FCC CFR47 PART 15 SUBPART C CERTIFICATION

TEST REPORT

FOR

PDA WITH BLUETOOTH

MODEL NUMBER: TUNGSTEN T5

FCC ID: O3W820

REPORT NUMBER: 04U2730-3

ISSUE DATE: JUNE 17, 2004

Prepared for
PALMONE, INC.
400 N. MCCARTHY BLVD.
MILPITAS, CA 95035
USA

Prepared by
COMPLIANCE CERTIFICATION SERVICES
561F MONTEREY ROAD,
MORGAN HILL, CA 95037, USA
TEL: (408) 463-0885
FAX: (408) 463-0888

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1. TEST RESULT CERTIFICATION

COMPANY NAME: PALMONE, INC.
400 N. MCCARTHY BLVD.
MILPITAS, CA 95035

EUT DESCRIPTION: PDA WITH BLUETOOTH

MODEL: TUNGSTEN T5

DATE TESTED: MAY 6 - JUNE 8, 2004

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: This document reports conditions under which testing was conducted and results of tests performed. 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.

Approved & Released For CCS By:

NEELESH RAJ
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

Tested By:

DAVID GARCIA
EMC ENGINEER
COMPLIANCE CERTIFICATION SERVICES

2. EUT DESCRIPTION

The EUT is a PDA with a Bluetooth transceiver operating in the 2400-2483.5 MHz Band with 79 channels and DH1 packets.

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

Frequency Band (MHz)	Output Power (dBm)	Output Power (mW)
2402 - 2480	-4.45	0.36

The radio utilizes an integral antenna with a maximum gain of 1.0 dBi.

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.4/2001, FCC CFR 47 Part 2 and FCC CFR 47 Part 15.

4. 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.

No part of this report may be used to claim or imply product endorsement by NVLAP or any agency of the US Government.

5. CALIBRATION AND UNCERTAINTY

5.1. 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.

5.2. 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%.

5.3. 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
Site B Preamplifier, 1300MHz	HP	8447D	2944A06589	8/18/2004
Quasi-Peak Adaptor	HP	85650A	2811A01155	5/24/2005
SA RF Section, 1.5 GHz	HP	85680B	2814A04227	2/22/2005
RF Preselector, 20 Hz ~ 2 GHz	HP	85685A	2817A00756	8/22/2004
SA Display Section 2	HP	85662A	2816A16696	5/24/2005
Site B Antenna, Bilog	Chase	CBL6112B	2586	3/8/2005
30MHz---- 2Ghz	Sunol Sciences	JB1 Antenna	A121003	12/22/2004
Spectrum Analyzer	Agilent	E4446A	MY43360112	1/13/2005
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	2/4/2005
Amplifier 1-26GHz	MITEQ	NSP2600-SP	924342	4/25/2005
EMI Receiver, 9 kHz ~ 2.9 GHz	HP	8542E	3942A00286	11/21/2004
RF Filter Section	HP	85420E	3705A00256	11/21/2004
EMI Test Receiver	R & S	ESHS 20	827129/006	7/17/2004
Site A Line Stabilizer / Conditioner	Tripplite	LC-1800a	A0051681	CNR
LISN, 10 kHz ~ 30 MHz	FCC	50/250-25-2	114	10/13/2004
LISN, 10 kHz ~ 30 MHz	Solar	8012-50-R-24-BNC	8379443	10/13/2004
Peak Power Meter	Agilent	E4416A	GB41291160	11/7/2004
Peak / Average Power Sensor	Agilent	E9327A	US40440755	11/7/2004

6. SETUP OF EQUIPMENT UNDER TEST

SUPPORT EQUIPMENT

The EUT was tested in a standalone condition.

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
AC ADAPTER	NETBIT	DV-0555R-1	N/A	N/A

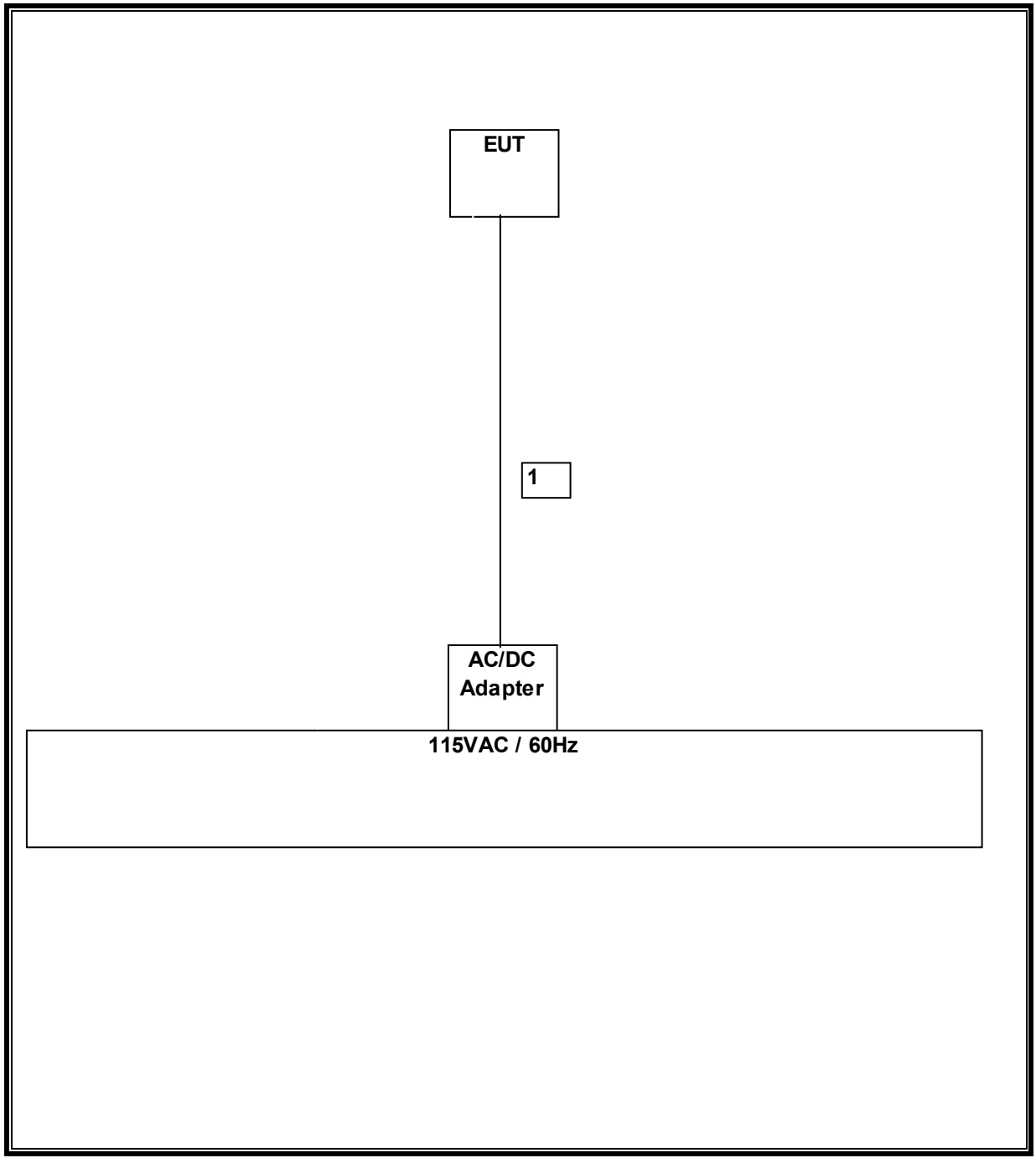
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	DC	1	DC	unshielded	1m	AC adapter cord

TEST SETUP

The EUT was operated in continuous transmit mode. X, Y and Z positions were tested. The X position was found to be worst case.

SETUP DIAGRAM FOR TESTS



SETUP FOR DIGITAL DEVICE TESTS

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
MODEM	ACEEX	1414	9013537	IFAXDM1414
PRINTER	HP	N/A	N/A	N/A
KEYBOARD	HP	SK-2502	HR805273662	G4UR415K
MONITOR	DELL	M780	5322DE20E049	DOC
MOUSE	HP	M-S34	LZA80318880	DZL210029
AC ADAPTER	PALM	R3W005-500	N/A	N/A
DESKTOP PC	COMPAQ	P400/S4	6846BW44A725	DOC
HEADPHONES	PANASONIC	N/A	N/A	N/A

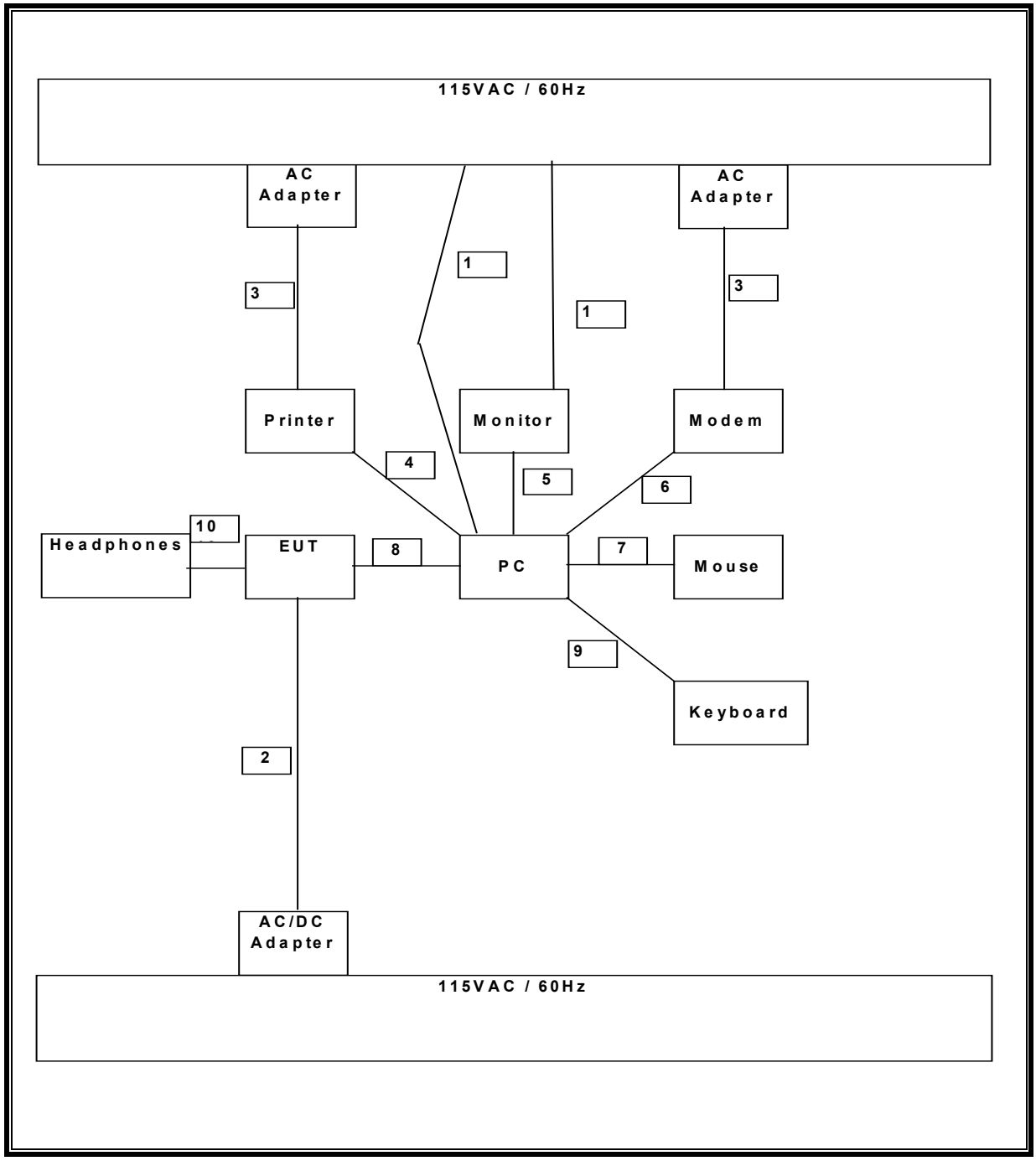
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	2	AC	Unshielded	1.5	2 prong U.S.
2	DC Adapter	2	DC	Unshielded	1.5	2 prong U.S.
3	DC Adapter	1	DC	Unshielded	1.5	N/A
4	Parallel	1	DB25	Shielded	1.5	N/A
5	Video	1	DB15	Shielded	1.5	N/A
6	Serial	1	9 to 25 pin	Shielded	1.5	N/A
7	Mouse	1	PS/2	Shielded	1.5	N/A
8	Sync	1	USB	Shielded	1.5	N/A
9	Keyboard	1	PS/2	Shielded	1.5	N/A
10	Audio	1	1/8" Stereo	Unshielded	1	N/A

TEST SETUP

The EUT is connected to a PC via a USB HotSync cable assembly. The EUT is printing H's to the screen.

