

**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.

A handwritten signature in black ink that reads 'FR Fleury'.

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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	407	Spectrum Analyzer	Hewlett Packard	2311A02209	12/02
HP8566B	743	Spectrum Analyzer	Hewlett Packard	2618A02913	11/02
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	2328A00112	NCR*
AMF-5D-010180-35-10P	719	Amplifier	Miteq	549460	NCR*
3115	453	Antenna, Horn	Electro Mechanics Co	3564	01/03
3115	251	Antenna, Horn	Electro Mechanics Co	2595	12/02
8481A	726	Power Sensor	Hewlett Packard	1926A27528	12/02
HP436A	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:** (\*) No Calibration Required.

No emissions other than intentional emissions evident between 30 MHz to 1000 MHz.

**Technical Documentation**

**Test Data Sheets**

**and**

**Test Setups**

**Kyocera Substitution SC301623**

4/3/03

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
3817.5	64.4	7.8	8.1	-37.8	-38.1	-13	-25.1
5726.25	58.5	8.7	10.4	-36.8	-38.5	-13	-25.5

Substitution Procedure:

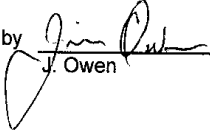
1. Select emissions that pass with less than 20 dB margin, note the Target level -- reading on spectrum analyzer.
2. Duplicate this targeted reading with Signal Generator, allowing for antenna horn gain and cable insertion loss.
3. Compare calculated power output to specification.

Input level and cable insertion losses verified with Power Meter #775: HP437A, cal. Date due: 09/11/03

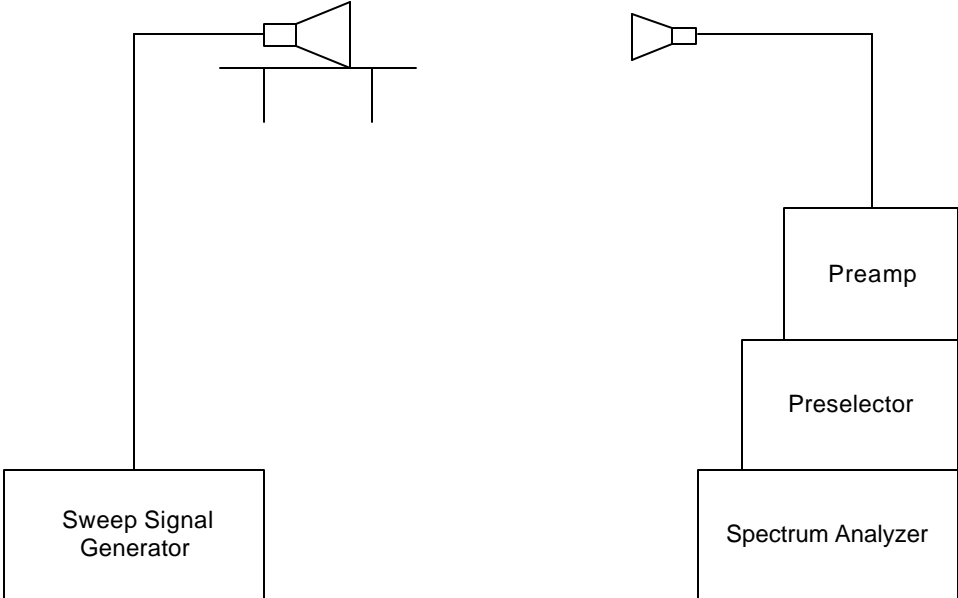
Power Sensor #726, Cal. Date due 12-12-03.

Location: TUV 3-meter roof site

Tested by   
A. Laudani

Reviewed by   
J. Owen

Test setup for Substitution Method



**REPORT No:** SC301623     **TESTER:** Alan Laudani     **SPEC:** FCC Part 22 para 22.917(b)(2)  
**CUSTOMER:** Kyocera Wireless     **TEST DIST:** 3 Meters  
**EUT:** KE424C     **TEST SITE:** Roof  
**EUT MODE:** Transmit CDMA     **BICONICAL:** N/A  
**DATE:** April 3, 2003     **ERP/EIRP Factor:** 7     **LOG:** N/A  
**NOTES:**     **HORN:** 251  
**RBW = VBW = 1 MHz**

