

MEASUREMENT AND TECHNICAL REPORT

LAND-CELLULAR CORPORATION
12068 MIRAMAR PARKWAY
MIRAMAR, FL 33025

DATE: 11 July 2003

This Report Concerns:	Original Grant: X	Class II Change:
Equipment Type:		
LAND-CELLULAR MODULE		
Deferred grant requested per 47 CFR 0.457(d)(1)(ii)?	Yes: Defer until:	No: X
Company Name agrees to notify the Commission by:	N/A	
of the intended date of announcement of the product so that the grant can be issued on that date.		
Transition Rules Request per 15.37?	Yes:	No: X*
(*) FCC Part 22, Paragraph(s) 22.917(b)(2) (*) FCC Part 24, Paragraph(s) 24.238(a)		
Report Prepared by:	TÜV AMERICA, INC 10040 Mesa Rim Road San Diego, CA 92121-2912 Phone: 858 546 3999 Fax: 858 546 0364	

TABLE OF CONTENTS

	Pages
1.0 GENERAL INFORMATION	3
1.1 Product Description	3
1.2 Related Submittal Grant	3
1.3 Tested System Details	3
1.4 Test Methodology	3
1.5 Test Facility	3
1.6 Part 2 Requirements	3
2.0 SYSTEM TEST CONFIGURATION	4
2.1 Justification	4
2.2 EUT Exercise Software	4
2.3 Special Accessories	4
2.4 Equipment Modifications	4
2.5 Configuration of Test System	4
3.0 RADIATED SPURIOUS EMISSIONS EQUIPMENT/DATA	5 - 26
4.0 ATTESTATION STATEMENT	27

1.0 GENERAL INFORMATION**1.1 Product Description**

Not Available

1.2 Related Submittal Grant

None

1.3 Tested System Details

The FCC ID's for all equipment, plus descriptions of all cables used in the tested system are:

None

1.4 Test Methodology

Purpose of Test: To demonstrate compliance with the following tests.

TEST	FCC CFR 47#	PASS/FAIL
Radiated Spurious Emissions	22.917(b)(2)	Pass
	24.238(a)	Pass

Both Conducted and Radiated testing were performed according to the procedures in FCC/ANSI C63.4 and CSA 108.8-M1983. Radiated testing was performed at an antenna-to-EUT distance of 3 meters.

1.5 Test Facility

The open area test site and conducted measurement data were tested by:

TÜV AMERICA, INC
10040 Mesa Rim Road
San Diego, CA 92121-2912
Phone: 858 546 3999
Fax: 858 546 0364

The Test Site Data and performance comply with ANSI C63.4 and are registered with the FCC, 7435 Oakland Mills Road, Columbia Maryland 21046. All Measurement Data is acquired according to the content of FCC Measurement Procedure and ANSI C63.4, unless supplemented with additional requirements as noted in the test report.

1.6 Part 2 Requirements (Remove if Part 15 or 18)

Report No. SC303100-03

2.0 SYSTEM TEST CONFIGURATION

2.1 Justification

The EUT was initially tested for FCC emissions in the following configuration:

See Test Setup Photos Exhibit

2.2 EUT Exercise Software

None

2.3 Special Accessories

None

2.4 Equipment Modifications

None

2.5 Configuration of Test System

See Test Setup Photos Exhibit

Report No. SC303100-03

3.0 RADIATED SPURIOUS EMISSIONS EQUIPMENT/DATA

See following page(s).

Report No. SC303100-03

Test Conditions: RADIATED SPURIOUS EMISSIONS: FCC Part 22.917(b)(2) and Part 24.238(a)

The RADIATED SPURIOUS EMISSIONS measurements were performed at the San Diego Testing Facility:

☐ - Test not applicable

■ - Roof (Small Open Area Test Site)

Testing was performed at a test distance of:

■ - 3 meters

Test Equipment Used:

Model No.	Prop. No.	Description	Manufacturer	Serial No.	Date Cal'ed
HP8566B	720	Spectrum Analyzer	Hewlett Packard	2115A00842	09/02
AMF-5D-010180-35-10P	719	PreAmplifier	Miteq	549460	NCR*
3115	251	Double Ridge Horn Antenna	EMCO	2495	12/02
FF 6548-2	783	2000 MHz High Pass Filter	Sage	008	NCR*
FF 6548-1	778	900 MHz Low Pass Filter	Sage	005	NCR*
3115	453	Horn Antenna	Electro Mechanics Co	3564	01/03
8481A	554	Power Sensor	Hewlett Packard	1926A27807	09/02
436A	775	Power Meter	Hewlett Packard	1918A05312	09/02
8350B/85592C	6707	Sweep Oscillator/Signal Generator	Hewlett Packard	2328A00112	NCR*
3146	243	Log Periodic Antenna	EMCO	106X	05/03
DM-105-T3	226	Dipole Antenna	EMCO	6666	02/03

Remarks: One year calibration cycle for all test equipment and sites. (*) No Calibration Required.

Kyocera Substitution SC303100

Model: Module 200 with Bluetree antenna

7/7/03

Location: Roof Site

	Frequency MHz	target level dBuV/m	Horn Gain dBi	cable loss dB	Signal Generator dBm	Total (ERP) dBm	Spec dBm	Margin Subst. dBm
output power								
FM low channel	824.04	96.4	0	3.5	24.7	21.2		
FM mid channel	836.49	97.2	0	3.6	25.5	21.9		
FM high channel	848.97	98.0	0	3.6	26.3	22.7		
CDMA low channel	824.70	96.0	0	3.5	24.3	20.8		
CDMA mid channel	836.49	95.3	0	3.6	23.6	20.0		
CDMA high channel	848.31	95.5	0	3.6	23.8	20.2		
PCS low channel	1851.25	88.9	7.8	5.3	19.3	21.8		
PCS mid channel	1880.00	87.7	7.8	5.4	18.3	20.7		
PCS high channel	1908.75	87.3	7.9	5.3	18.5	21.1		
spurious								
Bluetree PCS	3760	63.2	7.8	8.1	-39.7	-40.0	-13	-27.0
Bluetree PCS	3817.5	66.4	7.8	8.1	-36.7	-37.0	-13	-24.0

Substitution Procedure:

1. Select emissions that pass with less than 20 dB margin, note the Target level -- reading on spectrum analyzer.
2. Duplicate this targeted reading with Signal Generator, allowing for antenna horn gain and cable insertion loss.
3. Compare calculated power output to specification.

Location: TUV 3-meter roof site

Tested by

A. Laudani
A. Laudani

Kyocera Substitution SC303100

Model: Module 200 with Comverge antenna

7/7/03

Location: Roof Site

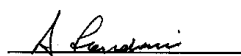
	Frequency MHz	target level dBuV/m	Horn Gain dBi	cable loss dB	Signal Generator (ERP/EIRP) dBm	Total (ERP/EIRP) dBm	Spec dBm	Margin Subst. dBm
output power								
FM low channel	824.04	105.6	0	3.5	33.9	30.4		
FM mid channel	836.49	105.1	0	3.6	33.4	29.8		
FM high channel	848.97	104.2	0	3.6	32.5	28.9		
CDMA low channel	824.70	104.1	0	3.5	32.4	28.9		
CDMA mid channel	836.49	104.8	0	3.6	33.1	29.5		
CDMA high channel	848.31	104.4	0	3.6	32.7	29.1		
PCS low channel	1851.25	88.3	7.8	5.3	18.7	21.2		
PCS mid channel	1880.00	88.9	7.8	5.4	19.5	21.9		
PCS high channel	1908.75	87.4	7.9	5.3	18.6	21.2		
Spurious								
Comverge PCS	3702.5	68.4	7.9	8	-33.6	-33.7	-13	-20.7
Comverge PCS	3760	76.9	7.8	8.1	-25.8	-26.1	-13	-13.1
Comverge FM	4182.5	65.1	8.9	9.8	-39.1	-40.0	-13	-27.0
Comverge PCS	5640.00	68.8	10.98	10.4	-28.3	-27.7	-13	-14.7
Comverge PCS	11280	49.5	13.9	12.2	-43.4	-41.7	-13	-28.7
Comverge PCS	11452.5	49.3	14.2	12.0	-44.6	-42.4	-13	-29.4

Substitution Procedure:

1. Select emissions that pass with less than 20 dB margin, note the Target level -- reading on spectrum analyzer.
2. Duplicate this targeted reading with Signal Generator, allowing for antenna horn gain and cable insertion loss.
3. Compare calculated power output to specification.

