



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

**FOR**

**DUAL BAND CDMA 2000 PHONE WITH BLUETOOTH**

**MODEL NUMBER: M1000-2X0**

**FCC ID: OVFKWC-M1000-2X0**

**REPORT NUMBER: 07U11076-3**

**ISSUE DATE: JUNE 1, 2007**

*Prepared for*  
**KYOCERA WIRELESS CORP.  
10300 CAMPUS POINT DRIVE  
SAN DIEGO, CA 92121, U.S.A.**

*Prepared by*  
**COMPLIANCE CERTIFICATION SERVICES  
47173 BENICIA STREET  
FREMONT, CA 94538, U.S.A.  
TEL: (510) 771-1000  
FAX: (510) 661-0888**



**NVLAP LAB CODE 200065-0**

Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
--	06/01/07	Initial Issue	T. Chan

## TABLE OF CONTENTS

<b>1.</b>	<b>ATTESTATION OF TEST RESULTS</b> .....	<b>4</b>
<b>2.</b>	<b>TEST METHODOLOGY</b> .....	<b>5</b>
<b>3.</b>	<b>FACILITIES AND ACCREDITATION</b> .....	<b>5</b>
<b>4.</b>	<b>CALIBRATION AND UNCERTAINTY</b> .....	<b>5</b>
4.1.	<i>MEASURING INSTRUMENT CALIBRATION</i> .....	5
4.2.	<i>MEASUREMENT UNCERTAINTY</i> .....	5
<b>5.</b>	<b>EQUIPMENT UNDER TEST</b> .....	<b>6</b>
5.1.	<i>DESCRIPTION OF EUT</i> .....	6
5.2.	<i>DESCRIPTION OF AVAILABLE ANTENNAS</i> .....	6
5.3.	<i>SOFTWARE AND FIRMWARE</i> .....	6
5.4.	<i>WORST-CASE CONFIGURATION AND MODE</i> .....	6
5.5.	<i>DESCRIPTION OF TEST SETUP</i> .....	7
<b>6.</b>	<b>TEST AND MEASUREMENT EQUIPMENT</b> .....	<b>9</b>
<b>7.</b>	<b>LIMITS AND RESULTS</b> .....	<b>10</b>
7.1.	<i>RADIATED EMISSIONS</i> .....	10
7.1.1.	TRANSMITTER RADIATED SPURIOUS EMISSIONS .....	10
7.1.2.	TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHZ .....	12
7.1.3.	WORST-CASE RADIATED EMISSIONS BELOW 1 GHz.....	21
7.2.	<i>POWERLINE CONDUCTED EMISSIONS</i> .....	25
<b>8.</b>	<b>SETUP PHOTOS</b> .....	<b>29</b>

**1. ATTESTATION OF TEST RESULTS**

**COMPANY NAME:** KYOCERA WIRELESS CORP.  
10300 CAMPUS POINT DRIVE  
SAN DIEGO, CA 92121, U.S.A.

**EUT DESCRIPTION:** DUAL BAND CDMA 2000 PHONE WITH BLUETOOTH

**MODEL:** M1000-2X0

**SERIAL NUMBER:** FFMK0000001241

**DATE TESTED:** MAY 25 – 28, 2007

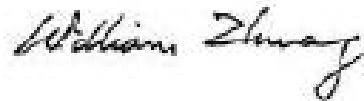
<b>APPLICABLE STANDARDS</b>	
<b>STANDARD</b>	<b>TEST RESULTS</b>
FCC PART 15 SUBPART C	NO NON-COMPLIANCE NOTED

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

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

Approved & Released For CCS By:

Tested By:

THU CHAN  
EMC SUPERVISOR  
COMPLIANCE CERTIFICATION SERVICES

WILLIAM ZHUANG  
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 47173 Benicia Street, Fremont, 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
Radiated Emission Above 2000 MHz	+/- 4.3 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 dual band CDMA 2000 phone with BT.

The radio module is manufactured by Kyocera Wireless.

### 5.2. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an IFA antenna, with a maximum gain of 2.6dBi.

### 5.3. SOFTWARE AND FIRMWARE

Two application software were used as follows:

1) StartGraphitePassThru.exe

Version: 1.0.0.1

2) BtCliCtrl.exe

Version: 1.0

Platform of EUT: M1000-2X0

SW Version of EUT: JV0.2.13

### 5.4. WORST-CASE CONFIGURATION AND MODE

The EUT has been investigated on all possible X Y Z, open, and normal positions, and the worst position is determined at Y position.

