SmartLabs, Inc.

TEST REPORT FOR

TempLinc – INSTEON Wireless Zone Thermostat w/ Humidity
Model: 2441ZTH

Tested To The Following Standards:

FCC Part 15 Subpart C Sections 15.207, 15.249
and
RSS-210 Issue 8

Report No.: 92706-8

Date of issue: February 16, 2012

ACCREDITED
Testing Certificates:
803.01, 803.02, 803.05, 803.06

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

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

Testing the Future
CKC LABORATORIES, INC.

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ADMINISTRATIVE INFORMATION

Test Report Information

REPORT PREPARED FOR:

SmartLabs, Inc.
16542 Millikan Ave.
Irvine, CA 92606

Representative: John Lockyer
Customer Reference Number: 12-3JL0117-04

REPORT PREPARED BY:

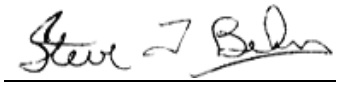
Dianne Dudley
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

Project Number: 92706

DATE OF EQUIPMENT RECEIPT: January 19, 2012
DATE(S) OF TESTING: January 19-27, 2012

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.
110 Olinda Place
Brea, CA 92823

Site Registration & Accreditation Information

Location	CB #	Japan	Canada	FCC
Brea A	US0060	R-2945, C-3248 & T-1572	3082D-1	90473

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C 15.207, 15.249 and RSS 210 Issue 8

Description	Test Procedure/Method	Results
Voltage Variation	FCC Part 15 Subpart C Section 15.31(e)	Pass
Conducted Emissions	FCC Part 15 Subpart C Section 15.207 / ANSI C63.4 (2003)	Pass
RF Power Output	FCC Part 15 Subpart C Section 15.249(a)	Pass
-20dBc Occupied Bandwidth	FCC Part 15 Subpart C	Pass
Bandedge	FCC Part 15 Subpart C	Pass
Field Strength of Spurious Emissions / Harmonics	FCC Part 15 Subpart C Section 15.249(b)(d)	Pass
99% Bandwidth	RSS- 210 Issue 8	Pass

Conditions During Testing

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

Summary of Conditions
None

EQUIPMENT UNDER TEST (EUT)

EQUIPMENT UNDER TEST

TempLinc – INSTEON Wireless Zone Thermostat with Humidity
Manuf: SmartLabs, Inc.
Model: 2441ZTH
Serial: NA

PERIPHERAL DEVICES

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

DC Power Supply
Manuf: Topward
Model: 6306D
Serial: 988614

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.

15.31(e) Voltage Variations

Test Conditions / Setup

The EUT is placed on the wooden table lined with Styrofoam of 10cm thickness. Orientated in the intended position, a temperature sensor is connected to the temperature port. The EUT is set in continuous transmit mode. TX= 914.5-915.5 MHz. The device can be powered with battery (3V) and or DC power supply (5V). The EUT was powered up using a support DC power supply set at 5V as intended and to simulate full battery power

15.31(e) compliance: the supply voltage was varied between 85% and 115% of the nominal rated supply voltage, no change in the Fundamental signal level was observed.

Frequency range of measurement = Fundamental
30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz
Test environment conditions: 21°C, 31% relative humidity, 101kPa

Engineer Name: E. Wong

Test Equipment					
Asset/Serial #	**Description**	**Model**	**Manufacturer**	**Cal Date**	**Cal Due**
AN02672	Spectrum Analyzer	E4446A	Agilent	8/9/2010	8/9/2012
AN01995	Biconilog Antenna	CBL6111C	Chase	3/8/2010	3/8/2012
AN00309	Preamp	8447D	HP	5/7/2010	5/7/2012
ANP05050	Cable	RG223/U	Pasternack	3/21/2011	3/21/2013
ANP05198	Cable	8268	Belden	12/21/2010	12/21/2012

Test Setup Photos

15.207 AC Conducted Emissions

Test Data Sheets

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer:	**SmartLabs, Inc.**		
Specification:	**15.207 AC Mains - Average**		
Work Order #:	**92706**	Date:	1/27/2012
Test Type:	**Conducted Emissions**	Time:	2:08:49 PM
Equipment:	**TempLinc -INSTEON Wireless Zone Thermostat with Humidity**	Sequence#:	14
Manufacturer:	SmartLabs, Inc.	Tested By:	E. Wong
Model:	2441ZTH		110V 60Hz
S/N:	NA		

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012
T1	ANP06084	Attenuator	SA18N10W-06	12/8/2010	12/8/2012
T2	AN02610	High Pass Filter	HE9615-150K-50-720B	11/21/2011	11/21/2013
T3	ANP04358	Cable	RG142	5/7/2010	5/7/2012
T4	AN00847.1	50uH LISN-Line 1 (dB)	3816/2NM	12/21/2010	12/21/2012
	AN00847.1	50uH LISN-Line 2 (dB)	3816/2NM	12/21/2010	12/21/2012

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

Function	Manufacturer	Model #	S/N
TempLinc - INSTEON Wireless Zone Thermostat with Humidity*	SmartLabs, Inc.	2441ZTH	NA

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power supply	Topward	6306D	988614

Test Conditions / Notes:

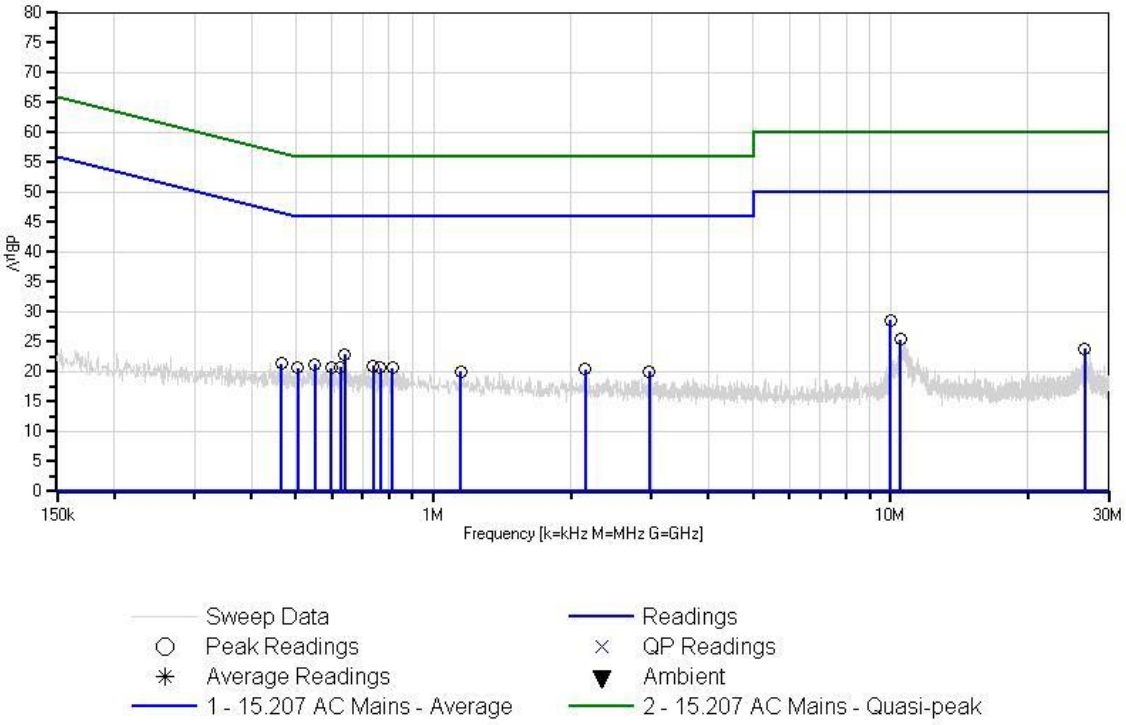
The EUT is placed on the wooden table Orientated in the intended position, a temperature sensor is connected to the temperature port.
The EUT is set in continuous transmit mode.
TX= 914.5-915.5 MHz.
The device can be powered with battery (3V) and /or DC power supply (5V). The EUT was powered up using a support DC power supply set at 5 V as intended and to simulate full battery power
Frequency range of measurement = 150kHz- 30MHz.
150 kHz-30 MHz; RBW=9 kHz, VBW=9kHz
Test environment conditions: 21°C, 31% relative humidity, 101kPa
AC Conducted emission is performed at the AC port of the support DC power supply.

Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Lead: L1

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	9.995M	21.8	+5.8	+0.2	+0.3	+0.5	+0.0	28.6	50.0	-21.4	L1
2	640.137k	16.8	+5.8	+0.2	+0.1	+0.0	+0.0	22.9	46.0	-23.1	L1
3	10.517M	18.6	+5.8	+0.2	+0.3	+0.5	+0.0	25.4	50.0	-24.6	L1
4	549.236k	15.1	+5.8	+0.2	+0.1	+0.0	+0.0	21.2	46.0	-24.8	L1
5	738.310k	14.9	+5.8	+0.2	+0.1	+0.0	+0.0	21.0	46.0	-25.0	L1
6	464.153k	15.4	+5.7	+0.2	+0.1	+0.0	+0.0	21.4	46.6	-25.2	L1
7	625.593k	14.7	+5.8	+0.2	+0.1	+0.0	+0.0	20.8	46.0	-25.2	L1
8	811.757k	14.6	+5.8	+0.2	+0.1	+0.0	+0.0	20.7	46.0	-25.3	L1
9	597.959k	14.6	+5.8	+0.2	+0.1	+0.0	+0.0	20.7	46.0	-25.3	L1
10	765.216k	14.6	+5.8	+0.2	+0.1	+0.0	+0.0	20.7	46.0	-25.3	L1
11	504.877k	14.6	+5.7	+0.2	+0.1	+0.0	+0.0	20.6	46.0	-25.4	L1
12	2.149M	14.3	+5.8	+0.2	+0.1	+0.0	+0.0	20.4	46.0	-25.6	L1
13	1.145M	13.9	+5.8	+0.2	+0.1	+0.0	+0.0	20.0	46.0	-26.0	L1
14	2.970M	13.7	+5.8	+0.2	+0.2	+0.1	+0.0	20.0	46.0	-26.0	L1
15	26.608M	15.6	+5.8	+0.3	+0.4	+1.8	+0.0	23.9	50.0	-26.1	L1

