CKC LABORATORIES, INC. Testing the Future

ACCREDITED
Certicate Numbers
803.01, 803.02, 803.05, 803.06
EMC

ADDENDUM TO SYNAPSENSE, INC. TEST REPORT FC08-034

FOR THE

THERMANODE, 99-0189

FCC PART 15 SUBPART C SECTION 15.249, SUBPART B SECTION 15.109 CLASS B AND RSS-210 ISSUE 7

TESTING

DATE OF ISSUE: MAY 8, 2008

PREPARED FOR:

SynapSense, Inc.
2365 Iron Point Road, Suite 100
Folsom, CA 95630

P.O. No.: 9282
W.O. No.: 87591

PREPARED BY:

Mary Ellen Clayton
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Date of test: March 11-19, 2008

Report No.: FC08-034A

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ADMINISTRATIVE INFORMATION

DATE OF TEST: March 11-19, 2008

DATE OF RECEIPT: March 11, 2008

REPRESENTATIVE: Mathew Di Nicola

MANUFACTURER:
SynapSense, Inc.
2365 Iron Point Road, Suite 100
Folsom, CA 95630

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

TEST METHOD: FCC Part 15 Subpart C Section 15.249, Subpart B Section 15.109 Class B, RSS-GEN and RSS-210 Issue 7

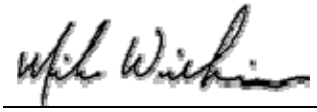
PURPOSE OF TEST:
Original Report: To perform the testing of the ThermaNode, 99-0189 with the requirements for FCC Part 15 Subpart C Section 15.249, Subpart B Section 15.109 Class B and RSS-210 Issue 7 devices.
Addendum A: To correct the frequency range on page 5 and on the data sheets and to correct the equipment list on pages 16, 18 and 20. No new testing.

APPROVALS

QUALITY ASSURANCE:

Steve Behm, Director of Engineering Services

TEST PERSONNEL:



Mike Wilkinson, EMC Engineer/Lab Manager

SUMMARY OF RESULTS

Test	Specification/Method	Results
Voltage Variations	FCC Part 15.31(e)	Pass
Radiated Emissions	FCC Part 15 Subpart B Section 15.109 Class B	Pass
Radiated Spurious Emissions	FCC Part 15 Subpart C Section 15.249	Pass
Band Edge		Pass
99% Bandwidth	RSS-210 Issue 7 and RSS GEN	Pass
Site File No	FCC Site No. 784962 Industry of Canada File No. IC 3082A-1	

CONDITIONS DURING TESTING

No modifications to the EUT were necessary during testing. Conducted emissions not required for this device because it is battery powered.

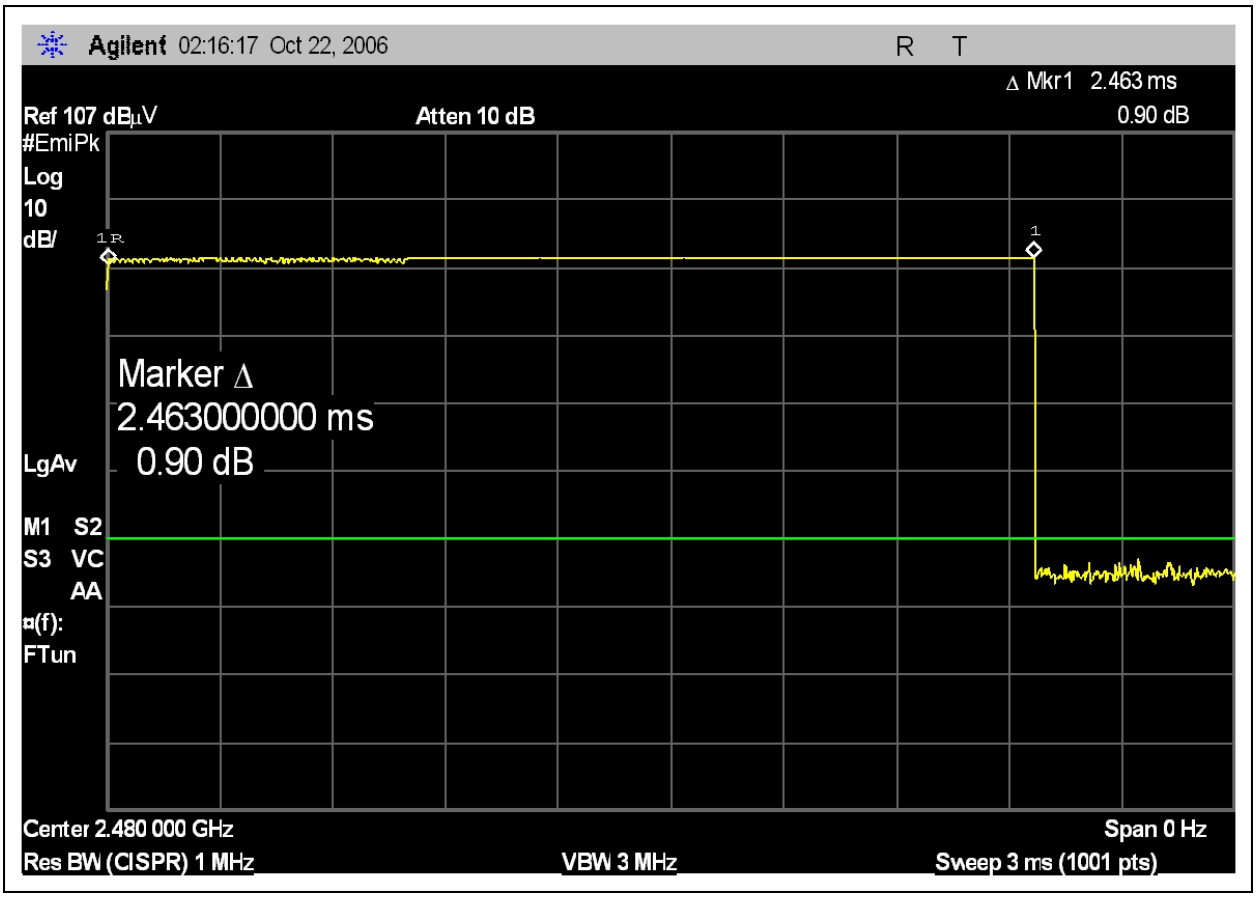
FCC 15.31(e) Voltage Variations
A fresh battery was used for testing.

