TESTING
CERT #803.01, 803.02, 803.05, 803.06

ADDENDUM TO BENTLY NEVADA LLC TEST REPORT FC09-106A

FOR THE

ESSENTIAL INSIGHT.MESH (185300), WSIM (185310-01) AND REPEATER (185350-01)

FCC PART 15 SUBPART C SECTION 15.247 AND RSS-210 ISSUE 7 (2007)

TESTING

DATE OF ISSUE: SEPTEMBER 16, 2009

PREPARED FOR:

Bently Nevada LLC
1631 Bently Parkway South
Minden, NV 89423

PREPARED BY:

Bonnie Robinson
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

P.O. No.: 900005991
W.O. No.: 88568

Date of test: June 22-24, 2009

Report No.: FC09-106B

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ADMINISTRATIVE INFORMATION

DATE OF TEST: June 22-24, 2009

DATE OF RECEIPT: June 22, 2009

REPRESENTATIVE: Lane Killion

MANUFACTURER:
Bently Nevada LLC
1631 Bently Parkway South
Minden, NV 89423

TEST LOCATION:
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

TEST METHOD: ANSI C63.4 (2003), RSS-210 Issue 7 (2007) and RSS-GEN Issue 2 (2007)

PURPOSE OF TEST:
Original Report: To perform the testing of the Essential Insight.mesh (185300), wSIM (185310-01) and Repeater (185350-01) with the requirements for FCC Part 15 Subpart B Section 15.247 devices.
Addendum A: Data correction FCC15.247 (d) Radiated Spurious Emissions and Bandedge section.
Addendum B: This addendum is to list the correct FCC Part 15 Subpart, which is Subpart C, not Subpart B. **Purpose of Test** now should state: To perform the testing of the Essential Insight.mesh (185300), wSIM (185310-01) and Repeater (185350-01) with the requirements for FCC Part 15 Subpart C Section 15.247 devices. Updated 15.247(b) power output table with no new testing.

APPROVALS

QUALITY ASSURANCE:

Steve Behm, Director of Engineering Services & Quality Assurance

TEST PERSONNEL:

Mike Wilkinson, Senior EMC Engineer/Lab Manager

SUMMARY OF RESULTS

Test	Specification/Method	Results
Occupied Bandwidth	FCC 15.247(a)(2) RSS-210 Issue 7 (2007) and RSS-GEN Issue 2 (2007)	Pass
RF Output Power	FCC 15.247 (b)(3)	Pass
Spurious Emissions	FCC 15.247(d)	Pass
Bandedge	FCC 15.247(d)	Pass
Peak Power Spectral Density	FCC 15.247 (e)	Pass
Site File No.	FCC 784962 IC 3082A-1	

CONDITIONS DURING TESTING

No modifications to the EUT were necessary during testing.

FCC 15.31(m) Number Of Channels
This device was tested on three channels.

FCC 15.33(a) Frequency Ranges Tested
15.247 Radiated Emissions: 9 kHz – 24 GHz

FCC 15.203 Antenna Requirements
The antenna is unique; therefore the EUT complies with Section 15.203 of the FCC rules.

EUT Operating Frequency
The EUT was operating at 2405-2480 MHz.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

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

The following models have been tested by CKC Laboratories: **Essential Insight.mesh (185300) and wSIM (185310-01)**

The manufacturer states that the following additional models are identical electrically to the one which was tested, or any differences between them do not affect their EMC characteristics, and therefore they meet the level of testing equivalent to the tested models. **Repeater (185350-01)**

EQUIPMENT UNDER TEST

Essential Insight.mesh
Manuf: Bently Nevada LLC
Model: 185300
Serial: 10.1C.DF

Essential Insight.mesh wSIM
Manuf: Bently Nevada LLC
Model: 185310-01
Serial: 10.1C.DF

PERIPHERAL DEVICES

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

Thermocouple
Manuf: Bently Nevada LLC
Model: Type K TC
Serial: NA

Thermocouple
Manuf: Bently Nevada LLC
Model: Type J TC
Serial: NA

Power Supply
Manuf: HP
Model: E3611A
Serial: 3125K01021

Accelerometer (2 each)
Manuf: Bently Nevada LLC
Model: 200157
Serial: G09C02PB & G09C02ME

Remote Computer
Manuf: Dell
Model: Latitude E6400
Serial: P00627027

EUT Serial Communication Test Fixture
Manuf: Bently Nevada LLC
Model: NA
Serial: NA

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.

REPORT OF EMISSIONS MEASUREMENTS

TESTING PARAMETERS

TEMPERATURE AND HUMIDITY DURING TESTING

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

The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula. This reading was then compared to the applicable specification limit.

SAMPLE CALCULATIONS		
	Meter reading	(dBµV)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. The following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used. When conducted emissions testing was performed, a 10 dB external attenuator was used with internal offset correction in the analyzer.

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the highest readings, this is indicated as a "QP" or an "Ave" on the appropriate rows of the data sheets. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer/receiver readings recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the measuring device called "peak hold," the measuring device had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the quasi-peak detector.

Average

For certain frequencies, average measurements may be made using the spectrum analyzer/receiver. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point the measuring device is set into the linear mode and the scan time is reduced.

