



ADDENDUM TO DUST NETWORKS TEST REPORT FC08-058

FOR THE

2.4 GHZ WIRELESS ULPM, LM2610

FCC PART 15 SUBPART C SECTIONS 15.207 & 15.247,
SUBPART B SECTIONS 15.107 & 15.109 CLASS B AND RSS 210 ISSUE 7

TESTING

DATE OF ISSUE: SEPTEMBER 22, 2008

PREPARED FOR:

Dust Networks
30695 Huntwood Avenue
Hayward, CA 94544

PREPARED BY:

Mary Ellen Clayton
CKC Laboratories, Inc.
5046 Sierra Pines Drive
Mariposa, CA 95338

W.O. No.: 88108

Date of test: May 29 - June 17, 2008

Report No.: FC08-058A

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TABLE OF CONTENTS

Administrative Information	3
Approvals	3
Summary of Results	4
Conditions During Testing	4
FCC 15.31(m) Number Of Channels	5
FCC 15.33(a) Frequency Ranges Tested	5
FCC 15.203 Antenna Requirements	5
EUT Operating Frequency	5
Equipment Under Test (EUT) Description	5
Equipment Under Test	5
Peripheral Devices	5
Report of Emissions Measurements	6
Testing Parameters	6
FCC 15.107 – AC Conducted Emissions	8
FCC 15.109 – Radiated Emissions	15
FCC 15.207 – AC Conducted Emissions	18
FCC 15.247(a)(2) - 6dB Bandwidth	25
FCC 15.247(b)(3) - RF Power Output	28
FCC 15.247(d) – Antenna Conducted Spurious Emissions	30
FCC 15.247(d) – OATS Radiated Spurious Emissions	39
FCC 15.247(e) - Power Spectral Density	46
RSS 210 - 99% Bandwidth	50

ADMINISTRATIVE INFORMATION

DATE OF TEST: May 29 - June 17, 2008

DATE OF RECEIPT: May 29, 2008

REPRESENTATIVE: Gordon Charles

MANUFACTURER:
Dust Networks
30695 Huntwood Avenue
Hayward, CA 94544

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

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

PURPOSE OF TEST:

Original Report: To perform the testing of the 2.4 GHz Wireless ULPM, LM2610 with the requirements for FCC Part 15 Subpart C Sections 15.207 & 15.247, Subpart B Sections 15.107 & 15.109 Class B and RSS 210 devices.

Addendum A: To revise the frequency range of testing on page 16, the units on pages 31-37, and the test conditions on page 47.

APPROVALS

QUALITY ASSURANCE:

Steve Behm, Director of Engineering Services

TEST PERSONNEL:



Randy Clark, EMC Engineer



Mike Wilkinson, Senior EMC Engineer/Lab Manager

SUMMARY OF RESULTS

Test	Specification/Method	Results
Radiated Emissions	FCC Subpart B Section 15.107 Class B	Pass
Mains Conducted Emissions	FCC Subpart B Section 15.109 Class B	Pass
Radiated Emissions	FCC Subpart C Section 15.207	Pass
6dB Bandwidth	FCC Subpart C Section 15.247(a)(2)	Pass
RF Power Output	FCC Subpart C Section 15.247(b)(3)	Pass
Antenna Conducted Spurious Emissions	FCC Subpart C Section 15.247(d)	Pass
OATS Radiated Spurious Emissions	FCC Subpart C Section 15.247(d)	Pass
Peak Power Spectral Density	FCC Subpart C Section 15.247(e)	Pass
99% Bandwidth	RSS 210 Issue 7/RSS Gen Issue 2	Pass
Site File Numbers	FCC Site No. 784962 Industry of Canada File No. IC 3082A-1	

CONDITIONS DURING TESTING

No modifications to the EUT were necessary during testing.

FCC 15.31(m) Number Of Channels

This device was tested on three channels.

FCC 15.33(a) Frequency Ranges Tested

15.107 Conducted Emissions: 150 kHz – 30 MHz

15.109 Radiated Emissions: 9 kHz – 1000 MHz

15.207 Conducted Emissions: 150 kHz – 30 MHz

15.247 Radiated Emissions: 9 kHz – 26GHz

FCC 15203 Antenna Requirements

The antenna is removable and unique; therefore the EUT complies with Section 15.203 of the FCC rules.

EUT Operating Frequency

The EUT was operating at 2405-2475MHz.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

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

EQUIPMENT UNDER TEST

2.4 GHz Wireless ULPM

Manuf: Dust Networks
Model: LM2610
Serial: 052908 & 061608
FCC ID: pending

PERIPHERAL DEVICES

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

Host PCB

Manuf: Dust Networks
Model: 600-0147
Serial: 052908

Support Computer

Manuf: Micron
Model: ClientPro Vxe
Serial: CKC Asset 803

DC Power Supply

Manuf: HP
Model: 6205C
Serial: 228A01775

REPORT OF EMISSIONS MEASUREMENTS

TESTING PARAMETERS

TEMPERATURE AND HUMIDITY DURING TESTING

The temperature during testing was within +15°C and + 35°C.

The relative humidity was between 20% and 75%.

The cables were routed consistent with the typical application by varying the configuration of the test sample. Interface cables were connected to the available ports of the test unit. The effect of varying the position of the cables was investigated to find the configuration that produced maximum emissions. Cables were of the type and length specified in the individual requirements. The length of cable that produced maximum emissions was selected.

The equipment under test (EUT) was set up in a manner that represented its normal use, as shown in the setup photographs. Any special conditions required for the EUT to operate normally are identified in the comments that accompany the emissions tables.

The emissions data was taken with a spectrum analyzer or receiver. Incorporating the applicable correction factors for distance, antenna, cable loss and amplifier gain, the data was reduced as shown in the table below. The corrected data was then compared to the applicable emission limits. Preliminary and final measurements were taken in order to ensure that all emissions from the EUT were found and maximized.

CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in 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	(dB μ V)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dB μ V/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used. When conducted emissions testing was performed, a 10 dB external attenuator was used with internal offset correction in the analyzer.

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "Peak" mode. Whenever a "Quasi-Peak" or "Average" reading is listed as one of the highest readings, this is indicated as a "QP" or an "Ave" on the appropriate rows of the data sheets. The following paragraphs describe in more detail the detector functions and when they were used to obtain the emissions data.

Peak

In this mode, the spectrum analyzer/receiver readings were recorded all emissions at their peak value as the frequency band selected was scanned. By combining this function with another feature of the measuring device called "peak hold," the measuring device had the ability to measure transients or low duty cycle transient emission peak levels. In this mode the measuring device made a slow scan across the frequency band selected and measured the peak emission value found at each frequency across the band.

Quasi-Peak

When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the quasi-peak detector.

Average

For certain frequencies, average measurements may be made using the spectrum analyzer/receiver. To make these measurements, the test engineer reduces the video bandwidth on the measuring device until the modulation of the signal is filtered out. At this point the measuring device is set into the linear mode and the scan time is reduced.

FCC 15.107 – AC CONDUCTED EMISSIONS

Test Setup Photos



Test Data Sheets

Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209 966-5240

Customer: **Dust Networks**
 Specification: **FCC 15.107(a) Class B - AVE**
 Work Order #: **88108** Date: 6/6/2008
 Test Type: **Conducted Emissions** Time: 2:51:37 PM
 Equipment: **2.4 GHz Wireless ULPM** Sequence#: 21
 Manufacturer: Dust Networks Tested By: Randal Clark
 Model: LM2610 120V 60Hz
 S/N: 052908

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
150kHz HP Filter TTE	G7754	01/22/2008	01/22/2010	02608
LISN, 8028-50-TS-24-BNC	8379276, 280	05/07/2007	05/07/2009	1248 & 1249
Site D Conducted Cable	N/A	03/06/2008	03/06/2010	CAB-SITE INT LISN 100k-30M

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
2.4 GHz Wireless ULPM*	Dust Networks	LM2610	052908

Support Devices:

Function	Manufacturer	Model #	S/N
Host PCB	Dust Networks	600-0147	052908
DC Power Supply	HP	6205C	228A01775
Support Computer	Micron	ClientPro Vxe	CKC Asset 803

Test Conditions / Notes:

EUT is an 802.15.4 transmitter and is operating in receive mode. Support computer equipment and DC power supply are outside the testing area. EUT is powered by 3.3 VDC via the host PCB. The Support computer is connected to the Host serial port and is controlling the EUT via HyperTerminal. Standard EUT antenna is supported vertically on piece of styrofoam. Frequency range investigated: 150kHz to 30 MHz. Temperature: 25°C, Relative Humidity: 39%.

Transducer Legend:

T1=CAB-SITED INT LISN 100k-30M	T2=LISN -280 - BK-AN1248
T3=Filter 150kHz HP AN02608	

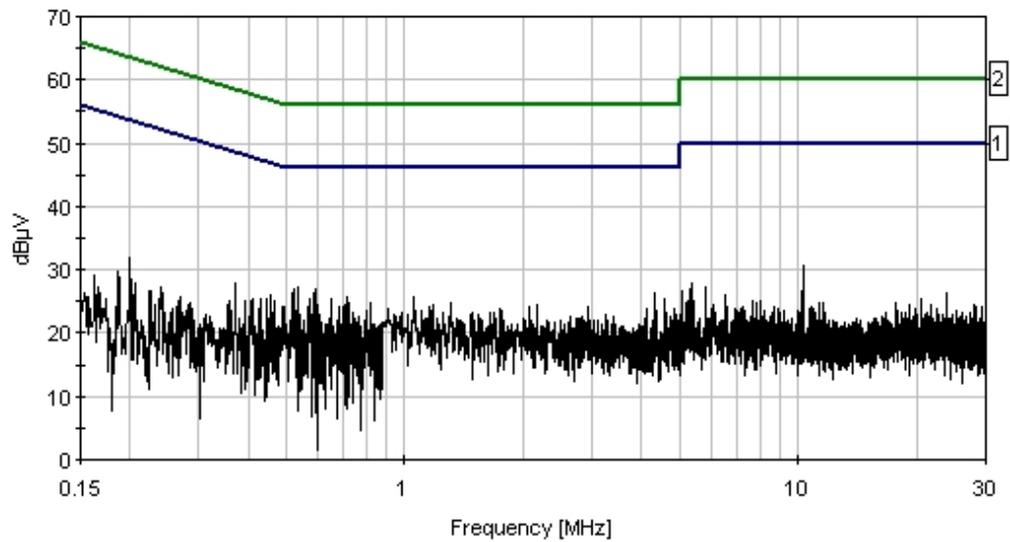
Measurement Data:

#	Freq MHz	Rdng dB μ V	Reading listed by margin.			Dist Table	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant
			T1 dB	T2 dB	T3 dB					
1	534.692k	14.9	+11.9	+0.2	+0.3	+0.0	27.3	46.0	-18.7	Black
2	520.875k	14.7	+11.9	+0.2	+0.3	+0.0	27.1	46.0	-18.9	Black
3	591.414k	14.5	+11.8	+0.2	+0.3	+0.0	26.8	46.0	-19.2	Black
4	10.274M	19.1	+10.8	+0.5	+0.2	+0.0	30.6	50.0	-19.4	Black

5	587.778k	14.1	+11.8	+0.2	+0.3	+0.0	26.4	46.0	-19.6	Black
6	4.339M	14.8	+11.0	+0.3	+0.1	+0.0	26.2	46.0	-19.8	Black
7	712.130k	13.4	+11.8	+0.2	+0.3	+0.0	25.7	46.0	-20.3	Black
8	1.056M	13.4	+11.8	+0.2	+0.2	+0.0	25.6	46.0	-20.4	Black
9	652.499k	13.2	+11.8	+0.2	+0.3	+0.0	25.5	46.0	-20.5	Black
10	4.594M	14.2	+10.9	+0.3	+0.1	+0.0	25.5	46.0	-20.5	Black
11	571.052k	13.1	+11.8	+0.2	+0.3	+0.0	25.4	46.0	-20.6	Black
12	371.071k	15.4	+12.0	+0.2	+0.2	+0.0	27.8	48.5	-20.7	Black
13	456.154k	13.7	+11.9	+0.2	+0.2	+0.0	26.0	46.8	-20.8	Black
14	724.493k	12.6	+11.8	+0.2	+0.3	+0.0	24.9	46.0	-21.1	Black
15	815.394k	12.6	+11.8	+0.2	+0.3	+0.0	24.9	46.0	-21.1	Black
16	1.311M	12.9	+11.6	+0.2	+0.2	+0.0	24.9	46.0	-21.1	Black
17	446.700k	13.2	+11.9	+0.2	+0.2	+0.0	25.5	46.9	-21.4	Black
18	464.880k	12.9	+11.9	+0.2	+0.2	+0.0	25.2	46.6	-21.4	Black
19	525.238k	12.2	+11.9	+0.2	+0.3	+0.0	24.6	46.0	-21.4	Black
20	603.049k	12.3	+11.8	+0.2	+0.3	+0.0	24.6	46.0	-21.4	Black
21	1.179M	12.5	+11.7	+0.2	+0.2	+0.0	24.6	46.0	-21.4	Black
22	708.494k	12.2	+11.8	+0.2	+0.3	+0.0	24.5	46.0	-21.5	Black
23	2.162M	12.7	+11.4	+0.2	+0.2	+0.0	24.5	46.0	-21.5	Black
24	200.904k	19.7	+11.8	+0.2	+0.2	+0.0	31.9	53.6	-21.7	Black
25	1.154M	12.2	+11.7	+0.2	+0.2	+0.0	24.3	46.0	-21.7	Black
26	2.923M	12.7	+11.2	+0.3	+0.1	+0.0	24.3	46.0	-21.7	Black

