

# MicroStrain, Inc.

## TEST REPORT FOR

### 2.4 GHz OEM Wireless Module, SG-Link OEM

Tested to the following standards:

FCC Part 15 Subpart C Sections 15.247  
&  
RSS-210 Version 7

Report No.: 90661-6

Date of issue: April 20, 2010



TESTING  
CERT #803.01, 803.02,  
803.05, 803.06

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

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

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## ADMINISTRATIVE INFORMATION

### Test Report Information

**REPORT PREPARED FOR:**

MicroStrain, Inc.  
459 Hurricane Lane  
Williston, VT 05495

**REPORT PREPARED BY:**

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

REPRESENTATIVE: Jake Galbreath  
Customer Reference Number: 8190

Project Number: 90661

**DATE OF EQUIPMENT RECEIPT:**

April 14, 2010

**DATE(S) OF TESTING:**

April 14-16, 2010

### Report Authorization

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

A handwritten signature in black ink that reads "Steve Behm".

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

## Test Facility Information



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

TEST LOCATION(S):  
CKC Laboratories, Inc.  
22116 23rd Drive S.E., Suite A  
Bothell, WA 98021-4413

## Site Registration & Accreditation Information

Location	JAPAN	CANADA	FCC
Bothell	R-2296, C-2506 & T-1489	3082C-1	318736

## SUMMARY OF RESULTS

### Standard / Specification: FCC Part 15 Subpart C 15.247

Description	Test Procedure/Method	Results
6 dB Bandwidth	FCC Part 15 Subpart C Section 15.247(a)(2) / KDB 558074	Pass
Max Peak Output Power	FCC Part 15 Subpart C Section 15.247(b)(3) / KDB 558074	Pass
Spurious Emissions	FCC Part 15 Subpart C Section 15.247(d) / KDB 558074	Pass
Power Spectral Density	FCC Part 15 Subpart C Section 15.247(e) / KDB 558074	Pass

### Standard / Specification: RSS-210 Version 7

Description	Test Procedure/Method	Results
99% Bandwidth	RSS-210 / RSS-GEN	Pass

## Conditions During Testing

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

Summary of Conditions
None

## **EQUIPMENT UNDER TEST (EUT)**

### **2.4 GHz OEM Wireless Module**

Manuf: MicroStrain, Inc.

Model: SG-Link OEM

Serial: NODE:303

## **PERIPHERAL DEVICES**

The EUT was not tested with peripheral devices.

## FCC PART 15 SUBPART C

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

### **Temperature and Humidity During Testing**

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

The relative humidity was between 20% and 75%.

### **15.31(e) Voltage Variations**

Not applicable to this device because it is battery powered.

### **15.33(a) Frequency Ranges Tested**

15.247 Radiated Emissions: 9 kHz – 25 GHz

### **15.203 Antenna Requirements**

The antenna is an integral part of the EUT and is non-removable; therefore the EUT complies with Section 15.203 of the FCC rules.

### **EUT Operating Frequency**

The EUT was operating at 2400-2483.5 MHz.

## 15.247(a)(2) 6 dB Bandwidth

Engineer Names: Armando del Angel & Jeff Gilbert

Test Equipment				
Name	Model	Cal Date	Cal Due	Asset
Cable	32026-2-29080-84	10/23/2009	10/23/2011	AN03121
Cable	Heliac	10/23/2009	10/23/2011	ANP05542
Preamp	83017A	9/17/2009	9/17/2011	AN01271
Cable	32026-2-29801-12	10/23/2009	10/23/2011	AN03123
Horn Antenna	3115	10/12/2009	10/12/2011	AN01412
Spectrum Analyzer	E4440A	8/25/2009	8/25/2011	AN02872

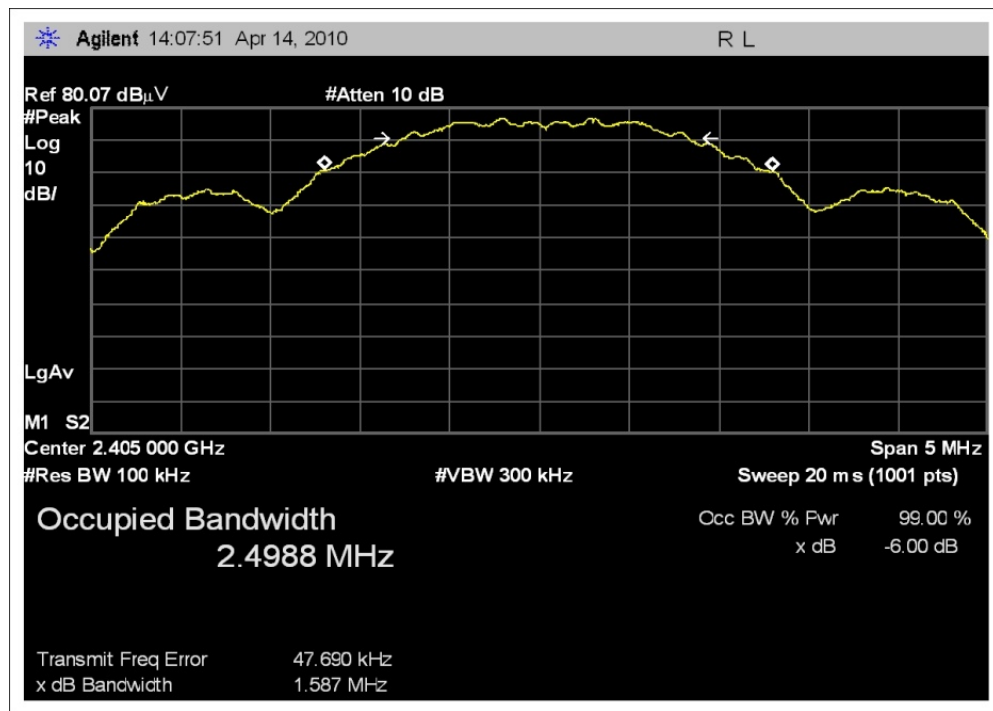
Test Conditions: Frequency Range Investigated: 2400 - 2483.5 MHz; 22°C / 27% Relative Humidity / 103.1 kPa; Testing per KDB 558074 for 15.247 DTS devices; EUT is in Continuous, 100% modulated TX mode; 2405 MHz, 2440 MHz, & 2480 MHz; 3 orientations were investigated (X, Y, and Z), worst case emissions from the Y-orientation are reported.

### Test Data

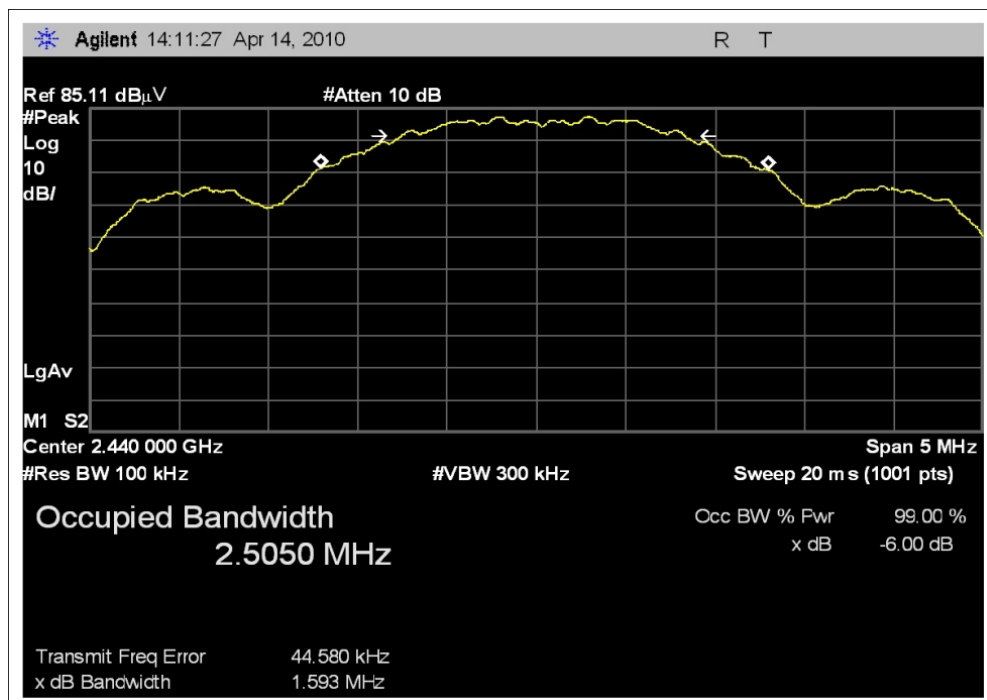
Frequency MHz	Measured 6 dB BW kHz	15.247 Min Limit kHz	Pass/Fail		Frequency MHz	Measured 99% BW kHz	Min Limit kHz	Pass/Fail
2405	1587	500	Pass		2405	2499	500	Pass
2440	1593	500	Pass		2440	2505	500	Pass
2480	1593	500	Pass		2480	2514	500	Pass



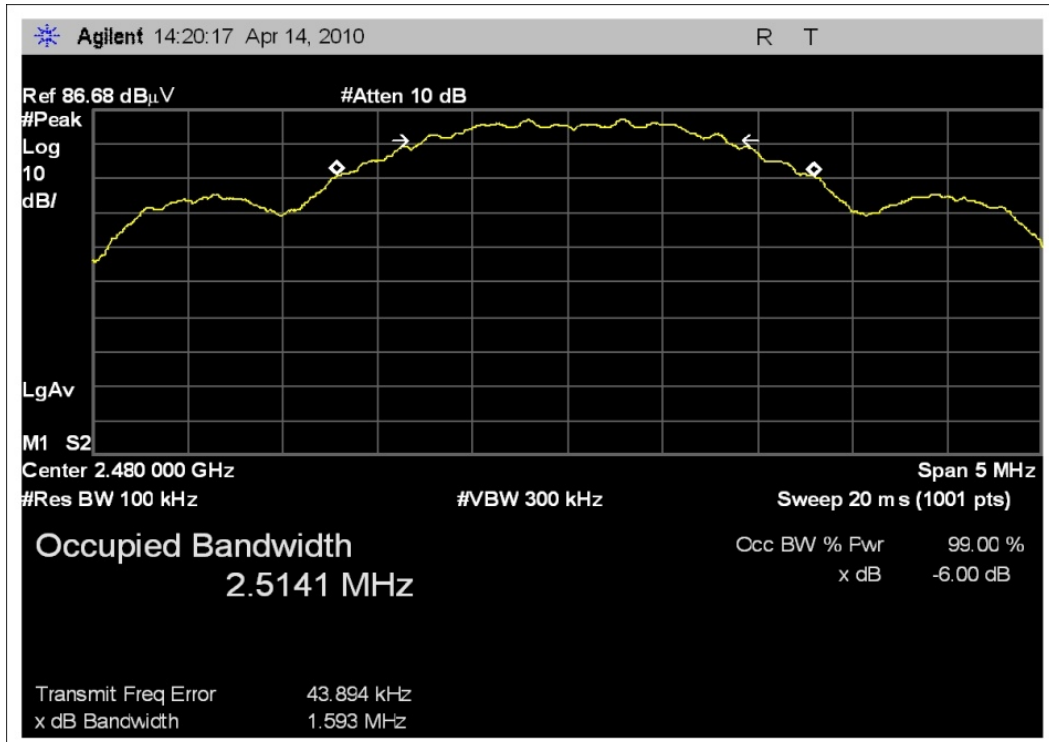
### Test Plots



2405 MHz – 6 dB

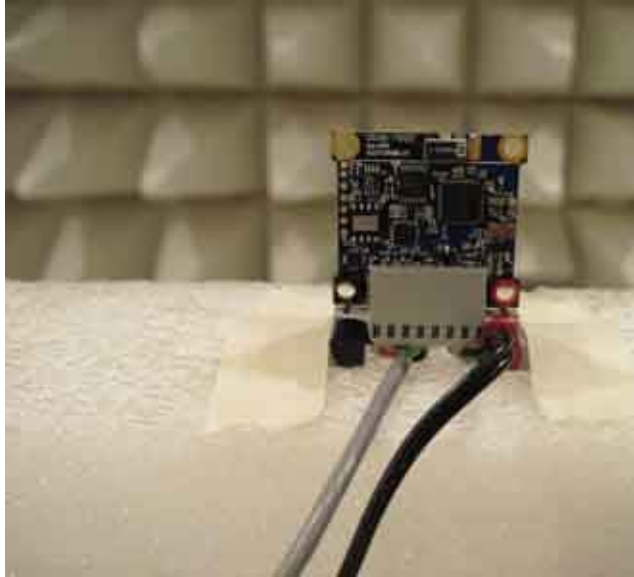


2440 MHz – 6 dB

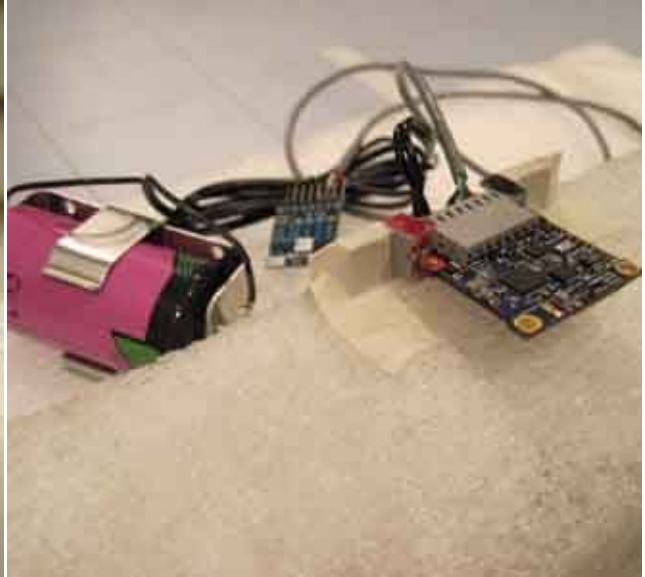


2480 MHz – 6 dB

**Test Setup Photos**



X Orientation



Y Orientation



Z Orientation

## 15.247(b)(3) Max Peak Output Power

Engineer Names: Armando del Angel & Jeff Gilbert

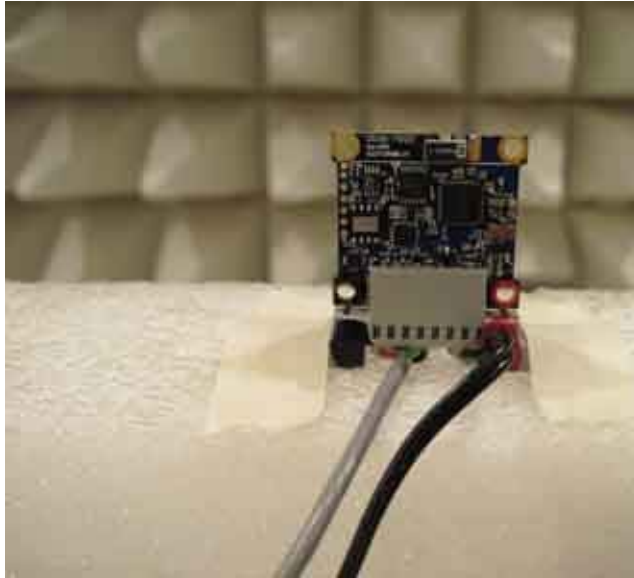
Test Equipment				
Name	Model	Cal Date	Cal Due	Asset
Cable	32026-2-29080-84	10/23/2009	10/23/2011	AN03121
Cable	Heliac	10/23/2009	10/23/2011	ANP05542
Preamp	83017A	9/17/2009	9/17/2011	AN01271
Cable	32026-2-29801-12	10/23/2009	10/23/2011	AN03123
Horn Antenna	3115	10/12/2009	10/12/2011	AN01412
Spectrum Analyzer	E4440A	8/25/2009	8/25/2011	AN02872

Test Conditions: Frequency Range Investigated: 2400 - 2483.5 MHz; 22°C / 27% Relative Humidity / 103.1 kPa; Testing per KDB 558074 for 15.247 DTS devices; EUT is in Continuous, 100% modulated TX mode; 2405 MHz, 2440 MHz, & 2480 MHz; 3 orientations were investigated (X, Y, and Z), worst case emissions from the Y-orientation are reported.

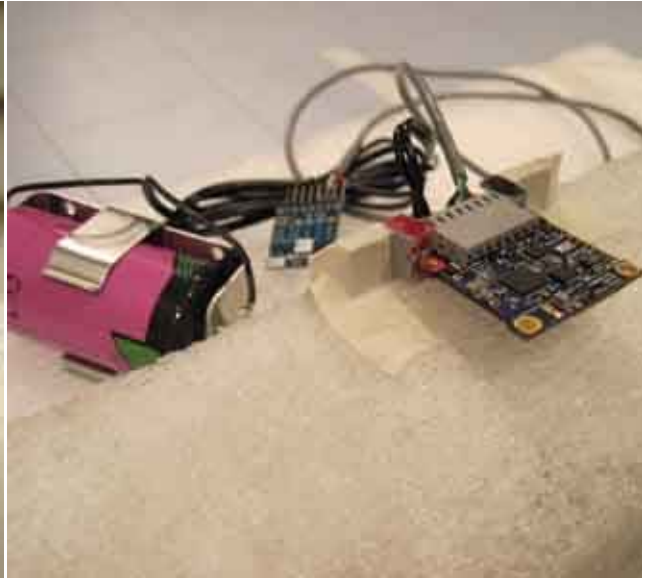
### Test Data Sheets

Frequency MHz	F/S in dBμV/m	Numeric Gain G*	F/S in V/m	Test Distance Meters	Conducted Power Watts	Conducted Power dBm	15.247 Limit dBm	Pass/Fail
2405	93.90	1.26	0.0495	3	5.8445E-04	-2.33	30.0	Pass
2440	96.60	1.26	0.0676	3	1.0883E-03	0.37	30.0	Pass
2480	97.70	1.26	0.0767	3	1.4020E-03	1.47	30.0	Pass

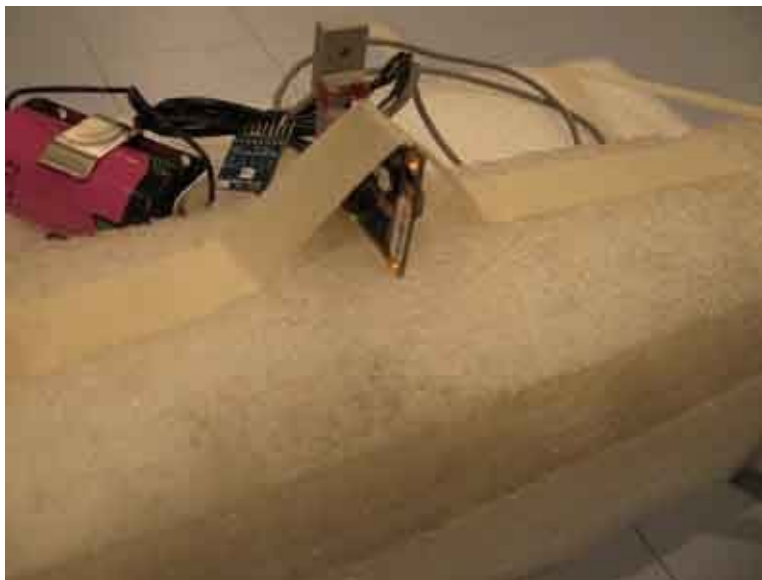
**Test Setup Photos**



X Orientation



Y Orientation



Z Orientation

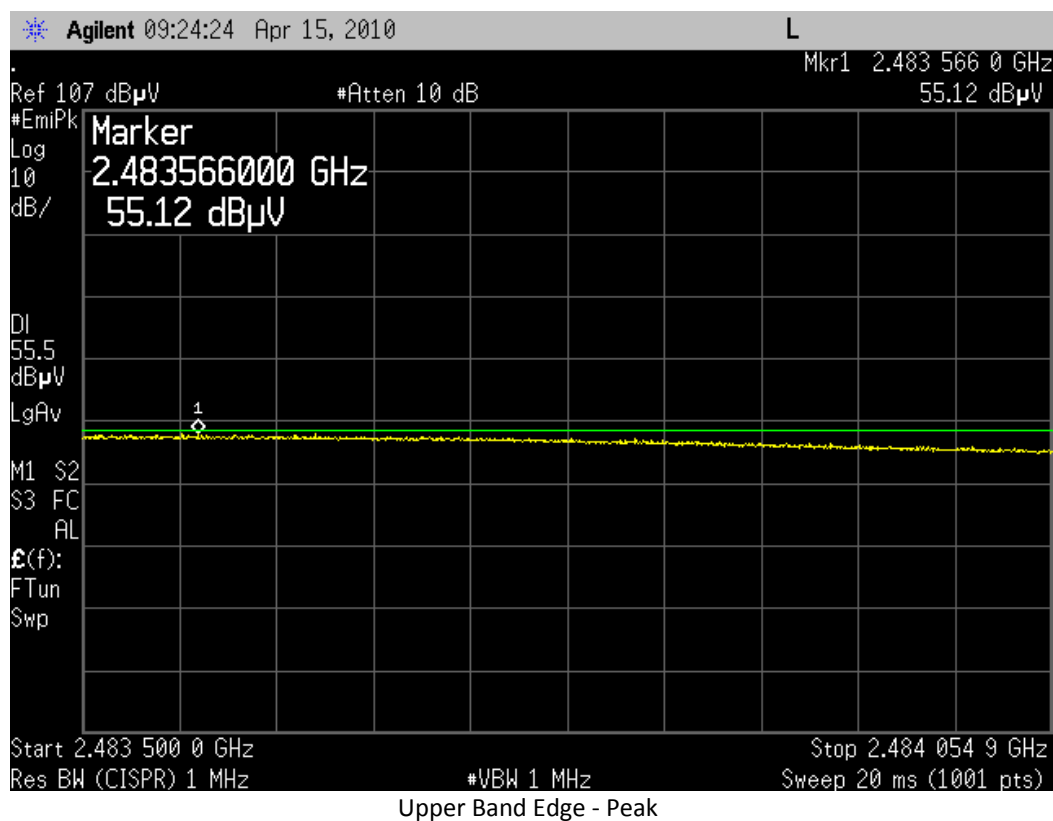
## 15.247(d) Spurious Emissions

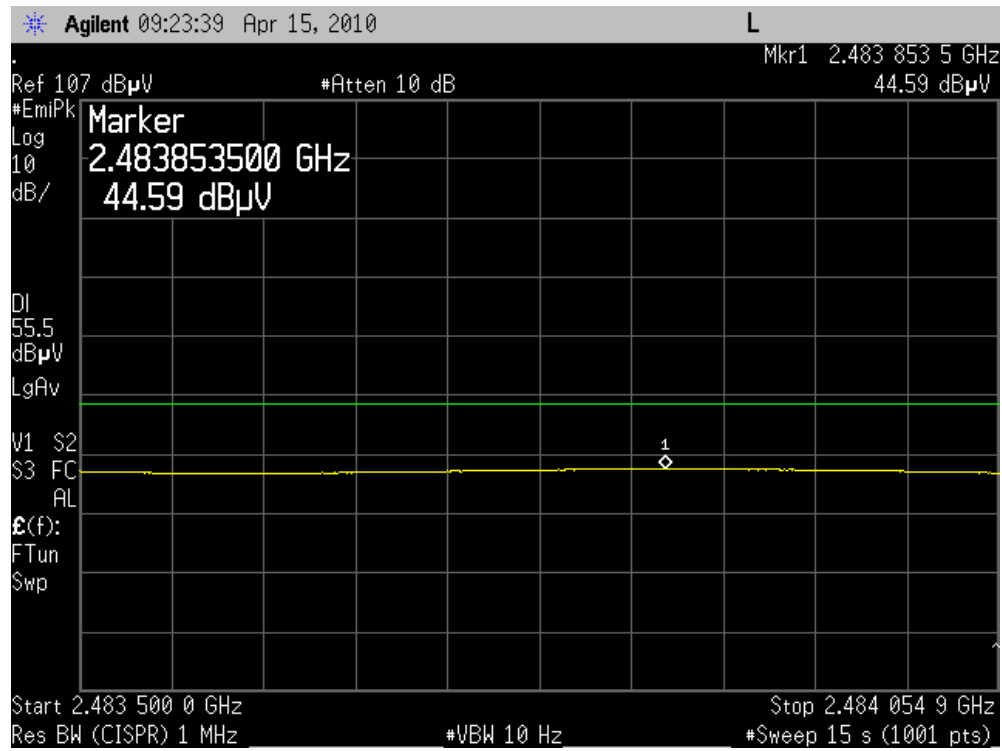
Engineer Names: Armando del Angel & Jeff Gilbert

