

RADIATED EMISSIONS

DATA

FOR

**KYOCERA WIRELESS
10300 Campus Point Drive
San Diego, CA 92121**

Prepared by

**TÜV AMERICA
10040 Mesa Rim Road
San Diego, CA 92121-2912**

Measurement Requirements (CFR 47 Part 22, Paragraph 22.917(b)(2) and Part 24, Paragraph 24.238(a))

The following measurements were performed by TÜV America. To the best of my knowledge these tests were conducted in accordance with the procedures outlined in Part 2 of the Commission's Rules and Regulations. The data presented below demonstrates compliance with the appropriate technical standards.



Floyd R. Fleury
EMC Manager

Emissions Test Conditions: SPURIOUS RADIATED EMISSIONS

Roof (small open area test site)

The *Spurious Radiated Emissions* measurements were performed using the following equipment:

Test Equipment Used:

Model No.	Prop. No.	Description	Manufacturer	Serial No.	Cal Date
HP8566B	720	Spectrum Analyzer	Hewlett Packard	2115A00842	07/02
Cable 1	731	30' Cable	United Microwave Prod	--	NCR*
Cable 2	756	10' Cable	United Microwave Prod	--	NCR*
Cable 3	6788	3' Cable	United Microwave Prod	--	NCR*
Cable 4	6790	40' Cable	United Microwave Prod	--	NCR*
HP8350B	6707	Sweep Signal Generator	Hewlett Packard	2749A09420	NCR*
AMF-5D-010180-35-10P	719	PreAmp	TUV America	549460	NCR*
3115	453	Antenna, Horn	Electro Mechanics Co	3564	01/03
3115	251	Antenna, Horn	Electro Mechanics Co	2595	12/02
HP8481	726	Power Sensor	Hewlett Packard	1926A27528	12/02
436A	775	Power Meter	Hewlett Packard	1918A05312	09/02
FF6549-2	783	2000 MHz High Pass Filter	Sage	008	NCR*
FF6549-1	778	900 MHz High Pass Filter	Sage	005	NCR*

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

Technical Documentation

Test Data Sheets

and

Test Setups

Kyocera Substitution SC3001762

4/9/03

Location: Roof Site

Frequency MHz	target level dBuV/m	Horn Gain dBi	cable loss dB	Signal Generator dBm	Total (EIRP) dBm	Spec dBm	Margin Subst. dBm
3702.5	72.9	7.9	7.6	-29.8	-29.5	-13	-16.5
3760	69.7	7.9	7.7	-32.0	-31.8	-13	-18.8
3817.5	69.7	7.8	7.8	-31.1	-31.1	-13	-18.1

Substitution Procedure:

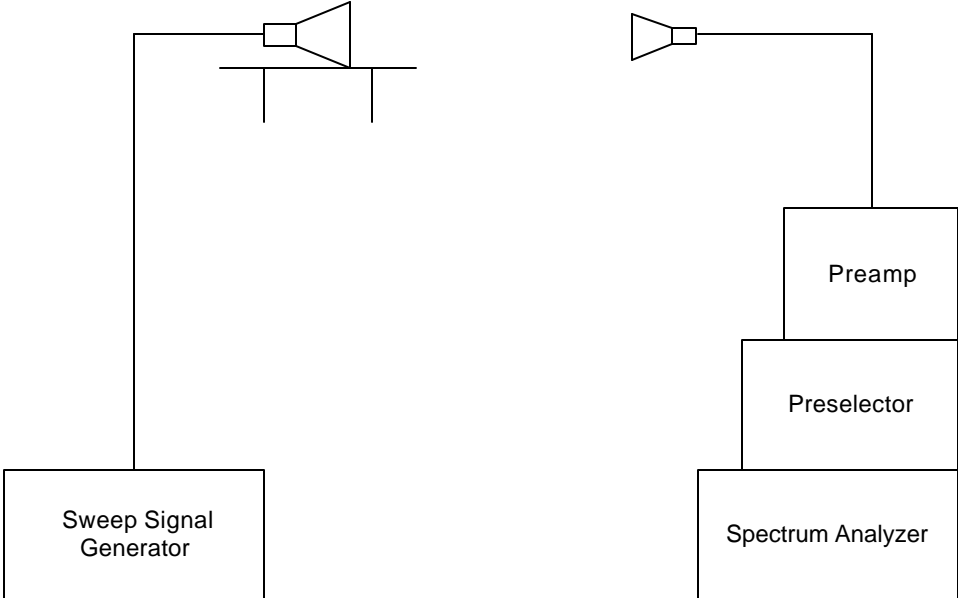
1. Select emissions that pass with less than 20 dB margin, note the Target level -- reading on spectrum analyzer.
2. Duplicate this targeted reading with Signal Generator, allowing for antenna horn gain and cable insertion loss.
3. Compare calculated power output to specification.

