



M. Flom Associates, Inc. - Global Compliance Center

3356 North San Marcos Place, Suite 107, Chandler, Arizona 85225-7176

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Transmitter Certification

of

FCC ID: PKRNVWV620

Model: NVW-V620

to

Federal Communications Commission

Rule Part(s) 22H, 24E, Confidentiality

Date Of Report: August 16, 2004

On the Behalf of the Applicant:

Novatel Wireless Inc.

At the Request of:

P.O. NWS09782

Novatel Wireless Inc.
9255 Towne Centre Dr., Suite 225
San Diego, CA 92121-3030

Attention of:

John Ross
858-812-0614; FAX:-2888
Email: jross@novatelwireless.com

Supervised By:

A handwritten signature in black ink, appearing to read 'D. Lee', is located above the name David E. Lee.

David E. Lee,
Compliance Test Manager

List of Exhibits
(FCC **Certification** (Cellular Transmitters) - Revised 9/28/98)

Applicant: Novatel Wireless Inc.

FCC ID: PKRNVWV620

By Applicant:

1. Letter of Authorization
2. Identification Drawings, 2.1033(c)(11)
 - Label
 - Location of Label
 - Compliance Statement
 - Location of Compliance Statement
3. Photographs, 2.1033(c)(12)
4. Confidentiality Request: 0.457 And 0.459
5. Documentation: 2.1033(c)
 - (3) User Manual
 - (9) Tune Up Info
 - (10) Schematic Diagram
 - (10) Circuit Description
 - Block Diagram
 - Parts List
 - Active Devices

By M.F.A. Inc.

- A. Testimonial & Statement of Certification

The applicant has been cautioned as to the following:

15.21 Information to User.

The users manual or instruction manual for an intentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

15.27(a) Special Accessories.

Equipment marketed to a consumer must be capable of complying with the necessary regulations in the configuration in which the equipment is marketed. Where special accessories, such as shielded cables and/or special connectors are required to enable an unintentional or intentional radiator to comply with the emission limits in this part, the equipment must be marketed with, i.e. shipped and sold with, those special accessories. However, in lieu of shipping or packaging the special accessories with the unintentional or intentional radiator, the responsible party may employ other methods of ensuring that the special accessories are provided to the consumer, without additional charge.

Information detailing any alternative method used to supply the special accessories for a grant of equipment authorization or retained in the verification records, as appropriate. The party responsible for the equipment, as detailed in § 2.909 of this chapter, shall ensure that these special accessories are provided with the equipment. The instruction manual for such devices shall include appropriate instructions on the first page of text concerned with the installation of the device that these special accessories must be used with the device. It is the responsibility of the user to use the needed special accessories supplied with the equipment.

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Required information per ISO/IEC Guide 25-1990, paragraph 13.2:

a) **Test Report**

b) Laboratory: M. Flom Associates, Inc.
(FCC: 31040/SIT) 3356 N. San Marcos Place, Suite 107
(Canada: IC 2044) Chandler, AZ 85225

c) Report Number: d0470040

d) Client: Novatel Wireless Inc.
9255 Towne Centre Dr., Suite 225
San Diego, CA 92121-3030

e) Identification: NVW-V620
(FCC ID: PKRNVWV620)
Description: PCIMCA Card CDMA

f) EUT Condition: Not required unless specified in individual tests.

g) Report Date: August 16, 2004
EUT Received: July 23, 2004 and August 13, 2004

h, j, k): As indicated in individual tests.

i) Sampling method: No sampling procedure used.

l) Uncertainty: In accordance with MFA internal quality manual.

m) Supervised by:



David E. Lee,
Compliance Test Manager

n) Results: The results presented in this report relate only to the item tested.

o) Reproduction: This report must not be reproduced, except in full, without written permission from this laboratory.

Accessories Used During Testing:

Manufacturer	Model	Description	Source
Agilent	E8285A	CDMA Call Box	Client Supplied

List of General Information Required for Certification

In Accordance with FCC Rules and Regulations,
Volume II, Part 2 and to Parts 22H, 22.901(d), 22E

Sub-Part 2.1033**(c)(1): Name and Address of Applicant:**

Novatel Wireless Inc.
9255 Towne Centre Dr., Suite 225
San Diego, CA 92121-3030

Manufacturer:

Novatel Wireless Inc.
9255 Towne Centre Dr., Suite 225
San Diego, CA 92121-3030

(c)(2): FCC ID:

PKRNVWV620

Model Number:

NVW-V620

(c)(3): Instruction Manual(s):

Please See Attached Exhibits

(c)(4): Type of Emission:

1M25F9W

(c)(5): FREQUENCY RANGE, MHz:

824.7 – 848.3 (Cellular)
1851.25 – 1908.75 (PCS)

(c)(6): Power Rating, Watts: Conducted

0.282 (Cellular)
0.251 (PCS)

☐ Switchable☒ Variable☐ N/A

FCC Grant Note:

(c)(7): Maximum Power Rating, Watts:

2W

Subpart 2.1033 (continued)

(c)(8): Voltages & Currents in All Elements in Final RF Stage, Including Final Transistor or Solid State Device:

Collector Current, A	=	per manual
Collector Voltage, Vdc	=	per manual
Supply Voltage, Vdc	=	3.6

(c)(9): **Tune-Up Procedure:**

Please See Attached Exhibits

(c)(10): **Circuit Diagram/Circuit Description:**

Including description of circuitry & devices provided for determining and stabilizing frequency, for suppression of spurious radiation, for limiting modulation and limiting power.

Please See Attached Exhibits

(c)(11): **Label Information:**

Please See Attached Exhibits

(c)(12): **Photographs:**

Please See Attached Exhibits

(c)(13): **Digital Modulation Description:**

 Attached Exhibits
 x N/A

(c)(14): **Test and Measurement Data:**

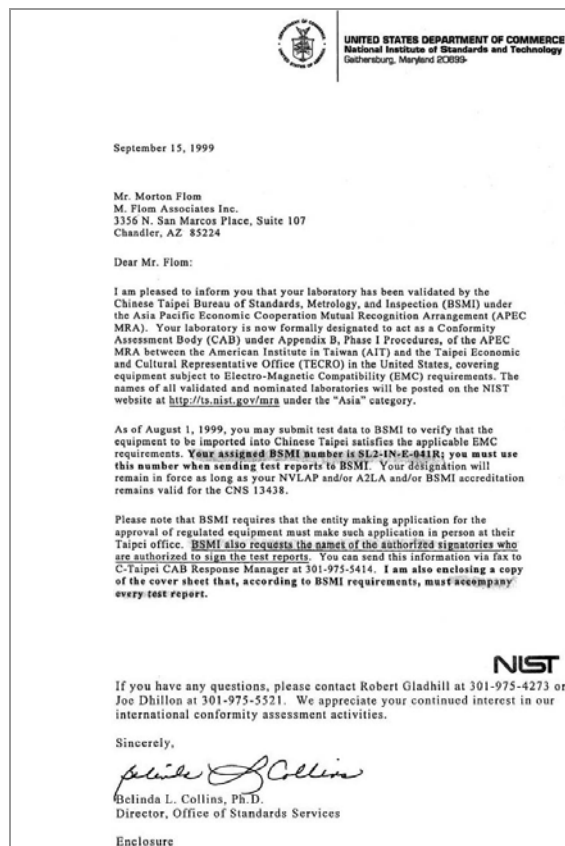
Follows



A2LA

"A2LA has accredited M. Flom Associates, Inc. Chandler, AZ for technical competence in the field of Electrical Testing. The accreditation covers the specific tests and types of tests listed on the agreed scope of accreditation. This laboratory meets the requirements of ISO/IEC 17025 – 1999 'General Requirements for the Competence of Testing and Calibration Laboratories' and any additional program requirements in the identified field of testing."

