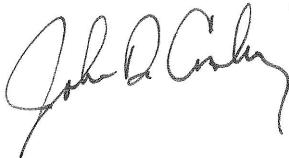
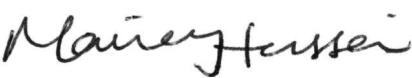




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Test Report

Report No	EL1266-1
Client	Sixnet, LLC
Address	331 Ushers Road Ballston Lake, NY 12079
Phone	1-518-877-5173
Items tested	BT-5X30v2 Modem
FCC ID	Z8Z-BT5X30V2
IC ID	2991A-BT5X30V2
FRN	0021271085
Equipment Type	Digital Transmission System
Equipment Code	DTS
Emission Designator	16M5F8D
FCC/IC Rule Parts	47 CFR 15.247, RSS 210 issue 8 and RSS GEN issue 3
Test Dates	February 10, 2012
Results	As detailed within this report
Prepared by	 John Cushing – Test Engineer
Authorized by	 Mairaj Hussain – EMC Supervisor
Issue Date	February 10, 2012
Conditions of Issue	This Test Report is issued subject to the conditions stated in the 'Conditions of Testing' section on page 34 of this report.

Curtis-Straus LLC is accredited by the American Association for Laboratory Accreditation for the specific scope of accreditation under Certificate Number 1627-01. This report may contain data which is not covered by the A2LA accreditation.



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Form Final Report REV 7-20-07 (DW)



Summary

This test report supports an application for certification of a transmitter operating pursuant to 47 CFR 15.247 and RSS-210. The product is the BT-5X30v2 Modem. It is a transmitter that operates in the range 2400-2483.5MHz

We found that the product met the above requirements without modification. The test sample was received in good condition.

The digital portion of these devices were tested under work order EL0551 and EL0552, please refer to these reports for verification of conformity.

The intentional transmitter is co-located with a Sierra Wireless EVDO CDMA m-PCI express card (FCC ID: N7N-MC5725, N7N-MC5728, N7NMC8790), a combined MPE calculation has been included in this certification. The EUT has different cellular modems available depending on the customers preference.

The differences between the BT-5630V2 and the BT-5830V2 are carrier based. The BT-5630V2 is for carriers that use CDMA technology. The BT-5830V2 is for carriers that use HSPA technology. Both units have the same printed circuit board in it. The BT-5830V2 has a few population differences based on that HSPA technology requires a SIM card. The BT-5630V2 has no SIM card.

Certification for this ID is for two model numbered units. The devices are identical in respect to intentional transmission; just the digital portion of the device is unique. Spurious emissions were performed on both units to confirm that restricted bands are not impeded by spurs.



Test Methodology

Radiated emission and AC Line conducted testing was performed according to the procedures specified in ANSI C63.4 (2003), FCC public notice regarding measurement procedure for DTS and RSS-GEN. Radiated Emissions were maximized by rotating the device around normal installation axes as well as varying the test antenna's height and polarity. The device antenna was maximized separately.

Conducted emission at the antenna port was performed, as required by rule section.

The EUT operating voltage is 100-240Vac 50/60Hz.

The following bandwidths were used during radiated spurious and line conducted emissions.

Frequency	RBW	VBW
0.15-30MHz	9kHz	30kHz
30-1000MHz	120kHz	1MHz
1-25GHz	1MHz	3MHz

The unit used two different modulation schemes, 802.11b and 802.11g. The following channels were evaluated.

Low Channel = 2412MHz

Mid Channel = 2437MHz

High Channel = 2462MHz



Product Tested - Configuration Documentation

Statement of Conformity

The BT-5XXXv2 Modem has been found to conform to the following parts of 47 CFR, RSS 210 and RSS GEN Issue 3 as detailed below:

RSS-GEN	RSS 210	Part 15	Comments
5.4		15.15(b)	There are no controls accessible to the user that varies the output power.
5.2		15.19	The label is shown in the label exhibit.
7.1.3 7.1.2		15.21	Information to the user is shown in the instruction manual exhibit.
		15.27	No special accessories are required for compliance.
4.1		15.31	The EUT was tested in accordance with the measurement standards in this section.
		15.33	Frequency range was investigated according to this section, unless noted in specific rule section under which the equipment operates.
		15.35	The EUT emissions were measured using the measurement detector and bandwidth specified in this section, unless noted in specific rule section under which the equipment operates.
7.1.2		15.203	The antenna for this device has a unique connection type.
	2.5	15.205 15.209	The fundamental is not in a Restricted band and the spurious and harmonic emissions in the Restricted bands comply with the general emission limits of 15.209.
7.2.4		15.207	EUT meets the AC Line conducted emissions requirements of 15.207.
	Annex 8	15.247	The unit complies with the requirements of 15.247
4.6.1			Occupied Bandwidth measurements were made.



Test Results

Bandwidth

LIMIT

The minimum 6 dB bandwidth shall be at least 500 kHz. [15.247(a) (2)]

MEASUREMENTS / RESULTS

Work Order: L1266

Company: Sixnet LLC

Date: 2/10/2012

Test Engineer: Matthew Burman

Spectrum Analyzer: Gold

Attenuator: PE7019

Temperature: 23.1°C

Humidity: 22%

Pressure: 1010mbar

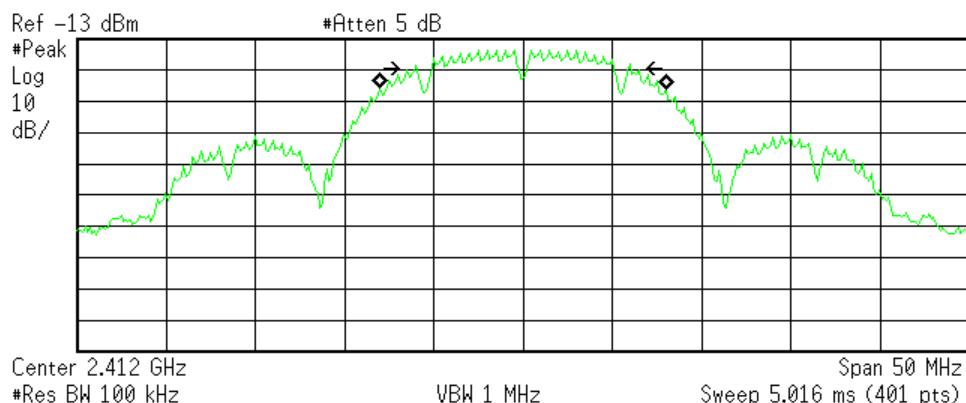
6dB Bandwidth

15.247(a)(2)

Modulation Type	Frequency (MHz)	Reading (MHz)	Limit (MHz)	Results
B	2412	12.138	0.5	Pass
B	2437	12.156	0.5	Pass
B	2462	12.128	0.5	Pass
G	2412	16.602	0.5	Pass
G	2437	16.607	0.5	Pass
G	2462	16.59	0.5	Pass

PLOT

Agilent 13:20:58 Feb 10, 2012 R T



Occupied Bandwidth
16.0123 MHz

Occ BW % Pwr 99.00 %
x dB -6.00 dB

Transmit Freq Error -18.057 kHz
x dB Bandwidth 12.138 MHz

C:\temp.gif file saved

Low Channel – 802.11b



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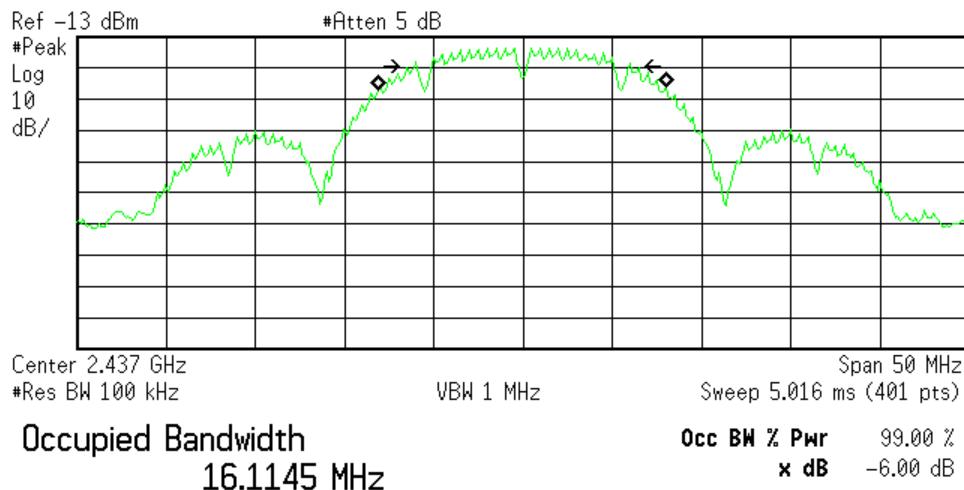


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Testing Cert. No. 1627-01

* Agilent 13:20:12 Feb 10, 2012

R T



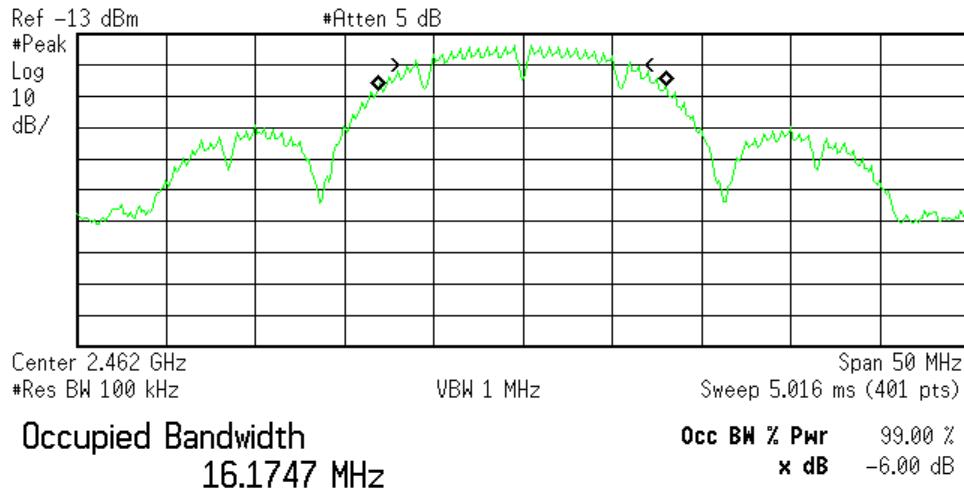
Transmit Freq Error -38.204 kHz
x dB Bandwidth 12.156 MHz

