

## COMPLIANCE WORLDWIDE INC. TEST REPORT 288-16

In Accordance with the Requirements of

Industry Canada RSS 210, Issue 8

Federal Communications Commission CFR Title 47 Part 15.229

Low Power License-Exempt Radio Communication Devices  
Intentional Radiators

Issued to

Secure Care Products, LLC  
39 Chenell Drive  
Concord, NH 03301  
603-223-0745

for the

Secure Care  
ENVisionIT®  
RTLS Non-Cutband Transmitter  
40.68 MHz Door Management Radio

FCC ID: KNK-4068-2

Report Issued on May 27, 2016

Testing performed by

  
\_\_\_\_\_  
Brian F. Breault  
EMC Test Engineer

Reviewed By

  
\_\_\_\_\_  
Larry K. Stillings

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## 1. Scope

This test report certifies that the Secure Care Products, LLC. ENVisionIT® model A20440952 RTLS Non-Cutband Transmitter 40.68 MHz door management radio, as tested, meets the Subpart C, FCC Part 15.229 requirements and the RSS 210 Annex II Rules. 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:** Secure Care Products, LLC.

**2.2. Model Number:** A20440952, model A20440962 contains an electrically identical transmitter with the 40.68 MHz antenna rotated 90 degrees. Each unit was measured and the worst case unit data is provided in this report.

**2.3. Serial Number:** ID 0093-0147

**2.4. Description:** 40.68 MHz door management radio. ENVisionIT® All in One Tag with 90° Antenna patient protection transmitter for infant security, wandering patient, & resident protection products.

**2.5. Power Source:** 3.0 VDC (Lithium) non-replaceable

**2.6. EMC Modifications:** None

## 3. Product Configuration

### 3.1. Operational Characteristics & Software

#### Operating Instructions for Test

Use the tester to enable continuous wave features. With the transmitter at the top of the tester, push the “4” key to enable continuous wave output on the low frequency radio. This will output a continuous wave for one minute and then revert back to normal operation.

The “#” key will put the transmitter in sleep mode

The “7” key will enable a quick wakeup of the transmitter

### 3.2. EUT Hardware

Manufacturer	Model/Part # / Options	Serial Number	Volts	Frq (Hz)	Description/Function
Secure Care Products, LLC.	A20440952 RTLS Non-Cutband Transmitter	0093-0147	3.0	DC	ENVisionIT® patient protection transmitter for infant security, wandering patient, & resident protection products.

### 3.3. Support Equipment

Manufacturer	Model/Part # / Options	Serial Number	Input Voltage	Frq (Hz)	Description/Function
Secure Care Products, LLC.	A07390940	0021600087	N/A	-	For setting up the DUT operation. Not used during testing.



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### 3. Product Configuration (continued)

#### 3.4. Support Equipment Cables

Cable Type	Length	Shield	From	To
None				

#### 3.5. Block Diagram



### 4. Measurements Parameters

#### 4.1 Measurement Equipment Used to Perform Test

Device	Manufacturer	Model No.	Serial No.	Cal Due	Interval
EMI Test Receiver, 9kHz - 7GHz <sup>1</sup>	Rohde & Schwarz	ESR7	101156	7/23/2017	2 Years
Spectrum Analyzer 20 Hz – 40 GHz <sup>2</sup>	Rohde & Schwarz	FSV40	100899	7/23/2017	2 Years
Spectrum Analyzer, 9 kHz to 40 GHz <sup>3</sup>	Rohde & Schwarz	FSVR40	100909	7/23/2017	2 Years
EMI Receiver	Hewlett Packard	8546A	3650A00360	6/4/2016	2 Years
Loop Antenna	EMCO	6512	9309-1139	9/23/2016	2 Years
CombiLog Antenna, 30 MHz to 2 GHz	Com-Power	AC-220	25509	5/12/2018	2 Years
LISN 50 Ω 50 µH, 9 kHz to 30 MHz	EMCO	3825/2	9109-1860	7/23/2016	1 Year
Power Supply	Hewlett Packard	6296A	7M0599	8/26/2016	2 Years
Digital Barometer	Control Company	4195	ID236	10/8/2017	2 Years
Temperature Chamber	Associated Research	E-0029	N/A	N/A	---

<sup>1</sup> ESR7 Firmware revision: V2.26,

Date installed: 08/15/2014

Previous V2.17, installed 6/11/2014.

<sup>2</sup> FSV40 Firmware revision: V2.30 SP4,

Date installed: 05/04/2016

Previous V2.30 SP1, installed 10/22/2014.

<sup>3</sup> FSVR40 Firmware revision: V2.23,

Date installed: 10/20/2014

Previous V1.63 SP1, installed 8/28/2013.

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#### 4. Measurements Parameters (continued)

##### 4.2 Measurement & Equipment Setup

Test Dates:	5/17/2016 to 5/27/2016
Test Engineers:	Brian Breault
Site Temperature (°C):	21.4
Relative Humidity (%RH):	32
Frequency Range:	30 kHz to 1.0 GHz
Measurement Distance:	3 Meters
EMI Receiver IF Bandwidth:	120 kHz (30 MHz – 1 GHz) 1 MHz (>1 GHz)
EMI Receiver Avg Bandwidth:	300 kHz (30 MHz – 1 GHz) 3 MHz (>1 GHz)
Detector Functions:	Peak, Quasi-Peak and Average

##### 4.3 Test Procedure

The manufacturer stated that two units, numbers A20440952 and A20440962, contained identical transmitters and by certifying one of the devices the other should be covered.

The two units were rotated through three orthogonal positions and measured for peak field strength. The unit that yielded the highest field strength measurement was used was used as the test sample for this test report. The three orthogonal positions are defined further on in this section.

The results of the preliminary measurements are as follows:

A20440952	Horizontal			Vertical		
	Field Strength	Elevation	TT Position	Field Strength	Elevation	TT Position
X-Axis	47.97	214	100	42.17	100	244
Y-Axis	50.03	264	268	57.63	100	354
Z-Axis	49.45	400	330	<b>57.87</b>	<b>100</b>	<b>64</b>

A20440962	Horizontal			Vertical		
	Field Strength	Elevation	TT Position	Field Strength	Elevation	TT Position
X-Axis	45.92	400	204	56.80	100	160
Y-Axis	47.86	285	90	44.78	100	264
Z-Axis	50.44	309	274	57.42	100	334

Test measurements were made in accordance FCC Part 15.229: Operation within the band 40.66–40.70 MHz.

