

COMPLIANCE WORLDWIDE INC. TEST REPORT 147-19

In Accordance with the Requirements of
Innovation, Science and Economic Development Canada RSS 210, Issue 9
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
40.68 MHz Patient Worn 90° Transmitter

FCC ID: KNK-B
IC: 5483A-B

Report Issued on March 29, 2019

Testing performed by



Brian F. Breault
EMC Test Engineer

Reviewed By



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1. Scope

This test report certifies that the Secure Care Products, LLC. 40.68 MHz Patient Worn 90° Transmitter, as tested, meets the Subpart C, FCC Part 15.229 requirements and the ISED Canada 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:** A22270944
- 2.3. **Serial Number:** Device ID 0172
- 2.4. **Description:** 40.68 MHz Patient Worn Transmitter for infant security, wandering patient, & resident protection products. The transmitter in this unit is mounted in a position 90° from the transmitter tested in report 146-19.
- 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 strap needs to be removed to stay in sleep mode.

The "7" key will enable a quick wakeup of the transmitter. The strap must be installed to wake up the transmitter.

3.2. EUT Hardware

Manufacturer	Model/Part # / Options	Serial Number	Volts	Freq (Hz)	Description/Function
Secure Care Products, LLC.	Patient Worn Transmitter	ID 0172	3.0	DC	Patient protection transmitter for infant security, wandering patient, & resident protection products.

3.3. Support Equipment

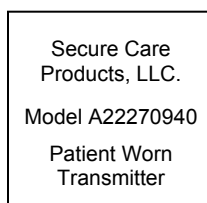
Manufacturer	Model/Part # / Options	Serial Number	Input Voltage	Freq (Hz)	Description/Function
Secure Care Products, LLC.	Stat40	0117300128	N/A	-	For setting up the DUT operation. Not used during testing.

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 and Software Used to Perform Test

Device	Manufacturer	Model No.	Serial No.	Cal Due	Interval
EMI Test Receiver, 9kHz - 7GHz ¹	Rohde & Schwarz	ESR7	101156	9/10/2020	2 Years
EMI Test Receiver, 10 Hz - 7GHz ¹	Rohde & Schwarz	ESR7	101770	10/3/2020	2 Years
Spectrum Analyzer, 2 Hz to 26.5 GHz ²	Rohde & Schwarz	FSW26	102057	9/13/2020	2 Years
Spectrum Analyzer, 9 kHz to 40 GHz ³	Rohde & Schwarz	FSV40	100899	9/10/2020	2 Years
EMI Receiver 9 kHz - 1 GHz	Hewlett Packard	8546A	3650A00360	9/11/2020	2 Years
Loop Antenna 9 kHz - 30 MHz	EMCO	6512	9309-1139	1/28/2022	3 Years
Biconilog Antenna, 30 MHz - 2 GHz	Sunol Sciences	JB1	A050913	6/3/2019	2 Years
Horn Antenna, 960 MHz to 18 GHz	Electro-Metrics	EM-6961	6337	10/3/2020	2 Years
Preamplifier, 1 GHz to 26.5 GHz	Hewlett Packard	8449B	3008A01323	9/11/2020	2 Years
Digital Multimeter w/ Thermocouple	Fluke	187	83030167	3/30/2019	1 Year
Digital Barometer	Control Company	4195	ID236	4/3/2020	2 Years
Temperature Chamber	Associated Environmental	SD-308	10782	CNR	

¹ ESR7 Firmware revision: V3.46 SP1, Date installed: 12/22/2018

² FSW26 Firmware revision: V4.30 SP1, Date installed: 02/22/2019

³ FSV40 Firmware revision: V2.30 SP4, Date installed: 05/04/2016

Previous V3.36 SP2, installed 12/5/2018.

Previous V3.36 SP2, installed 10/26/2018.

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

4. Measurements Parameters (continued)

4.2 Measurement & Equipment Setup

Test Dates:	3/1/2019 to 3/22/2019
Test Engineer:	Brian Breault, Sean Defelice
Site Temperature (°C):	21.4
Relative Humidity (%RH):	32
Frequency Range:	30 kHz to 1 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

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

Preliminary measurements were made with the cut-band strap installed and removed. It was determined that the highest emissions were achieved with the strap installed. Based on this criterion, all field strength measurements were made with the strap installed.

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

X Axis Upright (Strap toward rear)
Y Axis Horizontal on left edge
Z Axis Face Up (Strap down)



Y-Axis

Front of unit is facing the antenna at 0°
Front of unit is facing the antenna at 0°



Z-Axis

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

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

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

5.3. Choice of Operating Frequencies

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

6. Measurement Summary

Test Requirement	FCC Requirement	ISED Requirement	Test Report Section	Result	Comment
Antenna Requirement	15.203	RSS-210 A1.1	7.1	Compliant	The antenna is enclosed within the device under test.
Emission Bandwidth	C63.10-2013 §6.9	Not Required	7.2	Compliant	
Bandwidth Requirement in the Band 40.66 MHz - 40.70 MHz	Not Required	RSS-210 B.7(b)	7.3	Compliant	
Radiated Field Strength of Fundamental	15.229 (b)	RSS-210 B.7	7.4	Compliant	
Spurious and Harmonic Radiated Emissions	15.231 (b)(3), 15.209	RSS-210 B.7(c & d) RSS-GEN 7.3	7.5	Compliant	
Frequency Stability	15.229 (d)	RSS-210 B.7(e)	7.6	Compliant	

7. Measurement Data

7.1. 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.

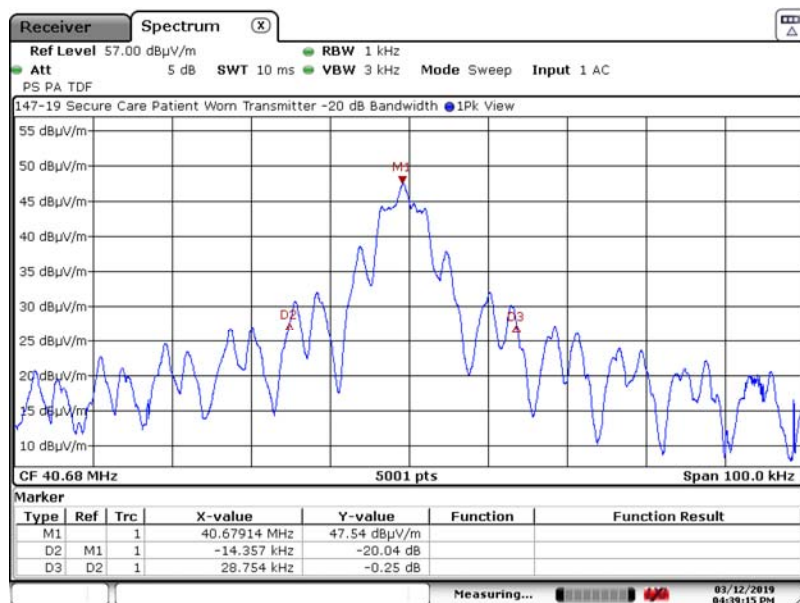
Status: The antenna utilized by the device under test is contained inside a sealed unit.

