



Class II Permissive Change To Append New Antenna

Test Report: 2005 030109-FCC
FCC ID: OVFKWC-M200

Equipment Under Test: RF Module
Model: M200
Antenna Model: MarkV 800MHz Internal CDMA Antenna / 36A056

Applicant: Kyocera Wireless Corporation
10300 Campus Point Drive
San Diego, CA 92121
858 449-9835
619 330-4977- fax

In Accordance With: FCC Part 22, Subpart H
Industry Canada RSS-129

AND

In Accordance With: FCC Part 24, Subpart E
Industry Canada RSS-133

Tested By: Nemko USA Inc.
11696 Sorrento Valley Road
San Diego, CA 92121-1024

Date: March 23, 2005

Total Number of Pages: 25

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Section 1. Summary of Test Results

General:

All measurements are traceable to national standards.

These tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 22, Subpart H and FCC Part 24, Subpart E.

DOCUMENT HISTORY

REVISION	DATE	COMMENTS
-	March 23, 2005	Prepared By: A. Laudani
-	March 23, 2005	Initial Release: R. L. Hill

NOTE: Nemko USA, Inc. hereby makes the following statements so as to conform to Chapter 10 (Test Reports) Requirements of ANSI C63.4 (1992) "Methods and Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz":

- The unit described in this report was received at Nemko USA, Inc.'s facilities on March 21, 2005. Testing was performed on the unit described in this report on March 21, 2005 to March 23, 2005.
- The Test Results reported herein apply only to the Unit actually tested, and to substantially identical Units.
- This report does not imply the endorsement of the Federal Communications Commission (FCC), NVLAP or any other government agency.

This Report is the property of Nemko USA, Inc., and shall not be reproduced, except in full, without prior written approval of Nemko USA, Inc. However, all ownership rights are hereby returned unconditionally to **Kyocera Wireless**, and approval is hereby granted to **Kyocera Wireless** and its employees and agents to reproduce all or part of this report for any legitimate business purpose without further reference to Nemko USA, Inc.

CERTIFICATION

Nemko USA, Inc., an independent Electromagnetic Compatibility (EMC) Test Laboratory, produced this Test Report and performed the Radio Frequency Interference (RFI) testing and data evaluation contained herein.

Nemko USA, Inc.'s measurement facility is currently registered with the United States Federal Communications Commission (FCC) in accordance with the provisions of 47 United States Code (CFR) Part 2, Subpart I, Section 2.948(a). A current description of Nemko USA, Inc.'s measurement facility is on file with the FCC. Nemko USA Inc. has additionally satisfied the FCC that it complies with the requirements set forth in 47 CFR Part 2, Subpart I, Section 2.948(d) regarding the accreditation of EMC laboratories. As a result, the FCC has placed Nemko USA Inc. on its list of EMC laboratories approved to perform Declaration of Conformity (DOC) procedure testing.

The RFI testing, test data collection and test data evaluation were accomplished in accordance with the ANSI C63.4-1992 Standard, and in accordance with the applicable sections of the FCC rules (47 CFR Parts 2 and 18)." digital devices. The testing was also accomplished in accordance with Industry Canada's ICES-003 standard for unintentional radiating device per EMCAB-3, Issue 3 (May 1998). The administrative summary of this test report provides a description of the test sample

I hereby certify that the test data, test data evaluation, and equipment configurations used to compile this test report are a true and accurate representation of the test sample's radio frequency interference characteristics as of the test date(s), and, for the design of the test sample.

Test Supervisor: Chip Fleury
Chip Fleury, Frontline Manager Nemko USA, Inc.

Summary Of Test Data

Name Of Test	Para. No.	Result
RF Power Output	2.1046	Complies
Audio Frequency Response	2.1047	NA ¹
Audio Low Pass Filter Response	2.1047	NA ¹
Modulation Limiting	2.1047	NA ¹
Occupied Bandwidth (WB Data)	2.1049	NA ²
Spurious Emissions at Antenna Terminals	2.1051	NA ²
Field Strength of Spurious Emissions	2.1053	Complies
Frequency Stability	2.1055	NA ²

Footnotes For N/A's:

- ¹ Digital Modulation
- ² Not tested, per customer's instructions.

