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ENGINEERING TEST REPORT # 307288 TCB Rev. 1

LSC Job Number:
C-218

Compliance Testing of:
CARESCAPE Telemetry
Model: T14

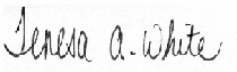
Test Date(s):
October 3rd & October 14th, 2007

Prepared For:
GE Medical Information Technologies, Inc.
Attention: Manuel Ferrer-Herrera
8200 W. Tower Ave.
Milwaukee, WI 53223

In accordance with:
Federal Communications Commission (FCC)
Part 95, Subpart H, Section 95.1115
Wireless Medical Telemetry Service (WMTS) Operating in the Frequency Band 1395-1400 MHz

This Test Report is issued under the Authority of:
Brian E. Petted, VP of Engineering

Signature: Date: December 5, 2007

Test Report Reviewed by:	**Project Engineer:**
Teresa A. White, Quality Manager	Ryan Urness, EMC Engineer/EMC Lab Manager
Signature: 	Signature: 
Date: December 5, 2007	Date: December 5, 2007

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LSC Revision Control

Date	Revision #	Revised By
10-26-07	1.0	RMU/TAW
11-27-07	1.1	RMU

EXHIBIT 1. INTRODUCTION

1.1 SCOPE

References:	FCC Part 95, Subpart H, Section 95.1115
Title:	Telecommunication – Code of Federal Regulations, CFR 47, Part 15
Purpose of Test:	To gain FCC Certification Authorization for Wireless Medical Telemetry Devices operating in the Frequency Band of 1395-1400 MHz
Test Procedures:	Both conducted and radiated emissions measurements were conducted in accordance with American National Standards Institute ANSI C63.4 – American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
Environmental Classification:	• Commercial, Industrial or Business • Residential

1.2 NORMATIVE REFERENCES

Publication	Year	Title
47 CFR, Parts 0-15, 95	2005	Code of Federal Regulations – Telecommunications (FCC)
ANSI C63.4	2004	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz.
CISPR 16-1-1	2003	Specification for radio disturbance and immunity measuring apparatus and methods. Part 1-1: Measuring Apparatus.
CISPR 16-2-1	2003	Specification for radio disturbance and immunity measuring apparatus and methods. Part 201: Conducted disturbance measurement.

1.3 LS Research, LLC TEST FACILITY

LS Research, LLC is accredited by A2LA (American Association for Laboratory Accreditation) to conform to ISO/IEC 17025, 2005 "General Requirements for the Competence of Calibration and Testing Laboratories".

LS Research, LLC's scope of accreditation includes all test methods listed herein, unless otherwise noted. A copy of the accreditation may be accessed on our web site: www.lsr.com. Accreditation status can be verified at A2LA's web site: www.a2la2.net.

1.4 LOCATION OF TESTING

All testing was performed at LS Research, LLC, W66 N220 Commerce Court, Cedarburg, Wisconsin, 53012 USA, utilizing the facilities listed below, unless otherwise noted.

List of Facilities Located at LS Research, LLC:

- Compact Chamber
- Semi-Anechoic Chamber
- Open Area Test Site (OATS)

1.5 TEST EQUIPMENT UTILIZED

A complete list of equipment utilized in testing is provided in Appendix A of this test report. Calibration dates are indicated in Appendix A. All test equipment is calibrated in accordance with A2LA standards.

EXHIBIT 2. PERFORMANCE ASSESSMENT

2.1 CLIENT INFORMATION

Manufacturer Name:	GE Medical Information Technologies, Inc.
Address:	8200 W. Tower Ave. Milwaukee, WI 53223
Contact Person:	Manuel Ferrer-Herrera, Tom Hastings

2.2 EQUIPMENT UNDER TEST (EUT) INFORMATION

The following information has been supplied by the applicant.

Product Name:	CARESCAPE Telemetry
Model Number:	T14
Serial Number:	SE307400003GP

2.3 ASSOCIATED ANTENNA DESCRIPTION

Associated antenna is an integral PCB mounted Inverted F antenna (IFA) designed to match circuit board ground. The antenna has a gain of -3.4dBi.

2.4 EUT'S TECHNICAL SPECIFICATIONS

Additional Information:

Frequency Range (in MHz)	1395-1400
RF Power in Watts	.004519
Conducted Output Power (in dBm)	6.55
Field Strength (and at what distance)	102 dBµV/m @ 3m
Occupied Bandwidth (99% BW)	11.9 kHz
Type of Modulation	GFSK
Emission Designator	F7D11k9
EIRP (in mW)	4.753
Transmitter Spurious (worst case)	52.59dBµV/m @ 1m
Frequency Tolerance %, Hz, ppm	<.001%
Microprocessor Model # (if applicable)	N/A
Antenna Information	
Detachable/non-detachable	Non-detachable
Type	Inverted F Integral PCB Antenna
Gain (in dBi)	-3.4 dBi
EUT will be operated under FCC Rule Part(s)	95 subpart H
Modular Filing	☐ Yes ☒ No

RF Technical Information:

Type of Evaluation (check one)		SAR Evaluation: Device Used in the Vicinity of the Human Head
	X	SAR Evaluation: Body-worn Device
		RF Evaluation

If RF Evaluation checked above, test engineer to complete the following:

- Evaluated against exposure limits: ☐ General Public Use ☐ Controlled Use
- Duty Cycle used in evaluation:
- Standard used for evaluation:
- Measurement Distance:
- RF Value: ☐ V/m ☐ A/m ☐ W/m^2
  ☐ Measured ☐ Computed ☐ Calculated

2.5 PRODUCT DESCRIPTION

The Apex Pro CH is a telemetry transmitter used in hospitals that acquires ECG info and digitizes it for transmission to the antenna system. The transmitter can also transmit information coming from external SpO2 or NIBP devices which are connected through either of two serial ports located on the transmitter end cap. The serial ports operate at 9600 bits/sec.

The Apex Pro CH1400 is designed to operate on 199 channels, at carrier frequencies between 1395 and 1400 MHz (25 kHz channel spacing), with a GFSK modulated format.

Associated antenna is an integral PCB mounted Inverted F antenna (IFA) designed to match circuit board ground. The antenna has a gain of -3.4dBi.

The device operates on two “AA” batteries for a series voltage of 3.0 VDC.

The frequency and power was set via customer supplied software, and is not a user configurable parameter in compliance with CFR 47 Part 95 § 645(a).

PHOTO (Optional)

EXHIBIT 3. EUT OPERATING CONDITIONS & CONFIGURATIONS DURING TESTS

3.1 CLIMATE TEST CONDITIONS

Temperature:	24° C
Humidity:	40%
Pressure:	102 kPa

3.2 APPLICABILITY & SUMMARY OF EMC EMISSION TEST RESULTS

FCC Paragraph	Test Requirements	Compliance (yes/no)
95.1115	Radiated Emissions Measurements for Wireless Medical Telemetry Service Devices	Yes
2.1046	Power Output Measurements	Yes
2.1049	Occupied Bandwidth	Yes
2.1051	Spurious Emissions at Antenna Terminals	Yes
2.1053	Spurious Radiated Emissions	Yes
2.1055	Conducted Output Power and Frequency Stability Over Variable Voltage	Yes

3.3 MODIFICATIONS INCORPORATED IN THE EUT FOR COMPLIANCE PURPOSES

☒ **None** ☐ **Yes (explain below)**

3.4 DEVIATIONS & EXCLUSIONS FROM TEST SPECIFICATIONS

☒ **None** ☐ **Yes (explain below)**

EXHIBIT 4. DECLARATION OF CONFORMITY

The EUT was found to MEET the requirements as described within the specification of CFR 47 Part 95 Subpart H Section 95.1115 for a Wireless Medical Telemetry Service Transmitter.