7.2. 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



Date: 12.MAR.2019 16:39:15

7. Measurement Data (continued)

7.3. Bandwidth Requirement in the Band 40.66 MHz - 40.70 MHz

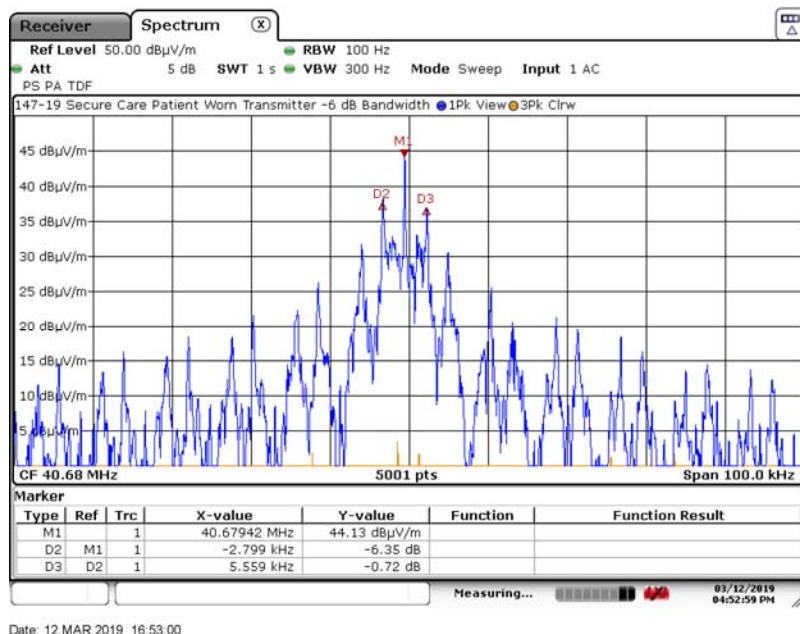
(ISED RSS-210 2.7, RSS-Gen 4.6.2)

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: The Emissions from the DUT meets the above requirement.

Fundamental Frequency	-6 dB Bandwidth		Band Edges		Result
	Lower Edge	Upper Edge	Lower Edge	Upper Edge	
(MHz)	(MHz)	(MHz)	(MHz)	(MHz)	
40.68	40.676621	40.673861	40.66	40.70	Compliant



7. Measurement Data (continued)

7.4. 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 ($\mu\text{V/m}$)
40.66 – 40.70	1000 $\mu\text{V/m}$

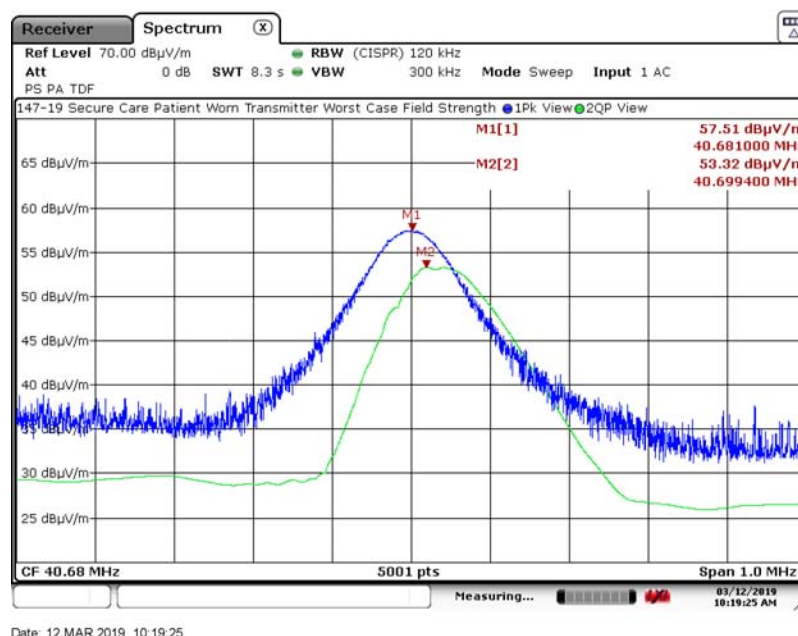
Fundamental Limit at 40.68 MHz = 1000 $\mu\text{V/m}$ = 60.00 dB $\mu\text{V/m}$

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

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

7.3.1. Worst Case Radiated Field Strength of Fundamental

Frequency (MHz)	Amplitude ¹ (dB $\mu\text{V/m}$)		Limit (dB $\mu\text{V/m}$)		Margin (dB)		Ant Polarity	Ant Height	Turntable Azimuth	Result
	Peak	QP	Peak	QP	Peak	QP	H/V	cm	Deg	
40.68	57.51	53.32	80.00	60.00	-22.49	-6.68	V	100	170	Compliant



7. Measurement Data (continued)

7.5. Spurious & Harmonic Radiated Emissions, 30 MHz to 1.0 GHz (15.229 Section (c), 15.209, ISED B.7 (c), ISED B.7 (d))

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.

Harmonic radiated emissions not exceed 225 $\mu\text{V}/\text{m}$ at 3 m measured with a quasi-peak detector.

Procedure: This test was performed in accordance with the information provided in ANSI C63.10-2013, Section 7.5.

Test Notes: Section 7.5.3 screen captures test notes:

1. The emission marked by the pair of vertical cursors in the section 7.5.3 screen captures is the 40.68 MHz fundamental intentional radiator frequency.
2. The emission marked by marker M1 is the 433.92 MHz intentional emission controlling the door functions. This transmitter is detailed in a separate test report. In some of the plots, the second harmonic of this frequency is also marked.

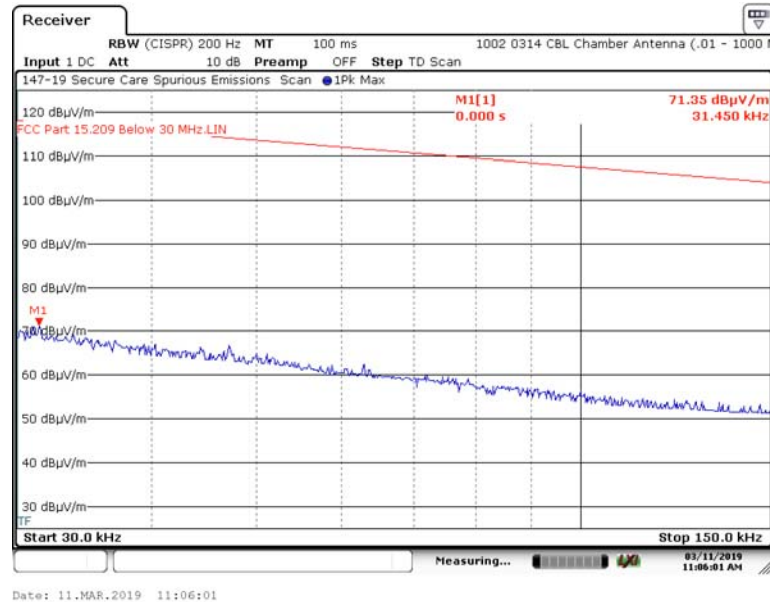
Conclusion: Compliant. The Emissions from the DUT did not exceed the field strength levels specified in FCC Part 15.209.