FCC 15.247(a)(2)/RSS-210 OCCUPIED BANDWIDTH

Test Location: CKC Laboratories, Inc. •5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209 966-5240

Customer: **Bently Nevada LLC**
Specification: **15.247(a)(2)/RSS GEN**
Work Order #: **88568** Date: 6/23/2009
Test Type: **Radiated Scan** Time: 11:37:53
Equipment: **Essential Insight.mesh** Sequence#: 3
Manufacturer: Bently Nevada LLC Tested By: Mike Wilkinson
Model: 185300
S/N: 10.1C.DF

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	08/07/2008	08/07/2010	02660
EMCO 3115 Horn Antenna	9006-3413	06/06/2008	06/06/2010	AN00327
Cable, Andrews Hardline HF-005-20	NA	09/04/2007	09/04/2009	ANP04274
Andrew-25'	N/A	05/19/2009	05/19/2011	AN01012
Cable, 10' 2.92mm 40 GHz	na	06/10/2009	06/10/2011	ANP01403
HP 8449B Preamp	3008A00301	11/13/2008	11/13/2010	2010

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

Function	Manufacturer	Model #	S/N
Essential Insight.mesh*	Bently Nevada LLC	185300	10.1C.DF
Essential Insight.mesh wSIM	Bently Nevada LLC	185300	10.1C.DF

Support Devices:

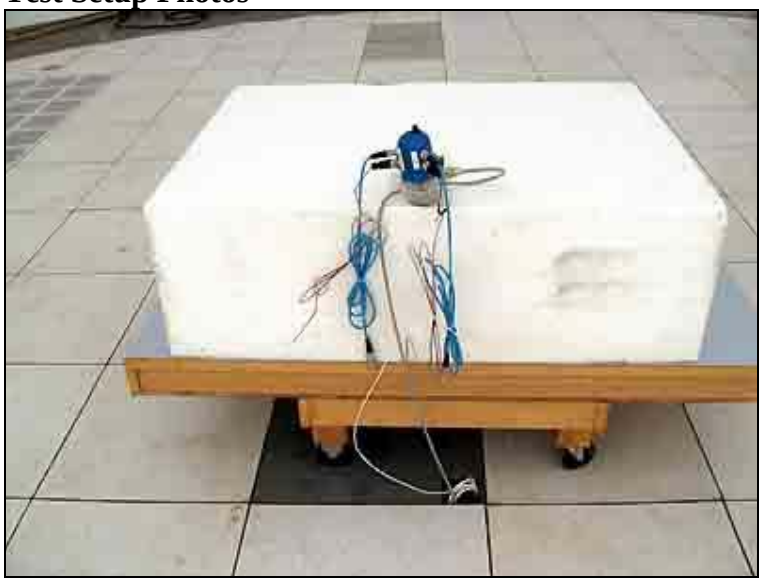
Function	Manufacturer	Model #	S/N
Thermocouple	Bently Nevada LLC	Type K TC	NA
Thermocouple	Bently Nevada LLC	Type J TC	NA
Accelerometer	Bently Nevada LLC	200157	G09C02ME
Accelerometer	Bently Nevada LLC	200157	G09C02PB
Power Supply	HP	E3611A	3125K01021

Test Conditions / Notes:

Standard used was 15.247(a)(2)/RSS GEN OBW. EUT is an 802.15.4 transceiver and is operating on the Low, Mid, and High channels as noted in the datasheet readings. The transceiver is transmitting continuously with modulation EUT was placed 80cm from the ground plane on a 40cm Styrofoam block. EUT has 4 transducer ports. Ports 1 & 3 have accelerometers with 2 meter cables attached. Ports 2 & 4 have 2.5 meter long thermocouples attached. EUT is battery operated .A remotely located external DC power supply is supplying nominal EUT power and is set at +3.3 VDC. The remote computer is connected to the EUT through the Test Fixture and is controlling the function of the EUT. EUT is transmitting continuously on Low, Mid & High channels as noted for each reading. Low channel = 2405 MHz, Mid channel = 2440 MHz, High channel =2480 MHz. The temperature was 23°C and the humidity was 38%. The frequency range investigated was: Carrier. Plots are corrected for transducers.

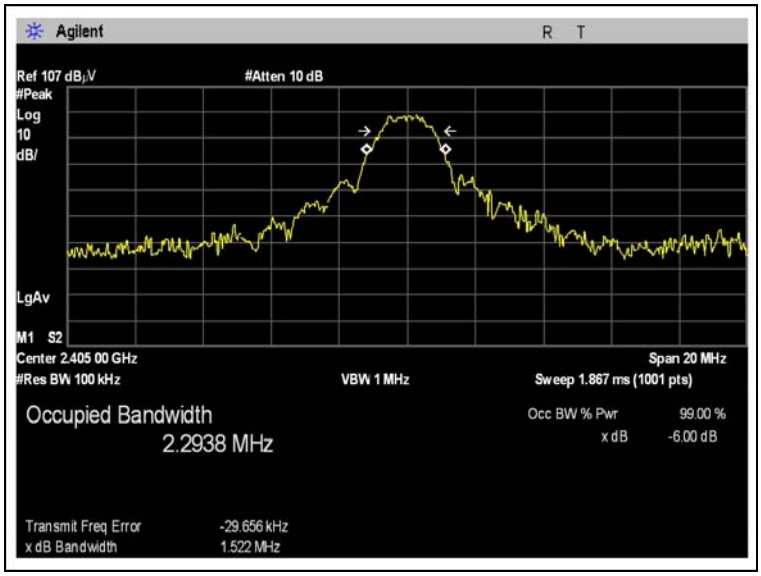
Channel	6 dB Bandwidth	26 dB Bandwidth	99% Bandwidth
2405 MHz	1.522 MHz	3.967 MHz	2.293 MHz
2445 MHz	1.509 MHz	3.228 MHz	2.257 MHz
2480 MHz	1.420 MHz	3.226 MHz	2.245 MHz

