



**FCC CFR47 PART 15 SUBPART C
CERTIFICATION
TEST REPORT**

FOR

LONG RANGE 2-WAY RF LASER BARCODE SCANNER

MODEL NUMBER: LZ400-RF

FCC ID: JWSLZ400RF

REPORT NUMBER: 05U3728-3B

ISSUE DATE: JANUARY 19, 2006

Prepared for
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NVLAP[®]
LAB CODE:200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
A	12/19/05	Initial Issue	Thu
B	01/19/06	Revised Sections 5.5 & 5.6 investigated with X,Y, & Z Positions	Thu
	01/19/06	Added Limit & Margin in Sections 7.1.1, 7.1.2, & 7.1.4	Thu
	01/19/06	Revised Section 7.1.5 used with Peak Power Meter & Inserted the corrected plot on page 27	Thu

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: WORTH DATA, INC.
623 SWIFT ST.
SANTA CRUZ, CA 95060 U.S.A

EUT DESCRIPTION: LONG RANGE 2-WAY 900MHz RF LASER BARCODE SCANNER

MODEL: LZ400-RF

SERIAL NUMBER: 01631

DATE TESTED: NOVEMBER 14-17, 2005

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 15 SUBPART C	NO NON-COMPLIANCE NOTED

Compliance Certification Services, Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Compliance Certification Services and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Compliance Certification Services will constitute fraud and shall nullify the document. No part of this report may be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any government agency.

Approved & Released For CCS By:

Tested By:



THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

CHIN PANG
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4-2003, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 561F Monterey Road, Morgan Hill, California, USA. The sites are constructed in conformance with the requirements of ANSI C63.4, ANSI C63.7 and CISPR Publication 22. All receiving equipment conforms to CISPR Publication 16-1, "Radio Interference Measuring Apparatus and Measurement Methods."

CCS is accredited by NVLAP, Laboratory Code 200065-0. The full scope of accreditation can be viewed at <http://www.ccsemc.com>.

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations, and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	UNCERTAINTY
Radiated Emission, 30 to 200 MHz	+/- 3.3 dB
Radiated Emission, 200 to 1000 MHz	+4.5 / -2.9 dB
Radiated Emission, 1000 to 2000 MHz	+4.5 / -2.9 dB
Power Line Conducted Emission	+/- 2.9 dB

Uncertainty figures are valid to a confidence level of 95%.

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a long range two way 900MHz RF laser barcode scanner operating in the 902-928 MHz band with 25 channels. The EUT has a peak output power of 12.64Bm (18.40 mW) and an antenna gain of -1 dBi.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak conducted output power as follows:

RF LASER

Channel	Frequency (MHz)	Power (dBm)	Power (mW)
Low	903	11.58	14.4
Middle	915	12.12	16.3
High	927	12.64	18.4

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a monopole JJB antenna, with a maximum gain of -1dBi.

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was RFL for Main FW and PICL0 for Radio FW

The test utility software used during testing was diagnostic mode selected by switches

5.5. WORST-CASE CONFIGURATION AND MODE

The worst-case channel is determined as the channel with the highest output power. The highest measured output power was at 927MHz. The EUT X, Y, and Z positions were investigated; "X" position was seemed worst case.

5.6. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	Worth Data	AUT-05-1000	NA	NA

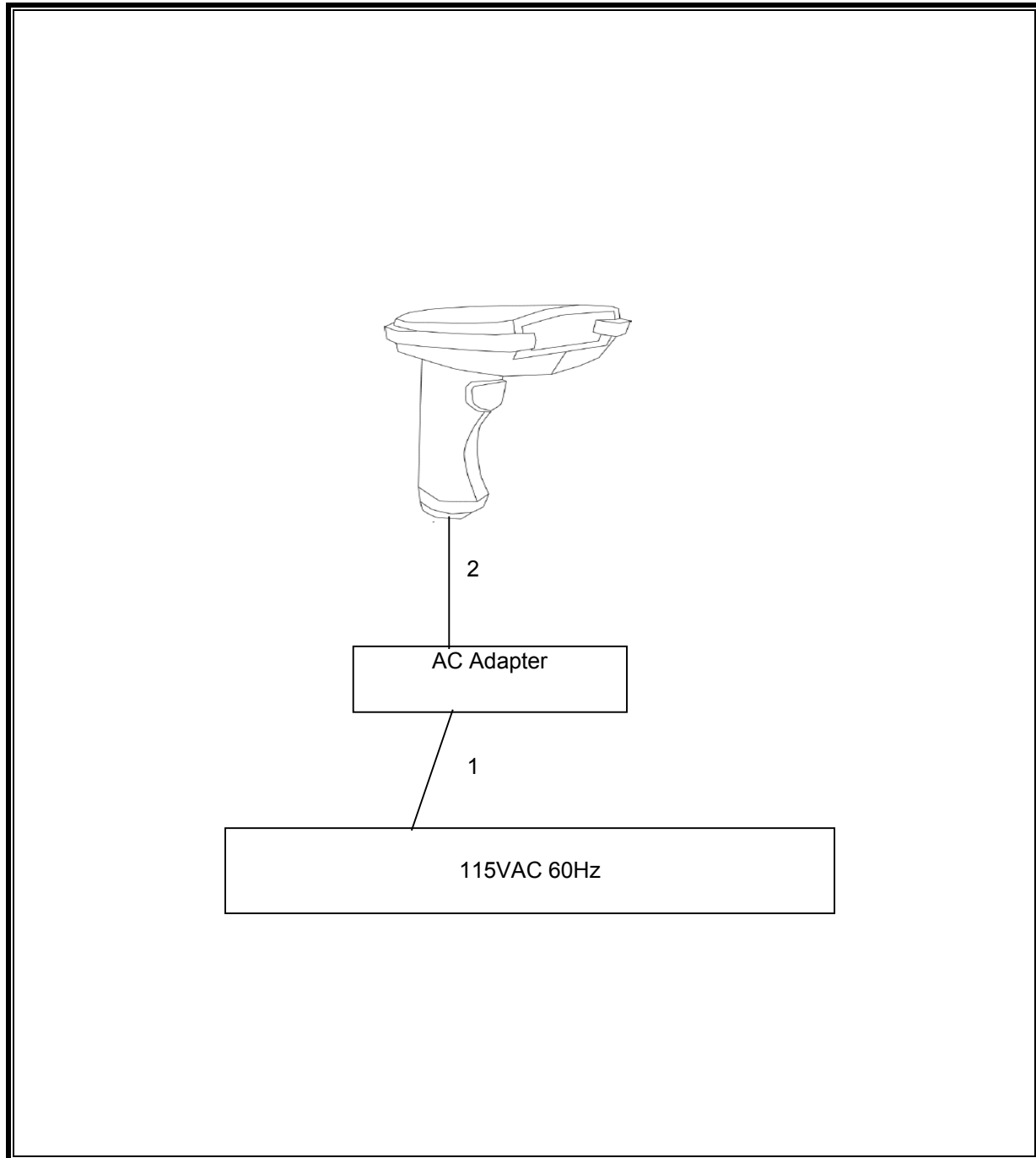
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US 115V	Un-shielded	2m	NA
2	DC	1	DC	Un-shielded	1m	NA

TEST SETUP

The EUT is installed as a stand-alone device during the tests. Test software exercised the RF Laser Scanner was set in continuous transmit mode. X, Y, and Z positions were investigated; "X" position was seemed worst case. High channel was deemed worst case due to the highest output power.

SETUP DIAGRAM FOR TESTS



6. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	Cal Due
Spectrum Analyzer 3 Hz ~ 44 GHz	Agilent	E4446A	MY43360112	3/28/2006
Antenna, Bilog 30MHz ~ 2Ghz	Solar	JB1	A121003	3/3/06
EMI Receiver, 9 kHz ~ 2.9 GHz	HP	8542E	3942A00286	3/29/06
RF Filter Section	HP	85420E	3705A00256	3/29/06
Antenna, Horn 1 ~ 18 GHz	Ertco	3115	6717	4/22/06
Preamplifier, 1 ~ 26.5 GHz	HP	8449B	3008A00369	8/17/06
EMI Test Receiver	R & S	ESHS 20	827129/006	6/3/06
Line Filter	Lindgren	LMF-3489	497	CNR
LISN, 10 kHz ~ 30 MHz	Simpson	8012-50-R-24-BNC	837990	8/30/06
Peak / Average Power Sensor	Agilent	E9327A	US40440755	2/10/06
Peak Power Meter	Agilent	E4416A	GB41291160	2/9/06
1.5GHz HPF	Micro Tronics	HPM13190	1	CNR

7. LIMITS AND RESULTS

7.1. ANTENNA PORT CHANNEL TESTS

7.1.1. 20 dB BANDWIDTH

LIMIT

The system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 1% to 3% of the 20 dB bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled.

