



**RADIATED SPURIOUS EMISSIONS PORTIONS OF  
FCC CFR47 PART 22H AND 24E  
CERTIFICATION TEST REPORT  
FOR  
DUAL BAND CDMA MOBILE PHONE WITH BLUETOOTH  
FCC MODEL NUMBER: S2150  
FCC ID: V65S2150A1  
REPORT NUMBER: 13U14874-1  
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Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
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## 1. ATTESTATION OF TEST RESULTS

**COMPANY NAME:** KYOCERA COMMUNICATIONS, INC  
8611 BALBOA AVENUE  
SAN DIEGO, CA 92123, U.S.A

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

**MODEL:** S2150

**SERIAL NUMBER:** 9211100074

**DATE TESTED:** MARCH 30-APRIL 01, 2013

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 22H and 24E	PASS (Radiated Portion)

UL 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 UL 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 UL CCS and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL 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 UL CCS By:

Tested By:



THU CHAN  
WISE OPERATIONS MANAGER  
UL CCS

CHIN PANG  
WISE ENGINEER  
UL CCS

## 2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with TIA-603-C, FCC CFR 47 Part 2, FCC CFR 47 Part 22, and FCC CFR Part 24.

## 3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 Benicia Street, Fremont, California, USA.

UL 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:

$$\text{Field Strength (dBuV/m)} = \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} - \text{Preamp Gain (dB)}$$

$$36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$$

### 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 Bluetooth featured Tri Band CDMA Phone that is manufactured by Kyocera Communications, Inc.

### 5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum peak ERP & EIRP output powers as follows:

Part 22 Cellular Band					
Frequency range (MHz)	Modulation	Channel Frequency		ERP	
				dBm	mW
824.70 – 848.31	CDMA2000 1xRTT	1013	824.70	27.90	616.6
		384	836.52	27.70	588.8
		777	848.31	28.00	631.0

Part 24 PCS Band					
Frequency range (MHz)	Modulation	Channel Frequency		EIRP	
				dBm	mW
1851.25 – 1908.75	CDMA2000 1xRTT	25	1851.25	27.67	584.8
		600	1880.00	27.66	583.4
		1175	1908.75	27.47	558.5

### 5.3. SOFTWARE AND FIRMWARE

The EUT is linked with Agilent Communication Test Set.

### 5.4. WORST-CASE CONFIGURATION AND MODE

The worst-position is the EUT with highest emissions. To determine the worst-case, the EUT was investigated for folded and unfolded X, Y, and Z-Positions, and the worst position among X, Y, or Z with AC/DC adapter and headset, after the investigations, the worst-position was turned out to be open at Y-Position with AC Adapter and headset for cell band and folded Z-Position with an AC Adapter for PCS band.

## PROCEDURE USED TO ESTABLISH TEST SIGNAL

### **3G-CDMA2000 1xRTT**

This procedure assumes the Agilent E5515C Test Set has the following applications installed and with valid license.

<u>Application</u>	<u>Rev, License</u>
CDMA2000 Mobil Test	B.10.11, L

#### 1xRTT

- Call Setup > Shift & Preset
- Protocol Rev > 6 (IS-2000-0)
- Radio Config (RC) > RC3 (Fwd3, Rvs3)
- FCH Service Option (SO) Setup > 55
- Traffic Data Rate > Full
- TDSO SCH Info > F-SCH Parameters > F-SCH Data Rate > 153.6 kbps  
> R-SCH Parameters > R-SCH Data Rate > 153.6 kbps
- Cell Info > Cell Parameters > System ID (SID) > 1234  
> Network ID (NID) > 1  
> Initial Registration Channel > 25 (PCS)

Once "Active Cell" show "Connected " then change "Rvs Power Ctrl" from "Active bits" to "**All Up bits**" to get the maximum power.

Worst-case Measurement Result @ Low, Middle and High Channel

Worst-case Measurement Result for Low, Middle and High Channel under Radio Configuration RC3 and Service Option 55.

