COMPLIANCE WORLDWIDE INC.
TEST REPORT 147-10R2

In Accordance with the Requirements of

Federal Communications Commission
CFR 47 Part 95, Subpart H

Low Power Licensed Radio Communication Devices
Wireless Medical Telemetry Service Transceiver
In the bands 1395-1400 and 1427-1432 MHz

Issued to

Philips Medical Systems
3000 Minuteman Drive
Andover, MA 01810
978-659-2800

for

ITS4841A 1.4 GHz Instrument Telemetry Module

With Cost Reduced LP1 Radio Board, P/N 453564193531

FCC ID: PQC-WMTS-ITS2

R2 report Issued on June 25, 2010
Original Report Issued on March 12, 2010

Tested by

Brian F. Breault

Reviewed by

Larry K. Stillings

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1. Scope

This test report certifies that the Philips cost reduced LP1 radio board from RTX, P/N 453564193531, for the ITS4841A 1.4 GHz Instrument Telemetry Module, using 1.9 GHz DECT technology, as tested, meets the Federal Communications Commission CFR 47, PART 95 requirement. The scope of this test report is limited to the test sample provided by the client, only in as much as that sample represents other production units. If any significant changes are made to the unit, the changes shall be evaluated and a retest may be required.

2. Product Details

2.1 Manufacturer: Philips Medical Systems

2.2 Model Number: ITS4841A (RTX 453564193531 Radio Module)

2.3 Serial Number: Not Specified

2.4 Description of EUT: LP1 radio board from RTX for the IntelliVue Telemetry II Instrument Telemetry System (ITS). The ITS module is marketed with a choice of 3 antennas depending on mounting configuration. If the ITS module is mounted internally in an MPXX monitor, it can be configured with either a dual band antenna, Philips P/N M3002-66493 with a gain of 2.0 dBi, or with a tri-band antenna, Philips P/N M8100-66490 with a gain of 1.2 dBi. If the ITS module is mounted externally on an MPXX Monitor, it is configured with a monopole whip antenna, Radial-Larsen P/N SPDA17RP2400. The ITS module was tested with the monopole and the dual band antenna. The dual band and tri-band antennas are both small PCB antenna and are considered similar so the antenna with the higher gain, the dual band, was qualified as a representative of both.

Modulation Method: Gaussian Frequency-Shift Keying (GFSK) – F1D Emission Designator
Maximum Occupied Bandwidth: 1.1 MHz – 1M1

2.5 Power Source: DC 12 volts – Provided by the MP50 Bedside Patient Monitor or a separate laboratory power supply.

2.6 EMC Modifications: None

3. Product Configuration

3.1. Operational Characteristics & Software

The ITS module provides a link from the MP50 Patient Monitor to the Access Point/Wireless Infrastructure and the Hospital LAN. The patient data is received by the IntelliVue Access Point and transmitted over the wireless LAN infrastructure to the IntelliVue Central Station. While there is a local display on the MP50, the performance of the ITS module will be monitored on the Philips IntelliVue Information Center (PIIC) display, i.e. the Central Station. The system should maintain smooth scrolling patient waveforms and constant numeric readouts.

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3. Product Configuration (continued)

3.2. EUT Hardware

Blk Diag #	Manufactr	Model/Part # / Options	Serial Number	Input Voltage	Frq (Hz)	Description/Function
1A	Philips	M4840-85708/989803143431	US73709149	12 V	DC	Philips IntelliVue 1.4 GHz ITS module
	RTX	453564193531	N/A	N/A	N/A	RTX radio module-1.9 GHz DECT
13A	Radial-Larsen	SPDA17RP2400	N/A	N/A	N/A	monopole whip antenna
13B	Philips	**M3002-66493**	N/A	N/A	N/A	dual band antenna

3.3. EUT Hardware/Software/Firmware Revision Level

EUT Model#	PCA#	Description	HW	SW	FW
M4840-85708		1.4 GHz radio module			

3.4. EUT Cables/Transducers

Blk Diag Ltr	Manufacturer	Model/Part #	Length (m)	Shield Y/N	Description/Function
A	Philips	989803162941	1	Y	ECG single patient use lead set
B	Philips	M1191A	2	N	SpO2 patient transducer

3.5. Support Equipment

Blk Diag #	Manufactr	Model/Part # Options	Serial Number	Input Voltage	Input Frq.	Description/Function
2	Philips	MP50	DE341Y0208	100-240	50-60	Patient Bedside Monitor
3	Bio-Tek	Lionheart2	203833	9 VDC	DC	Multi-parameter patient simulator (Recal # 125354)
4	DNI	Oxitest7	DOS03100687	9 VDC	DC	SpO2 patient simulator (Recall #125864)
5	Philips	ITS4844A/ 453563495101	US52400262	48	DC	1.4 GHz IntelliVue Core Access Point
6	Philips	M4845A	USU42200058	100-240	50-60	Philips Telemetry II Synchronization Box
7	PowerDSine	Philips P/N-ITS4845A	Eng. Sample 1	100-240	50-60	Power-Over-Ethernet Hub- 6 port
8	Cisco	WS-C2950G-24	FOC0816X10J	100-240	50-60	24 port 10/100 Ethernet Switch
9	Proxim	756005G/ Philips PN ITS3171A	35200408	100-240	50-60	Access Point Controller
10	HP	HP PN-KB212UC#ABA Philips PN-453564067761	2UA818128C	100-240	50-60	HP PC configured as a IntelliVue Information Center M3167-60002
11	HP	V7550	MY324WE270	100-240	50-60	Display for IntelliVue Information Center
12	Tripplite	SM5139	9338ALCSM15 13901271	100-120	60	Uninterruptible Power Supply

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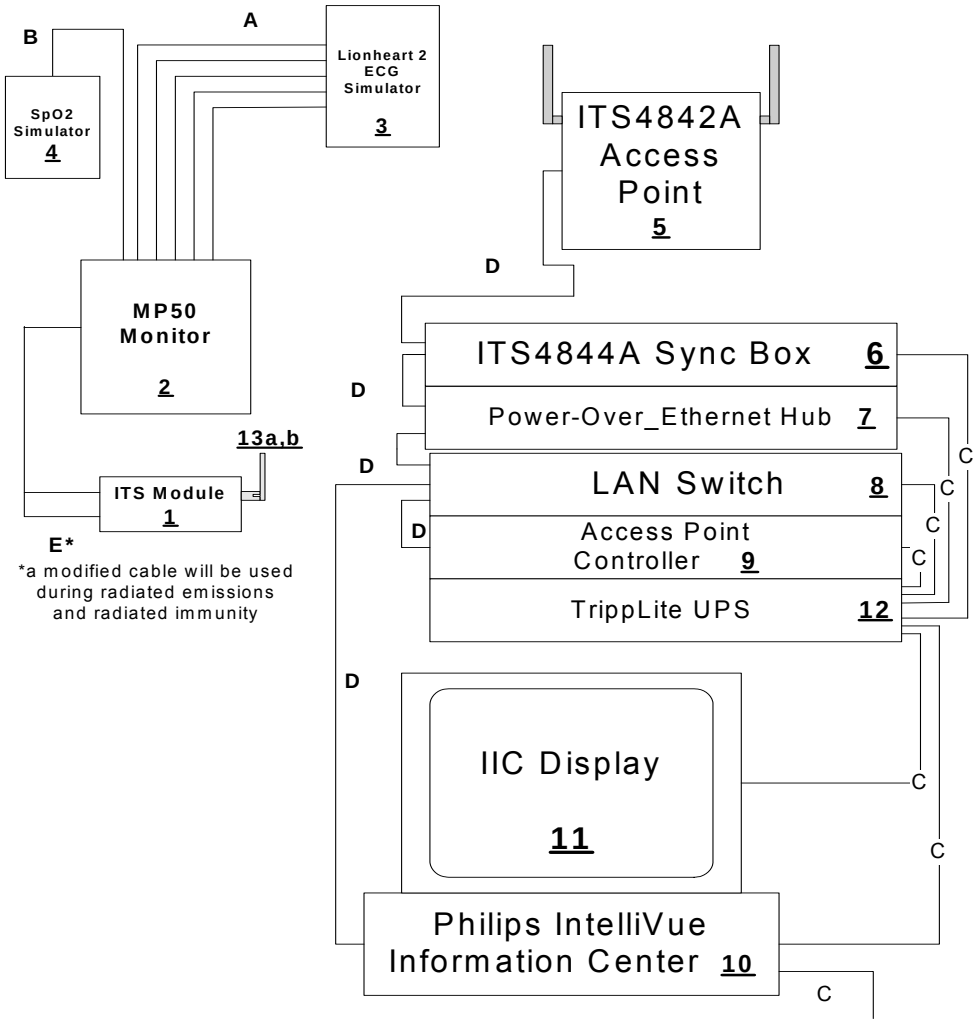
3. Product Configuration (continued)

3.6. Support Equipment Cables/Transducers

Blk Diag Ltr	Manufactr	Model/Part #	Length (m)	Shield Y/N	Description/Function
C	Unknown	**NA**	2	N	AC Power cords, quantity 6
D	Unknown	**NA**	Various	N	CAT 5 UTP LAN cable

3.7. Block Diagram



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4. Measurements Parameters

4.1. Measurement Equipment Used to Perform Tests

Device	Manufacturer	Model No.	Serial No.	Cal Due
EMI Receiver	Hewlett Packard	8546A	MY4510449	10/28/2010
Spectrum Analyzer	Hewlett Packard	8593E	3330A00115	10/28/2010
Microwave Preamp	Hewlett Packard	8449B	3008A01323	9/22/2010
LISN	EMCO	3825/2	9109-1860	7/7/2010
Bilog Antenna	Com-Power	AC-220	25509	8/6/2010
Horn Antenna	Electro-Metrics	EM-6961	6337	7/22/2010

4.2. Measurement & Equipment Setup

Test Date:	Feb 17, 2010 to March 8, 2010
Test Engineer:	Brian Breault
Normal Site Temperature (15 - 35°C):	21.7
Relative Humidity (20 -75%RH):	33%
Frequency Range:	30 MHz to 15 GHz
Measurement Distance:	3 Meters
EMI Receiver IF Bandwidth:	120 kHz - 30 MHz to 1 GHz 1 MHz - Above 1 GHz
EMI Receiver Avg Bandwidth:	300 kHz - 30 MHz to 1 GHz 3 MHz - Above 1 GHz
Detector Function:	Peak, QP - 30 MHz to 1 GHz Peak, Avg - Above 1 GHz Unless otherwise specified.

4.3. Test Procedure

All references to CFR 47 PART 95, Subpart H - Wireless Medical Telemetry Service (WMTS) refer to the 2009 edition.

The test methods used to generate the data in this test report is in accordance with ANSI C63.4: 2003, 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

4.4. Measurement Uncertainty

The following uncertainties are expressed for an expansion/coverage factor of K=2.

RF Frequency	$\pm$ 1x10^{-8}
Radiated Emission of Transmitter	$\pm$ 4.55 dB
Radiated Emission of Receiver	$\pm$ 4.55 dB
Temperature	$\pm$ 0.91^{o} C
Humidity	$\pm$ 5%

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5. Choice of Equipment for Test Suits

5.1 Choice of Model

This test report is based on the test samples supplied by the manufacturer and are reported by the manufacturer to be equivalent to the production units.

5.2 Presentation

This test sample was tested complete with all required ancillary equipment. Refer to Section 3 of this report for product equipment configuration.