Test Conditions:

Indoor Temperature: n/a °C
 Humidity: %

Outdoor Temperature: 16-22 °C
 Humidity: 45-62 %

Section 3. RF Power Output

Para. No.: 2.1046

Test Performed By: Alan Laudani	Date of Test: 1-20-05
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Minimum Standard: Para. 22.913(a). The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts. & Para.24.232, the EIRP must not exceed 2 Watts.

Test Results: Complies, see tables below.

Measurement Data:

Modulation	Frequency (MHz)	Measured (dBm)	Substituted Result (dBm)	Substituted Result Watts
FM	824.04	23.8	23.7	0.23
	836.49	21.3	20.1	0.11
	848.97	20.6	19.5	0.09
CDMA	824.70	25.8	25.6	0.37
	836.49	20.1	19.5	0.09
	848.97	21.2	20.7	0.12
PCS	1851.25	14.6	23.0	0.20
	1880.00	18.0	25.4	0.35
	1908.75	16.2	24.7	0.30



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Substitution Method For Radiated

Complete Yes Job #: 25-109-KYO Test #: 4
Preliminary Page 1 of 1

Client Name: KYOCERA WIRELESS
EUT Name: M200 Module
EUT Antenna #: Transdata Single Dipole
EUT Part #:
EUT Serial #:
EUT Config.: Transmit

Specification: FCC Part 22/ Part
Rod. Ant. #: NA Temp. (deg. C): 17
Dipole Ant.#: 752 Humidity (%): 67
Log Ant.#: 110 EUT Voltage: 13 V
DRG Ant. # tx: 752 EUT Frequency: dc
DRG Ant. # rx: 529 Phase: na
Cable# tx: 60ft Location: SOATS
Preamp#: 40dB Distance: 3m
Spec An.#: 835
Cable# rx: 40ft
Signal Generator#: 836
Reference:
Date: 3/22/2005
Time: 15:00
Staff: A. Laudani
Photo ID:
Peak Bandwidth: 1MHz, VBW-1MHz

Table with 8 columns: Frequency, target level, dipole Gain, cable loss, Signal Generator, Total (ERP), Spec, Margin. Rows include FM and CDMA frequencies.

Table with 8 columns: Frequency, target level, Horn Gain, cable loss, Signal Generator, Total (EIRP), Spec, Margin. Rows include various frequencies with negative margins.



Radiated Emissions Data

Job #: 25-109-KYO Page 1 of 1 Test #: 1 of 1

Client Name: Kyocera Wireless Corp.
EUT Name: Transdata Multifunction Electric Meter
EUT Model #: M200 Module
EUT Antenna #: Transdata Single Dipole
EUT Serial #:
EUT Config.: FM Tx Harmonics

Specification: FCC Part 22 Reference:
Rod. Ant. #: NA Temp. (deg. C): 17 Date: 03/21/05
Bicon Ant. #: NA Humidity (%): 64 Time:
Log Ant. #: 110 EUT Voltage: NA Staff: A. Laudani
DRG Ant. #: 529 EUT Frequency: NA
Dipole Ant. #: NA Phase: NA Peak Bandwidth: 1 MHz
Cable#: 40ft Location: RN# 90579 Video Bandwidth: 1 MHz
Preamp#: 842 Distance: 3m
Spec An. #: 835 ERP conversion factor: 7
QP #: NA
PreSelect#: NA

Table with 11 columns: Meas. Freq. (MHz), Vertical (dBuV) pk, Horizontal (dBuV) pk, CF (db), Max Level (dBm) pk, Spec. Limit (ERP) (dBm) pk, Margin dB pk, EUT Rotation, Ant. Height, Pass Fail Unc., Comment. Rows include frequency measurements like 824.07, 1648.14, 2472.21, etc.



