# SynapSense Corporation

**TEST REPORT FOR**

## Plug Meter, 0642

**Tested To The Following Standards:**

**FCC Part 15 Subpart C Sections 15.207, 15.209, 15.247**
**and**
**RSS 210 Issue 8**

**Report No.: 91167-9**

**Date of issue: February 3, 2011**

ACCREDITED

**TESTING**
**CERT #803.01, 803.02, 803.05, 803.06**

**This test report bears the accreditation symbol indicating that the testing performed herein meets the test and reporting requirements of ISO/IEC 17025 under the applicable scope of EMC testing for CKC Laboratories, Inc.**

**We strive to create long-term, trust based relationships by providing sound, adaptive, customer first testing services. We embrace each of our customers' unique EMC challenges, not as an interruption to set processes, but rather as the reason we are in business.**

Testing the Future
CKC LABORATORIES, INC.

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# ADMINISTRATIVE INFORMATION

## Test Report Information

**REPORT PREPARED FOR:**

SynapSense Corporation
2365 Iron Point Road, Suite 100
Folsom, CA 95630

Representative: Pat Weston
Customer Reference Number: 9948

**REPORT PREPARED BY:**

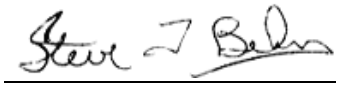
Dianne Dudley
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 91167

**DATE OF EQUIPMENT RECEIPT:** October 20, 2010
**DATE(S) OF TESTING:** October 20, 2010 – January 29, 2011

## Report Authorization

The test data contained in this report documents the observed testing parameters pertaining to and are relevant for only the sample equipment tested in the agreed upon operational mode(s) and configuration(s) as identified herein. Compliance assessment remains the client's responsibility. This report may not be used to claim product endorsement by A2LA or any government agencies. This test report has been authorized for release under quality control from CKC Laboratories, Inc.



***Steve Behm***
***Director of Quality Assurance & Engineering Services***
***CKC Laboratories, Inc.***

# Test Facility Information

Our laboratories are configured to effectively test a wide variety of product types. CKC utilizes first class test equipment, anechoic chambers, data acquisition and information services to create accurate, repeatable and affordable test results.

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

# Site Registration & Accreditation Information

| Location | CB # | Japan | Canada | FCC |
|---|---|---|---|---|
| Fremont | US0082 | R-2160, C2332 & T-228 | 3082B-1 | 958979 |

# SUMMARY OF RESULTS

**Standard / Specification: FCC Part 15 Subpart C 15.207, 15.209, 15.247 and RSS-210 Issue 8**

| Description | Test Procedure/Method | Results |
|---|---|---|
| AC Mains Conducted Emissions | FCC Part 15 Subpart C Section 15.207 / ANSI C63.4 (2003) | Pass |
| | | |
| Radiated Spurious Emissions | FCC Part 15 Subpart C Section 15.209 /15.247(d) / ANSI C63.4 (2003) | Pass |
| | | |
| RF Power Output | FCC Part 15 Subpart C Section 15.247(b)(3) / 2.1046 | Pass |
| | | |
| Occupied Bandwidth | FCC Part 15 Subpart C Section 15.247(a)(2) / 2.1049(I) | Pass |
| | | |
| Power Spectral Density | FCC Part 15 Subpart C Section 15.247(e) | Pass |
| | | |
| Bandedge | FCC Part 15 Subpart C Section 15.247(d) / 2.1053 | Pass |
| | | |
| 99% Bandwidth | RSS-210 Issue 8 | Pass |

# Conditions During Testing

This list is a summary of the conditions noted for or modifications made to the equipment during testing.

| Summary of Conditions |
|---|
| During Conducted Emissions testing, the Engineer replaced the 0.01uF capacitor with a 0.1uF capacitor after the fuse from L-N. Only two LEDs are on instead of four, this is done by firmware change. |
| |

# EQUIPMENT UNDER TEST (EUT)

## EQUIPMENT UNDER TEST

**Plug Meter**
Manuf: SynapSense Corporation
Model: 0642
Serial: None

## PERIPHERAL DEVICES

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

**Halogen Worklight (Dual)**
Manuf: Husky
Model: 553143 1200-Watts
Serial: None

# FCC PART 15 SUBPART C

This report contains EMC emissions test results under United States Federal Communications Commission (FCC) 47 CFR 15C requirements for Unlicensed Radio Frequency Devices, Subpart C - Intentional Radiators.

## 15.207 AC Conducted Emissions

### *Test Data Sheets*

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

| | | | |
|---|---|---|---|
| Customer: | **SynapSense Corporation** | | |
| Specification: | **15.207 AC Mains - Average** | | |
| Work Order #: | **91176** | Date: | 12/17/2010 |
| Test Type: | **Conducted Emissions** | Time: | 09:06:54 |
| Equipment: | **Plug Meter** | Sequence#: | 8 |
| Manufacturer: | SynapSense Corporation | Tested By: | A. Brar |
| Model: | 0642 | | 110V 60Hz |
| S/N: | None | | |

***Test Equipment*:**

| ID | Asset # | Description | Model | Calibration Date | Cal Due Date |
|---|---|---|---|---|---|
| | AN02668 | Spectrum Analyzer | E4446A | 3/9/2009 | 3/9/2011 |
| T1 | ANP05258 | High Pass Filter | HE9615-150K-50-720B | 12/2/2010 | 12/2/2012 |
| T2 | ANP01211 | Attenuator | 23-10-34 | 5/18/2009 | 5/18/2011 |
| T3 | ANP05440 | Cable | | 1/18/2010 | 1/18/2012 |
| T4 | ANP05300 | Cable | RG214/U | 3/6/2009 | 3/6/2011 |
| T5 | AN00494 | 50uH LISN-Line (dB) | 3816/NM | 3/30/2009 | 3/30/2011 |
| | AN00494 | 50uH LISN-Neutral (dB) | 3816/NM | 3/30/2009 | 3/30/2011 |

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

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Plug Meter* | SynapSense Corporation | 0642 | None |

***Support Devices:***

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Halogen Worklight (Dual) | Husky | 553143 1200-Watts | None |

***Test Conditions / Notes:***

Conducted Emissions 0.15-30MHz. Highest Clock: 2.4GHz (intentional Radiator).
Temperature: 65°F
Humidity: 42%
Atmospheric Pressure: 1022mbar

Notes: Testing 2440MHz unit

Modification: Replaced the 0.01uF capacitor with a 0.1uF capacitor after the fuse from L-N. Only two LEDs are on instead of four, this is done by firmware change.

Ext Attn: 0 dB

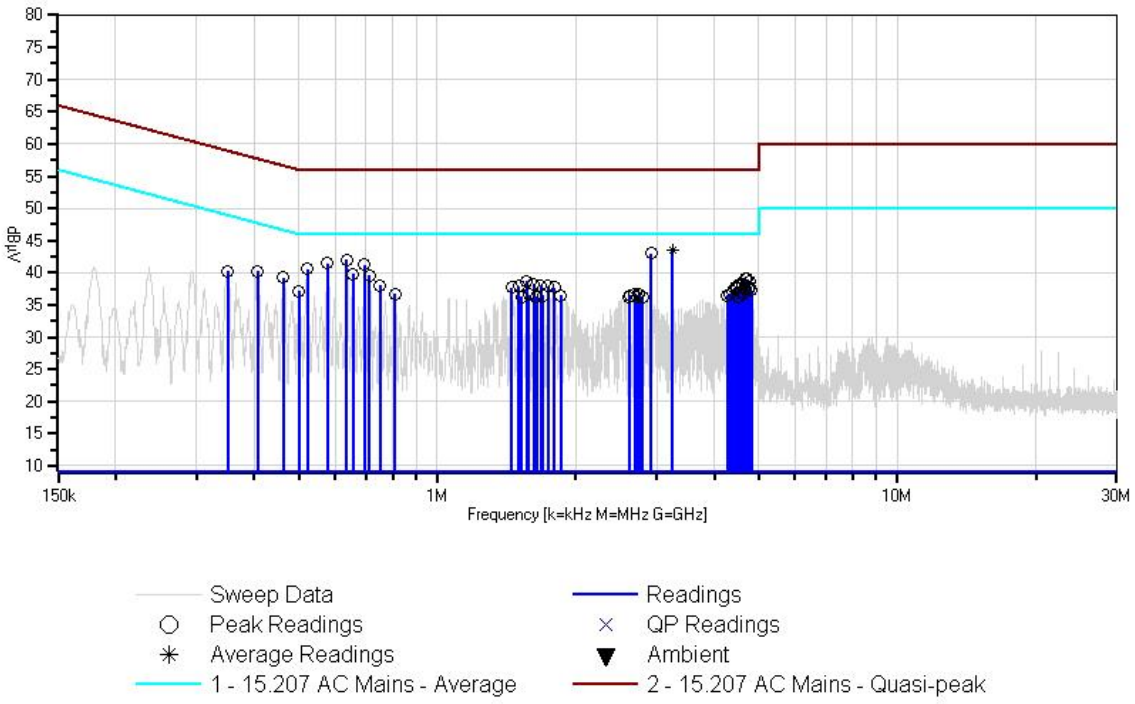
***Measurement Data:*** Reading listed by margin. Test Lead: Line