## 5.5. DESCRIPTION OF TEST SETUP

### SUPPORT EQUIPMENT

TEST EQUIPMENT LIST				
Description	Manufacturer	Model	Asset	Cal Due
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	12/20/13
Communications Test Set	Agilent / HP	E5515C	C01086	11/10/13
Vector Signal Generator	Agilent / HP	E4438C	None	07/06/13
Antenna, Horn, 18 GHz	EMCO	3115	C00783	10/25/13
Antenna, Horn, 18 GHz	EMCO	3115	C00945	12/11/13
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	C01016	08/14/13
Preamplifier, 25.5 GHz	Agilent / HP	8449B	C01063	10/22/13
Tuned Dipole 400-1000 MHz	ETS	3121C DB4	C00994	01/23/14
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM13193	N02689	CNR
Highpass Filter, 2.7 GHz	Micro-Tronics	HPM13194	N02687	CNR

### I/O CABLES

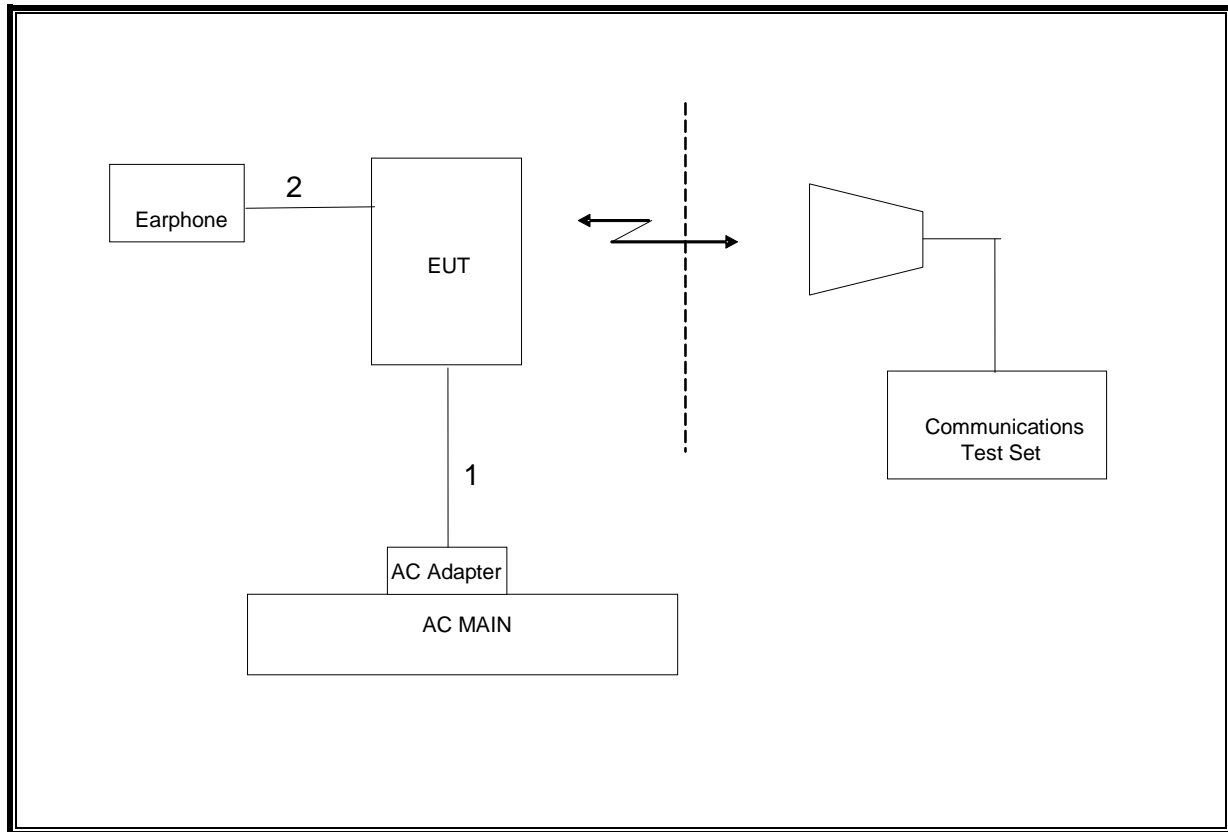
I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
2	DC	1	USB	Shielded	1.5m	N/A
3	Mic	1	Earphone	Un-shielded	1.5m	N/A

### TEST SETUP

The EUT is a CDMA phone and-is tested as a standalone configuration. Communications Test Set is used to link the device under test.



