

Boston Scientific Corporation

Jaguar Communicator

Report No. BSTN0336.1

Report Prepared By



www.nwemc.com
1-888-EMI-CERT

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EMC Test Report



22975 NW Evergreen Parkway
Suite 400
Hillsboro, Oregon 97124

Certificate of Test
Last Date of Test: December 5, 2011
Boston Scientific Corporation
Model: Jaguar Communicator

Emissions			
Test Description	Specification	Test Method	Pass/Fail
Out of Band Emissions	FCC 22H:2011	ANSI/TIA/EIA-603-C-2004	Pass
Out of Band Emissions	FCC 24E:2011	ANSI/TIA/EIA-603-C-2004	Pass
Effective Radiated Power (ERP)	FCC 22H:2011	ANSI/TIA/EIA-603-C-2004	Pass
Equivalent Isotropic Radiated Power (EIRP)	FCC 24E:2011	ANSI/TIA/EIA-603-C-2004	Pass

Modifications made to the product
See the Modifications section of this report

Test Facility

The measurement facility used to collect the data is located at:

Northwest EMC, Inc.
9349 W Broadway Ave.
Brooklyn Park, MN 55445

Phone: (763) 425-2281 Fax: (763) 424-3469

This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada (Site filing #2834E-1).

Approved By:

Rod Munro, Operations Manager



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.

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. This Report may only be duplicated in its entirety. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test.

Revision Number	Description	Date	Page Number
00	None		

Barometric Pressure

The recorded barometric pressure has been normalized to sea level.



Accreditations and Authorizations

FCC

Accredited by NVLAP for performance of FCC radio, digital, and ISM device testing. Our Open Area Test Sites, certification chambers, and conducted measurement facilities have been fully described in reports filed with the FCC and accepted by the FCC in letters maintained in our files. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by the FCC as a Telecommunications Certification Body (TCB). This allows Northwest EMC to certify transmitters to FCC specifications in accordance with 47 CFR 2.960 and 2.962.

NVLAP

Northwest EMC, Inc. is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP) for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. NVLAP is administered by the National Institute of Standards and Technology (NIST), an agency of the U.S. Commerce Department. The NVLAP accreditation encompasses Electromagnetic Compatibility Testing in accordance with the European Union EMC Directive 2004/108/EC, and ANSI C63.4. Additionally, Northwest EMC is accredited by NVLAP to perform radio testing in accordance with the European Union R&TTE Directive 1999/5/EEC, the requirements of FCC, and the RSS radio standards for Industry Canada.

Industry Canada

Accredited by NVLAP for performance of Industry Canada RSS and ICES testing. Our Open Area Test Sites and certification chambers comply with RSS-Gen, Issue 2 and have been filed with Industry Canada and accepted. Northwest EMC has been accredited by ANSI to ISO / IEC Guide 65 as a product certifier. We have been designated by NIST and recognized by Industry Canada as a Certification Body (CB) per the APEC Mutual Recognition Arrangement (MRA). This allows Northwest EMC to certify transmitters to Industry Canada technical requirements. (*Site Filing Numbers - Hillsboro: 2834D-1, 2834D-2, Sultan: 2834C-1, Irvine: 2834B-1, 2834B-2, Brooklyn Park: 2834E-1*)

CAB

Designated by NIST and validated by the European Commission as a Conformity Assessment Body (CAB) to conduct tests and approve products to the EMC directive and transmitters to the R&TTE directive, as described in the U.S. - EU Mutual Recognition Agreement.

Australia/New Zealand

The National Association of Testing Authorities (NATA), Australia has been appointed by the ACA as an accreditation body to accredit test laboratories and competent bodies for EMC standards. Accredited test reports or assessments by competent bodies must carry the NATA logo. Test reports made by an overseas laboratory that has been accredited for the relevant standards by an overseas accreditation body that has a Mutual Recognition Agreement (MRA) with NATA are also accepted as technical grounds for product conformity. The report should be endorsed with the respective logo of the accreditation body (NVLAP).



Accreditations and Authorizations

VCCI

Accepted as an Associate Member to the VCCI, Acceptance No. 564. Conducted and radiated measurement facilities have been registered in accordance with Regulations for Voluntary Control Measures, Article 8. (*Registration Numbers. - Hillsboro: C-1071, R-1025, G-84, C-2687, T-1658, and R-2318, Irvine: R-1943, G-85, C-2766, and T-1659, Sultan: R-871, G-83, C-3265, and T-1511, Brooklyn Park: R-3125, G-86, G-141, C-3464, and T-1634.*)

BSMI

Northwest EMC has been designated by NIST and validated by C-Taipei (BSMI) as a CAB to conduct tests as described in the APEC Mutual Recognition Agreement (US0017).

GOST

Northwest EMC, Inc. has been assessed and accredited by the Russian Certification bodies Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC, to perform EMC and Hygienic testing for Information Technology Products. As a result of their laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification

KCC

Northwest EMC, Inc is a CAB designated by MRA partners and recognized by Korea. (*Assigned Lab Numbers: Hillsboro: US0017, Irvine: US0158, Sultan: US0157, Brooklyn Park: US0175*)

VIETNAM

Vietnam MIC has approved Northwest EMC as an accredited test lab. Per Decision No. 194/QD-QLCL (dated December 15, 2009), Northwest EMC test reports can be used for Vietnam approval submissions.