C:\temp.gif file saved

Mid Channel – 802.11b

* Agilent 13:19:04 Feb 10, 2012

R T



Transmit Freq Error -61.858 kHz
x dB Bandwidth 12.128 MHz

C:\temp.gif file saved

High Channel – 802.11b



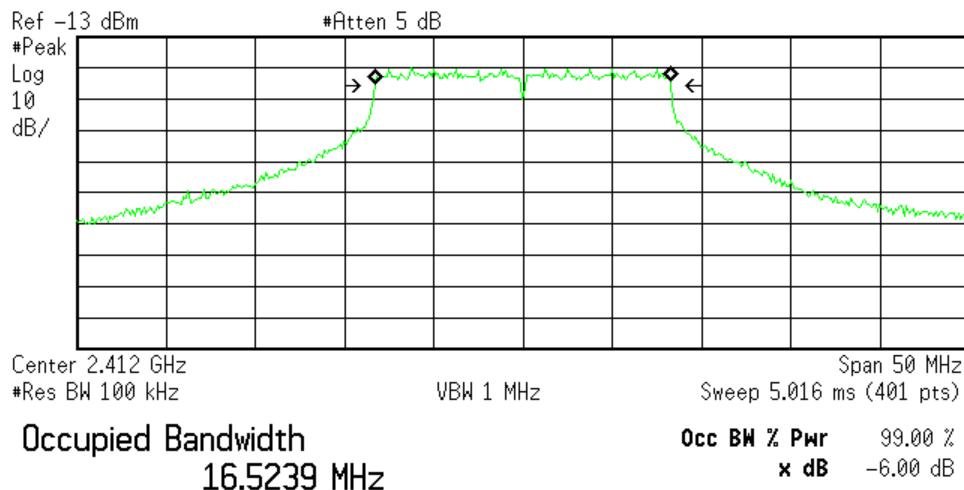
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Agilent 13:22:52 Feb 10, 2012

R T



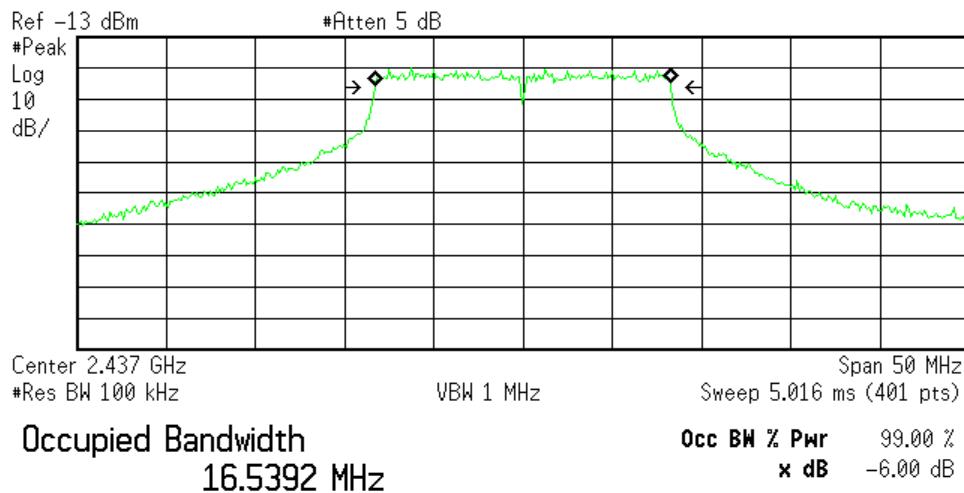
Transmit Freq Error -11.858 kHz
x dB Bandwidth 16.602 MHz

C:\temp.gif file saved

Low Channel – 802.11g

Agilent 13:23:33 Feb 10, 2012

R T



Transmit Freq Error -13.010 kHz
x dB Bandwidth 16.607 MHz

C:\temp.gif file saved

Mid Channel – 802.11g



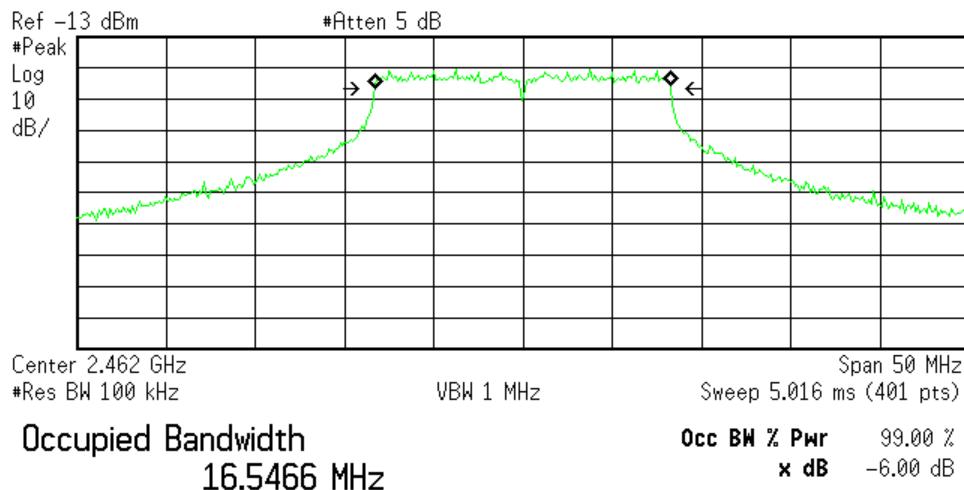
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Agilent 13:24:13 Feb 10, 2012

R T



Transmit Freq Error -24.079 kHz
x dB Bandwidth 16.590 MHz

C:\temp.gif file saved

High Channel – 802.11g



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Peak Power

LIMIT

Conducted Output Power
1 Watt
[15.247(b) (3)]

MEASUREMENTS / RESULTS

Work Order: L1266

Company: Sixnet LLC

Date: 2/10/2012

Test Engineer: Matthew Burman

Temperature: 21.3°C

Humidity: 21%

Pressure: 1010mbar

Spectrum Analyzer: Rental #5

Attenuator: PE7019

Cable: EMIR-High-22

Peak Output Power

15.247(b)(3)

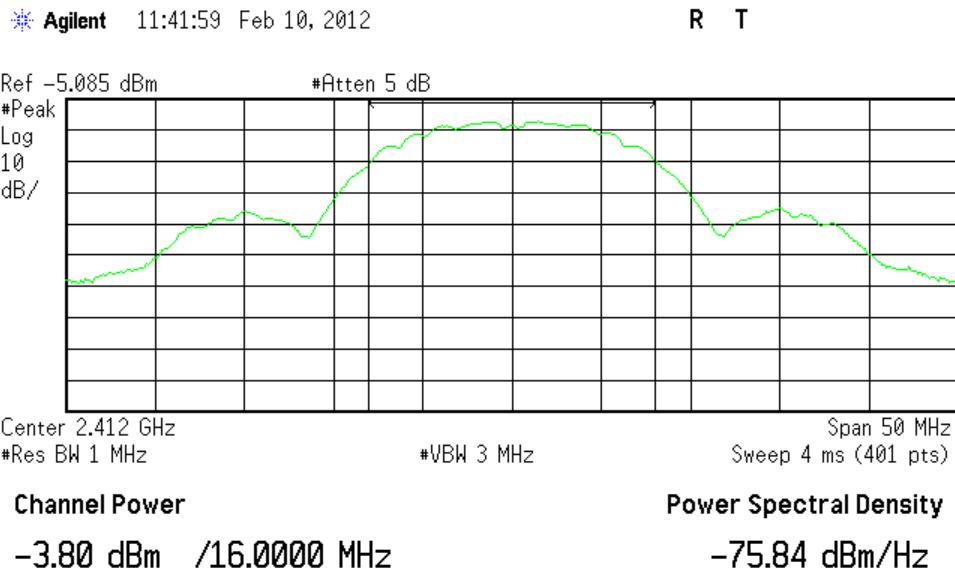
Measurement procedure 5.2.1.2

1Watt = 30dBm

Modulation Type	Frequency (MHz)	Reading (dBm)	Adjusted Reading (dBm)	Limit (dBm)	Results
B	2412	-3.8	19.3	30	Pass
B	2437	-3.62	19.48	30	Pass
B	2462	-4.01	19.09	30	Pass
G	2412	-6.95	16.15	30	Pass
G	2437	-7.21	15.89	30	Pass
G	2462	-7.53	15.57	30	Pass

*Adjusted reading = raw reading + attenuator factor + cable factor

PLOTS



C:\temp.gif file saved

Low Channel – 802.11b



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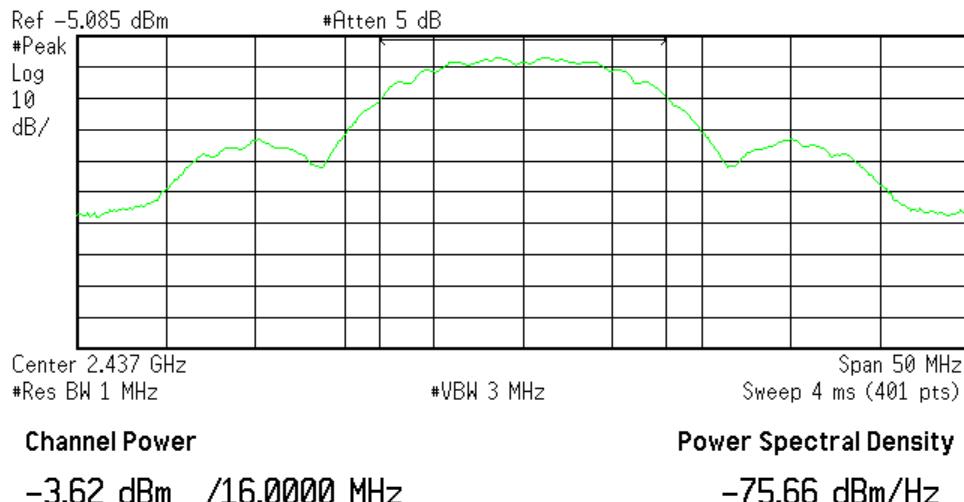


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* Agilent 11:41:03 Feb 10, 2012

R T



C:\temp.gif file saved

Mid Channel – 802.11b

* Agilent 11:39:34 Feb 10, 2012

R T



C:\temp.gif file saved

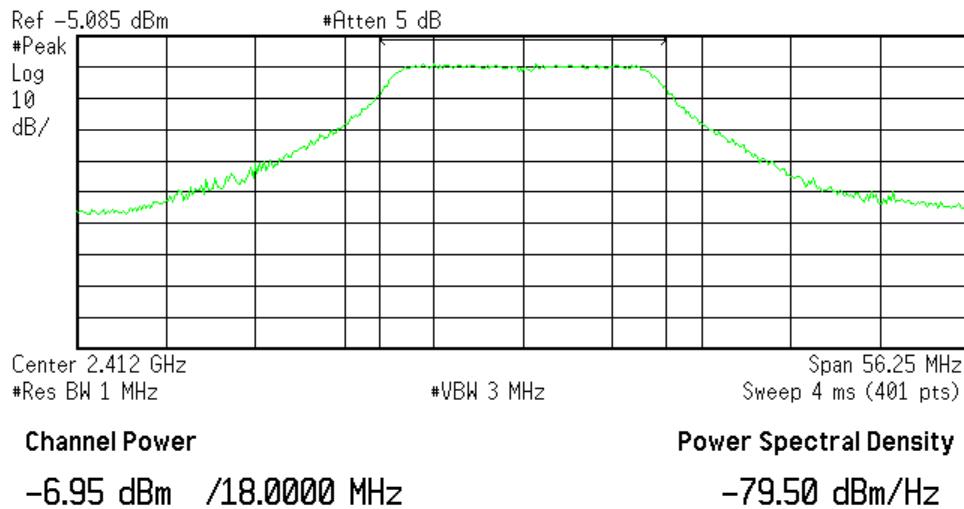
High Channel – 802.11b

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* Agilent 11:43:18 Feb 10, 2012