SETUP DIAGRAM FOR DIGITAL DEVICE TESTS



7. APPLICABLE LIMITS AND TEST RESULTS

7.1. 20 dB BANDWIDTH

LIMIT

None; for reporting purposes only.

TEST PROCEDURE

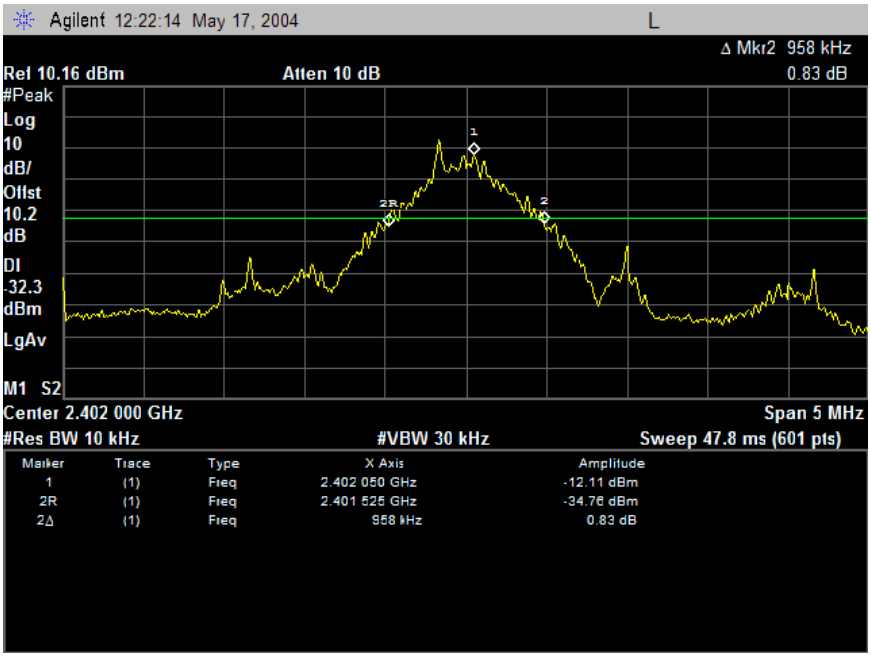
The transmitter output is connected to a spectrum analyzer. The RBW is set to 1% to 3% of the 20 dB bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled.

RESULTS

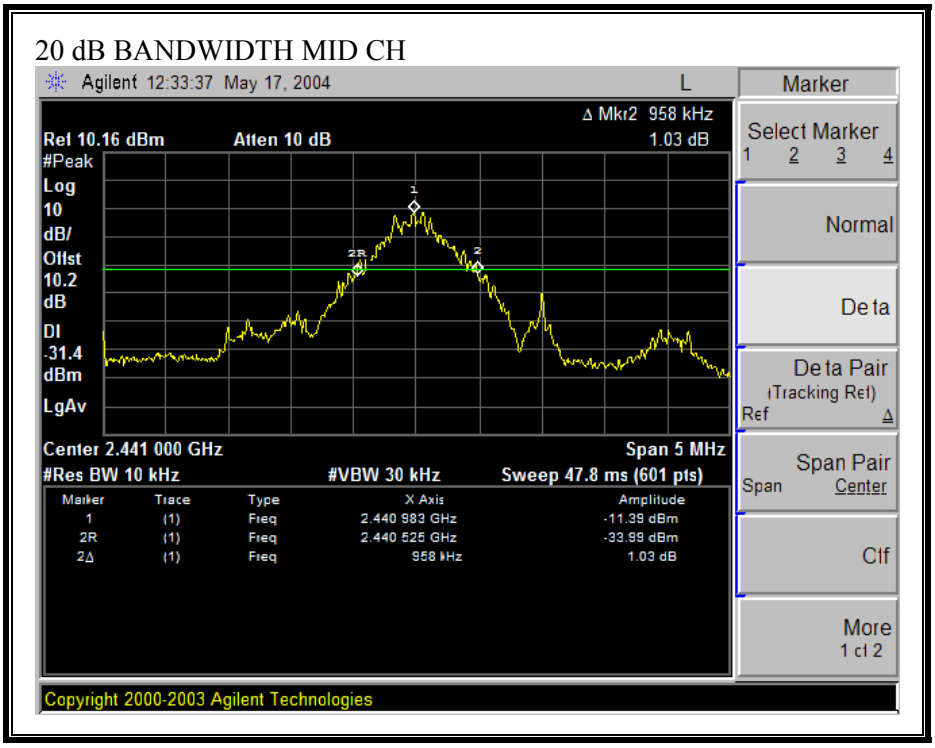
Channel	Frequency (MHz)	20 dB Bandwidth (kHz)
Low	2402	958
Middle	2441	958
High	2480	967

20 dB BANDWIDTH

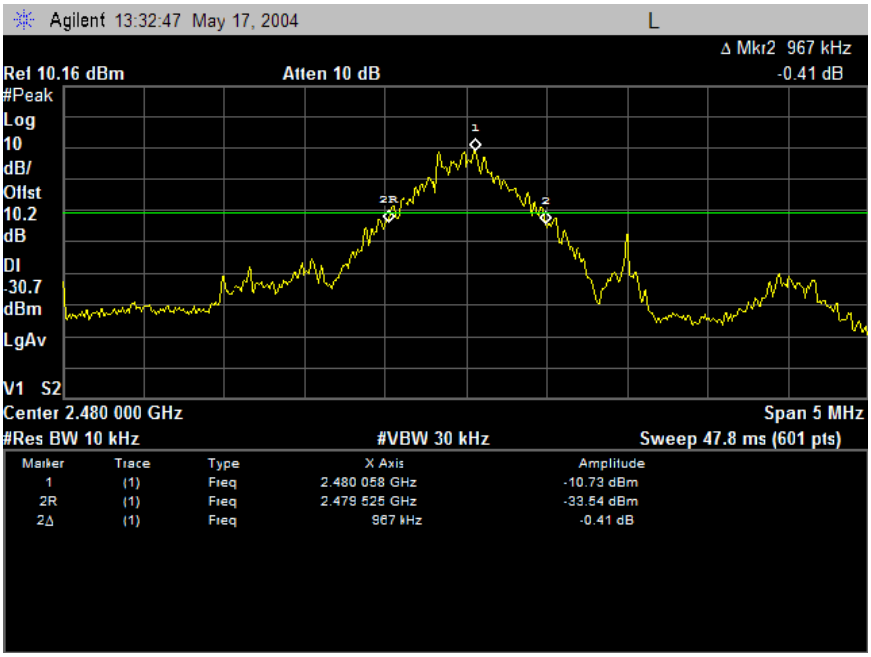
20 dB BANDWIDTH LOW CH



20 dB BANDWIDTH MID CH



20 dB BANDWIDTH HIGH CH



7.2. 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.

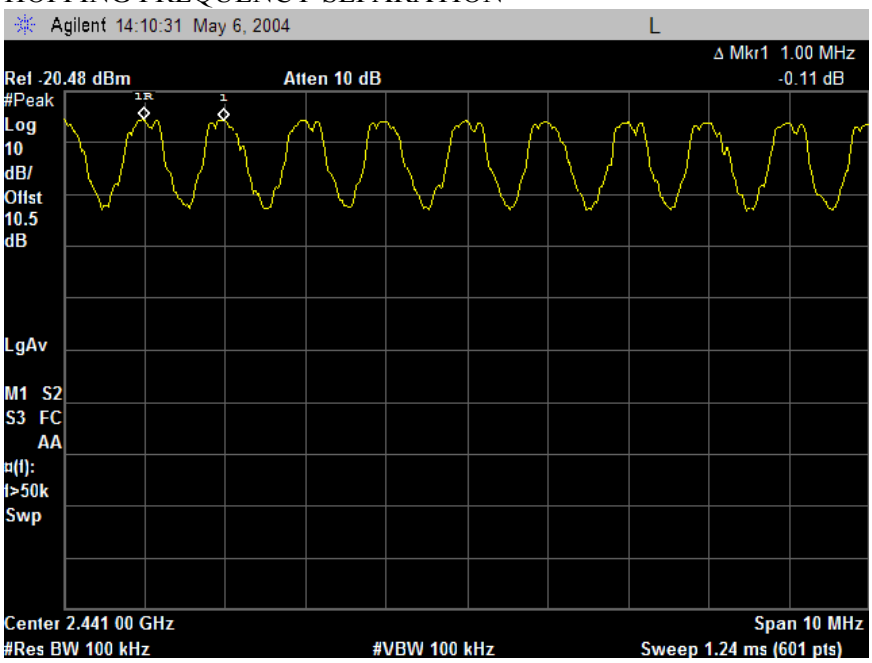
RESULTS

No non-compliance noted:

Channel separation is 1 MHz.

HOPPING FREQUENCY SEPARATION

HOPPING FREQUENCY SEPARATION



7.3. NUMBER OF HOPPING CHANNELS

LIMIT

§15.247 (a) (1) (iii) Frequency hopping systems in the 2400 – 2483.5 MHz band shall use at least 15 non-overlapping channels.

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.

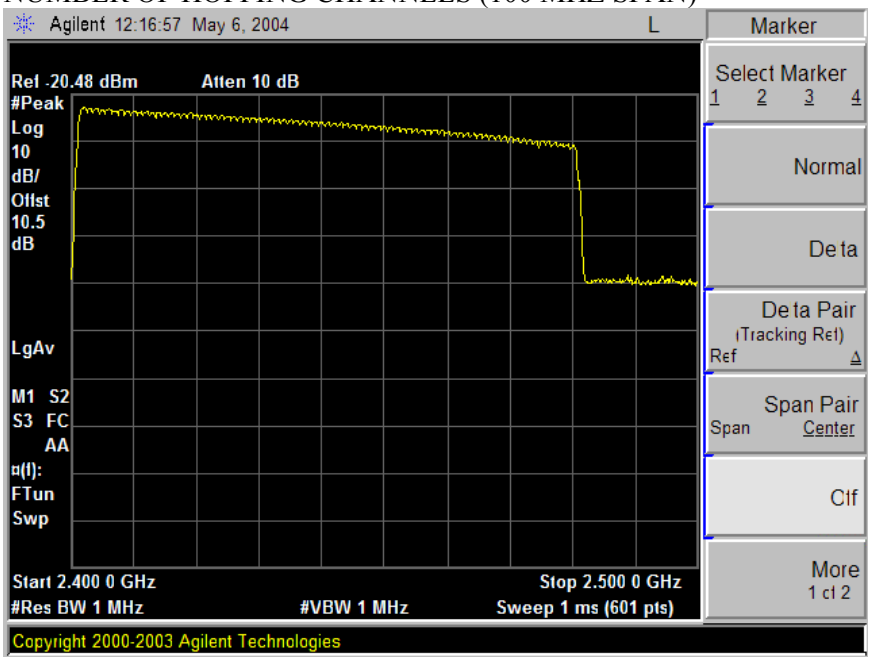
RESULTS

No non-compliance noted:

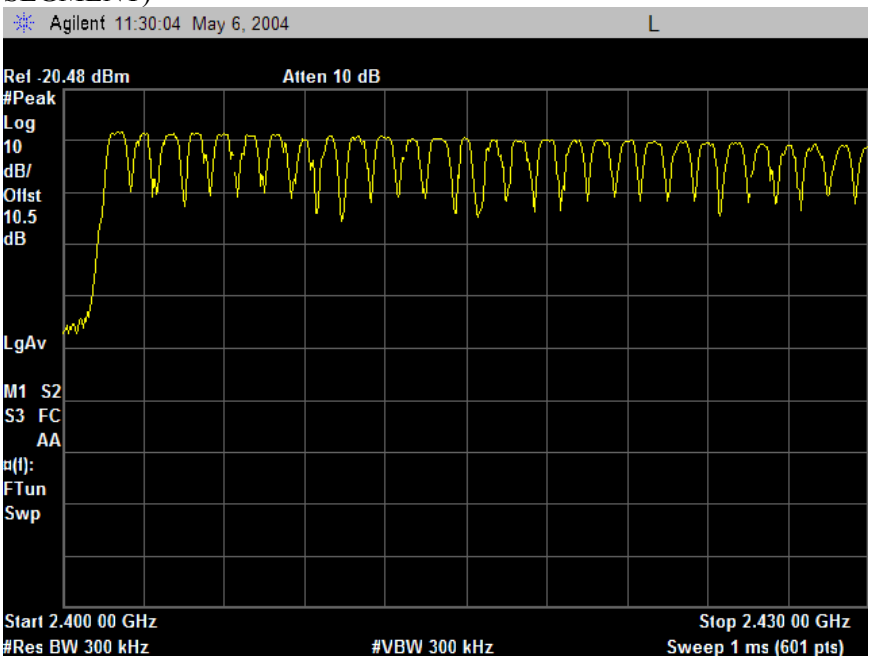
79 Channels observed.