Test Equipment				
Name	Model	Cal Date	Cal Due	Asset
Cable	32026-2-29080-84	10/23/2009	10/23/2011	AN03121
Cable	Heliac	10/23/2009	10/23/2011	ANP05542
Preamplifier	83017A	9/17/2009	9/17/2011	AN01271
Cable	32026-2-29801-12	10/23/2009	10/23/2011	AN03123
Horn Antenna	3115	10/12/2009	10/12/2011	AN01412
Spectrum Analyzer	E4440A	8/25/2009	8/25/2011	AN02872

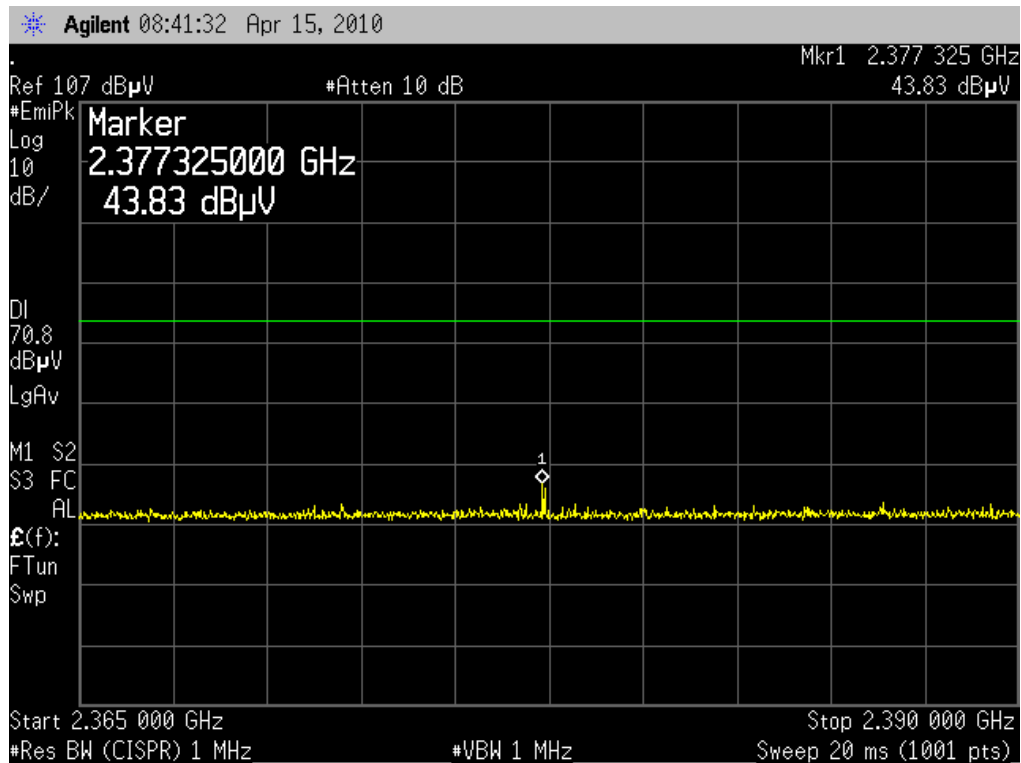
Test Conditions: Frequency Range Investigated: 2400 - 2483.5 MHz; 22°C / 27% Relative Humidity / 103.1 kPa; Testing per KDB 558074 for 15.247 DTS devices; EUT is in Continuous, 100% modulated TX mode; 2405 MHz, 2440 MHz, & 2480 MHz; 3 orientations were investigated (X, Y, and Z), worst case emissions from the Y-orientation are reported.

### Test Plots

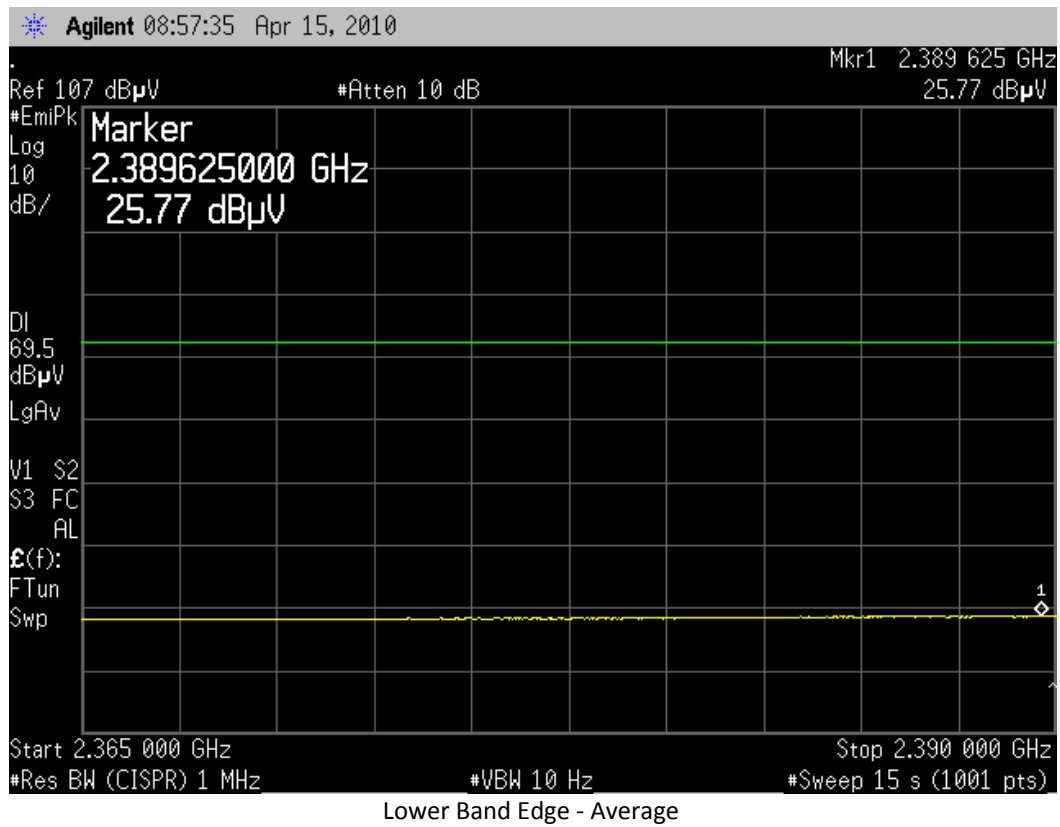




Upper Band Edge - Average



Lower Band Edge – Peak





### Test Data Sheets

Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **MicroStrain, Inc.**

Specification: **15.247(d)**

Work Order #: **90661**

Test Type: **Radiated Scan**

Equipment: **2.4 GHz OEM Wireless Module**

Manufacturer: MicroStrain, Inc.

Model: SG-Link OEM

S/N: NODE:303

Date: 4/16/2010

Time: 9:37:06 AM

Sequence#: 18

Tested By: Armando del Angel

#### ***Test Equipment:***

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
T2	ANP05360	Cable	RG214	11/10/2008	11/10/2010
T3	ANP05366	Cable	RG-214	10/20/2009	10/20/2011
T4	AN01517	Preamplifier	8447D	7/8/2008	7/8/2010
T5	AN00052	Loop Antenna	6502	6/4/2008	6/4/2010
T6	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

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

Function	Manufacturer	Model #	S/N
2.4 GHz OEM Wireless Module*	MicroStrain, Inc.	SG-Link OEM	NODE:303

#### ***Support Devices:***

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

Frequency Range Investigated: 0.009-30MHz  
 22°C / 30% Relative Humidity / 102.7 kPa  
 EUT is transmitting continuously; Y-orientation  
 Testing per KDB 558074 for 15.247 DTS devices

Ext Attn: 0 dB

#### ***Measurement Data:***

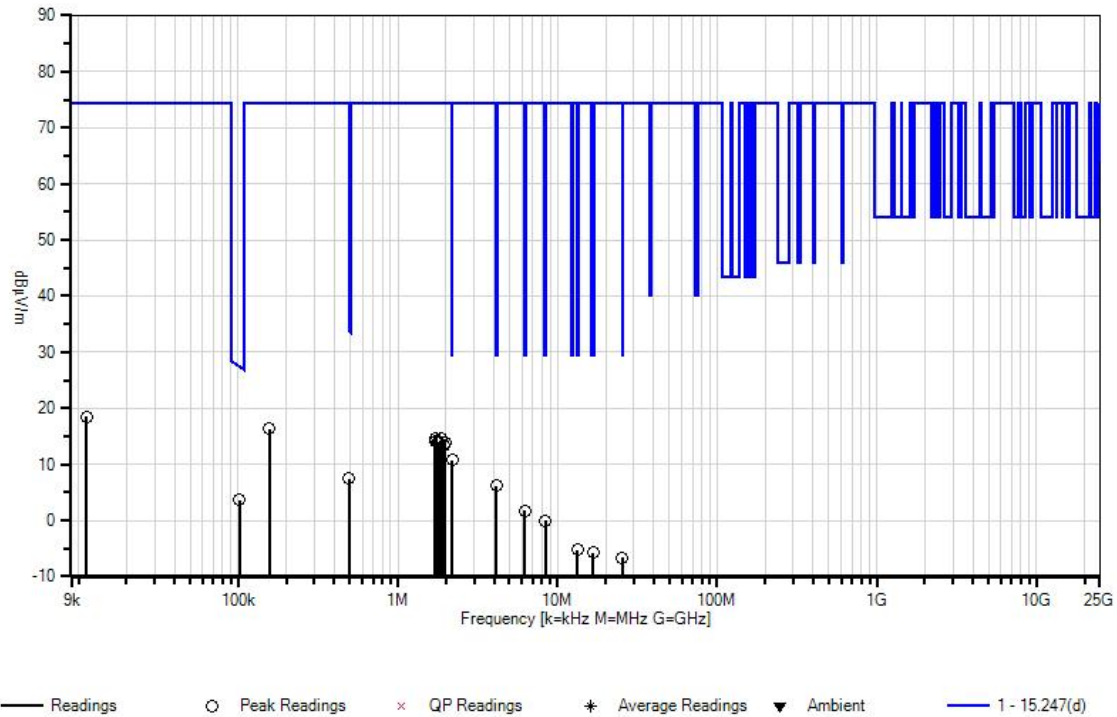
Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBÂμV/ m	Spec dBÂμV/ m	Margin dB	Polar Ant
1	2.181M	49.3	+0.0 +10.4	+0.1 +0.0	+0.1	-29.1	-20.0 360	10.8	29.5	-18.7	Verti 100
2	4.127M	44.7	+0.0 +10.3	+0.2 +0.0	+0.2	-29.2	-20.0 360	6.2	29.5	-23.3	Verti 100
3	102.213k	60.2	+0.0 +10.0	+0.0 +0.0	+0.1	-26.7	-40.0 360	3.6	27.4	-23.8	Verti 100
4	496.300k	66.3	+0.0 +9.9	+0.1 +0.0	+0.1	-29.0	-40.0 360	7.4	33.7	-26.3	Verti 100
5	6.217M	40.7	+0.0 +9.8	+0.2 +0.0	+0.2	-29.2	-20.0 360	1.7	29.5	-27.8	Verti 100

6	8.380M	39.3	+0.0 +9.5	+0.2 +0.0	+0.2	-29.2	-20.0 360	0.0	29.5	-29.5	Verti 100
7	13.362M	34.5	+0.0 +8.9	+0.2 +0.0	+0.3	-29.2	-20.0 360	-5.3	29.5	-34.8	Verti 100
8	16.695M	34.2	+0.0 +8.6	+0.3 +0.0	+0.3	-29.2	-20.0 360	-5.8	29.5	-35.3	Verti 100
9	25.560M	35.0	+0.1 +6.7	+0.3 +0.0	+0.4	-29.2	-20.0 360	-6.7	29.5	-36.2	Verti 100
10	11.208k	40.9	+0.0 +16.0	+0.0 +0.0	+0.1	+1.5	-40.0 360	18.5	74.3	-55.8	Verti 100
11	156.040k	73.8	+0.0 +10.0	+0.0 +0.0	+0.2	-27.7	-40.0 360	16.3	74.3	-58.0	Verti 100
12	1.739M	53.3	+0.0 +10.3	+0.1 +0.0	+0.1	-29.1	-20.0 360	14.7	74.3	-59.6	Verti 100
13	1.877M	53.3	+0.0 +10.3	+0.1 +0.0	+0.1	-29.1	-20.0 360	14.7	74.3	-59.6	Verti 100
14	1.884M	53.2	+0.0 +10.3	+0.1 +0.0	+0.1	-29.1	-20.0 360	14.6	74.3	-59.7	Verti 100
15	1.714M	52.8	+0.0 +10.3	+0.1 +0.0	+0.1	-29.1	-20.0 360	14.2	74.3	-60.1	Verti 100
16	1.779M	52.6	+0.0 +10.3	+0.1 +0.0	+0.1	-29.1	-20.0 360	14.0	74.3	-60.3	Verti 100
17	1.976M	52.4	+0.0 +10.4	+0.1 +0.0	+0.1	-29.1	-20.0 360	13.9	74.3	-60.4	Verti 100
18	1.789M	52.4	+0.0 +10.3	+0.1 +0.0	+0.1	-29.1	-20.0 360	13.8	74.3	-60.5	Verti 100
19	1.811M	52.4	+0.0 +10.3	+0.1 +0.0	+0.1	-29.1	-20.0 360	13.8	74.3	-60.5	Verti 100
20	1.942M	51.9	+0.0 +10.4	+0.1 +0.0	+0.1	-29.1	-20.0 360	13.4	74.3	-60.9	Verti 100

CKC Laboratories, Inc. Date: 4/16/2010 Time: 9:37:06 AM Microstrain, Inc. WO#: 90661  
 15.247(d) Test Distance: 3 Meters Sequence#: 18 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **MicroStrain, Inc.**  
 Specification: **15.247(d)**  
 Work Order #: **90661**  
 Test Type: **Radiated Scan**  
 Equipment: **2.4 GHz OEM Wireless Module**  
 Manufacturer: MicroStrain, Inc.  
 Model: SG-Link OEM  
 S/N: NODE:303

Date: 4/16/2010  
 Time: 10:23:44 AM  
 Sequence#: 21  
 Tested By: Armando del Angel

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
T2	ANP05360	Cable	RG214	11/10/2008	11/10/2010
T3	ANP05366	Cable	RG-214	10/20/2009	10/20/2011
T4	AN01517	Preamp	8447D	7/8/2008	7/8/2010
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011
T5	AN01993	Biconilog Antenna	CBL6111C	10/9/2009	10/9/2011

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

Function	Manufacturer	Model #	S/N
2.4 GHz OEM Wireless Module*	MicroStrain, Inc.	SG-Link OEM	NODE:303

**Support Devices:**

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

Frequency Range Investigated: 30-1000 MHz  
 22°C / 33% Relative Humidity / 102.2 kPa  
 EUT is transmitting continuously; Y-orientation  
 Testing per KDB 558074 for 15.247 DTS devices

Ext Attn: 0 dB

**Measurement Data:**

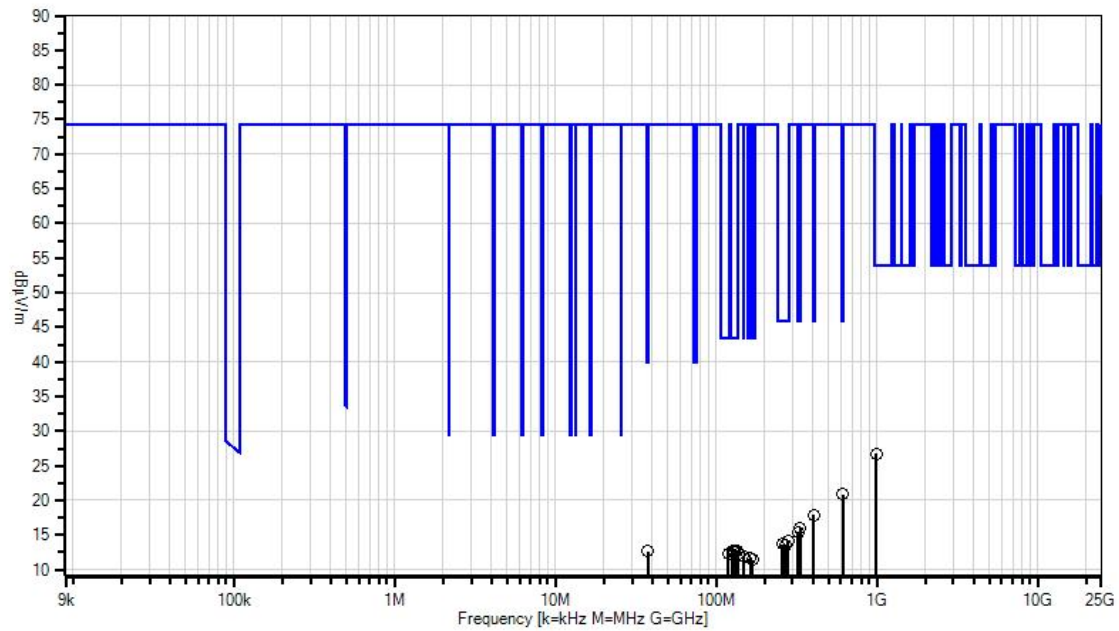
Reading listed by margin.

Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBμV	dB	dB	dB	dB	Table	dBÂμV/ m	dBÂμV/ m	dB	Ant
1	613.511M	26.5	+0.6 +20.0	+1.6	+1.8	-29.6	+0.0	20.9	46.0	-25.1	Verti 125
2	37.786M	28.5	+0.1 +12.3	+0.4	+0.5	-29.1	+0.0	12.7	40.0	-27.3	Verti 125
3	990.659M	26.2	+0.8 +24.3	+2.0	+2.4	-29.0	+0.0	26.7	54.0	-27.3	Verti 125
4	406.703M	27.2	+0.5 +16.5	+1.3	+1.5	-29.1	+0.0	17.9	46.0	-28.1	Verti 125
5	334.783M	26.9	+0.4 +14.6	+1.3	+1.3	-28.5	+0.0	16.0	46.0	-30.0	Verti 125
6	322.391M	26.8	+0.4 +14.2	+1.2	+1.3	-28.5	+0.0	15.4	46.0	-30.6	Verti 125
7	126.588M	27.5	+0.3 +12.4	+0.7	+0.8	-29.0	+0.0	12.7	43.5	-30.8	Verti 125

8	130.229M	27.6	+0.3 +12.3	+0.7	+0.8	-29.0	+0.0	12.7	43.5	-30.8	Verti 125
9	135.588M	27.8	+0.3 +12.1	+0.7	+0.8	-29.0	+0.0	12.7	43.5	-30.8	Verti 125
10	136.802M	27.7	+0.3 +12.1	+0.7	+0.8	-29.0	+0.0	12.6	43.5	-30.9	Verti 125
11	128.914M	27.4	+0.3 +12.3	+0.7	+0.8	-29.0	+0.0	12.5	43.5	-31.0	Verti 125
12	119.207M	28.4	+0.2 +11.1	+0.7	+0.8	-29.0	+0.0	12.2	43.5	-31.3	Verti 125
13	137.914M	27.2	+0.3 +12.1	+0.7	+0.8	-28.9	+0.0	12.2	43.5	-31.3	Verti 125
14	127.094M	26.9	+0.3 +12.3	+0.7	+0.8	-29.0	+0.0	12.0	43.5	-31.5	Verti 125
15	149.947M	26.6	+0.3 +12.1	+0.8	+0.9	-28.9	+0.0	11.8	43.5	-31.7	Verti 125
16	164.205M	27.6	+0.3 +10.9	+0.8	+0.9	-28.8	+0.0	11.7	43.5	-31.8	Verti 125
17	279.871M	26.9	+0.4 +13.2	+1.0	+1.1	-28.4	+0.0	14.2	46.0	-31.8	Verti 125
18	168.048M	27.7	+0.3 +10.5	+0.8	+0.9	-28.8	+0.0	11.4	43.5	-32.1	Verti 125
19	259.704M	26.8	+0.4 +12.9	+1.0	+1.1	-28.5	+0.0	13.7	46.0	-32.3	Verti 125
20	269.909M	26.4	+0.4 +13.0	+1.0	+1.1	-28.4	+0.0	13.5	46.0	-32.5	Verti 125

CKC Laboratories, Inc. Date: 4/16/2010 Time: 10:23:44 AM Microstrain, Inc. WO#: 90661  
 15.247(d) Test Distance: 3 Meters Sequence#: 21 Ext ATTN: 0 dB



— Readings    ○ Peak Readings    × QP Readings    \* Average Readings    ▼ Ambient    — 1 - 15.247(d)

Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **MicroStrain, Inc.**  
 Specification: **15.247(d)**  
 Work Order #: **90661**  
 Test Type: **Radiated Scan**  
 Equipment: **2.4 GHz OEM Wireless Module**  
 Manufacturer: MicroStrain, Inc.  
 Model: SG-Link OEM  
 S/N: NODE:303

Date: 4/16/2010  
 Time: 10:11:45 AM  
 Sequence#: 20  
 Tested By: Armando del Angel

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
T2	ANP05360	Cable	RG214	11/10/2008	11/10/2010
T3	ANP05366	Cable	RG-214	10/20/2009	10/20/2011
T4	AN01517	Preamp	8447D	7/8/2008	7/8/2010
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011
T5	AN01993	Biconilog Antenna	CBL6111C	10/9/2009	10/9/2011

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

Function	Manufacturer	Model #	S/N
2.4 GHz OEM Wireless Module*	MicroStrain, Inc.	SG-Link OEM	NODE:303

**Support Devices:**

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

Frequency Range Investigated: 30-1000 MHz  
 22°C / 33% Relative Humidity / 102.2 kPa  
 EUT is transmitting continuously; Y-orientation  
 Testing per KDB 558074 for 15.247 DTS devices

Ext Attn: 0 dB

**Measurement Data:**

Reading listed by margin.

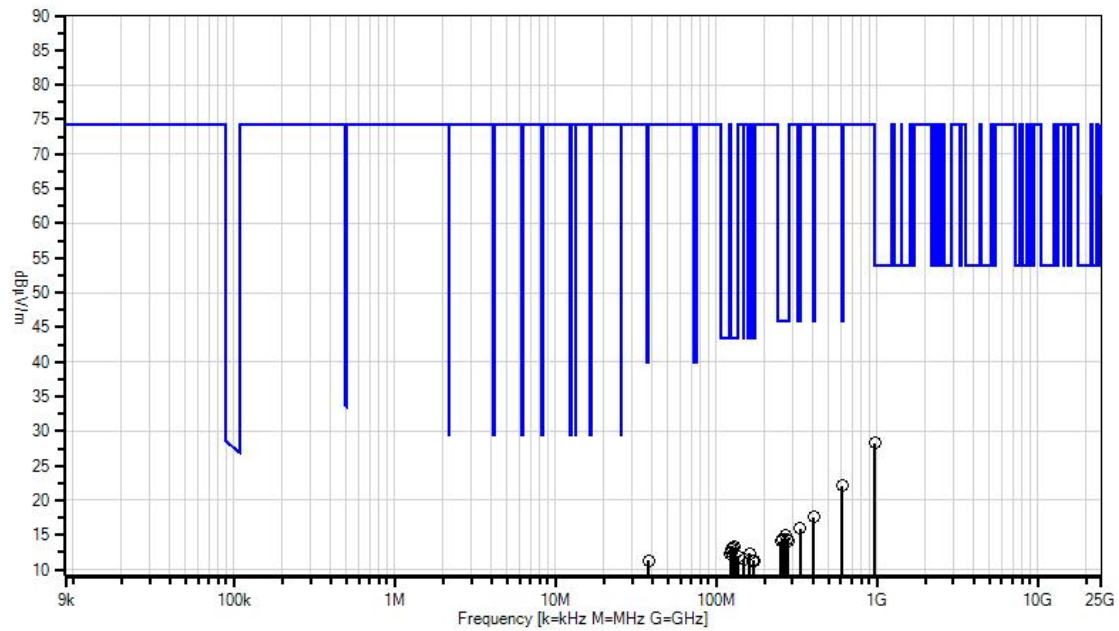
Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBμV	dB	dB	dB	dB	Table	dBÂμV/ m	dBÂμV/ m	dB	Ant
1	610.008M	27.7	+0.6 +20.0	+1.6	+1.8	-29.6	+0.0	22.1	46.0	-23.9	Horiz 126
2	977.231M	28.3	+0.8 +24.1	+1.9	+2.3	-29.1	+0.0	28.3	54.0	-25.7	Horiz 126
3	405.731M	26.8	+0.5 +16.5	+1.3	+1.5	-29.0	+0.0	17.6	46.0	-28.4	Horiz 126
4	38.038M	27.2	+0.1 +12.2	+0.4	+0.5	-29.1	+0.0	11.3	40.0	-28.7	Horiz 126
5	333.811M	26.8	+0.4 +14.6	+1.3	+1.3	-28.5	+0.0	15.9	46.0	-30.1	Horiz 126
6	130.532M	28.3	+0.3 +12.2	+0.7	+0.8	-29.0	+0.0	13.3	43.5	-30.2	Horiz 126
7	126.892M	28.1	+0.3 +12.3	+0.7	+0.8	-29.0	+0.0	13.2	43.5	-30.3	Horiz 126

8	125.982M	27.8	+0.3 +12.4	+0.7	+0.8	-29.0	+0.0	13.0	43.5	-30.5	Horiz 126
9	270.638M	27.9	+0.4 +13.0	+1.0	+1.1	-28.4	+0.0	15.0	46.0	-31.0	Horiz 126
10	124.364M	27.5	+0.2 +12.2	+0.7	+0.8	-29.0	+0.0	12.4	43.5	-31.1	Horiz 126
11	162.385M	28.0	+0.3 +11.1	+0.8	+0.9	-28.8	+0.0	12.3	43.5	-31.2	Horiz 126
12	123.454M	27.5	+0.2 +12.0	+0.7	+0.8	-29.0	+0.0	12.2	43.5	-31.3	Horiz 126
13	137.509M	26.9	+0.3 +12.1	+0.7	+0.8	-28.9	+0.0	11.9	43.5	-31.6	Horiz 126
14	258.246M	27.5	+0.4 +12.8	+1.0	+1.1	-28.5	+0.0	14.3	46.0	-31.7	Horiz 126
15	275.983M	27.1	+0.4 +13.1	+1.0	+1.1	-28.4	+0.0	14.3	46.0	-31.7	Horiz 126
16	280.357M	26.9	+0.4 +13.2	+1.0	+1.1	-28.4	+0.0	14.2	46.0	-31.8	Horiz 126
17	253.387M	27.4	+0.4 +12.8	+1.0	+1.1	-28.6	+0.0	14.1	46.0	-31.9	Horiz 126
18	149.947M	26.3	+0.3 +12.1	+0.8	+0.9	-28.9	+0.0	11.5	43.5	-32.0	Horiz 126
19	170.778M	27.9	+0.3 +10.2	+0.8	+0.9	-28.8	+0.0	11.3	43.5	-32.2	Horiz 126
20	171.789M	28.0	+0.3 +10.1	+0.8	+0.9	-28.8	+0.0	11.3	43.5	-32.2	Horiz 126



CKC Laboratories, Inc. Date: 4/16/2010 Time: 10:11:45 AM Microstrain, Inc. WO#: 90661  
 15.247(d) Test Distance: 3 Meters Sequence#: 20 Ext ATTN: 0 dB



— Readings    ○ Peak Readings    × QP Readings    \* Average Readings    ▼ Ambient    — 1 - 15.247(d)

Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **MicroStrain, Inc.**  
 Specification: **15.247(d)**  
 Work Order #: **90661**  
 Test Type: **Maximized Emissions**  
 Equipment: **2.4 GHz OEM Wireless Module**  
 Manufacturer: MicroStrain, Inc.  
 Model: SG-Link OEM  
 S/N: NODE:303

Date: 4/15/2010  
 Time: 8:32:45 AM  
 Sequence#: 2  
 Tested By: Jeff Gilbert

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
T2	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T3	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T4	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

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

Function	Manufacturer	Model #	S/N
2.4 GHz OEM Wireless Module*	MicroStrain, Inc.	SG-Link OEM	NODE:303

**Support Devices:**

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

Frequency Range Investigated: 1000 - 2400 MHz  
 21°C / 30% Relative Humidity / 102.4 kPa  
 EUT is transmitting continuously; Y-orientation  
 Testing per KDB 558074 for 15.247 DTS devices

Ext Attn: 0 dB

**Measurement Data:**

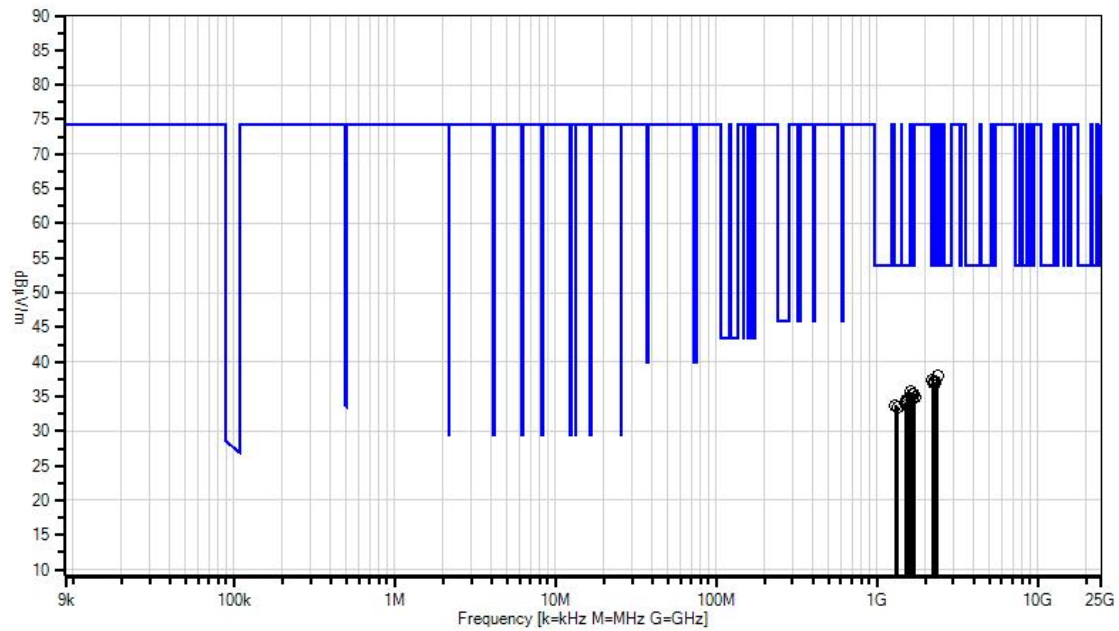
Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBÂμV/ m	Spec dBÂμV/ m	Margin dB	Polar Ant
1	2381.169M	39.7	+28.4 +1.3	+0.3	-34.5	+2.7	+0.0 360	37.9	54.0	-16.1	Verti 100
2	2231.740M	39.9	+28.0 +1.2	+0.3	-34.6	+2.6	+0.0 360	37.4	54.0	-16.6	Verti 100
3	2319.818M	39.1	+28.2 +1.3	+0.2	-34.5	+2.8	+0.0 360	37.1	54.0	-16.9	Verti 100
4	2262.719M	39.2	+28.1 +1.2	+0.3	-34.5	+2.7	+0.0 360	37.0	54.0	-17.0	Verti 100
5	2280.942M	39.1	+28.1 +1.2	+0.3	-34.5	+2.7	+0.0 360	36.9	54.0	-17.1	Verti 100

6	1623.787M	41.6	+25.8 +1.1	+0.2	-35.3	+2.3	+0.0 360	35.7	54.0	-18.3	Verti 100
7	1706.813M	40.5	+26.1 +1.2	+0.3	-35.1	+2.4	+0.0 360	35.4	54.0	-18.6	Verti 100
8	1677.777M	40.7	+26.0 +1.1	+0.3	-35.1	+2.4	+0.0 360	35.4	54.0	-18.6	Verti 100
9	1660.536M	41.0	+25.9 +1.1	+0.2	-35.2	+2.3	+0.0 360	35.3	54.0	-18.7	Verti 100
10	1691.388M	40.5	+26.1 +1.1	+0.3	-35.1	+2.4	+0.0 360	35.3	54.0	-18.7	Verti 100
11	1720.424M	40.0	+26.2 +1.2	+0.2	-35.1	+2.4	+0.0 360	34.9	54.0	-19.1	Verti 100
12	1645.564M	40.4	+25.9 +1.1	+0.2	-35.2	+2.3	+0.0 360	34.7	54.0	-19.3	Verti 100
13	1538.492M	40.8	+25.4 +1.1	+0.3	-35.5	+2.3	+0.0 360	34.4	54.0	-19.6	Verti 100
14	1520.344M	40.9	+25.3 +1.1	+0.2	-35.5	+2.2	+0.0 360	34.2	54.0	-19.8	Verti 100
15	1533.501M	40.7	+25.3 +1.1	+0.3	-35.5	+2.3	+0.0 360	34.2	54.0	-19.8	Verti 100
16	1513.085M	41.0	+25.2 +1.1	+0.2	-35.6	+2.2	+0.0 360	34.1	54.0	-19.9	Verti 100
17	1547.112M	40.4	+25.4 +1.1	+0.3	-35.5	+2.3	+0.0 360	34.0	54.0	-20.0	Verti 100
18	1305.657M	42.1	+24.2 +1.1	+0.2	-36.0	+2.1	+0.0 360	33.7	54.0	-20.3	Verti 100
19	1529.418M	40.2	+25.3 +1.1	+0.3	-35.5	+2.3	+0.0 360	33.7	54.0	-20.3	Verti 100
20	1349.301M	41.5	+24.4 +1.1	+0.2	-35.8	+2.1	+0.0 360	33.5	54.0	-20.5	Verti 100

CKC Laboratories, Inc. Date: 4/15/2010 Time: 8:32:45 AM Microstrain, Inc. WO#: 90661  
 15.247(d) Test Distance: 3 Meters Sequence#: 2 Ext ATTN: 0 dB



— Readings    ○ Peak Readings    × QP Readings    \* Average Readings    ▼ Ambient    — 1 - 15.247(d)

Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **MicroStrain, Inc.**  
 Specification: **15.247(d)**  
 Work Order #: **90661**  
 Test Type: **Maximized Emissions**  
 Equipment: **2.4 GHz OEM Wireless Module**  
 Manufacturer: MicroStrain, Inc.  
 Model: SG-Link OEM  
 S/N: NODE:303

Date: 4/15/2010  
 Time: 8:53:30 AM  
 Sequence#: 3  
 Tested By: Jeff Gilbert

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
T2	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T3	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T4	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

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

Function	Manufacturer	Model #	S/N
2.4 GHz OEM Wireless Module*	MicroStrain, Inc.	SG-Link OEM	NODE:303

**Support Devices:**

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

Frequency Range Investigated: 1000 - 2400 MHz  
 21°C / 30% Relative Humidity / 102.4 kPa  
 EUT is transmitting continuously; Y-orientation  
 Testing per KDB 558074 for 15.247 DTS devices

Ext Attn: 0 dB

**Measurement Data:**

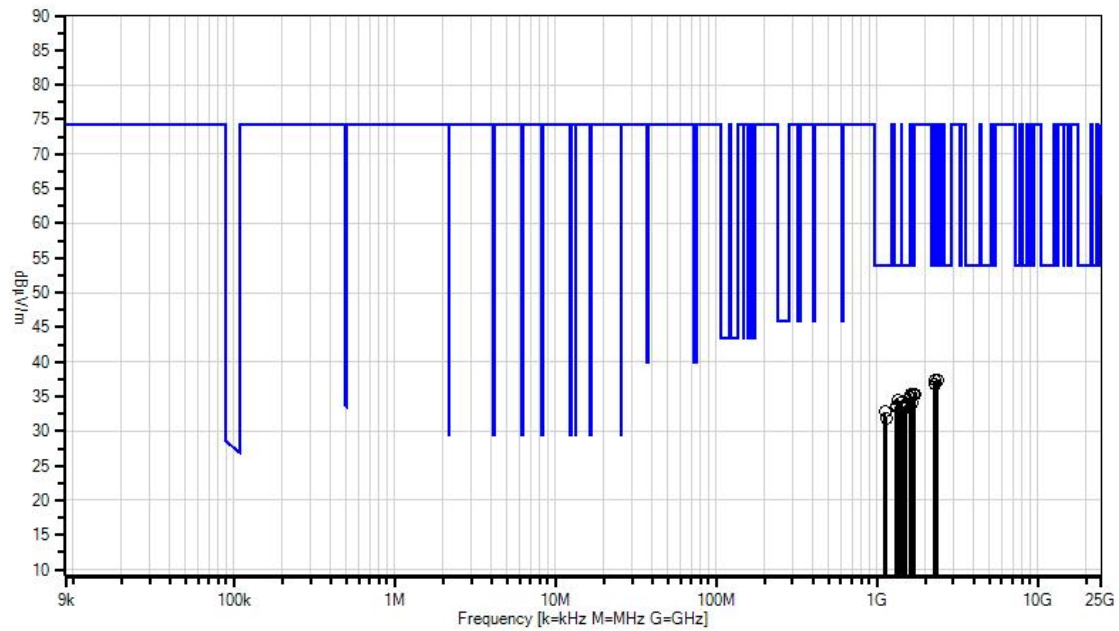
Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBÂμV/ m	Spec dBÂμV/ m	Margin dB	Polar Ant
1	2389.066M	39.2	+28.4 +1.3	+0.3	-34.5	+2.7	+0.0	37.4	54.0	-16.6	Horiz 100
2	2299.165M	39.3	+28.2 +1.3	+0.3	-34.5	+2.7	+0.0	37.3	54.0	-16.7	Horiz 100
3	2321.033M	38.8	+28.2 +1.3	+0.2	-34.5	+2.8	+0.0	36.8	54.0	-17.2	Horiz 100
4	1618.343M	41.3	+25.7 +1.1	+0.3	-35.3	+2.3	+0.0	35.4	54.0	-18.6	Horiz 100
5	1702.276M	40.4	+26.1 +1.2	+0.3	-35.1	+2.4	+0.0	35.3	54.0	-18.7	Horiz 100

6	1719.517M	40.4	+26.2 +1.2	+0.2	-35.1	+2.4	+0.0	35.3	54.0	-18.7	Horiz 100
7	1599.741M	40.9	+25.7 +1.1	+0.3	-35.3	+2.3	+0.0	35.0	54.0	-19.0	Horiz 100
8	1613.352M	40.9	+25.7 +1.1	+0.3	-35.3	+2.3	+0.0	35.0	54.0	-19.0	Horiz 100
9	1349.301M	42.4	+24.4 +1.1	+0.2	-35.8	+2.1	+0.0	34.4	54.0	-19.6	Horiz 100
10	1646.472M	39.8	+25.9 +1.1	+0.2	-35.2	+2.3	+0.0	34.1	54.0	-19.9	Horiz 100
11	1402.383M	41.6	+24.7 +1.1	+0.2	-35.7	+2.2	+0.0	34.1	54.0	-19.9	Horiz 100
12	1519.437M	40.4	+25.3 +1.1	+0.2	-35.5	+2.2	+0.0	33.7	54.0	-20.3	Horiz 100
13	1328.022M	41.8	+24.3 +1.1	+0.2	-35.9	+2.1	+0.0	33.6	54.0	-20.4	Horiz 100
14	1460.910M	40.6	+25.0 +1.1	+0.3	-35.6	+2.2	+0.0	33.6	54.0	-20.4	Horiz 100
15	1317.856M	41.7	+24.2 +1.1	+0.2	-35.9	+2.1	+0.0	33.4	54.0	-20.6	Horiz 100
16	1488.132M	40.2	+25.1 +1.1	+0.2	-35.6	+2.2	+0.0	33.2	54.0	-20.8	Horiz 100
17	1495.391M	40.1	+25.2 +1.1	+0.2	-35.6	+2.2	+0.0	33.2	54.0	-20.8	Horiz 100
18	1498.567M	40.1	+25.2 +1.1	+0.2	-35.6	+2.2	+0.0	33.2	54.0	-20.8	Horiz 100
19	1120.975M	43.4	+23.0 +0.9	+0.2	-36.6	+1.9	+0.0	32.8	54.0	-21.2	Horiz 100
20	1147.068M	42.1	+23.2 +1.0	+0.2	-36.5	+1.9	+0.0	31.9	54.0	-22.1	Horiz 100

CKC Laboratories, Inc. Date: 4/15/2010 Time: 8:53:30 AM Microstrain, Inc. WO#: 90661  
 15.247(d) Test Distance: 3 Meters Sequence#: 3 Ext ATTN: 0 dB



— Readings    ○ Peak Readings    × QP Readings    \* Average Readings    ▼ Ambient    — 1 - 15.247(d)

Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **MicroStrain, Inc.**  
 Specification: **15.247(d)**  
 Work Order #: **90661** Date: 4/15/2010  
 Test Type: **Maximized Emissions** Time: 10:30:33  
 Equipment: **2.4 GHz OEM Wireless Module** Sequence#: 10  
 Manufacturer: MicroStrain, Inc. Tested By: Jeff Gilbert  
 Model: SG-Link OEM  
 S/N: NODE:303

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
T2	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T3	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T4	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

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

Function	Manufacturer	Model #	S/N
2.4 GHz OEM Wireless Module*	MicroStrain, Inc.	SG-Link OEM	NODE:303

**Support Devices:**

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

Frequency Range Investigated: 2483.5 - 9000 MHz  
 22°C / 30% Relative Humidity / 102.7 kPa  
 EUT is transmitting continuously; Y-orientation, 2405 MHz  
 Testing per KDB 558074 for 15.247 DTS devices

Ext Attn: 0 dB

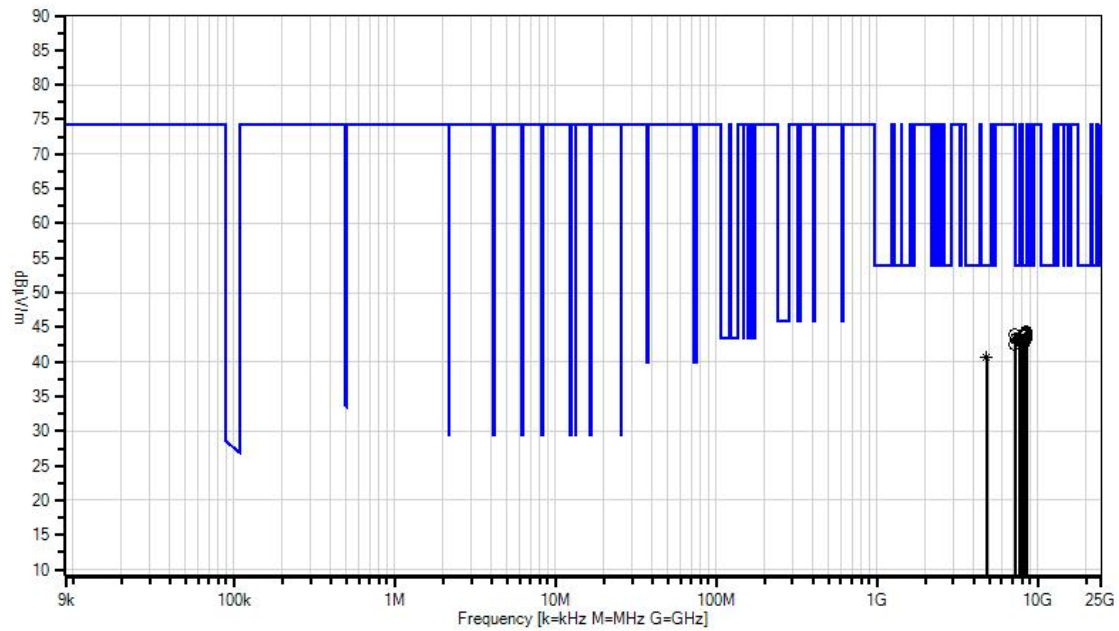
**Measurement Data:** Reading listed by margin. Test Distance: 2 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBÂμV/ m	Spec dBÂμV/ m	Margin dB	Polar Ant
1	8493.074M	37.1	+37.3 +2.5	+0.4	-34.6	+5.6	-4.0	44.3	54.0	-9.7	Verti 100
2	8407.418M	37.3	+37.1 +2.4	+0.4	-34.7	+5.6	-4.0	44.1	54.0	-9.9	Verti 100
3	8441.452M	37.1	+37.2 +2.4	+0.4	-34.7	+5.6	-4.0	44.0	54.0	-10.0	Verti 100
4	7265.277M	39.3	+35.1 +2.4	+0.5	-34.6	+5.2	-4.0	43.9	54.0	-10.1	Verti 100
5	8316.327M	37.3	+36.9 +2.5	+0.4	-34.7	+5.5	-4.0	43.9	54.0	-10.1	Verti 100



6	8226.237M	37.2	+36.6 +2.7	+0.4	-34.7	+5.5	-4.0	43.7	54.0	-10.3	Verti 100
7	8267.278M	37.2	+36.7 +2.6	+0.4	-34.7	+5.5	-4.0	43.7	54.0	-10.3	Verti 100
8	7292.304M	38.7	+35.2 +2.4	+0.5	-34.6	+5.2	-4.0	43.4	54.0	-10.6	Verti 100
9	7707.719M	37.8	+35.7 +2.5	+0.5	-34.6	+5.4	-4.0	43.3	54.0	-10.7	Verti 100
10	8495.116M	36.1	+37.3 +2.5	+0.4	-34.6	+5.6	-4.0	43.3	54.0	-10.7	Verti 100
11	8030.041M	37.5	+36.1 +2.4	+0.4	-34.7	+5.5	-4.0	43.2	54.0	-10.8	Verti 100
12	7743.755M	37.6	+35.7 +2.5	+0.5	-34.6	+5.4	-4.0	43.1	54.0	-10.9	Verti 100
13	8035.046M	37.3	+36.1 +2.5	+0.4	-34.7	+5.5	-4.0	43.1	54.0	-10.9	Verti 100
14	8179.190M	36.7	+36.5 +2.7	+0.4	-34.7	+5.5	-4.0	43.1	54.0	-10.9	Verti 100
15	8199.210M	36.5	+36.5 +2.7	+0.4	-34.7	+5.5	-4.0	42.9	54.0	-11.1	Verti 100
16	8279.290M	36.3	+36.8 +2.6	+0.4	-34.7	+5.5	-4.0	42.9	54.0	-11.1	Verti 100
17	8070.081M	36.9	+36.2 +2.5	+0.4	-34.7	+5.5	-4.0	42.8	54.0	-11.2	Verti 100
18	8154.165M	36.6	+36.4 +2.6	+0.4	-34.7	+5.5	-4.0	42.8	54.0	-11.2	Verti 100
19	7276.288M	37.9	+35.1 +2.4	+0.5	-34.6	+5.2	-4.0	42.5	54.0	-11.5	Verti 100
20	4810.080M Ave	39.2	+32.6 +2.0	+0.4	-33.8	+4.2	-4.0 360	40.6	54.0	-13.4	Verti 104
^	4810.024M	46.2	+32.6 +2.0	+0.4	-33.8	+4.2	-4.0 360	47.6	54.0	-6.4	Verti 104
^	4810.070M	44.6	+32.6 +2.0	+0.4	-33.8	+4.2	-4.0 360	46.0	54.0	-8.0	Verti 100

CKC Laboratories, Inc. Date: 4/15/2010 Time: 10:30:33 Microstrain, Inc. WO#: 90661  
 15.247(d) Test Distance: 2 Meters Sequence#: 10 Ext ATTN: 0 dB



— Readings    ○ Peak Readings    × QP Readings    \* Average Readings    ▼ Ambient    — 1 - 15.247(d)

Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **MicroStrain, Inc.**  
 Specification: **15.247(d)**  
 Work Order #: **90661**  
 Test Type: **Maximized Emissions**  
 Equipment: **2.4 GHz OEM Wireless Module**  
 Manufacturer: MicroStrain, Inc.  
 Model: SG-Link OEM  
 S/N: NODE:303

Date: 4/15/2010  
 Time: 10:43:16  
 Sequence#: 11  
 Tested By: Jeff Gilbert

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
T2	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T3	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T4	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

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

Function	Manufacturer	Model #	S/N
2.4 GHz OEM Wireless Module*	MicroStrain, Inc.	SG-Link OEM	NODE:303

**Support Devices:**

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

Frequency Range Investigated: 2483.5 - 9000 MHz  
 22°C / 30% Relative Humidity / 102.7 kPa  
 EUT is transmitting continuously; Y-orientation, 2405 MHz  
 Testing per KDB 558074 for 15.247 DTS devices

Ext Attn: 0 dB

**Measurement Data:**

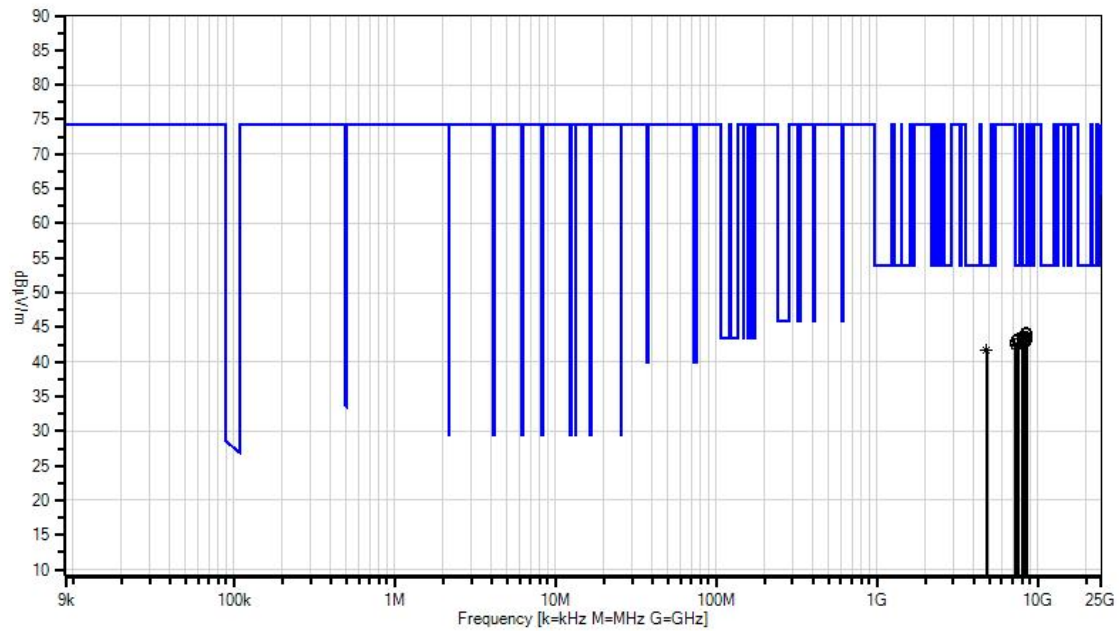
Reading listed by margin.

Test Distance: 2 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBÂμV/ m	Spec dBÂμV/ m	Margin dB	Polar Ant
1	8451.462M	37.1	+37.2 +2.5	+0.4	-34.6	+5.6	-4.0	44.2	54.0	-9.8	Horiz 100
2	8499.200M	36.8	+37.3 +2.5	+0.4	-34.6	+5.6	-4.0	44.0	54.0	-10.0	Horiz 100
3	8115.126M	37.5	+36.3 +2.6	+0.4	-34.7	+5.5	-4.0	43.6	54.0	-10.4	Horiz 100
4	8483.494M	36.4	+37.3 +2.5	+0.4	-34.6	+5.6	-4.0	43.6	54.0	-10.4	Horiz 100
5	8296.307M	36.7	+36.8 +2.6	+0.4	-34.7	+5.5	-4.0	43.3	54.0	-10.7	Horiz 100

6	7647.659M	38.0	+35.6 +2.6	+0.5	-34.8	+5.4	-4.0	43.3	54.0	-10.7	Horiz 100
7	8444.455M	36.4	+37.2 +2.4	+0.4	-34.7	+5.6	-4.0	43.3	54.0	-10.7	Horiz 100
8	8342.353M	36.7	+36.9 +2.5	+0.4	-34.7	+5.5	-4.0	43.3	54.0	-10.7	Horiz 100
9	8223.234M	36.7	+36.6 +2.7	+0.4	-34.7	+5.5	-4.0	43.2	54.0	-10.8	Horiz 100
10	8215.226M	36.7	+36.6 +2.7	+0.4	-34.7	+5.5	-4.0	43.2	54.0	-10.8	Horiz 100
11	8180.191M	36.8	+36.5 +2.7	+0.4	-34.7	+5.5	-4.0	43.2	54.0	-10.8	Horiz 100
12	8174.185M	36.7	+36.5 +2.7	+0.4	-34.7	+5.5	-4.0	43.1	54.0	-10.9	Horiz 100
13	7584.596M	38.1	+35.5 +2.6	+0.4	-34.9	+5.4	-4.0	43.1	54.0	-10.9	Horiz 100
14	8409.420M	36.3	+37.1 +2.4	+0.4	-34.7	+5.6	-4.0	43.1	54.0	-10.9	Horiz 100
15	8377.388M	36.4	+37.0 +2.4	+0.4	-34.7	+5.6	-4.0	43.1	54.0	-10.9	Horiz 100
16	8269.280M	36.5	+36.7 +2.6	+0.4	-34.7	+5.5	-4.0	43.0	54.0	-11.0	Horiz 100
17	7341.353M	38.2	+35.2 +2.4	+0.5	-34.6	+5.2	-4.0	42.9	54.0	-11.1	Horiz 100
18	7624.636M	37.5	+35.6 +2.6	+0.4	-34.8	+5.4	-4.0	42.7	54.0	-11.3	Horiz 100
19	7322.334M	37.8	+35.2 +2.4	+0.5	-34.6	+5.2	-4.0	42.5	54.0	-11.5	Horiz 100
20	4809.098M Ave	40.2	+32.6 +2.0	+0.4	-33.8	+4.2	-4.0 198	41.6	54.0	-12.4	Horiz 100
^	4809.022M	48.5	+32.6 +2.0	+0.4	-33.8	+4.2	-4.0 198	49.9	54.0	-4.1	Horiz 100
^	4809.025M	47.6	+32.6 +2.0	+0.4	-33.8	+4.2	-4.0	49.0	54.0	-5.0	Horiz 100

CKC Laboratories, Inc. Date: 4/15/2010 Time: 10:43:16 Microstrain, Inc. WO#: 90661  
 15.247(d) Test Distance: 2 Meters Sequence#: 11 Ext ATTN: 0 dB



— Readings    ○ Peak Readings    × QP Readings    \* Average Readings    ▼ Ambient    — 1 - 15.247(d)

Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **MicroStrain, Inc.**  
 Specification: **15.247(d)**  
 Work Order #: **90661**  
 Test Type: **Maximized Emissions**  
 Equipment: **2.4 GHz OEM Wireless Module**  
 Manufacturer: MicroStrain, Inc.  
 Model: SG-Link OEM  
 S/N: NODE:303

Date: 4/15/2010  
 Time: 10:12:00  
 Sequence#: 8  
 Tested By: Jeff Gilbert

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
T2	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T3	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T4	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

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

Function	Manufacturer	Model #	S/N
2.4 GHz OEM Wireless Module*	MicroStrain, Inc.	SG-Link OEM	NODE:303

**Support Devices:**

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

Frequency Range Investigated: 2483.5 - 9000 MHz  
 22°C / 30% Relative Humidity / 102.7 kPa  
 EUT is transmitting continuously; Y-orientation, 2440 MHz  
 Testing per KDB 558074 for 15.247 DTS devices

Ext Attn: 0 dB

**Measurement Data:**

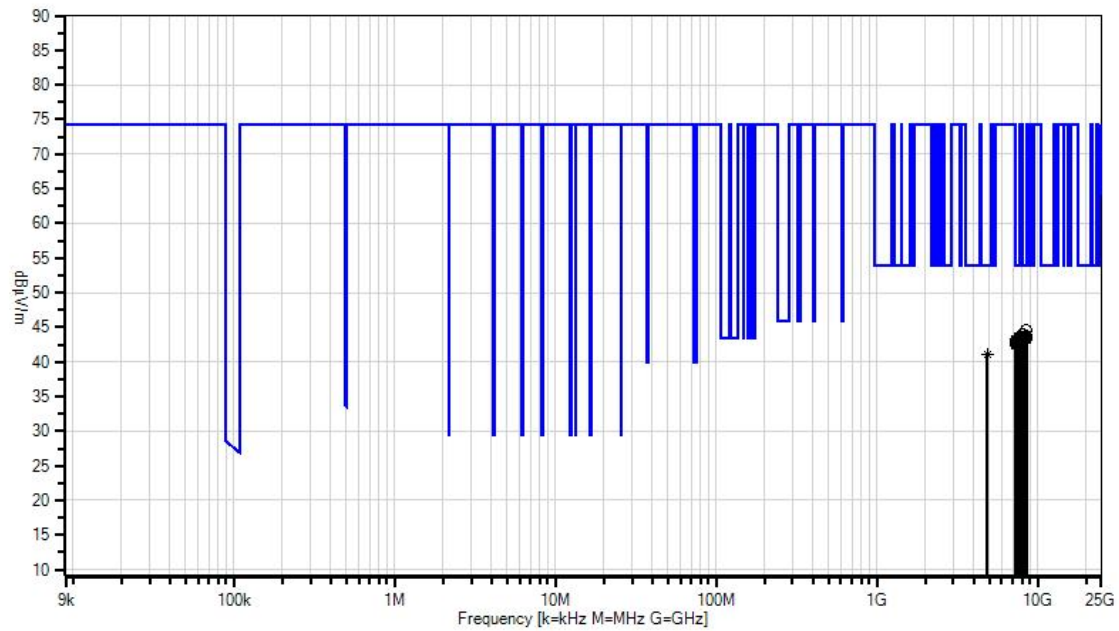
Reading listed by margin.

Test Distance: 2 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBÂμV/ m	Spec dBÂμV/ m	Margin dB	Polar Ant
1	8472.483M	37.4	+37.3 +2.5	+0.4	-34.6	+5.6	-4.0	44.6	54.0	-9.4	Verti 100
2	8112.123M	37.8	+36.3 +2.6	+0.4	-34.7	+5.5	-4.0	43.9	54.0	-10.1	Verti 100
3	8495.626M	36.5	+37.3 +2.5	+0.4	-34.6	+5.6	-4.0	43.7	54.0	-10.3	Verti 100
4	7731.743M	38.1	+35.7 +2.5	+0.5	-34.6	+5.4	-4.0	43.6	54.0	-10.4	Verti 100
5	8252.263M	37.1	+36.7 +2.6	+0.4	-34.7	+5.5	-4.0	43.6	54.0	-10.4	Verti 100

6	8063.074M	37.6	+36.2 +2.5	+0.4	-34.7	+5.5	-4.0	43.5	54.0	-10.5	Verti 100
7	8109.120M	37.4	+36.3 +2.6	+0.4	-34.7	+5.5	-4.0	43.5	54.0	-10.5	Verti 100
8	7746.758M	37.9	+35.7 +2.5	+0.5	-34.6	+5.4	-4.0	43.4	54.0	-10.6	Verti 100
9	8293.304M	36.8	+36.8 +2.6	+0.4	-34.7	+5.5	-4.0	43.4	54.0	-10.6	Verti 100
10	8427.438M	36.5	+37.1 +2.4	+0.4	-34.7	+5.6	-4.0	43.3	54.0	-10.7	Verti 100
11	8225.236M	36.8	+36.6 +2.7	+0.4	-34.7	+5.5	-4.0	43.3	54.0	-10.7	Verti 100
12	7345.357M	38.5	+35.2 +2.4	+0.5	-34.6	+5.2	-4.0	43.2	54.0	-10.8	Verti 100
13	7700.712M	37.6	+35.7 +2.5	+0.5	-34.6	+5.4	-4.0	43.1	54.0	-10.9	Verti 100
14	7621.633M	37.8	+35.6 +2.6	+0.4	-34.8	+5.4	-4.0	43.0	54.0	-11.0	Verti 100
15	7488.500M	37.9	+35.4 +2.4	+0.4	-34.6	+5.4	-4.0	42.9	54.0	-11.1	Verti 100
16	7559.571M	37.8	+35.5 +2.5	+0.4	-34.8	+5.4	-4.0	42.8	54.0	-11.2	Verti 100
17	7373.385M	37.9	+35.3 +2.3	+0.5	-34.6	+5.3	-4.0	42.7	54.0	-11.3	Verti 100
18	7593.605M	37.7	+35.5 +2.6	+0.4	-34.9	+5.4	-4.0	42.7	54.0	-11.3	Verti 100
19	7356.368M	38.0	+35.2 +2.3	+0.5	-34.6	+5.2	-4.0	42.6	54.0	-11.4	Verti 100
20	4880.072M Ave	39.4	+32.7 +2.0	+0.4	-33.7	+4.2	-4.0 2	41.0	54.0	-13.0	Verti 100
^	4880.025M	47.0	+32.7 +2.0	+0.4	-33.7	+4.2	-4.0 2	48.6	54.0	-5.4	Verti 100
^	4880.025M	45.7	+32.7 +2.0	+0.4	-33.7	+4.2	-4.0	47.3	54.0	-6.7	Verti 100

CKC Laboratories, Inc. Date: 4/15/2010 Time: 10:12:00 Microstrain, Inc. WO#: 90661  
 15.247(d) Test Distance: 2 Meters Sequence#: 8 Ext ATTN: 0 dB



— Readings    ○ Peak Readings    × QP Readings    \* Average Readings    ▼ Ambient    — 1 - 15.247(d)



Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **MicroStrain, Inc.**  
 Specification: **15.247(d)**  
 Work Order #: **90661** Date: 4/15/2010  
 Test Type: **Maximized Emissions** Time: 10:20:24  
 Equipment: **2.4 GHz OEM Wireless Module** Sequence#: 9  
 Manufacturer: MicroStrain, Inc. Tested By: Jeff Gilbert  
 Model: SG-Link OEM  
 S/N: NODE:303

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
T2	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T3	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T4	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

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

Function	Manufacturer	Model #	S/N
2.4 GHz OEM Wireless Module*	MicroStrain, Inc.	SG-Link OEM	NODE:303

**Support Devices:**

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

Frequency Range Investigated: 2483.5 - 9000 MHz  
 22°C / 30% Relative Humidity / 102.7 kPa  
 EUT is transmitting continuously; Y-orientation, 2440 MHz  
 Testing per KDB 558074 for 15.247 DTS devices

Ext Attn: 0 dB

**Measurement Data:**

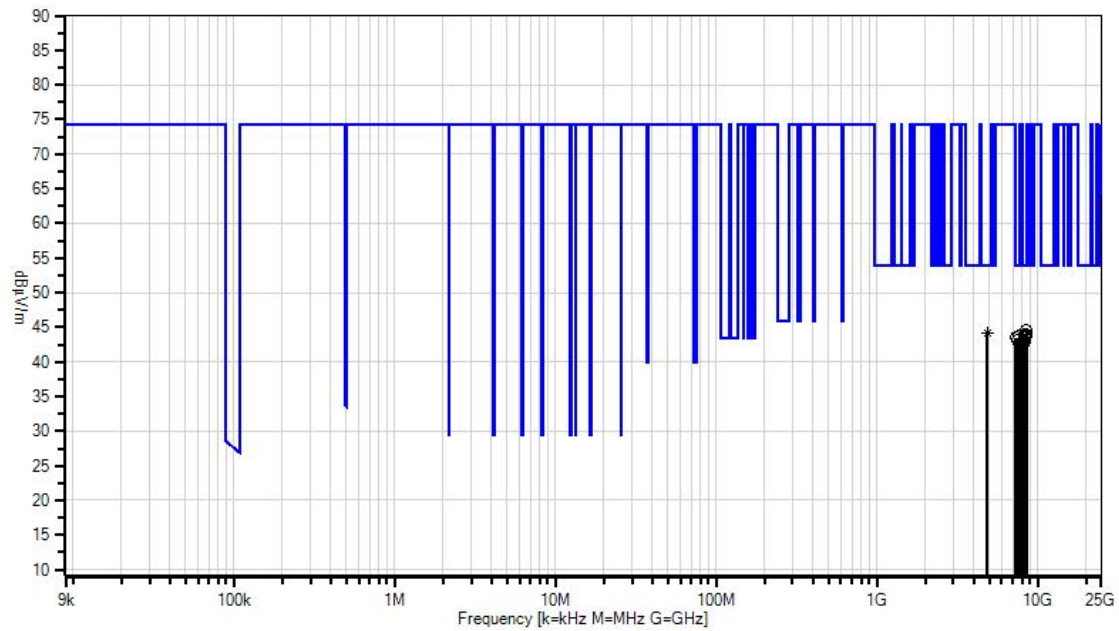
Reading listed by margin.

