



PCTEST ENGINEERING LABORATORY, INC.

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MEASUREMENT REPORT FCC PART 15.247 WPAN 802.15.4 Certification

Applicant Name:
SmartSynch Inc.
4400 Old Canton Road, Suite 300
Jackson, MS 39211
USA

Date of Testing:
October 05 - 06, 2010
Test Site/Location:
PCTEST Lab, Columbia, MD, USA
Test Report Serial No.:
0Y1010041664.QHC

FCC ID: QHC-OPENWAY1X

APPLICANT: SmartSynch Inc.

Application Type: Certification
Model(s): SSI Openway 1X
EUT Type: Smartmeter with Cellular/PCS CDMA and Zigbee
Max. RF Output Power: 32.06 mW (15.06 dBm) Peak Conducted
Frequency Range: 2405 - 2475 MHz (DSSS)
FCC Classification: Digital Transmission System (DTS)
FCC Rule Part(s): Part 15.247
Test Device Serial No.: 6JF060901027

This equipment has been shown to be capable of compliance with the applicable technical standards as indicated in the measurement report and was tested in accordance with the measurement procedures specified in ANSI C-63.4-2003. Test results reported herein relate only to the item(s) tested.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them.

Grant Conditions: Power output listed is conducted.

PCTEST certifies that no party to this application has been subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 862.

Randy Ortanez
President

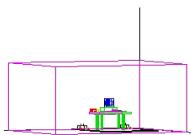


FCC ID: QHC-OPENWAY1X		FCC Pt. 15.247 802.15.4 ZIGBEE TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
Test Report S/N: 0Y1010041664.QHC	Test Dates: October 05 - 06, 2010	EUT Type: Smartmeter with Cellular/PCS CDMA and Zigbee		Page 1 of 26

T A B L E O F C O N T E N T S

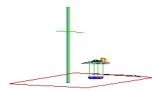
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MEASUREMENT REPORT

FCC Part 15.247

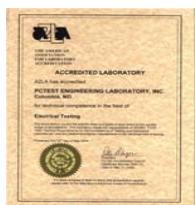


§ 2.1033 General Information

APPLICANT: SmartSynch Inc.
APPLICANT ADDRESS: 4400 Old Canton Road, Suite 300
 Jackson, MS 39211, USA
TEST SITE: PCTEST ENGINEERING LABORATORY, INC.
TEST SITE ADDRESS: 6660-B Dobbin Road, Columbia, MD 21045 USA
FCC RULE PART(S): Part 15.247
MODEL NAME: SSI Openway 1X
FCC ID: QHC-OPENWAY1X
Test Device Serial No.: 6JF060901027 Production Pre-Production Engineering
FCC CLASSIFICATION: Digital Transmission System (DTS)
DATE(S) OF TEST: October 05 - 06, 2010
TEST REPORT S/N: 0Y1010041664.QHC

Test Facility / Accreditations

Measurements were performed at PCTEST Engineering Lab located in Columbia, MD 21045, U.S.A.



- PCTEST facility is an FCC registered (PCTEST Reg. No. 90864) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules and Industry Canada (2451A-1).
- PCTEST Lab is accredited to ISO 17025 by U.S. National Institute of Standards and Technology (NIST) under the National Voluntary Laboratory Accreditation Program (NVLAP Lab code: 100431-0) in EMC, FCC and Telecommunications.
- PCTEST Lab is accredited to ISO 17025-2005 by the American Association for Laboratory Accreditation (A2LA) in Specific Absorption Rate (SAR) testing, Hearing Aid Compatibility (HAC) testing, CTIA Test Plans, and wireless testing for FCC and Industry Canada Rules.
- PCTEST Lab is a recognized U.S. Conformity Assessment Body (CAB) in EMC and R&TTE (n.b. 0982) under the U.S.-EU Mutual Recognition Agreement (MRA).
- PCTEST TCB is a Telecommunication Certification Body (TCB) accredited to ISO/IEC Guide 65 by the American National Standards Institute (ANSI) in all scopes of FCC Rules and Industry Canada Standards (RSS).
- PCTEST facility is an IC registered (2451A-1) test laboratory with the site description on file at Industry Canada.
- PCTEST is a CTIA Authorized Test Laboratory (CATL) for AMPS, CDMA, and EVDO wireless devices and for Over-the-Air (OTA) Antenna Performance testing for AMPS, CDMA, GSM, GPRS, EGPRS, UMTS (W-CDMA), CDMA 1xEVDO, and CDMA 1xRTT.



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1.0 INTRODUCTION

1.1 Scope

Measurement and determination of electromagnetic emissions (EMC) of radio frequency devices including intentional and/or unintentional radiators for compliance with the technical rules and regulations of the Federal Communications Commission.

1.2 PCTEST Test Location

The map below shows the location of the PCTEST LABORATORY, its proximity to the FCC Laboratory, the Columbia vicinity are, the Baltimore-Washington Internt'l (BWI) airport, the city of Baltimore and the Washington, DC area. (See *Figure 1-1*).

These measurement tests were conducted at the PCTEST Engineering Laboratory, Inc. facility in New Concept Business Park, Guilford Industrial Park, Columbia, Maryland. The site address is 6660-B Dobbins Road, Columbia, MD 21045. The test site is one of the highest points in the Columbia area with an elevation of 390 feet above mean sea level. The site coordinates are 39° 11'15" N latitude and 76° 49'38" W longitude. The facility is 1.5 miles North of the FCC laboratory, and the ambient signal and ambient signal strength are approximately equal to those of the FCC laboratory. There are no FM or TV transmitters within 15 miles of the site. The detailed description of the measurement facility was found to be in compliance with the requirements of § 2.948 according to ANSI C63.4-2003 on January 27, 2006.

