DUST NETWORKS TEST REPORT

FOR THE

ANTENNA, PARKING METER ANTENNA AND VEHICLE SENSOR ANTENNA

FCC PART 15 SUBPART C SECTION 15.247

TESTING

DATE OF ISSUE: OCTOBER 14, 2008

PREPARED FOR:

Dust Networks
30695 Huntwood Avenue
Hayward, CA 94544

PREPARED BY:

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

P.O. No.: 14203
W.O. No.: 87508

Date of test: September 16 - October 10, 2008

Report No.: FC08-097

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ADMINISTRATIVE INFORMATION

DATE OF TEST: September 16 – October 10, 2008

DATE OF RECEIPT: September 16, 2008

REPRESENTATIVE: Gordon Charles

MANUFACTURER:
Dust Networks
30695 Huntwood Avenue
Hayward, CA 94544

TEST LOCATION:
CKC Laboratories, Inc.
1120 Fulton Place
Fremont, CA 94539

TEST METHOD: ANSI C63.4 (2003)

PURPOSE OF TEST: To perform the testing of the Antenna, Parking Meter Antenna and Vehicle Sensor Antenna with the requirements for FCC Part 15 Subpart C Section 15.247 devices.

APPROVALS

Steve Behm, Director of Engineering Services

QUALITY ASSURANCE:

Amrinder Brar, EMC Engineer/Lab Manager

TEST PERSONNEL:

Art Rice

Art Rice, Senior EMC Engineer

SUMMARY OF RESULTS

Test	Specification	Results
OATS Radiated Spurious Emissions	FCC Part 15 Subpart B Section 15.247(d)	Pass
Band Edge	FCC Part 15 Subpart B Section 15.247(d)	Pass

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
15.247 Radiated Emissions: 30 MHz – 9500MHz.

FCC 15.203 Antenna Requirements
The antenna is a removable with a unique MMCX connector; therefore the EUT complies with Section 15.203 of the FCC rules.

EUT Operating Frequency
The EUT was operating at 902.49 MHz to 927.48MHz.

EQUIPMENT UNDER TEST (EUT) DESCRIPTION

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

EQUIPMENT UNDER TEST

Transmit Module
Manuf: Dust Networks
Model: M1030-AIS-ZNR
Serial: DOM:06-29

Antenna
Manuf: Streetline
Model: Parking Meter Antenna
Serial: Sample 1

Pavement Bump Antenna
Manuf: Streetline
Model: Vehicle Sensor Antenna
Serial: Sample 1

PERIPHERAL DEVICES

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

TTL Converter
Manuf: B&B Electronics
Model: 232LPTTL33
Serial: NA

Motherboard
Manuf: Dust Networks
Model: Tahoe Motherboard
Serial: NA

AC Adapter for PC
Manuf: Toshiba
Model: PA2411U
Serial: Date 9211

Laptop PC
Manuf: Toshiba
Model: PA1240U VCD
Serial: 67041624

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 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. 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
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 "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

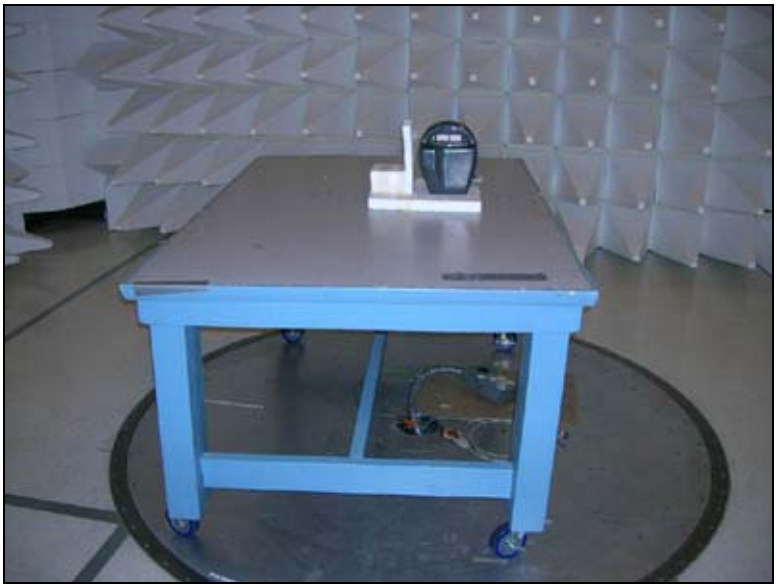
When the true peak values exceeded or were within 2 dB of the specification limit, quasi-peak measurements were taken using the quasi-peak detector.

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 15.247(d) – OATS RADIATED SPURIOUS EMISSIONS

Test Setup Photos



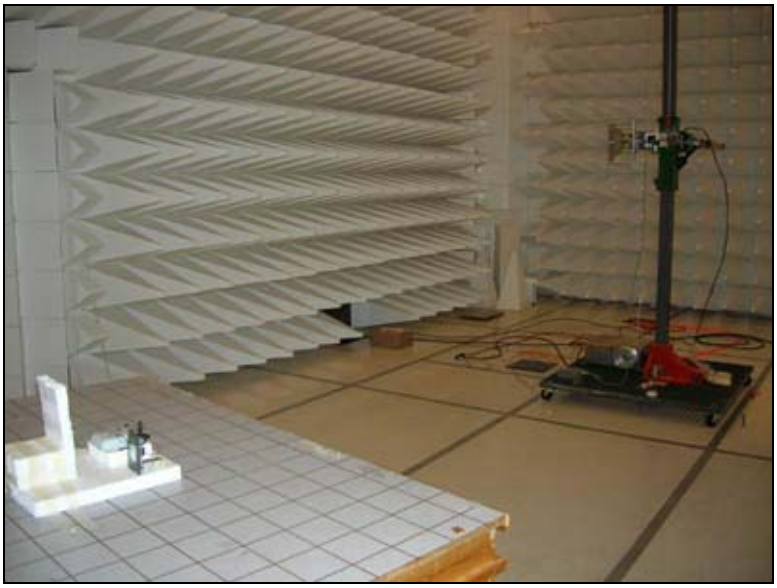
Parking Meter Antenna

Parking Meter Antenna

Parking Meter Antenna

Parking Meter Antenna

Vehicle Sensor Antenna



Vehicle Sensor Antenna

Test Data Sheets

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

Customer: **Dust Networks**
Specification: **M1030+PMA FCC 15.247(d) spurious +15.205 bands Rad-dBuV 902-928MHz**
Work Order #: **87508** Date: 10/10/2008
Test Type: **Spurious Emissions Scan** Time: 13:21:50
Equipment: **Antenna** Sequence#: 8
Manufacturer: Streetline Tested By: Art Rice
Model: Parking Meter Antenna
S/N: Sample 1