| # | Freq | Rdng | T1 T5 | T2 | T3 | T4 | Dist | Corr | Spec | Margin | Polar |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBµV | dB | dB | dB | dB | Table | dBµV | dBµV | dB | Ant |
| 1 | 3.242M | 33.2 | +0.2 +0.1 | +9.8 | +0.1 | +0.1 | +0.0 | 43.5 | 46.0 | -2.5 | Line |
| | Ave | | | | | | | | | | |
| ^ | 3.242M | 34.1 | +0.2 +0.1 | +9.8 | +0.1 | +0.1 | +0.0 | 44.4 | 46.0 | -1.6 | Line |
| 3 | 2.914M | 32.6 | +0.2 +0.1 | +9.8 | +0.1 | +0.2 | +0.0 | 43.0 | 46.0 | -3.0 | Line |
| 4 | 635.774k | 31.6 | +0.2 +0.1 | +9.8 | +0.0 | +0.3 | +0.0 | 42.0 | 46.0 | -4.0 | Line |
| 5 | 577.597k | 31.3 | +0.2 +0.1 | +9.8 | +0.0 | +0.1 | +0.0 | 41.5 | 46.0 | -4.5 | Line |
| 6 | 693.950k | 31.0 | +0.2 +0.1 | +9.8 | +0.0 | +0.1 | +0.0 | 41.2 | 46.0 | -4.8 | Line |
| 7 | 522.329k | 30.3 | +0.1 +0.1 | +9.8 | +0.1 | +0.2 | +0.0 | 40.6 | 46.0 | -5.4 | Line |
| 8 | 655.408k | 29.5 | +0.2 +0.1 | +9.8 | +0.0 | +0.2 | +0.0 | 39.8 | 46.0 | -6.2 | Line |
| 9 | 712.857k | 29.3 | +0.2 +0.1 | +9.8 | +0.0 | +0.2 | +0.0 | 39.6 | 46.0 | -6.4 | Line |
| 10 | 4.671M | 28.7 | +0.1 +0.1 | +9.9 | +0.1 | +0.2 | +0.0 | 39.1 | 46.0 | -6.9 | Line |
| 11 | 4.713M | 28.6 | +0.1 +0.1 | +9.9 | +0.1 | +0.2 | +0.0 | 39.0 | 46.0 | -7.0 | Line |
| 12 | 1.566M | 28.4 | +0.1 +0.1 | +9.9 | +0.1 | +0.1 | +0.0 | 38.7 | 46.0 | -7.3 | Line |
| 13 | 4.768M | 28.2 | +0.1 +0.1 | +10.0 | +0.1 | +0.2 | +0.0 | 38.7 | 46.0 | -7.3 | Line |
| 14 | 463.426k | 29.2 | +0.1 +0.0 | +9.8 | +0.0 | +0.2 | +0.0 | 39.3 | 46.6 | -7.3 | Line |
| 15 | 407.431k | 30.1 | +0.1 +0.0 | +9.8 | +0.0 | +0.2 | +0.0 | 40.2 | 47.7 | -7.5 | Line |
| 16 | 4.615M | 27.8 | +0.1 +0.1 | +9.9 | +0.1 | +0.2 | +0.0 | 38.2 | 46.0 | -7.8 | Line |
| 17 | 1.621M | 27.9 | +0.1 +0.1 | +9.9 | +0.0 | +0.2 | +0.0 | 38.2 | 46.0 | -7.8 | Line |
| 18 | 4.556M | 27.7 | +0.1 +0.1 | +9.9 | +0.1 | +0.2 | +0.0 | 38.1 | 46.0 | -7.9 | Line |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 19 | 1.681M | 27.7 | +0.1<br>+0.1 | +9.9 | +0.1 | +0.1 | +0.0 | 38.0 | 46.0 | -8.0 | Line |
| 20 | 752.127k | 27.7 | +0.2<br>+0.1 | +9.8 | +0.1 | +0.1 | +0.0 | 38.0 | 46.0 | -8.0 | Line |
| 21 | 1.507M | 27.5 | +0.1<br>+0.1 | +9.9 | +0.2 | +0.1 | +0.0 | 37.9 | 46.0 | -8.1 | Line |
| 22 | 1.741M | 27.5 | +0.1<br>+0.1 | +10.0 | +0.1 | +0.1 | +0.0 | 37.9 | 46.0 | -8.1 | Line |
| 23 | 4.441M | 27.3 | +0.1<br>+0.1 | +9.9 | +0.1 | +0.2 | +0.0 | 37.7 | 46.0 | -8.3 | Line |
| 24 | 1.796M | 27.2 | +0.1<br>+0.1 | +10.0 | +0.1 | +0.2 | +0.0 | 37.7 | 46.0 | -8.3 | Line |
| 25 | 1.451M | 27.3 | +0.1<br>+0.1 | +9.9 | +0.1 | +0.2 | +0.0 | 37.7 | 46.0 | -8.3 | Line |
| 26 | 4.790M | 27.2 | +0.1<br>+0.1 | +10.0 | +0.1 | +0.2 | +0.0 | 37.7 | 46.0 | -8.3 | Line |
| 27 | 4.730M | 27.1 | +0.1<br>+0.1 | +10.0 | +0.1 | +0.2 | +0.0 | 37.6 | 46.0 | -8.4 | Line |
| 28 | 4.692M | 27.2 | +0.1<br>+0.1 | +9.9 | +0.1 | +0.2 | +0.0 | 37.6 | 46.0 | -8.4 | Line |
| 29 | 4.496M | 27.1 | +0.1<br>+0.1 | +9.9 | +0.1 | +0.2 | +0.0 | 37.5 | 46.0 | -8.5 | Line |
| 30 | 4.654M | 27.1 | +0.1<br>+0.1 | +9.9 | +0.1 | +0.2 | +0.0 | 37.5 | 46.0 | -8.5 | Line |
| 31 | 350.709k | 29.8 | +0.1<br>+0.1 | +9.9 | +0.1 | +0.2 | +0.0 | 40.2 | 48.9 | -8.7 | Line |
| 32 | 4.828M | 26.8 | +0.1<br>+0.1 | +10.0 | +0.1 | +0.2 | +0.0 | 37.3 | 46.0 | -8.7 | Line |
| 33 | 4.381M | 26.8 | +0.1<br>+0.1 | +9.9 | +0.1 | +0.2 | +0.0 | 37.2 | 46.0 | -8.8 | Line |
| 34 | 501.240k | 26.8 | +0.1<br>+0.1 | +9.8 | +0.1 | +0.2 | +0.0 | 37.1 | 46.0 | -8.9 | Line |
| 35 | 4.577M | 26.6 | +0.1<br>+0.1 | +9.9 | +0.1 | +0.2 | +0.0 | 37.0 | 46.0 | -9.0 | Line |
| 36 | 810.303k | 26.4 | +0.2<br>+0.1 | +9.8 | +0.1 | +0.1 | +0.0 | 36.7 | 46.0 | -9.3 | Line |
| 37 | 4.326M | 26.3 | +0.1<br>+0.1 | +9.9 | +0.1 | +0.2 | +0.0 | 36.7 | 46.0 | -9.3 | Line |
| 38 | 2.685M | 26.2 | +0.2<br>+0.1 | +9.9 | +0.1 | +0.2 | +0.0 | 36.7 | 46.0 | -9.3 | Line |
| 39 | 2.744M | 26.2 | +0.2<br>+0.1 | +9.8 | +0.1 | +0.2 | +0.0 | 36.6 | 46.0 | -9.4 | Line |
| 40 | 1.583M | 26.2 | +0.1<br>+0.1 | +9.9 | +0.1 | +0.2 | +0.0 | 36.6 | 46.0 | -9.4 | Line |
| 41 | 4.598M | 26.2 | +0.1<br>+0.1 | +9.9 | +0.1 | +0.2 | +0.0 | 36.6 | 46.0 | -9.4 | Line |
| 42 | 2.625M | 26.0 | +0.2<br>+0.1 | +9.9 | +0.2 | +0.1 | +0.0 | 36.5 | 46.0 | -9.5 | Line |
| 43 | 1.698M | 26.1 | +0.1<br>+0.1 | +10.0 | +0.1 | +0.1 | +0.0 | 36.5 | 46.0 | -9.5 | Line |
| 44 | 1.855M | 26.0 | +0.1<br>+0.1 | +10.0 | +0.1 | +0.2 | +0.0 | 36.5 | 46.0 | -9.5 | Line |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 45 | 4.267M | 26.1 | +0.1<br>+0.1 | +9.9 | +0.1 | +0.2 | +0.0 | 36.5 | 46.0 | -9.5 | Line |
| 46 | 2.723M | 25.9 | +0.2<br>+0.1 | +9.8 | +0.1 | +0.2 | +0.0 | 36.3 | 46.0 | -9.7 | Line |
| 47 | 2.608M | 25.8 | +0.2<br>+0.1 | +9.9 | +0.2 | +0.1 | +0.0 | 36.3 | 46.0 | -9.7 | Line |
| 48 | 1.643M | 26.0 | +0.1<br>+0.1 | +9.9 | +0.0 | +0.2 | +0.0 | 36.3 | 46.0 | -9.7 | Line |
| 49 | 1.528M | 25.9 | +0.1<br>+0.1 | +9.9 | +0.2 | +0.1 | +0.0 | 36.3 | 46.0 | -9.7 | Line |
| 50 | 4.518M | 25.9 | +0.1<br>+0.1 | +9.9 | +0.1 | +0.2 | +0.0 | 36.3 | 46.0 | -9.7 | Line |
| 51 | 2.799M | 25.9 | +0.2<br>+0.1 | +9.8 | +0.1 | +0.2 | +0.0 | 36.3 | 46.0 | -9.7 | Line |

CKC Laboratories, Inc. Date: 12/17/2010 Time: 09:06:54 SynapSense Corporation WO#: 91176 Model:0642 SN:None
15.207 AC Mains - Average Test Lead: Line 110V 60Hz Sequence#: 8 Line



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

Customer: **SynapSense Corporation**
Specification: **15.207 AC Mains - Average**
Work Order #: **91176** Date: 12/17/2010
Test Type: **Conducted Emissions** Time: 8:58:08 AM
Equipment: **Plug Meter** Sequence#: 11
Manufacturer: SynapSense Corporation Tested By: A. Brar
Model: 0642 110V 60Hz
S/N: None

***Test Equipment*:**

| ID | Asset # | Description | Model | Calibration Date | Cal Due Date |
|---|---|---|---|---|---|
| | AN02668 | Spectrum Analyzer | E4446A | 3/9/2009 | 3/9/2011 |
| T1 | ANP05258 | High Pass Filter | HE9615-150K-50-720B | 12/2/2010 | 12/2/2012 |
| T2 | ANP01211 | Attenuator | 23-10-34 | 5/18/2009 | 5/18/2011 |
| T3 | ANP05440 | Cable | | 1/18/2010 | 1/18/2012 |
| T4 | ANP05300 | Cable | RG214/U | 3/6/2009 | 3/6/2011 |
| | AN00494 | 50uH LISN-Line (dB) | 3816/NM | 3/30/2009 | 3/30/2011 |
| T5 | AN00494 | 50uH LISN-Neutral (dB) | 3816/NM | 3/30/2009 | 3/30/2011 |

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

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Plug Meter* | SynapSense Corporation | 0642 | None |

***Support Devices:***

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Halogen Worklight (Dual) | Husky | 553143 1200-Watts | None |

***Test Conditions / Notes:***

Conducted Emissions 0.15-30MHz. Highest Clock: 2.4GHz (intentional Radiator).
Temperature: 65°F
Humidity: 42%
Atmospheric Pressure: 1022mbar

Notes: Testing 2440MHz unit

Modification: Replaced the 0.01uF capacitor with a 0.1uF capacitor after the fuse from L-N. Only two LEDs are on instead of four, this is done by firmware change.

Ext Attn: 0 dB

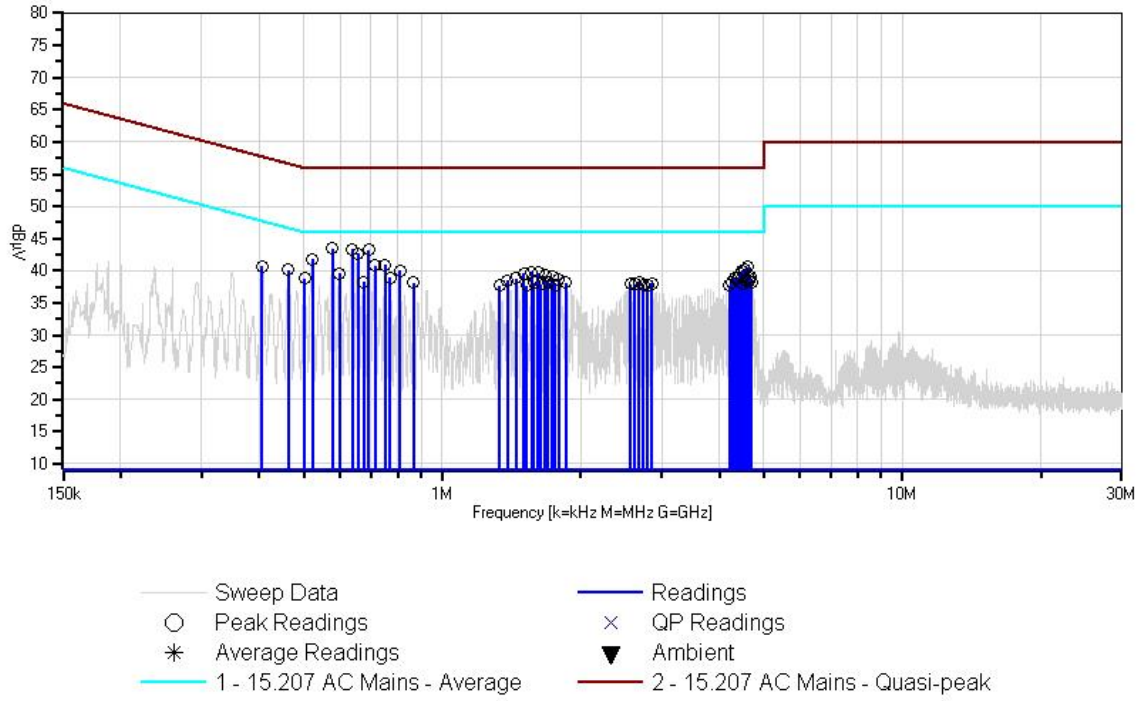
***Measurement Data:*** Reading listed by margin. Test Lead: Neutral

