MFA M. Flom Associates, Inc. - Global Compliance Center
3356 North San Marcos Place, Suite 107, Chandler, Arizona 85225-7176
www.mflom.com general@mflom.com (480) 926-3100, FAX: 926-3598

T R A N S M I T T E R C E R T I F I C A T I O N

of

FCC ID: QQLC3110
MODEL: C3110

to

FEDERAL COMMUNICATIONS COMMISSION

Rule Part(s) 2, 22, 24E, 22.901d, Confidentiality

DATE OF REPORT: November 13, 2002

ON THE BEHALF OF THE APPLICANT:

AirLink Communications, Inc.

AT THE REQUEST OF: P.O. 0020790

AirLink Communications, Inc.
472 Kato Terrace
Fremont, CA 94539

Attention of: Jim Baichtal
510-226-4201; FAX: -4299
email: jim@airlink.com

SUPERVISED BY: Morton Flom, P. Eng.

LIST OF EXHIBITS
(FCC **CERTIFICATION** (CELLULAR TRANSMITTERS) - REVISED 9/28/98)

APPLICANT: AirLink Communications, Inc.

FCC ID: QQLC3110

BY APPLICANT:

1. LETTER OF AUTHORIZATION	x
2. IDENTIFICATION DRAWINGS, 2.1033(c)(11)	
x LABEL	
___ LOCATION OF LABEL	
x COMPLIANCE STATEMENT	
x LOCATION OF COMPLIANCE STATEMENT	
3. PHOTOGRAPHS, 2.1033(c)(12)	x
4. CONFIDENTIALITY REQUEST: 0.457 and 0.459	x
5. DOCUMENTATION: 2.1033(c)	
(3) USER MANUAL	x
(9) TUNE UP INFO	x
(10) SCHEMATIC DIAGRAM	x
(10) CIRCUIT DESCRIPTION	x
BLOCK DIAGRAM	x
ACTIVE DEVICES/BOM	x

BY M.F.A. INC.

A. TESTIMONIAL & STATEMENT OF CERTIFICATION

B. STATEMENT OF QUALIFICATIONS

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: d02b0039

d) Client: AirLink Communications, Inc.
472 Kato Terrace
Fremont, CA 94539

e) Identification: C3110
FCC ID: QQLC3110
Description: CDMA Modem

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

g) Report Date: November 13, 2002
EUT Received: October 25, 2002

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:

Morton Flom, P. Eng.

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.

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LIST OF GENERAL INFORMATION REQUIRED FOR CERTIFICATION

IN ACCORDANCE WITH FCC RULES AND REGULATIONS,
VOLUME II, PART 2 AND TO

2, 22, 24E, 22.901d, Confidentiality

Sub-part 2.1033

(c)(1): NAME AND ADDRESS OF APPLICANT:

AirLink Communications, Inc.
472 Kato Terrace
Fremont, CA 94539

MANUFACTURER:

AirLink Communications, Inc.
472 Kato Terrace
Fremont, CA 94539

(c)(2): FCC ID: QQLC3110

MODEL NO: C3110

(c)(3): INSTRUCTION MANUAL(S):

PLEASE SEE ATTACHED EXHIBITS

(c)(4): TYPE OF EMISSION: 40K0F8W, 40K0F1D, 1M25F9W

(c)(5): FREQUENCY RANGE, MHz: 824.04 to 848
1850 to 1910

(c)(6): POWER RATING, Watts: 0.200
___ Switchable ___ Variable _x_ N/A

FCC GRANT NOTE: BC - The output power is continuously variable from the value listed in this entry to 5%-10% of the value listed.

(c)(7): MAXIMUM POWER RATING, Watts: 0.6

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Subpart 2.1033 (continued)

(c)(8): VOLTAGES & CURRENTS IN ALL ELEMENTS IN FINAL R. F. STAGE, INCLUDING FINAL TRANSISTOR OR SOLID STATE DEVICE:

COLLECTOR CURRENT, A = 600 ma
COLLECTOR VOLTAGE, Vdc = 3.3
SUPPLY VOLTAGE, Vdc = 19.3

(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

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M. Flom Associates, Inc. is accredited by the American Association for Laboratory Association (A2LA) as shown in the scope below.

THE AMERICAN
ASSOCIATION
FOR LABORATORY
ACCREDITATION

ACCREDITED LABORATORY

A2LA has accredited

M. FLOM ASSOCIATES, INC.
Chandler, AZ

for technical competence in the field of

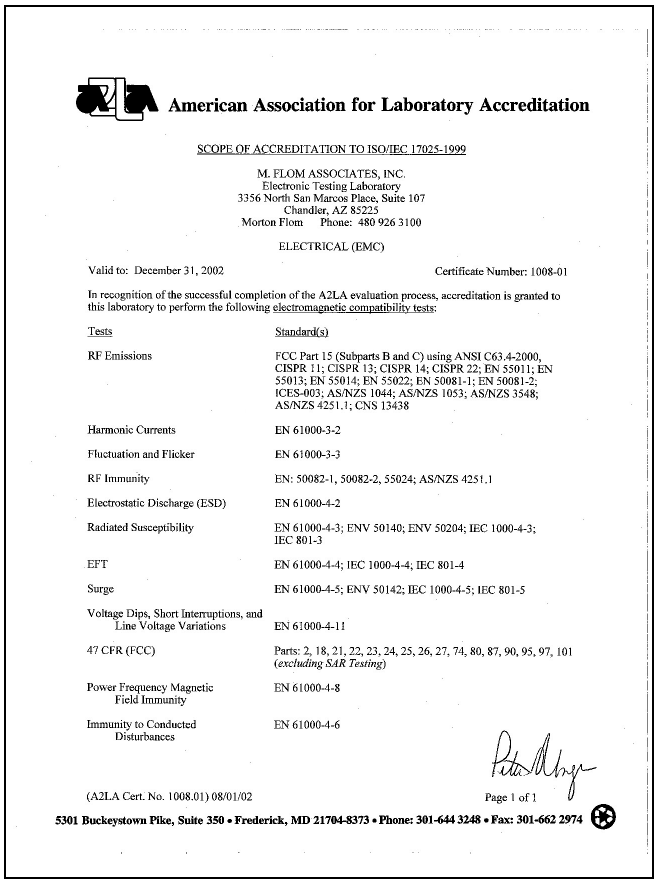
Electrical (EMC) Testing

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. Testing and calibration laboratories that comply with this International Standard also operate in accordance with ISO 9001 or ISO 9002.

Presented this 2nd day of March, 2001.

President
For the Accreditation Council
Certificate Number 1008.01
Valid to December 31, 2002

For tests or types of tests to which this accreditation applies, please refer to the laboratory's Electrical (EMC) Scope of Accreditation



American Association for Laboratory Accreditation

SCOPE OF ACCREDITATION TO ISO/IEC 17025-1999

M. FLOM ASSOCIATES, INC.
Electronic Testing Laboratory
3356 North San Marcos Place, Suite 107
Chandler, AZ 85225
Morton Flom Phone: 480 926 3100

ELECTRICAL (EMC)

Valid to: December 31, 2002 Certificate Number: 1008-01

In recognition of the successful completion of the A2LA evaluation process, accreditation is granted to this laboratory to perform the following electromagnetic compatibility tests:

Tests	Standard(s)
RF Emissions	FCC Part 15 (Subparts B and C) using ANSI C63.4-2000, CISPR 11; CISPR 13; CISPR 14; CISPR 22; EN 55011; EN 55013; EN 55014; EN 55022; EN 50081-1; EN 50081-2; ICES-003; AS/NZS 1044; AS/NZS 1053; AS/NZS 3548; AS/NZS 4251.1; CNS 13438
Harmonic Currents	EN 61000-3-2
Fluctuation and Flicker	EN 61000-3-3
RF Immunity	EN: 50082-1, 50082-2, 55024; AS/NZS 4251.1
Electrostatic Discharge (ESD)	EN 61000-4-2
Radiated Susceptibility	EN 61000-4-3; ENV 50140; ENV 50204; IEC 1000-4-3; IEC 801-3
EFT	EN 61000-4-4; IEC 1000-4-4; IEC 801-4
Surge	EN 61000-4-5; ENV 50142; IEC 1000-4-5; IEC 801-5
Voltage Dips, Short Interruptions, and Line Voltage Variations	EN 61000-4-11
47 CFR (FCC)	Parts: 2, 18, 21, 22, 23, 24, 25, 26, 27, 74, 80, 87, 90, 95, 97, 101 (*excluding SAR Testing*)
Power Frequency Magnetic Field Immunity	EN 61000-4-8
Immunity to Conducted Disturbances	EN 61000-4-6

(A2LA Cert. No. 1008.01) 08/01/02 Page 1 of 1

5301 Buckeystown Pike, Suite 350 • Frederick, MD 21704-8373 • Phone: 301-644 3248 • Fax: 301-662 2974

"This laboratory is accredited by the American Association for Laboratory Accreditation (A2LA) and the results shown in this report have been determined in accordance with the laboratory's terms of accreditation unless stated otherwise in the report."

Should this report contain any data for tests for which we are not accredited, or which have been undertaken by a subcontractor that is not A2LA accredited, such data would not covered by this laboratory's A2LA accreditation.

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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
_x_ 22 – Public Mobile Services
____ 22 Subpart H - Cellular Radiotelephone Service
_x_ 22.901(d) - Alternative technologies and auxiliary services
____ 23 – International Fixed Public Radiocommunication services
_x_ 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:

   _x_ (a) CDMA

   _x_ (b) CDMA PCS

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.

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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 unmodulated output power was measured by means of an R. F. Power Meter.

2. Measurement accuracy is ±3%.

MEASUREMENT RESULTS

NOMINAL, MHz	CHANNEL	dBm		R. F. POWER, WATTS	
		Lo	Hi	Lo	Hi
CDMA 800 MODE:					
824.73			23.9		0.248
836.40			23.9		0.248
848.19			23.9		0.248
CDMA PCS MODE:					
1851.25			23.79		0.239
1880.00			23.90		0.244
1908.75			23.95		0.248

PERFORMED BY: Doug Noble, B.A.S. E.E.T.

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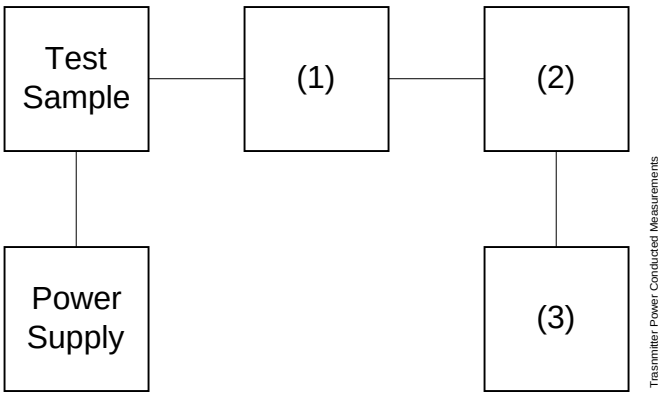
TRANSMITTER POWER CONDUCTED MEASUREMENTS

TEST 1: R. F. POWER OUTPUT
TEST 2: FREQUENCY STABILITY



Asset	Description (as applicable)	s/n
(1)	COAXIAL ATTENUATOR	
i00122	Narda 766-10	7802
i00123	Narda 766-10	7802A
i00069	Bird 8329 (30 dB)	1006
i00113	Sierra 661A-3D	1059
(2)	POWER METERS	
i00014	HP 435A	1733A05836
i00039	HP 436A	2709A26776
i00020	HP 8901A POWER MODE	2105A01087
(3)	FREQUENCY COUNTER	
i00042	HP 5383A	1628A00959
i00019	HP 5334B	2704A00347
i00020	HP 8901A FREQUENCY MODE	2105A01087

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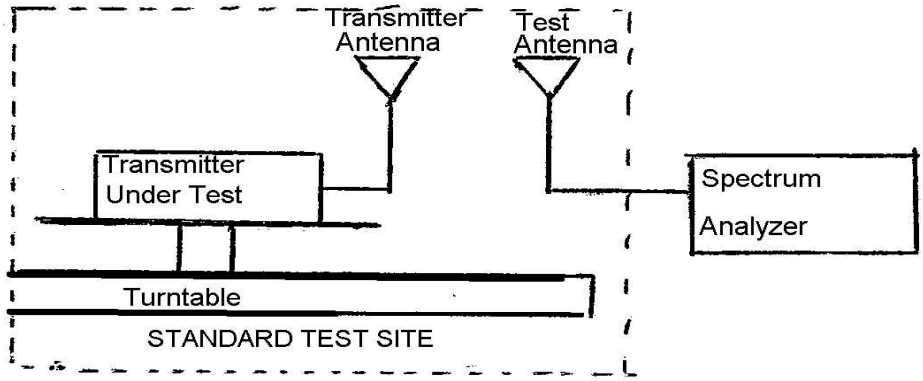
NAME OF TEST: ERP Carrier Power (Radiated)

SPECIFICATION: TIA/EIA 603A (Substitution Method)

2.2.17.1 Definition: The average radiated power of a licensed device is the equivalent power required, when delivered to a half-wave dipole or horn antenna, to produce at a distant point the same average received power as produced by the licensed device.

2.2.17.2 Method of Measurement:
a) Connect the equipment as illustrated. Place the transmitter to be tested on the turntable in the standard test site.



b) Raise and lower the test antenna from 1m to 6 m with the transmitter facing the antenna and record the highest received signal in dB as LVL.

c) Repeat step b) for seven additional readings at 45˚ interval positions of the turntable.

d) Replace the transmitter under test with a half-wave or horn vertically polarized antenna. The center of the antenna should be at the same location as the transmitter under test. Connect the antenna to a signal generator with a known output power and record the path loss in dB or LOSS.

e) Calculate the average radiated output power from the readings in step c) and d) by the following:

average radiated power = $10 \log_{10} \Sigma\ 10(LVL - LOSS)/10$ (dBm)

RESULTS ATTACHED

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NAME OF TEST: ERP Carrier Power (Radiated) RESULTS

CDMA 800

	824.73 MHz		836.4 MHz		848.19 MHz	
	LVL, dbm	Path Loss, db	LVL, dbm	Path Loss, db	LVL, dbm	Path Loss, db
0˚	23.9	-0.8	21.8	-0.2	24.0	-0.1
45˚	23.8	-0.8	22.3	-0.2	22.2	-0.1
90˚	24.3	-0.8	23.2	-0.2	22.7	-0.1
135˚	23.9	-0.8	22.2	-0.2	24.1	-0.1
180˚	24.3	-0.8	23.8	-0.2	23.3	-0.1
225˚	24.2	-0.8	21.1	-0.2	22.7	-0.1
270˚	23.9	-0.8	23.8	-0.2	23.9	-0.1
315˚	23.4	-0.8	23.4	-0.2	22.3	-0.1

	824.73 MHz	836.4 MHz	848.19 MHz
Av. Radiated Power:	24.7 dbm	22.9 dbm	23.25 dbm

PCS CDMA

	1851.25 MHz		1880 MHz		1908.75 MHz	
	LVL, dbm	Path Loss, db	LVL, dbm	Path Loss, db	LVL, dbm	Path Loss, db
0˚	21.1	-0.8	22.3	-0.2	22.6	+0.1
45˚	24.6	-0.8	22.5	-0.2	26.4	+0.1
90˚	20.4	-0.8	24.7	-0.2	20.9	+0.1
135˚	22.9	-0.8	22.4	-0.2	22.2	+0.1
180˚	22.2	-0.8	22.4	-0.2	21.6	+0.1
225˚	19.5	-0.8	23.0	-0.2	25.3	+0.1
270˚	24.3	-0.8	22.3	-0.2	21.6	+0.1
315˚	22.5	-0.8	23.0	-0.2	22.5	+0.1

	1851.25 MHz	1880 MHz	1905.75 MHz
Av. Radiated Power:	22.99 dbm	22.93 dbm	22.79 dbm

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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.