5.3 Choice of Operating Frequencies

The ITS4841A 1.4 GHz Instrument Telemetry Module operates on a total of 6 channels:

WMTS Channel Frequencies in the Band 1395 to 1400MHz		
Channel 1	1395.9MHz	Primary WMTS Channel
Channel 2	1397.5MHz	Primary WMTS Channel
Channel 3	1399.1MHz	Primary WMTS Channel
WMTS Channel Frequencies in the Band 1427 to 1432MHz		
Channel 4	1427.9MHz	Primary WMTS Channel
Channel 5	1429.5MHz	Secondary Channel, only available if not in use
Channel 6	1431.1MHz	Secondary Channel, only available if not in use

The choice of operating frequencies selected for the testing outlined in this report was based on the lowest and highest operating frequencies in each of the two bands utilized by the device under test. The frequencies selected were 1395.9 MHz, 1399.1 MHz, 1427.9 MHz and 1431.1 MHz.

6. Measurement Summary

Transmitter Test Requirement	FCC Requirement	Test Report Section	Result	Comment
Product Labeling	95.1109(b)	N/A	N/A	See exhibits FCC label sample and label location.
Specific Frequencies or Frequency Range(s) Used	95.1111(a)(1)	5.3	Compliant	
Modulation Scheme & Occupied Bandwidth	95.1111(a)(2) 2.1049(h)	7.1	Compliant	
Radiated Field Strength of Fundamental	95.1115(a)(2)	7.2	Compliant	
Radiated Field Strength of Harmonics	95.1115(b)(2)	7.3	Compliant	
Band Edge Measurements	95.1115(b)(2)	7.4	Compliant	
Spurious Radiated Emissions	95.1115(b)(2)	7.5	Compliant	
Emission Type	95.1115(c)	N/A	N/A	Transmits Data and ECG Waveforms
Channel Use	95.1115(d)	5.3	N/A	Reference Part 2.106 (2)(1) 1427-1432 MHz Medical Operations Band
Frequency Stability	95.1115(e)	7.6	Compliant	
Conducted Emissions	15.207	7.7	Compliant	
RF Safety	95.1125	7.8	Compliant	
Determination of Average Factor	N/A	N/A	N/A	

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7. Measurement Data (continued)

7.1. Occupied Bandwidth

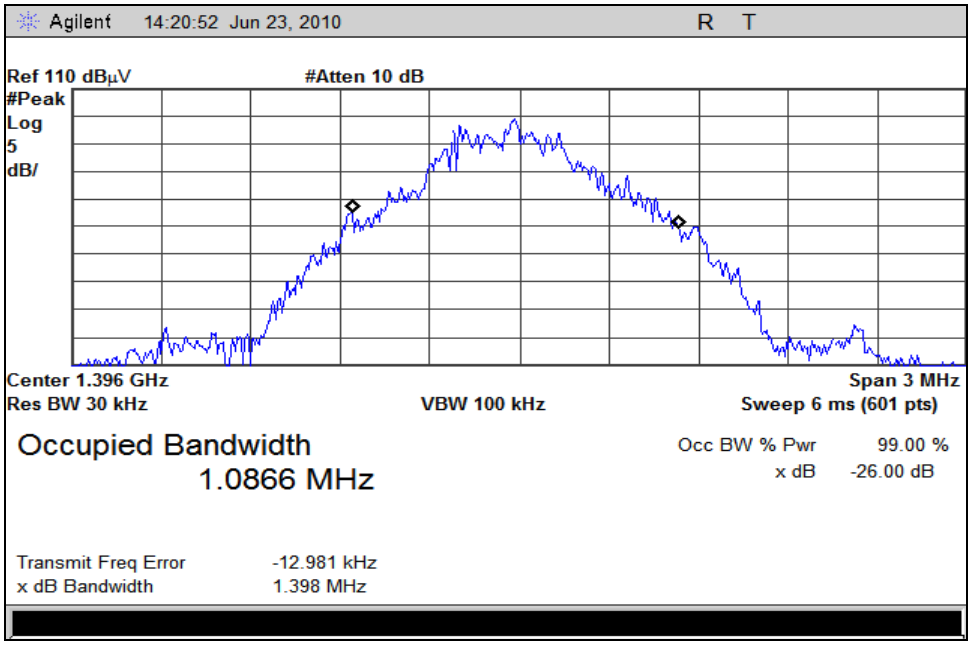
Requirement: Subpart H, Section 95.1111: Frequency coordination requires the modulation scheme and occupied bandwidth to be disclosed.

Section 2.1049(h): The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power radiated by a given emission shall be measured under the following conditions as applicable: Transmitters employing digital modulation techniques—when modulated by an input signal such that its amplitude and symbol rate represent the maximum rated conditions under which the equipment will be operated. The signal shall be applied through any filter networks, pseudo-random generators or other devices required in normal service. Additionally, the occupied bandwidth shall be shown for operation with any devices used for modifying the spectrum when such devices are optional at the discretion of the user.

7.1.1. Radiall/Larsen model SPDA17RP2400 Antenna

Channel	Freq (MHz)	Occupied Bandwidth (MHz)	Channel	Freq (MHz)	Occupied Bandwidth (MHz)
1	1395.9	1.0866	4	1427.9	1.0773
3	1399.1	1.0882	6	1431.1	1.0909

7.1.1.1. Channel 1, 1395.9 MHz



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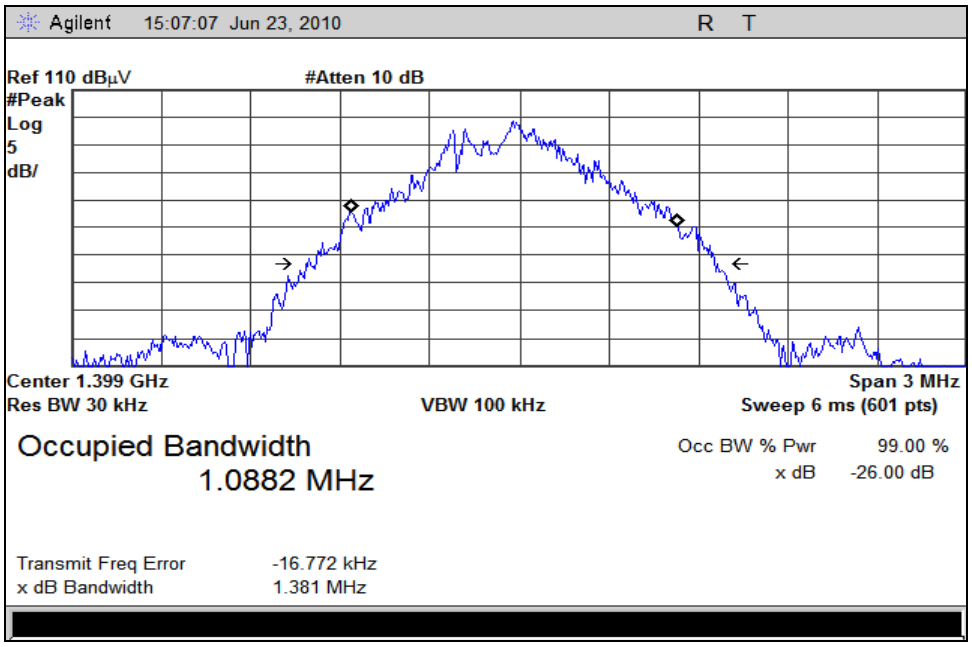
7. Measurement Data (continued)

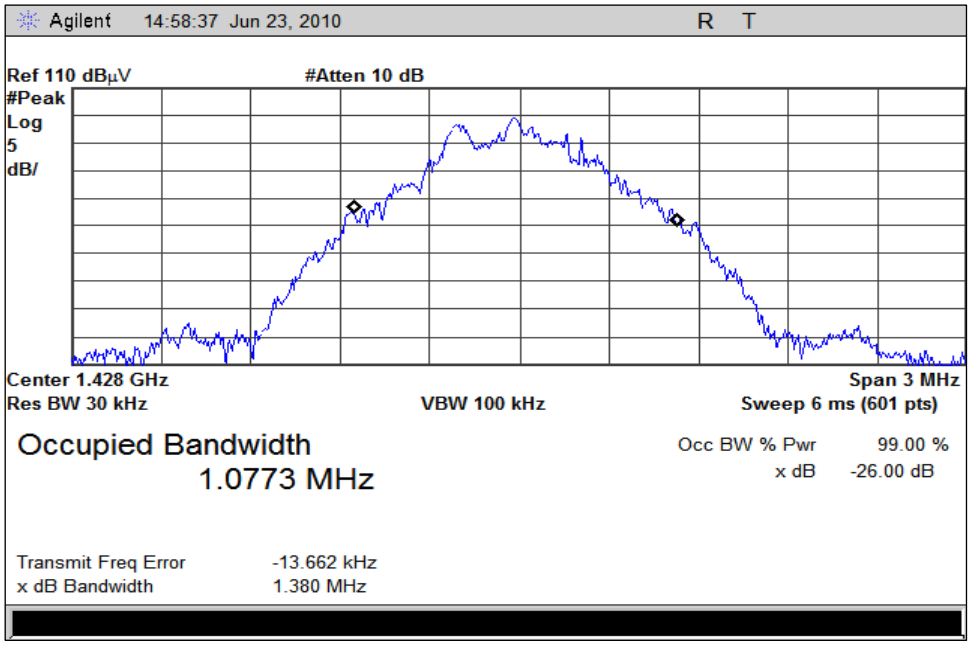
7.1. Occupied Bandwidth

7.1.1. Radiall/Larsen model SPDA17RP2400 Antenna

7.1.1.2. Channel 3, 1399.1 MHz



7.1.1.3. Channel 4, 1427.9 MHz



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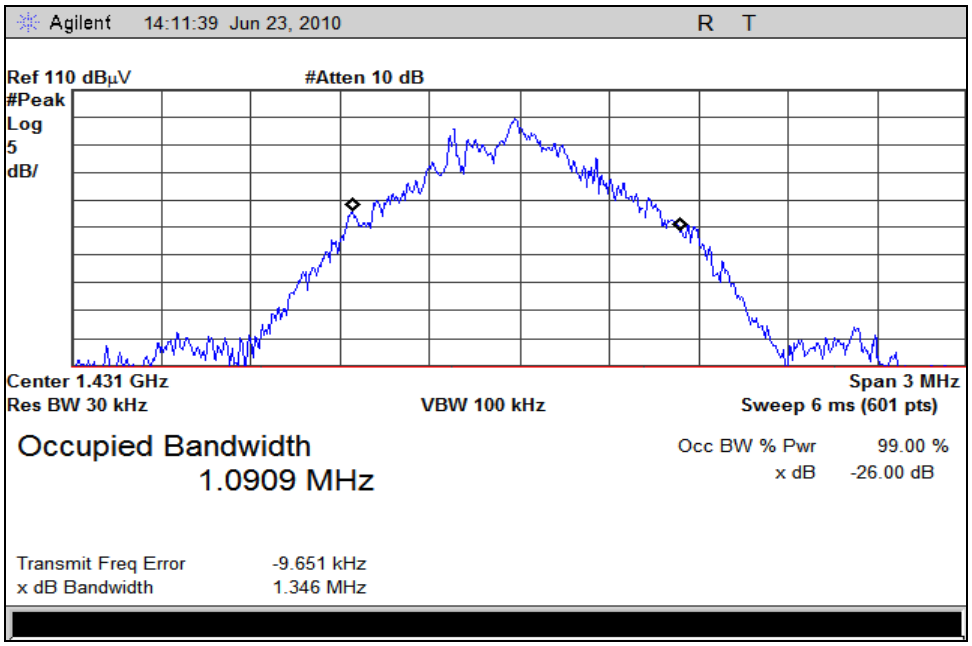
7. Measurement Data (continued)