7. Measurement Data (continued)

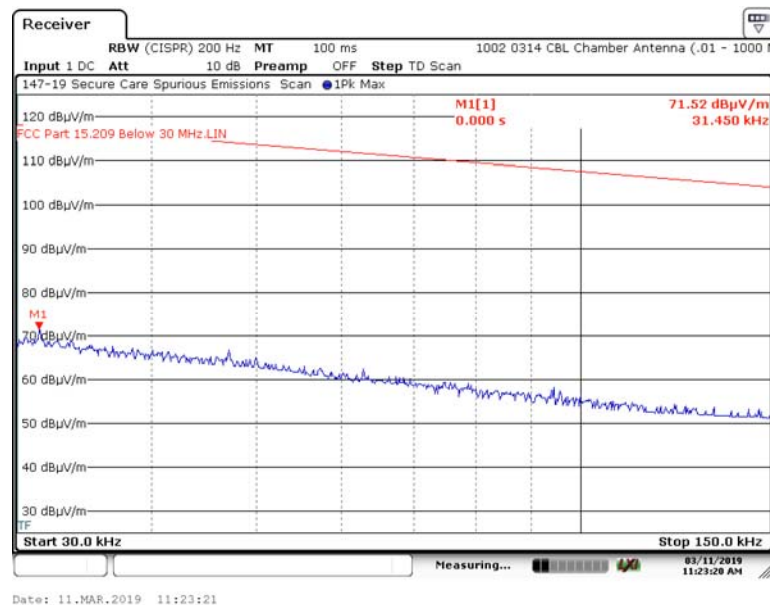
7.5. Spurious & Harmonic Radiated Emissions, 30 MHz to 1.0 GHz (15.229 Section (c), 15.209, ISSED B.7 (c), ISSED B.7 (d))

7.5.1. Spurious Radiated Emissions, 30 kHz to 150 kHz Test Results

7.5.1.1. X-Axis, Parallel Antenna



7.5.1.2. X-Axis, Perpendicular Antenna

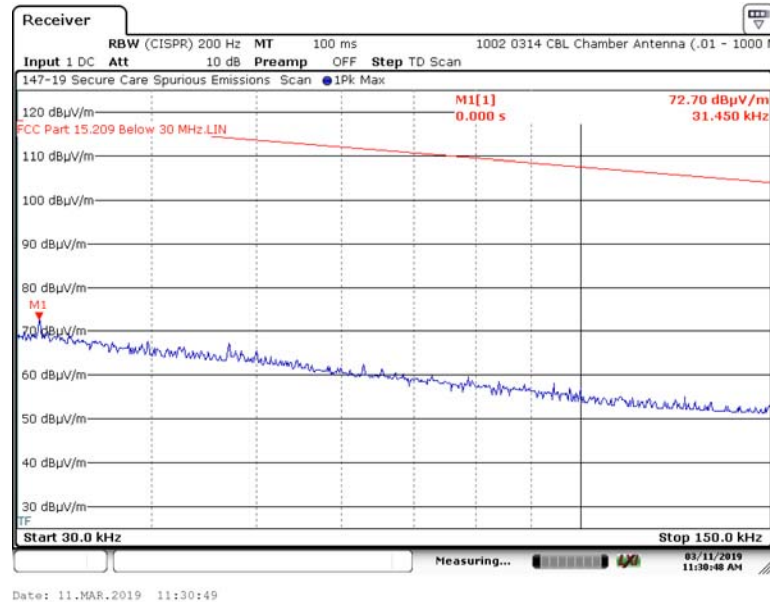


7. Measurement Data (continued)

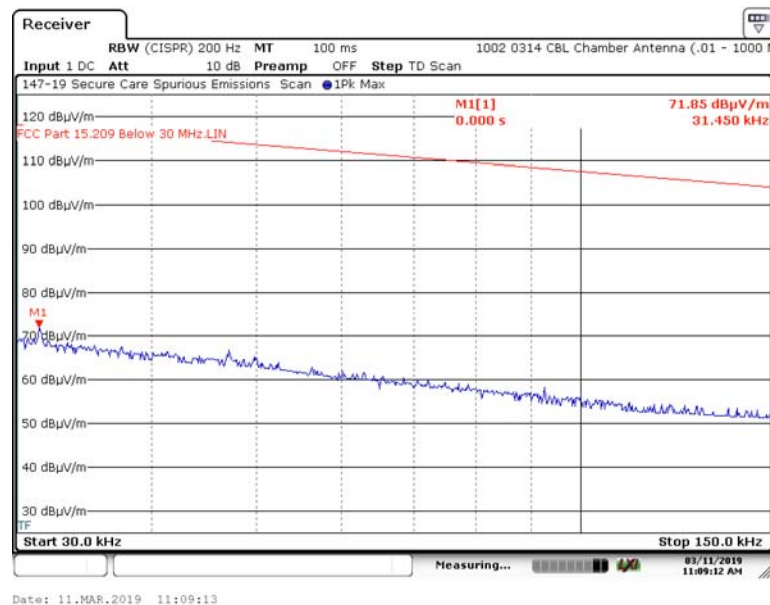
7.5. Spurious & Harmonic Radiated Emissions, 30 MHz to 1.0 GHz (15.229 Section (c), 15.209, ISED B.7 (c), ISED B.7 (d))