27	429.974k	13.1	+12.0	+0.2	+0.2	+0.0	25.5	47.3	-21.8	Black
28	494.696k	11.9	+11.9	+0.2	+0.3	+0.0	24.3	46.1	-21.8	Black
29	698.313k	11.8	+11.8	+0.2	+0.3	+0.0	24.1	46.0	-21.9	Black
30	2.076M	12.3	+11.4	+0.2	+0.2	+0.0	24.1	46.0	-21.9	Black

CKC Laboratories, Inc. Date: 6/6/2008 Time: 2:51:37 PM Dust Networks W/O#: 88108
 FCC 15.107(a) Class B - AVE Test Lead: Black 120V 60Hz Sequence#: 21 Ext ATTN: (EXTATTN)
 Dust Networks M/N LM2610 Receive Mode



— Sweep Data
 — 1 - FCC 15.107(a) Class B - AVE
 — 2 - FCC 15.107(a) Class B - QP

Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209 966-5240

Customer: **Dust Networks**
 Specification: **FCC 15.107(a) Class B - AVE**
 Work Order #: **88108** Date: 6/6/2008
 Test Type: **Conducted Emissions** Time: 2:50:47 PM
 Equipment: **2.4 GHz Wireless ULPM** Sequence#: 20
 Manufacturer: Dust Networks Tested By: Randal Clark
 Model: LM2610 120V 60Hz
 S/N: 052908

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
150kHz HP Filter TTE	G7754	01/22/2008	01/22/2010	02608
LISN, 8028-50-TS-24-BNC	8379276, 280	05/07/2007	05/07/2009	1248 & 1249
Site D Conducted Cable	N/A	03/06/2008	03/06/2010	CAB-SITE INT LISN 100k-30M

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
2.4 GHz Wireless ULPM*	Dust Networks	LM2610	052908

Support Devices:

Function	Manufacturer	Model #	S/N
Host PCB	Dust Networks	600-0147	052908
DC Power Supply	HP	6205C	228A01775
Support Computer	Micron	ClientPro Vxe	CKC Asset 803

Test Conditions / Notes:

EUT is an 802.15.4 transmitter and is operating in receive mode. Support computer equipment and DC power supply are outside the testing area. EUT is powered by 3.3 VDC via the host PCB. The Support computer is connected to the Host serial port and is controlling the EUT via HyperTerminal. Standard EUT antenna is supported vertically on piece of styrofoam. Frequency range investigated: 150kHz to 30 MHz. Temperature: 25°C, Relative Humidity: 39%.

Transducer Legend:

T1=CAB-SITED INT LISN 100k-30M	T2=LISN -276 - WT-AN01248
T3=Filter 150kHz HP AN02608	

Measurement Data:

Reading listed by margin.

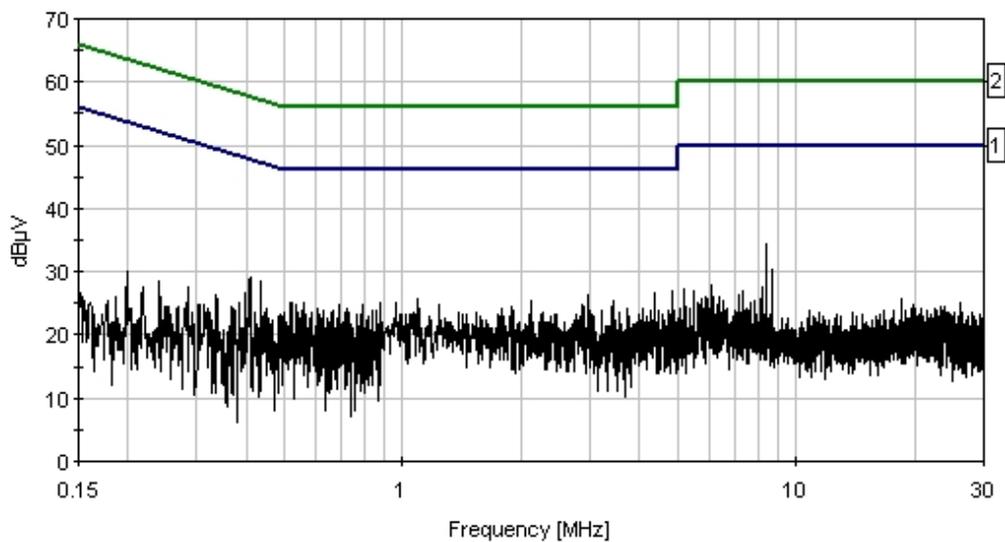
Test Lead: White

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	dB	Dist Table	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant
1	8.427M	22.8	+10.8	+0.8	+0.1	+0.0	34.5	50.0	-15.5	White	
2	409.613k	16.8	+12.0	+0.1	+0.2	+0.0	29.1	47.7	-18.6	White	
3	435.065k	16.2	+12.0	+0.1	+0.2	+0.0	28.5	47.2	-18.7	White	
4	4.858M	15.5	+10.9	+0.5	+0.1	+0.0	27.0	46.0	-19.0	White	

5	4.386M	15.1	+11.0	+0.4	+0.1	+0.0	26.6	46.0	-19.4	White
6	2.953M	14.8	+11.2	+0.3	+0.1	+0.0	26.4	46.0	-19.6	White
7	8.679M	18.5	+10.8	+0.9	+0.1	+0.0	30.3	50.0	-19.7	White
8	1.094M	13.6	+11.7	+0.2	+0.2	+0.0	25.7	46.0	-20.3	White
9	3.416M	13.9	+11.1	+0.3	+0.1	+0.0	25.4	46.0	-20.6	White
10	2.110M	13.5	+11.4	+0.2	+0.2	+0.0	25.3	46.0	-20.7	White
11	966.512k	12.9	+11.8	+0.2	+0.2	+0.0	25.1	46.0	-20.9	White
12	520.148k	12.6	+11.9	+0.2	+0.3	+0.0	25.0	46.0	-21.0	White
13	558.690k	12.8	+11.8	+0.1	+0.3	+0.0	25.0	46.0	-21.0	White
14	875.752k	12.7	+11.8	+0.2	+0.3	+0.0	25.0	46.0	-21.0	White
15	2.842M	13.3	+11.2	+0.3	+0.1	+0.0	24.9	46.0	-21.1	White
16	536.874k	12.3	+11.9	+0.2	+0.3	+0.0	24.7	46.0	-21.3	White
17	686.678k	12.5	+11.8	+0.1	+0.3	+0.0	24.7	46.0	-21.3	White
18	791.396k	12.5	+11.8	+0.1	+0.3	+0.0	24.7	46.0	-21.3	White
19	1.243M	12.6	+11.7	+0.2	+0.2	+0.0	24.7	46.0	-21.3	White
20	397.977k	14.2	+12.0	+0.1	+0.2	+0.0	26.5	47.9	-21.4	White
21	2.889M	13.0	+11.2	+0.3	+0.1	+0.0	24.6	46.0	-21.4	White
22	1.885M	12.6	+11.4	+0.2	+0.2	+0.0	24.4	46.0	-21.6	White
23	1.796M	12.4	+11.5	+0.2	+0.2	+0.0	24.3	46.0	-21.7	White
24	3.739M	12.8	+11.1	+0.3	+0.1	+0.0	24.3	46.0	-21.7	White
25	4.071M	12.9	+11.0	+0.3	+0.1	+0.0	24.3	46.0	-21.7	White
26	604.504k	11.9	+11.8	+0.1	+0.3	+0.0	24.1	46.0	-21.9	White

27	725.947k	11.9	+11.8	+0.1	+0.3	+0.0	24.1	46.0	-21.9	White
28	4.267M	12.5	+11.0	+0.4	+0.1	+0.0	24.0	46.0	-22.0	White
29	4.756M	12.5	+10.9	+0.5	+0.1	+0.0	24.0	46.0	-22.0	White
30	4.922M	12.5	+10.9	+0.5	+0.1	+0.0	24.0	46.0	-22.0	White

CKC Laboratories, Inc. Date: 6/6/2008 Time: 2:50:47 PM Dust Networks WO#: 88108
 FCC 15.107(a) Class B - AVE Test Lead: White 120V 60Hz Sequence#: 20 Ext ATTN: (EXTATTN)
 Dust Networks M/N LM2610 Receive Mode



— Sweep Data
 — 1 - FCC 15.107(a) Class B - AVE
 — 2 - FCC 15.107(a) Class B - QP

FCC 15.109 – RADIATED EMISSIONS

ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz

Test Setup Photos



Test Data Sheets

Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209 966-5240

Customer: **Dust Networks**
 Specification: **15.109 CLASS B**
 Work Order #: **88108**
 Test Type: **Radiated Emissions**
 Equipment: **2.4 GHz Wireless ULPM**
 Manufacturer: Dust Networks
 Model: LM2610
 S/N: 052908

Date: 6/2/2008
 Time: 15:49:16
 Sequence#: 15
 Tested By: Randal Clark

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8593EM SA	3624A00159	03/23/2007	03/23/2009	02111
HP 8447D Preamp	1937A02604	03/14/2007	03/14/2009	00099
HP 8449B Preamp	3008A00301	12/13/2006	12/13/2008	2010
Site D Rad Emiss-10m	N/A	03/06/2008	03/06/2010	CAB-SITED10M-9k-1G
3M SITE CABLE 20GHZ	NA	03/06/2008	03/06/2010	SITED3M1
Cable 2' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03011
Cable 2' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03008
Chase CBL6111C Bilog	2456	12/30/2006	12/30/2008	01991
EMCO 3115 Horn Antenna	8006-3413	03/17/2007	03/17/2009	00327
ARA MWH-1826/B Horn Antenna	1005	11/26/2006	11/26/2008	02046
Andrews Hardline (25')	CKC 1012	04/23/2007	04/23/2009	P01012

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
2.4 GHz Wireless ULPM*	Dust Networks	LM2610	052908

Support Devices:

Function	Manufacturer	Model #	S/N
Host PCB	Dust Networks	600-0147	052908
DC Power Supply	HP	6205C	228A01775
Support Computer	Micron	ClientPro Vxe	CKC Asset 803

Test Conditions / Notes:

EUT is an 802.15.4 transmitter and is operating in receive mode. Support computer equipment and DC power supply are outside the testing area. EUT is powered by 3.3 VDC via the host PCB. The Support computer is connected to the Host serial port and is controlling the EUT via HyperTerminal. Standard EUT antenna is supported vertically on piece of styrofoam. Frequency range investigated: 30 MHz to 12.5 GHz. No emissions detected above 1 GHz. Temperature: 25°C, Relative Humidity: 39%.

Transducer Legend:

T1=AMP AN00099	T2=CAB-SITED10M-9k-1G
T3=ANT AN01991 25-1000MHz	

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

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	Dist Table dB	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	51.000M	48.4	-27.1	+1.4	+9.1	+0.0	31.8	40.0	-8.2	Vert
2	46.250M	44.4	-27.1	+1.4	+10.7	+0.0	29.4	40.0	-10.6	Vert
3	49.130M	44.2	-27.1	+1.4	+9.7	+0.0	28.2	40.0	-11.9	Vert
4	52.880M	44.7	-27.1	+1.5	+8.6	+0.0	27.7	40.0	-12.3	Vert
5	60.000M	46.2	-27.2	+1.6	+6.8	+0.0	27.4	40.0	-12.6	Vert
6	58.750M	44.1	-27.2	+1.6	+7.1	+0.0	25.6	40.0	-14.4	Vert
7	602.283M	33.9	-28.0	+5.5	+19.7	+0.0	31.1	46.0	-14.9	Vert

8	64.900M	43.4	-27.1	+1.7	+6.5	+0.0	24.5	40.0	-15.5	Vert
9	600.013M	33.2	-28.0	+5.5	+19.7	+0.0	30.4	46.0	-15.6	Vert
10	680.013M	31.7	-27.8	+5.8	+20.5	+0.0	30.2	46.0	-15.8	Vert
11	51.038M	40.4	-27.1	+1.4	+9.1	+0.0	23.8	40.0	-16.2	Horiz
12	64.360M	42.7	-27.2	+1.6	+6.5	+0.0	23.6	40.0	-16.4	Vert
13	65.800M	42.2	-27.1	+1.7	+6.4	+0.0	23.2	40.0	-16.8	Vert
14	565.765M	32.2	-27.9	+5.3	+19.2	+0.0	28.8	46.0	-17.2	Vert
15	120.000M	39.4	-27.0	+2.2	+11.6	+0.0	26.2	43.5	-17.3	Vert
16	52.188M	39.4	-27.1	+1.4	+8.8	+0.0	22.5	40.0	-17.5	Horiz
17	51.750M	38.9	-27.1	+1.4	+8.9	+0.0	22.1	40.0	-18.0	Horiz
18	52.625M	38.9	-27.1	+1.5	+8.7	+0.0	22.0	40.0	-18.0	Horiz
19	74.630M	40.4	-27.1	+1.7	+6.9	+0.0	21.9	40.0	-18.1	Vert
20	52.925M	38.8	-27.1	+1.5	+8.6	+0.0	21.8	40.0	-18.2	Horiz
21	56.850M	39.4	-27.2	+1.5	+7.6	+0.0	21.3	40.0	-18.7	Vert
22	69.630M	40.2	-27.1	+1.7	+6.2	+0.0	21.0	40.0	-19.0	Vert
23	160.000M	35.0	-26.9	+2.6	+10.7	+0.0	21.4	43.5	-22.1	Vert
24	240.000M	33.8	-26.4	+3.3	+11.9	+0.0	22.6	46.0	-23.4	Vert
25	360.013M	28.9	-26.8	+4.1	+15.0	+0.0	21.2	46.0	-24.8	Vert
26	200.000M	32.8	-26.7	+3.0	+9.1	+0.0	18.2	43.5	-25.3	Vert
27	320.013M	28.6	-26.5	+3.8	+14.0	+0.0	19.9	46.0	-26.1	Vert
28	346.573M	26.7	-26.7	+4.0	+14.7	+0.0	18.7	46.0	-27.3	Vert