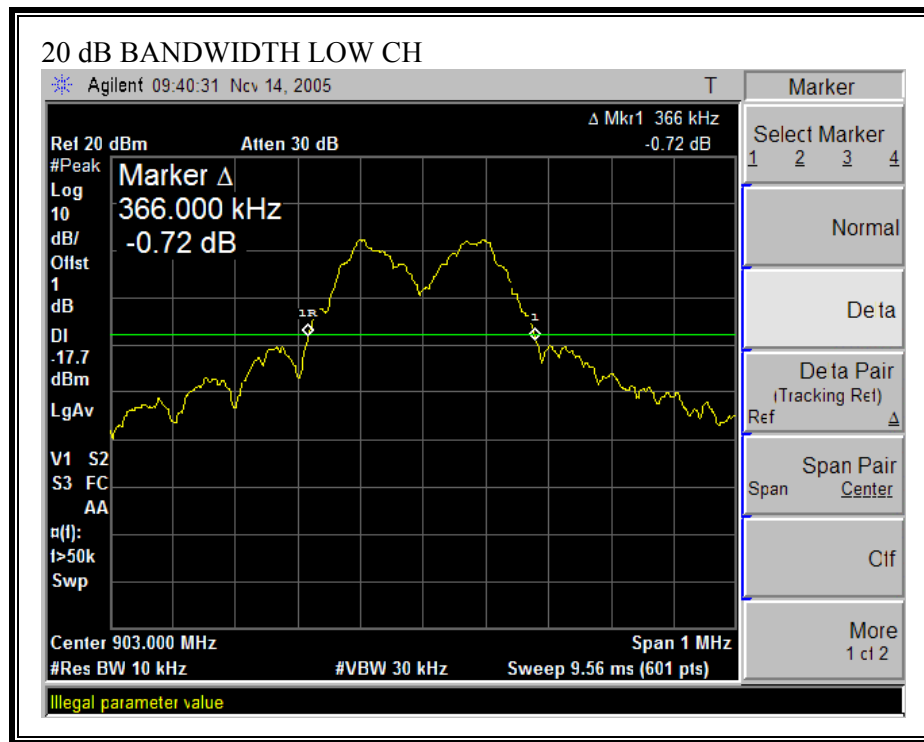
RESULTS

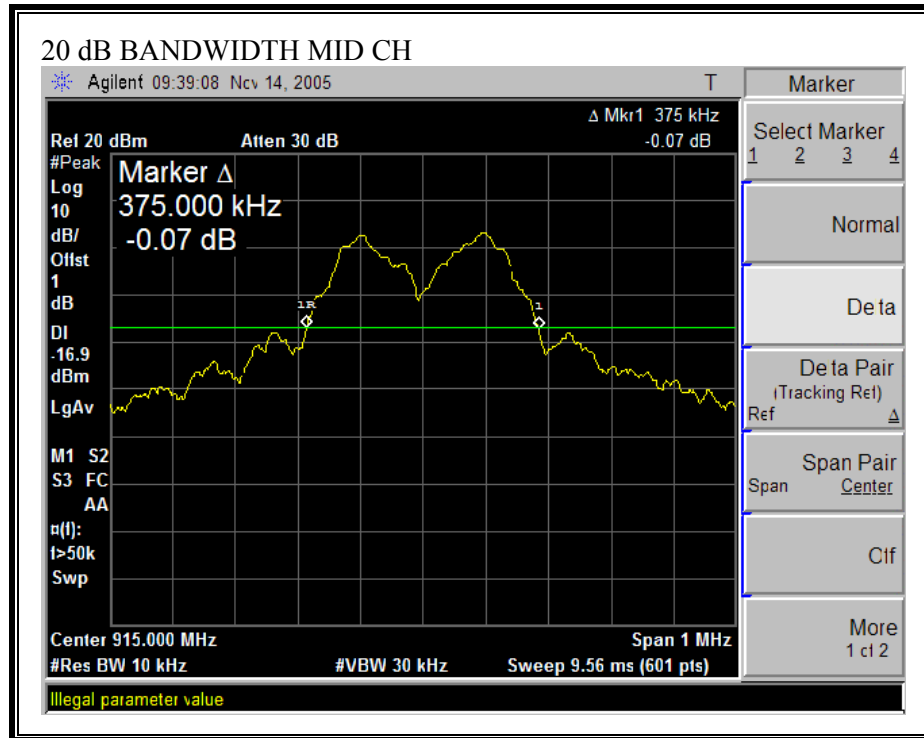
No non-compliance noted:

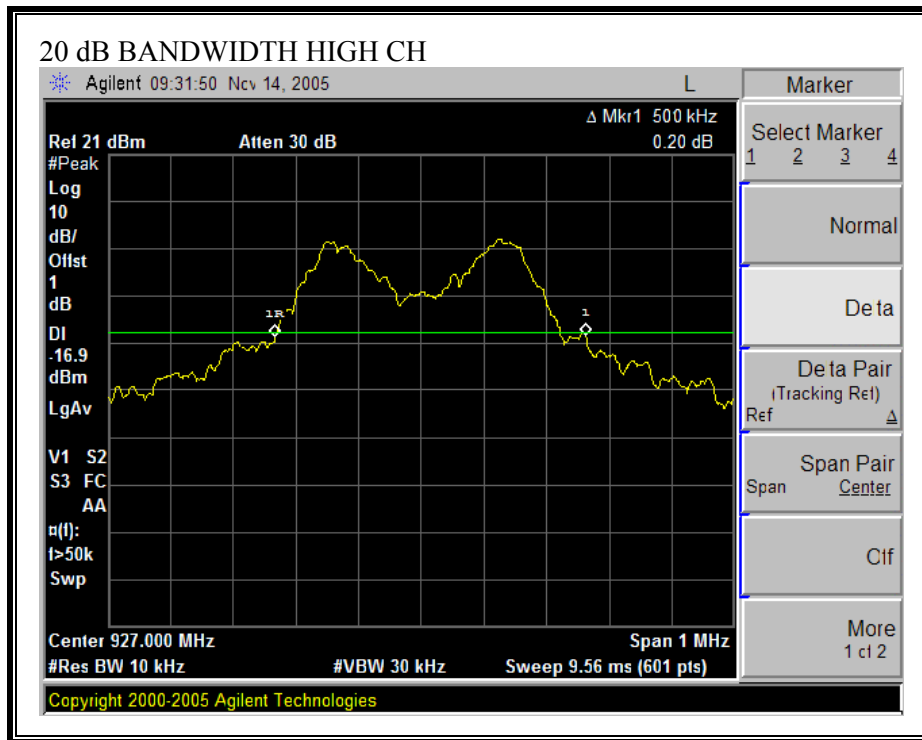
RF LASER

Channel	Frequency (MHz)	20 dB Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
Low	903	366	500	134
Middle	915	375	500	125
High	927	500	500	0

RF LASER, 20 dB BANDWIDTH







7.1.2. HOPPING FREQUENCY SEPARATION

LIMIT

§15.247 (a) (1) Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hoping channel, whichever is greater.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 100 kHz. The sweep time is coupled.

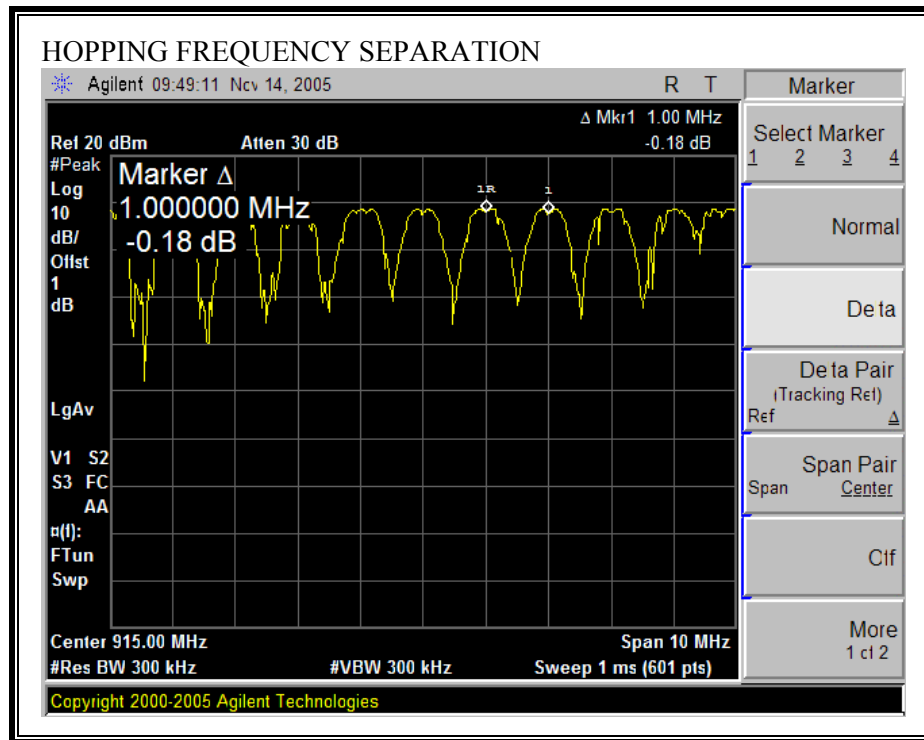
RESULTS

No non-compliance noted:

RF LASER

Channel	Frequency (MHz)	Hopping Separation (kHz)	$\geq 25\text{kHz}$ or 20 dB BW (kHz)	Margin (kHz)
Low	903	1000	500	500

