

Ext Attn: 0 dB

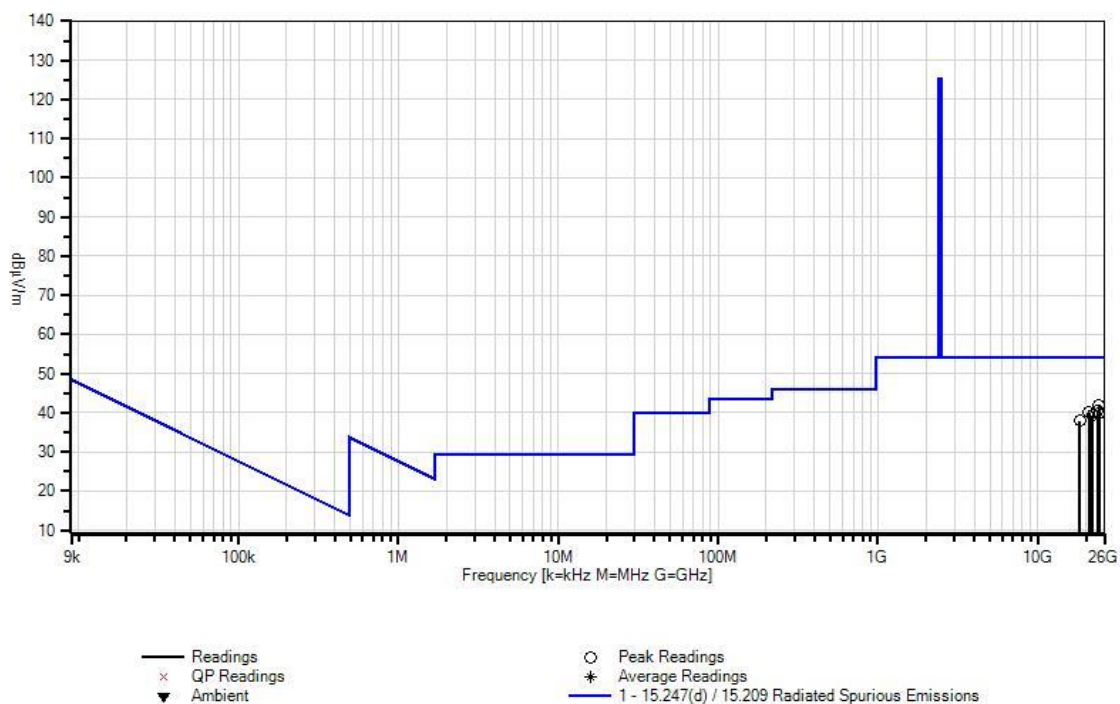
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	24153.000 M	46.8	+4.4	+5.5	-17.5	+2.9	+0.0	42.1	54.0	-11.9	Horiz
2	23663.000 M	45.4	+4.4	+5.4	-17.7	+3.0	+0.0	40.5	54.0	-13.5	Horiz
3	20905.000 M	44.7	+4.2	+5.1	-17.0	+3.1	+0.0	40.1	54.0	-13.9	Vert
4	23719.000 M	44.7	+4.4	+5.5	-17.7	+3.0	+0.0	39.9	54.0	-14.1	Vert
5	21920.000 M	44.0	+4.3	+5.3	-17.3	+3.0	+0.0	39.3	54.0	-14.7	Horiz
6	18168.000 M	43.4	+3.3	+4.8	-16.9	+3.4	+0.0	38.0	54.0	-16.0	Vert

CKC Laboratories, Inc Date: 8/21/2013 Time: 16:44:01 Bamb Labs WO#: 94232
Test Distance: 3 Meters Sequence#: 54



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

Customer: **Bam Labs**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94232** Date: 8/22/2013
 Test Type: **Radiated Scan** Time: 16:12:45
 Equipment: **Household Air Mattress Inflator** Sequence#: 93
 Manufacturer: Bam Labs Tested By: Hieu Song Nguyenpham
 Model: SIQ XX00DR
 S/N: CC 04 B4 00 00 8F

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00432	Loop Antenna	6502	4/2/2013	4/2/2015
T2	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
T3	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Household Air Mattress Inflator*	Bam Labs	SIQ XX00DR	CC 04 B4 00 00 8F

Support Devices:

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

Radiated Spurious Emission
 Frequency Range: 9kHz to 30MHz

High Clock: 32MHz
 Firmware used: SmartPump 501E (0.80d30), BLE v1.1.1, SleepExpert 8.00-d10rc2

Temperature: 21.6°C, Humidity: 39%, Atmospheric Pressure: 101.4kPa

Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz, Middle Frequency: 2.440GHz, High Frequency: 2.480GHz

RF output power of the chip= 1.19 dBm (DC)
 Gain of the antenna = 1dBi

9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz-25000MHz; RBW=1 MHz, VBW=1 MHz.

The EUT is a fixed device. It is placed on the 80 cm table. The EUT is set to continuously transmit.

Note: Zigbee is operated only.
Middle Channel

Ext Attn: 0 dB

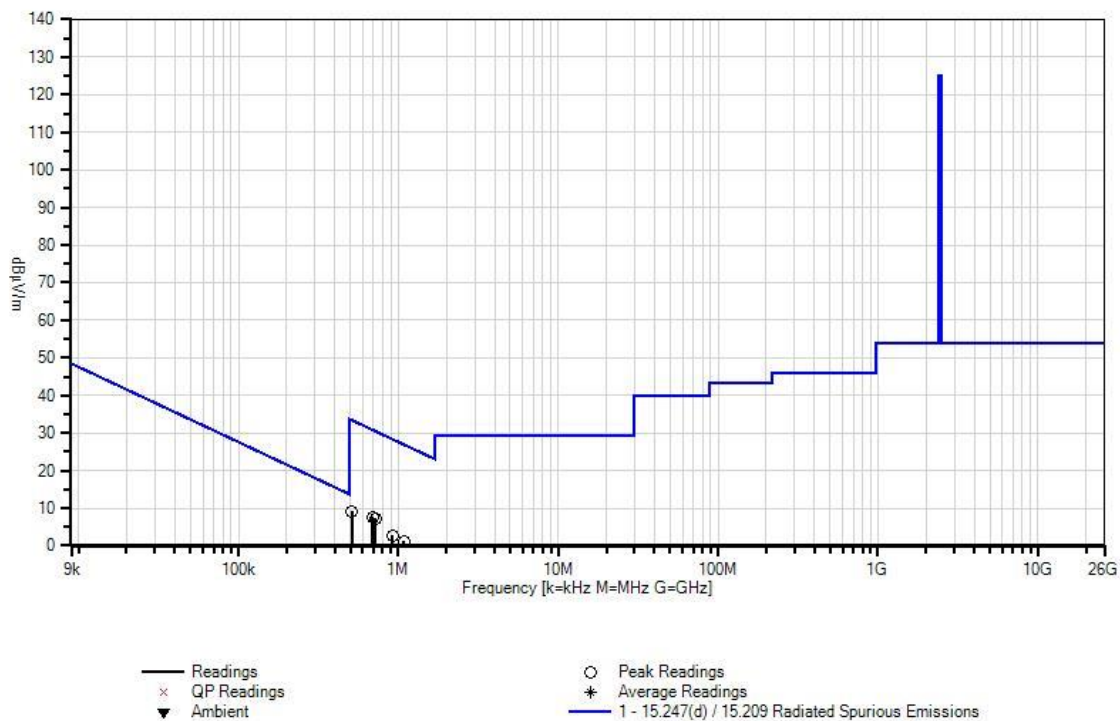
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB		Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	718.671k	37.4	+9.8	+0.1	+0.0		-40.0	7.3	30.5	-23.2	Perpe
2	687.310k	37.6	+9.9	+0.1	+0.0		-40.0	7.6	30.9	-23.3	Paral
3	513.782k	39.2	+9.8	+0.1	+0.0		-40.0	9.1	33.4	-24.3	Paral
4	921.469k	33.1	+9.5	+0.1	+0.0		-40.0	2.7	28.3	-25.6	Perpe
5	1.085M	31.5	+9.7	+0.1	+0.0		-40.0	1.3	26.9	-25.6	Paral
6	1.503M	27.8	+9.8	+0.1	+0.0		-40.0	-2.3	24.1	-26.4	Perpe

CKC Laboratories, Inc Date: 8/22/2013 Time: 16:12:45 Bamb Labs WO#: 94232
Test Distance: 3 Meters Sequence#: 93



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

Customer: **Bam Labs**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94232** Date: 8/22/2013
 Test Type: **Radiated Scan** Time: 10:26:00
 Equipment: **Household Air Mattress Inflator** Sequence#: 66
 Manufacturer: Bam Labs Tested By: Hieu Song Nguyenpham
 Model: SIQ XX00DR
 S/N: CC 04 B4 00 00 8F

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00730	Preamp	8447D	1/17/2013	1/17/2015
T2	AN00852	Biconilog Antenna	CBL 6111C	11/28/2012	11/28/2014
T3	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
T4	ANP01183	Cable	CNT-195	10/24/2011	10/24/2013
T5	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Household Air Mattress Inflator*	Bam Labs	SIQ XX00DR	CC 04 B4 00 00 8F

Support Devices:

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

Radiated Spurious Emission
 Frequency Range: 30MHz to 1000MHz

High Clock: 32MHz
 Firmware used: SmartPump 501E (0.80d30), BLE v1.1.1, SleepExpert 8.00-d10rc2

Temperature: 21.6°C, Humidity: 39%, Atmospheric Pressure: 101.4kPa

Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz, Middle Frequency: 2.440GHz, High Frequency: 2.480GHz

RF output power of the chip= 1.19 dBm (DC)
 Gain of the antenna = 1dBi

9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz;150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz-25000MHz;RBW=1 MHz, VBW=1 MHz.

The EUT is a fixed device. It is placed on the 80 cm table. The EUT is set to continuously transmit.

Note: Zigbee is operated only.
Middle Channel

Ext Attn: 0 dB

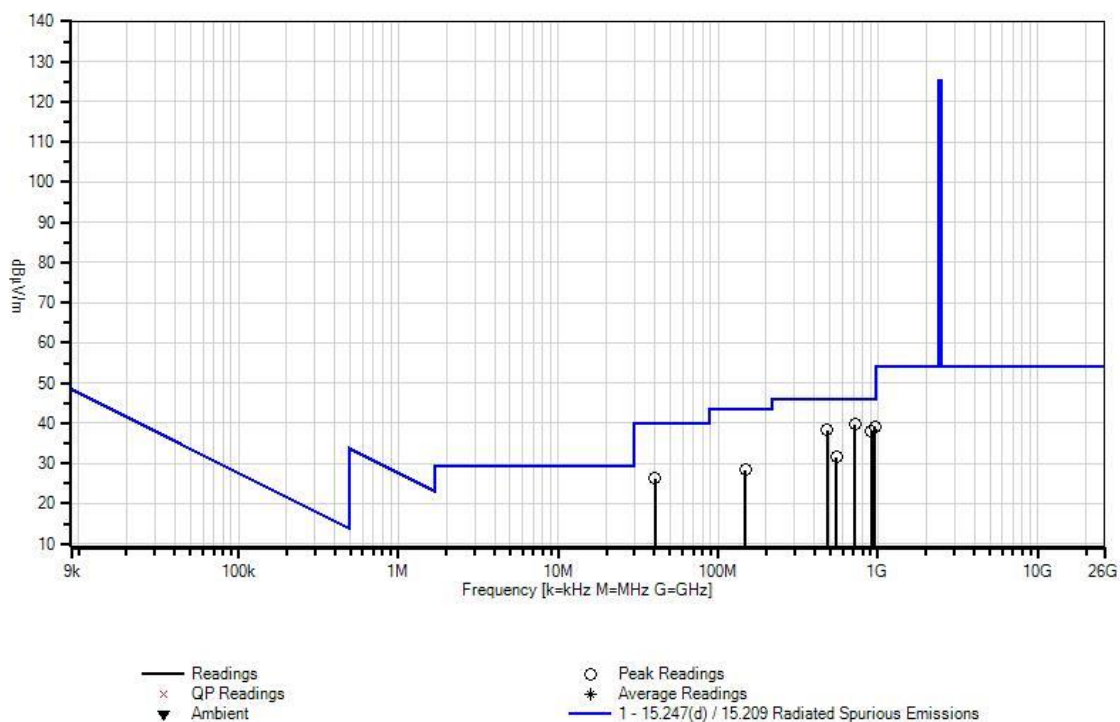
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	716.128M	41.3	-26.7 +0.8	+20.7	+3.0	+0.7	+0.0	39.8	46.0	-6.2	Vert
2	957.111M	37.4	-27.1 +0.9	+23.5	+3.5	+1.0	+0.0	39.2	46.0	-6.8	Vert
3	482.615M	44.3	-26.9 +0.6	+17.5	+2.3	+0.5	+0.0	38.3	46.0	-7.7	Vert
4	904.116M	36.7	-27.1 +0.9	+23.0	+3.4	+1.0	+0.0	37.9	46.0	-8.1	Horiz
5	40.448M	39.2	-27.0 +0.2	+13.2	+0.6	+0.1	+0.0	26.3	40.0	-13.7	Vert
6	546.398M	35.6	-26.9 +0.7	+19.1	+2.5	+0.6	+0.0	31.6	46.0	-14.4	Horiz
7	147.840M	42.4	-26.9 +0.3	+11.0	+1.2	+0.3	+0.0	28.3	43.5	-15.2	Horiz

CKC Laboratories, Inc Date: 8/22/2013 Time: 10:26:00 Bamb Labs WO#: 94232
Test Distance: 3 Meters Sequence#: 66



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

Customer: **Bam Labs**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94232** Date: 8/21/2013
 Test Type: **Radiated Scan** Time: 11:32:58
 Equipment: **Household Air Mattress Inflator** Sequence#: 21
 Manufacturer: Bam Labs Tested By: Hieu Song Nguyenpham
 Model: SIQ XX00DR
 S/N: CC 04 B4 00 00 8F

