



TESTING

CERT #803.01, 803.02, 803.05, 803.06

ADDENDUM TO GRID NET, INC. TEST REPORT FC09-048A

FOR THE

GE WIMAX SMARTMETER, WX-I210+C

**FCC PART 15 SUBPART B SECTIONS 15.107 & 15.109 CLASS B
AND PART 27**

TESTING

DATE OF ISSUE: JULY 8, 2009

PREPARED FOR:

Grid Net, Inc.
340 Brannan Street, Suite 501
San Francisco, CA 94107

P.O. No.: DEV 09-14
W.O. No.: 89201

PREPARED BY:

Joyce Walker
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Date of test: February 13 – July 8, 2009

Report No.: FC09-048B

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ADMINISTRATIVE INFORMATION

DATE OF TEST: February 13 –
March 30, 2009

DATE OF RECEIPT: February 13, 2009

REPRESENTATIVE: Patrick Orallo

MANUFACTURER:
GE Energy

TEST LOCATION:
CKC Laboratories, Inc.
1120 Fulton Place
Fremont, CA 94539

FREQUENCY RANGE TESTED: 10 kHz-26.9 GHz

TEST METHOD: ANSI C63.4 (2003) and FCC Part 27

PURPOSE OF TEST:

Original Report: To perform the testing of the GE WiMAX SmartMeter, WX-I210+c with the requirements for FCC Part 15 Subpart B Sections 15.107 & 15.109 Class B and Part 27 devices.

Addendum A: To correct the plot headers on pages 29-30, add the spurious emissions limit calculation on page 34 and correct the test equipment list on page 60 with no new testing.

Addendum B: Replaced the Conducted RF Power Output with new test data.

APPROVALS

QUALITY ASSURANCE:

Steve Behm, Director of Engineering Services

TEST PERSONNEL:

Art Rice, Senior EMC Engineer

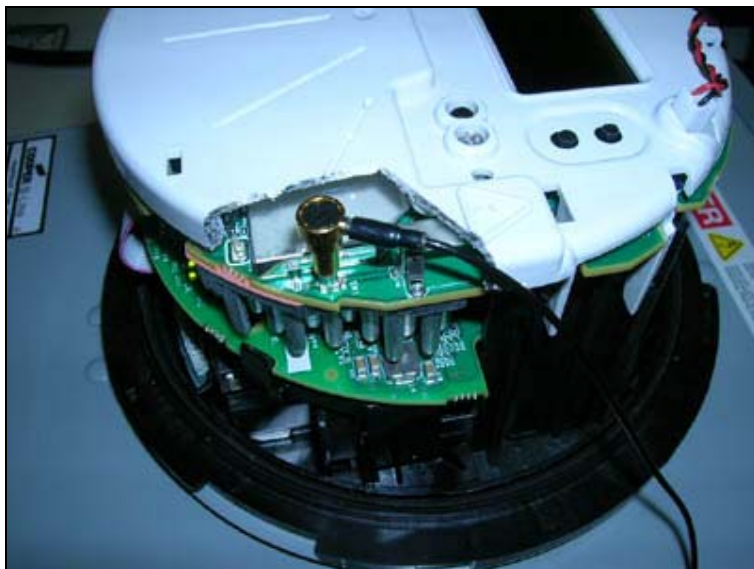
Amrinder Brar, EMC Engineer/Lab Manager

SUMMARY OF RESULTS

Test	Specification/Method	Results
Conducted Emissions	FCC 15.107	Pass
Radiated Emissions	FCC 15.109	Pass
Conducted RF Output Power	FCC 27.50(h)	Pass
Occupied Bandwidth	FCC 2.1049	Pass
Spurious Emissions at Antenna Terminal	FCC 27.53(m)	Pass
Bandedge Antenna Conducted	FCC 27.53(m)	Pass
OATS Spurious Emissions	FCC 27.53(m)	Pass
Bandedge OATS	FCC 27.53(m)	Pass
Frequency Stability	FCC 2.1055	Pass
Site File No.	FCC 958979	

CONDITIONS DURING TESTING

The plastic area above the RF connector was cut by the customer to accommodate connection of an RF cable for conducted tests.



EQUIPMENT UNDER TEST (EUT) DESCRIPTION

The customer declares the EUT tested by CKC Laboratories was representative of a production unit.

The following information has been changed by the customer since the time of testing. Any differences between the names does not affect their EMC characteristics and therefore meets the level of testing equivalent to the tested model name shown on the data sheets:

	<u>At the Time of Testing</u>	<u>Customer Declaration</u>
Device Name	ANSI WiMAX SmartMeter	GE WiMAX SmartMeter
Model Name	WX-i210+c	WX-I210+c
Manufacturer Name	Grid-Net	GE Energy
Customer Name	GE Energy	None

EQUIPMENT UNDER TEST

GE WiMAX SmartMeter

Manuf: GE Energy

Model: WX-I210+c

Serial: NA

PERIPHERAL DEVICES

The EUT was tested with the following peripheral device(s):

Laptop PC

Manuf: Dell

Model: Latitude D830

Serial: 9THV3G1

Isolation Transformer

Manuf: PCC

Model: ISO-300

Serial: NA

110-220V Step-up Transformer

Manuf: Philmore

Model: ST-300

Serial: NA

Wall Plugged Bridge

Manuf: NETGEAR

Model: XE102

Serial: 1X618653036AE

TEMPERATURE AND HUMIDITY DURING TESTING

The temperature during testing was within +15°C and + 35°C.
The relative humidity was between 20% and 75%.

FCC 2.1033(c) (3) USER'S MANUAL

The necessary information is contained in a separate document.

FCC 2.1033 (c)(4) TYPE OF EMISSIONS

4M44 W7D and 9M06 W7D

FCC 2.1033 (c)(5) FREQUENCY RANGE

2498MHz – 2688MHz

FCC 2.1033 (c)(6) OPERATING POWER

28.73 dBm

FCC 2.1033 (c)(8) DC VOLTAGES

The necessary information is contained in a separate document.

FCC 2.1033 (c)(9) TUNE-UP PROCEDURE

The necessary information is contained in a separate document.

FCC 2.1033(c)(10) SCHEMATICS AND CIRCUITRY DESCRIPTION

The necessary information is contained in a separate document.

FCC 2.1033(c)(11) LABEL AND PLACEMENT

The necessary information is contained in a separate document.

FCC 2.1033(c)(12) SUBMITTAL PHOTOS

The necessary information is contained in a separate document.

FCC 2.1033 (c)(13) MODULATION INFORMATION OFDMA, QPSK, 16QAM

MEASUREMENT UNCERTAINTIES

Uncertainty Value	Parameter
4.73 dB	Radiated Emissions
3.34 dB	Mains Conducted Emissions
3.30 dB	Disturbance Power

The reported measurement uncertainties are calculated based on the worst case of all laboratory environments from CKC Laboratories, Inc. test sites. Only those parameters which require estimation of measurement uncertainty are reported. The reported worst case measurement uncertainty is less than the maximum values derived in CISPR 16-4-2. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of $k=2$. Compliance is deemed to occur provided measurements are below the specified limits.

FCC 15.107 – AC CONDUCTED EMISSIONS

Test Setup Photos



Test Data Sheets

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • 510-249-1170

Customer: **GE Energy**
 Specification: **FCC 15.107 B COND [AVE]**
 Work Order #: **89201**
 Test Type: **Conducted Emissions**
 Equipment: **ANSI WiMAX SmartMeter**
 Manufacturer: **Grid-Net**
 Model: **WX-i210+c**
 S/N: **n/a**

Date: 3/26/2009
 Time: 16:13:18
 Sequence#: 19
 Tested By: Art Rice
 240V 60Hz

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
S.A., RF Section HP-8568B	2601A02492	01/06/2009	01/06/2011	02663
S.A., Display HP-85662A	2542A12169	01/06/2009	01/06/2011	02662
QP Adapter HP-85650A	2521A00909	01/07/2009	01/07/2011	00683
TTE High Pass Filter	H4120	12/18/2008	12/18/2010	05258
Cable	None	05/13/2008	05/13/2010	00880
10 dB Pad		04/05/2007	04/05/2009	00081
LISN, Emco 3816/2	9408-1006	04/02/2007	04/02/2009	00493

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
ANSI WiMAX SmartMeter*	Grid-Net	WX-i210+c	n/a

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

The wall mount transceiver is placed on top of the wooden test table.
 EUT powered by 240VAC.

FCC 15.107B

NOTES:

1) Spectrum analyzer settings: 0.15-30 MHz RBW=9kHz
 Conducted emissions .15-30 MHz.

Transducer Legend:

T1=LISN - AN00493 - Black - ELC "OUT"	T2=AN P00081 10dB Attenuator
T3=FIL-ANP05258-121808 CE HP Filter	T4=Cable Calibration ANP00880

Measurement Data:

Reading listed by margin.

Test Lead: Line 1

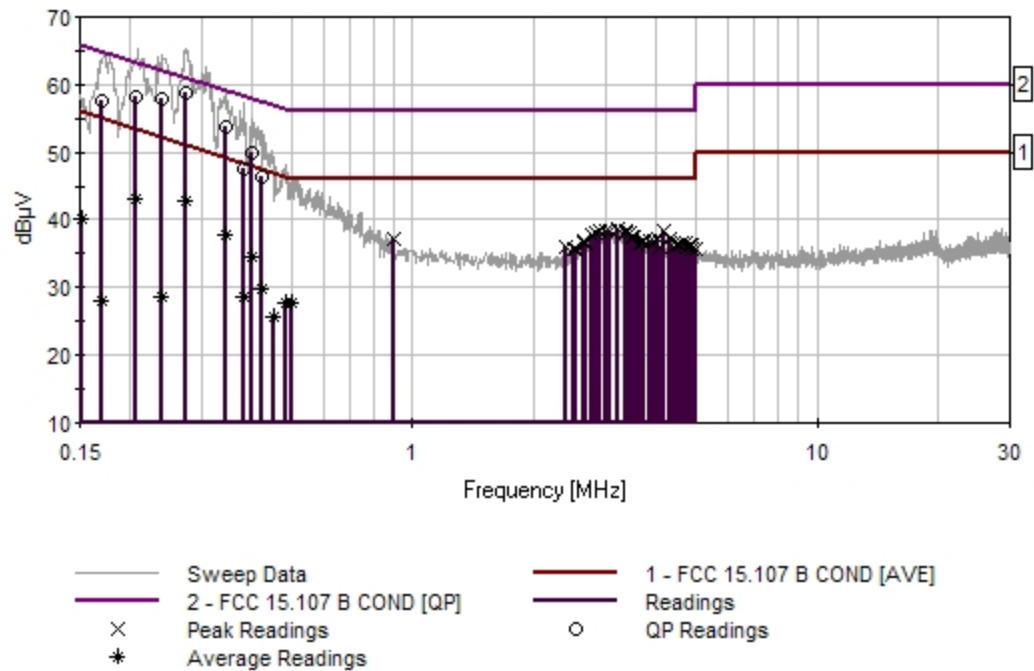
#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	274.000k	48.5	+0.1	+10.0	+0.2	+0.0	+0.0	58.8	61.0	-2.2	Line
QP											
^	273.624k	55.1	+0.0	+10.0	+0.2	+0.0	+0.0	65.3	51.0	+14.3	Line
3	240.000k	47.9	+0.0	+10.0	+0.1	+0.0	+0.0	58.0	62.1	-4.1	Line
QP											

4	205.470k QP	48.1	+0.0	+10.0	+0.1	+0.0	+0.0	58.2	63.4	-5.2	Line
^	209.630k	55.2	+0.0	+10.0	+0.1	+0.1	+0.0	65.4	53.2	+12.2	Line
6	343.260k QP	43.5	+0.0	+10.0	+0.1	+0.0	+0.0	53.6	59.1	-5.5	Line
7	3.203M	28.7	-0.1	+10.0	+0.1	+0.1	+0.0	38.8	46.0	-7.2	Line
8	171.000k QP	47.0	+0.0	+10.0	+0.4	+0.1	+0.0	57.5	64.9	-7.4	Line
^	171.089k	54.3	+0.0	+10.0	+0.4	+0.1	+0.0	64.8	54.9	+9.9	Line
10	2.893M	28.4	-0.1	+10.0	+0.1	+0.1	+0.0	38.5	46.0	-7.5	Line
11	3.012M	28.4	-0.1	+10.0	+0.1	+0.1	+0.0	38.5	46.0	-7.5	Line
12	3.080M	28.4	-0.1	+10.0	+0.1	+0.1	+0.0	38.5	46.0	-7.5	Line
13	3.352M	28.2	-0.1	+10.0	+0.1	+0.2	+0.0	38.4	46.0	-7.6	Line
14	4.186M	27.9	+0.0	+10.1	+0.1	+0.2	+0.0	38.3	46.0	-7.7	Line
15	2.829M	28.1	-0.1	+10.0	+0.1	+0.1	+0.0	38.2	46.0	-7.8	Line
16	400.000k QP	39.7	+0.1	+10.1	+0.0	+0.1	+0.0	50.0	57.9	-7.9	Line
^	400.157k	44.6	+0.1	+10.1	+0.0	+0.1	+0.0	54.9	47.9	+7.0	Line
18	3.382M	27.9	-0.1	+10.0	+0.1	+0.2	+0.0	38.1	46.0	-7.9	Line
19	3.425M	27.8	-0.1	+10.0	+0.1	+0.2	+0.0	38.0	46.0	-8.0	Line
20	2.782M	27.8	-0.1	+10.0	+0.1	+0.1	+0.0	37.9	46.0	-8.1	Line
21	274.000k Ave	32.4	+0.1	+10.0	+0.2	+0.0	+0.0	42.7	51.0	-8.3	Line
22	3.505M	27.1	+0.0	+10.1	+0.1	+0.2	+0.0	37.5	46.0	-8.5	Line
23	3.488M	27.0	+0.0	+10.1	+0.1	+0.2	+0.0	37.4	46.0	-8.6	Line
24	894.012k	27.0	+0.0	+10.0	+0.1	+0.1	+0.0	37.2	46.0	-8.8	Line
25	4.326M	26.8	+0.0	+10.1	+0.1	+0.2	+0.0	37.2	46.0	-8.8	Line
26	4.028M	26.7	+0.0	+10.1	+0.1	+0.2	+0.0	37.1	46.0	-8.9	Line
27	3.692M	26.6	+0.0	+10.1	+0.1	+0.2	+0.0	37.0	46.0	-9.0	Line
28	3.731M	26.6	+0.0	+10.1	+0.1	+0.2	+0.0	37.0	46.0	-9.0	Line

29	3.863M	26.7	+0.0	+10.1	+0.1	+0.1	+0.0	37.0	46.0	-9.0	Line
30	3.926M	26.7	+0.0	+10.1	+0.1	+0.1	+0.0	37.0	46.0	-9.0	Line
31	2.663M	26.7	-0.1	+10.0	+0.1	+0.1	+0.0	36.8	46.0	-9.2	Line
32	2.676M	26.6	-0.1	+10.0	+0.1	+0.1	+0.0	36.7	46.0	-9.3	Line
33	3.701M	26.3	+0.0	+10.1	+0.1	+0.2	+0.0	36.7	46.0	-9.3	Line
34	2.646M	26.3	-0.1	+10.0	+0.1	+0.2	+0.0	36.5	46.0	-9.5	Line
35	4.654M	26.1	+0.1	+10.0	+0.1	+0.2	+0.0	36.5	46.0	-9.5	Line
36	4.734M	26.1	+0.1	+10.0	+0.1	+0.2	+0.0	36.5	46.0	-9.5	Line
37	4.526M	26.0	+0.1	+10.0	+0.1	+0.2	+0.0	36.4	46.0	-9.6	Line
38	4.862M	26.0	+0.1	+10.0	+0.1	+0.2	+0.0	36.4	46.0	-9.6	Line
39	4.883M	26.0	+0.1	+10.0	+0.1	+0.2	+0.0	36.4	46.0	-9.6	Line
40	3.586M	25.9	+0.0	+10.1	+0.1	+0.2	+0.0	36.3	46.0	-9.7	Line
41	4.577M	25.8	+0.1	+10.0	+0.1	+0.2	+0.0	36.2	46.0	-9.8	Line
42	4.097M	25.7	+0.0	+10.1	+0.1	+0.2	+0.0	36.1	46.0	-9.9	Line
43	4.764M	25.7	+0.1	+10.0	+0.1	+0.2	+0.0	36.1	46.0	-9.9	Line
44	2.387M	25.6	+0.0	+10.0	+0.1	+0.2	+0.0	35.9	46.0	-10.1	Line
45	4.445M	25.5	+0.0	+10.1	+0.1	+0.2	+0.0	35.9	46.0	-10.1	Line
46	207.000k Ave	33.0	+0.0	+10.0	+0.1	+0.0	+0.0	43.1	53.3	-10.2	Line
47	4.998M	25.4	+0.1	+10.0	+0.1	+0.2	+0.0	35.8	46.0	-10.2	Line
48	2.506M	25.5	-0.1	+10.0	+0.1	+0.2	+0.0	35.7	46.0	-10.3	Line
49	2.527M	25.5	-0.1	+10.0	+0.1	+0.2	+0.0	35.7	46.0	-10.3	Line
50	4.905M	25.3	+0.1	+10.0	+0.1	+0.2	+0.0	35.7	46.0	-10.3	Line
51	425.000k QP	36.2	+0.1	+10.1	+0.0	+0.0	+0.0	46.4	57.3	-10.9	Line
52	381.000k QP	37.1	+0.1	+10.1	+0.0	+0.1	+0.0	47.4	58.3	-10.9	Line

53	343.000k	27.7	+0.0	+10.0	+0.1	+0.0	+0.0	37.8	49.1	-11.3	Line
	Ave										
^	343.244k	49.0	+0.0	+10.0	+0.1	+0.0	+0.0	59.1	49.0	+10.1	Line
55	400.000k	24.3	+0.1	+10.1	+0.0	+0.1	+0.0	34.6	47.9	-13.3	Line
	Ave										
56	151.000k	27.2	+0.0	+10.0	+2.9	+0.0	+0.0	40.0	55.9	-15.9	Line
	Ave										
^	150.727k	45.4	+0.0	+10.0	+3.0	+0.0	+0.0	58.4	56.0	+2.4	Line
58	425.000k	19.8	+0.1	+10.1	+0.0	+0.0	+0.0	29.9	47.3	-17.4	Line
	Ave										
^	424.882k	43.1	+0.1	+10.1	+0.0	+0.0	+0.0	53.3	47.4	+5.9	Line
60	504.000k	17.3	+0.1	+10.1	+0.0	+0.1	+0.0	27.6	46.0	-18.4	Line
	Ave										
^	504.146k	36.1	+0.1	+10.1	+0.0	+0.1	+0.0	46.4	46.0	+0.4	Line
62	487.000k	17.4	+0.1	+10.1	+0.0	+0.1	+0.0	27.7	46.2	-18.5	Line
	Ave										
^	486.694k	37.7	+0.1	+10.1	+0.0	+0.1	+0.0	48.0	46.2	+1.8	Line
64	381.000k	18.4	+0.1	+10.1	+0.0	+0.1	+0.0	28.7	48.3	-19.6	Line
	Ave										
^	381.250k	47.1	+0.1	+10.1	+0.0	+0.1	+0.0	57.4	48.3	+9.1	Line
66	454.000k	15.6	+0.1	+10.1	+0.0	+0.0	+0.0	25.8	46.8	-21.0	Line
	Ave										
^	453.970k	38.7	+0.1	+10.1	+0.0	+0.0	+0.0	48.9	46.8	+2.1	Line
68	240.000k	18.6	+0.0	+10.0	+0.1	+0.0	+0.0	28.7	52.1	-23.4	Line
	Ave										
^	240.173k	54.3	+0.0	+10.0	+0.1	+0.0	+0.0	64.4	52.1	+12.3	Line
70	171.000k	17.4	+0.0	+10.0	+0.4	+0.1	+0.0	27.9	54.9	-27.0	Line
	Ave										

CKC Laboratories, Inc. Date: 3/26/2009 Time: 16:13:18 GE Energy WO#: 89201
 FCC 15.107 B COND [AVE] Test Lead: Line 1 240V 60Hz Sequence#: 19
 WX-i210+c



Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • 510-249-1170

Customer: **GE Energy**
 Specification: **FCC 15.107 B COND [AVE]**
 Work Order #: **89201**
 Test Type: **Conducted Emissions**
 Equipment: **ANSI WiMAX SmartMeter**
 Manufacturer: **Grid-Net**
 Model: **WX-i210+c**
 S/N: **n/a**

Date: 3/26/2009
 Time: 16:33:21
 Sequence#: 20
 Tested By: Art Rice
 240V 60Hz

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
S.A., RF Section HP-8568B	2601A02492	01/06/2009	01/06/2011	02663
S.A., Display HP-85662A	2542A12169	01/06/2009	01/06/2011	02662
QP Adapter HP-85650A	2521A00909	01/07/2009	01/07/2011	00683
TTE High Pass Filter	H4120	12/18/2008	12/18/2010	05258
Cable	None	05/13/2008	05/13/2010	00880
10 dB Pad		04/05/2007	04/05/2009	00081
LISN, Emco 3816/2	9408-1006	04/02/2007	04/02/2009	00493

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
ANSI WiMAX SmartMeter*	Grid-Net	WX-i210+c	n/a

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

The wall mount transceiver is placed on top of the wooden test table.
 EUT powered by 240VAC.