FCC 15.207 – AC CONDUCTED EMISSIONS

ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	9kHz	150kHz	200Hz
CONDUCTED EMISSIONS	150kHz	30MHz	9kHz
CONDUCTED EMISSIONS	30MHz	26GHz	100kHz

Test Setup Photos



Test Data Sheets

Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209 966-5240

Customer: **Dust Networks**
 Specification: **FCC 15.207 - AVE**
 Work Order #: **88108** Date: 6/6/2008
 Test Type: **Conducted Emissions** Time: 2:46:03 PM
 Equipment: **2.4 GHz Wireless ULPM** Sequence#: 18
 Manufacturer: Dust Networks Tested By: Randal Clark
 Model: LM2610 120V 60Hz
 S/N: 052908

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
150kHz HP Filter TTE	G7754	01/22/2008	01/22/2010	02608
LISN, 8028-50-TS-24-BNC	8379276, 280	05/07/2007	05/07/2009	1248 & 1249
Site D Conducted Cable	N/A	03/06/2008	03/06/2010	CAB-SITE INT LISN 100k-30M

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
2.4 GHz Wireless ULPM*	Dust Networks	LM2610	052908

Support Devices:

Function	Manufacturer	Model #	S/N
Host PCB	Dust Networks	600-0147	052908
DC Power Supply	HP	6205C	228A01775
Support Computer	Micron	ClientPro Vxe	CKC Asset 803

Test Conditions / Notes:

EUT is an 802.15.4 transmitter and is operating on the center channel without modulation at maximum output. Support computer equipment and DC power supply are outside the testing area. EUT is powered by 3.3 VDC via the host PCB. The Support computer is connected to the Host serial port and is controlling the EUT via HyperTerminal. Standard EUT antenna is supported vertically on piece of styrofoam. Frequency range investigated: 150kHz to 30 MHz. Temperature: 25°C, Relative Humidity: 39%.

Transducer Legend:

T1=CAB-SITED INT LISN 100k-30M	T2=LISN -280 - BK-AN1248
T3=Filter 150kHz HP AN02608	

Measurement Data:

Reading listed by margin.

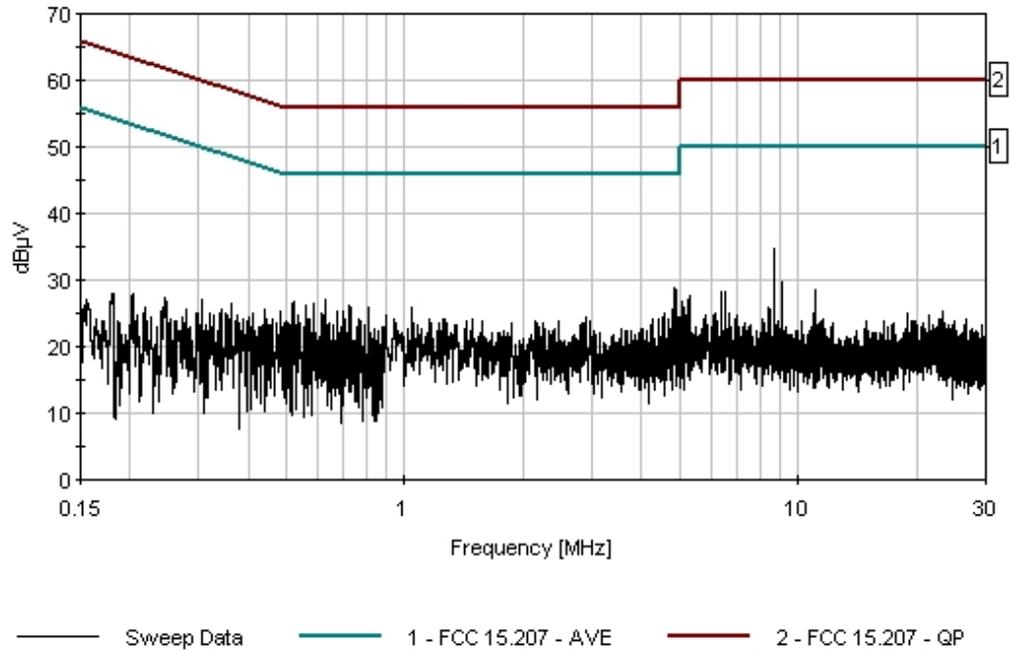
Test Lead: Black

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	Dist dB	Table	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant
1	8.679M	23.5	+10.8	+0.4	+0.1	+0.0		34.8	50.0	-15.2	Black
2	4.858M	17.6	+10.9	+0.3	+0.1	+0.0		28.9	46.0	-17.1	Black
3	4.922M	17.1	+10.9	+0.3	+0.1	+0.0		28.4	46.0	-17.6	Black
4	627.774k	14.9	+11.8	+0.2	+0.3	+0.0		27.2	46.0	-18.8	Black

5	520.875k	14.5	+11.9	+0.2	+0.3	+0.0	26.9	46.0	-19.1	Black
6	587.051k	14.3	+11.8	+0.2	+0.3	+0.0	26.6	46.0	-19.4	Black
7	722.311k	14.0	+11.8	+0.2	+0.3	+0.0	26.3	46.0	-19.7	Black
8	563.053k	13.8	+11.8	+0.2	+0.3	+0.0	26.1	46.0	-19.9	Black
9	732.492k	13.6	+11.8	+0.2	+0.3	+0.0	25.9	46.0	-20.1	Black
10	811.757k	13.6	+11.8	+0.2	+0.3	+0.0	25.9	46.0	-20.1	Black
11	1.047M	13.6	+11.8	+0.2	+0.2	+0.0	25.8	46.0	-20.2	Black
12	9.085M	18.4	+10.8	+0.4	+0.1	+0.0	29.7	50.0	-20.3	Black
13	4.794M	14.2	+10.9	+0.3	+0.1	+0.0	25.5	46.0	-20.5	Black
14	675.043k	12.9	+11.8	+0.2	+0.3	+0.0	25.2	46.0	-20.8	Black
15	699.768k	12.9	+11.8	+0.2	+0.3	+0.0	25.2	46.0	-20.8	Black
16	613.230k	12.8	+11.8	+0.2	+0.3	+0.0	25.1	46.0	-20.9	Black
17	481.606k	13.0	+11.9	+0.2	+0.2	+0.0	25.3	46.3	-21.0	Black
18	4.564M	13.5	+11.0	+0.3	+0.1	+0.0	24.9	46.0	-21.1	Black
19	536.146k	12.3	+11.9	+0.2	+0.3	+0.0	24.7	46.0	-21.3	Black
20	894.216k	12.4	+11.8	+0.2	+0.2	+0.0	24.6	46.0	-21.4	Black
21	441.610k	13.1	+12.0	+0.2	+0.2	+0.0	25.5	47.0	-21.5	Black
22	11.004M	16.8	+10.8	+0.6	+0.2	+0.0	28.4	50.0	-21.6	Black
23	2.897M	12.7	+11.2	+0.3	+0.1	+0.0	24.3	46.0	-21.7	Black
24	4.530M	12.9	+11.0	+0.3	+0.1	+0.0	24.3	46.0	-21.7	Black
25	4.994M	13.0	+10.9	+0.3	+0.1	+0.0	24.3	46.0	-21.7	Black
26	571.052k	11.9	+11.8	+0.2	+0.3	+0.0	24.2	46.0	-21.8	Black
27	761.580k	11.9	+11.8	+0.2	+0.3	+0.0	24.2	46.0	-21.8	Black

28	936.743k	12.0	+11.8	+0.2	+0.2	+0.0	24.2	46.0	-21.8	Black
29	1.490M	12.2	+11.6	+0.2	+0.2	+0.0	24.2	46.0	-21.8	Black
30	6.499M	16.8	+10.9	+0.4	+0.1	+0.0	28.2	50.0	-21.8	Black

CKC Laboratories, Inc. Date: 6/6/2008 Time: 2:46:03 PM Dust Networks WVO#: 88108
 FCC 15.207 - AVE Test Lead: Black 120V 60Hz Sequence#: 18 Ext ATTN: (EXTATTN)
 Dust Networks MN LM2610 Transmit Mode



Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209 966-5240

Customer: **Dust Networks**
 Specification: **FCC 15.207 - AVE**
 Work Order #: **88108** Date: 6/6/2008
 Test Type: **Conducted Emissions** Time: 2:48:09 PM
 Equipment: **2.4 GHz Wireless ULPM** Sequence#: 19
 Manufacturer: Dust Networks Tested By: Randal Clark
 Model: LM2610 120V 60Hz
 S/N: 052908

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
150kHz HP Filter TTE	G7754	01/22/2008	01/22/2010	02608
LISN, 8028-50-TS-24-BNC	8379276, 280	05/07/2007	05/07/2009	1248 & 1249
Site D Conducted Cable	N/A	03/06/2008	03/06/2010	CAB-SITE INT LISN 100k-30M

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
2.4 GHz Wireless ULPM*	Dust Networks	LM2610	052908

Support Devices:

Function	Manufacturer	Model #	S/N
Host PCB	Dust Networks	600-0147	052908
DC Power Supply	HP	6205C	228A01775
Support Computer	Micron	ClientPro Vxe	CKC Asset 803

Test Conditions / Notes:

EUT is an 802.15.4 transmitter and is operating on the center channel without modulation at maximum output. Support computer equipment and DC power supply are outside the testing area. EUT is powered by 3.3 VDC via the host PCB. The Support computer is connected to the Host serial port and is controlling the EUT via HyperTerminal. Standard EUT antenna is supported vertically on piece of styrofoam. Frequency range investigated: 150kHz to 30 MHz. Temperature: 25°C, Relative Humidity: 39%.

Transducer Legend:

T1=CAB-SITED INT LISN 100k-30M	T2=LISN -276 - WT-AN01248
T3=Filter 150kHz HP AN02608	

Measurement Data:

Reading listed by margin.

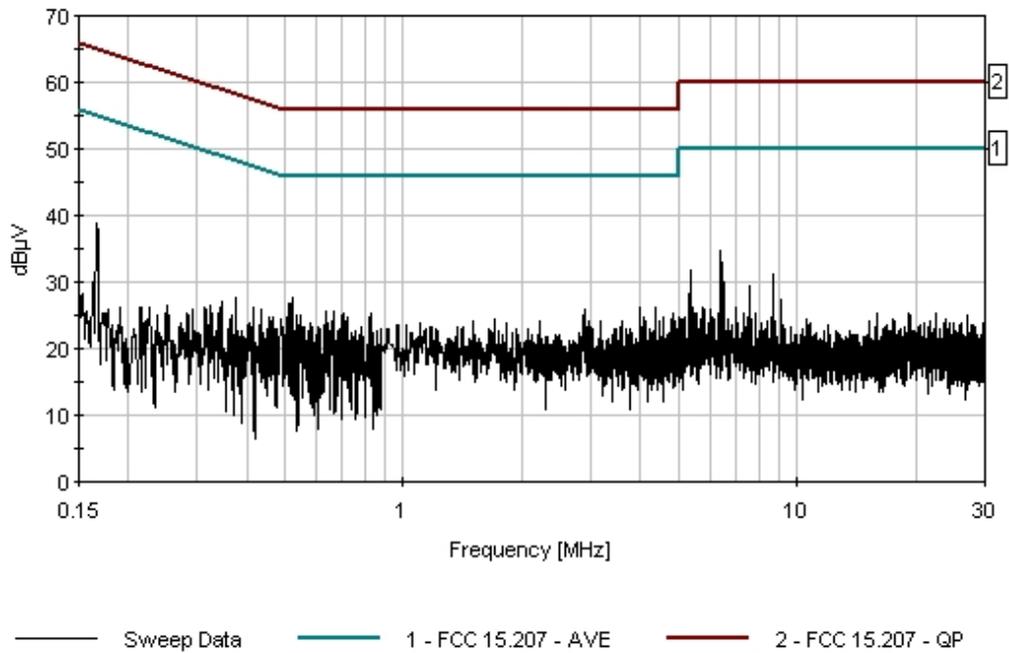
Test Lead: White

#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	T3 dB	Dist dB	Corr dB μ V	Spec dB μ V	Margin dB	Polar Ant
1	6.355M	23.1	+10.9	+0.6	+0.1	+0.0	34.7	50.0	-15.3	White
2	166.726k	25.7	+11.7	+0.1	+1.3	+0.0	38.8	55.1	-16.3	White
3	6.436M	21.3	+10.9	+0.6	+0.1	+0.0	32.9	50.0	-17.1	White
4	5.346M	20.4	+10.9	+0.5	+0.1	+0.0	31.9	50.0	-18.1	White