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02157	Horn Antenna-ANSI C63.5	3115	1/23/2013	1/23/2015
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/21/2012	3/21/2014
T3	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015
T4	AN03114	Preamp	AMF-7D-00101800-30-10P	4/11/2013	4/11/2015
T5	AN03015	Cable	32022-2-29094K-24TC	5/6/2013	5/6/2015
T6	AN03309	High Pass Filter	11SH10-3000/T10000-O/O	6/12/2012	6/12/2014

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Household Air Mattress Inflator*	Bam Labs	SIQ XX00DR	CC 04 B4 00 00 8F

Support Devices:

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

Radiated Spurious Emission
 Frequency Range: 1000MHz to 12000MHz
 High Clock: 32MHz
 Firmware used: SmartPump 501E (0.80d30), BLE v1.1.1, SleepExpert 8.00-d10rc2
 Temperature: 21.6°C, Humidity: 39%, Atmospheric Pressure: 101.4kPa
 Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz, Middle Frequency: 2.440GHz, High Frequency: 2.480GHz
 RF output power of the chip= 1.19 dBm (DC)
 Gain of the antenna = 1dBi
 9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz-25000MHz; RBW=1 MHz, VBW=1 MHz.
 The EUT is a fixed device. It is placed on the 80 cm table. The EUT is set to continuously transmit.
Note: Zigbee is operated only.
Middle Channel

Ext Attn: 0 dB

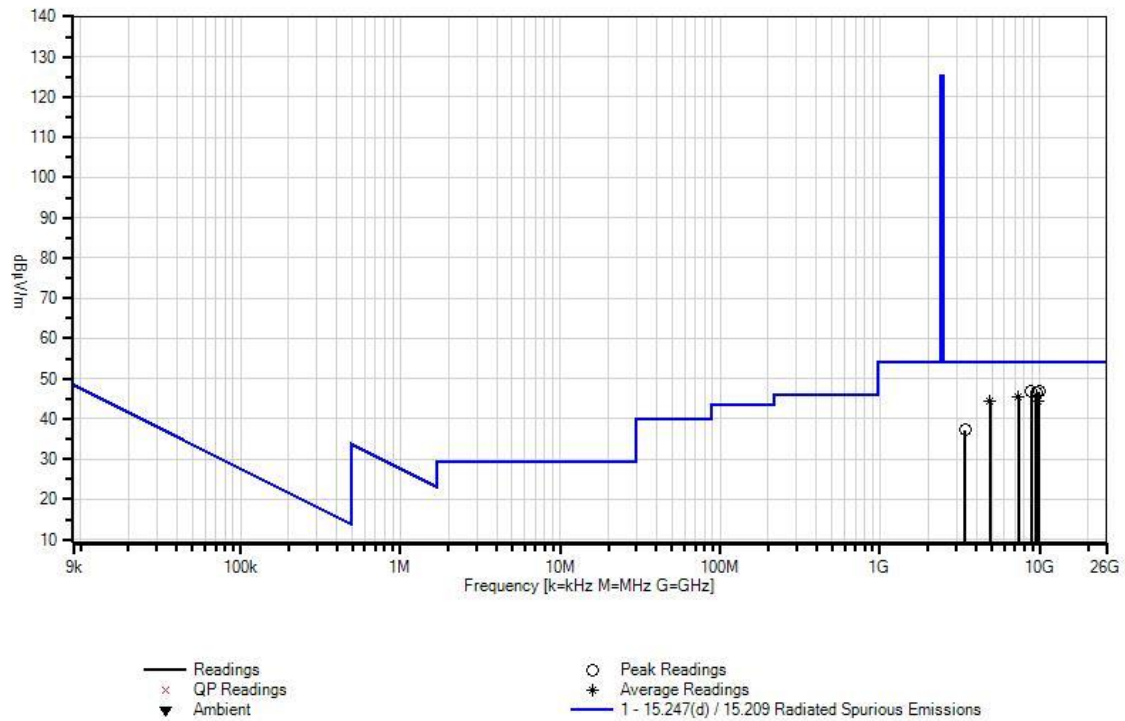
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	8822.944M	55.5	+38.1 +1.4	+2.1 +0.3	+5.9	-56.3	+0.0	47.0	54.0	-7.0	Horiz
2	9880.892M	55.4	+39.5 +1.3	+2.3 +0.1	+6.2	-58.0	+0.0	46.8	54.0	-7.2	Vert
3	9477.249M	55.6	+38.5 +1.2	+2.2 +0.3	+6.3	-57.6	+0.0	46.5	54.0	-7.5	Vert
4	7321.554M Ave	59.7	+36.6 +1.0	+1.9 +0.2	+5.4	-59.3	+0.0	45.5	54.0	-8.5	Horiz
^	7321.554M	68.1	+36.6 +1.0	+1.9 +0.2	+5.4	-59.3	+0.0	53.9	54.0	-0.1	Horiz
^	7321.554M	64.2	+36.6 +1.0	+1.9 +0.2	+5.4	-59.3	+0.0	50.0	54.0	-4.0	Horiz
7	4881.152M Ave	63.0	+33.4 +0.7	+1.5 +0.3	+3.8	-58.2	+0.0	44.5	54.0	-9.5	Vert
^	4881.152M	70.3	+33.4 +0.7	+1.5 +0.3	+3.8	-58.2	+0.0	51.8	54.0	-2.2	Vert
^	4881.152M	68.5	+33.4 +0.7	+1.5 +0.3	+3.8	-58.2	+0.0	50.0	54.0	-4.0	Vert
10	9758.332M Ave	52.7	+39.1 +1.3	+2.3 +0.2	+6.3	-57.6	+0.0	44.3	54.0	-9.7	Horiz
^	9758.332M	62.3	+39.1 +1.3	+2.3 +0.2	+6.3	-57.6	+0.0	53.9	54.0	-0.1	Horiz
^	9758.332M	61.7	+39.1 +1.3	+2.3 +0.2	+6.3	-57.6	+0.0	53.3	54.0	-0.7	Horiz
13	3410.935M	60.5	+31.1 +0.4	+1.3 +0.4	+3.0	-59.4	+0.0	37.3	54.0	-16.7	Horiz

CKC Laboratories, Inc Date: 8/21/2013 Time: 11:32:58 Bamb Labs WO#: 94232
 Test Distance: 3 Meters Sequence#: 21



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

Customer: **Bam Labs**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94232** Date: 8/21/2013
 Test Type: **Radiated Scan** Time: 14:02:56
 Equipment: **Household Air Mattress Inflator** Sequence#: 30
 Manufacturer: Bam Labs Tested By: Hieu Song Nguyenpham
 Model: SIQ XX00DR
 S/N: CC 04 B4 00 00 8F

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANANT-AN02693-20130221	Active Horn Antenna	AMFW-5F-18002650-20-10P	2/21/2013	2/21/2015
T2	ANP00928	Cable	various	2/10/2012	2/10/2014
T3	ANP06125	Cable	32022-29094K-29094K-72TC	5/6/2013	5/6/2015
T4	ANP06126	Cable	32022-29094K-29094K-168TC	9/7/2011	9/7/2013
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Household Air Mattress Inflator*	Bam Labs	SIQ XX00DR	CC 04 B4 00 00 8F

Support Devices:

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

Radiated Spurious Emission
 Frequency Range: 12000MHz to 18000MHz
 High Clock: 32MHz
 Firmware used: SmartPump 501E (0.80d30), BLE v1.1.1, SleepExpert 8.00-d10rc2
 Temperature: 21.6°C, Humidity: 39%, Atmospheric Pressure: 101.4kPa
 Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz, Middle Frequency: 2.440GHz, High Frequency: 2.480GHz
 RF output power of the chip= 1.19 dBm (DC)
 Gain of the antenna = 1dBi
 9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz-25000MHz; RBW=1 MHz, VBW=1 MHz.
 The EUT is a fixed device. It is placed on the 80 cm table. The EUT is set to continuously transmit.
Note: Zigbee is operated only.
Middle Channel

Ext Attn: 0 dB

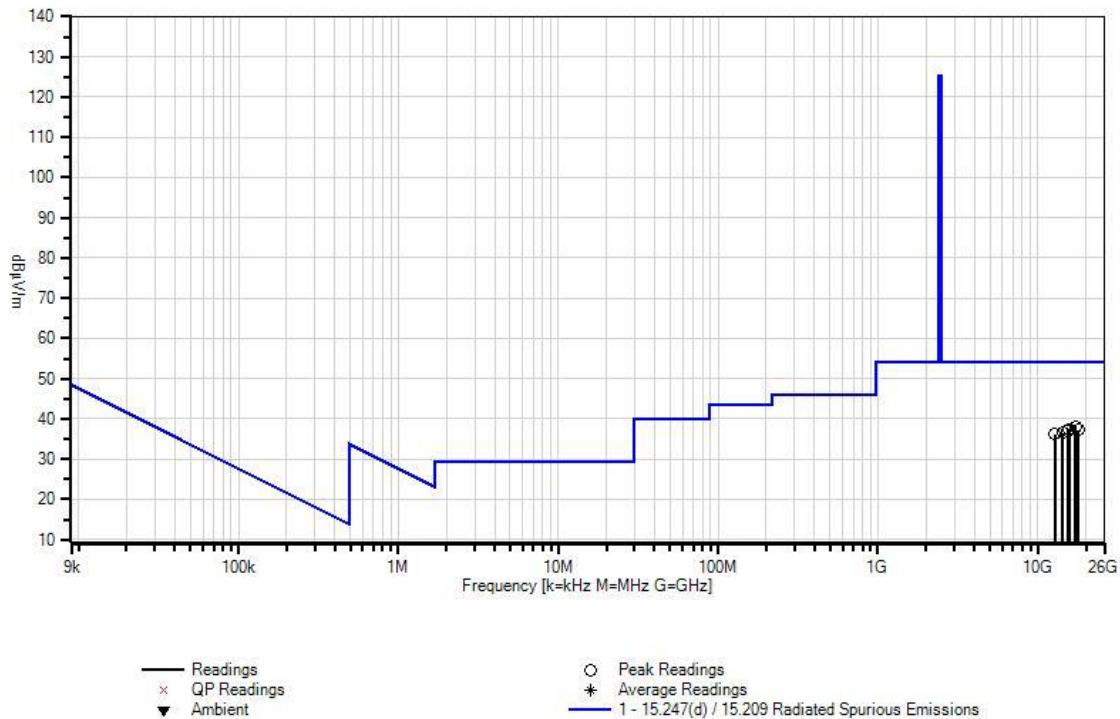
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	17208.765 M	44.3	-14.7	+0.8	+3.1	+4.7	+0.0	38.2	54.0	-15.8	Horiz
2	15617.294 M	44.9	-16.0	+1.0	+3.2	+4.4	+0.0	37.5	54.0	-16.5	Horiz
3	17817.808 M	41.9	-13.4	+0.8	+3.3	+4.7	+0.0	37.3	54.0	-16.7	Vert
4	15350.752 M	44.3	-15.7	+1.0	+3.1	+4.4	+0.0	37.1	54.0	-16.9	Vert
5	14305.914 M	44.2	-15.6	+0.9	+2.8	+4.2	+0.0	36.5	54.0	-17.5	Horiz
6	12697.700 M	44.3	-15.7	+0.9	+2.6	+4.0	+0.0	36.1	54.0	-17.9	Vert

CKC Laboratories, Inc Date: 8/21/2013 Time: 14:02:56 Bamb Labs WO#: 94232
Test Distance: 3 Meters Sequence#: 30



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

Customer: **Bam Labs**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94232** Date: 8/22/2013
 Test Type: **Radiated Scan** Time: 08:39:45
 Equipment: **Household Air Mattress Inflator** Sequence#: 57
 Manufacturer: Bam Labs Tested By: Hieu Song Nguyenpham
 Model: SIQ XX00DR
 S/N: CC 04 B4 00 00 8F

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06125	Cable	32022-29094K-29094K-72TC	5/6/2013	5/6/2015
T2	ANP06126	Cable	32022-29094K-29094K-168TC	9/7/2011	9/7/2013
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015
T3	AN02694	Horn Antenna-ANSI C63.5 Antenna Factors (dB)	AMFW-5F-18002650-20-10P	2/4/2013	2/4/2015
T4	ANP00929	Cable	various	2/16/2012	2/16/2014

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Household Air Mattress Inflator*	Bam Labs	SIQ XX00DR	CC 04 B4 00 00 8F

Support Devices:

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

Radiated Spurious Emission
 Frequency Range: 18000MHz to 25000MHz
 High Clock: 32MHz
 Firmware used: SmartPump 501E (0.80d30), BLE v1.1.1, SleepExpert 8.00-d10rc2
 Temperature: 21.6°C, Humidity: 39%, Atmospheric Pressure: 101.4kPa
 Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz, Middle Frequency: 2.440GHz, High Frequency: 2.480GHz
 RF output power of the chip= 1.19 dBm (DC)
 Gain of the antenna = 1dBi
 9 kHz -150 kHz; RBW=200Hz, VBW=200 Hz; 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz-25000MHz; RBW=1 MHz, VBW=1 MHz.
 The EUT is a fixed device. It is placed on the 80 cm table. The EUT is set to continuously transmit.
Note: Zigbee is operated only.
Middle Channel