7.1. Occupied Bandwidth

7.1.1. Radiall/Larsen model SPDA17RP2400 Antenna

7.1.1.4. Channel 6, 1431.1 MHz



7.1.2. Philips M3002-66493 Dual-Band Antenna

Channel	Freq (MHz)	Occupied Bandwidth (MHz)	Channel	Freq (MHz)	Occupied Bandwidth (MHz)
1	1395.9	1.1203	4	1427.9	1.1043
3	1399.1	1.1016	6	1431.1	1.1106

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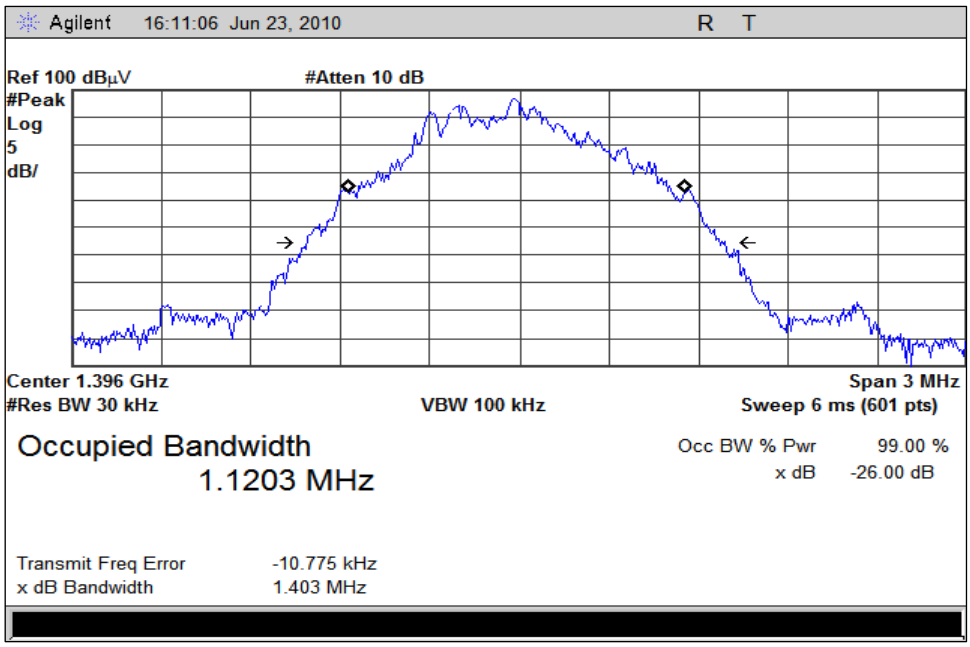
7. Measurement Data (continued)

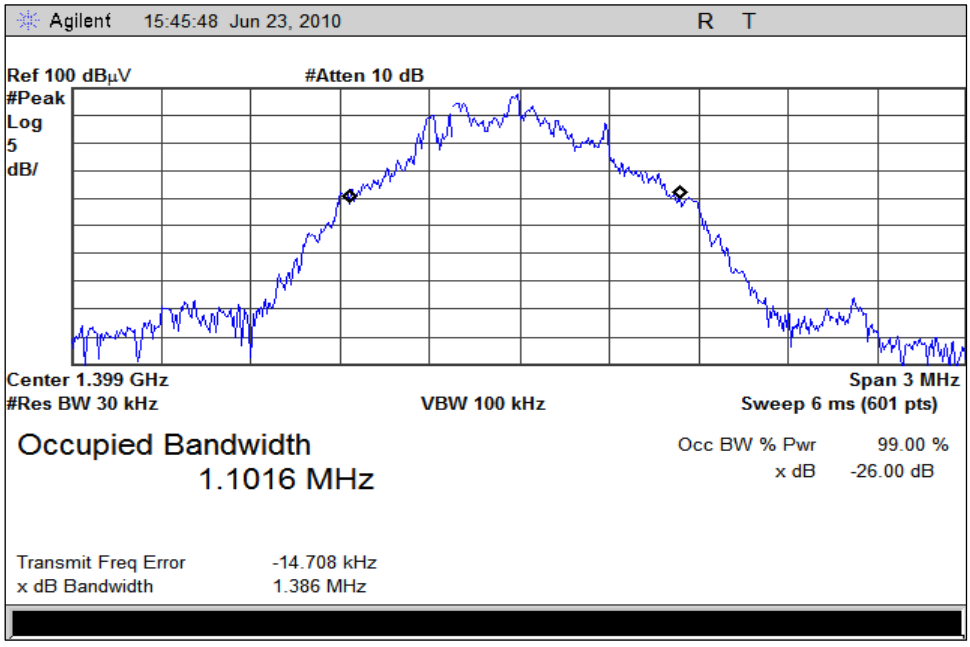
7.1. Occupied Bandwidth

7.1.2. Philips M3002-66493 Dual-Band Antenna

7.1.2.1. Channel 1, 1395.9 MHz



7.1.2.2. Channel 3, 1399.1 MHz



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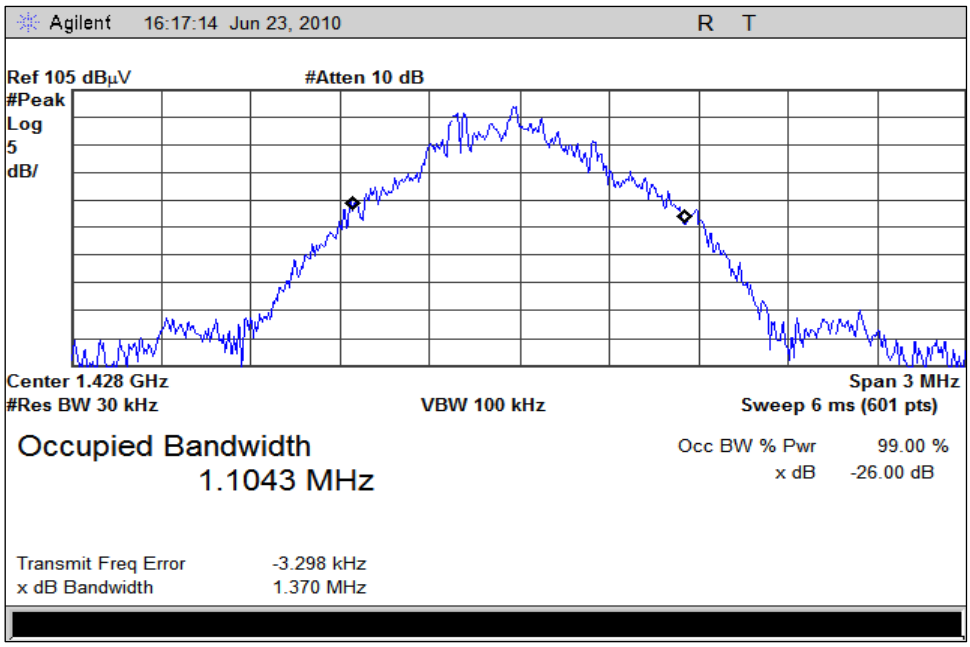
7. Measurement Data (continued)

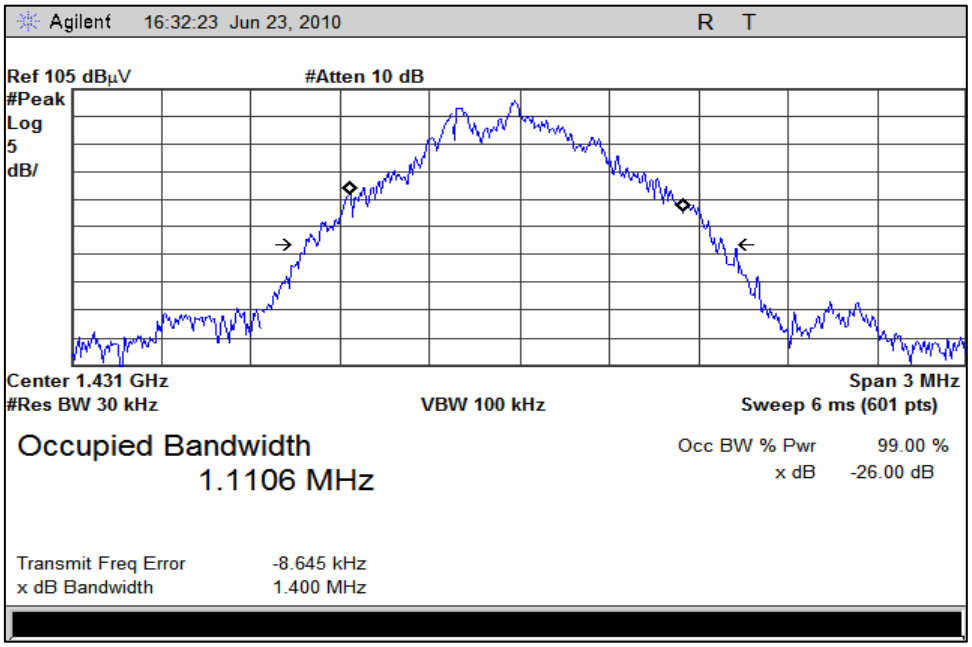
7.1. Occupied Bandwidth

7.1.2. Philips M3002-66493 Dual-Band Antenna

7.1.2.3. Channel 4, 1427.9 MHz



7.1.2.4. Channel 6, 1431.1 MHz



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7. Measurement Data

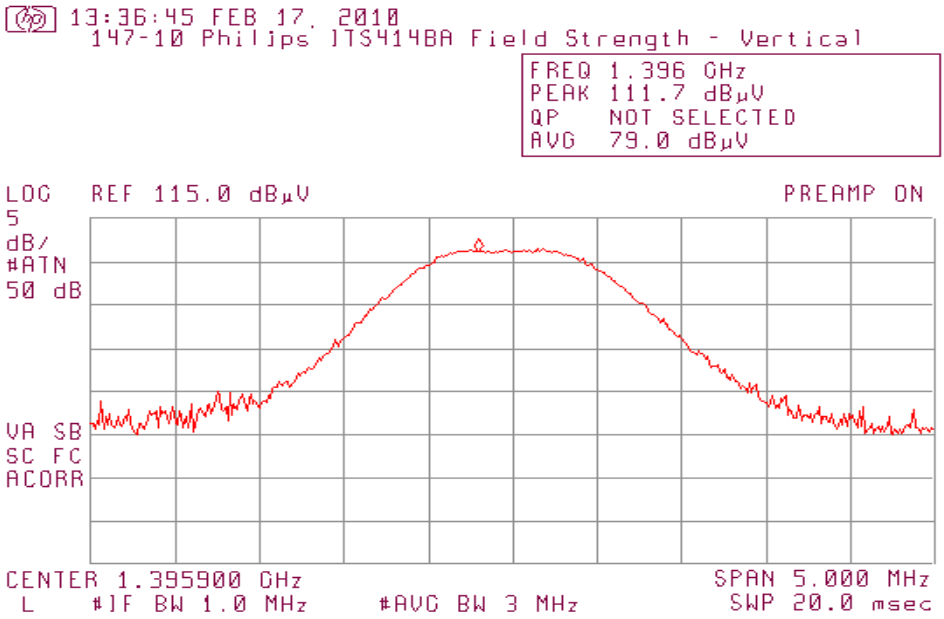
7.2. Radiated Field Strength of Fundamental (95.115(a)(2))

Requirement: In the 1395–1400 MHz and 1427–1429.5 MHz bands, the maximum allowable field strength is 740 mV/m (117.4 dBµV/m), as measured at a distance of 3 meters, using measuring equipment with an averaging detector and a 1 MHz measurement bandwidth.