7.5.1. Spurious Radiated Emissions, 30 kHz to 150 kHz Test Results

7.5.1.3. X-Axis, Ground Parallel Antenna



7.5.1.4. Y-Axis, Parallel Antenna

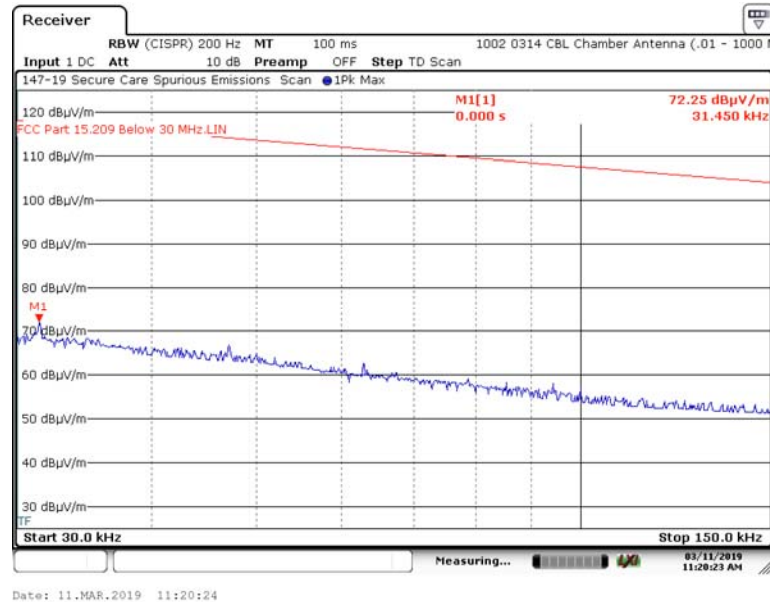


7. Measurement Data (continued)

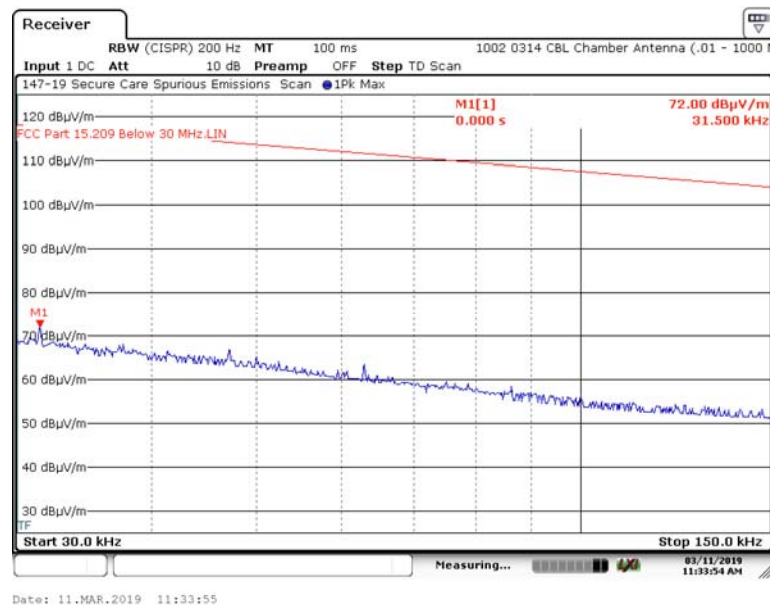
7.5. Spurious & Harmonic Radiated Emissions, 30 MHz to 1.0 GHz (15.229 Section (c), 15.209, ISSED B.7 (c), ISSED B.7 (d))

7.5.1. Spurious Radiated Emissions, 30 kHz to 150 kHz Test Results

7.5.1.5. Y-Axis, Perpendicular Antenna



7.5.1.6. Y-Axis, Ground Parallel Antenna

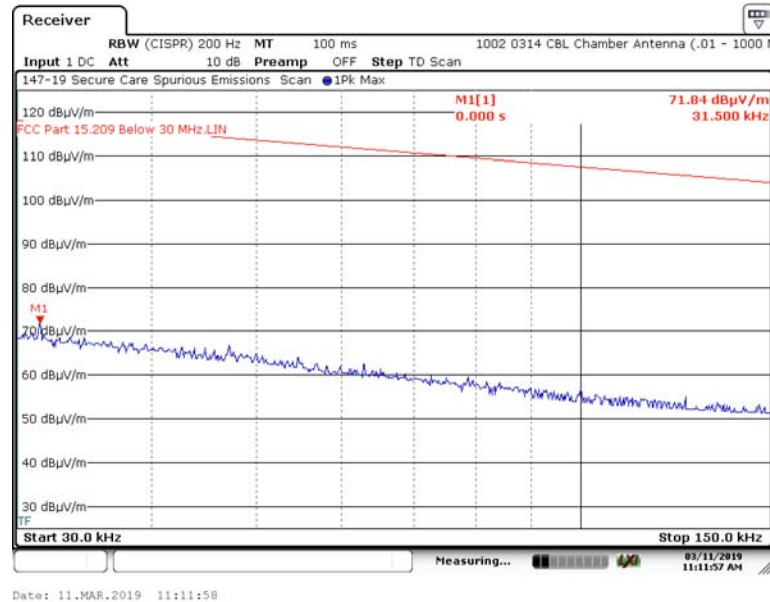


7. Measurement Data (continued)

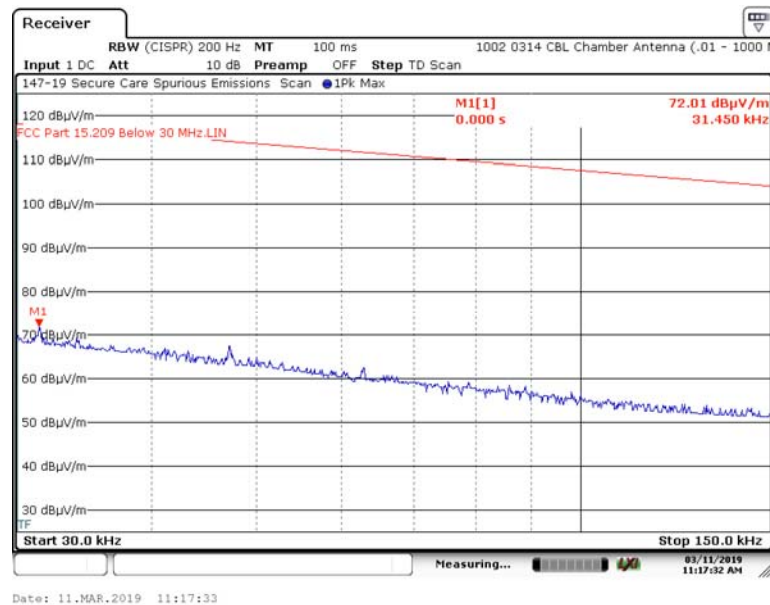
7.5. Spurious & Harmonic Radiated Emissions, 30 MHz to 1.0 GHz (15.229 Section (c), 15.209, ISSED B.7 (c), ISSED B.7 (d))