The test methods used to generate the data in this test report are in accordance with ANSI C63.10: 2013, American National Standard for Methods for Unlicensed Wireless Devices

#### 4. Measurements Parameters (continued)

##### 4.3 Test Procedure (continued)

In addition, the measurements were performed with the device in three orthogonal positions in accordance with ANSI C63.10-2013, sections 5.10.1, 6.4.6 and Annex H. The three orthogonal axes were defined as follows:



X-Axis



Y-Axis



Z-Axis

X Axis Upright (Label forward)

Y Axis Horizontal on left edge

Z Axis Label Up

Front of unit is facing the antenna at 0°

Front of unit is facing the antenna at 0°

Bottom edge of the unit is facing the antenna at 0°

#### 4.4. Choice of Equipment for Test Suits

##### 4.4.1. 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.

##### 4.4.2. Presentation

The test sample was tested complete with all required ancillary equipment. Refer 4.4

##### 4.4.3. Choice of Operating Frequencies

The transmitter in the unit under test utilizes a single operating frequency at approximately 40.68 MHz

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## 5. Measurement Summary

Test Requirement	FCC Requirement	IC Requirement	Test Report Section	Result	Comment
Antenna Requirement	15.203	RSS210 A1.1	6.1	Compliant	The antenna is enclosed within the device under test.
Emission Bandwidth	C63.10-2013 §6.9	Not Required	6.2	Compliant	
Bandwidth Requirement in the Band 40.66 MHz - 40.70 MHz	Not Required	IC RSS-210 §2.7 RSS-Gen 4.6.2	6.3	Compliant	
Radiated Field Strength of Fundamental	15.229 (b)	RSS210 A1.1.2	6.4	Compliant	
Spurious Radiated Emissions	15.231 (b)(3), 15.209	A13.1.2 (2)	6.5	Compliant	
Frequency Stability	15.229 (d)	Not Required	6.6	Compliant	
Conducted Emissions	15.207	---	---	Not Required	Unit operates on an internal battery.
Public Exposure to Radio Frequency Energy Levels.	15.247(i) 1.1307 (b)(1)	RSS-GEN 5.5, RSS 102	---	Not Required	Frequency is below 100 MHz.

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## 6. Measurement Data

### 6.1. Antenna Requirement (Section 15.203)

Requirement: An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this Section.

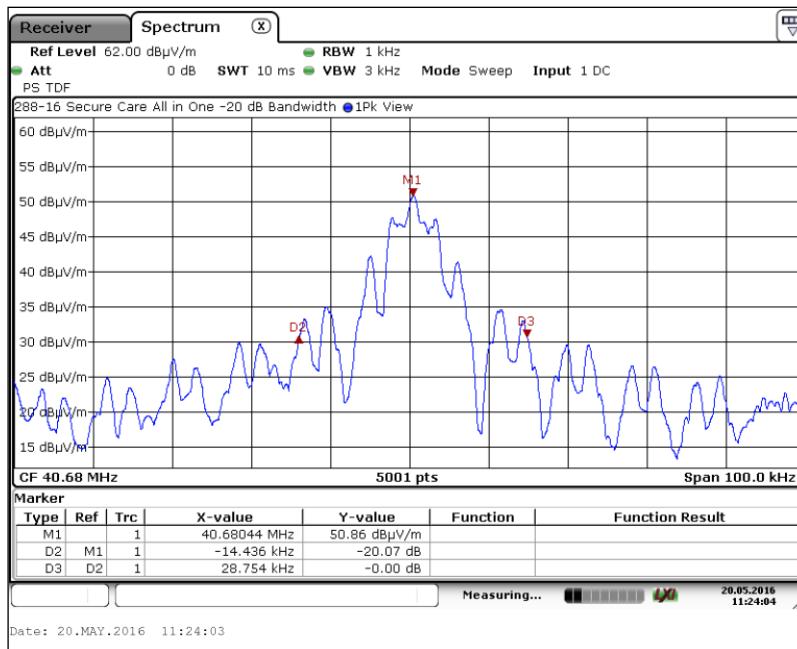
Status: Compliant - The antenna utilized by the device under test is contained inside a sealed plastic enclosure.

### 6.2. Emission Bandwidth

Requirement: The bandwidth requirement for FCC Part 15.229 is not specified. The 20 dB bandwidth has been included as part of this test report.

Test Note: Reference ANSI C63.10-2013, Section 6.9.1. The span range for the SA display shall be between two times and five times the OBW. The nominal IF filter bandwidth (3 dB RBW) should be approximately 1% to 5% of the OBW, unless otherwise specified, depending on the applicable requirement. The dynamic range of the SA at the selected RBW shall be more than 10 dB below the target "dB down" (attenuation) requirement.

Fundamental Frequency	-20 dB Bandwidth	Limit	Result
(MHz)	(kHz)	(kHz)	
40.68	28.754	N/A	Compliant



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## 6. Measurement Data (continued)

### 6.3. Bandwidth Requirement in the Band 40.66 MHz - 40.70 MHz

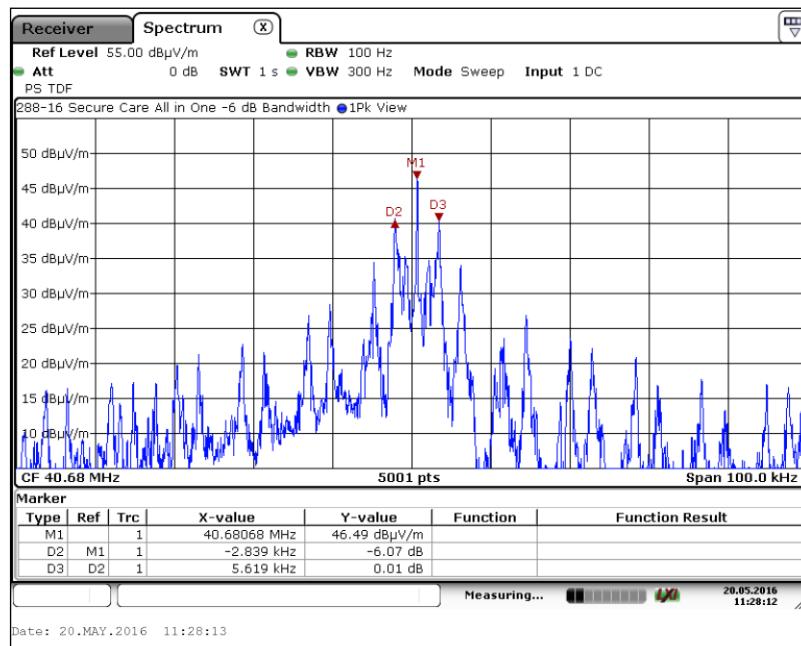
#### (IC RSS-210 2.7, RSS-Gen 4.6.2)

Requirement: The -6 dB bandwidth of the emission shall be confined within the 40.66 - 40.70 MHz band edges.

Test Note: Reference RSS-Gen, Section 4.6.2. Where indicated, the -6 dB emission bandwidth is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated 6 dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth equal to approximately 1.0% of the emission bandwidth.

Conclusion: Compliant - The Emissions from the DUT meets the above requirement.

Fundamental Frequency (MHz)	-6 dB Bandwidth		Band Edges		Result
	Lower Edge	Upper Edge	Lower Edge	Upper Edge	
	(MHz)	(MHz)	(MHz)	(MHz)	
40.68	40.6772	40.6828	40.66	40.70	Compliant



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## 6. Measurement Data (continued)

### 6.4. Radiated Field Strength of Fundamental (15.229, Section (a))

Requirement: Unless operating pursuant to the provisions in section 15.231, the field strength of any emissions within this band shall not exceed 1,000 microvolts/meter at 3 meters.

