FCC CFR47 PART 15 SUBPART C
CERTIFICATION
TEST REPORT

FOR

RF LASER BASESTATION

MODEL NUMBER: B78

FCC ID: JWSB78

REPORT NUMBER: 05U3728-1B

ISSUE DATE: JANUARY 19, 2006

Prepared for
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Revision History

Rev.	Issue Date	Revisions	Revised By
A	12/19/05	Initial Issue	Thu
B	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	Thu

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: WORTH DATA, INC.
623 SWIFT ST.
SANTA CRUZ, CA 95060, USA

EUT DESCRIPTION: RF LASER BASESTATION

MODEL: B78

SERIAL NUMBER: 01630

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:

THU CHAN
EMC SUPERVISOR
COMPLIANCE CERTIFICATION SERVICES

Tested By:

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 RF base station operating in the 902-928 MHz band with 25 channels. The EUT has a peak output power of 11.99 dBm (15.8 mW) and an antenna gain of -1 dBi.

5.2. MAXIMUM OUTPUT POWER

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

BASE STATION

Channel	Frequency (MHz)	Power (dBm)	Power (mW)
Low	903	11.99	15.8
Middle	915	11.75	15.0
High	927	11.43	13.9

5.3. DESCRIPTION OF AVAILABLE ANTENNAS

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

5.4. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was BSU 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 low channel, 903MHz.

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

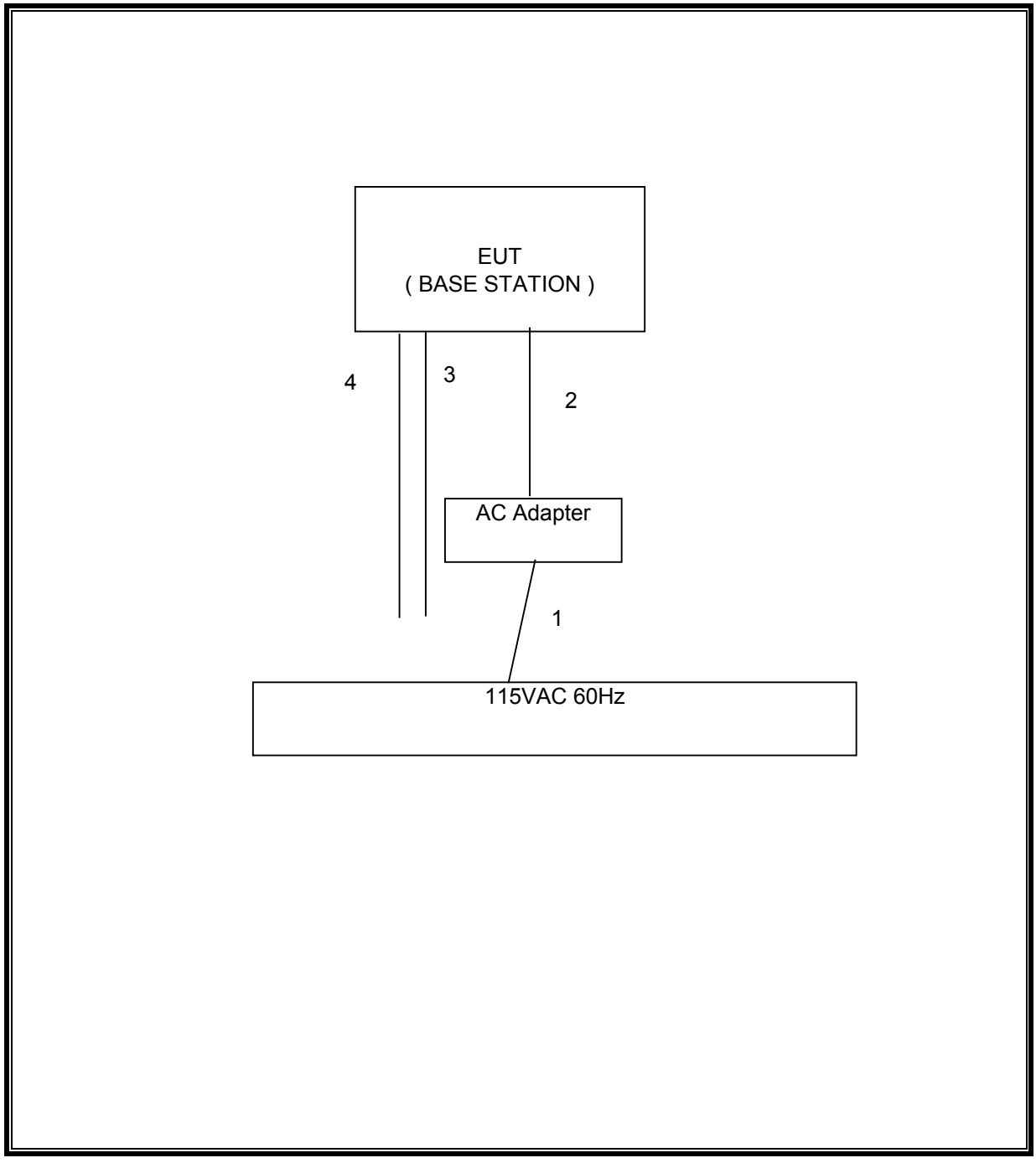
I/O CABLES

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	No
2	DC	1	DC	Un-shielded	2m	No
3	Ethernet	1	DB9	Un-shielded	2m	No
4	USB	1	USB	Un-shielded	2m	N0

TEST SETUP

The EUT was in continuous transmission mode.

SETUP DIAGRAM FOR TESTS



SETUP FOR DIGITAL DEVICE TESTS

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Serial Number**	**FCC ID**
Mouse	Logitech	M-UA34	LTC70500299	DZL211087
Printer	HP	2225C	2930S52614	DSI6XU2225
AC Adapter	Worth Data	AUT-05-1000	NA	NA
Laptop	Compaq	Presario 1200	NA	DoC
Laptop AC Adapter	Compaq	Series PPP009H	F3-0307014855B	DoC
AC Adapter	ACBEL POLYTECH	API-7629	B629022511197	NA

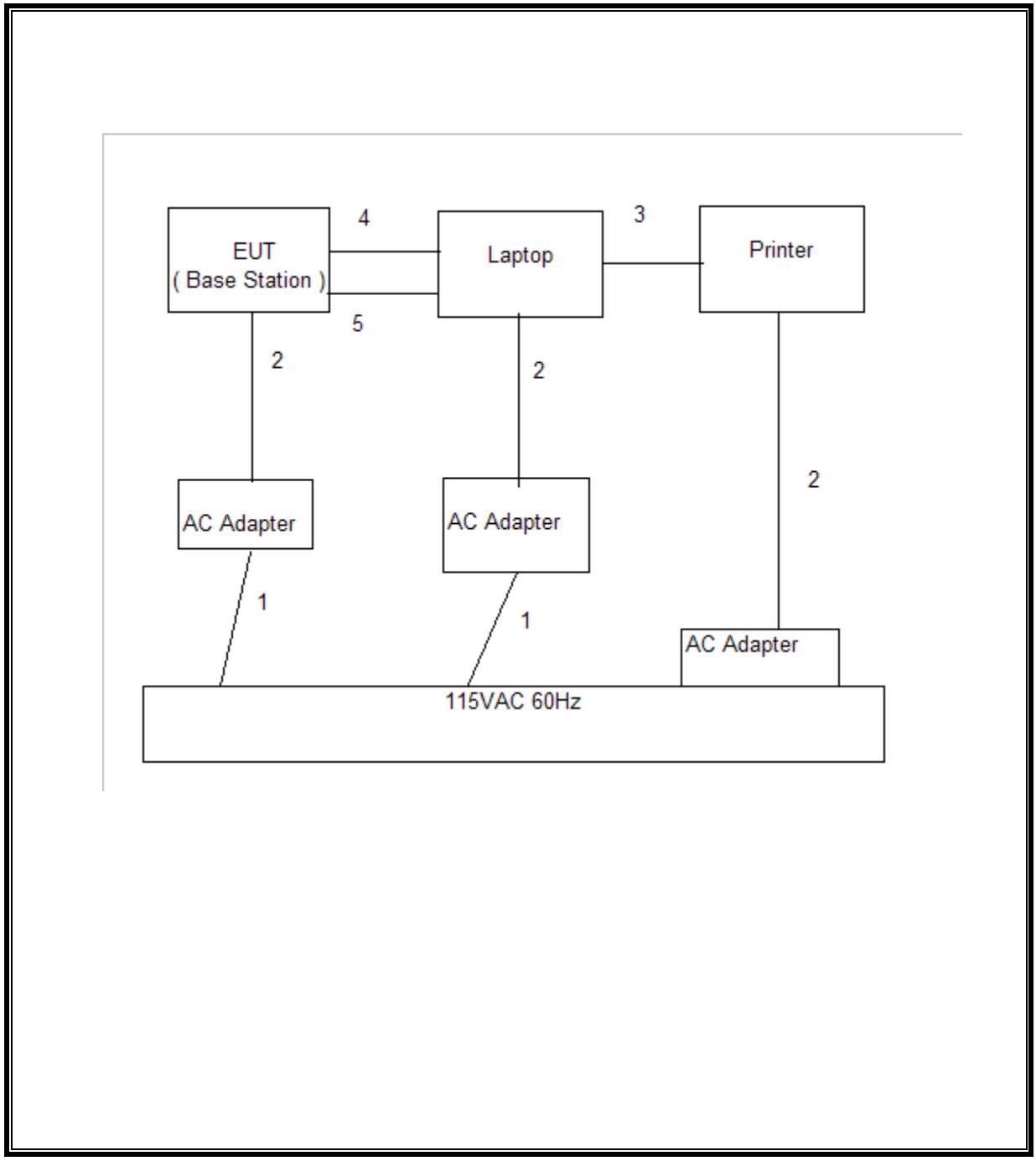
I/O CABLES

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	3	DC	Un-shielded	1m	NA
3	Parallel	1	DB25	Shielded	2m	NA
4	Ethernet	1	DB9	Un-shielded	1m	NA
5	USB	1	USB	Un-shielded	1m	NA

TEST SETUP

The EUT was in continuous transmission mode.

SETUP DIAGRAM FOR DIGITAL DEVICE 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

None; for reporting purposes only.

