



RADIATED SPURIOUS EMISSIONS PORTIONS OF

FCC PART 22H, 24E AND 90S

CERTIFICATION TEST REPORT

FOR

CDMA MOBILE PHONE with BLUETOOTH

FCC MODEL NUMBER: S2151

FCC ID: V65S2151

REPORT NUMBER: 13U14815-1

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Prepared for
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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: CDMA TRI-BAND MOBILE PHONE WITH BLUETOOTH

MODEL: S2151

SERIAL NUMBER: 0000061

DATE TESTED: January 28, 2013 – February 4, 2013

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC Part 22H, 24E, and 90S (Radiated Portions Only)	Pass

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

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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, FCC CFR Part 24, FCC Part 90, Subpart S.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 333 Pfingsten Road, Northbrook, IL, USA.

UL LLC is accredited by NVLAP, Laboratory Code 100414-0. The full scope of accreditation can be viewed at <http://ts.nist.gov/Standards/scopes/1004140.htm>

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	0.9 dB (k=2)
Radiated Disturbance, 30 to 1000 MHz	3.1 dB (k=2)

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a CDMA Tri-band phone manufactured by Kyocera Communications, Inc.

5.2. MAXIMUM OUTPUT POWER

The transmitter has a maximum **original reported peak** output power in report No. 12U14701-1 as follows:

Mode	Channel	f (MHz)	ERP	
			dBm	mW
CDMA2000, 1xRTT	1013	824.70	27.87	612.35
	384	836.52	28.84	765.60
	777	848.31	28.03	635.33

Mode	Channel	f (MHz)	EIRP	
			dBm	mW
CDMA2000, 1xRTT	25	1851.25	27.01	502.34
	600	1880.00	28.29	674.53
	1175	1908.75	28.51	709.58

Mode	Channel	f (MHz)	ERP	
			dBm	mW
CDMA2000, BC10	476	817.90	28.08	642.69
	580	819.15	26.54	450.82
	684	823.10	27.22	527.23

The transmitter has a maximum **new reported peak** output power in current report as follows:

Mode	Channel	f (MHz)	ERP	
			dBm	mW
CDMA2000, 1xRTT	1013	824.70	24.32	270.40
	384	836.52	27.59	574.12
	777	848.31	27.29	535.80

Mode	Channel	f (MHz)	EIRP	
			dBm	mW
CDMA2000, 1xRTT	25	1851.25	28.04	636.80
	600	1880.00	30.17	1039.92
	1175	1908.75	31.22	1324.34

Mode	Channel	f (MHz)	ERP	
			dBm	mW
CDMA2000, BC10	476	817.90	25.76	376.70
	580	819.15	25.84	383.71
	684	823.10	27.14	517.61

5.3. SOFTWARE AND FIRMWARE

The software version installed on EUT: 0.800VM
Hardware Version: 0202

The EUT was linked with MT8820C Anritsu Communication Test Set.

5.4. WORST-CASE CONFIGURATION AND MODE

The worst position is where the middle channel has the highest radiated power for each band. To determine the worst case axis (X, Y, Z) and position (folded and unfolded) of the EUT was investigated in each band. Once the worst axis and position was determined headset was added and radiated power was re-measured and battery charger was added and power was re-measured again. It was determined that worst case axis and position for Cellular Band and BC10 Band was X-Axis, Opened, with headset and power supply. For PCS band the worst case axis and position was X-Axis, folded with headset and power supply. Refer to test setup photos for test setup information.

5.5. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
Charging Adapter	Kyocera	SCP-36ADT	-	-
Headset	Generic	-	-	-

