



TESTING

CERT #803.01, 803.02, 803.05, 803.06

**INNCOM INTERNATIONAL, INC.
ADDENDUM TEST REPORT TO FC09-171A**

FOR THE

20dB INNCOM ZIGBEE RADIO MODULE, 02-9894

FCC PART 15 SUBPART C SECTIONS 15.207 & 15.247 AND RSS-210 ISSUE 7

TESTING

DATE OF ISSUE: JANUARY 15, 2010

DRAFT

PREPARED FOR:

INNCOM International, Inc.
277 W. Main St.
Niantic, CT 06357

PREPARED BY:

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P.O. No.: 00006341
W.O. No.: 89056

Date of test: September 21 - October 5, 2009

Report No.: FC09-171B

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ADMINISTRATIVE INFORMATION

DATE OF TEST: September 21 - October 5, 2009

DATE OF RECEIPT: September 21, 2009

REPRESENTATIVE: Ryan Gardner

MANUFACTURER:

INNCOM International, Inc.
277 W. Main St.
Niantic, CT 06357

TEST LOCATION:

CKC Laboratories, Inc.
1120 Fulton Place
Fremont, CA 94539

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

PURPOSE OF TEST:

Original: To perform the testing of the 20dB INNCOM Zigbee Radio Module, 02-9894 with the requirements for FCC Part 15 Subpart C Sections 15.207 & 15.247 and RSS-210 devices.

Addendum A: To correct an error in the Power Output Table found on page 34. No additional testing was performed.

Addendum B: To correct an error in the addendum report number referenced on the front page from FC09-071 to FC09-171.

APPROVALS

Steve Behm, Director of Engineering Services

QUALITY ASSURANCE:



Steve Van Kirk, Senior EMC Engineer / Lab Manager

TEST PERSONNEL:



Armando Del Angel, Test Engineer

SUMMARY OF RESULTS

Test	Specification/Method	Results
Voltage Variations	FCC 15.31e	Pass
Conducted Emissions	FCC 15.207	Pass
6dB Bandwidth	FCC 15.247(a)(2)	Pass
RF Output Power	FCC 15.247(b)(3)	Pass
OATS Spurious Emissions	FCC 15.247(d)	Pass
Band Edge	FCC 15.247(d)	Pass
Peak Power Spectral Density	FCC 15.247(e)	Pass
99% Bandwidth	RSS-210 Issue 7 / RSS GEN Issue 2	Pass
Site File No.	FCC 318736 IC 3082C-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

15.207 Conducted Emissions: 150 kHz – 30 MHz

15.247 Radiated Emissions: 30 MHz – 24.8 GHz

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 2.405 GHz – 2.4765 GHz.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

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

EQUIPMENT UNDER TEST

20dB INNCOM Zigbee Radio Module

Manuf: INNCOM International, Inc.
Model: 02-9894
Serial: NA

PERIPHERAL DEVICES

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

Power Supply

Manuf: NA
Model: MW7EA08EL
Serial: NA

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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 $+15^{\circ}\text{C}$ and $+35^{\circ}\text{C}$.
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 $\text{dB}\mu\text{V}/\text{m}$, the spectrum analyzer reading in $\text{dB}\mu\text{V}$ was corrected by using the following formula. This reading was then compared to the applicable specification limit.

SAMPLE CALCULATIONS		
	Meter reading	(dB μ V)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dB μ V/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 15.31(e) – VOLTAGE VARIATIONS

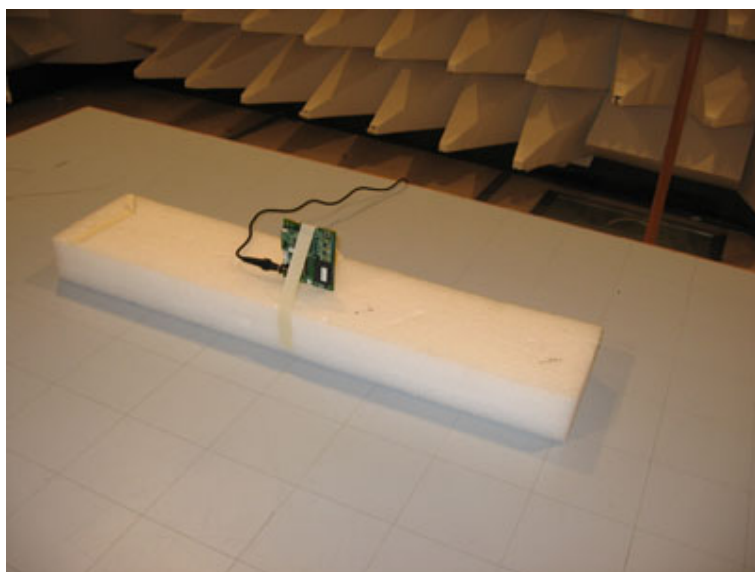
Test Equipment

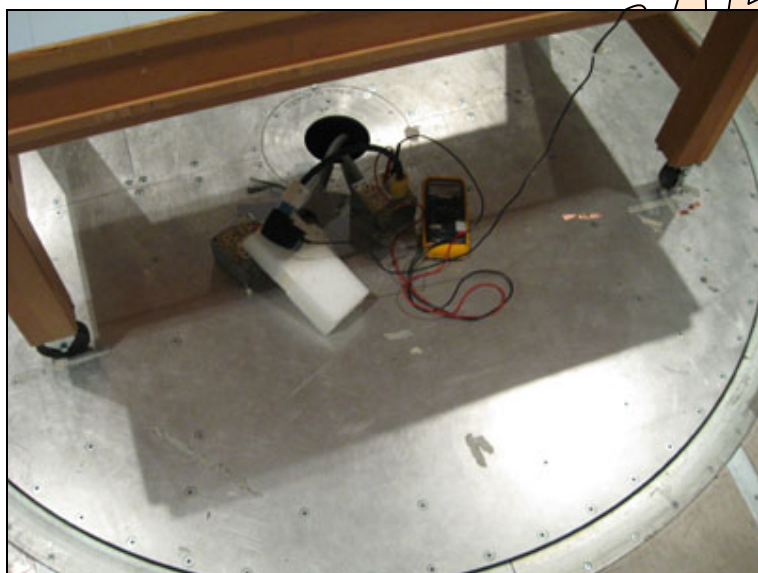
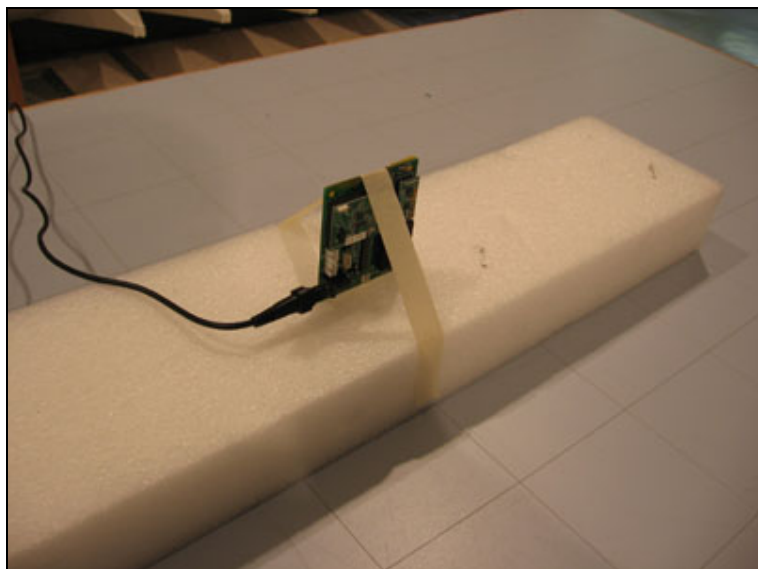
Asset #	Name	Manufacturer	Model	Serial	Cal Date	Cal Due
01314	AC Power Source	PPS	345AMXT-UPC3	9999-0190	6/4/2008	6/4/2010
3121	Cable	Astrolab	32026-2-29080-84		4/28/2009	4/28/2011
1412	Antenna, Horn	EMCO	3115	9606-4854	11/12/2007	11/12/2009
P05542	Cable, 23' blue	Andrews	Helix		4/21/2009	4/21/2011
1271	Preamp	HP	83017A	3123A00464	9/17/2009	9/17/2011
2871	Spectrum Analyzer	Agilent	E4440A	MY46186333	4/29/2009	4/29/2011

Test Conditions

The EUT is transmitting. Due to the lack of antenna connectors the test will be done through radiated measurements. EUT is located in the back edge of the test table over 10cm of Styrofoam. The Fundamental's emission will be maximized per ANSI C63.4 procedures. The input voltage to the EUT will be varied from 100% of the nominal voltage to 85% and 115% to analyze any change in the power output of the transmitter due to the voltage variations. EMI test will be used with the solely purpose of accurate Field Strength data gathering. Same calculation from the RF power output test will be done in order to convert the field strength to power.

Test Setup Photos







Test Data

	Vertical	Horizontal	
	85%	85%	
LOW	12.54dBm	15.45dBm	30dBm
MID	11.50dBm	12.64dBm	30dBm
HIGH	6.37dBm	10.47dBm	30dBm
	100%	100%	
LOW	12.77dBm	16.07dBm	30dBm
MID	11.07dBm	12.40dBm	30dBm
HIGH	6.55dBm	10.42dBm	30dBm
	115%	115%	
LOW	13.06dBm	14.99dBm	30dBm
MID	11.30dBm	12.68dBm	30dBm
HIGH	6.60dBm	10.15dBm	30dBm

FCC 15.207 – CONDUCTED EMISSIONS

Test Equipment

See data sheets for test equipment used.

Test Setup Photos



Test Data Sheets

Test Location: CKC Laboratories • 22116 23rd Dr SE • Bothell, WA 98021-4413 • 425-402-1717

Customer: **INNCOM International**
 Specification: **FCC 15.207 - AVE**
 Work Order #: **89056**
 Test Type: **Conducted Emissions**
 Equipment: **20dB INNCOM Zigbee Radio Module**
 Manufacturer: **INNCOM International, Inc.**
 Model: **02-9894**
 S/N:

Date: 10/5/2009
 Time: 16:56:54
 Sequence#: 3
 Tested By: Armando Del Angel
 120V 60Hz

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Cable 20'	16	11/10/2008	11/10/2010	ANP05360
High freq. Cable	N/A	04/28/2009	04/28/2011	AN03121
Agilent E4440A	MY46186333	04/29/2009	04/29/2011	AN02871
Cable, 23' blue Heliac	N/A	04/21/2009	04/21/2011	P05542
Attenuator	9912	03/21/2008	03/21/2010	ANP05503
Filter	G7752	07/21/2008	07/21/2010	AN02611
EMCO LISN	9606-1049	06/02/2009	06/02/2011	AN01492

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
20dB INNCOM Zigbee Radio Module*	INNCOM International, Inc.	02-9894	

Support Devices:

Function	Manufacturer	Model #	S/N
power supply	?	MW7EA08EL	

Test Conditions / Notes:

Temperature 23°C
Relative Humidity 33%
Pressure 102.6kPa
Testing Conducted Emissions per FCC 15.207
The unit is a 20dB Zigbee Radio Module.
The Transmitter is located 10cm over the wooden table on styrofoam.
The transmitter will be transmitting in the LOW, MID and HIGH channels.
Vertical Ground plane is located 40cm from the back of the table.

Transducer Legend:

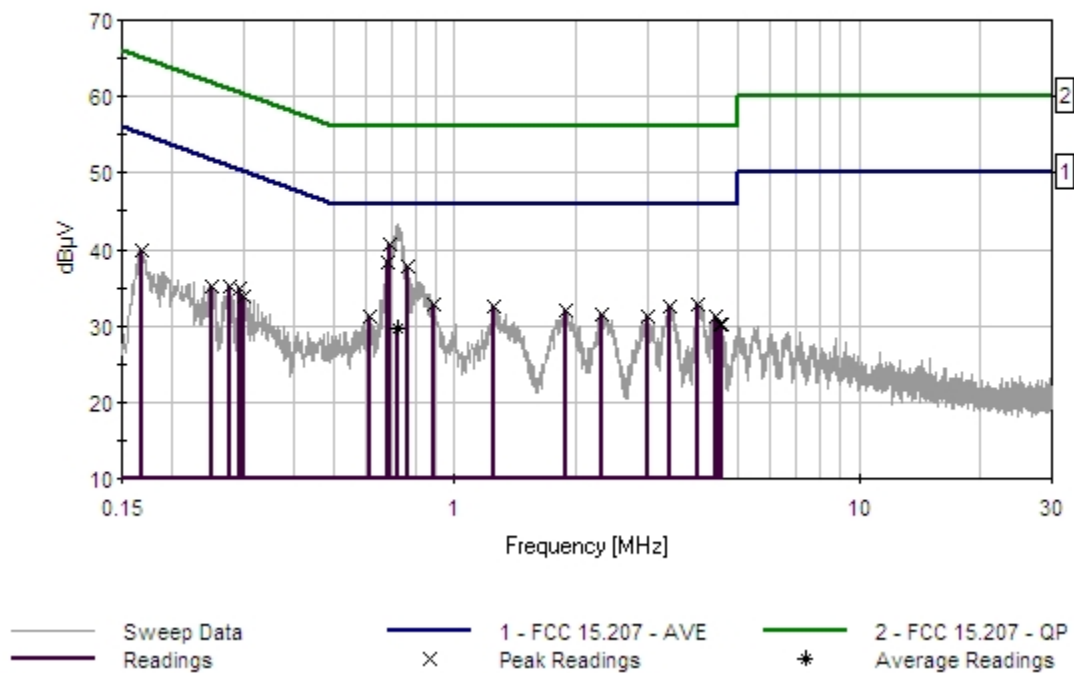
T1=CAB-ANP03121-042809	T2=CAB-ANP05360
T3=FIL-AN02611-072108	T4=ATT-ANP5503-032108
T5=CAB-ANP05542-042109	T6=CDN-AN01492-060209 - Line