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

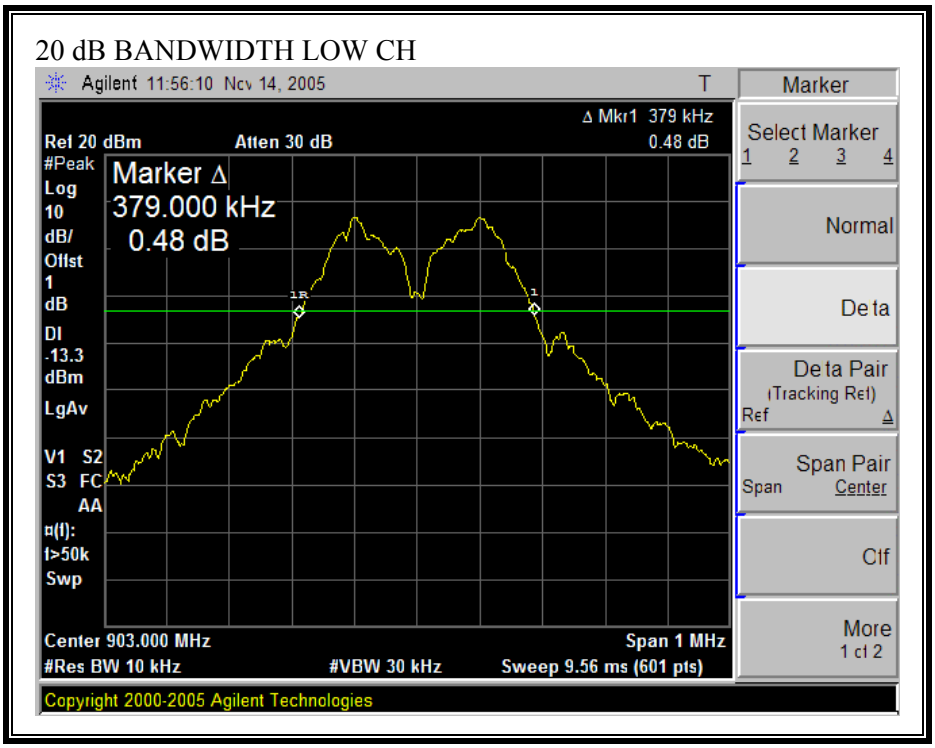
No non-compliance noted:

BASE STATION

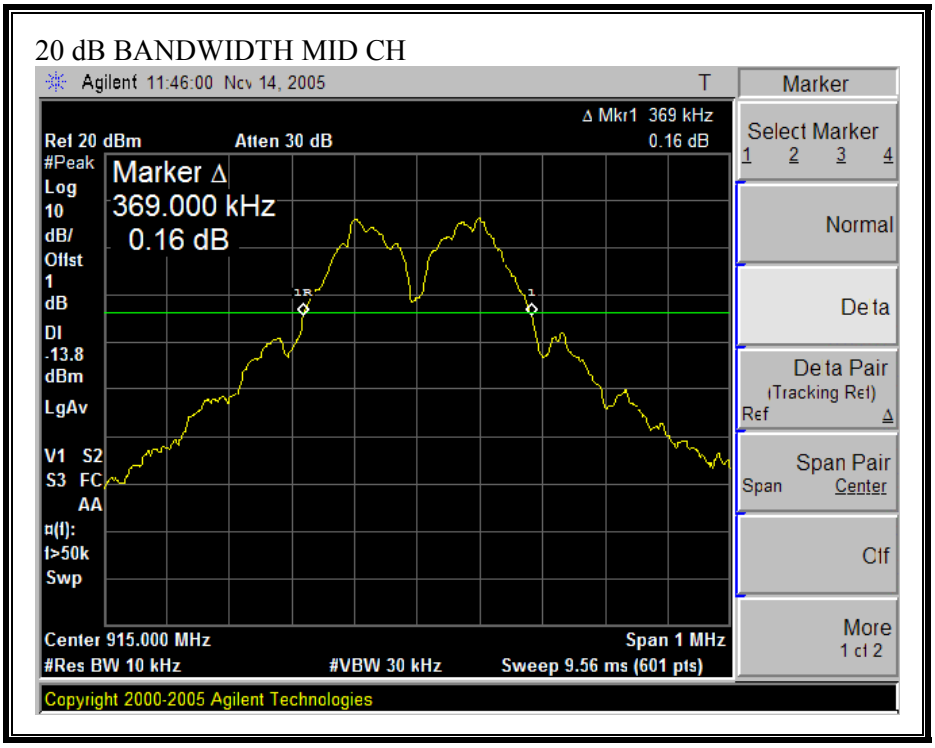
Channel	Frequency (MHz)	20 dB Bandwidth (kHz)	Limit (kHz)	Margin (kHz)
Low	903	379	500	121
Middle	915	369	500	131
High	927	415	500	85

20 dB BANDWIDTH

20 dB BANDWIDTH LOW CH



20 dB BANDWIDTH MID CH



20 dB BANDWIDTH HIGH CH

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

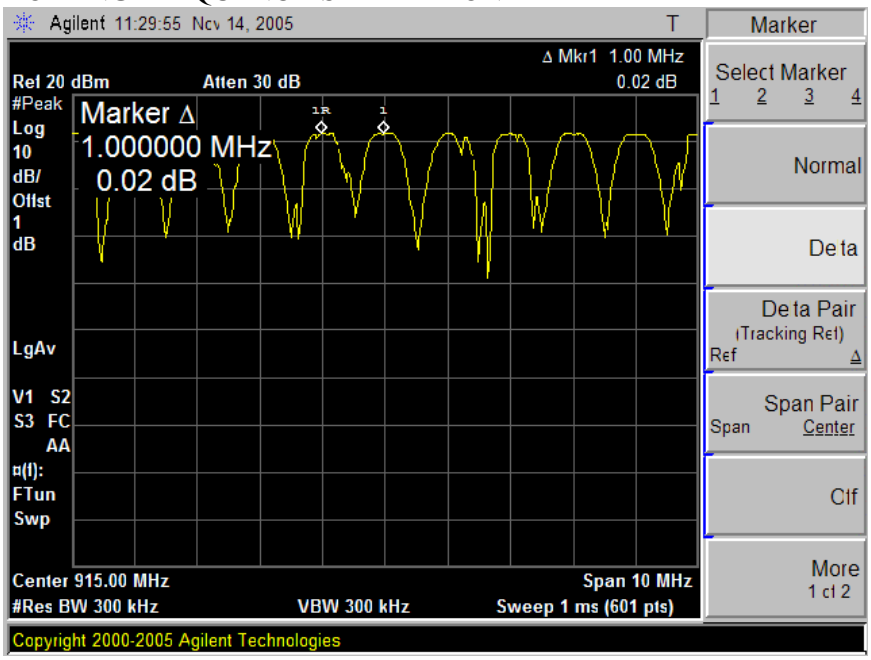
No non-compliance noted:

RF BASE STATION

Channel	Frequency (MHz)	Hopping Separation (kHz)	>=25kHz or 20 dB BW (kHz)	Margin (kHz)
High	927	1000	415	585

HOPPING FREQUENCY SEPARATION

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.

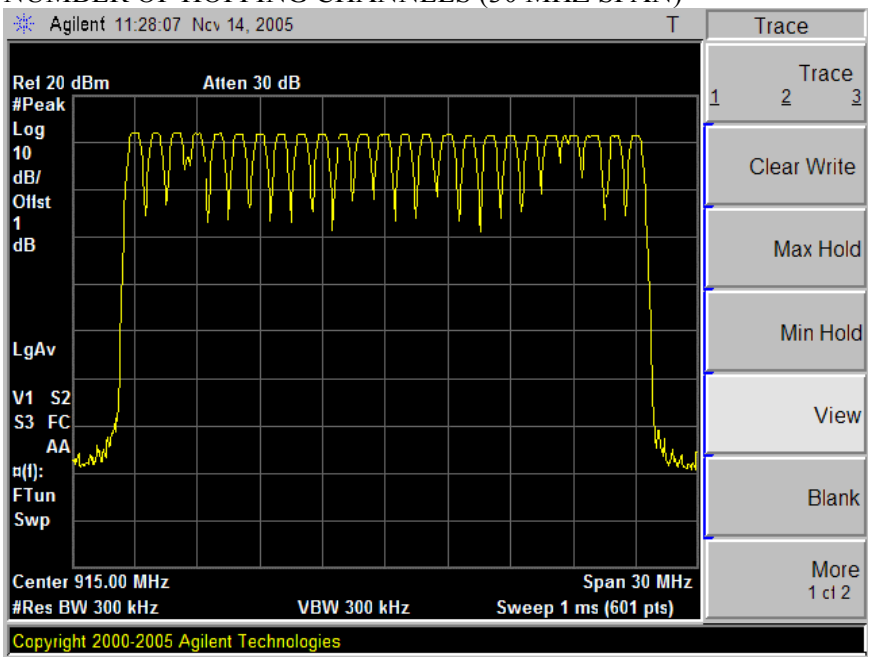
RESULTS

No non-compliance noted:

25 Channels observed.

NUMBER OF HOPPING CHANNELS

NUMBER OF HOPPING CHANNELS (30 MHZ SPAN)



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.