R T

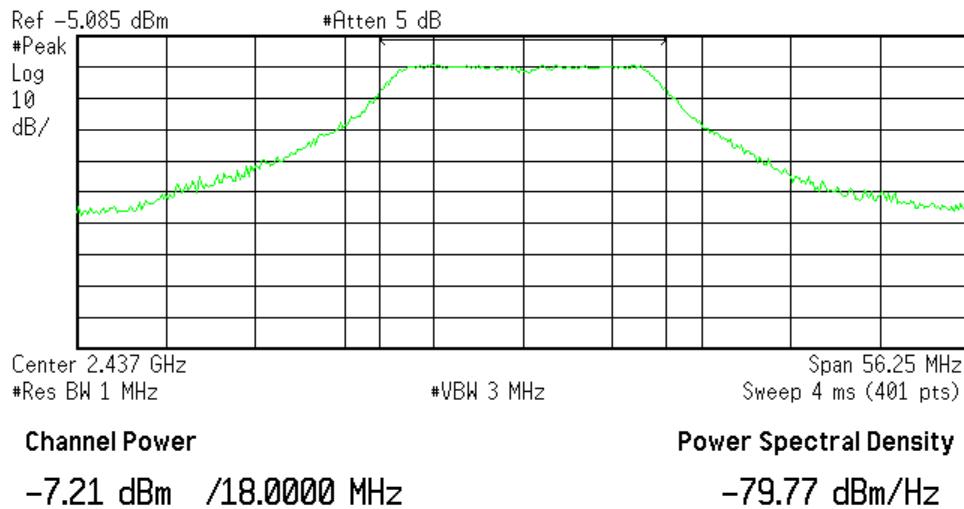


C:\temp.gif file saved

Low Channel – 802.11g

* Agilent 11:44:05 Feb 10, 2012

R T



C:\temp.gif file saved

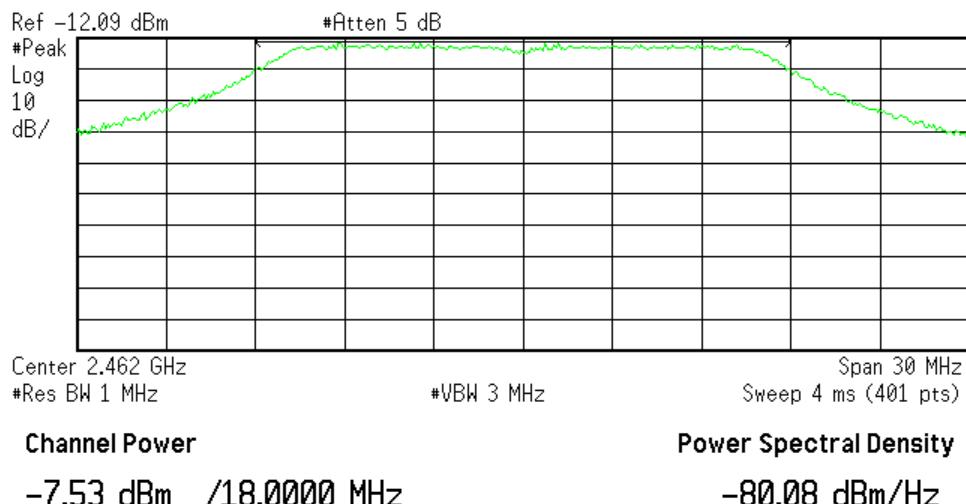
Mid Channel – 802.11g

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Agilent 11:38:00 Feb 10, 2012

R T



C:\temp.gif file saved

High Channel – 802.11g



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Band Edge Measurements

LIMITS

"In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits." [15.247(d)]

MEASUREMENTS / RESULTS

Work Order: L1266

Company: Sixnet LLC

Date: 2/10/2012

Test Engineer: Matthew Burman

Temperature: 21.3°C

Humidity: 21%

Pressure: 1010mbar

Spectrum Analyzer: Gold

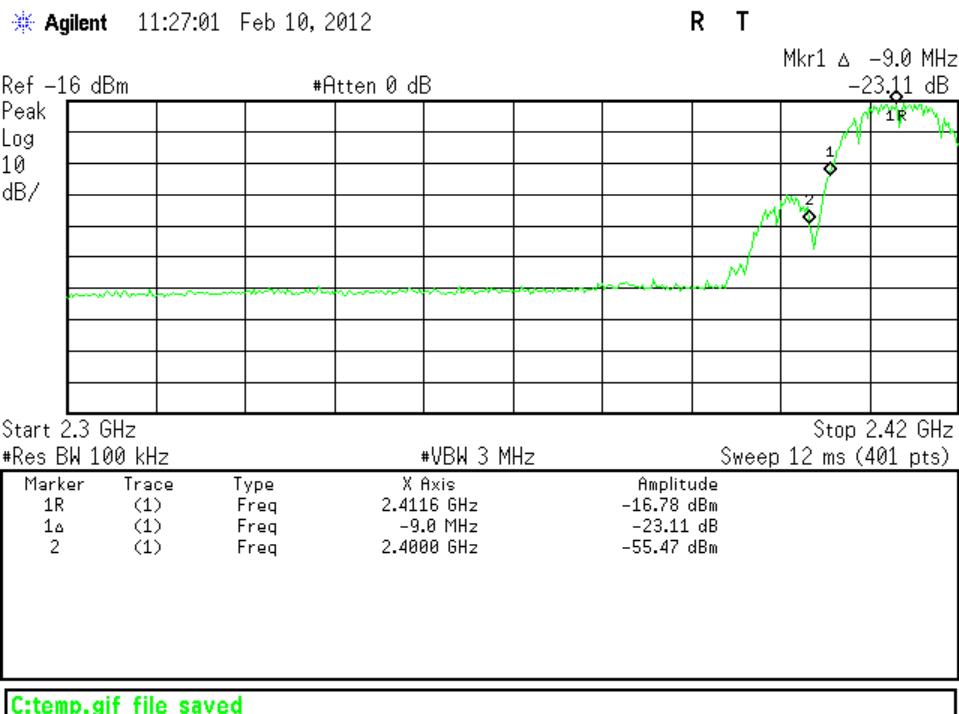
Attenuator: PE7019

Conducted Band Edge

15.247(d)

Modulation Type	Centered Frequency (MHz)	Restricted Band (MHz)	Delta (dB)	Limit (dB)	Results
B	2412	2400	38.69	20	Pass
B	2462	2483.5	56.56	20	Pass
G	2412	2400	27.46	20	Pass
G	2462	2483.5	44.26	20	Pass

PLOTS



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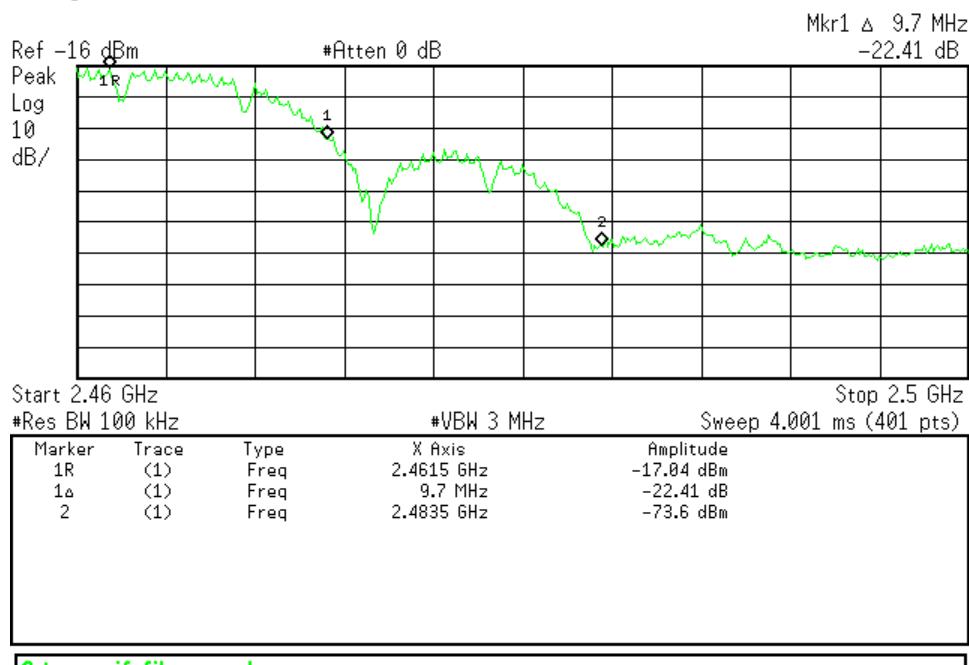
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Low Band Edge – 802.11b