NUMBER OF HOPPING CHANNELS

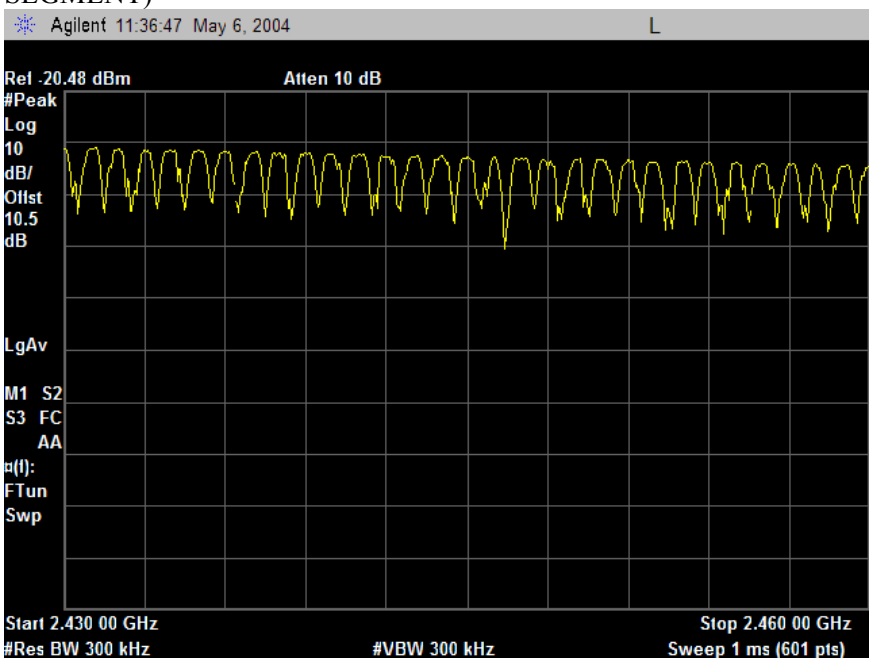
NUMBER OF HOPPING CHANNELS (100 MHZ SPAN)



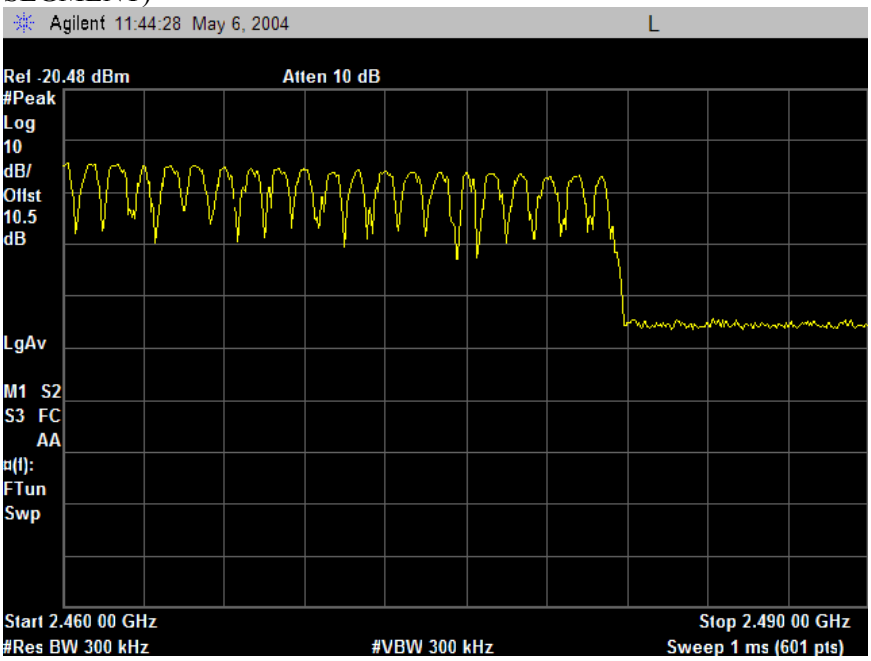
NUMBER OF HOPPING CHANNELS (30 MHZ SPAN, FIRST SEGMENT)



NUMBER OF HOPPING CHANNELS (30 MHZ SPAN, SECOND SEGMENT)



NUMBER OF HOPPING CHANNELS (30 MHZ SPAN, THIRD SEGMENT)



7.4. AVERAGE TIME OF OCCUPANCY

LIMIT

§15.247 (a) (1) (iii) Frequency hopping systems in the 2400 – 2483.5 MHz band shall use at least 15 non-overlapping channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

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 3.16 second scan, to enable resolution of each occurrence.

The average time of occupancy in the specified 31.6 second period (79 channels * 0.4 s) is equal to 10 * (# of pulses in 3.16 s) * pulse width.

RESULTS

No non-compliance noted:

Pulse width (DH1) = 430 us

# of pulses in 3.16 s = 6

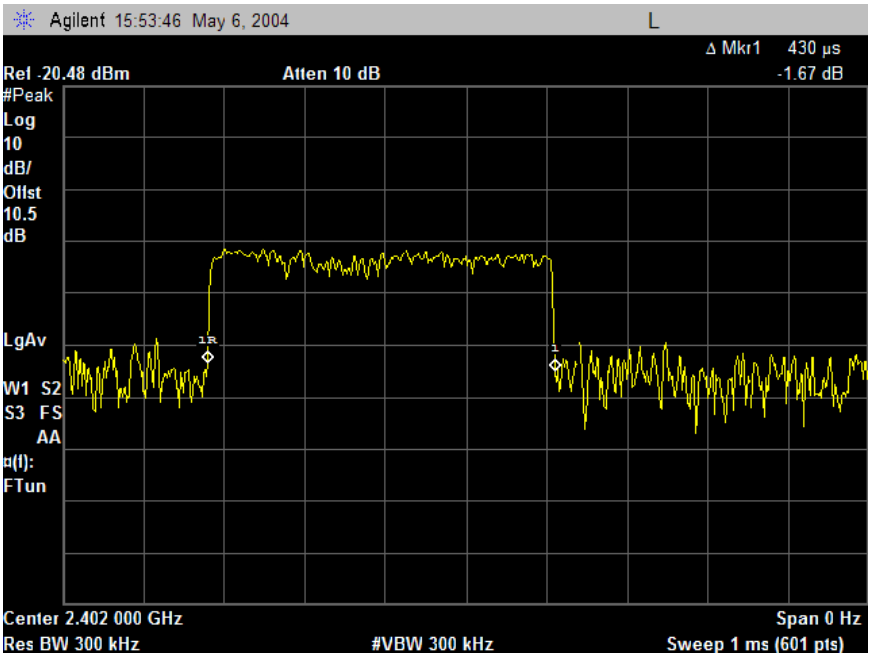
# of pulses in 31.6 s = 6 x 10 = 60

Average time of occupancy is 60 x 430 us = 25.8 ms

Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
0.0258	0.400	0.3742

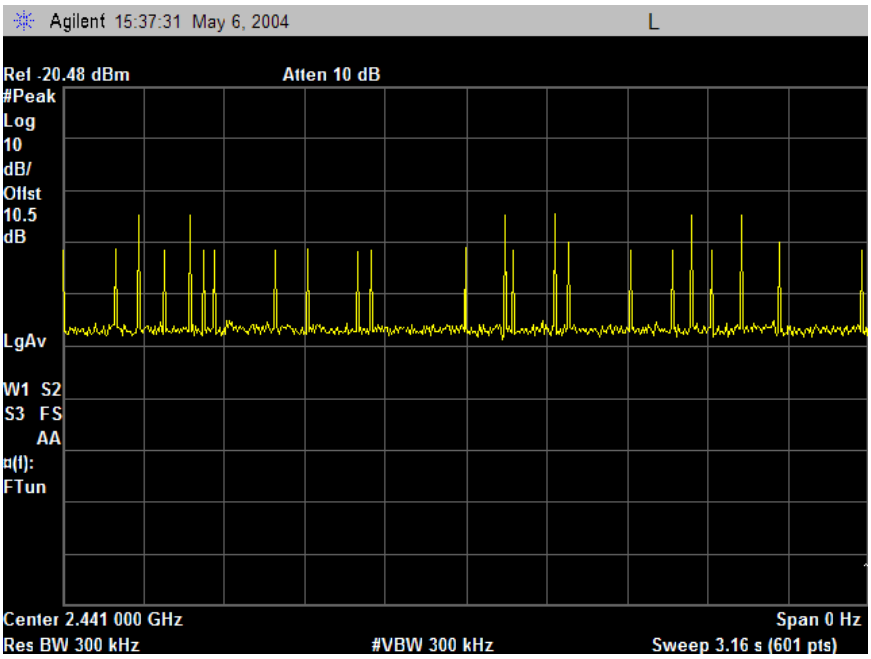
PULSE WIDTH

PULSE WIDTH



NUMBER OF PULSES IN 3.16 SECOND OBSERVATION PERIOD

NUMBER OF PULSES



Note: Lower amplitude signals are adjacent channels due to the IF filter response of the spectrum analyzer in 0 span.

7.5. 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) (1) For frequency hopping systems operating in the 2400-2483.5 MHz band employing at least 75 hopping channels: 1 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 1.0 dBi, therefore the limit is 30 dBm.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer and the analyzer bandwidth is set to a value greater than the 20 dB bandwidth of the EUT.

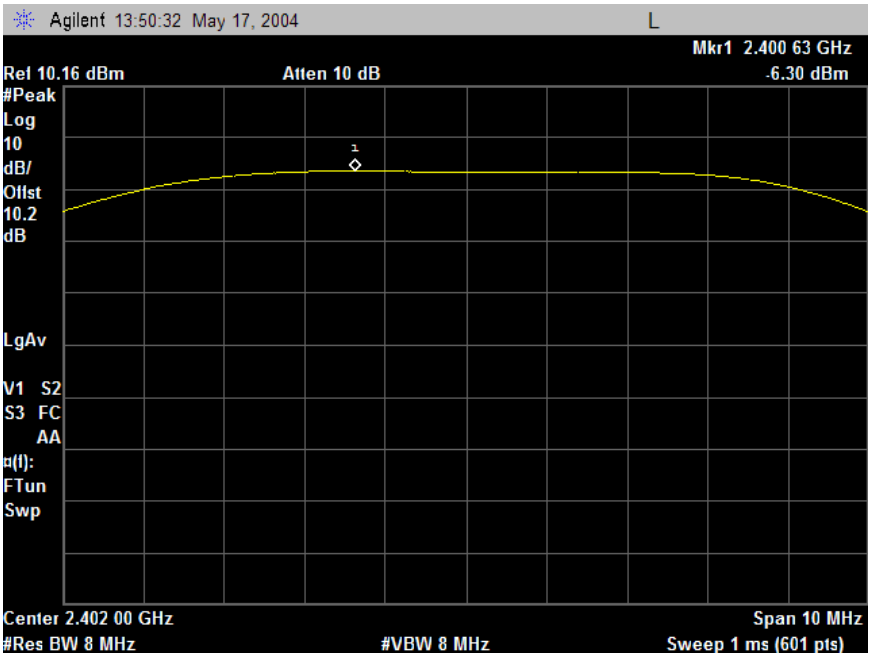
RESULTS

No non-compliance noted:

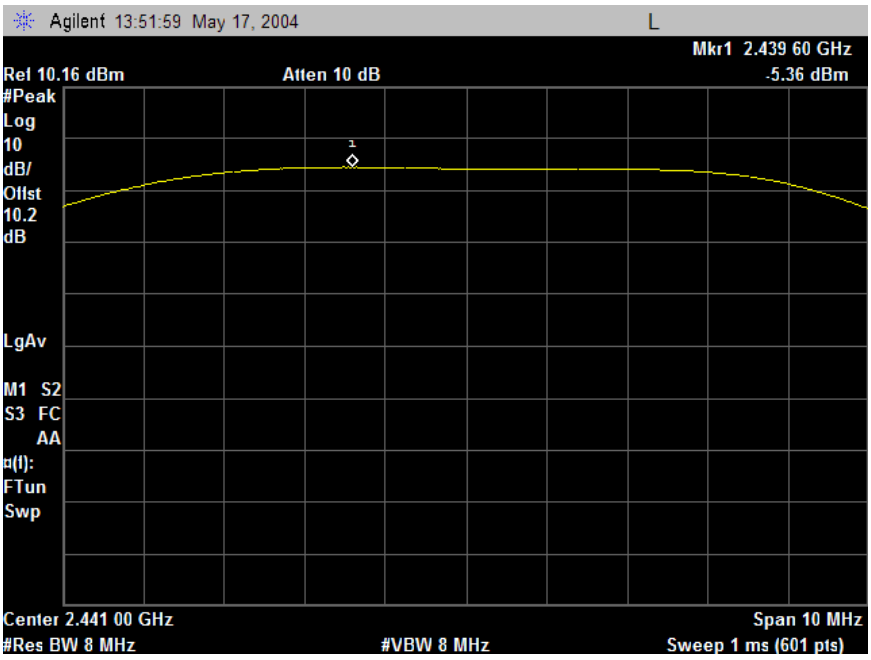
Channel	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-6.30	30	-36.30
Middle	2441	-5.36	30	-35.36
High	2480	-4.45	30	-34.45