Fundamental Frequency (MHz)	Field Strength of Fundamental ( $\mu$ V/m)
40.66 – 40.70	1000 $\mu$ V/m

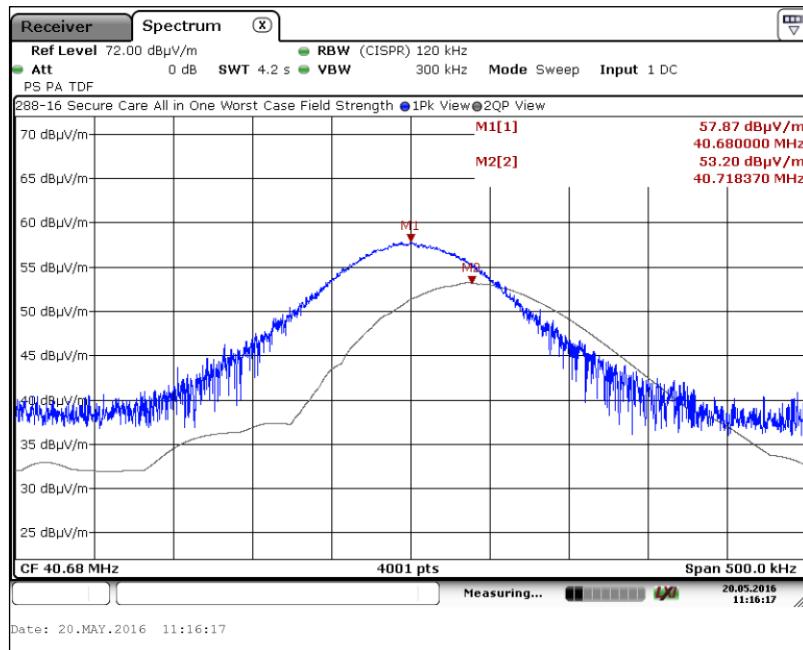
Fundamental Limit at 40.68 MHz = 1000  $\mu$ V/m = 60.00 dB $\mu$ V/m

**Test Note:** The data detailed in this section of the test report represents the worst case product orientation.

**Conclusion:** Compliant - The radiated field strength of the device under test complies with the requirements detailed in FCC Part 15.229, Section (a).

#### 6.3.1. Worst Case Radiated Field Strength of Fundamental

Frequency (MHz)	Amplitude <sup>1</sup> (dB $\mu$ V/m)		Limit (dB $\mu$ V/m)		Margin (dB)		Ant Polarity	Ant Height	Turntable Azimuth	Result
	Peak	QP	Peak	QP	Peak	QP				
40.68	57.87	53.20	80.00	60.00	-22.13	-6.80	V	100	354	Compliant



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## 6. Measurement Data (continued)

### 6.5. Spurious Radiated Emissions, 30 MHz to 1.0 GHz (15.229 Section (c), 15.209)

Requirement: The spurious radiated emissions requirements for intentional radiators shall demonstrate compliance with the field strength limits detailed in Part 15.229, Section (c): The field strength of any emissions appearing outside of this band shall not exceed the general radiated emissions limits in Section 15.209.

Procedure: This test was performed in accordance with the information provided in ANSI C63.10-2013, Section 6.5.

Test Notes: Section 6.5.3 screen captures test notes:

1. The emission marked by the pair of vertical cursors in screen captures 6.5.3.1 through 6.5.3.6 is the 40.68 MHz fundamental intentional emissions frequency.

Conclusion: Compliant - The Emissions from the DUT did not exceed the field strength levels specified in FCC Part 15.209.

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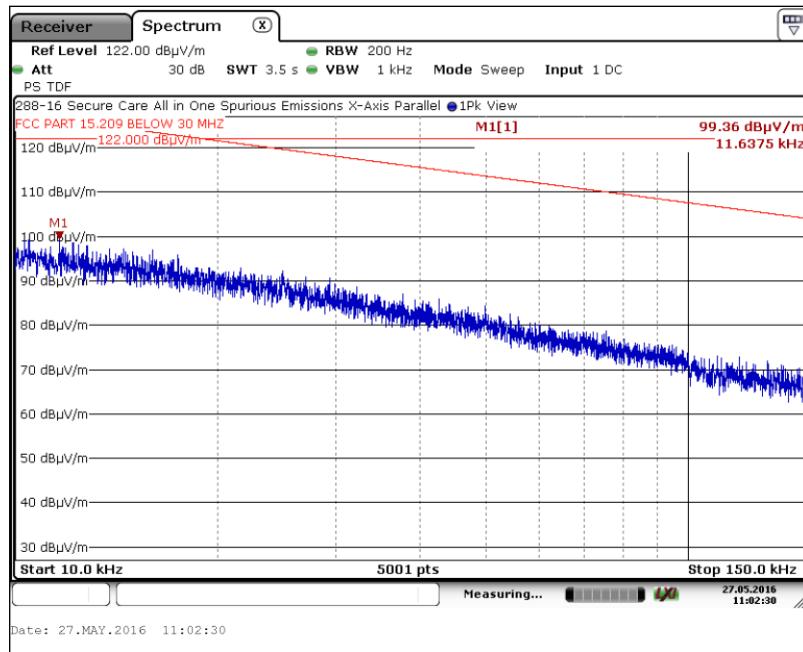
Issue Date: 5/27/2016

## 6. Measurement Data (continued)

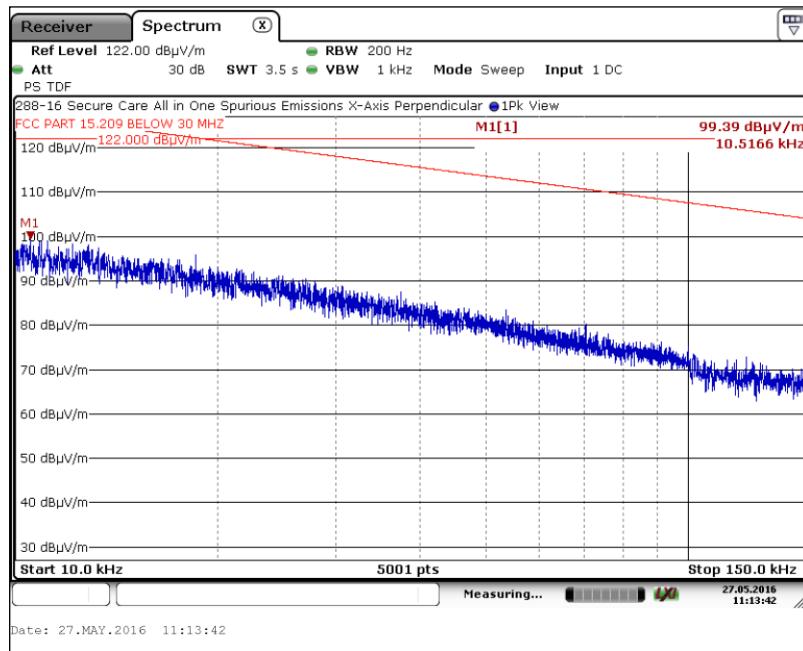
### 6.5. Spurious Radiated Emissions, 10 kHz to 1.0 GHz (15.229, § (c), 15.209) (cont'd)

