
**COMPLIANCE WORLDWIDE INC.
TEST REPORT 170-11**

**In Accordance with the Requirements of
Federal Communications Commission CFR Title 47 Part 15.249, Subpart C
Industry Canada RSS 210, Issue 8**

**Low Power License-Exempt Radio Communication Devices
Intentional Radiators**

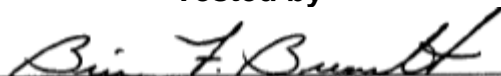
**Issued to
Philips Medical Systems
3000 Minuteman Drive
Andover, MA 01810
978-659-2800**

**for the
M3813C Steady Scale**

**FCC ID: PQC-M3813C
IC: 3549A-3813C**

Report Issued on March 11, 2011

Tested by



Brian F. Breault

Reviewed by



Larry K. Stillings

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1. Scope

This test report certifies that the Philips M3813C Steady Scale, as tested, meets the FCC Part 15, Subpart C and Industry Canada RSS 210, Issue 8 requirements. 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

2.2. Model Number: M3813C Steady Scale

2.3. Serial Number: CH51010005

2.4. Description: The Philips M3813C Steady Scale is a redesigned version of the existing M3813B standard scale. It is used in conjunction with the M3810A Telemedicine remote patient monitoring system.

The device provides accurate weight measurement data that is wirelessly transmitted to the PTS TeleStation which has been previously qualified. Data from the TeleStation is transferred to a remote patient measurement server via phone line modem.

The design and manufacture of the steady scale option for the M3813B Weight Scale is being provided by OEM NCI Technology.

2.5. Power Source: 6 Volts DC (4 AA Alkaline Batteries)

2.6. Hardware Revs.: Rev. A

2.7. Software Rev.: N/A

2.8. EMC Modifications: None

3. Product Configuration

3.1. Support Equipment

Device	Manufacturer	Model	Serial No.	Comment
No Support Equipment				

3.2. Cables

Cable Type	Length	Shield	From	To
No external cables				

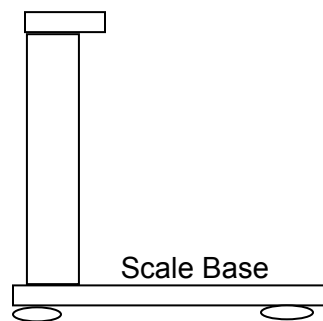
3.3. Operational Characteristics & Software

When scale is first powered up, the LCD will briefly display “88:8,8” followed by the UID number. At this point scale is in “t 0” normal mode where manual scale measurements can be made by stepping on/off scale base. Voice commands will guide the user to step on and off the scale followed by an audible and visual weight reading.

Pressing both the “Volume” and “Language” membrane switches of Scale LCD will cause scale display to enter “t 1” mode. This mode will continually weigh and transmit data at 6.0 Second intervals. This mode also displays and annunciates the weight measurement. For most EMC tests, a 30 kg metal disk will be applied to the scale base. For radiated emissions, radiated immunity, and magnetic field immunity, a paper stack will be used.

Pressing the “Volume” and “Language” membrane switches once again will cause scale display to enter “t 2” mode. This mode is used for unmodulated carrier signal at full transmit power (~1mW).

3.4. Block Diagram



4. Measurements Parameters

4.1. Measurement Equipment Used to Perform Test

Device	Manufacturer	Model No.	Serial No.	Cal Due
EMI Receiver	Agilent	E7405A	MY45115430	10/22/2011
EMI Receiver	Hewlett Packard	8546A	3330A00115	10/28/2011
Bilog Antenna	Com-Power	AC-220	25509	8/30/2011
Horn Antenna	Electro-Metrics	EM-6961	6337	10/19/2012
Microwave Preamp	Hewlett Packard	8449B	3008A01323	11/30/2012