Location: TUV 3-meter roof site

Tested by


A. Laudani

Kyocera Substitution SC303100

Model: Module 200 with Galtronics antenna

7/7/03

Location: Roof Site

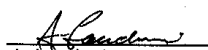
	Frequency	target level	Horn Gain	cable loss	Signal Generator	Total (ERP)	Spec
output power	MHz	dBuV/m	dBi	dB	dBm	dBm	dBm
FM low channel	824.04	101.6	0	3.5	29.9	26.4	
FM mid channel	836.49	100.6	0	3.6	28.9	25.3	
FM high channel	848.97	100.7	0	3.6	29.0	25.4	
CDMA low channel	824.70	100.4	0	3.5	28.7	25.2	
CDMA mid channel	836.49	99.7	0	3.6	28.0	24.4	
CDMA high channel	848.31	99.9	0	3.6	28.2	24.6	
PCS low channel	1851.25	92.3	7.8	5.3	22.8	25.3	
PCS mid channel	1880.00	92.3	7.8	5.4	22.9	25.3	
PCS high channel	1908.75	91.6	7.9	5.3	22.8	25.4	

Substitution Procedure:

1. Select emissions that pass with less than 20 dB margin, note the Target level -- reading on spectrum analyzer.
2. Duplicate this targeted reading with Signal Generator, allowing for antenna horn gain and cable insertion loss.
3. Compare calculated power output to specification.

Location: TUV 3-meter roof site

Tested by


A. Laudani

Kyocera Substitution SC303100

Model: Module 200 with IRD antenna

7/7/03

Location: Roof Site

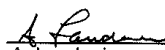
	Frequency MHz	target level dBuV/m	Horn Gain dBi	cable loss dB	Signal Generator dBm	Total (ERP) dBm	Spec dBm	Margin Subst. dBm
output power								
FM low channel	824.04	100.1	0	3.5	28.4	24.9		
FM mid channel	836.49	99.6	0	3.6	27.9	24.3		
FM high channel	848.97	100.6	0	3.6	28.9	25.3		
CDMA low channel	824.70	97.2	0	3.5	25.5	22.0		
CDMA mid channel	836.49	95.2	0	3.6	23.5	19.9		
CDMA high channel	848.31	95.3	0	3.6	23.6	20.0		
PCS low channel	1851.25	86.2	7.8	5.3	16.5	19.0		
PCS mid channel	1880.00	84.3	7.8	5.4	14.9	17.3		
PCS high channel	1908.75	83.0	7.9	5.3	14.2	16.8		
spurious								
IRD PCS	3702.5	64.2	7.9	8	-35.5	-35.6	-13	-22.6
IRD PCS	3760	63.1	7.8	8.1	-39.6	-39.9	-13	-26.9
IRD PCS	3817.5	65.8	7.8	8.1	-37.3	-37.6	-13	-24.6

Substitution Procedure:

1. Select emissions that pass with less than 20 dB margin, note the Target level -- reading on spectrum analyzer.
2. Duplicate this targeted reading with Signal Generator, allowing for antenna horn gain and cable insertion loss.
3. Compare calculated power output to specification.

Location: TUV 3-meter roof site

Tested by


A. Laudani

Kyocera Substitution SC303100

Model: Module 200 with Orion antenna

7/7/03

Location: Roof Site

	Frequency MHz	target level dBuV/m	Horn Gain dBi	cable loss dB	Signal Generator dBm	Total (ERP) dBm	Spec dBm	Margin Subst. dBm
output power								
FM low channel	824.04	98.4	0	3.5	26.7	23.2		
FM mid channel	836.49	96.8	0	3.6	25.1	21.5		
FM high channel	848.97	96.4	0	3.6	24.7	21.1		
CDMA low channel	824.70	97.3	0	3.5	25.6	22.1		
CDMA mid channel	836.49	95.0	0	3.6	23.3	19.7		
CDMA high channel	848.31	94.0	0	3.6	22.3	18.7		
PCS low channel	1851.25	87.0	7.8	5.3	15.7	18.2		
PCS mid channel	1880.00	86.5	7.8	5.4	17.1	19.5		
PCS high channel	1908.75	87.0	7.9	5.3	18.2	20.8		
spurious								
Orion PCS	3702.5	64.4	7.9	8	-35.4	-35.5	-13	-22.5

Substitution Procedure:

1. Select emissions that pass with less than 20 dB margin, note the Target level -- reading on spectrum analyzer.
2. Duplicate this targeted reading with Signal Generator, allowing for antenna horn gain and cable insertion loss.
3. Compare calculated power output to specification.

Location: TUV 3-meter roof site

Tested by


A. Laudani

Report No. SC303100-03

REPORT No: SC303100 TESTER: Alan Laudani SPEC: FCC Part 22 para 22.917(b)(2)

CUSTOMER: Kyocera Wireless INC

TEST DIST: 3 Meters

E U T: Module 200 with Bluetree antenna

TEST SITE: Roof

EUT MODE: Transmit CDMA

BICONICAL: N/A

DATE: June 30, 2003 EIRP Factor 7

LOG: N/A

NOTES: HORN: 251

Harmonics: RBW = 1 MHz, VBW = 1 MHz
900 MHz High Pass Filter inserted before Preamplifier
CF = Antenna Factor + Cable Loss - Preamplifier Gain

FREQ (MHz)	VERTICAL (dBuV) pk	HORIZONTAL (dBuV) pk	CF (dB/m) pk	MAX LEVEL (dBm) pk	SPEC LIMIT (dBm) pk	MARGIN (dB) pk	EUT Rotation	Antenna Height	Notes
824.7	96	89.5	22.9	21.5			320	1.2	Fundamental (Low Band)
1649.4	55.4	54.7	-9.3	-51.2	-13.0	-38.2			ambient
2474.1	49.1	58.8	-4.6	-43.2	-13.0	-30.2			ambient
3298.8	54.4	50.5	-1.7	-44.7	-13.0	-31.7	214	1	
4123.5	57	50.5	0.2	-40.2	-13.0	-27.2	276	1.8	
4948.2	44	45	0.6	-51.8	-13.0	-38.8			
5772.9	42.2	44.2	5.1	-48.1	-13.0	-35.1			
6597.6	50.6	48	5.8	-41.0	-13.0	-28	284	1.3	
7422.3	42	41.4	8.2	-47.1	-13.0	-34.1			
8247	44	43.8	9.4	-43.9	-13.0	-30.9			
836.49	95.3	87.1	22.8	20.7			317	1.2	Fundamental (Mid Band)
1672.98	53.7	51.2	-9.1	-52.7	-13.0	-39.7			ambient
2509.47	48.4	54.9	-4.5	-46.9	-13.0	-33.9	184	1	
3345.96	52.2	56	-1.6	-42.9	-13.0	-29.9	206	1.1	
4182.45	51.6	51.3	0.0	-45.7	-13.0	-32.7	183	1.1	
5018.94	40.6	42.9	0.8	-53.6	-13.0	-40.6			noise floor
5855.43	45.3	44.4	5.3	-46.8	-13.0	-33.8			noise floor
6691.92	46.3	43.3	6.1	-44.9	-13.0	-31.9	228	1.3	
7528.41	43.3	43	8.4	-45.6	-13.0	-32.6			noise floor
8364.9	43.8	44.8	9.7	-42.9	-13.0	-29.9			noise floor
848.31	95.5	86.3	23.1	21.2			338	1.1	Fundamental (High Band)
1696.62	55.9	57	-8.9	-49.3	-13.0	-36.3			ambient
2544.93	50.7	52.7	-4.3	-49.0	-13.0	-36	212	1	
3393.24	54.6	48.3	-1.4	-44.1	-13.0	-31.1	210	1.6	
4241.55	56.9	49	-0.1	-40.5	-13.0	-27.5	243	1.4	
5089.86	49.8	42.7	1.3	-46.2	-13.0	-33.2	260	1.3	
5938.17	44.3	41.6	5.5	-47.5	-13.0	-34.5			noise floor
6786.48	43.6	42.6	6.5	-47.3	-13.0	-34.3			noise floor
7634.79	43.7	44.2	8.5	-44.6	-13.0	-31.6			noise floor
8483.1	43	43.9	10.0	-43.5	-13.0	-30.5			noise floor

Report No. SC303100-03

REPORT No: SC303100 TESTER: Alan Laudani SPEC: FCC Part 22 para 22.917(b)(2)