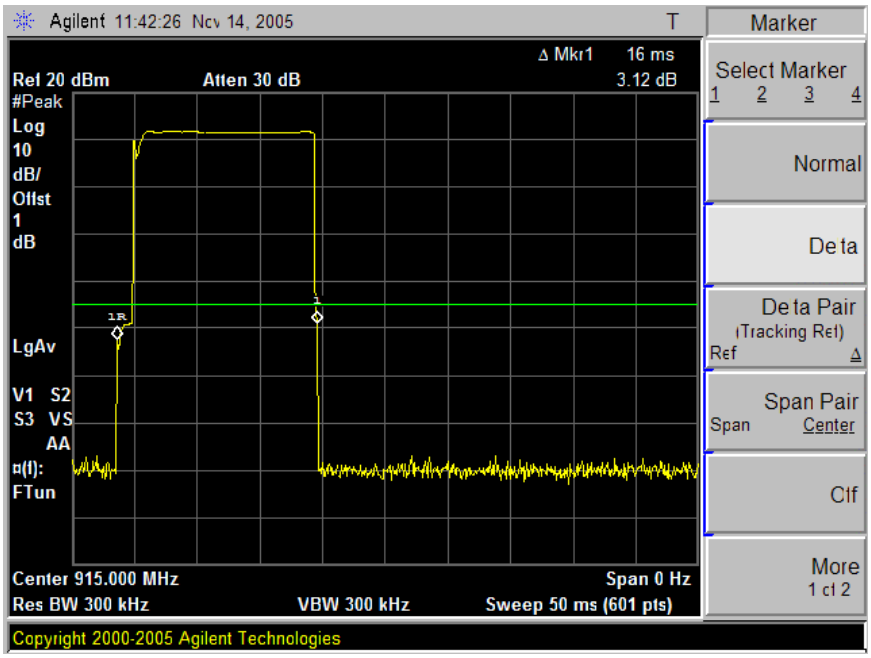
RESULTS

No non-compliance noted:

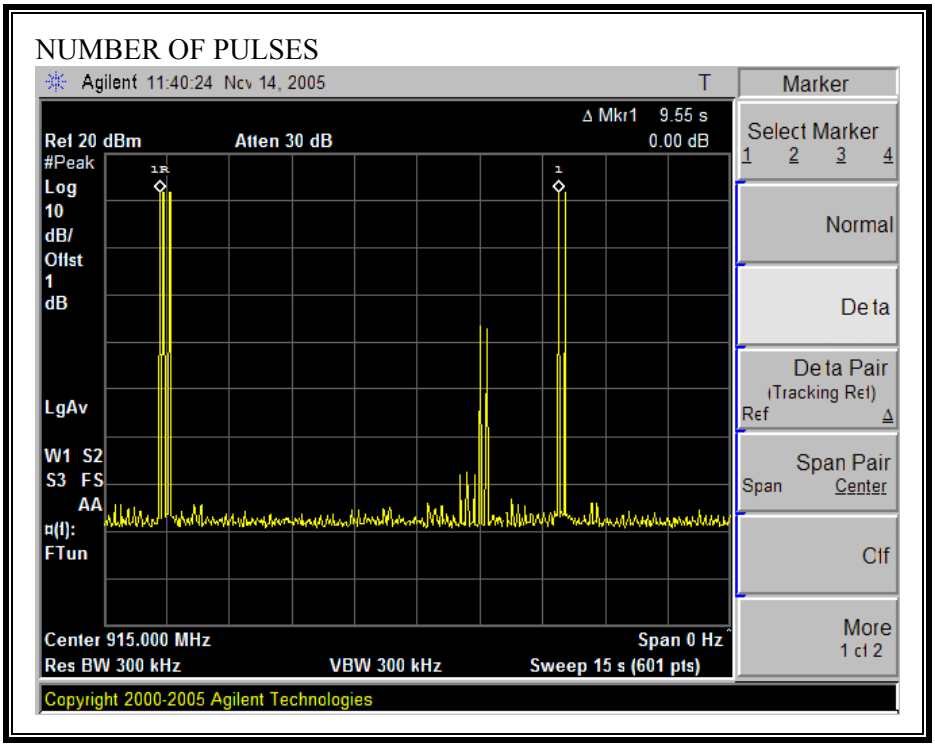
Pulse Width (msec)	Number of Pulses in 10 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
16	6	0.096	0.4	0.304

PULSE WIDTH

PULSE WIDTH



NUMBER OF PULSES IN 15SECOND OBSERVATION PERIOD



The two highest amplitude pulses occur when the channel frequency equals 915MHz. The lower amplitude pulses occur when the channel frequency is not equal to 915MHz. The amplitude of channel frequencies other then 915MHz will be a function of the delta frequency ($F_{channel}$-915) and the fall-off of the 1MHz RBW filter in the spectrum analyzer.

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 24 dBm.

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	11.99	24	-12.01
Middle	915	11.75	24	-12.25
High	927	11.43	24	-12.57

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.

BASE STATION

Channel	Frequency (MHz)	Average Power (dBm)
Low	903	11.69
Middle	915	11.43
High	927	11.13

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.

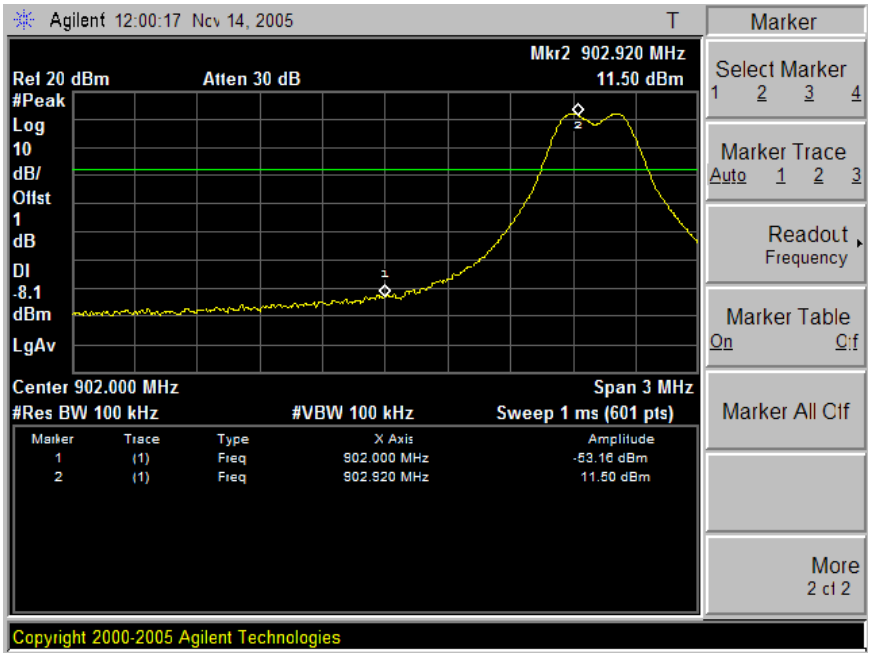
The spectrum from 30 MHz to 10 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

RESULTS

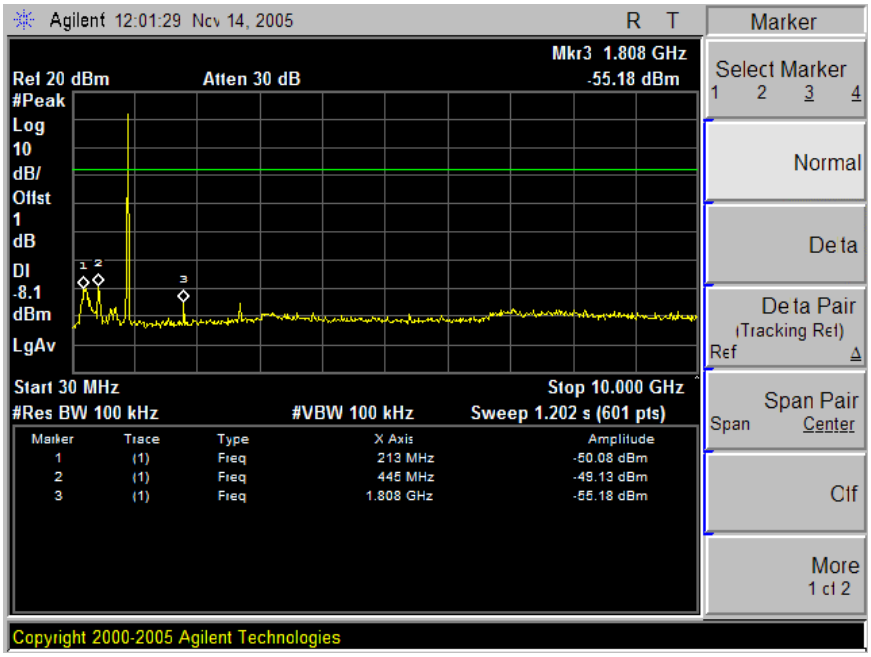
No non-compliance noted:

SPURIOUS EMISSIONS, LOW CHANNEL

LOW CHANNEL BANDEDGE

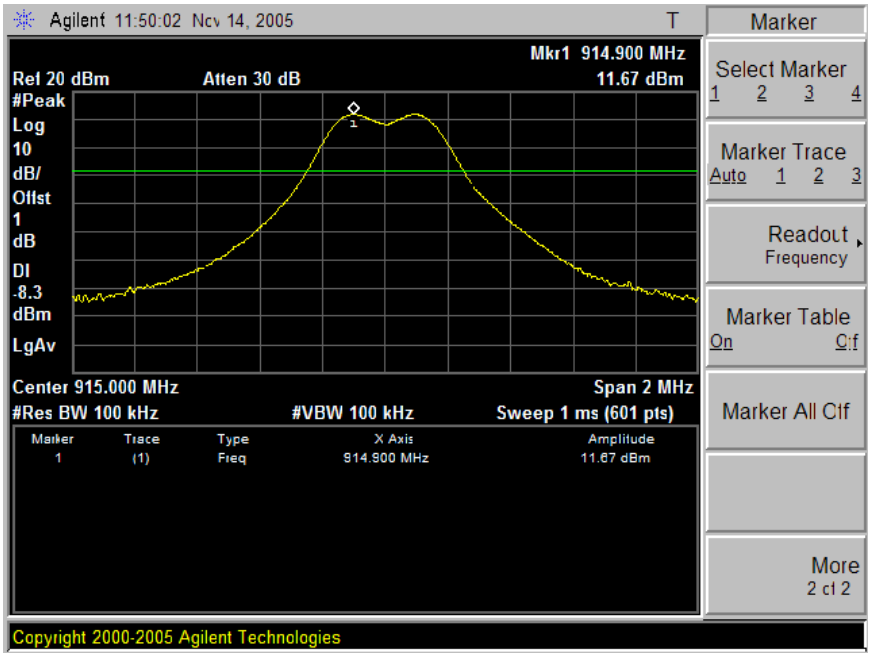


LOW CHANNEL SPURIOUS

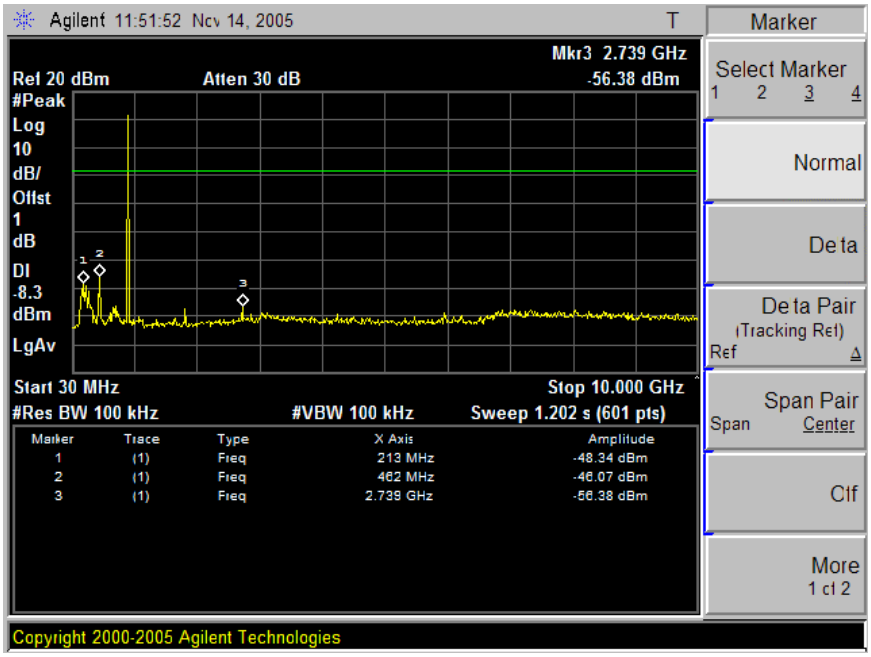


SPURIOUS EMISSIONS, MID CHANNEL

MID CHANNEL REFERENCE

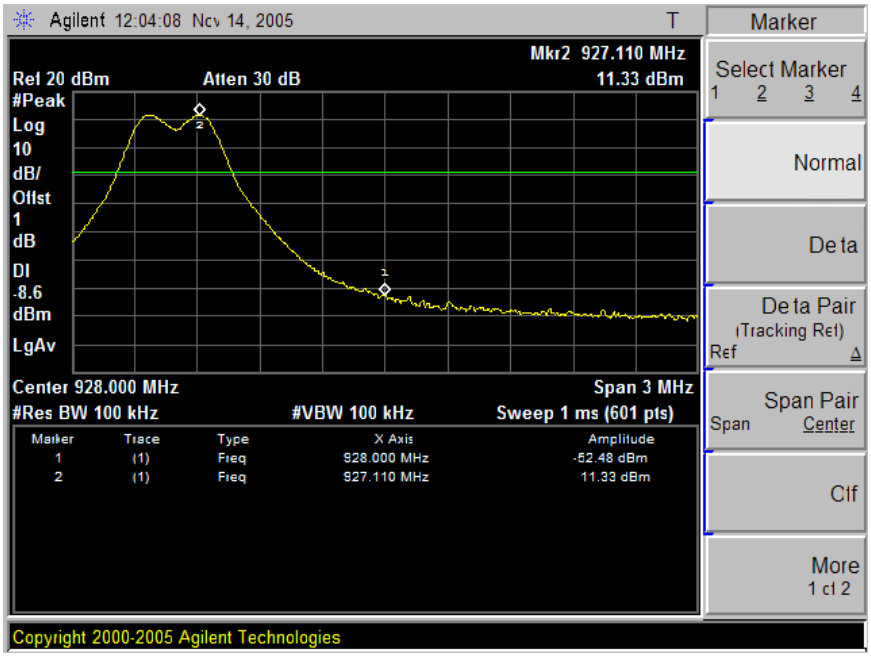


MID CHANNEL SPURIOUS

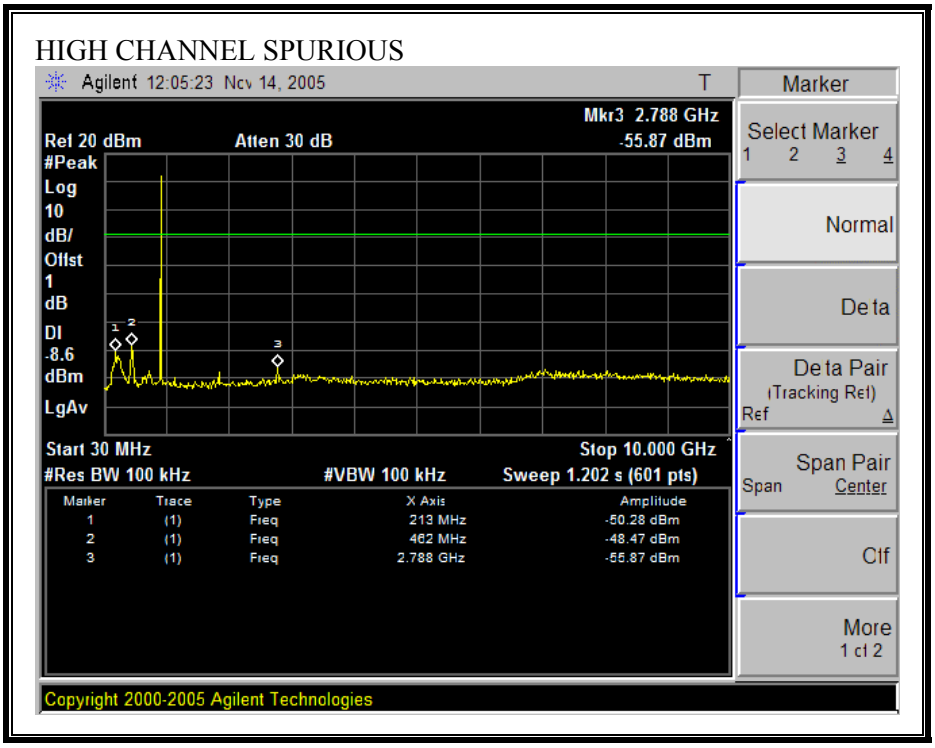


SPURIOUS EMISSIONS, HIGH CHANNEL

HIGH CHANNEL BANDEDGE

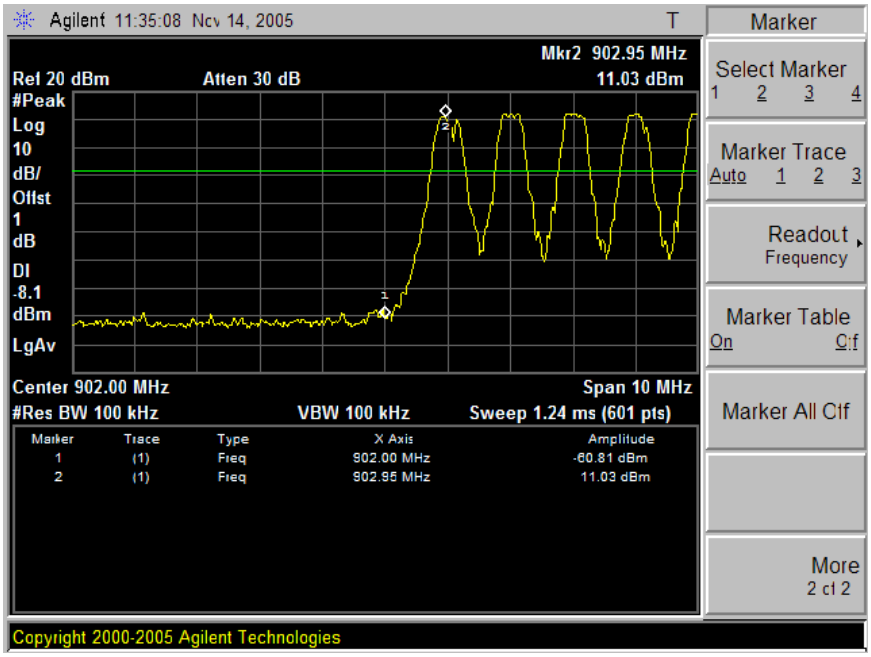


HIGH CHANNEL SPURIOUS

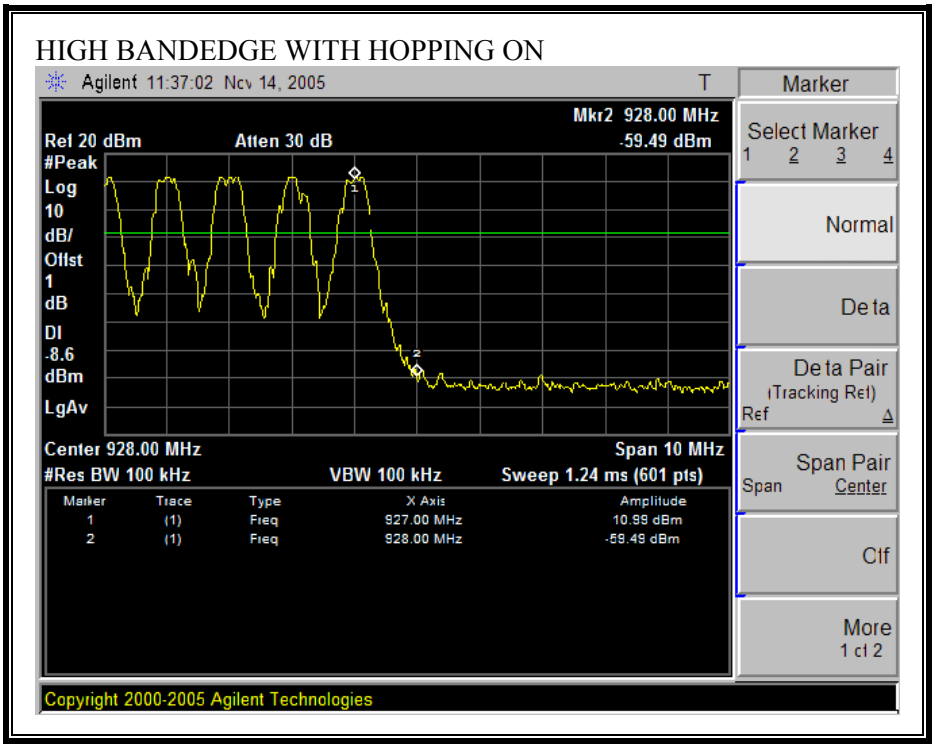


SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON

LOW BANDEDGE WITH HOPPING ON



HIGH BANDEDGE 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

11/15/05 **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 Base Station with JJB Antenna
EUT M/N:B78
Test Target:FCC 15.247
Mode Oper:TX

