

PASCO Scientific

TEST REPORT FOR

**Gun Diode Microwave Transmitter
Model: WA-9314B/WA-9801**

Tested To The Following Standards:

FCC Part 15 Subpart C Sections 15.207 and 15.245

Report No.: 91548-2

Date of issue: February 11, 2011



**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:

PASCO Scientific
10101 Foothills Blvd.
Roseville, CA 95747

Representative: Steve Miller
Customer Reference Number: 137525

DATE OF EQUIPMENT RECEIPT:**DATE(S) OF TESTING:****REPORT PREPARED BY:**

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

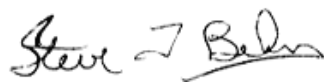
Project Number: 91548

February 3, 2011

February 3, 2011

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.
1120 Fulton Place
Fremont, CA 94539

Site Registration & Accreditation Information

Location	CB #	Japan	Canada	FCC
Fremont	US0082	R-2160, C2332 & T-228	3082B-1	958979

SUMMARY OF RESULTS

Standard / Specification: FCC Part 15 Subpart C

Description	Test Procedure/Method	Results
Conducted Emissions	FCC Part 15 Subpart C Section 15.207 / ANSI C63.4 (2003)	Pass
RF Power Output	FCC Part 15 Subpart C Section 15.245(b) / 2.1046	Pass
Occupied Bandwidth	FCC Part 15 Subpart C Section 2.1049(l)	Pass
Blockage	FCC Part 15 Subpart C Section 15.245	Pass
Field Strength of Spurious Radiation	FCC Part 15 Subpart C Section 15.245(b)(1) (b)(3) / 15.209 / 2.1053	Pass

Conditions During Testing

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

Summary of Conditions
None

EQUIPMENT UNDER TEST (EUT)

EQUIPMENT UNDER TEST

Gun Diode Microwave Transmitter

Manuf: PASCO Scientific

Model: WA-9314B/WA-9801

Serial: None

Class 2 Transformer

Manuf: Condor

Model: D9500

Serial: None

PERIPHERAL DEVICES

The EUT was not tested with peripheral devices.

FCC PART 15 SUBPART C

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

15.207 AC Conducted Emissions

Test Data Sheets

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

Customer: **PASCO Scientific**
 Specification: **15.207 AC Mains - Average**
 Work Order #: **91548**
 Test Type: **Conducted Emissions**
 Equipment: **Gun Diode Microwave Transmitter**
 Manufacturer: **PASCO Scientific**
 Model: **WA-9314B/WA-9801**
 S/N: **None**

Date: 2/3/2011
 Time: 4:06:19 PM
 Sequence#: 8
 Tested By: A. Brar
 110V 60Hz

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02668	Spectrum Analyzer	E4446A	3/9/2009	3/9/2011
T1	ANP05300	Cable	RG214/U	3/6/2009	3/6/2011
T2	ANP05440	Cable		1/18/2010	1/18/2012
T3	ANP01211	Attenuator	23-10-34	5/18/2009	5/18/2011
T4	ANP05258	High Pass Filter	HE9615-150K-50-720B	12/2/2010	12/2/2012
T5	AN00494	50uH LISN-Line (dB)	3816/NM	3/30/2009	3/30/2011
	AN00494	50uH LISN-Neutral (dB)	3816/NM	3/30/2009	3/30/2011

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Gun Diode Microwave Transmitter*	PASCO Scientific	WA-9314B/WA-9801	None
Class 2 Transformer	Condor	D9500	None

Support Devices:

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

EUT is continuously transmitting a CW signal at 10.538500GHz.
 EUT's antenna is vertical, as this produced the worst case fundamental readings.
 Temperature: 66°F
 Relative Humidity: 28%
 Atmospheric Pressure: 104.1kPa
 0.15-30MHz, EUT has no clocks in it.

Ext Attn: 0 dB

Measurement Data:

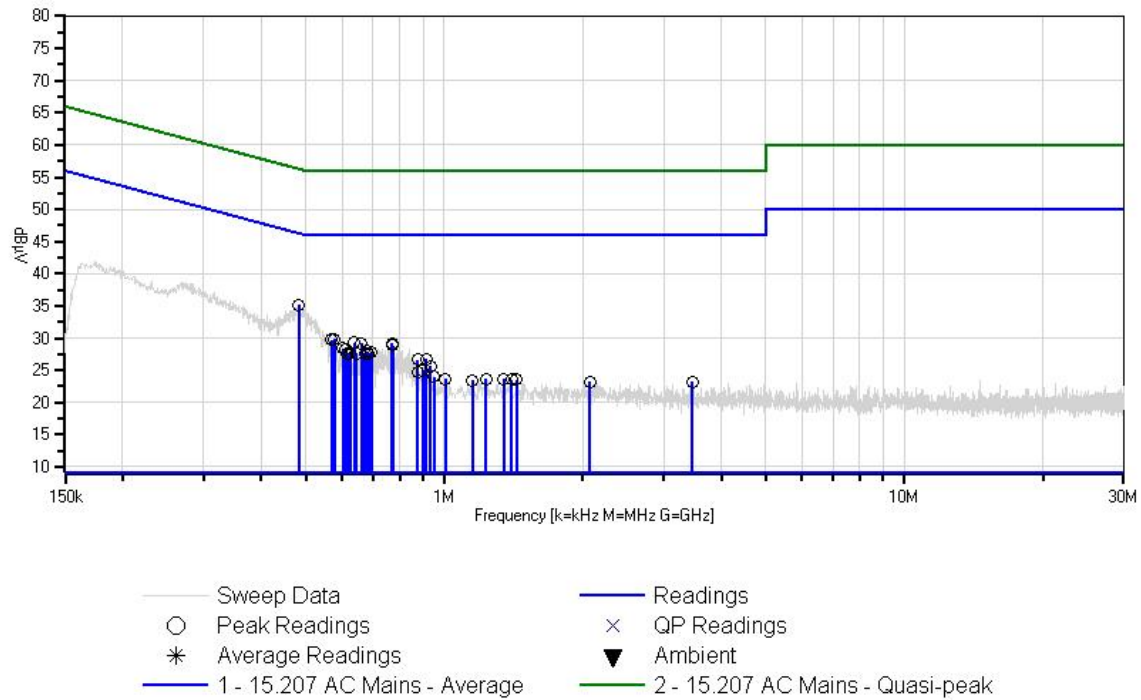
Reading listed by margin.