CF = Antenna Factor + Cable Loss - Pre-amplifier 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	124.4		0.0	27.0	-13.0	-40.9	158	1.5	Fundamental (Low Band)
1649.4	49.9	52.7	-9.3	-53.9	-13.0	-46			noise floor
2474.1	42.6	43	-4.6	-59.0	-13.0	-41.2			noise floor
3298.8	44.9	44	-1.7	-54.2	-13.0	-38.5			noise floor
4123.5	44.6	45.7	0.2	-51.5	-13.0	-37.9			noise floor
4948.2	45.4	45.9	0.6	-50.9	-13.0	-33.3			noise floor
5772.9	46	46	5.1	-46.3	-13.0	-32.1			noise floor
6597.6	45.4	46.5	5.8	-45.1	-13.0	-32.4			noise floor
7422.3	43.5	43.7	8.2	-45.4	-13.0	-31.5			noise floor
8247	43.4	42.9	8.4	-44.5	-13.0				noise floor
838.49	124.4		0.0	27.0					Fundamental (Mid Band)
1672.99	49.4	49.3	-9.1	-57.0	-13.0	-44	54	1	
2509.47	46.7	49.5	-4.5	-52.3	-13.0	-39.3	7	1	
3345.96	45.4	45.2	-1.6	-53.5	-13.0	-40.5			noise floor
4182.45	45.8	46.4	0.0	-50.9	-13.0	-37.9			noise floor
5018.84	44.7	45.7	0.8	-50.8	-13.0	-37.8			noise floor
5855.43	44.4	43	5.3	-47.7	-13.0	-34.7			noise floor
6691.92	43.7	43.4	6.1	-47.5	-13.0	-34.5			noise floor
7528.41	42.3	43.1	8.4	-45.8	-13.0	-32.3			noise floor
8364.9	43.5	42.4	9.7	-44.2	-13.0	-31.2			noise floor
848.31	124.4		0.0	27.0					Fundamental (High Band)
1696.62	48.3	50.5	-8.9	-55.8	-13.0	-42.8	235	1.5	
2544.93	47.6	46.4	-4.3	-54.1	-13.0	-41.1			noise floor
3393.24	45.4	45	-1.4	-53.3	-13.0	-40.3			noise floor
4241.55	45.8	45.4	-0.1	-51.6	-13.0	-38.6			noise floor
5089.86	45.6	46.1	1.3	-49.9	-13.0	-36.9			noise floor
5938.17	45.8	46	6.5	-45.8	-13.0	-32.8			noise floor
6786.48	44.3	44.3	6.5	-46.6	-13.0	-33.6			noise floor
7634.79	43.1	43.4	8.5	-45.4	-13.0	-32.4			noise floor
8483.1	42	42.9	10.0	-44.5	-13.0	-31.5			noise floor

REPORT No: SC301623 TESTER: Alan Laudani SPEC: FCC Part 22 para 22.917(b)(2)  
 CUSTOMER: Kyocera Wireless TEST DIST: 3 Meters  
 E U T: KE424C TEST SITE: Roof  
 EUT MODE: Transmit FM BICONICAL: N/A  
 DATE: April 3, 2003 ERP/EIRP Factor 7 LOG: N/A  
 NOTES: RBW = VBW = 1 MHz HORN: 251

CF = Antenna Factor + Cable Loss + Pre-amplifier 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	124.4		0.0	27.0					Fundamental (Low Band)
1648.08	51.9	48.9	-9.3	-54.7	-13.0	-41.7	36	1	
2472.12	41.7	42	-4.6	-60.0	-13.0	-47			noise floor
3296.16	45.3	45.7	-1.7	-53.4	-13.0	-40.4			noise floor
4120.2	44.7	41.4	0.2	-52.5	-13.0	-39.5			noise floor
4944.24	42.8	40.9	0.6	-54.0	-13.0	-41			noise floor
5768.28	40.3	42.3	5.1	-50.0	-13.0	-37			noise floor
6592.32	33.9	31.3	5.8	-57.7	-13.0	-44.7			noise floor
7416.36	33.5	32.3	8.2	-55.6	-13.0	-42.6			noise floor
8240.4	32.1	32.4	9.4	-55.5	-13.0	-42.5			noise floor
836.49	124.4		0.0	27.0					Fundamental (Mid Band)
1672.98	50.8	55.5	-9.1	-50.9	-13.0	-37.9	40	1	
2509.47	48.9	50.5	-4.5	-51.3	-13.0	-38.3	0	1.3	
3345.96	43.2	45.7	-1.6	-53.2	-13.0	-40.2			noise floor
4182.45	45	46	0.0	-51.3	-13.0	-38.3			noise floor
5018.94	44.9	45.5	0.8	-51.0	-13.0	-38			noise floor
5855.43	42.8	43.8	5.3	-48.3	-13.0	-35.3			noise floor
6691.92	42.7	43	6.1	-48.2	-13.0	-35.2			noise floor
7528.41	42.1	42	8.4	-46.8	-13.0	-33.8			noise floor
8364.9	42.7	42.8	9.7	-44.9	-13.0	-31.9			noise floor
848.97	124.4		0.0	27.0					Fundamental (High Band)
1697.94	50.4	49.3	-8.9	-55.9	-13.0	-42.9	0	1.1	
2546.91	47.5	48	-4.3	-53.7	-13.0	-40.7	334	1.2	
3395.88	44.6	45.5	-1.4	-53.2	-13.0	-40.2			noise floor
4244.85	46.1	46.1	-0.1	-51.3	-13.0	-38.3			noise floor
5093.82	46.4	45.1	1.4	-49.6	-13.0	-36.6			noise floor
5942.79	42.6	43.5	5.5	-48.3	-13.0	-35.3			noise floor
6791.76	42.2	41.2	6.5	-48.7	-13.0	-35.7			noise floor
7640.73	42.7	42.6	8.5	-46.1	-13.0	-33.1			noise floor
8489.7	41.7	41.8	10.0	-45.6	-13.0	-32.6			noise floor