4.2. Measurement & Equipment Setup

Test Dates:	3/9/2011 - 3/10/2011
Test Engineers:	Larry Stillings/Brian Breault
Normal Site Temperature (15 - 35°C):	21.6
Relative Humidity (20 -75%RH):	35
Frequency Range:	30 MHz to 9.2 GHz
Measurement Distance:	3 Meters
EMI Receiver IF Bandwidth:	100 kHz - 30 MHz to 1 GHz 1 MHz - Above 1 GHz
EMI Receiver Average Bandwidth:	300 kHz - 30 MHz to 1 GHz 3 MHz - Above 1 GHz
Detector Function:	Peak, Quasi-Peak & Average

4.3. Measurement Procedure

Test measurements were made in accordance FCC Part 15.249, IC RSS-210 Annex II: Operation within the bands 902 - 928 MHz, 2400 - 2483.5 MHz, 5725 - 5875 MHz, and 24.0 - 24.25 GHz.

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. Choice of Operating Frequencies

The Philips 3813C Steady Scale employs a single channel at 916.4 MHz.

5. Measurements Summary

Test Requirement	FCC Rule Requirement	IC Rule Requirement	Test Report Section	Result	Comment
Antenna Requirement	15.203	RSS-GEN 7.1.4	6.1	Compliant	Unit has an internal PCB antenna.
Radiated Field Strength of Fundamental	15.249 (a),(c)	RSS-210 A2.9	6.2	Compliant	
Radiated Field Strength of Harmonics	15.249 (a),(c)	RSS-210 A2.9	6.3	Compliant	
Band Edge Measurements	15.249 (d) 15.209	RSS-210 A8.5	6.4	Compliant	
Spurious Radiated Emissions	15.249 (d), 15.209	RSS-210 A13.1.2	6.5	Compliant	
Occupied Bandwidth	ANSI C63.4 § 13.1.7	N/A	6.6	Compliant	
99% Bandwidth	IC RSS-GEN	RSS-GEN	6.7	Compliant	
Conducted Emissions	15.207	RSS-GEN	N/A	Not Required	DUT uses batteries only.
Public Exposure to Radio Frequency Energy Levels	15.319 (i) 2.1091 FCC OET Bulletin 65	RSS-GEN 5.5, RSS 102	6.9	Compliant	

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: The unit under test employs a permanent, non-user accessible PCB antenna.

6.2. Radiated Field Strength of Fundamental (15.249, Section (a), (c)), IC RSS-210 A2.9

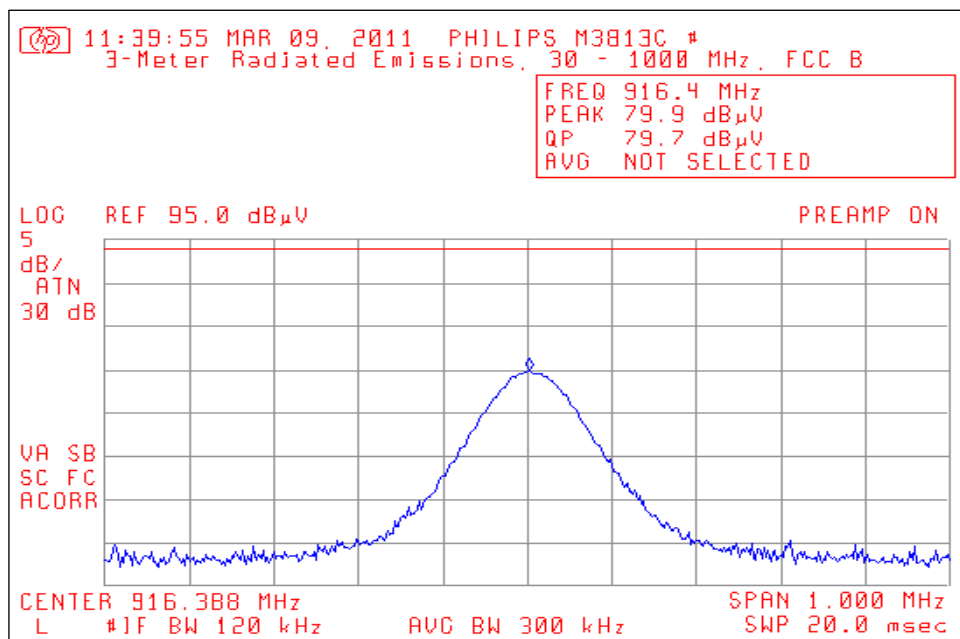
Requirement: The 3 meter field strength of the fundamental emissions from intentional radiators operated within the 902-928 MHz frequency bands shall comply with the following requirement: 50 millivolts/meter (94 dB μ V/m), quasi-peak mode measurement.