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

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dB μ V	dB	dB	dB	dB	Table	dB μ V	dB μ V	dB	Ant
1	690.314k	30.0	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	40.7	46.0	-5.3	Line

2	680.860k	27.5	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	38.2	46.0	-7.8	Line
3	760.853k	27.2	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	37.9	46.0	-8.1	Line
4	889.963k	22.2	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	32.9	46.0	-13.1	Line
5	3.986M	22.0	+0.1 +0.2	+0.2 +0.2	+0.1	+10.1	+0.0	32.9	46.0	-13.1	Line
6	1.243M	21.9	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	32.6	46.0	-13.4	Line
7	3.386M	21.7	+0.1 +0.2	+0.2 +0.2	+0.1	+10.1	+0.0	32.6	46.0	-13.4	Line
8	1.889M	21.2	+0.1 +0.2	+0.1 +0.1	+0.1	+10.1	+0.0	31.9	46.0	-14.1	Line
9	2.323M	20.8	+0.1 +0.2	+0.1 +0.1	+0.1	+10.1	+0.0	31.5	46.0	-14.5	Line
10	2.995M	20.5	+0.1 +0.2	+0.1 +0.2	+0.1	+10.1	+0.0	31.3	46.0	-14.7	Line
11	618.321k	20.5	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	31.2	46.0	-14.8	Line
12	4.420M	20.3	+0.1 +0.2	+0.2 +0.2	+0.1	+10.1	+0.0	31.2	46.0	-14.8	Line
13	168.907k	29.0	+0.1 +0.1	+0.0 +0.1	+0.4	+10.1	+0.0	39.8	55.0	-15.2	Line
14	294.714k	24.3	+0.1 +0.1	+0.0 +0.1	+0.1	+10.1	+0.0	34.8	50.4	-15.6	Line
15	278.716k	24.7	+0.1 +0.1	+0.0 +0.1	+0.1	+10.1	+0.0	35.2	50.9	-15.7	Line
16	4.530M	19.3	+0.1 +0.2	+0.2 +0.3	+0.1	+10.1	+0.0	30.3	46.0	-15.7	Line
17	4.560M	19.1	+0.1 +0.2	+0.2 +0.3	+0.1	+10.1	+0.0	30.1	46.0	-15.9	Line
18	723.038k	18.9	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	29.6	46.0	-16.4	Line
	Ave										
^	723.038k	32.6	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	43.3	46.0	-2.7	Line
20	300.532k	23.3	+0.1 +0.1	+0.0 +0.1	+0.1	+10.1	+0.0	33.8	50.2	-16.4	Line
21	251.082k	24.5	+0.1 +0.1	+0.0 +0.1	+0.2	+10.1	+0.0	35.1	51.7	-16.6	Line

CKC Laboratories Date: 10/5/2009 Time: [TESTTIME] INNCOM International WO#: 89056
FCC 15.207 - AVE Test Lead: Line 120V 60Hz Sequence#: 3 Polarity: Line
Notes:



DU

Test Location: CKC Laboratories • 22116 23rd Dr SE • Bothell, WA 98021-4413 • 425-402-1717

Customer: **INNCOM International**

Specification: **FCC 15.207 - AVE**

Work Order #: **89056**

Date: 10/5/2009

Test Type: **Conducted Emissions**

Time: 16:59:57

Equipment: **20dB INNCOM Zigbee Radio Module**

Sequence#: 4

Manufacturer: INNCOM International, Inc.

Tested By: Armando Del Angel

Model: 02-9894

120V 60Hz

S/N:

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Cable 20'	16	11/10/2008	11/10/2010	ANP05360
High freq. Cable	N/A	04/28/2009	04/28/2011	AN03121
Agilent E4440A	MY46186333	04/29/2009	04/29/2011	AN02871
Cable, 23' blue Helix	N/A	04/21/2009	04/21/2011	P05542
Attenuator	9912	03/21/2008	03/21/2010	ANP05503
Filter	G7752	07/21/2008	07/21/2010	AN02611
EMCO LISN	9606-1049	06/02/2009	06/02/2011	AN01492

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
20dB INNCOM Zigbee Radio Module*	INNCOM International, Inc.	02-9894	

Support Devices:

Function	Manufacturer	Model #	S/N
power supply	?	MP7EA08EL	

Test Conditions / Notes:

Temperature 23°C

Relative Humidity 33%

Pressure 102.6kPa

Testing Conducted Emissions per FCC 15.207

The unit is a 20dB Zigbee Radio Module.

The Transmitter is located 10cm over the wooden table on styrofoam.

The transmitter will be transmitting in the LOW, MID and HIGH channels.

Vertical Ground plane is located 40cm from the back of the table.

Transducer Legend:

T1=CAB-ANP03121-042809	T2=CAB-ANP05360
T3=FIL-AN02611-072108	T4=ATT-ANP5503-032108
T5=CAB-ANP05542-042109	T6=CDN-AN01492-060209 - Neutral

Measurement Data:

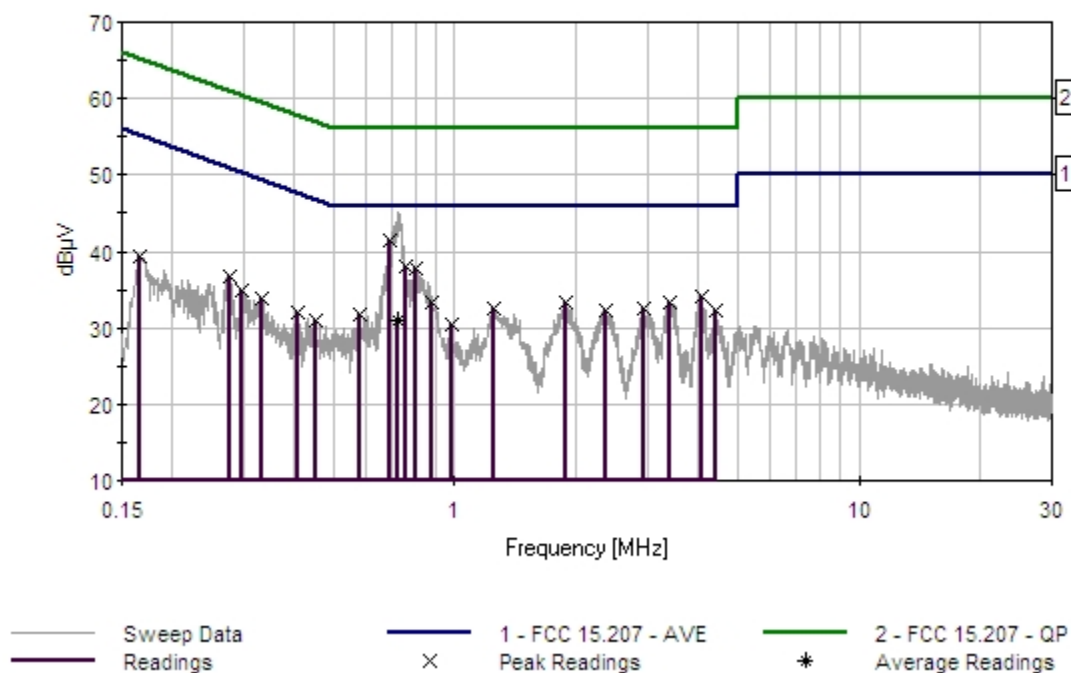
Reading listed by margin.

Test Lead: Neutral

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBμV	dB	dB	dB	dB	Table	dBμV	dBμV	dB	Ant
1	693.223k	30.8	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	41.4	46.0	-4.6	Neutr
2	753.581k	27.5	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	38.1	46.0	-7.9	Neutr

3	796.486k	27.2	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	37.8	46.0	-8.2	Neutr
4	4.092M	23.4	+0.1 +0.2	+0.2 +0.1	+0.1	+10.1	+0.0	34.2	46.0	-11.8	Neutr
5	3.391M	22.6	+0.1 +0.2	+0.2 +0.1	+0.1	+10.1	+0.0	33.4	46.0	-12.6	Neutr
6	1.877M	22.6	+0.1 +0.2	+0.1 +0.1	+0.1	+10.1	+0.0	33.3	46.0	-12.7	Neutr
7	877.205k	22.6	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	33.2	46.0	-12.8	Neutr
8	1.256M	22.0	+0.1 +0.1	+0.1 +0.0	+0.1	+10.1	+0.0	32.5	46.0	-13.5	Neutr
9	2.936M	21.8	+0.1 +0.2	+0.1 +0.1	+0.1	+10.1	+0.0	32.5	46.0	-13.5	Neutr
10	2.366M	21.6	+0.1 +0.2	+0.1 +0.1	+0.1	+10.1	+0.0	32.3	46.0	-13.7	Neutr
11	4.403M	21.5	+0.1 +0.2	+0.2 +0.1	+0.1	+10.1	+0.0	32.3	46.0	-13.7	Neutr
12	278.716k	26.3	+0.1 +0.1	+0.0 +0.0	+0.1	+10.1	+0.0	36.7	50.9	-14.2	Neutr
13	580.506k	21.2	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	31.8	46.0	-14.2	Neutr
14	720.857k Ave	20.3	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	30.9	46.0	-15.1	Neutr
^	720.857k	34.4	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	45.0	46.0	-1.0	Neutr
16	296.896k	24.4	+0.1 +0.1	+0.0 +0.0	+0.1	+10.1	+0.0	34.8	50.3	-15.5	Neutr
17	333.256k	23.4	+0.1 +0.1	+0.1 +0.0	+0.1	+10.1	+0.0	33.9	49.4	-15.5	Neutr
18	979.270k	19.8	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	30.4	46.0	-15.6	Neutr
19	411.067k	21.4	+0.1 +0.1	+0.1 +0.0	+0.1	+10.1	+0.0	31.9	47.6	-15.7	Neutr
20	165.271k	28.5	+0.1 +0.1	+0.0 +0.1	+0.5	+10.1	+0.0	39.4	55.2	-15.8	Neutr
21	452.518k	20.3	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	30.9	46.8	-15.9	Neutr

CKC Laboratories Date: 10/5/2009 Time: [TESTTIME] INNCOM International WO#: 89056
FCC 15.207 - AVE Test Lead: Neutral 120V 60Hz Sequence#: 4 Polarity: Neutral
Notes:



DU

Test Location: CKC Laboratories • 22116 23rd Dr SE • Bothell, WA 98021-4413 • 425-402-1717

Customer: **INNCOM International**

Specification: **FCC 15.207 - AVE**

Work Order #: **89056**

Date: 10/5/2009

Test Type: **Conducted Emissions**

Time: 16:53:44

Equipment: **20dB INNCOM Zigbee Radio Module**

Sequence#: 2

Manufacturer: INNCOM International, Inc.

Tested By: Armando Del Angel

Model: 02-9894

120V 60Hz

S/N:

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Cable 20'	16	11/10/2008	11/10/2010	ANP05360
High freq. Cable	N/A	04/28/2009	04/28/2011	AN03121
Agilent E4440A	MY46186333	04/29/2009	04/29/2011	AN02871
Cable, 23' blue Helix	N/A	04/21/2009	04/21/2011	P05542
Attenuator	9912	03/21/2008	03/21/2010	ANP05503
Filter	G7752	07/21/2008	07/21/2010	AN02611
EMCO LISN	9606-1049	06/02/2009	06/02/2011	AN01492

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
20dB INNCOM Zigbee Radio Module*	INNCOM International, Inc.	02-9894	

Support Devices:

Function	Manufacturer	Model #	S/N
power supply	?	MP7EA08EL	

Test Conditions / Notes:

Temperature 23°C

Relative Humidity 33%

Pressure 102.6kPa

Testing Conducted Emissions per FCC 15.207

The unit is a 20dB Zigbee Radio Module.

The Transmitter is located 10cm over the wooden table on styrofoam.

The transmitter will be transmitting in the LOW, MID and HIGH channels.

Vertical Ground plane is located 40cm from the back of the table.

Transducer Legend:

T1=CAB-ANP03121-042809	T2=CAB-ANP05360
T3=FIL-AN02611-072108	T4=ATT-ANP5503-032108
T5=CAB-ANP05542-042109	T6=CDN-AN01492-060209 - Line

Measurement Data:

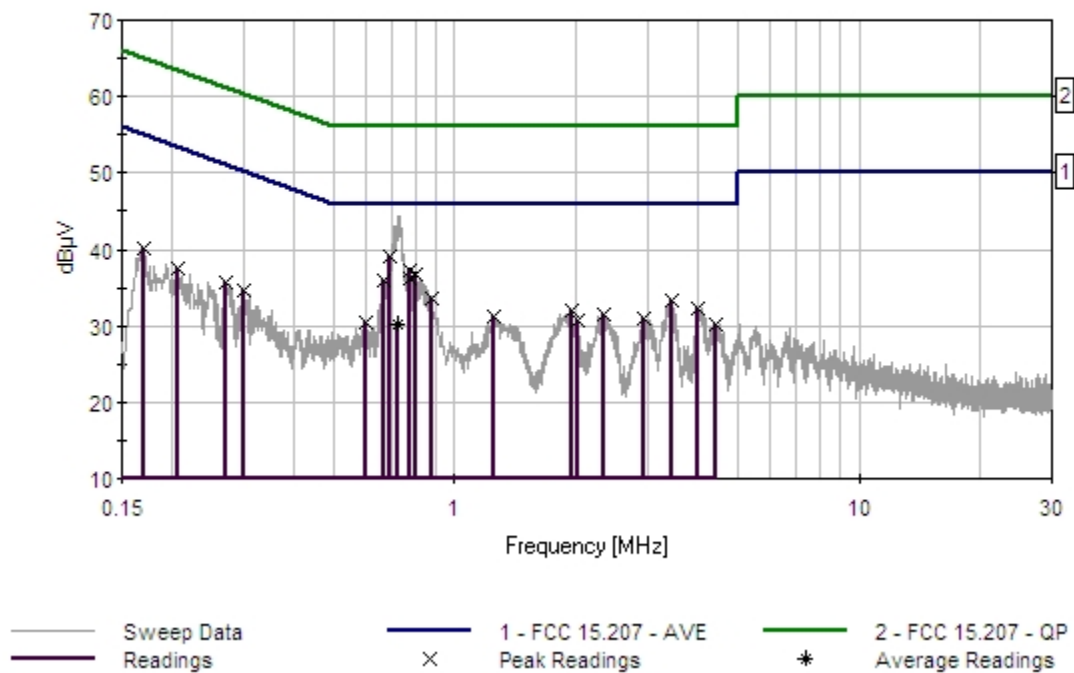
Reading listed by margin.