| # | Freq | Rdng | T1<br>T5 | T2 | T3 | T4 | Dist | Corr | Spec | Margin | Polar |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBµV | dB | dB | dB | dB | Table | dBµV | dBµV | dB | Ant |
| 1 | 577.597k | 33.4 | +0.2<br>+0.0 | +9.8 | +0.0 | +0.1 | +0.0 | 43.5 | 46.0 | -2.5 | Neutr |
| 2 | 637.228k | 33.0 | +0.2<br>+0.0 | +9.8 | +0.0 | +0.3 | +0.0 | 43.3 | 46.0 | -2.7 | Neutr |
| 3 | 693.223k | 33.1 | +0.2<br>+0.0 | +9.8 | +0.0 | +0.1 | +0.0 | 43.2 | 46.0 | -2.8 | Neutr |
| 4 | 656.135k | 32.5 | +0.2<br>+0.0 | +9.8 | +0.0 | +0.2 | +0.0 | 42.7 | 46.0 | -3.3 | Neutr |
| 5 | 521.602k | 31.6 | +0.1<br>+0.0 | +9.8 | +0.1 | +0.2 | +0.0 | 41.8 | 46.0 | -4.2 | Neutr |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 750.672k | 30.7 | +0.2<br>+0.0 | +9.8 | +0.1 | +0.1 | +0.0 | 40.9 | 46.0 | -5.1 | Neutr |
| 7 | 713.585k | 30.6 | +0.2<br>+0.0 | +9.8 | +0.0 | +0.2 | +0.0 | 40.8 | 46.0 | -5.2 | Neutr |
| 8 | 4.611M | 30.3 | +0.1<br>+0.0 | +9.9 | +0.1 | +0.2 | +0.0 | 40.6 | 46.0 | -5.4 | Neutr |
| 9 | 4.552M | 29.9 | +0.1<br>+0.0 | +9.9 | +0.1 | +0.2 | +0.0 | 40.2 | 46.0 | -5.8 | Neutr |
| 10 | 809.576k | 29.7 | +0.2<br>+0.1 | +9.8 | +0.1 | +0.1 | +0.0 | 40.0 | 46.0 | -6.0 | Neutr |
| 11 | 4.496M | 29.7 | +0.1<br>+0.0 | +9.9 | +0.1 | +0.2 | +0.0 | 40.0 | 46.0 | -6.0 | Neutr |
| 12 | 1.562M | 29.6 | +0.1<br>+0.0 | +9.9 | +0.1 | +0.1 | +0.0 | 39.8 | 46.0 | -6.2 | Neutr |
| 13 | 1.617M | 29.5 | +0.1<br>+0.0 | +9.9 | +0.0 | +0.2 | +0.0 | 39.7 | 46.0 | -6.3 | Neutr |
| 14 | 597.232k | 29.5 | +0.2<br>+0.0 | +9.8 | +0.0 | +0.1 | +0.0 | 39.6 | 46.0 | -6.4 | Neutr |
| 15 | 1.502M | 29.3 | +0.1<br>+0.0 | +9.9 | +0.2 | +0.1 | +0.0 | 39.6 | 46.0 | -6.4 | Neutr |
| 16 | 462.699k | 30.0 | +0.1<br>+0.0 | +9.8 | +0.0 | +0.2 | +0.0 | 40.1 | 46.6 | -6.5 | Neutr |
| 17 | 4.437M | 29.2 | +0.1<br>+0.0 | +9.9 | +0.1 | +0.2 | +0.0 | 39.5 | 46.0 | -6.5 | Neutr |
| 18 | 1.677M | 29.1 | +0.1<br>+0.0 | +9.9 | +0.1 | +0.1 | +0.0 | 39.3 | 46.0 | -6.7 | Neutr |
| 19 | 4.666M | 28.8 | +0.1<br>+0.0 | +9.9 | +0.1 | +0.2 | +0.0 | 39.1 | 46.0 | -6.9 | Neutr |
| 20 | 405.977k | 30.6 | +0.1<br>+0.0 | +9.8 | +0.0 | +0.2 | +0.0 | 40.7 | 47.7 | -7.0 | Neutr |
| 21 | 1.736M | 28.7 | +0.1<br>+0.0 | +10.0 | +0.1 | +0.1 | +0.0 | 39.0 | 46.0 | -7.0 | Neutr |
| 22 | 4.322M | 28.6 | +0.1<br>+0.0 | +9.9 | +0.1 | +0.2 | +0.0 | 38.9 | 46.0 | -7.1 | Neutr |
| 23 | 771.034k | 28.7 | +0.2<br>+0.0 | +9.8 | +0.1 | +0.1 | +0.0 | 38.9 | 46.0 | -7.1 | Neutr |
| 24 | 4.628M | 28.6 | +0.1<br>+0.0 | +9.9 | +0.1 | +0.2 | +0.0 | 38.9 | 46.0 | -7.1 | Neutr |
| 25 | 4.377M | 28.6 | +0.1<br>+0.0 | +9.9 | +0.1 | +0.2 | +0.0 | 38.9 | 46.0 | -7.1 | Neutr |
| 26 | 501.968k | 28.6 | +0.1<br>+0.0 | +9.8 | +0.1 | +0.2 | +0.0 | 38.8 | 46.0 | -7.2 | Neutr |
| 27 | 1.447M | 28.5 | +0.1<br>+0.0 | +9.9 | +0.1 | +0.2 | +0.0 | 38.8 | 46.0 | -7.2 | Neutr |
| 28 | 1.792M | 28.3 | +0.1<br>+0.0 | +10.0 | +0.1 | +0.2 | +0.0 | 38.7 | 46.0 | -7.3 | Neutr |
| 29 | 1.388M | 28.1 | +0.2<br>+0.0 | +9.9 | +0.1 | +0.2 | +0.0 | 38.5 | 46.0 | -7.5 | Neutr |
| 30 | 4.573M | 28.1 | +0.1<br>+0.0 | +9.9 | +0.1 | +0.2 | +0.0 | 38.4 | 46.0 | -7.6 | Neutr |
| 31 | 4.649M | 28.1 | +0.1<br>+0.0 | +9.9 | +0.1 | +0.2 | +0.0 | 38.4 | 46.0 | -7.6 | Neutr |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 32 | 674.316k | 28.2 | +0.2<br>+0.0 | +9.8 | +0.0 | +0.1 | +0.0 | 38.3 | 46.0 | -7.7 | Neutr |
| 33 | 1.698M | 27.9 | +0.1<br>+0.0 | +10.0 | +0.1 | +0.1 | +0.0 | 38.2 | 46.0 | -7.8 | Neutr |
| 34 | 2.680M | 27.8 | +0.2<br>+0.0 | +9.9 | +0.1 | +0.2 | +0.0 | 38.2 | 46.0 | -7.8 | Neutr |
| 35 | 4.262M | 27.9 | +0.1<br>+0.0 | +9.9 | +0.1 | +0.2 | +0.0 | 38.2 | 46.0 | -7.8 | Neutr |
| 36 | 1.583M | 27.8 | +0.1<br>+0.0 | +9.9 | +0.1 | +0.2 | +0.0 | 38.1 | 46.0 | -7.9 | Neutr |
| 37 | 867.752k | 27.9 | +0.1<br>+0.1 | +9.8 | +0.1 | +0.1 | +0.0 | 38.1 | 46.0 | -7.9 | Neutr |
| 38 | 4.705M | 27.8 | +0.1<br>+0.0 | +9.9 | +0.1 | +0.2 | +0.0 | 38.1 | 46.0 | -7.9 | Neutr |
| 39 | 1.855M | 27.7 | +0.1<br>+0.0 | +10.0 | +0.1 | +0.2 | +0.0 | 38.1 | 46.0 | -7.9 | Neutr |
| 40 | 2.855M | 27.7 | +0.2<br>+0.0 | +9.8 | +0.1 | +0.2 | +0.0 | 38.0 | 46.0 | -8.0 | Neutr |
| 41 | 2.566M | 27.5 | +0.2<br>+0.0 | +9.9 | +0.2 | +0.1 | +0.0 | 37.9 | 46.0 | -8.1 | Neutr |
| 42 | 1.638M | 27.7 | +0.1<br>+0.0 | +9.9 | +0.0 | +0.2 | +0.0 | 37.9 | 46.0 | -8.1 | Neutr |
| 43 | 4.513M | 27.6 | +0.1<br>+0.0 | +9.9 | +0.1 | +0.2 | +0.0 | 37.9 | 46.0 | -8.1 | Neutr |
| 44 | 2.625M | 27.5 | +0.2<br>+0.0 | +9.9 | +0.2 | +0.1 | +0.0 | 37.9 | 46.0 | -8.1 | Neutr |
| 45 | 1.758M | 27.5 | +0.1<br>+0.0 | +10.0 | +0.1 | +0.1 | +0.0 | 37.8 | 46.0 | -8.2 | Neutr |
| 46 | 2.740M | 27.5 | +0.2<br>+0.0 | +9.8 | +0.1 | +0.2 | +0.0 | 37.8 | 46.0 | -8.2 | Neutr |
| 47 | 1.524M | 27.4 | +0.1<br>+0.0 | +9.9 | +0.2 | +0.1 | +0.0 | 37.7 | 46.0 | -8.3 | Neutr |
| 48 | 1.332M | 27.3 | +0.2<br>+0.0 | +9.9 | +0.1 | +0.2 | +0.0 | 37.7 | 46.0 | -8.3 | Neutr |
| 49 | 4.207M | 27.5 | +0.1<br>+0.0 | +9.8 | +0.1 | +0.2 | +0.0 | 37.7 | 46.0 | -8.3 | Neutr |
| 50 | 2.795M | 27.4 | +0.2<br>+0.0 | +9.8 | +0.1 | +0.2 | +0.0 | 37.7 | 46.0 | -8.3 | Neutr |

CKC Laboratories, Inc. Date: 12/17/2010 Time: 8:58:08 AM SynapSense Corporation WO#: 91176 Model:0642 SN:None
15.207 AC Mains - Average Test Lead: Neutral 110V 60Hz Sequence#: 11 Neutral



## ***Test Setup Photos***

# 15.209/15.247(d) Spurious Radiated Emissions

## *Test Data Sheets*

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

Customer: **SynapSense Corporation**
Specification: **15.209 Radiated Emissions**
Work Order #: **91167** Date: 11/9/2010
Test Type: **Maximized Emissions** Time: 12:44:52 PM
Equipment: **Plug Meter** Sequence#: 16
Manufacturer: SynapSense Corporation Tested By: A. Brar
Model: 0642
S/N: None

***Test Equipment*:**

| ID | Asset # | Description | Model | Calibration Date | Cal Due Date |
|---|---|---|---|---|---|
| | AN02668 | Spectrum Analyzer | E4446A | 3/9/2009 | 3/9/2011 |
| T1 | ANP05300 | Cable | RG214/U | 3/6/2009 | 3/6/2011 |
| T2 | ANP05440 | Cable | | 1/18/2010 | 1/18/2012 |
| T3 | AN00432 | Loop Antenna | 6502 | 5/18/2009 | 5/18/2011 |

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

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Plug Meter* | SynapSense Corporation | 0642 | None |

***Support Devices:***

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Halogen Worklight (Dual) | Husky | 553143 1200-Watts | None |

***Test Conditions / Notes:***

Temp: 66°F
Relative Humidity: 45%
AP: 1031mbar
Frequency range tested: 0.09 - 30MHz
There are 4 EUTs, each set to a different transmit frequency: 2402, 2440, 2470MHz and one in Rx only mode.
This data sheet covers 2.1057 (a) (1) and 15.33 (a).

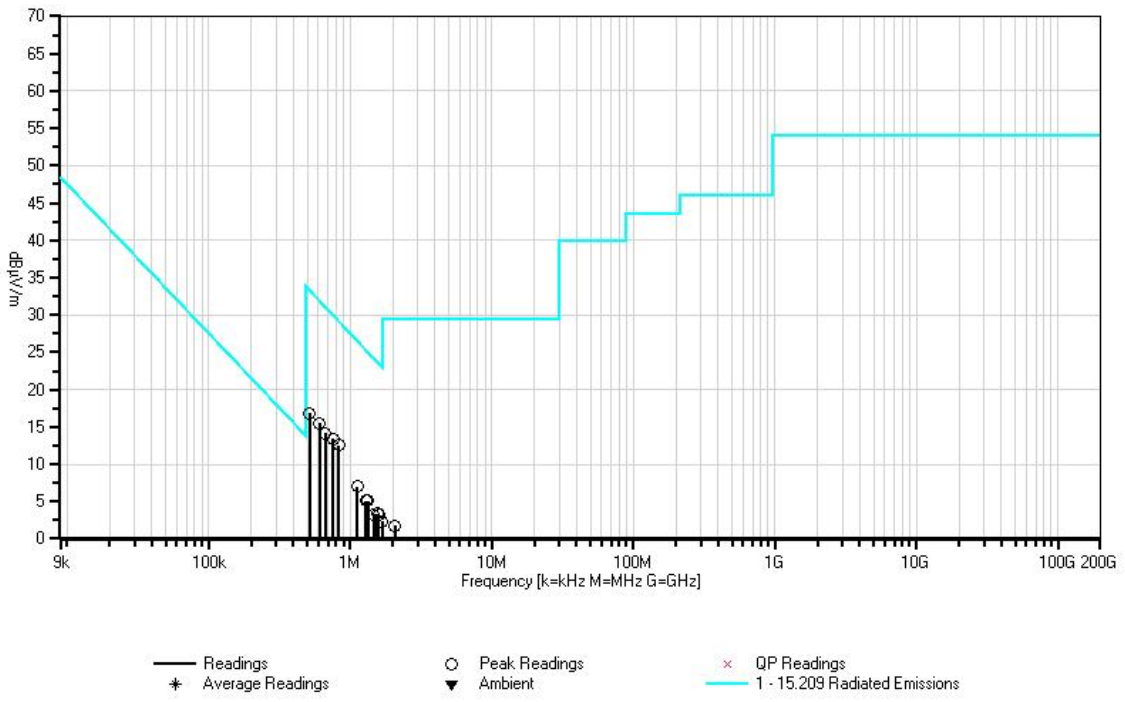
Ext Attn: 0 dB

***Measurement Data:*** Reading listed by margin. Test Distance: 4.5 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 | 609.954k | 38.5 | +0.1 | +0.0 | +9.9 | | -33.0 -5 | 15.5 | 31.9 | -16.4 | Perpe 100 |
| 2 | 517.964k | 39.6 | +0.2 | +0.1 | +9.9 | | -33.0 -5 | 16.8 | 33.3 | -16.5 | Perpe 100 |
| 3 | 758.394k | 35.9 | +0.1 | +0.1 | +10.3 | | -33.0 -5 | 13.4 | 30.0 | -16.6 | Perpe 100 |
| 4 | 831.569k | 35.0 | +0.1 | +0.1 | +10.3 | | -33.0 -6 | 12.5 | 29.2 | -16.7 | Paral 100 |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 672.676k | 36.8 | +0.2 | +0.0 | +10.2 | -33.0<br>-6 | 14.2 | 31.0 | -16.8 | Paral<br>100 |
| 6 | 1.124M | 29.5 | +0.1 | +0.1 | +10.3 | -33.0<br>-5 | 7.0 | 26.5 | -19.5 | Perpe<br>100 |
| 7 | 1.340M | 27.4 | +0.2 | +0.1 | +10.4 | -33.0<br>-5 | 5.1 | 25.0 | -19.9 | Perpe<br>100 |
| 8 | 1.595M | 25.6 | +0.2 | +0.1 | +10.4 | -33.0<br>-5 | 3.3 | 23.5 | -20.2 | Perpe<br>100 |
| 9 | 1.289M | 27.6 | +0.2 | +0.0 | +10.3 | -33.0<br>-5 | 5.1 | 25.3 | -20.2 | Perpe<br>100 |
| 10 | 1.555M | 25.7 | +0.1 | +0.2 | +10.4 | -33.0<br>-5 | 3.4 | 23.7 | -20.3 | Perpe<br>100 |
| 11 | 1.691M | 24.7 | +0.1 | +0.1 | +10.4 | -33.0<br>-6 | 2.3 | 23.0 | -20.7 | Paral<br>100 |
| 12 | 1.478M | 25.6 | +0.2 | +0.1 | +10.4 | -33.0<br>-6 | 3.3 | 24.2 | -20.9 | Paral<br>100 |
| 13 | 2.078M | 24.2 | +0.2 | +0.0 | +10.4 | -33.0<br>-6 | 1.8 | 29.5 | -27.7 | Paral<br>100 |

CKC Laboratories, Inc. Date: 11/9/2010 Time: 12:44:52 PM SynapSense Corporation WO#: 91167 Model:0642 SN:None
15.209 Radiated Emissions Test Distance: 4.5 Meters Sequence#: 16 Perpendicular



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

Customer: **SynapSense Corporation**
Specification: **15.209 Radiated Emissions**
Work Order #: **91167** Date: 11/9/2010
Test Type: **Maximized Emissions** Time: 11:36:53 AM
Equipment: **Plug Meter** Sequence#: 13
Manufacturer: SynapSense Corporation Tested By: A. Brar
Model: 0642
S/N: None

***Test Equipment*:**

| ID | Asset # | Description | Model | Calibration Date | Cal Due Date |
|---|---|---|---|---|---|
| | AN02668 | Spectrum Analyzer | E4446A | 3/9/2009 | 3/9/2011 |
| T1 | ANP05299 | Cable | RG214 | 3/6/2009 | 3/6/2011 |
| T2 | ANP05300 | Cable | RG214/U | 3/6/2009 | 3/6/2011 |
| T3 | ANP05440 | Cable | | 1/18/2010 | 1/18/2012 |
| T4 | AN00730 | Preamp | 8447D | 2/9/2009 | 2/9/2011 |
| T5 | AN00852 | Biconilog Antenna | CBL 6111C | 12/22/2008 | 12/22/2010 |

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

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Plug Meter* | SynapSense Corporation | 0642 | None |

***Support Devices:***

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Halogen Worklight (Dual) | Husky | 553143 1200-Watts | None |

***Test Conditions / Notes:***

Temp: 66°F
Relative Humidity: 45%
AP: 1031mbar

Frequency range tested: 30-1000MHz

There are 4 EUTs, each set to a different transmit frequency: 2402, 2440, 2470MHz and one in Rx only mode.