Ext Attn: 0 dB

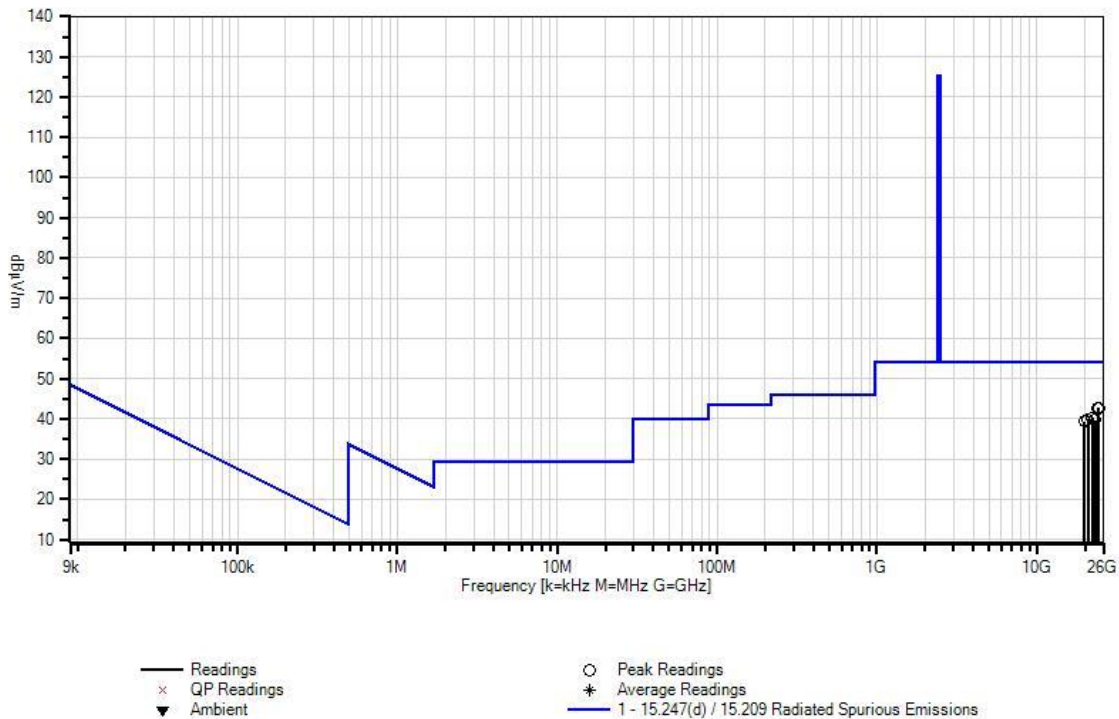
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	24061.343 M	47.3	+4.4	+5.5	-17.5	+3.0	+0.0	42.7	54.0	-11.3	Horiz
2	24216.921 M	47.1	+4.4	+5.5	-17.5	+3.0	+0.0	42.5	54.0	-11.5	Vert
3	22118.843 M	45.1	+4.4	+5.3	-17.4	+2.9	+0.0	40.3	54.0	-13.7	Horiz
4	20754.635 M	44.5	+4.2	+5.1	-17.0	+3.1	+0.0	39.9	54.0	-14.1	Vert
5	23083.791 M	44.9	+4.3	+5.4	-17.8	+2.9	+0.0	39.7	54.0	-14.3	Vert
6	19916.349 M	44.0	+3.8	+5.0	-16.7	+3.2	+0.0	39.3	54.0	-14.7	Horiz

CKC Laboratories, Inc Date: 8/22/2013 Time: 08:39:45 Bamb Labs WO#: 94232
Test Distance: 3 Meters Sequence#: 57



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

Customer: **Bam Labs**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94232** Date: 8/22/2013
 Test Type: **Radiated Scan** Time: 16:30:31
 Equipment: **Household Air Mattress Inflator** Sequence#: 96
 Manufacturer: Bam Labs Tested By: Hieu Song Nguyenpham
 Model: SIQ XX00DR
 S/N: CC 04 B4 00 00 8F

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00432	Loop Antenna	6502	4/2/2013	4/2/2015
T2	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
T3	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Household Air Mattress Inflator*	Bam Labs	SIQ XX00DR	CC 04 B4 00 00 8F

Support Devices:

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

Radiated Spurious Emission
 Frequency Range: 9kHz to 30MHz

High Clock: 32MHz
 Firmware used: SmartPump 501E (0.80d30), BLE v1.1.1, SleepExpert 8.00-d10rc2

Temperature: 21.6°, Humidity: 39%, Atmospheric Pressure: 101.4kPa

Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz, Middle Frequency: 2.440GHz, High Frequency: 2.480GHz

RF output power of the chip= 1.19 dBm (DC)
 Gain of the antenna = 1dBi

9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz-25000MHz; RBW=1 MHz, VBW=1 MHz.

The EUT is a fixed device. It is placed on the 80 cm table. The EUT is set to continuously transmit.

Note: Zigbee is operated only.
High Channel

Ext Attn: 0 dB

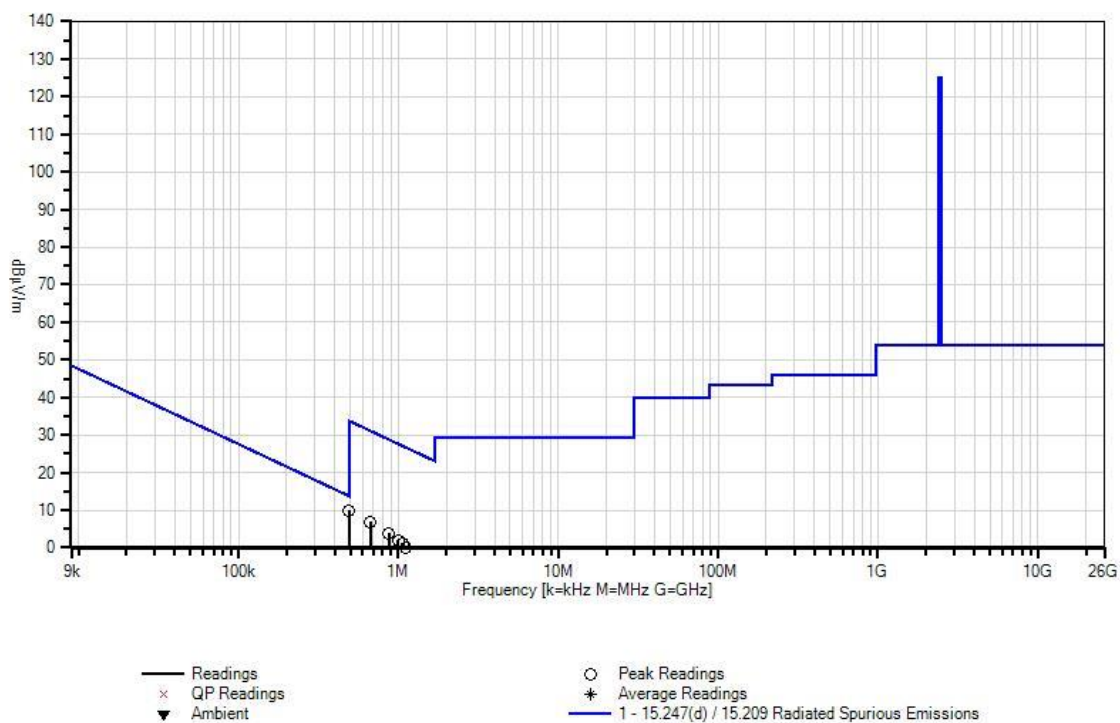
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB		Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	490.784k	40.0	+9.8	+0.1	+0.0		-40.0	9.9	33.8	-23.9	Paral
2	668.494k	37.0	+9.9	+0.1	+0.0		-40.0	7.0	31.1	-24.1	Perpe
3	869.201k	34.2	+9.5	+0.1	+0.0		-40.0	3.8	28.8	-25.0	Paral
4	996.734k	32.2	+9.7	+0.1	+0.0		-40.0	2.0	27.6	-25.6	Perpe
5	1.072M	31.4	+9.7	+0.1	+0.0		-40.0	1.2	27.0	-25.8	Paral
6	1.116M	30.3	+9.7	+0.1	+0.0		-40.0	0.1	26.7	-26.6	Perpe

CKC Laboratories, Inc Date: 8/22/2013 Time: 16:30:31 Bamb Labs WO#: 94232
Test Distance: 3 Meters Sequence#: 96



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

Customer: **Bam Labs**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94232** Date: 8/22/2013
 Test Type: **Radiated Scan** Time: 09:46:58
 Equipment: **Household Air Mattress Inflator** Sequence#: 63
 Manufacturer: Bam Labs Tested By: Hieu Song Nguyenpham
 Model: SIQ XX00DR
 S/N: CC 04 B4 00 00 8F

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN00730	Preamplifier	8447D	1/17/2013	1/17/2015
T2	AN00852	Biconilog Antenna	CBL 6111C	11/28/2012	11/28/2014
T3	ANP00880	Cable	RG214U	7/30/2012	7/30/2014
T4	ANP01183	Cable	CNT-195	10/24/2011	10/24/2013
T5	ANP05300	Cable	RG214/U	3/25/2013	3/25/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Household Air Mattress Inflator*	Bam Labs	SIQ XX00DR	CC 04 B4 00 00 8F

Support Devices:

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

<p>Radiated Spurious Emission Frequency Range: 30MHz to 1000MHz</p> <p>High Clock: 32MHz Firmware used: SmartPump 501E (0.80d30), BLE v1.1.1, SleepExpert 8.00-d10rc2</p> <p>Temperature: 21.6°C, Humidity: 39%, Atmospheric Pressure: 101.4kPa</p> <p>Transmitter operating frequency: 2.4GHz Number of Channel: 16 Low Frequency: 2.405GHz, Middle Frequency: 2.440GHz, High Frequency: 2.480GHz</p> <p>RF output power of the chip= 1.19 dBm (DC) Gain of the antenna = 1dBi</p> <p>9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz-25000MHz; RBW=1 MHz, VBW=1 MHz.</p> <p>The EUT is a fixed device. It is placed on the 80 cm table. The EUT is set to continuously transmit.</p> <p>Note: Zigbee is operated only. High Channel</p>

Ext Attn: 0 dB

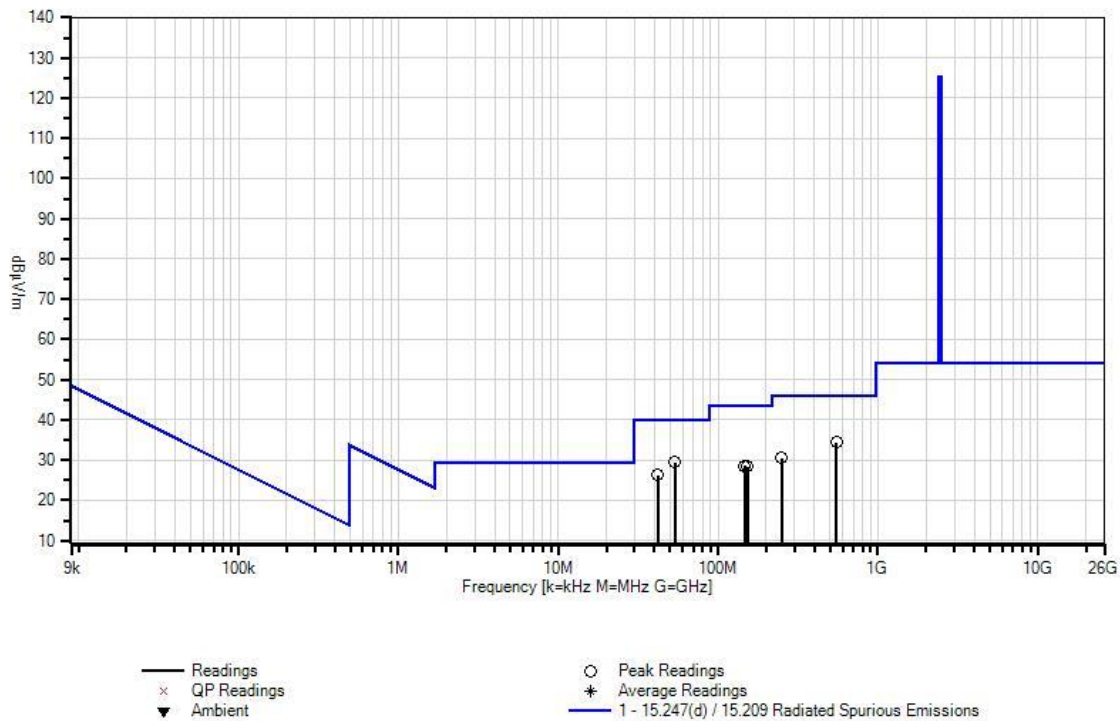
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	53.891M	47.7	-27.0 +0.2	+7.6	+0.7	+0.2	+0.0	29.4	40.0	-10.6	Vert
2	546.398M	38.4	-26.9 +0.7	+19.1	+2.5	+0.6	+0.0	34.4	46.0	-11.6	Vert
3	41.846M	39.9	-27.0 +0.2	+12.4	+0.6	+0.1	+0.0	26.2	40.0	-13.8	Vert
4	146.999M	42.6	-26.9 +0.3	+11.1	+1.2	+0.3	+0.0	28.6	43.5	-14.9	Horiz
5	152.285M	42.6	-26.9 +0.4	+10.8	+1.2	+0.3	+0.0	28.4	43.5	-15.1	Horiz
6	249.101M	42.8	-27.0 +0.4	+12.4	+1.6	+0.3	+0.0	30.5	46.0	-15.5	Horiz

CKC Laboratories, Inc Date: 8/22/2013 Time: 09:46:58 Bamb Labs WO#: 94232
Test Distance: 3 Meters Sequence#: 63



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

Customer: **Bam Labs**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94232** Date: 8/21/2013
 Test Type: **Radiated Scan** Time: 11:02:08
 Equipment: **Household Air Mattress Inflator** Sequence#: 18
 Manufacturer: Bam Labs Tested By: Hieu Song Nguyenpham
 Model: SIQ XX00DR
 S/N: CC 04 B4 00 00 8F

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02157	Horn Antenna-ANSI C63.5	3115	1/23/2013	1/23/2015
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/21/2012	3/21/2014
T3	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015
T4	AN03114	Preamp	AMF-7D-00101800-30-10P	4/11/2013	4/11/2015
T5	AN03015	Cable	32022-2-29094K-24TC	5/6/2013	5/6/2015
T6	AN03309	High Pass Filter	11SH10-3000/T10000-O/O	6/12/2012	6/12/2014

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Household Air Mattress Inflator*	Bam Labs	SIQ XX00DR	CC 04 B4 00 00 8F

Support Devices:

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

Radiated Spurious Emission
 Frequency Range: 1000MHz to 12000MHz
 High Clock: 32MHz
 Firmware used: SmartPump 501E (0.80d30), BLE v1.1.1, SleepExpert 8.00-d10rc2
 Temperature: 21.6°C, Humidity: 39%, Atmospheric Pressure: 101.4kPa
 Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz, Middle Frequency: 2.440GHz, High Frequency: 2.480GHz
 RF output power of the chip= 1.19 dBm (DC)
 Gain of the antenna = 1dBi
 9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz-25000MHz; RBW=1 MHz, VBW=1 MHz.
 The EUT is a fixed device. It is placed on the 80 cm table. The EUT is set to continuously transmit
Note: Zigbee is operated only.
High Channel