CKC Laboratories, Inc. Date: 1/27/2012 Time: 2:08:49 PM SmartLabs, Inc. WO#: 92706
15.207 AC Mains - Average Test Lead: L1 110V 60Hz Sequence#: 14 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **SmartLabs, Inc.**
Specification: **15.207 AC Mains - Average**
Work Order #: **92706** Date: 1/27/2012
Test Type: **Conducted Emissions** Time: 2:05:44 PM
Equipment: **TempLinc -INSTEON Wireless Zone Thermostat with Humidity** Sequence#: 13
Manufacturer: SmartLabs, Inc. Tested By: E. Wong
Model: 2441ZTH 110V 60Hz
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012
T1	ANP06084	Attenuator	SA18N10W-06	12/8/2010	12/8/2012
T2	AN02610	High Pass Filter	HE9615-150K-50-720B	11/21/2011	11/21/2013
T3	ANP04358	Cable	RG142	5/7/2010	5/7/2012
	AN00847.1	50uH LISN-Line 1 (dB)	3816/2NM	12/21/2010	12/21/2012
T4	AN00847.1	50uH LISN-Line 2 (dB)	3816/2NM	12/21/2010	12/21/2012

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

Function	Manufacturer	Model #	S/N
TempLinc- INSTEON Wireless Zone Thermostat with Humidity*	SmartLabs, Inc.	2441ZTH	NA

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power supply	Topward	6306D	988614

Test Conditions / Notes:

The EUT is placed on the wooden table Orientated in the intended position, a temperature sensor is connected to the temperature port.
The EUT is set in continuous transmit mode.
TX= 914.5-915.5 MHz.
The device can be powered with battery (3V) and /or DC power supply (5V). The EUT was powered up using a support DC power supply set at 5 V as intended and to simulate full battery power
Frequency range of measurement = 150kHz- 30MHz.
150 kHz-30 MHz; RBW=9 kHz, VBW=9kHz
Test environment conditions: 21°C, 31% relative humidity, 101kPa
AC Conducted emission is performed at the AC port of the support DC power supply.

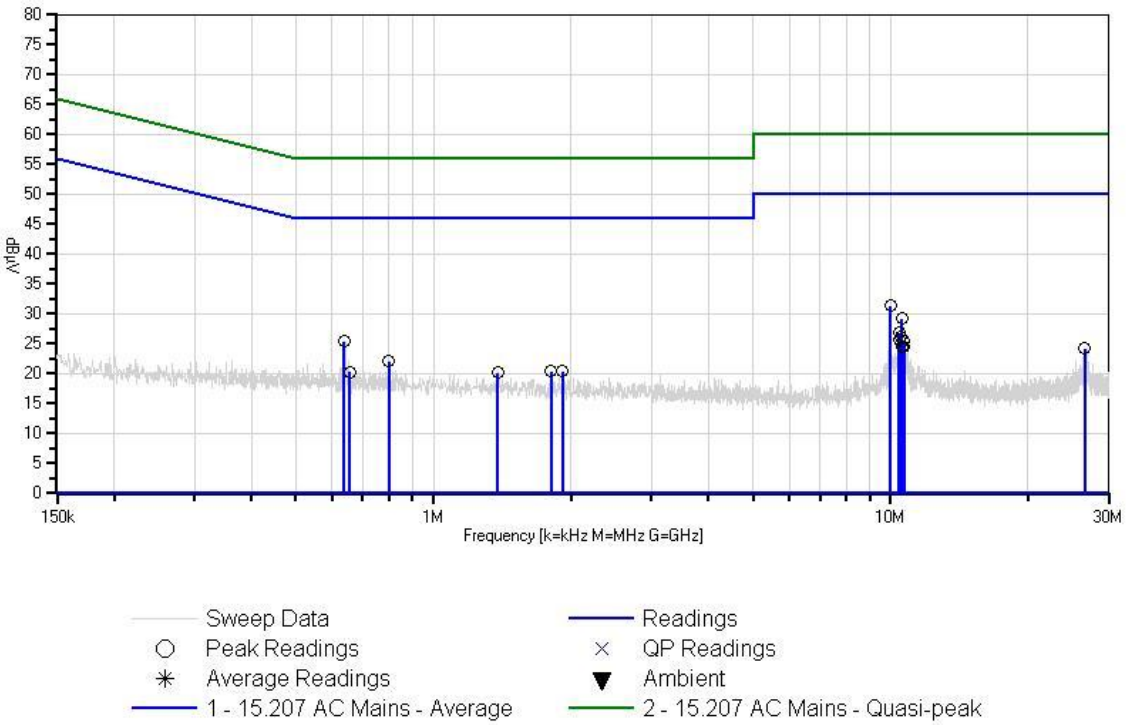
Ext Attn: 0 dB

Measurement Data: Reading listed by margin. Test Lead: L2

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	9.995M	24.5	+5.8	+0.2	+0.3	+0.6	+0.0	31.4	50.0	-18.6	L2
2	637.955k	19.3	+5.8	+0.2	+0.1	+0.0	+0.0	25.4	46.0	-20.6	L2
3	10.580M	22.3	+5.8	+0.2	+0.3	+0.6	+0.0	29.2	50.0	-20.8	L2

