TESTING
CERT #803.01, 803.02, 803.05, 803.06

GRID NET, INC.
ADDENDUM TEST REPORT TO FC09-049A

FOR THE

GE WIMAX SMARTGRID ROUTER, WX-SGR

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

TESTING

DATE OF ISSUE: AUGUST 10, 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 27, 2009

Report No.: FC09-049B

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ADMINISTRATIVE INFORMATION

DATE OF TEST: February 13 – July 27, 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: To perform the testing of the GE WiMAX SmartGrid Router, WX-SGR with the requirements for FCC Part 15 Subpart B Sections 15.107 & 15.109 Class B and Part 27 devices.
Addendum A: To repeat testing of sections 15.109, bandedge, spurious and radiated emissions with the external chassis removed from the EUT.
Addendum B: During the changes made for Addendum A, incorrect data sheets were placed in the bandedge antenna conducted data section and part of the test equipment was left out for spurious radiated emissions testing. These corrections did not require any additional testing.

APPROVALS

QUALITY ASSURANCE:

Steve Behm, Director of Engineering Services

TEST PERSONNEL:

Art Rice

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
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

E Tronic F5-NF-65B-02 ferrite was added to the Ethernet cable at the EUT to reduce an emission at 250 MHz.

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:

	At the Time of Testing	Customer Declaration
Device Name	WiMAX SmartGrid Router	GE WiMAX SmartGrid Router
Manufacturer Name	Grid-Net	GE Energy
Customer Name	GE Energy	None

EQUIPMENT UNDER TEST

WiMAX SmartGrid Router
Manuf: GE Energy
Model: WX-SGR
Serial: GN1S11ASS8BS000W

PERIPHERAL DEVICES

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

Laptop PC
Manuf: Dell
Model: Latitude D830
Serial: 9THV3G1

24 VDC Power Supply
Manuf: CUI Inc.
Model: 3A-401DN24
Serial: NA

Power Supply for EUT Fan
Manuf: Tektronix
Model: CPS250
Serial: CKC AN00900A

Cooling Fan
Manuf: CoolerMaster
Model: AA225-25BB-5EA-F1
Serial: NA

Antenna
Manuf: Mars Antennas and RF System, Inc
Model: ANT.MA-VM26-3F
Serial: NA

AC Adapter for Laptop
Manuf: Dell
Model: LA90PS0-00
Serial: CN-0DF266-71615-834-0DC3

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
4M 44 W7D and 9M06 W7D

FCC 2.1033 (c)(5) FREQUENCY RANGE
2498MHz – 2688MHz

FCC 2.1033 (c)(6) OPERATING POWER
26.1 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** Date: 2/26/2009
Test Type: **Conducted Emissions** Time: 18:29:50
Equipment: **WiMAX SmartGrid Router** Sequence#: 17
Manufacturer: Grid-Net Tested By: Art Rice
Model: WX-SGR 120V 60Hz
S/N: GN1S11ASS8BS000W

***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
WiMAX SmartGrid Router*	Grid-Net	WX-SGR	GN1S11ASS8BS000W

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Dell	Latitude D830	9THV3G1
24 VDC Power Supply	CUI Inc.	3A-401DN24	none
Power supply for EUT fan	Tektronix	CPS250	CKC AN00900A
Cooling Fan	CoolerMaster	AA225-25BB-5EA-F1	none
Antenna	Mars Antennas and RF System, Inc.	ANT.MA-VM26-3F	none
AC Adapter for laptop	Dell	LA90PS0-00	CN-0DF266-71615-834-0DC3

Test Conditions / Notes:

The wall mount transceiver is placed on top of the wooden test table. It is mounted on styrofoam blocks.
24VDC power supply for EUT is powered by the AC input. The 24VDC power supply is inside the metal cabinet that contains the EUT.
The laptop PC communicates to the EUT through the Ethernet connected to the laptop located on the test table. The laptop is constantly pinging the EUT to exercise the port.
Using command prompt "ping -t 192.168.137.1" to exercise Ethernet.
The laptop PC is also connected to the EUT through the RS232 cable. A Hyperterminal session is opened to establish communication.
An unterminated RS-485 cable is bundled to 40cm above the ground plane.

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

Conducted emissions 0.15-30 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

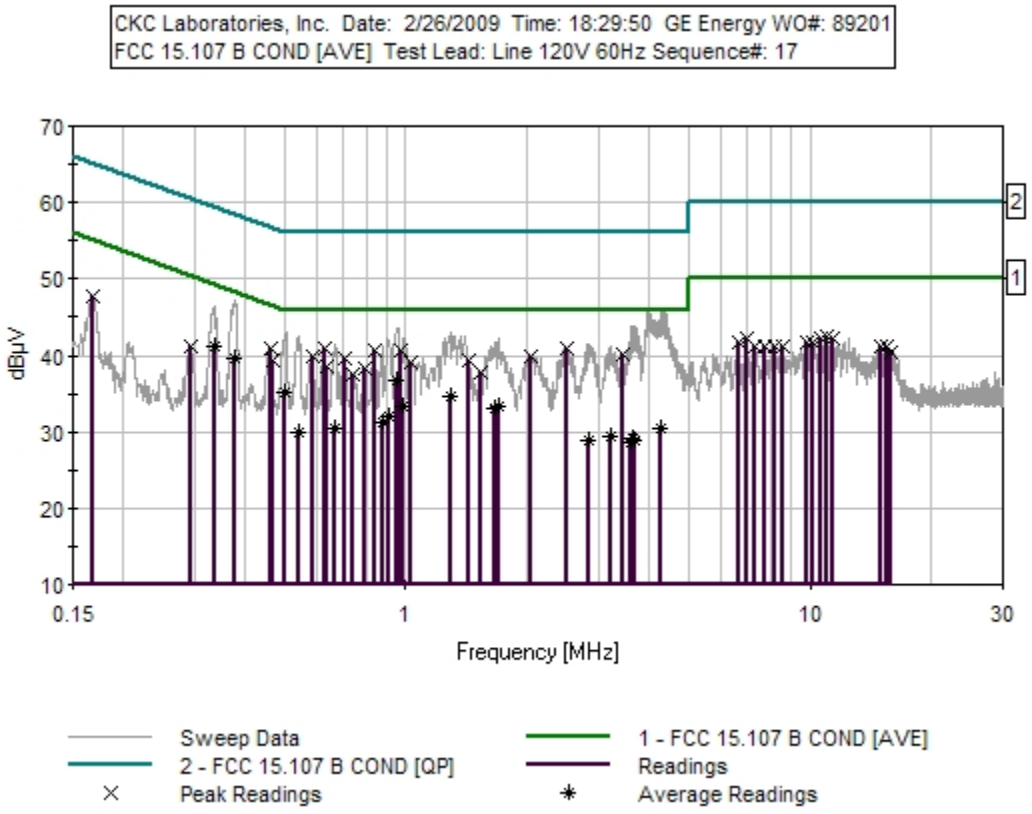
Measurement Data: Reading listed by margin. Test Lead: Line

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	628.498k	30.7	+0.0	+10.1	+0.0	+0.1	+0.0	40.9	46.0	-5.1	Line
2	2.489M	30.6	-0.1	+10.0	+0.1	+0.2	+0.0	40.8	46.0	-5.2	Line
3	970.566k	30.3	+0.1	+10.1	+0.1	+0.1	+0.0	40.7	46.0	-5.3	Line
4	833.568k	30.4	+0.0	+10.0	+0.1	+0.1	+0.0	40.6	46.0	-5.4	Line
5	462.696k	30.6	+0.1	+10.1	+0.0	+0.0	+0.0	40.8	46.6	-5.8	Line
6	3.437M	30.0	-0.1	+10.0	+0.1	+0.2	+0.0	40.2	46.0	-5.8	Line
7	587.047k	29.7	+0.1	+10.1	+0.0	+0.1	+0.0	40.0	46.0	-6.0	Line
8	2.034M	29.7	+0.0	+10.0	+0.1	+0.2	+0.0	40.0	46.0	-6.0	Line
9	705.581k	29.5	+0.0	+10.1	+0.0	+0.0	+0.0	39.6	46.0	-6.4	Line
10	1.430M	29.2	+0.0	+10.0	+0.1	+0.1	+0.0	39.4	46.0	-6.6	Line
11	1.034M	29.0	+0.0	+10.1	+0.1	+0.0	+0.0	39.2	46.0	-6.8	Line
12	469.968k	29.1	+0.1	+10.1	+0.0	+0.1	+0.0	39.4	46.5	-7.1	Line
13	168.180k	37.3	+0.0	+10.0	+0.4	+0.1	+0.0	47.8	55.0	-7.2	Line
14	635.042k	28.3	+0.0	+10.1	+0.0	+0.1	+0.0	38.5	46.0	-7.5	Line

15	795.026k	28.2	+0.0	+10.0	+0.1	+0.1	+0.0	38.4	46.0	-7.6	Line
16	11.013M	32.1	+0.0	+10.0	+0.1	+0.2	+0.0	42.4	50.0	-7.6	Line
17	10.644M	31.9	+0.0	+10.1	+0.1	+0.2	+0.0	42.3	50.0	-7.7	Line
18	11.409M	31.8	+0.0	+10.0	+0.1	+0.3	+0.0	42.2	50.0	-7.8	Line
19	6.959M	31.6	+0.1	+10.1	+0.1	+0.2	+0.0	42.1	50.0	-7.9	Line
20	336.000k Ave	31.1	+0.0	+10.0	+0.1	+0.0	+0.0	41.2	49.3	-8.1	Line
^	336.163k	36.4	+0.0	+10.0	+0.1	+0.0	+0.0	46.5	49.3	-2.8	Line
22	1.532M	27.7	+0.0	+10.0	+0.1	+0.1	+0.0	37.9	46.0	-8.1	Line
23	6.671M	31.3	+0.1	+10.1	+0.1	+0.2	+0.0	41.8	50.0	-8.2	Line
24	10.175M	31.4	+0.0	+10.1	+0.1	+0.2	+0.0	41.8	50.0	-8.2	Line
25	9.806M	31.2	+0.0	+10.1	+0.1	+0.3	+0.0	41.7	50.0	-8.3	Line
26	741.214k	27.5	+0.0	+10.1	+0.0	+0.0	+0.0	37.6	46.0	-8.4	Line
27	7.319M	30.7	+0.1	+10.1	+0.1	+0.3	+0.0	41.3	50.0	-8.7	Line
28	8.553M	30.9	+0.1	+10.0	+0.1	+0.2	+0.0	41.3	50.0	-8.7	Line
29	378.000k Ave	29.2	+0.1	+10.1	+0.0	+0.1	+0.0	39.5	48.3	-8.8	Line
^	378.341k	36.8	+0.1	+10.1	+0.0	+0.1	+0.0	47.1	48.3	-1.2	Line
31	8.184M	30.8	+0.1	+10.0	+0.1	+0.2	+0.0	41.2	50.0	-8.8	Line
32	15.013M	30.6	+0.0	+10.1	+0.2	+0.3	+0.0	41.2	50.0	-8.8	Line
33	15.544M	30.6	+0.0	+10.1	+0.2	+0.3	+0.0	41.2	50.0	-8.8	Line
34	7.725M	30.7	+0.1	+10.0	+0.1	+0.2	+0.0	41.1	50.0	-8.9	Line
35	294.713k	31.0	+0.1	+10.0	+0.2	+0.0	+0.0	41.3	50.4	-9.1	Line
36	949.000k Ave	26.3	+0.1	+10.1	+0.1	+0.1	+0.0	36.7	46.0	-9.3	Line
^	949.301k	33.2	+0.1	+10.1	+0.1	+0.1	+0.0	43.6	46.0	-2.4	Line
38	15.806M	29.6	+0.1	+10.1	+0.2	+0.3	+0.0	40.3	50.0	-9.7	Line

39	502.000k	24.8	+0.1	+10.1	+0.0	+0.1	+0.0	35.1	46.0	-10.9	Line
	Ave										
^	502.328k	32.7	+0.1	+10.1	+0.0	+0.1	+0.0	43.0	46.0	-3.0	Line
41	1.285M	24.3	+0.0	+10.1	+0.1	+0.1	+0.0	34.6	46.0	-11.4	Line
	Ave										
^	1.285M	32.6	+0.0	+10.1	+0.1	+0.1	+0.0	42.9	46.0	-3.1	Line
43	988.000k	23.1	+0.0	+10.1	+0.1	+0.1	+0.0	33.4	46.0	-12.6	Line
	Ave										
^	987.578k	32.0	+0.0	+10.1	+0.1	+0.1	+0.0	42.3	46.0	-3.7	Line
45	1.694M	23.0	+0.0	+10.0	+0.1	+0.1	+0.0	33.2	46.0	-12.8	Line
	Ave										
^	1.694M	32.0	+0.0	+10.0	+0.1	+0.1	+0.0	42.2	46.0	-3.8	Line
47	1.655M	22.8	+0.0	+10.0	+0.1	+0.1	+0.0	33.0	46.0	-13.0	Line
	Ave										
^	1.655M	31.5	+0.0	+10.0	+0.1	+0.1	+0.0	41.7	46.0	-4.3	Line
49	905.000k	21.9	+0.0	+10.0	+0.1	+0.1	+0.0	32.0	46.0	-14.0	Line
	Ave										
^	905.265k	31.9	+0.0	+10.0	+0.1	+0.1	+0.0	42.1	46.0	-3.9	Line
51	875.000k	21.0	+0.0	+10.0	+0.1	+0.1	+0.0	31.2	46.0	-14.8	Line
	Ave										
^	875.473k	31.1	+0.0	+10.0	+0.1	+0.1	+0.0	41.3	46.0	-4.7	Line
53	668.000k	20.3	+0.0	+10.1	+0.0	+0.1	+0.0	30.4	46.0	-15.6	Line
	Ave										
^	668.675k	31.3	+0.0	+10.1	+0.0	+0.1	+0.0	41.5	46.0	-4.5	Line
55	4.275M	20.0	+0.0	+10.1	+0.1	+0.2	+0.0	30.4	46.0	-15.6	Line
	Ave										
^	4.275M	35.8	+0.0	+10.1	+0.1	+0.2	+0.0	46.2	46.0	+0.2	Line
57	545.000k	19.7	+0.0	+10.1	+0.0	+0.1	+0.0	29.9	46.0	-16.1	Line
	Ave										
^	544.870k	32.3	+0.0	+10.1	+0.0	+0.1	+0.0	42.5	46.0	-3.5	Line
59	3.199M	19.3	-0.1	+10.0	+0.1	+0.1	+0.0	29.4	46.0	-16.6	Line
	Ave										
^	3.199M	31.0	-0.1	+10.0	+0.1	+0.1	+0.0	41.1	46.0	-4.9	Line
61	3.650M	18.8	+0.0	+10.1	+0.1	+0.2	+0.0	29.2	46.0	-16.8	Line
	Ave										
^	3.650M	33.4	+0.0	+10.1	+0.1	+0.2	+0.0	43.8	46.0	-2.2	Line

63 Ave	2.838M	18.8	-0.1	+10.0	+0.1	+0.1	+0.0	28.9	46.0	-17.1	Line
^	2.838M	31.4	-0.1	+10.0	+0.1	+0.1	+0.0	41.5	46.0	-4.5	Line
65 Ave	3.688M	18.4	+0.0	+10.1	+0.1	+0.2	+0.0	28.8	46.0	-17.2	Line
^	3.688M	33.3	+0.0	+10.1	+0.1	+0.2	+0.0	43.7	46.0	-2.3	Line
67 Ave	3.616M	18.3	+0.0	+10.1	+0.1	+0.2	+0.0	28.7	46.0	-17.3	Line
^	3.616M	33.5	+0.0	+10.1	+0.1	+0.2	+0.0	43.9	46.0	-2.1	Line



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** Date: 2/26/2009
Test Type: **Conducted Emissions** Time: 18:15:22
Equipment: **WiMAX SmartGrid Router** Sequence#: 16
Manufacturer: Grid-Net Tested By: Art Rice
Model: WX-SGR 120V 60Hz
S/N: GN1S11ASS8BS000W

***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
WiMAX SmartGrid Router*	Grid-Net	WX-SGR	GN1S11ASS8BS000W

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Dell	Latitude D830	9THV3G1
24 VDC Power Supply	CUI Inc.	3A-401DN24	none
Power supply for EUT fan	Tektronix	CPS250	CKC AN00900A
Cooling Fan	CoolerMaster	AA225-25BB-5EA-F1	none
Antenna	Mars Antennas and RF System, Inc.	ANT.MA-VM26-3F	none
AC Adapter for laptop	Dell	LA90PS0-00	CN-0DF266-71615-834-0DC3

Test Conditions / Notes:

The wall mount transceiver is placed on top of the wooden test table. It is mounted on styrofoam blocks.
24VDC power supply for EUT is powered by the AC input. The 24VDC power supply is inside the metal cabinet that contains the EUT.
The laptop PC communicates to the EUT through the Ethernet connected to the laptop located on the test table. The laptop is constantly pinging the EUT to exercise the port.
Using command prompt "ping -t 192.168.137.1" to exercise Ethernet.
The laptop PC is also connected to the EUT through the RS232 cable. A Hyperterminal session is opened to establish communication.
An unterminated RS-485 cable is bundled to 40cm above the ground plane.

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

Conducted emissions 0.15-30 MHz.