FCC 15.107B

NOTES:

1) Spectrum analyzer settings: 0.15-30 MHz RBW=9kHz

Conducted emissions .15-30 MHz.

Transducer Legend:

T1=LISN - AN00493 - White - ELC "OUT"	T2=AN P00081 10dB Attenuator
T3=FIL-ANP05258-121808 CE HP Filter	T4=Cable Calibration ANP00880

Measurement Data:

Reading listed by margin.

Test Lead: Line 2

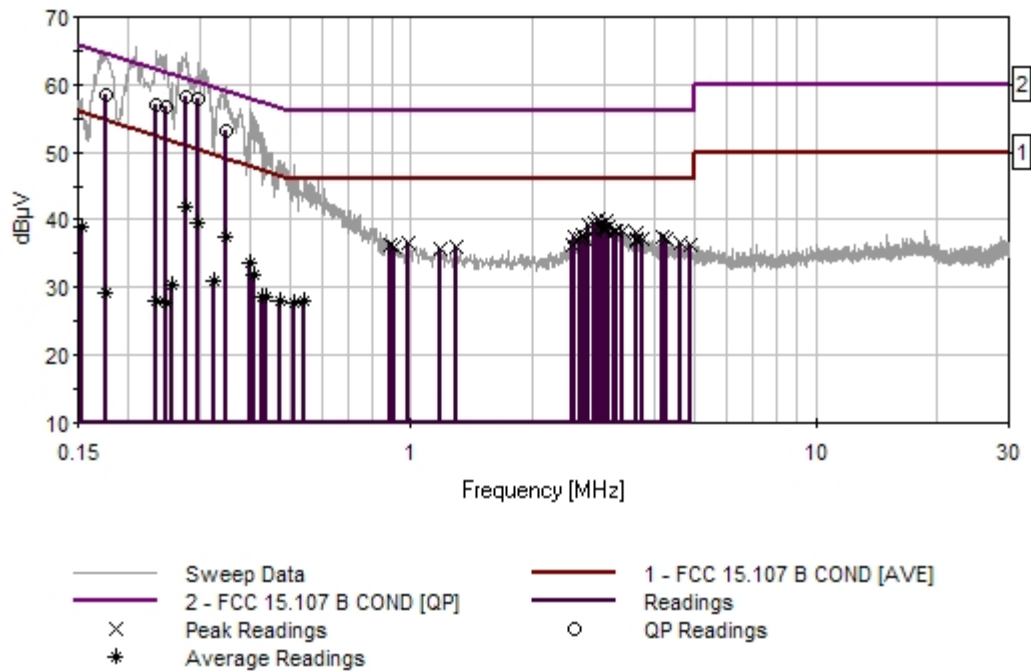
#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	298.000k	47.6	+0.0	+10.0	+0.2	+0.0	+0.0	57.8	60.3	-2.5	Line
QP											
2	278.000k	48.1	+0.0	+10.0	+0.2	+0.0	+0.0	58.3	60.9	-2.6	Line
QP											
^	277.987k	54.5	+0.0	+10.0	+0.2	+0.0	+0.0	64.7	50.9	+13.8	Line

4	247.000k QP	46.4	+0.0	+10.0	+0.2	+0.0	+0.0	56.6	61.9	-5.3	Line
5	234.000k QP	46.8	+0.0	+10.0	+0.1	+0.0	+0.0	56.9	62.3	-5.4	Line
^	233.628k	54.8	+0.0	+10.0	+0.1	+0.0	+0.0	64.9	52.3	+12.6	Line
7	347.000k QP	43.0	+0.1	+10.1	+0.1	+0.0	+0.0	53.3	59.0	-5.7	Line
^	347.071k	49.4	+0.1	+10.1	+0.1	+0.0	+0.0	59.7	49.0	+10.7	Line
9	2.897M	29.8	+0.1	+10.0	+0.1	+0.1	+0.0	40.1	46.0	-5.9	Line
10	3.046M	29.5	+0.1	+10.0	+0.1	+0.1	+0.0	39.8	46.0	-6.2	Line
11	175.000k QP	47.9	+0.0	+10.0	+0.4	+0.1	+0.0	58.4	64.7	-6.3	Line
12	2.825M	29.3	+0.1	+10.0	+0.1	+0.1	+0.0	39.6	46.0	-6.4	Line
13	2.748M	29.1	+0.1	+10.0	+0.1	+0.1	+0.0	39.4	46.0	-6.6	Line
14	2.931M	28.9	+0.1	+10.0	+0.1	+0.1	+0.0	39.2	46.0	-6.8	Line
15	3.072M	28.6	+0.1	+10.0	+0.1	+0.1	+0.0	38.9	46.0	-7.1	Line
16	3.029M	28.5	+0.1	+10.0	+0.1	+0.1	+0.0	38.8	46.0	-7.2	Line
17	2.957M	28.4	+0.1	+10.0	+0.1	+0.1	+0.0	38.7	46.0	-7.3	Line
18	3.016M	28.4	+0.1	+10.0	+0.1	+0.1	+0.0	38.7	46.0	-7.3	Line
19	3.220M	28.2	+0.1	+10.0	+0.1	+0.1	+0.0	38.5	46.0	-7.5	Line
20	3.344M	28.2	+0.1	+10.0	+0.1	+0.1	+0.0	38.5	46.0	-7.5	Line
21	3.195M	28.1	+0.1	+10.0	+0.1	+0.1	+0.0	38.4	46.0	-7.6	Line
22	2.850M	28.0	+0.1	+10.0	+0.1	+0.1	+0.0	38.3	46.0	-7.7	Line
23	3.616M	27.7	+0.1	+10.1	+0.1	+0.2	+0.0	38.2	46.0	-7.8	Line
24	2.646M	27.5	+0.1	+10.0	+0.1	+0.2	+0.0	37.9	46.0	-8.1	Line
25	2.544M	27.1	+0.1	+10.0	+0.1	+0.2	+0.0	37.5	46.0	-8.5	Line
26	4.177M	26.9	+0.1	+10.1	+0.1	+0.2	+0.0	37.4	46.0	-8.6	Line
27	3.748M	26.8	+0.1	+10.1	+0.1	+0.2	+0.0	37.3	46.0	-8.7	Line
28	2.612M	26.7	+0.1	+10.0	+0.1	+0.2	+0.0	37.1	46.0	-8.9	Line

29	2.680M	26.8	+0.1	+10.0	+0.1	+0.1	+0.0	37.1	46.0	-8.9	Line
30	3.599M	26.6	+0.1	+10.1	+0.1	+0.2	+0.0	37.1	46.0	-8.9	Line
31	4.279M	26.6	+0.1	+10.1	+0.1	+0.2	+0.0	37.1	46.0	-8.9	Line
32	278.000k Ave	31.7	+0.0	+10.0	+0.2	+0.0	+0.0	41.9	50.9	-9.0	Line
33	3.607M	26.3	+0.1	+10.1	+0.1	+0.2	+0.0	36.8	46.0	-9.2	Line
34	983.325k	26.4	+0.0	+10.1	+0.1	+0.1	+0.0	36.7	46.0	-9.3	Line
35	4.620M	26.3	+0.0	+10.0	+0.1	+0.2	+0.0	36.6	46.0	-9.4	Line
36	4.892M	26.1	+0.0	+10.0	+0.1	+0.2	+0.0	36.4	46.0	-9.6	Line
37	889.759k	26.1	+0.0	+10.0	+0.1	+0.1	+0.0	36.3	46.0	-9.7	Line
38	2.502M	25.9	+0.1	+10.0	+0.1	+0.2	+0.0	36.3	46.0	-9.7	Line
39	4.917M	26.0	+0.0	+10.0	+0.1	+0.2	+0.0	36.3	46.0	-9.7	Line
40	1.294M	25.8	+0.0	+10.1	+0.1	+0.1	+0.0	36.1	46.0	-9.9	Line
41	906.771k	25.9	+0.0	+10.0	+0.1	+0.0	+0.0	36.0	46.0	-10.0	Line
42	1.183M	25.3	+0.0	+10.1	+0.1	+0.1	+0.0	35.6	46.0	-10.4	Line
43	298.000k Ave	29.5	+0.0	+10.0	+0.2	+0.0	+0.0	39.7	50.3	-10.6	Line
^	298.349k	53.0	+0.0	+10.0	+0.2	+0.0	+0.0	63.2	50.3	+12.9	Line
45	347.000k Ave	27.1	+0.1	+10.1	+0.1	+0.0	+0.0	37.4	49.0	-11.6	Line
46	399.000k Ave	23.4	+0.1	+10.1	+0.0	+0.1	+0.0	33.7	47.9	-14.2	Line
^	400.157k	46.2	+0.1	+10.1	+0.0	+0.1	+0.0	56.5	47.9	+8.6	Line
48	409.000k Ave	21.7	+0.1	+10.1	+0.0	+0.1	+0.0	32.0	47.7	-15.7	Line
^	408.883k	44.9	+0.1	+10.1	+0.0	+0.1	+0.0	55.2	47.7	+7.5	Line
50	153.000k Ave	27.2	+0.0	+10.0	+1.8	+0.0	+0.0	39.0	55.8	-16.8	Line
^	152.909k	46.0	+0.0	+10.0	+1.8	+0.0	+0.0	57.8	55.8	+2.0	Line
52	541.000k Ave	17.7	+0.0	+10.1	+0.0	+0.1	+0.0	27.9	46.0	-18.1	Line
^	541.234k	35.8	+0.0	+10.1	+0.0	+0.1	+0.0	46.0	46.0	+0.0	Line

54	513.000k	17.6	+0.0	+10.1	+0.0	+0.1	+0.0	27.8	46.0	-18.2	Line
^	Ave 512.873k	37.9	+0.0	+10.1	+0.0	+0.1	+0.0	48.1	46.0	+2.1	Line
56	476.000k	17.9	+0.0	+10.1	+0.0	+0.1	+0.0	28.1	46.4	-18.3	Line
^	Ave 475.786k	38.5	+0.0	+10.1	+0.0	+0.1	+0.0	48.7	46.4	+2.3	Line
58	439.000k	18.6	+0.0	+10.1	+0.0	+0.0	+0.0	28.7	47.1	-18.4	Line
^	Ave 439.426k	40.8	+0.0	+10.1	+0.0	+0.0	+0.0	50.9	47.1	+3.8	Line
^	Ave 435.790k	40.6	+0.0	+10.1	+0.0	+0.0	+0.0	50.7	47.1	+3.6	Line
61	325.000k	20.6	+0.1	+10.0	+0.1	+0.1	+0.0	30.9	49.6	-18.7	Line
^	Ave 324.528k	44.5	+0.1	+10.0	+0.1	+0.1	+0.0	54.8	49.6	+5.2	Line
63	429.000k	18.4	+0.0	+10.1	+0.0	+0.0	+0.0	28.5	47.3	-18.8	Line
^	Ave 429.245k	42.2	+0.0	+10.1	+0.0	+0.0	+0.0	52.3	47.3	+5.0	Line
^	Ave 430.699k	41.8	+0.0	+10.1	+0.0	+0.0	+0.0	51.9	47.2	+4.7	Line
66	255.000k	20.2	+0.0	+10.0	+0.2	+0.0	+0.0	30.4	51.6	-21.2	Line
^	Ave 255.444k	49.9	+0.0	+10.0	+0.2	+0.0	+0.0	60.1	51.6	+8.5	Line
68	247.000k	17.6	+0.0	+10.0	+0.2	+0.0	+0.0	27.7	51.9	-24.2	Line
^	Ave 247.445k	54.1	+0.0	+10.0	+0.2	+0.0	+0.0	64.3	51.8	+12.5	Line
70	234.000k	17.9	+0.0	+10.0	+0.1	+0.0	+0.0	28.0	52.3	-24.3	Line
^	Ave 175.000k	18.7	+0.0	+10.0	+0.4	+0.1	+0.0	29.1	54.7	-25.6	Line
^	Ave 174.725k	54.4	+0.0	+10.0	+0.4	+0.1	+0.0	64.9	54.7	+10.2	Line

CKC Laboratories, Inc. Date: 3/26/2009 Time: 16:33:21 GE Energy WO#: 89201
 FCC 15.107 B COND [AVE] Test Lead: Line 2 240V 60Hz Sequence#: 20
 WX-i210+c



FCC 15.109 – RADIATED EMISSIONS

Test Setup Photos



Test Data Sheets

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • 510-249-1170

Customer: **GE Energy**
 Specification: **FCC 15.109 Class B Radiated 30-1000MHz**
 Work Order #: **89201** Date: 2/26/2009
 Test Type: **Maximized Emissions** Time: 15:30:50
 Equipment: **ANSI WiMAX SmartMeter** Sequence#: 14
 Manufacturer: Grid-Net Tested By: Art Rice
 Model: WX-i210+c
 S/N: n/a

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
E4446A Spectrum Analyzer	US44300408	03/05/2007	03/05/2009	02668
Preamplifier, HP8447D	2443A03707	02/09/2009	02/09/2011	00730
Antenna, Bilog	2630	12/22/2008	12/22/2010	00852
Cable	None	04/21/2008	04/21/2010	P05440
Cable	None	04/05/2007	04/05/2009	P05300
Cable	None	04/02/2007	04/02/2009	P05299

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
ANSI WiMAX SmartMeter*	Grid-Net	WX-i210+c	n/a

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Dell	Latitude D830	9THV3G1
Isolation Transformer	PCC	ISO-300	none
110-220V Step-up Transformer	Philmore	ST-300	none
Wall Plugged Bridge	NETGEAR	XE102	1X618653036AE

Test Conditions / Notes:

The wall mount transceiver is placed on top of the wooden test table. It is mounted on styrofoam blocks.
 EUT powered by 220VAC.
 The laptop PC communicates to the EUT through the Wall Plugged Bridge.
 The EUT uses carrier current signals over the power line to communicate with the Wall Plugged Bridge, which bridges to the Ethernet.
 The Ethernet cable is routed under groundplane to the laptop located outside the chamber. The laptop is constantly pinging the EUT to exercise the port.
 Using command prompt "ping -t 192.168.137.1" to exercise Ethernet.

NOTES:

- 1) Spectrum analyzer settings: 0.15-30 MHz RBW=9kHz, 30-1000 MHz RBW=120kHz
- 2) Testing the digital circuitry of the EUT.

Radiated emissions 30-1000 MHz.

Transducer Legend:

T1=Cable Calibration ANP05299	T2=Cable Calibration ANP05300
T3=Cable Calibration ANP05440	T4=AMP-AN00730-020909 .01-1000
T5=ANT AN00852 25-1000MHz	

Measurement Data:		Reading listed by margin.					Test Distance: 3 Meters				
#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBμV	dB	dB	dB	dB	Table	dBμV/m	dBμV/m	dB	Ant
1	499.990M	52.7	+0.2	+0.6	+1.3	-27.2	+0.0	45.5	46.0	-0.5	Horiz
	QP		+17.9				273				140
^	499.987M	53.0	+0.2	+0.6	+1.3	-27.2	+0.0	45.8	46.0	-0.2	Horiz
			+17.9				273				140
3	499.989M	51.0	+0.2	+0.6	+1.3	-27.2	+0.0	43.8	46.0	-2.2	Vert
	QP		+17.9				25				101
^	499.987M	51.9	+0.2	+0.6	+1.3	-27.2	+0.0	44.7	46.0	-1.3	Vert
			+17.9				25				101
5	399.989M	52.3	+0.1	+0.5	+1.2	-27.3	+0.0	42.8	46.0	-3.2	Vert
	QP		+16.0				346				111
^	399.994M	53.2	+0.1	+0.5	+1.2	-27.3	+0.0	43.7	46.0	-2.3	Vert
			+16.0				346				111
7	35.732M	46.7	+0.0	+0.2	+0.4	-27.4	+0.0	36.3	40.0	-3.7	Vert
	QP		+16.4				201				100
^	35.753M	56.0	+0.0	+0.2	+0.4	-27.4	+0.0	45.6	40.0	+5.6	Vert
			+16.4				201				100
9	599.989M	46.9	+0.2	+0.6	+1.5	-27.1	+0.0	41.7	46.0	-4.3	Vert
	QP		+19.6				16				102
^	599.987M	47.8	+0.2	+0.6	+1.5	-27.1	+0.0	42.6	46.0	-3.4	Vert
			+19.6				16				101
11	399.989M	50.8	+0.1	+0.5	+1.2	-27.3	+0.0	41.3	46.0	-4.7	Horiz
	QP		+16.0				174				199
^	399.987M	51.4	+0.1	+0.5	+1.2	-27.3	+0.0	41.9	46.0	-4.1	Horiz
			+16.0				174				200
13	35.148M	45.1	+0.0	+0.2	+0.4	-27.4	+0.0	35.1	40.0	-4.9	Vert
	QP		+16.8				209				100
^	35.084M	55.9	+0.0	+0.2	+0.4	-27.4	+0.0	45.9	40.0	+5.9	Vert
			+16.8				209				100
15	33.425M	44.4	+0.0	+0.2	+0.3	-27.4	+0.0	35.0	40.0	-5.0	Vert
	QP		+17.5				301				100
^	33.389M	56.0	+0.0	+0.2	+0.3	-27.4	+0.0	46.6	40.0	+6.6	Vert
			+17.5				301				100
17	35.333M	44.8	+0.0	+0.2	+0.4	-27.4	+0.0	34.7	40.0	-5.3	Vert
	QP		+16.7				209				100
^	35.382M	57.2	+0.0	+0.2	+0.4	-27.4	+0.0	47.0	40.0	+7.0	Vert
			+16.6				209				100
19	34.383M	44.4	+0.0	+0.2	+0.4	-27.4	+0.0	34.7	40.0	-5.3	Vert
	QP		+17.1				230				100
^	34.385M	57.9	+0.0	+0.2	+0.4	-27.4	+0.0	48.2	40.0	+8.2	Vert
			+17.1				230				100
21	799.983M	43.1	+0.2	+0.7	+1.8	-27.1	+0.0	40.4	46.0	-5.6	Horiz
	QP		+21.7				74				145
^	799.980M	44.7	+0.2	+0.7	+1.8	-27.1	+0.0	42.0	46.0	-4.0	Horiz
			+21.7				74				145