Site Temperature: 22.4°C Site Humidity: 31% RH

Freq.	Amplitude ¹ (dB μ V/m)		Limit (dB μ V/m)		Quasi-Peak Margin	Ant Pol.	Ant Height	Turntable Azimuth
	Peak	Quasi-Peak	Peak	Quasi-Peak		H/V	cm	Deg
916.4	79.9	79.7	114	94	-14.3	H	182	42
	78.4	76.8	114	94	-17.2	V	234	0

¹ All correction factors are included in the measurement values

6.2.1. Worst Case Field Strength



6. Measurement Data (continued)

6.3. Radiated Field Strength of Harmonics (15.249, Section (a)), IC RSS-210 A2.9

Requirement: The 3 meter field strength of the harmonic emissions from intentional radiators operated within the 902-928 MHz frequency bands shall comply with the following: 500 microvolts/meter (54 dBμV/m), average mode measurement. Peak field strength may not be greater than 20 dB above the average limit (74 dBμV/m).

Test Note: The harmonic emissions tabled in this section represent the absolute worst case emissions from the three orthogonal axes tested. Refer to section 4.3 for additional information.

Frequency (MHz)	Pk Amp (dBμV/m)	Av Amp (dBμV/m)	Av Limit (dBμV/m)	Margin (dB)	Polarity (H/V)	Ant Ht (cm)	Table (Deg)	Result
1832.78	47.1	45.0	54	-9.0	V	113	304	Compliant
2749.16	55.2	45.9	54	-8.1	V	154	35	Compliant
3665.55	57.1	45.5	54	-8.5	V	169	26	Compliant
4581.94	58.2	45.0	54	-9.0	V	150	0	Compliant
5498.33	48.9	42.4	54	-11.6	H	101	313	Compliant
6414.72	47.0	36.1	54	-17.9	V	153	72	Compliant
7331.10	48.3	36.8	54	-17.2	V	100	0	Compliant
8247.49	48.8	37.9	54	-16.1	H	100	0	Compliant
9163.88	50.0	39.6	54	-14.4	V	100	0	Compliant