7.5.1. Spurious Radiated Emissions, 30 kHz to 150 kHz Test Results

7.5.1.7. Z-Axis, Parallel Antenna



7.5.1.8. Z-Axis, Perpendicular Antenna

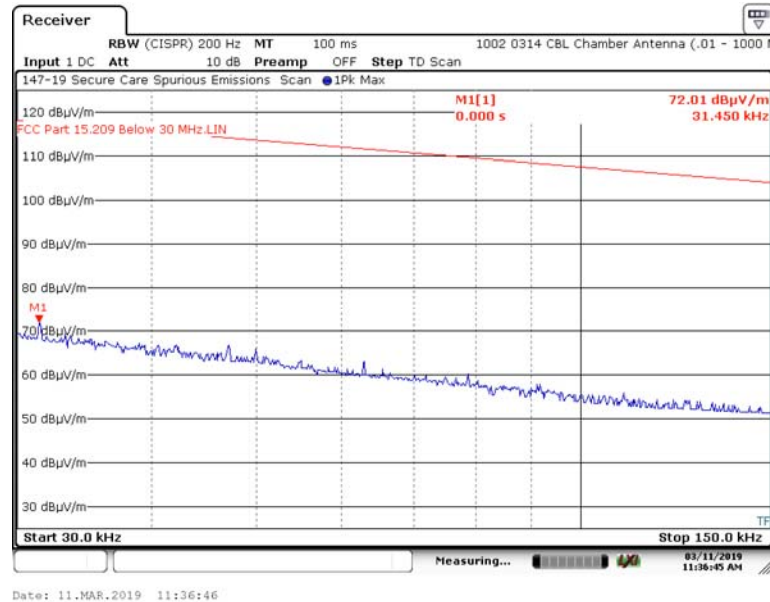


7. Measurement Data (continued)

7.5. Spurious & Harmonic Radiated Emissions, 30 MHz to 1.0 GHz (15.229 Section (c), 15.209, ISED B.7 (c), ISED B.7 (d))

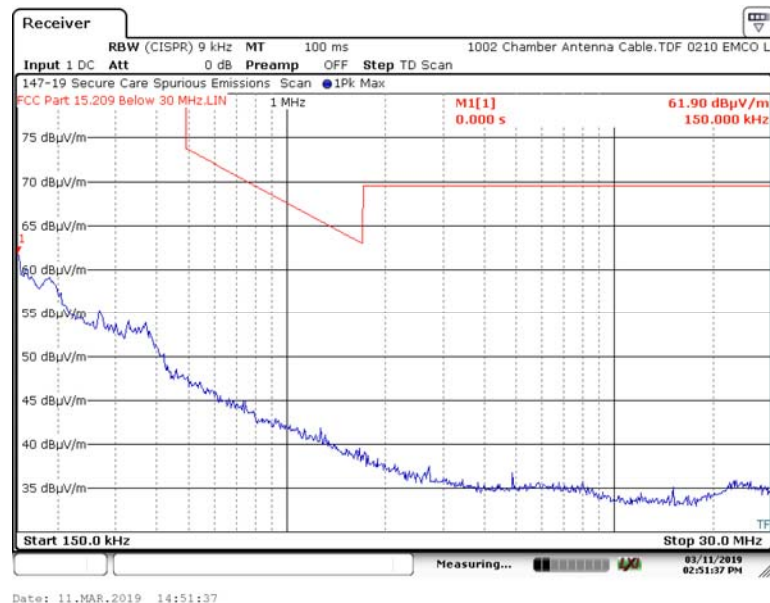
7.5.1. Spurious Radiated Emissions, 30 kHz to 150 kHz Test Results

7.5.1.9. Z-Axis, Ground Parallel Antenna



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

7.5.2.1. X-Axis, Parallel Antenna

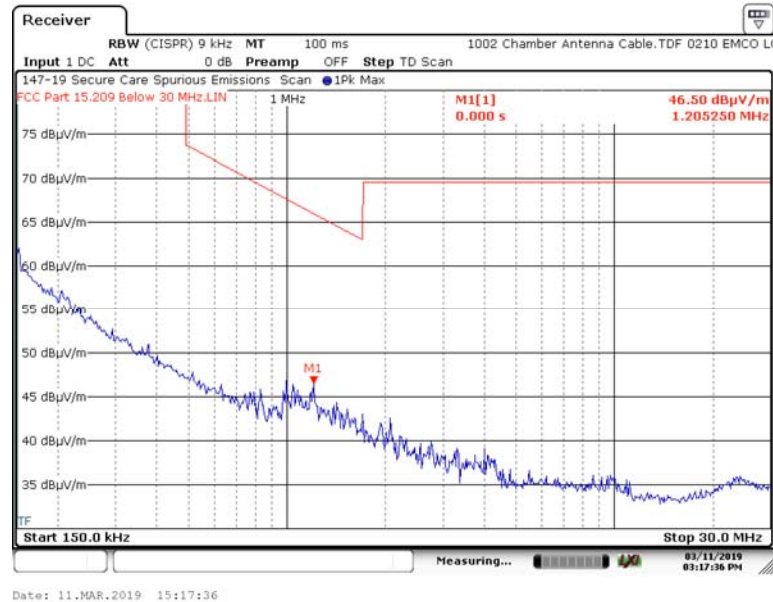


7. Measurement Data (continued)

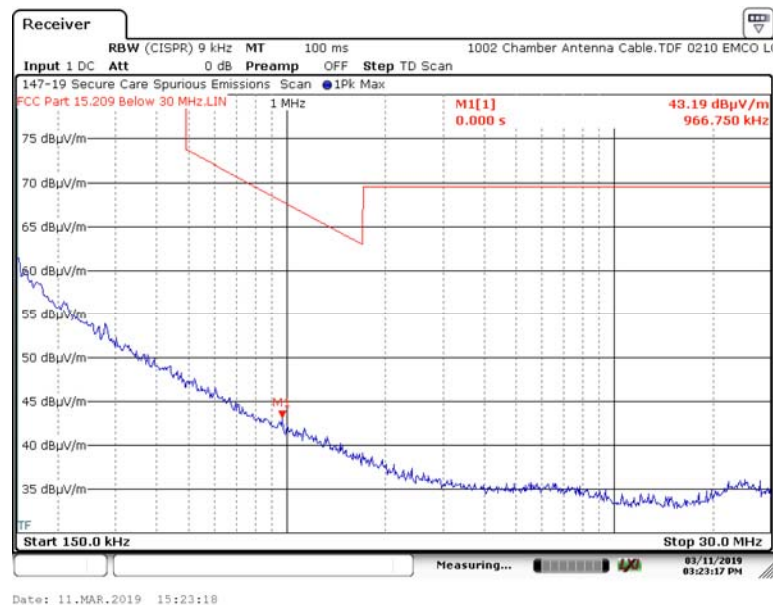
7.5. Spurious & Harmonic Radiated Emissions, 30 MHz to 1.0 GHz (15.229 Section (c), 15.209, ISED B.7 (c), ISED B.7 (d))