23	32.587M	42.7	+0.0	+0.2	+0.3	-27.4	+0.0	33.7	40.0	-6.3	Vert
	QP		+17.9				83				100
^	32.588M	49.9	+0.0	+0.2	+0.3	-27.4	+0.0	40.9	40.0	+0.9	Vert
			+17.9				83				100
25	33.974M	43.1	+0.0	+0.2	+0.4	-27.4	+0.0	33.6	40.0	-6.4	Vert
	QP		+17.3				64				100
^	33.944M	53.4	+0.0	+0.2	+0.4	-27.4	+0.0	43.9	40.0	+3.9	Vert
			+17.3				64				100
27	30.078M	41.6	+0.0	+0.1	+0.3	-27.4	+0.0	33.6	40.0	-6.4	Vert
	QP		+19.0				129				100
^	30.075M	52.3	+0.0	+0.1	+0.3	-27.4	+0.0	44.3	40.0	+4.3	Vert
			+19.0				129				100
29	32.227M	42.5	+0.0	+0.1	+0.3	-27.4	+0.0	33.5	40.0	-6.5	Vert
	QP		+18.0				337				100
^	32.216M	52.9	+0.0	+0.1	+0.3	-27.4	+0.0	43.9	40.0	+3.9	Vert
			+18.0				337				100
31	33.190M	42.8	+0.0	+0.2	+0.3	-27.4	+0.0	33.5	40.0	-6.5	Vert
	QP		+17.6				308				100
^	33.191M	53.6	+0.0	+0.2	+0.3	-27.4	+0.0	44.3	40.0	+4.3	Vert
			+17.6				308				100
33	33.800M	42.5	+0.0	+0.2	+0.3	-27.4	+0.0	33.0	40.0	-7.0	Vert
	QP		+17.4				301				100
^	33.846M	52.3	+0.0	+0.2	+0.3	-27.4	+0.0	42.8	40.0	+2.8	Vert
			+17.4				301				100
35	899.962M	40.8	+0.3	+0.8	+1.9	-27.4	+0.0	38.9	46.0	-7.1	Horiz
			+22.5				227				146
36	33.612M	42.2	+0.0	+0.2	+0.3	-27.4	+0.0	32.8	40.0	-7.2	Vert
	QP		+17.5				301				100
^	33.617M	53.7	+0.0	+0.2	+0.3	-27.4	+0.0	44.2	40.0	+4.2	Vert
			+17.4				301				100
38	68.657M	50.9	+0.1	+0.2	+0.5	-27.2	+0.0	30.6	40.0	-9.4	Horiz
			+6.1				254				270
39	39.682M	40.7	+0.1	+0.1	+0.5	-27.3	+0.0	28.0	40.0	-12.0	Vert
	QP		+13.9				327				101
^	39.662M	53.0	+0.1	+0.1	+0.5	-27.3	+0.0	40.3	40.0	+0.3	Vert
			+13.9				327				101
41	66.448M	47.3	+0.1	+0.2	+0.4	-27.1	+0.0	26.9	40.0	-13.1	Vert
	QP		+6.0				356				100
^	66.362M	57.2	+0.1	+0.2	+0.4	-27.1	+0.0	36.8	40.0	-3.2	Vert
			+6.0				356				100
43	41.045M	38.6	+0.1	+0.1	+0.4	-27.3	+0.0	25.0	40.0	-15.0	Vert
	QP		+13.1				17				102
^	40.979M	49.5	+0.1	+0.1	+0.4	-27.3	+0.0	36.0	40.0	-4.0	Vert
			+13.2				17				102
45	56.450M	44.7	+0.1	+0.2	+0.4	-27.3	+0.0	24.6	40.0	-15.4	Vert
	QP		+6.5				326				100
^	56.461M	61.5	+0.1	+0.2	+0.4	-27.3	+0.0	41.4	40.0	+1.4	Vert
			+6.5				326				100

47	39.831M	37.2	+0.1	+0.1	+0.5	-27.3	+0.0	24.4	40.0	-15.6	Vert
	QP		+13.8				322				101
^	39.821M	49.6	+0.1	+0.1	+0.5	-27.3	+0.0	36.8	40.0	-3.2	Vert
			+13.8				322				101
49	57.620M	43.2	+0.1	+0.2	+0.5	-27.3	+0.0	22.9	40.0	-17.1	Vert
	QP		+6.2				342				101
^	57.617M	60.0	+0.1	+0.2	+0.5	-27.3	+0.0	39.7	40.0	-0.3	Vert
			+6.2				342				101
51	54.302M	42.2	+0.0	+0.2	+0.4	-27.3	+0.0	22.6	40.0	-17.4	Vert
	QP		+7.1				353				102
^	54.310M	55.8	+0.0	+0.2	+0.4	-27.3	+0.0	36.2	40.0	-3.8	Vert
			+7.1				353				102
53	65.640M	42.8	+0.1	+0.2	+0.4	-27.1	+0.0	22.3	40.0	-17.7	Vert
	QP		+5.9				164				100
^	65.644M	56.1	+0.1	+0.2	+0.4	-27.1	+0.0	35.6	40.0	-4.4	Vert
			+5.9				164				100
55	31.645M	30.4	+0.0	+0.1	+0.4	-27.4	+0.0	21.8	40.0	-18.2	Horiz
	QP		+18.3				254				270
^	31.635M	43.5	+0.0	+0.1	+0.4	-27.4	+0.0	34.9	40.0	-5.1	Horiz
			+18.3				254				270
57	69.630M	42.1	+0.1	+0.2	+0.5	-27.3	+0.0	21.8	40.0	-18.2	Vert
	QP		+6.2				110				100
^	69.609M	57.7	+0.1	+0.2	+0.5	-27.3	+0.0	37.4	40.0	-2.6	Vert
			+6.2				110				100

FCC 2.1033(c)(14)/2.1046/27.50 – CONDUCTED RF POWER OUTPUT

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02668	Agilent	E4446A	US44300408	03/09/09	03/09/11
10 dB attenuator	ANP05411	Weinschel	54A-10	P7186	02/05/08	02/05/10

Test Conditions

The wall mount transceiver is placed on top of the wooden test table.

Powered by 220VAC.

The laptop PC communicates through the Wall Plugged Bridge to the EUT through the AC power line.

NOTES:

1) The EUT is transmitting continuously with OFMDA modulation.

Modulation types: A=5 MHz BW QPSK 1/2. B=10 MHz BW QPSK 1/2. C=5 MHz BW 16QAM 3/4. D=10 MHz BW 16QAM 3/4.

Low ch=2498.5 MHz for 5 MHz BW

Low ch=2501 MHz for 10 MHz BW

Mid ch=2600MHz

Hi ch=2687.5MHz for 5 MHz BW

Hi ch=2685 MHz for 10 MHz BW

2) Transmit power set at 27dBm.

3) CONDUCTED FROM ANTENNA PORT.

4) Channel Power measurements taken on the spectrum analyzer with Peak detector:

RBW =510kHz, VBW=5 MHz used for 5 MHz channel bandwidth.

RBW =1MHz, VBW=8 MHz used for 10 MHz channel bandwidth.

Test Setup Photos



Test Data

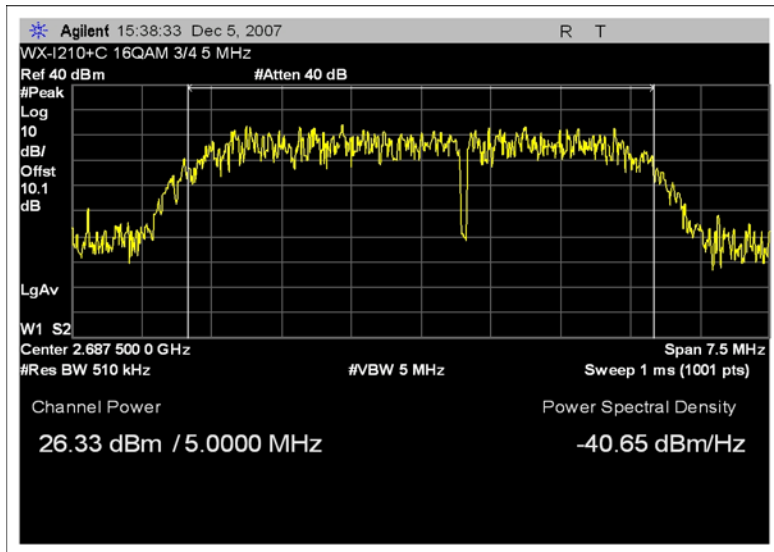
Model: WX-i210+c 5 MHz Channel Bandwidth

Channel-Frequency in MHz	Conducted Power Output-dBm: QPSK 1/2	Conducted Power Output-dBm: 16 QAM 3/4
Low-2498.5	28.19	28.73
Mid-2600	27.51	27.85
Hi-2687.5	26.58	26.33

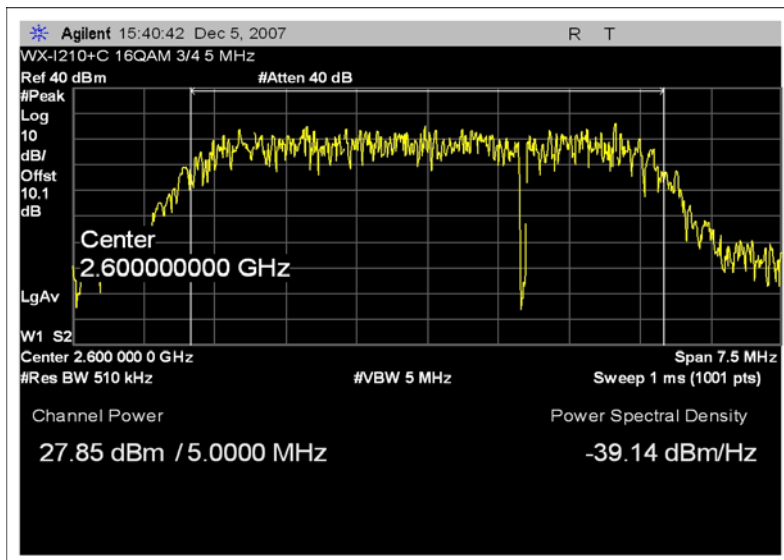
Model: WX-i210+c 10 MHz Channel Bandwidth

Channel-Frequency in MHz	Conducted Power Output-dBm: QPSK 1/2	Conducted Power Output-dBm: 16 QAM 3/4
Low-2501	26.78	26.78
Mid-2600	26.46	26.91
Hi-2685	25.55	25.38