CUSTOMER: Kyocera Wireless INC TEST DIST: 3 Meters

E U T: Module 200 with CONVERGE antenna TEST SITE: Roof

EUT MODE: Transmit CDMA BICONICAL: N/A

DATE: July 7, 2003 EIRP Factor: 7 LOG: N/A

NOTES: HORN: 251

Harmonics: RBW = 1 MHz, VBW = 1 MHz
 900 MHz High Pass Filter inserted before Preamp/Filter
 CF = Antenna Factor + Cable Loss - Preamp/Filter Gain

FREQ (MHz)	VERTICAL (dBuv) pk	HORIZONTAL (dBuv) pk	CF (dB/m)	MAX LEVEL (dBm) pk	SPEC LIMIT (dBm) pk	MARGIN (dB) pk	EUT Rotation	Antenna Height	Notes
824.7	104.1	92.1	22.9	29.6			67	1.1	Fundamental (Low Band)
1649.4	67.2	62.2	-9.3	-39.4	-13.0	-26.4	50	1.1	
2474.1	62.3	63.6	-4.6	-38.4	-13.0	-25.4			ambient
3298.8	53.1	63.7	-1.7	-35.4	-13.0	-22.4	210	1.2	
4123.5	54.7	63	0.2	-34.2	-13.0	-21.2	144	1	
4948.2	49.3	55.4	0.6	-41.4	-13.0	-28.4	124	1	
5772.9	42.8	45.7	5.1	-46.6	-13.0	-33.6			noise floor
6597.6	46.8	51.5	5.8	-40.1	-13.0	-27.1	142	1.3	
7422.3	43.5	44.7	8.2	-44.4	-13.0	-31.4			noise floor
8247	45.8	45.2	9.4	-42.1	-13.0	-29.1			noise floor
836.49	104.8	90.2	22.8	30.2			77	1.1	Fundamental (Mid Band)
1672.98	68.2	57.4	-9.1	-38.2	-13.0	-25.2	193	1.1	
2509.47	55.6	57.3	-4.5	-44.5	-13.0	-31.5	209	1	
3345.96	50.3	61.3	-1.6	-37.6	-13.0	-24.6	218	1.1	
4182.45	53.5	59.8	0.0	-37.5	-13.0	-24.5	95	1.2	
5018.94	53.5	58.3	0.8	-38.2	-13.0	-25.2	88	1.3	
5855.43	48	46.7	5.3	-44.1	-13.0	-31.1			noise floor
6891.92	47.4	51.3	6.1	-39.9	-13.0	-26.9	158	1.2	
7528.41	43.8	45.7	8.4	-43.2	-13.0	-30.2	22	1.1	
8364.9	44.9	45.7	9.7	-42.0	-13.0	-29			noise floor
848.31	104.4	93.5	23.1	30.1			63	1.1	Fundamental (High Band)
1696.62	70.1	66	-8.9	-36.2	-13.0	-23.2	188	1.1	
2544.93	54.7	57.3	-4.3	-44.4	-13.0	-31.4			ambient
3393.24	53.8	62.3	-1.4	-36.4	-13.0	-23.4	56	1.1	
4241.55	55.9	64	-0.1	-33.4	-13.0	-20.4	233	1	
5089.86	54.6	55.9	1.3	-40.1	-13.0	-27.1	245	1.8	
5938.17	47.7	48.3	5.5	-43.5	-13.0	-30.5	195	1.6	noise floor
6786.48	44.6	46.2	6.5	-44.7	-13.0	-31.7			noise floor
7634.79	44.9	45.2	8.5	-43.6	-13.0	-30.6			noise floor
8483.1	45	45.5	10.0	-41.9	-13.0	-28.9			noise floor

Report No. SC303100-03

REPORT No: SC303100 TESTER: Alan Laudani SPEC: FCC Part 22 para 22.917(b)(2)

CUSTOMER: Kyocera Wireless INC

TEST DIST: 3 Meters

E U T: Module 200 with Galtronics antenna

TEST SITE: Roof

EUT MODE: Transmit CDMA

BICONICAL: N/A

DATE: June 30, 2003 EIRP Factor 7

LOG: N/A

NOTES: HORN: 251

Harmonics: RBW = 1 MHz, VBW = 1 MHz

900 MHz High Pass Filter inserted before Preamplifier

CF = Antenna Factor + Cable Loss - Preamplifier Gain

FREQ (MHz)	VERTICAL (dBuV) pk	HORIZONTAL (dBuV) pk	CF (dB/m)	MAX LEVEL (dBm) pk	SPEC LIMIT (dBm) pk	MARGIN (dB) pk	EUT Rotation	Antenna Height	Notes
824.7	100.4	90.5	22.9	25.9			222	1.1	Fundamental (Low Band)
1649.4	55	54.2	-9.3	-51.6	-13.0	-38.6			ambient
2474.1	48.2	45.9	-4.6	-53.8	-13.0	-40.8	300	1.1	
3298.8	57.2	56.1	-1.7	-41.9	-13.0	-28.9	311	1.7	
4123.5	53.5	45.7	0.2	-43.7	-13.0	-30.7	200	1.3	
4948.2	50.9	44.7	0.6	-45.9	-13.0	-32.9	300	1.1	
5772.9	42.1	45.6	5.1	-46.7	-13.0	-33.7			noise floor
6597.6	50.4	43.5	5.8	-41.2	-13.0	-28.2	268	1.2	
7422.3	42.8	41.8	8.2	-46.3	-13.0	-33.3			noise floor
8247	44.5	44.7	9.4	-43.2	-13.0	-30.2			noise floor
836.49	99.7	89.3	22.8	25.1			226	1.1	Fundamental (Mid Band)
1672.98	54.3	54.8	-9.1	-51.6	-13.0	-38.6			ambient
2509.47	54.4	46	-4.5	-47.4	-13.0	-34.4	170	1.2	
3345.96	55	53.1	-1.6	-43.9	-13.0	-30.9	273	1.7	
4182.45	55.3	49	0.0	-42.0	-13.0	-29.0	262	1.3	
5018.94	51.2	47.7	0.8	-45.3	-13.0	-32.3			noise floor
5855.43	45.9	45.1	5.3	-46.2	-13.0	-33.2			noise floor
6691.92	51.3	43.3	6.1	-39.9	-13.0	-26.9	283	1.3	
7528.41	43.6	43.7	8.4	-45.2	-13.0	-32.2			noise floor
8364.9	43.3	43.2	9.7	-44.4	-13.0	-31.4			noise floor
848.31	99.9	92	23.1	25.6			216	1.1	Fundamental (High Band)
1696.62	54.3	54.8	-8.9	-51.5	-13.0	-38.5			ambient
2544.93	52.6	46.6	-4.3	-49.1	-13.0	-36.1	167	1	
3393.24	53.8	49.6	-1.4	-44.9	-13.0	-31.9	211	1.6	
4241.55	48.7	49.1	-0.1	-48.3	-13.0	-35.3	150	1.1	
5089.86	49.6	47.7	1.3	-46.4	-13.0	-33.4	256	1.6	
5938.17	46.6	46.3	5.5	-45.2	-13.0	-32.2			noise floor
6786.48	48.1	42.3	6.5	-42.8	-13.0	-29.8	291	1.3	
7634.79	44	43	8.5	-44.8	-13.0	-31.8			noise floor
8483.1	43.9	44.1	10.0	-43.3	-13.0	-30.3			noise floor

Report No. SC303100-03

REPORT No: SC303100 TESTER: Alan Laudani SPEC: FCC Part 22 para 22.917(b)(2)

CUSTOMER: Kyocera Wireless INC TEST DIST: 3 Meters

E U T: Module 200 with IRD antenna TEST SITE: Roof

EUT MODE: Transmit CDMA BICONICAL: N/A

DATE: July 2, 2003 EIRP Factor 7 LOG: N/A

NOTES: HORN: 251

Harmonics: RBW = 1 MHz, VBW = 1 MHz
900 MHz High Pass Filter inserted before Pre-amplifier
CF = Antenna Factor + Cable Loss - Pre-amplifier Gain