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

7.5.2.2. X-Axis, Perpendicular Antenna



7.5.2.3. X-Axis, Ground Parallel Antenna

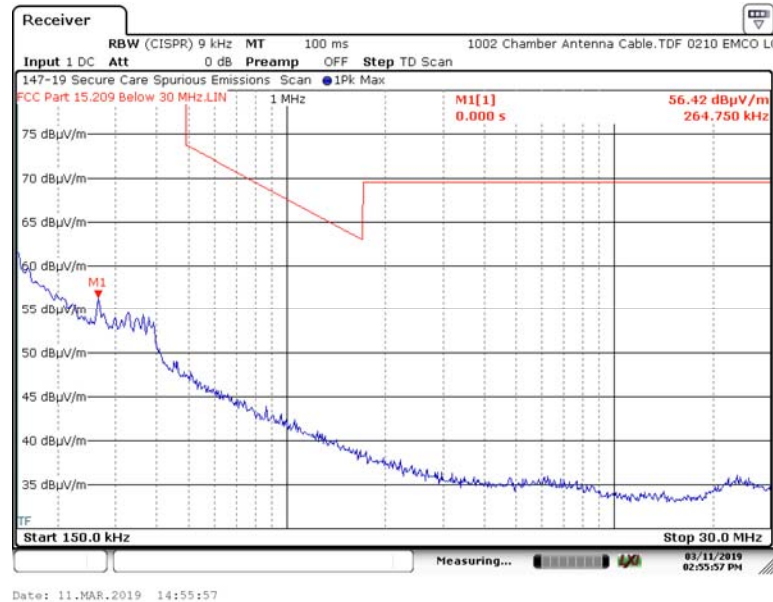


7. Measurement Data (continued)

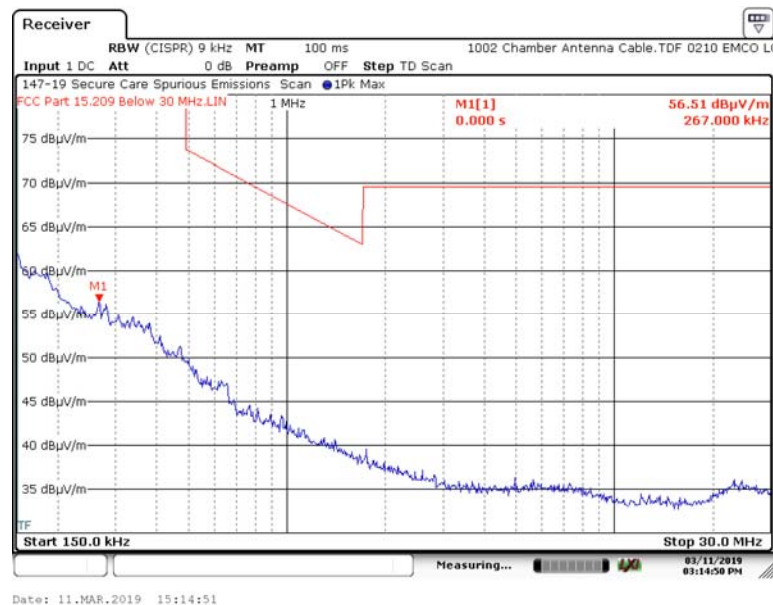
7.5. Spurious & Harmonic Radiated Emissions, 30 MHz to 1.0 GHz (15.229 Section (c), 15.209, ISED B.7 (c), ISED B.7 (d))

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

7.5.2.4. Y-Axis, Parallel Antenna



7.5.2.5. Y-Axis, Perpendicular Antenna

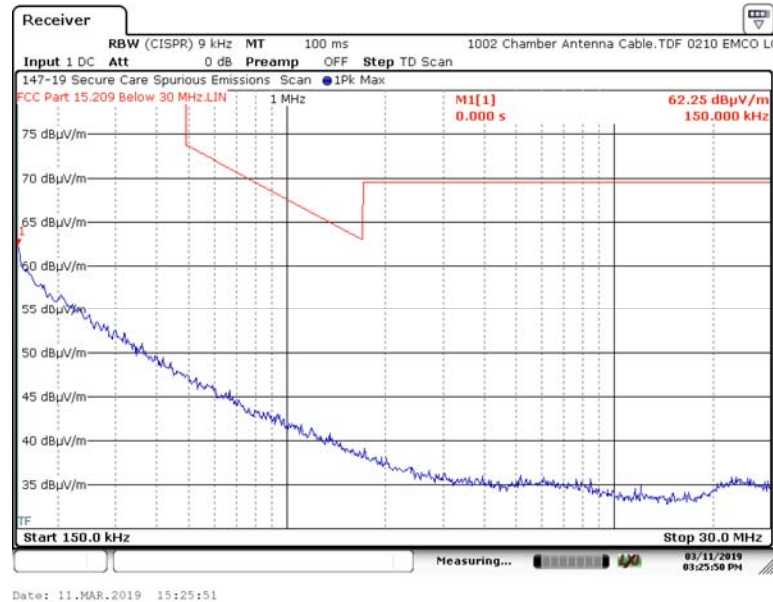


7. Measurement Data (continued)

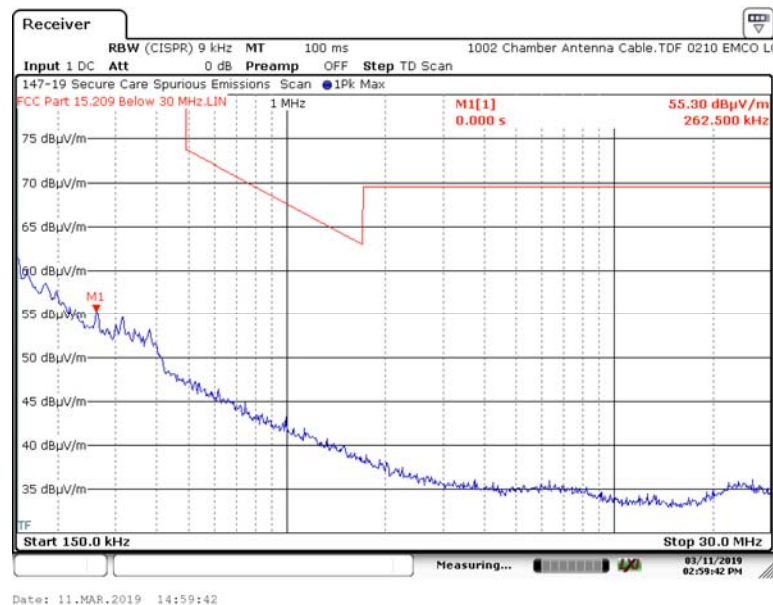
7.5. Spurious & Harmonic Radiated Emissions, 30 MHz to 1.0 GHz (15.229 Section (c), 15.209, ISED B.7 (c), ISED B.7 (d))