This data sheet covers 2.1057 (a) (1) and 15.33 (a).

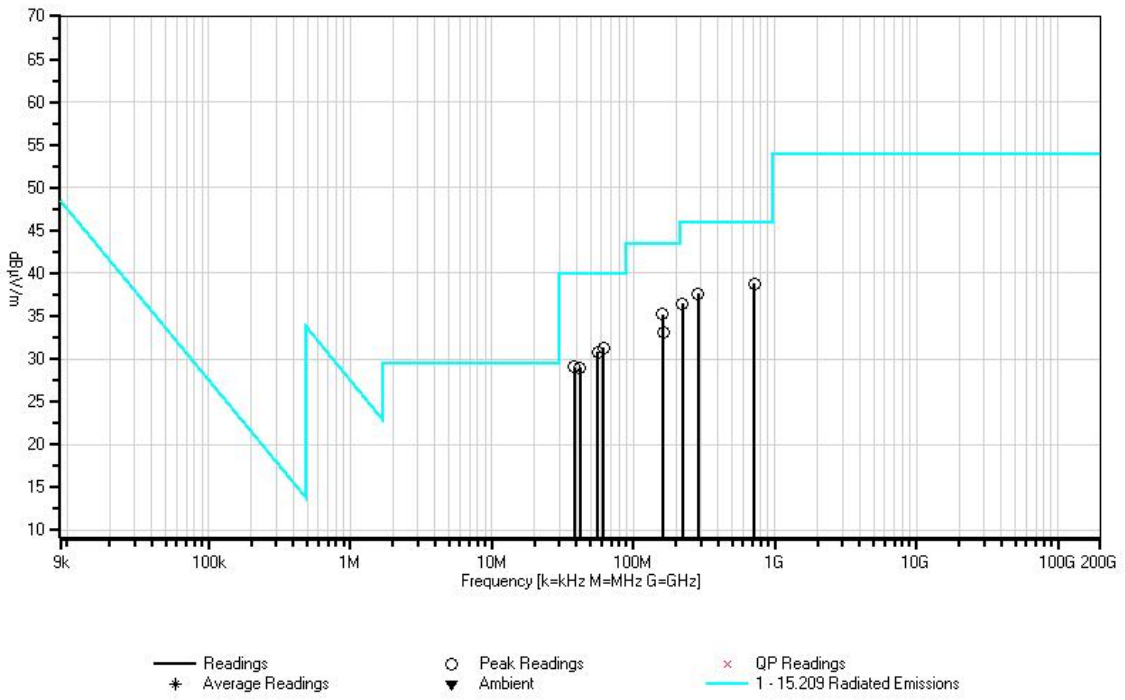
Ext Attn: 0 dB

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

| # | Freq | Rdng | T1<br>T5 | T2 | T3 | T4 | Dist | Corr | Spec | Margin | Polar |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBµV | dB | dB | dB | dB | Table | dBµV/m | dBµV/m | dB | Ant |
| 1 | 720.933M | 42.5 | +0.2<br>+20.5 | +0.9 | +1.7 | -27.0 | +0.0<br>-5 | 38.8 | 46.0 | -7.2 | Vert<br>130 |
| 2 | 162.014M | 51.0 | +0.2<br>+10.2 | +0.5 | +0.6 | -27.3 | +0.0<br>391 | 35.2 | 43.5 | -8.3 | Horiz<br>100 |
| 3 | 288.020M | 50.1 | +0.2<br>+13.0 | +0.6 | +0.9 | -27.2 | +0.0<br>391 | 37.6 | 46.0 | -8.4 | Horiz<br>100 |
| 4 | 61.744M | 52.0 | +0.1<br>+5.6 | +0.4 | +0.5 | -27.3 | +0.0<br>-5 | 31.3 | 40.0 | -8.7 | Vert<br>130 |
| 5 | 56.353M | 50.8 | +0.1<br>+6.5 | +0.3 | +0.4 | -27.3 | +0.0<br>-5 | 30.8 | 40.0 | -9.2 | Vert<br>130 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 223.996M | 51.4 | +0.2<br>+10.7 | +0.6 | +0.8 | -27.2 | +0.0<br>391 | 36.5 | 46.0 | -9.5 | Horiz<br>100 |
| 7 | 163.816M | 49.0 | +0.2<br>+10.1 | +0.5 | +0.6 | -27.3 | +0.0<br>391 | 33.1 | 43.5 | -10.4 | Horiz<br>100 |
| 8 | 38.319M | 41.0 | +0.1<br>+14.7 | +0.3 | +0.3 | -27.3 | +0.0<br>-5 | 29.1 | 40.0 | -10.9 | Vert<br>130 |
| 9 | 42.112M | 43.0 | +0.1<br>+12.6 | +0.3 | +0.3 | -27.3 | +0.0<br>-5 | 29.0 | 40.0 | -11.0 | Vert<br>130 |

CKC Laboratories, Inc. Date: 11/9/2010 Time: 11:36:53 AM SynapSense Corporation WO#: 91167 Model:0642 SN:None
15.209 Radiated Emissions Test Distance: 3 Meters Sequence#: 13 Horiz



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

Customer: **SynapSense Corporation**
Specification: **15.209 Radiated Emissions**
Work Order #: **91167** Date: 11/9/2010
Test Type: **Maximized Emissions** Time: 11:24:32
Equipment: **Plug Meter** Sequence#: 10
Manufacturer: SynapSense Corporation Tested By: A. Brar
Model: 0642
S/N: None

***Test Equipment*:**

| ID | Asset # | Description | Model | Calibration Date | Cal Due Date |
|---|---|---|---|---|---|
| | AN02668 | Spectrum Analyzer | E4446A | 3/9/2009 | 3/9/2011 |
| T1 | AN02061 | Horn Antenna | DRG-118A | 1/19/2009 | 1/19/2011 |
| T2 | ANP04241 | Cable | FSJ1-50A | 3/2/2010 | 3/2/2012 |
| T3 | ANP05138 | Cable | FSJ1P-50A-4 | 3/19/2010 | 3/19/2012 |
| T4 | AN03114 | Preamp | AMF-7D-00101800-30-10P | 9/16/2009 | 9/16/2011 |
| T5 | ANP05843 | Cable | 32022-2-29094K-48TC | 7/30/2010 | 7/30/2012 |
| T6 | ANP05411 | Attenuator | 54A-10 | 2/4/2010 | 2/4/2012 |

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

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Plug Meter* | SynapSense Corporation | 0642 | None |

***Support Devices:***

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Halogen Worklight (Dual) | Husky | 553143 1200-Watts | None |

***Test Conditions / Notes:***

Temp: 66°F
Relative Humidity: 45%
AP: 1031mbar

Frequency range tested: 1- 3.5GHz

There are 4 EUTs, each set to a different transmit frequency: 2402, 2440, 2470MHz and one in Rx only mode.
This data sheet covers 2.1057 (a) (1) and 15.33 (a).