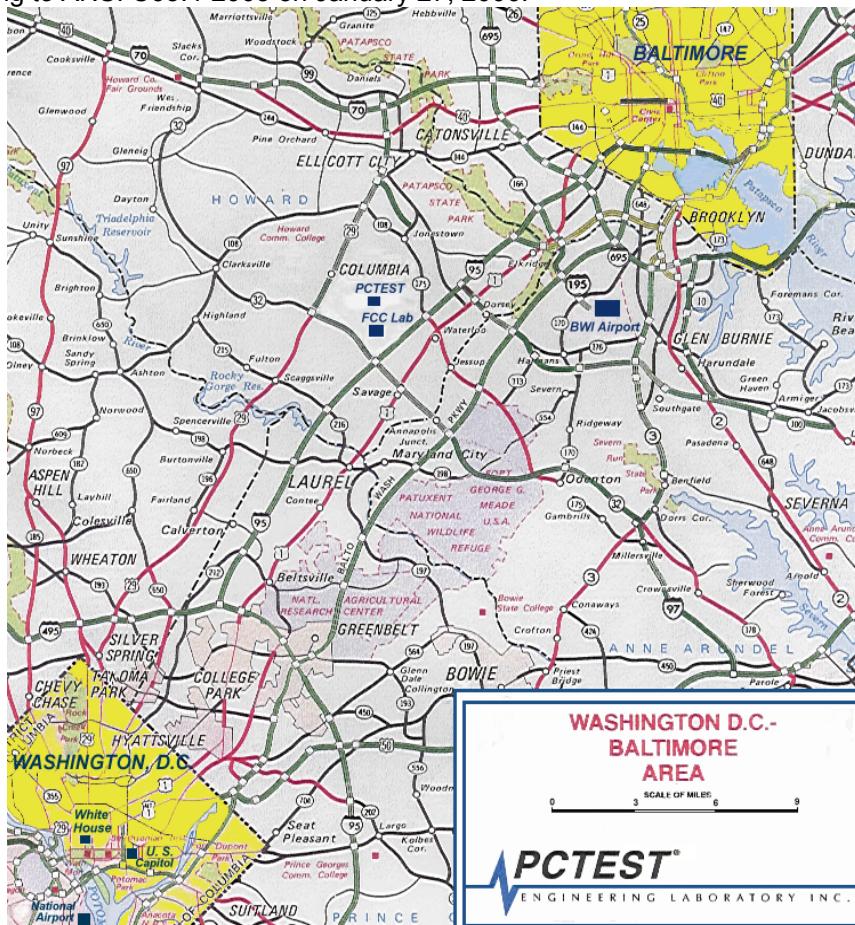


Figure 1-1. Map of the Greater Baltimore and Metropolitan Washington, D.C. area

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2.0 PRODUCT INFORMATION

2.1 Equipment Description

The Equipment Under Test (EUT) is the **SmartSynch Smartmeter with Cellular/PCS CDMA and Zigbee** **FCC ID: QHC-OPENWAY1X**. The EUT consisted of the following component(s):

Manufacturer / Model	FCC ID	Description
SmartSynch / Model: SSI Openway 1X	QHC-OPENWAY1X	Smartmeter with Cellular/PCS CDMA and Zigbee

Table 2-1. EUT Equipment Description

2.2 EMI Suppression Device(s)/Modifications

No EMI suppression device(s) were added and/or no modifications were made during testing.

2.3 Labeling Requirements

Per 15.19; Docket 95-19

The label shall be permanently affixed at a conspicuous location on the device; instruction manual or pamphlet supplied to the user and be readily visible to the purchaser at the time of purchase. However, when the device is so small wherein placement of the label with specified statement is not practical, only the trade name and FCC ID must be displayed on the device per Section 15.19(b)(2).

Please see attachment for FCC ID label and label location.

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3.0 DESCRIPTION OF TEST

3.1 Evaluation Procedure

The measurement procedure described in the American National Standard for Methods of Measurement of Radio-Noise Emission from Low-Voltage Electrical and Electronic Equipment in the Range of 9kHz to 40GHz (ANSI C63.4-2003) and FCC procedure dated March 23, 2005 entitled "Measurements of Digital Transmission Systems Operating Under Section 15.247" were used in the measurement of the **SmartSynch Smartmeter with Cellular/PCS CDMA and Zigbee FCC ID: QHC-OPENWAY1X**.

Deviation from measurement procedure.....**None**

3.2 Radiated Emissions

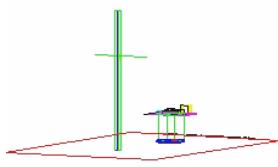


Figure 3-1. 3-Meter Test Site

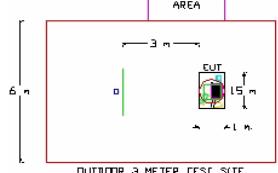


Figure 3-2. Dimensions of Outdoor Test Site

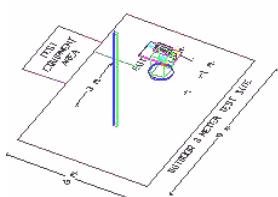


Figure 3-3. Turtable and System Setup

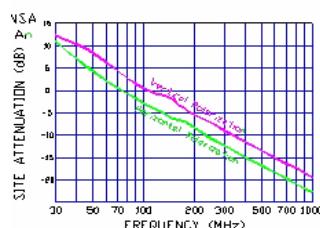


Figure 3-4. Normalized Site Attenuation Curves (H&V)

Preliminary measurements were made indoors at 1-meter using broadband antennas, broadband amplifiers, and spectrum analyzers to determine the frequency producing the maximum EME. Appropriate precaution was taken to ensure that all EME from the EUT were maximized and investigated. The system configuration, clock speed, mode of operation or video resolution, and turntable azimuth with respect to the antenna was noted for each frequency found. The spectrum was scanned from 30 to 200 MHz using a bi-conical antenna and from 200 to 1000 MHz using a log-spiral antenna. Above 1 GHz, linearly polarized double ridge horn antennas were used.

Final measurements were made outdoors at 3-meter test range using Roberts™ Dipole antennas or horn antennas (see *Figure 3-1*). The test equipment was placed on a wooden and plastic bench situated on a 1.5m x 2m area adjacent to the measurement area (see *Figure 3-2*). Sufficient time for the EUT, support equipment, and test equipment was allowed in order for them to warm up to their normal operating condition. The detector function was set to CISPR quasi-peak mode and the bandwidth of the spectrum analyzer was set to 100kHz for frequencies below 1GHz or 1MHz for frequencies above 1GHz. Above 1GHz the detector function was set to average mode (RBW = 1MHz, VBW = 10Hz).

The half-wave dipole antenna was tuned to the frequency found during preliminary radiated measurements. The EUT, support equipment and interconnecting cables were re-configured to the set-up producing the maximum emission for the frequency and were placed on top of a 0.8-meter high non-metallic 1 x 1.5 meter table (see *Figure 3-3*). The EUT, support equipment, and interconnecting cables were re-arranged and manipulated to maximize each EME emission. The turntable containing the system was rotated and the height of the receive antenna was varied 1 to 4 meters and stopped at the azimuth and height producing the maximum emission. Each emission was maximized by: varying the mode of operation or resolution; clock or data exchange speed; scrolling H pattern to the EUT and/or support equipment, and powering the monitor from the floor mounted outlet box and the computer aux AC outlet, if applicable; and changing the polarity of the antenna, whichever determined the worst-case emission. Photographs of the worst-case emission can be seen in the test setup photographs. Each EME reported was calibrated using the Agilent E8257D (250kHz – 20GHz) PSG Signal Generator. The Theoretical Normalized Site Attenuation Curves for both horizontal and vertical polarization are shown in *Figure 3-4*.

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4.0 ANTENNA REQUIREMENTS

Excerpt from §15.203 of the FCC Rules/Regulations:

"An intentional radiator antenna shall be designed to ensure that no antenna other than that furnished by the responsible party can 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."

- The antenna(s) of the Smartmeter with Cellular/PCS CDMA and Zigbee are **permanently attached**.
- There are no provisions for connection to an external antenna for the Zigbee module.

Conclusion:

The **SmartSynch Smartmeter with Cellular/PCS CDMA and Zigbee FCC ID: QHC-OPENWAY1X** unit complies with the requirement of §15.203.

Ch.	Frequency (MHz)	Ch.	Frequency (MHz)
11	2405	19	2445
12	2410	20	2450
13	2415	21	2455
14	2420	22	2460
15	2425	23	2465
16	2430	24	2470
17	2435	25	2475
18	2440		

Table 4-1. Frequency / Channel Operations

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5.0 TEST EQUIPMENT CALIBRATION DATA

Test Equipment Calibration is traceable to the National Institute of Standards and Technology (NIST).