5	524.511k	15.3	+11.9	+0.2	+0.3	+0.0	27.7	46.0	-18.3	White
6	8.688M	19.5	+10.8	+0.9	+0.1	+0.0	31.3	50.0	-18.7	White
7	514.330k	14.5	+11.9	+0.2	+0.3	+0.0	26.9	46.0	-19.1	White
8	4.003M	14.9	+11.0	+0.3	+0.1	+0.0	26.3	46.0	-19.7	White
9	4.381M	14.6	+11.0	+0.4	+0.1	+0.0	26.1	46.0	-19.9	White
10	2.889M	14.3	+11.2	+0.3	+0.1	+0.0	25.9	46.0	-20.1	White
11	6.517M	18.2	+10.9	+0.7	+0.1	+0.0	29.9	50.0	-20.1	White
12	662.680k	13.5	+11.8	+0.1	+0.3	+0.0	25.7	46.0	-20.3	White
13	636.501k	13.4	+11.8	+0.1	+0.3	+0.0	25.6	46.0	-20.4	White
14	7.589M	17.7	+10.8	+0.8	+0.1	+0.0	29.4	50.0	-20.6	White
15	701.949k	13.1	+11.8	+0.1	+0.3	+0.0	25.3	46.0	-20.7	White
16	4.862M	13.8	+10.9	+0.5	+0.1	+0.0	25.3	46.0	-20.7	White
17	375.434k	15.3	+12.0	+0.1	+0.2	+0.0	27.6	48.4	-20.8	White
18	824.120k	13.0	+11.8	+0.1	+0.3	+0.0	25.2	46.0	-20.8	White
19	535.419k	12.7	+11.9	+0.2	+0.3	+0.0	25.1	46.0	-20.9	White
20	549.963k	12.8	+11.8	+0.1	+0.3	+0.0	25.0	46.0	-21.0	White
21	2.842M	13.3	+11.2	+0.3	+0.1	+0.0	24.9	46.0	-21.1	White
22	4.990M	13.3	+10.9	+0.5	+0.1	+0.0	24.8	46.0	-21.2	White
23	4.569M	13.2	+11.0	+0.4	+0.1	+0.0	24.7	46.0	-21.3	White
24	415.430k	13.8	+12.0	+0.1	+0.2	+0.0	26.1	47.5	-21.4	White
25	434.338k	13.5	+12.0	+0.1	+0.2	+0.0	25.8	47.2	-21.4	White
26	504.149k	12.2	+11.9	+0.2	+0.3	+0.0	24.6	46.0	-21.4	White
27	718.675k	12.4	+11.8	+0.1	+0.3	+0.0	24.6	46.0	-21.4	White

28	4.058M	13.2	+11.0	+0.3	+0.1	+0.0	24.6	46.0	-21.4	White
29	1.702M	12.6	+11.5	+0.2	+0.2	+0.0	24.5	46.0	-21.5	White
30	4.790M	12.8	+10.9	+0.5	+0.1	+0.0	24.3	46.0	-21.7	White

CKC Laboratories, Inc. Date: 6/6/2008 Time: 2:48:09 PM Dust Networks WO#: 88108
 FCC 15.207 - AVE Test Lead: White 120V 60Hz Sequence#: 19 Ext ATTN: (EXTATTN)
 Dust Networks M/N LM2610 Transmit Mode



FCC 15.247(a)(2) 6dB BANDWIDTH

Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209 966-5240

Customer: **Dust Networks**

Specification: **15.247(a)(2)**

Work Order #: **88108**

Date: 5/30/2008

Test Type: **Radiated Scan**

Time: 13:18:43

Equipment: **2.4 GHz Wireless ULPM**

Sequence#: 6

Manufacturer: Dust Networks

Tested By: Randal Clark

Model: LM2610

S/N: 052908

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Weinchel 10dB attenuator	C8596	11/30/2006	11/30/2008	P02138
Cable 3' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03013
HP 8593EM SA	3624A00159	03/23/2007	03/23/2009	02111

Equipment Under Test (= EUT):*

Function	Manufacturer	Model #	S/N
2.4 GHz Wireless ULPM*	Dust Networks	LM2610	052908

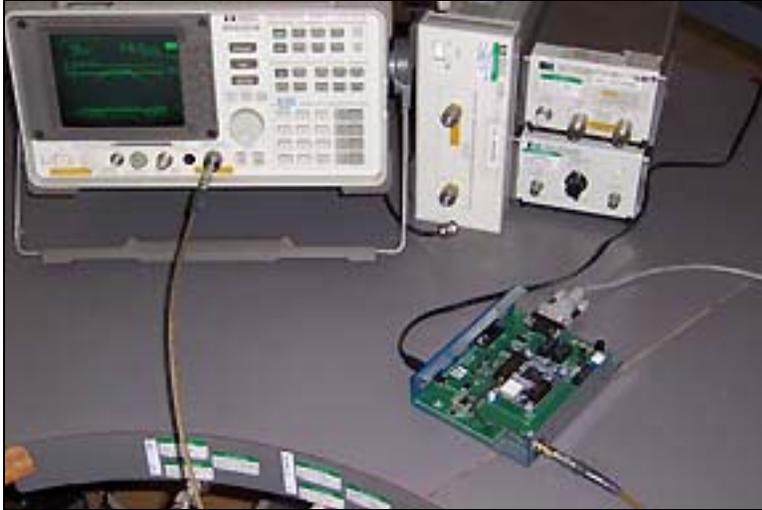
Support Devices:

Function	Manufacturer	Model #	S/N
Host PCB	Dust Networks	600-0147	052908
DC Power Supply	HP	6205C	228A01775
Support Computer	Micron	ClientPro Vxe	CKC Asset 803

Test Conditions / Notes:

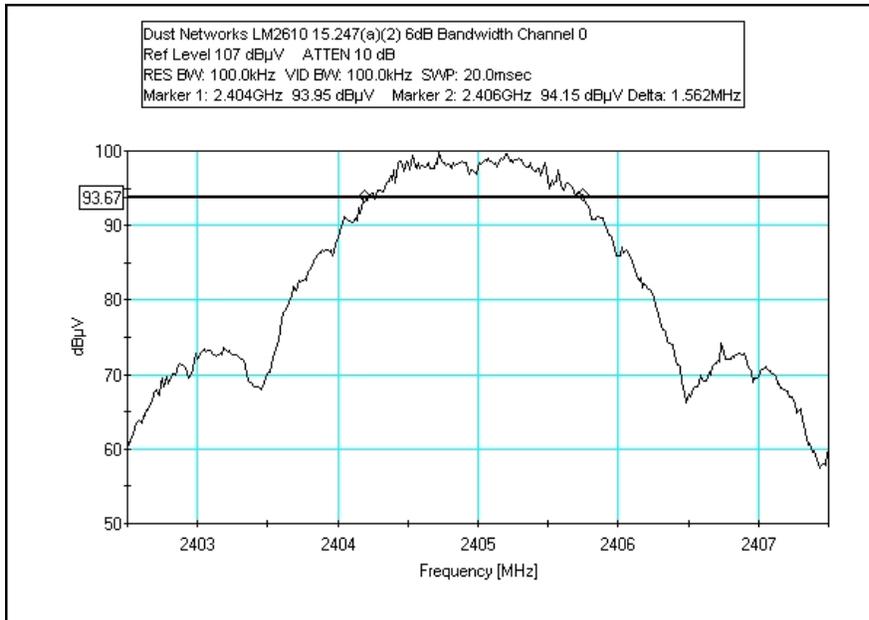
EUT is an 802.15.4 transmitter and is operating on the Low, Mid and High channels as noted in the data sheet readings. EUT is transmitting continuously with modulation. EUT is powered by 3.3 VDC via the host PCB. The Support computer is connected to the Host serial port and is controlling the EUT via HyperTerminal. EUT antenna port is connected directly to the SA through a cable and 10 dB attenuator. Channel 0, Low = 2405 MHz Channel 8, Mid = 2445 MHz Channel 14, High = 2475 MHz. Frequency range investigated: Carrier. Measurements made with the EUT set for maximum power output. Temperature: 23°C, Relative Humidity: 44%

Test Setup Photos

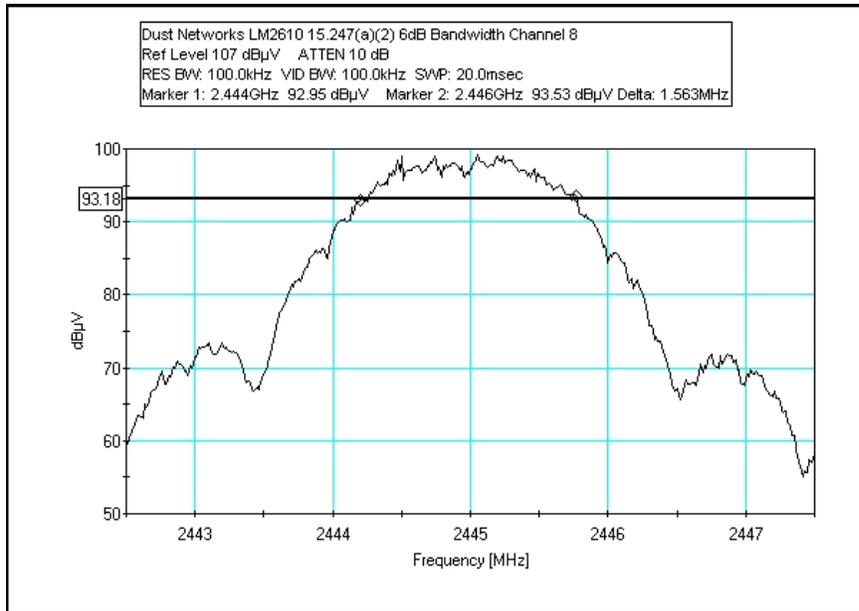


Test Plots

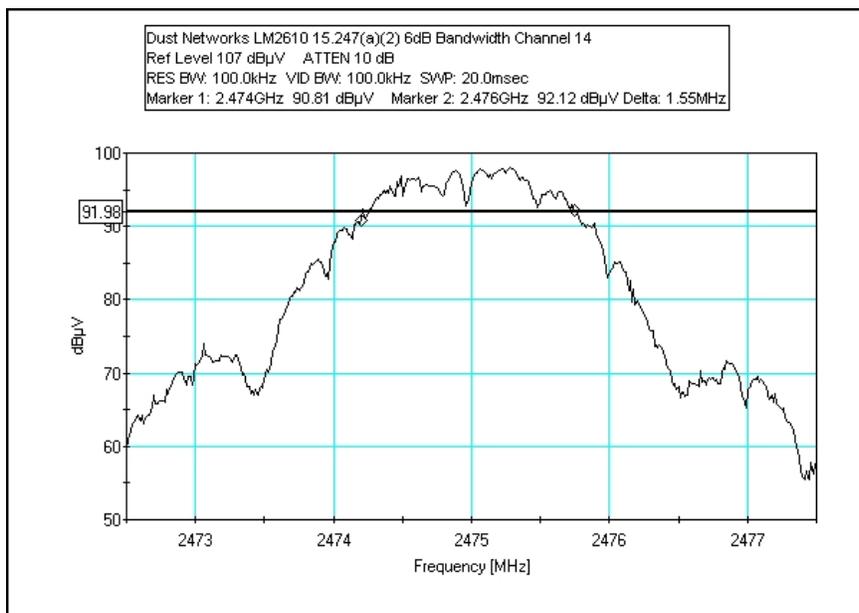
FCC 15.247(a)(2) 6dB BANDWIDTH - LOW CHANNEL



FCC 15.247(a)(2) 6dB BANDWIDTH - MID CHANNEL



FCC 15.247(a)(2) 6dB BANDWIDTH - HIGH CHANNEL



FCC 15.247(b)(3) RF POWER OUTPUT

Test Setup Photos



Test Data

Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209 966-5240

Customer: **Dust Networks**

Specification: **15.247(b)(3)**

Work Order #: **88108**

Test Type: **Radiated Scan**

Equipment: **2.4 GHz Wireless ULPM**

Manufacturer: Dust Networks

Date: 5/29/2008

Time: 15:53:59

Sequence#: 1

Tested By: Mike Wilkinson
Randal Clark

Model: LM2610

S/N: 052908

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Agilent E4446A SA	US44300407	01/03/2007	01/03/2009	02660
Weinchel 10dB attenuator	C8597	11/30/2006	11/30/2008	P02139
Cable 2' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03008
<i>Equipment used for voltage variations testing:</i>				
HP 8593EM SA	3624A00159	03/23/2007	03/23/2009	02111
Cable 3' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03013
Fluke 75 Digital Multi-Meter		04/18/2008	04/18/2010	00483

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
2.4 GHz Wireless ULPM*	Dust Networks	LM2610	052908
2.4 GHz Wireless ULPM*	Dust Networks	LM2610	061608

Support Devices:

Function	Manufacturer	Model #	S/N
Host PCB	Dust Networks	600-0147	052908
DC Power Supply	HP	6205C	228A01775
Support Computer	Micron	ClientPro Vxe	CKC Asset 803

Test Conditions / Notes:

EUT is an 802.15.4 transmitter and is operating on the Low, Mid and High channels as noted in the data sheet readings. EUT is transmitting continuously with modulation. EUT is powered by 3.3 VDC via the host PCB. The Support computer is connected to the Host serial port and is controlling the EUT via HyperTerminal. EUT antenna port is connected directly to the SA through a cable and 10 dB attenuator. Channel 0, Low = 2405 MHz, Channel 8, Mid = 2445 MHz, Channel 14, High = 2475 MHz. The temperature was 22.5°C and the humidity was 46%. Frequency range investigated was Carrier. RBW = 3 MHz. Measurements made with the EUT set for maximum power output and minimum power output as indicated in the data.

Mode	Frequency (MHz)	Output (dBm)	Output (mW)	Limit (mW)	Pass / Fail
High Power	2405	6.9	4.90	1000	Pass
	2445	6.5	4.47	1000	Pass
	2475	6.3	4.27	1000	Pass

Voltage variations performed in accordance with 15.31(e) using DC input voltage.