If some emissions are seen to be within 3 dB of their respective limits:
As these levels are within the tolerances of the test equipment and site employed, there is a possibility that this unit, or a similar unit selected out of production may not meet the required limit specification if tested by another agency.

LS Research, LLC certifies that the data contained herein was taken under conditions that meet or exceed the requirements of the test specifications. The results in this Test Report apply only to the item(s) tested on the above-specified dates. Any modifications made to the EUT subsequent to the indicated test date(s) will invalidate the data herein, and void this certification.

EXHIBIT 5. RADIATED EMISSIONS TEST: FCC 95.1115 & 2.1053

5.1 Test Setup

The test setup was assembled in accordance with Title 47, CFR FCC Part 95 and ANSI C63.4-2003. The EUT was placed on an 80cm high non-conductive pedestal, centered on a flush mounted 2-meter diameter turntable inside a 3 meter Semi-Anechoic, FCC listed Chamber. The EUT was operated in two modes, and final testing was performed using continuous transmit with modulation mode, using power as provided by two AA alkaline batteries. The unit has the capability to operate on 199 channels, controllable via laptop PC.

The applicable limits apply at a 3 meter distance. Measurements above 5 GHz were performed at a 1.0 meter separation distance. The calculations to determine these limits are detailed in the following pages. Please refer to Appendix A for a complete list of test equipment. The test sample was operated on one of two (2) standard channels: low (1395.025MHz) and high (1399.975MHz). The channels and operating modes were changed using a PC.

5.2 Test Procedure

Radiated RF measurements were performed on the EUT in a 3 meter Semi-Anechoic, FCC listed Chamber. The frequency range from 30 MHz to 15000 MHz was scanned and investigated. The radiated RF emission levels were manually noted at the various fixed degree settings of azimuth on the turntable and antenna height. The EUT was placed on a non-conductive pedestal in the 3 meter Semi-Anechoic Chamber, with the antenna mast placed such that the antenna was 3 meters from the EUT. A Biconical Antenna was used to measure emissions from 30 MHz to 300 MHz, and a Log Periodic Antenna was used to measure emissions from 300 MHz to 1000 MHz. A Double-Ridged Waveguide Horn Antenna was used from 1 GHz to 18 GHz. The maximum radiated RF emissions were found by raising and lowering the antenna between 1 and 4 meters in height, using both horizontal and vertical antenna polarities.

The battery voltage was checked frequently, and the batteries were replaced as necessary.

The EUT was rotated along three orthogonal axes during the investigations to find the highest emission levels.

5.3 Test Equipment Utilized

A list of the test equipment and antennas utilized for the Radiated Emissions test can be found in Appendix A. This list includes calibration information and equipment descriptions. All equipment is calibrated and used according to the operation manuals supplied by the manufacturers. All calibrations of the antennas used were performed at an N.I.S.T. traceable site. In addition, the Connecting Cables were measured for losses using a calibrated Signal Generator and a HP 8546A EMI Receiver. The resulting correction factors and the cable loss factors from these calibrations were entered into the HP 8546A EMI Receiver database. As a result, the data taken from the HP 8546A EMI Receiver accounts for the antenna correction factor as well as cable loss or other corrections, and can therefore be entered into the database as a corrected meter reading. The HP 8546A EMI Receiver was operated with a resolution bandwidth of 120 kHz for measurements below 1 GHz (video bandwidth of 300 kHz), and a bandwidth of 1 MHz for measurements above 1 GHz (video bandwidth of 1 MHz From 5 GHz to 18 GHz, an HP E4407B Spectrum Analyzer and an EMCO Horn Antenna were used.

Test Results

The EUT was found to **MEET** the Radiated Emissions requirements of Title 47 CFR, FCC Part 95.1115 for Wireless Medical Telemetry Services. The frequencies with significant RF signal strength were recorded and plotted as shown in the Data Charts and Graphs.

5.4 Test Equipment List

Test Equipment	Manufacturer	Model No.	Serial No.
EMI Receiver	HP	8546A	3617A00320
EMI Receiver Pre-Select.	HP	85460A	3448A00296
Spectrum Analyzer	Agilent	E4446A	US45300564
Log Periodic Antenna	EMCO	93146	9701-4855
Horn Antenna	EMCO	3115	6907
Bicon Antenna	EMCO	93110B	9702-2918
Pre-Amp	Adv. Microwave	WLA612	1145A04094
Horn Antenna – Std. Gain	EMCO	3160-09	9809-1120

5.5 CALCULATION OF RADIATED EMISSIONS LIMITS

The maximum peak output power of an intentional radiator in the 1395-1400 MHz band, as specified in Title 47 CFR 95.1115 (a) (2), is 740 mV/m. The harmonic and spurious RF emissions, as measured in any 1MHz bandwidth, as specified in 95.1115 (b), shall be less than 200µV/m for frequencies below 960MHz, and less than 500µV/m for frequencies above 960MHz.

The following table depicts the general radiated emission limits above 30 MHz. These limits are obtained from Title 47 CFR, Part 95.1115, for undesired emissions measurements.

Frequency (MHz)	3 m Limit µV/m	3 m Limit (dBµV/m)	1 m Limit (dBµV/m)
30-960	200	46	-
960-1395	500	54	-
1395-1400	740,000	117	-
1400-15000	500	54	63.5

Sample conversion from field strength µV/m to dBµV/m:

$dB\mu V/m = 20 \log_{10} (100)$

= 46 dBµV/m (from 30-960 MHz)

For measurements made at 1.0 meter, a 9.5 dB correction has been invoked.

1400 MHz to 15000 MHz

500µV/m or 54.0 dB/µV/m at 3 meters

54.0 + 9.5 = 63.5 dB/µV/m at 1 meter

5.6 RADIATED EMISSIONS DATA CHART

3 Meter Measurements of Electromagnetic Radiated Emissions
Test Standard: 47CFR, Part 95.1115 and 2.1053
Frequency Range Inspected: 30 MHz to 15000 MHz

Manufacturer:	GE Medical						
Date(s) of Test:	October 3rd & October 14th, 2007						
Tested by:	Ryan Urness						
Voltage:	3.0 VDC						
Operation Mode:	Continuous Transmit Modulated						
Environmental Conditions in the Lab:	Temperature: 20 – 25° C Relative Humidity: 30 – 60 %						
EUT Power:		Single Phase ___VAC		3 Phase ___VAC			
	X	Battery		Other:			
EUT Placement:	X	80cm non-conductive table		10cm Spacers			
EUT Test Location:	X	3 Meter Semi-Anechoic FCC Listed Chamber		3/10m OATS			
Measurements:		Pre-Compliance		Preliminary	X	Final	
Detectors Used:	X	Peak	X	Quasi-Peak	X	Average	

The following table depicts the level of significant spurious radiated RF emissions found:

Frequency (MHz)	Ant./EUT Polarity	Channel	Height (meters)	Azimuth (0° - 360°)	Measured EFI (dBµV/m)	Limit (dBµV/m)	Margin (dB)
978.7	Vert/Horiz	199	1.00	0°	28.0	54.0	26.0
296.3	Vert/Vert	199	1.00	0°	22.8	46.0	23.2
5071	Vert/Vert	199	1.00	0°	50.4	54.0	3.60
1287	Vert/Horiz	199	1.00	0°	35.7	54.0	18.3
992.1	Side/Horiz	001	1.00	0°	28.5	54.0	25.5
289.3	Horiz/Vert	001	1.00	0°	22.3	46.0	23.7
1341	Side/Horiz	001	1.00	0°	35.7	54.0	18.3
5005	Side/Horiz	001	1.00	0°	49.6	54.0	4.40

RADIATED EMISSIONS DATA CHART *(continued)*

The following table depicts the level of significant radiated RF fundamental and harmonic emissions seen on Channel 001:

