

Verathon Medical

FloPoint Sensor

June 22, 2007

Report No. VERA0015 Rev 01

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
Issue Date: June 22, 2007
Verathon Medical
Model: FloPoint Sensor

Emissions				
Test Description	Specification	Test Method	Pass	Fail
Field Strength of Fundamental	FCC 15.249:2006	ANSI C63.4:2003	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Spurious Radiated Emissions	FCC 15.249:2006	ANSI C63.4:2003	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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.
22975 NW Evergreen Parkway, Suite 400
Hillsboro, OR 97124

Phone: (503) 844-4066 Fax: 844-3826

This site has been fully described in a report filed with and accepted by the FCC (Federal Communications Commission) and Industry Canada.

Approved By:

Don Facteau, IS Manager

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
01	Removed reference to 120V/60Hz power settings (unit is battery operated)	10/24/07	10, 13-14, 17-18

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 United States Department of Commerce, National Institute of Standards and Technology, and National Voluntary Laboratory Accreditation Program for satisfactory compliance with the requirements of ISO/IEC 17025 for Testing Laboratories. The NVLAP accreditation encompasses Electromagnetic Compatibility Testing in accordance with the European Union EMC Directive 89/336/EEC, 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.



NVLAP LAB CODE 200629-0
NVLAP LAB CODE 200630-0
NVLAP LAB CODE 200676-0
NVLAP LAB CODE 200761-0

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 212, Issue 1 (Provisional) 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.



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.



TÜV Product Service: Included in TÜV Product Service Group's Listing of Recognized Laboratories. It qualifies in connection with the TÜV Certification after Recognition of Agent's Testing Program for the product categories and/or standards shown in TÜV's current Listing of CARAT Laboratories, available from TÜV. A certificate was issued to represent that this laboratory continues to meet TÜV's CARAT Program requirements. Certificate No. USA0604C.



TÜV Rheinland: Authorized to carryout EMC tests by order and under supervision of TÜV Rheinland. This authorization is based on "Conditions for EMC-Subcontractors" of November 1992.



NEMKO: Assessed and accredited by NEMKO (Norwegian testing and certification body) for European emissions and immunity testing. As a result of NEMKO's laboratory assessment, they will accept test results from Northwest EMC, Inc. for product certification (Authorization No. ELA 119).



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).



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, C-2687, T-289, and R-2318, Irvine: R-1943, C-2766, and T-298, Sultan: R-871, C-1784, and T-294*).



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. License No.SL2-IN-E-1017.



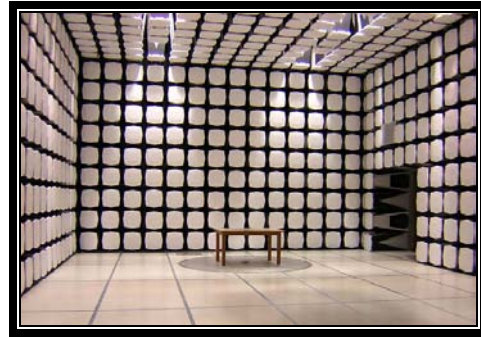
GOST: Northwest EMC, Inc. has been assessed and accredited by the Russian Certification bodies Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC, to perform EMC and Hygienic testing for Information Technology Products. As a result of their laboratory assessment, they will accept test results from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



SCOPE

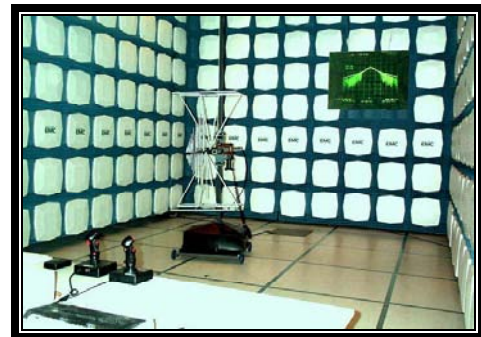
For details on the Scopes of our Accreditations, please visit:

<http://www.nwemc.com/scope.asp>



**California – Orange County Facility
Labs OC01 – OC13**

41 Tesla Ave. Irvine, CA 92618
(888) 364-2378 Fax: (503) 844-3826



**Oregon – Evergreen Facility
Labs EV01 – EV11**

22975 NW Evergreen Pkwy. Suite 400 Hillsboro, OR 97124
(503) 844-4066 Fax: (503) 844-3826



**Washington – Sultan Facility
Labs SU01 – SU07**

14128 339th Ave. SE Sultan, WA 98294
(888) 364-2378

Party Requesting the Test

Company Name:	Verathon Medical
Address:	21222 30th Drive SE, Suite 120
City, State, Zip:	Bothell, WA 98021
Test Requested By:	Tim Chinowsky
Model:	FloPoint Sensor
First Date of Test:	May 18, 2007
Last Date of Test:	June 12, 2007
Receipt Date of Samples:	May 18, 2007
Equipment Design Stage:	Prototype
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):

2.4 GHz radio transceivers. Device uses a Cypress CYWUSB6934 "Wireless USB" chip for remote control and data transmission between a handheld remote and a urine flowmeter located in a bathroom.

