



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

**FOR**

**HANDHELD TERMINAL**

**MODEL NAMES: DT-X11M30U**

**FCC ID: BBQDTX11M30U**

**REPORT NUMBER: 05I3866-8, Revision B**

**ISSUE DATE: JANUARY 25, 2006**

*Prepared for*

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**LAB CODE:200065-0**

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
A	01/09/2006	Initial Issue	Thu
B	01/25/2006	Added worst-case mode description under section 5.5 Updated model name from DT-X11M30U to DT-X11M30E on the plots on pages 54 thru 62 Added a test result table under section 7.1.4 on page 22	Thu Thu

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# 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** CASIO COMPUTER CO., LTD.  
6-2 HONMACHI 1-CHOME  
SHIBUYA-KU, TOKYO 151-8543, JAPAN

**EUT DESCRIPTION:** HANDHELD TERMINAL

**MODEL TESTED:** DT-X11M30E

**SERIAL NUMBER:** CS33

**DATE TESTED:** DECEMBER 29, 2005 – JANUARY 04, 2006

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:



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THU CHAN  
EMC SUPERVISOR  
COMPLIANCE CERTIFICATION SERVICES

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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 Handheld Terminal device manufactured by CASIO Computer Co. Ltd.

The tested EUT model was chosen as a representative of the following two models:

- DT-X11M30E\* – Bluetooth, Imager scanner
- DT-X11M30U - Bluetooth, Imager scanner

\*: Model tested

The above two models are identical to each other on hardware, two different model names are used only for marketing designation purpose.

The EUT has the following accessories:

#### **EUT ACCESSORIES**

Subassembly Description	Manufacturer	Part Number	Model Number
SATELLITE CRADLE	CASIO	PX-832AE	DT-160IOE
AC ADAPTER FOR CRADLE	CASIO	PX-829AE	AD-S42120AE
LARGE-CAPACITY BATTERY PACK	CASIO	PX-840EB	DT-5025LBAT
BATTERY PACK	CASIO	N/A	HA-A20BAT
RS-232C CABLE	CASIO	PX-966BA	DT-882RSC
RS-232C CABLE	CASIO	PX-966AA	DT-883RSC
RS-232C CABLE	CASIO	PX-966CB	DT-887AXA

## 5.2. MAXIMUM OUTPUT POWER

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

2400 to 2483.5 MHz Authorized Band

Frequency Range (MHz)	Output Power (dBm)	Output Power (mW)
2402 - 2480	0.52	1.13

## 5.3. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes a module antenna for BT, with a maximum gain of 1.1 dBi

## 5.4. SOFTWARE AND FIRMWARE

The EUT driver software installed in the host support equipment during testing was MS ActiveSync, WCESMgr.exe, ver 09/01/2003.

The test utility software used during testing was BTRadioTest WCE, ver. 1.0.0.1 for BT.

## 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 2441 MHz.

Preliminary test was done on both EUT sitting on cradle mode and EUT stand-alone mode at three orthogonal positions, and EUT sitting on cradle mode was determined as the worst-case mode.

## 5.6. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

N/A.

### I/O CABLES

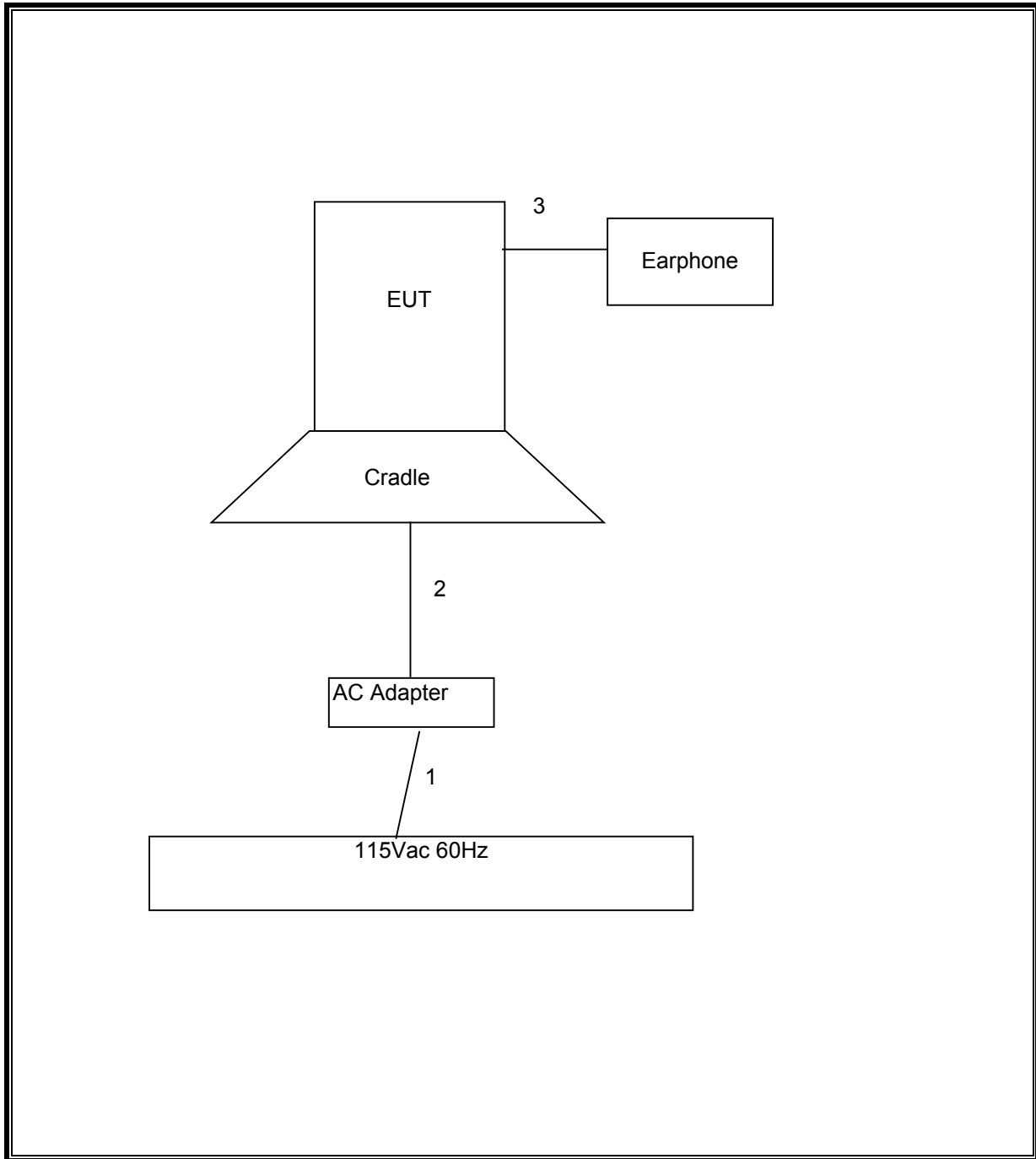
I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	AC	1	US 115V	Un-shielded	2m	NA
2	DC	1	DC	Un-shielded	1m	Ferrite at EUT end
3	Earphone	1	Din	Un-shielded	1m	Ferrite at EUT end

### TEST SETUP

The EUT is installed in the cradle during the tests. Test software exercised the EUT.



**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
Spectrum Analyzer, 26.5 GHz	HP	8593EM	3710A00205	7/26/06
Preamplifier, 1 ~ 26.5 GHz	HP	8449B	3008A00369	8/17/06
Antenna, Bilog 30 MHz ~ 2 Ghz	Sunol Sciences	JB1	A121003	3/3/06
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	4/22/06
Preamplifier, 1300 MHz	HP	8447D	1937A02062	1/7/06
Power Meter	R & S	NRVD	DE 12893	5/10/07
Power Sensor, 18 GHz, 300 mW	R&S	NVR-Z51	DE 13013	2/3/07
EMI Test Receiver	R & S	ESHS 20	827129/006	6/3/06
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	8/30/06
AC Power Source, 10 kVA	ACS	AFC-10K-AFC-2	J1568	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

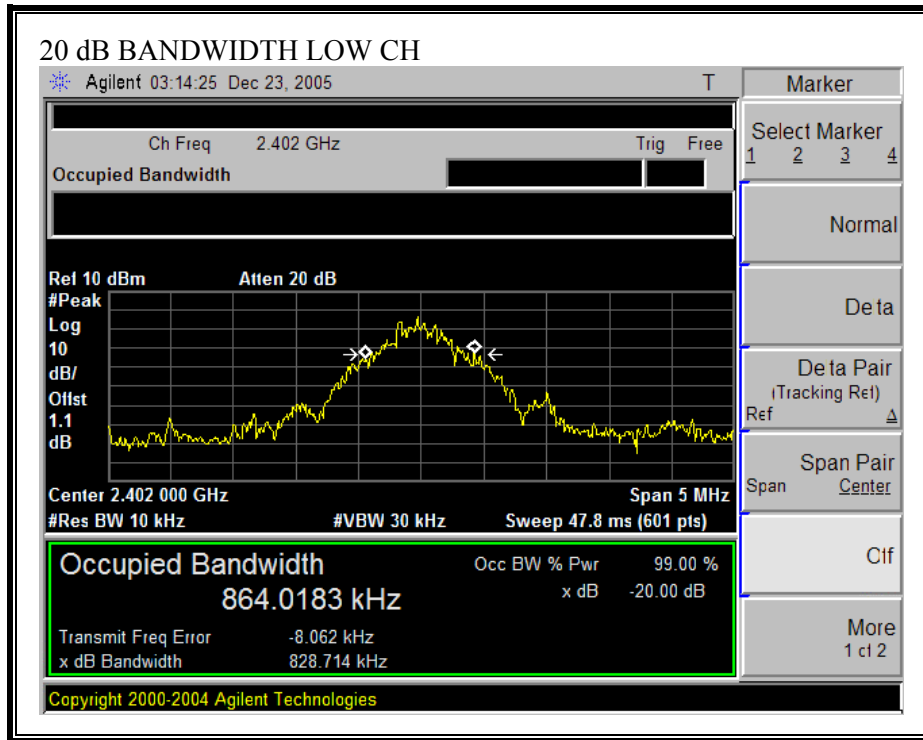
The transmitter output is connected to a spectrum analyzer. The RBW is set to 1% to 3% of the 20 dB bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled.

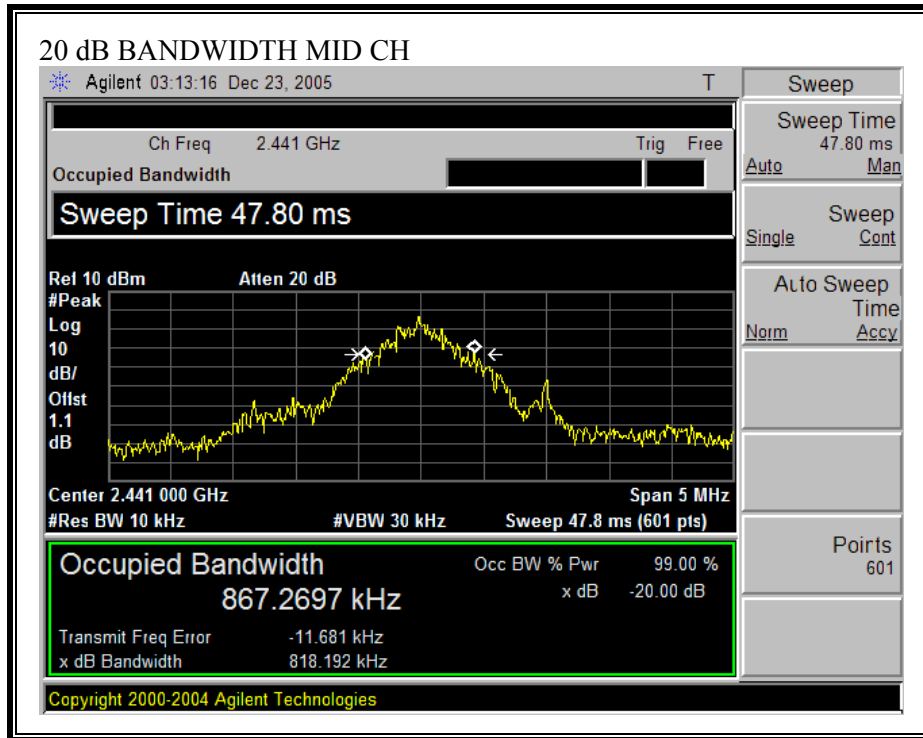
##### RESULTS

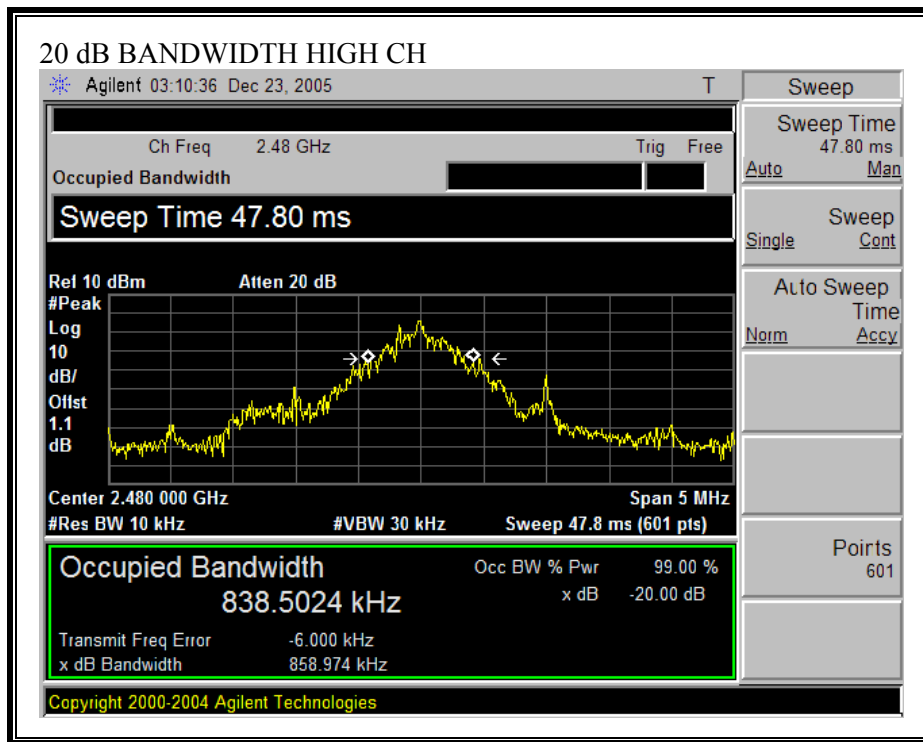
No non-compliance noted:

Channel	Frequency (MHz)	20 dB Bandwidth (kHz)
Low	2402	828.714
Middle	2441	818.192
High	2480	858.974

**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 hopping channel, whichever is greater.

### TEST PROCEDURE

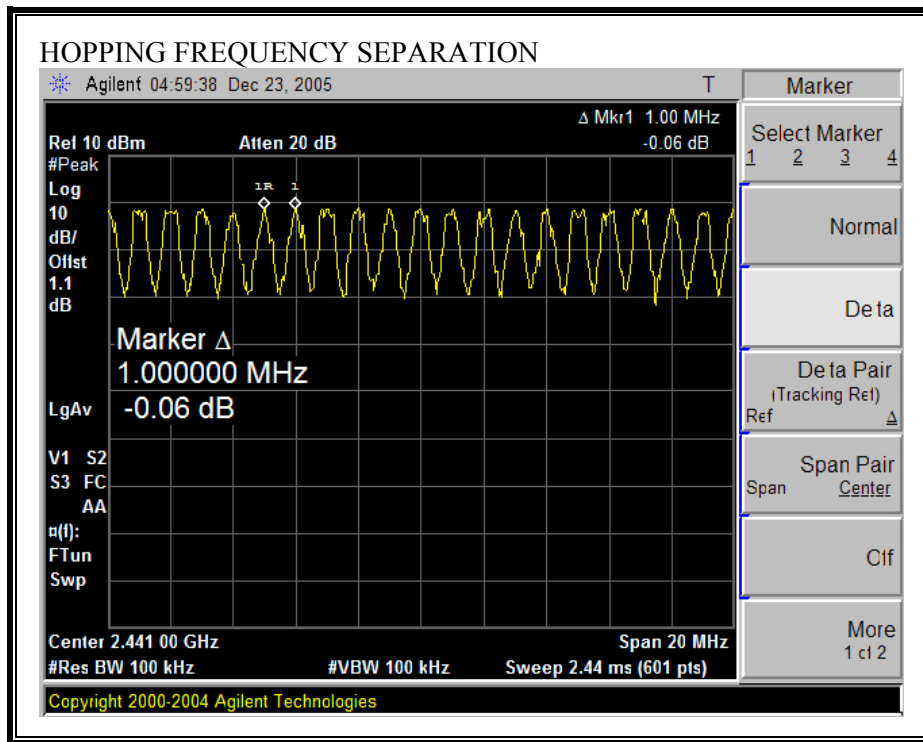
The transmitter output is connected to a spectrum analyzer. The RBW is set to 100 kHz and the VBW is set to 100 kHz. The sweep time is coupled.

### RESULTS

No non-compliance noted:

Channel	Frequency (MHz)	CHANNEL SEPARATION (kHz)	20 dB Bandwidth (kHz)	Margin (kHz)
Middle	2441	1000	858.974	141

**HOPPING FREQUENCY SEPARATION**





### **7.1.3. 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**

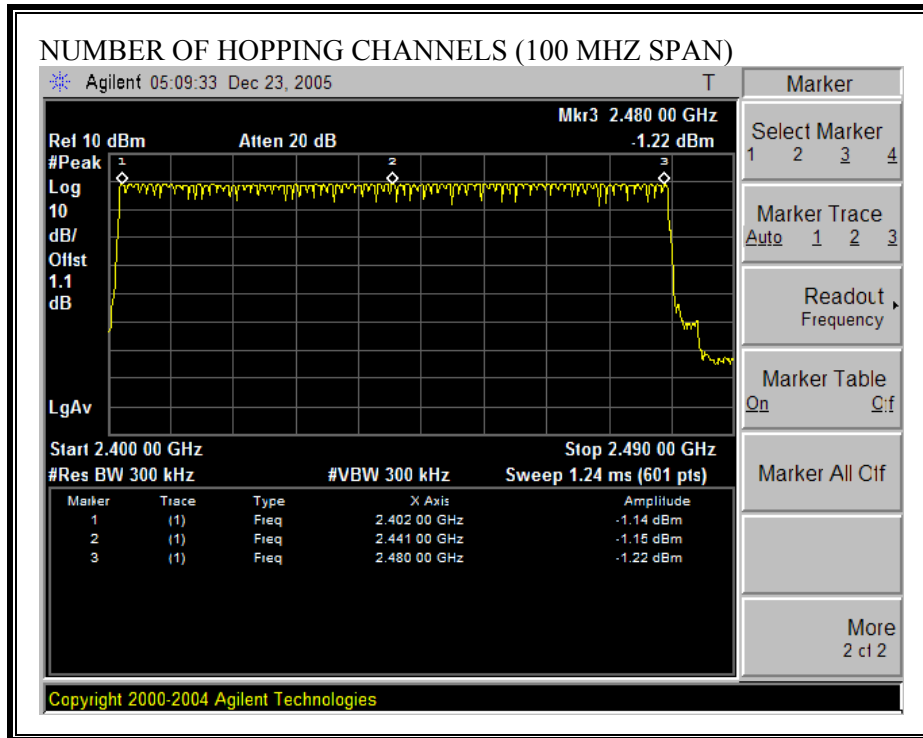
The transmitter output is connected to a spectrum analyzer. The span is set to cover the entire authorized band, in either a single sweep or in multiple contiguous sweeps. The RBW is set to 1 % of the span. The analyzer is set to Max Hold.

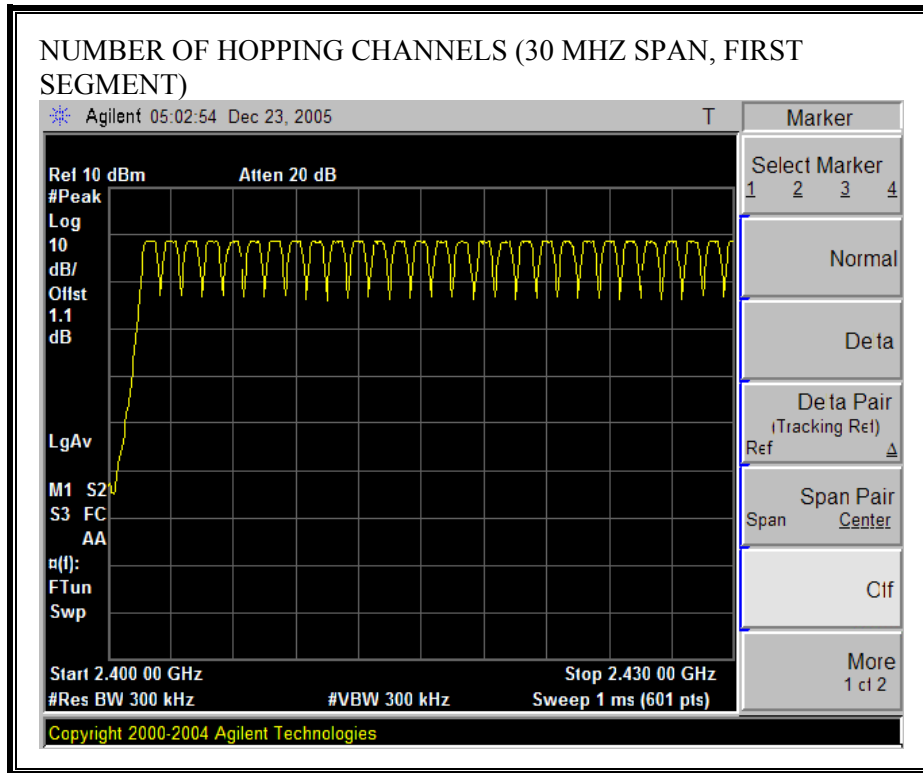
#### **RESULTS**

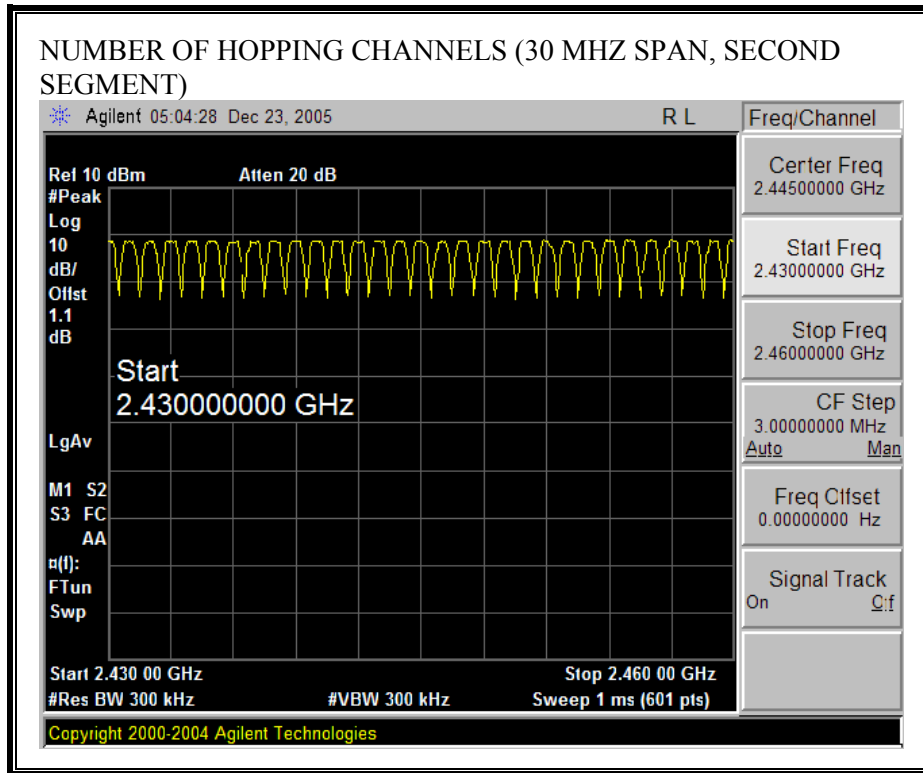
No non-compliance noted:

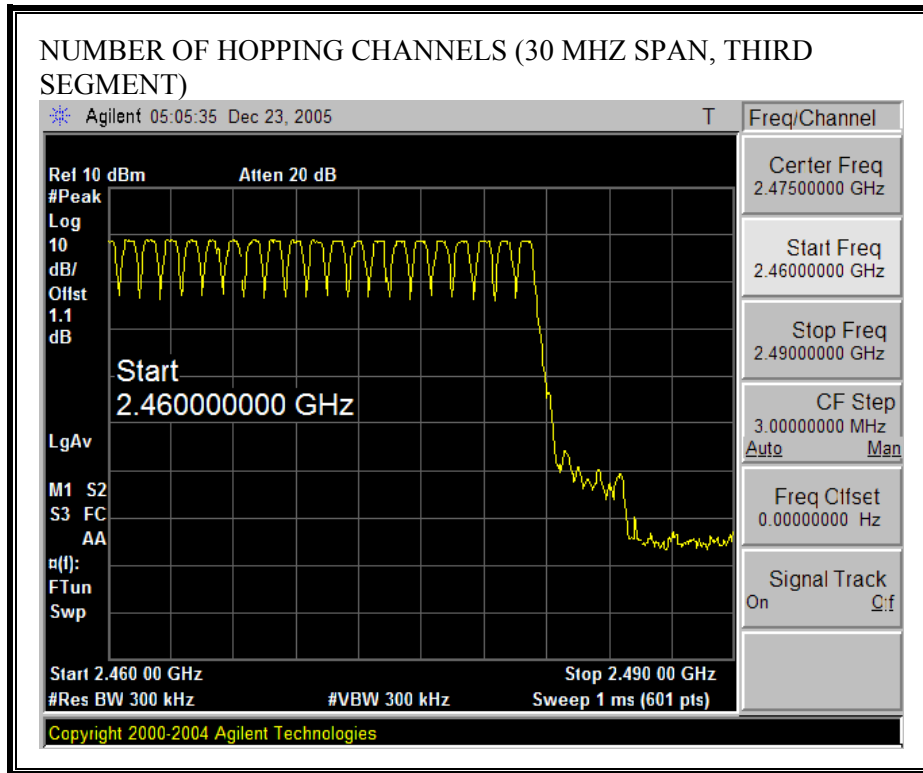
79 Channels observed.