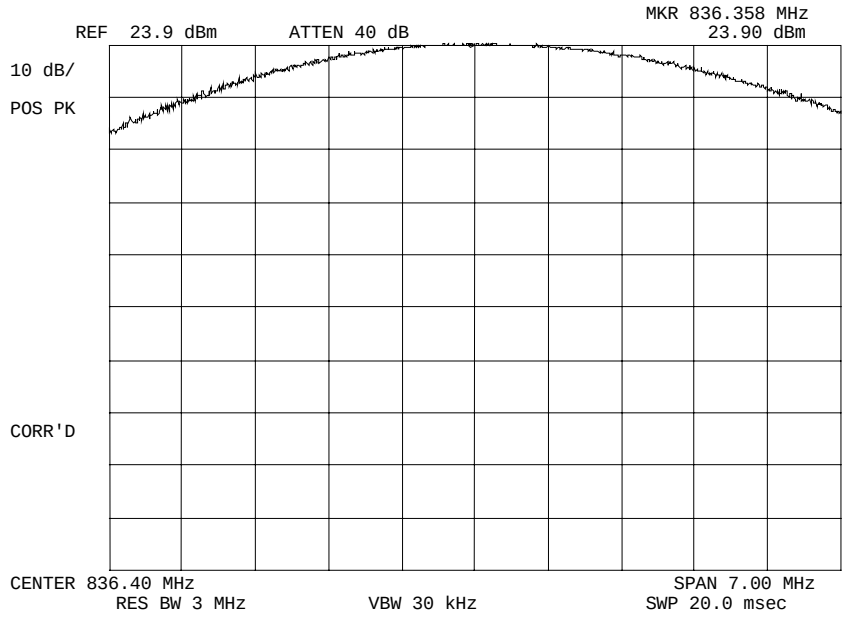
3. For EUTs supporting digital modulation, the digital modulation mode was operated to its maximum extent.

4. The Occupied Bandwidth was measured with the Spectrum Analyzer controls set as shown on the test results.

5. MEASUREMENT RESULTS: ATTACHED

PAGE NO. 13 of 39.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g02b0034: 2002-Nov-05 Tue 09:44:00
STATE: 2:High Power



POWER: HIGH
MODULATION: CDMA 800
REFERENCE LEVEL

PERFORMED BY: Doug Noble, B.A.S. E.E.T.

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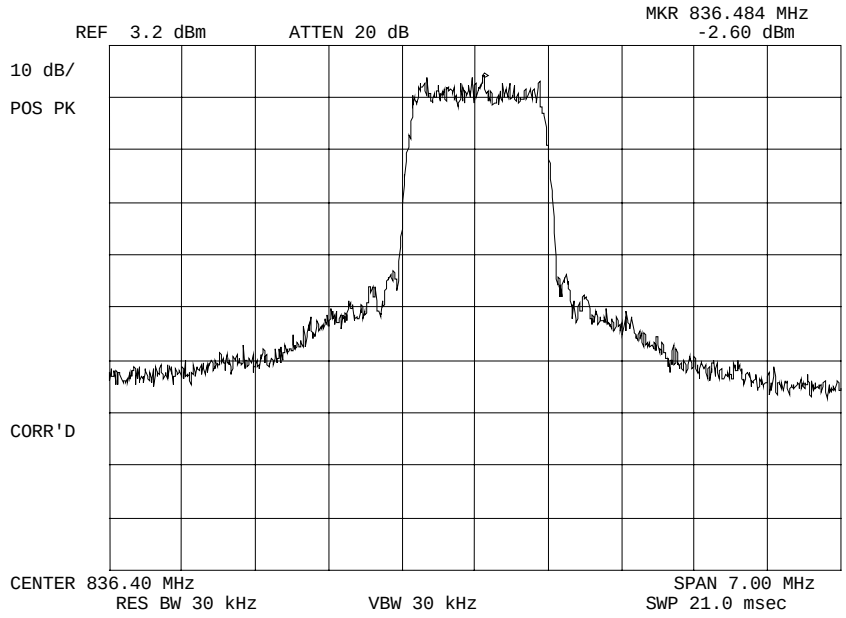
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g02b0028: 2002-Nov-05 Tue 08:58:00
STATE: 1:Low Power



POWER: LOW
MODULATION: CDMA 800

PERFORMED BY: Doug Noble, B.A.S. E.E.T.

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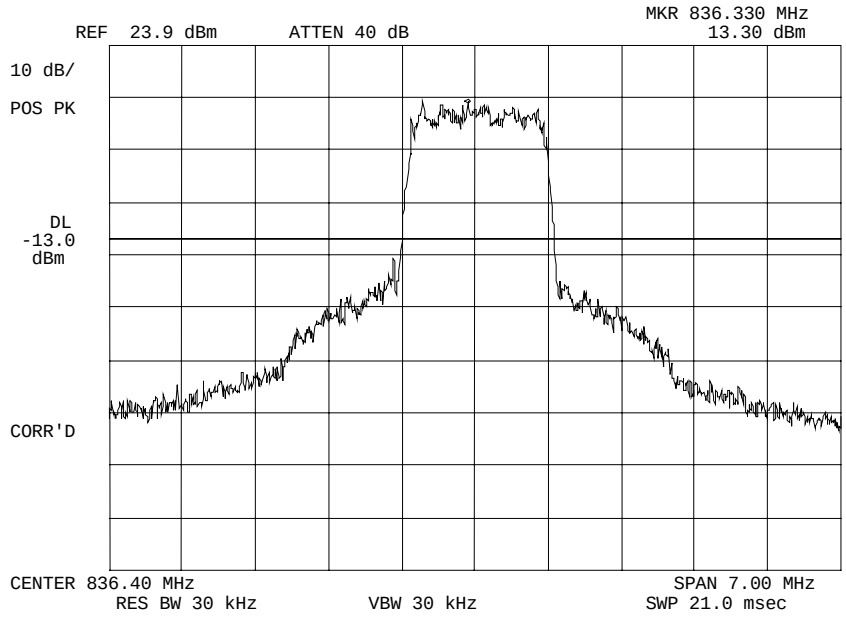
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g02b0031: 2002-Nov-05 Tue 09:10:00
STATE: 2:High Power



POWER: HIGH
MODULATION: CDMA 800

PERFORMED BY: Doug Noble, B.A.S. E.E.T.