Testing Objective:

Seeking TCB authorization under 15.249.

EUT Photo



CONFIGURATION 1 VERA0014

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
EUT - Sensor	Verathon Medical	FloSensor	07040601

CONFIGURATION 3 VERA0015

EUT			
Description	Manufacturer	Model/Part Number	Serial Number
EUT - Sensor	Verathon Medical	FloSensor	07040601

Equipment modifications					
Item	Date	Test	Modification	Note	Disposition of EUT
1	5/18/2007	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	6/11/2007	Field Strength of Fundamental	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	6/12/2007	Field Strength of Spurious Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

SPURIOUS RADIATED EMISSIONS

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

MODES OF OPERATION

Transmitting with modulation mid channel
Transmitting with modulation low channel
Transmitting with modulation high channel

POWER SETTINGS INVESTIGATED

Battery

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	25 GHz
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CLOCKS AND OSCILLATORS

SAMPLE CALCULATIONS

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

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOK	1/14/2007	13
Antenna, Horn	EMCO	3160-07	AHP	NCR	0
A292 Cable for Standard Gain Horn	ESM Cable Corp.	LA292	SUL	2/14/2007	13
Antenna, Horn	EMCO	3115	AHM	2/20/2006	24
SU07 cables a,h,c			SUB	2/14/2007	13
Antenna, Biconilog	EMCO	LPB-2513	AXC	NCR	0
SU07 cables a,f,c			SUA	3/30/2006	16
Spectrum Analyzer	Hewlett-Packard	8566B	AAL	12/7/2006	13
Quasi-Peak Adapter	Hewlett-Packard	85650A	AQA	12/7/2006	13
Spectrum Analyzer	Agilent	E4446A	AAT	12/7/2006	13
High Pass Filter	Micro-Tronics	HPM50111	HFO	12/29/2006	13
Low Pass Filter 0-1000 MHz	Micro-Tronics	LPM50004	LFD	12/29/2006	13
Pre-Amplifier	Miteq	AM-1616-1000	AOL	12/29/2006	13
Antenna, Biconilog	EMCO	3141	AXE	12/28/2005	24
Pre-Amplifier	Miteq	AMF-4D-010100-24-10P	APW	5/10/2007	13
Antenna, Horn	EMCO	3115	AHC	8/24/2006	12
Pre-Amplifier	Miteq	AMF-4D-005180-24-10P	APC	5/10/2007	13
Antenna, Horn	EMCO	3160-08	AHK	NCR	0
Pre-Amplifier	Miteq	JSD4-18002600-26-8P	APU	3/23/2006	17
Antenna, Horn	EMCO	3160-09	AHG	NCR	0
EV01 cables c,g, h			EVA	12/29/2006	13
EV01 cables g,h,j			EVB	5/10/2007	13
EV01 Cable D			EVD	3/30/2006	15
EV01 cables g,h,l			EVF	5/10/2007	13