Test Lead: Line

#	Freq MHz	Rdng dBμV	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dBμV	Spec dBμV	Margin dB	Polar Ant
1	482.333k	25.1	+0.1 +0.1	+0.0	+9.8	+0.1	+0.0	35.2	46.3	-11.1	Line
2	578.324k	19.6	+0.1 +0.1	+0.0	+9.8	+0.2	+0.0	29.8	46.0	-16.2	Line
3	568.871k	19.5	+0.1 +0.1	+0.0	+9.8	+0.2	+0.0	29.7	46.0	-16.3	Line
4	637.955k	18.9	+0.3 +0.1	+0.0	+9.8	+0.2	+0.0	29.3	46.0	-16.7	Line
5	660.499k	18.9	+0.2 +0.1	+0.0	+9.8	+0.2	+0.0	29.2	46.0	-16.8	Line
6	769.580k	18.9	+0.1 +0.1	+0.1	+9.8	+0.2	+0.0	29.2	46.0	-16.8	Line
7	771.761k	18.6	+0.1 +0.1	+0.1	+9.8	+0.2	+0.0	28.9	46.0	-17.1	Line
8	603.049k	18.2	+0.1 +0.1	+0.0	+9.8	+0.2	+0.0	28.4	46.0	-17.6	Line
9	611.049k	18.0	+0.1 +0.1	+0.0	+9.8	+0.2	+0.0	28.2	46.0	-17.8	Line
10	680.133k	17.8	+0.1 +0.1	+0.0	+9.8	+0.2	+0.0	28.0	46.0	-18.0	Line
11	695.404k	17.6	+0.1 +0.1	+0.0	+9.8	+0.2	+0.0	27.8	46.0	-18.2	Line
12	644.500k	17.2	+0.3 +0.1	+0.0	+9.8	+0.2	+0.0	27.6	46.0	-18.4	Line
13	624.866k	17.3	+0.2 +0.1	+0.0	+9.8	+0.2	+0.0	27.6	46.0	-18.4	Line
14	685.951k	17.4	+0.1 +0.1	+0.0	+9.8	+0.2	+0.0	27.6	46.0	-18.4	Line
15	672.861k	17.3	+0.2 +0.1	+0.0	+9.8	+0.2	+0.0	27.6	46.0	-18.4	Line
16	615.412k	17.4	+0.1 +0.1	+0.0	+9.8	+0.2	+0.0	27.6	46.0	-18.4	Line
17	915.480k	16.5	+0.2 +0.1	+0.1	+9.8	+0.1	+0.0	26.8	46.0	-19.2	Line
18	875.024k	16.4	+0.1 +0.1	+0.1	+9.8	+0.1	+0.0	26.6	46.0	-19.4	Line

19	932.490k	15.3	+0.2 +0.1	+0.1	+9.8	+0.1	+0.0	25.6	46.0	-20.4	Line
20	898.469k	14.7	+0.2 +0.1	+0.1	+9.8	+0.1	+0.0	25.0	46.0	-21.0	Line
21	877.205k	14.4	+0.1 +0.1	+0.1	+9.8	+0.1	+0.0	24.6	46.0	-21.4	Line
22	949.501k	13.7	+0.1 +0.1	+0.1	+9.8	+0.2	+0.0	24.0	46.0	-22.0	Line
23	1.345M	13.2	+0.2 +0.1	+0.1	+9.9	+0.2	+0.0	23.7	46.0	-22.3	Line
24	1.005M	13.3	+0.1 +0.1	+0.1	+9.8	+0.2	+0.0	23.6	46.0	-22.4	Line
25	1.234M	13.1	+0.2 +0.1	+0.1	+9.9	+0.2	+0.0	23.6	46.0	-22.4	Line
26	1.400M	13.0	+0.2 +0.1	+0.1	+9.9	+0.2	+0.0	23.5	46.0	-22.5	Line
27	1.439M	13.1	+0.2 +0.1	+0.1	+9.9	+0.1	+0.0	23.5	46.0	-22.5	Line
28	1.154M	13.1	+0.1 +0.1	+0.1	+9.8	+0.2	+0.0	23.4	46.0	-22.6	Line
29	2.076M	12.8	+0.2 +0.1	+0.0	+10.0	+0.1	+0.0	23.2	46.0	-22.8	Line
30	3.463M	12.8	+0.2 +0.1	+0.1	+9.8	+0.2	+0.0	23.2	46.0	-22.8	Line

CKC Laboratories, Inc. Date: 2/3/2011 Time: 4:06:19 PM PASCO Scientific WO#: 91548 Model:WA-9314B/WA-9801 SN:None
 15.207 AC Mains - Average Test Lead: Line 110V 60Hz Sequence#: 8 Line



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

Customer: **PASCO Scientific**
 Specification: **15.207 AC Mains - Average**
 Work Order #: **91548**
 Test Type: **Conducted Emissions**
 Equipment: **Gun Diode Microwave Transmitter**
 Manufacturer: **PASCO Scientific**
 Model: **WA-9314B/WA-9801**
 S/N: **None**

Date: 2/3/2011
 Time: 4:10:13 PM
 Sequence#: 9
 Tested By: A. Brar
 110V 60Hz

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02668	Spectrum Analyzer	E4446A	3/9/2009	3/9/2011
T1	ANP05300	Cable	RG214/U	3/6/2009	3/6/2011
T2	ANP05440	Cable		1/18/2010	1/18/2012
T3	ANP01211	Attenuator	23-10-34	5/18/2009	5/18/2011
T4	ANP05258	High Pass Filter	HE9615-150K-50-720B	12/2/2010	12/2/2012
	AN00494	50uH LISN-Line (dB)	3816/NM	3/30/2009	3/30/2011
T5	AN00494	50uH LISN-Neutral (dB)	3816/NM	3/30/2009	3/30/2011

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Gun Diode Microwave Transmitter*	PASCO Scientific	WA-9314B/WA-9801	None
Class 2 Transformer	Condor	D9500	None

Support Devices:

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

EUT is continuously transmitting a CW signal at 10.538500GHz.
 EUT's antenna is vertical, as this produced the worst case fundamental readings.
 Temperature: 66°F
 Relative Humidity: 28%
 Atmospheric Pressure: 104.1kPa
 0.15-30MHz, EUT has no clocks in it.

Ext Attn: 0 dB

Measurement Data:

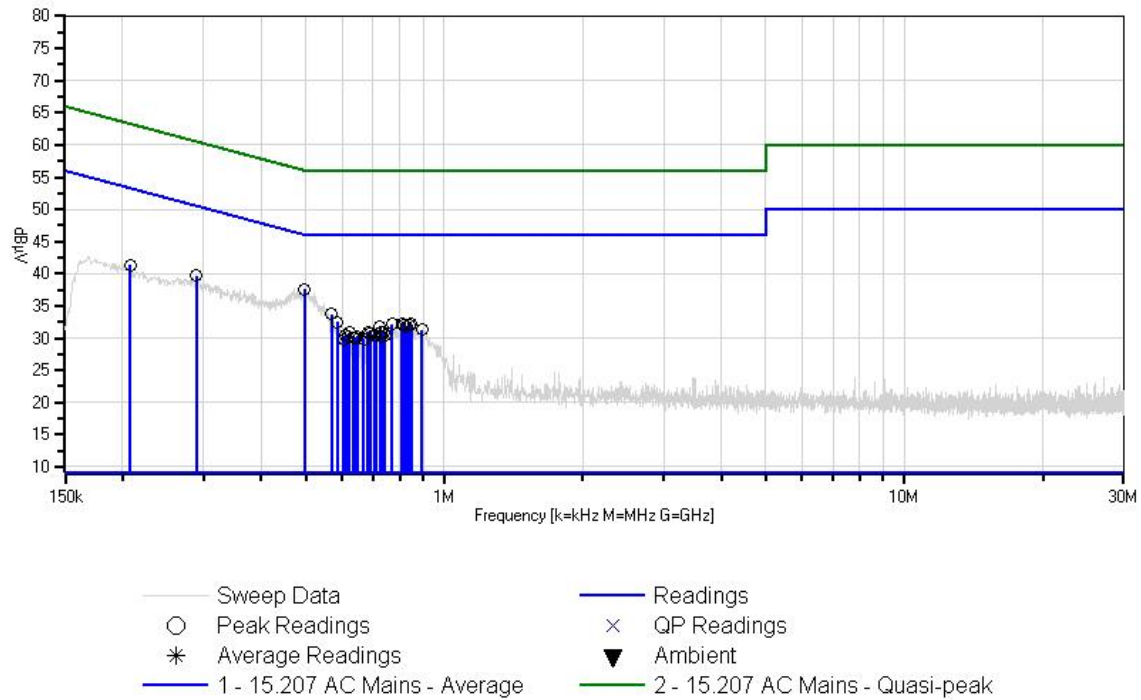
Reading listed by margin.