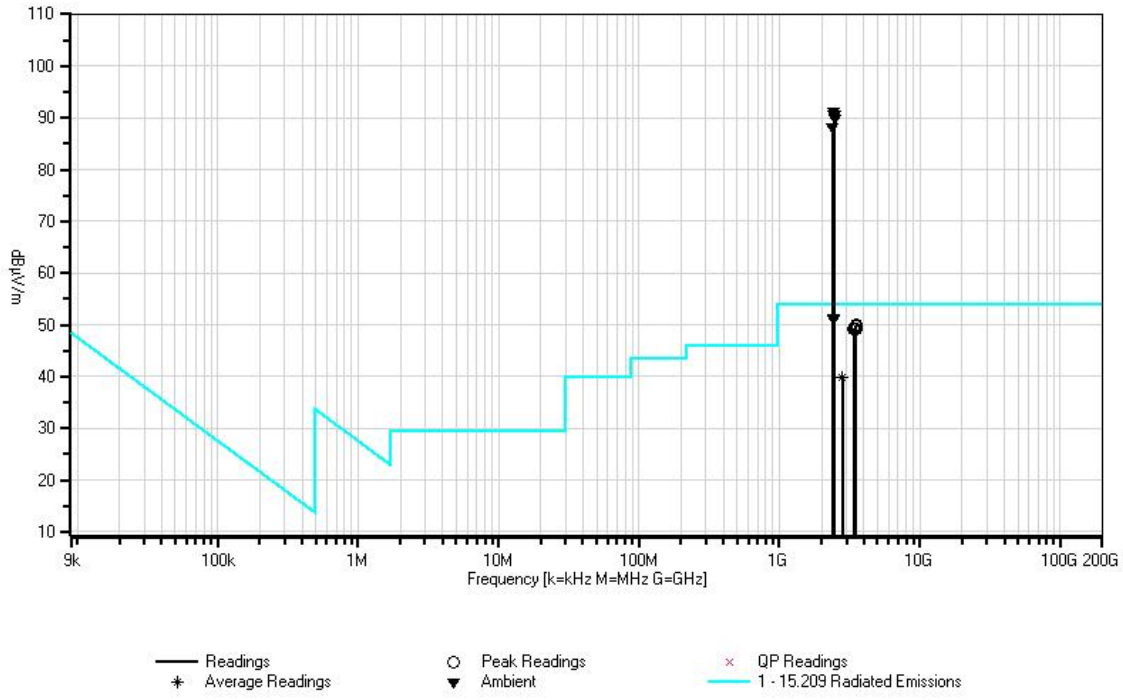
Ext Attn: 0 dB

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

| # | Freq | Rdng | T1<br>T5 | T2<br>T6 | T3 | T4 | Dist | Corr | Spec | Margin | Polar |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBµV | dB | dB | dB | dB | Table | dBµV/m | dBµV/m | dB | Ant |
| 1 | 2439.352M | 108.0 | +28.7 | +0.5 | +2.3 | -58.1 | +0.0 | 91.4 | 54.0 | +37.4 | Horiz |
| | Ambient | | +0.7 | +9.3 | | | | | In Band. | | 129 |
| 2 | 2470.383M | 107.4 | +28.8 | +0.5 | +2.3 | -58.2 | +0.0 | 90.8 | 54.0 | +36.8 | Vert |
| | Ambient | | +0.7 | +9.3 | | | -5 | | In Band. | | 130 |
| 3 | 2440.353M | 107.3 | +28.7 | +0.5 | +2.3 | -58.1 | +0.0 | 90.7 | 54.0 | +36.7 | Vert |
| | Ambient | | +0.7 | +9.3 | | | -5 | | In Band. | | 130 |
| 4 | 2470.383M | 106.4 | +28.8 | +0.5 | +2.3 | -58.2 | +0.0 | 89.8 | 54.0 | +35.8 | Horiz |
| | Ambient | | +0.7 | +9.3 | | | | | In Band. | | 129 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 2402.315M | 105.0 | +28.6 | +0.5 | +2.3 | -58.1 | +0.0 | 88.3 | 54.0 | +34.3 | Vert |
| | Ambient | | +0.7 | +9.3 | | | -5 | | In Band. | | 130 |
| 6 | 2410.323M | 68.0 | +28.7 | +0.5 | +2.3 | -58.1 | +0.0 | 51.4 | 54.0 | -2.6 | Horiz |
| | Ambient | | +0.7 | +9.3 | | | | | In Band. | | 129 |
| 7 | 2421.334M | 67.8 | +28.7 | +0.5 | +2.3 | -58.1 | +0.0 | 51.2 | 54.0 | -2.8 | Vert |
| | Ambient | | +0.7 | +9.3 | | | -5 | | In Band. | | 130 |
| 8 | 3494.768M | 63.3 | +31.4 | +0.7 | +2.9 | -58.6 | +0.0 | 49.9 | 54.0 | -4.1 | Horiz |
| | | | +0.9 | +9.3 | | | | | Noise Floor. | | 129 |
| 9 | 3494.380M | 63.0 | +31.4 | +0.7 | +2.9 | -58.6 | +0.0 | 49.6 | 54.0 | -4.4 | Horiz |
| | | | +0.9 | +9.3 | | | | | Noise Floor. | | 129 |
| 10 | 3387.994M | 62.8 | +31.2 | +0.6 | +2.8 | -58.4 | +0.0 | 49.2 | 54.0 | -4.8 | Vert |
| | | | +0.9 | +9.3 | | | -5 | | Noise Floor. | | 130 |
| 11 | 3400.396M | 62.6 | +31.3 | +0.6 | +2.8 | -58.3 | +0.0 | 49.2 | 54.0 | -4.8 | Vert |
| | | | +0.9 | +9.3 | | | -5 | | Noise Floor. | | 130 |
| 12 | 3489.923M | 62.6 | +31.4 | +0.7 | +2.9 | -58.6 | +0.0 | 49.2 | 54.0 | -4.8 | Vert |
| | | | +0.9 | +9.3 | | | -5 | | Noise Floor. | | 130 |
| 13 | 3412.992M | 62.5 | +31.3 | +0.6 | +2.8 | -58.3 | +0.0 | 49.1 | 54.0 | -4.9 | Vert |
| | | | +0.9 | +9.3 | | | -5 | | Noise Floor. | | 130 |
| 14 | 3493.218M | 62.5 | +31.4 | +0.7 | +2.9 | -58.6 | +0.0 | 49.1 | 54.0 | -4.9 | Vert |
| | | | +0.9 | +9.3 | | | -5 | | Noise Floor. | | 130 |
| 15 | 3437.021M | 62.4 | +31.3 | +0.7 | +2.9 | -58.4 | +0.0 | 49.1 | 54.0 | -4.9 | Horiz |
| | | | +0.9 | +9.3 | | | | | Noise Floor. | | 129 |
| 16 | 3423.069M | 62.3 | +31.3 | +0.7 | +2.9 | -58.3 | +0.0 | 49.1 | 54.0 | -4.9 | Horiz |
| | | | +0.9 | +9.3 | | | | | Noise Floor. | | 129 |
| 17 | 2825.076M | 54.6 | +30.0 | +0.6 | +2.5 | -58.1 | +0.0 | 39.7 | 54.0 | -14.3 | Vert |
| | Ave | | +0.8 | +9.3 | | | 47 | | | | 130 |
| ^ | 2825.076M | 66.1 | +30.0 | +0.6 | +2.5 | -58.1 | +0.0 | 51.2 | 54.0 | -2.8 | Vert |
| | | | +0.8 | +9.3 | | | -5 | | | | 130 |

CKC Laboratories, Inc. Date: 11/9/2010 Time: 11:24:32 SynapSense Corporation WO#: 91167 Model:0642 SN:None
15.209 Radiated Emissions Test Distance: 3 Meters Sequence#: 10 Horiz



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

Customer: **SynapSense Corporation**
Specification: **15.209 Radiated Emissions**
Work Order #: **91167** Date: 11/9/2010
Test Type: **Maximized Emissions** Time: 08:27:22
Equipment: **Plug Meter** Sequence#: 7
Manufacturer: SynapSense Corporation Tested By: A. Brar
Model: 0642
S/N: None

***Test Equipment*:**

| ID | Asset # | Description | Model | Calibration Date | Cal Due Date |
|---|---|---|---|---|---|
| | AN02668 | Spectrum Analyzer | E4446A | 3/9/2009 | 3/9/2011 |
| T1 | AN02061 | Horn Antenna | DRG-118A | 1/19/2009 | 1/19/2011 |
| T2 | ANP04241 | Cable | FSJ1-50A | 3/2/2010 | 3/2/2012 |
| T3 | ANP05138 | Cable | FSJ1P-50A-4 | 3/19/2010 | 3/19/2012 |
| T4 | AN01416 | High Pass Filter | 84300-80038 | 2/23/2010 | 2/23/2012 |
| T5 | AN03114 | Preamp | AMF-7D-00101800-30-10P | 9/16/2009 | 9/16/2011 |
| T6 | ANP05913 | Cable | 32022-29094K-65TC | 9/10/2009 | 9/10/2011 |

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

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Plug Meter* | SynapSense Corporation | 0642 | None |

***Support Devices:***

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Halogen Worklight (Dual) | Husky | 553143 1200-Watts | None |

***Test Conditions / Notes:***

Temp: 73°F
Relative Humidity: 40%
AP: 1014mbar
Frequency range tested: 3.5-18GHz.
There are 4 EUTs, each set to a different transmit frequency: 2402, 2440, 2470MHz and one in Rx only mode.
This data sheet covers 2.1057 (a) (1) and 15.33 (a).

Ext Attn: 0 dB

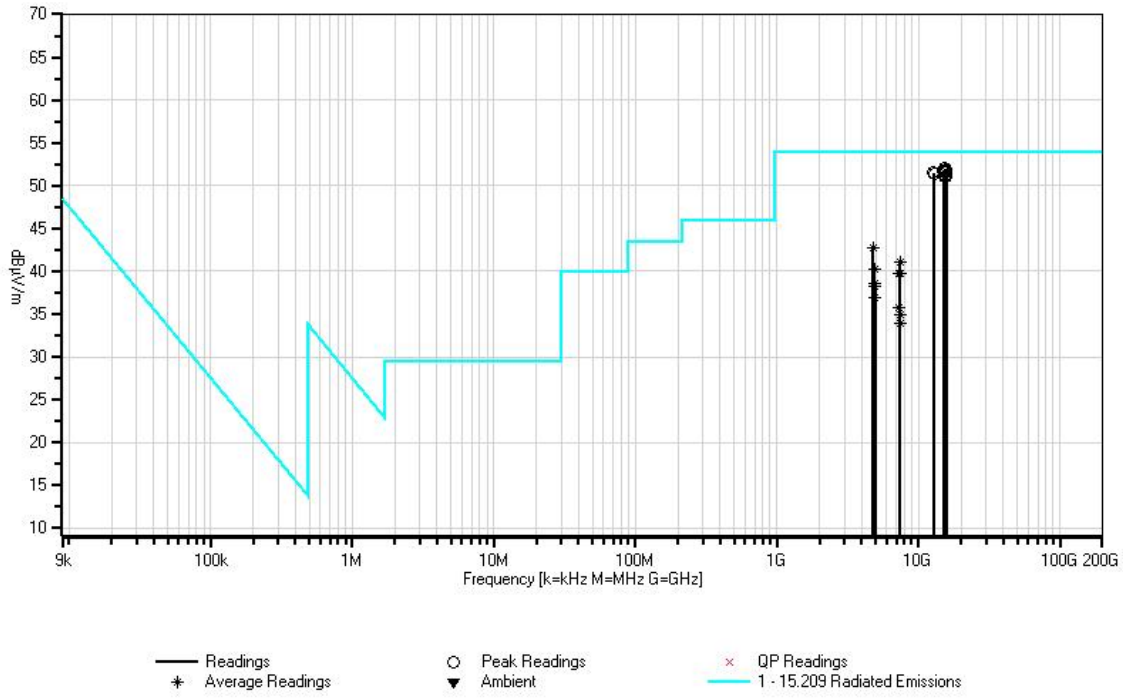
***Measurement Data:*** Reading listed by margin. Test Distance: 3 Meters

| # | Freq | Rdng | T1<br>T5 | T2<br>T6 | T3 | T4 | Dist | Corr | Spec | Margin | Polar |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MHz | dBµV | dB | dB | dB | dB | Table | dBµV/m | dBµV/m | dB | Ant |
| 1 | 15452.941 M | 55.2 | +42.5<br>-57.7 | +2.2<br>+2.6 | +6.9 | +0.3 | +0.0<br>-5 | 52.0 | 54.0 | -2.0 | Horiz<br>134 |
| 2 | 15794.282 M | 54.5 | +42.2<br>-57.5 | +2.2<br>+2.7 | +7.2 | +0.6 | +0.0<br>368 | 51.9 | 54.0 | -2.1 | Vert<br>129 |
| 3 | 15206.695 M | 55.0 | +42.9<br>-57.4 | +2.0<br>+2.6 | +6.6 | +0.0 | +0.0<br>-5 | 51.7 | 54.0 | -2.3 | Horiz<br>134 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 4 | 15677.165 M | 54.6 | +42.3 -57.6 | +2.1 +2.7 | +7.1 | +0.5 | +0.0 -5 | 51.7 | 54.0 | -2.3 | Horiz 134 |
| 5 | 15092.581 M | 55.0 | +43.0 -57.5 | +2.0 +2.6 | +6.6 | +0.0 | +0.0 -5 | 51.7 | 54.0 | -2.3 | Horiz 134 |
| 6 | 15579.067 M | 55.0 | +42.3 -57.8 | +2.0 +2.7 | +7.1 | +0.4 | +0.0 -5 | 51.7 | 54.0 | -2.3 | Horiz 134 |
| 7 | 15268.757 M | 55.1 | +42.8 -57.4 | +1.9 +2.6 | +6.6 | +0.1 | +0.0 368 | 51.7 | 54.0 | -2.3 | Vert 129 |
| 8 | 15330.819 M | 55.0 | +42.7 -57.5 | +2.0 +2.6 | +6.7 | +0.1 | +0.0 368 | 51.6 | 54.0 | -2.4 | Vert 129 |
| 9 | 12792.283 M | 57.9 | +40.7 -57.6 | +1.9 +2.4 | +6.0 | +0.2 | +0.0 368 | 51.5 | 54.0 | -2.5 | Vert 129 |
| 10 | 15697.185 M | 54.6 | +42.2 -57.6 | +2.1 +2.7 | +7.0 | +0.5 | +0.0 368 | 51.5 | 54.0 | -2.5 | Vert 129 |
| 11 | 13032.523 M | 57.7 | +40.9 -58.3 | +2.4 +2.4 | +5.8 | +0.5 | +0.0 368 | 51.4 | 54.0 | -2.6 | Vert 129 |
| 12 | 15680.168 M | 54.0 | +42.3 -57.6 | +2.1 +2.7 | +7.1 | +0.5 | +0.0 368 | 51.1 | 54.0 | -2.9 | Vert 129 |
| 13 | 15448.937 M | 54.2 | +42.5 -57.6 | +2.2 +2.6 | +6.9 | +0.3 | +0.0 -5 | 51.1 | 54.0 | -2.9 | Horiz 134 |
| 14 | 4804.303M Ave | 62.8 | +33.0 -59.0 | +0.8 +1.4 | +3.4 | +0.3 | +0.0 283 | 42.7 | 54.0 | -11.3 | Horiz 135 |
| ^ | 4804.303M | 81.9 | +33.0 -59.0 | +0.8 +1.4 | +3.4 | +0.3 | +0.0 -5 | 61.8 | 54.0 | +7.8 | Horiz 134 |
| 16 | 7410.907M Ave | 54.3 | +37.2 -58.3 | +1.1 +1.8 | +4.6 | +0.3 | +0.0 54 | 41.0 | 54.0 | -13.0 | Horiz 140 |
| ^ | 7410.907M | 73.9 | +37.2 -58.3 | +1.1 +1.8 | +4.6 | +0.3 | +0.0 -5 | 60.6 | 54.0 | +6.6 | Horiz 134 |
| 18 | 4879.411M Ave | 60.0 | +33.1 -58.9 | +0.8 +1.4 | +3.5 | +0.4 | +0.0 120 | 40.3 | 54.0 | -13.7 | Horiz 158 |
| ^ | 4879.411M | 79.4 | +33.1 -58.9 | +0.8 +1.4 | +3.5 | +0.4 | +0.0 -5 | 59.7 | 54.0 | +5.7 | Horiz 134 |
| 20 | 7321.026M Ave | 53.3 | +37.3 -58.4 | +1.1 +1.7 | +4.5 | +0.3 | +0.0 119 | 39.8 | 54.0 | -14.2 | Horiz 139 |
| ^ | 7321.026M | 72.4 | +37.3 -58.4 | +1.1 +1.7 | +4.5 | +0.3 | +0.0 -5 | 58.9 | 54.0 | +4.9 | Horiz 134 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 22 | 7408.946M | 53.0 | +37.2 | +1.1 | +4.6 | +0.3 | +0.0 | 39.7 | 54.0 | -14.3 | Vert |
| | Ave | | -58.3 | +1.8 | | | 104 | | | | 147 |
| | ^ 7408.946M | 72.3 | +37.2 | +1.1 | +4.6 | +0.3 | +0.0 | 59.0 | 54.0 | +5.0 | Vert |
| | | | -58.3 | +1.8 | | | | | | | 129 |
| 24 | 4940.764M | 58.1 | +33.2 | +0.8 | +3.5 | +0.4 | +0.0 | 38.6 | 54.0 | -15.4 | Horiz |
| | Ave | | -58.8 | +1.4 | | | 117 | | | | 159 |
| | ^ 4940.764M | 77.8 | +33.2 | +0.8 | +3.5 | +0.4 | +0.0 | 58.3 | 54.0 | +4.3 | Horiz |
| | | | -58.8 | +1.4 | | | -5 | | | | 134 |
| 26 | 4880.668M | 58.0 | +33.1 | +0.8 | +3.5 | +0.4 | +0.0 | 38.3 | 54.0 | -15.7 | Vert |
| | Ave | | -58.9 | +1.4 | | | 132 | | | | 129 |
| | ^ 4880.668M | 77.7 | +33.1 | +0.8 | +3.5 | +0.4 | +0.0 | 58.0 | 54.0 | +4.0 | Vert |
| | | | -58.9 | +1.4 | | | | | | | 129 |
| 28 | 4940.808M | 56.4 | +33.2 | +0.8 | +3.5 | +0.4 | +0.0 | 36.9 | 54.0 | -17.1 | Vert |
| | Ave | | -58.8 | +1.4 | | | 118 | | | | 124 |
| | ^ 4940.808M | 76.3 | +33.2 | +0.8 | +3.5 | +0.4 | +0.0 | 56.8 | 54.0 | +2.8 | Vert |
| | | | -58.8 | +1.4 | | | | | | | 129 |
| 30 | 7319.816M | 49.2 | +37.3 | +1.1 | +4.5 | +0.3 | +0.0 | 35.7 | 54.0 | -18.3 | Vert |
| | Ave | | -58.4 | +1.7 | | | 70 | | | | 126 |
| | ^ 7319.816M | 65.7 | +37.3 | +1.1 | +4.5 | +0.3 | +0.0 | 52.2 | 54.0 | -1.8 | Vert |
| | | | -58.4 | +1.7 | | | | | | | 129 |
| 32 | 7413.910M | 48.3 | +37.2 | +1.1 | +4.6 | +0.3 | +0.0 | 35.0 | 54.0 | -19.0 | Vert |
| | Ave | | -58.3 | +1.8 | | | 118 | | | | 124 |
| | ^ 7413.910M | 68.2 | +37.2 | +1.1 | +4.6 | +0.3 | +0.0 | 54.9 | 54.0 | +0.9 | Vert |
| | | | -58.3 | +1.8 | | | | | | | 129 |
| 34 | 7406.240M | 47.3 | +37.2 | +1.1 | +4.6 | +0.3 | +0.0 | 34.0 | 54.0 | -20.0 | Horiz |
| | Ave | | -58.3 | +1.8 | | | 125 | | | | 161 |
| | ^ 7406.240M | 69.9 | +37.2 | +1.1 | +4.6 | +0.3 | +0.0 | 56.6 | 54.0 | +2.6 | Horiz |
| | | | -58.3 | +1.8 | | | -5 | | | | 134 |