Certificate Number: **2152-01**



NIST

I am pleased to inform you that your laboratory has been validated by the Chinese Taipei Bureau of Standards, Metrology and Inspection (BSMI) under the Asia Pacific Economic Cooperation Mutual Recognition Agreement (APEC MRA). Your laboratory is now formally designated to act as a Conformity Assessment Body (CAB) under Appendix B, Phase I Procedures, of the APEC MRA between the American Institute in Taiwan (AIT) and the Taipei Economic and Cultural Representative Office (TECRO) in the United States, covering equipment subject to Electro-Magnetic Compatibility (EMC) requirements. The names of all validated and nominated laboratories will be posted on the NIST website at <http://ts.nist.gov/mra> under the 'Asia' category."

Sub-part

2.1033(c)(14):**Test and Measurement Data**

All tests and measurement data shown were performed in accordance with FCC Rules and Regulations, Volume II; Part 2, Sub-part J, Sections 2.947, 2.1033(c), 2.1041, 2.1046, 2.1047, 2.1079, 2.1051, 2.1053, 2.1055, 2.1057 and the following individual Parts:

- ☐ 21 – Domestic Public Fixed Radio Services
- ☐ 22 – Public Mobile Services
- ☒ 22 Subpart H - Cellular Radiotelephone Service
- ☒ 22.901(d) - Alternative technologies and auxiliary services
- ☐ 23 – International Fixed Public Radiocommunication services
- ☒ 24 – Personal Communications Services
- ☐ 74 Subpart H - Low Power Auxiliary Stations
- ☐ 80 – Stations in the Maritime Services
- ☐ 80 Subpart E - General Technical Standards
- ☐ 80 Subpart F - Equipment Authorization for Compulsory Ships
- ☐ 80 Subpart K - Private Coast Stations and Marine Utility Stations
- ☐ 80 Subpart S - Compulsory Radiotelephone Installations for Small Passenger Boats
- ☐ 80 Subpart T - Radiotelephone Installation Required for Vessels on the Great Lakes
- ☐ 80 Subpart U - Radiotelephone Installations Required by the Bridge-to-Bridge Act
- ☐ 80 Subpart V - Emergency Position Indicating Radiobeacons (EPIRB'S)
- ☐ 80 Subpart W - Global Maritime Distress and Safety System (GMDSS)
- ☐ 80 Subpart X - Voluntary Radio Installations
- ☐ 87 – Aviation Services
- ☐ 90 – Private Land Mobile Radio Services
- ☐ 94 – Private Operational-Fixed Microwave Service
- ☐ 95 Subpart A - General Mobile Radio Service (GMRS)
- ☐ 95 Subpart C - Radio Control (R/C) Radio Service
- ☐ 95 Subpart D - Citizens Band (CB) Radio Service
- ☐ 95 Subpart E - Family Radio Service
- ☐ 95 Subpart F - Interactive Video and Data Service (IVDS)
- ☐ 97 - Amateur Radio Service
- ☐ 101 – Fixed Microwave Services

General Information

1. Prior to testing, the deviation for audio modulation and each of the respective SAT + ST tones were set as close as possible to the required limit.
2. Except for audio modulation, which was applied externally, Wideband Data SAT, ST and all other tones and operational modes were provided by a test control unit incorporating appropriate software. Worst case repetition rate for Wideband Data was 10 kb/s.
3. Spurious radiation was measured at three (3) meters.
4. The two cellular frequency bands are available to the user automatically. Please refer to the manual contained in the documentation.
5. The normal modes of modulation are:
 - ☐ (a) Voice
 - ☐ (b) Wideband Data
 - ☐ (c) SAT
 - ☐ (d) ST
 - ☐ (e) SAT + Voice
 - ☐ (f) SAT + DTMF
 - ☒ (g) CDMA
 - ☐ (h) TDMA
 - ☐ (i) NAMPS Voice
 - ☐ (j) NAMPS DSAT
 - ☐ (k) NAMPS ST
 - ☐ (l) NAMPS Voice + DSAT

Standard Test Conditions
and
Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing:

In accordance with ANSI C63.4-1992/2000, section 6.1.9, and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104 °F) unless the particular equipment requirements specify testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

Prior to testing, the EUT was tuned up in accordance with the manufacturer's alignment procedures. All external gain controls were maintained at the position of maximum and/or optimum gain throughout the testing.

Measurement results, unless otherwise noted, are worst-case measurements.

Page Number 8 of 31.

Name of Test: Carrier Output Power (Conducted)

Specification: 47 CFR 2.1046(a)

Test Equipment: As per attached page

Measurement Procedure

1. The EUT was connected to a resistive coaxial attenuator of normal load impedance, and the un-modulated output power was measured by means of an R. F. Power Meter.
2. Measurement accuracy is $\pm 3\%$.

Measurement Results

Nominal, MHz	Channel	dBm	RF Power, Watts
Cellular CDMA Mode:			
825.3	991	24.5	0.282
836.4	380	24.5	0.282
847.7	799	24.5	0.282
PCS CDMA Mode:			
1851.25	025	24.0	0.251
1880.00	600	23.5	0.224
1908.75	1175	23.5	0.224

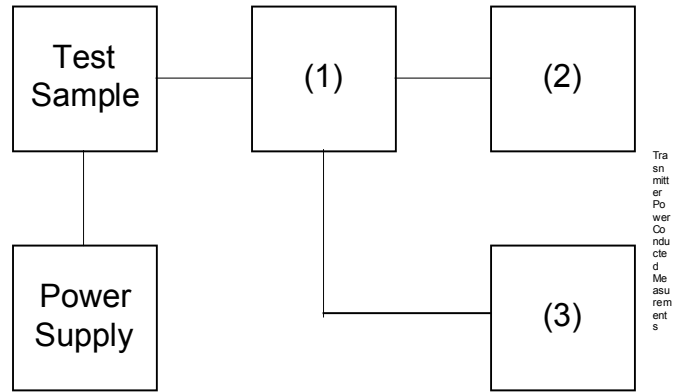
Performed By:



David E. Lee,
Compliance Test Manager

Transmitter Power Conducted Measurements

Test 1: RF Power Output
 Test 2: Frequency Stability



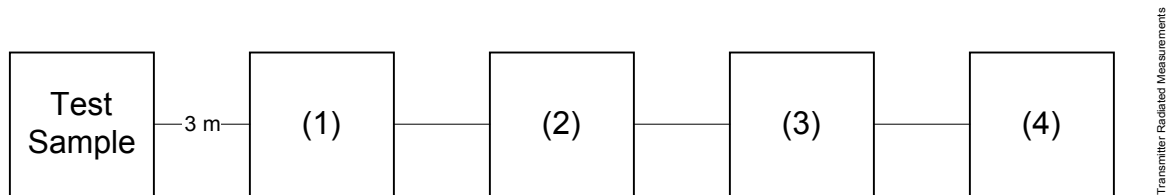
Asset (as applicable)	Description	s/n		
(1)	Coaxial Attenuator			
X	N/A	Splitter + Attenuator	Client Supplied	
X	i00231	Pasternack 30dB	231A	NCR
(2)	Power Meters			
X	i00228	HP E4418B	GB39512470	12 mo May-04
(3)	Frequency Counter / Base Station Simulator			
X	N/A	Agilent CDMA Box	Client Supplied	

Page Number 10 of 31.