HOPPING FREQUENCY SEPARATION



7.1.3. NUMBER OF HOPPING CHANNELS

LIMIT

§15.247 (a) (1) (i) For frequency hopping systems operating in the 902–928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

TEST PROCEDURE

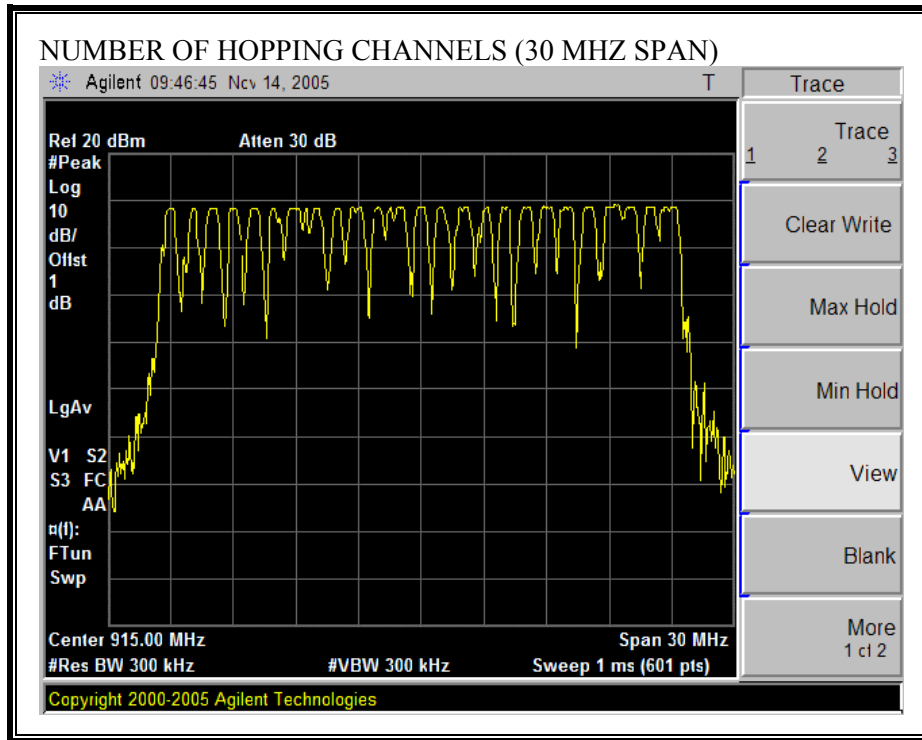
The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to 1 % of the span. The analyzer is set to Max Hold.

RESULTS

No non-compliance noted:

25 Channels observed.

NUMBER OF HOPPING CHANNELS



7.1.4. AVERAGE TIME OF OCCUPANCY

LIMIT

§15.247 (a) (1) (i) For frequency hopping systems operating in the 902–928 MHz band: if the 20 dB bandwidth of the hopping channel is less than 250 kHz, the system shall use at least 50 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 20 second period; if the 20 dB bandwidth of the hopping channel is 250 kHz or greater, the system shall use at least 25 hopping frequencies and the average time of occupancy on any frequency shall not be greater than 0.4 seconds within a 10 second period. The maximum allowed 20 dB bandwidth of the hopping channel is 500 kHz.

TEST PROCEDURE

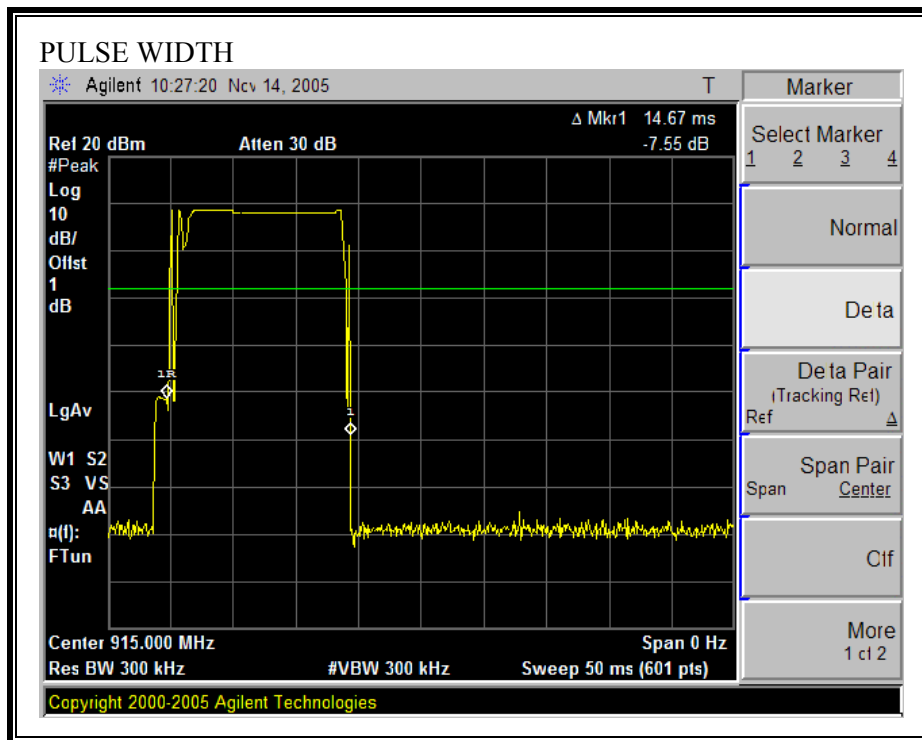
The transmitter output is connected to a spectrum analyzer. The span is set to 0 Hz, centered on a single, selected hopping channel. The width of a single pulse is measured in a fast scan. The number of pulses is measured in a slow scan.

RESULTS

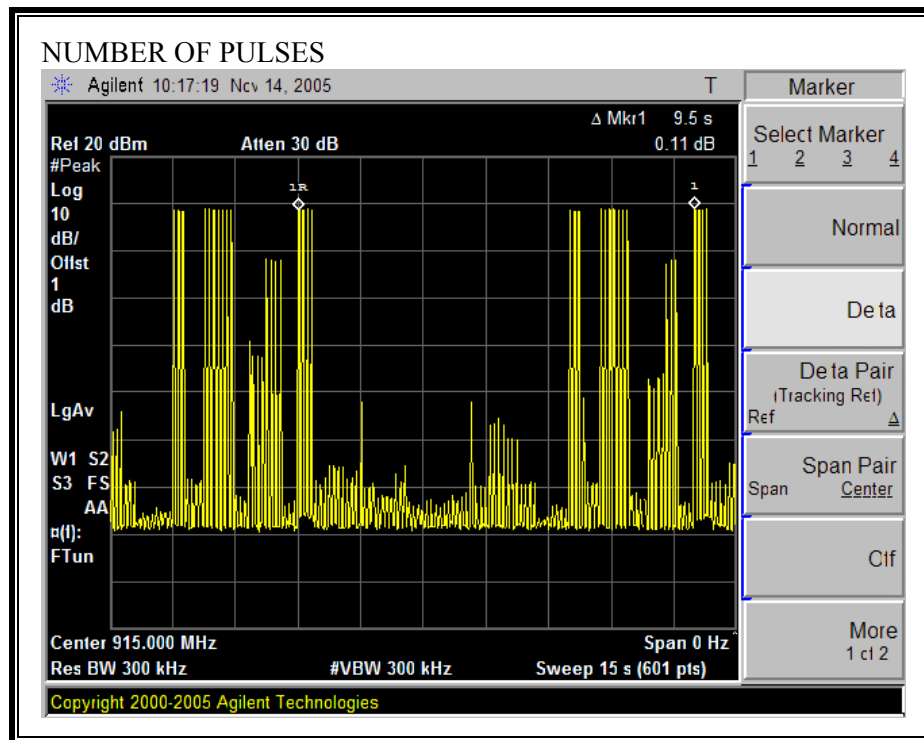
No non-compliance noted:

Pulse Width (msec)	Number of Pulses in 10 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
14.67	17	0.249	0.4	0.151

PULSE WIDTH



NUMBER OF PULSES IN 15 SECOND OBSERVATION PERIOD



7.1.5. PEAK OUTPUT POWER

PEAK POWER LIMIT

§15.247 (b) The maximum peak output power of the intentional radiator shall not exceed the following:

§15.247 (b) (2) For frequency hopping systems operating in the 902-928 MHz band , employing at least 50 hopping channels: 1 watt; and employing less than 50 hopping channels, but at least 25 hopping channels: 0.25 watt.

§15.247 (b) (4) Except as shown in paragraphs (b)(3) (i), (ii) and (iii) of this section, if transmitting antennas of directional gain greater than 6 dBi are used the peak output power from the intentional radiator shall be reduced below the stated values in paragraphs (b)(1) or (b)(2) of this section, as appropriate, by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

The maximum antenna gain is -1 dBi, therefore the limit is 24dBm.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

No non-compliance noted:

The cable assembly insertion loss of 1dB was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
Low	903	11.58	24	-12.42
Middle	915	12.12	24	-11.88
High	927	12.64	24	-11.36

7.1.6. AVERAGE POWER

AVERAGE POWER LIMIT

None: for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

No non-compliance noted:

The cable assembly insertion loss of 1dB was entered as an offset in the power meter to allow for direct reading of power.