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


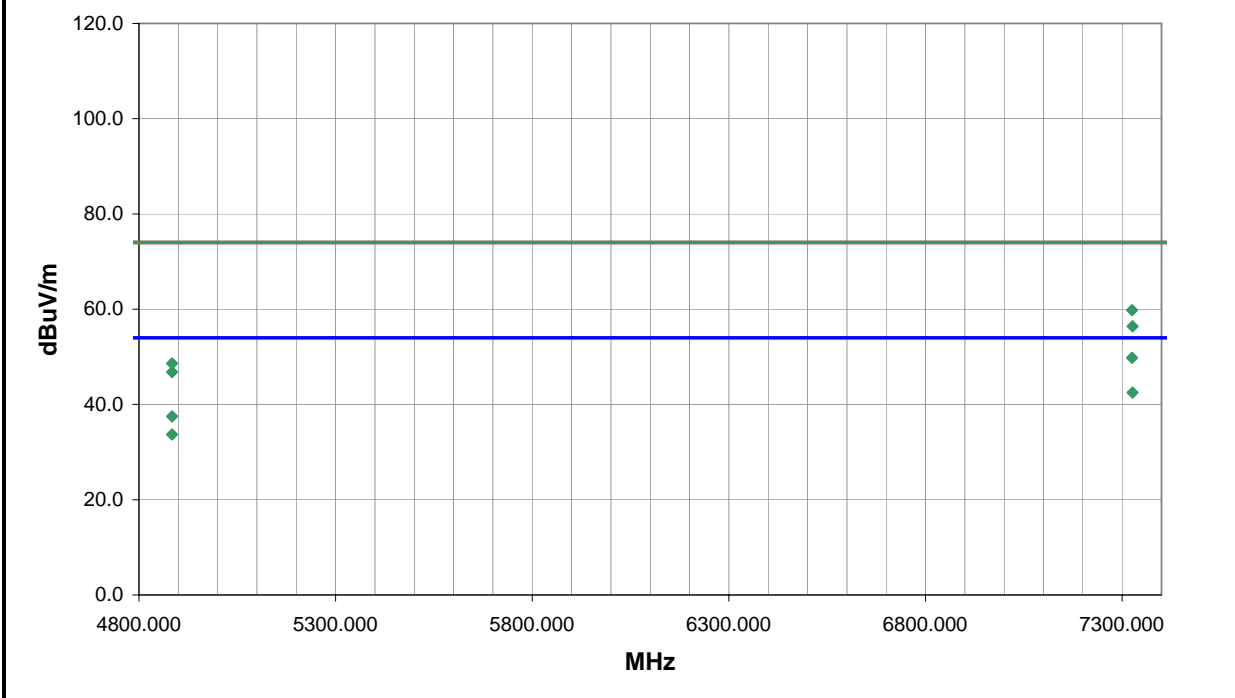
Measurements were made using the bandwidths and detectors specified. No video filter was used.