SCOPE

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

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



Northwest EMC Locations



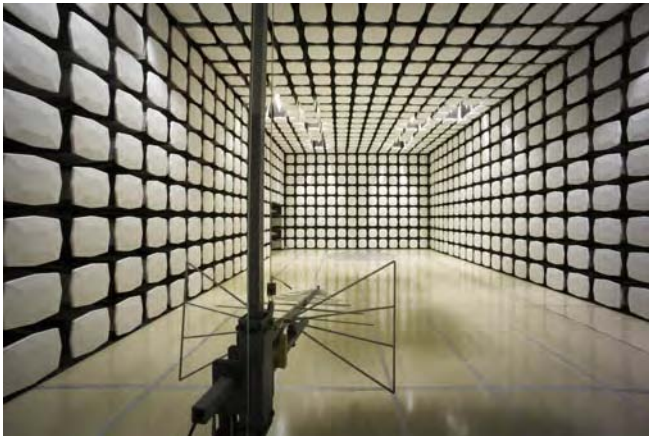
Oregon
Labs EV01-EV12
22975 NW Evergreen Pkwy
Suite 400
Hillsboro, OR 97124
(503) 844-4066

California
Labs OC01-OC13
41 Tesla
Irvine, CA 92618
(949) 861-8918

Minnesota
Labs MN01-MN08
9349 W Broadway Ave.
Brooklyn Park,
MN 55445
(763) 425-2281

Washington
Labs SU01-SU07
14128 339th Ave. SE
Sultan, WA 98294
(360) 793-8675

New York
Labs WA01-WA04
4939 Jordan Rd.
Elbridge, NY 13060
(315) 685-0796



Party Requesting the Test

Company Name:	Boston Scientific Corporation
Address:	4100 Hamline Avenue North
City, State, Zip:	St. Paul, MN 55112-5798
Test Requested By:	Pete Musto
Model:	Jaguar Communicator
First Date of Test:	December 2, 2011
Last Date of Test:	December 5, 2011
Receipt Date of Samples:	December 2, 2011
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test**Functional Description of the EUT (Equipment Under Test):**

Communicator

Testing Objective:

To demonstrate compliance to FCC Part 22H and 24E requirements

CONFIGURATION 1 BSTN0336 & BSTN0350**EUT**

Description	Manufacturer	Model/Part Number	Serial Number
Jaguar Communicator	Boston Scientific	6498	008
AC Power Supply	GlobTek, Inc.	GTM41060-1505	0411

Peripherals in test setup boundary

Description	Manufacturer	Model/Part Number	Serial Number
Bluetooth Dongle	Delta Mobile Systems, Inc.	DM210	None

Cables

Cable Type	Shield	Length (m)	Ferrite	Connection 1	Connection 2
Power Cord	No	1.9m	Yes	EUT	AC Mains
RJ11 Cable (2)	No	2.2m	No	EUT	Unterminated
USB Cable	Yes	1.9m	No	EUT	Unterminated

PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.

Equipment modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	12/2/2011	Out of Band Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	12/5/2011	Equivalent Isotropic Radiated Power (EIRP)	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	12/5/2011	Effective Radiated Power (ERP)	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

EMC Out of Band Emissions - Part 22

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 Cell Band, GPRS, EDGE, Ch 128: 824.2 MHz, 190: 836.6 MHz, 251: 848.8 MHz (See Comments)

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

BSTN0350 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	9 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
Antenna, Horn	ETS	3115	AJA	5/13/2011	24 mo
Universal Radio Communication Tester	Rhode & Schwarz	CMU200	BSU	NCR	0 mo
Power Sensor	Agilent	N8481A	SQN	9/23/2010	24 mo
Power Meter	Agilent	N1913A	SQI	9/23/2010	24 mo
Antenna, Dipole	EMCO	3121C-DB4	ADI	1/5/2010	36 mo
Signal Generator	Agilent	N5183A	TIA	1/18/2011	12 mo
.5-1 GHz Notch Filter	K&L Microwave	3TNF-500/1000-N/N	HGS	11/1/2010	24 mo
Low Pass Filter 0-425 MHz	Micro-Tronics	LPM50003	HGO	7/9/2010	24 mo
High Pass Filter	Micro-Tronics	HPM50108	HGP	7/9/2010	24 mo
MN05 Cables	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	7/1/2011	12 mo
Antenna, Horn	ETS	3160-07	AXP	NCR	0 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	7/1/2011	12 mo
Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVX	7/1/2011	12 mo
Antenna, Horn (DRG)	ETS Lindgren	3115	AIP	6/29/2011	24 mo
MN05 Cables	ESM Cable Corp.	DRG Horn Cables	MNI	10/18/2011	12 mo
MN05 Cables	ESM Cable Corp.	Bilog Cables	MNH	2/2/2011	12 mo
Pre-Amplifier	Miteq	AM-1616-1000	AVY	7/1/2011	12 mo
Antenna, Biconilog	ETS Lindgren	3142D	AXN	12/30/2009	24 mo
Spectrum Analyzer	Agilent	E4446A	AAT	2/15/2011	12 mo

MEASUREMENT BANDWIDTHS

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

Measurements were made using the IF bandwidths and detectors specified. No video filter was used, except in the case of the FCC Average Measurements above 1GHz. In that case, a peak detector with a 10Hz video bandwidth was used.

MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The highest gain antenna to be used with the EUT was tested for final measurements. The EUT was configured for the lowest, a middle, and the highest transmit frequency in each operational band. 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, and adjusting the measurement antenna height and polarization (per ANSI C63.10:2009). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

For licensed transmitters, the FCC references TIA/EIA-603 as the measurement procedure standard. TIA/EIA-603 Section 2.2.12 describes a method for measuring radiated spurious emissions that utilizes an antenna substitution method:

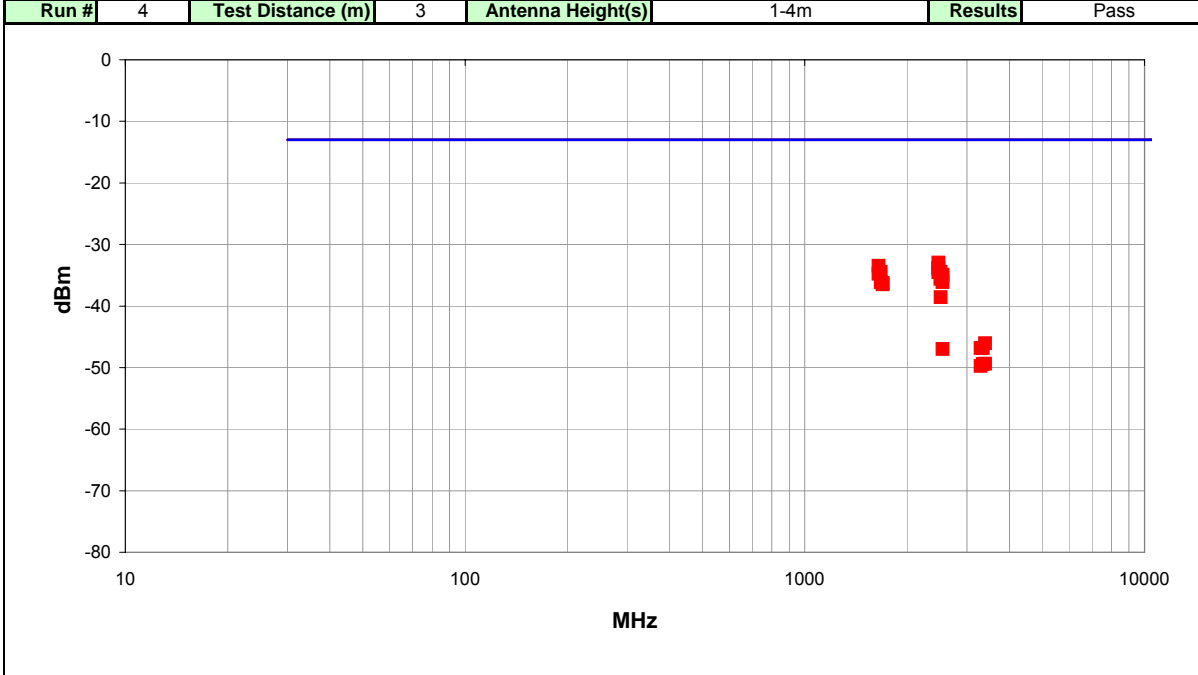
At an approved test site, the transmitter is placed on a remotely controlled turntable, and the measurement antenna is placed 3 meters from the transmitter. The turntable azimuth is varied to maximize the level of spurious emissions. The height of the measurement antenna is also varied from 1 to 4 meters. The amplitude and frequency of the highest emissions are noted. The transmitter is then replaced with a ½ wave dipole that is successively tuned to each of the highest spurious emissions for emissions below 1 GHz, and a horn antenna for emissions above 1 GHz. A signal generator is connected to the dipole (horn antenna for frequencies above 1 GHz), and its output is adjusted to match the level previously noted for each frequency. The output of the signal generator is recorded, and by factoring in the cable loss to the antenna and its gain; the power (dBm) into an ideal ½ wave dipole antenna is determined for each radiated spurious emission.

EMC

Out of Band Emissions - Part 22

Work Order:	BSTN0350	Date:	12/02/11	<i>Trevor Buls</i> Tested by: Trevor Buls
Project:	None	Temperature:	24.51 °C	
Job Site:	MN05	Humidity:	12.58% RH	
Serial Number:	1119	Barometric Pres.:	1028.9 mbar	
EUT:	Jaguar (Antenna Change)			
Configuration:	1			
Customer:	Boston Scientific Corporation			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Transmitting Cell Band, GPRS, EDGE, Ch 128: 824.2 MHz, 190: 836.6 MHz, 251: 848.8 MHz (See Comments)			
Deviations:	None			
Comments:	EUT tested in Horizontal only because this is the only position the device will be operated in as specified by the manufacturer.			