Frequency (MHz)	Ant./EUT Polarity	Height (meters)	Azimuth (0° - 360°)	Measured EFI (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1395.025	H/H	1.18	50°	97.1	117	19.9
1395.025	H/V	2.50	304°	97.3	117	19.7
1395.025	V/H	1.90	0°	95.4	117	21.6
1395.025	V/V	1.65	360°	99.6	117	17.4
1395.025	S/H	1.15	0°	98.7	117	18.3
1395.025	S/V	1.00	79°	99.0	117	18.0
8370.150	H/H	1.00	340°	45.1	63.5	18.4
8370.150	H/V	1.00	310°	47.6	63.5	15.9
8370.150	V/H	1.11	360°	48.2	63.5	15.3
8370.150	V/V	1.02	109°	42.9	63.5	20.6
8370.150	S/H	1.00	0°	45.4	63.5	18.1
8370.150	S/V	1.00	318°	51.5	63.5	12.0

The following table depicts the level of significant radiated RF fundamental and harmonic emissions seen on Channel 199:

Frequency (MHz)	Ant./EUT Polarity	Height (meters)	Azimuth (0° - 360°)	Measured EFI (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1399.975	H/H	1.15	143°	98.5	117	18.5
1399.975	H/V	1.17	347°	97.8	117	19.2
1399.975	V/H	2.81	17°	96.0	117	21.0
1399.975	V/V	1.11	320°	101.7	117	15.3
1399.975	S/H	1.13	360°	98.9	117	18.1
1399.975	S/V	1.00	187°	100.7	117	16.3
8399.850	H/H	1.00	343°	46.4	63.5	17.1
8399.850	H/V	1.00	286°	49.5	63.5	14.0
8399.850	V/H	1.15	270°	49.4	63.5	14.1
8399.850	V/V	1.25	128°	46.7	63.5	16.8
8399.850	S/H	1.06	177°	47.5	63.5	16.0
8399.850	S/V	1.00	316°	52.6	63.5	10.9

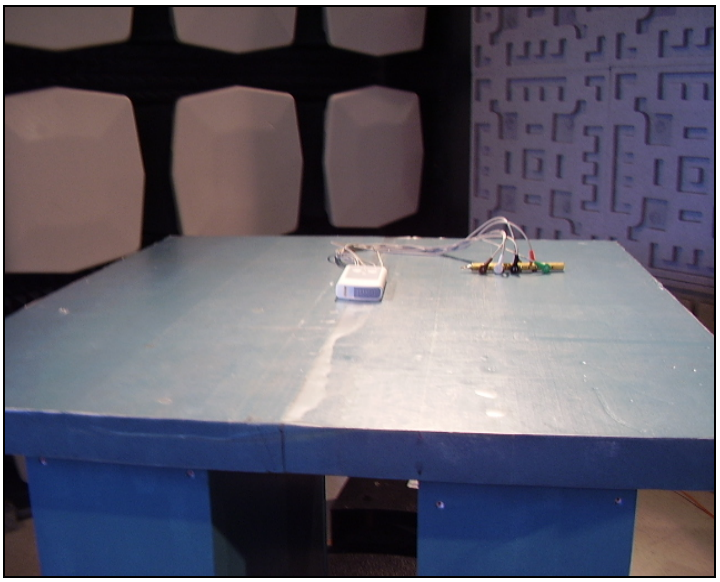
Notes:

1) A Quasi-Peak Detector was used in measurements below 1 GHz, and a Peak as well as an Average Detector was used in measurements above 1 GHz. Only the results from the Average detector are published in the table above. The peak detector was used to maximize radiated signal.
2) Measurements above 5 GHz were made at 1 meters of separation from the EUT.
3) Measurement at receiver system noise floor.
4) For measurements of the fundamental power, because of spectral bandwidth, the receiver was set to RBW=VBW=1 MHz.

5.7 Test Setup Photo(s) – Radiated Emissions Test

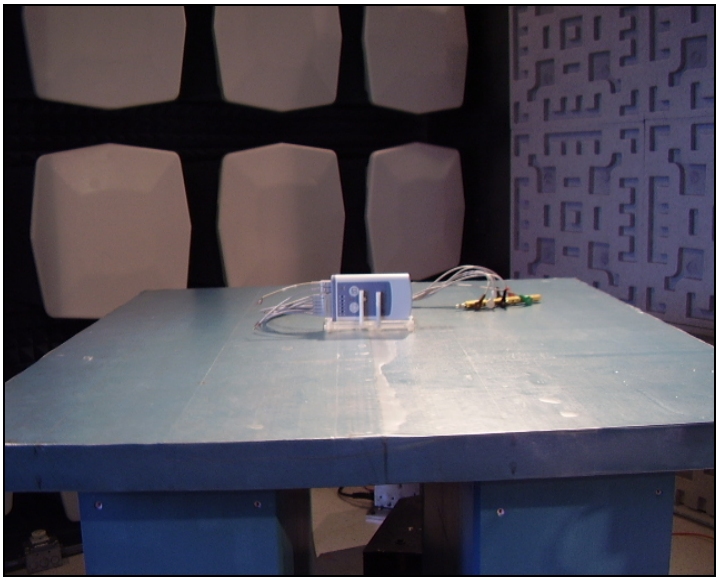
Vertical Orientation

Horizontal Orientation

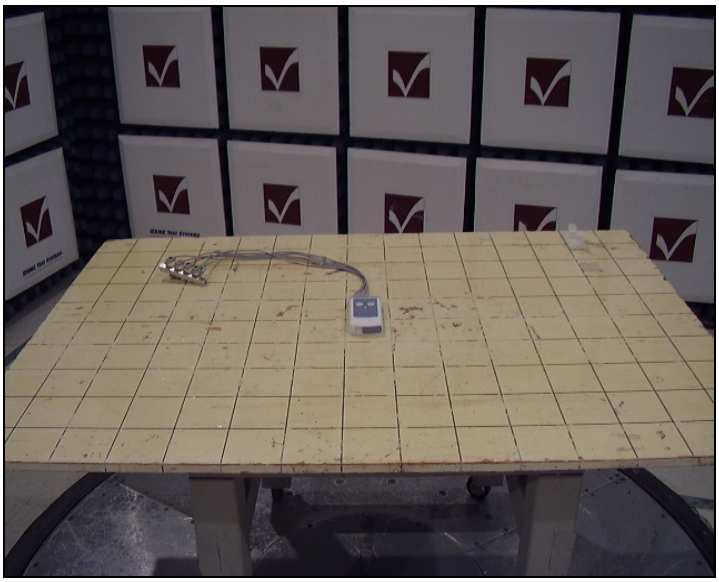


Test Setup Photo(s) – Radiated Emissions Test (continued…)