7.2.1. Radiall/Larsen model SPDA17RP2400 Antenna

Channel	Freq (MHz)	Peak Amp (dBµV/m)	Avg Amp (dBµV/m)	Avg Limit (dBµV/m)	Avg Margin (dB)
1	1395.9	111.7	79.0	117.4	-38.4
3	1399.1	111.7	79.2	117.4	-38.2
4	1427.9	110.9	79.0	117.4	-38.4
6	1431.1	111.5	79.4	117.4	-38.0

7.2.1.1. Channel 1, 1395.9 MHz



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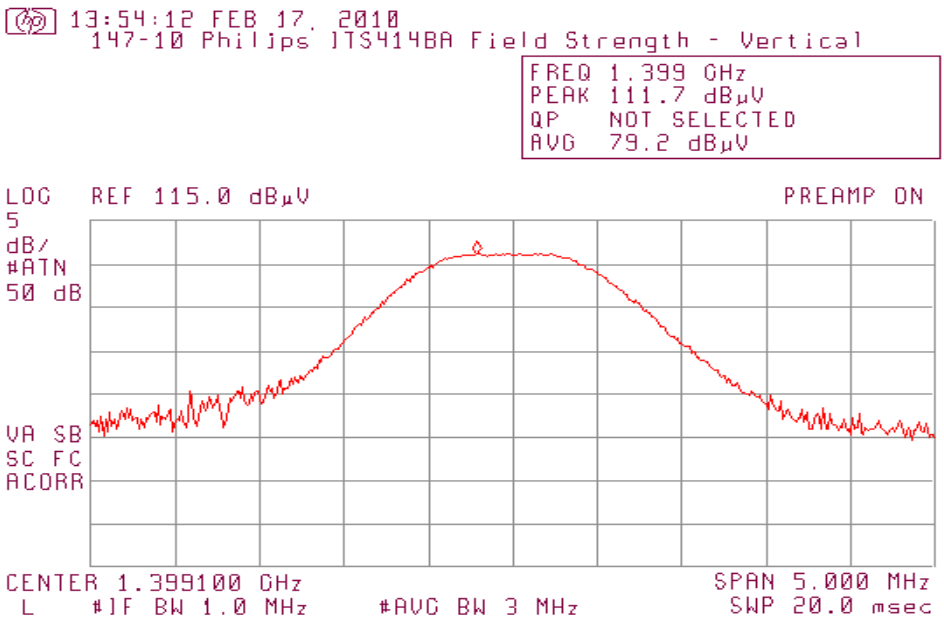
7. Measurement Data (continued)

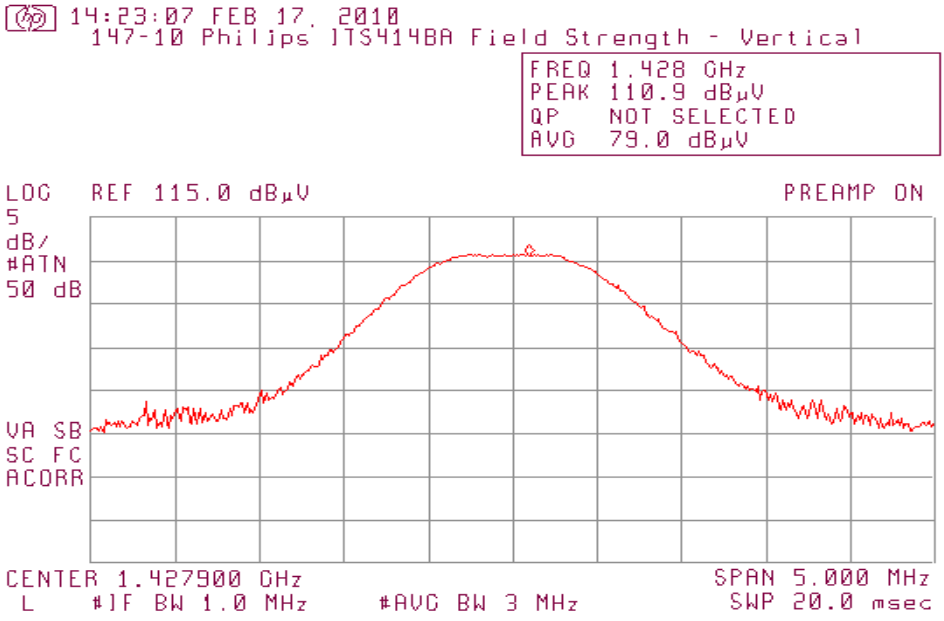
7.2. Radiated Field Strength of Fundamental (continued)

7.2.1. Radiall/Larsen model SPDA17RP2400 Antenna

7.2.1.2. Channel 3, 1399.1 MHz



7.2.1.3. Channel 4, 1427.9 MHz



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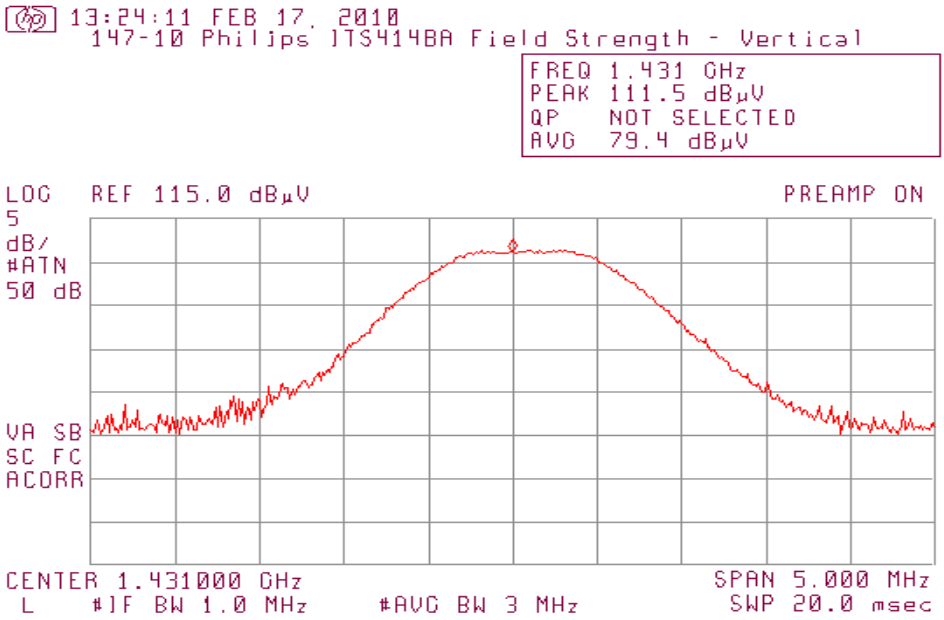
7. Measurement Data (continued)

7.2. Radiated Field Strength of Fundamental (continued)

7.2.1. Radiall/Larsen model SPDA17RP2400 Antenna

7.2.1.4. Channel 6, 1431.1 MHz



7.2.2. Philips M3002-66493 Dual-Band Antenna

Channel	Freq (MHz)	Peak Amp (dBµV/m)	Avg Amp (dBµV/m)	Avg Limit (dBµV/m)	Avg Margin (dB)
1	1395.9	98.6	68.3	117.4	-49.1
3	1399.1	98.0	64.2	117.4	-53.2
4	1427.9	100.2	64.6	117.4	-52.8
6	1431.1	101.3	69.4	117.4	-48.0

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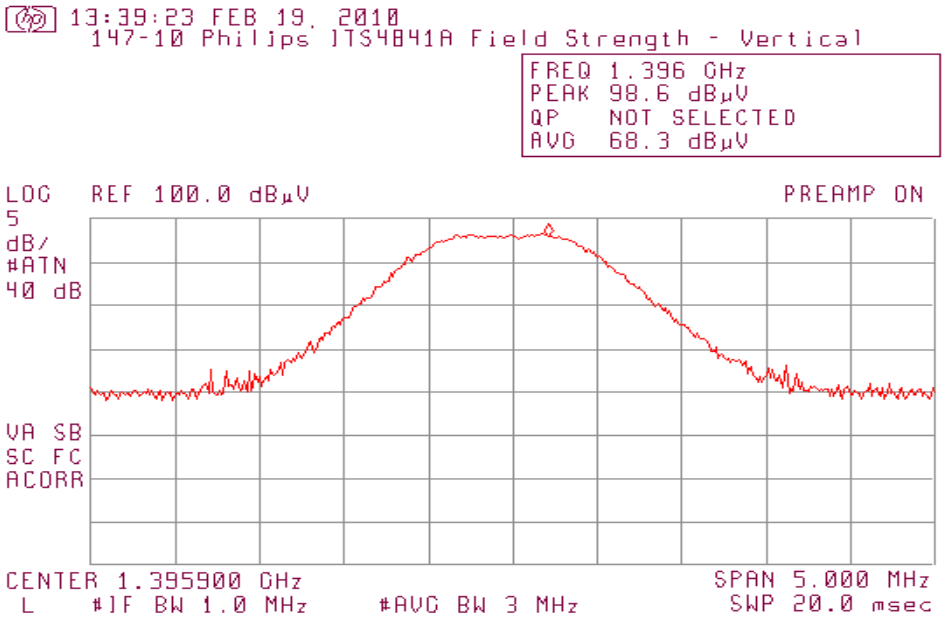
7. Measurement Data (continued)

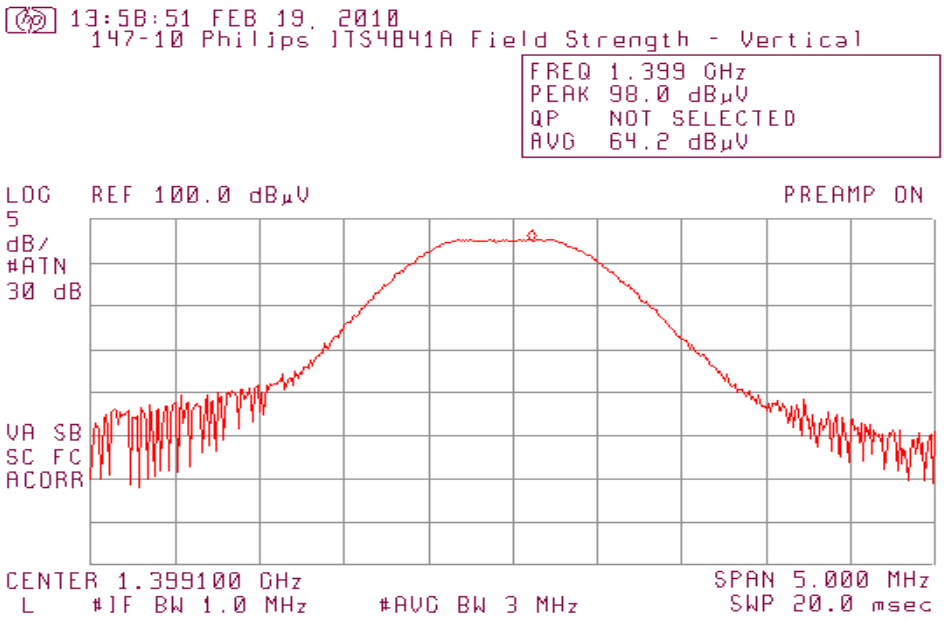
7.2. Radiated Field Strength of Fundamental (continued)