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

7.5.2.6. Y-Axis, Ground Parallel Antenna



7.5.2.7. Z-Axis, Parallel Antenna

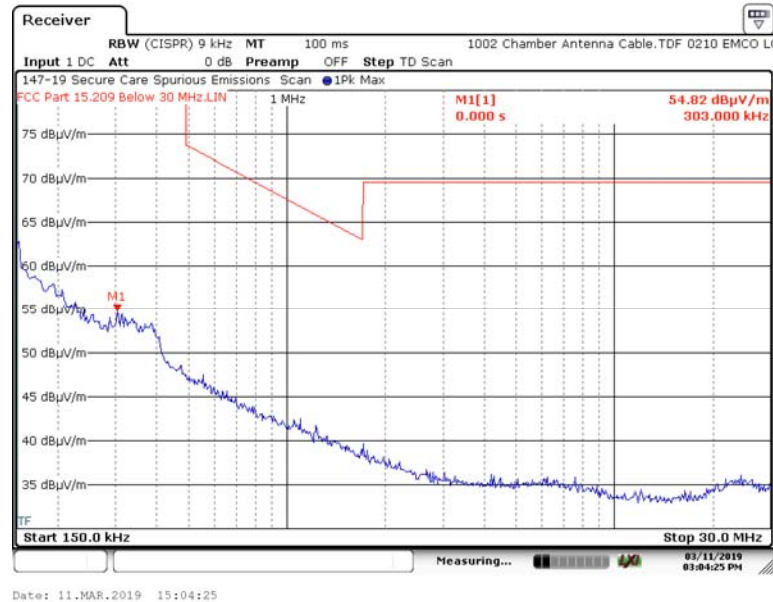


7. Measurement Data (continued)

7.5. Spurious & Harmonic Radiated Emissions, 30 MHz to 1.0 GHz (15.229 Section (c), 15.209, ISED B.7 (c), ISED B.7 (d))

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

7.5.2.8. Z-Axis, Perpendicular Antenna



7.5.2.9. Z-Axis, Ground Parallel Antenna

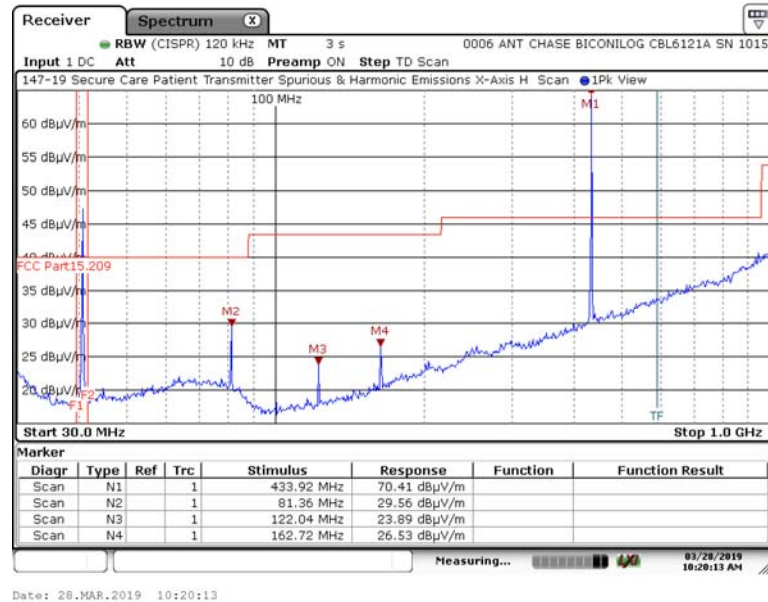


7. Measurement Data (continued)

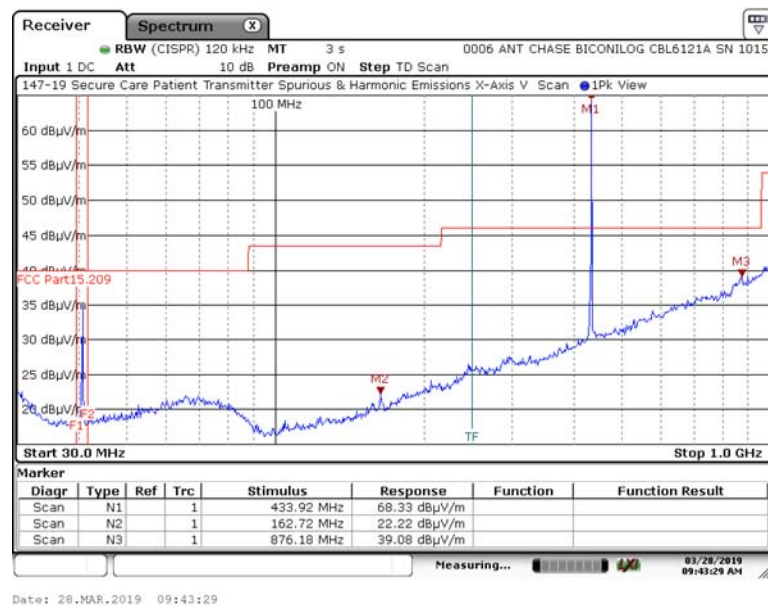
7.5. Spurious & Harmonic Radiated Emissions, 30 MHz to 1.0 GHz (15.229 Section (c), 15.209, ISSED B.7 (c), ISSED B.7 (d))

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

7.5.3.1. X-Axis, Horizontal Polarity



7.5.3.2. X-Axis, Vertical Polarity

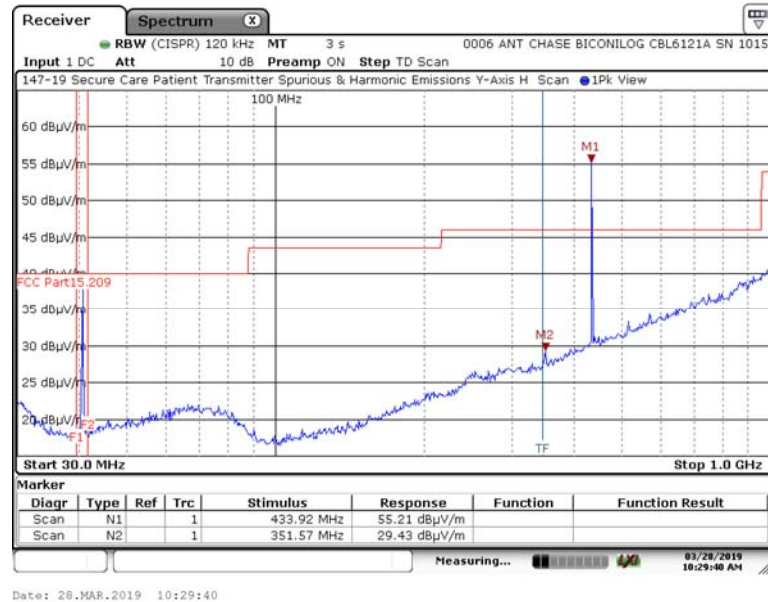


7. Measurement Data (continued)

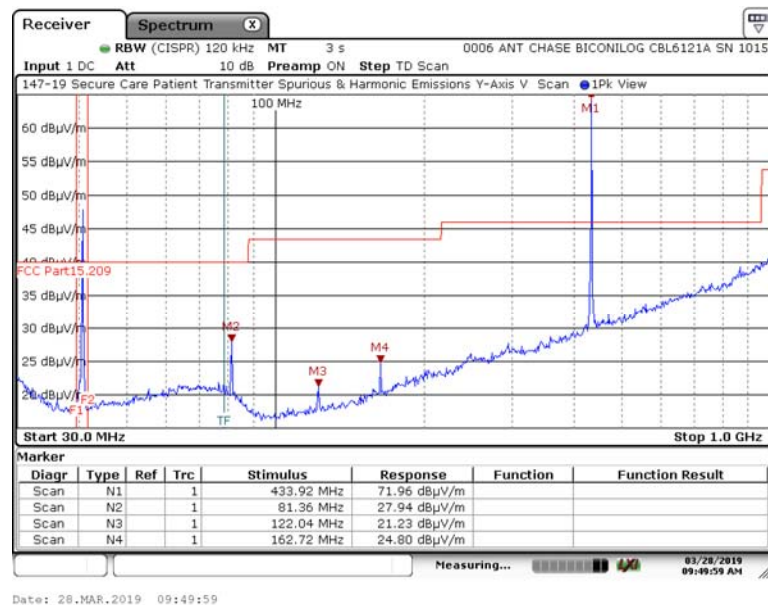
7.5. Spurious & Harmonic Radiated Emissions, 30 MHz to 1.0 GHz (15.229 Section (c), 15.209, ISED B.7 (c), ISED B.7 (d))

