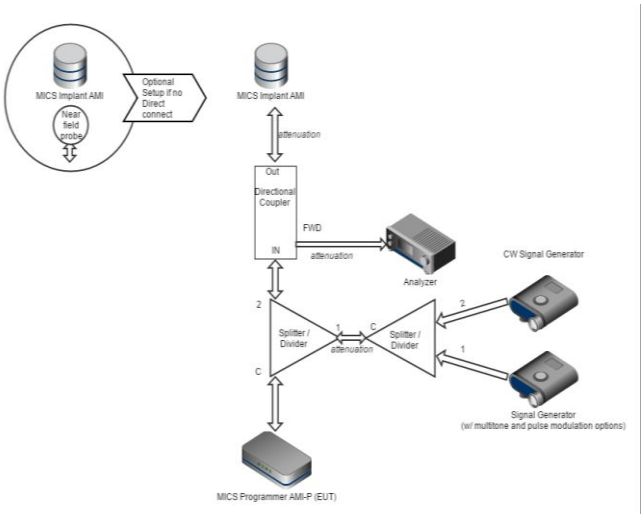
TEST DESCRIPTION

A near-field probe was placed near the transmitter. A low-loss coaxial cable was used to connect the near-field probe to the spectrum analyzer. The EUT was configured according to the following block diagram:

The signal generator was set to multitone operation to cause equal interferance across the entire band. The amplitude of the multitone signals (out of operation region) were set to the LBT threshold of 10*LOG(Bandwidth) - 150 + Antenna Gain + 10 dB.

The intended frequency (Fc) was set to the LBT threshold - 3 dB. A least interferred channel (LIC) was set to the LBT threshold + 3 dB. The EUT was verified to transmit on Fc. The amplitude of Fc was then raised to the LBT threshold + 6 dB. The EUT was verified to transmit on LIC.

The spectrum analyzer was set to measure the transmit band of 402-405 MHz. Screen captures were provided to show the EUT behavior at the different LBT threshold levels.



CHANNEL ACCESS BASED ON AMBIENT LEVELS, 10 CHANNEL

NORTHWEST EMC

XMit 2016.05.06

EUT:	Model 3300			**Work Order:**	BSTN0663
Serial Number:	058			**Date:**	08/08/16
Customer:	Boston Scientific Corporation			**Temperature:**	23.3 °C
Attendees:	Pete Musto			**Humidity:**	54.2% RH
Project:	Laramie Vision			**Barometric Pres.:**	1018 mbar
Tested by:	Dustin Sparks	**Power:**	220VAC/60Hz	**Job Site:**	MN02

TEST SPECIFICATIONS	Test Method
EN 301 839 V2.1.1:2016	EN 301 839 V2.1.1:2016

COMMENTS

EUT emissions bandwidth is 300000 Hz, 2.7 dBi antenna gain. Antenna port B, PRM application 3869 0.03.13

DEVIATIONS FROM TEST STANDARD

None

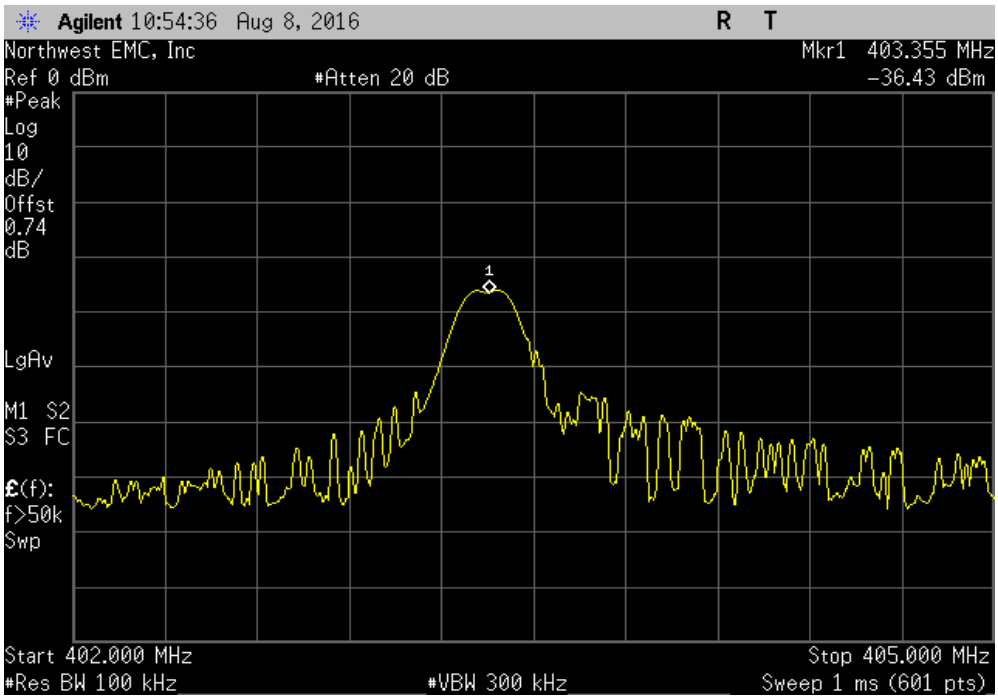
Configuration #	7	Signature Dustin Sparks