Test Specifications FCC 22H:2011	Test Method ANSI/TIA/EIA-603-C:2004						
Run #	4	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass



Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
2472.302	1.8	81.0	Horz	PK	5.08E-07	-32.9	-13.0	-19.9	Ch 128, GPRS
1648.321	2.4	9.0	Vert	PK	4.47E-07	-33.5	-13.0	-20.5	Ch 128, GPRS
2472.419	1.2	180.0	Horz	PK	4.13E-07	-33.8	-13.0	-20.8	Ch 128, EDGE
2472.894	1.6	354.0	Vert	PK	4.04E-07	-33.9	-13.0	-20.9	Ch 128, GPRS
1673.067	1.1	276.0	Horz	PK	3.59E-07	-34.4	-13.0	-21.4	Ch 190, GPRS
2509.592	1.1	356.0	Vert	PK	3.56E-07	-34.5	-13.0	-21.5	Ch 190, GPRS
2472.586	1.2	10.0	Vert	PK	3.52E-07	-34.5	-13.0	-21.5	Ch 128, EDGE
1648.313	1.2	273.0	Horz	PK	3.31E-07	-34.8	-13.0	-21.8	Ch 128, GPRS
2546.408	1.0	34.0	Vert	PK	3.22E-07	-34.9	-13.0	-21.9	Ch 251, EDGE
2546.348	1.7	101.0	Horz	PK	3.01E-07	-35.2	-13.0	-22.2	Ch 251, GPRS
2509.792	1.0	281.0	Horz	PK	2.83E-07	-35.5	-13.0	-22.5	Ch 190, GPRS
2509.717	1.2	23.0	Vert	PK	2.76E-07	-35.6	-13.0	-22.6	Ch 190, EDGE
2546.611	1.2	34.0	Vert	PK	2.45E-07	-36.1	-13.0	-23.1	Ch 251, GPRS
1673.142	3.1	22.0	Vert	PK	2.43E-07	-36.1	-13.0	-23.1	Ch 190, GPRS
1697.558	1.2	276.0	Horz	PK	2.34E-07	-36.3	-13.0	-23.3	Ch 251, GPRS
1697.708	3.2	9.0	Vert	PK	2.24E-07	-36.5	-13.0	-23.5	Ch 251, GPRS
2509.925	1.0	342.0	Horz	PK	1.39E-07	-38.6	-13.0	-25.6	Ch 190, EDGE
3395.425	1.5	127.0	Horz	PK	2.47E-08	-46.1	-13.0	-33.1	Ch 251, GPRS
3296.905	1.6	122.0	Horz	PK	2.07E-08	-46.8	-13.0	-33.8	Ch 128, GPRS
3346.567	1.6	123.0	Horz	PK	2.07E-08	-46.8	-13.0	-33.8	Ch 190, GPRS

EMC**Effective Radiated Power (ERP)**

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 Cell Band, GPRS, EDGE, Ch 128: 824.2 MHz, 190: 836.6 MHz, 251: 848.8 MHz (See Comments)

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

BSTN0350 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	823 MHz	Stop Frequency	850 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
Signal Generator	Agilent	N5183A	TIA	1/18/2011	12 mo
Power Sensor	Agilent	N8481A	SQN	9/23/2010	24 mo
Power Meter	Agilent	N1913A	SQL	9/23/2010	24 mo
Antenna, Dipole	EMCO	3121C-DB4	ADI	1/5/2010	36 mo
Antenna, Horn	ETS	3115	AJA	5/13/2011	24 mo
Universal Radio Communication Tester	Rhode & Schwarz	CMU200	BSU	NCR	0 mo
Attenuator, 20 dB, 'SMA'	SM Electronics	SA6-20	REO	7/1/2011	12 mo
MN05 Cables	ESM Cable Corp.	Bilog Cables	MNH	2/2/2011	12 mo
Antenna, Biconilog	ETS Lindgren	3142D	AXN	12/30/2009	24 mo
Spectrum Analyzer	Agilent	E4446A	AAT	2/15/2011	12 mo

MEASUREMENT BANDWIDTHS

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

Measurements were made using the IF bandwidths and detectors specified. No video filter was used, except in the case of the FCC Average Measurements above 1GHz. In that case, a peak detector with a 10Hz video bandwidth was used.

MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

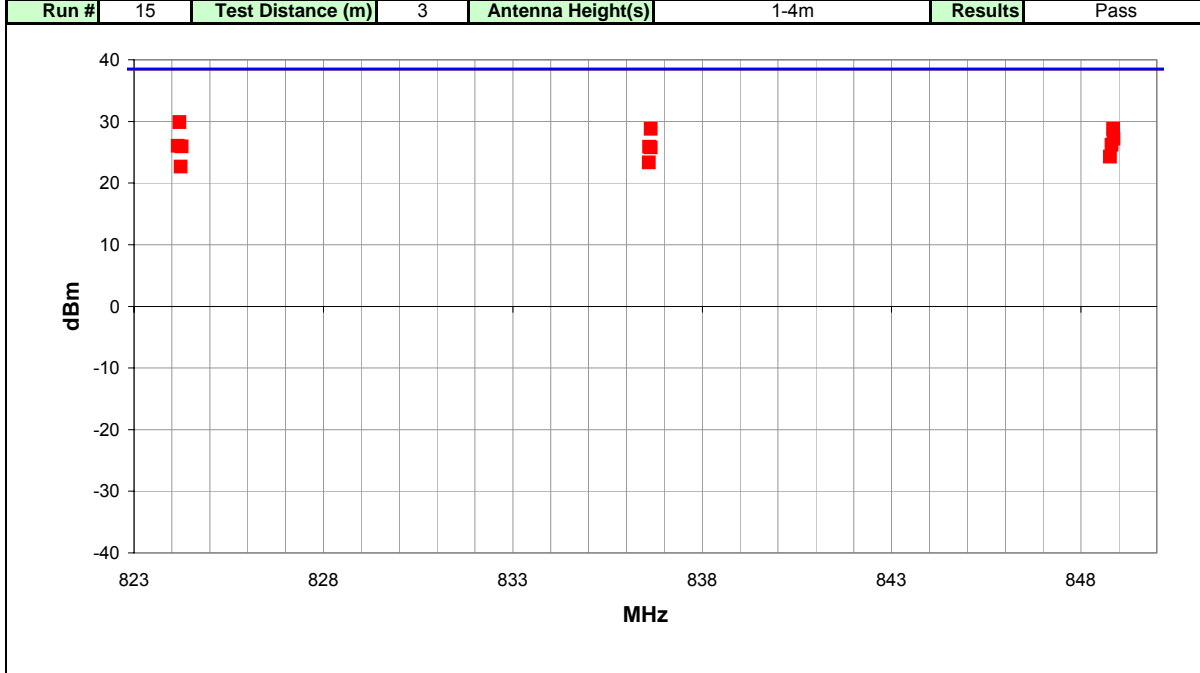
The fundamental emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height (1-4 meters) and polarization. The amplitude and frequency of the highest emission were noted. The EUT was then replaced with a 1/2 wave dipole that was successively tuned to the highest emission. A signal generator was connected to the dipole, and its output was adjusted to match the level previously noted for each frequency. The output of the signal generator was recorded. The signal generator, amplifier, and cable were then connected to an analyzer and the power output was recorded. By factoring in the dipole antenna gain (dBi), the effective radiated power for the maximum fundamental emission was determined. The ERP value was obtained from taking the value in EIRP - 2.15.