## 5.5. DESCRIPTION OF TEST SETUP

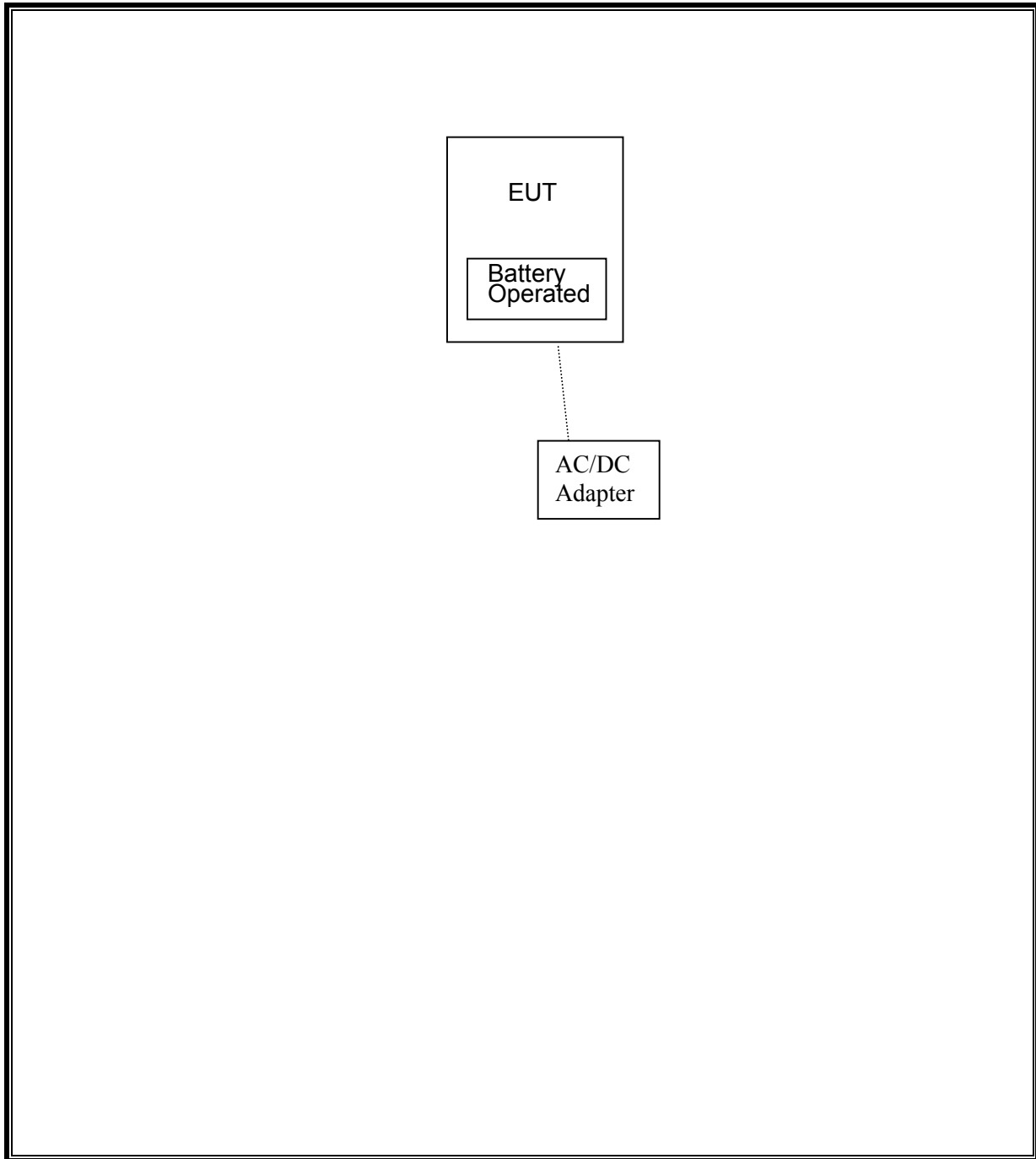
### SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Travel Charger	Kyocera	TXTVL10103	SSW-1212	N/A

### I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	DC Power	1	DC Power	Unshielded	1.8m	N/A

**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	S/N	Cal Due
Spectrum Analyzer 9KHz ~ 26.5 GHz	Agilent / HP	E4407B	MY41444592	10/06/07
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	2238	04/15/08
Antenna, Log Periodic 200 ~ 1000 MHz	EMCO	3146	9107-3163	03/11/08
Preamplifier, 1 ~ 26.5 GHz	Agilent / HP	8449B	3008A00931	08/01/07
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	04/15/08
Antenna, Bilog 30 MHz ~ 2 GHz	Sunol Sciences	JB1	A121003	08/13/07
EMI Test Receiver	R & S	ESHS 20	827129/006	01/27/08
LISN, 10 kHz ~ 30 MHz	FCC	LISN-50/250-25-2	2023	09/15/07
Preamplifier, 1 ~ 26.5 GHz	Agilent / HP	8449B	3008A00931	08/01/07
Antenna, Horn 1 ~ 18 GHz	EMCO	3115	6717	04/15/08

## 7. LIMITS AND RESULTS

### 7.1. RADIATED EMISSIONS

#### 7.1.1. 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.

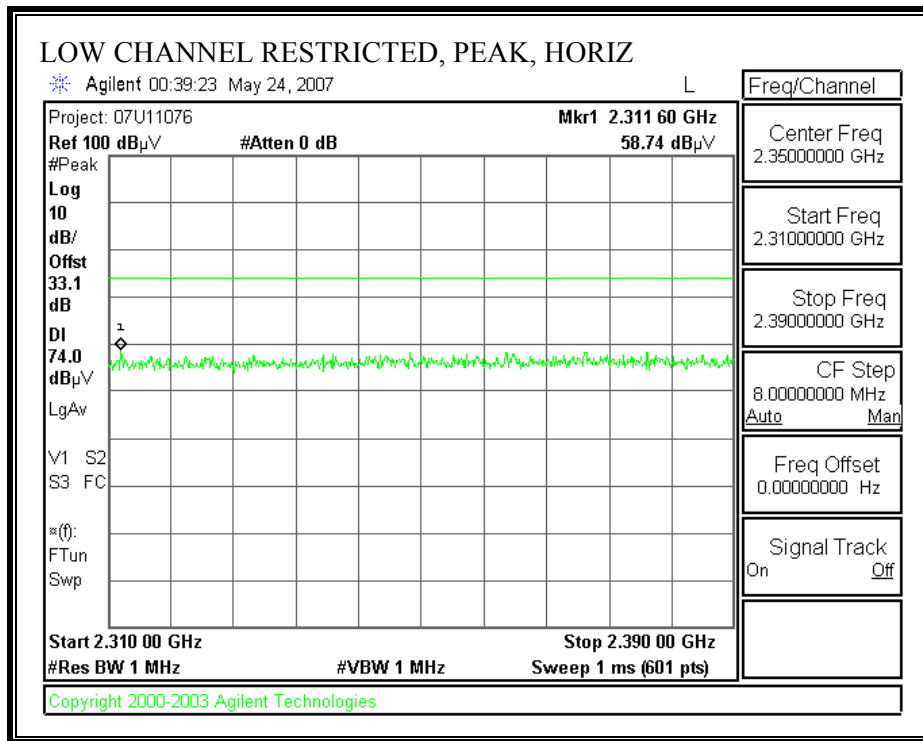
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