Test Lead: Neutral

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dB μ V	dB	dB	dB	dB	Table	dB μ V	dB μ V	dB	Ant
1	496.877k	27.4	+0.2 +0.0	+0.1	+9.8	+0.1	+0.0	37.6	46.1	-8.5	Neutr
2	288.896k	29.3	+0.2 +0.0	+0.1	+10.0	+0.1	+0.0	39.7	50.6	-10.9	Neutr
3	207.449k	31.0	+0.2 +0.0	+0.1	+10.0	+0.1	+0.0	41.4	53.3	-11.9	Neutr
4	569.598k	23.6	+0.1 +0.0	+0.0	+9.8	+0.2	+0.0	33.7	46.0	-12.3	Neutr
5	584.869k	22.4	+0.1 +0.0	+0.0	+9.8	+0.2	+0.0	32.5	46.0	-13.5	Neutr
6	809.576k	22.0	+0.1 +0.1	+0.1	+9.8	+0.2	+0.0	32.3	46.0	-13.7	Neutr

7	812.485k	22.0	+0.1 +0.1	+0.1	+9.8	+0.2	+0.0	32.3	46.0	-13.7	Neutr
8	770.307k	22.0	+0.1 +0.0	+0.1	+9.8	+0.2	+0.0	32.2	46.0	-13.8	Neutr
9	847.391k	21.9	+0.1 +0.1	+0.1	+9.8	+0.2	+0.0	32.2	46.0	-13.8	Neutr
10	819.030k	21.8	+0.1 +0.1	+0.1	+9.8	+0.2	+0.0	32.1	46.0	-13.9	Neutr
11	837.937k	21.6	+0.1 +0.1	+0.1	+9.8	+0.2	+0.0	31.9	46.0	-14.1	Neutr
12	828.483k	21.5	+0.1 +0.1	+0.1	+9.8	+0.2	+0.0	31.8	46.0	-14.2	Neutr
13	724.493k	21.5	+0.2 +0.0	+0.0	+9.8	+0.2	+0.0	31.7	46.0	-14.3	Neutr
14	894.216k	21.1	+0.2 +0.0	+0.1	+9.8	+0.1	+0.0	31.3	46.0	-14.7	Neutr
15	737.582k	20.8	+0.2 +0.0	+0.0	+9.8	+0.2	+0.0	31.0	46.0	-15.0	Neutr
16	730.310k	20.8	+0.2 +0.0	+0.0	+9.8	+0.2	+0.0	31.0	46.0	-15.0	Neutr
17	681.588k	20.8	+0.1 +0.0	+0.0	+9.8	+0.2	+0.0	30.9	46.0	-15.1	Neutr
18	622.684k	20.6	+0.2 +0.0	+0.0	+9.8	+0.2	+0.0	30.8	46.0	-15.2	Neutr
19	690.314k	20.6	+0.1 +0.0	+0.0	+9.8	+0.2	+0.0	30.7	46.0	-15.3	Neutr
20	704.858k	20.3	+0.2 +0.0	+0.0	+9.8	+0.2	+0.0	30.5	46.0	-15.5	Neutr
21	709.949k	20.3	+0.2 +0.0	+0.0	+9.8	+0.2	+0.0	30.5	46.0	-15.5	Neutr
22	742.673k	20.3	+0.2 +0.0	+0.0	+9.8	+0.2	+0.0	30.5	46.0	-15.5	Neutr
23	608.867k	20.3	+0.1 +0.0	+0.0	+9.8	+0.2	+0.0	30.4	46.0	-15.6	Neutr
24	618.321k	20.1	+0.2 +0.0	+0.0	+9.8	+0.2	+0.0	30.3	46.0	-15.7	Neutr
25	645.954k	20.0	+0.3 +0.0	+0.0	+9.8	+0.2	+0.0	30.3	46.0	-15.7	Neutr
26	728.129k	20.0	+0.2 +0.0	+0.0	+9.8	+0.2	+0.0	30.2	46.0	-15.8	Neutr
27	635.774k	19.8	+0.3 +0.0	+0.0	+9.8	+0.2	+0.0	30.1	46.0	-15.9	Neutr
28	642.318k	19.8	+0.3 +0.0	+0.0	+9.8	+0.2	+0.0	30.1	46.0	-15.9	Neutr
29	605.231k	19.8	+0.1 +0.0	+0.0	+9.8	+0.2	+0.0	29.9	46.0	-16.1	Neutr
30	668.498k	19.6	+0.2 +0.0	+0.0	+9.8	+0.2	+0.0	29.8	46.0	-16.2	Neutr

CKC Laboratories, Inc. Date: 2/3/2011 Time: 4:10:13 PM PASCO Scientific WO#: 91548 Model:WA-9314B/WA-9801 SN:None
 15.207 AC Mains - Average Test Lead: Neutral 110V 60Hz Sequence#: 9 Neutral



Test Setup Photos



15.245(b)/2.1046 RF Power Output

Test Data Sheets

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

Customer: **PASCO Scientific**

Specification: **15.245 Carrier and Spurious Emissions (10500-10550 MHz Transmitter Equipment for Indoor Use Only)**

Work Order #: **91548** Date: 2/3/2011

Test Type: **Radiated Scan** Time: 09:10:09

Equipment: **Gun Diode Microwave Transmitter** Sequence#: 1

Manufacturer: PASCO Scientific Tested By: A. Brar

Model: WA-9314B/WA-9801

S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02668	Spectrum Analyzer	E4446A	3/9/2009	3/9/2011
T1	ANP04241	Cable	FSJ1-50A	3/2/2010	3/2/2012
T2	ANP05138	Cable	FSJ1P-50A-4	3/19/2010	3/19/2012
T3	AN02061	Horn Antenna-ANSI C63.5	3115	1/17/2011	1/17/2013

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Gun Diode Microwave Transmitter*	PASCO Scientific	WA-9314B/WA-9801	None
Class 2 Transformer	Condor	D9500	None

Support Devices:

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

EUT is continuously transmitting a CW signal at 10.538500GHz.
RBW/VBW: 1/3MHz
Carrier Readings. FCC 15.245 (b).
Temperature: 66°F
Relative Humidity: 28%
Atmospheric Pressure: 104.1kPa