Transducer Legend:

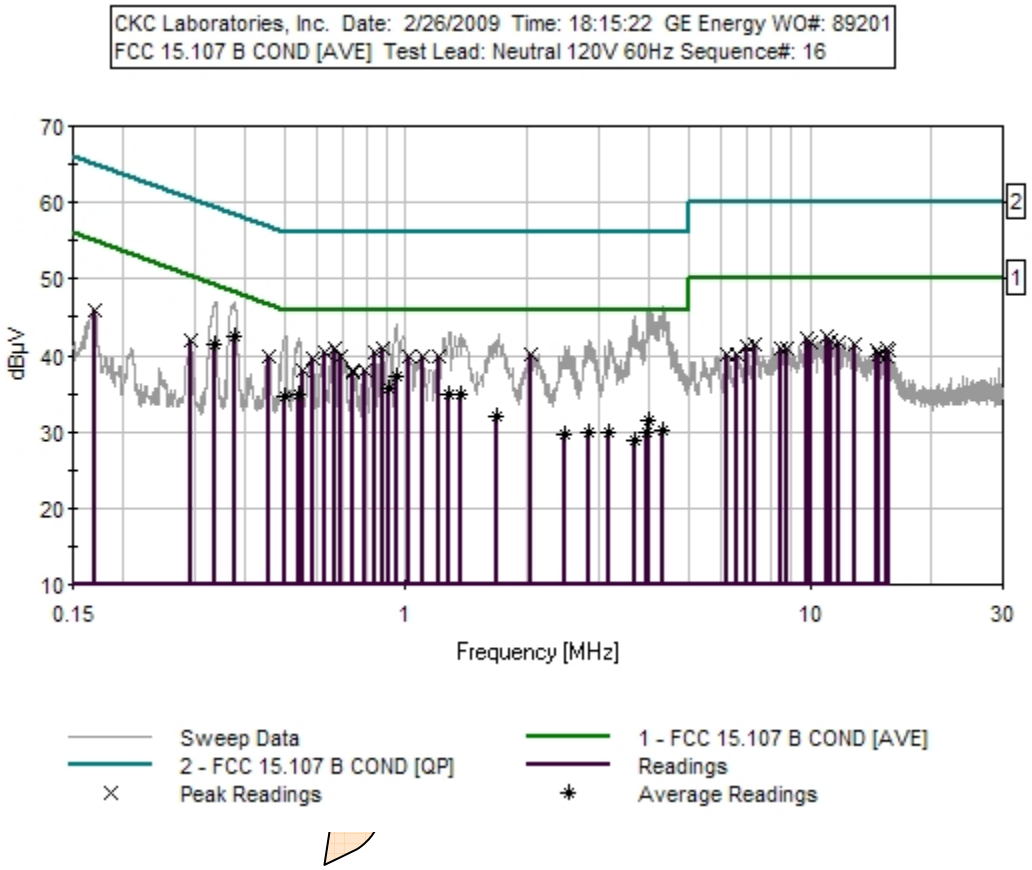
T1=LISN - AN00493 - White - ELC "OUT"	T2=AN P00081 10dB Attenuator
T3=FIL-ANP05258-121808 CE HP Filter	T4=Cable Calibration ANP00880

Measurement Data: Reading listed by margin. Test Lead: Neutral

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	667.039k	30.7	+0.0	+10.1	+0.0	+0.1	+0.0	40.9	46.0	-5.1	Neutral
2	873.564k	30.6	+0.0	+10.0	+0.1	+0.1	+0.0	40.8	46.0	-5.2	Neutral
3	627.043k	30.2	+0.0	+10.1	+0.0	+0.1	+0.0	40.4	46.0	-5.6	Neutral
4	377.000k Ave	32.3	+0.1	+10.1	+0.0	+0.1	+0.0	42.6	48.3	-5.7	Neutral
^	376.886k	36.6	+0.1	+10.1	+0.0	+0.1	+0.0	46.9	48.3	-1.4	Neutral
6	833.568k	30.1	+0.0	+10.0	+0.1	+0.1	+0.0	40.3	46.0	-5.7	Neutral
7	2.034M	29.8	+0.0	+10.0	+0.1	+0.2	+0.0	40.1	46.0	-5.9	Neutral
8	1.200M	29.7	+0.0	+10.1	+0.1	+0.1	+0.0	40.0	46.0	-6.0	Neutral
9	688.128k	29.7	+0.0	+10.1	+0.0	+0.1	+0.0	39.9	46.0	-6.1	Neutral
10	1.017M	29.7	+0.0	+10.1	+0.1	+0.0	+0.0	39.9	46.0	-6.1	Neutral
11	1.098M	29.5	+0.0	+10.1	+0.1	+0.1	+0.0	39.8	46.0	-6.2	Neutral
12	587.774k	29.5	+0.0	+10.1	+0.0	+0.1	+0.0	39.7	46.0	-6.3	Neutral
13	457.606k	29.7	+0.0	+10.1	+0.0	+0.0	+0.0	39.8	46.7	-6.9	Neutral
14	10.995M	32.2	+0.0	+10.0	+0.1	+0.2	+0.0	42.5	50.0	-7.5	Neutral
15	9.815M	31.7	+0.1	+10.1	+0.1	+0.3	+0.0	42.3	50.0	-7.7	Neutral
16	336.000k Ave	31.3	+0.1	+10.0	+0.1	+0.0	+0.0	41.5	49.3	-7.8	Neutral
^	336.345k	36.7	+0.1	+10.0	+0.1	+0.0	+0.0	46.9	49.2	-2.3	Neutral
18	555.050k	27.9	+0.0	+10.1	+0.0	+0.1	+0.0	38.1	46.0	-7.9	Neutral
19	736.123k	28.0	+0.0	+10.1	+0.0	+0.0	+0.0	38.1	46.0	-7.9	Neutral
20	795.026k	27.9	+0.0	+10.0	+0.1	+0.1	+0.0	38.1	46.0	-7.9	Neutral
21	11.319M	31.5	+0.0	+10.0	+0.1	+0.3	+0.0	41.9	50.0	-8.1	Neutral
22	11.752M	31.4	+0.0	+10.0	+0.1	+0.3	+0.0	41.8	50.0	-8.2	Neutral

23	737.578k	27.6	+0.0	+10.1	+0.0	+0.0	+0.0	37.7	46.0	-8.3	Neutral
24	10.094M	31.1	+0.1	+10.1	+0.1	+0.2	+0.0	41.6	50.0	-8.4	Neutral
25	293.986k	31.7	+0.0	+10.0	+0.2	+0.0	+0.0	41.9	50.4	-8.5	Neutral
26	7.328M	30.9	+0.1	+10.1	+0.1	+0.3	+0.0	41.5	50.0	-8.5	Neutral
27	12.851M	31.1	+0.0	+10.0	+0.1	+0.3	+0.0	41.5	50.0	-8.5	Neutral
28	953.000k Ave	27.0	+0.0	+10.1	+0.1	+0.1	+0.0	37.3	46.0	-8.7	Neutral
^	953.048k	33.8	+0.0	+10.0	+0.1	+0.1	+0.0	44.0	46.0	-2.0	Neutral
30	6.950M	30.7	+0.1	+10.1	+0.1	+0.2	+0.0	41.2	50.0	-8.8	Neutral
31	170.362k	35.5	+0.0	+10.0	+0.4	+0.1	+0.0	46.0	54.9	-8.9	Neutral
32	8.788M	30.6	+0.1	+10.0	+0.1	+0.2	+0.0	41.0	50.0	-9.0	Neutral
33	8.508M	30.5	+0.1	+10.0	+0.1	+0.2	+0.0	40.9	50.0	-9.1	Neutral
34	15.418M	30.2	+0.0	+10.1	+0.2	+0.3	+0.0	40.8	50.0	-9.2	Neutral
35	14.616M	30.0	+0.0	+10.1	+0.2	+0.3	+0.0	40.6	50.0	-9.4	Neutral
36	15.698M	30.0	+0.0	+10.1	+0.2	+0.3	+0.0	40.6	50.0	-9.4	Neutral
37	6.607M	29.7	+0.1	+10.1	+0.1	+0.2	+0.0	40.2	50.0	-9.8	Neutral
38	6.229M	29.6	+0.1	+10.1	+0.1	+0.2	+0.0	40.1	50.0	-9.9	Neutral
39	14.743M	29.5	+0.0	+10.1	+0.2	+0.3	+0.0	40.1	50.0	-9.9	Neutral
40	15.481M	29.4	+0.0	+10.1	+0.2	+0.3	+0.0	40.0	50.0	-10.0	Neutral
41	911.000k Ave	25.6	+0.0	+10.0	+0.1	+0.0	+0.0	35.7	46.0	-10.3	Neutral
^	911.024k	31.7	+0.0	+10.0	+0.1	+0.0	+0.0	41.8	46.0	-4.2	Neutral
43	543.000k Ave	24.8	+0.0	+10.1	+0.0	+0.1	+0.0	35.0	46.0	-11.0	Neutral
^	543.597k	32.1	+0.0	+10.1	+0.0	+0.1	+0.0	42.3	46.0	-3.7	Neutral
45	1.281M Ave	24.7	+0.0	+10.1	+0.1	+0.1	+0.0	35.0	46.0	-11.0	Neutral
^	1.281M	32.6	+0.0	+10.1	+0.1	+0.1	+0.0	42.9	46.0	-3.1	Neutral

47 Ave	1.366M	24.6	+0.0	+10.1	+0.1	+0.1	+0.0	34.9	46.0	-11.1	Neutral
^	1.366M	32.4	+0.0	+10.1	+0.1	+0.1	+0.0	42.7	46.0	-3.3	Neutral
49 Ave	502.000k	24.6	+0.0	+10.1	+0.0	+0.1	+0.0	34.7	46.0	-11.3	Neutral
^	502.601k	32.4	+0.0	+10.1	+0.0	+0.1	+0.0	42.6	46.0	-3.4	Neutral
51 Ave	1.689M	21.7	+0.0	+10.0	+0.1	+0.1	+0.0	31.9	46.0	-14.1	Neutral
^	1.689M	32.6	+0.0	+10.0	+0.1	+0.1	+0.0	42.8	46.0	-3.2	Neutral
53 Ave	4.011M	20.9	+0.1	+10.1	+0.1	+0.2	+0.0	31.4	46.0	-14.6	Neutral
^	4.011M	35.4	+0.1	+10.1	+0.1	+0.2	+0.0	45.9	46.0	-0.1	Neutral
55 Ave	4.347M	19.8	+0.1	+10.1	+0.1	+0.2	+0.0	30.3	46.0	-15.7	Neutral
^	4.347M	35.9	+0.1	+10.1	+0.1	+0.2	+0.0	46.4	46.0	+0.4	Neutral
57 Ave	3.943M	19.6	+0.1	+10.1	+0.1	+0.1	+0.0	30.0	46.0	-16.0	Neutral
^	3.943M	35.3	+0.1	+10.1	+0.1	+0.1	+0.0	45.7	46.0	-0.3	Neutral
59 Ave	3.182M	19.6	+0.1	+10.0	+0.1	+0.1	+0.0	29.9	46.0	-16.1	Neutral
^	3.182M	31.6	+0.1	+10.0	+0.1	+0.1	+0.0	41.9	46.0	-4.1	Neutral
61 Ave	2.821M	19.6	+0.1	+10.0	+0.1	+0.1	+0.0	29.9	46.0	-16.1	Neutral
^	2.821M	31.6	+0.1	+10.0	+0.1	+0.1	+0.0	41.9	46.0	-4.1	Neutral
63 Ave	2.485M	19.3	+0.1	+10.0	+0.1	+0.2	+0.0	29.7	46.0	-16.3	Neutral
^	2.485M	30.8	+0.1	+10.0	+0.1	+0.2	+0.0	41.2	46.0	-4.8	Neutral
65 Ave	3.675M	18.3	+0.1	+10.1	+0.1	+0.2	+0.0	28.8	46.0	-17.2	Neutral
^	3.675M	34.6	+0.1	+10.1	+0.1	+0.2	+0.0	45.1	46.0	-0.9	Neutral


CKC Laboratories, Inc. Date: 2/26/2009 Time: 18:15:22 GE Energy WO#: 89201
FCC 15.107 B COND [AVE] Test Lead: Neutral 120V 60Hz Sequence#: 16
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40
30
20
10
dBµV
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1
10
30
Frequency [MHz]
2
1
Sweep Data
2 - FCC 15.107 B COND [QP]
Peak Readings
1 - FCC 15.107 B COND [AVE]
Readings
Average Readings

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** Date: 2/26/2009
Test Type: **Conducted Emissions** Time: 17:37:31
Equipment: **WiMAX SmartGrid Router** Sequence#: 14
Manufacturer: Grid-Net Tested By: Art Rice
Model: WX-SGR 240V 60Hz
S/N: GN1S11ASS8BS000W

***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
WiMAX SmartGrid Router*	Grid-Net	WX-SGR	GN1S11ASS8BS000W

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Dell	Latitude D830	9THV3G1
24 VDC Power Supply	CUI Inc.	3A-401DN24	none
Power supply for EUT fan	Tektronix	CPS250	CKC AN00900A
Cooling Fan	CoolerMaster	AA225-25BB-5EA-F1	none
Antenna	Mars Antennas and RF System, Inc.	ANT.MA-VM26-3F	none
AC Adapter for laptop	Dell	LA90PS0-00	CN-0DF266-71615-834-0DC3

Test Conditions / Notes:

The wall mount transceiver is placed on top of the wooden test table. It is mounted on styrofoam blocks.
24VDC power supply for EUT is powered by the AC input. The 24VDC power supply is inside the metal cabinet that contains the EUT.
The laptop PC communicates to the EUT through the Ethernet connected to the laptop located on the test table. The laptop is constantly pinging the EUT to exercise the port.
Using command prompt "ping -t 192.168.137.1" to exercise Ethernet.
The laptop PC is also connected to the EUT through the RS232 cable. A Hyperterminal session is opened to establish communication.
An unterminated RS-485 cable is bundled to 40cm above the ground plane.

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

Conducted emissions 0.15-30 MHz.

Transducer Legend:

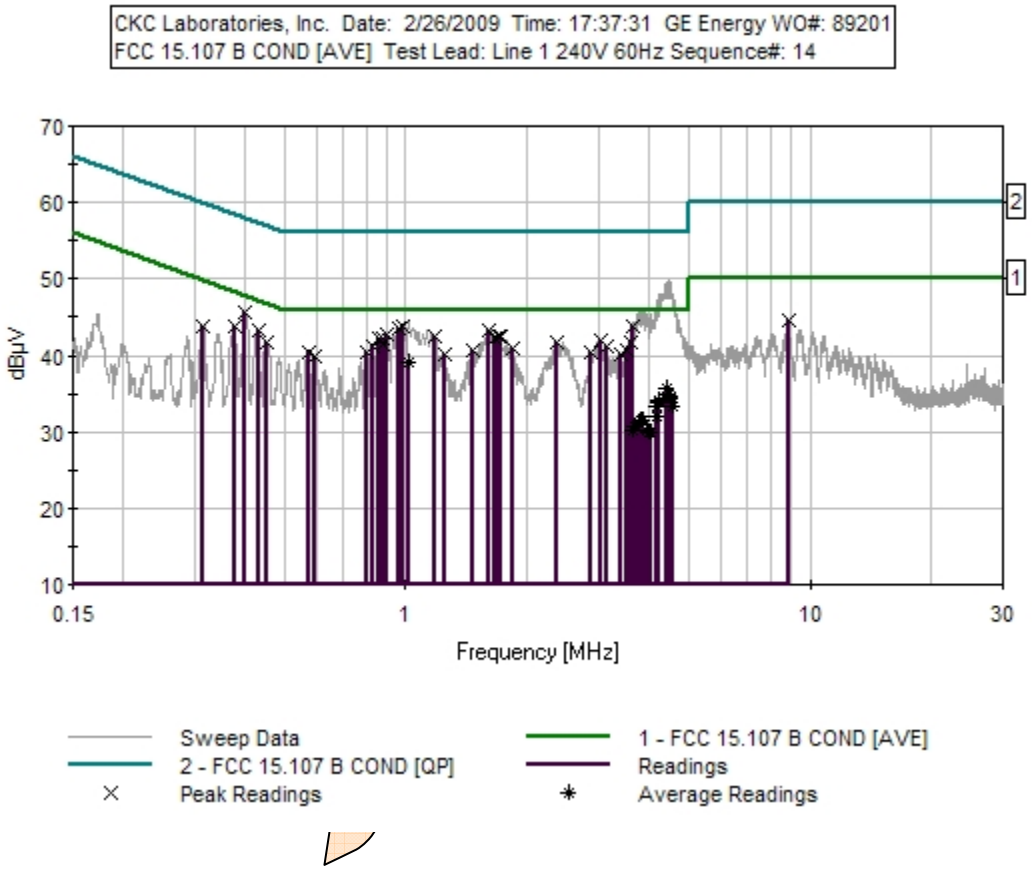
T1=LISN - AN00493 - Black - ELC "OUT"	T2=AN P00081 10dB Attenuator
T3=FIL-ANP05258-121808 CE HP Filter	T4=Cable Calibration ANP00880

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	987.578k	33.6	+0.0	+10.1	+0.1	+0.1	+0.0	43.9	46.0	-2.1	Line
2	401.611k	35.3	+0.1	+10.1	+0.0	+0.1	+0.0	45.6	47.8	-2.2	Line
3	3.637M	33.3	+0.0	+10.1	+0.1	+0.2	+0.0	43.7	46.0	-2.3	Line
4	957.807k	33.2	+0.1	+10.1	+0.1	+0.1	+0.0	43.6	46.0	-2.4	Line
5	1.613M	33.1	+0.0	+10.0	+0.1	+0.1	+0.0	43.3	46.0	-2.7	Line
6	902.518k	32.6	+0.0	+10.0	+0.1	+0.0	+0.0	42.7	46.0	-3.3	Line
7	1.715M	32.4	+0.0	+10.0	+0.1	+0.1	+0.0	42.6	46.0	-3.4	Line
8	1.183M	32.2	+0.0	+10.1	+0.1	+0.1	+0.0	42.5	46.0	-3.5	Line
9	1.694M	32.3	+0.0	+10.0	+0.1	+0.1	+0.0	42.5	46.0	-3.5	Line
10	856.111k	32.0	+0.0	+10.0	+0.1	+0.2	+0.0	42.3	46.0	-3.7	Line
11	1.660M	32.1	+0.0	+10.0	+0.1	+0.1	+0.0	42.3	46.0	-3.7	Line
12	430.699k	33.2	+0.1	+10.1	+0.0	+0.0	+0.0	43.4	47.2	-3.8	Line
13	877.000k	31.9	+0.0	+10.0	+0.1	+0.1	+0.0	42.1	46.0	-3.9	Line
14	3.055M	31.8	-0.1	+10.0	+0.1	+0.1	+0.0	41.9	46.0	-4.1	Line
15	2.353M	31.5	+0.0	+10.0	+0.1	+0.2	+0.0	41.8	46.0	-4.2	Line
16	3.612M	31.4	+0.0	+10.1	+0.1	+0.2	+0.0	41.8	46.0	-4.2	Line
17	376.886k	33.6	+0.1	+10.1	+0.0	+0.1	+0.0	43.9	48.3	-4.4	Line
18	875.018k	31.2	+0.0	+10.0	+0.1	+0.1	+0.0	41.4	46.0	-4.6	Line
19	3.135M	31.1	-0.1	+10.0	+0.1	+0.1	+0.0	41.2	46.0	-4.8	Line
20	829.205k	30.9	+0.0	+10.0	+0.1	+0.1	+0.0	41.1	46.0	-4.9	Line
21	1.830M	30.7	+0.0	+10.0	+0.1	+0.1	+0.0	40.9	46.0	-5.1	Line
22	453.970k	31.4	+0.1	+10.1	+0.0	+0.0	+0.0	41.6	46.8	-5.2	Line