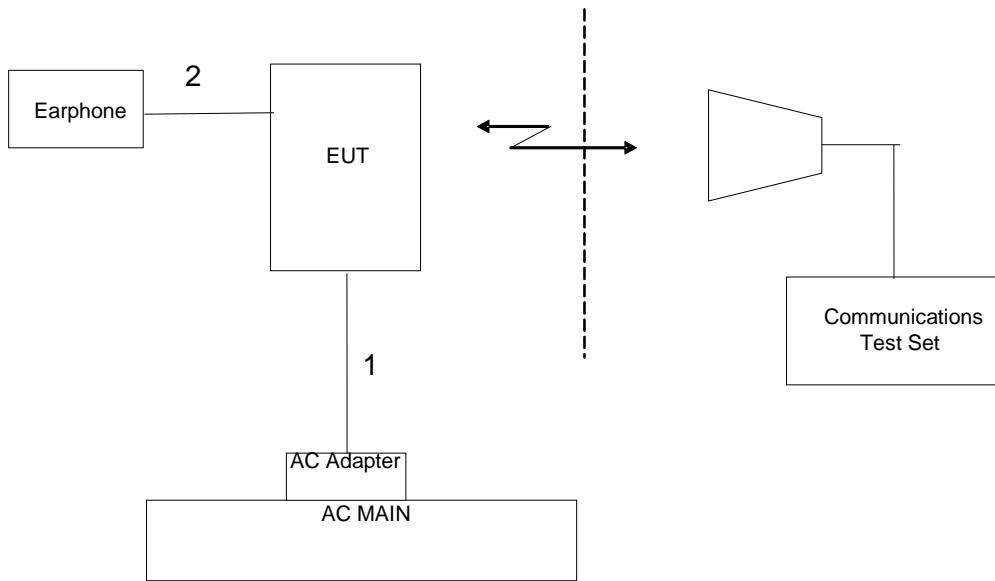
I/O CABLES

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	DC	1	USB micro B	Shielded	1.5m	N/A
2	Headphone / Mic	1	3.5mm	Shielded	1m	N/A

TEST SETUP

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

SETUP DIAGRAM FOR TESTS



5.6. 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 Date	Cal Due
EMI Test Receiver	Rohde & Schwarz	ESU	EMC4323	20121227	20131231
Bicon Antenna	Chase	VBA6106A	EMC4078	20120117	20130131
Bicon Antenna	Electro-Metrics	EM6912A	EMC4070	20120806	20130830
Log-P Antenna	Chase	UPA6109	EMC4313	20120807	20130831
Spectrum Analyzer	Rhode & Schwarz	FSEK	EMC4182	20121226	20131231
Antenna Array	UL	BOMS	EMC4276	20111227	20131231
Signal Generator	Rhode & Schwarz	SMT 03	EMC4107	20121228	20131231
Horn Antenna	ETS Lindgren	3117	EMC4294	20121114	20131129
Log-P Antenna	Chase	UPA6109	EMC4258	20121015	20131015
Communication Test Set	Anritsu	MT8820C	EMC4361	20120910	20130910

6. LIMITS AND RESULTS

6.1. 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.

90.635 Limitations on power and antenna height.

(a) The effective radiated power and antenna height for base stations may not exceed 1 kilowatt (30 dBw) and 304 m. (1,000 ft.) above average terrain (AAT), respectively, or the equivalent thereof as determined from the Table. These are maximum values, and applicants will be required to justify power levels and antenna heights requested.

(b) The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

Table—Equivalent Power and Antenna Heights for Base Stations in the 851–869 MHz and 935–940 MHz Bands Which Have a Requirement for a 32 km (20 mi) Service Area Radius

Antenna height (ATT) meters (feet)	Effective radiated power (watts) ^{1,2,4}
Above 1,372 (4,500)	65
Above 1,220 (4,000) to 1,372 (4,500)	70
Above 1,067 (3,500) to 1,220 (4,000)	75
Above 915 (3,000) to 1,067 (3,500)	100
Above 763 (2,500) to 915 (3,000)	140
Above 610 (2,000) to 763 (2,500)	200
Above 458 (1,500) to 610 (2,000)	350
Above 305 (1,000) to 458 (1,500)	600
Up to 305 (1,000)	³ 1,000

1. Power is given in terms of effective radiated power (ERP).
2. Applicants in the Los Angeles, CA, area who demonstrate a need to serve both the downtown and fringe areas will be permitted to utilize an ERP of 1 kw at the following mountaintop sites: Santiago Park, Sierra Peak, Mount Lukens, and Mount Wilson.
3. Stations with antennas below 305 m (1,000 ft) (AAT) will be restricted to a maximum power of 1 kw (ERP).

TEST PROCEDURE

ANSI / TIA / EIA 603 Clause 2.2.17

RESULTS

CDMA Output Power Cellular Band and BC10 (ERP)

Test Frequency MHz	Detector	EUT FS dBuV/m @ 3m	Receive Antenna Polarity	Substitution FS dBuV/m	Delta FS EUT and Sub dB	Voltage at Sub Antenna dBm	Substitution Antenna Factor dBi	Substitution EIRP Level dBm	EUT EIRP Level dBm	EUT ERP Level dBm	EUT ERP Level W
Cellular 800MHz Band											
824.64	PK	126.68	Horz	115.41	11.27	9.2	6	15.2	26.47	24.32	0.270
824.391	PK	118.7	Vert	113.77	4.93	9.2	5.7	14.9	19.83	17.68	0.059
836.436	PK	129.43	Horz	114.79	14.64	9.2	5.9	15.1	29.74	27.59	0.574
836.484	PK	122.35	Vert	113.94	8.41	9.2	5.8	15	23.41	21.26	0.134
848.217	PK	129.09	Horz	114.85	14.24	9.2	6	15.2	29.44	27.29	0.536
848.229	PK	121.68	Vert	114.57	7.11	9.2	6.1	15.3	22.41	20.26	0.106
Secondary Cellular 800MHz Band											
817.879	PK	128.01	Horz	115.5	12.51	9.2	6.2	15.4	27.91	25.76	0.377
817.948	PK	121.34	Vert	113.47	7.87	9.2	5.7	14.9	22.77	20.62	0.115
820.449	PK	128.17	Horz	115.48	12.69	9.2	6.1	15.3	27.99	25.84	0.384
820.524	PK	121.53	Vert	113.51	8.02	9.2	5.7	14.9	22.92	20.77	0.119
822.911	PK	129.4	Horz	115.31	14.09	9.2	6	15.2	29.29	27.14	0.518
822.923	PK	122.27	Vert	113.51	8.76	9.2	5.7	14.9	23.66	21.51	0.142

