



**FCC CFR47 PART 15 SUBPART C  
CLASS II PERMISSIVE CHANGE**

**CERTIFICATION TEST REPORT**

**FOR**

**SINGLE BAND 1XRTT CDMA PHONE WITH BLUETOOTH**

**FCC MODEL NUMBER: K53-01**

**FCC ID: OVF-K5301**

**REPORT NUMBER: 10U13126-2**

**ISSUE DATE: MARCH 25, 2010**

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

*Prepared by*  
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**NVLAP**<sup>®</sup>

NVLAP LAB CODE 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
---	03/25/10	Initial Issue	T. Chan

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## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** KYOCERA WIRELESS CORP.  
10300 CAMPUS POINT DRIVE  
SAN DIEGO, CA 9212, U.S.A.

**EUT DESCRIPTION:** SINGLE BAND 1XRTT CDMA PHONE WITH BLUETOOTH

**FCC MODEL:** K53-01

**SERIAL NUMBER:** F0000036187877

**DATE TESTED:** MARCH 24-25, 2010

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
CFR 47 Part 15 Subpart C	PASS

Compliance Certification Services, Inc. (CCS) tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by CCS based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. 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 CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by CCS will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Approved & Released For CCS By:



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THU CHAN  
EMC MANAGER  
COMPLIANCE CERTIFICATION SERVICES

Tested By:



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OLIVER SU  
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.

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. SAMPLE CALCULATION

Where relevant, the following sample calculation is provided:

$$\begin{aligned} \text{Field Strength (dBuV/m)} &= \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \\ &\text{Cable Loss (dB)} - \text{Preamp Gain (dB)} \\ 36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} &= 28.9 \text{ dBuV/m} \end{aligned}$$

### 4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 0.15 to 30 MHz	3.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.94 dB

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

## 5. EQUIPMENT UNDER TEST

### 5.1. DESCRIPTION OF EUT

The EUT is a Bluetooth, and EDR featured Single band CDMA Phone that manufactured by Kyocera Wireless Corporation.

### 5.2. MAXIMUM OUTPUT POWER

The test measurement passed within  $\pm 0.5\text{dBm}$  of the original output power.

### 5.3. DESCRIPTION OF CLASS II PERMISSIVE CHANGE

The major change filed under this application is adding Mechanical Enclosure.

### 5.4. DESCRIPTION OF AVAILABLE ANTENNAS

The radio utilizes an internal antenna, with a maximum gain of 0.05 dBi.

### 5.5. SOFTWARE AND FIRMWARE

The firmware installed in the EUT during testing was eng.bicent.20091118.144145.

The EUT driver software installed in the host support equipment during testing was Setup BTCLI, version 2.0.

The test utility software used during testing was FCC\_Tools.

### 5.6. WORST-CASE CONFIGURATION

The EUT has been evaluated at X, Y, Z-axis, and AC/DC adapter. The highest measured output power was at X-Axis with AC/DC adapter.

## 5.7. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

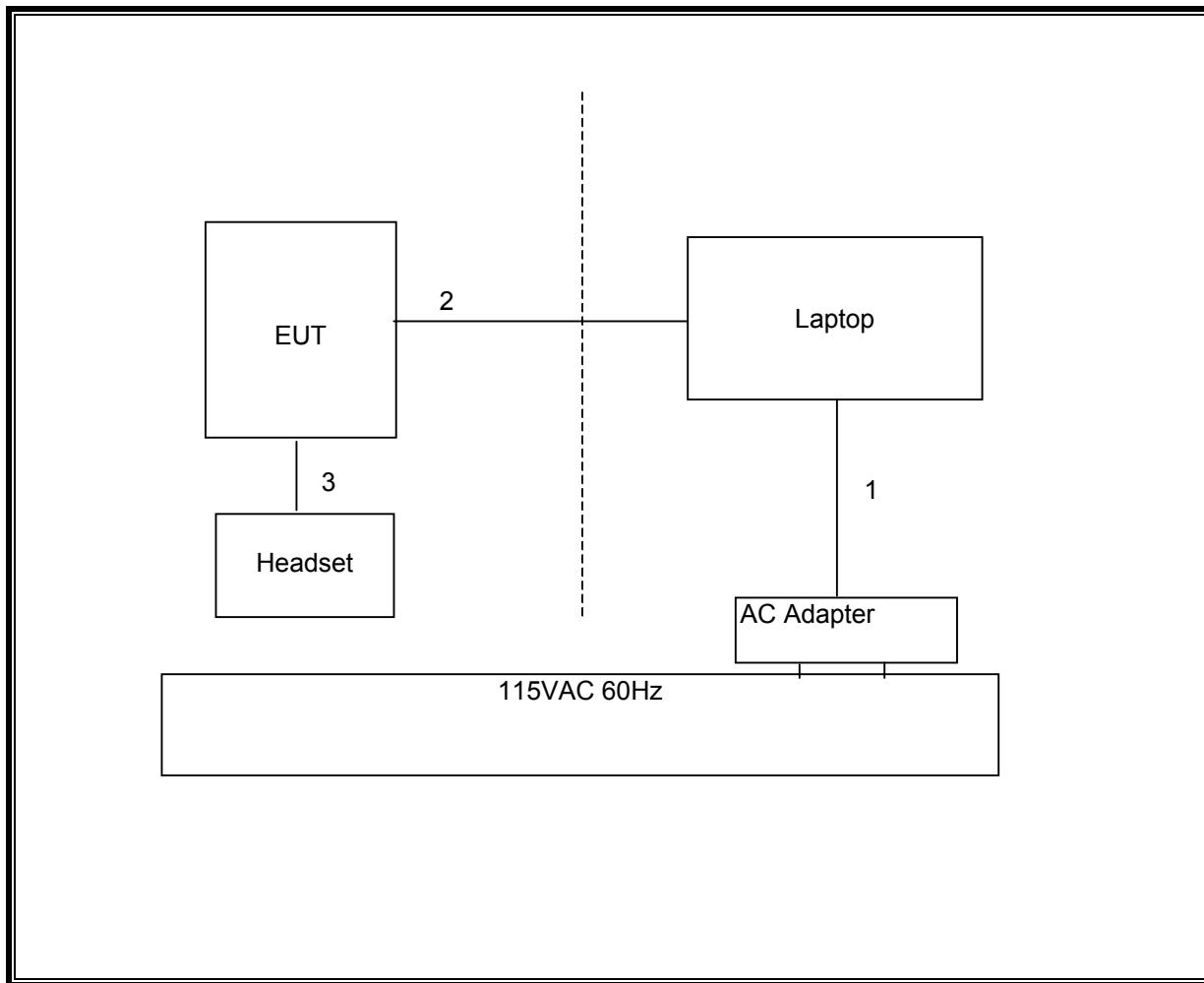
PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Laptop PC	DELL	D620	CCS # C01095	E2KWM3945ABG
AC Adapter	DELL	LA65NS0-00	CN-ODF23-71615-72M-2925	N/A
AC Adapter	Kyocera	TXTVL10148	N/A	DOC
Headset	Kyocera	N/A	N/A	N/A

### I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	DC Input	1	Mini-USB	Un-Shielded	1.85 m	N/A
2	USB	1	Mini-USB	Un-Shielded	1 m	N/A
3	AUDIO	1	Mini-Jack	Un-Shielded	1.2 m	Volume Control on the Cable