4	10.427M	19.9	+5.8	+0.2	+0.3	+0.6	+0.0	26.8	50.0	-23.2	L2
5	10.517M	19.3	+5.8	+0.2	+0.3	+0.6	+0.0	26.2	50.0	-23.8	L2
6	798.668k	16.0	+5.8	+0.2	+0.1	+0.0	+0.0	22.1	46.0	-23.9	L2
7	10.481M	18.9	+5.8	+0.2	+0.3	+0.6	+0.0	25.8	50.0	-24.2	L2
8	10.716M	18.5	+5.8	+0.2	+0.3	+0.6	+0.0	25.4	50.0	-24.6	L2
9	10.634M	17.6	+5.8	+0.2	+0.3	+0.6	+0.0	24.5	50.0	-25.5	L2
10	10.661M	17.6	+5.8	+0.2	+0.3	+0.6	+0.0	24.5	50.0	-25.5	L2
11	1.809M	14.2	+5.8	+0.2	+0.1	+0.1	+0.0	20.4	46.0	-25.6	L2
12	1.915M	14.2	+5.8	+0.2	+0.1	+0.1	+0.0	20.4	46.0	-25.6	L2
13	655.408k	14.2	+5.8	+0.2	+0.1	+0.0	+0.0	20.3	46.0	-25.7	L2
14	1.383M	14.0	+5.8	+0.2	+0.1	+0.1	+0.0	20.2	46.0	-25.8	L2
15	26.615M	15.9	+5.8	+0.3	+0.4	+1.8	+0.0	24.2	50.0	-25.8	L2

CKC Laboratories, Inc. Date: 1/27/2012 Time: 2:05:44 PM SmartLabs, Inc. WO#: 92706
15.207 AC Mains - Average Test Lead: L2 110V 60Hz Sequence#: 13 Ext ATTN: 0 dB



Test Setup Photos

15.249(a) RF Power Output

Test Data

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer:	**SmartLabs, Inc.**		
Specification:	**15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)**		
Work Order #:	**92706**	Date:	1/26/2012
Test Type:	**Maximized Emissions**	Time:	09:25:45
Equipment:	**TempLinc - INSTEON Wireless Zone Thermostat with Humidity**	Sequence#:	1
Manufacturer:	SmartLabs, Inc.	Tested By:	E. Wong
Model:	2441ZTH		
S/N:	NA		

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012
T2	AN01995	Biconilog Antenna	CBL6111C	3/8/2010	3/8/2012
T3	AN00309	Preamp	8447D	5/7/2010	5/7/2012
T4	ANP05050	Cable	RG223/U	3/21/2011	3/21/2013
T5	ANP05198	Cable	8268	12/21/2010	12/21/2012

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

Function	Manufacturer	Model #	S/N
TempLinc -INSTEON Wireless Zone Thermostat with Humidity*	SmartLabs, Inc.	2441ZTH	NA

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power supply	Topward	6306D	988614

Test Conditions / Notes:

The EUT is placed on the wooden table lined with Styrofoam of 10cm thickness. Orientated in the intended position, a temperature sensor is connected to the temperature port.
The EUT is set in continuous transmit mode.
TX= 914.5-915.5 MHz.
The device can be powered with battery (3V) and or DC power supply (5V). The EUT was powered up using a support DC power supply set at 5 V as intended and to simulate full battery power
15.31(e) compliance: the supply voltage was varied between 85% and 115% of the nominal rated supply voltage, no change in the Fundamental signal level was observed.
Frequency range of measurement = Fundamental
30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz
Test environment conditions: 21°C, 31% relative humidity, 101kPa

Ext Attn: 0 dB

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

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	915.086M QP	85.2	+0.0 +5.8	+23.6	-27.1	+0.5	+0.0	88.0	94.0	-6.0	Horiz
^	915.086M	86.9	+0.0 +5.8	+23.6	-27.1	+0.5	+0.0	89.7	94.0	-4.3	Horiz
3	915.086M	80.7	+0.0 +5.8	+23.6	-27.1	+0.5	+0.0	83.5	94.0	-10.5	Vert

Test Setup Photos

-20dBc Occupied Bandwidth

Test Conditions / Setup

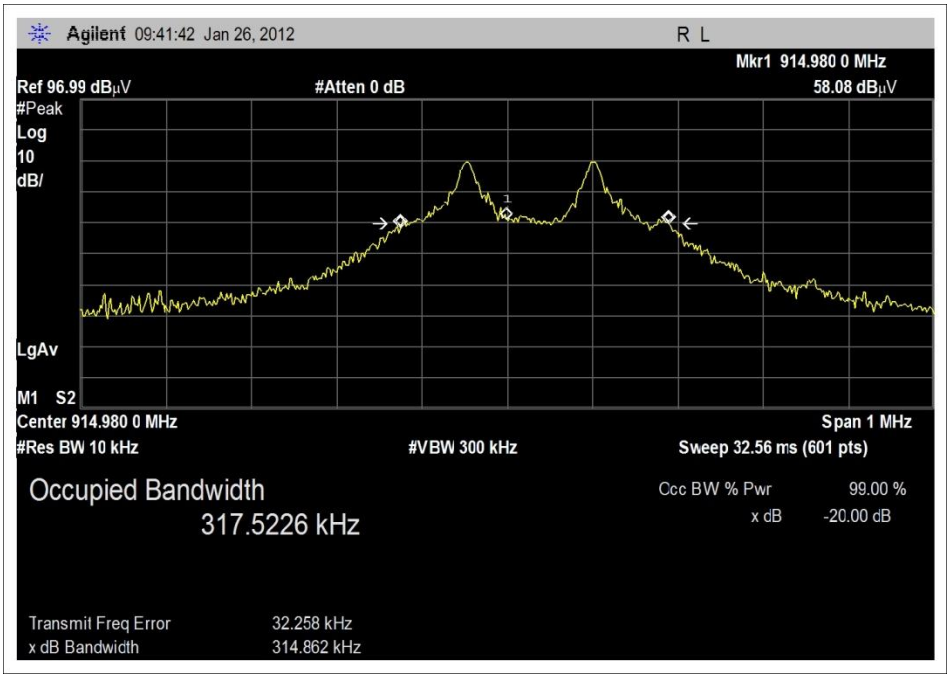
The EUT is placed on the wooden table lined with Styrofoam of 10cm thickness. Orientated in the intended position, a temperature sensor is connected to the temperature port. The EUT is set in continuous transmit mode. TX= 914.5-915.5 MHz. The device can be powered with battery (3V) and or DC power supply (5V). The EUT was powered up using a support DC power supply set at 5V as intended and to simulate full battery power.