CKC Laboratories, Inc. Date: 11/9/2010 Time: 08:27:22 SynapSense Corporation WO#: 91167 Model:0642 SN:None
15.209 Radiated Emissions Test Distance: 3 Meters Sequence#: 7 Vert



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

Customer: **SynapSense Corporation**
Specification: **15.209 Radiated Emissions**
Work Order #: **91167** Date: 11/9/2010
Test Type: **Maximized Emissions** Time: 1:14:29 PM
Equipment: **Plug Meter** Sequence#: 19
Manufacturer: SynapSense Corporation Tested By: A. Brar
Model: 0642
S/N: None

***Test Equipment*:**

| ID | Asset # | Description | Model | Calibration Date | Cal Due Date |
|---|---|---|---|---|---|
| | AN02668 | Spectrum Analyzer | E4446A | 3/9/2009 | 3/9/2011 |
| T1 | AN02694 | Active Horn Antenna | AMFW-5F-18002650-20-10P | 11/13/2008 | 11/13/2010 |
| T2 | ANP00929 | Cable | various | 3/29/2010 | 3/29/2012 |
| T3 | AN03143 | Cable | 32022-29094K-144TC | 9/10/2009 | 9/10/2011 |
| T4 | ANP05843 | Cable | 32022-2-29094K-48TC | 7/30/2010 | 7/30/2012 |

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

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Plug Meter* | SynapSense Corporation | 0642 | None |

***Support Devices:***

| Function | Manufacturer | Model # | S/N |
|---|---|---|---|
| Halogen Worklight (Dual) | Husky | 553143 1200-Watts | None |

***Test Conditions / Notes:***

Temp: 66°F,
Relative Humidity: 45%
AP: 1031mbar

Frequency range tested: 18-26.5GHz

There are 4 EUTs, each set to a different transmit frequency: 2402, 2440, 2470MHz and one in Rx only mode.

This data sheet covers 2.1057 (a) (1) and 15.33 (a).

Ext Attn: 0 dB

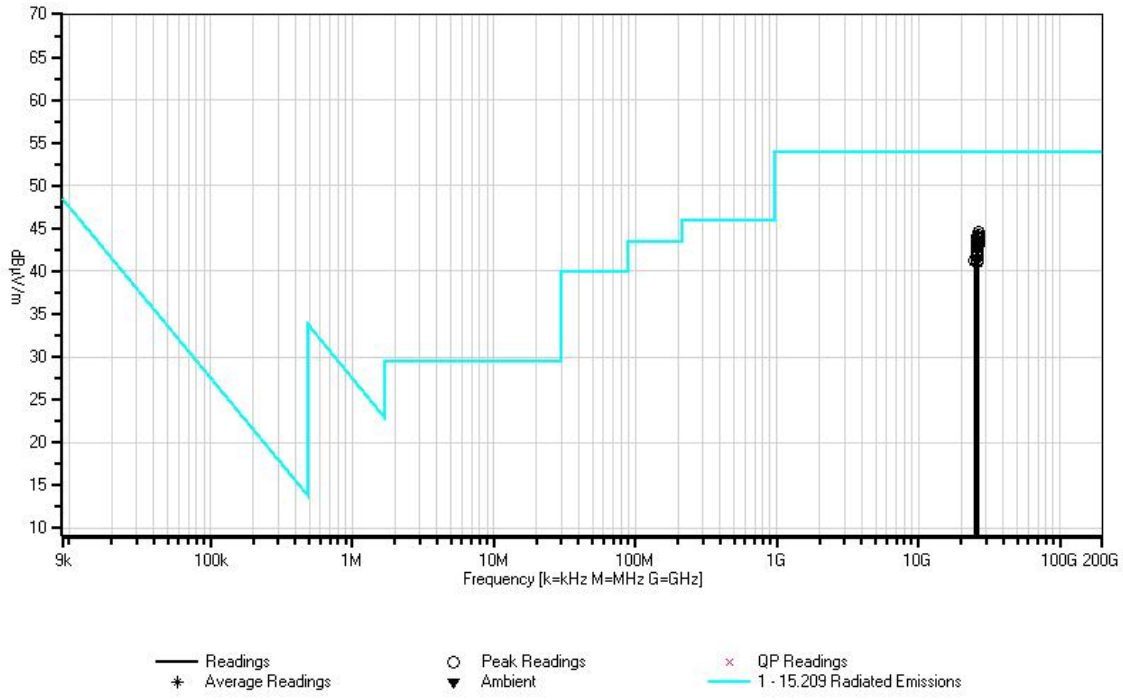
***Measurement Data:*** Reading listed by margin. Test Distance: 3 Meters

| # | Freq MHz | Rdng dBµV | T1 dB | T2 dB | T3 dB | T4 dB | Dist Table | Corr dBµV/m | Spec dBµV/m | Margin dB | Polar Ant |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 26423.740 M | 42.6 | -11.5 | +3.4 | +7.4 | +2.7 | +0.0 359 | 44.6 | 54.0 | -9.4 | Vert |
| 2 | 26469.988 M | 41.9 | -11.1 | +3.4 | +7.4 | +2.7 | +0.0 | 44.3 | 54.0 | -9.7 | Horiz |
| 3 | 26482.780 M | 41.8 | -11.0 | +3.4 | +7.4 | +2.7 | +0.0 | 44.3 | 54.0 | -9.7 | Horiz |
| 4 | 26417.836 M | 42.2 | -11.5 | +3.4 | +7.4 | +2.7 | +0.0 | 44.2 | 54.0 | -9.8 | Horiz |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 5 | 26424.232 M | 42.2 | -11.5 | +3.4 | +7.4 | +2.7 | +0.0 | 44.2 | 54.0 | -9.8 | Horiz |
| 6 | 26496.556 M | 41.6 | -10.9 | +3.4 | +7.4 | +2.7 | +0.0 | 44.2 | 54.0 | -9.8 | Horiz |
| 7 | 26368.636 M | 42.4 | -11.9 | +3.4 | +7.4 | +2.7 | +0.0 359 | 44.0 | 54.0 | -10.0 | Vert |
| 8 | 26400.616 M | 42.1 | -11.7 | +3.4 | +7.4 | +2.7 | +0.0 359 | 43.9 | 54.0 | -10.1 | Vert |
| 9 | 26470.972 M | 41.5 | -11.1 | +3.4 | +7.4 | +2.7 | +0.0 359 | 43.9 | 54.0 | -10.1 | Vert |
| 10 | 26405.044 M | 41.9 | -11.6 | +3.4 | +7.4 | +2.7 | +0.0 | 43.8 | 54.0 | -10.2 | Horiz |
| 11 | 26371.096 M | 41.9 | -11.9 | +3.4 | +7.4 | +2.7 | +0.0 | 43.5 | 54.0 | -10.5 | Horiz |
| 12 | 26387.824 M | 41.8 | -11.8 | +3.4 | +7.4 | +2.7 | +0.0 | 43.5 | 54.0 | -10.5 | Horiz |
| 13 | 26389.792 M | 41.6 | -11.8 | +3.4 | +7.4 | +2.7 | +0.0 | 43.3 | 54.0 | -10.7 | Horiz |
| 14 | 26209.228 M | 43.1 | -13.2 | +3.3 | +7.4 | +2.7 | +0.0 | 43.3 | 54.0 | -10.7 | Horiz |
| 15 | 26438.008 M | 41.1 | -11.4 | +3.4 | +7.4 | +2.7 | +0.0 359 | 43.2 | 54.0 | -10.8 | Vert |
| 16 | 26444.404 M | 41.0 | -11.3 | +3.4 | +7.4 | +2.7 | +0.0 359 | 43.2 | 54.0 | -10.8 | Vert |
| 17 | 26241.700 M | 42.6 | -12.9 | +3.3 | +7.4 | +2.7 | +0.0 359 | 43.1 | 54.0 | -10.9 | Vert |
| 18 | 26390.284 M | 41.3 | -11.7 | +3.4 | +7.4 | +2.7 | +0.0 359 | 43.1 | 54.0 | -10.9 | Vert |
| 19 | 26429.644 M | 41.0 | -11.4 | +3.4 | +7.4 | +2.7 | +0.0 359 | 43.1 | 54.0 | -10.9 | Vert |
| 20 | 26392.744 M | 41.2 | -11.7 | +3.4 | +7.4 | +2.7 | +0.0 359 | 43.0 | 54.0 | -11.0 | Vert |
| 21 | 26091.640 M | 43.5 | -14.1 | +3.3 | +7.4 | +2.7 | +0.0 | 42.8 | 54.0 | -11.2 | Horiz |

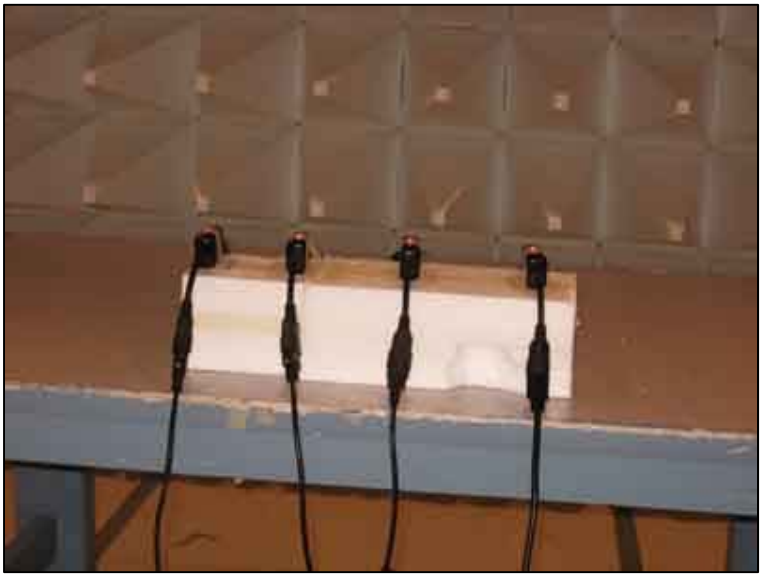
| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 22 | 26150.188 M | 42.6 | -13.6 | +3.3 | +7.4 | +2.7 | +0.0 | 42.4 | 54.0 | -11.6 | Horiz |
| 23 | 26072.452 M | 43.0 | -14.2 | +3.3 | +7.4 | +2.7 | +0.0 | 42.2 | 54.0 | -11.8 | Horiz |
| 24 | 26173.312 M | 41.9 | -13.4 | +3.3 | +7.4 | +2.7 | +0.0 | 41.9 | 54.0 | -12.1 | Horiz |
| 25 | 26104.924 M | 42.5 | -14.0 | +3.2 | +7.4 | +2.7 | +0.0 | 41.8 | 54.0 | -12.2 | Horiz |
| 26 | 26152.156 M | 41.4 | -13.6 | +3.3 | +7.4 | +2.7 | +0.0 359 | 41.2 | 54.0 | -12.8 | Vert |
| 27 | 24965.959 M | 43.8 | -15.4 | +3.0 | +7.2 | +2.6 | +0.0 359 | 41.2 | 54.0 | -12.8 | Vert |
| 28 | 25877.870 M | 42.8 | -14.9 | +3.2 | +7.4 | +2.6 | +0.0 359 | 41.1 | 54.0 | -12.9 | Vert |
| 29 | 26109.844 M | 41.7 | -13.9 | +3.2 | +7.4 | +2.7 | +0.0 359 | 41.1 | 54.0 | -12.9 | Vert |
| 30 | 26072.452 M | 41.9 | -14.2 | +3.3 | +7.4 | +2.7 | +0.0 359 | 41.1 | 54.0 | -12.9 | Vert |