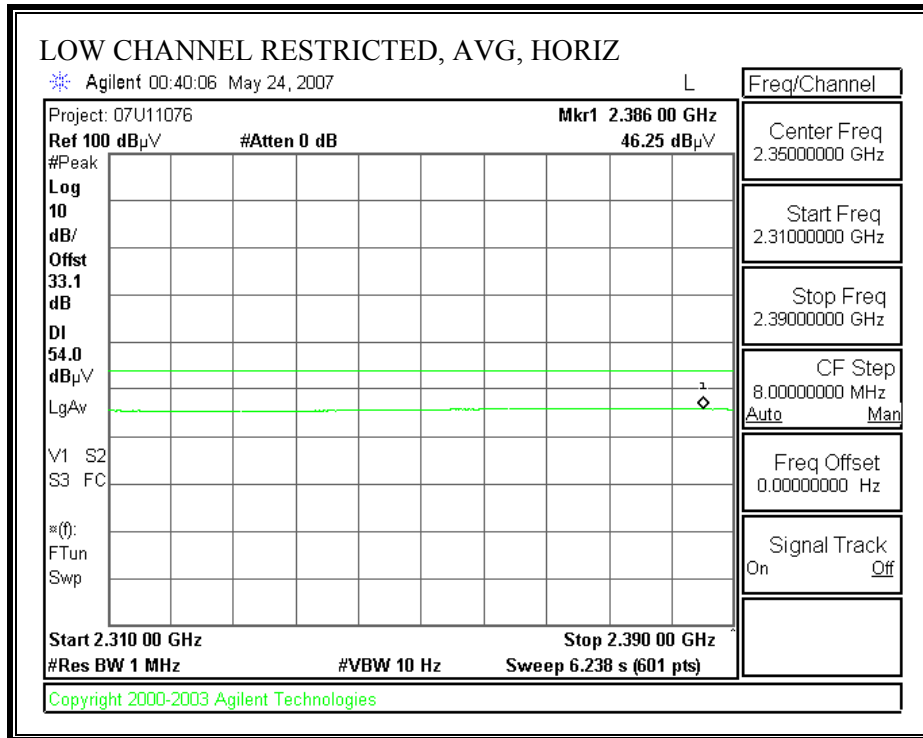
The spectrum from 30 MHz to 40 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in each 5 GHz band.

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.

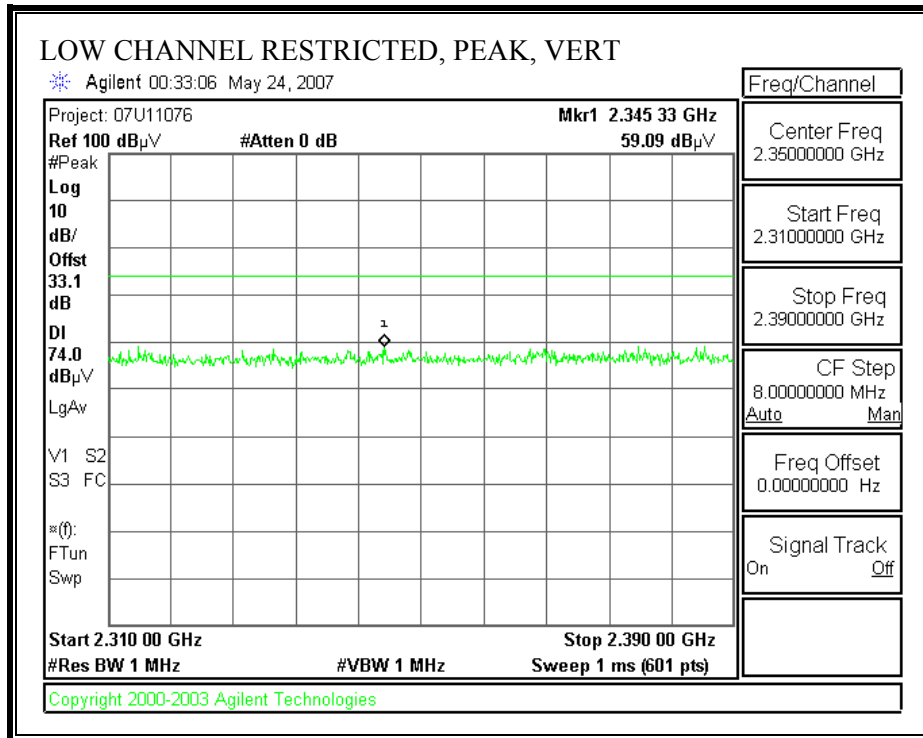
### 7.1.2. TRANSMITTER RADIATED EMISSIONS ABOVE 1 GHZ

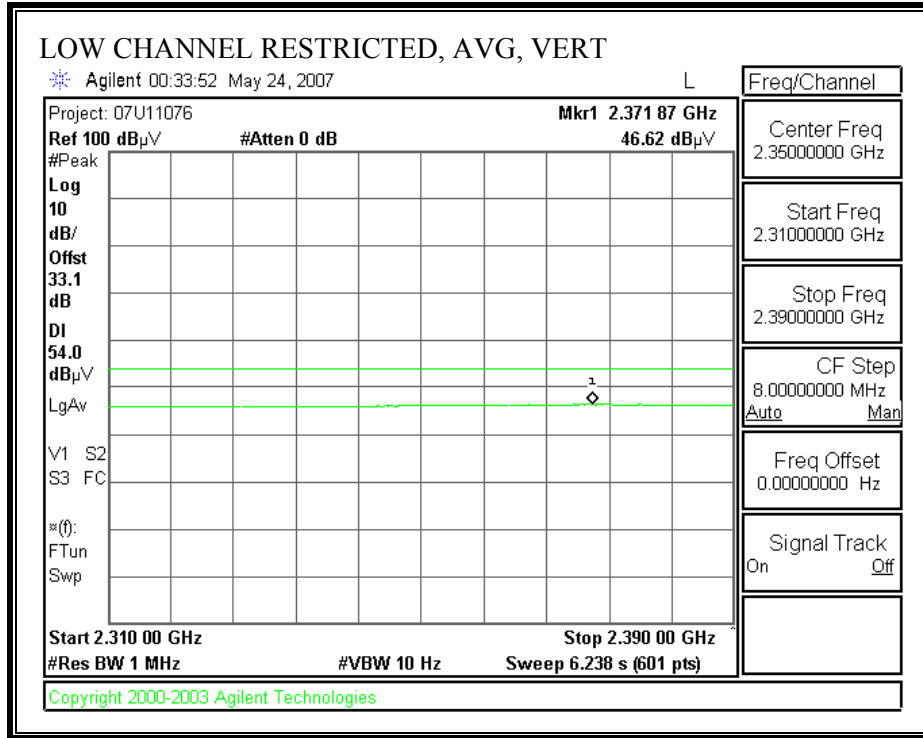
#### RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



