



**RADIATED SPURIOUS EMISSIONS PORTIONS OF
FCC CFR47 PART 22H, 24E, and 90S**

CERTIFICATION TEST REPORT

FOR

Tri Band CDMA Mobile Phone with WiFi/Bluetooth

FCC MODEL NUMBER: C5215

FCC ID: V65C5215

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Prepared for

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1. ATTESTATION OF TEST RESULTS

COMPANY NAME: Kyocera Communications Inc
8611 Balboa Ave.
San Diego, CA 92123

EUT DESCRIPTION: Tri Band CDMA Mobile Phone with Wifi/Bluetooth

FCC MODEL NUMBER: C5215

SERIAL NUMBER: Prototype

DATE TESTED: April 4, 2013 – April 5, 2013

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC PART 22H, 24E, & 90S	Pass

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

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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, RSS-132 Issue 2, and RSS-133 Issue 5.

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 333 Pfingsten Road, Northbrook, IL 60193, USA.

UL NBK is accredited by NVLAP, Laboratory Code 100414-0

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

Sample Calculations

Radiated Field Strength and Conducted Emissions data contained within this report is calculated on the following basis:

Field Strength (dBuV/m) = Meter Reading (dBuV) + AF (dB/m) - Gain (dB) + Cable Loss (dB)

Conducted Voltage (dBuV) = Meter Reading (dBuV) + Cable Loss (dB) + LISN IL (dB)

Conducted Current (dBuA) = Meter Reading (dBuV) + Cable Loss (dB) - Transducer Factor (dBohms)

ERP EUT level = Delta EUT and Substitution + ERP level

ERIP EUT level = Delta EUT and Substitution + ERIP level

Delta EUT and Substitution = Substitution Peak field - EUT Measured peak level

ERP Substitution = ERIP level -2.15

ERIP level = Voltage at Antenna + TX ant gain

4.3. MEASUREMENT UNCERTAINTY

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

Test	Range	Equipment	Uncertainty k=2
Radiated Emissions	30-200MHz	Bicon 3m Horz	3.30dB
Radiated Emissions	30-130MHz	Bicon 3m Vert	4.84dB
Radiated Emissions	130-200MHz	Bicon 3m Vert	4.94dB
Radiated Emissions	200-1000MHz	LogP 3m Horz	3.46dB
Radiated Emissions	200-1000MHz	LogP 3m Vert	4.98dB
Radiated Emissions	1-6GHz	Horn	5.02dB
Radiated Emissions	6-18GHz	Horn	5.34dB
Radiated Emissions	18-26GHz	Horn	6.60dB

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a Tri Band CDMA Mobile Phone with Wifi/Bluetooth that produced by Kyocera Communications Inc..

5.2. MAXIMUM OUTPUT POWER

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

RESULTS

Mode	Channel	f (MHz)	ERP	
			dBm	mW
CDMA2000, 1xRTT	1013	824.70	25.30	338.84
	384	836.52	26.12	409.26
	777	848.31	25.59	362.24

Mode	Channel	f (MHz)	EIRP	
			dBm	mW
CDMA2000, 1xRTT	25	1851.25	26.37	433.51
	600	1880.00	26.44	440.55
	1175	1908.75	25.89	388.15

Mode	Channel	f (MHz)	ERP	
			dBm	mW
CDMA2000, BC10	476	817.90	22.33	171.00
	580	820.50	25.40	346.74
	684	823.10	22.26	168.27

5.3. SOFTWARE AND FIRMWARE

The EUT is linked with Anritsu MT8820C Communication Test Set.

5.4. WORST-CASE CONFIGURATION AND MODE

The worst-case channel for RF radiated emissions are determined as the channel without the AC Power Adapter Source and without headset. EUT was tested at 80cm height.

For the fundamental investigation, since the EUT is a portable device that has three orientations; therefore X, Y and Z orientations have been investigated. The worst case was found to be at Z-position for all modes

PROCEDURE USED TO ESTABLISH TEST SIGNAL

3G-CDMA2000 1xRTT

This procedure assumes the Anritsu MT8820C Communication Test Set has the following applications installed and with valid license.