RF LASER

Channel	Frequency (MHz)	Average Power (dBm)
Low	903	11.53
Middle	915	12.07
High	927	12.59

7.1.7. CONDUCTED SPURIOUS EMISSIONS

LIMITS

§15.247 (c) In any 100 kHz bandwidth outside the frequency band in which the spread spectrum intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

TEST PROCEDURE

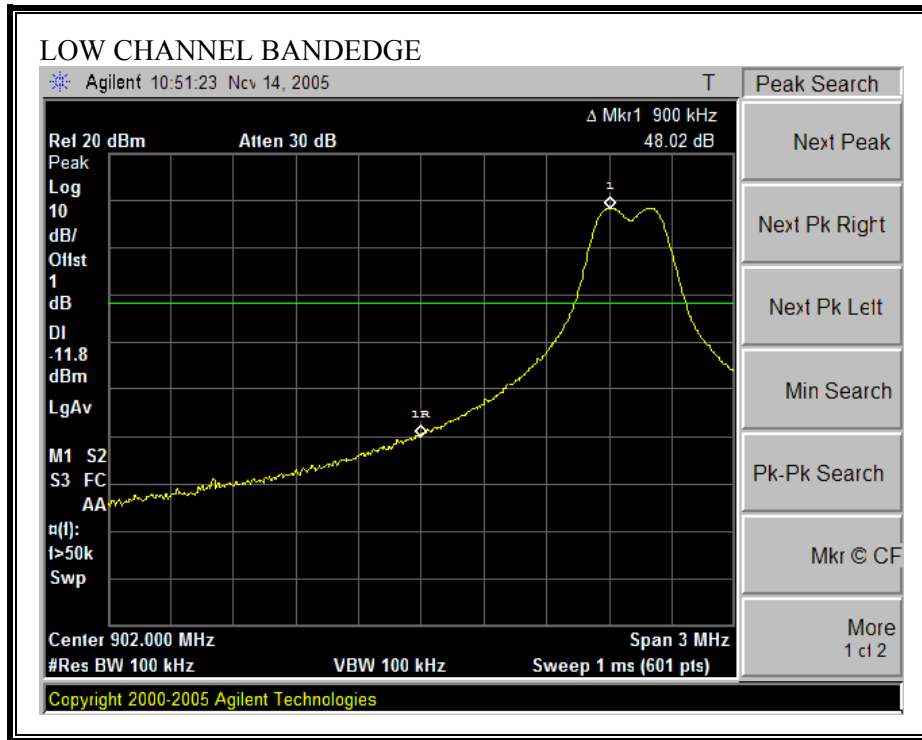
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

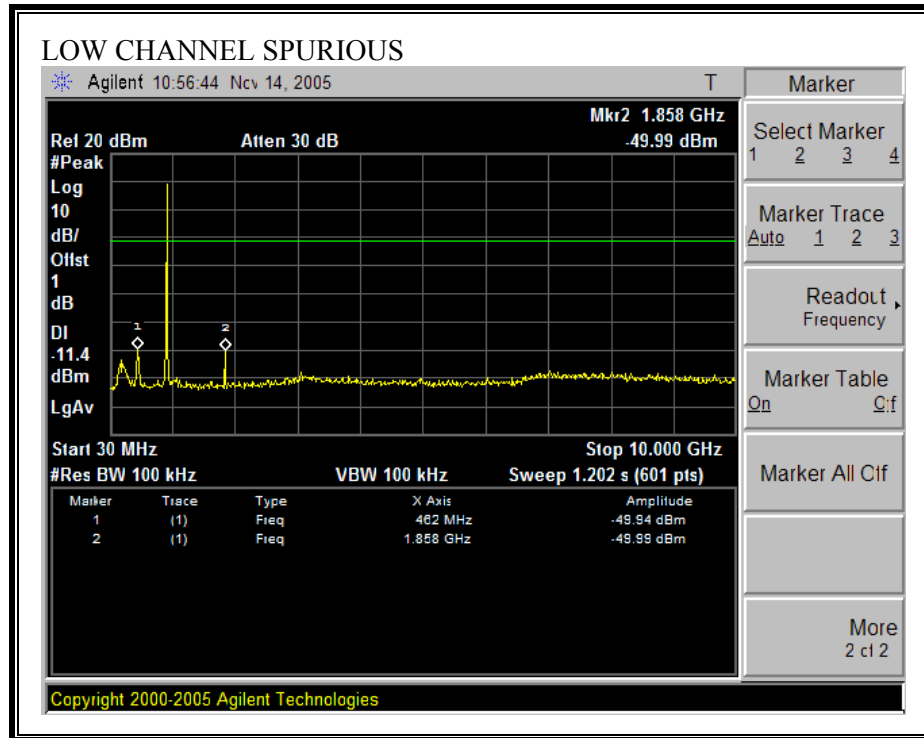
The spectrum from 30 MHz to 10 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

RESULTS

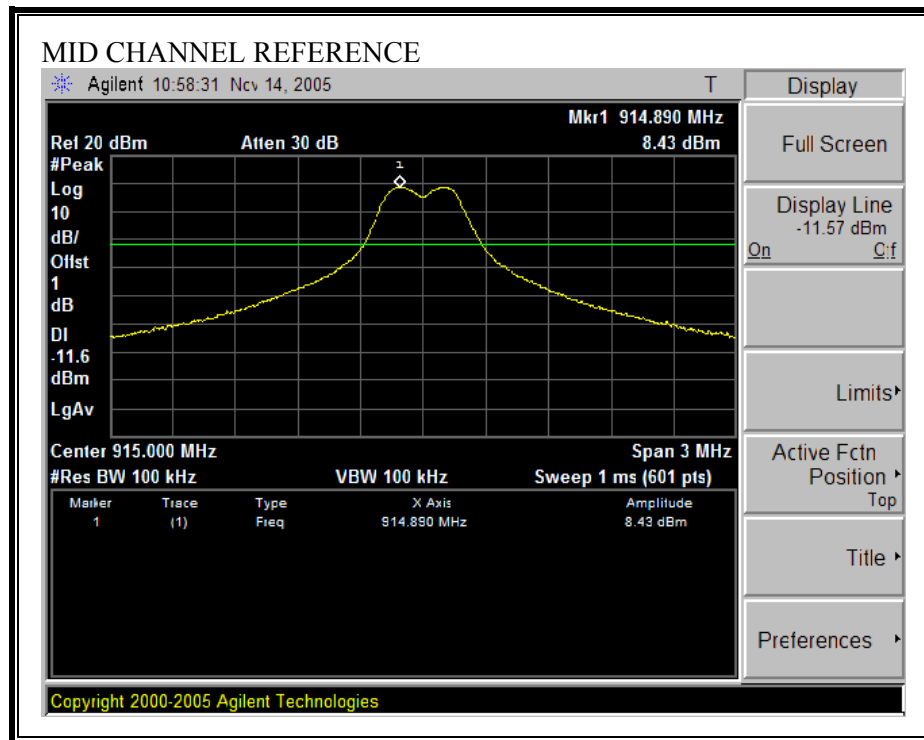
No non-compliance noted:

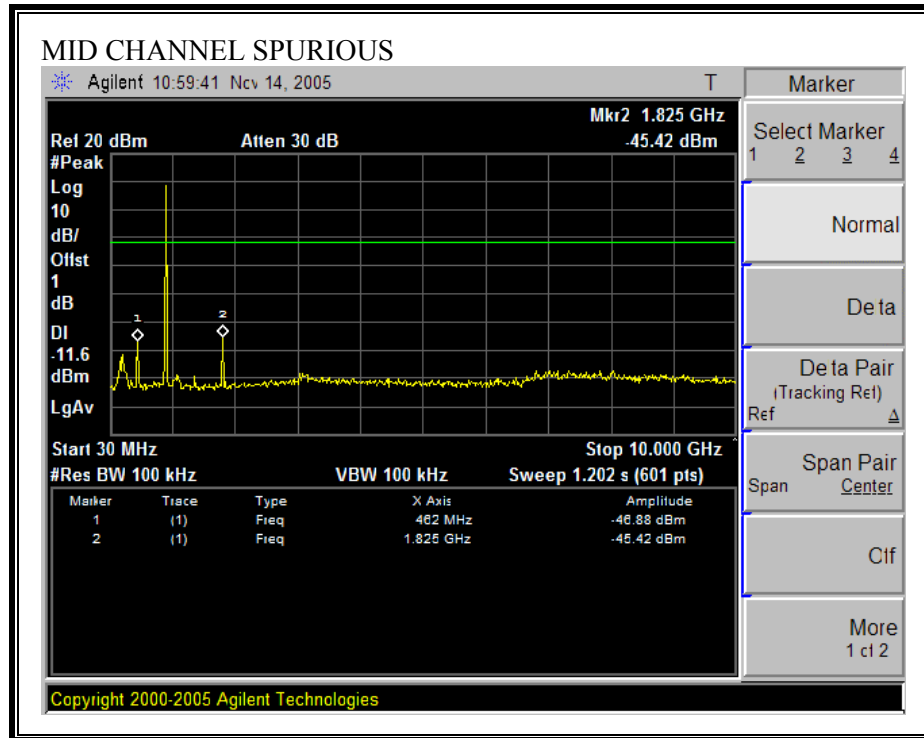
RF LASER, SPURIOUS EMISSIONS, LOW CHANNEL