OUTPUT POWER

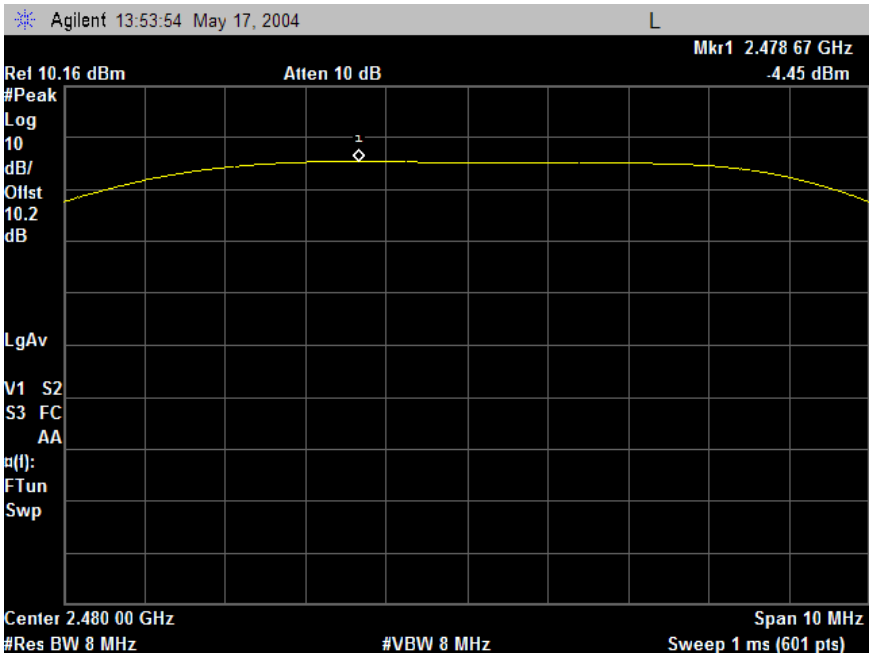
PEAK POWER LOW CH



PEAK POWER MID CH



PEAK POWER HIGH CH



7.6. AVERAGE POWER

AVERAGE POWER LIMIT

None; for reporting purposes only.

TEST PROCEDURE

The transmitter output is connected to a power meter.

RESULTS

The cable assembly insertion loss of 10.16 dB (including 10 dB pad and .16 dB cable) was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	-8.48
Middle	2441	-7.34
High	2480	-6.35

7.7. PEAK POWER SPECTRAL DENSITY

LIMIT

§15.247 (d) For direct sequence systems, the peak power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission.

§15.247 (f) The digital modulation operation of the hybrid system, with the frequency hopping turned off, shall comply with the power density requirements of paragraph (d) of this section.

TEST PROCEDURE

The transmitter output is connected to a spectrum analyzer, the maximum level in a 3 kHz bandwidth is measured with the spectrum analyzer using RBW = 3 kHz and VBW > 3 kHz, sweep time = span / 3 kHz, and video averaging is turned off. The PPSD is the highest level found across the emission in any 3 kHz band.

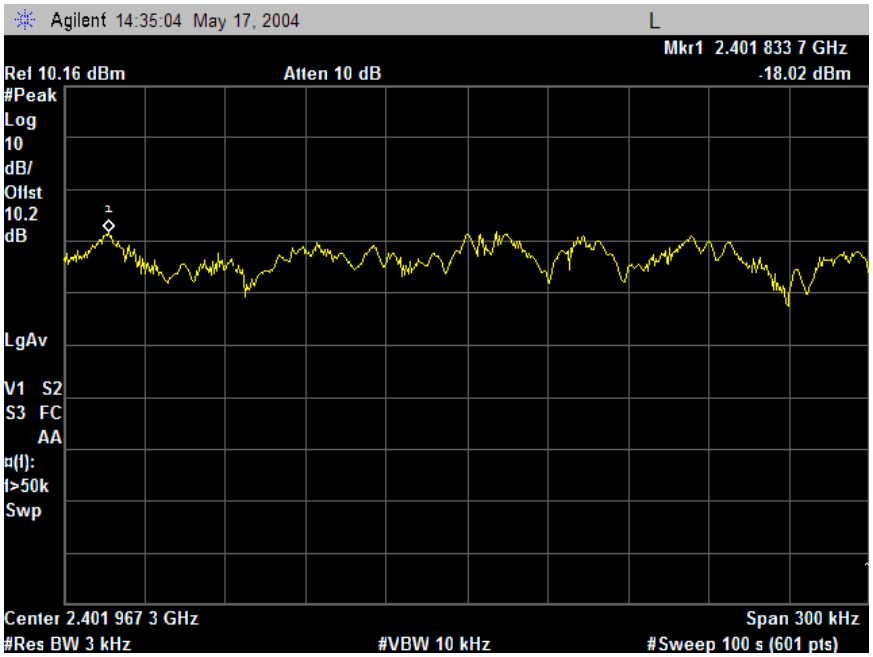
RESULTS

No non-compliance noted:

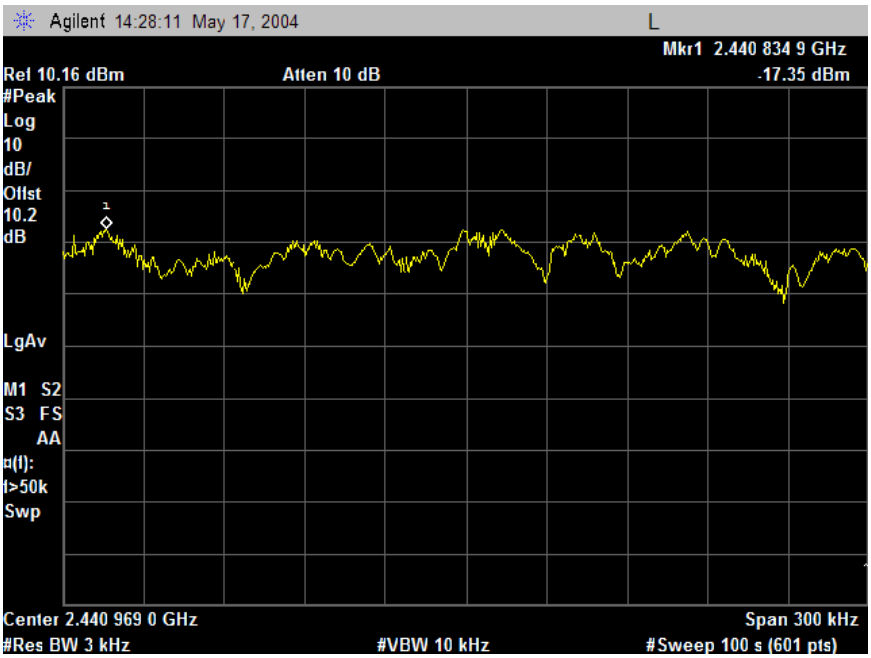
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-18.02	8	-26.02
Middle	2441	-17.35	8	-25.35
High	2480	-16.42	8	-24.42

PEAK POWER SPECTRAL DENSITY

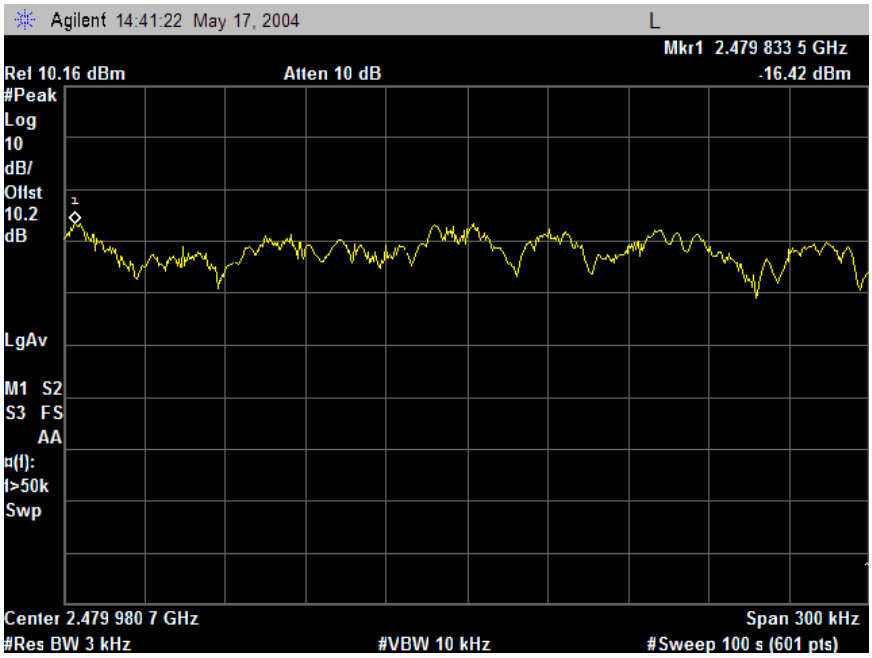
PPSD LOW CH



PPSD MID CH



PPSD HIGH CH



7.8. 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 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

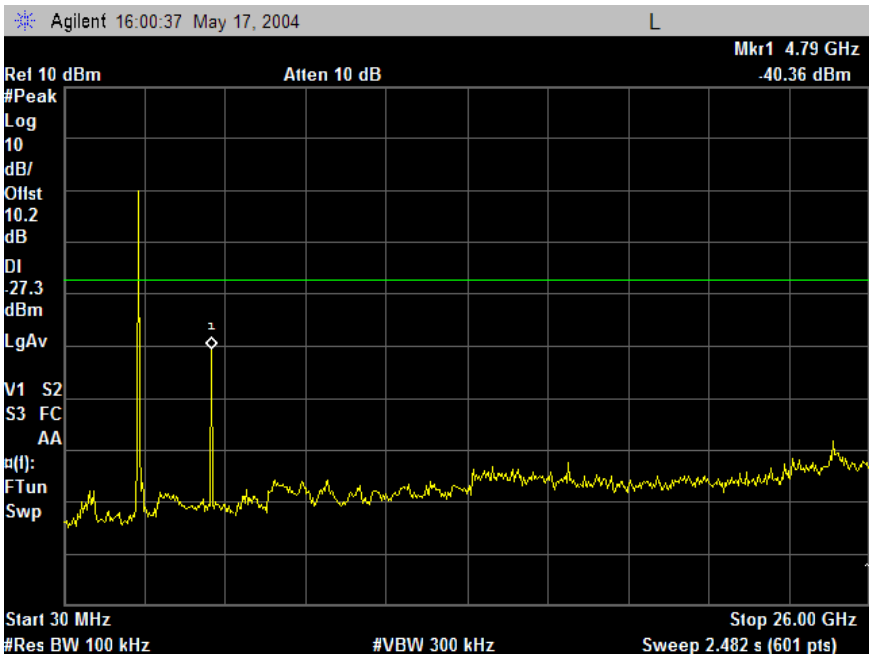
RESULTS

No non-compliance noted:

SPURIOUS EMISSIONS, LOW CHANNEL

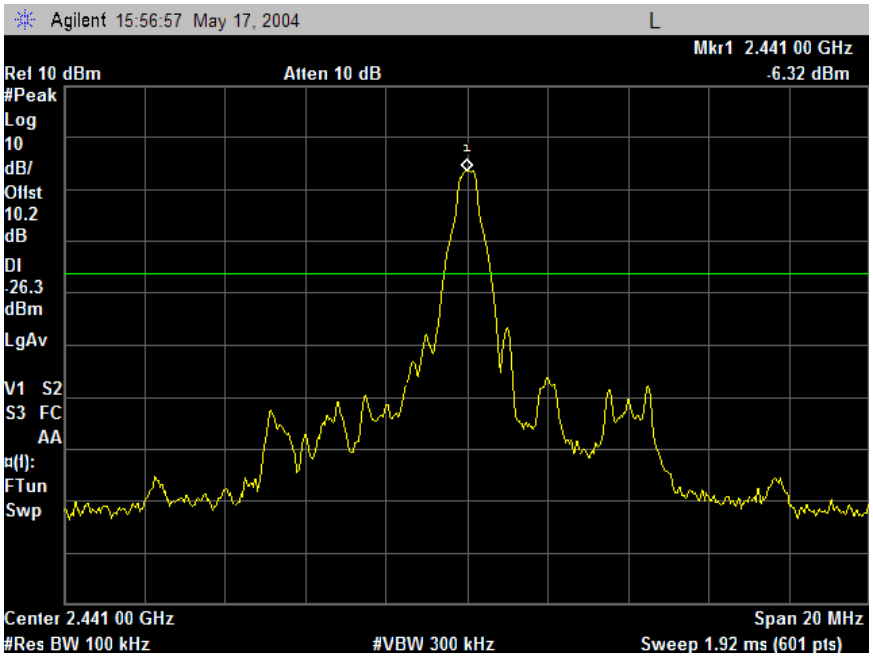
LOW CHANNEL BANDEDGE

LOW CHANNEL SPURIOUS

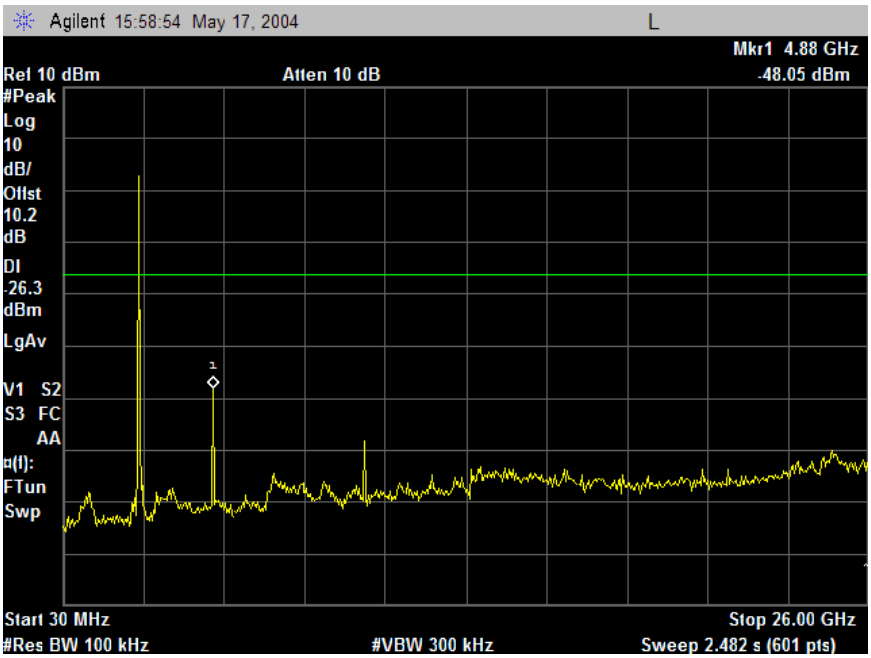


SPURIOUS EMISSIONS, MID CHANNEL

MID CHANNEL REFERENCE



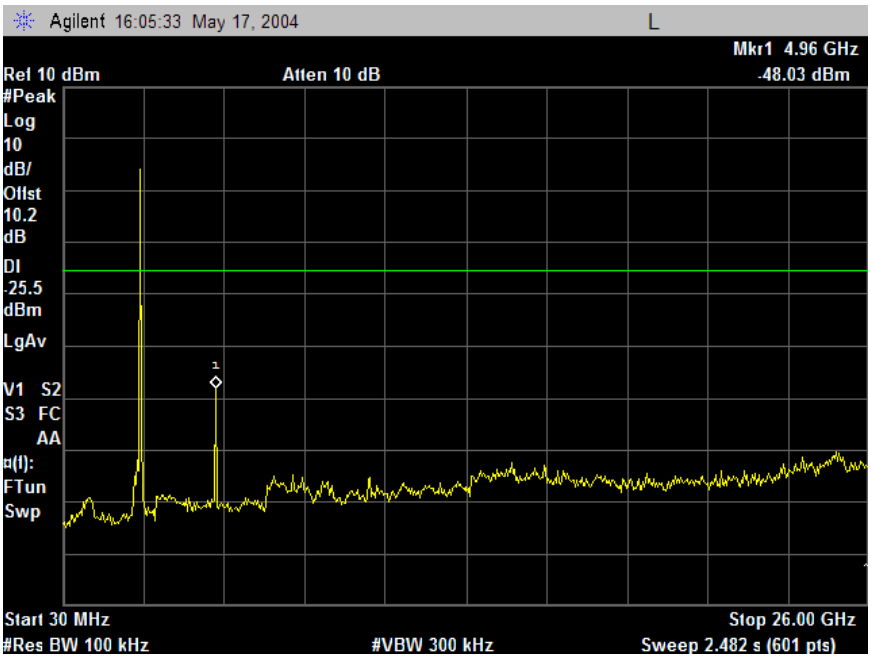
MID CHANNEL SPURIOUS



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

7.9. RADIATED EMISSIONS

7.9.1. 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.

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.

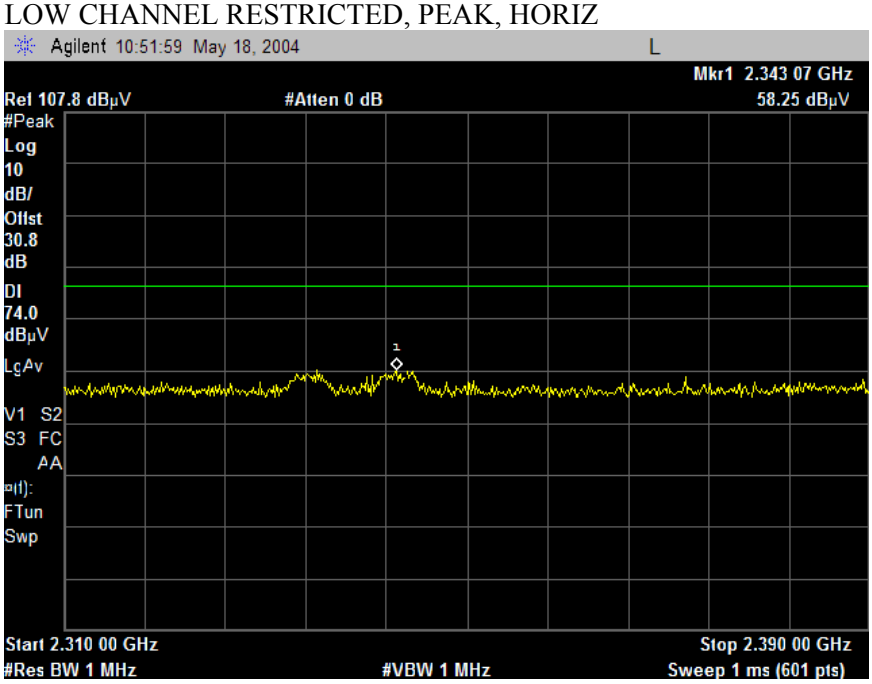
RESULTS

No non-compliance noted:

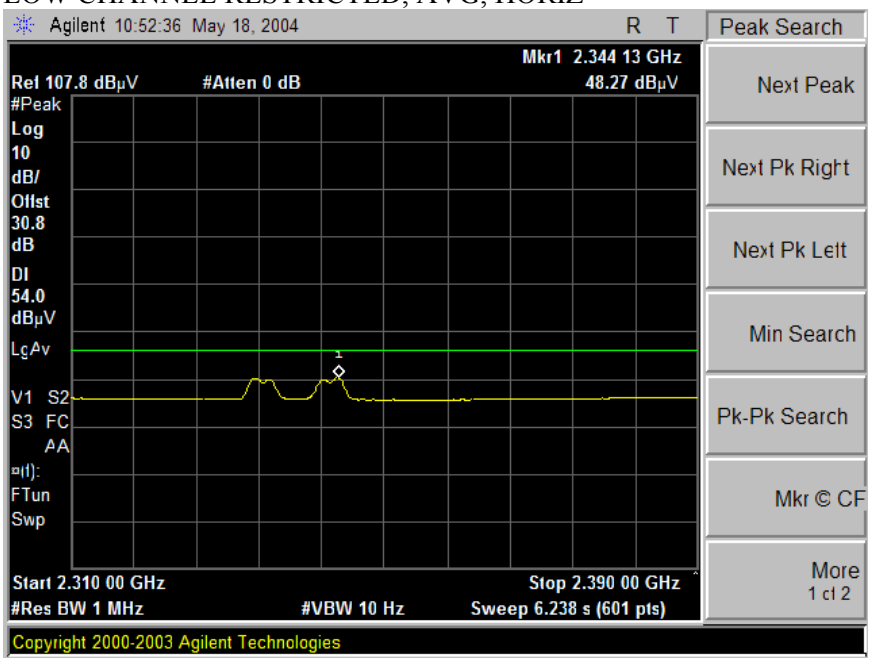
7.9.2. TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHZ

RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

LOW CHANNEL RESTRICTED, PEAK, HORIZ

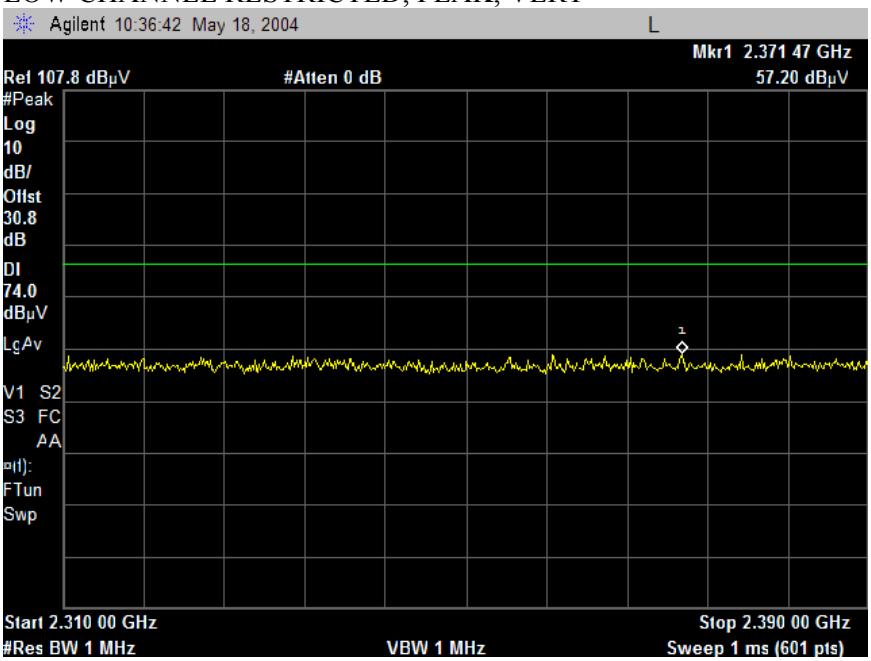


LOW CHANNEL RESTRICTED, AVG, HORIZ

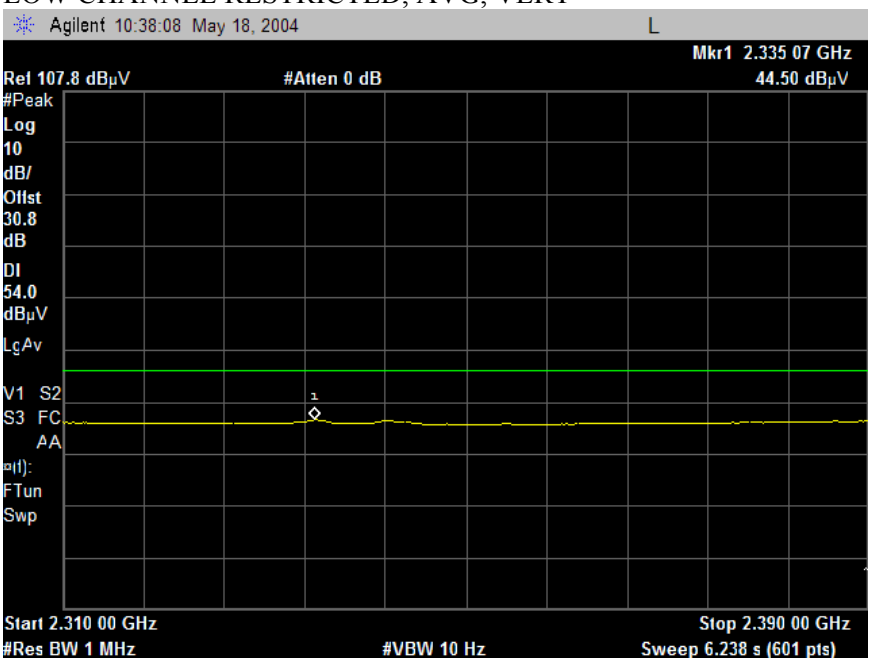


RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)