CDMA Output Power PCS Band (EiRP)

Test Frequency MHz	Meter Reading dBuV	Detector	EUT FS dBuV/m	Polarity	Substitution FS dBuV/m @ 3m	Delta FS EUT and Sub dB	Voltage at Sub Antenna dBm	Substitution Antenna Factor dBi	Substitution EIRP Level dBm	EUT EIRP Level dBm	EUT EIRP Level W
1851.2826	96.31	PK	127.18	Horz	112.45	14.73	8.90	4.41	13.31	28.04	0.637
1851.3848	92.86	AV	123.73	Horz	112.45	11.28	8.90	4.41	13.31	24.59	0.288
1851.1082	90.97	PK	121.84	Vert	111.31	10.53	8.90	4.48	13.38	23.91	0.246
1851.3788	87.42	AV	118.29	Vert	111.31	6.98	8.90	4.48	13.38	20.36	0.109
1879.9549	98.11	PK	129.11	Horz	111.95	17.16	8.78	4.23	13.01	30.17	1.040
1880.3637	94.1	AV	125.1	Horz	111.95	13.15	8.78	4.23	13.01	26.16	0.413
1879.7866	90.32	PK	121.32	Vert	110.75	10.57	8.78	4.22	13.00	23.57	0.228
1880.009	86.48	AV	117.48	Vert	110.75	6.73	8.78	4.22	13.00	19.73	0.094
1908.7655	99.1	PK	130.13	Horz	112.61	17.52	8.90	4.80	13.70	31.22	1.324
1909.1022	95.34	AV	126.37	Horz	112.61	13.76	8.90	4.80	13.70	27.46	0.557
1908.7335	90.6	PK	121.63	Vert	111.47	10.16	8.90	4.06	12.96	23.12	0.205
1908.6373	87.58	AV	118.61	Vert	111.47	7.14	8.90	4.06	12.96	20.1	0.102

6.2. 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.

§ 90.691 Emission mask requirements for EA-based systems.

(a) Out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \text{ Log}_{10}(f/6.1)$ decibels or $50 + 10 \text{ Log}_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \text{ Log}_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

(b) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

TEST PROCEDURE

ANSI / TIA / EIA 603 Clause 3.2.12 & FCC 22.917 (b), FCC 24.238 (b), & FCC 90S

RESULTS

CDMA Spurious & Harmonic (EIRP)

No spurious emissions were recorded within 20dB of the limit. The highest level of any emission was more than 30dB under the -13dBm limit.

CDMA Cellular Band and BC10 Band Results

Test Frequency MHz	Detector	EUT FS dBuV/m @ 3m	Polarity	Substitution FS dBuV/m @ 3m	Delta FS EUT and FS Sub dB	Voltage at Substitution Antenna dBm	Substitution Antenna Factor dBi	Substitution EIRP Level dBm	EUT EIRP Level dBm
Cellular 800MHz Band									
1648.649	PK	44.1	Horz	72.37	-28.27	-30.97	5.85	-25.12	-53.39
1648.649	PK	39.92	Vert	70.73	-30.81	-30.97	5.7	-25.27	-56.08
1672.673	PK	47.2	Horz	71.69	-24.49	-31	5.7	-25.3	-49.79
1672.673	PK	43.89	Vert	69.94	-26.05	-31	5.6	-25.4	-51.45
1696.697	PK	43.14	Horz	71.63	-28.49	-31.18	5.6	-25.58	-54.07
1696.697	PK	41.86	Vert	69.84	-27.98	-31.18	5.5	-25.68	-53.66
Secondary Cellular 800MHz Band									
1636.637	PK	50.34	Horz	72.66	-22.32	-30.93	5.9	-25.03	-47.35
1636.637	PK	45.97	Vert	71.17	-25.2	-30.93	5.8	-25.13	-50.33
1639.64	PK	49.14	Horz	72.67	-23.53	-30.93	5.9	-25.03	-48.56
1639.64	PK	44.31	Vert	70.94	-26.63	-30.93	5.75	-25.18	-51.81
1645.646	PK	45.69	Horz	72.56	-26.87	-30.9	5.8	-25.1	-51.97
1645.646	PK	41.13	Vert	70.8	-29.67	-30.9	5.7	-25.2	-54.87

CDMA PCS Band Results

No spurious emissions were recorded within 20dB of the limit. The highest emission recorded was at 9.541GHz and the level was 25dB under the -13dBm EIRP limit.