**NUMBER OF HOPPING CHANNELS**









### 7.1.4. 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.

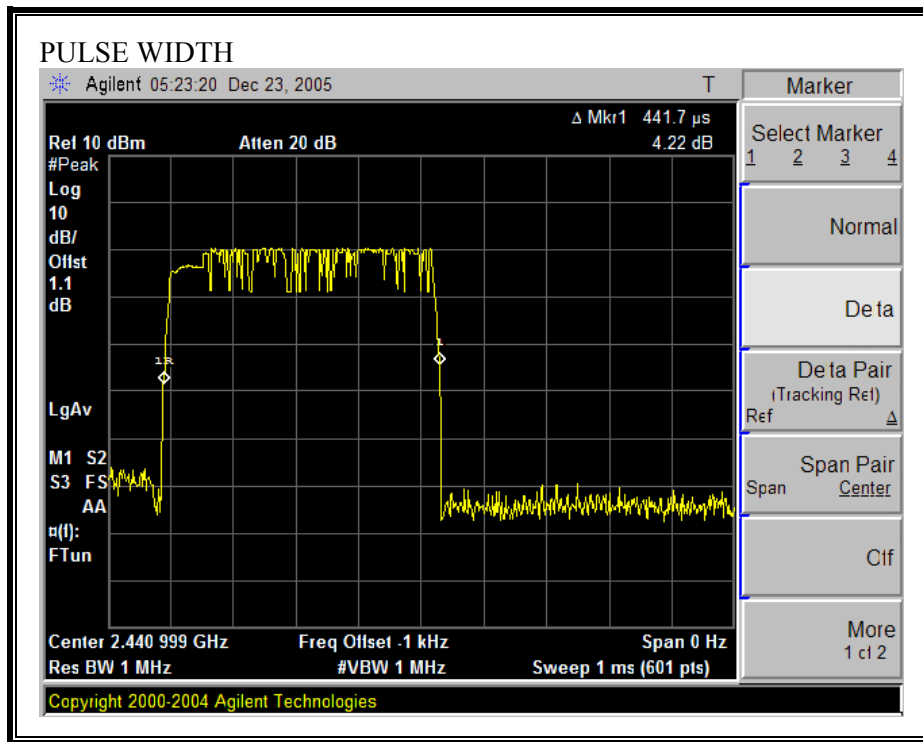
The average time of occupancy in the specified 31.6 second period (79 channels \* 0.4 s) is equal to 10 \* (# of pulses in 3.16 s) \* pulse width.

#### RESULTS

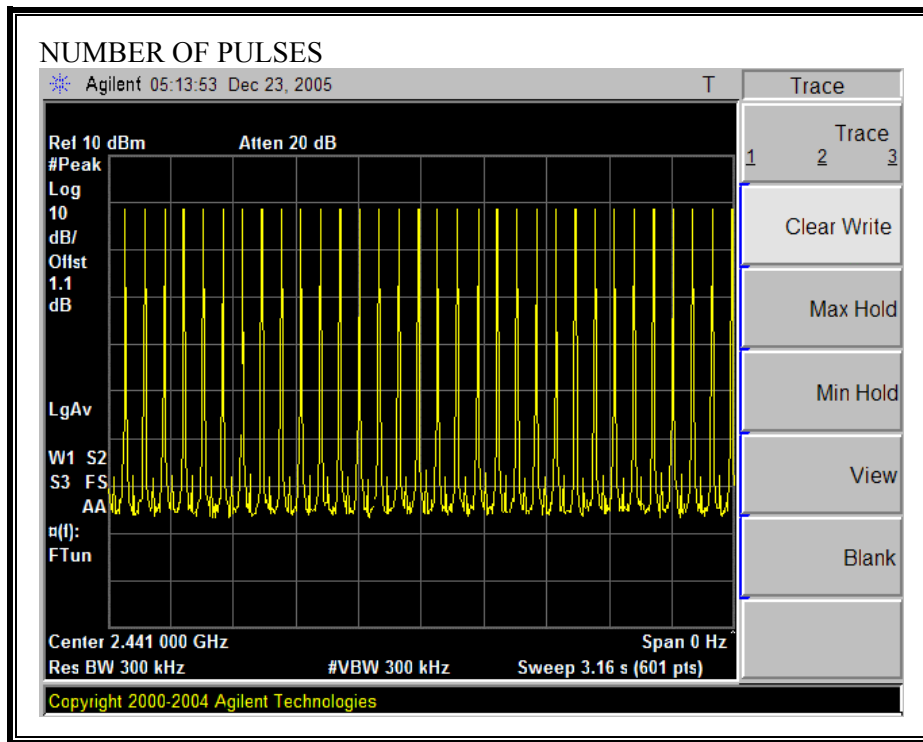
No non-compliance noted:

Pulse Width (msec)	Number of Pulses in 3.16 seconds	Average Time of Occupancy (sec)	Limit (sec)	Margin (sec)
0.4417	32	0.141	0.4	0.259

**PULSE WIDTH**



**NUMBER OF PULSES IN 3.16 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) (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 1.1 dBi, therefore the limit is 30 dBm.

### TEST PROCEDURE

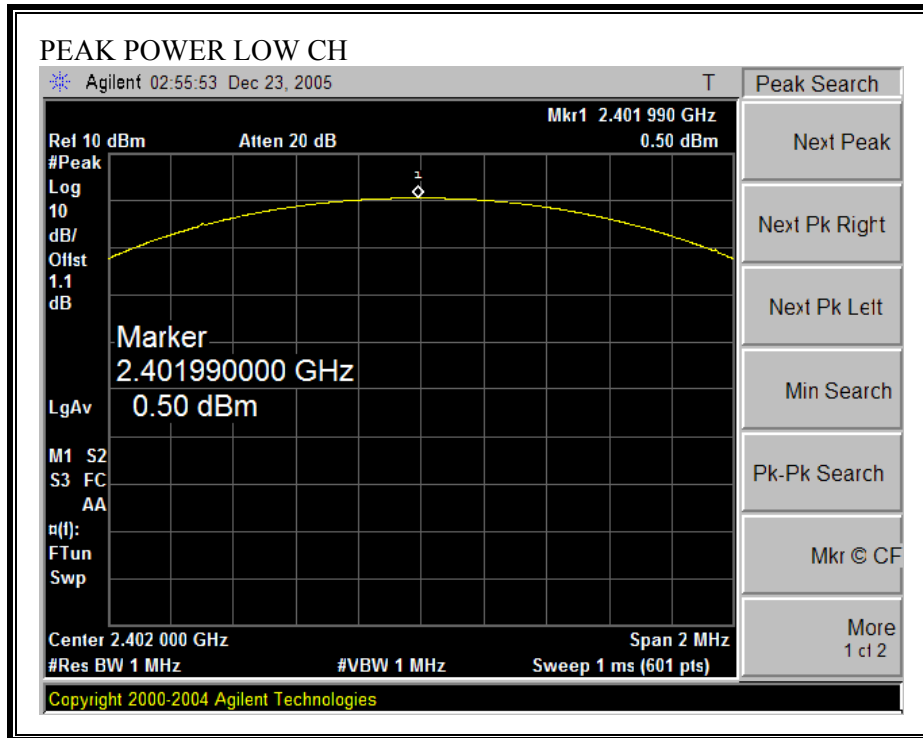
The transmitter output is connected to a spectrum analyzer and the analyzer bandwidth is set to a value greater than the 20 dB bandwidth of the EUT.

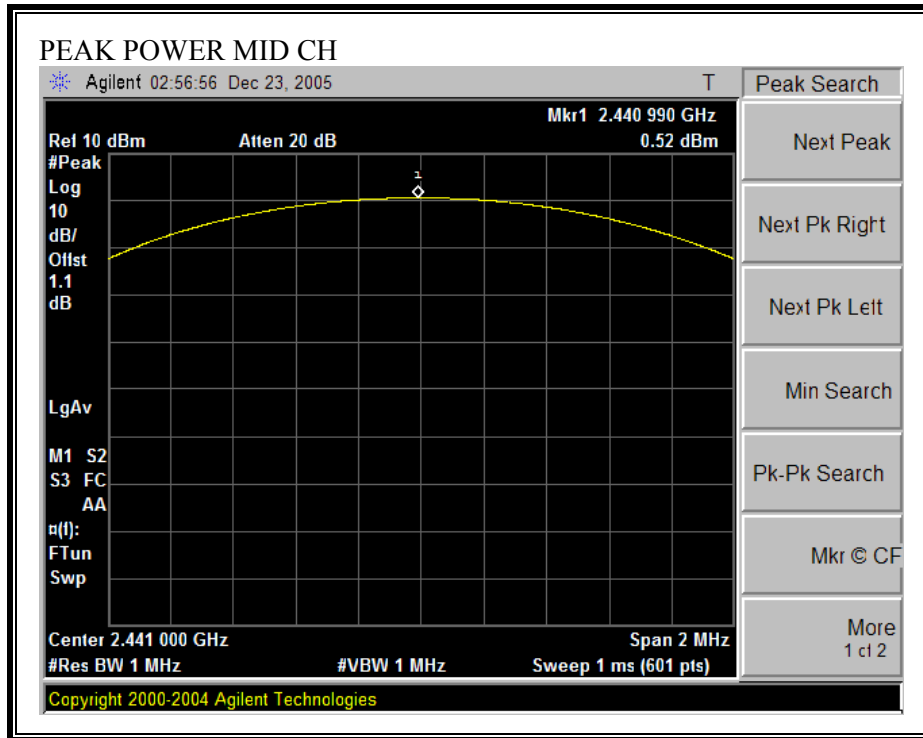
### RESULTS

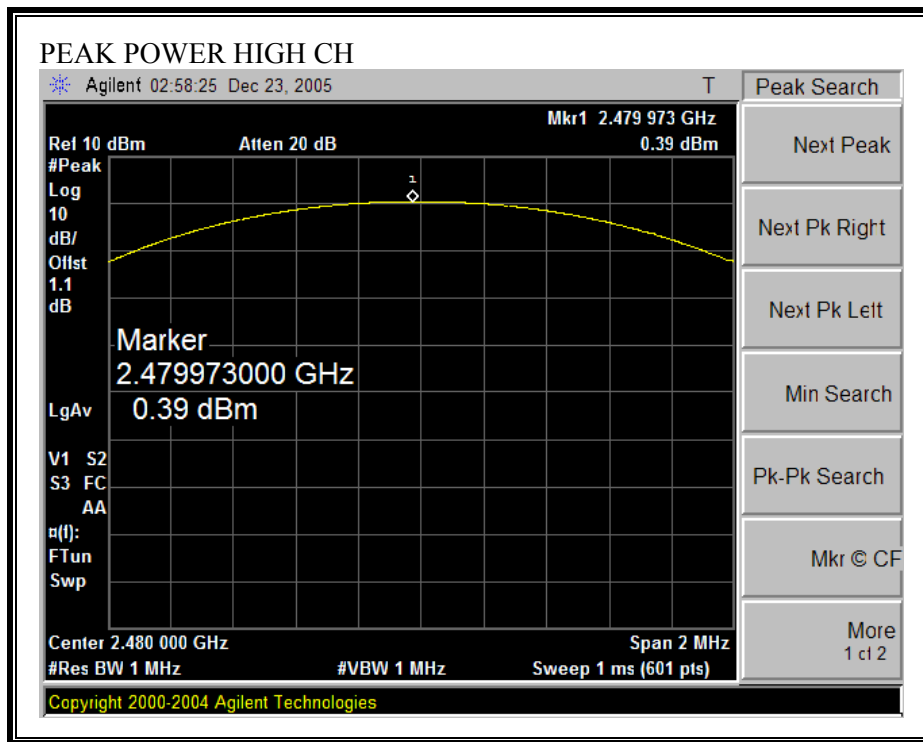
No non-compliance noted:

Channel	Frequency (MHz)	Peak Power (dBm)	Limit (dBm)	Margin (dB)
Low	2402	0.50	30	-29.50
Middle	2441	0.52	30	-29.48
High	2480	0.39	30	-29.61

**OUTPUT POWER**







### 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 0.5 was entered as an offset in the power meter to allow for direct reading of power.