Frequency (MHz)	Power Output (dBm)			Power Output (mW)		
	3.0 VDC	3.3 VDC	3.6 VDC	3.0 VDC	3.3 VDC	3.6 VDC
2405	6.8	6.8	6.9	4.76	4.90	5.00
2445	6.4	6.4	6.5	4.33	4.47	4.54
2475	6.0	6.0	6.3	3.96	4.27	4.41

FCC 15.247(d) – ANTENNA CONDUCTED SPURIOUS EMISSIONS

ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	9kHz	150kHz	200Hz
CONDUCTED EMISSIONS	150kHz	30MHz	9kHz
CONDUCTED EMISSIONS	30MHz	26GHz	100kHz

Test Setup Photos



Test Data Sheets

Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209 966-5240

Customer: **Dust Networks**
 Specification: **15.247(d) Dust M2140 LP**
 Work Order #: **88108** Date: 5/30/2008
 Test Type: **Antenna Conducted Emissions** Time: 11:38:31
 Equipment: **2.4 GHz Wireless ULPM** Sequence#: 3
 Manufacturer: Dust Networks Tested By: Randal Clark
 Model: LM2610
 S/N: 052908

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Weinchel 10dB attenuator	C8596	11/30/2006	11/30/2008	P02138
Cable 3' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03013
HP 8593EM SA	3624A00159	03/23/2007	03/23/2009	02111

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
2.4 GHz Wireless ULPM*	Dust Networks	LM2610	052908

Support Devices:

Function	Manufacturer	Model #	S/N
Host PCB	Dust Networks	600-0147	052908
DC Power Supply	HP	6205C	228A01775
Support Computer	Micron	ClientPro Vxe	CKC Asset 803

Test Conditions / Notes:

EUT is an 802.15.4 transmitter and is transmitting continuously without modulation. This configuration was determined worst case during engineering evaluation. EUT is powered by 3.3 VDC via the host PCB. The Support computer is connected to the Host serial port and is controlling the EUT via HyperTerminal. EUT antenna port is connected directly to the SA through a cable and 10 dB attenuator. Channel 0, Low = 2405 MHz Channel 8, Mid = 2445 MHz Channel 14, High = 2475 MHz. EUT Set to Channel 8. Frequency range investigated: 9kHz -26GHz. Measurements made with the EUT set for maximum power output. Temperature: 23°C, Relative Humidity: 44%.

Transducer Legend:

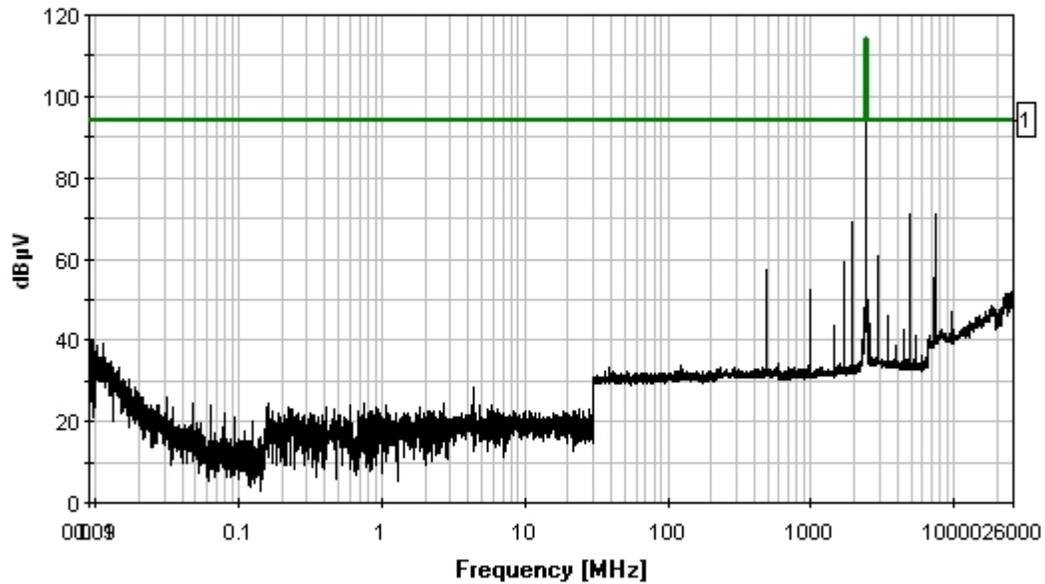
T1=ATT 10d B AN02138	T2=CAB-AN03013-40GHZ-3FT
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Measurement Data: Reading listed by margin. Test Distance: None

#	Freq MHz	Rdng dBµV	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBµV	Spec dBµV	Margin dB	Polar Ant
1	2444.940M	103.3	+9.9	+0.6			+0.0	113.8	114.0	-0.3	None
Fundamental											
2	4889.930M	60.6	+10.0	+0.8			+0.0	71.4	94.0	-22.6	None
3	7334.870M	60.1	+10.1	+1.0			+0.0	71.2	94.0	-22.8	None
4	1960.626M	58.6	+9.9	+0.6			+0.0	69.1	94.0	-24.9	None

5	2936.018M	50.2	+9.9	+0.6	+0.0	60.7	94.0	-33.3	None
6	1709.843M	48.9	+9.9	+0.5	+0.0	59.3	94.0	-34.7	None
7	489.853M	47.3	+9.8	+0.3	+0.0	57.4	94.0	-36.6	None
8	485.231M	43.7	+9.8	+0.3	+0.0	53.8	94.0	-40.2	None
9	979.393M	42.2	+9.9	+0.4	+0.0	52.5	94.0	-41.5	None
10	25087.290M	39.5	+10.6	+2.0	+0.0	52.1	94.0	-41.9	None
11	23293.900M	39.0	+10.7	+1.8	+0.0	51.5	94.0	-42.5	None
12	22957.640M	38.9	+10.6	+1.8	+0.0	51.3	94.0	-42.7	None
13	9779.890M	40.0	+10.1	+1.1	+0.0	51.2	94.0	-42.8	None
14	25855.890M	38.3	+10.5	+2.0	+0.0	50.8	94.0	-43.2	None
15	24526.860M	38.2	+10.6	+1.8	+0.0	50.6	94.0	-43.4	None
16	22525.310M	38.2	+10.5	+1.8	+0.0	50.5	94.0	-43.5	None

CKC Laboratories, Inc. Date: 5/30/2008 Time: 11:38:31 Dust Networks WVO#: 88108
15.247(d) Dust M2140 LP Test Distance: None Sequence#: 3 Ext ATTN: 0 dB
Dust Networks MN LM2610 Channel 8



Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209 966-5240

Customer: **Dust Networks**
 Specification: **15.247(d) Dust M2140 LP**
 Work Order #: **88108** Date: 5/30/2008
 Test Type: **Antenna Conducted Emissions** Time: 11:27:46
 Equipment: **2.4 GHz Wireless ULPM** Sequence#: 2
 Manufacturer: Dust Networks Tested By: Randal Clark
 Model: LM2610
 S/N: 052908

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Weinchel 10dB attenuator	C8596	11/30/2006	11/30/2008	P02138
Cable 3' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03013
HP 8593EM SA	3624A00159	03/23/2007	03/23/2009	02111

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
2.4 GHz Wireless ULPM*	Dust Networks	LM2610	052908

Support Devices:

Function	Manufacturer	Model #	S/N
Host PCB	Dust Networks	600-0147	052908
DC Power Supply	HP	6205C	228A01775
Support Computer	Micron	ClientPro Vxe	CKC Asset 803

Test Conditions / Notes:

EUT is an 802.15.4 transmitter and is transmitting continuously without modulation. This configuration was determined worst case during engineering evaluation. EUT is powered by 3.3 VDC via the host PCB. The Support computer is connected to the Host serial port and is controlling the EUT via HyperTerminal. EUT antenna port is connected directly to the SA through a cable and 10 dB attenuator. Channel 0, Low = 2405 MHz Channel 8, Mid = 2445 MHz Channel 14, High = 2475 MHz. EUT Set to Channel 0 Frequency range investigated: 9kHz -26GHz. Measurements made with the EUT set for maximum power output. Temperature: 23°C, Relative Humidity: 44%.

Transducer Legend:

T1=CAB-AN03013-40GHZ-3FT	T2=ATT 10d B AN02138
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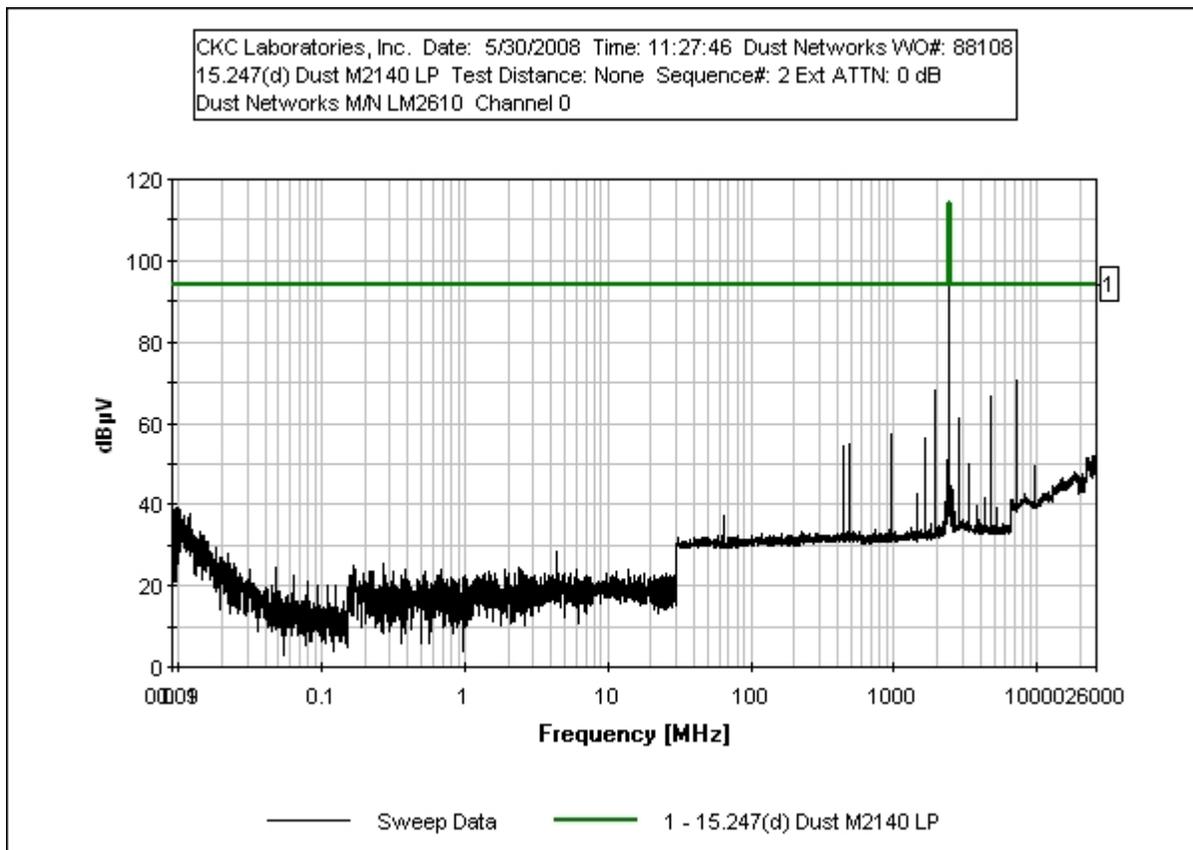
Measurement Data:

Reading listed by margin.

Test Distance: None

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	Margin dB	Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	2404.980M	103.5	+0.6	+9.9		+0.0	114.0	114.0	+0.0	None
Fundamental										
2	7214.950M	59.8	+1.0	+10.1		+0.0	70.9	94.0	-23.1	None
3	1926.621M	57.9	+0.5	+9.9		+0.0	68.3	94.0	-25.7	None
4	4809.970M	57.4	+0.8	+10.0		+0.0	68.2	94.0	-25.8	None
5	2867.433M	50.8	+0.6	+9.9		+0.0	61.3	94.0	-32.7	None

6	963.937M	47.0	+0.4	+9.9	+0.0	57.3	94.0	-36.7	None
7	1650.335M	45.7	+0.5	+9.9	+0.0	56.1	94.0	-37.9	None
8	481.533M	44.9	+0.3	+9.8	+0.0	55.0	94.0	-39.0	None
9	444.553M	44.4	+0.3	+9.8	+0.0	54.5	94.0	-39.5	None
10	2398.433M	44.0	+0.6	+9.9	+0.0	54.5	94.0	-39.5	None
11	24767.040M	39.5	+1.9	+10.6	+0.0	52.0	94.0	-42.0	None
12	22445.250M	39.0	+1.8	+10.5	+0.0	51.3	94.0	-42.7	None
13	24638.950M	38.5	+1.9	+10.6	+0.0	51.0	94.0	-43.0	None
14	9619.940M	39.5	+1.1	+10.1	+0.0	50.7	94.0	-43.3	None
15	24286.670M	38.2	+1.8	+10.6	+0.0	50.6	94.0	-43.4	None
16	25983.990M	37.8	+2.0	+10.5	+0.0	50.3	94.0	-43.7	None



Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209 966-5240

Customer: **Dust Networks**
 Specification: **15.247(d) Dust M2140 LP**
 Work Order #: **88108** Date: 5/30/2008
 Test Type: **Antenna Conducted Emissions** Time: 11:48:06
 Equipment: **2.4 GHz Wireless ULPM** Sequence#: 4
 Manufacturer: Dust Networks Tested By: Randal Clark
 Model: LM2610
 S/N: 052908

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Weinchel 10dB attenuator	C8596	11/30/2006	11/30/2008	P02138
Cable 3' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03013
HP 8593EM SA	3624A00159	03/23/2007	03/23/2009	02111