Test Distance: 2 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBÂμV/ m	Spec dBÂμV/ m	Margin dB	Polar Ant
1	8496.137M	37.4	+37.3 +2.5	+0.4	-34.6	+5.6	-4.0	44.6	54.0	-9.4	Horiz 100
2	4879.121M Ave	42.6	+32.7 +2.0	+0.4	-33.7	+4.2	-4.0 261	44.2	54.0	-9.8	Horiz 108
^	4879.173M	50.2	+32.7 +2.0	+0.4	-33.7	+4.2	-4.0 261	51.8	54.0	-2.2	Horiz 108
^	4879.173M	48.7	+32.7 +2.0	+0.4	-33.7	+4.2	-4.0	50.3	54.0	-3.7	Horiz 100
5	8471.482M	36.8	+37.3 +2.5	+0.4	-34.6	+5.6	-4.0	44.0	54.0	-10.0	Horiz 100

6	8370.381M	37.3	+37.0 +2.4	+0.4	-34.7	+5.6	-4.0	44.0	54.0	-10.0	Horiz 100
7	7719.731M	38.3	+35.7 +2.5	+0.5	-34.6	+5.4	-4.0	43.8	54.0	-10.2	Horiz 100
8	8450.461M	36.6	+37.2 +2.5	+0.4	-34.6	+5.6	-4.0	43.7	54.0	-10.3	Horiz 100
9	8436.447M	36.8	+37.2 +2.4	+0.4	-34.7	+5.6	-4.0	43.7	54.0	-10.3	Horiz 100
10	8497.158M	36.5	+37.3 +2.5	+0.4	-34.6	+5.6	-4.0	43.7	54.0	-10.3	Horiz 100
11	7320.332M	38.8	+35.2 +2.4	+0.5	-34.6	+5.2	-4.0	43.5	54.0	-10.5	Horiz 100
12	8346.357M	36.9	+36.9 +2.5	+0.4	-34.7	+5.5	-4.0	43.5	54.0	-10.5	Horiz 100
13	7524.536M	38.2	+35.4 +2.5	+0.4	-34.7	+5.4	-4.0	43.2	54.0	-10.8	Horiz 100
14	8342.353M	36.4	+36.9 +2.5	+0.4	-34.7	+5.5	-4.0	43.0	54.0	-11.0	Horiz 100
15	8215.226M	36.4	+36.6 +2.7	+0.4	-34.7	+5.5	-4.0	42.9	54.0	-11.1	Horiz 100
16	8304.315M	36.4	+36.8 +2.5	+0.4	-34.7	+5.5	-4.0	42.9	54.0	-11.1	Horiz 100
17	8108.119M	36.8	+36.3 +2.6	+0.4	-34.7	+5.5	-4.0	42.9	54.0	-11.1	Horiz 100
18	8092.103M	36.8	+36.3 +2.5	+0.4	-34.7	+5.5	-4.0	42.8	54.0	-11.2	Horiz 100
19	8203.214M	36.3	+36.6 +2.7	+0.4	-34.7	+5.5	-4.0	42.8	54.0	-11.2	Horiz 100
20	8066.077M	36.9	+36.2 +2.5	+0.4	-34.7	+5.5	-4.0	42.8	54.0	-11.2	Horiz 100
21	8094.105M	36.7	+36.3 +2.5	+0.4	-34.7	+5.5	-4.0	42.7	54.0	-11.3	Horiz 100
22	8069.080M	36.8	+36.2 +2.5	+0.4	-34.7	+5.5	-4.0	42.7	54.0	-11.3	Horiz 100

CKC Laboratories, Inc. Date: 4/15/2010 Time: 10:20:24 Microstrain, Inc. WO#: 90661  
 15.247(d) Test Distance: 2 Meters Sequence#: 9 Ext ATTN: 0 dB



— Readings    ○ Peak Readings    × QP Readings    \* Average Readings    ▼ Ambient    — 1 - 15.247(d)

Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **MicroStrain, Inc.**

Specification: **15.247(d)**

Work Order #: **90661**

Test Type: **Maximized Emissions**

Equipment: **2.4 GHz OEM Wireless Module**

Manufacturer: MicroStrain, Inc.

Model: SG-Link OEM

S/N: NODE:303

Date: 4/15/2010

Time: 09:53:11

Sequence#: 6

Tested By: Jeff Gilbert

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
T2	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T3	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T4	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

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

Function	Manufacturer	Model #	S/N
2.4 GHz OEM Wireless Module*	MicroStrain, Inc.	SG-Link OEM	NODE:303

**Support Devices:**

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

Frequency Range Investigated: 2500 - 9000 MHz  
 22°C / 30% Relative Humidity / 102.7 kPa  
 EUT is transmitting continuously; Y-orientation, 2480 MHz  
 Testing per KDB 558074 for 15.247 DTS devices

Ext Attn: 0 dB

**Measurement Data:**

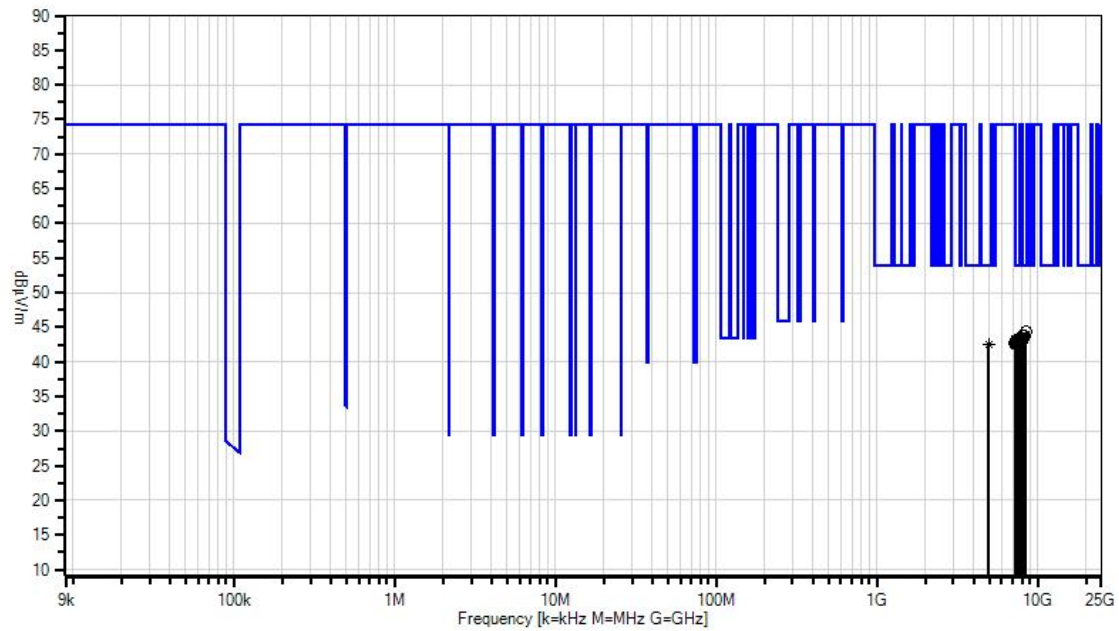
Reading listed by margin.

Test Distance: 2 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBÂμV/ m	Spec dBÂμV/ m	Margin dB	Polar Ant
1	8485.980M	37.1	+37.3 +2.5	+0.4	-34.6	+5.6	-4.0 360	44.3	54.0	-9.7	Verti 100
2	8113.608M	37.7	+36.3 +2.6	+0.4	-34.7	+5.5	-4.0 360	43.8	54.0	-10.2	Verti 100
3	8246.741M	37.3	+36.7 +2.6	+0.4	-34.7	+5.5	-4.0 360	43.8	54.0	-10.2	Verti 100
4	8357.852M	36.9	+37.0 +2.5	+0.4	-34.7	+5.6	-4.0 360	43.7	54.0	-10.3	Verti 100
5	8144.639M	37.2	+36.4 +2.6	+0.4	-34.7	+5.5	-4.0 360	43.4	54.0	-10.6	Verti 100

6	8214.709M	36.9	+36.6 +2.7	+0.4	-34.7	+5.5	-4.0 360	43.4	54.0	-10.6	Verti 100
7	7699.194M	37.8	+35.7 +2.5	+0.5	-34.6	+5.4	-4.0 360	43.3	54.0	-10.7	Verti 100
8	8174.669M	36.9	+36.5 +2.7	+0.4	-34.7	+5.5	-4.0 360	43.3	54.0	-10.7	Verti 100
9	7642.137M	38.0	+35.6 +2.6	+0.4	-34.8	+5.4	-4.0 360	43.2	54.0	-10.8	Verti 100
10	7374.870M	38.4	+35.3 +2.3	+0.5	-34.6	+5.3	-4.0 360	43.2	54.0	-10.8	Verti 100
11	7640.135M	37.9	+35.6 +2.6	+0.4	-34.8	+5.4	-4.0 360	43.1	54.0	-10.9	Verti 100
12	7499.995M	37.8	+35.4 +2.5	+0.4	-34.6	+5.4	-4.0 360	42.9	54.0	-11.1	Verti 100
13	7610.105M	37.8	+35.6 +2.6	+0.4	-34.9	+5.4	-4.0 360	42.9	54.0	-11.1	Verti 100
14	7270.766M	38.2	+35.1 +2.4	+0.5	-34.6	+5.2	-4.0 360	42.8	54.0	-11.2	Verti 100
15	7589.084M	37.8	+35.5 +2.6	+0.4	-34.9	+5.4	-4.0 360	42.8	54.0	-11.2	Verti 100
16	7518.013M	37.7	+35.4 +2.5	+0.4	-34.7	+5.4	-4.0 360	42.7	54.0	-11.3	Verti 100
17	7339.835M	37.9	+35.2 +2.4	+0.5	-34.6	+5.2	-4.0 360	42.6	54.0	-11.4	Verti 100
18	7505.000M	37.5	+35.4 +2.5	+0.4	-34.6	+5.4	-4.0 360	42.6	54.0	-11.4	Verti 100
19	7361.857M	37.8	+35.3 +2.3	+0.5	-34.6	+5.2	-4.0 360	42.5	54.0	-11.5	Verti 100
20	4960.049M Ave	40.6	+32.8 +2.0	+0.4	-33.7	+4.3	-4.0 1	42.4	54.0	-11.6	Verti 100
^	4960.023M	49.0	+32.8 +2.0	+0.4	-33.7	+4.3	-4.0 1	50.8	54.0	-3.2	Verti 100
^	4960.000M	47.6	+32.8 +2.0	+0.4	-33.7	+4.3	-4.0 360	49.4	54.0	-4.6	Verti 100

CKC Laboratories, Inc. Date: 4/15/2010 Time: 09:53:11 Microstrain, Inc. WO#: 90661  
 15.247(d) Test Distance: 2 Meters Sequence#: 6 Ext ATTN: 0 dB



— Readings    ○ Peak Readings    × QP Readings    \* Average Readings    ▼ Ambient    — 1 - 15.247(d)

Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **MicroStrain, Inc.**  
 Specification: **15.247(d)**  
 Work Order #: **90661**  
 Test Type: **Maximized Emissions**  
 Equipment: **2.4 GHz OEM Wireless Module**  
 Manufacturer: MicroStrain, Inc.  
 Model: SG-Link OEM  
 S/N: NODE:303

Date: 4/15/2010  
 Time: 10:02:44  
 Sequence#: 7  
 Tested By: Jeff Gilbert

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
T2	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T3	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T4	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

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

Function	Manufacturer	Model #	S/N
2.4 GHz OEM Wireless Module*	MicroStrain, Inc.	SG-Link OEM	NODE:303

**Support Devices:**

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

Frequency Range Investigated: 2500 - 9000 MHz  
 22°C / 30% Relative Humidity / 102.7 kPa  
 EUT is transmitting continuously; Y-orientation, 2480 MHz  
 Testing per KDB 558074 for 15.247 DTS devices

Ext Attn: 0 dB

**Measurement Data:**

Reading listed by margin.

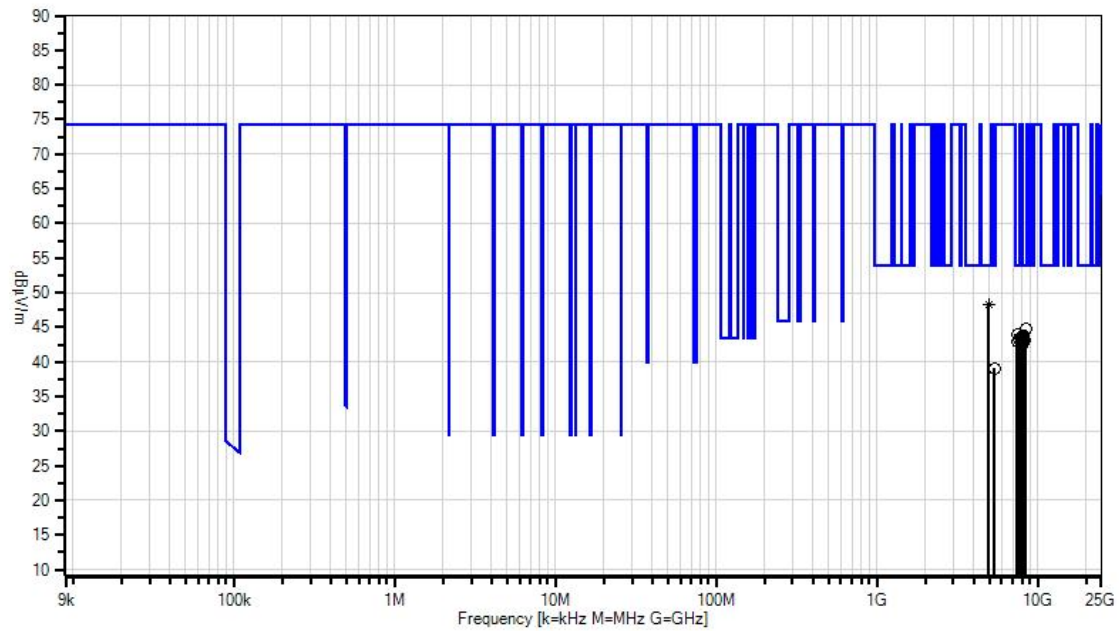
Test Distance: 2 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBÂμV/ m	Spec dBÂμV/ m	Margin dB	Polar Ant
1	4959.133M Ave	46.4	+32.8 +2.0	+0.4	-33.7	+4.3	-4.0 267	48.2	54.0	-5.8	Horiz 109
^	4959.095M	53.6	+32.8 +2.0	+0.4	-33.7	+4.3	-4.0 267	55.4	54.0	+1.4	Horiz 109
^	4959.100M	51.4	+32.8 +2.0	+0.4	-33.7	+4.3	-4.0 360	53.2	54.0	-0.8	Horiz 100
4	8469.964M	37.5	+37.3 +2.5	+0.4	-34.6	+5.6	-4.0 360	44.7	54.0	-9.3	Horiz 100
5	7499.995M	38.8	+35.4 +2.5	+0.4	-34.6	+5.4	-4.0 360	43.9	54.0	-10.1	Horiz 100

6	8130.625M	37.6	+36.4 +2.6	+0.4	-34.7	+5.5	-4.0 360	43.8	54.0	-10.2	Horiz 100
7	8208.703M	37.1	+36.6 +2.7	+0.4	-34.7	+5.5	-4.0 360	43.6	54.0	-10.4	Horiz 100
8	8216.711M	37.0	+36.6 +2.7	+0.4	-34.7	+5.5	-4.0 360	43.5	54.0	-10.5	Horiz 100
9	7733.228M	37.9	+35.7 +2.5	+0.5	-34.6	+5.4	-4.0 360	43.4	54.0	-10.6	Horiz 100
10	8177.672M	37.0	+36.5 +2.7	+0.4	-34.7	+5.5	-4.0 360	43.4	54.0	-10.6	Horiz 100
11	8192.687M	36.9	+36.5 +2.7	+0.4	-34.7	+5.5	-4.0 360	43.3	54.0	-10.7	Horiz 100
12	8223.718M	36.7	+36.6 +2.7	+0.4	-34.7	+5.5	-4.0 360	43.2	54.0	-10.8	Horiz 100
13	8082.577M	37.3	+36.2 +2.5	+0.4	-34.7	+5.5	-4.0 360	43.2	54.0	-10.8	Horiz 100
14	8238.733M	36.7	+36.6 +2.6	+0.4	-34.7	+5.5	-4.0 360	43.1	54.0	-10.9	Horiz 100
15	8346.841M	36.5	+36.9 +2.5	+0.4	-34.7	+5.5	-4.0 360	43.1	54.0	-10.9	Horiz 100
16	8365.860M	36.3	+37.0 +2.5	+0.4	-34.7	+5.6	-4.0 360	43.1	54.0	-10.9	Horiz 100
17	8028.523M	37.2	+36.1 +2.4	+0.4	-34.7	+5.5	-4.0 360	42.9	54.0	-11.1	Horiz 100
18	7533.028M	37.8	+35.5 +2.5	+0.4	-34.7	+5.4	-4.0 360	42.9	54.0	-11.1	Horiz 100
19	8065.560M	36.8	+36.2 +2.5	+0.4	-34.7	+5.5	-4.0 360	42.7	54.0	-11.3	Horiz 100
20	8048.543M	36.6	+36.1 +2.5	+0.4	-34.7	+5.5	-4.0 360	42.4	54.0	-11.6	Horiz 100
21	8033.528M	36.5	+36.1 +2.5	+0.4	-34.7	+5.5	-4.0 360	42.3	54.0	-11.7	Horiz 100
22	5390.888M	36.2	+33.6 +2.1	+0.5	-33.9	+4.6	-4.0 360	39.1	54.0	-14.9	Horiz 100



CKC Laboratories, Inc. Date: 4/15/2010 Time: 10:02:44 Microstrain, Inc. WO#: 90661  
 15.247(d) Test Distance: 2 Meters Sequence#: 7 Ext ATTN: 0 dB



— Readings    ○ Peak Readings    × QP Readings    + Average Readings    ▼ Ambient    — 1 - 15.247(d)

Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **MicroStrain, Inc.**

Specification: **15.247(d)**

Work Order #: **90661**

Test Type: **Maximized Emissions**

Equipment: **2.4 GHz OEM Wireless Module**

Manufacturer: MicroStrain, Inc.