LOW CHANNEL RESTRICTED, PEAK, VERT

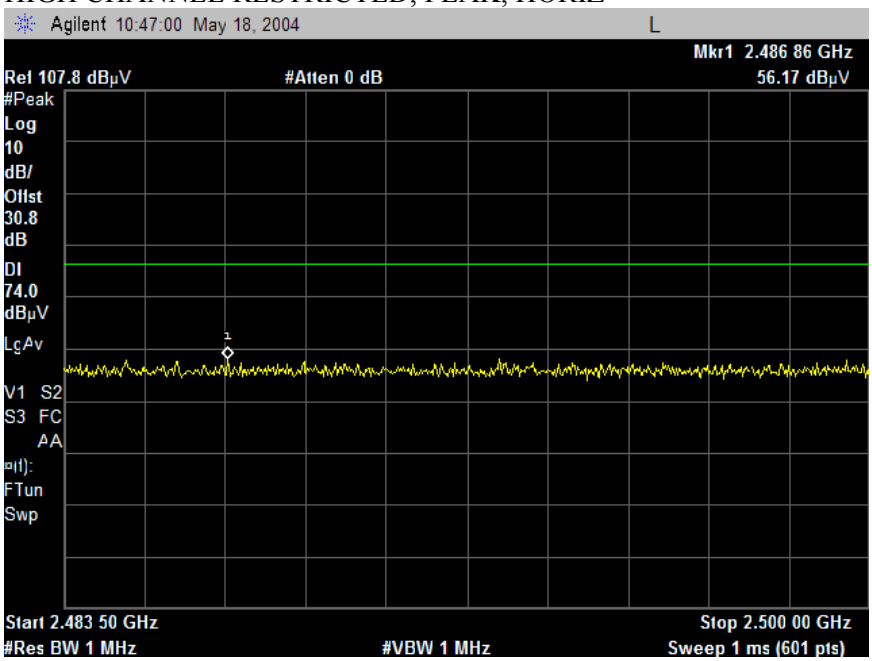


LOW CHANNEL RESTRICTED, AVG, VERT

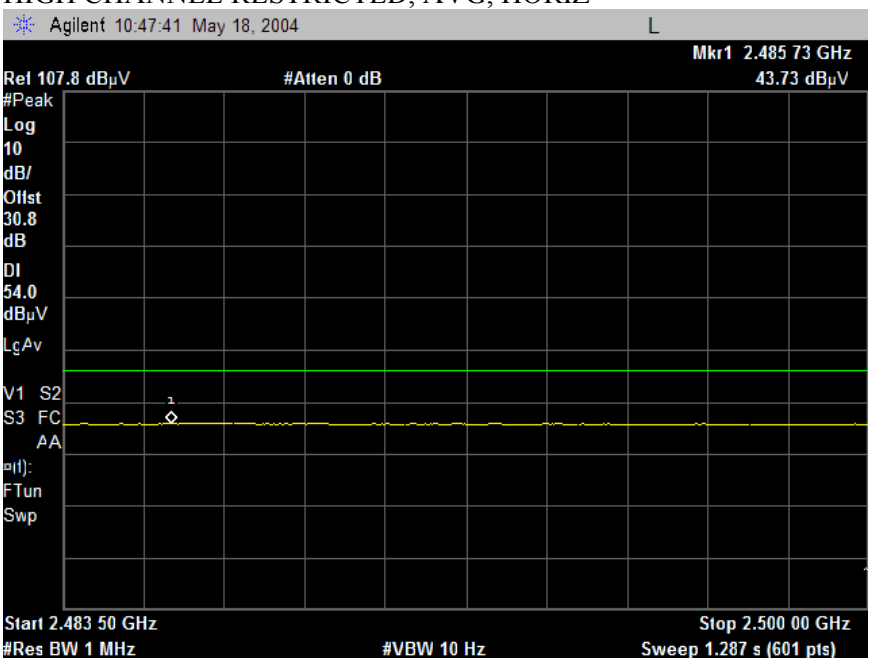


RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)

HIGH CHANNEL RESTRICTED, PEAK, HORIZ

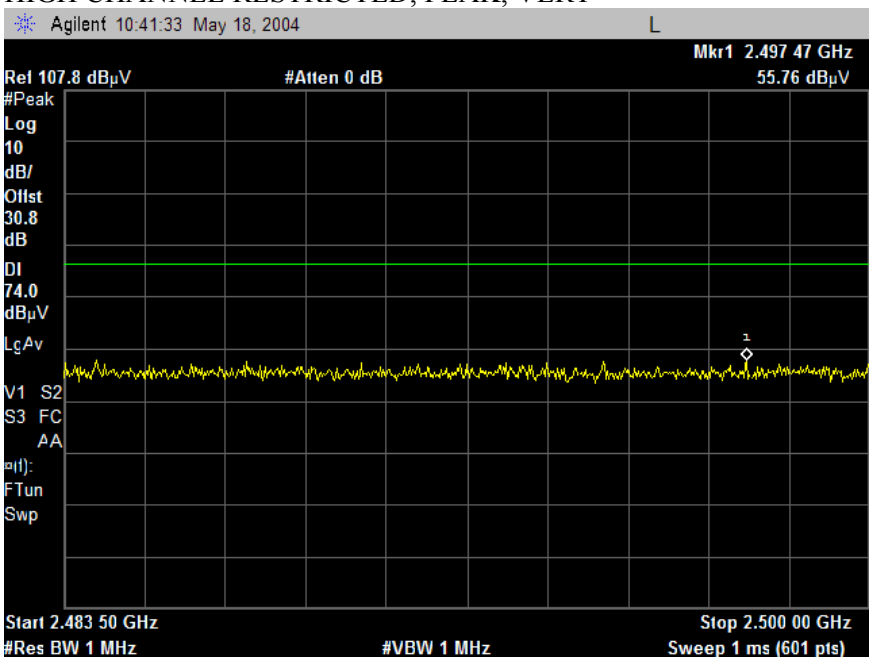


HIGH CHANNEL RESTRICTED, AVG, HORIZ

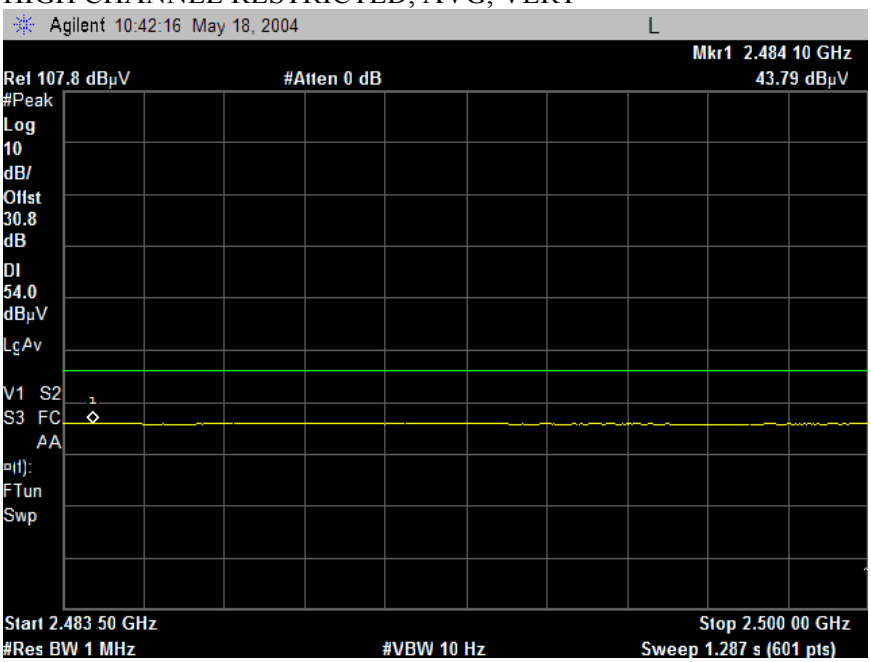


RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)

HIGH CHANNEL RESTRICTED, PEAK, VERT



HIGH CHANNEL RESTRICTED, AVG, VERT



DUTY CYCLE CORRECTION FACTOR

*In accordance with FCC Public Notice DA-00-705, the "duty cycle correction factor" for spurious radiated emissions is 20 log * (1.25 ms / 100 ms) = -38 dB, which was used to correct the average spurious reading.

DH1 = 625 us

625 us x 2 = 1.25 ms

20 log (1.25 ms / 100 ms) = - 38 dB

HARMONICS AND SPURIOUS EMISSIONS

05/18/04 **High Frequency Measurement**

Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: David Garcia
Project #: 04u2730
Company: palmOne
EUT Descrip.: PDA with Bluetooth
EUT M/N: Tungsten 5
Test Target: FCC IC
Mode Oper: Transmitting, L,M, H Channels

Test Equipment:

EMCO Horn 1-18GHz	Spectrum Analyzer	Pre-amplifer 1-26GHz	Pre-amplifer 26-40GHz	Horn > 18GHz
T73; S/N: 6717 @3m	Agilent E4446A Analyzer	T63 Miteq 646456		

Hi Frequency Cables: ☑ (2 ft) ☐ (2.0 ft) ☐ (3 ft) ☑ (12 ft)

Peak Measurements:
1 MHz Resolution Bandwidth
1MHz Video Bandwidth

Average Measurements:
1 MHz Resolution Bandwidth
10Hz Video Bandwidth

f GHz	Dist feet	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	HPF	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes
2402 Channel															
1.144	9.8	46.8	35.3	24.3	1.3	-36.5	0.0	1.0	36.9	25.4	74.0	54.0	-37.1	-66.6	V
4.804	9.8	53.8	51.7	33.4	2.9	-35.3	0.0	1.0	55.7	53.6	74.0	54.0	-18.3	-38.4	V
1.144	9.8	46.1	34.5	24.3	1.3	-36.5	0.0	1.0	36.2	24.6	74.0	54.0	-37.8	-67.4	H
4.804	9.8	56.2	54.2	33.4	2.9	-35.3	0.0	1.0	58.1	56.1	74.0	54.0	-15.9	-35.9	H
2441 Channel															
1.144	9.8	47.4	35.8	24.3	1.3	-36.5	0.0	1.0	37.5	25.9	74.0	54.0	-36.5	-66.1	V
4.882	9.8	65.3	63.8	33.4	2.9	-35.3	0.0	1.0	67.3	65.8	74.0	54.0	-6.7	-26.2	V
7.323	9.8	45.9	35.6	35.9	3.7	-34.6	0.0	1.0	51.8	41.5	74.0	54.0	-22.2	-50.5	V
1.144	9.8	45.1	35.3	24.3	1.3	-36.5	0.0	1.0	35.2	25.4	74.0	54.0	-38.8	-66.6	H
4.882	9.8	58.0	56.0	33.4	2.9	-35.3	0.0	1.0	60.0	58.0	74.0	54.0	-14.0	-34.0	H
7.323	9.8	42.0	33.4	35.9	3.7	-34.6	0.0	1.0	47.9	39.3	74.0	54.0	-26.1	-52.7	H
2480 Channel															
1.144	9.8	46.5	34.9	24.3	1.3	-36.5	0.0	1.0	36.6	25.0	74.0	54.0	-37.4	-67.0	V
4.960	9.8	61.5	59.7	33.5	2.9	-35.3	0.0	1.0	63.6	61.8	74.0	54.0	-10.4	-30.2	V
7.440	9.8	44.2	33.3	36.1	3.7	-34.5	0.0	1.0	50.4	39.5	74.0	54.0	-23.6	-52.5	V
1.144	9.8	43.8	34.8	24.3	1.3	-36.5	0.0	1.0	33.9	24.9	74.0	54.0	-40.1	-67.1	H
4.960	9.8	54.6	52.2	33.5	2.9	-35.3	0.0	1.0	56.7	54.3	74.0	54.0	-17.3	-37.7	H
7.440	9.8	42.3	31.9	36.1	3.7	-34.5	0.0	1.0	48.5	38.1	74.0	54.0	-25.5	-53.9	H
Note: A -38dB correction factor has been applied to the average readings.															