#### 6.5.1. Spurious Radiated Emissions, 10 kHz to 150 kHz Test Results

##### 6.5.1.1. X-Axis, Parallel Antenna



##### 6.5.1.2. X-Axis, Perpendicular Antenna



Test Number: 288-16

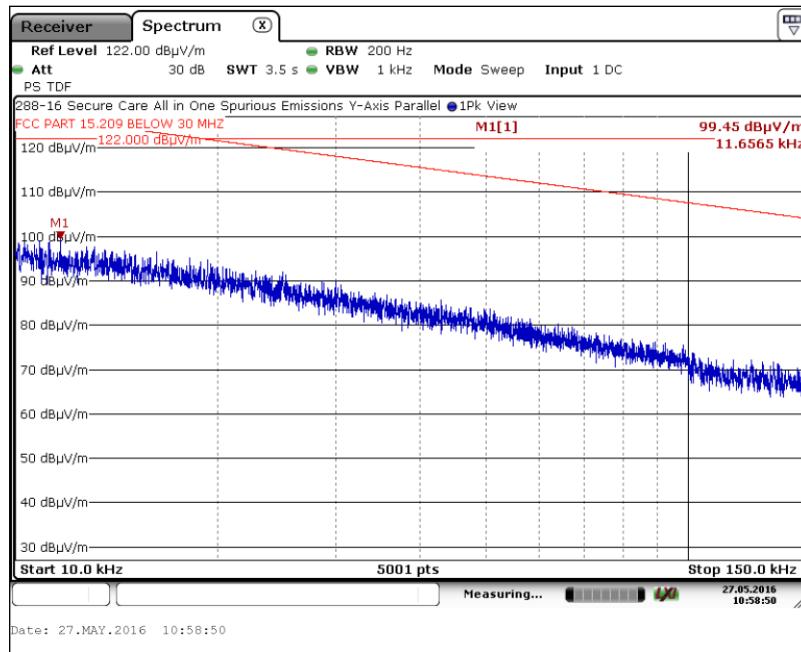
Issue Date: 5/27/2016

## 6. Measurement Data (continued)

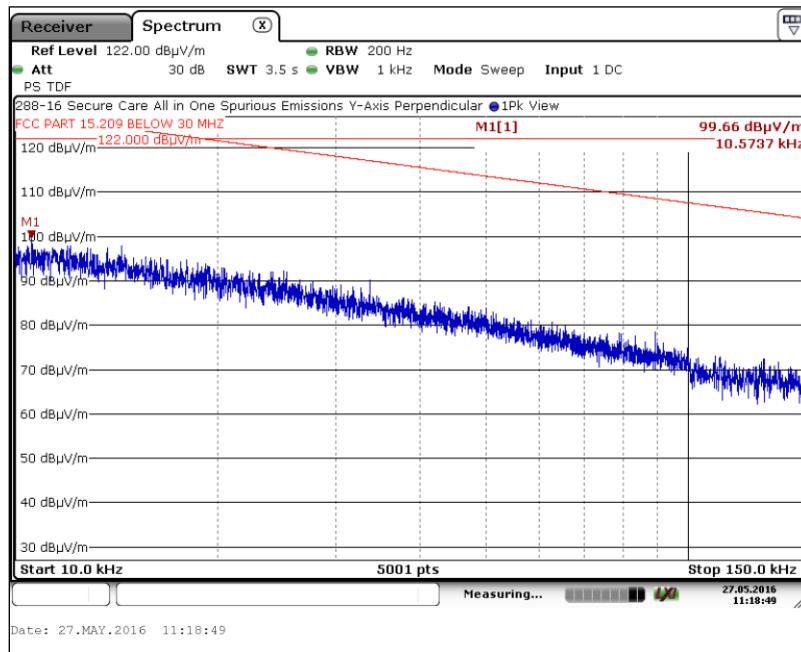
### 6.5. Spurious Radiated Emissions, 10 kHz to 1.0 GHz (15.229, § (c), 15.209) (cont'd)