Name of Test: R. F. Power Output (Radiated)

Specification: 47 CFR 2.1046(a)

Transmitter Radiated Measurements



Asset (as applicable)	Description	s/n		
(1) Transducer				
i00091	Emco 3115	001469	12 mo	Sep-03
i00089	Apriel Log Periodic	001500	12 mo	Sep-03
(2) High Pass Filter				
-	As Required			
(3) Preamp				
i00028	HP 8449 (+30 dB)	2749A00121	12 mo	Mar-04
(4) Spectrum Analyzer				
i00048	HP 8566B	2511A01467	12 mo	Jul-04
i00043	HP 8558B	2004A02076	12 mo	May-04
i00057	HP 8557A	1531A00191	12 mo	May-04
i00029	HP 8563E	3213A00104	12 mo	Jan-04

Measurement Procedure (Radiated)

The EUT was placed on an open-field site and its radiated field strength at a known distance was measured by means of a spectrum analyzer. Equivalent loading was calculated from the equation $P_t = ((E \times R)^2 / 49.2)$ watts, where $R = 3m$.

The EUT was tested in three laptops of different types.

HOST 1 DELL Latitude C800
 HOST 2 TOPSHIBA Tecra 8100
 HOST 3 DELL Latitude D800

Measurement accuracy is ± 1.5 dB.

Measurement Results

g0470044: 2004-Jul-23 Fri 11:05:00

State: 2:High Power / CDMA Mode:

HOST 1

Frequency Tuned, MHz	Frequency Emission, MHz	Meter, dBuV/m	CF, dB	ERP, dBm	ERP, Watts
824.7000000	824.750000	86.07	32.74	21.4	0.138
836.5200000	836.500000	87.17	32.92	22.7	0.186
848.3000000	848.190000	86.91	33.12	22.7	0.186

Frequency Tuned, MHz	Frequency Emission, MHz	Meter, dBuV/m	CF, dB	EIRP, dBm	EIRP, Watts
1851.250000	1851.263000	76.17	41.60	22.5	0.178
1880.000000	1880.013000	76.49	41.96	23.2	0.209
1908.750000	1908.763000	77.02	42.33	24.1	0.257

g0470052: 2004-Jul-23 Fri 13:00:00

State: 2:High Power / CDMA Mode

HOST 2

Frequency Tuned, MHz	Frequency Emission, MHz	Meter, dBuV/m	CF, dB	ERP, dBm	ERP, Watts
824.7000000	824.743000	90.76	31.58	25.0	0.316
836.5200000	836.533000	91.30	31.65	25.6	0.363
848.3000000	848.203000	90.22	31.75	24.6	0.288

Frequency Tuned, MHz	Frequency Emission, MHz	Meter, dBuV/m	CF, dB	EIRP, dBm	EIRP, Watts
1851.250000	1851.263000	76.24	41.6	22.6	0.182
1880.000000	1880.013000	78.36	41.96	25.1	0.324
1908.750000	1908.763000	76.49	42.33	23.6	0.229

g0480044: 2004-Aug-13 Fri 09:45:00

State: 2:High Power./.CDMA Mode

HOST 3

Frequency Tuned, MHz	Frequency Emission, MHz	Meter, dBuV/m	CF, dB	ERP, dBm	ERP, Watts
824.730000	824.741300	91.3	32.74	26.7	0.467
836.520000	836.521300	90.81	32.92	26.4	0.437
848.300000	848.301300	92.32	33.12	28.1	0.646

Frequency Tuned, MHz	Frequency Emission, MHz	Meter, dBuV/m	CF, dB	EIRP, dBm	EIRP, Watts
1851.250000	1851.250000	74.08	44.16	20.9	0.123
1880.000000	1880.000000	74.7	44.31	21.6	0.145
1908.750000	1908.750000	76.29	44.47	23.4	0.219

CDMA Mode:

The emission bandwidth exceeds the measurement bandwidth of the test receiver.



Performed By:

David E. Lee,
Compliance Test Manager

Page Number 13 of 31.

Name of Test: Emission Masks (Occupied Bandwidth)

Specification: 47 CFR 2.1049(c)(1), 22

Test Equipment: As per previous page

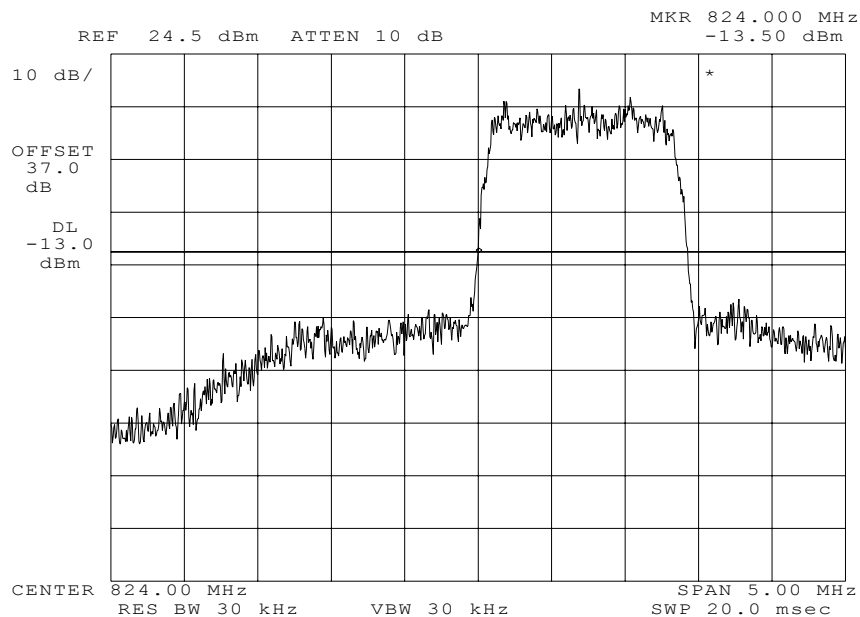
Measurement Procedure

1. The EUT and test equipment were set up as shown on the following page, with the Spectrum Analyzer connected.
2. For EUTs supporting audio modulation, the audio signal generator was adjusted to the frequency of maximum response and with output level set for ± 2.5 kHz deviation (or 50% modulation). With level constant, the signal level was increased 16 dB.
3. For EUTs supporting digital modulation, the digital modulation mode was operated to its maximum extent.
4. The Occupied Bandwidth was measured with the Spectrum Analyzer controls set as shown on the test results.
5. Measurement Results: Attached