23	1.460M	30.4	+0.0	+10.0	+0.1	+0.1	+0.0	40.6	46.0	-5.4	Line
24	3.531M	30.2	+0.0	+10.1	+0.1	+0.2	+0.0	40.6	46.0	-5.4	Line
25	800.117k	30.3	+0.0	+10.0	+0.1	+0.1	+0.0	40.5	46.0	-5.5	Line
26	8.815M	34.1	+0.1	+10.0	+0.1	+0.2	+0.0	44.5	50.0	-5.5	Line
27	574.685k	30.1	+0.1	+10.1	+0.0	+0.1	+0.0	40.4	46.0	-5.6	Line
28	2.867M	30.3	-0.1	+10.0	+0.1	+0.1	+0.0	40.4	46.0	-5.6	Line
29	1.243M	29.8	+0.0	+10.1	+0.1	+0.1	+0.0	40.1	46.0	-5.9	Line
30	3.408M	29.9	-0.1	+10.0	+0.1	+0.2	+0.0	40.1	46.0	-5.9	Line
31	597.228k	29.7	+0.1	+10.1	+0.0	+0.1	+0.0	40.0	46.0	-6.0	Line
32	315.802k	33.3	+0.1	+10.0	+0.2	+0.1	+0.0	43.7	49.8	-6.1	Line
33 Ave	1.013M	28.8	+0.0	+10.1	+0.1	+0.0	+0.0	39.0	46.0	-7.0	Line
^	1.013M	34.0	+0.0	+10.1	+0.1	+0.0	+0.0	44.2	46.0	-1.8	Line
35 Ave	4.403M	25.2	+0.0	+10.1	+0.1	+0.2	+0.0	35.6	46.0	-10.4	Line
^	4.403M	39.1	+0.0	+10.1	+0.1	+0.2	+0.0	49.5	46.0	+3.5	Line
37 Ave	4.471M	24.4	+0.0	+10.1	+0.1	+0.2	+0.0	34.8	46.0	-11.2	Line
^	4.471M	39.3	+0.0	+10.1	+0.1	+0.2	+0.0	49.7	46.0	+3.7	Line
39 Ave	4.513M	24.3	+0.1	+10.0	+0.1	+0.2	+0.0	34.7	46.0	-11.3	Line
^	4.513M	39.1	+0.1	+10.0	+0.1	+0.2	+0.0	49.5	46.0	+3.5	Line
41 Ave	4.530M	23.9	+0.1	+10.0	+0.1	+0.2	+0.0	34.3	46.0	-11.7	Line
^	4.530M	38.7	+0.1	+10.0	+0.1	+0.2	+0.0	49.1	46.0	+3.1	Line
43 Ave	4.245M	23.8	+0.0	+10.1	+0.1	+0.2	+0.0	34.2	46.0	-11.8	Line
^	4.245M	37.5	+0.0	+10.1	+0.1	+0.2	+0.0	47.9	46.0	+1.9	Line
45 Ave	4.220M	23.4	+0.0	+10.1	+0.1	+0.2	+0.0	33.8	46.0	-12.2	Line
^	4.220M	37.1	+0.0	+10.1	+0.1	+0.2	+0.0	47.5	46.0	+1.5	Line

47	4.569M Ave	22.9	+0.1	+10.0	+0.1	+0.2	+0.0	33.3	46.0	-12.7	Line
^	4.569M	37.6	+0.1	+10.0	+0.1	+0.2	+0.0	48.0	46.0	+2.0	Line
49	4.199M Ave	22.8	+0.0	+10.1	+0.1	+0.2	+0.0	33.2	46.0	-12.8	Line
^	4.199M	36.7	+0.0	+10.1	+0.1	+0.2	+0.0	47.1	46.0	+1.1	Line
51	4.156M Ave	21.7	+0.0	+10.1	+0.1	+0.2	+0.0	32.1	46.0	-13.9	Line
^	4.156M	36.4	+0.0	+10.1	+0.1	+0.2	+0.0	46.8	46.0	+0.8	Line
53	3.858M Ave	21.1	+0.0	+10.1	+0.1	+0.1	+0.0	31.4	46.0	-14.6	Line
^	3.858M	35.8	+0.0	+10.1	+0.1	+0.1	+0.0	46.1	46.0	+0.1	Line
55	3.824M Ave	21.1	+0.0	+10.1	+0.1	+0.1	+0.0	31.4	46.0	-14.6	Line
^	3.824M	35.8	+0.0	+10.1	+0.1	+0.1	+0.0	46.1	46.0	+0.1	Line
57	3.761M Ave	20.9	+0.0	+10.1	+0.1	+0.2	+0.0	31.3	46.0	-14.7	Line
^	3.761M	35.6	+0.0	+10.1	+0.1	+0.2	+0.0	46.0	46.0	+0.0	Line
59	3.680M Ave	20.2	+0.0	+10.1	+0.1	+0.2	+0.0	30.6	46.0	-15.4	Line
^	3.680M	33.9	+0.0	+10.1	+0.1	+0.2	+0.0	44.3	46.0	-1.7	Line
61	3.663M Ave	19.9	+0.0	+10.1	+0.1	+0.2	+0.0	30.3	46.0	-15.7	Line
^	3.663M	34.0	+0.0	+10.1	+0.1	+0.2	+0.0	44.4	46.0	-1.6	Line
63	3.935M Ave	19.8	+0.0	+10.1	+0.1	+0.1	+0.0	30.1	46.0	-15.9	Line
^	3.935M	35.2	+0.0	+10.1	+0.1	+0.1	+0.0	45.5	46.0	-0.5	Line
65	3.982M Ave	19.5	+0.0	+10.1	+0.1	+0.1	+0.0	29.8	46.0	-16.2	Line
^	3.982M	34.2	+0.0	+10.1	+0.1	+0.1	+0.0	44.5	46.0	-1.5	Line
67	4.028M Ave	19.4	+0.0	+10.1	+0.1	+0.2	+0.0	29.8	46.0	-16.2	Line
^	4.028M	35.0	+0.0	+10.1	+0.1	+0.2	+0.0	45.4	46.0	-0.6	Line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40
30
20
10
dBµV
0.15
1
10
30
Frequency [MHz]
2
1
Sweep Data
2 - FCC 15.107 B COND [QP]
Peak Readings
1 - FCC 15.107 B COND [AVE]
Readings
Average Readings

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** Date: 2/26/2009
Test Type: **Conducted Emissions** Time: 17:53:21
Equipment: **WiMAX SmartGrid Router** Sequence#: 15
Manufacturer: Grid-Net Tested By: Art Rice
Model: WX-SGR 240V 60Hz
S/N: GN1S11ASS8BS000W

***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
WiMAX SmartGrid Router*	Grid-Net	WX-SGR	GN1S11ASS8BS000W

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Dell	Latitude D830	9THV3G1
24 VDC Power Supply	CUI Inc.	3A-401DN24	none
Power supply for EUT fan	Tektronix	CPS250	CKC AN00900A
Cooling Fan	CoolerMaster	AA225-25BB-5EA-F1	none
Antenna	Mars Antennas and RF System, Inc.	ANT.MA-VM26-3F	none
AC Adapter for laptop	Dell	LA90PS0-00	CN-0DF266-71615-834-0DC3

Test Conditions / Notes:

The wall mount transceiver is placed on top of the wooden test table. It is mounted on styrofoam blocks.
24VDC power supply for EUT is powered by the AC input. The 24VDC power supply is inside the metal cabinet that contains the EUT.
The laptop PC communicates to the EUT through the Ethernet connected to the laptop located on the test table. The laptop is constantly pinging the EUT to exercise the port.
Using command prompt "ping -t 192.168.137.1" to exercise Ethernet.
The laptop PC is also connected to the EUT through the RS232 cable. A Hyperterminal session is opened to establish communication.
An unterminated RS-485 cable is bundled to 40cm above the ground plane.

NOTES:
1) Spectrum analyzer settings: 0.15-30 MHz RBW=9kHz
2) Testing the digital circuitry of the EUT.
Conducted emissions 0.15-30 MHz.

Transducer Legend:

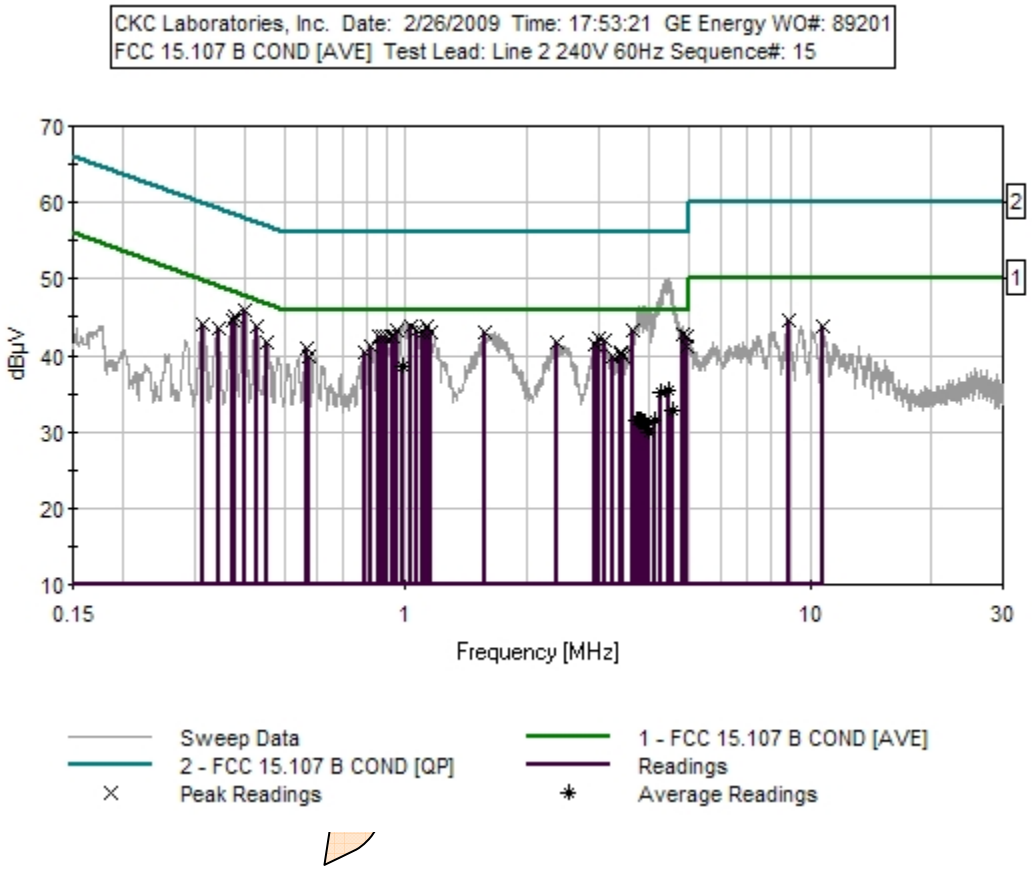
T1=LISN - AN00493 - White - ELC "OUT"	T2=AN P00081 10dB Attenuator
T3=FIL-ANP05258-121808 CE HP Filter	T4=Cable Calibration ANP00880

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	399.430k	35.5	+0.1	+10.1	+0.0	+0.1	+0.0	45.8	47.9	-2.1	Line
2	1.034M	33.7	+0.0	+10.1	+0.1	+0.0	+0.0	43.9	46.0	-2.1	Line
3	1.124M	33.6	+0.0	+10.1	+0.1	+0.1	+0.0	43.9	46.0	-2.1	Line
4	953.554k	33.1	+0.0	+10.1	+0.1	+0.1	+0.0	43.4	46.0	-2.6	Line
5	1.064M	33.1	+0.0	+10.1	+0.1	+0.1	+0.0	43.4	46.0	-2.6	Line
6	3.633M	32.7	+0.1	+10.1	+0.1	+0.2	+0.0	43.2	46.0	-2.8	Line
7	1.098M	32.7	+0.0	+10.1	+0.1	+0.1	+0.0	43.0	46.0	-3.0	Line
8	1.149M	32.7	+0.0	+10.1	+0.1	+0.1	+0.0	43.0	46.0	-3.0	Line
9	1.570M	32.8	+0.0	+10.0	+0.1	+0.1	+0.0	43.0	46.0	-3.0	Line
10	379.068k	34.7	+0.1	+10.1	+0.0	+0.1	+0.0	45.0	48.3	-3.3	Line
11	4.832M	32.4	+0.0	+10.0	+0.1	+0.2	+0.0	42.7	46.0	-3.3	Line
12	4.947M	32.3	+0.0	+10.0	+0.1	+0.2	+0.0	42.6	46.0	-3.4	Line
13	427.063k	33.7	+0.0	+10.1	+0.0	+0.0	+0.0	43.8	47.3	-3.5	Line
14	853.930k	32.2	+0.0	+10.0	+0.1	+0.2	+0.0	42.5	46.0	-3.5	Line
15	928.036k	32.4	+0.0	+10.0	+0.1	+0.0	+0.0	42.5	46.0	-3.5	Line
16	876.473k	32.2	+0.0	+10.0	+0.1	+0.1	+0.0	42.4	46.0	-3.6	Line
17	894.012k	32.2	+0.0	+10.0	+0.1	+0.1	+0.0	42.4	46.0	-3.6	Line
18	3.008M	31.9	+0.1	+10.0	+0.1	+0.1	+0.0	42.2	46.0	-3.8	Line
19	373.978k	34.2	+0.1	+10.1	+0.0	+0.1	+0.0	44.5	48.4	-3.9	Line
20	3.106M	31.6	+0.1	+10.0	+0.1	+0.1	+0.0	41.9	46.0	-4.1	Line
21	2.353M	31.3	+0.0	+10.0	+0.1	+0.2	+0.0	41.6	46.0	-4.4	Line
22	2.927M	31.2	+0.1	+10.0	+0.1	+0.1	+0.0	41.5	46.0	-4.5	Line

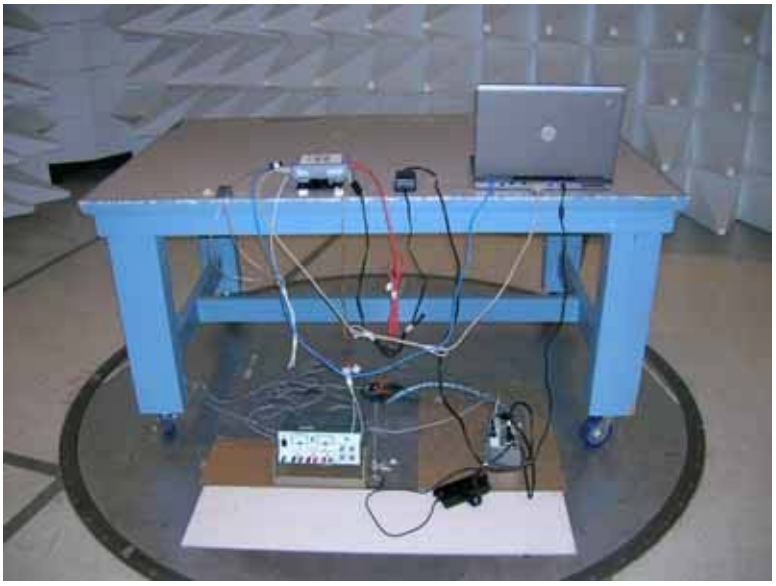
23	4.985M	31.0	+0.0	+10.0	+0.1	+0.2	+0.0	41.3	46.0	-4.7	Line
24	820.478k	30.9	+0.0	+10.0	+0.1	+0.1	+0.0	41.1	46.0	-4.9	Line
25	455.424k	31.6	+0.0	+10.1	+0.0	+0.0	+0.0	41.7	46.8	-5.1	Line
26	569.594k	30.6	+0.0	+10.1	+0.0	+0.1	+0.0	40.8	46.0	-5.2	Line
27	343.435k	33.4	+0.1	+10.0	+0.1	+0.0	+0.0	43.6	49.1	-5.5	Line
28	8.842M	34.1	+0.1	+10.0	+0.1	+0.2	+0.0	44.5	50.0	-5.5	Line
29	795.026k	30.2	+0.0	+10.0	+0.1	+0.1	+0.0	40.4	46.0	-5.6	Line
30	315.074k	33.8	+0.0	+10.0	+0.2	+0.1	+0.0	44.1	49.8	-5.7	Line
31	3.399M	29.9	+0.1	+10.0	+0.1	+0.2	+0.0	40.3	46.0	-5.7	Line
32	3.416M	29.7	+0.1	+10.0	+0.1	+0.2	+0.0	40.1	46.0	-5.9	Line
33	578.321k	29.8	+0.0	+10.1	+0.0	+0.1	+0.0	40.0	46.0	-6.0	Line
34	3.242M	29.7	+0.1	+10.0	+0.1	+0.1	+0.0	40.0	46.0	-6.0	Line
35	3.437M	29.6	+0.1	+10.0	+0.1	+0.2	+0.0	40.0	46.0	-6.0	Line
36	10.806M	33.5	+0.0	+10.1	+0.1	+0.2	+0.0	43.9	50.0	-6.1	Line
37	983.000k Ave	28.2	+0.0	+10.1	+0.1	+0.1	+0.0	38.5	46.0	-7.5	Line
^	983.325k	34.0	+0.0	+10.1	+0.1	+0.1	+0.0	44.3	46.0	-1.7	Line
39	4.462M Ave	24.9	+0.1	+10.1	+0.1	+0.2	+0.0	35.4	46.0	-10.6	Line
^	4.462M	39.6	+0.1	+10.1	+0.1	+0.2	+0.0	50.1	46.0	+4.1	Line
41	4.292M Ave	24.6	+0.1	+10.1	+0.1	+0.2	+0.0	35.1	46.0	-10.9	Line
^	4.292M	37.9	+0.1	+10.1	+0.1	+0.2	+0.0	48.4	46.0	+2.4	Line
43	4.573M Ave	22.6	+0.0	+10.0	+0.1	+0.2	+0.0	32.9	46.0	-13.1	Line
^	4.573M	38.3	+0.0	+10.0	+0.1	+0.2	+0.0	48.6	46.0	+2.6	Line
45	3.795M Ave	21.2	+0.1	+10.1	+0.1	+0.1	+0.0	31.6	46.0	-14.4	Line
^	3.795M	35.8	+0.1	+10.1	+0.1	+0.1	+0.0	46.2	46.0	+0.2	Line