Test Equipment:

Horn 1-18GHz	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit
T73; S/N: 6717 @3m	T34 HP 8449B			FCC 15.205

Hi Frequency Cables

2 foot cable	3 foot cable	12 foot cable	HPF	Reject Filter
	Chin 197538001	Chin 200354001	HPF_1.5GHz	

Peak Measurements RBW=VBW=1MHz
Average Measurements RBW=1MHz ; VBW=10Hz

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	51.3	47.5	26.6	1.9	-37.1	0.0	0.3	43.0	39.2	74.0	54.0	-31.0	-14.8	V
2.709	3.0	48.6	42.0	29.3	2.3	-36.1	0.0	0.6	44.7	38.1	74.0	54.0	-29.3	-15.9	V
3.612	3.0	46.0	36.3	31.8	2.7	-35.3	0.0	0.6	45.7	36.0	74.0	54.0	-28.3	-18.0	V
1.806	3.0	48.7	43.0	26.6	1.9	-37.1	0.0	0.3	40.4	34.7	74.0	54.0	-33.6	-19.3	H
2.709	3.0	44.2	33.0	29.3	2.3	-36.1	0.0	0.6	40.3	29.1	74.0	54.0	-33.7	-24.9	H
3.612	3.0	45.0	34.0	31.8	2.7	-35.3	0.0	0.6	44.7	33.7	74.0	54.0	-29.3	-20.3	H
Mid Ch, 915MHz															
1.830	3.0	51.6	46.8	26.7	1.9	-37.1	0.0	0.3	43.4	38.6	74.0	54.0	-30.6	-15.4	V
2.750	3.0	47.8	40.4	29.4	2.3	-36.1	0.0	0.6	44.0	36.6	74.0	54.0	-30.0	-17.4	V
3.660	3.0	46.9	41.0	31.9	2.7	-35.3	0.0	0.6	46.8	40.9	74.0	54.0	-27.2	-13.1	V
1.830	3.0	48.0	41.3	26.7	1.9	-37.1	0.0	0.3	39.8	33.1	74.0	54.0	-34.2	-20.9	H
2.750	3.0	43.8	38.2	29.4	2.3	-36.1	0.0	0.6	40.0	34.4	74.0	54.0	-34.0	-19.6	H
3.660	3.0	42.8	34.4	31.9	2.7	-35.3	0.0	0.6	42.7	34.3	74.0	54.0	-31.3	-19.7	H
Hig Hc, 927MHz															
1.854	3.0	53.3	50.0	26.8	1.9	-37.1	0.0	0.3	45.3	41.9	74.0	54.0	-28.7	-12.1	V
2.781	3.0	48.1	42.7	29.5	2.4	-36.1	0.0	0.6	44.5	39.1	74.0	54.0	-29.5	-14.9	V
3.708	3.0	46.1	38.6	32.0	2.7	-35.2	0.0	0.6	46.2	38.7	74.0	54.0	-27.8	-15.3	V
1.854	3.0	49.0	43.6	26.8	1.9	-37.1	0.0	0.3	40.9	35.5	74.0	54.0	-33.1	-18.5	H
2.781	3.0	46.0	38.6	29.5	2.4	-36.1	0.0	0.6	42.4	35.0	74.0	54.0	-31.6	-19.0	H
3.708	3.0	43.0	33.4	32.0	2.7	-35.2	0.0	0.6	43.1	33.5	74.0	54.0	-30.9	-20.5	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		

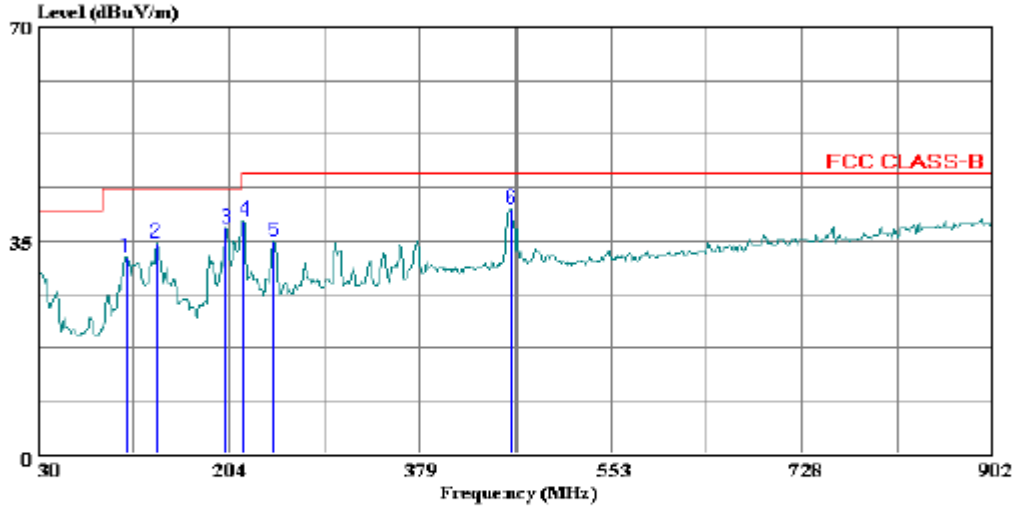
7.2.3. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz

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#: 30 File#: worthdata 3728.EMI Date: 11-14-2005 Time: 15:59:59



Trace: 29 Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Test Operator: : Chin Pang
Project #: : 05U3728-1
Company: : Worth Data Inc.
EUT: : Base Station
Model No. : B78
Configuration : EUT Only
Target of Test : FCC Class B
Mode of Operation: TX ON

HORIZONTAL DATA

Page: 1

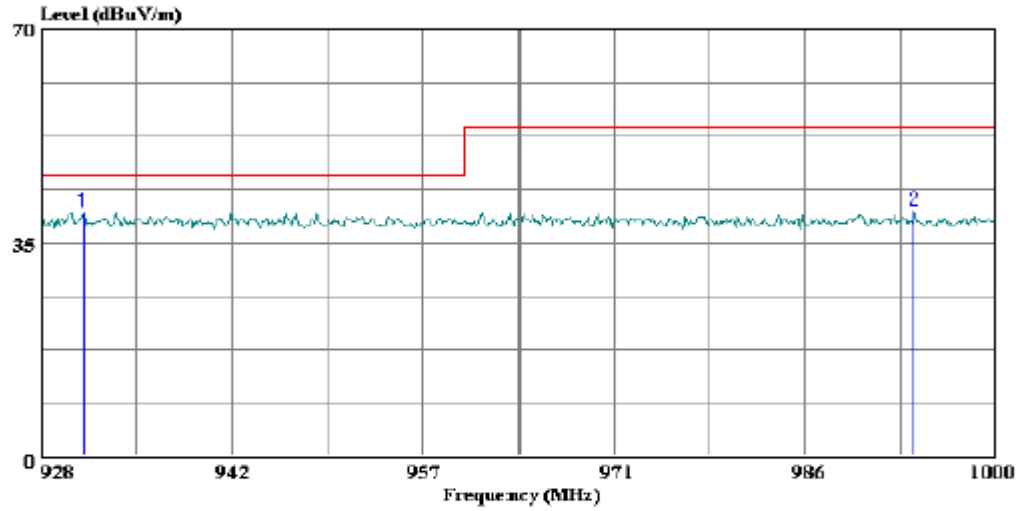
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	111.096	18.50	13.75	32.25	43.50	-11.26	Peak
2	138.128	19.64	14.90	34.54	43.50	-8.96	Peak
3	201.784	22.79	14.32	37.11	43.50	-6.39	Peak
4	218.352	25.76	12.46	38.22	46.00	-7.78	Peak
5	245.384	21.12	13.69	34.81	46.00	-11.19	Peak
6	463.384	20.71	19.50	40.21	46.00	-5.79	Peak

SPURIOUS EMISSIONS 928 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL

HORIZONTAL PLOT

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

Data#: 32 File#: worthdata 3728.EMI Date: 11-14-2005 Time: 16:04:06



(Audix ATC)

Trace: 31 Ref Trace:

Condition: FCC CLASS-B HORIZONTAL
Test Operator: : Chin Pang
Project #: : 05U3728-1
Company: : Worth Data Inc.
EUT: : Base Station
Model No. : B78
Configuration : EUT Only
Target of Test : FCC Class B
Mode of Operation: TX ON

HORIZONTAL DATA

Page: 1

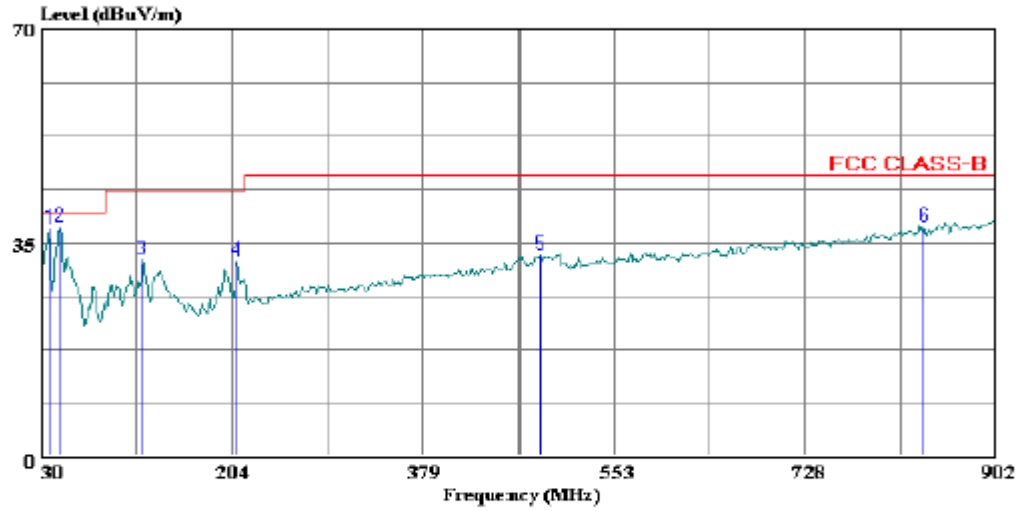
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	931.168	13.69	26.29	39.98	46.00	-6.02	Peak
2	993.808	13.25	26.94	40.19	54.00	-13.81	Peak