EMC

Effective Radiated Power (ERP)

Work Order:	BSTN0350	Date:	12/05/11	<i>Trevor Buls</i> Tested by: Trevor Buls
Project:	None	Temperature:	24.55 °C	
Job Site:	MN05	Humidity:	12.81% RH	
Serial Number:	1119	Barometric Pres.:	1031.5 mbar	
EUT:	Jaguar (Antenna Change)			
Configuration:	1			
Customer:	Boston Scientific Corporation			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Transmitting Cell Band, GPRS, EDGE, Ch 128: 824.2 MHz, 190: 836.6 MHz, 251: 848.8 MHz (See Comments)			
Deviations:	None			
Comments:	EUT tested in Horizontal only because this is the only position the device will be operated in as specified by the manufacturer.			

Test Specifications FCC 22H:2011	Test Method ANSI/TIA/EIA-603-C:2004						
Run #	15	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass



Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	ERP (Watts)	ERP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
824.200	1.0	300.0	Horz	PK	9.68E-01	29.9	38.5	-8.6	Ch 128, GPRS
848.855	1.0	27.0	Horz	PK	7.53E-01	28.8	38.5	-9.7	Ch 251, GPRS
836.640	1.0	133.0	Horz	PK	7.53E-01	28.8	38.5	-9.7	Ch 190, GPRS
848.860	1.0	162.0	Vert	PK	5.21E-01	27.2	38.5	-11.3	Ch 251, GPRS
848.810	1.0	179.0	Horz	PK	4.14E-01	26.2	38.5	-12.3	Ch 251, EDGE
824.155	1.0	169.0	Horz	PK	4.04E-01	26.1	38.5	-12.4	Ch 128, EDGE
824.255	1.1	166.0	Vert	PK	3.94E-01	26.0	38.5	-12.6	Ch 128, GPRS
836.600	1.0	141.0	Horz	PK	3.86E-01	25.9	38.5	-12.6	Ch 190, EDGE
836.640	1.1	164.0	Vert	PK	3.77E-01	25.8	38.5	-12.7	Ch 190, GPRS
848.765	1.1	171.0	Vert	PK	2.67E-01	24.3	38.5	-14.2	Ch 251, EDGE
836.593	1.0	162.0	Vert	PK	2.17E-01	23.4	38.5	-15.1	Ch 190, EDGE
824.230	2.7	178.0	Vert	PK	1.84E-01	22.7	38.5	-15.9	Ch 128, EDGE

EMC**Out of Band Emissions - Part 24**

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 PCS Band, GPRS, EDGE, Ch 512: 1850.2 MHz, 661: 1880 MHz, 810: 1909.8 MHz (See Comments)

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

BSTN0350 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	20 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
Universal Radio Communication Tester	Rhode & Schwarz	CMU200	BSU	NCR	0 mo
Antenna, Horn	ETS	3115	AJA	5/13/2011	24 mo
Signal Generator	Agilent	N5183A	TIA	1/18/2011	12 mo
Power Sensor	Agilent	N8481A	SQN	9/23/2010	24 mo
Power Meter	Agilent	N1913A	SQL	9/23/2010	24 mo
Low Pass Filter	Micro-Tronics	LPM50004	HGK	7/9/2010	24 mo
1-2 GHz Notch Filter	K&L Microwave	3TNF-1000/2000-N/N	HGT	11/1/2010	24 mo
High Pass Filter	Micro-Tronics	HPM50111	HGQ	7/9/2010	24 mo
MN05 Cables	N/A	Standard Gain Horn Cables	EVD	4/15/2011	12 mo
Antenna, Horn	ETS	3160-09	AHG	NCR	0 mo
Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	4/15/2011	12 mo
MN05 Cables	ESM Cable Corp.	Standard Gain Horn Cables	MNJ	7/1/2011	12 mo
Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AVV	7/1/2011	12 mo
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AVV	7/1/2011	12 mo
Antenna, Horn	ETS Lindgren	3160-08	AIQ	NCR	0 mo
Antenna, Horn	ETS	3160-07	AXP	NCR	0 mo
Pre-Amplifier	Miteq	AM-1616-1000	AVY	7/1/2011	12 mo
MN05 Cables	ESM Cable Corp.	DRG Horn Cables	MNI	10/18/2011	12 mo
Antenna, Horn (DRG)	ETS Lindgren	3115	AIP	6/29/2011	24 mo
Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVX	7/1/2011	12 mo
MN05 Cables	ESM Cable Corp.	Bilog Cables	MNH	2/2/2011	12 mo
Antenna, Biconilog	ETS Lindgren	3142D	AXN	12/30/2009	24 mo
Spectrum Analyzer	Agilent	E4446A	AAT	2/15/2011	12 mo