Name of Test: Emission Masks (Occupied Bandwidth)

g0470045: 2004-Jul-23 Fri 09:49:00

State: 2:High Power / Cellular / Low Channel



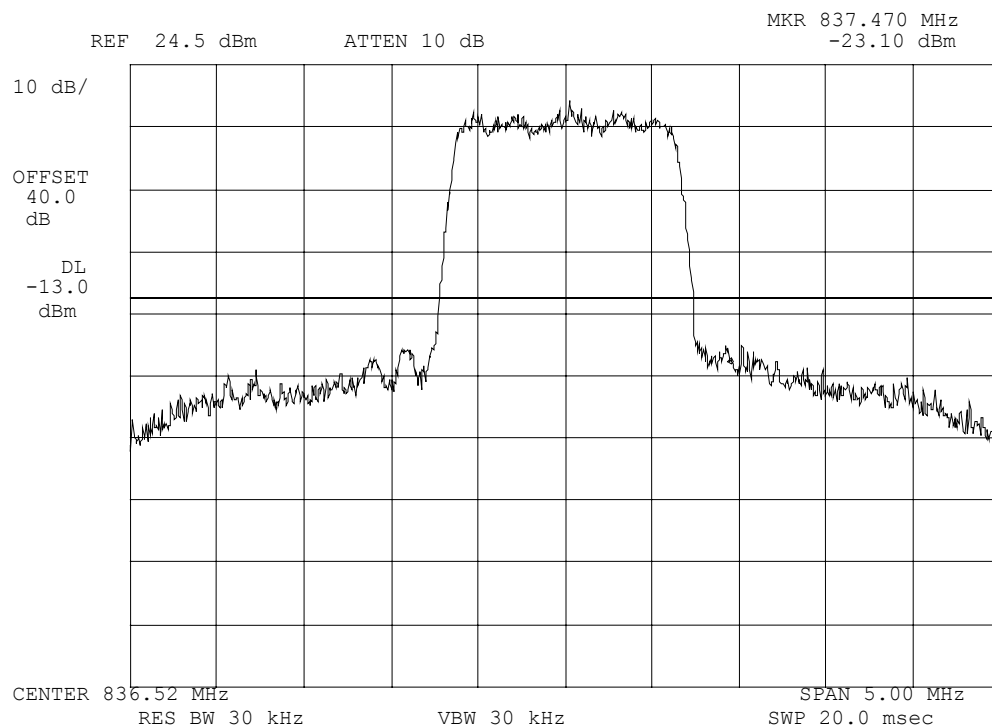
Power:
Modulation:

HIGH (24.5dBm)
CDMA

Performed By:


David E. Lee,
Compliance Test Manager

Name of Test: Emission Masks (Occupied Bandwidth)
g0470051: 2004-Jul-23 Fri 10:38:00
State: 2:High Power / Cellular / Mid Channel

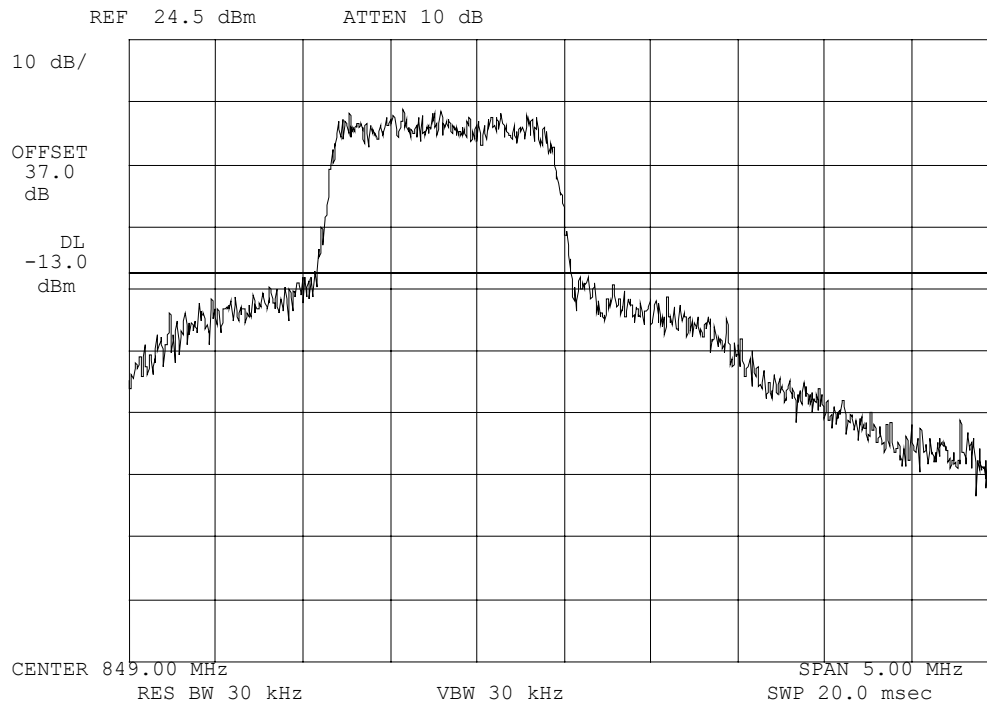


Power: HIGH (24.5dBm)
Modulation: CDMA

Performed By:


David E. Lee,
Compliance Test Manager

Name of Test: Emission Masks (Occupied Bandwidth)
g0470047: 2004-Jul-23 Fri 10:08:00
State: 2:High Power / Cellular / High Channel



Power:
Modulation:

HIGH (24.5dBm)
CDMA

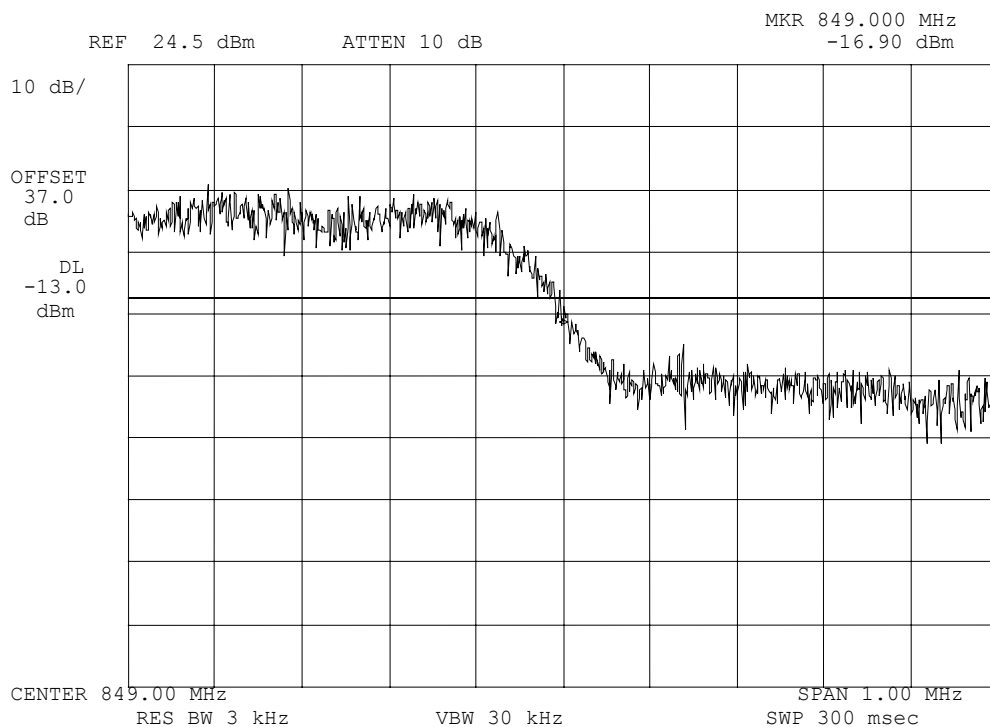
Performed By:


David E. Lee,
Compliance Test Manager

Name of Test: Emission Masks (Occupied Bandwidth)

g0470047: 2004-Jul-23 Fri 10:08:00

State: 2:High Power / Cellular / High Channel



Power:
Modulation:

HIGH (24.5dBm)
CDMA
(Band Edge Detail)