	Transmit on Fc	Transmit on LIC	Limit (Tx on LIC?)	Result
Fc LBT Threshold -3dB	Yes	No	No	Pass
Fc LBT Threshold +6dB	No	Yes	Yes	Pass

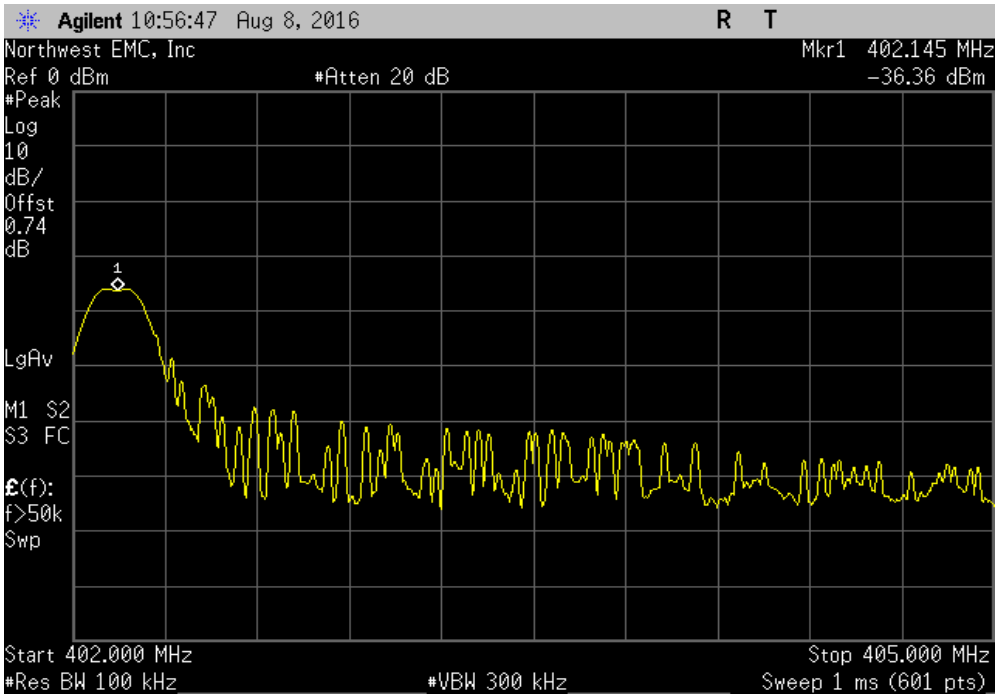
CHANNEL ACCESS BASED ON AMBIENT LEVELS, 10 CHANNEL

XMit 2016.05.06

Fc LBT Threshold -3dB						
			Transmit on Fc	Transmit on LIC	Limit (Tx on LIC?)	Result
			Yes	No	No	Pass



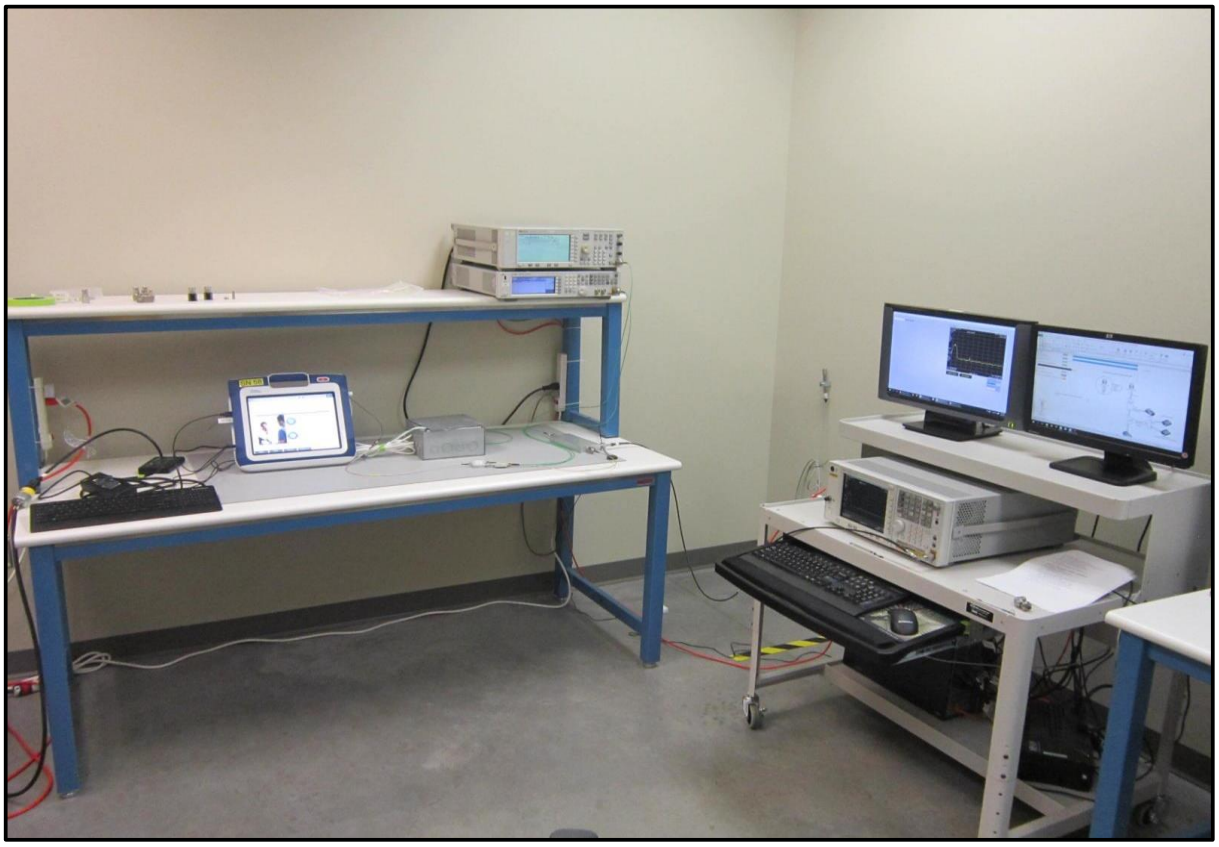
Fc LBT Threshold +6dB						
			Transmit on Fc	Transmit on LIC	Limit (Tx on LIC?)	Result
			No	Yes	Yes	Pass