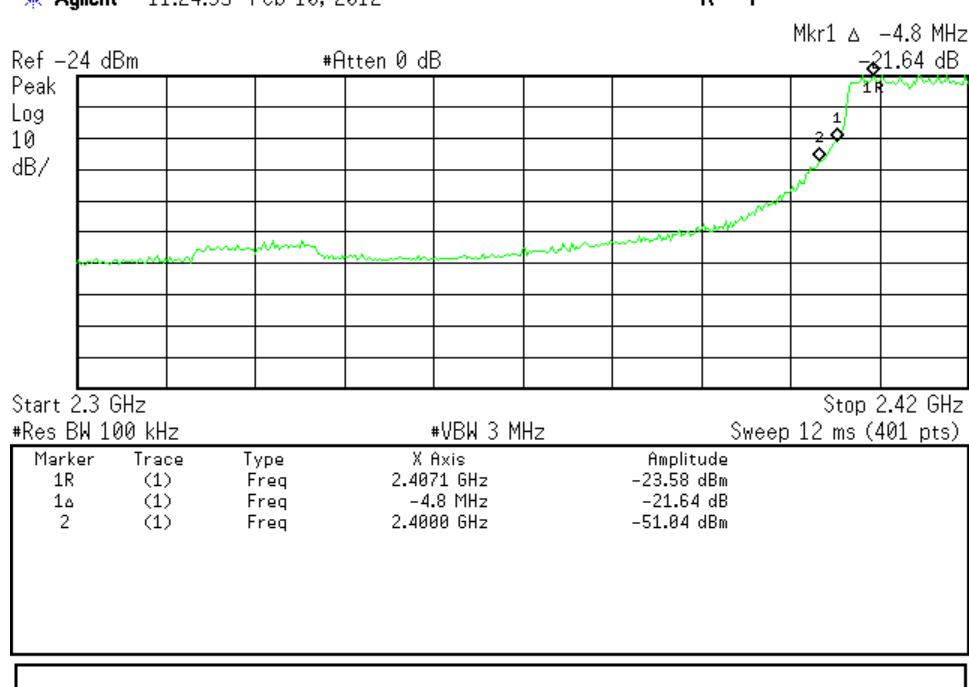
* Agilent 11:28:37 Feb 10, 2012

R T

**High Band Edge – 802.11b**

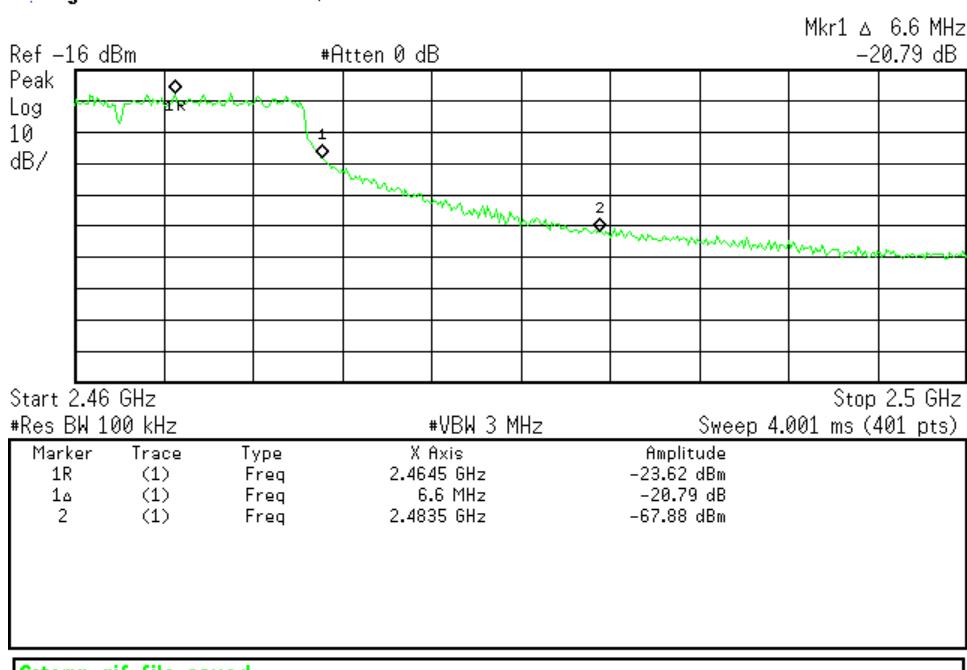
* Agilent 11:24:35 Feb 10, 2012

R T

**Low Band Edge – 802.11g**

Agilent 11:29:50 Feb 10, 2012

R T



High Band Edge – 802.11g



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Testing Cert. No. 1627-01

Radiated Spurious Emissions

LIMITS

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).
[15.247(d)]

MEASUREMENTS / RESULTS

Spurious Emissions							Work Order: L1266										
Date: 10-Feb-12			Company: Sixnet			EUT Operating Voltage/Frequency: 120/60Hz											
Engineer: John Cushing		EUT Desc: BT-6830v2		Pressure: 1010mBar													
Temp: 23.1°C							Measurement Distance: 3 m										
Frequency Range: 30-1000MHz																	
Notes: No emissions found, noise floor readings																	

Antenna Polarization (H / V)	Frequency (MHz)	Reading (dB μ V)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Reading (dB μ V/m)	---			FCC Class B		
							Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)
v	50.0	31.0	20.1	7.9	0.4	19.2	---	---	---	40.0	-20.8	Pass
v	100.0	32.3	20.0	10.2	0.5	23.0	---	---	---	43.5	-20.5	Pass
v	200.0	34.5	19.7	12.1	0.8	27.7	---	---	---	43.5	-15.8	Pass
v	300.0	36.4	19.7	13.3	0.9	30.9	---	---	---	46.0	-15.1	Pass
v	500.0	24.3	19.6	17.6	1.5	23.8	---	---	---	46.0	-22.2	Pass
v	700.0	21.0	18.9	20.1	1.6	23.8	---	---	---	46.0	-22.2	Pass

Table Result: Pass by -15.1 dB

Worst Freq: 300.0 MHz

Test Site: EMI Chamber 2
Analyzer: Asset #1328

Cable 1: Asset #1508
Preamp: Red

Cable 2: Asset #1506
Antenna: Red-Black

Cable 3: ---
Preselector: ---

Spurious Emissions										Work Order: L1266									
Date: 10-Feb-12			Company: Sixnet			EUT Operating Voltage/Frequency: 120Vac 60Hz			Pressure: 1010mBar										
Engineer: Matthew Burman		EUT Desc: BT5630-v2		Humidity: 22%		Measurement Distance: 3 m													
Frequency Range: 1-8GHz																			
Notes: RBW = 1MHz																			

Table Result: Pass by -8.5 dB

Worst Freq: 7236.0 MHz

Test Site: EMI Chamber 2
Analyzer: Gold

Cable 1: EMIR-HIGH-22
Preamp: Asset #1517

Cable 2: ---

Cable 3: ---
Antenna: Yellow Horn
Preselector: ---

Spurious Emissions										Work Order: L1266									
Date: 10-Feb-12			Company: Sixnet			EUT Operating Voltage/Frequency: 120Vac 60Hz			Pressure: 1010mBar										
Engineer: Matthew Burman		EUT Desc: BT5630-v2		Humidity: 22%		Measurement Distance: 1 m													
Frequency Range: 8-18GHz																			
Notes: RBW = 1MHz																			

Table Result: Pass by -9.4 dB

Worst Freq: 16884.0 MHz

Test Site: EMI Chamber 2
Analyzer: Gold

Cable 1: EMIR-HIGH-22
Preamp: Asset #1517

Cable 2: ---

Cable 3: ---
Antenna: Yellow Horn
Preselector: ---



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Spurious Emissions

Date: 10-Feb-12	Company: Sixnet	Work Order: L1266													
Engineer: John Cushing	EUT Desc: BT5630-v2	EUT Operating Voltage/Frequency: 120/60Hz													
Temp: 20.8°C	Humidity: 22%	Pressure: 1010mBar													
Frequency Range: 18-26.5GHz		Measurement Distance: 0.1 m													
Notes:															
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dB μ V)	Average Reading (dB μ V)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dB μ V/m)	Adjusted Avg Reading (dB μ V/m)	FCC Class B High Frequency - Peak	FCC Class B High Frequency - Average					
NO EMISSIONS FOUND	---	---	---	---	---	---	---	---	Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)	Limit (dB μ V/m)	Margin (dB)	Result (Pass/Fail)	
Table Result: --- by --- dB								Worst Freq: --- MHz							
Test Site: EMI Chamber 2		Cable 1: EMIR-HIGH-21		Antenna: 18-26.5GHz Horn		Analyzer: Rental SA#1									

Radiated Bandedge

Date: 10-Feb-12	Company: Sixnet	Work Order: L1266													
Engineer: Matthew Burman	EUT Desc: BT5630-v2	EUT Operating Voltage/Frequency: 120Vac 60Hz													
Temp: 20.8°C	Humidity: 22%	Pressure: 1010mBar													
Frequency Range: 2390-2483.5MHz		Measurement Distance: 3 m													
Notes: RBW = 1MHz															
Channel 1 = 2412MHz, Channel 11 = 2462MHz															
Antenna Polarization (H / V)	Frequency (MHz)	Peak Reading (dB μ V)	Average Reading (dB μ V)	Preamp Factor (dB)	Antenna Factor (dB/m)	Cable Factor (dB)	Adjusted Peak Reading (dB μ V/m)	Adjusted Avg Reading (dB μ V/m)	FCC Class B High Frequency - Peak	FCC Class B High Frequency - Average					
Power Settings = +15dB 802.11g - Channel 1 V 2390.0 60.4 44.2 21.7 28.1 3.3 70.1 53.9 74.0 -3.9 Pass 54.0 -0.1 Pass H 2390.0 51.1 36.2 21.7 28.1 3.3 60.8 45.9 74.0 -13.2 Pass 54.0 -8.1 Pass	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Power Settings = +21dB 802.11b - Channel 1 V 2390.0 52.2 43.9 21.7 28.1 3.3 61.9 53.6 74.0 -12.1 Pass 54.0 -0.4 Pass H 2390.0 34.8 29.6 21.7 28.1 3.3 44.5 39.3 74.0 -29.5 Pass 54.0 -14.7 Pass	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Power Settings = +15dB 802.11g - Channel 11 V 2483.5 58.4 43.4 21.8 28.4 3.3 68.3 53.3 74.0 -5.7 Pass 54.0 -0.7 Pass H 2483.5 48.7 36.4 21.8 28.4 3.3 58.6 46.3 74.0 -15.4 Pass 54.0 -7.7 Pass	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Power Settings = +21dB 802.11b - Channel 11 V 2483.5 50.6 42.1 21.8 28.4 3.3 60.5 52.0 74.0 -13.5 Pass 54.0 -2.0 Pass H 2483.5 44.3 38.3 21.8 28.4 3.3 54.2 48.2 74.0 -19.8 Pass 54.0 -5.8 Pass	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Table Result: Pass by -0.1 dB		Worst Freq: 2390.0 MHz													
Test Site: 1DCC-OATS-3M-I		Cable 1: EMIR-HIGH-22		Cable 2: ---		Cable 3: ---		Antenna: Yellow Horn		Preselector: ---					
Analyzer: Gold															



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Testing Cert. No. 1627-01

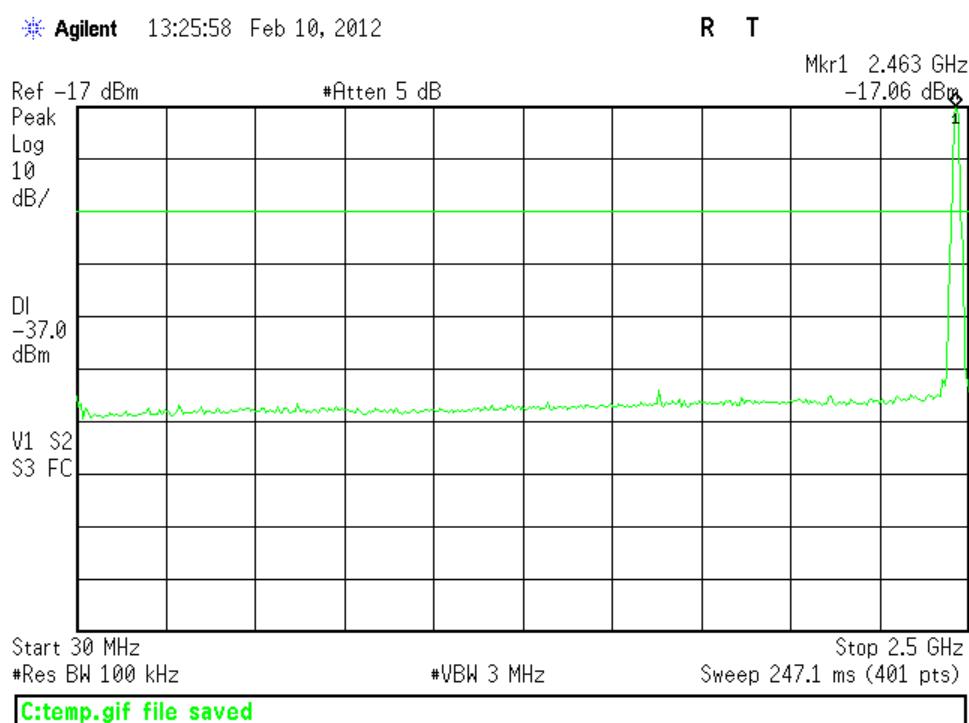
Conducted Spurious Emissions

LIMITS

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth that contains the highest level of desired power...