FREQ (MHz)	VERTICAL (dBuv) pk	HORIZONTAL (dBuv) pk	CF (dB/m)	MAX LEVEL (dBm) pk	SPEC LIMIT (dBm) pk	MARGIN (dB) pk	EUT Rotation	Antenna Height	Notes
824.7	97.2	94.6	22.9	22.7	-13.0	-42.2	265	1.1	Fundamental (Low Band)
1649.4	51.1	51.4	-9.3	-55.2	-13.0	-38.2	230	1.1	ambient
2474.1	43.2	50.8	-4.6	-51.2	-13.0	-29.4	290	1.3	
3298.8	54.7	56.7	-1.7	-42.4	-13.0	-35.4	298	1.4	
4123.5	48.8	48.5	0.2	-48.4	-13.0	-35.5	225	1.2	
4948.2	48.3	45.7	0.6	-48.5	-13.0	-35.3			noise floor
5772.9	42.8	44	5.1	-48.3	-13.0	-32.1			noise floor
6597.6	46.5	46.3	5.8	-45.1	-13.0	-30.1			noise floor
7422.3	45.5	46	8.2	-43.1	-13.0	-28.3			noise floor
8247	46.4	46.6	9.4	-41.3	-13.0				
836.49	95.2	93.7	22.8	20.6	-13.0	-40.2	277	1.1	Fundamental (Mid Band)
1672.98	53.2	49.6	-9.1	-53.2	-13.0	-36.6	121	1.4	ambient
2509.47	52.2	48.6	-4.5	-49.6	-13.0	-35.1	177	1	
3345.96	50.5	50.8	-1.6	-48.1	-13.0	-34.7			
4182.45	49.2	49.6	0.0	-47.7	-13.0	-36.6			
5018.94	46.9	46.3	0.8	-49.6	-13.0	-31.9			noise floor
5855.43	47.2	46.2	5.3	-44.9	-13.0	-31			
6691.92	47.2	45.5	6.1	-44.0	-13.0	-29			noise floor
7528.41	46.3	46.9	8.4	-42.0	-13.0	-27.6			noise floor
8364.9	46.3	47.1	9.7	-40.6	-13.0				
848.31	95.3	94.3	23.1	21.0	-13.0	-38	315	1	Fundamental (High Band)
1696.62	54.3	55.3	-8.9	-51.0	-13.0	-34.1	350	1.9	ambient
2544.93	54.6	48.6	-4.3	-47.1	-13.0	-32.4	110	1.1	
3393.24	52	53.3	-1.4	-45.4	-13.0	-31.7	188	1.5	
4241.55	50.8	52.7	-0.1	-44.7	-13.0	-35.9			
5089.86	47.1	45.7	1.3	-48.9	-13.0	-31.7			noise floor
5938.17	47.1	46.9	5.5	-44.7	-13.0	-31.2			noise floor
6786.48	46.7	46.4	6.5	-44.2	-13.0	-29.1			noise floor
7634.79	46.3	46.7	8.5	-42.1	-13.0	-27.2			
8483.1	46.4	47.2	10.0	-40.2	-13.0				

Report No. SC303100-03

REPORT No: SC303100 TESTER: Alan Laudani SPEC: FCC Part 22 para 22.917(b)(2)
 CUSTOMER: Kyocera Wireless INC TEST DIST: 3 Meters
 E U T: Module 200 with Orion antenna TEST SITE: Roof
 EUT MODE: Transmit CDMA BICONICAL: N/A
 DATE: July 2, 2003 EIRP Factor: 7 LOG: N/A
 NOTES: HORN: 251

Harmonics: RBW = 1 MHz, VBW = 1 MHz
 900 MHz High Pass Filter inserted before Preamplifier
 CF = Antenna Factor + Cable Loss - Preamplifier Gain

FREQ (MHz)	VERTICAL (dBuv) pk	HORIZONTAL (dBuv) pk	CF (dB/m) pk	MAX LEVEL (dBm) pk	SPEC LIMIT (dBm) pk	MARGIN (dB) pk	EUT Rotation	Antenna Height	Notes
824.7	97.3	89.9	22.9	22.8			145	1	Fundamental (Low Band)
1649.4	51.9	47.5	-9.3	-54.7	-13.0	-41.7	283	1	
2474.1	49	50.1	-4.6	-51.9	-13.0	-38.9			ambient
3298.8	55.1	55.2	-1.7	-43.9	-13.0	-30.9	300	1.1	
4123.5	52.4	51.4	0.2	-44.8	-13.0	-31.8	301	1.2	
4948.2	48.3	44.5	0.6	-48.5	-13.0	-35.5			noise floor
5772.9	43.6	44.6	5.1	-47.7	-13.0	-34.7			noise floor
6597.6	48.4	46.4	5.8	-43.2	-13.0	-30.2	300	1	
7422.3	45.2	45	8.2	-43.9	-13.0	-30.9			noise floor
8247	46.8	47.4	9.4	-40.5	-13.0	-27.5			noise floor
836.49	95	85.6	22.8	20.4			140	1	Fundamental (Mid Band)
1672.98	53	48.2	-9.1	-53.4	-13.0	-40.4	247	1.1	
2509.47	52.3	49.4	-4.5	-49.5	-13.0	-36.5			ambient
3345.96	55.3	52.6	-1.6	-43.6	-13.0	-30.6	346	1.2	
4182.45	51	53.6	0.0	-43.7	-13.0	-30.7	316	1.1	
5018.94	49	44.8	0.8	-47.5	-13.0	-34.5	184	1.1	
5855.43	47.7	46.8	5.3	-44.4	-13.0	-31.4			noise floor
6691.92	48.6	46.6	6.1	-42.6	-13.0	-29.6	319	1.4	
7528.41	46.2	46.3	8.4	-42.6	-13.0	-29.6			noise floor
8364.9	47.2	47.2	9.7	-40.5	-13.0	-27.5			noise floor
848.31	94	85.8	23.1	19.7			140	1.1	Fundamental (High Band)
1696.62	54.4	46.7	-8.9	-51.9	-13.0	-38.9	279	1	
2544.93	52.3	43.4	-4.3	-49.4	-13.0	-36.4	176	1	
3393.24	57.1	53.1	-1.4	-41.6	-13.0	-28.6	297	1.3	
4241.55	57.2	49.5	-0.1	-40.2	-13.0	-27.2	243	1.5	
5089.86	51.7	46.4	1.3	-44.3	-13.0	-31.3	258	1.2	
5938.17	48	46.7	5.5	-43.8	-13.0	-30.8			noise floor
6786.48	46.7	46.5	6.5	-44.2	-13.0	-31.2			noise floor
7634.79	45.8	46.5	8.5	-42.3	-13.0	-29.3			noise floor
8483.1	46.6	47.1	10.0	-40.3	-13.0	-27.3			noise floor

v.beta1a

Report No. SC303100-03

REPORT No: SC303100 TESTER: Alan Laudani SPEC: FCC Part 22 para 22.917(b)(2)

CUSTOMER: Kyocera Wireless INC TEST DIST: 3 Meters

E U T: Module 200 with Bluetree antenna TEST SITE: Roof

EUT MODE: Transmit FM BICONICAL: N/A

DATE: July 2, 2003 EIRP Factor 7 LOG: N/A

NOTES: HORN: 251

Harmonics: RBW = 1 MHz, VBW = 1 MHz
 900 MHz High Pass Filter inserted before Preampifier
 CF = Antenna Factor + Cable Loss - Preampifier Gain