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
-	263-10dB	(DC-18GHz) 10 dB Attenuator	N/A		N/A	N/A
-	No.166	(1000-26500MHz) Microwave RF Cable	N/A		N/A	N/A
-	No.167	(100kHz - 100MHz) RG58 Coax Cable	N/A		N/A	N/A
Agilent	11713A	Attenuation/Switch Driver	12/2/2009	Annual	12/2/2010	3439A02645
Agilent	8449B	(1-26.5GHz) Pre-Amplifier	12/2/2009	Annual	12/2/2010	3008A00985
Agilent	85650A	Quasi-Peak Adapter	12/2/2009	Annual	12/2/2010	3303A01872
Agilent	8566B	(100Hz-22GHz) Spectrum Analyzer	3/30/2010	Annual	3/30/2011	2618A02866
Agilent	8566B	(100Hz-22GHz) Spectrum Analyzer	3/30/2010	Annual	3/30/2011	2542A11898
Agilent	8566B	(100Hz-22GHz) Spectrum Analyzer	12/2/2009	Annual	12/2/2010	3638A08713
Agilent	E4407B	ESA Spectrum Analyzer	3/30/2010	Annual	3/30/2011	US39210313
Agilent	E4448A	PSA (3Hz-50GHz) Spectrum Analyzer	11/1/2009	Annual	11/1/2010	USA2510244
Agilent	E8257D	(250kHz-20GHz) Signal Generator	3/30/2010	Annual	3/30/2011	MY45470194
Agilent	N9020A	MXA Signal Analyzer	10/22/2009	Annual	10/22/2010	USA4670561
Agilent	N4010A	Wireless Connectivity Test Set	9/27/2010	Annual	9/27/2011	GB46170464
Emco	3115	Horn Antenna (1-18GHz)	10/14/2009	Biennial	10/14/2011	9704-5182
Emco	3115	Horn Antenna (1-18GHz)	4/8/2010	Biennial	4/8/2012	9205-3874
Emco	3116	Horn Antenna (18 - 40GHz)	9/9/2008	Triennial	9/9/2011	9203-2178
Emco	3816/2	LISN	10/8/2008	Biennial	10/8/2010	9707-1077
Emco	3816/2	LISN	10/8/2008	Biennial	10/8/2010	9707-1079
MiniCircuits	VHF-3100+	High Pass Filter	N/A		N/A	30721
Pasternack	PE2209-10	Bidirectional Coupler	N/A		N/A	N/A
Pasternack	PE7000-6	6 dB Attenuator	N/A		N/A	N/A
Rohde & Schwarz	CMU200	Base Station Simulator	11/11/2009	Annual	11/11/2010	836371/0079
Rohde & Schwarz	CMU200	Base Station Simulator	6/21/2010	Annual	6/21/2011	833855/0010
Sunol	DRH-118	Horn Antenna (1 - 18GHz)	5/14/2009	Biennial	5/14/2011	A050307
Sunol	JB5	Bi-Log Antenna (30M - 5GHz)	7/17/2009	Biennial	7/17/2011	A051107
Agilent	N4010A	Wireless Connectivity Test Set	11/2/2009	Annual	11/2/2010	GB44450273
Rohde & Schwarz	CMU200	Base Station Simulator	6/17/2010	Annual	6/17/2011	836536/0005
Rohde & Schwarz	FSQ 26	Spectrum Analyzer	8/28/2010	Annual	8/28/2011	200452
Anritsu	ML2495A	Power Meter	10/12/2009	Annual	10/12/2010	941001

Table 5-1. Annual Test Equipment Calibration Schedule

FCC ID: QHC-OPENWAY1X		FCC Pt. 15.247 802.15.4 ZIGBEE TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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6.0 TEST RESULTS

6.1 Summary

Company Name: SmartSynch Inc.
 FCC ID: QHC-OPENWAY1X
 FCC Classification: Digital Transmission System (DTS)

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Test Result	Reference
TRANSMITTER MODE (TX)					
15.247(a)(2)	6dB Bandwidth	> 500kHz	CONDUCTED	PASS	Section 6.2
15.247(b)(3)	Transmitter Output Power	< 1 Watt		PASS	Sections 6.3
15.247(e)	Transmitter Power Spectral Density	< 8dBm / 3kHz Band		PASS	Section 6.4
15.247(d)	Band Edge / Out-of-Band Emissions	Conducted < 30dBc		PASS	Sections 6.5, 6.6
15.205 15.209	General Field Strength Limits (Restricted Bands and Radiated Emission Limits)	Emissions in restricted bands must meet the radiated limits detailed in 15.209 (RSS-210 table 3 limits)	RADIATED	PASS	Sections 6.7, 6.8
15.207	AC Conducted Emissions 150kHz – 30MHz	< FCC 15.207 limits or < RSS-Gen table 2 limits	LINE CONDUCTED	PASS	Section 6.9
RECEIVER MODE (RX) / DIGITAL EMISSIONS					
15.107	AC Conducted Emissions 150kHz – 30MHz	< FCC 15.107 limits or < RSS-Gen table 2 limits	LINE CONDUCTED	PASS	Part 15B Test Report
15.109	General Field Strength Limits (Restricted Bands and Radiated Emissions Limits)	< FCC 15.109 limits or < RSS-210 table 3 limits	RADIATED (30MHz-1GHz) (1-25 GHz)	PASS	Part 15B Test Report

Table 6-1. Summary of Test Results

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6.2 6dB Bandwidth Measurement

§15.247(a)(2)

The bandwidth at 6dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the receive antenna while the EUT is operating in transmission mode at the appropriate frequencies. *The minimum permissible 6dB bandwidth is 500 kHz.*

Frequency [MHz]	Channel No.	Measured Bandwidth [MHz]	Minimum Bandwidth [MHz]	Pass / Fail
2405	11	1.670	0.500	Pass
2440	18	1.590	0.500	Pass
2475	25	1.610	0.500	Pass

Table 6-2. Conducted Bandwidth Measurements

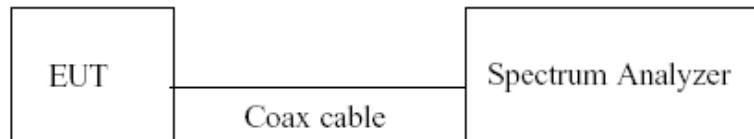


Figure 6-1. Test Instrument & Measurement Setup



Plot 6-1. 6dB Bandwidth Plot (802.15.4 – Ch. 11)

FCC ID: QHC-OPENWAY1X	 FCC Pt. 15.247 802.15.4 ZIGBEE TEST REPORT (CERTIFICATION)			Reviewed by: Quality Manager
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Plot 6-2. 6dB Bandwidth Plot (802.15.4 – Ch. 18)



Plot 6-3. 6dB Bandwidth Plot (802.15.4 – Ch. 25)

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6.3 Output Power Measurement

§15.247(b)(3)

A transmitter antenna terminal of EUT is connected to the input of an RF power sensor. Measurement is made using a broadband average power meter while the EUT is operating in transmission mode at the appropriate frequencies. ***The maximum permissible conducted output power is 1 Watt.***

Freq [MHz]	Channel	Measured Peak Power [dBm]
2405	11	15.06
2440	18	14.31
2475	25	13.86

Table 6-3. Conducted Output Power Measurements

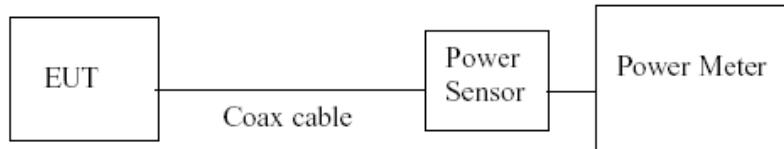


Figure 6-2. Test Instrument & Measurement Setup

FCC ID: QHC-OPENWAY1X		FCC Pt. 15.247 802.15.4 ZIGBEE TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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6.4 Power Spectral Density

§15.247(e)

The peak power density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating in transmission mode at the appropriate frequencies. ***The maximum permissible power spectral density is 8 dBm in any 3 kHz band.***

