

Big Ideas Inc.

TEST REPORT FOR

**Magic Door Closer
Model: MagicDoorCloserII**

Tested To The Following Standards:

FCC Part 15 Subpart C Section 15.215, 15.249 and RSS-210 Issue 8

Report No.: 93944-5

Date of issue: January 31, 2013



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

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

TABLE OF CONTENTS

Administrative Information	3
Test Report Information	3
Report Authorization	3
Test Facility Information	4
Software Versions	4
Site Registration & Accreditation Information	4
Summary of Results	5
Conditions During Testing	5
Equipment Under Test	6
Peripheral Devices	6
FCC Part 15 Subpart C	7
15.249(a) RF Power Output	7
15.249(d) Field Strength of Spurious Emissions	11
FCC 15.215(c) and RSS-210 A1.1.3 Occupied Bandwidth	17
Supplemental Information	20
Measurement Uncertainty	20
Emissions Test Details	20

ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

Big Ideas Inc.
1490 East Mineral Place
Centennial, CO 80122

REPORT PREPARED BY:

Joyce Walker
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

REPRESENTATIVE: James Sheldon

Project Number: 93944

DATE OF EQUIPMENT RECEIPT:

January 10, 2013

DATE(S) OF TESTING:

January 10-12, 2013

Report Authorization

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



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

Test Facility Information



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

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

Software Versions

CKC Laboratories Proprietary Software	Version
EMITest Emissions	5.00.14
Immunity	5.00.07

Site Registration & Accreditation Information

Location	CB #	TAIWAN	CANADA	FCC	JAPAN
Mariposa A	US0103	SL2-IN-E-1147R	3082A-2	90477	A-0136

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C & RSS-210 Issue 8

Description	Test Procedure	Results
RF Power Output	FCC Part 15 Subpart C Section 15.249(a)	Pass
Field Strength of Spurious Emissions	FCC Part 15 Subpart C Section 15.249(d)	Pass
Bandwidth	FCC 15.215(c) and RSS-210 A1.1.3	Pass

Conditions During Testing

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

Summary of Conditions
None

EQUIPMENT UNDER TEST (EUT)

EQUIPMENT UNDER TEST

Magic Door Closer

Manuf: Big Ideas Inc.

Model: MagicDoorCloserII

Serial: NA

FCC ID: R5T11-25-83

PERIPHERAL DEVICES

The EUT was not tested with peripheral devices.

FCC PART 15 SUBPART C

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

15.249(a) RF Power Output

Test Data

Test Location: CKC Laboratories • 5046 Sierra Pines Dr. • • (209) 966-5240

Customer: **Big Ideas, Inc.**

Specification: **15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)**

Work Order #: **93944**

Date: 1/11/2013

Test Type: **Maximized Emissions**

Time: 09:42:50

Equipment: **Magic Door Closer**

Sequence#: 1

Manufacturer: Big Ideas Inc.

Tested By: Chuck Kendall/Eddie Mariscal

Model: MagicDoorCloserII

S/N: NA

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01991	Biconilog Antenna	CBL6111C	3/14/2012	3/14/2014
T2	ANP01403	Cable	58758-23	6/22/2011	6/22/2013
T3	ANP05904	Cable	32022-2-29094K-144TC	6/22/2011	6/22/2013
T4	AN00062	Preamp	8447D	6/6/2012	6/6/2014
T5	AN03012	Cable	32022-2-29094K-36TC	2/28/2012	2/28/2014
T6	AN02660	Spectrum Analyzer	E4446A	8/23/2012	8/23/2014

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Magic Door Closer*	Big Ideas Inc.	MagicDoorCloserII	NA

Support Devices:

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

EUT is placed atop a wooden table lined with Styrofoam of 10cm thickness. The EUT is placed in continuous transmit mode.

EUT is rotated along three orthogonal axes, labeled as X, Y, and Z.

15.31(e) EUT is tested with brand new AA battery.