Ext Attn: 0 dB

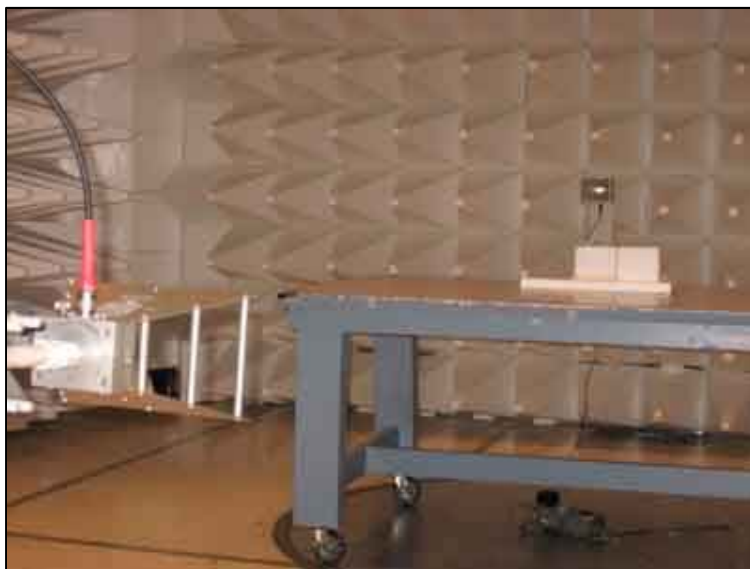
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	T3 dB		Dist Table	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	10538.717 M	75.4	+1.4	+5.5	+38.2		+0.0	120.5	128.0	-7.5	Vert
							86		EUT's antenna set in vertical polarity.		102
2	10538.667 M	74.8	+1.4	+5.5	+38.2		+0.0	119.9	128.0	-8.1	Horiz
							86		EUT antenna set in horizontal polarity.		101
3	10538.717 M	66.3	+1.4	+5.5	+38.2		+0.0	111.4	128.0	-16.6	Horiz
							86		EUT's antenna set in vertical polarity.		101
4	10538.475 M	46.6	+1.4	+5.5	+38.2		+0.0	91.7	128.0	-36.3	Vert
									EUT antenna set in horizontal polarity.		101

Test Setup Photos



2.1049(I) Occupied Bandwidth

Test Set up

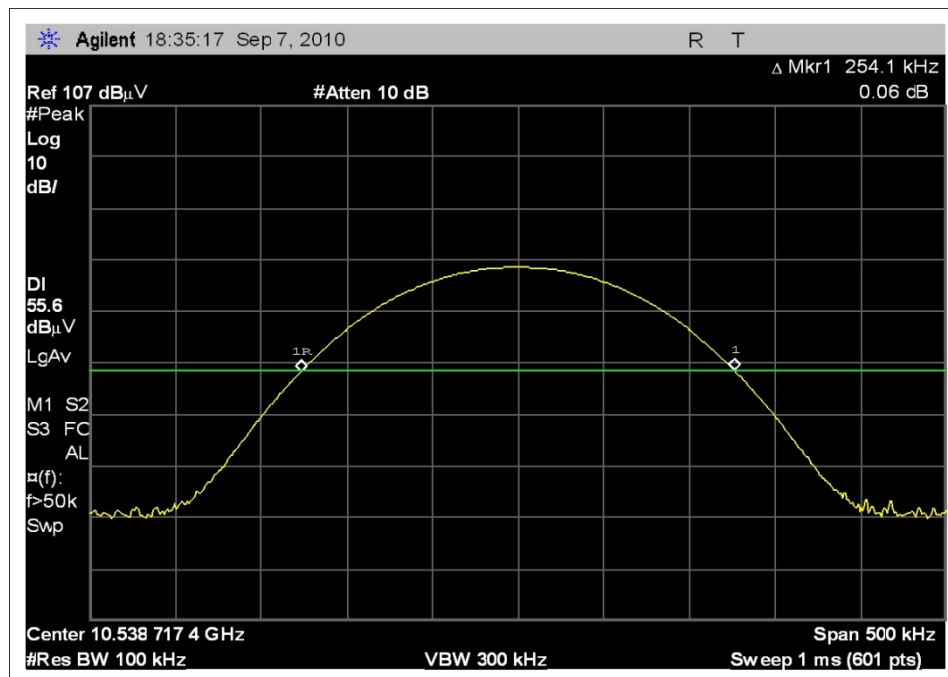
EUT is continuously transmitting a CW signal at 10.538500GHz. RBW/VBW: 100/300kHz OBW.
Temperature: 66°F, Relative Humidity: 28%, Atmospheric Pressure: 104.1kPa

Engineer Name: A. Brar

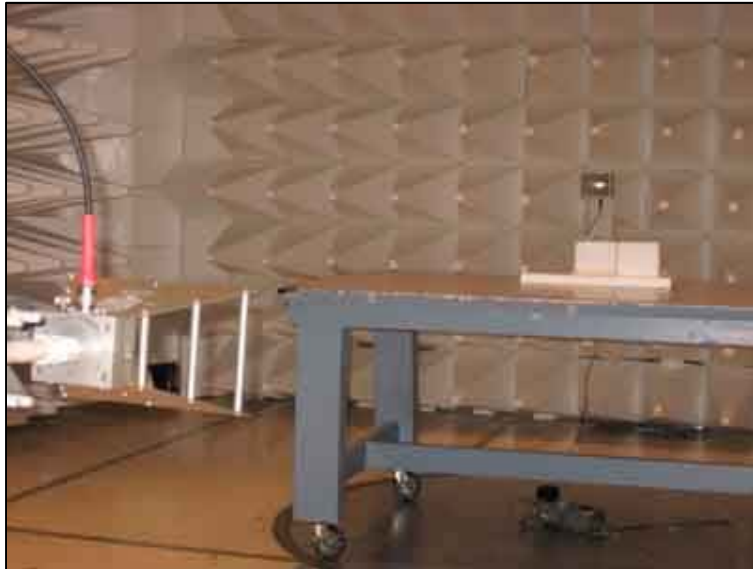
Test Equipment

Asset/Serial #	Description	Model	Manufacturer	Cal Date	Cal Due
AN02668	Spectrum Analyzer	E4446A	Agilent	3/9/2009	3/9/2011
ANP04241	Cable	FSJ1-50A	Andrews	3/2/2010	3/2/2012
ANP05138	Cable	FSJ1P-50A-4	Andrews	3/19/2010	3/19/2012
AN02061	Horn Antenna-ANSI C63.5	3115	ARA	1/17/2011	1/17/2013

Test Plot



Test Setup Photos



15.245 Blockedge

Test Set up

EUT is continuously transmitting a CW signal at 10.538500GHz. 1MHz RBW / 10Hz VBW, trace collected using Average detector with 10Hz VBW. BlockEdge Measurement. FCC 15.245.

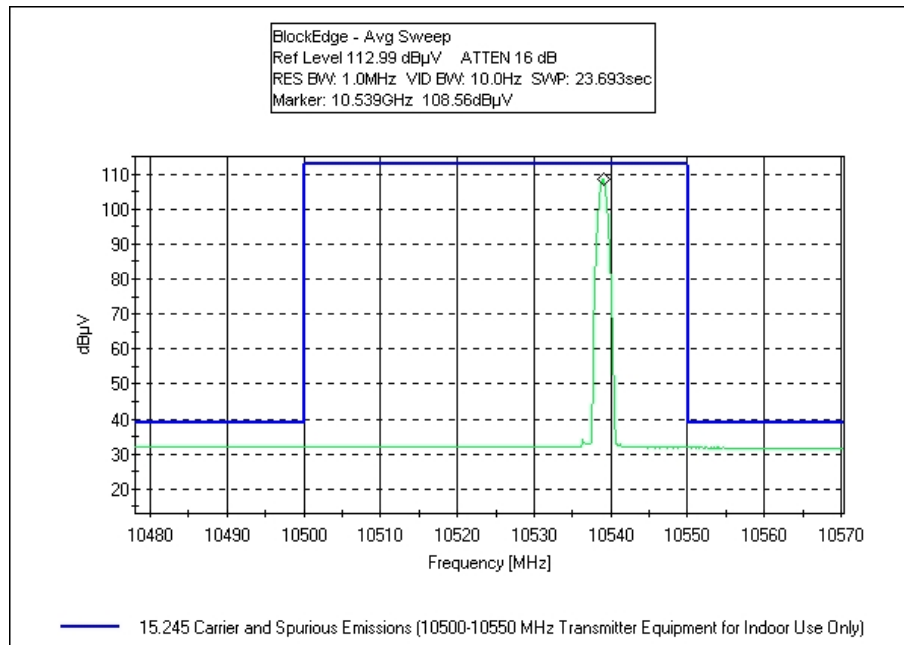
Temperature: 66°F, Relative Humidity: 28%, Atmospheric Pressure: 104.1kPa