Test Setup Photos

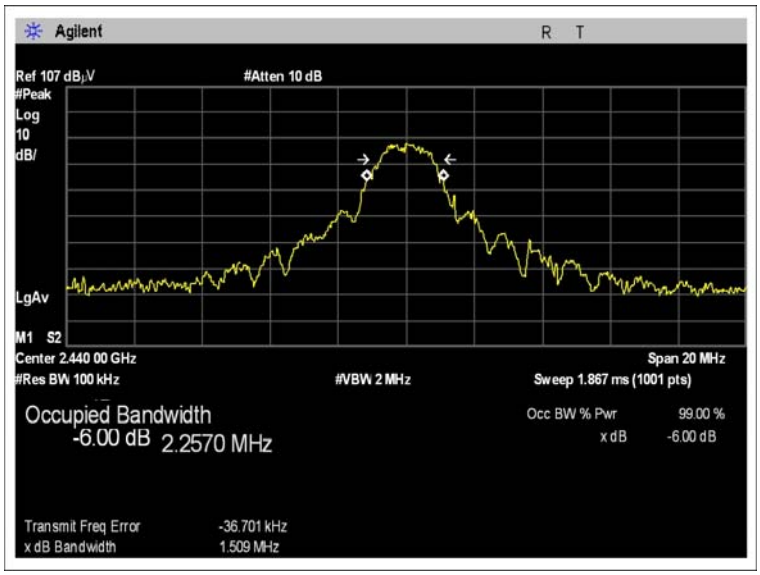


Test Plots

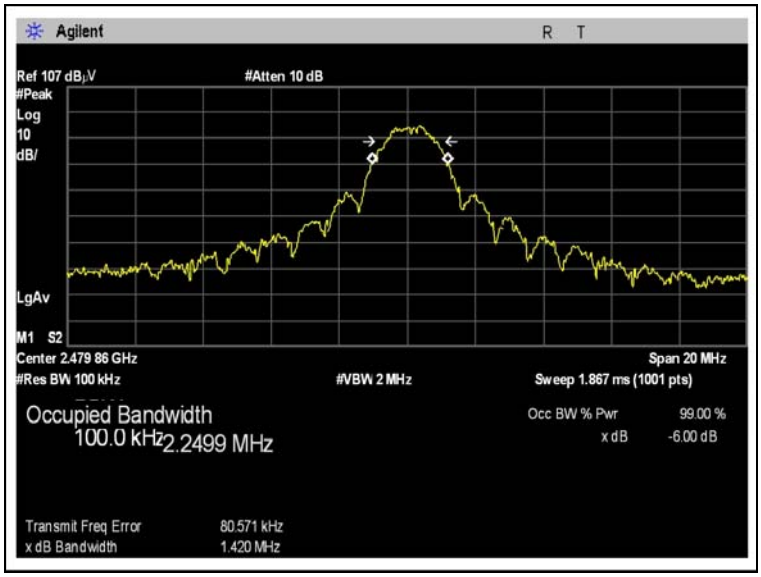
FCC 15.247(a)(2) OCCUPIED BANDWIDTH - LOW CHANNEL



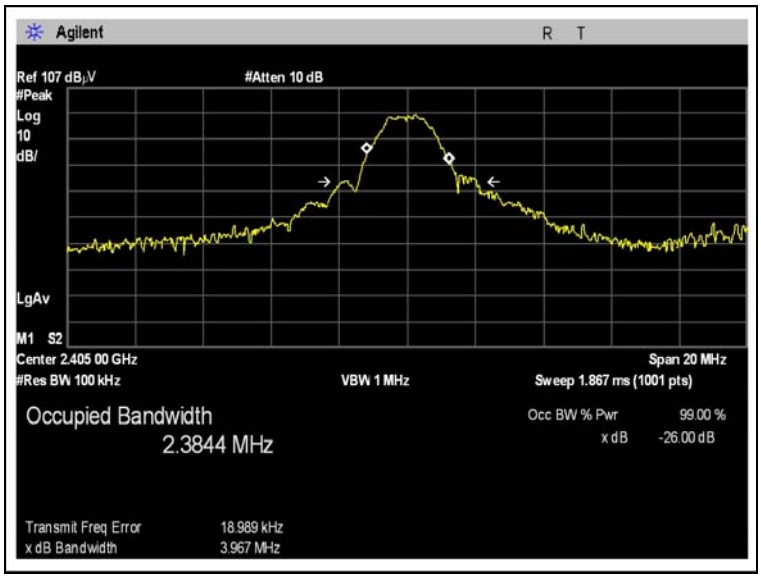
FCC 15.247(a)(2) OCCUPIED BANDWIDTH - MID CHANNEL



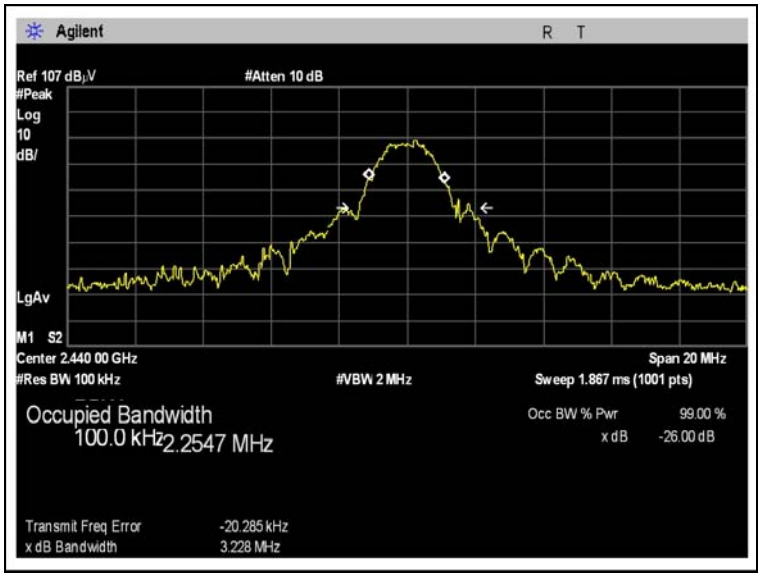
FCC 15.247(a)(2) OCCUPIED BANDWIDTH - HIGH CHANNEL