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
2.4 GHz Wireless ULPM*	Dust Networks	LM2610	052908

Support Devices:

Function	Manufacturer	Model #	S/N
Host PCB	Dust Networks	600-0147	052908
DC Power Supply	HP	6205C	228A01775
Support Computer	Micron	ClientPro Vxe	CKC Asset 803

Test Conditions / Notes:

EUT is an 802.15.4 transmitter and is transmitting continuously without modulation. This configuration was determined worst case during engineering evaluation. EUT is powered by 3.3 VDC via the host PCB. The Support computer is connected to the Host serial port and is controlling the EUT via HyperTerminal. EUT antenna port is connected directly to the SA through a cable and 10 dB attenuator. Channel 0, Low = 2405 MHz Channel 8, Mid = 2445 MHz Channel 14, High = 2475 MHz. EUT Set to Channel 14 Frequency range investigated: 9kHz -26GHz. Measurements made with the EUT set for maximum power output. Temperature: 23°C, Relative Humidity: 44%

Transducer Legend:

T1=ATT 10d B AN02138	T2=CAB-AN03013-40GHZ-3FT
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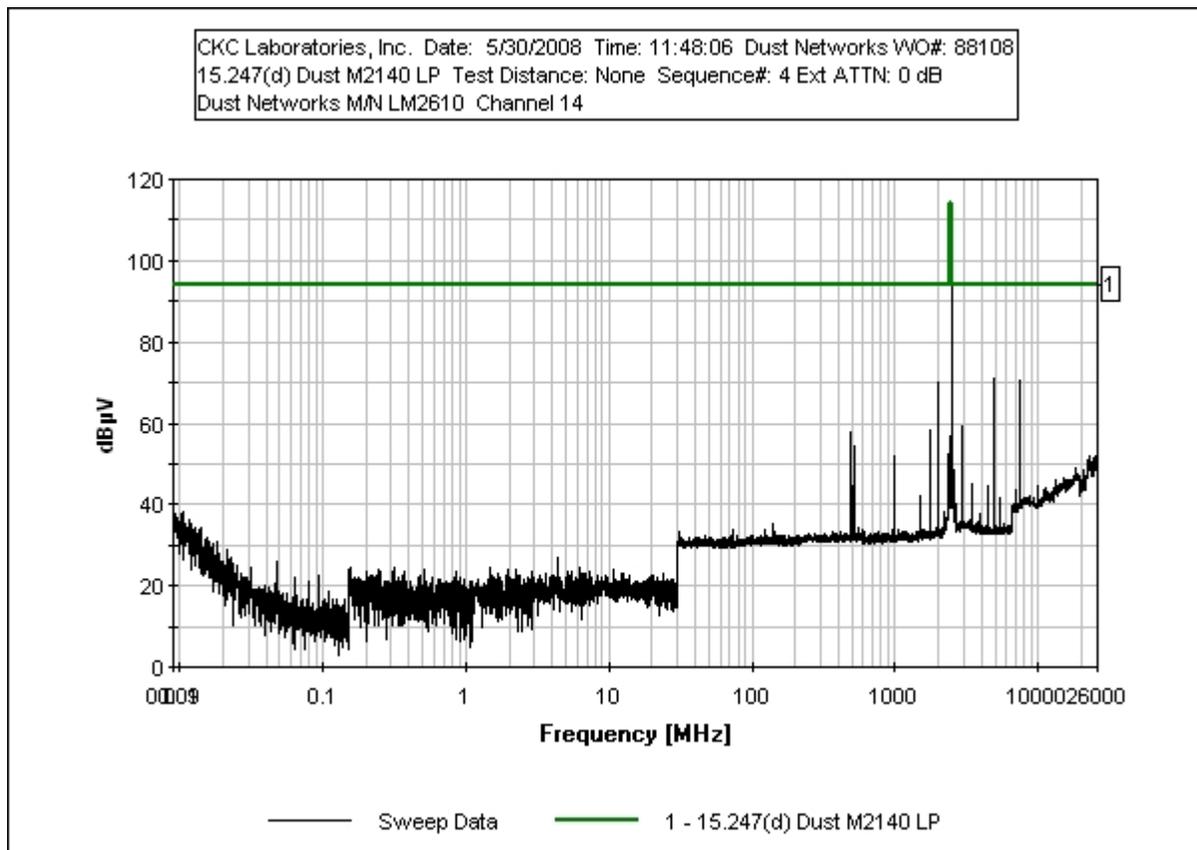
Measurement Data:

Reading listed by margin.

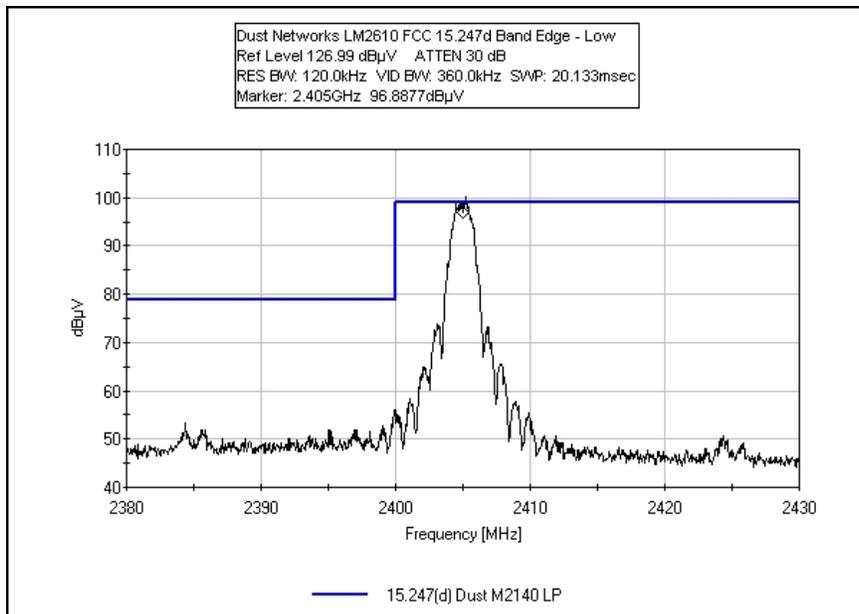
Test Distance: None

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	Dist dB	Corr dB	Spec dBμV	Margin dB	Polar Ant
1	2474.969M	102.9	+9.9	+0.6	+0.0	113.4	114.0	-0.6	None
Fundamental									
2	7424.908M	61.2	+10.1	+1.0	+0.0	72.3	94.0	-21.7	None
3	4949.938M	61.1	+10.0	+0.8	+0.0	71.8	94.0	-22.2	None
4	1986.129M	59.4	+9.9	+0.6	+0.0	69.9	94.0	-24.1	None
5	2970.310M	48.5	+9.9	+0.7	+0.0	59.1	94.0	-34.9	None

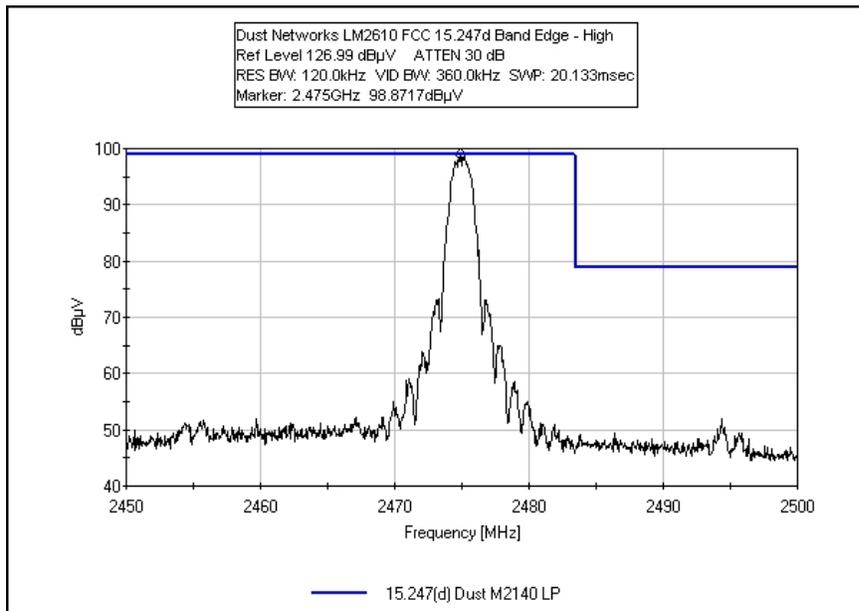
6	1756.599M	47.7	+9.9	+0.5	+0.0	58.1	94.0	-35.9	None
7	495.400M	47.9	+9.8	+0.3	+0.0	58.0	94.0	-36.0	None
8	514.815M	44.1	+9.8	+0.3	+0.0	54.2	94.0	-39.8	None
9	2355.927M	41.9	+9.9	+0.6	+0.0	52.4	94.0	-41.6	None
10	991.757M	41.4	+9.9	+0.4	+0.0	51.7	94.0	-42.3	None
11	22877.580M	39.3	+10.6	+1.8	+0.0	51.7	94.0	-42.3	None
12	25103.310M	39.1	+10.6	+2.0	+0.0	51.7	94.0	-42.3	None
13	2343.176M	40.8	+9.9	+0.6	+0.0	51.3	94.0	-42.7	None
14	24703.000M	38.7	+10.6	+1.9	+0.0	51.2	94.0	-42.8	None
15	9899.877M	39.4	+10.1	+1.2	+0.0	50.7	94.0	-43.3	None
16	23293.900M	37.8	+10.7	+1.8	+0.0	50.3	94.0	-43.7	None



Plots
FCC 15.247(d) BAND EDGE - LOW CHANNEL



FCC 15.247(d) BAND EDGE - HIGH CHANNEL



FCC 15.247(d) – OATS RADIATED SPURIOUS EMISSIONS

ANALYZER BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
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	26 GHz	1 MHz

Test Setup Photos



Test Data Sheets

Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209 966-5240

Customer: **Dust Networks**
 Specification: **FCC 15.247 (d)**
 Work Order #: **88108** Date: 6/6/2008
 Test Type: **Antenna Conducted Emissions** Time: 13:14:20
 Equipment: **2.4 GHz Wireless ULPM** Sequence#: 14
 Manufacturer: Dust Networks Tested By: Randal Clark
 Model: LM2610
 S/N: 052908

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
HP 8593EM SA	3624A00159	03/23/2007	03/23/2009	02111
HP 8447D Preamp	1937A02604	03/14/2007	03/14/2009	00099
HP 8449B Preamp	3008A00301	12/13/2006	12/13/2008	2010
Site D Rad Emiss-10m	N/A	03/06/2008	03/06/2010	CAB-SITED10M-9k-1G
3M SITE CABLE 20GHZ	NA	03/06/2008	03/06/2010	SITED3M1
Cable 2' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03011
Cable 2' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03008
EMCO Loop Antenna	1074	05/01/2007	05/01/2009	00226
Chase CBL6111C Bilog	2456	12/30/2006	12/30/2008	01991
EMCO 3115 Horn Antenna	4085	03/19/2007	03/19/2009	00656
ARA MWH-1826/B Horn Antenna	1005	11/26/2006	11/26/2008	02046
Andrews Hardline (25')	CKC 1012	04/23/2007	04/23/2009	P01012

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
2.4 GHz Wireless ULPM*	Dust Networks	LM2610	052908

Support Devices:

Function	Manufacturer	Model #	S/N
Host PCB	Dust Networks	600-0147	052908
DC Power Supply	HP	6205C	228A01775
Support Computer	Micron	ClientPro Vxe	CKC Asset 803

Test Conditions / Notes:

EUT is an 802.15.4 transmitter and is transmitting continuously without modulation. This configuration was determined worst case during engineering evaluation. Support computer equipment and DC power supply are outside the testing area. EUT is powered by 3.3 VDC via the host PCB. The Support computer is connected to the Host serial port and is controlling the EUT via HyperTerminal. EUT antenna port is connected to the manufacturer's standard antenna. Channel 0, Low = 2405 MHz, Channel 8, Mid = 2445 MHz, Channel 14, High = 2475 MHz. Frequency range investigated: 9kHz to 26 GHz. Temperature: 25°C, Relative Humidity: 39%.