### TEST SETUP

The headset attached EUT is tested as stand-alone unit. The support laptop is used only to setup, change channels and modulations for 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	Asset	Cal Due
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	08/04/10
Antenna, Horn, 18 GHz	ETS	3115	C00783	07/29/10
Preamplifier, 1300 MHz	Agilent / HP	8447D	C00580	01/06/11
Spectrum Analyzer, 26.5 GHz	Agilent / HP	E4440A	C01178	08/31/10
Reject Filter, 2.4-2.5 GHz	Micro-Tronics	BRM50702	N02684	CNR
Antenna, Bilog, 2 GHz	Sunol Sciences	JB1	C01016	07/14/10

## 7. RADIATED TEST RESULTS

### 7.1. LIMITS AND PROCEDURE

#### LIMITS

FCC §15.205 and §15.209

Frequency Range (MHz)	Field Strength Limit (uV/m) at 3 m	Field Strength Limit (dBuV/m) at 3 m
30 - 88	100	40
88 - 216	150	43.5
216 - 960	200	46
Above 960	500	54

#### 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.

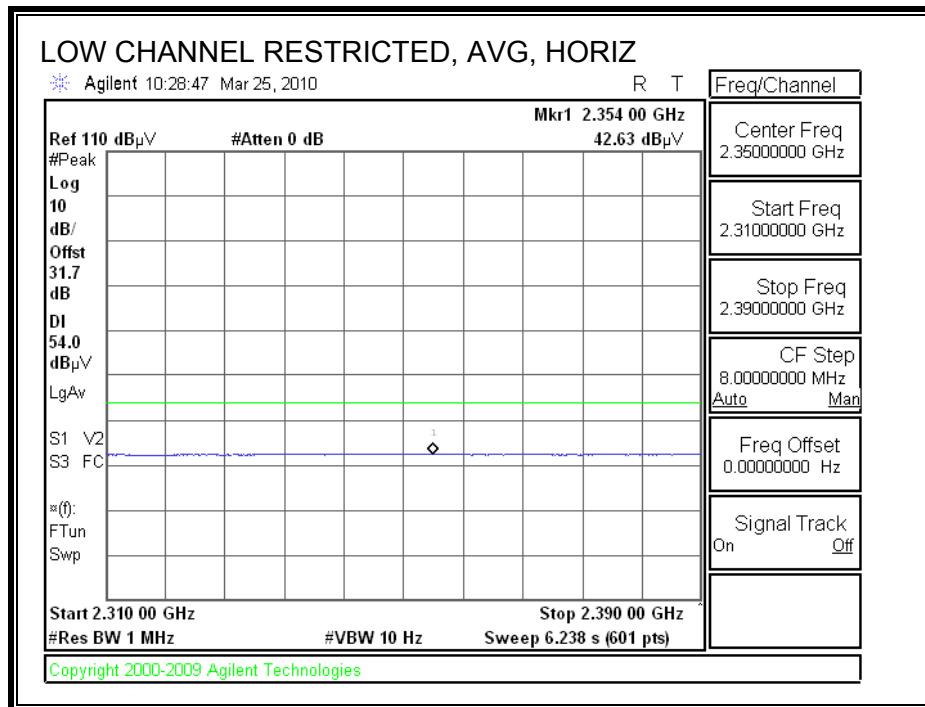
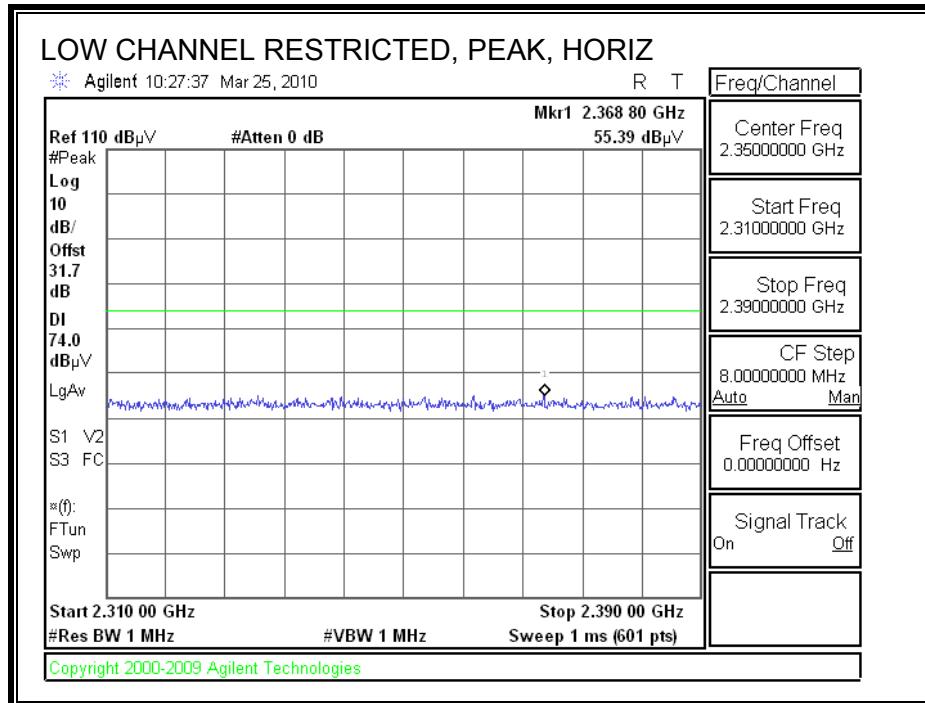
The spectrum from 30 MHz to 26 GHz is investigated with the transmitter set to the lowest, middle, and highest channels in the 2.4 GHz band.

The 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.