Test Lead: Line

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBμV	dB	dB	dB	dB	Table	dBμV	dBμV	dB	Ant
1	686.678k	28.3	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	39.0	46.0	-7.0	Line
2	771.034k	26.6	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	37.3	46.0	-8.7	Line

3	802.304k	26.1	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	36.8	46.0	-9.2	Line
4	775.397k	25.6	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	36.3	46.0	-9.7	Line
5	667.044k	25.2	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	35.9	46.0	-10.1	Line
6	877.205k	22.9	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	33.6	46.0	-12.4	Line
7	3.433M	22.3	+0.1 +0.2	+0.2 +0.2	+0.1	+10.1	+0.0	33.2	46.0	-12.8	Line
8	3.999M	21.5	+0.1 +0.2	+0.2 +0.2	+0.1	+10.1	+0.0	32.4	46.0	-13.6	Line
9	1.940M	21.2	+0.1 +0.2	+0.1 +0.1	+0.1	+10.1	+0.0	31.9	46.0	-14.1	Line
10	2.349M	20.7	+0.1 +0.2	+0.1 +0.1	+0.1	+10.1	+0.0	31.4	46.0	-14.6	Line
11	169.635k	29.4	+0.1 +0.1	+0.0 +0.1	+0.4	+10.1	+0.0	40.2	55.0	-14.8	Line
12	1.251M	20.5	+0.1 +0.1	+0.1 +0.1	+0.1	+10.1	+0.0	31.1	46.0	-14.9	Line
13	2.944M	20.1	+0.1 +0.2	+0.1 +0.2	+0.1	+10.1	+0.0	30.9	46.0	-15.1	Line
14	2.004M	20.0	+0.1 +0.2	+0.1 +0.1	+0.1	+10.1	+0.0	30.7	46.0	-15.3	Line
15	270.716k	25.1	+0.1 +0.1	+0.0 +0.1	+0.1	+10.1	+0.0	35.6	51.1	-15.5	Line
16	300.532k	24.1	+0.1 +0.1	+0.0 +0.1	+0.1	+10.1	+0.0	34.6	50.2	-15.6	Line
17	600.141k	19.7	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	30.4	46.0	-15.6	Line
18	4.437M	19.4	+0.1 +0.2	+0.2 +0.2	+0.1	+10.1	+0.0	30.3	46.0	-15.7	Line
19	207.449k	26.9	+0.1 +0.1	+0.0 +0.1	+0.2	+10.1	+0.0	37.5	53.3	-15.8	Line
20	726.674k	19.4	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	30.1	46.0	-15.9	Line
^	726.674k	33.5	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	44.2	46.0	-1.8	Line

CKC Laboratories Date: 10/5/2009 Time: [TESTTIME] INNCOM International WO#: 89056
FCC 15.207 - AVE Test Lead: Line 120V 60Hz Sequence#: 2 Polarity: Line
Notes:



DU

Test Location: CKC Laboratories • 22116 23rd Dr SE • Bothell, WA 98021-4413 • 425-402-1717

Customer: **INNCOM International**

Specification: **FCC 15.207 - AVE**

Work Order #: **89056**

Date: 10/5/2009

Test Type: **Conducted Emissions**

Time: 17:02:30

Equipment: **20dB INNCOM Zigbee Radio Module**

Sequence#: 5

Manufacturer: INNCOM International, Inc.

Tested By: Armando Del Angel

Model: 02-9894

120V 60Hz

S/N:

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Cable 20'	16	11/10/2008	11/10/2010	ANP05360
High freq. Cable	N/A	04/28/2009	04/28/2011	AN03121
Agilent E4440A	MY46186333	04/29/2009	04/29/2011	AN02871
Cable, 23' blue Helix	N/A	04/21/2009	04/21/2011	P05542
Attenuator	9912	03/21/2008	03/21/2010	ANP05503
Filter	G7752	07/21/2008	07/21/2010	AN02611
EMCO LISN	9606-1049	06/02/2009	06/02/2011	AN01492

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
20dB INNCOM Zigbee Radio Module*	INNCOM International, Inc.	02-9894	

Support Devices:

Function	Manufacturer	Model #	S/N
power supply	?	MP7EA08EL	

Test Conditions / Notes:

Temperature 23°C

Relative Humidity 33%

Pressure 102.6kPa

Testing Conducted Emissions per FCC 15.207

The unit is a 20dB Zigbee Radio Module.

The Transmitter is located 10cm over the wooden table on styrofoam.

The transmitter will be transmitting in the LOW, MID and HIGH channels.

Vertical Ground plane is located 40cm from the back of the table.

Transducer Legend:

T1=CAB-ANP03121-042809	T2=CAB-ANP05360
T3=FIL-AN02611-072108	T4=ATT-ANP5503-032108
T5=CAB-ANP05542-042109	T6=CDN-AN01492-060209 - Neutral

Measurement Data:

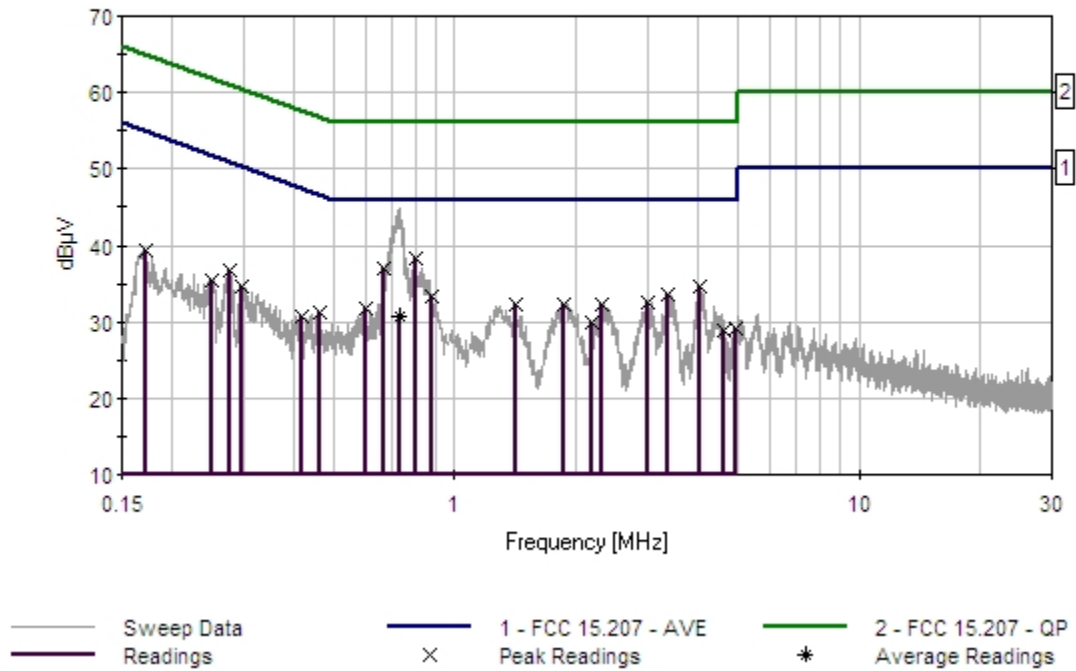
Reading listed by margin.

Test Lead: Neutral

#	Freq	Rdng	T1	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBμV	T5	T6			Table	dBμV	dBμV	dB	Ant
1	803.757k	27.8	+0.1	+0.1	+0.2	+10.1	+0.0	38.4	46.0	-7.6	Neutr
			+0.1	+0.0							
2	668.497k	26.5	+0.1	+0.1	+0.2	+10.1	+0.0	37.1	46.0	-8.9	Neutr
			+0.1	+0.0							

3	4.033M	23.7	+0.1 +0.2	+0.2 +0.1	+0.1	+10.1	+0.0	34.5	46.0	-11.5	Neutr
4	3.374M	22.8	+0.1 +0.2	+0.2 +0.1	+0.1	+10.1	+0.0	33.6	46.0	-12.4	Neutr
5	877.205k	22.6	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	33.2	46.0	-12.8	Neutr
6	2.999M	21.8	+0.1 +0.2	+0.1 +0.1	+0.1	+10.1	+0.0	32.5	46.0	-13.5	Neutr
7	1.864M	21.7	+0.1 +0.2	+0.1 +0.1	+0.1	+10.1	+0.0	32.4	46.0	-13.6	Neutr
8	2.323M	21.7	+0.1 +0.2	+0.1 +0.1	+0.1	+10.1	+0.0	32.4	46.0	-13.6	Neutr
9	1.413M	21.6	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	32.2	46.0	-13.8	Neutr
10	278.714k	26.2	+0.1 +0.1	+0.0 +0.0	+0.1	+10.1	+0.0	36.6	50.9	-14.3	Neutr
11	599.412k	21.1	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	31.7	46.0	-14.3	Neutr
12	733.945k	20.1	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	30.7	46.0	-15.3	Neutr
^	733.945k	34.3	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	44.9	46.0	-1.1	Neutr
14	171.088k	28.5	+0.1 +0.1	+0.0 +0.1	+0.4	+10.1	+0.0	39.3	54.9	-15.6	Neutr
15	298.349k	24.3	+0.1 +0.1	+0.0 +0.0	+0.1	+10.1	+0.0	34.7	50.3	-15.6	Neutr
16	461.243k	20.5	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	31.1	46.7	-15.6	Neutr
17	2.191M	19.1	+0.1 +0.2	+0.1 +0.1	+0.1	+10.1	+0.0	29.8	46.0	-16.2	Neutr
18	251.081k	24.9	+0.1 +0.1	+0.0 +0.0	+0.2	+10.1	+0.0	35.4	51.7	-16.3	Neutr
19	418.338k	20.3	+0.1 +0.1	+0.1 +0.0	+0.1	+10.1	+0.0	30.8	47.5	-16.7	Neutr
20	4.981M	18.2	+0.1 +0.2	+0.2 +0.1	+0.1	+10.1	+0.0	29.0	46.0	-17.0	Neutr
21	4.628M	18.1	+0.1 +0.2	+0.2 +0.1	+0.1	+10.1	+0.0	28.9	46.0	-17.1	Neutr

CKC Laboratories Date: 10/5/2009 Time: [TESTTIME] INNCOM International WO#: 89056
FCC 15.207 - AVE Test Lead: Neutral 120V 60Hz Sequence#: 5 Polarity: Neutral
Notes:



DU

Test Location: CKC Laboratories • 22116 23rd Dr SE • Bothell, WA 98021-4413 • 425-402-1717

Customer: **INNCOM International**

Specification: **FCC 15.207 - AVE**

Work Order #: **89056**

Date: 10/5/2009

Test Type: **Conducted Emissions**

Time: 16:49:21

Equipment: **20dB INNCOM Zigbee Radio Module**

Sequence#: 1

Manufacturer: INNCOM International, Inc.

Tested By: Armando Del Angel

Model: 02-9894

120V 60Hz

S/N:

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Cable 20'	16	11/10/2008	11/10/2010	ANP05360
High freq. Cable	N/A	04/28/2009	04/28/2011	AN03121
Agilent E4440A	MY46186333	04/29/2009	04/29/2011	AN02871
Cable, 23' blue Heliac	N/A	04/21/2009	04/21/2011	P05542
Attenuator	9912	03/21/2008	03/21/2010	ANP05503
Filter	G7752	07/21/2008	07/21/2010	AN02611
EMCO LISN	9606-1049	06/02/2009	06/02/2011	AN01492

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
20dB INNCOM Zigbee Radio Module*	INNCOM International, Inc.	02-9894	

Support Devices:

Function	Manufacturer	Model #	S/N
power supply	?	MAW7EA08EL	

Test Conditions / Notes:

Temperature 23°C

Relative Humidity 33%

Pressure 102.6kPa

Testing Conducted Emissions per FCC 15.207

The unit is a 20dB Zigbee Radio Module.

The Transmitter is located 10cm over the wooden table on styrofoam.

The transmitter will be transmitting in the LOW, MID and HIGH channels.

Vertical Ground plane is located 40cm from the back of the table.