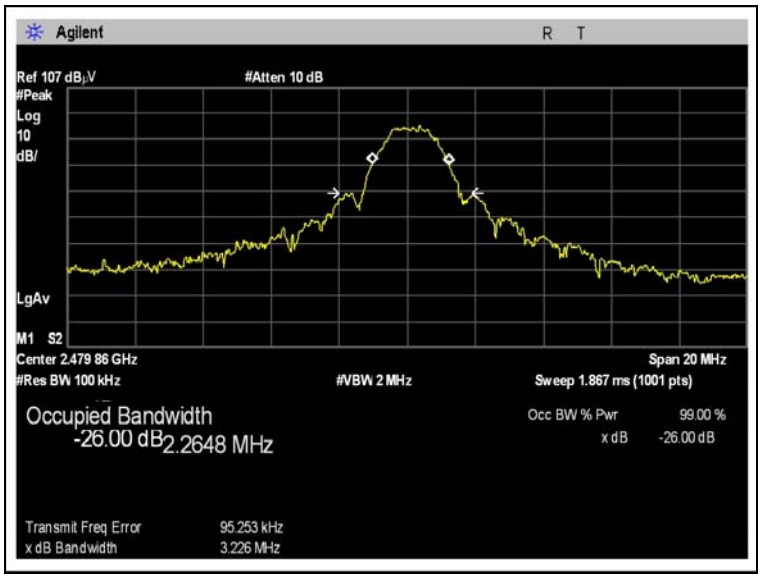
RSS-210 99% BANDWIDTH - LOW CHANNEL



RSS-210 99% BANDWIDTH - MID CHANNEL

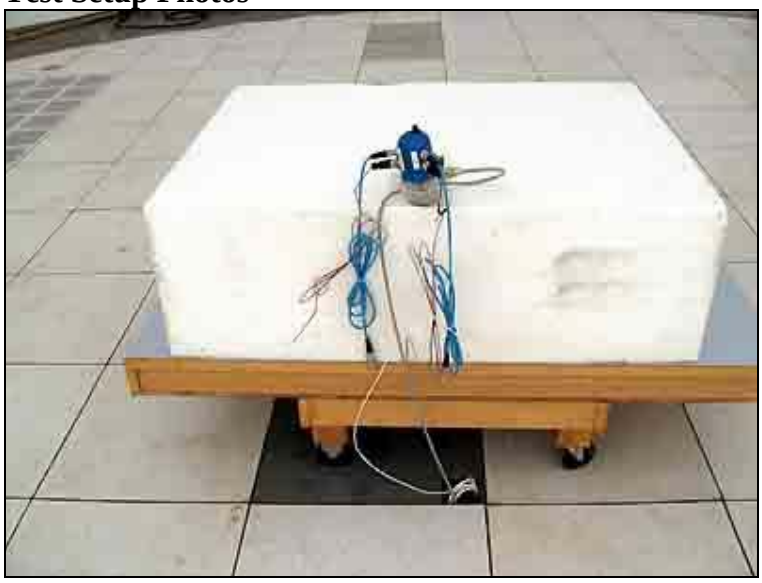


RSS-210 99% BANDWIDTH - HIGH CHANNEL



FCC 15.247(b)(3) RF POWER OUTPUT

Test Setup Photos



Test Data Sheets

Test Location: CKC Laboratories, Inc. •5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209 966-5240

Customer: **Bently Nevada LLC**
Specification: **15.247(b)(3)**
Work Order #: **88568** Date: 6/23/2009
Test Type: **Radiated Scan** Time: 13:18:56
Equipment: **Essential Insight.mesh** Sequence#: 1
Manufacturer: Bently Nevada LLC Tested By: Mike Wilkinson
Model: 185300
S/N: 10.1C.DF

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	08/07/2008	08/07/2010	02660
EMCO 3115 Horn Antenna	9006-3413	06/06/2008	06/06/2010	AN00327
Cable, Andrews Hardline HF-005-20	NA	09/04/2007	09/04/2009	ANP04274
Andrew-25'	N/A	05/19/2009	05/19/2011	AN01012
Cable, 10’ 2.92mm 40 GHz	na	06/10/2009	06/10/2011	ANP01403
HP 8449B Preamp	3008A00301	11/13/2008	11/13/2010	2010

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

Function	Manufacturer	Model #	S/N
Essential Insight.mesh*	Bently Nevada LLC	185300	10.1C.DF
wSIM	Bently Nevada LLC	185310-01	10.1C.DF

Support Devices:

Function	Manufacturer	Model #	S/N
Thermocouple	Bently Nevada LLC	Type K TC	NA
Thermocouple	Bently Nevada LLC	Type J TC	NA
Accelerometer	Bently Nevada LLC	200157	G09C02ME
Accelerometer	Bently Nevada LLC	200157	G09C02PB
Power Supply	HP	E3611A	3125K01021
Remote Computer	Dell	Latitude E6400	P00627027

Test Conditions / Notes:

Standard used was FCC 15.247 (b3)
EUT is an 802.15.4 transceiver and is operating on the Low, Mid, and High channels as noted in the datasheet readings. The transceiver is transmitting continuously with modulation.
EUT was placed 80cm from the ground plane on a 40cm Styrofoam block.
EUT has 4 transducer ports. Ports 1 & 3 have accelerometers with 2 meter cables attached. Ports 2 & 4 have 2.5 meter long theromcouples attached.
EUT is battery operated. A remotely located external DC power supply is supplying nominal EUT power and is set at +3.3 VDC
The remote computer is connected to the EUT through the Test Fixture and is controlling the function of the EUT.
EUT is transmitting continuously on Low, Mid & High channels as noted for each reading.
Low channel = 2405 MHz, Mid channel = 2440 MHz, High channel =2480 MHz.
RBW = 3 MHz, VBW 3X RBW
The temperature was 23°C and the humidity was 38%.
The frequency range investigated was: Carrier.