Frequency range of measurement = Fundamental
30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz
Test environment conditions: 21°C, 31% relative humidity, 101kPa

Engineer Name: E. Wong

Test Equipment					
Asset/Serial #	**Description**	**Model**	**Manufacturer**	**Cal Date**	**Cal Due**
AN02672	Spectrum Analyzer	E4446A	Agilent	8/9/2010	8/9/2012
AN01995	Biconilog Antenna	CBL6111C	Chase	3/8/2010	3/8/2012
AN00309	Preamp	8447D	HP	5/7/2010	5/7/2012
ANP05050	Cable	RG223/U	Pasternack	3/21/2011	3/21/2013
ANP05198	Cable	8268	Belden	12/21/2010	12/21/2012

Test Plots



Test Setup Photos

Bandedge

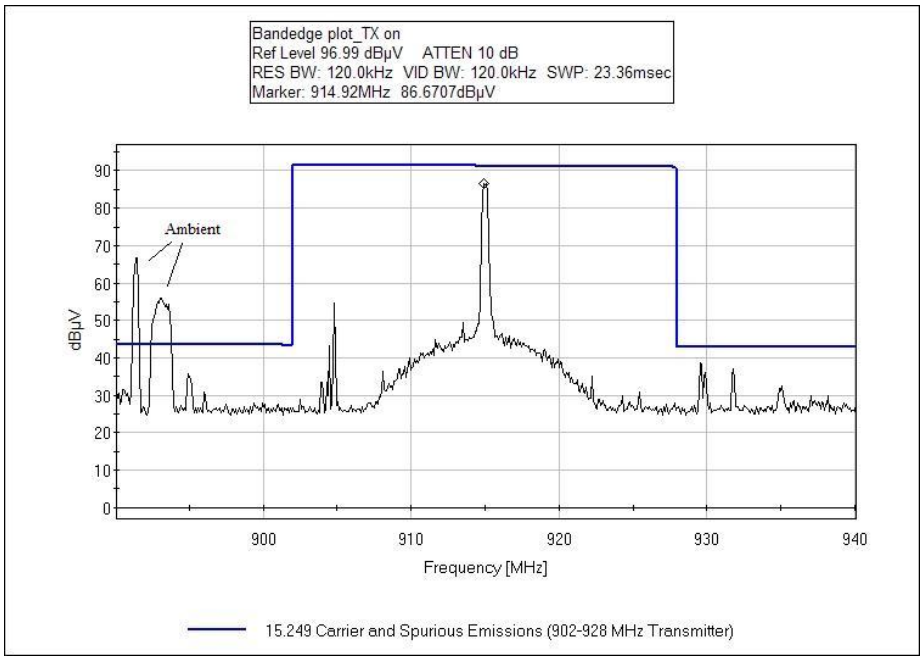
Test Conditions / Setup

The EUT is placed on the wooden table lined with Styrofoam of 10cm thickness. Orientated in the intended position, a temperature sensor is connected to the temperature port. The EUT is set in continuous transmit mode. TX= 914.5-915.5 MHz. The device can be powered with battery (3V) and or DC power supply (5V). The EUT was powered up using a support DC power supply set at 5V as intended and to simulate full battery power
Frequency range of measurement = Fundamental
30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz
Test environment conditions: 21°C, 31% relative humidity, 101kPa

Engineer Name: E. Wong

Test Equipment					
Asset/Serial #	**Description**	**Model**	**Manufacturer**	**Cal Date**	**Cal Due**
AN02672	Spectrum Analyzer	E4446A	Agilent	8/9/2010	8/9/2012
AN01995	Biconilog Antenna	CBL6111C	Chase	3/8/2010	3/8/2012
AN00309	Preamp	8447D	HP	5/7/2010	5/7/2012
ANP05050	Cable	RG223/U	Pasternack	3/21/2011	3/21/2013
ANP05198	Cable	8268	Belden	12/21/2010	12/21/2012