Fundamental frequency = 915MHz

Frequency range of interest: Fundamental

RBW = 120kHz, VBW = 120kHz;

Environmental test conditions:

Temperature: 15.5 Deg C

Relative Humidity: 52%

Atmospheric Pressure: 98.6kPa

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	915.037M	74.7	+20.1 +0.4	+1.3 +0.0	+1.3	-29.1	+0.0	68.7	94.0 Y	-25.3	Vert
2	915.037M	74.2	+20.1 +0.4	+1.3 +0.0	+1.3	-29.1	+0.0	68.2	94.0 X	-25.8	Horiz
3	915.037M	73.9	+20.1 +0.4	+1.3 +0.0	+1.3	-29.1	+0.0	67.9	94.0 Z	-26.1	Horiz
4	915.037M	71.3	+20.1 +0.4	+1.3 +0.0	+1.3	-29.1	+0.0	65.3	94.0 X	-28.7	Vert
5	915.037M	67.6	+20.1 +0.4	+1.3 +0.0	+1.3	-29.1	+0.0	61.6	94.0 Y	-32.4	Horiz
6	915.037M	61.5	+20.1 +0.4	+1.3 +0.0	+1.3	-29.1	+0.0	55.5	94.0 Z	-38.5	Vert

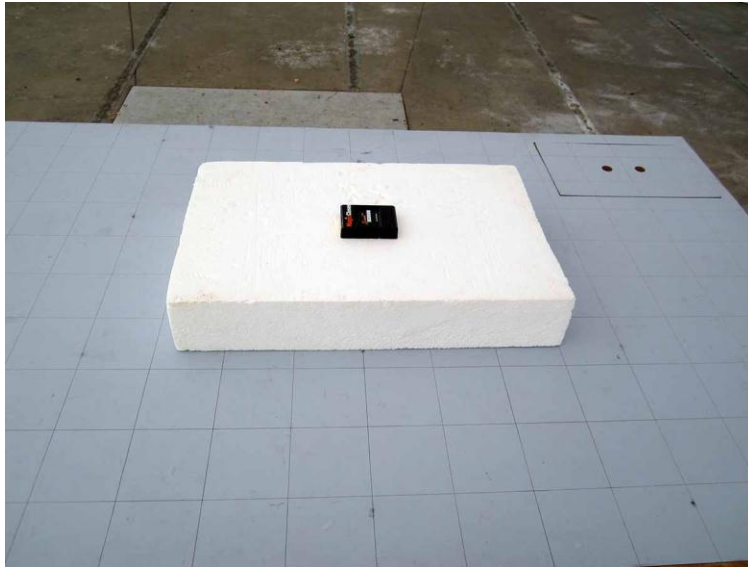
Test Setup Photos



X Axis



Y Axis



Z Axis

15.249(d) Field Strength of Spurious Emissions

Test Data Sheets

Test Location: CKC Laboratories • 5046 Sierra Pines Dr. • • (209) 966-5240

Customer: **Big Ideas Inc.**

Specification: **15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)**

Work Order #: **93944**

Date: 1/12/2013

Test Type: **Maximized Emissions**

Time: 14:14:40

Equipment: **Magic Door Closer**

Sequence#: 1

Manufacturer: Big Ideas Inc.

Tested By: Chuck Kendall/Eddie Mariscal

Model: MagicDoorCloserII

S/N: NA

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01991	Biconilog Antenna	CBL6111C	3/14/2012	3/14/2014
T2	ANP01403	Cable	58758-23	6/22/2011	6/22/2013
T3	ANP05904	Cable	32022-2-29094K-144TC	6/22/2011	6/22/2013
T4	AN00062	Preamp	8447D	6/6/2012	6/6/2014
T5	AN03012	Cable	32022-2-29094K-36TC	2/28/2012	2/28/2014
	AN02660	Spectrum Analyzer	E4446A	8/23/2012	8/23/2014
T6	AN03155	Preamp	83017A	8/3/2011	8/3/2013
T7	AN00327	Horn Antenna	3115	4/13/2012	4/13/2014
T8	ANDutyCycleCorr_93944	Duty Cycle Correction Factor		No Cal Required	No Cal Required
	AN00226	Loop Antenna	6502	3/28/2012	3/28/2014
	ANP05686	Cable	RG214/U	1/24/2012	1/24/2014

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Magic Door Closer*	Big Ideas Inc.	MagicDoorCloserII	NA

Support Devices:

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

EUT is placed atop a wooden table lined with Styrofoam of 10cm thickness. The EUT is placed in continuous transmit mode.

EUT is rotated along three orthogonal axes. Worst case was presented.

15.31(e) EUT is tested with brand new 1.5V battery.