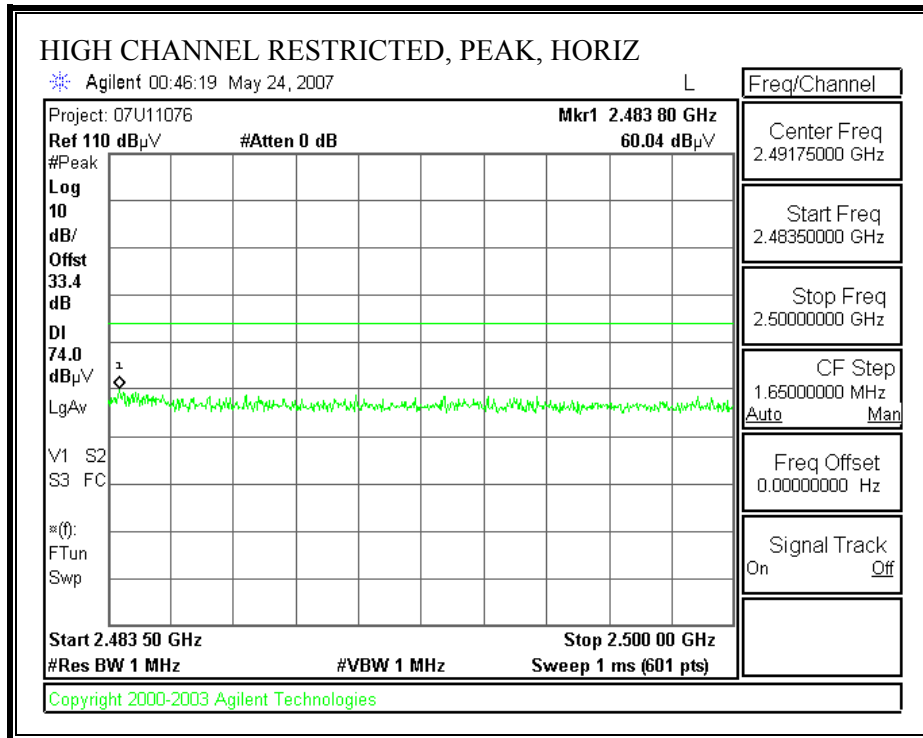


**RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)**

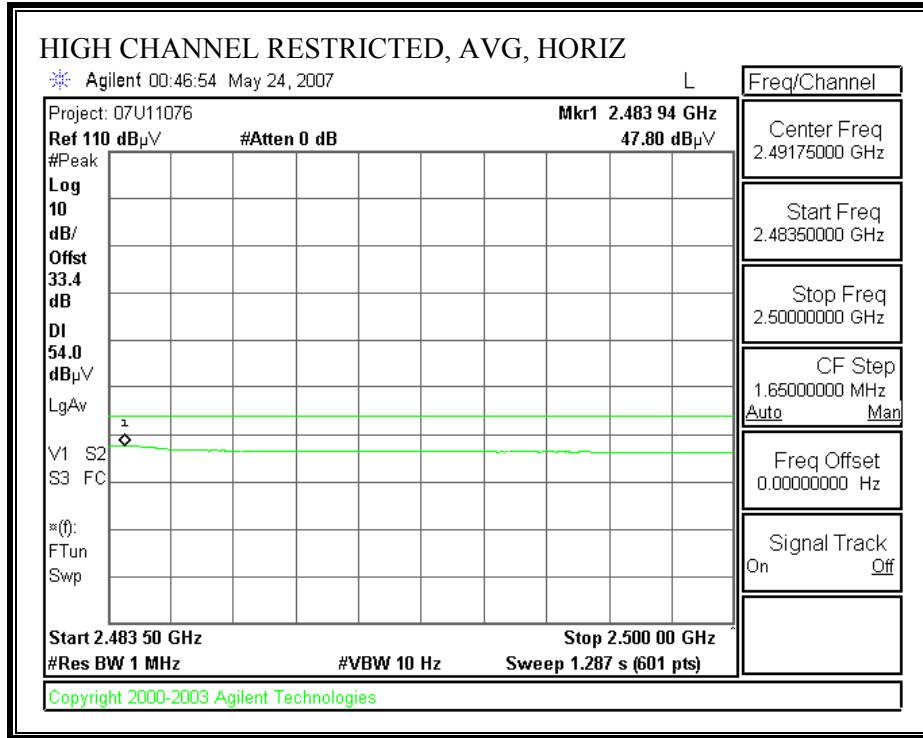




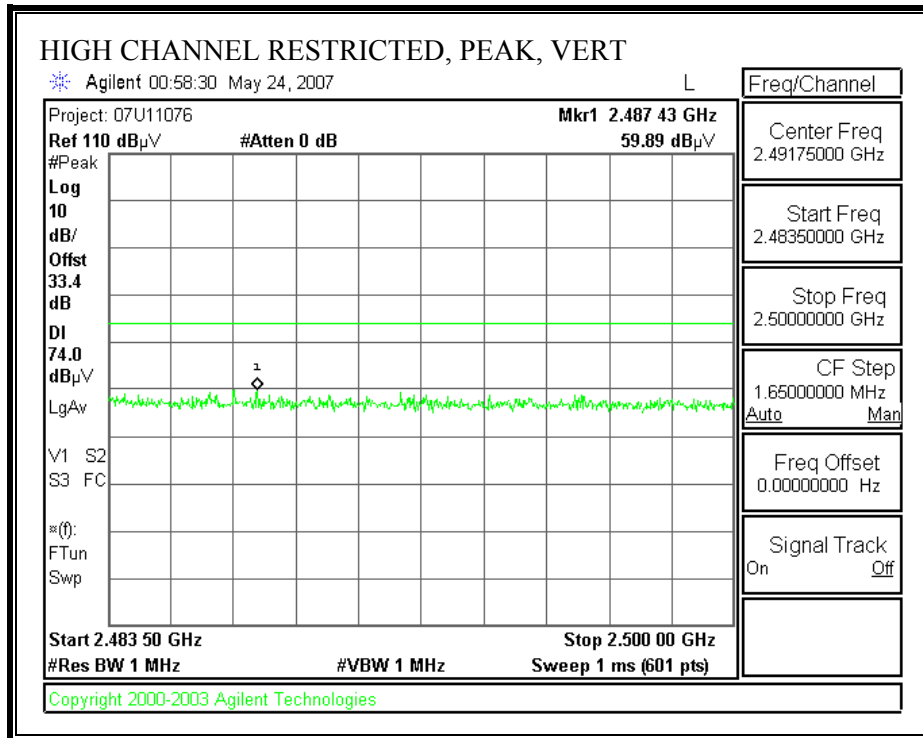
**RESTRICTED BANDEDGE (HIGH CHANNEL, HORIZONTAL)**