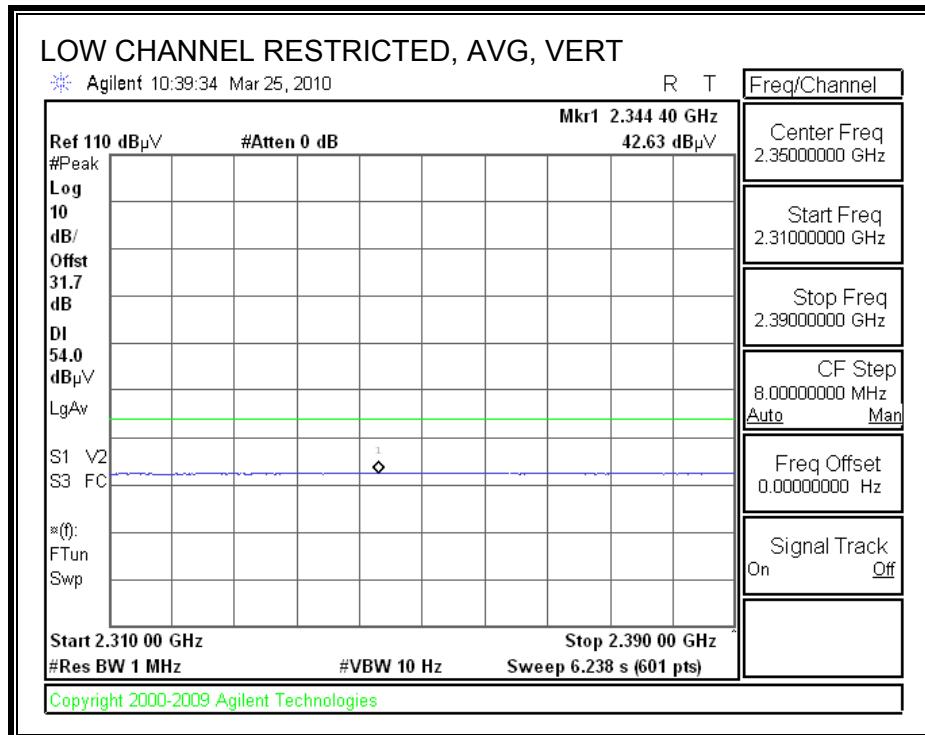
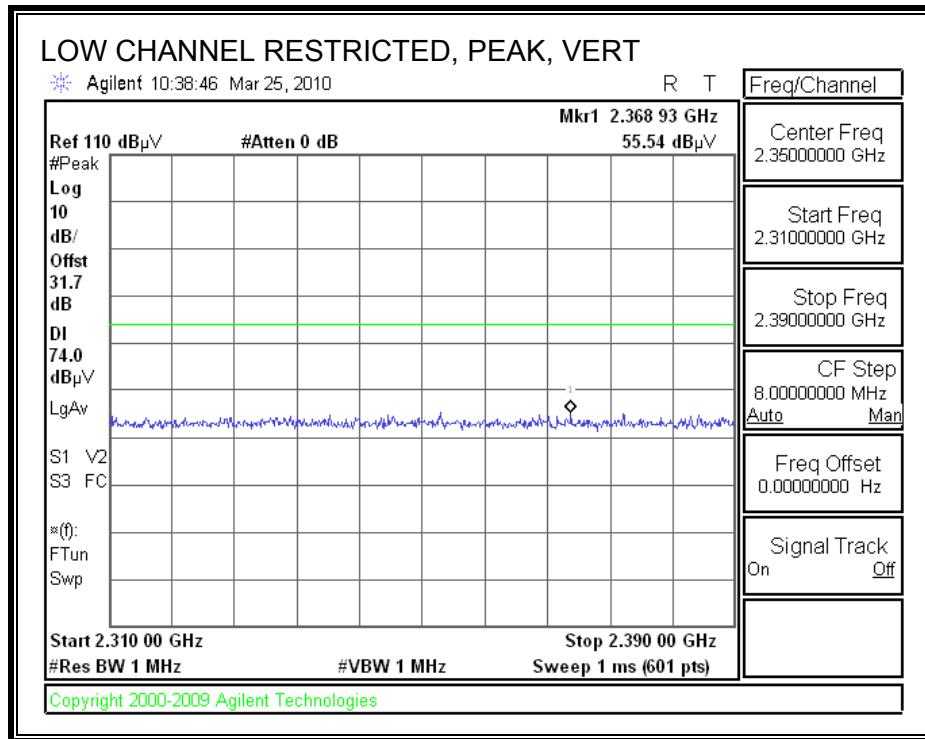
## 7.2. TRANSMITTER ABOVE 1 GHz

### 7.2.1. BASIC DATA RATE GFSK MODULATION

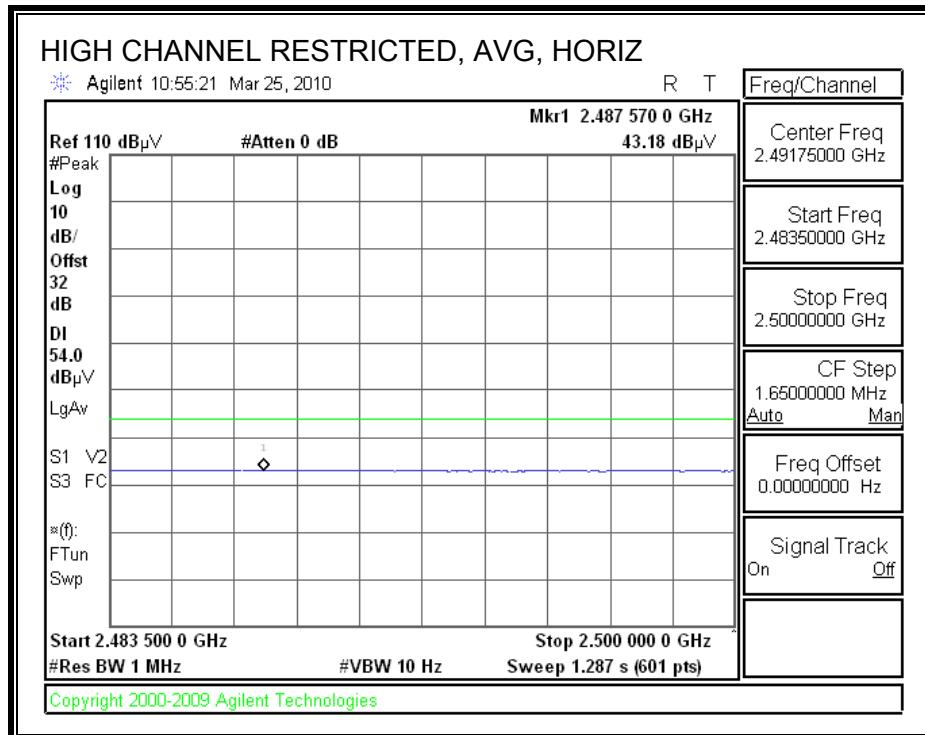
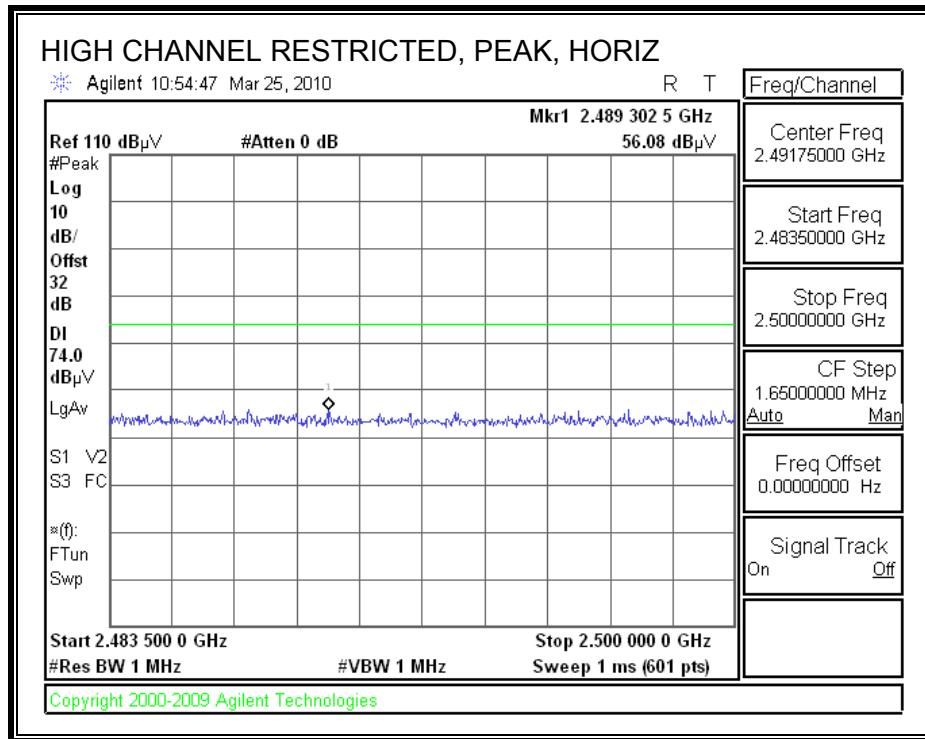
#### RESTRICTED BANEDGE (LOW CHANNEL, HORIZONTAL)