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

7.5.3.3. Y-Axis, Horizontal Polarity



7.5.3.4. Y-Axis, Vertical Polarity

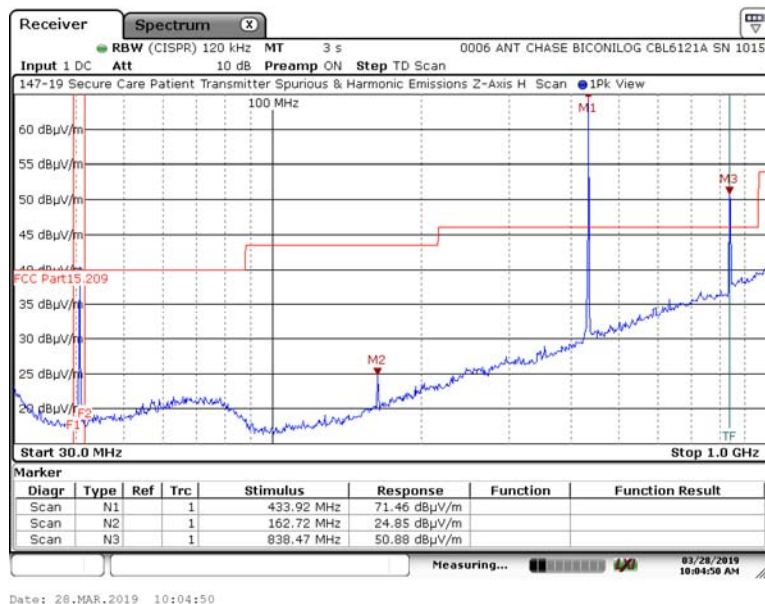


7. Measurement Data (continued)

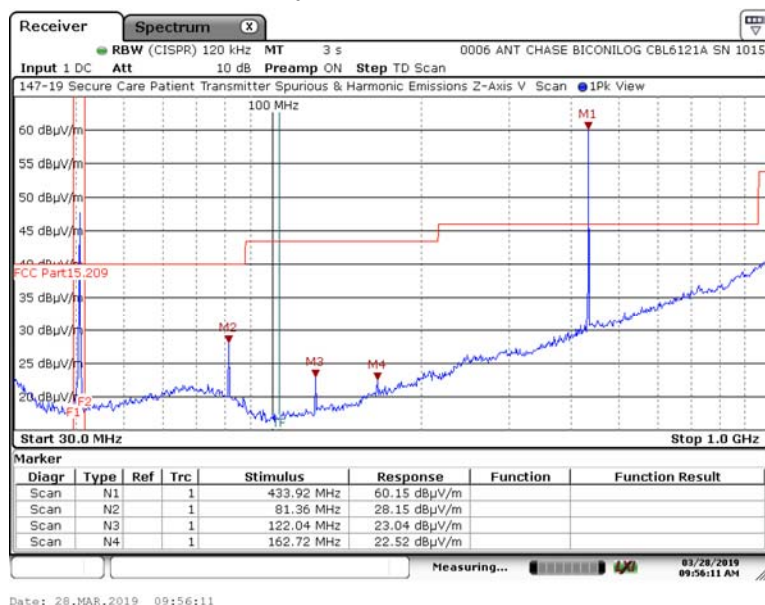
7.5. Spurious & Harmonic Radiated Emissions, 30 MHz to 1.0 GHz (15.229 Section (c), 15.209, ISED B.7 (c), ISED B.7 (d))

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

7.5.3.5. Z-Axis, Horizontal Polarity



7.5.3.6. Z-Axis, Vertical Polarity



7. Measurement Data (continued)

7.6. 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 All in One is housed in a sealed enclosure with a permanent Lithium battery.

Conclusion: 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	Deg. C	VDC	MHz		
40.68	Nominal	3 VDC	40.679821	N/A	N/A
	50		40.677751	0.005100	Compliant
	40		40.679776	0.000100	Compliant
	30		40.679026	0.002000	Compliant
	20		40.679161	0.001600	Compliant
	10		40.679625	0.000500	Compliant
	0		40.679641	0.000400	Compliant
	-10		40.678081	0.004300	Compliant
	-20		40.678411	0.001600	Compliant

8. Test Setup Photographs

8.1. Radiated Emissions Front View



8. Test Setup Photographs

8.2. Radiated Emissions Rear View < 30 MHz



8. Test Setup Photographs

8.3. Radiated Emissions Rear View 30 MHz – 1 GHz



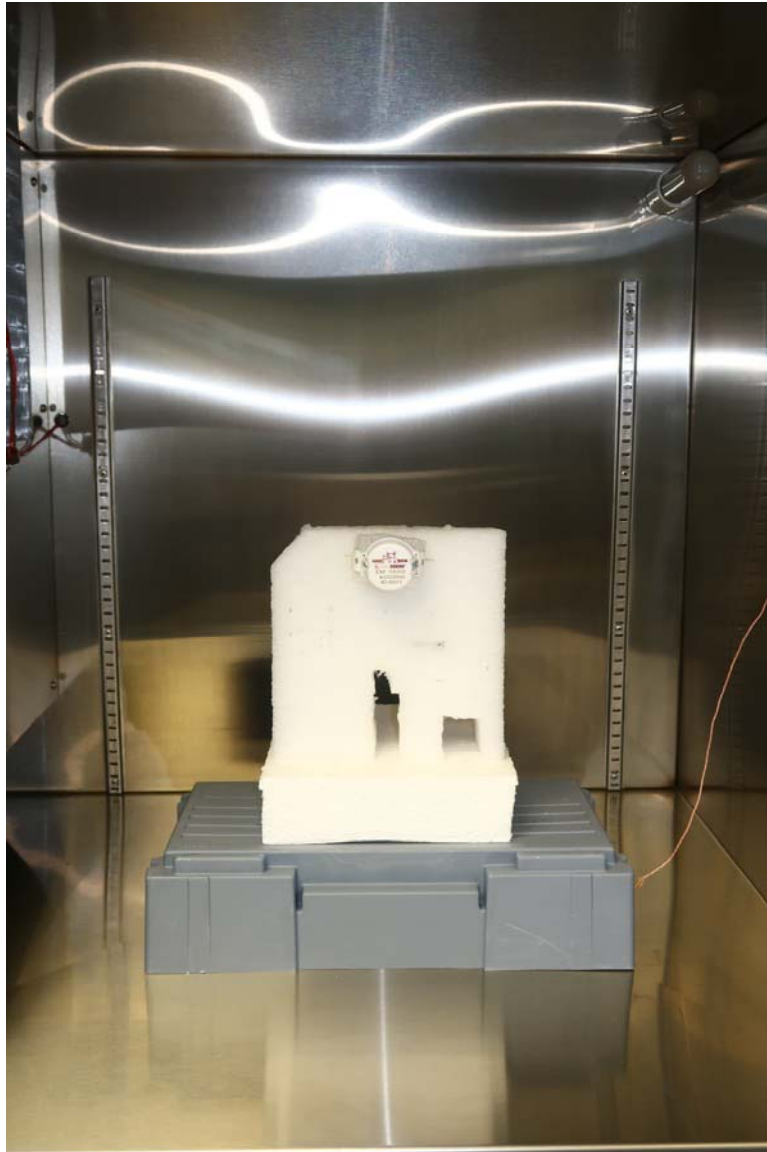
8. Test Setup Photographs

8.4. Frequency Stability Test Setup



8. Test Setup Photographs

8.5. Frequency Stability device Under Test



9. 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 the Federal Communications Commission (FCC) and Industry Canada standards. Through our American Association for Laboratory Accreditation (A2LA) ISO Guide 17025:2005 Accreditation our test sites are designated with the FCC (designation number **US1091**), Industry Canada (file number **IC 3023A-1**) and VCCI (Member number 3168) under registration number 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 11, KN 13, KN 14-1, KN 22, KN 32, KN 61000-6-3, KN 61000-6-4.

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. A second conducted emissions site is also located in the basement of the OATS site with a 2.3 x 2.5 meter ground plane and a 2.4 x 2.4 meter vertical wall.

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.