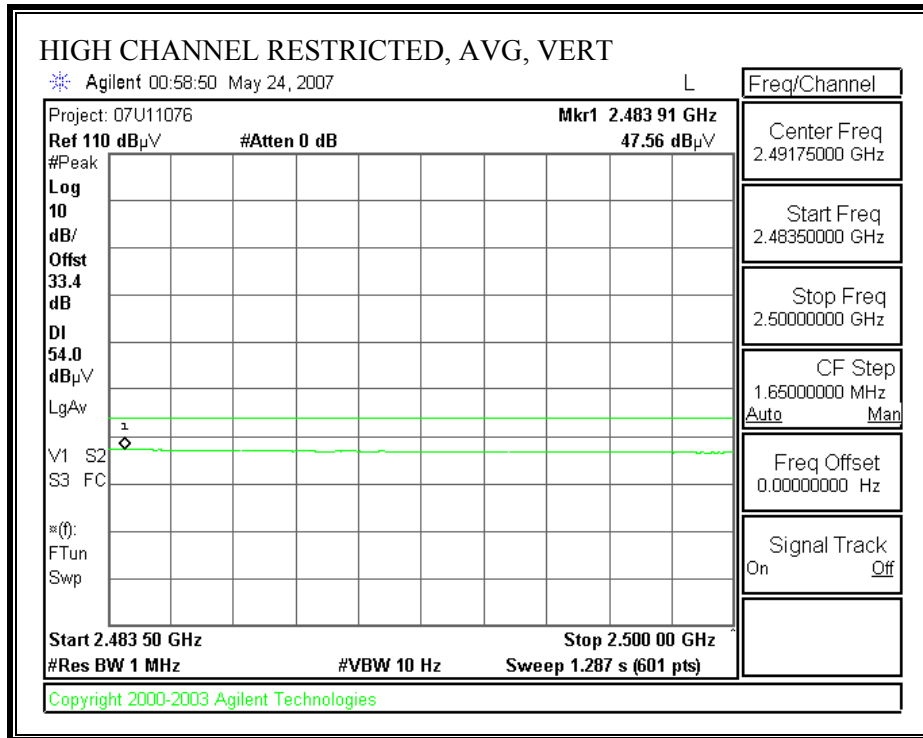






**RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)**



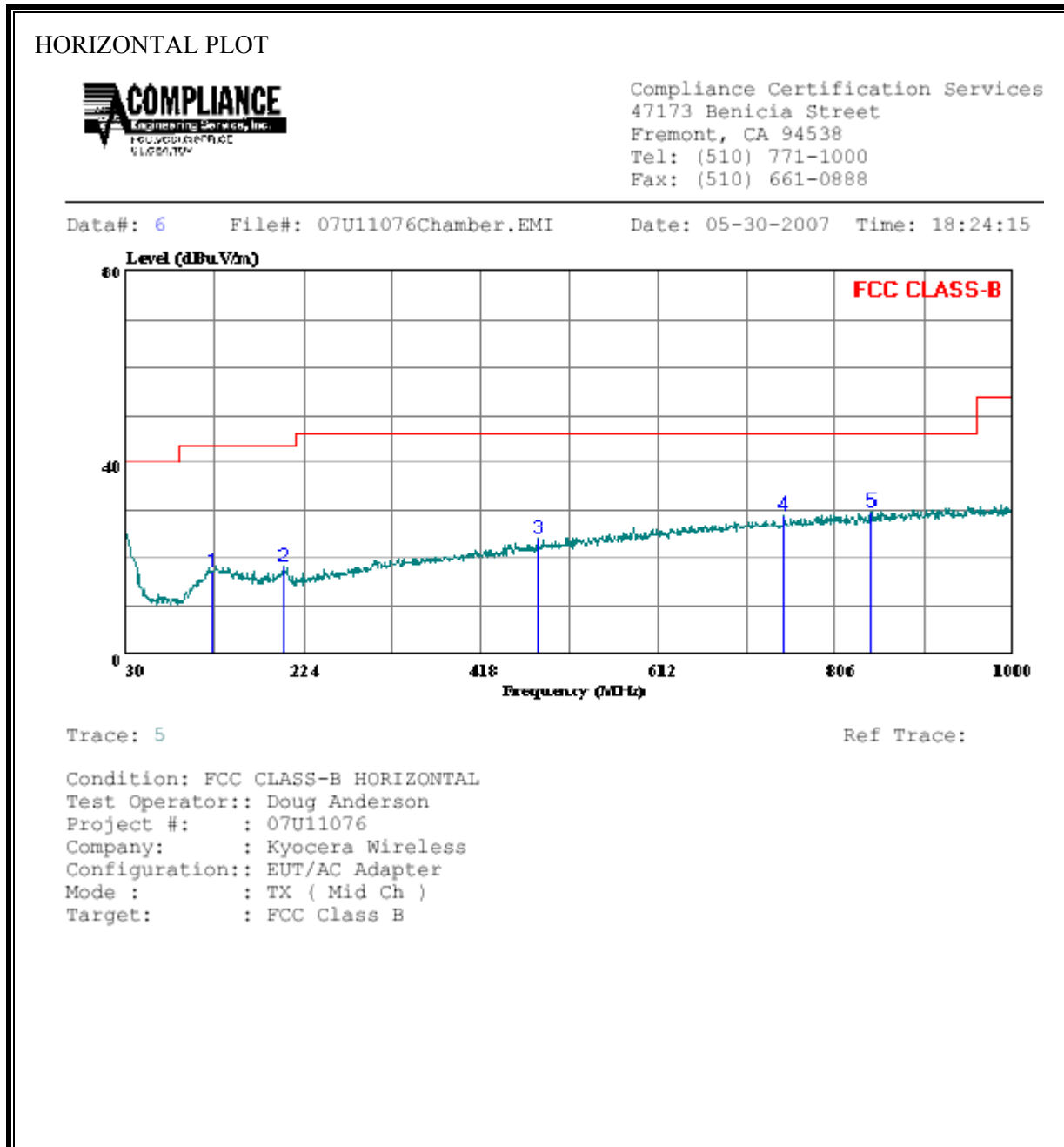


**HARMONICS AND SPURIOUS EMISSIONS**

05/25/07 High Frequency Measurement																	
Compliance Certification Services, Morgan Hill Open Field Site																	
Test Engr: William Zhuang																	
Project #: 07U11076																	
Company: Kyocera Wireless																	
EUT Descrip.: Dual Band CDMA 2000 phone with Bluetooth, internal antenna, clam shell, single config., AC adapter																	
EUT M/N: M1000-2X0																	
Test Target: FCC 15.247																	
Mode Oper: Tx On																	
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											
f	Dist	Read Pk	Read Avg	AF	CL	Amp	D Corr	Fitr	Peak	Avg	Pk Lim	Avg Lim	Pk Mar	Avg Mar	Notes		
GHz	(m)	dBuV	dBuV	dB/m	dB	dB	dB	dB	dBuV/m	dBuV/m	dBuV/m	dBuV/m	dB	dB	(V/H)		
<b>Low Ch. 2402MHz</b>																	
4.804	3.0	38.4	25.5	33.3	6.9	-36.5	0.0	0.6	42.7	29.7	74.0	54.0	-31.3	-24.3	V		
4.804	3.0	38.5	25.6	33.3	6.9	-36.5	0.0	0.6	42.8	29.8	74.0	54.0	-31.2	-24.2	H		
<b>Mid Ch. 2441MHz</b>																	
4.882	3.0	38.8	26.0	33.4	6.9	-36.5	0.0	0.6	43.3	30.5	74.0	54.0	-30.7	-23.5	V		
4.882	3.0	38.2	26.2	33.4	6.9	-36.5	0.0	0.6	42.7	30.6	74.0	54.0	-31.4	-23.4	H		
<b>High Ch. 2480MHz</b>																	
4.960	3.0	39.1	26.2	33.4	7.0	-36.5	0.0	0.6	43.7	30.8	74.0	54.0	-30.3	-23.2	V		
4.960	3.0	38.2	26.0	33.4	7.0	-36.5	0.0	0.6	42.8	30.6	74.0	54.0	-31.2	-23.4	H		
No more signal found above noise floor																	