Input level and cable insertion losses verified with Power Meter #775: HP437B, cal. Date due: 09/11/03
Power Sensor #726, Cal. Date due 12-12-03.

Location: TUV 3-meter roof site

Tested by A. Laudani
A. Laudani

Test setup for Substitution Method



REPORT No: SC301762 TESTER: Alan Laudani *AK* SPEC: FCC Part 22 para 22.917(b)(2)
 CUSTOMER: Kyocera Wireless TEST DIST: 3 Meters
 EUT: KZ4114 Tri-mode Phone TEST SITE: Roof
 EUT MODE: Transmit CDMA BICONICAL: N/A
 DATE: Apr. 08, 2003 ERP/EIRP Factor 7 LOG: N/A
 NOTES: HORN: 251

Part 22 - RBW 1 MHz

CF = Antenna Factor + Cable Loss - Preamp/Imp Gain

v.bobata

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	120.4		0.0	23.0					Fundamental (Low Band)
1648.4	50.8	50.6	-9.3	-56.0	-13.0	-43	172	1.2	
2474.1	48.2	45.7	-4.6	-53.8	-13.0	-40.8	175	1.2	
3288.8	50.1	53.5	-1.7	-45.6	-13.0	-32.6	178	1.4	
4123.5	45.6	44.9	0.2	-51.6	-13.0	-38.6			noise floor
4948.2	45.8	43.9	0.6	-51.0	-13.0	-38			noise floor
5772.9	43.9	44.4	5.1	-47.9	-13.0	-34.9			noise floor
6597.6	46.8	46.7	5.8	-44.8	-13.0	-31.8			noise floor
7422.3	45.7	45.7	8.2	-43.4	-13.0	-30.4			noise floor
8247	46.5	47.4	9.4	-40.5	-13.0	-27.5			noise floor
836.49	120.4		0.0	23.0					Fundamental (Mid Band)
1672.98	54	49.6	-9.1	-52.4	-13.0	-39.4	181	1.2	
2509.47	52.8	49.1	-4.5	-49.0	-13.0	-36	220	1.5	
3345.96	49.3	54.4	-1.6	-44.5	-13.0	-31.5	201	1.2	
4182.45	46.7	46	0.0	-50.6	-13.0	-37.6			noise floor
5018.94	45.8	45.2	0.8	-50.7	-13.0	-37.7			noise floor
5855.43	47.2	47	5.3	-44.9	-13.0	-31.9			noise floor
6691.92	46	47.1	6.1	-44.1	-13.0	-31.1			noise floor
7528.41	46.1	46.1	8.4	-42.8	-13.0	-29.8			noise floor
8364.9	46.7	47	9.7	-40.7	-13.0	-27.7			noise floor
848.31	120.4		0.0	23.0					Fundamental (High Band)
1696.62	53.7	49	-8.9	-52.6	-13.0	-39.6	174	1.2	
2544.93	49.5	54.4	-4.3	-47.3	-13.0	-34.3	198	1.6	
3393.24	46.6	51.7	-1.4	-47.0	-13.0	-34	190	1.2	
4241.55	45.9	46.9	-0.1	-50.5	-13.0	-37.5			noise floor
5089.86	45.5	45.3	1.3	-50.5	-13.0	-37.5			noise floor
5938.17	47.2	47.6	5.5	-44.2	-13.0	-31.2			noise floor
6786.48	46.8	46.1	6.5	-44.1	-13.0	-31.1			noise floor
7634.79	46.3	46.4	8.5	-42.4	-13.0	-29.4			noise floor
8483.1	46.9	46.7	10.0	-40.5	-13.0	-27.5			noise floor

