



RADIATED EMISSIONS

DATA

FOR

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

Prepared by

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



Measurement Requirements (CFR 47 Part 22, Paragraph 22.917 b2 and Part 24, Paragraph 24.238)

The measurements which follow were performed by TÜV Product Service. 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'.

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
3146	244	Log Periodic Antenna	EMCO	1063	02/02
3115	251	Double Ridge Antenna	EMCO	2495	10/01
AMF-3D-010180-35-10P	752	Amplifier 20 dB	Miteq	614344	N/A*
83640B	791	Synthesized Swept Signal Generator	Hewlett Packard	3844A00726	05/02
3115	453	Double Ridge Antenna (1 to 18 GHz)	Hewlett Packard	9412-4364	10/01
HP8586B	721	Spectrum Analyzer Display	Hewlett-Packard	2112A02185	06/02

Remarks: (*) Verified

Report No. SC105395-03



FCC Testing



RADIATED SPURIOUS - EMISSIONS SIGNAL SUBSTITUTION METHOD

Test Report #: SC105395 Test Area: Roof 3m-OATS

Test Method Signal Substitution Date: July 12



EUT Model #: KWC-2255
 EUT POWER:
 230 Vac/50 Hz 120 Vac/60 Hz
 Other: _____

Temperature 24 °C

EUT Description: _____

Air Pressure: 100.2 kPa

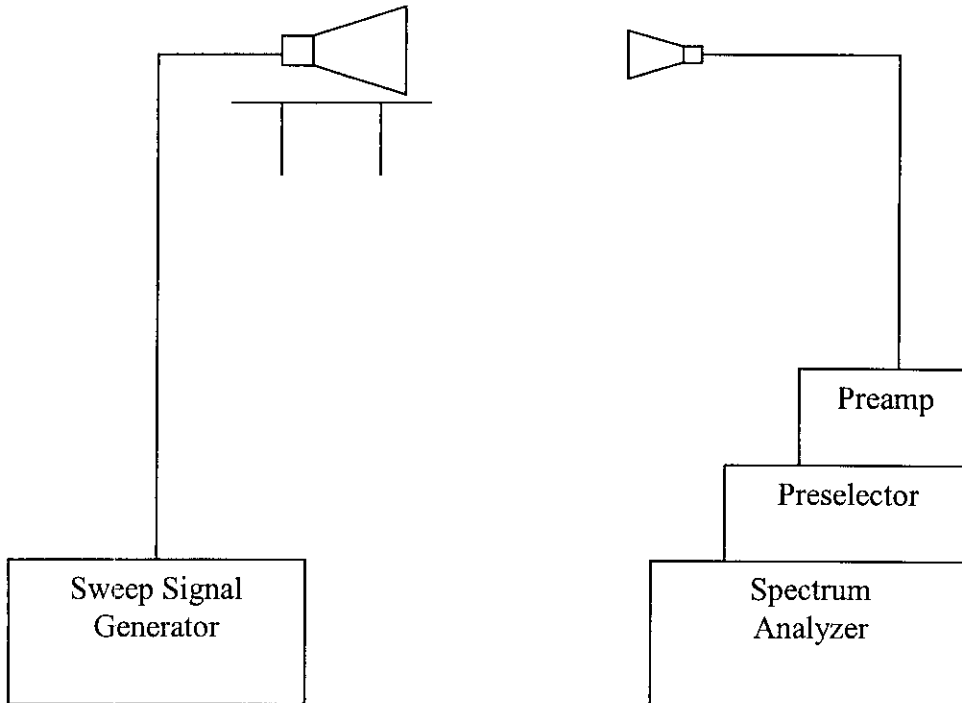
NOTES: Horn #453, Cables # 732, 721

Relative Humidity: 45 %

Frequency (MHz)	Signal Generator (dBm)	Gain of Antenna - Cable loss	Total (EIRP)	Limit	Margin (dB)
4123.5	-56.8	1.3	-55.5	-13	-42.3
5640	-52.1	0.3	-51.8	-13	-38.8
6592.32	-45.8	2	-43.8	-13	-30.8
6786.48	-50.3	1.4	-51.7	-13	-38.7
9064.44	-48.5	-0.8	-49.4	-13	-36.4
9543.75	-52	0.9	-51.3	-13	-38.3
11107.5	-44	0	-44	-13	-31.0
11280	-42.3	-1.7	-40.6	-13	-27.6