Transducer Legend:

T1=CAB-ANP03121-042809

T2=CAB-ANP05360

T3=FIL-AN02611-072108

T4=ATT-ANP5503-032108

T5=CAB-ANP05542-042109

T6=CDN-AN01492-060209 - Line

Measurement Data:

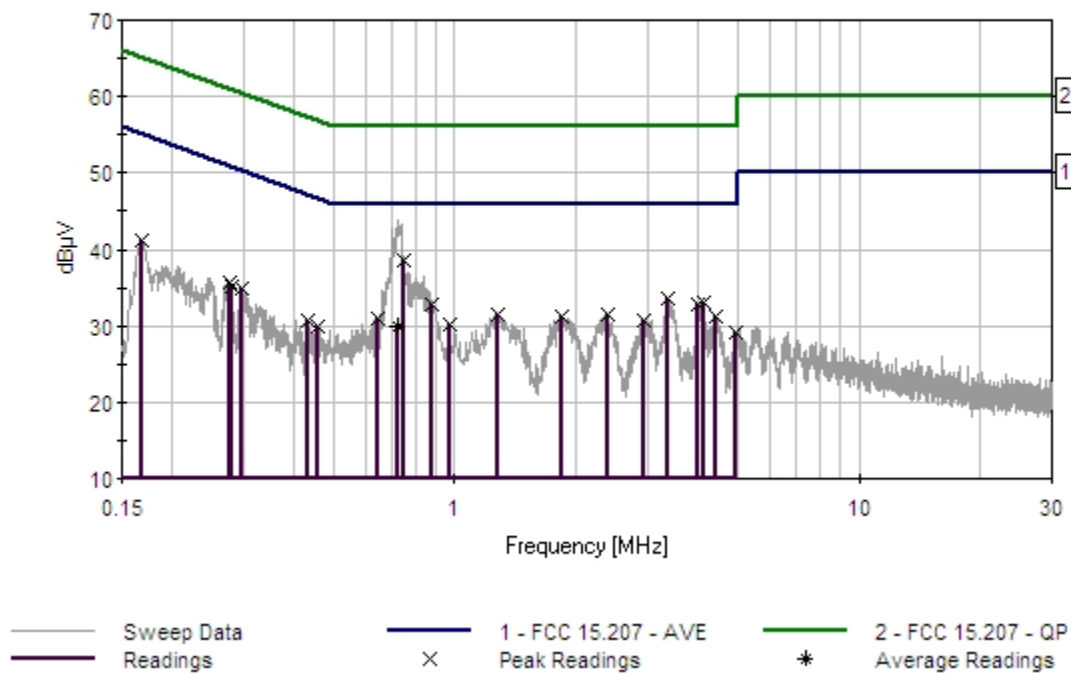
Reading listed by margin.

Test Lead: Line

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBμV	dB	dB	dB	dB	Table	dBμV	dBμV	dB	Ant
1	749.218k	27.8	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	38.5	46.0	-7.5	Line
2	3.382M	22.7	+0.1 +0.2	+0.2 +0.2	+0.1	+10.1	+0.0	33.6	46.0	-12.4	Line

3	4.131M	22.1	+0.1 +0.2	+0.2 +0.2	+0.1	+10.1	+0.0	33.0	46.0	-13.0	Line
4	881.458k	22.1	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	32.8	46.0	-13.2	Line
5	3.990M	21.9	+0.1 +0.2	+0.2 +0.2	+0.1	+10.1	+0.0	32.8	46.0	-13.2	Line
6	168.180k	30.5	+0.1 +0.1	+0.0 +0.1	+0.4	+10.1	+0.0	41.3	55.0	-13.7	Line
7	1.273M	21.0	+0.1 +0.1	+0.1 +0.1	+0.1	+10.1	+0.0	31.6	46.0	-14.4	Line
8	2.383M	20.9	+0.1 +0.2	+0.1 +0.1	+0.1	+10.1	+0.0	31.6	46.0	-14.4	Line
9	1.843M	20.6	+0.1 +0.2	+0.1 +0.1	+0.1	+10.1	+0.0	31.3	46.0	-14.7	Line
10	4.432M	20.4	+0.1 +0.2	+0.2 +0.2	+0.1	+10.1	+0.0	31.3	46.0	-14.7	Line
11	646.682k	20.2	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	30.9	46.0	-15.1	Line
12	277.261k	25.2	+0.1 +0.1	+0.0 +0.1	+0.1	+10.1	+0.0	35.7	50.9	-15.2	Line
13	2.936M	19.8	+0.1 +0.2	+0.1 +0.2	+0.1	+10.1	+0.0	30.6	46.0	-15.4	Line
14	298.350k	24.3	+0.1 +0.1	+0.0 +0.1	+0.1	+10.1	+0.0	34.8	50.3	-15.5	Line
15	280.897k	24.6	+0.1 +0.1	+0.0 +0.1	+0.1	+10.1	+0.0	35.1	50.8	-15.7	Line
16	966.512k	19.6	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	30.3	46.0	-15.7	Line
17	723.766k	19.1	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	29.8	46.0	-16.2	Line
	Ave										
^	723.766k	33.0	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	43.7	46.0	-2.3	Line
19	435.065k	20.0	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	30.7	47.2	-16.5	Line
20	456.154k	19.3	+0.1 +0.1	+0.1 +0.1	+0.2	+10.1	+0.0	30.0	46.8	-16.8	Line
21	4.960M	18.2	+0.1 +0.2	+0.2 +0.3	+0.1	+10.1	+0.0	29.2	46.0	-16.8	Line

CKC Laboratories Date: 10/5/2009 Time: [TESTTIME] INNCOM International WO#: 89056
FCC 15.207 - AVE Test Lead: Line 120V 60Hz Sequence#: 1 Polarity: Line
Notes:



DU

Test Location: CKC Laboratories • 22116 23rd Dr SE • Bothell, WA 98021-4413 • 425-402-1717

Customer: **INNCOM International**

Specification: **FCC 15.207 - AVE**

Work Order #: **89056**

Date: 10/5/2009

Test Type: **Conducted Emissions**

Time: 17:05:05

Equipment: **20dB INNCOM Zigbee Radio Module**

Sequence#: 6

Manufacturer: INNCOM International, Inc.

Tested By: Armando Del Angel

Model: 02-9894

120V 60Hz

S/N:

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Cable 20'	16	11/10/2008	11/10/2010	ANP05360
High freq. Cable	N/A	04/28/2009	04/28/2011	AN03121
Agilent E4440A	MY46186333	04/29/2009	04/29/2011	AN02871
Cable, 23' blue Helix	N/A	04/21/2009	04/21/2011	P05542
Attenuator	9912	03/21/2008	03/21/2010	ANP05503
Filter	G7752	07/21/2008	07/21/2010	AN02611
EMCO LISN	9606-1049	06/02/2009	06/02/2011	AN01492

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
20dB INNCOM Zigbee Radio Module*	INNCOM International, Inc.	02-9894	

Support Devices:

Function	Manufacturer	Model #	S/N
power supply	?	MAW7EA08EL	

Test Conditions / Notes:

Temperature 23°C

Relative Humidity 33%

Pressure 102.6kPa

Testing Conducted Emissions per FCC 15.207

The unit is a 20dB Zigbee Radio Module.

The Transmitter is located 10cm over the wooden table on styrofoam.

The transmitter will be transmitting in the LOW, MID and HIGH channels.

Vertical Ground plane is located 40cm from the back of the table.

Transducer Legend:

T1=CAB-ANP03121-042809	T2=CAB-ANP05360
T3=FIL-AN02611-072108	T4=ATT-ANP5503-032108
T5=CAB-ANP05542-042109	T6=CDN-AN01492-060209 - Neutral

Measurement Data:

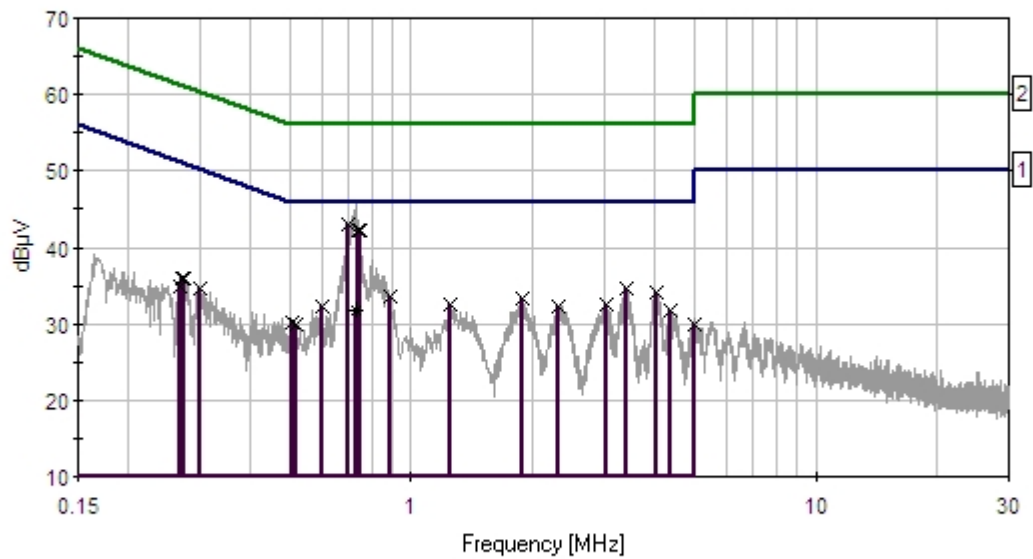
Reading listed by margin.

Test Lead: Neutral

#	Freq	Rdng	T1 T5	T2 T6	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBμV	dB	dB	dB	dB	Table	dBμV	dBμV	dB	Ant
1	695.404k	32.4	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	43.0	46.0	-3.0	Neutr
2	741.218k	31.5	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	42.1	46.0	-3.9	Neutr

3	745.581k	31.5	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	42.1	46.0	-3.9	Neutr
4	3.399M	23.8	+0.1 +0.2	+0.2 +0.1	+0.1	+10.1	+0.0	34.6	46.0	-11.4	Neutr
5	4.045M	23.3	+0.1 +0.2	+0.2 +0.1	+0.1	+10.1	+0.0	34.1	46.0	-11.9	Neutr
6	885.710k	23.0	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	33.6	46.0	-12.4	Neutr
7	1.889M	22.5	+0.1 +0.2	+0.1 +0.1	+0.1	+10.1	+0.0	33.2	46.0	-12.8	Neutr
8	1.243M	21.9	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	32.5	46.0	-13.5	Neutr
9	3.038M	21.8	+0.1 +0.2	+0.1 +0.1	+0.1	+10.1	+0.0	32.5	46.0	-13.5	Neutr
10	602.321k	21.8	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	32.4	46.0	-13.6	Neutr
11	2.319M	21.7	+0.1 +0.2	+0.1 +0.1	+0.1	+10.1	+0.0	32.4	46.0	-13.6	Neutr
12	728.855k	21.2	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	31.8	46.0	-14.2	Neutr
^	728.855k	35.3	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	45.9	46.0	-0.1	Neutr
14	4.373M	21.0	+0.1 +0.2	+0.2 +0.1	+0.1	+10.1	+0.0	31.8	46.0	-14.2	Neutr
15	275.806k	25.6	+0.1 +0.1	+0.0 +0.0	+0.1	+10.1	+0.0	36.0	50.9	-14.9	Neutr
16	270.715k	25.6	+0.1 +0.1	+0.0 +0.0	+0.1	+10.1	+0.0	36.0	51.1	-15.1	Neutr
17	301.258k	24.3	+0.1 +0.1	+0.0 +0.0	+0.1	+10.1	+0.0	34.7	50.2	-15.5	Neutr
18	505.603k	19.7	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	30.3	46.0	-15.7	Neutr
19	4.998M	19.2	+0.1 +0.2	+0.2 +0.1	+0.1	+10.1	+0.0	30.0	46.0	-16.0	Neutr
20	519.420k	19.3	+0.1 +0.1	+0.1 +0.0	+0.2	+10.1	+0.0	29.9	46.0	-16.1	Neutr
21	269.261k	24.4	+0.1 +0.1	+0.0 +0.0	+0.2	+10.1	+0.0	34.9	51.1	-16.2	Neutr

CKC Laboratories Date: 10/5/2009 Time: [TESTTIME] INNCOM International WO#: 89056
FCC 15.207 - AVE Test Lead: Neutral 120V 60Hz Sequence#: 6 Polarity: Neutral
Notes:



— Sweep Data
— Readings

— 1 - FCC 15.207 - AVE
x Peak Readings

— 2 - FCC 15.207 - QP
* Average Readings

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FCC 15.247(a)(2) – 6dB BANDWIDTH

Test Equipment

Asset #	Name	Manufacturer	Model	Serial	Cal date	Cal Due
3121	Cable	Astrolab	32026-2-29080-84		4/28/2009	4/28/2011
1412	Antenna, Horn	EMCO	3115	9606-4854	11/12/2007	11/12/2009
P05542	Cable, 23' blue	Andrews	Heliastax		4/21/2009	4/21/2011
1271	Preamplifier	HP	83017A	3123A00464	9/17/2009	9/17/2011
2871	Spectrum Analyzer	Agilent	E4440A	MY46186333	4/29/2009	4/29/2011

Test Conditions

EUT was transmitting. Due to the lack of antenna connectors the test was done through radiated measurements. EUT was located on the center of the test table over 10cm of Styrofoam. PSA was on max hold, marker-to-peak function is set on the peak of each channel, and then the marker was positioned 6dB below the peak on one side and then on the other side. The separation between those two points was the 6dB bandwidth. EUT was tested in the LOW (2.405GHz), MID (2.445GHz), and HIGH (2.475GHz). Test was done with a set of new batteries.