Frequency [MHz]	Channel No.	Measured Power Spectral Density [dBm]	Maximum Permissible Power Density [dBm / 3kHz]	Margin [dB]
2405	11	-0.850	8.0	-8.85
2440	18	-0.820	8.0	-8.82
2475	25	-1.720	8.0	-9.72

Table 6-4. Conducted Power Density Measurements

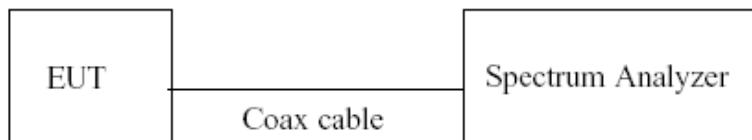
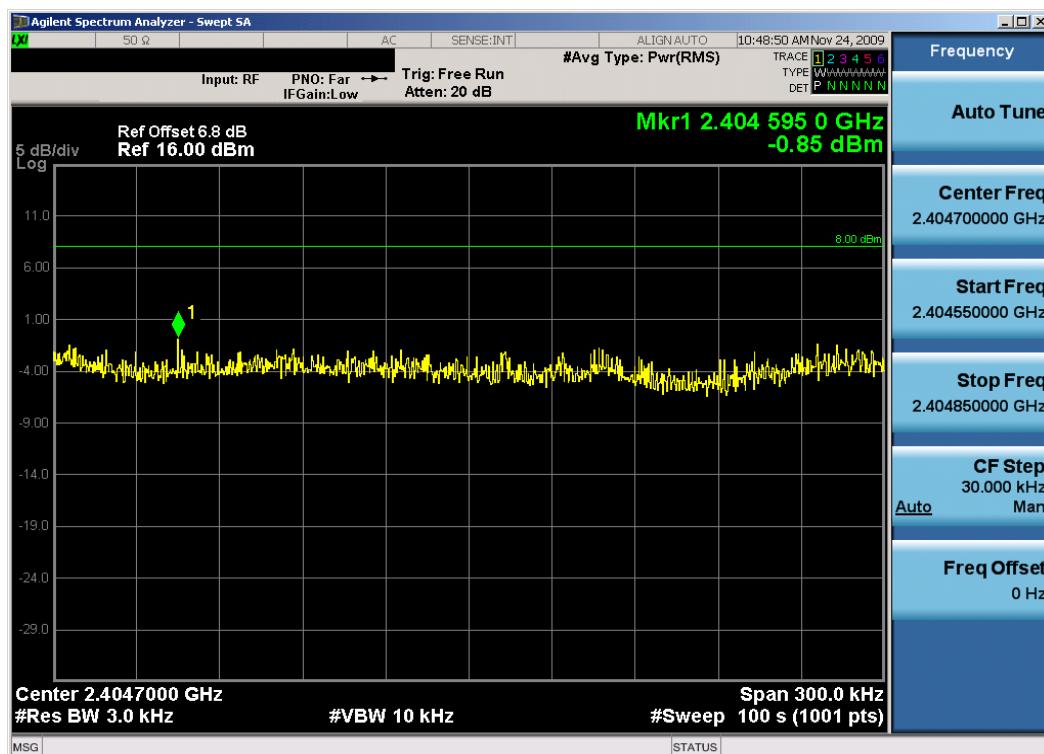
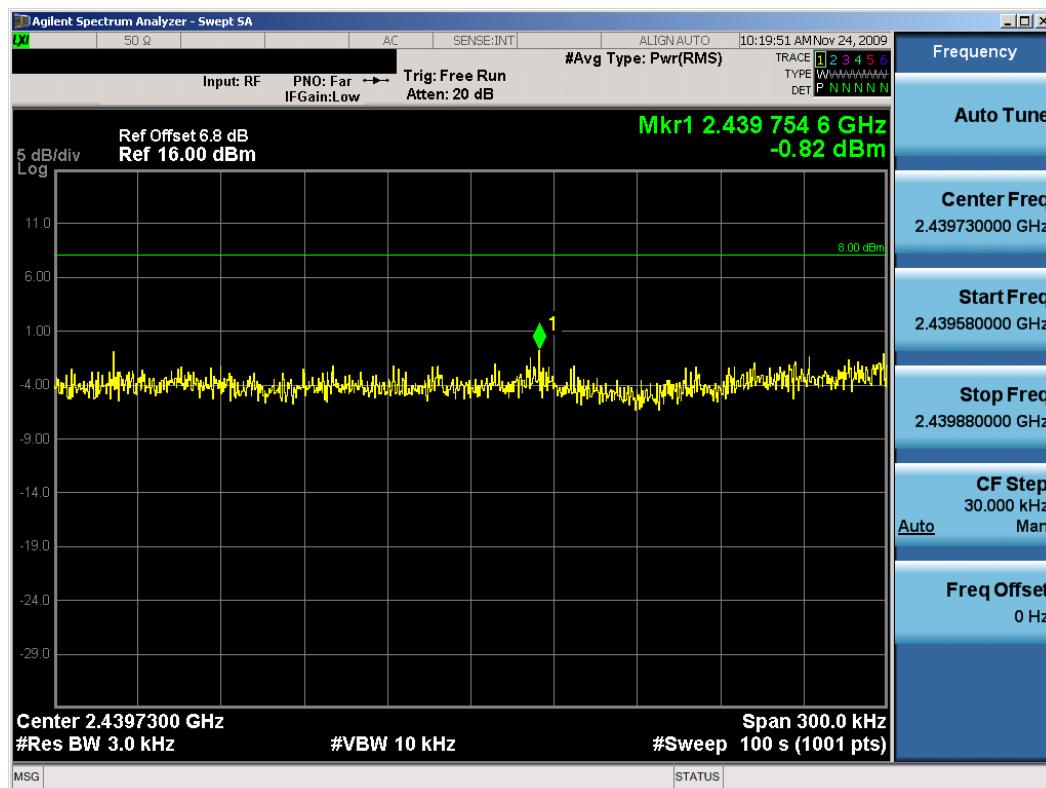