Model: SG-Link OEM

S/N: NODE:303

Date: 4/15/2010

Time: 09:12:09

Sequence#: 4

Tested By: Jeff Gilbert

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
T2	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T3	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T4	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

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

Function	Manufacturer	Model #	S/N
2.4 GHz OEM Wireless Module*	MicroStrain, Inc.	SG-Link OEM	NODE:303

**Support Devices:**

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

Frequency Range Investigated: 2483.5 - 2500 MHz

22°C / 30% Relative Humidity / 102.7 kPa

EUT is transmitting continuously; Y-orientation

Testing per KDB 558074 for 15.247 DTS devices

Ext Attn: 0 dB

**Measurement Data:**

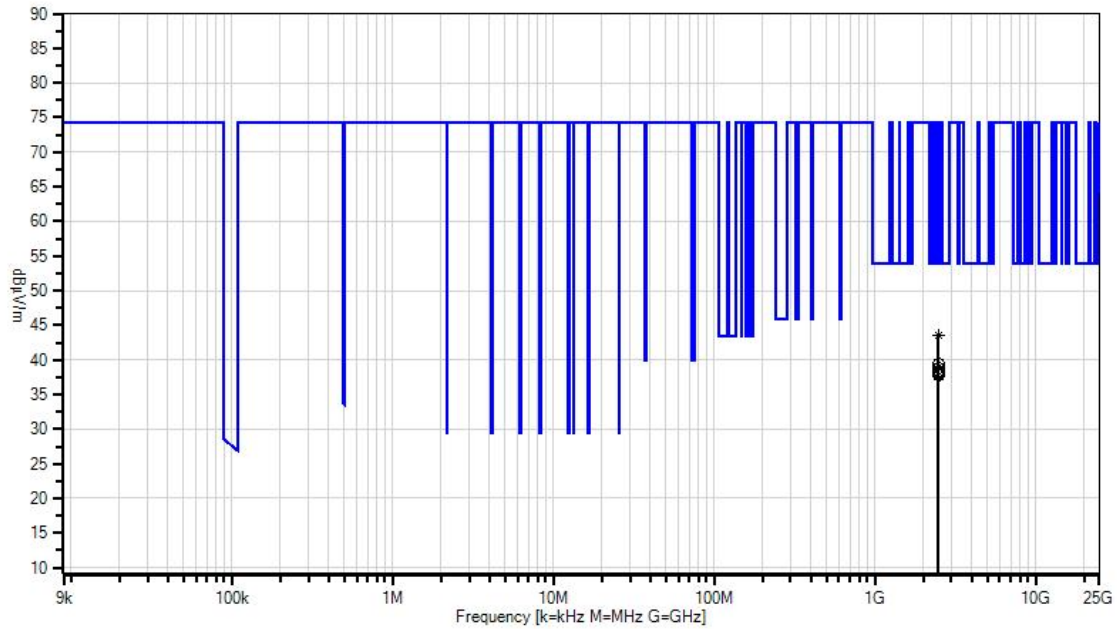
Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBµV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBÂµV/ m	Spec dBÂµV/ m	Margin dB	Polar Ant
1	2483.884M Ave	45.0	+28.6 +1.3	+0.2	-34.4	+2.8	+0.0 65	43.5	54.0	-10.5	Verti 100
^	2483.884M	53.9	+28.6 +1.3	+0.2	-34.4	+2.8	+0.0 65	52.4	54.0	-1.6	Verti 100
^	2483.884M	53.7	+28.6 +1.3	+0.2	-34.4	+2.8	+0.0 360	52.2	54.0	-1.8	Verti 100
4	2487.265M	40.9	+28.6 +1.3	+0.2	-34.4	+2.8	+0.0 360	39.4	54.0	-14.6	Verti 100
5	2492.904M	40.2	+28.7 +1.3	+0.2	-34.4	+2.8	+0.0 360	38.8	54.0	-15.2	Verti 100

6	2487.374M	40.0	+28.6 +1.3	+0.2	-34.4	+2.8	+0.0 360	38.5	54.0	-15.5	Verti 100
7	2492.150M	39.8	+28.7 +1.3	+0.2	-34.4	+2.8	+0.0 360	38.4	54.0	-15.6	Verti 100
8	2493.404M	39.8	+28.7 +1.3	+0.2	-34.4	+2.8	+0.0 360	38.4	54.0	-15.6	Verti 100
9	2489.956M	39.7	+28.7 +1.3	+0.2	-34.4	+2.8	+0.0 360	38.3	54.0	-15.7	Verti 100
10	2496.814M	39.5	+28.7 +1.3	+0.2	-34.4	+2.8	+0.0 360	38.1	54.0	-15.9	Verti 100
11	2498.209M	39.4	+28.7 +1.4	+0.2	-34.4	+2.8	+0.0 360	38.1	54.0	-15.9	Verti 100
12	2498.853M	39.4	+28.7 +1.4	+0.2	-34.4	+2.8	+0.0 360	38.1	54.0	-15.9	Verti 100
13	2493.734M	39.5	+28.7 +1.3	+0.2	-34.4	+2.8	+0.0 360	38.1	54.0	-15.9	Verti 100
14	2495.392M	39.3	+28.7 +1.3	+0.2	-34.4	+2.8	+0.0 360	37.9	54.0	-16.1	Verti 100
15	2497.746M	39.3	+28.7 +1.3	+0.2	-34.4	+2.8	+0.0 360	37.9	54.0	-16.1	Verti 100
16	2495.083M	39.2	+28.7 +1.3	+0.2	-34.4	+2.8	+0.0 360	37.8	54.0	-16.2	Verti 100
17	2495.012M	39.2	+28.7 +1.3	+0.2	-34.4	+2.8	+0.0 360	37.8	54.0	-16.2	Verti 100
18	2495.827M	39.2	+28.7 +1.3	+0.2	-34.4	+2.8	+0.0 360	37.8	54.0	-16.2	Verti 100
19	2491.727M	39.2	+28.7 +1.3	+0.2	-34.4	+2.8	+0.0 360	37.8	54.0	-16.2	Verti 100
20	2496.301M	39.2	+28.7 +1.3	+0.2	-34.4	+2.8	+0.0 360	37.8	54.0	-16.2	Verti 100
21	2495.965M	39.2	+28.7 +1.3	+0.2	-34.4	+2.8	+0.0 360	37.8	54.0	-16.2	Verti 100
22	2492.810M	39.1	+28.7 +1.3	+0.2	-34.4	+2.8	+0.0 360	37.7	54.0	-16.3	Verti 100

CKC Laboratories, Inc. Date: 4/15/2010 Time: 09:12:09 Microstrain, Inc. WO#: 90661  
 15.247(d) Test Distance: 3 Meters Sequence#: 4 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **MicroStrain, Inc.**

Specification: **15.247(d)**

Work Order #: **90661**

Test Type: **Maximized Emissions**

Equipment: **2.4 GHz OEM Wireless Module**

Manufacturer: MicroStrain, Inc.

Model: SG-Link OEM

S/N: NODE:303

Date: 4/15/2010

Time: 09:34:08

Sequence#: 5

Tested By: Jeff Gilbert

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
T2	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T3	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T4	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

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

Function	Manufacturer	Model #	S/N
2.4 GHz OEM Wireless Module*	MicroStrain, Inc.	SG-Link OEM	NODE:303

**Support Devices:**

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

Frequency Range Investigated: 2483.5 - 2500 MHz

22° C/ 30% Relative Humidity / 102.7 kPa

EUT is transmitting continuously; Y-orientation

Testing per KDB 558074 for 15.247 DTS devices

Ext Attn: 0 dB

**Measurement Data:**

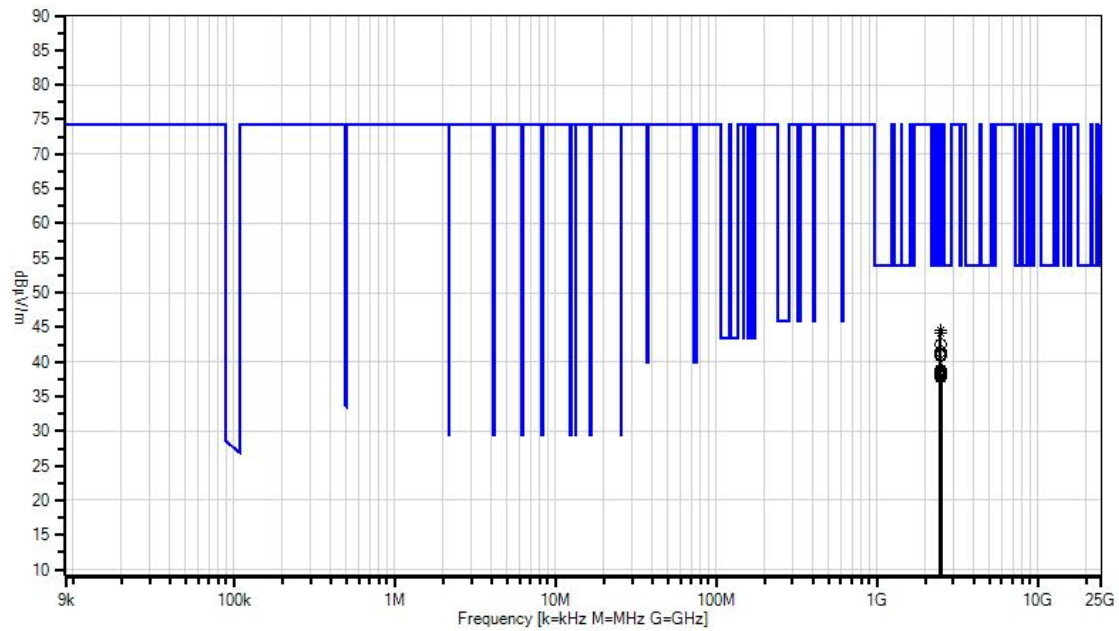
Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBÂμV/ m	Spec dBÂμV/ m	Margin dB	Polar Ant
1	2483.891M Ave	46.0	+28.6 +1.3	+0.2	-34.4	+2.8	+0.0 215	44.5	54.0	-9.5	Horiz 119
2	2483.566M Ave	45.6	+28.6 +1.3	+0.2	-34.4	+2.8	+0.0 215	44.1	54.0	-9.9	Horiz 119
^	2483.566M	55.1	+28.6 +1.3	+0.2	-34.4	+2.8	+0.0 215	53.6	54.0	-0.4	Horiz 119
^	2483.566M	54.4	+28.6 +1.3	+0.2	-34.4	+2.8	+0.0 360	52.9	54.0	-1.1	Horiz 100
5	2485.547M	44.0	+28.6 +1.3	+0.2	-34.4	+2.8	+0.0 360	42.5	54.0	-11.5	Horiz 100

6	2485.827M	42.9	+28.6 +1.3	+0.2	-34.4	+2.8	+0.0 360	41.4	54.0	-12.6	Horiz 100
7	2485.810M	42.5	+28.6 +1.3	+0.2	-34.4	+2.8	+0.0 360	41.0	54.0	-13.0	Horiz 100
8	2485.904M	42.4	+28.6 +1.3	+0.2	-34.4	+2.8	+0.0 360	40.9	54.0	-13.1	Horiz 100
9	2487.166M	40.3	+28.6 +1.3	+0.2	-34.4	+2.8	+0.0 360	38.8	54.0	-15.2	Horiz 100
10	2486.913M	40.3	+28.6 +1.3	+0.2	-34.4	+2.8	+0.0 360	38.8	54.0	-15.2	Horiz 100
11	2487.122M	40.1	+28.6 +1.3	+0.2	-34.4	+2.8	+0.0 360	38.6	54.0	-15.4	Horiz 100
12	2487.292M	40.0	+28.6 +1.3	+0.2	-34.4	+2.8	+0.0 360	38.5	54.0	-15.5	Horiz 100
13	2487.040M	40.0	+28.6 +1.3	+0.2	-34.4	+2.8	+0.0 360	38.5	54.0	-15.5	Horiz 100
14	2498.721M	39.5	+28.7 +1.4	+0.2	-34.4	+2.8	+0.0 360	38.2	54.0	-15.8	Horiz 100
15	2490.687M	39.6	+28.7 +1.3	+0.2	-34.4	+2.8	+0.0 360	38.2	54.0	-15.8	Horiz 100
16	2499.923M	39.5	+28.7 +1.4	+0.2	-34.4	+2.8	+0.0 360	38.2	54.0	-15.8	Horiz 100
17	2499.537M	39.4	+28.7 +1.4	+0.2	-34.4	+2.8	+0.0 360	38.1	54.0	-15.9	Horiz 100
18	2498.324M	39.3	+28.7 +1.4	+0.2	-34.4	+2.8	+0.0 360	38.0	54.0	-16.0	Horiz 100
19	2496.230M	39.3	+28.7 +1.3	+0.2	-34.4	+2.8	+0.0 360	37.9	54.0	-16.1	Horiz 100
20	2499.691M	39.2	+28.7 +1.4	+0.2	-34.4	+2.8	+0.0 360	37.9	54.0	-16.1	Horiz 100
21	2497.464M	39.3	+28.7 +1.3	+0.2	-34.4	+2.8	+0.0 360	37.9	54.0	-16.1	Horiz 100
22	2499.890M	39.1	+28.7 +1.4	+0.2	-34.4	+2.8	+0.0 360	37.8	54.0	-16.2	Horiz 100
23	2499.598M	39.1	+28.7 +1.4	+0.2	-34.4	+2.8	+0.0 360	37.8	54.0	-16.2	Horiz 100

CKC Laboratories, Inc. Date: 4/15/2010 Time: 09:34:08 Microstrain, Inc. WO#: 90661  
 15.247(d) Test Distance: 3 Meters Sequence#: 5 Ext ATTN: 0 dB



Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **MicroStrain, Inc.**  
 Specification: **15.247(d)**  
 Work Order #: **90661**  
 Test Type: **Maximized Emissions**  
 Equipment: **2.4 GHz OEM Wireless Module**  
 Manufacturer: MicroStrain, Inc.  
 Model: SG-Link OEM  
 S/N: NODE:303

Date: 4/15/2010  
 Time: 11:40:45 AM  
 Sequence#: 13  
 Tested By: Jeff Gilbert

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
T2	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T3	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T4	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

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

Function	Manufacturer	Model #	S/N
2.4 GHz OEM Wireless Module*	MicroStrain, Inc.	SG-Link OEM	NODE:303

**Support Devices:**

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

Frequency Range Investigated: 9000 - 17000 MHz  
 23°C / 30% Relative Humidity / 102.7 kPa  
 EUT is transmitting continuously; Y-orientation  
 Testing per KDB 558074 for 15.247 DTS devices

Ext Attn: 0 dB

**Measurement Data:**

Reading listed by margin.

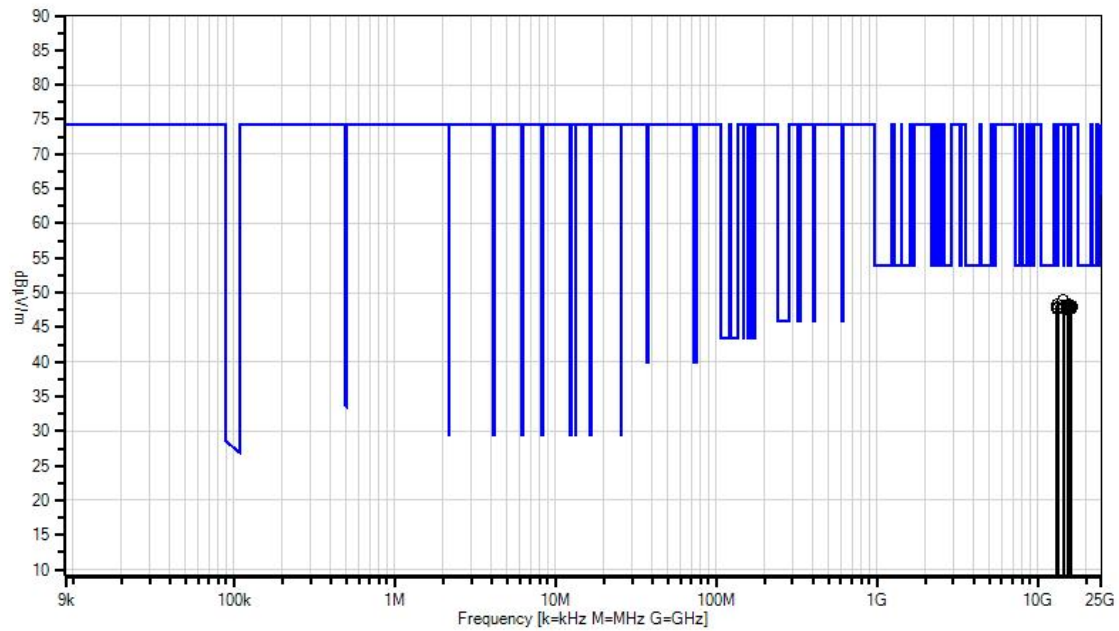
Test Distance: 1.5 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBÂμV/ m	Spec dBÂμV/ m	Margin dB	Polar Ant
1	14492.487 M	38.7	+40.0 +3.5	+0.5	-34.8	+7.0	-6.0 360	48.9	54.0	-5.1	Verti 100
2	13305.301 M	38.8	+39.2 +3.5	+0.8	-35.0	+7.0	-6.0 360	48.3	54.0	-5.7	Verti 100
3	15547.541 M	39.2	+38.3 +3.8	+0.5	-35.0	+7.5	-6.0 360	48.3	54.0	-5.7	Verti 100



4	13276.272 M	38.9	+39.1 +3.4	+0.8	-35.0	+7.0	-6.0	48.2	54.0	-5.8	Verti
							360				100
5	15649.643 M	39.1	+38.1 +3.8	+0.5	-34.9	+7.5	-6.0	48.1	54.0	-5.9	Verti
							360				100
6	16193.684 M	38.7	+37.8 +4.0	+0.6	-34.8	+7.8	-6.0	48.1	54.0	-5.9	Verti
							360				100
7	15364.358 M	38.8	+38.7 +3.5	+0.6	-35.0	+7.4	-6.0	48.0	54.0	-6.0	Verti
							360				100
8	15467.461 M	38.7	+38.5 +3.8	+0.5	-35.0	+7.5	-6.0	48.0	54.0	-6.0	Verti
							360				100
9	16127.153 M	39.0	+37.6 +3.9	+0.6	-34.9	+7.8	-6.0	48.0	54.0	-6.0	Verti
							360				100
10	16152.971 M	38.7	+37.7 +4.0	+0.6	-34.9	+7.8	-6.0	47.9	54.0	-6.1	Verti
							360				100
11	13312.308 M	38.4	+39.2 +3.5	+0.8	-35.0	+7.0	-6.0	47.9	54.0	-6.1	Verti
							360				100
12	13254.250 M	38.6	+39.1 +3.4	+0.8	-35.0	+7.0	-6.0	47.9	54.0	-6.1	Verti
							360				100
13	16121.195 M	38.9	+37.6 +3.9	+0.6	-34.9	+7.8	-6.0	47.9	54.0	-6.1	Verti
							360				100
14	15670.664 M	39.2	+38.0 +3.6	+0.5	-34.9	+7.5	-6.0	47.9	54.0	-6.1	Verti
							360				100
15	13308.304 M	38.3	+39.2 +3.5	+0.8	-35.0	+7.0	-6.0	47.8	54.0	-6.2	Verti
							360				100
16	15427.421 M	38.5	+38.6 +3.7	+0.6	-35.0	+7.4	-6.0	47.8	54.0	-6.2	Verti
							360				100
17	13366.362 M	38.2	+39.3 +3.5	+0.7	-35.0	+7.0	-6.0	47.7	54.0	-6.3	Verti
							360				100
18	15361.355 M	38.4	+38.8 +3.5	+0.6	-35.0	+7.4	-6.0	47.7	54.0	-6.3	Verti
							360				100
19	15568.562 M	38.6	+38.3 +3.6	+0.5	-34.9	+7.5	-6.0	47.6	54.0	-6.4	Verti
							360				100
20	16082.468 M	38.7	+37.5 +3.9	+0.6	-34.9	+7.8	-6.0	47.6	54.0	-6.4	Verti
							360				100

CKC Laboratories, Inc. Date: 4/15/2010 Time: 11:40:45 AM Microstrain, Inc. WO#: 90661  
 15.247(d) Test Distance: 1.5 Meters Sequence#: 13 Ext ATTN: 0 dB



— Readings    ○ Peak Readings    × QP Readings    \* Average Readings    ▼ Ambient    — 1 - 15.247(d)

Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **MicroStrain, Inc.**  
 Specification: **15.247(d)**  
 Work Order #: **90661**  
 Test Type: **Maximized Emissions**  
 Equipment: **2.4 GHz OEM Wireless Module**  
 Manufacturer: MicroStrain, Inc.  
 Model: SG-Link OEM  
 S/N: NODE:303

Date: 4/15/2010  
 Time: 11:49:57 AM  
 Sequence#: 14  
 Tested By: Jeff Gilbert

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
T2	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
T3	AN01271	Preamp	83017A	9/17/2009	9/17/2011
T4	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
T5	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011

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

Function	Manufacturer	Model #	S/N
2.4 GHz OEM Wireless Module*	MicroStrain, Inc.	SG-Link OEM	NODE:303

**Support Devices:**

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

Frequency Range Investigated: 9000 - 17000 MHz  
 23°C / 30% Relative Humidity / 102.7 kPa  
 EUT is transmitting continuously; Y-orientation  
 Testing per KDB 558074 for 15.247 DTS devices

Ext Attn: 0 dB

**Measurement Data:**

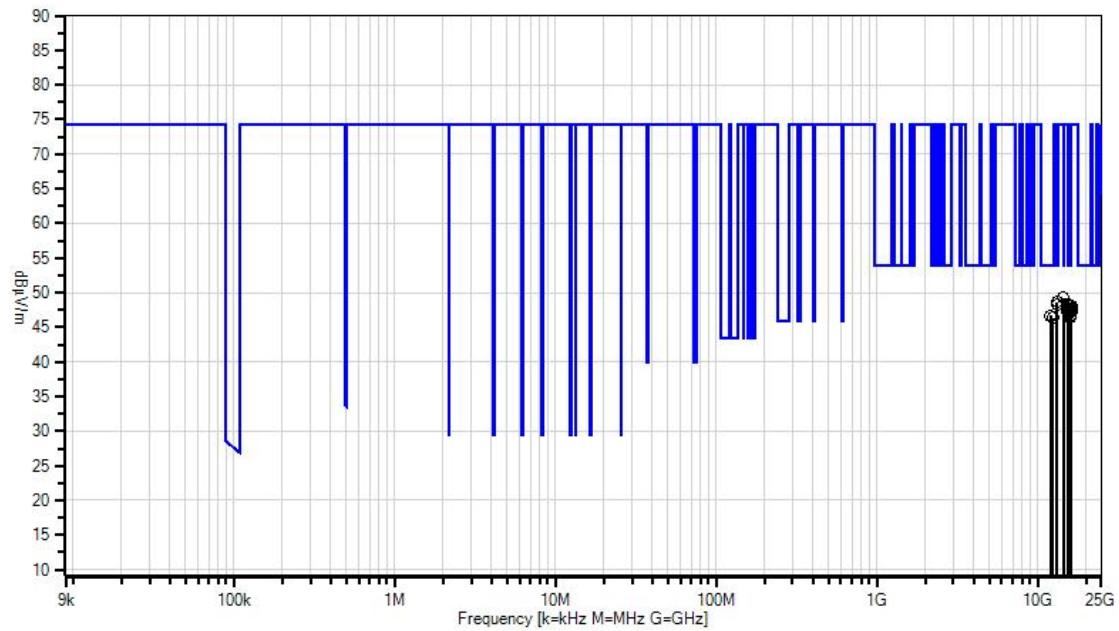
Reading listed by margin.