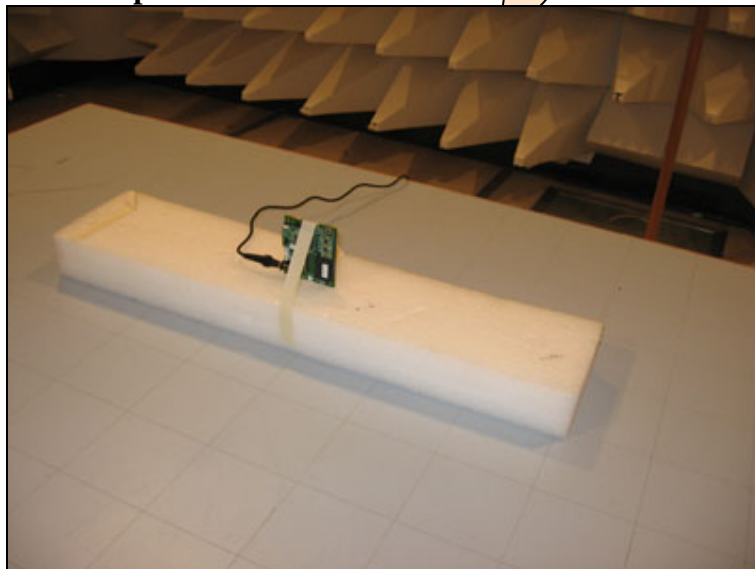
RBW = 100 kHz

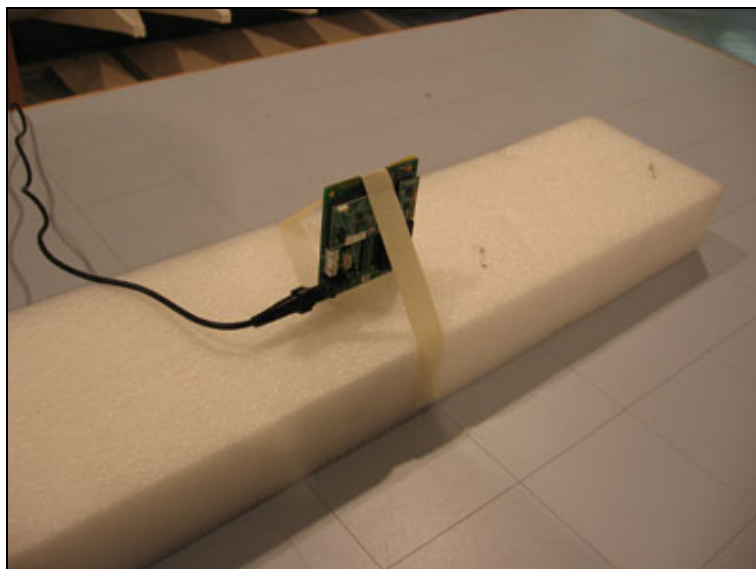
VBW = 1 MHz

Span = 10MHz

DRAFT

Test Setup Photos





Test Data

Channel	6dB Bandwidth	Limit
LOW	1.58MHz	500kHz
MID	1.58MHz	500kHz
HIGH	1.59MHz	500kHz

FCC 15.247(a)(2) OCCUPIED BANDWIDTH



FCC 15.247(a)(2) OCCUPIED BANDWIDTH



FCC 15.247(a)(2) OCCUPIED BANDWIDTH



FCC 15.247(b)(3) – RF POWER OUTPUT

Test Equipment

Asset #	Name	Manufacturer	Model	Serial	Cal date	Cal Due
3121	Cable	Astrolab	32026-2-29080-84		4/28/2009	4/28/2011
1412	Antenna, Horn	EMCO	3115	9606-4854	11/12/2007	11/12/2009
P05542	Cable, 23' blue	Andrews	Helix		4/21/2009	4/21/2011
1271	Preamp	HP	83017A	3123A00464	9/17/2009	9/17/2011
2871	Spectrum Analyzer	Agilent	E4440A	MY46186333	4/29/2009	4/29/2011

Test Conditions

EUT was transmitting. Due to the lack of antenna connectors the test was done through radiated measurements. EUT was located on the center of the test table over 10cm of Styrofoam. The Fundamental's emission was maximized per ANSI C63.4 procedures. EMI test was used with the solely purpose of accurate Field Strength data gathering. EUT was tested in the LOW (2.405GHz), MID (2.445GHz), and HIGH (2.475GHz). The gain (G) of the EUT's antenna was 1dBi.

The following calculation was used per FCC procedures in order to obtain the transmitter peak power:

$$P = (E \cdot d)^2 / (30 \cdot G)$$

E: Is the field strength in V/m

G: Is the numeric gain of the transmitting antenna over an isotropic radiator.

d: Is the distance at which the measurement is being executed.

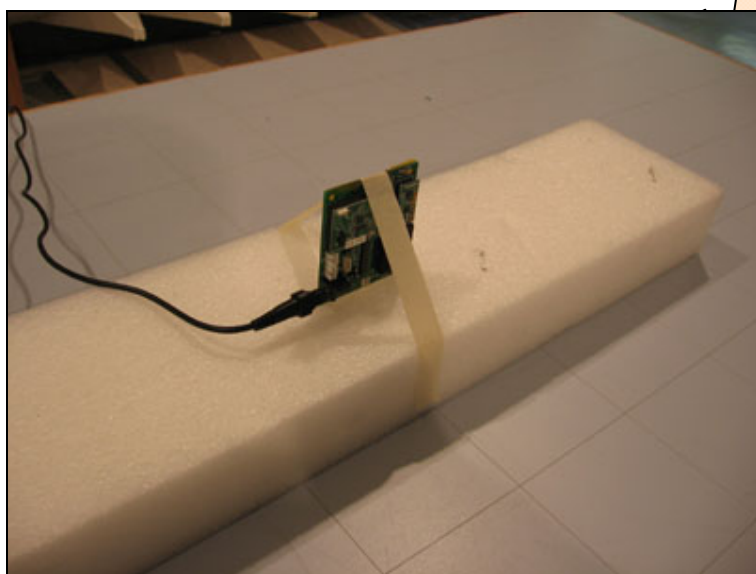
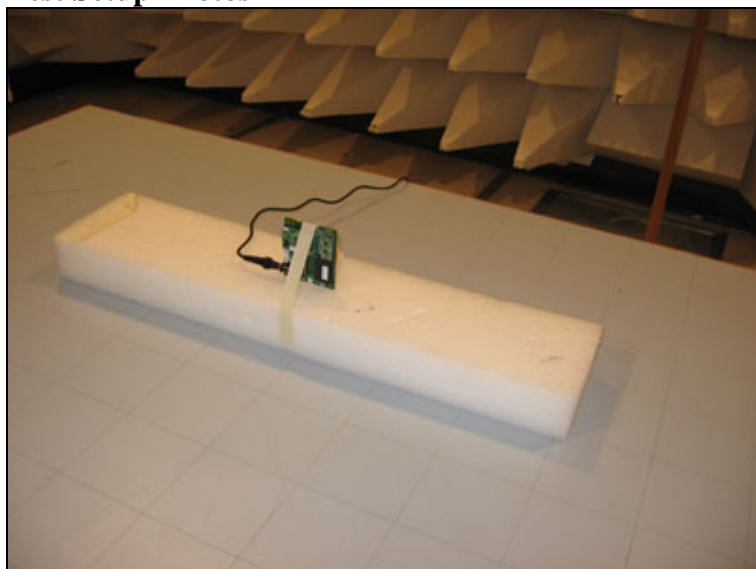
Since the measurements were taken with a RBW of 1MHz, and the 20dB BW of the signal is 2.5MHz; a correction factor of 3.97dB ($10 \log (2.5/1)$) was added to the measurements taken.

RBW = 1 MHz

VBW = 1 MHz

Span = 5MHz

Test Setup Photos



Test Data

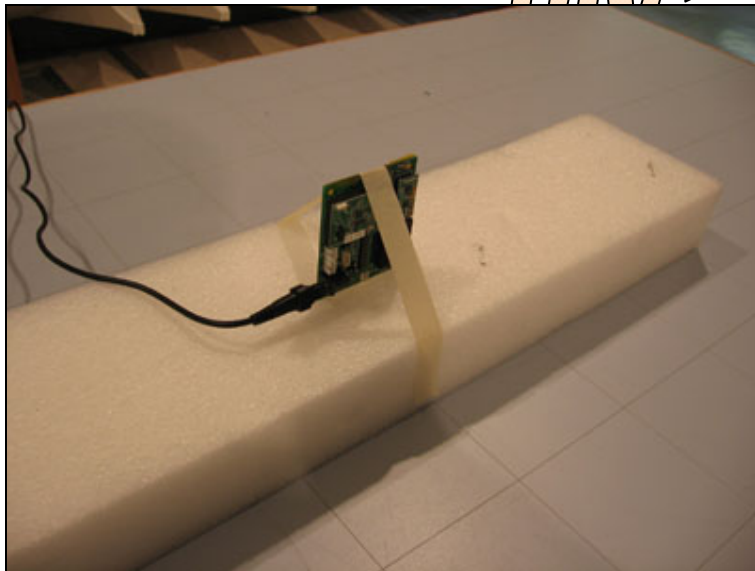
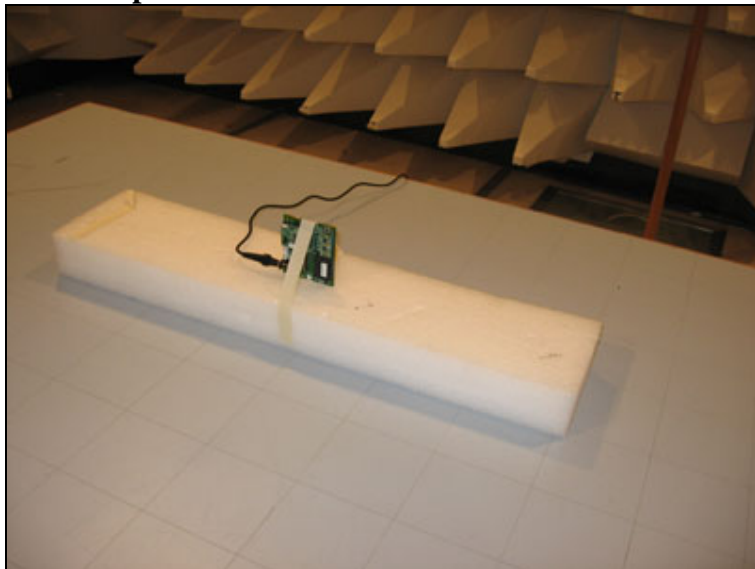
	Power	LIMIT
LOW	17.068dBm	30dBm
MID	12.398dBm	30dBm
HIGH	10.738dBm	30dBm

FCC 15.247(d) – OATS RADIATED SPURIOUS EMISSIONS

Test Equipment

See the data sheets for test equipment used.

Test Setup Photos



Test Data Sheets

Test Location: CKC Laboratories • 22116 23rd Dr SE • Bothell, WA 98021-4413 • 425-402-1717

Customer: **Fluke Corporation**

Specification: **FCC 15.247/15.209**

Work Order #: **89608**

Date: 10/5/2009

Test Type: **Radiated Scan**

Time: 15:57:13

Equipment: **20dB INNCOM Zigbee Radio Module**

Sequence#: 1

Manufacturer: INNCOM International, Inc.

Tested By: Armando Del Angel

Model: 02-9894

S/N:

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8447D Preamp	2944A08601	07/08/2008	07/08/2010	AN01517
Agilent E4440A	MY46186330	01/31/2008	01/31/2010	AN02872
Cable 6'	51	12/30/2008	12/30/2010	ANP05361
Antenna	2453	12/22/2008	12/22/2010	AN01994
Cable 20'	16	11/10/2008	11/10/2010	ANP05360
High freq. Cable	N/A	04/28/2009	04/28/2011	AN03121
Cable, 23' blue Heliac	N/A	04/21/2009	04/21/2011	P05542
EMCO 3115 Horn	9606-4854	11/12/2007	11/12/2009	AN01412
"Horn Antenna, Active 18-26GHz"	1114018	11/12/2008	11/12/2010	2742
Preamp	3123A00464	09/17/2009	09/17/2011	1271
Filter	311SH10-3000/T10000-0/0	12/02/2008	12/02/2010	3116
cable		12/02/2008	12/02/2010	3123

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
20dB INNCOM Zigbee Radio Module*	INNCOM International, Inc.	02-9894	

Support Devices:

Function	Manufacturer	Model #	S/N
power supply	?	MW7EA08EL	

Test Conditions / Notes:

Temperature 24°C

Humidity: 38%

Pressure: 102.1kPa

Testing Radiated Spurious Emissions per FCC 15.247(d)

The EUT is 20dB Zigbee Radio Module

The EUT is located in the center of the test table raised 10cm with styrofoam.

The EUT will be transmitting in the LOW, MID, and HIGH channels.

Because of the lack of antenna connectors the test will have to be done through radiated scans.