Ext Attn: 0 dB

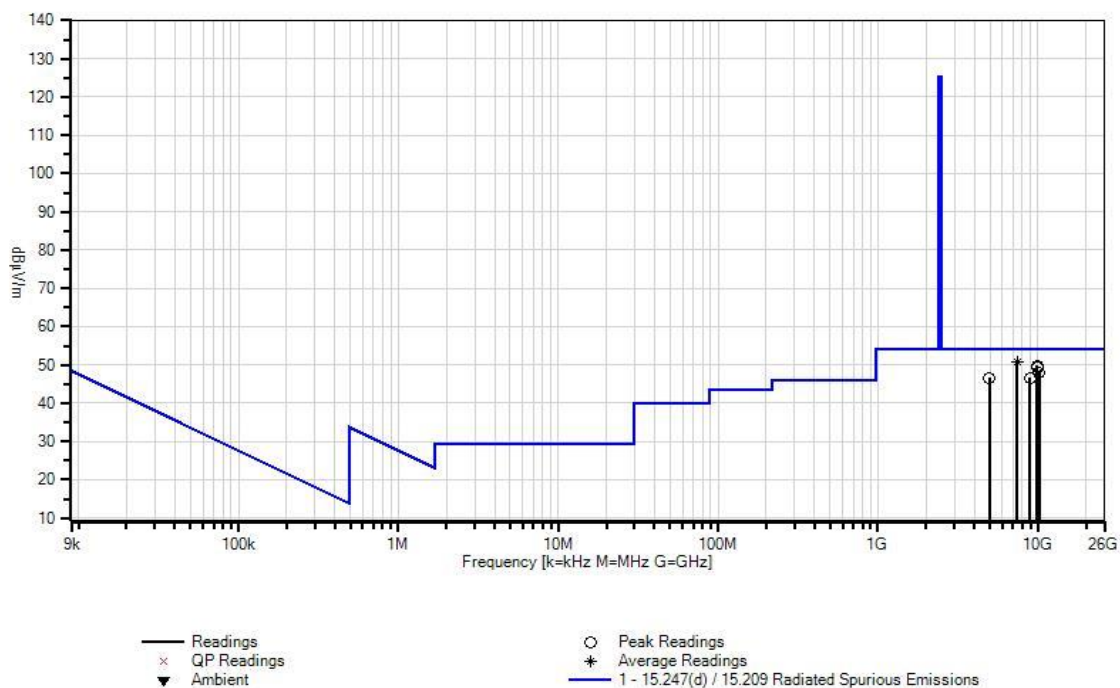
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	7438.502M Ave	64.7	+36.8 +1.0	+1.9 +0.2	+5.4	-59.3	+0.0	50.7	54.0	-3.3	Horiz
^	7438.502M	72.7	+36.8 +1.0	+1.9 +0.2	+5.4	-59.3	+0.0	58.7	54.0	+4.7	Horiz
^	7438.502M	70.2	+36.8 +1.0	+1.9 +0.2	+5.4	-59.3	+0.0	56.2	54.0	+2.2	Horiz
4	9922.977M	58.4	+39.6 +1.3	+2.3 +0.1	+6.3	-58.2	+0.0	49.8	54.0	-4.2	Horiz
5	9918.026M	58.0	+39.6 +1.3	+2.3 +0.1	+6.3	-58.2	+0.0	49.4	54.0	-4.6	Vert
6	10177.963 M	56.5	+39.7 +1.3	+2.3 +0.1	+6.3	-58.2	+0.0	48.0	54.0	-6.0	Vert
7	8950.661M	55.4	+38.2 +1.3	+2.1 +0.3	+6.0	-56.6	+0.0	46.7	54.0	-7.3	Horiz
8	4961.488M	64.5	+33.6 +0.7	+1.6 +0.2	+3.9	-57.9	+0.0	46.6	54.0	-7.4	Vert

CKC Laboratories, Inc Date: 8/21/2013 Time: 11:02:08 Bamb Labs WO#: 94232
Test Distance: 3 Meters Sequence#: 18



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

Customer: **Bam Labs**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94232** Date: 8/21/2013
 Test Type: **Radiated Scan** Time: 14:22:42
 Equipment: **Household Air Mattress Inflator** Sequence#: 33
 Manufacturer: Bam Labs Tested By: Hieu Song Nguyenpham
 Model: SIQ XX00DR
 S/N: CC 04 B4 00 00 8F

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANANT-AN02693-20130221	Active Horn Antenna	AMFW-5F-18002650-20-10P	2/21/2013	2/21/2015
T2	ANP00928	Cable	various	2/10/2012	2/10/2014
T3	ANP06125	Cable	32022-29094K-29094K-72TC	5/6/2013	5/6/2015
T4	ANP06126	Cable	32022-29094K-29094K-168TC	9/7/2011	9/7/2013
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Household Air Mattress Inflator*	Bam Labs	SIQ XX00DR	CC 04 B4 00 00 8F

Support Devices:

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

Radiated Spurious Emission
 Frequency Range: 12000MHz to 18000MHz
 High Clock: 32MHz
 Firmware used: SmartPump 501E (0.80d30), BLE v1.1.1, SleepExpert 8.00-d10rc2
 Temperature: 21.6°C, Humidity: 39%, Atmospheric Pressure: 101.4kPa
 Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz, Middle Frequency: 2.440GHz, High Frequency: 2.480GHz
 RF output power of the chip= 1.19 dBm (DC)
 Gain of the antenna = 1dBi
 9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz-25000MHz; RBW=1 MHz, VBW=1 MHz.
 The EUT is a fixed device. It is placed on the 80 cm table. The EUT is set to continuously transmit.
Note: Zigbee is operated only.
High Channel

Ext Attn: 0 dB

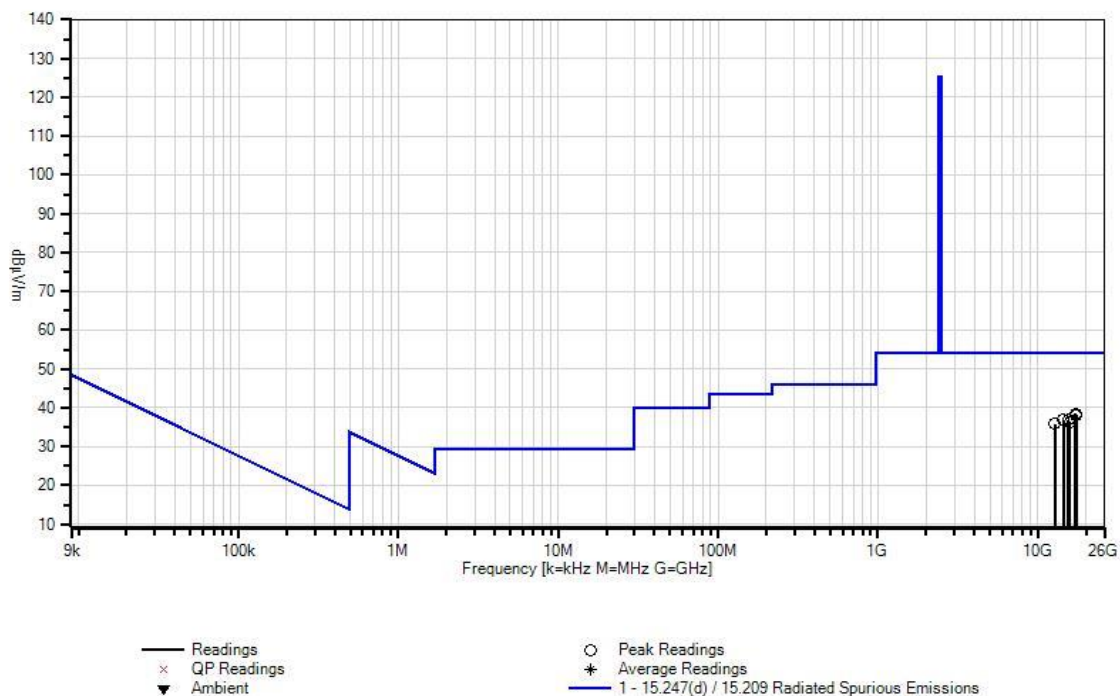
Measurement Data:

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	17174.062 M	44.7	-14.9	+0.8	+3.1	+4.7	+0.0	38.4	54.0	-15.6	Vert
2	17385.752 M	44.3	-14.6	+0.8	+3.0	+4.7	+0.0	38.2	54.0	-15.8	Horiz
3	14484.425 M	44.2	-15.4	+0.9	+2.9	+4.3	+0.0	36.9	54.0	-17.1	Vert
4	15546.739 M	44.0	-15.8	+1.0	+3.2	+4.4	+0.0	36.8	54.0	-17.2	Vert
5	15883.837 M	43.9	-16.3	+1.0	+3.2	+4.5	+0.0	36.3	54.0	-17.7	Horiz
6	12773.231 M	44.1	-15.8	+0.9	+2.6	+4.0	+0.0	35.8	54.0	-18.2	Horiz

CKC Laboratories, Inc Date: 8/21/2013 Time: 14:22:42 Bamb Labs WO#: 94232
Test Distance: 3 Meters Sequence#: 33



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

Customer: **Bam Labs**
 Specification: **15.247(d) / 15.209 Radiated Spurious Emissions**
 Work Order #: **94232** Date: 8/22/2013
 Test Type: **Radiated Scan** Time: 08:54:17
 Equipment: **Household Air Mattress Inflator** Sequence#: 60
 Manufacturer: Bam Labs Tested By: Hieu Song Nguyenpham
 Model: SIQ XX00DR
 S/N: CC 04 B4 00 00 8F

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	ANP06125	Cable	32022-29094K-29094K-72TC	5/6/2013	5/6/2015
T2	ANP06126	Cable	32022-29094K-29094K-168TC	9/7/2011	9/7/2013
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015
T3	AN02694	Horn Antenna-ANSI C63.5 Antenna Factors (dB)	AMFW-5F-18002650-20-10P	2/4/2013	2/4/2015
T4	ANP00929	Cable	various	2/16/2012	2/16/2014

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Household Air Mattress Inflator*	Bam Labs	SIQ XX00DR	CC 04 B4 00 00 8F

Support Devices:

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

Radiated Spurious Emission
 Frequency Range: 18000MHz to 25000MHz

High Clock: 32MHz
 Firmware used: SmartPump 501E (0.80d30), BLE v1.1.1, SleepExpert 8.00-d10rc2

Temperature: 21.6°C, Humidity: 39%, Atmospheric Pressure: 101.4kPa

Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz, Middle Frequency: 2.440GHz, High Frequency: 2.480GHZ

RF output power of the chip= 1.19 dBm (DC)
 Gain of the antenna = 1dBi

9 kHz -150 kHz; RBW=200 Hz, VBW=200 Hz; 150 kHz-30 MHz; RBW=9 kHz, VBW=9 kHz; 30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz, 1000 MHz-25000MHz; RBW=1 MHz, VBW=1 MHz.

The EUT is a fixed device. It is placed on the 80 cm table. The EUT is set to continuously transmit.

Note: Zigbee is operated only.
High Channel

Ext Attn: 0 dB

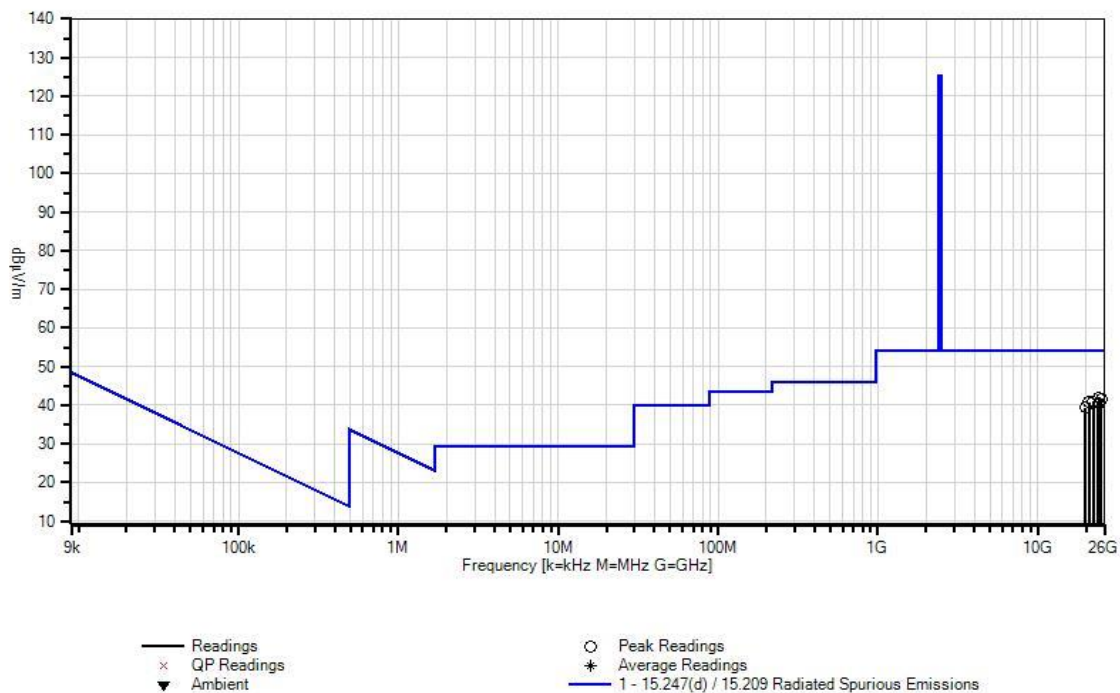
Measurement Data:

Reading listed by margin.