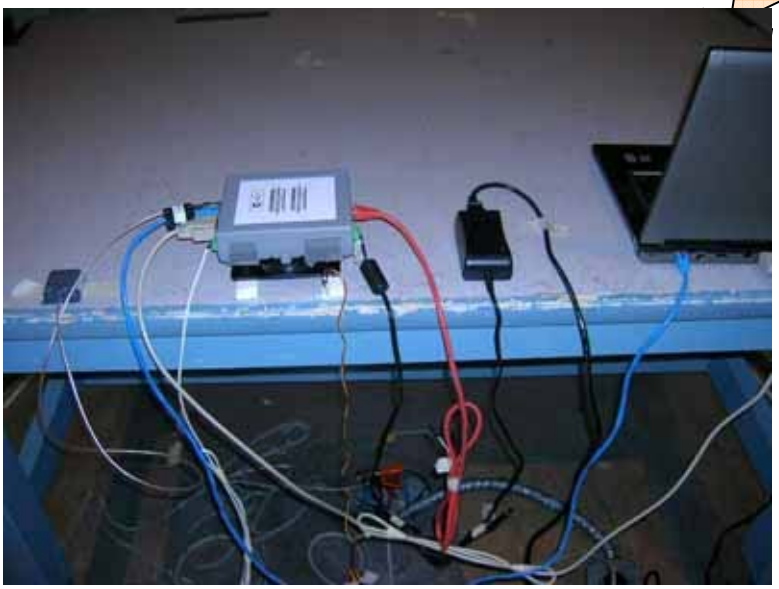
47	3.778M Ave	21.1	+0.1	+10.1	+0.1	+0.1	+0.0	31.5	46.0	-14.5	Line
^	3.778M	36.0	+0.1	+10.1	+0.1	+0.1	+0.0	46.4	46.0	+0.4	Line
^	3.769M	35.1	+0.1	+10.1	+0.1	+0.1	+0.0	45.5	46.0	-0.5	Line
50	4.126M Ave	20.9	+0.1	+10.1	+0.1	+0.2	+0.0	31.4	46.0	-14.6	Line
^	4.126M	35.3	+0.1	+10.1	+0.1	+0.2	+0.0	45.8	46.0	-0.2	Line
52	3.739M Ave	20.9	+0.1	+10.1	+0.1	+0.2	+0.0	31.4	46.0	-14.6	Line
^	3.739M	35.4	+0.1	+10.1	+0.1	+0.2	+0.0	45.9	46.0	-0.1	Line
54	3.833M Ave	21.0	+0.1	+10.1	+0.1	+0.1	+0.0	31.4	46.0	-14.6	Line
^	3.833M	35.7	+0.1	+10.1	+0.1	+0.1	+0.0	46.1	46.0	+0.1	Line
56	3.901M Ave	20.9	+0.1	+10.1	+0.1	+0.1	+0.0	31.3	46.0	-14.7	Line
^	3.901M	36.0	+0.1	+10.1	+0.1	+0.1	+0.0	46.4	46.0	+0.4	Line
58	3.854M Ave	20.8	+0.1	+10.1	+0.1	+0.1	+0.0	31.2	46.0	-14.8	Line
^	3.854M	35.9	+0.1	+10.1	+0.1	+0.1	+0.0	46.3	46.0	+0.3	Line
60	3.939M Ave	20.0	+0.1	+10.1	+0.1	+0.1	+0.0	30.4	46.0	-15.6	Line
^	3.939M	35.8	+0.1	+10.1	+0.1	+0.1	+0.0	46.2	46.0	+0.2	Line
62	3.994M Ave	19.5	+0.1	+10.1	+0.1	+0.2	+0.0	30.0	46.0	-16.0	Line
^	3.994M	35.6	+0.1	+10.1	+0.1	+0.2	+0.0	46.1	46.0	+0.1	Line


CKC Laboratories, Inc. Date: 2/26/2009 Time: 17:53:21 GE Energy WO#: 89201
FCC 15.107 B COND [AVE] Test Lead: Line 2 240V 60Hz Sequence#: 15
70
60
50
40
30
20
10
dBµV
0.15
1
10
30
Frequency [MHz]
2
1
Sweep Data
2 - FCC 15.107 B COND [QP]
Peak Readings
1 - FCC 15.107 B COND [AVE]
Readings
Average Readings

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: 7/22/2009
Test Type: **Maximized Emissions** Time: 17:01:52
Equipment: **WiMAX SmartGrid Router** Sequence#: 31
Manufacturer: Grid-Net Tested By: Art Rice
Model: WX-SGR
S/N: GN1S11ASS8BS000W

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Preamp, 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	03/06/2009	03/06/2011	P05299
Cable	None	03/06/2009	03/06/2011	P05300
SA - Agilent E4446A	US44300408	03/09/2009	03/09/2011	02668

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
WiMAX SmartGrid Router*	Grid-Net	WX-SGR	GN1S11ASS8BS000W

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Dell	Latitude D830	9THV3G1
24 VDC Power Supply	CUI Inc.	3A-401DN24	none
Power supply for EUT fan	Tektronix	CPS250	CKC AN00900A
Cooling Fan	CoolerMaster	AA225-25BB-5EA-F1	none
Antenna	Mars Antennas and RF System, Inc.	ANT.MA-VM26-3F	none
AC Adapter for laptop	Dell	LA90PS0-00	CN-0DF266-71615-834-0DC3

Test Conditions / Notes:

The transceiver is placed on top of the wooden test table. The fan is taped to the bottom of the EUT. It is mounted on styrofoam blocks.
24VDC power supply for EUT powered by 120VAC.
The laptop PC communicates to the EUT through the Ethernet connected to the laptop located on the test table. The laptop is constantly pinging the EUT to exercise the port.
Use command prompt command "ping -t 192.168.137.1" to exercise Ethernet.
The laptop PC is also connected to the EUT through the RS232 cable. A Hyperterminal session is opened to establish communication.
An unterminated RS-485 cable is bundled to 40cm above the ground plane.
A loopback cable is connected to the unsupported second RJ45 port.

NOTES:
1) Spectrum analyzer settings: 0.15-30 MHz RBW=9kHz, 30-1000 MHz RBW=120kHz
2) Testing the digital circuitry of the EUT.
3) E Tronic F5-NF-65B-02 ferrite was added to the Ethernet cable at the EUT to reduce an emission at 250 MHz.

Radiated emissions 30-1000 MHz.

Transducer Legend:

T1=AMP-AN00730-020909 .01-1000	T2=ANT AN00852 25-1000MHz
T3=CAB-ANP05299-030609	T4=CAB-ANP05300-030609
T5=Cable Calibration ANP05440	

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	250.000M	56.9	-27.2	+12.5	+0.3	+0.7	+0.0	44.2	46.0	-1.8	Horiz
	QP		+1.0				168				123
^	249.993M	57.5	-27.2	+12.5	+0.3	+0.7	+0.0	44.8	46.0	-1.2	Horiz
			+1.0				171				123
3	399.998M	52.9	-27.3	+16.0	+0.1	+0.6	+0.0	43.5	46.0	-2.5	Vert
	QP		+1.2				359				100
^	400.003M	53.3	-27.3	+16.0	+0.1	+0.6	+0.0	43.9	46.0	-2.1	Vert
			+1.2				359				100
5	250.002M	55.0	-27.2	+12.5	+0.3	+0.7	+0.0	42.3	46.0	-3.7	Vert
	QP		+1.0				75				100
^	250.003M	55.3	-27.2	+12.5	+0.3	+0.7	+0.0	42.6	46.0	-3.4	Vert
			+1.0				75				100
7	549.995M	45.9	-27.2	+18.8	+0.2	+0.9	+0.0	40.0	46.0	-6.0	Horiz
			+1.4				217				175
8	674.998M	42.4	-27.0	+20.1	+0.2	+0.9	+0.0	38.2	46.0	-7.8	Horiz
			+1.6				248				145
9	500.009M	44.2	-27.2	+17.9	+0.2	+0.9	+0.0	37.3	46.0	-8.7	Horiz
			+1.3				218				185

10	403.564M	46.4	-27.3 +1.2	+16.1	+0.1	+0.7	+0.0 361	37.2	46.0	-8.8	Vert 101
11	650.007M	41.5	-27.0 +1.6	+19.9	+0.2	+0.9	+0.0 243	37.1	46.0	-8.9	Horiz 154
12	407.139M	45.5	-27.3 +1.2	+16.2	+0.1	+0.7	+0.0 363	36.4	46.0	-9.6	Vert 101
13	74.840M	45.4	-27.3 +0.5	+6.8	+0.2	+0.4	+0.0 24	26.0	40.0	-14.0	Vert 101
14	81.180M	44.5	-27.3 +0.5	+7.4	+0.1	+0.4	+0.0 77	25.6	40.0	-14.4	Vert 101

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

Test Equipment

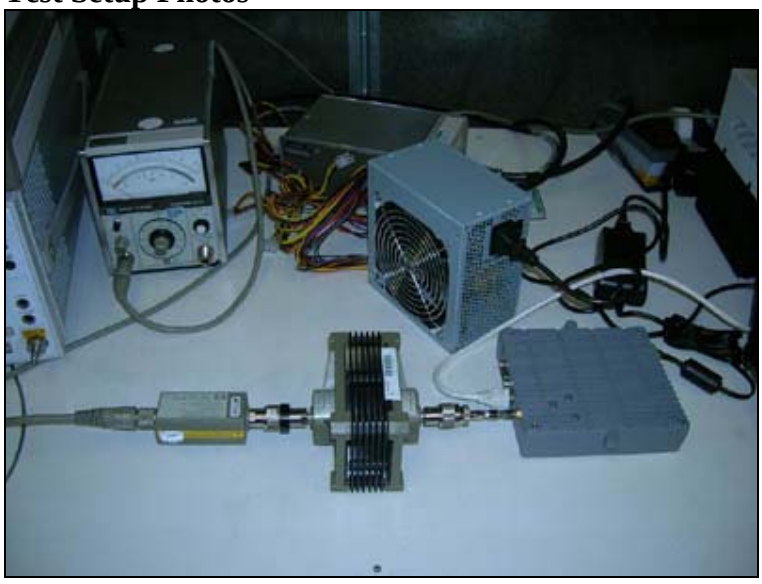
Equipment	Asset #	Manufacturer	Model #	Serial #	Cal Date	Cal Due
Power Meter	00174	HP	435B	2342A08531	01-04-08	01-04-10
Sensor & 30 dB attenuator	02572	HP	8482B	2703A04102	11-30-07	11-30-09

Test Conditions

The router is placed on top of the wooden test table.
Powered by 120VAC to the 24VDC power supply.
The laptop PC communicates to the EUT through the Ethernet cable.

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.

Test Setup Photos



Test Data

Model: WX-SGR 5 MHz Channel Bandwidth

Channel-Frequency in MHz	Average Conducted Power Output-dBm: QPSK 1/2	Average Conducted Power Output-dBm: 16 QAM 3/4
Low-2498.5	25.2	25.2
Mid-2600	26.1	26.1
Hi-2687.5	25.1	25.1

Model: WX-SGR 10 MHz Channel Bandwidth

Channel-Frequency in MHz	Average Conducted Power Output-dBm: QPSK 1/2	Average Conducted Power Output-dBm: 16 QAM 3/4
Low-2501	23.4	23.4
Mid-2600	24.2	23.9
Hi-2685	22.7	22.8

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 router is placed on top of the wooden test table.
Powered by 120VAC to the 24VDC power supply.
The laptop PC communicates to the EUT through the Ethernet cable.

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-SGR 5 MHz Channel Bandwidth

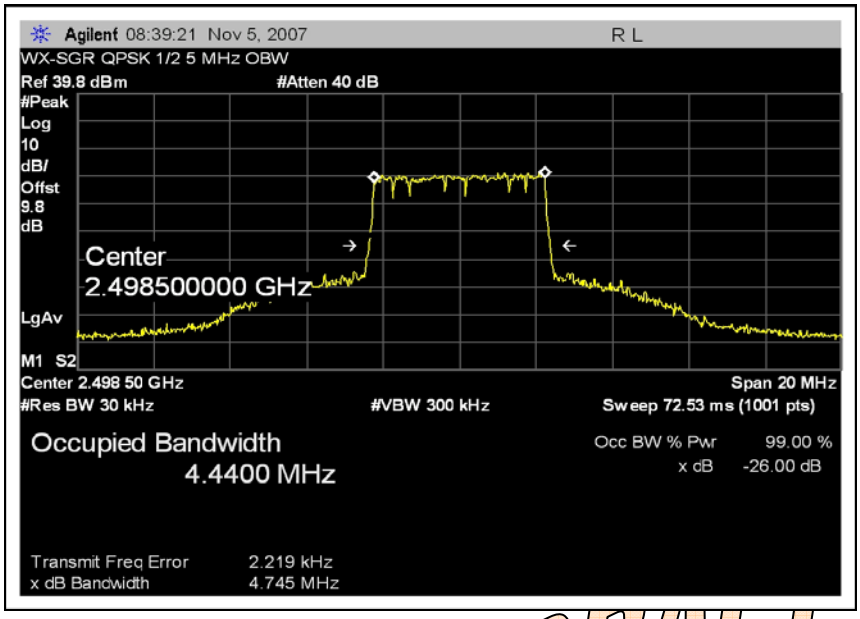
Channel-Frequency in MHz	Occupied bandwidth in MHz: QPSK 1/2	Occupied bandwidth in MHz: 16 QAM 3/4
Low-2498.5	4.4400	4.4272
Mid-2600	4.4412	4.4283
Hi-2687.5	4.4431	4.4383

Model: WX-SGR 10 MHz Channel Bandwidth

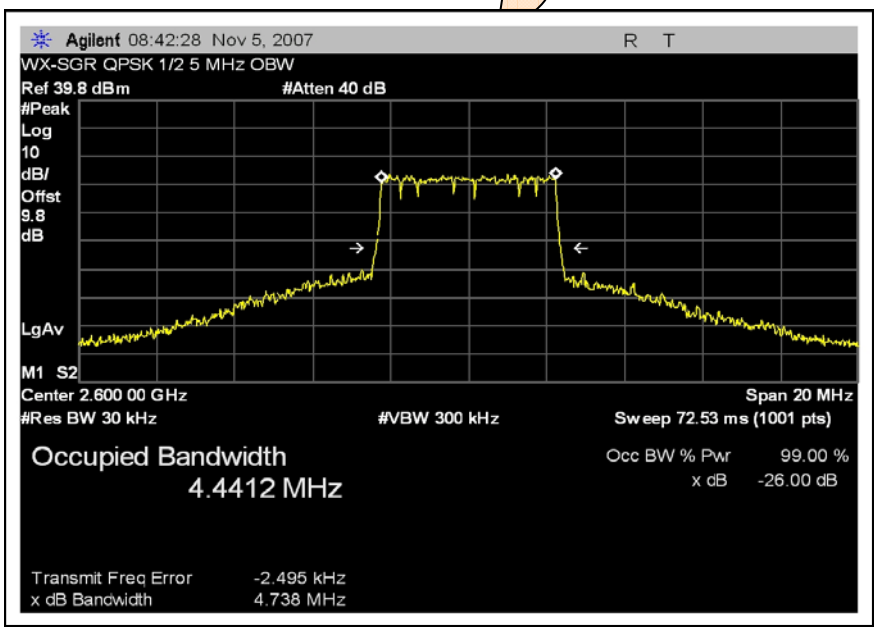
Channel-Frequency in MHz	Occupied bandwidth in MHz: QPSK 1/2	Occupied bandwidth in MHz: 16 QAM 3/4
Low-2501	9.0542	9.0556
Mid-2600	9.0491	9.0653
Hi-2685	9.0601	9.0626

Test Plots

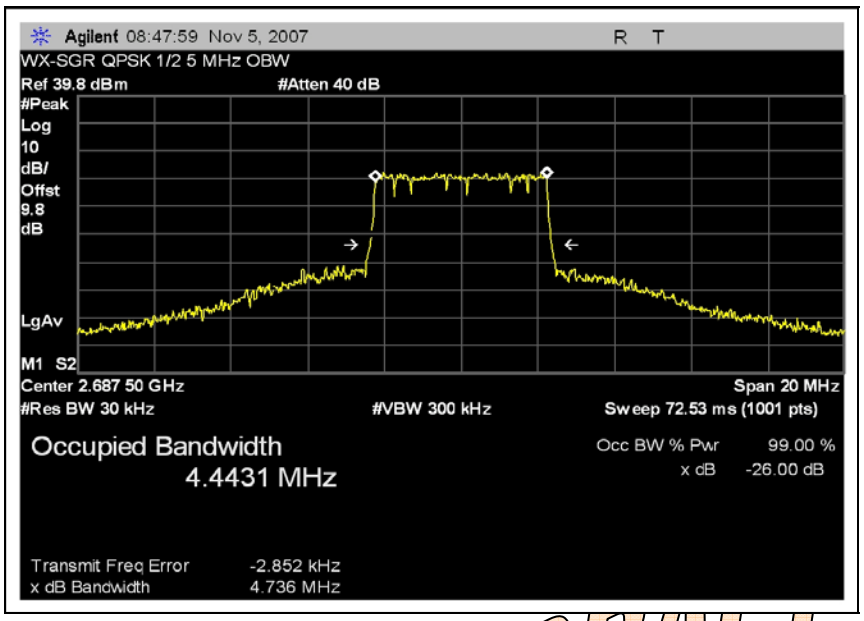
OCCUPIED BANDWIDTH – 5 MHz QPSK LOW CHANNEL