#### 6.5.1. Spurious Radiated Emissions, 10 kHz to 150 kHz Test Results

##### 6.5.1.3. Y-Axis, Parallel Antenna



##### 6.5.1.4. Y-Axis, Perpendicular Antenna



Test Number: 288-16

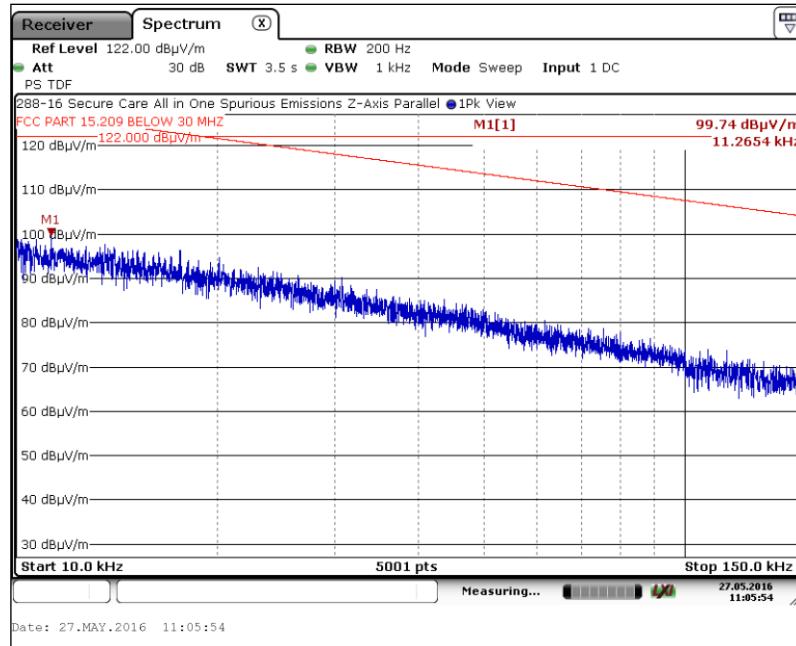
Issue Date: 5/27/2016

## 6. Measurement Data (continued)

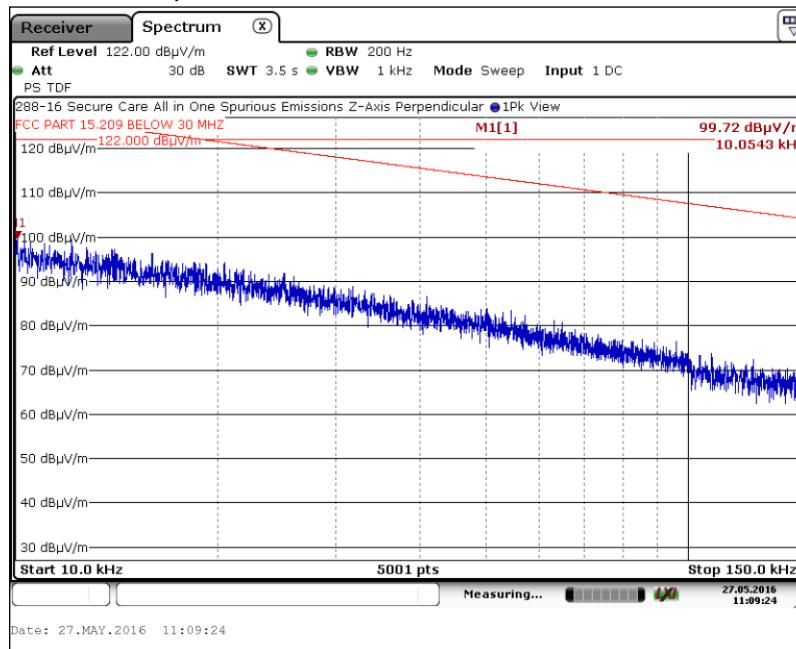
### 6.5. Spurious Radiated Emissions, 10 kHz to 1.0 GHz (15.229, § (c), 15.209) (cont'd)

#### 6.5.1. Spurious Radiated Emissions, 10 kHz to 150 kHz Test Results

##### 6.5.1.5. Z-Axis, Parallel Antenna



##### 6.5.1.6. Z-Axis, Perpendicular Antenna



Test Number: 288-16

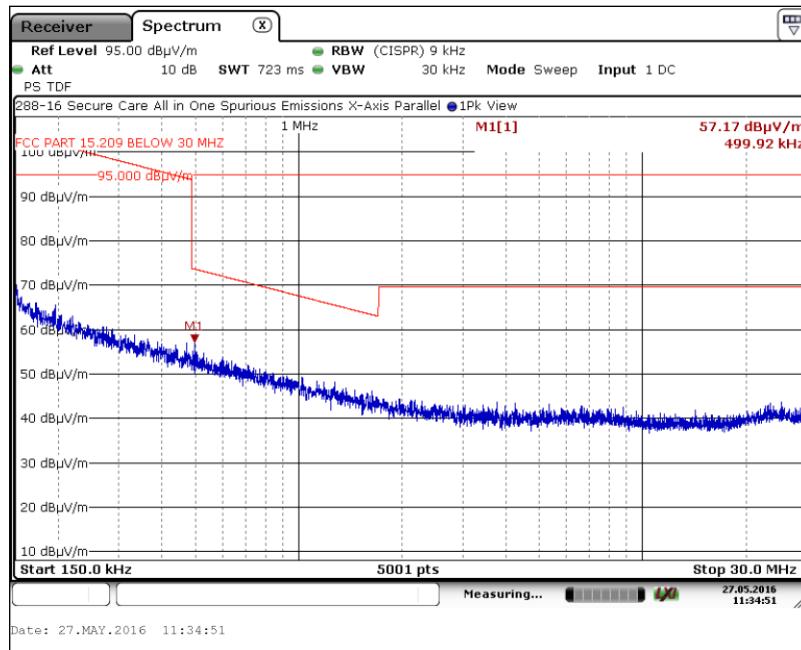
Issue Date: 5/27/2016

## 6. Measurement Data (continued)

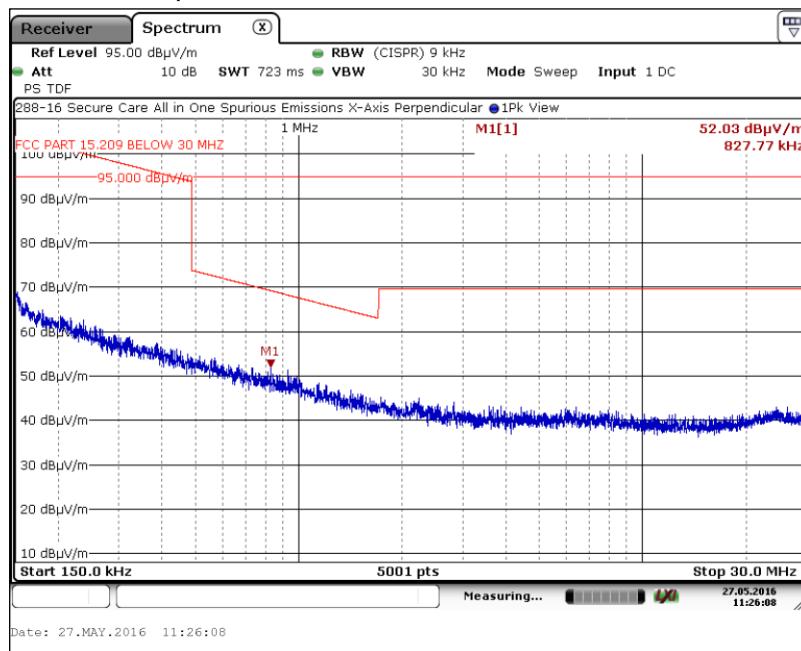
### 6.5. Spurious Radiated Emissions, 10 kHz to 1.0 GHz (15.229, § (c), 15.209) (cont'd)