Side Orientation



EUT on Test Pedestal

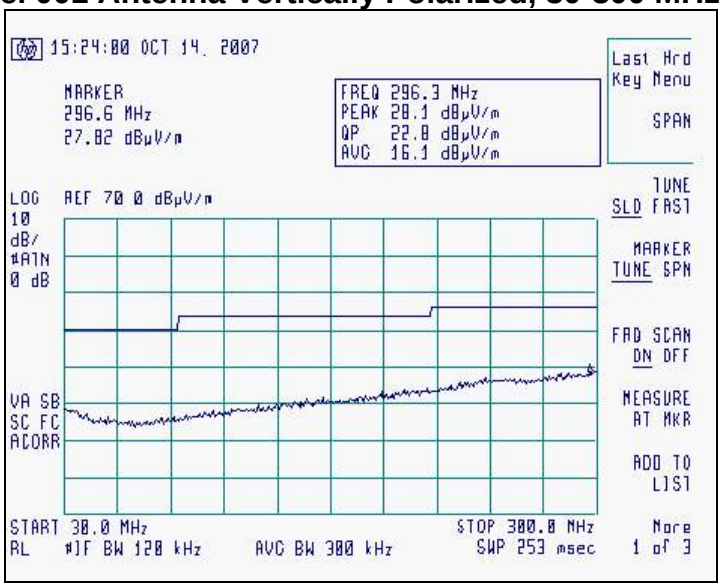


5.8 Screen Captures - Radiated Emissions Testing

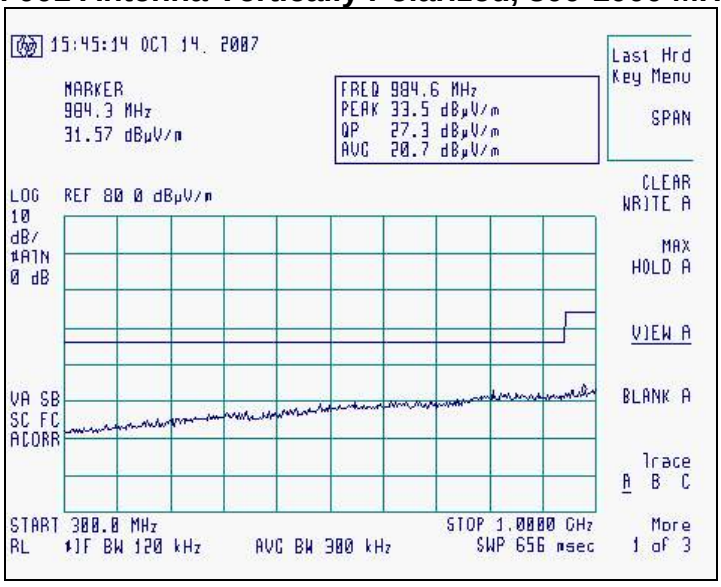
These screen captures represent Peak Emissions. For radiated emission measurements, a Quasi-Peak detector function is utilized when measuring frequencies below 1 GHz, and an Average detector function is utilized when measuring frequencies above 1 GHz.

The signature scans shown here are from worst-case emissions, as measured on channels 001 & 199, with the sense antenna both in vertical and horizontal polarity for worst case presentations.

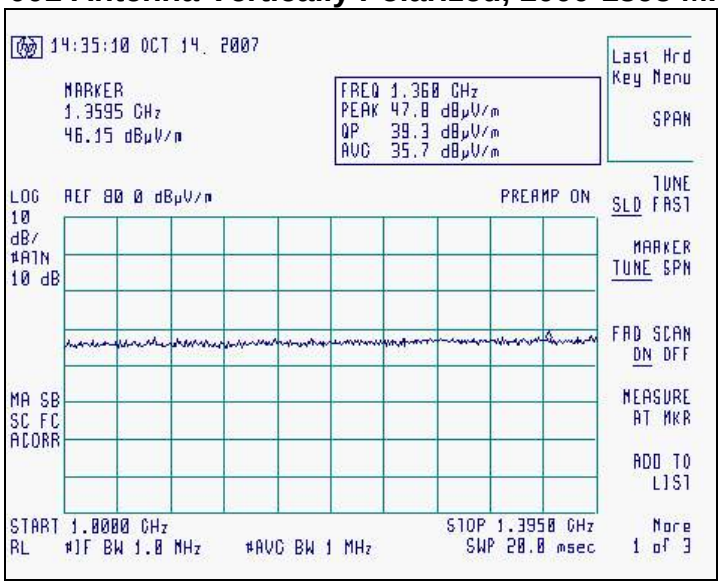
Channel 001 Antenna Vertically Polarized, 30-300 MHz, at 3m



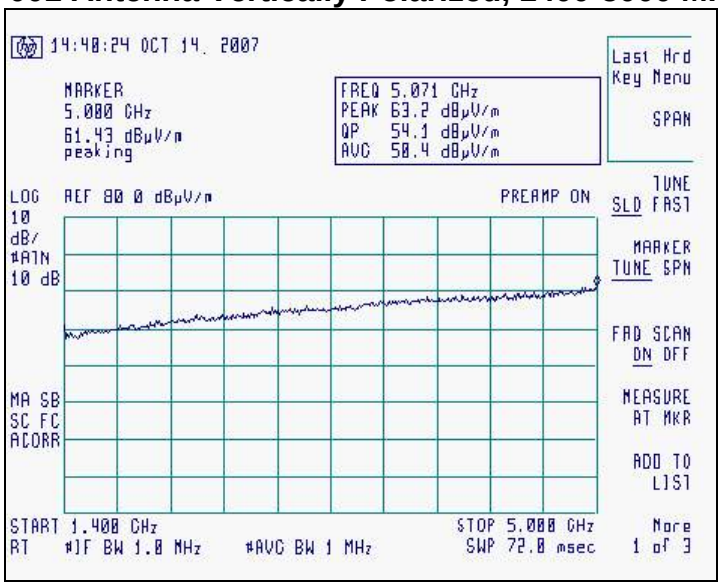
Channel 001 Antenna Vertically Polarized, 300-1000 MHz, at 3m



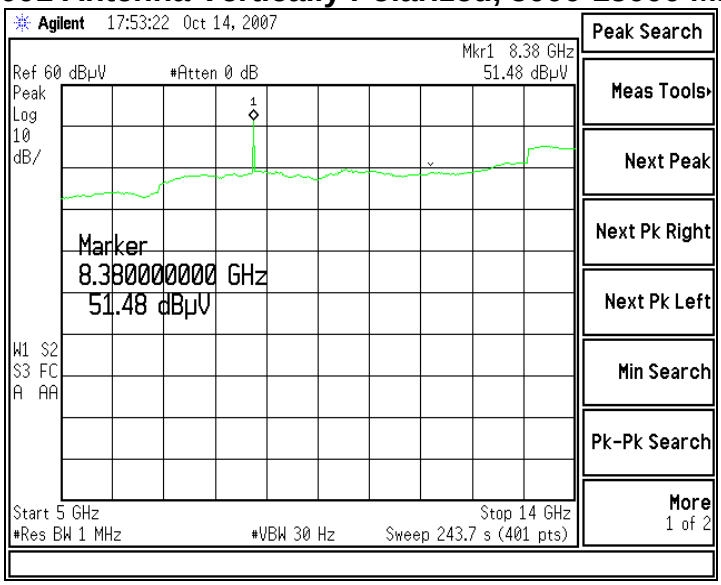
Channel 001 Antenna Vertically Polarized, 1000-1395 MHz, at 3m



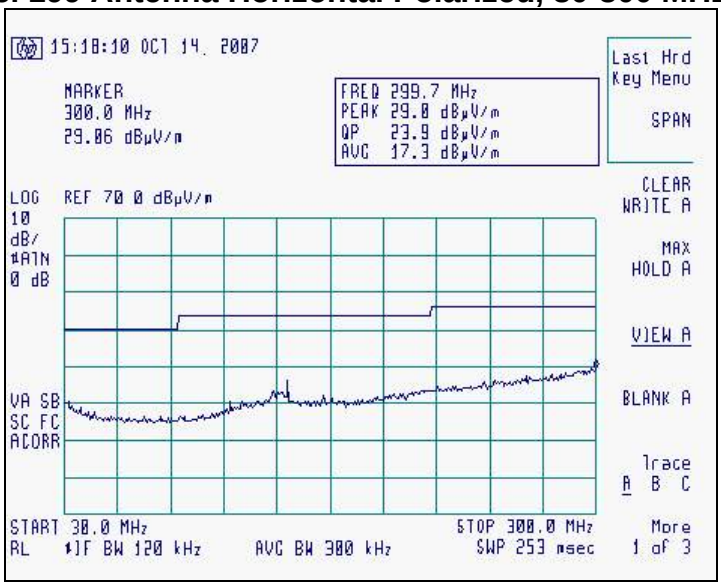
Channel 001 Antenna Vertically Polarized, 1400-5000 MHz, at 3m