Transducer Legend:

T1=CAB-ANP01012-051909	T2=CAB-ANP01403-061009
T3=Cable 20m andrews	T4=ANT AN00327 1GHz-18GHz
T5=AMP-AN02010-111308	

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	2405.440M	99.1	+2.2 -34.2	+2.4	+5.0	+28.3	+10.0	112.8	137.0 Low Channel	-24.2	Vert
2	2439.580M	98.5	+2.2 -34.2	+2.4	+5.0	+28.4	+10.0	112.3	137.0 Mid Channel	-24.7	Vert
3	2479.660M	96.6	+2.2 -34.1	+2.5	+5.1	+28.5	+10.0	110.8	137.0 High Channel	-26.2	Vert
4	2440.500M	88.8	+2.2 -34.2	+2.4	+5.0	+28.4	+10.0	102.6	137.0 Mid Channel	-34.4	Horiz
5	2479.560M	88.0	+2.2 -34.1	+2.5	+5.1	+28.5	+10.0	102.2	137.0 High Channel	-34.8	Horiz
6	2405.460M	83.4	+2.2 -34.2	+2.4	+5.0	+28.3	+10.0	97.1	137.0 Low Channel	-39.9	Horiz

Power Output Calculations

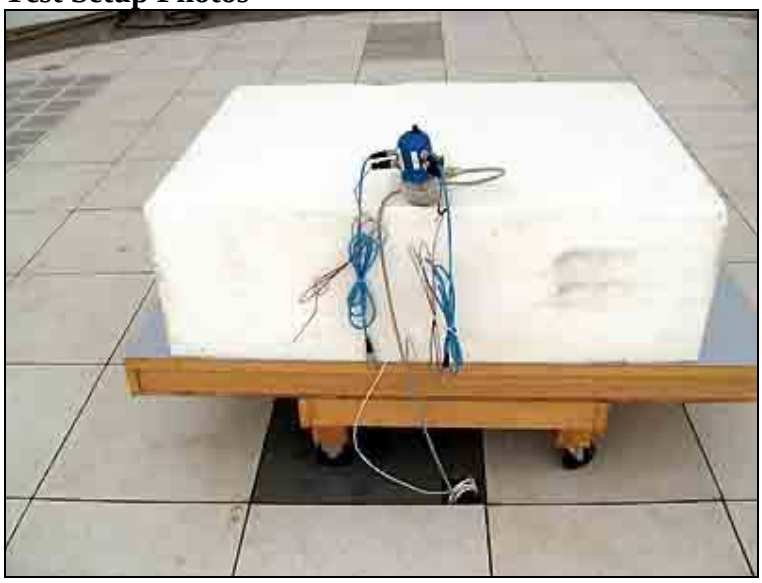
Frequency (MHz)	Field Strength (dBuV/m @ 3m)	Power Level (dBm)	Limit (dBm)	Results
2405	112.8	16.4	30	Pass
2440	112.3	15.9	30	Pass
2480	110.8	14.4	30	Pass

Power output calculated in accordance with KDB 558074 using power density formula:

$$P = \frac{(E \cdot d)^2}{30 \cdot G}$$ **where G is declared by the manufacturer to be 1.14 dBi.**

FCC 15.247(d) OATS RADIATED SPURIOUS EMISSIONS AND BANDEDGE

Test Setup Photos



Test Data

Test Location: CKC Laboratories, Inc. •5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209 966-5240

Customer: **Bently Nevada LLC**
Specification: **FCC 15.247 / 15.209**
Work Order #: **88568** Date: 6/23/2009
Test Type: **Maximized Emissions** Time: 16:30:43
Equipment: **Essential Insight.mesh** Sequence#: 4
Manufacturer: Bently Nevada LLC Tested By: Mike Wilkinson
Model: 185300
S/N: 10.1C.DF

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
E4446A	US44300507	07/08/2008	07/08/2010	AN02660
EMCO 3115 Horn Antenna	9006-3413	06/06/2008	06/06/2010	AN00327
Chase CBL6111C Bilog	2456	12/22/2008	12/22/2010	01991
ARA MWH-1826/B Horn Antenna	1005	11/12/2008	11/12/2010	AN02046
HP-8447D Preamp	2727A05444	06/20/2008	06/20/2010	AN00062
Cable, Andrews Hardline HF-005-20	NA	09/04/2007	09/04/2009	ANP04274
Andrew-25'	N/A	05/19/2009	05/19/2011	AN01012
Cable, 10’ 2.92mm 40 GHz	na	06/10/2009	06/10/2011	ANP01403
HP 8449B Preamp	3008A00301	11/13/2008	11/13/2010	2010
Loop Ant	1074	04/10/2009	04/10/2011	AN00226
Site A 10 meter cable set		05/10/2009	05/10/2011	MA10M

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

Function	Manufacturer	Model #	S/N
Essential Insight.mesh*	Bently Nevada LLC	185300	10.1C.DF
wSIM	Bently Nevada LLC	185310-01	10.1C.DF

Support Devices:

Function	Manufacturer	Model #	S/N
Thermocouple	Bently Nevada LLC	Type K TC	NA
Thermocouple	Bently Nevada LLC	Type J TC	NA
Accelerometer	Bently Nevada LLC	200157	G09C02ME
Accelerometer	Bently Nevada LLC	200157	G09C02PB
Power Supply	HP	E3611A	3125K01021
EUT Serial Communication Test Fixture	Bently Nevada LLC	None	None
Remote Computer	Dell	Latitude E6400	P00627027