Transducer Legend:

T1=AMP AN00099	T2=AMP HF - AN02010
T3=ANT AN00656 900MHz-18.5GHz	T4=CAB-AN03008-40GHZ-2FT
T5=CAB-AN03011-40GHZ-2FT	T6=CAB-SITED10M-9k-1G
T7=CAB-SITED3M1 9k - 20G	T8=Cable P01012
T9=ANT AN01991 25-1000MHz	

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

#	Freq MHz	Rdng dBµV	Reading listed by margin.				Dist Table	Corr dBµV/m	Spec dBµV/m	Margin dB	Polar Ant
			T1 dB	T2 dB	T3 dB	T4 dB					
1	4809.975M	43.0	+0.0	-33.9	+32.5	+0.6	+0.0	53.6	54.0	-0.4	Vert
	Ave		+0.6	+0.0	+7.4	+3.4					
^	4809.950M	47.9	+0.0	-33.9	+32.5	+0.6	+0.0	58.5	54.0	+4.5	Vert
			+0.6	+0.0	+7.4	+3.4					
3	2483.500M	51.6	+0.0	-34.7	+28.6	+0.4	+0.0	53.6	54.0	-0.4	Vert
	Ave		+0.4	+0.0	+4.9	+2.4					
^	2483.550M	54.2	+0.0	-34.7	+28.6	+0.4	+0.0	56.2	54.0	+2.2	Vert
			+0.4	+0.0	+4.9	+2.4					
^	2483.500M	53.6	+0.0	-34.7	+28.6	+0.4	+0.0	55.6	54.0	+1.6	Vert
			+0.4	+0.0	+4.9	+2.4					
6	7334.950M	36.0	+0.0	-33.6	+35.7	+0.7	+0.0	53.2	54.0	-0.8	Vert
	Ave		+0.7	+0.0	+9.4	+4.3					
^	7334.925M	43.1	+0.0	-33.6	+35.7	+0.7	+0.0	60.3	54.0	+6.3	Vert
			+0.7	+0.0	+9.4	+4.3					
8	4889.938M	42.3	+0.0	-34.1	+32.7	+0.6	+0.0	53.0	54.0	-1.0	Vert
	Ave		+0.6	+0.0	+7.4	+3.5					
^	4889.950M	46.2	+0.0	-34.1	+32.7	+0.6	+0.0	56.9	54.0	+2.9	Vert
			+0.6	+0.0	+7.4	+3.5					
10	7214.955M	35.3	+0.0	-33.3	+35.6	+0.7	+0.0	52.8	54.0	-1.2	Vert
	Ave		+0.7	+0.0	+9.5	+4.3					
^	7214.925M	42.4	+0.0	-33.3	+35.6	+0.7	+0.0	59.9	54.0	+5.9	Vert
			+0.7	+0.0	+9.5	+4.3					
12	7424.875M	35.8	+0.0	-33.9	+35.8	+0.7	+0.0	52.8	54.0	-1.2	Vert
	Ave		+0.7	+0.0	+9.4	+4.3					
^	7424.890M	43.2	+0.0	-33.9	+35.8	+0.7	+0.0	60.2	54.0	+6.2	Vert
			+0.7	+0.0	+9.4	+4.3					

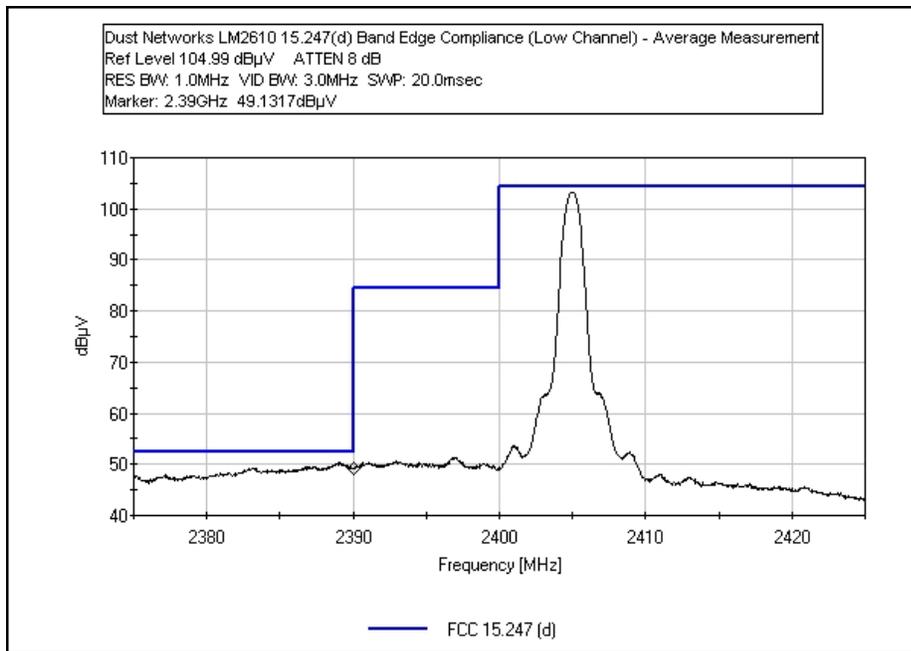
14	4949.938M Ave	42.0	+0.0 +0.6	-34.0 +0.0	+32.7 +7.3	+0.6 +3.5	+0.0	52.7	54.0	-1.3	Vert
^	4949.900M	47.5	+0.0 +0.6	-34.0 +0.0	+32.7 +7.3	+0.6 +3.5	+0.0	58.2	54.0	+4.2	Vert
16	7214.968M Ave	33.9	+0.0 +0.7	-33.3 +0.0	+35.6 +9.5	+0.7 +4.3	+0.0	51.4	54.0	-2.6	Horiz
^	7214.925M	42.6	+0.0 +0.7	-33.3 +0.0	+35.6 +9.5	+0.7 +4.3	+0.0	60.1	54.0	+6.1	Horiz
18	7424.939M Ave	34.4	+0.0 +0.7	-33.9 +0.0	+35.8 +9.4	+0.7 +4.3	+0.0	51.4	54.0	-2.6	Horiz
^	7424.850M	42.8	+0.0 +0.7	-33.9 +0.0	+35.8 +9.4	+0.7 +4.3	+0.0	59.8	54.0	+5.8	Horiz
20	2390.000M Ave	49.5	+0.0 +0.4	-34.7 +0.0	+28.4 +4.7	+0.4 +2.3	+0.0	51.0	54.0	-3.0	Vert
^	2390.000M	54.3	+0.0 +0.4	-34.7 +0.0	+28.4 +4.7	+0.4 +2.3	+0.0	55.8	54.0	+1.8	Vert
22	7334.951M Ave	33.1	+0.0 +0.7	-33.6 +0.0	+35.7 +9.4	+0.7 +4.3	+0.0	50.3	54.0	-3.7	Horiz
^	7334.925M	43.3	+0.0 +0.7	-33.6 +0.0	+35.7 +9.4	+0.7 +4.3	+0.0	60.5	54.0	+6.5	Horiz
24	4889.951M Ave	35.8	+0.0 +0.6	-34.1 +0.0	+32.7 +7.4	+0.6 +3.5	+0.0	46.5	54.0	-7.5	Horiz
^	4889.950M	43.2	+0.0 +0.6	-34.1 +0.0	+32.7 +7.4	+0.6 +3.5	+0.0	53.9	54.0	-0.1	Horiz
26	4949.966M Ave	35.6	+0.0 +0.6	-34.0 +0.0	+32.7 +7.3	+0.6 +3.5	+0.0	46.3	54.0	-7.7	Horiz
^	4949.900M	44.4	+0.0 +0.6	-34.0 +0.0	+32.7 +7.3	+0.6 +3.5	+0.0	55.1	54.0	+1.1	Horiz
28	46.250M	44.4	-27.1 +0.0 +10.7	+0.0 +1.4	+0.0 +0.0	+0.0 +0.0	+0.0	29.4	40.0	-10.6	Vert
29	4809.976M Ave	31.9	+0.0 +0.6	-33.9 +0.0	+32.5 +7.4	+0.6 +3.4	+0.0	42.5	54.0	-11.5	Horiz
^	4809.950M	41.8	+0.0 +0.6	-33.9 +0.0	+32.5 +7.4	+0.6 +3.4	+0.0	52.4	54.0	-1.6	Horiz

31	49.130M	44.2	-27.1 +0.0 +9.7	+0.0 +1.4 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	28.2	40.0	-11.9	Vert
32	52.880M	44.7	-27.1 +0.0 +8.6	+0.0 +1.5 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	27.7	40.0	-12.3	Vert
33	60.000M	46.2	-27.2 +0.0 +6.8	+0.0 +1.6 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	27.4	40.0	-12.6	Vert
34	58.750M	44.1	-27.2 +0.0 +7.1	+0.0 +1.6 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	25.6	40.0	-14.4	Vert
35	602.283M	33.9	-28.0 +0.0 +19.7	+0.0 +5.5 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	31.1	46.0	-14.9	Vert
36	64.900M	43.4	-27.1 +0.0 +6.5	+0.0 +1.7 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	24.5	40.0	-15.5	Vert
37	600.013M	33.2	-28.0 +0.0 +19.7	+0.0 +5.5 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	30.4	46.0	-15.6	Vert
38	680.013M	31.7	-27.8 +0.0 +20.5	+0.0 +5.8 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	30.2	46.0	-15.8	Vert
39	51.038M	40.4	-27.1 +0.0 +9.1	+0.0 +1.4 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	23.8	40.0	-16.2	Horiz
40	64.360M	42.7	-27.2 +0.0 +6.5	+0.0 +1.6 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	23.6	40.0	-16.4	Vert
41	65.800M	42.2	-27.1 +0.0 +6.4	+0.0 +1.7 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	23.2	40.0	-16.8	Vert
42	565.765M	32.2	-27.9 +0.0 +19.2	+0.0 +5.3 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	28.8	46.0	-17.2	Vert
43	120.000M	39.4	-27.0 +0.0 +11.6	+0.0 +2.2 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	26.2	43.5	-17.3	Vert
44	52.188M	39.4	-27.1 +0.0 +8.8	+0.0 +1.4 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	22.5	40.0	-17.5	Horiz
45	51.750M	38.9	-27.1 +0.0 +8.9	+0.0 +1.4 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	22.1	40.0	-18.0	Horiz
46	52.625M	38.9	-27.1 +0.0 +8.7	+0.0 +1.5 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	22.0	40.0	-18.0	Horiz

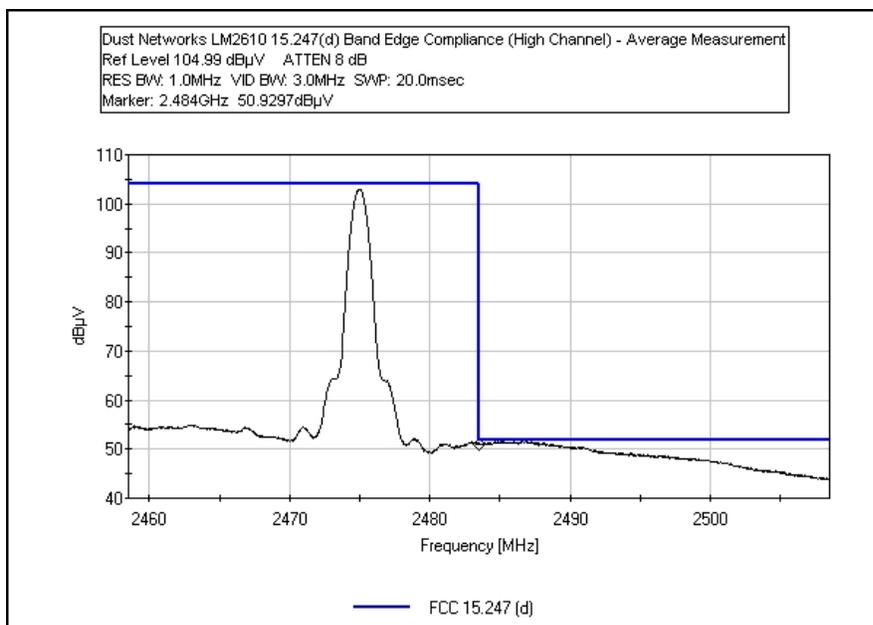
47	74.630M	40.4	-27.1 +0.0 +6.9	+0.0 +1.7 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	21.9	40.0	-18.1	Vert
48	52.925M	38.8	-27.1 +0.0 +8.6	+0.0 +1.5 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	21.8	40.0	-18.2	Horiz
49	56.850M	39.4	-27.2 +0.0 +7.6	+0.0 +1.5 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	21.3	40.0	-18.7	Vert
50	69.630M	40.2	-27.1 +0.0 +6.2	+0.0 +1.7 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	21.0	40.0	-19.0	Vert
51	160.000M	35.0	-26.9 +0.0 +10.7	+0.0 +2.6 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	21.4	43.5	-22.1	Vert
52	2400.000M	61.3	+0.0 +0.4	-34.7 +0.0	+28.4 +4.7	+0.4 +2.3	+0.0 +0.0	62.8	86.0	-23.2	Vert
53	240.000M	33.8	-26.4 +0.0 +11.9	+0.0 +3.3 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	22.6	46.0	-23.4	Vert
54	360.013M	28.9	-26.8 +0.0 +15.0	+0.0 +4.1 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	21.2	46.0	-24.8	Vert
55	200.000M	32.8	-26.7 +0.0 +9.1	+0.0 +3.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	18.2	43.5	-25.3	Vert
56	320.013M	28.6	-26.5 +0.0 +14.0	+0.0 +3.8 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	19.9	46.0	-26.1	Vert
57	346.573M	26.7	-26.7 +0.0 +14.7	+0.0 +4.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	+0.0 +0.0 +0.0	18.7	46.0	-27.3	Vert

Plots

FCC 15.247(d) BAND EDGE - LOW CHANNEL



FCC 15.247(d) BAND EDGE - HIGH CHANNEL



FCC 15.247(e) POWER SPECTRAL DENSITY

Test Setup Photos



Test Data Sheets

Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209 966-5240

Customer: **Dust Networks**
 Specification: **15.247(e)**
 Work Order #: **88108** Date: 5/30/2008
 Test Type: **Power Spectral Density** Time: 12:51:32
 Equipment: **2.4 GHz Wireless ULPM** Sequence#: 5
 Manufacturer: Dust Networks Tested By: Randal Clark
 Model: LM2610
 S/N: 052908

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Weinchel 10dB attenuator	C8596	11/30/2006	11/30/2008	P02138
Cable 3' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03013
HP 8593EM SA	3624A00159	03/23/2007	03/23/2009	02111

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
2.4 GHz Wireless ULPM*	Dust Networks	LM2610	052908

Support Devices:

Function	Manufacturer	Model #	S/N
Host PCB	Dust Networks	600-0147	052908
DC Power Supply	HP	6205C	228A01775
Support Computer	Micron	ClientPro Vxe	CKC Asset 803

Test Conditions / Notes:

EUT is an 802.15.4 transmitter and is operating on the Low, Mid and High channels as noted in the data sheet readings. EUT is transmitting continuously with modulation. EUT is powered by 3.3 VDC via the host PCB. The Support computer is connected to the Host serial port and is controlling the EUT via HyperTerminal. EUT antenna port is connected directly to the SA through a cable and 10 dB attenuator. Channel 0, Low = 2405 MHz Channel 8, Mid = 2445 MHz, Channel 14, High = 2475 MHz. Frequency range investigated: Carrier Measurements made with the EUT set for maximum power output. Temperature: 23°C, Relative Humidity: 44%. Tested in accordance with KDB 558074 using PSD option 1; plots provided show engineering data with a fast sweep speed. Actual data recorded shows no increase in PSD measurement with the sweep speed required by KDB 558074.