REPORT No: SC301623 TESTER: Alan Laudani SPEC: FCC Part 24 para 24.238(a)  
 CUSTOMER: Kyocera Wireless TEST DIST: 3 Meters  
 E U T: KE424C TEST SITE: Roof  
 EUT MODE: Transmit PCS BICONICAL: N/A  
 DATE: Apr. 3, 2003 ERP/EIRP Factor 5.5 LOG: N/A  
 NOTES: HORN: 251

Part 24 - RBW 1 MHz  
 CF = Antenna Factor + Cable Loss - Preamplifier Gain  
 v.beata1a

FREQ (MHz)	VERTICAL (dBuv) pk	HORIZONTAL (dBuv) pk	HORIZONTAL CF (dBm) pk	MAX LEVEL (dBm) pk	SPEC LIMIT (dBm) pk	MARGIN (dB) pk	EUT Rotation	Antenna Height	Notes
1851.25	128.6		-7.8	25.5					Fundamental (Low Band)
3702.5	59.5	61.6	-0.4	-34.1	-13.0	-21.1	262	1.1	
5553.75	50.8	50	4.5	-40.0	-13.0	-27	223	1.1	
7405	43.1	42.6	8.2	-44.0	-13.0	-31			noise floor
9256.25	43	43	10.4	-41.9	-13.0	-28.9			noise floor
11107.5	41.8	43	13.1	-39.1	-13.0	-26.1			noise floor
12958.75	49	50	12.7	-32.5	-13.0	-19.5			noise floor
14810	50	49	16.1	-28.1	-13.0	-16.1			noise floor
16661.25	52	49.7	18.5	-24.8	-13.0	-11.8			noise floor
1880	128.4								Fundamental (Mid Band)
3760	61.2	60.2	-7.6	25.5	-13.0	-21.3	263	1.3	
5640	52.8	53.8	4.7	-36.8	-13.0	-23.8	195	1.1	
7520	44.1	44	8.4	-42.7	-13.0	-29.7			noise floor
9400	43.3	43.6	10.0	-41.7	-13.0	-28.7			noise floor
11280	43.3	42.8	13.2	-38.8	-13.0	-25.8			noise floor
13160	50	50.7	13.2	-31.4	-13.0	-18.4			noise floor
15040	51.1	50.9	17.0	-27.1	-13.0	-14.1			noise floor
16920	50.8	50.1	19.5	-25.0	-13.0	-12			noise floor
1908.75	128.2								Fundamental (High Band)
3817.5	64.4	60.6	-7.4	25.5	-13.0	-16	256	1.2	
5728.25	51.7	58.5	4.9	-31.8	-13.0	-18.8	240	1.1	
7635	42.4	42.7	8.5	-44.0	-13.0	-31			noise floor
9543.75	45.2	43.7	9.8	-40.3	-13.0	-27.3			noise floor
11452.5	43.2	43.6	13.3	-38.4	-13.0	-25.4			noise floor
13361.25	49.6	49.6	14.0	-31.7	-13.0	-18.7			noise floor
15270	50	50.2	17.3	-27.7	-13.0	-14.7			noise floor
17178.75	50.4	50	21.1	-23.7	-13.0	-10.7			noise floor

Photograph of Test Setup



Photograph of Test Setup



## APPENDIX

### Supplemental Information