6.4. Band Edge Measurements

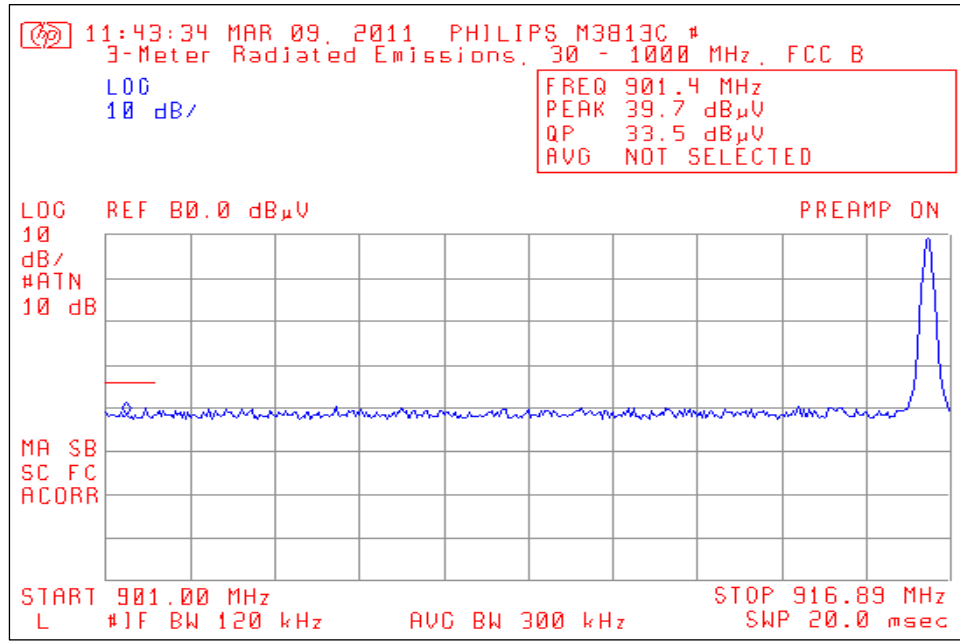
Requirement: Emissions radiated outside of the specified frequency band of 902 MHz to 928 MHz, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

Frequency	Band Edge (dBμV/m)			Limit (dBμV/m)	Margin (dB)	Result
	Freq MHz	Peak	Q-Peak	Q-Peak		
916.4	901.4	39.7	33.5	46	-12.5	Compliant
	928.4	39.1	34.0	46	-12.0	Compliant

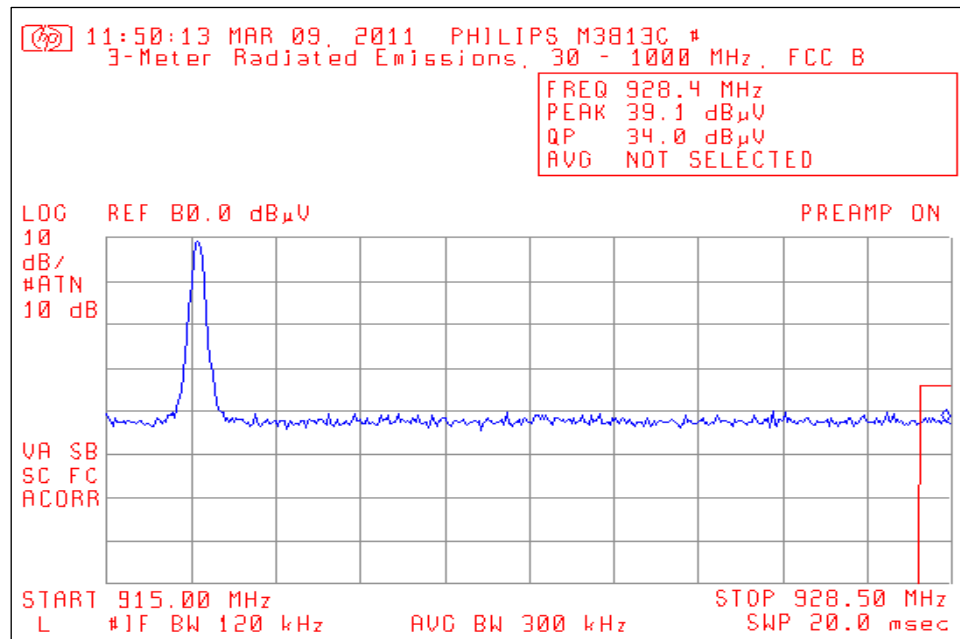
6. Measurement Data (continued)