**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
Spectrum Analyzer, 44 GHz	Agilent / HP	E4446A	C01069	12/20/13
Communications Test Set	Agilent / HP	E5515C	C01086	11/10/13
Vector Signal Generator	Agilent / HP	E4438C	None	07/06/13
Antenna, Horn, 18 GHz	EMCO	3115	C00783	10/25/13
Antenna, Horn, 18 GHz	EMCO	3115	C00945	12/11/13
Antenna, Bilog, 30MHz-1 GHz	Sunol Sciences	JB1	C01016	08/14/13
Preamplifier, 26.5 GHz	Agilent / HP	8449B	C01063	10/22/13
Tuned Dipole 400~1000 MHz	ETS	3121C DB4	C00994	01/23/14
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM13193	N02689	CNR
Highpass Filter, 2.7 GHz	Micro-Tronics	HPM13194	N02687	CNR

## **7. LIMITS AND RESULTS**

### **7.1. RADIATED OUTPUT POWER**

#### **LIMITS**

22.913(a) The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(b) 6.4 Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

#### **TEST PROCEDURE**

ANSI / TIA / EIA 603 Clause 2.2.17.

#### **RESULTS**

**CELL OUTPUT POWER (ERP)**

**High Frequency Substitution Measurement  
Compliance Certification Services Chamber A**

**Company:** KYOCERA WIRELESS  
**Project #:** 12U14874  
**Date:** 03/30/13  
**Test Engineer:** Chin Pang  
**Configuration:** EUT/AC Addapter/Headset  
**Mode:** TX, CELL BAND, CDMA 1XRTT MODE

**Test Equipment:**

**Receiving:** Sunol T122, and Chamber A N-type Cable (Setup this one for testing EUT)  
**Substitution:** Dipole S/N: 1629, 8ft SMA Cable Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.70	28.70	V	0.8	0.0	27.90	38.5	-10.5	
824.70	22.20	H	0.8	0.0	21.40	38.5	-17.0	
Mid Ch								
836.52	28.50	V	0.8	0.0	27.70	38.5	-10.7	
836.52	22.95	H	0.8	0.0	22.15	38.5	-16.3	
High Ch								
848.31	28.80	V	0.8	0.0	28.00	38.5	-10.4	
848.31	22.90	H	0.8	0.0	22.10	38.5	-16.3	

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**PCS OUTPUT POWER (EIRP)**

High Frequency Fundamental Measurement Compliance Certification Services Chamber A								
<b>Company:</b>		KYOCERA WIRELESS						
<b>Project #:</b>		12U14874						
<b>Date:</b>		03/30/13						
<b>Test Engineer:</b>		Chin Pang						
<b>Configuration:</b>		EUT open with AC Adapter and Headset						
<b>Mode:</b>		TX, PCS BAND, CDMA 1XRTT MODE						
<b>Test Equipment:</b>								
Receiving: Horn T60, and Chamber A SMA Cables								
Substitution: Horn T217 Substitution, 8ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.851	14.4	V	1.00	8.62	22.02	33.0	-11.0	
1.851	20.2	H	1.00	8.47	27.67	33.0	-5.3	
Mid Ch								
1.880	14.6	V	1.10	8.46	21.96	33.0	-11.0	
1.880	20.4	H	1.10	8.36	27.66	33.0	-5.3	
High Ch								
1.909	11.1	V	1.10	8.30	18.33	33.0	-14.7	
1.909	20.3	H	1.10	8.25	27.47	33.0	-5.5	
Rev. 3.30.13								

## **7.2. FIELD STRENGTH OF SPURIOUS RADIATION**

### **LIMIT**

§22.917 (e) and §24.238 (a) (i) & (b): Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least  $43 + 10 \log (P)$  dB.