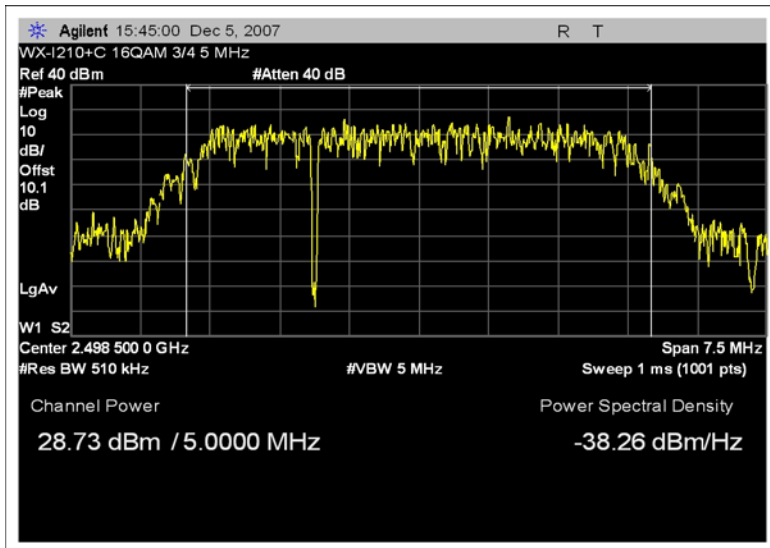
Channel Power – 5MHz 16QAM 3/4 – High



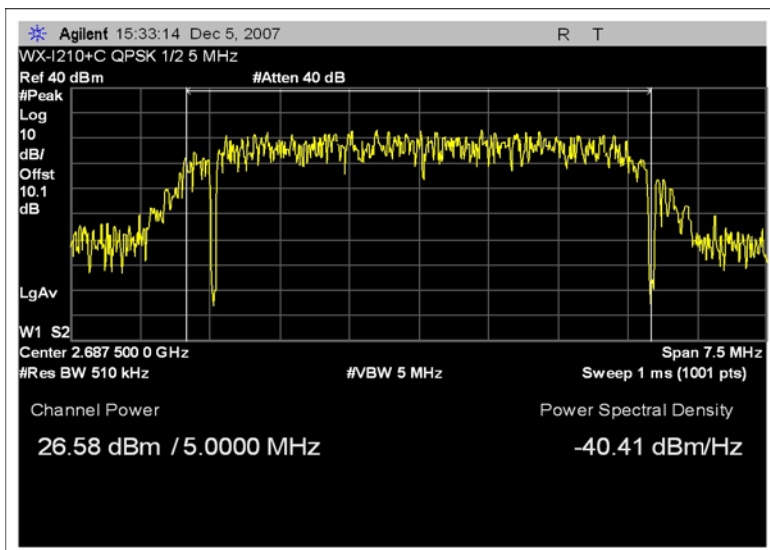
Channel Power – 5MHz 16QAM 3/4 – Middle



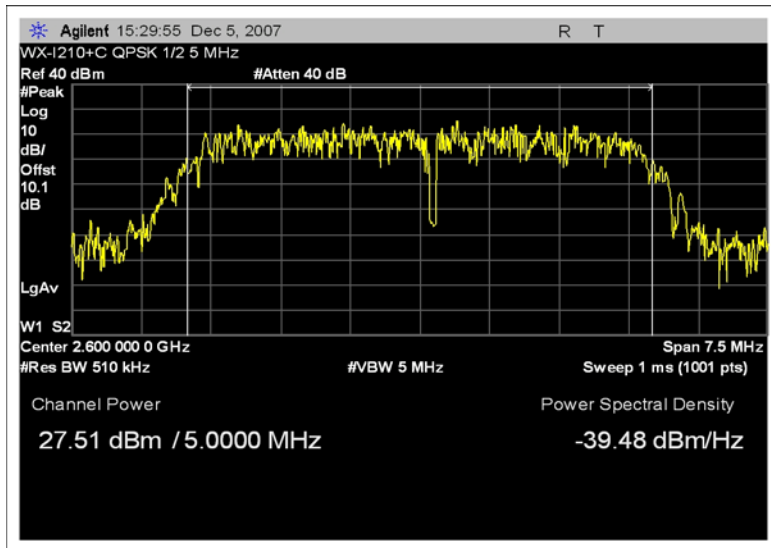
Channel Power – 5MHz 16QAM 3/4 – Low



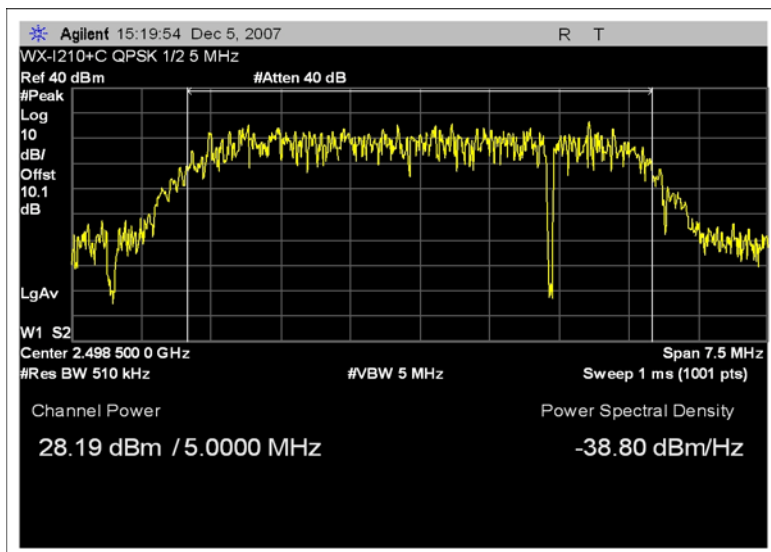
Channel Power – 5MHz QPSK 1/2 – High



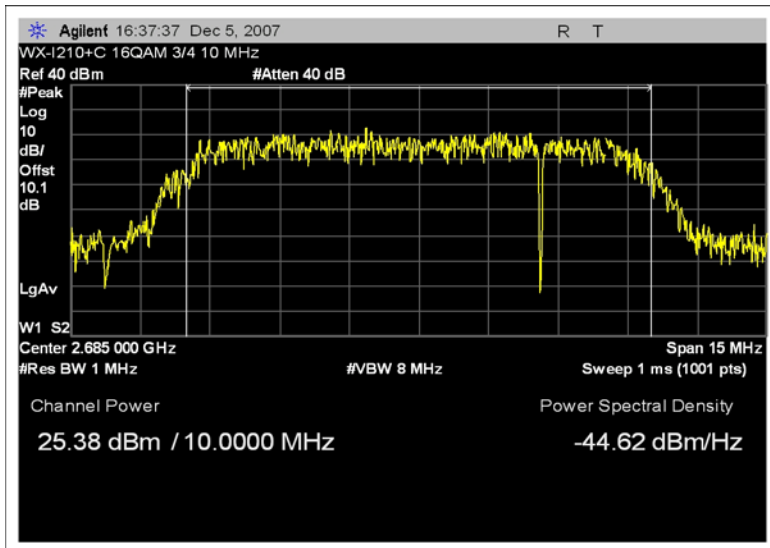
Channel Power – 5MHz QPSK 1/2 – Middle



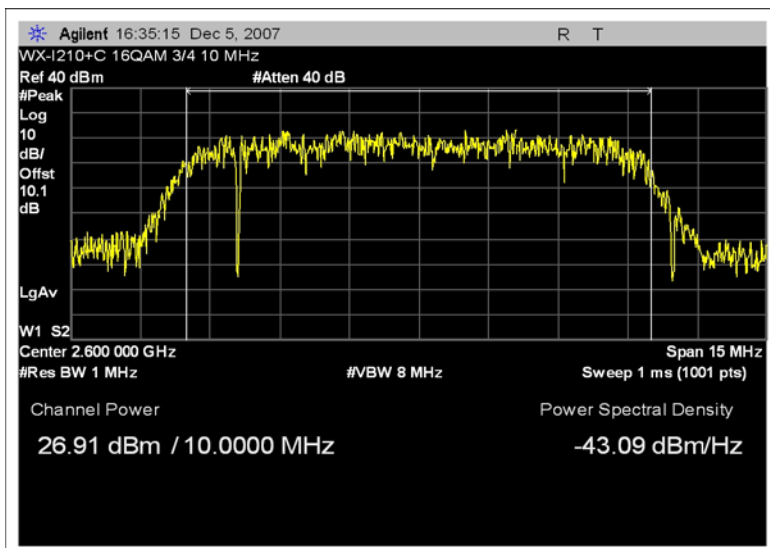
Channel Power – 5MHz QPSK 1/2 – Low



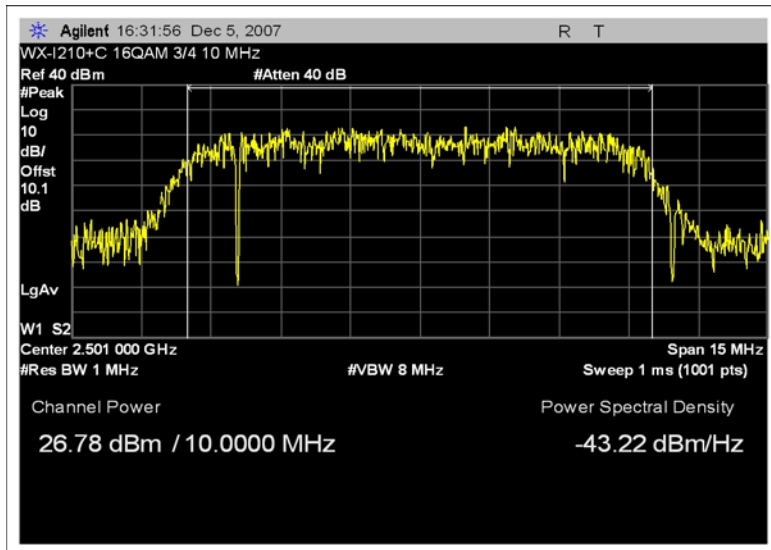
Channel Power – 10MHz 16QAM 3/4 – High



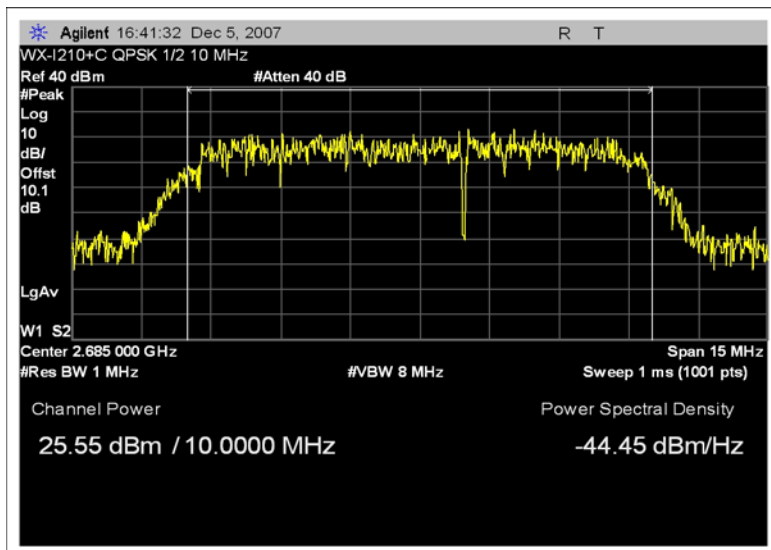
Channel Power – 10MHz 16QAM 3/4 – Middle



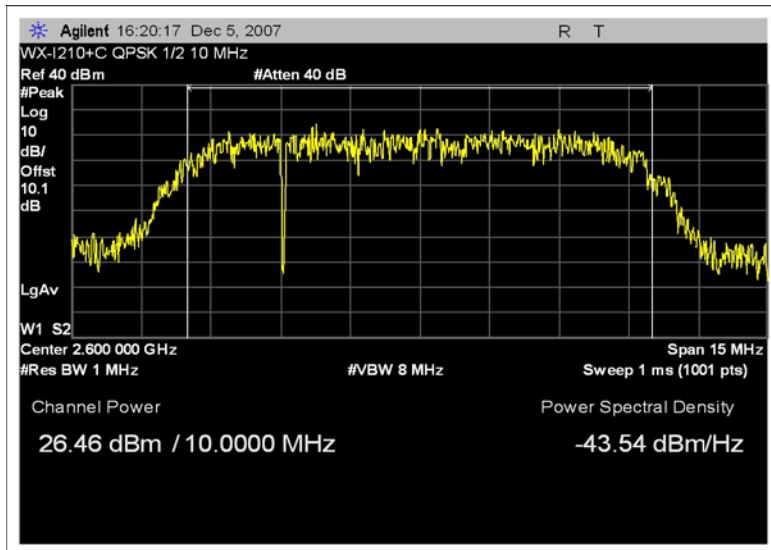
Channel Power – 10MHz 16QAM 3/4 – Low



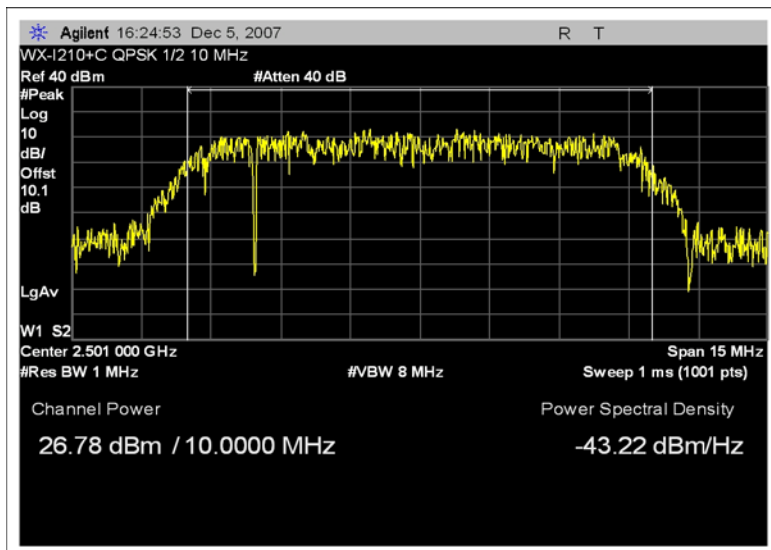
Channel Power – 10MHz QPSK 1/2 – High



Channel Power – 10MHz QPSK 1/2 – Middle



Channel Power – 10MHz QPSK 1/2 – Low



FCC 2.1049 - OCCUPIED BANDWIDTH

Test Equipment

Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Spectrum Analyzer	02668	Agilent	E4446A	US44300408	03/05/07	03/05/09
Cable	03015	Astrolab	32022-2-29094K-24TC	none	02/04/08	02/04/10
10 dB attenuator	ANP05411	Weinschel	54A-10	P7186	02/05/08	02/05/10

Test Conditions

The wall mount transceiver is placed on top of the wooden test table.

Powered by 220VAC.

The laptop PC communicates through the Wall Plugged Bridge to the EUT through the AC power line.

NOTES:

1) The EUT is transmitting continuously with OFDMA modulation.

Modulation types: A=5 MHz BW QPSK 1/2. B=10 MHz BW QPSK 1/2. C=5 MHz BW 16QAM 3/4. D=10 MHz BW 16QAM 3/4.

Low ch=2498.5 MHz for 5 MHz BW

Low ch=2501 MHz for 10 MHz BW

Mid ch=2600MHz

Hi ch=2687.5MHz for 5 MHz BW

Hi ch=2685 MHz for 10 MHz BW

2) Transmit power set at 27dBm.

3) CONDUCTED FROM ANTENNA PORT.

4) EUT on table next to Spectrum Analyzer.

5) Spectrum analyzer atten=40 dB, External atten=10dB.

6) SA offset of 9.8 dB to correct for cable and attenuator loss.

Test Setup Photos



Test Data

Model: WX-i210+c 5 MHz Channel Bandwidth

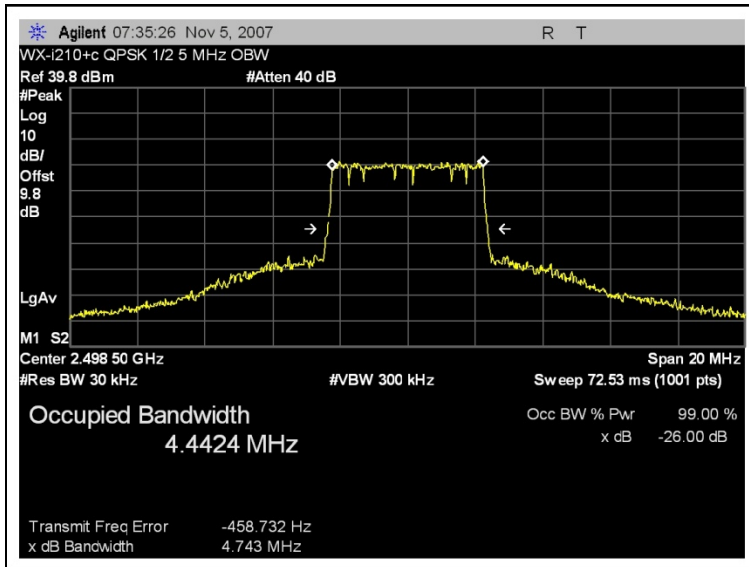
Channel-Frequency in MHz	Occupied bandwidth in MHz: QPSK 1/2	Occupied bandwidth in MHz: 16 QAM 3/4
Low-2498.5	4.4424	4.4374
Mid-2600	4.4367	4.4277
Hi-2687.5	4.4306	4.4390

Model: WX-i210+c 10 MHz Channel Bandwidth

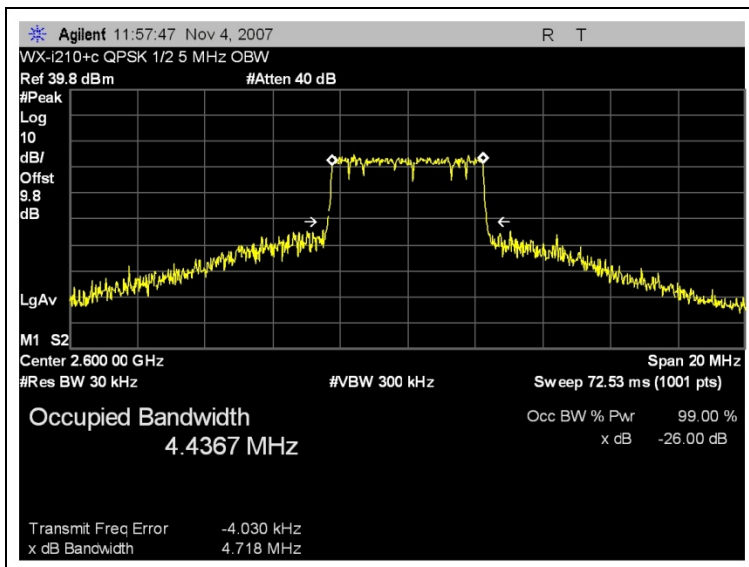
Channel-Frequency in MHz	Occupied bandwidth in MHz: QPSK 1/2	Occupied bandwidth in MHz: 16 QAM 3/4
Low-2501	9.0454	9.0665
Mid-2600	9.0626	9.0532
Hi-2685	9.0379	9.0616

Test Plots

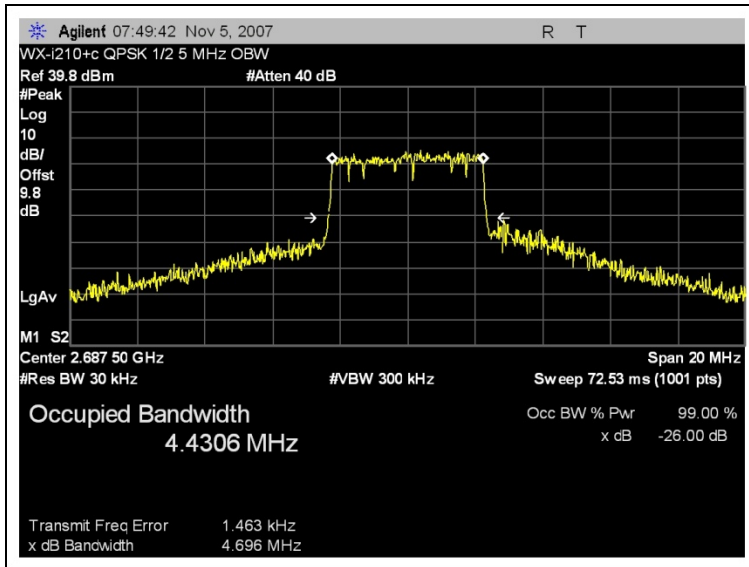
OCCUPIED BANDWIDTH - 5MHz QPSK LOW CHANNEL



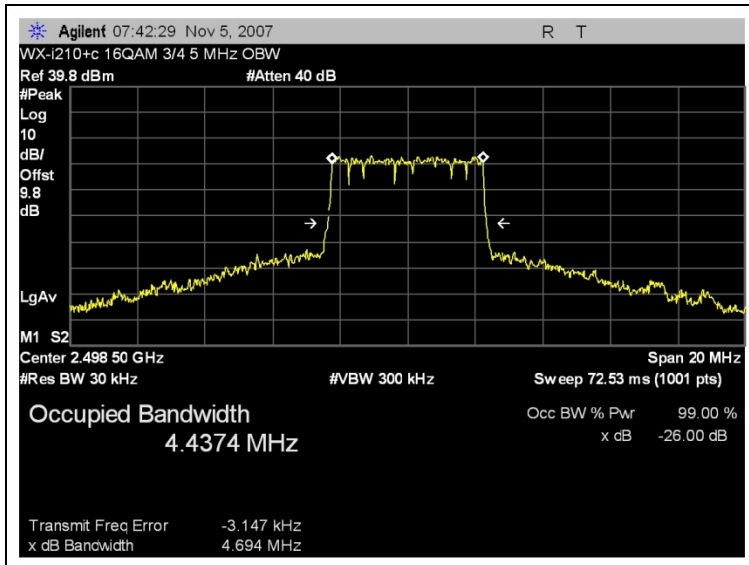
OCCUPIED BANDWIDTH - 5MHz QPSK MID CHANNEL



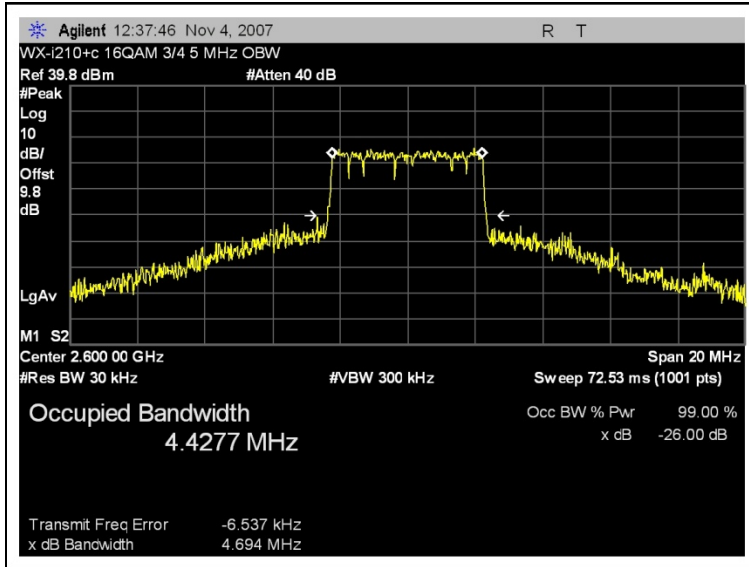
OCCUPIED BANDWIDTH - 5MHz QPSK HIGH CHANNEL



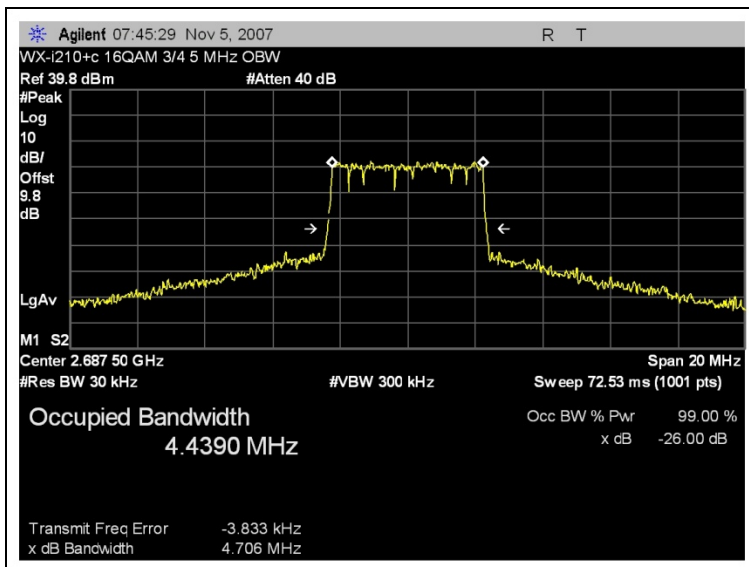
OCCUPIED BANDWIDTH - 5MHz 16QAM LOW CHANNEL



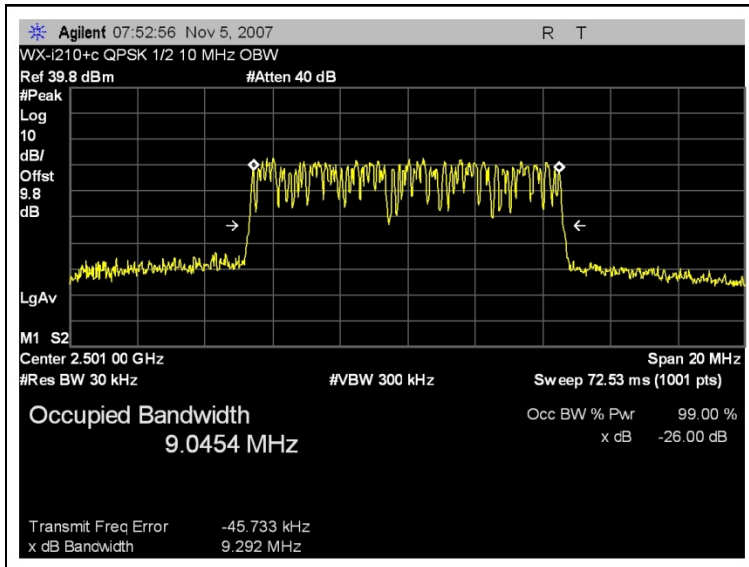
OCCUPIED BANDWIDTH - 5MHz 16QAM MID CHANNEL



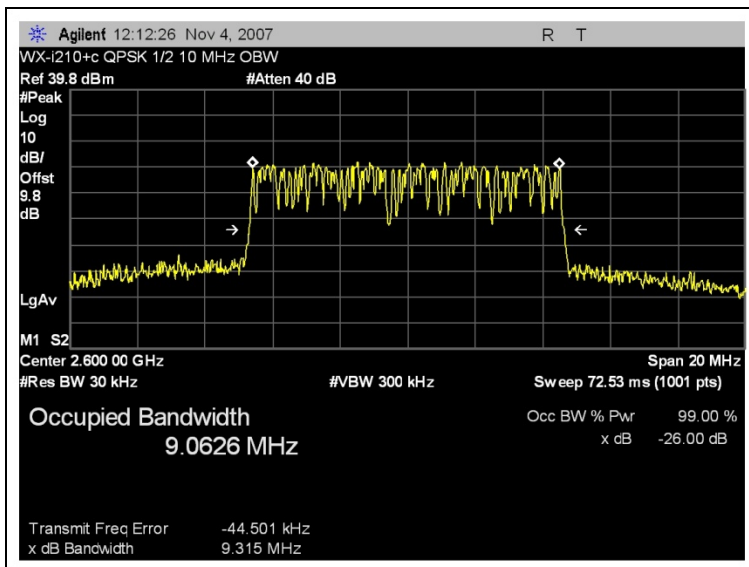
OCCUPIED BANDWIDTH - 5MHz 16QAM HIGH CHANNEL