15.25(c) Duty cycle correction factor of -20.476dB was applied to harmonics of the fundamental frequency. Duty cycle was measured as on 9.4667ms per 100ms sweep. $20 \cdot \log(9.4667/100) = -20.476\text{dB}$

Fundamental frequency = 915MHz

Frequency range of interest: 9k-9.15GHz

.009-.150MHz: RBW = 200Hz; VBW = 200Hz;

.150-30MHz: RBW = 150kHz; VBW = 150kHz

30-1000MHz: RBW = 120kHz; VBW = 120kHz;

1000-9150MHz: RBW = 1MHz; VBW = 1MHz;

Environmental test conditions:

Temperature: 15.5 Deg C

Relative Humidity: 52%

Atmospheric Pressure: 98.6kPa

Ext Attn: 0 dB

Measurement Data:

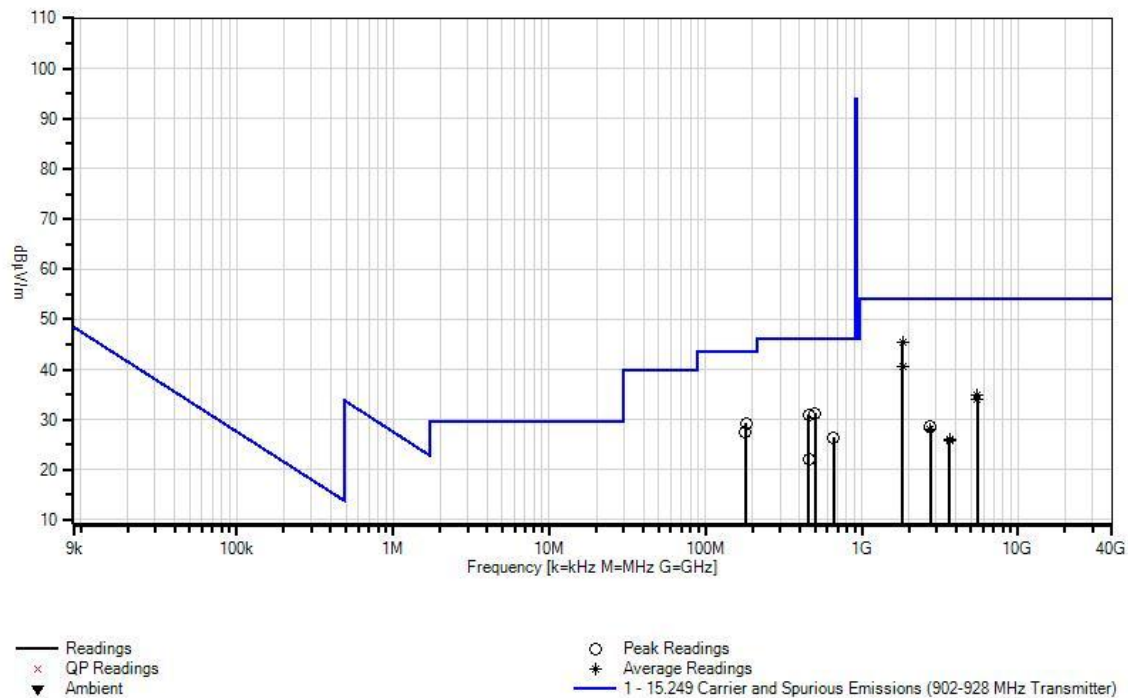
Reading listed by margin.