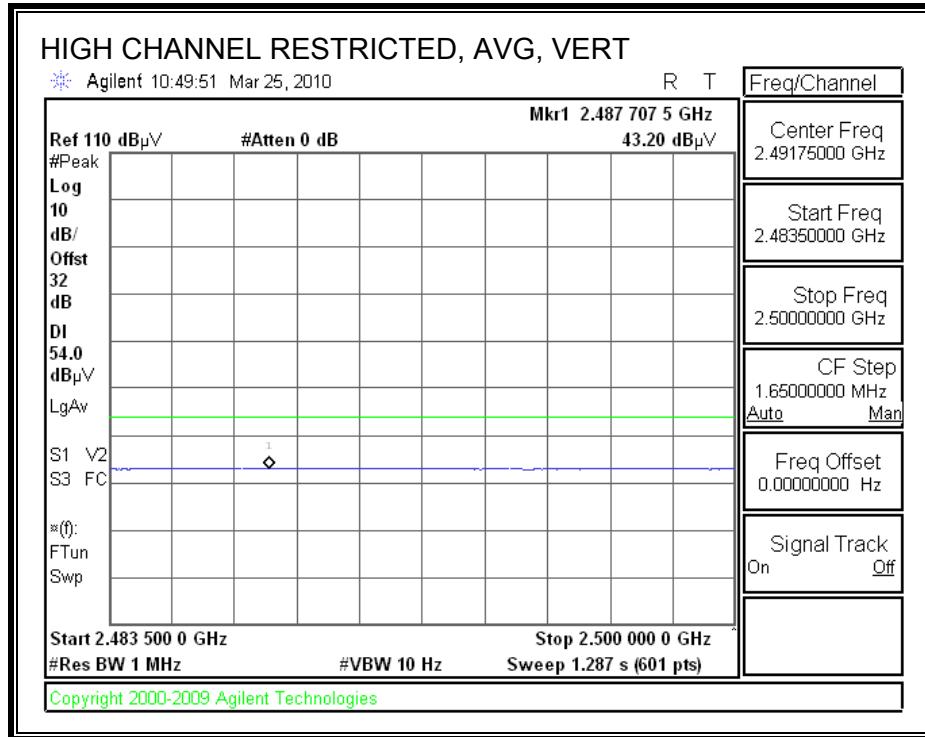
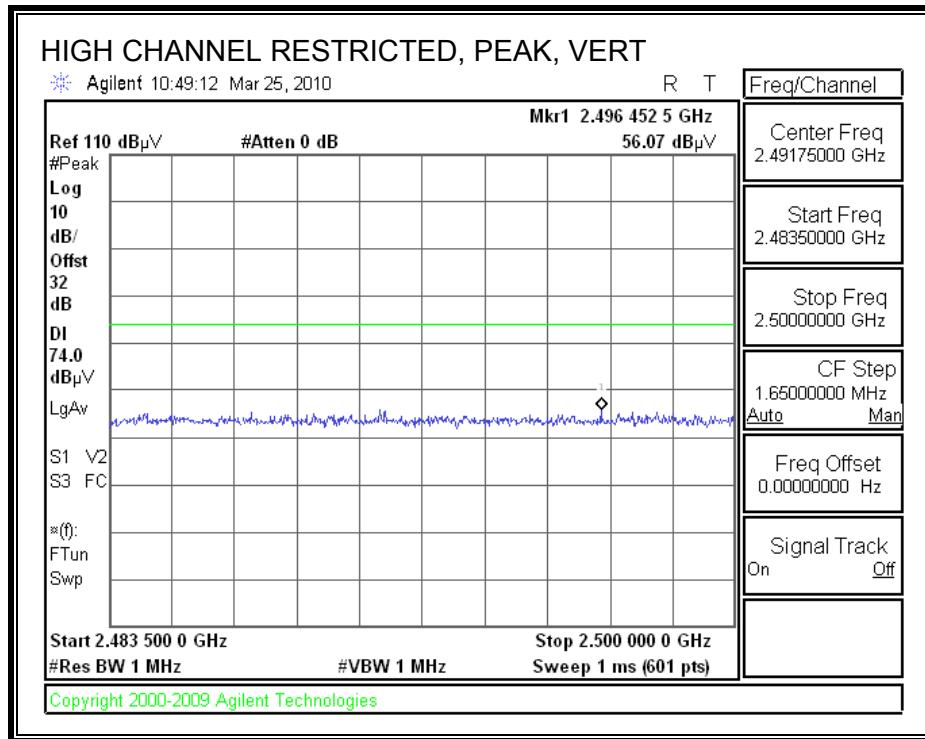
**RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)**



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



### RESTRICTED BANDEDGE (HIGH CHANNEL, VERTICAL)



**HARMONICS AND SPURIOUS EMISSIONS****High Frequency Measurement**  
**Compliance Certification Services, Fremont 5m Chamber**

Test Engr: Oliver Su  
 Date: 03/25/10  
 Project #: 10U13126  
 Company: Kyocera Wireless  
 EUT Description: Single Band 1XRTT CDMA Phone with Bluetooth  
 EUT M/N: K53-01  
 Test Target: FCC 15C  
 Mode Oper: Max Power with Bluetooth on

f	Measurement Frequency	Amp	Preamp Gain	Average Field Strength Limit
Dist	Distance to Antenna	D Corr	Distance Correct to 3 meters	Peak Field Strength Limit
Read	Analyzer Reading	Avg	Average Field Strength @ 3 m	Margin vs. Average Limit
AF	Antenna Factor	Peak	Calculated Peak Field Strength	Margin vs. Peak Limit
CL	Cable Loss	HPF	High Pass Filter	