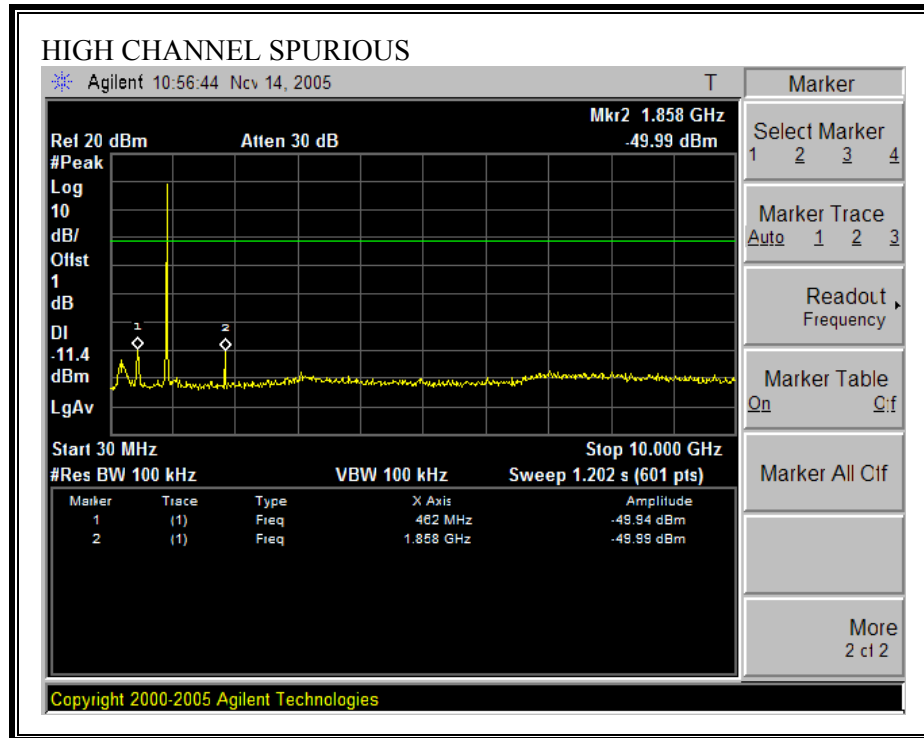




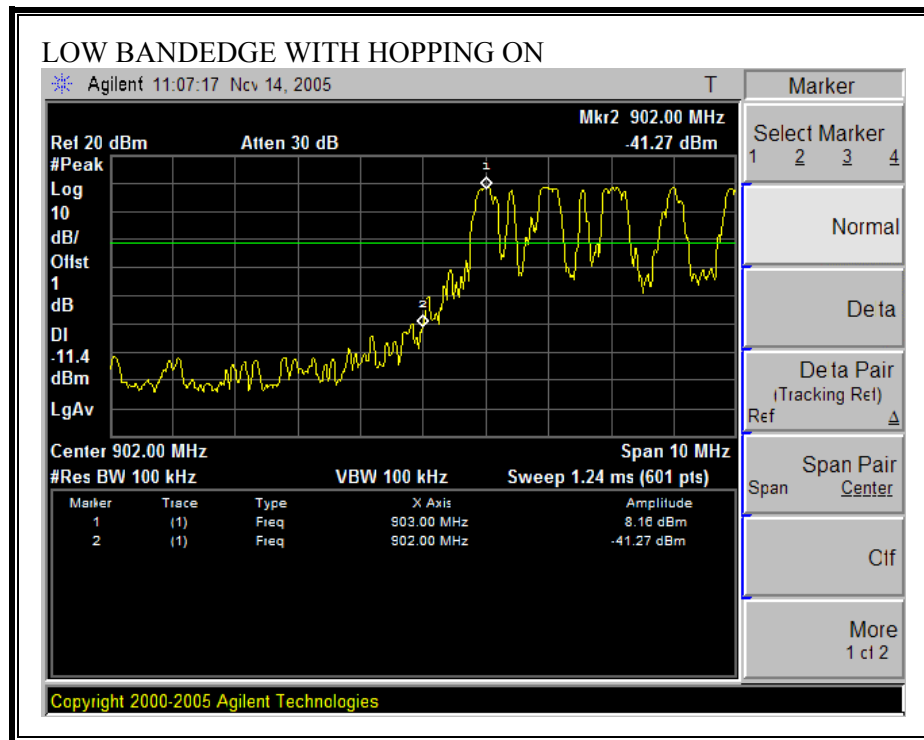
SPURIOUS EMISSIONS, MID CHANNEL

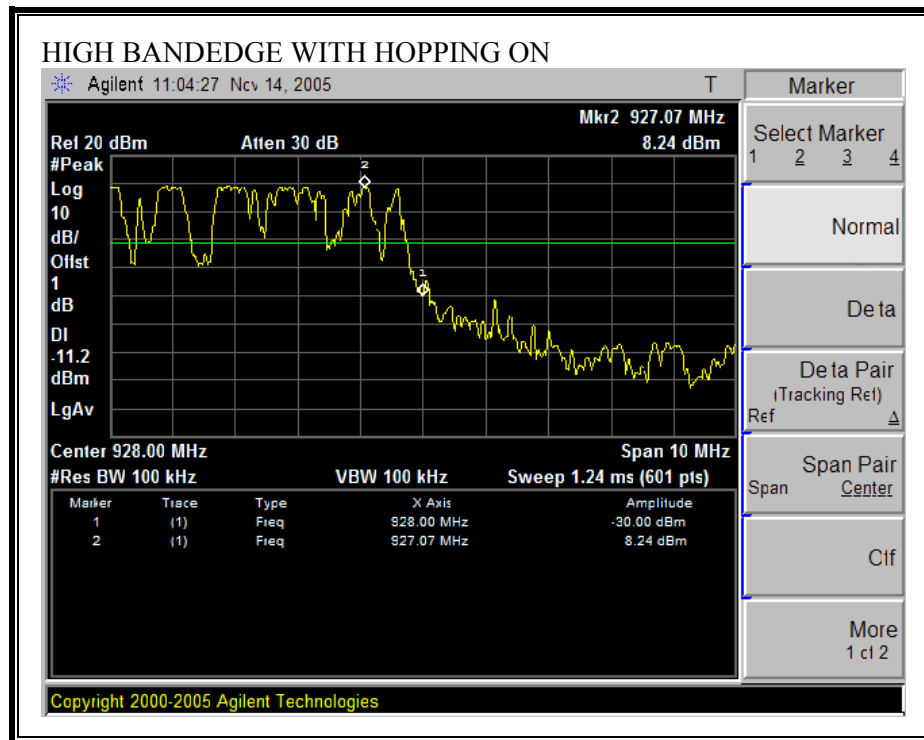






SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON





7.2. RADIATED EMISSIONS

7.2.1. TRANSMITTER RADIATED SPURIOUS EMISSIONS

LIMITS

§15.205 (a) Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)
13.36 - 13.41			

¹ Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

² Above 38.6

§15.205 (b) Except as provided in paragraphs (d) and (e), the field strength of emissions appearing within these frequency bands shall not exceed the limits shown in Section 15.209. At frequencies equal to or less than 1000 MHz, compliance with the limits in Section 15.209 shall be demonstrated using measurement instrumentation employing a CISPR quasi-peak detector. Above 1000 MHz, compliance with the emission limits in Section 15.209 shall be demonstrated based on the average value of the measured emissions. The provisions in Section 15.35 apply to these measurements.

§15.209 (a) Except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
30 - 88	100 **	3
88 - 216	150 **	3
216 - 960	200 **	3
Above 960	500	3

** Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

§15.209 (b) In the emission table above, the tighter limit applies at the band edges.

TEST PROCEDURE

The EUT is placed on a non-conducting table 80 cm above the ground plane. The antenna to EUT distance is 3 meters. The EUT is configured in accordance with ANSI C63.4. The EUT is set to transmit in a continuous mode.

For measurements below 1 GHz the resolution bandwidth is set to 100 kHz for peak detection measurements or 120 kHz for quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

For measurements above 1 GHz the resolution bandwidth is set to 1 MHz, then the video bandwidth is set to 1 MHz for peak measurements and 10 Hz for average measurements.

The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each 5 GHz band.

The frequency range of interest is monitored at a fixed antenna height and EUT azimuth. The EUT is rotated through 360 degrees to maximize emissions received. The antenna is scanned from 1 to 4 meters above the ground plane to further maximize the emission. Measurements are made with the antenna polarized in both the vertical and the horizontal positions.