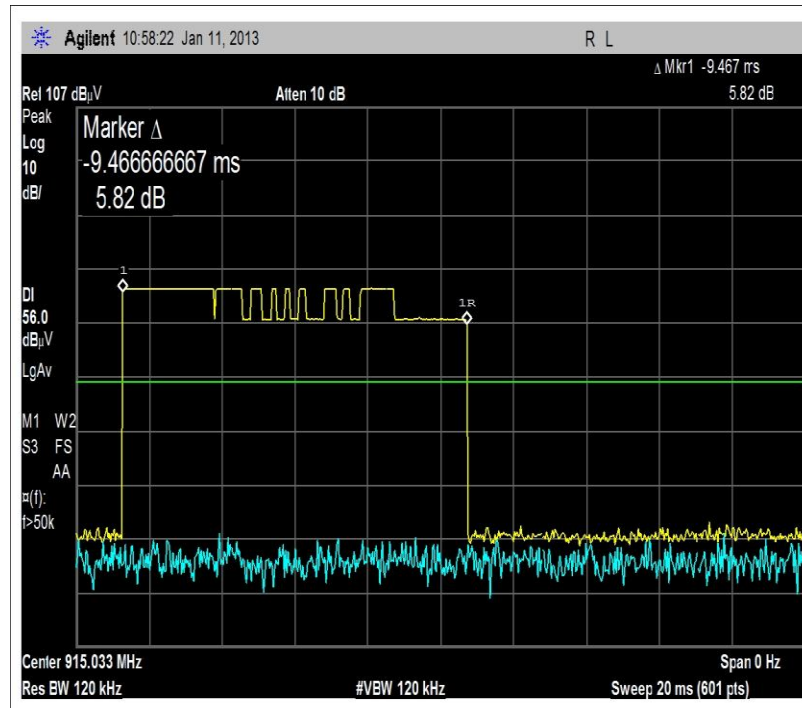
Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 T6 dB	T3 T7 dB	T4 T8 dB	Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	1830.080M Ave	65.6	+0.0 +0.6	+2.3 -30.7	+2.6 +25.6	+0.0 -20.5	+0.0	45.5	54.0	-8.5	Vert
									Duty Cycle correction of - 20.476dB applied		
^	1830.080M	66.0	+0.0 +0.6	+2.3 -30.7	+2.6 +25.6	+0.0 -20.5	+0.0	45.9	54.0	-8.1	Vert
									Duty Cycle correction of - 20.476dB applied		
3	1830.048M Ave	60.6	+0.0 +0.6	+2.3 -30.7	+2.6 +25.6	+0.0 -20.5	+0.0	40.5	54.0	-13.5	Horiz
									Duty Cycle correction of - 20.476dB applied		
^	1830.048M	61.2	+0.0 +0.6	+2.3 -30.7	+2.6 +25.6	+0.0 -20.5	+0.0	41.1	54.0	-12.9	Horiz
									Duty Cycle correction of - 20.476dB applied		
5	182.550M	48.2	+9.2 +0.2	+0.5 +0.0	+0.7 +0.0	-29.5 +0.0	+0.0	29.3	43.5	-14.2	Horiz
6	500.000M	41.2	+17.7 +0.3	+1.0 +0.0	+1.0 +0.0	-30.0 +0.0	+0.0	31.2	46.0	-14.8	Vert
7	457.508M	41.8	+16.9 +0.3	+0.9 +0.0	+1.0 +0.0	-29.9 +0.0	+0.0	31.0	46.0	-15.0	Vert
8	180.308M	46.5	+9.3 +0.2	+0.5 +0.0	+0.7 +0.0	-29.6 +0.0	+0.0	27.6	43.5	-15.9	Vert