Channel	Frequency (MHz)	Average Power (dBm)
Low	2402	0.00
Middle	2441	0.10
High	2480	0.00

### 7.1.7. 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

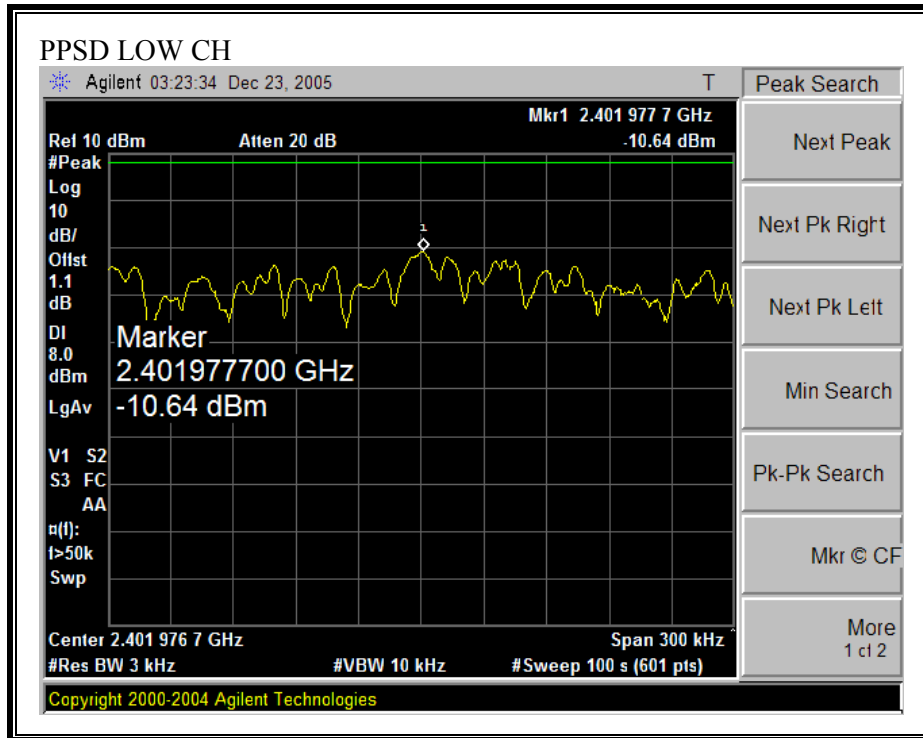
The transmitter output is connected to a spectrum analyzer, the maximum level in a 3 kHz bandwidth is measured with the spectrum analyzer using RBW = 3 kHz and VBW > 3 kHz, sweep time = span / 3 kHz, and video averaging is turned off. The PPSD is the highest level found across the emission in any 3 kHz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

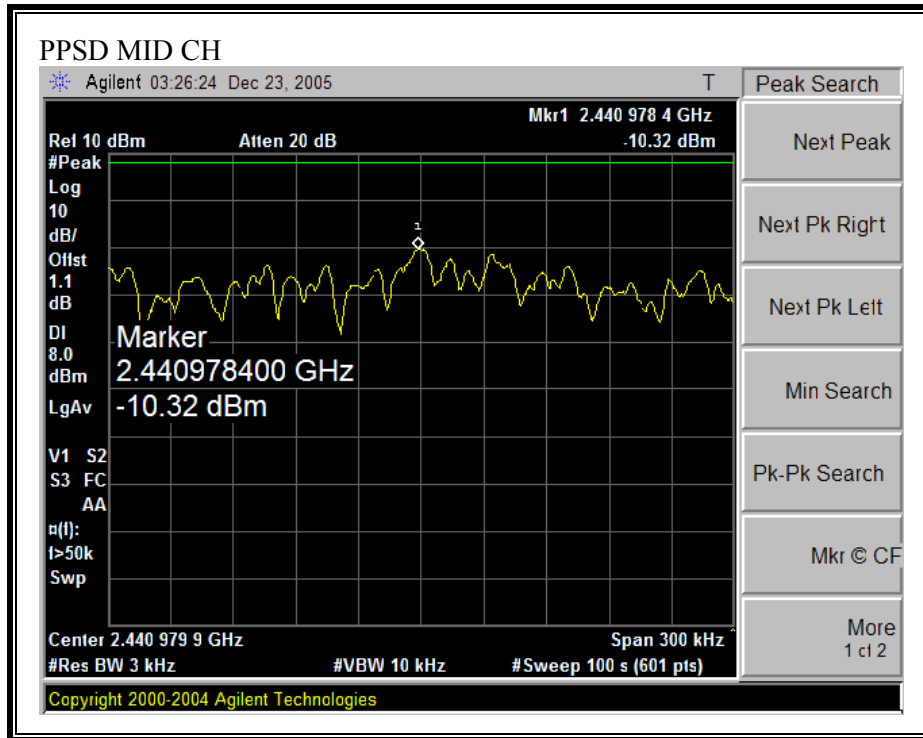
#### RESULTS

No non-compliance noted:

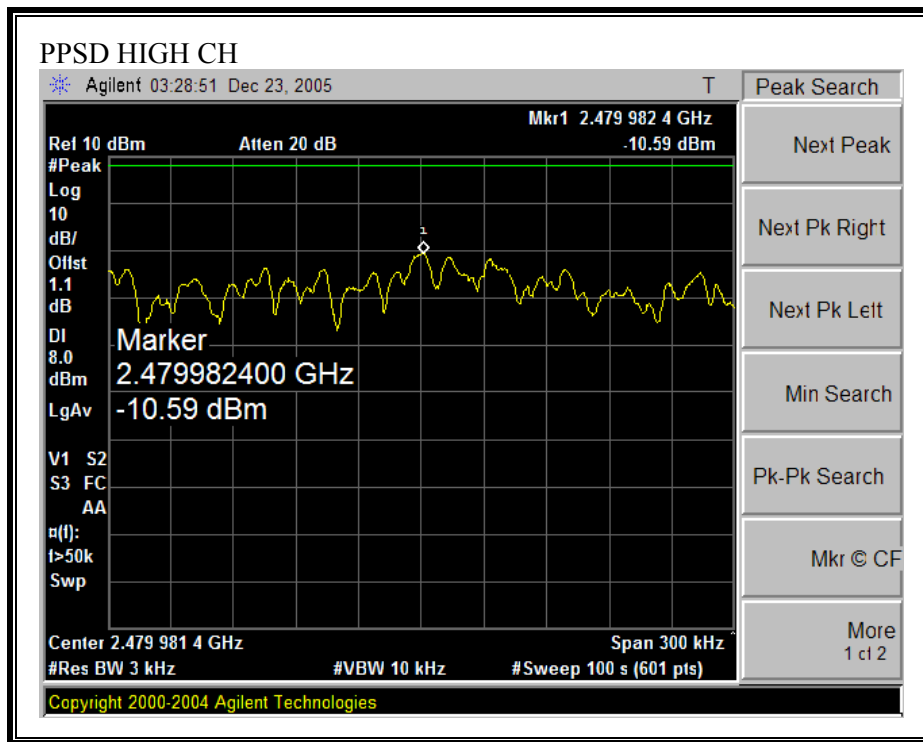
Channel	Frequency (MHz)	PPSD (dBm)	Limit (dBm)	Margin (dB)
Low	2402	-10.64	8	-18.64
Middle	2441	-10.32	8	-18.32
High	2480	-10.59	8	-18.59

**PEAK POWER SPECTRAL DENSITY**









## 7.1.8. 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

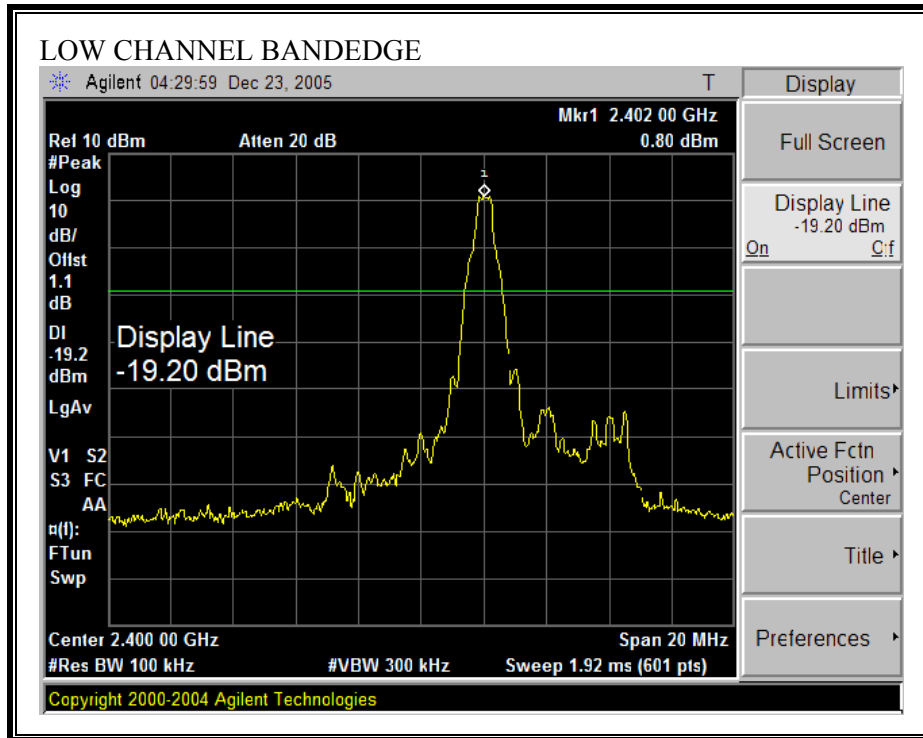
The transmitter output is connected to a spectrum analyzer. The resolution bandwidth is set to 100 kHz. The video bandwidth is set to 300 kHz.

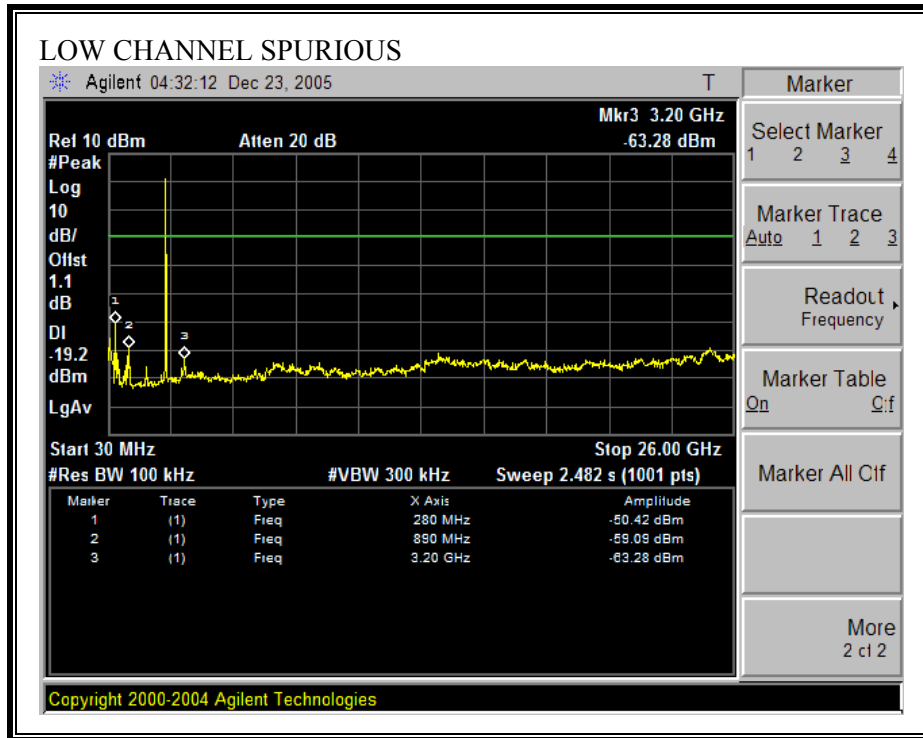
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels.

### RESULTS

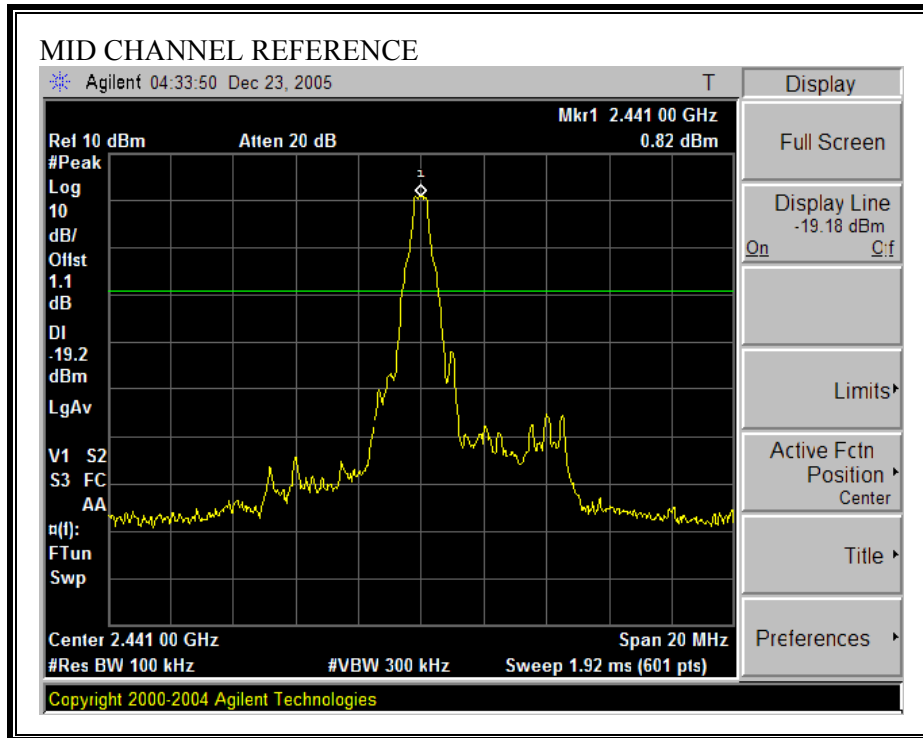
No non-compliance noted:

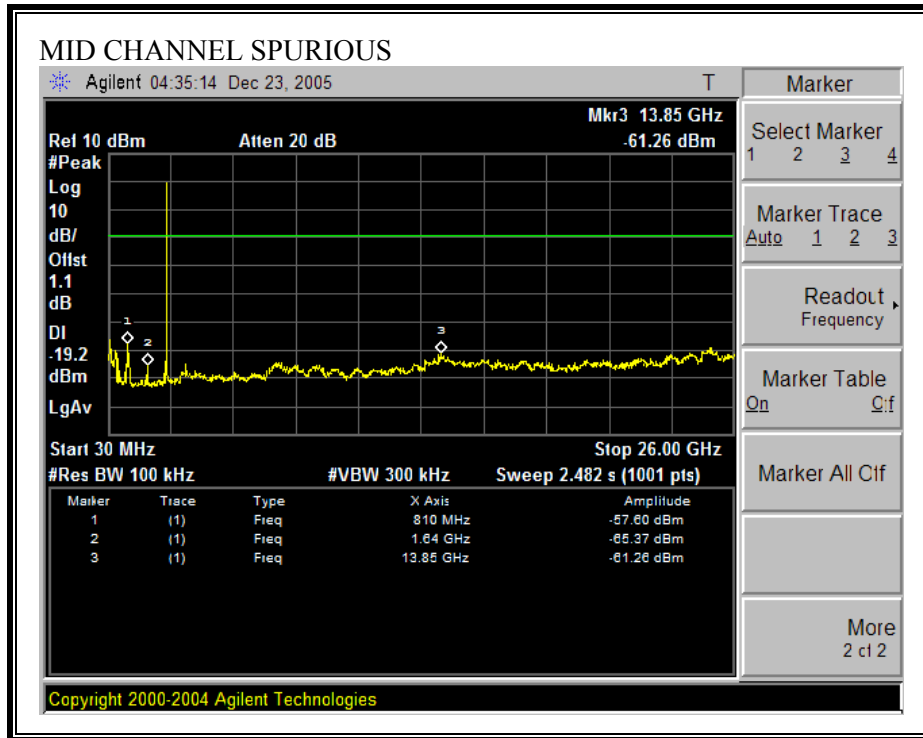
**SPURIOUS EMISSIONS, LOW CHANNEL**



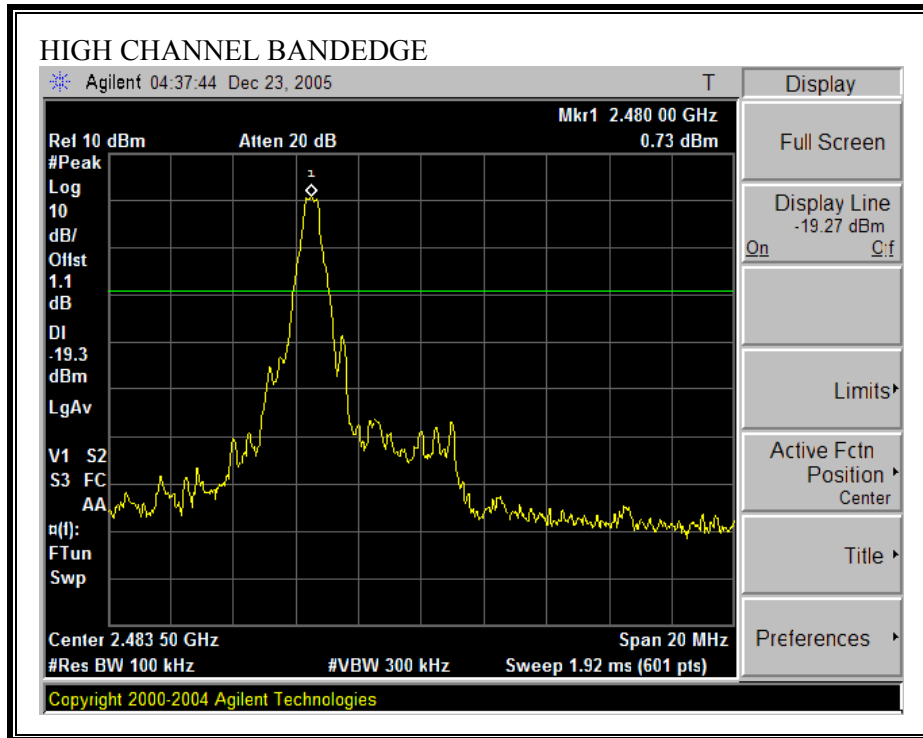


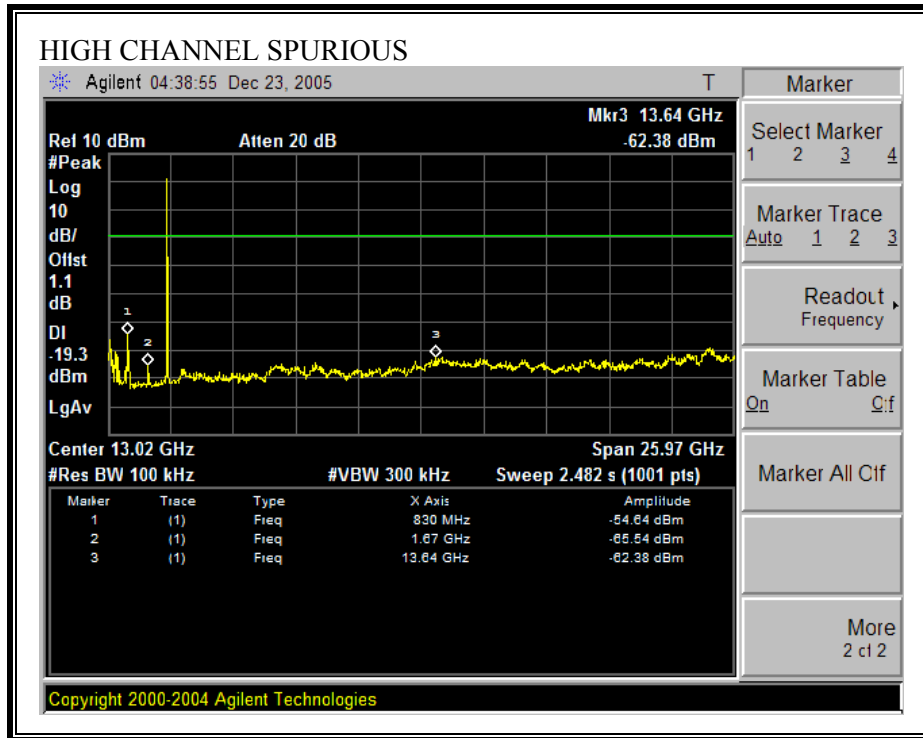
**SPURIOUS EMISSIONS, MID CHANNEL**





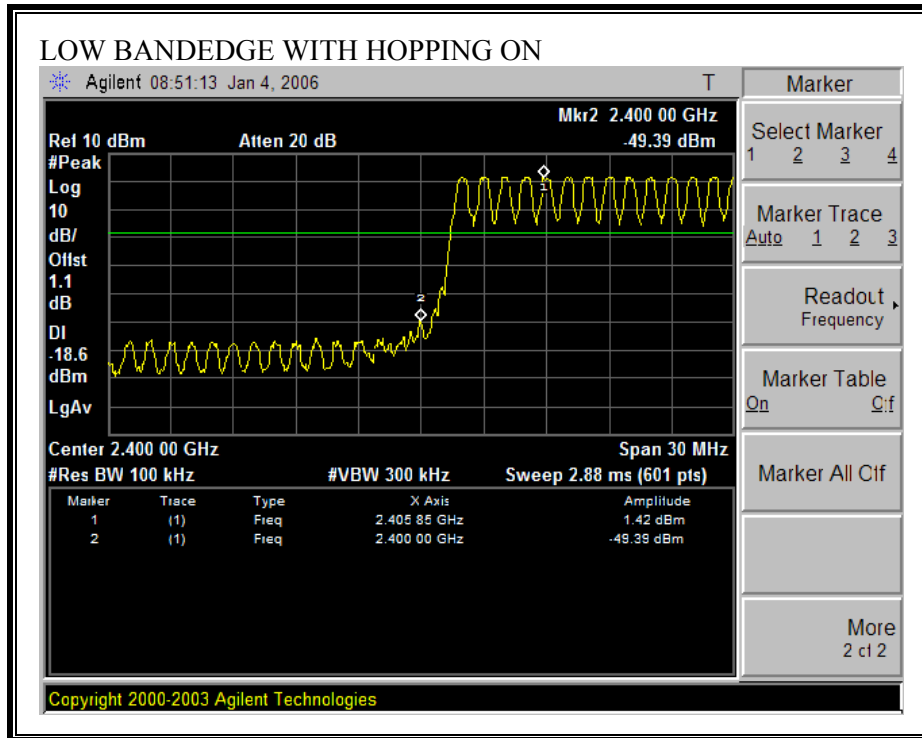
**SPURIOUS EMISSIONS, HIGH CHANNEL**

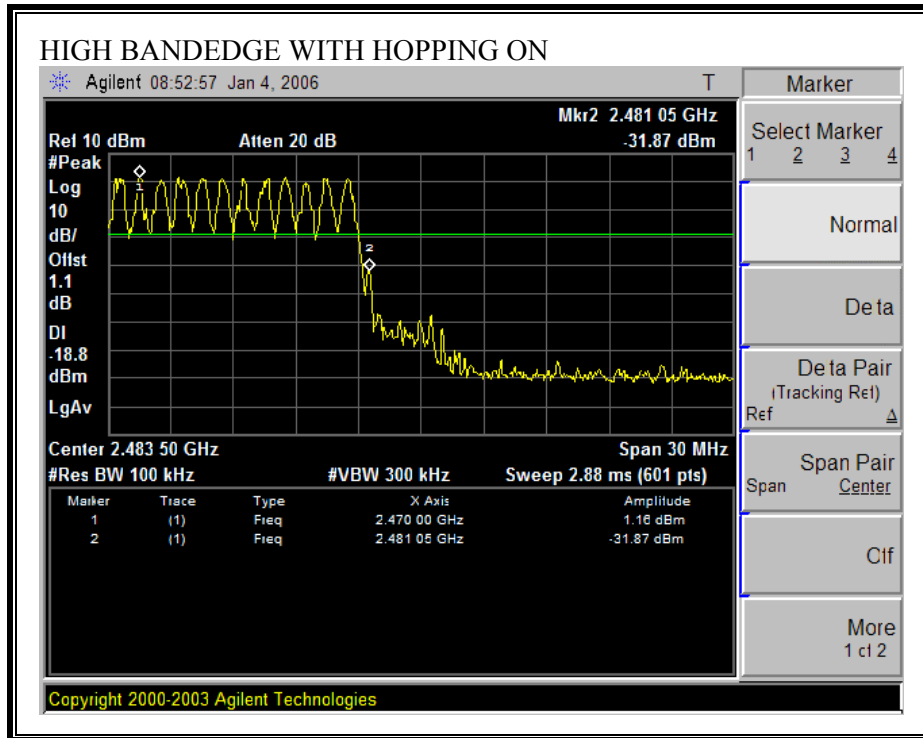






**SPURIOUS BANDEDGE EMISSIONS WITH HOPPING ON**





## 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
<sup>1</sup> 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	( <sup>2</sup> )
13.36 - 13.41			

<sup>1</sup> Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz.

<sup>2</sup> 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.

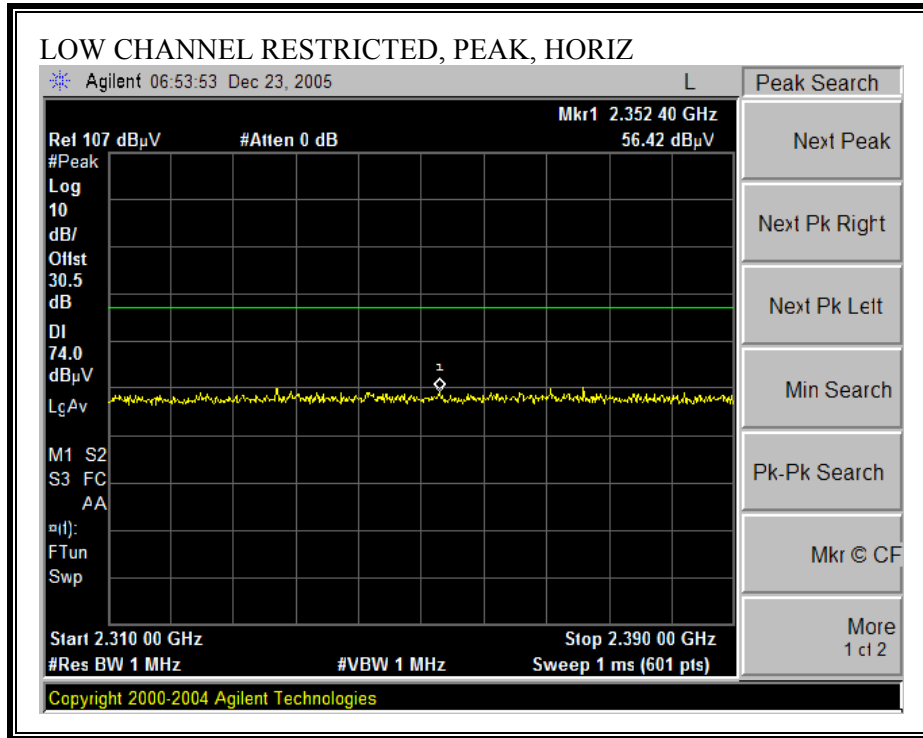
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

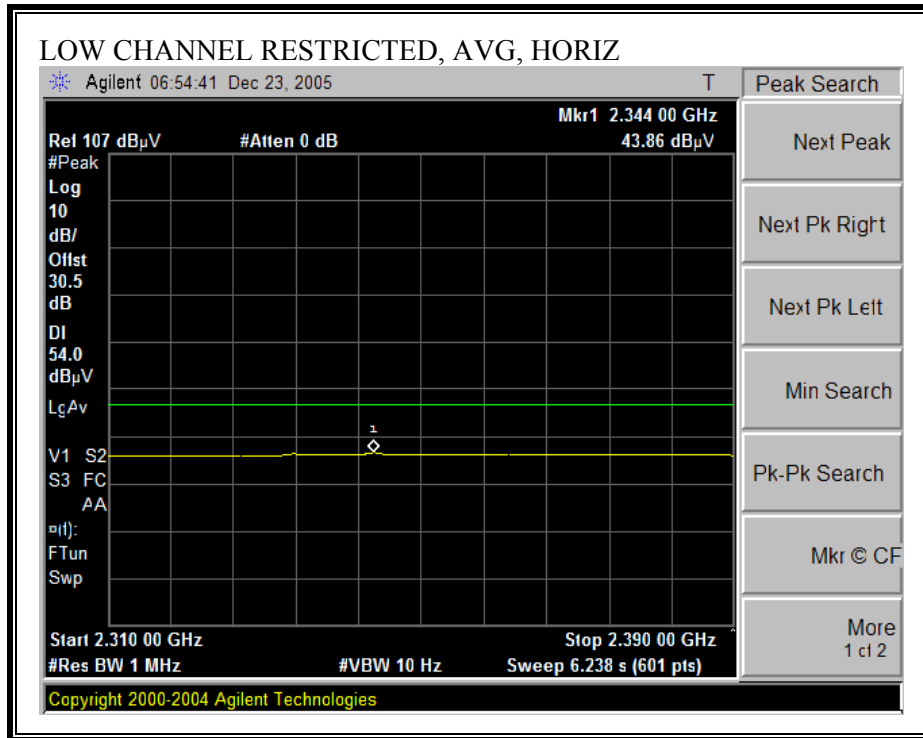
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each 5 GHz band.