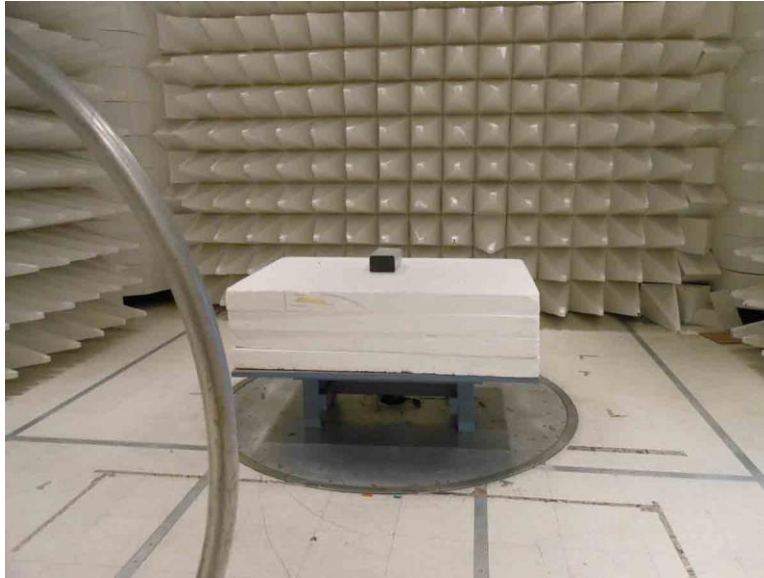
Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	24014.448 M	46.5	+4.4	+5.5	-17.5	+2.9	+0.0	41.8	54.0	-12.2	Horiz
2	24712.180 M	45.5	+4.4	+5.6	-17.0	+2.9	+0.0	41.4	54.0	-12.6	Horiz
3	22131.944 M	45.6	+4.4	+5.3	-17.4	+2.9	+0.0	40.8	54.0	-13.2	Horiz
4	20875.485 M	45.3	+4.2	+5.1	-17.0	+3.1	+0.0	40.7	54.0	-13.3	Horiz
5	23718.783 M	45.4	+4.4	+5.5	-17.7	+3.0	+0.0	40.6	54.0	-13.4	Horiz
6	19916.349 M	44.0	+3.8	+5.0	-16.7	+3.2	+0.0	39.3	54.0	-14.7	Horiz

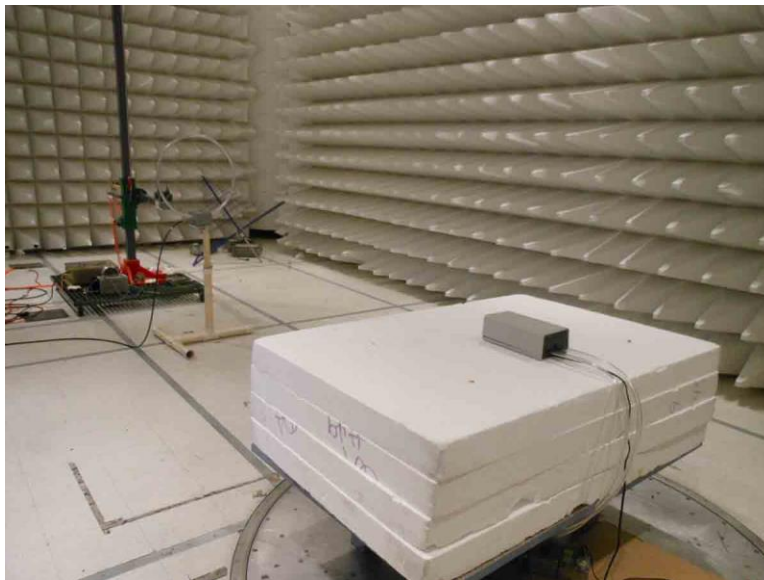
CKC Laboratories, Inc Date: 8/22/2013 Time: 08:54:17 Bamb Labs WO#: 94232
Test Distance: 3 Meters Sequence#: 60



Test Setup Photos



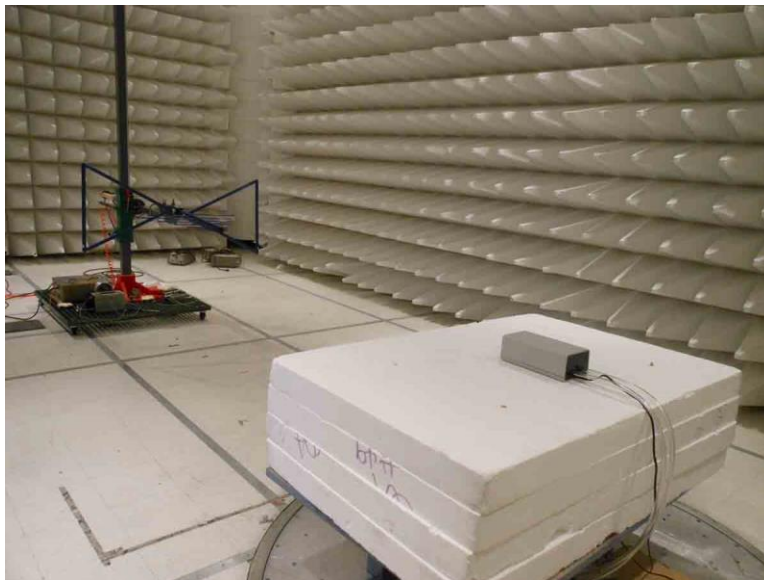
9kHz to 30MHz



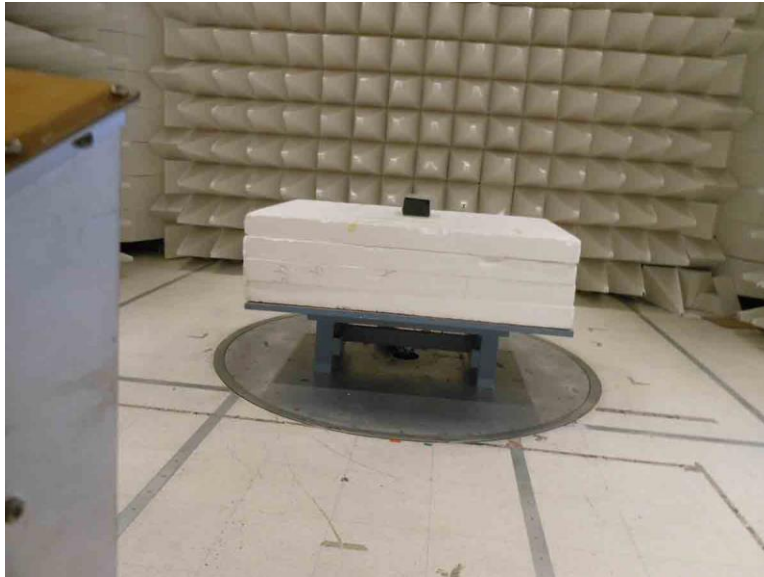
9kHz to 30MHz



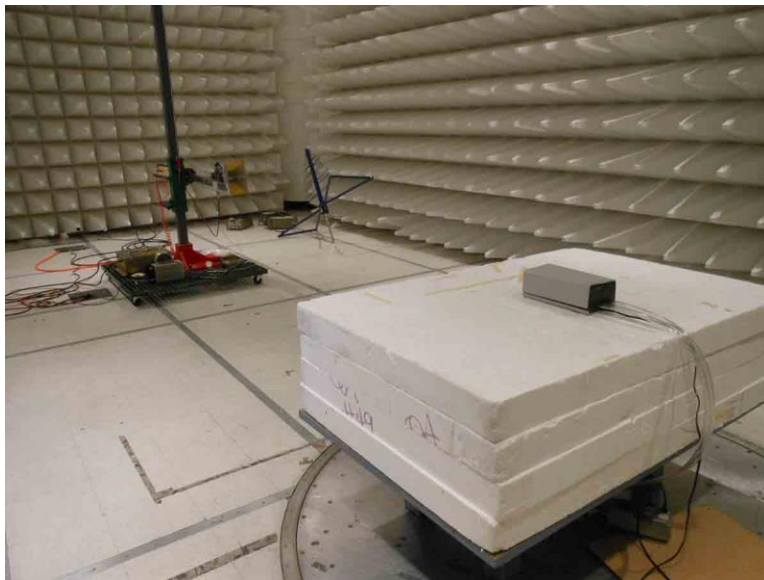
30MHz-1GHz



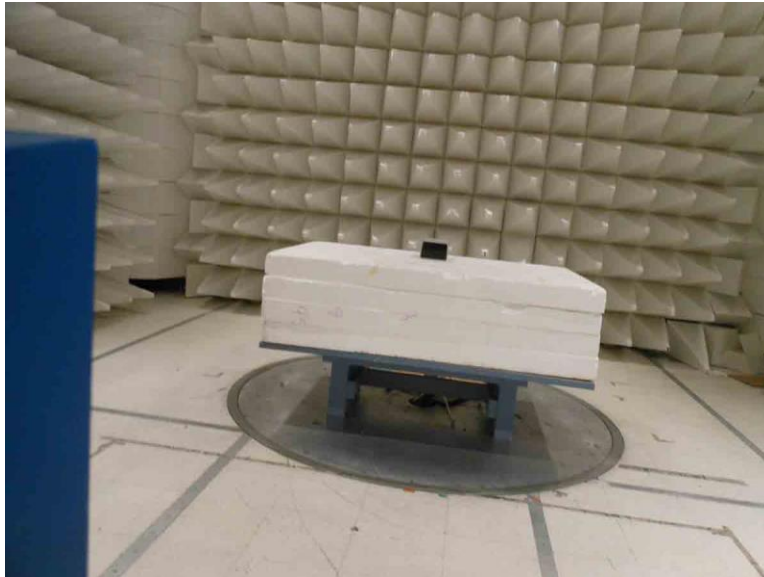
30MHz-1GHz



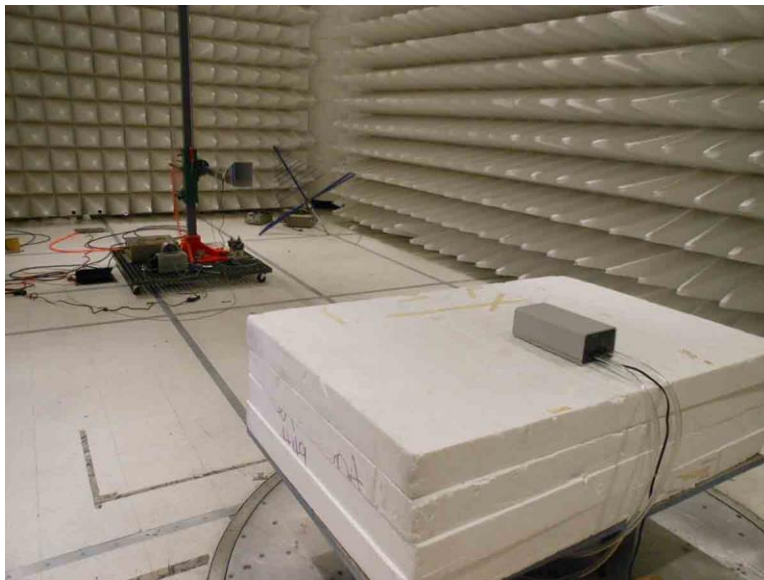
1-12GHz



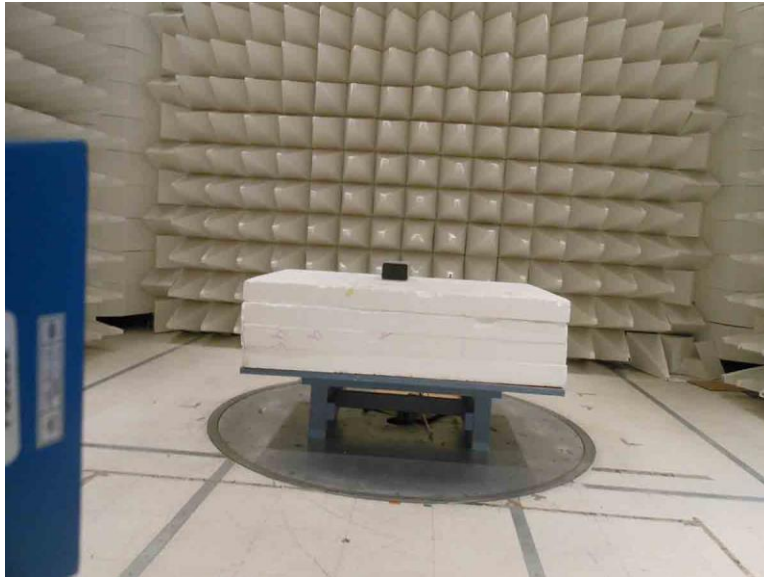
1-12GHz



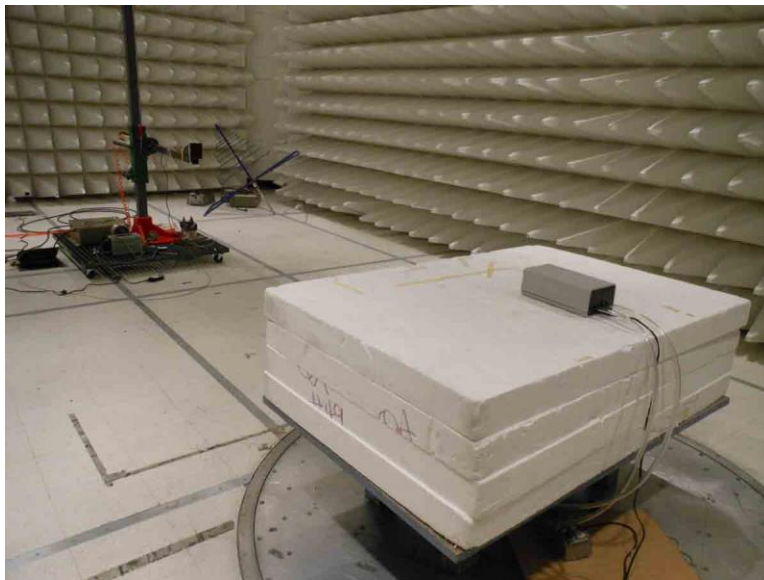
12-18GHz



12-18GHz



18-25GHz



18-25GHz

Band Edge

Test Conditions / Setup

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

Customer: **Bam Labs**

Specification: **Band edge**

Work Order #: **94232**

Date: 8/20/2013

Test Type: **Radiated Scan**

Time: 11:43:57

Equipment: **Household Air Mattress Inflator**

Sequence#: 5

Manufacturer: Bam Labs

Tested By: Hieu Song Nguyenpham

Model: SIQ XX00DR

S/N: CC 04 B4 00 00 8F

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02157	Horn Antenna-ANSI C63.5	3115	1/23/2013	1/23/2015
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/21/2012	3/21/2014
T3	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Household Air Mattress Inflator*	Bam Labs	SIQ XX00DR	CC 04 B4 00 00 8F