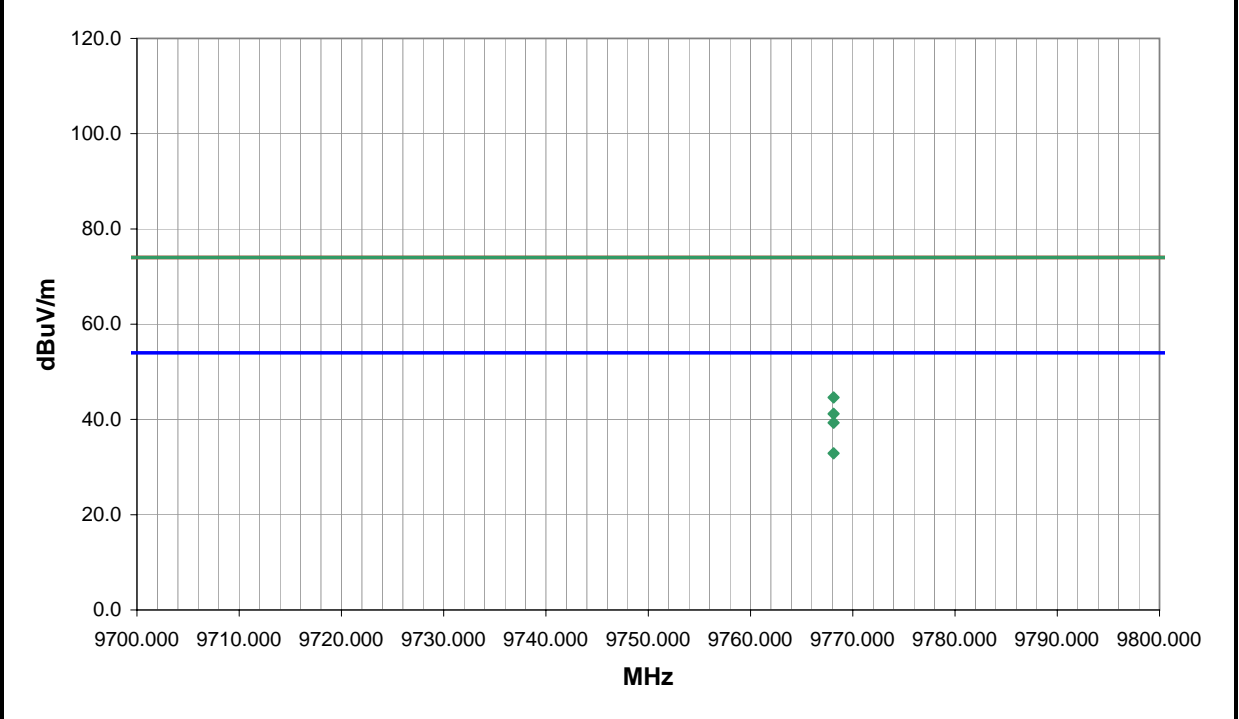
MEASUREMENT UNCERTAINTY

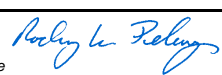
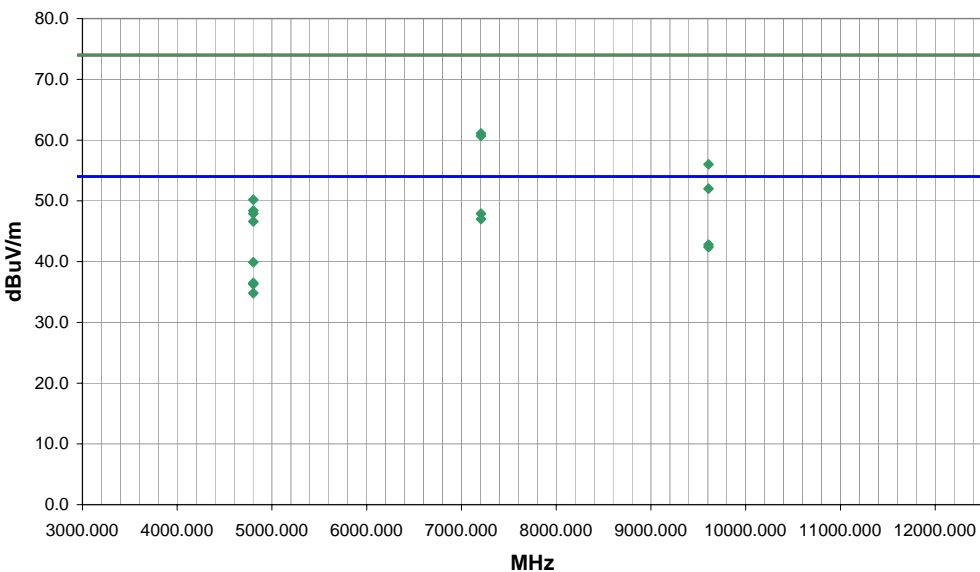
Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

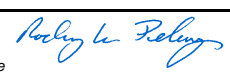
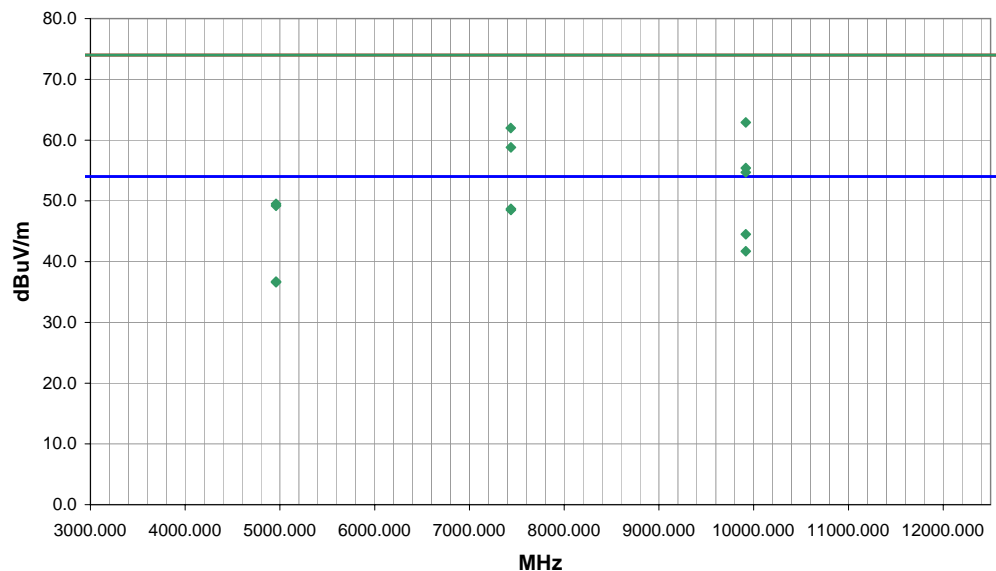
TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was transmitting and receiving while set at the lowest channel, a middle channel, and the highest channel available. While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.4:2003). A preamp and high pass filter were used for this test in order to provide sufficient measurement sensitivity.