Test Distance: 1.5 Meters

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBÂμV/ m	Spec dBÂμV/ m	Margin dB	Polar Ant
1	14497.492 M	39.0	+40.0 +3.5	+0.5	-34.8	+7.0	-6.0 360	49.2	54.0	-4.8	Horiz 100
2	13261.257 M	39.3	+39.1 +3.4	+0.8	-35.0	+7.0	-6.0 360	48.6	54.0	-5.4	Horiz 100
3	13271.267 M	39.0	+39.1 +3.4	+0.8	-35.0	+7.0	-6.0 360	48.3	54.0	-5.7	Horiz 100

4	15437.431 M	39.0	+38.6 +3.7	+0.5	-35.0	+7.5	-6.0	48.3	54.0	-5.7	Horiz
							360				100
5	15583.577 M	39.3	+38.2 +3.7	+0.5	-34.9	+7.5	-6.0	48.3	54.0	-5.7	Horiz
							360				100
6	15560.554 M	39.1	+38.3 +3.7	+0.5	-35.0	+7.5	-6.0	48.1	54.0	-5.9	Horiz
							360				100
7	15509.503 M	38.8	+38.4 +3.8	+0.5	-35.0	+7.5	-6.0	48.0	54.0	-6.0	Horiz
							360				100
8	16148.006 M	38.9	+37.7 +3.9	+0.6	-34.9	+7.8	-6.0	48.0	54.0	-6.0	Horiz
							360				100
9	15445.439 M	38.4	+38.6 +3.8	+0.5	-35.0	+7.5	-6.0	47.8	54.0	-6.2	Horiz
							360				100
10	16162.901 M	38.5	+37.7 +4.0	+0.6	-34.9	+7.8	-6.0	47.7	54.0	-6.3	Horiz
							360				100
11	16124.174 M	38.7	+37.6 +3.9	+0.6	-34.9	+7.8	-6.0	47.7	54.0	-6.3	Horiz
							360				100
12	15352.346 M	38.3	+38.8 +3.5	+0.6	-35.0	+7.4	-6.0	47.6	54.0	-6.4	Horiz
							360				100
13	16086.440 M	38.7	+37.5 +3.9	+0.6	-34.9	+7.8	-6.0	47.6	54.0	-6.4	Horiz
							360				100
14	15451.445 M	38.0	+38.5 +3.8	+0.5	-35.0	+7.5	-6.0	47.3	54.0	-6.7	Horiz
							360				100
15	16080.482 M	38.4	+37.5 +3.9	+0.6	-34.9	+7.8	-6.0	47.3	54.0	-6.7	Horiz
							360				100
16	16149.992 M	38.0	+37.7 +4.0	+0.6	-34.9	+7.8	-6.0	47.2	54.0	-6.8	Horiz
							360				100
17	12009.006 M	38.5	+38.8 +3.1	+0.6	-35.0	+6.7	-6.0	46.7	54.0	-7.3	Horiz
							360				100
18	15964.958 M	38.2	+37.4 +3.8	+0.6	-35.0	+7.7	-6.0	46.7	54.0	-7.3	Horiz
							360				100
19	16002.996 M	38.1	+37.3 +3.8	+0.6	-35.0	+7.7	-6.0	46.5	54.0	-7.5	Horiz
							360				100
20	12456.453 M	38.0	+38.7 +3.2	+0.6	-35.0	+6.9	-6.0	46.4	54.0	-7.6	Horiz
							360				100

CKC Laboratories, Inc. Date: 4/15/2010 Time: 11:49:57 AM Microstrain, Inc. WO#: 90661  
 15.247(d) Test Distance: 1.5 Meters Sequence#: 14 Ext ATTN: 0 dB



— Readings    ○ Peak Readings    × QP Readings    \* Average Readings    ▼ Ambient    — 1 - 15.247(d)

Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **MicroStrain, Inc.**

Specification: **15.247(d)**

Work Order #: **90661**

Test Type: **Maximized Emissions**

Equipment: **2.4 GHz OEM Wireless Module**

Manufacturer: MicroStrain, Inc.

Model: SG-Link OEM

S/N: NODE:303

Date: 4/15/2010

Time: 1:32:22 PM

Sequence#: 16

Tested By: Jeff Gilbert

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	11/13/2008	11/13/2010
T2	ANP05422	Cable	PE35591-72	12/17/2009	12/17/2011
T3	ANP05425	Cable	PE35591-120	12/17/2009	12/17/2011
T4	ANP05428	Cable	PE35591-60	12/17/2009	12/17/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011
	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
	AN01271	Preamplifier	83017A	9/17/2009	9/17/2011
	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011

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

Function	Manufacturer	Model #	S/N
2.4 GHz OEM Wireless Module*	MicroStrain, Inc.	SG-Link OEM	NODE:303

**Support Devices:**

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

Frequency Range Investigated: 17500 - 25000 MHz

23°C / 30% / Relative Humidity 102.7 kPa

EUT is transmitting continuously; Y-orientation

Testing per KDB 558074 for 15.247 DTS devices

Ext Attn: 0 dB

**Measurement Data:**

Reading listed by margin.

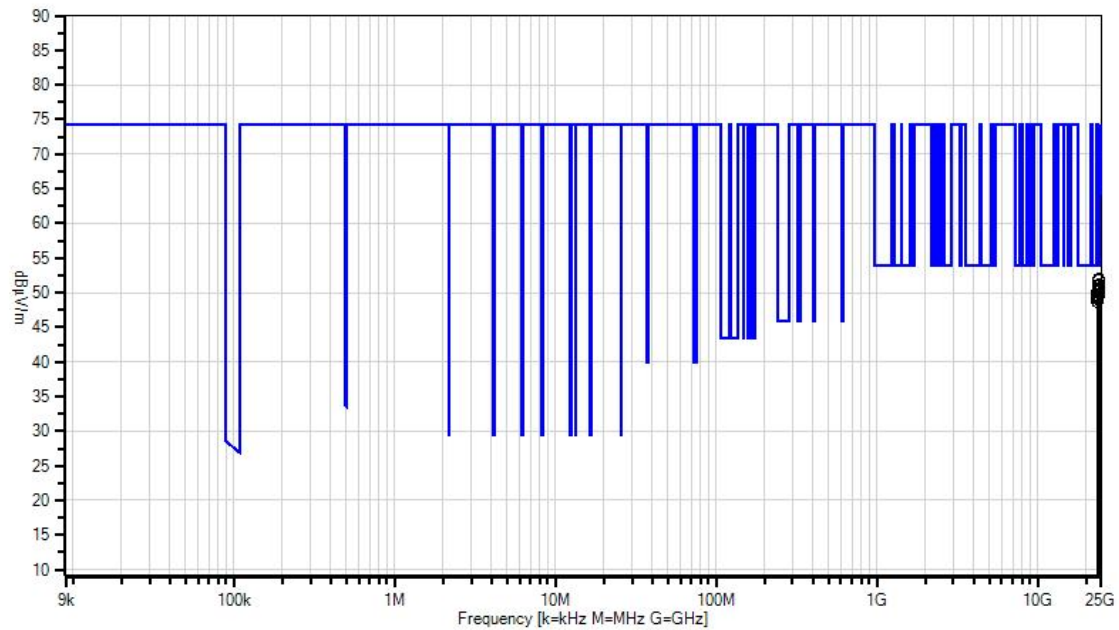
Test Distance: 1.5 Meters

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBÂμV/m	Spec dBÂμV/m	Margin dB	Polar Ant
1	24004.498 M	38.5	-13.9	+9.3	+15.1	+7.9	-6.0	50.9	54.1	-3.2	Verti
							360				100
2	24062.556 M	39.4	-13.8	+9.3	+15.1	+8.0	-6.0	52.0	55.3	-3.3	Verti
							360				100

3	23987.481 M	38.2	-13.9	+9.3	+15.1	+7.9	-6.0	50.6	54.0	-3.4	Verti
							360				100
4	24023.517 M	38.6	-13.9	+9.3	+15.1	+8.0	-6.0	51.1	54.5	-3.4	Verti
							360				100
5	23836.330 M	38.5	-14.3	+9.3	+15.0	+7.9	-6.0	50.4	54.0	-3.6	Verti
							360				100
6	23953.447 M	38.1	-14.0	+9.3	+15.1	+7.9	-6.0	50.4	54.0	-3.6	Verti
							360				100
7	23796.290 M	38.5	-14.4	+9.3	+15.0	+7.9	-6.0	50.3	54.0	-3.7	Verti
							360				100
8	23866.360 M	38.2	-14.2	+9.3	+15.0	+7.9	-6.0	50.2	54.0	-3.8	Verti
							360				100
9	23640.134 M	38.6	-14.8	+9.4	+15.0	+7.9	-6.0	50.1	54.0	-3.9	Verti
							360				100
10	24126.620 M	39.3	-13.7	+9.3	+15.1	+8.0	-6.0	52.0	56.6	-4.6	Verti
							360				100
11	23605.099 M	38.1	-14.9	+9.4	+14.9	+7.9	-6.0	49.4	54.0	-4.6	Verti
							360				100
12	23787.281 M	37.6	-14.4	+9.3	+15.0	+7.9	-6.0	49.4	54.0	-4.6	Verti
							360				100
13	23652.146 M	37.8	-14.8	+9.4	+15.0	+7.9	-6.0	49.3	54.0	-4.7	Verti
							360				100
14	23702.196 M	37.7	-14.7	+9.4	+15.0	+7.9	-6.0	49.3	54.0	-4.7	Verti
							360				100
15	23757.251 M	37.5	-14.5	+9.3	+15.0	+7.9	-6.0	49.2	54.0	-4.8	Verti
							360				100
16	23621.115 M	37.8	-14.9	+9.4	+14.9	+7.9	-6.0	49.1	54.0	-4.9	Verti
							360				100
17	23744.238 M	37.4	-14.6	+9.4	+15.0	+7.9	-6.0	49.1	54.0	-4.9	Verti
							360				100
18	23687.181 M	37.4	-14.7	+9.4	+15.0	+7.9	-6.0	49.0	54.0	-5.0	Verti
							360				100
19	23616.110 M	37.4	-14.9	+9.4	+14.9	+7.9	-6.0	48.7	54.0	-5.3	Verti
							360				100

20	24197.691	38.7	-13.5	+9.3	+15.2	+8.0	-6.0	51.7	58.1	-6.4	Verti
	M						360				100

CKC Laboratories, Inc. Date: 4/15/2010 Time: 1:32:22 PM Microstrain, Inc. WO#: 90661  
 15.247(d) Test Distance: 1.5 Meters Sequence#: 16 Ext ATTN: 0 dB



— Readings    ○ Peak Readings    × QP Readings    \* Average Readings    ▼ Ambient    — 1 - 15.247(d)



Test Location: CKC Laboratories, Inc. • 22116 23rd Ave SE, Suite A • Bothell, WA 98021 • (425) 402-1717

Customer: **MicroStrain, Inc.**  
 Specification: **15.247(d)**  
 Work Order #: **90661**  
 Test Type: **Maximized Emissions**  
 Equipment: **2.4 GHz OEM Wireless Module**  
 Manufacturer: MicroStrain, Inc.  
 Model: SG-Link OEM  
 S/N: NODE:303

Date: 4/15/2010  
 Time: 1:40:26 PM  
 Sequence#: 17  
 Tested By: Jeff Gilbert

**Test Equipment:**

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
T1	AN02742	Active Horn Antenna	AMFW-5F-18002650-20-10P	11/13/2008	11/13/2010
T2	ANP05422	Cable	PE35591-72	12/17/2009	12/17/2011
T3	ANP05425	Cable	PE35591-120	12/17/2009	12/17/2011
T4	ANP05428	Cable	PE35591-60	12/17/2009	12/17/2011
	AN02872	Spectrum Analyzer	E4440A	8/25/2009	8/25/2011
	AN01412	Horn Antenna-ANSI C63.5 Calibration (dB)	3115	10/12/2009	10/12/2011
	AN03123	Cable	32026-2-29801-12	10/23/2009	10/23/2011
	AN01271	Preamplifier	83017A	9/17/2009	9/17/2011
	ANP05542	Cable	Heliac	10/23/2009	10/23/2011
	AN03121	Cable	32026-2-29080-84	10/23/2009	10/23/2011

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

Function	Manufacturer	Model #	S/N
2.4 GHz OEM Wireless Module*	MicroStrain, Inc.	SG-Link OEM	NODE:303

**Support Devices:**

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

Frequency Range Investigated: 17500 - 25000 MHz  
 23°C / 30% Relative Humidity / 102.7 kPa  
 EUT is transmitting continuously; Y-orientation  
 Testing per KDB 558074 for 15.247 DTS devices

Ext Attn: 0 dB

**Measurement Data:**

Reading listed by margin.

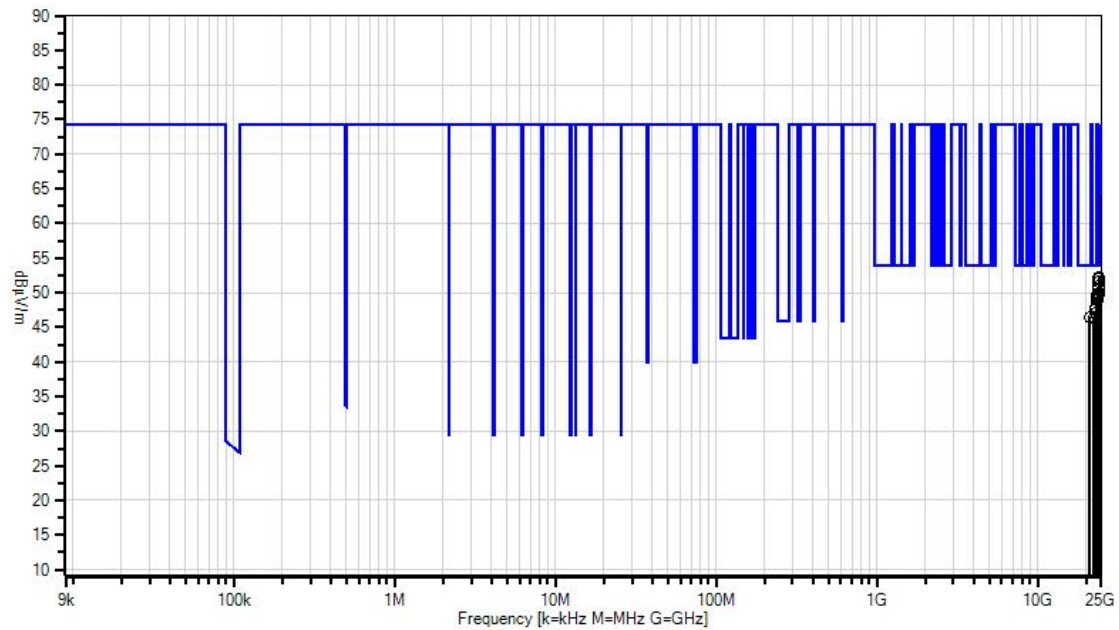
Test Distance: 1.5 Meters

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBÂμV/m	Spec dBÂμV/m	Margin dB	Polar Ant
1	24045.539 M	39.3	-13.8	+9.3	+15.1	+8.0	-6.0	51.9	54.9	-3.0	Horiz
							360				100
2	23796.290 M	38.8	-14.4	+9.3	+15.0	+7.9	-6.0	50.6	54.0	-3.4	Horiz
							360				100

3	23760.254 M	38.2	-14.5	+9.3	+15.0	+7.9	-6.0	49.9	54.0	-4.1	Horiz
							360				100
4	23897.391 M	37.7	-14.2	+9.3	+15.1	+7.9	-6.0	49.8	54.0	-4.2	Horiz
							360				100
5	23690.184 M	38.1	-14.7	+9.4	+15.0	+7.9	-6.0	49.7	54.0	-4.3	Horiz
							360				100
6	23727.221 M	37.8	-14.6	+9.4	+15.0	+7.9	-6.0	49.5	54.0	-4.5	Horiz
							360				100
7	23656.150 M	37.8	-14.8	+9.4	+15.0	+7.9	-6.0	49.3	54.0	-4.7	Horiz
							360				100
8	23660.154 M	37.8	-14.8	+9.4	+15.0	+7.9	-6.0	49.3	54.0	-4.7	Horiz
							360				100
9	23600.094 M	37.8	-14.9	+9.4	+14.9	+7.9	-6.0	49.1	54.0	-4.9	Horiz
							360				100
10	23632.126 M	37.5	-14.9	+9.4	+15.0	+7.9	-6.0	48.9	54.0	-5.1	Horiz
							360				100
11	24165.659 M	39.3	-13.6	+9.3	+15.2	+8.0	-6.0	52.2	57.4	-5.2	Horiz
							360				100
12	24149.643 M	38.7	-13.6	+9.3	+15.1	+8.0	-6.0	51.5	57.1	-5.6	Horiz
							360				100
13	24176.670 M	39.1	-13.6	+9.3	+15.2	+8.0	-6.0	52.0	57.6	-5.6	Horiz
							360				100
14	23111.606 M	38.5	-16.4	+9.3	+14.7	+7.8	-6.0	47.9	54.0	-6.1	Horiz
							360				100
15	23091.586 M	38.4	-16.5	+9.3	+14.7	+7.8	-6.0	47.7	54.0	-6.3	Horiz
							360				100
16	22894.389 M	38.5	-16.9	+9.1	+14.6	+7.7	-6.0	47.0	54.0	-7.0	Horiz
							360				100
17	22524.019 M	38.4	-16.9	+8.8	+14.5	+7.7	-6.0	46.5	54.0	-7.5	Horiz
							360				100
18	21036.533 M	38.2	-15.2	+8.2	+13.9	+7.3	-6.0	46.4	54.0	-7.6	Horiz
							360				100
19	22926.421 M	37.7	-16.9	+9.1	+14.7	+7.7	-6.0	46.3	54.0	-7.7	Horiz
							360				100

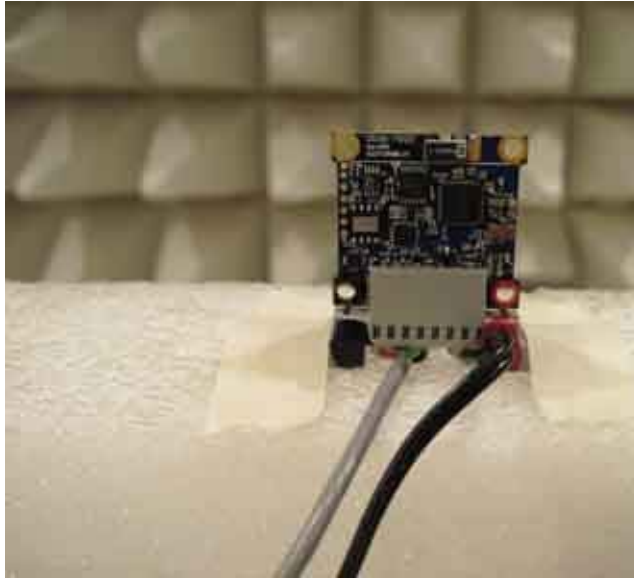
20	24232.726	38.0	-13.5	+9.3	+15.2	+8.0	-6.0	51.0	58.8	-7.8	Horiz
	M						360				100

CKC Laboratories, Inc. Date: 4/15/2010 Time: 1:40:26 PM Microstrain, Inc. WO#: 90661  
 15.247(d) Test Distance: 1.5 Meters Sequence#: 17 Ext ATTN: 0 dB

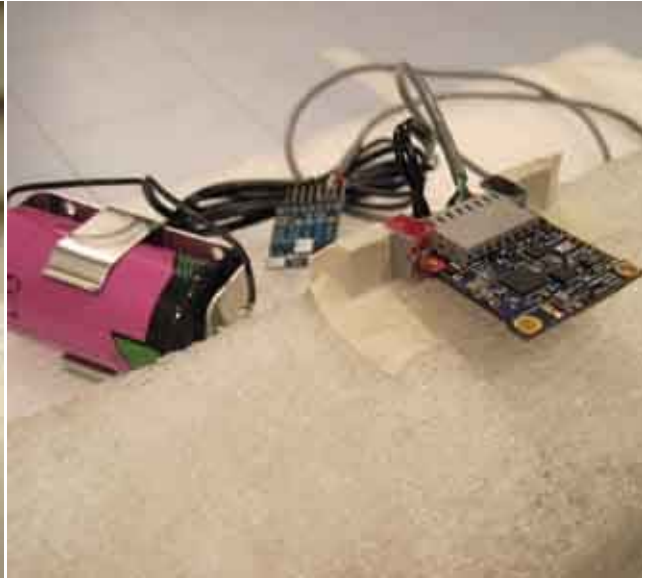


— Readings    ○ Peak Readings    × QP Readings    \* Average Readings    ▼ Ambient    — 1 - 15.247(d)