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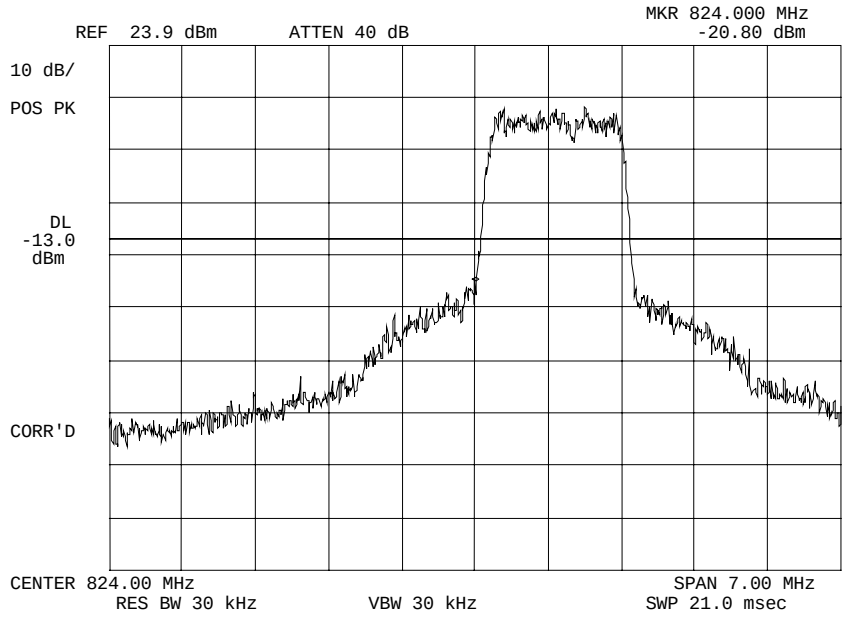
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g02b0029: 2002-Nov-05 Tue 09:05:00
STATE: 2:High Power



POWER: HIGH
MODULATION: CDMA 800
LOWER BANDEDGE CH 1014

PERFORMED BY: Doug Noble, B.A.S. E.E.T.

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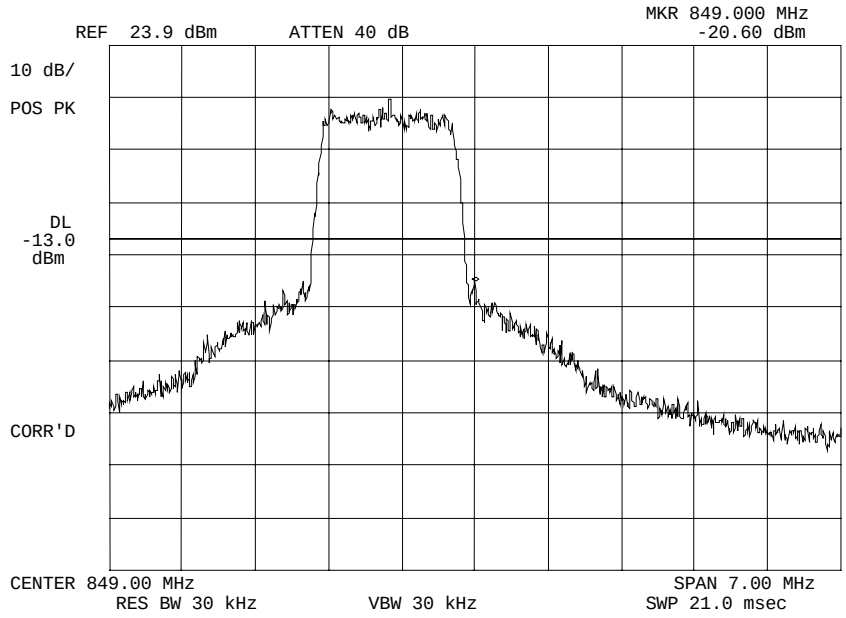
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g02b0030: 2002-Nov-05 Tue 09:07:00
STATE: 2:High Power



POWER: HIGH
MODULATION: CDMA 800
UPPER BANDEDGE CH 773

PERFORMED BY: Doug Noble, B.A.S. E.E.T.

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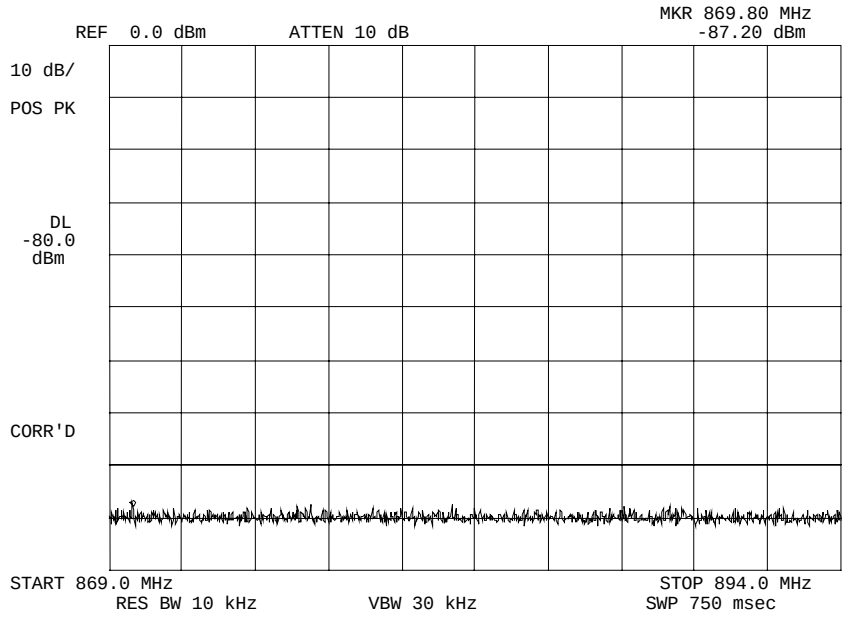
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g02b0033: 2002-Nov-05 Tue 09:32:00
STATE: 1:Low Power



POWER: LOW
MODULATION: CDMA 800
TX SPURS IN RX CRITICAL BAND

PERFORMED BY: Doug Noble, B.A.S. E.E.T.

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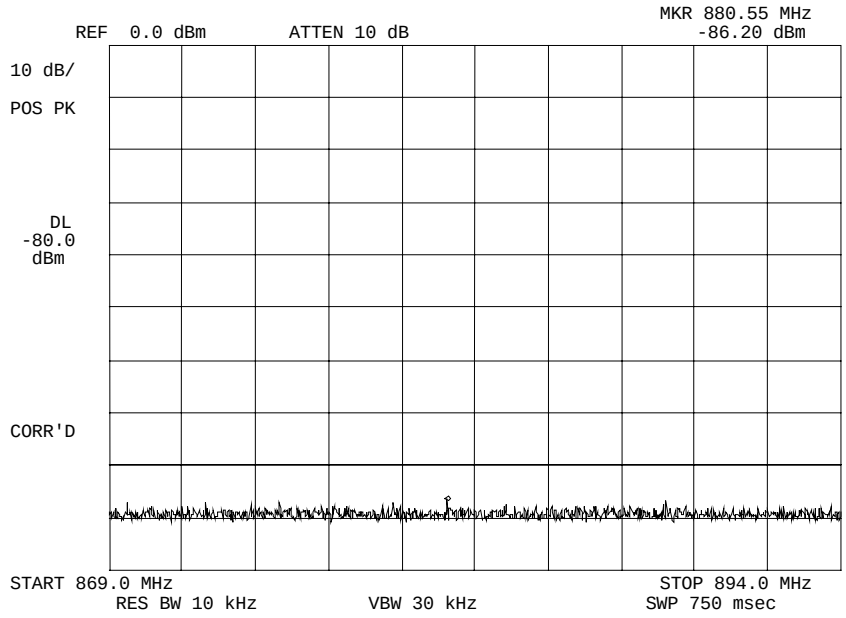
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g02b0032: 2002-Nov-05 Tue 09:31:00
STATE: 2:High Power



POWER: HIGH
MODULATION: CDMA 800
TX SPURS IN RX CRITICAL BAND

PERFORMED BY: Doug Noble, B.A.S. E.E.T.