FREQ (MHz)	VERTICAL (dBuV) pk	HORIZONTAL (dBuV) pk	CF (dB/m)	MAX LEVEL (dBm) pk	SPEC LIMIT (dBm) pk	MARGIN (dB) pk	EUT Rotation	Antenna Height	Notes
824.04	96.4	88.5	22.9	21.9			168	1.1	
1648.08	59.7	58.3	-9.3	-46.9	-13.0	-33.9	318	1.2	
2472.12	54.1	58.3	-4.6	-43.7	-13.0	-30.7	310	1	
3296.16	57.4	57.7	-1.7	-41.4	-13.0	-28.4	126	1.4	
4120.2	56.6	51.3	0.2	-40.6	-13.0	-27.6	282	1.6	
4944.24	53.9	51.7	0.6	-42.9	-13.0	-29.9	262	1.6	
5768.28	45.7	45.5	5.1	-46.6	-13.0	-33.6			noise floor
6592.32	53.2	47.3	5.8	-38.4	-13.0	-25.4	277	1.1	
7416.36	44.6	42.1	8.2	-44.5	-13.0	-31.5			noise floor
8240.4	44.4	44.9	9.4	-43.0	-13.0	-30			noise floor
836.49	97.2	88.9	22.8	22.6			310	1.1	
1672.98	60.2	56.5	-9.1	-46.2	-13.0	-33.2	200	1	
2509.47	59.1	52.9	-4.5	-42.7	-13.0	-29.7	174	1.1	
3345.96	60	55.6	-1.6	-38.9	-13.0	-25.9	126	1.1	
4182.45	59.7	53.9	0.0	-37.6	-13.0	-24.6	234	1.7	
5018.94	56.2	48.5	0.8	-40.3	-13.0	-27.3	261	2	
5855.43	46.6	45.2	5.3	-45.5	-13.0	-32.5	200	1	
6691.92	48.5	47.3	6.1	-42.7	-13.0	-29.7	69	1.1	
7528.41	46.8	44.8	8.4	-42.1	-13.0	-29.1	226	1.1	
8364.9	45	44.5	9.7	-42.7	-13.0	-29.7			noise floor
848.97	98	90.3	23.2	23.8			320	1.1	
1697.94	55.5	57	-8.9	-49.3	-13.0	-36.3	210	1.1	
2546.91	57	51.5	-4.3	-44.7	-13.0	-31.7	186	1.2	
3395.88	59.2	54.6	-1.4	-39.5	-13.0	-26.5	297	1.3	
4244.85	58.7	52.1	-0.1	-38.7	-13.0	-25.7	279	1.6	
5093.82	52.6	50.1	1.4	-43.4	-13.0	-30.4	197	1.3	
5942.79	45.8	45.4	5.5	-46.0	-13.0	-33			noise floor
6791.76	46.4	44	6.5	-44.5	-13.0	-31.5	207	1.1	
7640.73	43.3	43.4	8.5	-45.4	-13.0	-32.4			noise floor
8489.7	42.9	43.7	10.0	-43.7	-13.0	-30.7			noise floor

Report No. SC303100-03

REPORT No: SC303100 TESTER: Alan Laudani SPEC: FCC Part 22 para 22.917(b)(2)

CUSTOMER: Kyocera Wireless INC

TEST DIST: 3 Meters

E U T: Module 200 with COMVERGE antenna

TEST SITE: Roof

EUT MODE: Transmit FM

BICONICAL: N/A

DATE: July 7, 2003 EIRP Factor 7 LOG: N/A

NOTES: HORN: 251

Harmonics: RBW = 1 MHz, VBW = 1 MHz

900 MHz High Pass Filter inserted before Preamp

CF = Antenna Factor + Cable Loss - Preamp Gain

FREQ (MHz)	VERTICAL (dBuV) pk	HORIZONTAL (dBuV) pk	CF (dBm) pk	MAX LEVEL (dBm) pk	SPEC LIMIT (dBm) pk	MARGIN (dB) pk	EUT Rotation	Antenna Height	Notes
824.04	105.6	94.1	22.9	31.1			66	1.1	
1648.08	69.2	64.9	-9.3	-37.4	-13.0	-24.4	59	1.6	
2472.12	51.5	63.5	-4.6	-38.5	-13.0	-25.5			ambient
3296.16	55.8	60.5	-1.7	-38.6	-13.0	-25.6	58	1.2	
4120.2	60	62.9	0.2	-34.3	-13.0	-21.3	138	2.3	
4944.24	57.9	55.9	0.6	-38.9	-13.0	-25.9	10	1.3	
5768.28	45.6	49.8	5.1	-42.5	-13.0	-29.5	20	1.1	
6592.32	50.8	51.9	5.8	-39.7	-13.0	-26.7	84	1.7	
7416.36	44.5	47.2	8.2	-41.9	-13.0	-28.9	128	1.1	noise floor
8240.4	44.7	45	9.4	-42.9	-13.0	-29.9			
836.49	105.1	92.1	22.8	30.5			40	1.1	
1672.98	69.6	66.3	-9.1	-36.8	-13.0	-23.8	94	1.4	
2509.47	60.8	52.4	-4.5	-41.0	-13.0	-28	115	1.4	
3345.96	52.8	56.9	-1.6	-42.0	-13.0	-29	89	1.3	
4182.45	57.6	65.1	0.0	-32.2	-13.0	-19.2	134	1.5	
5018.94	54.6	58.5	0.8	-38.0	-13.0	-25	148	1.6	
5855.43	48.8	49.2	5.3	-42.9	-13.0	-29.9	173	1.4	
6691.92	52.1	54.1	6.1	-37.1	-13.0	-24.1	147	1.4	
7528.41	46.8	46.1	8.4	-42.1	-13.0	-29.1	149	1.2	
8364.9	45.4	45.4	9.7	-42.3	-13.0	-29.3			noise floor
848.97	104.2	92.6	23.2	30.0			45	1.1	
1697.94	70.6	68	-8.9	-35.7	-13.0	-22.7	70	1.4	
2546.91	57.9	58.4	-4.3	-43.3	-13.0	-30.3	77	1.8	
3395.88	57.2	62	-1.4	-36.7	-13.0	-23.7	173	1.1	
4244.85	57.9	63.8	-0.1	-33.6	-13.0	-20.6	115	1.2	
5093.82	57.4	59.4	1.4	-36.6	-13.0	-23.6	123	1	
5942.79	48.9	48.8	5.5	-42.9	-13.0	-29.9	88	1.1	
6791.76	48.7	51.4	6.5	-39.5	-13.0	-26.5	148	1.1	
7640.73	45.6	46.6	8.5	-42.2	-13.0	-29.2			noise floor
8489.7	43.9	44.5	10.0	-42.9	-13.0	-29.9			noise floor

Report No. SC303100-03

REPORT No: SC303100 TESTER: Alan Laudani SPEC: FCC Part 22 para 22.917(b)(2)

CUSTOMER: Kyocera Wireless INC TEST DIST: 3 Meters

E U T: Module 200 with Galtronics antenna TEST SITE: Roof

EUT MODE: Transmit FM BICONICAL: N/A

DATE: July 1, 2003 EIRP Factor 7 LOG: N/A

NOTES: HORN: 251

Harmonics: RBW = 1 MHz, VBW = 1 MHz

900 MHz High Pass Filter inserted before Preampifier

CF = Antenna Factor + Cable Loss - Preampifier Gain

FREQ (MHz)	VERTICAL (dBuv) pk	HORIZONTAL (dBuv) pk	CF (dBm)	MAX LEVEL (dBm) pk	SPEC LIMIT (dBm) pk	MARGIN (dB) pk	EUT Rotation	Antenna Height	Notes
824.04	101.6	92.2	22.9	27.1	-13.0	-48	161	1.1	noise floor
1648.08	45.1	45.6	-9.3	-61.0	-13.0	-38	166	1.3	
2472.12	51	50.9	-4.6	-51.0	-13.0	-27.1	302	1.4	
3296.16	59	57.1	-1.7	-40.1	-13.0	-30.3	140	1.3	
4120.2	53.9	50.4	0.2	-43.3	-13.0	-32.4	250	1.1	
4944.24	51.4	48.8	0.6	-45.4	-13.0	-34.3	320	1.3	noise floor
5768.28	44.5	45	5.1	-47.3	-13.0	-25	300	1.1	
6592.32	53.6	50.3	5.8	-38.0	-13.0	-30.7			noise floor
7416.36	44.5	41.2	8.2	-44.6	-13.0				
8240.4	44.2	44.1	9.4	-43.7	-13.0				
836.49	100.6	86.5	22.8	26.0	-13.0	-47.9	152	1.2	noise floor
1672.98	45.5	45.1	-9.1	-60.9	-13.0	-36.2	302	1.2	
2509.47	52.6	51.1	-4.5	-49.2	-13.0	-27	233	1	
3345.96	58.9	55.6	-1.6	-40.0	-13.0	-28.3	263	1.4	noise floor
4182.45	54.6	53.6	0.0	-42.7	-13.0	-30.5	320	1.3	
5018.94	55.2	52.1	0.8	-41.3	-13.0	-23.1	225	1.1	
5855.43	47.5	48.6	5.3	-43.5	-13.0	-27.3			noise floor
6691.92	55.1	49.9	6.1	-36.1	-13.0				
7528.41	50.6	46.7	8.4	-38.3	-13.0				
8364.9	47.4	47	9.7	-40.3	-13.0				
848.97	100.7	89.4	23.2	26.5	-13.0	-48.6	152	1.2	noise floor
1697.94	44.2	44.7	-8.9	-61.6	-13.0	-33.9	288	1.4	
2546.91	50.6	54.8	-4.3	-46.9	-13.0	-25.9	297	1.4	
3395.88	59.8	56.7	-1.4	-38.9	-13.0	-25.1	291	1.4	
4244.85	51.3	59.3	-0.1	-38.1	-13.0	-29.4	241	1.1	
5093.82	53.6	51.4	1.4	-42.4	-13.0	-30.2	81	1.5	
5942.79	48.6	48	5.5	-43.2	-13.0	-24.7	287	1.4	noise floor
6791.76	53.2	51	6.5	-37.7	-13.0	-25.4			
7640.73	50.4	47	8.5	-38.4	-13.0	-27.3			
8489.7	46.7	47.1	10.0	-40.3	-13.0				