Figure 6-3. Test Instrument & Measurement Setup

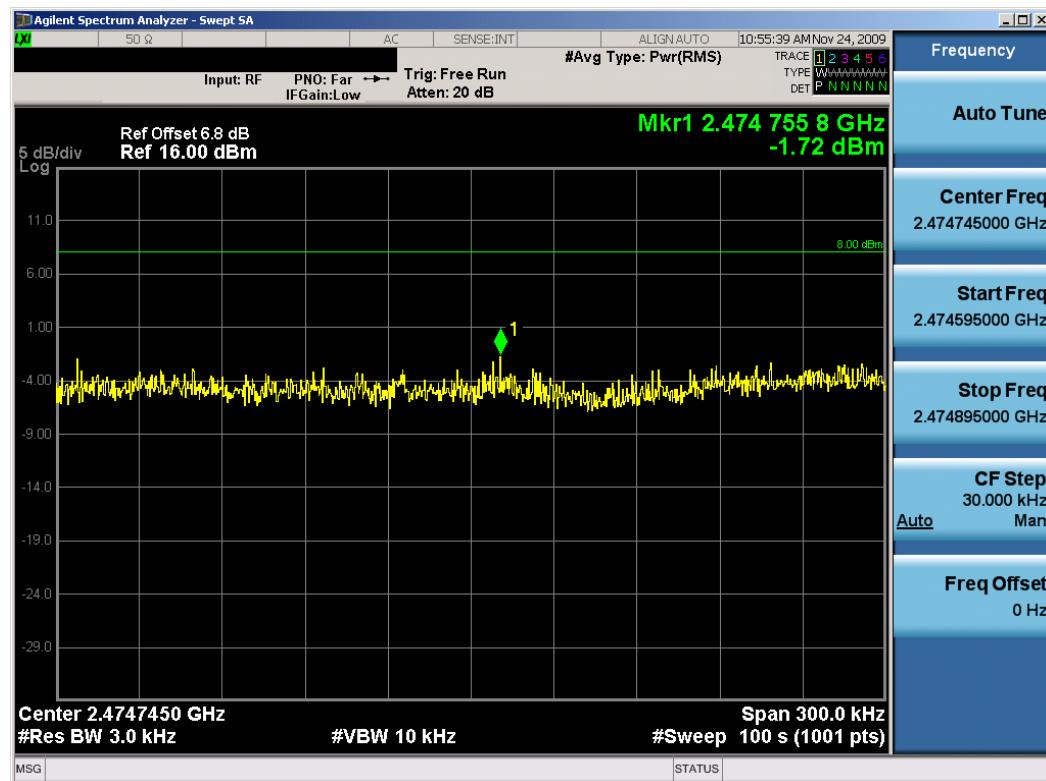


Plot 6-4. Power Spectral Density Plot (802.15.4 – Ch. 11)

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Plot 6-5. Power Spectral Density Plot (802.15.4 – Ch. 18)

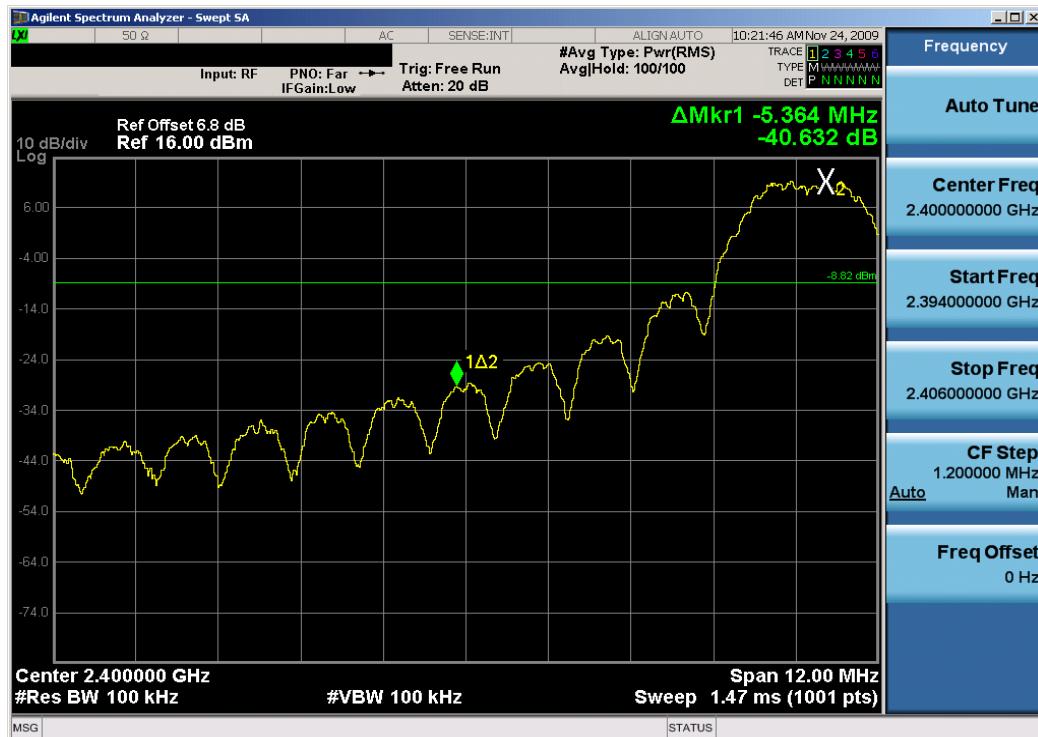


Plot 6-6. Power Spectral Density Plot (802.15.4 – Ch. 25)

FCC ID: QHC-OPENWAY1X	PCTEST® ENGINEERING LABORATORY, INC.			FCC Pt. 15.247 802.15.4 ZIGBEE TEST REPORT (CERTIFICATION)	Reviewed by: Quality Manager
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6.5 Conducted Emissions at the Band Edge

§15.247(d)



Plot 6-7. Band Edge Plot (802.15.4 – Ch. 11)

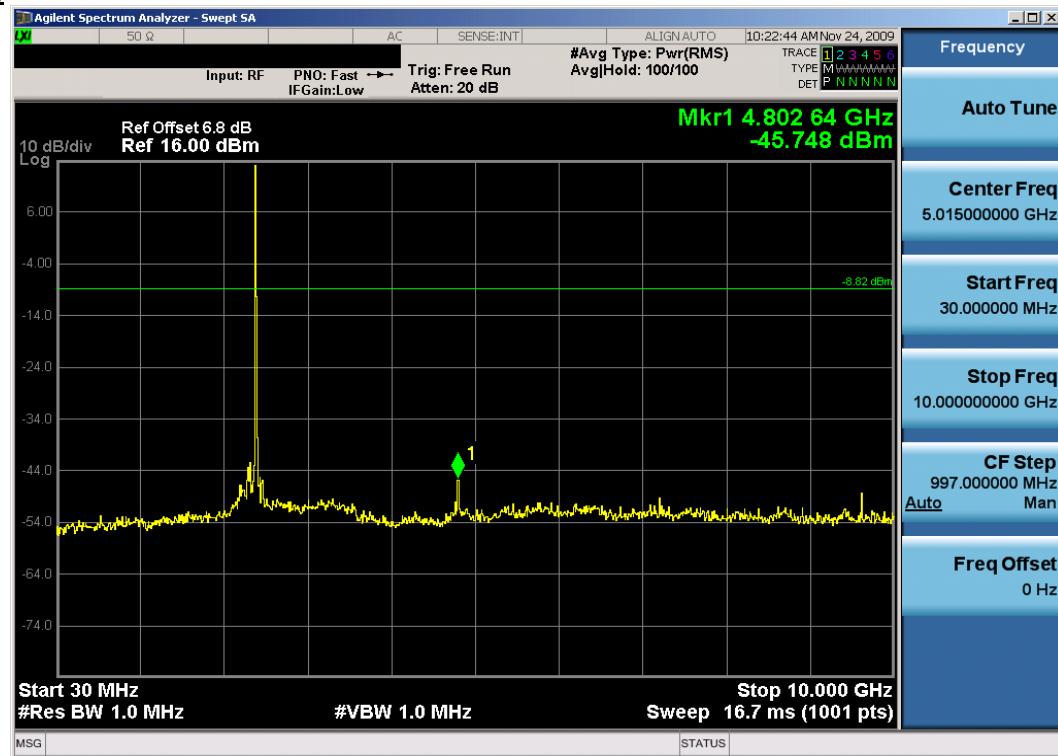


Plot 6-8. Band Edge Plot (802.15.4 – Ch. 25)

FCC ID: QHC-OPENWAY1X	FCC Pt. 15.247 802.15.4 ZIGBEE TEST REPORT (CERTIFICATION)				Reviewed by: Quality Manager
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6.6 Conducted Spurious Emissions

§15.247(d)