7.2.2. Philips M3002-66493 Dual-Band Antenna

7.2.2.1. Channel 1, 1395.9 MHz



7.2.2.2. Channel 3, 1399.1 MHz



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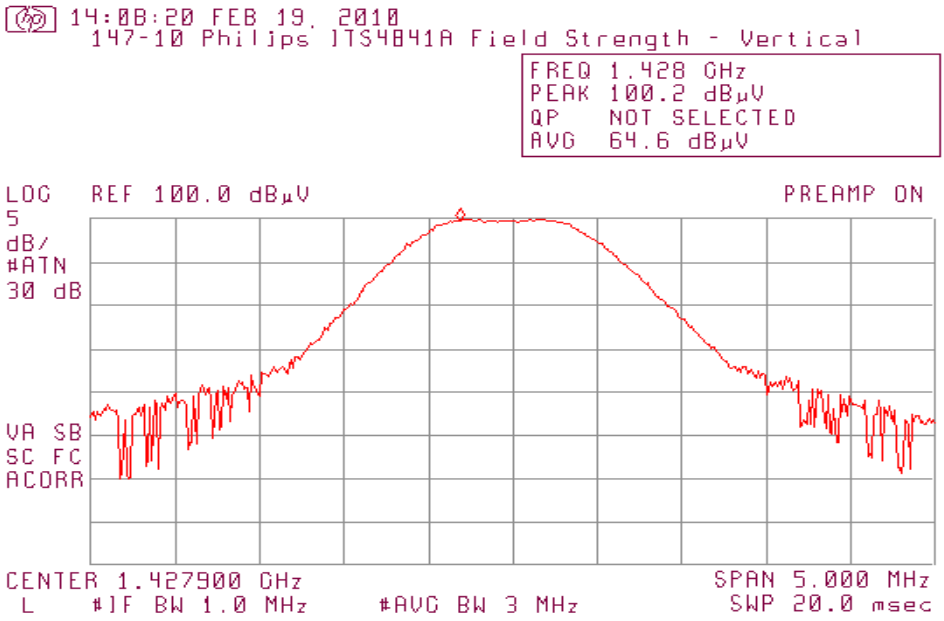
7. Measurement Data

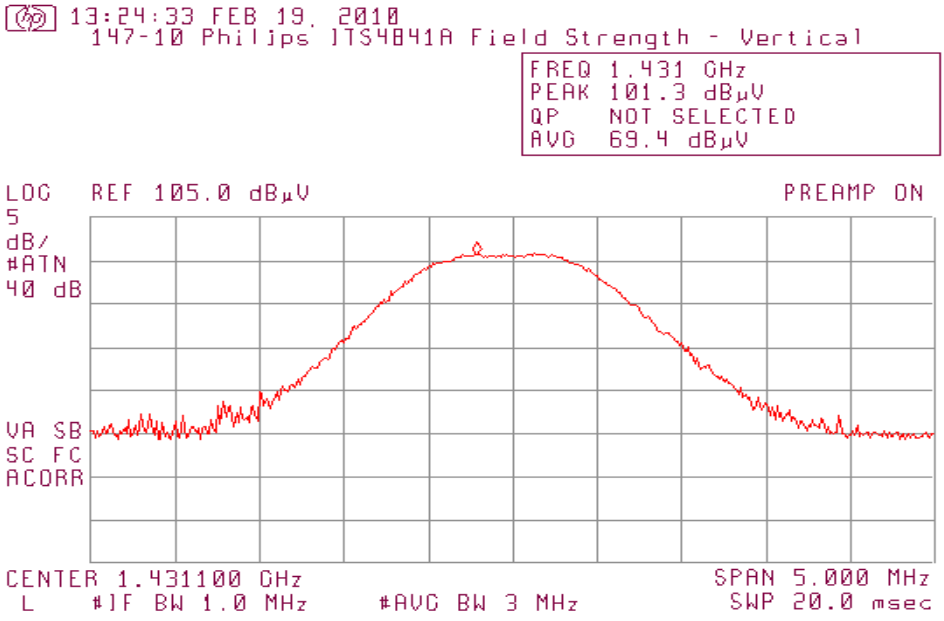
7.2. Radiated Field Strength of Fundamental (95.115(a)(2))

7.2.2. Philips M3002-66493 Dual-Band Antenna

7.2.2.3. Channel 4, 1427.9 MHz



7.2.2.4. Channel 6, 1431.1 MHz



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7. Measurement Data (continued)

7.3. Radiated Field Strength of Harmonics

7.3.1. Radiall/Larsen model SPDA17RP2400 Antenna

Frequency (MHz)	Amplitude (dBµV)		Corr. Fact. (dB)	Amplitude (dBµV/m)		Avg Limit	Margin (dB)	Ant Pol	Ant Ht	TT Pos	Result
	Peak	Avg		Peak	Avg			H/V	cm	Deg	
2791.800	52.53	34.76	-3.47	49.06	31.29	54.00	-22.71	V	108	40	Compliant
2798.200	52.70	37.98	-3.49	49.21	34.49	54.00	-19.51	V	104	5	Compliant
2855.800	53.72	35.00	-3.52	50.20	31.48	54.00	-22.52	V	110	190	Compliant
2862.200	55.79	35.77	-3.45	52.34	32.32	54.00	-21.68	V	108	200	Compliant
4187.700	46.35	32.64	0.09	46.44	32.73	54.00	-21.27	V	108	40	Compliant
4197.300	46.63	32.65	0.08	46.71	32.73	54.00	-21.27	H	105	20	Compliant
4283.700	45.99	32.34	0.14	46.13	32.48	54.00	-21.52	V	110	190	Compliant
4293.300	46.43	31.95	0.12	46.55	32.07	54.00	-21.93	V	102	0	Compliant
8375.400	48.43	34.40	5.44	53.87	39.84	54.00	-14.16	V	108	40	Compliant
8394.600	48.19	34.43	5.44	53.63	39.87	54.00	-14.13	H	105	20	Compliant
11167.200	48.40	34.33	8.96	57.36	43.29	54.00	-10.71	V	108	40	Compliant
11192.800	48.32	34.50	8.94	57.26	43.44	54.00	-10.56	H	105	20	Compliant
11423.200	47.47	34.10	9.07	56.54	43.17	54.00	-10.83	H	104	0	Compliant
11448.800	48.43	34.17	9.07	57.50	43.24	54.00	-10.76	V	102	0	Compliant
12563.100	47.09	33.42	10.71	57.80	44.13	54.00	-9.87	V	108	40	Compliant
12591.900	47.86	33.56	10.84	58.70	44.40	54.00	-9.60	H	105	20	Compliant

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7. Measurement Data (continued)

7.3. Radiated Field Strength of Harmonics (continued)

7.3.2. Philips M3002-66493 Dual-Band Antenna

Frequency (MHz)	Amplitude (dBµV)		Corr. Fact. (dB)	Amplitude (dBµV/m)		Avg Limit	Margin (dB)	Ant Pol	Ant Ht	TT Pos	Result
	Peak	Avg		Peak	Avg			H/V	cm	Deg	
2791.800	50.60	34.31	-3.47	47.13	30.84	54.00	-23.16	V	130	20	Compliant
2798.200	53.33	35.16	-3.49	49.84	31.67	54.00	-22.33	H	120	100	Compliant
2855.800	53.85	35.36	-3.52	50.33	31.84	54.00	-22.16	V	171	275	Compliant
2862.200	55.53	35.47	-3.45	52.08	32.02	54.00	-21.98	V	126	275	Compliant
4187.700	47.40	33.11	0.09	47.49	33.20	54.00	-20.80	H	110	40	Compliant
4197.300	46.30	33.79	0.08	46.38	33.87	54.00	-20.13	H	120	270	Compliant
4283.700	47.90	33.20	0.14	48.04	33.34	54.00	-20.66	V	120	0	Compliant
4293.300	48.20	33.01	0.12	48.32	33.13	54.00	-20.87	V	126	0	Compliant
8375.400	48.73	34.88	5.44	54.17	40.32	54.00	-13.68	H	110	40	Compliant
8394.600	48.26	37.72	5.44	53.70	43.16	54.00	-10.84	H	120	270	Compliant
11167.200	47.36	33.91	8.96	56.32	42.87	54.00	-11.13	H	110	40	Compliant
11192.800	48.54	37.93	8.94	57.48	46.87	54.00	-7.13	H	120	270	Compliant
11423.200	51.32	34.98	9.07	60.39	44.05	54.00	-9.95	H	116	275	Compliant
11448.800	50.08	34.15	9.07	59.15	43.22	54.00	-10.78	V	126	0	Compliant
12563.100	47.05	33.16	10.71	57.76	43.87	54.00	-10.13	V	110	0	Compliant
12591.900	49.18	36.76	10.84	60.02	47.60	54.00	-6.40	H	120	270	Compliant

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7. Measurement Data (continued)

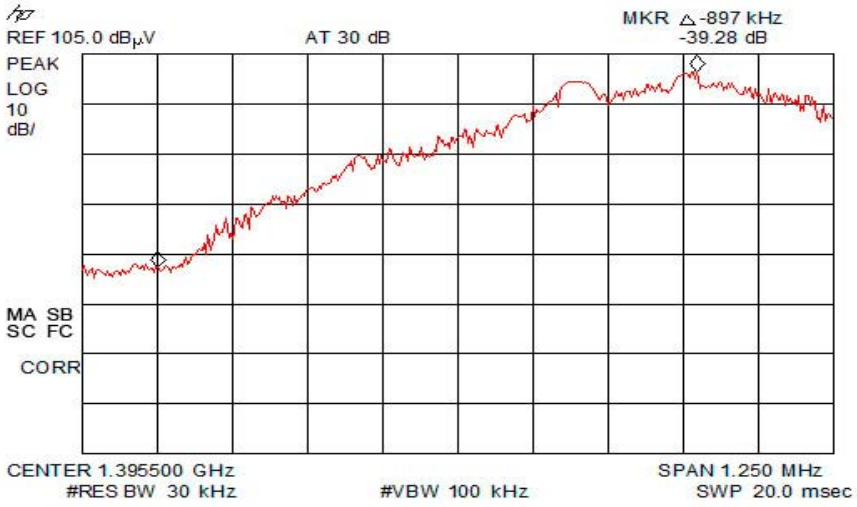
7.4. Band Edge

Requirement: The band edge measurements were made in accordance with FCC Publication Number 913591: Measurement of Radiated Emissions at the Edge of the Band for a Part 15 RF Device.