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

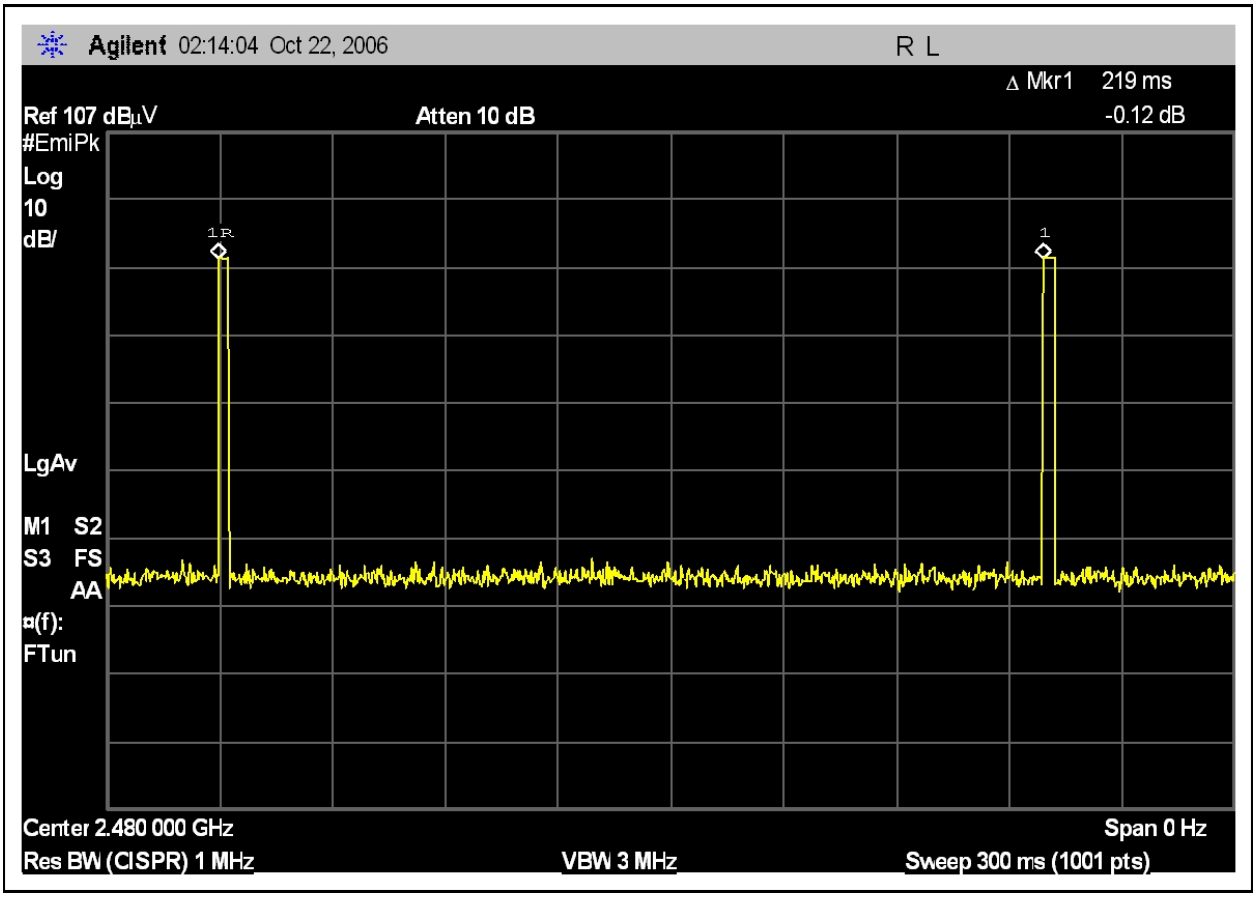
FCC 15.33(a) Frequency Ranges Tested
15.109 Radiated Emissions: 30 MHz – 1000 MHz
15.249 Radiated Emissions: 30 kHz – 40 GHz

FCC SECTION 15.35 Analyzer Bandwidth Settings Per Frequency Range
Duty Cycle correction factor applied in accordance with 15.35. Maximum on time in 100ms is 2.463ms therefore, 20*log(2.463/100) = -32dB. Bandwidths: CISPR.

DUTY CYCLE 2.463ms 1.12%



DUTY CYCLE 300ms



FCC 15.203 Antenna Requirements

The antenna is an integral part of the EUT and is non-removable; therefore the EUT complies with Section 15.203 of the FCC rules.

EUT Operating Frequency

The EUT was operating at 2.4 GHz.

Temperature And Humidity During Testing

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

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

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

The following model was tested by CKC Laboratories: **Tempra Node, 99-0189**

Since the time of testing the manufacturer has chosen to use the following model name in its place. 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: **ThermaNode, 99-0189**

EQUIPMENT UNDER TEST

ThermaNode

Manuf:	SynapSense
Model:	99-0189
Serial:	T-1

PERIPHERAL DEVICES

The EUT was not tested with peripheral devices.

REPORT OF EMISSIONS MEASUREMENTS

TESTING PARAMETERS

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 were 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

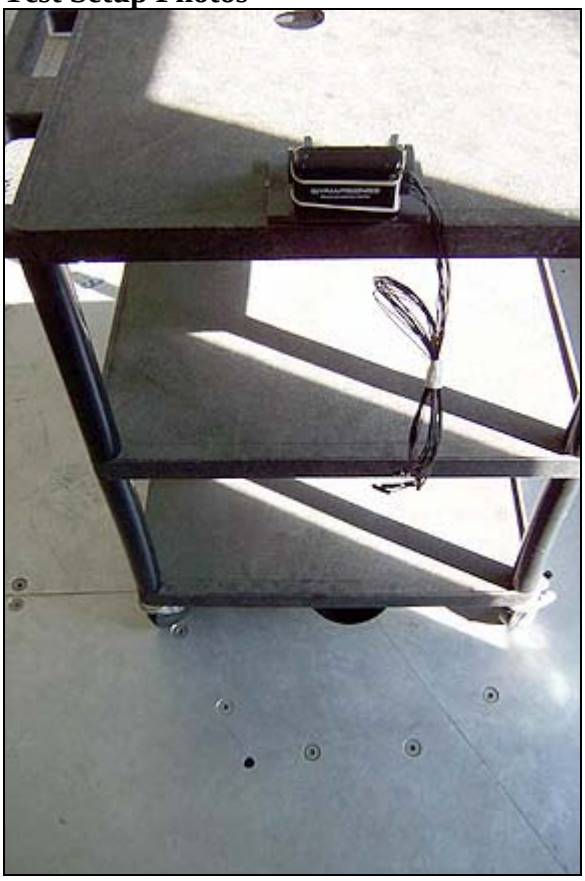
When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the quasi-peak detector.