30 - 1000MHz RBW=100kHz VBW=1MHz

1.0 - 24.8GHz RBW=1MHz VBW=3MHz

Transducer Legend:

T1=CAB-ANP03121-042809	T2=ANT-AN01412-111207
T3=CAB-ANP05542-042109	T4=AMP-AN01271-091709
T5=CAB-ANP03123-120208	T6=FIL-AN03116-120208
T7=ANT AN01994 25-1000MHz	T8=AMP-AN01517-070808
T9=CAB-ANP05360	T10=CAB-ANP05361

Measurement Data:		Reading listed by margin.					Test Distance: 3 Meters				
#	Freq	Rdng	T1 T5 T9	T2 T6 T10	T3 T7	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBμV	dB	dB	dB	dB	Table	dBμV/m	dBμV/m	dB	Ant
1	34.050M	44.9	+0.2 +0.0 +0.3	+0.0 +0.0 +0.1	+0.0 +19.2	+0.0 -29.1	+0.0	35.6	40.0	-4.4	Horiz
	QP								LOW channel		175
^	34.050M	47.7	+0.2 +0.0 +0.3	+0.0 +0.0 +0.1	+0.0 +19.2	+0.0 -29.1	+0.0	38.4	40.0	-1.6	Horiz
									LOW channel		175
3	12375.000	33.8	+3.0 +1.6 +0.0	+38.9 +0.2 +0.0	+6.7 +0.0	-35.0 +0.0	+0.0	49.2	54.0	-4.8	Horiz
	M						199		LOW Channel		240
4	7426.250M	38.5	+2.1 +1.1 +0.0	+36.5 +0.3 +0.0	+5.2 +0.0	-34.6 +0.0	+0.0	49.1	54.0	-4.9	Verti
									HIGH channel		99
5	4810.871M	42.1	+1.9 +0.8 +0.0	+33.2 +0.7 +0.0	+4.2 +0.0	-33.8 +0.0	+0.0	49.1	54.0	-4.9	Verti
	Ave								LOW Channel		100
^	4810.871M	49.4	+1.9 +0.8 +0.0	+33.2 +0.7 +0.0	+4.2 +0.0	-33.8 +0.0	+0.0	56.4	54.0	+2.4	Verti
									LOW Channel		100
7	4890.780M	41.4	+1.9 +0.8 +0.0	+33.4 +0.6 +0.0	+4.2 +0.0	-33.7 +0.0	+0.0	48.6	54.0	-5.4	Verti
	Ave								MID Channel		100
^	4890.780M	48.7	+1.9 +0.8 +0.0	+33.4 +0.6 +0.0	+4.2 +0.0	-33.7 +0.0	+0.0	55.9	54.0	+1.9	Verti
									MID Channel		100
9	7336.305M	38.1	+2.1 +1.1 +0.0	+36.4 +0.3 +0.0	+5.2 +0.0	-34.6 +0.0	+0.0	48.6	54.0	-5.4	Horiz
							360		MID Channel		179
10	9781.645M	33.3	+2.5 +1.2 +0.0	+38.6 +0.3 +0.0	+6.0 +0.0	-33.9 +0.0	+0.0	48.0	54.0	-6.0	Horiz
							360		MID Channel		100
11	4950.915M	39.8	+2.0 +0.9 +0.0	+33.6 +0.6 +0.0	+4.2 +0.0	-33.7 +0.0	+0.0	47.4	54.0	-6.6	Verti
							360		HIGH channel		99
12	14850.050	28.4	+3.0 +1.3 +0.0	+40.7 +0.4 +0.0	+7.2 +0.0	-34.8 +0.0	+0.0	46.2	54.0	-7.8	Horiz
	M								Noise floor reading		148
13	14429.050	26.3	+3.0 +1.4 +0.0	+41.3 +1.8 +0.0	+7.0 +0.0	-34.8 +0.0	+0.0	46.0	54.0	-8.0	Verti
	M						360		Noise floor readings		99
14	45.120M	47.3	+0.2 +0.0 +0.4	+0.0 +0.0 +0.1	+0.0 +12.0	+0.0 -29.1	+0.0	30.9	40.0	-9.1	Verti
							360		LOW channel		150

15	17116.420 M	25.4	+3.5 +1.1 +0.0	+40.6 +0.4 +0.0	+8.1 +0.0 +0.0	-34.8 +0.0 +0.0	+0.0 360	44.3	54.0	-9.7	Horiz
									Noise floor		100
16	50.520M	49.9	+0.2 +0.0 +0.4	+0.0 +0.0 +0.1	+0.0 +8.8 +0.0	+0.0 -29.1 +0.0	+0.0 360	30.3	40.0	-9.7	Verti
									HIGH channel		100
17	9619.181M	28.8	+2.5 +1.5 +0.0	+38.7 +0.4 +0.0	+5.9 +0.0 +0.0	-34.0 +0.0 +0.0	+0.0	43.8	54.0	-10.2	Verti
									Noise floor readings		99
18	12225.000 M	28.0	+3.0 +1.6 +0.0	+39.1 +0.3 +0.0	+6.5 +0.0 +0.0	-35.0 +0.0 +0.0	+0.0 360	43.5	54.0	-10.5	Verti
									MID Channel		100
19	44.310M	45.0	+0.2 +0.0 +0.4	+0.0 +0.0 +0.1	+0.0 +12.5 +0.0	+0.0 -29.1 +0.0	+0.0 360	29.1	40.0	-10.9	Horiz
									HIGH channel		175
20	4890.920M Ave	35.4	+1.9 +0.8 +0.0	+33.4 +0.6 +0.0	+4.2 +0.0 +0.0	-33.7 +0.0 +0.0	+0.0 11	42.6	54.0	-11.4	Horiz
									MID Channel		99
^	4890.920M	44.0	+1.9 +0.8 +0.0	+33.4 +0.6 +0.0	+4.2 +0.0 +0.0	-33.7 +0.0 +0.0	+0.0 11	51.2	54.0	-2.8	Horiz
									MID Channel		99
22	4810.829M Ave	35.3	+1.9 +0.8 +0.0	+33.2 +0.7 +0.0	+4.2 +0.0 +0.0	-33.8 +0.0 +0.0	+0.0 30	42.3	54.0	-11.7	Horiz
									LOW Channel		99
^	4810.829M	43.4	+1.9 +0.8 +0.0	+33.2 +0.7 +0.0	+4.2 +0.0 +0.0	-33.8 +0.0 +0.0	+0.0 30	50.4	54.0	-3.6	Horiz
									LOW Channel		99
24	69.420M	50.2	+0.3 +0.0 +0.5	+0.0 +0.0 +0.1	+0.0 +6.3 +0.0	+0.0 -29.2 +0.0	+0.0 360	28.2	40.0	-11.8	Verti
									HIGH channel		100
25	7216.236M Ave	31.5	+2.2 +1.1 +0.0	+36.3 +0.4 +0.0	+5.1 +0.0 +0.0	-34.6 +0.0 +0.0	+0.0 322	42.0	54.0	-12.0	Horiz
									LOW Channel		123
^	7216.236M	40.9	+2.2 +1.1 +0.0	+36.3 +0.4 +0.0	+5.1 +0.0 +0.0	-34.6 +0.0 +0.0	+0.0 322	51.4	54.0	-2.6	Horiz
									LOW Channel		123
27	7216.179M Ave	31.3	+2.2 +1.1 +0.0	+36.3 +0.4 +0.0	+5.1 +0.0 +0.0	-34.6 +0.0 +0.0	+0.0 329	41.8	54.0	-12.2	Verti
									LOW Channel		99
^	7216.179M	41.1	+2.2 +1.1 +0.0	+36.3 +0.4 +0.0	+5.1 +0.0 +0.0	-34.6 +0.0 +0.0	+0.0 329	51.6	54.0	-2.4	Verti
									LOW Channel		99
29	7336.360M Ave	30.5	+2.1 +1.1 +0.0	+36.4 +0.3 +0.0	+5.2 +0.0 +0.0	-34.6 +0.0 +0.0	+0.0 360	41.0	54.0	-13.0	Verti
									MID Channel		100
^	7336.360M	39.8	+2.1 +1.1 +0.0	+36.4 +0.3 +0.0	+5.2 +0.0 +0.0	-34.6 +0.0 +0.0	+0.0 360	50.3	54.0	-3.7	Verti
									MID Channel		100
31	9897.788M Ave	26.2	+2.4 +1.1 +0.0	+38.6 +0.2 +0.0	+6.0 +0.0 +0.0	-34.0 +0.0 +0.0	+0.0 11	40.5	54.0	-13.5	Horiz
									LOW Channel		100
^	9897.788M	38.6	+2.4 +1.1 +0.0	+38.6 +0.2 +0.0	+6.0 +0.0 +0.0	-34.0 +0.0 +0.0	+0.0 11	52.9	54.0	-1.1	Horiz
									LOW Channel		100

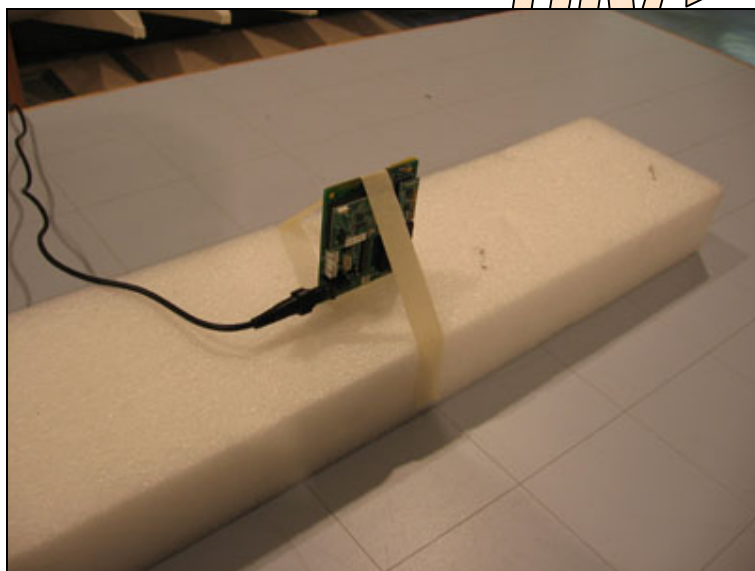
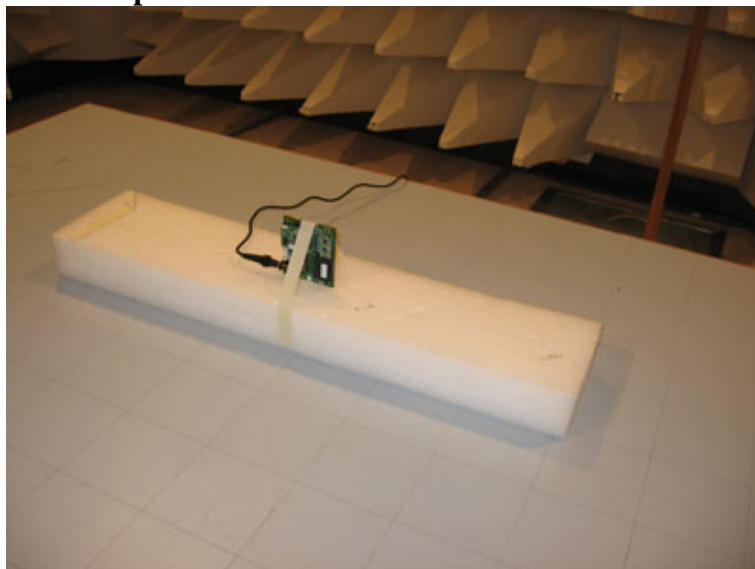
33	51.330M	46.3	+0.2 +0.0 +0.4	+0.0 +0.0 +0.1	+0.0 +8.4	+0.0 -29.1	+0.0 360	26.3	40.0 MID Channel	-13.7	Verti 150
34	12022.290 M Ave	23.7	+2.8 +1.9 +0.0	+39.4 +0.5 +0.0	+6.6 +0.0	-35.0 +0.0	+0.0	39.9	54.0 LOW Channel	-14.1	Horiz 124
^	12022.290 M	34.8	+2.8 +1.9 +0.0	+39.4 +0.5 +0.0	+6.6 +0.0	-35.0 +0.0	+0.0	51.0	54.0 LOW Channel	-3.0	Horiz 124
36	7426.201M Ave	28.4	+2.1 +1.1 +0.0	+36.5 +0.3 +0.0	+5.2 +0.0	-34.6 +0.0	+0.0 10	39.0	54.0 LOW Channel	-15.0	Horiz 100
^	7426.201M	39.8	+2.1 +1.1 +0.0	+36.5 +0.3 +0.0	+5.2 +0.0	-34.6 +0.0	+0.0 10	50.4	54.0 LOW Channel	-3.6	Horiz 100
38	9621.729M Ave	23.3	+2.5 +1.5 +0.0	+38.7 +0.4 +0.0	+5.9 +0.0	-34.0 +0.0	+0.0	38.3	54.0 LOW Channel	-15.7	Horiz 152
^	9621.729M	33.9	+2.5 +1.5 +0.0	+38.7 +0.4 +0.0	+5.9 +0.0	-34.0 +0.0	+0.0	48.9	54.0 LOW Channel	-5.1	Horiz 152
40	65.100M	44.2	+0.3 +0.0 +0.4	+0.0 +0.0 +0.1	+0.0 +5.6	+0.0 -29.2	+0.0 360	21.4	40.0 HIGH channel	-18.6	Horiz 175
41	169.590M	42.0	+0.4 +0.0 +0.8	+0.0 +0.0 +0.2	+0.0 +9.8	+0.0 -28.8	+0.0 360	24.4	43.5 HIGH channel	-19.1	Verti 100
42	80.490M	38.4	+0.3 +0.0 +0.5	+0.0 +0.0 +0.1	+0.0 +7.6	+0.0 -29.1	+0.0 360	17.8	40.0 MID Channel	-22.2	Verti 150
43	375.600M	29.9	+0.6 +0.0 +1.2	+0.0 +0.0 +0.3	+0.0 +15.6	+0.0 -28.8	+0.0	18.8	46.0 HIGH channel	-27.2	Verti 150

FCC 15.247(d) - BAND EDGE

Test Equipment

See the data sheets for test equipment used.

Test Setup Photos



Test Plots

Test Location: CKC Laboratories • 22116 23rd Dr SE • Bothell, WA 98021-4413 • 425-402-1717

Customer: **INNCOM International**
 Specification: **FCC 15.247(d) Bandedge Compliance**
 Work Order #: **89056** Date: 10/5/2009
 Test Type: **Radiated Scan** Time: 12:32:36
 Equipment: **20dB INNCOM Zigbee Radio Module** Sequence#: 3
 Manufacturer: INNCOM International, Inc. Tested By: Armando Del Angel
 Model: 02-9894
 S/N:

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
High freq. Cable	N/A	04/28/2009	04/28/2011	AN03121
Agilent E4440A	MY46186333	04/29/2009	04/29/2011	AN02871
EMCO 3115 Horn	9606-4854	11/12/2007	11/12/2009	AN01412 EMCO 3115 Horn
HP 83017A	3123A00464	09/17/2009	09/17/2011	AN01271
Cable, 23' blue Heliac	N/A	04/21/2009	04/21/2011	P05542
High freq. Cable	N/A	12/02/2008	12/02/2010	AN03123

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
20dB INNCOM Zigbee Radio Module*	INNCOM International, Inc.	02-9894	

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

Temperature 21°C
 Humidity: 33%
 Pressure: 102.7kPa

Testing Bandedge Compliance per FCC15.247(d)

The EUT is 20dB Zigbee Radio Module

The EUT is located in the center of the test table raised 10cm with styrofoam.