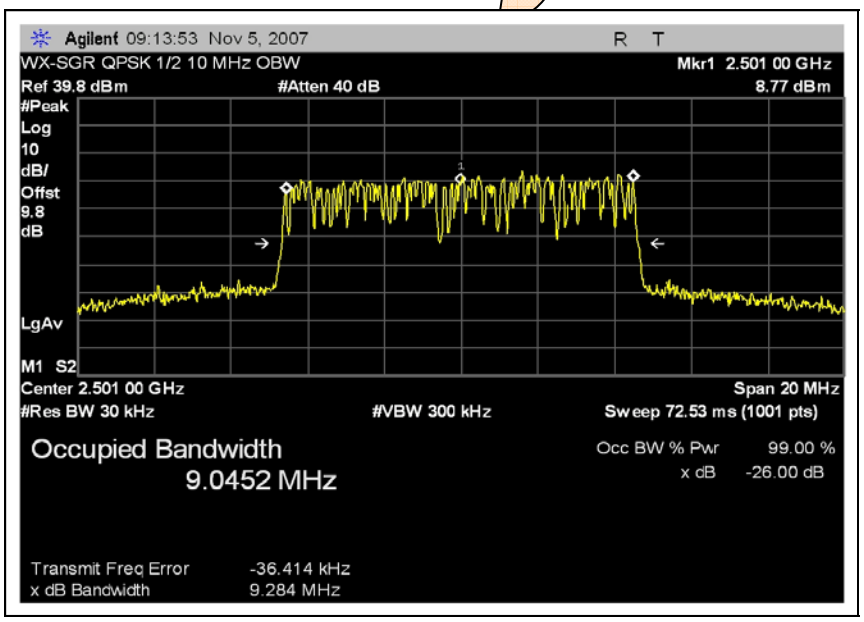
OCCUPIED BANDWIDTH - 5 MHz QPSK MID CHANNEL



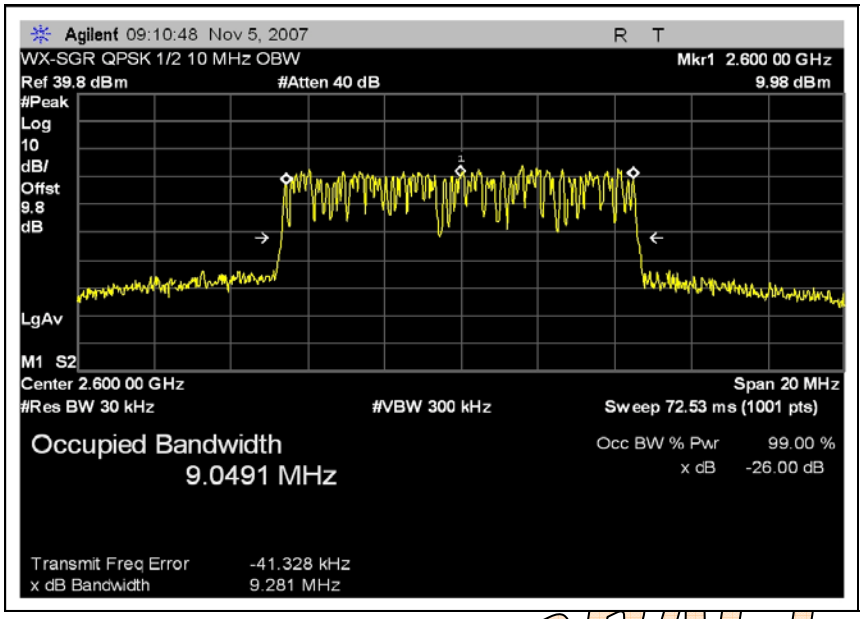
OCCUPIED BANDWIDTH - 5 MHz QPSK HIGH CHANNEL



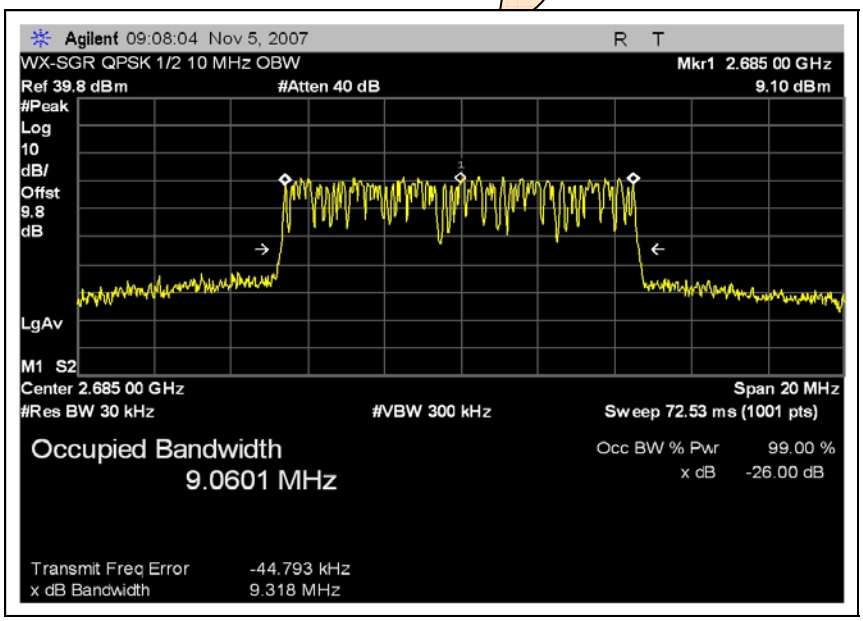
OCCUPIED BANDWIDTH - 10 MHz QPSK LOW CHANNEL



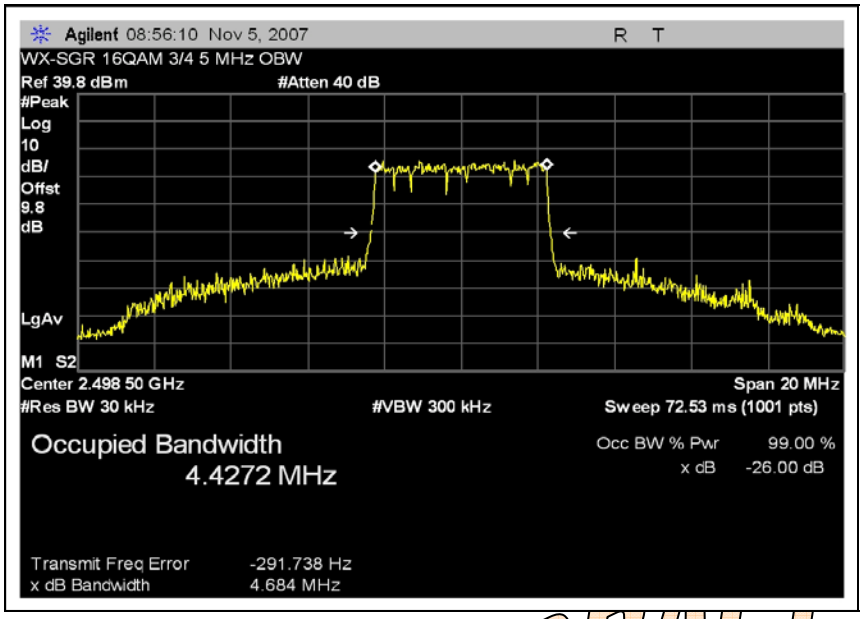
OCCUPIED BANDWIDTH - 10 MHz QPSK MID CHANNEL



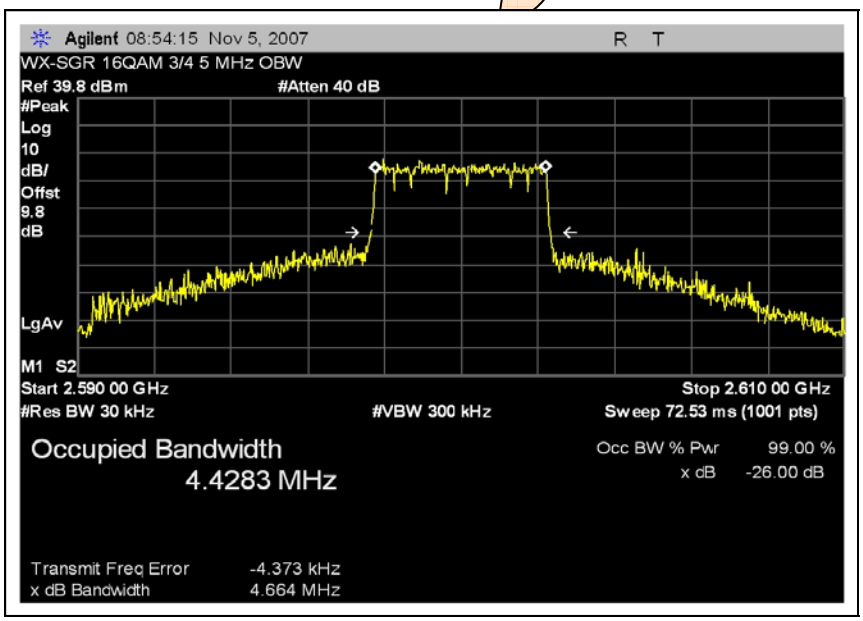
OCCUPIED BANDWIDTH - 10 MHz QPSK HIGH CHANNEL



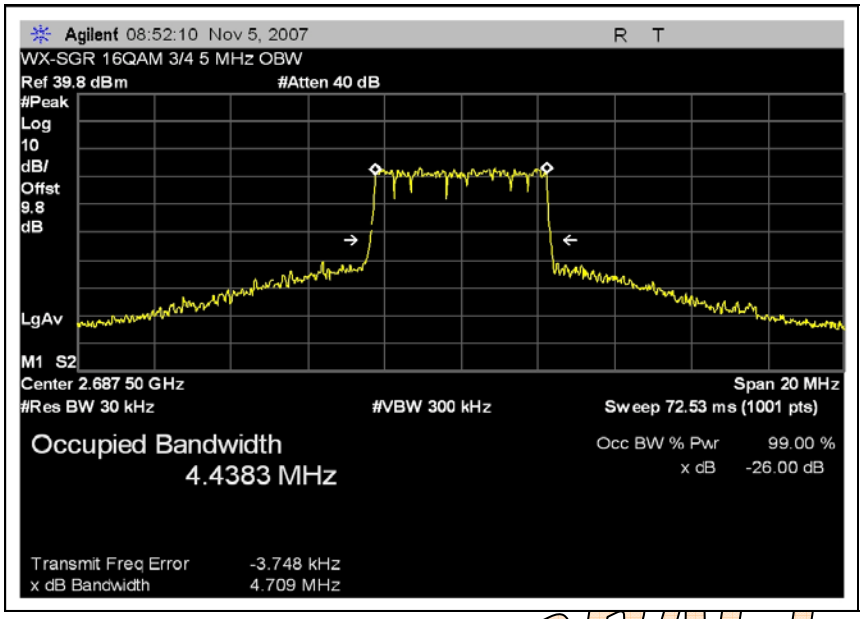
OCCUPIED BANDWIDTH - 5 MHz 16QAM LOW CHANNEL



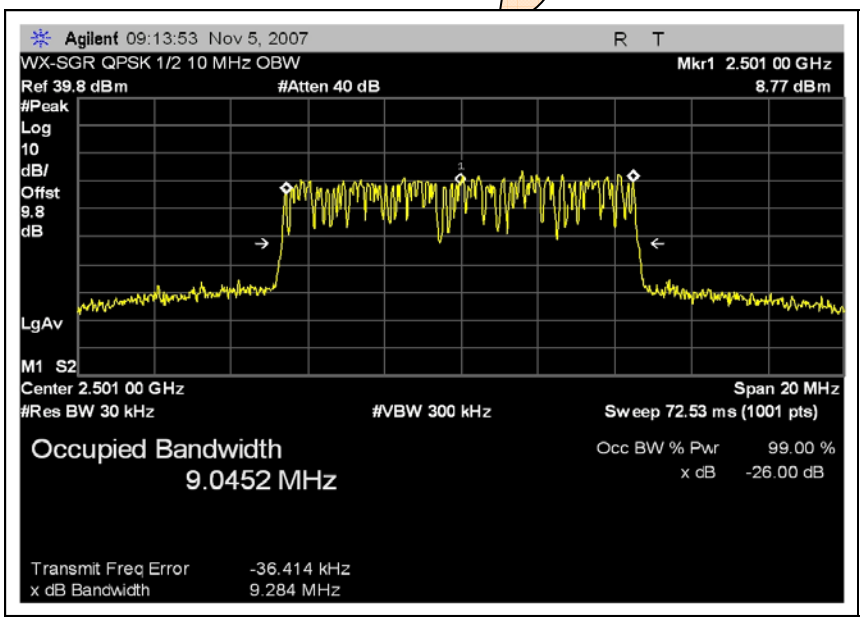
OCCUPIED BANDWIDTH - 5 MHz 16QAM MID CHANNEL



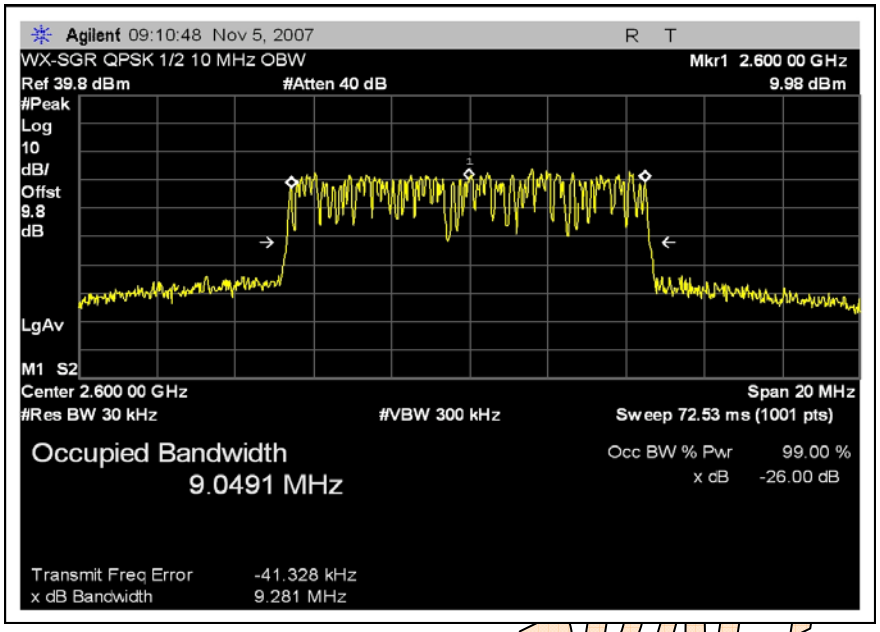
OCCUPIED BANDWIDTH - 5 MHz 16QAM HIGH CHANNEL



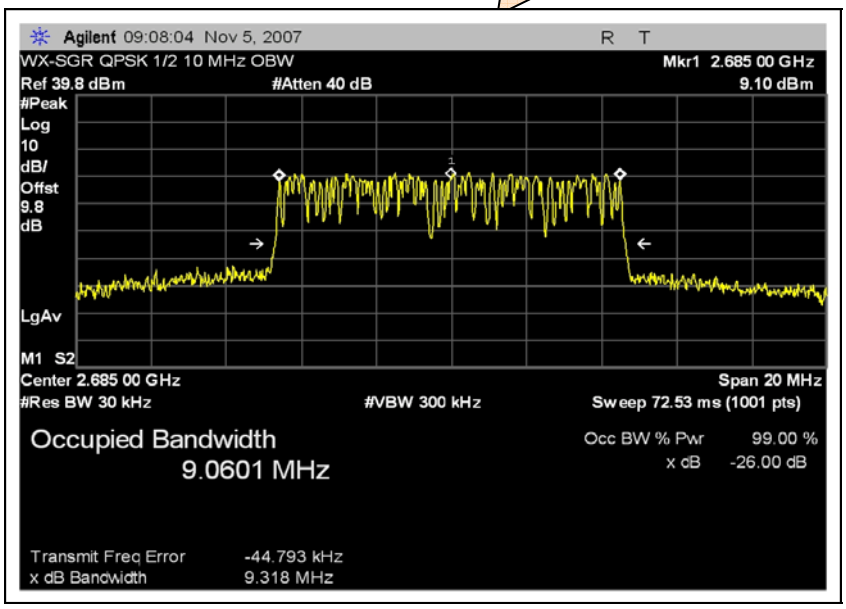
OCCUPIED BANDWIDTH - 10 MHz 16QAM LOW CHANNEL



OCCUPIED BANDWIDTH - 10 MHz 16QAM MID CHANNEL



OCCUPIED BANDWIDTH - 10 MHz 16QAM HIGH CHANNEL



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

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 dBuV Ave**
Work Order #: **89201** Date: 2/20/2009
Test Type: **Conducted Emissions** Time: 18:30:46
Equipment: **WiMAX SmartGrid Router** Sequence#: 6
Manufacturer: Grid-Net Tested By: Art Rice
Model: WX-SGR 120V 60Hz
S/N: GN1S11ASS8BS000W

***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
WiMAX SmartGrid Router*	Grid-Net	WX-SGR	GN1S11ASS8BS000W

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Dell	Latitude D830	9THV3G1
24 VDC Power Supply	CUI Inc.	3A-401DN24	none

Test Conditions / Notes:

The router is placed on top of the wooden test table.
Powered by 120VAC to the 24VDC power supply.
The laptop PC communicates to the EUT through the Ethernet cable.

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 Low channel.

FCC 27.53(m)(2)(v)
Conducted emissions 10 kHz-26900 MHz.