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 15.109 RADIATED EMISSIONS

Test Setup Photos



Test Data Sheets

Test Location: CKC Laboratories, Inc. •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **SynapSense**
Specification: **15.109 CLASS B**
Work Order #: **87591** Date: 3/12/2008
Test Type: **Maximized Emissions** Time: 10:13:08
Equipment: **Tempra Node** Sequence#: 1
Manufacturer: SynapSense Tested By: Mike Wilkinson
Model: 99-0189
S/N: T-1

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
10M SITE CBL MAST CBL	N/A	03/23/2007	03/23/2009	CAB-SITED10M
HP 8447D Preamp	1937A02604	03/14/2007	03/14/2009	00099
Chase CBL6111C Bilog	2456	12/30/2006	12/30/2008	01991

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

Function	Manufacturer	Model #	S/N
Tempra Node*	SynapSense	99-0189	T-1

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

Standard used was FCC 15.109 Class B. Equipment is a low power wireless temperature sensor device operating on 2.4 GHz ISM frequency band. The device is operating with a configuration representative of worst case emissions. EUT ports are loaded with a representative configuration. All EUT ports are filled. Transmitter circuitry has been disabled for this test, however the digital circuitry remains active. Frequency Range Investigated: 30MHz - 1GHz. Temperature: 23ºC, Relative Humidity: 41%. Bandwidths: CISPR.

Transducer Legend:

T1=ANT AN01991 25-1000MHz T2=AMP AN00099
T3=CAB-SITED10M-9k-1G

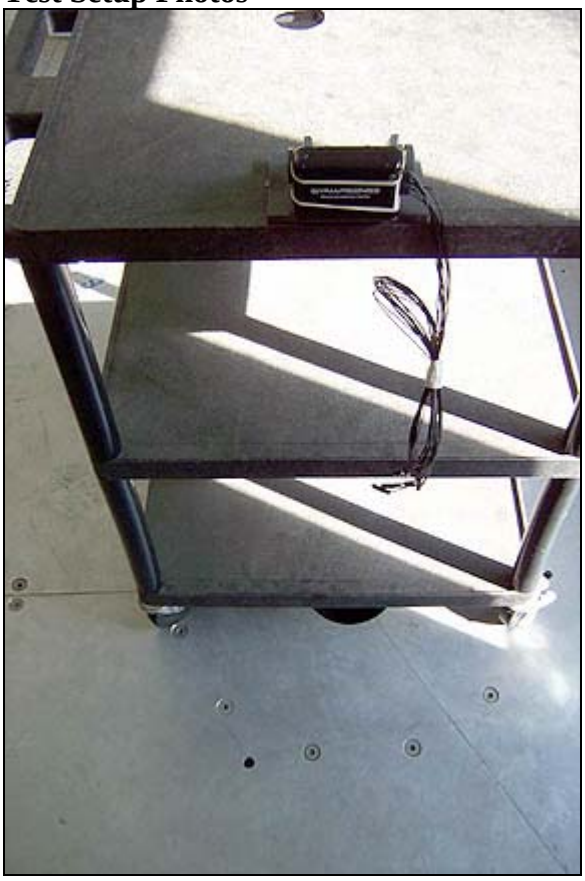
Measurement Data: Reading listed by margin. Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
1	31.997M	31.1	+18.0	-27.2	+1.5		+0.0	23.4	40.0	-16.6	Vert
2	111.997M	36.9	+11.0	-27.0	+3.1		+0.0	24.0	43.5	-19.5	Vert
3	95.997M	35.9	+9.7	-27.1	+2.8		+0.0	21.3	43.5	-22.2	Horiz
4	63.997M	33.2	+6.5	-27.2	+2.2		+0.0	14.7	40.0	-25.3	Vert

5	143.997M	29.7	+11.4	-26.9	+3.5	+0.0	17.7	43.5	-25.8	Vert
6	143.997M	27.3	+11.4	-26.9	+3.5	+0.0	15.3	43.5	-28.2	Horiz
7	111.997M	27.4	+11.0	-27.0	+3.1	+0.0	14.5	43.5	-29.0	Horiz
8	127.997M	25.5	+11.7	-27.0	+3.3	+0.0	13.5	43.5	-30.0	Vert
9	127.997M	25.4	+11.7	-27.0	+3.3	+0.0	13.4	43.5	-30.1	Horiz

FCC 15.249 RADIATED EMISSIONS

Test Setup Photos



Test Data Sheets

Test Location:	CKC Laboratories, Inc. •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)		
Customer:	**SynapSense**		
Specification:	**FCC 15.249 (2400-2483.5MHz)**		
Work Order #:	**87591**	Date:	3/17/2008
Test Type:	**Maximized Emissions**	Time:	15:09:16
Equipment:	**Tempra Node**	Sequence#:	2
Manufacturer:	SynapSense	Tested By:	Mike Wilkinson
Model:	99-0189		
S/N:	T-1		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
HP 8449B Preamp	3008A00301	12/13/2006	12/13/2008	2010
EMCO 3115 Horn Antenna	8006-3413	03/17/2007	03/17/2009	00327
3M SITE CABLE 20GHZ	NA	03/06/2008	03/06/2010	SITED3M1
Cable 10' 40 GHz Gore	NA	04/23/2007	04/23/2009	ANP04290
Cable 2' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03011
Cable 2' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03008
HP Preamp, HF	3332A00309	03/20/2007	03/20/2009	02115
ARA Antenna, Horn	01012	01/08/2008	01/08/2010	02045

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

Function	Manufacturer	Model #	S/N
Tempra Node*	SynapSense	99-0189	T-1

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

Standard used was FCC. Equipment is a low power wireless sensor device operating on 2.4 GHz ISM frequency band. The device is operating with maximum duty cycle of 1.12%, a configuration representative of worst case emissions. EUT ports are loaded with a representative configuration. All EUT ports are filled. Emissions investigated from three orthogonal axis of the equipment. Reported data represents the worst case of all orientations which was vertical. Channel tested: Low, Middle and High. Frequency Range Investigated: Carrier. Duty Cycle correction factor applied in accordance with 15.35. Maximum on time in 100ms is 2.463ms therefore, 20*log(2.463/100) = -32dB. Temperature: 23ºC, Relative Humidity: 41% Bandwidths: CISPR.