Tested By: ALAN LAUANI

NOTES: _____





REPORT No: SC105395 TESTER: Alan Laudani *AKJ* SPEC: *27.917 62*
 CUSTOMER: Kyocera Wireless Corp. TEST DIST: 3 Meters
 E U T: KWC-2255 TEST SITE: Roof
 EUT MODE: See Below BICONICAL: N/A
 DATE: July 11, 2001 LOG: 244
 NOTES: Duty Cycle= 100% OTHER: NONE
 above 1GHz: RBW & VBW 1 MHz for Pk; RBW 1MHz and VBW 10Hz for AVG
 below 1GHz: RBW & VBW 100 kHz for Pk; RBW 100kHz and VBW 10Hz for AVG
 CF = Antenna Factor + Cable Loss - Preamplifier Gain + Preselector Loss

v.beta1a

FREQ (MHz)	VERTICAL (dBuv)		HORIZONTAL (dBuv)		CF (dB/m)	MAX LEVEL (dBuV/m) pk	SPEC LIMIT (dBuV/m)		MARGIN (dB) pk	EUT Rotation	Antenna Height
	pk	av	pk	av			pk	av			
Cell. CDMA Tx Channel 1013											
824.7	101.5		90		22.1	123.6			123.6	0	1
Channel 383											
836.49	100.9		90.5		22.1	123.0			123		
Channel 777											
848.31	100.6		85.4		22.3	122.9			122.9		



REPORT No: SC105395 TESTER: Alan Laudani ^{Atty} SPEC: 27.917 b2
 CUSTOMER: Kyocera Wireless Corp. TEST DIST: 3 Meters
 E U T: KWC-2255 TEST SITE: Roof
 EUT MODE: See Below BICONICAL: N/A
 DATE: July 11, 2001 LOG: 244
 NOTES: Duty Cycle= 100% OTHER: NONE

above 1GHz: RBW & VBW 1 MHz for Pk; RBW 1MHz and VBW 10Hz for AVG
 below 1GHz: RBW & VBW 100 kHz for Pk; RBW 100kHz and VBW 10Hz for AVG
 CF = Antenna Factor + Cable Loss - Preamplifier Gain + Preselector Loss

v.beta1a

FREQ (MHz)	VERTICAL (dBuv)		HORIZONTAL (dBuv)		CF (dB/m)	MAX LEVEL (dBuV/m) pk	SPEC LIMIT (dBuV/m)		MARGIN (dB) pk	EUT Rotation	Antenna Height
	av	pk	pk	av			pk	av			
FM TX Channel 991											
824.04	102.4		88.5		22.1	124.5			124.5	0	1
Channel 383											
836.49	101.9		91.7		22.1	124.0			124	0	1
Channel 799											
848.97	101.2		90.7		22.4	123.6			123.6	0	1



REPORT No: SC105395 TESTER: Alan Laudani SPEC: 24.238
 CUSTOMER: Kyocera Wireless Corp. TEST DIST: 3 Meters
 E U T: KWC-2255 TEST SITE: Roof
 EUT MODE: CDMA Cellular BICONICAL: N/A
 DATE: July 11, 2001 LOG: N/A
 NOTES: Duty Cycle= 100% OTHER: 251
 above 1GHz: RBW & VBW 1 MHz for Pk; RBW 1MHz and VBW 10Hz for AVG
 Filter #778 900 MHz High Pass
 CF = Antenna Factor + Cable Loss - Preamp/loss Gain + Preselector Loss