The EUT will be transmitting in the LOW and HIGH channels.

Because of the lack of antenna connectors the test will have to be done through radiated scans.

Plot shows peak values only with 1MHz RBW, tabular data shows both peak and average values.

Limit line includes the 54dBuV/m at the restricted bands and 20dBc with respect to the fundamental on the rest of the frequencies.

RBW = 1MHz

VBW = 1MHz

Transducer Legend:

T1=CAB-ANP03121-042809	T2=CAB-ANP05542-042109
T3=AMP-AN01271-091709	T4=ANT-AN01412-111207
T5=CAB-ANP03123-120208	

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

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	2405.356M	109.2	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	107.9	107.9	+0.0	Horiz 181
2	2389.502M Ave	43.6	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	42.3	54.0	-11.7	Horiz 181
^	2389.502M	56.2	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	54.9	54.0	+0.9	Horiz 181
4	2389.372M Ave	43.5	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	42.2	54.0	-11.8	Horiz 181
^	2389.372M	55.8	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	54.5	54.0	+0.5	Horiz 181
6	2388.117M Ave	42.6	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	41.3	54.0	-12.7	Horiz 181
^	2388.117M	56.2	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	54.9	54.0	+0.9	Horiz 181
8	2387.953M Ave	42.4	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	41.1	54.0	-12.9	Horiz 181
^	2387.953M	55.1	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	53.8	54.0	-0.2	Horiz 181
10	2386.347M Ave	41.9	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	40.6	54.0	-13.4	Horiz 181
^	2386.347M	55.9	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	54.6	54.0	+0.6	Horiz 181
^	2386.347M	52.3	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	51.0	54.0	-3.0	Horiz 181
13	2386.347M Ave	41.9	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	40.6	54.0	-13.4	Horiz 181
14	2386.347M Ave	41.9	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	40.6	54.0	-13.4	Horiz 181
15	2385.509M Ave	41.8	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	40.5	54.0	-13.5	Horiz 181
^	2385.509M	54.8	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	53.5	54.0	-0.5	Horiz 181
17	2384.007M Ave	41.7	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	40.4	54.0	-13.6	Horiz 181
^	2384.007M	55.1	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	53.8	54.0	-0.2	Horiz 181
19	2399.990M	70.4	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	69.1	87.9	-18.8	Horiz 181
20	2399.668M	68.0	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	66.7	87.9	-21.2	Horiz 181
21	2397.641M	60.4	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	59.1	87.9	-28.8	Horiz 181
22	2397.276M	57.3	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	56.0	87.9	-31.9	Horiz 181

23	2395.551M	56.6	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	55.3	87.9	-32.6	Horiz 181
24	2395.829M	56.3	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	55.0	87.9	-32.9	Horiz 181
25	2390.594M	56.2	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	54.9	87.9	-33.0	Horiz 181
26	2395.092M	56.1	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	54.8	87.9	-33.1	Horiz 181
27	2395.057M	56.0	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	54.7	87.9	-33.2	Horiz 181
28	2394.849M	55.8	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	54.5	87.9	-33.4	Horiz 181
29	2394.009M	55.7	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	54.4	87.9	-33.5	Horiz 181
30	2393.749M	55.6	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	54.3	87.9	-33.6	Horiz 181
31	2390.005M	42.9	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	41.6	87.9	-46.3	Horiz 181
	Ave										
^	2390.005M	56.3	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 53	55.0	87.9	-32.9	Horiz 181

DRAFT

Test Location: CKC Laboratories • 22116 23rd Dr SE • Bothell, WA 98021-4413 • 425-402-1717

Customer: **INNCOM International**
 Specification: **FCC 15.247(d) Bandedge Compliance**
 Work Order #: **89056**
 Test Type: **Radiated Scan**
 Equipment: **20dB INNCOM Zigbee Radio Module**
 Manufacturer: INNCOM International, Inc.
 Model: 02-9894
 S/N:

Date: 10/5/2009
 Time: 12:55:39 PM
 Sequence#: 5
 Tested By: Armando Del Angel

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
High freq. Cable	N/A	04/28/2009	04/28/2011	AN03121
Agilent E4440A	MY46186333	04/29/2009	04/29/2011	AN02871
EMCO 3115 Horn	9606-4854	11/12/2007	11/12/2009	AN01412 EMCO 3115 Horn
HP 83017A	3123A00464	09/17/2009	09/17/2011	AN01271
Cable, 23' blue Heliac	N/A	04/21/2009	04/21/2011	P05542
High freq. Cable	N/A	12/02/2008	12/02/2010	AN03123

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
20dB INNCOM Zigbee Radio Module*	INNCOM International, Inc.	02-9894	

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

Temperature 21°C
 Humidity: 33%
 Pressure: 102.7kPa

Testing Bandedge Compliance per FCC15.247(d)

The EUT is 20dB Zigbee Radio Module

The EUT is located in the center of the test table raised 10cm with styrofoam.

The EUT will be transmitting in the LOW and HIGH channels.

Because of the lack of antenna connectors the test will have to be done through radiated scans.

Plot shows peak values only with 1MHz RBW, tabular data shows both peak and average values.

Limit line includes the 54dBuV/m at the restricted bands and 20dBc with respect to the fundamental on the rest of the frequencies.

RBW = 1MHz

VBW = 1MHz

Transducer Legend:

T1=CAB-ANP03121-042809	T2=CAB-ANP05542-042109
T3=AMP-AN01271-091709	T4=ANT-AN01412-111207
T5=CAB-ANP03123-120208	

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

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	2405.348M	102.3	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 222	101.0	101.0	+0.0	Verti 128
2	2387.634M	49.9	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 222	48.6	54.0	-5.4	Verti 128
3	2389.441M	49.9	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 222	48.6	54.0	-5.4	Verti 128
4	2387.703M	49.6	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 222	48.3	54.0	-5.7	Verti 128
5	2388.255M	49.6	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 222	48.3	54.0	-5.7	Verti 128
6	2381.295M	49.3	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 222	48.0	54.0	-6.0	Verti 128
7	2383.869M	49.3	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 222	48.0	54.0	-6.0	Verti 128
8	2385.458M	49.2	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 222	47.9	54.0	-6.1	Verti 128
9	2385.725M	49.2	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 222	47.9	54.0	-6.1	Verti 128
10	2385.829M	49.2	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 222	47.9	54.0	-6.1	Verti 128
11	2387.452M	49.2	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 222	47.9	54.0	-6.1	Verti 128
12	2382.478M	49.1	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 222	47.8	54.0	-6.2	Verti 128
13	2384.438M	49.1	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 222	47.8	54.0	-6.2	Verti 128
14	2385.354M	49.1	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 222	47.8	54.0	-6.2	Verti 128
15	2386.235M	49.0	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 222	47.7	54.0	-6.3	Verti 128
16	2386.313M	49.0	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 222	47.7	54.0	-6.3	Verti 128
17	2386.882M	49.0	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 222	47.7	54.0	-6.3	Verti 128
18	2386.969M	49.0	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 222	47.7	54.0	-6.3	Verti 128
19	2383.420M	48.9	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 222	47.6	54.0	-6.4	Verti 128
20	2383.644M	48.8	+1.2 +0.5	+2.7	-34.5	+28.8	+0.0 222	47.5	54.0	-6.5	Verti 128

Test Location: CKC Laboratories • 22116 23rd Dr SE • Bothell, WA 98021-4413 • 425-402-1717

Customer: **INNCOM International**
 Specification: **FCC 15.247(d) Bandedge Compliance**
 Work Order #: **89056**
 Test Type: **Radiated Scan**
 Equipment: **20dB INNCOM Zigbee Radio Module**
 Manufacturer: INNCOM International, Inc.
 Model: 02-9894
 S/N:

Date: 10/5/2009
 Time: 11:51:42
 Sequence#: 2
 Tested By: Armando Del Angel

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
High freq. Cable	N/A	04/28/2009	04/28/2011	AN03121
Agilent E4440A	MY46186333	04/29/2009	04/29/2011	AN02871
EMCO 3115 Horn	9606-4854	11/12/2007	11/12/2009	AN01412 EMCO 3115 Horn
HP 83017A	3123A00464	09/17/2009	09/17/2011	AN01271
Cable, 23' blue Heliac	N/A	04/21/2009	04/21/2011	P05542
High freq. Cable	N/A	12/02/2008	12/02/2010	AN03123

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
20dB INNCOM Zigbee Radio Module*	INNCOM International, Inc.	02-9894	

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

Temperature 21°C
 Humidity: 33%
 Pressure: 102.7kPa

Testing Bandedge Compliance per FCC15.247(d)

The EUT is 20dB Zigbee Radio Module

The EUT is located in the center of the test table raised 10cm with styrofoam.

The EUT will be transmitting in the LOW and HIGH channels.

Because of the lack of antenna connectors the test will have to be done through radiated scans.

Plot shows peak values only with 1MHz RBW, tabular data shows both peak and average values.

Limit line includes the 54dBuV/m at the restricted bands and 20dBc with respect to the fundamental on the rest of the frequencies.

RBW = 1MHz

VBW = 1MHz

Transducer Legend:

T1=CAB-ANP03121-042809
T3=AMP-AN01271-091709
T5=CAB-ANP03123-120208

T2=CAB-ANP05542-042109
T4=ANT-AN01412-111207

Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	2474.399M	107.6	+1.2 +0.5	+2.8	-34.4	+29.0	+0.0 37	106.7	106.7	+0.0	Horiz 180
2	2485.359M	54.1	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 37	53.3	54.0	-0.7	Horiz 180
3	2494.485M	53.5	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 37	52.7	54.0	-1.3	Horiz 180
4	2497.063M	52.8	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 37	52.0	54.0	-2.0	Horiz 180
5	2492.968M	52.7	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 37	51.9	54.0	-2.1	Horiz 180
6	2493.437M	52.6	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 37	51.8	54.0	-2.2	Horiz 180
7	2490.218M Ave	41.5	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 37	40.7	54.0	-13.3	Horiz 180
^	2490.218M	53.9	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 37	53.1	54.0	-0.9	Horiz 180
9	2483.530M Ave	41.3	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 37	40.5	54.0	-13.5	Horiz 180
^	2483.530M	55.4	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 37	54.6	54.0	+0.6	Horiz 180
11	2484.413M Ave	41.1	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 37	40.3	54.0	-13.7	Horiz 180
^	2484.413M	54.2	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 37	53.4	54.0	-0.6	Horiz 180
13	2493.967M Ave	39.8	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 37	39.0	54.0	-15.0	Horiz 180
^	2493.967M	52.8	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 37	52.0	54.0	-2.0	Horiz 180
15	2497.618M Ave	39.4	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 37	38.6	54.0	-15.4	Horiz 180
^	2497.618M	52.4	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 37	51.6	54.0	-2.4	Horiz 180
17	2501.844M	50.9	+1.3 +0.5	+2.8	-34.4	+29.1	+0.0 37	50.2	86.7	-36.5	Horiz 180
18	2502.910M	50.8	+1.3 +0.5	+2.8	-34.4	+29.1	+0.0 37	50.1	86.7	-36.6	Horiz 180
19	2502.427M	50.7	+1.3 +0.5	+2.8	-34.4	+29.1	+0.0 37	50.0	86.7	-36.7	Horiz 180
20	2504.336M	50.4	+1.3 +0.5	+2.8	-34.4	+29.1	+0.0 37	49.7	86.7	-37.0	Horiz 180
21	2501.683M	50.3	+1.3 +0.5	+2.8	-34.4	+29.1	+0.0 37	49.6	86.7	-37.1	Horiz 180
22	2502.117M	50.3	+1.3 +0.5	+2.8	-34.4	+29.1	+0.0 37	49.6	86.7	-37.1	Horiz 180

23	2502.204M	50.1	+1.3 +0.5	+2.8	-34.4	+29.1	+0.0 37	49.4	86.7	-37.3	Horiz 180
24	2504.571M	49.4	+1.3 +0.5	+2.8	-34.4	+29.1	+0.0 37	48.7	86.7	-38.0	Horiz 180
25	2504.038M	49.1	+1.3 +0.5	+2.8	-34.4	+29.1	+0.0 37	48.4	86.7	-38.3	Horiz 180

DRAFT

Test Location: CKC Laboratories • 22116 23rd Dr SE • Bothell, WA 98021-4413 • 425-402-1717

Customer: **INNCOM International**
 Specification: **FCC 15.247(d) Bandedge Compliance**
 Work Order #: **89056**
 Test Type: **Radiated Scan**
 Equipment: **20dB INNCOM Zigbee Radio Module**
 Manufacturer: INNCOM International, Inc.
 Model: 02-9894
 S/N:

Date: 10/5/2009
 Time: 11:26:13 AM
 Sequence#: 1
 Tested By: Armando Del Angel

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
High freq. Cable	N/A	04/28/2009	04/28/2011	AN03121
Agilent E4440A	MY46186333	04/29/2009	04/29/2011	AN02871
Cable, 23' blue Helix	N/A	04/21/2009	04/21/2011	P05542
9606-4854	11/12/2007	11/12/2009		AN01412 EMCO 3115 Horn
HP 83017A	3123A00464	09/17/2009	09/17/2011	AN01271
High freq. Cable	N/A	12/02/2008	12/02/2010	AN03123

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
20dB INNCOM Zigbee Radio Module*	INNCOM International, Inc.	02-9894	

Support Devices:

Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

Temperature 21°C
 Humidity: 33%
 Pressure: 102.7kPa

Testing Bandedge Compliance per FCC15.247(d)

The EUT is 20dB Zigbee Radio Module

The EUT is located in the center of the test table raised 10cm with styrofoam.

The EUT will be transmitting in the LOW and HIGH channels.

Because of the lack of antenna connectors the test will have to be done through radiated scans.

Plot shows peak values only with 1MHz RBW, tabular data shows both peak and average values.