Engineer Name: A. Brar

Test Equipment

Asset/Serial #	Description	Model	Manufacturer	Cal Date	Cal Due
AN02668	Spectrum Analyzer	E4446A	Agilent	3/9/2009	3/9/2011
ANP04241	Cable	FSJ1-50A	Andrews	3/2/2010	3/2/2012
ANP05138	Cable	FSJ1P-50A-4	Andrews	3/19/2010	3/19/2012
AN02061	Horn Antenna-ANSI C63.5	3115	ARA	1/17/2011	1/17/2013
AN02812	Preamplifier	83017-69004	HP	3/8/2009	3/8/2011
ANP05843	Cable	32022-2-29094K-48TC	AstroLab	7/30/2010	7/30/2012

Test Plot



Test Setup Photos



15.245(b)(1),(b)(3) / 15.209 / 2.1053 Field Strength of Spurious Radiation

Test Data Sheets

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

Customer: **PASCO Scientific**
 Specification: **15.209 Radiated Emissions**
 Work Order #: **91548** Date: 2/3/2011
 Test Type: **Maximized Emissions** Time: 3:44:25 PM
 Equipment: **Gun Diode Microwave Transmitter** Sequence#: 6
 Manufacturer: PASCO Scientific Tested By: A. Brar
 Model: WA-9314B/WA-9801
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02668	Spectrum Analyzer	E4446A	3/9/2009	3/9/2011
T1	AN00730	Preamplifier		1/31/2011	1/31/2013
T2	AN00852	Biconilog Antenna	CBL 6111C	11/16/2010	11/16/2012
T3	ANP05299	Cable	RG214	3/6/2009	3/6/2011
T4	ANP05300	Cable	RG214/U	3/6/2009	3/6/2011
T5	ANP05440	Cable		1/18/2010	1/18/2012

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Gun Diode Microwave Transmitter*	PASCO Scientific	WA-9314B/WA-9801	None
Class 2 Transformer	Condor	D9500	None

Support Devices:

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

EUT is continuously transmitting a CW signal at 10.538500GHz.
 EUT's antenna is vertical, as this produced the worst case fundamental readings.
 Temperature: 66°F
 Relative Humidity: 28%
 Atmospheric Pressure: 104.1kPa
 30-1000MHz, EUT has no clocks in it.

Ext Attn: 0 dB

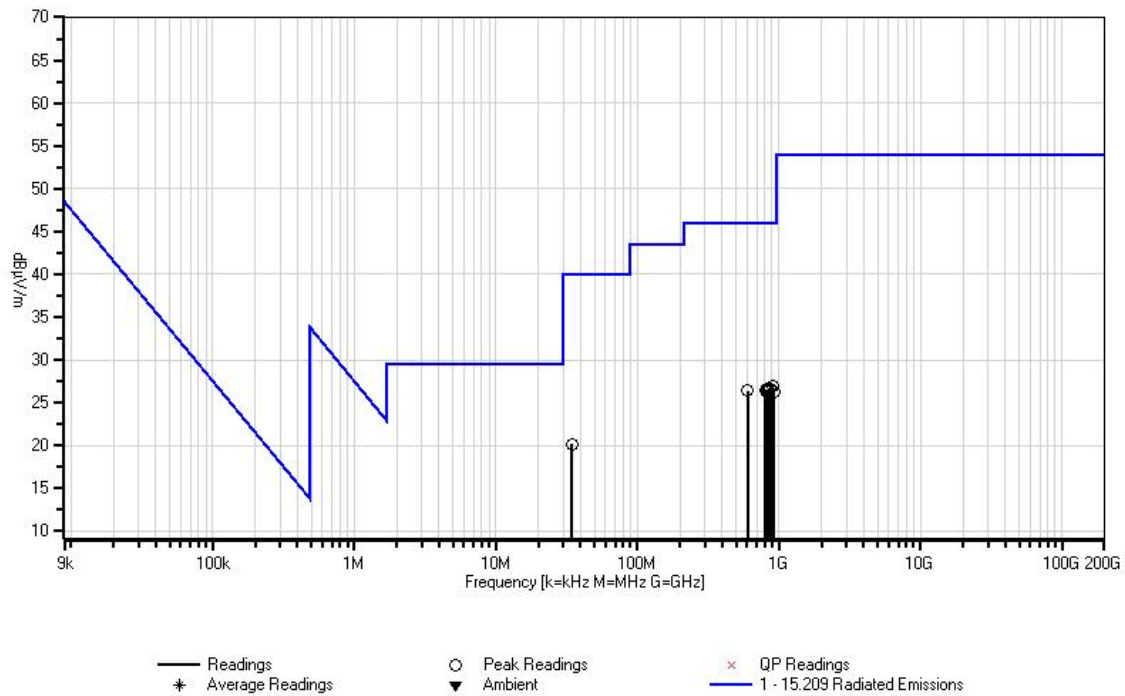
Measurement Data:

Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	905.421M	29.0	-27.4 +2.0	+21.8	+0.3	+1.2	+0.0 -5	26.9	46.0	-19.1	Vert 151
2	860.467M	28.8	-27.3 +1.9	+21.8	+0.3	+1.2	+0.0 -5	26.7	46.0	-19.3	Vert 151
3	827.773M	28.7	-27.3 +1.9	+21.9	+0.3	+1.1	+0.0 -5	26.6	46.0	-19.4	Horiz 151
4	854.629M	28.6	-27.3 +1.9	+21.8	+0.3	+1.2	+0.0 -5	26.5	46.0	-19.5	Vert 151
5	855.796M	28.6	-27.3 +1.9	+21.8	+0.3	+1.2	+0.0 -5	26.5	46.0	-19.5	Vert 151
6	804.420M	28.6	-27.2 +1.9	+21.9	+0.3	+1.0	+0.0 -5	26.5	46.0	-19.5	Horiz 151
7	606.505M	31.8	-27.2 +1.5	+19.2	+0.2	+0.9	+0.0 -5	26.4	46.0	-19.6	Vert 151
8	836.530M	28.3	-27.3 +1.9	+21.9	+0.3	+1.2	+0.0 -5	26.3	46.0	-19.7	Vert 151
9	926.439M	28.4	-27.6 +2.0	+21.9	+0.4	+1.2	+0.0 -5	26.3	46.0	-19.7	Vert 151
10	34.545M	28.9	-27.6 +0.3	+18.2	+0.1	+0.3	+0.0 -5	20.2	40.0	-19.8	Horiz 151