FREQ (MHz)	VERTICAL (dBuV) av	HORIZONTAL (dBuV) pk av	CF (dB/m)	MAX LEVEL (dBuV/m) pk	SPEC LIMIT (dBuV/m) pk av	MARGIN (dB) pk	EUT Rotation	Antenna Height	Notes
Channel 1013									
	824.7								
1649.4	38	37.2	5.9	43.9	82.2	-38.3	0	1	noise floor
2474.1	29.7	30.3	10.6	40.9	82.2	-41.3	180	1	noise floor
3298.8	31.9	33.6	13.9	47.5	82.2	-34.7	200	1	noise floor
4123.5	32.1	33.4	18.5	51.9	82.2	-30.3			noise floor
4948.2	30.9	30.6	19.5	50.4	82.2	-31.8			noise floor
5772.9	29.9	30.5	21.9	52.4	82.2	-29.8			noise floor
6597.6	34.4	34.5	21.4	55.9	82.2	-26.3			noise floor
7422.3	34.4	33.6	22.3	56.7	82.2	-25.5			noise floor
Channel 383									
	836.49								
1672.98	38	37.9	6.0	44.0	82.2	-38.2	0	1	noise floor
2509.47	33.2	32.3	10.7	43.9	82.2	-38.3			noise floor
3345.96	31.8	34.5	14.1	48.6	82.2	-33.6			noise floor
4182.45	32.8	32.9	18.8	51.7	82.2	-30.5	200	1	
5018.94	32	32	19.5	51.5	82.2	-30.7	200	1	
5855.43	34.6	34.4	22.1	56.7	82.2	-25.5			noise floor
6691.92	36.3	36.5	21.5	58.0	82.2	-24.2			noise floor
7528.41	35.5	35.1	22.3	57.8	82.2	-24.4			noise floor
Channel 777									
	848.31								
1696.62	39.9	36.9	6.2	46.1	82.2	-36.1	240	1	
2544.93	31.6	35.2	10.9	46.1	82.2	-36.1	200	1	
3393.24	32.3	33.4	14.3	47.7	82.2	-34.5	200	1	
4241.55	33.4	33.2	19.0	52.4	82.2	-29.8	180	1	
5089.86	34	33.2	19.8	53.8	82.2	-28.4	180	1	
5938.17	34.2	33	22.3	56.5	82.2	-25.7			noise floor
6786.48	36.8	35.7	21.7	58.5	82.2	-23.7			noise floor



REPORT No: SC105395 TESTER: Alan Laudani SPEC: 24-238
 CUSTOMER: Kyocera Wireless Corp. TEST DIST: 3 Meters
 E U T: KWC-2255 TEST SITE: Roof
 EUT MODE: FM Cellular Tx BICONICAL: N/A
 DATE: July 11, 2001 LOG: N/A

NOTES: Duty Cycle= 100% OTHER: 251
 above 1GHz: RBW & VBW 1 MHz for PK; RBW 1MHz and VBW 10Hz for AVG
 Filter #778 900 MHz High Pass
 CF = Antenna Factor + Cable Loss - Preamplifier Gain + Preselector Loss