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		

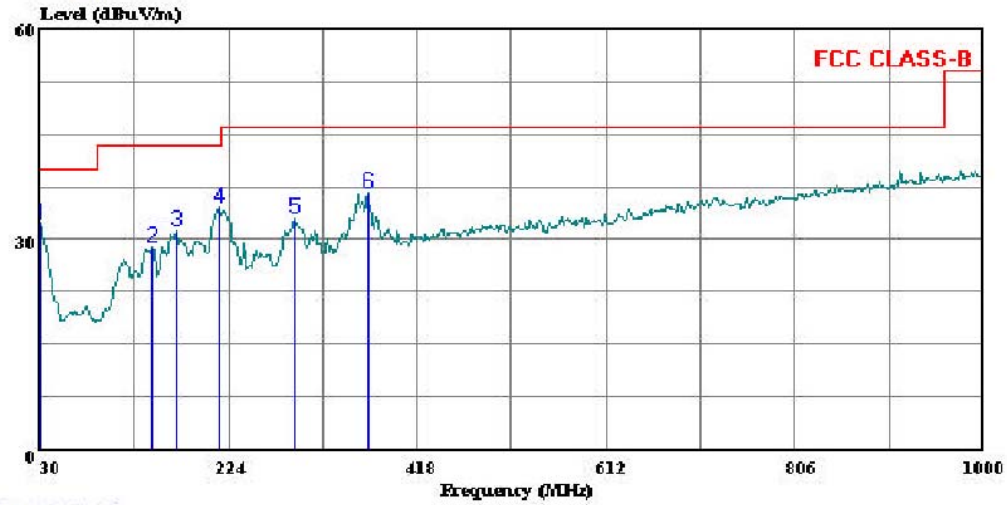
7.9.3. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz

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

HORIZONTAL PLOT

COMPLIANCE Engineering Services, Inc.
561F Monterey Road
San Jose, CA 95131
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 24 File#: 04U2730.EMI Date: 05-18-2004 Time: 16:47:58



(Audix ATC)
Trace: 23 Ref Trace:

Condition: FCC CLASS-B
Test Operator: : David Garcia
Project #: : 04U2730
Company: : palmOne
EUT: : PDA with Bluetooth
Model No: : Tungsten T5
Configuration: : EUT
Target of Test: : FCC CLASS B
Mode of Operation: Tx WORST CASE, High, Horizontal

Page: 1

HORIZONTAL DATA

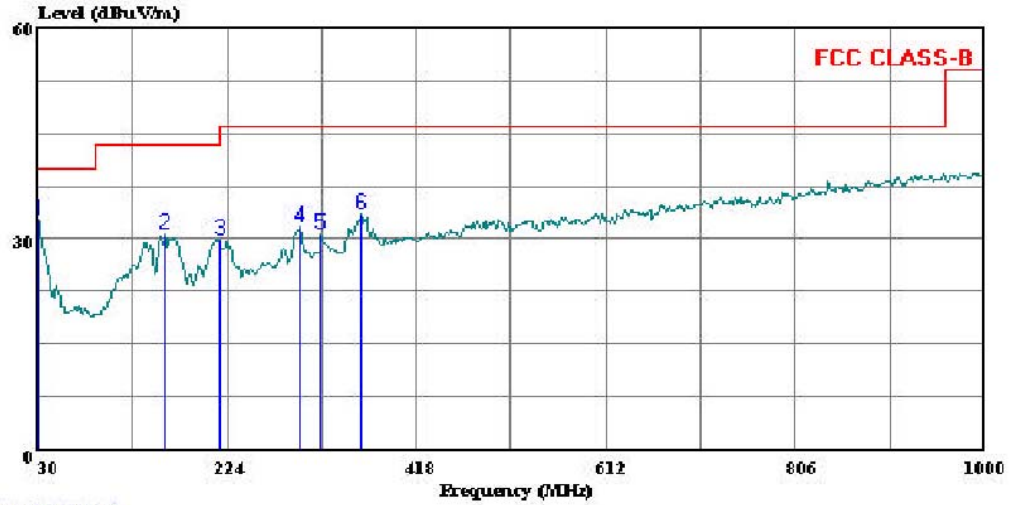
	Freq	Remark	Read Level	Factor	Level	Limit Line	Over Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	30.970	Peak	9.25	22.95	32.20	40.00	-7.80
2	145.430	Peak	14.22	14.72	28.93	43.50	-14.57
3	169.680	Peak	17.69	13.51	31.20	43.50	-12.30
4	213.330	Peak	21.67	12.85	34.52	43.50	-8.98
5	290.930	Peak	17.20	15.74	32.94	46.00	-13.07
6	366.590	Peak	19.23	17.35	36.58	46.00	-9.42

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

VERTICAL PLOT

561F Monterey Road
San Jose, CA 95131
Tel: (408) 463-0888
Fax: (408) 463-0885

Data#: 14 File#: 04U2730.EMI Date: 05-18-2004 Time: 15:55:55



(Audix ATC)
Trace: 13 Ref Trace:

Condition: FCC CLASS-B
Test Operator: : David Garcia
Project #: : 04U2730
Company: : palmOne
EUT: : PDA with Bluetooth
Model No: : Tungsten T5
Configuration: : EUT
Target of Test: : FCC CLASS B
Mode of Operation: Tx WORST CASE, Low, Vertical

Page: 1

VERTICAL DATA

	Freq	Remark	Read Level	Factor	Level	Limit Line	Over Limit
	MHz		dBuV	dB	dBuV/m	dBuV/m	dB
1	30.970	Peak	9.81	22.95	32.76	40.00	-7.24
2	159.980	Peak	16.96	13.77	30.73	43.50	-12.77
3	216.240	Peak	16.94	12.91	29.85	46.00	-16.15
4	298.690	Peak	15.68	15.91	31.59	46.00	-14.42
5	320.030	Peak	14.44	16.23	30.67	46.00	-15.33
6	361.740	Peak	16.40	17.22	33.62	46.00	-12.38

7.9.4. DIGITAL DEVICE RADIATED EMISSIONS

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

DIGITAL RADIATED DATA

COMPLIANCE Certification Services
FCC, VCCI, CISPR, CE, AUSTEL, NZ
UL, CSA, TUV, BSMI, DHHS, NVLAP
561F MONTEREY ROAD, SAN JOSE, CA 95037-9001
PHONE: (408) 463-0885 FAX: (408) 463-0888

Project #:	04U2730-xx
Report #:	04U2730-xx
Date& Time:	05/07/04 3:42 PM
Test Engr:	D.Garcia
Company:	PalmOne
EUT Description:	PDA w/Bluetooth
Test Configuration :	Digital configuration, Hotsync cable interface
Type of Test:	FCC Class B
Mode of Operation:	Printing H's, HotSync

A-Site | B-Site | C-Site | F-Site | 6 Worst Data | Descending

Freq. (MHz)	Reading (dBuV)	AF (dB)	Closs (dB)	Pre-amp (dB)	Level (dBuV/m)	Limit FCC_B	Margin (dB)	Pol (H/V)	Az (Deg)	Height (Meter)	Mark (P/Q/A)
87.23	45.70	8.23	2.03	29.20	26.75	40.00	-13.25	3mH	180.00	1.50	P
106.63	44.60	11.19	2.25	29.12	28.92	43.50	-14.58	3mH	45.00	1.50	P
135.73	45.60	12.17	2.55	28.96	31.37	43.50	-12.13	3mH	0.00	2.00	P
271.71	50.70	12.35	3.79	28.44	38.41	46.00	-7.59	3mH	90.00	2.00	P
361.99	47.40	14.62	4.55	28.70	37.87	46.00	-8.13	3mH	20.00	2.00	P
396.22	46.70	15.74	4.85	28.87	38.42	46.00	-7.58	3mH	90.00	1.50	P
87.23	44.70	8.23	2.03	29.20	25.75	40.00	-14.25	3mV	90.00	1.50	P
101.67	47.10	10.67	2.20	29.13	30.83	43.50	-12.67	3mV	90.00	1.50	P
189.08	45.70	9.13	3.10	28.77	29.15	43.50	-14.35	3mV	180.00	1.50	P
371.76	39.30	14.94	4.63	28.75	30.13	46.00	-15.87	3mV	270.00	1.50	P
396.44	46.20	15.75	4.85	28.87	37.93	46.00	-8.07	3mV	90.00	1.00	P
528.51	46.30	17.79	5.75	29.20	40.64	46.00	-5.36	3mV	0.00	1.00	P

Total data #: 12
V.2b

7.10. 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.

7.10.1. STANDALONE POWERLINE CONDUCTED EMISSIONS

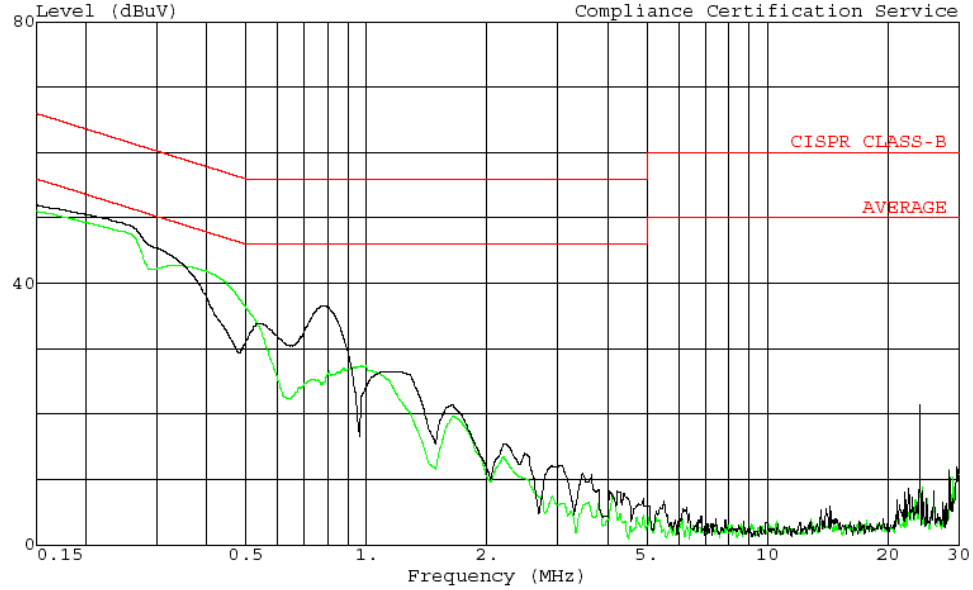
6 WORST EMISSIONS (NETBIT DV-0555R-1 AC ADAPTER)

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
0.15	51.91	--	--	0.00	66.00	56.00	-14.09	-4.09	L1
0.78	36.59	--	--	0.00	56.00	46.00	-19.41	-9.41	L1
24.01	21.49	--	--	0.00	60.00	50.00	-38.51	-28.51	L1
0.15	51.03	--	--	0.00	66.00	56.00	-14.97	-4.97	L2
0.36	42.52	--	--	0.00	60.00	50.00	-17.48	-7.48	L2
24.01	19.15	--	--	0.00	60.00	50.00	-40.85	-30.85	L2
6 Worst Data									

LINE 1 AND LINE 2 RESULTS

COMPLIANCE Engineering Services, Inc.
561F Monterey Road,
Morgan Hill, CA 95037 USA
Tel: (408) 463-0885
Fax: (408) 463-0888

Data#: 6 File#: FCCNTBIT.EMI Date: 06-07-2004 Time: 11:14:20



Trace: 14 Ref Trace:
Project # : 04U2730
Test Operator : David Garcia
Company : PalmOne
EUT : PDA with Bluetooth
Model : Tungsten T5
Configuration : EUT; NetBit DV-0555R-1 AC Adapter
Mode of Operation: Transmitting; mid channel
Target of Test : EN55022 B (FCC B)
Voltage : 115VAC/60Hz
: L1: Peak(Black) , L2: Peak(Green)

7.10.2. DIGITAL DEVICE POWERLINE CONDUCTED EMISSIONS

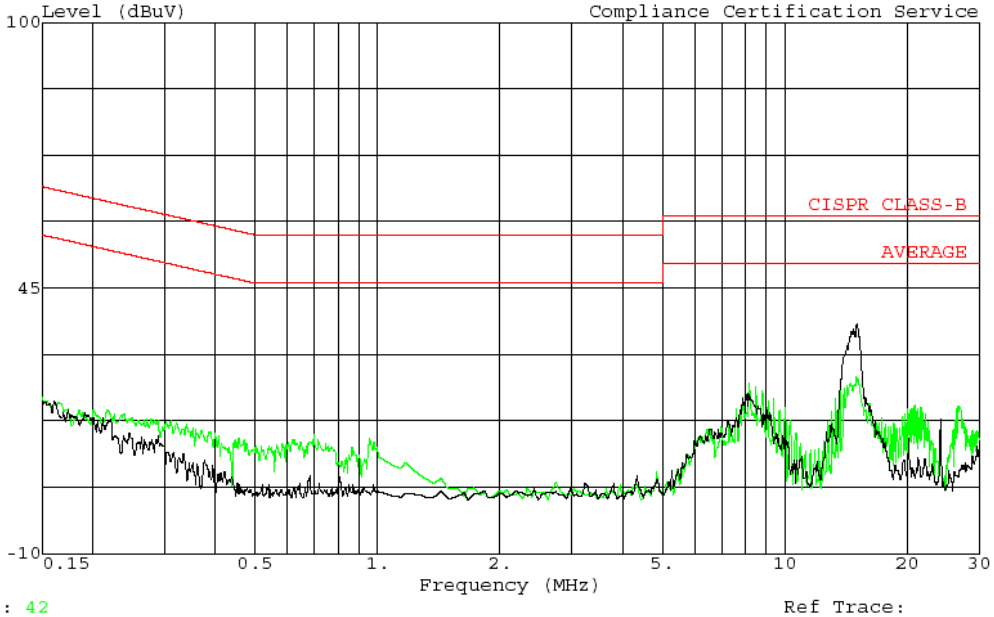
6 WORST EMISSIONS (PALM R3W005-500 AC ADAPTER)