Transducer Legend:

T1=ANT AN00327 900MHz-18.5GHz	T2=Cable WL Gore 10' 40 GHz AN P004290
T3=CAB-AN03008-40GHZ-2FT	T4=CAB-AN03011-40GHZ-2FT
T5=CAB-SITED3M1 9k - 20G	T6=Amp HF - AN02010
T7=32 dB15.35 Duty Cycle Correction	

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

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
			T5	T6	T7						
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	2404.600M	97.7	+28.2	+2.7	+0.4	+0.4	+0.0	67.4	94.0	-26.6	Vert
	Ave		+4.7	-34.7	-32.0				Low Channel		
^	2404.670M	97.7	+28.2	+2.7	+0.4	+0.4	+0.0	99.4	94.0	+5.4	Vert
			+4.7	-34.7	+0.0				Low Channel		

3	2444.640M Ave	95.4	+28.3 +4.7	+2.7 -34.7	+0.4 -32.0	+0.4	+0.0	65.2	94.0 Mid Channel	-28.8	Vert
^	2444.660M	95.4	+28.3 +4.7	+2.7 -34.7	+0.4 +0.0	+0.4	+0.0	97.2	94.0 Mid Channel	+3.2	Vert
5	2444.640M Ave	94.2	+28.3 +4.7	+2.7 -34.7	+0.4 -32.0	+0.4	+0.0	64.0	94.0 Mid Channel	-30.0	Horiz
^	2444.640M	94.2	+28.3 +4.7	+2.7 -34.7	+0.4 +0.0	+0.4	+0.0	96.0	94.0 Mid Channel	+2.0	Horiz
7	2405.600M Ave	92.7	+28.2 +4.7	+2.7 -34.7	+0.4 -32.0	+0.4	+0.0	62.4	94.0 Low Channel	-31.6	Horiz
^	2405.600M	92.7	+28.2 +4.7	+2.7 -34.7	+0.4 +0.0	+0.4	+0.0	94.4	94.0 Low Channel	+0.4	Horiz
9	2479.650M Ave	90.6	+28.4 +4.7	+2.7 -34.7	+0.4 -32.0	+0.4	+0.0	60.5	94.0 High Channel	-33.5	Horiz
^	2479.650M	90.6	+28.4 +4.7	+2.7 -34.7	+0.4 +0.0	+0.4	+0.0	92.5	94.0 High Channel	-1.5	Horiz
11	2479.650M Ave	64.2	+28.4 +4.7	+2.7 -34.7	+0.4 -32.0	+0.4	+0.0	34.1	94.0 High Channel	-59.9	Vert
^	2479.650M	94.2	+28.4 +4.7	+2.7 -34.7	+0.4 +0.0	+0.4	+0.0	96.1	94.0 High Channel	+2.1	Vert

Test Location: CKC Laboratories, Inc. •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **SynapSense**
Specification: **FCC 15.249 (2400-2483.5MHz)**
Work Order #: **87591** Date: 3/17/2008
Test Type: **Maximized Emissions** Time: 11:32:55
Equipment: **Tempra Node** Sequence#: 4
Manufacturer: SynapSense Tested By: Mike Wilkinson
Model: 99-0189
S/N: T-1

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
HP 8447D Preamp	1937A02604	03/14/2007	03/14/2009	00099
Chase CBL6111C Bilog	2456	12/30/2006	12/30/2008	01991
3M SITE CABLE 20GHZ	NA	03/06/2008	03/06/2010	SITED3M1
Cable 10' 40 GHz Gore	NA	04/23/2007	04/23/2009	ANP04290
Cable 2' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03011
Cable 2' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03008
EMCO Loop Antenna	1074	05/01/2007	05/01/2009	00226
EMCO 3115 Horn Antenna	8006-3413	03/17/2007	03/17/2009	00327
ARA MWH-1826/B Horn Antenna	1005	11/27/2006	11/27/2008	02046
HP 8449B Preamp	3008A00301	12/13/2006	12/13/2008	2010
HP Preamp, HF	3332A00309	03/20/2007	03/20/2009	02115
ARA Antenna, Horn	01012	01/08/2008	01/08/2010	02045

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

Function	Manufacturer	Model #	S/N
Tempra Node*	SynapSense	99-0189	T-1

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

Standard used was FCC15.249 Equipment is a low power wireless sensor device operating on 2.4 GHz ISM frequency band. The device is operating with maximum duty cycle of 1.12%, a configuration representative of worst case emissions. EUT ports are loaded with a representative configuration. All EUT ports are filled. Emissions investigated from three orthogonal axis of the equipment. Reported data represents the worst case of all orientations which was vertical. Channel tested: Low. Frequency Range Investigated: 32 kHz to 40 GHz. Also complies with the restrictions of 15.205. Temperature: 23ºC, Relative Humidity: 41%. Duty Cycle correction factor applied in accordance with 15.35. Maximum on time in 100ms is 2.463ms therefore, 20*log(2.463/100) = -32dB. Bandwidths: CISPR.

Transducer Legend:

T1=ANT AN00327 900MHz-18.5GHz	T2=Cable WL Gore 10' 40 GHz AN P004290
T3=CAB-AN03008-40GHZ-2FT	T4=CAB-AN03011-40GHZ-2FT
T5=CAB-SITED3M1 9k - 20G	T6=Amp HF - AN02010
T7=32 dB15.35 Duty Cycle Correction	

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

#	Freq	Rdng	T1 T5	T2 T6	T3 T7	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	2483.501M	42.9	+28.4 +4.7	+2.7 -34.7	+0.4 +0.0	+0.4	+0.0	44.8	54.0 Band Edge	-9.2	Vert
2	2483.500M	41.9	+28.4 +4.7	+2.7 -34.7	+0.4 +0.0	+0.4	+0.0	43.8	54.0 Band Edge	-10.2	Horiz
3	4810.180M Ave	48.0	+33.2 +7.2	+3.8 -33.9	+0.6 -32.0	+0.6	+0.0	27.5	54.0	-26.5	Vert
^	4810.180M	48.0	+33.2 +7.2	+3.8 -33.9	+0.6 +0.0	+0.6	+0.0	59.5	54.0	+5.5	Vert
5	4810.493M Ave	47.9	+33.2 +7.2	+3.8 -33.9	+0.6 -32.0	+0.6	+0.0	27.4	54.0	-26.6	Horiz
^	4810.493M	47.9	+33.2 +7.2	+3.8 -33.9	+0.6 +0.0	+0.6	+0.0	59.4	54.0	+5.4	Horiz
7	2399.900M Ave	56.6	+28.2 +4.7	+2.7 -34.7	+0.4 -32.0	+0.4	+0.0	26.3	54.0 Band Edge	-27.7	Vert
^	2399.900M	56.6	+28.2 +4.7	+2.7 -34.7	+0.4 +0.0	+0.4	+0.0	58.3	54.0 Band Edge	+4.3	Vert
9	2399.880M Ave	49.0	+28.2 +4.7	+2.7 -34.7	+0.4 -32.0	+0.4	+0.0	18.7	54.0 Band Edge	-35.3	Horiz
^	2399.880M	49.0	+28.2 +4.7	+2.7 -34.7	+0.4 +0.0	+0.4	+0.0	50.7	54.0 Band Edge	-3.3	Horiz