Transducer Legend:

T1=CAB-AN03015-020408	T2=ATT-ANP05411-020508

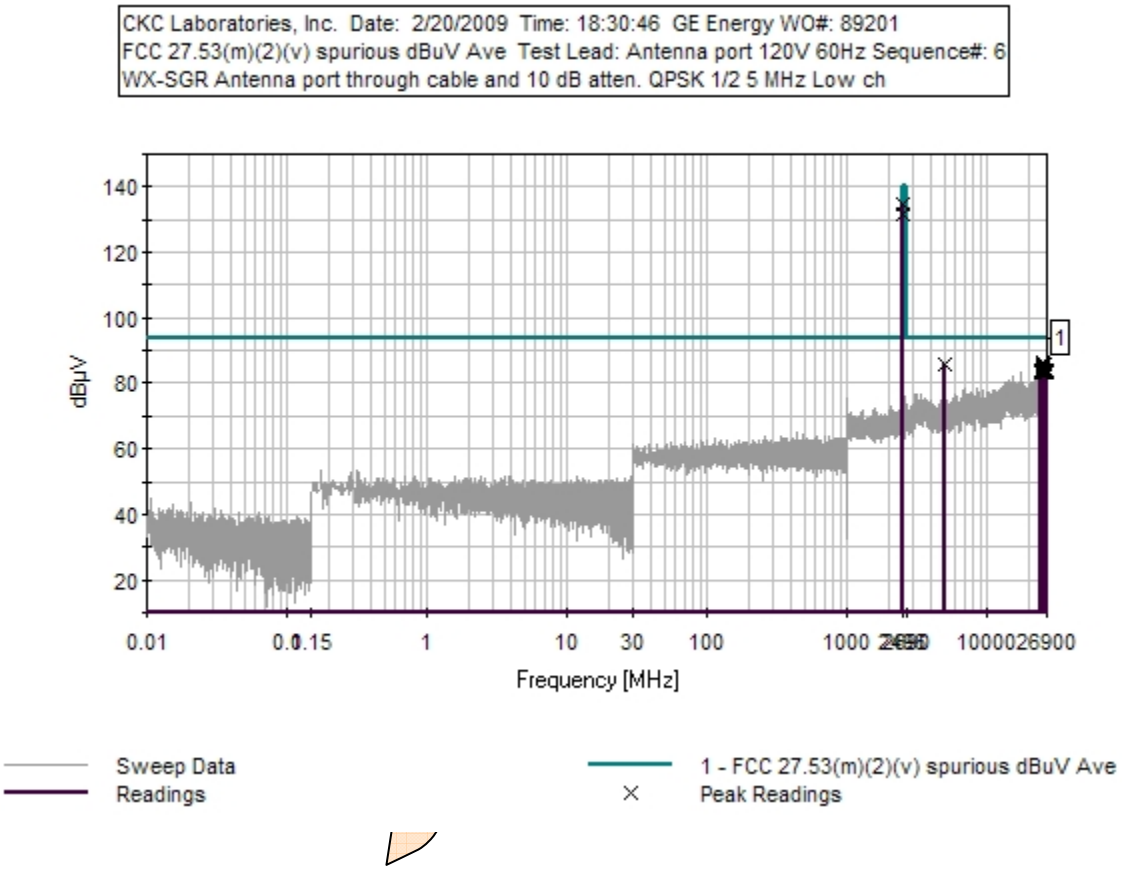
Measurement Data: Reading listed by margin. Test Lead: Antenna port

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	2499.167M	125.2	+0.4	+9.4			+0.0	135.0	140.0 Fundamental	-5.0	Anten
2	25325.020 M	74.9	+1.1	+10.3			+0.0	86.3	94.0	-7.7	Anten
3	25230.400 M	74.5	+1.2	+10.3			+0.0	86.0	94.0	-8.0	Anten
4	4997.148M	75.8	+0.7	+9.4			+0.0	85.9	94.0 Harmonic	-8.1	Anten
5	2500.188M	121.9	+0.4	+9.4			+0.0	131.7	140.0	-8.3	Anten
6	25747.810 M	74.3	+1.0	+10.4			+0.0	85.7	94.0	-8.3	Anten
7	25251.030 M	73.8	+1.2	+10.3			+0.0	85.3	94.0	-8.7	Anten
8	25026.710 M	73.7	+1.1	+10.3			+0.0	85.1	94.0	-8.9	Anten

9	25028.130 M	73.7	+1.1	+10.3	+0.0	85.1	94.0	-8.9	Anten
10	25133.180 M	73.4	+1.2	+10.3	+0.0	84.9	94.0	-9.1	Anten
11	25008.450 M	73.5	+1.0	+10.3	+0.0	84.8	94.0	-9.2	Anten
12	25150.250 M	73.2	+1.2	+10.3	+0.0	84.7	94.0	-9.3	Anten
13	25224.000 M	73.0	+1.2	+10.3	+0.0	84.5	94.0	-9.5	Anten
14	24888.990 M	73.1	+0.9	+10.4	+0.0	84.4	94.0	-9.6	Anten
15	24952.990 M	73.1	+1.0	+10.3	+0.0	84.4	94.0	-9.6	Anten
16	25190.330 M	72.9	+1.2	+10.3	+0.0	84.4	94.0	-9.6	Anten
17	25185.590 M	72.8	+1.2	+10.3	+0.0	84.3	94.0	-9.7	Anten
18	25216.410 M	72.6	+1.2	+10.3	+0.0	84.1	94.0	-9.9	Anten
19	26665.250 M	72.6	+1.1	+10.4	+0.0	84.1	94.0	-9.9	Anten
20	24171.900 M	72.8	+0.9	+10.3	+0.0	84.0	94.0	-10.0	Anten
21	25065.360 M	72.6	+1.1	+10.3	+0.0	84.0	94.0	-10.0	Anten
22	25074.140 M	72.6	+1.1	+10.3	+0.0	84.0	94.0	-10.0	Anten
23	25135.550 M	72.5	+1.2	+10.3	+0.0	84.0	94.0	-10.0	Anten
24	25175.630 M	72.5	+1.2	+10.3	+0.0	84.0	94.0	-10.0	Anten
25	25301.300 M	72.6	+1.1	+10.3	+0.0	84.0	94.0	-10.0	Anten

26	24509.940 M	72.7	+0.8	+10.4	+0.0	83.9	94.0	-10.1	Anten
27	25003.710 M	72.6	+1.0	+10.3	+0.0	83.9	94.0	-10.1	Anten
28	26020.740 M	72.5	+1.0	+10.4	+0.0	83.9	94.0	-10.1	Anten
29	24140.890 M	72.6	+0.9	+10.3	+0.0	83.8	94.0	-10.2	Anten
30	24261.910 M	72.5	+1.0	+10.3	+0.0	83.8	94.0	-10.2	Anten
31	26623.990 M	72.3	+1.1	+10.4	+0.0	83.8	94.0	-10.2	Anten
32	24292.910 M	72.4	+1.0	+10.3	+0.0	83.7	94.0	-10.3	Anten
33	25006.560 M	72.4	+1.0	+10.3	+0.0	83.7	94.0	-10.3	Anten
34	25043.790 M	72.3	+1.1	+10.3	+0.0	83.7	94.0	-10.3	Anten
35	25125.830 M	72.2	+1.2	+10.3	+0.0	83.7	94.0	-10.3	Anten
36	25163.770 M	72.2	+1.2	+10.3	+0.0	83.7	94.0	-10.3	Anten
37	25173.490 M	72.2	+1.2	+10.3	+0.0	83.7	94.0	-10.3	Anten
38	25189.380 M	72.2	+1.2	+10.3	+0.0	83.7	94.0	-10.3	Anten
39	25235.860 M	72.2	+1.2	+10.3	+0.0	83.7	94.0	-10.3	Anten
40	25330.000 M	72.3	+1.1	+10.3	+0.0	83.7	94.0	-10.3	Anten
41	26114.640 M	72.3	+1.0	+10.4	+0.0	83.7	94.0	-10.3	Anten
42	26315.490 M	72.3	+1.0	+10.4	+0.0	83.7	94.0	-10.3	Anten

43	24229.900 M	72.3	+1.0	+10.3	+0.0	83.6	94.0	-10.4	Anten
44	25031.460 M	72.2	+1.1	+10.3	+0.0	83.6	94.0	-10.4	Anten
45	25080.070 M	72.2	+1.1	+10.3	+0.0	83.6	94.0	-10.4	Anten
46	25141.480 M	72.1	+1.2	+10.3	+0.0	83.6	94.0	-10.4	Anten
47	25744.020 M	72.2	+1.0	+10.4	+0.0	83.6	94.0	-10.4	Anten
48	26321.890 M	72.2	+1.0	+10.4	+0.0	83.6	94.0	-10.4	Anten
49	25063.700 M	72.1	+1.1	+10.3	+0.0	83.5	94.0	-10.5	Anten
50	25207.160 M	72.0	+1.2	+10.3	+0.0	83.5	94.0	-10.5	Anten
51	26595.770 M	72.0	+1.1	+10.4	+0.0	83.5	94.0	-10.5	Anten


CKC Laboratories, Inc. Date: 2/20/2009 Time: 18:30:46 GE Energy WO#: 89201
FCC 27.53(m)(2)(v) spurious dBuV Ave Test Lead: Antenna port 120V 60Hz Sequence#: 6
WX-SGR Antenna port through cable and 10 dB atten. QPSK 1/2 5 MHz Low ch
dBµV
140
120
100
80
60
40
20
0.01
0.15
1
10
30
100
1000
1000026900
Frequency [MHz]
1
Sweep Data
Readings
1 - FCC 27.53(m)(2)(v) spurious dBuV Ave
Peak Readings

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:	2/20/2009
Test Type:	**Conducted Emissions**	Time:	18:08:55
Equipment:	**WiMAX SmartGrid Router**	Sequence#:	5
Manufacturer:	Grid-Net	Tested By:	Art Rice
Model:	WX-SGR		120V 60Hz
S/N:	GN1S11ASS8BS000W		

***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
WiMAX SmartGrid Router*	Grid-Net	WX-SGR	GN1S11ASS8BS000W

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Dell	Latitude D830	9THV3G1
24 VDC Power Supply	CUI Inc.	3A-401DN24	none

Test Conditions / Notes:

The router is placed on top of the wooden test table.
Powered by 120VAC to the 24VDC power supply.
The laptop PC communicates to the EUT through the Ethernet cable.

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 Mid channel.

FCC 27.53(m)(2)(v)
Conducted emissions 10 kHz-26900 MHz.

Transducer Legend:

T1=CAB-AN03015-020408	T2=ATT-ANP05411-020508

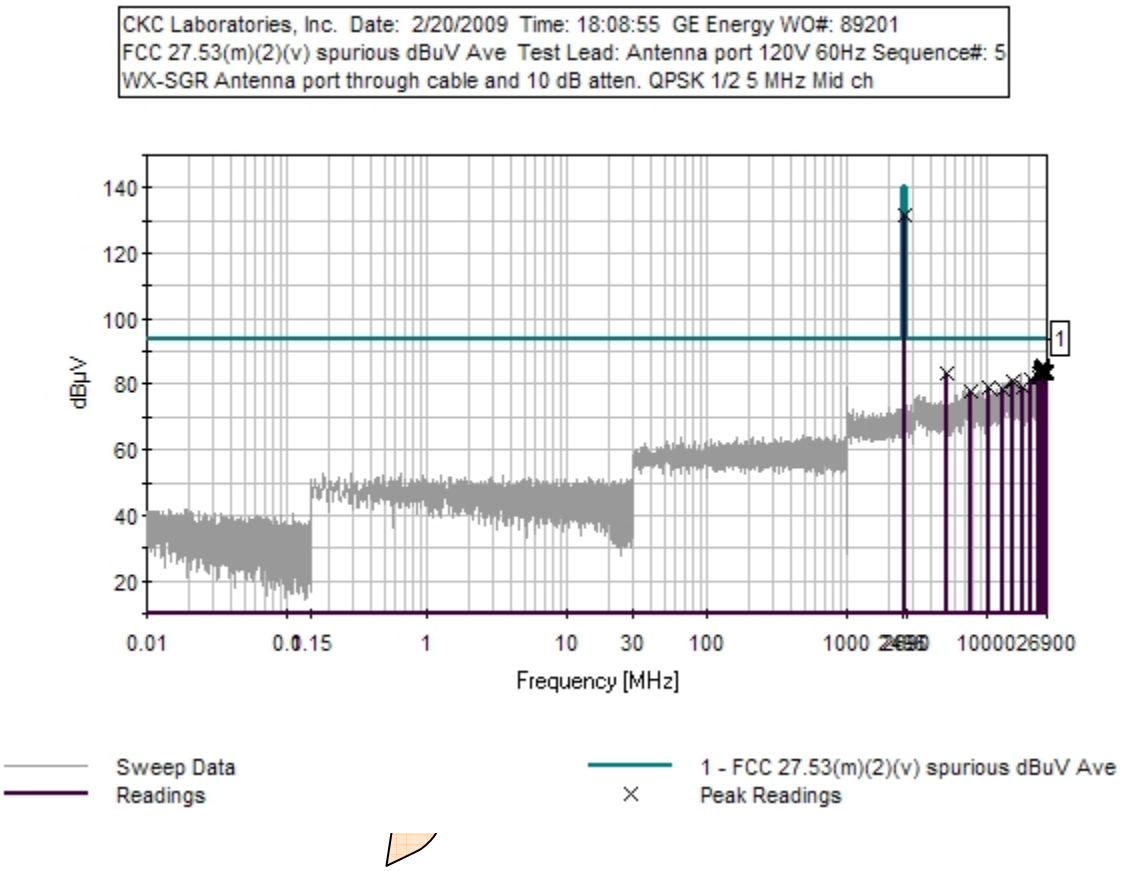
Measurement Data: Reading listed by margin. Test Lead: Antenna port

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	25267.160 M	74.4	+1.2	+10.3			+0.0	85.9	94.0	-8.1	Anten
2	2601.200M	121.9	+0.4	+9.4			+0.0	131.7	140.0	-8.3	Anten
3	25034.300 M	74.3	+1.1	+10.3			+0.0	85.7	94.0	-8.3	Anten
4	24188.900 M	74.0	+0.9	+10.3			+0.0	85.2	94.0	-8.8	Anten
5	25074.610 M	73.7	+1.1	+10.3			+0.0	85.1	94.0	-8.9	Anten
6	25174.440 M	73.6	+1.2	+10.3			+0.0	85.1	94.0	-8.9	Anten
7	25108.280 M	73.4	+1.1	+10.3			+0.0	84.8	94.0	-9.2	Anten
8	25081.010 M	73.2	+1.1	+10.3			+0.0	84.6	94.0	-9.4	Anten
9	25163.770 M	73.1	+1.2	+10.3			+0.0	84.6	94.0	-9.4	Anten
10	24116.890 M	73.3	+0.9	+10.3			+0.0	84.5	94.0	-9.5	Anten
11	24832.980 M	73.2	+0.8	+10.4			+0.0	84.4	94.0	-9.6	Anten
12	24868.980 M	73.1	+0.9	+10.4			+0.0	84.4	94.0	-9.6	Anten
13	26000.040 M	72.8	+1.0	+10.4			+0.0	84.2	94.0	-9.8	Anten
14	25090.970 M	72.8	+1.1	+10.3			+0.0	84.2	94.0	-9.8	Anten
15	24235.900 M	72.8	+1.0	+10.3			+0.0	84.1	94.0	-9.9	Anten

16	25083.380 M	72.7	+1.1	+10.3	+0.0	84.1	94.0	-9.9	Anten
17	25152.150 M	72.6	+1.2	+10.3	+0.0	84.1	94.0	-9.9	Anten
18	25183.690 M	72.6	+1.2	+10.3	+0.0	84.1	94.0	-9.9	Anten
19	25006.790 M	72.7	+1.0	+10.3	+0.0	84.0	94.0	-10.0	Anten
20	26086.660 M	72.6	+1.0	+10.4	+0.0	84.0	94.0	-10.0	Anten
21	24388.920 M	72.7	+0.9	+10.3	+0.0	83.9	94.0	-10.1	Anten
22	25879.650 M	72.5	+1.0	+10.4	+0.0	83.9	94.0	-10.1	Anten
23	25104.020 M	72.4	+1.1	+10.3	+0.0	83.8	94.0	-10.2	Anten
24	26565.180 M	72.3	+1.1	+10.4	+0.0	83.8	94.0	-10.2	Anten
25	24968.000 M	72.4	+1.0	+10.3	+0.0	83.7	94.0	-10.3	Anten
26	25175.150 M	72.2	+1.2	+10.3	+0.0	83.7	94.0	-10.3	Anten
27	25197.440 M	72.2	+1.2	+10.3	+0.0	83.7	94.0	-10.3	Anten
28	5200.314M	73.5	+0.7	+9.4	+0.0	83.6	94.0	-10.4	Anten
29	24166.890 M	72.4	+0.9	+10.3	+0.0	83.6	94.0	-10.4	Anten
30	25060.860 M	72.2	+1.1	+10.3	+0.0	83.6	94.0	-10.4	Anten
31	25147.170 M	72.1	+1.2	+10.3	+0.0	83.6	94.0	-10.4	Anten
32	25165.900 M	72.1	+1.2	+10.3	+0.0	83.6	94.0	-10.4	Anten

33	25178.000 M	72.1	+1.2	+10.3	+0.0	83.6	94.0	-10.4	Anten
34	25223.050 M	72.1	+1.2	+10.3	+0.0	83.6	94.0	-10.4	Anten
35	25257.200 M	72.1	+1.2	+10.3	+0.0	83.6	94.0	-10.4	Anten
36	25318.140 M	72.2	+1.1	+10.3	+0.0	83.6	94.0	-10.4	Anten
37	26573.240 M	72.1	+1.1	+10.4	+0.0	83.6	94.0	-10.4	Anten
38	23497.810 M	72.5	+0.7	+10.3	+0.0	83.5	94.0	-10.5	Anten
39	25020.310 M	72.2	+1.0	+10.3	+0.0	83.5	94.0	-10.5	Anten
40	23527.820 M	72.4	+0.7	+10.3	+0.0	83.4	94.0	-10.6	Anten
41	25167.800 M	71.9	+1.2	+10.3	+0.0	83.4	94.0	-10.6	Anten
42	25188.670 M	71.9	+1.2	+10.3	+0.0	83.4	94.0	-10.6	Anten
43	25314.580 M	72.0	+1.1	+10.3	+0.0	83.4	94.0	-10.6	Anten
44	25880.840 M	72.0	+1.0	+10.4	+0.0	83.4	94.0	-10.6	Anten
45	26098.040 M	72.0	+1.0	+10.4	+0.0	83.4	94.0	-10.6	Anten
46	26358.410 M	72.0	+1.0	+10.4	+0.0	83.4	94.0	-10.6	Anten
47	26750.850 M	72.0	+1.0	+10.4	+0.0	83.4	94.0	-10.6	Anten
48	25232.300 M	71.8	+1.2	+10.3	+0.0	83.3	94.0	-10.7	Anten
49	25241.310 M	71.8	+1.2	+10.3	+0.0	83.3	94.0	-10.7	Anten

50	25399.950 M	71.8	+1.1	+10.4	+0.0	83.3	94.0	-10.7	Anten
51	25980.900 M	71.9	+1.0	+10.4	+0.0	83.3	94.0	-10.7	Anten
52	26606.680 M	71.8	+1.1	+10.4	+0.0	83.3	94.0	-10.7	Anten
53	23400.040 M	71.1	+0.7	+10.3	+0.0	82.1	94.0	-11.9	Anten
54	20800.020 M	70.8	+0.6	+10.1	+0.0	81.5	94.0	-12.5	Anten
55	15600.070 M	69.5	+1.1	+10.1	+0.0	80.7	94.0	-13.3	Anten
56	18200.010 M	68.6	+0.7	+10.0	+0.0	79.3	94.0	-14.7	Anten
57	10400.130 M	68.5	+1.0	+9.6	+0.0	79.1	94.0	-14.9	Anten
58	13000.140 M	67.4	+1.4	+9.7	+0.0	78.5	94.0	-15.5	Anten
59	7800.219M	67.7	+0.6	+9.4	+0.0	77.7	94.0	-16.3	Anten


CKC Laboratories, Inc. Date: 2/20/2009 Time: 18:08:55 GE Energy WO#: 89201
FCC 27.53(m)(2)(v) spurious dBuV Ave Test Lead: Antenna port 120V 60Hz Sequence#: 5
WX-SGR Antenna port through cable and 10 dB atten. QPSK 1/2 5 MHz Mid ch
dBµV
140
120
100
80
60
40
20
0.01
0.15
1
10
30
100
1000
1000026900
Frequency [MHz]
1
Sweep Data
Readings
1 - FCC 27.53(m)(2)(v) spurious dBuV Ave
Peak Readings

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:	2/20/2009
Test Type:	**Conducted Emissions**	Time:	18:54:36
Equipment:	**WiMAX SmartGrid Router**	Sequence#:	7
Manufacturer:	Grid-Net	Tested By:	Art Rice
Model:	WX-SGR		120V 60Hz
S/N:	GN1S11ASS8BS000W		

***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
WiMAX SmartGrid Router*	Grid-Net	WX-SGR	GN1S11ASS8BS000W

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Dell	Latitude D830	9THV3G1
24 VDC Power Supply	CUI Inc.	3A-401DN24	none

Test Conditions / Notes:

The router is placed on top of the wooden test table.
Powered by 120VAC to the 24VDC power supply.
The laptop PC communicates to the EUT through the Ethernet cable.