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Antenna	2630	12/30/2006	12/30/2008	00852
E4446A Spectrum Analyzer	US44300408	03/05/2007	03/05/2009	02668
Cable	None	04/02/2007	04/02/2009	P05299
Cable	None	04/05/2007	04/05/2009	P05300
Preamp, HP88447D	2443A03707	02/05/2007	02/05/2009	00730
Cable	None	04/21/2008	04/21/2010	P05440
Cable HF FSJ1P-50A-4	HOL-HF-025-06	05/06/2008	05/06/2010	P05138
Cable, HF	n/a	05/06/2008	05/06/2010	P04241
HF Cable		03/27/2007	03/27/2009	01952
1.5GHz HP Filter	PN 83400-80037	04/01/2008	04/01/2010	P01415
Preamp, HP83017A	3123A00283	05/16/2007	05/16/2009	00785
Antenna, Horn 1-18 GHz	1064	03/19/2007	03/19/2009	02061

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

Function	Manufacturer	Model #	S/N
Transmit module	Dust Networks	M1030-AIS-ZNR	DOM:06-29
Antenna*	Streetline	Parking Meter Antenna	Sample 1

Support Devices:

Function	Manufacturer	Model #	S/N
Motherboard	Dust Networks	Tahoe Motherboard	none
TTL Converter	B&B Electronics	232LPTTL33	none

Test Conditions / Notes:

Transmitting 32 byte packets with 20 mS between packets continuously at +5dBm output. Low channel 902.4914 MHz, Mid channel 914.6038 MHz, High channel 927.4823 MHz. Transmit module is mounted to motherboard. TTL converter is connected between motherboard and RS-232 cable that routes down, then outside the chamber to the support PC. RBW=120 kHz, VBW=300 kHz 30-1000MHz. RBW=1 MHz, VBW=3 MHz 1-9.5 GHz. Antenna is the Parking Meter Antenna rated at -5.5 dBi gain. The RS-232 cable was disconnected from the TTL converter once the transmissions were initiated. The laptop was also disconnected from the cable to prevent false signals from the support equipment. Ambient signals were deleted from the data sheet. The spec limit outside restricted bands was set to -20dBc. (-20 dB from max level of radiated fundamental). Harmonics of the transmitter have a -9.9 dB dwell time correction factor applied. Customer states a maximum 32mS dwell in any 100mS time period. Radiated emissions 30-9500 MHz.

Transducer Legend:

T1=ANT AN00852 25-1000MHz	T2=Cable Calibration ANP05299
T3=Cable Calibration ANP05300	T4=AMP-AN00730-020507
T5=Cable Calibration ANP05440	T6=Cable P01952 2'
T7=CAB-ANP05138-050608	T8=CAB-ANP04241-050608
T9=HPF AN01415 1.5GHz	T10=AMP-AN00785-051607
T11=ANT AN02061 900MHz-18.5GHz	T12=-9.9 dB Dwell Time Correction Factor

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

#	Freq	Rdng	T1 T5 T9	T2 T6 T10	T3 T7 T11	T4 T8 T12	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	2707.466M	60.8	+0.0	+0.0	+0.0	+0.0	+0.0	48.3	54.0	-5.7	Vert
	Ave		+0.0	+0.3	+2.6	+0.8	327		Low ch		121
			+0.3	-36.0	+29.4	-9.9					
^	2707.458M	74.0	+0.0	+0.0	+0.0	+0.0	+0.0	61.5	54.0	+7.5	Vert
			+0.0	+0.3	+2.6	+0.8	327		Low ch		121
			+0.3	-36.0	+29.4	-9.9					
3	2782.438M	60.1	+0.0	+0.0	+0.0	+0.0	+0.0	47.9	54.0	-6.1	Horiz
	Ave		+0.0	+0.3	+2.6	+0.8	227		Hi ch		144
			+0.3	-36.0	+29.7	-9.9					
^	2782.488M	74.1	+0.0	+0.0	+0.0	+0.0	+0.0	61.9	54.0	+7.9	Horiz
			+0.0	+0.3	+2.6	+0.8	227		Hi ch		144
			+0.3	-36.0	+29.7	-9.9					
5	3709.832M	54.0	+0.0	+0.0	+0.0	+0.0	+0.0	45.8	54.0	-8.2	Horiz
			+0.0	+0.4	+3.3	+1.1	332		Hi ch		142
			+0.2	-35.1	+31.8	-9.9					
6	2743.816M	56.9	+0.0	+0.0	+0.0	+0.0	+0.0	44.6	54.0	-9.4	Horiz
	Ave		+0.0	+0.3	+2.6	+0.8	237		Mid ch		144
			+0.3	-36.0	+29.6	-9.9					
^	2743.848M	71.6	+0.0	+0.0	+0.0	+0.0	+0.0	59.3	54.0	+5.3	Horiz
			+0.0	+0.3	+2.6	+0.8	237		Mid ch		144
			+0.3	-36.0	+29.6	-9.9					
8	2782.470M	56.5	+0.0	+0.0	+0.0	+0.0	+0.0	44.3	54.0	-9.7	Vert
	Ave		+0.0	+0.3	+2.6	+0.8	269		Hi ch		111
			+0.3	-36.0	+29.7	-9.9					
^	2782.462M	70.2	+0.0	+0.0	+0.0	+0.0	+0.0	58.0	54.0	+4.0	Vert
			+0.0	+0.3	+2.6	+0.8	269		Hi ch		111
			+0.3	-36.0	+29.7	-9.9					
10	3609.958M	52.5	+0.0	+0.0	+0.0	+0.0	+0.0	43.4	54.0	-10.6	Vert
			+0.0	+0.2	+3.1	+0.9	220		Low ch		119
			+0.2	-35.2	+31.6	-9.9					
11	2743.840M	55.6	+0.0	+0.0	+0.0	+0.0	+0.0	43.3	54.0	-10.7	Vert
	Ave		+0.0	+0.3	+2.6	+0.8	265		Mid ch		139
			+0.3	-36.0	+29.6	-9.9					
^	2743.820M	71.0	+0.0	+0.0	+0.0	+0.0	+0.0	58.7	54.0	+4.7	Vert
			+0.0	+0.3	+2.6	+0.8	265		Mid ch		139
			+0.3	-36.0	+29.6	-9.9					
13	4637.608M	47.7	+0.0	+0.0	+0.0	+0.0	+0.0	41.1	54.0	-12.9	Vert
			+0.0	+0.5	+3.5	+1.1	302		Hi ch		125
			+0.2	-34.8	+32.8	-9.9					