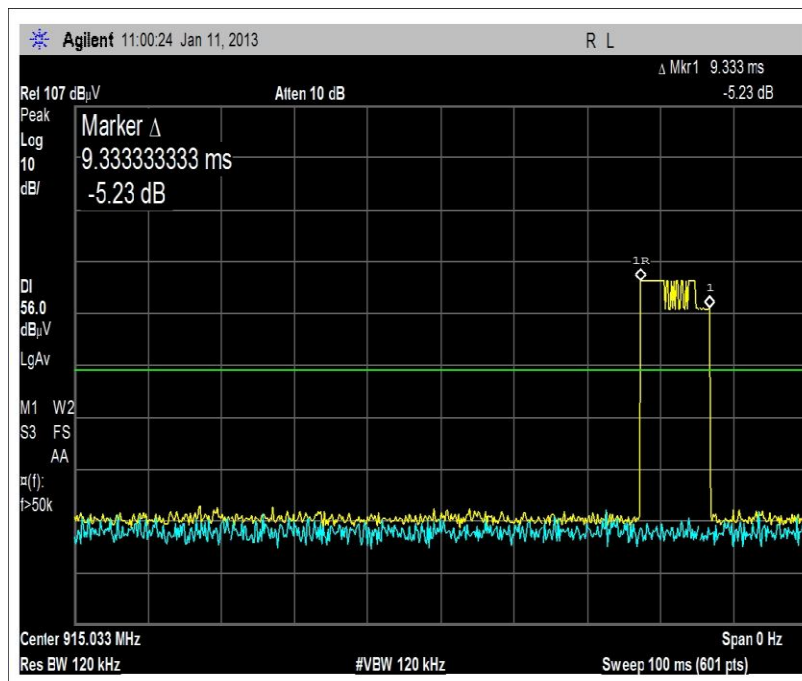
9	5490.239M Ave	43.3	+0.0 +1.1	+4.4 -30.5	+3.5 +33.6	+0.0 -20.5	+0.0	34.9	54.0 Duty Cycle correction of - 20.476dB applied	-19.1	Vert
^	5490.239M	45.8	+0.0 +1.1	+4.4 -30.5	+3.5 +33.6	+0.0 -20.5	+0.0	37.4	54.0 Duty Cycle correction of - 20.476dB applied	-16.6	Vert
11	659.980M	34.4	+19.3 +0.4	+1.1 +0.0	+1.2 +0.0	-30.0 +0.0	+0.0	26.4	46.0	-19.6	Vert
12	5490.236M Ave	42.5	+0.0 +1.1	+4.4 -30.5	+3.5 +33.6	+0.0 -20.5	+0.0	34.1	54.0 Duty Cycle correction of - 20.476dB applied	-19.9	Horiz
^	5490.236M	45.4	+0.0 +1.1	+4.4 -30.5	+3.5 +33.6	+0.0 -20.5	+0.0	37.0	54.0 Duty Cycle correction of - 20.476dB applied	-17.0	Horiz
14	457.519M	32.8	+16.9 +0.3	+0.9 +0.0	+1.0 +0.0	-29.9 +0.0	+0.0	22.0	46.0	-24.0	Horiz
15	2745.050M	46.6	+0.0 +0.8	+2.8 -30.6	+2.2 +27.4	+0.0 -20.5	+0.0	28.7	54.0 Duty Cycle correction of - 20.476dB applied	-25.3	Horiz
16	2745.112M Ave	45.8	+0.0 +0.8	+2.8 -30.6	+2.2 +27.4	+0.0 -20.5	+0.0	27.9	54.0 Duty Cycle correction of - 20.476dB applied	-26.1	Vert
^	2745.112M	48.2	+0.0 +0.8	+2.8 -30.6	+2.2 +27.4	+0.0 -20.5	+0.0	30.3	54.0 Duty Cycle correction of - 20.476dB applied	-23.7	Vert
18	3660.169M Ave	39.1	+0.0 +0.9	+3.4 -30.5	+2.5 +31.2	+0.0 -20.5	+0.0	26.1	54.0 Duty Cycle correction of - 20.476dB applied	-27.9	Horiz
^	3660.169M	44.3	+0.0 +0.9	+3.4 -30.5	+2.5 +31.2	+0.0 -20.5	+0.0	31.3	54.0 Duty Cycle correction of - 20.476dB applied	-22.7	Horiz
20	3660.155M Ave	38.7	+0.0 +0.9	+3.4 -30.5	+2.5 +31.2	+0.0 -20.5	+0.0	25.7	54.0 Duty Cycle correction of - 20.476dB applied	-28.3	Vert
^	3660.155M	43.7	+0.0 +0.9	+3.4 -30.5	+2.5 +31.2	+0.0 -20.5	+0.0	30.7	54.0 Duty Cycle correction of - 20.476dB applied	-23.3	Vert

CKC Laboratories Date: 1/12/2013 Time: 14:14:40 Big Ideas, LLC WO#: 93944
 15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter) Test Distance: 3 Meters Sequence#: 1 Ext
 ATTN: 0 dB





20ms Sweep Duty Cycle



100ms Sweep Duty Cycle

Test Setup Photos



FCC 15.215(c) and RSS-210 A1.1.3 Occupied Bandwidth

Test Conditions / Setup

Test Location: CKC Laboratories • 5046 Sierra Pines Dr. • • (209) 966-5240

Customer: **Big Ideas Inc.**

Specification: **Occupied Bandwidth**

Work Order #: **93944**

Date: 1/11/2013

Test Type: **Maximized Emissions**

Time: 09:42:50

Equipment: **Magic Door Closer**

Sequence#: 1

Manufacturer: Big Ideas Inc.