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NAME OF TEST: Transmitter Conducted Measurements

SPECIFICATION: 47 CFR 2.1051: Unwanted (spurious) Emissions
2.1049(c), 24.238(b): Occupied Bandwidth
24: Emissions at Band Edges

TEST EQUIPMENT: As per attached page

MEASUREMENT PROCEDURE

1. The EUT and test equipment were set up as shown on the following page with the Spectrum Analyzer connected.

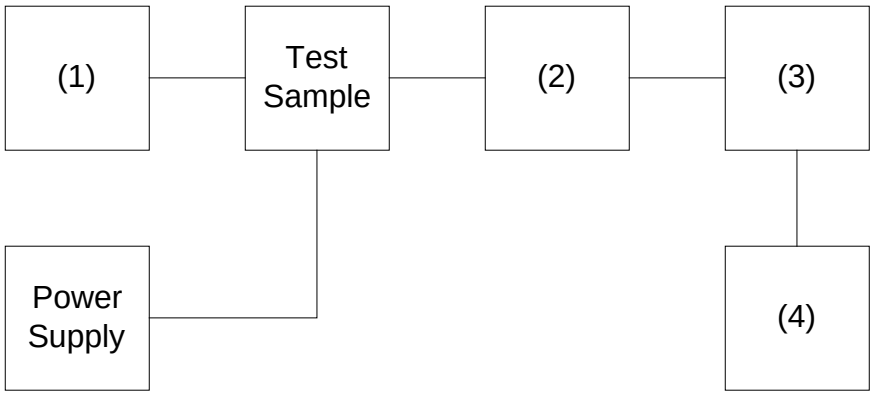
2. The low and high channels for all RF powers within the designated frequency block(s) were measured.

3. MEASUREMENT RESULTS: ATTACHED

PERFORMED BY: Doug Noble, B.A.S. E.E.T.

TRANSMITTER SPURIOUS EMISSION

TEST A. OCCUPIED BANDWIDTH (IN-BAND SPURIOUS)
TEST B. OUT-OF-BAND SPURIOUS



Transmitter Test Set Up

Asset	Description (as applicable)	s/n
(1)	AUDIO OSCILLATOR/GENERATOR	
i00010	HP 204D	1105A04683
i00017	HP 8903A	2216A01753
i00012	HP 3312A	1432A11250
(2)	COAXIAL ATTENUATOR	
i00122	Narda 766-10	7802
i00123	Narda 766-10	7802A
i00069	Bird 8329 (30 dB)	1006
i00113	Sierra 661A-3D	1059
(3)	FILTERS; NOTCH, HP, LP, BP	
i00126	Eagle TNF-1	100-250
i00125	Eagle TNF-1	50-60
i00124	Eagle TNF-1	250-850
(4)	SPECTRUM ANALYZER	
i00048	HP 8566B	2511A01467
i00029	HP 8563E	3213A00104

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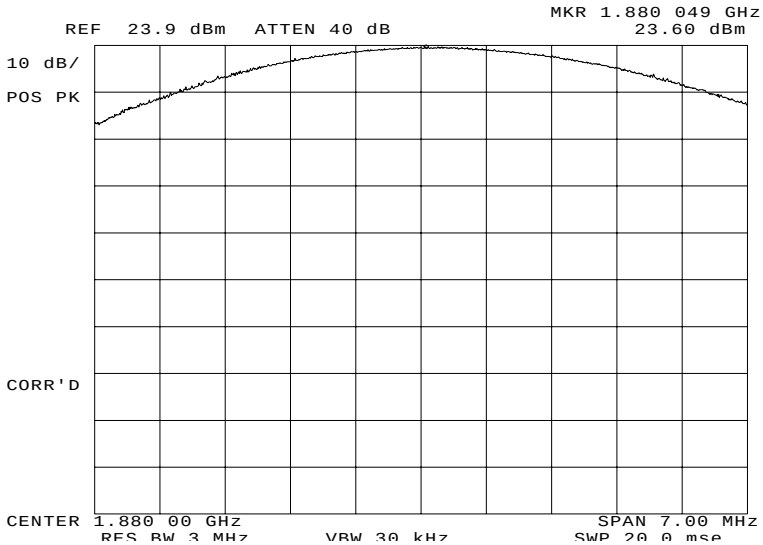
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g02a0035: 2002-Oct-25 Fri 14:06:00
STATE: 2:High Power

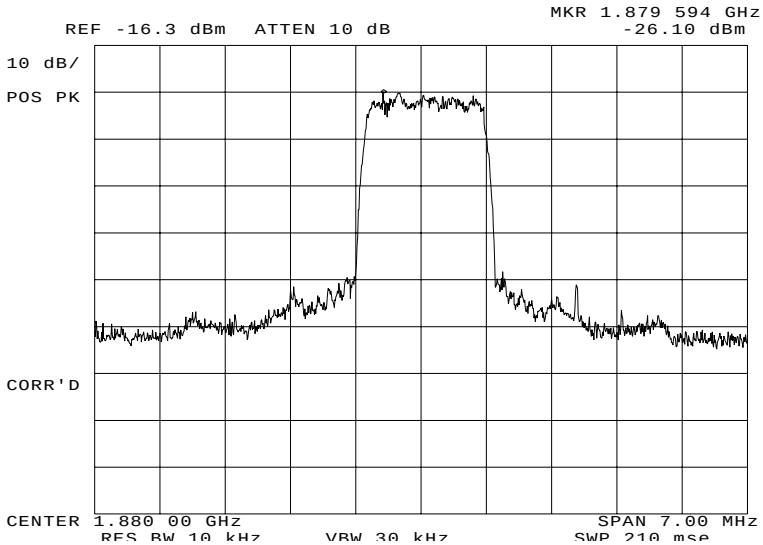


POWER: HIGH
MODULATION: CDMA PCS BAND
REFERENCE LEVEL

PERFORMED BY: Doug Noble, B.A.S. E.E.T.

PAGE NO. 23 of 39.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g02a0037: 2002-Oct-25 Fri 14:09:00
STATE: 1:Low Power

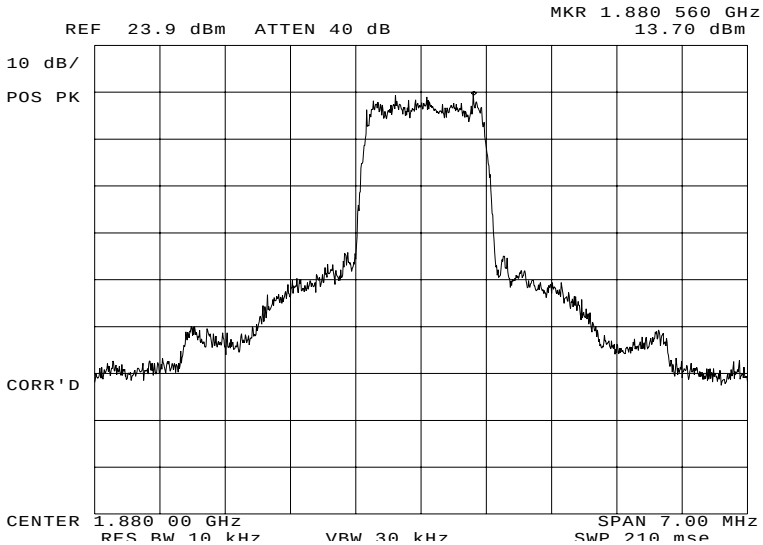


POWER: LOW
MODULATION: CDMA PCS BAND

PERFORMED BY: Doug Noble, B.A.S. E.E.T.