14	3658.448M	49.7	+0.0	+0.0	+0.0	+0.0	+0.0	41.0	54.0	-13.0	Horiz
			+0.0	+0.4	+3.1	+0.9	342		Mid ch		145
			+0.2	-35.1	+31.7	-9.9					
15	3610.008M	49.5	+0.0	+0.0	+0.0	+0.0	+0.0	40.4	54.0	-13.6	Horiz
			+0.0	+0.2	+3.1	+0.9	340		Low ch		128
			+0.2	-35.2	+31.6	-9.9					
16	3709.796M	48.1	+0.0	+0.0	+0.0	+0.0	+0.0	39.9	54.0	-14.1	Vert
			+0.0	+0.4	+3.3	+1.1	340		Hi ch		99
			+0.2	-35.1	+31.8	-9.9					
17	2707.460M	52.2	+0.0	+0.0	+0.0	+0.0	+0.0	39.7	54.0	-14.3	Horiz
	Ave		+0.0	+0.3	+2.6	+0.8	272		Low ch		156
			+0.3	-36.0	+29.4	-9.9					
^	2707.432M	68.3	+0.0	+0.0	+0.0	+0.0	+0.0	55.8	54.0	+1.8	Horiz
			+0.0	+0.3	+2.6	+0.8	272		Low ch		156
			+0.3	-36.0	+29.4	-9.9					
19	4637.650M	45.8	+0.0	+0.0	+0.0	+0.0	+0.0	39.2	54.0	-14.8	Horiz
			+0.0	+0.5	+3.5	+1.1	175		Hi ch		99
			+0.2	-34.8	+32.8	-9.9					
20	5414.958M	43.8	+0.0	+0.0	+0.0	+0.0	+0.0	39.1	54.0	-14.9	Vert
			+0.0	+0.4	+4.0	+1.3	216		Low ch		102
			+0.2	-34.9	+34.2	-9.9					
21	3658.424M	47.6	+0.0	+0.0	+0.0	+0.0	+0.0	38.9	54.0	-15.1	Vert
			+0.0	+0.4	+3.1	+0.9	333		Mid ch		127
			+0.2	-35.1	+31.7	-9.9					
22	4573.024M	44.5	+0.0	+0.0	+0.0	+0.0	+0.0	37.6	54.0	-16.4	Vert
			+0.0	+0.4	+3.5	+1.0	300		Mid ch		102
			+0.2	-34.8	+32.7	-9.9					
23	5414.892M	42.2	+0.0	+0.0	+0.0	+0.0	+0.0	37.5	54.0	-16.5	Horiz
			+0.0	+0.4	+4.0	+1.3	238		Low ch		105
			+0.2	-34.9	+34.2	-9.9					
24	4573.034M	44.3	+0.0	+0.0	+0.0	+0.0	+0.0	37.4	54.0	-16.6	Horiz
			+0.0	+0.4	+3.5	+1.0	212		Mid ch		107
			+0.2	-34.8	+32.7	-9.9					
25	4512.458M	43.6	+0.0	+0.0	+0.0	+0.0	+0.0	36.3	54.0	-17.7	Vert
			+0.0	+0.3	+3.4	+1.0	320		Low ch		119
			+0.2	-34.8	+32.5	-9.9					
26	1855.086M	76.3	+0.0	+0.0	+0.0	+0.0	+0.0	60.7	78.6	-17.9	Vert
			+0.0	+0.2	+2.2	+0.6	296		Hi ch		111
			+0.6	-36.8	+27.5	-9.9					
27	1829.160M	75.9	+0.0	+0.0	+0.0	+0.0	+0.0	59.9	78.6	-18.7	Vert
			+0.0	+0.2	+2.1	+0.6	263		Mid ch		139
			+0.6	-36.9	+27.3	-9.9					
28	1804.958M	73.5	+0.0	+0.0	+0.0	+0.0	+0.0	57.4	78.6	-21.2	Vert
			+0.0	+0.2	+2.1	+0.6	256		Low ch		138
			+0.7	-36.9	+27.1	-9.9					
29	1854.967M	72.9	+0.0	+0.0	+0.0	+0.0	+0.0	57.3	78.6	-21.3	Horiz
			+0.0	+0.2	+2.2	+0.6	150		Hi ch		177
			+0.6	-36.8	+27.5	-9.9					

30	1805.012M	70.3	+0.0	+0.0	+0.0	+0.0	+0.0	54.2	78.6	-24.4	Horiz
			+0.0	+0.2	+2.1	+0.6	203		Low ch		134
			+0.7	-36.9	+27.1	-9.9					
31	1829.212M	70.1	+0.0	+0.0	+0.0	+0.0	+0.0	54.1	78.6	-24.5	Horiz
			+0.0	+0.2	+2.1	+0.6	150		Mid ch		172
			+0.6	-36.9	+27.3	-9.9					
32	171.000M	33.9	+9.9	+0.2	+0.3	-27.2	+0.0	17.8	43.5	-25.7	Horiz
			+0.7	+0.0	+0.0	+0.0	370		Mid ch		150
			+0.0	+0.0	+0.0	+0.0					
33	170.060M	33.7	+10.0	+0.2	+0.3	-27.2	+0.0	17.7	43.5	-25.8	Horiz
			+0.7	+0.0	+0.0	+0.0			Low ch		150
			+0.0	+0.0	+0.0	+0.0					
34	168.180M	33.0	+10.2	+0.2	+0.3	-27.2	+0.0	17.2	43.5	-26.3	Horiz
			+0.7	+0.0	+0.0	+0.0	217		Hi ch		149
			+0.0	+0.0	+0.0	+0.0					
35	171.470M	31.5	+9.8	+0.2	+0.3	-27.2	+0.0	15.3	43.5	-28.2	Vert
			+0.7	+0.0	+0.0	+0.0	370		Low ch		100
			+0.0	+0.0	+0.0	+0.0					
36	171.470M	31.2	+9.8	+0.2	+0.3	-27.2	+0.0	15.0	43.5	-28.5	Vert
			+0.7	+0.0	+0.0	+0.0	315		Mid ch		100
			+0.0	+0.0	+0.0	+0.0					
37	5487.444M	47.0	+0.0	+0.0	+0.0	+0.0	+0.0	42.4	78.6	-36.2	Vert
			+0.0	+0.5	+4.0	+1.2	172		Mid ch		102
			+0.2	-34.9	+34.3	-9.9					
38	5564.838M	45.9	+0.0	+0.0	+0.0	+0.0	+0.0	41.4	78.6	-37.2	Vert
			+0.0	+0.5	+4.0	+1.2	60		Hi ch		100
			+0.2	-34.9	+34.4	-9.9					
39	5564.676M	45.6	+0.0	+0.0	+0.0	+0.0	+0.0	41.1	78.6	-37.5	Horiz
			+0.0	+0.5	+4.0	+1.2	319		Hi ch		112
			+0.2	-34.9	+34.4	-9.9					
40	5487.456M	45.3	+0.0	+0.0	+0.0	+0.0	+0.0	40.7	78.6	-37.9	Horiz
			+0.0	+0.5	+4.0	+1.2	254		Mid ch		110
			+0.2	-34.9	+34.3	-9.9					
41	521.500M	35.3	+18.8	+0.2	+0.5	-27.1	+0.0	29.1	78.6	-49.5	Horiz
			+1.4	+0.0	+0.0	+0.0	368		Hi ch		149
			+0.0	+0.0	+0.0	+0.0					
42	507.500M	34.7	+18.5	+0.2	+0.6	-27.2	+0.0	28.1	78.6	-50.5	Vert
			+1.3	+0.0	+0.0	+0.0	-9		Hi ch		100
			+0.0	+0.0	+0.0	+0.0					
43	521.500M	33.7	+18.8	+0.2	+0.5	-27.1	+0.0	27.5	78.6	-51.1	Vert
			+1.4	+0.0	+0.0	+0.0	-9		Hi ch		100
			+0.0	+0.0	+0.0	+0.0					
44	507.500M	34.1	+18.5	+0.2	+0.6	-27.2	+0.0	27.5	78.6	-51.1	Vert
			+1.3	+0.0	+0.0	+0.0	70		Low ch		100
			+0.0	+0.0	+0.0	+0.0					
45	579.500M	32.0	+19.8	+0.3	+0.6	-27.1	+0.0	27.1	78.6	-51.5	Vert
			+1.5	+0.0	+0.0	+0.0	370		Mid ch		100
			+0.0	+0.0	+0.0	+0.0					
46	513.500M	33.6	+18.6	+0.2	+0.5	-27.1	+0.0	27.1	78.6	-51.5	Horiz
			+1.3	+0.0	+0.0	+0.0	9		Mid ch		150
			+0.0	+0.0	+0.0	+0.0					