MEASUREMENT BANDWIDTHS

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

Measurements were made using the IF bandwidths and detectors specified. No video filter was used, except in the case of the FCC Average Measurements above 1GHz. In that case, a peak detector with a 10Hz video bandwidth was used.

MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

TEST DESCRIPTION

The highest gain antenna to be used with the EUT was tested for final measurements. The EUT was configured for the lowest, a middle, and the highest transmit frequency in each operational band. 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, and adjusting the measurement antenna height and polarization (per ANSI C63.10:2009). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

For licensed transmitters, the FCC references TIA/EIA-603 as the measurement procedure standard. TIA/EIA-603 Section 2.2.12 describes a method for measuring radiated spurious emissions that utilizes an antenna substitution method:

At an approved test site, the transmitter is placed on a remotely controlled turntable, and the measurement antenna is placed 3 meters from the transmitter. The turntable azimuth is varied to maximize the level of spurious emissions. The height of the measurement antenna is also varied from 1 to 4 meters. The amplitude and frequency of the highest emissions are noted. The transmitter is then replaced with a ½ wave dipole that is successively tuned to each of the highest spurious emissions for emissions below 1 GHz, and a horn antenna for emissions above 1 GHz. A signal generator is connected to the dipole (horn antenna for frequencies above 1 GHz), and its output is adjusted to match the level previously noted for each frequency. The output of the signal generator is recorded, and by factoring in the cable loss to the antenna and its gain, the power (dBm) into an ideal ½ wave dipole antenna is determined for each radiated spurious emission.

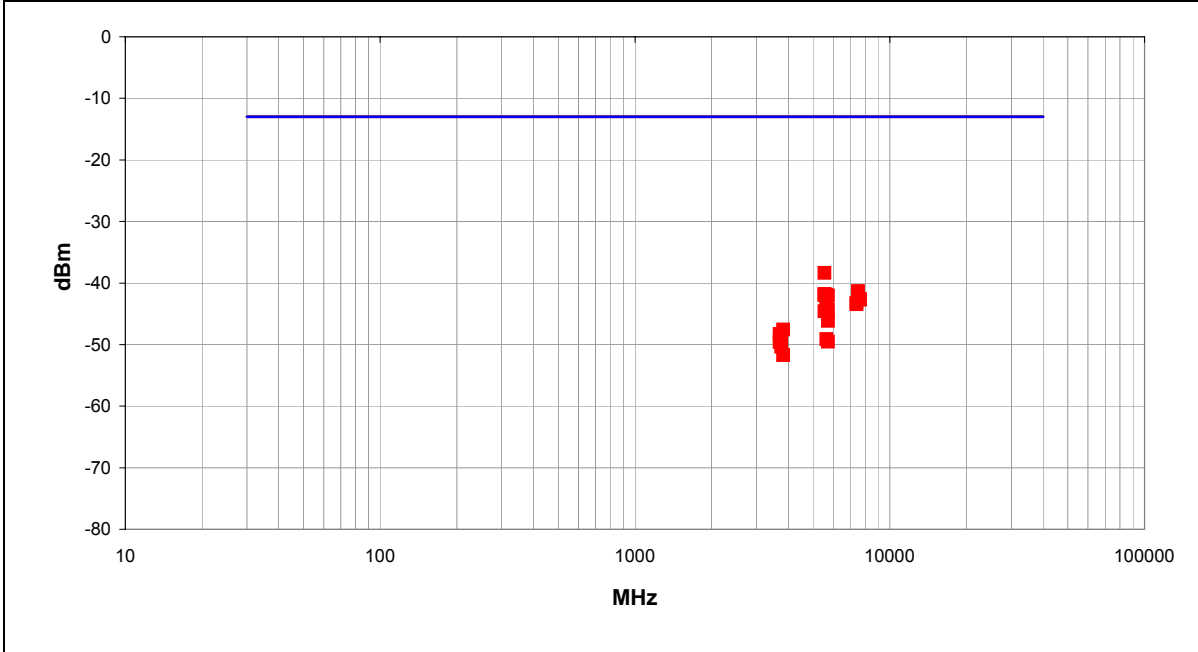
EMC

Out of Band Emissions - Part 24

Work Order:	BSTN0350	Date:	12/02/11	<i>Trevor Buls</i> Tested by: Trevor Buls
Project:	None	Temperature:	24.51 °C	
Job Site:	MN05	Humidity:	12.58% RH	
Serial Number:	1119	Barometric Pres.:	1028.9 mbar	
EUT:	Jaguar (Antenna Change)			
Configuration:	1			
Customer:	Boston Scientific Corporation			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Transmitting PCS Band, GPRS, EDGE, Ch 512: 1850.2 MHz, 661: 1880 MHz, 810: 1909.8 MHz (See Comments)			
Deviations:	None			
Comments:	EUT tested in Horizontal only because this is the only position the device will be operated in as specified by the manufacturer.			