Report No. SC303100-03

REPORT No: SC303100 TESTER: Alan Laudani SPEC: FCC Part 22 para 22.917(b)(2)

CUSTOMER: Kyocera Wireless INC

TEST DIST: 3 Meters

E U T: Module 200 with IRD antenna

TEST SITE: Roof

EUT MODE: Transmit FM

BICONICAL: N/A

DATE: July 7, 2003 EIRP Factor 7 LOG: N/A

LOG: N/A

NOTES: HORN: 251

Harmonics: RBW = 1 MHz, VBW = 1 MHz

900 MHz High Pass Filter inserted before Preamp

CF = Antenna Factor + Cable Loss - Preamp Gain

FREQ (MHz)	VERTICAL (dBuv) pk	HORIZONTAL (dBuv) pk	CF (dB/m) pk	MAX LEVEL (dBm) pk	SPEC LIMIT (dBm) pk	MARGIN (dB) pk	EUT Rotation	Antenna Height	Notes
824.04	100.1	88.6	22.9	25.6	-13.0	-35.2	169	1.1	ambient
1648.08	58.4	56.7	-9.3	-48.2	-13.0	-29.5			ambient
2472.12	46.1	59.5	-4.6	-42.5	-13.0	-28.6	118	1.2	
3296.16	57.5	54.8	-1.7	-41.6	-13.0	-24.3	85	1.6	
4120.2	59.9	49.9	0.2	-37.3	-13.0	-28.2	90	1.5	
4944.24	55.6	47.7	0.6	-41.2	-13.0	-33.2	130	1.4	
5768.28	46.1	44.6	5.1	-46.2	-13.0	-25.9	112	1.3	
6592.32	52.7	43.9	5.8	-38.9	-13.0	-31	120	1.1	noise floor
7416.36	46.2	43.2	8.2	-42.9	-13.0				
8240.4	43.9	42.9	9.4	-44.0	-13.0				
836.49	99.6	90.6	22.8	25.0	-13.0	-37.7	150	1.2	
1672.98	55.7	55.7	-9.1	-50.7	-13.0	-35.2	155	1	
2509.47	53	53.6	-4.5	-48.2	-13.0	-28.1	140	1.7	
3345.96	57.3	57.8	-1.6	-41.1	-13.0	-33	248	1.3	
4182.45	46.2	51.3	0.0	-46.0	-13.0	-32.4	146	1.1	
5018.94	51.1	50.4	0.8	-45.4	-13.0	-32.7			noise floor
5855.43	46.4	46.1	5.3	-45.7	-13.0	-25.1	162	1.4	
6691.92	53.1	49.6	6.1	-38.1	-13.0	-28.9	289	1	
7528.41	47	45.8	8.4	-41.9	-13.0	-28.4			noise floor
8364.9	45.2	46.3	9.7	-41.4	-13.0				
848.97	100.6	97	23.2	26.4	-13.0	-28.2	148	1.1	
1697.94	59.6	65.1	-8.9	-41.2	-13.0	-32.3	149	1.7	ambient
2546.91	56.4	54.3	-4.3	-45.3	-13.0	-26.1	146	1.8	
3395.88	59.6	58.6	-1.4	-39.1	-13.0	-26.6	240	1	
4244.85	57.8	55.6	-0.1	-39.6	-13.0	-28.9	202	1	
5093.82	54.1	50.1	1.4	-41.9	-13.0	-30.7	138	1.3	
5942.79	47.1	48.1	5.5	-43.7	-13.0	-27.3	127	1.2	
6791.76	50.6	47.3	6.5	-40.3	-13.0	-27.5	129	1	
7640.73	48.3	45.3	8.5	-40.5	-13.0	-30.3			noise floor
8489.7	44.1	43.4	10.0	-43.3	-13.0				

Report No. SC303100-03

REPORT No: SC303100 TESTER: Alan Laudani SPEC: FCC Part 22 para 22.917(b)(2)

CUSTOMER: Kyocera Wireless INC TEST DIST: 3 Meters

E U T: Module 200 with Orion antenna TEST SITE: Roof

EUT MODE: Transmit FM BICONICAL: N/A

DATE: July 2, 2003 EIRP Factor 7 LOG: N/A

NOTES: HORN: 251

Harmonics: RBW = 1 MHz, VBW = 1 MHz
 900 MHz High Pass Filter inserted before Preamplifier
 CF = Antenna Factor + Cable Loss - Preamplifier Gain

FREQ (MHz)	VERTICAL (dBuv) pk	HORIZONTAL (dBuv) pk	CF (dB/m)	MAX LEVEL (dBm) pk	SPEC LIMIT (dBm) pk	MARGIN (dB) pk	EUT Rotation	Antenna Height	Notes
824.04	98.4	91.1	22.9	23.9	-13.0	-36.7	343	1	
1648.08	56.9	56.1	-9.3	-49.7	-13.0	-36.7			ambient
2472.12	53.8	62.6	-4.6	-39.4	-13.0	-26.4			ambient
3296.16	57.5	56.6	-1.7	-41.6	-13.0	-28.6	241	1	
4120.2	59.2	51.7	0.2	-38.0	-13.0	-25	258	1.9	
4944.24	53.8	48.2	0.6	-43.0	-13.0	-30	258	1.3	
5768.28	45.4	44.2	5.1	-46.9	-13.0	-33.9			noise floor
6592.32	52.8	48.8	5.8	-38.8	-13.0	-25.8	258	1.3	
7416.36	47.3	42.1	8.2	-41.8	-13.0	-28.8	145	1.2	
8240.4	44	44.6	9.4	-43.3	-13.0	-30.3			noise floor
836.49	96.8	89.3	22.8	22.2			211	1.2	
1672.98	55.2	51.2	-9.1	-51.2	-13.0	-38.2	137	1	
2509.47	53.8	52.5	-4.5	-48.0	-13.0	-35	268	1	
3345.96	53.6	52.7	-1.6	-45.3	-13.0	-32.3	216	1.3	
4182.45	59.4	50.6	0.0	-37.9	-13.0	-24.9	254	1.5	
5018.94	54.3	47.2	0.8	-42.2	-13.0	-29.2	255	1.4	
5855.43	46	45	5.3	-46.1	-13.0	-33.1	205	1.2	
6891.92	51.1	47.7	6.1	-40.1	-13.0	-27.1	310	1	
7528.41	47	44.8	8.4	-41.9	-13.0	-28.9	328	1.1	
8364.9	44.9	45	9.7	-42.7	-13.0	-29.7			noise floor
848.97	96.4	90.2	23.2	22.2			220	1.2	
1697.94	54.4	58.6	-8.9	-47.7	-13.0	-34.7	322	1.3	ambient
2546.91	52	52.2	-4.3	-49.5	-13.0	-36.5	263	1.6	
3395.88	58.5	54.3	-1.4	-40.2	-13.0	-27.2	228	1.4	
4244.85	58.3	57.8	-0.1	-39.1	-13.0	-26.1	257	1.3	
5093.82	51.2	49.5	1.4	-44.8	-13.0	-31.8	237	1.3	
5942.79	46.9	45.8	5.5	-44.9	-13.0	-31.9			noise floor
6791.76	49.8	45.7	6.5	-41.1	-13.0	-28.1	216	1.1	
7640.73	48.7	45	8.5	-40.1	-13.0	-27.1	212	1.1	
8489.7	43.4	44.3	10.0	-43.1	-13.0	-30.1			noise floor

Report No. SC303100-03

REPORT No: SC303100 TESTER: Alan Laudani SPEC: FCC Part 24 para 24.238(a)