#### 6.5.2. Spurious Radiated Emissions, 150 kHz to 30 MHz Test Results

##### 6.5.2.1. X-Axis, Parallel Antenna



##### 6.5.2.2. X-Axis, Perpendicular Antenna



Test Number: 288-16

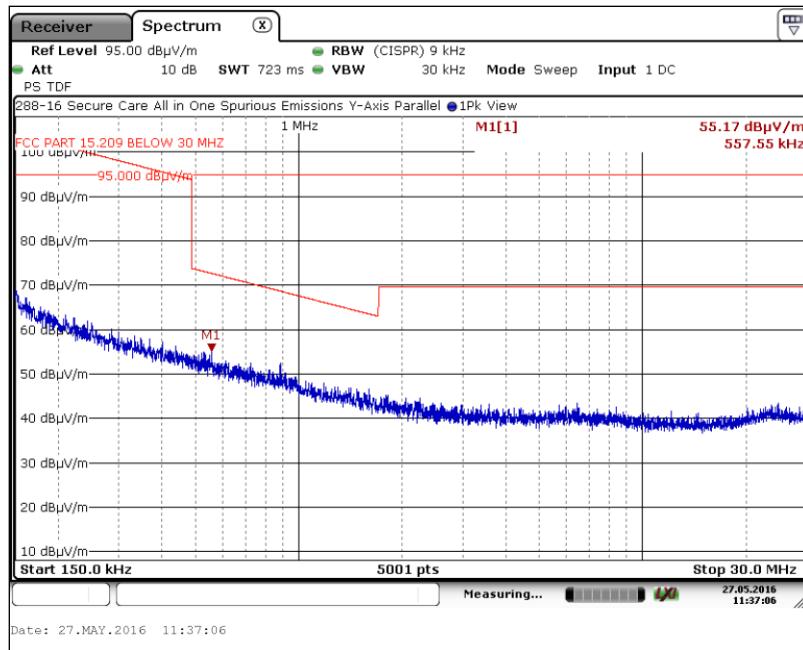
Issue Date: 5/27/2016

## 6. Measurement Data (continued)

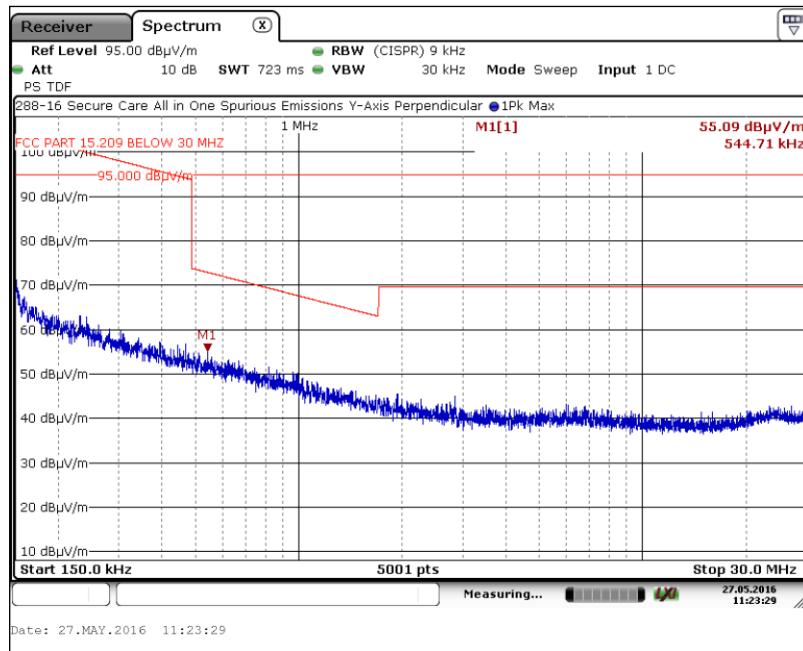
### 6.5. Spurious Radiated Emissions, 10 kHz to 1.0 GHz (15.229, § (c), 15.209) (cont'd)

#### 6.5.2. Spurious Radiated Emissions, 150 kHz to 30 MHz Test Results

##### 6.5.2.3. Y-Axis, Parallel Antenna



##### 6.5.2.4. Y-Axis, Perpendicular Antenna



Test Number: 288-16

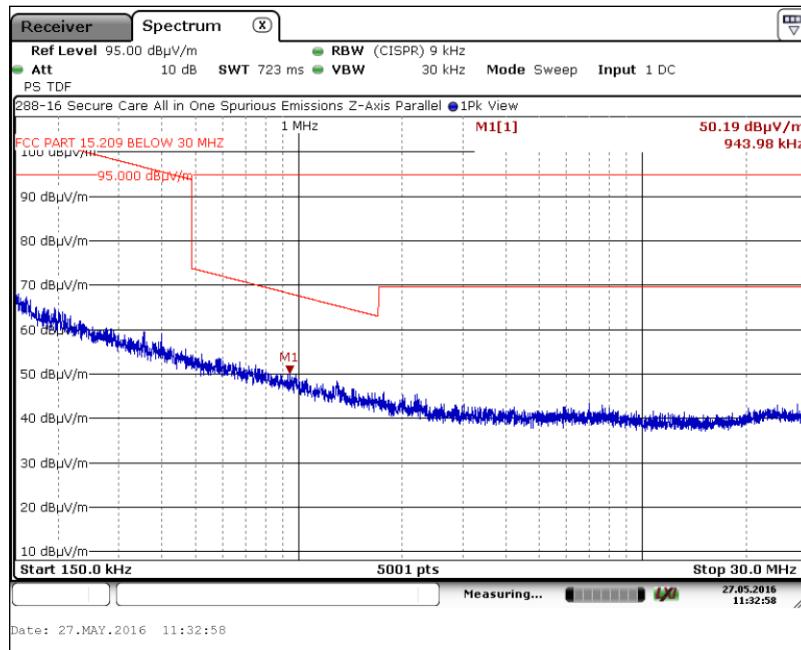
Issue Date: 5/27/2016

## 6. Measurement Data (continued)

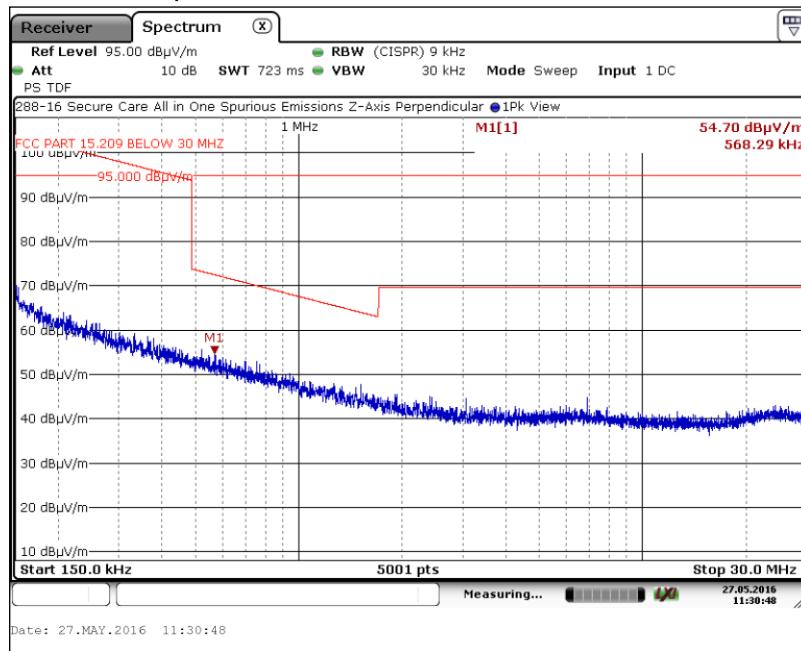
### 6.5. Spurious Radiated Emissions, 10 kHz to 1.0 GHz (15.229, § (c), 15.209) (cont'd)