6.4. Band Edge Measurements (continued)

6.4.1. Band Edge Measurements - Lower Band Edge



6.4.2. Band Edge Measurements - Upper Band Edge



6. Measurement Data (continued)

6.5. Spurious Radiated Emissions, 30 MHz to EUT 10th Harmonic (15.249, Section (d)), IC RSS-GEN

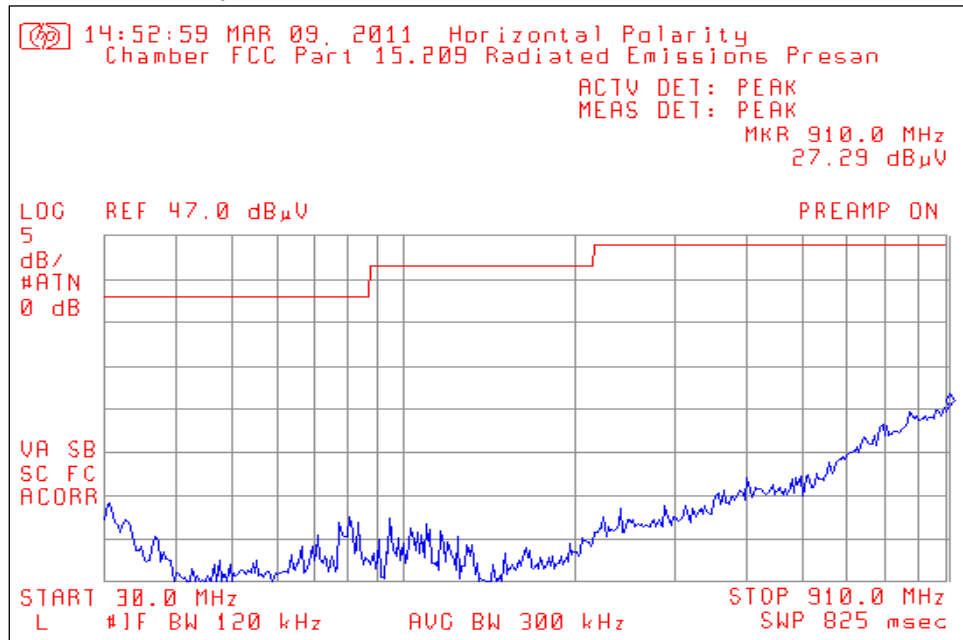
Requirement: Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in Section 15.209, whichever is the lesser attenuation.

6.5.1. Regulatory Limit: FCC Part 209, 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
Above 960	3	54.0

6.5.2. Test Results, 30 MHz to 1 GHz

6.5.2.1. Horizontal Polarity¹



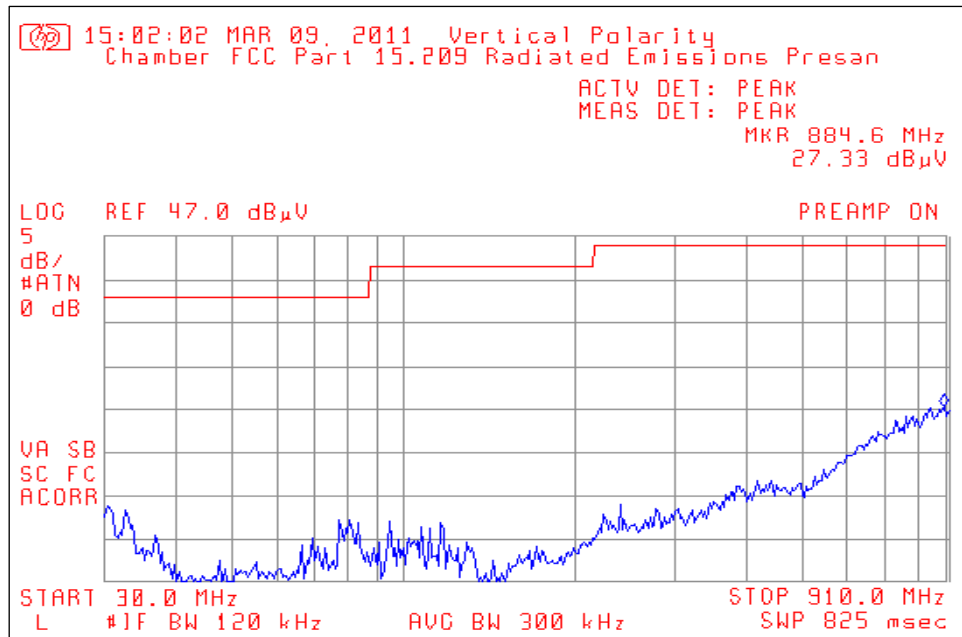
¹ Includes all correction factors.