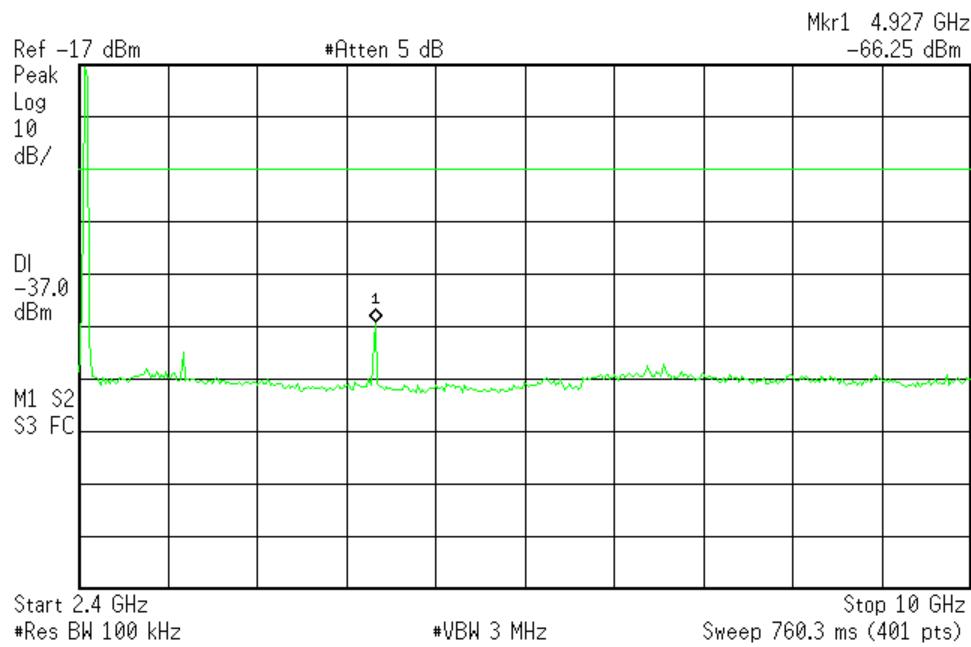
[15.247(d)]

MEASUREMENTS / RESULTS



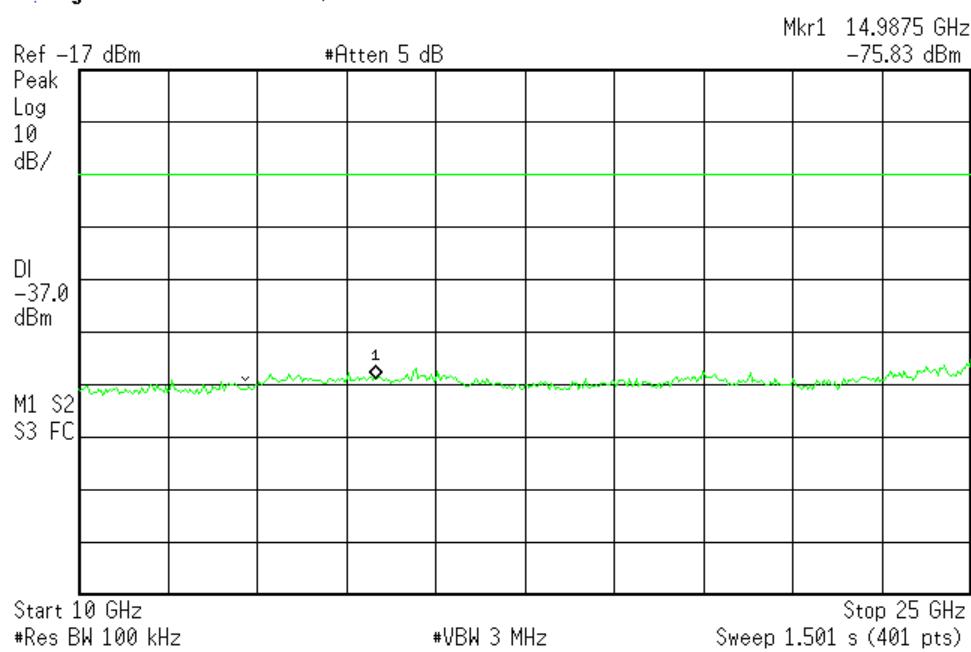
Agilent 13:26:59 Feb 10, 2012

R T



Agilent 13:27:33 Feb 10, 2012

R T



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Power Spectral Density

LIMIT

...the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.
[15.247(e)]

MEASUREMENTS / RESULTS

Work Order: L1266

Company: Sixnet LLC

Date: 2/10/2012

Test Engineer: Matthew Burman

Temperature: 21.3°C

Humidity: 21%

Pressure: 1010mbar

Spectrum Analyzer: Gold

Attenuator: PE7019

Cable: EMIR-High-22

Power Spectral Density

15.247(e)

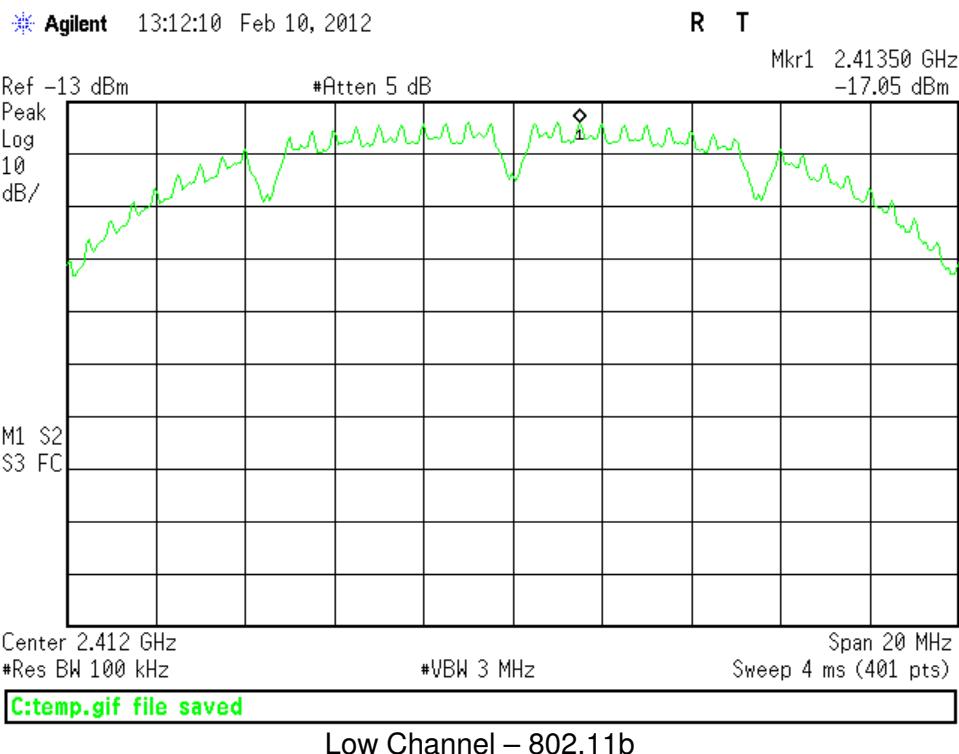
Modulation Type	Frequency (MHz)	Peak Power Spectral Density			
		Reading (dBm)	Adjusted Reading (dBm)	Limit (dBm)	Results
B	2412	-17.05	-9.55	8	Pass
B	2437	-16.4	-8.9	8	Pass
B	2462	-17.04	-9.54	8	Pass
G	2412	-23.76	-16.26	8	Pass
G	2437	-23.52	-16.02	8	Pass
G	2462	-23.45	-15.95	8	Pass

*Adjusted reading = raw reading + attenuator factor (19.8dB) + cable factor + scaling factor

Scaling factor = $10\log(3\text{kHz} / 100\text{kHz}) = -15.2\text{dB}$

Adjusted = raw + 19.4 + 3.3 -15.2

PLOTS



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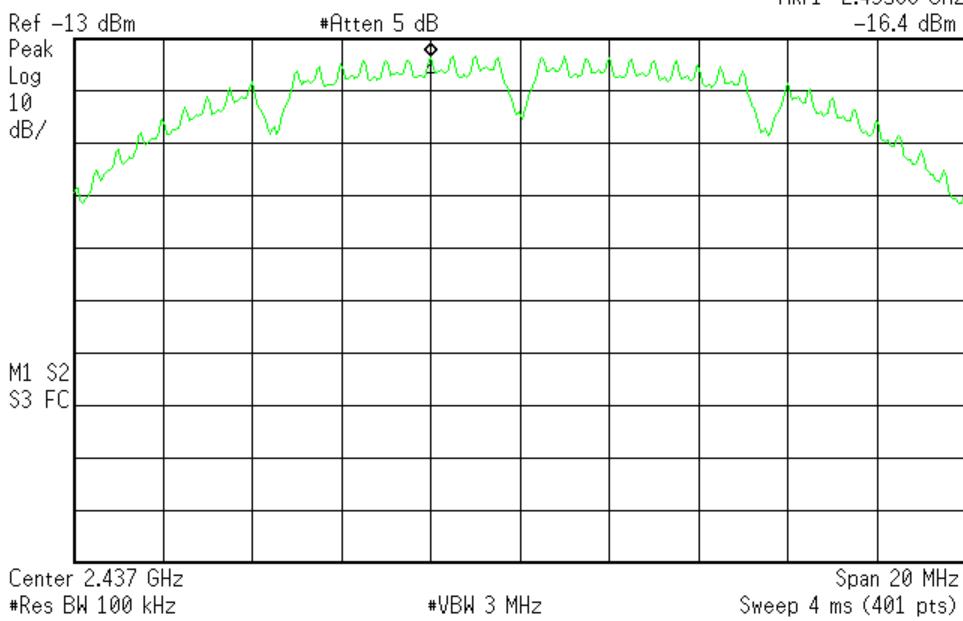


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Testing Cert. No. 1627-01

Agilent 13:13:28 Feb 10, 2012

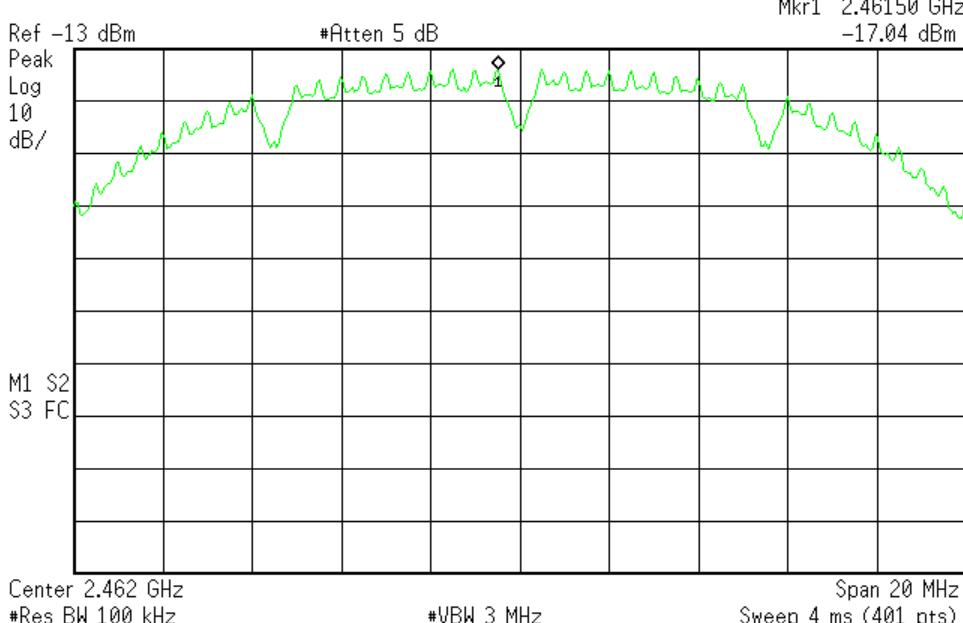
R T

Mkr1 2.43500 GHz
-16.4 dBm

Mid Channel – 802.11b

Agilent 13:14:22 Feb 10, 2012

R T

Mkr1 2.46150 GHz
-17.04 dBm

High Channel – 802.11b



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Agilent 12:00:33 Feb 10, 2012