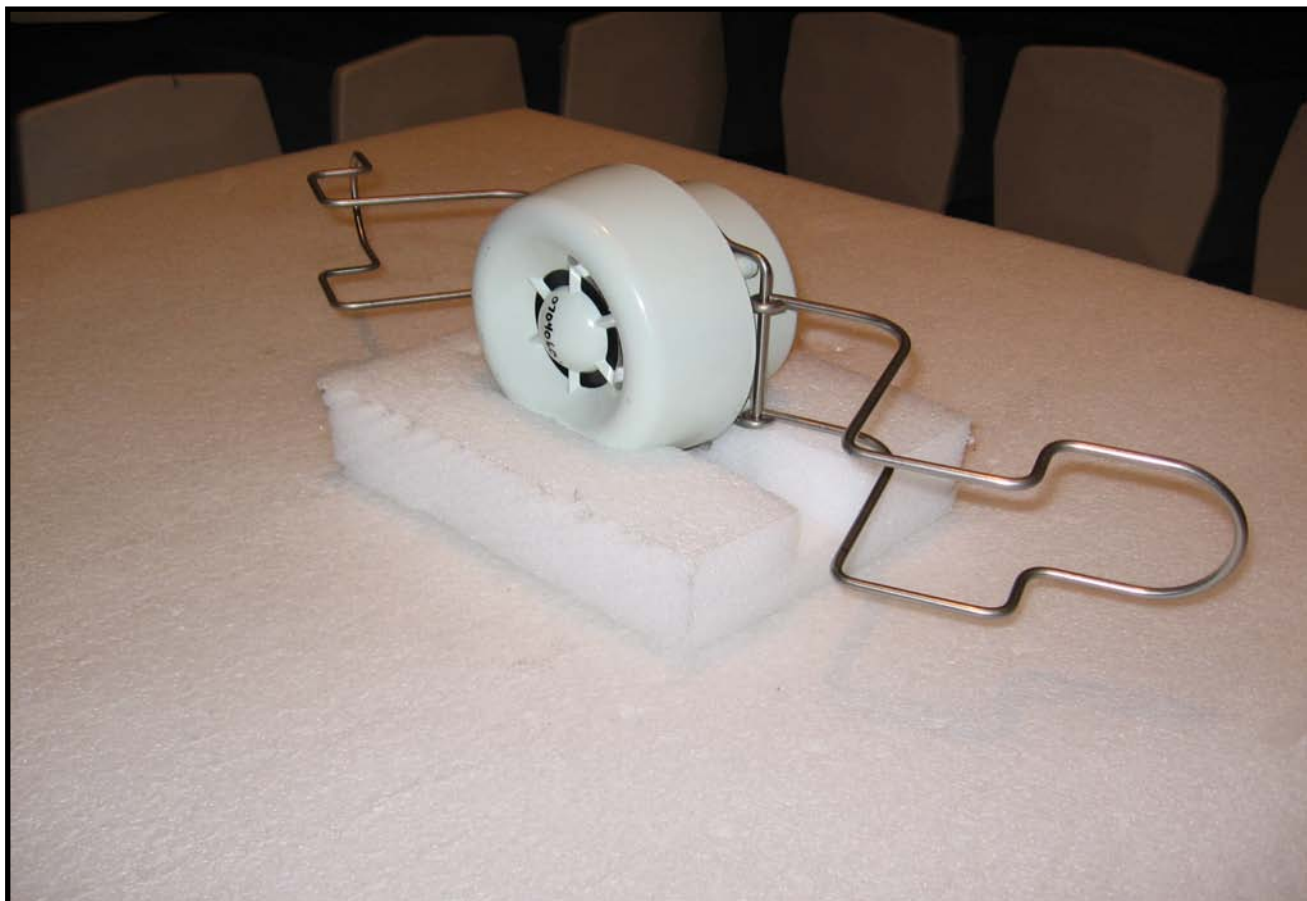
NORTHWEST		SPURIOUS RADIATED EMISSIONS		ACQ 2007.05.07								
EMC				EMI 2006.12.04								
EUT: FloPoint Sensor			Work Order: VERA0014									
Serial Number: None.			Date: 05/18/07									
Customer: Verathon Medical			Temperature: 19 C									
Attendees: Tim Chinowsky			Humidity: 40%									
Project: None			Barometric Pres.: 30.03									
Tested by: Chris Searls		Power: Battery		Job Site: SU07								
TEST SPECIFICATIONS			Test Method									
FCC 15.249:2006			ANSI C63.4:2003									
TEST PARAMETERS												
Antenna Height(s) (m)		1 - 4		Test Distance (m)								
COMMENTS												
None												
EUT OPERATING MODES												
Transmitting at 2442Mhz												
DEVIATIONS FROM TEST STANDARD												
No deviations.												
Run #	2		 Signature									
Configuration #	1											
Results	Pass											
												
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
7325.110	33.5	16.3	104.0	1.5	3.0	0.0	H-Horn	AV	0.0	49.8	54.0	-4.2
7326.363	26.2	16.3	134.0	1.5	3.0	0.0	V-Horn	AV	0.0	42.5	54.0	-11.5
7325.110	43.5	16.3	104.0	1.5	3.0	0.0	H-Horn	PK	0.0	59.8	74.0	-14.2
4884.062	28.4	9.1	144.0	1.1	3.0	0.0	H-Horn	AV	0.0	37.5	54.0	-16.5
7326.363	40.1	16.3	134.0	1.5	3.0	0.0	V-Horn	PK	0.0	56.4	74.0	-17.6
4884.056	24.6	9.1	296.0	1.1	3.0	0.0	V-Horn	AV	0.0	33.7	54.0	-20.3
4884.062	39.5	9.1	144.0	1.1	3.0	0.0	H-Horn	PK	0.0	48.6	74.0	-25.4
4884.056	37.7	9.1	296.0	1.1	3.0	0.0	V-Horn	PK	0.0	46.8	74.0	-27.2