PAGE NO. 24 of 39.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g02a0036: 2002-Oct-25 Fri 14:07:00
STATE: 2:High Power

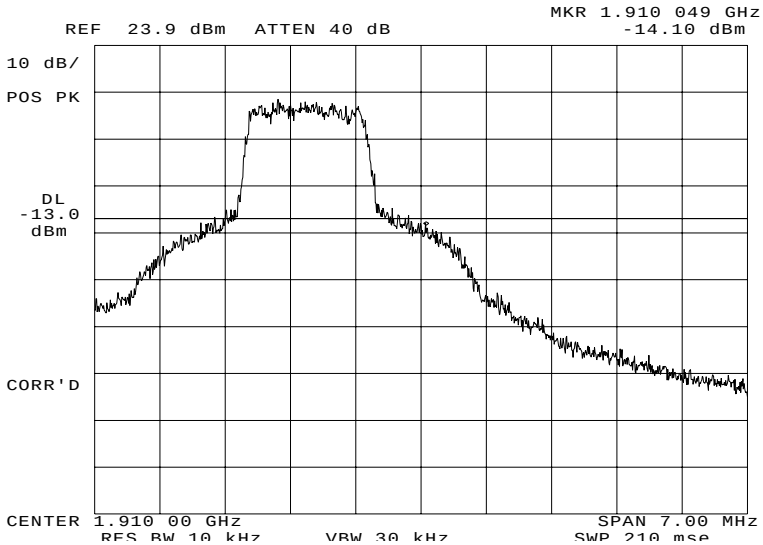


POWER: HIGH
MODULATION: CDMA PCS BAND

PERFORMED BY: Doug Noble, B.A.S. E.E.T.

PAGE NO. 25 of 39.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g02a0039: 2002-Oct-25 Fri 14:14:00
STATE: 2:High Power



POWER: HIGH
MODULATION: CDMA PCS BAND
UPPER BANDEDGE CH 1175

PERFORMED BY: Doug Noble, B.A.S. E.E.T.

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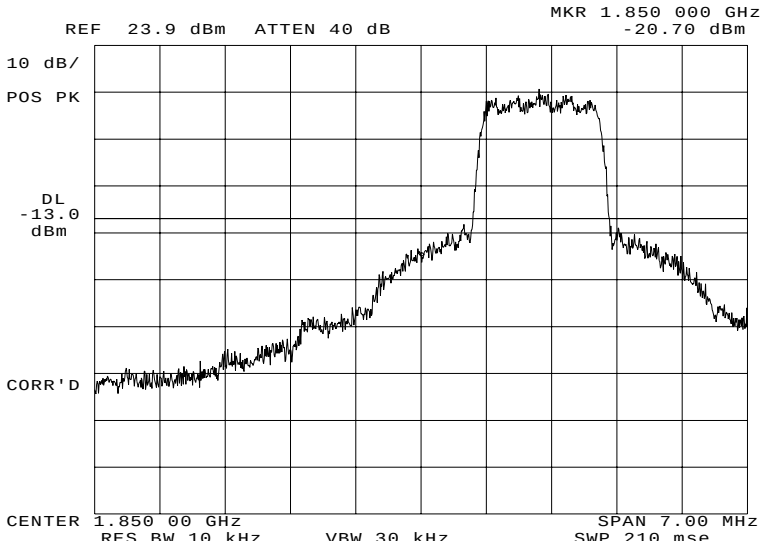
NAME OF TEST: Emission Masks (Occupied Bandwidth)
g02a0040: 2002-Oct-25 Fri 14:57:00
STATE: 2:High Power

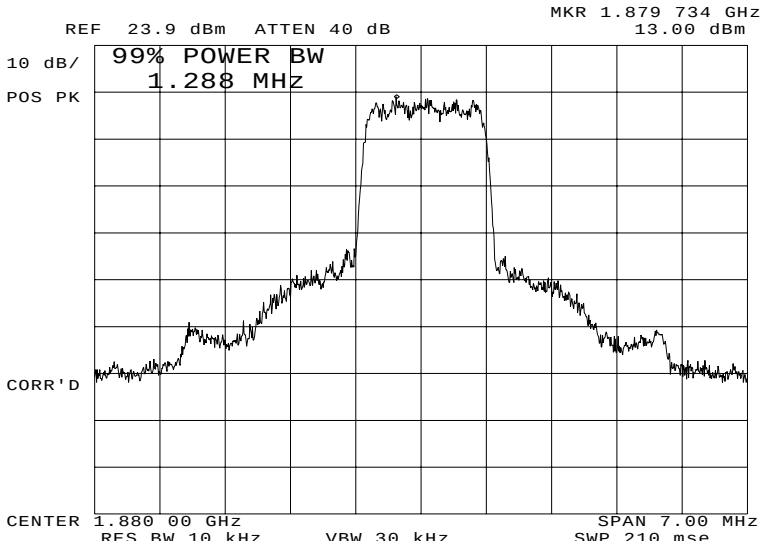


POWER: HIGH
MODULATION: CDMA PCS BAND
LOWER BANDEDGE CH 025

PERFORMED BY: Doug Noble, B.A.S. E.E.T.

PAGE NO. 27 of 39.

NAME OF TEST: Emission Masks (Occupied Bandwidth)
g02a0038: 2002-Oct-25 Fri 14:11:00
STATE: 2:High Power



POWER: HIGH
MODULATION: CDMA PCS BAND
99 % POWER BANDWIDTH

PERFORMED BY: Doug Noble, B.A.S. E.E.T.

PAGE NO. 28 of 39.

NAME OF TEST: Spurious Emissions at Antenna Terminals

SPECIFICATION: 47 CFR 2.1051, 22.917

TEST EQUIPMENT: As per attached page

MEASUREMENT PROCEDURE

1. The EUT was connected to a coaxial attenuator and then to a Spectrum Analyzer.

2. A notch filter was introduced to reduce or eliminate spurious emission which could be generated internally in the spectrum analyzer.

3. Measurements were made over the range from 45 kHz to 10 GHz for the worst case modulation so both the highest and lowest R.F. power settings.

4. All other emissions were 20 dB or more below the limit.

5. Spectrum analyzer bandwidth was set to section 22.917(h) as applicable.

6. MEASUREMENT RESULTS: ATTACHED

PAGE NO. 29 of 39.

NAME OF TEST: Unwanted Emissions (Transmitter Conducted)
g02b0035: 2002-Nov-05 Tue 09:53:00
STATE: 2:High Power CDMA 800

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBm	LEVEL, dBc	MARGIN, dB
824.040000	1648.111500	-54	-77.9	-41
836.400000	1672.616000	-54.3	-78.2	-41.3
848.970000	1698.093500	-54.5	-78.4	-41.5
824.040000	2472.163500	-53	-76.9	-40
836.400000	2509.351000	-55	-78.9	-42
848.970000	2546.680000	-56.1	-80	-43.1
824.040000	3296.210500	-56.5	-80.4	-43.5
836.400000	3345.739000	-56.2	-80.1	-43.2
848.970000	3395.970500	-56	-79.9	-43
824.040000	4120.082500	-55.7	-79.6	-42.7
836.400000	4181.813000	-56.6	-80.5	-43.6
848.970000	4244.655000	-55.1	-79	-42.1
824.040000	4944.485000	-55.2	-79.1	-42.2
836.400000	5018.631500	-55.9	-79.8	-42.9
848.970000	5093.790500	-56.3	-80.2	-43.3
824.040000	5768.082500	-54	-77.9	-41
836.400000	5854.703900	-50.3	-74.2	-37.3
848.970000	5942.697400	-50.6	-74.5	-37.6
824.040000	6592.281200	-49.6	-73.5	-36.6
836.400000	6691.168600	-49.8	-73.7	-36.8
848.970000	6791.836200	-50.3	-74.2	-37.3
824.040000	7416.325100	-50.1	-74	-37.1
836.400000	7527.666700	-49.6	-73.5	-36.6
848.970000	7640.960600	-49.2	-73.1	-36.2
824.040000	8240.236200	-50.1	-74	-37.1
836.400000	8363.845100	-50.2	-74.1	-37.2
848.970000	8489.671100	-50.3	-74.2	-37.3
824.040000	9064.637700	-49.8	-73.7	-36.8
836.400000	9200.530500	-49	-72.9	-36
848.970000	9338.505700	-50	-73.9	-37
824.040000	9888.588100	-49.6	-73.5	-36.6
836.400000	10036.897100	-50.5	-74.4	-37.5
848.970000	10187.837200	-50.1	-74	-37.1
824.040000	10712.741600	-48.5	-72.4	-35.5
836.400000	10873.148200	-50.3	-74.2	-37.3
848.970000	11036.738000	-49.1	-73	-36.1
824.040000	11536.751200	-49.9	-73.8	-36.9
836.400000	11709.405800	-50.3	-74.2	-37.3
848.970000	11885.686100	-48.7	-72.6	-35.7
824.040000	12360.568600	-50.1	-74	-37.1
836.400000	12545.937000	-45.3	-69.2	-32.3
848.970000	12734.529500	-45.4	-69.3	-32.4

PERFORMED BY: Doug Noble, B.A.S. E.E.T.