CKC Laboratories, Inc. Date: 2/3/2011 Time: 3:44:25 PM PASCO Scientific WO#: 91548 Model:WA-9314B/WA-9801 SN:None
 15.209 Radiated Emissions Test Distance: 3 Meters Sequence#: 6 Vert



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

Customer: **PASCO Scientific**
 Specification: **15.209 Radiated Emissions**
 Work Order #: **91548**
 Test Type: **Maximized Emissions**
 Equipment: **Gun Diode Microwave Transmitter**
 Manufacturer: **PASCO Scientific**
 Model: **WA-9314B/WA-9801**
 S/N: **None**

Date: 2/3/2011
 Time: 10:11:10
 Sequence#: 2
 Tested By: A. Brar

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02668	Spectrum Analyzer	E4446A	3/9/2009	3/9/2011
T1	ANP04241	Cable	FSJ1-50A	3/2/2010	3/2/2012
T2	ANP05138	Cable	FSJ1P-50A-4	3/19/2010	3/19/2012
T3	AN02812	Preamp	83017-69004	3/8/2009	3/8/2011
T4	ANP05843	Cable	32022-2-29094K-48TC	7/30/2010	7/30/2012
T5	AN02061	Horn Antenna-ANSI C63.5	3115	1/17/2011	1/17/2013

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Gun Diode Microwave Transmitter*	PASCO Scientific	WA-9314B/WA-9801	None
Class 2 Transformer	Condor	D9500	None

Support Devices:

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

EUT is continuously transmitting a CW signal at 10.538500GHz.
 EUT's antenna is vertical, as this produced the worst case fundamental readings.
 Temperature: 66°F
 Relative Humidity: 28%
 Atmospheric Pressure: 104.1kPa
 1-18GHz

Ext Attn: 0 dB

Measurement Data:

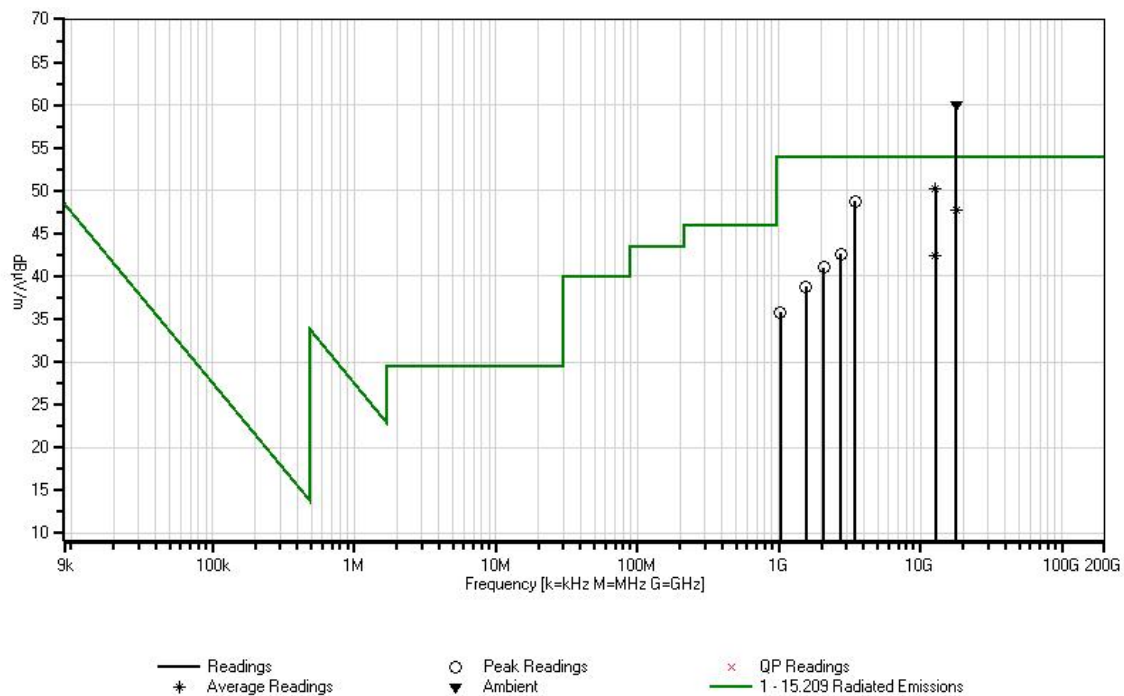
Reading listed by margin.

Test Distance: 3 Meters

#	Freq	Rdng	T1 T5	T2	T3	T4	Dist	Corr	Spec	Margin	Polar
	MHz	dBμV	dB	dB	dB	dB	Table	dBμV/m	dBμV/m	dB	Ant
1	17853.000	38.6	+2.0	+7.2	-34.5	+2.1	+0.0	60.0	54.0	+6.0	Horiz
	M		+44.6								
	Ambient						-5		Noise floor reading.		101
2	12800.000	33.9	+1.9	+6.0	-34.6	+1.8	+0.0	50.2	54.0	-3.8	Vert
	M		+41.2								
	Ave								Noise floor reading.		101
3	3460.000M	45.8	+0.7	+2.9	-33.2	+0.9	+0.0	48.8	54.0	-5.2	Vert
			+31.7				19		Noise floor reading.		101
4	17853.333	26.4	+2.0	+7.2	-34.5	+2.1	+0.0	47.8	54.0	-6.2	Horiz
	M		+44.6								
	Ave						-5		Noise floor reading.		101
5	2740.000M	42.4	+0.6	+2.5	-33.3	+0.8	+0.0	42.6	54.0	-11.4	Vert
			+29.6				68		Noise floor reading.		101

6	12800.000 M	26.1	+1.9 +41.2	+6.0	-34.6	+1.8	+0.0	42.4	54.0	-11.6	Vert
Ave									Noise floor reading.	101	
^	12800.000 M	39.3	+1.9 +41.2	+6.0	-34.6	+1.8	+0.0	55.6	54.0	+1.6	Vert
									Noise floor reading.	101	
8	2080.000M	41.5	+0.5 +30.0	+2.1	-33.8	+0.7	+0.0	41.0	54.0	-13.0	Vert
									Noise floor reading.	101	
9	1555.000M	44.0	+0.4 +26.5	+1.8	-34.5	+0.6	+0.0	38.8	54.0	-15.2	Vert
									Noise floor reading.	101	
10	1030.000M	44.4	+0.3 +25.7	+1.4	-36.5	+0.5	+0.0	35.8	54.0	-18.2	Horiz
									Noise floor reading.	101	

CKC Laboratories, Inc. Date: 2/3/2011 Time: 10:11:10 PASCO Scientific WO#: 91548 Model:WA-9314B/WA-9801 SN:None
15.209 Radiated Emissions Test Distance: 3 Meters Sequence#: 2 Vert