Radiated Emissions Data

Job #: 25-109-KYO Page 1 Test #: 3 of 1

Client Name: Kyocera Wireless Corp.
EUT Name: Transdata Multifunction Electric Meter
EUT Model #: M200 Module
EUT Antenna #: Transdata Single Dipole
EUT Serial #:
EUT Config.: PCS Tx

Specification: FCC Part 24
Rod. Ant. #: NA
Bicon Ant. #: NA
Log Ant. #: 110
DRG Ant. #: 529
Dipole Ant. #: NA
Cable #: 40ft
Preamp #: 842
Spec An. #: 835
QP #: NA
PreSelect #: NA
Reference: Date: 3/21/05
Humidity (%): 64
EUT Voltage: NA
EUT Frequency: NA
Phase: NA
Location: RN# 90579
Distance: 3m
EIRP conversion factor: 5.5
Staff: A. Laudani
Photo ID:
Peak Bandwidth: 1 MHz
Video Bandwidth: 1 MHz

Table with 11 columns: Meas. Freq. (MHz), Vertical (dBuV) pk, Horizontal (dBuV) pk, CF (db), Max Level (dBm) pk, Spec. Limit (ERIP) (dBm) pk, Margin dB pk, EUT Rotation, Ant. Height, Pass Fail Unc., Comment. Rows include frequency measurements like 1851.25, 3702.50, 5553.75, etc.



Section 4. Audio Frequency Response

Para. No.: 2.1047

Test Performed By:	Date of Test:
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Minimum Standard: Para. No. 15-19-B.

Test Results: Not Applicable, digital modulation

Measurement Data: See attached graph.

Section 5. Audio Low-Pass Filter Response**Para. No.: 2.1047**

Test Performed By:	Date of Test:
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Minimum Standard: Para. No. 22.915 (d).**Test Results:** Not Applicable, digital modulation**Measurement Data:**

- d) Audio filter characteristics. Except as provided in Sec. 22.917, radiotelephony signals applied to the modulator from the modulation limiter must be attenuated as a function of frequency as specified in this paragraph.
- (1) For mobile stations, these signals must be attenuated, relative to the level at 1 kHz, as follows:
 - (i) In the frequency ranges of 3.0 to 5.9 kHz and 6.1 to 15.0 kHz, signals must be attenuated by at least $40 \log (f/3)$ dB, where f is the frequency of the signal in kHz.
 - (ii) In the frequency range of 5.9 to 6.1 kHz, signals must be attenuated at least 35 dB.
 - (iii) In the frequency range above 15 kHz, signals must be attenuated at least 28 dB.

Section 6. Modulation Limiting

Para. No.: 2.1047

Test Performed By:	Date of Test:
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Minimum Standard: 22.915(b)

Test Results: Not Applicable, digital modulation

Measurement Data:

SAT Deviation:
WB Data Deviation:
ST Deviation:

Section 7. Occupied Bandwidth (WB Data)

Para. No.: 2.1049

Test Performed By:	Date of Test:
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Minimum Standard: 22.917(d); Para. No.: 24.238.

Test Results: Not applicable, per customer's instructions.

Test Data:

Section 8. Spurious Emissions At Antenna Terminals

Para. No.: 2.1051

Test Performed By:	Date of Test:
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Minimum Standard: Para. No. 22.917(b). Para. No.: 24.238.

Test Results: Not applicable, per customer's instructions.

Test Data:



Section 9. Field Strength of Spurious

Para. No.: 2.1053

Test Performed By: Alan Laudani	Date of Test:
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Minimum Standard: Para. No. 22.917(b); Para. No.: 24.238.

Test Results:

The maximum spurious field strength in PCS mode is 8.4 dB below the limit @ 3817.5 MHz (substituted value).

The maximum spurious field strength in FM and CDMA mode is more than 20 dB below the limit for all harmonics.