R T

Mkr1 2.40575 GHz
-23.76 dBmRef -13 dBm
Peak Log 10 dB/

#Atten 5 dB

V1 S2
S3 FCCenter 2.412 GHz
#Res BW 100 kHz

#VBW 3 MHz

Span 20 MHz
Sweep 4 ms (401 pts)

C:\temp.gif file saved

Low Channel – 802.11g

Agilent 11:57:54 Feb 10, 2012

R T

Mkr1 2.43075 GHz
-23.52 dBmRef -13 dBm
Peak Log 10 dB/

#Atten 5 dB

V1 S2
S3 FCCenter 2.437 GHz
#Res BW 100 kHz

#VBW 3 MHz

Span 20 MHz
Sweep 4 ms (401 pts)

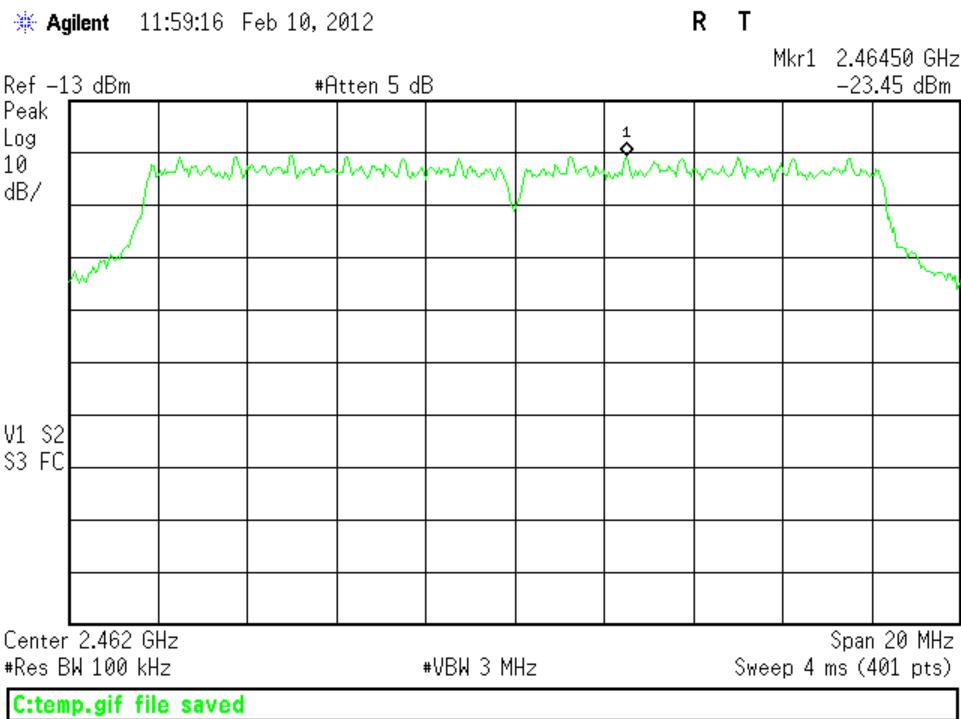
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Mid Channel – 802.11g



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AC Line Conducted Emissions

LIMITS

Frequency of emission (MHz)	Quasi-peak limit (dB μ V)	Average limit (dB μ V)
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

[47 CFR 15.207(a)]

MEASUREMENTS / RESULTS

AC Mains Conducted Emissions

AC Mains Conducted Emissions		Company: Sixnet	Work Order: L1266							
Date: 18-Oct-11	Engineer: Andrew Chin	EUT Desc: BT-5630v2	Test Site: CEMI 3							
Temp: 20.3°C		Humidity: 33%	Pressure: 1002mBar							
Notes:										
Measurement Device: Asset #1492 LISN		EUT Operating Voltage/Frequency: 110V/60Hz								
Range: 0.15-30MHz		Spectrum Analyzer: Black								
Frequency (MHz)	Q.P. Readings		Ave. Readings		Impedance Factor (dB)	FCC/CISPR B		FCC/CISPR B		Overall Result (Pass/Fail)
	QP1 (dB μ V)	QP2 (dB μ V)	AV1 (dB μ V)	AV2 (dB μ V)		qp Limit (dB μ V)	qp Margin dB	AVE Limit (dB μ V)	AVE Margin dB	
0.59	10.1	10.2	7.7	7.8	20.1	56.0	-25.7	46.0	-18.1	Pass
0.89	6.9	6.7	2.9	3.0	20.1	56.0	-29.0	46.0	-22.9	Pass
1.18	6.1	5.8	1.6	1.9	20.1	56.0	-29.8	46.0	-24.0	Pass
20.95	13.6	12.2	9.5	11.4	20.4	60.0	-26.0	50.0	-18.2	Pass
21.25	13.9	11.5	9.5	11.2	20.4	60.0	-25.7	50.0	-18.4	Pass
21.55	13.1	11.4	8.3	10.1	20.4	60.0	-26.5	50.0	-19.5	Pass
Table Result:		Pass	by	-18.10 dB	Worst Freq:		0.59 MHz			

AC Mains Conducted Emissions

Date: 18-Oct-11	Company: Sixnet	Work Order: L1266								
Engineer: Andrew Chin	EUT Desc: BT-5830v2	Test Site: CEMI 3								
Temp: 20.3°C	Humidity: 33%	Pressure: 1002mBar								
Notes:										
Measurement Device: Asset #1492 LISN		EUT Operating Voltage/Frequency: 110V/60Hz								
Range: 0.15-30MHz		Spectrum Analyzer: Black								
Frequency (MHz)	Q.P. Readings		Ave. Readings		Impedance Factor (dB)	FCC/CISPR B		FCC/CISPR B		Overall Result (Pass/Fail)
	QP1 (dB μ V)	QP2 (dB μ V)	AV1 (dB μ V)	AV2 (dB μ V)		qp Limit (dB μ V)	qp Margin dB	AVE Limit (dB μ V)	AVE Margin dB	
	0.59	10.1	10.2	7.7		7.8	20.1	56.0	-25.7	
0.89	6.9	6.7	2.9	3.0	20.1	56.0	-29.0	46.0	-22.9	Pass
1.18	6.1	5.8	1.6	1.9	20.1	56.0	-29.8	46.0	-24.0	Pass
20.95	13.6	12.2	9.5	11.4	20.4	60.0	-26.0	50.0	-18.2	Pass
21.25	13.9	11.5	9.5	11.2	20.4	60.0	-25.7	50.0	-18.4	Pass
21.55	13.1	11.4	8.3	10.1	20.4	60.0	-26.5	50.0	-19.5	Pass
Table Result: Pass		by	-18.10 dB		Worst Freq: 0.59 MHz					

No emissions were found related to the radio portion of the device; readings are taken at noise floor. For verification AC line conducted emissions data, please refer to work order L0551 or L0552 as appropriate.

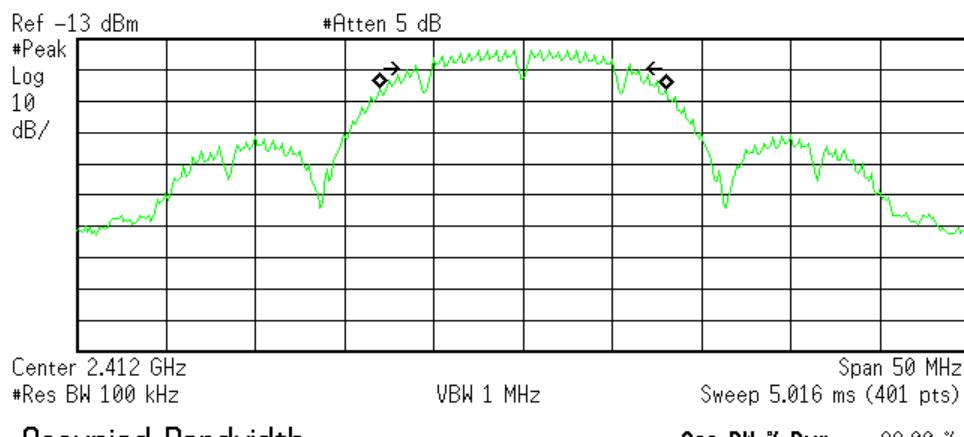
Occupied Bandwidth

REQUIREMENT

When an occupied bandwidth is not specified in the applicable RSS, the transmitted signal bandwidth to be reported is to be its 99% emission bandwidth, as calculated or measured. [RSS-GEN 4.6.1]

Agilent 13:20:58 Feb 10, 2012

R T



Transmit Freq Error -18.057 kHz
x dB Bandwidth 12.138 MHz

C:\temp.gif file saved

Low Channel – 802.11b



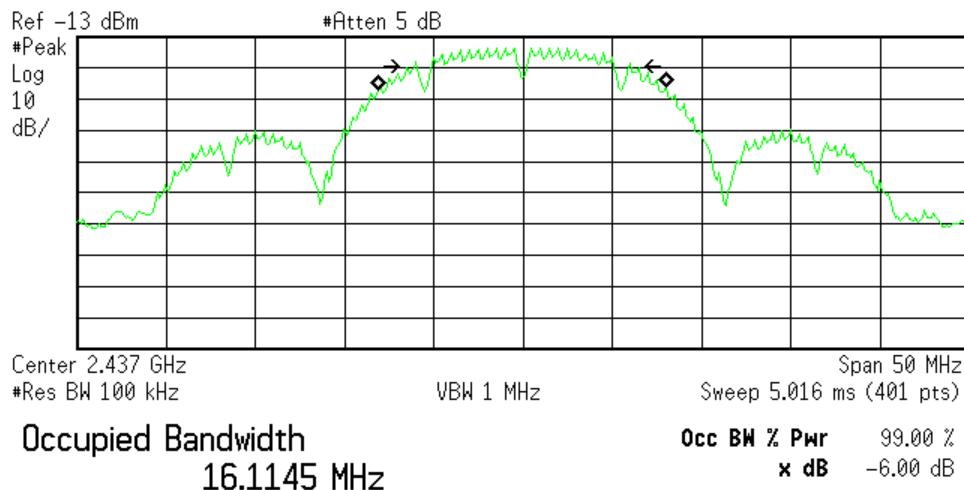
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* Agilent 13:20:12 Feb 10, 2012