Support Devices:

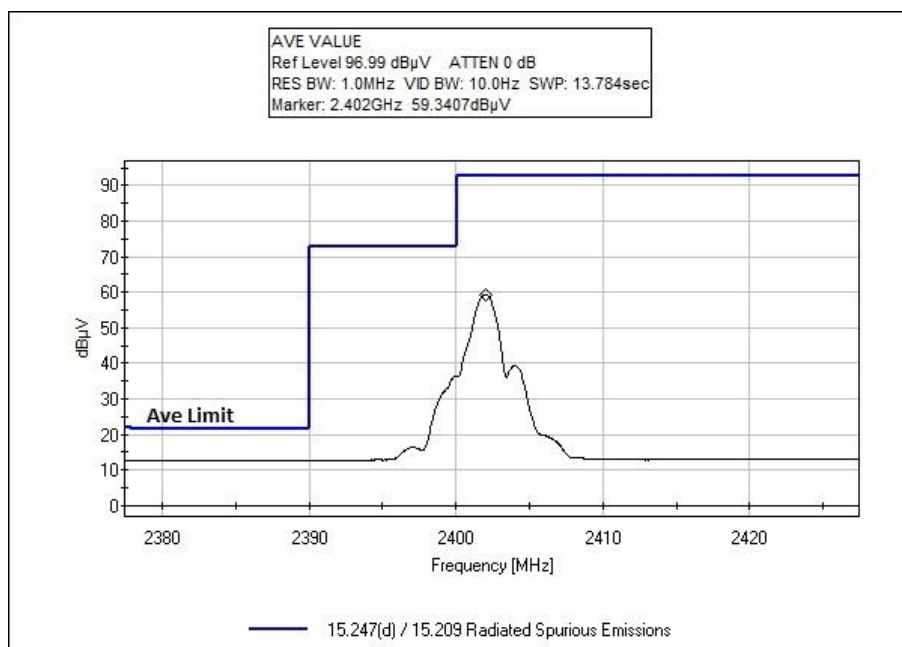
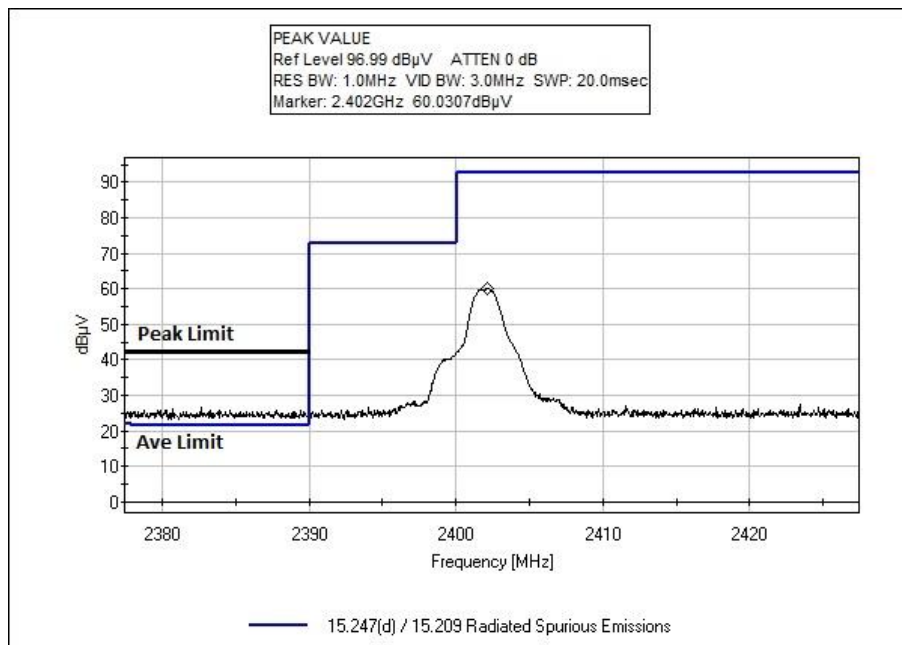
Function	Manufacturer	Model #	S/N
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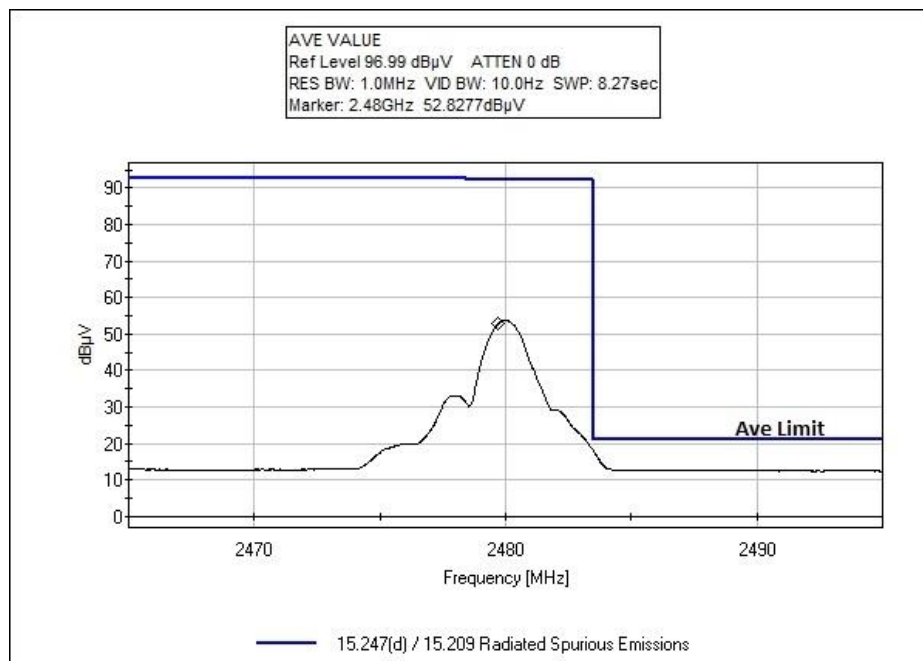
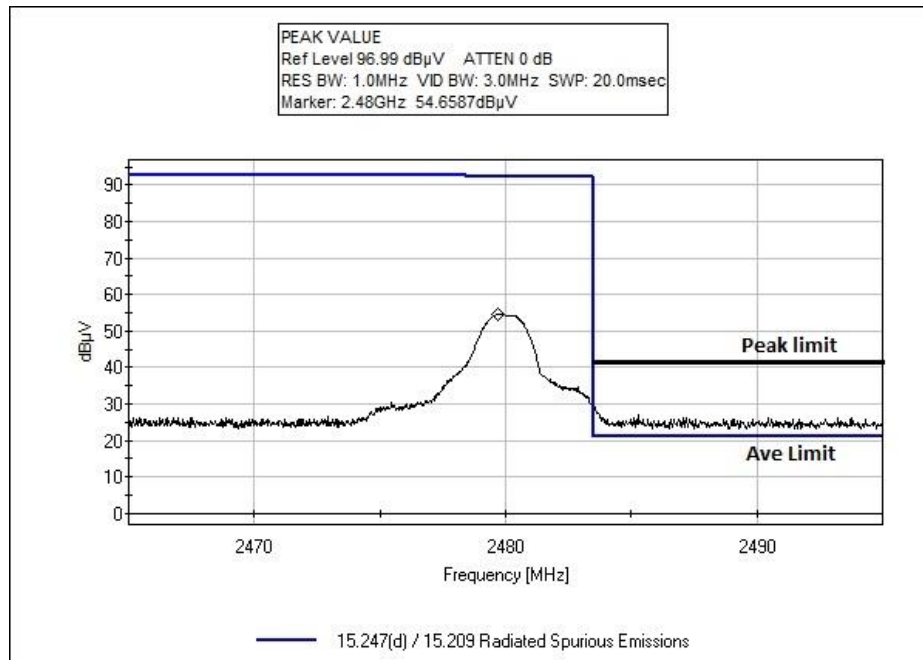
Test Conditions / Notes:

High Clock: 32MHz
 Firmware used: SmartPump 501E (0.80d30), BLE v1.1.1, SleepExpert 8.00-d10rc2
 Temperature: 21.6°C, Humidity: 39%, Atmospheric Pressure: 101.4kPa
 Transmitter operating frequency: 2.4GHz
 Low Frequency: 2.402GHz
 Middle Frequency: 2.440GHz
 High Frequency: 2.480GHz
 RF output power of the chip= 0dBm
 Gain of the antenna = 1dBi
 The EUT is a fixed device. It is placed on the 80 cm table. The EUT is set to continuously transmit.

Note: Bluetooth is operated only.

Test Data





Zigbee Test Conditions / Setup

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

Customer: **Bam Labs**

Specification: **Band edge**

Work Order #: **94232**

Date: 8/21/2013

Test Type: **Radiated Scan**

Time: 09:59:11

Equipment: **Household Air Mattress Inflator**

Sequence#: 6

Manufacturer: Bam Labs

Tested By: Hieu Song Nguyenpham

Model: SIQ XX00DR

S/N: CC 04 B4 00 00 8F

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02157	Horn Antenna-ANSI C63.5	3115	1/23/2013	1/23/2015
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/21/2012	3/21/2014
T3	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Household Air Mattress Inflator*	Bam Labs	SIQ XX00DR	CC 04 B4 00 00 8F

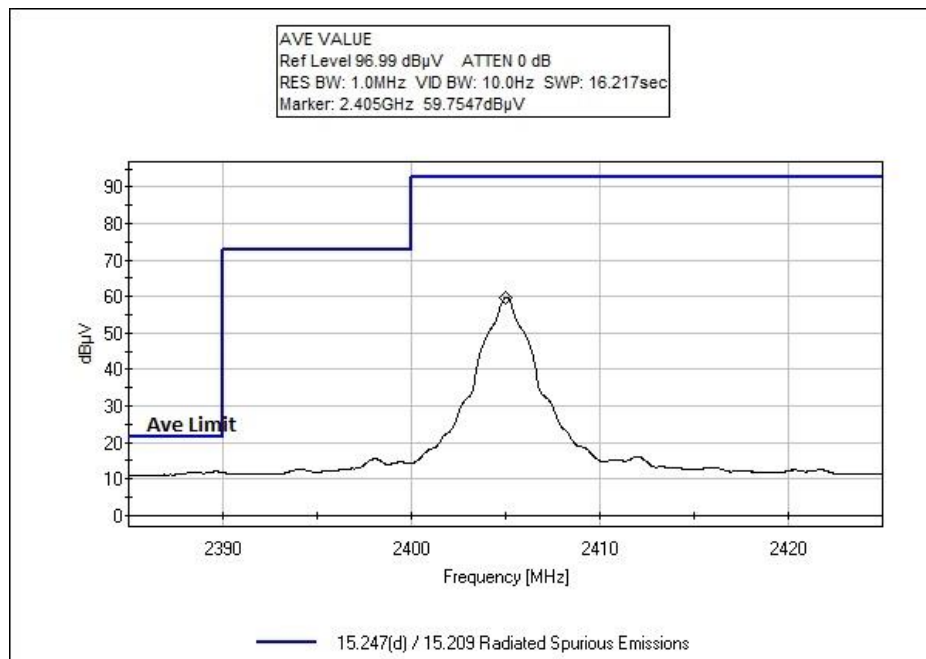
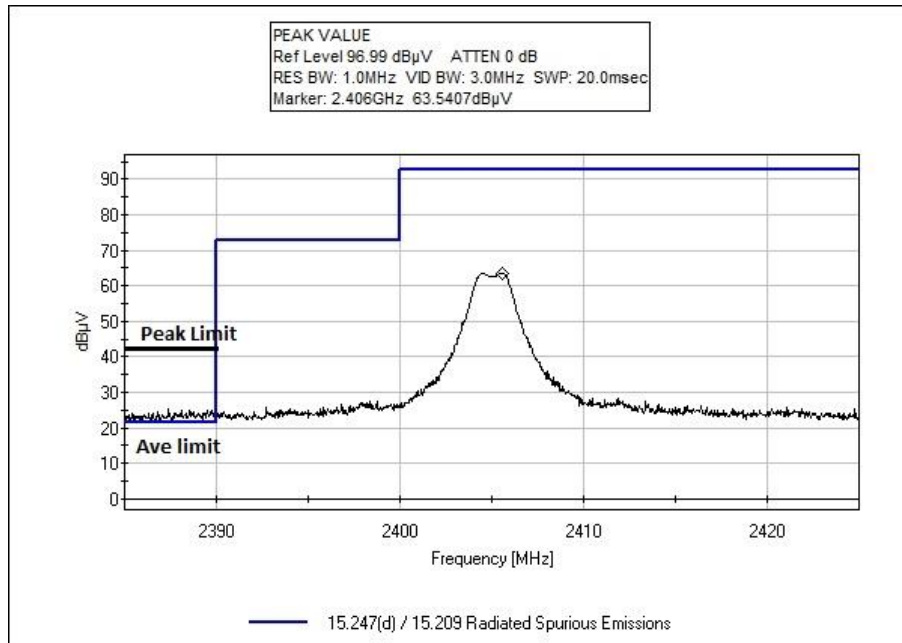
Support Devices:

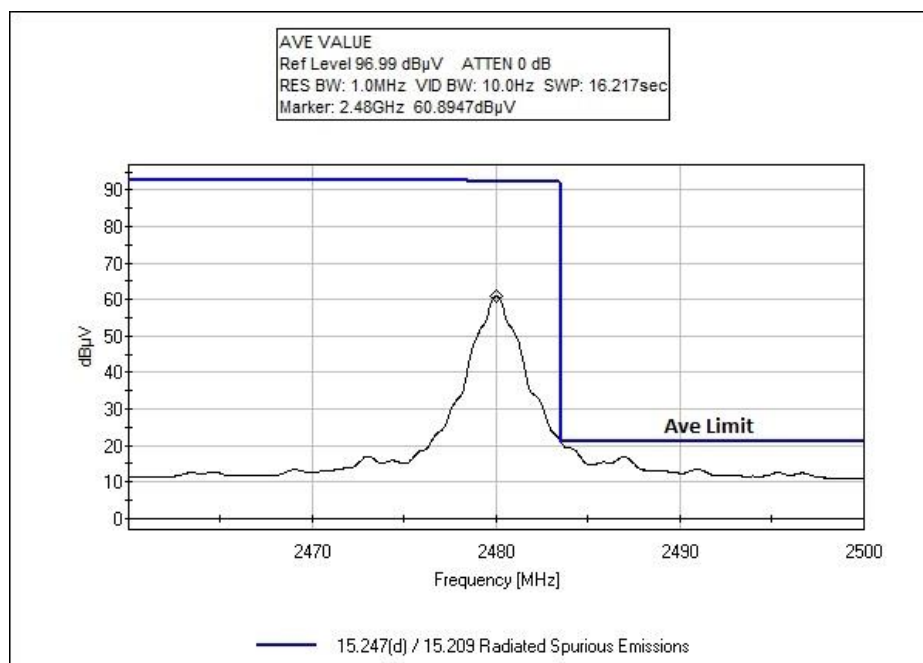
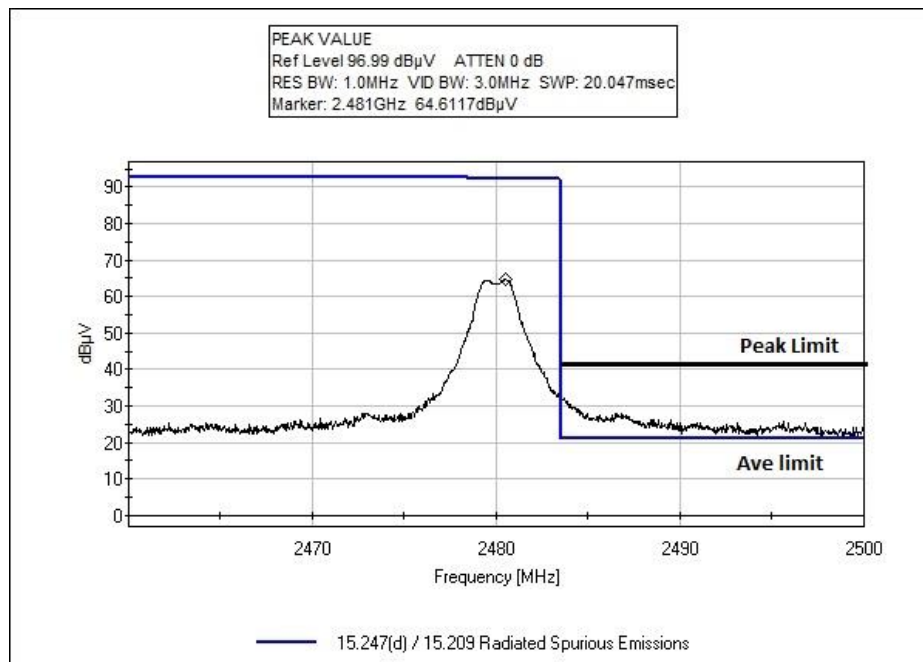
Function	Manufacturer	Model #	S/N
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Test Conditions / Notes:

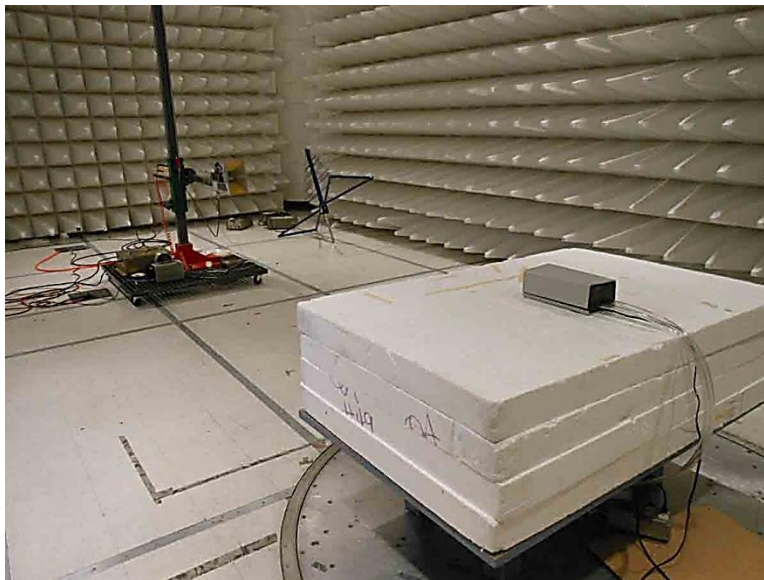
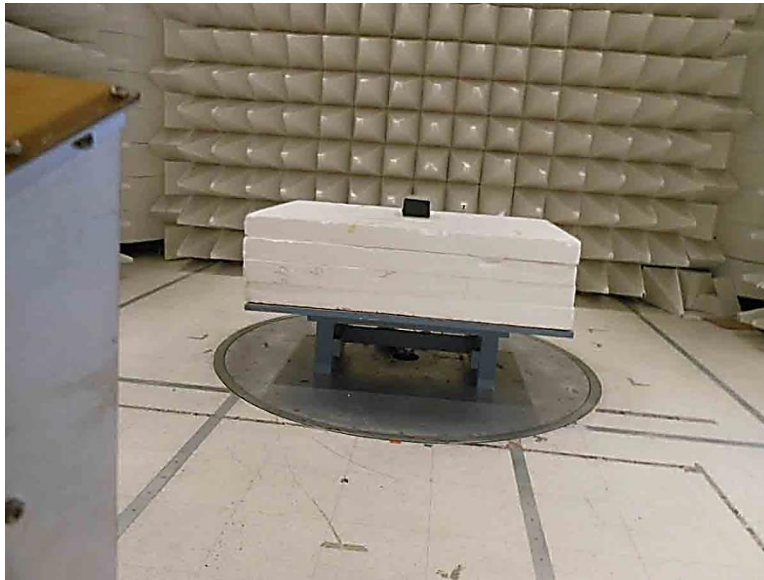
<p>High Clock: 32MHz</p> <p>Firmware used: SmartPump 501E (0.80d30), BLE v1.1.11, SleepExpert 8.00-d10rc2</p> <p>Temperature: 21.6°C, Humidity: 39%, Atmospheric Pressure: 101.4kPa</p> <p>Transmitter operating frequency: 2.4GHz</p> <p>Number of Channel: 16</p> <p>Low Frequency: 2.405GHz</p> <p>Middle Frequency: 2.440GHz</p> <p>High Frequency: 2.480GHZ</p> <p>RF output power of the chip= 1.19 dBm (DC)</p> <p>Gain of the antenna= 1dBi</p> <p>The EUT is a fixed device. It is placed on the 80 cm table. The EUT is set to continuously transmit.</p> <p>Note: Zigbee is operated only.</p>
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Test Data





Test Setup Photos



15.247(e) Power Spectral Density

Test Conditions / Setup

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

Customer: **Bam Labs**

Specification: **15.247(e) Power Spectral Density**

Work Order #: **94232**

Date: 8/20/2013

Test Type: **Radiated Scan**

Time: 11:43:57

Equipment: **Household Air Mattress Inflator**

Sequence#: 5

Manufacturer: Bam Labs

Tested By: Hieu Song Nguyenpham

Model: SIQ XX00DR

S/N: CC 04 B4 00 00 8F

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02157	Horn Antenna-ANSI C63.5	3115	1/23/2013	1/23/2015
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/21/2012	3/21/2014
T3	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Household Air Mattress Inflator*	Bam Labs	SIQ XX00DR	CC 04 B4 00 00 8F

Support Devices:

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

High Clock: 32MHz

Firmware used: SmartPump 501E (0.80d30), BLE v1.1.1, SleepExpert 8.00-d10rc2

Temperature: 21.6°C, Humidity: 39%, Atmospheric Pressure: 101.4kPa

Transmitter operating frequency: 2.4GHz

Low Frequency: 2.402GHz, Middle Frequency: 2.440GHz, High Frequency: 2.480GHz

RF output power of the chip= 0dBm

Gain of the antenna = 1dBi

The EUT is a fixed device. It is placed on the 80 cm table and 3 meter away from the measuring antenna. The EUT is set to continuously transmit.

RBW=100kHz

VBW=300kHz

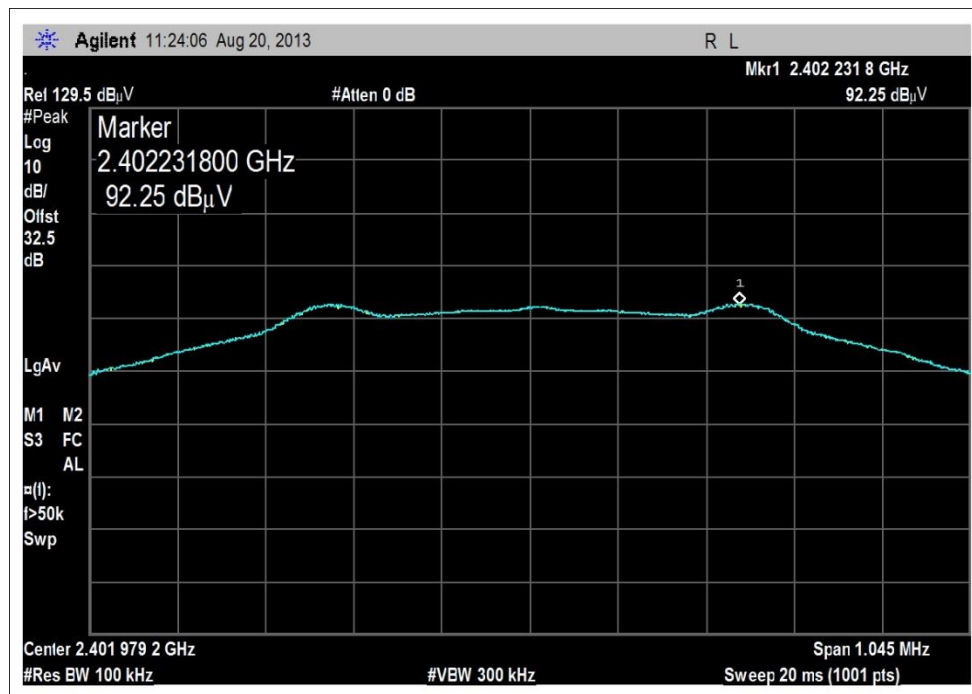
Note: Bluetooth is operated only.

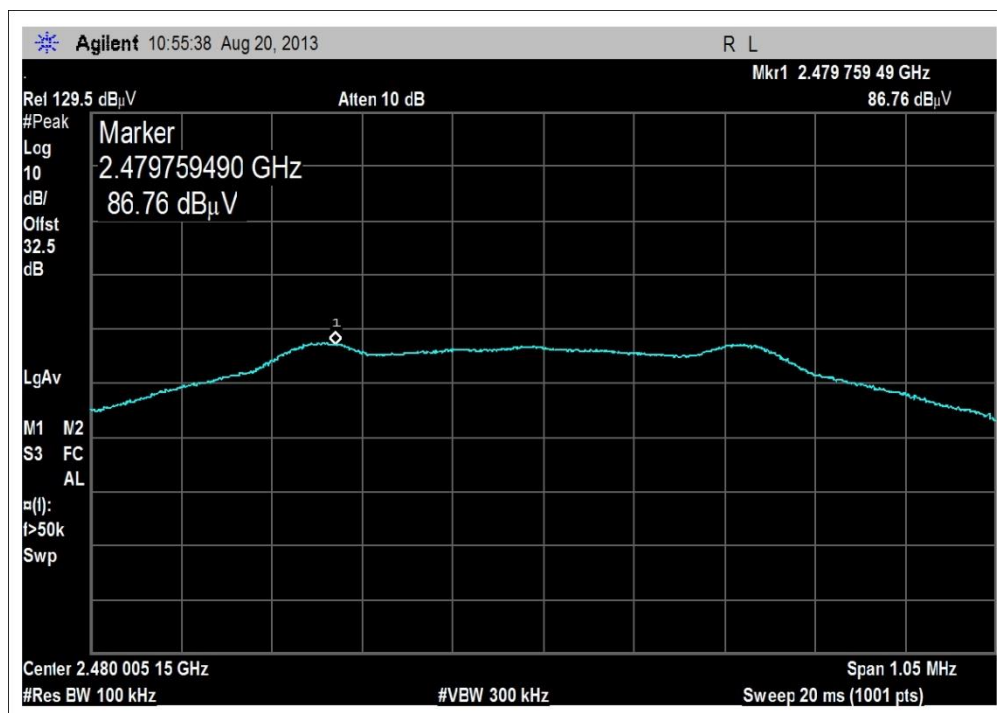
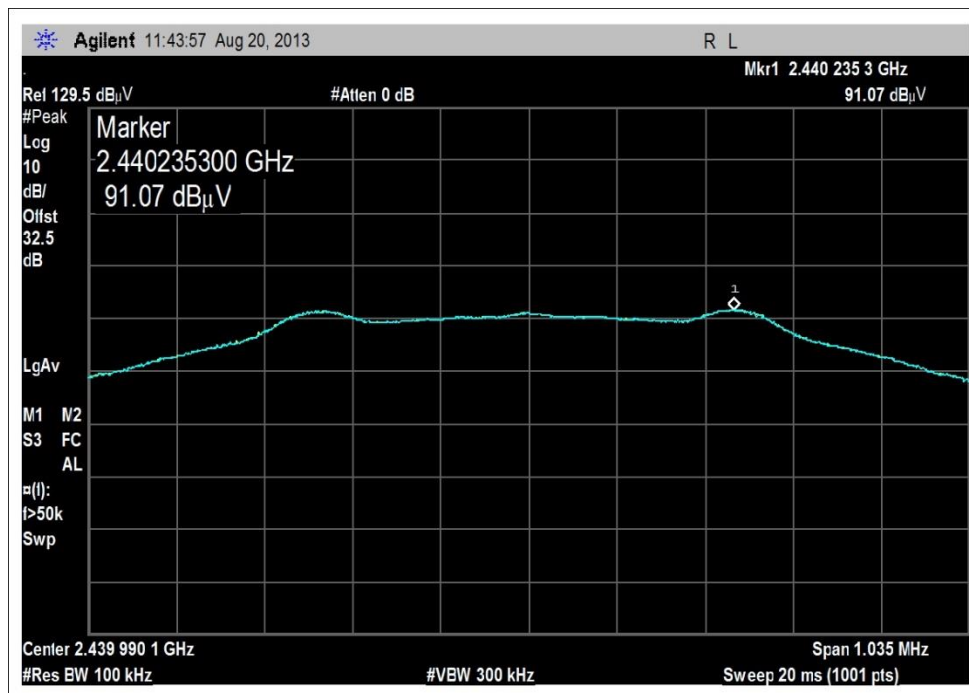
Test Data

Frequency (MHz)	Measured Power dBm	Power Limit dBm	Pass/Fail
2402.2318 Low Channel	-3.97757	8	Pass
2440.2353 Middle Channel	-5.15757	8	Pass
2479.75949 High Channel	-9.46757	8	Pass

A formula converts Radiated Method to Conducted Method.