FREQ (MHz)	VERTICAL (dBuV) av	pk	HORIZONTAL (dBuV) av	pk	CF (dBm)	MAX LEVEL (dBuV/m) pk	SPEC LIMIT (dBuV/m) pk av	MARGIN (dB) pk	EUT Rotation	Antenna Height	Notes
Channel 991											
	824.04										
1648.08	41	41	5.9	46.9			82.2	-35.3	120	1	
2472.12	28	38	10.6	46.6			82.2	-33.6			noise floor
3296.16	34.3	37.5	13.9	51.4			82.2	-30.8	0	1	
4120.2	34	34	18.5	52.5			82.2	-29.7	0	1	
4944.24	32.2	33	19.5	52.5			82.2	-29.7	200	1	
5768.28	30.7	31.3	21.9	53.2			82.2	-29	200	1	
6592.32	37.4	37.8	21.3	59.1			82.2	-23.1	200	1	
7416.36	34.3	35.2	22.2	57.4			82.2	-24.8			noise floor
8240.4	36.1	33.9	24.0	60.1			82.2	-22.1			noise floor
9064.44	34.2	34.5	26.8	61.3			82.2	-20.9			noise floor
Channel 383											
	836.49										
1672.98	39.6	41.6	6.0	47.6			82.2	-34.6	0	1.5	
2509.47	31.7	37	10.7	47.7			82.2	-34.5	0	1.5	
3345.96	35.6	34.4	14.1	49.7			82.2	-32.5	180	1	
4182.45	36.3	35.4	18.8	55.1			82.2	-27.1	180	1	
5018.94	35.3	35.9	19.5	55.4			82.2	-26.8	180	1	
5855.43	35.1	35.7	22.1	57.8			82.2	-24.4			noise floor
6691.92	37.8	39.2	21.5	60.7			82.2	-21.5	180	1.2	
7528.41	35.6	35.7	22.3	56.0			82.2	-24.2	0	1	
8364.9	35.6	35.8	24.5	60.3			82.2	-21.9			noise floor
Channel 799											
	848.97										
1697.94	44.1	40.2	6.2	50.3			82.2	-31.9		1.2	
2546.91	32.4	35.2	10.9	46.1			82.2	-36.1	200	1.2	noise floor
3395.88	38.6	37	14.3	52.9			82.2	-29.3	200	1.4	
4244.85	35.9	34.7	19.0	54.9			82.2	-27.3	200	1	
5093.82	38.2	37.6	19.8	56.0			82.2	-24.2			noise floor
5942.79	35.9	35	22.3	56.2			82.2	-24	200	1	noise floor
6791.76	38.1	37.8	21.7	59.8			82.2	-22.4	200	1	noise floor
7640.73	36	36.7	22.5	56.5			82.2	-23.7	200	1	
8489.7	34.9	35.7	25.1	60.8			82.2	-21.4	200	1	noise floor



REPORT No: SC105395 TESTER: Alan Laudani SPEC: 24.238
 CUSTOMER: Kyocera Wireless Corp. TEST DIST: 3 Meters
 E U T: KWC-2255 TEST SITE: Roof
 EUT MODE: PCS/CDMA Tx BICONICAL: N/A
 DATE: July 11, 2001 LOG: N/A
 NOTES: Duty Cycle= 100% OTHER: 251
 above 1GHz: RBW & VBW 1 MHz for Pk; RBW 1MHz and VBW 10Hz for AVG
 Filter #781 2000 MHz High Pass
 CF = Antenna Factor + Cable Loss - Preamplifier Gain + Preselector Loss

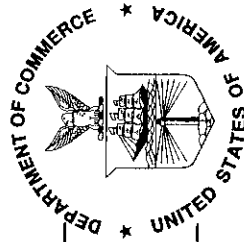
FREQ (MHz)	VERTICAL (dBuV) av	HORIZONTAL (dBuV) pk av	CF (dB/m)	MAX LEVEL (dBuV/m) pk	SPEC LIMIT (dBuV/m) pk av	MARGIN (dB) pk	EUT Rotation	Antenna Height	Notes
Channel 1175									
	1908.75								
3817.5	33.5	33.8	16.9	50.7	82.2	-31.5	100	1	
5726.25	32.4	32.6	21.9	54.5	82.2	-27.7	240	1	
7635	34.8	34.8	22.5	57.3	82.2	-24.9			noise floor
9543.75	34.3	34.7	26.6	61.3	82.2	-20.9			noise floor
11452.5	33.5	34.1	32.4	66.5	82.2	-15.7			noise floor
Channel 600									
	1880								
3760	31.7	33.2	16.5	49.7	82.2	-32.5	220	1	
5640	31.5	33.1	21.7	54.8	82.2	-27.4	220	1	
7520	34.4	34.5	22.3	56.8	82.2	-25.4			noise floor
9400	35.2	34.9	26.6	61.8	82.2	-20.4			noise floor
11280	33.2	34	31.8	65.8	82.2	-16.4			noise floor
Channel 25									
	1851.25								
3702.5	30.6	31.2	16.1	47.3	82.2	-34.9	200	1	
5553.75	30.5	31.3	21.5	52.8	82.2	-29.4			noise floor
7405	34.1	34.7	22.2	56.9	82.2	-25.3			noise floor
9256.25	35.2	35	26.7	61.9	82.2	-20.3			noise floor
11107.5	33.9	34.6	31.3	65.9	82.2	-16.3			noise floor