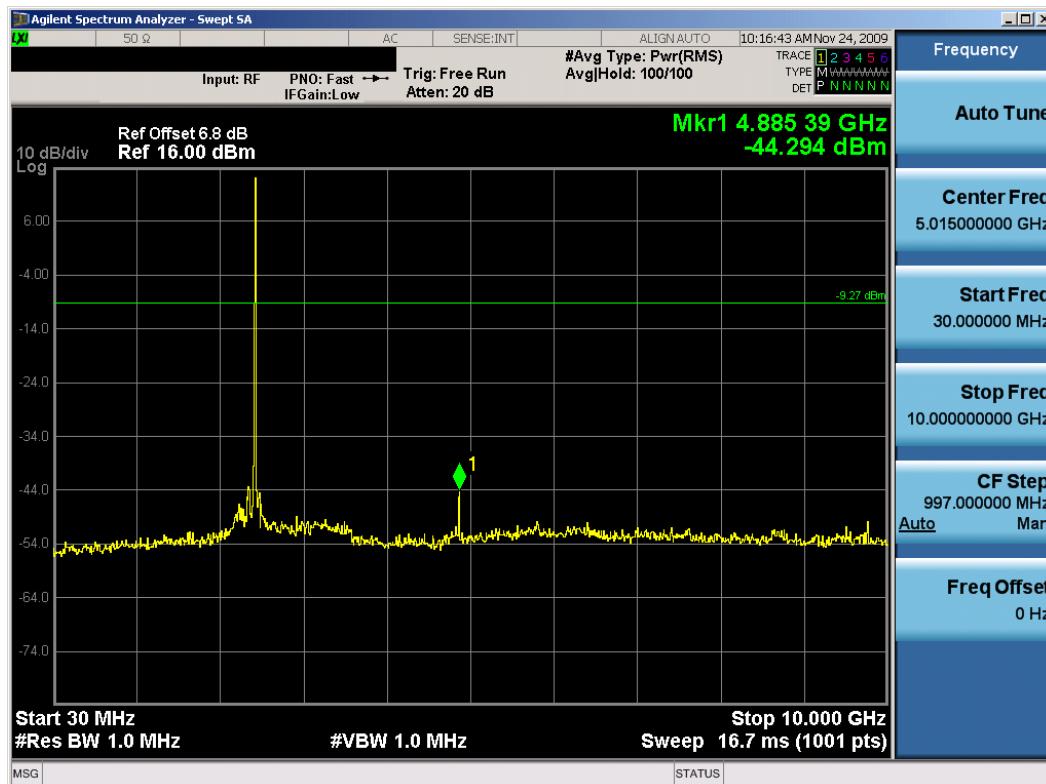


Plot 6-9. Conducted Spurious Plot (802.15.4 – Ch. 11)



Plot 6-10. Conducted Spurious Plot (802.15.4 – Ch. 11)

FCC ID: QHC-OPENWAY1X		FCC Pt. 15.247 802.15.4 ZIGBEE TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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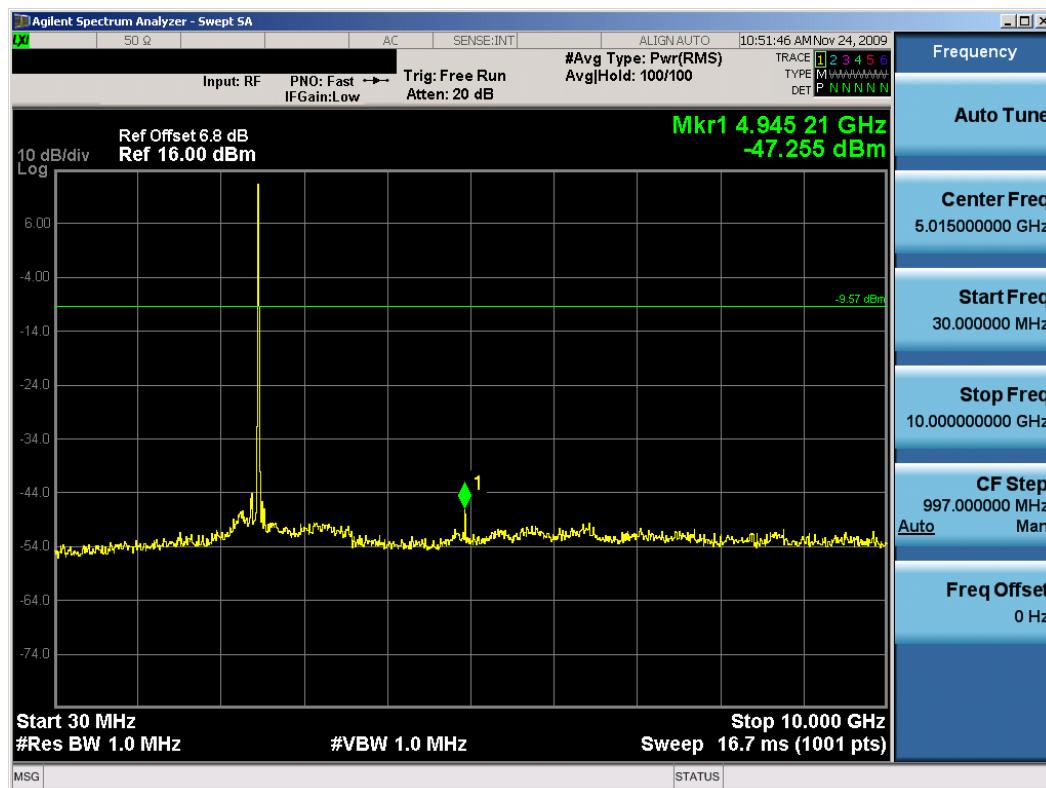


Plot 6-11. Conducted Spurious Plot (802.15.4 – Ch. 18)

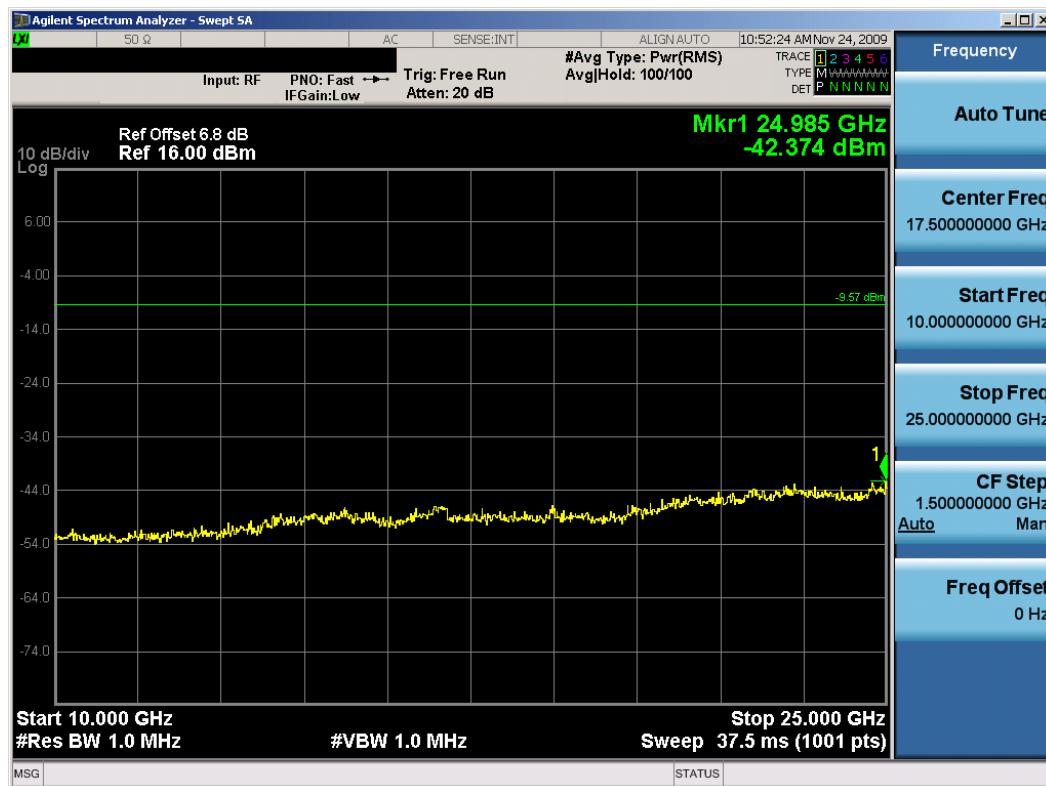


Plot 6-12. Conducted Spurious Plot (802.15.4 – Ch. 18)