CUSTOMER: Kyocera Wireless INC

TEST DIST: 3 Meters

E U T: Module 200 with Bluetree antenna

TEST SITE: Roof

EUT MODE: Transmit PCS

BICONICAL: N/A

DATE: June 30, 2003 ERP Factor 5.5 LOG: N/A

NOTES: Harmonics: RBW = 1 MHz, VBW = 1 MHz

2000 MHz High Pass Filter inserted before Preamplifier

CF = Antenna Factor + Cable Loss - Preamplifier Gain

FREQ (MHz)	VERTICAL (dBuv) pk	HORIZONTAL (dBuv) pk	CF (dB/m)	MAX LEVEL (dBm) pk	SPEC LIMIT (dBm) pk	MARGIN (dB) pk	EUT Rotation	Antenna Height	Notes
1851.25	88.9	77.9	32.0	25.6			300	1.1	Fundamental (Low Band)
3702.5	60.4	55	-0.4	-35.3	-13.0	-22.3	243	1.5	
5563.75	46.9	42.5	4.5	-43.9	-13.0	-30.9	146	1	
7405	42.2	40.7	8.2	-44.9	-13.0	-31.9			noise floor
9256.25	43.7	43.2	10.4	-41.2	-13.0	-28.2			noise floor
11107.5	43.2	43.5	13.1	-38.6	-13.0	-25.6			noise floor
12958.75	45.3	45.1	12.7	-37.2	-13.0	-24.2			noise floor
14810	44.8	44	16.1	-34.3	-13.0	-21.3			noise floor
16661.25	45	45.9	18.5	-30.9	-13.0	-17.9			noise floor
1880	87.7	78.9	32.2	24.6			320	1.2	Fundamental (Mid Band)
3760	63.2	58.9	-0.3	-32.3	-13.0	-19.3	245	1.1	
5640	50.2	48.7	4.7	-40.4	-13.0	-27.4	187	1	
7520	42.2	41.8	8.4	-44.6	-13.0	-31.6			noise floor
9400	43.1	41.7	10.0	-42.2	-13.0	-29.2			noise floor
11280	43.4	42.6	13.2	-38.7	-13.0	-25.7			noise floor
13160	45	45.1	13.2	-37.0	-13.0	-24			noise floor
15040	44.9	45.6	17.0	-32.6	-13.0	-19.6			noise floor
16920	44.8	45	19.5	-30.8	-13.0	-17.8			noise floor
1908.75	87.3	78.4	32.4	24.4			301	1.2	Fundamental (High Band)
3817.5	66.4	62.8	-0.1	-29.0	-13.0	-16	262	1.3	
5726.25	55	52.1	4.9	-35.3	-13.0	-22.3	5	1.1	
7635	44.4	43.4	8.5	-42.3	-13.0	-29.3			noise floor
9543.75	44.3	43.9	9.8	-41.2	-13.0	-28.2			noise floor
11452.5	50	43.7	13.3	-32.0	-13.0	-19	260	1.4	
13361.25	44.4	44.3	14.0	-36.9	-13.0	-23.9			noise floor
15270	44	44.5	17.3	-33.4	-13.0	-20.4			noise floor
17178.75	44.3	44.7	21.1	-29.4	-13.0	-16.4			noise floor

Report No. SC303100-03

REPORT No: SC303100 TESTER: Alan Laudani SPEC: FCC Part 24 para 24.238(a)

CUSTOMER: Kyocera Wireless INC TEST DIST: 3 Meters

E U T: Module 200 with CONVERGE antenna TEST SITE: Roof

EUT MODE: Transmit PCS BICONICAL: N/A

DATE: July 2, 2003 ERP Factor: 5.5 LOG: N/A

NOTES: Harmonics: RBW = 1 MHz, VBW = 1 MHz HORN: 251
 2000 MHz High Pass Filter inserted before Preamp

CF = Antenna Factor + Cable Loss - Preamp Gain

FREQ (MHz)	VERTICAL (dBuV) pk	HORIZONTAL (dBuV) pk	CF (dB/m) pk	MAX LEVEL (dBm) pk	SPEC LIMIT (dBm) pk	MARGIN (dB) pk	EUT Rotation	Antenna Height	Notes
1851.25	88.3	79.1	32.0	25.0			17	1.5	Fundamental (Low Band)
3702.5	68.4	65.4	-0.4	-27.3	-13.0	-14.3	100	1	
5553.75	52.4	53.4	4.5	-37.4	-13.0	-24.4	23	1	
7405	43.2	42.3	8.2	-43.9	-13.0	-30.9			noise floor
9256.25	45.2	45.3	10.4	-39.6	-13.0	-26.6			noise floor
11107.5	45.4	45.1	13.1	-36.7	-13.0	-23.7			noise floor
12958.75	47.6	47.3	12.7	-34.9	-13.0	-21.9			noise floor
14810	46.1	46	16.1	-33.0	-13.0	-20			noise floor
16661.25	45.5	46.6	18.5	-30.2	-13.0	-17.2			noise floor
1880	88.9	82.1	32.2	25.8			50	1	Fundamental (Mid Band)
3760	76.9	71	-0.3	-18.6	-13.0	-5.64	10	1.3	
5640	68.8	63.8	4.7	-21.8	-13.0	-8.77			
7520	40.6	41.7	8.4	-45.1	-13.0	-32.1			noise floor
9400	40.9	41.5	10.0	-43.8	-13.0	-30.8			noise floor
11280	42	49.5	13.2	-32.6	-13.0	-19.6	60	1.3	noise floor
13160	46.5	45.8	13.2	-35.6	-13.0	-22.6			noise floor
15040	44.3	44.7	17.0	-33.5	-13.0	-20.5			noise floor
16920	45	44.9	19.5	-30.8	-13.0	-17.8			noise floor
1908.75	87.4	80.3	32.4	24.5			47	1	Fundamental (High Band)
3817.5	70	72.1	-0.1	-23.3	-13.0	-10.3	27	1.1	
5726.25	51.9	52.8	4.9	-37.5	-13.0	-24.5	75	1.3	
7635	42.4	44	8.5	-42.7	-13.0	-29.7	85	1.1	
9543.75	42	42.5	9.8	-43.0	-13.0	-30			noise floor
11452.5	44.4	49.3	13.3	-32.7	-13.0	-19.7	255	1.1	
13361.25	45.8	45.5	14.0	-35.5	-13.0	-22.5			noise floor
15270	44.1	45	17.3	-32.9	-13.0	-19.9			noise floor
17178.75	44.2	44.1	21.1	-29.9	-13.0	-16.9			noise floor

v.be1a1a

Report No. SC303100-03

REPORT No: SC303100 TESTER: Alan Laudani SPEC: FCC Part 24 para 24.238(a)

CUSTOMER: Kyocera Wireless INC

TEST DIST: 3 Meters

E U T: Module 200 with Galtronics antenna

TEST SITE: Roof

EUT MODE: Transmit PCS

BICONICAL: N/A

DATE: June 30, 2003 ERP Factor 5.5

LOG: N/A

NOTES: Harmonics: RBW = 1 MHz, VBW = 1 MHz

HORN: 251

2000 MHz High Pass Filter inserted before Preamp

CF = Antenna Factor + Cable Loss - Preamp Gain

FREQ (MHz)	VERTICAL (dBuv) pk	HORIZONTAL (dBuv) pk	CF (dB/m)	MAX LEVEL (dBm) pk	SPEC LIMIT (dBm) pk	MARGIN (dB) pk	EUT Rotation	Antenna Height	Notes
1851.25	92.3	78.7	32.0	29.0	-13.0	-24.9	95	1.4	Fundamental (Low Band)
3702.5	57.8	57.2	-0.4	-37.9	-13.0	-29.3	294	1.4	
5553.75	48.5	43	4.5	-42.3	-13.0	-29.3	324	1.3	
7405	45.1	45.9	8.2	-41.2	-13.0	-28.2			noise floor
9256.25	46.6	46.8	10.4	-38.1	-13.0	-25.1			noise floor
11107.5	47.2	45.8	13.1	-34.9	-13.0	-21.9			noise floor
12958.75	50.5	50.8	12.7	-31.7	-13.0	-18.7			noise floor
14810	50.9	50.3	16.1	-28.2	-13.0	-15.2			noise floor
16661.25	50.9	51	18.5	-25.8	-13.0	-12.8			noise floor
1880	92.3	83	32.2	29.2	-13.0	-21.2	272	1.3	Fundamental (Mid Band)
3760	61.3	60.2	-0.3	-34.2	-13.0	-27.1	17	1.4	
5640	50.5	49.6	4.7	-40.1	-13.0	-27.4			noise floor
7520	46.4	45.6	8.4	-40.4	-13.0	-24.7			noise floor
9400	47.6	46.7	10.0	-37.7	-13.0	-22.8			noise floor
11280	46.3	46.3	13.2	-35.8	-13.0	-19			noise floor
13160	50.1	49.4	13.2	-32.0	-13.0	-14.3			noise floor
15040	50.2	50.9	17.0	-27.3	-13.0	-10.3			noise floor
16920	51.1	52.5	19.5	-23.3	-13.0				
1908.75	91.6	77.6	32.4	28.7	-13.0	-20.4	270	1.3	Fundamental (High Band)
3817.5	62	58.1	-0.1	-33.4	-13.0	-24.2	301	1.3	
5726.25	53.1	51.7	4.9	-37.2	-13.0	-27.6	277	1.8	
7635	46.1	45.9	8.5	-40.6	-13.0	-25.9			noise floor
9543.75	46.6	46.3	9.8	-38.9	-13.0	-23			noise floor
11452.5	46	45.6	13.3	-36.0	-13.0	-17.5			noise floor
13361.25	50.8	50.1	14.0	-30.5	-13.0	-14.5			noise floor
15270	50.4	49.7	17.3	-27.5	-13.0	-10.2			noise floor
17178.75	50.9	50.8	21.1	-23.2	-13.0				noise floor