NORTHWEST		SPURIOUS RADIATED EMISSIONS		ACQ 2007.05.07								
EMC				EMI 2006.12.04								
EUT: FloPoint Sensor			Work Order: VERA0014									
Serial Number: None.			Date: 05/18/07									
Customer: Verathon Medical			Temperature: 19 C									
Attendees: Tim Chinowsky			Humidity: 40%									
Project: None			Barometric Pres.: 30.03									
Tested by: Chris Searls		Power: Battery		Job Site: SU07								
TEST SPECIFICATIONS			Test Method									
FCC 15.249:2006			ANSI C63.4:2003									
TEST PARAMETERS												
Antenna Height(s) (m)		1 - 4		Test Distance (m)								
COMMENTS												
None												
EUT OPERATING MODES												
Transmitting at 2442Mhz												
DEVIATIONS FROM TEST STANDARD												
No deviations.												
Run #	3		 Signature									
Configuration #	1											
Results	Pass											
												
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)
9768.120	45.9	-6.6	287.0	1.2	3.0	0.0	H-Horn	AV	0.0	39.3	54.0	-14.7
9768.120	39.5	-6.6	287.0	1.2	3.0	0.0	V-Horn	AV	0.0	32.9	54.0	-21.1
9768.120	51.2	-6.6	287.0	1.2	3.0	0.0	H-Horn	PK	0.0	44.6	74.0	-29.4
9768.120	47.8	-6.6	287.0	1.2	3.0	0.0	V-Horn	PK	0.0	41.2	74.0	-32.8

NORTHWEST		SPURIOUS RADIATED EMISSIONS		PSA 2007.05.07 EMI 2006.12.20									
EMC													
EUT: FloPoint Sensor			Work Order: VERA0015										
Serial Number: 07040601			Date: 06/12/07										
Customer: Verathon Medical			Temperature: 23										
Attendees: None			Humidity: 31%										
Project: None			Barometric Pres.: 30.11										
Tested by: Rod Peloquin		Power: Battery		Job Site: EV01									
TEST SPECIFICATIONS			Test Method										
FCC 15.249:2006			ANSI C63.4:2003										
TEST PARAMETERS													
Antenna Height(s) (m)		1 - 4		Test Distance (m) 3									
COMMENTS													
EUT OPERATING MODES													
Transmitting with modulation													
DEVIATIONS FROM TEST STANDARD													
No deviations.													
Run #	9	 Signature											
Configuration #	3												
Results	Pass												
													
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
7206.088	34.7	13.2	266.0	1.2	3.0	0.0	V-Horn	AV	0.0	47.9	54.0	-6.1	EUT on side
7206.088	33.8	13.2	345.0	1.1	3.0	0.0	H-Horn	AV	0.0	47.0	54.0	-7.0	EUT typical orientation
9608.112	27.0	15.8	151.0	1.3	3.0	0.0	H-Horn	AV	0.0	42.8	54.0	-11.2	EUT typical orientation
9608.050	26.6	15.8	23.0	1.2	3.0	0.0	V-Horn	AV	0.0	42.4	54.0	-11.6	EUT on side
7205.990	47.9	13.2	266.0	1.2	3.0	0.0	V-Horn	PK	0.0	61.1	74.0	-12.9	EUT on side
7205.852	47.5	13.2	345.0	1.1	3.0	0.0	H-Horn	PK	0.0	60.7	74.0	-13.3	EUT typical orientation
4804.105	32.5	7.4	278.0	1.0	3.0	0.0	V-Horn	AV	0.0	39.9	54.0	-14.1	EUT on side
4804.032	29.1	7.4	225.0	1.8	3.0	0.0	H-Horn	AV	0.0	36.5	54.0	-17.5	EUT typical orientation
4804.098	28.9	7.4	7.0	1.2	3.0	0.0	H-Horn	AV	0.0	36.3	54.0	-17.7	EUT on side
9608.285	40.2	15.8	151.0	1.3	3.0	0.0	H-Horn	PK	0.0	56.0	74.0	-18.0	EUT typical orientation
4804.030	27.4	7.4	28.0	1.0	3.0	0.0	V-Horn	AV	0.0	34.8	54.0	-19.2	EUT typical orientation
9608.090	36.2	15.8	23.0	1.2	3.0	0.0	V-Horn	PK	0.0	52.0	74.0	-22.0	EUT on side
4804.040	42.8	7.4	278.0	1.0	3.0	0.0	V-Horn	PK	0.0	50.2	74.0	-23.8	EUT on side
4804.108	41.0	7.4	28.0	1.0	3.0	0.0	V-Horn	PK	0.0	48.4	74.0	-25.6	EUT typical orientation
4804.128	40.5	7.4	7.0	1.2	3.0	0.0	H-Horn	PK	0.0	47.9	74.0	-26.1	EUT on side
4803.965	39.2	7.4	225.0	1.8	3.0	0.0	H-Horn	PK	0.0	46.6	74.0	-27.4	EUT typical orientation