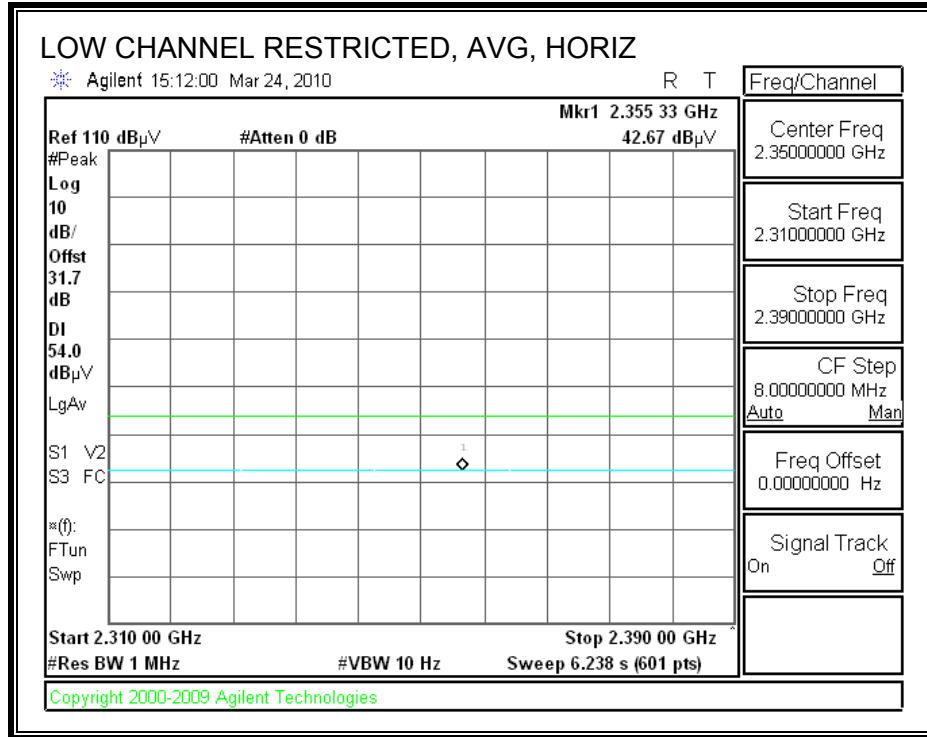
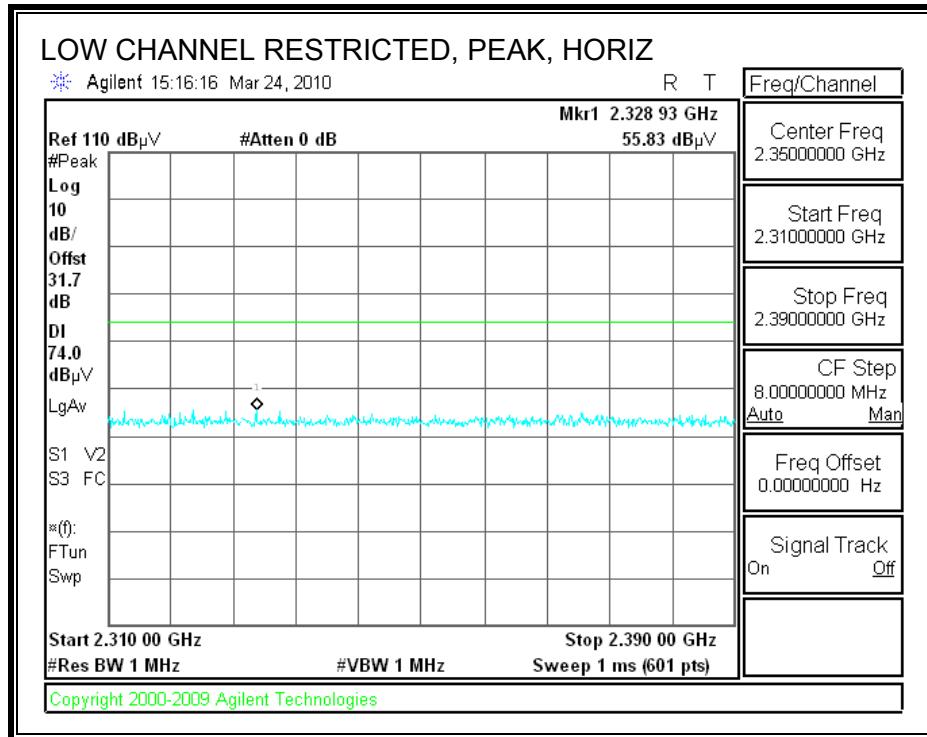
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant Pol. V/H	Det. P/A/QP	Notes
<b>Low ch, 2402 MHz</b>													
4.804	3.0	38.7	32.8	5.8	-34.8	0.0	0.0	42.4	74.0	-31.6	H	P	
4.804	3.0	26.0	32.8	5.8	-34.8	0.0	0.0	29.7	54.0	-24.3	H	A	
4.804	3.0	38.9	32.8	5.8	-34.8	0.0	0.0	42.6	74.0	-31.4	V	P	
4.804	3.0	27.0	32.8	5.8	-34.8	0.0	0.0	30.7	54.0	-23.3	V	A	
<b>Mid ch, 2441 MHz</b>													
4.882	3.0	38.1	32.8	5.8	-34.9	0.0	0.0	41.9	74.0	-32.1	H	P	
4.882	3.0	25.5	32.8	5.8	-34.9	0.0	0.0	29.3	54.0	-24.7	H	A	
4.882	3.0	38.3	32.8	5.8	-34.9	0.0	0.0	42.1	74.0	-31.9	V	P	
4.882	3.0	25.6	32.8	5.8	-34.9	0.0	0.0	29.4	54.0	-24.6	V	A	
<b>High ch, 2480 MHz</b>													
4.960	3.0	37.9	32.9	5.9	-34.9	0.0	0.0	41.8	74.0	-32.2	H	P	
4.960	3.0	25.3	32.9	5.9	-34.9	0.0	0.0	29.2	54.0	-24.8	H	A	
4.960	3.0	38.9	32.9	5.9	-34.9	0.0	0.0	42.8	74.0	-31.2	V	P	
4.960	3.0	25.3	32.9	5.9	-34.9	0.0	0.0	29.2	54.0	-24.8	V	A	

Rev. 4.1.2.7

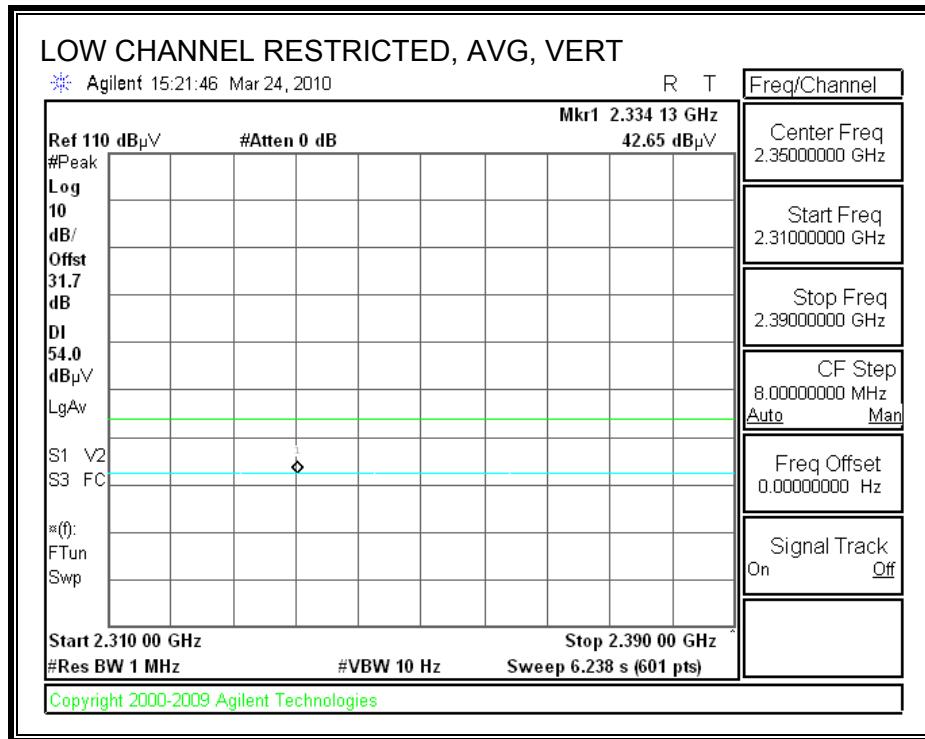
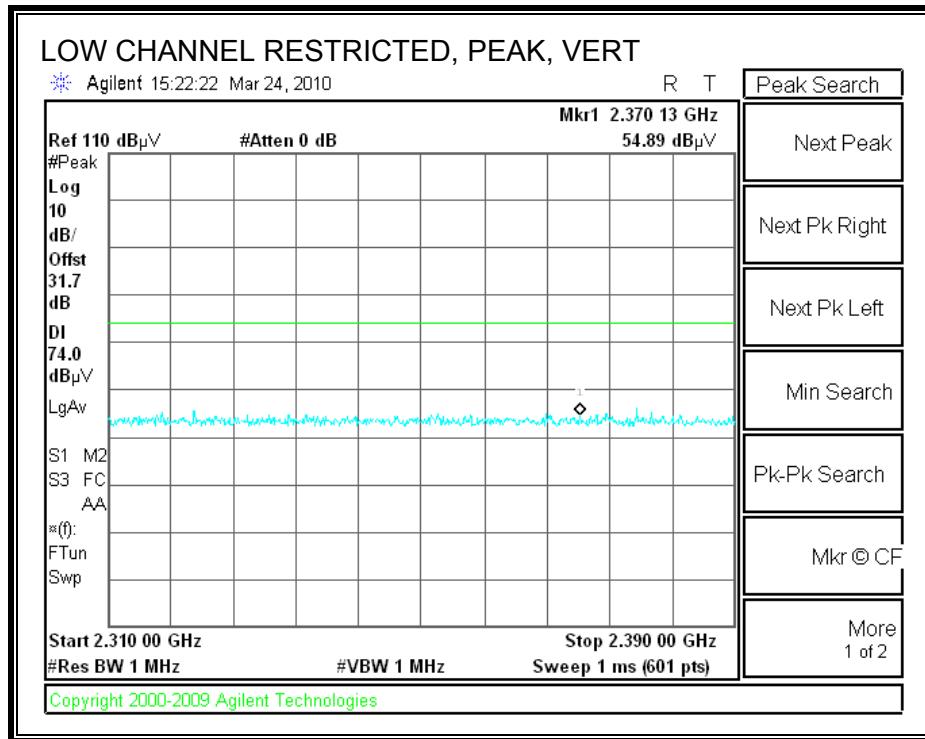
Note: No other emissions were detected above the system noise floor.