Test Data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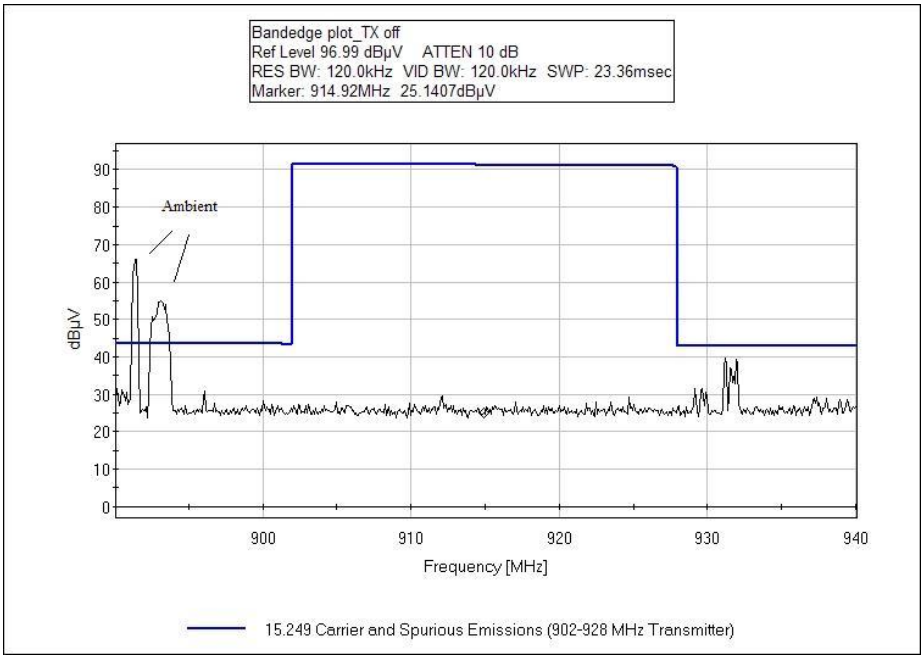
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 23.36msec
Marker: 914.92MHz 86.6707dBµV
Ambient
dBµV
Frequency [MHz]
15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)


Bandedge plot_TX off
Ref Level 96.99 dBµV ATTEN 10 dB
RES BW: 120.0kHz VID BW: 120.0kHz SWP: 23.36msec
Marker: 914.92MHz 25.1407dBµV
Ambient
dBµV
Frequency [MHz]
15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)

Test Setup Photos

15.249(b)(d) Field Strength of Spurious / Harmonic Emissions

Test Data Sheets

Test Location: CKC Laboratories, Inc. • 110 N. Olinda Place • Brea, CA 92823 • (714) 993-6112

Customer: **SmartLabs, Inc.**
Specification: **15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter)**
Work Order #: **92706** Date: 1/26/2012
Test Type: **Maximized Emissions** Time: 10:57:57
Equipment: **TempLinc- INSTEON Wireless Zone Thermostat with Humidity** Sequence#: 2
Manufacturer: SmartLabs, Inc. Tested By: E. Wong
Model: 2441ZTH
S/N: NA

***Test Equipment*:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02672	Spectrum Analyzer	E4446A	8/9/2010	8/9/2012
T2	AN01995	Biconilog Antenna	CBL6111C	3/8/2010	3/8/2012
T3	AN00309	Preamp	8447D	5/7/2010	5/7/2012
T4	ANP05050	Cable	RG223/U	3/21/2011	3/21/2013
T5	ANP05198	Cable	8268	12/21/2010	12/21/2012
T6	AN00849	Horn Antenna	3115	4/23/2010	4/23/2012
T7	AN00786	Preamp	83017A	8/5/2010	8/5/2012
T8	AN03239	Cable	32022-2-29094K-24TC	8/30/2011	8/30/2013
T9	ANP05421	Cable	Sucoflex 104A	2/12/2010	2/12/2012
T10	ANP05563	Cable	ANDL-1-PNMN-48	9/3/2010	9/3/2012
T11	AN02749	High Pass Filter	9SH10-1000/T10000-O/O	11/22/2011	11/22/2013
	AN00314	Loop Antenna	6502	6/30/2010	6/30/2012

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

Function	Manufacturer	Model #	S/N
TempLinc - INSTEON Wireless Zone Thermostat with Humidity*	SmartLabs, Inc.	2441ZTH	NA

Support Devices:

Function	Manufacturer	Model #	S/N
DC Power supply	Topward	6306D	988614

Test Conditions / Notes:

The EUT is placed on the wooden table lined with Styrofoam of 10cm thickness. Orientated in the intended position, a temperature sensor is connected to the temperature port.
The EUT is set in continuous transmit mode.
TX= 914.5-915.5 MHz.
The device can be powered with battery (3V) and /or DC power supply (5V). The EUT was powered up using a support DC power supply set at 5V as intended and to simulate full battery power
Frequency range of measurement = 9 kHz- 10 GHz.
9 kH -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-10000 MHz; RBW=1 MHz, VBW=1 MHz.
Test environment conditions: 21°C, 31% relative humidity, 101kPa