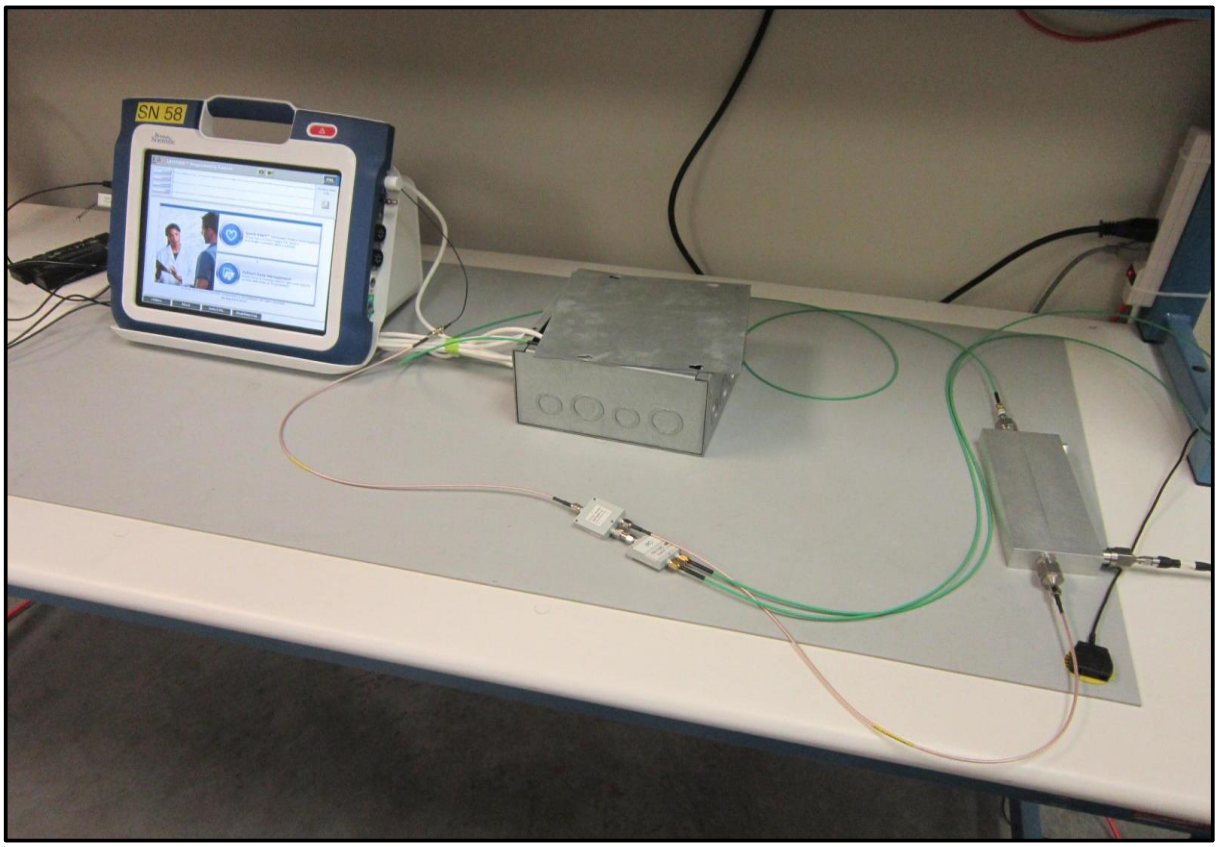


CHANNEL ACCESS BASED ON AMBIENT LEVELS, 10 CHANNEL

NORTHWEST EMC

XMit 2016.05.06





CHANNEL ACCESS BASED ON AMBIENT LEVELS, 10 CHANNEL

XMit 2016.05.06