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#: 38 File#: worthdata 3728.EMI Date: 11-14-2005 Time: 16:24:34



(Audix ATC)

Trace: 37 Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator: : Chin Pang
Project #: : 05U3728-1
Company: : Worth Data Inc.
EUT: : Base Station
Model No. : B78
Configuration : EUT Only
Target of Test : FCC Class B
Mode of Operation: TX ON

VERTICAL DATA

Page: 1

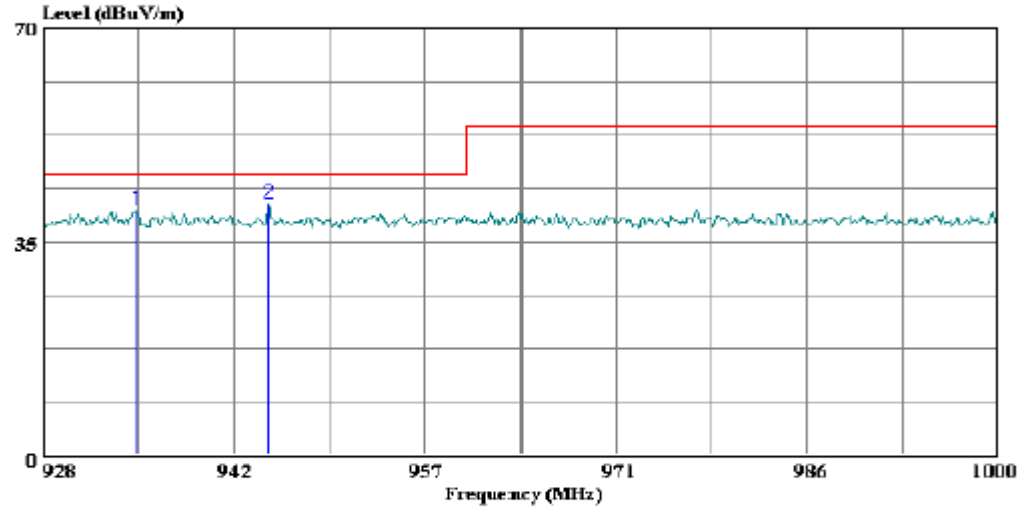
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	37.848	20.58	16.65	37.23	40.00	-2.77	Peak
2	46.568	26.29	11.20	37.49	40.00	-2.51	Peak
3	123.304	17.01	15.21	32.22	43.50	-11.28	Peak
4	207.888	18.70	13.40	32.10	43.50	-11.40	Peak
5	485.184	13.11	19.92	33.03	46.00	-12.97	Peak
6	835.728	12.53	25.03	37.56	46.00	-8.44	Peak

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

VERTICAL PLOT

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

Data#: 34 File#: worthdata 3728.EMI Date: 11-14-2005 Time: 16:07:20



(Audix ATC)

Trace: 33 Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator: : Chin Pang
Project #: : 05U3728-1
Company: : Worth Data Inc.
EUT: : Base Station
Model No. : B78
Configuration : EUT Only
Target of Test : FCC Class B
Mode of Operation: TX ON

VERTICAL DATA

Page: 1

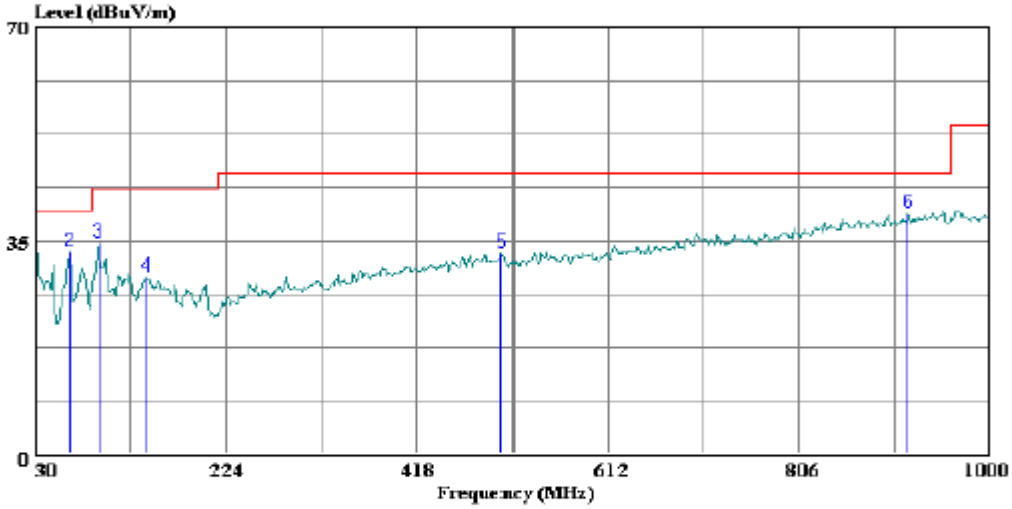
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	935.128	13.95	26.33	40.28	46.00	-5.72	Peak
2	945.064	14.79	26.45	41.24	46.00	-4.76	Peak

DIGITAL SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)

HORIZONTAL PLOT

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

Data#: 12 File#: worthdata 3728.EMI Date: 11-14-2005 Time: 15:05:38



(Audix ATC)

Trace: 11 Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator: : Chin Pang
Project #: : 05U3728-1
Company: : Worth Data Inc.
EUT: : Base Station
Model No. : B78
Configuration : EUT/Laptop/Printer/Mouse
Target of Test : FCC Class B
Mode of Operation: Normal

HORIZONTAL DATA

Page: 1

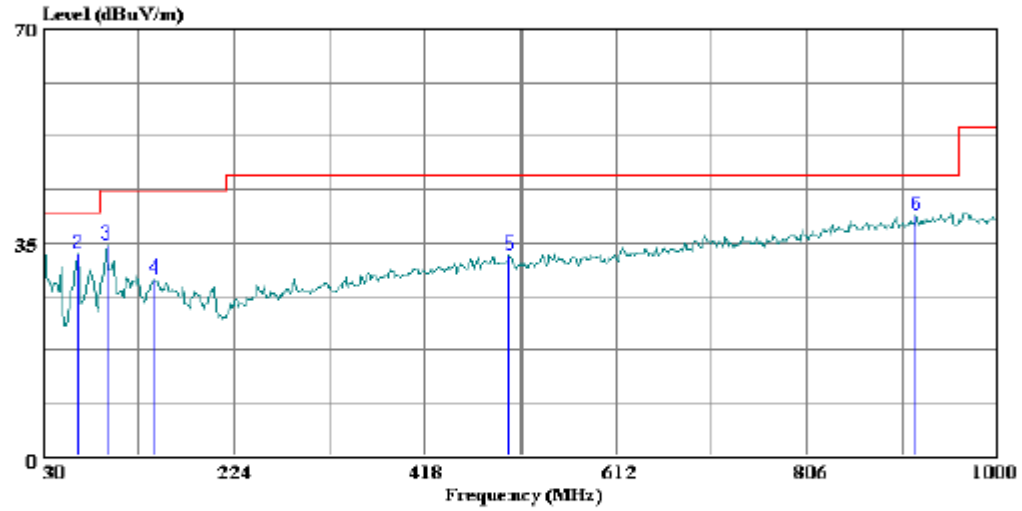
	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	31.940	14.56	19.94	34.50	40.00	-5.50	Peak
2	65.890	24.02	9.09	33.11	40.00	-6.89	Peak
3	94.990	24.55	10.12	34.67	43.50	-8.83	Peak
4	143.490	14.37	14.63	29.00	43.50	-14.51	Peak
5	504.330	12.68	20.26	32.94	46.00	-13.06	Peak
6	916.580	13.51	26.04	39.55	46.00	-6.45	Peak

SPURIOUS EMISSIONS 30 TO 1000 MHz (WORST-CASE CONFIGURATION, VERTICAL

VERTICAL PLOT

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

Data#: 12 File#: worthdata 3728.EMI Date: 11-14-2005 Time: 15:05:38



(Audix ATC)

Trace: 11 Ref Trace:

Condition: FCC CLASS-B VERTICAL
Test Operator: : Chin Pang
Project #: : 05U3728-1
Company: : Worth Data Inc.
EUT: : Base Station
Model No. : B78
Configuration : EUT/Laptop/Printer/Mouse
Target of Test : FCC Class B
Mode of Operation: Normal

VERTICAL DATA

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	31.940	14.56	19.94	34.50	40.00	-5.50	Peak
2	65.890	24.02	9.09	33.11	40.00	-6.89	Peak
3	94.990	24.55	10.12	34.67	43.50	-8.83	Peak
4	143.490	14.37	14.63	29.00	43.50	-14.51	Peak
5	504.330	12.68	20.26	32.94	46.00	-13.06	Peak
6	916.580	13.51	26.04	39.55	46.00	-6.45	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 µH/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.