47	579.500M	31.7	+19.8	+0.3	+0.6	-27.1	+0.0	26.8	78.6	-51.8	Vert
			+1.5	+0.0	+0.0	+0.0	-9		Hi ch		100
			+0.0	+0.0	+0.0	+0.0					
48	557.000M	32.0	+19.4	+0.2	+0.7	-27.0	+0.0	26.7	78.6	-51.9	Horiz
			+1.4	+0.0	+0.0	+0.0	370		Low ch		150
			+0.0	+0.0	+0.0	+0.0					
49	552.000M	31.5	+19.3	+0.2	+0.7	-27.0	+0.0	26.1	78.6	-52.5	Horiz
			+1.4	+0.0	+0.0	+0.0	370		Low ch		150
			+0.0	+0.0	+0.0	+0.0					
50	545.500M	31.3	+19.2	+0.2	+0.7	-27.1	+0.0	25.7	78.6	-52.9	Horiz
			+1.4	+0.0	+0.0	+0.0	370		Low ch		150
			+0.0	+0.0	+0.0	+0.0					
51	545.500M	31.1	+19.2	+0.2	+0.7	-27.1	+0.0	25.5	78.6	-53.1	Horiz
			+1.4	+0.0	+0.0	+0.0	9		Mid ch		150
			+0.0	+0.0	+0.0	+0.0					
52	507.000M	31.8	+18.5	+0.2	+0.6	-27.2	+0.0	25.2	78.6	-53.4	Horiz
			+1.3	+0.0	+0.0	+0.0	9		Mid ch		150
			+0.0	+0.0	+0.0	+0.0					
53	507.500M	31.7	+18.5	+0.2	+0.6	-27.2	+0.0	25.1	78.6	-53.5	Vert
			+1.3	+0.0	+0.0	+0.0	370		Mid ch		100
			+0.0	+0.0	+0.0	+0.0					
54	507.500M	31.6	+18.5	+0.2	+0.6	-27.2	+0.0	25.0	78.6	-53.6	Horiz
			+1.3	+0.0	+0.0	+0.0	370		Low ch		150
			+0.0	+0.0	+0.0	+0.0					
55	524.000M	31.0	+18.8	+0.2	+0.5	-27.1	+0.0	24.8	78.6	-53.8	Horiz
			+1.4	+0.0	+0.0	+0.0	9		Mid ch		150
			+0.0	+0.0	+0.0	+0.0					
56	531.000M	30.4	+19.0	+0.2	+0.5	-27.1	+0.0	24.4	78.6	-54.2	Horiz
			+1.4	+0.0	+0.0	+0.0	9		Mid ch		150
			+0.0	+0.0	+0.0	+0.0					
57	516.000M	30.5	+18.7	+0.2	+0.5	-27.1	+0.0	24.2	78.6	-54.4	Horiz
			+1.4	+0.0	+0.0	+0.0	370		Low ch		150
			+0.0	+0.0	+0.0	+0.0					

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

Customer: **Dust Networks**
Specification: **M1030 FCC 15.247(d) spurious +15.205 bands Rad-dBuV 902-928MHz**
Work Order #: **87508** Date: 10/9/2008
Test Type: **Spurious Emissions Scan** Time: 11:48:06
Equipment: **Pavement bump antenna** Sequence#: 3
Manufacturer: Streetline Tested By: Art Rice
Model: Vehicle Sensor Antenna
S/N: Sample 1

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Antenna	2630	12/30/2006	12/30/2008	00852
E4446A Spectrum Analyzer	US44300408	03/05/2007	03/05/2009	02668
Cable	None	04/02/2007	04/02/2009	P05299
Cable	None	04/05/2007	04/05/2009	P05300
Preamp, HP88447D	2443A03707	02/05/2007	02/05/2009	00730
Cable	None	04/21/2008	04/21/2010	P05440
Cable HF FSJ1P-50A-4	HOL-HF-025-06	05/06/2008	05/06/2010	P05138
Cable, HF	n/a	05/06/2008	05/06/2010	P04241
HF Cable		03/27/2007	03/27/2009	01952
1.5GHz HP Filter	PN 83400-80037	04/01/2008	04/01/2010	P01415
Preamp, HP83017A	3123A00283	05/16/2007	05/16/2009	00785
Antenna, Horn 1-18 GHz	1064	03/19/2007	03/19/2009	02061

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

Function	Manufacturer	Model #	S/N
Pavement bump antenna*	Streetline	Vehicle Sensor Antenna	Sample 1
Transmit module	Dust Networks	M1030-AIS-ZNR	DOM:06-29

Support Devices:

Function	Manufacturer	Model #	S/N
Motherboard	Dust Networks	Tahoe Motherboard	none
TTL Converter	B&B Electronics	232LPTTL33	none

Test Conditions / Notes:

Transmitting 32 byte packets with 20 mS between packets continuously at +5dBm output. Low channel 902.4914 MHz, Mid channel 914.6038 MHz, High channel 927.4823 MHz. Transmit module is mounted to motherboard. TTL converter is connected between motherboard and RS-232 cable that routes down, then outside the chamber to the support PC. RBW=120 kHz, VBW=300 kHz 30-1000MHz. RBW=1 MHz, VBW=3 MHz 1-9.5 GHz. Antenna is the Vehicle Sensor Antenna rated at -8 dBi gain. The RS-232 cable was disconnected from the TTL converter once the transmissions were initiated. The laptop was also disconnected from the cable to prevent false signals from the support equipment. Ambient signals were deleted from the data sheet. For measurements above 1 GHz the spec limit outside restricted bands was set to -20dBc. (-20 dB from max level of radiated fundamental). Harmonics of the transmitter have a -9.9 dB dwell time correction factor applied. Customer states a maximum 32mS dwell in any 100mS time period. Radiated emissions 30-9500 MHz.