OCCUPIED BANDWIDTH - 10MHz QPSK LOW CHANNEL



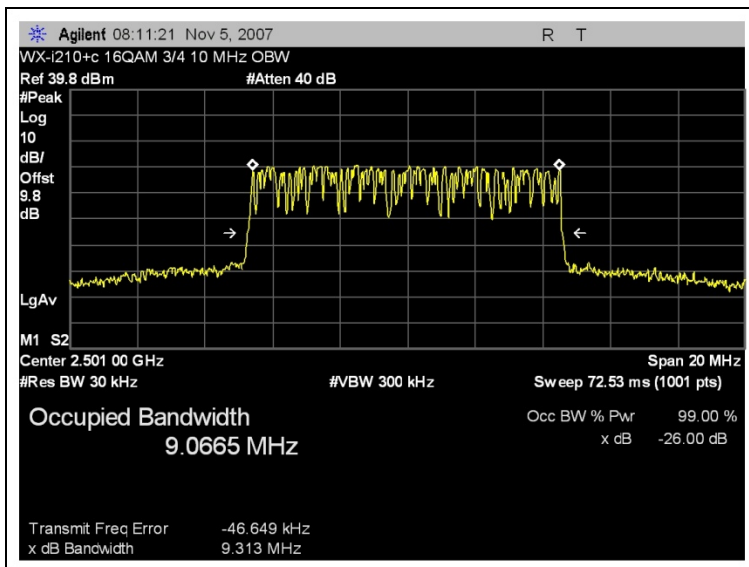
OCCUPIED BANDWIDTH - 10MHz QPSK MID CHANNEL



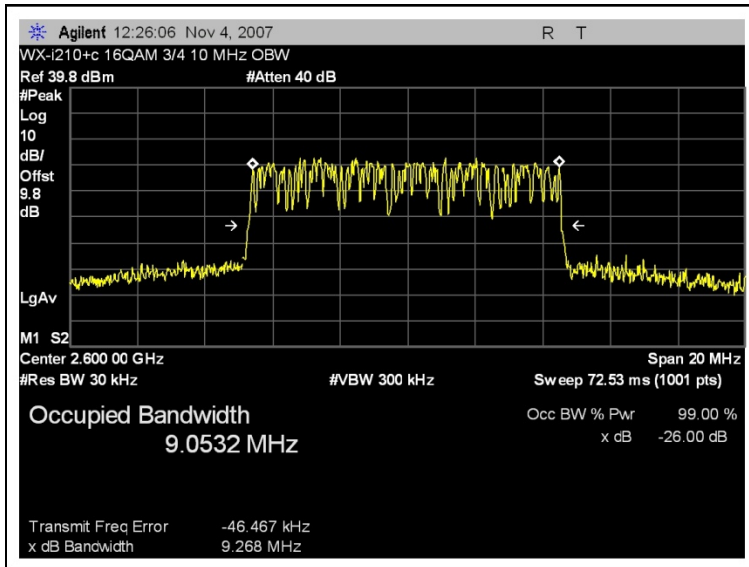
OCCUPIED BANDWIDTH - 10MHz QPSK HIGH CHANNEL



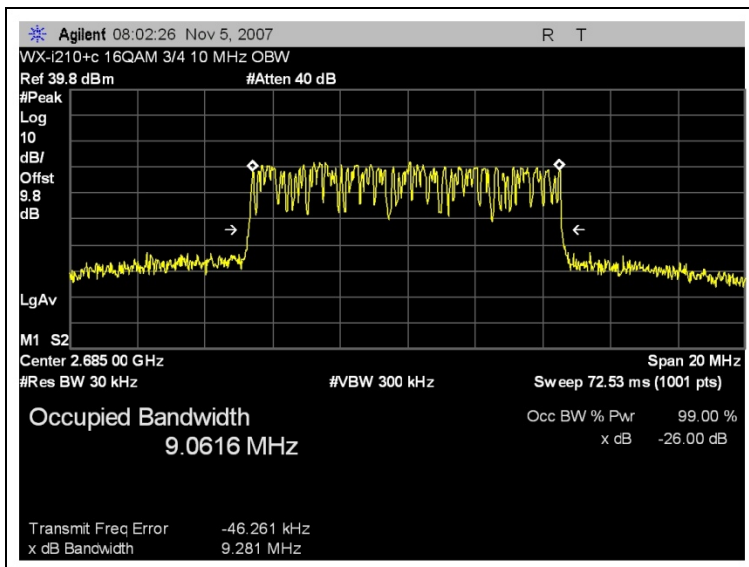
OCCUPIED BANDWIDTH - 10MHz 16QAM LOW CHANNEL



OCCUPIED BANDWIDTH - 10MHz 16QAM MID CHANNEL



OCCUPIED BANDWIDTH - 10MHz 16QAM HIGH CHANNEL



FCC 2.1033(c)(14)/2.1051/27.53 - SPURIOUS EMISSIONS AT ANTENNA TERMINAL

Test Setup Photos



Test Data

Spurious emissions limit calculation:

First convert maximum measured power output from dBm to dBW.

$\text{Inv log} [(26.6 \text{ dBm} - 30)/10] = 0.457\text{W}$

Then calculate required attenuation:

$43 + 10 \log(0.457\text{W}) = 39.6\text{dB attenuation}$

Then calculate the limit in dBm:

$26.6 - 39.6 = -13\text{dBm}$

Convert to dBuV:

$107 + (-13) = 94 \text{ dBuV}$



Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • 510-249-1170

Customer: **GE Energy**
 Specification: **FCC 27.53(m)(2)(v) spurious dBuV Ave**
 Work Order #: **89201** Date: 2/23/2009
 Test Type: **Conducted Emissions** Time: 09:07:31
 Equipment: **ANSI WiMAX SmartMeter** Sequence#: 2
 Manufacturer: Grid-Net Tested By: Art Rice
 Model: WX-i210+c 220V 60Hz
 S/N: n/a

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
E4446A Spectrum Analyzer	US44300408	03/05/2007	03/05/2009	02668
Cable - HF - 32022-2-29094K-24TC	n/a	02/04/2008	02/04/2010	03015
10dB Pad 54A-10	P7186	02/05/2008	02/05/2010	P05411
10dB Pad 766-10	none	01/23/2008	01/23/2010	P05389

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
ANSI WiMAX SmartMeter*	Grid-Net	WX-i210+c	n/a

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Dell	Latitude D830	9THV3G1
Isolation Transformer	PCC	ISO-300	none
110-220V Step-up Transformer	Philmore	ST-300	none
Wall Plugged Bridge	NETGEAR	XE102	1X618653036AE

Test Conditions / Notes:

The wall mount transceiver is placed on top of the wooden test table.
 Powered by 220VAC.
 The laptop PC communicates through the Wall Plugged Bridge to the EUT through the AC power line.

NOTES:

- 1) The EUT is transmitting continuously with OFDMA modulation.
 Modulation types: A=5 MHz BW QPSK 1/2. B=10 MHz BW QPSK 1/2. C=5 MHz BW 16QAM 3/4. D=10 MHz BW 16QAM 3/4.
 Low ch=2498.5 MHz for 5 MHz BW
 Low ch=2501 MHz for 10 MHz BW
 Mid ch=2600MHz
 Hi ch=2687.5MHz for 5 MHz BW
 Hi ch=2685 MHz for 10 MHz BW
- 2) Transmit power set at 27dBm.
- 3) CONDUCTED FROM ANTENNA PORT.
- 4) EUT on table next to Spectrum Analyzer.
- 5) Spectrum analyzer atten=40 dB, External atten=10dB.
- 6) Spectrum analyzer settings: 10kHz-150kHz RBW=VBW=200Hz, 0.15-30 MHz RBW=VBW=9kHz, 30-1000 MHz RBW=VBW=120kHz, 1-27GHz RBW=VBW=1 MHz
- 7) Transmitting with worst case modulation 5 MHz QPSK 1/2.
- 8) Transmitting on low channel.

FCC 27.53(m)(2)(v)

Conducted emissions 10kHz-26900 MHz.

Transducer Legend:

T1=CAB-AN03015-020408

T2=ATT-ANP05411-020508

Measurement Data:

Reading listed by margin.

Test Lead: Antenna port

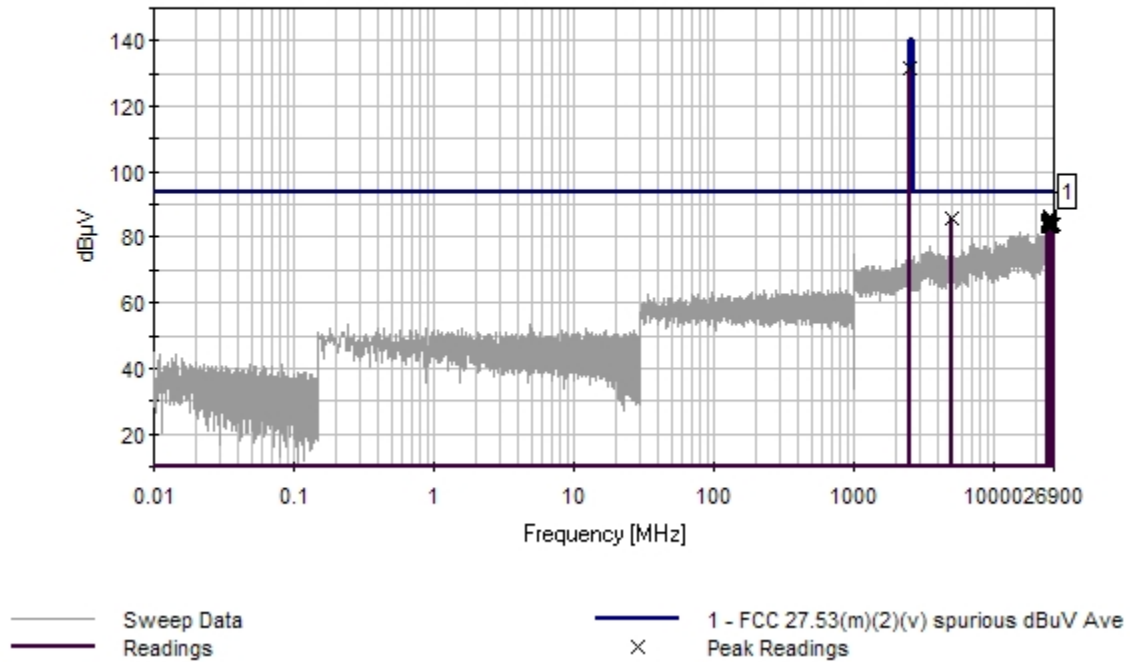
#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	dB		Dist Table	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant
1	24993.000 M	75.3	+1.0	+10.3			+0.0	86.6	94.0	-7.4	Anten
2	2499.187M	122.1	+0.4	+9.4			+0.0	131.9	140.0	-8.1	Anten
									Fundamental		
3	25200.530 M	74.4	+1.2	+10.3			+0.0	85.9	94.0	-8.1	Anten
4	4996.701M	75.6	+0.7	+9.4			+0.0	85.7	94.0	-8.3	Anten
									Harmonic		
5	25217.360 M	73.8	+1.2	+10.3			+0.0	85.3	94.0	-8.7	Anten
6	25182.270 M	73.6	+1.2	+10.3			+0.0	85.1	94.0	-8.9	Anten
7	24143.890 M	73.8	+0.9	+10.3			+0.0	85.0	94.0	-9.0	Anten

8	25179.420 M	73.5	+1.2	+10.3	+0.0	85.0	94.0	-9.0	Anten
9	25230.170 M	73.5	+1.2	+10.3	+0.0	85.0	94.0	-9.0	Anten
10	25279.250 M	73.3	+1.2	+10.3	+0.0	84.8	94.0	-9.2	Anten
11	25171.120 M	73.2	+1.2	+10.3	+0.0	84.7	94.0	-9.3	Anten
12	25152.390 M	73.1	+1.2	+10.3	+0.0	84.6	94.0	-9.4	Anten
13	25197.440 M	73.1	+1.2	+10.3	+0.0	84.6	94.0	-9.4	Anten
14	24190.900 M	73.3	+0.9	+10.3	+0.0	84.5	94.0	-9.5	Anten
15	25022.680 M	73.2	+1.0	+10.3	+0.0	84.5	94.0	-9.5	Anten
16	25151.440 M	73.0	+1.2	+10.3	+0.0	84.5	94.0	-9.5	Anten
17	25052.800 M	73.0	+1.1	+10.3	+0.0	84.4	94.0	-9.6	Anten
18	24199.900 M	73.0	+1.0	+10.3	+0.0	84.3	94.0	-9.7	Anten
19	24224.900 M	72.9	+1.0	+10.3	+0.0	84.2	94.0	-9.8	Anten
20	25139.350 M	72.6	+1.2	+10.3	+0.0	84.1	94.0	-9.9	Anten
21	25234.200 M	72.6	+1.2	+10.3	+0.0	84.1	94.0	-9.9	Anten
22	25266.680 M	72.6	+1.2	+10.3	+0.0	84.1	94.0	-9.9	Anten
23	26004.380 M	72.7	+1.0	+10.4	+0.0	84.1	94.0	-9.9	Anten
24	25076.980 M	72.6	+1.1	+10.3	+0.0	84.0	94.0	-10.0	Anten

25	25295.610 M	72.6	+1.1	+10.3	+0.0	84.0	94.0	-10.0	Anten
26	24324.920 M	72.7	+0.9	+10.3	+0.0	83.9	94.0	-10.1	Anten
27	24354.920 M	72.7	+0.9	+10.3	+0.0	83.9	94.0	-10.1	Anten
28	24401.930 M	72.7	+0.9	+10.3	+0.0	83.9	94.0	-10.1	Anten
29	25027.190 M	72.5	+1.1	+10.3	+0.0	83.9	94.0	-10.1	Anten
30	25044.730 M	72.5	+1.1	+10.3	+0.0	83.9	94.0	-10.1	Anten
31	25119.670 M	72.4	+1.2	+10.3	+0.0	83.9	94.0	-10.1	Anten
32	25195.540 M	72.4	+1.2	+10.3	+0.0	83.9	94.0	-10.1	Anten
33	25707.740 M	72.5	+1.0	+10.4	+0.0	83.9	94.0	-10.1	Anten
34	26563.760 M	72.4	+1.1	+10.4	+0.0	83.9	94.0	-10.1	Anten
35	26601.930 M	72.4	+1.1	+10.4	+0.0	83.9	94.0	-10.1	Anten
36	25037.150 M	72.4	+1.1	+10.3	+0.0	83.8	94.0	-10.2	Anten
37	25280.910 M	72.3	+1.2	+10.3	+0.0	83.8	94.0	-10.2	Anten
38	25941.540 M	72.4	+1.0	+10.4	+0.0	83.8	94.0	-10.2	Anten
39	24913.990 M	72.4	+0.9	+10.4	+0.0	83.7	94.0	-10.3	Anten
40	24948.990 M	72.4	+1.0	+10.3	+0.0	83.7	94.0	-10.3	Anten
41	25012.720 M	72.4	+1.0	+10.3	+0.0	83.7	94.0	-10.3	Anten

42	25282.810 M	72.3	+1.1	+10.3	+0.0	83.7	94.0	-10.3	Anten
43	24239.900 M	72.3	+1.0	+10.3	+0.0	83.6	94.0	-10.4	Anten
44	24317.910 M	72.3	+1.0	+10.3	+0.0	83.6	94.0	-10.4	Anten
45	25057.060 M	72.2	+1.1	+10.3	+0.0	83.6	94.0	-10.4	Anten
46	25073.430 M	72.2	+1.1	+10.3	+0.0	83.6	94.0	-10.4	Anten
47	25172.310 M	72.1	+1.2	+10.3	+0.0	83.6	94.0	-10.4	Anten
48	25677.860 M	72.2	+1.0	+10.4	+0.0	83.6	94.0	-10.4	Anten
49	26239.840 M	72.2	+1.0	+10.4	+0.0	83.6	94.0	-10.4	Anten
50	26224.670 M	72.1	+1.0	+10.4	+0.0	83.5	94.0	-10.5	Anten

CKC Laboratories, Inc. Date: 2/23/2009 Time: 09:07:31 GE Energy WO#: 89201
FCC 27.53(m)(2)(v) spurious dBuV Ave Test Lead: Antenna port 220V 60Hz Sequence#: 2
WX-i210+c Antenna port through cable and 10 dB atten. Low ch. QPSK 1/2 5 MHz





Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • 510-249-1170

Customer: **GE Energy**
 Specification: **FCC 27.53(m)(2)(v) spurious dBuV Ave**
 Work Order #: **89201** Date: 2/23/2009
 Test Type: **Conducted Emissions** Time: 09:05:03
 Equipment: **ANSI WiMAX SmartMeter** Sequence#: 3
 Manufacturer: Grid-Net Tested By: Art Rice
 Model: WX-i210+c 220V 60Hz
 S/N: n/a

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
E4446A Spectrum Analyzer	US44300408	03/05/2007	03/05/2009	02668
Cable - HF - 32022-2-29094K-24TC	n/a	02/04/2008	02/04/2010	03015
10dB Pad 54A-10	P7186	02/05/2008	02/05/2010	P05411
10dB Pad 766-10	none	01/23/2008	01/23/2010	P05389

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
ANSI WiMAX SmartMeter*	Grid-Net	WX-i210+c	n/a

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Dell	Latitude D830	9THV3G1
Isolation Transformer	PCC	ISO-300	none
110-220V Step-up Transformer	Philmore	ST-300	none
Wall Plugged Bridge	NETGEAR	XE102	1X618653036AE

Test Conditions / Notes:

The wall mount transceiver is placed on top of the wooden test table.

Powered by 220VAC.

The laptop PC communicates through the Wall Plugged Bridge to the EUT through the AC power line.

NOTES:

1) The EUT is transmitting continuously with OFDMA modulation.

Modulation types: A=5 MHz BW QPSK 1/2. B=10 MHz BW QPSK 1/2. C=5 MHz BW 16QAM 3/4. D=10 MHz BW 16QAM 3/4.

Low ch=2498.5 MHz for 5 MHz BW

Low ch=2501 MHz for 10 MHz BW

Mid ch=2600MHz

Hi ch=2687.5MHz for 5 MHz BW

Hi ch=2685 MHz for 10 MHz BW

2) Transmit power set at 27dBm.

3) CONDUCTED FROM ANTENNA PORT.

4) EUT on table next to Spectrum Analyzer.

5) Spectrum analyzer atten=40 dB, External atten=10dB.

6) Spectrum analyzer settings: 10kHz-150kHz RBW=VBW=200Hz, 0.15-30MHz RBW=VBW=9kHz, 30-1000MHz RBW=VBW=120kHz, 1-27GHz RBW=VBW=1 MHz

7) Transmitting with worst case modulation 5 MHz QPSK 1/2.

8) Transmitting on mid channel.