Test Specifications FCC 24E:2011	Test Method ANSI/TIA/EIA-603-C:2004
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Run #	14	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass
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Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
5550.367	1.4	184.0	Horz	PK	1.453E-07	-38.4	-13.0	-25.4	Ch 512, GPRS
7519.850	1.0	179.0	Vert	PK	7.351E-08	-41.3	-13.0	-28.3	Ch 661, GPRS
5550.600	1.6	189.0	Horz	PK	6.642E-08	-41.8	-13.0	-28.8	Ch 512, EDGE
5639.983	1.0	209.0	Horz	PK	6.443E-08	-41.9	-13.0	-28.9	Ch 661, GPRS
5550.500	1.4	209.0	Vert	PK	6.343E-08	-42.0	-13.0	-29.0	Ch 512, GPRS
5729.325	1.4	173.0	Horz	PK	6.250E-08	-42.0	-13.0	-29.0	Ch 810, GPRS
7518.683	1.0	237.0	Horz	PK	5.975E-08	-42.2	-13.0	-29.2	Ch 661, GPRS
7640.367	2.6	332.0	Horz	PK	5.464E-08	-42.6	-13.0	-29.6	Ch 810, GPRS
7641.400	1.0	200.0	Vert	PK	5.337E-08	-42.7	-13.0	-29.7	Ch 810, GPRS
7398.825	1.0	183.0	Vert	PK	4.727E-08	-43.3	-13.0	-30.3	Ch 512, GPRS
7398.792	1.0	168.0	Horz	PK	4.514E-08	-43.5	-13.0	-30.5	Ch 512, GPRS
5639.967	1.0	168.0	Vert	PK	3.973E-08	-44.0	-13.0	-31.0	Ch 661, GPRS
5729.608	1.2	175.0	Vert	PK	3.681E-08	-44.3	-13.0	-31.3	Ch 810, GPRS
5640.033	1.5	174.0	Horz	PK	3.624E-08	-44.4	-13.0	-31.4	Ch 661, EDGE
5550.300	1.3	193.0	Vert	PK	3.485E-08	-44.6	-13.0	-31.6	Ch 512, EDGE
5729.183	1.4	185.0	Horz	PK	2.432E-08	-46.1	-13.0	-33.1	Ch 810, EDGE
3819.775	1.5	288.0	Horz	PK	1.762E-08	-47.5	-13.0	-34.5	Ch 810, GPRS
3700.509	1.3	70.0	Horz	PK	1.487E-08	-48.3	-13.0	-35.3	Ch 512, GPRS
5641.508	1.0	234.0	Vert	PK	1.229E-08	-49.1	-13.0	-36.1	Ch 661, EDGE
3760.017	1.3	285.0	Horz	PK	1.178E-08	-49.3	-13.0	-36.3	Ch 661, GPRS

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 PCS Band, GPRS, EDGE, Ch 512: 1850.2 MHz, 661: 1880 MHz, 810: 1909.8 MHz (See Comments)

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

BSTN0350 - 1

FREQUENCY RANGE INVESTIGATED

Start Frequency	1850 MHz	Stop Frequency	1910 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
Signal Generator	Agilent	N5183A	TIA	1/18/2011	12 mo
Power Sensor	Agilent	N8481A	SQN	9/23/2010	24 mo
Power Meter	Agilent	N1913A	SQL	9/23/2010	24 mo
Antenna, Horn	ETS	3115	AJA	5/13/2011	24 mo
Universal Radio Communication Tester	Rhode & Schwarz	CMU200	BSU	NCR	0 mo
Attenuator, 10db, 'SMA'	S.M. Electronics	SA18H-10	REN	7/1/2011	12 mo
MN05 Cables	ESM Cable Corp.	DRG Horn Cables	MNI	10/18/2011	12 mo
Antenna, Horn (DRG)	ETS Lindgren	3115	AIP	6/29/2011	24 mo
Spectrum Analyzer	Agilent	E4446A	AAT	2/15/2011	12 mo

MEASUREMENT BANDWIDTHS

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

Measurements were made using the IF bandwidths and detectors specified. No video filter was used, except in the case of the FCC Average Measurements above 1GHz. In that case, a peak detector with a 10Hz video bandwidth was used.

MEASUREMENT UNCERTAINTY

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 for radiated emissions measurements is less than +/- 4 dB, and for conducted emissions measurements is less than +/- 2.7 dB. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for measurement uncertainty are available upon request.