Transducer Legend:

T1=ANT AN00852 25-1000MHz	T2=Cable Calibration ANP05299
T3=Cable Calibration ANP05300	T4=AMP-AN00730-020507
T5=Cable Calibration ANP05440	T6=Cable P01952 2'
T7=CAB-ANP05138-050608	T8=CAB-ANP04241-050608
T9=HPF AN01415 1.5GHz	T10=AMP-AN00785-051607
T11=ANT AN02061 900MHz-18.5GHz	T12=-9.9 dB Dwell Time Correction Factor

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

#	Freq	Rdng	T1 T5 T9	T2 T6 T10	T3 T7 T11	T4 T8 T12	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	2707.470M	62.5	+0.0	+0.0	+0.0	+0.0	+0.0	50.0	54.0	-4.0	Horiz
	Ave		+0.0	+0.3	+2.6	+0.8	192		Low ch, RBW=1		168
			+0.3	-36.0	+29.4	-9.9			MHz		
^	2707.482M	75.9	+0.0	+0.0	+0.0	+0.0	+0.0	63.4	54.0	+9.4	Horiz
			+0.0	+0.3	+2.6	+0.8	192		Low ch, RBW=1		168
			+0.3	-36.0	+29.4	-9.9			MHz		
3	2782.424M	60.0	+0.0	+0.0	+0.0	+0.0	+0.0	47.8	54.0	-6.2	Horiz
	Ave		+0.0	+0.3	+2.6	+0.8	235		Hi ch		127
			+0.3	-36.0	+29.7	-9.9					
^	2782.480M	73.1	+0.0	+0.0	+0.0	+0.0	+0.0	60.9	54.0	+6.9	Horiz
			+0.0	+0.3	+2.6	+0.8	235		Hi ch		127
			+0.3	-36.0	+29.7	-9.9					
5	2743.802M	59.6	+0.0	+0.0	+0.0	+0.0	+0.0	47.3	54.0	-6.7	Horiz
	Ave		+0.0	+0.3	+2.6	+0.8	183		Mid ch		181
			+0.3	-36.0	+29.6	-9.9					
^	2743.885M	72.7	+0.0	+0.0	+0.0	+0.0	+0.0	60.4	54.0	+6.4	Horiz
			+0.0	+0.3	+2.6	+0.8	183		Mid ch		181
			+0.3	-36.0	+29.6	-9.9					
7	2782.430M	58.4	+0.0	+0.0	+0.0	+0.0	+0.0	46.2	54.0	-7.8	Vert
	Ave		+0.0	+0.3	+2.6	+0.8	185		Hi ch		140
			+0.3	-36.0	+29.7	-9.9					
^	2782.441M	71.8	+0.0	+0.0	+0.0	+0.0	+0.0	59.6	54.0	+5.6	Vert
			+0.0	+0.3	+2.6	+0.8	189		Hi ch		137
			+0.3	-36.0	+29.7	-9.9					
9	2707.473M	57.6	+0.0	+0.0	+0.0	+0.0	+0.0	45.1	54.0	-8.9	Vert
	Ave		+0.0	+0.3	+2.6	+0.8	313		Low ch		114
			+0.3	-36.0	+29.4	-9.9					
^	2707.433M	70.8	+0.0	+0.0	+0.0	+0.0	+0.0	58.3	54.0	+4.3	Vert
			+0.0	+0.3	+2.6	+0.8	313		Low ch		114
			+0.3	-36.0	+29.4	-9.9					
11	2743.785M	57.3	+0.0	+0.0	+0.0	+0.0	+0.0	45.0	54.0	-9.0	Vert
	Ave		+0.0	+0.3	+2.6	+0.8	37		Mid ch		173
			+0.3	-36.0	+29.6	-9.9					
^	2743.812M	70.2	+0.0	+0.0	+0.0	+0.0	+0.0	57.9	54.0	+3.9	Vert
			+0.0	+0.3	+2.6	+0.8					
			+0.3	-36.0	+29.6	-9.9					
							37		Mid ch		173

13	3609.880M	53.8	+0.0	+0.0	+0.0	+0.0	+0.0	44.7	54.0	-9.3	Horiz
	Ave		+0.0	+0.2	+3.1	+0.9	116		Low ch		182
			+0.2	-35.2	+31.6	-9.9					
^	3609.913M	56.5	+0.0	+0.0	+0.0	+0.0	+0.0	47.4	54.0	-6.6	Horiz
			+0.0	+0.2	+3.1	+0.9	116		Low ch		182
			+0.2	-35.2	+31.6	-9.9					
15	3709.704M	52.1	+0.0	+0.0	+0.0	+0.0	+0.0	43.9	54.0	-10.1	Horiz
			+0.0	+0.4	+3.3	+1.1	238		Hi ch		147
			+0.2	-35.1	+31.8	-9.9					
16	3709.896M	51.2	+0.0	+0.0	+0.0	+0.0	+0.0	43.0	54.0	-11.0	Vert
			+0.0	+0.4	+3.3	+1.1	176		Hi ch		121
			+0.2	-35.1	+31.8	-9.9					
17	4637.298M	49.5	+0.0	+0.0	+0.0	+0.0	+0.0	42.9	54.0	-11.1	Horiz
			+0.0	+0.5	+3.5	+1.1	180		Hi ch		102
			+0.2	-34.8	+32.8	-9.9					
18	7420.192M	42.1	+0.0	+0.0	+0.0	+0.0	+0.0	42.1	54.0	-11.9	Horiz
			+0.0	+0.7	+4.8	+1.3	214		Hi ch		99
			+0.2	-35.1	+38.0	-9.9					
19	1804.926M	76.7	+0.0	+0.0	+0.0	+0.0	+0.0	60.6	73.1	-12.5	Vert
			+0.0	+0.2	+2.1	+0.6	219		Low ch,		100
			+0.7	-36.9	+27.1	-9.9			RBW=100kHz		
20	824.860M	35.4	+22.4	+0.2	+0.7	-27.2	+0.0	33.3	46.0	-12.7	Vert
			+1.8				202		Mid channel		123
21	825.455M	35.2	+22.4	+0.2	+0.7	-27.2	+0.0	33.1	46.0	-12.9	Vert
			+1.8				202		Mid channel		123
22	619.342M	37.5	+20.3	+0.1	+0.6	-27.0	+0.0	33.0	46.0	-13.0	Horiz
			+1.5				101		Low channel		134
23	4512.393M	48.0	+0.0	+0.0	+0.0	+0.0	+0.0	40.7	54.0	-13.3	Horiz
			+0.0	+0.3	+3.4	+1.0	172		Low ch		115
			+0.2	-34.8	+32.5	-9.9					
24	4572.902M	47.2	+0.0	+0.0	+0.0	+0.0	+0.0	40.3	54.0	-13.7	Horiz
			+0.0	+0.4	+3.5	+1.0	16		Mid ch		141
			+0.2	-34.8	+32.7	-9.9					
25	1855.110M	74.9	+0.0	+0.0	+0.0	+0.0	+0.0	59.3	73.1	-13.8	Vert
			+0.0	+0.2	+2.2	+0.6	221		Hi ch,		99
			+0.6	-36.8	+27.5	-9.9			RBW=100kHz		
26	4572.902M	46.8	+0.0	+0.0	+0.0	+0.0	+0.0	39.9	54.0	-14.1	Vert
			+0.0	+0.4	+3.5	+1.0	56		Mid ch		142
			+0.2	-34.8	+32.7	-9.9					
27	628.814M	36.3	+20.3	+0.1	+0.6	-27.0	+0.0	31.8	46.0	-14.2	Horiz
			+1.5				270		Mid channel		119
28	1829.325M	74.8	+0.0	+0.0	+0.0	+0.0	+0.0	58.8	73.1	-14.3	Horiz
			+0.0	+0.2	+2.1	+0.6	324		Mid ch,		207
			+0.6	-36.9	+27.3	-9.9			RBW=100kHz		
29	194.100M	45.9	+9.2	+0.1	+0.3	-27.2	+0.0	29.1	43.5	-14.4	Horiz
			+0.8				45		Mid channel		151