FCC 27.53(m)(2)(v)

Conducted emissions 10kHz-26900 MHz.

Transducer Legend:

T1=CAB-AN03015-020408

T2=ATT-ANP05411-020508

Measurement Data:

Reading listed by margin.

Test Lead: Antenna port

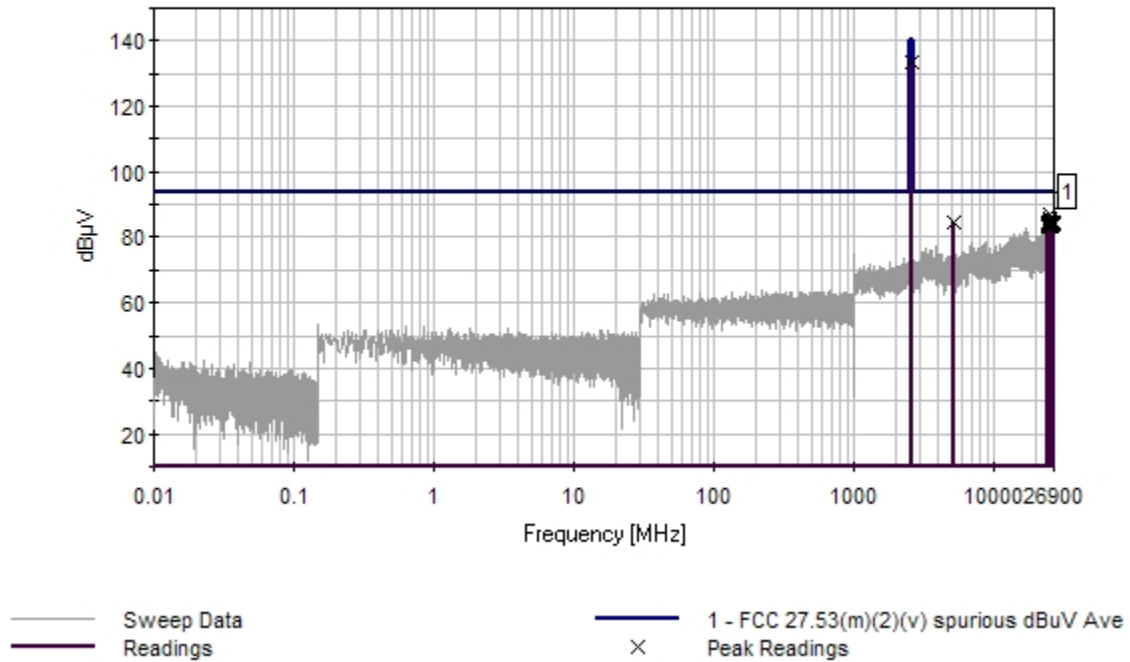
#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	2601.200M	123.8	+0.4	+9.4			+0.0	133.6	140.0	-6.4	Anten
									Fundamental		
2	25089.080 M	75.4	+1.1	+10.3			+0.0	86.8	94.0	-7.2	Anten
3	25119.900 M	74.3	+1.2	+10.3			+0.0	85.8	94.0	-8.2	Anten
4	25030.510 M	74.3	+1.1	+10.3			+0.0	85.7	94.0	-8.3	Anten
5	24952.990 M	74.2	+1.0	+10.3			+0.0	85.5	94.0	-8.5	Anten
6	24879.980 M	74.0	+0.9	+10.4			+0.0	85.3	94.0	-8.7	Anten
7	24961.990 M	74.0	+1.0	+10.3			+0.0	85.3	94.0	-8.7	Anten

8	24964.000 M	73.8	+1.0	+10.3	+0.0	85.1	94.0	-8.9	Anten
9	5201.476M	74.7	+0.7	+9.4	+0.0	84.8	94.0 Harmonic	-9.2	Anten
10	24125.890 M	73.6	+0.9	+10.3	+0.0	84.8	94.0	-9.2	Anten
11	25137.450 M	73.3	+1.2	+10.3	+0.0	84.8	94.0	-9.2	Anten
12	25196.490 M	73.3	+1.2	+10.3	+0.0	84.8	94.0	-9.2	Anten
13	26283.470 M	73.4	+1.0	+10.4	+0.0	84.8	94.0	-9.2	Anten
14	25112.080 M	73.3	+1.1	+10.3	+0.0	84.7	94.0	-9.3	Anten
15	25977.350 M	73.3	+1.0	+10.4	+0.0	84.7	94.0	-9.3	Anten
16	25152.630 M	73.0	+1.2	+10.3	+0.0	84.5	94.0	-9.5	Anten
17	26616.400 M	73.0	+1.1	+10.4	+0.0	84.5	94.0	-9.5	Anten
18	25048.530 M	72.9	+1.1	+10.3	+0.0	84.3	94.0	-9.7	Anten
19	25256.250 M	72.8	+1.2	+10.3	+0.0	84.3	94.0	-9.7	Anten
20	25277.590 M	72.8	+1.2	+10.3	+0.0	84.3	94.0	-9.7	Anten
21	24156.890 M	73.0	+0.9	+10.3	+0.0	84.2	94.0	-9.8	Anten
22	25039.520 M	72.8	+1.1	+10.3	+0.0	84.2	94.0	-9.8	Anten
23	25134.130 M	72.7	+1.2	+10.3	+0.0	84.2	94.0	-9.8	Anten
24	25131.050 M	72.6	+1.2	+10.3	+0.0	84.1	94.0	-9.9	Anten

25	26621.380 M	72.6	+1.1	+10.4	+0.0	84.1	94.0	-9.9	Anten
26	24931.990 M	72.7	+0.9	+10.4	+0.0	84.0	94.0	-10.0	Anten
27	25205.270 M	72.5	+1.2	+10.3	+0.0	84.0	94.0	-10.0	Anten
28	25342.560 M	72.6	+1.1	+10.3	+0.0	84.0	94.0	-10.0	Anten
29	25353.230 M	72.6	+1.1	+10.3	+0.0	84.0	94.0	-10.0	Anten
30	25955.290 M	72.6	+1.0	+10.4	+0.0	84.0	94.0	-10.0	Anten
31	26281.580 M	72.6	+1.0	+10.4	+0.0	84.0	94.0	-10.0	Anten
32	24992.000 M	72.6	+1.0	+10.3	+0.0	83.9	94.0	-10.1	Anten
33	25109.230 M	72.5	+1.1	+10.3	+0.0	83.9	94.0	-10.1	Anten
34	25223.760 M	72.4	+1.2	+10.3	+0.0	83.9	94.0	-10.1	Anten
35	24104.890 M	72.6	+0.9	+10.3	+0.0	83.8	94.0	-10.2	Anten
36	24967.000 M	72.5	+1.0	+10.3	+0.0	83.8	94.0	-10.2	Anten
37	25063.700 M	72.4	+1.1	+10.3	+0.0	83.8	94.0	-10.2	Anten
38	25073.900 M	72.4	+1.1	+10.3	+0.0	83.8	94.0	-10.2	Anten
39	25207.880 M	72.3	+1.2	+10.3	+0.0	83.8	94.0	-10.2	Anten
40	26084.760 M	72.4	+1.0	+10.4	+0.0	83.8	94.0	-10.2	Anten
41	26141.670 M	72.4	+1.0	+10.4	+0.0	83.8	94.0	-10.2	Anten

42	24984.000 M	72.4	+1.0	+10.3	+0.0	83.7	94.0	-10.3	Anten
43	25062.990 M	72.3	+1.1	+10.3	+0.0	83.7	94.0	-10.3	Anten
44	25080.540 M	72.3	+1.1	+10.3	+0.0	83.7	94.0	-10.3	Anten
45	24294.910 M	72.3	+1.0	+10.3	+0.0	83.6	94.0	-10.4	Anten
46	24853.980 M	72.3	+0.9	+10.4	+0.0	83.6	94.0	-10.4	Anten
47	25167.090 M	72.1	+1.2	+10.3	+0.0	83.6	94.0	-10.4	Anten
48	25346.590 M	72.2	+1.1	+10.3	+0.0	83.6	94.0	-10.4	Anten
49	25989.910 M	72.2	+1.0	+10.4	+0.0	83.6	94.0	-10.4	Anten
50	25160.690 M	72.0	+1.2	+10.3	+0.0	83.5	94.0	-10.5	Anten
51	26430.260 M	72.0	+1.1	+10.4	+0.0	83.5	94.0	-10.5	Anten

CKC Laboratories, Inc. Date: 2/23/2009 Time: 09:05:03 GE Energy WO#: 89201
FCC 27.53(m)(2)(v) spurious dBuV Ave Test Lead: Antenna port 220V 60Hz Sequence#: 3
WX-i210+c Antenna port through cable and 10 dB atten. Mid ch. QPSK 1/2 5 MHz





Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • 510-249-1170

Customer: **GE Energy**
 Specification: **FCC 27.53(m)(2)(v) spurious dBuV Ave**
 Work Order #: **89201** Date: 2/23/2009
 Test Type: **Conducted Emissions** Time: 09:34:08
 Equipment: **ANSI WiMAX SmartMeter** Sequence#: 4
 Manufacturer: Grid-Net Tested By: Art Rice
 Model: WX-i210+c 220V 60Hz
 S/N: n/a

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
E4446A Spectrum Analyzer	US44300408	03/05/2007	03/05/2009	02668
Cable - HF - 32022-2-29094K-24TC	n/a	02/04/2008	02/04/2010	03015
10dB Pad 54A-10	P7186	02/05/2008	02/05/2010	P05411
10dB Pad 766-10	none	01/23/2008	01/23/2010	P05389

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
ANSI WiMAX SmartMeter*	Grid-Net	WX-i210+c	n/a

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Dell	Latitude D830	9THV3G1
Isolation Transformer	PCC	ISO-300	none
110-220V Step-up Transformer	Philmore	ST-300	none
Wall Plugged Bridge	NETGEAR	XE102	1X618653036AE

Test Conditions / Notes:

The wall mount transceiver is placed on top of the wooden test table.
Powered by 220VAC.
The laptop PC communicates through the Wall Plugged Bridge to the EUT through the AC power line.

NOTES:

- 1) The EUT is transmitting continuously with OFDMA modulation.
Modulation types: A=5 MHz BW QPSK 1/2. B=10 MHz BW QPSK 1/2. C=5 MHz BW 16QAM 3/4. D=10 MHz BW 16QAM 3/4.
Low ch=2498.5 MHz for 5 MHz BW
Low ch=2501 MHz for 10 MHz BW
Mid ch=2600MHz
Hi ch=2687.5MHz for 5 MHz BW
Hi ch=2685 MHz for 10 MHz BW
- 2) Transmit power set at 27dBm.
- 3) CONDUCTED FROM ANTENNA PORT.
- 4) EUT on table next to Spectrum Analyzer.
- 5) Spectrum analyzer atten=40 dB, External atten=10dB.
- 6) Spectrum analyzer settings: 10kHz-150kHz RBW=VBW=200Hz, 0.15-30 MHz RBW=VBW=9kHz, 30-1000 MHz RBW=VBW=120kHz, 1-27GHz RBW=VBW=1 MHz
- 7) Transmitting with worst case modulation 5 MHz QPSK 1/2.
- 8) Transmitting on High channel.

FCC 27.53(m)(2)(v)

Conducted emissions 10kHz-26900 MHz.

Transducer Legend:

T1=CAB-AN03015-020408

T2=ATT-ANP05411-020508

Measurement Data:

Reading listed by margin.

Test Lead: Antenna port

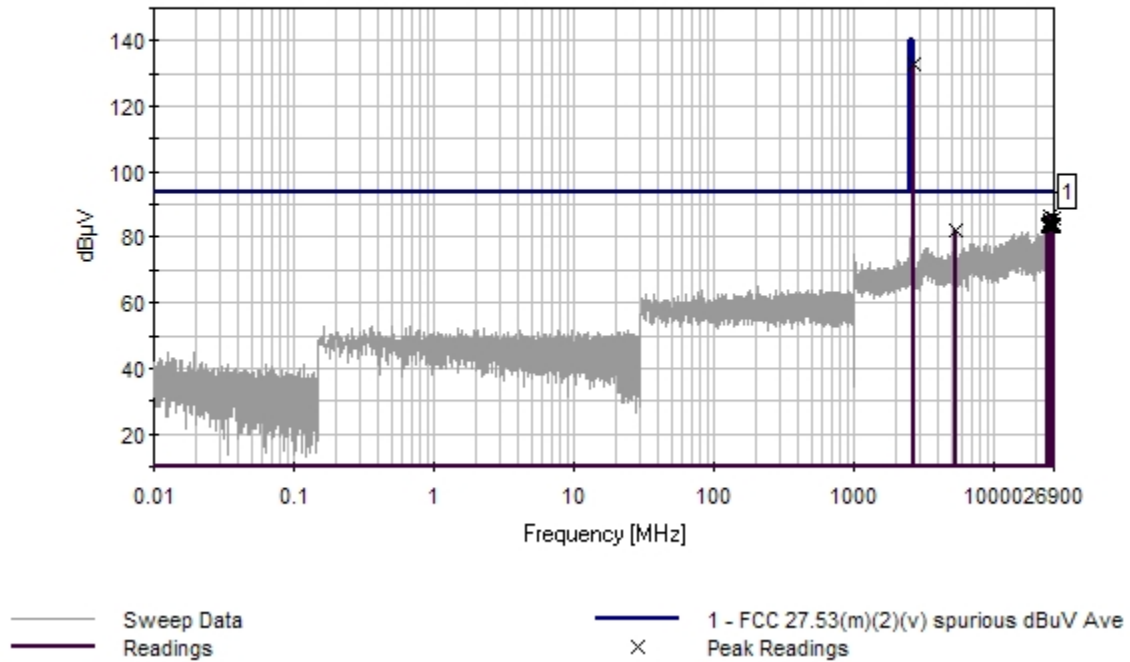
#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	2688.148M	123.1	+0.4	+9.4			+0.0	132.9	140.0	-7.1	Anten
									Fundamental		
2	25141.240 M	74.7	+1.2	+10.3			+0.0	86.2	94.0	-7.8	Anten
3	26657.890 M	74.4	+1.1	+10.4			+0.0	85.9	94.0	-8.1	Anten
4	25085.760 M	74.1	+1.1	+10.3			+0.0	85.5	94.0	-8.5	Anten
5	25177.760 M	73.9	+1.2	+10.3			+0.0	85.4	94.0	-8.6	Anten
6	25213.090 M	73.9	+1.2	+10.3			+0.0	85.4	94.0	-8.6	Anten
7	25072.240 M	73.7	+1.1	+10.3			+0.0	85.1	94.0	-8.9	Anten

8	25016.280 M	73.7	+1.0	+10.3	+0.0	85.0	94.0	-9.0	Anten
9	24894.990 M	73.6	+0.9	+10.4	+0.0	84.9	94.0	-9.1	Anten
10	25031.690 M	73.4	+1.1	+10.3	+0.0	84.8	94.0	-9.2	Anten
11	25057.060 M	73.4	+1.1	+10.3	+0.0	84.8	94.0	-9.2	Anten
12	24999.000 M	73.4	+1.0	+10.3	+0.0	84.7	94.0	-9.3	Anten
13	25003.000 M	73.3	+1.0	+10.3	+0.0	84.6	94.0	-9.4	Anten
14	25055.640 M	73.2	+1.1	+10.3	+0.0	84.6	94.0	-9.4	Anten
15	25185.110 M	73.1	+1.2	+10.3	+0.0	84.6	94.0	-9.4	Anten
16	25035.010 M	73.0	+1.1	+10.3	+0.0	84.4	94.0	-9.6	Anten
17	25152.390 M	72.9	+1.2	+10.3	+0.0	84.4	94.0	-9.6	Anten
18	25023.390 M	72.9	+1.0	+10.3	+0.0	84.2	94.0	-9.8	Anten
19	25063.230 M	72.8	+1.1	+10.3	+0.0	84.2	94.0	-9.8	Anten
20	26247.670 M	72.8	+1.0	+10.4	+0.0	84.2	94.0	-9.8	Anten
21	26343.230 M	72.8	+1.0	+10.4	+0.0	84.2	94.0	-9.8	Anten
22	24100.890 M	72.9	+0.9	+10.3	+0.0	84.1	94.0	-9.9	Anten
23	24871.980 M	72.8	+0.9	+10.4	+0.0	84.1	94.0	-9.9	Anten
24	24896.990 M	72.8	+0.9	+10.4	+0.0	84.1	94.0	-9.9	Anten

25	25159.270 M	72.6	+1.2	+10.3	+0.0	84.1	94.0	-9.9	Anten
26	26030.220 M	72.7	+1.0	+10.4	+0.0	84.1	94.0	-9.9	Anten
27	24049.880 M	72.9	+0.8	+10.3	+0.0	84.0	94.0	-10.0	Anten
28	24911.990 M	72.7	+0.9	+10.4	+0.0	84.0	94.0	-10.0	Anten
29	24953.990 M	72.7	+1.0	+10.3	+0.0	84.0	94.0	-10.0	Anten
30	24995.000 M	72.7	+1.0	+10.3	+0.0	84.0	94.0	-10.0	Anten
31	25293.240 M	72.6	+1.1	+10.3	+0.0	84.0	94.0	-10.0	Anten
32	26157.090 M	72.6	+1.0	+10.4	+0.0	84.0	94.0	-10.0	Anten
33	26666.670 M	72.5	+1.1	+10.4	+0.0	84.0	94.0	-10.0	Anten
34	25015.570 M	72.6	+1.0	+10.3	+0.0	83.9	94.0	-10.1	Anten
35	25247.240 M	72.4	+1.2	+10.3	+0.0	83.9	94.0	-10.1	Anten
36	24167.900 M	72.6	+0.9	+10.3	+0.0	83.8	94.0	-10.2	Anten
37	24249.910 M	72.5	+1.0	+10.3	+0.0	83.8	94.0	-10.2	Anten
38	24292.910 M	72.5	+1.0	+10.3	+0.0	83.8	94.0	-10.2	Anten
39	25172.070 M	72.3	+1.2	+10.3	+0.0	83.8	94.0	-10.2	Anten
40	25208.590 M	72.3	+1.2	+10.3	+0.0	83.8	94.0	-10.2	Anten
41	24807.980 M	72.5	+0.8	+10.4	+0.0	83.7	94.0	-10.3	Anten

42	23979.870 M	72.5	+0.8	+10.3	+0.0	83.6	94.0	-10.4	Anten
43	24794.970 M	72.4	+0.8	+10.4	+0.0	83.6	94.0	-10.4	Anten
44	25020.310 M	72.3	+1.0	+10.3	+0.0	83.6	94.0	-10.4	Anten
45	25162.590 M	72.1	+1.2	+10.3	+0.0	83.6	94.0	-10.4	Anten
46	25200.050 M	72.0	+1.2	+10.3	+0.0	83.5	94.0	-10.5	Anten
47	25984.220 M	72.1	+1.0	+10.4	+0.0	83.5	94.0	-10.5	Anten
48	26042.320 M	72.1	+1.0	+10.4	+0.0	83.5	94.0	-10.5	Anten
49	26597.900 M	72.0	+1.1	+10.4	+0.0	83.5	94.0	-10.5	Anten
50	5375.294M	72.0	+0.8	+9.5	+0.0	82.3	94.0 Harmonic	-11.7	Anten

CKC Laboratories, Inc. Date: 2/23/2009 Time: 09:34:08 GE Energy WO#: 89201
FCC 27.53(m)(2)(v) spurious dBuV Ave Test Lead: Antenna port 220V 60Hz Sequence#: 4
WX-i210+c Antenna port through cable and 10 dB atten. High ch. QPSK 1/2 5 MHz



FCC 27.53 – BANDEDGE ANTENNA CONDUCTED

Test Setup Photos



Test Data

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • 510-249-1170

Customer: **GE Energy**
 Specification: **FCC 27.53(m)(2)(v) Band Edge dBm Ave**
 Work Order #: **89201** Date: 2/20/2009
 Test Type: **Conducted Emissions** Time: 15:49:17
 Equipment: **ANSI WiMAX SmartMeter** Sequence#: 3
 Manufacturer: Grid-Net Tested By: Art Rice
 Model: WX-i210+c 220V 60Hz
 S/N: n/a

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
E4446A Spectrum Analyzer	US44300408	03/05/2007	03/05/2009	02668
Cable - HF - 32022-2-29094K-24TC	n/a	02/04/2008	02/04/2010	03015
10dB Pad 54A-10	P7186	02/05/2008	02/05/2010	P05411

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
ANSI WiMAX SmartMeter*	Grid-Net	WX-i210+c	n/a

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Dell	Latitude D830	9THV3G1
Isolation Transformer	PCC	ISO-300	none
110-220V Step-up Transformer	Philmore	ST-300	none
Wall Plugged Bridge	NETGEAR	XE102	1X618653036AE

Test Conditions / Notes:

The wall mount transceiver is placed on top of the wooden test table.