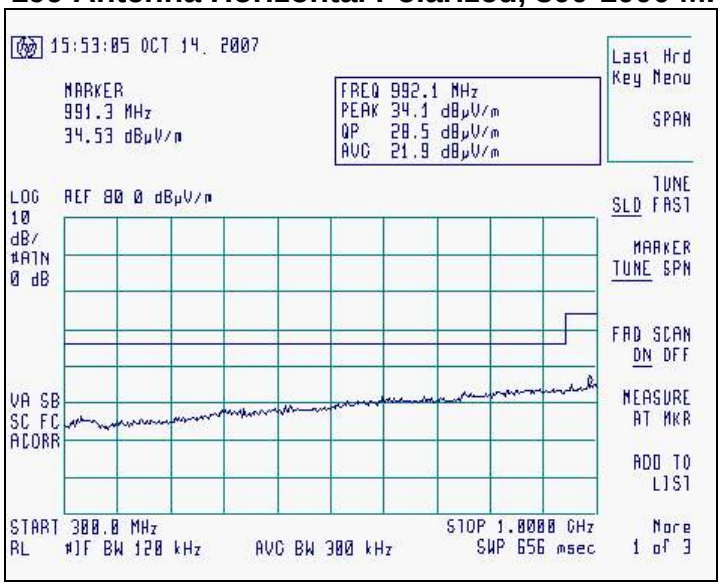
Channel 001 Antenna Vertically Polarized, 5000-15000 MHz, at 3m



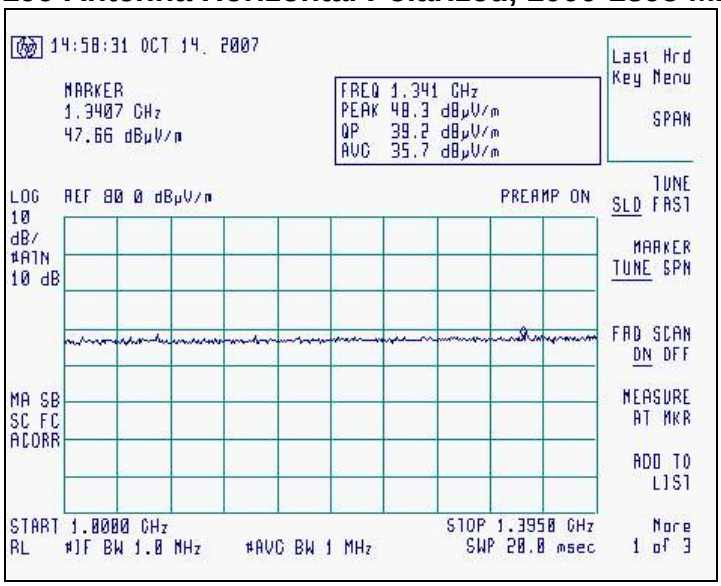
Channel 199 Antenna Horizontal Polarized, 30-300 MHz, at 3m



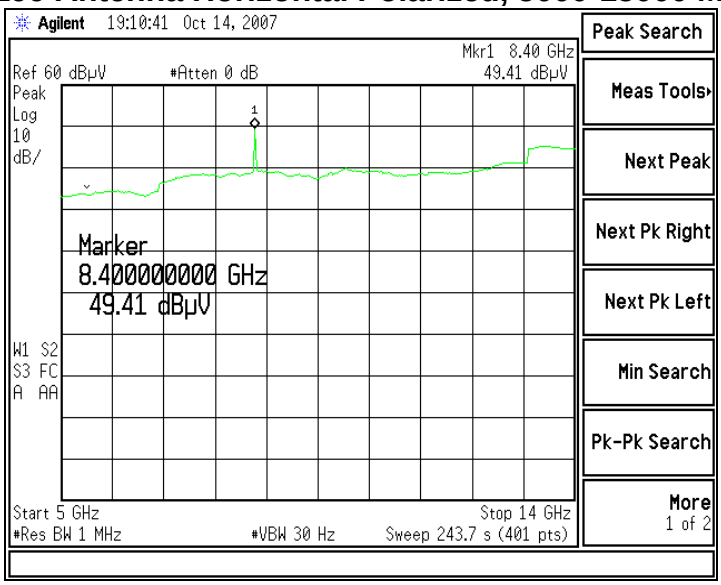
Channel 199 Antenna Horizontal Polarized, 300-1000 MHz, at 3m



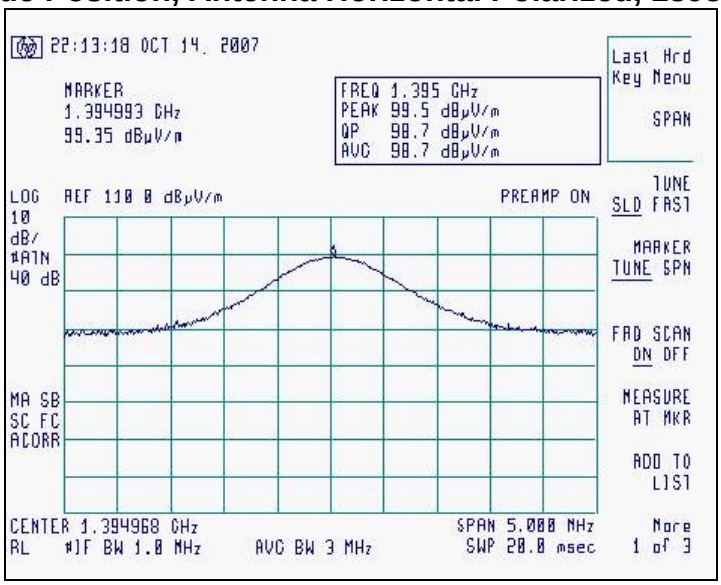
Channel 199 Antenna Horizontal Polarized, 1000-1395 MHz, at 3m



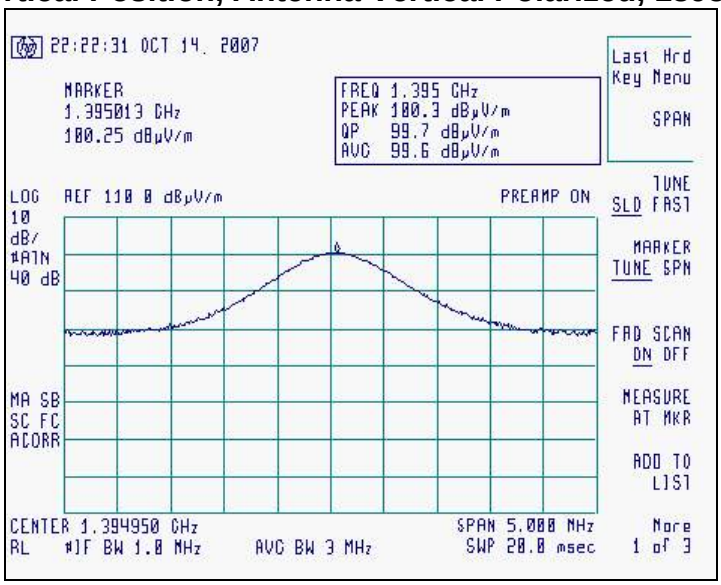
Channel 199 Antenna Horizontal Polarized, 5000-15000 MHz, at 3m



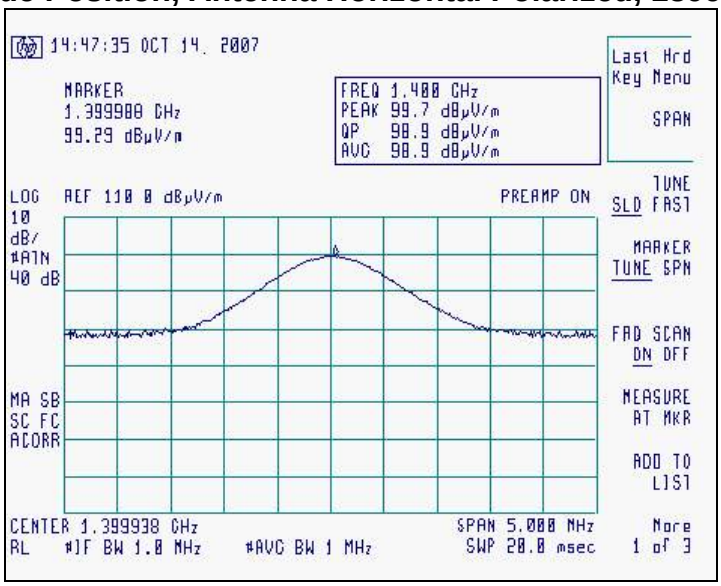
Channel 001, Side Position, Antenna Horizontal Polarized, 1395.025 MHz, at 3m