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 10 kHz-26900 MHz.

Transducer Legend:

T1=CAB-AN03015-020408	T2=ATT-ANP05411-020508

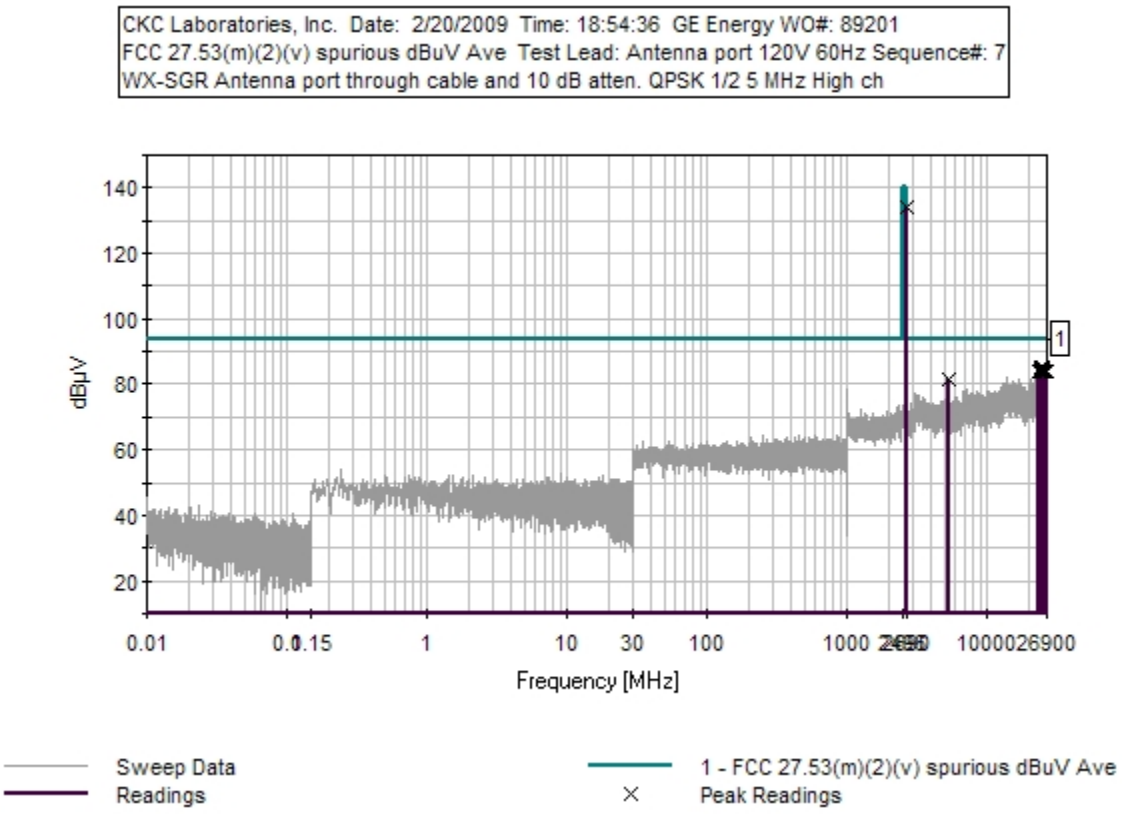
Measurement Data: Reading listed by margin. Test Lead: Antenna port

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	2688.171M	124.5	+0.4	+9.4			+0.0	134.3	140.0 Fundamental	-5.7	Anten
2	25265.730 M	73.7	+1.2	+10.3			+0.0	85.2	94.0	-8.8	Anten
3	24078.880 M	73.9	+0.8	+10.3			+0.0	85.0	94.0	-9.0	Anten
4	24990.000 M	73.7	+1.0	+10.3			+0.0	85.0	94.0	-9.0	Anten
5	25072.480 M	73.6	+1.1	+10.3			+0.0	85.0	94.0	-9.0	Anten
6	24338.920 M	73.6	+0.9	+10.3			+0.0	84.8	94.0	-9.2	Anten
7	25177.760 M	73.3	+1.2	+10.3			+0.0	84.8	94.0	-9.2	Anten
8	25003.000 M	73.3	+1.0	+10.3			+0.0	84.6	94.0	-9.4	Anten
9	25076.510 M	73.2	+1.1	+10.3			+0.0	84.6	94.0	-9.4	Anten
10	25130.100 M	73.1	+1.2	+10.3			+0.0	84.6	94.0	-9.4	Anten
11	25159.740 M	73.1	+1.2	+10.3			+0.0	84.6	94.0	-9.4	Anten
12	25208.110 M	73.1	+1.2	+10.3			+0.0	84.6	94.0	-9.4	Anten
13	24156.890 M	73.2	+0.9	+10.3			+0.0	84.4	94.0	-9.6	Anten
14	25007.980 M	73.1	+1.0	+10.3			+0.0	84.4	94.0	-9.6	Anten
15	24921.990 M	73.0	+0.9	+10.4			+0.0	84.3	94.0	-9.7	Anten

16	25013.200 M	73.0	+1.0	+10.3	+0.0	84.3	94.0	-9.7	Anten
17	25023.160 M	73.0	+1.0	+10.3	+0.0	84.3	94.0	-9.7	Anten
18	25142.430 M	72.8	+1.2	+10.3	+0.0	84.3	94.0	-9.7	Anten
19	25156.420 M	72.8	+1.2	+10.3	+0.0	84.3	94.0	-9.7	Anten
20	25158.550 M	72.8	+1.2	+10.3	+0.0	84.3	94.0	-9.7	Anten
21	25164.010 M	72.8	+1.2	+10.3	+0.0	84.3	94.0	-9.7	Anten
22	25226.610 M	72.8	+1.2	+10.3	+0.0	84.3	94.0	-9.7	Anten
23	24928.990 M	72.9	+0.9	+10.4	+0.0	84.2	94.0	-9.8	Anten
24	24988.000 M	72.9	+1.0	+10.3	+0.0	84.2	94.0	-9.8	Anten
25	25323.120 M	72.8	+1.1	+10.3	+0.0	84.2	94.0	-9.8	Anten
26	23400.800 M	73.1	+0.7	+10.3	+0.0	84.1	94.0	-9.9	Anten
27	24966.000 M	72.8	+1.0	+10.3	+0.0	84.1	94.0	-9.9	Anten
28	26231.540 M	72.7	+1.0	+10.4	+0.0	84.1	94.0	-9.9	Anten
29	26544.790 M	72.6	+1.1	+10.4	+0.0	84.1	94.0	-9.9	Anten
30	26601.460 M	72.6	+1.1	+10.4	+0.0	84.1	94.0	-9.9	Anten
31	24084.880 M	72.8	+0.9	+10.3	+0.0	84.0	94.0	-10.0	Anten
32	24354.920 M	72.8	+0.9	+10.3	+0.0	84.0	94.0	-10.0	Anten

33	24860.980 M	72.7	+0.9	+10.4	+0.0	84.0	94.0	-10.0	Anten
34	24889.990 M	72.7	+0.9	+10.4	+0.0	84.0	94.0	-10.0	Anten
35	26350.110 M	72.6	+1.0	+10.4	+0.0	84.0	94.0	-10.0	Anten
36	24816.980 M	72.7	+0.8	+10.4	+0.0	83.9	94.0	-10.1	Anten
37	25072.000 M	72.5	+1.1	+10.3	+0.0	83.9	94.0	-10.1	Anten
38	25193.650 M	72.4	+1.2	+10.3	+0.0	83.9	94.0	-10.1	Anten
39	25937.510 M	72.5	+1.0	+10.4	+0.0	83.9	94.0	-10.1	Anten
40	26596.480 M	72.4	+1.1	+10.4	+0.0	83.9	94.0	-10.1	Anten
41	25224.950 M	72.3	+1.2	+10.3	+0.0	83.8	94.0	-10.2	Anten
42	25261.940 M	72.3	+1.2	+10.3	+0.0	83.8	94.0	-10.2	Anten
43	25283.990 M	72.4	+1.1	+10.3	+0.0	83.8	94.0	-10.2	Anten
44	25771.760 M	72.4	+1.0	+10.4	+0.0	83.8	94.0	-10.2	Anten
45	26030.220 M	72.4	+1.0	+10.4	+0.0	83.8	94.0	-10.2	Anten
46	24253.910 M	72.4	+1.0	+10.3	+0.0	83.7	94.0	-10.3	Anten
47	25000.000 M	72.4	+1.0	+10.3	+0.0	83.7	94.0	-10.3	Anten
48	25053.740 M	72.3	+1.1	+10.3	+0.0	83.7	94.0	-10.3	Anten
49	25064.890 M	72.3	+1.1	+10.3	+0.0	83.7	94.0	-10.3	Anten

50	25349.910 M	72.3	+1.1	+10.3		+0.0	83.7	94.0	-10.3	Anten
51	5375.144M	71.0	+0.8	+9.5		+0.0	81.3	94.0 Harmonic	-12.7	Anten



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:	7/21/2009
Test Type:	**Conducted Emissions**	Time:	15:06:31
Equipment:	**WiMAX SmartGrid Router**	Sequence#:	4
Manufacturer:	Grid-Net	Tested By:	Art Rice
Model:	WX-SGR		120V 60Hz
S/N:	GN1S11ASS8BS000W		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
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
SA - Agilent E4446A	US44300408	03/09/2009	03/09/2011	02668

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
WiMAX SmartGrid Router*	Grid-Net	WX-SGR	GN1S11ASS8BS000W

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Dell	Latitude D830	9THV3G1
24 VDC Power Supply	CUI Inc.	SA-401DN24	none

Test Conditions / Notes:

The router is placed on top of the wooden test table.
Powered by 120VAC to the 24VDC power supply.
The laptop PC communicates to the EUT through the Ethernet cable.

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) 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

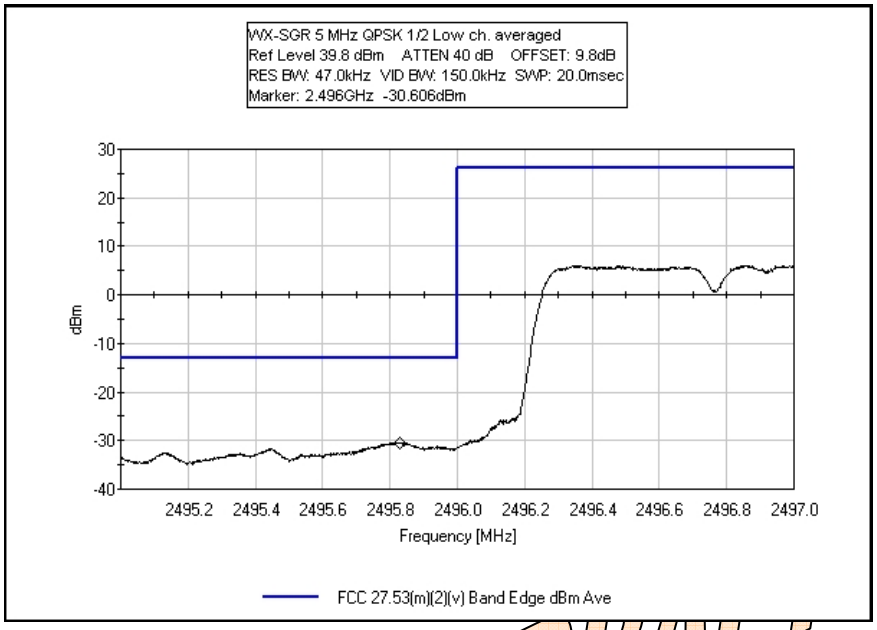
Transducer Legend:

Measurement Data: Reading listed by margin. Test Lead: Antenna port

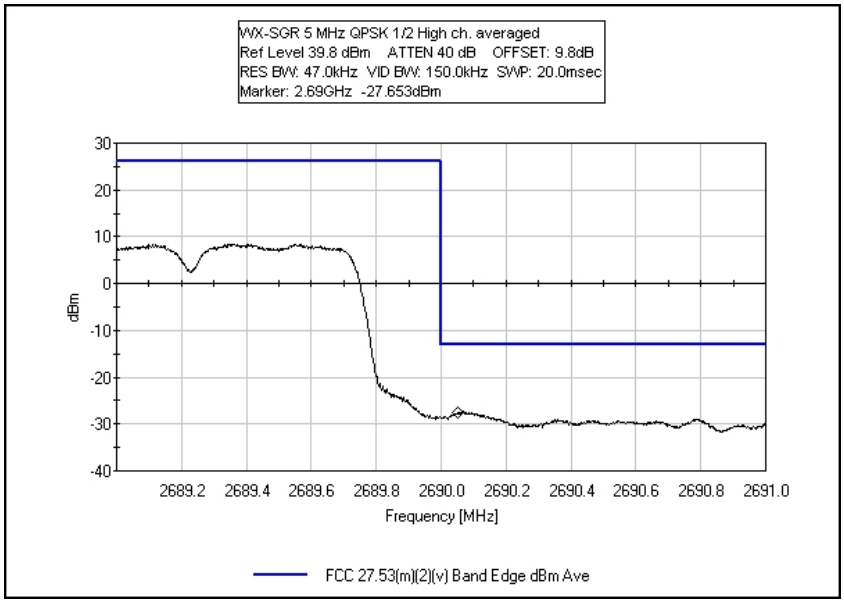
#	Freq MHz	Rdng dBµV	dB	dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	2687.850M Ave	25.6					+0.0	25.6	26.1	-0.5	Anten
									Fundamental, 5 MHz QPSK 1/2, High		
2	2499.000M Ave	24.2					+0.0	24.2	26.1	-1.9	Anten
									Fundamental, 5 MHz QPSK 1/2, Low		
3	2502.580M Ave	21.8					+0.0	21.8	26.1	-4.3	Anten
									Fundamental, 10 MHz QPSK 1/2, Low		
4	2685.440M Ave	20.6					+0.0	20.6	26.1	-5.5	Anten
									Fundamental, 10 MHz QPSK 1/2, High		

5	2690.050M Ave	-27.6		+0.0	-27.6	-13.0	-14.6	Anten Band Edge, 5 MHz QPSK 1/2, High, RBW=47kHz
6	2690.390M Ave	-29.8		+0.0	-29.8	-13.0	-16.8	Anten Band Edge, 10 MHz QPSK 1/2, High, RBW=100kHz
7	2495.828M Ave	-30.6		+0.0	-30.6	-13.0	-17.6	Anten Band Edge, 5 MHz QPSK 1/2, Low, RBW=47kHz
8	2495.550M Ave	-34.9		+0.0	-34.9	-13.0	-21.9	Anten Band Edge, 10 MHz QPSK 1/2, Low, RBW=100kHz