Limit line includes the 54dBuV/m at the restricted bands and 20dBc with respect to the fundamental on the rest of the frequencies.

RBW = 1MHz

VBW = 1MHz

Transducer Legend:

T1=CAB-ANP03121-042809	T2=CAB-ANP05542-042109
T3=AMP-AN01271-091709	T4=ANT-AN01412-111207
T5=CAB-ANP03123-120208	

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

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	2474.399M	101.4	+1.2 +0.5	+2.8	-34.4	+29.0	+0.0 219	100.5	100.5	+0.0	Verti 146
2	2483.566M	48.4	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 219	47.6	54.0	-6.4	Verti 146
3	2485.113M	48.3	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 219	47.5	54.0	-6.5	Verti 146
4	2483.652M	48.2	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 219	47.4	54.0	-6.6	Verti 146
5	2485.938M	48.2	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 219	47.4	54.0	-6.6	Verti 146
6	2486.271M	48.2	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 219	47.4	54.0	-6.6	Verti 146
7	2494.436M	47.2	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 219	46.4	54.0	-7.6	Verti 146
8	2494.966M	47.1	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 219	46.3	54.0	-7.7	Verti 146
9	2496.755M	47.1	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 219	46.3	54.0	-7.7	Verti 146
10	2492.648M	46.9	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 219	46.1	54.0	-7.9	Verti 146
11	2494.658M	46.9	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 219	46.1	54.0	-7.9	Verti 146
12	2492.746M	46.8	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 219	46.0	54.0	-8.0	Verti 146
13	2492.216M	46.7	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 219	45.9	54.0	-8.1	Verti 146
14	2497.754M	46.7	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 219	45.9	54.0	-8.1	Verti 146
15	2497.717M	46.6	+1.2 +0.5	+2.8	-34.4	+29.1	+0.0 219	45.8	54.0	-8.2	Verti 146
16	2501.349M	44.9	+1.3 +0.5	+2.8	-34.4	+29.1	+0.0 219	44.2	80.5	-36.3	Verti 146
17	2501.894M	44.9	+1.3 +0.5	+2.8	-34.4	+29.1	+0.0 219	44.2	80.5	-36.3	Verti 146
18	2503.109M	44.9	+1.3 +0.5	+2.8	-34.4	+29.1	+0.0 219	44.2	80.5	-36.3	Verti 146
19	2502.439M	44.8	+1.3 +0.5	+2.8	-34.4	+29.1	+0.0 219	44.1	80.5	-36.4	Verti 146
20	2506.257M	43.8	+1.3 +0.5	+2.8	-34.4	+29.1	+0.0 219	43.1	80.5	-37.4	Verti 146

FCC 15.247(e) - PEAK POWER SPECTRAL DENSITY

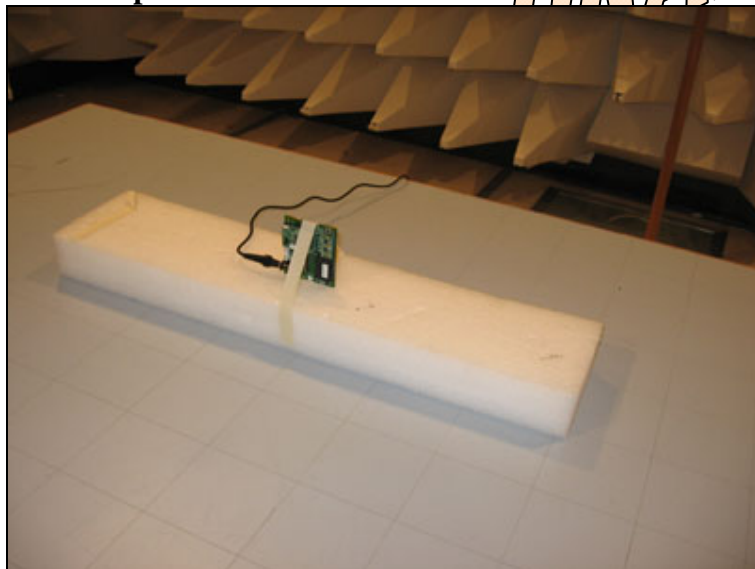
Test Equipment

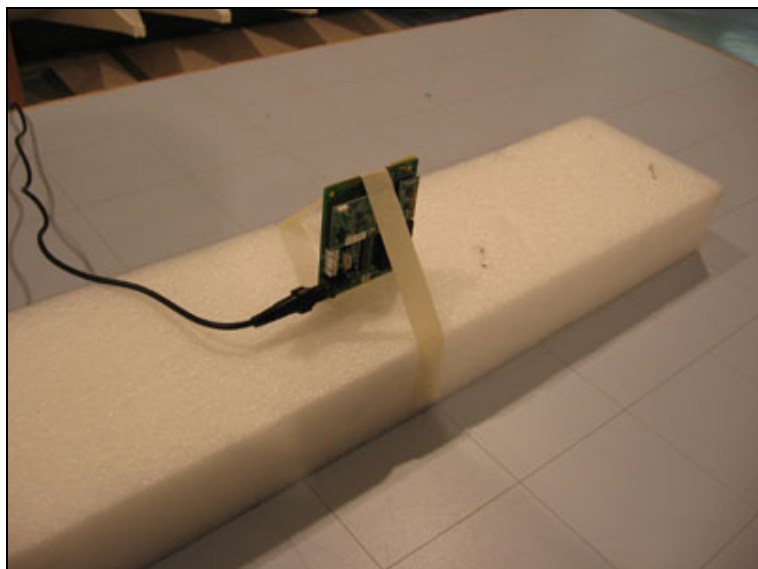
Asset #	Name	Manufacturer	Model	Serial	Cal date	Cal Due
3121	Cable	Astrolab	32026-2-29080-84		4/28/2009	4/28/2011
1412	Antenna, Horn	EMCO	3115	9606-4854	11/12/2007	11/12/2009
P05542	Cable, 23' blue	Andrews	Heliastax		4/21/2009	4/21/2011
1271	Preamp	HP	83017A	3123A00464	9/17/2009	9/17/2011
2871	Spectrum Analyzer	Agilent	E4440A	MY46186333	4/29/2009	4/29/2011

Test Conditions

The EUT was transmitting. Due to the lack of antenna connectors the test was done through radiated measurements. EUT was located on the center of the test table over 10cm of Styrofoam. The Fundamental's emission was maximized per ANSI C63.4 procedures. PSA was on max hold centered at the desired channel. EMI test was used with the solely purpose of accurate Field Strength data gathering. Same calculation from the RF power output test was used in order to convert the field strength to power. EUT was tested in the LOW (2.405GHz), MID (2.445GHz), and HIGH (2.475GHz).

Test Setup Photos





Test Data

	Power	Limit
LOW	-4.832dBm/3kHz	8dBm/3kHz
MID	-7.762dBm/3kHz	8dBm/3kHz
HIGH	-7.232dBm/3kHz	8dBm/3kHz

RSS-210 - 99% BANDWIDTH

Test Equipment

Asset #	Name	Manufacturer	Model	Serial	Cal date	Cal Due
3121	Cable	Astrolab	32026-2-29080-84		4/28/2009	4/28/2011
1412	Antenna, Horn	EMCO	3115	9606-4854	11/12/2007	11/12/2009
P05542	Cable, 23' blue	Andrews	Helix		4/21/2009	4/21/2011
1271	Preamp	HP	83017A	3123A00464	9/17/2009	9/17/2011
2871	Spectrum Analyzer	Agilent	E4440A	MY46186333	4/29/2009	4/29/2011

Test Conditions

EUT was transmitting. Due to the lack of antenna connectors the test was done through radiated measurements. EUT was located on the center of the test table over 10cm of Styrofoam. PSA was on max hold. Agilent procedure used for each channel. EUT was tested in the LOW (2.405GHz), MID (2.445GHz), and HIGH (2.475GHz).

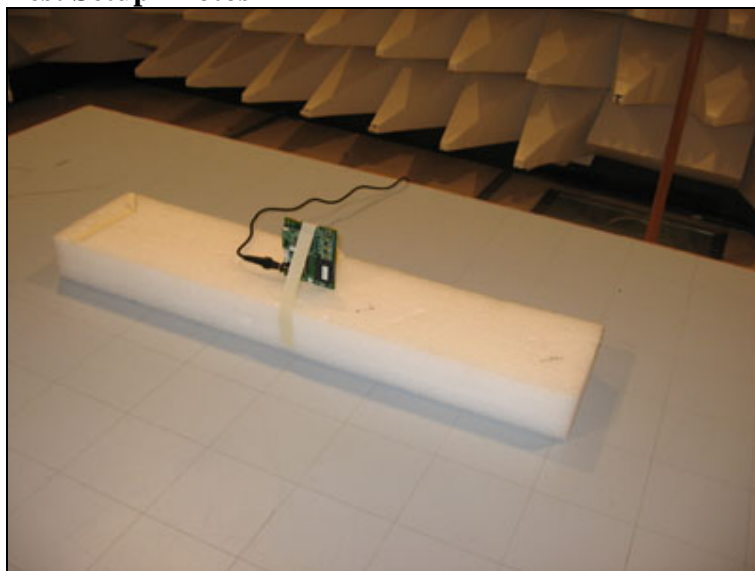
RBW = 100 kHz

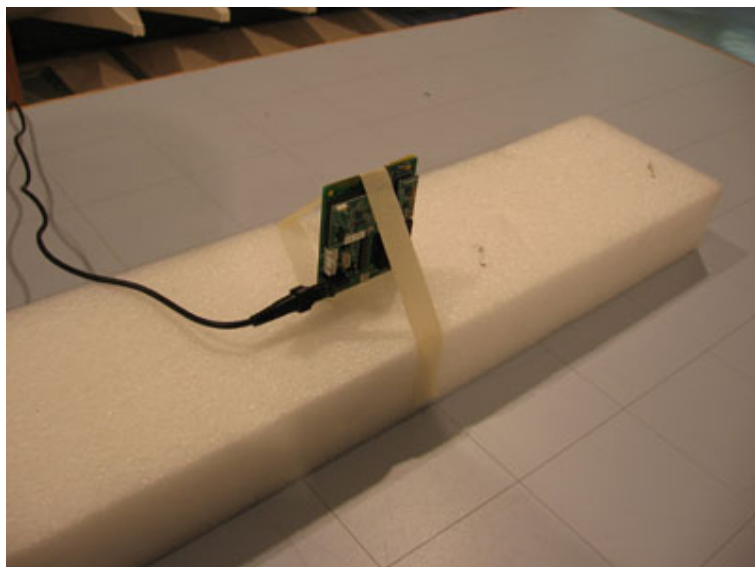
VBW = 1 MHz

Span = 10 MHz

DRAFT

Test Setup Photos



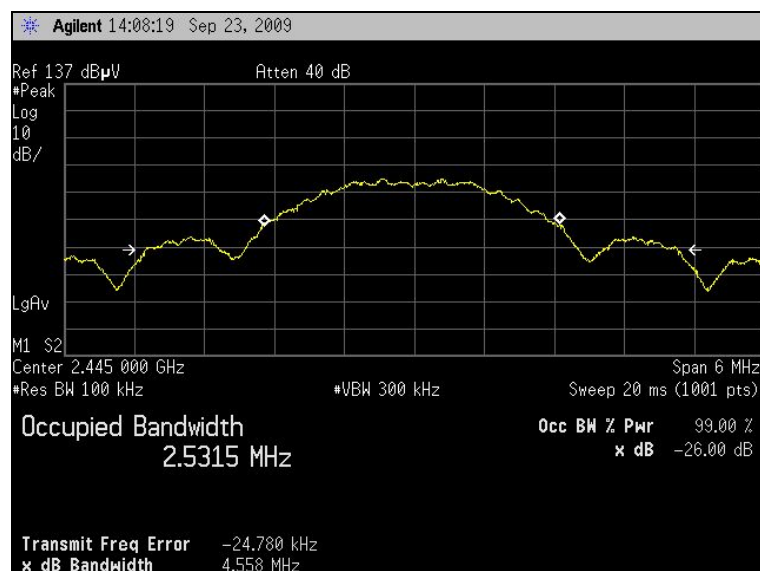


Test Plots

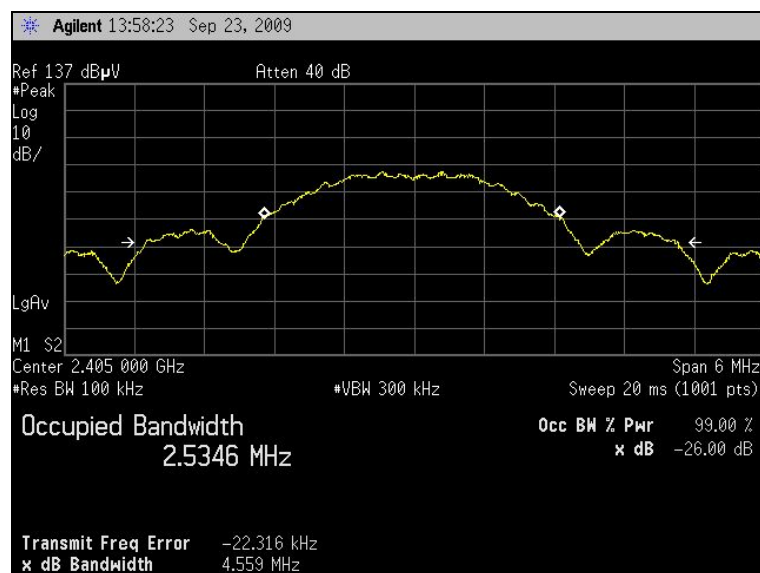
Channel	99% Bandwidth
LOW	2.53MHz
MID	2.53MHz
HIGH	2.60MHz

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RSS-210 99% BANDWIDTH



RSS-210 99% BANDWIDTH



RSS-210 99% BANDWIDTH