REPORT No: SC303100 TESTER: Alan Laudani SPEC: FCC Part 24 para 24.238(a)

CUSTOMER: Kyocera Wireless INC

TEST DIST: 3 Meters

E U T: Module 200 with IRD antenna

TEST SITE: Roof

EUT MODE: Transmit PCS

BICONICAL: N/A

DATE: July 2, 2003 ERP Factor 5.5

LOG: N/A

NOTES: Harmonics: RBW = 1 MHz, VBW = 1 MHz

HORN: 251

2000 MHz High Pass Filter inserted before Preamp

CF = Antenna Factor + Cable Loss - Preamp Gain

v.beta1a

FREQ (MHz)	VERTICAL (dBuv) pk	HORIZONTAL (dBuv) pk	CF (dB/m)	MAX LEVEL (dBm) pk	SPEC LIMIT (dBm) pk	MARGIN (dB) pk	EUT Rotation	Antenna Height	Notes
1851.25	86.2	82.7	32.0	22.9	-13.0	-18.5	237	1.3	Fundamental (Low Band)
3702.5	64.2	58.9	-0.4	-31.5	-13.0	-18.5	341	1	
5553.75	49.3	44.6	4.5	-41.5	-13.0	-28.5	293	1	
7405	41.8	42.1	8.2	-45.0	-13.0	-32			noise floor
9256.25	44.5	45.1	10.4	-39.8	-13.0	-26.8			noise floor
11107.5	42.5	43.6	13.1	-38.5	-13.0	-25.5			noise floor
12958.75	45.9	45.1	12.7	-36.6	-13.0	-23.6			noise floor
14810	45.1	45.3	16.1	-33.8	-13.0	-20.8			noise floor
16661.25	45	44.8	18.5	-31.8	-13.0	-18.8			noise floor
1880	84.3	83.4	32.2	21.2	-13.0	-19.4	54	1.5	Fundamental (Mid Band)
3760	63.1	56.6	-0.3	-32.4	-13.0	-19.4	292	1.3	
5640	49.2	41.4	4.7	-41.4	-13.0	-28.4	346	1.4	
7520	40.1	40.4	8.4	-46.4	-13.0	-33.4			noise floor
9400	41.2	41.5	10.0	-43.8	-13.0	-30.8			noise floor
11280	41.7	42.7	13.2	-39.4	-13.0	-26.4			noise floor
13160	45.3	44.5	13.2	-36.8	-13.0	-23.8			noise floor
15040	44.8	44.2	17.0	-33.4	-13.0	-20.4			noise floor
16920	45	44.9	19.5	-30.8	-13.0	-17.8			noise floor
1908.75	83	81.2	32.4	20.1	-13.0	-16.6	300	1.2	Fundamental (High Band)
3817.5	65.8	60.4	-0.1	-29.6	-13.0	-29	187	1	
5726.25	46.2	48.3	4.9	-42.0	-13.0	-24.3	172	1.5	
7635	49.4	48.9	8.5	-37.3	-13.0	-24.3	31	1.2	
9543.75	42.6	42.3	9.8	-42.9	-13.0	-29.9			noise floor
11452.5	42.1	42.3	13.3	-39.7	-13.0	-26.7			noise floor
13361.25	44	43.9	14.0	-37.3	-13.0	-24.3			noise floor
15270	44.4	44	17.3	-33.5	-13.0	-20.5			noise floor
17178.75	44.8	44.3	21.1	-29.3	-13.0	-16.3			noise floor

Report No. SC303100-03

REPORT No: SC303100 TESTER: Alan Laudanik SPEC: FCC Part 24 para 24.238(a)

CUSTOMER: Kyocera Wireless INC

TEST DIST: 3 Meters

E U T: Module 200 with Orion antenna

TEST SITE: Roof

EUT MODE: Transmit PCS

BICONICAL: N/A

DATE: July 2, 2003 ERP Factor 5.5 LOG: N/A

NOTES: Harmonics: RBW = 1 MHz, VBW = 1 MHz HORN: 251

2000 MHz High Pass Filter inserted before Preamplifier

CF = Antenna Factor + Cable Loss - Preamplifier Gain

FREQ (MHz)	VERTICAL (dBuv) pk	HORIZONTAL (dBuv) pk	CF (dB/m)	MAX LEVEL (dBm) pk	SPEC LIMIT (dBm) pk	MARGIN (dB) pk	EUT Rotation	Antenna Height	Notes
1851.25	87	71.3	32.0	23.7			260	1.2	Fundamental (Low Band)
3702.5	64.4	56.7	-0.4	-31.3	-13.0	-18.3	272	1.4	
5553.75	47.4	44.5	4.5	-43.4	-13.0	-30.4	283	1.3	
7405	41.7	41.2	8.2	-45.4	-13.0	-32.4			noise floor
9256.25	44.8	44.4	10.4	-40.1	-13.0	-27.1			noise floor
11107.5	43	43.4	13.1	-38.7	-13.0	-25.7			noise floor
12958.75	46.1	46.1	12.7	-36.4	-13.0	-23.4			noise floor
14810	44.8	45.5	16.1	-33.6	-13.0	-20.6			noise floor
16661.25	45	45.6	18.5	-31.2	-13.0	-18.2			noise floor
1880	86.5	70	32.2	23.4			245	1	Fundamental (Mid Band)
3760	59	57.7	-0.3	-36.5	-13.0	-23.5	233	1.2	
5640	46.4	46.6	4.7	-44.0	-13.0	-31	242	1.3	
7520	42.4	42.2	8.4	-44.4	-13.0	-31.4			noise floor
9400	42.4	41.2	10.0	-42.9	-13.0	-29.9			noise floor
11280	43.1	44	13.2	-38.1	-13.0	-25.1			noise floor
13160	46	45.3	13.2	-36.1	-13.0	-23.1			noise floor
15040	45.4	45.4	17.0	-32.8	-13.0	-19.8			noise floor
16920	45.3	44.7	19.5	-30.5	-13.0	-17.5			noise floor
1908.75	87	71	32.4	24.1			297	1.3	Fundamental (High Band)
3817.5	61.7	56.2	-0.1	-33.7	-13.0	-20.7	4	1	
5726.25	49	44.3	4.9	-41.3	-13.0	-28.3	257	1	
7635	43.1	42.4	8.5	-43.6	-13.0	-30.6			noise floor
9543.75	42.2	42.6	9.8	-42.9	-13.0	-29.9			noise floor
11452.5	43.9	43.5	13.3	-38.1	-13.0	-25.1			noise floor
13361.25	44.6	44.6	14.0	-36.7	-13.0	-23.7			noise floor
15270	44.5	44	17.3	-33.4	-13.0	-20.4			noise floor
17178.75	43.9	44.5	21.1	-29.6	-13.0	-16.6			noise floor

Report No. SC303100-03

4.0 ATTESTATION STATEMENT

GENERAL REMARKS:

SUMMARY:

All tests were performed per CFR 47, Part(s) 22.917(b)(2), 24.238(a)

■ - Performed

The Equipment Under Test

■ - **Fulfills** the requirements of CFR 47, Part(s) 22.917(b)(2), 24.238(a)

Testing Start Date: 30 June 2003

Testing End Date: 07 July 2003

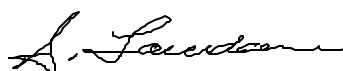
- TÜV AMERICA, INC. -

Responsible Engineer:



Jim Owen
(EMC Chief Engineer)

Responsible Engineer:



Alan Laudani
(EMC Engineer)