FCC ID: QHC-OPENWAY1X	 FCC Pt. 15.247 802.15.4 ZIGBEE TEST REPORT (CERTIFICATION)			Reviewed by: Quality Manager
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Plot 6-13. Conducted Spurious Plot (802.15.4 – Ch. 25)



Plot 6-14. Conducted Spurious Plot (802.15.4 – Ch. 25)

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Test Report S/N: 0Y1010041664.QHC	Test Dates: October 05 - 06, 2010	EUT Type: Smartmeter with Cellular/PCS CDMA and Zigbee				Page 18 of 26

6.7 Radiated Spurious Emission Measurements

§15.247(d) / §15.205

The EUT was tested from 9kHz up to the tenth harmonic of the fundamental frequency of the transmitter using CISPR quasi peak detector below 1GHz. Above 1 GHz, average measurements were taken using RBW = 1MHz, VBW = 10Hz, and linearly polarized horn antennas. All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Table 6-5 per Section 15.209

Frequency	Field Strength [μ V/m]	Measured Distance [Meters]
0.009 – 0.490 MHz	2400/F (kHz)	300
0.490 – 1.705 MHz	24000/F (kHz)	30
1.705 – 30.00 MHz	30	30
30.00 – 88.00 MHz	100	3
88.00 – 216.0 MHz	150	3
216.0 – 960.0 MHz	200	3
Above 960.0 MHz	500	3

Table 6-5. Radiated Limits

Sample Calculation

- Field Strength Level [$\text{dB}_{\mu\text{V/m}}$] = Analyzer Level [dBm] + 107 + AFCL [dB]

Notes:

- AFCL = Antenna Factor [dB] + Cable Loss [dB]

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Radiated Spurious Emission Measurements (Cont'd)

§15.247(d) / §15.205

Distance of Measurements: 3 Meters

Operating Frequency: 2405MHz

Channel: 11

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol [H/V]	AFCL [dB]	Field Strength [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]
4810.00	-101.31	Avg	H	41.93	47.61	53.98	-6.37
4810.00	-91.77	Peak	H	41.93	57.15	73.98	-16.83
12025.00	-135.00	Avg	H	53.16	25.16	53.98	-28.82
12025.00	-125.00	Peak	H	53.16	35.16	73.98	-38.82

Table 6-6. Radiated Measurements @ 3 meters

NOTES:

1. All emissions shown lie in the restricted bands specified in §15.205 and RSS-210 section 2.7, Table 1 and are below the limit shown in Table 6-5.
2. Average Measurements > 1GHz using RBW = 1MHz VBW = 10Hz
3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
4. The EUT is supplied with nominal AC voltage.
5. The spectrum is measured from 9kHz to the 10th harmonic and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.
6. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
7. Above 960MHz the limit is 500 μ V/m (54dB μ /m) at 3 meters radiated.

FCC ID: QHC-OPENWAY1X		FCC Pt. 15.247 802.15.4 ZIGBEE TEST REPORT (CERTIFICATION)		Reviewed by: Quality Manager
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Radiated Spurious Emission Measurements (Cont'd)

§15.247(d) / §15.205

Distance of Measurements: 3 Meters

Operating Frequency: 2440MHz

Channel: 18

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol [H/V]	AFCL [dB]	Field Strength [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]
4880.00	-103.29	Avg	H	42.16	45.88	53.98	-8.10
4880.00	-93.95	Peak	H	42.16	55.22	73.98	-18.76
7320.00	-104.89	Avg	H	47.57	49.68	53.98	-4.30
7320.00	-94.61	Peak	H	47.57	59.96	73.98	-14.02
12200.00	-135.00	Avg	H	53.13	25.13	53.98	-28.85
12200.00	-125.00	Peak	H	53.13	35.13	73.98	-38.85

Table 6-7. Radiated Measurements @ 3 meters

NOTES:

1. All emissions shown lie in the restricted bands specified in §15.205 and RSS-210 section 2.7, Table 1 and are below the limit shown in Table 6-5.
2. Average Measurements > 1GHz using RBW = 1MHz VBW = 10Hz
3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
4. The EUT is supplied with nominal AC voltage.
5. The spectrum is measured from 9kHz to the 10th harmonic and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.
6. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
7. Above 960MHz the limit is 500 μ V/m (54dB μ /m) at 3 meters radiated.

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Radiated Spurious Emission Measurements (Cont'd)

§15.247(d) / §15.205

Distance of Measurements: 3 Meters

Operating Frequency: 2475MHz

Channel: 25

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol [H/V]	AFCL [dB]	Field Strength [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]
4950.00	-103.26	Avg	H	42.40	46.14	53.98	-7.84
4950.00	-93.84	Peak	H	42.40	55.56	73.98	-18.42
7425.00	-105.80	Avg	H	47.60	48.80	53.98	-5.18
7425.00	-95.56	Peak	H	47.60	59.04	73.98	-14.94
12375.00	-135.00	Avg	H	53.10	25.10	53.98	-28.88
12375.00	-125.00	Peak	H	53.10	35.10	73.98	-38.88

Table 6-8. Radiated Measurements @ 3 meters

NOTES:

1. All emissions shown lie in the restricted bands specified in §15.205 and RSS-210 section 2.7, Table 1 and are below the limit shown in Table 6-5.
2. Average Measurements > 1GHz using RBW = 1MHz VBW = 10Hz
3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
4. The EUT is supplied with nominal AC voltage.
5. The spectrum is measured from 9kHz to the 10th harmonic and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.
6. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
7. Above 960MHz the limit is 500 μ V/m (54dB μ /m) at 3 meters radiated.

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6.8 Radiated Restricted Band Edge Measurements

§15.205 / §15.209

Distance of Measurements: 3 Meters

Operating Frequency: 2475MHz

Channel: 25

Frequency [MHz]	Analyzer Level [dBm]	Detector	Pol [H/V]	AFCL [dB]	Field Strength [dB μ V/m]	Limit [dB μ V/m]	Margin [dB]
2483.50	-90.78	Avg	H	35.20	51.42	53.98	-2.56
2483.50	-77.78	Peak	H	35.20	64.42	73.98	-9.56
2483.87	-90.88	Avg	H	35.20	51.32	53.98	-2.66
2483.87	-78.52	Peak	H	35.20	63.68	73.98	-10.30
2485.01	-92.00	Avg	H	35.21	50.21	53.98	-3.77
2485.01	-79.89	Peak	H	35.21	62.32	73.98	-11.66

Table 6-9. Radiated Restricted Band Edge Measurements at 3-meters

NOTES:

1. All emissions shown lie in the restricted bands specified in §15.205 and RSS-210 section 2.7, Table 1 and are below the limit shown in Table 6-5.
2. Average Measurements > 1GHz using RBW = 1MHz VBW = 10Hz
3. The antenna is manipulated through typical positions, polarity and length during the tests. The EUT is manipulated through three orthogonal planes.
4. The EUT is supplied with nominal AC voltage.
5. The spectrum is measured from 9kHz to the 10th harmonic and the worst-case emissions are reported. No significant emissions were found beyond the fifth harmonic for this device.
6. Levels at - 135 dBm represent the analyzer noise floor and signify that no emission was detected.
7. Above 960MHz the limit is 500 μ V/m (54dB μ /m) at 3 meters radiated.