Test Location: CKC Laboratories, Inc. •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **SynapSense**
Specification: **FCC 15.249 (2400-2483.5MHz)**
Work Order #: **87591** Date: 3/17/2008
Test Type: **Maximized Emissions** Time: 15:40:31
Equipment: **Tempra Node** Sequence#: 5
Manufacturer: SynapSense Tested By: Mike Wilkinson
Model: 99-0189
S/N: T-1

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
HP 8447D Preamp	1937A02604	03/14/2007	03/14/2009	00099
Chase CBL6111C Bilog	2456	12/30/2006	12/30/2008	01991
3M SITE CABLE 20GHZ	NA	03/06/2008	03/06/2010	SITED3M1
Cable 10' 40 GHz Gore	NA	04/23/2007	04/23/2009	ANP04290
Cable 2' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03011
Cable 2' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03008
EMCO Loop Antenna	1074	05/01/2007	05/01/2009	00226
EMCO 3115 Horn Antenna	8006-3413	03/17/2007	03/17/2009	00327
ARA MWH-1826/B Horn Antenna	1005	11/27/2006	11/27/2008	02046
HP 8449B Preamp	3008A00301	12/13/2006	12/13/2008	2010
HP Preamp, HF	3332A00309	03/20/2007	03/20/2009	02115
ARA Antenna, Horn	01012	01/08/2008	01/08/2010	02045

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

Function	Manufacturer	Model #	S/N
Tempra Node*	SynapSense	99-0189	T-1

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

Standard used was FCC15.249 Equipment is a low power wireless sensor device operating on 2.4 GHz ISM frequency band. The device is operating with maximum duty cycle of 1.12%, a configuration representative of worst case emissions. EUT ports are loaded with a representative configuration. All EUT ports are filled. Emissions investigated from three orthogonal axis of the equipment. Reported data represents the worst case of all orientations which was vertical. Channel tested: Mid. Frequency Range Investigated: 32 kHz to 40 GHz. Also complies with the restrictions of 15.205. Temperature: 23ºC, Relative Humidity: 41%. Duty Cycle correction factor applied in accordance with 15.35. Maximum on time in 100ms is 2.463ms therefore, 20*log(2.463/100) = -32dB. Bandwidths: CISPR.

Transducer Legend:

T1=ANT AN00327 900MHz-18.5GHz	T2=Cable WL Gore 10' 40 GHz AN P004290
T3=CAB-AN03008-40GHZ-2FT	T4=CAB-AN03011-40GHZ-2FT
T5=CAB-SITED3M1 9k - 20G	T6=Amp HF - AN02010
T7=32 dB15.35 Duty Cycle Correction	

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

#	Freq	Rdng	T1 T5	T2 T6	T3 T7	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	4890.240M	48.8	+33.4	+3.8	+0.6	+0.6	+0.0	28.5	54.0	-25.5	Horiz
	Ave		+7.4	-34.1	-32.0						
^	4890.240M	48.8	+33.4	+3.8	+0.6	+0.6	+0.0	60.5	54.0	+6.5	Horiz
			+7.4	-34.1	+0.0						
3	4890.240M	48.1	+33.4	+3.8	+0.6	+0.6	+0.0	27.8	54.0	-26.2	Vert
	Ave		+7.4	-34.1	-32.0						
^	4890.240M	48.1	+33.4	+3.8	+0.6	+0.6	+0.0	59.8	54.0	+5.8	Vert
			+7.4	-34.1	+0.0						

Test Location: CKC Laboratories, Inc. •4933 Sierra Pines Dr. • Mariposa, CA 95338 • 1-800-500-4EMC (4362)

Customer: **SynapSense**
Specification: **FCC 15.249 (2400-2483.5MHz)**
Work Order #: **87591** Date: 3/12/2008
Test Type: **Maximized Emissions** Time: 14:25:03
Equipment: **Tempra Node** Sequence#: 3
Manufacturer: SynapSense Tested By: Mike Wilkinson
Model: 99-0189
S/N: T-1

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
HP 8447D Preamp	1937A02604	03/14/2007	03/14/2009	00099
Chase CBL6111C Bilog	2456	12/30/2006	12/30/2008	01991
3M SITE CABLE 20GHZ	NA	03/06/2008	03/06/2010	SITED3M1
Cable 10' 40 GHz Gore	NA	04/23/2007	04/23/2009	ANP04290
Cable 2' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03011
Cable 2' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03008
EMCO Loop Antenna	1074	05/01/2007	05/01/2009	00226
EMCO 3115 Horn Antenna	8006-3413	03/17/2007	03/17/2009	00327
ARA MWH-1826/B Horn Antenna	1005	11/27/2006	11/27/2008	02046
HP 8449B Preamp	3008A00301	12/13/2006	12/13/2008	2010
HP Preamp, HF	3332A00309	03/20/2007	03/20/2009	02115
ARA Antenna, Horn	01012	01/08/2008	01/08/2010	02045

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

Function	Manufacturer	Model #	S/N
Tempra Node*	SynapSense	99-0189	T-1

Support Devices:

Function	Manufacturer	Model #	S/N

Test Conditions / Notes:

Standard used was FCC 15.249. Equipment is a low power wireless sensor device operating on 2.4 GHz ISM frequency band. The device is operating with maximum duty cycle of 1.12%, a configuration representative of worst case emissions. EUT ports are loaded with a representative configuration. All EUT ports are filled. Emissions investigated from three orthogonal axis of the equipment. Reported data represents the worst case of all orientations which was vertical. Channel tested: High. Frequency Range Investigated: 32 kHz to 40 GHz. Also complies with the restrictions of 15.205. Temperature: 23ºC, Relative Humidity: 41%. Bandwidths: CISPR.