Application	Rev, License
CDMA2000 Mobil Test	22.12 #006

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) > 0
> Initial Registration Channel > 600 (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 (RF RADIATED TEST)

PERIPHERAL SUPPORT EQUIPMENT LIST				
Description	Manufacturer	Model	Serial Number	FCC ID
AC Adapter	Kyocera	SCP-35ADT	-	DoC
Headset	Kyocera	-	-	DoC

I/O CABLES (RF RADIATED TEST)

I/O CABLE LIST						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length	Remarks
1	USB	1	DC	Shielded	1.2	Connects to AC supply
2	Headphone	1	IO	Un-shielded	1.45	None

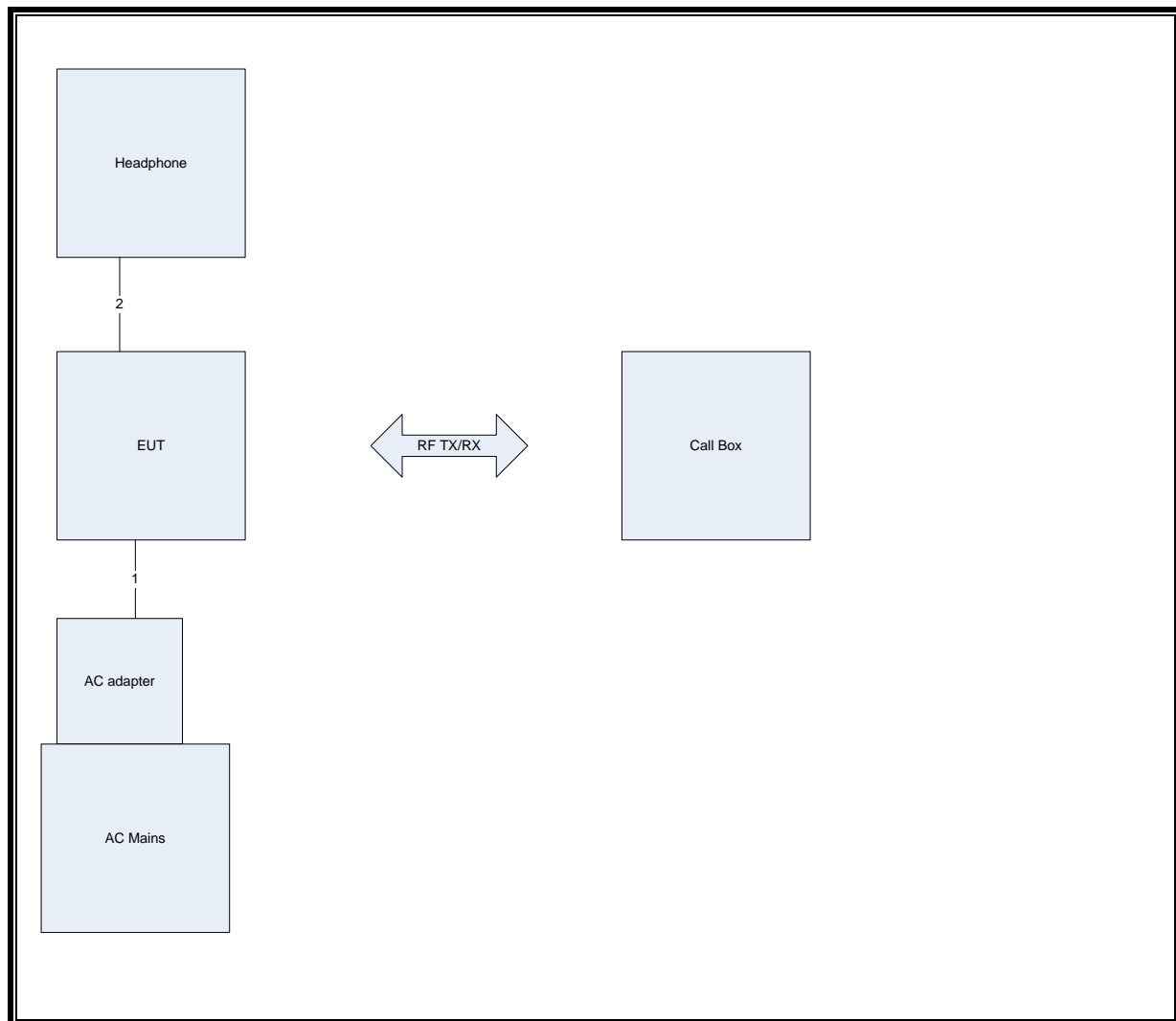
Worst case test setup was found with no IO cables attached.

TEST SETUP

The EUT is a stand-alone device. A link is established between the EUT and the communication test set

Call Box was set for EUT to transmit at maximum power.