## 7.2.2. ENHANCED DATA RATE 8PSK MODULATION

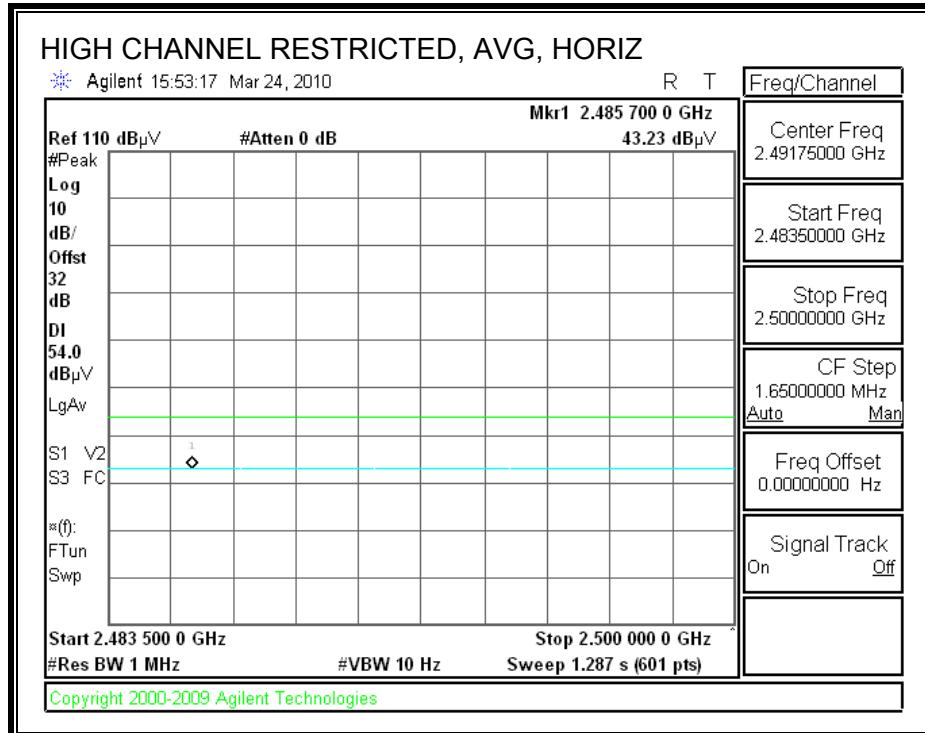
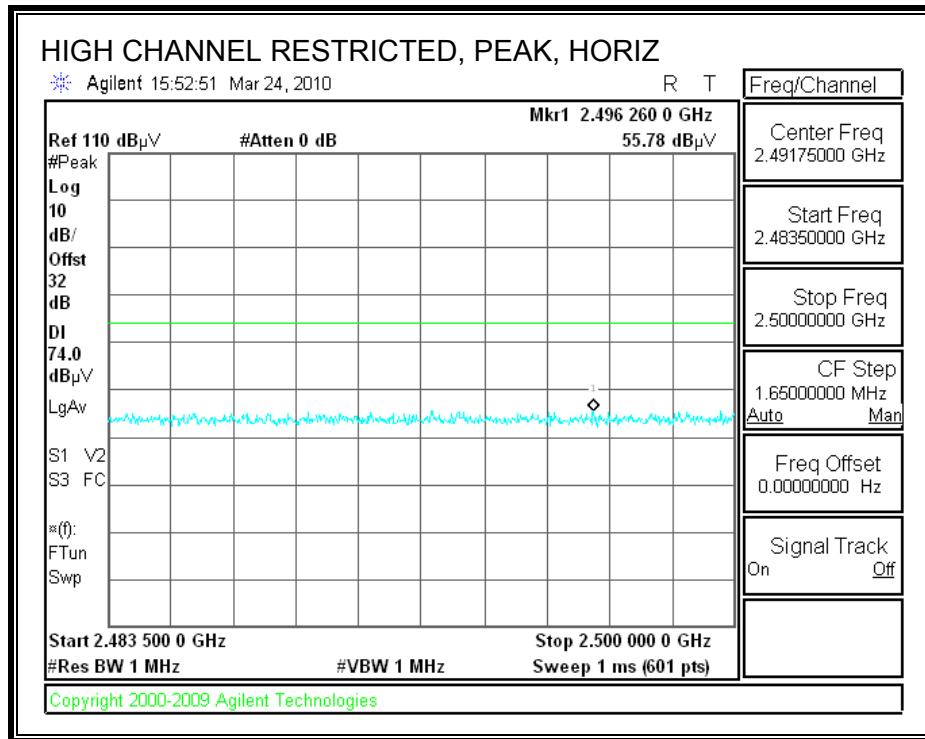
## RESTRICTED BANDEDGE (LOW CHANNEL, HORIZONTAL)