Channel 001, Vertical Position, Antenna Vertical Polarized, 1395.025 MHz, at 3m



Channel 199, Side Position, Antenna Horizontal Polarized, 1399.975 MHz, at 3m



Channel 199, Vertical Position, Antenna Vertical Polarized, 1399.975 MHz, at 3m

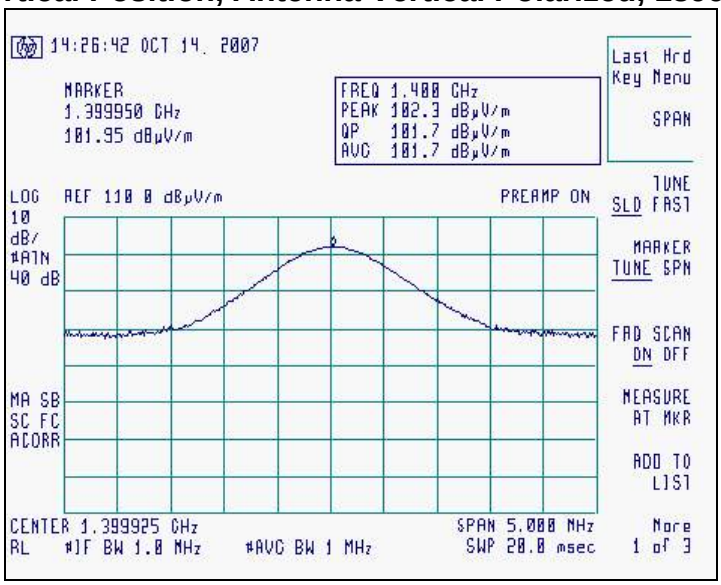


EXHIBIT 6. OCCUPIED BANDWIDTH/BANDEDGE: FCC 2.1049

6.1 Method of Measurements

Refer to ANSI C63.4 and Wireless Medical Telemetry Service devices operating under 95.1115.

The transmitter output was connected to the Spectrum Analyzer. The bandwidth of the fundamental frequency was measured with the Spectrum Analyzer using RBW=1kHz and VBW=3kHz.

The EUT was configured to run in a continuous transmit mode, while being supplied with typical data as a modulation source. The spectrum analyzer was used in peak-hold mode while measurements were made, as presented in the chart below.

Test Data

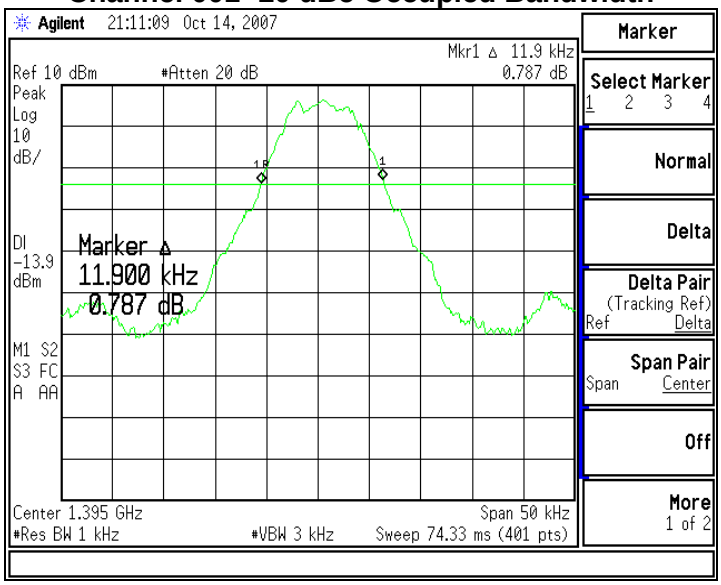
Channel	Center Frequency (MHz)	Measured -20 dBc Occ.Bw (kHz)	Amplitude at Band Edge dBµV/m (1395 MHz & 1400 MHz)
001	1395.025	11.9	42.75
199	1399.975	11.6	47.99

6.2 Test Equipment List

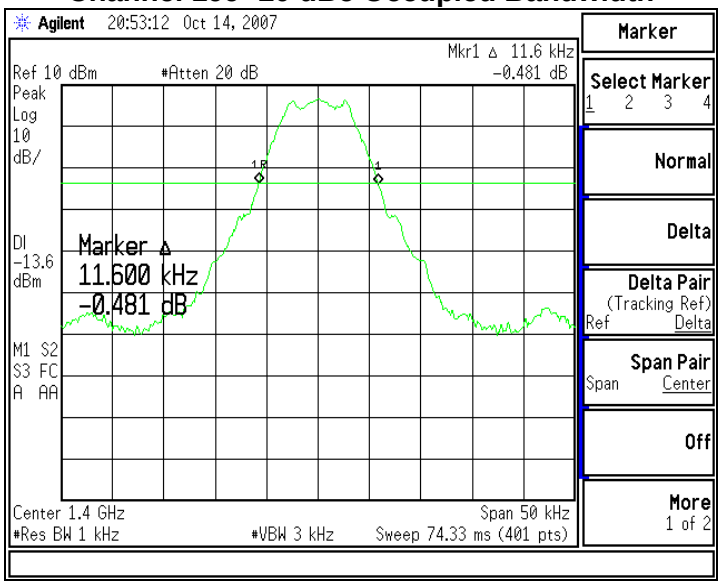
Test Equipment	Manufacturer	Model No.	Serial No.
Spectrum Analyzer	Agilent	E4407B	US39160256
Spectrum Analyzer	Agilent	E4446A	US45300564