Transducer Legend:

T1=ANT AN00327 900MHz-18.5GHz	T2=Cable WL Gore 10' 40 GHz AN P004290
T3=CAB-AN03008-40GHZ-2FT	T4=CAB-AN03011-40GHZ-2FT
T5=CAB-SITED3M1 9k - 20G	T6=Amp HF - AN02010
T7=32 dB15.35 Duty Cycle Correction	

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

#	Freq	Rdng	T1 T5 T6 T7	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	4960.240M	45.8	+33.5 +7.4	+3.9 -34.0	+0.6 -32.0	+0.6	+0.0	25.8	54.0	-28.2	Vert
2	4960.000M	45.2	+33.5 +7.4	+3.9 -34.0	+0.6 -32.0	+0.6	+0.0	25.2	54.0	-28.8	Horiz
3	2483.500M	44.7	+28.4 +4.7	+2.7 -34.7	+0.4 -32.0	+0.4	+0.0	14.6	54.0 Band Edge	-39.4	Vert
4	2400.000M	41.8	+28.2 +4.7	+2.7 -34.7	+0.4 -32.0	+0.4	+0.0	11.5	54.0 Band Edge	-42.5	Vert

RSS-210 99% BANDWIDTH

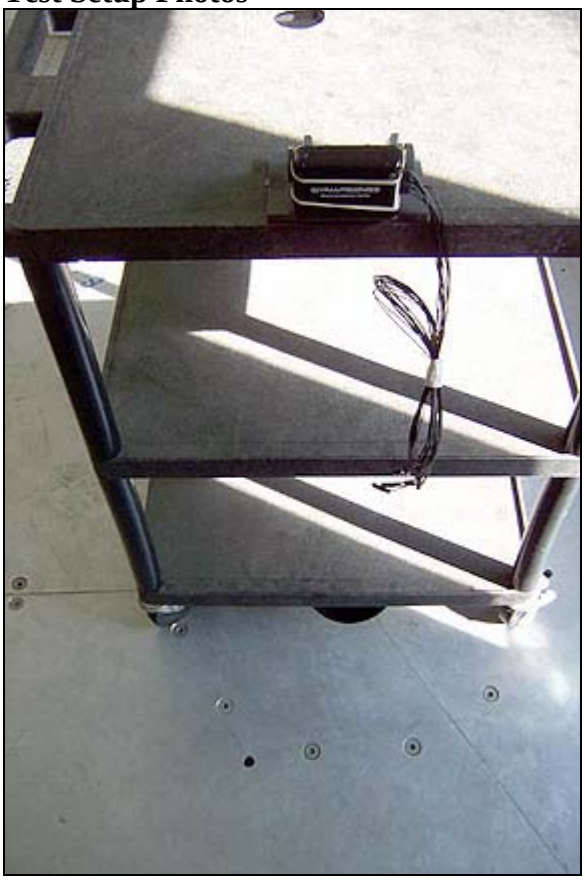
Test Equipment

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
HP 8449B Preamp	3008A00301	12/13/2006	12/13/2008	2010
EMCO 3115 Horn Antenna	8006-3413	03/17/2007	03/17/2009	00327
3M SITE CABLE 20GHZ	NA	03/06/2008	03/06/2010	SITED3M1
Cable 10' 40 GHz Gore	NA	04/23/2007	04/23/2009	ANP04290
Cable 2' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03011
Cable 2' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03008

Test Conditions

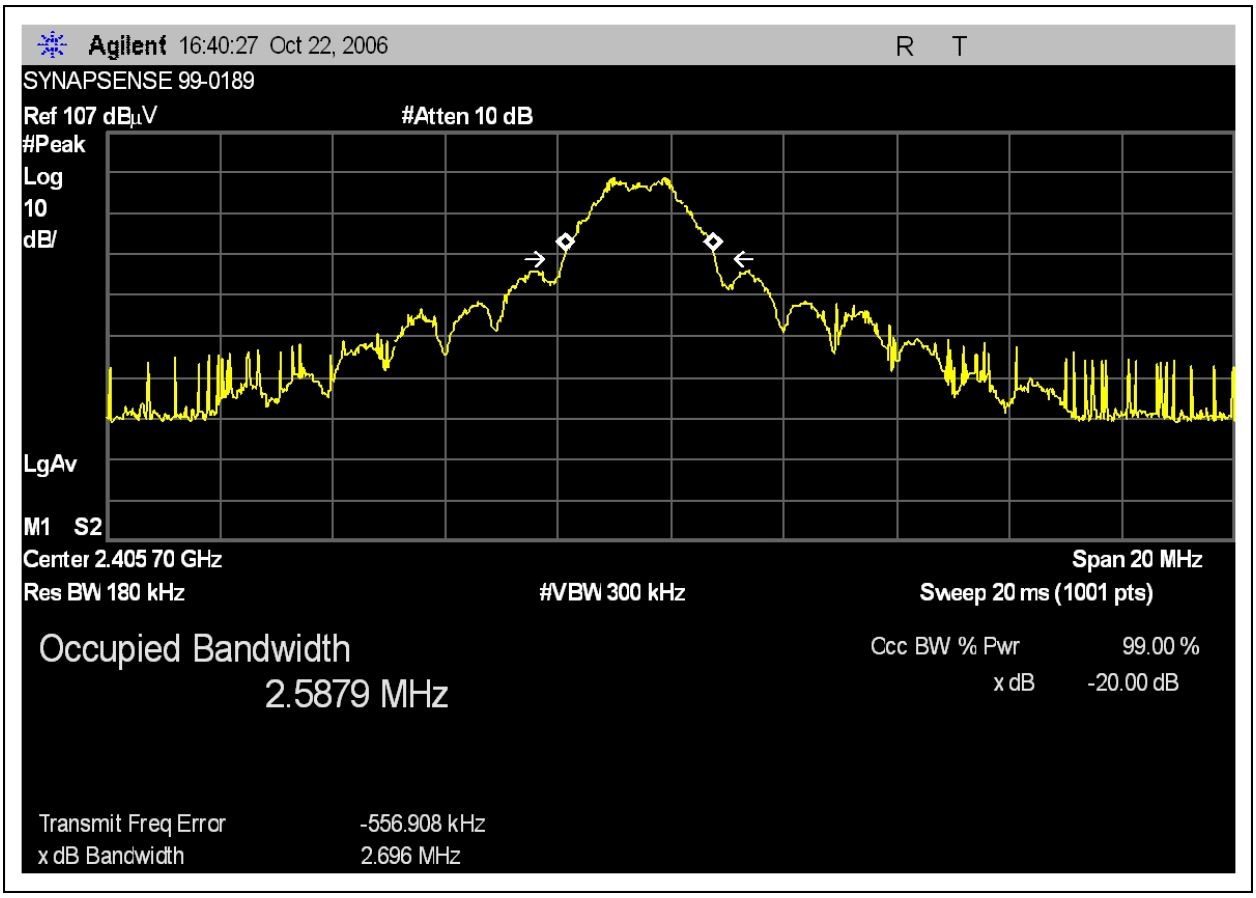
Standard used was FCC. Equipment is a low power wireless sensor device operating on 2.4 GHz ISM frequency band. The device is operating with maximum duty cycle of 1.12%, a configuration representative of worst case emissions. EUT ports are loaded with a representative configuration. All EUT ports are filled. Emissions investigated from three orthogonal axis of the equipment.