7.2.2. TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHZ

HARMONICS AND SPURIOUS EMISSIONS WITH LINX 869 JJB ANTENNA

11/16/05 High Frequency Measurement															
Compliance Certification Services, Morgan Hill Open Field Site															
Test Engr: Chin Pang															
Project #: 05U3728-1															
Company: Worth Data															
EUT Descrip.: Low Range 2 Way 900MHz RF Laser Barcode Scanner															
EUT M/N: LZ400-RF															
Test Target: FCC 15.247															
Mode Oper: TX															
Test Equipment:															
Horn 1-18GHz		Pre-amplifier 1-26GHz		Pre-amplifier 26-40GHz		Horn > 18GHz		Limit							
T59; S/N: 3245 @3m		T34 HP 8449B						FCC 15.205							
Hi Frequency Cables															
2 foot cable		3 foot cable		12 foot cable		HPF		Reject Filter		Peak Measurements RBW=VBW=1MHz Average Measurements RBW=1MHz ; VBW=10Hz					
		Chin 197538001		Chin 200354001		HPF_1.5GHz									
f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
Low ch, 903MHz															
1.806	3.0	60.0	58.0	26.9	1.9	-37.1	0.0	0.3	52.0	50.0	74.0	54.0	-22.0	-4.0	V
2.709	3.0	56.0	53.0	29.3	2.3	-36.1	0.0	0.6	52.1	49.1	74.0	54.0	-21.9	-4.9	V
3.612	3.0	50.3	46.0	31.6	2.7	-35.3	0.0	0.6	49.9	45.6	74.0	54.0	-24.1	-8.4	V
1.806	3.0	63.2	61.1	26.9	1.9	-37.1	0.0	0.3	55.2	53.1	74.0	54.0	-18.8	-0.9	H
2.709	3.0	58.0	55.5	29.3	2.3	-36.1	0.0	0.6	54.1	51.6	74.0	54.0	-19.9	-2.4	H
3.612	3.0	49.0	43.2	31.6	2.7	-35.3	0.0	0.6	48.6	42.8	74.0	54.0	-25.4	-11.2	H
Mid Ch, 915MHz															
1.830	3.0	58.9	57.4	27.0	1.9	-37.1	0.0	0.3	51.0	49.5	74.0	54.0	-23.0	-4.5	V
2.745	3.0	54.7	50.0	29.4	2.3	-36.1	0.0	0.6	50.9	46.2	74.0	54.0	-23.1	-7.8	V
3.660	3.0	46.4	37.0	31.7	2.7	-35.3	0.0	0.6	46.1	36.7	74.0	54.0	-27.9	-17.3	V
1.830	3.0	62.5	61.1	27.0	1.9	-37.1	0.0	0.3	54.6	53.2	74.0	54.0	-19.4	-0.8	H
2.745	3.0	57.0	55.3	29.4	2.3	-36.1	0.0	0.6	53.2	51.5	74.0	54.0	-20.8	-2.5	H
3.660	3.0	45.5	36.4	31.7	2.7	-35.3	0.0	0.6	45.2	36.1	74.0	54.0	-28.8	-17.9	H
Hig Ch, 927MHz															
1.854	3.0	63.7	58.2	27.1	1.9	-37.1	0.0	0.3	56.0	50.5	74.0	54.0	-18.0	-3.5	V
2.781	3.0	56.2	53.2	29.5	2.4	-36.1	0.0	0.6	52.6	49.6	74.0	54.0	-21.4	-4.4	V
3.708	3.0	46.4	37.0	31.9	2.7	-35.2	0.0	0.6	46.3	36.9	74.0	54.0	-27.7	-17.1	V
1.854	3.0	64.8	60.4	27.1	1.9	-37.1	0.0	0.3	57.1	52.7	74.0	54.0	-16.9	-1.3	H
2.781	3.0	56.1	55.3	29.5	2.4	-36.1	0.0	0.6	52.4	51.7	74.0	54.0	-21.6	-2.3	H
3.708	3.0	50.5	43.1	31.9	2.7	-35.2	0.0	0.6	50.4	43.0	74.0	54.0	-23.6	-11.0	H
Note: No other emissions were detected above the system noise floor.															
f	Measurement Frequency		Amp	Preamp Gain		Avg Lim	Average Field Strength Limit								
Dist	Distance to Antenna		D Corr	Distance Correct to 3 meters		Pk Lim	Peak Field Strength Limit								
Read	Analyzer Reading		Avg	Average Field Strength @ 3 m		Avg Mar	Margin vs. Average Limit								
AF	Antenna Factor		Peak	Calculated Peak Field Strength		Pk Mar	Margin vs. Peak Limit								
CL	Cable Loss		HPF	High Pass Filter											

7.2.3. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz

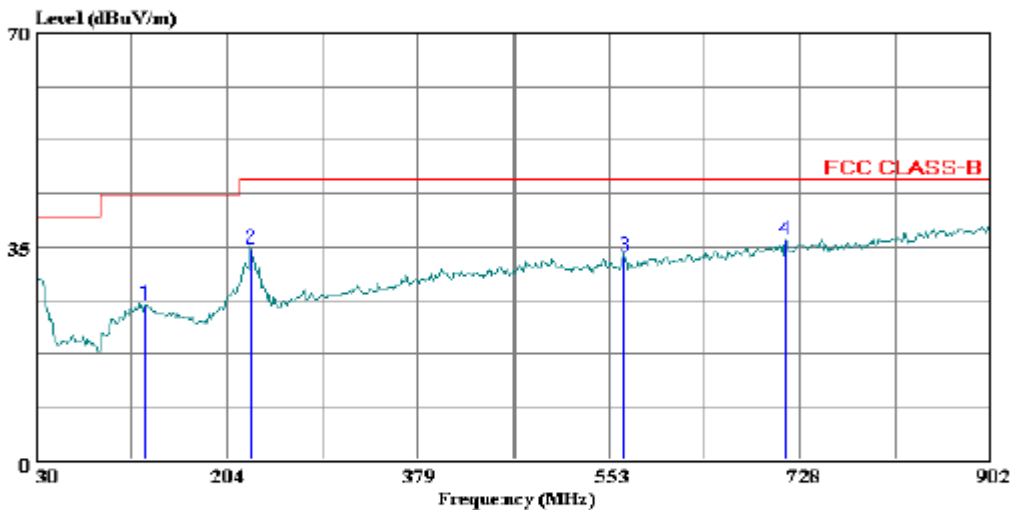
SPURIOUS EMISSIONS 30 TO 902 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT



561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 28 File#: worthdata 3728.EMI Date: 11-14-2005 Time: 15:48:52



(Auxiliary ATC)

Trace: 27

Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Test Operator: : Chin Pang
Project #: : 05U3728-1
Company: : Worth Data Inc.
EUT: : RF Laser
Model No. : LZ400-RF
Configuration : EUT Only
Target of Test : FCC Class B
Mode of Operation: TX ON

HORIZONTAL DATA

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	129.408	10.38	15.16	25.54	43.50	-17.96	Peak
2	227.072	21.68	12.93	34.61	46.00	-11.39	Peak
3	566.280	12.40	21.05	33.45	46.00	-12.55	Peak
4	713.648	12.85	23.30	36.15	46.00	-9.85	Peak

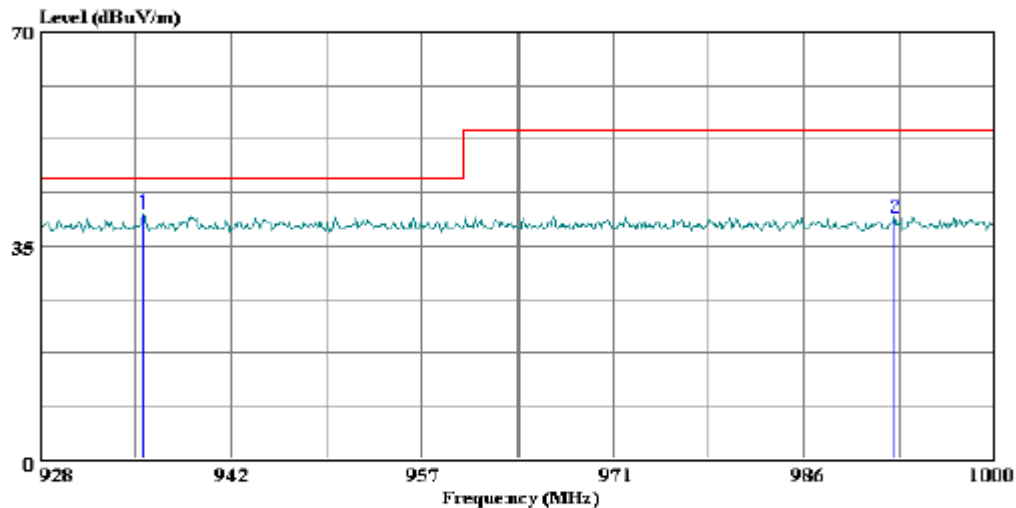
SPURIOUS EMISSIONS 928-1000 MHz (WORST-CASE CONFIGURATION (HORIZONTAL))

HORIZONTAL PLOT



561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 26 File#: worthdata 3728.EMI Date: 11-14-2005 Time: 15:45:32



(Auxiliary ATC)