REPORT No: SC301762 TESTER: Alan Laudani SPEC: FCC Part 22 para 22.917(b)(2)
 CUSTOMER: Kyocera Wireless TEST DIST: 3 Meters
 E U T: H414 Tri-mode Phone TEST SITE: Roof
 EUT MODE: Transmit FM BICONICAL: N/A
 DATE: Apr. 08, 2003 ERP/EIRP Factor 7 LOG: N/A
 NOTES: HORN: 251

Part 22 - RBW 1 MHz

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	122.4		0.0	25.0					
1648.08	52.2	50.8	-9.3	-54.4	-13.0	-41.4	184	1.1	Fundamental (Low Band)
2472.12	49.5	47	-4.6	-52.5	-13.0	-39.5	183	1.2	
3296.16	46.2	53.3	-1.7	-45.8	-13.0	-32.8	205	1.3	
4120.2	45.7	44.5	0.2	-51.5	-13.0	-38.5			noise floor
4944.24	46.4	44.4	0.6	-50.4	-13.0	-37.4			noise floor
5768.28	44.1	45	5.1	-47.3	-13.0	-34.3			noise floor
6592.32	46.3	46.8	5.8	-44.8	-13.0	-31.8			noise floor
7416.36	45.3	45.3	8.2	-43.8	-13.0	-30.8			noise floor
8240.4	47.5	47.2	9.4	-40.4	-13.0	-27.4			noise floor
836.49	122.4		0.0	25.0					
1672.98	52	50.2	-9.1	-54.4	-13.0	-41.4	190	1.1	Fundamental (Mid Band)
2509.47	51.2	52.7	-4.5	-49.1	-13.0	-36.1	180	1.4	
3345.96	48.5	53.5	-1.6	-45.4	-13.0	-32.4	205	1.2	
4182.45	46.9	45.9	0.0	-50.4	-13.0	-37.4			noise floor
5018.94	45.6	45.2	0.8	-50.9	-13.0	-37.9			noise floor
5855.43	47.4	47.1	5.3	-44.7	-13.0	-31.7			noise floor
6691.92	46.6	47.4	6.1	-43.8	-13.0	-30.8			noise floor
7528.41	46.4	46.2	8.4	-42.5	-13.0	-29.5			noise floor
8364.9	47.2	47.3	9.7	-40.4	-13.0	-27.4			noise floor
848.97	122.4		0.0	25.0					
1697.94	51.8	50.3	-8.9	-54.5	-13.0	-41.5	194	1.4	Fundamental (High Band)
2546.91	53.4	51.9	-4.3	-48.3	-13.0	-35.3	185	1.4	
3395.88	47.4	53.5	-1.4	-45.2	-13.0	-32.2	205	1.2	
4244.85	46.5	47.3	-0.1	-50.1	-13.0	-37.1			noise floor
5093.82	45	46.6	1.4	-49.4	-13.0	-36.4			noise floor
5942.79	46.6	47.1	5.5	-44.7	-13.0	-31.7			noise floor
6791.76	47.1	45.8	6.5	-43.8	-13.0	-30.8			noise floor
7640.73	46.4	46.6	8.5	-42.2	-13.0	-29.2			noise floor
8489.7	46.8	46.5	10.0	-40.6	-13.0	-27.6			noise floor