SETUP DIAGRAM FOR RF RADIATED 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
EMI Test Receiver	Rohde & Schwarz	ESCI	EMC4328	20131231
Bicon Antenna	Chase	VBA6106A	EMC4078	20140228
Log-P Antenna (TX)	Chase	UPA6109	EMC4258	20131030
Log-P Antenna	Chase	UPA6109	EMC4313	20130831
Horn Antenna (TX)	ETS	3117	EMC4294	20131129
Spectrum Analyzer	Rhode & Schwarz	FSEK	EMC4182	20131231
Antenna Array	UL	BOMS	EMC4276	20131231
Signal Generator	Rohde & Schwarz	SML 03	EMC 4331	20131231
Call Box	Anritsu	MT8820C	EMC4361	20130910

7. RADIATED TEST 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.

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

Mode	Channel	f (MHz)	ERP	
			dBm	mW
CDMA2000, 1xRTT	1013	824.70	25.30	338.84
	384	836.52	26.12	409.26
	777	848.31	25.59	362.24

Mode	Channel	f (MHz)	EIRP	
			dBm	mW
CDMA2000, 1xRTT	25	1851.25	26.37	433.51
	600	1880.00	26.44	440.55
	1175	1908.75	25.89	388.15

Mode	Channel	f (MHz)	ERP	
			dBm	mW
CDMA2000, BC10	476	817.90	22.33	171.00
	580	820.50	25.40	346.74
	684	823.10	22.26	168.27

CELL OUTPUT POWER (ERP)

Description	Freq. MHz	Polarization	Voltage at antenna dBm	Substitution Peak Filed Strenght Measured dBuV/m	TX ant dBi	EIRP Level	ERP Level dBm	EUT Measured Peak Level dBuV/m	Delta EUT and Substitution dB	ERP EUT Level dBm	Limit dBm/MHz	Margin dB
CDMA 800												
Low	824.7	Horizontal	-20.29	85.7	6	-14.29	-16.44	127.44	41.74	25.3	38.45	-13.15
		Vertical	-20.29	83.99	5.7	-14.59	-16.74	117.27	33.28	16.54	38.45	-21.91
Mid	836.52	Horizontal	-20.38	85.17	5.9	-14.48	-16.63	127.92	42.75	26.12	38.45	-12.33
		Vertical	-20.38	83.85	5.8	-14.58	-16.73	118.38	34.53	17.8	38.45	-20.65
Hi	848.31	Horizontal	-20.34	85.61	6.05	-14.29	-16.44	127.64	42.03	25.59	38.45	-12.86
		Vertical	-20.34	83.87	6	-14.34	-16.49	117.26	33.39	16.9	38.45	-21.55

PCS OUTPUT POWER (EIRP)

Description	Freq. MHz	Polarization	Voltage at antenna dBm	Substitution Peak Filed Strenght Measured dBuV/m	TX ant dBi	EIRP Level	EUT Measured Peak Level dBuV/m	Delta EUT and Substitution dB	EIRP EUT Level dBm	Limit dBm/MHz	Margin dB
CDMA 1900											
Low	1851.25	Horizontal	-20.85	101.64	4.4215	-16.429	123.97	22.33	5.9015	33	-27.0985
		Vertical	-20.85	100.22	4.48	-16.37	117	16.78	0.41	33	-32.59
Mid	1880	Horizontal	-21.05	101.31	4.2266	-16.823	126.71	25.4	8.5766	33	-24.4234
		Vertical	-21.05	99.05	4.22	-16.83	118.92	19.87	3.04	33	-29.96
Hi	1908.75	Horizontal	-21.21	101.33	4.082	-17.128	123.59	22.26	5.132	33	-27.868
		Vertical	-21.21	99.86	4.06	-17.15	117.83	17.97	0.82	33	-32.18

BC10 OUTPUT POWER (ERP)

Description	Freq. MHz	Polarization	Voltage at antenna dBm	Substitution Peak Filed Strenght Measured dBuV/m	TX ant dBi	EIRP Level	ERP Level dBm	EUT Measured Peak Level dBuV/m	Delta EUT and Substitution dB	ERP EUT Level dBm	Limit dBm/MHz	Margin dB
CDMA 2nd 800												
Low	817.9	Horizontal	-20.35	85.4	6.15	-14.2	-16.35	128.12	42.72	26.37	50	-23.63
		Vertical	-20.35	83.69	5.7	-14.65	-16.8	117.05	33.36	16.56	50	-33.44
Mid	820.5	Horizontal	-20.33	85.33	6.1	-14.23	-16.38	128.15	42.82	26.44	50	-23.56
		Vertical	-20.33	83.61	5.7	-14.63	-16.78	117.08	33.47	16.69	50	-33.31
Hi	823.1	Horizontal	-20.29	85.44	6.05	-14.24	-16.39	127.72	42.28	25.89	50	-24.11
		Vertical	-20.29	83.71	5.7	-14.59	-16.74	117.3	33.59	16.85	50	-33.15

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.

§ 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 $116 \log_{10}(f/6.1)$ decibels or $50 + 10 \log_{10}(P)$ 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 $43 + 10 \log_{10}(P)$ 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

For Part 22 Cell Band 800 and Part 90 Cell Band 800 No Harmonics were above the noise floor.

For Part 24 PCS Band, No Spurious Emissions were found to be within 29 dB from the limit. The highest emissions recorded was at 5.637 GHz, -43dBm EIRP, margin 29dB from the limit