Trace: 25

Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Test Operator: : Chin Pang
Project #: : 05U3728-1
Company: : Worth Data Inc.
EUT: : RF Laser
Model No. : LZ400-RF
Configuration : EUT Only
Target of Test : FCC Class B
Mode of Operation: TX ON

HORIZONTAL DATA

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	935.848	13.93	26.34	40.27	46.00	-5.73	Peak
2	992.440	12.67	26.93	39.60	54.00	-14.40	Peak

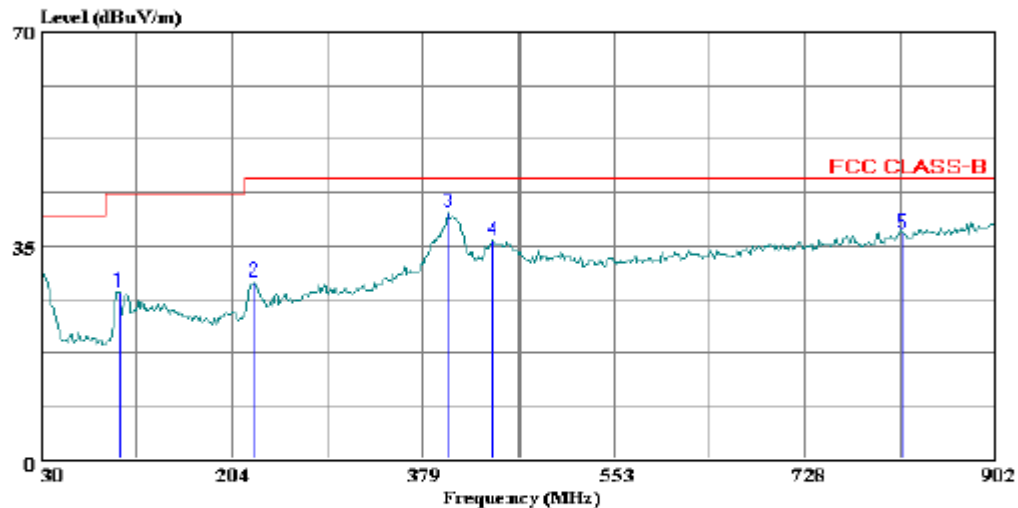
SPURIOUS EMISSIONS 30 TO 902 MHz (WORST-CASE CONFIGURATION, VERTICAL)

VERTICAL PLOT



561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 22 File#: worthdata 3728.EMI Date: 11-14-2005 Time: 15:38:38



(Auxiliary ATC)

Trace: 21

Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator: : Chin Pang
Project #: : 05U3728-1
Company: : Worth Data Inc.
EUT: : RF Laser
Model No.: : LZ400-RF
Configuration : EUT Only
Target of Test : FCC Class B
Mode of Operation: TX ON

VERTICAL DATA

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	101.504	15.92	11.54	27.46	43.50	-16.04	Peak
2	225.328	16.23	12.86	29.09	46.00	-16.91	Peak
3	402.344	22.42	18.11	40.53	46.00	-5.47	Peak
4	443.328	16.72	19.03	35.75	46.00	-10.25	Peak
5	816.544	12.27	24.80	37.07	46.00	-8.93	Peak

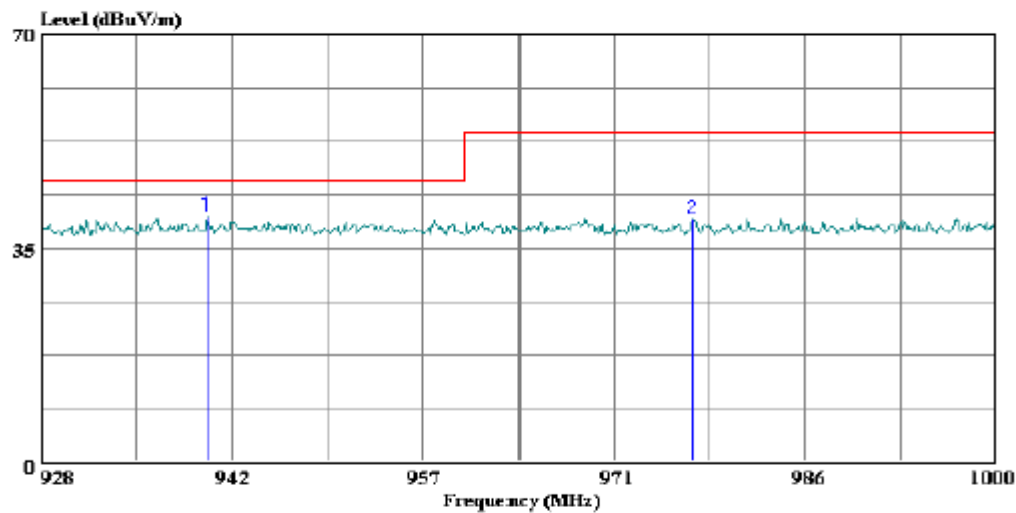
SPURIOUS EMISSIONS 928-1000 MHz (WORST-CASE CONFIGURATION (VERTICAL))

VERTICAL PLOT



561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 24 File#: worthdata 3728.EMI Date: 11-14-2005 Time: 15:41:28



(Auxiliary ATC)

Trace: 23

Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator: : Chin Pang
Project #: : 05U3728-1
Company: : Worth Data Inc.
EUT: : RF Laser
Model No. : LZ400-RF
Configuration : EUT Only
Target of Test : FCC Class B
Mode of Operation: TX ON

VERTICAL DATA

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	940.528	13.76	26.44	40.20	46.00	-5.80	Peak
2	977.104	12.87	26.75	39.62	54.00	-14.38	Peak

7.3. POWERLINE CONDUCTED EMISSIONS

LIMIT

§15.207 (a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal.

The lower limit applies at the boundary between the frequency ranges.

Frequency of Emission (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56 *	56 to 46 *
0.5-5	56	46
5-30	60	50

* Decreases with the logarithm of the frequency.

TEST PROCEDURE

The EUT is placed on a non-conducting table 40 cm from the vertical ground plane and 80 cm above the horizontal ground plane. The EUT is configured in accordance with ANSI C63.4.

The resolution bandwidth is set to 9 kHz for both peak detection and quasi-peak detection measurements. Peak detection is used unless otherwise noted as quasi-peak.

Line conducted data is recorded for both NEUTRAL and HOT lines.

RESULTS

No non-compliance noted:

6 WORST EMISSIONS

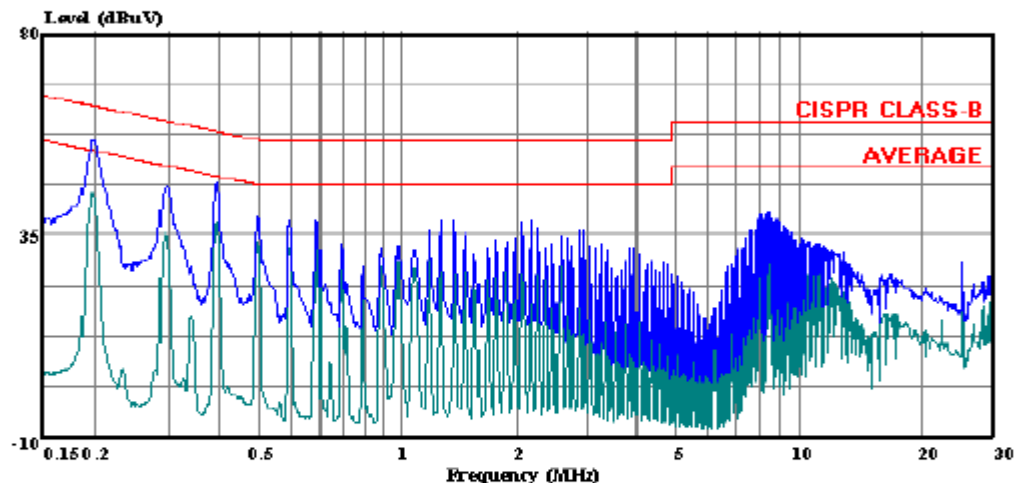
CONDUCTED EMISSIONS DATA (115VAC 60Hz)									
Freq.	Reading			Closs	Limit	EN B	Margin		Remark
(MHz)	PK (dBuV)	QP (dBuV)	AV (dBuV)	(dB)	QP	AV	QP (dB)	AV (dB)	L1 / L2
0.20	52.86	--	42.11	0.00	63.82	53.82	-10.96	-11.71	L1
0.49	48.16	--	42.00	0.00	56.24	46.24	-8.08	-4.24	L1
8.82	49.88	--	47.28	0.00	60.00	50.00	-10.12	-2.72	L1
0.20	51.46	--	41.07	0.00	63.69	53.69	-12.23	-12.62	L2
0.49	47.64	--	42.44	0.00	56.15	46.15	-8.51	-3.71	L2
8.82	51.14	--	48.90	0.00	60.00	50.00	-8.86	-1.10	L2
6 Worst Data RF LASER									

LINE 1 RESULTS



Compliance Certification Services
561F Monterey Road
Morgan Hill, CA 95037
Tel: (408) 463-0885
Fax: (408) 463-0888