6. Measurement Data (continued)

6.5. Spurious Radiated Emissions, 30 MHz to EUT 10th Harmonic (15.249, Section (d)), IC RSS-GEN

6.5.2. Test Results, 30 MHz to 1 GHz

6.5.2.2. Vertical Polarity¹



¹ Includes all correction factors.

6.5.3. Test Results, > 1 GHz

There were no measurable emissions above 1 GHz except the harmonic emissions detailed in section 6.3 of this test report.

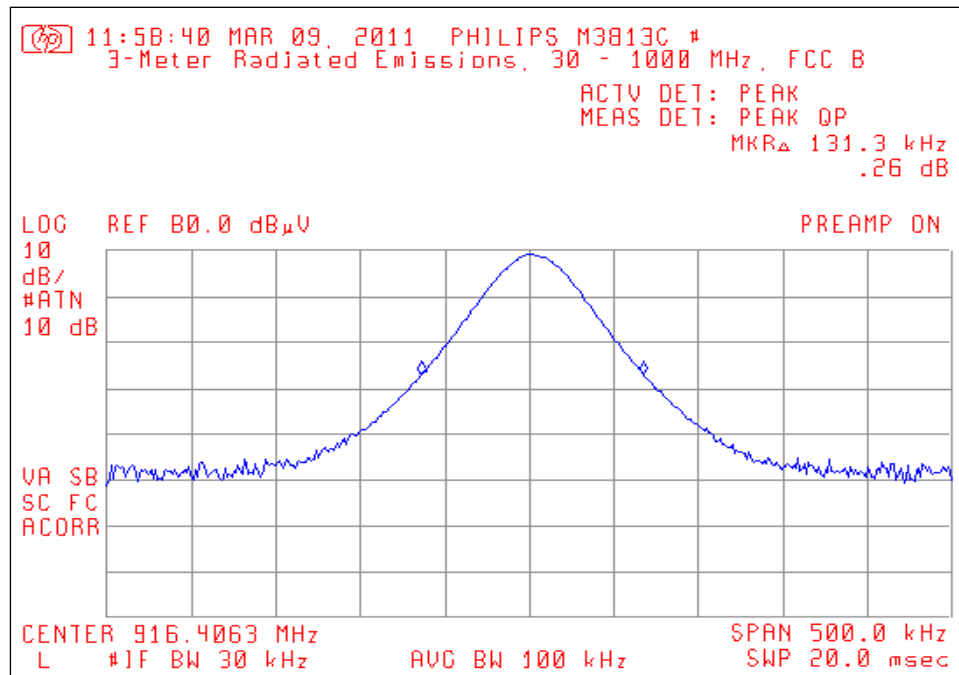
6. Measurement Data (continued)

6.6 Occupied Bandwidth (ANSI C63.4, Section 13.1.7)

Requirement: The occupied bandwidth measurements on an intentional radiator shall be made in accordance with the requirements outlined in ANSI C63.4-2003, Section 13.1.7. If no bandwidth requirement is specified by the procuring or regulatory agency, measure the bandwidth at -26 dB with respect to the reference level.