6.3 Screen Captures - OCCUPIED BANDWIDTH / BANDEDGE

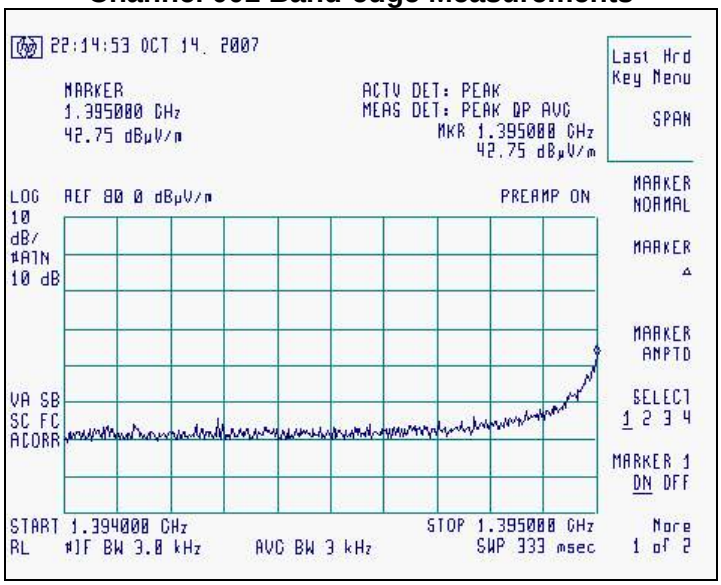
Channel 001 -20 dBc Occupied Bandwidth



Channel 199 -20 dBc Occupied Bandwidth



Channel 001 Band-edge Measurements



Channel 199 Band-edge Measurements

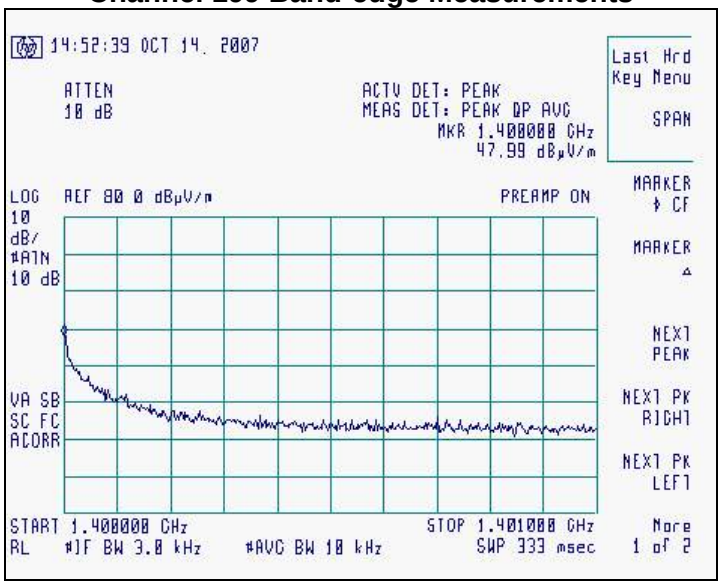


EXHIBIT 7. POWER OUTPUT (CONDUCTED): FCC 2.1046

7.1 Method of Measurements

The conducted RF output power of the EUT was measured at the antenna port using a short RF cable connected to the spectrum analyzer. The loss from the cable was added on the analyzer as a correction factor, there by allowing direct measurements without the need for any further corrections. The unit was configured to run in a continuous transmit mode, while being supplied with typical data as a modulation source. The spectrum analyzer was used with resolution and video bandwidths set to 1 MHz, and a span of 1 MHz, with measurements from a peak detector presented in the chart below.

Test Data:

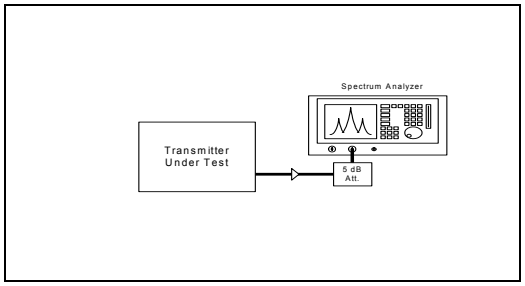
CHANNEL	CENTER FREQ (MHz)	LIMIT (dBm)	MEASURED POWER (dBm)	MARGIN (dB)
001	1395.025	+22.15 dBm	6.31	15.84
199	1399.975	+22.15 dBm	6.55	15.60

7.2 Test Data

Transmitter Channel	Freq. (MHz)	Peak Power at Antenna Terminal (dBm)	Calculated EIRP (dBm) [1]	Conducted Power Limit (dBm)
001	1395.025	6.31	2.91	22.15
199	1399.975	6.55	3.15	22.15

[1] EIRP Calculation:

EIRP = (Peak power at antenna terminal in dBm) + (EUT Antenna gain in dBi)



Measured RF Power Output (in Watts): 0.004519 (from highest measured conducted power)
Declared RF Power Output (in Watts): 0.005623 (from Customer declared power)

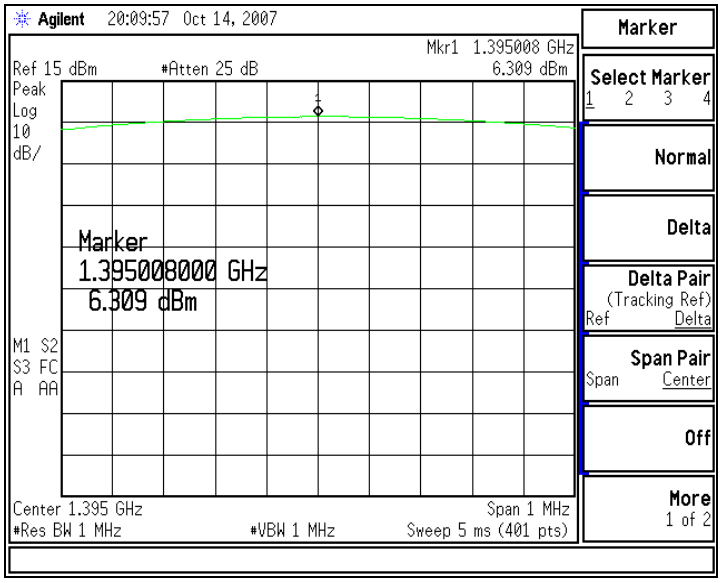
Note: Power (W) = $(10^{(\text{conducted power (dBm)}/10)})/1000$

7.3 Test Equipment List

Test Equipment	Manufacturer	Model No.	Serial No.	Frequency Range
Spectrum Analyzer	Agilent	E4407B	US39160256	9kHz – 26.5GHz

7.4 Screen Captures – Power Output (Conducted)

Channel 001



Channel 199

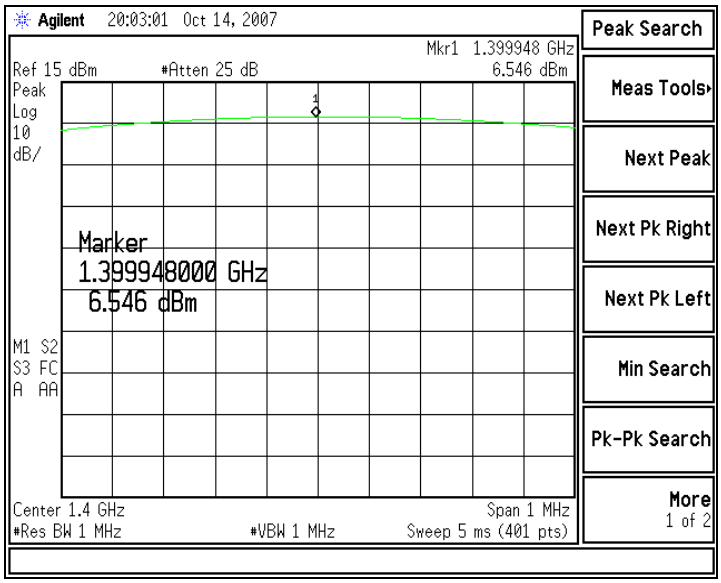


EXHIBIT 8. SPURIOUS CONDUCTED EMISSIONS: FCC 2.1053

8.1 Limits

In any 100 kHz bandwidth outside the frequency band in which the wireless medical telemetry service intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at lease 20 db below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

Calculation of Radiated Emission Measurements

Frequency (MHz)	Limit (dBm)
30-960	-49.21
960-1395	-41.25
1400-14000	-41.25

FCC Part 2.1053 requires a measurement of conducted harmonic and spurious RF emission levels, as reference to the carrier level when measured in a 100 kHz bandwidth. For this test, the spurious and harmonic RF emissions from the EUT were measured at the EUT antenna port using a short RF cable. The loss from the cable was added on the analyzer as a correction factor, there by allowing direct readings of the measurements made without the need for any further corrections. A Hewlett Packard model E4407B spectrum analyzer was used with the resolution bandwidth set to 100 kHz for this portion of the tests. The unit was configured to run in a continuous transmit mode, while being supplied with typical data as a modulation source. The spectrum analyzer was used with measurements from a peak detector presented in the chart below. Screen captures were acquired and any noticeable spurious and harmonic signals were identified and measured.