Data#: 21 File#: worth data BS.EMIDate: 11-16-2005 Time: 09:51:24



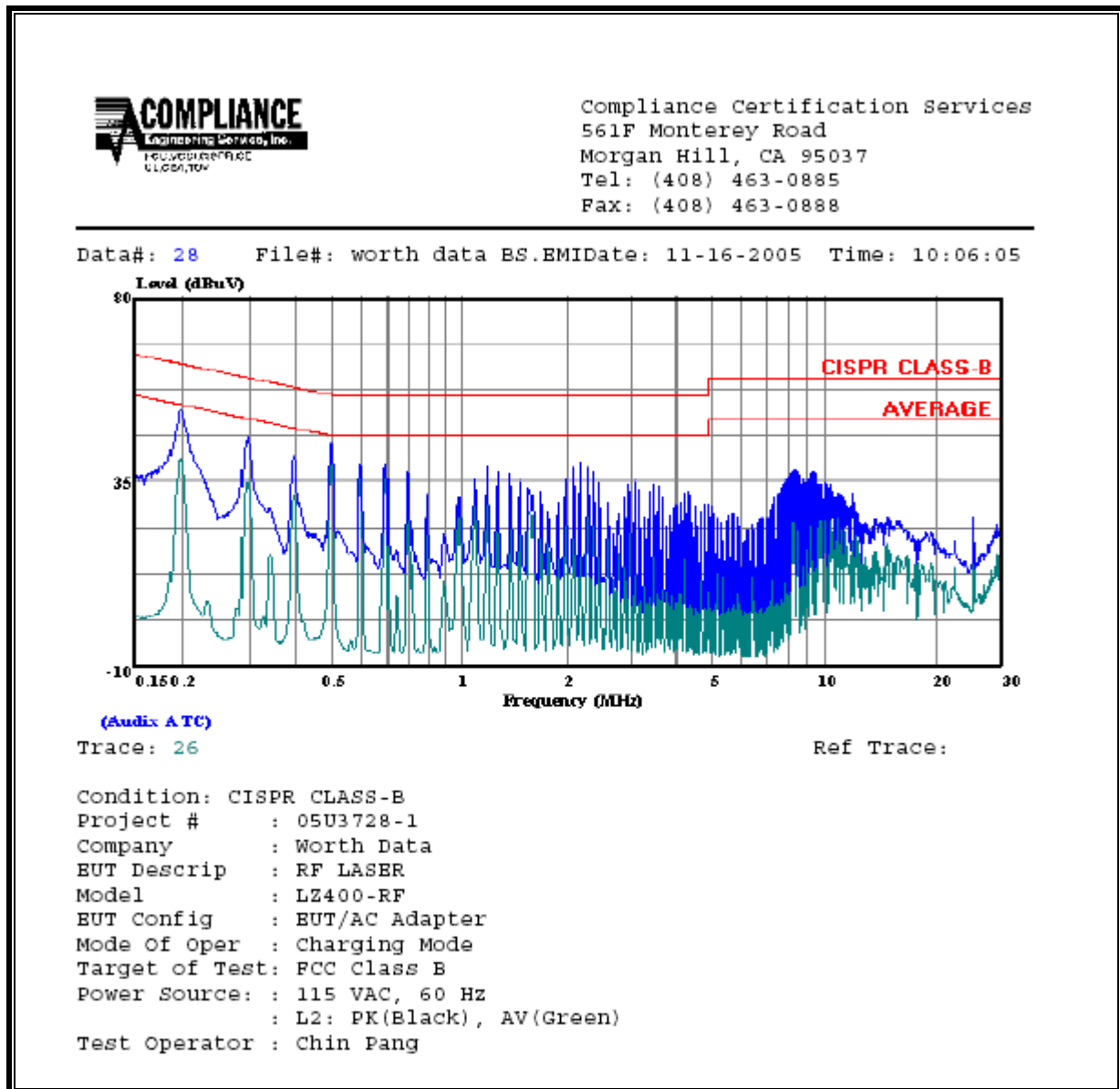
(Auxiliary TC)

Trace: 19

Ref Trace:

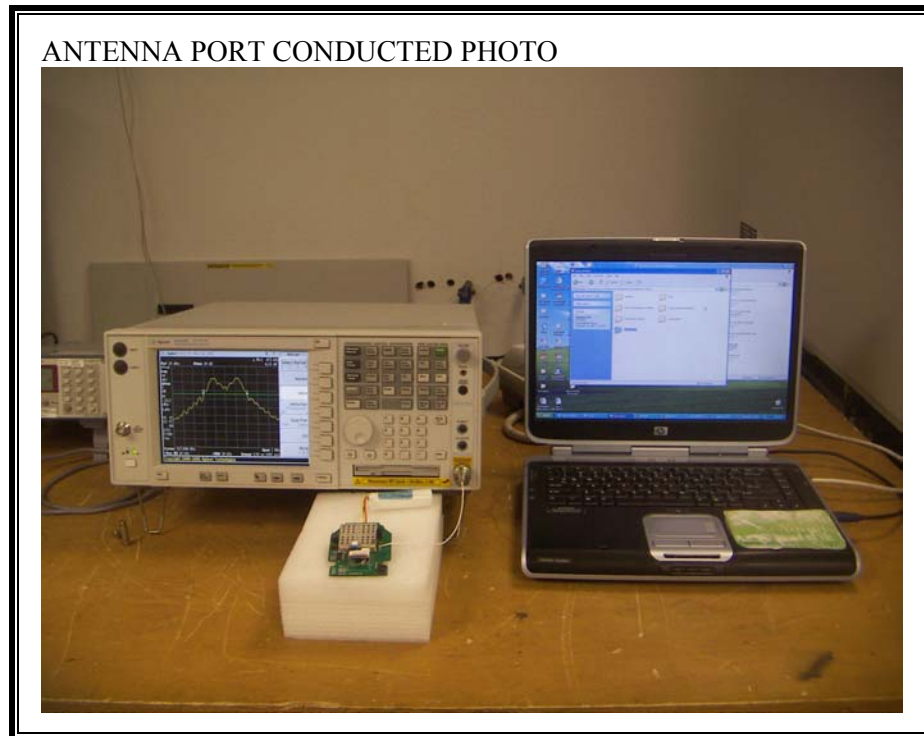
Condition: CISPR CLASS-B
Project # : 05U3728-1
Company : Worth Data
EUT Descrip : RF LASER
Model : LZ400-RF
EUT Config : EUT/AC Adapter
Mode Of Oper : Charging Mode
Target of Test: FCC Class B
Power Source: : 115 VAC, 60 Hz
: L1: PK(Black), AV(Green)
Test Operator : Chin Pang

LINE 2 RESULTS



8. SETUP PHOTOS

ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP



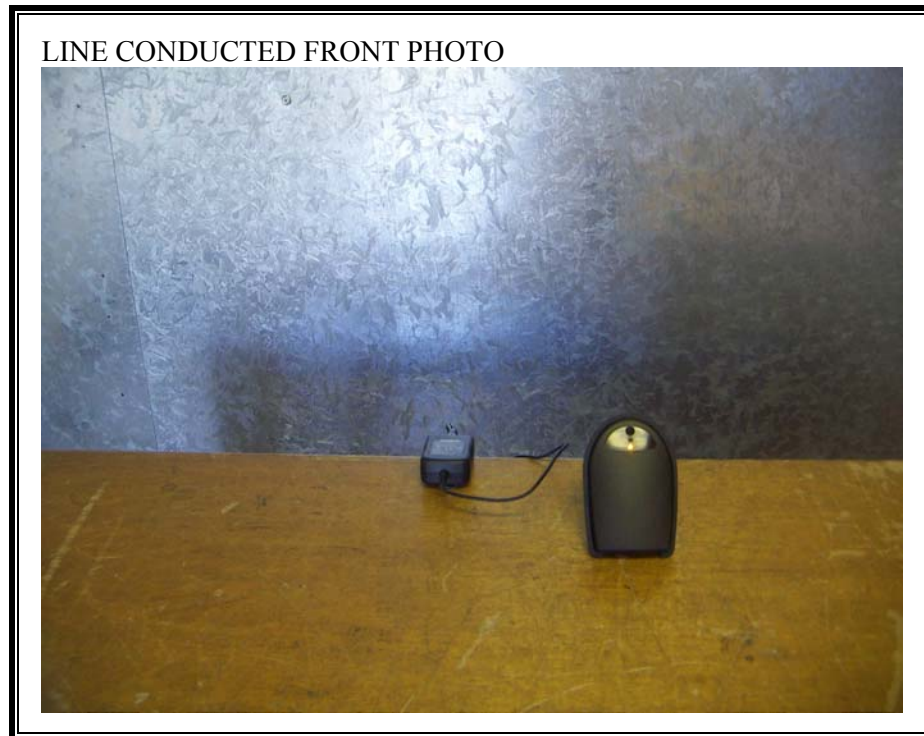
RADIATED RF MEASUREMENT SETUP



RADIATED BACK PHOTO



POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP



LINE CONDUCTED BACK PHOTO



END OF REPORT