Test Setup Photos

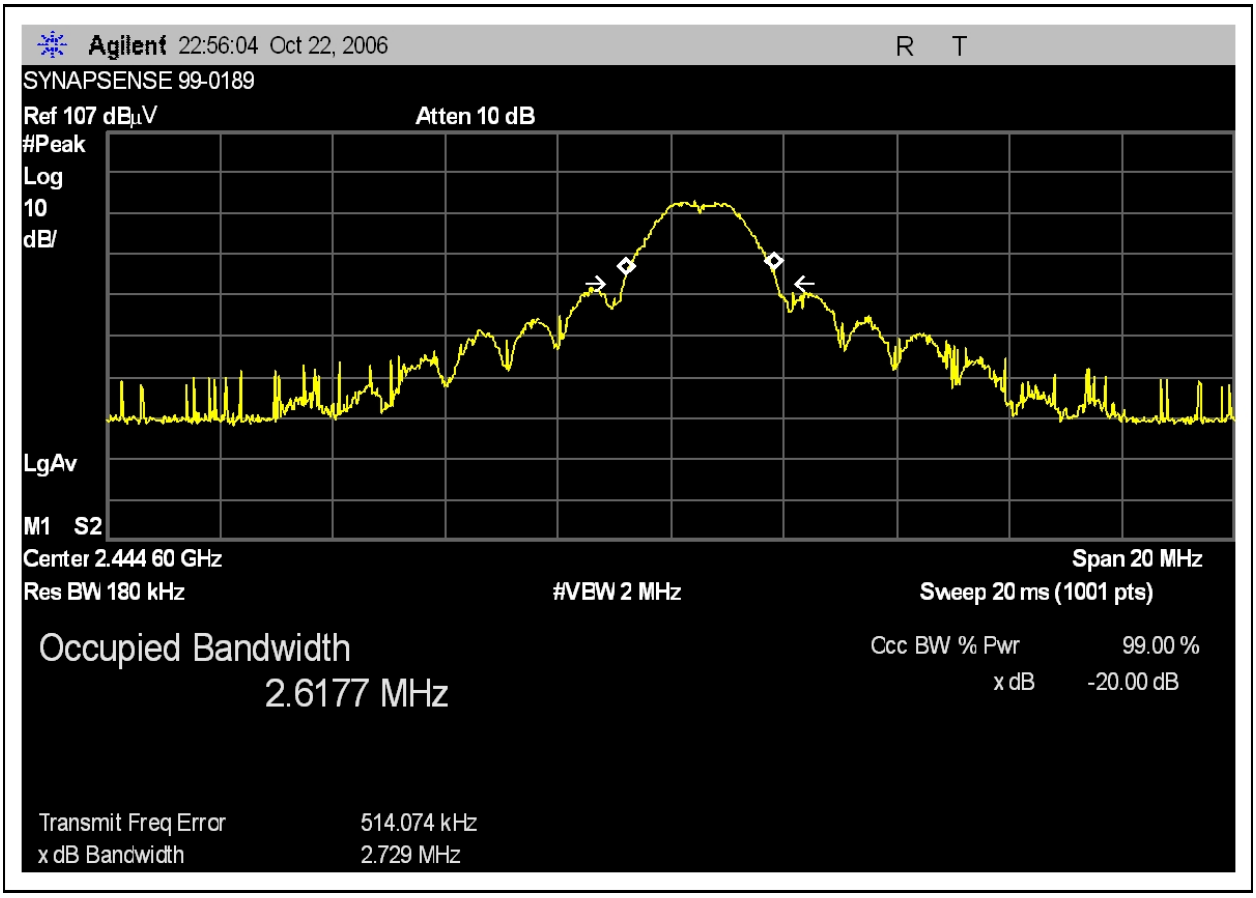


Test Plots

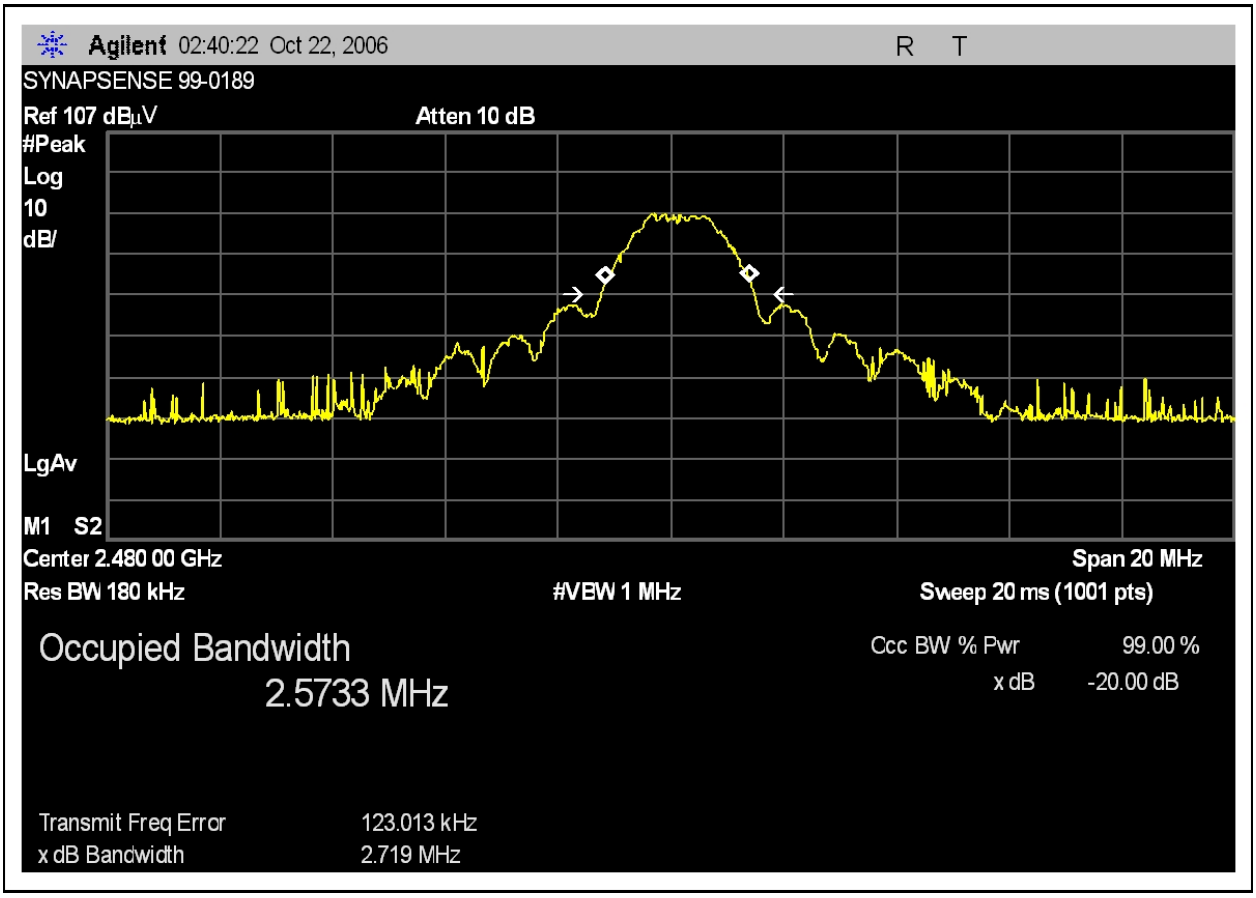
99% BANDWIDTH - LOW CHANNEL



99% BANDWIDTH - MID CHANNEL



99% BANDWIDTH - HIGH CHANNEL



BAND EDGE

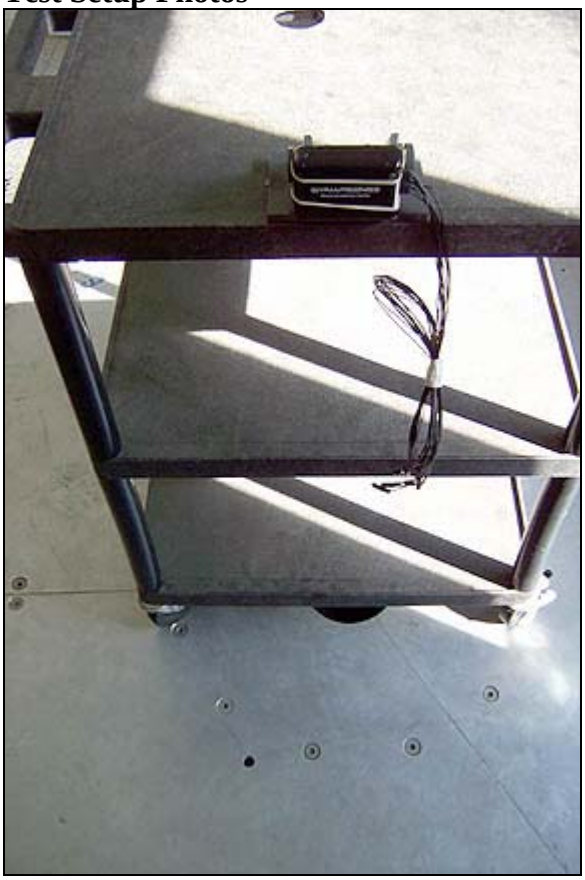
Test Equipment

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
HP 8449B Preamp	3008A00301	12/13/2006	12/13/2008	2010
EMCO 3115 Horn Antenna	8006-3413	03/17/2007	03/17/2009	00327
3M SITE CABLE 20GHZ	NA	03/06/2008	03/06/2010	SITED3M1
Cable 10' 40 GHz Gore	NA	04/23/2007	04/23/2009	ANP04290
Cable 2' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03011