**7.1.3. WORST-CASE RADIATED EMISSIONS BELOW 1 GHz**

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

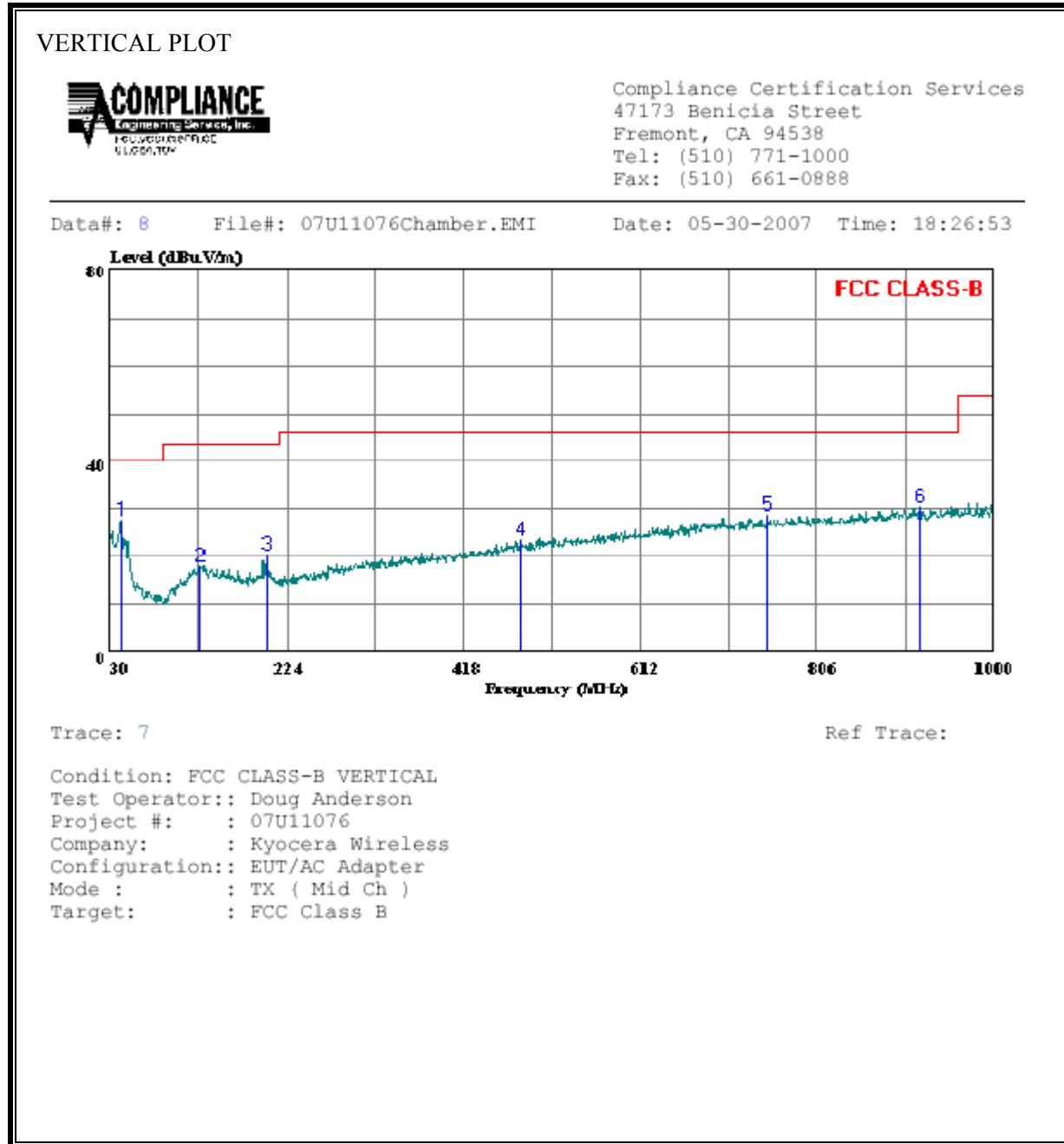


HORIZONTAL DATA

Page: 1

	Freq	Read Level	Factor	Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB	dBuV/m	dBuV/m	dB	
1	124.090	30.40	-13.05	17.35	43.50	-26.15	Peak
2	201.690	31.90	-13.60	18.30	43.50	-25.20	Peak
3	480.080	32.10	-7.81	24.29	46.00	-21.71	Peak
4	748.770	31.80	-2.80	29.00	46.00	-17.00	Peak
5	845.770	31.50	-1.69	29.81	46.00	-16.19	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	41.640	40.59	-12.84	27.74	40.00	-12.26	Peak
2	127.970	30.90	-13.04	17.86	43.50	-25.64	Peak
3	201.690	33.90	-13.60	20.30	43.50	-23.20	Peak
4	480.080	31.30	-7.81	23.49	46.00	-22.51	Peak
5	751.680	31.40	-2.74	28.66	46.00	-17.34	Peak
6	917.550	31.60	-0.99	30.61	46.00	-15.39	Peak