7.4.1. Radiall/Larsen model SPDA17RP2400 Antenna

Channel	Signal Peak			Band Edge		
	Freq (MHz)	Peak Amp (dBµV/m)	Avg Amp (dBµV/m)	Freq (MHz)	Delta Value (dB)	Avg Amp (dBµV/m)
1	1395.9	111.7	79.0	1395	-39.28	40.91
3	1399.1	111.7	79.2	1400	-38.91	40.29
4	1427.9	110.9	79.0	1427	-38.09	40.91
6	1431.1	111.5	79.4	1432	-39.18	40.22

7.4.1.1. Channel 1, 1395.9 MHz Lower Band Edge Offset



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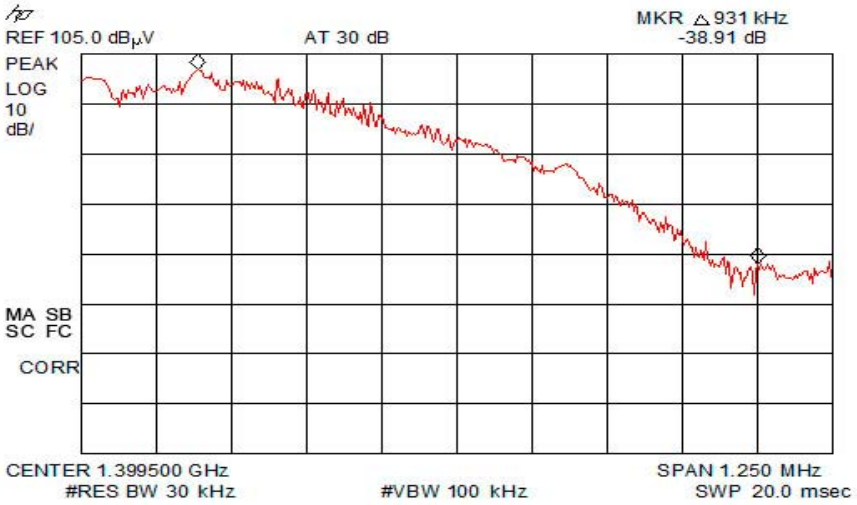
7. Measurement Data (continued)

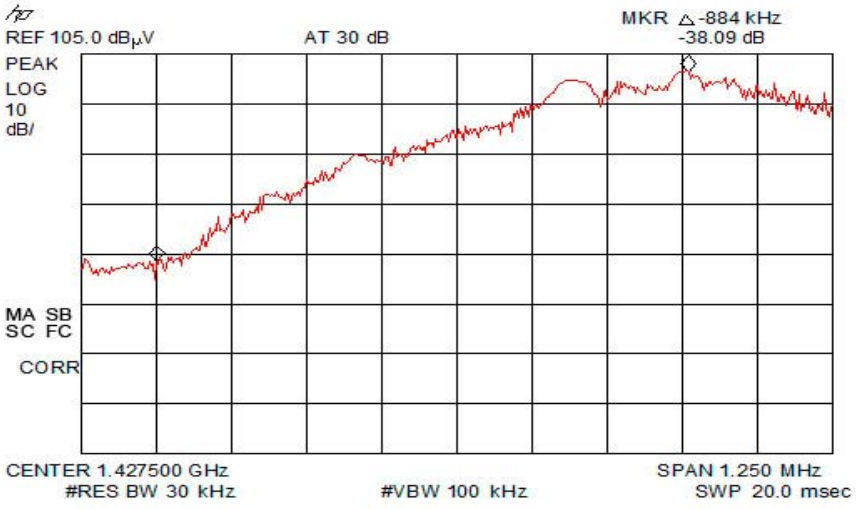
7.4. Band Edge (continued)

7.4.1. Radiall/Larsen model SPDA17RP2400 Antenna

7.4.1.2. Channel 3, 1399.1 MHz Upper Band Edge Offset



7.4.1.3. Channel 4, 1427.1 MHz Lower Band Edge Offset



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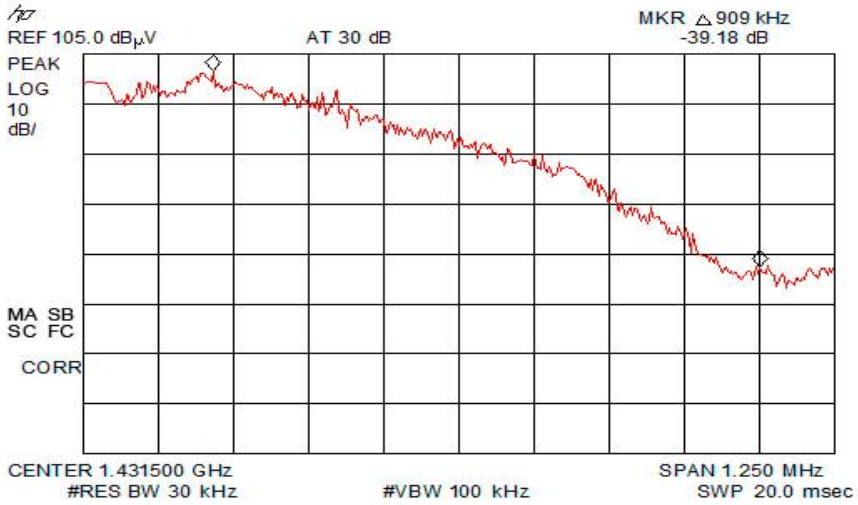
7. Measurement Data (continued)

7.4. Band Edge (continued)

7.4.1. Radiall/Larsen model SPDA17RP2400 Antenna

7.4.1.4. Channel 6, 1431.1 MHz Upper Band Edge Offset



7.4.2. Philips M3002-66493 Dual-Band Antenna

Channel	Signal Peak			Band Edge		
	Freq (MHz)	Peak Amp (dBµV/m)	Avg Amp (dBµV/m)	Freq (MHz)	Delta Value (dB)	Avg Amp (dBµV/m)
1	1395.9	98.6	68.3	1395	-39.31	30.21
3	1399.1	98.0	64.2	1400	-37.83	26.37
4	1427.9	100.2	64.6	1427	-38.09	26.51
6	1431.1	101.3	69.4	1432	-40.95	28.45

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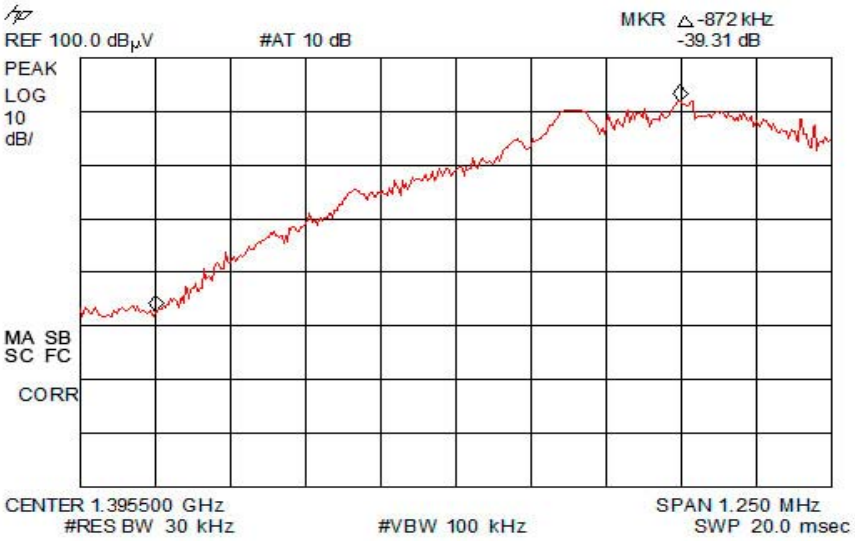
7. Measurement Data (continued)

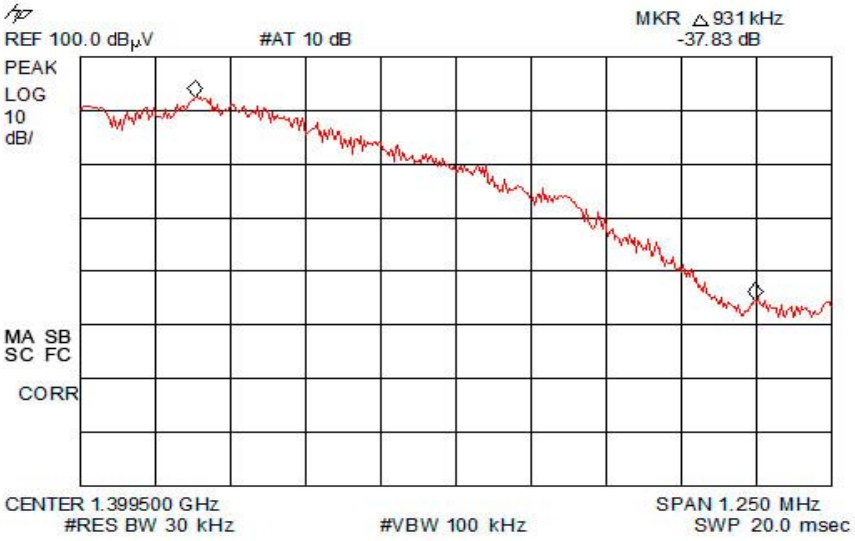
7.4. Band Edge (continued)

7.4.2. Philips M3002-66493 Dual-Band Antenna

7.4.2.1. Channel 1, 1395.9 MHz Lower Band Edge Offset



7.4.2.2. Channel 3, 1399.1 MHz Upper Band Edge Offset



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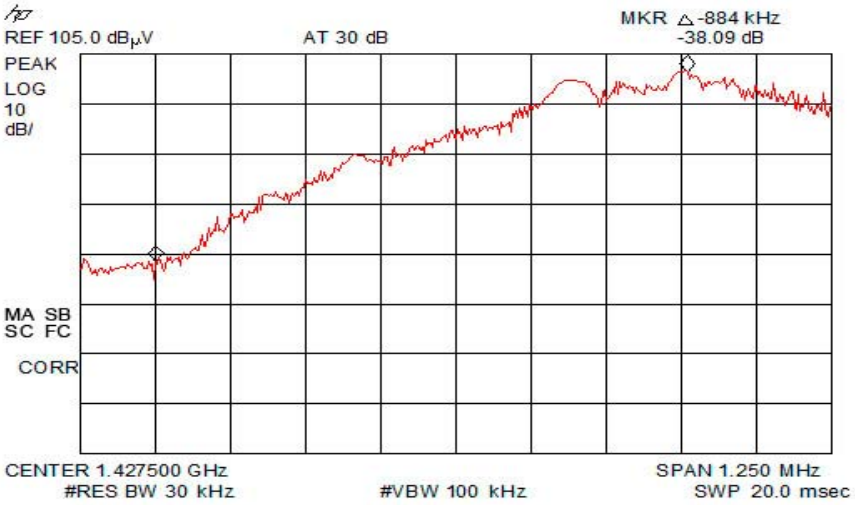
7. Measurement Data (continued)

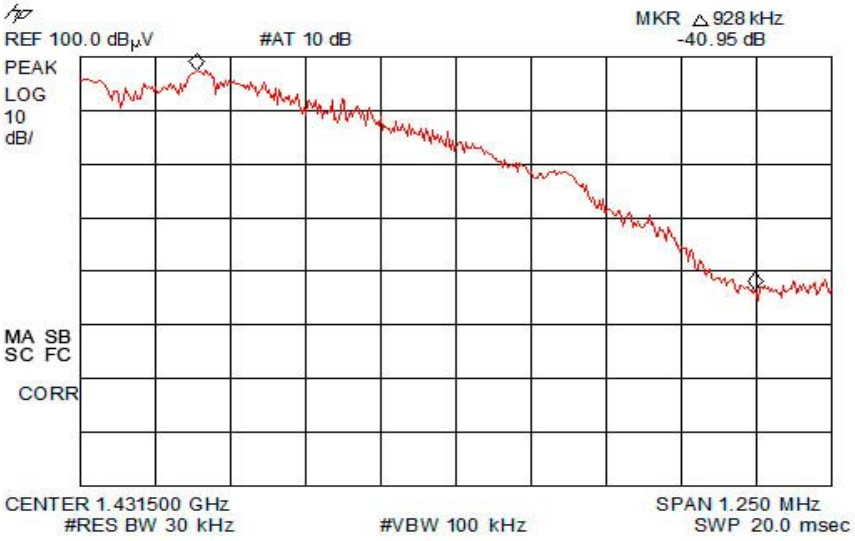
7.4. Band Edge (continued)

7.4.2. Philips M3002-66493 Dual-Band Antenna

7.4.2.3. Channel 4, 1427.1 MHz Lower Band Edge Offset



7.4.2.4. Channel 6, 1431.1 MHz Upper Band Edge Offset



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7. Measurement Data (continued)

7.5. Spurious Radiated Emissions

7.5.1. Regulatory Limit: FCC Part 95.11115 Radiated Field Strength (QP)

Frequency Range (MHz)	Distance (Meters)	Limit (dBµV/m)
< 960	3	46.0

FCC Part 15, Class B, Quasi-Peak

Frequency Range (MHz)	Distance (Meters)	Limit (dBµV/m)
30 to 88	3	40.0
88 to 216	3	43.5
216 to 960	3	46.0
960 to 1000	3	54.0

7.5.2. Test Procedure

Test measurements were made in accordance with ANSI C63.4-2003, Standard Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronics Equipment in the Range of 9 kHz to 40 GHz.