Cable 2' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03008

Test Conditions

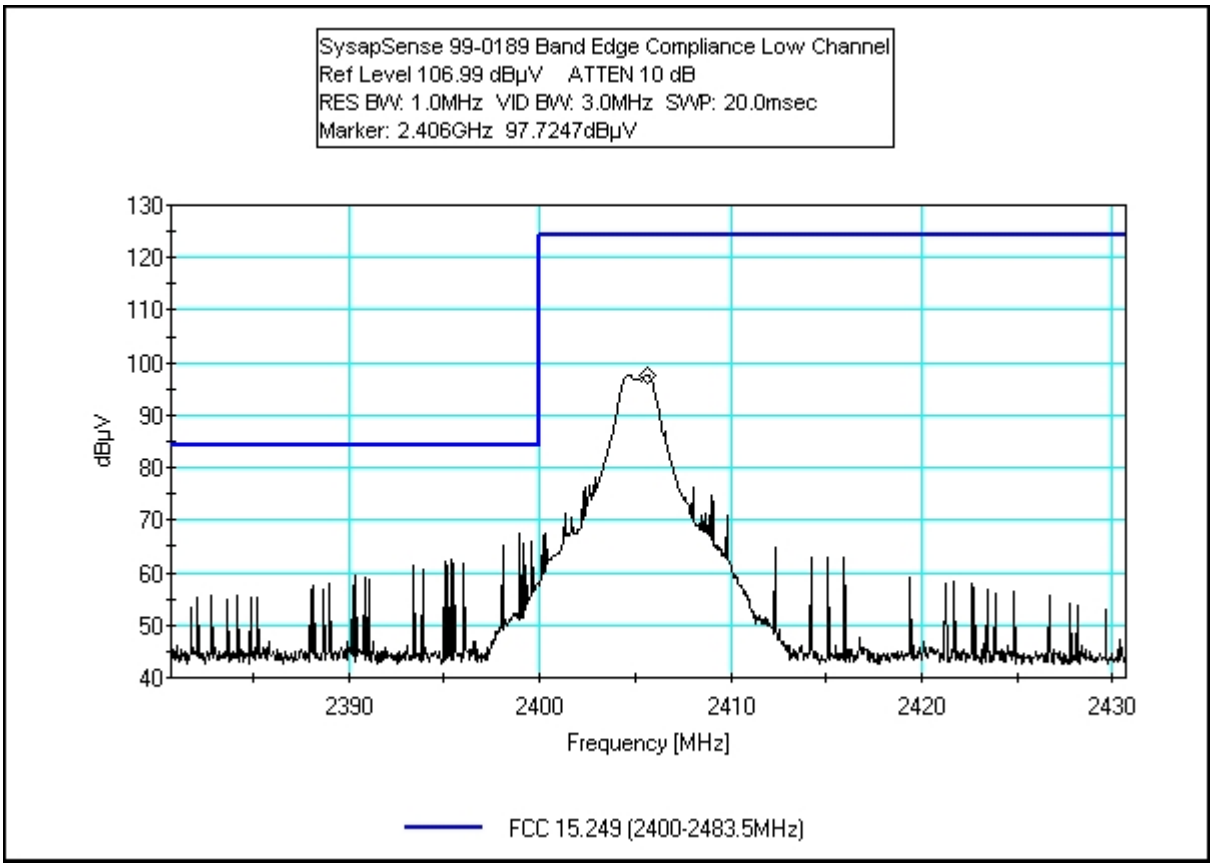
Standard used was FCC. Equipment is a low power wireless sensor device operating on 2.4 GHz ISM frequency band. The device is operating with maximum duty cycle of 1.12%, a configuration representative of worst case emissions. EUT ports are loaded with a representative configuration. All EUT ports are filled. Emissions investigated from three orthogonal axis of the equipment.

Test Setup Photos



Test Plots

BAND EDGE LOW CHANNEL



BAND EDGE HIGH CHANNEL