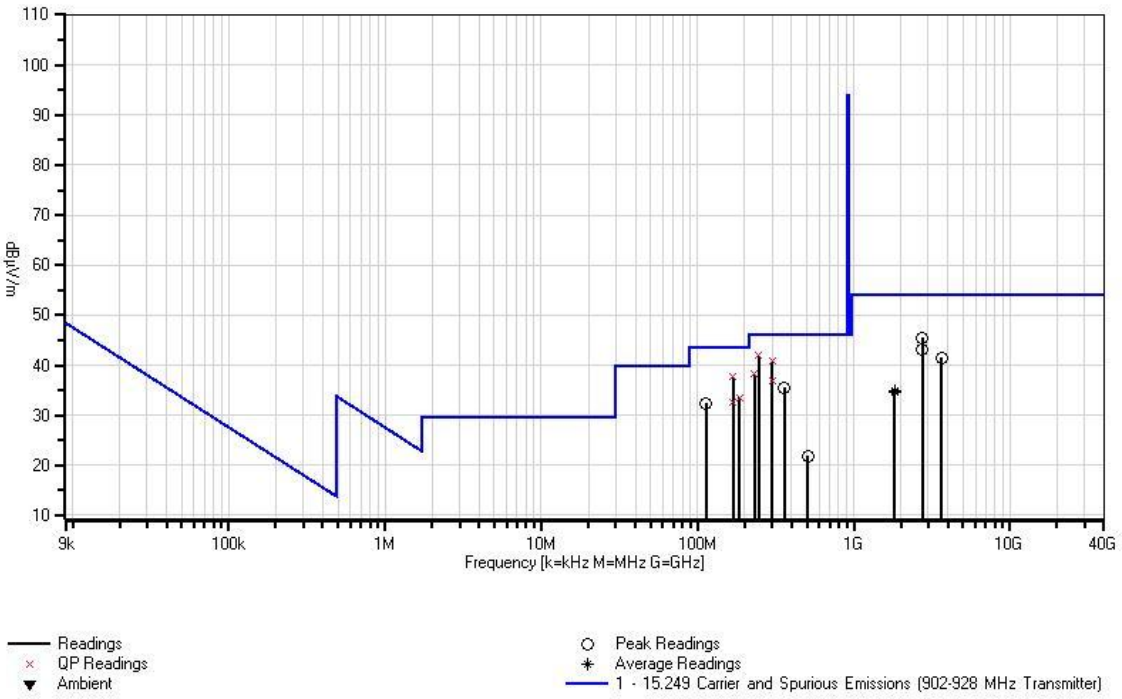
Ext Attn: 0 dB

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

#	Freq	Rdng	T1 T5 T9	T2 T6 T10	T3 T7 T11	T4 T8	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV/m	dBµV/m	dB	Ant
1	246.450M	54.4	+0.0	+12.4	-27.8	+0.2	+0.0	42.0	46.0	-4.0	Vert
	QP		+2.8	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
^	246.450M	61.8	+0.0	+12.4	-27.8	+0.2	+0.0	49.4	46.0	+3.4	Vert
			+2.8	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
3	301.333M	51.9	+0.0	+13.4	-27.8	+0.2	+0.0	40.8	46.0	-5.2	Horiz
	QP		+3.1	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
^	301.333M	56.2	+0.0	+13.4	-27.8	+0.2	+0.0	45.1	46.0	-0.9	Horiz
			+3.1	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
5	169.333M	53.3	+0.0	+9.7	-27.8	+0.2	+0.0	37.7	43.5	-5.8	Horiz
	QP		+2.3	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
^	169.333M	60.0	+0.0	+9.7	-27.8	+0.2	+0.0	44.4	43.5	+0.9	Horiz
			+2.3	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
7	231.583M	51.7	+0.0	+11.4	-27.8	+0.2	+0.0	38.2	46.0	-7.8	Horiz
	QP		+2.7	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
^	231.583M	58.9	+0.0	+11.4	-27.8	+0.2	+0.0	45.4	46.0	-0.6	Horiz
			+2.7	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
9	2744.950M	48.3	+0.0	+0.0	+0.0	+0.0	+0.0	45.5	54.0	-8.5	Horiz
			+0.0	+29.3	-37.8	+0.4					
			+1.4	+3.3	+0.6						
10	301.617M	47.9	+0.0	+13.4	-27.8	+0.2	+0.0	36.8	46.0	-9.2	Vert
	QP		+3.1	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						
^	301.617M	53.9	+0.0	+13.4	-27.8	+0.2	+0.0	42.8	46.0	-3.2	Vert
			+3.1	+0.0	+0.0	+0.0					
			+0.0	+0.0	+0.0						