Test Data: See tables pages 11 to 15

Set Up Photos





Section 10. Frequency Stability

Para. No.: 2.1055

Test Performed By:	Date of Test:
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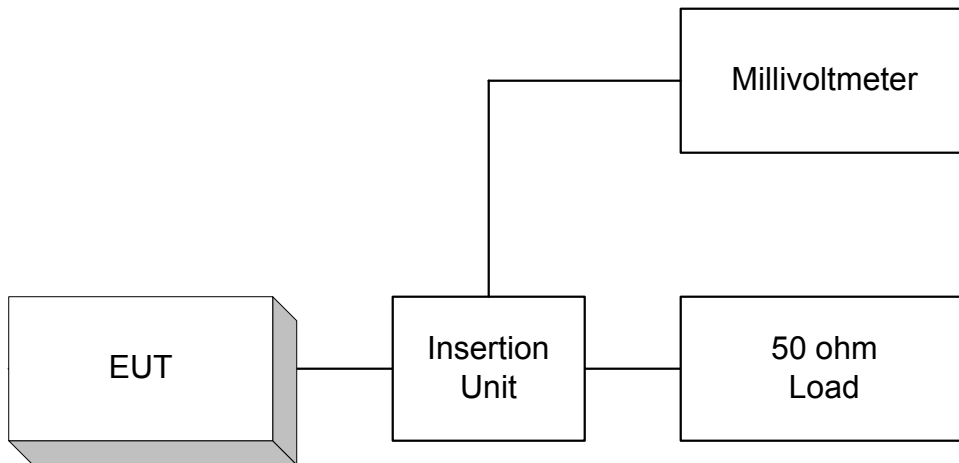
Minimum Standard: Para. No. 22.355; 24.235.

Test Results: Not applicable, per customer's instructions.

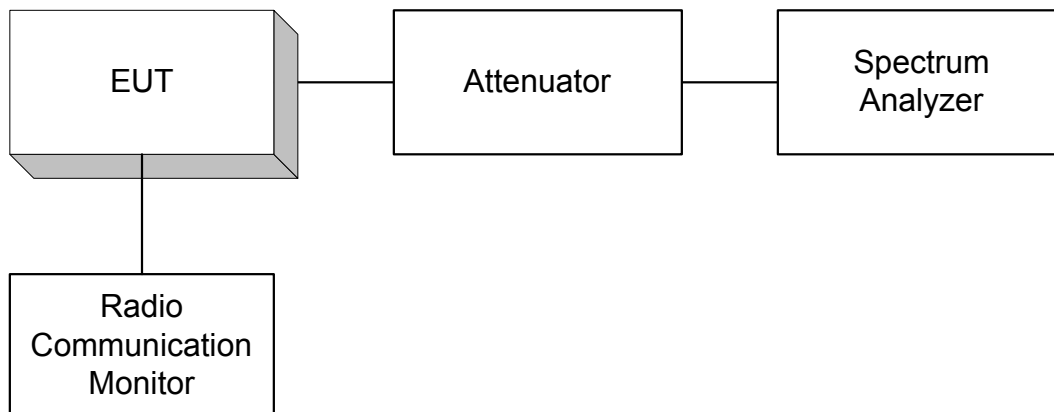
Measurement Data: Standard Test Frequency: _____ MHz
Standard Test Voltage: _____ Vdc