7.5.3. Note: The EUT is in compliance with the FCC Part 15 Class B limit below 960 MHz and therefore is in compliance with the 95.1115 Radiated Field Strength Limit

7.5.4. Note: Radiated Emissions > 1 GHz

There were no measurable emissions above 1 GHz other than the emissions tabled in Section 7.3.

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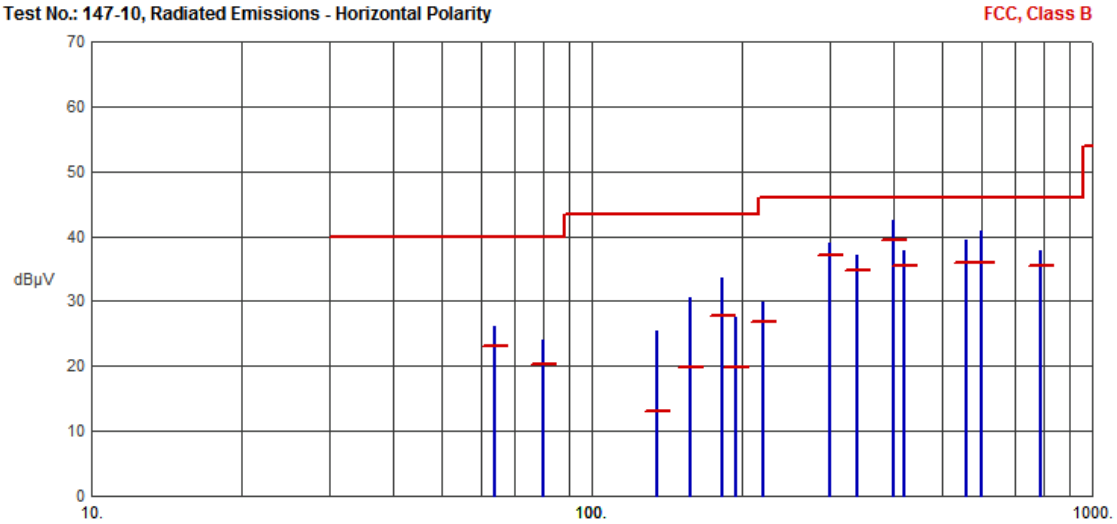
7. Measurement Data (continued)

7.5. Spurious Radiated Emissions (continued)

7.5.4. Horizontal Polarity



Frequency (MHz)	Pk Amp (dBµV/m)	QP Amp (dBµV/m)	QP Limit (dBµV/m)	Margin (dB)	Ant Ht (cm)	Table (Deg)	Comments
63.9958	26.02	23.12	40.00	-16.88	N/A	N/A	
79.9830	24.02	20.31	40.00	-19.69	N/A	N/A	
135.2412	25.34	12.98	43.50	-30.52	N/A	N/A	
157.4346	30.59	19.77	43.50	-23.73	N/A	N/A	
182.1800	33.69	27.67	43.50	-15.83	N/A	N/A	
194.0819	27.64	19.74	43.50	-23.76	N/A	N/A	
219.9971	29.87	26.81	46.00	-19.19	N/A	N/A	
300.0074	39.01	37.11	46.00	-8.89	N/A	N/A	
339.9890	37.06	34.69	46.00	-11.31	N/A	N/A	
399.9846	42.39	39.37	46.00	-6.63	N/A	N/A	
419.9845	37.76	35.45	46.00	-10.55	N/A	N/A	
560.0013	39.34	35.82	46.00	-10.18	N/A	N/A	
600.0005	40.80	35.91	46.00	-10.09	N/A	N/A	
786.4484	37.74	35.43	46.00	-10.57	N/A	N/A	

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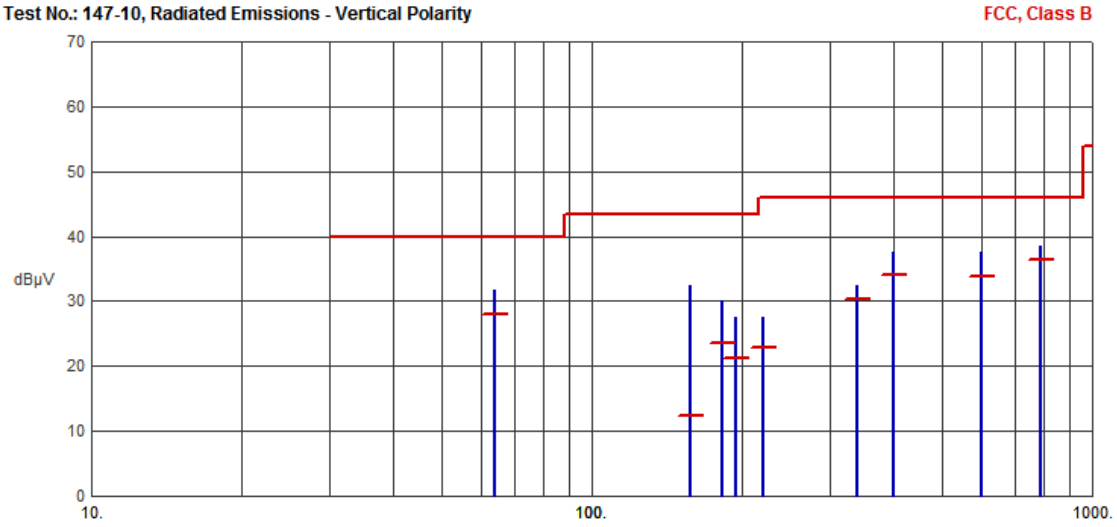
7. Measurement Data (continued)

7.5. Spurious Radiated Emissions (continued)

7.5.5. Vertical Polarity



Frequency (MHz)	Pk Amp (dBµV/m)	QP Amp (dBµV/m)	QP Limit (dBµV/m)	Margin (dB)	Ant Ht (cm)	Table (Deg)	Comments
63.9958	31.77	28.09	40.00	-11.91	N/A	N/A	
157.4346	32.41	12.36	43.50	-31.14	N/A	N/A	
182.1800	30.16	23.48	43.50	-20.02	N/A	N/A	
194.0819	27.46	21.28	43.50	-22.22	N/A	N/A	
220.0235	27.57	22.89	46.00	-23.11	N/A	N/A	
339.9919	32.39	30.44	46.00	-15.56	N/A	N/A	
399.9846	37.51	34.06	46.00	-11.94	N/A	N/A	
600.0005	37.47	33.88	46.00	-12.12	N/A	N/A	
786.4484	38.56	36.30	46.00	-9.70	N/A	N/A	

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7. Measurement Data (continued)

7.6. Frequency Stability

Requirement: Manufacturers of wireless medical telemetry devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all of the manufacturer's specified conditions.

Note : The manufacturer states that the operating temperature range of the product under test is 0 ºC to +55 ºC and the operating voltage range is 12 volts DC ±15%. The product under test frequency stability measurements were made to these specifications.

Nominal temperature = 21.7 ºC
Nominal voltage = 12 VDC
Operating Temperature = 0ºC to +55ºC
Operating Voltage = 10.2 VDC to 13.8 VDC (±15%)

Channel	Assigned Freq.	Temp.	Voltage	Meas. Frequency	Deviation	
	GHz	Deg. C	VDC	MHz	kHz	%
1	1395.9	Nominal	Nominal	1395.8885	-11.5000	0.000824
		0	10.2	1395.8890	-11.0000	0.000788
			13.8	1395.8960	-4.0000	0.000287
		55	10.2	1395.8930	-7.0000	0.000501
			13.8	1395.8985	-1.5000	0.000107
3	1399.1	Nominal	Nominal	1399.0885	-11.5000	0.000822
		0	10.2	1399.1040	4.0000	0.000286
			13.8	1399.1100	10.0000	0.000715
		55	10.2	1399.1055	5.5000	0.000393
			13.8	1399.1095	9.5000	0.000679
4	1427.9	Nominal	Nominal	1427.9035	3.5000	0.000245
		0	10.2	1427.8905	-9.5000	0.000665
			13.8	1427.8850	-15.0000	0.001051
		55	10	1427.8890	-11.0000	0.000770
			13.8	1427.8985	-1.5000	0.000105
6	1431.1	Nominal	Nominal	1431.1005	0.5000	0.000035
		0	10.2	1431.1060	6.0000	0.000419
			13.8	1431.1115	11.5000	0.000804
		55	10.2	1431.0960	-4.0000	0.000280
			13.8	1431.1080	8.0000	0.000559

Test Result: The ITS4841A 1.4 GHz Instrument Telemetry Module maintained a deviation of less than 0.002% from the assigned frequency in each of the four frequencies tested. This ensures that the transmitter will remain within band of operation under all of the manufacturer's specified conditions.

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7. Measurement Data (continued)

7.7. Conducted Emissions

7.7.1. Regulatory Limit: EN55022, Class B

Frequency Range (MHz)	Limits (dBµV)	
	Quasi-Peak	Average
0.15 to 0.50	66 to 56[1]	56 to 46[1]
0.50 to 5.0	56	46
0.50 to 30	60	50
[1] The limit decreases linearly with the logarithm of the frequency.		

7.7.2. Test Procedure

Test measurements were made in accordance with CISPR 22, Section 9: Method of measurement of conducted disturbance at mains terminals and telecommunication ports and ANSI C63.4-2003, Standard Methods of Measurement of Radio Noise Emissions from Low-Voltage Electrical and Electronics Equipment in the Range of 9 kHz to 40 GHz.

Note:

The power to the device under test was supplied by the Philips MP50 Patient Bedside Monitor. Reference item number 2 on the block diagram in Section 3.7.