CKC Laboratories, Inc. Date: 11/9/2010 Time: 1:14:29 PM SynapSense Corporation WO#: 91167 Model:0642 SN:None
15.209 Radiated Emissions Test Distance: 3 Meters Sequence#: 19 Vert



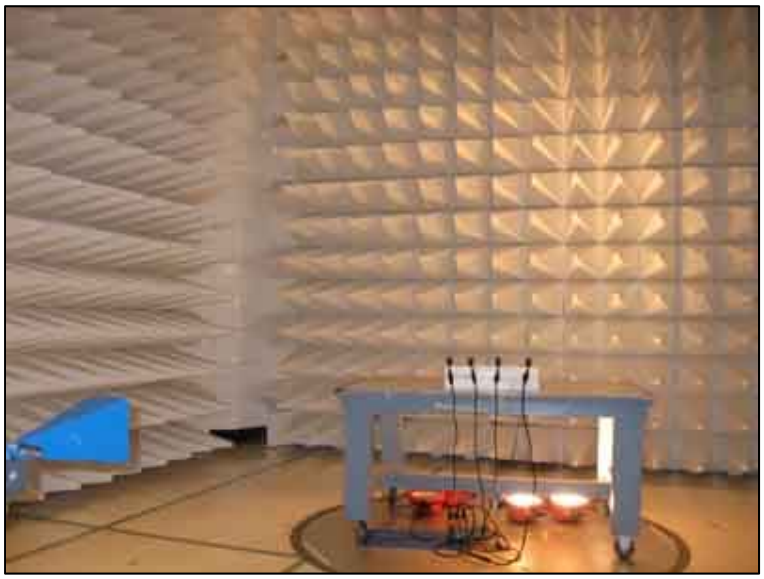
## ***Test Setup Photos***

**9kHz - 30MHz Mag Loop Antenna**



**30-1000MHz Bi Log Antenna**

**1-18GHz Horn Antenna**



**18-26.5GHz Horn Antenna**

# 15.47(b)(3) RF Power Output

## *Test Conditions*

There are three EUTs, each set to a different transmit frequency: 2402, 2440 & 2470MHz. Testing one EUT at a time set to one of the three channels. Fundamental readings, RBW 8MHz / VBW 8MHz
Temp: 68.2°F, Relative Humidity: 48%, AP: 1025mbar. FCC 2.1055(d) & 15.31(e) covered under this data sheet by altering the voltage from 85% to 115% of the nominal, no effects were noticed.

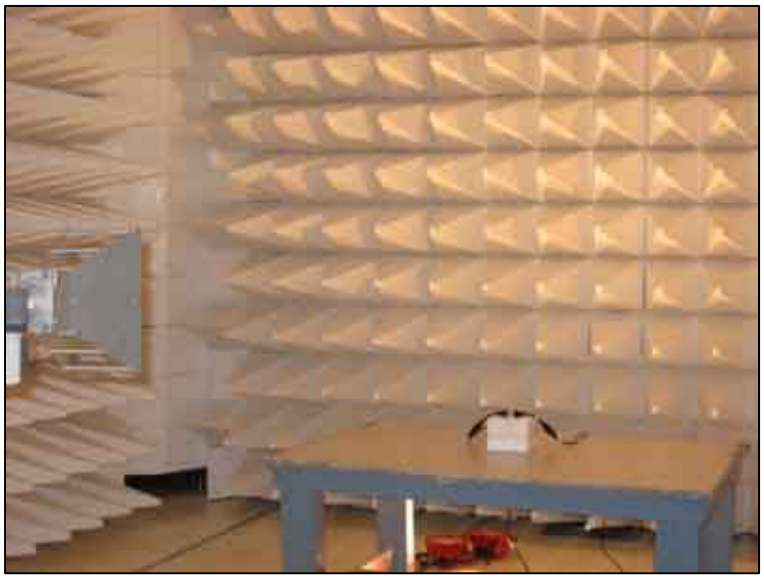
Engineer Name: A. Brar

| Test Equipment | | | | | |
|---|---|---|---|---|---|
| **Asset/Serial #** | **Description** | **Model** | **Manufacturer** | **Cal Date** | **Cal Due** |
| AN02668 | Spectrum Analyzer | E4446A | Agilent | 3/9/2009 | 3/9/2011 |
| AN02061 | Horn Antenna | DRG-118A | ARA | 1/19/2009 | 1/19/2011 |
| ANP04241 | Cable | FSJ1-50A | Andrews | 3/2/2010 | 3/2/2012 |
| ANP05138 | Cable | FSJ1P-50A-4 | andrews | 3/19/2010 | 3/19/2012 |

## *Test Data*

| Frequency (MHz) | F/S in dBuV/m | Antenna Gain in dBi | Numeric Gain G | F/S in V/m | Test Distance in meters | Power in Watts | Limit (Watts) | Results |
|---|---|---|---|---|---|---|---|---|
| 2402.083 | 91.5 | 3.60 | 2.29 | 0.0376 | 3 | 1.8498E-04 | 1 | Pass |
| 2439.675 | 93.0 | 3.60 | 2.29 | 0.0447 | 3 | 2.6129E-04 | 1 | Pass |
| 2470.335 | 99.4 | 3.6 | 2.29 | 0.0933 | 1 | 1.2673E-04 | 1 | Pass |

## ***Test Setup Photos***



# 15.247(a)(2) Occupied Bandwidth

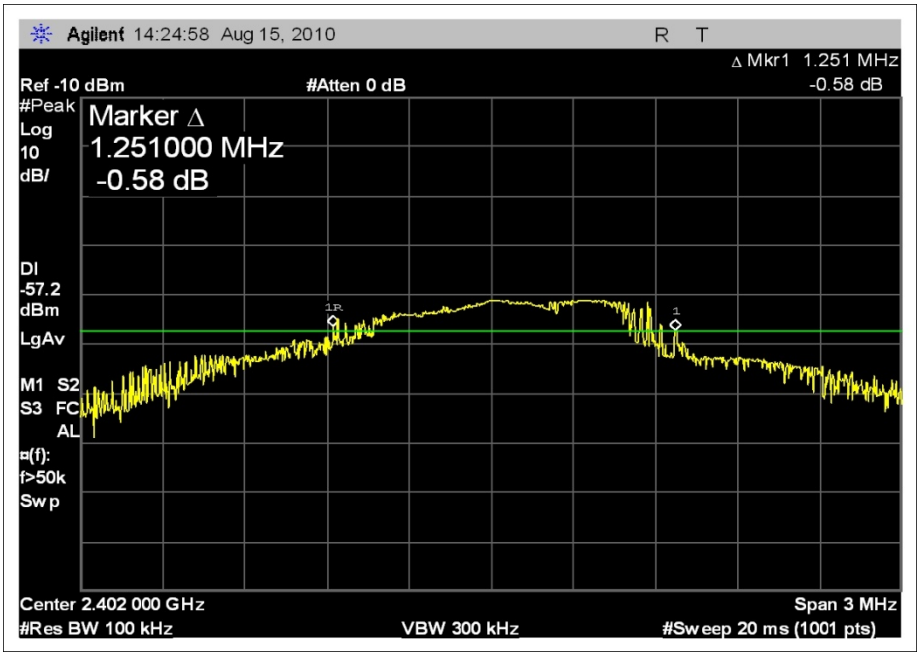
## *Test Conditions*

There are three EUTs, each is set to transmit at one frequency at a time, low, mid and high channel. Only one unit is being tested at a time. Temp: 73°F, Relative Humidity: 45%, AP: 1034mbar. RBW 100kHz, VBW 300kHz. Sweep Time: 20ms.

Engineer Name: A. Brar

| Test Equipment | | | | | |
|---|---|---|---|---|---|
| **Asset/Serial #** | **Description** | **Model** | **Manufacturer** | **Cal Date** | **Cal Due** |
| AN02668 | Spectrum Analyzer | E4446A | Agilent | 3/9/2009 | 3/9/2011 |
| AN02061 | Horn Antenna | DRG-118A | ARA | 1/19/2009 | 1/19/2011 |
| ANP04241 | Cable | FSJ1-50A | Andrews | 3/2/2010 | 3/2/2012 |
| ANP05138 | Cable | FSJ1P-50A-4 | Andrews | 3/19/2010 | 3/19/2012 |

## *Test Plots*

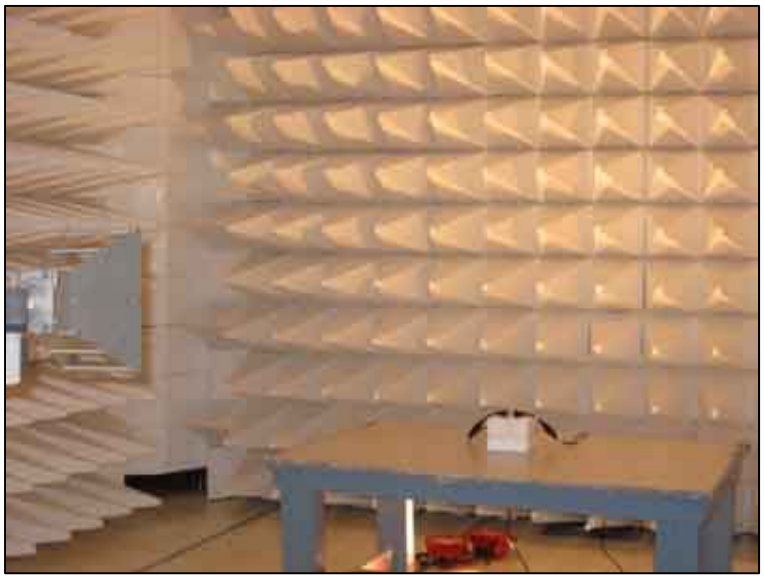



**Low-Channel-6dB Bandwidth**


**Mid Channel-6dB Bandwidth**


**High Channel-6dB Bandwidth**

***Test Setup Photos***



# 15.247(e) Power Spectral Density

## *Test Conditions*

There are three EUTs, each set to a different transmit frequency: 2402, 2440 & 2470MHz. Testing one EUT at a time set to one of the three channels. Temp: 61°F, Relative Humidity: 47%, AP: 1030mbar. RBW 3kHz / VBW 9kHz

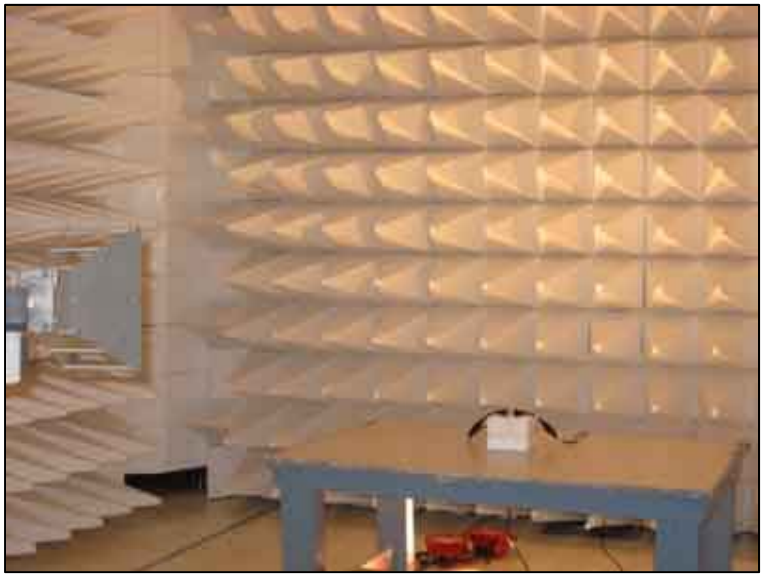
Engineer Name: A. Brar

| Test Equipment | | | | | |
|---|---|---|---|---|---|
| **Asset/Serial #** | **Description** | **Model** | **Manufacturer** | **Cal Date** | **Cal Due** |
| AN02668 | Spectrum Analyzer | E4446A | Agilent | 3/9/2009 | 3/9/2011 |
| AN02061 | Horn Antenna | DRG-118A | ARA | 1/19/2009 | 1/19/2011 |
| ANP04241 | Cable | FSJ1-50A | Andrews | 3/2/2010 | 3/2/2012 |
| ANP05138 | Cable | FSJ1P-50A-4 | Andrews | 3/19/2010 | 3/19/2012 |

## *Test Data*

| Frequency (MHz) | F/S in dBuV/M | Antenna Gain in dBi | Numeric Gain G | F/S in V/M | Test Distance in meters | Power dBm | Limit dBm | Results |
|---|---|---|---|---|---|---|---|---|
| 2402.083 | 90.2 | 3.60 | 2.29 | 0.0324 | 1 | -18.2 | 8 | Pass |
| 2439.675 | 91.3 | 3.60 | 2.29 | 0.0367 | 1 | -17.1 | 8 | Pass |
| 2470.335 | 85.5 | 3.6 | 2.29 | 0.0188 | 1 | -22.9 | 8 | Pass |