$\text{dBm (conducted power)} = \text{dBuV/m} + 20 \cdot \text{LOG D} - 104.77 - \text{Gain (dBi)}$





Zigbee Test Conditions / Setup

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

Customer: **Bam Labs**
 Specification: **15.247(e) Power Spectral Density**
 Work Order #: **94232** Date: 8/21/2013
 Test Type: **Radiated Scan** Time: 09:59:11
 Equipment: **Household Air Mattress Inflator** Sequence#: 6
 Manufacturer: Bam Labs Tested By: Hieu Song Nguyenpham
 Model: SIQ XX00DR
 S/N: CC 04 B4 00 00 8F

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02157	Horn Antenna-ANSI C63.5	3115	1/23/2013	1/23/2015
T2	AN03302	Cable	32026-29094K-29094K-72TC	3/21/2012	3/21/2014
T3	ANP01210	Cable	FSJ1P-50A-4A	2/19/2013	2/19/2015
	AN02668	Spectrum Analyzer	E4446A	2/22/2013	2/22/2015

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Household Air Mattress Inflator*	Bam Labs	SIQ XX00DR	CC 04 B4 00 00 8F

Support Devices:

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

PSD of the EUT
 High Clock: 32MHz
 Firmware used: SmartPump 501E (0.80d30), BLE v1.1.11, SleepExpert 8.00-d10rc2
 Temperature: 21.6°C, Humidity: 39%, Atmospheric Pressure: 101.4kPa
 Transmitter operating frequency: 2.4GHz
 Number of Channel: 16
 Low Frequency: 2.405GHz
 Middle Frequency: 2.440GHz
 High Frequency: 2.480GHZ
 RF output power of the chip= 1.19 dBm (DC)
 Gain of the antenna= 1dBi
 RBW=100kHz
 VBW=300kHz

The EUT is a fixed device. It is placed on the 80 cm table and 3 meters away from the measuring antenna. The EUT is set to continuously transmit.

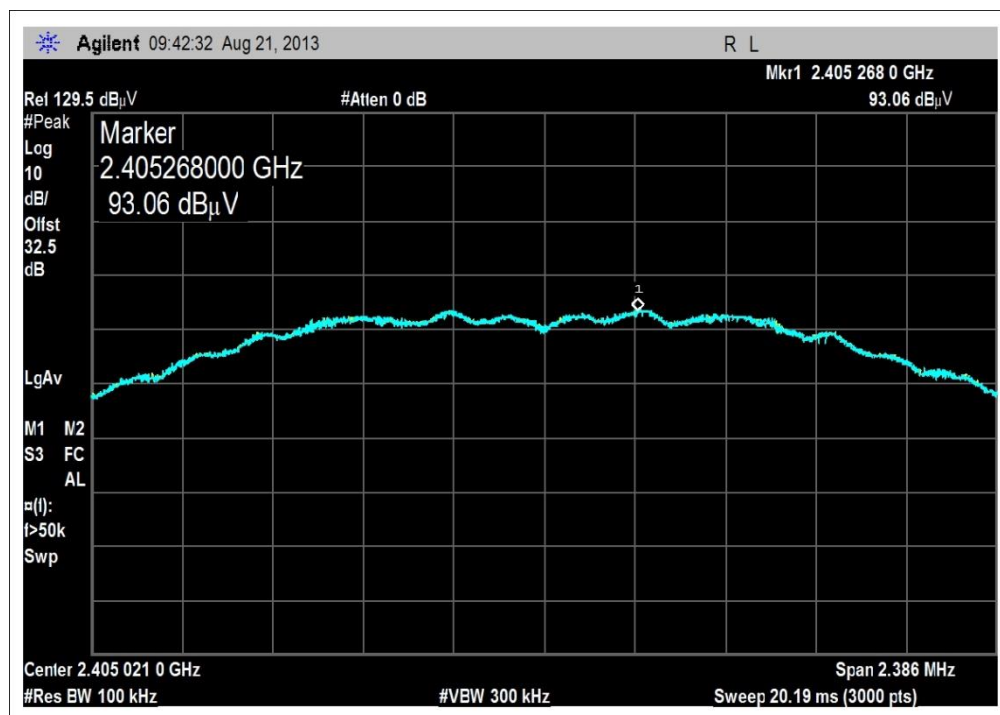
Note: Zigbee is operated only.

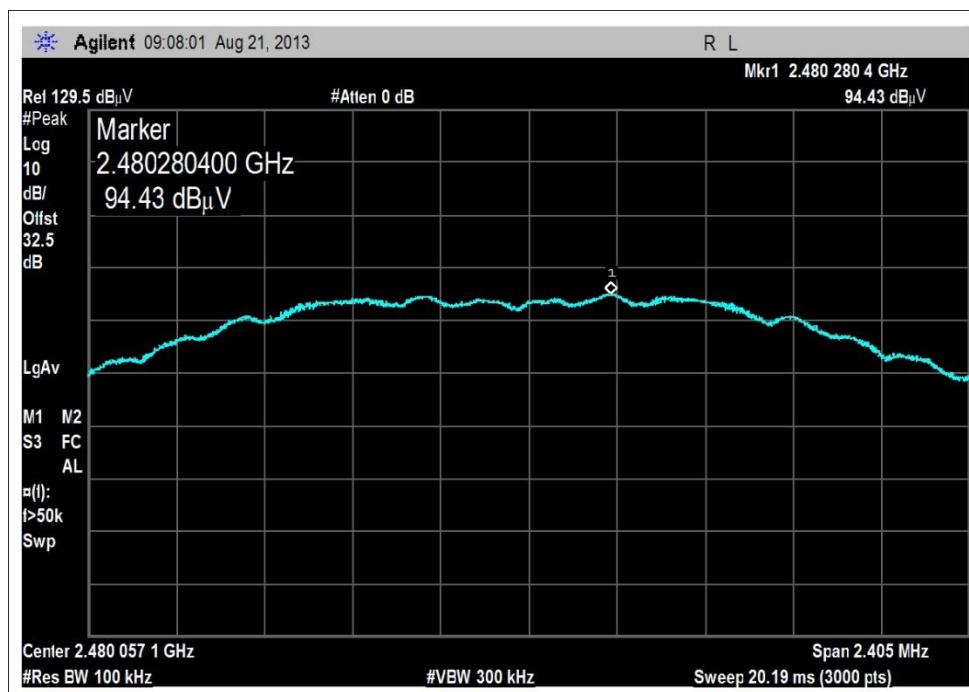
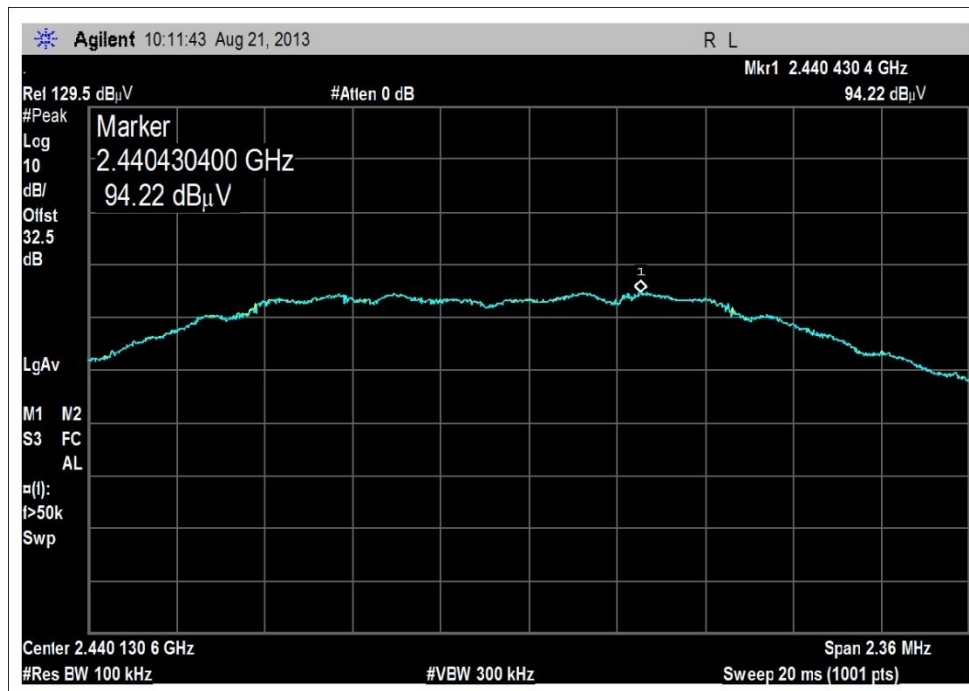
Test Data

Frequency (MHz)	Measured Power dBm	Power Limit dBm	Pass/Fail
2405.2680 Low Channel	-3.16757	8	Pass
2440.4304 Middle Channel	-2.00757	8	Pass
2480.2804 High Channel	-1.79757	8	Pass

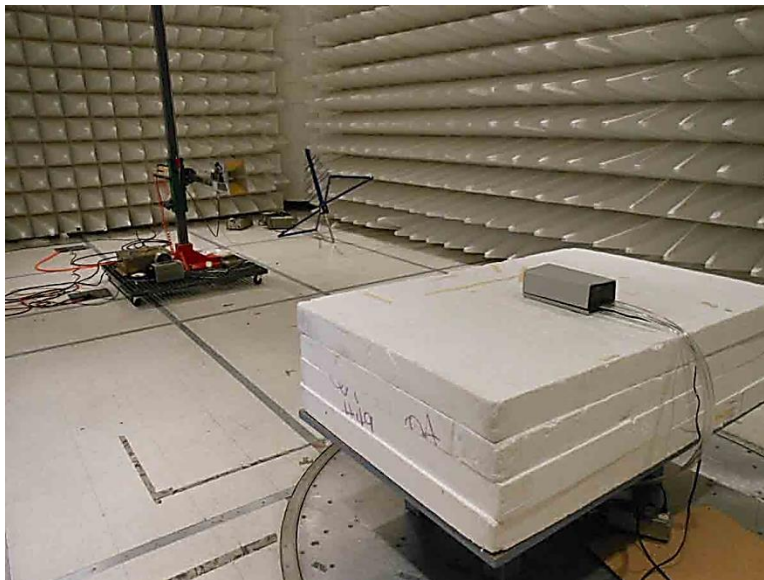
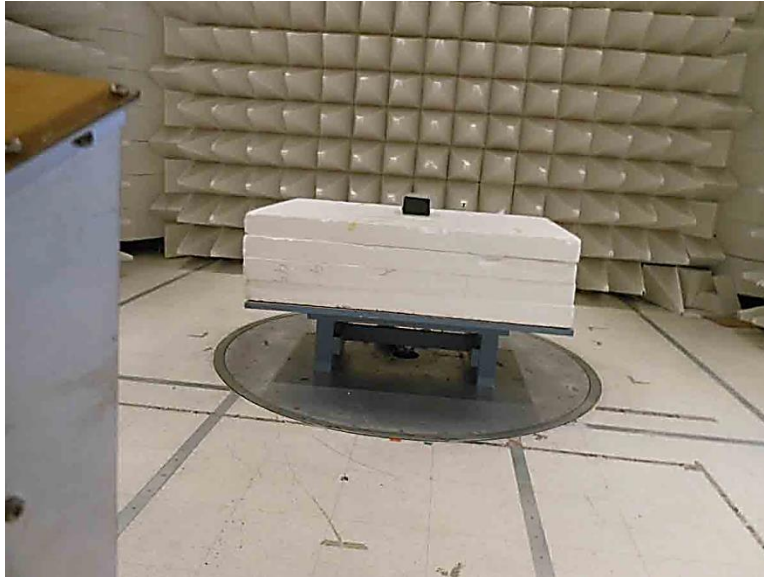
A formula converts Radiated Method to Conducted Method.

$$\text{dBm (conducted power)} = \text{dBuV/m} + 20 \cdot \text{LOG D} - 104.77 - \text{Gain (dBi)}$$





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

Unless otherwise indicated, the following configuration parameters are used for equipment setup: 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 dB μ V/m, the spectrum analyzer reading in dB μ V 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. Unless otherwise specified, 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	9 kHz	150 kHz	200 Hz
RADIATED 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 "positive peak" detector mode. Whenever a "quasi-peak" or "average" reading was recorded, the measurement was annotated with a "QP" or an "Ave" on the appropriate rows of the data sheets. In cases where quasi-peak or average limits were employed and data exists for multiple measurement types for the same frequency then the peak measurement was retained in the report for reference, however the numbering for the affected row was removed and an arrow or carrot ("^") was placed in the far left-hand column indicating that the row above takes precedence for comparison to the limit. 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 or receiver recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature called "peak hold," the measurement device had the ability to measure intermittent 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

Quasi-peak measurements were taken using the quasi-peak detector when the true peak values exceeded or were within 2 dB of a quasi-peak specification limit. Additional QP measurements may have been taken at the discretion of the operator.

Average

Average measurements were taken using the average detector when the true peak values exceeded or were within 2 dB of an average specification limit. Additional average measurements may have been taken at the discretion of the operator. If the specification or test procedure requires trace averaging, then the averaging was performed using 100 samples or as required by the specification. All other average measurements are performed using video bandwidth averaging. 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.