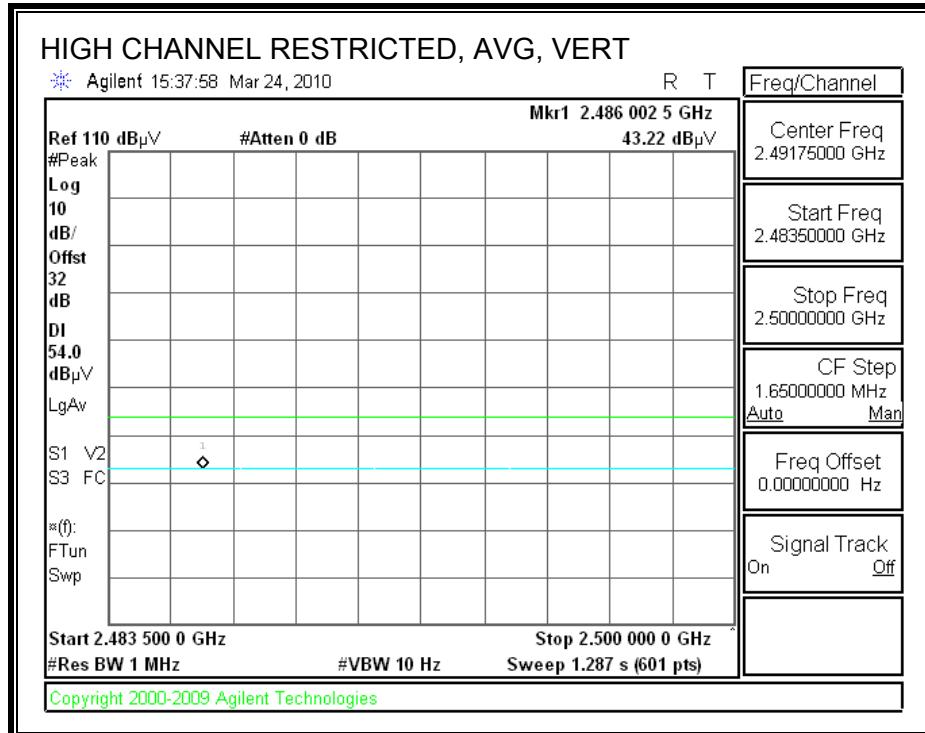
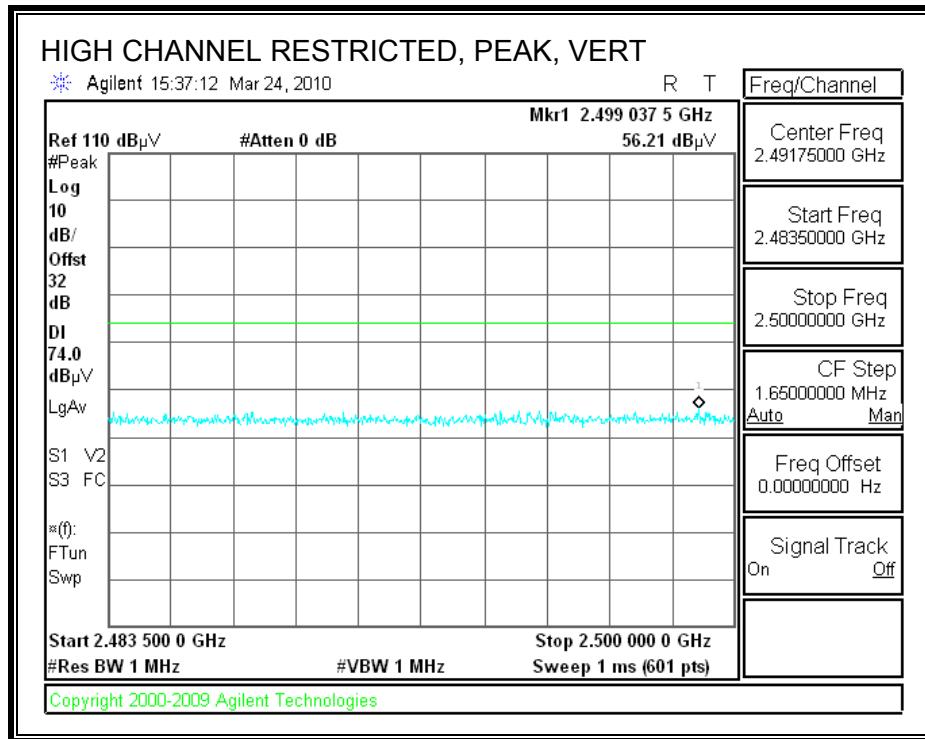
**RESTRICTED BANDEDGE (LOW CHANNEL, VERTICAL)**



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



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



**HARMONICS AND SPURIOUS EMISSIONS**

<b>Company:</b>	Kyocera Wireless												
<b>EUT Description:</b>	Single Band 1XRTT CDMA Phone with Bluetooth												
<b>EUT M/N:</b>	K53-01												
<b>Test Target:</b>	FCC 15C												
<b>Mode Oper:</b>	Max Power with EDR on and Bluetooth on												
	<b>f</b>	Measurement Frequency	Amp	Preamp Gain									Average Field Strength Limit
	<b>Dist</b>	Distance to Antenna	D	Corr	Distance Correct to 3 meters								Peak Field Strength Limit
	<b>Read</b>	Analyzer Reading	Avg		Average Field Strength @ 3 m								Margin vs. Average Limit
	<b>AF</b>	Antenna Factor	Peak		Calculated Peak Field Strength								Margin vs. Peak Limit
	<b>CL</b>	Cable Loss	HPF		High Pass Filter								

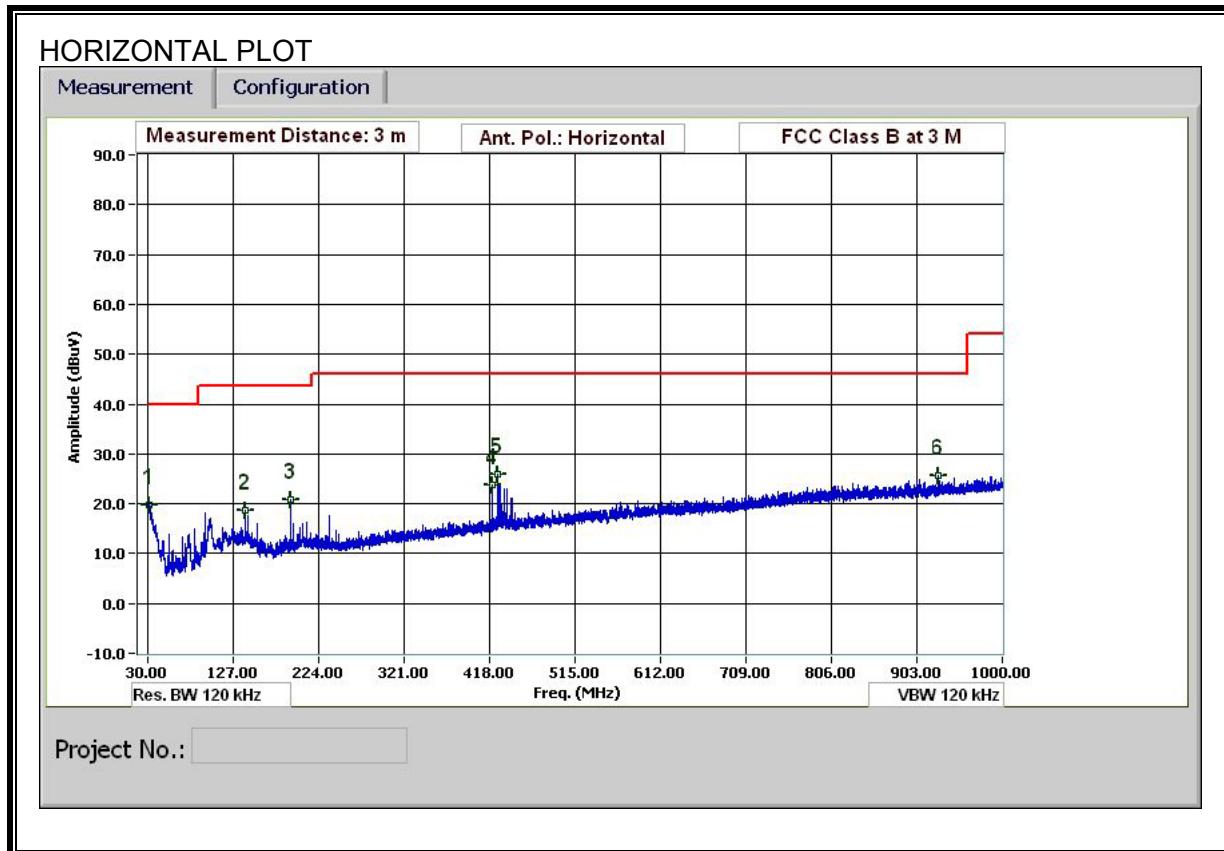
f GHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Fltr dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant. Pol. V/H	Det. P/A/QP	Notes
<b>Low ch, 2402MHz</b>													
4.804	3.0	38.2	32.8	5.8	-34.8	0.0	0.0	41.9	74.0	-32.1	H	P	
4.804	3.0	26.2	32.8	5.8	-34.8	0.0	0.0	29.9	54.0	-24.1	H	A	
4.804	3.0	38.8	32.8	5.8	-34.8	0.0	0.0	42.5	74.0	-31.5	V	P	
4.804	3.0	26.2	32.8	5.8	-34.8	0.0	0.0	29.9	54.0	-24.1	V	A	
<b>Mid ch, 2441MHz</b>													
4.882	3.0	38.4	32.8	5.8	-34.9	0.0	0.0	42.2	74.0	-31.8	H	P	
4.882	3.0	25.6	32.8	5.8	-34.9	0.0	0.0	29.4	54.0	-24.6	H	A	
4.882	3.0	38.5	32.8	5.8	-34.9	0.0	0.0	42.3	74.0	-31.7	V	P	
4.882	3.0	25.6	32.8	5.8	-34.9	0.0	0.0	29.4	54.0	-24.6	V	A	
<b>High ch, 2480MHz</b>													
4.960	3.0	38.3	32.9	5.9	-34.9	0.0	0.0	42.2	74.0	-31.8	H	P	
4.960	3.0	25.5	32.9	5.9	-34.9	0.0	0.0	29.4	54.0	-24.6	H	A	
4.960	3.0	38.0	32.9	5.9	-34.9	0.0	0.0	41.9	74.0	-32.1	V	P	
4.960	3.0	25.4	32.9	5.9	-34.9	0.0	0.0	29.3	54.0	-24.7	V	A	