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

Customer: **PASCO Scientific**
 Specification: **15.245 Carrier and Spurious Emissions (10500-10550 MHz Transmitter Equipment for Indoor Use Only)**
 Work Order #: **91548** Date: 2/3/2011
 Test Type: **Maximized Emissions** Time: 13:15:38
 Equipment: **Gun Diode Microwave Transmitter** Sequence#: 3
 Manufacturer: PASCO Scientific Tested By: A. Brar
 Model: WA-9314B/WA-9801
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN02668	Spectrum Analyzer	E4446A	3/9/2009	3/9/2011
T1	ANP05843	Cable	32022-2-29094K-48TC	7/30/2010	7/30/2012
T2	AN03143	Cable	32022-29094K-144TC	9/10/2009	9/10/2011
T3	AN02694	Active Horn Antenna-ANSI C63.5 Antenna Factors (dB)	AMFW-5F-18002650-20-10P	11/10/2010	11/10/2012
T4	AN02695	Active Horn Antenna-ANSI C63.5 Antenna Factors (dB)	AMFW-5F-260400-33-8P	11/10/2010	11/10/2012
T5	ANP00929	Cable	various	3/29/2010	3/29/2012
T6	ANP00930	Cable	various	3/29/2010	3/29/2012

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Gun Diode Microwave Transmitter*	PASCO Scientific	WA-9314B/WA-9801	None
Class 2 Transformer	Condor	D9500	None

Support Devices:

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

EUT is continuously transmitting a CW signal at 10.538500GHz.
 EUT's antenna is vertical, as this produced the worst case fundamental readings.
 Temperature: 66°F
 Relative Humidity: 28%
 Atmospheric Pressure: 104.1kPa
 18-40GHz

Ext Attn: 0 dB

Measurement Data:

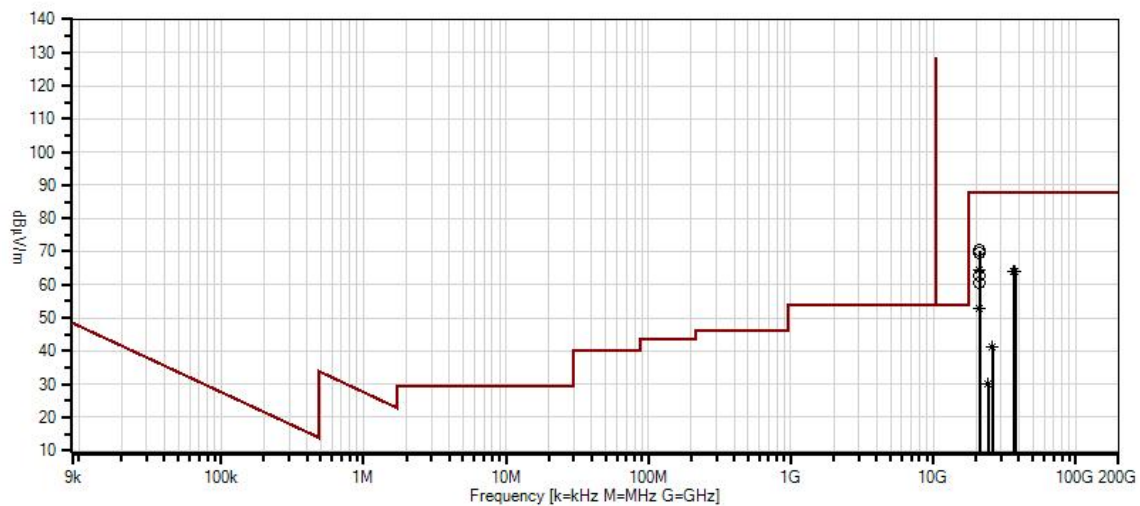
Reading listed by margin.

Test Distance: 3 Meters

#	Freq MHz	Rdng dB μ V	T1 T5 dB	T2 T6 dB	T3 dB	T4 dB	Dist Table	Corr dB μ V/m	Spec dB μ V/m	Margin dB	Polar Ant
1	21076.100 M	73.2	+2.3 +3.2	+6.6 +0.0	-15.0	+0.0	+0.0	70.3	88.0	-17.7	Vert
							127		Blue Tx Unit.		110
2	21061.663 M	72.5	+2.3 +3.2	+6.6 +0.0	-15.0	+0.0	+0.0	69.6	88.0	-18.4	Vert
							79		Modified EUT, added bandpass filter.		110
3	21077.414 M Ave	67.4	+2.3 +3.2	+6.6 +0.0	-15.0	+0.0	+0.0	64.5	88.0	-23.5	Vert
							78		Noise floor.		110
4	37489.000 M Ave	43.0	+3.4 +0.0	+9.0 +3.2	+0.0	+5.3	+0.0	63.9	88.0	-24.1	Horiz
									Noise floor.		110
^	37489.000 M	56.2	+3.4 +0.0	+9.0 +3.2	+0.0	+5.3	+0.0	77.1	88.0	-10.9	Horiz
							231		Noise floor.		110
6	36692.500 M Ave	44.0	+3.3 +0.0	+9.1 +3.4	+0.0	+4.1	+0.0	63.9	88.0	-24.1	Vert
									Noise floor.		110
^	36692.500 M	56.4	+3.3 +0.0	+9.1 +3.4	+0.0	+4.1	+0.0	76.3	88.0	-11.7	Vert
									Noise floor.		110
8	21074.000 M	65.8	+2.3 +3.2	+6.6 +0.0	-15.0	+0.0	+0.0	62.9	88.0	-25.1	Vert
							-5				101
9	21077.000 M	63.5	+2.3 +3.2	+6.6 +0.0	-15.0	+0.0	+0.0	60.6	88.0	-27.4	Horiz
							26				110
10	21077.389 M Ave	55.5	+2.3 +3.2	+6.6 +0.0	-15.0	+0.0	+0.0	52.6	88.0	-35.4	Vert
							126		EUT's antenna is horizontal.		110
^	21077.414 M	67.8	+2.3 +3.2	+6.6 +0.0	-15.0	+0.0	+0.0	64.9	88.0	-23.1	Vert
							78		Noise floor.		110
^	21077.389 M	57.4	+2.3 +3.2	+6.6 +0.0	-15.0	+0.0	+0.0	54.5	88.0	-33.5	Vert
							126		EUT's antenna is horizontal.		110
13	26046.667 M Ave	42.4	+2.7 +3.2	+7.4 +0.0	-14.6	+0.0	+0.0	41.1	88.0	-46.9	Vert
							-5		Noise floor.		101
^	26046.667 M	55.9	+2.7 +3.2	+7.4 +0.0	-14.6	+0.0	+0.0	54.6	88.0	-33.4	Vert
							-5		Noise floor.		101

15	24233.000	35.0	+2.6	+7.1	-17.5	+0.0	+0.0	30.2	88.0	-57.8	Vert
	M		+3.0	+0.0							
	Ave						-5		Noise floor.		101
^	24233.000	56.5	+2.6	+7.1	-17.5	+0.0	+0.0	51.7	88.0	-36.3	Vert
	M		+3.0	+0.0							
							-5		Noise floor.		101

CKC Laboratories, Inc. Date: 2/3/2011 Time: 13:15:38 PASCO Scientific WO#: 91548 Model:WA-9314B/WA-9801 SN:None
15.245 Carrier and Spurious Emissions (10500-10550 MHz Transmitter Equipment for Indoor Use Only) Test
Distance: 3 Meters Sequence#: 3 Horiz



— Readings
○ Peak Readings
× QP Readings
+ Average Readings
▼ Ambient
— 1 - 15.245 Carrier and Spurious Emissions (10500-10550 MHz Transmitter Equipment for Indoor Use Only)