**Test Setup Photos**



X Orientation



Y Orientation



Z Orientation

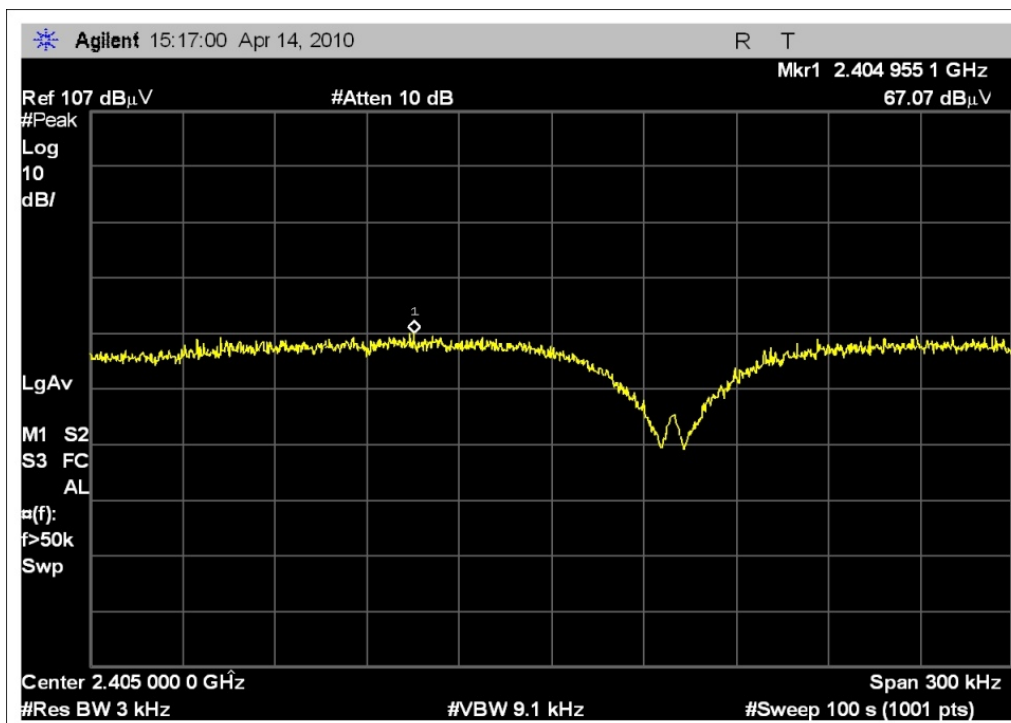
## 15.247(e) Power Spectral Density

Engineer Names: Armando del Angel & Jeff Gilbert

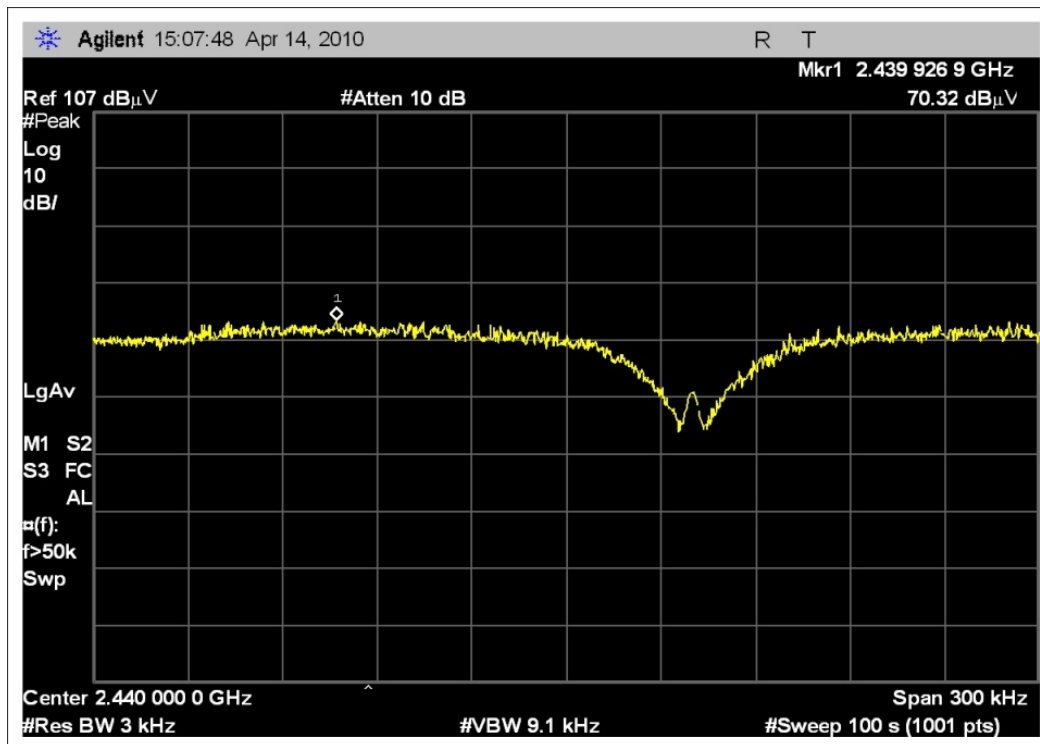
Test Equipment				
Name	Model	Cal Date	Cal Due	Asset
Cable	32026-2-29080-84	10/23/2009	10/23/2011	AN03121
Cable	Heliac	10/23/2009	10/23/2011	ANP05542
Preamp	83017A	9/17/2009	9/17/2011	AN01271
Cable	32026-2-29801-12	10/23/2009	10/23/2011	AN03123
Horn Antenna	3115	10/12/2009	10/12/2011	AN01412
Spectrum Analyzer	E4440A	8/25/2009	8/25/2011	AN02872

Test Conditions: Frequency Range Investigated: 2400 - 2483.5 MHz; 22°C / 27% Relative Humidity / 103.1 kPa; Testing per KDB 558074 for 15.247 DTS devices; EUT is in Continuous, 100% modulated TX mode; 2405 MHz, 2440 MHz, & 2480 MHz; 3 orientations were investigated (X, Y, and Z), worst case emissions from the Y-orientation are reported.

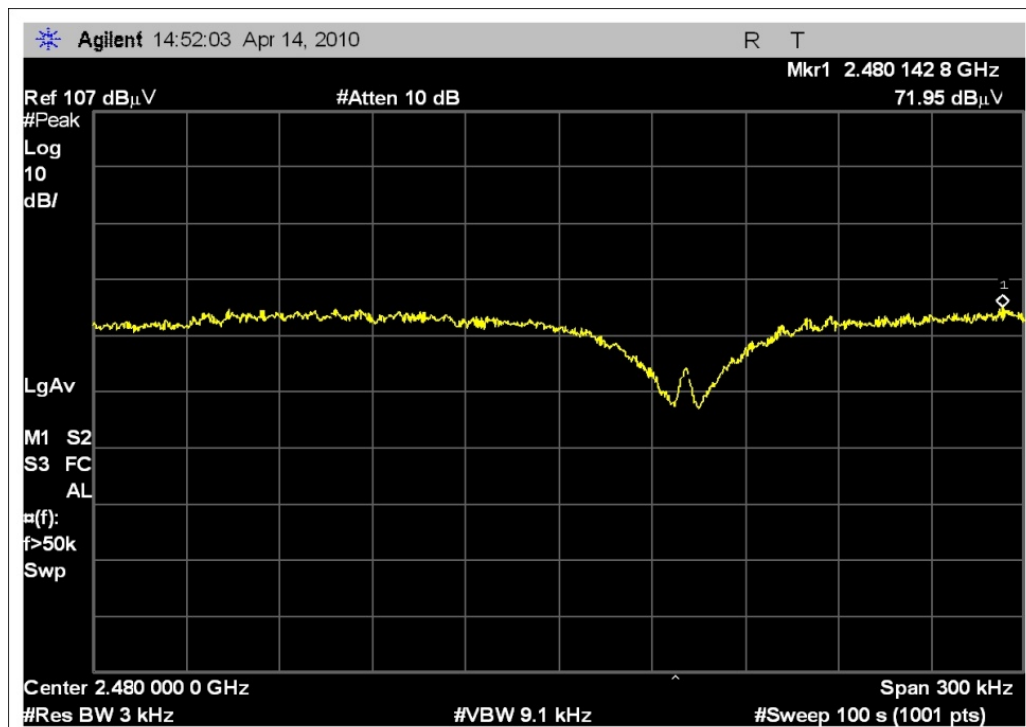
### Test Plots



2405 MHz - PSD

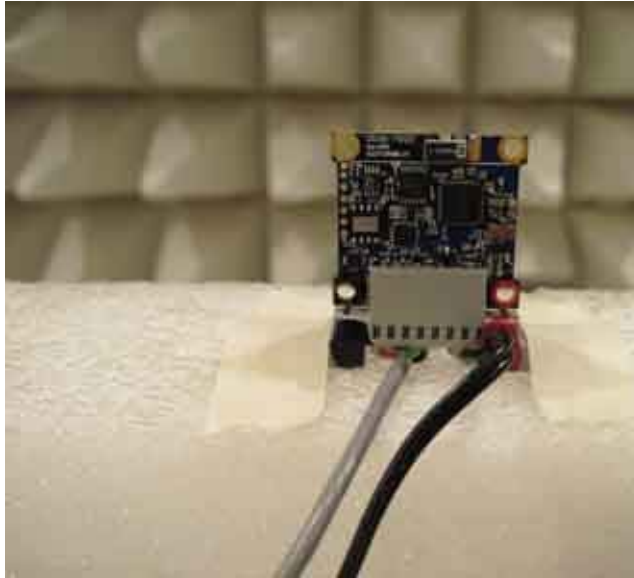


2440 MHz - PSD

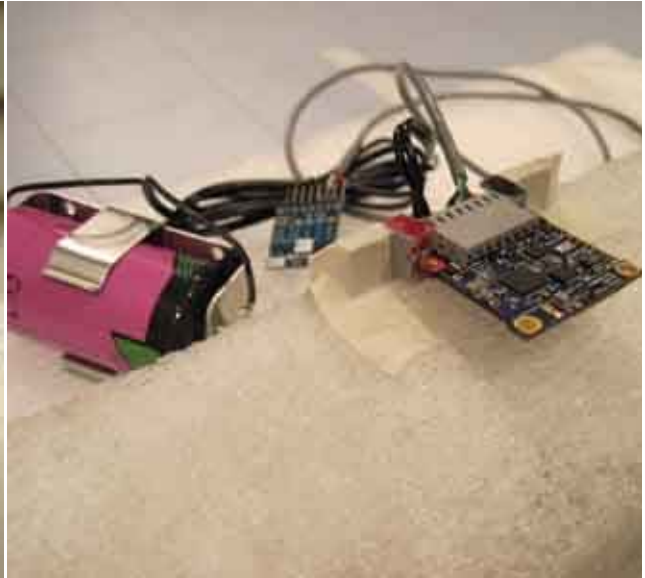


2480 MHz - PSD

**Test Setup Photos**



X Orientation



Y Orientation



Z Orientation

## RSS-210 99% Bandwidth

Engineer Names: Armando del Angel & Jeff Gilbert

Test Equipment				
Name	Model	Cal Date	Cal Due	Asset
Cable	32026-2-29080-84	10/23/2009	10/23/2011	AN03121
Cable	Heliac	10/23/2009	10/23/2011	ANP05542
Preamp	83017A	9/17/2009	9/17/2011	AN01271
Cable	32026-2-29801-12	10/23/2009	10/23/2011	AN03123
Horn Antenna	3115	10/12/2009	10/12/2011	AN01412
Spectrum Analyzer	E4440A	8/25/2009	8/25/2011	AN02872

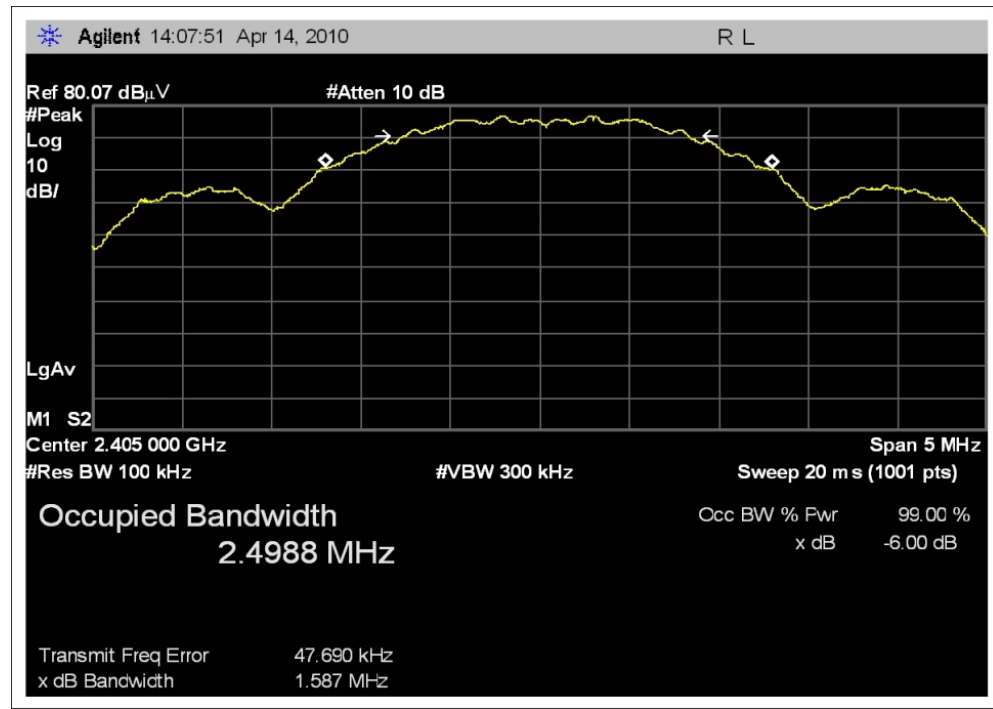
Test Conditions: Frequency Range Investigated: 2400 - 2483.5 MHz; 22°C / 27% Relative Humidity / 103.1 kPa; Testing per KDB 558074 for 15.247 DTS devices; EUT is in Continuous, 100% modulated TX mode; 2405 MHz, 2440 MHz, & 2480 MHz; 3 orientations were investigated (X, Y, and Z), worst case emissions from the Y-orientation are reported.

### Test Data

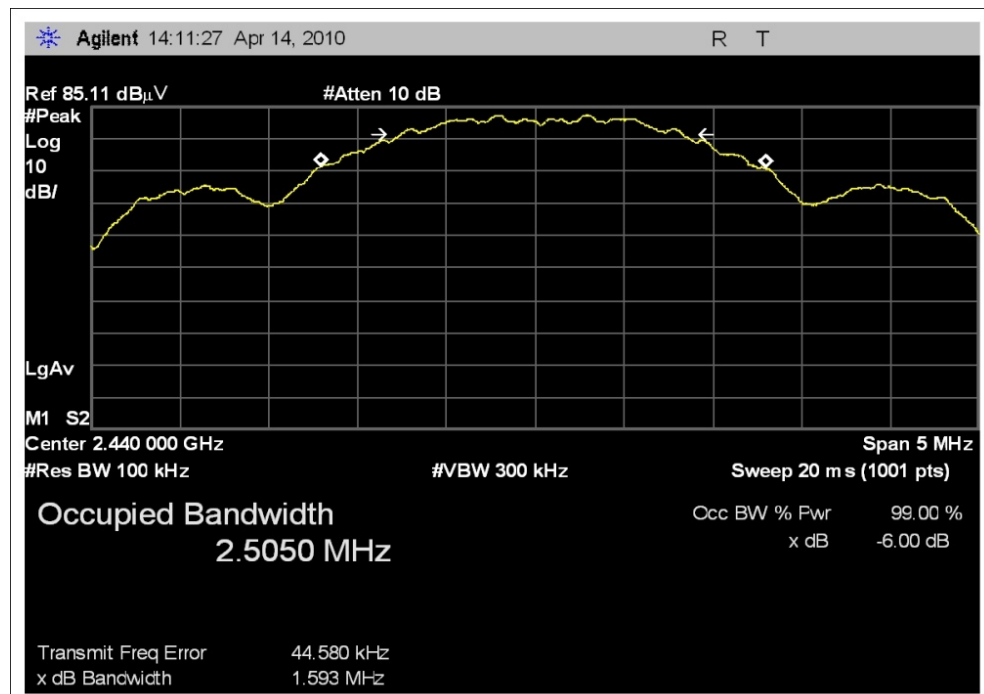
Frequency MHz	Measured 6 dB BW kHz	15.247 Min Limit kHz	Pass/Fail		Frequency MHz	Measured 99% BW kHz	Min Limit kHz	Pass/Fail
2405	1587	500	Pass		2405	2499	500	Pass
2440	1593	500	Pass		2440	2505	500	Pass
2480	1593	500	Pass		2480	2514	500	Pass



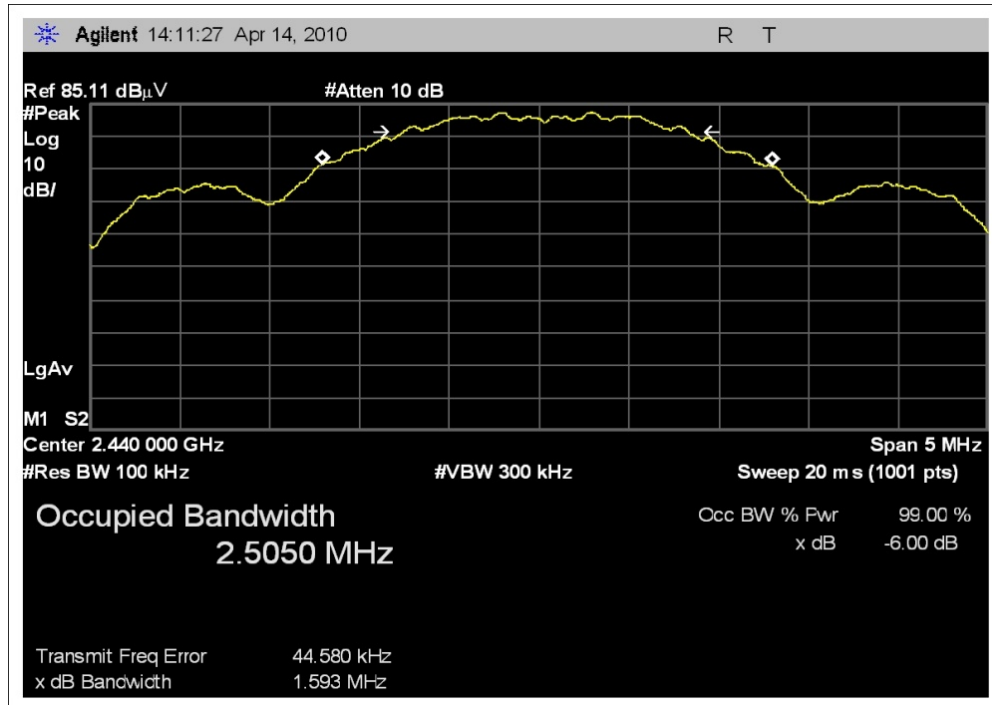
### Test Plots



2405 MHz – 99% BW

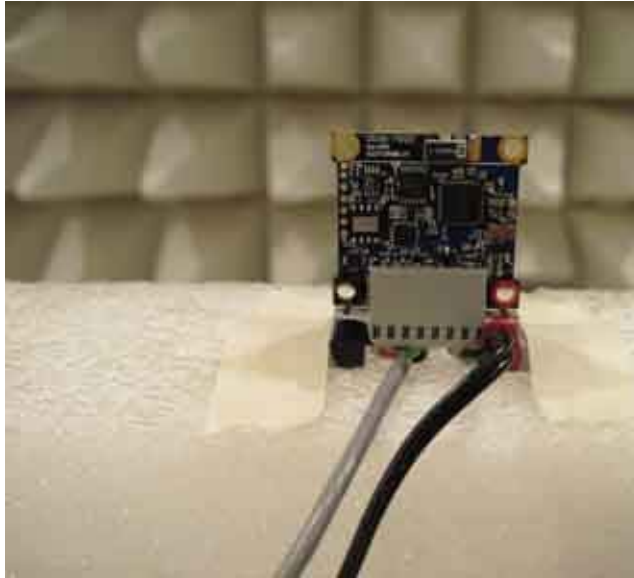


2440 MHz – 99% BW

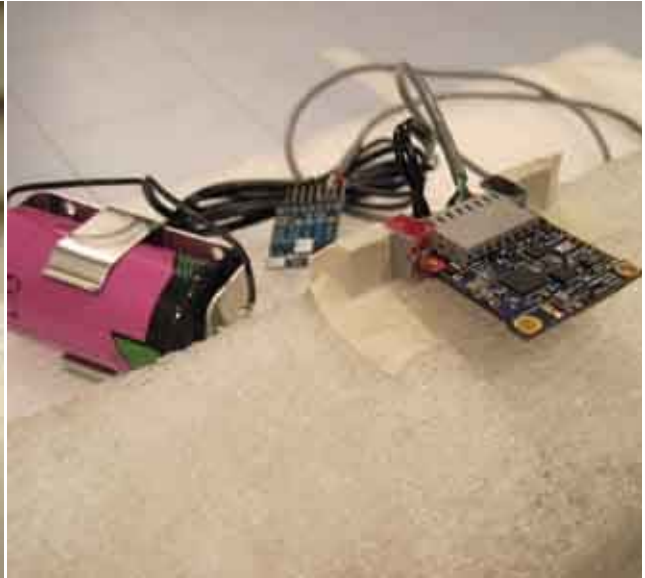


2480 MHz – 99% BW

**Test Setup Photos**



X Orientation



Y Orientation



Z Orientation

## SUPPLEMENTAL INFORMATION

### Measurement Uncertainty

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

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

### Emissions Test Details

#### TESTING PARAMETERS

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

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

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

#### CORRECTION FACTORS

The basic spectrum analyzer reading was converted using correction factors as shown in the highest emissions readings in the tables. For radiated emissions in  $\text{dB}\mu\text{V}/\text{m}$ , the spectrum analyzer reading in  $\text{dB}\mu\text{V}$  was corrected by using the following formula. This reading was then compared to the applicable specification limit.

SAMPLE CALCULATIONS		
	Meter reading	(dB $\mu$ V)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dB $\mu$ 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.

### 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 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.