Transducer Legend:

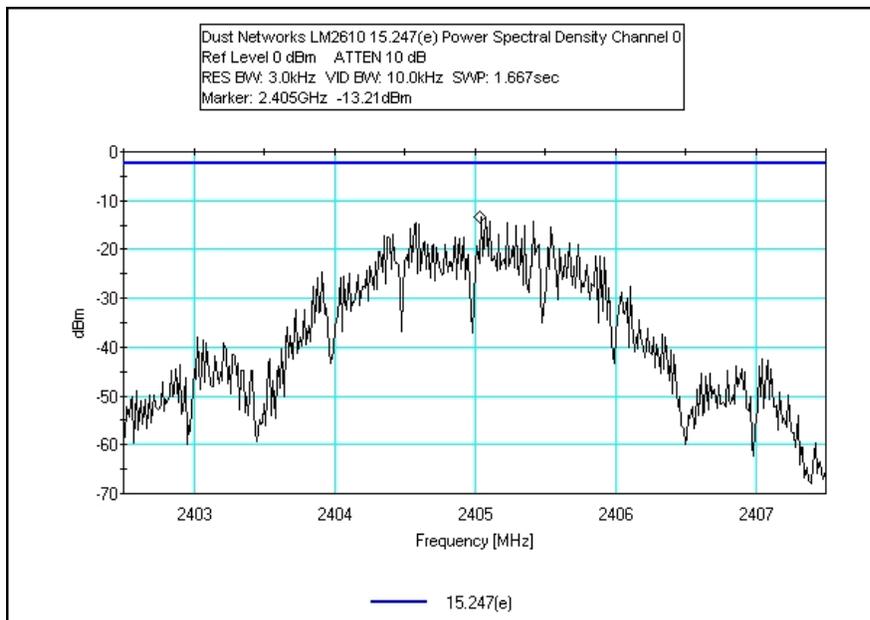
T1=ATT 10d B AN02138	T2=CAB-AN03013-40GHZ-3FT
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Measurement Data: Reading listed by margin. Test Distance: None

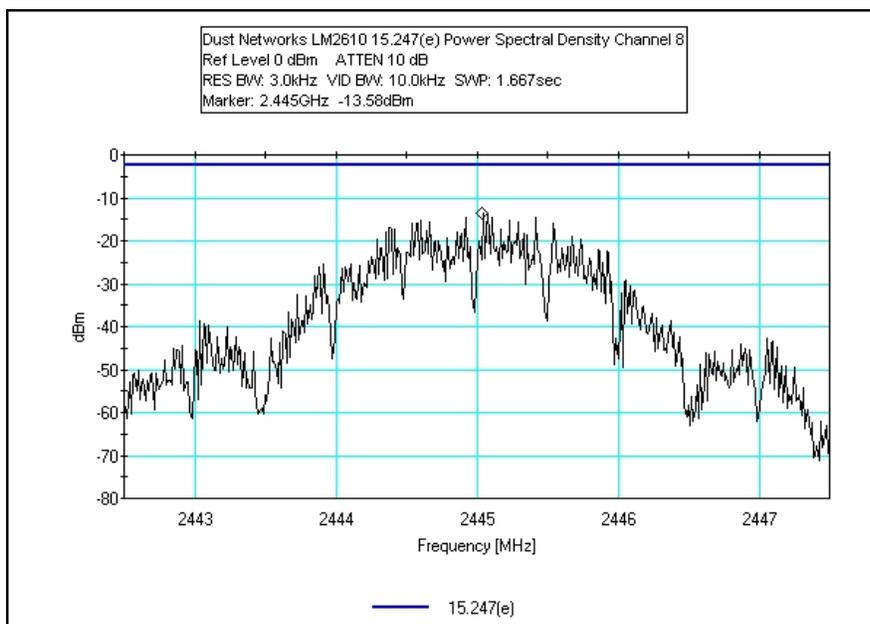
#	Freq MHz	Rdng dB μ V	T1 dB	T2 dB	dB	dB	Dist Table	Corr dBm	Spec dBm	Margin dB	Polar Ant
1	2405.038M	-13.2	+9.9	+0.6			+0.0	-2.7	8.0	-10.7	None
Channel 0											
2	2445.015M	-13.6	+9.9	+0.6			+0.0	-3.1	8.0	-11.1	None
Channel 8											
3	2475.038M	-14.3	+9.9	+0.6			+0.0	-3.8	8.0	-11.8	None
Channel 14											

Test Plots

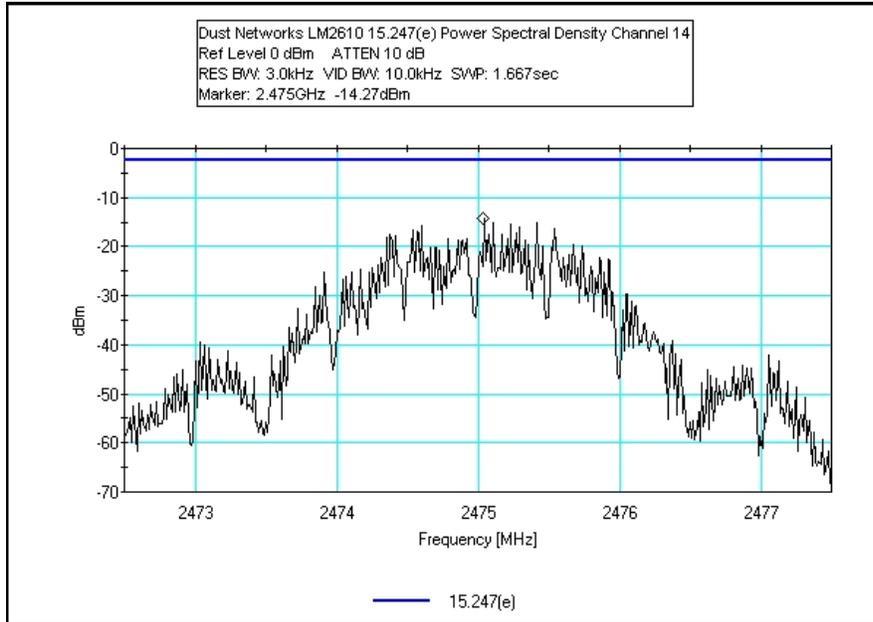
FCC 15.247(e) POWER SPECTRAL DENSITY - CHANNEL 0



FCC 15.247(e) POWER SPECTRAL DENSITY - CHANNEL 8



FCC 15.247(e) POWER SPECTRAL DENSITY - CHANNEL 14



RSS 210 99% BANDWIDTH

Test Location: CKC Laboratories, Inc. • 5046 Sierra Pines Dr. • Mariposa, CA 95338 • 209 966-5240

Customer: **Dust Networks**
 Specification: **RSS 210**
 Work Order #: **88108** Date: 5/30/2008
 Test Type: **Radiated Scan** Time: 13:18:43
 Equipment: **2.4 GHz Wireless ULPM** Sequence#: 6
 Manufacturer: Dust Networks Tested By: Randal Clark
 Model: LM2610
 S/N: 052908

Test Equipment:

Function	S/N	Calibration Date	Cal Due Date	Asset #
Weinchel 10dB attenuator	C8596	11/30/2006	11/30/2008	P02138
Cable 3' 40 GHz Astrolab	NA	01/15/2008	01/15/2010	AN03013
HP 8593EM SA	3624A00159	03/23/2007	03/23/2009	02111

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
2.4 GHz Wireless ULPM*	Dust Networks	LM2610	052908

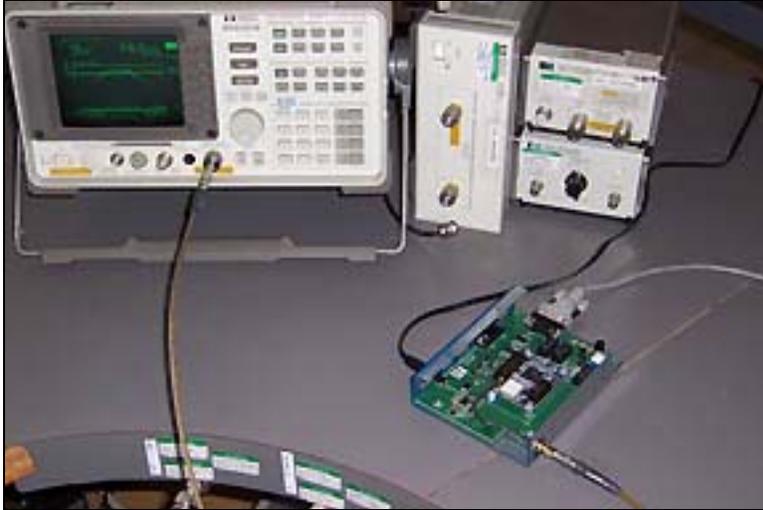
Support Devices:

Function	Manufacturer	Model #	S/N
Host PCB	Dust Networks	600-0147	052908
DC Power Supply	HP	6205C	228A01775
Support Computer	Micron	ClientPro Vxe	CKC Asset 803

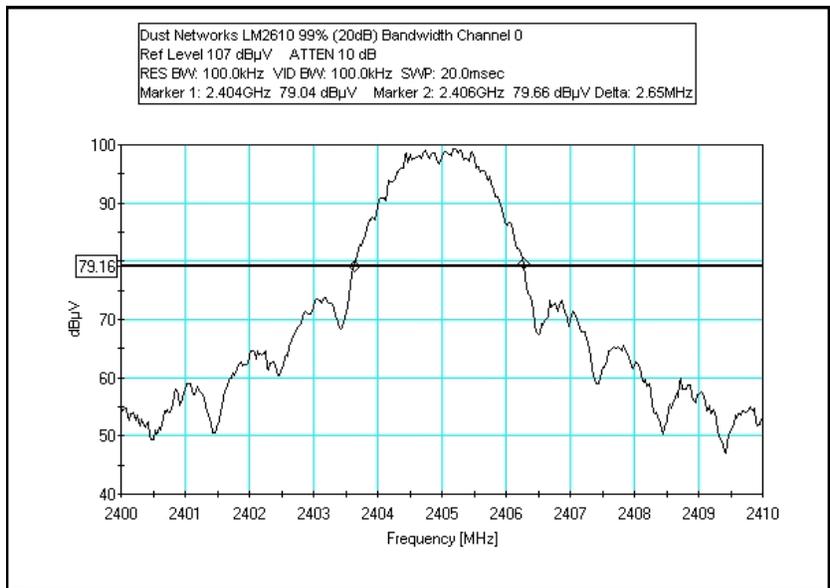
Test Conditions / Notes:

EUT is an 802.15.4 transmitter and is operating on the Low, Mid and High channels as noted in the data sheet readings. EUT is transmitting continuously with modulation. EUT is powered by 3.3 VDC via the host PCB. The Support computer is connected to the Host serial port and is controlling the EUT via HyperTerminal. EUT antenna port is connected directly to the SA through a cable and 10 dB attenuator. Channel 0, Low = 2405 MHz Channel 8, Mid = 2445 MHz Channel 14, High = 2475 MHz. Frequency range investigated: Carrier. Measurements made with the EUT set for maximum power output. Temperature: 23°C, Relative Humidity: 44%.

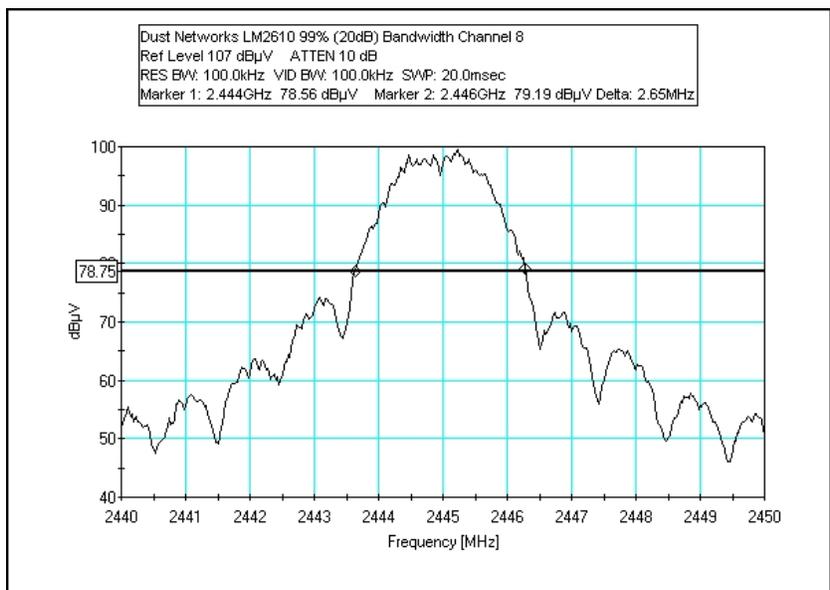
Test Setup Photos



Test Plots
RSS 210 99% BANDWIDTH - CHANNEL 0



RSS 210 99% BANDWIDTH - CHANNEL 8



RSS 210 99% BANDWIDTH - CHANNEL 14