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.

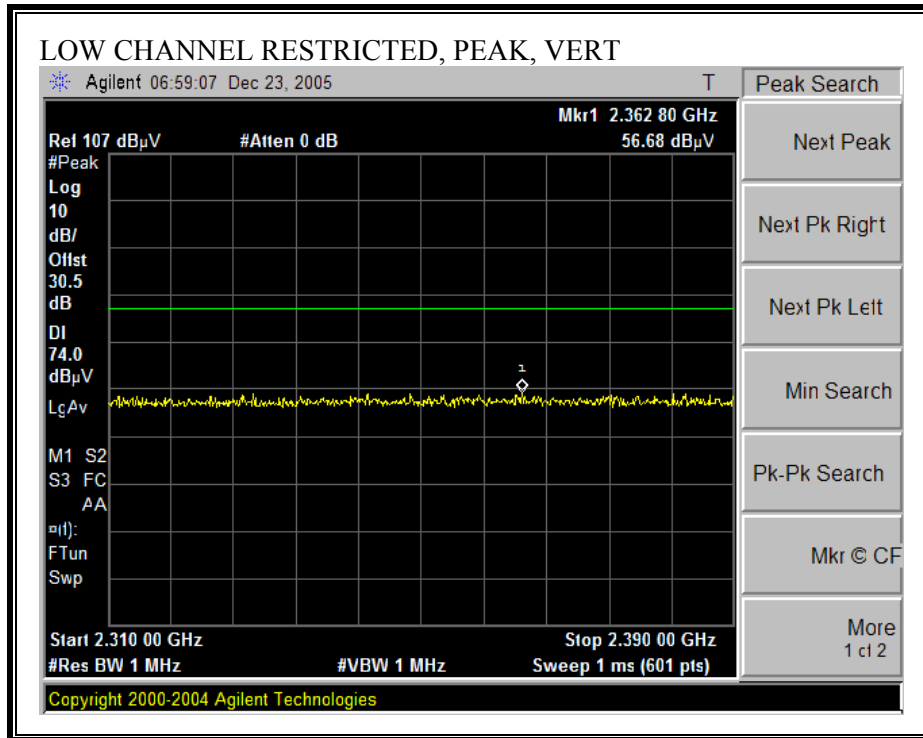
### 7.2.2. TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHZ

#### RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)

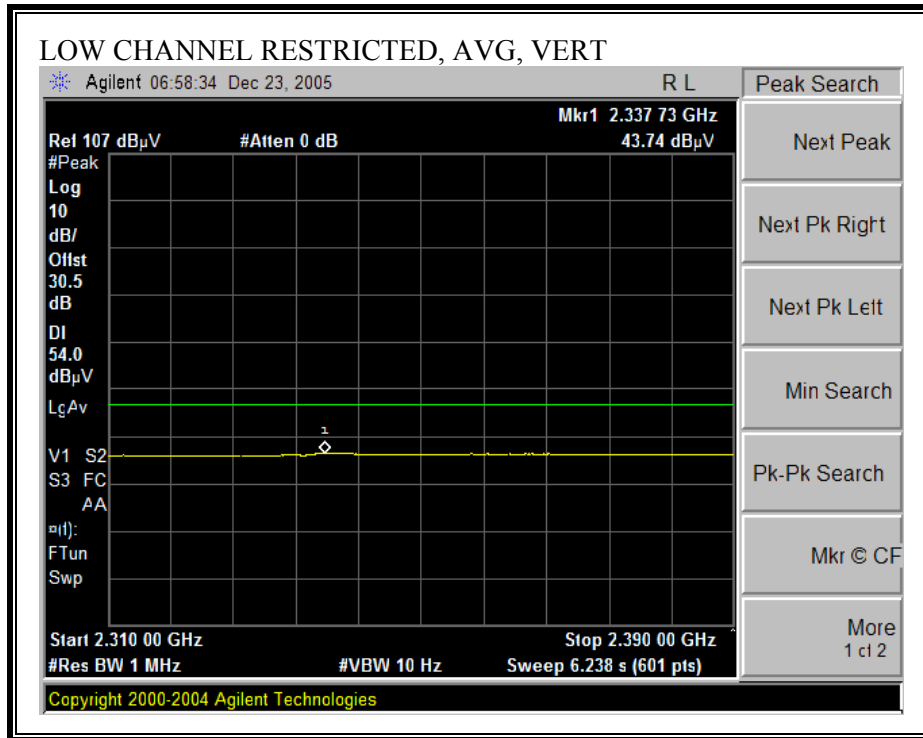




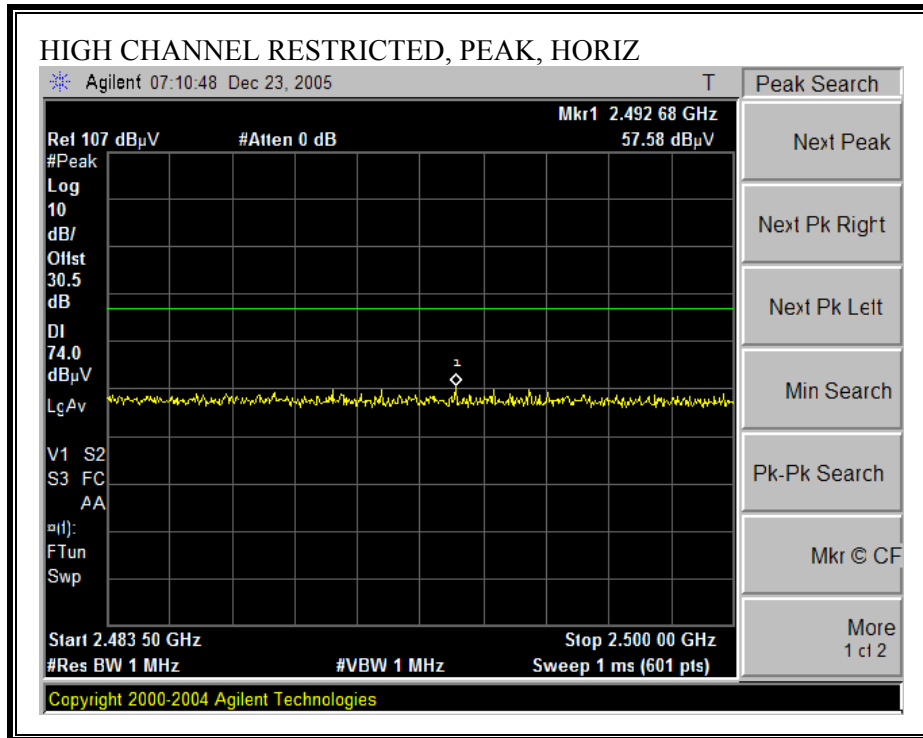
**RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)**

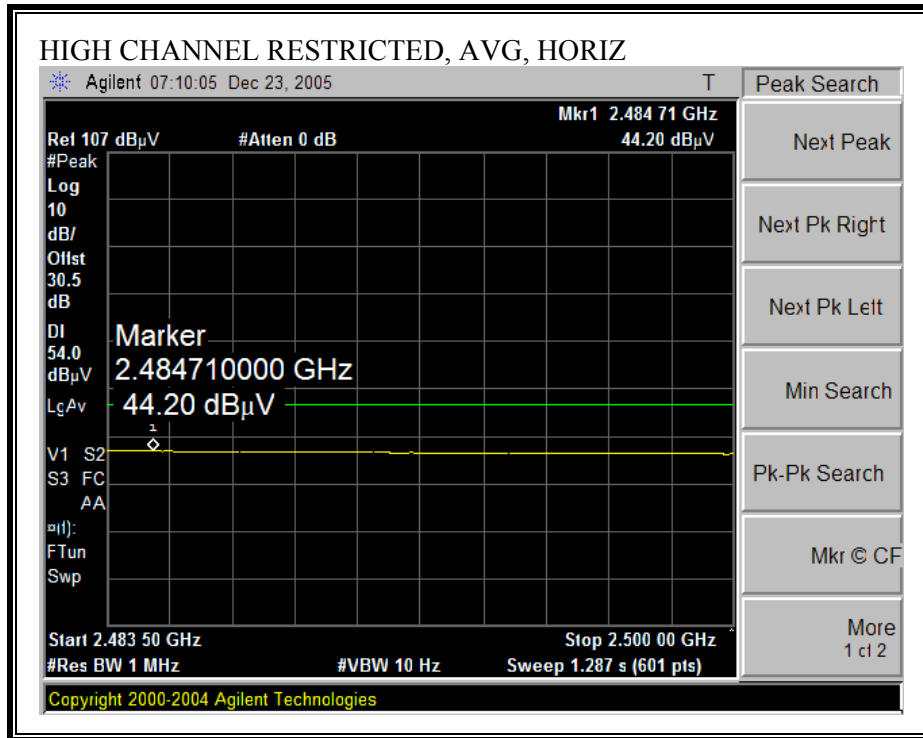




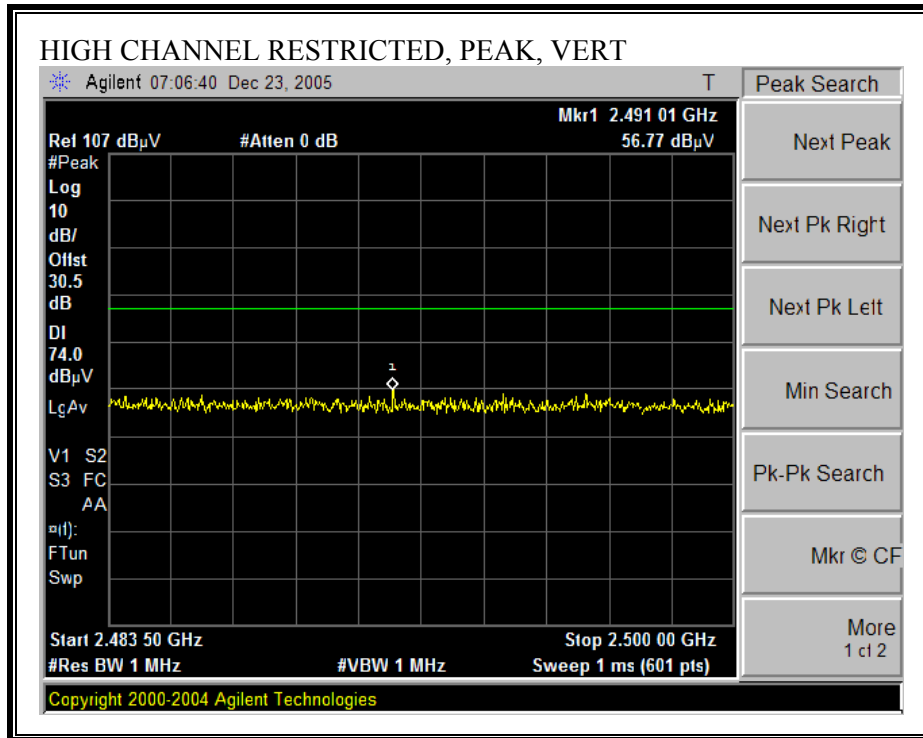


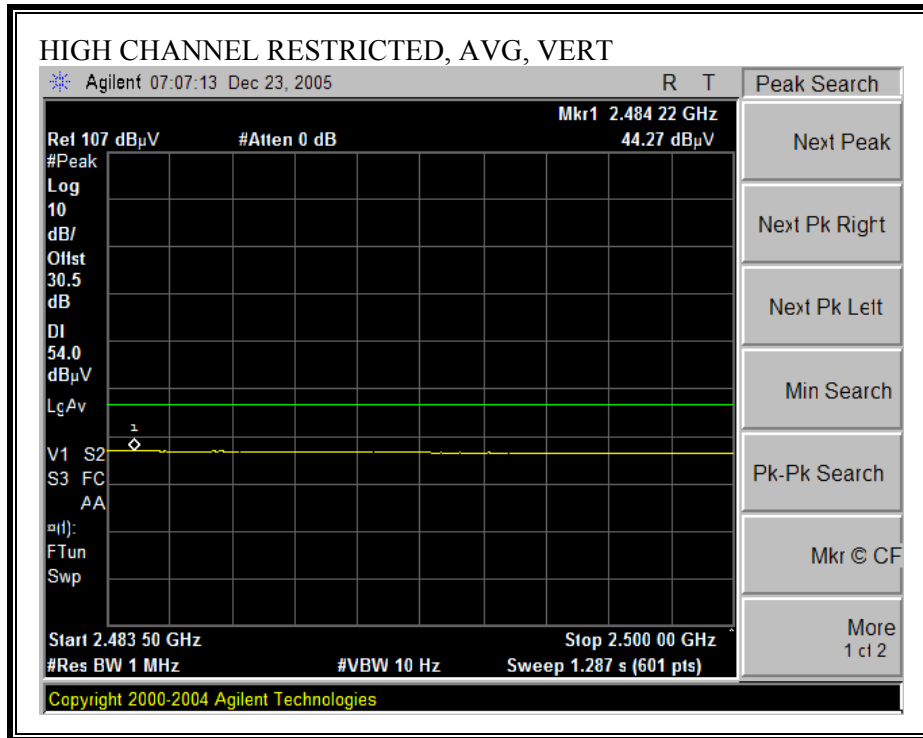
**RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)**





**RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)**





**HARMONICS AND SPURIOUS EMISSIONS**

01/04/06 High Frequency Measurement  
 Compliance Certification Services, Morgan Hill Open Field Site

Test Engr: Chin Pang  
 Project #: 0513608  
 Company: CASIO  
 EUT Descrip.: Handheld Terminal with Cradle ( Worst Case )  
 EUT M/N: DT-X11M30E  
 Test Target: FCC PART 15C  
 Mode Oper: BT, TX

**Test Equipment:**

EMCO Horn 1-18GHz T73; S/N: 6717 @3m	Pre-amplifer 1-26GHz T63 Miteq 646456	Pre-amplifer 26-40GHz	Horn > 18GHz	Limit FCC 15.205
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Hi Frequency Cables

2 foot cable 2_Vien	3 foot cable	4 foot cable	12 foot cable 12_Vien	HPF	Reject Filter
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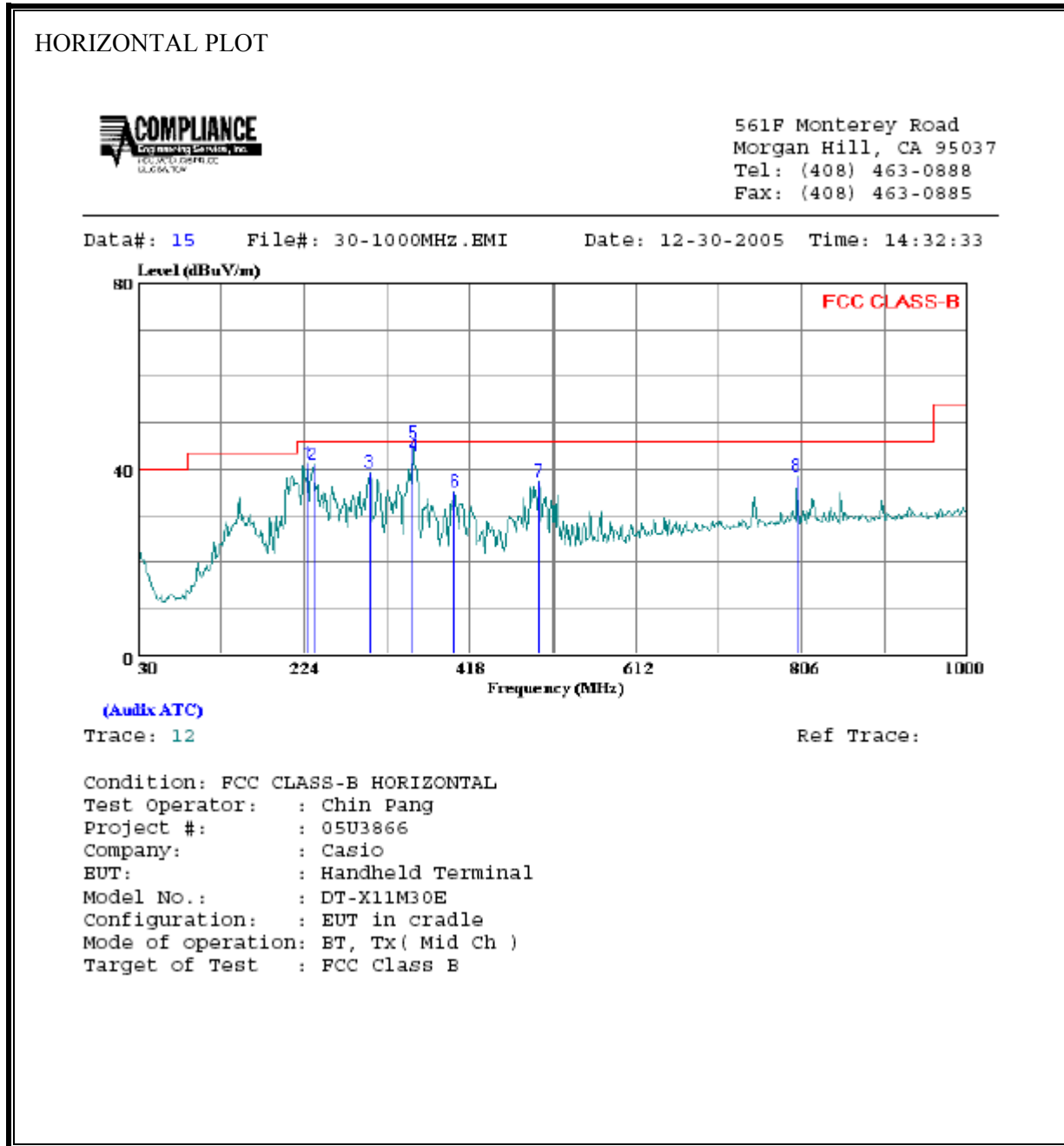
Peak Measurements  
 RBW=VBW=1MHz  
 Average Measurements  
 RBW=1MHz ; VBW=10Hz

f GHz	Dist (m)	Read Pk dBuV	Read Avg. dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filtr dB	Peak dBuV/m	Avg dBuV/m	Pk Lim dBuV/m	Avg Lim dBuV/m	Pk Mar dB	Avg Mar dB	Notes (V/H)
<b>LOW CH 2402 MHz</b>															
4.804	3.0	46.5	32.0	33.7	3.1	-37.9	0.0	0.0	45.3	30.8	74	54	-28.7	-23.2	H
4.804	3.0	46.0	31.9	33.7	3.1	-37.9	0.0	0.0	44.8	30.7	74	54	-29.2	-23.3	V
<b>MID CH 2441 MHz</b>															
4.882	3.0	47.0	32.0	33.8	3.1	-37.9	0.0	0.0	46.0	31.0	74	54	-28.0	-23.0	H
4.882	3.0	45.8	31.6	33.8	3.1	-37.9	0.0	0.0	44.8	30.6	74	54	-29.2	-23.4	V
<b>HI CH 2480 MHz</b>															
4.960	3.0	47.2	34.0	33.9	3.1	-37.9	0.0	0.0	46.3	33.1	74	54	-27.7	-20.9	H
4.960	3.0	46.2	33.4	33.9	3.1	-37.9	0.0	0.0	45.3	32.5	74	54	-28.7	-21.5	V
NO OTHER EMISSIONS WERE DETECTED AFTER 2ND HARMONIC															

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 1000 MHz (WORST-CASE CONFIGURATION, HORIZONTAL)



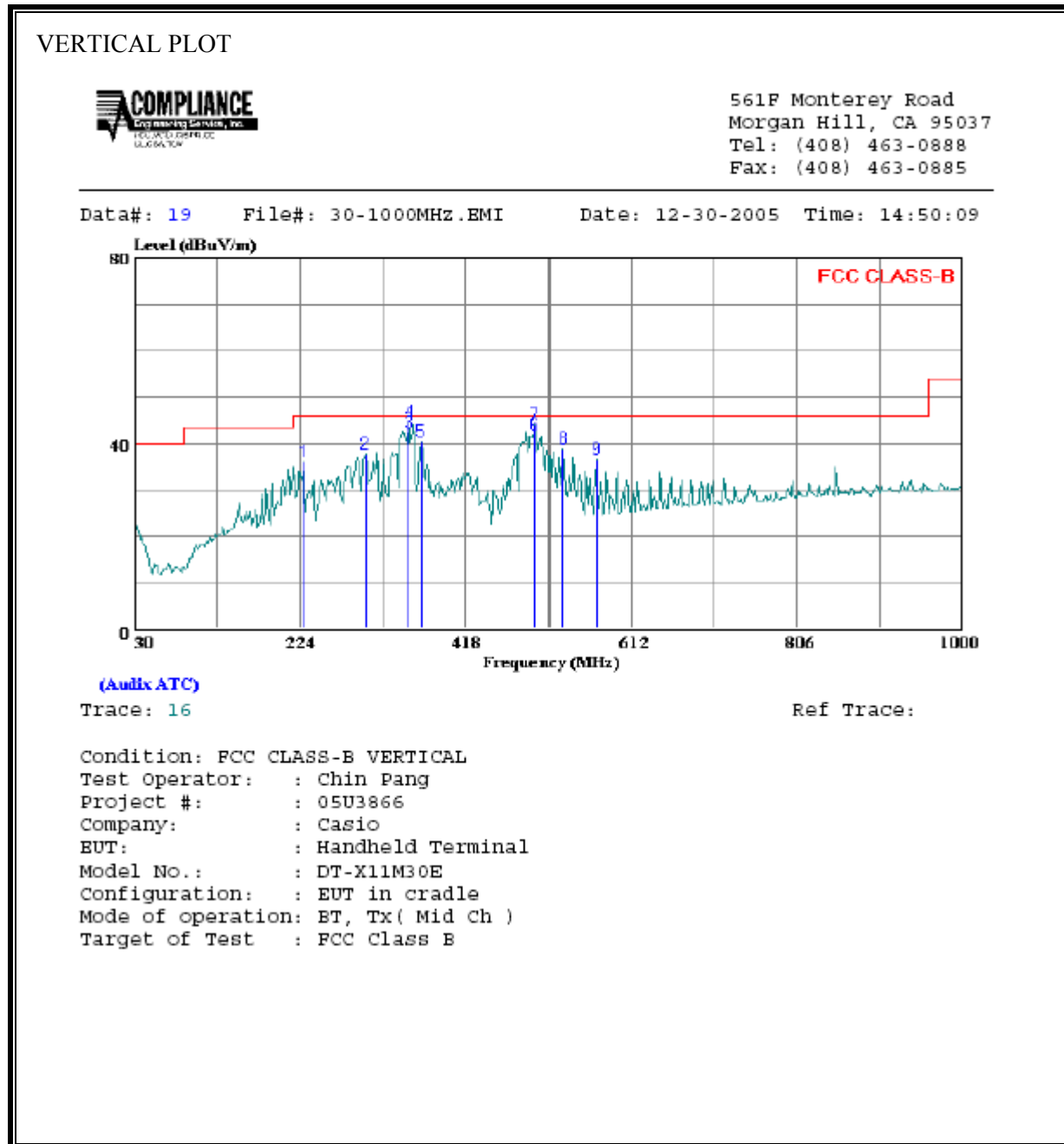
HORIZONTAL DATA

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	227.880	56.02	-14.67	41.35	46.00	-4.65	Peak
2	235.640	55.42	-14.32	41.10	46.00	-4.90	Peak
3	300.630	51.04	-11.84	39.20	46.00	-6.80	Peak
4	352.040	53.54	-10.63	42.91	46.00	-3.09	QP
5	352.040	56.31	-10.63	45.68	46.00	-0.32	Peak
6	400.540	44.82	-9.54	35.28	46.00	-10.72	Peak
7	499.480	44.61	-7.24	37.37	46.00	-8.63	Peak
8	800.180	40.21	-1.79	38.42	46.00	-7.58	Peak



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



VERTICAL DATA

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	227.880	50.54	-14.67	35.87	46.00	-10.13	Peak
2	300.630	49.55	-11.84	37.71	46.00	-8.29	Peak
3	352.040	53.00	-10.63	42.37	46.00	-3.63	QP
4	352.040	55.32	-10.63	44.69	46.00	-1.31	Peak
5	366.590	50.67	-10.22	40.45	46.00	-5.55	Peak
6	499.480	48.94	-7.24	41.70	46.00	-4.30	QP
7	499.480	51.13	-7.24	43.89	46.00	-2.11	Peak
8	531.490	45.57	-6.74	38.83	46.00	-7.17	Peak
9	570.290	42.53	-5.97	36.56	46.00	-9.44	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  $\mu$ 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.