30	619.333M	36.1	+20.3 +1.5	+0.1	+0.6	-27.0	+0.0 46	31.6	46.0 Low channel	-14.4	Vert 102
31	1829.151M	74.5	+0.0 +0.0 +0.6	+0.0 +0.2 -36.9	+0.0 +2.1 +27.3	+0.0 +0.6 -9.9	+0.0 -10	58.5	73.1 Mid ch, RBW=100kHz	-14.6	Vert 167
32	4637.256M	45.7	+0.0 +0.0 +0.2	+0.0 +0.5 -34.8	+0.0 +3.5 +32.8	+0.0 +1.1 -9.9	+0.0 104	39.1	54.0 Hi ch	-14.9	Vert 119
33	193.640M	45.4	+9.2 +0.8	+0.1	+0.3	-27.2	+0.0 39	28.6	43.5 Low channel	-14.9	Horiz 148
34	193.580M	45.2	+9.2 +0.8	+0.1	+0.3	-27.2	+0.0 37	28.4	43.5 High channel	-15.1	Horiz 168
35	191.680M	45.2	+9.2 +0.7	+0.1	+0.3	-27.2	+0.0 45	28.3	43.5 Mid channel	-15.2	Horiz 151
36	191.670M	45.1	+9.2 +0.7	+0.1	+0.3	-27.2	+0.0 37	28.2	43.5 High channel	-15.3	Horiz 168
37	1854.899M	73.3	+0.0 +0.0 +0.6	+0.0 +0.2 -36.8	+0.0 +2.2 +27.5	+0.0 +0.6 -9.9	+0.0 273	57.7	73.1 Hi ch	-15.4	Horiz 126
38	196.700M	44.8	+9.1 +0.8	+0.1	+0.3	-27.1	+0.0 45	28.0	43.5 Mid channel	-15.5	Horiz 151
39	191.680M	44.8	+9.2 +0.7	+0.1	+0.3	-27.2	+0.0 39	27.9	43.5 Low channel	-15.6	Horiz 148
40	628.804M	34.6	+20.3 +1.5	+0.1	+0.6	-27.0	+0.0 360	30.1	46.0 Mid channel	-15.9	Vert 134
41	196.800M	44.3	+9.1 +0.8	+0.1	+0.3	-27.1	+0.0 39	27.5	43.5 Low channel	-16.0	Horiz 148
42	199.060M	43.6	+9.1 +0.8	+0.1	+0.3	-27.1	+0.0 39	26.8	43.5 Low channel	-16.7	Horiz 148
43	783.200M	31.5	+22.0 +1.8	+0.3	+0.6	-27.1	+0.0 185	29.1	46.0 High channel	-16.9	Vert 123
44	638.100M	32.7	+20.4 +1.5	+0.2	+0.6	-27.0	+0.0 369	28.4	46.0 High channel	-17.6	Vert 123
45	3609.988M Ave	45.3	+0.0 +0.0 +0.2	+0.0 +0.2 -35.2	+0.0 +3.1 +31.6	+0.0 +0.9 -9.9	+0.0 147	36.2	54.0 Low ch, RBW=1 MHz	-17.8	Vert 100
^	3609.986M	57.8	+0.0 +0.0 +0.2	+0.0 +0.2 -35.2	+0.0 +3.1 +31.6	+0.0 +0.9 -9.9	+0.0 147	48.7	54.0 Low ch, RBW=1 MHz	-5.3	Vert 100

47	855.000M	30.2	+22.6 +1.8	+0.2	+0.7	-27.3	+0.0 -8	28.2	46.0 High channel	-17.8	Vert 123
48	543.200M	33.5	+19.2 +1.4	+0.2	+0.6	-27.1	+0.0 -10	27.8	46.0 High channel	-18.2	Vert 123
49	615.300M	32.3	+20.2 +1.5	+0.1	+0.6	-27.0	+0.0 369	27.7	46.0 High channel	-18.3	Vert 123
50	1804.928M	70.2	+0.0 +0.0 +0.7	+0.0 +0.2 -36.9	+0.0 +2.1 +27.1	+0.0 +0.6 -9.9	+0.0 350	54.1	73.1 Low ch, RBW=100kHz	-19.0	Horiz 185
51	638.100M	31.2	+20.4 +1.5	+0.2	+0.6	-27.0	+0.0 -10	26.9	46.0 High channel	-19.1	Horiz 168
52	521.500M	31.9	+18.8 +1.4	+0.2	+0.5	-27.1	+0.0 370	25.7	46.0 High channel	-20.3	Horiz 168
53	3658.408M Ave	42.1	+0.0 +0.0 +0.2	+0.0 +0.4 -35.1	+0.0 +3.1 +31.7	+0.0 +0.9 -9.9	+0.0 154	33.4	54.0 Mid ch	-20.6	Vert 167
^	3658.392M	54.7	+0.0 +0.0 +0.2	+0.0 +0.4 -35.1	+0.0 +3.1 +31.7	+0.0 +0.9 -9.9	+0.0 154	46.0	54.0 Mid ch	-8.0	Vert 167
55	3658.402M Ave	42.0	+0.0 +0.0 +0.2	+0.0 +0.4 -35.1	+0.0 +3.1 +31.7	+0.0 +0.9 -9.9	+0.0 133	33.3	54.0 Mid ch	-20.7	Horiz 172
^	3658.452M	55.2	+0.0 +0.0 +0.2	+0.0 +0.4 -35.1	+0.0 +3.1 +31.7	+0.0 +0.9 -9.9	+0.0 133	46.5	54.0 Mid ch	-7.5	Horiz 172
57	475.700M	32.5	+17.9 +1.2	+0.2	+0.6	-27.3	+0.0 370	25.1	46.0 High channel	-20.9	Vert 123
58	475.700M	31.7	+17.9 +1.2	+0.2	+0.6	-27.3	+0.0 28	24.3	46.0 Mid channel	-21.7	Vert 128
59	475.800M	31.1	+17.9 +1.2	+0.2	+0.6	-27.3	+0.0 5	23.7	46.0 High channel	-22.3	Horiz 168
60	8122.254M Ave	28.5	+0.0 +0.0 +0.4	+0.0 +0.7 -35.3	+0.0 +4.9 +38.2	+0.0 +1.5 -9.9	+0.0 169	29.0	54.0 Low ch, RBW=1 MHz	-25.0	Vert 100
^	8122.282M	42.2	+0.0 +0.0 +0.4	+0.0 +0.7 -35.3	+0.0 +4.9 +38.2	+0.0 +1.5 -9.9	+0.0 169	42.7	54.0 Low ch, RBW=1 MHz	-11.3	Vert 100
62	9024.672M Ave	27.9	+0.0 +0.0 +0.4	+0.0 +0.2 -35.1	+0.0 +5.2 +38.7	+0.0 +1.5 -9.9	+0.0 200	28.9	54.0 Low ch, RBW=1 MHz	-25.1	Vert 100
^	9024.754M	42.6	+0.0 +0.0 +0.4	+0.0 +0.2 -35.1	+0.0 +5.2 +38.7	+0.0 +1.5 -9.9	+0.0 200	43.6	54.0 Low ch, RBW=1 MHz	-10.4	Vert 100