Frequency (MHz)	-26 dB Bandwidth (MHz)	Result
916.4	0.26	Compliant

6.6.1. Occupied Bandwidth Plot



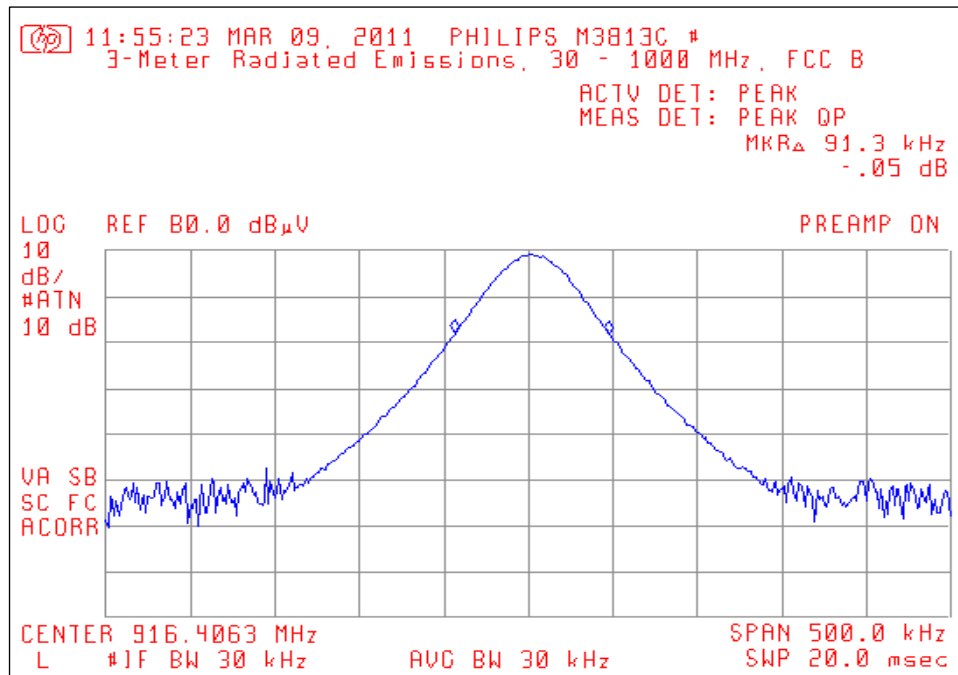
6. Measurement Data (continued)

6.7. 99% Power Bandwidth (RSS 210)

Requirement: The 99% bandwidth shall be no wider than 0.25% of the centre frequency for devices operating between 70-900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the centre frequency.

Channel	Channel Frequency	99% Power Bandwidth	Allowable Power Bandwidth	Result
	MHz	MHz	MHz	
N/A	916.4	0.0913	4.582	Compliant

6.7.1. 99% Bandwidth Plot



6. Measurement Data (continued)

6.9. Public Exposure to Radio Frequency Energy Levels (15.247(i) (1.1307 (b)(1)) RSS-GEN 5.5, RSS 102

6.9.1. Note: The following equation is used to determine the output power from the measured field strength:

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

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.

Frequency (MHz)	Peak Field Strength (dBμV/m)	Distance (m)	Antenna Gain ¹ (dBi)	Measured Output Power (mW)
916.4	79.90	3.0	-4.0	0.0736413

Freq.	MPE Distance (cm)	DUT Output Power (dBm)	DUT Antenna Gain (dBi)	Power Density		Limit (mW/cm ²)	Result
	(1)	(2)	(3)	(mW/cm ²)	(W/m ²)		
				(4)		(5)	
916.4	20.0	-11.33	-4.0	0.0000058	0.0000583	1	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)

- 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.
- Sections 6.2 of this test report.
- Antenna gain data provided by the client.
- Power density is calculated from field strength measurement and antenna gain.
- Reference CFR 1.1310, Table 1: Limits for Maximum Permissible Exposure (MPE), Section (B): Limits for General Population/Uncontrolled Exposure.

7. 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) and Industry Canada standards. A description of the test sites is on file with the FCC (registration number **96392**) and Industry Canada (file number **IC 3023A-1**).

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 meter W x 1.5 meter L x 2.0 meter H, floor standing or table top.