Test Conditions / Notes:

Standard used was FCC 15.247 d /15.209 Spurious
EUT was placed on a 40cm Styrofoam block 80cm from the ground plane.
EUT has 4 transducer ports. Ports 1 & 3 have accelerometers with 2 meter cables attached. Ports 2 & 4 have 2.5 meter long theromcouples attached.
EUT is battery operated .A remotely located external DC power supply is supplying nominal EUT power and is set at +3.3 VDC
The remote computer is connected to the EUT through the Test Fixture and is controlling the function of the EUT.
EUT is transmitting continuously on Low, Mid & High channels as noted for each reading.
Low channel = 2405 MHz .
Mid channel = 2440 MHz .
High channel =2480 MHz.
RBW = 100 kHz, VBW 3X RBW. 1-24 GHz.
RBW = 120 kHz, VBW 3X RBW. 30-1000 MHz.
RBW = 9 kHz, VBW 3X RBW. 150 kHz -30 MHz.
RBW = 200 Hz, VBW 3X RBW. 9 - 150 kHz.
Duty Cycle correction applied as per 15.35 and noted when applied . Correction factor was derived from measured 5 RF on time pulses of 4.4ms in 100 ms = 22%= 22/100 = 20log .22= -13.15dB.
The temperature was 23 degrees C and the humidity was 38%.
The frequency range investigated was: 9 kHz - 24.0 GHz.

Transducer Legend:

T1=CAB-ANP01012-051909	T2=CAB-ANP01403-061009
T3=Cable 20m Andrews	T4=ANT AN00327 1GHz-18GHz
T5=15.35 Duty Cycle Correction	T6=AMP-AN02010-111308

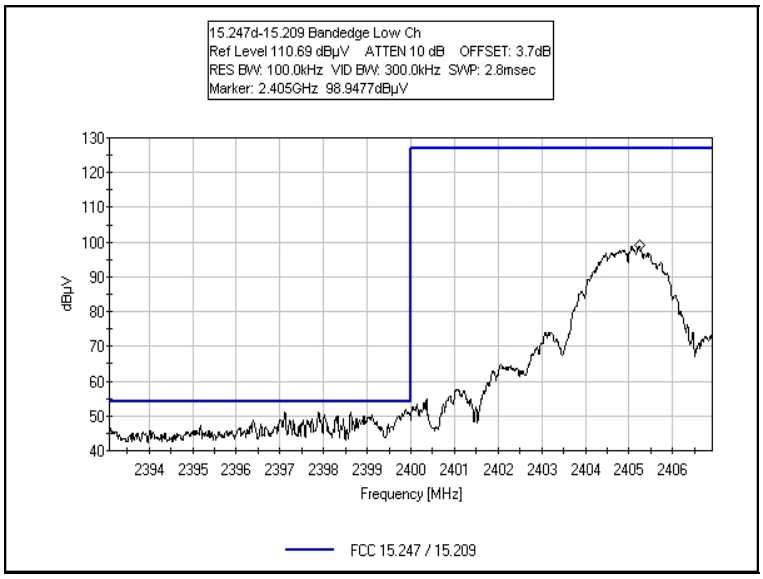
Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq	Rdng	T1 T5 T6	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB dB dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	4880.920M Ave	48.8	+2.7 -13.2	+3.7 -33.3	+10.5	+33.4	-10.0	42.6	54.0 High Channel with duty cycle correction added	-11.4	Horiz
^	4880.920M	48.8	+2.7 +0.0	+3.7 -33.3	+10.5	+33.4	-10.0	55.8	54.0 High Channel	+1.8	Horiz
3	4880.940M Ave	48.1	+2.7 -13.2	+3.7 -33.3	+10.5	+33.4	-10.0	41.9	54.0 Mid Channel with duty cycle correction added	-12.1	Vert
^	4880.940M	48.1	+2.7 +0.0	+3.7 -33.3	+10.5	+33.4	-10.0	55.1	54.0 Mid Channel	+1.1	Vert
5	4960.940M Ave	46.7	+2.7 -13.2	+3.7 -33.2	+10.6	+33.5	-10.0	40.8	54.0 High Channel with duty cycle correction added	-13.2	Vert
^	4960.940M	46.7	+2.7 +0.0	+3.7 -33.2	+10.6	+33.5	-10.0	54.0	54.0 High Channel	+0.0	Vert
7	4958.940M	33.4	+2.7 +0.0	+3.7 -33.2	+10.6	+33.5	-10.0	40.7	54.0 High Channel	-13.3	Horiz