NORTHWEST		SPURIOUS RADIATED EMISSIONS		PSA 2007.05.07 EMI 2006.12.20									
EMC													
EUT: FloPoint Sensor			Work Order: VERA0015										
Serial Number: 07040601			Date: 06/12/07										
Customer: Verathon Medical			Temperature: 23										
Attendees: none			Humidity: 31%										
Project: None			Barometric Pres.: 30.11										
Tested by: Rod Peloquin		Power: Battery		Job Site: EV01									
TEST SPECIFICATIONS			Test Method										
FCC 15.249:2006			ANSI C63.4:2003										
TEST PARAMETERS													
Antenna Height(s) (m)		1 - 4		Test Distance (m)									
				3									
COMMENTS													
EUT OPERATING MODES													
Transmitting with modulation high channel													
DEVIATIONS FROM TEST STANDARD													
No deviations.													
Run #	10	 Signature											
Configuration #	3												
Results	Pass												
													
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
7437.168	34.2	14.5	272.0	1.2	3.0	0.0	V-Horn	AV	0.0	48.7	54.0	-5.3	EUT on side
7437.122	34.0	14.5	259.0	1.9	3.0	0.0	H-Horn	AV	0.0	48.5	54.0	-5.5	EUT typical orientation
9916.115	28.3	16.2	299.0	1.7	3.0	0.0	H-Horn	AV	0.0	44.5	54.0	-9.5	EUT typical orientation
9915.802	46.7	16.2	299.0	1.7	3.0	0.0	H-Horn	PK	0.0	62.9	74.0	-11.1	EUT typical orientation
7436.560	47.5	14.5	259.0	1.9	3.0	0.0	H-Horn	PK	0.0	62.0	74.0	-12.0	EUT typical orientation
9916.115	25.5	16.2	22.0	1.2	3.0	0.0	V-Horn	AV	0.0	41.7	54.0	-12.3	EUT on side
7437.518	44.3	14.5	272.0	1.2	3.0	0.0	V-Horn	PK	0.0	58.8	74.0	-15.2	EUT on side
4958.088	28.7	8.0	345.0	1.0	3.0	0.0	V-Horn	AV	0.0	36.7	54.0	-17.3	EUT on side
4958.050	28.6	8.0	315.0	1.2	3.0	0.0	H-Horn	AV	0.0	36.6	54.0	-17.4	EUT typical orientation
9916.330	39.2	16.2	299.0	1.7	3.0	0.0	H-Horn	PK	0.0	55.4	74.0	-18.6	EUT typical orientation
9915.855	38.5	16.2	22.0	1.2	3.0	0.0	V-Horn	PK	0.0	54.7	74.0	-19.3	EUT on side
4958.010	41.5	8.0	315.0	1.2	3.0	0.0	H-Horn	PK	0.0	49.5	74.0	-24.5	EUT typical orientation
4958.185	41.2	8.0	345.0	1.0	3.0	0.0	V-Horn	PK	0.0	49.2	74.0	-24.8	EUT on side





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.

MODES OF OPERATION

Transmitting with modulation

POWER SETTINGS INVESTIGATED

Battery

FREQUENCY RANGE INVESTIGATED

Start Frequency	2400 MHz	Stop Frequency	2483.5 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
Spectrum Analyzer	Agilent	E4446A	AAT	12/7/2006	13
Antenna, Horn	EMCO	3115	AHC	8/24/2006	12
EV01 cables g,h,j			EVB	5/10/2007	13

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 bandwidths and detectors specified. No video filter was used.

MEASUREMENT UNCERTAINTY

Measurement uncertainty is used to reflect the accuracy of the measured result as compared with its "true" or theoretically correct value. Our measurement data meets or exceeds the measurement uncertainty requirements of CISPR 16-4. In the case of transient tests our test equipment has been demonstrated by calibration to provide at least a 95% confidence that it complies with the test specification requirements. The measurement uncertainty for any test is available upon request.