## 7.2. 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.

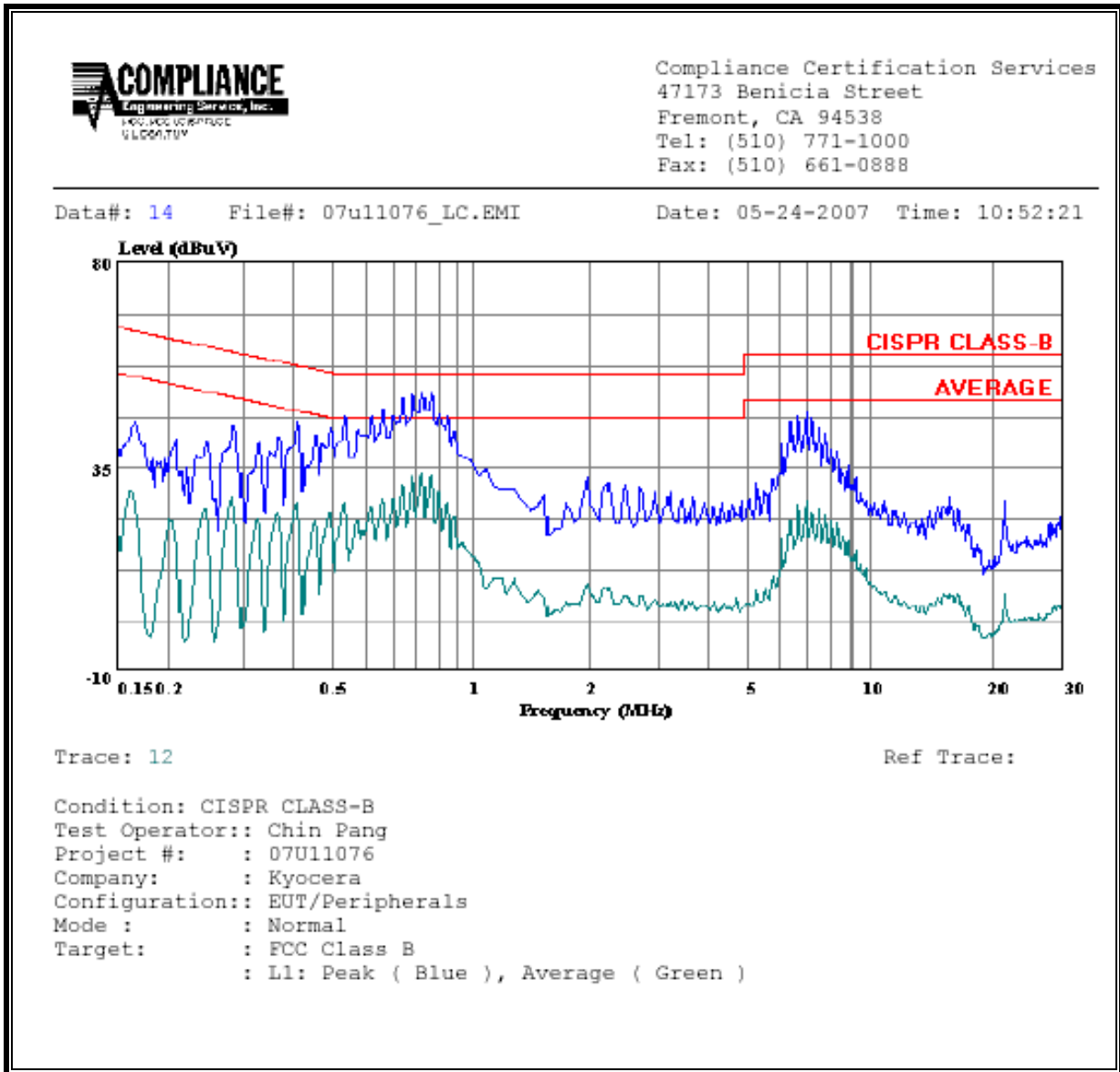
### RESULTS

No non-compliance noted:

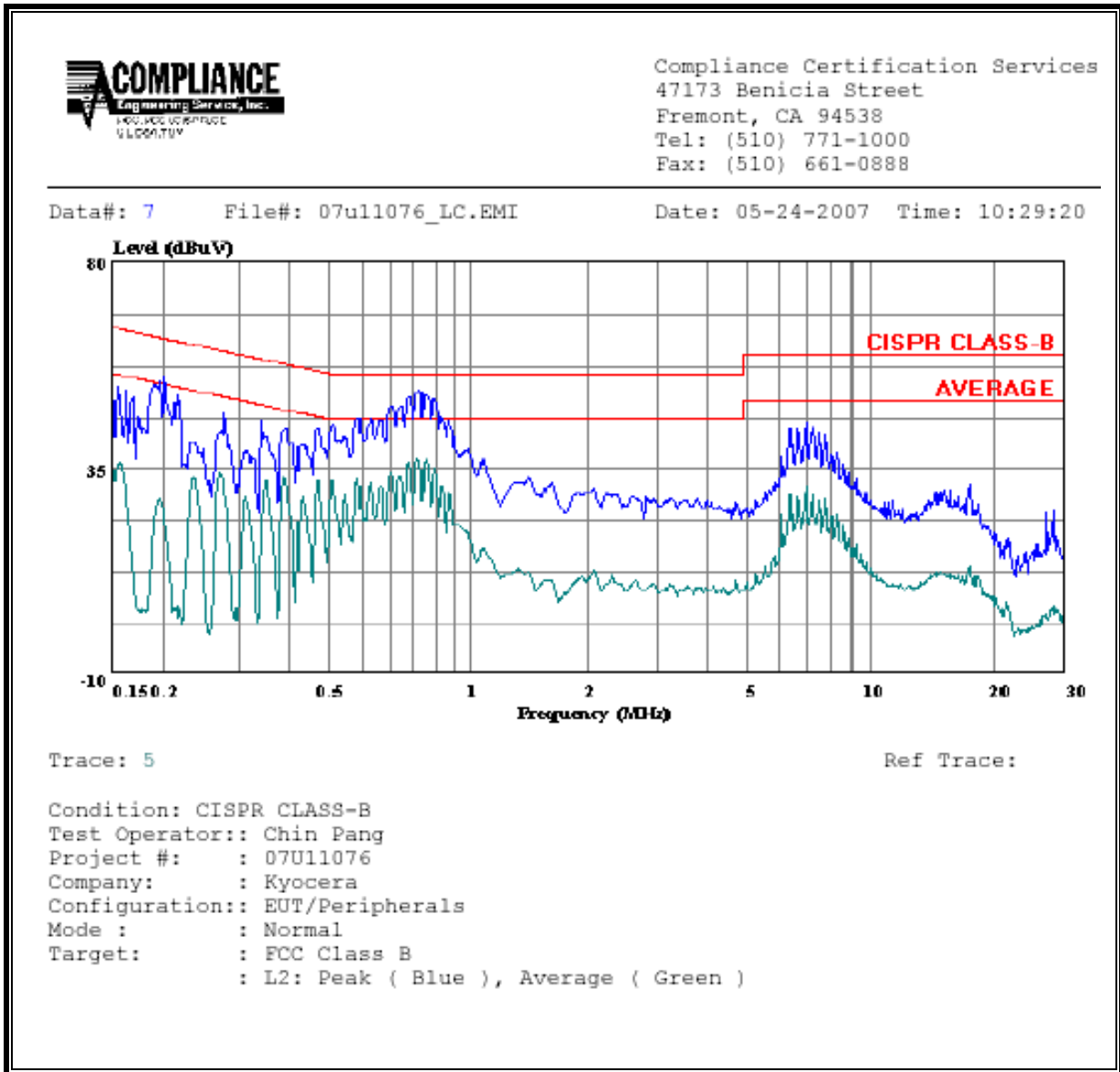
**6 WORST EMISSIONS**

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
0.16	44.80	--	30.11	0.00	65.26	55.26	-20.46	-25.15	L1
0.86	51.72	--	33.84	0.00	56.00	46.00	-4.28	-12.16	L1
7.06	47.20	--	26.85	0.00	60.00	50.00	-12.80	-23.15	L1
0.19	53.44	--	36.38	0.00	64.04	54.04	-10.60	-17.66	L2
0.83	52.20	--	37.38	0.00	56.00	46.00	-3.80	-8.62	L2
7.06	45.29	--	31.39	0.00	60.00	50.00	-14.71	-18.61	L2
6 Worst Data									

**LINE 1 RESULTS**



**LINE 2 RESULTS**



**NOTE: Setup photos are contained in a separate document.**