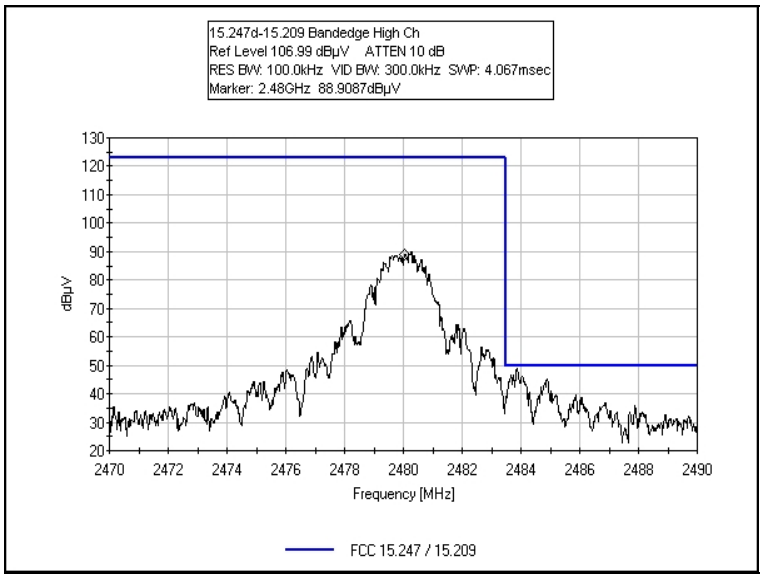
8	4810.940M Ave	44.4	+3.0 -13.2	+3.8 -33.5	+10.3	+33.2	-10.0	38.0	54.0 Low Channel with duty cycle correction added	-16.0	Horiz
^	4810.940M	44.4	+3.0 +0.0	+3.8 -33.5	+10.3	+33.2	-10.0	51.2	54.0 Low Channel	-2.8	Horiz
10	4811.160M Ave	43.5	+3.0 -13.2	+3.8 -33.5	+10.3	+33.2	-10.0	37.1	54.0 Low Channel with duty cycle correction added	-16.9	Vert
^	4811.160M	43.5	+3.0 +0.0	+3.8 -33.5	+10.3	+33.2	-10.0	50.3	54.0 Low Channel	-3.7	Vert
12	7216.020M Ave	35.7	+3.7 -13.2	+4.3 -33.5	+14.4	+35.6	-10.0	37.0	54.0 Low Channel with duty cycle correction added	-17.0	Horiz
^	7216.020M	35.7	+3.7 +0.0	+4.3 -33.5	+14.4	+35.6	-10.0	50.2	54.0 Low Channel	-3.8	Horiz
14	9757.900M Ave	32.7	+4.0 -13.2	+5.3 -34.1	+13.9	+37.9	-10.0	36.5	54.0 Mid Channel with duty cycle correction added	-17.5	Horiz
^	9757.900M	32.7	+4.0 +0.0	+5.3 -34.1	+13.9	+37.9	-10.0	49.7	54.0 Mid Channel	-4.3	Horiz
16	9761.900M Ave	30.7	+4.0 -13.2	+5.3 -34.1	+13.9	+37.9	-10.0	34.5	54.0 Mid Channel with duty cycle correction added	-19.5	Vert
^	9761.900M	30.7	+4.0 +0.0	+5.3 -34.1	+13.9	+37.9	-10.0	47.7	54.0 Mid Channel	-6.3	Vert
18	7321.320M Ave	31.8	+3.6 -13.2	+4.4 -33.6	+14.2	+35.9	-10.0	33.1	54.0 Mid Channel with duty cycle correction added	-20.9	Horiz
^	7321.320M	31.8	+3.6 +0.0	+4.4 -33.6	+14.2	+35.9	-10.0	46.3	54.0 Mid Channel	-7.7	Horiz
20	7215.970M Ave	29.9	+3.7 -13.2	+4.3 -33.5	+14.4	+35.6	-10.0	31.2	54.0 Low Channel with duty cycle correction added	-22.8	Vert
^	7215.970M	29.9	+3.7 +0.0	+4.3 -33.5	+14.4	+35.6	-10.0	44.4	54.0 Low Channel	-9.6	Vert

22	4880.940M Ave	37.0	+2.7 -13.2	+3.7 -33.3	+10.5	+33.4	-10.0	30.8	54.0	-23.2	Horiz Mid Channel with duty cycle correction added
23	7441.930M Ave	28.7	+3.6 -13.2	+4.5 -33.8	+14.1	+36.1	-10.0	30.0	54.0	-24.0	Vert High Channel with duty cycle correction added
^	7441.930M	28.7	+3.6 +0.0	+4.5 -33.8	+14.1	+36.1	-10.0	43.2	54.0	-10.8	Vert High Channel
25	7438.980M Ave	27.8	+3.6 -13.2	+4.5 -33.8	+14.1	+36.1	-10.0	29.1	54.0	-24.9	Horiz High Channel with duty cycle correction added
^	7438.980M	28.9	+3.6 +0.0	+4.5 -33.8	+14.1	+36.1	-10.0	43.4	54.0	-10.6	Horiz High Channel

FCC 15.247(d) BANDEDGE - LOW CHANNEL

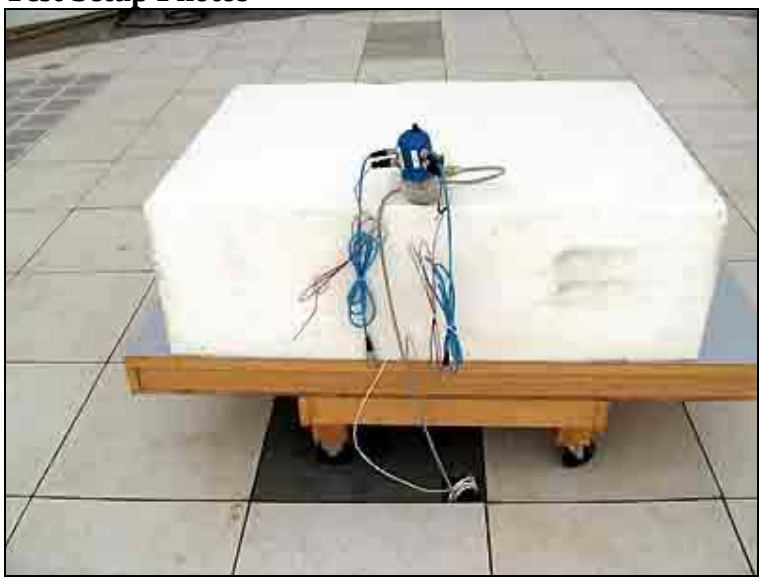


FCC 15.247(d) BANDEDGE - HIGH CHANNEL



FCC 15.247(e) PEAK POWER SPECTRAL DENSITY

Test Setup Photos



Test Data Sheets

Test Location: CKC Laboratories, Inc. •5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209 966-5240