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
8.15	23.12	--	--	0.00	60.00	50.00	-36.88	-26.88	L1
15.07	37.62	--	--	0.00	60.00	50.00	-22.38	-12.38	L1
24.14	17.84	--	--	0.00	60.00	50.00	-42.16	-32.16	L1
8.19	25.20	--	--	0.00	60.00	50.00	-34.80	-24.80	L2
13.70	24.42	--	--	0.00	60.00	50.00	-35.58	-25.58	L2
14.99	26.58	--	--	0.00	60.00	50.00	-33.42	-23.42	L2
6 Worst Data									

LINE 1 AND LINE 2 RESULTS

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

Data#: 49 File#: 04U2730.EMI Date: 05-11-2004 Time: 16:31:41

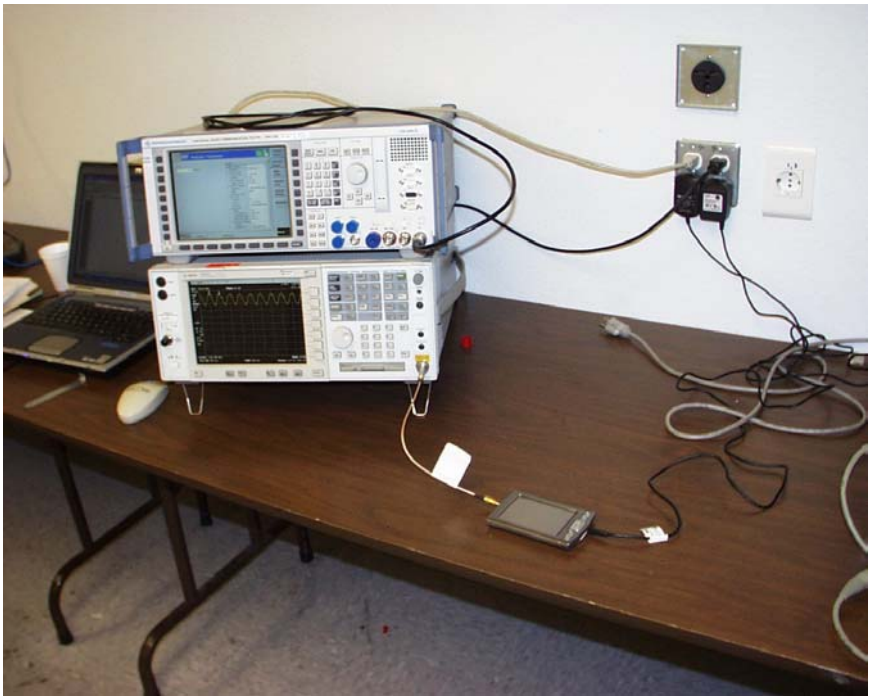


Trace: 42 Ref Trace:
Project # : 04U2730
Test Operator : David Garcia
Company : palmOne Inc.
EUT : PDA with Bluetooth
Model : Tungsten T5
Configuration : EUT/Desktop/Headphones; Palm AC Adapter
Mode of Operation: Hotsync worst case
Target of Test : FCC CISPR B Worst Case
Voltage : 115 VAC/60Hz
: L1: Peak (Black) L2: Peak (Green)

8. SETUP PHOTOS

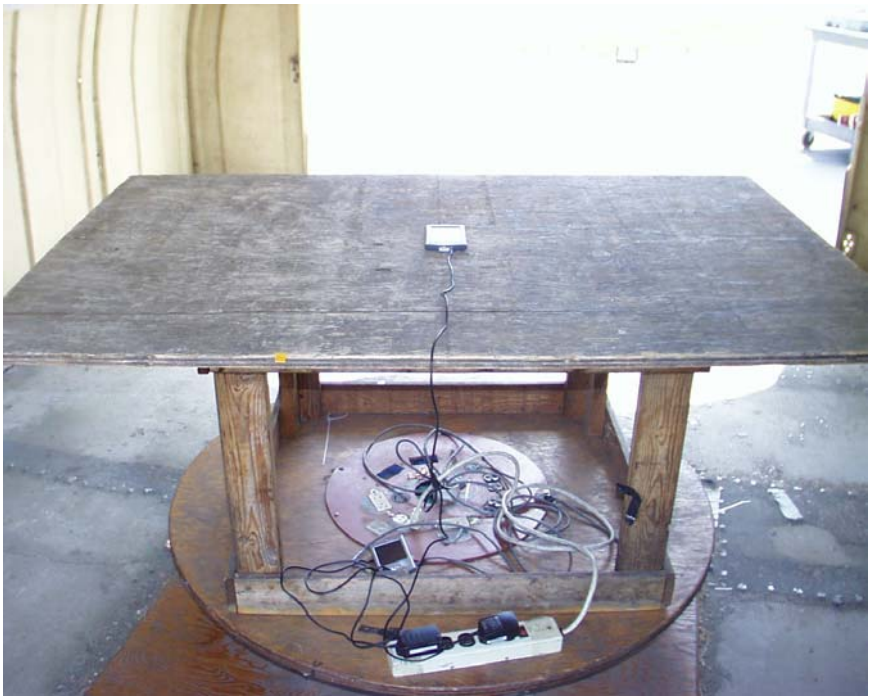
ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP

ANTENNA PORT CONDUCTED PHOTO



RADIATED RF MEASUREMENT SETUP

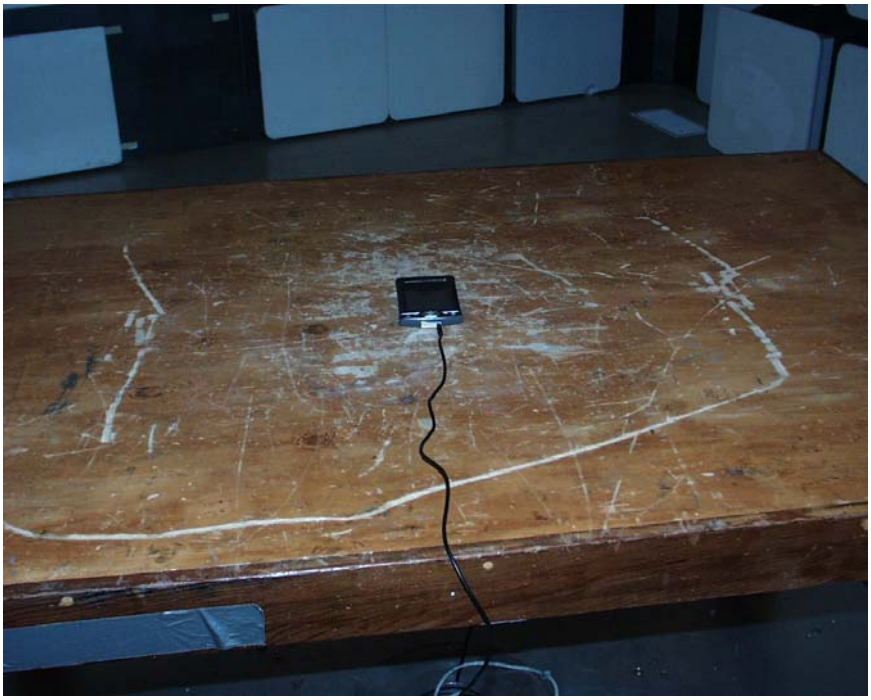
RADIATED FRONT PHOTO



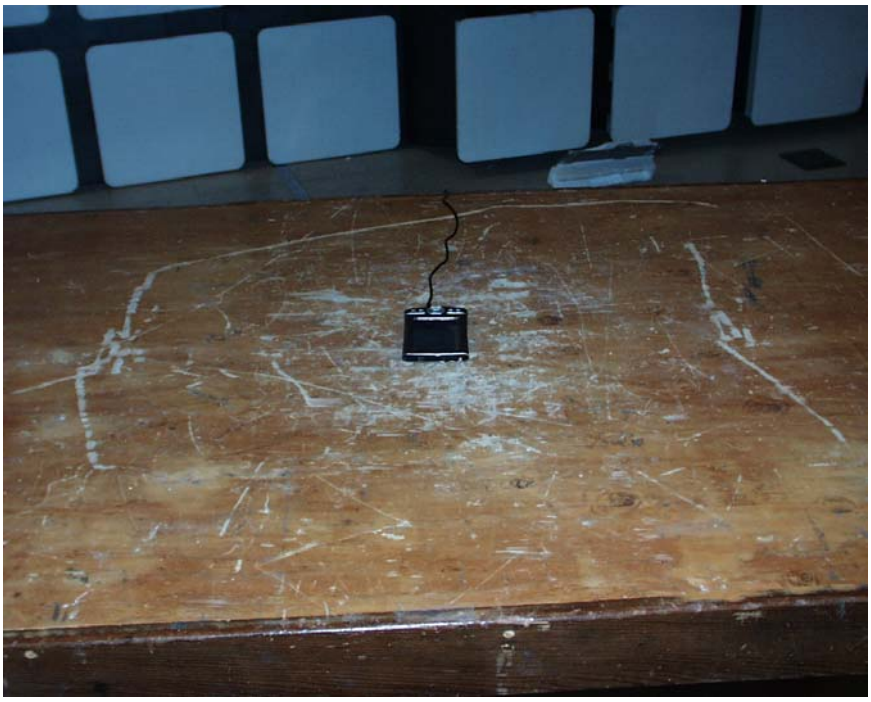
RADIATED BACK PHOTO

RADIATED RF MEASUREMENT SETUP

RADIATED FRONT PHOTO



RADIATED BACK PHOTO



DIGITAL DEVICE RADIATED EMISSIONS SETUP

DIGITAL DEVICE FRONT PHOTO

DIGITAL DEVICE BACK PHOTO

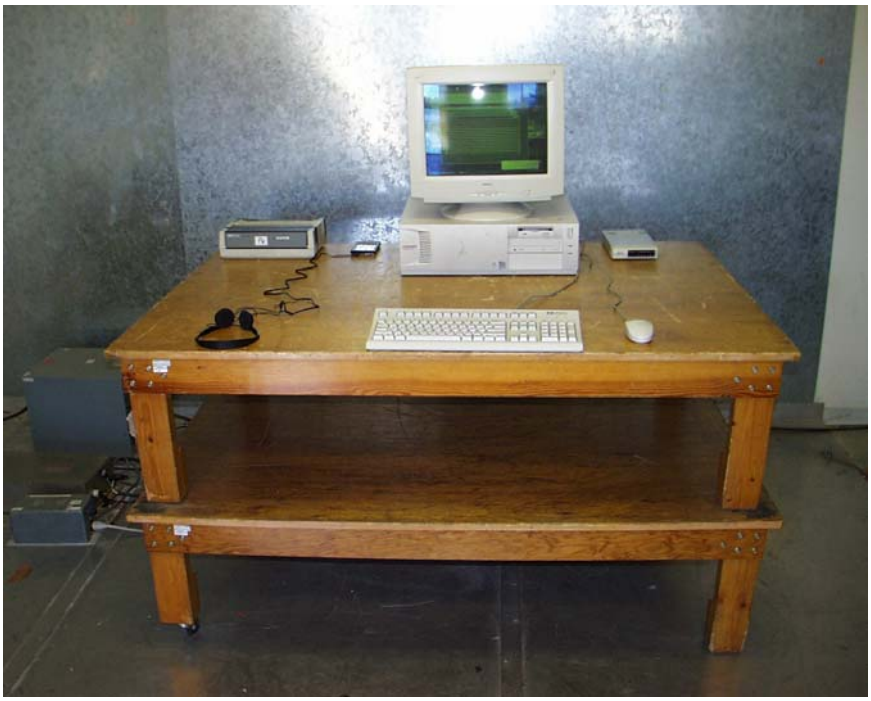
POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP

LINE CONDUCTED FRONT PHOTO

LINE CONDUCTED BACK PHOTO

DIGITAL DEVICE POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP

LINE CONDUCTED FRONT PHOTO



LINE CONDUCTED BACK PHOTO

END OF REPORT