R T



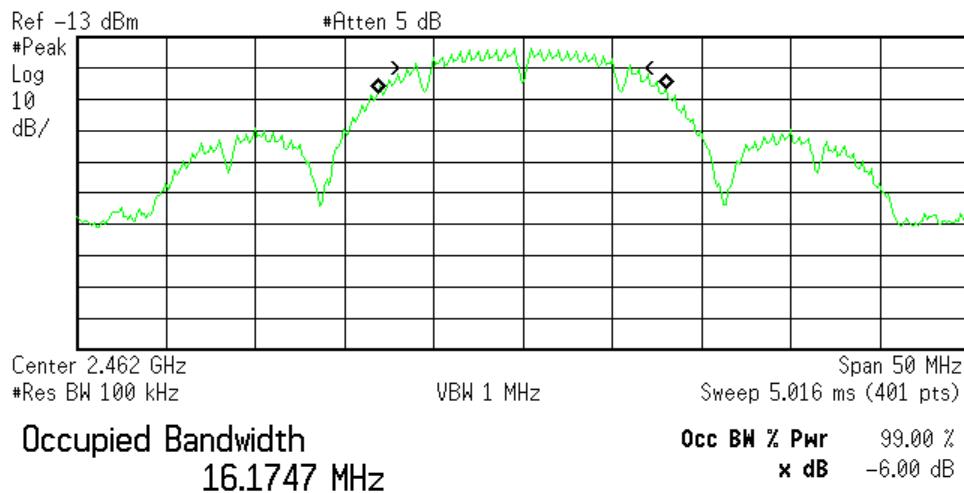
Transmit Freq Error -38.204 kHz
 x dB Bandwidth 12.156 MHz

C:\temp.gif file saved

Mid Channel – 802.11b

* Agilent 13:19:04 Feb 10, 2012

R T



Transmit Freq Error -61.858 kHz
 x dB Bandwidth 12.128 MHz

C:\temp.gif file saved

High Channel – 802.11b

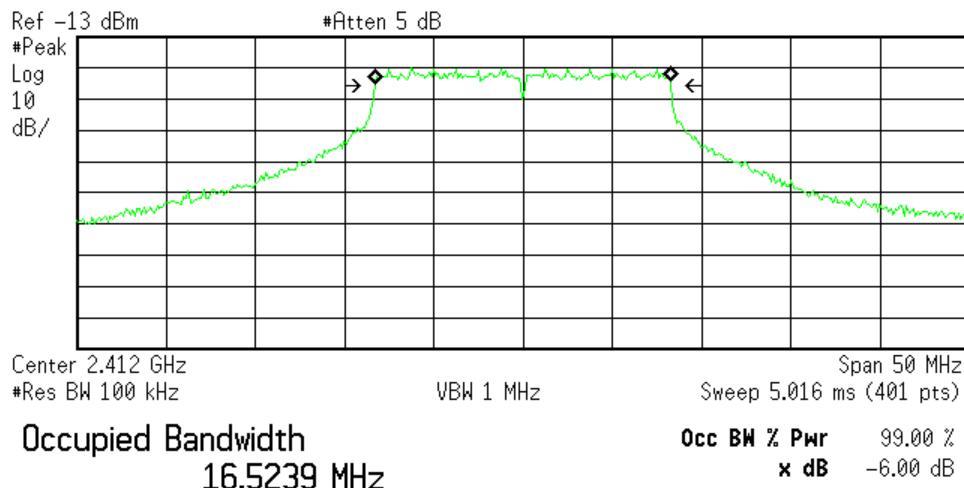
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Agilent 13:22:52 Feb 10, 2012

R T



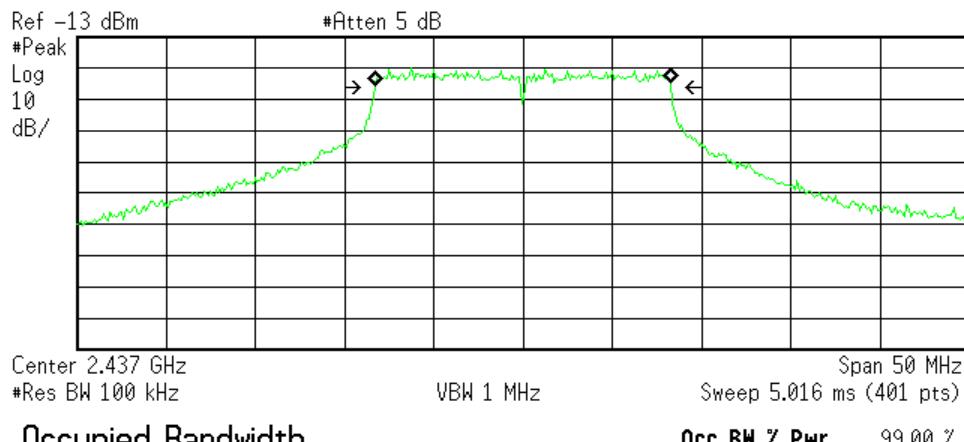
Transmit Freq Error -11.858 kHz
x dB Bandwidth 16.602 MHz

C:\temp.gif file saved

Low Channel – 802.11g

Agilent 13:23:33 Feb 10, 2012

R T



Transmit Freq Error -13.010 kHz
x dB Bandwidth 16.607 MHz

C:\temp.gif file saved

Mid Channel – 802.11g

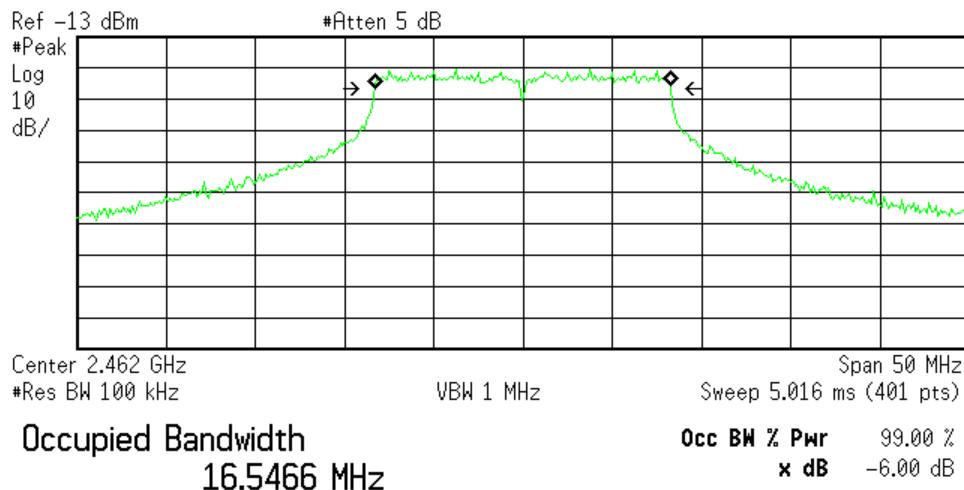


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Agilent 13:24:13 Feb 10, 2012

R T



Transmit Freq Error -24.079 kHz
x dB Bandwidth 16.590 MHz

C:\temp.gif file saved

High Channel – 802.11g



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Measurement Uncertainty

The listed uncertainties are the worst case uncertainty for the entire range of measurement. Please note that the uncertainty values are provided for informational purposes only and are not used in determining the PASS/FAIL results.

Measurement	Expanded Uncertainty k=2	Maximum allowable uncertainty
Radiated Emissions (30-1000MHz)		
NIST	5.6dB	N/A
CISPR	4.6dB	5.2dB (Ucispqr)
Radiated Emissions (1-26.5GHz)	4.6dB	N/A
Radiated Emissions (above 26.5GHz)	4.9dB	N/A
Magnetic Radiated Emissions	5.6dB	N/A
Conducted Emissions		
NIST	3.9dB	N/A
CISPR	3.6dB	3.6dB (Ucispqr)
Telco Conducted Emissions (Current)	2.9dB	N/A
Telco Conducted Emissions (Voltage)	4.4dB	N/A
Electrostatic Discharge	11.5%	N/A
Radiated RF Immunity (Uniform Field)	1.6dB	N/A
Electrical Fast Transients	23.1%	N/A
Surge	23.1%	N/A
Conducted RF Immunity	3dB	N/A
Magnetic Immunity	12.8%	N/A
Dips and Interrupts	2.3V	N/A
Harmonics	3.5%	N/A
Flicker	3.5%	N/A
Radio frequency (@ 2.4GHz)	3.23×10^{-8}	1×10^{-7}
RF power, conducted	0.40dB	0.75dB
Maximum frequency deviation:		
• Within 300Hz and 6kHz of audio frequency / Within 6kHz and 25kHz of audio frequency	3.4% 0.3dB	5% 3dB
Adjacent channel power	1.9dB	3dB
Conducted spurious emission of transmitter, valid up to 12.75GHz	2.39dB	3dB
Conducted emission of receivers	1.3dB	3dB
Radiated emission of transmitter, valid up to 26.5GHz	3.9dB	6dB
Radiated emission of transmitter, valid up to 80GHz	3.3dB	6dB
Radiated emission of receiver, valid up to 26.5GHz	3.9dB	6dB
Radiated emission of receiver, valid up to 80GHz	3.3dB	6dB
Humidity	2.37%	5%
Temperature	0.7°C	1.0 °C
Time	4.1%	10%
RF Power Density, Conducted	0.4dB	3dB
DC and low frequency voltages	1.3%	3%
Voltage (AC, <10kHz)	1.3%	2%
Voltage (DC)	0.62%	1%
The above reflects a 95% confidence level		



Test Equipment Used

Rev: 17-Oct-2011

	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Spectrum Analyzers / Receivers /Preselectors							
Black	9kHz-12.8GHz	8596E	Agilent	3710A00944	337	I	12-Nov-2011
SA EMI Chamber (1328)	9kHz-13.2 GHz	E4405B	Agilent	MY44210241	1328	I	4-Mar-2012
Rental SA #5	9kHz-26.5 GHz	E4407B	Agilent	MY44220066	1491	I	17-Mar-2012
Rental SA #1 (Brown)	9kHz-26.5GHz	E4407B	Agilent	SG44210511	1510	I	12-Apr-2012
LISNs/Measurement Probes	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
230VAC LISN Asset 1492	10kHz-50MHz	9252-50-R-24-BNC	Solar	84713	1492	I	19-Apr-2012
Radiated Emissions Sites	FCC Code	IC Code	VCCI Code			Cat	Calibration Due
EMI Chamber 2	719150	2762A-7	R-3033, G-107			I	12-Mar-2013
Conducted Test Sites (Mains / Telco)	FCC Code		VCCI Code			Cat	Calibration Due
CEMI 3	719150		C-3362, T-1577			III	NA
Preamps /Couplers Attenuators / Filters	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Red	0.009-2000MHz	ZFL-1000-LN	CS	N/A	798	II	28-Mar-2012
Brown	1-18GHz	CS	CS	N/A	1523	II	1-Aug-2012
HF (Yellow)	18-26.5GHz	AFS4-18002650-60-8P-4	CS	467559	1266	I	6-Oct-2012
Antennas	Range	MN	Mfr	SN	Asset	Cat	Calibration Due
Red-Black BiLog	30-2000MHz	JB1	Sunol	A091604-2	1106	I	3-Dec-2012
Yellow Horn	1-18GHz	3115	EMCO	9608-4898	37	I	17-Jun-2013
HF (White) Horn	18-26.5GHz	801-WLM	WaveLine	758	758	I	Verify before Use
Meteorological Meters		MN	Mfr	SN	Asset	Cat	Calibration Due
Temp./Humidity/Atm. Pressure Gauge		7400 Perception II	Davis	N/A	965	I	4-Apr-2013
Thermohygrometer		35519-044	Control Company	72457628	1337	II	8-Jan-2012
CHAMBER2 Thermohygrometer		35519-044	Control Company	72457639	1347	II	19-Aug-2013
Cables	Range		Mfr			Cat	Calibration Due
Asset #1506	9kHz - 18GHz		Florida RF			II	19-Aug-2012
Asset #1508	9kHz - 18GHz		Florida RF			II	9-Apr-2012
CEMI-03	9kHz - 2GHz		C-S			II	16-Sep-2012
REMI-High-21	9kHz - 26.5GHz		C-S			II	18-Jan-2012

All equipment is calibrated using standards traceable to NIST or other nationally recognized calibration standard.