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

Customer: **PASCO Scientific**
 Specification: **15.245 Carrier and Spurious Emissions (10500-10550 MHz Transmitter Equipment for Indoor Use Only)**
 Work Order #: **91548** Date: 2/3/2011
 Test Type: **Maximized Emissions** Time: 14:59:45
 Equipment: **Gun Diode Microwave Transmitter** Sequence#: 4
 Manufacturer: PASCO Scientific Tested By: A. Brar
 Model: WA-9314B/WA-9801
 S/N: None

Test Equipment:

ID	Asset #	Description	Model	Calibration Date	Cal Due Date
	AN01406	Spectrum Analyzer	8564E	9/20/2010	9/20/2012
T1	AN02347	Active Horn Antenna	32022-2-29094K-48TC	4/29/2009	4/29/2011
T2	ANP05843	Cable	32022-2-29094K-48TC	7/30/2010	7/30/2012

Equipment Under Test (* = EUT):

Function	Manufacturer	Model #	S/N
Gun Diode Microwave Transmitter*	PASCO Scientific	WA-9314B/WA-9801	None
Class 2 Transformer	Condor	D9500	None

Support Devices:

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

EUT is continuously transmitting a CW signal at 10.538500GHz.
 EUT's antenna is vertical, as this produced the worst case fundamental readings.
 Temperature: 66°F
 Relative Humidity: 28%
 Atmospheric Pressure: 104.1kPa
 40-60GHz

Ext Attn: 0 dB

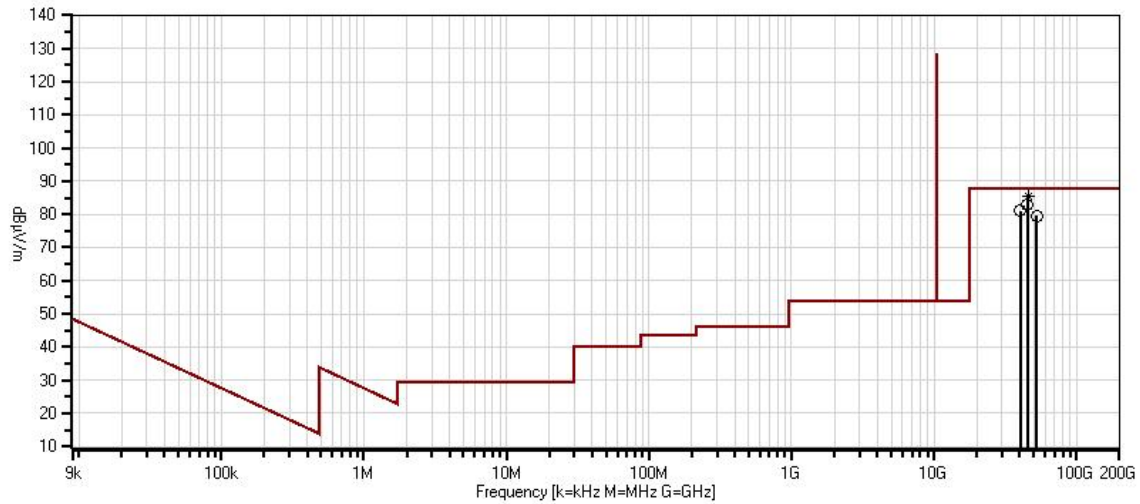
Measurement Data:

Reading listed by margin.

Test Distance: 1 Meter

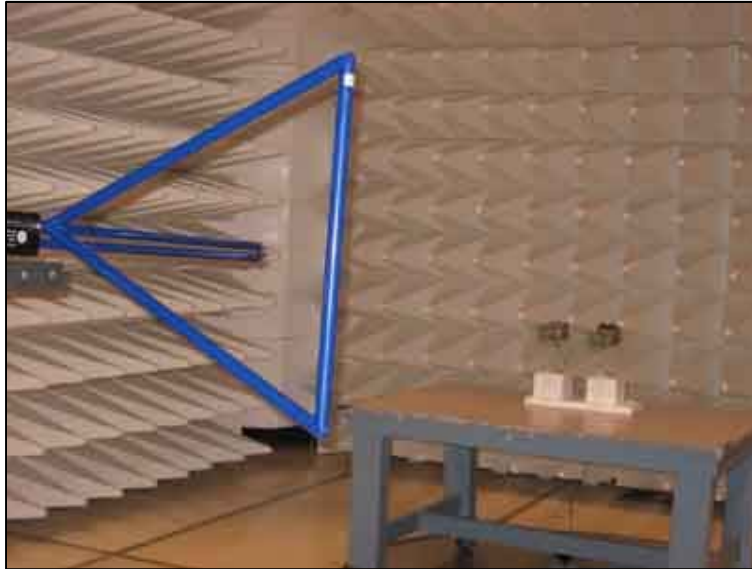
#	Freq MHz	Rdng dBμV	T1 dB	T2 dB	Dist dB	Corr dBμV/m	Spec dBμV/m	Margin dB	Polar Ant
1	45930.000 M	59.0	+34.8	+1.0	-9.5	85.3	88.0	-2.7	Vert
	Ave				180				110
^	45930.000 M	60.2	+34.8	+1.0	-9.5	86.5	88.0	-1.5	Vert
					180				110
3	45030.000 M	57.0	+34.5	+1.0	-9.5	83.0	88.0	-5.0	Vert
					180				110
4	40230.000 M	56.8	+32.8	+0.9	-9.5	81.0	88.0	-7.0	Vert
					180				110
5	52500.000 M	50.7	+37.3	+1.1	-9.5	79.6	88.0	-8.4	Vert
					180				110

CKC Laboratories, Inc. Date: 2/3/2011 Time: 14:59:45 PASCO Scientific WO#: 91548 Model:WA-9314B/WA-9801 SN:None
15.245 Carrier and Spurious Emissions (10500-10550 MHz Transmitter Equipment for Indoor Use Only) Test Distance: 1 Meter Sequence#: 4 Vert



- Readings
- Peak Readings
- × QP Readings
- * Average Readings
- ▼ Ambient
- 1 - 15.245 Carrier and Spurious Emissions (10500-10550 MHz Transmitter Equipment for Indoor Use Only)

Test Setup Photos



SUPPLEMENTAL INFORMATION

Measurement Uncertainty

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

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

Emissions Test Details

TESTING PARAMETERS

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 μ V)
+	Antenna Factor	(dB)
+	Cable Loss	(dB)
-	Distance Correction	(dB)
-	Preamplifier Gain	(dB)
=	Corrected Reading	(dB μ V/m)

TEST INSTRUMENTATION AND ANALYZER SETTINGS

The test instrumentation and equipment listed were used to collect the emissions data. A spectrum analyzer or receiver was used for all measurements. The following table shows the measuring equipment bandwidth settings that were used in designated frequency bands. For testing emissions, an appropriate reference level and a vertical scale size of 10 dB per division were used.

MEASURING EQUIPMENT BANDWIDTH SETTINGS PER FREQUENCY RANGE			
TEST	BEGINNING FREQUENCY	ENDING FREQUENCY	BANDWIDTH SETTING
CONDUCTED EMISSIONS	150 kHz	30 MHz	9 kHz
RADIATED EMISSIONS	30 MHz	1000 MHz	120 kHz
RADIATED EMISSIONS	1000 MHz	>1 GHz	1 MHz

SPECTRUM ANALYZER/RECEIVER DETECTOR FUNCTIONS

The notes that accompany the measurements contained in the emissions tables indicate the type of detector function used to obtain the given readings. Unless otherwise noted, all readings were made in the "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.