12	185.583M QP	49.8	+0.0 +2.4 +0.0	+9.0 +0.0 +0.0	-27.8 +0.0 +0.0	+0.2 +0.0	+0.0	33.6	43.5	-9.9	Horiz
^	185.583M	59.4	+0.0 +2.4 +0.0	+9.0 +0.0 +0.0	-27.8 +0.0 +0.0	+0.2 +0.0	+0.0	43.2	43.5	-0.3	Horiz
14	360.780M	44.6	+0.0 +3.4 +0.0	+15.1 +0.0 +0.0	-27.8 +0.0 +0.0	+0.3 +0.0	+0.0	35.6	46.0	-10.4	Vert
15	169.500M QP	48.3	+0.0 +2.3 +0.0	+9.7 +0.0 +0.0	-27.8 +0.0 +0.0	+0.2 +0.0	+0.0	32.7	43.5	-10.8	Vert
^	169.500M	56.9	+0.0 +2.3 +0.0	+9.7 +0.0 +0.0	-27.8 +0.0 +0.0	+0.2 +0.0	+0.0	41.3	43.5	-2.2	Vert
17	2744.917M	45.9	+0.0 +0.0 +1.4	+0.0 +29.3 +3.3	+0.0 -37.8 +0.6	+0.0 +0.4	+0.0	43.1	54.0	-10.9	Vert
18	113.467M	46.9	+0.0 +1.8 +0.0	+11.3 +0.0 +0.0	-27.8 +0.0 +0.0	+0.2 +0.0	+0.0	32.4	43.5	-11.1	Vert
19	3659.967M	41.1	+0.0 +0.0 +1.7	+0.0 +31.3 +4.1	+0.0 -37.4 +0.3	+0.0 +0.4	+0.0	41.5	54.0	-12.5	Vert
20	1830.100M Ave	41.4	+0.0 +0.0 +1.0	+0.0 +27.2 +2.7	+0.0 -38.2 +0.4	+0.0 +0.3	+0.0	34.8	54.0	-19.2	Vert
^	1830.100M	54.3	+0.0 +0.0 +1.0	+0.0 +27.2 +2.7	+0.0 -38.2 +0.4	+0.0 +0.3	+0.0	47.7	54.0	-6.3	Vert
22	1830.050M Ave	41.2	+0.0 +0.0 +1.0	+0.0 +27.2 +2.7	+0.0 -38.2 +0.4	+0.0 +0.3	+0.0	34.6	54.0	-19.4	Horiz
^	1830.050M	54.4	+0.0 +0.0 +1.0	+0.0 +27.2 +2.7	+0.0 -38.2 +0.4	+0.0 +0.3	+0.0	47.8	54.0	-6.2	Horiz
24	509.930M	26.6	+0.0 +4.1 +0.0	+18.4 +0.0 +0.0	-27.6 +0.0 +0.0	+0.4 +0.0	+0.0	21.9	46.0	-24.1	Vert

CKC Laboratories, Inc. Date: 1/26/2012 Time: 10:57:57 SmartLabs, Inc. WO#: 92706
15.249 Carrier and Spurious Emissions (902-928 MHz Transmitter) Test Distance: 3 Meters Sequence#: 2 Ext
ATTN: 0 dB



Test Setup Photos

RSS-210

99 % Bandwidth

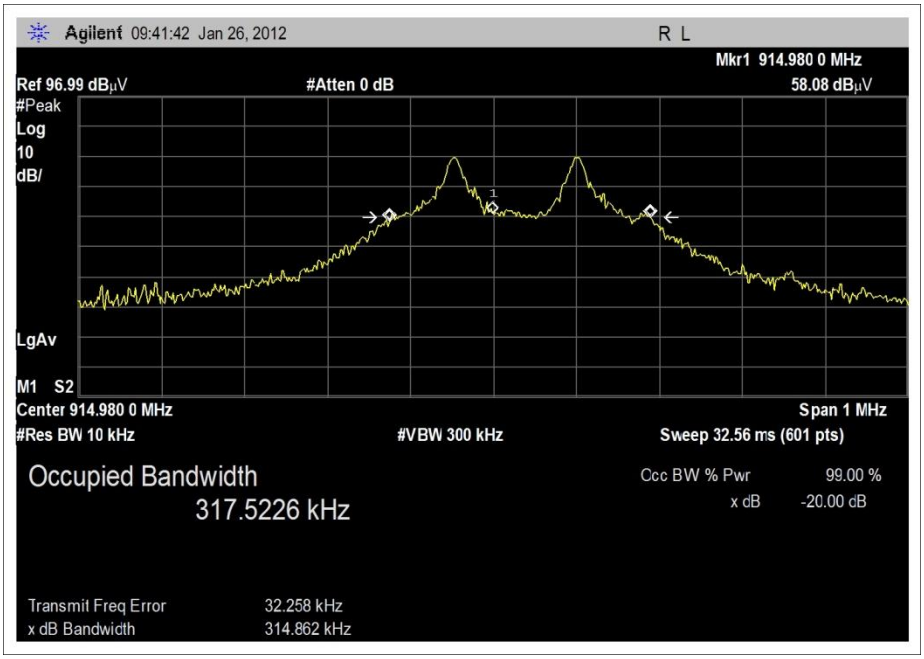
Test Conditions / Setup

The EUT is placed on the wooden table lined with Styrofoam of 10cm thickness. Orientated in the intended position, a temperature sensor is connected to the temperature port. The EUT is set in continuous transmit mode. TX= 914.5-915.5 MHz. The device can be powered with battery (3V) and or DC power supply (5V). The EUT was powered up using a support DC power supply set at 5V as intended and to simulate full battery power.
Frequency range of measurement = Fundamental
30 MHz-1000 MHz; RBW=120 kHz, VBW=120 kHz
Test environment conditions: 21°C, 31% relative humidity, 101kPa

Engineer Name: E. Wong

Test Equipment					
Asset/Serial #	**Description**	**Model**	**Manufacturer**	**Cal Date**	**Cal Due**
AN02672	Spectrum Analyzer	E4446A	Agilent	8/9/2010	8/9/2012
AN01995	Biconilog Antenna	CBL6111C	Chase	3/8/2010	3/8/2012
AN00309	Preamp	8447D	HP	5/7/2010	5/7/2012
ANP05050	Cable	RG223/U	Pasternack	3/21/2011	3/21/2013
ANP05198	Cable	8268	Belden	12/21/2010	12/21/2012

Test Data



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 dBµV/m, the spectrum analyzer reading in dBµV was corrected by using the following formula. This reading was then compared to the applicable specification limit.

SAMPLE CALCULATIONS		
	Meter reading	(dBµV)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dBµV/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. 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	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.