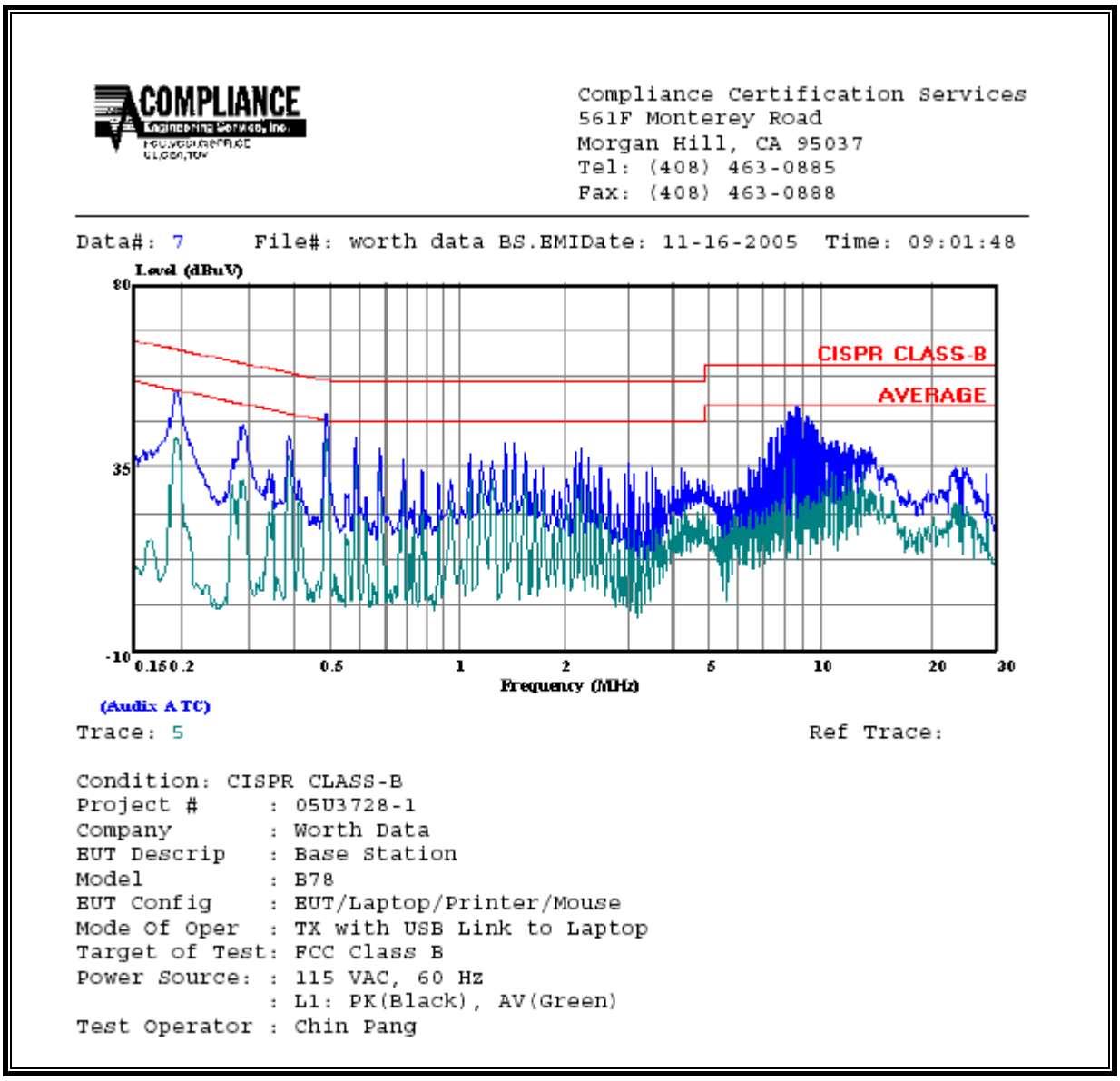
RESULTS

No non-compliance noted:

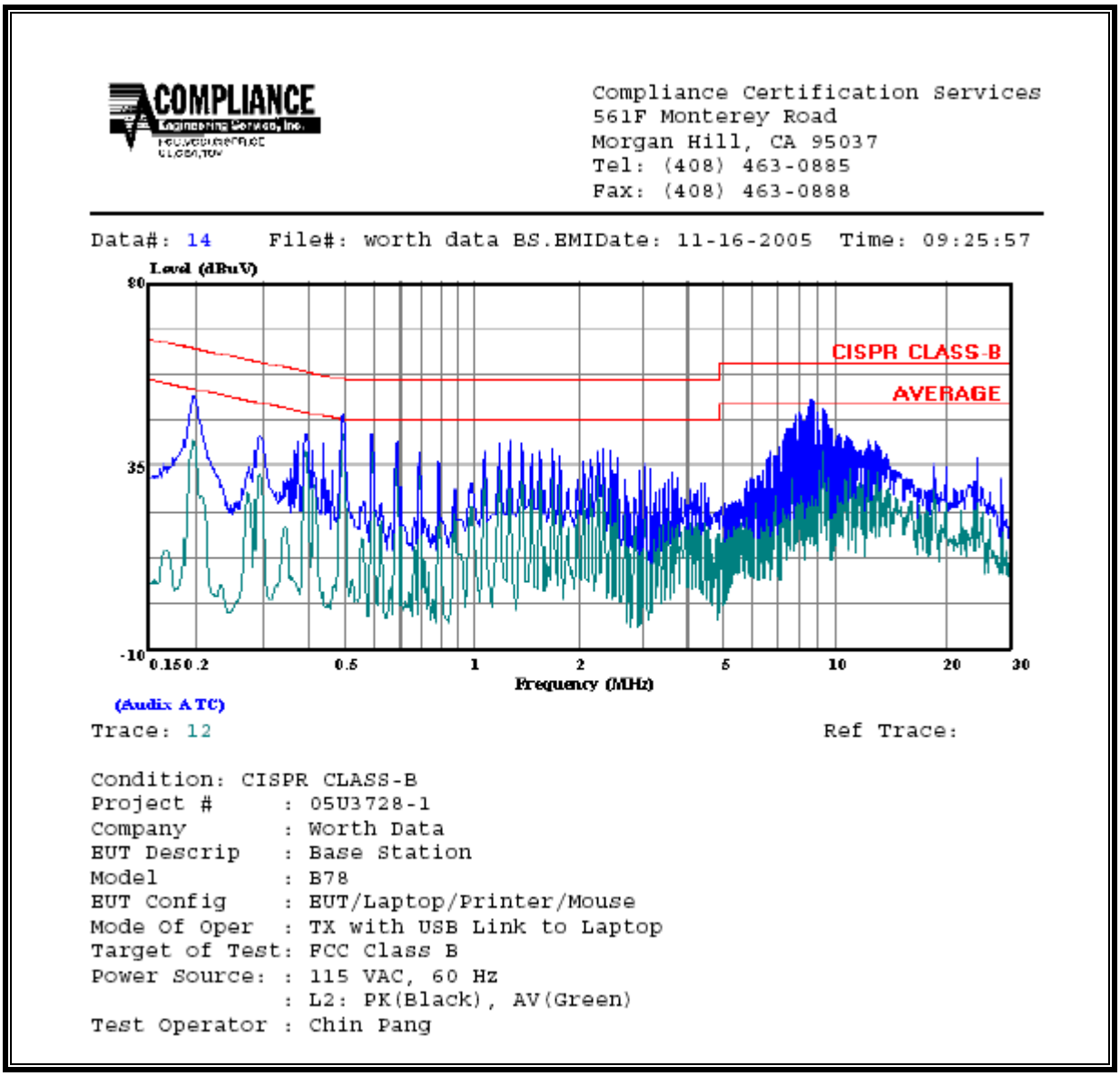
6 WORST EMISSIONS (EUT AC/DC ADAPTER)

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	55.64	--	43.57	0.00	63.61	53.61	-7.97	-10.04	L1
0.40	46.34	--	37.47	0.00	57.94	47.94	-11.60	-10.47	L1
8.41	39.46	--	37.12	0.00	60.00	50.00	-20.54	-12.88	L1
0.20	52.24	--	39.98	0.00	63.74	53.74	-11.50	-13.76	L2
0.49	44.22	--	40.42	0.00	56.10	46.10	-11.88	-5.68	L2
8.32	37.16	--	35.78	0.00	60.00	50.00	-22.84	-14.22	L2
6 Worst Data Base Station									

LINE 1 RESULTS



LINE 2 RESULTS



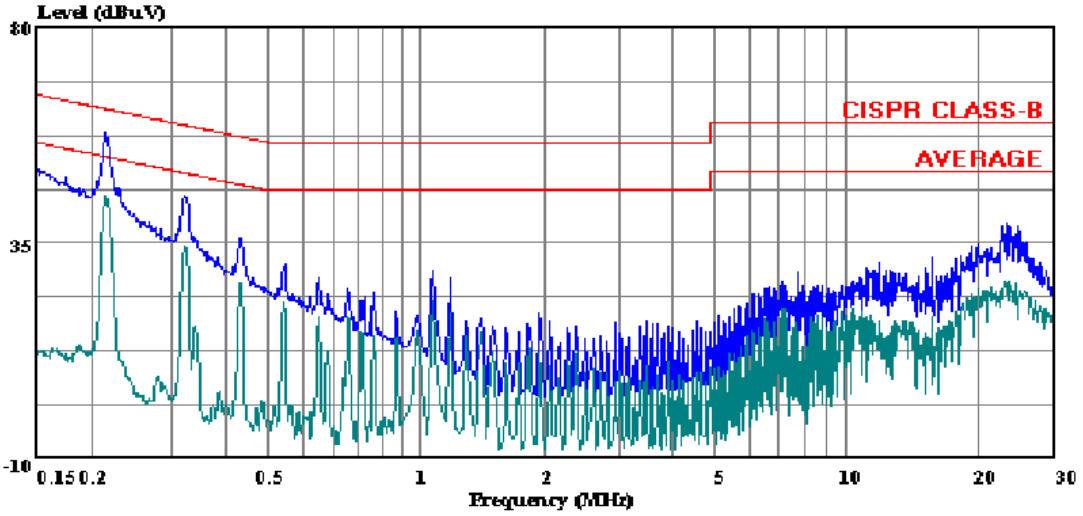
6 WORST EMISSIONS (LAPTOP AC/DC ADAPTER)

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
0.22	58.04	--	43.81	0.00	63.01	53.01	-4.97	-9.20	L1
0.32	45.08	--	34.36	0.00	59.66	49.66	-14.58	-15.30	L1
23.39	39.12	--	26.92	0.00	60.00	50.00	-20.88	-23.08	L1
0.22	54.74	--	41.90	0.00	62.97	52.97	-8.23	-11.07	L2
0.32	43.24	--	32.86	0.00	59.63	49.63	-16.39	-16.77	L2
23.76	41.38	--	33.86	0.00	60.00	50.00	-18.62	-16.14	L2
6 Worst Data Laptop AC Adater									

LINE 1 RESULTS

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

Data#: 35 File#: worth data BS.EMIDate: 11-17-2005 Time: 11:17:26



(Audix ATC)