Powered by 220VAC.

The laptop PC communicates through the Wall Plugged Bridge to the EUT through the AC power line.

NOTES:

1) The EUT is transmitting continuously with OFDMA modulation.

Modulation types: A=5 MHz BW QPSK 1/2. B=10 MHz BW QPSK 1/2. C=5 MHz BW 16QAM 3/4. D=10 MHz BW 16QAM 3/4.

Low ch=2498.5 MHz for 5 MHz BW

Low ch=2501 MHz for 10 MHz BW

Mid ch=2600MHz

Hi ch=2687.5MHz for 5 MHz BW

Hi ch=2685 MHz for 10 MHz BW

2) Transmit power set at 27dBm.

3) CONDUCTED FROM ANTENNA PORT.

4) EUT on table next to Spectrum Analyzer.

5) Spectrum analyzer atten=40 dB, External atten=10dB.

6) Spectrum analyzer settings: 9kHz-150kHz RBW=VBW=200Hz, 0.15-30 MHz RBW=VBW=9kHz, 30-1000 MHz RBW=VBW=120kHz, 1-27GHz RBW=VBW=1 MHz

7) Averaged (100 samples) readings.

8) Band edge readings performed at 1% of 26dB BW of signal. 47 kHz for 5 MHz BW (26dB BW=4.7MHz). 100kHz for 10 MHz BW (26dB BW=9.3 MHz), per 27.53(m)(6).

9) SA offset of 9.8 dB to correct for cable and attenuator loss.

FCC 27.53(m)(2)(v)

Conducted emissions 2.4-2.7 GHz.

Transducer Legend:

Measurement Data:

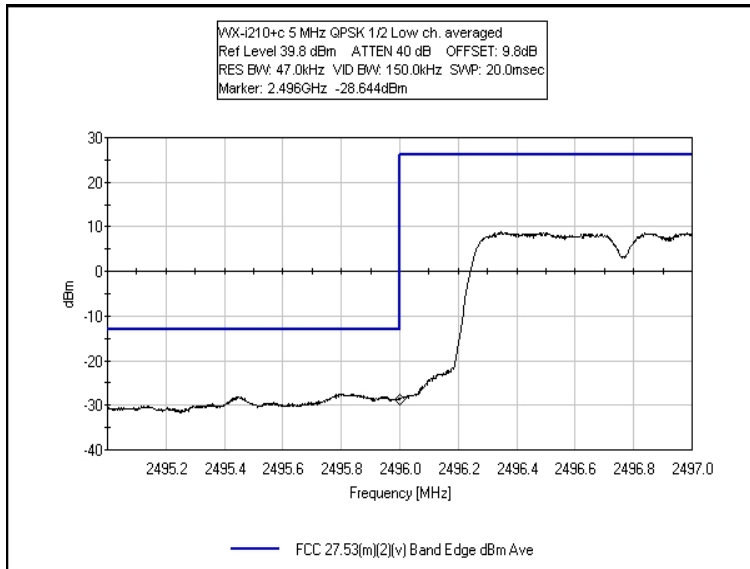
Reading listed by margin.

Test Lead: Antenna port

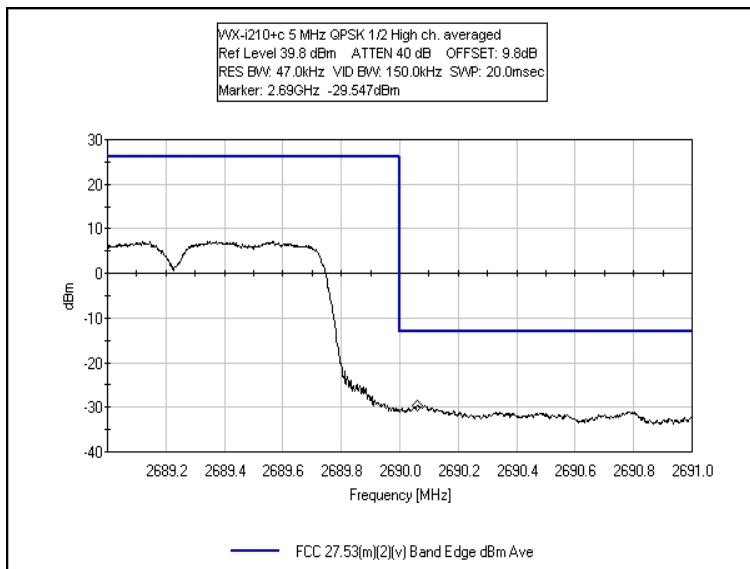
#	Freq MHz	Rdng dBμV	dB	dB	dB	dB	Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	2497.600M Ave	26.3					+0.0	26.3	26.3	+0.0	Anten
									Fundamental, 5MHz QPSK 1/2, Low		
2	2688.110M Ave	23.8					+0.0	23.8	26.1	-2.3	Anten
									Fundamental, 5 MHz QPSK 1/2, High		
3	2499.780M Ave	21.2					+0.0	21.2	26.1	-4.9	Anten
									Fundamental, 10 MHz QPSK 1/2, Low		
4	2685.450M Ave	19.9					+0.0	19.9	26.1	-6.2	Anten
									Fundamental, 10 MHz QPSK 1/2, High		

5	2495.998M Ave	-28.2	+0.0	-28.2	-13.0	-15.2	Anten
					Band Edge, 5MHz QPSK 1/2, Low, RBW=47kHz		
6	2495.990M Ave	-28.6	+0.0	-28.6	-13.0	-15.6	Anten
					Band Edge, 10 MHz QPSK 1/2, Low, RBW=100kHz		
7	2690.060M Ave	-29.5	+0.0	-29.5	-13.0	-16.5	Anten
					Band Edge, 5MHz QPSK 1/2, High, RBW=47kHz		
8	2690.048M Ave	-30.5	+0.0	-30.5	-13.0	-17.5	Anten
					Band Edge, 10MHz QPSK 1/2, High, RBW=100kHz		

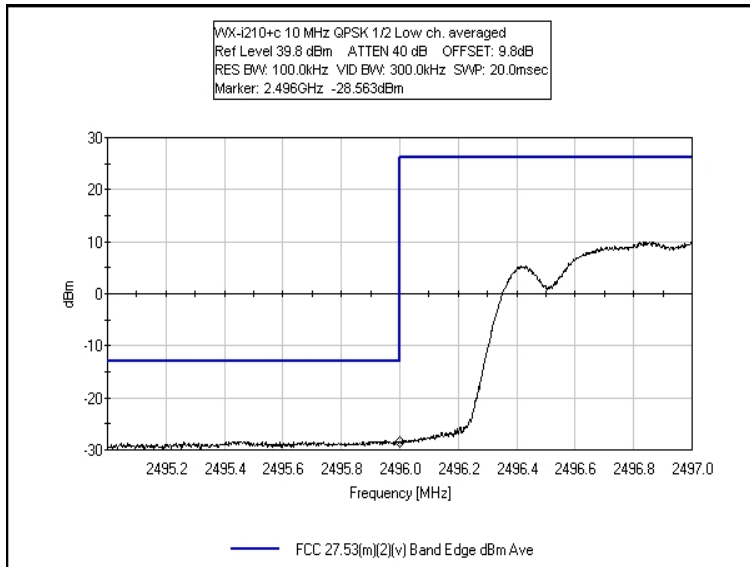
FCC 27.53 BANDEDGE - 5MHz QPSK LOW CHANNEL



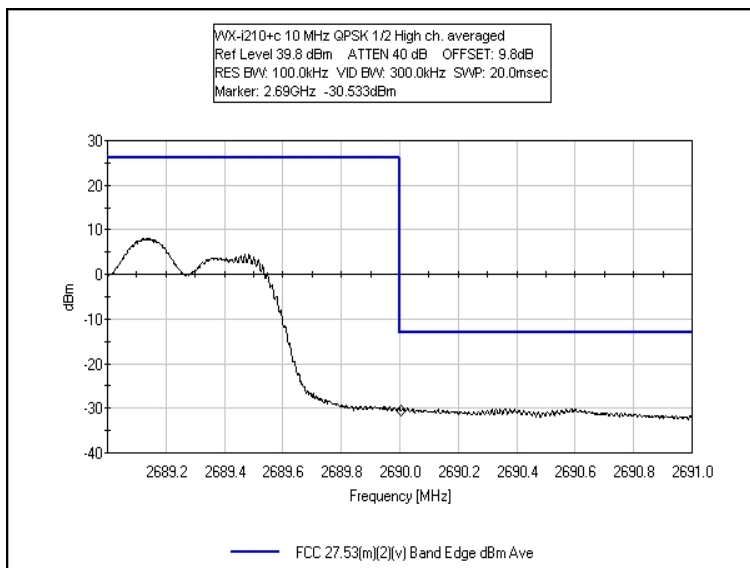
FCC 27.53 BANDEDGE - 5MHz QPSK HIGH CHANNEL



FCC 27.53 BANDEDGE - 10MHz QPSK LOW CHANNEL



FCC 27.53 BANDEDGE - 10MHz QPSK HIGH CHANNEL



FCC 2.1033(c)(14)/2.1053/27.53 - FIELD STRENGTH OF SPURIOUS RADIATION

Test Setup Photos



Test Data Sheets

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • 510-249-1170

Customer: **GE Energy**
 Specification: **FCC 27.53(m)(2)(v) Spurious Rad dBuV Ave**
 Work Order #: **89201** Date: 2/25/2009
 Test Type: **Maximized Emissions** Time: 10:41:39
 Equipment: **ANSI WiMAX SmartMeter** Sequence#: 10
 Manufacturer: Grid-Net Tested By: Art Rice
 Model: WX-i210+c
 S/N: n/a

9kHz-26.9 GHz Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
E4446A Spectrum Analyzer	US44300408	03/05/2007	03/05/2009	02668
Active Horn 26-40GHz	1097854	11/12/2008	11/12/2010	02695
Active Horn 18-26GHz	1087835	11/12/2008	11/12/2010	02694
HF Cable		02/28/2008	02/28/2010	01206
HF Cable		02/28/2008	02/28/2010	01205
Horn - DRG-118A	1064	01/09/2009	01/09/2011	02061
Cable	None	04/21/2008	04/21/2010	P05440
Cable	None	04/05/2007	04/05/2009	P05300
Cable	None	04/02/2007	04/02/2009	P05299
Preamplifier, HP8447D	2443A03707	02/09/2009	02/09/2011	00730
Antenna, Bilog	2630	12/22/2008	12/22/2010	00852
Mag Loop - 6502	2078	06/11/2007	06/11/2009	00432

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
ANSI WiMAX SmartMeter*	Grid-Net	WX-i210+c	n/a

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Dell	Latitude D830	9THV3G1
Isolation Transformer	PCC	ISO-300	none
110-220V Step-up Transformer	Philmore	ST-300	none
Wall Plugged Bridge	NETGEAR	XE102	1X618653036AE

Test Conditions / Notes:

The wall mount transceiver is placed on top of the wooden test table. It is mounted on styrofoam blocks. EUT powered by 220VAC. The laptop PC communicates to the EUT through the Wall Plugged Bridge. The Ethernet cable is routed under groundplane to the laptop located outside the chamber.

NOTES:

- 1) The EUT is transmitting continuously with OFDMA modulation.
Modulation types: A=5 MHz BW QPSK 1/2. B=10 MHz BW QPSK 1/2. C=5 MHz BW 16QAM 3/4. D=10 MHz BW 16QAM 3/4.
Low ch=2498.5 MHz for 5 MHz BW
Low ch=2501 MHz for 10 MHz BW
Mid ch=2600MHz
Hi ch=2687.5MHz for 5 MHz BW
Hi ch=2685 MHz for 10 MHz BW
- 2) Transmit power set at 27dBm.
- 3)
- 5) Spectrum analyzer atten=0dB.
- 6) Spectrum analyzer settings: 10kHz-150kHz RBW=VBW=200Hz, 0.15-30 MHz RBW=VBW=9kHz, 30-1000 MHz RBW=VBW=120kHz, 1-27GHz RBW=VBW=1 MHz
- 7) Transmitting with worst case modulation 5 MHz QPSK 1/2.
- 8) Frequencies above 1 GHz were pre-scanned near field. Signals found in the pre-scans 10kHz-26900MHz were maximized.

FCC 27.53(m)(2)(v)

Radiated emissions 4.9-5.4 GHz.

Operating Frequency: 2489MHz - 2688MHz
Channels: Low, Mid and High
Highest Measured Output
Power: 25.29 ERP(dBm)= 0.338 ERP(Watts)
Distance: 3 meters
Limit: 43+10Log(P)= 38.29 dBc

Freq. (MHz)	Reference Level (dBm)	Antenna Polarity (H/V)	dBc
5,200.10	-22.9	Vert	48.19
5,200.10	-18.5	Vert	43.79
4,997.18	-23.5	Vert	48.79
4,997.18	-19.5	Vert	44.79
4,997.12	-26.5	Horiz	51.79
4,997.12	-22	Horiz	47.29
5,375.20	-27.3	Vert	52.59
5,375.20	-23.4	Vert	48.69
5,200.10	-27.6	Horiz	52.89
5,200.10	-22.5	Horiz	47.79
5,375.00	-31.6	Horiz	56.89
5,375.02	-27.9	Horiz	53.19

FCC 27.53 – BANDEDGE OATS

Test Setup Photos



Test Data

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • 510-249-1170

Customer: **GE Energy**
 Specification: **FCC 27.53(m)(2)(v) Band Edge Rad dBuV Ave**
 Work Order #: **89201** Date: 2/25/2009
 Test Type: **Band Edge Measurements** Time: 14:16:54
 Equipment: **ANSI WiMAX SmartMeter** Sequence#: 11
 Manufacturer: Grid-Net Tested By: Art Rice
 Model: WX-i210+c
 S/N: n/a

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
E4446A Spectrum Analyzer	US44300408	03/05/2007	03/05/2009	02668
Horn - DRG-118A	1064	01/09/2009	01/09/2011	02061
Cable HF FSJ1P-50A-4	HOL-HF-025-06	05/06/2008	05/06/2010	P05138
Cable, HF	n/a	05/06/2008	05/06/2010	P04241

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
ANSI WiMAX SmartMeter*	Grid-Net	WX-i210+c	n/a

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Dell	Latitude D830	9THV3G1
Isolation Transformer	PCC	ISO-300	none
110-220V Step-up Transformer	Philmore	ST-300	none
Wall Plugged Bridge	NETGEAR	XE102	1X618653036AE

Test Conditions / Notes:

The wall mount transceiver is placed on top of the wooden test table. It is mounted on styrofoam blocks. EUT powered by 220VAC. The laptop PC communicates to the EUT through the Wall Plugged Bridge. The Ethernet cable is routed under groundplane to the laptop located outside the chamber.

NOTES:

- 1) The EUT is transmitting continuously with OFDMA modulation.
Modulation types: A=5 MHz BW QPSK 1/2. B=10 MHz BW QPSK 1/2. C=5 MHz BW 16QAM 3/4. D=10 MHz BW 16QAM 3/4.
Low ch=2498.5 MHz for 5 MHz BW
Low ch=2501 MHz for 10 MHz BW
Mid ch=2600MHz
Hi ch=2687.5MHz for 5 MHz BW
Hi ch=2685 MHz for 10 MHz BW
- 2) Transmit power set at 27dBm.
- 3)
- 5) Spectrum analyzer atten=0dB.
- 6) Spectrum analyzer settings: 10kHz-150kHz RBW=VBW=200Hz, 0.15-30 MHz RBW=VBW=9kHz, 30-1000 MHz RBW=VBW=120kHz, 1-27GHz RBW=VBW=1 MHz
- 7) Transmitting with worst case modulation QPSK 1/2.
- 8) Averaged (100 samples) readings.
- 9) Band edge readings performed at 1% of 26dB BW of signal. 47 kHz for 5 MHz BW (26dB BW=4.7MHz). 100kHz for 10 MHz BW (26dB BW=9.3 MHz), per 27.53(m)(6).

FCC 27.53(m)(2)(v)

Radiated emissions 2.4-2.7 GHz.