Testing Facilities
Certificates of Approval



United States Department of Commerce
National Institute of Standards and Technology



ISO/IEC GUIDE 25:1990
ISO 9002:1987

Certificate of Accreditation

TUV PRODUCT SERVICE, INC.
SAN DIEGO, CA

is recognized under the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria established in Title 15, Part 285 Code of Federal Regulations. These criteria encompass the requirements of ISO/IEC Guide 25 and the relevant requirements of ISO 9002 (ANSI/ASQC Q92-1987) as suppliers of calibration or test results. Accreditation is awarded for specific services, listed on the Scope of Accreditation for:

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

December 31, 2001

Effective through

Ronald E. Alderman

For the National Institute of Standards and Technology

NVLAP Lab Code: 100268-0

NVLAP-01C (11-95)



ISO/IEC GUIDE 25:1990
ISO 9002:1987

Scope of Accreditation



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**ELECTROMAGNETIC COMPATIBILITY
AND TELECOMMUNICATIONS**

NVLAP LAB CODE 100268-0

TUV PRODUCT SERVICE, INC.

10040 Mesa Rim Road
San Diego, CA 92121-1034
Mr. R. Barry Wallen
Phone: 619-546-3999 Fax: 619-546-0364
E-Mail: bwallen@TUVps.com
URL: <http://www.tuvps.com>

NVLAP Code Designation / Description

Emissions Test Methods:

- 12/CIS22 IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment
- 12/CIS22a IEC/CISPR 22:1993: Limits and methods of measurement of radio disturbance characteristics of information technology equipment, Amendment 1:1995, and Amendment 2:1996.
- 12/CIS22b CNS 13438:1997: Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Equipment
- 12/F01 FCC Method - 47 CFR Part 15 - Digital Devices
- 12/F01a Conducted Emissions, Power Lines, 450 KHz to 30 MHz
- 12/F01b Radiated Emissions

December 31, 2001

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National Institute
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National Voluntary
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Scope of Accreditation



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**ELECTROMAGNETIC COMPATIBILITY
AND TELECOMMUNICATIONS**

NVLAP LAB CODE 100268-0

TUV PRODUCT SERVICE, INC.

NVLAP Code Designation / Description

12/T51 AS/NZS 3548: Electromagnetic Interference - Limits and Methods of Measurement of Information Technology Equipment

MIL-STD-462 : Conducted Emissions:

12/A01 MIL-STD-462 Method CE01

12/A04 MIL-STD-462 Method CE02

12/A06 MIL-STD-462 Method CE03

12/A08 MIL-STD-462 Method CE04

12/A10 MIL-STD-462 Method CE06

12/A12 MIL-STD-462 Method CE07

MIL-STD-462 : Conducted Susceptibility:

12/B01 MIL-STD-462 Method CS01

12/B02 MIL-STD-462 Method CS02

12/B04 MIL-STD-462 Method CS03/CS04/CS05/CS08

12/B05 MIL-STD-462 Method CS06

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AND TELECOMMUNICATIONS**

NVLAP LAB CODE 100268-0

TUV PRODUCT SERVICE, INC.

<i>NVLAP Code</i>	<i>Designation / Description</i>
12/B06	MIL-STD-462 Method CS07
12/B07	MIL-STD-462 Method CS09

MIL-STD-462 : Radiated Emissions:

12/D01	MIL-STD-462 Method RE01
12/D02	MIL-STD-462 Method RE02
12/D03	MIL-STD-462 Method RE03

MIL-STD-462 : Radiated Susceptibility:

12/E01	MIL-STD-462 Method RS01
12/E02	MIL-STD-462 Method RS02
12/E03	MIL-STD-462 Method RS03 (Consult laboratory for field strengths available)
12/E04	MIL-STD-462 Method RS03 employing RADHAZ procedures for high level testing (Consult laboratory for field strengths available)

December 31, 2001

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Photograph of Test Setup



Photograph of Test Setup