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NAME OF TEST: Unwanted Emissions (Transmitter Conducted)
g02a0041: 2002-Oct-25 Fri 14:59:00
STATE: 2:High Power PCS CDMA

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	LEVEL, dBm	LEVEL, dBc	MARGIN, dB
1851.250000	3702.403000	-53.4	-77.3	-40.4
1880.000000	3760.236600	-55.3	-79.2	-42.3
1908.750000	3817.376500	-54.8	-78.7	-41.8
1851.250000	5553.866000	-55.3	-79.2	-42.3
1880.000000	5639.785400	-55.7	-79.6	-42.7
1908.750000	5725.999900	-56.1	-80	-43.1
1851.250000	7404.851000	-50.6	-74.5	-37.6
1880.000000	7520.100100	-49.6	-73.5	-36.6
1908.750000	7634.820100	-48.5	-72.4	-35.5
1851.250000	9256.384000	-49.8	-73.7	-36.8
1880.000000	9399.852000	-49.6	-73.5	-36.6
1908.750000	9543.984200	-50.3	-74.2	-37.3
1851.250000	11107.661900	-49.1	-73	-36.1
1880.000000	11280.075700	-49.9	-73.8	-36.9
1908.750000	11452.658900	-48.7	-72.6	-35.7
1851.250000	12958.849700	-46.2	-70.1	-33.2
1880.000000	13160.204300	-44.9	-68.8	-31.9
1908.750000	13361.166000	-44.7	-68.6	-31.7
1851.250000	14810.075200	-44.9	-68.8	-31.9
1880.000000	15040.166700	-44.8	-68.7	-31.8
1908.750000	15269.907500	-44.1	-68	-31.1
1851.250000	16661.400100	-43.9	-67.8	-30.9
1880.000000	16919.771700	-44.3	-68.2	-31.3
1908.750000	17178.710500	-43.8	-67.7	-30.8
1851.250000	18512.359900	-43.7	-67.6	-30.7
1880.000000	18799.898500	-38.4	-62.3	-25.4
1908.750000	19087.508500	-38.9	-62.8	-25.9
1851.250000	20363.654600	-37.9	-61.8	-24.9
1880.000000	20679.821100	-36.3	-60.2	-23.3
1908.750000	20996.221800	-36.4	-60.3	-23.4

PERFORMED BY: Doug Noble, B.A.S. E.E.T.

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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

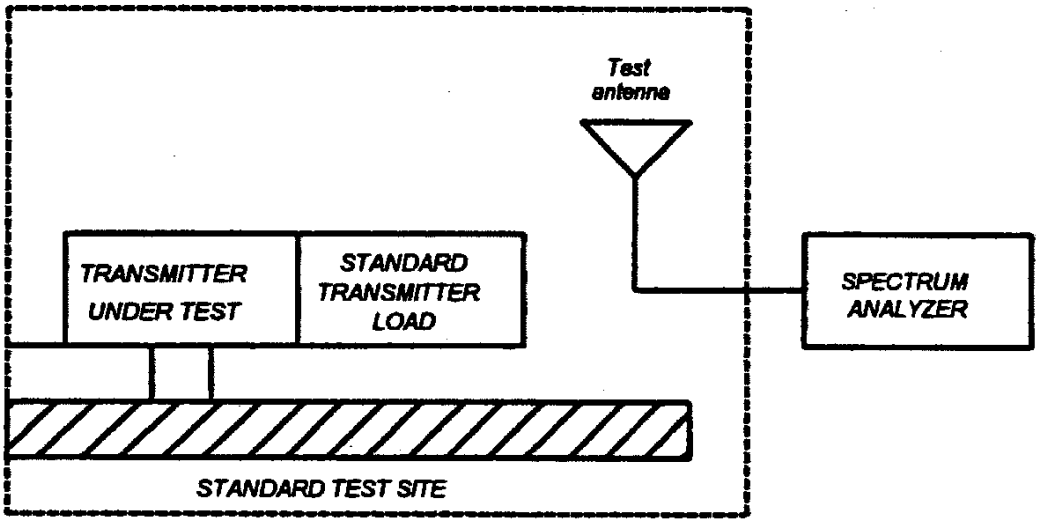
1.2.12.1 Definition: Radiated spurious emissions are emissions from the equipment when transmitting into a non-radiating load on a frequency or frequencies which are outside an occupied band sufficient to ensure transmission of information of required quality for the class of communications desired.

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.



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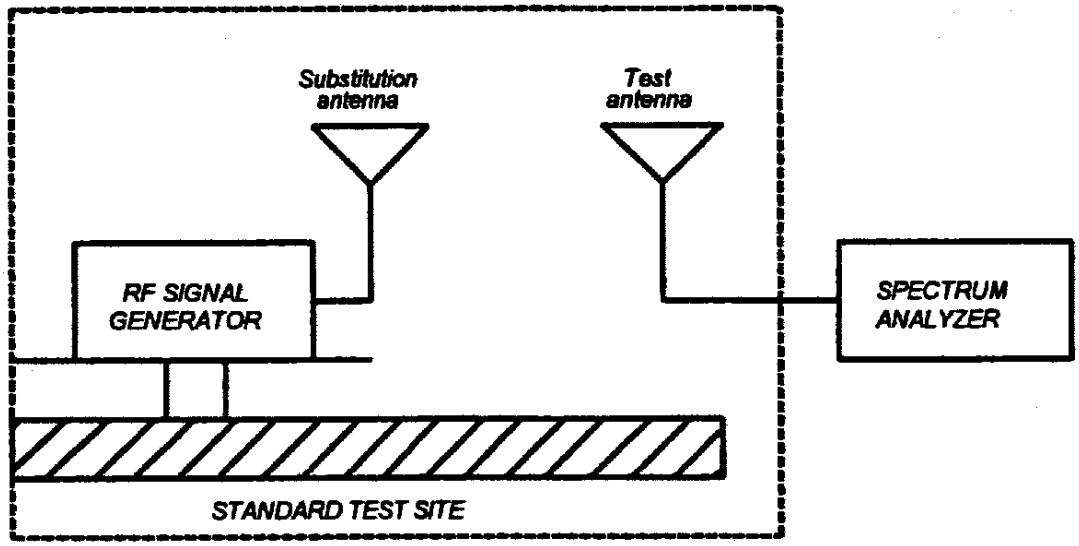
NAME OF TEST: Field Strength of Spurious Radiation (Cont.)

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 ± 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.

PAGE NO. 33 of 39.