#### 6.5.2. Spurious Radiated Emissions, 150 kHz to 30 MHz Test Results

##### 6.5.2.5. Z-Axis, Parallel Antenna



##### 6.5.2.6. Z-Axis, Perpendicular Antenna



Test Number: 288-16

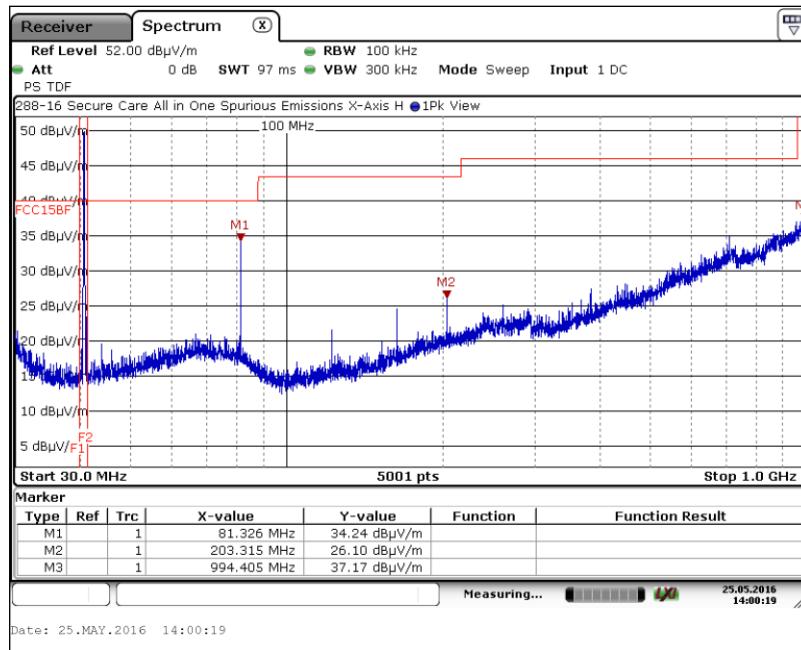
Issue Date: 5/27/2016

## 6. Measurement Data (continued)

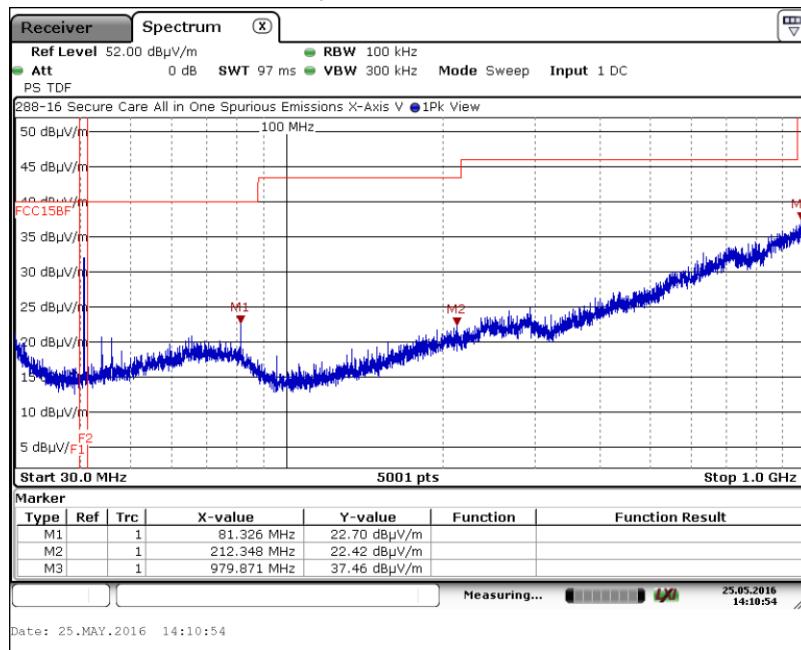
### 6.5. Spurious Radiated Emissions, 10 kHz to 1.0 GHz (15.229, § (c), 15.209) (cont'd)

#### 6.5.3. Spurious Radiated Emissions, 30 MHz to 1 GHz Test Results

##### 6.5.3.1. X-Axis, Horizontal Polarity



##### 6.5.3.2. X-Axis, Vertical Polarity



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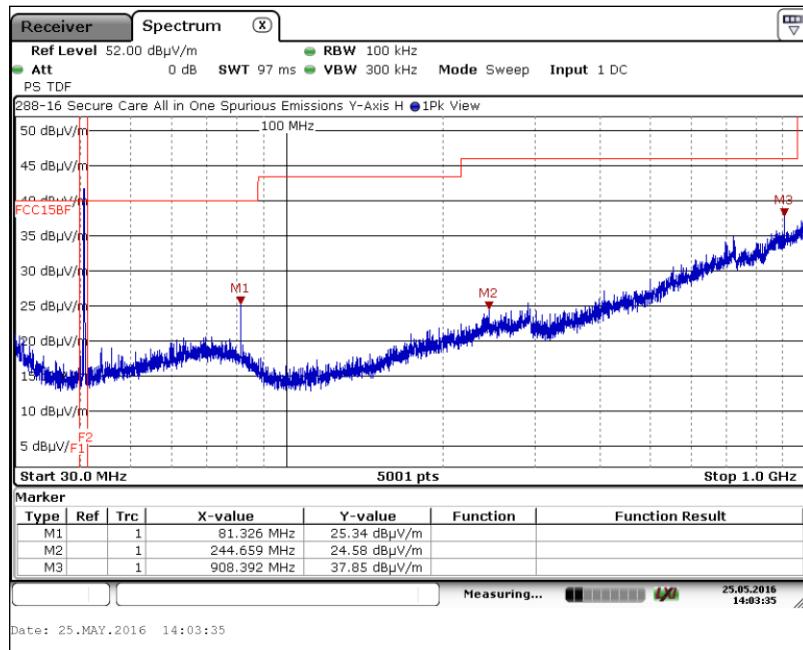
Issue Date: 5/27/2016

## 6. Measurement Data (continued)

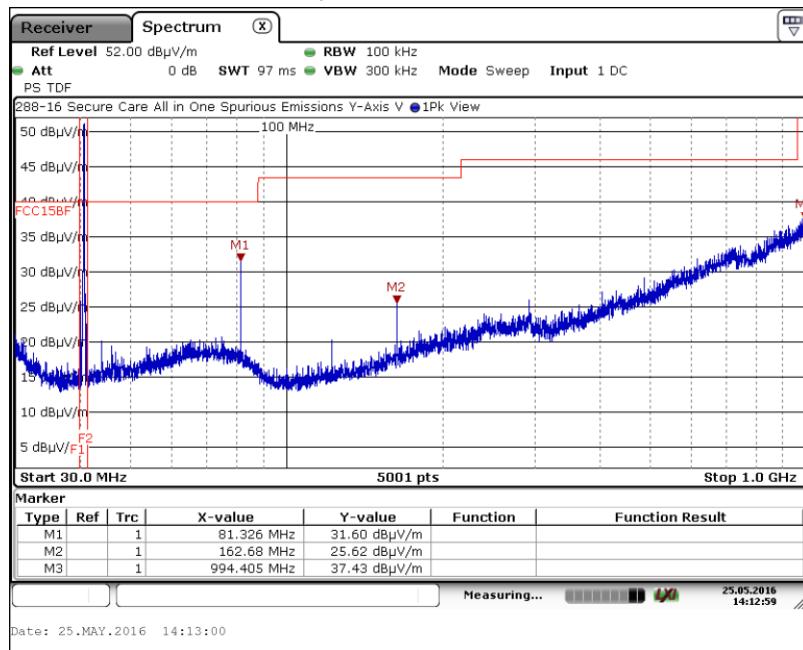
### 6.5. Spurious Radiated Emissions, 10 kHz to 1.0 GHz (15.229, § (c), 15.209) (cont'd)