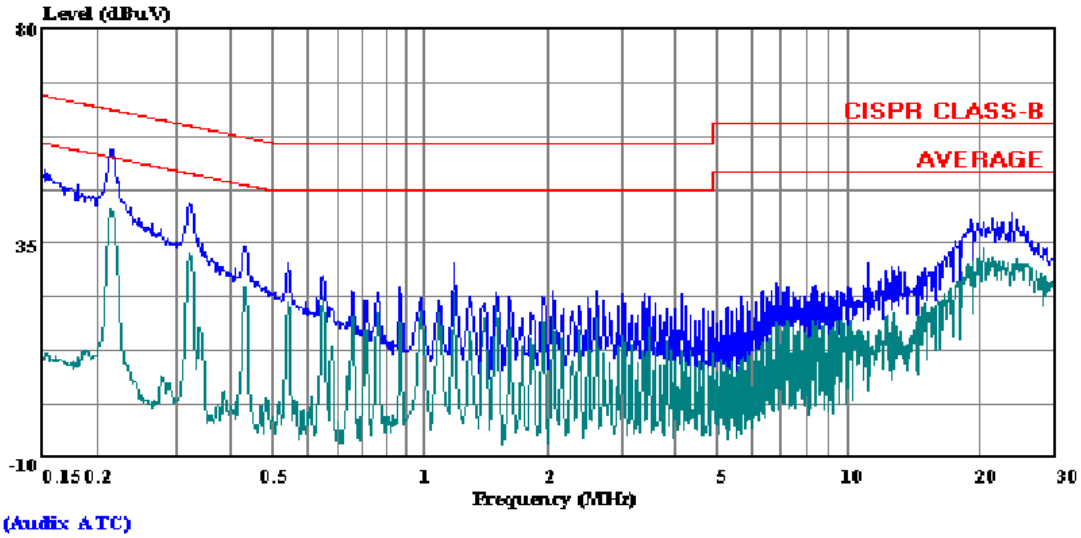
Trace: 33 Ref Trace:

Condition: CISPR CLASS-B
Project # : 05U3728-1
Company : Worth Data
EUT Descrip : RF Base Station
Model : B78
EUT Config : EUT/Laptop/Printer/Mouse
Mode Of Oper : TX with USB Link to Laptop
Target of Test: FCC Class B
Power Source: : 115 VAC, 60 Hz
: L1: PK(Green), AV(Black)
Test Operator : Chin Pang
: Laptop AC Adapter

LINE 2 RESULTS

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

Data#: 42 File#: worth data BS.EMIDate: 11-17-2005 Time: 11:34:04



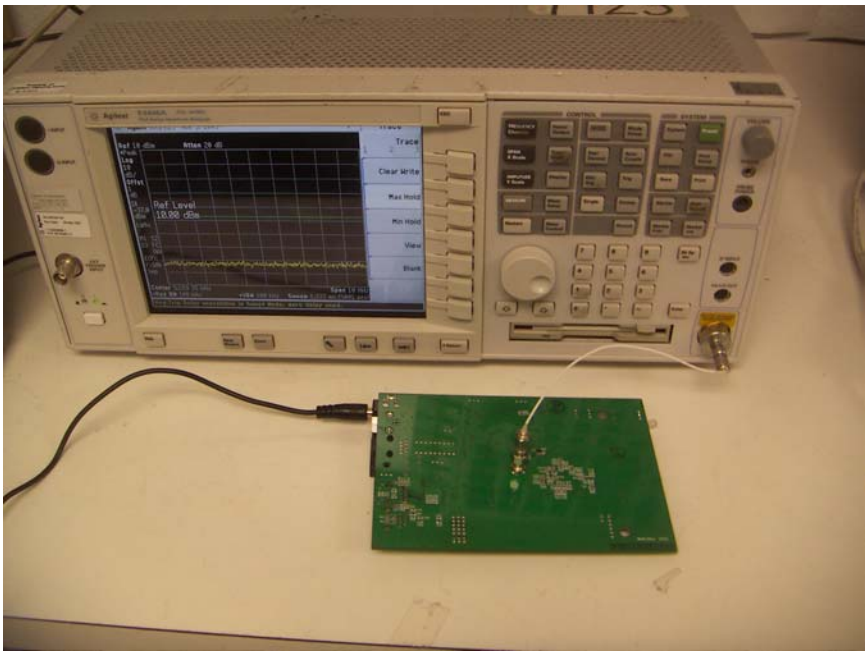
Trace: 40 Ref Trace:

Condition: CISPR CLASS-B
Project # : 05U3728-1
Company : Worth Data
EUT Descrip : RF Base Station
Model : B78
EUT Config : EUT/Laptop/Printer/Mouse
Mode Of Oper : TX with USB Link to Laptop
Target of Test: FCC Class B
Power Source: : 115 VAC, 60 Hz
: L2: PK(Green), AV(Black)
Test Operator : Chin Pang
: Laptop AC Adapter

8. SETUP PHOTOS

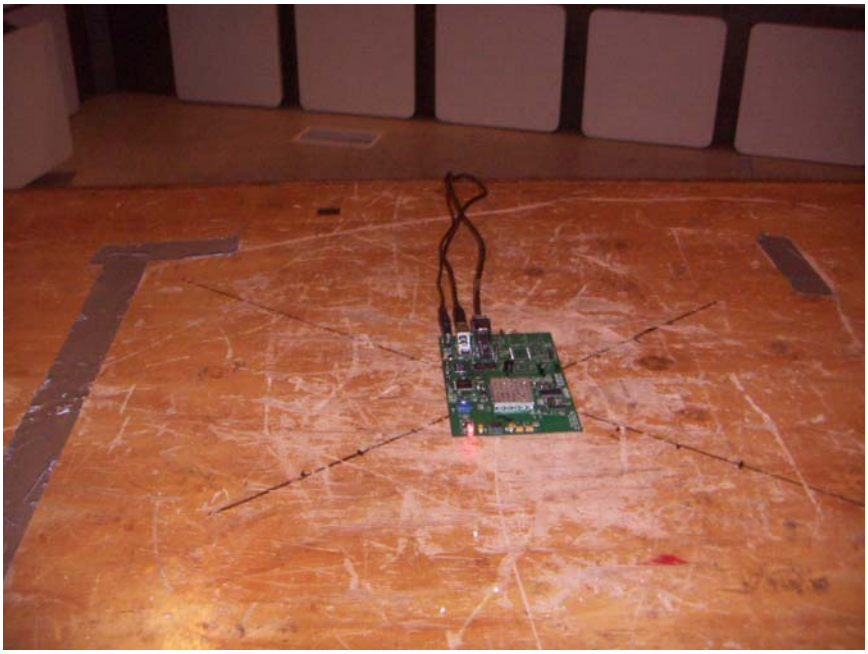
ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP

ANTENNA PORT CONDUCTED PHOTO

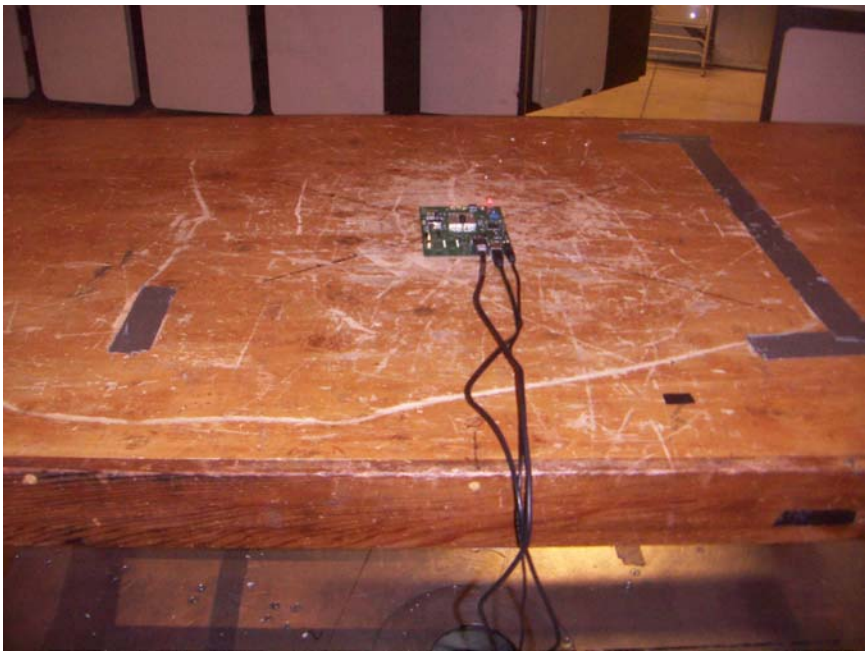


RADIATED RF MEASUREMENT SETUP

RADIATED FRONT PHOTO



RADIATED BACK PHOTO



DIGITAL DEVICE RADIATED EMISSIONS SETUP

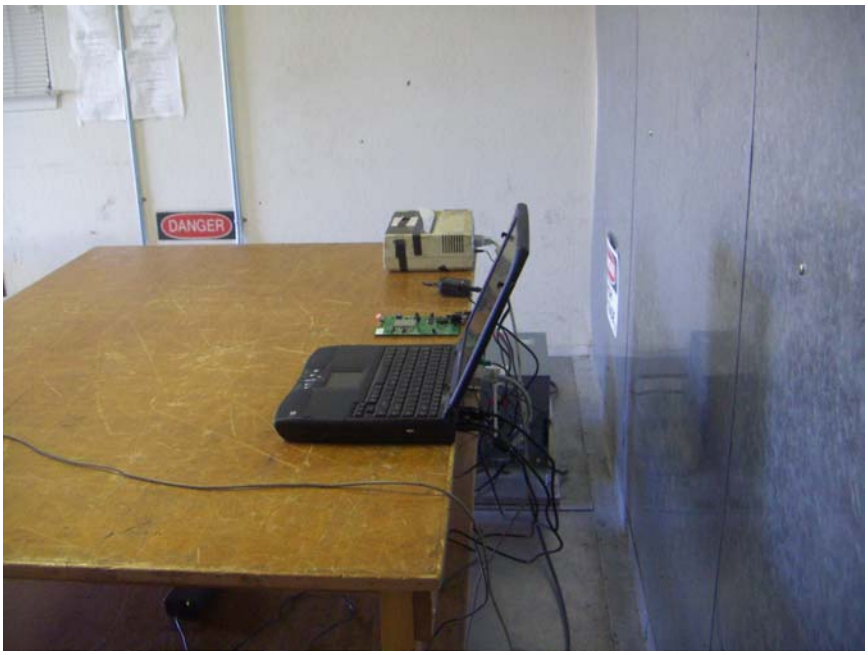
DIGITAL DEVICE FRONT PHOTO

DIGITAL DEVICE BACK PHOTO

POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP

LINE CONDUCTED FRONT PHOTO

LINE CONDUCTED BACK PHOTO



END OF REPORT