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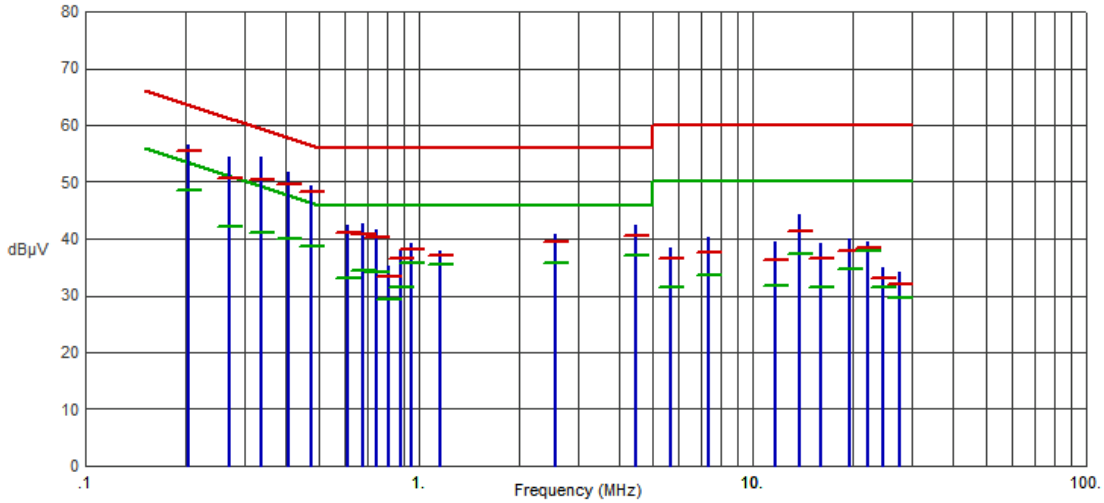
7. Measurement Data (continued)

7.7. Conducted Emissions (continued)

7.7.3. 120 Volts, 60 Hz, Phase

Test No.: 147-10, 120 Volts, 60 Hz Phase FCC, Class B



Frequency (MHz)	Pk Amp (dBµV)	QP Amp (dBµV)	QP Limit (dBµV)	QP Margin (dB)	Avg Amp (dBµV)	Avg Limit (dBµV)	Avg Margin (dB)	Comments
.2033	56.66	55.48	63.47	-7.99	48.49	53.47	-4.98	
.2710	54.36	50.79	61.09	-10.30	42.22	51.09	-8.87	
.3362	54.50	50.44	59.30	-8.86	41.07	49.30	-8.23	
.4061	51.71	49.50	57.73	-8.23	39.94	47.73	-7.79	
.4742	49.42	48.30	56.44	-8.14	38.78	46.44	-7.66	
.6089	42.31	41.00	56.00	-15.00	33.15	46.00	-12.85	
.6780	42.58	40.82	56.00	-15.18	34.53	46.00	-11.47	
.7454	41.59	40.23	56.00	-15.77	34.15	46.00	-11.85	
.8135	35.24	33.29	56.00	-22.71	29.24	46.00	-16.76	
.8802	37.89	36.43	56.00	-19.57	31.35	46.00	-14.65	
.9487	39.27	38.13	56.00	-17.87	35.61	46.00	-10.39	
1.1518	37.87	36.99	56.00	-19.01	35.57	46.00	-10.43	
2.5753	40.87	39.48	56.00	-16.52	35.69	46.00	-10.31	
4.4727	42.30	40.64	56.00	-15.36	37.11	46.00	-8.89	
5.6922	38.28	36.65	60.00	-23.35	31.56	50.00	-18.44	
7.3860	40.28	37.48	60.00	-22.52	33.55	50.00	-16.45	
11.7218	39.49	36.34	60.00	-23.66	31.75	50.00	-18.25	
13.8271	44.16	41.46	60.00	-18.54	37.25	50.00	-12.75	
15.9978	39.11	36.41	60.00	-23.59	31.58	50.00	-18.42	
19.4528	39.98	37.77	60.00	-22.23	34.63	50.00	-15.37	
22.1080	39.54	38.38	60.00	-21.62	37.88	50.00	-12.12	
24.5296	35.02	32.95	60.00	-27.05	31.51	50.00	-18.49	
27.6566	34.18	32.11	60.00	-27.89	29.61	50.00	-20.39	

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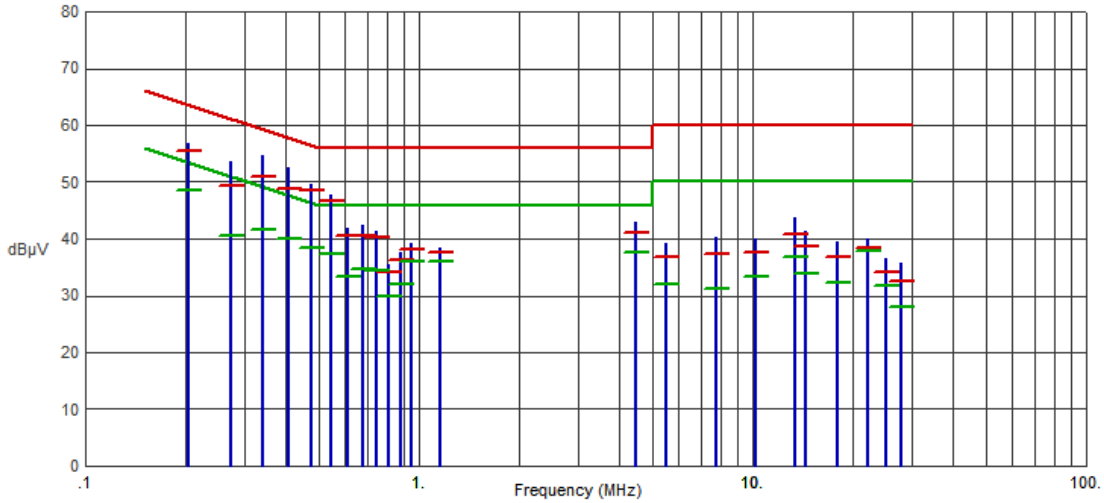
7. Measurement Data (continued)

7.7. Conducted Emissions (continued)

7.7.4. 120 Volts, 60 Hz, Neutral

Test No.: 147-10, 120 Volts, 60 Hz Neutral FCC, Class B



Frequency (MHz)	Pk Amp (dBµV)	QP Amp (dBµV)	QP Limit (dBµV)	QP Margin (dB)	Avg Amp (dBµV)	Avg Limit (dBµV)	Avg Margin (dB)	Comments
.2038	56.74	55.41	63.45	-8.04	48.42	53.45	-5.03	
.2736	53.51	49.36	61.01	-11.65	40.63	51.01	-10.38	
.3415	54.54	51.06	59.17	-8.11	41.56	49.17	-7.61	
.4067	52.56	48.92	57.72	-8.80	40.10	47.72	-7.62	
.4742	49.58	48.40	56.44	-8.04	38.43	46.44	-8.01	
.5424	47.70	46.74	56.00	-9.26	37.46	46.00	-8.54	
.6092	41.91	40.45	56.00	-15.55	33.31	46.00	-12.69	
.6789	42.37	40.63	56.00	-15.37	34.61	46.00	-11.39	
.7462	41.22	40.18	56.00	-15.82	34.49	46.00	-11.51	
.8139	35.58	34.01	56.00	-21.99	29.89	46.00	-16.11	
.8811	37.48	36.20	56.00	-19.80	32.12	46.00	-13.88	
.9495	39.21	38.24	56.00	-17.76	36.04	46.00	-9.96	
1.1529	38.39	37.59	56.00	-18.41	36.10	46.00	-9.90	
4.4764	42.94	41.18	56.00	-14.82	37.50	46.00	-8.50	
5.4936	39.16	36.84	60.00	-23.16	32.00	50.00	-18.00	
7.7999	40.19	37.32	60.00	-22.68	31.30	50.00	-18.70	
10.1736	40.09	37.65	60.00	-22.35	33.36	50.00	-16.64	
13.3603	43.67	40.92	60.00	-19.08	36.71	50.00	-13.29	
14.4511	41.25	38.58	60.00	-21.42	33.83	50.00	-16.17	
18.0466	39.35	36.82	60.00	-23.18	32.22	50.00	-17.78	
22.2643	39.89	38.34	60.00	-21.66	37.75	50.00	-12.25	
25.1572	36.63	34.04	60.00	-25.96	31.86	50.00	-18.14	
27.8932	35.62	32.52	60.00	-27.48	27.87	50.00	-22.13	

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7. Measurement Data (continued)

7.8. RF Safety (Public Exposure to Radio Frequency Energy Levels (95.1125, 1.1307 (b)(1)))

Requirement: Portable devices as defined in § 2.1093(b) of this chapter operating in the WMTS are subject to radio frequency radiation exposure requirements as specified in §§ 1.1307(b) and 2.1093 of this chapter.

Test Note: Due to the product configuration, it was not possible to directly connect the device under test to the measurement equipment. The output power of the device was derived from the peak field strength measurements using the following formula:

$$P = \frac{(E \times d)^2}{(30 \times G)}$$

P = the power in Watts.

E = the measured maximum field in V/m

G = the numeric gain of the transmitting antenna over an isotropic radiator.

D = the distance in meters of the field strength measurement.

7.8.1. Output Power with the Radiall/Larsen model SPDA17RP2400 Antenna

Channel	Frequency	Peak Field Strength	Meas. Distance	Antenna Gain[1]	Measured Output Power
	(MHz)	(dBµV/m)	(m)	(dBi)	(mW)
1	1395.9	111.7	3.0	2.0	27.9976290
3	1399.1	111.7	3.0	2.0	27.9976290
4	1427.9	110.9	3.0	2.0	23.2874135
6	1431.1	111.5	3.0	2.0	26.7375281

7.8.2. Output Power with the Philips M3002-66493 Dual-Band Antenna

Channel	Frequency	Peak Field Strength	Meas. Distance	Antenna Gain[1]	Measured Output Power
	(MHz)	(dBµV/m)	(m)	(dBi)	(mW)
1	1395.9	98.6	3.0	2.0	1.3712646
3	1399.1	98.0	3.0	2.0	1.1943215
4	1427.9	100.2	3.0	2.0	1.9820803
6	1431.1	101.3	3.0	2.0	2.5534141

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7. Measurement Data (continued)

7.8. RF Safety (Public Exposure to Radio Frequency Energy Levels (95.1125, 1.1307 (b)(1)) (continued)

The following results are based on the power values derived in tables 7.8.1 and 7.8.2 on the previous page:

Antenna	Channel	MPE Distance (cm)	DUT Output Power (dBm)	DUT Antenna Gain (dBi)	Power Density (mW/cm2)	Limit (mW/cm2)	Result
		(1)	(2)	(3)	(4)	(5)	
Radiall/Larsen SPDA17RP2400	1	20	14.4712125	2.0	0.0088	0.93	Compliant
	3	20	14.4712125	2.0	0.0088	0.93	Compliant
	4	20	13.6712125	2.0	0.0073	0.95	Compliant
	6	20	14.2712125	2.0	0.0084	0.95	Compliant
Philips M3002-66493	1	20	1.3712125	2.0	0.0004	0.93	Compliant
	3	20	0.7712125	2.0	0.0004	0.93	Compliant
	4	20	2.9712125	2.0	0.0006	0.95	Compliant
	6	20	4.0712125	2.0	0.0008	0.95	Compliant

$$PD = \frac{OP + AG}{(4 \times \pi \times d^2)}$$

PD = Power Density (mW/cm2)
OP = DUT Output Power (dBm)
AG = DUT Antenna Gain (dBi)
d = MPE Distance (cm)

1. Reference CFR 2.1093(b): For purposes of this section, a portable device is defined as a transmitting device designed to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user.
2. Sections 7.8.1 and 7.8.2 of this test report.
3. Antenna manufacturer's data sheets.
4. Power density is calculated from field strength measurement and antenna gain.
5. Reference CFR 1.1310, Table 1: Limits for Maximum Permissible Exposure (MPE), Section (B): Limits for General Population/Uncontrolled Exposure.

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