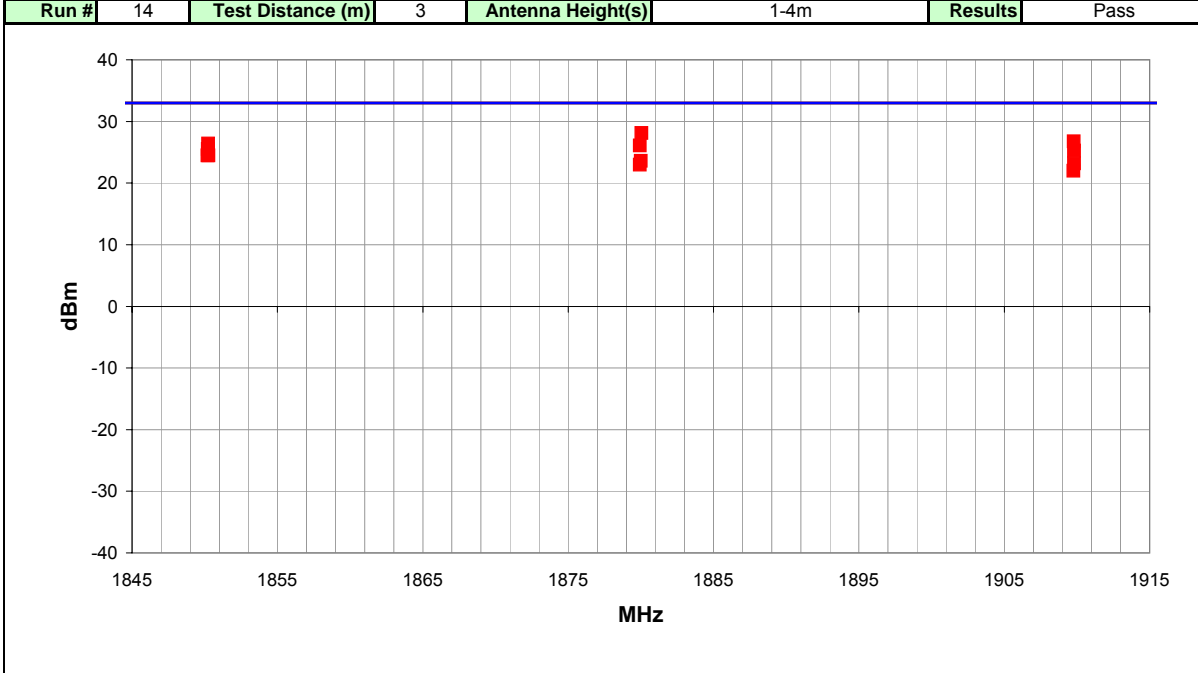
TEST DESCRIPTION

The fundamental emissions from the EUT were maximized by rotating the EUT, and adjusting the measurement antenna height (1-4 meters) and polarization. The antennas to be used with the EUT were tested. The EUT was transmitting while set at the lowest channel, a middle channel, and the highest channel available. The amplitude and frequency were noted. The EUT was then replaced with a horn antenna. A signal generator was connected to the horn 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 gain (dBi) of the horn antenna the effective radiated power for each emission was determined.

EMC Equivalent Isotropic Radiated Power (EIRP)

Work Order:	BSTN0350	Date:	12/05/11	<i>Trevor Buls</i> Tested by: Trevor Buls
Project:	None	Temperature:	24.55 °C	
Job Site:	MN05	Humidity:	12.81% RH	
Serial Number:	1119	Barometric Pres.:	1031.5 mbar	
EUT:	Jaguar (Antenna Change)			
Configuration:	1			
Customer:	Boston Scientific Corporation			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Transmitting PCS Band, GPRS, EDGE, Ch 512: 1850.2 MHz, 661: 1880 MHz, 810: 1909.8 MHz (See Comments)			
Deviations:	None			
Comments:	EUT tested in Horizontal only because this is the only position the device will be operated in as specified by the manufacturer.			

Test Specifications FCC 24E:2011	Test Method ANSI/TIA/EIA-603-C:2004						
Run #	14	Test Distance (m)	3	Antenna Height(s)	1-4m	Results	Pass



Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
1880.047	2.5	124.0	Horz	PK	6.46E-01	28.1	33.0	-4.9	Ch 661, GPRS
1909.783	1.0	92.0	Horz	PK	4.75E-01	26.8	33.0	-6.2	Ch 810, GPRS
1850.242	1.1	97.0	Horz	PK	4.37E-01	26.4	33.0	-6.6	Ch 512, GPRS
1879.940	1.0	93.0	Horz	PK	4.07E-01	26.1	33.0	-6.9	Ch 661, EDGE
1850.208	1.0	96.0	Horz	PK	3.55E-01	25.5	33.0	-7.5	Ch 512, EDGE
1909.808	1.1	181.0	Horz	PK	3.37E-01	25.3	33.0	-7.7	Ch 810, EDGE
1850.250	1.0	311.0	Vert	PK	2.81E-01	24.5	33.0	-8.5	Ch 512, EDGE
1850.200	1.0	9.0	Vert	PK	2.81E-01	24.5	33.0	-8.5	Ch 512, GPRS
1879.993	1.1	83.0	Vert	PK	2.28E-01	23.6	33.0	-9.4	Ch 661, GPRS
1909.800	1.2	202.0	Vert	PK	2.08E-01	23.2	33.0	-9.8	Ch 810, GPRS
1879.940	1.0	204.0	Vert	PK	1.98E-01	23.0	33.0	-10.0	Ch 661, EDGE
1909.752	1.0	205.0	Vert	PK	1.58E-01	22.0	33.0	-11.0	Ch 810, EDGE