8.2 Test Equipment List

Test Equipment	Manufacturer	Model No.	Serial No.	Frequency Range
Spectrum Analyzer	Agilent	E4446A	US45300564	9kHz to 26.5 GHz

8.3 Test Data

Fundamental Frequency: 1395.025 MHz & 1399.975 MHz
Modulation: GFSK
Frequency Test Range: 30MHz – 14GHz

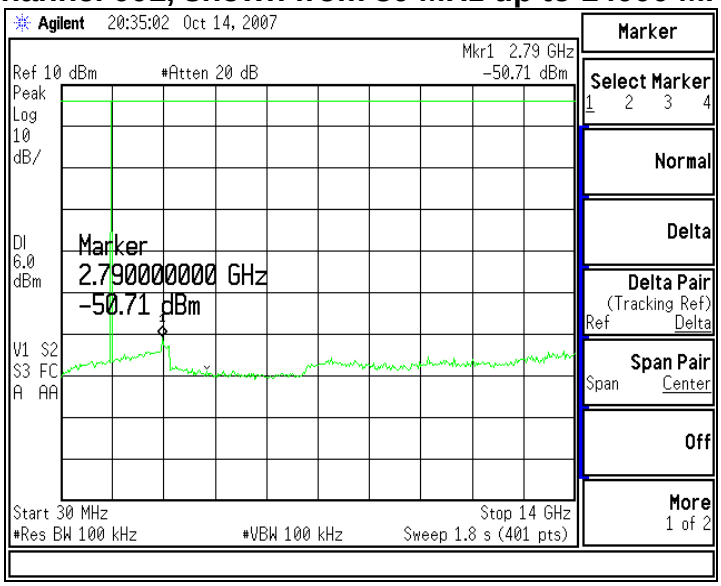
No significant emissions could be noted within -50 dBc of the fundamental level for this product.

	Channel 001	Channel 199
Fundamental	+ 6.31 (dBm)	+ 6.55 (dBm)
2nd Harmonic	- 50.71 (dBm)	- 51.62 (dBm)
3rd Harmonic	Note (1)	Note (1)
4th Harmonic	Note (1)	Note (1)
5th Harmonic	Note (1)	Note (1)
6th Harmonic	Note (1)	Note (1)
7th Harmonic	Note (1)	Note (1)
8th Harmonic	Note (1)	Note (1)
9th Harmonic	Note (1)	Note (1)
10th Harmonic	Note (1)	Note (1)

Notes:
(1) Measurement greater than -50dBc of fundamental or at system noise floor.

8.4 Screen Captures – Spurious Conducted Emissions

Channel 001, shown from 30 MHz up to 14000 MHz



Screen Captures – Spurious Conducted Emissions (continued…)

Channel 199, shown from 30 MHz up to 14000 MHz

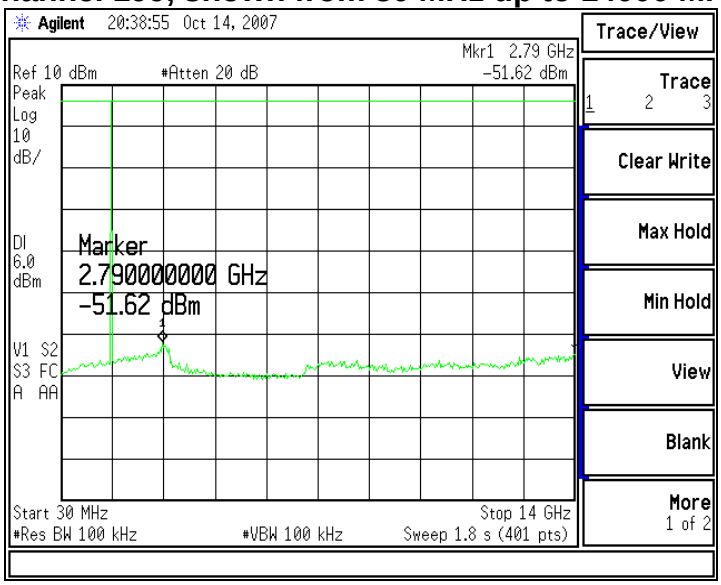


EXHIBIT 9. FREQUENCY & POWER STABILITY: FCC 2.1055

Frequency Stability vs. Voltage:

A spectrum analyzer was used to measure the frequency at the appropriate frequency markers. For this test, the EUT was placed in continuous transmit CW mode. Power to the EUT was supplied by an external bench-type variable power supply. The frequency of operation was monitored using the spectrum analyzer while the voltage was varied.

	DC Voltage Source		
	2.55 VDC	3.00 VDC	3.45 VDC
Channel 001	1395.017 (MHz)	1395.027 (MHz)	1395.012 (MHz)
Channel 199	1399.964 (MHz)	1399.969 (MHz)	1399.964 (MHz)

The RF Power Output of the EUT was also monitored in a separate test; also using a Spectrum Analyzer the voltage was varied.

	DC Voltage Source		
	2.55 VDC	3.00 VDC	3.45 VDC
Channel 001	5.65 (dBm)	5.53 (dBm)	5.52 (dBm)
Channel 199	5.36 (dBm)	5.45 (dBm)	5.56 (dBm)

No anomalies were noted; in the measured transmit power, varying less than 1 dB, during the voltage variation tests.

Frequency Stability vs. Temperature:

The data showing the frequency stability of the transmitter, with respect to temperature variations, was provided by the manufacturer, and worst case reported below.

6.4.1.2 Center Frequency Error (Hz) at 1395.025 MHz - Conducted						6.4.1.2 Center Frequency Error (Hz) at 1399.975 MHz - Conducted					
0 deg C	10 deg C	20 deg C	30 deg C	40 deg C	50 deg C	0 deg C	10 deg C	20 deg C	30 deg C	40 deg C	50 deg C
160.98	-114.70	-105.35	-634.91	-566.12	-489.28	-264.25	-119.83	-102.00	-618.40	-595.82	-352.22

APPENDIX A

Test Equipment List

Asset #	Manufacturer	Model #	Serial #	Description	Date	Due
AA960008	EMCO	3816/2NM	9701-1057	Line Impedance Stabilization Network	12/6/07	12/6/08
AA960031	HP	119474A	3107A01708	Transient Limiter	Note 1	Note 1
AA960077	EMCO	93110B	9702-2918	Biconical Antenna	9/19/07	9/19/08
AA960078	EMCO	93146	9701-4855	Log-Periodic Antenna	9/19/07	9/19/08
AA960081	EMCO	3115	6907	Double Ridge Horn Antenna	12/04/06	12/04/07
CC00221C	Agilent	E4407B	US39160256	Spectrum Analyzer	1/11/07	1/11/08
EE960004	EMCO	2090	9607-1164	Device Controller	N/A	N/A
EE960013	HP	8546A	3617A00320	Receiver RF Section	9/20/07	9/20/08
EE960014	HP	85460A	3448A00296	Receiver Pre-Selector	9/20/07	9/20/08
EE960073	Agilent	E4446A	US45300564	Spectrum Analyzer	8/17/07	8/17/08
N/A	LSC	Cable	0011	3 Meter ½" Armored Cable	Note 1	Note 1
N/A	LSC	Cable	0050	10 Meter RG 214 Cable	Note 1	Note 1
N/A	Pasternack	Attenuator	N/A	10 dB Attenuator	Note 1	Note 1

Note 1 - Equipment calibrated within a traceable system.

Uncertainty Statement

This uncertainty represents an expanded uncertainty expressed at approximately the 95 % confidence level, using a coverage factor of k=2.

Table of Expanded Uncertainty Values, (K=2) for Specified Measurements

Measurement Type	Particular Configuration	Uncertainty Values
Radiated Emissions	3 – Meter chamber, Biconical Antenna	4.24 dB
Radiated Emissions	3-Meter Chamber, Log Periodic Antenna	4.8 dB
Radiated Emissions	10-Meter OATS, Biconical Antenna	4.18 dB
Radiated Emissions	10-Meter OATS, Log Periodic Antenna	3.92 dB
Conducted Emissions	Shielded Room/EMCO LISN	1.60 dB
Radiated Immunity	3 Volts/Meter in 3-Meter Chamber	1.128 Volts/Meter
Conducted Immunity	3 Volts level	1.0 V