Section 11. Block Diagrams

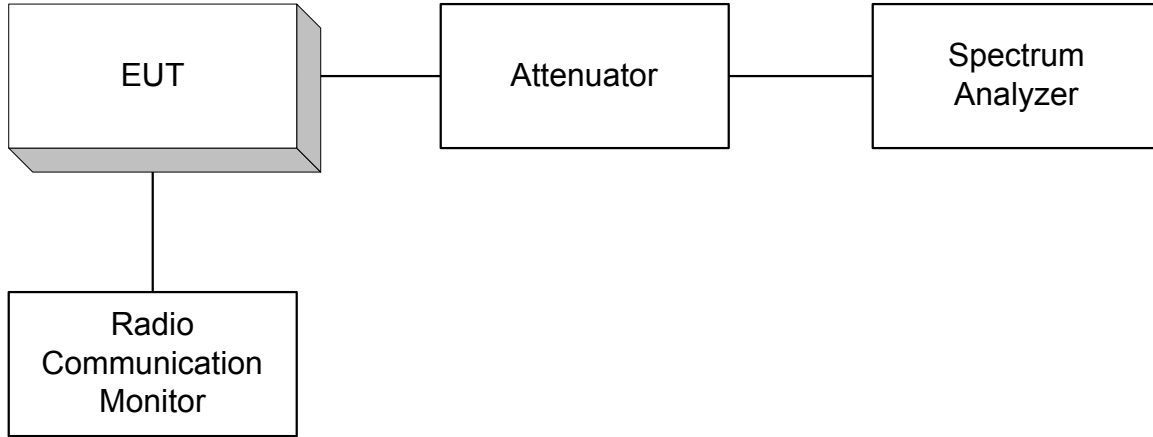
Para. No. 2.1046 - R.F. Power Output



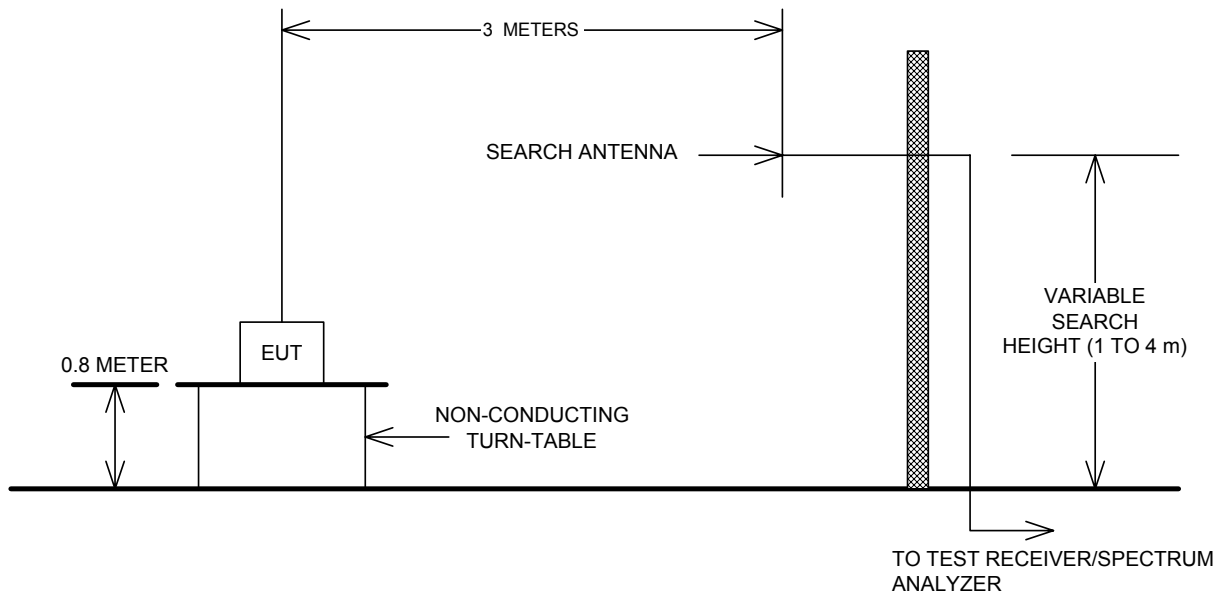
Para. No. 2.1049 - Occupied Bandwidth



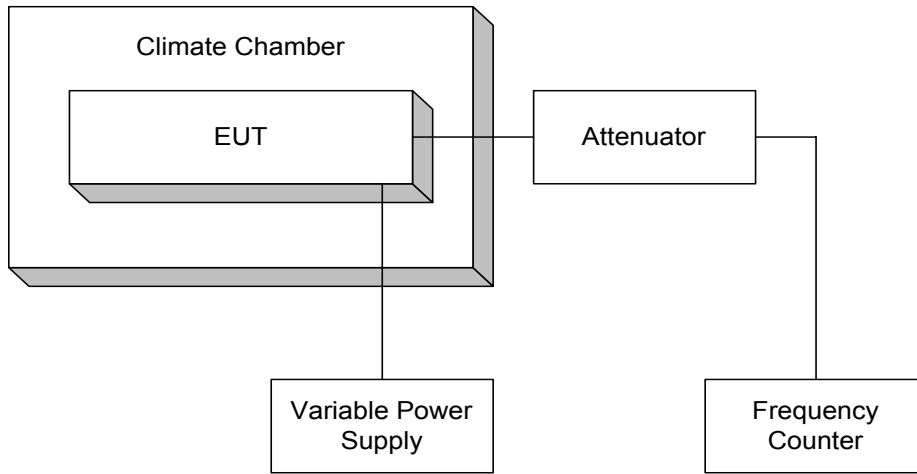
Para. No. 2.1051 Spurious Emissions at Antenna Terminals



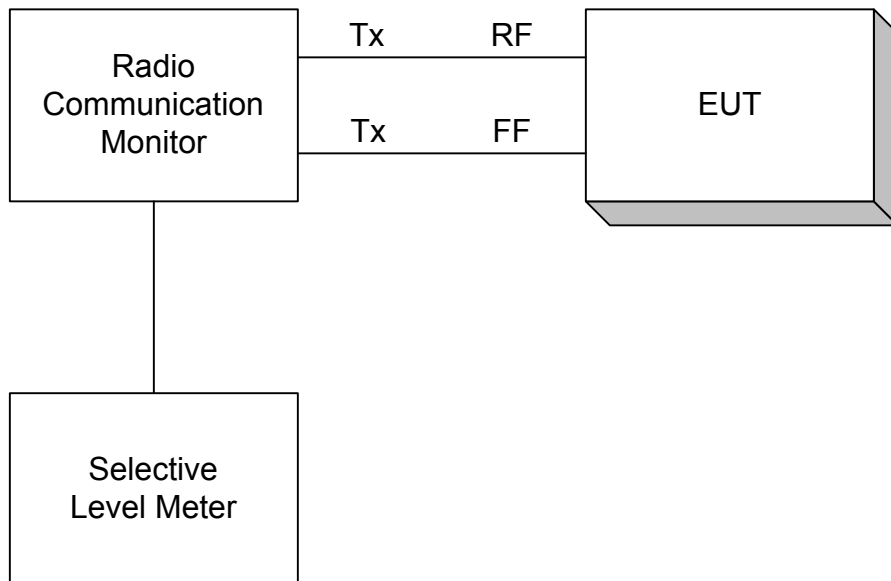
Para. No. 2.1053 - Field Strength of Spurious Radiation



Para. No. 2.1055 - Frequency Stability



Para. No. 2.1045 – Audio Frequency Response, Audio Low Pass Filter Response And Modulation Limiting



Section 13. Test Equipment List

Emissions Test Equipment					
Client	Kyocera Wireless		EUT Name	MultiFunction Electric Meter	
PAN #	24-611-KYO		EUT Model	M200 with MarkV 800MHz Internal CDMA Antenna / 36A056	
<i>Device Type</i>	<i>Model #</i>	<i>MFG</i>	<i>Asset #</i>	<i>SN</i>	<i>Cal Due</i>
OATS #1 (South)					
Spectrum Analyzer	1088.3494.30	R & S	835	830320/002	12-30-05
Antenna, Ridged Guide	3115	EMCO	529	2505	11-19-05
Antenna, Ridged Guide	3115	EMCO	752	9609-4943	12-19-05
Signal Generator	1018	Gigatronics	440	314104	9/22/2005
Dipole Set	3121C	EMCO	756	1215	8-27-05
Antenna, LPA	3146	EMCO	110	1217	10-4-05

NA: Not Applicable
 NCR: No Cal Required
 COU: CAL On Use