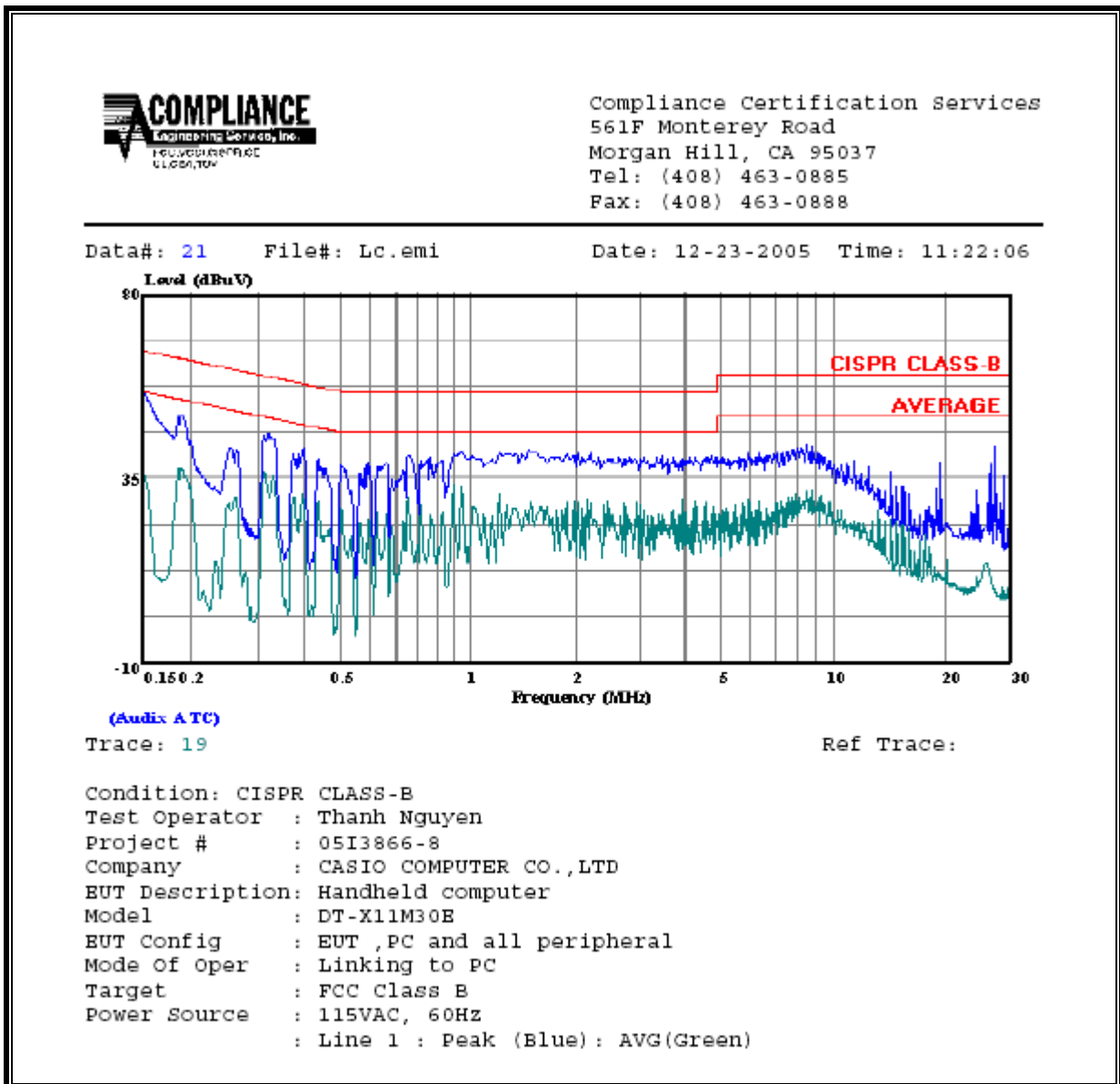
#### RESULTS

No non-compliance noted:

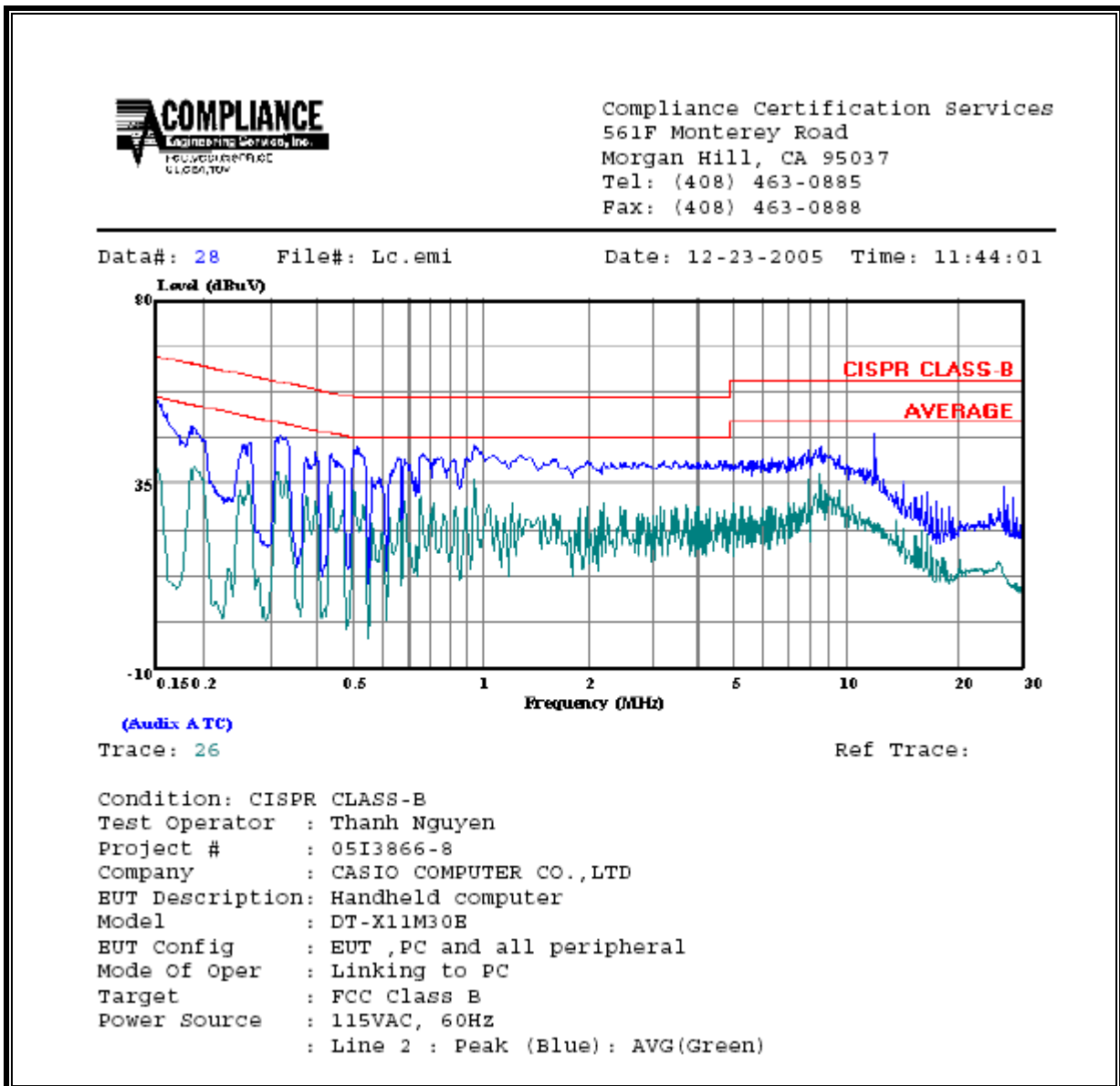
**6 WORST EMISSIONS**

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
0.15	56.90	--	36.62	0.00	66.00	56.00	-9.10	-19.38	L1
1.58	41.00	--	29.37	0.00	56.00	46.00	-15.00	-16.63	L1
27.13	42.46	--	14.68	0.00	60.00	50.00	-17.54	-35.32	L1
0.15	55.60	--	38.71	0.00	66.00	56.00	-10.40	-17.29	L2
1.05	44.08	--	30.10	0.00	56.00	46.00	-11.92	-15.90	L2
12.06	46.84	--	27.12	0.00	60.00	50.00	-13.16	-22.88	L2
6 Worst Data									

**LINE 1**

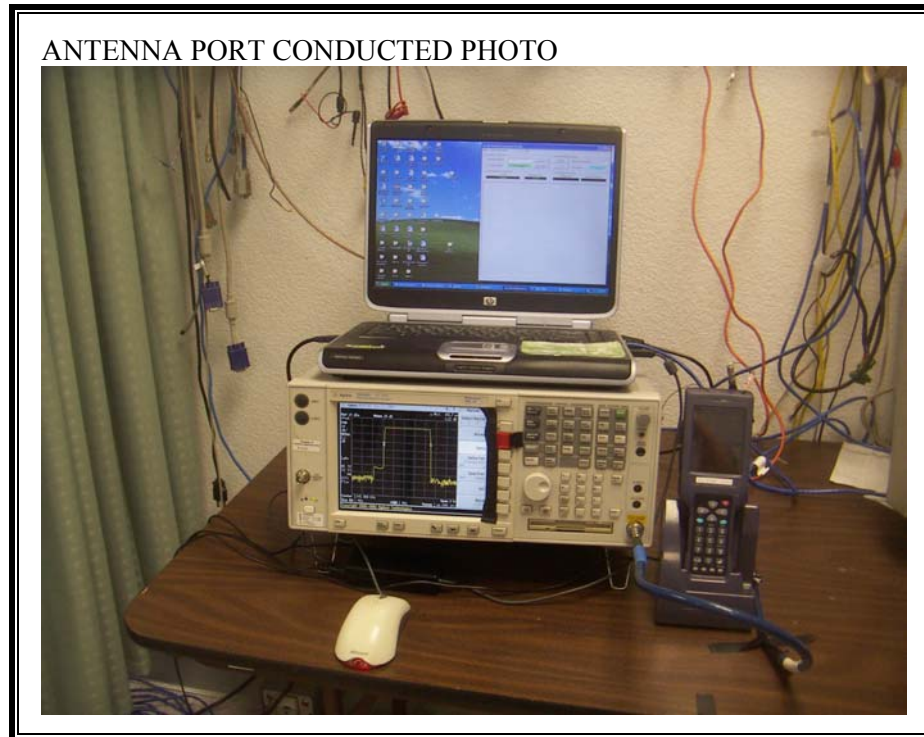


**LINE 2 RESULTS**



## 8. SETUP PHOTOS

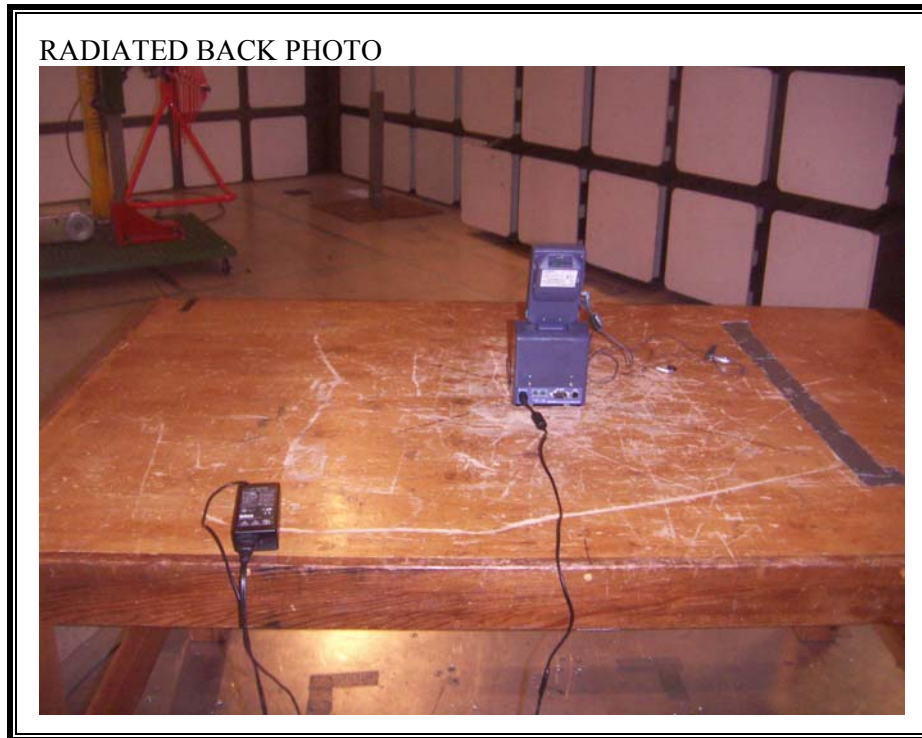
### ANTENNA PORT CONDUCTED RF MEASUREMENT SETUP



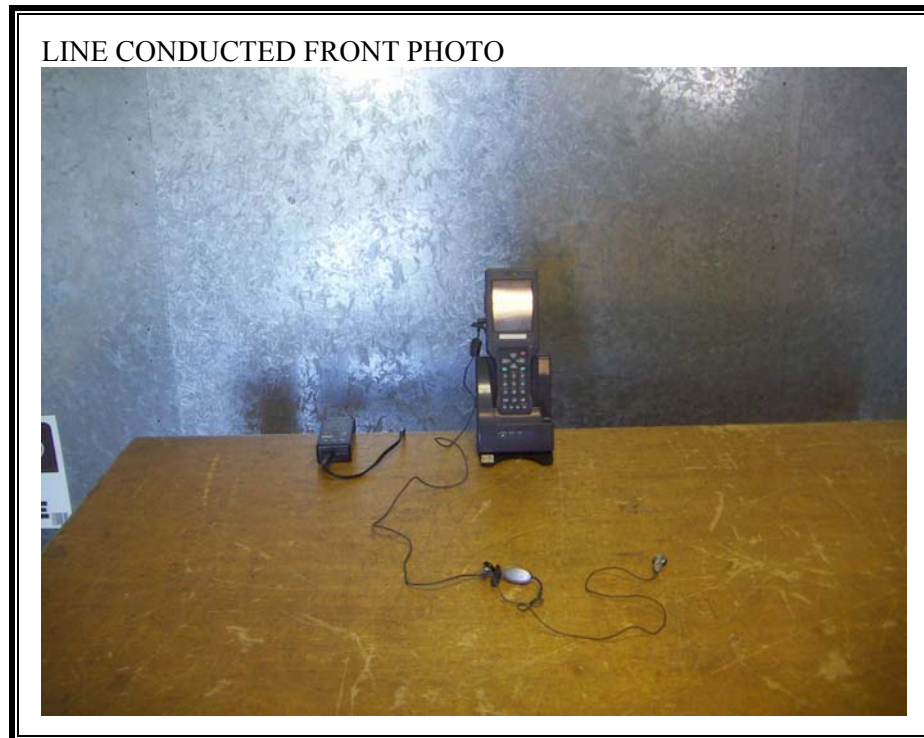
**RADIATED RF MEASUREMENT SETUP**







**POWERLINE CONDUCTED EMISSIONS MEASUREMENT SETUP**





**END OF REPORT**