REPORT No: SC301762 TESTER: Alan Laudant **AKX** SPEC: FCC Part 24 para 24.238(a)
 CUSTOMER: Kyocera Wireless TEST DIST: 3 Meters
 E U T: **FE114** Tri-mode Phone TEST SITE: Roof
 EUT MODE: Transmit PCS BICONICAL: N/A
 DATE: Apr. 08, 2003 ERP/EIRP Factor 5.5 LOG: N/A
 NOTES: Part 24 - RBW 1 MHz HORN: 251

CF = Antenna Factor + Cable Loss - Preamp/ifier Gain
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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
1851.25	126.1		-7.8	23.0	-13.0	-9.8	185	1.2	Fundamental (Low Band)
3702.5	72.9	67.9	-0.4	-22.8	-13.0	-30.6	146	1.2	
5553.75	47.2	43.7	4.5	-43.6	-13.0	-28.7			noise floor
7405	45.4	44.7	8.2	-41.7	-13.0	-24.0			noise floor
9258.25	47.9	46.7	10.4	-37.0	-13.0	-23.1			noise floor
11107.5	45.9	46.0	13.1	-36.1	-13.0	-15.1			noise floor
12958.75	51.0	50.9	12.7	-31.5	-13.0	-12.1			noise floor
14810	50.3	51.0	16.1	-28.1	-13.0				noise floor
16661.25	51.7	49.9	18.5	-25.1	-13.0				noise floor
1880	125.9		-7.6	23.0	-13.0	-12.8	184	1.2	Fundamental (Mid Band)
3760	69.7	66.1	-0.3	-25.8	-13.0	-27.0	182	1.0	
5640	50.6	45.8	4.7	-40.0	-13.0	-26.2			noise floor
7520	45.4	47.6	8.4	-39.2	-13.0	-26.0			noise floor
9400	46.3	45.9	10.0	-39.0	-13.0	-23.4			noise floor
11280	46.2	45.7	13.2	-36.4	-13.0	-18.5			noise floor
13160	49.2	50.6	13.2	-31.5	-13.0	-13.7			noise floor
15040	51.5	50.3	17.0	-26.7	-13.0	-11.7			noise floor
16920	51.1	50.9	19.5	-24.7	-13.0				noise floor
1908.75	125.7		-7.4	23.0	-13.0	-12.7	191	1.2	Fundamental (High Band)
3817.5	69.7	64.7	-0.1	-25.7	-13.0	-22.7	250	1.1	
5726.25	52.2	54.6	4.9	-35.7	-13.0	-24.0	233	1.0	
7635	48.8	49.7	8.5	-37.0	-13.0	-25.0			noise floor
9543.75	47.5	45.2	9.8	-38.0	-13.0	-22.0			noise floor
11452.5	47.0	46.1	13.3	-35.0	-13.0	-18.2			noise floor
13361.25	50.1	50.1	14.0	-31.2	-13.0	-13.0			noise floor
15270	51.9	51.2	17.3	-26.0	-13.0	-10.0			noise floor
17178.75	50.5	51.1	21.1	-23.0	-13.0				noise floor

Photograph of Test Setup



Photograph of Test Setup



Appendix

Supplemental Information

RADIATED RFI PRE-SCAN SHIELDED ROOM AT 1 METER

Test Report #: SC301762 Test Area: SR3
Test Method: FCC 15.209(a) Date: April 10, 2003



EUT Model #: KE414
EUT POWER: 230 Vac/50 Hz 120 Vac/60 Hz
 Other:

EUT Description: Cellular Tri-mode Phone

NOTES: MODES Tx FM, CDMA, PCS; Rx

NO EMISSIONS OTHER THAN INTENTIONAL EMISSIONS EVIDENT.

FREQUENCY MHz	QUASI-PEAK dBµV	AVERAGE dBµV	FREQUENCY MHz	QUASI-PEAK dBµV	AVERAGE dBµV

Tested By: A. Landan Printed A. Landan Signature

- NOTES:
- 1. Ap 1594E #6504 Spectrum Analyzer T-29-03
 - 2. CBL 111 #460 Antenna BiLog NCR