Customer: **Bently Nevada LLC**
Specification: **15.247(e)**
Work Order #: **88568** Date: 6/23/2009
Test Type: **Radiated Scan** Time: 11:37:53
Equipment: **Wireless Mesh Network Device, 802.15.4** Sequence#: 3
Manufacturer: Bently Nevada LLC Tested By: Mike Wilkinson
Model: Essential Insight.mesh wSIM
S/N: 10.1C.DF

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	08/07/2008	08/07/2010	02660
EMCO 3115 Horn Antenna	9006-3413	06/06/2008	06/06/2010	AN00327
Cable, Andrews Hardline HF-005-20	NA	09/04/2007	09/04/2009	ANP04274
Andrew-25'	N/A	05/19/2009	05/19/2011	AN01012
Cable, 10’ 2.92mm 40 GHz	na	06/10/2009	06/10/2011	ANP01403
HP 8449B Preamp	3008A00301	11/13/2008	11/13/2010	2010

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

Function	Manufacturer	Model #	S/N
Wireless Mesh Network Device, 802.15.4*	Bently Nevada LLC	Essential Insight.mesh wSIM	10.1C.DF

Support Devices:

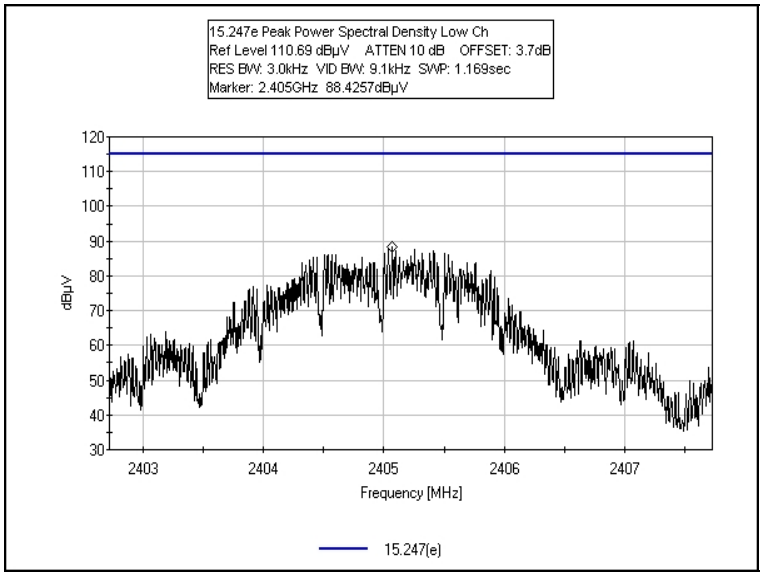
Function	Manufacturer	Model #	S/N
Thermocouple	Bently Nevada LLC	Type K TC	NA
Thermocouple	Bently Nevada LLC	Type J TC	NA
Accelerometer	Bently Nevada LLC	200157	G09C02ME
Accelerometer	Bently Nevada LLC	200157	G09C02PB
Power Supply	HP	E3611A	3125K01021

Test Conditions / Notes:

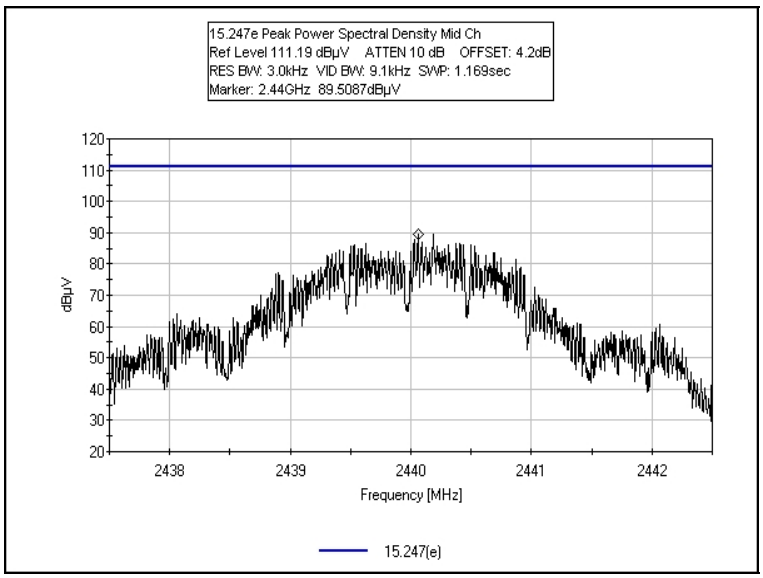
Standard used was FCC 15.247(e) PPSD. EUT is an 802.15.4 transceiver and is operating on the Low, Mid, and High channels as noted in the datasheet readings. The transceiver is transmitting continuously with modulation EUT was placed 80cm from the ground plane on a 40cm Styrofoam block. EUT has 4 transducer ports. Ports 1 & 3 have accelerometers with 2 meter cables attached. Ports 2 & 4 have 2.5 meter long thermocouples attached. EUT is battery operated. A remotely located external DC power supply is supplying nominal EUT power and is set at +3.3 VDC. The remote computer is connected to the EUT through the Test Fixture and is controlling the function of the EUT. EUT is transmitting continuously on Low, Mid & High channels as noted for each reading. Low channel = 2405 MHz, Mid channel = 2440 MHz, High channel =2480 MHz. The temperature was 23° C and the humidity was 38%. The frequency range investigated was: Carrier. Plots are corrected for transducers.

Test Plots

FCC 15.247(e) PEAK POWER SPECTRAL DENSITY – LOW CHANNEL



FCC 15.247(e) PEAK POWER SPECTRAL DENSITY – MID CHANNEL



FCC 15.247(e) PEAK POWER SPECTRAL DENSITY – HIGH CHANNEL