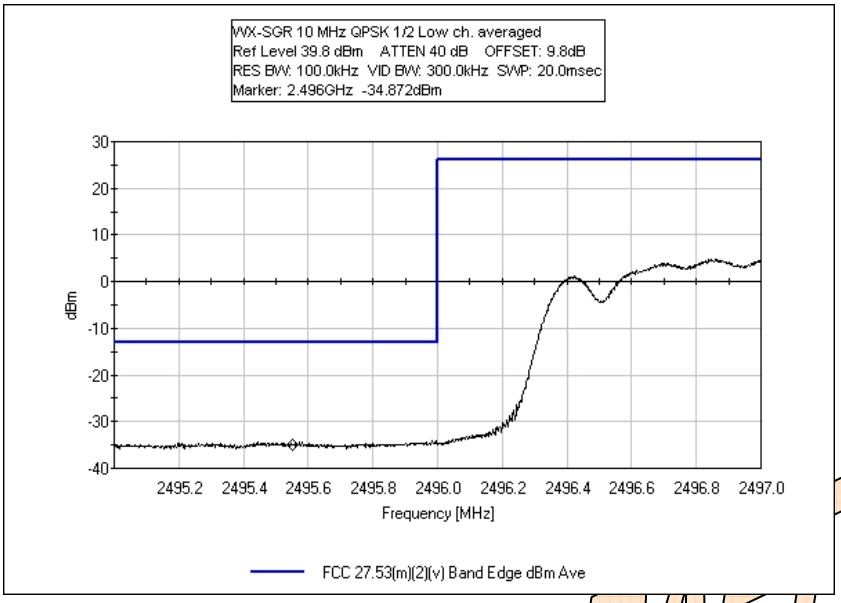
BANDEDGE - 5 MHz QPSK LOW CHANNEL



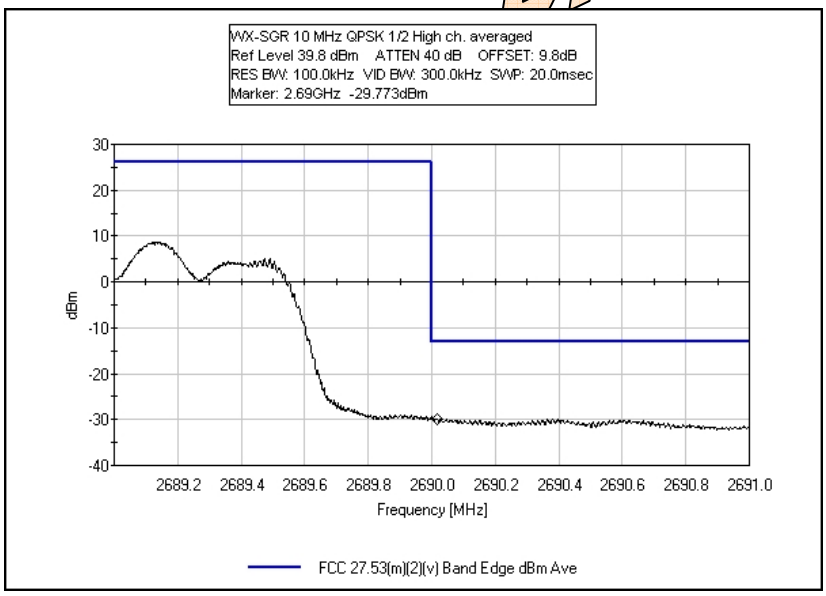
BANDEDGE - 5 MHz QPSK HIGH CHANNEL



BANDEDGE - 10 MHz QPSK LOW CHANNEL

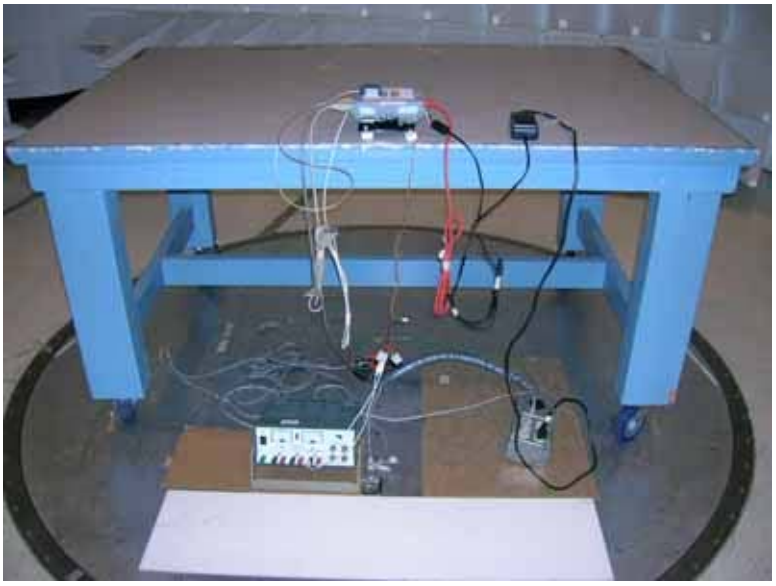


BANDEDGE - 10 MHz QPSK HIGH CHANNEL



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: 7/22/2009
Test Type: **Maximized Emissions** Time: 13:57:20
Equipment: **WiMAX SmartGrid Router** Sequence#: 28
Manufacturer: Grid-Net Tested By: Art Rice
Model: WX-SGR
S/N: GN1S11ASS8BS000W

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
E4446A Spectrum Analyzer	US44300408	03/11/2009	03/11/2011	02668
Active Horn 26-40GHz	1097854	11/12/2008	11/12/2010	02695
Active Horn 18-26GHz	1114018	11/13/2008	11/13/2010	02742
HF Cable	None	08/12/2008	08/12/2010	05843
HF Cable	None	02/04/2008	02/04/2010	03015
HF Cable	HOL-HF-025-06	05/06/2008	05/06/2010	P05138
HF Cable	None	05/06/2008	05/06/2010	P04241
Horn - DRG-118A	1064	01/09/2009	01/09/2011	02061
Preamp, HP83017A	00873	02/20/2009	02/20/2011	02812
Cable	None	04/21/2008	04/21/2010	P05440
3.5 GHz HP Filter	None	04/01/2008	04/01/2010	P01416
Cable	None	03/06/2009	03/06/2011	P05300
Cable	None	03/06/2009	03/06/2011	P05299
Preamp, HP8447D	2443A03707	02/09/2009	02/09/2011	00730
Antenna, Bilog	2630	12/22/2008	12/22/2010	00852
Mag Loop - 6502	2078	05/18/2009	05/18/2011	00432

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
WiMAX SmartGrid Router*	Grid-Net	WX-SGR	GN1S11ASS8BS000W

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Dell	Latitude D830	9THV3G1
24 VDC Power Supply	CUI Inc.	3A-401DN24	none
Power supply for EUT fan	Tektronix	CPS250	CKC AN00900A
Cooling Fan	CoolerMaster	AA225-25BB-5EA-F1	none
Antenna	Mars Antennas and RF System, Inc.	ANT.MA-VM26-3F	none

Test Conditions / Notes:

The transceiver is placed on top of the wooden test table.
24VDC power supply for EUT powered by 120VAC.
The laptop PC communicates to the EUT through the Ethernet.
Unterminated RS-232 and RS-485 cables are bundled to 40cm above the floor.
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)
4)
5) Spectrum analyzer atten=10 dB.
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) Checked low, mid, and high channels.
9) Frequencies above 1 GHz were pre-scanned near field. Signals found in the pre-scans 9kHz-26900MHz were maximized.

Radiated emissions 4.9-5.4 GHz.

Operating Frequency: 2498 MHz - 2688 MHz
Channels: Low, Mid and High
Highest Measured Output Power: 26.10 ERP(dBm)= 0.407 ERP(Watts)
Distance: 3 meters
Limit: 43+10Log(P) 39.10 dBc

Freq. (MHz)	Reference Level (dBm)	Antenna Polarity (H/V)	dBc
4,997.12	-38.4	Vert	64.50
5,200.06	-40	Vert	66.10
5,375.17	-42	Vert	68.10
4,997.01	-45.5	Horiz	71.60
5,200.06	-45.8	Horiz	71.90
5,375.17	-46.4	Horiz	72.50

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

Test Setup Photos

DRAFT

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:	11:37:28
Equipment:	**WiMAX SmartGrid Router**	Sequence#:	18
Manufacturer:	Grid-Net	Tested By:	Art Rice
Model:	WX-SGR		15-30VDC
S/N:	GN1S11ASS8BS000W		

***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
Tenma Power Supply	0201714	10/06/2008	10/06/2010	P05574
Temperature Chamber	10911-S	04/03/2008	04/03/2010	02721

***Equipment Under Test* (* = EUT):**

Function	Manufacturer	Model #	S/N
WiMAX SmartGrid Router*	Grid-Net	WX-SGR	GN1S11ASS8BS000W

Support Devices:

Function	Manufacturer	Model #	S/N
Laptop PC	Dell	Latitude D830	9THV3G1
Power supply for EUT fan	Tektronix	CPS250	CKC AN00900A
Cooling Fan	CoolerMaster	AA225-25BB-5EA-F1	none
AC Adapter for laptop	Dell	LA90PS0-00	CN-0DF266-71615-834-0DC3

Test Conditions / Notes:

The wall mount transceiver is placed on top of the wooden test table.
Powered by 15-30VDC.
The laptop PC communicates through the Ethernet cable to the EUT.

NOTES:
1) The EUT is transmitting continuously with a single-tone signal.
Low ch=2498.5 MHz
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)
8) Testing over the entire specified voltage input range.

Conducted emissions 2.4-2.7 GHz.

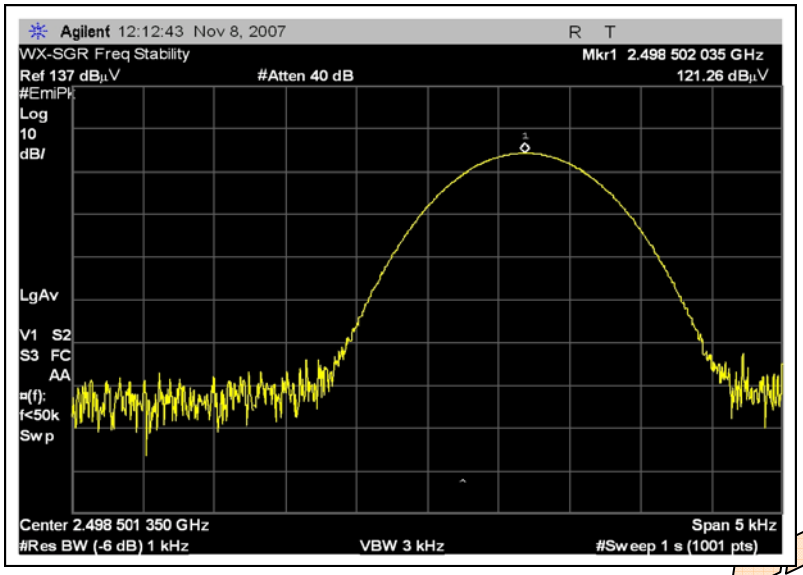
Transducer Legend:

T1=CAB-AN03015-020408	T2=ATT-ANP05411-020508

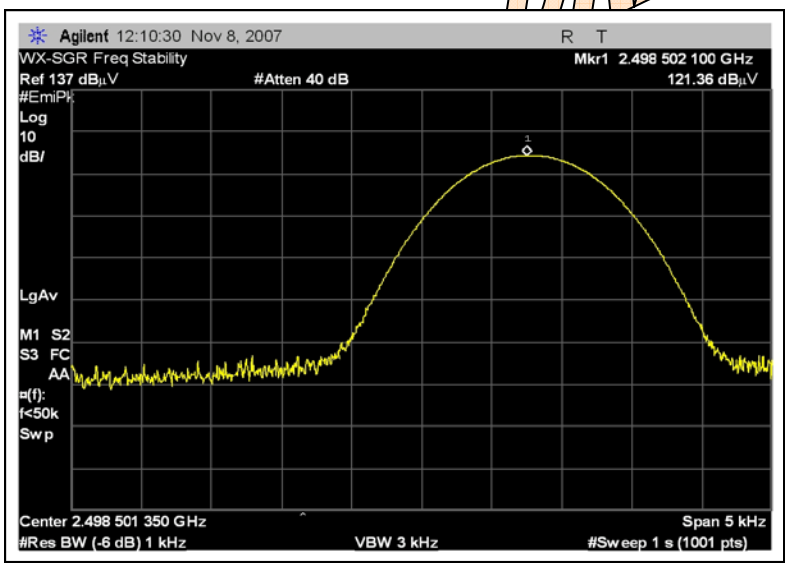
Measurement Data: Reading listed by margin. Test Lead: Antenna port

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	2498.502M	121.4	+0.4	+9.4			+0.0	131.2	140.0	-8.8	Anten
									Low ch, 24VDC		
2	2498.502M	121.3	+0.4	+9.4			+0.0	131.1	140.0	-8.9	Anten
									Low ch, 15VDC		
3	2498.502M	121.2	+0.4	+9.4			+0.0	131.0	140.0	-9.0	Anten
									Low ch, 30VDC		
4	2687.502M	120.4	+0.4	+9.4			+0.0	130.2	140.0	-9.8	Anten
									High ch, 30VDC		
5	2687.503M	120.1	+0.4	+9.4			+0.0	129.9	140.0	-10.1	Anten
									High ch, 24VDC		
6	2687.503M	119.8	+0.4	+9.4			+0.0	129.6	140.0	-10.4	Anten
									High ch, 15VDC		

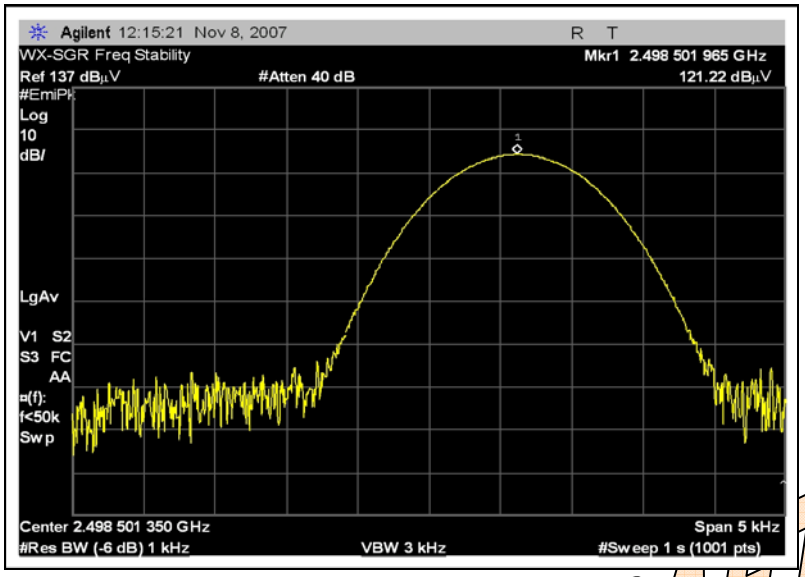
FREQUENCY STABILITY - LOW CHANNEL 15VDC



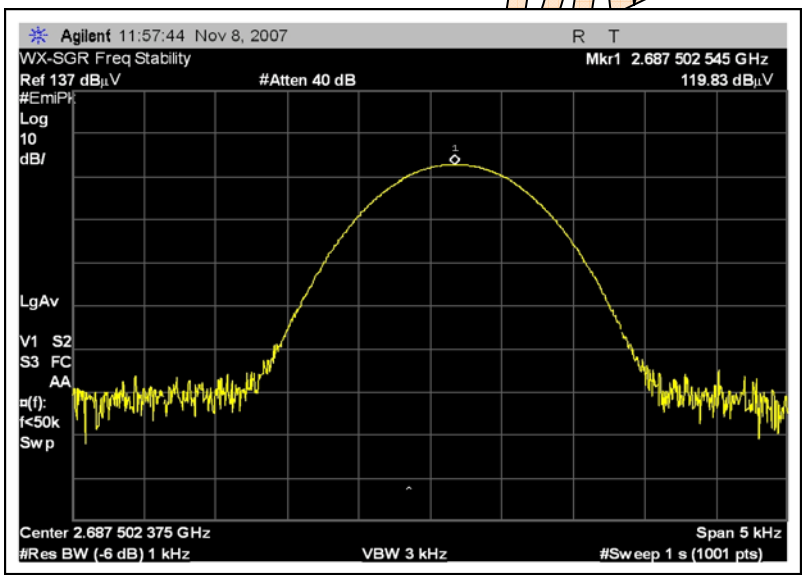
FREQUENCY STABILITY - LOW CHANNEL 24VDC



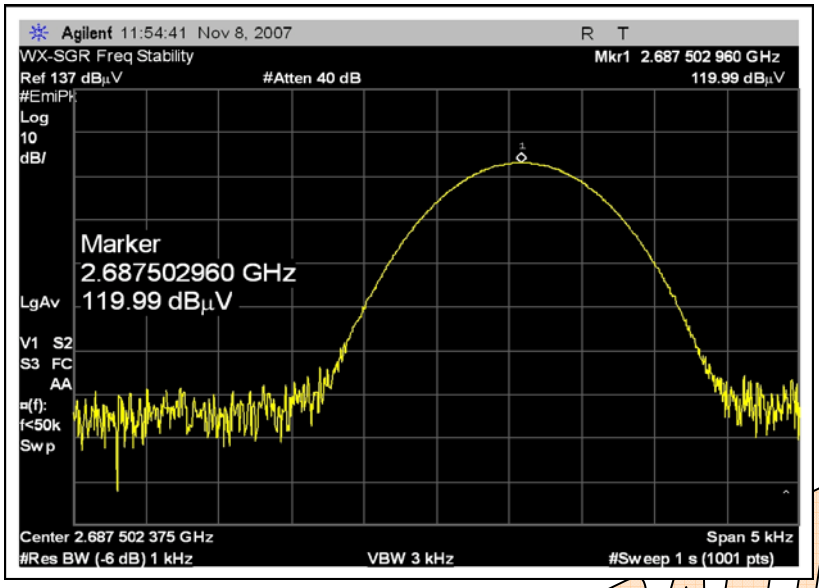
FREQUENCY STABILITY - LOW CHANNEL 30VDC



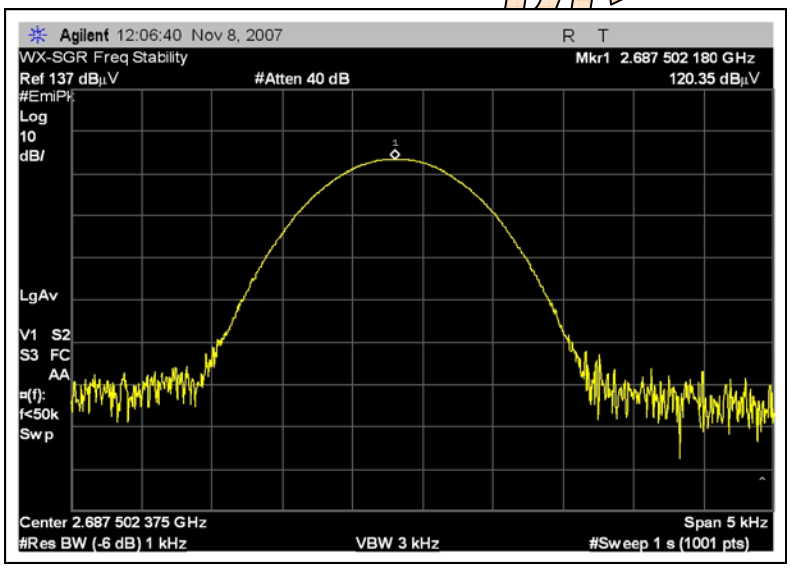
FREQUENCY STABILITY - HIGH CHANNEL 15VDC



FREQUENCY STABILITY - HIGH CHANNEL 24VDC



FREQUENCY STABILITY - HIGH CHANNEL 30VDC



Temperature Variations

Channel Frequency:		Channel 1 (MHz) 2498.5	Dev. (MHz)	Channel 3 (MHz) 2687.5	Dev. (MHz)
Temp (C)	Voltage				
-30	24.0	2498.50347	0.00347	2687.50347	0.00347
-20	24.0	2498.50167	0.00167	2687.50133	0.00133
-10	24.0	2498.50253	0.00253	2687.50220	0.00220
0	24.0	2498.50360	0.00360	2687.50403	0.00403
10	24.0	2498.50447	0.00447	2687.50447	0.00447
20	24.0	2498.50373	0.00373	2687.50423	0.00423
30	24.0	2498.50210	0.00210	2687.50127	0.00127
40	24.0	2498.50130	0.00130	2687.50107	0.00107
50	24.0	2498.50123	0.00123	2687.50093	0.00093

Voltage Variations (±15%)

20	15.0	2498.50204	0.00203	2687.50254	0.00254
20	24.0	2498.50210	0.00210	2687.50296	0.00296
20	30.0	2498.50197	0.00196	2687.50218	0.00218
Max Deviation (MHz)			**0.00447**		**0.00447**