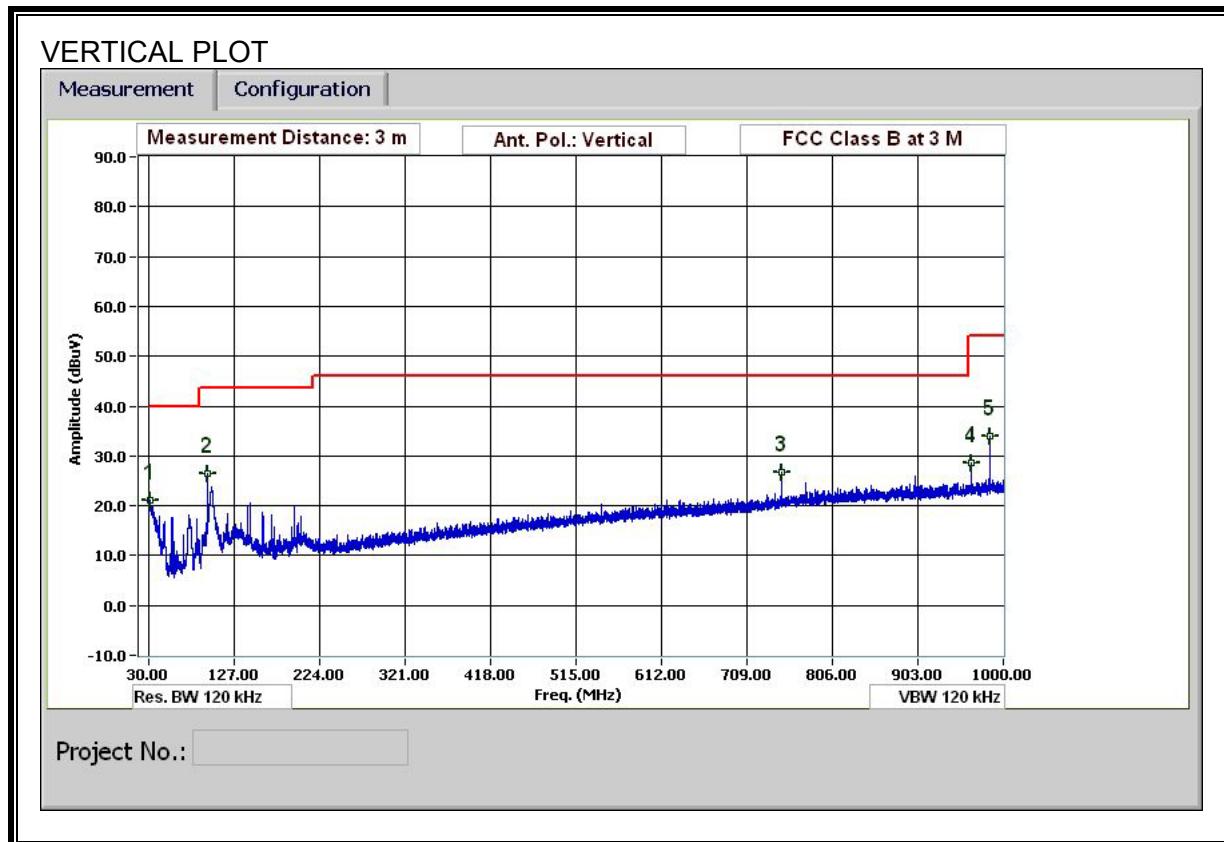
  

<b>Rev. 4.1.2.7</b>
<b>Note: No other emissions were detected above the system noise floor.</b>

### 7.3. WORST-CASE BELOW 1 GHz

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



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

## HORIZONTAL AND VERTICAL DATA

## 30-1000MHz Frequency Measurement

Compliance Certification Services, Fremont 5m Chamber

Test Engr: Oliver Su

Date: 03/24/10

Project #: 10U13126

Company: Kyocera Wireless

EUT Description: Single Band 1XRTT CDMA Phone with Bluetooth

EUT M/N: K53-01

Test Target: FCC 15C

Mode Oper: Max Power with EDR on &amp; Bluetooth on

f	Measurement Frequency	Amp	Preamp Gain	Margin	Margin vs. Limit
Dist	Distance to Antenna	D	Corr	Distance Correct to 3 meters	
Read	Analyzer Reading	Filter		Filter Insert Loss	
AF	Antenna Factor	Corr.		Calculated Field Strength	
CL	Cable Loss	Limit		Field Strength Limit	

f MHz	Dist (m)	Read dBuV	AF dB/m	CL dB	Amp dB	D Corr dB	Filter dB	Corr. dBuV/m	Limit dBuV/m	Margin dB	Ant Pol. V/H	Det. P/A/QP	Notes
<b>Horizontal</b>													
31.200	3.0	29.1	19.8	0.5	29.7	0.0	0.0	19.7	40.0	-20.3	H	P	
141.365	3.0	33.7	13.1	1.1	29.4	0.0	0.0	18.6	43.5	-24.9	H	P	
192.007	3.0	37.3	11.4	1.2	29.0	0.0	0.0	21.0	43.5	-22.5	H	P	
420.976	3.0	35.9	15.4	2.0	29.4	0.0	0.0	23.9	46.0	-22.1	H	P	
426.616	3.0	38.0	15.5	2.0	29.4	0.0	0.0	26.0	46.0	-20.0	H	P	
927.637	3.0	29.2	21.8	3.1	28.5	0.0	0.0	25.5	46.0	-20.5	H	P	
<b>Vertical</b>													
30.840	3.0	30.3	20.0	0.5	29.7	0.0	0.0	21.1	40.0	-18.9	V	P	
96.723	3.0	45.8	9.2	0.9	29.5	0.0	0.0	26.4	43.5	-17.1	V	P	
748.350	3.0	33.2	20.1	2.7	29.4	0.0	0.0	26.6	46.0	-19.4	V	P	
963.759	3.0	31.8	22.2	3.2	28.5	0.0	0.0	28.7	54.0	-25.3	V	P	
985.119	3.0	36.9	22.4	3.2	28.4	0.0	0.0	34.1	54.0	-19.9	V	P	

Rev. 1.27.09

Note: No other emissions were detected above the system noise floor.