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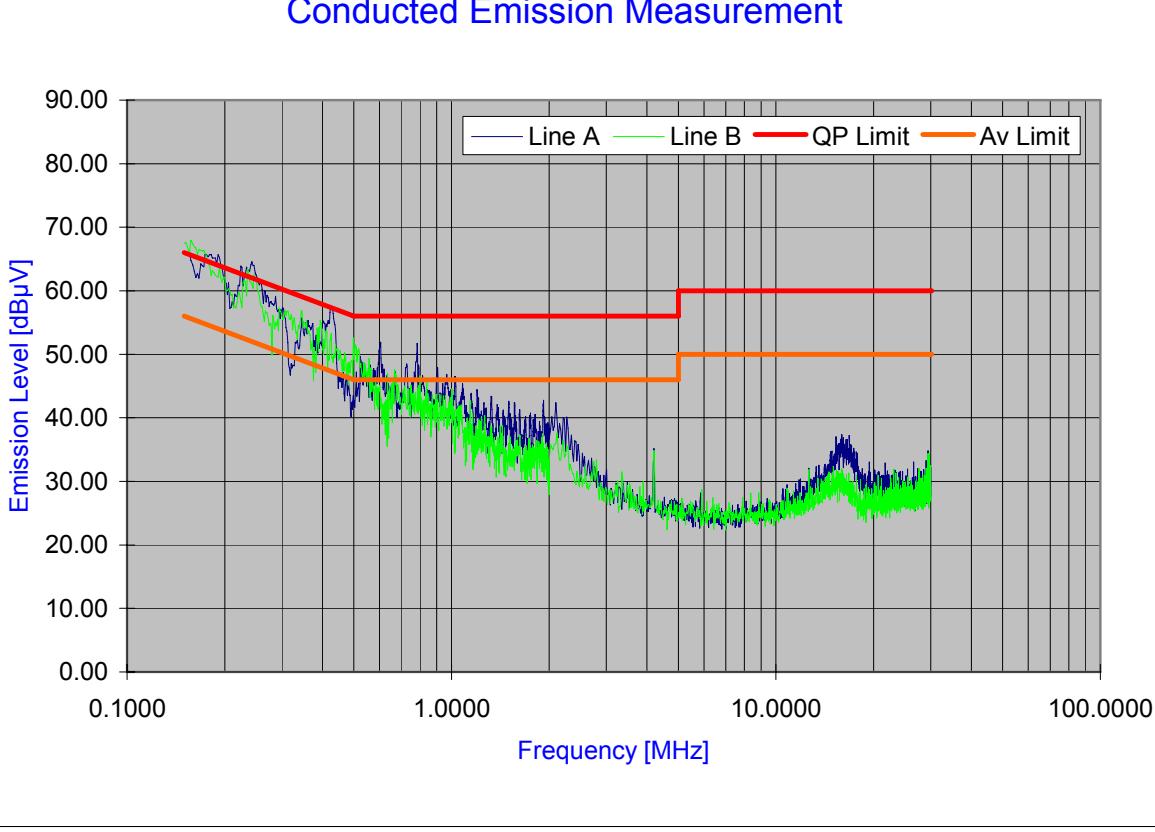
6.9 Line-Conducted Test Data

§15.207; RSS-Gen [7.2.2]

PCTEST Engineering Laboratory Inc.

Company : SmartSynch Inc.
 Model Number : SSI Openway 1X
 FCC ID Code : QHC-OPENWAY1X
 Standard : FCC Part 15C, 15.207

Power Source : AC120V/60Hz
 Tested Date : 10/05/2010
 Note : Tested with Zigbee Tx ON



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Plot 6-15. Line Conducted Plot with Zigbee

Notes:

1. All modes of operation were investigated and the worst-case emissions are reported.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. Line A = Phase; Line B = Neutral
4. Traces shown in plot are made using a peak detector.
5. Deviations to the Specifications: None.

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Line-Conducted Test Data (Cont'd)

§15.207; RSS-Gen [7.2.2]

No.	Line	Frequency	Factor	QP	Limit	Margin	Average	Limit	Margin
		[MHz]	[dB]	[dB μ V]	[dB μ V]	[dB]	[dB μ V]	[dB μ V]	[dB]
1	A	0.150	6.85	63.81	66.00	-2.19	40.40	56.00	-15.60
2	A	0.181	6.86	62.01	64.44	-2.43	45.40	54.44	-9.04
3	A	0.245	6.89	55.84	61.94	-6.10	35.19	51.94	-16.75
4	A	0.272	6.90	52.53	61.06	-8.53	33.62	51.06	-17.44
5	A	0.350	6.93	49.49	58.96	-9.47	30.54	48.96	-18.42
6	A	0.357	6.93	49.83	58.79	-8.96	33.93	48.79	-14.86
7	A	0.358	6.93	49.72	58.78	-9.06	32.70	48.78	-16.08
8	A	0.426	6.95	53.74	57.33	-3.59	35.31	47.33	-12.02
9	A	0.602	6.99	48.13	56.00	-7.87	30.87	46.00	-15.13
10	A	0.768	7.01	38.78	56.00	-17.22	25.45	46.00	-20.55
11	B	0.150	6.84	64.05	66.00	-1.95	46.99	56.00	-9.01
12	B	0.243	6.89	60.29	61.98	-1.69	40.82	51.98	-11.16
13	B	0.307	6.92	51.37	60.04	-8.67	30.65	50.04	-19.39
14	B	0.312	6.92	51.57	59.93	-8.36	29.88	49.93	-20.05
15	B	0.352	6.93	55.05	58.92	-3.87	31.23	48.92	-17.69
16	B	0.401	6.94	48.27	57.84	-9.57	28.27	47.84	-19.57
17	B	0.425	6.95	53.88	57.35	-3.47	31.72	47.35	-15.63
18	B	0.427	6.95	53.13	57.32	-4.19	32.62	47.32	-14.70
19	B	0.511	6.97	39.88	56.00	-16.12	23.52	46.00	-22.48
20	B	0.551	6.98	40.80	56.00	-15.20	23.21	46.00	-22.79

Table 6-10. Line Conducted Data with Zigbee

Notes:

1. All Modes of operation were investigated and the worst-case emissions are reported.
2. The limit for Class B device(s) from 150kHz to 30MHz are specified in Section 15.207 of the Title 47 CFR.
3. Line A = Phase; Line B = Neutral
4. Traces shown in plot are made using a peak detector.
5. Deviations to the Specifications: None.

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7.0 CONCLUSION

The data collected relate only the item(s) tested and show that the **SmartSynch Smartmeter with Cellular/PCS CDMA and Zigbee FCC ID: QHC-OPENWAY1X** is in compliance with Part 15C of the FCC Rules.

FCC ID: QHC-OPENWAY1X	 PCTEST ENGINEERING LABORATORY, INC.	FCC Pt. 15.247 802.15.4 ZIGBEE TEST REPORT (CERTIFICATION)	 SmartSynch	Reviewed by: Quality Manager
Test Report S/N: 0Y1010041664.QHC	Test Dates: October 05 - 06, 2010	EUT Type: Smartmeter with Cellular/PCS CDMA and Zigbee		Page 26 of 26