Tested By: Chuck Kendall/Eddie Mariscal

Model: MagicDoorCloserII

S/N: NA

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01991	Biconilog Antenna	CBL6111C	3/14/2012	3/14/2014
T2	ANP01403	Cable	58758-23	6/22/2011	6/22/2013
T3	ANP05904	Cable	32022-2-29094K-144TC	6/22/2011	6/22/2013
T4	AN00062	Preamp	8447D	6/6/2012	6/6/2014
T5	AN03012	Cable	32022-2-29094K-36TC	2/28/2012	2/28/2014
T6	AN02660	Spectrum Analyzer	E4446A	8/23/2012	8/23/2014

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Magic Door Closer*	Big Ideas Inc.	MagicDoorCloserII	NA

Support Devices:

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

EUT is placed atop a wooden table lined with Styrofoam of 10cm thickness. The EUT is placed in continuous transmit mode.

EUT was rotated along three orthogonal axes, and the worst case was presented.

15.31(e) EUT is tested with brand new AA battery.

Fundamental frequency = 915MHz

Frequency range of interest: Fundamental

RBW = 120kHz, VBW = 120kHz;

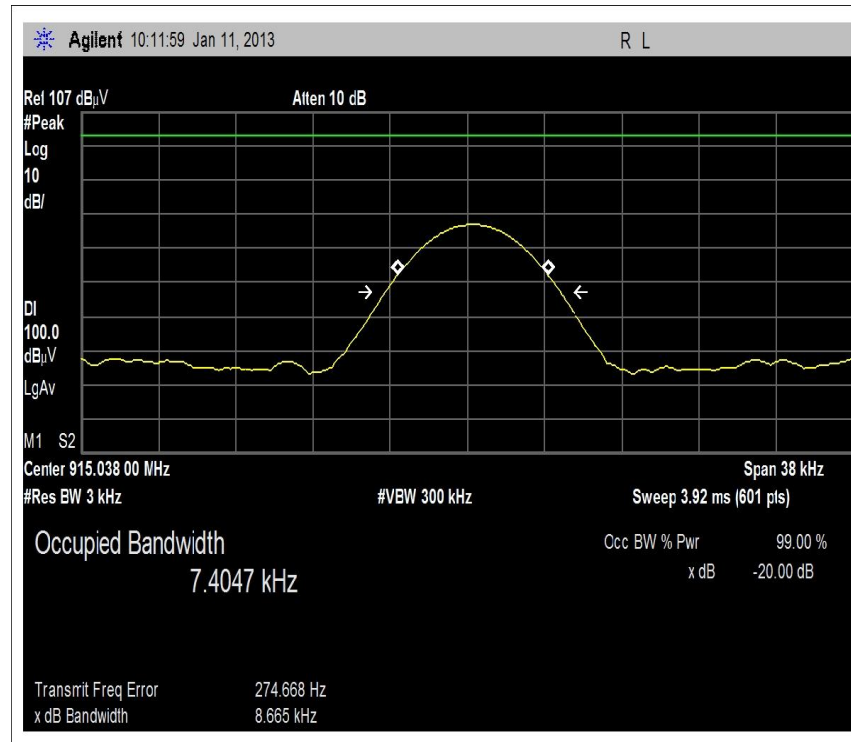
Environmental test conditions:

Temperature: 15.5 Deg C

Relative Humidity: 52%

Atmospheric Pressure: 98.6kPa

Test Data



15.215(C) and RSS-210 A1.1.3 Bandwidth

Test Setup Photos



SUPPLEMENTAL INFORMATION

Measurement Uncertainty

Uncertainty Value	Parameter
4.73 dB	Radiated Emissions
3.34 dB	Mains Conducted Emissions
3.30 dB	Disturbance Power

The reported measurement uncertainties are calculated based on the worst case of all laboratory environments from CKC Laboratories, Inc. test sites. Only those parameters which require estimation of measurement uncertainty are reported. The reported worst case measurement uncertainty is less than the maximum values derived in CISPR 16-4-2. Reported uncertainties represent expanded uncertainties expressed at approximately the 95% confidence level using a coverage factor of $k=2$. Compliance is deemed to occur provided measurements are below the specified limits.

Emissions Test Details

TESTING PARAMETERS

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 $\text{dB}\mu\text{V}/\text{m}$, 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	(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.