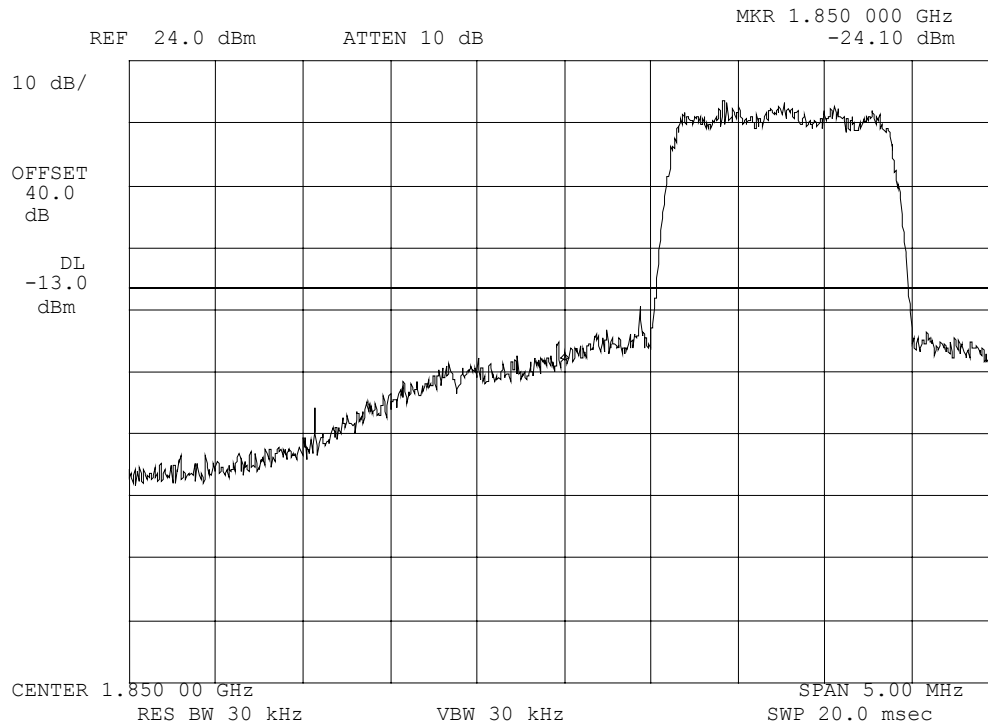
Performed By:


David E. Lee,
Compliance Test Manager

Name of Test: Emission Masks (Occupied Bandwidth)

g0470048: 2004-Jul-23 Fri 10:24:00

State: 2:High Power / PCS / Low Channel



Power:
Modulation:

HIGH (24.0dBm)
CDMA

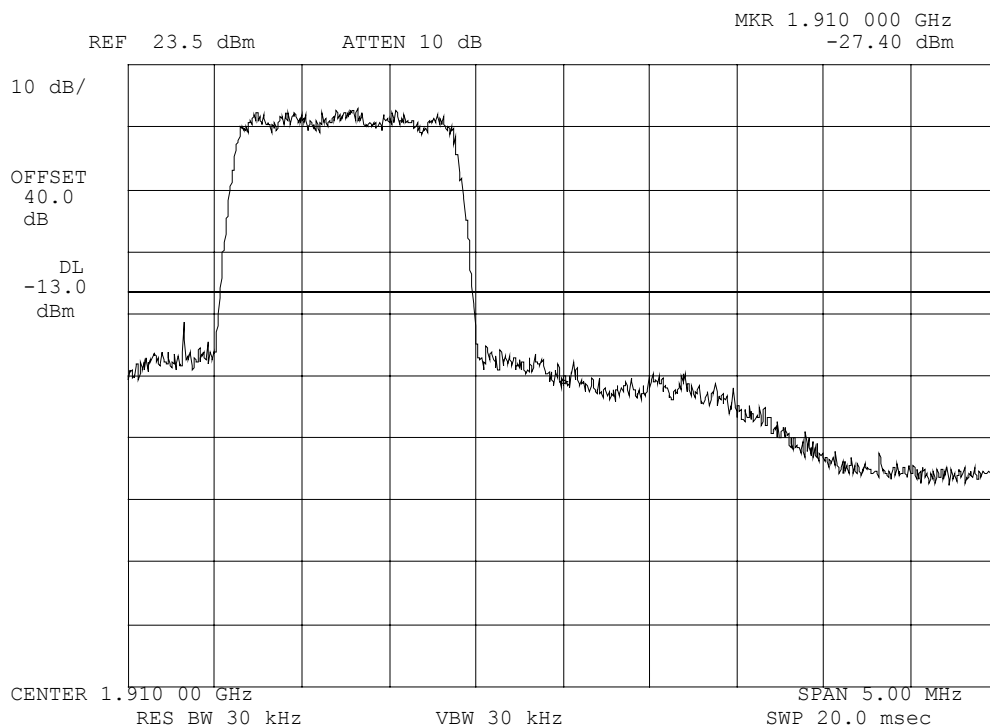
Performed By:


David E. Lee,
Compliance Test Manager

Name of Test: Emission Masks (Occupied Bandwidth)

g0470049: 2004-Jul-23 Fri 10:30:00

State: 2:High Power / PCS / High Channel



Power:
Modulation:

HIGH (23.5dBm)
CDMA

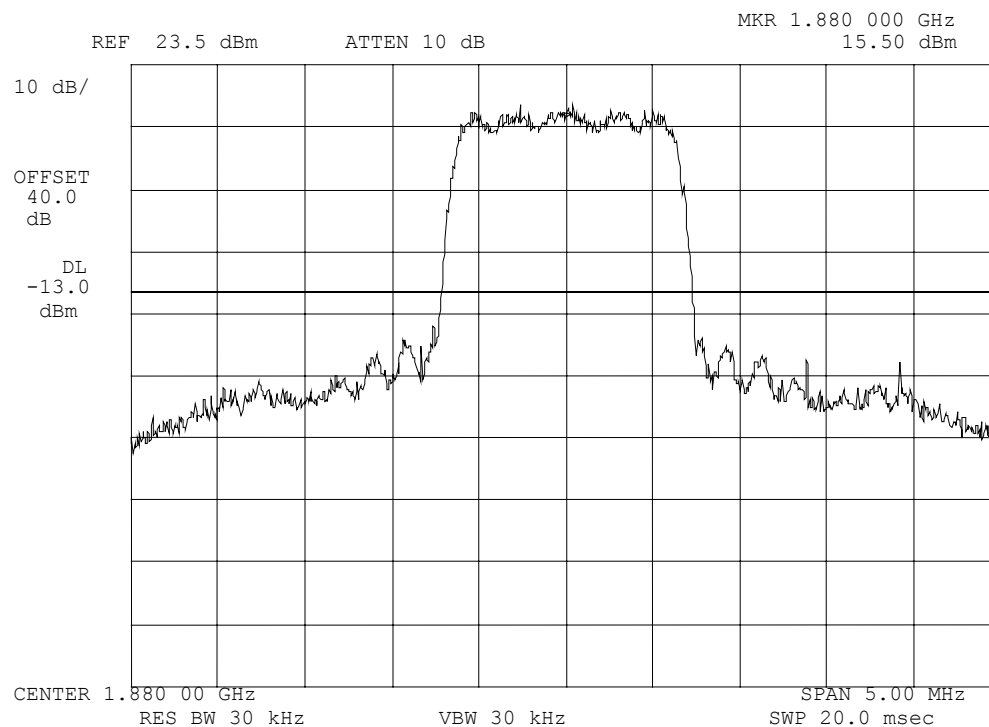
Performed By:


David E. Lee,
Compliance Test Manager

Name of Test: Emission Masks (Occupied Bandwidth)

g0470050: 2004-Jul-23 Fri 10:33:00

State: 2:High Power / PCS / Mid Channel



Power:
Modulation:

HIGH (23.5dBm)
CDMA

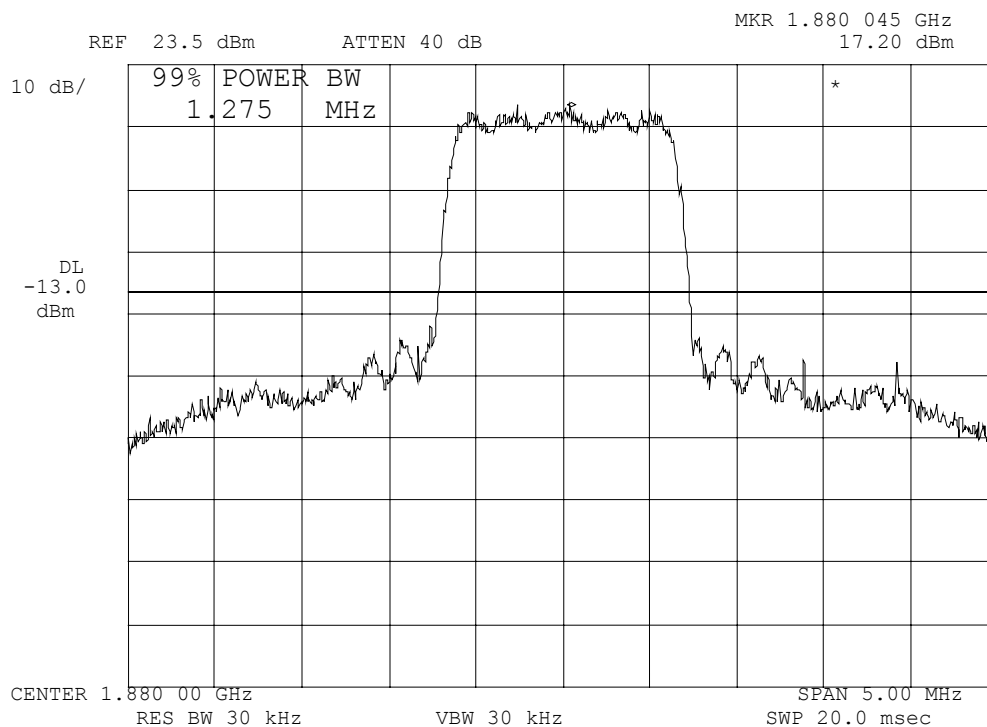
Performed By:


David E. Lee,
Compliance Test Manager

Name of Test: Emission Masks (Occupied Bandwidth)

g0470051: 2004-Jul-23 Fri 10:38:00

State: 2:High Power



Power:
Modulation:

99.9% POWER BANDWIDTH
CDMA

Performed By:


David E. Lee,
Compliance Test Manager

Page Number 22 of 31.

Name of Test: Field Strength of Spurious Radiation

Specification: 47 CFR 2.1053(a)

Guide: ANSI/TIA/EIA-603-1992/2001, Paragraph 1.2.12 and Table 16, 47 CFR 22.917

Measurement Procedure

1.2.12.1 Definition: Radiated spurious emissions are emissions from the equipment when transmitting into a non-radiating load on a frequency or frequencies which are outside an occupied band sufficient to ensure transmission of information of required quality for the class of communications desired.

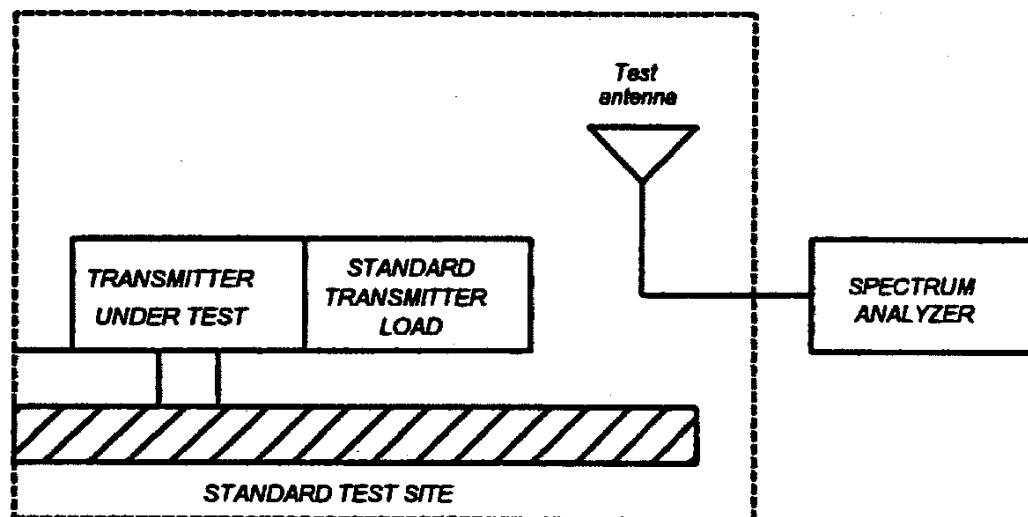
NOTE:

The EUT was tested in three laptops of different types.

HOST 1	DELL Latitude C800
HOST 2	TOPSHIBA Tecra 8100
HOST 3	DELL Latitude D800

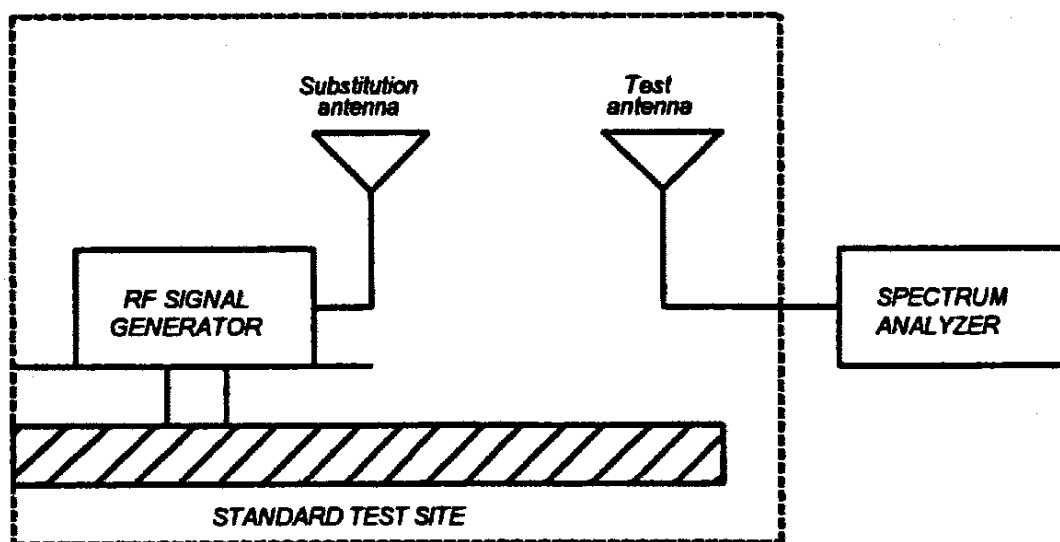
1.2.12.2 Method of Measurement

- A) Connect the equipment as illustrated
- B) Adjust the spectrum analyzer for the following settings:
 - 1) Resolution Bandwidth 100 kHz (<1 GHZ), 1 MHZ (> 1GHz).
 - 2) Video Bandwidth ≥ 3 times Resolution Bandwidth, or 30 kHz (22.917)
 - 3) Sweep Speed ≤ 2000 Hz/second
 - 4) Detector Mode = Mean or Average Power
- C) Place the transmitter to be tested on the turntable in the standard test site. The transmitter is transmitting into a non-radiating load which is placed on the turntable. The RF cable to this load should be of minimum length.