## ***Test Setup Photos***



# 15.247(d) Bandedge

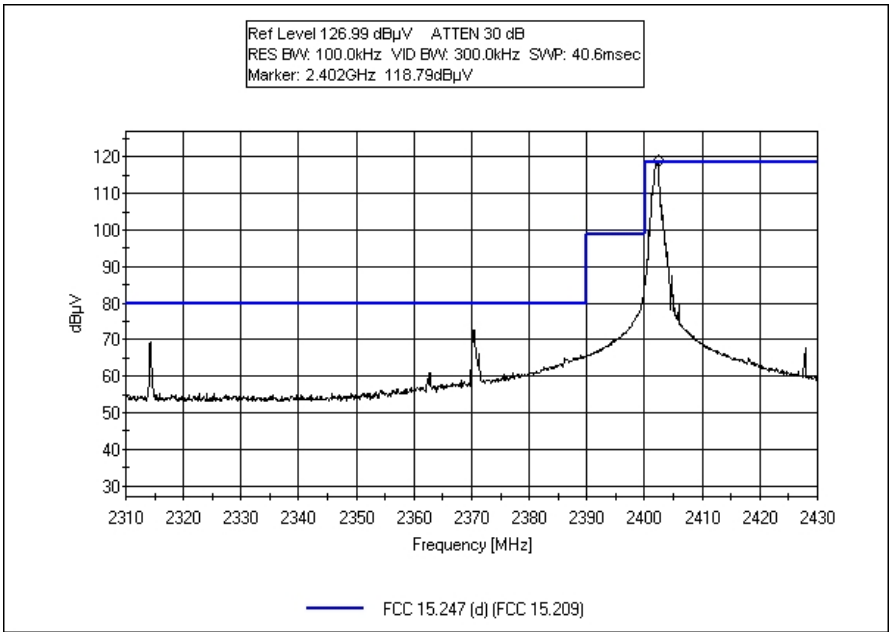
## *Test Conditions*

There are three EUTs, each is set to transmit at one frequency at a time, low, mid and high channel. Only one unit is being tested at a time. Temp: 73°F, Relative Humidity: 45%, AP: 1034mbar . RBW 100kHz, VBW 300kHz. Sweep Time: 20ms

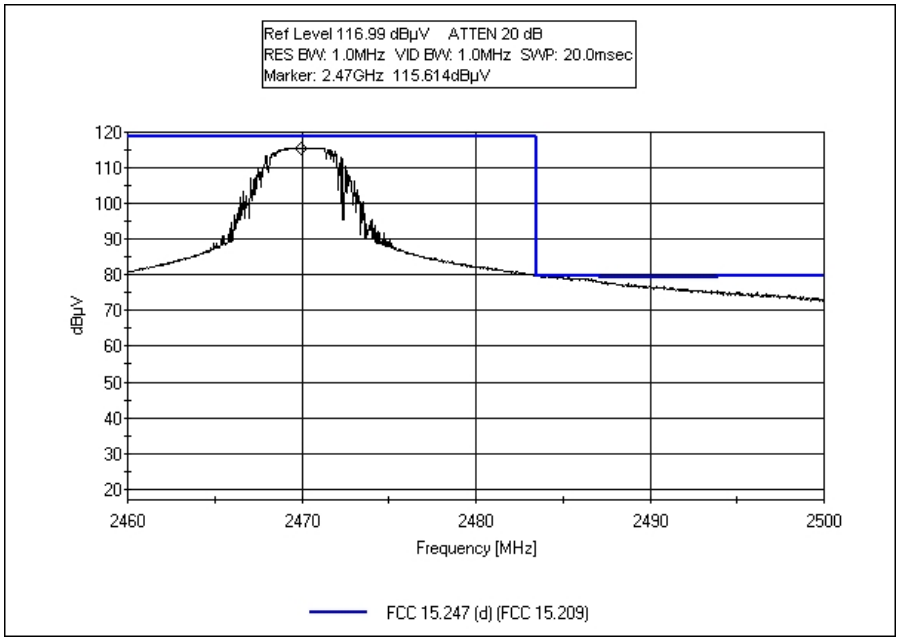
Engineer Name: A. Brar

| Test Equipment | | | | | |
|---|---|---|---|---|---|
| **Asset/Serial #** | **Description** | **Model** | **Manufacturer** | **Cal Date** | **Cal Due** |
| AN02668 | Spectrum Analyzer | E4446A | Agilent | 3/9/2009 | 3/9/2011 |
| AN02061 | Horn Antenna | DRG-118A | ARA | 1/19/2009 | 1/19/2011 |
| ANP04241 | Cable | FSJ1-50A | Andrews | 3/2/2010 | 3/2/2012 |
| ANP05138 | Cable | FSJ1P-50A-4 | Andrews | 3/19/2010 | 3/19/2012 |

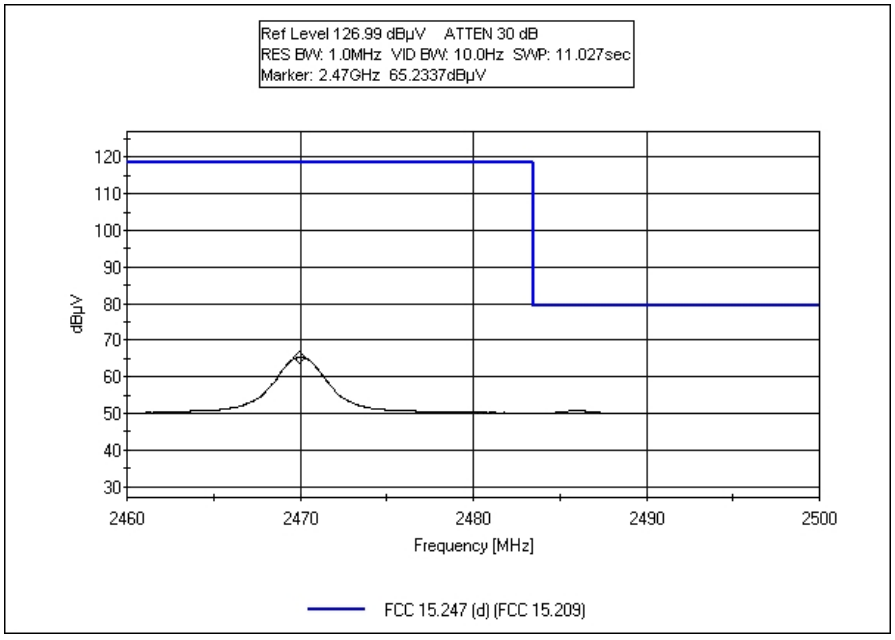
## *Test Plots*




**Low Channel**

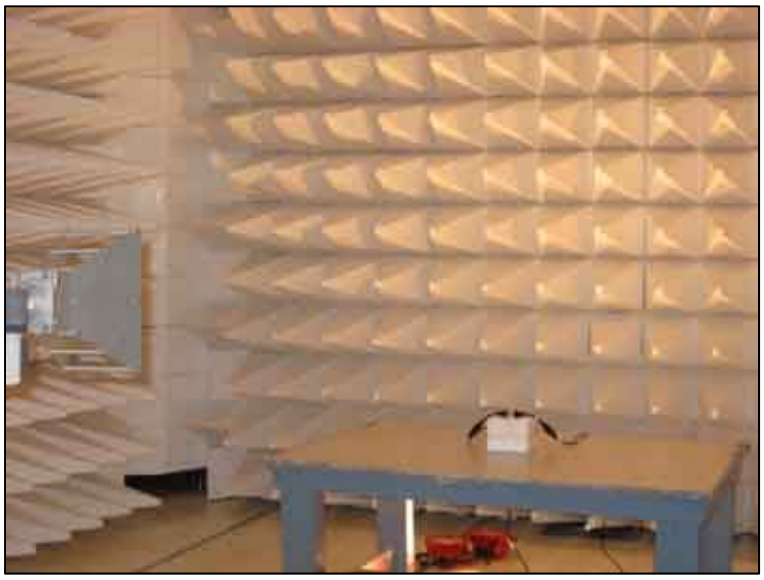



**High Channel**




**High Channel Average**

## ***Test Setup Photos***



# RSS-210

## 99% Bandwidth

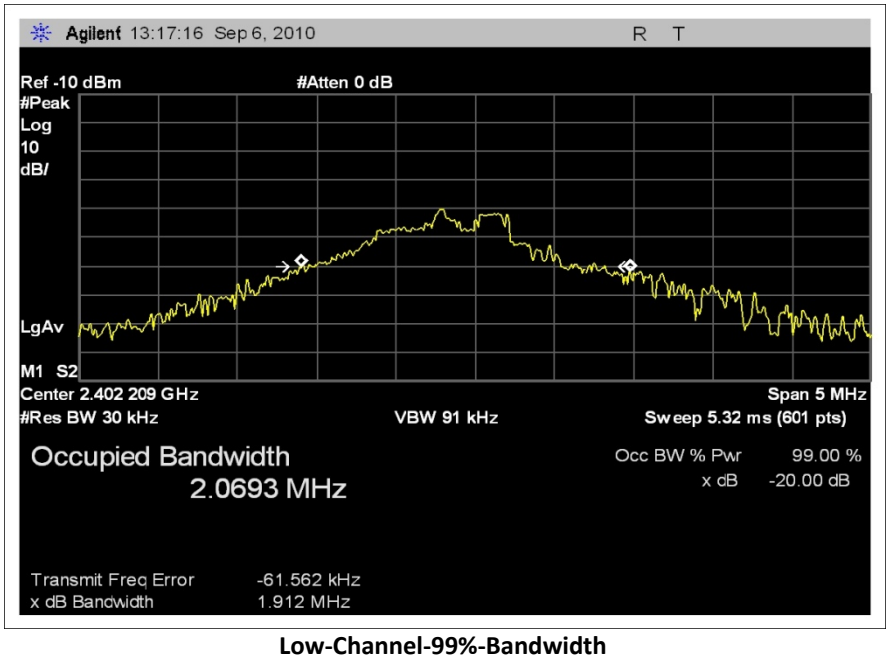
### *Test Conditions*

There are three EUTs, each is set to transmit at one frequency at a time, low, mid and high channel. Only one unit is being tested at a time. Temp: 65°F, Relative Humidity: 42%, AP: 1030mbar. RBW 30kHz, VBW 90kHz. IC 99% OBW.

Engineer Name: A. Brar

| Test Equipment | | | | | |
|---|---|---|---|---|---|
| **Asset/Serial #** | **Description** | **Model** | **Manufacturer** | **Cal Date** | **Cal Due** |
| AN02668 | Spectrum Analyzer | E4446A | Agilent | 3/9/2009 | 3/9/2011 |
| AN02061 | Horn Antenna | DRG-118A | ARA | 1/19/2009 | 1/19/2011 |
| ANP04241 | Cable | FSJ1-50A | Andrews | 3/2/2010 | 3/2/2012 |
| ANP05138 | Cable | FSJ1P-50A-4 | Andrews | 3/19/2010 | 3/19/2012 |

### *Test Plots*

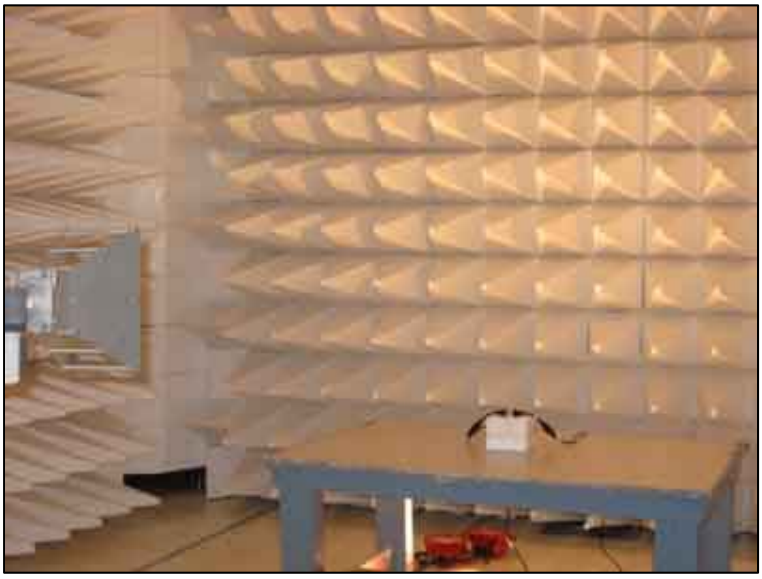



**Low-Channel-99%-Bandwidth**


**Mid-Channel-99%-Bandwidth**


**High-Channel-99%-Bandwidth**

## ***Test Setup Photos***



# SUPPLEMENTAL INFORMATION

## Measurement Uncertainty

| 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.

## Emissions Test Details

**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.

| MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE | | | |
|---|---|---|---|
| TEST | BEGINNING FREQUENCY | ENDING FREQUENCY | BANDWIDTH SETTING |
| CONDUCTED EMISSIONS | 150 kHz | 30 MHz | 9 kHz |
| RADIATED EMISSIONS | 30 MHz | 1000 MHz | 120 kHz |
| RADIATED EMISSIONS | 1000 MHz | >1 GHz | 1 MHz |

**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.