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 =
$10\log_{10}$(TX power in watts/0.001) – the levels in step l)

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

Test Equipment:

Asset (as applicable)	Description	s/n	Cycle (Per ANSI C63.4-1992/2000 Draft, 10.1.4)	Last Cal
TRANSDUCER				
i00088	EMCO 3109-B 25MHz-300MHz	2336	12 mo.	Sep-02
i00065	EMCO 3301-B Active Monopole	2635	12 mo.	Sep-02
i00089	Aprel 2001 200MHz-1GHz	001500	12 mo.	Sep-02
i00103	EMCO 3115 1GHz-18GHz	9208-3925	12 mo.	Sep-02
AMPLIFIER				
i00028	HP 8449A	2749A00121	12 mo.	Mar-02
SPECTRUM ANALYZER				
i00029	HP 8563E	3213A00104	12 mo.	Jan-02
i00033	HP 85462A	3625A00357	12 mo.	Jan-02
i00048	HP 8566B	2511AD1467	6 mo.	Jan-02

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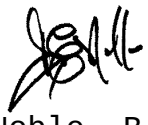
NAME OF TEST: Field Strength of Spurious Radiation

STATE: 2:High Power CDMA 800
g02b0012: 2002-Nov-04 Mon 12:55:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	ERP, dBm	ERP, dbc
836.400000	1672.816667	-55.6	≤ -65.1
836.400000	2509.233334	-52.6	≤ -65.1
836.400000	3345.600000	-50.7	≤ -65.1
836.400000	4182.000000	-49.2	≤ -65.1
836.400000	5018.400000	-46.9	≤ -65.1
836.400000	5854.800000	-47.8	≤ -65.1
836.400000	6691.200000	-46	≤ -65.1
836.400000	7527.600000	-44.9	≤ -65.1
836.400000	8364.000000	-41.2	≤ -65.1

STATE: 2:High Power CDMA PCS
g02b0013: 2002-Nov-04 Mon 14:06:00

FREQUENCY TUNED, MHz	FREQUENCY EMISSION, MHz	EIRP, dBm	MARGIN, dB
1880.000000	3760.000000	-45.8	≤ -58.65
1880.000000	5640.000000	-45.3	≤ -58.65
1880.000000	7520.000000	-42.4	≤ -58.65
1880.000000	9400.000000	-39.5	≤ -58.65
1880.000000	11280.000000	-37	≤ -58.65
1880.000000	13160.000000	-37.4	≤ -58.65
1880.000000	15040.000000	-36.5	≤ -58.65
1880.000000	16920.000000	-34.7	≤ -58.65



PERFORMED BY: Doug Noble, B.A.S. E.E.T.

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NAME OF TEST: Frequency Stability (Temperature Variation)

SPECIFICATION: 47 CFR 2.1055(a)(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

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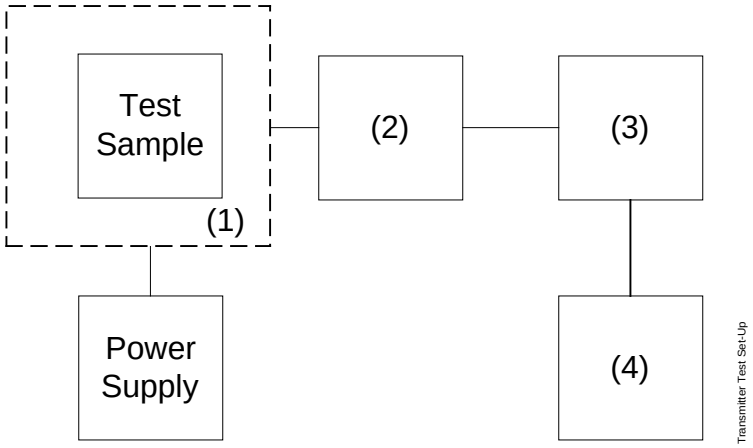
TRANSMITTER TEST SET-UP

TEST A. OPERATIONAL STABILITY
TEST B. CARRIER FREQUENCY STABILITY
TEST C. OPERATIONAL PERFORMANCE STABILITY
TEST D. HUMIDITY
TEST E. VIBRATION
TEST F. ENVIRONMENTAL TEMPERATURE
TEST G. FREQUENCY STABILITY: TEMPERATURE VARIATION
TEST H. FREQUENCY STABILITY: VOLTAGE VARIATION



Transmitter Test Set-Up

Asset (as applicable)	Description	s/n
(1)	TEMPERATURE, HUMIDITY, VIBRATION	
i00027	Tenney Temp. Chamber	9083-765-234
i00	Weber Humidity Chamber	
i00	L.A.B. RVH 18-100	
(2)	COAXIAL ATTENUATOR	
i00122	NARDA 766-10	7802
i00123	NARDA 766-10	7802A
i00113	SIERRA 661A-3D	1059
i00069	BIRD 8329 (30 dB)	10066
(3)	R.F. POWER	
i00014	HP 435A POWER METER	1733A05839
i00039	HP 436A POWER METER	2709A26776
i00020	HP 8901A POWER MODE	2105A01087
(4)	FREQUENCY COUNTER	
i00042	HP 5383A	1628A00959
i00019	HP 5334B	2704A00347
i00020	HP 8901A	2105A01087

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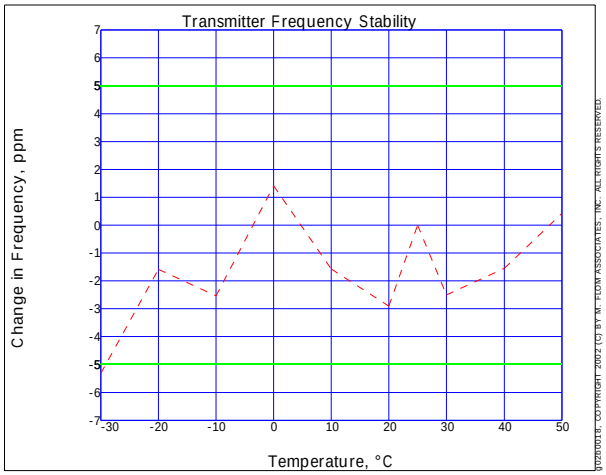
NAME OF TEST: Frequency Stability (Temperature Variation)
g02b0018: 2002-Nov-05 Tue 10:13:47
STATE: 0:General



PERFORMED BY: Doug Noble, B.A.S. E.E.T.

PAGE NO. 38 of 39.

NAME OF TEST: Frequency Stability (Voltage Variation)

SPECIFICATION: 47 CFR 2.1055 (b)(1)

TEST EQUIPMENT: As per previous page

MEASUREMENT PROCEDURE

1. The EUT was placed in a temperature chamber at 25±5°C and connected as for "Frequency Stability - Temperature Variation" test.

2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.

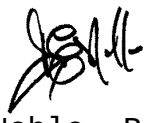
3. The variation in frequency was measured for the worst case.

Use 'best' data only.');
RESULTS: Frequency Stability (Voltage Variation)
g02b0036: 2002-Nov-05 Tue 10:11:28
STATE: 0:General

LIMIT, ppm = 5
LIMIT, Hz = 4182
BATTERY END POINT (Voltage) = 15

% of STV	Voltage	Frequency, MHz	Change, Hz	Change, ppm
85	16.4	836.410220	-1680	-2.01
100	19.3	836.411900	0	0.00
115	22.19	836.412810	910	1.09
78	15	836.412110	210	0.25

LIMIT: Must remain within authorized frequency block.



PERFORMED BY: Doug Noble, B.A.S. E.E.T.

PAGE NO. 39 of 39.

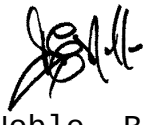
NAME OF TEST: Necessary Bandwidth and Emission Bandwidth

SPECIFICATION: 47 CFR 2.202(g)

MODULATION = 40K0F8W
NECESSARY BANDWIDTH:
NECESSARY BANDWIDTH (B_N), kHz = 40.0
(measured at the 99.75% power bandwidth)

MODULATION = 40K0F1D
NECESSARY BANDWIDTH:
NECESSARY BANDWIDTH (B_N), kHz = 40.0
(measured at the 99.75% power bandwidth)

MODULATION = 1M25F9W
NECESSARY BANDWIDTH:
NECESSARY BANDWIDTH (B_N), MHz = 1.25
(measured at the 99.75% power bandwidth)



PERFORMED BY: Doug Noble, B.A.S. E.E.T.

END OF TEST REPORT

TESTIMONIAL AND STATEMENT OF CERTIFICATION

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: Morton Flom, P. Eng.