Product Documentation

The following documentation has been provided by the client for inclusion in this report.



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Conditions Of Testing

[Bureau Veritas Consumer Products Services, Inc., a Massachusetts corporation], and/or its affiliates (collectively, the "Company") will conduct, at the request of the Submitter ("Client"), the tests specified on the submitted Test Request Form or equivalent in accordance with, and subject to, the following terms and conditions (collectively, "Conditions"):

1. All orders for tests are subject to acceptance by the Company, and no order will constitute a binding commitment of the Company unless and until such order is accepted by it, as evidenced by the issuance of a written report ("Test Report") by the Company. The Test Report is issued solely by the Company, is intended for the exclusive use of Client and shall not be published, used for advertising purposes, copied or replicated for distribution to any other person or entity or otherwise publicly disclosed without the prior written consent of the Company. By submitting a request for services to the Company, Client consents to the disclosure to accreditation bodies of those records of Client relevant to the accreditation body's assessment of the Company's competence and compliance with relevant accreditation criteria. The Company shall not be liable for any loss or damage whatsoever resulting from the failure of the Company to provide its services within any time period for completion estimated by the Company. If Client anticipates using the Test Report in any legal proceeding, arbitration, dispute resolution forum or other proceeding, it shall so notify the Company prior to submitting the Test Report in such proceeding. The Company has no obligation to provide a fact or expert witness at such proceeding unless the Company agrees in advance to do so for a separate and additional fee.
2. The Test Report will set forth the findings of the Company solely with respect to the test samples identified therein. Unless specifically and expressly indicated in the Test Report, the results set forth in such Test Report are not intended to be indicative or representative of the quality or characteristics of the lot from which a test sample is taken, and Client shall not rely upon the Test Report as being so indicative or representative of the lot or of the tested product in general. The Test Report will reflect the findings of the Company at the time of testing only, and the Company shall have no obligation to update the Test Report after its issuance. The Test Report will set forth the results of the tests performed by the Company based upon the written information provided to the Company. The Test Report will be based solely on the samples and written information submitted to the Company by Client, and the Company shall not be obligated to conduct any independent investigation or inquiry with respect thereto.
3. The Company may, in its sole discretion, destroy samples which have been furnished to the Company for testing and which have not been destroyed in the course of testing. The Company may delegate the performance of all or a portion of the services contemplated hereunder to an affiliate, agent or subcontractor of the Company, and Client consents to such delegation.
4. These Conditions and the Test Report represent the entire understanding of the parties hereto with respect to the subject matter hereof and of the Test Report, and no modification, variance or extrapolation with respect thereto shall be permitted without the prior written consent of the Company.
5. The names, service marks, trademarks and copyrights of the Company and its affiliates, including the names "BUREAU VERITAS," "BUREAU VERITAS CONSUMER PRODUCTS SERVICES," "BVCPS", "MTL", "ACTS", "MTL-ACTS" and CURTIS-STRAUS (collectively, the "Marks") are and shall remain the sole property of the Company or its affiliates and shall not be used by Client except solely to the extent that Client obtains the prior written approval of the Company and then only in the manner prescribed by the Company. Client shall not contest the validity of the Marks or take any action that might impair the value or goodwill associated with the Marks or the image or reputation of the Company or its affiliates.
6. Payment in full shall be due 30 days after the date of invoice. Interest shall be due on overdue amounts from the due date until paid at an interest rate of 1.5% per month or, if less, the maximum rate permitted by law. The Company reserves the right, at any time and from time to time, to revoke any credit extended to Client. Client shall reimburse the Company for any costs it incurs in collecting past due amounts, including court costs and fees and expenses of attorneys and collection agencies. The Test Report may not be used or relied upon by Client if and for so long as Client fails to pay when due any invoice issued by the Company or any affiliate of it to Client or any affiliate or subsidiary of Client together with interest and penalties, if any, accrued thereon.
7. The Company disclaims any and all responsibility or liability arising out of or in connection with e-mail transmissions of such information.
8. Client understands and agrees that the Company is neither an insurer nor a guarantor, that the Company does not take the place of Client or any designer, manufacturer, agent, buyer, distributor or transportation or shipping company, and that the Company disclaims all liability in such capacities. Client further understands that if it seeks assurance against loss or damage, it should obtain appropriate insurance.
9. Client agrees that the Company, by providing the services, does not take the place of Client nor any third party, nor does the Company release them from any of their obligations, nor does the Company otherwise assume, abridge, abrogate or undertake to discharge any duty of any third party to Client or any duty of Client or any third party to any other third party, and Client will not release any third party from its obligations and duties with respect to the tested goods.
10. Client shall, on a timely basis, (a) provide adequate instructions to the Company in order to enable the Company to perform properly its services, (b) provide, or cause Client's suppliers and contractors to provide, the Company with all documents necessary to enable the Company to perform its services, (c) furnish the Company with all relevant information regarding Client's intended use and purposes of the tested goods, (d) advise the Company of essential dates and deadlines relevant to the tested goods and (e) fully exercise all rights and remedies available to Client against third parties in respect of the tested goods.
11. The Company shall undertake due care and ordinary skill in the performance of its services to Client, and the Company shall accept responsibility only were such skill has not been exercised and, even in such event, only to the extent of the limitation of liability set forth herein.
12. If Client desires to assert a claim arising from or relating to (i) the performance, purported performance or non-performance of any services by the Company or (ii) the sale, resale, manufacture, distribution or use of any tested goods, it must submit that claim to the Company in a writing that sets forth with particularity the basis for such claim within 60 days from discovery of the potential claim and not more than six months after the date of issuance of the Test Report to Client. Client waives any and all such claims including, without limitation, claims that the Test Report is inaccurate, incomplete or misleading or that additional or different testing is required, unless and then only to the extent that Client submits a written claim to the Company within both such time periods.



13. CLIENT SHALL, EXCEPT TO THE EXTENT OF COMPANY'S LIABILITY TO CLIENT HEREUNDER (WHICH IN NO EVENT SHALL EXCEED THE LIMITATION OF LIABILITY HEREIN), HOLD HARMLESS AND INDEMNIFY THE COMPANY, ITS AFFILIATES AND THEIR RESPECTIVE DIRECTORS, OFFICERS, EMPLOYEES, AGENTS AND SUBCONTRACTORS AGAINST ALL ACTUAL OR ALLEGED THIRD PARTY CLAIMS FOR LOSS, DAMAGE OR EXPENSE OF WHATSOEVER NATURE AND HOWSOEVER ARISING FROM OR RELATING TO (i) THE PERFORMANCE, PURPORTED PERFORMANCE OR NON-PERFORMANCE OF ANY SERVICES BY THE COMPANY OR (ii) THE SALE, RESALE, MANUFACTURE, DISTRIBUTION OR USE OF ANY TESTED GOODS.

14. EXCEPT AS MAY OTHERWISE BE EXPRESSLY AGREED TO IN WRITING BY THE COMPANY AND NOTWITHSTANDING ANY PROVISION TO THE CONTRARY CONTAINED HEREIN OR IN ANY TEST REPORT, NO WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, IS MADE.

15. (A) IN NO EVENT WHATSOEVER SHALL THE COMPANY BE LIABLE FOR ANY CONSEQUENTIAL, SPECIAL, INCIDENTAL, EXEMPLARY OR PUNITIVE DAMAGES IN CONNECTION WITH, RELATING TO OR ARISING OUT OF THE TEST REPORT OR THE SERVICES PROVIDED BY THE COMPANY HEREUNDER, INCLUDING WITHOUT LIMITATION LOSS OF OR DAMAGE TO PROPERTY; LOSS OF INCOME, PROFIT OR USE; OR ANY CLAIMS OR DEMANDS MADE AGAINST CLIENT OR ANY OTHER PERSON BY ANY THIRD PARTY IN CONNECTION WITH, RELATING TO OR ARISING OUT OF THE SERVICES PROVIDED BY THE COMPANY HEREUNDER.

(B) NOTWITHSTANDING ANY PROVISION TO THE CONTRARY CONTAINED HEREIN, AND IN RECOGNITION OF THE RELATIVE RISKS AND BENEFITS TO CLIENT AND THE COMPANY ASSOCIATED WITH THE TESTING SERVICES CONTEMPLATED HEREBY, THE RISKS HAVE BEEN ALLOCATED SUCH THAT UNDER NO CIRCUMSTANCES WHATSOEVER SHALL THE LIABILITY OF THE COMPANY TO CLIENT OR ANY THIRD PARTY IN RESPECT OF ANY CLAIM FOR LOSS, DAMAGE OR EXPENSE, OF WHATSOEVER NATURE OR MAGNITUDE, AND HOWSOEVER ARISING, EXCEED AN AMOUNT EQUAL TO FIVE (5) TIMES THE AMOUNT OF THE FEES PAID TO THE COMPANY FOR THE SPECIFIC SERVICES WHICH GAVE RISE TO SUCH CLAIM OR U.S.\$10,000, WHICHEVER IS THE LESSER AMOUNT.

16. The Company shall not be liable for any loss or damage resulting from any delay or failure in performance of its obligations hereunder resulting directly or indirectly from any event of force majeure or any event outside the control of the Company. If any such event occurs, the Company may immediately cancel or suspend its performance hereunder without incurring any liability whatsoever to Client.

17. Company's services, including these Conditions, shall be governed by, and construed in accordance with, the local laws of the country where the Company performs the tests or, in the case of tests performed in the United States of America, the laws of Massachusetts without regard to conflicts of laws principles. If any aspect(s) of these Conditions is found to be illegal or unenforceable, the validity, legality and enforceability of all remaining aspects of these Conditions shall not in any way be affected or impaired thereby. Any proceeding related to the subject matter hereof shall be brought, if at all, in the courts of the country where the Company performs the tests or, in the case of tests performed in the United States of America, in the courts of Massachusetts. Client waives the right to interpose any counterclaim or setoffs of any nature in any litigation arising hereunder.

Rev.160009121(2) #684340 v13CS



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