### **TEST PROCEDURE**

ANSI / TIA / EIA 603 Clause 3.2.12 & FCC 22.917 (b), FCC 24.238

### **RESULTS**

**CELL SPURIOUS & HARMONIC (ERP)**

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
<b>Company:</b>		Kyocera							
<b>Project #:</b>		13U14874							
<b>Date:</b>		03/30/13							
<b>Test Engineer:</b>		Chin Pang							
<b>Configuration:</b>		EUT and AC Adapter							
<b>Mode:</b>		TX, Cell Band, CDMA2000							
<b>Chamber</b>		<b>Pre-amplifier</b>		<b>Filter</b>		<b>Limit</b>			
5m Chamber A		T144 8449B		Filter 1		Part 22			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Low Ch, 824.7MHz</b>									
1.649	-20.2	V	3.0	38.2	1.0	-57.3	-13.0	-44.3	
2.474	-14.3	V	3.0	37.5	1.0	-50.8	-13.0	-37.8	
1.649	-23.4	H	3.0	38.2	1.0	-60.6	-13.0	-47.6	
2.474	-22.0	H	3.0	37.5	1.0	-58.5	-13.0	-45.5	
<b>Mid Ch, 836.52MHz</b>									
1.673	-19.9	V	3.0	38.1	1.0	-57.0	-13.0	-44.0	
2.510	-14.2	V	3.0	37.5	1.0	-50.6	-13.0	-37.6	
1.673	-23.2	H	3.0	38.1	1.0	-60.3	-13.0	-47.3	
2.510	-16.9	H	3.0	37.5	1.0	-53.3	-13.0	-40.3	
<b>High Ch, 848.31MHz</b>									
1.697	-19.6	V	3.0	38.1	1.0	-56.7	-13.0	-43.7	
2.545	-18.0	V	3.0	37.5	1.0	-54.5	-13.0	-41.5	
1.697	-22.0	H	3.0	38.1	1.0	-59.1	-13.0	-46.1	
2.545	-19.7	H	3.0	37.5	1.0	-56.1	-13.0	-43.1	
Rev. 03.30.13 Note: No other emissions were detected above the system noise floor.									

**PCS Spurious & Harmonic (EIRP)**

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
<b>Company:</b>		KYOCERA WIRELESS							
<b>Project #:</b>		13U14874							
<b>Date:</b>		03/30/13							
<b>Test Engineer:</b>		Chin Pang							
<b>Configuration:</b>		EUT open with AC adapter and Headset							
<b>Mode:</b>		TX, PCS Band, CDMA 1XRTT MODE							
<b>Chamber</b>		<b>Pre-amplifier</b>		<b>Filter</b>		<b>Limit</b>			
5m Chamber A		T144 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
<b>Low Ch, 1851.25MHz</b>									
3.703	-13.1	V	3.0	36.8	1.0	-48.9	-13.0	-35.9	
5.554	-10.7	V	3.0	36.3	1.0	-46.0	-13.0	-33.0	
7.405	-8.2	V	3.0	36.6	1.0	-43.7	-13.0	-30.7	
3.703	-15.0	H	3.0	36.8	1.0	-50.8	-13.0	-37.8	
5.554	-12.1	H	3.0	36.3	1.0	-47.3	-13.0	-34.3	
7.405	-9.6	H	3.0	36.6	1.0	-45.2	-13.0	-32.2	
<b>Mid Ch, 1880.00MHz</b>									
3.760	-14.9	V	3.0	36.8	1.0	-50.7	-13.0	-37.7	
5.640	-11.6	V	3.0	36.3	1.0	-46.9	-13.0	-33.9	
7.520	-9.0	V	3.0	36.6	1.0	-44.6	-13.0	-31.6	
3.760	-15.8	H	3.0	36.8	1.0	-51.6	-13.0	-38.6	
5.640	-10.9	H	3.0	36.3	1.0	-46.2	-13.0	-33.2	
7.520	-8.9	H	3.0	36.6	1.0	-44.5	-13.0	-31.5	
<b>High Ch, 1908.75MHz</b>									
3.818	-11.8	V	3.0	36.7	1.0	-47.5	-13.0	-34.5	
5.726	-10.5	V	3.0	36.3	1.0	-45.8	-13.0	-32.8	
7.635	-7.9	V	3.0	36.6	1.0	-43.5	-13.0	-30.5	
3.818	-11.7	H	3.0	36.7	1.0	-47.4	-13.0	-34.4	
5.726	-8.8	H	3.0	36.3	1.0	-44.1	-13.0	-31.1	
7.635	-7.8	H	3.0	36.6	1.0	-43.4	-13.0	-30.4	
Rev. 03.30.13									
Note: No other emissions were detected above the system noise floor.									