TEST DESCRIPTION

The antennas to be used with the EUT were tested. The EUT was transmitting and/or receiving while set at the lowest channel, a middle channel, and the highest channel available. While scanning, emissions from the EUT were maximized by rotating the EUT, adjusting the measurement antenna height and polarization, and manipulating the EUT antenna in 3 orthogonal planes (per ANSI C63.4:2003).

NORTHWEST EMC										PSA 2007.05.07 EMI 2006.12.20			
FIELD STRENGTH OF FUNDAMENTAL													
EUT: FloPoint Sensor					Work Order: VERA0015								
Serial Number: 07040601					Date: 06/11/07								
Customer: Verathon Medical					Temperature: 22								
Attendees: None					Humidity: 34%								
Project: None					Barometric Pres.: 30.11								
Tested by: Rod Peloquin					Power: Battery					Job Site: EV01			
TEST SPECIFICATIONS										Test Method			
FCC 15.249:2006										ANSI C63.4:2003			
TEST PARAMETERS													
Antenna Height(s) (m)		1 - 4			Test Distance (m)		3						
COMMENTS													
EUT OPERATING MODES													
Transmitting with modulation													
DEVIATIONS FROM TEST STANDARD													
No deviations.													
Run #		2			 Signature								
Configuration #		3											
Results		Pass											
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Azimuth (degrees)	Height (meters)	Distance (meters)	External Attenuation (dB)	Polarity	Detector	Distance Adjustment (dB)	Adjusted dBuV/m	Spec. Limit dBuV/m	Compared to Spec. (dB)	Comments
2402.047	59.7	33.1	7.0	1.2	3.0	0.0	H-Horn	AV	0.0	92.8	94.0	-1.2	EUT on side
2402.043	58.8	33.1	320.0	1.1	3.0	0.0	H-Horn	AV	0.0	91.9	94.0	-2.1	EUT typical orientation
2402.027	56.4	33.1	29.0	1.4	3.0	0.0	V-Horn	AV	0.0	89.5	94.0	-4.5	EUT on side
2442.077	56.3	33.2	12.0	1.5	3.0	0.0	H-Horn	AV	0.0	89.5	94.0	-4.5	EUT on side
2479.067	56.1	33.4	20.0	1.1	3.0	0.0	H-Horn	AV	0.0	89.5	94.0	-4.5	EUT on side
2442.013	55.1	33.2	178.0	1.5	3.0	0.0	H-Horn	AV	0.0	88.3	94.0	-5.7	EUT typical orientation
2402.063	52.1	33.1	141.0	1.1	3.0	0.0	V-Horn	AV	0.0	85.2	94.0	-8.8	EUT typical orientation
2442.013	52.0	33.2	191.0	1.2	3.0	0.0	V-Horn	AV	0.0	85.2	94.0	-8.8	EUT typical orientation
2442.063	51.3	33.2	280.0	1.2	3.0	0.0	V-Horn	AV	0.0	84.5	94.0	-9.5	EUT on side
2479.027	51.0	33.4	132.0	1.4	3.0	0.0	V-Horn	AV	0.0	84.4	94.0	-9.6	EUT typical orientation
2479.073	50.6	33.4	18.0	1.4	3.0	0.0	V-Horn	AV	0.0	84.0	94.0	-10.0	EUT on side
2479.077	49.3	33.4	46.0	1.3	3.0	0.0	H-Horn	AV	0.0	82.7	94.0	-11.3	EUT typical orientation
2401.773	60.5	33.1	7.0	1.2	3.0	0.0	H-Horn	PK	0.0	93.6	114.0	-20.4	EUT on side
2401.837	59.6	33.1	320.0	1.1	3.0	0.0	H-Horn	PK	0.0	92.7	114.0	-21.3	EUT typical orientation
2402.177	57.4	33.1	29.0	1.4	3.0	0.0	V-Horn	PK	0.0	90.5	114.0	-23.5	EUT on side
2441.857	57.3	33.2	12.0	1.5	3.0	0.0	H-Horn	PK	0.0	90.5	114.0	-23.5	EUT on side
2478.787	57.1	33.4	20.0	1.1	3.0	0.0	H-Horn	PK	0.0	90.5	114.0	-23.5	EUT on side
2441.790	56.2	33.2	178.0	1.5	3.0	0.0	H-Horn	PK	0.0	89.4	114.0	-24.6	EUT typical orientation
2402.150	53.4	33.1	141.0	1.1	3.0	0.0	V-Horn	PK	0.0	86.5	114.0	-27.5	EUT typical orientation
2442.297	53.3	33.2	191.0	1.2	3.0	0.0	V-Horn	PK	0.0	86.5	114.0	-27.5	EUT typical orientation