64	196.900M	34.4	+9.1 +0.8	+0.1	+0.3	-27.1	+0.0 -10	17.6	43.5 High channel	-25.9	Vert 123
65	250.700M	32.4	+13.0 +1.0	+0.1	+0.4	-27.1	+0.0 37	19.8	46.0 High channel	-26.2	Horiz 168
66	4512.476M Ave	32.7	+0.0 +0.0 +0.2	+0.0 +0.3 -34.8	+0.0 +3.4 +32.5	+0.0 +1.0 -9.9	+0.0 83	25.4	54.0 Low ch, RBW=1 MHz	-28.6	Vert 100
^	4512.432M	47.2	+0.0 +0.0 +0.2	+0.0 +0.3 -34.8	+0.0 +3.4 +32.5	+0.0 +1.0 -9.9	+0.0 83	39.9	54.0 Low ch, RBW=1 MHz	-14.1	Vert 100
68	5414.886M Ave	30.1	+0.0 +0.0 +0.2	+0.0 +0.4 -34.9	+0.0 +4.0 +34.2	+0.0 +1.3 -9.9	+0.0 181	25.4	54.0 Low ch, RBW=1 MHz	-28.6	Vert 100
^	5414.932M	43.9	+0.0 +0.0 +0.2	+0.0 +0.4 -34.9	+0.0 +4.0 +34.2	+0.0 +1.3 -9.9	+0.0 181	39.2	54.0 Low ch, RBW=1 MHz	-14.8	Vert 100
70	7219.916M	42.6	+0.0 +0.0 +0.2	+0.0 +0.6 -34.9	+0.0 +4.8 +37.8	+0.0 +1.3 -9.9	+0.0 -10	42.5	73.1 Low ch, RBW=1 MHz	-30.6	Vert 100
71	6317.700M	44.9	+0.0 +0.0 +0.2	+0.0 +0.4 -34.9	+0.0 +4.6 +35.5	+0.0 +1.3 -9.9	+0.0 369	42.1	73.1 Low ch, RBW=1 MHz	-31.0	Vert 100
72	5564.824M	44.5	+0.0 +0.0 +0.2	+0.0 +0.5 -34.9	+0.0 +4.0 +34.4	+0.0 +1.2 -9.9	+0.0 127	40.0	73.1 Hi ch	-33.1	Vert 119
73	6492.204M	42.0	+0.0 +0.0 +0.2	+0.0 +0.6 -35.0	+0.0 +4.7 +35.8	+0.0 +1.2 -9.9	+0.0 228	39.6	73.1 Hi ch	-33.5	Horiz 100
74	5564.780M	43.3	+0.0 +0.0 +0.2	+0.0 +0.5 -34.9	+0.0 +4.0 +34.4	+0.0 +1.2 -9.9	+0.0 228	38.8	73.1 Hi ch	-34.3	Horiz 100

FCC PART 15.247(d) - BAND EDGE

Test Setup Photos

Parking Meter Antenna

Vehicle Sensor Antenna

Test Data

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

Customer:	**Dust Networks**		
Specification:	**FCC 15.247(d) bandedge Rad-dBuV -6.7dBi Antenna**		
Work Order #:	**87508**	Date:	10/9/2008
Test Type:	**Band Edge Measurements**	Time:	16:14:26
Equipment:	**Antenna**	Sequence#:	7
Manufacturer:	Streetline	Tested By:	Art Rice
Model:	Parking Meter Antenna		
S/N:	Sample 1		

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Antenna	2630	12/30/2006	12/30/2008	00852
E4446A Spectrum Analyzer	US44300408	03/05/2007	03/05/2009	02668
Cable	None	04/02/2007	04/02/2009	P05299
Cable	None	04/05/2007	04/05/2009	P05300
Preamp, HP88447D	2443A03707	02/05/2007	02/05/2009	00730
Cable	None	04/21/2008	04/21/2010	P05440

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

Function	Manufacturer	Model #	S/N
Transmit module	Dust Networks	M1030-AIS-ZNR	DOM:06-29
Antenna*	Streetline	Parking Meter Antenna	Sample 1

Support Devices:

Function	Manufacturer	Model #	S/N
Motherboard	Dust Networks	Tahoe Motherboard	none
TTL Converter	B&B Electronics	232LPTTL33	none
Laptop PC	Toshiba	PA1240U VCD	67041624
AC Adapter for PC	Toshiba	PA2411U	Date 9211

Test Conditions / Notes:

Measured transmitter fundamental signal levels to determine -20dBc band edge limits. Transmitting 32 byte packets with 20 mS between packets continuously at +5dBm output. Low channel 902.4914 MHz, Mid channel 914.6038 MHz, High channel 927.4823 MHz. Transmit module is mounted to motherboard. TTL converter is connected between motherboard and RS-232 cable that routes down, then outside the chamber to the support PC. The RS-232 cable was disconnected from the TTL converter once the transmissions were initiated. RBW=100 kHz, VBW=300 kHz. Antenna is the Parking Meter Antenna rated at -5.5dBi gain. Note: The spec limit used worst case measured fundamental radiated level.

Transducer Legend:

T1=ANT AN00852 25-1000MHz	T2=Cable Calibration ANP05299
T3=Cable Calibration ANP05300	T4=AMP-AN00730-020507
T5=Cable Calibration ANP05440	

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	dBµV	dB	Ant
1	902.540M	99.7	+22.9 +1.9	+0.3	+0.8	-27.3	+0.0 97	98.3	98.6 Peak of Low ch signal	-0.3	Vert 100
2	927.552M	98.9	+23.1 +1.9	+0.2	+0.7	-27.4	+0.0 91	97.4	98.6 Peak of Hi ch signal	-1.2	Vert 100
3	901.988M	73.4	+22.9 +1.9	+0.3	+0.8	-27.3	+0.0 97	72.0	78.6 Low ch bandedge	-6.6	Vert 100
4	928.012M	72.9	+23.1 +1.9	+0.2	+0.7	-27.4	+0.0 91	71.4	78.6 Upper ch bandedge	-7.2	Vert 100

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

Customer: **Dust Networks**
Specification: **FCC 15.247(d) bandedge Rad-dBuV -6.7dBi Antenna**
Work Order #: **87508** Date: 9/16/2008
Test Type: **Band Edge Measurements** Time: 14:28:18
Equipment: **Pavement bump antenna** Sequence#: 2
Manufacturer: Streetline Tested By: Art Rice
Model: Vehicle Sensor Antenna
S/N: Sample 1

***Test Equipment*:**

Function	S/N	Calibration Date	Cal Due Date	Asset #
Antenna	2630	12/30/2006	12/30/2008	00852
E4446A Spectrum Analyzer	US44300408	03/05/2007	03/05/2009	02668
Cable	None	04/02/2007	04/02/2009	P05299
Cable	None	04/05/2007	04/05/2009	P05300
Preamp, HP88447D	2443A03707	02/05/2007	02/05/2009	00730
Cable	None	04/21/2008	04/21/2010	P05440

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

Function	Manufacturer	Model #	S/N
Pavement bump antenna*	Streetline	Vehicle Sensor Antenna	Sample 1
Transmit module	Dust Networks	M1030-AIS-ZNR	DOM:06-29

Support Devices:

Function	Manufacturer	Model #	S/N
Motherboard	Dust Networks	Tahoe Motherboard	none
TTL Converter	B&B Electronics	232LPTTL33	none
Laptop PC	Toshiba	PA1240U VCD	67041624
AC Adapter for PC	Toshiba	PA2411U	Date 9211

Test Conditions / Notes:

Measured transmitter fundamental signal levels to determine -20dBc band edge limits. Transmitting 32 byte packets with 20 mS between packets continuously at +5dBm output. Transmit module is mounted to motherboard. TTL converter is connected between motherboard and RS-232 cable that routes down, then outside the chamber to the support PC. The RS-232 cable was disconnected from the TTL converter once the transmissions were initiated. RBW=100 kHz, VBW=300 kHz. Antenna is the Vehicle Sensor Antenna rated at -8 dBi gain. Note: The spec limit used worst case measured fundamental radiated level.