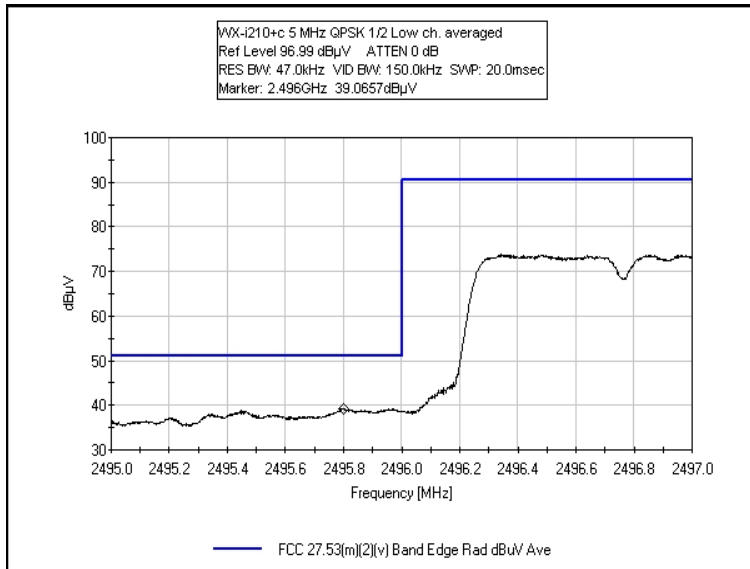
Transducer Legend:

T1=ANT AN02061 900MHz-18.5GHz
T2=CAB-ANP05138-050608
T3=CAB-ANP04241-050608

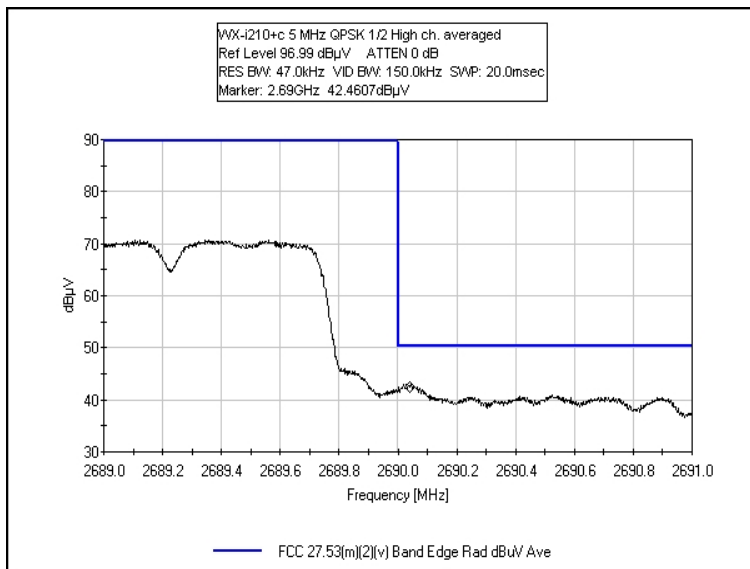
Measurement Data:		Reading listed by margin.				Test Distance: 3 Meters					
#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB		Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	2687.740M Ave	88.6	+29.5	+2.6	+0.8		+0.0 177	121.5	122.6 Fundamental, High, 5 MHz QPSK 1/2, RBW=1MHz	-1.1	Vert 103
2	2499.160M Ave	86.9	+28.8	+2.5	+0.8		+0.0 197	119.0	122.6 Fundamental, Low, 5 MHz QPSK 1/2, RBW=1MHz	-3.6	Vert 103
^	2499.180M	88.0	+28.8	+2.5	+0.8		+0.0 360	120.1	122.6	-2.5	Vert 103
4	2501.220M Ave	85.7	+28.8	+2.5	+0.8		+0.0 197	117.8	122.6 Fundamental, Low, 10 MHz QPSK 1/2, RBW=1 MHz	-4.8	Vert 103

5	2685.240M Ave	84.0	+29.5	+2.6	+0.8	+0.0 177	116.9	122.6	-5.7	Vert 103
								Fundamental, High, 10 MHz QPSK 1/2, RBW=1MHz		
6	2690.042M Ave	42.8	+29.5	+2.6	+0.8	+0.0 177	75.7	83.2	-7.5	Vert 103
								Band Edge, High, 5 MHz QPSK 1/2		
^	2690.088M	34.3	+29.5	+2.6	+0.8	+0.0 177	67.2	83.2	-16.0	Vert 103
								Band edge, High, 10 MHz QPSK 1/2		
8	2495.812M Ave	39.0	+28.8	+2.5	+0.8	+0.0 197	71.1	83.2	-12.1	Vert 103
								Band edge, Low, 5 MHz QPSK 1/2		
9	2495.986M Ave	35.5	+28.8	+2.5	+0.8	+0.0 197	67.6	83.2	-15.6	Vert 103
								Band edge, Low, 10 MHz QPSK 1/2		

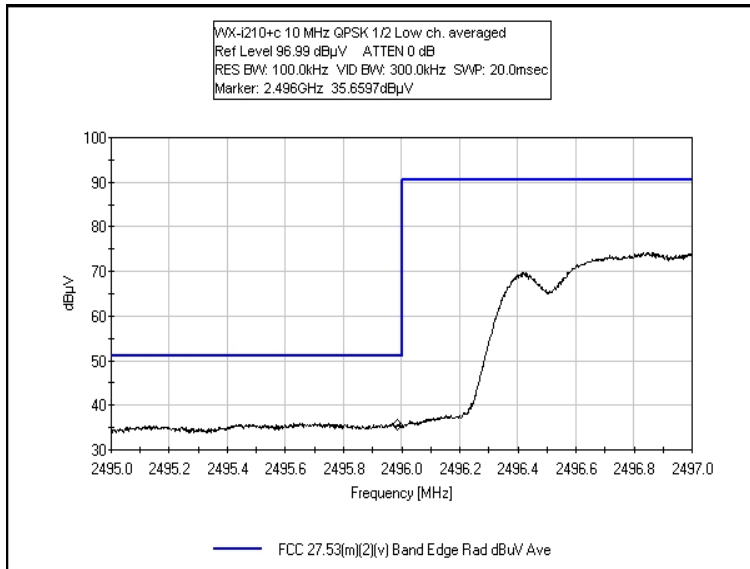
FCC 27.53 RADIATED BANDEDGE - 5MHz QPSK LOW CHANNEL



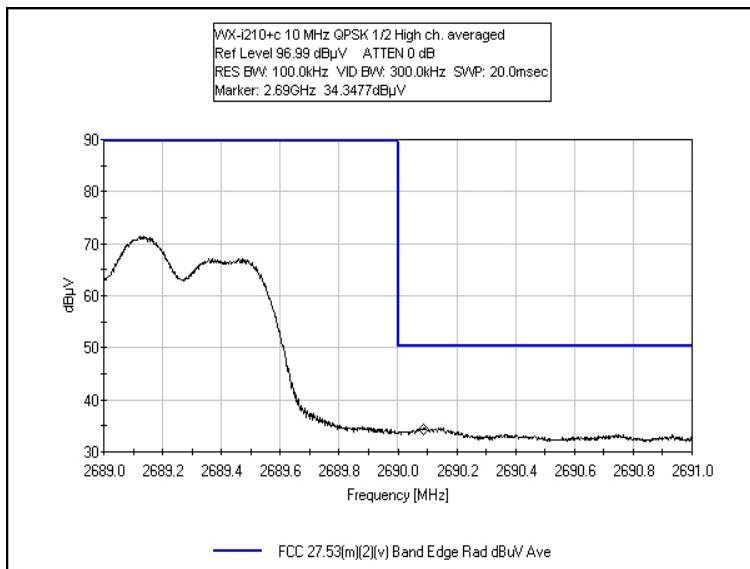
FCC 27.53 RADIATED BANDEDGE - 5MHz QPSK HIGH CHANNEL



FCC 27.53 RADIATED BANDEDGE - 10MHz QPSK LOW CHANNEL



FCC 27.53 RADIATED BANDEDGE - 10MHz QPSK HIGH CHANNEL



FCC 2.1033(c)(14)/2.1055- FREQUENCY STABILITY

Test Setup Photos







Test Data

Test Location: CKC Laboratories, Inc. • 1120 Fulton Place • Fremont, CA 94539 • 510-249-1170

Customer: **GE Energy**
 Specification: **FCC 27.50(h)(2) Max Power dBuV**
 Work Order #: **89201** Date: 3/4/2009
 Test Type: **Frequency Stability with Voltage Variations** Time: 10:08:00
 Equipment: **ANSI WiMAX SmartMeter** Sequence#: 17
 Manufacturer: Grid-Net Tested By: Art Rice
 Model: WX-i210+c 230V 60Hz
 S/N: n/a

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
E4446A Spectrum Analyzer	US44300408	03/05/2007	03/05/2009	02668
Cable - HF - 32022-2-29094K-24TC	n/a	02/04/2008	02/04/2010	03015
10dB Pad 54A-10	P7186	02/05/2008	02/05/2010	P05411
DMM, Fluke 85	65380320	07/17/2008	07/17/2010	02361
Powerstat Type 126	none	07/16/2007	07/16/2009	00435
Temperature Chamber	10911-S	04/03/2008	04/03/2010	02721

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
ANSI WiMAX SmartMeter*	Grid-Net	WX-i210+c	n/a

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Dell	Latitude D830	9THV3G1
Isolation Transformer	PCC	ISO-300	none
110-220V Step-up Transformer	Philmore	ST-300	none
Wall Plugged Bridge	NETGEAR	XE102	1X618653036AE

Test Conditions / Notes:

The wall mount transceiver is placed on top of the wooden test table.
Powered by 230VAC +/- 15%. The variac adjusts the voltage input to the isolation transformer. The voltage is checked at the 220V output of the step-up transformer, which powers the WX-i210+c SmartMeter.
The laptop PC communicates through the Wall Plugged Bridge to the EUT through the AC power line.

NOTES:

1) The EUT is transmitting continuously with a single-tone signal.

Low ch=2498.5 MHz

Mid ch=2600MHz

Hi ch=2687.5MHz

2) Transmit power set at 27dBm.

3) CONDUCTED FROM ANTENNA PORT.

4) EUT on table next to Spectrum Analyzer.

5) Spectrum analyzer atten=40 dB, External atten=10dB.

6) Spectrum analyzer settings: RBW=VBW=1 kHz

7) Frequency stability with voltage variation per FCC 2.1055(d)

Conducted emissions 2.4-2.7 GHz.

Transducer Legend:

T1=CAB-AN03015-020408

T2=ATT-ANP05411-020508

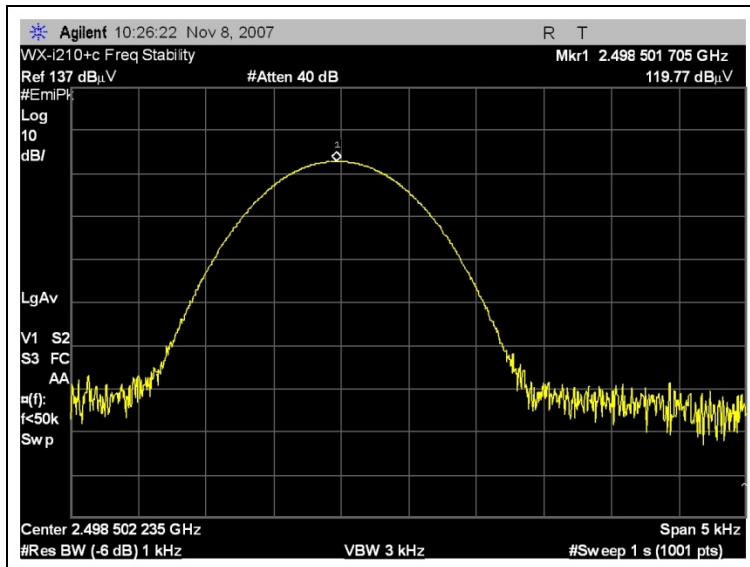
Measurement Data:

Reading listed by margin.

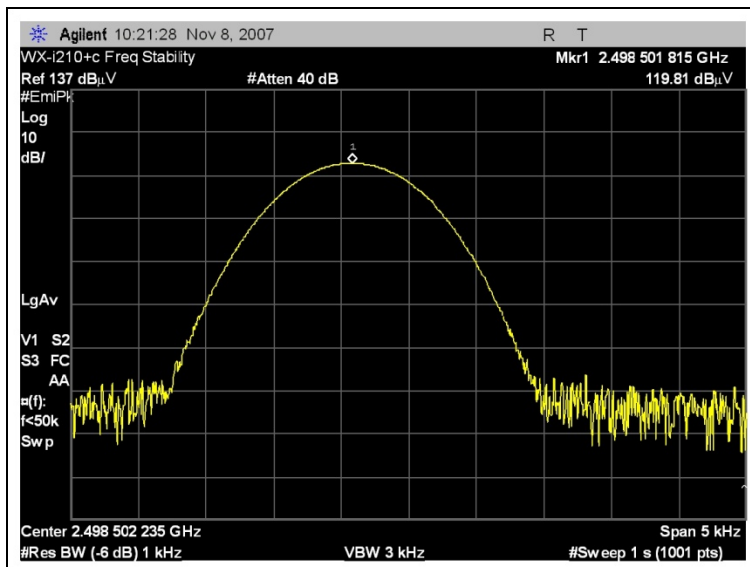
Test Lead: Antenna port

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB			Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	2498.502M	120.0	+0.4	+9.4			+0.0	129.8	140.0	-10.2	Anten
									Low ch, 195.5V - 15%		
2	2687.501M	119.8	+0.4	+9.4			+0.0	129.6	140.0	-10.4	Anten
									High ch, 195.5V - 15%		
3	2498.502M	119.8	+0.4	+9.4			+0.0	129.6	140.0	-10.4	Anten
									Low ch, 230VAC nominal		
4	2498.502M	119.8	+0.4	+9.4			+0.0	129.6	140.0	-10.4	Anten
									Low ch, 264.5V +15%		
5	2687.501M	119.6	+0.4	+9.4			+0.0	129.4	140.0	-10.6	Anten
									High ch, 264.5V +15%		
6	2687.501M	119.6	+0.4	+9.4			+0.0	129.4	140.0	-10.6	Anten
									High ch, 230VAC nominal		

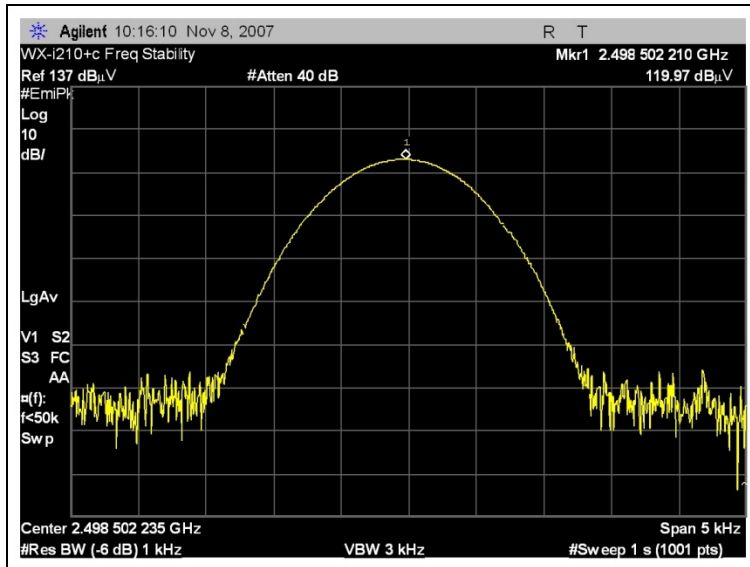
FREQUENCY STABILITY - LOW CHANNEL NOMINAL



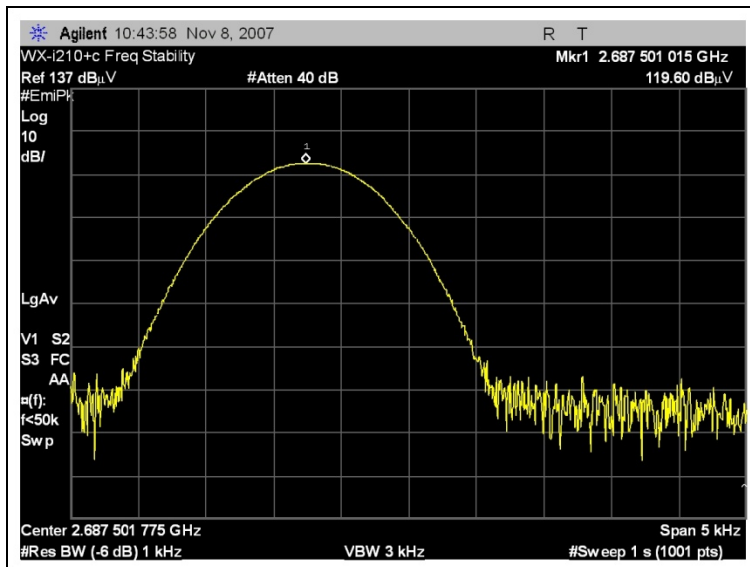
FREQUENCY STABILITY - LOW CHANNEL +15%



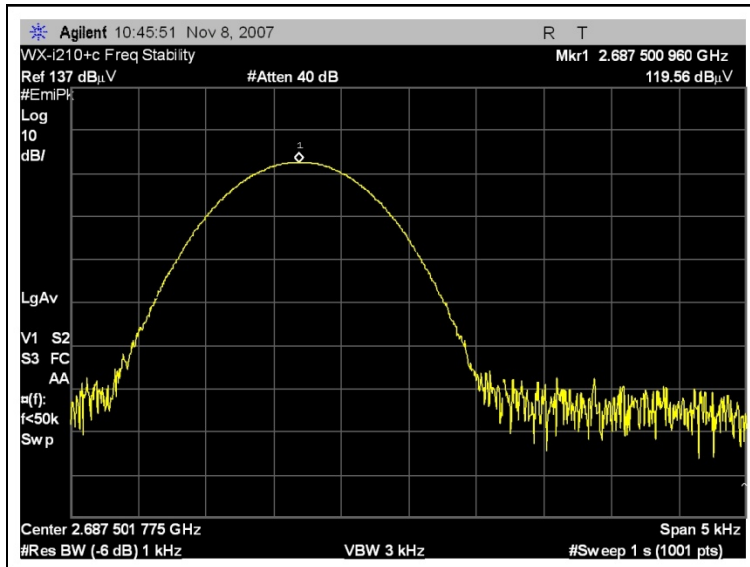
FREQUENCY STABILITY - LOW CHANNEL -15%



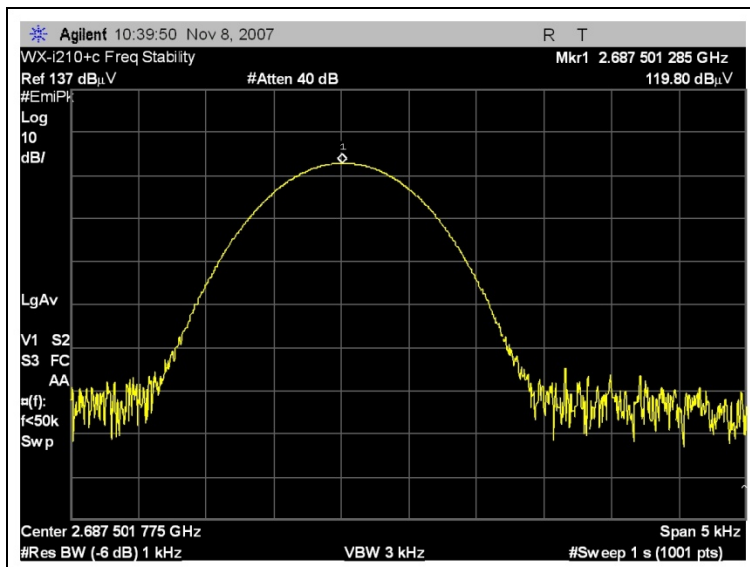
FREQUENCY STABILITY - HIGH CHANNEL NOMINAL



FREQUENCY STABILITY - HIGH CHANNEL +15%



FREQUENCY STABILITY - HIGH CHANNEL -15%



Temperature Variations

		Channel 1 (MHz)	Dev. (MHz)	Channel 3 (MHz)	Dev. (MHz)
Channel Frequency:		2498.5		2687.5	
Temp (C)	Voltage				
-30	230	2498.50507	0.00507	2687.50510	0.00510
-20	230	2498.50443	0.00443	2687.50440	0.00440
-10	230	2498.50420	0.00420	2687.50403	0.00403
0	230	2498.50403	0.00403	2687.50380	0.00380
10	230	2498.50510	0.00510	2687.50493	0.00493
20	230	2498.50513	0.00513	2687.50497	0.00497
30	230	2498.50433	0.00433	2687.50453	0.00453
40	230	2498.50260	0.00260	2687.50167	0.00167
50	230	2498.50050	0.00050	2687.50087	0.00087

Voltage Variations ($\pm 15\%$)

20	195.5	2498.50210	0.00210	2687.50129	0.00128
20	230	2498.50171	0.00171	2687.50102	0.00101
20	264.5	2498.50182	0.00182	2687.50096	0.00096

Max Deviation (MHz)	0.00513		0.00510
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