Name of Test: Field Strength of Spurious Radiation (Cont.)

- D) For each spurious measurement the test antenna should be adjusted to the correct length for the frequency involved. This length may be determined from a calibration ruler supplied with the equipment. Measurements shall be made from the lowest radio frequency generated in the equipment to the tenth harmonic of the carrier, except for the region close to the carrier equal to $\pm$ the test bandwidth (see section 1.3.4.4).
- E) For each spurious frequency, raise and lower the test antenna from 1 m to 4 m to obtain a maximum reading on the spectrum analyzer with the test antenna at horizontal polarity. Repeat this procedure to obtain the highest possible reading. Record this maximum reading.
- F) Repeat step E) for each spurious frequency with the test antenna polarized vertically.



- G) Reconnect the equipment as illustrated.
- H) Keep the spectrum analyzer adjusted as in step B).
- I) Remove the transmitter and replace it with a substitution antenna (the antenna should be half-wavelength for each frequency involved). The center of the substitution antenna should be approximately at the same location as the center of the transmitter. At lower frequencies, where the substitution antenna is very long, this will be impossible to achieve when the antenna is polarized vertically. In such case the lower end of the antenna should be 0.3 m above the ground.

Name of Test:

Field Strength of Spurious Radiation (Cont.)

- J) Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a non-radiating cable. With the antennas at both ends horizontally polarized and with the signal generator tuned to a particular spurious frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output.
- K) Repeat step J) with both antennas vertically polarized for each spurious frequency.
- L) Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps J) and K) by the power loss in the cable between the generator and the antenna and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna.
- M) The levels recorded in step L) are absolute levels of radiated spurious emissions in dBm. The radiated spurious emissions in dB can be calculated by the following:

Radiated spurious emissions dB =

$$10\log_{10}(\text{TX power in watts}/0.001) - \text{the levels in step I)}$$

NOTE: It is permissible that other antennas provided can be referenced to a dipole.

Test Equipment:

Asset (as applicable)	Description	s/n	Cycle	Last Cal
Transducer				
	i00088	EMCO 3109-B 25MHz-300MHz	2336	12 mo. Sep-03
	i00065	EMCO 3301-B Active Monopole	2635	12 mo. Sep-03
X	i00089	Apriel 2001 200MHz-1GHz	001500	12 mo. Sep-03
X	i00103	EMCO 3115 1GHz-18GHz	9208-3925	12 mo. Sep-03
Amplifier				
X	i00028	HP 8449A	2749A00121	12 mo. Mar-04
Spectrum Analyzer				
	i00029	HP 8563E	3213A00104	12 mo. Jan-04
X	i00033	HP 85462A	3625A00357	12 mo. May-04
	i00048	HP 8566B	2511AD1467	6 mo. Jul-04

Measurement Results: Field Strength of Spurious Radiation

Measurement Distance, m = 3
 Spectrum Searched, GHz = 2nd to 10th harmonic

Name of Test: Field Strength of Spurious Radiation

g0470054: 2004-Jul-24 Sat 07:13:00

State: 2:High Power

HOST 1

Frequency Tuned, MHz	Frequency Emission, MHz	Meter, dBuV	CF, dB	ERP, dBm	Margin, dB
836.400000	1673.083333	57.53	-2.36	-42.2	-27.0
836.400000	2509.483333	48.03	1.23	-48.1	-32.9
836.400000	3345.883333	42.20	3.46	-51.7	-36.5
836.400000	4182.283333	38.87	7.19	-51.3	-36.1
836.400000	5018.683333	39.37	8.37	-49.6	-34.5
836.400000	5855.083333	38.70	10.22	-48.5	-33.3
836.400000	6691.483333	39.20	9.20	-49.0	-33.8
836.400000	7527.883333	39.03	10.89	-47.5	-32.3
836.400000	8364.283333	40.70	11.90	-44.8	-29.6

Frequency Tuned, MHz	Frequency Emission, MHz	Meter, dBuV	CF, dB	EIRP, dBm	Margin, dB
1880.000000	3760.283333	45.30	5.98	-43.9	-30.9
1880.000000	5640.283333	43.13	10.14	-42.0	-28.9
1880.000000	7520.283333	42.63	10.86	-41.7	-28.7
1880.000000	9400.283333	39.97	15.32	-39.9	-26.9
1880.000000	11280.283333	40.97	15.68	-38.6	-25.6
1880.000000	13160.283333	39.47	9.25	-46.5	-33.5
1880.000000	15040.283333	43.47	12.94	-38.8	-25.8
1880.000000	16920.283333	43.30	7.19	-44.7	-31.7
1880.000000	18800.283333	42.30	0.00	-52.9	-39.9



Performed By:

David E. Lee,
Compliance Test Manager

Measurement Results: Field Strength of Spurious Radiation

Measurement Distance, m = 3
 Spectrum Searched, GHz = 2nd to 10th harmonic

Name of Test: Field Strength of Spurious Radiation

g0470055: 2004-Jul-24 Sat 07:58:00

State: 2:High Power

HOST 2

Frequency Tuned, MHz	Frequency Emission, MHz	Meter, dBuV	CF, dB	ERP, dBm	Margin, dB
836.400000	1673.083333	55.80	-2.36	-43.9	-28.8
836.400000	2509.483333	45.63	1.23	-50.5	-35.3
836.400000	3345.883333	39.97	3.46	-53.9	-38.8
836.400000	4182.283333	39.13	7.19	-51.1	-35.9
836.400000	5018.683333	38.80	8.37	-50.2	-35.0
836.400000	5855.083333	38.97	10.22	-48.2	-33.0
836.400000	6691.483333	40.30	9.20	-47.9	-32.7
836.400000	7527.883333	40.47	10.89	-46.0	-30.8
836.400000	8364.283333	39.47	11.90	-46.0	-30.8

Frequency Tuned, MHz	Frequency Emission, MHz	Meter, dBuV	CF, dB	EIRP, dBm	Margin, dB
1880.000000	3760.283333	48.97	5.98	-40.3	-27.3
1880.000000	5640.283333	40.63	10.14	-44.5	-31.4
1880.000000	7520.283333	38.63	10.86	-45.7	-32.7
1880.000000	9400.283333	41.47	15.32	-38.4	-25.4
1880.000000	11280.283333	40.97	15.68	-38.6	-25.6
1880.000000	13160.283333	41.63	9.25	-44.3	-31.3
1880.000000	15040.283333	42.97	12.94	-39.3	-26.3
1880.000000	16920.283333	41.47	7.19	-46.6	-33.5
1880.000000	18800.283333	40.47	0.00	-54.8	-41.7



Performed By:

David E. Lee,
Compliance Test Manager

Measurement Results: Field Strength of Spurious Radiation

Measurement Distance, m = 3
 Spectrum Searched, GHz = 2nd to 10th harmonic

Name of Test: Field Strength of Spurious Radiation

g0470056: 2004-Jul-24 Sat 08:24:00

State: 2:High Power

HOST 3

Frequency Tuned, MHz	Frequency Emission, MHz	Meter, dBuV	CF, dB	ERP, dBm	Margin, dB
836.400000	1673.083333	46.63	-2.36	-53.1	-37.9
836.400000	2509.483333	42.13	1.23	-54.0	-38.8
836.400000	3345.883333	41.47	3.46	-52.4	-37.3
836.400000	4182.283333	40.47	7.19	-49.7	-34.5
836.400000	5018.683333	39.30	8.37	-49.7	-34.5
836.400000	5855.083333	37.97	10.22	-49.2	-34.0
836.400000	6691.483333	40.13	9.20	-48.0	-32.9
836.400000	7527.883333	38.63	10.89	-47.9	-32.7
836.400000	8364.283333	40.13	11.90	-45.3	-30.2

4

Frequency Tuned, MHz	Frequency Emission, MHz	Meter, dBuV	CF, dB	EIRP, dBm	Margin, dB
1880.000000	3760.283333	40.97	5.98	-48.3	-35.3
1880.000000	5640.283333	50.13	10.14	-35.0	-21.9
1880.000000	7520.283333	41.13	10.86	-43.2	-30.2
1880.000000	9400.283333	39.97	15.32	-39.9	-26.9
1880.000000	11280.283333	38.63	15.68	-40.9	-27.9
1880.000000	13160.283333	40.80	9.25	-45.2	-32.2
1880.000000	15040.283333	43.80	12.94	-38.5	-25.5
1880.000000	16920.283333	42.63	7.19	-45.4	-32.4
1880.000000	18800.283333	41.30	0.00	-53.9	-40.9



Performed By:

David E. Lee,
Compliance Test Manager

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Name of Test: Frequency Stability (Temperature & Voltage Variation)

Specification: 47 CFR 2.1055(a)(1) & 47 CFR 2.1055 (b)(1)

Test Conditions: As Indicated

Test Equipment: As per previous page

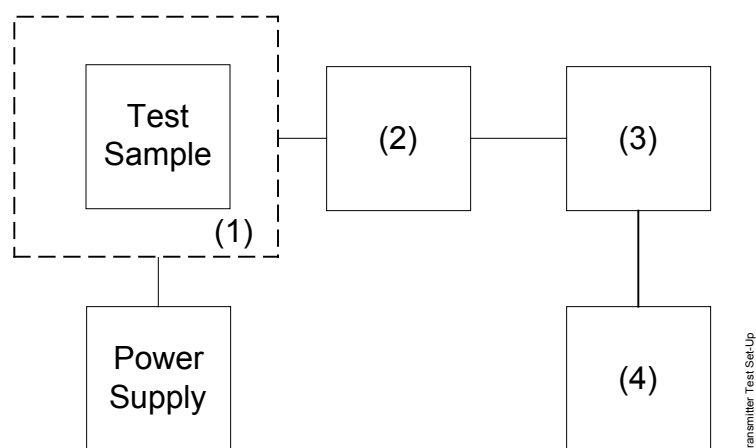
Measurement Procedure

1. The EUT and test equipment were set up as shown on the following page.
2. With all power removed, the temperature was decreased to -30°C and permitted to stabilize for three hours. Power was applied and the maximum change in frequency was noted within one minute.
3. With power OFF, the temperature was raised in 10°C steps. The sample was permitted to stabilize at each step for at least one-half hour. Power was applied and the maximum frequency change was noted within one minute.
4. The temperature tests were performed for the worst case.
5. Measurement Results: Attached

Transmitter Test Set-Up

Test G. Frequency Stability: Temperature Variation

Test H. Frequency Stability: Voltage Variation



Asset (as applicable)	Description	s/n		
(1)	Temperature Chamber	Client Supplied		
(2)	Coaxial Attenuator			
X	N/A	Splitter + Attenuator	Client Supplied	
X	i00231	Pasternack 30dB	231A	NCR
(3)	Power Meters			
X	i00228	HP E4418B	GB39512470	12 mo May-04
(4)	Frequency Counter / Base Station Simulator			
X	N/A	Agilent CDMA Box	Client Supplied	

Test data supplied by client.

Test setup requires use of CDMA Test Box to measure error.

Limit: Must remain within authorized frequency block.

Name of Test:

Frequency Stability (Temperature & Voltage Variation)

NAME OF TEST : Frequency Stability (Temperature Variation)

Operating Frequency :	836520000	Hz
Channel :	384	
Reference Voltage :	3.3	Vdc
Deviation Limit :	+/- 0.00025/2.5	%/ppm

Voltage (%)	Power (Vdc)	Temp (C)	Frequency (Hz)	Deviation (%)	Offset (Hz)
100%	3.3	25(Ref)	836,520,001.50	0.0000000	1.5
100%		-20	836,520,003.60	0.0000021	3.6
100%		-10	836,520,005.10	0.0000036	5.1
100%		0	836,520,005.50	0.0000040	5.5
100%		10	836,519,996.70	-0.0000048	-3.3
100%		25	836,519,994.10	-0.0000074	-5.9
100%		30	836,519,996.30	-0.0000052	-3.7
100%		40	836,519,995.60	-0.0000059	-4.4
100%		50	836,520,005.80	0.0000043	5.8
100%		60	836,519,996.00	-0.0000055	-4
90%	3.0	25	836,520,002.50	0.0000010	2.5
110%	3.6	25	836,520,004.80	0.0000033	4.8

NAME OF TEST : Frequency Stability (Temperature Variation)

Operating Frequency :	1880000000	Hz
Channel :	600	
Reference Voltage :	3.3	Vdc
Deviation Limit :	+/- 0.00025/2.5	%/ppm

Voltage (%)	Power (Vdc)	Temp (C)	Frequency (Hz)	Deviation (%)
100%	3.3	25(Ref)	1,879,999,988.00	0.0000000
100%		-20	1,880,000,001.90	0.0000139
100%		-10	1,879,999,994.00	0.0000060
100%		0	1,880,000,004.00	0.0000160
100%		10	1,880,000,006.10	0.0000181
100%		25	1,879,999,988.00	0.0000000
100%		30	1,880,000,007.80	0.0000198
100%		40	1,880,000,005.30	0.0000173
100%		50	1,880,000,005.10	0.0000171
100%		60	1,880,000,010.80	0.0000228
90%	3.0	25	1,880,000,011.40	0.0000234
110%	3.6	25	1,880,000,012.70	0.0000247



Performed By:

David E. Lee,
Compliance Test Manager

Page Number 31 of 31.

Name of Test: Necessary Bandwidth and Emission Bandwidth

Specification: 47 CFR 2.202(g)

Modulation = CDMA

Necessary Bandwidth:

Calculated Necessary Bandwidth (B_N),
at 99.7% power bandwidth, kHz = 1250.0

Measured at the 99.9% power bandwidth = 1275.0



Performed By:

David E. Lee,
Compliance Test Manager

END OF TEST REPORT

Testimonial and Statement of Certification
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This is to certify that:

1. **That** the application was prepared either by, or under the direct supervision of, the undersigned.
2. **That** the technical data supplied with the application was taken under my direction and supervision.
3. **That** the data was obtained on representative units, randomly selected.
4. **That,** to the best of my knowledge and belief, the facts set forth in the application and accompanying technical data are true and correct.

Certifying Engineer:



David E. Lee,
Compliance Test Manager