Transducer Legend:

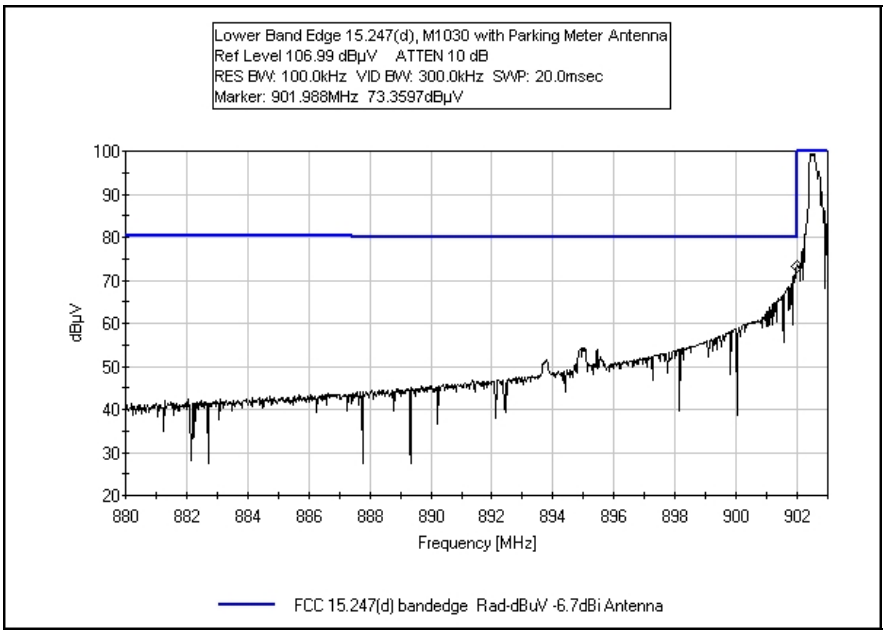
T1=ANT AN00852 25-1000MHz	T2=Cable Calibration ANP05299
T3=Cable Calibration ANP05300	T4=AMP-AN00730-020507
T5=Cable Calibration ANP05440	

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

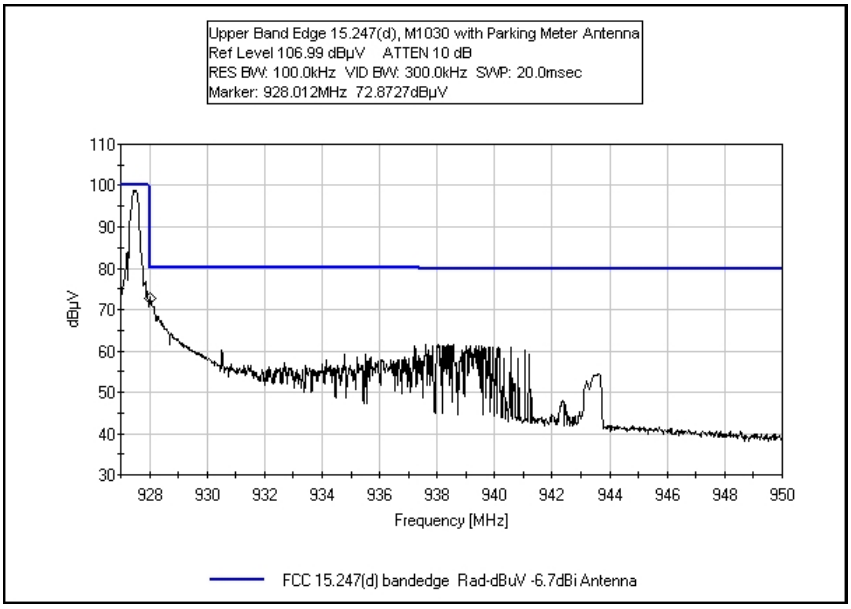
#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBµV	dB	dB	dB	dB	Table	dBµV	dBµV	dB	Ant
1	928.058M	67.7	+23.1 +1.9	+0.2	+0.7	-27.4	+0.0 16	66.2	73.1 Band edge level, TX on high channel	-6.9	Vert 122
2	902.000M	67.1	+22.9 +1.9	+0.3	+0.8	-27.3	+0.0 340	65.7	73.1 Band edge level, TX on low channel	-7.4	Vert 122

Test Plots

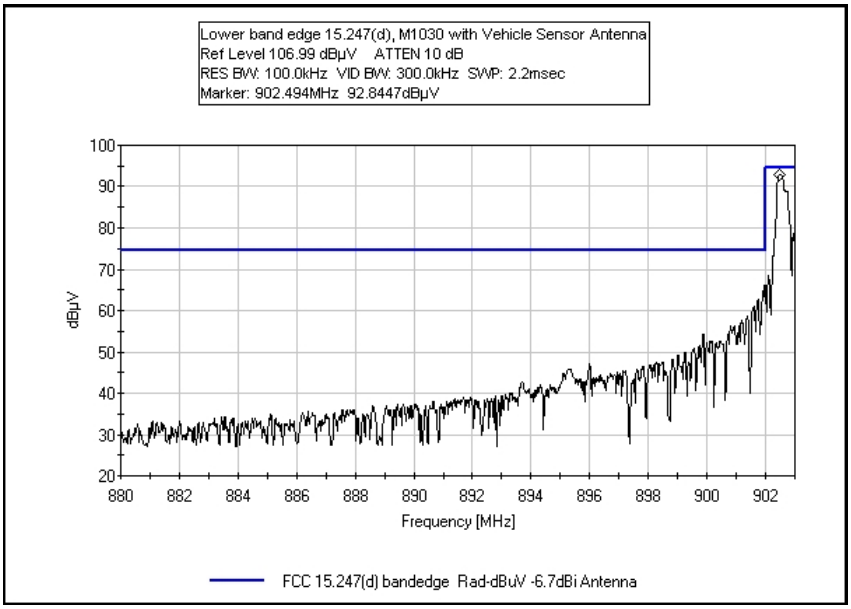
BAND EDGE - PARKING METER ANTENNA LOW



BAND EDGE - PARKING METER ANTENNA UPPER



FCC 15.247(d) BAND EDGE - VEHICLE SENSOR ANTENNA LOW



FCC 15.247(d) BAND EDGE - VEHICLE SENSOR ANTENNA UPPER