#### 6.5.3. Spurious Radiated Emissions, 30 MHz to 1 GHz Test Results

##### 6.5.3.3. Y-Axis, Horizontal Polarity



##### 6.5.3.4. Y-Axis, Vertical Polarity



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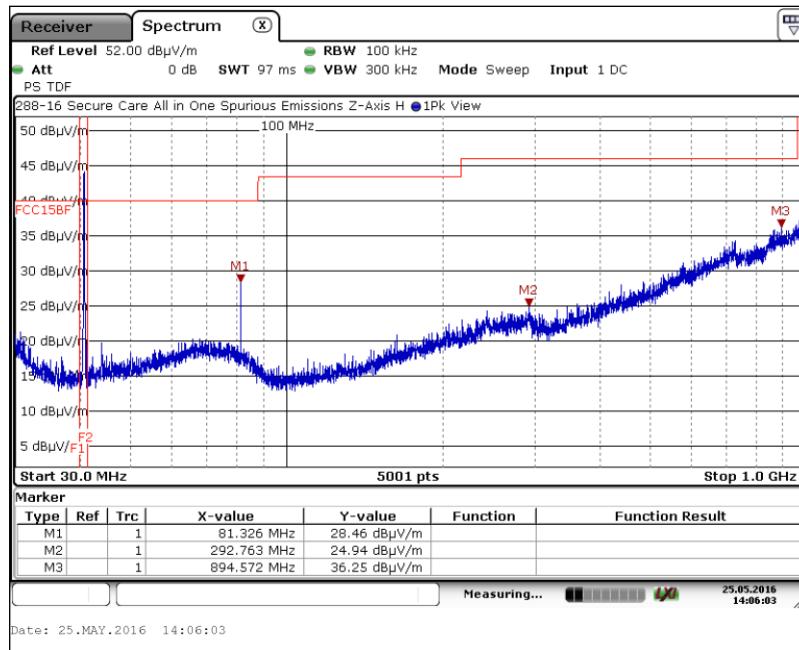
Issue Date: 5/27/2016

## 6. Measurement Data (continued)

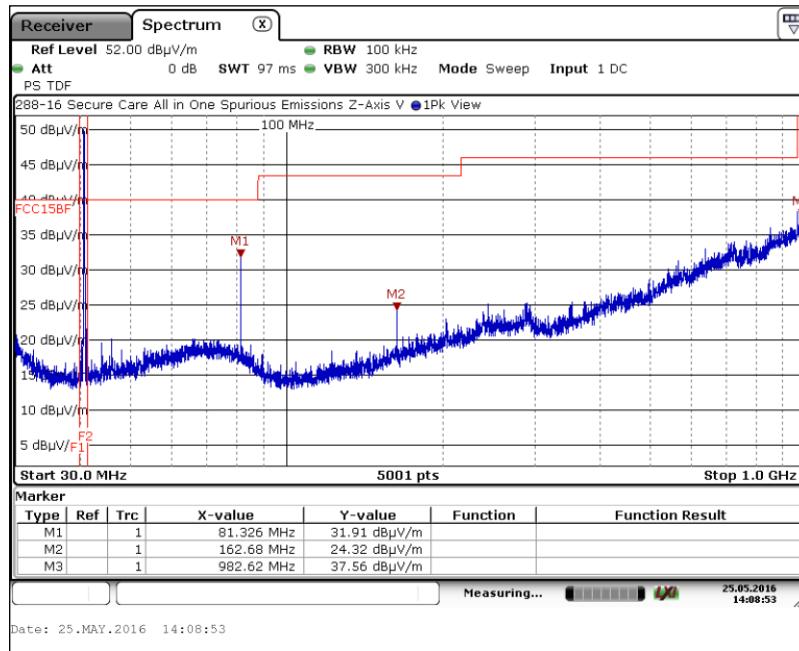
### 6.5. Spurious Radiated Emissions, 10 kHz to 1.0 GHz (15.229, § (c), 15.209) (cont'd)

#### 6.5.3. Spurious Radiated Emissions, 30 MHz to 1 GHz Test Results

##### 6.5.3.5. Z-Axis, Horizontal Polarity



##### 6.5.3.6. Z-Axis, Vertical Polarity



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## 6. Measurement Data (continued)

### 6.6. Frequency Stability (15.229 Section (d))

Requirement: The frequency tolerance of the carrier signal shall be maintained within  $\pm 0.01\%$  of the operating frequency over a temperature variation of -20 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C. For battery operated equipment, the equipment tests shall be performed using a new battery.

Test Note: The Secure Care ENVisionIT® model A20450952 RTLS Non-Cutband is housed in a sealed enclosure with a permanent Lithium battery.

Conclusion: Compliant - The intentional emission falls within the frequency tolerance required by FCC Part 15.229 Section (d).

Assigned Freq.	Temperature	Voltage	Meas. Frequency	Tolerance %	Result
			MHz		
MHz	Deg. C	VDC	MHz		
40.68	Nominal	3 VDC	40.680484	N/A	N/A
	50		40.679700	0.001900	Compliant
	40		40.679917	0.001400	Compliant
	30		40.680083	0.001000	Compliant
	20		40.680450	0.000100	Compliant
	10		40.680417	0.000200	Compliant
	0		40.680200	0.000700	Compliant
	-10		40.680300	0.000500	Compliant
	-20		40.679300	0.001000	Compliant

## 7. Test Setup Photographs

### 7.1. Radiated Emissions Front View



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## 7. Test Setup Photographs

### 7.2. Radiated Emissions Rear View < 30 MHz



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## 7. Test Setup Photographs

### 7.3. Radiated Emissions Rear View 30 MHz – 1 GHz



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## 7. Test Setup Photographs

### 7.5. Frequency Stability Test Setup





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## 8. Test Site Description

Compliance Worldwide is located at 357 Main Street in Sandown, New Hampshire. The test sites at Compliance Worldwide are used for conducted and radiated emissions testing in accordance with Federal Communications Commission (FCC), Industry Canada, and Voluntary Control Council Interference (VCCI) standards. A description of the test sites is on file with the FCC (registration number US1091), Industry Canada (file number IC 3023A-1), and VCCI (Member number 3168), Registration numbers C-3673, G-167, R-3305, T-1809 and A-0208.

Compliance Worldwide is also designated as a Phase 1 CAB under APEC-MRA (US0132) for Australia/New Zealand AS/NZS CISPR 22, Chinese-Taipei (Taiwan) BSMI CNS 13438 and Korea (RRA) KN 22.

The radiated emissions test site is a 3 and 10 meter enclosed open area test site (OATS). Personnel, support equipment and test equipment are located in the basement beneath the OATS ground plane.

The conducted emissions site is part of a 16' x 20' x 12' ferrite tile chamber and uses one of the walls for the vertical ground plane required by EN 55022.

Both sites are designed to test products or systems 1.5 meters W x 1.5 meters L x 2.0 meters H, floor standing or table top.